SUBSYSTEM / COMPONENT	FUNCTIONALITY	RAMIFICATION OF LOSS OF FUNCTION (Malfunction, Degraded Function, Out-of-Time, Out-of-Sequence)	SEVERITY Loss of Function	INTERFACES	OPERATIONAL ENVIRONMENT	SAFETY-CRITICAL FUNCTION
1.0 Inert Gas (IG) Distribution Subsystem	Provides means to fill high-pressure gas cylinders with IG	-	-	-	-	-
1.1 IG regulator and meter	1. Regulates gas flow to cylinders 2. Meter indicates pressure in gas cylinders.	1. Uncontrolled cylinder fill-potential manifold or cylinder rupture. 2.1 Cylinders are overfilled-potential cylinder rupture. 2.2 Cylinders are underfilled-cylinder user is cheated.	1. Catastrophic. 2.1 Catastrophic. 2.2 Negligible.	Inert Gas resevoir. Inert Gas manifold	Operator in Equipment Room	Regularion of IG flow IG pressure monitoring
1.2 IG manifold	Distributes IG to cylinders.	1. Manifold leaks and allows IG to flow into the equipment room. 2. Manifold ruptures.	1. Catastrophic-Potential death from asphyxiation. 2. Catastrophic-potential death.	High-pressure gas cylinders	Operator in Equipment Room	Distribution of IG to cylinders.
1.3 High-pressure gas cylinder	Stores IG.	1. Gas cylinder leaks and allows IG to flow into the equipment room 2. Gas cylinder ruptures.	1., 2. Catastrophic.	Inert Gas manifold	Operator in Equipment Room	IG containment.
2.0 Forced Ventilation Subsystem	-	-	-	-	-	-
2.1 Forced Ventilation Blower	Forces fresh air into the Equipment Room	Blower failure results in IG buildup in Equipment Room	Catastrophic.	Electrical power/switch Equipment Room	Operator in Equipment Room	Fresh air circulation.
2.1.1 Blower switch (manual)	Turns blower on/off	1. Blower switch failure 2. Operator fails to turn on manual blower switch. 3. Operator fails to turn off blower switch.	1. Catastrophic. 2. Catastrophic. 3. Negligible.	Electrical power Forced Ventilation Blower Atmosphere	Operator in Equipment Room	Blower switch Man-Machine Interface/procedures
2.2 Exhaust Pipe component	Allows forced air to exit the equipment room.	1. Exhaust pipe is clogged 2. Exhaust pipe fails to remove dense IG because incorrectly placed.	1. Catastrophic. 2. Catastrophic.	Equipment Room Atmosphere	Operator in Equipment Room	Air exhaust into atmosphere.
3.0 Pressurized Diesel Fuel Line	Transfer diesel fuel.	1. Diesel fuel line leak into the equipment room 2. Diesel fuel line leak onto light fixture.	1. Marginal. 2. Catastrophic.	Equipment Room	Operator in Equipment Room	Diesel fuel containment.
4.0 Four-inch Water Line	Transfer water.	1. Water line leak into the equipment room. 2. Water line leak onto light fixture	1. Negligible. 2. Marginal.	Equipment Room	Operator in Equipment Room	None

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5.0 Sump Pump Subsystem	Remove water seepage from the equipment room.	-	-	-	-	-
5.1 Sump pump switch (automatic)	Turns sump pump on/off automatically	1. Sump pump switch fails off and water is not removed 2. Sump pump switch fails on and continuously runs.	1. Marginal. 2. Negligible.	Electrical power Sump pump	Operator in Equipment Room	None
6.0 Oxygen Deficiency Detection and Alarm Subsystem	Warn Barney if oxygen level is deficient	-	-	-	-	-
6.1 Oxygen Deficiency Alarm	Audible alarm in the equipment room if oxygen level is deficient	1. Audible alarm fails off 2. Audible alarm fails on.	**1. Catastrophic.** 2. Marginal.	Electrical power Oxygen Detector Alarm control software	Operator in Equipment Room	Oxygen deficiency alarm
6.2 Oxygen Detector	Detects and reports oxygen level	1. Detector reports incorrect oxygen level. 2. Detector fails to report oxygen level.	**1. Catastrophic.** **2. Catastrophic.**	Oxygen Deficiency Alarm Electrical power Alarm control software	Operator in Equipment Room	Oxygen detection
6.3 Entry Point Alarm	Audible alarm outside entry point if oxygen level is deficient in the equipment room	1. Entry point alarm fails off. 2. Entry point alarm fails on.	**1. Catastrophic.** 2. Marginal.	Electrical power Oxygen Detector Alarm control software	Operator in Equipment Room	Entry point alarm
6.4 Control Room Alarm	Audible alarm in the control room if oxygen is deficient in the equipment room.	1. Control room alarm fails off. 2. Control room alarm fails on.	**1. Catastrophic.** 2. Marginal.	Electrical power Oxygen Detector Alarm control software	Operator in Equipment Room	Control room alarm

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6.5 Alarm control software	Logic to read oxygen detector and sound alarms	1. Alarm fails to notify personnel of hazardous oxygen level 2. Alarm control software continuously causes alarms to sound.	**1. Catastrophic.** 2. Marginal.	Electrical power Oxygen Detector Control Room Alarm Entry Point Alarm Oxygen Deficiency Alarm	Operator in Equipment Room	Interpret oxygen detector input and activate alarms if oxygen level is out of range.
7.0 Equipment Room Subsystem	-	-	-	-	-	-
7.1 Entry door	Only entrance/exit into equipment room	Fire, explosion, or unknown blocks entry/exit.	Catastrophic.	Atmosphere Equipment room	Operator in Equipment Room	Ability to exit equipment room.
7.2 Equipment room electrical light	Single light fixture provides light for equipment room.	1. Light fixture fails when Barney is in the equipment room. 2. Light burns out.	1. Marginal. 2. Negligible.	Electrical power Light switch	Operator in Equipment Room	None
7.3 Equipment room light switch.	Turns equipment room light on/off.	1. Light switch fails on. 2. Light switch fails off.	1., 2. Negligible.	Electrical power Light	Operator in Equipment Room	None
8.0 Electrical Power	Supplies electricity to sump pump, alarm subsystem, blower subsystem, equipment room lighting.	1. Sump pump will not operate. 2. Oxygen level is unknown and alarms do not work. 3. Blower subsystem cannot remove IG. 4. Equpment room has no lights.	1. Marginal. **2., 3. Catastrophic.** 4. Negligible.	Electrical Power source Sump pump Alarm subsystem Blower subsystem Equipment Room light	Operator in Equipment Room	Electrical power