

Name(s) of Risk Team Members: A. Etkin, Andreas Warkentien, T. Tallerico	Point Value → Parameter ↓	1	2	3	4	5
Area/Facility Description Title: Collider-Accelerator Department Building 1006B Area Area/Facility # (if applicable): Area-Wide FRA 9-07	Occupancy or Use	≤once/year	≤once/month	≤once/week	≤once/shift	>once/shift
Area/Facility Description: Area-Warm gas, liquid Helium receiving and dispatch and 80° K Cooler	Severity	First Aid Only	Medical Treatment	Lost Time	Partial Disability	Death or Permanent Disability
	Likelihood	Extremely Unlikely	Unlikely	Possible	Probable	Multiple
Approved by: <i>E. Lessard</i> Date: 4-24-07 Rev.#: 0						

Reason for Revision (if applicable):	Comments:
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Physical Item or Activity	Hazard(s)	Control(s)	Before Additional Controls				Control(s) Added to Reduce Risk	After Additional Controls				% Risk Reduction
			Occupancy A	Severity B	Likelihood C	Risk* AxBxC		Occupancy A	Severity B	Likelihood C	Risk* AxBxC	
Cryogenic fluids and systems	Contact with temperature – extremes that result in such injuries frost bite or burns	Design reviews, ASSRC reviews, Cryogenic safety committee, proof testing, LOTO, work planning, PPE and training, postings, Cryogenic-system designs to consensus codes, inspections, relief valve testing, procedures, work planning	2	4	2	16						
Cryogenic systems	Oxygen deficiency	ODH analysis, ODH exhaust fans, training, remote/local audible/visible alarms, Fire/Rescue group response, EMTs, Cryo-systems designed to consensus codes, procedures, work planning, LOTO, inspections, PPE as required, postings and labeling, Cryogenics Safety Committee/ASSRC reviews	2	5	2	20						
Pressurized Systems	Being struck by an object, such as flying debris from a release of pressurized gas	Postings, PPE, maintenance, training, work planning, Cryogenic Safety Committee /ASSRC reviews, procedures, interlock systems, Certification/testing of pressure related equipment, Tier 1 inspections, LOTO, C-AD Chief ME reviews, codes and standards usage	2	3	3	18						
Confined Spaces	Oxygen deficiency	Training, atmospheric testing before entry and periodically, entry procedures, Permits, work planning, LOTO, respirators, forced ventilation, personnel rescue equipment, emergency planning, EMTs, SBMS, Signs.	1	5	2	10						

Confined Spaces - Metal	Increased chance of shock due to proximity to conducting surfaces	All equipment is listed or reviewed by CEE; work planning; grounding standards; GFCI, LOTO, procedures, training	1	4	2	8					
Vacuum	Ear damage from vessel rupture	Postings, PPE, maintenance, training, work planning, ASSRC reviews, procedures, Tier 1 inspections, Chief ME reviews, vacuum windows covered during handling, use of industry standards, design reviews	2	3	3	18					
Vacuum	Being struck by an object, such as flying debris	Postings, PPE, maintenance, training, work planning, ASSRC reviews, procedures, Tier 1 inspections, Chief ME reviews, vacuum windows covered during handling, use of industry standards, design reviews	2	3	3	18					
Electrical equipment & Power Supplies BNL Class A & B <250 V AC, <1000 VDC	Shock or electrocution, arc blast, burn	All equipment is listed or reviewed by CEE, Tier 1 inspections, disconnected cable policy, installations comply with applicable codes, procedures, training, distribution drawings, LOTO, energized electrical work permits, NFP 70 E PPE and training, energized electrical work permits, Kirk keys, ASSRC/ESRC reviews, qualified electricians and technicians, cabinet interlocks, postings, locked areas, guarding, work planning, GFCI, grounding standards, emergency procedures. Implementation of a plan to meet OSHA's NRTL requirements	4	4	2	32					
Electrical equipment & Power Supplies BNL Class C <600 V AC, <6000 V DC		All equipment is listed or reviewed by CEE, Tier 1 inspections, disconnected cable policy, installations comply with applicable codes, procedures, training, distribution drawings, LOTO, energized electrical work permits, NFP 70 E PPE and training, energized electrical work permits, Kirk keys, ASSRC/ESRC reviews, qualified electricians and technicians, cabinet interlocks, postings, locked areas, guarding, work planning, GFCI, grounding standards, emergency procedures, two-person rule for energized electrical work. Implementation of a plan to meet OSHA's NRTL requirements	4	5	2	40					
Working at heights	Falls to lower level, such as falling from a ladder or over a railing	Postings, barriers, fall protection, maintenance, training, work planning, procedures, Tier 1 inspections, PPE, approved scaffolding and platforms, approved ladders, anti-slip surfaces	3	5	3	45					

Further Description of Controls Added to Reduce Risk:					
*Risk:	0 to 20	21 to 40	41-60	61 to 80	81 or greater
	Negligible	Acceptable	Moderate	Substantial	Intolerable