

Name(s) of Risk Team Members: J. Scott, A. Warkentien, F. Cullen, A. Wozniak			Point Value → Parameter ↓		1	2	3	4	5		
Area/Facility Description Title: Collider-Accelerator Department			Occupancy or Use		≤once/year	≤once/month	≤once/week	≤once/shift	>once/shift		
Area/Facility # (if applicable): FRA 27-06			Severity		First Aid Only	Medical Treatment	Lost Time	Partial Disability	Death or Permanent Disability		
Area/Facility Description: Building 1005H RHIC Compressor Room, Repair of Compressor Skid No. 3 oil line (Work Request SS2006-057)			Likelihood		Impossible	Unlikely	Possible	Probable	Multiple		
Approved by: <i>E. Lessard</i> Date: 5/5/2006      Rev.#: 0											
Reason for Revision (if applicable): Yearly update and review							Comments:				
			Before Additional Controls				After Additional Controls				
Physical Item or Activity	Hazard(s)	Control(s)	Occupancy A	Severity B	Likelihood C	Risk* AxBxC	Control(s) Added to Reduce Risk				% Risk Reduction
							Occupancy A	Severity B	Likelihood C	Risk* AxBxC	
Cryogenic Fluids And Systems	Contact with temperature – extremes that result in such injuries as heat exhaustion, frost bite or burns	Design reviews, ASSRC reviews, proof testing, LOTO, work planning, PPE and training, postings, Cryogenic-system designs to consensus codes, inspections, relief valve testing	3	2	2	12					
Cryogenic Fluids And Systems	Oxygen deficiency	ODH analyses, ODH controls, training, interlocked emergency exhaust fans, PPE, remote/local audible/visible alarms, emergency response, EMTs, work planning, POMs, medical clearance, escape pack, MSDS, LOTO, postings, Cryo-system designs to consensus codes, inspections, relief valve testing	3	5	2	30					
Pressurized Systems	Being struck by object due to pressure release	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, Venting of trapped pressure prior to work.	4	3	3	36					

Gases	Oxygen deficiency	ODH analyses, ODH controls, training, interlocked emergency exhaust fans, remote/local audible/visible alarms, emergency response, EMTs, work planning, POMs, medical clearance, escape pack, MSDS, LOTO, postings, Cryo-system designs to consensus codes, cylinder storage controls, cylinder labels, inspections	4	5	2	40					
Hydraulics	Being struck by object due to pressure release	Design reviews, ASSRC reviews, proof testing, LOTO, work planning, PPE and training, Venting of systems trapped pressure prior to work or disconnect.	4	3	3	36					
Cooling water	Being struck by object due to pressure release	Design reviews, ASSRC reviews, proof testing, LOTO, work planning, PPE and training, Venting of trapped pressure.	4	3	3	36					
Electrical equipment & Power Supplies BNL Class A & B <250 V AC, <1000 V DC	Shock or electrocution	All equipment is listed or reviewed by CEE, Tier 1 inspections, disconnected cable policy, installations comply with applicable codes, procedures, training, distribution drawings, LOTO, working hot permits, ASSRC reviews, qualified electricians and technicians, cabinet interlocks, postings, locked areas, guarding, work planning, GFCI, grounding standards, emergency procedures, NFPA 70E training and PPE	4	4	2	32					
Electrical equipment & Power Supplies BNL Class C <600 V AC <6000 V DC	Shock or electrocution, arc blast	All equipment is listed or reviewed by CEE, Tier 1 inspections, disconnected cable policy, installations comply with applicable codes, procedures, training, distribution drawings, LOTO, working hot permits, ASSRC reviews, qualified electricians and technicians, cabinet interlocks, postings, locked areas, guarding, work planning, GFCI, grounding standards, emergency procedures, two-person rule for hot work, NFPA 70E training and PPE	4	5	2	40					
Electrical equipment & Power Supplies BNL Class D >600 V AC, >6000 V DC	Shock or electrocution, arc blast	All equipment is listed or reviewed by CEE, Tier 1 inspections, disconnected cable policy, installations comply with applicable codes, procedures, training, distribution drawings, LOTO, working hot permits, ASSRC reviews, qualified electricians and technicians, cabinet interlocks, postings, locked areas, guarding, work planning, GFCI, grounding standards, emergency procedures, safety watch for hot work, NFPA 70E training and PPE	4	5	2	40					
MCCs, Panels And Wall Sockets	Shock or electrocution, arc blast	All equipment is listed or reviewed by CEE, Tier 1 inspections, disconnected cable policy, installations comply with applicable codes, procedures, training, distribution drawings, LOTO, working hot permits, ASSRC reviews, qualified electricians and technicians, cabinet interlocks, postings, locked areas, guarding, work planning, GFCI, grounding standards, emergency procedures, NFPA 70E training and PPE	4	5	2	40					

Remotely And Automatically Operated Equipment	Being caught in or compressed by equipment	Guarding, training, posting, LOTO	2	3	3	12					
Working At Heights	Falls to a lower level such as 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	4	4	2	32					
Vacuum	Ear damage	Postings, PPE, maintenance, training, work planning, ASSRC reviews, procedures, Tier 1 inspections, Chief ME reviews, use of industry standards, design reviews	2	5	2	20					
Vacuum	Being struck by object such as flying debris following vacuum failure	Postings, PPE, maintenance, training, work planning, ASSRC reviews, procedures, Tier 1 inspections, Chief ME reviews, use of industry standards, design reviews, LOTO, Venting system to atmospheric prior to work	2	5	2	20					
Walking – Working Surfaces	Falls at the same level	PPE; Tier 1; work planning; P.E. scheduled maintenance; internal and external audits; posting; labeling; training; barriers; communication; lessons learned, Training and checklist for walking to staff, FRA for walking, OPM on work planning, Snow shovels and salt in appropriate areas.	4	4	3	48					
Egress	Impaired egress	Tier 1; work planning; skill of craft; P.E. scheduled maintenance; internal and external audits; posting; labeling; training; barriers; communication; internal processes; lessons learned; life safety codes; emergency preparedness, C-AD housekeeping policy	4	4	2	32					
Material Handling	Being struck by object such as falling load or loss of control of load	Tier 1; work planning; postings; training; communication; internal procedures; lessons learned, OPM, Weight limits, inspected certified equipment	3	5	2	30					
Extreme Noise	Ear damage	Postings, PPE [double hearing protection], training, work planning, ASSRC reviews, procedures, occupation limits, area and personnel monitoring, medical surveillance	4	4	2	32					
High Heat	Contact with temperature – extremes that result in such injuries as heat exhaustion or burns	Postings, PPE, ventilation, training, work planning, ASSRC reviews, procedures, heat stress analyses	4	3	2	24					
Chemical Use	Skin exposure	PPE, hazard communication training, specific hazard training, MSDS, CMS, secondary containment, work planning and hazard identification, Tier 1	3	2	3	18					
Chemical Use	Eye exposure	PPE, hazard communication training, specific hazard training, MSDS, CMS, work planning and hazard identification, Tier 1	3	2	2	12					
Chemical Use	Inhalation	PPE, ventilation, hazard communication training, specific hazard training, MSDS, CMS, work planning and hazard identification, Tier1	3	2	2	12					

Hot Surfaces	Contact with temperature – extremes that result in such injuries as heat exhaustion or burns	Posting, PPE, barriers, training, tier 1	4	2	2	16					
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						