

Name(s) of Risk Team Members: R. Karol, P. Sampson, J. Benante, R. Savage, L. Vogt, L. Masi, J. Young			Point Value → Parameter ↓	1	2	3	4	5				
Area/Facility Description Title: Collider-Accelerator Department Accelerators Area/Facility # (if applicable): Accelerators Area-Wide FRA 24-06			Occupancy or Use	≤once/year	≤once/month	≤once/week	≤once/shift	>once/shift				
Area/Facility Description: Area-Wide Accelerator			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: 2-16-06 Rev.#: 0								Comments:				
Reason for Revision (if applicable):												
			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	Occupancy A	Severity B	Likelihood C	Risk* AxBxC	% Risk Reduction
Radiation	See Facility-Wide Radiation Evaluation	See Facility-Wide Radiation Evaluation										
Electrical	See Facility-Wide Electrical Evaluation	See Facility-Wide Electrical Evaluation										
Material Handling	See Facility-Wide Material Handling Evaluation	See Facility-Wide Material Handling Evaluation										
Housekeeping	See Facility-Wide Housekeeping Evaluation	See Facility-Wide Housekeeping Evaluation										
Fire	See Facility-Wide Fire Evaluation	See Facility-Wide Fire Evaluation										
ODH	See Facility-Wide ODH Evaluation	See Facility-Wide ODH Evaluation										
Water	Being struck by an object due to a pressure release	Postings, maintenance, PPE, training, work planning, ASSRC review, procedures, Tier 1 inspections, PLC monitoring and interlocks, LOTO, codes and standards use	4	3	2	24						

Water	Contact with temperature – extremes that result in such injuries as heat exhaustion, frost bite or burns	Postings, maintenance, PPE, training, work planning, ASSRC review, procedures, Tier 1 inspections, LOTO, Barriers or posting	4	3	1	12						
Cryogenic	Being struck by an object due to a pressure release	Postings, maintenance, training, work planning, LOTO, PPE, Cryogenic Safety Committee /ASSRC reviews, procedures, PPE, interlock systems, Tier one inspection, pressure testing, pressure relief valve testing and inspections	4	4	2	32						
Cryogenic	Contact with temperature – extremes that result in such injuries as heat exhaustion, frost bite or burns	Postings, maintenance, training, work planning, LOTO, Cryogenic Safety Committee /ASSRC reviews, procedures, PPE, interlock systems, Tier 1 inspection	4	3	1	12						
Cryogenic	ODH	Postings, maintenance, training, work planning, LOTO, Cryogenic Safety Committee /ASSRC reviews, procedures, PPE, interlock & alarm systems, Tier 1 inspection, interlock & alarm testing, calibrated equipment	4	5	2	40						
Pressurized Systems	Being struck by an object such as flying debris	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	4	3	3	36						
Vacuum	Ear damage	Postings, PPE, maintenance, training, work planning, ASSRC reviews, procedures, Tier 1 inspections, Chief ME reviews, vacuum windows covered during handling, use of industry codes and standards, design reviews, LOTO	4	4	2	32						
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 codes and standards, design reviews, LOTO	4	4	2	32						
Work at heights	Falls to lower level, such as falling from a ladder or over a railing	Postings, barriers, standard and alternate fall protection methods, maintenance, training, work planning, procedures, Tier 1 inspections, PPE, approved scaffolding and platforms, approved ladders, anti-slip surfaces	3	5	3	45	See Note 1	3	5	2	30	33%
RF	Thermal radiation exposure	Postings, maintenance, training, work planning, ASSRC reviews, procedures, interlock systems, Tier 1 inspections, RF gaskets, LOTO, RF field surveys	2	4	1	8						
Lasers	Thermal radiation exposure and eye damage	Barriers, interlock systems, postings, training, LSO review, work planning, PPE, procedures, Tier 1 inspections, warning systems	4	4	2	32						

Magnetic Field	Adverse mechanical force exerted on ferromagnetic objects and or to electronic/medical implants	Barriers, warning systems, postings, training, ASSRC review, work planning, procedures, Tier 1 inspections, magnetic safety reviews, medical exams, LOTO, Magnetic field surveys, approved interlocks	3	3	1	9					
Remotely Operated Equipment	Becoming caught in or compressed by equipment	Postings, barriers, guards, maintenance, training, work planning, procedures, Tier 1 inspections, ASSRC reviews	2	3	2	12					
Chemicals	Personnel exposure, fire, explosions, reactive metals	Postings, barriers, PPE, maintenance, training, work planning, procedures, Tier 1 inspections, CMS, MSDS, SBMS, volume controls, locked/controlled areas, use or safer chemicals	3	2	2	12					
Confined Spaces	Entrapment, engulfment, exposure to dangerous atmospheres	Barriers, procedures, postings, training, Confined Spaces Permits, work planning, procedures, Tier 1 inspections, SBMS, calibrated atmospheric equipment.	2	5	2	20					

Further Description of Controls Added to Reduce Risk:

Note 1: C-A-OPM 1.25 issued in FY06, [Alternate Fall Protection Plan for Leading Edge Work During Precast Concrete Erection and Disassembly](#), to address alternate fall protection methods when standard OSHA methods are not possible.

*Risk:	0 to 20	21 to 40	41-60	61 to 80	81 or greater
	Negligible	Acceptable	Moderate	Substantial	Intolerable