Name(s) of Risk Team Members: J. Maraviglia, L. Hammons, D. Aichroth, R. Karol and P. Bergh	Point Value → Parameter ↓	1	2	3	4	5
Area/Facility Description Title: Collider-Accelerator Department Area/Facility # (if applicable): General Facility FRA 3-08	Occupancy or Use (A)	≤once/year	≤once/month	≤once/week	≤once/shift	>once/shift
Area/Facility Description: General Facility-Wide Ionizing Radiation	Severity (B)	First Aid Only	Medical Treatment	Lost Time	Partial Disability	Death or Permanent Disability
Approved by: *E. Lessard* Date: 5-13-08 Rev.#: 0	Likelihood (C)	Extremely Unlikely	Unlikely	Possible	Probable	Multiple
Reason for Revision (if applicable): Annual Review		Comments:				

			Risk with Controls in Place					Risk with Additional Controls in Place				
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
Primary beam	Unshielded proton, electron or ion beam, external radiation	ACS, PASS, security sweeps, postings, crash buttons and chords, C-AD area classification, shielding, dosimetry, training, RSC reviews	1	5	1	5						
Secondary beam	Unshielded beams, external radiation	ACS, PASS, security sweeps, postings, crash buttons and chords, C-AD area classification, shielding, dosimetry, training, locked gates, fenced in areas, RCD surveys, RWPs, work planning, RSC reviews, RCD oversight	1	4	2	8						
Target Areas	Unshielded beam, residual radiation, external radiation	ACS, PASS, security sweeps, postings, crash buttons and chords, C-AD area classification, shielding, dosimetry, training, locked gates, fenced in areas, RCD surveys, RWPs, work planning, RSC reviews, RCD oversight, extra shielding around targets, special keys to target areas	1	5	1	5						
General area radiation	Residual radiation, external radiation	Postings, training, shielding, RCD surveys, TLD area monitoring program, RCD oversight, RWP, work planning	5	1	4	20						
Contamination	Residual radiation, activated fluids, external or internal radiation	Postings, training, RCD surveys, RCD oversight, RWP, work planning, PPE, friskers, keeping contamination areas minimized, response to spills	2	1	4	8						
Internal radiation	Internal radiation	RWP, work planning, PPE, WB counting, sealed tunnel/cave gates to reduce exposure to activated air, delay before entering primary areas to allow decay of isotopes, HEPA vacuums, air sampling, routine contamination survey program, RCD oversight	2	1	3	6						

Storage of Radioactive Materials	Residual radiation, external radiation	Fenced and posted areas, dosimetry, RWPs, work planning, RCD oversight, inspections, RMA inventories, some areas locked, shielding	5	1	4	20							
Radioactive Sources	Internal or external radiation	Training, BNL and C-AD source custodians, source inventory, shielding, locked boxes, leak checks, posting, dosimetry, Chipmunk calibration procedures, locked cage for Chipmunk source	5	2	2	20							
RF Cavities	X-rays	ACS, PASS, shielding, training, RCD surveys, postings, locked areas, procedures for test areas, RWP, work planning	1	5	1	5							
Unauthorized Movement of Activated Materials	Residual radioactivity incorporated into the structure of the item that was moved	Activated components are fixed to the accelerator structure and require tools and/or heavy equipment to move; activation areas are enclosed and posted with the 'activation-check' instruction; RWPs, work planning, RCD oversight, inspections, RMA inventories are used to control movement of materials from activation areas or RMAs; some areas are locked and keys controlled; activation-check training; double surveys of waste streams; regular surveys of offices and other uncontrolled areas surrounding the activation areas.	5	1	4	20							
Tours	Internal or external radiation	Postings, trained escorts, RCD concurrence to enter radiation areas, RWP, work planning, training waiver, red TLD, BNL minors policy	3	1	2	6							
Industrial X-Ray Radiography	Unshielded X-Ray exposure	Qualified X-Ray equipment operator, 60 feet of power cable use between tube head and controls, work orders, RWPs, Alarming dosimeters, TLDs, visual boundary control, postings, procedures, HP coverage, surveys.	2	2	1	4							
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