Job Risk Assessment

Name(s) of Risk Team Members: E. Lessard, D. Passarello. L Tenreiro	Point Value → Parameter ↓	1	2	3	4	5
Job Title: Pressurized System Work Job Number or Job Identifier: JRA 9-04	Frequency (B)	≤once/year	≤once/month	≤once/week	≤once/shift	>once/shift
Job Description: Removal, maintenance and re-insertion of high speed gas turbine at 1005R located on an elevated platform	Severity (C)	First Aid Only	Medical Treatment	Lost Time	Partial Disability	Death or Permanent Disability
Training and Procedures List (optional): Approved by: *E. Lessard* Date: 8-11-04 Rev. #: 0	Likelihood (D)	Impossible	Unlikely	Possible	Probable	Multiple

Stressors (if applicable, please list all):	Reason for Revision (if applicable):	Comments:
High noise and heat if compressor is in operation. Hurrying is also a stressor if compressor is in operation and awaiting repair of one of the turbines. The 1005R Building is also an ODH Class 1 Area during compressor operations. These stressors are not present if turbines are undergoing routine maintenance during summer shutdown periods.		

				Before Additional Controls							After Additional Controls					
Job Step / Task	Hazard	Control(s)	**Stressors Y/N**	**# of People A**	**Frequency B**	**Severity C**	**Likelihood D**	**Risk* AxBxCxD**	Control(s) Added to Reduce Risk	**Stressors Y/N**	**# of People A**	**Frequency B**	**Severity C**	**Likelihood D**	**Risk* AxBxCxD**	% Risk Reduction
Verify with Cryogenic Control Room that there is no pressure, then LOTO energy sources (oil, helium, electrical)	Being struck by an object or hit by high-pressure oil due to a pressure release	LOTO lists, LOTO training	Y	1	2	3	2	12								
Entering 1005R during compressor operations (ODH not applicable during shutdown periods)	Oxygen deficiency	ODH training, warning signs, medical-approved ODH qualified, personal oxygen monitor, self-rescue supplied-atmospheric respirator	Y	1	2	5	2	20								
Assemble material handling equipment (dye table, slings, tools, oil-catching materials)	Falls on same level	Grating on floor, housekeeping rules, maintenance of walking/working surfaces	Y	1	2	3	2	12								

Apply a sling-support to turbine with 10 ton crane, and remove bolts and piping from the turbine	Being struck by an object or oil due to a pressure release	LOTO, safety glasses, smock, gloves, safety shoes	Y	1	2	3	2	12								
Apply a sling-support to turbine with 10 ton crane, and remove bolts and piping from the turbine	Falls to lower level, such as falling over a railing	Railing on walkway, housekeeping rules, maintenance of walking/working surfaces	Y	1	2	5	2	20								
Apply a sling-support to turbine with 10 ton crane, and remove bolts and piping from the turbine	Temperature extremes such as excessive heat during compressor operation	Limiting time in the compressor room during machine operations, using locator/placement pins on turbines to make removal and installation of turbines quicker	Y	1	2	3	2	12								
Apply a sling-support to turbine with 10 ton crane, and remove bolts and piping from the turbine	Noise due to compressor operation	Hearing protection	Y	1	2	4	2	16								
Apply a sling-support to turbine with 10 ton crane, and remove bolts and piping from the turbine	Bodily reaction – injuries resulting from bending and slipping without falling due to minimal aisle width in work area and presence of small amounts of oil	Use of the crane to support the turbine during unbolting activities	Y	1	2	3	2	12	OSHA has cited the minimal width of the working aisle-way as a violation. The Cryogenic supervisor has requested a walkway improvement such that the brake systems on the turbines will not stick out into the walkway. Widening the walkway is also being considered but is constrained by other equipment in the area and significant cost.	Y	1	2	3	2	0%	While an injury is unlikely even with more room on the platform, it is not impossible
Apply a sling-support to turbine with 10 ton crane, and remove bolts and piping from the turbine	Oil falling on a worker from above	Use of oil-diapers and other oil catch mechanisms on the grated floor	Y	1	2	3	2	12								
Transport turbine across compressor building using 10 ton crane	Being struck by an object such as a component falling on a worker from above	Clearing personnel for the compressor room in the area below the lift, hard hats when overhead crane is in use	Y	1	2	3	2	12								

Remove turbine (~200 pounds) from crane, place onto dye table and strap down; push turbine and dye table to maintenance high bay	Overexertion – injuries caused by excessive lifting, pushing, pulling, holding, or carrying	Use of crane to support turbine while placing onto dye table and use of a dye table to transport the turbine	Y	1	2	4	3	24									
Remove turbine from dye table and place on work bench	Overexertion – injuries caused by excessive lifting, pushing, pulling, holding, or carrying	Use of a dye table that can be height adjusted to the bench height; use of Plexiglas surfaces on the dye table and work bench to easily slide the turbine by hand	N	1	2	4	3	24									
Disassemble turbine and perform inspection, measurement and routine maintenance and cleaning	Being struck against an object – for example cuts and skin abrasions from working with shop tools	Use of gloves, use of appropriate shop tools	N	1	2	2	2	8									
Disassemble turbine and perform inspection, measurement and routine maintenance and cleaning	Chemical exposure	Minimizing amount of chemicals used (alcohol and acetone), gloves	N	1	2	2	2	8									
Re-assemble turbine	Being struck against an object – for example cuts and skin abrasions from working with shop tools	Maintaining a clear work area, good housekeeping, being aware of components with sharp edges	N	1	2	2	2	8									
Remove turbine from work bench to dye table; strap down turbine for transport and push dye table and turbine back toward compressor room	Overexertion – injuries caused by excessive lifting, pushing, pulling, holding, or carrying	Use of a dye table that can be height adjusted to the bench height; use of Plexiglas surfaces on the dye table and work bench to easily slide the turbine by hand, smooth working surfaces	N	1	2	4	3	24									
Entering 1005R during compressor operations (not applicable during shutdown periods)	Oxygen deficiency	ODH training, warning signs, medical-approved ODH qualified, personal oxygen monitor, self-rescue supplied-atmospheric respirator	Y	1	2	5	2	20									
Attach turbine to crane, remove from dye table and transport across compressor room	Being struck by an object such as a tool or component falling on a worker from above	Clearing personnel for the compressor room in the area below the lift, hard hats when overhead crane is in use	Y	1	2	3	2	12									

Apply sling-support with 10 ton crane, and re-install bolts and piping on the turbine (also see similar items for removal of turbine)	Bodily reaction – injuries resulting from bending and slipping without falling due to minimal aisle width in work area and presence of small amounts of oil	Use of the crane to support the turbine during installation activities	Y	1	2	3	2	12	OSHA has cited the minimal width of the working aisle-way as a violation. The Cryogenic supervisor has requested a walkway improvement such that the brake systems on the turbines will not stick out into the walkway. Widening the walkway is also being considered but is constrained by other equipment in the area and significant cost.	Y	1	2	3	2	0%	While an injury is unlikely even with more room on the platform, it is not impossible
Cleanup work area in 1005R	Being struck against an object – for example cuts and skin abrasions from working in tight spaces such as the narrow walkway	Maintaining a clear work area, good housekeeping, being aware of components with sharp edges	Y	1	2	3	2	12	OSHA has cited the minimal width of the working aisle-way as a violation. The Cryogenic supervisor has requested a walkway improvement such that the brake systems on the turbines will not stick out into the walkway. Widening the walkway is also being considered but is constrained by other equipment in the area and significant cost.	Y	1	2	3	2	0%	While an injury is unlikely even with more room on the platform, it is not impossible
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