1. **Equipment Information**

|  |  |
| --- | --- |
|  |  |
| Entity Code (CEID) |  |
| Functional Area |  |
| Process |  |
| Supplier |  |
| Model |  |
| Tool Description |  |
| Tool Type (FOK, Upgrade, Legacy) |  |
| Upgrade Description |  |

1. **Equipment Components**

Identify components of tool that are in scope of JHA.

|  |  |
| --- | --- |
| **Component** | **Supplier / Manufacturer** |
|  |  |
|  |  |
|  |  |

1. **Change Control**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Rev #** | **Section** | **Author** | **Change Summary** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**4. Review and Approval**

|  |  |  |
| --- | --- | --- |
| **Reviewer** | **Name** | **Date Reviewed and Approved** |
|  |  |  |
|  |  |  |

**5. Equipment Safety Certification Documents**

|  |  |  |
| --- | --- | --- |
| **Document** | **Required (Yes / No)** | **Comments** |
| SEMI S2 / S8 Report |  |  |
| ISMI Environmental Emissions Report  |  |  |
| Chiller / Heat Exchanger Data (fluorinated heat transfer fluid) |  |  |
| ISMI Combustible Materials Test Report |  |  |
| CE Mark Declaration of Conformity |  |  |

**6. JHA Supplemental Documents**

|  |  |  |
| --- | --- | --- |
| **Document** | **Required (Yes / No)** | **Comments** |
| PPE Evaluation |  |  |
| Confined Space Assessment |  |  |
| Chemical Exposure Qualitative Risk Assessment |  |  |
| Laser Data Sheet |  |  |
| Ionizing Radiation Device Inventory Sheet |  |  |

**7. JHA SCOPE:**

List Preventative Maintenance (PM) and Operation (OM) tasks documented and performed.

Note: Non-standard / Non-documented tasks are typically not evaluated. Any non-documented tasks require a pre-task-plan to be completed prior to performing work.

**Task List**

|  |  |  |  |
| --- | --- | --- | --- |
| **Spec Name** | **Spec Number** | **Rev** | **Task Description** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
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|  |  |  |  |

**Step 1:**

**Perform Energy Control Procedures (ECP) Assessment:**

ECP's shall be developed for known and routine maintenance activities that will be performed on equipment. Any non-standard / non-documented tasks require a pre-task-plan to be completed prior to performance of work.

**Identify Hazardous Energy Types**

|  |  |  |
| --- | --- | --- |
| Yes | N/A | ENERGY TYPE |
|  |  | Electrical |
|  |  | * Low Voltage (50-600V)
 |
|  |  | * High Voltage (>600V)
 |
|  |  | Chemical (e.g. Explosion, pressure, extreme heat, fire, corrosive, solvent, reactive, oxidizer, toxic) |
|  |  | Pressure (e.g.Hydraulic/pneumatic) |
|  |  | Vacuum |
|  |  | Mechanical (e.g. Capable of crushing, pinching, cutting, snagging, striking) |
|  |  | Thermal - (e.g. high surface temp, hot liquid, steam) |
|  |  | Thermal - Cryogenic |
|  |  | Ionizing Radiation |
|  |  | Non-ionizing Radiation |
|  |  | Ultra-Violet |
|  |  | Infrared  |
|  |  | RF/Microwave |
|  |  | Laser |
|  |  | Magnetic |
|  |  | Stored (e.g.Flywheels, springs, differences in elevation, elevated parts that could drop, capacitors, batteries) |

**Hazardous Energies Control Point Listing**: Identify Energy control procedures for every energy type identified above.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HAZARDOUS ENERGYTYPE | DANGERZONE  | ISOLATION POINT  | POINT TO DISCONNECT/DISSIPATE ANY STORED ENERGY | METHOD/LOCATION TO VERIFY NO RESIDUAL ENERGY EXISTS |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

* Document the highest arc flash PPE required for CEID installed on site as a reference.

**Step 2:**

**Identify Energized Electrical Work Hazards:**

|  |  |  |
| --- | --- | --- |
| TASK DESCRIPTION | SOURCE/LOCATION | VOLTAGES PRESENT |
|  |  |  |
|  |  |  |
|  |  |  |

**Step 3:**

**Document Personal Protective Equipment (PPE):** Perform a task-by-task assessment of activities:

* List tasks to be performed on a known and routine basis;
* Identify hazards employees will exposed to in each task (use hazards identified in ECP table);
* Define PPE required to protect employees from hazards in addition to the controls defined in ECP.

|  |  |  |  |
| --- | --- | --- | --- |
|  | TASK | POTENTIALHAZARDS | PPE REQUIRED |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |

**Step 4:**

**Document Chemical Hazards**

List all chemical hazards. Include process chemicals, maintenance chemicals and any anticipated or known byproducts. Also, include chemicals that are used in closed loop systems (chillers, etc) and internal to tool.

Process Chemicals

|  |  |  |  |
| --- | --- | --- | --- |
| CHEMICAL NAME &SYMBOL/ABBREV. | PROPERTIES | STATE | HAZARDS |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

PM Chemicals

|  |  |  |  |
| --- | --- | --- | --- |
| CHEMICAL NAME &SYMBOL/ABBREV. | PROPERTIES | STATE | HAZARDS |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Process Byproduct Hazards

|  |  |  |  |
| --- | --- | --- | --- |
| BYPRODUCT DESCRIPTION | PROPERTIES | STATE | HAZARDS |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Notes for step 4:**

* List chemical as it is listed in the safety data sheet (SDS)
* Reference SDS and GHS standard to complete properties, state, and hazards sections

**Step 5:**

**Provided a summary of a Chemical Exposure Qualitative Risk Assessment:**

**Step 6:**

**Ergonomic Hazards:**

List all parts over 10 lbs that are lifted manually or with a lifting device.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NAME OF PART TO BE MANUALLY HANDELED | PART WEIGHT (LBS) | FREQUENCY OF HANDELING (E.G. WEEKLY, MONTHLY, QUARTERLY, ETC) | IS LIFTING ASSIST SUPPLIED OR SPECIFIED? (E.G. HOIST, CRANE) | LIFTING DEVICE CAPACITY |
|   |  |  |   |  |
|   |  |  |   |  |
|  |  |  |  |  |
|  |  |  |  |  |

* Does the supplier provide lifting devices, step stools, work platforms, or ladders with the equipment? If so, please list these items:

**Perform Ergonomics Assessment**

Based on the parts listed, complete a task-by-task analysis of ergonomic hazards.

|  |  |  |  |
| --- | --- | --- | --- |
| TASK | HAZARDS | LOCATION | CONTROL |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Step 7:**

**Identify and Evaluate Ionizing Radiation Hazards:**

List all ionizing radiation hazards.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LOCATION OF SOURCE |  MAX VOLTAGE (KVP) | TYPICAL VOLTAGE (KVP) | MAX CURRENT (MA) | TYPICAL CURRENT (MA) |
|   |   |   |   |   |
|   |   |   |   |   |

* Has an Ionizing Radiation Device Inventory sheet been completed for each source? **Yes [ ]  No [ ]**

**Step 8:**

**Identify and Evaluate Non-Ionizing Radiation Hazards**

List all non-ionizing radiation hazards. Non-ionizing radiation includes the spectrum of ultraviolet (UV), visible light, infrared (IR), microwave (MW), radio frequency (RF), and extremely low frequency (ELF).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NON\_IONIZINGRADIATION HAZARD | LOCATION OF SOURCE |  FREQ / WAVE-LENGTH | MAX POWER / FIELD STRENGTH | NOMINAL POWER / FIELD STRENGTH |
|   |  |   |   |   |
|   |  |   |   |   |

**Step 9:**

**Complete Radiation Tables for PM Spec if applicable.**

Specific radiation sources and hazards:

|  |  |  |  |
| --- | --- | --- | --- |
| RADIATIONSOURCE/TYPE | IONIZING/NONIONIZING | HAZARD | CONTROLS |
|  |  |  |  |
|  |  |  |  |

Radiation source leak check procedure:

|  |  |  |
| --- | --- | --- |
| SPECIFY REASON FOR LEAK CHECK  | PROCEDURE | NOTE/RESULTS |
|  |  |  |
|  |  |  |

**Step 10:**

**Identify and Evaluate Laser Hazards:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| LASER TYPE |  LOCATION | OPERATING LASERCLASS | MAINTENANCE LASERCLASS | POWER/ENERGY | WAVE-LENGTH |
|  |  |  |  |  |  |
|   |   |   |   |   |   |

Note: The operating laser class refers to the laser product, while maintenance laser class refers to the laser source embedded in the tool.

* Does Open Beam Work need to be performed? **Yes [ ]  No [ ]**

**Step 11:**

**Identify and Evaluate Noise Hazards Noise:**

Identify all noise sources at or above 80 dB.

|  |  |  |
| --- | --- | --- |
| TYPE | SOUND LEVELS (dBA) | LOCATION |
|   |  |   |
|  |  |  |
|  |  |  |

**Step 12:**

**Identify and Evaluate Oxygen Deficient Environments:**

Identify all “spaces” where inert gases/cryogens are used and determine if there is oxygen depletion potential. Rooms, tool cabinets, or other enclosures around inert uses are considered inert use “spaces.”

|  |
| --- |
| SPACE LOCATION |
|  |
|  |
|  |

**Step 13:**

**Identity and Evaluate Confined Space Hazards:**

A space must meet all three of the following requirements to be considered a confined space. If the space meets these requirements a confined space assessment must be completed and documented.

1. A space is large enough and so configured that an employee can bodily enter and perform work.

2. The space has a limited or restricted means of egress.

3. The space is not designed for continuous human occupancy.

|  |  |  |  |
| --- | --- | --- | --- |
| DESCRIPTION OF SPACE | NON-PERMIT REQUIRED | PERMIT REQUIRED | ALTERNATE ENTRY IS POSSIBLE |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Step 14:**

**Identity Handling Systems and Lifting Devices:**

Complete the following table for any hoist and/or crane systems that are used:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HOIST / CRANE MANUFACTURER | ID # | EXTERNAL / INTERNAL TO EQUIPMENT | TYPE (HOIST, CRANE,SLING, END EFFECTOR) | INSPECTION FREQUENCY(e.g.ANNUAL, MONTHLY) |
|  |  |  |  |  |
|  |  |  |  |  |

**Step 15:**

**Identify and Evaluate Working from Height Hazards:**

Identify all work activities performed from a ladder or other work platform. Also identify any work performed at or above 4 feet.

|  |  |  |  |
| --- | --- | --- | --- |
| LOCATION | ACTIVITY / TASK | LADDER / WORK PLATFORM REQUIRED | PERSONAL FALL PROTECTION SYSTEM REQUIRED |
|  |  |  |  |
|   |  |   |  |

**Step 16:**

**Identify and Evaluate Waste Hazards:**

Identify type of wastes that may be generated as a result of the PM or Operations.  Examples are: IPA and IPA wipes, contaminated debris, lead contaminated debris, arsenic contaminated debris, vacuumed material\*, etc.

|  |  |  |  |
| --- | --- | --- | --- |
| WASTEGENERATED | CHEMICAL CONTAMINATION | SAFE HANDLING PRACTICES | DISPOSAL LOCATION |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

*\* Vacuum use should be determined as House Vac, Nilfisk or Arsenic.*

*\* The general house vacuum system must generate a non-hazardous waste. No liquids (solvents/corrosives) nor metal-bearing material (Ag, As, Ba, Ca, Cr, Hg, Pb, Se) shall be allowed in the house vacuum system.*

**Step 17:**

**Identify and Evaluate Decontamination Hazards**

List parts that may be shipped for rebuild, off site parts clean, disposal on a routine basis.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item # | Part Name or Intel Part # | Chemical Contamination | Existing Contamination (incl. byproducts) | Estimated Amount of Contamination Remaining\* |
| 1 |  |  |  |  |
| 2 |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Item # | Part Name or Intel Part # | Decon Process | Preparation for Transport |
|  |  |  |  |
|  |  |  |  |