Alcoa

The Element of Possibility™

MASSENA OPERATIONS

SITE CONDITIONS PACKAGE

Revised April 20th., 2026

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ALCOA USA Corp.

Massena Operations (MO) Site Conditions Package

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Alcoa USA Corp.
Site Conditions for Massena Operations

1.0 PURPOSE

Site Conditions **along with attached references, are mandatory documents that contain expectations and requirements applicable to all Contractors, Subcontractors, Contracted Services and Vendors. These documents describe the Environment, Health and Safety (EHS) responsibilities and are a binding / integral part of all contracts and purchase orders for work at Alcoa USA Corp's Massena Operations. This package is available in electronic media format from Alcoa's Procurement or Contractor Safety Office.**

2.0 COMMITMENT

This Contractor shall accept, and communicate to all contract personnel, the fact that an aggressive safety program for both ALCOA and contract personnel exists at Massena Operations. Expectations of performance and attitude relating to matters of health and safety at Alcoa are most likely beyond what Contract personnel normally encounter at typical job sites. The Contractor or Contracted Service shall aggressively enforce all regulatory and Massena Operations' safety rules and policies upon their employees, subcontractors, vendors and delivery persons.

Safety performance observed during the execution of this contract will be tracked by Alcoa and will be a determining factor on the firm's opportunity to perform future work with ALCOA.

All Contractors and Vendors are expected to understand and comply with the following Alcoa Values along with our supporting EHS Policy and Principles.

ALCOA VALUES:

- Act with Integrity
- Operate with Excellence
- Care for People

EHS POLICY:

It is Alcoa's policy to operate worldwide in a safe, responsible manner which respects the environment, the health of our employees, our customers, contractors and the communities where we operate. We will not compromise environmental, health or safety values for profit or production.

EHS PRINCIPLES:

- We value human life above all else and manage risks accordingly.
- We relentlessly pursue an EHS incident free workplace.
- We do not compromise our EHS Value for profit or production.
- We comply with all laws and set higher standards for ourselves and our suppliers where unacceptable risks are identified.
- We support sustainable development by incorporating social responsibility, economic success and environment excellence into our decision making process.
- We measure and assess our performance and are open and transparent in our communications.
- We supply and use safe and reliable products and services.
- We use our EHS knowledge to enhance the safety and well-being of our communities.

- We are all accountable for conforming with and deploying our EHS Value and Principles.

The Contractor's Management is accountable for the safety and health of their employees. The Contractor is also accountable for the impact and actions their employees and subcontractors may have on the safety and health of others. Each contractor employee is responsible for working in a manner that respects the health and safety of the individual and the environment. Such behavior is a requirement of the workplace.

3.0 COMPLIANCE WITH RULES AND REGULATIONS

Contractors, Subcontractors, Contracted Services and Vendors shall comply with Alcoa Standards and additional provisions contained or referenced within this document, and as specified by Alcoa representatives. In addition, the Contractor and any Subcontractors shall comply with all applicable governmental, state and local EHS laws, regulations, rules, codes and any documents referenced in the contract specifications. For the purpose of this document, the term Contractor shall include Primary Contractor, Subcontractor, Contracted Services and Vendors.

All contractor activity shall be performed in such a manner as to minimize interference with normal Alcoa operations. Contractor's employees shall remain in their assigned work areas and not wander to other parts of the facility.

DISQUALIFICATIONS AND DISMISSALS: Contractor shall communicate to his/her personnel, subcontractors, suppliers and delivery persons that adherence to Alcoa's *Site Conditions* is a requirement for doing business with Alcoa Corp.

Any violation or deviation from the above conditions may result in the dismissal of the Contractor and cancellation of contracts with Alcoa. Furthermore, it is expected that the Contractor shall counsel, discipline and/or dismiss their employees for violating safety policies or demonstrating a negative attitude toward health and safety.

ADDITIONAL PENALTIES: If the Owner observes or is made aware of unsafe acts or behaviors in regard to regulations, policies, rules, or procedures by employees, invitees, or sub-contractors, the contractor, depending on the seriousness of the situation, may be subject to a penalty of up to $10,000 per occurrence and/or termination of the contract.

4.0 SUBCONTRACTORS

The contractor will only employ first tier subcontractors in the performance of on-site work under this contract. **Subcontractors may not be used without approval from Alcoa's Procurement Department and must meet all pre-job requirements.** Subcontractors must complete and pass the Contractor Safety Pre-Qualification process administered by Purchasing Services Company. They shall complete all other pre-job requirements which include scheduling of a preconstruction conference, orientation, a prejob safety meeting and submission of all required safety documentation. Unapproved Subcontractors showing up at the gate to work will not be allowed to enter the site. Any delay in project schedule due to untimely requests for subcontractor approval or failure to schedule orientation is the Contractor's responsibility. Requests for subcontractor approval can be made by completing attached Alcoa document *PSC Safety Prequalification Questionnaire Request*. The contractor must submit a complete list of all proposed subcontractors and suppliers who will be involved with the project to both the Alcoa Responsible Person and the Project Leader **prior to** the Preconstruction Conference**.**

5.0 COMMUNICATION

5.1 Language Fluency

For safety purposes, all Contractor employees shall possess a fundamental ability to speak and understand the English language.

5.2 Radio Communication

Frequencies for any radio communication equipment must be submitted to the Alcoa Responsible Person and approved by the Plant Protection Supervisor prior to use on plant site.

5.3 Telephone/Cellular Service

At least one member of the contractor's on-site supervision shall be available via cellular phone at all times for the duration of the contract. Contact numbers are to be communicated during the preconstruction conference and noted on the Work Plan.

6.0 ENVIRONMENTAL EXPECTATIONS

6.1 Massena Environmental Policy

All Employees and Contractors of Alcoa's Massena Operations will operate in a manner that respects our community and global environment. In support of this commitment, it is our goal to:

1) Comply with all legal and corporate requirements applicable in our workplace;

2) Continually improve environmental performance by maintaining and enhancing our environmental management system;

3) Prevent pollution by setting objectives and targets for air emissions, wastewater discharges, waste generation and/or energy usage; and

4) Maintain open communication with the community and our employees about our environmental performance.

These goals reflect our dedication to the Corporation's objective to *"Leave No Environmental Footprint*".

6.2 Spills

Release of <u>any amount</u> of a chemical or petroleum product to the environment, is considered a "spill". A release constitutes potential for ground / surface water, or atmospheric contamination.

Releases that could occur during the performance of work at this location include, but are not limited to the following:

1) Oil/Petroleum Spills (diesel, gasoline, hydraulic fluid, etc.)

2) Hazardous Waste Spills (Lead, PCB's, etc)

3) Chemical Spills/Releases (solvents, acid, paint, etc.)

Contractor shall provide impermeable secondary containment in storage areas where liquid materials are subject to spilling.

If a release occurs, the Contractor shall take the following steps:

1) If possible without risking bodily harm, attempt to contain the release.. If there is immediate danger, evacuate the area.
2) Call the Alcoa USA Corp Emergency Number (315-705-2800) and provide them with the details of the release.

When notifying the Alcoa Emergency Number, provide the following information:

1) Exact location of the release.
2) Type and description of the material released.
3) Estimated amount of material released.
4) Extent of any injury or property damage.
5) Extent of actual or potential environmental damage, if known.
6) What actions, if any, have been taken to control the release?

The Alcoa Emergency and Environmental Response Teams will take appropriate action according to the Location's Release Prevention, Control and Countermeasure (RPCC) Plan. Contractors may be back-charged for the cost of any clean-up, damage and remediation caused by their employees, vehicles, subcontractors and vendors.

Note: Vehicles or Equipment that are leaking oil are not allowed on Alcoa's site. Equipment that repeatedly causes spills of oil or chemicals to Alcoa's property will be removed from the property at the Contractor's expense. It is Alcoa's intention to eliminate releases of oil and chemicals to the environment through the use of sound equipment maintenance and management procedures.

Representatives of Alcoa's Environmental Department will direct the disposal of all waste resulting from spills on plant property.

6.3 Disposal of Waste

Disposal of Contractor generated batteries, engine oil, transmission fluids, hydraulic fluids, filters, radiator fluids, tires or fluorescent light bulbs shall be in accordance with Alcoa's Environmental Waste Disposal Plan. The Alcoa Environmental Representative shall also direct the disposal of any other hazardous or non hazardous construction debris/waste/material generated by the project. Advance notice must be given so arrangements for the appropriate containers, sampling, labeling and regulatory notifications can be made.

Waste handling procedures, including the classification of waste, container type, labeling requirements and regulatory clocks, shall be detailed in the Contractor's Safe Work Plan and reviewed during the Pre-construction Conference. These procedures will be approved by the Environmental Department prior to initiation of the project. Any changes in scope during the project which changes the types or volume of waste generated must be reviewed and approved by Alcoa's Environmental Department representative.

The contractor shall note that discarded leather products such as gloves and boots are a hazardous waste and must be disposed of in a designated red hazardous waste drum.

Contractors who will be handling hazardous waste shall be trained in accordance with RCRA requirements.

7.0 HEALTH AND SAFETY EXPECTATIONS

7.1 Conduct of Contractor Employees

While on Alcoa Property, the Contractor's employees shall not engage in any dangerous, illegal or unacceptable conduct, including but not limited to the following:

1) Violating safety rules or common safety practices, or causing a safety threat to a co-worker or Alcoa employees.
2) Creating or contributing to any unsafe or unsanitary condition.
3) Unnecessarily distracting the attention of any employee who is working, or participating in a non-work related activity that interferes with the job.
4) Using abusive language.
5) Threatening, intimidating, harassing, coercing or interfering with fellow employees.
6) Discriminating by talk or action against groups or individuals on the basis of race, color, sex, age, religion, disability, veteran's status, pregnancy, or national origin.
7) Immoral conduct or indecency, sexual harassment, or possessing or displaying offensive verbal, visual or physical material or objects of any kind.
8) Fighting or instigating a fight.
9) Theft, abuse or deliberate destruction of property, tools or equipment of employees or the Company.
10) Gambling of any type.
11) Possessing firearms or other weapons on Company premises.
12) Making false or malicious statements concerning an employee, the Company, or its products.
13) Falsifying records, including gate registers, time cards, or making untrue statements that may result in the falsification of records or abuse of project expense accounts.
14) Misusing or removing from premises, without permission, employee lists, blueprints, records, or other confidential information of any nature, in any form.
15) Soliciting, collecting contributions, or distributing written or printed matter without permission of management.
16) Posting or removing notices, signs or writing in any form on bulletin boards or Company property without specific permission of management.
17) The use of video and photography equipment, including cameras on cellular phones without written permission.
18) Horseplay or not giving full attention to your job.
19) Failure to obey a supervisor or other forms of insubordination.
20) Leaving a designated work area. Contractors are reminded not to visit other areas of the plant without authorization.
21) Performing personal work on Alcoa property.

22) Any action or behavior illegal under local, state or federal law.

23) Smoking or use of tobacco products inside any building or within 25 feet of a man door.

7.2 Substance Abuse

Consuming or possessing any intoxicating beverage, illegal substance or abuse of prescription drugs is forbidden. It is the responsibility of the Contractor to monitor their employees prior to entering Alcoa property and during the course of their work. Those suspected to be under the influence of alcohol or drugs will be escorted from the premises and denied future admittance to the site until a negative test result is obtained.

Contractor and Subcontractor employees may be required to submit to a five panel drug and/or alcohol test in compliance with Alcoa policy, governmental regulations or specific project requirements.

Before any work begins, the contractor shall submit a copy of his company's substance abuse policy to Alcoa. The stricter of the two policies will prevail during the contract. Any additional expectations will be covered in the "Scope of Work" on a project specific basis.

7.3 Housekeeping

Good housekeeping is indicative of a proactive safety program, can eliminate the root cause of many accidents before they occur and is the responsibility of each Contractor. Good housekeeping practices increase productivity and increase the quality of goods produced and services rendered. If at any time the owner finds jobsite housekeeping to be unacceptable, work activities may be suspended until the contractor has returned the work area to an acceptable condition. In support of these expectations the contractor shall:

1) Perform clean up at the job site throughout the day.

2) Stack materials to maintain safe clearances and prevent toppling.

3) Identify and remove loose overhead materials.

4) Immediately remove or bend over any nails protruding from lumber.

5) Locate containers throughout the Contractor's work area for collection of employee's trash and empty these containers on a regular basis.

6) Not allow refuse to accumulate.

7) Maintain unobstructed passageways for pedestrian and vehicle traffic.

8) Obtain approval for material storage locations from the Owner.

9) Maintain roofs free of combustibles, trash and debris, and secure all materials such that they cannot become airborne in the event a high winds develop.

10) Maintain hoses and cords such that they will not become tripping hazards.

11) Segregate and containerize waste in accordance with the work plan. Final disposal of project waste will be handled by Alcoa with another vendor.

The introduction of moisture into scrap aluminum will result in an explosion hazard when it is charged into the molten metal furnace for re-melting. To eliminate this hazard, the **possession of disposable beverage cans and glass bottles is strictly prohibited** within the fence line of the West plant. Plastic and paper beverage containers, as well as any reusable cups or mugs are

allowed, but must not be taken into any production areas.

7.4 Work Permits

A work permit is a written document requiring authorizing sign-off by Alcoa and acceptance by the Contractor to perform designated high risk activities. A work permit is required for the following activities at Massena Operations:

1) Hot Work (HS 5.11 *Welding, Burning and Cutting*)

2) Excavation (HS 5.14 *Digging, Drilling, Excavation, and Sawing Permit Procedure*)

3) Roof Access (HS 5.7 *Fall Control Program*)

4) Entering Confined Spaces (HS 5.9 *Confined Space Program*) – Contractors shall enter confined spaces under Alcoa's Confined Space Entry Program and Space Specific Procedures.

   In addition the contractor shall:

   - Request and review the space specific confined space procedure including known hazards of the space with the Project Leader prior to entry.
   - Coordinate entry with other Contractors or Alcoa employees and determine who will have operational control.
   - Stop work and inform the owner of any additional hazards encountered during the entry.
   - Meet with Alcoa for a debriefing following the entry in regards to the permit, procedure and any hazards encountered during the entry.

7.5 Hazard Communication

The Contractor must comply with OSHA's 1910.120 Hazard Communication Standard, all applicable Right-to-Know laws and shall use document 33.052.4 titled *Application of OSHA Hazard Communication Standard for Outside Contractors* to assist with compliance. Alcoa will make the Contractor aware of specific industrial hygiene concerns the contractor may encounter relative to Alcoa's processes.

In accordance with document 33.052.4, the Contractor will:

1) Submit an SDS along with a completed chemical approval form on any new products for approval by Alcoa's Environmental and Industrial Hygiene Departments before materials are delivered to the site.

2) Provide Alcoa with a chemical inventory containing the product name, manufacturer and an SDS of the latest revision date for each product that is brought on site.

3) Maintain labels on all containers of materials brought onto the workplace.

4) Provide its employees with information and training on the chemicals in their workplace.

5) Maintain a copy of the most recent chemical inventory and SDS in at least one location on site that is known and accessible by all employees.

In accordance with document 33.052.4, Alcoa will:

1) Provide Contractors with a list of the hazardous materials to which the contractor

or subcontractor may be exposed in the workplace.

2) Make available to the contractor, subcontractor and their employees, Alcoa's SDS for each substance in Alcoa's material inventory.

3) Notify the contractor of appropriate emergency procedures for the workplace.

7.6 Alcoa's Equipment

1) Mobile Equipment - Contractors may not operate any equipment belonging to Alcoa. Exceptions to this may be allowed under special circumstances and will be noted in the Scope of Work. Contractors who use mobile equipment belonging to Alcoa will be required to sign an "Equipment Hold Harmless Agreement" that has been approved and signed by Alcoa's Location Manager.

2) Small tools and safety equipment – Will be supplied by the Contractor. Alcoa will not furnish any of these items.

7.7 Contractor's Mobile Equipment

Contractor shall ensure that employees assigned to operate mobile equipment have had the required training or licensing, and demonstrate the necessary skills to safely operate the equipment. Contractors shall also ensure the equipment has been successfully tested and checked for compliance with applicable Governmental requirements. Contractor shall submit upon request all mobile equipment licenses and training documentation as required in Massena Operations *Contractor, Subcontractor, and Contracted Services Environmental Health and Safety Process.*

Prior to operating mobile equipment, the first operator to use each vehicle on each shift shall complete a written "Pre-Operational Inspection Checklist". The completed and most recent checklist shall remain on the vehicle while it is in use. Immediate action shall be taken on items noted that pose safety concerns. Several completed inspections on each project shall be delivered to the Alcoa Responsible Person.

All motor vehicles and mobile equipment shall be maintained in a safe operating condition, free of oil, hydraulic and other fluid leaks. Machine guarding shall be maintained in compliance with the manufacture's and Alcoa's requirements. Mobile equipment shall be equipped with a fire extinguisher and back-up alarm in accordance with regulatory requirements. It is strongly recommended that a pre-assembled spill kit, supplied by the contractor, be available on all projects utilizing mobile equipment.

Mobile equipment shall be equipped with occupant restraints and roll over protection as required by OSHA. When mobile equipment is not in use, it must be positioned where it will not obstruct railroad tracks, roadways, walkways, electrical ROWs or passageways. All equipment not in use must be secured to prevent movement or operation. Mobile cranes and other equipment with "booms" shall not be parked with the boom suspended over walkways, employee passageways, roadways, railroad tracks, electrical or mechanical equipment or buildings.

When construction work is to be done on, from, or in the operating envelope of an overhead building crane, the crane shall be locked out or other measures taken as described in the attached HS 5.8 *Mobile Equipment Program*.

When mobile equipment is in use, clearances shall be maintained to prevent anyone from being caught between the equipment and adjacent structures. The Contractor shall barricade the swing

area or provide a flagman for the protection of persons passing by. Minimum distances from electrical lines shall be observed as per the requirements of document 32.60 entitled *Electrical High Voltage Safety* and S8.6 entitled *Massena Electrical Safety Standard.* No travel of vehicles or any load exceeding 13'- 6" in height shall take place without approval of the Alcoa Responsible Person.

Servicing of air filled tires shall be completed by qualified personnel in accordance with 29 CFR 1910.177

All mobile equipment entering and leaving the site shall be free of soils or substances including buckets, tracks and tires. Alcoa reserves the right to require wipe sample results or a letter from the contractor certifying the equipment is free of hazardous materials prior to use on Alcoa property. If the project involves work in areas of suspect contaminated soils, the equipment will be "wipe" tested for contamination by Alcoa prior to being released. Turn around on these samples is typically 48 hours and the equipment will be held on-site until satisfactory results are obtained.

Due to the presence of molten metal and open flames in many areas of the plant, contractor equipment shall not be powered by propane unless project specific authorization is obtained from the Alcoa Responsible Person.

The use of cellular phones while operating any mobile equipment on site is strictly prohibited.

Prior to a pedestrian coming within 3' of mobile equipment, the vehicle must be shut down and the parking brake set. Compliance with this expectation is a shared responsibility between the operator and pedestrian. This rule applies to all vehicles.

7.8 Ladders/Scaffolding

Ladders and scaffolding shall be in good condition and be used in compliance with the attached Massena Operations S8.3 *Fall Control Program*. In addition, only type IA (300 lb load rated) fiberglass ladders shall be used. Wood and Aluminum ladders are not acceptable

7.9 Electrical Hazards

Contractor employees must be aware of electrical hazards that exist in the vicinity of their work area and follow the safe work procedures described below that are required to address them. These hazards are broken down into the categories of High Voltage (over 1000 volts) and Low Voltage (1000 volts or less). Only Qualified Journeyman Electricians or Apprentices working under the direction of Journeyman shall perform electrical work. Alcoa requires electrical work to be performed on de energized circuits whenever possible. No work on live circuits is allowed without prior written approval from the Project Leader.

7.9.1 High Voltage: Note the following minimum requirements and see attached Alcoa Engineering Standard 32.60 *High Voltage Electrical* for additional detail. Any exceptions to these rules will be on a project specific basis and will be documented in the contractors' work plan.

1) DO NOT work on or around any high voltage power lines or electrical equipment unless you are specially trained and authorized. Special training shall be required as defined in Alcoa Engineering Standard 32.60 and approved by the locations High Voltage Designee. Always assume power lines and electrical equipment is energized until they have been Locked, Tagged and Verified and Grounded.

3) DO NOT work within 15 feet of power lines or electrical equipment.

4) DO NOT operate equipment, tools, or other objects within 15 feet of un-insulated power lines or equipment.

5) DO NOT place buildings, store materials, park vehicles, etc. under power lines or within a 15 foot right-of-way (horizontal distance) of power lines.

6) DO NOT block access to substations or other electrical equipment.

7) DO NOT work outside during thunderstorms or when lightning is present.

8) DO NOT exit a vehicle or other mobile equipment if it comes incontact with a high voltage power line.

9) DO notify the Project Leader in the event of any electrical malfunction.

7.9.2 Low Voltage - See attached *S8.6 Massena Electrical Safety Standard*

1) DO NOT work on or open cabinets to any electrical equipment unless you are qualified and authorized.

2) DO NOT store materials, park vehicles, or leave equipment within 42” of breaker panels, transformers, or other electrical equipment.

3) DO NOT touch cables, breaker panels, transformers, or other electrical equipment.

4) DO NOT use faulty electrical tools, cords, or other equipment including those that are missing guards or auxiliary handles.

5) DO NOT use power tools that do not have a “dead-man” switch

5) DO use grounded or double insulated tools, cords, and other electrical equipment.

6) DO use portable Ground Fault Circuit Interrupter outlets and/or cords for all construction activities.

7) DO NOT remove ground wires from poles, towers, fences, transformers, motors, panels, or other electrical equipment.

7.10 Employee Training

All Contractor employees who work in jobs that require special skills and knowledge of applicable standards shall be trained and qualified. If they do not have documentation of the appropriate qualifications, the Contractor shall provide EHS and other Specific Training. This training shall be specific to the hazards involved and provide the necessary knowledge and skills for the employee to safely perform the work. All employees will be trained and knowledgeable in applicable standards.

If an employee is found to be working without sufficient training, it will be considered a breach of contract. The contractor will be subject to dismissal and another contractor will be hired to complete the project. Any additional costs to complete the project will be deducted from the original contract.

7.11 Lock/Tag/Verify

Fixed Electrical, Mechanical and other Equipment - Strict ALCOA policy exists on **Locking** equipment out of service, **Tagging** equipment and **Verifying** (LTV) to confirm that it is safely de-energized before work is performed. Before work begins on equipment to be removed or relocated, a written notice stating that all utilities have been de-energized shall be obtained from the Alcoa Project Leader. See HS 5.6 *Lockout/Tagout Verification Program* attached to this document. For any work on or around fixed equipment, the Alcoa Project Leader will communicate the machine specific procedures prior to finalizing the work plan.

Railroad Tracks – "Blue Flag" Isolation Procedures must be implemented whenever working, hoisting or storing materials within 8 ½' from the centerline of any railroad tracks. See attached HS 5.6.1 *Massena East (or West) Railroad Isolation Procedures*.

7.12 Fall Protection

Single leg lanyards are preferred for fall arrest applications unless the task requires moving from point to point where a fall potential exists. If a "Y" or twin tailed lanyard is required, it shall be of the type designed with two independent shock absorbers. The use of retractable or lanyards equal to or shorter than 4' in length are required for work from aerial lifts.

Any access to the bed of a flatbed truck or trailer greater than 48 inches in height, must be made with fall protection in place. Alcoa has constructed a tarping station at the west plant that is equipped with handrails and end-gates. This structure is available for use by all contractors and delivery companies. If the tarping station is not available or adequate for a particular load, the contractor shall provide a man lift or other suitable access to avoid having personnel working without protection from falling. At no time is anyone allowed to climb on the actual load. The contractor is responsible for assuring all of their employees, vendors and delivery persons are aware of, and are working in compliance with these requirements.

See attachment *S8.3 Massena Operations Fall Protection Program* for additional requirements on fall protection.

7.13 Medical Implants

Individuals with heart pacemakers, implanted defibrillators and pumps, epidural nerve stimulators, muscle stimulation devices, insulin pumps, cochlear implants, ferromagnetic foreign bodies in the eye, and other types of medical implants that could be affected by magnetic fields, including cardiac stents that were installed in the last 4 weeks, are prohibited from entering the Potrooms, Rodding Room, Rectifier Station and Electrical High Yards. If any of the contractors' employees have one of these devices, the contractor shall notify and meet with the Alcoa Responsible Person prior to the individual being allowed to work anywhere within Alcoa's Massena Operations.

7.14 Worker on Foot Program (WoF)

Recognizing the fact that Mobile Equipment is the most common cause of fatalities in Heavy Industry, Alcoa has implemented a heightened awareness and control program known as "Worker on Foot" (WoF). The Objective of this program is to eliminate uncontrolled movements of Workers / Pedestrians inside an area where Mobile Equipment is running. In support of this objective, the following expectations apply to all contracted projects at Massena and the contractor is to incorporate specific measures within their Work Plan to comply with these requirements. Any additional requirements or exceptions to these rules will be

communicated in the Scope of Work or by the Alcoa Responsible Person on a project specific basis.

1. Work Zone Boundary Identification: Boundaries may consist of a combination of red danger tape, roof warning line, orange snow fence, Garlock / wooden hand rails, or tightly spaced wooden / concrete barriers encircling the work area or tied to other permanent barricades / structures. Any additional specific requirements will be communicated based on the specific area in which you are working.
2. Work Zone Boundaries shall be established:
    a. To separate the project from Alcoa's operations and traveled areas. Barricade information tags, supplied by Alcoa, shall be displayed on these boundaries. Entry / exit points will be designated.
    b. Within the project area to separate the contractors' Workers on Foot (WoF) from running Mobile Equipment.
3. In the event workers must enter a Mobile Equipment zone while equipment is running, eye contact must be made with the operator and the equipment shut down prior to the worker entering the zone. The operator shall not restart the equipment until the worker has exited the zone.
4. The path of travel for equipment and personnel from project areas to parking, office and break locations will be designated and agreed upon as noted in the scope of work or discussed during the Preconstruction Conference. Employees are required to follow these routes and are not to cross barricades established by Alcoans or other contractors without specific permission.

    Exceptions to rule # 2b - this program does not apply to:

    - Work performed by a mobile crane after it has been set on its outriggers. These movements are controlled by a "crane signal person" and "Vertical Drop Zone" rules (VDZ).
    - Work around an asphalt paver. This is covered by standard traffic control procedures and the paver "dump person".
    - Work around a concrete truck during placement of concrete. This is covered by the "chute person" who directs the truck.

    Exception to rule #3:

    - If Workers must be in the ME zone for tasks such as: shoveling into an excavator / loader bucket or placing / removing items from the forks of a forklift, the operator must shut down the machine and set the parking brake prior to the workers approaching the bucket. When the equipment must move, either the workers shall first exit the zone or a spotter with an orange vest will be designated to control the zone and direct equipment for any required movements. Operators will be instructed to only move inside a shared work zone "when and as" directed by the spotter.

8.0 LOCATION SPECIFIC ISSUES

8.1 Security

8.1.1 Plant Access

Entrance for the Contractor's employees, visitors and material suppliers shall be through the Construction Gate. Gate hours are from 6 am – 4 pm Monday through Friday. If you need to enter or exit outside of these hours access will be through Gate #1.

8.1.2 Hours of Work

Specific work schedules shall be agreed upon with both the Project Leader and Alcoa Responsible Person during the Preconstruction Conference. Proposed changes to the accepted work schedule must be discussed with the Project Leader and Alcoa Responsible Person before any additional days or hours are worked.

Analysis of injury trends throughout the U.S. has shown a significant relationship between lengthy work hours and the frequency of recordable injuries. In support of our commitment to maintain the safest workplace possible, Massena Operations has adopted the "64 Hour Rule" for contracted projects. Under this rule, no personnel will be allowed to work more than an 11 hour shift or 64 hours in a payroll week and must have a minimum of 8 hrs rest in between shifts. Specific exceptions may be granted on a case by case basis and will be communicated by the Alcoa Responsible Person. You will be advised if any of your activities are excluded from these requirements.

8.1.3 Material Passes

In the interest of security and plant protection, Contractor's employees shall not bring anything other than essential items, such as lunches, toolboxes and work clothes into the plant. All such items, as well as personal vehicles, are subject to inspection by Alcoa's security personnel upon entering and leaving the plant site. Failure to submit to inspection will be sufficient grounds for restricting the individual from further entry to the property.

Contractor's personal property (tools and mobile equipment) removed from the plant site must be accompanied by a Material / Equipment Pass signed by the Project Leader or Alcoa Responsible Person. The pass must be presented to the Security Officer at the gate for inspection. This includes small tools equipment, mobile equipment, supplies and unused materials.

Contractors are reminded that they are responsible for all delivery personnel they bring on site. If material and equipment delivery or pickups are taking place, the contractor is required to ensure the driver receives truck driver orientation and must supply an escort to guide the driver from the gate, to and from the worksite and ensure delivery personnel are operating in compliance with this document.

8.1.4 Entrance Identification

All employees must carry some form of photo identification.

Individual employees will be required to sign in and out each time they enter and

exit the plant site. The times recorded on the log shall be the exact time in which the individual is entering or leaving the site. Entering a false time on the gate log or entering a signature or time for another employee will be grounds for dismissal.

During the execution of work under this contract, Contractor employees are to be restricted to the specific area or areas of work and not be allowed to wander about the plant property or other jobsites. When required to enter other areas, area specific training and authorization must be obtained from the Project Leader.

8.1.5 Pass Procedures for Contractor's Visitors, Vendors and Service Representatives

The Contractor shall obtain a pass for all Visitors, Vendors, and Service Representatives from the Alcoa Responsible Person or designee. Passes shall be requested 24 hours in advance, and if approved, the Visitor, Vendor, or Service Representative must be escorted by the Contractor at all times.

8.2 Driving and Parking

Contractor's employees shall park their personal vehicles in the designated areas at the gate unless authorized to receive a drive-in pass by the Alcoa Responsible Person or designee. The pass is in the form of an orange window decal and will be issued by plant security. Alcoa is not liable for these vehicles.

Contractor employees may be bused to the worksite by a Contractor Vehicle that has been issued a drive in pass.

Contractor personnel shall remain in the area where their work is to be performed. Employees shall travel to and from the work area by a direct route approved by the Project Leader. If access is through a production area, pedestrian walkways shall be used wherever available.

Contractor's personnel driving construction vehicles shall obey all plant speed limits and warning signs. Contractor shall take precautions to avoid damage to plant roads and grounds. Any damage caused to the Owners facilities shall be repaired by the contractor at no additional cost to Alcoa.

Contractors shall be aware that there are a number of unguarded railroad crossings within each plant and drive accordingly.

8.3 Emergency Plan

Before beginning work on a contract, the Contractor will be provided with information on Massena Operations Emergency Procedures and Evacuation Plans, which will address the appropriate responses and expectations of the contractor at the time of an emergency. The Contractor shall comply fully with this plan, communicate it to his/her employees and perform any necessary reinforcement of this training to ensure compliance.

Any emergency such as injury, accident, chemical spill, or fire must be reported immediately to the Emergency Number (315-705-2800–West Plant, 315-764-6211–East Plant) and then to the Alcoa Responsible Person and Project Leader.

All injury free events, "near misses" or confrontations with Alcoa employees shall be documented and immediately reported to the Alcoa Responsible Person and Project Leader.

See section 9.0 of this document for additional requirements relative to injury and incident follow-up.

8.4 First Aid and Emergency Treatment and Response Plan

The Contractor shall select a medical provider and ambulance service to be summoned in case of a serious personal injury to an employee. If no election is made, it will be assumed the providers of choice are Massena Volunteer Rescue Squad and Massena Memorial Hospital.

Although the Contractor will plan to utilize an outside medical service provider, they will be required to sign Alcoa's Emergency Medical Agreement. This agreement is in place to cover situations where Alcoa's medical services or personnel assist with first response to a serious illness or injury. It is mandatory that this agreement be signed. A copy of the agreement is included in the Site Conditions Package.

Many diseases are transported through the blood and bodily fluids. Anyone in a position who could encounter blood and other bodily fluids must be trained and understand measures of control to prevent exposure. If the Contractor has an employee with occupational exposure to blood-borne pathogens, they shall establish a written exposure control plan designed to eliminate or minimize the employee's exposure.

8.5 Personal Protective Equipment (PPE)

Personal Protective Equipment shall be kept clean and in good working condition. The Contractor will be responsible for furnishing all personal protective and safety equipment to their employees. Contractors are responsible for ensuring their employees have been trained in the use of PPE and safety equipment.

The Project Leader will inform the Contractor of any specific Departmental Safety Rules, PPE or specialized Training that may be required in the area where work is to take place. At a minimum, Contractor's personnel shall wear the following personal protective equipment at all times in any production, maintenance or construction work area, inside or outside of buildings:

1) Shirts: Long sleeve shirts made of 100% cotton, covering the upper body from shoulder to waist are required. Short sleeves may be acceptable for some tasks outside of buildings but will only be authorized on a project specific basis. Hoodies within buildings are not permitted due to entanglement hazards.

2) Trousers - Full-length trousers are required at all times. Access to production buildings will require trousers made of 100% cotton or flame retardant material.

3) Hard Hats: Lime green, V-Guard hats, meeting ANSI Z89.1 are required. These may be purchased at Gillees 315-764-9910, Fastenal 315-769-3278 or Haun Welding 315-764-9728 in Massena. All hats shall bear the employees first and last name, along with the company logo or name on the front of the hat. A strip of reflective tape is required along the lower sides, front and back of the hat. A white emergency number sticker will be provided to each contractor employee during their initial orientation and shall be displayed on the side of the hat, above the reflective stripe.

4) Work Boots: Steel-toed, 8" high, leather work boots with internal metatarsal guards meeting ANSI Standard Z41.2 and Z41.4 (Electrical Hazard) are required. Boots must be in good condition and fully laced. All boots for work at Alcoa shall be purchased at the on-site Gillee's Boot Store location in building #60. The store will be open following contractor orientation on Mondays or by calling 315-764-9910 to arrange for an appointment at other times.

5) Safety Glasses: ANSI Z87.1+ or equivalent plastic framed safety glasses with permanently affixed, rigid side shields. Sunglasses and photo chromic lenses shall not be worn inside any buildings.

6) Face Shields: In addition to safety glasses, ANSI Z87.1+ face shields attached to hardhats are required for any welding, grinding, chipping, abrasive cutting or pressure washing.

7) Hearing Protection: Required where posted, when grinding and around any operation where a noise level above 85 dBA may be experienced.

8) Rings and Jewelry: No finger rings or dangling jewelry are to be worn on the job site. Electrical personnel are prohibited from wearing metal watchbands or bracelets.

9) Hair: Shoulder length or longer hair will be controlled by wearing hairnets or tucking under the hardhat.

10) Respiratory: The Contractor shall comply with HS 6.5 *Respiratory Protection Program*. Documentation of the contractors Respiratory Protection Program, along with employee medical clearance (every 3 years) and annual fit testing for each individual shall be transmitted to the Project Leader before respirators are utilized. Any access to Massena West Carbon Plant Greenmill (bldg. # 354C) requires the use of respiratory protection with organic vapor relief. Any additional known project / task specific assessments will be shared on a project specific basis.

11) Reflective Vests: A orange reflective vest or shirt is required to be worn by anyone directing traffic or when directing mobile equipment in a WoF zone.

12) Fall Arrest Equipment: The Contractor shall comply with and furnish his employees with equipment in accordance with HS 5.7 *Fall Control Program*. Documented inspections within the last 6 months for all fall protection equipment shall be completed by the contractors competent person and documentation shall be available upon request.

13) Arc Flash Protection: Anyone exposed to live electrical equipment or involved in operation of switches greater than 240 Volts must don PPE as noted by the labels of each piece of Alcoa Electrical equipment. In the event the equipment is not labeled, Alcoa's electrical engineer will determine the arc flash PPE level required prior to performance of the task. See Alcoa standard 32.70 *Electrical Arc Flash* for more information.

14) Additional PPE: Working in certain exposures or operating areas of the plant may require additional PPE such as, disposable coveralls, fire retardant clothing, etc.

    Alcoa's standard 70.8 *Coal Tar Pitch* requires on site showers and laundering of outer garments for anyone who has either periodic or regular visible coal tar pitch contamination of skin or clothing. This includes anyone working in building # 354C (Greenmill). Laundering services are available from Alcoa's approved vendor, Aramark.

8.6 Fire Protection

Open Fires are prohibited.

Storage and Dispensing of Flammable Liquids:

1) All containers shall be UL approved and clearly labeled. Containers will be stored in an approved flammable cabinet. The Alcoa Responsible Person shall approve the location of the flammable cabinet.

2) The use of portable fuel storage tanks must be authorized in advance by the Alcoa Responsible Person and the Environmental Department. Tanks shall be placed a minimum of 75 feet from buildings, construction operations, parking lots, etc., to minimize their exposure to a fire involving the tank. Spill containment equivalent to 110% of the capacity of the storage tank shall be provided. Fuel transfer pumps shall be equipped with self-closing dispensing nozzles. Containers of flammable liquids with flash points below 140 degrees F (vapor pressure not exceeding 40 psi absolute at 100 degrees F) shall be provided with atmospheric and emergency relief vents equipped with flame arrestors. Tanks or drums from which such flammable liquids (by definition above) are dispensed shall be electrically grounded and shall be equipped with bonding wires to complete the grounding with the vessel into which the liquid is dispensed.

3) Identify tanks with the contents and “No Smoking” stenciled neatly in 4" letters on all viewable sides of the tank.

4) Provide portable fire extinguishers for fuel storage tanks, the size and location of which is consistent with NFPA and OSHA Standards.

Refueling of Vehicles: Refuel vehicles only in pre-designated outdoor locations, with a spill kit available at each area. At a minimum, observe the following procedures for refueling:

a. Shut off the vehicle engine.

b. Do not smoke.

c. Do not over-fill the tank.

b. When the fuel is liquid propane gas, ground the nozzle of the fuel hose to the vehicle filler pipe with a ground wire.

Portable Fire Extinguishers (To be furnished by the Contractor)

a. Provide and regularly inspect portable fire extinguishers suitable for the potential hazard for equipment, office, building and work activities.

b. Install portable fire extinguishers on mobile equipment such as trucks, mobile cranes, service vehicles, etc.

c. Provide a minimum of (1) 20 lb extinguisher and fire watch attendant for any “hot work” activities.

d. Certain areas of the Ingot plant contain accumulations of metal fines (dusts) that may be combustible or explosive and can only be extinguished with

Class "D" extinguishers. Check with the Project Leader to determine if the area in which you are working contains this type of material and to review the approved cleaning procedures.

Burning and Welding

Perform burning and welding only with an approved Hot Work Permit. The Project Leader will be responsible for issuing or coordinating the issuance of all work permits for each shift.

Gas Cylinder Precautions

Observe the following precautions when using / storing oxygen, acetylene and other flammable gas cylinders (Refer to 29 CFR 1926.350 through 29 CFR 1926.354)

a. Do not store flammable liquids inside buildings unless approved by the Alcoa Responsible Person.

b. Oxygen and flammable gas (i.e. acetylene, etc.) storage areas shall be separated by at least 25 feet and from flammable materials or ignition sources such as fire, molten metal or electric lines. If impossible to comply with this 25-foot distance, then isolate the storage area with a non-combustible fire barrier, 5' in height, with a 1/2-hour fire-resistant rating

c. Do not transport or hoist gas cylinders by overhead cranes except in an approved holder or carrier designed for this purpose.

d. Gas cylinders shall be stored, used and transported in a secured vertical position. Reinstall valve caps when cylinders are not in use.

e. Maintain regulators and gauges for oxygen and fuel in proper working order while in use. Keep oil and grease away from oxygen cylinders, fittings and hoses.

f. Oxy-acetylene torches shall be equipped with flash back arrestors and check valves.

g. All oxygen and acetylene regulators shall be maintained and bled off when not in use.

8.7 Utilities and Contractors Facilities

Temporary Buildings

The Contractor shall provide their own worksite storage, shop and office for this contract. Manufactured storage and office trailers shall be set up in an area designated by the Alcoa Responsible Person.

Alcoa may supply 120 volt, single phase and/or 480 volt, three phase electrical power as availability permits. The contractor will be responsible for all utility connections. Work shall be performed by a qualified electrician in accordance with local codes and Alcoa standards.

At the completion of the project, all temporary facilities shall be removed to the satisfaction of the Alcoa Responsible Person and Project Leader.

Toilets/Wash Facilities

The Contractor shall provide and maintain chemical toilets and temporary shower / wash facilities in sufficient number for both his employees and subcontractors. Toilets shall be promptly removed upon completion of the contract. Contract personnel will not be allowed to use Owner's toilet or washroom facilities without specific authorization.

Utilities

When water, compressed air, electric power or other utilities are supplied by the Owner, points of connection, method of connection and connected load shall be requested by the Contractor and approved by the Project Leader.

E-mail

On-site contractors shall be capable of communicating via e-mail. All Contractors shall provide an e-mail address for receipt of project communications, critical safety alerts and meeting notifications.

9.0 INJURY/ILLNESS/INJURY FREE EVENT - NOTIFICATION, INVESTIGATION AND REPORTING

Contractor shall immediately **notify** the Alcoa Responsible Person and Project Leader of ***ANY*** injuries, industrial illnesses, injury free events or property damage incidents. Assistance in contacting Alcoa personnel can be obtained by calling the Clockhouse at 315-705-2424

The Contractor shall **investigate** all injuries, high potential injury-free and property damage events. The severity of the injury or severity potential of the injury free event will determine the degree of Alcoa's participation in the investigation. Contractor shall submit a written **report** to the Alcoa Responsible Person for injury and injury free events within 24 hours. The contractor shall also participate in completing Alcoa's Injury/Illness/Injury Free Event form as requested.

Whenever possible, Contractors shall utilize alternate work assignments to accommodate injured employee/s as a means to minimize potential lost work day/s.

10.0 ADMINISTRATION REQUIREMENTS

Additional administrative requirements are contained in the document entitled *Massena Operations Contractor, Subcontractor, and Contracted Services Environmental Health and Safety Process*, which is the first attachment to these Site Conditions.

11.0 ATTACHED REFERENCES

Alcoa EHS Controlled References - The following are EHS Controlled Documents that have frequent application in contracted work and shall be followed when they are applicable to the work being performed.

M.O.	Contractor, Subcontractor, and Contracted Services Environmental Health and Safety Process
M.O.	Asbestos Management Plan
M.O.	Emergency Medical Agreement

M.O.	Lead Management Plan
Alcoa	Alcoa's Policy on Substance Abuse
32.60	Electrical High Voltage Safety
33.042	Labor Relations Guide for Outside Contractors
33.051.1	Government Regulatory Agency Project Inspection Guidelines
33.052.1	Safety and Health Eval of Outside Contractors / Subcontractors
33.052.4	Application of OSHA Hazard Com Standard for Outside Contractors
Alcoa	PSC Safety Prequalification Request (for subcontractors)
HS 5.6	Lockout/Tagout Verification Program
HS 5.6.1	East Plant Blue Flag Railroad Isolation Procedures
HS 5.6.1	West Plant Blue Flag Railroad Isolation Procedures
HS 5.7	Fall Control Program
HS 5.8	Mobile Equipment
HS 5.9	Confined Space Entry
HS 5.10	Electrical Low Voltage Safety Standard
HS 5.14	Excavation Trenching and Shoring
HS 6.5	Respiratory Protection
A-166301	Alcoa West Plant Map
A-164820	East Plant Map
Alcoa	Contractor Safety Work Plan Example

12.0 ADDITIONAL DOCUMENTS

These Alcoa standards may be obtained from the Project Leader if they have not been attached to this document and are applicable to the work involved

HS 5.11	Welding, Burning and Cutting
16.4.1	Excess Air Flow Safety Valves
17.10.1	Low-Velocity Powder-Actuated Tools
18.18.3	Contractors Specification for Asbestos Work
18.4.2	Prevention of Explosions of Aluminum Fines and Dust
18.6.1	Safe Handling of Compressed Gases
18.14	Welding and Cutting Containers
33.053	Safety in Painting
32.70	Arc Flash
70.8	Coal Tar Pitch

Revision History

Date	Revision Description	Reviewed/Approved by:
7-10-02	New Document	J. Fregoe, J. Charlebois
9-6-02	Miscellaneous Wording	J. Fregoe, J. Charlebois
5-2-03	Added document control	J. Fregoe
9-8-04	General Update	J. Fregoe, M. DeRosie
5-18-07	64 Hour Rule and General Update	J. Fregoe
11-21-08	General Update – Flatbeds, Environ., etc.	J. Fregoe, S. McGovern
11-29-11	General Update – PPE, Attached Ref, Etc.	J. Fregoe
12-18-18	General Update – WoF, Emerg #, Boots Etc.	J. Fregoe

3-17-2026	Added Hoodie Requirement Under 8.5 section 1	J. Zembek

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Alcoa USA Corp.
Massena Operations
CONTRACTOR, SUBCONTRACTOR AND CONTRACTED SERVICES ENVIRONMENT, HEALTH AND SAFETY PROCESS

TABLE OF CONTENTS

1.0 PURPOSE

Alcoa USA Corp. uses Contractors, Subcontractors and Engineering, Procurement and Construction Management firms (EPCM's), to construct, install, revise, renovate, maintain and demolish facilities and processes. Contracted Services are hired to provide routine services and specialized work. All contractors and their employees have the responsibility and are expected to understand, comply, promote and assist in the implementation of Alcoa's Environment, Health and Safety (EHS) Value, Policy, Principles, and other applicable EHS rules and regulations. Planning is a critical factor required to achieve excellence in contractor safety performance. This document describes the required planning and contract requirements for Alcoa Project Management personnel, Contractors, Subcontractors and Contracted Services. The goal of this process is to ensure the appropriate EHS Value, Policy and Principles are maintained during all phases of the work.

Alcoa VALUES

Act with integrity, Operate with Excellence and Care for People

EHS POLICY

It is Alcoa's policy to operate worldwide in a safe, responsible manner, which respects the environment and the health of our employees, contractors, customers and the communities where we operate. We will not compromise environmental, health or safety values for profit or production.

EHS PRINCIPLES

In support of Alcoa's Environmental, Health and Safety Policy, the following principles have been developed to provide additional direction on accountability on specific issues.

- We value human life above all else and manage risks accordingly.
- We relentlessly pursue an EHS incident free workplace.
- We do not compromise our EHS value for profit or production.
- We comply with all laws and set higher standards for ourselves and our suppliers where unacceptable risks are identified.
- We support sustainable development, by incorporating social responsibility, economic success, and environment excellence into our decision-making process.
- We measure and assess our performance and are open and transparent in our communications.
- We supply and use safe and reliable products and services.
- We use our knowledge to enhance the safety and well-being of our communities.
- We are all accountable for conforming with and deploying our EHS value and principles.

2.0 SCOPE

This document describes the EHS requirements that will be used at Massena Operations for the contracting process mandated by Alcoa Engineering Standard 33.051 titled "*Contractor, Subcontractor and Contracted Services Environment, Health and Safety Process"*. Section 4 of this document is an outline of the process that has been adopted by Massena Operations to comply with regulatory, corporate, and location-specific requirements. The Process will be used for projects managed by both Alcoa "Project Leaders" and EPCM's.

Temporary Employees and Visitors that are not agents of a specific contractor are not covered under this process. Temporary employees shall be handled under department new-hire and employee training programs. Visitors shall be handled as per the visitor safety program.

Contractor, Subcontractor and Contracted Service supervision and senior management are accountable for the Safety and Health of their employees as well as the impact their employees may have on the Environment, Health and Safety of others. Contractors, Subcontractors and Contracted Services are expected to follow all applicable rules, regulations, and provide training/communications to their employees as required by the type of work being performed.

3.0 DEFINITIONS AND RESPONSIBILITIES

3.1 Definitions

3.1.1 **Alcoa Responsible Person (ARP)** An Individual who has a working knowledge of the Alcoa and regulatory standards which are normally applicable to the type of contracted work being performed, has successfully completed the Alcoa course entitled "Contractor & Contracted Services Training for the Alcoa Responsible Person" and has working knowledge of the contract which applies to the work. Another name for the Alcoa Responsible Person could be the Single Point of Accountability (SPA). The Alcoa Responsible Person(s) represents the safety, contractual and financial interests of Alcoa

3.1.2 **Alcoa Property** means any location, facility, or portion thereof, which is controlled by Alcoa, and on which Alcoa operates.

3.1.3 **Construction** is an activity performed by Contractors that is generally the construction of new facilities or the maintenance, renovation, or relocation of existing facilities. Construction is work that normally requires civil, mechanical, electrical, and/or other specialty work, such as demolition and environmental remediation.

3.1.4 **Contractor** describes entities or employees of entities that perform work governed by a contractual arrangement between Alcoa and the entity and who

are not directly controlled or supervised by Alcoa employees, but does not include Contracted Services or Subcontractors.

3.1.5 **Contracted Services** describe entities or employees of entities that generally perform low risk on site support activities, such as security, janitorial, cafeteria, uniform delivery, lawn care, garbage disposal, pest control, vending, engineering, design, training, consulting, or other professional or non-professional services not directly controlled or supervised by Alcoa employees.

3.1.6 **Contractor Responsible Person(s)** is an individual who has been designated by the Contractor, Subcontractor or Contracted Service, and who possesses the detailed knowledge to fulfill the Contractor, Subcontractor or Contracted Services EHS obligations under the contract, which applies to the work. The Contractor Responsible Person(s) could be appointed from the Contractor, Subcontractor or Contracted Service management group, superintendents, foremen, working crews or from a third party. This individual must be on site daily while work is progressing. Some scopes of work may require a separate, dedicated person for this task. Alcoa reserves the right to add this requirement at any time, if unacceptable safety performance indicates that a dedicated person is needed.

3.1.7 **Contractor Company Safety Program** is the combination of documents establishing the rules and methods typically used by a non-Alcoa entity to protect their employees from EHS hazards. It is to be noted that if any requirements of Alcoa's Site Conditions are stricter than the contractor's program, the Site Conditions shall govern. A copy of the contractor's program shall be maintained on site.

3.1.8 **Contractor Safety Work Plan / Permit to Work** is a formal document that is prepared by the Contractor, Subcontractor or Contracted Service (in electronic format) to communicate the Safe Method of Work in a step-by-step approach to ensure that the contractor and their employees understand the project, the site and the risks associated with the chosen methods of construction. The Work Plan is an analysis of all steps of the project, in sequential order, to determine what hazards exist, or may arise during construction and details the abatement / control procedures to address these hazards. Work shall not begin until the plan has been reviewed by the Alcoa Responsible Person and Project Leader during a Pre-Construction Conference. The work plan is a comprehensive analysis that addresses both hazards of the area as well as those of the chosen methods of work. A somewhat generic Contractor Safety Work Plan, consisting of documents written for specific tasks, combined with a more comprehensive site-specific plan may cover small, repetitive jobs. An example of a completed work plan is included in the Site Conditions package.

3.1.9 **Alcoa My Safety Check** is a risk identification booklet that is to be on contractors at all time and must be completed daily prior to starting work. This booklet will be provided by Alcoa. The booklet is to be completed by the contractor identifying the employee, task, time, location, risks, controls, stops, and lessons learned. Spot checks will be completed on contractors in the field for compliance.

3.1.10 **Embedded Contractor** is an entity or employees of entities that perform activity or service on a regular and continual basis (typically daily) and are governed by a contractual arrangement between Alcoa and the entity. An embedded contractor may or may not be directly controlled or supervised by Alcoa employees. An Alcoa person is to be identified as having responsibility for them as their Project Leader (APL).

3.1.11 **EPCM** is an abbreviation for Engineering, Procurement and Construction Management. EPCM firms provide services for construction, engineering and maintenance projects. An EPCM is a Contracted Service that is responsible to Alcoa for the firms they bring onto Alcoa property. An EPCM firm typically performs some of the Project Leader and Alcoa Responsible Person duties.

3.1.12 **Hazard and Risk Assessment (HRA)** is a high-level risk assessment activity to identify the inherent risks associated with the type and location of a contractor's proposed/approved scope of work. It provides a forum to allow the contractor and Alcoa to review site-specific risks, work methodology, permit requirements, plant and equipment to be used, training and competency requirements. For smaller project the HRA may be completed as part of the Preconstruction Conference.

3.1.13 **High-Risk Work** pertains to the following actions and activities.

(1) Entering a confined space
(2) Conducting high-voltage electrical work
(3) Operating mobile equipment (industrial / construction and cranes)
(4) Implementing lockout/tagout/verification requirements
(5) Working at heights (different level fall)
(6) Being exposed to molten metal
(7) Being exposed to chemicals
(8) Removing machine guarding
(9) Conducting construction/demolition
(10) Testing, commissioning and troubleshooting
(11) Conducting hot work
(12) Conducting diving operations

While this is not an exhaustive list, these categories are examples of services that must be managed in a way that ensures appropriate controls are implemented to mitigate the risk of the activity to as low as reasonably practicable (ALARP). These include the Critical 6+1 hazard categories.

3.1.14 **Orientation** is a presentation led by the Alcoa Responsible Person to review highlights of the Site Conditions outlining Alcoa's EHS expectations and hazards that are commonly encountered when working at Massena Operations. All Contractor Subcontractor and Contracted Services employees are required to attend Contractor Orientation prior to performing any work on site and every 365 days. Sessions are held at 7:30 AM every Monday morning in room # 206 of building #60 which is located adjacent to the #1 Clockhouse, in Area I.

3.1.15 **Permit** is a document obtained by the contractor from the PL or designee, authorizing the start of specific tasks. Permits must be at the site of the work and are required for: Excavation/Digging, Hot Work, Roof Access and Confined Space Entry.

3.1.16 **Preconstruction Conference** is a meeting between the Contractor's Superintendent, Responsible Person, Foreman, Management representative, Alcoa Responsible Person, Project Leader, and others as needed to review the Contractor Safety Work Plan and all aspects of the project including the "scope of work", construction drawings, specifications, schedules and coordination with Alcoa's operations. This meeting shall be held at least 1 week prior to the contractors planned start of work unless mutually agreed to with the ARP. This will allow time to correct any deficiencies in the work plan and address any other coordination issues identified during the review.

3.1.17 **Pre-Job Safety Meeting** is a meeting held by the Contractor Responsible Person before any work begins to disseminate the Scope of Work, applicable Site Conditions requirements and Contractor Safety Work Plan to all employees of the Contractor, Subcontractor and/or Contracted Service. The Project Leader and Alcoa Responsible Person shall be notified of the time and place of this meeting. The Pre-Job Safety Meeting is usually held the morning work begins and all employees must sign acknowledging their understanding of the work plan. Additional pre-job safety meetings are to be scheduled as necessary to brief new employees who start work at a later date.

3.1.18 **Prequalification** is a process used by Alcoa on an annual basis to evaluate Contractors, Subcontractors and Contracted Services health and safety programs and performance prior to selecting them for bidding.

3.1.19 **Project Environment, Health and Safety Review (PEHSR)** is a review process to ensure sound environmental, health and safety practices, in accordance with Alcoa's EHS standards, are incorporated into new projects, process, or equipment modifications. The PESHR is initiated by the Project Leader at the design phase. Most PESHR reviews will utilize Massena Operations *Project Environmental, Health & Safety Review Checklist;* however, larger capital projects will require use of the Corporate (18.17) four stage PESHR. The third stage in the corporate process is a "Construction review" in

which the contractor shall also be involved. This stage will be completed prior to finalizing the Work Plan.

3.1.20 **Project Leader (PL)** is the Alcoan who initiates, coordinates, manages and is responsible for a specific Project, Contracted Service, or Transportation Service. All contractors, contracted services and transportation services must have a designated Project Leader who is located at Massena Operations.

3.1.21 **Safety Hazard Assessment** shall mean the identification of all existing and potential hazards associated with the location of, and/or the work itself, which need to be abated or controlled through the Contractor Safety Work Plan to ensure the safe completion of the work. Due to changes in the Scope of Work or actual conditions encountered in the field, the Safety Hazard Assessment may need to be reviewed and updated as the project progresses. (Also see "Contractor Safety Work Plan")

3.1.22 **Scope of Work** is the written, legal description of a project or service request. The scope of work shall be concise, but adequately explain the sequential requirements of a project in enough detail to ensure the contractor understands the work and any Alcoa imposed constraints. For large projects this document may require several pages. For small projects a paragraph may be all that is needed. The Scope of Work is part of the contract bid package.

3.1.23 **Site Conditions** is a summary of the specific rules, regulations, procedures, and administrative requirements for Massena Operations. Site Conditions are provided to the contractor as a legal attachment to the Purchase Order and are equally important as the other contract documents. Contractor employees are expected to know, understand and follow all aspects of the *Site Conditions*. Massena Operation's *Contractor, Subcontractor and Contracted Services Environment, Health and Safety Process* is part of, and always included in the "Site Conditions" package.

3.1.24 **Site Visit** is a meeting with the selected, prequalified Contractors, or Contracted Services to explain the Scope of Work, Drawings, Site Conditions, and other aspects of a proposed project. It is the opportunity for representatives of the Contractor, or Contracted Service to ask questions about any items in these documents that are unclear.

3.1.25 **Subcontractor** describes entities or employees of entities that perform activities or services on Alcoa property governed by a contractual arrangement between a Contractor and the entity. Contractors and Contracted Services are responsible for and will be held accountable for the actions of their Subcontractors, Vendors and Agents, who must comply with all of the same requirements contained in the principal contract between Alcoa and the

Contractor or Contracted Service. Because Alcoa does not have a direct agreement with subcontractors, representation from the contractor must be on site while their subcontractors are working. Any exception to this must be approved by the ARP and Project Leader.

3.1.26 **Temporary Employees** are employees of temporary labor agencies who work at Alcoa to supplement the salaried workforce yet are paid by and receive benefits from their employing agency. Although these individuals are employees of another firm, they will be supervised and trained by Alcoa on an individual basis, in the same manner as our permanent employees.

3.1.27 **Visitors** are individuals who arrive at the facility for the purpose of consulting, selling, purchasing or for public relations purposes. Additional details are found in Alcoa's Visitor Safety Policy.

3.2 Responsibilities

3.2.1 **Location Management** has the responsibility to:

- Ensure compliance with 33.051 titled "*Contractor, Subcontractor and Contracted Services EHS Management Framework"* and this document.
- Identify resources to comply with 33.051 and this document.
- Designate the Alcoa Responsible Person(s) as accountable for Contractor's compliance with 33.051 and this document.
- Designate Procurement Management as accountable for purchasing control.

3.2.2 **Procurement Management** has the responsibility to:

- Initiate prequalification of Contractors and Contracted Services.
- Select Contractors, and Contracted Services who are qualified to perform the scope of work, have been prequalified and are approved by the Alcoa Responsible Person in the last 12 months.
- Communicate the Scope of Work, Site Conditions and other expectations to the Contractor, Subcontractor and Contracted Services prior to the Site Visit.
- Ensure the detailed Scope of Work and Site Conditions are included in Purchase Orders.
- Ensure all Contractors and Contracted Services are signatory to the Site Conditions.

3.2.3 **Project Leader** has the responsibility to:

- Complete course # SW 450 - Project Leader Training within the last 3 years.
- Contact the Contracting out SPA to review the scope of work and obtain approval to proceed with contracting the work.
- Initiate / coordinate projects and repair services.
- Coordinate preparation of and provide a clear and detailed Scope of Work, that includes known hazards and (following a Hazard and Risk Assessment) identified controls for the intended work along with Plans and Project Specifications.
- Initiate the involvement of Purchasing, Environmental and the ARP prior to finalizing the Scope of Work.
- Work with the ARP to determine if the contractor needs to provide a full-time safety professional at the job site
- Prepare project approval documentation.
- Initiate, schedule and complete the PEHSR Process.
- Coordinate the detailed engineering and design, including cost estimates.
- Ensure the contractors we hire are qualified to perform the type work.
- Coordinate the project including scheduling of the Preconstruction Conference and other project meetings, injury and Incident investigations and communications with departments who will be affected by the project.
- Actively participate in the work plan review portion of the Preconst Conf. to ensure the hazard assessment and countermeasures are complete.
- Issue Work Permits for the project. Note: If the Project Leader is not trained to issue the permits required by the project, they are responsible for identifying other resources to issue the permits.
- Establish any lock boxes that are required for the project
- Communicate and enforce rules and regulations applicable to Alcoa’s EHS policies and procedures.
- Immediately notify the ARP of any injuries or incidents related to the project and assure the scene has been secured until an investigation has taken place.
- Manage the project in compliance with this document.
- Transmit specific safety procedures and Alcoa SDS sheets to the contractor.
- Identify hazardous materials and process hazards to which the contractor may be exposed.
- Ensure Contractor SDS’s are noted on the work plan and the Alcoa IH approval process is completed before they are brought to the worksite.

- Communicate any changes in the Scope of Work to Procurement, the Contractor, and the Alcoa Responsible Person.
- Monitor the work site daily for compliance with the Work Plan/ Permit to Work and to perform Construction Management activities. (An alternate may be designated on days where the Project Leader is not able to perform this duty.)

3.2.4 **Contractor, Subcontractor and Contracted Service Management** has the responsibility to:

- Designate competent Supervision and a Contractor Responsible Person
- Comply with all applicable laws, regulations, and codes.
- Comply with Alcoa EHS Values, Policies and Principles.
- Comply with Site Conditions and other expectations as defined in the Scope of Work.
- Develop a Job Specific “Contractor Safety Work Plan / Permit to Work”.
- Ensure employees have the appropriate skills for the job.
- Provide employees with the appropriate EHS training.
- Provide the appropriate Personal Protective Equipment (PPE), tools and equipment.
- Maintain a safe and healthy work environment.

3.2.5 **Alcoa Responsible Person(s)** has responsibility for the following:

- Determine with the Project Leader (based on the scope of the work) to which degree to apply the Contractor, Subcontractor and Contracted Services Environmental Health and Safety Process to any non-Alcoa entity.
- Assist the Project Leader in identifying hazards of the site prior to the Site Visit. The Alcoa Responsible Person will review the Scope of Work to ensure hazards specific to the worksite have been included in a detailed description of the work.
- Ensure the requirements of this document are met.
- Assist Procurement in identifying potentially qualified Contractors, Subcontractors and Contracted Services.
- Review Consolidated Prequalification Evaluations from PSC and determine whether or not any given firm will be allowed to bid on our projects.
- Attend all Site Visits and Pre-Construction Conferences.
- Attend Pre-Job Safety and Job-progress Meetings as availability permits.

- Assist Project Leaders, Contractors, Subcontractors or Contracted Services with EHS hazard assessments inclusive of process hazards and the potential for changing conditions.
- Review Job Specific, Contractor Safety Work Plans.
- Conduct Massena Operations Contractor Orientation
- Audit Contractor employee EHS training documentation and HazCom compliance.
- Perform periodic EHS monitoring of the Work Site for compliance with the Work Plan / Permit to Work and assure follow up is completed with the Prime Contractor or Contracted Services management.
- Enforce applicable (contractual) rules and regulations with Location Management, Project Leader, Contractor, Subcontractor or Contracted Services Management.
- Act as the Alcoa rep for all EHS communications and assistance.
- Attend PESHR reviews for contracted projects as applicable.

3.2.6 **Contractor Responsible Person(s)** has responsibility for the following:

- Ensure all EHS obligations under the contract, which apply to the work are fulfilled and employees are complying.
- Perform EHS hazard assessments and participate in the development of the Contractor Safety Work Plan.
- Attend and play an active role in all Pre-Construction Conferences, Investigations, Pre-Job Safety, and Job Progress Meetings.
- Assist in the development of and approve the Contractor Safety Work Plan / Permit to Work
- Understand and implement the Contractor Safety Work Plan including compliance with HazCom.
- Ensure employees have attended Alcoa Contractor Orientation within the last 12 months and that all necessary EHS regulatory training as noted on the work plan, has been provided to their employees.
- Ensure the work plan has been reviewed by all employees and that additional daily and changed conditions, pre task reviews / briefs are taking place.
- Hold a final review and orient employees to the work location in the field.
- Complete routine EHS periodic monitoring and auditing of the work site, correct any deficiencies, and communicate the results to Alcoa. At least one documented inspection shall be delivered to the ARP each week.
- Stop work on any task where conditions / scope has changed or additional hazards are identified, until the work plan is amended.

- With Contractor, Subcontractor or Contracted Services Management, enforce applicable rules and regulations.
- Act as the contractor representative for the resolution of any problems or concerns, associated with the work.

4.0 REQUIREMENTS

The following process is for managing projects involving Contractors, Subcontractors, and Contracted Services. This document, along with Massena Operations Site Conditions and applicable regulatory rules / regulations is the minimum Massena Operations will use to comply with the mandatory Alcoa Engineering Standard 33.051 for managing Contractor, Subcontractor and Contracted Service activities. Adherence to the process will be demonstrated with written documentation, such as the project Scope of Work, Site Conditions, Orientation and Training Records, Contractor Safety Work Plans and project inspections. Subcontractors and Contracted Services must comply with the same requirements expected of Contractors.

4.1 Preparation of the Bid Package

The bid package will include a Scope of Work, along with any plans, drawings and applicable specifications. While the bid document for a typical project will normally include nine (9) “sections”; at a minimum, all projects must include the following:

- A legal and complete description of the project and the work that is to be accomplished (detailed “Scope of Work”).
- Specific EHS expectations of the job.
- A listing of any planned project meetings which the contractor will be required to attend.
- Identification of hazardous materials, such as, but not limited to, asbestos, refractory ceramic fibers, PCBs, beryllium, coal tar pitch and lead, which may be encountered during the project.
- The Contractor’s role regarding specific precautions or procedures to be employed when dealing with hazardous materials, including waste segregation and labeling.
- Schedule in which the work must be completed.
- Any required production constraints affecting completion of the work.
- If applicable, availability of any Alcoa equipment or utilities for the contractors use.
- Responsibility for supply of materials.

4.2 Complete the Project Environmental Health and Safety Review (PEHSR).

The PESHR Process is initiated by the Project Leader at the design phase if applicable (reference Massena PESHR process for determination). Most PESHR reviews will utilize Massena Operations, "*Project Environmental, Health & Safety Review Checklist";* however, larger capital projects will require use of the corporate (18.17 series) four stage PESHR which incorporates a Construction review, in which the contractor will participate. This stage is to be completed prior to finalizing the Work Plan.

4.3 Project Approval Process

Projects and the procurement of contracted services normally requires management approval prior to the expenditure of funds. The Project Leader shall complete the RFA, Shop Order, Facility Request for Funds, Purchase Requisition, etc. and route for approval. The authorizing manager has the responsibility to ensure a "PEHSR" has been completed before approving expenditure of funds.

4.4 Prequalification of Contractors, Subcontractors of Contracted Services

Before entering into a contractual arrangement, there must be an evaluation to determine the ability of the Contractor, Subcontractor or Contracted Service to fulfill the EHS conditions of the contract. Contractors must demonstrate they have the resources to meet all the job requirements including the awareness, attitude and knowledge to protect their employees and others from EHS Hazards. Alcoa has contracted with a 3rd party vendor, Purchasing Services Company (PSC) to collect and summarize information regarding a potential contractor or subcontractors safety management systems and safety performance over the last 5 years. PSC charges a fee to both Alcoa and the contractor for this service based on the number of man-hours worked annually by the firm being evaluated. The contractor's profile will also be posted on an internal website for all Alcoa locations to view and potentially draw from, for projects in other areas of the US. Alcoa engineering standard 33.055.1 titled "*Contracted Services Environmental, Health & Safety Prequalification Questionnaire"* will be used to evaluate Contractor's, Subcontractor's, and Contracted Services EHS capabilities. Evaluation of

this questionnaire will help ensure that only qualified, safety conscious firms are selected.
Subcontractors must also complete this process and may not be used without specific permission from the Procurement Department.

4.5 Risk Assessment

Risk assessment takes place both during development of the Scope of Work by Alcoa and during the Contractor Safety Work Plan development process by the contractor. The Project Leader may utilize the *Contracted Services Safety Requirements Guide* 33.052.1 and shall review the project with the Alcoa Responsible Person to determine EHS risks of the project, prior to scheduling a site visit. Contractors, Subcontractors, Contracted Services and Alcoa personnel must understand the level of risk exhibited by the project's Scope of Work and their chosen methods of construction to ensure risks are identified and that the necessary controls and procedures are in place to eliminate or minimize those risks.

4.6 Invitation to Quote

When the bid package has been finalized and the project is approved, procurement will send and bid package and an Invitation to Quote to select Contractors who have been prequalified and approved by the Alcoa Responsible Person. Included in the bid package will be the Scope of Work, Site Conditions package, applicable Alcoa Engineering Standards, plans, commercial Terms and Conditions, and schedule of project milestone dates.

4.7 Site Visits

The invitation to quote will include a date and time for a scheduled Site Visit, in which selected contractors will convene for an on-site meeting. A Procurement representative normally coordinates these discussions, with the Project Leader and the Alcoa Responsible Person in attendance. This meeting will include a review of the Scope of Work, Plans, Site Conditions, project schedule, Alcoa commercial requirements, and the bidding process. Contractors may also extend the invitation to representatives of their subcontractors. Any clarifications resulting from the Site Visit discussions will be forwarded to all bidders in the form of an addendum. The meeting will conclude with a visit to the work site. Any questions from contractors after the site visit shall be directed to the procurement agent.

4.8 Bid Submittal, Contract Award and Purchase Order

After the bids have been received, a Contractor is selected based on several factors. Alcoa may also request preliminary clarification meetings with any bidder prior to award.
Next, Procurement will send a Purchase Order (P.O.) to the vendor for acceptance. The bid package, including the Scope of Work, Site Conditions, Engineering Standards, Project Drawings and any addenda are always referenced on the Purchase Order.
The contractor shall note that subcontractors may not be used without approval from Alcoa's Procurement Department and will be expected to meet all requirements of this document, including orientation and training. If a bid is based on using any specific subcontractors, it is the contractor's responsibility to initiate a prequalification review of the subcontractor, prior to the bid due date.

4.9 Pre-Construction Conference

After the contract has been endorsed, the contractor is required to prepare a Contractor Safety Work Plan and request a Pre-Construction Conference with Alcoa. This meeting is held to ensure Contractor, Subcontractor or Contracted Services management understands the project deliverables and has thoroughly considered the steps necessary to complete the work. The Contractor, Subcontractor or Contracted Service will be responsible for scheduling the conference through the Project Leader. The Scope of Work, Site Conditions, permits, training, accident reporting, coordination with Alcoa's operations and other administrative requirements will all be discussed. Information on EHS aspects of the job and tasks, emergency procedures, traffic patterns, adjacent operating production equipment and waste disposal will be integrated in this discussion.
The contractors work plan shall be submitted to the Alcoa Responsible Person and Project Leader in an electronic format, prior to the Preconstruction Conference, which will be held a minimum of 1 week prior to the planned start of work. Exceptions to these requirements must be authorized by the ARP.
The Alcoa Responsible Person and Project Leader will review the Contractor Safety Work Plan with the Contractor's Management and attempt to resolve any identified deficiencies. The contractor shall bring the plan on a laptop computer to the meeting so that minor changes can be made, and the document finalized during the review. Inadequate work plans will have to be revised and resubmitted. If this occurs, an additional review will need to be scheduled prior to the start of work. During a project, changes in the scope of work, and/or actual conditions encountered in the field may require the plan to be altered and updated to

reflect the changes. Work will need to stop on the tasks requiring revision, until the plan has been revised and reviewed with the Alcoa team.

4.10 Contractor Orientation

A Contractor Orientation is required for all non-Alcoans that will be working at Massena Operations. Orientation is valid until the Project Leader or Alcoa Responsible Person believes it would be beneficial for the employee to have a refresher, or for a maximum of twelve months. **Orientation attendees include all contractor, subcontractor and contracted service employees. No work may be performed prior to attending orientation.** Orientation will be provided by the Alcoa Responsible Person and is intended to be a brief review of the Site Conditions as well as expectations for the conduct of contractor employees.
Each participant will be required to sign an attendance sheet to document attendance. The names of employees who have successfully completed Contractor orientation will be entered into a database to be use by security for gate control. Contractor Orientation is normally not applicable to delivery vendors such as mail service, beverage vendors, truck drivers, salespeople, or consultants who will receive a brief overview of Alcoa expectations relevant to their exposure by verbal communications, video, signage, literature, or other appropriate means, as required by other Alcoa programs.
Note - Alcoa Contractor Safety Orientation is not a substitute for EHS Regulatory training which the contractor must provide to their employees.

4.11 Contractor Specific Training

The Contractor Safety Work Plan must identify any specific employee **Regulatory** (State, Federal) **and Alcoa required (Site Conditions contents) training requirements.** The Alcoa Responsible Person may request information on the Contractor's training program to assure it meets applicable training requirements. Documentation of all successfully completed, regulatory training and/or the materials/programs used to complete the training shall be submitted to the Alcoa Responsible Person upon request.

4.12 Pre-Job Safety Meeting

On the first day of the job, and before any work is started, the Contractor Responsible Person and Superintendent are required to hold a meeting

with their employees to explain the Contractor Safety Work Plan, highlighting specific hazards, and the contractor-chosen work methods that will be used to complete the project. The Alcoa Responsible Person and Project Leader will be notified of the time and place of this meeting and will have the option of attending. Any Alcoa specific procedures, such as lockout, confined space, etc. will be presented by the Project Leader or authorized representative to a member of the contractors' supervision prior to the prejob safety meeting so the contractor may disseminate the information to their employees. Each employee shall sign the work plan indicting they understand and will follow it while working on the project. Subsequent meetings shall be held for any new employees as they arrive on the project site. Note: within 3 days of the initial and final prejob safety meetings, the contractor shall submit a complete copy of the signed Work Plan to the ARP. Another copy shall be made at the end of the project if there are new employees that started after the initial prejob safety meeting.

4.13 Work Permits

Tasks requiring specialized Work Permits shall be noted in the Contractor Safety Work Plan. Activities requiring a permit at Massena Operations are Entering Confined Spaces, Digging and Excavation, Roof Access and Hot Work. Additional details on these requirements can be found in the Site Conditions. The Alcoa Project Leader or authorized representative, who has received permit training, will issue any work permits.

4.14 Monitoring and Auditing

The Project Leader, Alcoa Responsible Person and the Contractor Responsible Person are responsible for monitoring the Contractor's adherence to the EHS expectations listed in the Scope of Work and Site Conditions.

- The Project Leader will inspect the work site on a daily basis to assure the Contractor is following their work plan and is in compliance with the *Site Conditions*.
- Note: Those serving in the role of Project Leader shall perform their required number of documented Forwood observations (based on position) for the week, on the contractors they are overseeing.
- The Alcoa Responsible Person will also perform random observations. The frequency of observations may vary. For large construction jobs, observations may be daily. Smaller projects and contracted services will also be observed regularly.

- The Contractor will submit documentation of at least one weekly toolbox talk and housekeeping/safety audit to the ARP each week. The Proposed format for this audit shall be submitted at the Preconstruction Conference.

- Alcoa document 33.052.1 titled "*Safety and Health Evaluation of Outside Contractors and Subcontractors"* and Massena Operations Contractor Safety Audit Checklist will be made available for auditing use by both contractors and Alcoans.

4.15 Work Closure

When the work is completed, the Alcoa Responsible Person and Project Leader may request a wrap-up meeting with Contractor and Subcontractors or Contracted Services management. All action items listed on the Final "*Project Environment, Health and Safety Review"* assigned to the Contractor, Subcontractor or Contracted Service must be completed before the Contractor, Subcontractor or Contracted Services is released. All refuse and materials shall be placed in the designated containers and the Job Site must be clean as determined by the Project Leader. Any outstanding project documentation will need to be turned in before final payment is released.

Revision History

Date of Revision	Revision Description	Reviewed/Approved by:
04-20-2002	New document	J. Fregoe, J. Charlebois
05-02-2003	Added Document Control	J. Fregoe
09-08-2004	General Update	J. Fregoe, M. Derosie
01-24-2006	Revised Principles / Gen Update	J. Fregoe, L. Denesha
11-22-2011	General Update	J. Fregoe, S. McGovern
12-22-2016	General Update to reflect the split	J. Fregoe
04-28-2021	Update to Include Mandatory PL training	J. Fregoe
03-17-2026	Added My Safety Check Requirement	J. Zembek

I. PURPOSE

Asbestos removal and handling requires strict adherence to numerous state and federal regulations. Special work practices must be followed to minimize fiber release, control fibers within the work zone and to prevent employee exposure. These procedures require attention to detail and can be complex. This document is to aid persons who authorize and supervise the removal of asbestos containing material.

II. REGULATORY REQUIREMENTS FOR THIS DOCUMENT

The OSHA Construction Standard 29 CFR 1926.1101 and the General Industry Standard 29 CFR 1910.1101 and Alcoa's Asbestos Management Procedure requires businesses who handle, disturb or remove asbestos containing material to develop a written management plan.

III. ASBESTOS MANAGEMENT

A. Asbestos will be managed in place and will be removed if it becomes damaged and releases fibers or if building/equipment renovations or repairs require its removal or prior to building demolition. Asbestos removal and encapsulation shall be conducted by NYS Licensed Asbestos Contractor using NYS Certified Asbestos Workers. All work shall be completed in accordance to Code Rule 56 and 29 cfr 1926.1100

IV. RESPONSIBILITIES

A. Location Management
Provide resources to safely handle remove and dispose asbestos containing consistent with EPA OSHA and NYS regulations.

B. Industrial Hygiene/Safety
Identify asbestos and maintain asbestos inventory and plans. Conduct personal air monitoring and bulk asbestos sampling. Maintain a database of asbestos sample results and evaluate removal work plans. Hugh Palmer is a New York State Licensed Asbestos Management Planner

C. Maintenance Supervision
Review maintenance projects, which may disturb asbestos and ensure that the appropriate work procedures are followed and licensed personnel, are assigned to the job. Stop any maintenance work if asbestos containing materials are inadvertently encountered.

D. Engineering
Ensure that asbestos containing materials, which may be disturbed during a project, are identified, and communicated to the appropriate personnel and plan for the removal, encapsulation, or enclosure of asbestos if it is encountered during a project.

E. Asbestos Abatement Supervisors
Conduct pre and post shift inspections of the work site to ensure that the enclosure, critical barriers, and ventilation systems are functioning properly. Observe work practices of the asbestos handlers to ensure their work methods minimize fiber release and all PPE is worn properly. Complete all required daily record keeping.

F. Plant Protection
The ERTs are responsible for isolating areas if an asbestos release is discovered.

G. Certified Asbestos Handlers
Remove asbestos containing material in a manner that minimizes fiber releases. Wear the proper PPE and follow decontamination procedures. Report immediately to the Asbestos Abatement Supervisor, any condition, which may result in a fiber release outside of the work area.

H. All Employees

Do not disturb any material, which may contain asbestos. Report to their supervisor any damaged asbestos containing material.

V. IDENTIFICATION OF ASBESTOS

A. Description of ACM and PACM

1. PACM - Presumed Asbestos Containing Material, thermal insulation material found in buildings constructed prior to 1980, 12 X 12 floor tile, tile mastic, window caulking and built-up roofing. These products must be treated as asbestos unless they are confirmed by testing to be asbestos free.

2. ACM - Asbestos Containing Material, is defined as any material containing more than 1% of chrysotile, amosite, crocidolite, tremolite asbestos, actinolite asbestos or anthophyllite asbestos. Asbestos was used in many products including but not limited to pipe and tank insulation, , arc shoots, water pipe, roofing felts, gaskets, spray on insulation and wire insulation.

3. If a project may disturb asbestos or PACM the asbestos survey must be reviewed, or sample(s) must be obtained to determine the presence of asbestos.

B. Asbestos Survey

An asbestos survey has been conducted at Massena Operations. The results of the survey are maintained by the IH/Safety department. A database of all bulks asbestos sample results and survey information is maintained by the Industrial Hygiene and Safety Department. Asbestos Database. The asbestos survey must be reviewed and updated every five years.

C. Bulk Sampling Procedures

1. ACM and PACM can only be sampled by a New York State licensed asbestos inspector. Contact the Industrial Hygiene/Safety Department to arrange for sampling. DO NOT SEND SAMPLES VIA PLANT MAIL

2. Only NYS licensed Building Inspectors can take bulk samples of suspected asbestos containing materials, no exceptions.

3. All bulk samples of suspected materials are sent to EMSL Analytical in Cinnaminson NJ an asbestos accredited lab and will analyze our samples within 24 hours from time of receipt if a rush request is made.

4. All bulk samples being sent to a NYSDOH certified lab and must be submitted by the IH Department.

5. Employees requesting information on suspected asbestos containing materials should be directed to the IH Department. The IH Department has an up-to-date inventory of where we have found asbestos as well as its many different appearances.

D. Laboratory

Bulk asbestos and area air samples are sent to EMSL Analytical in Cinnaminson, NJ, a New York State ELAP and AIHA accredited laboratory. Personal air samples are sent to Clark Testing in Jefferson Hills Pa. The use of other laboratories requires the prior approval of the IH Department.

E. Labeling of ACM

All asbestos containing material shall be identified in one of the following methods

1. Label affixed to the material
2. Identify locations of asbestos containing material on a print
3. A sign posted on the door of a room containing numerous sources of asbestos containing material.

4. Asbestos bulk database

VI. TRAINING AND WORKER CERTIFICATIONS

A. Only New York State Certified Asbestos Handlers are permitted to remove asbestos. New York State Certified Asbestos Supervisor shall supervise these employees. The Asbestos Supervisor, a certified Asbestos Inspector or an Air Sampling Technician shall conduct area air monitoring for NYS CR56 compliance. An Industrial Hygienist shall review the sampling methods and sampling plan.

B. New York State's asbestos licensing requirements are equivalent to the EPA's Model Accreditation Plan (MAP) training requirements. All persons who may disturb asbestos must be trained and certified. All licensed asbestos workers are required to possess a copy of their certificate during the course of the asbestos project. The following categories of certification are issued:

Asbestos Air Sampling Technician
Any person who performs air sampling inside the enclosures as required by Code Rule 56 shall possess a valid Asbestos Air sampling Technician certificate. Persons possessing an Asbestos Handler certificate may not perform the tasks described for an air sampler without obtaining an asbestos project air sampling technician certificate.

Inspector
Any person who performs the limited tasks involved in the survey, identification and assessment of the condition of asbestos and asbestos material and the recording and reporting thereof, or who is involved in the collection of bulk samples of asbestos material or suspected asbestos material for laboratory analysis shall possess a valid Inspector Certificate.

Project Monitor
Any person, other than an asbestos abatement contractor, or an employee or agent thereof, who oversees the scope, timing phasing and/or remediation methods to be utilized on any asbestos project shall possess a valid Project Monitor certificate. Third party Project Monitors are required for all projects requiring air monitoring.

Project Manager/Planner
Any person who assesses the hazard posed by the presence or asbestos or asbestos-containing material and/or who recommends appropriate response actions and a schedule for such response actions shall possess a valid Management/Planner certificate.

VII. MEDICAL MONITORING

All persons who possess a current New York State Asbestos Inspector are to be included in the Medical Surveillance Program. These employees are to receive an annual physical using the criteria describe by Alcoa's International Health Standards while they hold a valid New York State Asbestos certificate. Former New York State certified asbestos workers shall receive physical examination based upon the frequency indicated by Alcoa's World Wide Health

VIII. EXPOSURE LIMITS

All Asbestos work is contracted out to only New York State Licensed Contractors and Alcoa employees do not conduct any level of Asbestos work. All Contractors will be following the exposure air monitoring set forth.

A. Permissible Exposure Limits (PELs)
The 8 hour time weighted average PEL for asbestos is 0.1 fiber per cubic centimeter (0.1 f/cc).

Employees are allowed to work in asbestos containing atmospheres of up to 1 f/cc for the Excursion Limit period of no more than 30 minutes. No employee shall be exposed to the Excursion Limit more than 4 times per 8 hour work shift, and each exposure shall be separated from the next by no less than 60 minutes

B. Exposure Monitoring

1. Personal exposure monitoring shall be conducted for each work task where the employee is could to be exposed to airborne concentrations of asbestos exceeding PEL or Excursion Limit as determined by an industrial hygienist or an equally qualified person. Daily personal air monitoring abatement projects for asbestos abatement projects shall comply with the requirements of section IV.D. Alcoa health and safety staff or an outside contractor shall conduct exposure monitoring. All monitoring shall follow procedures outlined in 29 CFR 1910.1001 and The Alcoa Exposure Assessment Guidelines.

2. An initial exposure assessment of 30 minute short term and full shift (8 hour) exposures to asbestos shall be made for each type of work performed involving handling or disturbance of asbestos. The initial exposure assessments shall utilize sampling data, sampling data from similar jobs and tasks obtained within the previous 12 months, or objective data demonstrating that the asbestos containing material cannot release fibers exceeding the exposure limit.

3. Unless personal exposures are below the PEL (and/or Excursion Limit) daily air-monitoring representative of each employee's exposure working within the regulated shall be conducted. Exposure monitoring may cease if exposures have been statistically shown to be below the exposure limits. Alcoa shall provide affected employees or their designated representatives with an opportunity to observe any monitoring of employee exposure to asbestos conducted in accordance with 29 CFR 1910.1001 (d)

C. Regulated Areas

1. Areas where airborne concentrations of ACM or PACM exceed the 8 hour PEL (0.1 f/cc) or the 30 minute Excursion Limit (1.0 f/cc) shall be restricted to appropriately trained and equipped personnel. Restricted areas shall be marked with appropriate signs warning employees of the restrictions per 29 CFR 1910.1001.

2. Alcoa currently has no such restricted areas and does not expect to have them in the future.

IX. CUSTODIAL AND NON-ABATEMENT OPERATIONS

This section of the document applies to all routine, custodial, non-abatement operations at Alcoa involving the handling of all known or possible asbestos or asbestos-containing materials.

Persons who may contact disturb asbestos during the commencement of their normal job shall receive general asbestos awareness training. Persons who may contact asbestos include general electricians, general mechanics, custodians and laborers. These employees must receive 2 hours or initial training and an annual one hour refresher. The Alcoa Asbestos General Awareness program shall be used.

X. METHODS OF COMPLIANCE

A. Work Practices and Engineering Controls

1. When possible, Alcoa shall institute work practices and engineering controls to reduce and maintain employee exposure to ACM and PACM to below the PEL and Excursion Limit.

2. Whenever this is not possible, they shall use them to reduce employee exposures to the lowest possible level and supplement them with respiratory protection devices.

3. Examples of work practices and engineering controls include, the use of local exhaust ventilation, prohibiting of the use of compressed air or hand operated power tools (e.g., saws, abrasive wheels, and drills) on asbestos, and use of wet methods.

B. Floor Buffing and Waxing

1. Sanding of asbestos containing flooring material is prohibited

2. Stripping of finishes must be conducted using low abrasion pads at speeds lower than 300 rpm and wet methods.

3. Burnishing or dry buffing may be performed on vinyl asbestos floor tile having sufficient finish that the pad cannot contact the asbestos containing material.

XI. INCIDENTIAL DISTURBANCES

Upon discovery of an incidental disturbance (an unintentional asbestos containing material failure or act of nature involving asbestos containing material that causes fiber release and requires immediate cleanup of the affected area to prevent further fiber release), contact the Emergency Line at West 705-2800. The affected area shall be cordoned off with barrier tape at a distance of twenty-five (25) feet, if possible, from the outermost limit of the disturbance. Asbestos signage shall be posted around the areas and appropriate decontamination enclosure systems and airlocks shall be set in place.

A. Only certified persons or authorized visitors shall be allowed within the affected area after the disturbance is discovered.

B. Methods shall be employed to minimize further disturbance of the affected material.

C. Notification to the Asbestos Control Bureau, Department of Labor shall be made as soon as possible and in accordance with Industrial Code Rule 56.

D. For releases greater than 10 ft^2 or 25 linear feet a personal decontamination enclosure system that complies with ICR Subpart 56-9 shall be utilized. A waste decontamination enclosure system that fully complies with ICR Subpart 56-10 shall be utilized. These enclosure systems may be remote and shall be removed only after satisfactory clearance air monitoring results have been achieved.

E. For a disturbance within an interior space the following shall be installed as soon as possible: isolation barriers that conform to ICR Subpart 56-8.1(j), negative air and a barrier consisting of two (2) layers of six-mil poly separating the occupied areas from the work area.

F. Relief from ICR Subpart 56-6.1 (Ventilation) applies only to exterior disturbances.

G. If disturbance is outdoors all adjacent building openings within twenty-five (25) feet of the outermost limit of the disturbance shall be sealed with two (2) layers of six-mil fire retardant plastic sheeting.

H. For disturbances greater than ten (10) square feet or twenty-five (25) lineal feet an airlock shall be required at the entrance to the affected area. Workers shall double suit prior to entering the affected area. Prior to leaving the affected area the worker shall remove the outer suit in the airlock, don a new outer suit, and proceed directly to the remote personal decontamination unit.

I. For “minor” disturbances one (1) air test shall be taken inside and outside of each work area during and after abatement. For "small" disturbances three (3) air tests shall be taken inside and outside of each work area

during and after abatement. For “large” disturbances five (5) air tests shall be taken inside and outside of each work area during and after abatement.

J. After cleanup of the debris caused by the incidental disturbance, encapsulation of the affected areas shall be performed.

K. For disturbances involving pipe insulation, glove bags shall be used.

L. If air sampling results indicate any airborne asbestos fiber concentrations at or above 0.01 fibers per cubic centimeters work shall be stopped immediately, and methods shall be altered to reduce the asbestos fiber concentration.

M. All tools used during cleanup operations shall be decontaminated via wet wiping and HEPA vacuuming.

N. The contractor shall observe a four (4) hour waiting (settling/ drying) period prior to clearance air monitoring.

O. Due to the nature of this work background and pre-abatement air samples cannot be taken.

P. After completion of the drying period, an authorized and qualified individual, (i.e., the Project Monitor, Air Monitor or Design Engineer) shall inspect the abatement location for dryness and debris. Once the abatement area is inspected and determined dry and free of debris, clearance air tests may be performed.

Q. If air test results are unacceptable the abatement area shall be re-cleaned, a new settling period observed and the test rerun.

R. A copy of the APPLICABLE VARIANCE AV 105 shall be conspicuously posted at the entrance to the personal decontamination enclosure. All other applicable provisions of Industrial Code Rule 56-1 through 56-18 shall be complied.

XII. ASBESTOS REMEDIATION PROJECTS

A. All asbestos remediation projects shall comply with all of the provisions set forth in 29 CFR 1926.1101, 40 CFR 61, Subpart M and NYS Code Rule 56. The employers of contracted employees of Alcoa shall be wholly responsible for complying with the provisions of 29 CFR 1910.1001. If the work practices employed by the contractor cannot comply with the requirements of NYS Code Rule 56, then the contractor shall apply for a variance from the NYS Department of Labor Engineering Services Unit. The variance must be prepared by a NYSDOH Certified Project Designer.

B. Classification of Remediation Projects

1. Class I
   Class 1 is the removal of thermal systems insulation and surfacing asbestos containing material or presumed asbestos containing material. The removal of pipe insulation, elbows, thermal insulation around hot water heaters, and within furnaces are examples of Class I work.

2. Class II
   Removal of asbestos containing material which is not thermal system insulation or surfacing material. These include but is not limited to the removal of asbestos containing wallboard, floor tile and sheeting, roofing and siding shingles and construction mastics.

3. Class III
   Repair and maintenance operations where asbestos containing materials and possible asbestos containing materials including thermal systems insulation and surfacing materials, gaskets, asbestos containing vinyl floor tile, transite etc., may be disturbed.

4. Class IV
Maintenance and custodial activities during which employees contact but do not disturb asbestos containing material or possible asbestos containing material and activities to clean up dust, waste, and debris resulting from Class I, II and III activities.

C. Emergency Asbestos Project

1. An unexpected, unanticipated or unforeseen occurrence, including but not limited to, a steam, chemical gas or water line rupture, a boiler failure, or building collapse which poses

a) An imminent danger to the health and safety of the public, the response to which will constitute an asbestos project.

b) An asbestos related risk to the health and safety of the public from exposure to asbestos fibers.

D. Definition of Asbestos Project Size

1. Large Asbestos Project
Asbestos project involving the removal, disturbance, enclosure, encapsulation, or handling of 160 ft^2 or more of asbestos or asbestos material or 260 linear feet or more of asbestos or asbestos material.

2. Small Asbestos Project
As asbestos project involving the removal, enclosure, encapsulation, disturbance of friable asbestos or any handling of more than 10 and less than 160 ft^2 of asbestos or asbestos material or more than 25 and less than 260 linear feet of asbestos or asbestos material.

3. Minor Asbestos Project
An asbestos project involving the removal, disturbance, repair, enclosure, encapsulation, or handling of 10 ft^2 or less of asbestos or asbestos material or 25 linear feet or less of asbestos or asbestos material.

E. Asbestos Project Notifications

1. Regulatory Agencies
a) If the project requires the removal of 260 linear feet or 160 $ft^{2\ of}$ asbestos containing material (Large Asbestos Project) the EPA Region II and the Asbestos Control Bureau of the New York State Department of Labor's Division of Safety and Health shall be notified and appropriate fees paid no later than 10 days prior to the commencement of the project. If the project is postponed or canceled the NYSDOL shall be notified by phone no later than one day prior to the original start date, followed by a written notice within 5 days for the NYSDOL and by the original start date for the EPA. If the project has been postponed, an amended notification form shall be submitted to the NYSDOL no later than three days prior to project commencement.

b) If a single asbestos project involves several locations in a building or area which do not involve 260 linear feet or 160 ft^2 of asbestos containing material, but which in total equal or exceed this amount, written notification shall be required. Each building will be considered a separate project for the purpose of meeting all the NYSDOL notification requirements. A separate project notification form and fee must be submitted for each building. All notifications to the NYSDOL and the EPA should be sent return receipt requested.

c) Emergency asbestos project notification may be submitted by contacting the Program Managers Office, Asbestos Control Bureau, in Albany, New York. See section 56-1.7 of NYS Code Rule 56 for more detail. In the case of an emergency EPA shall be notified no later than the following working day.

d) If the removal of asbestos containing material is performed using a method not recognized in 1926.1001 (g) (5) the method shall be evaluated by either a Certified Industrial Hygienist or a licensed Professional Engineer who is qualified as a project designer. If more than 25 linear or 10 ft^2 of asbestos are removed then the evaluation shall be sent to OSHA, Office of Technical Support, Room N3653, 200 Constitution Avenue, NW Washington, DC 20210.

2. Building Occupant Notification

a) The building occupants must be notified at least 10 days prior to the commencement of removal work unless the project is routine custodial maintenance. The building occupants must be notified prior to the removal of the asbestos by the following means;

(1) Posting and signs identifying the work zone. These signs must comply with the requirements of 1926.1101.

(2) Posting a building notification on all entrances to the work area

F. Personal and Area Air monitoring

1. Personal Exposure Monitoring

a) All asbestos abatement (construction/demolition) projects conducted at the Alcoa facility shall include personal exposure monitoring conducted in accordance with Section VII B of this document with the following modifications:

(1) For Class I Projects, the employer shall assume that the employee's exposure to asbestos is in excess of the PEL/Excursion Limit unless a negative exposure assessment has been made on the current project.

(2) For Class I and II Asbestos Projects, the employer shall conduct daily exposure monitoring representative of each employee assigned to work within the regulated area performing Class I or Class II work. Monitoring shall continue for the project's duration or until a negative exposure assessment has been determined.

(3) For all other asbestos abatement projects other than Class I and Class II, the employer shall conduct periodic monitoring of all work where exposures are expected to exceed the PEL/Excursion Limit at intervals sufficient to document the validity of the exposure prediction.

b) Employers of abatement contractors shall be responsible for providing personal exposure monitoring services for their employees unless otherwise agreed to by Alcoa.

2. Area Monitoring

a) Full shift (8 hour) area monitoring for asbestos is required by NYSDOL Code Rule 56 at a frequency determined by the size of the asbestos project. All area monitoring will be conducted and analyzed by a licensed outside laboratory following approved methods described in 29 CFR 1926.1101. The air monitoring firm and laboratory must be separate

from the abatement contractor and hired directly by Alcoa. The following table indicates the type of area samples required for each project size.

Project Size	Background	Area Preparation Pre-Project	Project Work in Progress	Post-Abatement Clearance
Large Project >160 ft^2 or 260 lf	YES	YES	YES	YES
Small Project 10-160 ft^2 or 25 -260 lf	YES	YES	NO	YES
Minor Project[1] <10 ft^2 or 25 lf	NO	NO	NO	YES, if enclosure integrity is breached
Unintentional fiber release	NO	NO	YES	YES

XIII. Minor Projects do not include routine custodial maintenance.

A. Pre- and Post- Abatement Sampling
When required, these samples will be collected as follows:

(1) At least 12 hours following any wet cleaning procedures are completed and where there is no visible signs of pooled liquid or condensation.

(2) For Large Projects at least 5 samples from within the containment area and 5 samples from outside the containment area will be collected. One additional sample will be collected within the containment for each additional 5000 ft^2 over 25000 ft^2 of contained area.

(3) For Small Projects 3 samples from within the containment area and 3 samples from outside the containment area will be collected.

(4) Sampling locations will be placed at random around and inside the containment area, remote from obstructions and away from corners of rooms. If possible, one sample shall be collected from each room of the contained area.

(5) Outside sampling locations shall be placed within 50 feet for the containment entrance (one sample) and within 25 feet from the containment barriers (the remainder of the samples).

(6) Aggressive sampling techniques shall be used for all Clearance Monitoring. A leaf blower or fan will agitate the containment room air for 5 minutes for every 1000 ft^2. A running fan will be placed in the center of the area pointing toward the ceiling for the duration of the sampling period.

(7) *A variance from aggressive air monitoring may be obtained from the NYSDOL if normal dust and debris within the building will blind the samples. A petition for the variance must be submitted to the NYSDOL prior to commencement of the* job.

(8) Negative air blowers will be adjusted to allow no more than 2 room air changes per hour.

B. Work in Progress Sampling
When required, these samples shall be collected daily outside the containment area as follows:

(1) A minimum of 2 samples shall be collected within 10 ft of the isolation barriers. Where negative ventilation exhaust ducts run through uncontaminated areas, one of the area samples shall be collected in one of these areas.

(2) One area sample will be collected within 10 ft of each containment entrance/exit and of each personal decontamination and waste decontamination enclosure.

(3) One sample shall be collected outside the building or structure.

(4) One area sample shall be collected within 10 ft of each unobstructed, negative pressure ventilation equipment exhaust

C. Interpretation of results

1. During abatement activities
If air samples collected outside the work area or enclosure exceed 0.01f/cc or background, whichever is greater, work shall stop immediately for inspection and repairs of the barriers. Cleanup of surfaces outside the work area using HEPA vacuums and/or wet cleaning methods shall be performed prior to the resumption of abatement activities.

2. Clearance Monitoring
Clearance monitoring results are satisfactory when every sample demonstrates an airborne concentration of asbestos fibers of 0.01 f/cc or background whichever is greater. Work areas failing the clearance monitoring shall be re-cleaned and resample.

XIV. WORK PRACTICES

A. Prohibited Work Practices
B. The following work practices and engineering controls shall not be used for work related to or for work, which disturbs ACM or PACM, regardless of measured levels of asbestos exposure or the results of initial exposure assessments:

1. High-speed abrasive disc saws without a point of cut ventilator or enclosures with HEPA filtered exhaust air.

2. Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air.

3. Dry sweeping, shoveling or other dry clean-up of dust and debris containing ACM and PACM.

4. Employee rotation as a means of reducing employee exposure to asbestos.

C. Class I Abatement Work Practices and Requirements

1. General Requirements
2. The following engineering controls and work practices and procedures shall be used for all Class 1 Projects.

a) All persons performing Class I work shall wear a NIOSH approved respirator with a HEPA filters, full body disposable coveralls, and boot covers or rubber boots

b) A regulated area shall be established using critical barriers, barrier tape, and/or signs. The method for establishing the regulated area is dependent upon the type of removal work.

c) All Class I work, including the installation and operation of the control system, shall be supervised by a New York State Certified Asbestos Supervisor. All Class I asbestos work shall be performed by a New York State Certified Asbestos Handler.

d) For all Class I jobs involving the removal of more than 25 linear or 10 ft^2 of thermal system insulation or surfacing material. For all other Class I jobs, without a negative exposure assessment, or where Alcoans are working in areas adjacent to the regulated area, while the Class I work is being performed, one of the following methods to ensure that airborne asbestos does not migrate from the regulated area shall be used:

e) Critical barriers shall be placed over all the openings to the regulated area, except where activities are performed outdoors; or another barrier or isolation method which prevents the migration of airborne asbestos from the regulated area, as verified by perimeter area surveillance during each work shift at each boundary of the regulated area, showing no visible asbestos dust; and perimeter area monitoring showing that clearance levels contained in 40 CFR Part 763, Subpart. E, of the EPA Asbestos in Schools Rule are met, or that perimeter area levels, measured by Phase Contrast Microscopy (PCM) are no more than background levels representing the same area before the asbestos work began. The results of such monitoring shall be made known to the employer no later than 24 hours from the end of the work shift represented by such monitoring. Exception: For work completed outdoors where employees are not working in areas adjacent to the regulated areas. Construction of critical barriers shall comply with the requirements of Code Rule 56 Sections 8, 9, 10

f) HVAC systems shall be isolated in the regulated area by sealing with a double layer of 6 mil flame retardant plastic or the equivalent.

g) Impermeable 6 mil flame retardant plastic drop cloths shall be placed on surfaces beneath all removal activity.

h) All objects within the regulated area shall be covered with 6 mil flame retardant impermeable plastic sheeting and secured by duct tape.

3. Negative Pressure Enclosure (NPE) systems
4. NPE systems shall be used when feasible and complying with following specifications and work practices.

a) The negative pressure enclosure (NPE) must comply with the specifications of NYS Code Rule 56.

b) At least 4 air changes per hour shall be maintained in the NPE,

c) A minimum of -0.02 column inches of water pressure differential, relative to outside pressure, shall be maintained within the NPE as evidenced by manometric measurements,

d) The NPE shall be kept under negative pressure throughout the period of its use. A backup negative air machine shall be in place at all times and ready to operate

e) Air movement shall be directed away from employees performing asbestos work within the enclosure, and toward a HEPA filtration or a collection device.

f) Before beginning work within the enclosure and at the beginning of each shift, the NPE shall be inspected for breaches and smoke-tested for leaks, and any leaks sealed. Results of daily inspections and any applicable corrections shall be noted in daily project logs.

g) Electrical circuits in the enclosure shall be deactivated, unless equipped with ground-fault circuit interrupters.

5. Mini-enclosure
6. A small walk-in enclosure accommodating no more than two persons (mini-enclosure) may be used if the disturbance or removal can be completely contained by the enclosure with the following specifications and work practices. Use of mini-enclosures shall comply with NYS Code Rule 56.

a) The fabricated or job-made enclosure shall be constructed of 6 mil flame retardant plastic or equivalent.

b) The enclosure shall be placed under negative pressure by means of a HEPA filtered vacuum or similar ventilation unit:

c) Before use, the mini-enclosure shall be inspected for leaks and smoke-tested to detect breaches, and breaches sealed

d) Before reuse, the interior shall be completely washed with amended water and HEPA-vacuumed.

e) During use, air movement shall be directed away from the employee's breathing zone within the mini-enclosure

7. Glove bags
8. Glove bag systems may be used to remove PACM and/or ACM from straight runs of piping and elbows and other connections with the following specifications and work practices. The use of glove bags or boxes shall comply with the requirements of NYS Code Rule 56 Section 16.1 b.

D. Class II Abatement Work Practices and Requirements
E. All Class II Asbestos Projects shall be supervised by a competent person as defined in 29 CFR 1926.1101 (b) For indoor Class II Asbestos Projects where Alcoa is unable to demonstrate negative exposure assessments or where the ACM is not removed substantially intact, the following work practices to ensure that airborne asbestos does not migrate from the regulated areas. The construction and use of these work practices shall comply with the provisions of Code Rule 56.

1. General Requirements
2. Unless the following specific work practices suggest otherwise, the following shall be performed on all Class II Asbestos Projects:

a) Critical barriers shall be placed over all openings to the regulated areas.

b) For all Class II jobs, impermeable 6 mil flame retardant plastic drop cloths shall be placed on surfaces beneath all removal activity.

c) All ACM shall be thoroughly wetted with amended water prior to and during removal.

d) The material shall be removed in an intact state unless this is not possible.

e) Cutting, abrading or breaking the materials shall be prohibited unless it is unavoidable.

f) ACM shall be immediately bagged or wrapped, or kept wetted until transferred to a closed container, no later than the end of the work shift.

3. Vinyl Floor Tile
4. For removing vinyl and asphalt flooring materials containing ACM or flooring installed prior to 1980 for which no information is available.

a) Flooring or its backing shall not be sanded.

b) Vacuums equipped with HEPA filter, disposable dust bag, and metal floor tool (no brush) shall be used to clean floors.

c) Resilient sheeting shall be removed by cutting with wetting of the snip point and wetting during delamination. Rip-up of resilient sheet floor material is prohibited.

d) All scraping of residual adhesive and/or backing shall be performed using wet methods.

e) Dry sweeping and mechanical chipping is prohibited.

f) Tiles shall be removed intact, unless the employer demonstrates that intact removal is not possible.

g) When tiles are heated and can be removed intact, wetting may be omitted.

h) Resilient flooring material including associated mastic and backing shall be assumed to be asbestos-containing unless an industrial hygienist determines that it is asbestos-free using recognized analytical techniques.

5. Roofing material
6. NYS Code Rule 56 requires that persons who remove and supervise the removal of asbestos containing roofing materials be a State certified handler or supervisor. Applicable Variances to NYS Code Rule 56 (AV 88, AV 90) give conditions for conducting an ACM roof and/or roof flashing removal without the use of isolation barriers and their associated ventilation and cleanup requirements. For removing roofing material containing asbestos the following work practices shall be followed:

a) Roofing material shall be removed in an intact state to the extent feasible. OSHA defines intact as roofing material that is still bound in its binding matrix. A material is non-intact if it has deteriorated to such a point that asbestos fibers can be released when the material is crumbled or pulverized.

b) Wet methods shall be used to remove roofing materials that are not intact, or that will be rendered not intact during removal, unless such wet methods are not feasible or will create safety hazards. Roofing material is said to be removed intact if the material is intact prior to its removal and when hand tools such as knives, spuds, pry bars, crow bars, shovels, spades and axes are used in accordance with standard practice in the roofing industry.

c) Cutting machines shall be continuously misted during use, unless a competent person determines that misting substantially decreases worker safety.

d) When removing built-up roofs with asbestos-containing roofing felts and an aggregate surface using a power roof cutter, all dust resulting from the cutting operation shall be collected by a HEPA dust collector, or shall be HEPA vacuumed by vacuuming along the cut line When removing built-up roofs with asbestos-containing roofing felts and a smooth surface using a power roof cutter, the dust resulting from the cutting operation shall be

collected either by a HEPA dust collector or HEPA vacuuming along the cut line, or by gently sweeping and then carefully and completely wiping up the still-wet dust and debris left along the cut line.

e) Asbestos-containing material that has been removed from a roof shall not be dropped or thrown to the ground. The material shall be carried or passed to the ground by hand, lowered to the ground via covered, dust-tight chute, crane or hoist

f) Any ACM that is not intact shall be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift. While non-intact material remains on the roof it shall either be kept wet, placed in an impermeable waste bag, or wrapped in plastic sheeting. Intact material does not need to be wrapped while on the roof.

g) Intact ACM shall be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift

h) Upon being lowered, unwrapped material shall be transferred to a closed receptacle in such manner so as to preclude the dispersion of dust.

i) Roof level heating and ventilation air intake sources within the work area shall be sealed with 2 layers of 6 mil plastic sheeting. Other air intakes outside the work are may require sealing depending upon circumstances of the job. The asbestos supervisor shall evaluate each situation.

7. The following pertain to roofing projects as they are regulated by NESHAP (40 CFR 61, Subpart M).

(a) NESHAP defines roofing as a renovation project unless it is performed as a precursor to the demolition of a building. Renovation projects not involving friable asbestos are not subject to the requirements of NESHAPS. All demolition projects require at least NESHAP notifications.

(b) NESHAP defines non-friable materials based on the potential to release fibers as: Category I - gaskets, packings, resilient floor coverings and their mastic, asphalt roofing products (e.g., built-up roofing, asphalt containing single ply membrane systems, asphalt shingles, asphalt underlayment felts asphalt containing coatings and mastics, asphalt base flashing).

(c) Category II - All other non-friable ACM such as asbestos-cement shingles, ACM tiles, transite boards or panels.

(d) If the renovation involves Category I materials only, and they will not be abraded as defined by the regulation, then NESHAP does not apply. If the materials will be abraded and the project is less than 5580 square feet than NESHAP does not apply.

(e) All Category II projects less than 160 ft^2 are not subject to NESHAP.

(f) Any Category II project of any size where less than 160 ft^2 of material is damaged/made friable with mechanical devices (see regulation) or contaminated by ACM from another source is not subject to NESHAP

(g) For Category II projects dropping or sliding shingles to the ground shall be considered abrading and will therefore result in NESHAP regulation.

(h) Several exemptions from wet removal requirements are listed in the regulation appendix.

8. Cementations asbestos-containing siding and shingles (other than roofing), transite work practices

a) Cutting, abrading or breaking siding, shingles or transite panels is prohibited.

b) Each panel or shingle shall be sprayed with amended water prior to removal.

c) Unwrapped or unbagged panels or shingles shall be immediately lowered to the ground via covered dust-tight chute, crane or hoist, or placed in an impervious waste bag or wrapped in plastic sheeting and lowered to the ground no later than the end of the work shift.

d) Nails shall be cut flat with sharp instruments.

F. Class III Work Practices and Requirements

1. The following work practices shall be instituted for all Class III Asbestos Projects:

a) Work shall be performed using wet methods.

b) To the extent feasible, the work shall be performed using local exhaust ventilation.

c) Where the disturbance involves drilling, cutting, abrading, sanding, chipping, breaking or sawing of thermal system insulation, or surfacing material, Alcoa shall use impermeable drop cloths and shall isolate the operation use mini-enclosures or glove bag systems.

2. Gaskets work practices.

a) If the condition of the gasket indicates that it is unlikely to be removed intact, the removal shall be undertaken within a glove bag.

b) The gasket shall be immediately placed in an appropriate disposal container.

c) Any scraping to remove residue shall be performed wet.

G. Class IV Work Practices and Requirements Practices

H. All Class IV Projects shall be conducted following the requirements set out in the beginning of this section mandating the use of wet methods, HEPA vacuums, and prompt cleanup of debris containing ACM or PACM. Employees cleaning up asbestos containing materials in regulated areas requiring the use of respirators for Class I, II, or III work shall also wear respirators.

XV. PERSONAL PROTECTIVE EQUIPMENT

A. Respiratory Protection

1. Where the use of engineering controls and work practices does not adequately reduce employee's exposure to ACM or PACM, Alcoa shall provide respiratory protection equipment and training to their employees in accordance with the requirements of 29 CFR 1910.1001 The administration of respiratory protection at the Alcoa facility is detailed in the plant Respiratory Protection Program.

2. Respirators shall be worn in the following asbestos abatement conditions:

a) All Class I Projects,

b) Class II projects where the ACM or PACM is not removed substantially intact.

c) Class II and III projects where the work is being performed by dry methods, except on sloped roofs where a negative exposure assessment has been made and the ACM is being removed intact.

d) During all Class III projects where thermal system insulation or surfacing ACM or PACM is being disturbed.

e) During all Class IV projects were other persons within the regulated areas are performing work that requires the use of respirators.

f) During any project where airborne concentrations of asbestos exceed the PEL/Excursion Limit.

g) In Emergencies/Incidental Disturbances

B. Protective Work Clothing/Hygiene Facilities

1. The contractor shall issue disposable protective work clothing, including, coveralls, foot coverings, and gloves to all employees involved in asbestos abatement These garments will be appropriately disposed of at the conclusion of each work period.

2. Additionally, the contractors will provide all of the above-described employees with clean changing rooms, shower facilities, and lunch/break rooms.

XVI. WASTE DISPOSAL

A. Disposal of Asbestos waste shall be accomplished following the requirements of NYS Code Rule 56, NYS Code Rule 360 Title 6, 29 CFR 1910.1001, 29 CFR 1926.1101, and 40 CFR 61 Subparts A and M(NESHAPS). Additionally, the following work practices shall be observed.

1. Asbestos waste shall be containerized as it accumulates throughout the work period and at the end of each work shift.

2. Discharge no visible emissions to the outside air from collection, mixing wetting and handling operations, or control emissions to the outside air by means of negative air procedures.

3. Waste containers shall be double layered 6 mil plastic bags or equivalent, appropriately labeled as containing asbestos fibers and with the facility name and location. The primary waste container shall be decontaminated prior to placement into the secondary container. The containers shall be airtight, and dust tight. Where asbestos has sharp edges or must be broken down to fit into bags, the waste may be wrapped with 6 mil plastic. Class II roofing material shall be containerized in appropriately labeled bins that shall prevent the migration of dust (no plastic bags/wrapping necessary). An example of the all container labels is:

B. DANGER
C. CONTAINS ASBESTOS FIBERS
D. AVOID CREATING DUST
E. CANCER AND LUNG DISEASE HAZARD

1. Holding containers/trucks for waste storage and transportation shall be labeled as containing asbestos and with the facility name and location and shall be water and dust tight. These containers

shall remain closed and locked at all times when the transfer of waste is not in process. The outside of the containers shall be cleaned of asbestos dust daily.

2. Asbestos may only be transported by a NYSDOT permitted asbestos waste hauler. All waste loads must be transported under the appropriate waste manifest.

Date of Review:	8/1/2023	Date of Next Review:	8/1/2026
Reviewed By:	Hugh Palmer		
Approved by (SPA or Manager):	Hugh Palmer		
NOTE: Programs to be reviewed every 3 years.			
Revision Table:			
Revision Made by:	Date:	Describe Revision Made:	
Hugh Palmer	8/1/2023	Added new Revision chart	
Jonathan Hewitt	8/2/2023	Corrected Titles in Chart.	
Hugh Palmer	8/1/2024	Annual review	
Hugh Palmer	8/1/2025	Annual review	
Hugh Palmer	3/172026	Annual review	

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EMERGENCY MEDICAL AGREEMENT

This Emergency Medical Agreement (this "**Agreement**"), is made and entered into on {Date}, by and between **Alcoa USA Corp** ("Company"), and {Name of Seller}, a {state of incorporation} corporation ("Seller").

BACKGROUND

Seller has undertaken to perform {describe services performed by Seller} in accordance with {Purchase Order Number or Reference Contract} for Company on the premises of Company at {location} (the "**Premises**"), using Seller's employees ("**Seller's Employees**").

Company is willing to make available its Emergency Response Team for the emergency medical treatment of Seller's Employees who may be seriously injured or become seriously ill while working on the Premises.

THE AGREEMENT

Section 1: Definitions

1.1 **Medical Emergency** means a sudden, unexpected health event that may threaten life, limb or well-being, including, without limitation: multiple system trauma, eye trauma, open fractures, dislocations with neurovascular compromise, third degree burns, facial or inhalation burns, severe burns, anaphylaxis (extreme allergy), chest pain suggesting cardiac disease, chest pain with dyspnea or loss of consciousness, loss of consciousness or seizures, acute toxic inhalation or ingestion exposures, bleeding from any orifice except menses and minor epistaxis, obstetrical emergencies, altered mental status and psychiatric emergencies.

1.2 **Emergency Medical Treatment** means the initial treatment and care provided to Seller's Employees that suffer a Medical Emergency, such Emergency Medical Treatment may include, without limitation, first aid and cardiopulmonary resuscitation ("**CPR**").

1.3 **Company Emergency Response** means a Company employee or an independent contractor hired by Company who is designated by Company to provide Emergency Medical Treatment and such Company Emergency Response team is certified to provide Emergency Medical Treatment.

Section 2: Seller's Medical Provider

Seller must designate a medical care facility that Company can send Seller's Employee to for non-Emergency Medical Treatment ("**Seller's Medical Provider**"). If Seller has difficulty in designating Seller's Medical Provider, Company will help Seller designate one, however, Company's help in designating Seller's Medical Provider will not be considered an endorsement or recommendation of Seller's Medical Provider. If Seller does not designate Seller's Medical Provider, Seller's Employee will be sent to the nearest medical provider. Company's choice of

medical provider will not be considered an endorsement or recommendation of that medical provider.

Section 3: Medical Attention

3.1 If a Company Emergency Response Technician (ERT), in his or her sole discretion, determines that Seller's Employee has suffered a Medical Emergency while on the Premises, a Company ERT may provide Emergency Medical Treatment to the injured Seller's Employee. If Seller's Employee suffering a Medical Emergency is in need of transportation to a medical facility, Company will call a public ambulance to take Seller's Employee to the nearest medical facility to the Premises or Company will provide the transportation in accordance with Section 4. If, however, Company's ERT, in his or her sole discretion, determines that Seller's Employee has *not* suffered a Medical Emergency, a Company ERT will refer Seller's Employee to Seller's Medical Provider or some other medical provider as set forth in Section 2.

3.2 Seller's Employees are strictly prohibited from seeking medical care for any ailment that is not a Medical Emergency. If a Company ERT, however, treats Seller's Employee that did not suffer a Medical Emergency, Seller agrees to indemnify and release Company for the medical treatment in accordance with Section 5.

3.3 It is the intention of the parties that the "Good Samaritan" statute or any equivalent law, regulation or rule will apply to Emergency Medical Treatment rendered by any Company Medical Person on any Seller's Employees.

3.4 Company will neither have control over nor have responsibility in any manner for any subsequent or concurrent medical treatment Seller's Employee may receive from other non-Company emergency care personnel, personnel at Seller's Medical Provider, or any other non-Company person.

Section 4: Use of Ambulance Service

4.1 If a Company Medical Person determines that Seller's Employee requires emergency transportation to a physician, any other medical facility, and no public ambulance, or vehicle owned by Seller is immediately available for the transportation, ERTs will not transport under any circumstance, public ambulance is the only transport.

4.2 Seller's Employee who is transported to a medical facility or physician, in a vehicle furnished by Company will be accompanied by at least one representative of Seller who will be solely responsible for the moving and/or assistance of Seller's Employee.

4.3 Seller agrees to waive, release and discharge Company, its Medical Persons, officers, employees, agents and representatives from any and all claims and demands of any kind or character that Seller or Seller's Employee then has, or can subsequently acquire against Company, its successors and assigns, for or on account of emergency transportation

provided by Company under Section 4 of this Agreement. This release will survive any termination or expiration of this Agreement.

Section 5: Indemnification & Release

5.1 Seller will indemnify, defend and save harmless Company, its Medical Persons, officers, employees, agents and representatives from any and all liability, claims, loss, damage, expense, cost, including attorneys' fees, for injury, including death, to persons, including Seller's Employees, or damage to or loss of property arising out of or related to Emergency Medical Treatment or any other medical treatment rendered to Seller's Employee under this Agreement. This indemnification will survive any termination or expiration of this Agreement.

5.2 Seller agrees to waive, release and discharge Company, its Medical Persons, officers, employees, agents and representatives from any and all claims and demands of any kind or character that Seller or Seller's Employees then has, or can subsequently acquire against Company, its successors and assigns, for or on account of any matter or anything arising out of, or in any manner connected with the provision of Emergency Medical Treatment or any other medical treatment by Company Medical Persons. This release will survive any termination or expiration of this Agreement.

Section 6: Electronic Commerce

At Company's request, Company and Seller will facilitate business transactions by electronically transmitting data. Any data digitally signed pursuant to this section and electronically transmitted will be as legally sufficient as a written, signed, paper document exchanged between the parties, notwithstanding any legal requirement that the data be in writing or signed. Each authorized representative of a party will adopt a unique, verifiable digital identification consisting of symbols or codes to be transmitted with each transmission. Use of the digital identification will be deemed for all purposes to constitute a "signature" and will have the same effect as a signature on a written document.

Section 7: Miscellaneous

6.1 Term. This Agreement will remain in full force and effect for the duration of the services provided by Seller to Company under {Purchase Order number or Reference Contract}.

6.2 Assignment. Neither party may assign this Agreement without the express written consent of the other party and any such attempted assignment, whether by operation of law or otherwise, will be void; except, however, Company may assign this Agreement to any related entity without Seller's consent.

6.3 Governing Law. This Agreement is governed by and interpreted in accordance with the laws of the Commonwealth of Pennsylvania, except any laws relating to choice or conflicts of law.

6.4 Amendments. This Agreement may not be amended or modified except by an instrument in writing signed by a duly authorized officer of both parties.

6.5 Severability. If any one or more provisions of this Agreement are found to be illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions will not in any way be affected or impaired.

6.6 Entire Agreement. This Agreement sets forth the entire agreement and understanding between the parties with respect to its subject matter. Any oral representations or modifications concerning this Agreement will be of no force or effect unless contained in a subsequent written modification signed by a duly authorized officer of both parties.

6.7 Headings. The descriptive headings in this Agreement are for convenience only and will not control or affect the meaning, interpretation or construction or any provision of this Agreement.

6.8 Successors and Assigns. This Agreement will be binding upon and inure to the benefit of the parties and their respective successors and permitted assigns.

AGREED AND ACCEPTED:

[SELLER]	**ALCOA USA Corp.**
By:_____	By:_____
Title:_____	Title:_____
Date:_____	Date:_____

1.0 PURPOSE

This program specifies the methods by which the organization will identify, evaluate, and control lead in the workplace.

The objective of this program is to best manage potential exposure to lead in excess of the Action Level for personnel lead exposure.

2.0 SCOPE

Lead is a hazardous substance that may be taken into the body by the inhalation or ingestion of dust, vapors or fumes containing lead. Lead dust and fumes may be produced by the disturbance of lead-bearing materials. Most commonly these are painted metal surfaces, and lead based paints have, in the past, been used in many applications throughout Massena Operations. Experience with testing paint across the site has shown that many of the painted surfaces contain lead, either in the topcoat or in the layers of substrate paint and primer.

Lead may also be present in brass, bronze, solder, and other alloyed metals that may be handled in the course of maintenance or fabrication and / or refractory that had at one point in time been used with lead alloys such as but not limited to 2011.

This mandatory procedure applies to all construction and maintenance work performed on-site, and at any remote locations owned or operated by Massena Operations, where exposure to lead may arise from the disturbance of lead-containing materials.

For the purpose of this program, any material with lead as an intentional component of the material, regardless of the percent of composition, shall be classified as “lead-containing,” and the provisions of this program shall apply. Additionally, all coated surfaces will be PRESUMED to contain lead unless or until it can be proved otherwise.

3.0 RESPONSIBILITIES

3.1 **Location and Department Management** will ensure the overall requirements of this procedure in relation to employee, contractor and environmental protection are carried out.

3.2 **Industrial Hygiene** will:

Advise Massena management with the intent of avoiding occupational lead exposure in excess of the Action Level (0.030 mg/M^3 8-Hr.TWA),

- Ensure appropriate airborne monitoring is performed.
- Identify personnel who are exposed over the Action Level to Massena Medical.
- Provide training materials for lead awareness and exposure management.
- Review and approve the required lead exposure control plans of departments and contractors who must perform work that presents a risk of lead exposure.
- Retain all generated employee lead exposure records and make them available to employees and their designees upon request.

3.3 **Supervisors and Planners** will ensure that the presence of lead, in coatings and materials that may be disturbed during the course of planned maintenance work, is known. This will be performed in a timely manner to provide the opportunity to either remediate the lead-containing coating, or establish special procedures, prior to the work being performed. They may request assistance from Industrial Hygiene for this.

3.4 In relation to lead, **Employees** will comply with instructions provided to them that are consistent with the intent and provisions of this program. This may include the following:

- Wear all personal protective equipment specified for the job.
- Comply with special work procedures related to lead.
- Notify their supervisor if scheduled work presents the risk of disturbing lead-containing materials.

3.5 **Procurement** will prohibit the purchase of any known lead-containing products without the consent of industrial hygiene. In the event that non-lead containing substitutes are not available, written approval from Industrial Hygiene is required prior to purchase. Procurement may require the Requisitioner to obtain this approval.

Contracts for lead abatement will provide for suspension of the work, without penalty to Alcoa, upon observation of nonconformance with the procedural and regulatory safety and health requirements. Once the nonconformance and/or regulatory safety and health requirement has been corrected the contractor shall resume work.

3.6 **Massena Medical** will offer all necessary medical surveillance to Alcoans identified by Industrial Hygiene as being exposed over the Action Level. Medical will generate and retain all records of medical surveillance required by Alcoa and regulations. Medical will make available upon request to employees, and their designees, all site-available medical surveillance records pertaining to

occupational lead exposure resulting from employment at Massena Operations. Medical surveillance for personnel, contractors, subcontractors, and contracted services shall be performed in accordance with EHS STD 70.27.

4.0 IDENTIFICATION OF LEAD-CONTAINING MATERIALS

Lead based paints have been used at Massena, and in many cases still exist underneath layers of newer lead-free paint. Prior to work being performed that will disturb the paint on a painted surface, if the lead content of the surface coating is unknown, or in doubt, then testing must be conducted to determine if lead is present.

Certain solders and alloys of brass and bronze also contain lead. These materials may also be identified by proper use of the Lead Check® swab. Work with these materials is usually performed during maintenance work or in the fabrication of tools or machine parts.

The use of Lead Check® swab is a quick method to determine if lead is present. *This method, however, can give false results if improper techniques are used. Only personnel who have thoroughly read, understood, and precisely follow the procedures in Appendix 1, may use the Lead Check® swabs.* Training is available from Industrial Hygiene upon request.

When the presence of lead is suspected despite negative results from a Lead Check® swab test, laboratory analysis shall be used to verify the presence of lead. A laboratory that is accredited by the American Industrial Hygiene Association shall do analysis of these samples. Reference decision tree located in this document, for tasks that are less than two hours in duration.

5.0 HAZARD CONTROL

5.1 Restricted Work on Lead-Containing Coatings and Materials

The following processes are not permitted on lead-containing paints/coatings without prior written, job-specific approval from Industrial Hygiene:

- Welding
- Lancing/air-arc gouging
- Torch cutting
- Grinding
- Sanding
- Needling
- Chipping
- Burning

- Power sawing
- Any other process that creates fume or particles small enough that they may become airborne.

5.2 Unrestricted Work on Lead-Containing Materials

The following process may be performed on lead-containing paints and coatings with prior notification sent to Industrial Hygiene. Industrial Hygiene shall be given enough prior notice to provide them the opportunity to observe or assess the potential for exposure. Their pre-job assessment will identify additional training, personal protective equipment, and disposal requirements where appropriate.

- Chemical removal of coatings
- Shearing of painted or alloyed sheet metal
- Removal of painted nuts/bolts with impact tools

5.3 Abatement of Lead Coatings

Prior to any processes outlined in Section 5.1 being performed on lead-coated materials, the lead-containing coating shall be safely removed. Lead removal by abrasive blasting, chipping, grinding, sanding, scraping, and scaling may only be performed by a competent person that is qualified and equipped to safely abate lead-containing coatings. Such individuals shall be qualified by the standard Alcoa Procurement Contractor Qualification process. Lead removal by chemical methods, that do not create fine particulate that may become airborne, may be performed by Massena Alcoans and by contractors with prior notice to Industrial Hygiene, as per section 5.2.

Prior to welding or torch-cutting on lead-coated materials, all lead-bearing coatings shall be removed for a distance of at least four inches from the point of operation, or whatever distance is necessary to keep the coating from burning from the heat of the operation. After these coatings have been removed as above, the point of operation will not be considered lead coated.

5.4 Preferred Work Processes

Work processes that do not result in the creation of fine particles or fumes shall be used, where feasible, in preference to processes that do. Examples include:

- Chemical removal of paint rather than mechanical or thermal methods.
- Removing painted bolts with a wrench instead of cutting off bolt heads with a torch or cutting wheel.
- Shearing painted metals or lead-bearing alloys instead of sawing or torch-cutting.
- Drilling painted metals, provided that the drill is sharp enough and cooled with enough oil to eliminate the burning of the paint from the heat of drilling. The paint flakes generated by this process must be collected and properly disposed of in conformance with the provisions supplied by the Massena Environmental Department.

Under most circumstances Industrial Hygiene can assess this work as non-lead-exposing, thus permitting the work to proceed with minimal additional precautions against lead exposure.

5.5 Unusual or First-Time Work

Industrial Hygiene shall be consulted for all first-time or unusual work on lead-bearing or coated materials. IH participation in a PESHR or Health Hazard Work Permit can fulfill this requirement.

Routine jobs with established Safe Work Instructions or Safe Job Procedures may be performed without a specific Industrial Hygiene review each time. All SWI/SJP precautions and procedures intended to control lead exposure must be reviewed and approved by Industrial Hygiene.

5.6 Special Situations

All maintenance work that is unavoidable and has the potential to expose personnel to levels at or above the Action Level (0.030 mg/M^3 8-Hr.TWA), shall be performed only with the prior written consent of Massena Industrial Hygiene. Time shall be reserved to establish a written exposure control plan and for extensive preparations, including exposure monitoring, medical surveillance, lead training, PPE selection, respirator user certification and waste disposal preparations.

6.0 CONTRACTORS

Contractors shall not bring lead-containing materials on site without the prior approval of Industrial Hygiene. The Alcoan hosting the contractor is responsible for knowing what the contractor will be bringing onto the plant site and for contacting Industrial Hygiene for assistance if necessary.

Where contracted work is likely to disturb lead-containing materials, the Alcoan responsible for the contractor shall inform the contractor of the presence of lead and shall require the contractor to handle these materials in accordance with all State and Federal regulations, Alcoa EHS Standards, and Massena Operations' Policy and Procedures. Under these conditions, the contractor shall provide a written exposure control plan that is acceptable to Massena Industrial Hygiene prior to the commencement of the work. Adequate time shall be provided for Industrial Hygiene to review the plan and provide a written response.

The contractor shall comply with all federal, state, and local regulations governing the lead work. Included, in the regulations that apply, may be a requirement for representative monitoring of employee lead exposures. The contractor shall provide for this exposure monitoring, and share the results with Massena Industrial Hygiene, including the full names of the exposed contractor's employees and the dates of the work.

Massena EHS professional monitor the contractor's work. Observed nonconformance to the contract requirements for compliance with procedures and regulations may result in suspension of the work.

7.0 RECORD KEEPING

All laboratory analytical results must be retained in permanent files by the department performing the test. This is to document the appropriateness of work practices, relative to lead, which are used on coated surfaces. It is recommended that one central file maintained by the department safety coordinator be used for this purpose.

Industrial Hygiene shall indefinitely retain all employee lead exposure test results that are generated by Massena Industrial Hygiene and those that are provided by contractors under section 6.0.

All employee medical surveillance records performed under this program must be retained for the duration of employment plus 30 years.

APPENDIX A Use of Lead Check® Swabs

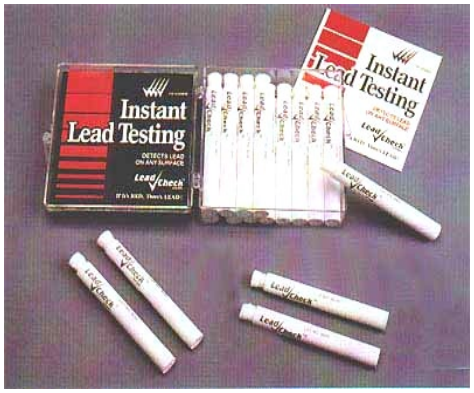
A.1 GENERAL PROCEDURES FOR ALL APPLICATIONS

1. Use disposable impervious gloves. Vinyl gloves are recommended, but other thin, impervious, disposable gloves are acceptable.
2. Collect any paint flakes generated by this cutting (including any adhered to the knife blade) with a dampened paper towel and retain the towel in a small, zippered plastic bag.
3. If the test is negative, perform the quality check as instructed by the manufacturer. The swab, paper towel and disposable gloves may be thrown away in the regular garbage.
4. If the test is positive, place the test swabs and the disposable gloves in the bag with the paper towel, and contact the Environmental Department for disposal instructions.
5. Record the results of the test, including a description of the coating, substrate surface, building number and location (whatever is required to enable someone else to identify the test material later). Digital pictures of the material and swab response are encouraged, but not mandatory.
6. Notify the appropriate personnel of the test results. This may include the supervisor of the work crew assigned to perform the job on the coated surface, the department maintenance planner, and the area safety coordinator.

When coatings are cut through to test multiple layers, the substrate is exposed. If this surface is outdoors, or in a hostile environment, it may be desirable to reseal the surface. Consult the owner of the structure or equipment.

A.2 PRINCIPLE OF METHOD

LeadCheck® Swabs are based on the reactivity of certain compounds capable of forming strongly colored complexes with lead. When LeadCheck® Swabs are used, a pink color that is specific for lead develops within 30 seconds and is stable for hours.



A.3 HOW TO ACTIVATE A LEADCHECK SWAB

Each LeadCheck® Swab requires that the two glass ampoules of non-hazardous chemicals be activated.

CRUSH - squeeze and crush points marked "A" and "B".

SHAKE AND SQUEEZE - Shake the swab twice and squeeze gently until yellow liquid comes to the tip - the swab is now activated and ready for testing.

RUB - While squeezing gently to keep the yellow liquid at the tip, rub the swab on the test area for 30 seconds.

A.4 SPECIFIC APPLICATIONS

LeadCheck® Swabs can be used to detect lead on many surfaces. Below are the applications for which LeadCheck® Swabs are intended at Massena Operations, and specific instructions on their use. [The manufacturer's instructions, below, have been abridged to reflect the usage of LeadCheck® Swabs at Massena Operations.]

1. General painted surfaces
2. Red painted surfaces
3. Lead chromate paint (bright yellow, orange, red or green)
4. Painted plaster, cement, or stucco surfaces.
5. Solder

A.4.1 General Painted Surfaces

Note: Surfaces that have been painted several times may have layers of lead paint underneath layers of non-leaded paint ensure that you are sampling all layers of paint down to the substrate.

Procedure:

1. If dirty, clean the surface with a household cleaner, rinse and dry.
2. Cut a small V-shaped notch (about ¼ inch long) to expose all painted layers down to the bare surface.
3. Activate a LeadCheck® Swab.
4. Rub the activated swab into the notch to determine if any of the paint layers contains lead.
5. Examine the swab tip and/or test surface for a color change to pink or red.

Interpretation:

1. If the swab and/or the test surface turn a pink to red color, the test is positive for lead. Only lead produces a pink to red color with LeadCheck® Swabs.
2. If the swab and or test surface did not turn pink or red, no hazardous level of lead was detected. Use the confirmation card to confirm that the LeadCheck® reagents were active (the circle on the card should turn bright pink).

A.4.2 Testing Red Painted Surfaces

It is important, when testing surfaces painted with red paint, to make sure that red pigment will not bleed from the paint surface onto the swab tip.

Procedure:

Using a white cloth, clean the red surfaces with a few drops of white distilled vinegar.

Interpretation:

If the cloth turns pink or red, the pigment will bleed onto the fiber tip of the swab. Contact Industrial Hygiene for assistance.

A.4.3 Lead Chromate Paint (Bright Yellow, Orange, Red or Green)

Marine and industrial paints can contain lead chromate pigments. Paints containing lead chromate pigments include colors that are bright yellow, red, orange and some greens. Paints that are pastel or neutral in color do not contain lead chromate pigments.

LeadCheck® Swabs will detect the lead in these paints but it will take longer for color to develop. In general, where lead chromate pigments are present the higher the lead chromate concentration the shorter the color development time.

Procedure:

Follow the general directions for testing a painted surface.

1. Cut a "notch" in the paint down to the substrate.
2. Activate a LeadCheck® Swab.
3. Rub swab tip on the test surface for about 30 seconds.

Interpretation:

1. If the swab tip does not turn pink, and a lead chromate pigment is suspected:
2. Squeeze a drop of fluid from the swab onto one of the dots on the Test Confirmation Card. DO NOT LET THE SWAB TIP TOUCH THE CARD!
3. If the drop of fluid turns the dot on the confirmation card pink, seal the swab in a zip-lock plastic bag for further observation.
4. Observe the tip of the swab and/or surface tested. If a lead chromate pigment is present, pink will appear on the test surface or swab tip in as few as 5 to 10 minutes, or as long as 18 hours depending on the lead chromate concentration in the paint.

A.4.4 Painted Plaster, Cement or Stucco Surfaces

Plaster has been widely used as the finish surface for interior walls for over 150 years. Composed primarily of calcium sulfate (hemihydrates), plaster may interfere with color development. It is possible, however, with care, to test for lead paint on plaster surfaces using LeadCheck® Swabs.

Procedure:

1. Cut a notch into the paint down to the surface (See Instructions). Do not break or scratch the plaster surface.
2. Clean the notch by brushing or blowing out any surface dust collected in the notched area.
3. Activate a LeadCheck® Swab.
4. Rub the swab tip into the notched area of the paint for about 30 seconds.
5. Check the swab tip, paint surface and paint edge for a pink to red color development.

Interpretation:

1. If no pink color develops, be sure to confirm the negative result by rubbing the swab tip onto a dot on the Test Confirmation Card supplied with the kit. If the confirmation card dot does not immediately turn pink the test is invalid - surface dust has likely prevented the color development. Re-clean the notch to remove all plaster dust, and repeat the test using a new LeadCheck® Swab.

A.4.5 Solder

LeadCheck® Swabs can be used to screen for lead solders used in plumbing. A swab quickly turns pink to red when testing commonly used tin/lead solders. LeadCheck® Swabs will not turn pink when testing 0.2%, or "lead free" solder.

Procedure:

1. Wipe the surface dirt off the solder joint of your pipe with a paper towel or cloth.
2. Rub the solder joint with an emery board or rough up the surface with a piece of sandpaper.
3. Activate a LeadCheck® Swab.
4. Squeeze the swab until a drop of the yellow/orange liquid drops onto the prepared solder surface.
5. Touch, **DO NOT RUB**, the swab tip to the wet solder surface and dab gently for ten seconds or less*.

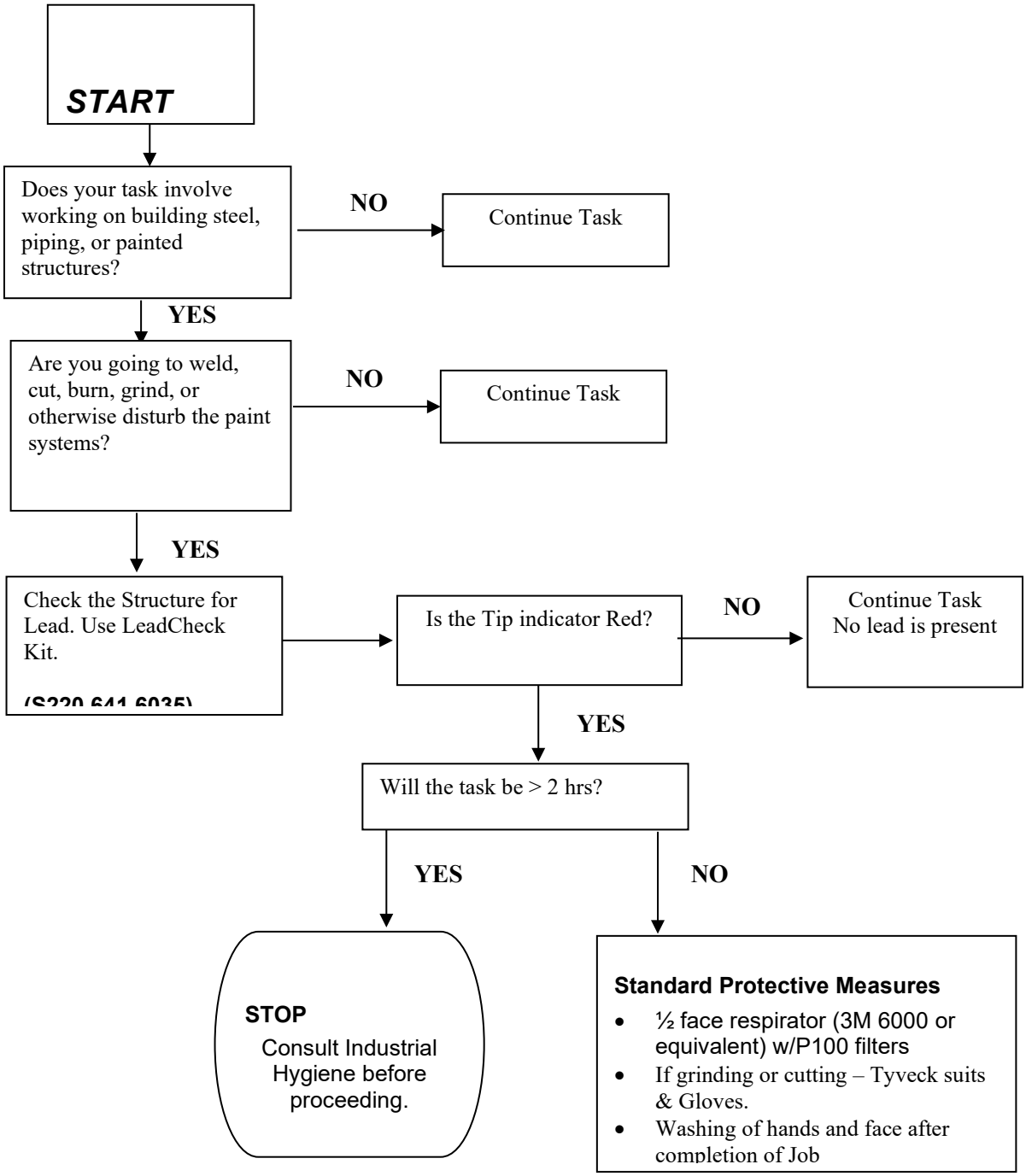
Interpretation:

1. If the tip of the swab turns pink or red, the solder contains greater than 2% lead.
2. If the tip of the swab turns purple high levels of tin have been detected. Repeat the test making sure to just touch the tip to the solder surface - Do Not Rub!

Note: *Vigorous rubbing may cause a metallic film to be deposited on the swab. This can interfere with interpretation. Do not rub the solder joint with the swab too long.

Appendix B RELATED DOCUMENTS

1. 29 CFR 1910.252 General Industry Standards for Welding, Cutting and Brazing
2. 29 CFR 1926.354 Construction Industry Standards for Welding, Cutting, and Heating In Way of Preservative Coatings
3. EHS STD 18.20 Lead Management
4. EHS STD 18.20.2 Medical Surveillance of Lead and Its Inorganic Compounds
5. EHS SUP 18.20.2 Contract Specification for Lead
6. EHS SUP 18.20.1 Lead Hazard Control
7. EHS SUP 70.27.1 Supplemental Lead and Its Inorganic Compounds Medical Surveillance


START
Does your task involve working on building steel, piping, or painted structures?
NO
Continue Task
YES
Are you going to weld, cut, burn, grind, or otherwise disturb the paint systems?
NO
Continue Task
YES
Check the Structure for Lead. Use LeadCheck Kit.
Is the Tip indicator Red?
NO
Continue Task
No lead is present
YES
Will the task be > 2 hrs?
YES
NO
STOP
Consult Industrial Hygiene before proceeding.
Standard Protective Measures
• ½ face respirator (3M 6000 or equivalent) w/P100 filters
• If grinding or cutting – Tyveck suits & Gloves.
• Washing of hands and face after completion of Job

Date of Review:	10/20/2025	Date of Next Review:	10/20/2026
Reviewed By:	Hugh Palmer		
Approved by (SPA or Manager):	Nate Rufa		
NOTE: Non-SSOP documents are to be reviewed in conjunction with the ASAT corporate schedule.			
Revision Table:			
Revision Made by:	Date:	Describe Revision Made:	
Jonathan Hewitt	8/2/2023	Review/Revision Table added.	
Hugh Palmer	8/30/2024	Reviewed	
Hugh Palmer	10/20/2025	Reviewed	

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ALCOA USA CORP MASSENA OPERATIONS

Drug and Alcohol Policy

I. PURPOSE

Massena Operations' goal is to provide a drug and alcohol free work place. Our commitment is to maintain a safe working environment for all employees, contractors, subcontractors, contracted services and visitors. Consistent with this commitment, the Company has established this policy concerning abuse of alcohol and drugs.

The Company does expect employees to report for work in a condition to perform their duties free from the effects of alcohol and drugs. Employee involvement with alcohol or drugs on the job or off the job can have an impact on job performance and safety that interferes with the objective of a safe work environment for all.

II. SUBSTANCES

The substances covered in this policy include but are not limited to alcohol and illegal drugs. Substance means any controlled legal or illegal drug, alcohol in any form or formulation, inhalants such as glues, solvents, etc., noncontrolled prescription or nonprescription medication with the potential to cause impairment or any other agent with the potential for illicit use, misuse or abuse. Substances as defined will be herein referred to as drugs or alcohol.

A. An employee, while on Company premises, may use a prescription drug or prescribed controlled substance. (1) The prescription drug has been prescribed by a doctor for the person using or in possession of the drug; (2) the employee takes the proper dosage and follows all instructions and warning for use of the drug as identified by the employee's doctor or as labeled on the medication's container; and (3) The employee does not sell or transfer the drug to any other person while on Company premises, as defined in Section III, A.

B. If an employee or member of management has questions regarding the safe and proper use of prescription or over-the-counter drugs while at work, they should contact the plant Medical Department.

C. Employees should report to the Medical Department (or medical department off-hours contact) when using any prescription that will hinder job performance as warned through instructions for use of such drugs.

III. POLICY

The Massena Operations alcohol and drug policy applies to all employees, contractors, subcontractors, contracted services and visitors. The policy is as follows:

A. The use, sale, transfer or possession of drugs, alcohol, or controlled substances on Company property or work sites is strictly prohibited. Premises include all buildings, parking lots and other facilities used by the Company to conduct its operations plus all work sites to which employees are assigned in the course of the performance of their duties for the Company.
   - Drinking and driving is strictly prohibited while on Company paid travel time.
   - This provision applies to all vehicles, Company and private, on Company property or work sites.

B. During working hours, any employee, contractor, subcontractor, contracted service or visitor under the influence of alcohol, drugs or controlled substances is strictly prohibited. No employee, contractor, subcontractor, contracted service or visitor shall remain at work if under the influence of a substance. Being under the influence shall be confirmed with a positive drug or alcohol test.

C. Any visitor or employee of a contractor, subcontractor or contracted service found in violation of this document shall be refused entry to Alcoa property or work sites or removed from Alcoa property or work sites.

D. A drug screen test result is considered positive when the presence of any drug (as defined in Section II) is reported per the DOT standards. A positive test for alcohol is defined utilizing the DOT standards for alcohol. Employees who test for the presence of alcohol, but don't meet the level for impairment will not be allowed to work and not allowed to return for that shift.

E. The Massena Operations will designate an occupational health care professional as the substance abuse testing program coordinator. A Medical Review Officer (MRO) will be appointed, whose primary responsibility is to review and interpret all laboratory confirmed positive test results obtained through the substance abuse program.

F. The Massena Operations alcohol and drug policy will include a drug free awareness program to inform employees about the dangers of drug abuse in the workplace and about any available treatment programs.

IV. DRUG FREE WORKPLACE ACT

In accordance with the Drug Free Workplace Act of 1988, each employee is required to notify the Company of any conviction under a criminal drug statute involving the use, sale or distribution of drugs in the workplace within five (5) days of such conviction.

V. EMPLOYEE RESPONSIBILITY

A. All union employees should understand their rights under the master agreement page 123 (Local 420), Alcoholism and Drug Abuse as Treatable Illness.
B. It is the responsibility of all employees who enter the plant premises to comply with this policy to make the workplace drug and alcohol free.

VI. SUBSTANCE TESTING

A. Screen substances shall include Alcohol, Cocaine, Opiates, Phencyclidine and Amphetamines. All positive drug screening results shall be verified by a gas chromatography/mass spectrometry confirmatory test. Positive alcohol screening results shall be verified by confirmatory testing using an evidential breath alcohol testing device after a 15-minute waiting periods, but before 30 minutes have elapsed.

Screening for marijuana may be included if the employee, while working, manifests specific articulable symptoms of cannabis impairment that:

- decrease or lessen the employee's performance of the essential duties or tasks of their position;
- Interfere with an employer's obligation to provide a safe and healthy workplace, free from recognized hazards, as required by state and federal occupational safety and health laws

The smell of marijuana, by itself, is not evidence of "articulable symptoms of impairment".

B. Collectors at the Massena location shall be trained on the procedure for urine drug screening. All samples collected shall be collected in accordance with generally accepted collection methods, governmental regulations or laboratory requirement and follow strict chain of custody procedures. All specimen collections shall be done in a manner that prevents the likelihood of tampering and maintains a sense of personal dignity for the employee or prospective employee.

C. Resolution of negative dilute specimens shall be guided by EHS SUP 71.32.1 Standard.

- If the Medical Review Officer informs the employer that a negative urine drug test was dilute, because the creatinine concentration of the specimen $\geq$ 2 milligrams per deciliter but $\leq$ 5 milligrams per deciliter, a re-collection under direct observation must be done immediately.
- If the Medical Review Officer informs the employer that a negative urine drug test was dilute, because the creatinine concentration of the specimen was > 5 milligrams per deciliter, a re-collection may be done immediately, without direct observation.
- If the Medical Review Officer informs the employer that the urine drug test was substituted, because the Creatinine concentration of the specimen was <2 milligrams per deciliter and has a specific gravity $\leq$1.0010

or ≥1.0200, the specimen should be treated as a refusal test, as those values or so diminished they are not consistent with human urine.

Specimen	Creatinine (mg/dl)		Specific Gravity	Action
Substituted (QUEST REPORT RESULTS AS SUBSTITUTED)	<2	and	≤ 1.001 or ≥ 1.020	Treat as refusal to test
Very dilute (QUEST REPORTS RESULTS AS INVALID)	≥ 2 and ≤ 5	and	> 1.001 and <1.003	Direct observation re-collection required
Somewhat dilute (QUEST REPORTS RESULTS AS DILUTE")	> 5 and < 20	and	> 1.001 and <1.003	Unobserved re-collection allowable

- The result of the retest will be treated as the test result of record.
- If the result of retest is also negative and dilute, a re-collection shall be conducted immediately only if the Medical Review Office directs the employer to conduct a re-collection under direct observation.
- If the employee declines to take a test directed by the employer, the employee has refused the test.

D. Alcohol testing shall be conducted in a manner to ensure accuracy, reliability, and confidentiality. All testing shall be administered by appropriately trained and certified breath alcohol or screening test technicians per contract with Massena Memorial Hospital.

VII. TESTING OF CURRENT EMPLOYEES*

- **Reasonable Suspicion/Just Cause Testing**
- **Mandatory EAP referred employees under this policy will be tested prior to returning to work**
- **Employees being recalled after a 6 month or greater layoff will be tested prior to returning to work, as part of their return to work physical.**

*** Drug testing for marijuana is not permitted except for the limited circumstances referenced in Section VI ("Substance Testing") of this Policy**.

VIII. DISCIPLINARY AND REHABILITATIVE STANDARDS

A. **Positive Test Result** Employees who have a positive drug or alcohol test result according to DOT standards may be subject to disciplinary action and may have the opportunity to participate in rehabilitation.

B. **Refusal to Test.** Refusal to submit to a drug and alcohol tests or test specimen will be considered the same as a positive test result.

C. **Tampering.** Employees who in any way tamper with drug and alcohol tests or test specimen may be subject to discharge from employment.

D. **Possession.** Employees who possess alcohol or drugs on plant premises may be subject to discharge from employment.

IX. EMPLOYEE ASSISTANCE PROGRAM

Alcoa's Employee Assistance Program (EAP) is available to all Massena employees. This service, which provides counseling, rehabilitation, and coordination with community resources, is voluntary and confidential.

X. CONFIDENTIALITY

All test results will be handled confidentially in accordance with DOT Standards.

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This is a Safety and Health Guidance for Compliance document - Alcoa Controlled Entities Worldwide.

1.0 SCOPE

This document is for Owner's personnel responsible for contracted work on the property of the Owner or on property of a client for whom the Owner is doing work. Its purpose is to provide guidelines for the Owner's supervisors on the proper procedures in the event of a Government Regulatory Agency inspection of the site. An excellent and expanded “Guidance Document for OSHA (USA) Investigations and Inspections” has been developed. Contact Corporate Legal or Health and Safety for a copy of the document.

2.0 PROJECT INSPECTIONS

2.1 OSHA (UNITED STATES)

Under OSHA jurisdiction, an employer's business may be inspected by an official of the federal or state Occupational Safety and Health Administration for the following reasons:

1) A catastrophic accident involving one or more fatalities or hospitalizing five or more employees.

2) An employee complaint.

3) A routine inspection.

2.2 MSHA (UNITED STATES)

MSHA claims enforcement jurisdiction over OSHA on alumina refining facilities and locations involving the consumption of raw ore such as the magnesium silicate reduction process. Construction Industry Standards, Part 1926-Occupational Safety and Health Regulations, apply in both references.

The Federal Mine Safety and Health Administration is required by law to inspect all mines at least twice each year (four times annually for underground mines). MSHA will also inspect an employers premises in the event of:

1) A catastrophic accident involving one or more fatalities or the hospitalization of three or more employees.

2) An employee complaint.

3) In addition, the following events may initiate an inspection of the premises by MSHA:

- An injury to an individual at a mine which has a reasonable potential to cause death.
- An entrapment of an individual at a mine for more than 30 minutes.
- An unplanned inundation of a mine by a liquid or gas.
- An unplanned ignition or explosion of gas or dust at a mine.
- An unplanned mine fire not extinguished within 30 minutes of discovery.
- An unplanned ignition or explosion of a blasting agent or an explosive at a mine.
- An unplanned roof fall at or above the anchorage zone in active mine workings where roof bolts are in use; or, an unplanned roof or rib fall in active mine workings that impairs ventilation or impedes passage.
- A coal or rock outburst that causes withdrawal of miners or that disrupts regular mining activity for more than one hour.
- An unstable condition at an impoundment, refuse pile, or culm bank that requires emergency action in order to prevent failure, or which causes individuals to evacuate an area; or, failure of an impoundment, refuse pile or culm bank.
- Damage to hoisting equipment in a shaft or slope that endangers an individual or that interferes with use of the equipment for more than 30 minutes.
- An event at a time that causes death or bodily injury to an individual not on the mine property at the time the event occurs. Examples: a detonation of explosives at a mine which throws material outside the mine property, or a haulage truck which rolls off the mine property and causes an injury.

2.3 INSPECTION PROCEDURES

2.3.1 Credentials

The inspector should volunteer presentation of his credentials upon arrival. Be sure to verify that he is actually an official representative of a federal or state agency.

2.3.2 Opening Conference

Determine the reason for the inspection. If it is the result of an employee complaint, you may request a copy of the complaint.

Determine the scope of the inspection. Contractor's and Owner's management representatives potentially affected by the inspection shall be present. Affected employee representatives are also entitled to be present at the opening conference.

The Compliance Officer will explain an employer's rights and responsibilities under the Act(s) and will ask if there is any objection to an inspection.

2.3.3 The Inspection

Accompanying the Compliance Officer, the inspection should include a management representative of the Contractor, the Owner, and may also include an employee representative.

Standard plant entry procedures: As with any other visitor to the Owner's premises, the inspector, and others, shall conform to all applicable requirements. This shall include:

1) Normal entry procedures, i.e., visitors pass, sign-in, badges, etc.

2) Personal protective equipment (proper attire) requirements.

2.3.4 Photographs

Due to the proprietary nature of the Owner's various processes and equipment, there are certain guidelines regarding the use of photographic or video equipment (See Section 2.4 for Alcoa's Policy concerning government photographic material). All such materials are subject to the following considerations:

1) In the case of negative film, the Owner should have the film processed and secure duplicate prints for our files. The Owner should stamp some prints to indicate proprietary scenes and return all prints to Compliance Officer as soon as possible. All negatives should be filed at the plant and should be available for reprinting if necessary.

2) In the case of transparencies, film should be processed and duplicates will be made and forwarded to the Compliance Officer as soon as possible. Proprietary scenes should be labeled appropriately.

3) In the case of Polaroid or other "instant" film, the Owner will make copy prints of Compliance Officer's photographs for the Owner's files and return the originals to the Compliance Officer, labeling proprietary material where appropriate.

4) In the case of motion picture or videotape footage, the original material should be processed and duplicated. The original film or tape should be returned. Proprietary footage will be identified and recorded in a separate log.

2.3.5 Log of Inspection Events

Take notes. During the inspection, the management representatives should keep notes regarding:

1) Alleged violations the Compliance Officer observes or mentions.

2) Photographs taken.

3) Employees interviewed, questions asked, and responses (if possible).

4) Monitoring, such as for noise, dust, fumes, etc.

Obvious violations - any obvious violations noted during the inspection that can be easily corrected shall be abated by the Contractor on the spot.

Do not argue with a Compliance Officer.

2.3.6 Closing Conference

The Compliance Officer is expected to confer with the employer or his representative for informal review of apparent safety or health violations. On Jobs where the employees have an authorized representative, there is no provision for this inclusion in this conference unless the employer invites him. The role of the employee's representative is completed with the end of the actual inspection.

2.4 ALCOA POLICY CONCERNING GOVERNMENT PHOTOGRAPHIC MATERIALS

Representatives of government agencies often visit Alcoa plants for inspections and in the course of such visits might wish to take photographs, or make films or videotapes. Company personnel must always be concerned that process or equipment confidentiality is not compromised through the release of inappropriate material photographed by the government representative.

There is a general agreement in effect between Alcoa and these agencies to protect the confidentiality of our operations and facilities.

If the inspection is part of an enforcement or compliance action, where the chain of custody of evidence is essential to the agency, the representative can take the necessary photographs. He or she is asked to provide Alcoa, at our expense, with copies of such photographs - or films or videos - before any are released to the general public. Plant personnel must then review the material and mark confidential any portions that they feel divulge proprietary information or give away trade secrets. The agency is obligated to handle the material as confidential or to notify Alcoa that it does not agree the material contains confidential information.

If the inspection is for information purposes only and not part of an enforcement or compliance action, Alcoa should take the photographs, develop the film, and send prints to the agency. If agency representatives make a strong argument for taking the photos themselves, the plant management can either allow them to do so or contact Pittsburgh Environmental Affairs personnel for guidance on a case-by-case basis.

2.5 NOTIFICATION

Immediately after completion of the closing conference, notify the local Management and the Office of Corporate Safety of the inspection and subjects discussed during the conference.

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This Engineering Standard should be evaluated for use in support of Alcoa's Values, ABS Principles and your locations Business Objectives. Before using this Engineering Standard, check the Alcoa Intranet to verify this is the most current version. Valid for 30 days from 2021-05-06.

1.0 GENERAL

1. This Standard is the labor relations guide for Contractors, Subcontractors and Contracted Services working on Alcoa owned, managed or leased property. Contractors, Subcontractors and Contracted Services shall use cost effective labor relations practices to decrease the total cost of work to the Owner. This guide does not relieve Contractors, Subcontractors or Contracted Services of responsibility to conduct labor relations activities.

2. Contractors, Subcontractors or Contracted Services shall abide by labor agreements between local contractors' association and local labor organizations which may affect the work or its costs. Local contractors' association means any group which bargains with local labor organizations on behalf of construction contractors concerning terms and conditions of employment for construction labor. Contractors, Subcontractors and Contracted Services should take advantage of special conditions offered in labor agreements, project agreements and other applicable special agreements for reduced construction costs.

3. If a labor dispute threatens to affect the performance or cost of the work, the Owner reserves the right to restrict Contractor, Subcontractor or Contracted Service from hiring employees or to suspend or terminate the work. This may apply even if the Contractor, Subcontractor or Contracted Service is not directly involved in the labor dispute. Owner will reimburse Contractor, Subcontractor or Contracted Service for reasonable out-of-pocket costs and expenses resulting from the Owner's exercise of these rights. Owner will not compensate for loss of anticipated profits. If work is delayed by Contractor, Subcontractor or Contracted Service employee labor disputes, the time to complete the work may be extended.

4. This Standard includes general labor relations for all locations. Include the necessary local modifications and amendments in the Site Conditions.

5. Contractors, Subcontractors, Contracted Services and the Owner share a mutual responsibility to maintain good working conditions. The Site Conditions describe Contractor, Subcontractor, Contracted Service and Owner responsibilities to maintain good working conditions.

6. Contractor, Subcontractor or Contracted Service shall immediately notify Owner if collective bargaining demands were made by any labor

organization and of labor disputes which may affect the performance or the cost of the work.

7. Contractors, Subcontractors and Contracted Services shall ensure supervisors attend the necessary training, education, and orientation programs. Programs developed by the Owner for a specific project will be available to Contractors, Subcontractors and Contracted Services.

8. Contractors, Subcontractors or Contracted Services shall install prefabricated or preassembled materials when specified or purchased by Owner without unnecessary change or rework and regardless of where fabricated.

9. Contractors, Subcontractors or Contracted Services shall cooperate with the Owner in using designated entrances as required.

10. Contractors, Subcontractors and Contracted Services shall complete and submit 33.042.1 prior to or with bids for work.

11. Standard 33.042.3 lists a number of inefficient work practices. Contractors, Subcontractors or Contracted Services shall ensure these practices do not occur. Owner shall periodically use 33.042.3 during the work to evaluate the Contractor, Subcontractor and Contracted Service's labor relations performance. Contractors, Subcontractors and Contracted Services shall cooperate with the Owner in these evaluations.

12. Contractors, Subcontractors and Contracted Services management shall institute and enforce an effective EHS program per 33.052.

2.0 MANAGEMENT RIGHTS

Contractors, Subcontractors and Contracted Services management shall exercise rights specifically detailed in and not expressly limited by applicable collective bargaining agreements. These management rights include, but are not limited to the following rights.

1. To hire, discharge, promote, and transfer employees.
2. To select and remove foremen or other levels of supervision.
3. To establish and enforce reasonable standards ofproduction.
4. To introduce labor saving equipment and materials to the extent feasible.
5. To determine the number of craftsmen necessary to perform a task, job or project.
6. To establish, maintain and enforce rules and regulations conducive to efficient and productive operations.

3.0 WORK RULES

1. Contractors, Subcontractors and Contracted Services shall conduct pre-job meetings prior to starting work as required by Owner. Keep meeting minutes in writing and furnish copies to the Owner and all other participants. Notify the Owner of meetings in advance.
2. Contractors, Subcontractors and Contracted Services shall cooperate with the Owner and each other to establish and maintain work rules and practices as needed.
3. Contractors, Subcontractors and Contracted Services shall inform the Owner of developments in labor relations affecting the project and shall consult with Owner prior to announcement on labor matters, disputes or negotiations affecting the project.
4. Contractors, Subcontractors and Contracted Services shall provide Owner with copies of labor agreements and meet with the Owner to discuss appropriate action at least 5 days before the expiration of labor agreements affecting the work.
5. Contractors, Subcontractors and Contracted Services shall take appropriate actions to resolve violations of collective bargaining agreements and jurisdictional disputes, including the filing of appropriate process with appropriate court or agency.

4.0 WORK HOURS AND OVERTIME

1. Unless otherwise specified, perform work in standard 5 day and 40 hour workweeks. Spot overtime will be permitted to complete critical items of work, such as concrete placement or emergency work. Keep Owner informed regarding such work and the necessity for overtime.
2. Avoid scheduled overtime. Owner will permit overtime and weekend schedules for items, such as testing, tie-ins to existing facilities and maintenance of operating facilities. Owner and Contractor, subcontractor or Contracted Service shall schedule overtime at least 24 hours in advance.
3. If overtime is permitted by the Owner, only the personnel required to safely complete the approved work or as required by contractual agreements shall work.

5.0 WORK FORCE

1. Contractors, Subcontractors and Contracted Services shall provide a sufficient number of experienced and qualified personnel to perform the work and comply with the work schedule.

2. Prior to the start of work, Contractors, Subcontractors and Contracted Service shall submit a schedule of personnel required to complete the work as scheduled. Show estimated personnel requirements by craft per month.

3. Contractors, Subcontractors and Contracted Services shall review the local labor supply and advise Owner of any anticipated problems with personnel requirements and provide plans to overcome any anticipated problems and maintain schedule.

4. Contractors, Subcontractors and Contracted Services shall provide Owner with a weekly report showing the number of personnel by craft for each day.

6.0 REFERENCES

33.041 titled “Foreword To Contractor, Subcontractor And Contracted Service Labor Relations Guide.”

33.042.1 titled “Contractor, Subcontractor and Contracted Service Labor Relations Prequalification Questionnaire.”

33.042.3 titled “Contractor, Subcontractor and Contracted Service Labor Relations Evaluation.”

33.043 titled “Picketing Activities at Construction Gates.”

33.052 titled “Sample EHS Process for Contractors, Subcontractors and Contracted Services Working on Engineering Projects.”

Job Aid: SAFETY AND HEALTH EVALUATION OF OUTSIDE CONTRACTORS AND SUBCONTRACTORS

(formerly 33.052.1)

1.0 SCOPE

This Standard applies to Alcoa owned, managed and leased locations worldwide where Contractors, Subcontractors and Contracted Services are used.

2.0 PURPOSE

This Standard describes the inspection and evaluation process for Contractors, Subcontractors and Contracted Services working at a location to ensure a safe, healthy and low risk workplace.

3.0 REQUIREMENTS

3.1 Inspections or evaluations of Contractors, Subcontractors and Contracted Services shall be done in accordance with Engineering Standards, local regulations and consensus standards which are interpreted as local regulations in effect at the location where the work is taking place.

3.2 In the absence of local regulations and consensus standards which are interpreted as local regulations in effect at the location where the work is taking place, inspections or evaluations of Contractors, Subcontractors and Contracted Services shall be done in accordance with this and other Engineering Standards.

3.3 Contractors, Subcontractors and Contracted Services and their employees shall maintain a clean, healthy, safe and low risk workplace per location specific requirements. By inspection and evaluation, Alcoa personnel shall ensure Contractors, Subcontractors and Contracted Services comply with location specific site conditions, work rules, safety and health rules, housekeeping rules and material storage rules.

3.4 The workplace shall be inspected periodically to ensure equipment is suitably maintained, defective equipment is repaired or removed from service, and Contractors, Subcontractors and Contracted Services evaluated to ensure the workplace and work process is managed in a safe, healthy and low risk manner. The following are examples of equipment and workplace areas to be inspected.

(1) Tools and equipment such as hand tools, ladders and personal protective equipment.

(2) Work areas such as maintenance and electrical shops, production areas, roadways and travelways.

(3) High hazard areas and equipment such as flammable solvent storage rooms, electrical substations, boilers, pressure vessels, cranes, vehicles, fork trucks and below-the-hook lifting devices.

(4) Offices, lunchrooms, conference rooms and administration areas.

(5) Bathroom, locker room, shower rooms and other hygiene facilities.

3.5 Inspection and evaluation frequency shall be based on identified risk, regulations and consensus standards which are interpreted as regulations, relevant Engineering Standards, and location specific requirements. Inspections considered necessary but without a clearly defined frequency shall be conducted monthly.

3.6 Inspectors shall be qualified, trained and knowledgeable on the inspection items for which they are responsible and shall have valid licenses where required.

3.7 Inspections shall be documented to ensure identified deficiencies are corrected and inspection records shall be kept to confirm inspections have been completed, the equipment is safe to use and identified deficiencies were corrected. Record keeping should be straightforward and practical.

3.8 Deficiencies shall be assigned to designated individuals or groups who shall correct the deficiencies on a timely basis per the location specific deficiency correction program.

3.9 To demonstrate active participation in the inspection process, employees and management can conduct inspections together, inspection reports can be posted and inspection results can be discussed at meetings.

3.10 Locations shall have comprehensive loss prevention programs to manage risks.

3.11 The inspection form below is comprehensive and locations are encouraged to use it as a basis for the location specific Contractors, Subcontractors and Contracted Services inspection and evaluation process. Locations can add or subtract items or categories depending on the site specific needs and risks, the work being performed, and local regulations or consensus standards.

3.12 The inspection form below may be used for Contractors, Subcontractors and Contracted Services inspections or for internal projects.

3.13 The inspection form below may be used by Contractors, Subcontractors and Contracted Services to develop a pre-job safety plan or to develop their internal inspection and evaluation programs.

Job Aid: SAFETY AND HEALTH EVALUATION OF OUTSIDE CONTRACTORS AND SUBCONTRACTORS

(formerly 33.052.1)

Company Name: _____ Date of Inspection: ___

Location: _____ Building Number: _____

Company Supervisor Name: _____

Total Number of Workers: _____

Name of Inspector: _____ Date of Report: ___

Inspection Frequency: ☐ Final ☐ Quarterly ☐ Monthly ☐ Spot Check

CATEGORY Inspection Item	OK	Not OK	NA	Comments	Who Will Correct?
ADMINISTRATIVE CONTROLS					
Accident and injury records	☐	☐	☐		
Accident investigation followup	☐	☐	☐		
Asbestos training documents	☐	☐	☐		
Excavation competent person	☐	☐	☐		
Fall control competent person	☐	☐	☐		
Scaffolding competent person	☐	☐	☐		
Confined space entry training	☐	☐	☐		
Company EHS commitment	☐	☐	☐		
Emergency response plan	☐	☐	☐		
Government regulation log	☐	☐	☐		
Confined space entry training	☐	☐	☐		
Hazardous release plan	☐	☐	☐		
Employee certification	☐	☐	☐		
Employee orientation	☐	☐	☐		
Permit program	☐	☐	☐		
Toolbox meetings	☐	☐	☐		
Training records	☐	☐	☐		
Confined space entry training	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
ENVIRONMENT					
Air quality control	☐	☐	☐		
Leachates	☐	☐	☐		
PCB controls	☐	☐	☐		
Caustic controls	☐	☐	☐		
Secondary containment	☐	☐	☐		
Appropriate illumination	☐	☐	☐		

Job Aid: SAFETY AND HEALTH EVALUATION OF OUTSIDE CONTRACTORS AND SUBCONTRACTORS

(formerly 33.052.1)

CATEGORY Inspection Item	OK	Not OK	NA	Comments	Who Will Correct?
Lead	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
INDUSTRIAL HYGIENE					
Container labeling	☐	☐	☐		
Health hazard communication	☐	☐	☐		
MSDS available	☐	☐	☐		
Asbestos health protection	☐	☐	☐		
Lead health protection	☐	☐	☐		
Refractory ceramic fibers health protection	☐	☐	☐		
Petroleum volatiles health protection	☐	☐	☐		
Fluorine and chlorine health protection	☐	☐	☐		
Heat stress	☐	☐	☐		
Noise overexposure	☐	☐	☐		
Radiation control	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
BARRICADES					
Appropriate flags	☐	☐	☐		
Appropriate for hazard	☐	☐	☐		
Protect holes and edges	☐	☐	☐		
Cover non barricaded holes	☐	☐	☐		
Casual pedestrian protected	☐	☐	☐		
Work zones protected	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
HIGH WORK					
Barricades	☐	☐	☐		
Communications procedures	☐	☐	☐		
Inspection of hoist cables	☐	☐	☐		
Maintenance of equipment	☐	☐	☐		
Engineered anchorage points	☐	☐	☐		
Fall protection	☐	☐	☐		
Job safety plan	☐	☐	☐		

Job Aid: SAFETY AND HEALTH EVALUATION OF OUTSIDE CONTRACTORS AND SUBCONTRACTORS

(formerly 33.052.1)

CATEGORY Inspection Item	OK	Not OK	NA	Comments	Who Will Correct?
Properly designed hoist system	☐	☐	☐		
Properly designed work platform	☐	☐	☐		
Work zone protection	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
COMPRESSED AIR					
Authorized use	☐	☐	☐		
Condition of hose and fittings	☐	☐	☐		
Excess flow check valves	☐	☐	☐		
Tripping hazards with hoses	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
CONFINED SPACE					
Air monitor on site	☐	☐	☐		
Confined space entry kit	☐	☐	☐		
Outside observer with communications	☐	☐	☐		
Permit completed and displayed	☐	☐	☐		
Rescue provisions	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
ELECTRICAL ENERGY SOURCES					
Appropriate grounding	☐	☐	☐		
Condition of extension cords	☐	☐	☐		
Compliance with high voltage rules	☐	☐	☐		
Compliance with low voltage rules	☐	☐	☐		
Compliance with arc flash rules	☐	☐	☐		
Proper switchgear working clearance	☐	☐	☐		
Proper approach distances	☐	☐	☐		
Proper overhead lines working clearance	☐	☐	☐		
Temporary lighting	☐	☐	☐		
Temporary power	☐	☐	☐		
Tripping hazards from wires	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		

Job Aid: SAFETY AND HEALTH EVALUATION OF OUTSIDE CONTRACTORS AND SUBCONTRACTORS

(formerly 33.052.1)

CATEGORY Inspection Item	OK	Not OK	NA	Comments	Who Will Correct?
	☐	☐	☐		
	☐	☐	☐		
OTHER ENERGY SOURCES					
Energy sources at zero energy	☐	☐	☐		
Tagout lockout and verification system in place	☐	☐	☐		
Proper working clearances	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
EXCAVATIONS					
Adequate entrance and exit	☐	☐	☐		
Appropriate barricades	☐	☐	☐		
Competent person involved	☐	☐	☐		
Digging permit issued and accessible	☐	☐	☐		
Excavation shored, benched or sloped	☐	☐	☐		
Excavated materials set back from edge	☐	☐	☐		
Inspected before each shift	☐	☐	☐		
Properly designed	☐	☐	☐		
Shoring	☐	☐	☐		
Traffic considerations	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
FUEL AND FLAMMABLES					
Bonding/grounding	☐	☐	☐		
Containers properly labeled	☐	☐	☐		
Fire protection	☐	☐	☐		
No smoking	☐	☐	☐		
Proper containers	☐	☐	☐		
Proper storage	☐	☐	☐		
Proper transportation	☐	☐	☐		
Refueling outside	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		

Job Aid: SAFETY AND HEALTH EVALUATION OF OUTSIDE CONTRACTORS AND SUBCONTRACTORS

(formerly 33.052.1)

ALCOA

CATEGORY Inspection Item	OK	Not OK	NA	Comments	Who Will Correct?
COMPRESSED GAS CYLINDERS					
Caps on unused cylinders	☐	☐	☐		
Condition of hoses and torches	☐	☐	☐		
Condition of regulators and gauges	☐	☐	☐		
Cutting torches have anti-flashbacks	☐	☐	☐		
Cylinder stored secured in vertical position	☐	☐	☐		
Fire protection	☐	☐	☐		
Protective screens used	☐	☐	☐		
Permit available	☐	☐	☐		
Proper transportation of cylinders	☐	☐	☐		
Storage of flammables away from oxygen	☐	☐	☐		
Used in adequate ventilation	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
ELECTRICAL WELDING					
Adequate ventilation available	☐	☐	☐		
Condition of welding leads	☐	☐	☐		
Fire protection	☐	☐	☐		
Permit issued	☐	☐	☐		
Proper ground	☐	☐	☐		
Protective equipment (flash screen, hood, clothing)	☐	☐	☐		
Surface Prep, (lead, etc.)	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
ELECTRICAL TOOLS					
Assured grounding	☐	☐	☐		
Cords inspected/GFCI in place	☐	☐	☐		
Correct tool for application	☐	☐	☐		
Double insulated or 3 prong	☐	☐	☐		
General condition	☐	☐	☐		
Guards in place	☐	☐	☐		
Power actuated tool training	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		

Job Aid: SAFETY AND HEALTH EVALUATION OF OUTSIDE CONTRACTORS AND SUBCONTRACTORS

(formerly 33.052.1)

CATEGORY Inspection Item	OK	Not OK	NA	Comments	Who Will Correct?
	☐	☐	☐		
	☐	☐	☐		
LADDERS					
Base protected for secure position	☐	☐	☐		
Three point contact climbing procedure used	☐	☐	☐		
Condition of job fabricated ladders	☐	☐	☐		
Ladder pitch of 4 to 1 used	☐	☐	☐		
Ladder storage	☐	☐	☐		
Non-metallic ladders used	☐	☐	☐		
Non-skid feet used	☐	☐	☐		
One person at a time on ladder	☐	☐	☐		
Sound footing	☐	☐	☐		
Sound physical condition	☐	☐	☐		
Step ladder not used as extension ladder	☐	☐	☐		
Top 3 feet of ladder is above elevation change	☐	☐	☐		
Top tied off	☐	☐	☐		
Top two steps of ladder not used	☐	☐	☐		
Working off ladder properly	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
SCAFFOLDING					
All braces in place with pins	☐	☐	☐		
Erection by competent person	☐	☐	☐		
Hoisting procedures	☐	☐	☐		
Loading restrictions	☐	☐	☐		
Personal Tie-Off	☐	☐	☐		
Proper design and materials	☐	☐	☐		
Proper work platforms	☐	☐	☐		
Secure footing, level and plumb with anchorage	☐	☐	☐		
Toprail, midrail and toeboard used	☐	☐	☐		
Wheels locked	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
STEEL ERECTION					
Fall protection plan	☐	☐	☐		

Job Aid: SAFETY AND HEALTH EVALUATION OF OUTSIDE CONTRACTORS AND SUBCONTRACTORS

(formerly 33.052.1)

CATEGORY Inspection Item	OK	Not OK	NA	Comments	Who Will Correct?
Power line clearance	☐	☐	☐		
Proper work platforms	☐	☐	☐		
Sling maintenance	☐	☐	☐		
Storage areas	☐	☐	☐		
Tag lines	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
ROOF WORK					
Clean-up	☐	☐	☐		
Materials secured	☐	☐	☐		
Roof opening and skylight protection	☐	☐	☐		
Perimeter work zone protection	☐	☐	☐		
Proper access	☐	☐	☐		
Protection from hot materials	☐	☐	☐		
Warning lines	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
FREE MOVING MOBILE EQUIPMENT					
Backup warning	☐	☐	☐		
Operator certification	☐	☐	☐		
Falling object protection	☐	☐	☐		
Rollover protection	☐	☐	☐		
Hand signals posted	☐	☐	☐		
High voltage clearances	☐	☐	☐		
Inspection sheets current	☐	☐	☐		
Lights and mirrors working	☐	☐	☐		
Load chart available	☐	☐	☐		
Operation training	☐	☐	☐		
Pre-operation checklist	☐	☐	☐		
Refuel outside	☐	☐	☐		
Rigging hook with safety latch	☐	☐	☐		
Fire extinguisher	☐	☐	☐		
Safety flags or flashers	☐	☐	☐		
Seat belts	☐	☐	☐		
Swing radius clearance/protection	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		
_____	☐	☐	☐		

Job Aid: SAFETY AND HEALTH EVALUATION OF OUTSIDE CONTRACTORS AND SUBCONTRACTORS

(formerly 33.052.1)

CATEGORY Inspection Item	OK	Not OK	NA	Comments	Who Will Correct?
	☐	☐	☐		
PERSONAL PROTECTIVE EQUIPMENT					
Respirators as needed	☐	☐	☐		
Face shield or goggles for eyes	☐	☐	☐		
Fall protection	☐	☐	☐		
Foot protection	☐	☐	☐		
Hard hats	☐	☐	☐		
Hearing protection	☐	☐	☐		
Gloves	☐	☐	☐		
Personal clothing and jewelry restrictions	☐	☐	☐		
Personal flotation devices	☐	☐	☐		
Protective clothing	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
SIGNS AND WARNING					
Construction area signs	☐	☐	☐		
Containers labeled	☐	☐	☐		
Fire explosion hazard	☐	☐	☐		
Flag person/ground person	☐	☐	☐		
Flashers	☐	☐	☐		
Health hazards	☐	☐	☐		
Physical hazards	☐	☐	☐		
Railroad isolation	☐	☐	☐		
Heavy Traffic	☐	☐	☐		
Work overhead	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
	☐	☐	☐		
HOUSEKEEPING					
Disposal chutes used	☐	☐	☐		
Clean floor around saws	☐	☐	☐		
Material storage	☐	☐	☐		
Multi-shift inspection of cords and hoses	☐	☐	☐		
Nails clinched and removed	☐	☐	☐		
Proper illumination	☐	☐	☐		
Proper tool and material storage	☐	☐	☐		
Spill containment	☐	☐	☐		

Job Aid: SAFETY AND HEALTH EVALUATION OF OUTSIDE CONTRACTORS AND SUBCONTRACTORS

(formerly 33.052.1)

CATEGORY Inspection Item	OK	Not OK	NA	Comments	Who Will Correct?
Trash and scrap separation and disposal	☐	☐	☐		
_____	☐	☐	☐	_____	_____
_____	☐	☐	☐	_____	_____
_____	☐	☐	☐	_____	_____
_____	☐	☐	☐	_____	_____
JOB SAFETY PLAN					
Completed	☐	☐	☐	_____	_____
Effectiveness of implementation	☐	☐	☐	_____	_____
Evidence of use	☐	☐	☐	_____	_____
_____	☐	☐	☐	_____	_____
_____	☐	☐	☐	_____	_____
_____	☐	☐	☐	_____	_____
_____	☐	☐	☐	_____	_____

1.PURPOSE

Massena Operations Hazard Communication Program is intended to provide all Alcoans, our customers and contractors with information on the hazards of chemical products which they work with, information on how to handle and dispose of them safely, proper identification and emergency response. We will meet these objectives by; maintaining an inventory by department of all hazardous materials used at Massena Operations, labeling hazardous materials with the appropriate in-house or commercial product label, providing access to Safety Data Sheets to all employees, educating employees on the hazardous to chemical products, which they work with and
providing Safety Data Sheets to our customers

2. MATERIALS INVENTORY

2.1. A Materials Inventory has been developed listing the materials present in the plant. The inventory list materials used in each department and plant wide. The Materials Inventory includes entries for products purchased from outside vendors, process intermediates and byproducts, and internally generated mixtures (coating formulations, alloys, etc.).

2.2. The Materials inventory is maintained on the Alcoa's Vendor SDS System (Paratox by Maerix) found on Alcoa's Intranet.

3. MATERIAL LABELING

3.1. In-house Labeling -- (Labels which are used to identify materials used internally)

3.1.1. Supplier product labels
Labels affixed to a container by the manufacturer or supplier must not be removed or defaced whenever the product is in the container. We will utilize the manufacturer labels whenever possible provided that they meet the requirements of the OSHA Hazard Communication Standard

3.1.2. In-house Labels
All labels are required to have Name Address and telephone number, product identifier, signal word pictograms, a signal word, hazard and precautionary statements, the product identifier, of information are as follows:

3.1.2.1. Name, Address and Telephone Number
Hazard class delineation will comprise all the physical hazards as defined in the standard. These include flammable, combustible, oxidizer, explosive, chemically and water reactive, pyrophoric, compressed gas, and corrosive. In addition, the health hazard designation will be used for the following: Irritant, sensitizer, carcinogen, and acute toxicity as defined in Appendix A of OSHA Standard. Chemicals which have significant toxicological effects (mutagenicity, teratogenicity, adverse reproductive effects, etc.).

3.1.2.2. Product identifier
Product Identifier is how the hazardous chemical is identified. This can be (but is not limited to) the chemical name, code number or batch number. The manufacturer, importer or distributor can decide the appropriate product identifier.

3.1.2.3. Signal Words
Signal Words are used to indicate the relative level of severity of the hazard and specific alert the reader to a potential hazard on the label. There are only two words used as signal words, "Danger" and "Warning." Within a specific hazard class, "Danger" is used for the more severe hazards and "Warning" is used for the less severe hazards. There will only be one signal word on the label no matter how many hazards a chemical may have. If one of the hazards warrants a "Danger" signal word and another warrants the signal word "Warning," then only "Danger" should appear on the label.

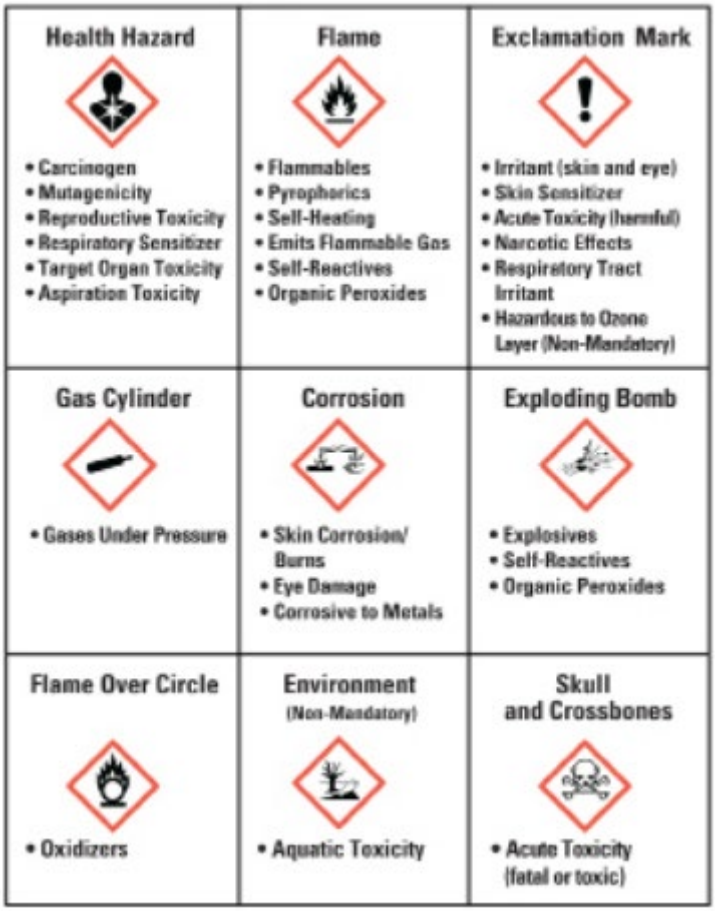
3.1.2.4. Hazard Statements Warning

Hazard Statements Warning describe the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard.

3.1.2.5. Pictogram(s)

Pictograms are graphic symbols used to communicate specific information about the hazards of a chemical. On hazardous chemicals being shipped or transported from a manufacturer, importer or distributor.

Pictograms



3.1.3. Scope of Labeling

3.1.3.1. Alcoa in-house labels must be affixed to any Alcoa container, portable or stationary, which contains any hazardous material. An exception to this rule is a portable container filled by an individual for his or her immediate use. Immediate use means, completely used within the work shift by the individual who filled the container.

3.1.3.2. Each department is responsible to ensure that labeled hazardous material is properly handled and stored. Any questions as to proper labeling should be referred to the location Industrial Hygiene and Safety Manager or the Industrial Hygienist.

3.1.3.3. It is the responsibility of department managers. flow path leaders and superintendents to ensure that the necessary in-house labels are requested and, when received, properly affixed to the appropriate container.

3.2. Printing of in-house Labels Inhouse labels are created from the Paratox using information from the SDS. Contact Hugh Palmer for the appropriate labels.

4. SAFETY DATA SHEETS

4.1. Alcoa Commercial SDS's.
Alcoa SDS's are available for all of our commercial products not considered "articles" or otherwise exempted under OSHA 29 CFR 1910.1200 and for many scrap and recycled products. Copies of our commercial product SDS are found on the Massena Hazard Communication Web Page.

4.1.1. The Customer Service department is responsible for sending SDS to customers of Massena Operation Products. SDS shall be sent with the first shipment, and whenever any changes occur in the SDS. Primary Metals in Knoxville is responsible of sending SDS to our customers of smelting products. SDS shall be sent with the first shipment, and whenever any changes occur in the SDS.

4.2. Vendor Supplied SDS

4.2.1 Safety Data Sheets are received and reviewed by the plant industrial hygienist. The SDS are reviewed and submitted to Paratox for inclusion into the plant inventory. SDS are available by accessing Alcoa EHS Intranet Web page through any PC with intranet access. If a terminal is not available in a work area or the network is down a SDS can be obtained by contacting Hugh Palmer at 315-842-9833.

4.3. Contractor SDS

4.3.1. Alcoa Provided Materials
The Alcoa project leader. must provide the contractor copies of all SDS for products provided by Alcoa. SDS must be provided to the contractor, upon request, for materials used by Alcoa in the vicinity of the contractor’s employees.

4.3.2. Contractor Provided Materials
The contractor must provide the project engineer SDS for all products used on site. The project leader must review the SDS to ensure they are approved for plant use. The new product approval process must be used for any new material brought onto Massena Operations.

5. EMPLOYEE TRAINING

5.1. General Overview of Hazardous Materials

5.1.1. To address the hazard communication training requirements, Alcoa Massena Operation has developed a Hazardous Materials Training Program required for all employee (SH-010) which includes the following areas:

- Globally Harmonized System GHS of Classification and Labeling of Chemicals
- Managing hazardous materials
- Labeling
- Safety Data Sheets
- Safe Handling
- Emergency procedures
- Control measures

- Purchasing of Hazardous Materials
- TSCA

5.2. Department Specific Training
Each department will provide supplemental information on the specific hazards present in its own area. Chemical specific training programs are available on the Hazard Communication Web Page. Training must be documented in the Massena Training Data base.

5.3. Method of Informing Employees of the Hazards Associated with Non-Routine Tasks
The hazards of non-routine tasks, including those involving hazardous materials, will be reviewed with employees during pre-job discussions with their supervisor. These discussions will include a review of appropriate Job Safety Analyses, Equipment Safety Analysis, Safety Data Sheets and Engineering Standards.

5.4. Transfers and New Employees
Department Managers and superintendents are responsible for ensuring transferred employees instructed in the proper handling of hazardous materials within the department during their orientation. Hazard communications training is an element of new employee orientation.

5.5. CONTRACTORS, SUBCONTRACTORS AND CONTRACTED SERVICE
The Alcoa Project Leader will be responsible for ensuring that provisions the provisions of the Hazard Communication Standard which apply to employees of outside contractors will be administered as described in Alcoa Engineering Standard 33.052.4.

6. CHEMICAL ORDERING AND INVENTORY CONTROL PLAN

6.1. Policy
No amount of any chemical substance (whether purchased or received at no cost) can be brought onto the site until it is reviewed and approved by Environmental and Industrial Hygiene. Chemical safety information [for example Safety Data Sheets (SDSs)] will be made available for all materials that employees may come into contact with. This information along with the appropriate training in the safe use of materials that they are required to use or come into contact with. This information along with appropriate training in the safe use of the chemical(s) will be furnished to comply with the Hazard Communications Standard, OSHA 29 CFR 1910.1200.

6.2. What Is a Chemical Substance?
The intention of this procedure is not to require a review and approval for all chemicals; however, the following substances will require Environmental and Industrial Hygiene review:

Abrasives	Fertilizers	Lubricants
Additives	Fuels	Manufactured Chemicals
Analytical Chemicals	Herbicides	Paints
Adhesives	Insulating Materials	Paint Strippers
Boiler Treatment Chemicals	Janitorial Supplies	Process Chemicals
Cement and Glues	Thinners	R&D Chemicals
Cleaners	Water Treatment Chemicals	Solders
Coatings	Waterproofing Materials	Solvents
Compressed Gases	Welding Rods	Refractory Materials
Degreasers/Metal Cleaners	Welding Fluxes	Sealants

6.3. Chemical Prescreening/Approval Process's
Safety Data Sheets (SDS) are maintained through the Paratox system. SDS may be viewed and downloaded from this site. Massena Operations approved hazardous materials inventory is found on the **Plant SDS Inventory** on the Massena Operation Hazardous Materials Web Page. Prior to ordering a hazardous material the requester should check the material inventory to determine if it has been approved.

6.3.1. New Product – If you are purchasing a new material not currently used on site or have a new application for an existing product you must complete the New Material Review form.

Follow this procedure if you are using a material for the ***first*** time. Obtain a current SDS for the chemical from the supplier or manufacturer.

- Fill out the form entitled **New Material Request Form.** Send or take this form to the industrial hygienist. The request will be reviewed by industrial hygiene and environmental personnel.
- You will be notified via email of the product's approval status. You may order the product once it has been approved.
- The new product will be added to the Massena hazardous material inventory in Paratox.

6.3.2. Orcale Purchases – Product purchased through Oracle must be on the Massena Hazardous Materials inventory. If they are not, you must use the New Product Approval Process.

6.4. On Site Contractors:

All on site contractors are required, as part of their purchase order or contract agreement with Alcoa, to provide chemical safety information on all chemicals that they plan to bring on site. These chemicals will undergo a review prior to use at Massena Operations. If contractor representative becomes aware of a new material in use without a review, the contractor will be requested to stop using the material until a review takes place.

7. OTHER CONSIDERATIONS

7.1. Toxic Substances Control Act Compliance:

All chemicals manufactured or imported into the United States must be on the Environmental Protection Agency's TSCA approved chemical list. When a material is brought onto site, the material must be entered into the chemical inventory database to determine if it is a TSCA approved material.

7.2. SARA Compliance:

The SDS must be reviewed by Environmental to determine if it is regulated by the Super Fund Amendments and Re authorization Act (SARA), Title III. If so, the Environmental Department must maintain accurate inventories to comply with Sections 312 and 313 of SARA.

7.3. Medical Emergencies

For medical emergencies, chemical identity information in one's possession should be communicated to the treating physician or nurse immediately. In many instances, the supplier himself will be the one providing chemical identity information if it is proprietary. If situations arise requiring the release of proprietary information, Robert M. James, the Corporate Director of Health. should be apprised subsequent to its release. We may elect to require the treating physician or nurse to sign a confidentiality agreement for the information we divulged once the emergency is abated.

Appendix A

WROUGHT ALUMINUM PRODUCTS, 2xxx SERIES ALLOYS 664

Hazard statement

May cause an allergic skin reaction. May cause cancer by inhalation. Causes damage to organs through prolonged or repeated exposure by inhalation.

Precautionary statement

Prevention

Obtain special instructions before use. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves and eye/face protection. Wash thoroughly after handling. Do not eat, drink or smoke when using this product.

Response

IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. IF exposed or concerned: Get medical advice/attention. Get medical advice/attention if you feel unwell.

Storage

Store in a dry place.

Disposal

Reuse or recycle material whenever possible. Dispose of contents/container in accordance with local/regional/national/international regulations.

Danger

Supplemental information

Non-combustible. Small chips, fine turnings and dust from processing may be readily ignitable. Contains nickel. May produce an allergic reaction.

Explosion/fire hazards may be present when:
- Dust or fines are dispersed in air.
- Chips, dust or fines are in contact with water.
- Dust and fines are in contact with certain metal oxides (e.g., rust, copper oxide).
- Molten metal is in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide).

FIRE FIGHTING MEASURES:
Use Class D extinguishing agents on fines, dust or molten metal.
Use coarse water spray on chips and turnings.

IN CASE OF SPILL:
Avoid the generation of dusts during clean-up. Collect scrap for recycling.
Hot aluminum does not necessarily glow red. If molten: Use dry sand to contain the flow of material. All tooling (e.g., shovels or hand tools) and containers which come in contact with molten metal must be preheated or specially coated, rust free and approved for such use.
Allow the spill to cool before remelting as scrap.
See Alcoa SDS Number 664

Chemtrec: +1-703-527-3887 +1-800-424-9300 (24 Hour Emergency Telephone, multiple languages spoken)

Alcoa Corporation, 201 Isabella Street, Pittsburgh, PA 15212-5858 United States +1-812-853-1111 (24 Hour Emergency Telephone, English only)
Alcoa Health and Safety Email: SDSInfo@alcoa.com Tel: +1-412-992-5499 and Fax: +1-866-560-0431

Alcoa

Appendix B

COAL TAR PITCH

169

Hazard statement

May cause an allergic skin reaction. May cause cancer by skin contact. May cause cancer by inhalation. May cause genetic defects. May damage fertility or the unborn child. May cause long lasting harmful effects to aquatic life.

Precautionary statement

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing dust/fume/vapors. Wear protective gloves/clothing and eye/face protection. Use personal protective equipment as required. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment.

Response

IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Storage

Store away from incompatible materials. Keep away from heat, sparks and open flame - No smoking.

Disposal

Dispose of contents/container in accordance with local/regional/national/ international regulations.

Danger

Supplemental information

Material will burn if ignited. Dust or fines dispersed in the air can be explosive.

Direct contact: Can cause irritation of the eyes and skin. Skin contact: Can cause photosensitization. Prolonged or repeated skin contact may cause skin cancer. May be absorbed through the skin in harmful amounts. Contact with molten material may cause thermal burns. Dust or vapor: Can cause irritation of the respiratory tract. Acute overexposure: Can cause central nervous system effects and cardiovascular system effects. Chronic overexposures: Can cause lung cancer, kidney cancer and bladder cancer.

FIRE FIGHTING MEASURES: Water spray, fog, CO2, dry chemical, or regular foam. Do not allow runoff to sewer, waterway or ground. Use water spray to minimize vapors. Use water spray to cool exposed containers. Move undamaged containers away from heat or flame, if possible.

IN CASE OF SPILL: Avoid the generation of dusts during clean-up. Avoid contact with skin and eyes. Contain spillage with sand or earth. Allow spilled material to solidify and scrape up with shovels into a suitable container for recycle or disposal. Recover spills for reuse. Do not allow this material to drain into sewers/water supplies. Pick up contaminated soil. Wear appropriate personal protective equipment.

See Alcoa SDS Number 0169.

Chemtrec: +1-703-527-3887 +1-800-424-9300 (24 Hour Emergency Telephone, multiple languages spoken)

Alcoa Corporation, 201 Isabella Street, Pittsburgh, PA 15212-5858 United States +1-812-853-1111 (24 Hour Emergency Telephone, English only)
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Alcoa

Appendix C

Hazard	Area 2	Area 3
Coal Tar Pitch – Coal tar pitch is found in our green, and baked carbon departments, and in aluminum services and in our potrooms during bake in of pots. Coal tar pitch is a carcinogen and can cause photosensitization of the skin. Person working in areas where coal tar pitch is present will receive special training	No	Yes
Alumina – Alumina is considered a nuisance dust and there is a low health risk.	No	Yes
Bath/Reacted Alumina – Bath and alumina contains fluoride that can be irritating to the eyes nose and throat. Hydrogen fluoride gas is generated in our reduction cells at temperature exceeding 500. HF can cause severe irritation to the eye, nose, and throat.	No	Yes
Electromagnetic fields - Exposure to electromagnetic fields can adversely affect individuals with certain types of medical implants and acquired ferromagnetic foreign bodies. Magnetic fields within our potrooms range between 0 and 300 Gauss. Magnetic fields found in high amperage equipment such as substations, motor rooms, rectifier stations, induction furnaces and around large motors may be sufficient to adversely affect the performance of medical implants.	No	Yes
Molten Aluminum – Molten aluminum and water can be an explosive combination. The risk is greatest when there is sufficient molten aluminum to entrap or seal off the water. Water and other forms of contamination on or contained in aluminum scrap or remelt ingot are known to have caused explosions in melting operations. If confined, even a few drops of water can lead to violent explosions	Yes	Yes
Aluminum Dust – Aluminum dust and fines is reactive and explosive. The dust in the Metallurgist laboratory on the Band saw in the ingot plant is considered explosive. Aluminum dust will react with water to form hydrogen gas.	Yes	No
Asbestos – Waste product. Asbestos was a widely used material due to its thermal, mechanical, chemical, and electrical properties. Commonly for thermal system insulation, sprayed or troweled on surfacing, and miscellaneous uses such as floor tile, and gaskets, fireproofing, roofing, and thermocouple insulation. Suspect building materials installed prior to 1981 must be presumed to contain asbestos and are, therefore, classified as presumed asbestos-containing materials (PCAM) and treated as asbestos-containing material (ACM) until analytical testing confirms otherwise. Chronic overexposures: Can cause scarring of the lungs (asbestosis), lung damage and thickening of the lung lining (pleural plaques). Can cause cancer of the lung lining (mesothelioma), lung cancer, cancer of the vocal cords, cancer of the gastrointestinal tract and kidney cancer. IARC/NTP: Listed as "known to be a human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1) *. Additional information: Smoking has been found to substantially increase the risk of lung cancer from asbestos exposure.	Yes	Yes
Lead – Lead is found on many painted surfaces including machinery and building steel. Lead is also used in ingot casting and is found in some ingot furnaces. Lead can cause irritation of eyes and upper respiratory tract. Acute overexposures: Can cause nausea and muscle cramps. Chronic overexposures: Can cause weakness in the extremities (peripheral neuropathy), gastrointestinal tract effects, kidney damage, liver damage, central nervous system damage, damage to blood forming organs, blood cell damage and reproductive harm. Can cause reduced fertility and fetal toxicity in pregnant women. **Certain inorganic lead compounds** IARC/NTP: Listed as "reasonably anticipated to be a human carcinogen" by the NTP. Listed as possibly carcinogenic to humans by IARC (Group 2B) *.	Yes	Yes
Refractory Ceramic Fibers – Refractory ceramic fibers, RCF is an asbestos replacement product used as a furnace insulation. Aluminum silicate fibers such as Kaowool, and Inswool are insoluble in lung tissue and have been linked to lung cancer in laboratory animal.	Yes	Yes

Chlorine – Chlorine is used at the Massena Intake for water purification and in the ingot plant to filter metal. Chlorine is stored in 1-ton cylinders at both locations. The health effects of chlorine are as follows. ACUTE: Liquid contact with skin or eyes may cause burns. Vapors may cause severe irritation to skin, eyes, and respiratory tract. Inhalation of large concentrations may cause pneumonitis and pulmonary edema. Exposure to liquid can cause burns on contact. Prompt treatment is important to minimize effects. The hazard at different concentrations is reported to be as follows: 0.2-0.5 ppm = No toxic, long term effect. 1-3 ppm = Definite odor; irritation of eyes and nose. 5-8 ppm = Throat, eye, and mucous membrane irritation. 30 ppm = Intense coughing fits. 34-51 = Lethal in 1 to 1.5 hours exposure. 40-60 = Exposure for 30-60 minutes without effective respiration may cause bronchitis, pulmonary edema, or bronchopneumonia. 100 ppm = May be lethal after 50 minutes of exposure (estimated). 430 ppm = Lowest concentration known to cause lethality after 30 minutes of exposure. 1000 ppm = May be fatal with a few deep breaths. CHRONIC: There are no known chronic effects from exposure to chlorine gas at or below the accepted occupational limits for exposure. Repeated exposure to chlorine above the TLV may result in reduced pulmonary capacity and dental erosion.	Yes	No
Beryllium – Beryllium is found in reacted alumina, and molten bath in the potroom. SHORT TERM (acute health effects) Inhaling high levels of beryllium in the air can cause lung damage and a disease called 'chemical pneumonia' which resembles pneumonia Beryllium health effects first noticed in 1940's/50's Symptoms include coughing, burning and pain in the chest, and shortness of breath The acute health effects of beryllium no longer occur in industry due to better workplace controls and practices. LONG TERM (chronic effects) Chronic Beryllium Disease (CBD) Primarily a lung disease. Occurs in individuals who become allergic or sensitized to beryllium. Can affect people who were exposed to small amounts of beryllium CBD can take years to develop -- from first exposure to onset of disease can be 10-15 years Although not fully understood, recent studies suggest that beryllium sensitization may have a genetic basis.	Yes	Yes

Date of Review:	8/29/2025	Date of Next Review:	8/30/2026
Reviewed By:	Jonathan Hewitt		
Approved by (SPA or Manager):	Hugh Palmer		
NOTE: Non-SSOP documents are to be reviewed in conjunction with the ASAT corporate schedule.			
Revision Table:			
Revision Made by:	Date:	Describe Revision Made:	
Jonathan Hewitt	8/2/2023	Review/Revision Table added.	
Hugh Palmer	8/30/2024	Reviewed	
Hugh Palmer	8/29/25	Reviewed	

PSC Prequal Submittal Form

FILL IN GREEN SHADED AREAS ONLY!
ALL **MUST** BE COMPLETED -- FORMS WITH BLANK SPACES WILL BE RETURNED!
RETURN COMPLETED FORMS TO JERRY FREGOE, CONTRACTOR SAFETY

1. Supplier to be Evaluated:	
Type of Supplier (Prime or Sub):	
Company Legal Name:	
dba Name (if different):	
Contact Name:	
Title:	
E-mail Address:	
Phone Number:	

2. Site Code: Massena

3. Scope of Work to beprovided:	

4. Requestor:	
Requestor's Name:	
E-mail Address:	
Phone Number:	

5. Priority (Normal=14 days, or Rush=7 day):	

Notes:

Table of Contents:

1. Purpose:

The Lockout/Tagout Verification Program establishes the minimum performance requirements for lockout/tagout/try of energy sources that have the potential to cause injury to personnel. All employees shall comply with this program in accordance with OSHA Standard 1910.147. This program incorporates the servicing, maintenance and cleaning of machines and equipment in which the "unexpected" energization or start-up of the machines or equipment, or release of stored energy could cause injury to employees.

- This program is mandatory for ALL employees: hourly, salaried, production, maintenance, and contractor. Failure to use them when required, or any violation of the danger tag rules, shall be cause for corrective action.

2. SCOPE:

The program applies to the control of energy during servicing and/or maintenance of machines and equipment which take place during normal production operation and emergency situation when:

- For safety in the installation, maintenance, repair, cleaning, and adjustment of all power-driven machines and equipment, such equipment shall be shut down and secured in as positive a manner as possible and danger tags & locks shall be used to prevent the operation of such equipment. For this purpose, **A WHITE DANGER TAG** and LOCK shall be used to protect the personnel. **A YELLOW**

WARNING TAG shall be used to indicate that equipment is not fit for operation or under repair and if necessary, a general-purpose lock other than locks specified in this policy may be used in conjunction with the yellow tag.

3. DEFINITIONS APPLICABLE TO THIS PROCEDURE

a) Affected Employees is a person whose job requires operation or use of equipment on which servicing, or maintenance is being performed under lockout/tagout, or whose job requires work in an area in which such servicing or maintenance is being performed.

b) Authorized Employee is a person responsible for implementing a tagout/lockout procedure on equipment to service or perform maintenance on that equipment. An authorized employee and an affected employee may be the same person when the affected employee's duties also include performing maintenance or service on a machine or equipment which must be locked or a tagout system implemented and has reviewed general lock/tag/try procedures.

c) Barricade is a physical obstruction, such as tapes, ropes, cones or A-frame type wood or metal structures, intended to warn about and limit access to a hazardous area. Barricades are temporary and not to be used as permanent guarding.

d) Capable of Being Locked Out refers to an energy isolation device designed with an integral part to which a lock, such as a hasp or other integral locking mechanism, can be affixed, or if it has a locking mechanism built into it. Energy isolation also will be considered capable of being locked out if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolation device or permanently alter its energy control capability

e) Crew will be considered a group of two or more persons working on the same equipment under the group Lock-Tag-Try procedure. A crew can be made up of multi-disciplines.

f) Energized means connected to an energy source or containing residual or stored energy.

g) Energy Control Plan is a specific energy isolation procedure or checklist developed from one or more generic energy control procedures and applied to equipment, processes, tasks or confined space entry.

h) Energy Isolating Device are mechanical devices that are intended to prevent the transmission or release of energy, including a manually operated electrical circuit breaker; a disconnect switch; a physically operated switch used to isolate the electrical supply to a circuit where the poles cannot operate independently; a slide gate; a slip blind; a line valve; a block; and any similar device used to block or isolate energy. The term does not include a push button, selector switch or other control circuit type devices.

i) Energy Source is any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, gravitational, radioactive, or other energy.

j) Equipment Isolation Sheet is an equipment-specific list of energy sources and energy isolation points created and used to identify all energy isolation devices needed to perform a specific task.

k) Flagging is a form of marking used on distinct components, equipment, or area to prevent misidentification with other components, equipment or areas which are similar in appearance or close in location

l) **Group Tagout/Lockout/Verification** is a special tagout/lockout/verification procedure where a group or set number of people work under the protection of a common or group tagout/lockout/verification and an authorized person has the primary responsibility for isolating and securing the energy isolation devices.

m) Hot Tap is a procedure used in repair, maintenance and service activities that involve welding on a piece of equipment (pipelines, vessels, or tanks) under pressure to install connections or appurtenances. The procedure is commonly used to replace or add sections of a pipeline without interruption.

n) Lockout is the act of locking and tagging any energy isolation device in the safe position. Isolation devices may not be able to be locked, may have an integrated lockout means or may require modifications before locks can be used.

o) Lockout Device includes a lock and is designed to hold an energy isolation device in the safe position to prevent unexpected activation of an energy source, unexpected start-up, or unexpected release of stored energy.

p) Mark Up system is used for personnel and equipment protection in matters involving the Power System for Massena West. It is used in place of the personal danger tag rules. It is to be used on all circuits above 2400 volts, except the 6600-volt motor circuits, and lower voltages if they affect the work being done.

q) Normal Production Operations is the utilization of a machine or equipment to perform its intended production function.

r) Qualified Electrical Personnel are those persons who have had training in avoiding the electrical hazards of working on or near exposed electrical parts.

s) Qualified Mechanical Personnel are those persons who have had training in avoiding mechanical, pneumatic, hydraulic, etc. hazards of working on or nearby equipment/machinery.

t) Responsible Person is a member of a crew or supervisor that initiates, locks, tags, and documents a group lock-tag-try procedure.

u) Servicing or Maintenance and cleaning are workplace activities such as constructing, installing, setting up, adjusting, cleaning, inspecting, modifying, or any work performed to prepare equipment to perform its normal production operation while the equipment is not being operated. These activities include lubrication, cleaning, or clearing jams, and making adjustments or tool changes where the person may be exposed to the unexpected activation of an energy source, unexpected start-up, or unexpected release of stored energy.

w) Setting up is any work performed to prepare a machine or equipment to perform its normal production operation.

v) Stored Energy is energy that can be drawn upon to do work but can become hazardous if unexpectedly contacted, energized, or released. Stored energy can take many forms, including gravitational, mechanical, momentum, pressurized, electrical and chemical.

w) Tagout Device is a prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

x) Trouble Shooting is a systematic problem-solving process that applies to activities involving energized equipment of sufficient energy to cause serious injury or illness. These activities include adjusting or visual assessment of equipment.

y) Verification is the inquiry, observation and testing methods used to ensure that the proper energy sources are effectively isolated and secured in the safe position and that the equipment, process, or system is in a zero or controlled energy state appropriate for the work to be done.

z) Zero Energy is all sources of incoming energy have been blocked or disconnected and all internal energy has been released or blocked.

REQUIREMENTS:

4. GENERAL

(1) Massena Operations shall create, implement, and maintain a location-specific energy control program that complies with this standard and applicable local regulations.

(2) No machine, vehicle, crane, piece of equipment or process shall be operated when a personal lock and/or tag is attached to an associated energy isolation device.

(3) An assessment shall be performed by the location and determine on a case-by-case basis energy isolation devices, components or equipment that are similar in location and appearance. Locations shall then develop procedures to ensure personnel do not manipulate or perform work on incorrect energy isolation devices, components, or equipment.

(4) The purpose and function of tags and locks shall be easy to identify by personnel.

(5) The consequences for violating the location-specific energy control program shall be proportional to the potential risk.

(6) Energy isolation points shall be located as close to the work as possible to make it as easy as possible for employees to follow the isolation procedures.

ENERGY CONTROL PROGRAM

a) The location-specific energy control program shall include documented energy control procedures for every piece of equipment or system, personnel training and periodic energy control inspections that comply with this standard.

b) At a minimum, the location-specific energy control program shall include the following.

A. The equipment-specific energy control for troubleshooting and diagnosing, repairing, and verifying repairs made to equipment. Similar equipment (e.g., drill presses, CNC machines, lathes, etc.) may fall under one troubleshooting procedure.

B. Methods to prevent unexpected activation of an energy source, unexpected start-

up, or unexpected release of stored energy.

C. A review of equipment-specific energy control procedures whenever new equipment is installed, existing equipment is renovated or modified, or there is a new or revised control procedure for the equipment.

D. Step-by-step tagout/lockout equipment-specific energy control procedures that ensure the energy isolation device, equipment or process cannot be operated without removal of the tagout/lockout device.

E. Specification of the methods to control isolation points.

F. A lock and a white personal danger tag (or an equivalent unique and personal form of identification) to place on the energy isolation device. The key to the lock must be under the exclusive control of the user.

c) The location-specific energy control program shall establish an equipment warning tag or equivalent procedure to prevent the operation of equipment that is newly installed, awaiting repairs or unsafe to operate.

5. RESPONSIBILITIES:

a) The responsibilities of following through on this procedure are binding upon all employees.

b) Most equipment has a combination of mechanical, electrical, pressure, engulfment, etc. hazards. Therefore, the lockout/tagout procedures must involve all appropriate personnel and must verify that all forms of incoming energy are blocked, and all internal energy is released to accomplish a "zero energy state". Zero energy state is the condition in which any source of energy - active or latent - has been released or blocked off in a machine, process, or system.

c) The switch, valve, or operating lever shall be placed in the "Safe" position. If an employee is not certain which switch, valve, or lever to operate in order to secure the equipment, he/she shall check with a knowledgeable person who is familiar with the isolation of that equipment. After placement of a danger tag(s) & lock(s), test the disconnect or switch handle after lock-out to make certain it cannot be moved to the "on" position. **VERIFY EQUIPMENT** to ensure that the proper switch, valve, or lever has been turned off and that the equipment is at a zero-energy state.

d) Only qualified electrical personnel may open an electrical enclosure to operate a disconnect device.

e) New and/or Altered equipment being installed that has been connected to or contains (eg. spring, tank, etc.) an energy source shall be reviewed as a part of the Project Safety & Health Review process and meet Alcoa Engineering Standard(s).

f) No equipment shall be operated when either a personal danger tag & lock or equipment warning tag is attached to the associated switch, valve, or operating lever.

g) Railroad track isolation procedures must be followed whenever the task involves work on or near rail tracks. A minimum of 8.5' from the center line of the tracks is required.

h) Confined space procedures must be followed along when lockout/tagout procedures or a task involves entry into a confined space.

6. KEY CONTROL / IDENTIFICATION:

a) Each individual shall only use HIS/HER own tags & lock(s). Tags shall have the individual's name and department identification. Locks shall have the employee name on it.

b) ALL personal danger locks or sets of locks will be individually keyed with ONLY one key per lock. Crib Attendants and supervisors will be the only persons that can distribute personal locks and will destroy any extra keys that accompany the lock prior to issuing. Note that a set of locks may be keyed alike, again with only one key for the set of locks.

c) Keys to locks that have been placed on an energy isolating device (Lockout) must be carried on the person that applied the lock(s) while work is being performed.

d) Each Employee locking out a piece of equipment is required to use their own personal blue danger lock and white personal danger tag.

e) It is a violation of the Lockout/Tagout Policy to LEND your personal lock and/or key to another person.

f) Storing of personal locks when not in use must be such that they are not stored with keys in the locks in plain view. (This policy is intended to ensure that the control of each individual's locks & keys is maintained.)

7. PERSONAL LOCKOUT PROCEDURE:

A) Notification of Lockout/Tagout:

a) Authorized Employee shall notify all Affected Employees of lockout / tagout purposes.

b) Authorized Employee shall assure that the isolation device is in the zero-energy state. (Equipment/machine shall be shut down in normal manner.)

c) Authorized Employee shall be certain as to which switch, valve, or other energy isolating devices apply to the equipment/machine being locked out. More than one energy source (electrical, hydraulic, pneumatic or others) may be involved. Any questionable, unidentified energy sources shall be resolved by the employee with his/her supervisor and/or safety department, and/or knowledgeable person. STOP if there is any uncertainty regarding proper isolation.

B) Lockout/Tagout:

a) Authorized Employee shall lock the isolation device in the off position with a lockout device and a tag.

b) Everyone working on the Equipment/Line MUST have their own lock on the energy isolation device.

c) Only the Blue personal danger locks, as identified in Attachment #4, will be used for personal lockouts situations.

d) Blue Personal Danger Locks will not be used for anything but Lockout of energy sources, lock boxes or in accordance with an approved procedure.

e) The White Personal Danger Tag shall be attached to the lock with a place for the individual's name and department. White Personal Danger Tags must be attached directly to the lock or with a device that can support a minimum of 50lb. Two examples would be a plastic tie wrap, or a padlock seal as shown in attachment #4. Employee name and department are required on Tag. Employee name is required on the Blue Lock. **Date is not required on either.**

f) Do not permit the use of pushbuttons, toggle switches, pressure switches and similar control circuit devices for isolation purposes.

g) Personal danger tags and locks are not required if electricity is the only source of energy and the cord can be unplugged, and the plug is under the exclusive control of the person performing the servicing or maintenance.

h) If two or more employees are working on the equipment, then the group lock-tag-try procedures may be used.

i) For equipment that cannot be locked or where a locking procedure is not obvious, a thorough evaluation of the situation must be undertaken with the use of the Trouble shooting permit to decide how to make it safe. This permit shall be used when work will be performed on equipment while the equipment is not under LTV condition, which includes adjusting or visual assessment of equipment. After trouble shooting is complete the LTV procedure will be followed.

j) Alternative measure procedures are in place when activities are beyond minor tooling changes or adjustments of equipment take place and LTV procedures cannot be followed. These procedures can be found on the safety home page.

FOR QUALIFIED ELECTRICAL PERSONNEL ONLY

Control panels equipped with a switch with its operating handle mounted in the door and a latching mechanism which allows the door to be opened if the switch is off, shall have personal danger tags placed on the outside handle and on the inside operating mechanism to verify that the danger tag is always viewable. If a lock cannot be applied to an electrical isolating device, then a tag shall be applied, and supplementary safety measures shall be utilized. Examples of such measures include:

* removal of fuses

  Pulling a fuse shall never be the sole substitute for lockout or tagout. One switch may feed several motors individually fused, and switch tagout may shut down equipment unnecessarily. In this case, disconnect, tape, and tagout wires from the load side of the fuse clips, as well as removing the fuses.

* blocking of a controlling switch or
* opening and tagging an extra disconnecting device.

k) A personal danger tag and lock shall be removed by the person who attached it whenever the job is completed or when the person leaves the job. In cases when the job is not completed during the shift or completed by the end of the shift, each person leaving the job shall remove his/her own danger tag and lock. The person or crew shall replace their personal danger tags with an equipment warning tag in accordance with the equipment warning tag rules.

l) Personal shall be prohibited from removing any white danger tag or lock other than their own. If personnel leave the job site and forget their personal lock and tag on equipment the ERT's will be called and attachment #1 Personal LTV Lock/Tag removal incident procedure, form will be followed.

m) If distinct form of marking or labeling is not already available, use flagging to ensure personnel manipulate or perform work on the correct energy isolation devices, valves, or equipment.

8. FLAGGING:

a) Flagging is used to prevent misidentification with energy isolation devices, components or equipment that are similar in location and appearance but on which no work is to be performed. Flagging needs to be durable, securely attached, highly visible and distinctly different in size, shape, and color so it is easily recognized and distinguished as to purpose and function.

b) Before energy isolation is complete, flagging is used to identify isolation devices, valves, components, or equipment to be worked on or manipulated. Flagging used before energy isolation is complete does not indicate proof of positive isolation and does not eliminate the need for independent verification of isolation. The most common application of flagging used before energy isolation is complete is to identify isolation devices, valves, components, or equipment not conspicuously marked or labeled with the associated process, equipment, or function.

c) After energy isolation is complete, flagging is used to define and mark the safe work zone if equipment is similar in appearance or close in location. Flagging used after energy isolation is complete requires proof of positive isolation and independent verification of isolation. The most common application is in high-voltage electrical situations where flagging is used to identify de-energized equipment from barricaded energized equipment.

d) Flagging must include identification of the applicable energy isolation, job or task with sufficient information, such as the work order number, to easily inform personnel of the reason for the flagging.
e) Flagging must be removed after the task or job is complete.

Note: Electricians' working on or near High Voltage Electrical Systems will follow High Voltage Electrical Safety Standard 32.60 Section 4.6.3 - Identifying the Work Zone and Restricting Access to the Area.

C) <u>Procedure for Electrical Energy Control</u>:

a) Perform appropriate pre-job review prior to work.

b) Obtain the proper Lock, Tag, Verify procedure for equipment being isolated if one is needed.

c) Identify energy source(s) and control methods.

d) If opening disconnect switches use left hand rule: Stand to the side, hold breath, turn face, and open switch. If this is not possible contact an electrically qualified person for guidance.

e) Tag and lockout the switch in the off position.

f) Test the disconnect, or switch handle, after applying locks to make certain it cannot be moved to the "on" position.

g) Verify zero energy state by trying equipment. See lockout verification section.

h) Authorized employee who open the disconnect switch shall be approved by the location to perform these tasks.

i) Locks and lockout devices must be attached in a manner that will hold the energy-isolating device in a "safe" position.

j) Pulling the fuses is not to be used as the sole substitute for Lockout.

D) <u>Procedure for Mechanical Energy Control:</u> (Equipment powered by internal combustion engines, air, pressurized gases, water, steam, vessel, valves, pipelines, chemical, stored energy, etc. are examples of mechanically powered equipment)

a) Obtain the proper Lock, Tag, Verify procedure for equipment being isolated if one is needed.

b) Identify energy source(s) and control methods.

c) Operate mechanical isolating devices such as valves, levers, etc. to the safe position.

d) Carefully evaluate the potential for a leaking valve or a closed valve to leak by looking for evidence of entrance or release of fluids that may constitute a hazard. Bleeding, purging, capping blanking, blinding or disconnecting all service, process, vent or overflow lines are examples of procedures that may be required.

e) Be aware that upstream and downstream pressure and vacuum conditions may exist adjacent to a hydraulic or pneumatic valve. For pneumatic valves, pressure must be relieved by bleed off. For hydraulics, stored energy must be controlled. Continue after these planning steps are complete.

f) Test and inspect for stored air, gas, steam, hydraulic fluid, etc. that remains under pressure in piping, accumulators, and cylinders. Operate enough combinations of controls to eliminate stored energy in the mechanical systems. Compare equipment component positions with those shown on equipment drawings to bring energy stored in springs or elevated devices latched into position to a safe energy state.

g) Test the isolation device after lockout has been installed to make sure that is cannot be operated or have its state changed

h) Verify zero energy state. See lockout verify verification section

i) Authorized employee who open the disconnect switch shall be approved by the location to perform these tasks

j) Locks and lockout devices must be attached in a manner that will hold the energy-isolating device in a "safe" position

k) After verification of electrical lockout, bleed off all air and/or hydraulic pressure and discharge any stored energy as indicated in specific equipment procedures. If needed, mechanically block any part that may move due to gravity. Once all sources of energy are dissipated, restrained, relieved, disconnected and/or otherwise rendered safe, apply lockout/tagout energy isolating devices. If there is a possibility of re-accumulation of stored energy to a hazardous level, continued isolation shall be performed until the possibility of such accumulation no longer exists.

l) The following shall be followed for breaking lines.

1. Always assume the line is pressurized. Never rely on a pressure gauge to prove the line is depressurized.
2. Completely isolate lines to be worked on. At a minimum, this means blocking and bleeding the line.
3. Install a blind flange on the pressure side when a valve or spool is dropped out of a line. If the spool was removed between line sections, both open ends must be blinded if the line is being left unattended.
4. Give special consideration to butterfly valves, which do not provide the same level of sealing as do gate or ball valves. Gate and ball valves are commonly referred to as block valves.
5. Ensure every isolation plan considers what type of valves is installed in the system to prevent potential exposure to energy in the form of pressure. In a system that has only butterfly valves upstream of the work

being performed, energy sources must be de-energized to safely perform work.

m) The following shall be followed for hot taps.
   a. The metallurgy, wall thickness and condition of the equipment or pipe to be hot tapped shall be established and verified by subject matter experts before approving any hot tap.
   b. Hot tapping is prohibited on vapor-filled vessels or piping without first inserting that equipment and verifying the enter vapor space is below the limiting oxygen concentration for the flammables inside the equipment.
   c. Hot tapping is prohibited on lines or equipment with cladding or internal coating or linings of glass, lead, refractory, plastic, or other metals.

n) Energy control procedures must include a review of EHS STD 18.1 Entering and Working in Confined Spaces

E) Lockout Verification:

a) Check the lockout by attempting to run/start equipment or machine. Each run/start device must be tried to ensure total lockout of equipment or machine.

b) Electricians must check their
- voltage tester on a known energized voltage source before testing the locked-out circuit
- then test the circuit on the load side after opening the disconnect
- check for electrical interlocks,
- tagout / lockout as necessary, and
- test control circuit to insure it is deactivated; after performing voltage check,
- re-check your tester on a known energized voltage source to ensure your tester was working during above checks.

c) If the switchblade is the method of verification and the panel door needs to be opened to verify, then only a qualified electrical personnel may open the panel door.

d) Qualified electricians shall test for no voltage on phase-to-phase and phase- to- ground before beginning any work on electrical conductors or energized parts.

F) Release of Control:

a) Upon completion of repair/work, the Authorized Employee must inspect to ensure that:
- All guards are replaced and secured.
- All tools have been removed.
- Any other nonessential items have been removed.

b) Authorized Employee must check to ensure that all employees in the area/working on the line have been notified and are in a safe position or removed from the area.

c) Before lockout/tagout devices are removed, and before equipment/machines are energized, Affected Employees must be notified that the lockout/tagout devices are actually being removed.

d) Each lockout/tagout device will be removed by the Employee who applied it.

**In cases when the Employee who applied the lockout/tagout device is not available to remove it, (the person has left the site) the device may be removed by the Supervisor from the originating department adhering to Attachment 1 in the Appendix.

e) Re-energize the energy isolation device.

f) Test run the equipment/machine and verify repair and operating condition.

g) Notify Affected Employees of equipment/machines that operation is safe and placed into service.

G) <u>Testing or Positioning of Energized Equipment</u>:

In situations where the energy isolating device(s) are locked out and/or tagged out, and there is a need to test or position the equipment, the following sequence of actions will be followed:

- If there are no existing specfic written SSOP or Written Trouble Shooting Procedure, issue a Trouble Shooting Permit (See Appendix)
- Energize and proceed with testing or positioning.
- Reapply energy control measures to continue servicing and maintenance.

9. GROUP TAGOUT / LOCKOUT PROCEDURE:

a) When one or more people are working on a piece of equipment, the group may use a lockbox procedure to avoid placing individual personal locks and tags on each isolation device. This procedure can be used for one or more shifts.

b) The primary responsibility for making the equipment safe lies with the members of the group. One member of the group, the "Responsible Person," shall affix Red Group Locks and Tags to each device being isolated. This "responsible person" shall coordinate the affected work forces and ensure continuity of protection.

c) The keys to these Red Locks shall be placed into a lockbox.

d) A Red Lock, keyed different from the one isolating the equipment shall be placed on the lock box by the "responsible person."

e) A "Group Lockout Form," (Attachment # 2) is filled out by the "responsible person" who ID's Energy Sources / Location and the Equipment that is isolated.

f) At this point the "responsible person" tries the equipment to verify that it is inoperative.

g) Each person who works on the equipment must review the "Group Lockout Form" prior to placing his/her personal danger tag and blue lock on the lockbox (including the "responsible person" for

the job). When the person has stopped working on the equipment at the end of the day, that person will remove their blue lock and danger tag from the lock box. This includes the Responsible Person; they must also apply a personal blue lock and tag to enter the area.

h) Anyone, not part of the original group, who wishes to work in the area isolated by a lockbox must contact the "responsible person" and review the "Group Lockout Form" before placing a personal blue lock and tag on lockbox and beginning work. Provision for verification of energy isolation devices must be given.

i) The "Group Lockout Form" must be reviewed each time that you lock the lockbox to ensure that you are working on the section of equipment that is locked out.

j) If a person so desires, he/she may also place their own locks and tags on equipment instead of working under the Responsible Person.

k) At any time during the outage, the red lock(s), tag(s) are removed; the "group lockout form" must be reassessed by the "responsible person" with representative from each crew or group that is working on the equipment.

l) When the job is completed and all personal blue locks and tags are removed from the lockbox, the keys to the red group locks may be accessed and isolation devices can be unlocked by the "responsible person".

m) Transfer of responsibility:

a. If the job may be completed on the next shift, the "responsible person" can transfer the responsibilities to another "responsible person" in order to unlock the equipment.
b. If the "responsible person" will not be available to unlock the equipment due to being unavailable for personal or company business, the "responsible person" can transfer the responsibilities to another "responsible person" in order to unlock the equipment.
c. The "responsible person" will review the "group lockout form" with new "responsible person" and provide the key to red lock on the box. The new "responsible person" will sign and date the "group lockout form" and inform all crafts or groups' working on the equipment that transfer of responsibility has been made.
d. **Note:** The "responsible person" does not need to be in the plant while others are working on the equipment.

Note: Use of a lockbox in High Voltage switching procedures deviates from the above in that each energy isolating device is locked with a single-keyed, dedicated station lock, not a personal lockout lock. Also, each individual energy isolating device is tagged with a **Mark Up Tag**, not a personal danger tag.

10. EQUIPMENT WARNING TAG / YELLOW LOCK USAGE:

YELLOW TAG - NEVER USE THIS TAG / YELLOW LOCK FOR PERSONAL PROTECTION

a) The yellow equipment warning tag shall be used for temporary equipment protection only. It provides space on one side for describing the reason for tagging the equipment, the name and department of the individual attaching the tag, and the date. If necessary, a general-purpose lock may be used in conjunction with the yellow tag.

1. Unsafe equipment or machinery.
2. Equipment or machinery undergoing repairs that carries over into the next shift or for extended periods of time.
3. Equipment or machinery that would be damaged by operation.
4. New equipment or machinery that has been or is about to be connected to an energy source.
5. Additional equipment designated by the location such as during confined space entry.
6. Mobile equipment.

b) The tag shall be properly filled out and placed on the switch, valve, operating lever, or isolating device whenever its state must not be changed because damage may be done to the equipment.

c) After repair or corrective action has been made and the appropriate people have checked out the equipment and assured themselves that the equipment is safe to operate, the equipment warning tag can be removed. The appropriate people that may check out the equipment and remove this tag are as follows:

* Originator of the tag or his/her supervisor
* Worker or repair person, or relieving worker or repair person
* Maintenance supervisor
* Engineer from the area.

d) The tag is to be returned to the originating department and the operating department must also be notified that the equipment is operational.

e) The perforated bottom section of the Equipment Warning Tag may be used at the discretion of the originator/department.

YELLOW LOCK

a) Yellow locks shall be used on equipment that is taken out of service and will be idle for an extended period.

*The yellow lock will be in addition to the yellow tag.
*The tag will be filled out as per above.
*The key location will be written on the tag in the Name section.

11. CONTRACTORS:

a) Contracted firms must supply their employees with personal locks for Lock, Tag & Verify. Contractor locks should be plain and silver colored, but any normal sized, individually keyed lock (with a single key) will be accepted as long as they are not red. The Alcoa Safety Department will supply red and white bands for each contractor employee on which they write their name and company name before placing on the locks. Alcoa will also supply the white personal danger tags

on which "Contractor" is stamped on both sides of the tag. The contractors' employees will be required to write their name and company name legibly on the tag. The name must be on the lock. It is recommended that the contractor laminates these tags with 2" Packing tape to protect them from damage.

b) When contracted services are engaged in activities at a location, the location and the contracted services employer must communicate their respective energy control procedures to each other. Both parties are responsible for ensuring that their respective employees, who are likely to interface with each other, understand and honor the other's energy control procedures.

c) Lock Boxes for Contractor Isolation: All lock boxes for contracted projects shall be established and removed by the Alcoa Project Leader (or other Alcoa representative) for the duration of the project. This Alcoa individual will review the lockbox details with the contractor prior to their employees placing personal locks on the box. At no time is a contractor to set up a lockbox, or handle the controlling key for a lockbox, that controls Alcoa equipment.

12. EQUIPMENT SPECIFIC L/T/T PROCEDURES:

a) Multiple sources, equipment specific procedures have been developed to ENSURE the complete lockout of the equipment. The location of these procedures can be found on the Massena Safety and Health SharePoint, LTV page. They may also be attained from the supervisor in the department.

13. PERIODIC INSPECTIONS:

a) Each specific energy source used at the facility will be audited / inspected to assure the proper application of the energy control procedures and responsibilities are in accordance with Massena's energy control program. The audit / inspection will be documented through the use of the audit form located at the end of this document titled "LTV Audit Form".

b) The energy control audit / inspection shall be conducted on a representative sample of the equipment specific energy control procedures that include all the various energy sources at the site. The energy control inspection shall verify authorized persons understand their responsibilities and the proper implementation of energy control procedures. Use guidelines below for representative sample size.

Sample population < 25 Sample 100%
Sample population >25-50 Sample 50%
Sample population >50-100 Sample 25%
Sample population >100-500 Sample 15%
Sample population >500-1,000 Sample 5%
Sample population >1,000 Sample 3%

OSHA Reference to the above

c) Maintain documentation of all annual energy control inspections including the type of equipment of process inspected, personnel performing the inspection, the names of the personnel observed during the inspection, their job titles and departments and the date of the inspection.

d) Corrections to deficient energy control procedures shall be completed immediately.

14. PROCEDURE CHANGES:

a) If procedure changes or new ones are created, use the "SS0P & LTV Procedure Change" form to document – See Attachment #5

15. PROCEDURE REVIEWS:

a) We will also review all LTV procedures on a periodic basis to verify that the PESHR process effectively captured all changes. This will involve a field review of each procedure to confirm nothing has changed since the last review of the procedure.

16. TRAINING:

a) Training describing the location-specific energy control program will be conducted initially for all new employees before they are assigned to any position, and refresher training every two years. Refresher training shall occur when changes to equipment, job assignments, processes or procedures, or audit results necessity warrant a revision to the energy control program, or when audits, observations or increases of incidents indicate a lack of understanding or compliance.

The training shall include the following:

- Authorized persons—Recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.
- Affected persons—An overview of the purpose and use of energy control procedures, barricades and flagging.

All others

- The purpose and function of energy control procedures.
- A prohibition against tampering with or removing flagging, tags or locks from energy isolation devices, values, components, or equipment
- The need for verification of isolation.
- A caution against attempting to restart or energize tagged out or locked out equipment.

Trained personnel shall be required to demonstrate proficiency.

b) All Contractors will review the Lockout/Tagout Program with their ALCOA Project Sponsor prior to their starting any work on any machine/equipment.

17. RAILROAD TRACK ISOLATION PROCEDURES

In order to adequately protect personnel working on or around railroad tracks railroad track isolation procedures have been developed. Refer to the **West Plant Railroad Isolation Procedure (Blue Flag)**, located on the LTV web page on the Safety and Health website.

18. REFERENCES:

Alcoa Engineering Standard 18.3 (see Safety Professional to review)
OSHA Standard 1910.147

A copy of this written program can be located at the Safety and Health Website, LTV web page. The below attachments are also located on the LTV web page.

19. ATTACHMENT #1 PERSONAL DANGER TAG/LOCK REMOVAL REPORT - This form is to be used when a person has left the plant without removing his/her lockout locks and tags.

20. ATTACHMENT #2 GROUP LOCKOUT FORM - This form is to be used for Group - lockout / tagout situations.

21. ATTACHMENT #4 SAMPLES OF TAGS & LOCKS - This is to present visually the tags and locks that are used in Massena Operations.

22. ATTACHMENT #6 LTV AUDIT FORM - This form is to standardize how we audit the different aspects of our LTV program.

23. ATTACHMENT #8 TROUBLE SHOOTING PERMIT - Use this form when there are no existing specific written SSOP or Written Trouble Shooting Procedure, and work will be performed on equipment while the equipment is not under LTV condition, which includes adjusting or visual assessment of equipment.

24. RECORD HISTORY:

Date of Review:	8/1/2023	Date of Next Review:	9/18/2026
Reviewed By:	Jonathan Hewitt		
Approved by (SPA or Manager):	Nate Rufa		
NOTE: LTV procedures are to be reviewed every 3 years.			
Revision Table:			
Revision Made by:	Date:	Describe Revision Made:	

Jody Hoerner	11/23/2021	Added to Section 8- EQUIPMENT WARNING TAG / YELLOW LOCK USAGE
Jonathan Hewitt	2/28/2023	Reviewed
Jody Hoerner	6/6/2023	Revised program with Updated EHS-STD 18.3
Jody Hoerner	8/1/2023	Revised LTV Program change from annual training to every two years per Standard 18.3 2 years.
Jody Hoerner	8/29/2023	Review/Revision Table Added
Jody Hoerner	9/18/2023	Added definition of flagging as per 18.3.2 Removed all reference to green flag. Removed attachment #7-Green Flag Decision Flow Chart.
Jonathan Hewitt	9/26/23	Updated next review date.

1.0 PURPOSE

The "Blue Flag" Railroad Isolation procedures protect personnel and equipment from unexpected movement of railroad cars. A Blue Flag is a signaling device, affixed to the railroad track, informing train crews that the designated area is isolated and secured against any movement of railroad apparatus. The Blue Flag shall be used whenever persons are working in close proximity to railroad tracks, in track wells, loading or unloading railcars, or working on or around railcars.

2.0 PROCEDURE

2.1 Working on or Around Railroad Tracks and Cars

2.1.1 Persons, vehicles, equipment, or materials shall not be positioned within eight and one half feet of the center of any railroad track or cars being loaded/unloaded unless protected by the procedures outlined in this document.

2.1.2 If work must be performed on or around railroad tracks, OUTSIDE of the designated railcar loading/unloading areas, then Rail America must be notified at 769-8608. Provide Rail America with the following information:

- Location of work proposed
- Estimated schedule
- The proposed precautionary measures
- For off shift and weekend notification contact #1 Clock house at 4128.

2.1.3 The work area shall be secured by one of the following means:

- Position portable derailer(s) or rail stop and blue flag a minimum of 50 feet from work area to keep the engine, trackmobile, railcars from entering the work area and /or
- Position the rail switch(s) in a direction to keep the engine, trackmobile, railcars from entering the work area.
  - Be certain that the engine or trackmobile are not within the protected area when securing the area.
  - Set hand brakes and chock wheels of any rail cars within the protected area.
  - Each person working within the protected area must affix their personal danger tag and lock to the derailer(s)/rail stop, rail switch or lockbox.

2.1.4 When the work is complete the area shall be returned to service by the following means:

- Remove all equipment, tools, material, and vehicles from the area.
- Remove chocks from any railcars in the isolated area.
- Each person shall remove their personal danger tag and lock from derailer or lockbox, and remove derailer.
- Contact Rail America at 769-8608 if work was performed outside of designated railcar loading/unloading areas to inform them that the work is complete and the rail clear.

2.2 Loading and Unloading Railcars:

2.2.1 Railcar wheels must be chocked, to prevent accidental movement, whenever cars are loaded or unloaded.

2.2.2 A derailer with a blue flag such as the Aldon Derailer DR-1 permanent style or rail stops shall be installed at least 50 feet ahead of cars at the designated

loading/unloading facilities. If the cars are loaded/unloaded indoors, the derailer shall be affixed outdoors and 50 feet from the entry door to the facility.

2.2.3 Prior to loading/unloading, persons responsible for loading/unloading the railcar(s) shall check to insure derailer/rail stop is in proper to position to isolate track and that blue flag is visible to oncoming traffic.

2.2.4 Persons loading/unloading the railcars shall affix their personal danger tag and lock to the derailer.

2.2.5 Upon completion of loading/unloading, persons responsible for loading/unloading the railcar(s) shall check to insure that all locks and tags are removed, the derailer opened and all dock plates removed, and the derailer/rail stop is in proper position to allow access to the track and the blue flag is not visible to oncoming traffic.

3.0 Material Storage

Material must not be stored within 8 ½ feet of the center of the railroad tracks unless the Rail America manager has approved the storage location.

RECORD HISTORY:

Revision Date	Nature of Revision	Name of Document Review Participant
10/19/03	Revised format of original Massena Operations document to reflect applicability to Primary Massena West	Allen Baxter
11/12/07	Reviewed with no needed Changes	Hargett, Simpson, Serviss
10/26/09	Removed the phone extension number 4331 that is no longer used to call Massena Terminal Railroad. Also MTRR has changed to Rail America.	Rebecca Garrant
07/15/11	Added Rail Switch as a means of isolation and added 50 feet requirement of the derailer to work area	Serviss

Working at Height & Falling Objects

PURPOSE:

The purpose of this procedure is to identify the minimum fall protection requirements for Massena Operations employees, contractors, visitors, or vendors to prevent injuries related to falls.

SCOPE:

This fall prevention/protection procedure must be followed anytime a potential for same level or different level falls exist. All Massena Operations employees, contractor, visitors, or vendors that are exposed to fall hazards must comply with this procedure. The procedure covers fall hazard provisions for:

- Walking or working at unprotected heights of four (4) feet or more in General Industry applications.
- Note: for applications between 4' and 6' a risk assessment must be conducted prior beginning unprotected work. The assessment shall identify all reasonably practicable controls to prevent or mitigate the risk of a fall and injury.
- Fall control is required when personnel access flatbed trucks and trailers which are 4 feet or more in height.
- Working over open vessels, pits, machinery, or moving equipment
- Working over water or over objects which may impose impalement hazards or fall-through hazards such as floor holes, manhole openings, roof openings, wall openings, skylights.
- Working from portable and fixed ladders, cranes, structural steel and mobile equipment such as tank trucks, rail cars, large earth moving equipment, etc.
- Exposure to same-level fall hazards
- Hazards that may contribute to falls shall be addressed using one or more of the following:
  - Eliminate the hazard.
  - Fall prevention system.
  - Fall protection.

DEFINITIONS

Access- Any movement by physical or mechanical means to reach a workstation.

Aerial lifts - Mechanical devices such as articulated or extendible boom lifts, and bucket trucks used for access to heights. (Scissor lifts are not aerial lifts by Alcoa definition)

Anchorage or Anchorage Point - is an approved, secure point of attachment for lifelines, lanyards, or deceleration devices.

Boatswain Chair - is an adjustable suspension scaffold consisting of a solid seat or web sling designed to support one person in a sitting position. A seat is desirable over a sling for suspended work requiring more than a few minutes.

Burst Out - Failure of any snap hook subject to pressure on the gate mechanism by the anchorage point. This includes the unintentional disconnection of perched locking snap hooks from eyebolts.

Competent person - A competent person is one who through extensive knowledge, training and experience has demonstrated the ability to resolve problems related to the subject matter and is qualified to observe and stop work. This person is also able to train in the following areas:

- Nature of fall hazards in work areas
- Correct procedures for erecting, maintaining, disassembling, and inspecting the fall arrest systems to be used.

Working at Height & Falling Objects

- Use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, designated access zones, and other fall prevention techniques to be used.
- Role of employees in fall prevention techniques.
- Correct procedures for the handling and storage of equipment and materials and the erection of overhead protection.
- Applicable Alcoa, regulatory and consensus standards.

Connector - A device that is used to couple parts of a system together. It may be an independent component such as a carabiner, or an integral component such as a buckle or D-ring sewn into a body harness, or a snap hook spliced or sewn into a lanyard.

Controlled Access Zone - An area where access is controlled and where designated tasks may occur without the use of guardrail systems, personal fall arrest systems or safety net systems. CAZ's shall only be used as a last resort and after review with the Fall SPA.

Critical Control - A control that is critical to the prevention or mitigation of Fatal or Serious Injuries / Illness (FSI). The absence or ineffectiveness of the critical control(s) would significantly increase the risk of a FSI event. These controls are often the most relied upon control, it by itself or in combination with other controls prevents or mitigates FSI events.

Critical Risk - Hazard(s) and their associated risk (severity and potential) that if left uncontrolled would likely result in a Fatal or Serious Injury (FSI)

Critical Risk Management - A risk management process to prevent and mitigate Fatal and Serious Injuries / Illnesses (FSI) by applying controls and evaluating their effectives through management observations and assessments.

D-Ring - An attachment point on a harness for a retractable or shock absorbing lanyard. It also can be an anchorage connector for fixed locations or the temporary use of anchorage slings.

Deceleration distance - The additional vertical distance between the harness attachment point at the moment of activation of the lanyards shock absorber and the location of the attachment point once the individual comes to a complete stop.

Designated Access Zone or Designated Work Area - is an area defined by a warning line system or other barrier erected on a roof to warn personnel that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail systems, personal fall arrest systems or safety net systems.

Different Level Fall - An incident where you fall below the level you were standing or walking on (e.g. you fall below foot level).

D-Ring - An attachment point on the harness for a device or lanyard. Also, can be an anchorage connector for fixed locations or while temporarily using anchorage slings (column wrap).

Elevated Fall Hazard - Any presence off the ground or any activity which could result in an uncontrolled fall.

Exposed Edge - An unprotected edge on walking or working surfaces, platforms, scaffolds, or roofs. Not to be confused with Leading Edge.

Fall Arrest- The process of bringing a person's free fall under control after the fall has started.

Working at Height & Falling Objects

Fall Arrest System - A full body harness and lanyard connected to an anchorage point that is used to bring a person's free fall under control after the fall has started.

Fall Control - The elimination or control of a fall hazard using a fall protection method and fall protection systems.

Falling Object - A solid object that either falls from its original position from its own weight or that breaks free from its fastenings due to a force applied from the impact of some other equipment or a moving object.

Fall Prevention - Any means or methods used to eliminate or prevent exposure to a fall. These include properly designed and installed guardrails used to protect floor edges, wall openings, roof openings, exposed edges, walkways, platforms, and equipment. Adequate floor covers, skylight covers, and roof covers, scaffolding, platforms with adequate guardrail systems, and aerial lifts are examples of fall prevention systems.

Fall Protection - The use of a Fall Arrest System or safety nets designed and installed as a stop a person after a fall. These systems do not eliminate fall hazards, but instead reduces the possibility of injury if a fall occurs.

Fall Restraint System - A device or devices, including any necessary component that prevents a person from reaching a fall hazard. Fall restraint systems shall only be used on a walking/working surface that has a maximum of /12 pitch.

Free fall distance - The vertical distance between the harness attachment point at the time of an unrestrained fall and just before the system applies force to arrest the fall.

Full body harness - The design of single or multiple straps that can be secured around the body to which a lanyard or device can be attached. The design distributes the arresting forces over the buttocks, thighs, chest, and shoulders.

Gate - The closure on a snap hook which swings closed to secure the connection. Note all snap hook and carabiner gates must meet the Z 359.1 ANSI Standard (3600 lb. gate strength).

General Roof Plan - A procedure establishing control for access for construction, maintenance, and other activities on a roof. It specifies the provisions for a pre-job roof safety plan, leading edge roof work, and when other appropriate procedures are to be established.

Guardrail system – An edge barrier erected to prevent employees from falling to lower levels.

Hardware - Snap hook, D-rings, buckles, carabiners, adjuster, and O-rings used to attach the components of a fall arrest system together.

Hole – A gap or void in a floor, roof, or other walking/working surface measuring 2 inches or more in its least dimension.

Horizontal Lifeline - A rail, rope, wire, or synthetic cable that is installed on a horizontal plane and used for attachment of a worker's lanyard or lifeline device while moving horizontally. Used to control dangerous pendulum-like swing falls. Must be designed, used, and installed under the supervision of a qualified person.

Impalement Hazard - is exposure during a fall to a sharp or blunt object with an area less than 9 square

inches on its top flat portion, or which could reasonably cause penetration of a person in the vicinity of the hazard during a fall.

Lanyard - A flexible line of webbing, rope or cable incorporating a shock absorber, used to secure a full body harness to a lifeline or an anchorage point. Lanyards may be shock-absorbing or retractable.

Leading edge - The edge of a floor, roof or formwork for a floor or other walking/working surface (such as a deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed or constructed.

Leading Edge Self Retracting Lifeline – A self-retracting lanyard designed to be used in the horizontal position where a fall would result in a worker going over an edge. A leading edge SRL incorporates a shock absorber integrated into the lifeline near the point where it attaches to the workers D ring.

Lifeline - A vertical line from a fixed anchorage or a horizontal between two anchorages, independent of walking or working surfaces, to which a lanyard or device is secured. Part of a fall protection system used as back-up safety for an elevated worker.

Low Slope Roof - A roof with a slope less than or equal to 10 degrees or 2/12, which is 2 units of vertical rise to 12 identical units of horizontal run.

Non-Roof Work - General work performed on a roof such as mechanical work on air handling units, inspections, and air emissions observations.

Opening (walking/working surface) – a gap or void 12 inches or more in its least dimension through which an employee can fall to a lower level.

Opening (wall) - A gap or void 30 inches or more high and 18 inches or more wide in a wall or partition through which an employee can fall to a lower level.

Person in Charge - The person overseeing the work crew, such as the unit supervisor, project engineer, construction manager, task coordinator or team leader.

Qualified person - One with a recognized degree or professional certificate and extensive knowledge and experience in the fall control field, who is capable of designing, analyzing, evaluating and specifying fall prevention/protection systems.

Roof Work - The hoisting, storage, application and removal of roofing equipment and material including insulation, sheet metal and vapor barrier, but not including the construction of the roof deck. (OSHA 1926.500 (b))

Rope – Is a wire or synthetic rope used as a lifeline.

Rope grab - A fall arrestor that is designed to move up and down a lifeline suspended from a fixed overhead anchorage point to which the harness is attached. In the event of a fall, the rope grab locks onto the compatible rope through compression to arrest the fall.

Safety Monitoring System - A safety system in which a competent person is responsible for recognizing and warning employees of fall hazards. (OSHA 1926.500 (b))

Safety Net System - A structure composed of nets with a max opening of 6” square and rigging located directly under a work area designed to arrest a fall and prevent contact with any surface or structure below the net. Nets shall bear the mfg. name, date, latest test date and be installed according to Osha

and manufacturers requirements.

Same level fall - An instance in which you fall to the same level in which you were standing or walking (e.g., you fall to foot level).

Scaffold - Any temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage), used for supporting employees, materials or both.

Self-Retracting Lifeline (SRL) - A fall arrestor whose integral line extends as a worker moves downward and automatically removes slack as the worker moves up toward the unit. SRL's have a centrifugal locking mechanism that stops the lifeline from further extension when a fall is detected.

Shock absorbing lanyard - A flexible line of webbing, cable, or rope attached between an anchorage point and full body harness, with an integral shock absorber which dissipates energy by increasing the deceleration distance.

Snap hook, locking (formerly called double-action) - A connecting snap hook that requires two separate forces to open the gate; one to deactivate the gate keeper, and a second to depress and open the gate which automatically closes when released. Used to minimize roll-out or accidental disengagement. Required at Massena Operations.
Snap hook, non-locking (formerly called single action) - A connecting snap hook that requires a single force to open the gate which automatically closes when released. Single action snap hooks are not permitted.

Softener – Padded material to protect fall protection from sharp edges.

Stanchion - An upright bar, post or support for securing a horizontal lifeline, warning line or handrail in place. Generally used in fall control to refer to the supports for a warning line system.

Steep Roof - is a roof with a slope greater than 10 degrees or 2/12 pitch, which is 2 units of vertical rise to 12 identical units of horizontal run.

Suspended Staging or Scaffolding - A single point or multiple point work platform suspended by ropes, or other non-rigid means, from an overhead structure used for powered or non-powered access, up and down the side of a structure.

Suspension Trauma – A potentially fatal consequence when workers are left in a suspended state while using fall arrest systems. Also referred to as harness-induced pathology.

Tie-off - The act of securing the end of a lanyard to an anchorage point. An anchorage point is sometimes referred to as a tie-off point.

Tool Tethering - A method of preventing tools from falling or being dropped. A typical tool tethering system will comprise of three components: the tether point on the tool itself, a tool lanyard, and an anchor point.

Unprotected Sides and Edges - Any side or edge of a surface (except at entrances to points of access) where there is no wall or guardrail system.

Warning Line System - Continuous rope, wire or chain, marked with a flag every 6 ft., and supporting stanchions (typically at a maximum 25' spacing) erected around all sides of the roof work area.

Work Position Harness - A full body harness with a D-ring on each side, in addition to the D ring on the

back. The additional side D rings are intended to support the actual weight of a person working hands free.

RESPONSIBILITIES

Management / Supervisor is responsible for:

- Evaluating the need for personal fall arrest equipment and fall prevention systems as the task is being planned.
- Supplying personal fall arrest equipment, fall prevention systems and falling object prevention and mitigation equipment for the task and ensuring it is maintained.
- Ensuring personnel are trained in the application, use and inspection of the fall arrest equipment, fall prevention systems and falling object prevention and mitigation systems.
- Providing the necessary supervision to ensure that the application and use of personal fall arrest equipment and fall prevention systems is correctly applied to control fall hazards.
- Ensuring compliance with all safe work practices, work rules, training, or other fall control requirements.

The employee is responsible for:

- Evaluating the need for personal fall arrest equipment and fall prevention systems when preplanning the job.
- Considering fall and falling object hazards that may be present while performing the task as well as any fall hazards while traveling to and from an elevated work area.
- Considering the use of fall prevention systems such as scaffolding, guardrails and aerial lifts.
- Discussing with the person in charge any potential hazards that may develop during the job.
- Complying with all safe work practices, work rules, training, or other fall control requirements.
- Properly maintaining, inspecting, and using, fall arrest equipment and systems.
- Inspecting, reporting, and ensuring correction of any deficiencies in fall prevention systems and falling object prevention.

The Fall Control SPA is responsible for:

- Evaluating the selection and purchases of new equipment.
- Updating and overseeing the fall training programs and activities.
- Maintaining the written Massena Operations Fall Control Program.
- Recommend changes to improve execution of the program.

SPECIFIC FALL PREVENTION / PROTECTION RULES AND REQUIREMENTS

Floor, Roof, Skylight and Similar Covers

- Temporary or permanent covers or guards shall be provided for skylights, holes or openings in floors, roofs, roadways, or other walking and working surfaces where there is a potential for a fall.
- Wall opening shall be protected if the bottom edge of the opening is less than 39 inches above the walking and working surface.

Working at Height & Falling Objects

Manhole openings

- Every manhole floor opening should be guarded by a standard manhole cover.
- While the cover is not in place, the manhole opening shall be fully protected on all sides by physical barriers or for short term exposures, an individual will be designated to stand guard and ensure no one approaches the hole until the cover is replaced.

Protection for holes in floors and other walking/working surfaces.

- All covers shall be capable of supporting without failure, at least twice the weight of employees, equipment and materials that may be imposed on the cover at any one time.
- A temporary guardrail system may be used to protect employees working around the hazard.
- A full body harness and lanyard attached to an approved anchorage point (fall arrest) may also be used but is the last option that should be considered to protect people working around an open hole.
- All covers must be secured to prevent accidental displacement by the wind, equipment, or employees.
- All covers should be marked with the words "**DANGER-HOLE**" or similar warning of the potential hazard. This provision does not apply to cast iron manhole covers or steel grates used on streets or roadways.

Walking/working surfaces that expose people to same level fall hazards.

- Walkways must be maintained to prevent slips, trips, and falls.
- Each department should regularly inspect their work areas and platforms.
- General Requirements:
  - Elevated walking and working surfaces shall be designed by a qualified person to ensure strength and structural integrity is adequate for maximum intended load with an adequate safety factor.
  - Keep all tools and materials in their place when not in use.
  - Always keep the floor clear.
  - Keep aisles and passageways clear.
  - Close all drawers.
  - Use permanent wiring, not extension cords, whenever possible.
  - Keep wires and cords untangled.
  - Clean up spills immediately.
  - Keep chemical containers closed when not in use.
  - Check chemical containers regularly for leaks.
  - Don't let grease or dirt build up on floors or surfaces.
  - Maintain lighting.
  - Report holes, loose, or deteriorated grating, floor block and other flooring problems.
  - Throw away trash promptly.

Fixed Ladders, platforms, and stairways 4 feet or more in height

- Requires guardrails, handrails, mid-rails, toe boards, etc.
- Any fixed ladder, platform, or stairway damaged beyond safe use must be repaired immediately or tagged out to prevent use.
- For specifications, refer to the Alcoa Engineering Standard 33.013 and consult with the Safety and Health department before making any changes or additions.
- Handrails must be used when ascending or descending stairs.

Working at Height & Falling Objects

Portable Ladders: General Requirements

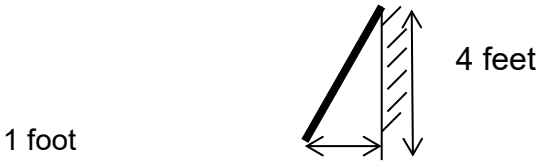
- Must be rated at the Type 1A (300lb) min capacity.
- Must be maintained according to manufacturer's recommendations.
- Must be inspected every six months as per *Massena Operations Portable Ladder Inspection Procedure.*
- Ladders shall be visually inspected for defects by the user prior to each use including verification that ladder has the current, colored inspection tie wrap. Missing safety feet or shoes, cracked rungs, damaged side rail, etc. or any equipment with structural defects shall be immediately identified with a yellow equipment tag and shall be removed from service until repaired or disposed of.
- Always use the correct type of ladder for the application. If you are unsure of the type of ladder needed, contact your supervisor.
- Make sure hands and shoes are dry and free of oil and grease.
- Fall protection is required when working at or above 6 feet from a portable ladder. Work from ladders between 4 and 6' will require 3 points of contact.
- Always clean and return to storage after each use.
- Ladders being used in a location where they can be displaced by workplace activities, such as passageways, doorways, or driveways, shall be secured to prevent accidental displacement. Barriers or a safety person shall attend to keep activities or traffic away from the area.
- No additional portable wooden ladders are to be purchased as they are being phased out as they are retired.
- Ladders shall be made of non-conductive material.
- Verify that ladders are positioned more than 10 feet away (horizontally) from exposed electrical lines.
- Ladders shall be used only on stable and level surfaces unless secured to prevent accidental displacement.
- Climbing/descending
  - Always face the ladder when climbing up or down.
  - Tools or other articles which are too large to be carried in pockets, backpacks or belts shall be lifted and lowered by hand line.
- Do not work outside of the side rails. (A person is "outside" of the side rails when their "belt buckle" is laterally beyond either side rail.) Working outside of the side rails is defined as "overreaching" because the center of gravity is outside of the side rail. If these provisions cannot be met, stop, and relocate the ladder.

Portable straight or extension ladders

- Must be secured during use: refer to illustrations in "Ladder Tie Off Methods", for clarification.
- Select a ladder that is the right length for the job.
- Straight ladders must be equipped with safety feet.
- Securing ladder:
  - Verify both side rails make contact with a fixed resting point, or use a device to prevent the ladder from twisting.
  - The ladder shall be secured close to the top resting point as follows:
    - Rope or tie wire to be tied to both side rails directly below a rung with no slack in rope.
    - Tie off point on both side rails must be below the point to which the ladder is resting.
  - If ladder is not secured, it must be held by a person to prevent movement.
  - If using the ladder to access an elevated surface, extend the ladder at least three feet above the top surface being accessed.
- Do not leave unsecured ladders unattended.
- Position extension ladders against the structure prior to extending.
- Maintain 3 points of contact while climbing.

Working at Height & Falling Objects

- Do NOT stand on or above the third rung from the top of a ladder.
- Ladders shall not be moved, shifted, or extended while occupied.
- Angle the ladder so the distance from the bottom to the wall equals one-fourth of the ladder's working height.



Step Ladders

- The top and the top step shall not be used as a step.
- Cross bracing on the rear section of step ladders shall not be used for climbing unless the ladders are designed and provided with steps for climbing on both sides.
- Step ladders shall only be used on hard level surfaces with the locking mechanism fully extended.

Mobile Ladder Stands and Mobile Ladder Stand Platforms (Portable Stairs)

- All mobile ladder stands, and platforms shall be in compliance with ANSI A14.7-1991 and OSHA 1910.29.
- Platforms purchased after Jan 1st, 2020, shall have handrails that are a min of 39" high.
- The maximum work level height shall not exceed four (4) times the minimum or least base dimension. Where the basic mobile unit does not meet this requirement, suitable outrigger frames shall be employed.
- The minimum step width shall be 16 inches.
- Mobile ladder stands and platforms shall be inspected prior to each use.
- Mobile ladder stands and platforms shall not be moved when occupied.
- Damaged or defective mobile ladder stands, and platforms shall be removed from service until repaired or replaced (damaged ladder destroyed and discarded).
- Mobile ladder stands and platforms shall not be loaded beyond manufacturer's rating.
- Materials and equipment shall not be stored on the steps or platform.
- Additional height shall not be gained by the addition of any type of extension, or an object being placed on the unit.
- Foreign materials, such as mud or grease shall be removed from a person's shoes prior to ascending a unit.
- Handrails shall be used while ascending or descending the unit.
- The user shall face the ladders when ascending or descending a unit except when the slope of the ladder is 50 degrees or less above the horizontal.
- Verify that mobile ladder stands, and platforms are positioned at least 10 feet horizontally away from high voltage electrical lines.
- Occupied units shall not be placed in front of a door unless the door is either secured in an open position, locked, attended, or barricaded.
- Always keep the unit in close proximity to the work. Descend and relocate the unit to prevent overreaching.
- Mobile ladder stands and platforms shall only be used on level surfaces.
- Access or egress to or from any step or platform from any other elevated surface shall be prohibited unless the unit has been positively secured against movement.

Working at Height & Falling Objects

Grating

- Grating throughout the facility shall be formally inspected every (2) years and shall identify the following:
  - Defects such as loose fastener clips, damaged grates, corrosion, etc.
  - Proposed corrective actions.
  - Interim measures to mitigate the hazards.
  - Actual corrective measures that were taken.
  - Inspector's name and the date of the inspection.
  - Replacement of grating if inspection shows a condition that is unsafe or unacceptable.
- Before grating, flooring, decking, railing can be removed, a grating, decking, flooring, railing removal permit must be completed. The permit can be found on POKA.

Fall Protection Requirements for Aerial Lifts

- Personnel working from an aerial lift shall wear a full body harness with a lanyard connected to the manufacturer's anchorage point in such a manner to restrain the individual inside the basket and protect them from falling outside the basket. A retractable lanyard is preferred.
- Lifts shall be set up on a firm, level surface in accordance with the manufacture's guidelines.
- Personnel shall not anchor to an adjacent pole, structure, or equipment when working from an aerial lift.
- Working outside the basket while attached to the aerial lift anchorage point is prohibited.
- Never sit or stand on the top rail, middle rail or toe board.
- Never stand on materials or any other object in an attempt to increase reach from the basket.
- Aerial lifts shall not be used to travel while the basket is in the elevated position.
- 100% fall protection is required while making the transfer from the basket to an unprotected area. This shall be achieved through the use of a double leg lanyard or maintaining tie off in the basket of the lift until being positioned behind a fall prevention rail on a protected platform.
- Scissor lifts are not considered aerial lifts and therefore a fall arrest system is not required, unless required by the manufacturer.
- Baskets on forklifts are prohibited.
- The area below the basket and boom of aerial lifts must be protected by a safety person and/or signs, barricades, traffic cones etc. as appropriate for the amount and type of traffic in the area in which work is being performed.
- New lifts shall be equipped with an anti-crush system.

Fall Arrest Equipment Selection and Use

- Shall comply with OSHA and ANSI 9.12 standards.
- Examples include full body harnesses, lanyards, vertical lifelines, horizontal lifelines, and nets.
- Fall Arrest systems have three components: an anchorage point, connecting device and body support.
- It is used ONLY when fall prevention is not feasible due to location, or practicality.
- Considerations in designing a fall arrest system:
  - Anchorage points must be approved.
  - Interference with the work task and the required mobility.
  - Potential use for positioning and restraint.
  - Emergency rescue after a fall has been arrested.
  - Minimizing the free fall distance.
  - Fall clearance from obstructions including the proximity of beams, welding operations, live electrical conductors, impalement hazards, process tanks, rotating and other hazardous

equipment.

- Rules
  - NEVER attach to a D-ring, eyebolt, rebar or other attachment point unless specifically trained in proper connection techniques to resist “Burst Out”.
  - NEVER use a non-locking snap hook.
  - NEVER attach two snap hooks or lanyards together or to one “D” ring.
  - NEVER loop a lanyard around a member unless it is a “Tie-back” lanyard.
    - Use a connector strap (synthetic web sling).
  - NEVER attach the shock absorbing end of a lanyard to the anchor point.
    - Attach the shock absorber end to the D ring on the back of a harness.
  - NEVER tie a lanyard in a knot.
  - NEVER use a safety belt in a personal fall arrest system
  - NEVER use a shock absorbing lanyard greater than 6’ in length for fall arrest.
  - NEVER use double leg lanyard unless it is the only feasible method of 100% fall control.

Full Body Harnesses

- The capacity of the fall arrest system must be greater than the weight of the individual with their tools.
- Most fall protection equipment is designed for a maximum capacity of 310 pounds. Special equipment will need to be obtained that has a higher weight limit capacity.
- Users weighing over 310 pounds are not approved to use horizontal lifeline unless approved by a qualified person due to the potential for excessive line deflection.
- Harness materials shall be selected to resist deterioration from the presence of hazards in the workplace, such as sun, welding arcs, electric arcs or dilute chlorides containing acids.
- Additional holes shall not be punched in harnesses for size adjustment.
- Work positioning “D” rings on full body harnesses shall be used only for positioning and not as a fall-arrest. They shall be used in conjunction with a fall arrest system, including a lanyard attached to the rear “D” ring.

Marking, Inspection and Testing of Fall Arrest Systems

- Upon receipt of purchased fall arrest equipment, equipment instructions shall be retained and incorporated into user's training programs. Cleaning and storage shall be maintained in according with the manufacturer's instructions.
- Except for connectors, the following manufacturer's markings on fall arrest equipment shall be verified prior to putting the fall arrest equipment into service. The following markings shall remain legible for the life of the equipment:
  - Identification marks of the manufacturer, such as the name or logo.
  - Model and part number of fall arrest equipment.
  - Date of manufacture.
  - Capacity rating.
  - Standard to which the equipment was manufactured to comply.
- A departmental inventory system including the model and serial number (Identification number) for each piece of equipment, username, and the most recent inspection date, will be maintained.
- A visual inspection of personal fall arrest equipment shall be conducted by the user before each use.
- A documented inspection by a competent person shall be performed on personal fall arrest equipment every six months.
- Engineered systems such as permanent anchor points and horizontal lifelines will be inspected by a competent person annually.
- Rejected fall arrest equipment shall be destroyed and removed from the inventory list.
- See Massena Operations and Health Procedures – Fall Arrest Equipment Inspection Procedure for

detailed inspection instructions.
- No Fall Arrest Equipment shall be used unless the appropriate colored cable tie is attached, indicating the inspection is current.
- Weight testing of “in service” fall arrest equipment shall not be permitted. Sample equipment on which weight testing has been performed or was in use when a user fell shall be destroyed to prevent future use.

Purchase/Acquisition/Replacement of Fall Arrest Equipment

- All Fall Arrest equipment purchased for Alcoa employees must be from the approved list on the webpage or approved by the Fall Protection SPA. The area supervisor and Fall Protection SPA shall investigate complaints, defects or use issues related to fall protection equipment or devices.
- Defective or damaged fall protection equipment must be immediately destroyed and removed from the inventory.
- Snap hook gate strength shall comply with the ANSI Z359.1 or Z359.12 (2007) requirement for 3600-pound loading.

Anchorage Point Requirements for Fall Arrest Equipment

- Temporary anchorage points can be approved by a competent person based on a pre-approved engineering model.
- Permanent anchorage points must be approved by a qualified person.
- Permanent and temporary fall arrest anchorage points shall be designed by a qualified person. Anchorage points for fall arrest systems must be approved or fit the following approved engineered model.
  - Guard post and guardrails built with 6” or larger steel pipe or square tubing in sound condition.
  - All building columns.
  - All identified anchor points in personal lifts.
- Anchorage points to which personal fall arrest equipment is attached shall have a load bearing capability of 5000 pounds static load to failure per person. Anchorage points used with retractable lifelines which limit free fall distance to 2 feet or less shall have a load bearing capability of 3000 pounds per person.
- Anchorage points for engineered fall arrest systems shall have a safety factor of at least two times the manufacturer's maximum fall arrest force test data.
- Anchorage points for elevated work can be provided by crane hooks if the load bearing capability is acceptable.
- Anchorage used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached, or shall be designed, installed, and used as follows:
  - As part of a complete personal fall arrest system which maintains a safety factor of at least two; and
  - Under the supervision of a qualified person.
- The user must inspect the anchor point for physical damage prior to each use.
- Examples of what NOT to use as anchor points (unless approved by engineering).
  - Handrails
  - Ladders
  - “C” clamps
  - Electrical conduit or pipe runs.
  - Guard post and guardrails built with less than 6” steel pipe or square tubing.
- Overhead crane hooks on cranes that are rated for a min of 2.5 tons can be used as anchor points if the lanyard is restrained by a safety latch.
- When attaching a personal fall arrest system to a beam or column:

  - Use a column wrap or beam clamp type fall anchor/connector.
  - Column wraps use on a vertical member must be placed directly above a horizontal support or horizontal member to prevent it from sliding down.
- The anchorage point should not be lower than the harness D-ring except in aerial lifts.
- Anytime a fall occurs, the anchor point must be tagged out of service until it is inspected by a qualified person.

Anchorage Points for Fall Restraint

- Anchorage points must be approved or fit an approved engineered model.
- Permanent anchor points for fall restraint shall be designed by a qualified person. Temporary fall restraint anchorage points can be chosen by a competent person.
- Anchorage points for restraint systems shall have strength capable of sustaining static loads applied in the directions permitted by the system of at least 1,000 pounds, or two times the foreseeable force.
- When more than one person or restraint system is attached to an anchorage, the strengths set forth above shall be multiplied by the number of persons or systems attached.
- If the restraint anchorage is also used as an anchorage for fall arrest, then it shall comply with the requirements for fall arrest anchorages.
- Fall restraint systems shall only be used on a walking/working surface that has a slope between zero and 18.4 degrees.

Lifelines

- A qualified person shall approve lifelines, associated systems and stanchions used for securing a lifeline.
- Horizontal lifelines shall support a 5,000-pound dead weight load or two times the maximum fall arrest force per person applied to the center of the lifeline between two fixed anchorages.
- Self-retracting lifelines used on horizontal surfaces with leading and exposed edges, must be rated as “Leading Edge SRL’s” which include a shock absorbing component on the "person end" of the line to reduce force as the lifeline contacts the exposed, leading edge.
- Lifeline materials of construction shall be selected to resist deterioration from the presence of hazards in the workplace, such as sun, welding arcs, electric arcs or dilute chlorides containing acids.
- Rope diameters selected for use with a rope grab type fall protection system shall meet the grab manufacturer's specifications. Rope grabs shall operate automatically and have no manual features to move down the line unless it is failsafe.
- Lanyards used with a rope grab shall be a max of 3’ long.
- Requirements for lifelines and harness systems used solely for confined space rescue are not included in this document, except when such systems are used for fall protection while entering and exiting vertical confined spaces.
- Ladder climbing devices which incorporate a notched rail system are prohibited. Devices shall be designed as failsafe in case the engagement device is held open by the climber.
- Lifeline materials shall be selected to resist deterioration from the presence of hazards in the workplace, such as sun, welding arcs, electric arcs or dilute chlorides containing acids.

Guardrail Systems

- Used to protect floor, wall, roof or similar holes or openings through which a person may fall.
- Erected on all unprotected sides or edges of the hole or opening.
- Must be considered as a first option of protection when access is required onto equipment that

exposes the employee to a 4 foot or greater fall.

- Must be considered as the first option of protection for preventing falls from a walking/working elevation to a lower level 4 foot or greater.
- Systems used at points of access such as ladderways must be provided with a gate or similar protective device or be offset such that a person could not inadvertently walk directly into the hole or opening.
- DO NOT sit, stand, or lean on or over guardrails.
- Sides should not be removed for the passage of materials through holes and openings, until fall protection provisions are in place to prevent / protect against a fall through the opening.
- Guardrail systems used at a platform's points of access, such as ladders, shall have a self-closing gate or similar protective device or be offset so personnel cannot inadvertently walk directly into the hole or opening.
- Design Requirements for Guardrail Systems:

    - Must comply with Alcoa Engineering Standard 33.013 and the building codes of New York State.
    - Top edge height of top rails, or equivalent guardrail system members, shall be 39 – 45" above the walking or working level.
    - Middle rails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking or working surface when there is no wall or parapet wall at least 21 inches high. Open gaps between the top rail and middle rail or the middle rail and working surface shall not exceed 20 inches.
    - Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pound-force applied within 2 inches of the top edge, in any outward or downward direction, at any point along the top edge. A 200 pound-force test load applied in a downward direction shall not deflect the top edge of the guardrail to a height less than 39 inches above the walking or working level. Middle rails shall be capable of withstanding, without failure, a force of at least 150 pound-force applied in any downward or outward direction.
    - Guardrail systems shall be so surfaced as to prevent injury to personnel from punctures or lacerations, and to prevent snagging of clothing.
    - The ends of all top rails and middle rails shall not overhang the terminal posts, except where such overhang does not constitute a projection hazard.
    - Top rails and middle rails shall be at least ¼ inch nominal diameter or thickness to prevent cuts and lacerations. If wire rope is used for top rails, it shall be flagged at not more than 6-foot intervals with high visibility material.

Fall Protection Plan

- A fall protection plan shall only be used in place of a fall prevention system on leading edge work or precast concrete where use of conventional fall control equipment is demonstrated to not be feasible, or it creates a greater hazard.
- On the rare occasion that a fall protection plan is being considered, consult with the location fall control SPA and Corp Standard 18.2.

Railroad, Truck and Tractor Trailer Loading and Unloading

- Access to the bed of a flatbed truck or trailer over 48 inches must be made with fall protection in place.
- There is a tarping station at each plant that is equipped with side handrails and end-gates. This structure is available for use by Alcoa employees, contractors and inbound / outbound freight

drivers.
- Ingot shipping docks are equipped with trailer side protection to prevent falls from trailers while loading trucks and removing rigging.
- If the tarping station is not adequate, man-lifts, portable stairs or other suitable access devices are available to avoid having personnel working without protection from falling.
- At no time is anyone allowed to climb on the actual load.
- Contractors are responsible for assuring their employees, vendors and delivery persons are aware of, and in compliance with these requirements.

Operator and Maintenance access to Mobile Equipment Requirements

- All maintenance on mobile equipment above 4' will require one of the following:
  - Rolling / portable stair tower.
  - Boom / scissor lift.
  - Tie off to an approved anchor point that is at least as high as the harness D ring.
- Work on overhead cranes will be conducted using:
  - Fall arrest from approved anchor points on the crane.
  - Work out of a boom/scissor lift.
  - From the protected catwalk of the crane
  - **Railroad, Truck and Tractor Trailer Loading and Unloading**

EXCAVATIONS

- Fall protection for work around excavations shall be in accordance with OSHA 1926.501 (b)(7).
- Barricades shall be set back a minimum of two feet from hole.
  - Garlock rails, barrels with snow fencing or floor coverings shall be used as protection within buildings.
  - Sawhorses or barrels / posts with snow fencing for exterior barricading.
- Barriers and warning signs or a flag person is required if adjacent to traffic.

SCAFFOLDS

Scope

This procedure must be followed by all Massena employees and contractors when erecting and using a scaffold.

Definitions

- *Competent Person* – one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- *Qualified Person* – one who by possession of a recognized degree, certification, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

Duties of a Competent Person

- To select and direct employees who erect, dismantle, move, or alter scaffolds.
- To determine if it is safe for employees to work on, or from a scaffold during storms or high winds and to ensure that a personal fall arrest system or windscreens protect these employees.
- To train employees involved in erecting, disassembling, moving, operating, repairing, maintaining, or

inspecting scaffolds to recognize associated work hazards.
- To train employees working on the scaffolds to recognize the associated hazards and understand procedures to control or minimize those hazards.
- To inspect scaffolds and scaffold components for visible defects before each work shift and after any occurrence which could affect the structural integrity and to authorize prompt corrective actions and document on an inspection tag.
- To ensure scaffold loads do not exceed the weight for which the scaffold was designed.
- To determine the feasibility and safety of providing fall protection and access for erectors and dismantlers.
- To determine if a scaffold will be structurally sound when intermixing components from different manufacturers.

Duties of a Qualified Person

- To design scaffolding in accordance with OSHA 1910.28 and / or 1926.451(a)(6).

Duties of a Professional Engineer

- For Suspension Scaffolds – to design the direct connections of masons' multi-point adjustable suspension scaffolds. Refer to OSHA 1910.28(f)(17)

Scaffold Rules and Requirements:

- Scaffold will be built and used in accordance with OSHA Std.1926 Subpart L.
- All scaffold users need to be trained on the safe use of a scaffold.
- The erection, dismantling, moving, maintaining and inspection of a scaffold must be performed by a person trained by a competent person to recognize any hazard associated with the work**.**
- Mason adjustable multiple-point suspension scaffolds shall be installed or relocated in accordance with designs and instructions of a professional engineer and supervised by a competent, designated person.
- Suspension ropes for scaffolding shall support at least 6 times the intended load.
- Personnel on suspended scaffold shall use a fall arrest system with an independent lifeline.
- Scaffolds shall be designed by a *qualified person*. The manufacturer is considered to be the qualified designer for purchased scaffold.
- Before each work shift and after any occurrence that could affect the structural integrity, a *competent person* must inspect the scaffold and scaffold components for visible defects.
- After first erecting, when moved or when changing any component of the scaffold, a *competent person* must inspect the scaffold using the Inspection checklist.
- Do not clutter scaffolds with excess tools, materials, and debris.
- Keep the area around and under the scaffold clear.
- Safeguards shall be in place to prevent the scaffold from being hit by mobile equipment.
- Keep scaffold loads to a minimum.
- Scaffolds over 4' in height require a full fall prevention system. In the event fall prevention is infeasible a fall arrest system must be utilized.

FIXED LADDER GATES
- Guardrail systems used at points of access to a platform, such as ladders, shall have a self-closing, double-bar gate or similar protective device or be offset so a person cannot inadvertently walk directly into the hole or opening.
- Gates need to be installed on all new installation projects before the equipment may be put into service.

Working at Height & Falling Objects

- Chains and single bars are not acceptable for permanent ladder opening protection.

ROOF ACCESS GUIDELINES

Roof Practices – includes interior and exterior roofs.

- To access a roof, a Roof Access Permit, or a documented Roof SWI (Safe Work instruction) must be used/in place.
- A Roof Access Permit and/or Roof SWI must be signed by an Authorizing Person. These persons are identified in the IS Menu Training Database, by the department safety professional, or the location's Fall Control SPA.
- In order to be an Authorizing Person to sign a Roof Access Permit, a person needs to have taken courses: SW-755 (Roof Permit Authorization) and SW 030 (Fall Protection) Training.
- Person issuing the Roof Access Permit is responsible for ensuring the integrity of the roof has been evaluated. If there are areas of concern, they have been identified and the permit requires measures be taken to isolate them.
- Personnel inspecting, investigating, or assessing conditions on a roof prior to the actual start of construction work or after all construction work has been completed, need not be included in the plan for roof work but shall be protected from fall hazards by other effective means, such as a safety monitoring system.
- Personnel performing roof work on low slope roofs, with unprotected sides and edges 6 feet or more above lower levels, shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or a combination of warning line system and guardrail system, warning line system and safety net system, or warning line system and personal fall arrest system, or warning line system and safety monitoring system.
- Personnel performing roof work on a steep roof with unprotected sides and edges 6 feet or more above lower levels shall be protected from falling by guardrail systems with toe boards, safety net systems, or personal fall arrest systems.
- Personnel performing non roof work, such as air conditioning repairs, on a roof shall be protected from falling by guardrail systems, safety net systems or personal fall arrest systems. Warning line systems are also permitted when the warning line system is placed 15 feet from the edge and complies with section 4.3.4, and no work is permitted to take place in the area between the warning line and edge, and effective work rules are in place prohibiting personnel from going past the warning line.
- Hoist Areas and Hoisting Operations
  - Personnel in a hoist area shall be protected from falls of 6 feet or more by a guardrail or personal fall arrest system.
  - If all or portions of guardrail systems, chains, gates or other barriers are removed to facilitate the hoisting operation, and personnel must lean through the access opening or out over the edge of the access opening to receive or guide equipment and materials, that person shall be protected from fall hazards by a personal fall arrest system.
- All roof work must be supervised by a competent person who will be designated as the Roof Work Supervisor.
- Plant Security needs to be notified with a time frame that you will be on the roof and notified again when you are off.
- One person needs to carry some form of communication that is capable of contacting Plant Security, such as a plant radio or cellular phone.
- No employee or contractor will go on plant roofs in the following conditions unless appropriate safety precautions are taken to address the eminent hazards. Under these circumstances approval of the area superintendent is required:
  - Lightning
  - Heavy rain

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  - High winds
  - Icing conditions
  - Hail
  - Dense fog
- When possible, roof work is to be scheduled and performed during daylight hours.
- Roof work performed after dark requires special provisions to be in place such as proper lighting.
- Only those individuals specifically covered by the Permit or SWI shall be permitted on the roof.
- Provisions may need to be established to protect people below from falling objects.

Use of Mobile Equipment on Roofs

- The roof must be capable of withstanding the weight of the mobile equipment. Consult an engineer to determine if the roof can support the mobile equipment, materials, and people to be used for the job.
- Special accommodations and guidelines must be determined to get the mobile equipment on the roof. Thorough pre-job planning, and reviews shall take place for this activity.

Designated Work Area Marked by a Warning Line System

- Designated Work Areas can be used as an alternative to guardrails when personnel within the designated area are not exposed to any different level fall hazards (including roof holes, leading edges, wall openings and skylights).
- The following requirements must be met to qualify work for designated work area status:
  - The work is of a temporary nature such as the maintenance of roof-top equipment or roof maintenance repair.
  - The work CANNOT be leading edge roof work or primary roof construction.
- The designated work area must be clearly identified and surrounded by a warning barrier consisting of a flagged rope, wire or chain and supporting stanchions. Warning barrier equipment requirements are:
  - Able to withstand 16 pounds of force at 30” above its base to provide adequate warning to anyone who may bump against it.
  - Have a minimum tensile strength of 500 pounds.
  - Be visible from 25 feet.
  - Be 34” – 39” above the floor (including sag).
  - Be flagged at least every 6 feet with high visibility materials.
  - Be tied between each stanchion.

- The perimeter of the designated work area must be at least 6 feet from the unprotected side or edge.
- The area between the warning line and the unprotected side or edge shall be considered off-limits unless a complete guardrail system or fall arrest equipment is being used to protect those who enter the area between the warning line and the unprotected side or edge.
- Access to the designated work area shall be by a clear path formed by two lines attached to stanchions meeting the performance criteria outlined above or by equivalent means.
- When using mechanical equipment:
  - A warning line should be erected no less than 6 feet from the roof edge which is parallel to the direction of mechanical equipment operation, and not less than 10 feet from the roof edge which is perpendicular to the direction of mechanical equipment operation.

Garlock Rail Guard 200

- Meets OSHA requirements for permanent and temporary guardrails.

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- Can be used to protect employees from falling into openings in the floor or ground.
- Any breaks in a continuous railing section, requires an outrigger assembly (consisting of minimum 5 ft. section of Garlock rail and pinned base plate) to be placed 90 degrees away from the danger side of the continuous railing.
- Where falling material is a danger to personnel below, a removable toe board must be provided. 2" x 4" toe boards must be secured in the slots provided.
- The pins for the assembly must be put into place and secured.
- The Garlock Rail Guard 200 is not to be used as an anchor point.

Safety Monitoring System

(Note: Safety Monitoring System only applies to roof work on roofs 50 feet or less in width and MUST be approved by the Plant Fall Protection SPA)

- A safety monitoring system shall only be implemented as a fall prevention system when no other measure can be implemented.
- A competent person shall be designated as a safety monitor to ensure the safety of personnel and compliance with local regulations.
- The safety monitor shall:
  - Be able to recognize fall hazards.
  - Be able to warn when it appears personnel are unaware of a fall hazard or are acting in an unsafe manner.
  - Be on the same walking and working surface and within visual sighting distance of the personnel being monitored.
  - Be close enough to communicate orally with personnel.
  - Be free of other responsibilities which could distract from safety monitoring.
- Personnel shall promptly comply with fall hazard warnings from safety monitors.

Falling Objects

- The vertical drop zone (VDZ) is => 1.5 times the height of the falling objects hazard.
- To avoid exposure to falling objects, the following shall be observed:
  - Employee shall observe the VDZ at all times.
  - Where work will take place overhead, (cranes, manlifts, forklifts, platforms, scaffolds, ladders, edges of buildings, openings in roofs/floors, etc.) the exclusion zone must be barricaded to prevent others from entering the drop zone.
  - Stored materials shall be stacked no more than 6 feet.
  - Pallet racks are to have leg guarding fixed to the floor.
  - If the weather is particularly severe and the work area designs are not adequate to prevent dropped/falling objects, such as wind blowing material/tools/equipment off elevated surfaces, delay the work or take additional precautions to prevent falling tools or equipment.
  - In situations where employees must enter the drop zone, three-way communication must take place prior to them entering, to ensure overhead activities have been suspended and there are no loose objects in danger of falling. Once the lower task is complete, exposed employees shall retreat and inform upper-level employees that the drop zone is again clear, and they can resume work.
- Responsibilities:
  - Working at Heights SPA shall also serve as the Falling Objects SPA
  - All employees are responsible for identifying overhead hazards and either barricading the area or reporting any questionable items to their supervisor.
  - Falling object hazard compliance assessments shall be conducted as a CCFV.
  - Ongoing communication and periodic reviews of falling object incidents will be conducted.

Working at Height & Falling Objects

TRAINING REQUIREMENTS

- Fall Protection Awareness Training (SW 040) must be conducted and documented for all personnel when they are hired. Refresher shall be conducted every (3) years.
- Fall Protection Training (SW 030) is required for personnel who use fall protection equipment. Personnel are trained in the proper use, limitations, and care of fall protection equipment.
- Refresher training (SW 031) for personnel who use fall protection is conducted annually and/or when:
  - The company has reason to believe that an employee who has already been trained does not have the understanding or skill required.
  - New fall arrest equipment/or procedures are introduced.
  - Changes in the work environment necessitate additional training.
  - Equipment inspection results demonstrate the need for retraining.
- Roof Work and Access Permit Training (SW 755), in addition to Fall Protection Training (SW 030), is required for personnel who are authorized to issue a permit.
- When the company has reason to believe that any affected employee who has already been trained does not have the understanding or skill required the company shall retrain that employee.
- Each department manager is responsible for identifying affected personnel and assuring that the needed training is conducted and documented.
- Training is tracked in the Training Tracker System for all personnel.

EMERGENCY RESPONSE

- Massena Operations has an Emergency Response Team.
- The function of the team is to perform emergency operations involving all types of emergencies including high angle rescue.
- Pre-job briefs for work at heights shall include a plan to rescue the worker in the event they become suspended from their fall arrest equipment.
- A fall control plan including rescue details is required when working on poles, towers and similar structures.
- Emergency Response Team Members are trained in HAZMAT, fire, rope rescue and medical emergencies.

SAFETY RISK REGISTRY

- Fall hazard surveys will be an ongoing activity of this program and will be coordinated by the Fall Protection SPA.

AUDITS

- Departments should conduct periodic audits to assure compliance with this program.

REFERENCES

OSHA Construction Standards Subpart M – Fall Protection
OSHA 29 CFR 1910.22-29, Walking and Working Surfaces
OSHA 29 CFR 1910.66, Appendix C

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OSHA 29 CFR 1926.500-503
ANSI A14.1 Safety Requirements for Portable Wood Ladders
ANSI A14.3 Safety Requirement for Fixed Ladders
ANSI A1264.1 Safety Requirements for Floor and Wall Openings and Railing Systems
ANSI Z359.1 (2007)
Manufacturer's Recommendations

2 RECORD HISTORY:

Revision Date	Nature of Revision	Name of Document Review Participant
5/30/01	Original document	Dale Parnapy
8/27/01	Revised format	Allen Baxter
9/11/01	Revised format	Allen Baxter
5/01/02	Combine into one Site Program	A. Baxter, K. Butz, B. Serviss, J. Fregoe, J. Charlebois
5/31/02	Finalized draft revisions	A. Baxter, K. Butz, B. Serviss, J. Fregoe, J. Charlebois
10/31/02	Removed allowance for perpendicular roof access w/o fall protection and added requirement for positive protection	A. Baxter, K. Butz, B. Serviss, J. Fregoe, S. Barr, R. Hammac
4/28/03	Modified language in section 6.6	K. Butz, B. Serviss, J. Fregoe & S. Anderson
7/14/03	Minor Changes to Highlighted Sections	K. Butz, Fall Protection Team
9/3/03	Added East Plant Personnel to Roof Permit Authorization	K. Butz
5/17/03	Amended section 5.5 – portable ladders.	K. Butz, B. Hammac
4/17/06	Updated "Authorizing Persons" for Roof Permit Access.	K. Butz, D. Parnapy
10/31/07	Updated to meet 18.2 requirements	R. Hammac, D. Parnapy, B. Serviss, T. Simpson
8/03/10	Updated Portable Ladder sections for clarification, added Mobile Ladder Stands, and JLG Lift Pod section	R. Garrant, D. Parnapy, B. Serviss
5/10/13	Updated to meet the 2012 18.2 Requirements	J. Fregoe & D. Parnapy
10/7/20	Updated to meet the Nov 2019 18.2 Requirements	D. Eggleston, K Jarvis J. Fregoe

Date of Review:	3/10/2026	Date of Next Review:	3/10/2029
Reviewed By:	Jonathan Hewitt		
Approved by (SPA or Manager):	Nate Rufa		

Working at Height & Falling Objects

NOTE: Non-SSOP documents are to be reviewed in conjunction with the ASAT corporate schedule.		
Revision Table:		
Revision Made by:	Date:	Describe Revision Made:
Jonathan Hewitt	8/29/23	Review/Revision Table added.
Jason Zembek	12/20/23	Added Pallet Rack leg guarding requirement.
Jonathan Hewitt	4/9/2024	Updated formatting, reworded the vertical drop zone criteria for exclusion zones, corrected grammatical errors.
Jonathan Hewitt	4/10/2024	Added the requirement for a grating, flooring, decking, railing removal permit.
Jonathan Hewitt	3/10/2026	Updated SPA responsibilities.

1 Purpose and Scope

The purpose of this document is to eliminate injuries and fatalities caused by the operation of mobile equipment by setting minimum requirements for the specification and operation of mobile equipment.

This document applies to all leased, purchased and contractor mobile equipment used at Massena Alcoa Operations. Where there is a difference between this Standard and local regulations, the more stringent requirement is to be met.

2 Program Requirements

The Massena Mobile Equipment Management Program is implemented to achieve compliance with 30.36.1-Free Moving Mobile Equipment Standard, and local regulations. At a minimum, the program must include the critical controls and the following components.

2.1 Identification and Management of Risk

A process to identify and manage the risks associated with mobile equipment that includes:

a. Eliminating or reducing the need for mobile equipment in the workplace.

b. Physically segregating heavy mobile equipment, industrial mobile equipment, vehicles and pedestrians.

c. Where elimination or physical segregation is not practicable, implementing other controls to safely manage interactions.

d. Conduct risk assessments on the operation, interaction and maintenance of mobile equipment to address the potential for interaction between mobile equipment, and mobile equipment and pedestrians, and determine controls.

e. Establishing location minimum equipment specifications for mobile equipment based on risk assessment, regulatory requirements and this Standard.

Fatality Prevention Risk Matrix:
Alcoa Massena Safety Risk Registry

2.2 Requirements and Procedures

Requirements and procedures to address mobile equipment hazards:

a. Procedures and rules for safe operation and parking of mobile equipment.

- Mobile Equipment will not be used for any other operation than what it is built for.
- Mobile Equipment will not be used to manipulate a process while it is actively running.
  One Point Lesson-Mobile Equipment use for Intended Purpose.ppt
- Only qualified and authorized operators or repairers shall operate industrial trucks or tractors and then only after proper training.
  - All motor vehicles must be equipped with operator restraints as referenced by AES 30.36.1. Vehicle operators and passengers must use the supplied occupant protection whenever the vehicle is in operation.
  - Drive at safe posted speeds at all times. Use extra care in congested areas, when making turns or on rough floors or pavement.
  - Pedestrians shall not come within 6ft of any side of a vehicle that is in motion or stopped with its ignition on unless protected by a physical barrier.
  - Before using any vehicle, make sure that steering, brakes, lights, horn, back up alarms where applicable, the windshield is clean, the cab floor is free of debris, and other equipment are in good working order. Complete the pre-use inspection checklist. Report any apparent defects to your supervisor.

- Mobile equipment shall be taken out of service when an inspection finds a condition which impacts safe operation (Pre-shift calls out these conditions).
- Face in the direction you are traveling, never back up without looking to see that all is clear.
- Always give pedestrians the right of way. If pedestrians block line of travel, slow down, or stop if necessary, and sound horn.
- All mobile equipment shall be parked according to the following requirements:
  - Vehicles must be secured against movement with parking brakes applied
  - Reverse parking shall be the preferred method of parking, expected in instances where the risk of vehicle collision with worker on foot is higher.
  - Parking mobile equipment on pedestrian walkways is prohibited.
  - Park vehicle in a safe place when not in use. When vehicles are unattended by an operator the engine shall be shut off and the parking brake engaged. Do not obstruct crossings, passageways, or roadways. Shut off engine and apply parking brake when filling the fuel tank. If it is not practical to shut off the engine, then the controls must be neutralized, parking brake set, and the wheels chocked.
  - When the engine power is required for full function of the equipment (e.g., vacuum or pump trucks), chocks shall be in place, and operators must be within 25ft. and have visual contact with the vehicles.
- Stunt driving, racing, and horseplay with vehicles are strictly forbidden.
- Do not bump into objects or material. Do not use your truck as a battering ram.
- Be sure your truck and load clears doors and doorways when entering or leaving buildings. No movement of vehicles or persons is allowed under motorized doors when they are in motion.
- Do not allow any person to ride the forks, pallets, loads, or hitch a ride in any manner on your vehicle, except where an authorized seat is provided for that purpose.
- Park vehicle in a safe place when not in use, with engine off and parking brake engaged. Do not obstruct crossings, passageways, or roadways. Leave forks lowered and in such a position as not to create a tripping hazard.

- **Delivery, loading, transporting and unloading.**
  - When traveling, keep the forks (app. 6 inches off the ground), pole or platform as low as possible, consistent with running clearances. Never travel with load in raised position.
  - When carrying a load, which obstructs your vision, travel with load behind you.
  - Always use blocking when moving or stacking round ingots or bars.
  - When stacking material on high piles, be sure that pedestrians and workers are in the clear. Storage of material shall not create a hazard. Bags, containers, bundles, etc., stored in tiers shall be stacked, blocked, interlocked in height so that they are stable and secured against sliding or collapse. Stored materials shall not block access to any emergency exit and also be 36” from electrical panels.
  - Be sure that your truck is properly and carefully loaded. See that the load is correctly stacked and balanced and is well back on the forks. Do not attempt to handle loads beyond the rated capacity of the truck, or drive on surfaces, which may not support the truck and load.
- **Stockpile development, management, reclaiming and dumping.**
  - When stacking material on high piles, be sure that pedestrians and workers are in the clear. Storage of material shall not create a hazard. Bags, containers, bundles, etc., stored in tiers shall be stacked, blocked, interlocked in height so that they are stable and secured against sliding or collapse. Stored materials shall not block access to any emergency exit and be 36” from electrical panels.
- **Hitching and towing**-referenced on Massena Operations Safety Share Point-Alcoa Massena Health and Safety Programs-Mobile Equipment
  - Hitching:
    SPL-Procedures for Hitching Activities
  - Towing:
    Procedure to safely tow disabled mobile equipment

- **Safe reversing and spotting practices** are located in Massena Mobile Equipment General Awareness Training (SM-090) required for all employees initially and every 3 years. Also included in Mobile equipment training will include:

- A. The location's general safe operating practices (e.g., speed limits).
- B. Risks associated with mobile equipment.
- C. Controls associated with mobile equipment, including the following:
  - WOF
  - Mobile equipment/pedestrian interfaces.
  - Safety devices and equipment (seat belts, blue lights, etc.).
  - Minimum approach distance.
  - Pre-operational inspections.
  - Blind Spots - Both mobile equipment operators and WOF shall be educated in regards to blind spots of mobile equipment they either operate and/or are present in their work environment. The visibility of mobile equipment operators is limited by the equipment's structure or materials they are carrying or moving. The following is a visual example of operator blind spots for the average forklift.


View from front of the forklift.


View from back of the forklift.

- **Pre-use shift inspection of mobile equipment, industrial vehicle, and towed equipment**
  - Pre-shift/use inspection shall be performed by the operator and documented on forms approved by the Safety and Health Department.
  - Massena is in the process of moving from paper pre-shift inspections to POKA, a computer-based software program for pre-shift inspection entry and storage.
  - The inspection record shall remain with the vehicle during the shift or in an area that is easily accessible.
  - Vehicle inspection records shall be maintained by the departments for three months.
  - Vehicle inspections shall be periodically audited by departmental personnel.
  - Personnel who perform preventative mobile equipment inspections and maintenance shall receive training consistent with the scope of their duties. Massena Vehicle Pre-Shift Inspections
- **Communication between mobile equipment, heavy mobile equipment and pedestrians** Vehicle Pedestrian Communication
- **Separation of a distance** of 2-3 lengths must be kept between mobile equipment, mobile equipment and heavy mobile equipment and mobile equipment and pedestrians.
- **Pedestrian segregation and traffic rules for mobile equipment interactions**
  - All departments have been assessed for Worker on Foot areas and have controls and WOF rules in place that include:

(1.) Permanent or fixed – This type of work zone is stationary. The WOF and equipment work and travel in and through the zone. The zones are very well defined and located in areas where the WOF completes his or her routine tasks. Examples are furnaces, storage areas (e.g., warehouses), raw material areas, saw areas, big bags storage area and mobile equipment workshops.

(2.) Movable – This type of work zone moves as the WOF moves throughout his or her routine tasks. The WOF executes the task in different zones or areas along the shift. Examples are tapping/ setting carbon in potrooms, sampling, measuring, and exiting vehicles in mining.
(3.) Temporary – This type of work zone moves and is not part of routine production work. These zones are typically maintenance, construction, contractor, and housekeeping work, such as floor repairs, crane repairs, sweeping/vacuuming, project work or other maintenance service activities in operating areas.

- **Correct use of mobile equipment safety devices** is included in mobile equipment specific training.
- **Temporary traffic controls and road closures** will be communicated throughout the facility for awareness. Equipment such as signage, barricading, fencing and/or traffic cones will be used to demarcate the area. Detours and alternate routes will be communicated.

b. Safe Work Instructions for activities that involve the operation of mobile equipment.

- Safe Work Instructions are included in mobile equipment specific training and in departmental SSOP's.

c. Traffic Management Plan:

Traffic rules, including speed limits

- Drive slowly. Have vehicle under control. Be prepared to stop instantly if necessary.
- Lights On" Policy: All free moving mobile equipment shall be equipped with headlights and shall operate the headlights at all times while on plant site.
- Vehicles must give pedestrians the right-of-way. However, pedestrians should, wherever possible, stay on one side of the road and leave room for a vehicle to pass.
- Obey all traffic signs and posted speed limits. The speed limit on plant roads, unless otherwise posted, is 15 mph.
- Use extra caution in congested areas, at Plant entrances, entrances near buildings, and whenever there are pedestrians on the roads. Be alert for other vehicles or persons stepping out from buildings or other blind areas.
- Mobile Equipment shall not travel faster than 6 mph limit while within Primary Metals buildings, without exception.

Overtaking standards

- Passing is discouraged on plant property. In rare circumstances where overtaking is unavoidable, visual and/or verbal contact must be made with both operators and the person being passed must give a hand signal that it is clear to pass.

Heavy Vehicle Route

- The Molten Metal hauler route is clearly marked with signage, and the incoming truck route is marked out by signage and map handed to drivers upon check in at security gate.

Communication protocols

- Communication will be discussed and documented in Contractor safe work plans if contractor performing work, to ensure clear and concise communications are taking place between work areas and departments affected. The Alcoa Project Leader is responsible for plant wide communications for road closures, or road work taking place.

Procedures for entering hazardous or restricted operating areas

- include following signage in area, plant and departmental policies.

Safe following distances

- Minimum safe following distances for vehicles/mobile equipment on plant property is 2-3 lengths or the 3 second rule.

Mobile equipment and pedestrian segregation controls

- Mobile Equipment and pedestrian segregation controls are communicated in mobile equipment awareness training required for all employees and can be found in departmental Worker on Foot rules and procedures.

Road traffic control signs and signaling are in place and maintained.

- Signs and signaling area are maintained departmentally through the Maintenance REX system.

Parking procedures, including park-up areas and around workshops and buildings.

- Designated parking areas have been established throughout the facility. Signage and lines demarcating parking space are present. In areas in which the car/mobile equipment cannot drive out, back in is required (Signage present in these locations).

Location access, loading and unloading points

- Loading and unloading locations are present through the facility and are mapped. When truck drivers arrive at our facility, they receive a map of these locations.

Trigger action response plans (TARPs) to manage inclement weather conditions that could affect road conditions and safe mobile equipment operations.

- Massena Operations maintains an inclement weather plan to ensure roads; parking areas and walkways are maintained. This plan is updated annually.

Sign-off of design and post-construction of heavy mobile equipment roads (e.g. haul roads) by mining engineers and operations-not applicable to Massena.

d. Requirement for a Journey Management Plan when driving long distances or to remote or isolated locations by vehicle.

Individuals who operate motor vehicles on company business or Alcoa property on at least a monthly basis shall receive Business Travel Training which is a one-time training requirement and comprehensive defensive driving training appropriate for the risk, country and area, every 5 years.

e. Establish location minimum mobile equipment specifications (including mandatory safety devices and features) for mobile equipment, including:

- Collision Avoidance Systems (CAS)
- In-Vehicle Monitoring Systems (IVMS) or Fatigue Detection and Alarm Systems-Fatigue Detection systems are presently being trialed on a specific piece of mobile equipment. Upon completion of trial this system will be evaluated for its efficacy and safety for its intended use prior to expanding the trial.
- Proximity detection and alert systems
- Blue warning lights-All mobile equipment that performs work and is operated inside the buildings are equipped with directional blue lights which are hard wired to the key.
  - The intent of the blue lights on mobile equipment is to warn pedestrians/WOF of the presence of mobile equipment and/or the direction in which the mobile equipment is coming from.
  - The use of blue lights on specific mobile equipment shall be determined by the business unit and/or location.
  - When lights are installed, a minimum of one blue light shall be directed to the front and one blue light directed to the back of mobile equipment.
  - Based on the size and speed of the mobile equipment, the distance the blue lights are projected shall be far enough away from the mobile equipment to give significant warning to pedestrians/WOF.

(1.) The type of blue lights shall be determined by the location, but the lights will be bright enough to be visible at all hours of the day.

(2.) The method of installation for blue lights shall be determined by the location. The lights will be attached to withstand the normal use of mobile equipment and shall be part of the preventative maintenance schedules for the vehicle.

(3.) The blue lights shall be part of the pre-operational check sheet.

- Reversing sensors, alarms and cameras-all are called out on the Massena Mobile Equipment PEHSR.
  Mobile Equipment Safety Review (For New/Rental/Altered Mobile Equipment)
- Call-sign (identification) markings
- Inclinometer for mobile equipment working on slopes
- Rollover Protective Systems (ROPS) based on EHS SUP 30.36.1.2

30.36.1.2
- Falling Object Protective Structures (FOPS) based on EHS STD 18.2. 18.2.1

f. **Risk assessments on mobile equipment** to develop safe operating practices, document operational design limits and identify safety devices.
- Corporate spec sheet and Massena Mobile Equipment PEHSR are used for design review to ensure that all required safety devices are spec'd.

g. **Inspections on new equipment** to ensure that they meet Alcoa and location minimum mobile equipment specifications.
- A Commissioning Mobile Equipment PEHSR is completed for all newly acquired mobile equipment to ensure all the required operational features and safety devices area have been installed.

h. **Ensure that modifications to mobile equipment** that affect the structure, capacity, stability, operational design limits or safety devices are not to be made without written approval from the original equipment manufacturer or a competent person.
- Repairs/Modifications
  - Any repairs or modifications, which could affect the safe operation of any industrial vehicle, shall be reviewed and approved by engineering and/or the manufacturer of the equipment. Such approval shall be in writing.
  - Modifications to mobile equipment affecting the capacity, stability or safe operation shall not be made without written approval from the following.
    (1.) The original equipment manufacturer or its successor.
    (2.) A competent person/firm specializing in mobile equipment modifications consistent with the type and magnitude of the equipment to be modified (e.g., industrial vehicle, earth-moving mobile equipment, mobile crane, etc.

i. **Establish and implement procedures for ensuring that mobile equipment operators are fit for duty**, including pre-employment and periodic medical evaluations, detection and management of operators potentially impaired due to drugs, alcohol or fatigue. Refer to EHS STD 70.2 Work Ability Assessment.
Work Ability Assessment.docx

Employees who operate mobile equipment as part of their work assignment must receive periodic medical examinations to determine if they are physically qualified to safely perform essential functions of the job. The content and frequency of medical examination shall comply with (EHS STD 70.2 Work Ability Assessment). Persons who only operate jib and packing station cranes do not need to receive a physical examination.
- Medical clearance will not be required for cars, light trucks, vans, scooters, all-terrain vehicles, riding lawn mowers and walk-behind vehicles (sweepers, hand trucks, lawn mowers, etc.).

j. **Provide designated parking and refueling areas** for heavy mobile equipment, which are segregated from light vehicles and industrial mobile equipment.

- Refueling of vehicles:
  Refuel vehicles only in pre-designated locations with a spill kit and fire extinguisher available at each area following below procedures:
  - ❖ Shut off the vehicle engine.
  - ❖ Do not smoke.
  - ❖ Do not over-fill the tank.

Emergency Refueling:
1) Within 50 feet of refueling operations there will be no smoking, Open Flames, Cutting and welding, or Hot metal.

2) Vehicles needing refueling in molten metal environments shall be towed outside of the environment.
3) Obtain approval from the supervisor of the area.
4) A Ten Pound ABC dry chemical fire extinguisher must be available while refueling vehicle.
5) Set the parking brake and shut off the engine.
6) Check the area to be sure there are no other sources of ignition.
7) Fuel shall be secured and transported in a properly labeled approved portable safety can with a flash back arrester; the color of the can must be red.
8) The vehicle used to transport gasoline containers must be equipped with a fire extinguisher.

k. Prohibit the use of motorcycles, including quad bikes.

- Bicycle and Motorcycle Rules
  - Motorcycles (two- or three-wheeled powered vehicles), four-wheel all-terrain vehicles (ATVs, also known as quads) or motorbikes without rollover protection are prohibited on company property.
  - Travelling to work and leaving work to go home is permitted and not considered 'business-related',
  - If you ride to work and need to travel to another location in the plant for a meeting, etc. or a task required by work – this is not permitted and considered 'business-related' travel,
  - If you are a motorcycle rider and have any questions on this issue, please contact the Safety Department.
  - Two wheeled bicycles are permitted to travel to work and from work-to-home ***ONLY***. They are not to be used for business purpose.
  - ATVs with ROPS are allowed when reviewed and approved by site management.

2.3 Inspection and Maintenance

An inspection and maintenance program for mobile equipment, towed equipment and road infrastructure, which includes:

a. Routine inspection, maintenance and servicing consistent with local regulations and manufacturer recommendations.
   - Massena Operations has an established preventative maintenance program for all mobile equipment types on site. This plan is based on risk and operational requirements. The frequency of preventative maintenance shall be determined by engineering, maintenance and production and shall consider the frequency and severity of operation, criticality of the equipment to operations and the potential effects of a failure.
   - Upon completion of the routine PMs and emergency repairs the garage mechanics (Qualified Personnel), shall complete the prerelease check list.
     Pre-release%20form.doc

b. Competent personnel undertaking inspection, maintenance and servicing.
   - Massena Mobile Equipment servicing is conducted by qualified garage mechanics that have completed the 5 years minimum experience and passed a qualification exam. Beyond the training required for bidding on a garage mechanic position, garage mechanics receive continual training by equipment manufacturers on the specific equipment within the plant.

c. A method to clearly identify the status of mobile equipment in regard to inspection, maintenance and servicing.
   - Pre-shift inspections call out when mobile equipment shall not be operated and taken out of service until repairs.

d. A process to quarantine, rectify hazards and discard damaged or defective mobile equipment.
   - Garage mechanics will take mobile equipment out of service until repairs can be made and

take mobile equipment out of service and ready the equipment for discard or return due to lease complete.

e. Inspection and maintenance of roads, berms, barriers, parking areas and traffic signage.
   - Asset integrity engineer oversees inspection and repairs of roadway surfaces.

f. The maintenance and retention of inspection and maintenance records.
   - Records are maintained in the REX system.

2.4 Training and Competency Program-Operation and Certification Training:

Operator training on all industrial vehicles will be conducted or coordinated by the Department. All training records will be maintained by the Safety Department. Departments will determine who will be certified to operate mobile equipment.

- Massena Operations training and competency program includes induction (Mobile Equipment General Awareness-SM-090) training for all personnel and role specific training for mobile equipment operators, maintenance personnel and spotters at Massena Operations. This training is conducted initially, and refresher training will be conducted every three years. Included in the training:

A. The location's general safety operating practices (e.g., speed limits).
B. Risks associated with mobile equipment.
C. Controls associated with mobile equipment, including the following:
   (1.) WOF.
   (2.) Mobile equipment/pedestrian interfaces.
   (3.) Safety devices and equipment (seat belts, blue lights, etc.).
   (4.) Minimum approach distance.
   (5.) Pre-operational inspections.

- Certification and Training
  Initial training requires the employee to attend a classroom session conducted by a competent person with the knowledge, skills and experience required for safe operation of the specific mobile equipment for which the employee is being trained. (The Health & Safety Manager shall approve all training content.)
  - Training shall be a combination of classroom instruction and practical hands-on operation of the equipment and be conducted prior to the employee operating the mobile equipment.
  - Each employee is required to demonstrate to the instructor knowledge of course content, which may include a written test and/or skill demonstration evaluation.
  - Unless a location can demonstrate that some of the topics are not needed for safe operation of the mobile equipment on-site, equipment-specific training requirements shall include the following:
    1. All operating instructions, warnings, and precautions for the type of free- or earth-moving mobile equipment that the operator will be authorized to operate.
    2. The location of controls and instrumentation, what they do and how they work.
    3. Engine or motor operation.
    4. Steering and maneuvering.
    5. Visibility, including blind spots and restrictions due to loading.
    6. Fundamental operation as outlined in the mobile equipment operator's manual.
    7. Purpose and function of all safety features, including FOPS, ROPS and occupant restraints.
    8. Proper response to a lateral tip-over or rollover.

9. Overhead obstructions, utilities and electrical lines.
10. Capacity and operational stability limitations.
11. Inspection and maintenance requirements.
12. Hazards of crane or vehicle/pedestrian interface.
13. Hazards of carbon monoxide or diesel exhaust.
14. Hazards of servicing multi-piece or split-rim tires.
15. Hazards of railroad tracks and rail operations.
16. Loading and unloading trucks/flatbeds safely.
17. Early or unscheduled departure, dock drive-off, and trailer floor or landing gear collapse.
18. Rough terrain, haul roads, high walls, residue lakes, brush clearing and similar exposures.
19. Surface conditions where the equipment will be operated.
20. Composition of probable loads and load stability.
21. Pedestrian traffic areas and restricted and hazardous locations where the equipment could be operated.
22. Ramps and other sloped surfaces that could affect the stability of the equipment.
23. Closed environments and other areas where insufficient ventilation could cause a buildup of carbon monoxide or diesel exhaust.
24. Other unique or potentially hazardous environmental conditions that exist or may exist.
25. Refueling and recharging batteries, if applicable.
26. Safe method for making hitch connections.
27. Blind Spots - Both mobile equipment operators and WOF shall be educated regarding blind spots of mobile equipment they either operate and/or are present in their work environment. The visibility of mobile equipment operators is limited by the equipment's structure or materials they are carrying or moving. The following is a visual example of operator blind spots for the average forklift.

- Departmental Skills Assessment
  - Each department is required to train and evaluate operators on the type(s) of equipment they are expected to operate in the department
  - All operators are required to demonstrate to a designated representative hands-on proficiency for the types of equipment they will be operating.
  - A record of employee proficiency shall be documented on the forms provided by the Safety Department and maintained in the Workday Learning.

  Re-certification
  - The employee will be required to demonstrate role specific/hands-on proficiency training which includes familiarization with the mobile equipment critical controls, operation of the different types and models of mobile equipment, use of safety devices, maintenance and inspection procedures, fatigue and impairment screening requirements, if applicable, they will be required to operate.
  - The hands-on proficiency will be conducted upon initial certification and then every 3 years. The proficiency test shall be documented on the forms provided by the safety department and maintained by the department.
  - Refresher training shall be conducted as required by local regulations or when an operator is involved in an incident, is observed to be operating in an unsafe manner, is assigned to a different type of free moving mobile equipment, or when conditions in the workplace change that could affect the safe operation of free moving mobile equipment.
  - Employees involved in Mobile Equipment incidents/accidents will not drive the involved Mobile equipment until Investigation has been completed and a determination if Refresher training is required. If Refresher training is identified

the individual will not drive the specified equipment until training has been completed and a vehicle proficiency assessment has been completed.

2.5 Emergency Response

- Massena Operations Emergence response procedures are to utilize the emergency number 315-705-2800 which will alert the emergency direct line. The ERT's who are trained in emergency response requirements, emergency assistance, extraction and rescue of personnel involved in mobile equipment accidents and responding to mobile equipment fires will be notified and take control of situation.

3.0 Critical Controls

3.1 Mobile Equipment / Industrial Vehicle Integrity

Pre-use/Shift

- Pre-shift/use inspection are conducted by the operator and documented on forms approved by the Safety and Health Department and for those that are utilizing POKA on the I-Pad or their personnel phones.
- The inspection record shall remain with the vehicle during the shift or in an area that is easily accessible.
- Vehicle inspection records shall be maintained by the departments for three months.
- Vehicle inspections shall be periodically audited by departmental personnel.
- Personnel who perform preventative mobile equipment inspections and maintenance shall receive training consistent with the scope of their duties.

Massena Vehicle Pre-Shift Inspections

a. Pre-use shift inspections are conducted prior to each use on mobile equipment and towed equipment, with defective equipment taken out of service. The inspections have clear guidelines for mobile equipment to be tagged out of service.

b. Inspections verify controls and mandatory safety devices, such as strobe lights. reversing cameras, brakes, steering and tires are functional.

c. Routine service and maintenance required under the location inspection and maintenance program has been completed.

d. Inspection records remain with the vehicle or on the computerized POKA system for the entire shift or be readily accessible.

Tag out Procedure for Mobile Equipment in need of repairs:

The Yellow Warning Tag is to be used tagging mobile or portable equipment such as fork trucks, mobile cranes, scooters, hand trucks, coil crates, racks, ladders, lifting tongs, etc. that are considered unsafe and in need of repairs.

a) The tag must be completed with a description of what needs to be repaired, dated, and signed. The tagged equipment must be sent to the appropriate department for repairs.
b) After repair or corrective action, the appropriate people that may remove the tag are as follows:
   - ❖ originator of the tag or his/her supervisor
   - ❖ repair person
   - ❖ maintenance supervisor
   - ❖ engineer from the area

3.2 Mobile Equipment and Pedestrian Segregation

Pedestrians and mobile equipment are segregated by maintaining a minimum separation distance, physical barriers, traffic controls and Worker on Foot Rules.

Pedestrians are prohibited from approaching 6 feet or 2 meters from operating vehicles and industrial mobile equipment unless either:

a. Separated by a substantial physical barrier.

b. Permission is obtained from the mobile equipment operator, and the mobile equipment stops work.

c. Permitted by the location traffic controls and rules (e.g. travelling on opposite sides of the road, pedestrian walkways and crossings).

Massena Operations 6ft rule and wheel chocking policy:
Massena Operations 6ft rule and wheel chocking policy

Massena Operations facility map for load/unload areas.

Load/unload areas are marked with signage and ground painted to demarcate the 15ft area around load/unload area. No one is allowed in the area unless the loading and unloading has stopped.

Massena Operations Designated Load-Unload Areas

Pedestrian walkways are clearly marked and where practicable protected by guards, barricades, railing and gates (at crossing points).

When there is a requirement for a pedestrian to work with or in close proximity to mobile equipment, worker on foot controls are implemented.

Pedestrian Pathway (Walkway) - shall meet the following requirements:

- Minimum 36” wide
- Pedestrian pathways are to be painted consistent with AES 30.36.1.1. Mobile Equipment and Pedestrian Segregation
- Pedestrian Pathways should not be routed under overhead crane loads without signs and lights to alert pedestrians.
- A barrier must be installed on the vehicle side of the pathway. The type of barrier is dependent upon the vehicle traffic and direction of flow. A combination of these barriers’ types may be used:

1. ***Type 1. Steel or concrete barrier***

   A Type 1 barrier is required whenever vehicle travel is perpendicular to the pedestrian walkway, when loads may cross into the pedestrian pathway or in areas where the loads may be unstable. Type 1 barriers are also required when pedestrian pathway are routed behind stored material. The barrier must be taller than the maximum height of the stored material.

2. ***Type 2. Steel posts and railing.***

   These barriers are suitable for areas where the traffic is parallel to the pedestrian walkway.

3. ***Type 3. Distance***

   Vehicle and pedestrian segregation is achieved by maintaining a minimum of 5 feet separation between the pedestrian walkway and the vehicle roadway. The pedestrian walkway must be painted on the floor.

4. ***Type 4. Painted Walkway***

   This is the least protective method to separate pedestrians and vehicles and must be used sparingly. Painted walkway may be used when other forms of separation are not possible due to building constraints.

Pedestrian Only Walkways:

Design Criteria	Example
1. Minimum 3 foot (1 meter) width where feasible. 2. Solid green floor markings are preferred. See Section 6.2. 3. Located where mobile equipment traffic cannot access the walkway. 4. Physical barriers shall be placed on all walkways where risk assessment dictates. Barrier gates shall be installed on the unprotected side.	

B. Crosswalks:

- Signs posted to alert vehicles of the crosswalk.
- Cross Walks inside buildings shall be painted red.
- Pedestrian gates should be installed at high use intersections.
- Mirrors and other ways to enhance pedestrian or vehicle operators' vision may be necessary.

Shared Mobile Equipment Travel Way and Pedestrian Walkway:

Design Criteria	Example
1. Minimum 3 foot (1 meter) width for pedestrian walkway. Mobile equipment travel way width not specified. 2. Solid yellow floor markings are preferred. See Section 6.2. 3. Walkways shall not be routed into hazardous areas such as along unprotected electrical panels, near door entry points and hot metal or into areas of high traffic. 4. Walkways shall be added to all entrances and exit doors and connect to an interior walkway. 5. Physical barriers shall be placed on all walkways based on the risk assessment.	

Mobile Equipment and Pedestrian Cross Walks

Design Criteria	Example
1. Minimum 3 foot (1 meter) width for pedestrian walkway. Mobile equipment travel way width not specified.	
2. Yellow or orange floor marking with additional alert symbol to designate a high hazard traffic area is preferred. See Section 6.2. Examples of alert symbols are crosshatching, red solid bars, walkway borders or stop signs. Requires the pedestrian to stop and look before proceeding into a high hazard traffic zone.	

3. Walkways shall not be routed into hazardous areas such as along unprotected electrical panels, near door entry points and hot metal or into areas of high traffic.	
4. Physical barriers shall be placed on all walk ways based on the risk assessment. The use of barrier gates in conjunction with physical barriers is highly recommended.	

Mobile Equipment Only Travel Way

Design Criteria	Example
1. Mobile equipment travel way width not specified.	
2. Solid red floor markings are preferred. See Section 6.2.	
3. Examples of areas that are to be restricted to mobile equipment only are listed below. this list is not limited to those defined and can be added to as the location deems necessary: A. Mobile equipment overhead doors and openings. B. Interior and exterior ramps. C. Loading docks.	
4. Physical barriers shall be placed in these areas to restrict access based on the risk assessment. The use of barrier gates in conjunction with physical barriers is highly recommended.	

C. Doorways:

- Man-doors should be installed next to exterior roll doors.
- The door must swing outward in such a manner to maximize visibility and be identified as an exit. Roll doors are not recognized as an exit.
- In the absence of a man-door a pedestrian walkway must be painted on one side of the roll door entrance.
- Signs reading “Stop Blow Horn” should be installed at all exterior entrances and exits.

3.3 Worker on Foot Controls

Massena Operations has incorporated measures to ensure the safety of pedestrians (workers on foot) working with or in close proximity to mobile equipment. All areas have completed assessments and have incorporated controls for high-risk areas. The departments continue to work on the assessments and further incorporate technology into their controls.

Where mobile equipment cannot be segregated from workers on foot, Massena Operations has controls to ensure:

a. Work zone (exclusion zones) boundaries are identified.

b. Communication procedures are documented for mobile equipment and workers on foot. Workers must obtain authorization from mobile equipment operators prior to entering, exiting and moving inside of the work zone.

c. Safe areas for workers on foot (including spotters) are identified and clearly marked within the work zone or identified in procedures.

d. Workers within the zone wear high visibility clothing.

All work must immediately cease in a work zone if personnel enter the zone without authorization from mobile equipment operators.

3.4 Mobile Equipment Specification-Mobile Equipment Purchasing/Leasing Specifications

Massena Operations Mobile equipment meets the location minimum equipment specification and is equipped with mandatory safety features and devices. All Purchased or leased mobile equipment shall comply with the Alcoa Engineering Standards 30.20 General Requirements For In-Plant Industrial Vehicle And Automatic Guided Vehicles and 30.3.2 Sound Level Requirements for Purchase Lease or Rental Vehicles and must undergo a Project Health Safety Environmental Review prior to acceptance and use.

30.20-General Requirements for In-Plat Industrial Vehicles:
30.20
30.3.2 Noise Levels for Purchased, Leased or Rented Vehicles:
30.3.2

Massena Mobile Equipment PEHSR:
Mobile Equipment Safety Review (For New/Rental/Altered Mobile Equipment)

The Maintenance Department or other departmental designee(s) will be responsible for inspecting the vehicle prior to release for use to determine that it meets Alcoa's requirements

The location must ensure that:

a. Mobile equipment is equipped with the following features and devices:
   - Reversing alarm
   - Flashing amber beacon, flag and fire extinguisher if accessing active mining or residue areas
   - Horn
   - Seat belts for driver and all occupants
   - Cargo barriers and load restraints if transporting cargo in the cabin, tray or trailer
   - Additional features and devices determined by the location (e.g. CAS, reversing camera)

b. Mobile equipment that interacts with heavy mobile equipment and other mobile equipment must be equipped with:
   - Two-way UHF radio
   - Vehicle call-sign (identification) markings

c. Blue warning lights facing the potential direction of travel (front and back) for industrial mobile equipment that are used inside buildings or in low light conditions.

d. ROPS and FOPS are installed according to Section 2.2-EHS SUP 30.36.1.2 and 18.2.1.

   30.36.1.2: Determination of Roll Over Protection Systems
   30.36.1.2

   18.2.1: Falling Objects

18.2.1

3.5 Safe Operating Practices

Safe operating practices are followed when operating or driving mobile equipment, operators must:

a. Only operate equipment they are licensed, authorized and competent to operate.
b. Ensure that they are fit for work, not impaired by drugs, alcohol and fatigue.
c. Only use mobile equipment within its operating design limits.
d. Wear seat belts
e. Comply with all maximum speed limits, traffic signals and rules.
   The Massena Speed Control Policy is that mobile equipment used exclusively within buildings shall not travel faster than the 6-mph limit. Whenever possible vehicles will be limited by physical or mechanical means (e.g., governing devices, removing gears). All mobile equipment will follow this rule unless it meets one of the criteria listed below:
   - ERT vehicle
   - Vehicles utilized more than 75% of time “outside”.
   - Any vehicle that cannot be effectively controlled or one that’s operation is compromised by implementing the controls.

   These vehicles will be considered exempt vehicles. All vehicles are still subject to all applicable speed limits inside and outside the plants.
f. Only use mobile phones/devices when parked. Cellular phone use for business or personal purposes shall be prohibited while operating mobile equipment on the plant property and while traveling off site for business purposes. For purposes of this section mobile equipment includes the following: cars, trucks, scooters, cranes, tricycles, fork trucks, golf carts, buggies. It is acceptable to use the phone if the mobile equipment is at a standstill.
g. Park in safe, conspicuous locations, outside the blind spots of other mobile equipment and in a fundamentally stable parking configuration.
h. Never leave equipment running unattended.
i. Only use approved routes when operating vehicles that transport more than 6 occupants.
j. Ensure transported loads are restrained or secured.
k. Ensure that personnel and mobile equipment maintain adequate separation distance from dump truck tipping operations and the toe of tipping areas.
l. Refueling of vehicles:
   Refuel vehicles only in pre-designated locations with a spill kit and fire extinguisher available at each area following below procedures:
   - ❖ Shut off the vehicle engine.
   - ❖ Do not smoke.
   - ❖ Do not over-fill the tank.

   Emergency Refueling:
   - Within 50 feet of refueling operations there will be no smoking, Open Flames, Cutting and welding, or Hot metal.
   - Vehicles needing refueling in molten metal environments shall be towed outside of the environment.
   - Obtain approval from the supervisor of the area.
   - A Ten Pound ABC dry chemical fire extinguisher must be available while refueling vehicle.
   - Set the parking break and shut off the engine.
   - Check the area to be sure there are no other sources of ignition.
   - Fuel shall be secured and transported in a properly labeled approved portable safety can with a flash back arrester; the color of the can must be red.
   - The vehicle used to transport gasoline containers must be equipped with a fire extinguisher.

3.6 Road Design and Traffic Controls

Roads and operating areas are designed, constructed and maintained to prevent mobile equipment accidents.

Roads and mobile equipment operating areas must:

a. Be maintained free from road damage, traffic hazards and debris.

b. Be of sufficient size to permit maneuvering by the largest equipment that is intended to be used.

c. Have adequate drainage and compaction.

d. Be delineated, with appropriate traffic markings, signaling, signs and speed limits.

e. Have adequate lighting, marking and traffic signs at pedestrian crossings, intersections, parking areas and railroad crossings.

f. Be free from hazardous overhead services if equipment is required to raise buckets, extensions or trays.

g. Be designed according to the location traffic management plan.

4 Other Controls

4.1 High Visibility Clothing

Personnel that perform work or are in the vicinity of mobile equipment wear high visibility clothing to improve their visibility and alert operators to their presence.

High visibility clothing must comprise of:

a. Fluorescent or other non-retroreflective high visibility material for day use

b. Retroreflective elements for night use

c. A combination of fluorescent or other non-retroreflective high visibility material and retroreflective elements for day and night use.

The design and composition of high visibility clothing must comply with local standards and regulations. In the absence of local standards and regulations, the design should comply with ANSI/ISEA 107-2020: American National Standard for High-Visibility Safety Apparel.

4.2 Journey Management Plan (already listed above-need what our plan is).

A journey management plan is developed and followed when travelling long distances by vehicle or when the route is remote or isolated.

Vehicle travel is reviewed and planned to ensure that the risks of travel are controlled. A journey management plan must be completed for journeys exceeding 5 hours duration.

All salary employees at Massena Operations are required to take SW776 Business Travel Training initially, and SW-775 Defensive Driving every 5 years.

The journey management plan must include:

a. Identification of safe travel routes.

b. Risk assessment for travel hazards.

c. Communication methods, contacts and frequency of check-in calls.

d. Checks to ensure that the driver has had adequate sleep, is not fatigued or impaired due to drugs or alcohol.

e. Check that the vehicle has had a pre-use inspection and servicing is current.

f. Contingency plans in the event of breakdown.

g. Consideration of potential adverse weather conditions.

4.3 Automobile Decal Passes/Drive in Privileges

- A decal attached to the window of an automobile is to be considered as both a pass to enter plant gates and an identification of the automobile whose owner has been authorized to drive through the plant gates. Each driver must ensure the decal is in view when he/she drives through plant entrances. (In some instances, the decal has been placed on a window that can be cranked down
- Only the employee issued the decal has drive-in privileges, not family members, riders, etc.
- While parked or driving on Company property, the Company assumes no responsibility for damage to personally owned cars.
- Personally owned automobiles are not to be parked or driven inside buildings.
- Cars are to be parked so that they do not block or obstruct fire hydrants, roads, crossings, or plant entrances. Clearance must be maintained for passage of trucks, tractor-trailers, mobile construction equipment, snowplows, ambulances and firefighting equipment. This type of equipment has priority over personal automobiles.
- If it is necessary for the Maintenance Department to remove snow under ordinary conditions from parking areas, roadways, sidewalks, etc., at any time, a person may be requested to move his/her car.
- In case Plant Protection cannot identify the driver, or in case of irregularities, the driver will be requested to present his/her Company identification, and the number of the blue decal will be noted for further investigation.
- The issuance of an employee automobile decal pass does not affect our policy or procedure for taking Company property or equipment out of the plant area or bringing personally owned articles into the plant. Articles such as guns, cameras, explosives and all alcoholic beverages are restricted and are not allowed on Company property.
- All automobiles are subject to inspection by employees of the Plant Protection Department upon entering or leaving the plant.
- The driver is responsible for the passengers he/she takes through the gate, that visitors have passes and have registered at the Clock house, and that visitors or regular employees are not taking in or out of the plant restricted or Company items.
- When the decal pass becomes worn or damaged, the employee should report the matter to Plant Protection.
- If an employee plans to dispose of his/her car, he/she should bring it to Plant protection for removal of the decal pass so that Company responsibility may be cleared and the employee's responsibility for the sticker may be voided. Creditable assurance of the removal of the blue decal pass must be obtained before a new one can be issued.
- If an employee leaves the employment of Massena Operations, he/she should notify Plant Protection so removal of the automobile decal pass may be arranged by the time he/she leaves.
- The Company reserves the right to cancel or restrict all automobile decal passes presently issued and they are to be surrendered upon request.

4.4 Contractors

- Contractors, subcontractors and contracted services shall undergo mobile equipment operator medical evaluations in accordance with the requirements established by Alcoa, local

regulations or their own companies.

- Third party individuals (contractors) who operate industrial vehicles shall be qualified in the operation of the vehicles involved and must be able to demonstrate operating abilities consistent with Alcoa's expectations for safe operation. Contractors must provide Alcoa with written certification or other documentation of training upon request that supports an operator's qualifications to operate an industrial vehicle. Typically, contractors will not be permitted to use Alcoa equipment. The Plant Manager must approve exceptions to this in writing and document on a hold harmless agreement.
- Contractors must follow the mobile equipment requirements outlined in the job-specific safety plan for the project.

4.5 Truck Loading/Unloading

This section is applicable only to those situations where trucks are being loaded with mobile equipment that must board the equipment that is being loaded/unloaded. Loading and unloading trucks present unique problems. Specific procedures shall be employed to control hazards associated with the unexpected movement of the vehicle being loaded/unloaded and the condition of the loading dock area. Loading/unloading shall only take place in those areas where suitable loading docks, dock ramps and chocking devises are available.

Incoming Trucks:

Trucks shall be loaded/unloaded in designated areas that comply with the requirements established in **Alcoa Engineering Standard 30.36.1 Loading Dock Safety**. Each area that engages in this type of activity is responsible for developing specific SSOP to cover this task.

Minimum requirements for all dock areas:

1. Dock lights installed and functioning,
2. Wheel chocks, wheel boots, or wheel locks,
3. A method of preventing early departure of the truck that is lockable. This devise shall be used when loading or unloading. The person loading/unloading the truck will maintain control of the key for the lockable devise until loading or unloading is completed,
4. Trailer stands or jacks during loading or unloading of any kind while the truck is disconnected from the trailer,
5. Specific signage and procedures for each dock area,
6. Fall controls in compliance with Alcoa Engineering Standard 18.2.1,
7. Truck drivers will be briefed via Safety Orientation by Plant Protection Personnel when they arrive on-sight and receive and sign proper documentation.
    - Personnel working within or around loading docks shall receive training on the safe operation and use of dock safety devices and equipment. The training shall include:
        -Hazards associated with dock operations.
        -Operation, inspection and maintenance of dock safety devices

4.6 Cellular Phone Usage:

Cellular phone use for business or personal purposes shall be prohibited while operating mobile equipment on the plant property and while traveling off site for business purposes. For purposes of this section mobile equipment includes the following: cars, trucks, scooters, cranes, tricycles, fork trucks, golf carts, buggies. It is acceptable to use the phone if the mobile equipment is at a standstill.

CONDITIONS OF USE

The Company will take no responsibility for damage to personal cellular phones that are carried

or used on site. Personnel using mobile electronic devices shall operate them in accordance with the following conditions of use:

Mobile electronic devices:

a. Must not be used in production, maintenance, environmental, rectifier yard, storage or other operating areas of the plant as determined by Management.
b. Must not be used while operating equipment, motor vehicles, including cranes or industrial mobile equipment.
c. Must not be used while walking in operating, production, maintenance, and other areas where mobile equipment and crane traffic are operated. Employees must stop and locate themselves in a safe location to utilize cell phones on the operating floor.
d. May be used while in break areas, lunchrooms, locker rooms, barricaded walkways and offices. If incoming calls are for Company business, employees must move to a safe area to respond.
e. Must not be used to take pictures on plant property unless permission is granted in writing by the Plant Manager or designee.

5 Definitions

Mobile Equipment – Operator-controlled wheeled or tracked powered mobile equipment, includes vehicles, industrial mobile equipment and heavy mobile equipment.

Industrial Mobile Equipment – Operator-controlled wheeled or tracked powered mobile equipment that is not heavy mobile equipment or a vehicle. Includes equipment such as crucible haulers, forklifts and skid steers.

Heavy Mobile Equipment – Mobile equipment used for heavy earthmoving activities or part of the mining or residue disposal sequence. Includes haul trucks, graders, large excavators, dump trucks, water carts, bulldozers and front-end loaders.

Vehicle – Wheeled mobile equipment that is predominantly used to transport personnel. Includes, cars, vans, 4WDs, buses and pickup trucks.

Fundamentally Stable Parking – Parking in a manner or location that prevents uncontrolled movement of the mobile equipment, due to gravity, should braking fail.

6 References

EHS STD 70.2 Work Ability Assessment
70.2
EHS-STD-25.01 Fatigue Management
25.01

EHS-STD 30.36.1.2 Determination of Rollover Protection Systems
30.36.1.2
EHS-STD 18.2.1 Falling Objects
18.2.1

. Record History:

Date of Review:	10/27/2025	Date of Next Review:	10/27/2026
Reviewed By:	Jody Hoerner		

Approved by (SPA or Manager):	Nate Rufa	
NOTE: Non-SSOP documents are to be reviewed in conjunction with the ASAT corporate schedule.		
Revision Table:		
Revision Made by:	Date:	Describe Revision Made:
Jody Hoerner, Nate Rufa	3/3/2020	Revised to include 30.36.1 Standard Revisions
Jody Hoerner	7/16/2020	Program revision review to include 30.36.1 Standard Revisions.
	7/22/2020	Revised to include One Point Lesson and verbiage on page 10-Safe Operating Procedures 7.D. The first two bullets and One Point Lesson Link.
Jody Hoerner	9/2/2020	Added to 6. A. Maintenance and Repairs- The prerelease check list will be maintained for 3 months.
Jody Hoerner	3/29/2023	Added to 11a-6mph.
Jody Hoerner, Jonathan Hewitt	6/8/2023	Reviewed Massena Mobile Equipment Program and revised 11c – Bicycle and Motorcycle rules to include Motorcycles (two- or three-wheeled powered vehicles), four-wheel all-terrain vehicles (ATVs, also known as quads) or motorbikes without rollover protection are prohibited on company property, and ATVs with ROPS are allowed when reviewed and approved by site management.
Jonathan Hewitt	8/29/23	Review/Revision Table added.
Jody Hoerner	8/29/2023	Updated Revision Table/added - Removed semi-annual inspection from 7B-Safe Operating Procedures and changed 9A from 24” to 36”.
Jody Hoerner	4/30/2024	Reviewed
Jonathan Hewitt	9/20/2024	Updated date of next review.
Jody Hoerner	10/27/2025	Revised program with updated standard requirements.

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Table of Contents:

1. Purpose

Alcoa Massena Operations is committed to providing a safe and healthy work environment for its employees. The plant Confined Space Entry Policy (CSE) was developed and implemented to establish site-specific safe working practices for entry into confined spaces and to comply with the Alcoa 18.1 Engineering Standard and OSHA Confined Space Entry Standard 29 CFR 1910.146. These procedures and practices shall be applied to protect Alcoa and contractor employees while performing work in confined spaces.

Confined Space may be described as, but not limited to, the following:

A confined space is a space, which is large enough and so configured to permit bodily entrance of personnel to perform assigned work and has limited or restricted means for entry or exit and is not equipped or designed for continuous occupancy. All three conditions must exist to determine the space a Confined Space. Confined spaces include but are not limited to storage tanks, process vessels, pits, silos, vats, wells, sewers, degreasers, boilers, ventilation and exhaust ducts, tunnels, underground utility vaults, and pipelines. The hazards associated with confined spaces can cause serious injury and death to workers. Two major factors have led to fatal injuries in confined spaces: 1) failure to recognize and control the hazards associated with confined spaces, and 2) inadequate or incorrect emergency response. The emergency response is usually a spontaneous reaction to an emergency and can lead to multiple fatalities.

Working in confined spaces presents unique hazards not normally encountered in everyday work. Entering a confined space should only be done if it is impossible to effectively complete the work from outside of the confined space. To protect all Alcoa and contractor employees from the potential hazards that maybe encountered while entering and working in confined spaces, Massena Operations has adopted the following confined space entry program.

2. Responsibilities and Duties

2.1 Safety and Health Department.

- 2.1.1. Assist departments to properly identify, classify and reclassify confined spaces.

2.2. SPA for Confined Space and Confined Space Team

- 2.2.1. Review entry and rescue procedures.
- 2.2.2. Review and approve training materials.
- 2.2.3. Assist departments to properly identify, classify and reclassify confined spaces.
- 2.2.4. Audit the effectiveness of the CSE program.
- 2.2.5. Maintain Database of Confined Space information.
- 2.2.6. SPA will review and maintain all expired entry permits for the year and maintain permits for 30 years plus the years of service of employees.
- 2.2.7. Review and approve training materials.
- 2.2.8. Review what rescue equipment is needed in each Specific Confined Space Procedure.
- 2.2.9. Maintain Confined Space inventory.

2.3. Department heads and authorizing supervisor:
Department heads and authorizing supervisors or their designated salaried representatives shall be responsible for implementing the Confined Space Program in their department by the following:

2.3.1. See that confined spaces are identified within facilities or areas under their control.
2.3.2. Must be trained in and have knowledge of each hazard that may be faced during entry, including the mode, signs or symptoms, and consequences of the exposure.
2.3.3. Review and approve entry and rescue procedures.
2.3.4. See that hazards are identified, and assessments performed, for confined spaces under their control.
2.3.5. See that rescue equipment is defined for each Specific Confined Space Procedure.
2.3.6. Documenting that all training, pre-job review and preparation for a specific confined space entry have been met by signing the pre-entry authorization space on the entry permit.
2.3.7. Obtaining all equipment necessary to complete the confined-space entry project through the SUPERT's.
2.3.8. Authorize entry by signing the Entry Authorization space on the entry permit.

2.4. Entry Team Leader

2.4.1. Must be trained in and have knowledge of each hazard that may be faced during entry, including the mode, signs or symptoms, and consequences of the exposure.
2.4.2. Ensuring that the required atmospheric tests are performed at the confined space and results recorded on the permit prior to entry.
2.4.3. Terminate the entry permit when entry work is completed.
2.4.4. Terminating the entry and canceling the permit when:
- Entry operations covered by the entry permit have been completed.
- Condition that is not allowed under the entry permit arises in or near the permit space.

2.4.5. Must be trained in and have knowledge of the proper use of equipment, including:
- Atmospheric testing and monitoring equipment.
- Ventilating equipment needed to obtain acceptable entry conditions.
- Communication equipment necessary to maintain contact with the attendant.
- Personal protective equipment as needed.
- Lighting equipment as needed.
- Barriers and shields as needed.
- Equipment, such as ladders, needed for safe ingress and egress.
- Rescue and emergency equipment as needed.
- Any other equipment necessary for safe entry into and rescue from permit spaces.

2.4.6. Verify by signature that all entries on the permit have been completed, all atmospheric testing has been completed and all required equipment is at the entry site.

2.4.7. Verify that identification barriers/signage are placed around Entry points of Permit required spaces.
- To prevent Unauthorized entry
- To denote potential for Objects falling into the space
- To keep Vehicular hazards away from the space

2.4.8. Verify that Plant Security Office #1 Clock house has been contacted prior to and at the conclusion of confined space entry.

2.4.9. Taking the following actions when unauthorized persons approach or enter a permit space while entry is underway:
- Warn the unauthorized persons that they must stay away from the permit space.
- Advise the unauthorized persons that they must exit immediately if they have entered the permit space.
- Inform the authorized Entrants and the authorizing Supervisor if unauthorized persons have entered the permit space.

2.4.10. Terminating the entry and canceling the permit when:
- Entry operations covered by the entry permit have been completed.
- Condition that is not allowed under the entry permit arises in or near the permit space.

2.4.11. The Entry Supervisor/Team Leader must remain on the plant site during a Permit Required Confined Space Entry.

2.5. Authorized Entrants

2.5.1. Must be trained in and have the knowledge of hazards that may be faced during entry, including the mode, signs or symptoms, and consequences of the exposure.

2.5.2. Must be trained in and have knowledge of the proper use of equipment, including:

- Atmospheric testing and monitoring equipment.
- Ventilating equipment needed to obtain acceptable entry conditions.
- Communication equipment necessary to maintain contact with the observer.
- Personal protective equipment as needed.
- Lighting equipment as needed.
- Barriers and shields as needed.
- Equipment, such as ladders, needed for safe ingress and egress.
- Rescue and emergency equipment as needed.
- Any other equipment necessary for safe entry into and rescue from permit spaces.

2.5.3. Communication with the Attendant/observer as necessary to enable the Attendant/observer to monitor entrant status and to enable the Attendant/observer to alert entrants of the need to evacuate the space if required.

2.5.4. Alert the Attendant/observer whenever:

- The entrant recognizes any warning sign or symptom of exposure to a dangerous situation,
- The entrant detects a prohibited condition.

2.5.5. Exiting the permit space as quickly as possible whenever:

- An order to evacuate has been given by the Attendant/observer, Entry Supervisor/Team Leader.
- The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
- The Entrant detects a prohibited condition; or an evacuation alarm is activated.

2.5.6. Wear a body harness and retrieval line unless retrieval line will not be effective in a rescue or is a Hazard.

2.6. Authorized Attendant / observer

2.6.1. Persons authorized to perform duties as Attendant/observer shall be responsible for and receive training in the following:

- Knowing the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of exposure.
- Is aware of possible behavioral effects of hazard exposure in authorized entrants.
- Continuously maintaining an accurate count of authorized entrants in the permit space and ensures that the means used to identify authorized entrants accurately identifies who is in the permit space.
- Remains outside the permit space during entry operations until relieved by another Attendant/observer.
- Attempting non-entry rescue if proper equipment is in place and the rescue attempt will not present further hazards to the entrant or observer.
- Communicating with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space when conditions warrant.
- Monitoring activities inside and outside the space to determine if it is safe for entrants to remain in the space and ordering the authorized entrants to evacuate the permit space immediately under any of the following conditions:
    a) If the Attendant/observer detects a prohibited condition.

b) If the Attendant/observer detects the behavioral effects of hazard exposure in an authorized entrant.
c) If the Attendant/observer detects a situation outside the space that could endanger the authorized entrants.
d) If the Attendant/observer cannot effectively and safely perform all the duties required by this program.
e) An Attendant/observer becomes aware of the need to rescue entrants from another space.

- Summoning rescue and other emergency services when needed.
- Suspend activities, and recall entrants from the confined space when new or different hazards are detected. New procedures, equipment, and further training shall be developed and provided by the supervisor(s) before continuing.
- Taking the following actions when unauthorized persons approach or enter a permit space while entry is underway:
  a) Warn the unauthorized persons that they must stay away from the permit space.
  b) Advise the unauthorized persons that they must exit immediately if they have entered the permit space.
  c) Inform the authorized entrants and the Entry Supervisor/Team Leader if unauthorized persons have entered the permit space.
  d) Notify authorizing supervisor of any unauthorized entry.

2.6.2 Perform no duties that might interfere with his or her primary duty to monitor and protect the authorized entrants.

2.6.3 Be certain the entrant is wearing a body harness unless the retrieval line will not be effective in a rescue or is a hazard. (4.8.2.3/4)

3. Definitions

3.1 Acceptable Entry Conditions

The conditions that must exist in a permit required confined space to allow entry and to ensure that employees involved with a permit confined space entry can safely enter and work safely within the space.

3.2 Affected Employee
An employee who works in an area, where a confined space entry is being performed.

3.3 Attendant / Observer
An employee stationed outside the confined space, trained as required by this standard, assigned to monitor the employees inside this space, and other spaces within the limits as authorized by the location.

3.4 Authorized Employee
An employee who has completed training in "Confined Space Entry" and participates in confined space entry as an entrant, attendant, or Entry Supervisor/Team Leader.3.5 Authorizing Supervisor
Member of management who authorizes the entry into a permit required confined space. The Authorizing Supervisor is responsible to assure that the entrants have received adequate training, conduct a pre-job review, assuring that the required equipment is available and designates the Entry Supervisor/Team Leader. The Authorizing supervisor is NOT required to be on the plant site during the confined space entry.

3.6 Authorized Entrant
An employee authorized to enter a permit-required confined space. May be a fully trained employee with authority to approve entry by others and may enter the space covered by the permit provided the attendant is informed.

3.7 Blanking and Blinding
The absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or skillet blind) that completely covers the bore and that can withstand the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

3.8 Bump Test (Functional Test)
A means of verifying instrument calibration by using a known concentration of test gas to demonstrate that an instrument's response to the test gas is within acceptable limits. Persons performing Bump Test do NOT modify the response if an instrument fails the bump test, full calibration must be performed. Record shall be kept for one complete calendar year. Refer to section 14.0 for additional information.

3.9 Calibration (Full Calibration)
The adjustment of an instrument's response to match a desired value compared to a known concentration of test gas. Full calibration is to be performed only by trained individuals. Refer to Section 13.0 for additional information.

3.10 Double Block and Bleed
The closure of a pipe, line, or duct by locking and/or tagging a drain or vent which is open to atmosphere in line between two locked-closed valves.

3.11 Emergency
Any occurrence or event(s), internal or external to the confined space that could endanger the entrants.

3.12 Engulfment
Surrounding and effective capture of an employee by a liquid or finely divided solid substance.

3.13 Entry
The act by which an employee, intentionally passes through an opening into a confined space and whereby, any part of the body breaks the plane of the opening. Includes, ensuing work activities in the space.

3.14 Entry Team Leader
The person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations and for terminating entry as required by this standard. An Entry Team Leader may be the supervisor of the employees involved, a project engineer, task coordinator, crew leader or other individual who is designated to perform the above duties. He/She verifies the permit by signing the permit last before the entry takes place.

3.15 Entry Permit
Is the location specific hard copy document used to allow and control entry into a hazardous confined space that contains the entry details from the confined space hazard assessment, task procedures, emergency procedures and other crucial information about entry into the confined space?

- Permit space to be entered, Purpose of entry, Date and authorized duration of entry permit, Authorized entrants name(s), Name of attendant(s), Name and signature of the individual serving as Entry Team Leader.

- Hazards of the permit space to be entered. Measures used to isolate the permit space and to eliminate or control permit space hazards before entry. Acceptable entry conditions. Spaces for recording initial, re-entry, and periodic results of atmospheric testing including oxygen, carbon monoxide and lower explosive limit.

- Results of initial, re-entry and periodic atmospheric tests accompanied by the name or initials of tester. Time when initial, re-entry and periodic test was preformed.

- Type of non-entry rescue equipment required. Rescue and emergency services that can be summoned and the means for summoning those services. Communication procedures used by authorized entrants and attendants to maintain contact during entry.

- Equipment such as personal protective equipment, testing equipment, communications equipment, alarms systems and rescue equipment.

- Any other information given the circumstances of the space, to ensure employee safety. Any additional permits, such as hot work permits that have been issued to authorize work in the permit space.

3.16 Entry Permit System
The location's written procedures for preparing and issuing permits for entry and returning the permit space to service.

3.17 Hazardous Atmosphere
An atmosphere that may expose employees to the risk of death, incapacitation, and impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

3.17.1 Flammable gas, vapor, or mist more than 10 percent of its lower explosive limit (LEL).

3.17.2 Airborne combustible dust at concentrations that meet or exceed its LEL.

Note: This concentration may be approximated as a condition in which the dust obscures vision at 5 feet (1.52m) or less.

3.17.3 Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.

3.17.4 Atmospheric concentration of any substance for which a dose or permissible exposure limit is published in an applicable regulatory standard, and which could result in employee exposure more than its dose or permissible exposure limit:

Note: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, and impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.

3.17.5 Any other atmospheric condition that is immediately dangerous to life and health.

Note: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets that comply with the Hazard Communication Standard, 29 CFR 1910.1200 published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

3.18 Hot Work Permit
Location written authorization to perform operations, which could provide a source of ignition such as riveting, welding, cutting, burning, heating, or grinding. The Hot Work Permit should be attached to the permit, or the number of the burning permit should be written on the Confined Space Permit.

3.19 Immediately Dangerous to Life or Health (IDLH)
Any condition, which poses an immediate threat to loss of life, may result in irreversible or immediate health effects may result in eye damage, irritation, or other conditions, which could impair escape from the permit space.

3.20 Inerting
Rendering the atmosphere of a permit space non-flammable, non-explosive, or otherwise chemically non-reactive by displacing or diluting the original atmosphere with steam or a gas that is non-reactive to the space.

Note: Purging with an inert gas such as nitrogen or argon will always result in an atmosphere that is immediately dangerous to life and health (IDLH) due to insufficient oxygen content. Proper ventilation and testing of the atmosphere must be conducted prior to entry.

3.21 Isolation
The separation of a permit space from unwanted forms of energy. Isolation is usually accomplished by such means as Tag out/lockout, double block, and bleed, blanking or blinding, the removal of spool pieces, or blocking, pinning, or disconnecting mechanical linkages.

3.22 Line Breaking
The intentional opening of a pipe, line or duct that has potential to deliver materials, gases, or fluids that can cause injury.

3.23 Non-Entry Retrieval System
A retrieval system used for non-entry rescue of persons from permit space. It includes how retrieval equipment is attached to authorized entrants (i.e., full body harness, wristlets, if appropriate) and the means by which the authorized entrant is lifted from the permit space (i.e., retrieval line, lifting device and anchor).

3.24 Non-Permitted Condition
Any condition or set of conditions whose hazard potential exceeds the condition limits stated in the entry permit.

3.25 Non-Permit Required Confined Space
A confined space that does not contain or, with respects to atmospheric hazards, have the potential to contain any hazard capable of causing death, incapacitation, injury, acute illness or may prevent the unaided escape.

3.26 Oxygen Deficient Atmosphere
An atmosphere containing less that 19.5 percent oxygen by volume.

3.27 Oxygen Enriched Atmosphere
An atmosphere containing more than 23.5 percent oxygen by volume.

3.28 Permit Required Confined Space
A confined space that has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere.
- Contains a material that has the potential for engulfing an entrant.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section (hoppers, silos); or
- Contains any other recognized serious safety or health hazard that creates an immediately dangerous to life or health situation.

3.29 Retrieval Line
Is a rescue rated line or rope secured at one end to the full body harness worn by personnel and the other end is secured to either a lifting device or other retrieval device or to an anchor point located outside the entry.

4. Identification of Confined Spaces

All confined spaces must be identified and classified. Confined spaces are either permit required, or non-permit required confined spaces. The OSHA Confined Space Classification Flowchart found in the appendix, or the OSHA Confined Space Advisor is to be used to evaluate confined spaces. The classification of the confined space may be changed depending upon the work being conducted, the hazards created, and method employed to control the hazards. The reclassification may be for the duration of a job or permanent. The identification or reclassification must be jointly conducted with department management, a representative entrant and the Safety and Health Professional.

Posting a sign at the entrance and the posting of the Confined Space Entry Permit during an entry shall identify all confined spaces (either must be always visible). Each confined space must also be listed in an inventory. NOTE: Due to the large number, All Manholes and Sewer drains are considered Confined Spaces and signage will be post at time of entry.

West Plant - For those spaces that are not entered routinely, signs will be posted at the entrance stating that the Safety Department needs to be contacted before entering at which time a procedure will be written before entry is allowed. The Smelting confined spaces may not have these signs due to the large number of spaces that are not entered; the Smelting Inventory section on the Web Page will indicate those spaces that will not be allowed to be entered until a procedure is written.

5. Hazards within a Confined Space

5.1 Oxygen Deficiency

The normal atmosphere is composed of approximately 21% oxygen and 79% nitrogen. Atmosphere containing less than 19.5% oxygen shall be considered oxygen deficient. The oxygen level inside a confined space may decrease as the result of either consumption or displacement.

There are several processes, which consume oxygen in a confined space. Oxygen is consumed during combustion of flammable materials, as in welding, cutting, or brazing. A more subtle consumption of oxygen occurs during bacterial action, as in the fermentation process. Oxygen can also be consumed during chemical reactions such as in the formation of rust on the exposed surfaces of a confined space. The number of people working in a confined space and the amount of physical activity can also influence oxygen consumption. Oxygen levels can also be reduced as the result of oxygen displacement by other gases. A simple asphyxiating atmosphere contains a gas or gases that are physiologically inert, and which do not produce any ill effects on the body. In sufficient quantity, a simple asphyxiant will displace oxygen and may result in an atmosphere unable to support respiration. The ambient, or normal, atmosphere is composed of approximately 21% oxygen, 78% nitrogen, and 1% argon with small amounts of various other gases. For example, if 100% nitrogen, a non-toxic, colorless, odorless gas, is used to inert (displace oxygen in) a confined space, it will cause immediate collapse and death to the worker if the confined space is not adequately ventilated before worker entry.

Argon is heavier than air and will sink to the bottom of pits and sewers forcing the air upward. This creates stratified layers of argon and air. Pre-entry air monitoring must be performed at various levels in a confined space where argon could be present.

5.2 Oxygen Enriched Atmospheres

Oxygen-enriched atmospheres are those atmospheres containing an oxygen concentration greater than 23.5%. An oxygen- enriched atmosphere causes combustible materials such as clothing and hair to burn violently when ignited.

5.3 Flammable Atmospheres

Flammable atmospheres are generally the result of flammable gases, vapors, dust mixed in certain concentrations with air, or an oxygen-enriched atmosphere that reach the lower explosive limit.

These gases or vapors can accumulate within a confined space when there is inadequate ventilation. Gases that are heavier than air will accumulate in the lower levels of a confined space. Therefore, it is especially important that atmospheric tests be conducted near the bottom of all confined spaces.

The work being conducted in a confined space can generate a flammable atmosphere. Work such as spray-painting, coating or the use of flammable solvents for cleaning can result in the formation of an explosive atmosphere. Welding or cutting with oxyacetylene equipment can also cause explosions in a confined space. Welding and burning shall not be allowed without a hot work permit. Oxygen and

acetylene hoses may have small leaks, which could generate an explosive atmosphere, and, therefore, they should be removed when not in use. Oxygen or acetylene torches left inside a confined space during a break may leak creating a flammable atmosphere. The atmosphere shall be tested continuously while any hot work is being conducted within the confined space.

5.4 Toxic atmospheres

Toxic atmospheres may be present within a confined space as the result of one or more of the following:

5.4.1 The Product Stored in the Confined Space

When a product is stored in a confined space it can be absorbed by the walls and give off toxic vapors when removed or when cleaning the residual material. The product can also produce toxic vapors, which remain in the atmosphere due to poor ventilation.

5.4.2 The Work Being Conducted in the Confined Space

Toxic atmospheres can be generated as the result of work being conducted inside the confined space. Examples of such work include Welding or brazing with metals capable of producing carbon monoxide, ozone, nitrogen oxide, hydrogen fluoride or metal fumes. Many of the solvents used for cleaning and/or degreasing produce highly toxic vapors.

5.4.3 Areas Adjacent to the Confined Space

Toxic gases produced by processes near the confined space may enter and accumulate in the confined space. Portable generators, welders and vehicles produce carbon monoxide, which can enter the confined space. Carbon monoxide is about the same density as air.

5.5 Mechanical and Physical Hazards

Problems such as rotating or moving mechanical parts or energy sources can create hazards within a confined space. All rotating or moving equipment such as pumps, process lines, electrical sources, etc., within a confined space must be identified. Physical factors such as heat, cold, noise, vibration, and fatigue can contribute to accidents. These factors must be evaluated for all confined spaces.

6. Training Requirements

All plant employees shall receive overview training on confined spaces. Those persons whose job requires them to enter a confined space, act as an attendant or supervise persons who enter into confined spaces, on-site rescue team and others involved in the Confined Space Program shall receive confined space entry training. All Confined Space Entry Training shall include demonstration of proficiency. Retraining shall be required whenever there are program changes and when auditing or observations indicate a deficiency in

knowledge or skill. (Training course #SW005 – Confined Space Entry (overview), #SW010 – Confined Space Entry, and SW012 Confined Space Refresher yearly)

7. Preparation for Entry into a Confined Space

7.1 Prior to entry:

Prior to entry into any confined space the following SHALL be in place:

- Confined space is identified, and all entry points labeled.
- Hazard and Control Assessment for this task is completed.
- Entry procedure/SOP for this task is written and reviewed.
- Attach Confined Space Procedure to the permit after reviewing the procedure with the entry team.
- Authorizing Supervisor, Entry Supervisor/Team Leader, Entrants and Attendants have received required training.

7.2 Entry Preparation

A pre-entry briefing between the entry team and the authorizing supervisor must precede all entries into a permit required and non-permitted confined space. The authorizing supervisor shall:

- Discuss the scope of the project with the entry team reviewing the isolation and entry procedures, potential and actual hazards, and control measures.
- Discuss emergency procedures for rescue and or evacuation.
- Review the required equipment and ensure that it is in good working order.
- Identify the duties of the entry team (Supervisor, Entrants and Attendant/observer)
- Review Hazard Assessment

7.3 Isolating the Confined Space

All mechanical, electrical, heat-producing equipment or other energy sources need to be disconnected or locked-out and tagged-out. This would also include any pumps that pull fluid from, or pump fluid into, the confined space. Warning signs or barriers will be needed to prevent unauthorized entry or to protect workers from external hazards. If the confined space will be left open and unattended for any length of time, warning signs and barriers will be required. Entry Supervisor/Team Leader will indicate if the confined space needs to be purged. Purging with inert gas is not permitted. If the space must be flushed or purged with Air/Steam/Water/Chemical Neutralization, describe the procedures. Identify the contents and empty or drain or clear the confined space as completely as possible. Indicate the type of cleaning methods to be used. If using Steam, use only above the liquid level in the space and allow space to cool properly before accessing. If chemical cleaners are to be used, name the type, and describe the procedures. The SDS for the chemical should be consulted prior to use. Bond low-pressure lines to the space or enclosure to prevent auto-ignition and elimination of static spark potential. Prevent the use of free-falling water unless the nozzles or hoses are bonded to the confined space.

7.4 Ventilation of the Confined Space

Ventilation is one of the most common engineering controls used in confined spaces. When ventilation is used to remove atmospheric contaminants from the confined space, the space should be ventilated until the atmosphere is within the acceptable ranges. Ventilation should be maintained during the occupancy if there is a potential for the atmospheric conditions to move out of the acceptable range. When ventilation is not possible or feasible, the qualified person prior to authorizing entry should determine alternate protective measures or methods to remove air contaminants and protect occupants. Conditions regarding continuous forced air ventilation should be used as follows:

7.4.1 Employees should not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.

7.4.2 Forced air ventilation should be so directed as to ventilate the immediate areas where an employee is or will be present within the space.

7.4.3 Continuous ventilation is maintained until all employees have left the space.

7.4.4 Air supply for forced air ventilation should be from a clean source.

7.5 Atmospheric Testing

7.5.1 The atmosphere of permit required confined spaces must be tested, prior to entry and continuously for oxygen, combustible gas, carbon monoxide and Hydrogen Sulfide and/or Chlorine and when ever re-entered. See section 7.6.5 if continuous air monitoring is not possible. The plant industrial hygienist should be contacted for monitoring of other air contaminates, such as solvent vapors. The results of the initial, re-entry and periodic monitoring SHALL be recorded on the entry permit.

7.5.1.1 Steps for air monitoring

- Use a confined space air monitoring instrument (CSI).
- Fill out the ***MX6/VENTIS PRO CHECKOUT LOG*** Sheet to record that a Bump Test was completed prior to use and that the Visual and Audio Alarms are working prior to use.
- The CSI must be “bump” tested to ensure it is functioning properly and be calibrated (within 30 days of use).
- CSI users must be familiar with its operation.
- Ventilation equipment must be shut off before conducting initial atmospheric tests. This is to establish what the atmospheric conditions will be if ventilation equipment fails.

- Testing shall be conducted at locations where the entrants will be working. Testing in a vertical atmosphere that may be stratified shall be conducted at the plane of the opening and at approximately every four feet in the direction of travel and to each side. The testing of atmospheres shall be conducted at varying heights when entering horizontal confined spaces with a potential stratification and in the direction of travel to the workspace at a pace that allows the monitor to sample and analyze the atmosphere.
- Initial atmospheric testing shall be performed from the outside using sampling pump w/extendable probe or tubing. If testing requires entry into the space, the use of a Scot Air Pak is required. [NOTE: Employees must be fit tested for SCBA or Remote Air Breathing Devices].
- The atmosphere must be monitored for carbon monoxide, oxygen, and combustible gas (also Hydrogen Sulfide or Chlorine when permit denotes) while work is being conducted in the confined space. The monitor should occupy the same level as the breathing zone of entrant.
- If the confined space is left for any reason, the atmosphere must be re-tested and recorded on the permit before re-entering the space.
- Bump tests are only valid for 16 hours from the bump test time.
- The monitor should be “fresh air tested” after unit startup.
- If an extension hose is used, a time delay of 2 seconds per foot of hose must be added to the testing time. For example, if a ten-foot hose is affixed to the sampling pump, it requires 20 seconds for the air to travel through the hose to the sensor.
- Records of hazardous atmosphere testing shall be considered employee exposure records and shall be managed in accordance with 71.16.

7.6 Safeguarding

7.6.1 When hazards exist that cannot be otherwise eliminated, personal protective equipment should be worn to protect against these hazards, examples: sharp edges, chemical irritation, slipping, noise and other hazards.

7.6.2 Full body harness affixed to a lifeline and winch shall be used to rescue someone from a permit required confined space. Except when it will create a greater safety hazard.

7.6.3 Ventilate the confined space while entrants are inside to ensure proper oxygen levels and reduce heat stress.

7.6.4 Continuously monitor the atmosphere.

7.6.5 If continuously monitoring of the confined space is not feasible and it is to be only periodically tested, a JSA or SOP must be written and approved by the Safety Department.

7.6.6 Store compressed gas cylinders outside of the confined space and close their valves when not in use.

7.6.7 Locate the exhaust of gas-powered equipment away from the confined space opening and ventilation equipment.

7.6.8 Use GFCI protection for 110 and 440 VAC tools and lights or Low Voltage Tools/Lights.

7.6.9 Use explosion proof electrical equipment and spark resistant tools as required.

7.6.10 The use of energy isolation procedures (Lock/Tag/Try) must be fully implemented during all phases of entry.

7.7 Conclusion of Entry

When scheduled work operations in a Confined Space have concluded:

- Entrants will exit the space and sign out time of exit.
- The area will be returned to its normal state.
- The Permit will be canceled by notifying plant security.

8 Entry Permits

8.1 Permit Required Confined Spaces

8.1.1 Entry permits are provided in Stores(MAS1019990401) and shall be filled out and signed as required before entry is permitted. Hot work and other permits, if applicable, must be completed and posted with the entry permit.

8.1.2 The shift logbook in the Security office must show documentation of:

- The permit space to be entered,
- The purpose of the entry,
- The names of the authorized entrants, attendants, and Entry Team Leader,
- The date and authorized duration of the purposed event
- Any additional permits (such as for hot work) that have been issued in conjunction with the entry.

8.1.3 Each person entering the confined space, attendant, Entry Team Leader and/or authorizing supervisor must sign the entry permit. After all work in the confined space has been completed entrants, attendants, and Entry Team Leader must sign-off on the entry permit that the entry has been completed.

8.1.4 Entry Permits for Permit Required Confined spaces are valid while the Entry Team Leader is on plant site. If the supervisor leaves the plant the new Entry Team Leader or team leader SHALL complete a new permit.

8.1.5 Canceled Confined Space Entry Permits SHALL be returned to the Plant SPA for Confined Space for auditing.

8.2 Non-Permit Required Confined Spaces

8.2.1 A space classified by the employer as a permit-required confined space may be reclassified as a non-permit confined space under the following procedures:

8.2.1.1 If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space, the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated.

NOTE: Control of atmospheric hazards through forced air ventilation does not constitute elimination

8.2.1.2 If it is necessary to enter the permit space to eliminate hazards, such entry shall be performed, as a permit required confined space. If testing and inspection during that entry demonstrates that the hazards within the permit space have been eliminated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated.

8.2.1.3 It may be determined that all hazards in a permit space have been eliminated, through the completion of the non-permit required certification that contains the date, the location of the space, and the signature of the person(s) making the determination. The certification (Non Permit Space Certification) shall be made available to each employee entering the space. The certifications may be made for the duration of a job or for up to one year.

8.2.1.4 If hazards arise within a permit space that has been reclassified to a non-permit space each employee in the space shall exit the space. The space shall be reevaluated to determine whether it must be reclassified as a permit space.

9 Sewer Entries

Sewer entry differs in two vital respects from other permit entries; first, there rarely exists any way to completely isolate the space (a section of a continuous system) to be entered; second, because isolation is not complete, the atmosphere may suddenly and unpredictably become lethally hazardous (toxic, flammable or explosive) from causes beyond the control of the entrant. All sewers at Massena Operations are:

- Permit required.
- Require continuous air monitoring.
- Entrants MUST wear a full body harness with a lifeline.
- Require the use of a tripod and winch for self-rescue.
- Must Ventilate with positive pressure.

10 Rescue Procedures

The rescue of an entrant from a confined space requires special procedures and training. Multiple fatalities occur when well intentioned but ill prepared coworkers attempt a rescue of a fellow employee.

10.1 To facilitate non entry rescue, non entry retrieval systems or methods shall be used whenever an authorized entrant enters a hazardous confined space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant.

10.2 Each authorized entrant must use a full body harness with a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head, or at another point small enough for the successful removal of the entrant.

10.3 When a hazardous confined space is entered, the other end of the retrieval line shall be attached to a mechanical device or fixed point outside the confined space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type hazardous confined spaces more than five feet (1.5 meters) deep. A mechanical device is considered "available" when it is at the access point of the vertical entry and ready for use. A mechanical device is required whether an external service is used.

10.4 The Attendant/observer MUST summon help by contacting the Security Office via RADIO or PHONE 315-705-2800. If at all practical the attendant should then attempt to retrieve entrant(s) with an external retrieval device until help arrives. No attempt shall be made to enter the confined space for rescue.

IMPORTANT: **Security must contact all logged Permit Confined Space Entries to exit space due to other plant emergencies**

11 Contracted Services

It is the contractor's responsibility to provide a safe workplace for their employees; it is the Alcoa Project Leader's responsibility to review the contractor's procedures and monitor the contractor's performance to those procedures to assure compliance.

The Alcoa contractor safety coordinator shall determine if the contractors confined space entry program meets or exceeds the requirements of Massena Operations' Confined Space Entry Program and OSHA 1910.146. Copies of training records, training materials, calibration and inspection records shall be provided to Alcoa upon request.

The contractor shall seek approval from the Alcoa Project Leader or designee prior to entry into a confined space. The contractor and the project leader shall review all recognized hazards, the entry procedures and any coordination required between Alcoa and contractor personnel. Upon completion of the confined space entry the Alcoa Project leader shall debrief the contractor of any hazards confronted or created in permit space during entry operations

The contractor shall furnish all forms, equipment and instrumentation required for compliance with the referenced standards (air monitoring equipment, personal protective equipment, emergency retrieval equipment) and all other items required to provide a safe workplace.

The contractor shall provide the Alcoa Project Leader with copies of completed entry permits.

12 References

- Alcoa Engineering 18.1 Overview of Entering and Working in Confined Spaces
- OSHA Standard 29 CFR 1910.146

13 Confined Space Air Monitoring Instrument Calibration

Each instrument must be calibrated at least monthly using the Docking Station and a record of the calibration can be obtained from the Confined Space SPA. Calibrations are maintained indefinitely.

14 Bump Test

Each instrument must be bump tested prior to use.

15 Forms:

CONFINED SPACE ENTRY PERMIT may be obtained through Stores item MAS1019990401

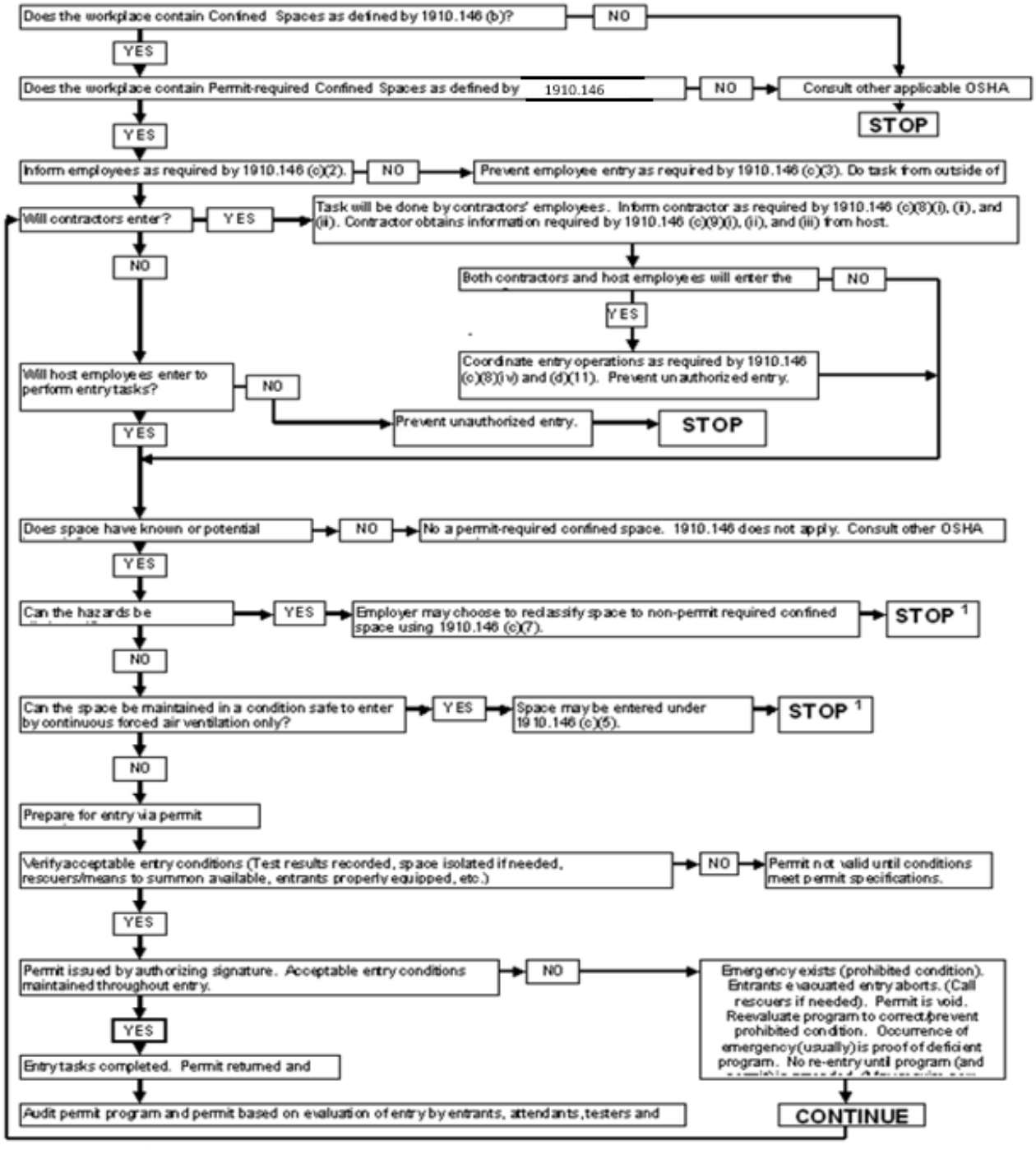
Template for written procedure

Confined Space Hazard Assessment

Non Permit Required Space Certification

Appendix A

Permit-required Confined Space Decision Flow Chart



[1] Spaces may have to be evacuated and re-evaluated if hazards arise

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RECORD HISTORY:

Revision Date	Nature of Revision	Name of Document Review Participant
5/30/01	Original document	Roy Mittiga
8/27/01	Format change	Allen Baxter
9/11/01	Format changes	Allen Baxter
11/12/02	Combine East/West/AEP Programs	A. Baxter, K. Butz, T. Doud, B. Serviss
5/8/07	Incorporated 18.1 Engineering Changes	B. Serviss, Roy Mittiga, T. Simpson
04/14/08	Calibration Sticker requirements	Bruce Serviss, Roy Mittiga, Tom Simpson
4/29/08	Non-Permit Certification Change and added form for Atmospheric Test Readings for Non-Permit Certification	Bruce Serviss, Roy Mittiga, Tom Simpson
12/15/08	Added section into Steps for Air Monitoring to fill out sign out ITX Sheet to record that a Bump Test was completed prior to use and that the Visual and Audio Alarms are working prior to use.	Bruce Serviss, Roy Mittiga, Dave Barclay
2/23/10	Added a section in 7.1 stating the following: Attach Confined Space Procedure to the permit after reviewing the procedure with the entry team.	Bruce Serviss, Roy Mittiga
8/16/12	Updated sections referencing confined space air monitoring instrumentation to reflect change to new instrumentation (MX6 from ITX) Updated references AEP to AFE.	Timothy Kass, Roy Mittiga, Felicity Foster
5/2/16	revised	Kevin Durant

Date of Review:	8/31/23	Date of Next Review:	8/31/26
Reviewed By:	Dinora Grow		
Approved by (SPA or Manager):	Nate Rufa		
NOTE: To be reviewed with the ASAT schedule.			
Revision Table:			
Revision Made by:	Date:	Describe Revision Made:	
K. Durant	8/17/2023	Updated material, changed numbers, added this table	
D.Grow	8/31/2023	Updated Alcoa Logo in Header, corrected links within the document.	
Jonathan Hewitt	10/3/23	Corrected Review Date.	
Richard Coller	4/10/2025	Updated SPA Name	

Table of Contents

1.0 SCOPE

1.1 All Alcoa Massena Operations employees, contractors, and visitors are exposed to potential electrical hazards in the work place. To be able to recognize and minimize these hazards, proper training, personal protective equipment, tools, and work practices must be in place and followed.

This standard establishes minimum electrical safety rules and safety-related work practices for the Alcoa Massena Operations. Additional polices, procedures, and requirements are found in the following Alcoa Massena Policies or Standards and consensus Standards and Regulations:

A. Alcoa Massena Operations' Lock/Tag/Try Procedure.
B. Alcoa High Voltage Electrical Safety Standard 32.60.
C. Alcoa Engineering Standard 32.62, Safety Features for Portable Electrical Test Meters.
D. Alcoa Inspecting and Testing Potroom Electrical Insulation Standard 32.66.
E. Alcoa Potroom Electrical Safety Standard 32.67.
F. Alcoa Low Voltage Electrical Safety Standard 32.69
G. Alcoa Electrical Arc Flash Hazard Safety Standard 32.70.
H. NFPA 70 - National Electrical Code®.
I. NFPA 70E - Standard for Electrical Safety Requirements for Employee Workplaces.
J. NFPA 70B - Recommended Practice for Electrical Equipment Maintenance.
K. NFPA 79 - Electrical Standard for Industrial Machinery.
L. OSHA Regulations 29 CFR 1910 Subpart S.
M. OSHA Regulations 29 CFR 1926 Subpart K.
N. OSHA Regulations 29 CFR 1926 Subpart V.
O. OSHA Regulations 29 CFR 1910.269.

1.2 This standard shall apply to all employees, contractors, and visitors while working on or near energized conductors, energized exposed parts of electrical equipment, or such conductors and equipment that potentially may become energized. For the purpose of this standard, low voltage means 1000 volts nominal or less phase-to-phase or conductor-to-conductor. High Voltage, for this standard, means voltages above 1000 volts AC, as defined in Alcoa's 32.60 Mandated High Voltage Safety Std.

2.0 PURPOSE

2.1 The practices and procedures outlined in this standard are intended to provide for employee safety relative to electrical hazards in the workplace. However, each individual, or area shall be responsible for details and activities specific to the affected equipment or system.

2.2 Knowledge of this standard in itself does not make a person a qualified electrical worker. Guidelines shall be established concerning informal and formal training, as well as levels of experience in the electrical field using training outlines for electrical workers, or other workers whose job function would expose them to a potential electrical hazard.

2.3 The safety considerations contained in this standard shall serve as minimum guidelines in the design, maintenance and operation of systems and equipment. It is imperative that the applicable design and safety code guidelines are met or exceeded to enhance employee safety.

2.4 If there are local governmental codes, or accepted employee safety standards, design criteria, etc., that are more stringent than those identified within this standard, then those shall be considered more appropriate, and shall be followed.

3.0 DEFINITIONS

3.1 The following words and their definitions have been taken, for convenience to the reader, from other consensus standards. The cited standards and regulations contain additional definitions important to the understanding of the requirements. It may be necessary to refer to these additional definitions in some instance. These Standards include:

A. NFPA 70 - National Electrical Code®.

B. NFPA 70E - Standard for Electrical Safety Requirements for Employee Workplaces.

C. NFPA 70B - Recommended Practice for Electrical Equipment Maintenance.

D. NFPA 79 - Electrical Standard for Industrial Machinery.

E. OSHA Regulations 29 CFR 1910 Subpart S.

F. OSHA Regulations 29 CFR 1926 Subpart K.

G. OSHA Regulations 29 CFR 1926 Subpart V.

H. OSHA Regulations 29 CFR 1910.269.

3.2 Definitions proceeded with the symbol (*) indicate words and/or phrases that are unique to this standard. Although some of these words and/or phrases may be found in other regulations or standards, they are used in a unique way in this standard.

A. Each employee shall be familiar with these words and the way they are used as applicable to their job assignment:

1) **ANSI**. American National Standards Institute.

2) **Approach Boundaries.** Approach Boundaries (Shock Protection Boundaries) are approach limits set to keep personnel from contacting a shock hazard created by exposed, energized conductors. Each conductor or part presenting a shock hazard will have two approach boundaries – limited and restricted. These boundaries define the restrictions and safe work practices required to work within each boundary (See Section 17.0).

3) **(*) Approved.** Methods, devices, tools, equipment or practices acceptable to Alcoa Massena and/or regulatory Authority Having Jurisdiction (AHJ).

4) **ASTM**. American Society for Testing and Materials.

5) **Attachment Plug (Plug Cap) (Cap).** A device that, by insertion in a receptacle, establishes a connection between the conductors of the attached flexible cord and the conductors connected permanently to the receptacle.

6) **Barricade.** A physical obstruction such as tapes, ropes, cones, or A-frame type wood or metal structures intended to provide a warning about and to limit access to a hazardous area.

7) **Barrier.** A physical obstruction that is intended to prevent contact with equipment or live parts or to prevent unauthorized access to a work area.

8) **Bus.** A conductor or group of conductors that serves as a common connection for two or more circuits.

9) **Competent Person.** A person who, by way of training and/or experience, is capable of identifying existing and predictable hazards relating to the specific operation, is designated by the employer, and has the authority to take prompt and appropriate actions.

10) **Conductor**. A material, usually in the form of a wire, cable, or bus bar, suitable for carrying electric current.

a) Bare. A conductor having no covering or electrical insulation whatsoever.

b) Conductor, Covered. A conductor encased within material of composition or thickness that is **not** recognized as electrical insulation.

c) Conductor, Insulated. A conductor encased within material of composition and

thickness that is recognized as electrical insulation.

11) **(*) Current Tap.** A device intended for connection to a permanently installed outlet providing additional outlet provisions, including optional on/off switch(s), pilot lights, overcurrent protection and surge and noise suppression. This type of unit has no cord, it plugs directly into a receptacle.
12) **Deenergized.** Free from any electrical connection to a source of potential difference and from electrical charge; not having a potential different from that of the earth.
13) **(*) Dielectric Testing.** A controlled method used to test the electrical safety integrity of personal protective and live-line equipment.
14) **(*) Electrically Authorized Person.** An employee to whom the employer has assigned the authority and responsibility to perform a specific assignment in an area where an electrical hazard may exist. One who can demonstrate by experience and training the ability to recognize potentially hazardous electrical energy. "Electrically Authorized Employees" could include, but are not limited to, electricians, mechanics, supervisors, operators, engineers, custodians, painters, etc.
15) **(*) Electrically Safe Work Condition.** A state in which the conductor or circuit part to be worked on or near has been disconnected from energized parts, locked/tagged in accordance with established standards, tested to ensure the absence of voltage.
16) **(*) Employee.** A person employed or contracted by Alcoa, part-time or full-time, for wages or salary.
17) **Energized.** Electrically connected to a source of voltage.
18) **Energy Source.** Any electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal, or other energy source that could cause injury to personnel.
19) **Equipment (Electrical).** A general term including material, fittings, devices, appliances, fixtures, apparatus and the like used as a part of, or in connection with, an electrical installation.
20) **(*) Escort.** A competent person accompanying electrically non-qualified employees or visitors in the vicinity of electrical equipment or lines.
21) **Exposed (As Applied to Live Parts).** Capable of being inadvertently touched or approached nearer than a safe distance by a person. It applies to parts that are not suitably guarded, or isolated, or insulated.
22) **(*) Extension Cord Set.** A length of flexible cord assembled with an attachment plug or current tap as a line fitting and a cord connector as a load fitting.
23) **Flash Hazard.** A dangerous condition associated with release of energy caused by an electric arc.
24) **(*) Flash Protection Boundary.** This is the distance within which a person shall wear personal protective equipment appropriate for the potential arc flash energy for any part of the body that may be exposed.
25) **Ground (Earth).** A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of the earth.
26) **Grounded (Earthed).** Connected to earth or to some conducting body that serves in place of the earth.
27) **Guarded.** Covered, shielded, fenced, enclosed, or otherwise protected, by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach or contact by persons or objects to a point of danger.
28) **(*) Hazard Risk Analysis.** The decision-making process required to determine the degree and extent of the hazard, the appropriate protective equipment, and the job planning necessary to complete a task safely.
29) **(*) High Voltage.** For the purpose of this standard, high voltage is voltage levels above 1000 volts nominal or more phase-to-phase or conductor-to-conductor.
30) **Insulated.** Separated from other conducting surfaces by a dielectric (including air space) offering a high resistance to the passage of current.
    a) **Note: When an object is said to be insulated, it is understood to be insulated for the**

conditions to which it is normally subject. Otherwise, it is, within the purpose of these rules, uninsulated.

31) Insulation (Cable). That which is relied upon to insulate the conductor from other conductors, conducting parts, or ground.

32) (*) Isolated.

a) Any object that is not readily accessible to persons unless special means of access are used.

b) All sources of supply have been removed, that is, all isolation devices are locked open and any fuses associated with potential devices or other power supplies are removed

33) Limited Approach Boundary. The outer most shock protection boundary to be crossed by only qualified persons. Unqualified persons are never to cross this boundary unless escorted by a qualified person (See Section 17.0).

34) Live Parts. Electric conductors, buses, terminals, or components that are uninsulated or exposed and a shock hazard exists.

35) (*) Location Manager. General manager of the facility.

36) (*) Low Voltage. For the purpose of this standard, low voltage means less than 1000 volts nominal phase-to-phase or conductor-to-conductor.

37) Lockout. The placement of a lockout device on an energy-isolating device in accordance with an established procedure, ensuring that the energy-isolating device and the equipment being controlled cannot be operated until the lockout device is removed (See Unique Lockout System).

38) Lockout Device. A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment.

39) (*) Mobile Equipment. Includes but is not limited to cranes, bucket trucks, aerial lifts, and similar types of equipment.

40) (*) Personal Electric Appliance. An appliance intended for individual or limited group use for the purpose of entertainment, refreshment, personal comfort or personal grooming and provided at the expense of the employee. Some examples of such appliances are radios, coffee pots, hot plates, hair dryers, etc.

41) Qualified Person. One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training on the hazards involved. NOTE: A person can be considered qualified with respect to certain equipment and methods (such as maintenance of HVAC equipment) but can still be unqualified for others.

42) (*) Relocatable Power Tap. A flexible cord set, 2 to 25 feet in length, with an assembly containing multiple outlets, master or individual on/off switch(s), overcurrent device, pilot lights and optional surge and noise suppression.

43) Restricted Approach Boundary. A shock protection boundary to be crossed by only qualified persons. No person is to cross this boundary without meeting the requirements of the De-energized Work Policy (Section 7.14), Energized Work Policy (Section 7.15) and Exceptions to De-energized Work Policy (Section 7.16). Due to the boundary's proximity to a shock hazard, the use of shock protection techniques, and other safety equipment are required. This boundary also signifies the point where insulated tools are required if contact with energized parts is possible. (See Section 17.0).

44) (*) Safety Lock. A lock that is a controlled keyed lock (intended for personnel protection only) that would be installed at each tagout/lockout location. This is a unique lock system.

45) Shock Hazard. A dangerous condition associated with the possible release of energy caused by contact or approach to live parts.

46) (*) Supply Cord – Detachable. A length of flexible cord assembled with an attachment plug or current tap as a line fitting and with a single outlet appliance coupler as a load fitting, with or without a through-cord switch. The load fitting is intended to mate with the motor attachment cap of an appliance.

47) (*) Supply Cord – Non-detachable. A length of flexible cord assembled without a load fitting (appliance coupler) but with an attachment plug or current tap as a line fitting, with or without a through-cord switch for direct connection to an appliance.

48) Switch. A device for opening and closing or for changing the connection of a circuit. In this standard, a switch is understood to be manually operable, unless otherwise stated.

49) Tagout. The placement of a tagout device on an energy-isolating device (in accordance with an established procedure) to indicate that the energy-isolating device and the equipment being controlled may not be operated until the tagout device is removed.

50) Tagout Device. A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy-isolating device in accordance with an established procedure, to indicate that the energy-isolating device and the equipment being controlled may not be operated until the tagout device is removed.

51) (*) Ten (10) Foot Rule. An electrically unqualified person performing work must maintain a distance of 10 feet minimum from live parts. To prevent physical contact with energized or isolated ungrounded power lines, equipment or machines shall be operated as follows:

a) The minimum clearance between the lines and every part of the equipment or machine or its load shall be 10 feet for lines rated 50 kV or below.

b) This distance shall increase 4 inches for each 10 kV above 50 kV.

52) (*) Treadle Pad. A length of rubber-like material used to protect a flexible cord where it crosses a walkway or other similar path. It is used to assist in protecting the cord from damage and to reduce the chance of tripping on the cord.

53) Voltage. The root-mean-square (rms) (effective) difference of potential between any two conductors of the circuit concerned.

54) Working Near (Live Parts). Any activity inside the limited approach boundary.

55) Working On (Live Parts). Coming in contact with live parts with the hands, feet, or other body parts, with tools, probes, or with test equipment, regardless of the personal protective equipment a person is wearing.

56) (*) Work Zone. The space required to safeguard personnel. An area temporarily marked off by rope, tape, or other barricading devices. Entry into this area is prohibited by all personnel other than those authorized by the person in charge of the work zone.

4.0 RESPONSIBILITIES

4.1 Location Manager

A. The Location Manager, or a designee (a Competent Person), shall be responsible for meeting all administrative, design, construction, and maintenance requirements of this standard. This responsibility includes system electrical planning, operation, and control. The Location Manager, or designee, shall be responsible for obtaining, reading, understanding, implementing, and maintaining legally mandated governmental codes, policies, and standards. The Location Manager, or designee, shall also be responsible for ensuring that personnel complete all required training and that documentation of training is maintained.

4.2 Task Supervisor or Person-in-Charge

A. The task supervisor or person-in-charge shall:

1) Be a competent person.

2) Adopt such precautions as are within the individual's authority to prevent accidents, and to take positive action to obtain necessary precautions for those concerns not within his or her authority in order to insure employee safety.

3) See that the location safety rules, training requirements, and operating procedures are observed and followed by the employees under the direction of this individual.

4) Prepare all the necessary documentation as required (i.e., Lockout/tagout Procedures, Switching Procedures, Confined Space Procedures, Digging Permits, Welding Permits, etc.).

5) Prevent unauthorized persons, who are not escorted, from approaching places where electrical work requiring qualification is being performed.

6) Ensure that tools or devices used are suited for the work at hand, and that applicable tools have been tested, as required.

4.3 Employee

A. The employee is the person most responsible for his or her own safety. Qualified, competent and electrically authorized employees shall remain knowledgeable in applicable electrical safety concerns as contained in this, or other standards.

B. All employees shall consider electrical hazards where electrical work is not the primary task, but where the opportunity for contact exists, such as during lockout/tagout, working near open crane rails, near motor control centers and switchgear, construction around cable ladders, and resetting devices and equipment.

4.4 Escort

A. A competent person shall escort persons without the appropriate electrical safety training, unless specifically authorized through written procedure, in areas where the safe work distance clearance cannot be met. Examples could include: non-electrical maintenance personnel, contractors, vendors, production, and staff personnel. The escort shall safeguard the people in his or her care and shall ensure that safety regulations are observed.

5.0 EMPLOYEE TRAINING

5.1 Application

A. The training requirements shall apply to all employees who face a risk of an electrical hazard during the performance of their job. Employees shall be trained to understand the specific hazards associated with electrical energy. Employees shall be trained in electrical safe work practices and procedures necessary to provide protection from electrical hazards associated with their respective job or task assignments.

5.2 Type of Training

A. Training required by this standard shall be of the classroom or on-the-job type, or a combination of the two. The degree of training provided shall be determined by the risk to the employee.

5.3 General Plant Employee (Electrically Unqualified Person)

A. All non-electrical personnel shall receive the following training (or equivalent), see Appendix B.

1) Annual OSHA Electrical Safety Awareness Training, Course No. SE-050.

2) Affected personnel shall receive formal Potroom Electrical Training, Course No. SE-040 every 3 years and quarterly tool box meetings, Course Nos. SE-041, SE-042, SE-043 and SE-044 to cover potroom electrical related hazards.

5.4 Qualified Persons

A. Qualified persons, such as general electricians, electrical supervisors, electrical engineers, designers and

technicians, shall receive the following formal classroom training (or equivalent), see Appendix B.

1) Refresher training on the Massena Electrical Low and High Voltage Safety Standard shall be conducted every 2 years, Course No. SE-015.

2) High Voltage Electrical Safety AES 32.60 Training courses are covered under Course Nos. SE-020 (initial one time only) and SE-021 (refresher every 2 years).

a) Alcoa mandatory electrical safety standards 32.69 and 32.70 are covered under the SE-020 and SE-021 courses.

3) Annual Electrical Qualified (HV and LV) Hands-on Training Assessment, Course No. SE-022

4) NEC, NFPA 70 and NFPA 70E, Course No. SE-031 or equivalent every 3 years.

5) Affected personnel shall receive formal Potroom Electrical Training Course No. SE-040 every 3 years and quarterly tool box meetings Course Nos. SE-041, SE-042, SE-043 and SE-044 to cover potroom electrical related hazards.

6) Annual OSHA Electrical Safety Awareness Training, Course No. SE-050.

7) Annual Area Specific Electrical Arc Flash Training, Course No. SE-60.

8) Medic First Aid, AED and CPR Instruction, Course No. SR-090 every 2 years

a) Persons with current first aid, AED and CPR certification from an outside agency are exempt from the first aid, AED and CPR instruction.

B. In addition, qualified persons shall be trained and knowledgeable in the following:

1) Understanding of the specific hazards and possible injury associated with electrical energy and the personal protective equipment and job planning necessary to perform electrical tasks safely.

2) Proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools, when required.

3) Safety-related work practices, safety procedures, and other personnel safety requirements that relate to their job or task assignments.

4) Any other safety practices, including applicable emergency procedures that are related to their work and necessary for their safety.

5) Skills and techniques necessary to distinguish live parts from the other parts of electric equipment, machines, and processes.

6) Skills and techniques necessary to determine the nominal voltage of exposed live parts.

7) Skills and techniques necessary to understand the Electrical (Arc) Flash Hazard Boundary for low and high voltage equipment

8) The permitted approach distances and the corresponding voltages to which the qualified person will be exposed.

9) Skills and techniques necessary for the understanding of induced, static, and impressed voltages, grounding integrity, condition of poles and structures, and circuit and equipment location.

10) Methods of release of victims from contact with live parts.

5.5 Additional Training - Job Specific

A. Depending on task responsibilities, electricians, electrical supervisors, electrical engineers, designers and technicians shall receive additional training on the following standards:

1) NFPA 70B - Recommended Practice for Electrical Equipment Maintenance.

2) NFPA 79 - Electrical Standard for Industrial Machinery.

5.6 Electrically Authorized Persons

A. All non-qualified personnel such as mechanical engineers, technicians, custodians and general

mechanics who, in the performance of their job, would be required to enter a room or area containing exposed or energized conductors, or parts, or who must approach closer than 10 feet to exposed conductors must receive authorization from a qualified person and must receive training specific to the job.

5.7 Retraining of Personnel

A. There shall be additional training or retraining of personnel as necessary:

1) To keep abreast of technology, new types of equipment, and procedural changes.

2) To maintain proficient skills.

3) If supervision, periodic audits, or the annual inspection reveals that the employees are not complying with required safety-related work practices.

4) If seldom used safety-related work practices are employed.

a) Note: OSHA considers these to be tasks that are performed less than once per year.

B. Observations and Reviews for Qualified Personnel

1) To verify personnel understand the training they receive and are applying the required knowledge and skills to their tasks, an annual Electrical Qualified (HV and LV) Hands-on Training Assessment, Course No. SE-022, is required to verify they can demonstrate their proficiency.

6.0 PERSONNEL CERTIFICATION AND RECORD KEEPING

6.1 Responsibility

A. The Location Manager or a designee shall confirm who is qualified and electrically authorized to perform work in each area.

B. Supervisors shall make sure procedures are established and that employees are trained in those procedures.

C. Every employee shall follow procedures, including the use of PPE, and understand how an employee's qualifications status relates to the specific task.

6.2 Record Keeping

A. Records for each person considered to be qualified and/or electrically authorized shall be established and maintained. The records shall include the following:

1) Name and identification.

2) Date and time of training.

3) Content of training (such as course number or outline).

4) Basis for acceptance as qualified or electrically authorized (i.e., test score, demonstration of skills, and work location).

B. Records for each person considered to be unqualified shall be established and maintained.

1) Name and identification

2) Date and time of training.

3) Content of training (such as course number or outline).

7.0 SAFE WORK PRACTICES

7.1 General

A. All electrical enclosures shall be kept closed and all latches and/or screws shall be in place and tight unless a work zone, in accordance with Section 7.23, has been established.

B. Special precaution shall be observed in areas where additional or unexpected electrical hazards may be present. Example areas are:

1) Main Electrical Distribution Rooms

2) Rectifier Rooms

3) Motor Rooms

7.2 Stationary Storage Batteries

A. In addition to the standard PPE, chemical gloves, apron, and a face shield shall be worn when handling storage batteries. Eye wash capability must be available in the immediate vicinity.

B. Storage batteries require careful handling. The acid is injurious to skin and clothing. If acid comes in contact with your skin, wash the skin immediately.

C. Keep open flames and smoking materials away from batteries because of explosive fumes. Do not bring open flames into battery areas until all the batteries have been removed and the area is adequately ventilated. Batteries give off explosive gases during, and for a time after, charging.

D. When working on storage batteries, non-conductive tools shall be used.

E. Stationary storage batteries shall have signs warning of hazards located at battery stations.

7.3 Mobile Equipment Clearances

A. **In Transit** The height of electrical lines in the route of travel and the height of equipment must be verified prior to transit of equipment whose height may contact an electrical line.

B. Operating

1) A work zone should not be within 10 feet of electrical lines. Cranes, aerial lifts, dump trucks, line trucks, etc., must maintain 10 feet of clearance when operating around electrical lines. If the equipment could inadvertently enter this 10-foot zone, the Alcoa Electrical Department must be contacted immediately to assure that the proper precautions are taken to prevent contact and/or electrocution.

C. Lifting

1) Lifting over non-insulated energized conductors is not permitted. Lifting over other conductors requires suitable protection of the conductors to prevent damage.

7.4 Working Clearances

A. Material

1) Equipment rated 600 volts and less shall have a minimum clearance of 36 inches. Where conductive surfaces, such as protective barriers, metal parts storage containers or drums, aluminum products, etc., may be placed in front of the equipment, the minimum clearance shall be 42 inches.

2) Enclosure door(s) shall be capable of opening at least 90 degrees or must be removable.

3) The width of the work space shall be 30 inches or the width of the equipment, whichever is greater.

a) Note: Reference National Electrical Code® Section 110.26.

B. Low Voltage Circuits

1) A work zone should not be within 10 feet of low voltage circuits - examples include 250VDC crane rails, cable trays, and 480 volt cables.

2) If a work zone could be within the 10-foot limit, qualified personnel shall be contacted prior to the start of work and a pre-job safety review held to assure that proper precautions are taken.

7.5 Access to Electrical Panels

A. Only qualified persons may access electrical panels with exposed live parts.

B. Electrical equipment rooms shall not be used for storage of cleaning supplies or unrelated equipment.

C. Electric panels are not to be used to store spare parts, etc.

D. Electrical drawings must be stored neatly in the pockets provided, in an approved container, or in a spare section. If drawings are to be stored in an electrical panel, it must be done so that it does not present an electrical hazard.

7.6 Opening and Closing Switches

A. When possible, turn all loads OFF.

B. The operator shall not stand directly in front of the disconnect switch or circuit breaker being operated. The operator should stand to the left or right of the device, providing minimal direct body exposure, and use his/her left or right hand to operate the switch whenever possible. Take a deep breath prior to operating the switch and hold to maintain a positive pressure in the lungs. Exhale when the switching operation has been completed.

C. Electrical enclosure covers or doors shall be closed and properly secured before energized electrical disconnect switches or circuit breakers are either opened or closed.

D. Under NO circumstances should a disconnect switch or circuit breaker be operated in an attempt to clear a fault or abnormal condition. All personnel must leave the area quickly and allow the electrical system to clear the fault. Immediately contact electrical personnel to de-energize, troubleshoot, and correct the problem.

E. Personnel operating a switch shall wear PPE rated for the incident energy as indicated by the arc flash label.

7.7 Resetting of Circuit Breakers, Overload Devices, and Replacement of Fuses

A. Only qualified persons shall reset tripped circuit breakers or overload devices and replace fuses.

B. Exception – Reset of 120/240 VAC Branch Circuit Breakers

1) Persons who have attended annual OSHA Electrical Safety Awareness Training are permitted to perform a single reset on 120/240 VAC branch circuit breakers in lighting and receptacle panelboards if the following conditions are met:

a) The Breaker is a Branch Circuit. The Main Breaker can only be reset by a Qualified person

b) The cause of the trip must be determined prior to resetting the breaker.

c) The electrical department shall be notified of the location of the panel, the circuit-breaker number, and the reason the circuit breaker tripped.

d) If a circuit breaker trips a second time, qualified personnel shall be notified to identify the cause of the trip and reset the circuit breaker.

C. Under no circumstances shall an unqualified person open an electrical enclosure with exposed conductors to reset a circuit breaker or other reset device (includes motor overloads).

D. The cause of the tripped breaker, overload or blown fuse shall be determined prior to resetting or replacing except when necessary for further troubleshooting.

7.8 Anti-Restart Devices

A. Anti-restart devices shall be installed on all fixed shop-type equipment where restart after a power interruption is possible.

B. Anti-restart devices which are installed in the supply cord shall be of a type that requires the equipment

on/off switch to be in the off position before it can be reset after a power interruption.

C. Anti-restart devices shall have an annual documented test in accordance with manufacturer instructions for proper operation.

7.9 Capacitors and Similar Energy-Storing Devices

A. When performing maintenance on equipment equipped with capacitors, extra precaution shall be taken.

B. Capacitors shall be properly discharged before performing any work on or near exposed terminals.

C. Do not touch capacitor terminals or handle capacitors unless there is a permanently installed bleed-resistor or shorting jumper.

7.10 Current Transformers

A. The secondary of current transformers **shall not be opened while energized**. Dangerous voltages can be present on the secondary terminals under such conditions.

B. The secondary terminals shall be shorted before disconnecting the secondary connections.

7.11 Bottom Fed Switches

A. It is an Alcoa Massena Policy that all source voltage be connected to the top lugs of switches and panelboards.

B. Due to varying model design and age of some equipment, there are circumstances where the source voltage may have been connected to the bottom lugs. Special precaution shall be observed when working on such equipment.

7.12 Tie and Transfer Switches

A. Special precaution shall be observed when working on tie or transfer switches. These switches can receive source voltage from multiple locations.

B. Before operating or performing electrical tasks on tie or transfer switches, the sources providing power to the tie or transfer switch and the arc flash incident energy for each source must be known. Each source may create a different PPE level and different safe work procedures to be implemented. This can be verified by the arc flash analysis and respective arc flash label for each source that could provide power.

7.13 Energized Conductor Handling

A. Avoid the unnecessary handling of energized conductors. Although insulated, there could be unseen insulation damage. When handling is necessary, proper PPE shall be worn.

7.14 De-energized Work Policy

A. Before beginning any construction, maintenance or troubleshooting work on systems or equipment operating at 50 volts or above, (other than activities described in Section 7.16), which will place the worker(s) within the flash protection boundary or limited approach boundary, whichever is greater, the electrical equipment shall be completely de-energized, locked, tagged, tried and tested.

B. The following tasks are included in the De-energized Work Policy:

1) Opening enclosures on any of the following equipment:

a) Main distribution transformers.

b) Main distribution switchboards and panelboards.

c) Circuit breaker panelboards.

d) Fused and non-fusible disconnect switches.

e) Bus plugs.

2) Placement or removal of bus plugs.

3) Repair of luminaires (lighting fixtures).

4) Replacement of luminaire (lighting) ballast.

5) Relamping of luminaires (lighting fixtures).

a) Exception: Qualified persons shall be permitted to relamp permanently installed luminaires with the use of PPE.

6) Replacement of feeder or branch circuit fuses.

a) Exception: Qualified persons shall be permitted to replace fuses in 120 volt or lower control circuits, associated with PLCs, without de-energizing the control voltage source with the use of PPE.

7) Removal of wires from terminal blocks or electrical components,

8) Replacement of components.

C. Electrical equipment, lines and systems shall be considered energized until deenergized, locked, tagged, tried, and tested in accordance with Section 7.17.

7.15 Energized Work Policy

A. As stated in Section 7.14, the general policy is that NO construction, maintenance or troubleshooting work is to be performed on any conductors and/or exposed equipment parts at 50 volts and above while energized.

7.16 Exceptions to De-energized Work Policy

A. Other than the tasks listed below, exceptions to the de-energized work policy shall require the approval of the Location Manager or Designee and a written procedure including:

1) A flash hazard analysis accordance with Alcoa Engineering Standard 32.70 before such work begins.

2) A work zone in accordance with Section 7.23.

3) Class 0 rubber insulating gloves with leather protectors shall be worn.

a) Exception: If no part of the worker's body or object will cross the restricted approach boundary, Class 0 rubber insulating gloves with leather protectors are not required.

b) Note: See Section 8.3 for additional instructions on the proper use of rubber insulating gloves.

B. The exceptions listed below will require special precautions on the part of the qualified person performing such tasks, including the use of personal protective equipment.

1) Exception No. 1 - Adjustments to Programmed Devices

a) A qualified person may perform adjustments to programmed devices, drives, switches, and overload devices of energized electrical equipment, provided that no conductive objects or tools other than approved test cables shall be used.

2) Exception No. 2 – Current/Voltage Measurement and/or Phasing Verification

a) A qualified person may perform current/voltage measurements inside of energized electrical equipment if the following conditions are met:

1. Perform current/voltage measurement or phasing only.
2. Use only Alcoa Massena approved multimeter or clamp-on ammeter (See Appendix A).
3. Rubber insulating gloves shall be worn during measurements in accordance with NFPA 70E.

4. Verify that the multi-meter is in correct test function before contacting energized parts.

b) If loose connections are found, the procedure must be stopped immediately and the equipment put into an electrically safe condition and repairs made. Once repairs have been completed, the current or voltage measurement procedure can be restarted.

C. Exception No. 3 – Visual Inspection and Infrared Testing

1) A qualified person may perform a visual inspection and/or infrared scan of energized electrical equipment if the following conditions are met:

a) No conductive objects or tools shall be used within the restricted approach boundary.

b) Use Alcoa Massena approved infrared testing device.

D. Exception No. 4 – Replacement of Fuses and Resetting of Overload Devices

1) A qualified person may replace fuses and/or reset overload devices if the following conditions are met:

a) No conductive objects or tools shall be used within the restricted approach boundary.

b) The disconnect switch serving the load is in the off position.

E. Exception No. 5 – Power System 120VAC and 125VDC Control System Voltages

1) A qualified person may perform the following power system operations for control voltages of 125VDC and 120VAC systems:

a) remove or replace relays,

b) short CT circuits,

c) open test switches,

d) replace fuses for control or lockout systems,

e) reset tripped relays,

f) test relay operations (functional trip tests),

g) work in panels with energized cabinet heaters (maintaining restricted approach clearances for the appropriate voltages),

h) work in potline control panels (with appropriate shock hazard guards in place),

i) utilize non-GFCI receptacles for approved test gear that is not designed to operate on GFCI systems, and

j) perform maintenance on Substation Battery Systems following applicable maintenance standards such as IEEE 450.

2) All operations shall be performed with approved manufacturer's equipment while maintaining limits of approach boundaries (avoiding contact) and using approved PPE for Flash Hazard concerns.

7.17 De-energizing Systems and Equipment for Employee Protection

A. Live parts to which an employee might be exposed shall be put into an electrically safe work condition before an employee works on or near them.

B. An electrically safe work condition shall be achieved and verified by the following process:

1) Determine all possible sources of electrical supply to the specific equipment. Check applicable up-to-date drawings, diagrams, and identification tags.

2) Establish a work zone in accordance with Section 7.23.

3) After properly interrupting the load current, open the disconnecting device(s) for each source.

4) Where it is possible, visually verify that all the blades of the disconnecting devices are fully open or

that drawout type circuit breakers are withdrawn to the fully disconnected position.

5) Apply lockout/tagout devices in accordance with a documented and established policy.

6) Use an approved multi-meter to test each phase conductor or circuit part to verify they are de-energized. Tests shall be performed:

a) Phase-to-Ground.

b) Phase-to-Phase.

7) Determine that the approved multi-meter is operating satisfactorily before and after the tests described in Section 7.17(B) Item f).

8) Where the possibility of induced voltages or stored electrical energy exists, ground the phase conductors or circuit parts before touching them. Where it could be reasonably anticipated that the conductors or circuit parts being de-energized could contact other exposed energized conductors or circuit parts, apply ground-connecting devices rated for the available fault duty.

a) When determining if there is a possibility of induced voltages on long feeders or branch circuits, confirm that there are no adjacent feeder or branch circuit conductors that could later be energized resulting in induced voltages.

7.18 Personal Safety Grounds

A. Before any ground is installed, the lines or equipment shall first be tested for absence of voltage unless a previously installed ground is present. Before installation of the grounds, the grounding equipment shall be visually inspected to confirm the equipment's integrity.

1) **Caution:** Grounds left on equipment when reenergized present a short circuit hazard. A positive method of control shall be used to assure removal before reenergizing, such as tags, leaving doors or covers open, leaving the ground cables clearly visible, use of magnetic ground signs, etc.

B. Temporary protective grounding equipment shall be installed at the work location. If installation of grounds at the work location is not feasible, grounds shall be installed on each side of the work location, as close to it as possible.

C. Protective grounding equipment shall be capable of conducting the maximum ground-fault current that could flow for the time necessary to clear the fault. This equipment should have an ampacity greater than, or equal to, that of No. 2 AWG copper. A larger conductor size may be required for higher capacity systems. See ASTM F855 for information on grounding cable and jumper ratings.

D. Protective grounds shall have an impedance to ground low enough to guarantee prompt operation of protective devices in case of accidental energization of the lines or equipment.

E. Before grounding any previously energized part, the employee shall first test the previously energized parts for voltage. Check the test equipment for proper operation immediately before and after the test. If the parts are free from voltage, the grounding may be started. When grounding, first attach one end of the grounding device to an effective ground. Then, the grounding device should next be brought into contact with the previously energized part and be securely attached. If the test indicates that the parts are not free from voltage, then the grounds must not be attached to the part. Determine the source of the voltage to ensure that the presence of this voltage does not prohibit completion of the grounding.

F. Personnel shall use wear the required PPE when attaching or removing grounds.

G. When removing grounds, first remove the grounding devices from the de-energized parts. Then, remove the connection to the ground.

7.19 Exceptions to Use of Personal Safety Grounds

A. If the employer can demonstrate that the installation of grounds is impractical or presents a greater hazard than working without grounds, the lines or equipment may be treated as de-energized if the following conditions are met:

1) Lines and equipment have been de-energized as specified in Section 7.17, and

2) There is no possibility of contact with another energized source, and

3) There is no possibility of induced voltage.

7.20 Reenergizing Systems and Equipment

A. Prior to reenergizing systems and equipment the following steps shall be taken:

1) All protective grounds shall be removed.

2) Remove all tools, spare parts, keys, wires, etc. from within the enclosure or panel.

3) Close and secure all enclosure or panel door(s).

4) All personal safety locks and tags shall be removed from points of disconnect.

5) All employees shall be clear of the systems and/or equipment.

6) Re-energize systems and/or equipment.

7) Restore area to its original condition.

7.21 Working Near Live Parts - Approach Distances – 1000 Volts or Less (for High Voltage ref 32.60)

A. Unqualified Persons

1) Unqualified persons shall not come any closer than the Limited Approach Boundary (refer to Approach Boundaries Table in Section 17.0) or Flash Protection Boundary, whichever is greater, to exposed, energized circuit parts. This includes the longest conductive object being handled. Energized parts could be exposed when a qualified person is performing troubleshooting on systems or production equipment.

2) The person performing the electrical work shall inform the unqualified person of the electrical hazard and warn him or her to remain outside of the Limited Approach Boundary or Flash Protection Boundary, whichever is greater.

B. Electrically Authorized Persons

1) Electrically authorized persons, specific task trained, may work inside the limited approach boundary.

2) In no case shall an electrically authorized person be allowed to work within the restricted approach boundary.

C. Qualified Persons

1) For a qualified person to approach, or take any conductive object, closer to live parts than the Restricted Approach Boundary, he/she shall:

a) Have a plan that is documented and approved by authorized management.

b) Be certain that no part of the body shall enter the prohibited space.

c) Minimize the risk due to inadvertent movement by keeping as much of the body out of the restricted space, using only protected body parts in the space as necessary to accomplish the work.

d) Use personal protective equipment appropriate for working on live parts, and rated for the voltage and energy level involved.

e) Wear Class 0 rubber insulating gloves meeting ASTM D120 and leather protectors meeting ASTM F696 and/or;

f) Cover the exposed, energized parts with either rubber or PVC cover-up material meeting ASTM F1742 and,

g) Use insulated or insulating tools meeting ASTM F1505 and,

h) Wear proper face protection as determined by the Arc Flash Boundary.

2) To cross the ~~prohibited~~ restricted approach boundary and enter the ~~prohibited~~ restricted space is considered the same as making contact with live parts, the qualified person shall:

a) Have specified training to work on live parts.

b) Have a documented plan justifying the need to work that close.

c) Perform a Hazard Risk Analysis.

d) Have (a) and (b) approved by authorized management.

e) Use personal protective equipment appropriate for working on live parts, and rated for the voltage and energy level involved.

7.22 Job Briefings

A. Before the start of each job, the employee in charge shall conduct a job briefing with the employees involved using the Human Performance (HP) pre-job brief process.

B. The briefing shall cover such subjects as hazards associated with the job, work procedures involved, special precautions, energy source controls, personal protective equipment requirements, and work zones.

C. A person working alone shall review the work to be done prior to starting the job. The job briefing shall consider all items listed in Section 7.22(B).

D. At least one job briefing shall be conducted before the start of each job or shift. Additional job briefings shall be held if changes occur during the course of the work that could affect personnel safety.

E. A brief discussion is satisfactory if the work involved is routine and if the employee, by virtue of training and experience, can reasonably be expected to recognize and avoid the hazards involved in the job.

F. A more extensive discussion shall be conducted if the work is complicated or particularly hazardous, or if the employee (qualified or unqualified) cannot be expected to recognize and avoid the hazards involved in the job.

7.23 Work Zones

A. Work Zones are established to prevent unqualified persons from approaching energized parts that would otherwise have been protected by enclosures.

B. Work Zones are established to provide protection for the person performing the electrical work, so that they are not accidentally bumped or pushed into energized parts.

C. Work zones are established to clearly identify equipment to be worked on where symmetry or situations where all the equipment may look the same, exist side by side, and present a potential hazard, i.e. rectifiers, transformers, power panels, disconnect switches, circuit breakers and motor control centers.

D. A Work Zone must be established whenever unqualified persons will be exposed to energized parts during troubleshooting, maintenance, construction and similar activities.

E. In addition to the Work Zone required for shock protection, a flash protection boundary shall be established when there is the possibility of a flash hazard.

F. If the flash protection boundary is greater than the limited approach boundary, the Work Zone shall be established based upon the flash protection boundary dimension.

G. A minimum Work Zone based on the limited approach boundary (or flash protection boundary if greater) shall be established in all directions from live parts whenever protective covers are removed and/or enclosures doors are open.

1) Note 1: Enclosure doors, on production systems, may be opened without establishing a Work Zone where no energized parts will be exposed and no mechanical hazards exist.

2) Note 2: Specific procedures, described elsewhere in this standard, may not require a Work Zone to

be established.

7.24 Raising/Lowering Material/Equipment

A. All small equipment and tools to be used aloft shall be raised and lowered by means of a non-conductive hand line, a canvas bucket or other suitable method.

B. Care shall be taken by employees working overhead to prevent dropping and falling of tools or material on other electrical equipment or systems.

C. Employees on the ground shall stay clear of overhead work to reduce the potential of being struck by falling pieces.

7.25 Portable Ladders

A. Portable ladders shall have nonconductive side rails if they are used where the employee or the ladder could contact live parts.

7.26 Safety Interlocks

A. Electrical Safety Interlocks

1) Only a qualified person shall be permitted to defeat or bypass an electrical safety interlock over which the person has sole control, and then only temporarily while the qualified person is working on the equipment.

2) The safety interlock system shall be returned to its operable condition when the work is completed.

B. Machine Guarding Safety Interlocks

1) Machine guarding safety interlock systems shall not be bypassed or otherwise rendered inoperative while the equipment is energized except when phasing conductors following new or revised installations or when performing testing. Under no other circumstances shall the machine guarding safety interlock system be bypassed or otherwise rendered inoperable.

2) Temporarily defeating or bypassing a machine guarding safety interlock to perform testing requires approval from the Location Manager, or designee.

3) A written procedure for the task must be developed before the work is performed.

4) The machine guarding safety interlock system shall be returned to its operable condition when the work is completed.

7.27 Working in Electrical Enclosures

A. De-energized means that the main disconnect switch or feed has been opened, locked, tagged, and tried. A de-energized panel is considered safe, provided the work does not require working within the restricted approach boundary to the line side of the main disconnect switch.

B. If work is required within the restricted approach boundary to the line side of the main disconnect switch, a pre-job safety review with the supervisor and/or engineering personnel must be conducted to determine proper procedures and protection.

7.28 Arc Flash Labels

A. Arc flash labels are affixed to 125VDC Station Batteries, 250VDC Crane Power, 480VAC, 2.4KV and 13.8KV electrical equipment throughout the location and shall comply with requirements of AES 32.70.

B. Personnel operating a switch or performing specific electrical tasks shall wear PPE rated for the incident energy as indicated by the arc flash label.

C. The arc flash label indicates the distance (flash hazard boundary) at which a person must stand to avoid

the arc flash hazard. No arc rated PPE is required beyond the flash hazard boundary.

D. Electrical equipment shall be labeled for all PPE Levels and Prohibited. See Appendix D for a listing of arc flash labels both existing and new.

E. Special precautions shall be observed before performing electrical tasks on equipment, i.e. power panels, that has the capability of being fed from two different sources of power. The arc flash incident energy for the source providing power to the electrical equipment must be known. Each source may create a different PPE level and different safe work procedures to be implemented. This can be verified by the arc flash analysis and respective arc flash label for each source that could provide power.

7.29 Normal Operation of Energized Electric Equipment

A. Normal operation of energized electric equipment such as circuit breakers and switches shall be permitted only when the following conditions are satisfied:

1) The equipment is properly installed per industry codes, standards and manufacturer recommendations.

2) The equipment is properly maintained per industry standards or manufacturer recommendations.

3) There is no evidence of impending failure such as arcing, overheating, loose or bound equipment parts, visible damage, or deterioration.

4) If the electrical equipment is of enclosed switchgear design, equipment covers must be in place and doors closed and secure.

B. Exceptions to these conditions requires a risk assessment and authorized based on the risk level or plant manager approval.

1) Refer to EHS Standard 32.69 'Low Voltage Electrical Safety', Appendix 6.0 for Switching Risk Assessment example

2) Refer to EHS Standard 32.60 'High Voltage Electrical Safety', Appendix 6.8 for Switching Risk Assessment example.

8.0 PERSONAL PROTECTIVE EQUIPMENT

8.1 General

A. The personal protective equipment worn shall comply with the operating area requirements and the job task being done. The requirements are intended to protect a person from electric shock and arc flash. A flash hazard analysis shall be performed before work begins. Anyone operating a switch or performing electrical tasks shall wear PPE rated for the PPE level as indicated by the arc flash label.

B. Personnel shall wear the appropriate clothing and Personal Protective Equipment (PPE) when working around low voltage systems. This section and the requirements of 32.70 shall apply to outline the PPE necessary to provide personnel with adequate protection from electrical hazards.

8.2 Clothing Requirements

A. The clothing required to be worn is dependent upon the potential hazard exposure for the task being performed and shall comply with the requirements as outlined in Electrical Arc Flash Hazard Standard 32.70

B. All undergarments shall be 100% natural fiber and shall include socks, underwear, bras, and T-shirts.

C. Work uniforms shall be free of petroleum products that would increase the flammability of the clothing.

D. There shall be no holes, rips, tears, etc.

E. FR clothing shall be laundered in accordance with clothing manufacturers' instructions.

8.3 Rubber Insulating Gloves

A. As a minimum, Class 0, rubber insulating gloves meeting ASTM D120 with leather protectors meeting ASTM F696 shall be worn anytime a qualified person is working closer than the Restricted Approach Boundary to live parts.

B. Gloves shall be worn with approved protectors.

1) Exception: When a task requires maximum dexterity, it is permissible to remove the leather protector, provided the rubber insulating glove is not exposed to physical damage. Some acceptable examples of when it may be necessary to remove the leather protector are:

a) Performing voltage checks with a multi-meter,

b) Performing current measurements with a clamp-on ammeter.

C. If an employee has determined that a task cannot be performed safely while wearing rubber insulating gloves and/or leather protectors, the employee shall:

1) Not perform the task,

2) Contact the supervisor and,

3) Schedule the task when the Alcoa Massena lock/tag/try procedure can be implemented.

D. Gloves shall be stored in an approved glove bag or equivalent protective location.

E. The gloves shall be labeled indicating the month the inspection expires.

8.4 Foot Protection

A. All electrical personnel shall wear electrical hazard rated footwear. Electrical hazard rated footwear shall meet the ANSI Z41 requirements.

B. Damaged shoes, such as exposed steel toes, shall not be worn.

8.5 Head Protection

A. Class E, 20 KV hard hats shall be worn at all times when there is a possibility of head contact with exposed, potentially energized, conductors or equipment parts. Some examples are:

1) Working near overhead lines,

2) Working on or near electrical distribution equipment with enclosure covers removed or enclosure doors open.

B. Hard hats shall be kept clean and in good condition and shall not be altered or defaced in any manner except for company approved markings.

8.6 Face and Head Burn Protection

A. Based upon the Flash Hazard Analysis results, required PPE for face and head burn protection shall comply with the requirements as outlined in Electrical Arc Flash Hazard Standard 32.70.

8.7 Eye Protection

A. Approved eyewear, with non-conductive side shields and frames, shall be worn at all times when performing any type of electrical work.

8.8 Ear Protection

A. Proper hearing protection may be required based upon arc flash hazard analysis results.

8.9 Rings, Watches, and Other Conductive Articles

A. Rings are prohibited in production and maintenance areas of Alcoa Massena Operations.

B. Conductive articles shall not be worn within the limited approach boundary (or flash protection boundary if greater). This shall include but not be limited to such items as metal watchbands and bracelets, metal-framed eyewear, metal dangling jewelry, key chains, metal headgear, metalized aprons, cloth with conductive thread.

9.0 TOOLS AND INSTRUMENTATION

9.1 General

A. Only qualified persons who have received training on the specific testing equipment and the associated hazards shall be permitted to perform testing on systems and/or equipment.

B. All test equipment shall be visually inspected prior to use for physical damage to cases and test leads.

C. Damaged equipment shall be immediately returned to the area supervisor.

D. When selecting test equipment confirm that the instrument is adequate for the voltage and environmental conditions that it will be exposed to.

E. Before using any electrical test equipment read all manufacturer instructions and warnings.

F. Observe any special safety precautions that are part of the manufacturer's instructions and/or Alcoa Massena policy.

G. Use only test instruments that are approved by the Alcoa Engineering Standard 32.62.

9.2 Test Equipment

A. Only Alcoa Massena approved test equipment shall be used. For examples of pre-approved test equipment. Refer to Appendix A.

B. If a particular application requires the use of a meter not on this list, a careful review by electrical engineering and maintenance must be taken to assure the meter's safety. No new equipment should be obtained for routine testing purposes unless it is UL listed to a minimum rating of Cat. III-600V per UL3111 (IEC 61010) and is in compliance with Alcoa Engineering Standard 32.62.

C. Only Alcoa Massena approved test leads and accessories shall be used.

D. Replacement test leads and/or accessories shall be as specified by the manufacturer.

9.3 Pocket Voltage Sensors

A. The pocket AC Voltage Sensor shall only be used for troubleshooting. These sensors shall NOT be used in place of plant approved voltage testers or meters for verification of deenergized circuits during Lock, Tag, Try procedures.

B. The pocket AC voltage sensor shall be UL listed and constructed of non-conductive components. The sensor's painted (insulated) metal clip for securing the sensor to a shirt pocket is an exception to the non-conductive requirement, provided the insulation is not chipped, exposing the metal.

C. The proper method for using the AC Sensor is as follows:

a) **Caution:** The AC sensor DOES NOT sense DC voltages and only reliably senses AC voltages between 90 - 600 VAC.

1) Verify that the voltages related to the circuit being tested are compatible with the sensor's design. If the circuit voltage is unknown DO NOT use the sensor.

2) Verify proper sensor operation by testing the sensor on a known voltage. Treat the AC sensor as a

"Mini-Glow-Stick".

3) Use of damaged or malfunctioning sensors shall be suspended IMMEDIATELY and returned to an electrical supervisor for inspection and disposal. Except for battery replacement, AC sensors shall not be disassembled for repair.

9.4 Hand Tools

A. Even though work on energized circuits is prohibited, the potential exists for accidental contact with energized components. Because of this, proper selection, use, and care of hand tools is important to safely performing electrical work. The following guidelines apply to electrical hand tools:

1) All hand tools shall be kept clean and dry.

2) The handle of screwdrivers, wire cutters, strippers, wrenches and other hand tools used on potentially energized electrical conductors (terminals, wire, etc.) shall be non-conductive and free from cuts or holes.

3) Only non-conducting rules and tapes shall be used in proximity to potentially energized electrical equipment.

9.5 New Testing Devices

A. Any new electrical safety related or testing device must be reviewed and approved by Alcoa Massena Operations maintenance and engineering personnel. The person wishing to use this new device is responsible for contacting the appropriate personnel to participate in the review.

10.0 INSPECTIONS AND TESTING OF PPE AND EQUIPMENT

10.1 Rubber Insulating Gloves

A. Before each day's use, personnel shall inspect and test their gloves as follows:

1) Inspect for physical damage such as cuts, tears or abrasions.

2) Perform an air test by trapping air inside the glove and examining it for pin-holes or other apparent leakage.

3) Immediately following any incident suspected of causing damage.

a) If damage is suspected, personnel shall not use the gloves until the gloves have been dielectrically tested and approved for further use.

B. Personnel shall use only gloves meeting ASTM F496 that have been dielectrically tested within the previous six months.

1) New rubber gloves shall be dielectrically tested before first use.

2) The dielectric testing of rubber insulating gloves shall be in accordance with ASTM standards.

C. Rubber gloves shall be labeled indicating the date the dielectric test expires.

D. Each employee shall be aware of the re-test date on the glove being used.

E. Low voltage gloves are color coded for Alcoa Employees (red or black). Only red gloves shall be used from Jan – Jun and black from Jul – Dec.

10.2 Rubber Insulating Blankets, Covers, Matting, and Line Hoses

A. This equipment shall be visually inspected for defects before use and installation on exposed, energized conductors, devices, or equipment, or if damage is suspected.

1) Do not use damaged or possibly damaged equipment until it has passed an electrical retest.

B. This equipment is not designed for permanent installation. Follow the manufacturer's specifications for

use as exposure may result in ozone checking, corona cutting, or excessive weathering.

C. This equipment shall be tested in accordance with ASTM D178, ASTM F479, ASTM F478, ASTM D1048, ASTM D1049, and ASTM D1050.

D. This equipment shall be tested before using it the first time and then again once every 12 months.

E. This equipment shall be labeled indicating the date the dielectric test expires.

10.3 Live-Line Tools

A. Live-line tools shall be visually inspected for defective hardware attachments, cracks, deformities, contamination, and proper operation before using and/or testing them.

B. Live-line tools shall be dielectrically tested every twelve months. Refer to IEEE 978 “Guide for In-Service Maintenance and Electrical Testing of Live-Line Tools”.

C. Live-line tools shall be labeled indicating the date the dielectric test expires.

10.4 Cord and Plug Connected Portable Power Tool Testing

A. Only approved electrical test equipment is used to test portable corded power tools. (Test requirements as listed in section 10.4 E – below.)

1) Pow-R-Saf by Multi-Amp is one such approved test set.

B. Portable tools shall be diagnostically tested as follows:

1) Prior to being placed into service.

2) Every twelve months thereafter or any time damage is suspected.

C. Portable power tools shall have a tag attached indicating the month the inspection expires.

D. It is each department manager’s, and/or contractor responsible person’s responsibility to assure that the portable power tool inspection and testing programs are properly implemented and maintained.

E. An electrically authorized person shall test portable power tools for:

1) Proper polarity and/or phasing of conductor connections.

2) Open or high impedance equipment grounding conductor.

3) Short circuits.

4) Ground faults.

F. It is the user’s responsibility to assure that only inspected and properly labeled portable power tools and extension cord sets are used.

G. The user shall perform a visual inspection prior to each day’s use. As a minimum the user shall inspect for the following:

1) Cracked and loose parts.

2) Deformed and missing pins on attachment plug.

3) Damage to outer jacket or insulation on attachment cord.

4) Evidence of possible internal damage, such as, pinched or crushed cord or case.

H. If a defective tool or supply cord is found, it shall be removed from service and delivered to the Electrical group leader for repair or disposal.

10.5 Test Records

A. Test records for Alcoa-owned equipment and tools shall be kept for the life of the equipment and tools or for a minimum of three years. Examples include low voltage gloves, test meters, live line tools and cord connected portable electric tools.

11.0 EXTENSION CORD SETS AND SUPPLY CORD USE

11.1 General Requirements

A. All extension cords must have an initial inspection/test indicated by an approved (red or blue) tie wrap from the initial electrical inspection/test. The approved tie wrap satisfies the documented inspection/test requirement.

1) GFCI protected extension cords shall require an initial inspection/test only and shall have a red tie wrap attached at the GFCI end of the cord.

2) Non GFCI protected extension cords shall require both an initial inspection/test and an annual inspection/test with approved tie wraps attached as follows at the prong end of the cord:

a) The annual inspection/test shall be conducted during February of each year.

b) A red tie wrap shall be attached during even years, example: 2012 – red

c) A blue tie wrap shall be attached during odd years, example: 2013 – blue

3) An electrically authorized person shall inspect/test extension cords for:

a) Proper polarity and/or phasing of conductor connections

b) Cracked or loose parts

c) Open or high impedance equipment grounding conductor

d) Short circuits

e) Ground faults

f) Deformed and missing pins on attachment plug

g) Damage to outer jacket or insulation

h) Evidence of possible internal damage, such as pinched or crushed cord

i) Proper GFCI operation

B. All extension cord sets shall contain an equipment grounding conductor.

C. Unless specifically permitted elsewhere in this standard extension cord sets shall not be smaller than No. 14 AWG.

D. Extension cord sets fabricated with No.14 AWG, or smaller, wire size shall not have more than one outlet.

E. Extension cord sets fabricated with No.12 AWG wire or larger shall not have more than three outlets (factory assembled tri-tap).

F. All extension cord sets shall be listed (UL or equal) factory assembled units or field constructed to meet the same required standards and suitable for the intended environment and voltage.

G. Field constructed cord sets shall be fabricated in accordance with Section 11.6 of this standard.

H. Neither employees, nor visitors, nor contractors shall bring on site or use unapproved extension cord sets.

I. Extension cord sets and/or supply cords shall not be unplugged while the equipment is operating.

J. Supply cords and/or extension cord sets shall not have splices or taped repairs.

K. Extension cord sets and/or supply cords supplied from a disconnect switch shall not be unplugged with the disconnect switch closed.

L. Extension cord sets are for temporary use only and shall not replace permanent wiring.

M. Only qualified personnel shall custom make or field modify extension cord sets and supply cords.

N. Custom made, field modified or new extension cord sets and supply cords shall be tested by a qualified person prior to being placed into service. Testing shall include color code verification, ground verification, polarity, insulation and continuity. Application of the Tie-wrap is a verification of the completed test.

11.2 Offices - Management and Production

A. Extension cord sets shall not be used on office equipment, such as typewriters, copy machines, etc., or appliances such as fans or space heaters where such equipment is located within reach of permanently wired outlets or structural surfaces on which permanently wired outlets could be located.

1) The expression "located within reach" means that the receptacle outlet is no further away from the equipment than the length of the supply cord.

B. When the supply cord is connected to an outlet, it shall not be exposed to physical abuse from feet, office chairs and equipment storage.

C. Where the supply cords must run through areas exposed to traffic or storage of materials, the supply cord shall lie flat on the floor and, unless listed for hard or extra hard usage, it shall be protected from physical abuse by the use of treadle pads or similar devices.

D. Supply cords and/or extension cord sets shall be arranged such that they do not pose a tripping hazard.

E. Extension cord sets listed for extra hard usage, no longer than necessary, shall be permitted for items specified in Section 11.2(A) when desks are located away from walls or office dividers, as would be the case within an open office setting.

F. Extension cord sets listed for extra usage, no longer than necessary, shall be permitted on small appliances such as coffee pots when such appliances are equipped with less than a 6-foot supply cord and be equipped with a single outlet cord connector.

G. In unusual or emergency conditions, approval may be obtained from the Alcoa Massena Safety Department for the temporary use of an approved extension cord set.

11.3 Production and Storage Areas

A. Extension cord sets shall not be used to supply stationary type production equipment except during initial setup and testing.

B. Frequently moved production equipment, such as a drum inspection stand, shall be permitted to be supplied through an extension cord set, provided all applicable requirements of this procedure are met.

C. Portable and handheld production equipment shall be permitted to be supplied through an extension cord set when it is necessary to use the equipment over a wide undefined area.

D. Extension cord sets shall not be permitted with production support equipment such as electronic scales, fans, space heaters or similar equipment.

E. Extension cord sets shall be suitable for hard or extra hard usage and, as a minimum, and shall be listed as SOOW type cord. When used in environments that contain chemicals or other destructive agents, the outer jacket shall be listed for the purpose.

F. Extension cord sets shall have a minimum of No.14 AWG conductors or an ampere rating not less than 125% of the ampere rating marked on the nameplate of the equipment to which it is connected, whichever is greater.

G. Extension cord sets shall contain an equipment grounding conductor regardless of whether or not the supplied equipment requires equipment grounding.

H. Extension cord sets shall have a single outlet connector body of the proper rating.

I. Extension cord sets used with 15- and 20-ampere, 125-volt equipment, in wet and conductive locations

shall be protected by a ground-fault circuit-interrupter (GFCI).

J. Extension cord sets shall be protected against physical abuse from foot or vehicle traffic by suitable means, such as treadle pads or running boards. Cord sets shall not be run over sharp edges of equipment or structural members.

K. Extension cord sets shall be visible, except where protected as described in Section 11.3(J), and shall not go through holes in walls, floors, or ceilings.

L. When not in use extension cord sets shall be properly coiled and stored in locations where they will not be physically abused.

11.4 Safety and Environmental Test Equipment

A. Safety and environmental monitoring equipment installed for long-term use shall not be supplied through extension cord sets.

B. Safety and environmental monitoring equipment for temporary or emergency purposes shall be permitted on extension cord sets protected by a ground-fault circuit-interrupter.

C. Extension cord sets used with safety and environmental monitoring equipment shall be listed for hard or extra hard usage, suitable for outdoor use and be equipped with a single cord connector body.

1) **Exception:** If more than one environmental monitoring unit is needed at this same location, then a maximum of three (3) outlets shall be permitted.

D. When surge and noise protection is required it shall be an integral part of the cord connector. Separate temporary power taps shall not be used to accomplish this feature. They shall be listed for their intended use.

E. When extension cord sets are used as permitted in this section and safety and environmental monitoring equipment is removed, it shall be the responsibility of the same technician / person to remove the extension cord set and properly return it to storage.

F. When extension cord sets are used as permitted in this section, it shall be inspected each month by the technician for physical damage and fatigue.

11.5 Maintenance Operations and Construction Activities

A. Extension cord sets shall be listed for hard or extra hard usage, and as a minimum, be listed as SOOW type cord.

B. Extension cord sets shall be protected by a ground-fault circuit-interrupter.

C. When in use, extension cord sets shall be protected against physical abuse and/or damage. When possible all cord sets should be run overhead to avoid damage to the cords.

D. Extension cord sets shall be inspected for damage before each use. If there is any evidence of damage the cord set shall not be used until repaired by a qualified person.

E. Extension cord sets that are not in use shall be properly coiled and stored in a location where they will not be exposed to physical abuse.

11.6 Field Constructed Extension Cord Sets

A. Field constructed extension cord sets shall be fabricated with all listed components.

B. Field constructed extension cord sets shall comply with all applicable requirements of Section 11.1 of this standard.

C. Attachment plugs and connector bodies shall be dead-front construction and have no exposed metal parts.

D. Flexible cord shall be listed for hard or extra hard usage and, as a minimum, be listed as SOOW type cord.

E. Extension cord sets SHALL NOT be fabricated using device boxes with multiple outlets.

11.7 Pendant Outlets

A. Cord supplied pendant outlets shall be permitted where there is no other means of providing power to cord-and-plug connected utilization equipment.

B. Cord shall be listed for hard or extra hard usage, and as a minimum, be No. 14 AWG and be listed as SOOW type cord.

C. Proper stress relief shall be installed at each end of the cord.

D. The cord shall be equipped with a single cord connector of the proper type for the intended loads.

E. Pendant outlets SHALL NOT be fabricated using device boxes with multiple outlets.

11.8 Visual Inspection

A. Extension cord sets and supply cords shall **be visually inspected before each use including:**

1) Inspect for loose parts.

2) Inspect for deformed and missing pins.

3) Inspect for damage to outer jacket or insulation.

4) Inspect for evidence of possible internal damage, such as, pinched or crushed outer jacket.

B. If a defective extension cord set or supply cord has been found, it shall be removed from service and delivered to the Electrical Group Leader for disposal.

12.0 RELOCATABLE POWER TAPS AND CURRENT TAPS

12.1 General

A. Relocatable power taps and current taps shall be listed by a recognized testing laboratory such as Underwriters Laboratories Inc. (UL).

B. Current taps shall be directly mounted and secured to a fixed receptacle outlet and equipped with a master on/off switch and supplementary overcurrent protection rated at not more than 15 amperes. Surge and noise protection shall be optional.

1) Exception: Current taps equipped with surge and noise suppression, which are directly mounted and secured to a fixed receptacle outlet, shall be permitted without a master on/off switch and supplementary overcurrent protection where used solely for equipment requiring surge and noise protection.

C. Relocatable power taps shall meet the following requirements:

1) Supply cords shall not exceed 25 feet.

2) Shall have a minimum of No. 14 AWG supply cords.

3) Supply cords smaller than No. 12 AWG shall have integral supplementary overcurrent protection as required by UL Standard 1343.

4) Shall be equipped with a master on/off switch.

5) Shall not be permitted to be supplied through extension cord sets.

6) Shall not be supplied through another Relocatable Power Tap.

7) Shall include integral surge and noise protection when required.

8) Shall be located where they are visible and the master on/off switch is accessible to the user.

9) When mounted to a fixed surface, Relocatable Power Taps shall be secured in accordance with manufacturers' instructions.

10) Shall not be permanently mounted to a structure (walls) surface.

11) When used in wet locations or outdoors must be listed for that purpose.

12) Shall not be used with cords longer than necessary. Coiling of the supply cord shall be avoided.

13) Shall not be used as a replacement for extension cord sets.

12.2 Offices - Management and Production

A. Two Relocatable Power Tap units shall be permitted per desk or employee work space.

B. Where two Relocatable Power Taps do not satisfy the electrical needs, the facility owner shall request assistance from facility engineering to determine what other wiring methods may be more appropriate.

C. Stationary appliances such as refrigerators, water coolers, etc. and major appliances such as coffee pots, fans and space heaters shall not be supplied through Relocatable Power Taps.

D. Stationary office equipment, such as copy machines, diazo machines, etc., that require surge and noise protection shall be supplied from a receptacle outlet with integral surge and noise protection.

12.3 Break Areas

A. Small appliances such as coffee pots, toaster ovens, microwave ovens, refrigerators, and vending machines, located in designated break rooms, shall not be supplied through Relocatable Power Taps.

B. When appliances, such as those described in Section 12.3(A), require surge or noise protection, such protection shall be provided by other than Relocatable Power Taps.

12.4 Laboratories, Electronic and Maintenance Shops

A. Relocatable Power Taps or current taps shall not be indiscriminately used. Where a large number of receptacle outlets are required, such as on work benches, plug strips or similar devices shall be used.

B. The need for surge and noise protection shall not be considered justification for the indiscriminate use of Relocatable Power Taps or Current Taps.

C. Relocatable Power Taps located on work benches and similar surfaces shall be mounted such that the receptacle outlets are not facing upward.

12.5 Telephone Equipment

A. Telephone equipment located in general areas or in telephone equipment closets shall not be supplied through Relocatable Power Taps.

B. Where surge and noise protection is required it shall be an integral part of the receptacle outlet or a current tap with surge and noise protection.

13.0 USE OF GROUND-FAULT CIRCUIT-INTERRUPTERS (GFCI)

13.1 General Application Requirements

A. Ground-fault circuit-interrupter protection shall be provided by one of the following type devices:

1) GFCI type circuit breakers.

2) GFCI type receptacle outlets.

3) Portable GFCIs.

B. The GFCI shall meet or exceed the requirements of ANSI/UL 943-2000 for a class A GFCI.

C. GFCI type devices used in wet locations and/or outdoors shall be listed for use in wet locations.

D. GFCI devices supplied through flexible cord shall be listed for such use and shall include open-neutral protection.

E. If receptacle outlets are protected by a GFCI type circuit breaker, the panelboard and circuit number shall be legibly and durably marked on each receptacle cover plate. All protected receptacles fed from a GFCI shall also be labeled as per NEC.

F. Egress lighting shall not be supplied from a circuit protected by a GFCI.

G. A portable GFCI shall be plugged directly into a receptacle and an extension cord shall be plugged into the portable GFCI.

13.2 Specific Applications:

A. GFCI protection shall be used for all 15- and 20-ampere, 125 volt, receptacle outlets located in the following locations:

1) Rest rooms

a) Note: Rest room lighting shall not be connected to the load side of any GFCI-protected circuit

2) Laboratories where installed within 6-feet of sinks, along benches where experiments are performed with water or other liquids or on fume hoods

3) Janitorial closets or employee work areas within 6 feet of a utility sink

4) Safety and environmental monitoring activities especially in wet locations or locations that are unprotected from the weather

5) Electric scooters with integral battery charger (shall be protected by a GFCI that is an integral part of the charger AC supply cord or connected to a receptacle that is protected by a GFCI)

a) Note: GFCIs shall be listed for use in wet locations

6) Outdoor receptacles located on buildings, fences, or other structures (shall be protected by a GFCI type circuit breaker)

a) Exception1: Receptacle outlets installed for specific purposes and equipment, such as a sump pumps, shall not be required to have GFCI protection

b) Exception 2: A GFCI type receptacle outlet shall be permitted if the outlet is listed as suitable for use in a wet location while in use

13.3 Construction and Maintenance Activities

A. All receptacle outlets in construction and maintenance activities shall be protected by a GFCI. This includes receptacles on the outside of construction trailers, on temporary power poles, on portable and vehicle-mounted generators, and on engine driven welders.

1) Exception 1: Receptacle outlets installed for specific purposes and/or equipment, such as sump pumps or test equipment, shall not be required to have GFCI protection.

2) Exception 2: 15-, 20-, or 30-ampere, 125 and/or 250 volt receptacle outlets may, with the permission of the Electrical Department, employ a written Assured Equipment Grounding Program. A written request must be submitted stating the reasons why GFCIs cannot be used.

3) Exception 3: Receptacles on a 2-wire, single-phase portable or vehicle-mounted generator rated not more than 5kW, where the circuit conductors of the generator are insulated from the generator frame and all other grounded surfaces.

B. All portable electric hand tools and extension cord sets shall be supplied from receptacle outlets that are protected by a GFCI or have integral ground-fault protection.

C. GFCI type outlets installed outdoors shall be listed as suitable for a wet location with the device in use.

D. GFCI type circuit breakers shall not be installed outdoors unless the panelboard enclosure and GFCI

circuit breaker are listed for use in a wet location.

13.4 GFCI TESTING REQUIREMENTS

A. Minimum Test intervals

1) Ground-fault circuit-interrupters (GFCI) shall be tested at regular intervals. To meet the mfg recommended monthly testing frequency, prior to use, all GFCIs will be tested monthly (28 days), unless the following conditions are met.

2) Receptacle is indoors, is tested prior to use and receptacle is tested and documented at a minimum every 6 months.

3) The Facility Owner shall be responsible for all documented testing and records within their area(s) of ownership.

4) Users shall be trained to test the GFCI before each use when possible.

B. Training

1) All persons responsible for testing GFCIs shall have access to the proper test instructions from the manufacture and be familiar with the performance testing requirements of the GFCI.

a) NOTE: The testing of the GFCI will cause an interruption to any equipment being served by this GFCI unit.

2) The basic test outlined by the manufactures is to push the "TEST" button on the front of the GFCI unit. This must cause the electric power to be interrupted to the protected receptacle / wiring. Interruption of power should be verified (i.e. with a test light or the LED on the receptacle etc…

3) The GFCI can then be return to use by pushing the "RESET" button.

C. Physical Condition

1) GFCIs listed for use in wet location shall also be inspected for physical damage that would allow the entrance of moisture,sealing boots around the TEST and RESET Buttons shall be checked for proper integrity and damage.

2) Flex and stress fittings shall be checked for cracks or other signs of damage.

3) Enclosure screws shall be tight and cover gaskets in place.

D. Test results

1) A record of test results shall be maintained indicating the date, tester's initials and the results of the test.

2) Test records shall be maintained by the facility owner in a location accessible to the person(s) responsible for performing the tests.

E. Failure Reporting and Repair

1) When a GFCI fails the test it shall be reported to the facility owner immediately.

2) The facility owner shall take immediate corrective action with the maintenance department.

3) GFCIs that fail the test shall be removed from use by means of the Tag Procedure until repaired or replaced.

14.0 APPLIANCES

14.1 General

A. All appliances must be in good, safe operating condition with no exposed electrical hazards and shall be

listed and labeled by an appropriate product safety testing and certification organization such as Underwriters Laboratory (UL).

B. The appliance shall have a manufacturer's nameplate. All manufacturer's safe guards are to be in place and operable and equipment cabinets (cases) shall be complete with all covers properly attached.

C. The appliance is to be used in accordance with all instructions provided by the manufacturer.

D. Equipment supplied from 15- or 20-ampere, 125-volt receptacle outlets shall not be used in wet locations unless protected by a GFCI.

E. Heat generating appliances are not to be operated in an enclosed box or near flammable or combustible materials. Portable space heaters shall be equipped with a tip-over or overheat switch.

F. When not in use, appliances shall be stored so as not to be exposed to physical damage.

G. Homemade appliances are prohibited.

14.2 Appliance Supply Cords

A. Power cords shall not have splices or repairs. Attachment plugs shall be dead front construction or molded into the power cord.

B. Equipment with metal cabinets or extensive metal components, such as coffee pots, microwave ovens and toasters, shall be equipped with a 3-wire power cord supplied from a properly grounded 3-wire receptacle outlet. When the manufacturer does not supply the equipment with a 3-wire power cord, it shall be supplied from a receptacle outlet protected by a Ground-Fault Circuit Interrupter (GFCI).

1) Exception: Listed equipment shall not be required to be grounded where protected by a system of double insulation or its equivalent. Double insulated equipment shall be distinctively marked.

C. Supply cords shall be visually inspected before each use for:

1) loose parts;

2) deformed and missing pins;

3) damage to outer jacket or insulation; and

4) evidence of possible internal damage, such as pinched or crushed outer jacket.

D. If a defective supply cord is found, the appliance shall be removed from service.

E. Appliances shall not be supplied through extension cord sets or relocatable power taps, except as allowed under the conditions of Section 11.2 (F).

14.3 Hair Dryers and Personal Grooming Appliances

A. All personal grooming appliances supplied from 15- or 20-ampere, 125-volt receptacle outlets shall have an integral ground-fault circuit interrupter (GFCI) or be supplied from a GFCI receptacle outlet.

B. Electrically operated personal grooming appliances shall not be used in showers.

14.4 Receptacle Mounted Power Supplies

A. Receptacle mounted power supplies for such office accessories as adding machines and calculators shall be listed and labeled for the appliance with which it is used.

B. Power supplies shall not be attached to outlets that are behind desks, filing cabinets or otherwise concealed so that ventilation is restricted.

C. When not in use power supplies shall be removed from the outlet and properly stored.

15.0 POTROOMS

15.1 General

A. In general, tasks performed within the Potline working zone are exempt from the requirements of this document. See Alcoa Potroom Electrical Safety Standard 32.67 for guidelines for electrical design, installations and safe work practices for safety requirements when in the Potline working zone.

1) The location manager or the designee shall conduct an annual assessment to assure that the requirements of Potroom Electrical Safety Standard 32.67 are followed. Action plans shall be developed and implemented to correct any identified gaps. (AES 32.67, Section 4.6 'Self-Assessment and EHS audit')

2) The following statements are to be followed in addition to the requirements of Alcoa Standard 32.67.

B. Electrical safety in the potrooms is maintained by keeping all grounds covered or isolated so that it is virtually impossible for a person to come in contact with the pots and ground at the same time. Regular AC and DC power circuits are NOT used in the potrooms.

C. Special circuits and components have been developed allowing AC power to be used safely on the pots. The following rules apply to the use of AC power in the potrooms:

1) No repair work is to be performed on the special isolating transformers.

2) Transformers are to be returned to the factory for repair or replacement.

3) No changes are to be made in the 480 volt circuits, the disconnect switches or pot transformers, without specific engineering approval.

4) No wiring or additional electrical equipment is to be installed on the pots without engineering approval.

15.2 West Plant Ground Breaker

A. At the West Plant the appropriate grounding breaker will be used:

1) Whenever work is done within the potroom building or on pot potential circuits where there is a danger that the potline could be grounded through a person or equipment while performing work.

2) Whenever any work is performed in the Potline 6 basements under the pots.

16.0 SPECIFIC DESIGN PRACTICES

16.1 Grounding of Separately-Derived Systems

A. General

1) All separately-derived systems shall be grounded in accordance with NEC.

2) All grounding connections shall be made at the transformer location.

3) All grounding and bonding conductors shall be sized in accordance with the latest National Electrical Code® requirements.

16.2 Equipment Grounding Conductors

A. General

1) All feeders and branch circuits shall include an additional equipment grounding conductor.

2) Equipment grounding conductors shall be sized in accordance with the latest National Electrical Code®.

3) The equipment grounding conductor shall be installed with the feeder or branch circuit conductors inside the conduit.

4) Where feeder or branch circuit conduits contain multiple circuits, the equipment grounding conductor

shall be sized for the largest overcurrent device.

5) Where feeders or branch circuits have been adjusted for voltage drop, the equipment grounding conductor shall be adjusted in size in accordance with the latest National Electrical Code®.

6) Where high system fault current is available, a qualified person shall verify that the equipment grounding conductor specified in the National Electrical Code® is adequate.

7) All conduit installations shall be continuous and made-up wrench tight regardless of the installation of the additional equipment grounding conductor.

17.0 Boundaries and Limits of Approach

Boundaries and Limits of Approach		
Boundary	**Method to Determine**	**Protection Against**
Flash Hazard Boundary	Calculated through flash hazard analysis	Arc Flash
Limited Approach Boundary	Set by regulatory standard	Shock
Restricted Approach Boundary	Set by regulatory standard	Shock

Boundaries and Limits of Approach

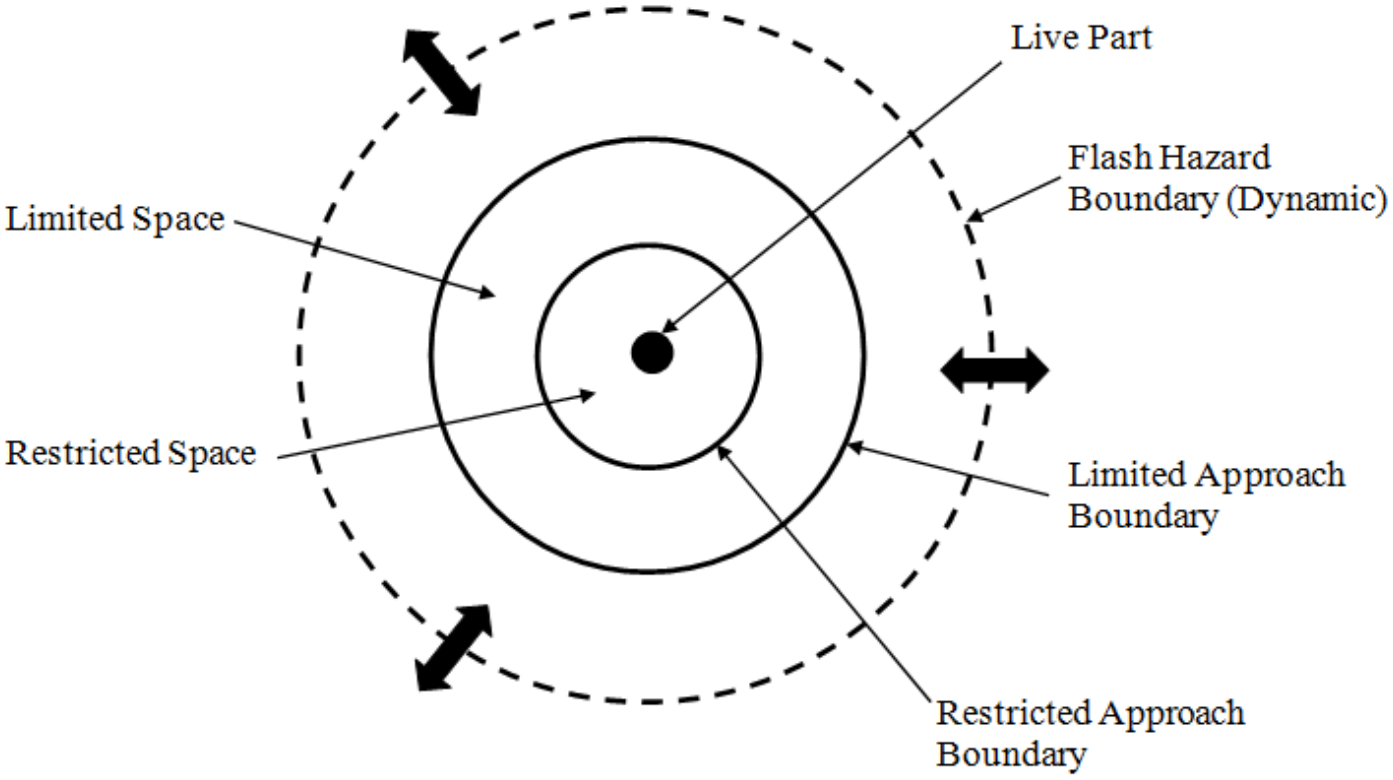


Diagram of Boundaries and Limits of Approach relative to a Live Part

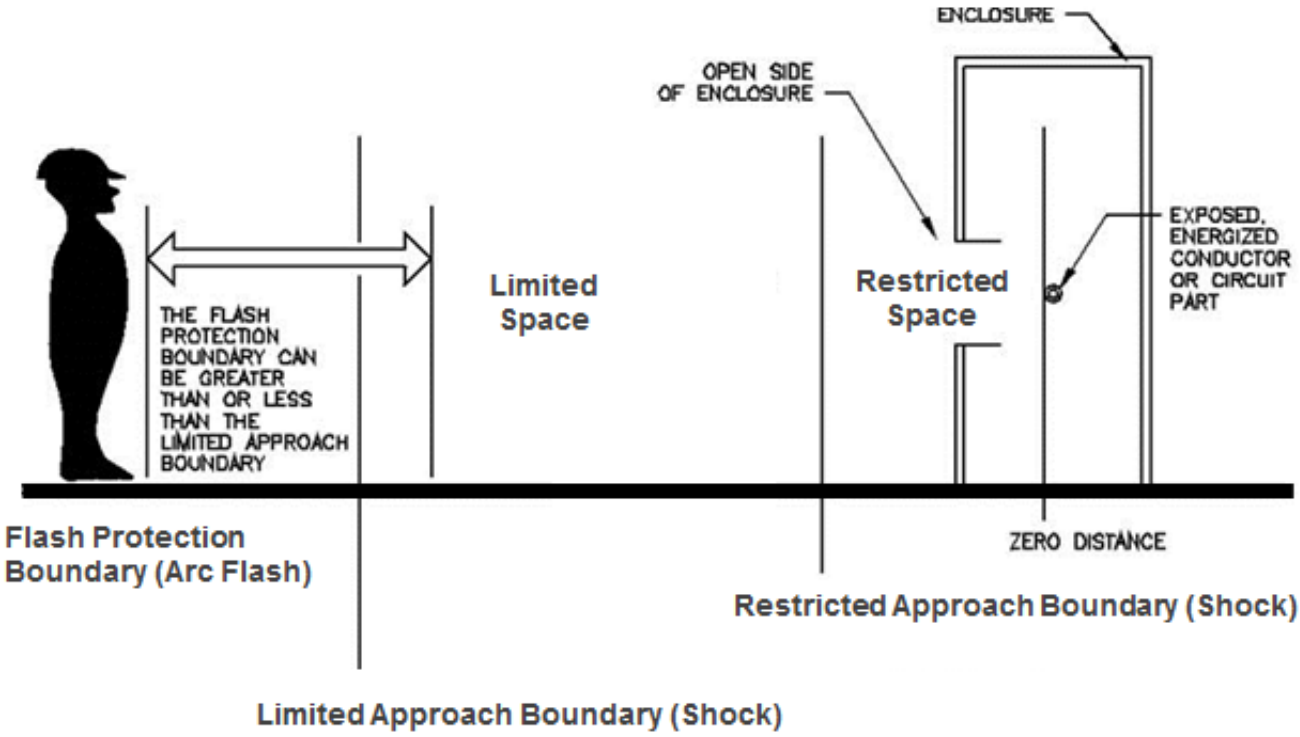


Diagram of Boundaries and Limits of Approach relative to an Exposed Energized Conductor or Circuit Part in an Enclosure with an Open Side

Approach Boundary to Exposed, Energized Parts				
	Unqualified Persons		*Qualified Persons*	
Nominal Voltage	**Limited Approach Boundary**		**Restricted Approach Boundary**	
	ft	*m*	*in*	*cm*
51 - 150	3.5	1.0	Avoid Contact	
151 - 750	3.5	1.0	12	30
751 - 999	6	2	30	76

18.0 ADDENDUM

Revisions to This Document

Alcoa Massena Health and Safety Department shall coordinate revisions to this document along with representatives from each area of the plant that are on the Electrical Standards Committee as listed below:

Electrical Safety Standard Reviewers

Nate Rufa	GPP Safety
Aaron Lavoie	GPP Power Systems
Jarrod Davis	GPP Power Systems
Ray Phillips	GPP Smelter
Dale Parnapy	GPP Smelter
Paul Bordeaux	GPP Casthouse
Thomas Carter	GPP Power System

19.0 APPENDIX A – ALCOA MASSENA APPROVED TEST EQUIPMENT

As per Alcoa's 32.62 Portable Electrical Test Meter Standard the following is an approved list of meters in use at Massena Operations. All other meters must meet the requirements of 32.62 or be approved by the Electrical Dept prior to use.

Massena Portable Test Meters

Make	Model	Description	Rating	Users
FLUKE				
	T2	Voltage & Continuity Tester	Cat III - 1000V UL	CAC,TJH,JPS
	26 III	True RMS Multimeter	Cat III - 600V UL3111	ATC,MWW,SBS
	27	Analog/Digital Multimeter	Cat III - 1000V UL3111	JDM
	77 II	Digital Multimeter	1000V UL1244	AOK
	77 III	Digital Multimeter	Cat III - 600V UL3111	RPC
	85 III	Digital Multimeter	Cat III - 1000V UL	AOK
	87 III	True RMS Multimeter	Cat III - 1000V UL3111	CAC,DJN,JPS,WMW,AOK,KWD
	112	Digital Multimeter	Cat III - 600V UL3111	RJA
	177	Analog/Digital Multimeter	Cat III - 1000V UL3111	AOK
	179	Analog/Digital Multimeter	Cat III - 1000V UL3111	ELECT
	787	ProcessMeter	Cat III - 1000V UL3111	CAC,TJH,JPS,MJF
	123	ScopeMeter	Cat III - 600V UL3111	DJN
	80i-400	Current Clamp	600V IEC348	JPS
	97	ScopeMeter	600V UL1244	
	80i-1000s	Current Clamp	Cat III - 600V UL3111	
Megger				
	DLRO-10	Ductor		
	MIT515	5KV Insulation Tester		
Simpson				
	260-8	Analog Multimeter		RPC,CAC
Triplett				
	60	Analog Multimeter		
	Ultra	AC Current Meter AC/DC Current Meter -1000A		JPS

20.0 APPENDIX B – ALCOA MASSENA ELECTRICAL SAFETY COURSE DESCRIPTIONS

20.1 Massena Electrical Safety Standard Review……..……Course # SE-015

Program Length: 2 hours or equivalent multiple sessions **Instructor:** Electrically Qualified Personnel

Target Audience: Electrically Qualified Persons (Alcoans and Contract Personnel)

Corporate and/or Regulatory Required: Corporate

Frequency of Refresher: Every 2 years

Overview: This is refresher training on applicable sections of the Massena Electrical safety standards.

Objectives: This training will provide targeted training in the following areas:

- Understanding of the specific hazards and possible injury associated with electrical energy and the personal protective equipment and job planning necessary to perform electrical tasks safely.
- Proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools, when required.
- Safety related work practices, safety procedures, and other personnel safety requirements that relate to their job or task assignments.
- Skills and techniques necessary to distinguish live parts from the other parts of electric equipment, machines, and processes.
- Skills and techniques necessary to determine the nominal voltage of exposed live parts.
- Skills and techniques necessary to understand the Electrical (Arc) Flash Hazard Boundary for low and high voltage equipment
- The permitted approach distances and the corresponding voltages to which the qualified person will be exposed.
- Skills and techniques necessary for the understanding of induced, static, and impressed voltages, grounding integrity, condition of poles and structures, and circuit and equipment location.

Course Materials: Massena Electrical Safety Standard

20.2 High Voltage Electrical Safety …….. Course # SE-020

Program Length: 24 hours **Instructor:** Alcoa Personnel

Target Audience: Electrically Qualified Persons (Alcoans and Contract Personnel)

Corporate and/or Regulatory Required: Corporate

Frequency of Refresher: Initial training only

Overview: This course is designed to familiarize participants with the minimum safety rules and practices for the design, operation and maintenance of Alcoa's high voltage systems as required by Alcoa Engineering Standard 32.60. This course also includes training on Low Voltage Electrical Safety AES 32.69 and Electrical Arc Flash Hazard Safety AES 32.70.

Objectives: This training will provide initial introduction and discussion to familiarize participants with content of High Voltage Electrical Safety AES 32.60, Low Voltage Electrical Safety AES 32.69 and Electrical Arc Flash Hazard Safety AES 32.70.

Course Materials: Alcoa Engineering Standards 32.60, 32.69 and 32.70, Power Point Presentations, Videos

20.3 High Voltage Electrical Safety……. Course # SE-021

Program Length: 4 hours **Instructor:** Alcoa Personnel

Target Audience: Electrically Qualified Persons (Alcoans and Contract Personnel)

Corporate and/or Regulatory Required: Corporate

Frequency of Refresher: Every 2 years

Overview: This course is an abbreviated version of Course No. SE-020 including any regulatory changes since the last presentation of this training. It highlights the current requirements of Alcoa Engineering Standard 32.60. This course also includes training on Low Voltage Electrical Safety AES 32.69 and Electrical Arc Flash Hazard Safety AES 32.70.

Objectives: This training will provide review and discussion to familiarize participants with content of High Voltage Electrical Safety AES 32.60, Low Voltage Electrical Safety AES 32.69 and Electrical Arc Flash Hazard Safety AES 32.70. Focus will include any regulatory changes that may have occurred since the last presentation of this training.

Course Materials: Alcoa Engineering Standards 32.60, 32.69 and 32.70, Power Point Presentations,

20.4 Electrical Safety General Electrician Skills Assessment…… Course # SE-022

Program Length: 30 minutes **Instructor:** Alcoa Personnel

Target Audience: General Electricians

Corporate and/or Regulatory Required: Corporate

Frequency of Refresher: Annual

Overview: To document the assessment or evaluation of a General Electrician's skills, knowledge and experience for work on electrical equipment to meet the requirements of Massena Operations Electrical Low and High Voltage Safety Standard, Low Voltage Electrical Safety AES 32.69, Electrical Arc Flash Hazard Safety AES 32.70n and High Voltage Electrical Safety AES 32.60.

Objectives: This training will provide hands-on assessment in the following areas:

- Proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools, when required.
- Safety related work practices, safety procedures, and other personnel safety requirements that relate to their job or task assignments.
- Knowledge and understanding of Massena's Markup, LTV and Energized Work Rules
- Skills and techniques necessary to distinguish live parts from the other parts of electric equipment, machines, and processes.
- The ability to distinguish exposed, energized parts from non-energized parts of structures in and around the high voltage equipment.
- The ability to determine the nominal voltage of exposed live parts and any circuits being worked around.
- Skills and techniques necessary to understand the Electrical (Arc) Flash Hazard Boundary for low and high voltage equipment.
- Demonstrate a knowledge of proper barricading requirements and techniques to create and document that a safe work zone is attained.
- The permitted approach distances and the corresponding voltages to which the qualified person will be exposed.
- Skills and techniques necessary for the understanding of induced, static, and impressed voltages, grounding integrity, condition of poles and structures, and circuit and equipment location.
- Has knowledge of and demonstrates proper switch operation including safety interlocks.
- Demonstrates an understanding of and has the ability to recognize a properly closed/open switch.

Course Materials: Electrical Qualified (HV and LV) Hands-on Training Assessment (Document)

20.5 National Electrical Code (NEC) ……..Course # SE-031

Program Length: 24 Hours **Instructor:** Contractor or Alcoa Personnel

Target Audience: Electrically Qualified Persons (Alcoans and Contract Personnel)

State and Federal Required: OSHA 29 CFR 1910, OSHA 29 CFR 1926, NFPA 70E, National Electrical Code

Frequency of Refresher: Every 3 years.

Overview: This presentation covers the major changes in the National Electric Code and NFPA 70E that affect the industrial electrician.

Objectives: This training will cover the following topics:

- Introduction, Objectives, and Reasons for Training
- Hazards of Electricity and Safety-Related Work Practices
- Regulatory Requirements of OSHA CFR 1910 and CFR 1926 and Relationship of National Electrical Code to OSHA
- Introduction, Definitions and General Requirements
- Wiring Design and Protection
- Types and Requirements of Services
- Overcurrent Protection
- Grounding and Bonding
- Wiring Methods and Materials
- Application and use of Flexible Cords
- Lighting Fixtures, Receptacles and Plugs
- Miscellaneous Equipment
- Motors and Motor Controllers
- Transformers
- Fundamentals of Hazardous Locations - Class I, II, III Locations
- Special Occupancies
- Special Equipment Conditions
- Changes in NEC Codes
- Changes in NFPA 70E regulatory requirements

Course Materials: Lesson Plan, NEC Code Handbook, NFPA 70E Standard, Plant NEC Audits

20.6 Potroom Electrical Safety……Course # SE-040

Program Length: 60 minutes **Instructor:** Alcoa Personnel

Target Audience: All Affected Persons

Corporate and/or Regulatory Required: Corporate

Frequency of Refresher: Every 3 years

Overview: This course is formal potroom electrical safety training to review electrical hazards and safe work practices and procedures associated with the potline at Massena Operations to meet the requirements of Potroom Electrical Safety AES 32.67. The training is designed to increase the employees' awareness of electrical hazards in the potrooms.

Objectives: This training will provide targeted training in the following areas:

- Electrical hazards – battery effect, bridging, electrical arcing, electrical shock, potline open circuit events, identifying and reporting hazards
- Safe work practices and procedures
- Care and use of PPE
- Using grounding devices
- Potline emergency trip system
- Potline restarts
- Mobile equipment in the potrooms
- Tool safety

Course Materials: Potline Electrical Safety Power Point Presentation, Single Point Lessons

20.7 Potroom Electrical Safety…….Course #s SE-041, SE-042, SE-043, SE-044

Program Length: 20 minutes each session **Instructor:** Alcoa Personnel

Target Audience: All affected persons

Corporate and/or Regulatory Required: Corporate

Frequency of Refresher: Every 3 months (quarterly: Q1 - SE-041, Q2 – SE-042, Q3 - SE-043, Q4 – SE-044)

Overview: The purpose of this training is to cover an electrical hazard associated in the potrooms to meet the requirements of Potroom Electrical Safety AES 32.67 in a tool box meeting format. The training is designed to increase the employees' awareness of electrical hazards in the potrooms.

Objectives: This training is to review a specific electrical hazard associated with the potline at Massena Operations. Participants will be able to recognize electrical hazards in their potroom work areas

Course Materials: Single Pont Lessons

20.8 Electrical Safety (OSHA)……Course # SE-050

Program Length: 35 Minutes **Instructor:** Alcoa Personnel

Target Audience: All Employees

Corporate and/or Regulatory Required: Corporate and Regulatory

Frequency of Refresher: Annual

Overview: The training is designed to increase the employees' awareness of electrical hazards in the work place.

Objectives: Participants will be able to recognize electrical hazards in their work areas.

Course Materials: Lesson Plan and Video

20.9 Arc Flash Electrical Safety Area Specific……Course # SE-60

Program Length: 60 Minutes **Instructor:** Contractor or Alcoa Personnel

Target Audience: Electrically Qualified Persons

Corporate and/or Regulatory Required: Corporate

Frequency of Refresher: Annual

Overview: This training program provides area specific training for employees who perform any task that could initiate an electrical arc flash.

Objectives: This training is intended to familiarize people with arc flash activities specific to the area where they work. Topics to be covered may include the following and vary based upon the audience:

- Electrical standards
- Facts about electrical arcs
- Definitions
- Arc flash hazard policy, analyses and assessment
- Arc flash hazard warning labels
- Arc flash hazard boundary
- Safe work zones
- Personal protective equipment
- Electrical tasks

Course Materials: Course materials used may include the following and vary based upon the audience:

- Single point lessons
- Arc flash hazard policy, analyses and assessment
- Arc flash videos

20.10 Medic First Aid Training……Course # SR-090

Program Length: 8 Hours **Instructor:** Alcoa Personnel

Target Audience: All Departments

Corporate and/or Regulatory Required: Corporate and Regulatory

Frequency of Refresher: Initial training with refresher required every 2 years.

Overview: Medic First Aid is a basic course in emergency care. CPR/AED and other important emergency care skills are combined into one eight hour course which allows the student to function with one set of priorities in a medical emergency. Students learn the same priorities of care and approach to the patient used by professionals.

Objectives: The following topics will be covered:

- How to do the primary assessment of a patient
- CPR (Cardio Pulmonary Resuscitation)
- Use of AED (Automatic External Defibrillator)
- Dealing with obstructed airways
- Controlling bleeding
- Shock management
- Illness and accident assessment

Course Materials: Lesson Plan

21.0 APPENDIX C – LOW VOLTAGE ELECTRICAL SAFETY AUDIT PROCEDURE

21.1 Purpose

A. This procedure outlines an acceptable approach to performing a low voltage electrical safety audit.

B. Performing a regular low voltage electrical safety audit is essential to general safety as well as electrical safety.

21.2 Scope

C. This procedure includes recommendations on auditing of the complete low voltage electrical system from the supply point up to, and including, the utilization equipment.

D. The physical audit includes the verification of the following:

E. Compliance with all applicable OSHA and National Consensus Standards, Alcoa Company Policies and best practice.

F. Design, installation, and maintenance practices.

G. Written Electrical Safety Program.

H. Training requirements for persons exposed to electrical hazards.

I. Training requirements for persons responsible for designing, installing and/or performing maintenance on electrical systems and equipment.

J. Safety-related work practices.

K. Electrical safety training for both qualified and unqualified persons.

21.2 Definitions

A. Low Voltage

1) A system, either utility supplied or a company owned separately derived system, with 1000 volts or less on the secondary side of the transformer.

2) The primary supply to the transformer may be 1000 volts or less or can be over 1000 volts.

3) Where the transformer primary supply is over 1000 volts, the low voltage audit procedure should begin at the secondary lugs of the transformer.

21.3 Audit Team Participants

A. The audit team should be composed of representatives from the following areas:

1) Outside consultant with regulatory expertise and industrial audit experience.

2) Plant Engineering.

3) Maintenance Supervision.

4) Electrical Maintenance Department Persons.

5) Safety Department.

6) Safety Coordinators and/or Safety Team Members.

7) Production Supervision and/or Production Safety Coordinators.

B. The Audit Team Participants should be those with the greatest electrical experience and knowledge of the specific equipment in the area to be audited.

21.4 Audit Team Training

A. The audit team participants should receive adequate training in the following:

1) Understanding of the purpose and goals of the audit.

2) Use of test equipment that will be used during the audit.

3) Method of documentation of audit findings.

4) OSHA Regulations, Consensus Standards and Alcoa Company Standards and Policies that will be referenced during the audit.

21.5 Audit Team Safety

A. The audit team participants must receive training regarding the following hazards:

1) All electrical hazards they will be exposed to in the process of inspecting electrical systems and/or electrical equipment. For example:

2) Flash hazard if electrical equipment enclosures are opened, for inspection, with power on.

3) Flash hazard and/or contact hazard if exposed live parts are found during the inspection process.

4) Flash hazard when entering work areas where electrical work is being performed on energized electrical equipment.

5) Contact (shock) hazard if electrical equipment enclosures are opened, for inspection, with the power on.

B. In addition to the electrical hazards that may be present, all audit team participants shall be made aware of other hazards that may be present when near active production areas.

21.6 Audit Finding Database

A. Collection of Field Data

1) The audit form provided at the end of this procedure (or equivalent) shall be used to record the audit findings. The forms can be automatically numbered and printed.

2) If pre-numbered forms are used, all numbers should be accounted for. If a form is damaged or lost, the number shall be recorded as unused.

3) Audit participants should be encouraged to record the location of the finding as precise as possible so as to make it easy for those responsible for abatement of the finding to locate the specific finding.

4) Eminent danger findings shall be reported to the audit manager for immediate abatement. An audit team participant shall remain at the finding location until a competent person is present to handle the abatement.

B. Recording Audit Finding Field Data

1) The data collected in the field and recorded on the Audit Form shall be entered into a Microsoft Access Database (or equivalent). The Database should be designed so as to automatically record vital information such as:

a) Risk Assessment Code (RAC).

b) Description of Hazard associated with the finding.

c) Recommended abatement when engineering is not required.

d) All OSHA and NFPA Regulations and Alcoa Company Standards or Policies associated with the finding.

2) The database should have sufficient predefined report formats so as to make abatement of the

findings as efficient as possible.

21.7 Audit Team Debriefing

A. The audit team manager should arrange to have regular debriefing sessions with the audit team(s) to review such things as:

1) Frequency of certain findings, and why certain findings occur so frequently.

2) Seriousness of the findings.

3) Regulatory requirements that apply.

4) What can be done about reducing the frequency of certain findings?

B. So as to use the audit most efficiently, the audit manager should do trend analysis of the field data to determine whether or not the field inspection process can be accelerated in some areas.

21.8 Audit Procedure

A. Administrative Controls

1) Verify that the electrical system is adequately documented and the one-line drawings up-to-date.

2) Verify that there a process to ensure that electrical engineers, maintenance supervisors and electricians are knowledgeable in the electrical safety standards such as:

a) Alcoa Corporate Engineering Standards.

b) 29 CFR 1910 Subpart S.

c) 29 CFR 1926 Subpart K.

d) NFPA 70 - National Electrical Code®.

e) NFPA 70E - Standard for Electrical Safety Requirements for Employee Workplaces.

f) NFPA 70B – Recommended Practice for Electrical Equipment Maintenance.

g) NFPA 79.

3) Verify how electricians and other qualified individuals are selected, and what qualifications must they have.

4) What methods are used to develop and communicate safe electrical work practices?

5) Check to see whether or not qualified personnel are allowed to work on energized circuits. If yes, under what conditions?

6) Verify that production employees have been trained on basic electrical safety as it relates to their job.

7) Review the personal protective equipment requirements for qualified employees.

8) Determine the procedure to inspect and test live line tools, rubber gloves, blankets and cable covers, extension cords, and portable tools.

B. Engineer Controls

1) Has a fault-current study/arc flash hazard assessment been done?

2) Have approach boundaries been established around major distribution equipment?

3) Are infrared scans of main distribution equipment and busways done on a regular basis?

4) What processes are used to ensure that equipment is adequately grounded, and appropriately sized fuses or breakers are used?

5) Is there a policy to select and approve electrical equipment and instruments?

6) Has the plant electrical engineer reviewed fuse coordination practices?

7) Who approves the fusing requirements for equipment?

8) Is there a preventive maintenance program to ensure that electrical equipment is well maintained?

21.9 General Observations

A. All selected areas should be inspected for compliance with applicable standards and Alcoa Company Policy as shown on the Audit Form.

B. Items not found on the Audit Form should be recorded under "Other" and described in the Notes section.

C. Items currently not on the Audit Form, but frequently found, should be added to the Audit Database and Form.

21.10 Executive Summary

A. The Audit Manager should write an executive summary of the completed audit, summarizing the overall results.

B. The summary report should include comments regarding the performance of the Audit Team and changes or improvements that should be made when performing the next audit.

C. Audit Team opinions should be provided as why the frequency of certain findings appear to be high.

D. Audit Team suggestions should be provided on how to reduce or eliminate certain findings.

E. When available, a comparison of previous audit data should be made to show the degree of progress made after each audit.

21.11 Frequency of Audit

A. A partial audit should be performed on a yearly basis with a complete audit performed every three years.

B. A complete audit should be performed on a yearly basis if there is little or no progress in improvements from one audit to the next.

C. Sharing of audit data with other facilities is encouraged.

22.0 APPENDIX D – ARC FLASH LABELS

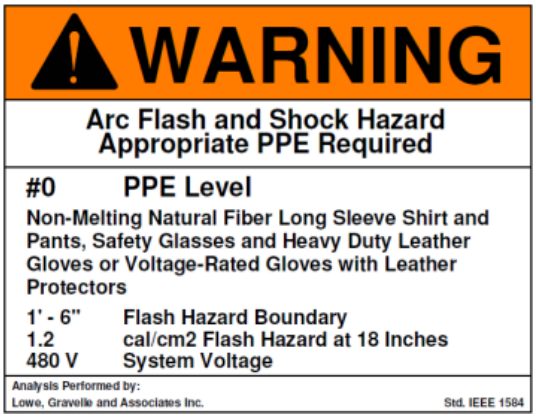
Arc flash labels are affixed to 125VDC Station Battery, 250VDC Crane Power, 480VAC, 2.4 KV, and 13.8KV electrical equipment, examples include – disconnect switches, power panels, motor control centers, and enclosed switchgear throughout the location. These labels indicate the PPE level of the equipment as determined by arc flash analyses. The incident energy (cal/cm^2) is a measure of the amount of energy that could be released in the event of a catastrophic failure. To be protected from being burned if this energy should be released, anyone operating a switch or performing specific electrical tasks shall wear PPE rated for the incident energy as indicated by the arc flash label. The label also indicates the distance (flash hazard boundary) at which a person must stand to avoid the arc flash hazard. No arc rated PPE is required beyond the flash hazard boundary. At Massena Operations, electrical equipment is labeled for all PPE Levels 0 - 4 and Prohibited.

A. Low and High Voltage AC Electrical Equipment

480VAC Electrical Equipment Arc Flash Labels

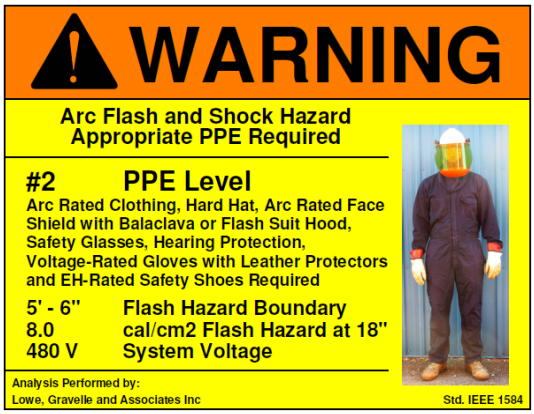
Arc flash labels for PPE Levels 0 – 4 (40 Cal/cm^2) and Prohibited are shown below:

Arc Flash Label – Level 0

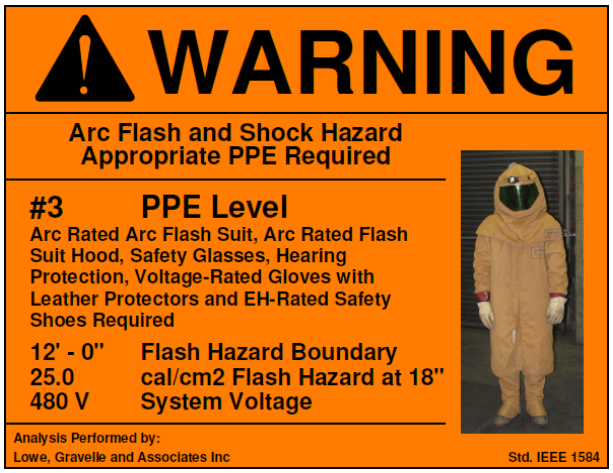


Arc Flash Label – Level 0

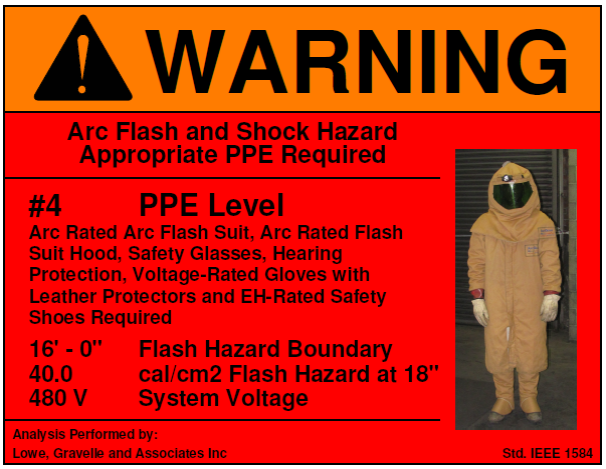
Arc Flash Label – Level 1



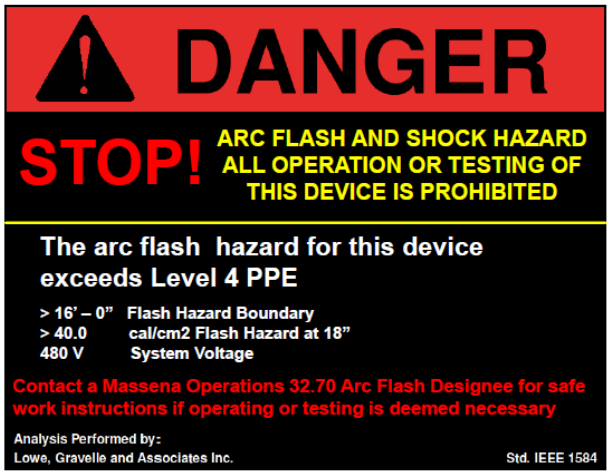
Arc Flash Label – Level 2



Arc Flash Label – Level 3



Arc Flash Label – Level 4



Prohibited

When a prohibited label appears on electrical equipment, it means that the PPE Level is greater than Level 4.

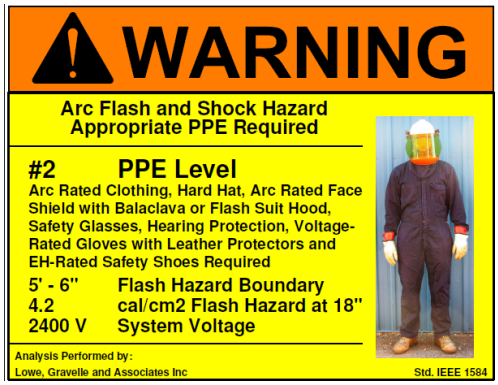
STOP!

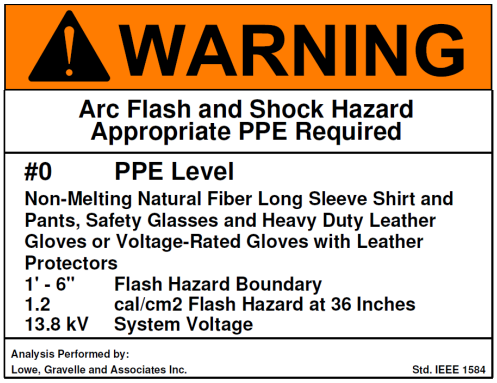
A Massena Operations 32.70 Arc Flash Designee must be contacted for safe work instructions before proceeding. Safe work instructions may include utilizing upstream devices to isolate equipment or increasing distance to reduce the arc flash exposure. Safe work instructions are specific for the task being performed.

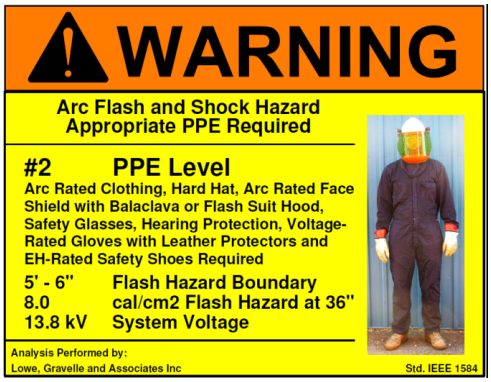
Remember – Anyone operating a switch or performing specific electrical tasks shall wear PPE rated for the PPE level as indicated by the arc flash label.

2.4KV and 13.8KV Electrical Equipment

2.4KV arc flash labels are affixed to 2.4KV electrical equipment at the Massena Intake which is designated as arc flash levels 2 or 3. 13.8KV arc flash labels are affixed to plant substation13.8KV enclosed switchgear which is designated as arc flash levels 0, 1, 2 or 3.





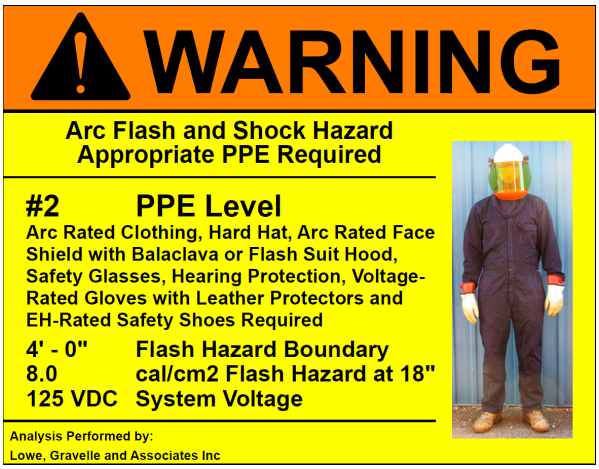


Remember – Anyone operating a switch or performing specific electrical tasks shall wear PPE rated for the PPE level as indicated by the arc flash label.

B. DC Electrical Equipment Arc Flash Labels

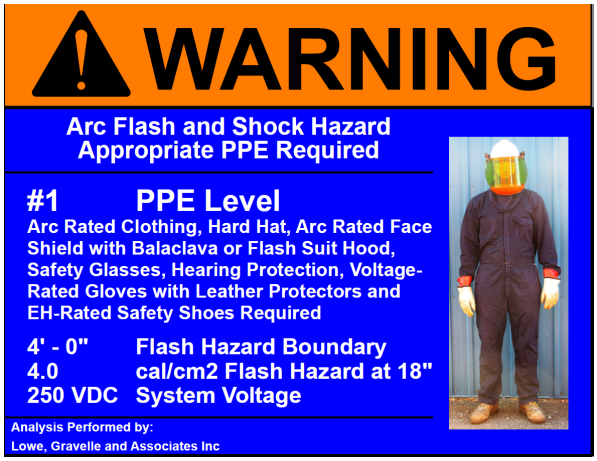
125VDC Station Batteries and 250VDC Crane Power Electrical Equipment

125VDC arc flash labels are affixed to 125VDC Power System Station Battery electrical equipment which is designated as arc flash level 2. 250VDC arc flash labels are affixed to 250VDC Crane Power electrical equipment in both the Casthouse and Smelter which is designated as arc flash level 1.



125VDC Station Battery Electrical Equipment

Arc Flash Label – Level 2



250VDC Crane Power Electrical Equipment

Arc Flash Label – Level 1

Remember – Anyone operating a switch or performing specific electrical tasks shall wear PPE rated for the PPE level as indicated by the arc flash label.

23.0 RECORD HISTORY

Date of Review:	08/01/2023	Date of Next Review:	08/01/2024
Reviewed By:	Aaron Lavoie		
Approved by (SPA or Manager):	Aaron Lavoie (LV SPA) / Jarrod Davis (32.60 Designee)		
NOTE: Non-SSOP documents are to be reviewed in conjunction with the ASAT corporate schedule.			
Revision Table:			
Revision Made by:	Date:	Describe Revision Made:	
Aaron Lavoie	08/01/2023	Review/Revision Table added. Formatting and revision updates. Updated Reviewers List.	

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This Engineering Standard should be evaluated for use in support of Alcoa's Values, ABS Principles and your locations Business Objectives. Before using this Engineering Standard, check the Alcoa Controlled Document System to verify this is the most current version.

1.0 SCOPE

This document applies to all Alcoa owned, managed, and leased facilities worldwide that contain high voltage electrical systems. This document is designed to enable locations worldwide to conduct consistent self-assessments and external audits of high voltage electrical safety practices and procedures.

2.0 PURPOSE

The purpose of a self-assessment or external assessment is to verify compliance with EHS STD 32.60 High Voltage Electrical Safety. The goal of the self-assessment and audit processes are to enforce safe working conditions and practices, to uncover weak areas where improved practices and procedures would enhance safety and to provide a consistent worldwide method for auditing locations for compliance.

3.0 DEFINITIONS

See EHS STD 32.60.

4.0 REQUIREMENTS

4.1 GENERAL

(1) Locations shall conduct an annual self-assessment of high voltage safety practices. The self-assessment shall be used to determine where the location does not comply with EHS STD 32.60. A location shall receive an initial external audit within twelve months of acquisition or commissioning. If a location receives a fair, good or excellent on an external audit, another external audit shall be performed once every three years. If a location receives a poor on an external audit, another external audit shall be performed within the following twelve month period. Prior to the external audit, the annual self-assessment shall be completed and the results provided to the auditors. See Section 4.11 of EHS STD 32.60.

(2) The assessment covers minimum expectations for required practices and has ten modules. Each module consists of a series of minimum expectations followed by questions used to verify compliance. The questions, used in conjunction with the *Table of Ratings* at the end of each module, provides a means of assessing location performance and whether they meet 32.60 expectations. The modules are titled as follows:

A. Commitment and Management Responsibility

B. Training Requirements

C. Personal Protective Equipment

D. Tool Knowledge

E. Electrical Safety Knowledge

F. Performing Work Safely and Creating a Safe Work Zone

G. Operation and Maintenance

H. Mobile Equipment

I. Housekeeping and Storage Practices

J. Design and Construction

4.2 PERFORMING ASSESSMENTS

(1) Who Should Be Involved?

Persons conducting assessments should be familiar with and have a working knowledge of the terms, practices, and concepts involved with their assigned sections. An individual or team could be assigned responsibility for coordinating the assessment activities and communicating the results and related action plans to the EHS STD 32.60 designee.

(2) How to Answer the Assessment Questions?

When assessing each module, begin by reviewing the minimum expectations in each section. Interviews with personnel, observations, and reviews of documentation should be performed in enough depth to provide evidence of meeting or not meeting the minimum expectations.

(3) When Should Assessments Be Performed?

Locations must complete all applicable sections of the EHS SUP 32.60.1 on an annual basis. In years when an external audit is scheduled, the self-assessment must be completed prior to the audit.

4.3 GUIDELINES FOR COMPLETING THE ASSESSMENT

(1) Gathering Information

Answering the questions will require the person conducting the assessment to gather information from a variety of sources. Some questions can only be answered through interviewing personnel; others will be dependent upon observations; and certain questions require a review of documentation. The more information gathered and documented on the form, the more sound the conclusion.

For example, a question that asks if personnel understand the ten-foot rule or three-meter rule will require a survey of persons working in high voltage areas. If 25 persons are asked, and 24 provide a valid definition, that result should be noted on the form. Or if energized work is performed, the assessor needs to review the written approval for such tasks since it is required by Section 4.6 of EHS STD 32.60.

(2) Documenting Results

Documenting observations and conclusions is an important part of the assessment process. It serves as a complete record of the actions performed by the assessor to support the ratings assigned to each module and provides location personnel with vital information for improving safety practices. For example, following is statement #2, from Module 1, and the supporting questions:

The location manager and designee clearly recognize their responsibilities.

Are the periodic reviews of 32.60 for compliance done as required?	☐ Yes ☐ No
When was the last assessment?	
Where is the appointment(s) documented?	
Have personnel completed all required training?	☐ Yes ☐ No
Is the training documented?	☐ Yes ☐ No
	Location of Documentation:

For the second question, the assessor should record the date of the last self-assessment. For question 4, a notation could be made that training records were reviewed and the results of the review. That notation would support the assessor's conclusion.

(3) Completing the Form

Below is a sample from Module 3, Personal Protective Equipment. It includes the Ratings Table, one statement and supporting questions, and a comments box. After all questions in the module are completed, the Ratings Table is marked by checking the box behind the rating the location received. Preceding each question, the assessor should click in the appropriate box for yes or no. Leave blank for a "N/A" answer if the question is not applicable. Any notations should be made in the margins and the provided comments box. The auditor may also include the method for gathering data, document numbers, names of persons interviewed, summary of results, and identification of exceptional practices. Space is also provided to list in documentation included with the assessment.

Personnel performing high voltage tasks wear the appropriate personal protective equipment to protect against electrical hazards. See Section 6 of EHS STD 32.60.

Electrically non-conductive 20kV hard hats or equivalent.	☐ Yes	☐ No
Electrical hazard-rated footwear or equivalent.	☐ Yes	☐ No
Safety glasses with electrically nonconductive side shields and frames.	☐ Yes	☐ No
Arc-rated face shield and balaclava or flash suit hood as required.	☐ Yes	☐ No
Hearing protection.	☐ Yes	☐ No
Approved arc-rated clothing as required.	☐ Yes	☐ No
Rubber insulating gloves and leather protectors	☐ Yes	☐ No

Comments:
Associated Documents/Records:

RATING:	**Poor** ☐	**Fair** ☐	**Good** ☐	**Excellent** ☐
Intent: To determine management commitment and responsibility in implementing 32.60 requirements and safety practices.				

4.4 RATINGS AND SCORES

As each module is completed, review the results and determine an appropriate rating using the definitions shown in the *Table of Ratings*. Consider whether the minimum expectations are in place and the types of exceptions, if any, which were noted during the assessment. Because of the global application of this document, there may be isolated instances where rational judgment may be necessary to assign a rating to a module. Pay particular attention to the exceptions and the reasons why they occurred. If initial analysis of the module is inconclusive, additional observations, interviews, and reviews should be conducted. Record the rating for each module on the form. Record any conclusions, suggestions, or comments in the box provided at the end of each module. Then record the ratings, rating totals, and rating percentages on the *Score Card* for each module.

TABLE 1 - TABLE OF RATINGS

RATING	DEFINITION
Poor	Most of the applicable items listed as minimum expectations are missing or deficient. Many exceptions were found during testing. Urgent corrective actions are required. (Note: a “Fair” rating may be considered if a detailed action plan(s) is in place, which is supported by adequate resources and executed in a timely manner.)
Fair	Many, but not all, of the applicable items listed as minimum expectations are in place. A few exceptions were found during testing. The exceptions represented more than isolated anomalies and are indicative of the need for program / process / system improvement.
Good	All of the applicable items listed as minimum expectations are in place. Exceptions found during the assessment are considered to be isolated anomalies and inconsequential in relation to the overall level of performance and associated risk.
Excellent	All of the applicable items listed as minimum expectations are in place and no exceptions have occurred during the assessment over an extended period of time. Additional procedures or practices are in place that could serve as internal Alcoa benchmarks or exceptional practices.
Not Applicable (N/A)	The objective and its associated minimum expectations do not apply to the facility’s current operations or to financial/business processes. They are performed by another Alcoa location or resource.

4.5 COMPLETING THE AUDIT SCORECARD

After completing all the modules, transfer the rating for each to the scorecard by checking the appropriate box. Then write the tally for each rating in the provided areas. Use the key beneath the box to provide the location's overall rating.

See the example below. Since this location received one poor and three fairs, a rating of good or excellent is not possible. The overall rating is FAIR.

FIGURE 1 - EHS STD 32.60.1 Scorecard Example

Module		Ratings			
		Excellent	Good	Fair	Poor
1.0	Commitment and Management Responsibility	☐	☒	☐	☐
2.0	Training Requirements	☒	☐	☐	☐
3.0	Person Protective Equipment	☐	☒	☐	☐
4.0	Tools and Electrical Safety	☐	☐	☒	☐
5.0	Creating a Safe Work Zone	☐	☐	☒	☐
6.0	Operation and Maintenance	☐	☒	☐	☐
7.0	Housekeeping and Storage Practices	☐	☐	☐	☒
8.0	Mobile Equipment	☐	☒	☐	☐
9.0	Design and Construction	☐	☐	☒	☐
	Total Each Column	1	4	3	1
Overall Rating:		**Excellent** ☐	**Good** ☐	**Fair** ☒	**Poor** ☐

Rules of Use

- **Excellent** = EXCELLENT in at least two modules and GOOD in all the others.
- **Good** = Must receive an excellent or good under the Commitment and Management Responsibility module and receive no more than two FAIR in all other modules and no POORs.
- **Fair** = May receive no more than two POOR.
- **Poor** = Receive three or more POOR.

4.6 ACTION PLANS

For those modules receiving a **Fair** or **Poor** rating, identify the minimum expectations that were not in place and determine their root causes. Develop an action plan designed to eliminate the root causes. The action plan should include deadlines, resource requirements, personnel assignments and cost if appropriate. Progress reviews of the action plan should be completed on a

regular basis. Completion of the action plan should improve the module rating to at least a **Good** rating. The location must have another external audit within the following twelve-month time frame if the overall score is **Poor**.

5.0 REFERENCES

EHS STD 32.60 - High Voltage Electrical Safety

6.0 HIGH VOLTAGE ELECTRICAL ASSESSMENT

Date		**Location**	
Auditors/Assessors		**Manager**	
		32.60 Designee(s)	
Audit Score			
Summary of Results			
Major Findings: Minor Findings: Other:			

6.1 MODULE 1 – COMMITMENT AND MANAGEMENT RESPONSIBILITY

Intent: To determine if location management: 1) has met the responsibilities per 32.60; 2) is actively involved in ensuring 32.60 is followed; and 3) has effectively communicated management's expectations to all levels of the organization.
(Reference 32.60, Sections 3.2, 3.10, 3.11)

1. The location manager has appointed a qualified person as a 32.60 designee or has assumed the responsibility. This has been documented. See Section 3.2.1 of 32.60.

Has a 32.60 designee been appointed?	☐ Yes ☐ No
Who is the designee?	
Where is the appointment(s) documented?	
Does the site have more than one designee?	☐ Yes ☐ No
If yes, who are the other designees?	
If the 32.60 designee is not onsite, how does the location ensure another qualified person is available to cover the designee's duties?	

2. The location manager and designee clearly recognize their responsibilities.

Are the periodic reviews of 32.60 for compliance done as required?	☐ Yes ☐ No
When was the last assessment?	
Have personnel completed all the required training?	☐ Yes ☐ No
Is the training documented?	☐ Yes ☐ No

3. Energized work and the accompanying Job Safety Analysis are approved only by the location manager.

Is energized work performed at this location?	☐ Yes ☐ No
If so, are written procedures for performing energized work available to workers?	☐ Yes ☐ No ☐ N/A
Have the procedures been approved by the location manager?	☐ Yes ☐ No ☐ N/A
Does the manager discuss with the 32.60 designee the necessity of any energized tasks and what safety	☐ Yes ☐ No ☐ N/A

procedures are required prior to providing written approval for energized work?	

4. All new and modified installations comply with local regulations and consensus standards. See Section 4.12 of 32.60.

Does the 32.60 designee approve all new designs and any modifications to the high voltage systems?	☐ Yes ☐ No
Do all new installations and any modifications comply with the requirements of 32.60?	☐ Yes ☐ No
If not, explain the reasons for the noncompliance	

5. Contractors, subcontractors and contracted services train their employees on high voltage safety requirements or the equivalent. See Section 4.2(5) of 32.60.

Has the 32.60 designee reviewed and approved contractor, subcontractor and contracted services high voltage electrical safety programs?	☐ Yes ☐ No
Does the contractor, subcontractor or contracted services high voltage electrical safety program meet the requirements and content of 32.60?	☐ Yes ☐ No

6. All high voltage electrical incidents such as contacts, near misses, equipment damage and switching errors are investigated. See Section 4.10 of 32.60.

Are high voltage electrical incidents such as contacts, near misses, equipment damage and switching errors investigated?	☐ Yes ☐ No
If so, by whom?	
Is the Alcoa Major Incident Reporting process and system used?	☐ Yes ☐ No
If not, what method is used?	
When was the last time an incident or near miss occurred?	
Was it recordable?	☐ Yes ☐ No
Are corrective actions identified and put into action?	☐ Yes ☐ No
If applicable, are copies of previously documented incidents available?	☐ Yes ☐ No

Was documentation of any incidents reviewed by the auditor?	☐ Yes ☐ No
Are incidents used to assess training needs?	☐ Yes ☐ No

7. The 32.60 designee must ensure that high voltage self-assessments are conducted annually. See Section 4.11 of 32.60

Are safety observations performed?	☐ Yes ☐ No
Are high voltage safety reviews used to assess training needs?	☐ Yes ☐ No
Does training include new technologies, new types of equipment and changes in procedures?	☐ Yes ☐ No
Were self-assessments conducted and documented annually?	☐ Yes ☐ No
Were action plans developed as a result of the last internal audit to fix any non-compliance with 32.60?	☐ Yes ☐ No
If the answer was NO above, what were the reasons any action plans were not developed?	
Were those action plans completed prior to the next internal audit?	☐ Yes ☐ No
If the answer was NO above, what were the reasons any critical actions items were not completed	
List items not completed:	

8. Locations are required to perform external audits every three years.

Was the last external 32.60 audits performed within the past three years?	☐ Yes ☐ No
Did the location receive a “Poor” on the last external audit?	☐ Yes ☐ No
If YES above, is this audit being performed within twelve months of the last audit?	☐ Yes ☐ No ☐ N/A

Comments:
Associated Documents/Records:

RATING:	**Poor** ☐	**Fair** ☐	**Good** ☐	**Excellent** ☐
Intent: To determine management commitment and responsibility in implementing 32.60 requirements and safety practices.				

MODULE 2 – TRAINING REQUIREMENTS

Intent: To ensure an effective process for determining and providing appropriate training as required by 32.60. (Reference 32.60, Sections 4.3)

1. Training has been documented and records maintained for qualified personnel, authorized personnel and affected personnel. See Section 4.3 of 32.60.

Have all persons exposed to high voltage received initial training on all required electrical safety training?	☐ Yes ☐ No
Does each person attend retraining as least once every two years?	☐ Yes ☐ No
Are training records available for review?	☐ Yes ☐ No
What training and retraining has been done in the last two years?	

2. Personnel attend review training prior to performing a task conducted less than once a year.

Did personnel attend a refresher or review session prior to completing the task?	☐ Yes ☐ No
If NO above, was an in-depth pre-work briefing or some type of review conducted prior to completion of the task? Describe type of review:	

3. Training is conducted on a continuous basis.

Do high voltage personnel attend toolbox talks, pre-work briefings, and other types of training or reviews on a regular basis?	☐ Yes ☐ No
Are personnel involved in an incident, near miss or switching error required to attend retraining if they did not follow correct procedure?	☐ Yes ☐ No
What type of training has been identified as needed because of an incident?	
Did the results of an incident identify the need for re-training?	☐ Yes ☐ No

4. Qualified employees are knowledgeable on the requirements contained in 32.60, 32.69 and 32.70. See Section 4.3(1) of 32.60.

What types of training do qualified persons and task qualified receive to ensure they are competent in the	

work practices, procedures, and requirements necessary for their job assignments?	
How does the location verify a person is qualified or task qualified to safely complete a task?	
Have qualified persons received emergency response training on the following when working at a site without medical assistance available within approximately four minutes:	
Cardiopulmonary resuscitation (CPR)?	☐ Yes ☐ No
Automatic external defibrillator (AED)?	☐ Yes ☐ No
Emergency first aid?	☐ Yes ☐ No

5. Task Qualified Persons know/understand location specific requirements. See 4.3(2) of 32.60.

Do Task qualified persons know and understand the following safe work practices for establishing a safe work zone at the location?	
Techniques to distinguish exposed, energized parts from de-energized parts.	☐ Yes ☐ No
Techniques to determine nominal voltage of exposed, energized parts.	☐ Yes ☐ No
Required distances and applicable boundaries.	☐ Yes ☐ No
Proper use of personal protective equipment, insulated tools and shielding materials.	☐ Yes ☐ No
Arc flash hazard safety.	☐ Yes ☐ No
Trained and documented to perform particular tasks.	☐ Yes ☐ No

6. Qualified persons know/understand location-specific requirements.

Do qualified persons know and understand the following safe work practices for establishing a safe work zone at the location?	
Techniques to distinguish exposed, energized parts from de-energized parts.	☐ Yes ☐ No
Techniques to determine nominal voltage of exposed, energized parts.	☐ Yes ☐ No
Required distances and applicable boundaries.	☐ Yes ☐ No
Proper use of personal protective equipment, insulated tools and shielding materials.	☐ Yes ☐ No
Arc flash hazard safety.	☐ Yes ☐ No

7. Those employees not high voltage qualified whose work could bring them closer than the ten-foot or three-meter rule have been trained to be authorized or task qualified. See Section 4.3(2) and 4.3(3) of 32.60.

Do authorized personnel understand approach boundaries pertaining to them?	☐ Yes ☐ No
Do authorized personnel understand the limitations and restrictions of entering areas containing high voltage equipment?	☐ Yes ☐ No
Do authorized personnel understand the requirements of working in areas containing arc flash hazards?	☐ Yes ☐ No
Have authorized persons received on-the-job training from a qualified person prior to being allowed access to work within a high voltage area?	☐ Yes ☐ No
Do authorized persons understand the barricading and flagging used to identify both safe and hazardous equipment within a work zone?	☐ Yes ☐ No
Do authorized persons understand the need for an escort when working within the minimum approach distances in appendix 2 of 32.60?	☐ Yes ☐ No

8. All unqualified personnel who may be exposed to high voltage systems have received awareness training. See Section 4.3(4) of 32.60

Do affected personnel understand the ten-foot or three-meter rule?	☐ Yes ☐ No
Do affected personnel know when they need to be escorted?	☐ Yes ☐ No
Do affected personnel understand arc flash hazard boundaries?	☐ Yes ☐ No

9. On-going training and skills assessment is conducted through various exercises and means.

Personnel are required to attend regular safety talks.	☐ Yes ☐ No
An annual documented supervisory observation is conducted on each qualified/authorized personnel.	☐ Yes ☐ No

Comments:
Associated Documents/Records:

RATING:	**Poor** ☐	**Fair** ☐	**Good** ☐	**Excellent** ☐
Intent: To ensure personnel are receiving appropriate training on Standard 32.60 requirements.				

MODULE 3 - PERSONAL PROTECTIVE EQUIPMENT

Intent: To ensure personal protective equipment is properly selected and personnel are trained in the use and maintenance of personal protective equipment. (Reference 32.60, Sections 4.4)

1. Personnel performing high voltage tasks wear the appropriate personal protective equipment to protect against electrical hazards. See Section 4.4 of 32.60.

When in areas with exposed, energized parts, personnel wear the following:	
Electrically non-conductive 20kV hard hats or equivalent.	☐ Yes ☐ No
Electrical hazard-rated footwear or equivalent.	☐ Yes ☐ No
Safety glasses with electrically nonconductive side shields and frames.	☐ Yes ☐ No
Arc-rated face shield and balaclava or flash suit hood as required.	☐ Yes ☐ No
Hearing protection.	☐ Yes ☐ No
Approved arc-rated clothing as required.	☐ Yes ☐ No
Rubber insulating gloves and leather protectors.	☐ Yes ☐ No

2. Personnel do not wear conductive items such as jewelry and rings when exposed to electrical hazards.

Do personnel remove all conductive items prior to working exposed to electrical hazards?	☐ Yes ☐ No

3. Personnel know how to find out what PPE is required for a high voltage task.

Can personnel explain how to find what PPE is required for a task?	☐ Yes ☐ No

4. Personnel wear the required personal protective equipment

Personnel wear the required PPE when:	
Applying safety grounds and testing for voltage?	☐ Yes ☐ No
Conducting infrared testing?	☐ Yes ☐ No
When testing lines and equipment?	☐ Yes ☐ No
At a minimum, do personnel wear the PPE required by the 32.70 arc flash hazard analysis when working around high voltage exposed, energized parts?	☐ Yes ☐ No

5. **Personal protective equipment for personnel working within the arc flash boundary is determined by an arc flash hazard analysis. See 4.4.1 of 32.60**

Have all needed arc flash hazard analyses been completed?	☐ Yes ☐ No
If an analysis has not been completed, does the location have an interim default table?	☐ Yes ☐ No

6. **At a minimum, personnel wear 17kV or higher rubber-insulating gloves with leather protectors when working exposed to high voltage electrical hazards.**

Do personnel wear rubber-insulating gloves rated 17kV or higher with leather protectors when performing work on the following (See Section 4.4(6) of 32.60.):	
Energized conductors?	☐ Yes ☐ No
Live-line tools?	☐ Yes ☐ No
Manually operated high voltage switches?	☐ Yes ☐ No
Installing and removing grounds on lines and equipment?	☐ Yes ☐ No

7. **High voltage personal protective equipment is appropriately maintained and stored. See Section 4.4 of 32.60.**

Arc-rated clothing is free of frays and tears.	☐ Yes ☐ No
Damaged PPE is removed from service.	☐ Yes ☐ No
How are the switching suits, hoods, face shields and other protective clothing stored?	
How are the high voltage gloves stored?	
How are rubber sleeves stored?	
Is PPE cleaned according to the manufacturer's recommendations?	☐ Yes ☐ No

8. **Documentation shows dielectric testing frequency of rubber-insulating gloves and sleeves to be appropriate. See Section 4.4(6) and 4.4(7) of 32.60.**

Are rubber sleeves dielectrically tested?	☐ Yes ☐ No
How often?	
Are rubber sleeves visually inspected?	☐ Yes ☐ No
How often?	
Are rubber-insulating gloves dielectrically tested?	☐ Yes ☐ No

How often?	
Are gloves inspected and air tested?	☐ Yes ☐ No
How often?	
Can personnel demonstrate how to air test gloves?	☐ Yes ☐ No
Do labels and documentation show that dielectric testing of gloves and sleeves is within the required time limits?	☐ Yes ☐ No
What does an electrician do if gloves are outdated or damaged?	

Comments:
Associated Documents/Records:

RATING:	**Poor** ☐	**Fair** ☐	**Good** ☐	**Excellent** ☐
Intent: To ensure proper personal protective equipment is used and maintained.				

MODULE 4 - TOOL KNOWLEDGE

Intent: To ensure testing, inspection, and record keeping procedures for high voltage tools and equipment comply with 32.60. (Reference 32.60, Sections 4.3(1) and 4.5)

1. Personnel are trained in the use and care of appropriate tools and equipment.

Does documentation or interviews show that all personnel know the use and care of appropriate tools and equipment?	☐ Yes ☐ No

2. Employees are knowledgeable in the use, care, and storage of live-line tools and equipment. See Section 4.5 of 32.60.

Are tools visually inspected?	☐ Yes ☐ No
Can personnel demonstrate how to inspect tools?	☐ Yes ☐ No
Where are live-line tools and equipment stored?	
What is done with damaged tools	

3. Live-line tools and equipment are dielectrically tested at a minimum of once every 12 months. See Section 4.5.1 and 4.5.2 of 32.60.

Are inspections of high voltage tools and equipment documented and up to date?	☐ Yes ☐ No
Do tools have labels showing either when the tool was tested or the expiration date for the testing?	☐ Yes ☐ No

Comments:

Associated Documents/Records:

RATING: **Poor** ☐ **Fair** ☐ **Good** ☐ **Excellent** ☐

Intent: To ensure use and care of high voltage tools comply with 32.60 requirements.

MODULE 5 – ELECTRICAL SAFETY KNOWLEDGE

Intent: To determine if personnel know and adhere to the safety requirements of 32.60. (Reference 32.60, Sections 4.2(3), 4.5 and 4.6)

1. Personnel are knowledgeable and follow all applicable safety requirements associated with their tasks. See Section 4.2.3 of 32.60.

Are applicable safe work instructions available to personnel?	☐ Yes ☐ No
Do personnel acknowledge they are most responsible for their own safety?	☐ Yes ☐ No
Do personnel know the most important high voltage safety rule (not isolated, not grounded, not safe)?	☐ Yes ☐ No

2. Personnel understand and adhere to the ten-foot or three-meter rule. See Section 4.6.1 of 32.60.

Do authorized, task qualified, and qualified personnel understand and adhere to the minimum approach distances for all high voltages present at this location	☐ Yes ☐ No
Do interviews indicate all personnel understand the ten-foot or three-meter rule and understand how the rule applies to them	☐ Yes ☐ No

3. Qualified personnel act as task supervisors to direct high voltage work. These persons clearly understand their responsibilities. See Section 4.2.2 of 32.60.

Do interviews indicate the task supervisor determines the safe work zone?	☐ Yes ☐ No
Does the task supervisor keep affected persons from entering the safe work zone unless accompanied by qualified personnel?	☐ Yes ☐ No
Does the task supervisor ensure personnel follow location high voltage electrical safety rules and operating procedures?	☐ Yes ☐ No
Do task supervisors have the appropriate and properly inspected tools and equipment, switching orders, job safety analysis and other procedures to safely perform high voltage electrical work?	☐ Yes ☐ No

4. Qualified or Task Qualified personnel escort affected persons into areas containing high voltage equipment and parts.

Do interviews confirm escorts ensure affected persons comply with all high voltage electrical safety rules?	☐ Yes ☐ No

5. Task supervisors or the designee verify contractors and their subcontractors follow all Alcoa safety rules and procedures.

Are contractors enforcing all safety rules?	☐ Yes ☐ No

6. Electric utility workers and their contractors and subcontractors comply with Section 4.2(6) of 32.60.

Does the electric utility company and their contractors and subcontractors have a documented high voltage electrical safety program that includes how to create a safe work zone?	☐ Yes ☐ No

Comments:
Associated Documents/Records:

RATING:	**Poor** ☐	**Fair** ☐	**Good** ☐	**Excellent** ☐

Intent: To determine if personnel know and adhere to the safety requirements of 32.60

MODULE 6 - PERFORMING WORK SAFELY AND CREATING A SAFE WORK ZONE

Intent: To ensure compliance with the minimum requirements for performing work safely and creating a safe work zone. (Reference 32.60, Sections 4.6 and 4.7)

1. Pre-work briefings are held as appropriate to discuss relevant safety issues. See Section 4.6(6)(F) of 32.60.

Do high voltage electrical safety topics discussed during pre-work briefings include shock and arc flash hazards, personal protective equipment, safe work procedures, lockout and tagout, and tasks to be completed?	☐ Yes ☐ No
Provide a listing of high voltage electrical safety topics discussed during pre-work briefings?	
Are additional briefings held with the crew if work conditions or methods change during the completion of the task?	☐ Yes ☐ No

2. A qualified person prepares switching orders and each step is clearly identified. See Section 4.8(1) of 32.60.

Does a qualified person prepare switching orders?	☐ Yes ☐ No
Does a second qualified person review the switching orders?	☐ Yes ☐ No
Do switching orders include a list of all switches and circuit breakers that will be operated for energy isolation?	☐ Yes ☐ No
Was each step of a past switching order marked off as completed?	☐ Yes ☐ No
When does this location use lock/tag/verify procedures instead of switching orders?	

3. Where generating and switching locations are influenced by distance, ownership, or organizational structure, a formal written agreement exists between the parties outlining the agreed upon lockout/tagout procedure. See Section 4.7.2(C) of 32.60.

Does this location require a formal written agreement on lockout/tagout procedures?	☐ Yes ☐ No
Does the agreement fulfill the requirements for creating a safe work zone?	☐ Yes ☐ No

4. Safe work zones are established for protection of personnel inside and outside of the zone. See Section 4.6(5) of 32.60.

Provide specific examples of when barricading and flagging is required at this location and how it is accomplished?	

5. Tasks conducted on or near high voltage electrical systems have documented procedures for creating a safe work zone. See Section 4.7 of 32.60.

Are there documented procedures for creating a safe work zone?	☐ Yes ☐ No
Do the procedures contain all of the following:	
Assignment of the responsible person?	☐ Yes ☐ No
Isolate and confirm?	☐ Yes ☐ No
Tag and lock isolation devices?	☐ Yes ☐ No
Verify by testing and ground?	☐ Yes ☐ No
Identify safe work zone?	☐ Yes ☐ No
Document safe work zone?	☐ Yes ☐ No
Release the safe work zone?	☐ Yes ☐ No
Do the responsible persons release the safe work zone in a controlled and safe manner by:	
Removing flagging and barricading?	☐ Yes ☐ No
Removing personal locks and tags?	☐ Yes ☐ No
Removing and accounting for all ground sets?	☐ Yes ☐ No
Releasing the safe work zone for restoration of power?	☐ Yes ☐ No

6. Personnel verify the number of ground sets applied to establish a safe work zone and number of ground sets removed when releasing the safe work zone.

Where do personnel record the number of ground sets applied?	
How do personnel verify the correct number of ground sets are removed?	

7. Do persons (employees and contractors) follow the required safe work practices.

Do personnel understand they must stop work if changing work conditions create a potential hazard?	☐ Yes ☐ No
Do personnel understand they must report any violation of safety practices?	☐ Yes ☐ No

If personnel violated safe work practices, what corrective actions were taken?	

8. Adequate illumination is provided when personnel working in areas with limited visibility.

Do the job safety analyses and the task supervisors ensure lamps or other types of lighting are provided when a work area does not have adequate illumination?	☐ Yes ☐ No

Comments:
Associated Documents/Records:

RATING:	**Poor** ☐	**Fair** ☐	**Good** ☐	**Excellent** ☐
Intent: To ensure the location requirements for performing work safely and creating a safe work zone comply with 32.60.				

MODULE 7 - OPERATION AND MAINTENANCE

Intent: To ensure safe work practices and hazard controls are used in the operation and maintenance of high voltage equipment. (Reference 32.60, Sections 4.6 and 4.8)

1. The location complies with the energized work policy. See Section 4.6(6)(C) of 32.60.

Does the location perform any energized work other than the use of high voltage detectors and hot sticks, grounding and phasing?	☐ Yes ☐ No ☐ N/A
If yes, provide examples.	
If yes, are procedures for energized work documented?	☐ Yes ☐ No ☐ N/A

2. Personnel involved in the operation and maintenance of high voltage systems understand that if electrical parts are not isolated and not grounded, they are not safe. See 4.8(3), 4.8(4), and 4.8(5) of 32.60.

Do personnel use the proper sequence to attach and remove grounds?	☐ Yes ☐ No
Have ground leads and clamps been determined capable of carrying the maximum available fault current for the time necessary to clear the fault?	☐ Yes ☐ No
Do personnel ensure that a five-minute waiting period is observed between isolating static capacitors and grounding/shorting?	☐ Yes ☐ No
Have personal ground sets been tested during the preceding twelve months to ensure maximum voltage drop values for the short circuit rating are not exceeded?	☐ Yes ☐ No
Are personal ground sets labeled with the last testing and inspection dates?	☐ Yes ☐ No

3. Un-terminated cables are not left exposed and ungrounded. See 4.8(4) of 32.60.

Are un-terminated feeder cables left exposed?	☐ Yes ☐ No
What methods are used to prevent unauthorized personnel from accessing the un-terminated cables?	

4. All safe work practices are utilized when working overhead. See 4.6(6)(G) of 32.60.

Are tasks performed at elevated heights at this location?	☐ Yes ☐ No
What methods are used to raise and lower tools and materials?	

Are personnel wearing fall protection?	☐ Yes ☐ No
Has a specific fall protection assessment for high voltage tasks been conducted?	☐ Yes ☐ No

5. All safe work practices are utilized when working in confined spaces. See Section 4.6(6)(H) of 32.60.

If tasks are performed in confined spaces at the location, are confined space entry and high voltage task analyses conducted?	☐ Yes ☐ No

6. The task supervisor implements any additional measures necessary to protect personnel from potentially energized lines and equipment during testing procedures. See 4.8(6) of 32.60.

Are test trailers, vehicles and unguarded conductive parts accessible to the test operator grounded?	☐ Yes ☐ No
Do personnel use insulated equipment and are they isolated from hazards when grounds have been removed for testing purposes?	☐ Yes ☐ No
Are test areas barricaded or guarded to keep unauthorized persons from entering?	☐ Yes ☐ No
If someone must enter a test area after equipment has been de-energized are high voltage and other exposed terminals grounded?	☐ Yes ☐ No
Does the person in charge of testing ensure all persons are isolated from the hazards and use insulated equipment?	☐ Yes ☐ No

7. Signs are in place as required. See Section 4.8(10) of 32.60.

Are signs legible and in good condition?	☐ Yes ☐ No
Do signs convey the correct information needed by the location?	☐ Yes ☐ No
Are signs installed as required such as on substation gates and fences?	☐ Yes ☐ No
Do signs comply with local regulations and consensus standards?	☐ Yes ☐ No

8. The location has a documented and effective locking program to prevent unauthorized operation of high voltage switches. See Section 4.8(11) of 32.60.

What is the location locking policy, and describe how compliance with the policy is achieved?	

Are personal locks used for personal protection only?	☐ Yes ☐ No
Are operating system locks used?	☐ Yes ☐ No
If operating system locks are not used, is there a reviewed documented program to prevent unauthorized operation of high voltage switches	☐ Yes ☐ No ☐ N/A

9. Specific high voltage area tasks have been identified. See Section 4.8(12) of 32.60.

Does high voltage yard auxiliary equipment require servicing?	☐ Yes ☐ No
Are insulators and bushings cleaned?	☐ Yes ☐ No
If so, who does this work and are there procedures in place?	
Is infrared testing performed at this location?	☐ Yes ☐ No
Is line clearing and tree trimming performed at this location?	☐ Yes ☐ No

10. Permanent grounds are inspected on a yearly basis. Equipment, fence, structure, bonding and other visible grounding is inspected on a yearly basis and tested on a five year basis. See 4.8(12)E of 32.60.

Have permanent grounds been inspected within the last twelve months?	☐ Yes ☐ No
Has the grounding system been tested within the past five years?	☐ Yes ☐ No
If not, when was the last test of the grounding system?	

Comments:
Associated Documents/Records:

RATING:	**Poor** ☐	**Fair** ☐	**Good** ☐	**Excellent** ☐
Intent: To verify safe work practices and hazard controls are used in the operation and maintenance of high voltage equipment.				

MODULE 8 - MOBILE EQUIPMENT

Intent: To ensure mobile equipment operations associated with high voltage tasks are performed as required by 32.60. (Reference 32.60, Section 4.9)

1. Personnel operating mobile equipment are aware of the ten-foot rule. See Section 3.1 and 4.9 of 32.60.

What type of training have mobile equipment operators received?	

2. Proper grounding procedures are used for mobile equipment. See Section 4.9 of 32.60.

Are potential hazards identified before mobile equipment is moved to the job site?	☐ Yes ☐ No
Are persons grounding the equipment qualified or authorized to perform the task?	☐ Yes ☐ No
Have mobile equipment operators been trained to recognize any potential electrical hazards?	☐ Yes ☐ No
Have mobile equipment operators been trained in proper grounding techniques?	☐ Yes ☐ No
Do mobile equipment operators understand the restricted zone?	☐ Yes ☐ No
Is equipment or material hoisted over exposed, energized high voltage conductors or equipment?	☐ Yes ☐ No
If equipment or material is hoisted over exposed, energized parts, is there a Job Safety Analysis and approval?	☐ Yes ☐ No ☐ N/A

3. Mobile equipment operated at distances that compromise the ten-foot or three-meter rule are insulated, tested, grounded and barricaded.

Is mobile equipment that compromised the ten-foot (three-meter rule) or the minimum approach distances of appendix 2 in 32.60 insulated and tested as required by Section 4.9(1)(C) of 32.60?	☐ Yes ☐ No
Is the equipment barricaded and grounded?	☐ Yes ☐ No
Are grounds applied to mobile equipment before the equipment is within the ten-foot rule distance?	☐ Yes ☐ No
Is a risk assessment performed when non-insulated mobile equipment will compromise the ten foot rule?	☐ Yes ☐ No

Does the 32.60 designee approve the use of non-insulated mobile equipment that will violate the ten foot rule?	☐ Yes ☐ No

4. The task supervisor and 32.60 designee ensure proper safety precautions are taken when cranes used in construction are within 20 feet of power lines.

Do crane operators stop operation if the equipment will come closer than 20 feet to a power line and contact the task supervisor?	☐ Yes ☐ No
Does the task supervisor contact the 32.60 designee or qualified person authorized by the 32.60 designee when a crane will be within 20 feet of a power line?	☐ Yes ☐ No
When a crane is operated within 20 feet of a power line, does the 32.60 designee ensure safety practices are in place to keep the crane from contacting the lines?	☐ Yes ☐ No

5. Personnel understand the dimensional clearances that pertain to mobile equipment in transit. See Section 4.9.2(B) of 32.60.

Do personnel understand the dimensional clearances that pertain to mobile equipment in transit and their loads as outlined in Section 4.9(2) of 32.60?	☐ Yes ☐ No
Do personnel understand the equipment in transit allowed to encroach upon the area defined by the ten-foot rule as outlined in Section 4.9(2) of 32.60?	☐ Yes ☐ No

Comments:
Associated Documents/Records:

RATING:	**Poor** ☐	**Fair** ☐	**Good** ☐	**Excellent** ☐
Intent: To ensure mobile equipment tasks associated with high voltage are performed per the requirements of 32.60.				

MODULE 9 - HOUSEKEEPING AND STORAGE PRACTICES

Intent: To ensure compliance with the housekeeping practices for repair and maintenance, material storage and general condition of high voltage substations, switchgear facilities and rights-of-way. (Reference 32.60, Sections 4.8(7), 4.8(8), 4.8.(9)

1. Material and equipment not necessary for distribution and transmission systems repair are not stored in substation and switchgear facilities. See Section 4.8(7) of 32.60.

Are materials and equipment stored in substations?	☐ Yes ☐ No
Are the materials stored there necessary for repair of the distribution and transmission system?	☐ Yes ☐ No
Have storage locations been identified and approved?	☐ Yes ☐ No
Are substation and switchgear facilities inspected for housekeeping and storage practices?	☐ Yes ☐ No
Who performs the inspections?	☐ Yes ☐ No
Is material or equipment stored in front of high voltage distribution equipment?	☐ Yes ☐ No

2. Qualified personnel periodically inspect substations to determine equipment condition and ground system integrity. See Section 4.8(7) of 32.60.

Are periodic inspections of substations performed to determine equipment condition and ground system integrity?	☐ Yes ☐ No
Who performs the inspections?	☐ Yes ☐ No
Are doors to control houses or electrical buildings left open or are there openings where varmints and dust or water can enter?	☐ Yes ☐ No
Are inspections documented?	☐ Yes ☐ No

3. Rights-of-way are clear and orderly. See Section 4.8(8) or 32.60.

Are rights-of-way clear of trees and brush?	☐ Yes ☐ No
Are materials and equipment stored closer than 10 feet horizontally under exposed high voltage lines?	☐ Yes ☐ No
Is mobile equipment that could violate the ten-foot or three-meter rule stored closer than ten horizontal feet under exposed high voltage lines?	☐ Yes ☐ No

4. No permanent or temporary buildings are placed closer than ten feet horizontal under exposed high voltage lines. See Section 4.8(9) of 32.60.

Are any buildings closer than ten feet horizontal under exposed high voltage lines?	☐ Yes ☐ No
Have permanent buildings located under high voltage lines been approved by the 32.60 designee?	☐ Yes ☐ No

Comments:
Associated Documents/Records:

RATING:	**Poor** ☐	**Fair** ☐	**Good** ☐	**Excellent** ☐
Intent: To ensure compliance with housekeeping practices in high voltage substations, switchgear facilities, and rights-of-way.				

32.60.1 SCORECARD

MODULE	RATINGS			
	Excellent	Good	Fair	Poor
1. Commitment and Management Responsibility	☐	☐	☐	☐
2. Training Requirements	☐	☐	☐	☐
3. Personal Protective Equipment	☐	☐	☐	☐
4. Tool Knowledge	☐	☐	☐	☐
5. Electrical Safety Knowledge	☐	☐	☐	☐
6. Performing Work Safely and Creating a Safe Work Zone	☐	☐	☐	☐
7. Operation and Maintenance	☐	☐	☐	☐
8. Mobile Equipment	☐	☐	☐	☐
9. Housekeeping and Storage Practices	☐	☐	☐	☐
10. Design and Construction	☐	☐	☐	☐
Total Each Column				
Overall Rating:	**Excellent** ☐	**Good** ☐	**Fair** ☐	**Poor** ☐

Rules of Use

- **Excellent** = EXCELLENT in at least two modules and GOOD in all the others.
- **Good** = Must receive an excellent or good under the Commitment and Management Responsibility module and receive no more than two FAIR in all other modules and no POORs.
- **Fair** = May receive no more than two POOR.
- **Poor** = Receive three or more POOR.

Excavation, Digging, and Drilling

Alcoa Massena Program

1 Purpose and Scope

Industrial fatalities as the result of digging and excavation activities are usually caused by lack of planning and implementation of basic rules and safe work practices. Inadequate shoring and the presence of above and underground utilities present a potential hazard for digging and/or drilling activities. This document shall apply to all Alcoa Massena Operations personnel, contractors, subcontractors, contracted services, visitors, and vendors.

The purpose of this document is to describe the safe practices and personnel protection methods that shall be used when working within or in the proximity of excavations and trenches. Permitting is to ensure that we do not strike utility lines or unknowingly excavate in known contaminated soils when digging or drilling at Massena Operations.

2 Definitions

2.1 Aluminum Hydraulic Shoring is a pre-engineered shoring system comprised of aluminum hydraulic cylinders (cross braces) used in conjunction with vertical rails (uprights) or horizontal rails (wales). Such system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.

2.2 Benching is a method of protecting personnel from cave-ins by excavating the sides of an excavation, to form one, or a series of horizontal levels or steps, usually with vertical or near vertical surfaces between levels.

2.3 Cave-In is the separation of material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize personnel.

2.4 Competent Person is a person who by possession of a recognized degree in an applicable field or a certificate of professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to identify existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

2.5 Cross Braces are the horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.

2.6 Excavation is any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

2.7 Faces or Sides are the vertical or inclined earth surfaces formed as a result of excavation work.

2.8 Hazardous Atmosphere is any atmosphere that may expose personnel to the risk of death, incapacitation, injury, acute illness or may prevent the unaided escape from a hazardous confined space. The following are hazardous atmospheres:

(1) Atmospheric oxygen concentration below 19.5% or above 23.5%.
(2) Flammable gas, vapor or mist in excess of 10% of the lower explosive limit.
(3) Airborne combustible dust at a concentration that meets or exceeds its lower explosive limit.
(4) Atmospheric concentration of any substance where entrant exposure exceeds the dose or occupational exposure limit established by local regulations. An atmosphere containing a substance at a concentration exceeding the occupational exposure limit shall not automatically be classified as a hazardous atmosphere, especially if the occupational exposure limit is intended solely to prevent long-term adverse health effects.
(5) Any other atmospheric condition that is immediately dangerous to life or health.

2.9 Protective System is a method of protecting personnel from cave-ins, from material that could fall or roll from an excavation face into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

2.10 Sheeting are the members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system such as wales and cross braces.

2.11 Shield is a structure able to withstand a cave-in and protect personnel within the shield. Shields can be permanent or can be designed to be portable and moved along as work progresses. Shields can be premanufactured or custom built in accordance with applicable local regulations. Shields used in trenches are usually referred to as "trench boxes" or "trench shields".

2.12 Shoring System is a metal, hydraulic, mechanical, or timber structure which supports the sides of an excavation and is designed to prevent cave-ins.

2.13 Sloping is a method of protecting personnel from cave-ins by excavating to form faces that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, application of surcharge loads and the presence of water at or below ground level.

2.14 Stable Rock is a natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the sides of the excavation is secured against cave-in or movement by rock bolts or other protective systems designed by the appropriate professional who is authorized to perform such designs by local regulations.

2.15 Structural Ramp is a ramp fabricated of steel or wood and usually used for vehicle access. Ramps made of soil or rock are not considered structural ramps.

2.16 Surcharge means an excessive vertical load or weight caused by spoil, overburden, vehicles, equipment, or activities that may affect trench stability.

2.17 Support System is a structure such as underpinning, bracing or shoring which provides support to an adjacent structure, underground installation or sides of an excavation.

2.18 Tabulated Data are tables and charts approved by the appropriate professional as authorized by local regulations and which are used to design and construct a protective system.

2.19 Trench is a narrow excavation, in relation to its length, made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench measured at the bottom is not greater than 15 feet (4.6 meters). If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet (4.6 meters) or less, measured at the bottom of the excavation, the excavation is also considered to be a trench.

2.20 Underpinning are structural supports such as piling and bracing provided to deepen the support points under an existing wall, machine, or column where the excavation is lower than the foundation or structure. Underpinnings are normally designed by a structural engineer.

2.21 Uprights are the vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not contact each other. Uprights placed so that individual members are closely spaced, in contact with or interconnected to each other, are often called sheeting.

2.22 Wales are horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the sheeting system.

2.23 Utility Line a process gas, natural gas, liquid fuel, hydraulic, water line, sewer, electrical wires or conduit, power lines, or underground storage tank

3.24 Requester is the person, who initiates the need to dig, drill, saw, or excavate. This is the responsible person to initiate the digging permit procedure.

3 Requirements

3.1 General Requirements

(1) This document shall be used in conjunction with local regulations in the analysis of excavations and in the development of excavation specific safety practices and procedures.

(2) Alcoa personnel, contractors, subcontractors, and contracted services performing excavation work shall be knowledgeable of local regulations on excavation.

(3) Prior to starting any excavation work, Alcoa personnel, contractors, subcontractors, and contracted services shall designate a competent person responsible for excavation work as required by this document

and any applicable local regulations. Written certification that the designated competent person has received training by formal instruction, on the job experience, or both, and is qualified to act as a competent person as defined by this document and any applicable local regulations shall be provided.

(4) Prior to starting any excavation, Alcoa personnel, contractors, subcontractors, and contracted services shall prepare a job specific safety plan which includes the following site conditions:
A. Type of soil expected to be encountered.
B. Expected surface moisture and groundwater conditions.
C. Any previous disturbances of the soil.
D. Size and depth of the excavation.
E. Amount of time all or part of the excavation will be open.
F. Range of expected weather conditions during the excavation.
G. Location and type of equipment to be used.
H. Proximity and physical condition of adjacent structures and improvements.
I. Location and nearness of overhead and underground utilities.
J. Determination of responsibility to locate underground utilities.
K. Type and proximity of vehicular traffic to the excavation. Substantial barricades (e.g. jersey barriers) or berms (i.e. dirt barriers) may be warranted.
L. Shock or vibration created from blasting or pile driving.
M. Other nearby sources of shock and vibration.
N. If shoring is needed, the type and size.

(5) Prior to starting any excavation/drilling, review the scope of work with the personnel involved and obtain a Digging, Drilling, Excavation Permit from the Alcoa Project Leader. The review shall include the following:

A. Location and description of the job.
B. Identification of the designated competent person and other engineering or production personnel who will need to be informed throughout the job.
C. Drawings and layouts which describe the scope of work.
D. Safety procedures and practices that apply to the job.
E. The possible need for emergency procedures and the location of emergency equipment.

(6) The contractor, subcontractor or contracted service shall be responsible for providing the necessary equipment and personnel hazardous atmosphere evaluations or monitoring required by this document and local regulations.

(7) Wells, shafts, pits or other excavations shall be protected with appropriate physical barricades when unattended and lighting shall be provided when needed. Upon completion of work, immediately backfill excavations. to conduct any.

3.2 Permitting Procedure

(1) Permitting Procedure for Digging, Drilling, Sawing and Excavating if digging or drilling is required the requester shall meet with the appropriate knowledgeable engineering, environmental and/or maintenance personnel, the supervisor of the digging crew and others as appropriate to review the drill/digging site for under and above ground utilities and hazards.

(2) The Digging/Drilling/Excavation Permit found on page 9 shall be initiated. Drawings of the area's utilities and hazardous sites (yard only) shall be reviewed. The checklist shall accompany the Work Order. The requester shall refer to Alcoa Engineering Standard 18.19 Excavation, Trenching and Shoring for safe work practices when working in and around trenches and 32.60 for High Voltage Electrical Safety.

(3) The requester shall in the field identify the location of all utilities. Mark with paint, ribbon, chalk or flags the boundaries of the excavation and the location of any utilities.

(4) If utilities are within the boundaries of the excavation, they must be isolated, or controls taken to ensure that they are not damaged or contacted. Use Massena Operation's Lockout Tagout and Markup procedures to isolate utilities.

(5) Review the checklist, drawings, special digging procedures and the location of the utilities or contaminated soils with the digging crew. When contaminated soils are excavated, members of the

digging crew MUST have completed the training requirements specified in OSHA Standard 1910.120 HAZWOPER

(6) The permit shall accompany the digging crew.

3.3 Specific Requirements

(1) A stairway, ladder, ramp or other safe means of access and egress shall be provided. If specified, structural ramps for personnel access to an excavation shall be designed by a competent person or engineer with experience in structural design and shall comply with local regulations. Structural members with uniform thickness for multipiece ramps shall be used and connected together in such a way as to prevent tripping. Cleats or special surface treatments shall be used on ramps to prevent slipping. Access and egress to excavations and trenches of 4 feet (1.2 meters) or more in depth shall be provided which require no more than 25 feet (8 meters) of lateral travel. Ensure that egress points do not empty into a vehicle path.

(2) Shield systems shall be deployed in a manner that prevents hazardous movements in the event of sudden lateral loads on the shield. Personnel shall be prohibited from riding in shields at any time. When a shield is designed to resist the calculated forces for the full depth of the trench, excavations shall be permitted to a maximum of 2 feet (.6 meters) below the bottom of the shield provided there are no indications of loss of soil behind the shield.

(3) Personnel shall be prohibited from working in excavations with accumulated water unless adequately protected from cave-ins. Diversion ditches, dikes, de-watering pumps or other control methods shall be used to prevent water accumulation in an excavation.

(4) Shoring, bracing, and underpinning shall be used to ensure the stability of adjacent structures. Excavations below the level of a base, footing, or retaining wall shall be approved by the appropriate professional as authorized by local regulations.

(5) Personnel shall wear high visibility vests or clothing when excavating near mobile equipment. Barricades with warning lights shall be used to warn traffic when excavating near roadways. Personnel shall be prohibited from working under any overhead loads. Use of mobile equipment near an excavation or approaching an excavation shall be done with a clear, unobstructed view from the vehicle operator. Barricades, hand signals, stop logs or berms shall be used to protect personnel working in excavations from mobile equipment.

(6) Loose rock or soil shall be removed from the face of an excavation by scaling, use of protective barricades or other means. Personnel shall be prohibited from working on the face of excavations while other people are working at lower levels unless adequate protection from falling materials is provided. Personnel shall be protected by positioning materials at least 2 feet (.6 meters) from the edge of the excavation, grading materials away from the edge of the excavation, using restraining devices to keep material from falling into the excavation, or a combination. Personnel involved in the loading or unloading of excavation or trenching materials shall be in protective operator cabs or at a safe distance.

(7) The atmosphere in excavations deeper than 4 feet (1.2 meters) where oxygen deficiency or flammable gases are likely to be present shall be tested before permitting personnel to enter. Persons shall not be permitted to enter the trench or excavation if the oxygen concentration is less than 19.5%. Ventilate and retest to obtain flammable gas concentrations less than 5% of the lower flammable limit. Assess potential sources of hazardous gases that may be in close proximity to the excavation. The ability of forced air ventilation to remove hazardous atmospheres from excavations shall be periodically monitored. See EHS STD 18.1.

(8) The competent person shall complete a daily inspection checklist of excavations and surrounding areas if personnel will enter the excavation. See Job Aid (formerly 18.19.1). This inspection shall be conducted at the beginning of the shift and as needed throughout the shift, including after every rainstorm. All inspections shall identify the development of any fissures, tension cracks, sloughing, undercutting, water seepage, bulging at the bottom, when there is a change in the size, location or placement of the spoil pile or when there is any indication of change or movement in adjacent structures. If any of these occurrences is observed the competent person shall take immediate action to ensure that no one is in the excavation and that corrective action is taken to address the hazard before anyone can re-enter the excavation.

(9) A protective system for personnel shall be used unless the excavation is entirely stable rock or it is less than 5 feet (1.5 meters) deep, or as defined by local regulations, and inspection by a competent person indicates no potential cave-in hazard. Protective systems shall be designed in accordance with local regulations and shall withstand loads that can be reasonably expected. See 18.19.1.

3.4 Responsibilities

(1) **A competent person shall** be designated if personnel will enter an excavation. The competent person shall be trained and knowledgeable in soil analysis, the use or protective systems for excavations, local regulations (requirement of 26 CFR Part 1926 Subpart P) and this document. The competent person may have other duties such as crew leader, operator, or laborer. The competent person shall:

A. Be present at the excavation if personnel enter the excavation.
B. Monitor water removal equipment and operations.
C. Inspect excavations, adjacent areas, and protective systems daily, prior to the start of work, as needed throughout the shift and after every rainstorm or other occurrence which may increase the hazard.
D. Remove personnel from the excavation if a hazard occurs until the necessary precautions are taken.
E. Classify the soil and reclassify the soil after changed conditions.
F. Ability to detect conditions that could result in cave-ins, hazardous atmospheres, and other hazards including those associated with confined spaces.
G. Authority to take prompt corrective measures to eliminate existing and predictable hazards and to stop work when.

(2) The crew leader shall:

A. Evaluate potential hazards and required personal protective equipment, develop safe work practices and procedures, and emergency action plans as an integral part of the preplanning for each job.
B. Ensure all personnel involved in the excavation are trained in the recognition of excavation hazards and their potential exposure to these hazards.
C. Ensure personnel operating equipment are adequately trained and aware of potential hazards.
D. Develop procedures governing the work in or near the obvious and potentially hazardous areas of excavation.
E. Assure that work, as defined in this document, is done only by authorized personnel properly trained in the job under the direction of a competent person.
F. Furnish properly maintained equipment and tools for the job, and personal protective equipment.
G. Prevent unauthorized personnel from access to work areas by erecting proper barricades, signs, gates or personnel as required.
H. Oversee the correct application of this document to all aspects of the work.
I. Coordinate plans for excavations with the appropriate department representatives. Communicate plans and schedules to all involved.
J. Verify that all underground and overhead utilities have been identified, isolated, or protected and obtain any digging or work permits as required.
K. Verify the angle of slope, shoring and protective systems are installed per the design drawings and job specifications.

(3) Personnel shall:

A. Examine all aspects of the job, expected or unexpected, during the evaluation portion of a job.
B. Evaluate the potential for excavation hazards, the need for additional equipment and personal protection devices and other safety precautions before beginning work.
C. Consider other hazards surrounding the excavation area where secondary activity takes place. Evaluate hazards from excavation equipment operation, movement of materials and other activities.
D. Stop work immediately, evacuate the excavation and resolve unusual or unexpected situations.

4 References

- EHS STD 18.1 - Entering and Working in Confined Spaces
- 18.19.1 - Design Considerations for Protective Systems Used in Excavations
- Job Aid (formerly EHS SUPP STD 18.19.2) - Excavation Inspection Form
- 29 CFR Part 1926.650 - .652, Subpart P – Construction Standards for Excavations
- Alcoa Engineering Standard 18.19 Excavation Shoring and Trenching

7 Document Control

Date of Review:	4/20/26	Date of Next Review:	4/20/28
Reviewed By:	Jason Zembek		
Approved by (SPA or Manager):	Jason Zembek		
NOTE: Non-SSOP documents are to be reviewed in conjunction with the ASAT corporate schedule.			
Revision Table:			
Revision Made by:	Date:	Describe Revision Made:	
Jason Zembek	8/31/2023	Input information new standard form and Review/Revision Table added.	

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1.0 Scope

The Massena Operations Respiratory Protection Program includes all manufacturing and other support service jobs and tasks where exposure to potentially harmful agents above the established Occupational Exposure Limits (OEL) can exist. This program supplements the control of hazards by work practices and engineering control measures.

The Scope of the Respiratory Protection Program does not include contractors or other non-Alcoans not under direct control by employees of Massena Operations.

2.0 Purpose

The purpose of the Massena Operations Respiratory Protection Program is to provide a method of control where engineering or work practice controls are not practical, feasible, or while they are being developed and instituted. This document conforms to the regulations promulgated under 29 CFR 1910.134 Respiratory Protection and the requirements of EHS STD 18.1.1 Respiratory Protection. Alcoa shall provide respirators as needed for protecting the health of Alcoa employees.

3.0 Responsibility

3.1 Respiratory Protection Program Administrator

The Massena Operations Industrial Hygienist, **Hugh Palmer,** functions as the Respiratory Protection Program Administrator. He is responsible for all facets of this program and has full authority to make decisions necessary to ensure its success. The Respiratory Protection Program Administrator will:

A) Monitor employee's exposure to potential inhalation hazards and assign respirator for the specific job/task as needed.
B) Ensure that respirator users are medically approved, fit-tested and trained to use the assigned device.

C) Kevin Durant shall ensure that Self-Contained Breathing Apparatus (SCBA) is inspected monthly, and users receive annual training.
D) Ensure that Grade D breathing air is used for supplied air respirators.
E) Conduct random inspection to ensure that respirator devices are properly worn, maintained, and stored.
F) Conduct an annual review of the Respiratory Protection Program.

3.2 Business Unit (BU) Managers

BU Managers provide resources necessary to ensure success of this Respiratory Protection Program. They are responsible for overseeing and directing their areas in the implementation of this program as outlined, and that the responsibilities assigned are accomplished to facilitate technology change to eliminate the need for respiratory protection.

3.3 Area (Departmental) Managers

Area Managers are responsible for the administrative controls of the Respiratory Protection Program in their area. The area managers will:

A) Develop and maintain a Job Safety Analysis (JSAs) and ensure that when the use of respirator is required for specific tasks, such requirements are included in the JSA.
B) Ensure that there is a clean and sanitary location for the storage of respirator equipment.
C) Assure that monthly inspections of emergency escape respirators are carried out and documented.

3.4 Line Management

Line Management is responsible for the compliance of the Respirator Protection Program in their area.
Line Management will:

A) Notify the industrial hygienist of potential inhalation hazard when new chemicals or processes are being introduced into the area. EHS staff must approve all new chemicals prior to purchase through the New Materials Review (NMR) process.
B) Be familiar with the type of respiratory protection required in their area and ensure that all respirator users are properly fit tested for the device and are trained in its use. The unit supervisor shall enforce the proper use of respiratory protection.
C) Ensure that the respirator storage area is clean and sanitary.
D) Ensure chemical cartridge change-out schedules are followed.
E) Ensure that no unauthorized maintenance or repairs on respirators are performed.

3.5 Area Safety Professional

The Area Safety Professional will:

A) Function as liaison between the departments and the Respiratory Protection Program Administrator for issues related to respiratory protection.
B) Assist in conducting annual qualitative fit testing for employees in his/her area and maintain accurate training records.
C) Ensure that all employees wearing respiratory protection are medically approved; successfully fit tested and trained to use the devices.
D) Ensure that the correct respirator is used for a job/task requiring respiratory protection.
E) Ensure that clean respirators are available from the department respirator storage area.

F) Ensure that correct respiratory protection is being properly worn for jobs or tasks in areas that require respiratory protection (including proper cartridge change-out schedules).
G) Maintain all fit testing and training documentation.
H) Ensure that voluntary users of disposable dust masks are given Appendix D of the OSHA standard 29 CFR 1910.134.

3.6 Fit Testers

A) Shall conduct fit testing only if facial hair or other face-to–seal interference problems are not present.
B) Maintain fit testing proficiency by attending training at least every three years or more frequently if necessary.

3.7 Respirator Users

Respirator users are responsible for the proper use and care of the device. Their duties include:

A) Attend required respirator training and fit test as scheduled.
B) Use, store, and maintain respirators in accordance with the training received, manufacturer's instructions, OSHA standards and the provisions of this program.
C) Performing user seal check whenever the respirator is donned.
D) Do not use a negative pressure device if facial hair interferes with the face piece to face seal.
E) Discontinue the use of damaged or malfunctioning respirator device and report it to the department Respirator Coordinator immediately.
F) Report to the Medical Department when there is any personal condition or change in medical status that may prevent the use of the assigned respirator.

3.8 Medical Department

The Medical Department will:

A) Evaluate all potential respirator users based on criteria established in EHS STD 18.1.
B) Maintain an up-to-date list of employees who are restricted from using a negative pressure respirator and communicate the list to the department and the Respiratory Protection Program Administrator

4.0 Program Evaluation

An appraisal, including a formal self-evaluation, of the effectiveness of the respirator program must be carried out annually by the Respiratory Protection Administrator or designee. Action must be taken to correct deficit found in the program.

5.0 Selection of Respiratory Protection Equipment

The Respiratory Protection Program Administrator must approve all respirators used at Massena Operations. Only NIOSH approved devices will be used. Refer to the *Massena West – Respiratory Protection Document* for the selection of respirator devices required for various Department/Jobs in a tabular format. All approved respirator equipment and associated materials are listed in the MAS Respirator Types document are on the Massena Share Drive.

Respirators are selected on the basis of hazards to which the employee is exposed. They include:

A) Nature of the hazard - chemical, physical properties, environmental concentration, and exposure limit.
B) Oxygen concentration at the location.
C) Characteristics of the operation and location of hazardous areas.
D) Work activities and duration of respirator usage.
E) Characteristics of respirator, such as assigned protection factor, maximum use concentration, and its limitations.
F) Specific requirements of the respirator user.

6.0 Quality of Breathing Air

6.1 Breathing Air Quality

Breathing air used for respiration must at least meet the requirements of the specification for Grade D breathing air described in Commodity Specification CGA G-7.1: 19.5% to 23.5% (v/v) oxygen, carbon monoxide level not to exceed 10 ppm, carbon dioxide level less than 1000 ppm, hydrocarbon less than 5 mg/m^3, and there should be no noticeable odor. When a compressor is used to generate breathing air, the compressed air must pass through an in-line air purifying system with a carbon monoxide monitor equipped with audio and visual alarms set at 10 ppm. Carbon monoxide monitor shall be calibrated every six months as recommended by the manufacturer. Air supply for continuous flow respirators must be capable of providing at least 4 cfm to all tight-fitting respirator face pieces and 6 cfm to all loose-fitting respirator face pieces.

6.2 Allegro Inline Monitor and Filtering system

The Allegro Carry All Travel Panel ("Breathing Box") is a positive pressure air device. It is required to be used here at Massena Operations when supplied air is needed for breathing while working. The system can be checked out at the IH Lab in the Main Office.

The filtering system has the capability of supplying safe breathing air to as many as five (5) workers simultaneously. The inline filtering system monitors only the air being supplied through itself and not the air or atmosphere outside the breathing equipment. It is designed to alarm if the air contains greater than 10 parts per million of carbon monoxide. This panel filtration system will not remove carbon monoxide.

8.0 IDLH Atmosphere

All oxygen deficient atmosphere (19.5%), unknown atmosphere and atmosphere with air contaminant present at IDLH concentration are considered to be immediately dangerous to life and health. Under such conditions the following shall be used:

A) A full-face piece pressure demand respirator with a service life of 30 minutes.
B) A combination full-face piece pressure demand airline respirator with auxiliary self-contained air supply.

For entry into an IDLH atmosphere, more than one employee must be located outside the IDLH atmosphere. They must maintain contact, via voice, visual or other means, with employees inside. The outside employees must be trained and equipped with the same type of respiratory devices and equipment to provide effective emergency rescue.

9.0 Medical Evaluation of Potential Respirator User

Respirator users must be physically and psychologically capable to use the device. Massena Operations Medical will conduct medical evaluation of potential respirator users Department according to criteria stated in the EHS STD 18.1.

The Medical Director will determine an employee's ability to use a respirator based on employee's medical condition, type and weight of the respirator assigned, duration and frequency of use, expected physical work effort, other personal protective equipment used by the employee and other potential hazards (chemical and physical) in the work environment. The Medical Director may specify the type of respirator the employee can use. The employee will be notified of their ability to use a respirator device at the time of his/her physical exam. The employee's supervision and the Respiratory Program Administrator will be notified when an employee is disqualified from using a negative pressure respirator or has any other restrictions for respirator use.

An employee will be re-evaluated when there is a change in employee's medical condition that may affect their respirator use or a significant change in work environment or job requirement that may affect the physiological burden on the employee. The medical department shall formally interview employees about their respirator usage. This shall be documented during the respirator medical evaluation.

10.0 Respirator Use

10.1 Required Respirator Use

The use of respiratory protection is required for certain job/tasks at Massena Operations; other usage is voluntary. Based on the potential inhalation hazard associated with some job/tasks and employee exposure determined by air monitoring, respirator required job/tasks include, but are not limited to, the activities outlined in each plant's departmental respiratory requirement document.

10.2 Voluntary Use of Disposable Dust Masks

An Employee who, on their own, elects to wear a disposable dust mask (filtering face piece) respirator shall:

- Be trained in the care, use, and limitation of the respirator.
- Have read to them and have signed as receiving a copy of Appendix D of the OSHA standard 29 CFR 1910.134.
- Voluntary respirator use is exempt from the facial hair provision.
- Medical evaluation and approval is required initially and periodically for voluntary use of a respirator other than filtering facepiece respirators in accordance with EHS STD 71.23.

- Voluntary respirator use is allowed for the following applications – General Dusty environments where mandatory use of respirators is not otherwise indicated by this program, humidifying air, mowing grass, small scale painting (e.g., spray cans). The Industrial Hygiene Department shall be consulted for any applications outside of this list.

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10.3 Chlorine Emergency Escape Respirators

Emergency escape chlorine respirators, The North mouth bite type respirator for acid gases will be available wherever there is a possibility for a chlorine leak.

Employees, visitors, and contractors working in these areas will be instructed on the proper use and limitations of this type of respirator.

The Industrial Hygienist or Department Safety Professional shall inspect chlorine escape respirators monthly.

10.4 Green Mill (Building 354C) All persons

The Green Mill Respiratory Policy outlines the requirements for the various levels of employees, visitors, and contractors.
Entry into the Green Mill (Building 354C) for all persons at Massena Operations requires the wearing of an appropriate respirator. Press and hold the Ctrl key and Left mouse button to access the Link:

Green Mill (Building 354C) Respiratory Protection

The Visitor Certification Form must be filled out prior to a visitor entering the Green Mill (Building 354C). Press and hold the Ctrl key and Left mouse button to access the Link:

Massena Green Mill Visitors

11.0 Respirator Fit Test

This section is not applicable for voluntary wearers of filtering face piece respirators. Each wearer of a tight-fitting face piece respirator shall pass either a qualitative or quantitative fit test to assure satisfactory fit prior to initial use and on an annual basis thereafter. Fit testing shall be conducted on a more frequent basis if:

A) A significant weight change (e.g., 20 pounds or more).
B) New significant facial scarring in the area of the face piece seal.
C) Significant dental changes that affect the face/face piece seal.
D) After reconstructive or cosmetic surgery which may affect the face/face piece seal.
E) Any other changes that may interfere with the face piece seal.

11.1 Test Methods

A qualitative or quantitative respirator fit test shall be used to determine the ability of each individual respirator wearer to obtain a satisfactory fit with all respirators, which have tight fitting face pieces.

11.1.1 Qualitative Fit Testing

Half Face and Filtering face piece respirators will be fit-tested by the qualitative fit-test method. This method subjectively determines the ability of the wearer to obtain a satisfactory face piece to face seal. The Safety Professionals are responsible for fit testing using this method.

11.1.2 Quantitative Fit Test

Half mask and full-face piece respirators are quantitatively fit tested using the TSI Porta Count Plus Respirator Fit Tester. Respirator users will wear a fit-test respirator connected to the fit tester. The Porta Count Fit Tester continuously counts particles inside and outside (ambient air) the respirator as the wearer performs a series of exercises. Fit factor of the face piece is determined by comparing the number of particles inside to that outside the respirator. A fit factor of 100 is required to pass a quantitative fit test for a half face respirator and a fit factor of 500 is required to pass a full-face respirator. If the fit factor is less than 100 or 500, this procedure will be repeated using a different size, model or brand of respirator.

12.0 Facial Hair, Eye and Face Protective Devices

Massena Operations policy and OSHA regulation 29 CFR 1910.134(e)(5)(i) require that there be no facial hair interference **with the sealing surface of the respirators. Respirator users with** facial hair shall r*emove the interfering facial hair prior to the use of a tight-fitting face piece.*

If spectacles, goggles, face shield or welding helmet must be worn with a respirator, it shall not interfere with the face piece to face seal.

12.0 Respirator Maintenance

Respirator Maintenance and inspection must be performed regularly. Maintenance shall be carried out on a schedule that ensures that each respirator wearer is provided with a respirator that is clean and in good operating condition. Press and hold the Ctrl key and Left mouse button to access the Link:

Respirator Inspection Procedure

12.1 Cleaning and Sanitizing.

Each reusable respirator must be cleaned and sanitized by the respirator user. A respirator issued for other than continuous personal use by a particular worker, shall be cleaned and sanitized after each use. A respirator issued to solely one person should be cleaned and sanitized after each day's use. See Appendix B-2 below and SINGLE POINT LESSON: Inspection Procedure For 3M Reusable Respirators. Press and hold the Ctrl key and Left mouse button to access the Link:

Respirator Cleaning & Storage Procedures

12.2 Inspection

Respirators shall be inspected by the user immediately prior to each use to ensure that it is in proper working condition. After cleaning and sanitizing, each respirator shall be inspected to determine if it is in proper working condition, if it needs replacement parts or repairs, or if it should be discarded. See SINGLE POINT LESSON: Cleaning & Storage Procedures For 3M Respirators.

Respirators stored for emergency or rescue use shall be inspected at least monthly.

12.3 Repair

Massena Operations employees are not allowed to repair respirators unless specifically trained to do so by the Industrial Hygiene Department.

12.4 Storage

Respirators shall be stored in a manner that will protect them from dust, sunlight, heat, extreme cold, excessive moisture or damaging chemicals. Respirators shall be stored to prevent distortion of rubber or other elastomeric parts. Respirators shall not be stored in such places as lockers and toolboxes unless they are protected from contamination, distortion, and damage.

13.0 Respirator Service Life

Particulate Filters or Filtering face pieces will be discarded as soon as they:

- becomes unsanitary.
- when user experiences increase resistance when breathing
- after 30 days of intermittent use.

Gas and Vapor cartridges must be marked by the user with the date of first use. The gas or vapor cartridges of cartridge respirators will be changed according to the following table:

Use of cartridge respirator	**Cartridge change out policy**
Used less than 1 hour per day	Changed monthly
Used 1 to less than 4 hours per day	Changed weekly
Used 12 or more hours per day	Changed daily

NOTE: It is the intention of the change-out schedule that cartridges will be changed before there is any detectable vapor breakthrough. When the contaminant can be tasted or smelled through the cartridge, work must be suspended, and cartridge must be changed immediately. Additionally, Industrial Hygiene must be notified of premature cartridge failure.

The Respirator Protection Program Administrator determines respirator change-out schedule based on respirator service life recommended by the manufacturer. The 3M Service Life Software is used to determine service life of the 3M respirator devices used on site.

14.0 Powered Air Purifying Respirators (PAPRs)

Powered Air Purifying Respirators (PAPRs) will be provided in situations where greater protection than that of a negative pressure respirator is required or in situations where the Medical Department has prohibited an employee from wearing a half-face negative pressure respirator.

Employees using PAPRs must be trained in the limitations of this type of respiratory protection, in replacement of filters and cartridges, in cleaning and storage, and how to perform flow checks.

PAPRs will be maintained by the owner or the issuing department and must be inspected/serviced monthly. Prior to each use a flow check must be performed based on the manufacturer's recommendations, If the test fails, change the filter cartridge or recharge the battery as appropriate.

15.0 Supplied Air Respirators

Supplied air respirators provide a continuous flow of air from a remote air source to the respirator wearer. These respirators offer protection from airborne contaminates that are not immediately dangerous to life or health (IDLH). These respirators are used at Massena Operations to provide respiratory protection in general purpose applications including heavy and light-duty abrasive blasting and painting applications. These respirators are to be connected to either air compressors or plant air in conjunction with the Allegro Carry all Travel Panel.

Airlines for supplied air respirators cannot exceed 50 feet in length, and the maximum inlet pressure is 125 psi. All supplied air respirators shall be an approved system by NIOSH (see owner's manual for system components) and must be approved by the Massena Operations Industrial Hygienist. Supplied air respirators will be maintained by the Massena Operations Industrial Hygienist and must be inspected/serviced monthly.

16.0 Training

The Massena Operations Industrial Hygienist, and the respirator wearers shall be given adequate training to ensure the proper use of respirators.

16.1 Training Content

To ensure the proper and safe use of a respirator, the minimum training of each respirator wearer shall include the following elements:

A) Discussion of the nature of the airborne hazard that results in a need for worker protection. Not applicable for voluntary wearers of filtering face pieces.
B) The nature, extent, and effects of respiratory hazards to which the person may be exposed.
C) An explanation of why a particular type of respirator has been selected for a specific respiratory hazard.
D) An explanation of the operation, capabilities and limitations of the respirator selected. Explanation of problems involving misusing a respirator
E) Instructions on how to put on the respirator, how it should be positioned on the face, how to set the strap tension, and how to wear it properly.
F) Explanation of conditions that can prevent face piece to face seal.
G) An opportunity for each respirator wearer to handle the respirator, learn how to don and wear it properly, check its seals, and wear it in a safe atmosphere.
H) An explanation of how to maintain, inspect for proper working conditions, and store the respirator.
I) How to determine when the cartridges need to be replaced.

J) Regulation concerning respirator use. For voluntary wearers of filtering face piece respirators, a copy of Appendix D of the OSHA standard 29 CFR 1910.134 must be signed.

16.2 Refresher Training

Refresher training shall be conducted at least on an annual basis for all respirator wearers. The content of the training may vary depending on the frequency of respirator use and type of respirator worn. As a minimum, training shall include proper donning procedures, Maintenance and care of assigned respirators, the hazards for which the respirators are assigned, and the limitations of the respirators used.

17.0 Recordkeeping

Medical evaluation record of respirator users will be maintained in employee's medical file in accordance with EHS STD 18.1. Respirator fit test record will be maintained by the Industrial Hygiene department and inputted into the Respiratory Fit Testing Database. The Safety Training Professional will maintain Respiratory Protection training records in the appropriate training record database. Per AES 18.1.1 Respirator Protection requires these records be maintained for 40 years.

18.0 Definitions

Air-purifying Respirator is a respirator designed to remove contaminates from ambient air prior to its inhalation.

Approved Respirator is a respirator approved by the Industrial Hygiene department and has been assigned a stock item number.

Filtering face piece respirator (dust mask) is a negative pressure particulate respirator with a filter as an integral part of the face piece or with the entire face piece composed of the filtering medium. Refers to what is commonly called a “disposable dust mask.”

Immediately Dangerous to Life or Health (IDLH) is any hazardous atmosphere that poses an immediate threat to life or health or that poses an immediate threat of severe exposure to contaminants, such as radioactive materials, which are likely to have adverse delayed effects on health.

Negative pressure respirator is a respirator in which the air pressure inside the respiratory inlet cover is positive in relation to the air pressure of the outside atmosphere during exhalation and inhalation.

Powered Air-Purifying Respirator (PAPR) is a positive-pressure air purifying device incorporating a half-face piece, full face piece or head covering which provides the wearer with air filtered through a powered filtering unit, comprising of a filter or filters, and an electrically operated blower unit.

Respirator is a device designed to protect the user from inhalation of harmful atmospheres.

Respiratory Protection Administration is a person selected from safety, industrial hygiene, or other qualified personnel to administer and coordinate the overall plant respiratory protection program.

Tight fitting face piece is a respirator inlet covering that forms a complete seal with the face. Typically, this is half-face piece or full-face piece respirators.

Voluntary use of filtering face piece respirators refers to use of a respirator where a documented exposure assessment verifies exposures are less than 50% of the OEL and therefore not significant and respiratory protection is not required. Voluntary use of filtering face piece respirators is exempt select sections of the program. In order to qualify for exemption from select sections of this document, there must be written documentation that the exposure for which a person chooses to wear a filtering face piece respirator is not significant. This may include a valid qualitative exposure assessment and/or applicable short term or full shift sampling data.

User Seal Check – A positive or negative pressure check conducted by the wearer to determine if the respirator is properly seated to the face.

19.0 Reference

OSHA 29 CFR 1910.134
OSHA 29 CFR 1910.1025 Appendix D
ANSI Z88.2 “Respiratory Protection”
AES 18.1.1 Respiratory Protection, January 2017
WWHS #16 “Respirator Medical Surveillance Protocol”
American Industrial Hygiene Association “Respiratory Protection – a Manual and Guideline.”
Compress Gas association CGA G-7.1 “Commodity Specifications for Air

How to obtain a copy of 29 CFR 1910.134 OSHA Respiratory Protection Standard.

1. A hard copy of the OSHA standard can be obtained from any member of the Safety & Industrial Hygiene Department.

2. An electronic copy is available at the following Web Site:

   Http://www.osha-slc.gov/OshStd_toc/OSHA_Sted_toc_1910_SuBPART_I.htm

Appendix A to § 1910.134: Fit Testing Procedures (Mandatory)

Part I. OSHA-Accepted Fit Test Protocols

A. Fit Testing Procedures -- General Requirements

The employer shall conduct fit testing using the following procedures. The requirements in this appendix apply to all OSHA-accepted fit test methods, both QLFT and QNFT.

1. The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.

2. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, because it is only a review.

3. The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.

4. The test subject shall be instructed to hold each chosen face piece up to the face and eliminate those that obviously do not give an acceptable fit.

5. The more acceptable face pieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in the following item A.6. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.

6. Assessment of comfort shall include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:

   (a) Position of the mask on the nose

   (b) Room for eye protection

(c) Room to talk

(d) Position of mask on face and cheeks

7. The following criteria shall be used to help determine the adequacy of the respirator fit:

(a) Chin properly placed;

(b) Adequate strap tension, not overly tightened;

(c) Fit across nose bridge;

(d) Respirator of proper size to span distance from nose to chin;

(e) Tendency of respirator to slip;

(f) Self-observation in mirror to evaluate fit and respirator position.

8. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks described in Appendix B-1 of this section or those recommended by the respirator manufacturer which provide equivalent protection to the procedures in Appendix B-1. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another face piece shall be selected and retested if the test subject fails the user seal check tests.

9. The test shall not be conducted if there is any hair growth between the skin and the face piece sealing surface, such as stubble beard growth, beard, mustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.

10. If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties.

11. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retested.

12. Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.

13. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use, which could interfere with respirator fit.

14. Test Exercises.

    (a) The following test exercises are to be performed for all fit testing methods prescribed in this appendix, except for the CNP method. A separate fit testing exercise regimen is contained in the CNP protocol. The test subject shall perform exercises, in the test environment, in the following manner:

        (1) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.

        (2) Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.

        (3) Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.

        (4) Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).

        (5) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.

        (6) ***Rainbow Passage***

            When the sunlight strikes raindrops in the air, they act

like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

(7) Grimace. The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT)

(8) Bending over. The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist. (8) Normal breathing. Same as exercise (1).

(b) Each test exercise shall be performed for one minute except for the grimace exercise, which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

B. Qualitative Fit Test (QLFT) Protocols

1. General

(a) The employer shall ensure that persons administering QLFT are able to prepare test solutions, calibrate equipment and perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order.

(b) The employer shall ensure that QLFT equipment is kept clean and well

maintained so as to operate within the parameters for which it was designed.

2. Isoamyl Acetate Protocol

[REMOVED] – Not used at Massena Operations.

3. Saccharin Solution Aerosol Protocol

Bitrex™ (Denatonium Benzoate) will ONLY be used if the test subject cannot taste the Bitrex™ (Denatonium Benzoate) Taste Threshold Screening.

The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Taste threshold screening. The saccharin taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of saccharin.

(1) During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches in diameter by 14 inches tall with at least the front portion clear and that allows free movements of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.

(2) The test enclosure shall have a 3/4-inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(3) The test subject shall don the test enclosure. Throughout the threshold-screening test, the test subject shall breathe through his/her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a sweet taste.

(4) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the threshold check solution into the enclosure. The nozzle is directed away from the nose and mouth of the person. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(5) The threshold check solution is prepared by dissolving 0.83 gram of sodium saccharin USP in 100 ml of warm water. It can be prepared by putting 1 ml of the fit test solution (see (b)(5)

below) in 100 ml of distilled water.

(6) To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then released and allowed to fully expand.

(7) Ten squeezes are repeated rapidly and then the test subject is asked whether the saccharin can be tasted. If the test subject reports tasting the sweet taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

(8) If the first response is negative, ten more squeezes are repeated rapidly, and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

(9) If the second response is negative, ten more squeezes are repeated rapidly, and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

(10) The test conductor will take note of the number of squeezes required to solicit a taste response.

(11) If the saccharin is not tasted after 30 squeezes (step 10), the test subject is unable to taste saccharin and may not perform the saccharin fit test.

Note to paragraph 3. (a): If the test subject eats or drinks something sweet before the screening test, he/she may be unable to taste the weak saccharin solution.

(12) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(13) Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

(14) The nebulizer shall be thoroughly rinsed in water, shaken dry, and refilled at least each morning and afternoon or at least every four hours.

(b) Saccharin solution aerosol fit test procedure.

(1) The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

(2) The fit test uses the same enclosure described in 3. (a) above.

(3) The test subject shall don the enclosure while wearing the respirator selected in section I. A. of this appendix. The respirator shall be properly adjusted and equipped with a particulate filter(s).

(4) A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(5) The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 ml of warm water.

(6) As before, the test subject shall breathe through the slightly open mouth with tongue extended, and report if he/she tastes the sweet taste of saccharin.

(7) The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of saccharin fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test. A minimum of 10 squeezes is required.

(8) After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.

(9) Every 30 seconds the aerosol concentration shall be replenished using one half the original number of squeezes used initially (e.g., 5, 10 or 15).

(10) The test subject shall indicate to the test conductor if at any time during the fit test the taste of saccharin is detected. If the test subject does not report tasting the saccharin, the test is passed.

(11) If the taste of saccharin is detected, the fit is deemed unsatisfactory, and the test is failed. A different respirator shall

be tried, and the entire test procedure is repeated (taste threshold screening and fit testing).

(12) Since the nebulizer has a tendency to clog during use, the test operator must make periodic checks of the nebulizer to ensure that it is not clogged. If clogging is found at the end of the test session, the test is invalid.

4. BitrexTM (Denatonium Benzoate) Solution Aerosol Qualitative Fit Test Protocol

The Bitrex™ (Denatonium benzoate) solution aerosol QLFT protocol uses the published saccharin test protocol because that protocol is widely accepted. Bitrex™ is routinely used as a taste aversion agent in household liquids which children should not be drinking and is endorsed by the American Medical Association, the National Safety Council, and the American Association of Poison Control Centers. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Taste Threshold Screening.

The Bitrex™ taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of Bitrex™.

(1) During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches (30.5 cm) in diameter by 14 inches (35.6 cm) tall. The front portion of the enclosure shall be clear from the respirator and allow free movement of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.

(2) The test enclosure shall have a \3/4\ inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(3) The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his or her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a bitter taste

(4) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the Threshold Check Solution into the enclosure. This Nebulizer shall be clearly marked

to distinguish it from the fit test solution nebulizer.

(5) The Threshold Check Solution is prepared by adding 13.5 milligrams of Bitrex™ to 100 ml of 5% salt (NaCl) solution in distilled water. Available to purchase already prepared by 3M – Sensitivity Solution (FT-31).

(6) To produce the aerosol, the nebulizer bulb is firmly squeezed so that the bulb collapses completely and is then released and allowed to fully expand.

(7) An initial ten squeezes are repeated rapidly and then the test subject is asked whether the Bitrex can be tasted. If the test subject reports tasting the bitter taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

(8) If the first response is negative, ten more squeezes are repeated rapidly, and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

(9) If the second response is negative, ten more squeezes are repeated rapidly, and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

(10) The test conductor will take note of the number of squeezes required to solicit a taste response.

(11) If the Bitrex is not tasted after 30 squeezes (step 10), the test subject is unable to taste Bitrex and may not perform the Bitrex fit test.

(12) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(13) Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

(14) The nebulizer shall be thoroughly rinsed in water, shaken to dry, and refilled at least each morning and afternoon or at least every four hours.

(b) Bitrex Solution Aerosol Fit Test Procedure.

(1) The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

(2) The fit test uses the same enclosure as that described in 4. (a) above.

(3) The test subject shall don the enclosure while wearing the respirator selected according to section I. A. of this appendix. The respirator shall be properly adjusted and equipped with any type of particulate filter(s).

(4) A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(5) The fit test solution is prepared by adding 337.5 mg of Bitrex to 200 ml of a 5% salt (NaCl) solution in warm water. Available to purchase already prepared by 3M – Fit Test Solution (FT-32).

(6) As before, the test subject shall breathe through his or her slightly open mouth with tongue extended and be instructed to report if he/she tastes the bitter taste of Bitrex.

(7) The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of the fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test.

(8) After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.

(9) Every 30 seconds the aerosol concentration shall be replenished using one half the number of squeezes used initially (e.g., 5, 10 or 15).

(10) The test subject shall indicate to the test conductor if at any time during the fit test the taste of Bitrex is detected. If the test subject does not report tasting the Bitrex, the test is passed.

(11) If the taste of Bitrex is detected, the fit is deemed unsatisfactory, and the test is failed. A different respirator shall be tried, and the entire test procedure is repeated (taste threshold screening and fit testing).

5. Irritant Smoke (Stannic Chloride) Protocol

[REMOVED] – Not used at Massena Operations.

C. Quantitative Fit Test (QNFT) Protocols

[REMOVED] – Only Conducted by IH Department and Emergency Response Technicians.

Respirators that are <u>not shared</u> may be cleaned using a method sufficient to adequately remove contaminants, perspiration and skin oils from the face piece. In many cases, thorough wiping with a towelette or alcohol wipe will be sufficient. Gross contamination by toxic materials may require using the procedures, below, or disposal of the respirator.

Shared respirators must be cleaned, between users, following the procedure below. Fit-test respirators may be cleaned using towelettes or alcohol wipes between fit tests, but prior to storage must be cleaned using the procedure below.

Respirator Cleaning Procedures
(Mandatory Appendix B-2 to the OSHA standard)

A. Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure- demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
B. Wash components in warm (43 deg. C [110 deg. F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.

C. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain.

D. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
   1. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg. C (110 deg. F); or,
   2. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium

and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43 deg. C (110 deg. F); or,

3. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.

E. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on face pieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

F. Components should be hand-dried with a clean lint-free cloth or air-dried.

G. Reassemble face piece, replacing filters, cartridges, and canisters where necessary.

H. Test the respirator to ensure that all the components work properly.

Revision History		
Date of Revision	**Revision Description**	**Reviewed/Approved by:**
06-24-2013	New document	T. Kass, L. Macaulay
05-30-2017	Revised, Removed East Plant	H. Palmer, N. Rufa
02-22-2023	Reviewed	H. Palmer
06-28-2024	Reviewed	H. Palmer
12-31-2025	Reviewed	H. Palmer

This is the OSHA non-mandatory Appendix D to §1910.134

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, of if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirator's limitations.

2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.

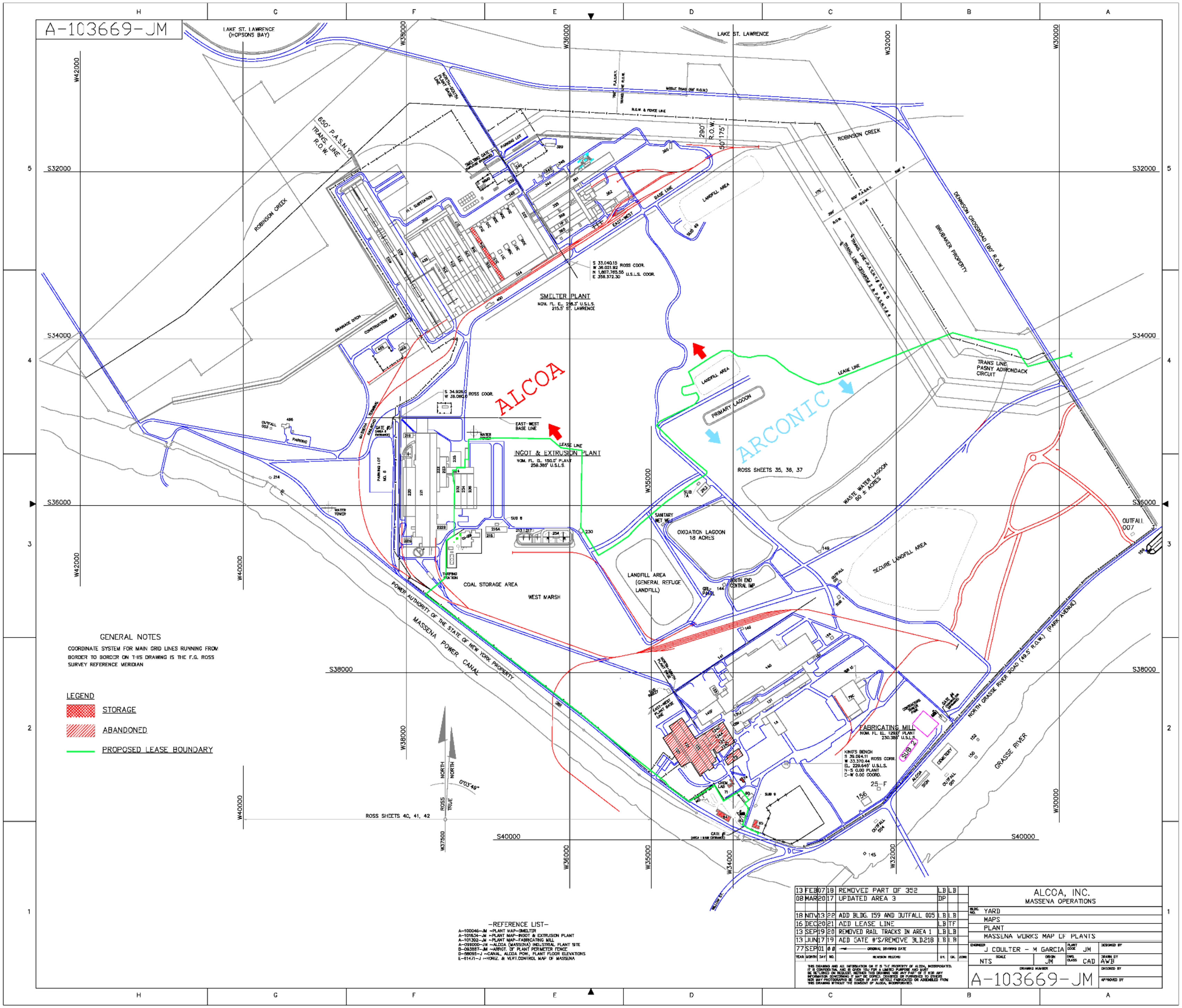
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.

4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

I have had this document read and explained to me. _____

_____date

HMP_202406282


A-103669-JM
LAKE ST. LAWRENCE (HOPSONS BAY)
LAKE ST. LAWRENCE
ROBINSON CREEK
650' P.A.S.N.Y. TRANS. LINE R.O.W.
SMELTER PLANT
NOM. FL. EL. 258.3' U.S.L.S. 215.5' ST. LAWRENCE
ALCOA
ARCONIC
LEASE LINE
INGOT & EXTRUSION PLANT
NOM. FL. EL. 150.0' PLANT 258.385' U.S.L.S.
EAST-WEST BASE LINE
LANDFILL AREA
PRIMARY LAGOON
ROSS SHEETS 35, 36, 37
WASTE WATER LAGOON 60 ± ACRES
OXIDATION LAGOON 18 ACRES
LANDFILL AREA (GENERAL REFUSE LANDFILL)
SECURE LANDFILL AREA
COAL STORAGE AREA
WEST MARSH
TRANS. LINE PASNY ADIRONDACK CIRCUIT
DENNISON CROSSROAD (66' R.O.W.)
BRUBAKER PROPERTY
POWER AUTHORITY OF THE STATE OF NEW YORK PROPERTY
MASSENA POWER CANAL
FABRICATING MILL
NORTH GRASSE RIVER ROAD (49.5' R.O.W.) (PARK AVENUE)
GRASSE RIVER
OUTFALL 007
ROSS SHEETS 40, 41, 42
GENERAL NOTES
COORDINATE SYSTEM FOR MAIN GRID LINES RUNNING FROM BORDER TO BORDER ON THIS DRAWING IS THE F.G. ROSS SURVEY REFERENCE MERIDIAN
LEGEND
STORAGE
ABANDONED
PROPOSED LEASE BOUNDARY
-REFERENCE LIST-
A-100046-JM ~PLANT MAP-SMELTER
A-101634-JM ~PLANT MAP-INGOT & EXTRUSION PLANT
A-101392-JM ~PLANT MAP-FABRICATING MILL
A-099000-JM ~ALCOA (MASSENA) INDUSTRIAL PLANT SITE
B-093887-JM ~ARRGT. OF PLANT PERIMETER FENCE
D-69095-J ~CANAL, ALCOA POW., PLANT FLOOR ELEVATIONS
E-81471-J ~HORIZ. & VERT.CONTROL MAP OF MASSENA
13 FEB 07 18 REMOVED PART OF 352 LB LB
08 MAR 20 17 UPDATED AREA 3 DP
18 NOV 13 22 ADD BLDG. 159 AND OUTFALL 005 LB LB
16 DEC 20 21 ADD LEASE LINE LB TF
13 SEP 19 20 REMOVED RAIL TRACKS IN AREA 1 LB LB
13 JUN 17 19 ADD GATE #'S/REMOVE BLD.218 LB LB
77 SEP 01 00 ORIGINAL DRAWING DATE
YEAR MONTH DAY NO. REVISION RECORD DR. CK. ZONE
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ENGINEER J COULTER - M GARCIA
PLANT CODE JM
SCALE NTS
ORIGIN JM
DWG. CLASS CAD
DRAWN BY AWB
DRAWING NUMBER A-103669-JM

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Alcoa USA - Massena Operations
Authority to Proceed Permit

The Contractor shall submit this plan having completed the Project Info sheet as well as items #8 - #16 completed prior to the Pre-Construction Conference.

Revised: February 2024

Project Information

Project Name:	
Project Location:	
Contract Number:	
Contractor:	
Contractor Email Address:	
Contractor Field Superindendant:	
Jobsite Cell Phone #:	
Home Office Phone #:	
Address for Correspondence:	
Description of Tasks to be Completed Under this Plan:	
Plan Date	
Supersedes Plan Dated	
Plan Prepared By	
Alcoa Project Leader / Phone #	

Pre-Construction Conference: Steps 1-4

Completion Status	*Choose from dropdown menu*

	1. Review Scope of Work *(Project Leader to Review the Written Scope of Work)*

	2. Review Site Conditions Document *(Contractor must have a field office copy available)*

	3. Project Schedule:
	Start Date:
	Estimated Completion Date:

	4. Workforce Requirements:	
	# of employees:	
	Orientation Scheduled for:	
	Sub-contractors:	

Pre-Construction Conference: Steps 5 and 6

Completion Status	*Choose from dropdown menu*

	5. Materials Management
	What company will be providing material?
	Where will the material be stored?
	Notes:

	6. Environmental Issues
	Are there issues related to water, waste, spills, disposal or other concerns that could impact this project or environmental compliance?

Pre-Construction Conference: Step 7

Completion Status	*Choose from dropdown menu*

	7. Industrial Hygiene Issues
	(Identify any need for further review or IH sampling)

Project Steps and EHS Hazard Assessment

• Please see example Project Steps sheet for formatting
• Use as many sheets as required

JOB STEP	DETAILS OF CRITICAL RISK/POTENTIAL DANGER	DETAILS OF MEASURES TO ELIMINATE DANGER	SPECIFIC STOP CRITERIA
Detailed steps of the job in sequence ***(BOLD if Critical)***	*Provide detail on potential accidents or hazards based on dropdown choice*	*Provide detailed measures of how dangers will be eliminated*	*Stop criteria danger not listed in dropdown*

8. List materials that will be used requiring SDS		
Exact Product Name	**Manufacturer**	**Alcoa Part #**

9. Waste Removal/Disposal

List types of waste that will be generated and the disposal/container method.
ANY uncertainties as to how the waste must be handled, contact the Environmental Department.
If PCB's are a potential source, consult with Environmental Department prior to this Safety Work Plan review.

Types of Waste Generated	Contain Type/Estimated Quantity	Alcoa SPA for Waste Containers (Name)

10. Select All Required Safety Equipment

Check All That Apply

☐	Safety Glasses Z87.1+	☐	Gloves (Leather)
☐	Metatarsal Boots	☐	Respiratory Protection
☐	Hearing Protection	☐	Personal Danger Locks / Tags
☐	Lime Green Hard Hat	☐	Trench Shoring / Certified Box
☐	Face Shields (High Impact)	☐	Fire Extinguishers
☐	Cell Phone	☐	Men Working or other Signs
☐	Confined Space Meter	☐	Barricades (wood)
☐	Harnesses and Lanyards	☐	Orange Safety Fence
☐	Tyvek Suits or coveralls	☐	Concrete Safety Barriers
☐	Derailer for RR Isolation	☐	Yellow Caution Tape
☐	Two Way Radios	☐	Electrical Arc Flash PPE
☐	Reflective Hi-Visibility Vests	☐	Welding Flash Curtains
☐	FR Clothing	☐	GFCI
☐	Spill Kit	☐	Warning Line System

11. List All Required Special Tools and Equipment

List all tools and equipment unique to job below

1)	6)
2)	7)
3)	8)
4)	9)
5)	10)

12. List All Required Permits

All permits will be issued by the Alcoa Project Leader (as requested by the Contractor)

☐	Confined Space	☐	Roof Work
☐	Hot Work	☐	Digging Permit
☐		☐	
☐		☐	
☐		☐	

13. Rescue From a Fall

If this plan includes fall protection, what is the plan to rescue a suspended worker after a fall? (If not, type N/A)

14. List All Required Training

Documentation that employees have been trained according to the applicable OSHA standard shall be submitted to the Contractor Safety Office

Check all that apply

☐	Alcoa Orientation (Given by Alcoa)	☐	Hearing Conservation
☐	Confined Space	☐	Respiratory Protection
☐	Lock, Tag, Verify	☐	Hazard Communication
☐	Fall Protection / Prevention	☐	Electrical - High Voltage
☐	Excavation - Trenching	☐	Elec Low Voltage Awareness
☐	Aerial Lift	☐	Elec Low Voltage Qual. Person
☐	Fork Truck	☐	Elec Arc Flash Protection
☐	NYS Crane Certification	☐	Scaffold Erection
☐	Qualified Signal Person	☐	Asbestos Handler
☐	Qualified Rigger	☐	Asbestos Awareness
☐	Coal Tar Pitch Awareness	☐	Lead Worker
☐	Chlorine Awarness	☐	Lead Awareness
☐	Beryllium Awareness	☐	Welding Certification
☐	PCB Awareness	☐	40 Hr Hazwoper
☐	Potroom Training	☐	Powder Actuated Tools
☐	Hot Work	☐	
☐		☐	
☐		☐	
☐		☐	
☐		☐	

15. List Area of Competency and Competent Person

As required by OSHA standards -
Check all applicable categories and designate an individual

	Area of Competency	Competent Person
☐	Excavation	
☐	Scaffold Inspection	
☐	Asbestos Contractor Supervisor	
☐	Fall Protection	
☐	Confined Space (Entry Team Leader)	
☐	Lead Hazard Control	

16. Designation of Contractor Responsible Person

Individual shall possess the detailed knowledge to fulfill the EHS obligations under this contract and as outlined in Massena Operations Contractor, Subcontractor and Contracted Services Environmental Health and Safety Process

Name:
Signature:

Additional Job Details

17. Location of Evacuation Meeting Point:	

18. Security Gate Sign-In Info:	Building Number (Work Area):		
	Sign-In Key:		

19. Weekly Tool Box Talk will be held on (Day of Week):	

20. Complete Job Site Walk Through At Conclusion of Pre-Construction Meeting

21. Plan Reviewed (To be completed at the Pre-Construction Conference)		
Note: Any changes in the Scope of Work or actual conditions encountered will require an update and subsequent review of this plan		

Contractor Management:		
Name:	Signature:	Date:
Contractor Responsible Person:		
Name:	Signature:	Date:
Alcoa Project Leader:		
Name:	Signature:	Date:
Alcoa Responsible Person:		
Name:	Signature:	Date:
Alcoa Environmental Dept:		
Name:	Signature:	Date:

Additional Pre-Construction Conference Attendees		
Name:	Signature:	Date:
Name:	Signature:	Date:
Name:	Signature:	Date:
Name:	Signature:	Date:
Name:	Signature:	Date:
Name:	Signature:	Date:

22. List Participants in Pre-Job Safety Meeting

To be signed by any individual who **did not** attend the Pre-Construction Conference **after** reviewing the saftey work plan. The individual **may not** beginning work on this project until this is complete.

Name:	Signature:	Date:
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Additional Notes

Although Alcoa and the contractor may have worked jointly to complete this document, it does not relieve the contractor from the contractual obligation to comply with all Massena Operations EHS rules and other Regulatory Requirements.

The contractor is reminded that at least one documented Tool Box Talk and Jobsite Audit shall be performed by the contractor and delivered to the Alcoa Responsible Person on a Weekly basis.

An electronic version of this form is available:
1. On Alcoa's O: Drive at:
O:\Infoshare\Contractor\General\Forms\Contractor Safety Work Plan / Permit to Work.
2. By sending an email request to: jerry.fregoe@alcoa.com

Document Control

Date of Review:	4/20/26	Date of Next Review:	4/20/27
Reviewed By:	Jason Zembek		
Approved by (SPA or Manager):	Jason Zembek		
NOTE: Non-SSOP documents are to be reviewed in conjunction with the ASAT corporate schedule.			
Revision Table:			
Revision Made by:	Date:	Describe Revision Made:	
Jason Zembek	4/20/26	Added Revision Table	