Alcoa

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MASSENA OPERATIONS

SITE CONDITIONS PACKAGE

Revised May 9th., 2021

ALCOA USA Corp.

Massena Operations (MO) Site Conditions Package

Index

Alcoa USA Corp.
Site Conditions for Massena Operations

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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.

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

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

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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.

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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

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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.

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3.1.9 **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).

3.1.10 **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.

3.1.11 **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.

3.1.12 **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.

3.1.13 **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

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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.

3.1.14 **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.

3.1.15 **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.

3.1.16 **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.

3.1.17 **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.

3.1.18 **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.

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3.1.19 **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.

3.1.20 **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")

3.1.21 **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.

3.1.22 **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.

3.1.23 **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.

3.1.24 **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.

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3.1.25 **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.

3.1.26 **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.

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- 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.)

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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

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- 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.

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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.

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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.
<u>Subcontractors must also complete this process and may not be used without specific permission from the Procurement Department.</u>

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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.

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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.

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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

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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.

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- 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

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I. PURPOSE

Asbestos has been shown to cause lung cancer, asbestosis and mesothelioma. OSHA, EPA, and New York State Departments of Labor, Health and Environmental Conservation have established strict regulations affecting the removal, handling and disposal of asbestos. All Alcoans and contractors must comply with all laws and regulations concerning the handling, removal and disposal of asbestos. This document is intended to guide Massena Operations' personnel through the maze of regulatory requirements to ensure that asbestos is handled removed and disposed of in a safe and environmentally acceptable manner.

II. DEFINITION OF ASBESTOS

Asbestos is a general term for a number of naturally occurring hydrated fibrous mineral silicates crystallized in a narrow vein as parallel bundles of extremely minute fibers. Asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos and any of these minerals that has been chemically treated and or altered. Any physical disturbance of these compact bundles generally breaks them down into individual fibers or finer bundles.

Asbestos was a widely used, mineral-based fire and chemical resistant material. Depending upon the chemical composition, fibers may range from course too silky. The properties, which made asbestos valuable to industry, are its strength, flexibility, heat and chemical resistance and good frictional properties. It has been used in pipe and furnace insulation, floor tile, brake shoes, electrical insulation, and welding blankets

The current use of asbestos in the United States is limited and has not been widely used since the mid 1970s. Massena Operations prohibits the purchase and use of any asbestos containing material.

III. HEALTH AFFECTS OF ASBESTOS

The adverse health effects associated with asbestos exposure have been extensively studied for many years. Results of these studies and epidemiological investigations have demonstrated that inhalation of asbestos fibers may increase the risk of developing lung cancer, mesothelioma or asbestosis.

The majority of people who have died from asbestos were asbestos workers. These workers were frequently exposed to high concentrations of asbestos fibers every day with little or no protection. The asbestos abatement workers today follow specific work procedures and wears appropriate protective equipment to minimize exposure.

IV. 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.

V. RESPONSIBILITIES

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

B. Industrial Hygiene/Environmental
Indentify 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, Nathan Rufa and Jim Tryon are New York State Licensed Asbestos Building Inspectors.

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. Massena does not have nor require Asbestos Abatement Supervisors and is Contractors only.

F. Plant Protection
The ERT 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. Massena does not have nor require Certified Asbestos Handlers and is Contractors only.

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

VI. 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.

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, brake and clutch pads, 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/Environmental Department to arrange for sampling. DO NOT COLLECT SAMPLES.

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

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

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

4. 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 EMLS Analytical in Cinaminson, NJ, a New York State ELAP and AIHA accredited laboratory. Personal air samples are sent to Clark Testing in Pittsburgh. 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
- Label affixed to the material
- Identify locations of asbestos containing material on a print
- A sign posted on the door of a room containing numerous sources of asbestos containing material.
- Asbestos bulk database

VII. 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. A Certified 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:

C. Asbestos Handler
Any person who, within a work area, removes, encapsulates or disturbs friable asbestos, or who handles asbestos material in any manner which may result in the release of asbestos fiber, and whose duties are not otherwise described below shall possess a valid handler certificate. None at Alcoa Massena Operations, Contractors only.

D. Restricted Asbestos Handler - Allied Trades
Any person performing any limited or special tasks in preparation for, or ancillary to, an asbestos project, such as a carpenter, electrician plumber or similar occupation, or any other person who may incidentally disturb asbestos during the course of any employment, shall possess a valid Restricted Asbestos Handler - Allied Trades or an Asbestos Handlers certificate. None at Alcoa Massena Operations, Contractors only.

E. 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. None at Alcoa Massena Operations, Contractors only.

F. 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.

G. Operation and Maintenance
Any person who performs operations, maintenance and repair activities of small scale and short duration which may disturb asbestos or asbestos material shall possess a valid Operations and Maintenance of Asbestos Handlers certificate. None at Alcoa Massena Operations, Contractors only.

H. Asbestos Supervisor
Any person who performs supervision of persons (other than authorized visitors) permitted to enter the work area, shall possess a valid supervisor certificate. None at Alcoa Massena Operations, Contractors only.

I. Project Designer
Any person who plans the scope, timing phasing and/or remediation methods to be utilized on any asbestos project shall possess a valid Project Designer certificate. NYS Project Designers are required to develop work plans and submit variances to the NYS DOL. None at Alcoa Massena Operations, Contractors only.

J. Project Monitor
Any person, other than an asbestos abatement contractor, or a 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.

K. 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.

VIII. MEDICAL MONITORING

All persons who possess a current New York State Asbestos Handler, Asbestos Supervisor, Asbestos Inspector or Project Designer 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 Protocol.

IX. FIBER RELEASES

If asbestos-containing material has been dislodge or discovered, immediately contact the Emergency Response at West at 315-705-2800. Plant Protection will responded and evaluate the situation and implement appropriate controls. Only persons with the proper training, certification and equipment can clean up asbestos containing debris and effect repairs.

X. WORK PRACTICES

Refer to Massena Operation's Safety and Health Procedures Manual for Removal and Handling for Asbestos for details. All Removal and Handling is conducted by a NYS Licensed Contractor.

XI. ASBESTOS ABATEMENT PRIORITIES

Massena Operations is an old plant with asbestos found throughout. Asbestos containing material is found in furnace insulation, pipe insulation and covering , galbestos siding, transite wall board, roofing felt and flashing, gaskets vinyl floor tile and in wire insulation. Massena Operations will manage asbestos containing material in place and will remove this material when:

A. Maintenance and renovation activities may disturb asbestos
B. Asbestos material is damaged and cannot be repaired
C. The building will be demolished

XII. WASTE DISPOSAL

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

XIII. TRANSFER OR SALE OF ALCOA PROPERTY OR PURCHASE OF NEW PROPERTY EQUIPMENT OR SUPPLIES

Since Alcoa loses control of asbestos maintenance program when building and equipment are sold to others it is in the Company's best long term interest (i.e., minimization of potential future liability exposure, consistency with Alcoa's values) to removal all friable asbestos before sale. Accordingly the sponsoring manager is required to have the material removed and replace before the transfer is complete. Likewise, when property or equipment is purchase, the seller is required to identify all asbestos. The sponsoring manager is encouraged the have the material removed and replaced before the transfer is completed. This will prevent future problems for Alcoa, since the asbestos will ultimately have to be remove and disposed of as a special, or perhaps a hazardous waste. Massena Operations will not purchase any operating supplies or spare parts containing asbestos.

XIV. BUILDING DEMOLITION

An asbestos survey shall be conducted prior to advertising for bids or contracting or commencing any demolition work on a building constructed before January 1, 1980. The asbestos survey shall be conducted by a NYS licensed inspector and shall comply with the requirements of NYS Code Rule 56 and NESHAPS

XV. RECORDKEEPING

Alcoa shall maintain records of all employee asbestos related exposure measurements and medical surveillance data for the period of employment plus 30 years. Any objective data used to represent exposure measurements by Alcoa will be maintained for the period or reliance upon it. All employee asbestos related training records will be maintained for a period of one year beyond the last date of employment.

Alcoa shall make available, upon written request, any asbestos related records maintained to the Assistant Secretary of the United States Department of Labor, and or the individual employee or his/her designated representative in accordance with 29 CFR 1910.1020 (a).

XVI. REFERENCES

- Alcoa Asbestos Management Procedure Revised 2/93
- Alcoa World Wide Heath Protocols
- Massena Operation's Safety and Health Procedures Manual for Removal and Handling for Asbestos
- CFR 1910.1001 OSHA General Industry Standard for Occupational Exposure to Asbestos
- CFR 1926.1101 OSHA Construction Standard for Occupational Exposure to Asbestos
- OSHA Instruction CPL 2-2.63 Inspection Procedures for Occupational Exposure to Asbestos
- EPA Interpretive Rule of Roof Removal Operations Under National Emissions Standards for Hazardous
- Air Pollutants (Asbestos) June 17, 1994.
- New York State Industrial Code Rule 56, as Amended Effective November 9, 1994
- Title 6 New York State Code Part 360
- CFR 61 Subparts A and M(NESHAPS).

EMERGENCY MEDICAL AGREEMENT

This Emergency Medical Agreement (this "**Agreement**"), is made and entered into on {Date}, by and between **ALCOA INC.**, a Pennsylvania corporation ("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 Medical Department, First Aid Stations, the services of its medical staff and ambulance services 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, burns over more than 5% of total body surface area, 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 Medical Person** means a Company employee or an independent contractor hired by Company who is designated by Company to provide Emergency Medical Treatment and such Company Medical Person is licensed or certified to provide such 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 Medical Person, in his or her sole discretion, determines that Seller's Employee has suffered a Medical Emergency while on the Premises, a Company Medical Person 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 either call a public ambulance or public conveyance 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 Medical Person, in his or her sole discretion, determines that Seller's Employee has *not* suffered a Medical Emergency, a Company Medical Person 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 Medical Person, 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.

3.5 Any reading of x-rays that are needed as part of Emergency Medical Treatment and taken by a Company Medical Person will be provisional. Company will take reasonable efforts to send any x-rays taken by any Company Medical Person to Seller's Medical Provider or any physician or medical facility that may subsequently treat Seller's Employee, but only if Seller or Seller's Employee so notifies Company of the appropriate physician or medical facility to send the x-rays. Company, however, will not be responsible for or liable for a failure of Seller's Medical Provider and/or Seller's Employee's physician or medical facility to receive the x-rays.

Section 4: Use of Ambulance Service

4.1 If a Company Medical Person determines that Seller's Employee requires emergency transportation to a physician, hospital, Company First Aid Station, or any other medical facility, and no public ambulance, public conveyance or vehicle owned by Seller is immediately available for the transportation, Company may furnish transportation to the

nearest medical facility to the Premises, if a suitable vehicle is available after being notified that a Medical Emergency exists and the nature of the transportation desired.

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 INC.**
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 top coat 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, that 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

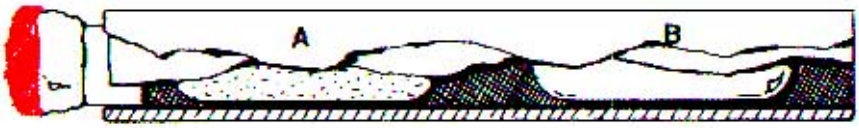
1. Use disposable impervious gloves. Vinyl gloves are recommended, but other thin, impervious, disposable gloves are acceptable.
2. Collect any paint flakes generated by this cutting (including any adhered to the knife blade) with a dampened paper towel and retain the towel in a small zippered plastic 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*.

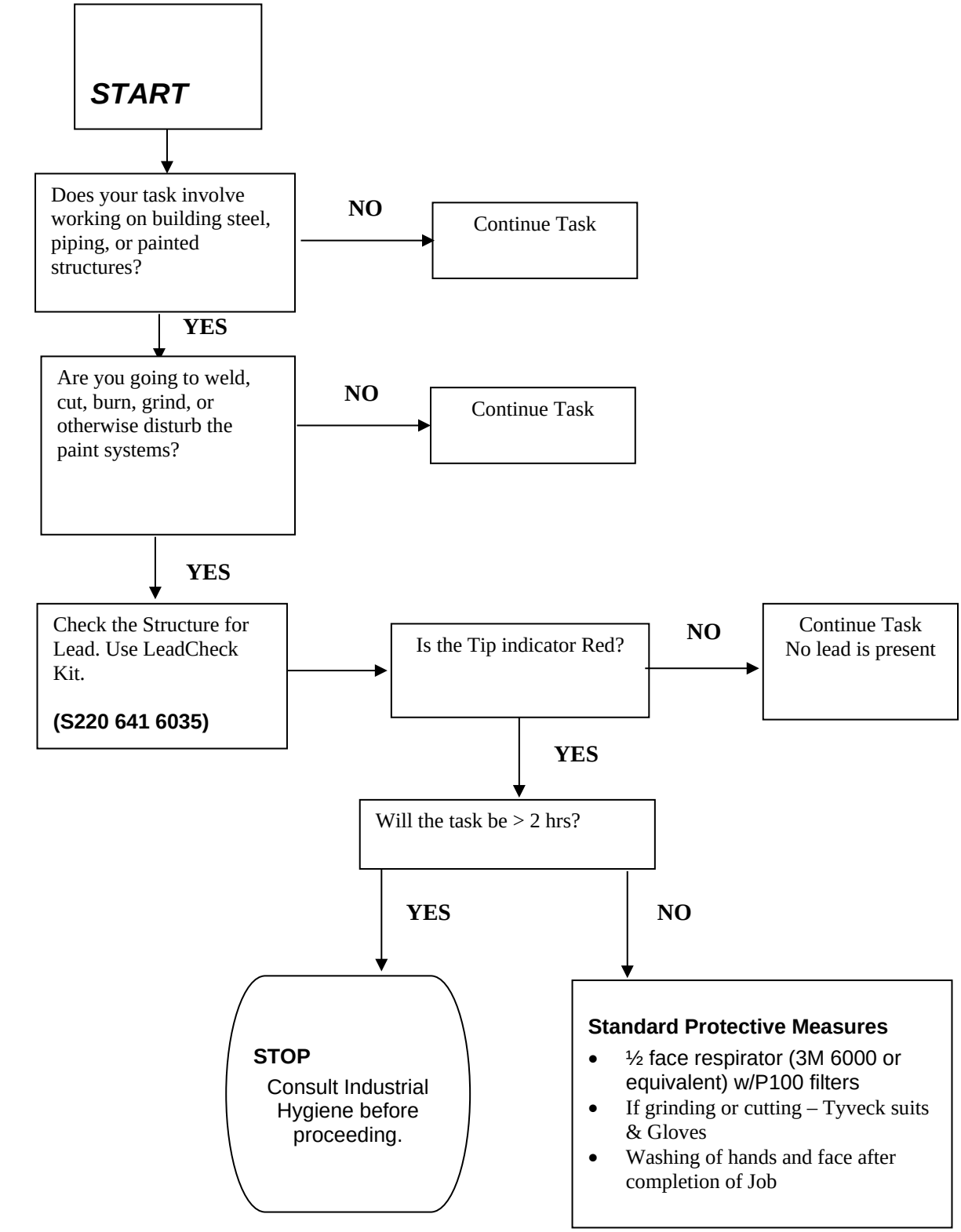
Interpretation:

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.
(S220 641 6035)
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

EXHIBIT

Alcoa Promises Drug-Free Workplace

In compliance with the 1988 Drug-Free Workplace Act, we are printing the text of our company policy on substance abuse. Please take a minute to read the policy, paying particular attention to the parts that refer to individual responsibilities. If you have any questions on the policy, please contact the personnel department.

Alcoa Inc.

Corporate Policy on Substance Abuse

Alcoa is committed to providing a work environment in which safety is assured. Consistent with this commitment, the Company has established this Standard concerning abuse of alcohol and drugs.

While the Company has no intention of intruding into private lives, it does expect employees to report for work in condition to perform their duties free from the effects of alcohol and illicit 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 our objective of a safe work environment for all.

The Alcoa standard on alcohol and drug abuse applies to all employees and is as follows:

1. The use, sale, transfer, or possession of illicit drugs or controlled substances without prescription on Company property or work sites is strictly prohibited. This provision applies to employees on Company-paid travel time and while conducting Company business on someone else's premises.
2. The use, sale, transfer, or possession of alcohol on any Company property or work site is strictly prohibited except with prior approval by an appropriate official of the Company. This prohibition and that contained in item 1 above apply to Company vehicles, as well as private vehicles on Company property or work sites.
3. Any employee being at work under the influence of alcohol, drugs, or controlled substances is strictly prohibited. No employee will be permitted to remain at work when performance is affected by alcohol, drugs, or controlled substances.
4. Where appropriate and permitted by law, testing will be utilized to determine the presence of alcohol, drugs, or controlled substances.
5. The Company reserves the right to conduct searches or inspections of an employee and his or her personal belongings for cause or as part of a general inspection as a means of enforcing the provisions of this Standard. Such searches or inspection may include, for example, employees' personal effects, lockers, desks, lunch boxes, purses, briefcases, and private vehicles located on Company property or work sites.
6. Any visitor or employee of a contractor found in violation of this Standard will be refused entry to or removed from Company property.

Violation of this Standard may result in disciplinary action up to and including discharge.

Drug-Free Workplace Addendum to Substance Abuse Policy

INTRODUCTION

The Drug-Free Workplace Act of 1988 and the regulations implementing it require that any company performing a U.S. federal contract worth more than $25,000 certify that it intends to provide a drug-free workplace. The Company has adopted the following modifications to the Substance Abuse Standard to comply with the requirements of the statute and regulations and to ensure a drug- free workplace.

POLICIES

In addition to the standards set forth in the Corporate Standard on Substance Abuse, the following policies are in effect:

1. The unlawful manufacture, distribution, dispensing, possession, or use of controlled substances is prohibited in the workplace. Violators will be subject to discipline, up to and including discharge.
2. It is a condition of continuing employment with the Company for each employee 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 days of such conviction. The Company is required to pass this information on to the federal contracting officer, as well as taking appropriate measures (discipline and/or counseling and rehabilitation) with the employee.

A failure to observe and abide by either of these standards will lead to discipline including discharge.

Employee assistance programs providing counseling, rehabilitation, and coordination with community resources and/or coverage for treatmer the Health Benefits Plan are available to all employee.

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.

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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.

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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:

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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.

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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

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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.

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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.

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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.”

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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)

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	☐	☐	☐	_____	_____
_____	☐	☐	☐	_____	_____
_____	☐	☐	☐	_____	_____
_____	☐	☐	☐	_____	_____
_____	☐	☐	☐	_____	_____

Prepared By	Reviewed By	Approval By
Date: October 2020	Date: October 2020	Date: November 2020
Michèle Lalonde	James C. Wesdock	Michèle Lalonde James C. Wesdock

1.0 SCOPE

This document applies to all Alcoa owned, Alcoa managed, and Alcoa leased facilities worldwide, and to all Alcoa personnel, contractors, subcontractors, contracted services, visitors and vendors. Specific contractor requirements are provided in section 4.6. Local regulations or consensus standards shall be followed when they are more stringent than the requirements of this document.

2.0 PURPOSE

The purpose of this document is to describe the Alcoa process for the management of hazardous materials and to prevent Fatal and Serious Incidents and Major Environmental incidents related to the use and presence of hazardous materials.

3.0 DEFINITIONS

3.1 Alcoa Project Leader/Manager – A designated individual accountable for overall EHS performance and delivery of principal services being provide by the contractor and is responsible for the successful completion of the requirements identified within EHS STD 33.051 – Contractor EHS Management.

3.2 Alcoa Responsible Person – A designated person with general EHS oversight of contractor work, as per EHS STD 33.051 – Contractor EHS Management.

3.3 Contractor Project Lead / Manager (CPL/M) – The contracting company Lead/Manager who is responsible for the safe and successful delivery of the agreed principal service(s) under the contract or term of contract, as per EHS STD 33.051 – Contractor EHS Management.

3.4 EHS Approval Professional is an Industrial Hygiene, Environmental, Safety and/or Fire prevention professional involved in the New Material Approval process.

3.5 EHS Contractor Management Plan – is a formal document required for all work, that is used by the contractor/subcontractor for the identification, assessment, and control of all existing or potential hazards associated with the specific location and the proposed safe method of work, as per EHS STD 33.051 – Contractor EHS Management.

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3.6 GHS is the Globally Harmonized System of Classification and Labelling of Chemicals. Developed by the United Nations, it includes harmonized criteria for classification of substances and mixtures according to their Health, Environment and Physical hazards and Harmonized Hazard communication elements including requirements for labeling and Safety Data Sheets.

3.7 Hazard Control is an act, object (engineered) or system (combination of act and object) intended to prevent or mitigate an unwanted event.

3.8 Hazardous Material refers to any substance or mixture, in any form, that may pose harm to facilities/property, human health or the environment. A more professional definition is based on the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS): Any substances or mixtures meeting GHS classification criteria for physical hazards, health hazards and environmental hazards will be regarded as hazardous chemicals.

Examples are: paints, adhesives, solvents, cleaners, coatings, fuels, bricks and refractory materials (containing silica or RCF), compressed gases, coal tar pitch, welding electrodes, fluxes, mechanical lubricants, process lubricants, etc.

3.9 Industrial Hygiene is a discipline directed at preventing occupational illness and disease through the anticipation, identification, assessment, and control of workplace health hazards.

3.10 Industrial Hygiene Professional is a person qualified by virtue of training and experience to anticipate, identify, assess and control health hazards and to conduct an industrial hygiene program.

3.11 Incompatible Hazardous Materials will react to cause an imminent threat to health or safety through an explosion, a fire, and/or the formation of toxic gas or flammable materials.

3.12 Materials Inventory is a comprehensive list of all materials at a location, including hazardous materials. Materials include:

1. Raw materials, feedstocks, process additives, process by-products, products, intermediates, other chemical products.
2. Laboratory reagents if the laboratory supports a production process.
3. Household consumer products if used at a frequency significantly greater or in ways significantly different than expected for consumers.

3.13 Risk refers to the chance of something happening that will have an impact on objectives. It is usually measured in terms of event likelihood and consequences.

3.14 Safety Data Sheets (SDSs): are an essential component of the GHS and are intended to provide comprehensive information about a substance or mixture‘s Environment, Health or Safety hazards and precautionary measures for use in workplace hazardous materials management.

3.15 Segregation refers to the separation of incompatible hazardous materials by any means (minimum distance, distinct storage buildings or areas, etc.) to prevent the risk of explosion, fire, and/or the formation of toxic gas or flammable materials.

4.0 REQUIREMENTS

4.1 RESPONSIBILITIES

1. Each location shall assign the following responsibilities:
    A. EHS Approval Professionals, who are responsible to approve hazardous materials, using the process outlined in Section 4.3, and to include all location SDSs in the corporate SDS database.
    B. Requestors of hazardous materials, who shall get approval from EHS Approval Professionals before initial purchase.
    C. Single Points of Accountability (SPAs) for each department/area who are responsible to inform EHS Approval Professionals of any change in Materials Inventories.

4.2 MATERIALS MANAGEMENT

1. Each location shall create and maintain a current and historic Materials Inventory.
2. The corporate SDS database shall be used to maintain the inventory at locations.
3. The Materials Inventory shall be maintained to control the purchase, acquisition and introduction of new Materials and exclusion of materials no longer in use. The following information shall be documented for each material:
    A. Name.
    B. Manufacturer.
    C. Safety Data Sheet (SDS) revision date.
    D. Department(s) or process(es) where used, including historically.
    E. Beginning and end date of use.
4. Annual departmental inspections shall include the following verifications:
    A. SDS availability;
    B. Approval of the product and inclusion in the corporate SDS database;
    C. Labelling (original and secondary) and signage;
    D. Storage conditions;
    E. Containment, when needed;
    F. Segregation of incompatible hazardous materials
    G. Current use of the material
5. Safety Data Sheets (SDSs) shall be obtained and retained for each item on the Materials Inventory.
    A. All SDSs shall be uploaded into the corporate database.
    B. Manufacturers shall be contacted to ensure that active SDSs (those covering materials currently in use) are the latest version and this contact shall be documented.
    C. Obsolete and superseded SDSs shall be electronically kept within

the corporate SDS database.

D. Any material that is kept on site, even if only in storage and inclusive of contractor materials, shall be considered active in the inventory with a current SDS.

E. SDSs shall be acquired from the manufacturer or distributor prior to the initial purchase of a new material.

6. Purchase of hazardous materials with credit cards shall not be permitted.

7. Labels on purchased containers and materials shall be maintained. Where in-house signage and/or labeling is required (e.g. tanks, vessels, portable containers), signs or labels shall, at a minimum, provide:

A. Material name or content.

B. Health and safety hazards.

C. Preventative measures.

D. SDS access and location information.

Signs or labels shall comply with local regulatory requirements.

8. Alcoa Safety Data Sheets, for those products requiring SDSs, shall be provided to customers prior to or with the initial purchase and with the first purchase following a revision to the SDS.

A. A written procedure for the distribution of SDSs shall be established for locations that are not using Oracle order management.

B. The following distribution information shall be included in the written procedure:

(1.) Customer name and address

(2.) Material shipped.

(3.) Date shipped.

(4.) SDS provided, including revision date and language/format.

4.3 HAZARDOUS MATERIALS RISK ASSESSMENT

4. Any new material which is potentially hazardous shall undergo a Risk Assessment (New Material Approval) prior to purchase and/or introduction to the location. The Risk Assessment shall consist of the following:

A. A standardized form, which includes a review of the physical, chemical, safety and environmental properties, hazards and risks. New Material Review and Approval Form (Appendix 6.1) may be used, however any equivalent form specific to the country/region regulatory requirements may also be used.

(1.) The location procurement and EHS Approval professionals shall be familiar with, and refer to Appendix 6.2 Materials with High Potential EHS risks and shall avoid introduction of these Materials to the extent possible.

B. The completed form, including recommendations, shall be

communicated to relevant department managers and other stakeholders needing the information.

4.4 Hazard Control for Hazardous Materials

1. Local regulation including applicable codes shall be thoroughly reviewed and applied.
2. Specific use and storage requirements of hazardous materials recommended from the Risk Assessment (New Material Review and Approval) shall be implemented, communicated to hazardous materials users and made available to users.
3. Where elimination or substitution of the Materials listed in Appendix 6.2 Materials with High Potential EHS risks is not achievable or where quality or product safety issues require their use, appropriate control procedures shall be designed and implemented, their effectiveness demonstrated, and the controls maintained and monitored. The controls shall be approved by an industrial hygiene professional and the use of the chemical(s) shall be periodically reviewed for potential elimination.
4. Emergency showers, eye-wash stations and first aid kits, fire protection requirements shall be implemented as required by local regulations and applicable Alcoa EHS STDs.
5. Hazardous material controls such as storage, segregation (see Appendices 6.3 and 6.4), barriers, quantity, usage, compatibility, monitoring, PPE and disposal shall be implemented and evaluated. These controls shall be adequate in proportion to the quantities present at the location, meet the Preparedness and Emergency Planning requirements of EHS STD 60.9 - Emergency Preparedness and Response Plans**,** and be included in a Permit to work (PTW), if applicable (see EHS STD – 5.03 Permit to Work).
6. Applicable Alcoa Standards (see references) shall be reviewed and applied where applicable.

4.5 Hazard Communication Training

1. Employees shall receive general awareness training in the following situations:
   A. Prior to initial work assignment.
   B. Whenever a new chemical hazard is introduced into the work area.
   C. Whenever new information on health risks becomes available.
2. General awareness training shall include:
   A. Roles and responsibilities of key personnel involved in hazardous materials management.
   B. Description of how Hazardous Materials are defined and identified.
   C. Hazardous material management process, particularly for supervisors, purchasers, procurement employees and requestors.
   D. Instructions in how to access, read and utilize Safety Data Sheets and labels received on shipped containers and any workplace labeling system used within the location.

E. Potential health and safety risks (toxicity, flammability, explosivity, reactivity). The training shall be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals.

F. Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area.

G. Measures employees shall take to protect themselves from these hazards.

H. General storage conditions, incompatibilities and segregation of hazardous materials

3. Chemical-Specific training

A. Specific information to employees with Unacceptable and Significant exposures, as determined in EHS STD 71.11.

B. Specific information on risks and control strategies for critical safety risks, e.g. explosion or fire risk due to the presence or use of the hazardous material.

4. Refresher training shall be provided every three years for both general awareness and chemical-specific.

4.6 CONTRACTORS, SUBCONTRACTORS AND CONTRACTED SERVICES

1. Contractor, subcontractor or contracted service shall comply with local regulations and consensus standards concerning Hazardous Materials.

2. The requirements of EHS STD 30.051- Contractor EHS Management and EHS STD 30.055 - Contractor, Subcontractor and Contracted Services Prequalification and Selection Process shall be followed.

3. The Alcoa Project Leader/Manager or Alcoa Responsible Person shall obtain a list of all materials and related SDSs, to be used on site, from the Contractor Project Lead/Manager (see EHS STD 30.051) and provide to the EHS Approval Professional(s) for review.

A. All SDSs of Hazardous Materials that are brought on the site by Contractors and that will remain on site for possible future use shall be uploaded into the corporate database and considered part of the active Materials Inventory.

B. The materials list shall be reviewed by Health, Safety, Environmental, Fire Prevention EHS Approval Professional(s), as appropriate.

C. EHS Approval Professional(s) shall determine the need for a full Risk Assessment, as per Section 4.3, based on professional judgment and SDS ingredients review, as appropriate.

D. The outcome of the review shall be communicated to the Alcoa Project Leader/Manager or Alcoa Responsible Person and included in the Permit to Work, if applicable (see EHS STD 5.03 – Permit to Work).

E. The Alcoa Project Leader/Manager or Alcoa Responsible Person shall communicate the outcome of the review to the Contractor Project Lead/Manager and shall ensure that appropriate controls, as per Section 4.4, are included in the scope specific EHS

Contractor Management Plan (see EHS STD 33.051).

4.7 RECORDS MANAGEMENT

1. Records management shall follow Corporate Retention policy Records Management Policy.

5.0 REFERENCES

5.1 EHS SUP 71.11.2 - Supplemental Hazard Materials Management In-House Labeling Formats

5.2 EHS STD 25.02 - Lab Safety

5.3 Alcoa FSI Decision Tool and Automatic Hazard categories

5.4 EHS STD 33.051 Contractor, Subcontractor and Contracted Services EHS Management Framework

5.5 EHS STD 33.055 – Contractor, Subcontractor and Contracted Services Prequalification and Selection Process

5.6 EHS SUP 33.055.1 Contracted services prequalification form

5.7 EHS-STD-5.03 PERMIT TO WORK (PTW)

Alcoa Engineering Standards – Loss Prevention Standards:

5.8 ENG STD 18.6.1 Safe Handling of Compressed Gases (2010_April).

5.9 ENG STD 18.6.2 Flammable And Combustible Liquids Loss Prevention (2020_July).

5.10 ENG STD 18.6.2.1 Requirements for Using, Storing And Handling Flammable And Combustible Liquids For Loss Prevention (2009_April).

6.0 APPENDIX

6.1 ALCOA NEW MATERIAL REVIEW AND APPROVAL FORM

6.2 ALCOA LIST OF MATERIALS WITH HIGH POTENTIAL EHS RISKS

6.3 GENERAL RECOMMENDATIONS FOR THE STORAGE OF HAZARDOUS MATERIALS

6.4 RECOMMENDATIONS FOR THE SEGREGATION OF INCOMPATIBLE HAZARDOUS MATERIALS

7.0 DOCUMENT HISTORY

Last Updated: 2021 March

Last Reviewed: 2021 March

Significant Changes to this Standard		
Date	Section / Paragraph	SPA
March 2021	New Appendix 6.2 created from Appendix 6.4 of EHS STD 71.11 Materials with High Potential Health risks and renamed Materials with High Potential EHS risks. List also updated. Old Appendices 6.2.and 6.3 renumbered 6.3 and 6.4.	Michèle Lalonde James Wesdock
November 2020	Revised, and now stand-alone, Hazardous Materials Management STD created - Requirements on Hazardous Materials previously included as part of IH STD 71.11. 2.0 Purpose: Purpose expanded – Purpose is to describe the Alcoa process for the management of hazardous materials and to prevent Fatal and Serious Incidents related to the use and presence of hazardous materials. 3.0 Definitions: Substantially revised. 4.1 Responsibilities: New Section on Responsibilities to EHS Approval Professionals, Requestors of hazardous materials and Single Points of Accountability (SPAs) for each departments/area added. 4.2 Material management: Corporate SDS database to be used to maintain the inventory at locations. The Materials Inventory maintained to control the purchase, acquisition and introduction of new Materials and exclusion of materials no longer in use. New Annual departmental inspections including specific verifications. Purchase of hazardous materials with credit cards shall not permitted. 4.3 Hazardous Materials Risk Assessment: new section on the process of reviewing the physical and chemical hazards associated with Hazardous Materials. Standardized form or equivalent to be used. Form including Recommendations to be communicated to relevant Department managers and other stakeholders. 4.4 Hazard Control for Hazardous Materials: new section with new requirements: Local regulation, applicable codes and Applicable Alcoa Standards to be applied. Specific use and storage requirements implemented, communicated and made available to users. Hazardous material controls adequate in proportion to the quantities present at the location and included in a Permit to work (PTW) if applicable. 4.5 Hazard Communication training: Training now clearly divided into 2 sub sections: 4.5.2 General awareness training and 4.5.3 Chemical-Specific training. 4.6 Contractors, Subcontractors and Contracted services: All applicable requirements for contractors have been consolidated in this section, with the necessary overlaps to the Safety Contractor Management STDs. Process for material review based on a list of all materials and related SDSs, to be used on site provided to the EHS Approval Professional(s). Outcome of the review communicated to the Alcoa Project Leader/Manager or Alcoa Responsible Person and included in the Permit to Work, if applicable. Appropriate controls to be included in the scope specific EHS Contractor Management Plan. SDSs of Hazardous Materials that are brought on the site by Contractors and that will remain on site to be uploaded into the corporate database.	Michèle Lalonde James Wesdock

	4.7 Records Management Not anymore detailed – Simply refers to Corporate Retention Policy (Records Management Policy). 5.0 References New references added 6.0 Appendices Former Appendices replaced by 3 new Appendices: 6.1 Alcoa New Material Review and Approval Form 6.2 General Recommendations for the storage of Hazardous Materials 6.3 Recommendations for the Segregation of Incompatible Hazardous Materials	

APPENDIX 6.1 ALCOA NEW MATERIAL REVIEW AND APPROVAL FORM

ALCOA NEW MATERIAL REVIEW AND APPROVAL FORM

Complete this form and submit with product SDS to the physical or electronic Mailbox. (insert Site contact information)

SDS # (Assigned after approval): _____

I. This section to be completed by the Requestor

A. CONTACT INFORMATION (All fields must be completed before NMR can be processed)

Requestor:_____ Telephone: _____ Date: _____

Location: _____ Department: _____ Supervisor: _____

Response needed by: _____

B. BACKGROUND INFORMATION

Product name: _____ Manufacturer: _____

Supplier: _____ If approved, expected date on site: _____

SDS available: ☐ Yes ☐ No (Note: NMR will **not** be processed without an (SDS)

Format: ☐ Hard copy ☐ Electronic

Use: ☐ Trial ☐ Permanent/ongoing ☐ Limited installation ☐ Construction/Demolition

Potential component of Alcoa product: ☐ Yes ☐ No

Safer substitute: ☐ Yes ☐ No ☐ N/A (new material)

If Yes, current material: _____

Will new material cause the product to deviate from customer specifications: ☐ Yes ☐ No

If Yes, has the change be approved by the Quality Department: ☐ Yes ☐ No ☐ N/A

Will the material be imported: ☐ Yes ☐ No Will the material be exported: ☐ Yes ☐ No

C. USE AND STORAGE INFORMATION

What is to be accomplished by using this material (specific application/goal): _____

Where will this be used: ☐ Plant-wide ☐ Department specific

If Department specific: Department _____ Building/Room: _____

Who will be exposed: Job: _____ Task: _____

Where will this be stored (Storage area/Room): _____

Frequency of use: ☐ Daily ☐ Weekly ☐ Monthly ☐ Less than 12 days per year

Estimated usage rate (include units: lb/day; liter/week, kg/day): _____

Total annual consumption (include units): _____

Average amount on hand (lb.): _____ Maximum amount on hand (lb.): _____

Material use:

- ☐ Abrasive wheel, belt
- ☐ Abrasive, granular blast material
- ☐ Adhesive
- ☐ Alloy
- ☐ Cleaning agent
- ☐ Compressed gas
- ☐ Core / shell removal chemicals
- ☐ Core compound material
- ☐ Die coating
- ☐ Elevated pressure material
- ☐ Elevated temperature material
- ☐ Etching chemicals
- ☐ Fluorescent penetrant
- ☐ Heat treat materials
- ☐ Hot top additive
- ☐ Insecticide or herbicide
- ☐ Janitorial material
- ☐ Lab reagent/standard
- ☐ Mold wrap
- ☐ Office supply
- ☐ Packaging material
- ☐ Process additive (e.g. flux)
- ☐ Process lubricant
- ☐ Raw material/feed stock
- ☐ Refractory / insulation
- ☐ Resin (epoxy, polyurethane, etc.)
- ☐ Shell ingredient
- ☐ Solvent
- ☐ Surface coating (e.g. paints, etc)
- ☐ Water treatment chemical
- ☐ Wax
- ☐ Welding Supplies
- ☐ X-ray developing chemical
- ☐ Other: _____

How will this material be handled:

- ☐ Burned (e.g., fuel)
- ☐ Closed system
- ☐ Heated/melted
- ☐ Manual transfer (e.g. poured, dumped)
- ☐ Sprayed
- ☐ Extruded
- ☐ Machined
- ☐ Other: _____

Packaged quantities:

- ☐ Small container
- ☐ Box
- ☐ Drum
- ☐ Bulk
- ☐ Other: _____

Packaged weight: _____

Engineering controls available:

- ☐ Local exhaust ventilation
- ☐ Laboratory hoods
- ☐ Secondary containment
- ☐ Enclosure
- ☐ Restricted access
- ☐ Eye wash/emergency shower
- ☐ Change rooms/showers
- ☐ Other: _____

Will use generate material for disposal: ☐ Yes ☐ No

If Yes: Describe material: _____ Quantity and rate: _____

Will use generate discharges to storm water, groundwater or sewer system: ☐ Yes ☐ No

If Yes: Describe discharge and destination: _____ Quantity and rate: _____

Will use generate air emissions: ☐ Yes ☐ No

If Yes: Describe air emissions: _____ Quantity and rate: _____

II. This section to be completed by the EHS Resources

A. CHEMICAL LIST REVIEW (These lists can be searched in Alcoa Comply Plus Web - Paratox)

Components on the Alcoa Prohibited Chemicals List? ☐ Yes ☐ No

If Yes, list name and CAS#: _____

Is substitute feasible: ☐ Yes ☐ No

If Yes: Reject. If No: Develop management procedures.

ALL COMPONENTS LISTED ON TSCA INVENTORY: ☐ **YES** ☐ **NO** ☐ **EXEMPT** ☐ **EXCLUDED**

(A) If Exempt/Excluded, will usage be in compliance with Exemption/Exclusion: ☐ Yes ☐ No

(B) If Not Listed or No to (A), options available: ☐ PMN ☐ R&D ☐ QC Chemical ☐ None

If None: Reject.

(C) Import certification needed: ☐ Positive ☐ Negative ☐ None/Not imported

ANY COMPONENTS LISTED ON TSCA 12(B) EXPORT LIST: ☐ **YES** ☐ **NO**

If Yes: If exported, review regulatory reporting requirements. If No: No further action required.

If Yes, list name and CAS#: _____

Will material be subject to TSCA inventory update rule reporting/documentation: ☐ Yes ☐ No

If Yes: Review regulatory reporting requirements. If No: No further action required.

DOES PRODUCT CONTAIN: ☐ **ASBESTOS** ☐ **RCF** ☐ **BERYLLIUM** ☐ **CTP** ☐ **LEAD** ☐ **PCBS**

If any: Formal management plan must be in place. If none: No further action required.

DOES PRODUCT CONTAIN CARCINOGENS: ☐ **IARC** ☐ **NTP** ☐ **ACGIH** ☐ **OSHA**

If any: Assess exposures and necessary control measures. If none: No further action required.

If so, list name, CAS# and classification: _____

Is material banned or restricted ozone depleting substance: ☐ Yes ☐ No

IF BANNED OR RESTRICTED: FORMAL MANAGEMENT PLAN MUST BE IN PLACE. IF NO: NO FURTHER ACTION REQUIRED

B. EPCRA Evaluation (ALL NEW MATERIALS MUST BE EVALUATED FOR EPCRA IMPACT)

DOES MATERIAL CONTAIN EPA SECTION 302 OR STATE SPECIFIC EXTREMELY HAZARDOUS SUBSTANCES (EHS'S): ☐ **YES** ☐ **NO**

If Yes, list name, CAS# and reportable quantity: _____

Will EHS Threshold Planning Quantity (TPQ) be exceeded (consider all similar EHS's on site), 40 CFR 355 Appendices A & B: ☐ Yes ☐ No

If Yes: Notify state within 60 days that site is subject to Emergency Planning requirements.
If No: No further action required.

Will EHS on site at any one time exceed 500 lb. or EPA Section 302 TPQ, whichever is lower: ☐ Yes ☐ No

If Yes: Submit MSDS or Chemical List to SERC, LEPC and fire department(s) within 3 months.

If No, Will EHS on site at any one time exceed 10,000 lb.: ☐ Yes ☐ No

If Yes: Submit MSDS or Chemical List to SERC, LEPC and fire department(s) within 3 months.
If No: No further action required.

Will EHS be contained in an Alcoa product: ☐ Yes ☐ No

If Yes: Review "Supplier Notification" requirements. If No: No further action required.

DOES MATERIAL CONTAIN SECTION 313 TOXIC CHEMICALS: ☐ **YES** ☐ **NO**

If Yes: Review regulatory reporting requirements for SARA 313. If No: No further action required.

If Yes, list name, CAS# and reportable quantity: _____

Will use of material lead to manufacture (creation) of any Section 313 Toxic Chemicals/Categories: ☐ Yes ☐ No

If Yes: Review regulatory reporting requirements for SARA 313. If No: No further action required.

If Yes, list name and CAS#: _____

EPCRA SPA approval: ☐ Yes ☐ No Name: _____
Date: _____ ☐ N/A

If No, explain: _____

C. INDUSTRIAL/HAZARDOUS WASTE EVALUATION

Will use generate material for disposal: ☐ Yes ☐ No If No, Skip to Section D.

Will Solid Waste Determination Form need to be created: ☐ Yes ☐ No
If Yes: Create SWD. If No: Amend existing SWD.

Will this material change regulatory status of facility: ☐ Yes ☐ No
If Yes, does facility's Notification of Hazardous Waste Activity Form need updated: ☐ Yes ☐ No
If Yes: Update notification. If No: No further action required.

Will Generation Logs and Waste Profile Logs need to be updated: ☐ Yes ☐ No
If Yes: Update Logs. If No: No further action required.

Will waste minimization plan be needed for this material: ☐ Yes ☐ No
If Yes: Develop plan. If No: No further action required.

Do on-site management and/or disposal options need to be developed: ☐ Yes ☐ No ☐ Send off-site
If Yes: Develop. If No: No further action required.
If Send off-site, is an approved Transporter and TSDF available: ☐ Yes ☐ No
If Yes: Utilized approved Transporter/TSDF. If No: Audit and approve appropriate vendors
If a "Commodity" Motor Carrier Contract is necessary, contact Alcoa Materials Management Department

Haz. Waste SPA approval: ☐ Yes ☐ No Name: _____Date:_____ ☐ N/A
If No, explain: _____

D. WATER/WASTEWATER EVALUATION

Will use generate discharges to storm water, groundwater, or sewer system: ☐ Yes ☐ No
If No, Skip to Section E.

Where will wastewater affected by this material be ultimately discharged from the site:
☐ Surface Water ☐ POTW ☐ Class V Injection Well ☐ Other _____

Does any authority require prior notification of discharges from the site: ☐ Yes ☐ No ☐ N/A
If Yes,
Does sites sewer use ordinance limit or otherwise restrict this material: ☐ Yes ☐ No
Does the surface water discharge permit application need updated: ☐ Yes ☐ No
Does the POTW permit application need updated: ☐ Yes ☐ No
If discharge to Class V injection well, will discharge impact local drinking water and/or cause ground water to exceed standards (if not sure, please contact expert): ☐ Yes ☐ No
If No or N/A, explain: _____

Will a characterization of the discharge be required: ☐ Yes ☐ No
If Yes: Characterize and document with appropriate inventory.
If No, explain: _____

Will associated wastewater discharge inventory need updated: ☐ Yes ☐ No
If Yes: Update inventory. If No: No further action required.

If site has "No Exposure Certification", does new SOP need to be written or updated: ☐ Yes ☐ No
If Yes: Develop or update. If No: No further action required.

If site has a storm water permit and material will be exposed, will SWPPP need updated: ☐ Yes ☐ No

If Yes: Update. If No: No further action required.

If material is an oil or oil product, does site need to generate or amend its SPCC plan: ☐ Yes ☐ No

If Yes: Update. If No: No further action required.

Waste water SPA approval: ☐ Yes ☐ No Name:_____ Date:_____ ☐ N/A

If No, explain: _____

E. AIR EMISSIONS EVALUATION

Will use generate air emissions: ☐ Yes ☐ No If No, Skip to Section F.

What chemical(s) will be emitted: _____

Has the Potential To Emit evaluation been made: ☐ Yes ☐ No

If Yes, is a Permit, Exemption or other approval needed to emit this material: ☐ Yes ☐ No

If Yes: Obtain.

If No: Explain: _____

If No, explain: _____

Will site's air emission inventory need updated: ☐ Yes ☐ No

If Yes: Update inventory. If No: No further action required.

Air emissions SPA approval: ☐ Yes ☐ No Name: _____Date:_____ ☐ N/A

If No, explain: _____

F. Miscellaneous ENVIRONMENTAL

Will the RPCC Plan need updated: ☐ Yes ☐ No

If Yes: Update. If No: No further action required.

Will new/modified storage facilities be required: ☐ Yes ☐ No

If Yes, explain: _____

Will special training be required: ☐ Yes ☐ No

If Yes, explain: _____

G. HEALTH Hazards

Applicable routes of exposure:

☐ Inhalation ☐ Ingestion ☐ Skin contact/absorption ☐ No chemical release/No exposure

If inhalation, are OELs available for the product/components: ☐ Yes ☐ No

If No, explain how exposure assessment was performed: _____

Applicable health hazards:

☐ Eye irritant ☐ Respiratory irritant ☐ Central nervous system effects

☐ Skin irritant ☐ Respiratory sensitizer ☐ Reproductive hazard

☐ Dermal sensitizer ☐ Acute toxin ☐ Developmental hazard

☐ Corrosive ☐ Chronic toxin ☐ Carcinogen

☐ Other: _____

Will counter measures be needed to control exposures: ☐ Yes ☐ No

If Yes, explain: _____

Are any components covered by an OSHA Substance Specific Standard: ☐ Yes ☐ No

If Yes: Review regulatory requirements. If No: No further action required.

If Yes, list chemical and applicable requirements: _____

Will special handling procedures be required: ☐ Yes ☐ No
If Yes, explain: _____

Will special training be required: ☐ Yes ☐ No
If Yes, explain: _____

IH SPA approval: ☐ Yes ☐ No Name: _____ Date:_____ ☐ N/A
If No, explain: _____

H. SAFETY Hazards

Applicable safety hazards:

☐ Flammable liquid	☐ Explosive	☐ Water reactive
☐ Combustible liquid	☐ Pyrophoric	☐ Oxidizer
☐ Flammable solid	☐ Unstable/reactive	☐ Corrosive
☐ Other: _____		

Will special storage conditions be required: ☐ Yes ☐ No
If Yes, explain:

Will special handling procedures be required: ☐ Yes ☐ No
If Yes, explain: _____

Safety SPA approval: ☐ Yes ☐ No Name: _____Date:_____ ☐ N/A
If No, explain: _____

III. Approval by the EHS Department

A. APPROVAL

Environmental Reviewer: _____ Date: _____
☐ Approved ☐ Not Approved ☐ More Information required _____
If Not Approved, explain: _____

Health Reviewer: _____ Date: _____
☐ Approved ☐ Not Approved ☐ More Information required _____
If Not Approved, explain: _____

Safety Reviewer: _____ Date: _____
☐ **APPROVED** ☐ **NOT APPROVED** ☐ **MORE INFORMATION REQUIRED** _____
If Not Approved, explain: _____

QC Reviewer: _____ Date: _____
☐ Approved ☐ Not Approved ☐ More Information required _____
If Not Approved, explain: _____

OVERALL: ☐ Approved: ☐ ONE TIME USE ☐ w/ special requirements
☐ Plant-wide ☐ Department _____
☐ **NOT APPROVED** _____

B. QUALITATIVE EXPOSURE ASSESSMENT

☐ **UNCERTAIN** ☐ **INSIGNIFICANT** ☐ **SIGNIFICANT** ☐ **UNACCEPTABLE**

IV. Special Requirements of Use for Requestor

A. Special requirements (BEYOND WHAT IS ALREADY REQUIRED IN THE AREA)

PPE requirements:

☐ Safety glasses	☐ Leather gloves	☐ Filtering facepiece _____
☐ Goggles	☐ Cotton gloves	☐ Cartridge respirator _____
☐ Face shield	☐ Synthetic gloves _____	☐ Supplied air
	☐ Splash suit	☐ PAPR _____
Other: _____		
PESHR Required: ☐ Yes ☐ No If No, Why: _____		
Engineering controls required: _____		
Restrictions on use: _____		
IH sampling required:_____		
Storage facilities requirements: _____		
Special handling procedures: _____		
Training required:		
☐ RCRA	☐ Waste Oil	☐ Respirator
☐ TSCA	☐ Water Discharge	☐ Chemical Specific: _____
☐ DOT	☐ Air/Ozone Depleting	☐ Other: _____
Additional comments: _____		

APPENDIX 6.2 MATERIALS WITH HIGH POTENTIAL EHS RISKS

Generally, known and suspected CMRs (Carcinogens, Mutagens and Reprotoxic substances), Respiratory sensitizers as well as some Materials of environmental concerns such as Persistent Organic Pollutants require special consideration due to their potential for adverse human health effects, environmental impacts or safety risks.

Preferentially materials with high potential EHS risks shall be eliminated or substituted from production, process or maintenance use. Where elimination or substitution is not achievable or where quality or product safety issues require their use, appropriate control procedures shall be designed and implemented, their effectiveness demonstrated and the controls maintained and monitored. The controls shall be approved by an industrial hygiene professional and the use of the chemical(s) shall be periodically reviewed for potential elimination. Laboratory procedures that require or specify chemicals on the list (e.g. analytical protocols requiring benzene or chloroform) are exempt from elimination requirements. Appropriate handling procedures must still be developed and implemented (please refer to the Alcoa EHS Standards where applicable).

The following is a non-inclusive list of substances considered as Materials with High Potential EHS Risk.

Antimony in paints, solders or metals

Asbestos

Benzene (CAS No. 71-43-2. Synonyms: Benzol) -- limit benzene content to 0.1% or less in all solvents or hydrocarbons

Benzo(a)pyrene (CAS No. 50-32-8.)

Benzidine derived dyes contaminated with alpha/beta naphthylamine

Beryllium

Bis (2-ethylhexyl) Phthalate (DEHP). CAS 117-81-7

Bisphenol A

1-Bromopropane (CAS No. 106-94-5. Synonyms: *n*-Propyl bromide, 1-Propyl bromide)

Butyl Benzyl Phthalate (BBP). CAS 85-68-7

Cadmium (all forms) in paints, solders, or metals.

Carbon tetracholoride

Chloroform (CAS no. 67-66-3. Synonyms: Trichloro methane, Methane trichloride, Methyltrichloride, Methenyl trichloride)

Chromium VI (Hexavalent chromium)

Dibutyl Phthalate (DBP). CAS 84-74-2

Diisobutyl Phthalate (DIBP). CAS 84-69-5

1, 4 Dioxane. CAS 123-91-1

Dioxins and furans

Formaldehyde containing products or formaldehyde generating products. Not applicable to coatings. (CAS No. 50-00-0. Synonyms: Methanal)

HBCD (hexabromocyclododecane). CAS 3194-55-6 and 26637-99-4

Lead (all forms)

Mercury (all forms)

Methylene chloride (CAS No. 75-09-2. Synonyms: methylene dichloride, Dichloro methane)

Methyl chloroform (CAS No. 71-55-6. Synonyms: 1,1,1-trichloroethane,)

Methyl and ethyl ethers of ethylene glycol and their acetates:

CAS No. 110-80-5. Synonyms: Cellosolve®, 2-ethoxyethanol, Ethylene glycol monoethyl ether, EGEE;

CAS No. 109-86-4. Synonyms: Methly Cellosolve®, 2-methoxyethanol, Ethlylene glocol monomethly ether, EGME;

CAS No. 111-15-9. Synonyms: Cellosolve Acetate®, Ethylene glycol monoethyl ether acetate, 2-ethoxyethyl acetate, EGEEA:

CAS No. 110-49-6. Synonyms: Methly Cellosolve Acetate®, 2-methoxyethyl acetate, Ethlylene glycol monomethyl ether acetate, EGMEA

N-methyl-2pyrolidine (NMP). CAS 872-50-4

Nitrosamines and precursor compounds used in combinations capable of forming nitrosamines (e.g., amines and nitrites in metal working fluids)

Oils such as petroleum hydrocarbons which are not severely hydro-treated and solvent refined

Ortho toluidine (CAS No. 95-53-4. Synonyms: *o*-Toluidine, 2-Toluidine, *o*-Aminotoluene, 2 Aminotoluene)

Perchloroethylene (CAS No. 127-18-4. Synonyms: Tetrachloroethylene, Perc.

Per and poly-fluoroalkyl substances (PFAS) (more than 170 substances, including Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA)).

Persistent Organic Pollutants from the Stockholm Convention (Annex A)

Phthalates (all forms) – not otherwise listed above

Pigment violet 29. CAS 81-33-4

Polychlorinated Biphenyls (PCBs)

Potent sensitizers such as aromatic diisocyanates

Refractory ceramic fibers (CAS No. 142844-00-6 Synonyms: Refractory Fibers Aluminosilicate)

Sulfur hexafluoride (CAS No 2551-62-4)

Trichloroethylene (CAS No. 79-01-6. Synonyms:1,2-Trichloroethene, 1,1-Dichloro-2-Chloroethylene, TCE, Dichloroethylene)

Vinyl chloride (CAS No. 75-01-4)

APPENDIX 6.3 GENERAL RECOMMENDATIONS FOR THE STORAGE OF HAZARDOUS MATERIALS

The followings are general recommendations concerning the use and storage of hazardous materials. As mentioned, more specific handling and storage conditions from local regulation, Alcoa Loss prevention ENG STD and Risk assessment recommendations (from the New Material Review and Approval Form) shall also be implemented.

- Flammable materials (See Alcoa STD for Liquids):
  - Flammable materials are incompatible with all oxidizers (including peroxides). Because of their potential to generate a fire, they generally should be stored in separate compartments or rooms (cabinets for small amounts). Large containers should have specific containment basins.
  - Store away from ignition sources (sparks, welding…), ground and bond containers, use anti-static tools
  - Storage room shall be equipped with containment and ventilated (but not cabinets)
- Oxidizers
  - Oxidizers are very reactive compounds. They should never be stored with flammable and combustible materials and reducing agents.
  - They should also be separated from all organic material (wood).
- Water and air reactive materials
    - Reactive materials include Pyrophoric materials (catches fire spontaneously if exposed to air), Self-heating substances that may catch fire and Water-reactive materials that may emit flammable gases or spontaneously ignite
  - Highly reactive materials should be stored away from any source of water and air.
  - Containers shall be airtight and protected from shocks.
- Compressed gases (See Alcoa STD)
  - Cylinders of compressed gases can act as rockets if shocked. Consequently, they should be stored in a separate compartment or outdoors.
  - Cylinders shall be stored vertically and be fixed to a solid structure.
- Corrosive materials
  - Corrosives should not be stored with highly reactive materials. Acids should be separated from bases with distance.
  - Large containers should have specific containment basins.

APPENDIX 6.4 RECOMMENDATIONS FOR THE SEGREGATION OF INCOMPATIBLE HAZARDOUS MATERIALS

The following Table was extracted from Seton Chemical Storage Guidance Note according to COSHH. It is not a mandatory tool but can be used as a tool to identify incompatible materials and decide what segregation level is needed. Note that amounts of hazardous materials involved shall be also taken into account

Chemical Segregation by Chemical Group	Class	1	2			3	4			5		6	8
Explosive	1.0 Explosive		Segregate From	Segregate From	Segregate From	Segregate From	Segregate From	Segregate From	Segregate From	Segregate From	Segregate From	Segregate From	Segregate From
Compressed gases	2.1 Flammable	Segregate From		Keep Apart	Segregate From or Keep Apart	Segregate From	Segregate From	Segregate From	Segregate From	Segregate From	ISOLATE	Keep Apart	Keep Apart
	2.2 Non Toxic Non flammable	Segregate From	Keep Apart		Keep Apart	Keep Apart	Segregation may not be necessary	Segregate From	Segregation may not be necessary	Segregation may not be necessary	Segregate From	Segregation may not be necessary	Keep Apart
	2.3 Toxic	Segregate From	Segregate From or Keep Apart	Keep Apart		Segregate From	Keep Apart	Segregate From	Keep Apart	Segregation may not be necessary	Segregate From	Segregation may not be necessary	Keep Apart
Flammable liquids		Segregate From	Segregate From	Keep Apart	Segregate From		Keep Apart	Segregate From	Segregate From	Segregate From	ISOLATE	Keep Apart	Keep Apart
Flammable solids	4.1 Readily combustible	Segregate From	Segregate From	Segregation may not be necessary	Keep Apart	Keep Apart		Keep Apart	Segregate From	Segregate From	Segregate From	Keep Apart	Segregation may not be necessary
	4.2 Spontaneously combustible	Segregate From	Segregate From	Segregate From	Segregate From	Segregate From	Keep Apart		Keep Apart	Segregate From	ISOLATE	Keep Apart	Keep Apart
	4.3 Dangerous when wet	Segregate From	Segregate From	Segregation may not be necessary	Keep Apart	Segregate From	Segregate From	Keep Apart		Keep Apart	Segregate From	Segregation may not be necessary	Segregation may not be necessary
Oxidising substances	5.1 Oxidising substance	Segregate From	Segregate From	Segregation may not be necessary	Segregation may not be necessary	Segregate From	Segregate From	Segregate From	Keep Apart		Segregate From	Keep Apart	Keep Apart
	5.2 Organic peroxide	Segregate From	ISOLATE	Segregate From	Segregate From	ISOLATE	Segregate From	ISOLATE	Segregate From	Segregate From		Keep Apart	Keep Apart
Toxic		Segregate From	Keep Apart	Segregation may not be necessary	Segregation may not be necessary	Keep Apart	Keep Apart	Keep Apart	Segregation may not be necessary	Keep Apart	Keep Apart		Segregation may not be necessary
Corrosive		Segregate From	Keep Apart	Keep Apart	Keep Apart	Keep Apart	Segregation may not be necessary	Keep Apart	Segregation may not be necessary	Keep Apart	Keep Apart	Segregation may not be necessary	

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:

Revised 6/22/12

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. The program will be reviewed annually.

- 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
An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

b) Authorized Employee
This is a person who locks or implements a LTV system procedure on machines or equipment to perform the servicing, maintenance or cleaning on that machine or 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) Capable of Being Locked Out
An energy isolating device will be considered to be capable of being locked out either if it is designed with a hasp or other attachment or integral part of which, or through which a lock can be affixed, or if it has a locking mechanism built into it. Other energy isolating devices will also be considered to be capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

d) Crew
A 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.

e) Energized
Connected to an energy source or containing residual or stored energy.

f) Energy Isolating Device
A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: a manually operated electrical circuit breaker, a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated 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, and other control circuit type devices.

g) Energy Source
This is any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

h) Flagging

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

i) Hot Tap
A procedure used in repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels, or tanks) under pressure, in order to install connections or appurtenances. It is commonly used to replace or add sections of a pipeline without the interruption or service for air, gas, water, steam, and petrochemical distribution systems.

j) Lockout
The placement of a lockout device on an energy isolating device, or in accordance with an approved procedure, ensuring that the energy isolating device and / or the equipment being controlled cannot be operated until the lockout device is removed.

k) Lockout Device
This is 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.

l) Mark Up
The 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.

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

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

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

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

q) Servicing Maintenance and Cleaning
Work place 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 to actually produce its product is either servicing or maintenance. These activities include lubrication, cleaning, or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected activation of an energy source, unexpected start-up, or unexpected release of stored energy.

r) Setting up

Any work performed to prepare a machine or equipment to perform its normal production operation.

s) Tagout Device
This 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.

t) Trouble Shooting
Work performed on equipment while the equipment is not under LTV condition, which includes adjusting or visual assessment of equipment.

u) Verification
This 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.

v) Zero Energy
All sources of incoming energy have been blocked or disconnected and all internal energy has been released or blocked.

w) 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.

x.) Attachment #2 – Group Lockout Form
This form is to be used for Group - lockout / tagout situations.

y) Attachment #3 - Lockout / Tagout / Try Variance Form
This form is to be used when it is necessary to adjust a job task which varies from the prescribed L/T/T procedure.

z) Attachment #4 - Sample Tags & Locks
This is to present visually the tags and locks that are used in Massena Operations.

aa) Attachment #5 – SSOP and LTV Procedure Change
This form is used when a SSOP or LTV procedure has been changed and retraining is needed.

bb) Attachment #6 – LTV Audit Form
This form is to standardize how we audit the different aspects of our LTV program.

cc) Attachment #7 - Green Flag Decision Flow Chart
This flow chart is used to decide whether or not to use a Green Flag for simple, short duration jobs.

dd) Attachment # 8 – Trouble Shooting Permit
Use this form when there are no existing specfic 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.

4. 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 insure 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.

i) **Any variance from these procedures must be reviewed and approved by the Safety Manager and Departmental Manager and a Lockout /Tagout Variance Form" (Attachment #3) be completed prior to work. Variances must be reviewed and approved annually by the Health and Safety Manager.**

5. 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.)

6. PERSONAL LOCKOUT PROCEDURE:

A) <u>Notification of Lockout/Tagout:</u>

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 <u>any</u> uncertainty regarding proper isolation.

B) <u>Lockout/Tagout</u>:

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 to decide how to make it safe. Use of Attachment #3 Lockout/Tagout/ Try Variance Form must be used.

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.

j) 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.

k) If distinct form of marking or labeling is not already available, use flagging (green) to ensure personnel manipulate or perform work on the correct energy isolation devices, valves or equipment.

C) Procedure for Electrical Energy Control:

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, 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) For pneumatic valves, pressure must be relieved or bleed off. For hydraulics, stored energy must be controlled.

e) 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.

f) Test the isolation device after lockout has been installed to make sure that is cannot be operated or have its state changed

g) Verify zero energy state. See lockout verify 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) 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.

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) Testing or Positioning of Energized Equipment:

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:

- o If there are no existing specfic written SSOP or Written Trouble Shooting Procedure, issue a Trouble Shooting Permit (See Appendix)
- o Energize and proceed with testing or positioning.
- o Reapply energy control measures to continue servicing and maintenance.

7. 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.

8. EQUIPMENT WARNING TAG:

NEVER USE THIS TAG 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.

9. FLAGGING – GREEN:

a) A Green Equipment Identification flag does **NOT** indicate proof of zero energy state and that proper LTV procedures have been followed

b) Green Equipment Identification flags are used to positively and visually identify plant equipment and machinery that is being worked on.

c) Green equipment identification flags shall only be used by an Authorized Person. Green flags shall be attached once zero energy state has been verified according to LTV procedures.

d) If multiple Green flags are in use in one area on more than one piece of equipment, refer back to the Equipment Identification and LTV procedures to ensure the right equipment is worked on. If there are any remaining questions, ask your supervisor.

e) For simple, short duration jobs, the Green flag procedure may not be applicable (use Green Flag Decision Flow Chart in Appendix). However, if the employee(s) leaves the area for any reason without removing all locks and tags, the Green flag must be applied.

f) Green equipment identification Flags shall be securely attached to prevent inadvertent removal or misplacement of the flag.

g) Green flags shall be durable to withstand the work environment and not deteriorate.

h) Wherever possible, the Green flag(s) must be attached to the equipment where it is highly visible and can remain for the duration of the job.

a. Flags shall be attached in a manner that ensures they are visible to employees approaching the work area from any direction.

i) All Green flags are to be removed prior to equipment being released from energy isolation and returned to service.

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.

10. 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.

11. 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 Website, LTV Web page. They may also be attained from the supervisor in the department.

12. 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.

~~13. VARIANCES:~~

~~a) All LTV variances will also be reviewed at least annually, or as changes to the procedures are necessary, by the Safety and Health Manager.~~

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 necessity of a Lockout/Tagout/Verify Program and the program components will be presented for all Authorized and Affected employees annually. The training will be given in a designated month to ensure that all employees, regardless of their department, are apprised of and familiar with the necessity of a Lockout/Tagout/Verify Program.

b) All New Employees will be trained during their Orientation program before they are assigned to any position.

c) All Contractors will review the Lockout/Tagout Program with their ALCOA Project Sponsor prior to their starting any work on any machine/equipment.

d) Re-training will be conducted whenever there is reason to believe that there are deviations from or inadequacies in the Lockout/Tagout/Verify Procedures, or whenever there are changes made to the program.

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

20. ATTACHMENT #2
GROUP LOCKOUT FORM

21. ATTACHMENT #3
LOCKOUT / TAGOUT / TRY VARIANCE FORM

22. ATTACHMENT #4
SAMPLES OF TAGS & LOCKS

23. ATTACHMENT #5
SSOP & LTV PROCEDURE CHANGE

24. ATTACHMENT #6
LTV AUDIT FORM

25. ATTACHMENT #7
GREEN FLAG DECISION FLOW CHART

26. ATTACHMENT #8
TROUBLE SHOOTING PERMIT

27. RECORD HISTORY:

Revision Date	Nature of Revision	Name of Document Review Participant
9/7/00	Original document	
4/5/01	Revised	Micki Nesbitt
9/11/01	Format changes	Allen Baxter

9/24/01	Change to Green Tag	Allen Baxter
10/23/01	Inclusion of cross reference to Railroad Track Isolation procedures	Allen Baxter
11/11/02	Annual review of written program – no changes	Allen Baxter
6/29/05	Annual review with changes	Micki Nesbitt, Bernie Sweeney, Tim Hargett, Karl Butz
9/26/07	Annual review of written program with changes	Karl Butz, Tim Hargett, Bruce Serviss, Tom Simpson
11/27/07	Add Wheel Cover One Point Lesson	Bruce Serviss
9/25/08	Updated LTV Audit Form – attachment # 6 and Program Section 12	Bruce Serviss, Tim Hargett
1/20/09	Added Trouble Shooting Permit - Attachment 8, Definition and revised Section 6G - Testing or Positioning of Energized Equipment	Bruce Serviss
7/15/11	Blue Flag Procedure changed to add "Switches" as a means of isolation	Bruce Serviss
8/30/12	Annual Review	LTV one Massena Team
12/19/13	Annual Review with specific updates including: training frequency update from annual to every three years, variance review/approval process update, and a change from three year to periodic for the LTV procedure reviews. Also included verbiage that a set of locks may be keyed alike, and added 7j allowing an individual the right to lock separately under Group LTV per the LTV ASAT 8.2.8c.	Ken Hurlbut, Darren Carr, Tracey Sheets, LTV Critical 9 Team
12/11/14	Updated/removed links so that all remaining embedded links and references are valid. Expanded the Contractor verbiage in Section 10. Corrected minor grammar and formatting issues.	Tracey Sheets
08/17/15	Annual review. Also clarified that employee name must be on all LTV locks, and both name and department on tags. Removed the Steering Wheel Cover reference as it has been replaced with a Mobile Equipment variance. Continued process of correcting formatting issues.	Tracey Sheets
10/05/16	Annual review, changed Special Lockout form name to Group Lockout, added points of clarification to the Group Lockout section including Responsible Person requirement to apply blue lock prior to entry. Also clarified the Transfer of Responsibility section. Continued correcting formatting issues.	Tracey Sheets
10/10/19	Updated training frequency to annual, Variance section struck out in compliance with the updated ASAT Gap Analysis.	Tracey Sheets

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

Table of Contents:

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1.0 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.

2.0 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

3.0 DEFINITIONS

Access- is 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 snaphook subject to pressure on the gate mechanism by the anchorage point. This includes the unintentional disconnection of perched locking snaphooks 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;
- 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 snaphook 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.

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 (Dropped) 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 snaphook which swings closed to secure the connection. Note: all snaphook 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 - Snaphook, 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.

4.0 RESPONSIBILITIES

4.1 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.

4.2 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.

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4.3 The Fall Protection Team is responsible for:

- Maintaining the written Massena Operations Fall Control Program.
- Maintaining and updating the Locations Fall Survey including documenting new hazards identified, target dates and person(s) responsible for completing corrective actions.
- Periodically verify compliance with the procedures in this program.
- Identify training requirements.
- Verify documented training is being conducted.
- Recommend changes to improve execution of the program.

4.4 The Fall Control SPA's are responsible for:

- Evaluating the selection and purchases of new equipment.
- Updating and overseeing the fall training programs and activities.

5.0 SPECIFIC FALL PREVENTION / PROTECTION RULES AND REQUIREMENTS

5.1 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.

5.2 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.

5.3 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.

5.4 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.
  - Keep the floor clear at all times.
  - 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.

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- Report holes, loose or deteriorated grating, floor block and other flooring problems.
- Throw away trash promptly.

5.5 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.

5.6 Portable Ladders: General Requirements

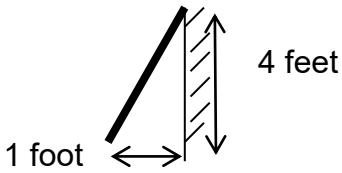
- Must be rated at the Type 1A (300lb) min capacity
- Must be maintained according to manufacturer's recommendations.
- Must be inspected every six months as per *Massena Operations Portable Ladder Inspection Procedure.*
- Ladders shall be visually inspected for defects by the user prior to each use 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 non-conductive
- 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.

5.7 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.
- 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.



5.8 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.

5.9 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.

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- 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 position the unit close 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.

5.10 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.

5.11 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.

5.12 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.

5.13 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.

5.14 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 (link below) for detailed inspection instructions.

Fall Arrest Equipment Inspection Procedure Checklists

NOTE: Controlled EHS Documents are maintained electronically on the server. Printed versions of EHS Documents are *UNCONTROLLED*. Prior to relying on a printed document, verify that it is current.

- 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.

5.15 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.

5.16 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 as long as 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 as long as 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.

5.17 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.

5.18 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.

5.19 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.

5.20 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.

5.21 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 Alcoans, 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.

5.22 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**

7.0 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.

7.0 SCAFFOLDS

7.1 Scope

This procedure must be followed by all Massena employees and contractors when erecting and using a scaffold.

7.2 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.

7.3 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.

7.4 Duties of a Qualified Person

- To design scaffolding in accordance with OSHA 1910.28 and / or 1926.451(a)(6).

7.5 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)

7.6 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: MAS_Ops Scaffold Checklist.doc.
- 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.

8.0 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.
- Chains and single bars are not acceptable for permanent ladder opening protection.

9.0 ROOF ACCESS GUIDELINES

9.1 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
  - 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.

Roof Access Permit form
Roof Safe Work Instruction Template
Inspecting, Investigating or Assessing a Roof - SWI

9.2 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.

9.3 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.

9.4 "Garlock Rail Guard 200"

- Meets OSHA requirements for permanent and temporary guardrails.
- Can be used as a means 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.

9.5 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.

10.0 Falling Object Program

- Exposure to falling objects (drop zone or VDZ) is generally within a 1:1 angle from the upper, outside edge of any suspended or hoisted load, loose, or untethered object/tool.
- To avoid exposure to falling objects, the following shall be observed:
  - Employee shall stay out of the blue light zones when overhead cranes are operating
  - Where work will take place overhead, (cranes, manlifts, forklifts, platforms, scaffolds, ladders, edges of buildings, openings in roofs/floors, etc.) barricades/delineation shall be erected or a groundman stationed to prevent others from entering the drop zone.
  - Stored materials shall be stacked in accordance with dept policies and those on pallet racking shall not overhang the rack
  - Possibility of wind blowing equipment off platforms or rain and ice making tool grips or footing slippery. If the weather is particularly severe and the work area designs are not adequate to prevent dropped/falling objects, 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:
  - Fall Control 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 through the Forwood Critical Risk Management application.
  - Ongoing communication and periodic reviews of falling object incidents will be conducted.

10.0 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.

11.0 EMERGENCY RESPONSE

- Massena Operations has Emergency Response Teams at both locations.
- 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 he/she becomes suspended from their fall arrest equipment. The ideal rescue plan is to utilize an aerial lift. At minimum, the plan must allow for rescue within 15 minutes
- A fall control plan including rescue details is required for work required on poles, towers and similar structures.
- Emergency Response Team Members are trained and drill in HAZMAT, fire, rope rescue and medical emergencies.

- Additional firefighting and emergency response equipment and/or personnel are available for response from the Massena Fire Department and Massena Rescue Squad.

12.0 FALL HAZARD SURVEY

- Fall hazard surveys will be an ongoing activity of this program and will be coordinated by the Fall Protection SPA's.
- The "Fall Hazard Identification Form" should be used to identify and prioritize hazards (see attachment). The form should be given to a member of the Fall Team for entry into the system.
- High priority issues will be addressed first, or counter measures put in place until full corrections are implemented.

13.0 AUDITS

- Departments should conduct periodic audits to assure compliance with this program.

14.0 REFERENCES

Roof Access Permit
Scaffold Checklist Form
Fall Hazard Identification Form
Roof Safe Work Instruction Template
Job Aid: Ladder Tie-Off Methods

OSHA Construction Standards Subpart M – Fall Protection
OSHA 29 CFR 1910.22-29, Walking and Working Surfaces
OSHA 29 CFR 1910.66, Appendix C
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

Alcoa Engineering Standards:

- 18.2 Fall Control
- Work At Heights & Fall Protection
- 33.013 Fall Protection - Supplemental Documents Design, construction, installation of fixed platforms, walkways, ladders, stairways, roof openings

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

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Table of Contents:

1. Purpose

This document is a compilation of the various rules, procedures and requirements developed for the safe operation of free moving mobile equipment (industrial and earth-moving mobile equipment) throughout Massena Operations to eliminate injuries and fatalities.

GENERAL REQUIREMENTS

(1) All operating locations with mobile equipment shall have a mobile equipment safety program that includes specific requirements for operating procedures, medical evaluations, inspection, testing and maintenance, purchasing, contractor procedures, training, incident investigation and reporting.

(2) All mobile equipment shall comply with applicable country/local regulations and Alcoa standards.

(3) If there is a conflict, the regulation, standard or document yielding the safest or most robust method for use of mobile equipment shall be used.

2. Definitions

- **Blue Lights** are lights (blue in color) mounted on mobile equipment that project from the front, back and/or sides to warn pedestrians or workers that the mobile equipment is approaching or present in the area.
- **Collision Avoidance System** is an engineered automated system installed on a piece of mobile equipment or carried by an individual that detects humans and/or mobile equipment. It either warns of the presence of a human/mobile equipment or does not allow the mobile equipment to make contact with the human or another piece of mobile equipment.
- **Competent Person** is a person who possesses 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 solve or resolve problems relating to the subject matter and work.
- **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 (FSI) by applying controls and evaluating their effectives through management observations and assessments.
- **Dock Leveler** is a loading dock safety device used to bridge the gap between the loading dock and a trailer backed into the loading dock. Dock levelers move up and down to meet the trailer bed and provide a smooth, safe transition into and out of the trailer. Automatic hydraulic levelers are preferred, as they reduce potential stump out and leveler free fall due to a velocity fuse incorporated into the hydraulic system.
- **Early Departure or Unscheduled Departure** is when the truck driver mistakenly pulls

away from the dock before loading or unloading operations are complete.

- **Earth-Moving Mobile Equipment** is operator-controlled mobile equipment not on fixed rails and used to haul or work earth. Examples include haul trucks, scrapers, loaders, crawler or wheel tractors, bulldozers, off-road trucks, graders, agricultural and industrial tractors, and similar equipment.
- **Falling Object Protection System (FOPS)** is designed to **protect** the mobile equipment cab and operator from **falling objects** in dangerous environments.
- **Free-Moving Mobile Equipment** is operator-controlled mobile equipment not constrained by fixed rails. Examples include gasoline, propane, diesel or electrically powered industrial trucks, automatic guided vehicles, power aerial lifts, lawn tractors, tug boats, mobile cranes, vacuum trucks, bucket trucks, water trucks, cherry pickers, dumpster trucks, light dump trucks, street sweepers, scooters, buggies, golf cart-type vehicles and other industrial vehicles.
- **Loading Dock Door Safety Barrier** is a horizontal beam or other device installed on a loading dock door.
- **Pedestrian Walkway** is a defined path identified as a means of safe passage through an area or building. Pedestrian walkways are a form of protection that is designed to prevent pedestrians from walking into mobile equipment traffic.
- **Pre-Use Inspection** is a required inspection that is to be completed before each shift when the mobile equipment is to be used.
- **Rollover Protection System (ROPS)** is a system or structure intended to protect mobile equipment operators from injuries caused by vehicle overturns or rollovers.
- **Safety Bollards** are devices installed into the concrete edges of the loading dock to prevent drive off. Bollards are locked into the up position to prevent drive off and locked down when access to the trailer is required.
- **Trailer Stand or Trailer Jack** is an engineered device placed under the nose of a trailer. It is designed to help prevent trailer tip over and landing gear collapse by providing secure support.
- **Unattended Vehicle** is when the operator exits the vehicle while it is running.
- **Vehicle Restraint or Trailer Restraint** is an engineered device that locks onto the rear impact guard. It restrains trailers at the loading dock to keep them from separating from the loading dock during trailer loading and unloading.
- **Wheel Chock or Chock** is a loading dock safety device that is wedged between the tire and ground to prevent dock walk or trailer creep.
- **Worker on Foot (WOF)** refers to pedestrians working with, or in close proximity to, operating mobile equipment or fixed-rail equipment (cranes).
- **Worker on Foot zones** are working zones in which the presence of a WOF is highly probable due to the existence of routine or temporary tasks. WOF areas can be permanent, movable or temporary.

  (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.

3. Operator Certification and Training

Operator training on all industrial vehicles will be conducted or coordinated by the Department. 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.). All training records will be maintained by the Safety Department. Departments will determine who will be certified to operate mobile equipment.

Certification will consist of the following components:

A. Medical Examination

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 71.19: Mobile Equipment Operator Medical Evaluation). Persons who only operate jib and packing station cranes do not need to receive a physical examination.

B. Certification and Training

- Initial training requires the employee to attend a classroom session conducted by a competent person with the knowledge, skills an 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 demonstate to the instructor knowledge of course content, which may include a written test and/or skill demonstration evaluation.
- Unless a location can demonstate 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 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 fork lift.

View from the front of the forklift

View from the back of the forklift

C. Departmental Skills Assessment

(1) Each department is required to train and evaluate operators on the type(s) of equipment they are expected to operate in the department

(2) All operators are required to demonstrate to a designated representative hands-on proficiency for the types of equipment they will be operating.

(3) A record of employee proficiency shall be documented on the forms provided by the Safety Department and maintained in the training Tracker.

D. Re-certification

(4) The employee will be required to demonstrate a hands-on proficiency capability on the specific vehicle type they will be operating to a designated representative upon initial certification and then every 3 years. The proficiency test shall be documented on the forms provided by the safety department.

(5) A record of this information shall be documented on forms provided by the safety department and maintained by the department.

(6) 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.

(7) Employee's 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.

E. General Awareness Training (SM-090)

Annual mobile equipment refresher training will include:

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.

4. Mobile Equipment Purchasing/Leasing Specifications

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* ENG STD 30.3.2: Noise Levels for Purchased, Leased, or Rented Vehicles, and must undergo a Project Health Safety Environmental Review prior to acceptance and use.

Massena Mobile Equipment PEHSR

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.

5. Inspections

A. Slings and lifting devices

1. Alloy steel chain slings
   - *Identification* - Each sling shall have a permanently affixed durable identification marked with the following; (1) Name, symbol, or trademark of sling manufacturer, Chain grade and size, (3) Number of legs, (4) Loads and angles for which it is rated, and (5) Reach.
   - F*requent Inspections* - Visual inspections by the user with records not required Frequency varies from daily to monthly depending on use and work environment.
   - *Periodic Inspections* - Complete link by link documented inspection by a designated person. The frequency varies from monthly to yearly depending upon use, but shall not exceed 12 months.

2. Wire rope slings
   - *Identification* - Each sling shall have a permanently affixed durable identification.
   - *Frequent Inspections* - Pre-use visual inspection by the user.
   - *Periodic Inspections* - Complete documented inspection by a designated person. Frequency depends on the use of the sling, but shall not exceed 12 months.

3. Synthetic web slings
   - *Identification* - Each sling shall have a permanently affixed durable identification marked with the following; (1) Name, symbol, or trademark of sling manufacturer, (2) Manufacturer's code or stock number, (3) Rated load for the type of hitch, (4) Type of material and construction, and (5) Date of manufacture.
   - *Frequent Inspections* - Pre-use visual inspection by the user.

- *Periodic Inspections* - None required.

4. Lifting devices
   - Pre-use - Lifting devices shall be inspected prior to each shift.
   - Periodic - Complete documented inspection by a designated person. Frequency depends on the use of the lifting device, but shall not exceed 12 months
   - Any/all lifting attachments to be used must be rated and posted on both the attachments & mobile equipment per OSHA 1910.178(a)(5) & (a)(6).

B. Mobile Equipment / Industrial Vehicle

1. Pre-use/Shift
   - Pre-shift/use inspection shall be performed by the operator and documented on forms approved by the Safety and Health Department.
   - 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

2. Maintenance Pre-release
   - Upon completion of serviced mobile equipment the garage mechanics (Qualified Personnel), shall conduct inspection using the pre release form before releasing back to service to operations. (Massena pre release form).
   - Inspection pre release form, testing and maintenance records shall be accessible and retained at the location for both mobile equipment and dock safety devices.

6. Maintenance/Repair

A. Preventative Maintenance

A preventative maintenance program shall be established for all mobile equipment. 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 pre release check list. (Massena pre release form).
  - The pre release check list will be maintained for 3 months.

B. 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.).

7. Safe Operating Procedures

A. "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.

B. Speed Control Policy: (Massena Primary Metals)

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.

In accordance with this policy, all mobile equipment that is controlled will be on a semiannual inspection to assure that it is in compliance. The method of checking for verification will be with approved speed verification instrumentation.

- ❖ Passing the test signifies that the mobile equipment was at the required speed or less. Nothing further will be required until the next inspection.
- ❖ Failing the test the equipment will be tagged out immediately by the garage mechanic. The department asset owner will be notified. It will be their responsibility to lead an investigation to determine the reason for failing and the best method to correctly address the necessary repairs.
- ❖ After the investigation is completed, the asset owner will enter a work request to the mobile equipment planner to make the necessary repairs to bring it back in control. **If the vehicle needs to be put back in service without speed controls, written safe work procedures must be written and approved by the asset owner and safety department to assure that the proper controls are in place to safely operate the vehicle for an agreed upon time frame. Afterwhich, the vehicle is to be taken out of service and the necessary repairs made.**
- ❖ All equipment that fails will be re-evaluated at the next PM or in 3 months, whichever comes first. Passing at that time will not require another evaluation until the scheduled semiannual inspection. Failure will be addressed the same as previously done.

C. 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 break 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.

D. All mobile equipment / Industrial vehicles:

- 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:
  (1.) Vehicles must be secured against movement with parking brakes applied
  (2.) Reverse parking shall be the preferred method of parking, expected in instances where the risk of vehicle collision with worker on foot is higher.
  (3.) Parking mobile equipment on pedestrian walkways is prohibited.
  - o 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.

- 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.
- Stunt driving, racing, and horseplay with vehicles are strictly forbidden.
- Always give pedestrians the right of way. If pedestrians block line of travel, slow down, or stop if necessary, and sound horn.
- 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.
- 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.
- 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.
- All mobile equipment shall be parked according to the following requirements:
  (1.) Vehicles must be secured against movement with parking brakes applied
  (2.) Reverse parking shall be the preferred method of parking, expected in instances where the risk of vehicle collision with worker on foot is higher.
  (3.) 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.
- Avoid sudden starts, stops, and turns, especially when carrying a load. Apply brakes gradually when stopping. Do not use reverse to stop vehicle except in case of emergency such as failure of brakes to hold.
- Sound horn at all blind corners, when passing through doorways, when passing other vehicles,

pedestrians, or workers, or wherever there is a sign indicating its use. Never sound horn to startle people.

- Obey all traffic signs such as "stop", "slow", "caution", "keep to right", etc.
- Do not attempt to make any repairs to vehicles yourself. Authorized persons should do all maintenance work.
    A. Inspections of free moving mobile equipment shall be performed by qualified inspectors in accordance with location specific procedures, local regulations and consensus standards. Inspection records shall be accessible and retained at the location.
    B. Only designated location personnel or approved contractors are authorized to perform maintenance on free moving mobile equipment, a qualified maintenance employee or contractor shall conduct an inspection prior to returning the free moving mobile equipment to operations.
- Report all incidents, whether they involve personal injury, equipment or material damage, collisions or upsets, to your supervisor at once. Do not remove your vehicle from the scene of an accident without proper authorization. If its location creates a potential hazard, then move it to an area that is safe.
- When floors are slippery with grease, oil, or water, reduce your speed, and notify appropriate personnel to have floors cleaned up or clean yourself, if appropriate.
- Avoid operating internal combustion engines (vehicles and equipment) in an enclosed area for long periods of time. Carbon monoxide level may become excessive.
- Be careful when mounting and dismounting vehicles and use steps where provided.
- Do not smoke or use open flames around batteries being charged.
- A distance of 2-3 lengths must be kept between vehicles, which are following one another.
- The driver is responsible for keeping his/her vehicles clear of the edge of a loading dock.
- If a vehicle is leaking fluid, do not move it. Take appropriate actions to stop leak and or clean the spill.
- All tricycles and personnel scooters will have a highly visible flag or flashing light.
- Free Rigging is prohibited unless Employers receive written approval from the Powered Industrial Manufacturers when modifications and additions affect the capacity and safe operation of powered industrial trucks.
    - ❖ Definition of Free Rigging: Free rigging is the direct attachment to or placement of rigging equipment (slings, shackles, rings, etc.) onto the tines of a powered industrial truck for a below-the-tines lift. This type of lift does not use an approved lifting attachment.

E. Aerial Lifts

- Only qualified and authorized operators or repairers shall operate aerial lift.
- The operator shall inspect the work site for possible hazards (before and during use). These hazards include:
    - ❖ Drop-offs or holes
    - ❖ Bumps and floor obstructions
    - ❖ Debris on the floor
    - ❖ Overhead obstructions/high voltage conductors
    - ❖ Hazardous locations
    - ❖ Surfaces which will be adequate to withstand load forces imposed by the aerial platform in all operating configurations
    - ❖ Wind and weather conditions

- ❖ Other possible unsafe conditions on or off the site.

- When traveling with an aerial list, an escort vehicle is to be used when the aerial lift visibility is impaired either by physical (eg. Structures, vegetation) or environmental conditions (lighting).
- The aerial platform is to be operated within limits set by the manufacturer.
- Outriggers, stabilizers, or other stability measures are used as required by the manufacturer.
- All guardrails are installed and access gates are closed according to manufacturer instructions.
- Distribute the load on the platform/extensions to manufacturer's specifications.
- Adequate overhead clearance shall be maintained between baskets and energized electrical conductor.
- Keep platform free of clutter, grease, etc.
- Audible alarms/interlocks must be tested and function.
- Ground controls must be tested and functioning prior to using the aerial lift.
- When raising/lowering the platforms keep body parts clear of the platform and other moving parts.
- Full body safety harness and lanyard affixed to an approved anchor point is required while in an aerial lift.
- Maintain firm footing on platform floors. Never use ladders, planks or any other means to gain extra height or reach from/in the platform. Use 3-point contact to enter or exit the unit.
- Care shall be taken to prevent rope, hoses, electric cords, cables or other fixtures from becoming entangled in the platform structure -- secure equipment and stow when not in use.
- Never use the platform as a crane.
- Operate at a speed conducive to ground conditions, visibility, slope, personnel, etc. Always operate equipment in control.
- Stunt driving and horseplay shall be strictly forbidden.
- The engine shall be shut down and be in a well-ventilated area free from sparks, flames or other hazards that may cause an explosion or fire.
- Batteries shall be charged in a well ventilated area free from sparks, flames or other hazards, which may cause fire or explosion.
- Never alter/disable any safety device on the equipment.
- Modifications to a device shall be made only after the manufacturer gives prior written authorization.
- Maintain a clear view of travel direction, keeping a safe distance from holes, drop- off, ramps and other hazards.
- Never attach wire, cables, rope, etc. on a fixed object, your unit could tip over.

F. Mobile Cranes

General Operating

1. Only *trained* and *authorized* persons shall be permitted to operate mobile cranes.

2. The equipment shall be used only in accordance with the manufacturer's instructions and safety precautions.

2. Altering, modifying or disabling *safety devices* or *interlocks* is prohibited.

4. Prior to operation, the operator shall perform a pre-operational check of the equipment and record the information on the Pre-operational checklist supplied in your area. Be sure the controls are plainly marked as to their function.

(i) Inspect the wire rope.

(ii) Immediately report any defects or malfunctions, which become evident during operating. Any defects or malfunctions that affect the safety of operations shall be repaired prior to continued use of the mobile crane.

(iii) Make sure that all outriggers are fully lowered, wheels are off the ground, and the crane is level. (Use of proper cribbing may be necessary where ground is unsure.)

5. Always maintain a safe distance from overhead obstacles.

(iv) Do not operate or park the machine near high voltage wires above 600 volts A. C.

(v) High Voltage operations require that the guidelines established in Alcoa Engineering Standard Part 32.60, Electrical High Voltage Rules And Regulations and OSHA 1910.333 (c)(3) be followed.

(vi) Do not operate the machine in high winds or during electrical storms.

(vii) Stunt driving and horseplay shall not be permitted.

(viii) During inside travel, entering or exiting buildings, an escort should be used.

(ix) Do not handle a *suspended load* over people.

(x) See that the load will clear all obstacles before swinging the boom. Barricade the *work zone*.

(xi) Take operating signals from only one person, unless it is the “STOP” or “*Emergency Stop*” signal. A stop signal shall be obeyed, regardless of who gives it.

(xii) Do not allow anyone to ride on a load carried by the crane or on the crane hooks.

(xiii) When leaving a crane unattended, the operator must land any attached load, set all brakes, put all controls in the off position, shut off the engine, and if required, use wheel chocks or suitable material for blocking wheels to prevent crane movement.

(xiv) Before traveling a crane with a load, a designated person shall be responsible for determining and controlling safety.

(xv) A portable fire extinguisher shall be installed in the cab or at the machinery housing.

(xvi) The operator shall not be permitted to leave their position at the controls while the load is suspended.

(xvii) When erecting a jib, make sure that all retaining pins on the jib are in place at boom attachment areas. All hardware used with jib attachment shall be OEM approved or supplied.

(xviii) Know the maximum safe load capacity of a crane in the configuration being used. Exceeding the capacity could result in crane upset or personal injury.

(xix) When working a mobile crane in the path of overhead cranes, use Tag-out/Lockout/Verify procedures

(xx) Use a ground safety person when working in congested and/or high hazard areas. The ground person must be able to stay with the crane for the duration of the job and guarantee that unauthorized personnel and other machinery do not enter the crane operating work zone. This safety consideration may be ensured using safety cones, reflectors, safety tape,

and Tag-out/Lockout/Verify procedures. When the type work being performed creates a hazard of falling objects, the floor below shall be safety taped off and a "personnel working above" or similarly worded sign shall be positioned on the floor.

G. Special Requirements for Mowing on Slopes:

A. The following requirements apply to Alcoa locations (owned or leased) that use their own personnel or contracted services to mow plant grounds with riding mowers (e.g., tractors, zero-turn mowers).

B. All Alcoa locations must formally evaluate all grounds and properties to determine risks associated with mower rollover potential. Areas identified with slopes greater than 15 degrees require controls that include the following:

(1.) Prohibit mowing with any type of sit-down mowing unit (e.g., riding, stand-behind, etc.) on an incline greater than 15 degrees.

(2.) Strategically place signage to prohibit riding mowers on inclines greater than 15 degrees.

(3.) Implement landscaping strategies, such plants, stones and/or mulch, to avoid trimming vegetation and mowing.

(4.) Require only weed/grass trimmers or remote-operated mowers to maintain slopes greater than 15 degrees.

8. Vehicle Pedestrian Segregation

In the industrial environment industrial vehicles operate in close proximity to employees with limited separation of the mobile equipment from pedestrians. Every opportunity should be made to designate separate vehicle and pedestrian pathways. Rerouting of pedestrians and vehicles maybe necessary to achieve this.

If barriers must be erected to separate vehicles and pedestrians the following are the minimum guidelines to provide adequate protection.

A. Pedestrian Pathway (Walkway) - shall meet the following requirements:

- Minimum 24" 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 install at high use intersections.
- Mirrors and other ways to enhance pedestrian or vehicle operators vision maybe 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.

9. Worker on Foot (WOF) Rules

WOF rules shall be incorporated as part of the location’s general safety rules and fatality prevention efforts. There are three WOF rules.

(1.) Work zone boundaries shall be clearly visible in the form of fencing, lines or any equivalent method for permanent/fixed work zones (e.g., casting furnaces). Cones, lights, flagging, tape, etc. shall be used to visually identify moving/temporary work zones (e.g., carbon-setting area in potrooms).

(2.) Procedures for vehicle or WOF entering, exiting and moving inside the work zone shall be established, with the minimum expectation being three-way communication via radio, visual hand signals or visual eye contact and head nod.

(3.) Safe areas shall be identified and clearly marked for all work zones. Mobile equipment shall only move inside a shared work zone when the WOF is confirmed to be in the safe area. Mobile equipment shall be stopped and put in neutral with the parking brake applied prior to WOF leaving the safe area.

10. Blue Lights

A. 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.

B. The use of blue lights on specific mobile equipment shall be determined by the business unit and/or location.

C. 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.

D. 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 the 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.

11. Safe Driving On Plant Grounds

A. General Rules

- Drive slowly. Have vehicle under control. Be prepared to stop instantly if necessary.
- 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 7mph limit while within Primary Metals buildings, without exception.

B. 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 fire fighting 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 employ 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.

C. Bicycle and Motorcycle Rules

- US PP policy does not allow the use of two wheeled motor vehicles for company business.
- Travelling to work and leaving work to go home is permitted and not considered 'business-related',
- If you ride to work and are required to go to the other plant, department or a task required by work – this is not permitted and considered 'business-related' travel,
- If you ride to work and need to travel to another location in the plant for a meeting, etc. 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.

12. 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. See EHS STD 71.19: Mobile Equipment Operator Medical Evaluation and EHS SUP 71.26.11: Guidelines For Medical Evaluation Of Temporary Alcoa Employees And Contractor, Subcontractor And Contracted Services Personnel.

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.

Contractors must follow the mobile equipment requirements outlined in the job-specific safety plan for the project. (Reference EHS STD 33.051: Contractor, Subcontractor and Contracted Services EHS Management Framework.)

13. Tag out Procedure:

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

14. Railcar And Truck Loading/Unloading:

This section is applicable only to those situations where railroad cars and/or trucks are being loaded with mobile equipment that must board the equipment that is being loaded/unloaded. Loading and unloading of railroad cars and 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.

A. Railroad Cars:
Prior to loading or unloading of any type of railroad car the applicable Railroad Isolation Procedure (Blue Flag) shall be followed to secure the section of track. The appropriate chocks shall be placed to secure the rail car and dock boards shall be inspected prior to installation and shall be securely placed prior to use. Each area that engages in this type of activity is responsible for developing specific SSOP to cover this task.
S:\HS5_6 LOTO\West\Program\MAS_West Railroad Isolation Procedure.doc

B. 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 documented 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

C. Procedures for controlling incoming trucks – These procedures cover key areas, such as sharing information with drivers, inspecting loads to ensure stability and controlling driver staging or waiting areas. (Reference: EHS STD 25.03 Delivery Management. Massena Loading / Unloading Vehicle Inspection

15. 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:

1. **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.

16. References:

~~Corporate Requirements:~~
~~Alcoa Industrial Vehicle Safety Requirements~~
Mobile Equipment PESHR
Alcoa Engineering Standards:
30.3.2 – Noise Levels of Purchased, Leased, or Rented Vehicles
30.20 – Requirements for In Plant Industrial Vehicles
30.21 – Specification and Bid Evaluation Form For In Plant Industrial Vehicles
30.36.1 – Free Moving Mobile Equipment Safety
30.36.1.1 – Mobile Equipment And Pedestrian Segregation
30.36.2 – Business Travel Safety
30.36.3 – Earth Moving Mobile Equipment Safety
30.36.4 – Crane Safety
30.36.5 – Railroad Mobile Equipment Safety
30.38 – Electric Overhead Traveling Crane Management And Control Of Work Zones
Alcoa Engineering Standards Homepage
Alcoa Engineering Standards Table of Contents
Complete List of Mobile Equipment Related Engineering Standards
Massena Mobile Equipment Safety Page
A copy of this written program can be located at:
http://intranet.mas.alcoa.com:6459/Primary%20Metals/HS5_8%20Mobile%20Equipment/Program/MAS_OPS%20Mobile%20Equipment%20Program.doc

17. Record History:

Revision Date	Nature of Revision	Name of Document Review Participant
5/30/01	Original document	Greg Jensen
8/27/01	Format revisions	Allen Baxter
10/01/01	Combined East and West Plant programs and added sections pertaining to LOTO, Contractors, Purchase/Leased Equipment.	Allen Baxter

10/23/01	Included cross reference to Railroad Track Isolation procedure	Allen Baxter
12/20/01	Included Lights on Policy into section 6 and reference to Alcoa Engineering Std on Loading Dock safety procedure	Allen Baxter
2/21/02	Combined GCFP and Primary Programs into one Operations-wide program	Allen Baxter, Shawn Scott, Karl Butz
3/13/02	Added section 14 dealing with Cell phone use	Allen Baxter & Karl Butz
10/10/02 4/28/03	Revised section 3 on new equipment purchase. Revised section 8C on motorcycle and bicycle use to clarify meaning.	Allen Baxter Karl Butz
5/15/03	Revised Dist. List	Karl Butz & Terry Dubray
8/03/06	Removed Internal 6 Year Classroom Training	Mobile Equipment Teams / K. Butz/ B. Sweeney
3/09/07	Added comment to include that forks should be 6" above ground.	K. Butz
01/02/08	Reviewed/Revised-(Added material in yellow highlight, material to be deleted slash mark through it).	Safety Department
06/25/08	Revised Operator Certification/Recertification 2 D (5) added.	Safety Department
06/25/08	Added 6 C (29) Safe Operating Procedures Industrial Vehicles-added (29) Free Rigging prohibited without written approval from powered industrial truck manufacturers when modifications and additions affect the capacity and safe operation of powered industrial trucks. Added also the definition of Free Rigging.	Safety Department
9/7/10	Revise language regarding motorcycle and bicycle policy.	Karl Butz
12/21/11	Added 6.B speed control policy, 7A Pedestrian pathway (Walkway) definition and 7.A.(2) consistent with AES 30.36.1.1.	Safety Department
5/1/12	Revised the 6.B speed control policy and 8.A.(5) Mobile Equipment shall not travel faster than 7mph while within Primary Metals buildings, without exception.	Mobile Equipment SPA's
3/3/2020	Revised to include 30.36.1 Standard Revisons	Mobile Equipment SPA
7/16/2020	Program revision review to include 30.36.1 Standard Revisions.	Jody Hoerner, Nate Rufa
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 pre release check list will be maintained for 3 months.	

Table of Contents:

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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 lead 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 situation, and can lead to multiple fatalities.

Working in confined spaces presents unique hazards not normally encountered in everyday work. Entering into 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.
- 2.1.2. Review entry and rescue procedures.
- 2.1.3. Review and approve training materials.
- 2.1.4. Industrial Hygiene Department shall maintain all expired entry permits for 30 years.

2.2. SPA for Confined Space and Confined Space Team

- 2.2.1. Assist departments to properly identify, classify and reclassify confined spaces.
- 2.2.2. Audit the effectiveness of the CSE program.
- 2.2.3. Maintain Database of Confined Space information.
- 2.2.4. SPA will review and maintain all expired entry permits for 12 months.
- 2.2.5. Review and approve training materials.
- 2.2.6. Review what rescue equipment is needed in each Specific Confined Space Procedure.

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2.2.7. 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 hazards 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 and maintaining all equipment necessary to complete the confined-space entry project.
2.3.8. Completing a Pre-Entry Checklist. (See Attachment "A") Needs to be completed, signed and turned into Security in order to have an Entry Permit issued. *(East Plant ONLY)*
2.3.9. 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 hazards that may be faced during entry, including the mode, signs or symptoms, and consequences of the exposure.
2.4.2. Insuring 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 (West Plant) 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.

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- 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.

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- 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 into 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 is capable of withstanding 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.

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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, in order 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 in excess of 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 a distance of 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 in excess of 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 are capable of causing injury.

3.23 Non-Entry Retrieval System

A retrieval system used for non-entry rescue of persons from permit space. It includes the means by which 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 visible at all times). Each confined space must also be listed in

an inventory. NOTE: Do 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 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 a number of 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 into 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)

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 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.
- Do not key a radio within 5 feet of the air monitoring equipment. The radio waves will cause the instrument to malfunction.
- 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 a distance of 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 work space 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.

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- 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 *(AFE and the West Plant)* and shall be completely 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 into 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. Permits will then be sent to the Industrial Hygienist Department indefinitely in accordance with 71.16

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
- Must use a 5 minute emergency oxygen pack for emergency exit

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.

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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. Wristlets may be used in lieu of the full body harness if the location can demonstrate that the use of the full body harness creates a greater hazard and that the use of wristlets is the safest and most effective alternative.

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 or not an external service is used.

10.4 The Attendant/observer MUST summon help by contacting the Security Office via RADIO or PHONE x4500 (AFE/West Plant). 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 work place 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
- Alcoa Engineering 18.1.2 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 Entry SPA or Massena Operations Health & Safety website. Calibrations are maintained indefinitely.

14 Bump Test

Each instrument must be bump tested prior to use.

15 Forms:

Entry Permit
Attachment A Entry Permit Request
Attachment B Pre-Entry Briefing
Attachment C Entry Log Sheet
Attachment D Template for written procedure
Confined Space Hazard Assessment
Non Permit Required Space Certification
Atmospheric Test Readings for Non Permit Certification
MX-6 Checkout Log

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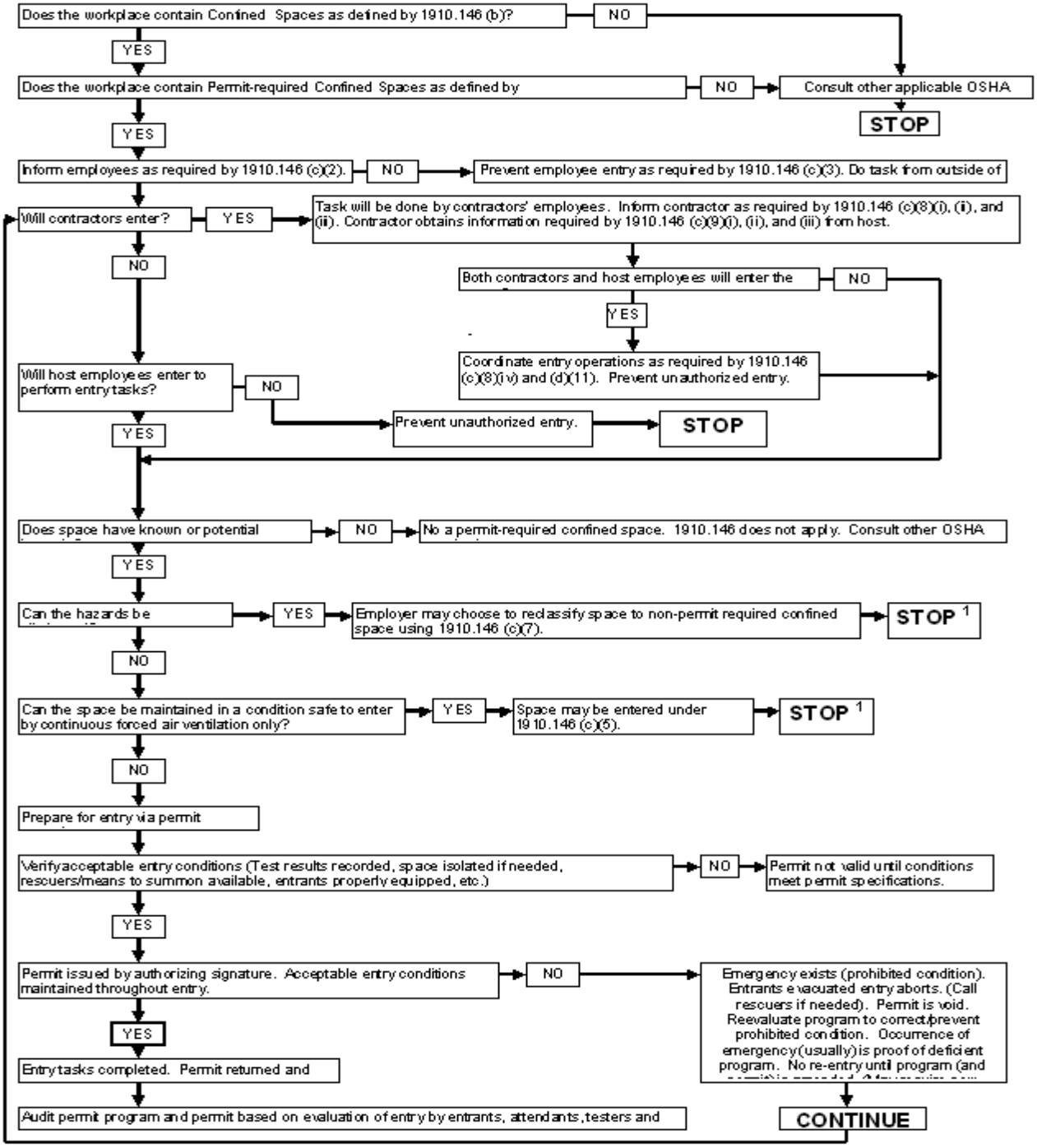
Appendix A

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

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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) Prohibited Approach Boundary.** A shock protection boundary to be crossed by only qualified persons (at a distance from a live part) which, when crossed by a body part or object, requires the same protection as if direct contact is made with a live part (See Section 17.0).~~

42) 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.

43) (*) 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.

44) 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).

45) (*) 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.

46) Shock Hazard. A dangerous condition associated with the possible release of energy caused by contact or approach to live parts.

47) (*) 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.

48) (*) 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.

49) 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.

50) 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.

51) 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.

52) (*) 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.

53) (*) 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.

54) Voltage. The root-mean-square (rms) (effective) difference of potential between any two conductors of the circuit concerned.

55) Working Near (Live Parts). Any activity inside the limited approach boundary.

56) 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.

57) (*) 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 ~~Electrical Safety Related Work Practices~~ 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. ~~In addition,~~ 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

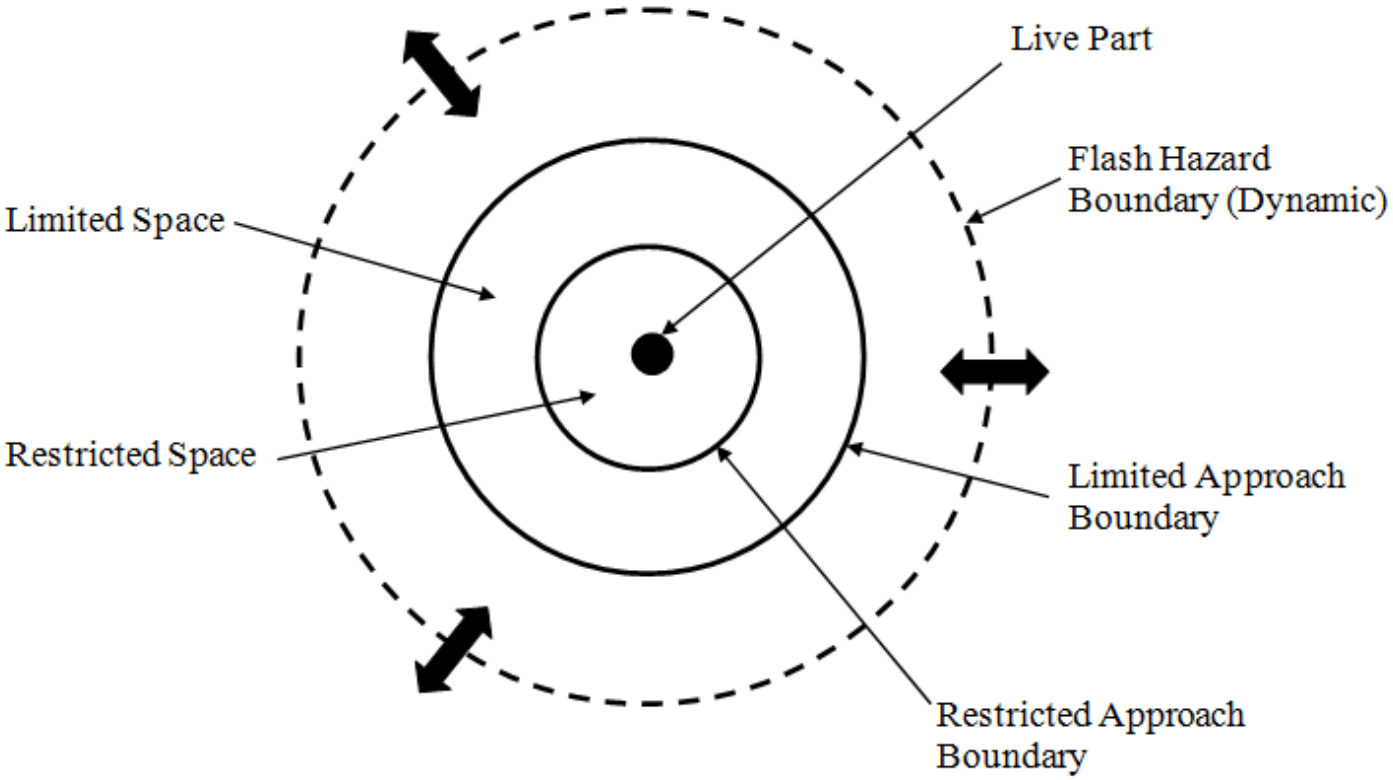


Diagram of Boundaries and Limits of Approach relative to a Live Part

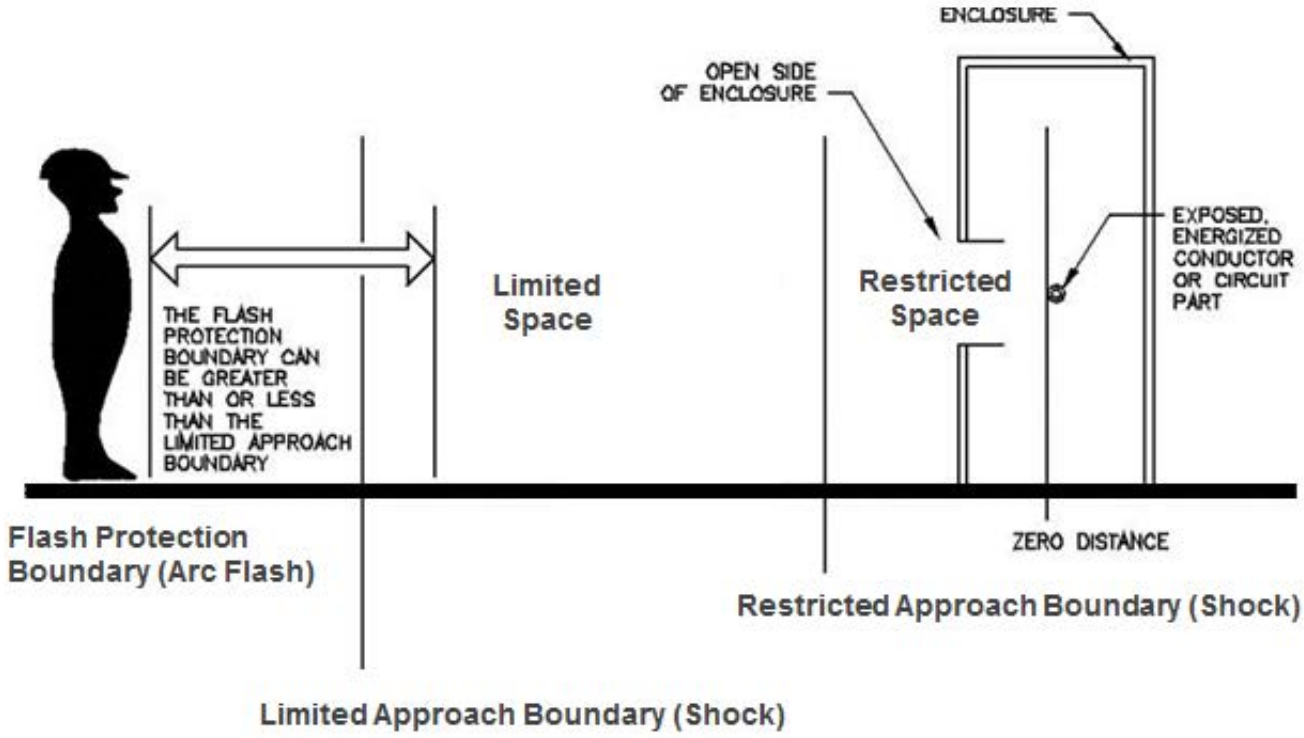


Diagram of Boundaries and Limits of Approach relative to an Exposed Energized Conductor or Circuit Part in an Enclosure with an Open Side

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
Ken Hurlbut	GPP Safety
Mike Campbell	LGA (Lowe, Gravelle & Associates)
Ken Bellor	GPP Contracted Services
Paul Bordeaux	GPP Casthouse
Tim Hargett	GPP Casthouse
Jon Butler	GPP Casthouse
Thomas Carter	GPP Power System
Matthew Fullerton	GPP Power System
Fred Murphy	GPP Power System
Dale Parnapy	GPP Smelter
Ray Phillips	GPP Smelter
Aaron Lavoie	GPP Smelter
Richard Snider	GPP Smelter
Craig Brannen	GPP Smelter

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		
Amprobe				
	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.

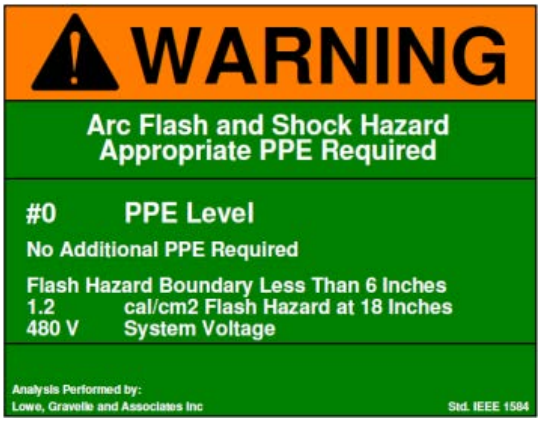
22.0 APPENDIX D – ARC FLASH LABELS

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

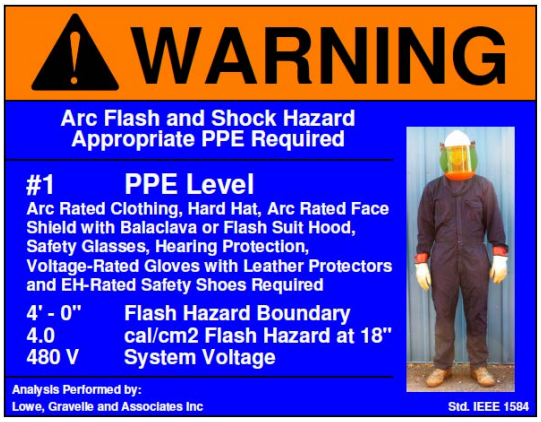
480VAC Electrical Equipment Arc Flash Labels

Arc flash labels for PPE Levels 0 – 4 (40 Cal/cm^2) and Prohibited are shown below:



Arc Flash Label – Level 0

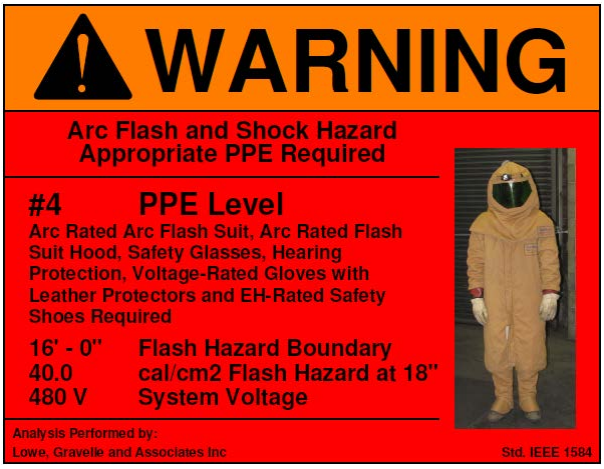
Arc Flash Label – Level 0



Arc Flash Label – Level 1

Arc Flash Label – Level 2

Arc Flash Label – Level 3



Arc Flash Label – Level 4

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.

Prohibited

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

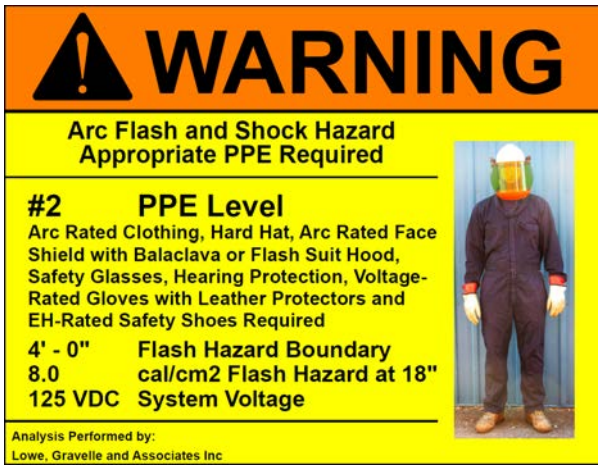
2.4KV arc flash labels are affixed to 2.4KV electrical equipment at the Massena Intake which is designated as arc flash levels 2 or 3. 13.8KV arc flash labels are affixed to plant substation13.8KV enclosed switchgear which is designated as arc flash levels 0, 1, 2 or 3.

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

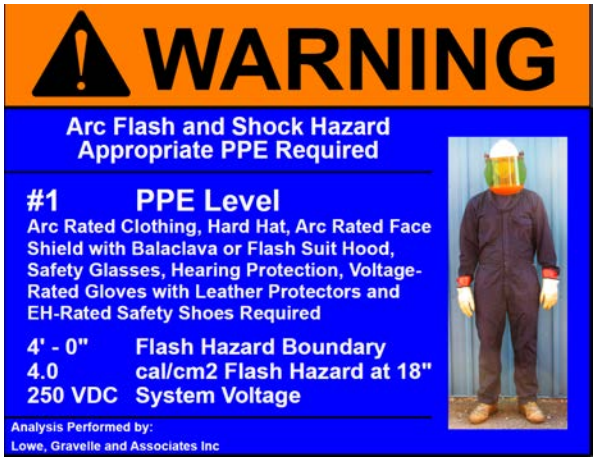
125VDC Station Batteries and 250VDC Crane Power Electrical Equipment

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

Revision Date	Nature of Revision	Name of Document Review Participant
1/21/2002	Draft Procedure Published to intranet	Low Voltage Standard Committee
2/26/02	Revisions to Draft	Low Voltage Standard Committee
3/6/2002	Final revisions to draft acceptance as final standard	Low Voltage Standard Committee
7/7/02	Revisions to standard	Low Voltage Standard Committee
9/10/02	Revisions to standard	Low Voltage Standard Committee
3/20/03	Revisions to standard: Revised sections 20.1.5, 20.1.10, 27.2; Added sections 20.1.12, 20.1.13, 22.1.8; Revised record history	Low Voltage Standard Committee
1/31/2010	Significant revisions / clarifications	Electrical Core Team - Reviewers
2/28/13	Revisions to standard/clarifications to be consistent with AES 32.69 August 2012	Electrical Standards Team
9/19/13	Revised Section 5.4.A.4) and Appendix B Section 20.1 – Changed frequency of training for Course #SE015 from annual to every 2 years; Revised listing of Electrical Safety Standard Reviewers Addendum 18.0 to include Rebecca Garrant and Lindsay Macaulay	Electrical Standards Team
3/26/15	Revisions to standard: Revised Table of Contents; Added section 7.28 and Appendix D – arc flash labels; Added Section 10.1.E - LV glove color code; Revised listing of Electrical Safety Standard Reviewers Addendum 18.0; Eliminated User's column – Appendix A - Alcoa Massena Approved Test Equipment; Revised 23.0 Record History	Electrical Standards Team
8/24/15	Revisions to standard: Employee training 5.3.A., 5.4.A.; Retraining of Personnel 5.7.B.1); Opening and Closing Switches 7.6.B., 7.6.E.; Resetting of Circuit Breakers, Overload Devices and Replacement of Fuses 7.7.B.1); Tie and Transfer Switches 7.12.B.; Work Zones 7.23.B.,C.,D.,E.,F.,G.;Arc Flash Labels 7.28.E.; PPE General 8.1.A.; PPE Ear Protection 8.8.A.; PPE Rings, Watches and Other Conductive Articles 8.9.B.; Approach Boundaries - Table 'Restricted Approach Boundary (spelling)'; Appendix B – Alcoa Massena Electrical Safety Course Descriptions 20.2, 20.3, 20.4, 20.5, 20.7, 20.8, 20.10; Record History 23.0	Electrical Standards Team
10/9/18	Revisions to standard: Table of Contents 7.29 Normal Operation of Energized Electrical Equipment, 17.0 Boundaries and Limits of Approach; Employee Training Qualified Persons 5.3.A.3), Retaining of Personnel 5.6.B.1); Safe Work Practices 7.28 Normal Operation of Energized Electric	Electrical Standards Team

	Equipment; Potrooms General 15.0.A.1) and 2); Boundaries and Limits of Approach 17.0; Addendum 18.0 Electrical Safety Standard Reviewers; Appendix B 20.0 Alcoa Massena Electrical Safety Course Descriptions 20.2, 20.3, 20.4, 20.5; Appendix D 22.0 Arc Flash Labels; Record History 23.0	

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 .

HIGH VOLTAGE ELECTRICAL ASSESSMENT FOR ANNUAL 32.60 SELF-ASSESSMENT AND EXTERNAL AUDITS

Table Of Contents

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1.0 PURPOSE

This Standard describes high voltage electrical self-assessments and external audits. The purpose of a self-assessment or external audit is to verify compliance with 32.60 titled "High Voltage Electrical."

2.0 REQUIREMENTS

2.1 GENERAL

1. Conduct an annual self-assessment of high voltage safety practices to determine noncompliance with 32.60, find weaknesses and produce plans for improvement, and establish personnel training needs for the upcoming year. Every three years, perform an audit by external auditors knowledgeable in the requirements of 32.60. Prior to the external audit, complete the annual self-assessment and provide the results to the auditors. See Section 3.10 of 32.60.
2. This Standard provides minimum expectations for required practices and has nine 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, assesses performance. The nine modules are titled as follows.
   - A. Commitment and Management Responsibility
   - B. Training Requirements
   - C. Personal Protective Equipment
   - D. Tools and Electrical Safety Knowledge
   - E. Creating a Safe Work Zone
   - F. Operation and Maintenance
   - G. Housekeeping and Storage Practices
   - H. Mobile Equipment
   - I. Design and Construction

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2.2 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.

2. How to Answer the Questions?

   When assessing each module, begin by reviewing the minimum expectations in each section. Perform personnel interviews, observations, and review documentation in enough depth to provide evidence of meeting or not meeting the minimum expectations.

3. When Should They Be Performed?

   Complete all applicable sections of 32.60.1 on an annual basis. In years when an external audit is scheduled, complete the self-assessment prior to the audit.

2.3 GUIDELINES FOR COMPLETING THE ASSESSMENT

1. Obtaining Information

   Answering the questions requires the assessor to obtain information from a variety of sources. Some questions can only be answered through personnel interviews; some questions will be dependent upon observations; and some questions require a review of documentation. Document obtained information of the form.

   For example, a question that asks if personnel understand the ten-foot rule or three-meter rule requires a survey of personnel working in high voltage areas. If 25 persons are asked, and 24 provide a valid definition, note that result on the form. Or if live-line work is performed, the assessor needs to review the written approval for such tasks since it is required by Section 3.6 Item 6., C., (2.) of 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 practices. For example, following is statement #2, from Module 1, and the supporting questions:

   The location manager and designee clearly recognize their responsibilities.

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☐ Are there periodic reviews of 32.60 for compliance?

☐ When was the last assessment? _____

☐ Have personnel received all required training?

☐ Is the training documented? _____

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 placing a check on the line following the rating the location received. In the box preceding each question, the assessor should write in a "Y" for yes, an "N" for no, and an "N/A" for not applicable. Any notations should be made in the margins and the comments box. Notes might include method used for obtaining data, document numbers, names of persons interviewed, summary of results, and identification of exceptional practices.

Rating: **Poor**☐ **Fair**☐ **Good**☒ **Excellent**☐

Intent: To ensure personal protective equipment is properly selected and personnel are trained in the use and maintenance of personal protective equipment.

1. Personnel wear the appropriate personal protective equipment to protect them from electrical hazards. See Section 3.4 of 32.60. When in areas with exposed energized parts, do personnel wear the following:

Y	Electrically non-conductive hard hats rated at 20 kV or equivalent?
Y	Electrical hazard rated footwear or equivalent?
N	Safety glasses with electrically nonconductive side shields and frames?
Y	Hearing protection?
Y	Approved Fire Resistant clothing as required?
N	Not wear conductive jewelry and rings?

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Comments:	Observed personnel at various areas throughout the location. Most wore appropriate personal protective equipment. However, many were wearing Metal watches and rings. Observed personnel not wearing safety glasses where required. Add other comments as needed and appropriate.

2.4 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 Standard, there may be instances where business 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, conduct additional observations, interviews, and reviews. 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 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.

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2.5 COMPLETING THE AUDIT SCORECARD

After completing all the modules, transfer the rating for each to the scorecard by placing a check in the appropriate box. Then tally the total for each rating and write that 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.

32.60.1 Scorecard

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** ☐

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 POOR.

Fair = May receive no more than two POOR.

Poor = Receive three or more POOR.

2.6 ACTION PLANS

For those modules receiving a Fair or Poor rating, identify the minimum expectations 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.

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3.0 HIGH VOLTAGE ELECTRICAL ASSESSMENT

Date: _____ Location: _____

Auditors/Assessors: _____ Manager: _____

_____ 32.60 Designee: _____

_____ _____

_____

Audit Score: _____

Summary of Results: _____

_____

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MODULE 1 - COMMITMENT AND MANAGEMENT RESPONSIBILITY

Rating: **Poor**☐ **Fair**☐ **Good**☐ **Excellent**☐

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?

   ☐ Who is the designee? _____

   ☐ Where is the appointment documented? _____

2. The location manager and designee clearly recognize their responsibilities.

   ☐ Are there periodic reviews of 32.60 for compliance?

   ☐ When was the last assessment? _____

   ☐ Have personnel received all required training?

   ☐ Is the training documented? _____

3. Is live-line work and the accompanying Job Safety Analysis approved only by the location manager.

   ☐ Is live-line work performed at this location?

   ☐ Are written procedures for performing live-line work available to workers?

   ☐ Have the procedures been approved by the location manager?

4. All new and modified installations comply with local regulations and consensus standards. See Section 3.11 of 32.60.

   ☐ Do all new installations and any modifications to existing installations comply with the requirements of 32.60? If not, explain reasons for the noncompliance.

   _____

   _____

5. Contractors, subcontractors and contracted services train their employees on high voltage safety requirements or the equivalent. See Section 3.2.6 of 32.60.

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☐ Has the 32.60 designee reviewed and approved contractor, subcontractor and contracted services high voltage electrical safety programs?

☐ Does the contractor, subcontractor or contracted services high voltage electrical safety program meet the requirements and content of 32.60?

7. The 32.60 designee ensures high voltage assessments are conducted annually. See Section 3.10 of 32.60.

☐ Are safety observations performed?

☐ Are high voltage safety review used to assess training needs?

☐ Does training include new technologies, new types of equipment and changes in procedures?

☐ Are self-assessments conducted and documented annually?

☐ Are external 32.60 audits performed every five years for locations with Good or Excellent on the previous external audit?

8. If the location received a “Poor” or a “Fair” on the last external audit, another external audit must be performed within the following twelve months.

☐ Did the location receive a “Fair” or “Poor” on the last external audit?

☐ If so, is this audit being performed within twelve months of the last audit?

☐ Have action plans developed as a result of the last audit been completed or has significant work toward completion of the action plan been completed?

☐ List action plans completed? _____

☐ List action plans not completed? _____

Comments: _____

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MODULE 2 – TRAINING REQUIREMENTS

Rating: **Poor**☐ **Fair**☐ **Good**☐ **Excellent**☐

Intent: To ensure an effective process for determining and providing appropriate training as required by 32.60.

(Reference 32.60, Sections 3.3)

1. Training has been documented and records maintained for qualified personnel, authorized personnel and affected personnel. See Section 3.3 of 32.60.

   ☐ How are persons selected to be trained? _____

   _____

   ☐ Are training records available for review?

   ☐ What training and retraining has been done in the last two years?

   _____

   _____

2. Qualified employees are knowledgeable on the requirements contained local regulations, consensus standards and 32.60. See Section 3.3.1 of 32.60. Qualified personnel receive the following training and retraining when required:

   ☐ Emergency first aid?

   ☐ Cardiopulmonary resuscitation for locations without readily available qualified medical assistance?

   ☐ Techniques to distinguish exposed, energized parts from de-energized parts?

   ☐ Techniques to determine nominal voltage of exposed, energized parts?

   ☐ Understand required distances?

   ☐ Proper use of personal protective equipment, insulated tools and shielding materials?

   ☐ Arc flash hazard boundaries and the requirements for working within arc flash hazard boundaries?

3. Employees whose work could bring them closer than the ten-foot or three-meter rule allows have been trained to be authorized. See Section 3.3.2 of 32.60.

   ☐ Do authorized personnel understand clearance distances pertaining to them?

   ☐ Do authorized personnel understand the limitations and restrictions of entering areas containing high voltage equipment?

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☐ Do authorized personnel understand the requirements of working in areas containing arc flash hazards?

4. All affected personnel who may be exposed to high voltage systems have received effective awareness training. See Section 3.3.3 of 32.60.

☐ Do affected personnel understand the ten-foot or three-meter rule?

☐ Do affected personnel know when they need to be escorted?

☐ Do affected personnel understand arc flash hazard boundaries?

5. A program exists to insure all people requiring training have been identified, skills required for training have been identified and those who were absent from training are rescheduled. See 3.3 of 32.60.

☐ Have personnel who were absent during training been rescheduled?

☐ What skills and topics have been included in training and retraining since the last audit?

_____

_____

☐ How were skills and topics included in training identified for inclusion?

_____

_____

Comments:

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ASSESSMENT MODULE 3 - PERSONAL PROTECTIVE EQUIPMENT

Rating: **Poor**☐ **Fair**☐ **Good**☐ **Excellent**☐

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 3.4)

1. Personnel wear the appropriate personal protective equipment to protect them from electrical hazards. See Section 3.4 of 32.60. When in areas with exposed energized parts, do personnel wear the following:

   ☐ Electrically non-conductive hard hats rated at 20 kV or equivalent?

   ☐ Electrical hazard rated footwear or equivalent?

   ☐ Safety glasses with electrically nonconductive side shields and frames?

   ☐ Hearing protection?

   ☐ Approved Fire Resistant clothing as required?

   ☐ Not wear conductive jewelry and rings?

2. When in close proximity to exposed, energized parts, personnel wear the required personal protective equipment.

   ☐ At a minimum, do personnel wear protective clothing with a minimum arc rating of 8 calories per square centimeter when working in close proximity to high voltage exposed, energized parts?

3. Personal protective equipment for personnel working within the arc flash hazard boundary is determined by 32.70. See 3.4.1 of 32.60.

   ☐ Is the required personal protective equipment determined by an arc hazard analysis?

   ☐ If an analysis has not been completed, do personnel wear personal protective equipment as determined by 32.70? (Table 130.7(C)(9) of NFPA 70E 2009 Edition or local equivalent.)

4. Are rubber insulating gloves rated 17kV or higher with leather protectors used when performing work on the following. See Section 3.4.5 of 32.60.

   ☐ Energized conductors?

   ☐ Live-line tools?

   ☐ Manually operated high voltage switches?

   ☐ Installing and removing grounds on lines and equipment?

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5. High voltage personal protective equipment is appropriately stored. See Section 3.4.5 of 32.60.

- ☐ How are the high voltage gloves stored? _____
- ☐ How are rubber sleeves stored? _____

6. Documentation shows dielectric testing frequency of rubber insulating gloves and sleeves to be appropriate. See Section 3.4.5 of 32.60.

- ☐ Are rubber sleeves dielectrically tested? How often? _____
- ☐ Are rubber sleeves visually inspected? How often? _____
- ☐ Are insulated rubber gloves dielectrically tested? How often? _____
- ☐ Are gloves inspected and air tested? How often? _____
- ☐ Can personnel demonstrate how to air test gloves?
- ☐ Documentation and labels show that dielectric testing of gloves and sleeves is within the required time limits.
- ☐ What does an electrician do if gloves are outdated or damaged?
- ☐ _____

7. Proper personal protective equipment is worn when performing high voltage tasks.

- ☐ Do personnel wear protective clothing with a minimum arc rating of 8 calories per square centimeters when using live-line tools?
- ☐ Do personnel wear the required personal protective equipment when applying safety grounds and testing for voltage?
- ☐ Do personnel wear the required personal protective equipment for infrared testing?
- ☐ Do personnel wear the required personal protective equipment when testing lines and equipment?

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Comments:

MODULE 4 - TOOLS AND ELECTRICAL SAFETY KNOWLEDGE

Rating: **Poor**☐ **Fair**☐ **Good**☐ **Excellent**☐

Intent: To determine if personnel know and adhere to the safety requirements of 32.60. To ensure testing, inspection, and record keeping procedures for high voltage tools and equipment comply with 32.60.

(Reference 32.60, Sections 3.2.3, 3.5.1, 3.5.2 and 3.6)

1. Personnel are knowledgeable and follow all applicable safety requirements associated with their tasks. See Section 3.2.3 of 32.60.

   ☐ Does documentation or interviews show that all personnel have been trained in the use and care of appropriate tools and equipment?

   ☐ Are applicable safe work instructions available to personnel?

   ☐ Are personnel knowledgeable about instructions and procedures?

   ☐ Do personnel acknowledge they are most responsible for their own safety?

2. Employees are knowledgeable in the use, care, and storage of live-line tools and equipment. See Section 3.5.1 of 32.60.

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- ☐ Are tools visually inspected? How often? _____
- ☐ Can personnel demonstrate how to inspect tools? _____
- ☐ 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 3.5.2 of 32.60.

   ☐ Are inspections of high voltage tools and equipment documented and up to date?

4. Personnel understand and adhere to the ten-foot or three-meter rule. See Section 3.6.1 of 32.60.

   ☐ Do authorized and qualified personnel understand and adhere to the minimum approach distance for all high voltages present at this location?

   ☐ Do interviews indicate all personnel understand the ten-foot or three-meter rule and understand how the rule applies to them?

5. Qualified personnel act as task supervisors to direct high voltage work. These persons clearly understand their responsibilities. See Section 3.2.2 of 32.60.

   ☐ Do interviews indicate the task supervisor determines the safe work zone?

   ☐ Does the task supervisor keep affected persons from entering the safe work zone unless accompanied by qualified personnel?

   ☐ Does the task supervisor ensure personnel follow location high voltage electrical safety rules and operating procedures?

   ☐ 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?

6. 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?

7. Electric utility workers and their contractors and subcontractors comply with Section 3.2.7 of 32.60.

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☐ 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?

Comments:

MODULE 5 - PERFORMING WORK SAFELY AND CREATING A SAFE WORK ZONE

Rating: **Poor**☐ **Fair**☐ **Good**☐ **Excellent**☐

Intent: To ensure compliance with the requirements for performing work safely and creating a safe work zone.

(Reference 32.60, Sections 3.6.5, 3.6.7, 3.7 and 3.8.1)

1. Safe work zones are established for protection of personnel inside and outside of the zone. See Section 3.6.5 of 32.60.

   ☐ Provide specific examples of when barricading is required at this location and how it is accomplished?

2. Pre-work briefings are held as appropriate to discuss relevant safety issues. See Section 3.6.7 of 32.60.

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☐ Do high voltage electrical safety topics discussed during pre-work briefings include hazards, personal protective equipment, safe work procedures, lockout and tagout, and tasks to be completed?

☐ 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?

3. Tasks conducted on or near high voltage electrical systems have documented procedures for creating a safe work zone. See Section 3.7 of 32.60.

☐ Are there documented procedures for creating a safe work zone?

☐ Do the procedures contain all of the following procedures including assignment of the responsible person?

- ☐ Isolate and confirm?
- ☐ Tag and lock isolation devices?
- ☐ Test, verify and ground?
- ☐ Identify safe work zone?
- ☐ Document safe work zone?
- ☐ Restore power?

4. 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 3.7 of 32.60.

☐ Does this location require a formal written agreement on lockout/tagout procedures?

☐ Does the agreement fulfill the requirements for creating a safe work zone?

5. A qualified person prepares switching orders and each step is clearly identified. See Section 3.8.1 of 32.60.

☐ Does a qualified person prepare switching orders?

☐ Does a second qualified person review the switching orders?

☐ Do switching orders include a list of all switches and circuit breakers that will be operated for energy isolation?

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☐ Was each step of a past switching order marked off as completed.

☐ When does this location use lock/tag/verify procedures instead of switching orders?

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MODULE 6 - OPERATION AND MAINTENANCE

Rating: **Poor**☐ **Fair**☐ **Good**☐ **Excellent**☐

Intent: To ensure safe work practices and hazard controls are used in the operation and maintenance of high voltage equipment.

(Reference 32.60, Sections 3.6.6, 3.6.8, 3.6.9, 3.8.2, 3.8.3, 3.8.4, 3.8.8, 3.8.9, 3.8.10)

1. The location complies with the live-line work policy. See Section 3.6.6 of 32.60.

   ☐ Does the location perform any live-line work other than the use of high voltage detectors and hot sticks, grounding and phasing? Give examples.

   _____

   _____

   ☐ Are procedures for this work documented?

2. All safe work practices are utilized when working overhead. See 3.6.8 of 32.60.

   ☐ Are tasks performed at elevated heights at this location?

   ☐ What methods are used to raise and lower tools and materials?

   _____

   ☐ Has a specific fall protection assessment for high voltage tasks been conducted?

3. All safe work practices are utilized when working in confined spaces. See Section 3.6.9 of 32.60.

   ☐ If tasks are performed in confined spaces at the location, are confined space entry and high voltage task analyses conducted?

4. 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 3.8.2 and 3.8.3 of 32.60.

   ☐ Do personnel use the proper sequence to attach and remove grounds?

   ☐ Have ground leads and clamps been determined to be capable of carrying the maximum available fault current for the time necessary to clear the fault?

   ☐ Do personnel insure that a five-minute waiting period is observed between isolating static capacitors and grounding/shorting?

   ☐ Have personal ground sets been tested during the preceding twelve months ensure maximum voltage drop values for the short circuit rating are not exceeded?

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☐ Are personal ground sets labeled with the last testing and inspection dates?

5. The task supervisor implements any additional measures necessary to protect personnel from potentially energized lines and equipment during testing procedures. See 3.8.4 of 32.60.

☐ Do personnel use insulated equipment and are they isolated from hazards when grounds have been removed for testing purposes?

☐ Are test areas guarded as required?

6. Signs are in place as required. See Section 3.8.8 of 32.60.

☐ Are signs legible and in good condition?

☐ Do signs convey the correct information needed by the location?

☐ Are signs installed as required such as on substation gates and fences?

☐ Do signs comply with local regulations and consensus standards?

7. The location has a documented and effective locking program to prevent unauthorized operation of high voltage switches. See Section 3.8.9 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?

☐ Are operating system locks used?

☐ If operating system locks are not used, is there a reviewed documented program to prevent unauthorized operation of high voltage switches?

8. Specific high voltage area tasks have been identified. See Section 3.8.10 of 32.60.

☐ Does high voltage yard auxiliary equipment require servicing?

☐ Are insulators and bushings cleaned? If so, who does this work and are there procedures in place?

_____

_____

☐ Is infrared testing performed at this location?

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☐ Is line clearing and tree trimming performed at this location?

9. 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 ten year basis. See 3.8.10 of 32.60.

☐ Have permanent grounds been inspected within the last twelve months?

☐ Has the grounding system been tested within the past ten years? If not, when was the last test of the grounding system?

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MODULE 7 - HOUSEKEEPING AND STORAGE PRACTICES

Rating: **Poor**☐ **Fair**☐ **Good**☐ **Excellent**☐

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 3.8.5, 3.8.6, 3.8.7)

1. Material and equipment not necessary for distribution and transmission systems repair are not stored in substation and switchgear facilities. See Section 3.8.5 of 32.60.

   ☐ Are materials and equipment stored in substations?

   ☐ Are they necessary for repair of the distribution and transmission system?

   ☐ Have storage locations been identified and approved?

   ☐ Are substation and switchgear facilities inspected for housekeeping and storage practices? Who performs the inspections?

   _____

   ☐ Is material or equipment stored in front of high voltage distribution equipment?

2. Qualified personnel periodically inspect substations to determine equipment condition and ground system integrity. See Section 3.8.5 of 32.60.

   ☐ Are periodic inspections of substations performed to determine equipment condition and ground system integrity? Who performs the inspections?

   _____

   ☐ Are inspections documented?

3. Rights-of-way are clear and orderly. See Section 3.8.6 or 32.60.

   ☐ Are rights-of-way clear of trees and brush?

   ☐ Are materials and equipment stored closer than 10 feet horizontally under exposed high voltage lines?

   ☐ Is mobile equipment that could violate the ten-foot or three-meter rule stored closer than ten horizontal feet under exposed high voltage lines?

4. No permanent or temporary buildings are placed closer than ten feet horizontal under exposed high voltage lines. See Section 3.8.7 of 32.60.

   ☐ Are any buildings closer than ten feet horizontal under exposed high voltage lines?

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☐ Have permanent buildings located under high voltage lines been approved?

Comments:

MODULE 8 - MOBILE EQUIPMENT

Rating: **Poor**☐ **Fair**☐ **Good**☐ **Excellent**☐

Intent: To ensure mobile equipment operations associated with high voltage tasks are performed as required by 32.60.

(Reference 32.60, Section 3.9)

1. Personnel operating mobile equipment are aware of the ten-foot rule. See Section 3.9.1 of 32.60.

   ☐ What type of training have mobile equipment operators received?

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2. Proper grounding procedures are used for mobile equipment. See Section 3.9.2 of 32.60.

- ☐ Are potential hazards identified before mobile equipment is moved to the job site?
- ☐ Have mobile equipment operators been trained to recognize any potential electrical hazards?
- ☐ Have mobile equipment operators been trained in proper grounding techniques?
- ☐ Do mobile equipment operators understand the restricted zone?
- ☐ Is equipment or material hoisted over exposed, energized high voltage conductors or equipment?
- ☐ If equipment or material is hoisted over exposed, energized parts, is there a Job Safety Analysis and approval?

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 or three-meter rule insulated and tested as required by Section 3.9 of 32.60?
- ☐ Is the equipment barricaded and grounded?
- ☐ If non-insulated equipment is used to test and ground isolated lines, has the task been approved?

4. Personnel understand the dimensional clearances that pertain to mobile equipment in transit. See Section 3.9.3 of 32.60.

- ☐ Do personnel understand the dimensional clearances that pertain to mobile equipment in transit and their loads as outlined in Section 3.9.3 of 32.60?
- ☐ Do personnel understand the equipment in transit allowed to encroach upon the area defined by the ten-foot rule as outlined in Section 3.9.3 of 32.60?

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Comments:

ASSESSMENT MODULE 9 - DESIGN AND CONSTRUCTION

Rating: **Poor**☐ **Fair**☐ **Good**☐ **Excellent**☐

Intent: To ensure all new installations and modifications to existing installations are designed and constructed per 32.60, local regulations and consensus standards.

(Reference 32.60, Section 3.11)

1. The guidelines for design and construction of new or modified high voltage installations comply with Section 3.11 of 32.60.

☐ Have there been any modifications or new installations since the last external assessment? If yes, describe below.

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☐ Is insulated cable used in new or upgraded installations? If no, explain below.

☐ Is arc-resistant switchgear with integral grounding used in new or upgraded installations? If no, explain below.

☐ Is new high voltage equipment designed, constructed and installed in accordance with 32.60, local regulations and consensus standards? If no, explain below.

2. Existing equipment, lines and structures meet or exceed the requirements of Section 3.11 of 32.60

☐ Is equipment and devices identified or labeled?

☐ Are fences and gates properly grounded and bonded as required?

☐ Are fences the appropriate height?

☐ Are line clearances correct?

☐ Are precautions taken to prevent unauthorized climbing of high voltage structures?

☐ Are guards provided around exposed, energized parts where safety hazards exist?

☐ Are other structures, such as pipelines, that are parallel or pass under exposed lines properly grounded?

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4.0 SCORECARD

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	☐	☐	☐	☐
Overall Rating:	**Excellent** ☐	**Good** ☐	**Fair** ☐	**Poor** ☐

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 POOR.

Fair = May receive no more than two POOR.

Poor = Receive three or more POOR.

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1.0 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. The purpose of 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.

2.0 Applicability

The procedure shall be used whenever digging, drilling or sawing including wood block floor and floor brick.

3.0 Reference Document

- OSHA Standard 1926.650-652 Excavation
- Alcoa Engineering Standard 18.19 Excavation Shoring and Trenching
- Alcoa Engineering Standard 32.60 Electrical High Voltage Maintenance and Design Safety Practices
- OSHA Technical Manual Section IV Construction Operations, Chapter 2 – Excavations Hazard Recognition in Trenching and Shoring.

4.0 Definitions

4.1. Utility line - A process gas, natural gas, liquid fuel, hydraulic, water line, sewer, electrical wires or conduit, power lines, or underground storage tank

4.2. Competent Person – A person who has specific training in OSHA Standard 1926.650-652, who is capable of identifying existing or predictable hazards in the surroundings or unsanitary, hazardous, or dangerous working conditions and who has authorization to take prompt corrective measures to eliminate them

4.3 Contaminated Soils – Soils from areas identified on Ref. Dwg#L-161459 JM.

5.0 Responsibilities

5.1. Competent Person - Shall supervise all excavations and conduct daily inspections of the site. Additional inspections shall be conducted whenever the site conditions change increasing risk of a cave-in.

NOTE: Controlled EHS Documents are maintained electronically on the server. Printed versions of EHS Documents are *UNCONTROLLED*. Prior to relying on a printed document, verify that it is current.

5.2. Digging Supervisor - Shall ensure the area is appropriately secured with barricades set back at least two feet from the hole, warning signs or a flag person if necessary.

5.3. Requester – The person, who initiates the need to dig, drill, saw or excavate. This person is responsible to initiate the digging permit procedure

6.0 General Procedure

6.1. Permitting Procedure for Digging, Drilling, Sawing and Excavating:

6.1.1. 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.

6.1.2. The **Digging/Drilling/Excavation Permit** found on page 6 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.

6.1.3. 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.

6.1.4 If utilities are within the boundaries of the excavation they must be isolated or controls taken to ensure that the are not damaged or contacted. Use Massena Operation's Lockout Tagout and Markup procedures to isolate utilities.

6.1.5. 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

6.1.6 The permit shall accompany the digging crew.

6.2. Site Preparation for Excavating

6.2.1. A Competent Person shall supervise all excavations and conduct daily inspections of the site (Excavation Daily Inspection Checklist). Additional inspections shall be conducted whenever the site conditions change increasing risk of a cave-in.

6.2.2. Alcoa Engineering Standard 18.19 (Excavation, Trenching and Shoring) 32.60 High Voltage Electrical Safety and underground utilities drawings should be used as a guide to determine site requirements.

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6.2.3. A pre-job review shall be conducted with the employees performing the work, the responsible supervisor and the proprietor of the facility.

6.2.4. The digging supervisor shall ensure the area is appropriately secured with barricades set back a minimum of two feet from the hole, warning signs or a flag person if necessary. Standard guard rails, barrels with snow fencing or floor coverings shall be used to protect floor openings and excavations within buildings. Sawhorses, or barrels with snow fencing are suitable for exterior barricading. *Note: Construction warning tape is for warning and is NOT suitable for barricading.*

6.2.5. If the excavation is left open during darkness, barricades shall be equipped with lights.

6.3. Shoring/Trenching/Sloping/Benching

6.3.1. All soils to be considered OSHA Class "C" unless determined to be otherwise by Competent Person using a recognized testing method.

6.3.2. All excavated and backfilled materials shall be stored at least two (2) feet from the edge of the excavation. If contaminated soils are excavated the Environmental Department must be consulted prior to digging.

6.3.3. When the excavation is greater than five (5) feet in depth or when unusual adjacent activity or other factors indicate that ground movement is possible, personal protective procedures shall be employed. The methods approved for this protection are:

- An approved shield/trench box.
- Wall sloping on a 1.5 to 1 angle for Class "C" soils. Alternative sloping can be used if other soil conditions are determined through testing by a Competent Person.
- When the shield/trench box or sloping technique cannot be used, a "Registered Professional Engineer" in accordance with OSHA 1926.650-652 shall approve the methods and materials used.
- The personal protective procedure for excavations deeper than twenty (20) feet or which undermine a building foundation shall be designed by a "Registered Professional Engineer".

6.3.4. Ladders extending a minimum of Three (3) feet above grade shall be placed on intervals, not to exceed twenty-five (25) feet along any excavation exceeding 4 feet deep. Other methods for providing access and/or egress shall meet OSHA Standard 1926.650-652.

6.3.5 The atmosphere of potentially hazardous trenches shall be tested for

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oxygen, carbon monoxide and combustible gas prior to entry and periodically monitored. Gasoline powered pumps or generators shall not be placed into a trench.

6.3.6. No one is permitted to enter an excavation containing standing water unless adequate personal protection measures have been taken and approved by a Competent Person to prevent cave-in.

6.4. Identification of Underground Utilities

6.4.1. Uniform color coding of underground utilities reduces the risk of inadvertently damaging the utility when excavating. Massena Operations has adopted the color-coding system used by Public Utilities throughout New York to identify our underground utilities. Stakes and or buried colored tape complying
color scheme must be used to identify underground utilities.

- Yellow - Gas, oil, petroleum products, steam, compressed air, compressed gases, and all other hazardous liquids and or gaseous materials except water.
- Red - Electric
- Orange - Communication lines or cables, including but not limited to telephone, telegraph, fire signals, cable television, data systems, electronic controls and other instrumentation
- Blue – Water
- Green - Storm and sanitary sewers including forced mains and other non-hazardous materials
- White - Excavators designated work site
- Hot Pink – Temporary surveyor and engineer markings

6.5. Backfilling

6.5.1 The excavation shall not be left exposed no longer than necessary. If a trench dug in type A or B soil is left exposed for more than 24 hours, it must be reclassified as type C and type C sloping and shoring requirements implemented.

6.5.2. Drawings shall be “marked up” to depict discrepancies and returned to the project engineer. The project engineer is responsible for updating drawings.

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6.5.3. Damage to ground wires, cathodic protection, insulated flanges, torn pipe coatings or other devices shall be repaired prior to backfilling.

6.5.4. Cables, witness posts, boards, colored dyes, colored plastic tape or other procedures used to indicate buried utilities shall be replaced prior to backfilling.

Forms:

MAS_Ops Digging Drilling Excavation Permit
MAS_Ops Excavation Daily Inspection Checklist

A copy of this written program can be located at:
http://intranet.mas.alcoa.com:6459/Primary%20Metals/pm_procedureindex.htm

RECORD HISTORY:

Revision Date	Nature of Revision	Name of Document Review Participant
5/30/02	Exceptions added and format changed to standard policy procedure format	Karl Butz & Allen Baxter
12/28/06	Edit section 2.0 to include wood brick flooring and brick floors.	Karl Butz & Bill Boak

DISTRIBUTION:
This document has been distributed to the following people:

Name	Department	Name	Department

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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) 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 task, 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 chemical or process is 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 the 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 and Cost document. The most current documents on the O:\ drive.

O:\Teams\Safety\General\HS 6 Hazard Control Process - Health Focus\HS6.4 Respiratory Protection\Program and Information

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 area.
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, and will be challenged with calibration gas immediately prior to use. 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 West Plant Area 3 ERT Office.

The filtering system has the capability of supplying safe breathing air to as many as four (4) 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 respirator 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 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 are 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.

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 PortaCount Plus Respirator Fit Tester. Respirator user will wear a fit-test respirator connected to the fit tester.The PortaCount 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 experience increased 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 4 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 Sperian Biosystems Travel Panel 50MP.

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 owner or the issuing department and must be **inspected/serviced monthly**.

16.0 Training

The supervisor, the person issuing respirators, and the respirator wearers shall be given adequate training by a qualified person 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) Instruction 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 Departmental Fit Tester for one year, A copy will be forwarded to the Respirator Administrator to be inputted into the Respiratory Fit Testing Database. The Department 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, October 2001
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. A 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

Saccharin 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. Bitrex™ (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 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.

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 respirators limitations.

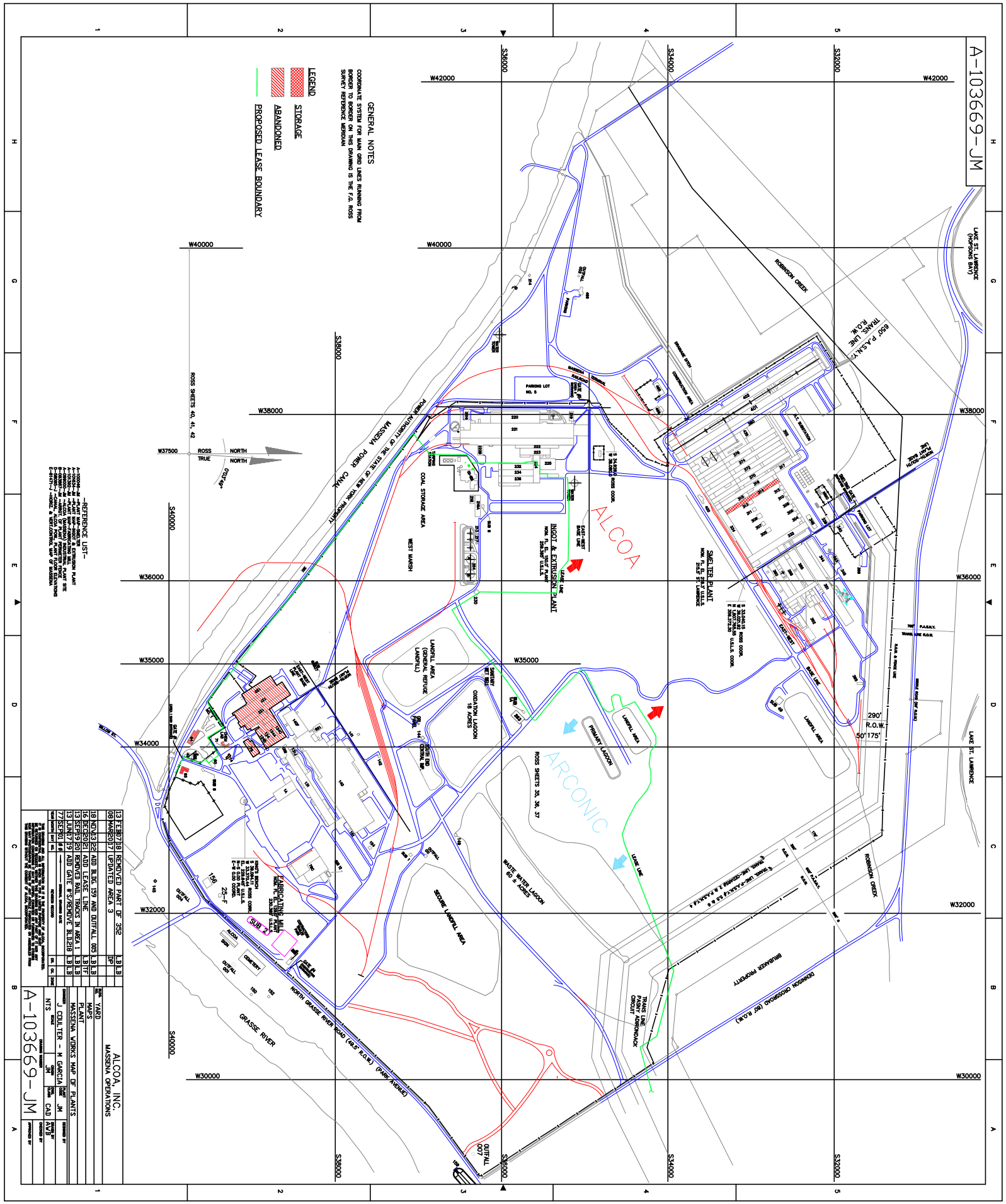
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or 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


A-103669-JM
GENERAL NOTES
COORDINATE SYSTEM FOR MAIN GRID LINES RUNNING FROM BOTTOM TO TOP OF DRAWING IS THE F.G. ROSS SURVEY REFERENCE MERIDIAN
LEGEND
STORAGE
ABANDONED
PROPOSED LEASE BOUNDARY
ALCOA
ARCONIC
ROSS SHEETS 40, 41, 42
ROSS SHEETS 35, 36, 37
ROSS NORTH TRUE NORTH
MASSENA POWER CANAL
POWER AUTHORITY OF THE STATE OF NEW YORK PROPERTY
COAL STORAGE AREA
WEST MARSH
INGOT & EXTRUSION PLANT
SMELTER PLANT
PARKING LOT NO. 5
LANDFILL AREA (GENERAL REFUGE LANDFILL)
OXIDATION LAGOON 18 ACRES
PRIMARY LAGOON
SECURE LANDFILL AREA
WASTE WATER LAGOON 60 ± ACRES
FABRICATING MILL
SUB 2
SUB 3
CEMETERY
ROBINSON CREEK
650' P.S.N.Y. TRANS. LINE R.O.W.
290' R.O.W. 50'175'
LAKE ST. LAWRENCE (HOPKINS BAY)
LAKE ST. LAWRENCE
GRASSE RIVER
NORTH GRASSE RIVER ROAD (49.5 R.O.W.) (PARK AVENUE)
DUNNIGAN CROSSROAD (60' R.O.W.)
BRABAZER PROPERTY
TRANS. LINE PARK ADIRONDACK CIRCUIT
OUTFALL 007
W42000
W40000
W38000
W37500
W36000
W35000
W34000
W32000
W30000
S36000
S34000
S32000
S38000
S40000
-REFERENCE LIST-
ALCOA, INC.
MASSENA OPERATIONS
MASSENA WORKS MAP OF PLANTS
PLANT
MAPS
YARD
A-103669-JM
J COULTER - M GARCIA
CAD
AVB
JM
NTS
13 FEB07 18 REMOVED PART OF 352 LB LB
08 MAR2017 UPDATED AREA 3 DP
18 NOV13 22 ADD BLDG. 159 AND OUTFALL 005 LB LB
16 DEC2021 ADD LEASE LINE IN AREA 1 LB LB
15 SEP2021 ADD BLDG. 7M AREA 1 LB LB
13 JUN17 19 ADD GATE #K-7 REMOVE BLDG 20 LB LB
77 SEP01 M.F.

Alcoa USA - Massena Operations

Contractor Safety Work Plan / Permit to Work

The Contractor shall submit this plan with this page and items # 8-16 completed prior to the Pre-Construction Conference.

Project Name: _____

Project Location: _____

Contract #: _____

Contractor*:* _____

E-Mail Address*:* _____

Contractor Field Superintendent: _____

Jobsite Phone and Cell: _____

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 #:_____

At the Pre-Construction Conference: (*Check when complete*)

____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. **Discuss workforce requirements:**

- **# of Employees: _____**
- **Orientation Scheduled for: _____**
- **Sub-contractors: _____**
    - **Are their prequalifications current? _____**

____5. **Discuss materials management:** (*Who provides what, where to store, etc.*)

_____

_____

____6. **Discuss environmental Issues**. Are there issues related to water, waste, spills, disposal or other concerns that could impact this project or environmental compliance?

_____

_____

____7. **Discuss industrial hygiene issues:** (*Identify any need for further review or IH sampling.*)

_____

_____

Prior to the Preconstruction Conference (Contractor to complete # 8 – 16 on their own)

____8. **List materials that will be used requiring SDS**.

Exact Product Name	Manufacturer	Alcoa Part #

Project Steps and EHS Hazard Assessment

- Please read the Instructions on the last 2 pages before completing this section.
- Use as many sheets as required.

JOB STEPS	POTENTIAL DANGER	MEASURES TO ELIMINATE DANGER	STOP CRITERIA
Detailed steps of the job in sequence **(BOLD if Critical)**	Potential accidents or hazards to be accounted for during job steps:	Precautions: behavioral, organizational, technical. Use of protective equipment.	What would cause the crew to stop and seek out help from others

____9. **List types of waste that will be generated and the disposal/container method. If there are 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.**

Type of Waste Generated	Container Type/ Estimated Quantity (Specify Drum Type, Roll-off, etc.)	Alcoa SPA for Waste Containers (Name)

_____10. **List safety equipment required:** (Place an X in the box if applicable)

(**X**) Safety Glasses Z87.1+_____
(**X**) Metatarsal Boots_____
( ) Hearing Protection_____
(**X**) Lime Green Hard Hat_____
( ) Face Shields (High Impact)_
(**X**) Cell Phone_____
( ) Confined Space Meter_____
(**X**) Long Sleeve Cotton Shirts___
( ) Harnesses and Lanyards ____
( ) Tyvek Suits or coveralls_____
( ) Derailer for RR Isolation ____
( ) Two Way Radios _____
( ) Reflective Hi-Visibility Vests
( ) FR Clothing_____
( ) Spill Kit_____

( ) Gloves_ (_____) ___
( ) Respiratory Protection_____
( ) Personal Danger Locks / Tags_
( ) Trench Shoring / Certified Box
( ) Fire Extinguishers_____
( ) Men Working or other Signs__
( ) Barricades (_____) ____
( ) Orange Safety Fence_____
( ) Concrete Safety Barriers_____
( ) Yellow Caution Tape_____
( ) Red Danger Tape_____
( ) Electrical Arc Flash PPE_____
( ) Welding Flash Curtains_____
( ) GFCI_____
( ) Warning Line System_____

____11. **List special tools and equipment required:**

( ) _____ ( ) _____
( ) _____ ( ) _____

____12. **List Permits required:** (Note: 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?*)

_____

_____

____14. **List Training required:** (Documentation that employees have been trained according to the applicable OSHA standard shall be submitted to the Contractor Safety Office)

(**X**) Alcoa Orientation (given by Alcoa)	( ) Hearing Conservation
( ) Confined Space	( ) Respiratory Protection
( ) Lock, Tag, Verify	(**X**) 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
( ) Crane Signal Person	( ) Asbestos Handler
( ) Qualified Rigger	( ) Asbestos Awareness
( ) Coal Tar Pitch Awareness	( ) Lead Worker
( ) Beryllium Awareness	( ) Lead Awareness
( ) Chlorine Awareness	( ) Welding Certification
( ) PCB Awareness	( ) 40 Hr Hazwoper
( ) Potroom Training	( ) Powder Actuated Tools
( ) _____	( ) _____

____15. **List Competent Persons** and **Area of Competency** (as required by OSHA standards – designate an individual for all categories that apply)

( ) 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: _____

____17. **Location of Evacuation Meeting Point:** _____

____18. **Security Gate Sign-In Info: Bldg. #** _____ **Sign-In Key:** _____

____19. **Weekly Tool Box Talk will be held on (Day of Week):** _____

____20. **Walk through job site.**

____21. **Plan Reviewed By**: 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: _____ Date: _____

Contractor Responsible Person: _____ Date: _____

Alcoa Project Leader: _____ Date: _____

Alcoa Responsible Person: _____ Date: _____

Alcoa Environmental Dept: _____ Date: _____

Additional Pre-Construction Conference Attendees

Print 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** a review of this plan and **before** beginning work on this project.)

Print Name	**Signature**	**Date**

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.
- 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:\Teams\Contractor\General\Contractor Safety Work Plan Form.
    2. By sending an email request to: jerry.fregoe@alcoa.com

Instructions for completing page # 3 of this document

EHS Hazard Assessment: The contractor shall develop a work plan and hazard assessment as described below, that explains the procedure or steps intended to be used to complete the project. The description should be brief although it requires a thoughtful detailed look at each step of the construction process to imagine the potential environmental, safety, and health hazards that may exist. The intent is to provide "layers of protection" between the workers performing the construction, maintenance, or services and the potential hazards inherent to the work.

Task Steps	**Potential Danger (Hazard Assessment)**	**Measures To Eliminate Danger**	**Stop Criteria**
Detailed **steps** of the job in sequence.	Potential accidents or hazard during job steps.	Precautions to eliminate or avoid hazards. Personal protective equipment.	What would cause the crew to stop and seek help from others
WHAT & HOW	WHAT/WHEN/WHERE	WHAT/WHEN/ WHERE/HOW	CONDITION & REACTION

Note: Use the format above to develop the job safety plan. Use as many pages as necessary to adequately plan the job.

Hazard Assessments: The questions below are intended to be a partial checklist for the contractor to use in developing the Contractor Safety Work Plan for a project. Additional items will have to be considered based on the specific scope of work, methods to be used, and conditions encountered.

- Electrical Hazards (*Are high voltage power lines in close proximity? Will grounding of mobile equipment be required? Are there overhead hazards? Zero energy state verified?)*
- Other Energy Sources: Pneumatic, Hydraulic, Conveyors, Stored Energy, etc. *(Procedures identified?)*
- Electrical Tools (*Will GFCI's be needed? Are tools and cords in good condition? Deadman switches on all*)
- Equipment Isolation – L/T/V (*Always list Lockout as a step, and specify actual lockout points and verification or lockout procedure # for Alcoa lockbox and who will establish.*)
- Fall Potential (*Will the job require working above 6 feet? What type of fall protection/prevention equipment will be needed for this job? Is roof access required? Harnesses inspected? Access to flatbeds or trailers?)*
- Hoisting/Rigging *(Loads and capacities known? Slings inspected? Taglines, Certified riggers & Signalmen?)*
- Ladders (*Will ladders be utilized? Are they in good condition, adequate length and secured?*)
- Scaffolds (*Are scaffolds required? Are they inspected by a competent person? Erected and used by trained individuals?)*
- Personnel Lifts (*Will they be used? Are they per the standards? Inspections, 4' max length lanyards*?)
- Digging/Excavation (P*ermits required? Will trenches be deeper than five feet? Buried or overhead utility lines in close proximity? Will shoring, or sloping be required? Competent person? Daily inspection forms?)*
- Confined Spaces (*Are there any? Is retrieval required*? *Competent persons? Gas Meters? Specify Alcoa Confined Space Procedure #.)*
- Atmospheric Conditions (*Is there exposure to heat stress or extreme cold, poor ventilation, etc?*)

- Lighting (*Is the area properly illuminated? Will night work be required*? *Temporary lighting?)*
- Hazardous Materials *(Will the work be performed in an area where toxic and/or hazardous materials/chemicals are present? Will there be exposure to lead, asbestos, or CTPV?)*
- Hazard Communication *(What products will be used? Have all SDSs been submitted & approved by Alcoa?)*
- Noise (*Will the job be in a hearing protection required area? Will the work generate high noise*?)
- Dust (*Will the work generate or disturb dust? Are respirators required? Have "Appendix D" forms been signed for voluntary use? Note: Access to 354C requires a disposable respirator with Organic Vapor Relief)*
- Burning and Welding (*Will the work require the use of welding and cutting equipment? Is the equipment per the standards? Are permits required? Are fire extinguishers available? Is ERT fire protection required)*
- Barricading & Worker on Foot WoF (*barricades, signage, fences, caution tape & info tags? Will warning lights be required? How will affected crews be notified? Workers separation from Mobile Equip?)*
- Portable Equipment (*Will saws, mixers, washers, etc. be used*?)
- Mobile Equipment (*What are the inherent traffic hazards to pedestrians? Are there overhead hazards? What equipment will be used on this project? Does it meet the standards? Inspections? Operator training/certifications?)*
- Personal Hygiene (*Are portable toilets to be used? Hand-washing facilities? Where will workers eat?*)
- Personal Protective Equipment *(What PPE will be required for the work and the plant area in which the work will be performed? Has the equipment been inspected? Z87+ face shields, Rubber over boots etc.)*
- Molten Metal Hazards *(maintain 25' clearance from all liquid metal. FR clothing if closer)*
- Air Emissions *(Will project result in an increase in particulates emissions, SO, NOx, F, VOC, CO, or other?)*
- Water Pollution Control *(Will this project produce additional wastewater or new components in a wastewater discharge system? Protection of a nearby stream/body of water required? Are regulatory permits required?)*
- Solid and Hazardous Waste *(Will this project result in solid or hazardous waste? Has compliance with state and federal restrictions on handling, storage, transportation, and disposal been considered? Have containers been request and how will it be segregated?)*
- Toxic Substances *(Does this project involve the manufacture, processing, or use of new substances that would be covered by the Toxic Substances Control Act? Is there a chlorine hazard?)*
- Permits *(Have all necessary state and federal permits been applied for? Who will issue Alcoa Permits?)*
- Lifting/Repetitive Motion *(Will this project require awkward/heaving lifting? Awkward positions or repetitive motions? Strain or sprain possible? Can equipment be used to eliminate these injuries?)*
- Other Hazards: Line of Fire/Struck By, Slip/Trip, Pinch Points/Sharp Edges *(Is work area kept clean? Housekeeping considered? Workers protected from moving parts?)*