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Addendum F **Preparedness and Prevention**

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F. PREPAREDNESS AND PREVENTION

F.1 PREPAREDNESS AND PREVENTION REQUIREMENTS

The following sections document the preparedness and prevention measures taken at LERF and 200 Area ETF.

F.1.1 Equipment Requirements

The following sections describe the internal and external communications systems and the emergency equipment required that could be activated by the LERF and 200 Area ETF Building Emergency Director(BED).

F.1.1.1 Internal Communications

When operators are present at the LERF, the operators carry two-way radios to maintain contact with 200 Area ETF personnel. The operators at LERF are informed of emergencies (e.g., building and/or area evacuations, take-cover events, high airborne contamination, fire, and/or explosion), and are provided with emergency instructions by several systems. These systems include the mobile two-way radios, and the telephone in the LERF instrument building.

The 200 Area ETF is equipped with an internal communication system to provide immediate emergency instruction to personnel. The onsite communication system at the 200 Area ETF includes telephones, mobile two-way radios, a public address system, and alarm systems. The telephone and radio systems provide for internal and external communication. Alarm systems exist to allow personnel to respond appropriately to various emergencies, including building evacuations, take cover events, and fire and/or explosion. Addendum J provides additional information on the response activities.

F.1.1.2 External Communications

The LERF and its operators are equipped with devices for summoning emergency assistance from the Hanford Fire Department, the Hazardous Materials Response Team, and/or Hanford patrol, as necessary. External communication to summon emergency assistance is made by a normal telephone system or mobile two-way radios. The LERF telephone is available in the instrumentation building.The 200 Area ETF uses fire alarm pull boxes and telephones for external communication and are located at numerous locations throughout the 200 Area ETF.

F.1.1.3 Emergency Equipment

The LERF and 200 Area ETF rely primarily on the Hanford Fire Department to respond to fires and other emergencies as described in Permit Attachment 4, *Hanford Emergency Management Plan*, (DOE/RL-94-02). All LERF and 200 Area ETF operators are familiar with the LERF and 200 Area ETF contingency plans (Addendum J) and are trained in the use of emergency pumping of LERF and 200 Area ETF systems, fire, and communications equipment.

Portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment is available at various locations in the 200 Area ETF.

The 200 Area ETF has fire extinguishers, automatic fire suppression systems (200 Area ETF control room and electrical room), fire alarm pull boxes, and a water spray system (200 Area ETF operating and administrative portions).

Respirators, hazardous material protective gear, and special work procedure clothing for 200 Area ETF personnel are kept in the change room at the 200 Area ETF. Safety showers are located in convenient

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locations in the 200 Area ETF, and emergency eyewashes are available for use. Water for these devices is supplied from the 200 Area ETF sanitary water system.

F.1.1.4 Water for Fire Control

A water main is not provided to the LERF. The Hanford Fire Department is equipped with fire engines for fire control for fires requiring high water volume and pressure. The 200 Area ETF is serviced by two 12-inch raw water lines that are tied into the 200 East Area raw water distribution grids. These lines provide a looped configuration that supplies two independent sources of raw water for fire protection and raw water uses. Connections from the 200 Area ETF raw water system supply fire hydrants and the wet pipe sprinkler system. In the event that water pressure is lost, the Hanford Fire Department is equipped with fire engines to provide needed water.

F.1.2 Aisle Space Requirement

The operation of the LERF does not involve aisle space. Nevertheless, the LERF and the individual basins are easily accessible to emergency response personnel and vehicles. A 6.1-meter-wide service road runs along the base of the basin area on the east, south, and west sides within the operational security fence.

Aisle spacing at 200 Area ETF is sufficient to allow the movement of personnel and fire protection equipment in and around the containers. This storage arrangement also meets the requirements of the National Fire Protection Association (NFPA 1996) for the protection of personnel and the environment. A minimum 30-inch aisle space is maintained between rows of containers as required by WAC 173-303-630(5)(c).

F.2 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT

The following sections describe preventive procedures, structures, and equipment.

F.2.1 Unloading Operations, Spill Prevention, and Control

Underground pipelines that transfer aqueous waste to and from the LERF are encased in a secondary pipe. If a leak is detected in a pipeline, flow in the pipeline will be stopped and the cause of the leak investigated and remediated.

If it is required to transfer aqueous waste from one LERF basin to another, existing transfer pumps are used as described in Addendum C.

The 200 Area ETF Load-in Station is monitored continuously during tank-filling operations and filling is stopped immediately if leaks occur. Care is taken to ensure that even minor leaks are cleaned up immediately and disposed of in accordance with approved management procedures. Any spill that is determined to be a dangerous waste will be managed according to the requirements of WAC 173-303.

F.2.2 Runoff

The LERF is constructed and operated to ensure that all aqueous waste is contained within the basins. The basins are designed and operated to prevent overtopping. Furthermore, the basins are provided with very low-density polyethylene floating covers to prevent the introduction of precipitation into the basins. The basins also are graded to ensure that all precipitation outside the basins is directed away from the surface impoundments.

The basins are constructed so that the top of the basin dikes are approximately 3 meters above grade. The exterior side slopes of the basins have a 2.25 (horizontal) to 1 (vertical) slope. Run-on of precipitation to the basins from the surrounding area is not possible because the surrounding area slopes away from the LERF.

Dangerous waste and hazardous chemical handling areas at the 200 Area ETF are designed to contain spills, leaks, and wash water, thereby preventing run-off and subsequent releases. All dangerous and/or

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mixed waste loading and unloading areas are provided with secondary containment structures as described in Addendum C, Process Information.

F.2.3 Water Supplies

The LERF uses operating practices, structures, and equipment to prevent the contamination of natural water supplies (i.e., groundwater and surface water). The LERF is monitored ~~closely~~ continuously during aqueous waste transfers and at least daily during operation to detect abnormal conditions (e.g., leaks), and regularly inspected to detect equipment and structural deteriorations that could allow possible water supply contamination. The basins are provided with a leachate collection system that is designed to contain any leachate generated. These systems, in conjunction with the double-composite liner system and underlying low permeable clay liner, ensure that should a release occur, the release will be fully contained within the basin configuration and, therefore, water supplies will be protected. Addendum J, Contingency Plan, provides information on procedures that are implemented if a release is detected at the LERF.

There are no drinking water wells near the 200 Area ETF. Therefore, a release would not immediately contaminate drinking water supplies. The 200 Area ETF uses operating practices, structures, and equipment to prevent the contamination of natural water supplies (i.e., groundwater and surface water). The 200 Area ETF is monitored during processing operations to detect abnormal conditions, and is inspected regularly to detect equipment and structural deteriorations that could allow spills to the environment. Areas in contact with dangerous and/or mixed waste are monitored continuously during Load-in Station and/or ETF processing operations through a series of level and pressure indicators, leak detection alarms, equipment failure alarms, and control panel readouts. In addition, the 200 Area ETF is inspected regularly for the presence of leaks or other off normal conditions wherever possible (in all areas that can be safely entered).

In addition to detailed operating practices, structures and equipment are used at the 200 Area ETF to prevent contamination of water supplies. The structures and equipment designed to prevent contamination of water supplies are the same as the structures and equipment used to prevent run-off from dangerous and/or mixed waste handling areas.

F.2.4 Equipment and Power Failure

The storage function of the LERF is not affected by loss of power and a temporary loss of power would not pose a threat to the environment. Loss of electrical power would not cause the storage of the waste to be jeopardized. For process condensate transferred from the 242-A Evaporator, appropriate valving procedures are followed to ensure a smooth restart of the flow to the LERF in the event of a power failure at the 242-A Evaporator.

The 200 Area ETF does not have a standby power source. Power to selected lighting, computers, and process controls is configured with an uninterruptible power supply. During partial loss of normal power, the effected pumps and subsystems will be shut down. Complete loss of power to the 200 Area ETF shuts down the entire 200 Area ETF except for the instruments in the control room connected to the uninterruptible power supply. Redundant pumps allow the process to continue to operate when only one component is out of service.

When power at the 200 Area ETF is lost, the valves assume a fail-safe position to allow the process to remain in a safe shutdown mode until restoration of power. This action allows the operators to perform equipment surveys during shutdown and to confirm that there are no safety issues because the 200 Area ETF is shut down. Because a power failure would also shutoff flow into the 200 Area ETF, there will not be any increase in volume in any of the holdup basins, tanks, or other systems.

A combination of reliability, redundancy, maintenance, and repair features are used in the 200 Area ETF equipment and systems to minimize random failure of equipment. For crucial systems such as ventilation filters, redundant trains are provided to mitigate equipment and system failure. Spare parts are maintained for essential production and safety equipment.

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F.2.5 Personnel Exposure

At the LERF and 200 Area ETF, operating practices, structures, and equipment are used to prevent undue exposure of personnel to dangerous and/or mixed waste. All personnel handling waste use protective clothing and equipment. All operations are conducted so that exposure to dangerous and/or mixed waste and hazardous materials are maintained ALARA.

Protective clothing and equipment are prescribed for personnel handling chemicals or dangerous waste. Before the start of any operation that could expose personnel to the risk of injury or illness, a review of the operation is performed to ensure that the nature of hazards that might be encountered is considered and appropriate protective gear is selected. Personnel are instructed to wear personal protective equipment in accordance with training, posting, and instructions.

A change trailer at LERF is located between Basins 42 and 43. In addition, the change trailer has an operations office for working with procedures. Exits within the change trailer are clearly marked. A storage building is located within the perimeter fence, northwest of the basins. The LERF storage building also is provided with separate storage areas for clean and contaminated equipment. A decontamination shower and decontamination building is located at the 272-AW Building, approximately 1.6 kilometers from the LERF or at the 200 Area ETF.

The 200 Area ETF has eyewash stations and safety showers in convenient locations for use by personnel. The following structures and equipment were incorporated into the 200 Area ETF design to minimize personnel exposure.

- Offices, control room, clean- and soiled-clothes storage areas, change rooms, and the lunchroom are situated to minimize casual exposure of personnel.
- Building exit pathways are located to provide rapid egress in emergency evacuations.
- Emergency lighting devices are located strategically throughout the 200 Area ETF.
- Audio and/or visual alarms are provided for all room air samplers, area alarms, and liquid monitors. Visual readouts for these alarm systems are located in less contaminated areas to minimize exposure to personnel.
- Areas for decontaminating and maintaining equipment are provided in contaminated areas to limit the spread of contamination to uncontaminated areas such as the control room.
- Instrument interlock systems automatically return process operations to a safe condition if an unsafe condition should occur.
- The 200 Area ETF ventilation systems are designed to provide airflow from uncontaminated zones to progressively more contaminated zones.

Whenever possible, exposures to hazards are controlled by accepted engineering and/or administrative controls. Protective gear is used where effective engineering or administrative controls are not feasible.

F.3 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTE

Typically, aqueous waste managed at the LERF or 200 Area ETF does not display the characteristics of reactivity or ignitability. Any aqueous waste streams exhibiting these characteristics are blended or mixed at LERF to a concentration where the waste no longer exhibits reactive or ignitable characteristics.

Incompatible aqueous waste is not expected to be stored or treated at the LERF or 200 Area ETF (Addendum B, Waste Analysis Plan). Therefore, the requirements of WAC 173-303-806(4)(a) are not applicable.