Centralized Consolidation/ Recycling Center

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CENTRALIZED CONSOLIDATION/RECYCLING CENTER

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CENTRALIZED CONSOLIDATION/RECYCLING CENTER

L. T. St. Georges
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1.0 INTRODUCTION

There are approximately 175 separate locations on the Hanford Site where dangerous waste is accumulated in hundreds of containers according to compatibility. Materials that are designated as waste could be kept from entering the waste stream by establishing collection points for these materials and wastes and then transporting them to a centralized consolidation/recycling center (hereinafter referred to as the consolidation center). Once there the materials would be prepared for offsite recycling.

This document discusses the removal of batteries, partially full aerosol cans, and DOP light ballasts from the traditional waste management approach, which eliminates 89 satellite accumulation areas from the Hanford Site (43 for batteries, 33 for aerosols, and 13 for DOP ballasts). Eliminating these 89 satellite accumulation areas would reduce by hundreds the total number of containers shipped offsite as hazardous waste (due to the increase in containers when the wastes that are accumulated are segregated according to compatibility for final shipment).

This new approach is in line with the U.S. Environmental Protection Agency's (EPA) draft Universal Waste Rules for these "nuisance" and common waste streams. Additionally, future reviews of other types of wastes that can be handled in this less restrictive and more cost-effective manner will occur as part of daily operations at the consolidation center.

The Hanford Site has been identified as a laboratory for reinventing government by the Secretary of the U.S. Department of Energy (DOE), Hazel O'Leary, and as a demonstration zone where "innovative ideas, processes and technologies can be created, tested and demonstrated." Additionally, DOE, EPA, and the Washington State Department of Ecology (Ecology) have agreed to cut Hanford cleanup costs by \$1 billion over a 5-year period. Finally, the Revised Code of Washington 70.105 states that "management and regulation of hazardous waste disposal should encourage practices which result in the least amount of waste being produced."

2.0 SCOPE

The three waste streams that will be managed during the start-up phase of the consolidation center are: (1) all types of batteries currently not recycled (alkaline, ni-cad, carbon-zinc, etc.), (2) aerosol cans, and (3) DOP light ballasts. Lead-acid batteries are excluded from this proposal because they already are collected and sent offsite for recycling. Items with radiological contamination will not be considered. Other waste streams will continue to be evaluated as candidates for the consolidation center, including

both regulated and nonregulated waste streams. Examples include shop rags, fluorescent light tubes, and incandescent lamps. Offsite recyclers will be investigated to determine the best facility to send these wastes so materials could be recovered for reuse.

Additionally, the consolidation center may be used as a collection point for solid wastes (aluminum, plastic, glass, etc.) to ensure these items are recycled rather than landfilled.

3.0 OBJECTIVES

Near-term objectives to operating the consolidation center are to (1) immediately reduce the total amount of waste shipped to offsite treatment, storage, or disposal (TSD) facilities by consolidating and recycling whenever possible; (2) reduce the number of satellite accumulation areas and less-than-90-day waste accumulation areas onsite; (3) reduce the cost of hazardous waste management at Hanford; and (4) reduce the time that certain waste streams currently are accumulated onsite before being moved to a less-than-90-day waste accumulation area.

Long-term objectives are to (1) further reduce the total waste stream by identifying other waste streams that could be processed at the center; (2) help DOE and Ecology meet their waste minimization and cost savings goals; and (3) become a model facility for other DOE sites and private industry.

4.0 OPERATIONS

This section describes the processes that will be used for the three waste streams handled during the startup phase of the consolidation center.

4.1 Onsite Collection of Dangerous Wastes for Recycling

The wastes to be consolidated for offsite recycling are picked up and transported to the consolidation center on an as-needed basis by the organization that currently transports the same materials as dangerous waste to the 616 Nonradioactive Dangerous Waste Storage Facility; therefore, additional transportation services are not required. While these wastes to be recycled are awaiting collection, they are placed in a container that is clearly labeled "Hold for Centralized Consolidation/Recycling Center." They are delivered to the consolidation center where they are consolidated and managed for offsite recycling.

The consolidation center is located in the 4734-D Building in the 400 Area of the Hanford Site. The primary reason for selecting this facility is because it is centrally located to all generation points on the site.

4.2 Handling the Various Wastes at the Consolidation Center

4.2.1 Aerosol Cans. Aerosol can products are inventoried as they arrive at the center and placed on labeled storage shelves. The generator is required to provide a Material Safety Data Sheet (MSDS) for each product. The cans are inspected to determine if a new nozzle can be put back on so the contents can be used. If it is not possible to salvage the can, a puncturing device is used to remove the contents. The contents are put into another type of container and attempts made to use all the contents.

If it is not possible to use all the contents of the can, either by attaching a new nozzle or discharging its contents into another type of container for reuse, the liquid waste will be put into an appropriate waste container after puncturing the can, and managed according to the requirements of Washington Administrative Code (WAC) 173-303-200. The empty can will be crushed and recycled as scrap metal. The aerosol can's contents will be added to the inventory sheet based on the MSDS for the material, and the waste container will remain in the satellite accumulation area until it is full or reaches the limit established by regulations. Empty cans also are brought to the center for scrap metal recovery.

The center's staff will develop a database that would be reviewed by Procurement before filling purchase requisitions to determine if supplies of these aerosol products already exist onsite.

4.2.2 Batteries. In the past, all flashlight and smaller-sized batteries were part of the dangerous waste stream. Previous attempts to identify a recycling vendor were unsuccessful because of the size of the Hanford Site and the multiple locations where small quantities of batteries were held in satellite accumulation areas. By providing a centralized consolidation center for all the batteries onsite, a recycler has one pick-up point for a larger quantity of batteries.

All makes of batteries not covered under other services or contracts are collected for transport to the consolidation center, where they are separated by type into proper U.S. Department of Transportation (DOT) containers and placed on a pallet for safe storage while awaiting pickup/shipment to an offsite battery recycler.

The WAC 173-303-520 requirements for lead-acid batteries will be met for all types of batteries at the consolidation center.

4.2.3 DOP Light Ballasts. DOP light ballasts are moved to the consolidation center where the DOP capacitor is removed from the ballast and placed in a satellite accumulation area for that waste stream. The remainder of the ballast, approximately 90 percent of the ballast, is made available for scrap metal recycling.

5.0 COMPLIANCE ISSUES

In order for the concept of the consolidation center to work, the definition of "point of generation" was revisited. Accumulation points are required by regulation to be established "at or near the point of generation." For some wastes, this definition does not make sense and regulators allow flexibility regarding the point of accumulation. For example, when painters go into the field to work, after the job is complete they return all their paint-related wastes back to their shop where the process of cleaning actually generates the waste. Another example is when aerosol can products quit working in the field. The worker returns the partially full can back to the facility and places the can in a satellite accumulation area.

The generation point for the wastes described herein is now the consolidation center, so the batteries and DOP light ballasts will not be considered waste until they arrive at the consolidation center. The aerosol cans still contain product since the contents will be made available for reuse by puncturing the can. This means a hazardous waste manifest is not required to ship these items to the consolidation center. They will be shipped to the consolidation center in accordance with DOT regulations for hazardous materials.

Since this concept required a shift in regulatory interpretation, approval was sought and received from Ecology (Appendix A). A letter transmitted the proposal from DOE's Richland Operations Office to Ecology.

5.1 Batteries

Before, when certain batteries (ni-cad, alkaline, carbon-zinc, etc.) quit working in the field, they were added to a satellite accumulation area or, in the case of office users, thrown in the trash. Rather than placing these batteries in an accumulation area, these items are now transported to the consolidation center using a hazardous material shipping record (HMSR), where waste accumulation begins. The benefit to this new practice is waste consolidation, which means fewer full 55-gallon containers shipped offsite, rather than the many smaller or partially full containers that were shipped.

5.2 Aerosol Products

There are no transportation and "point of generation" issues with aerosol can products because these items potentially contain product. Attempts are made at the consolidation center to either repair the can (add a new nozzle) or make the material available for use in another container. Only after these attempts have failed will the designation of waste occur.

The can puncturing device that is used has a double filtration system to capture liquids from the propellant and a carbon filter that captures hydrocarbons and removes odors. Regulatory analysis of this practice has indicated that the amount of material punctured each year would not exceed

thresholds that would require compliance with WAC 173-460, "Controls for New Sources of Toxic Air Pollutants."

5.3 Dangerous Waste Permit

The consolidation center is an accumulation facility, not a storage facility, so a TSD permit is not required. The 55-gallon containers in the satellite accumulation areas at the center will not fill very quickly. If the containers do reach their capacity, they will be moved to an existing 90-day accumulation area and managed appropriately.

6.0 MANAGEMENT CRITERIA

6.1 Criteria for Generator Facilities

The facilities that generate these wastes must meet specific management criteria to ensure proper accumulation and transportation. An overview of these criteria are described in this section. The consolidation center's staff has prepared procedures for generators of these wastes. These procedures include detailed information on proper packaging of materials, including hazard classes, proper shipping names, and segregation requirements.

6.1.1 Aerosol Cans. Generators collect partially full aerosol cans in cabinets marked "Partially Full Aerosol Cans for Repair/Reuse/Reclamation." The cans are segregated by their associated hazards (e.g., aerosols/flammable, aerosols/ nonflammable, etc.). The consolidation center does not accept aerosol cans that contain acutely hazardous chemicals.

When a sufficient quantity of aerosol cans are collected at a facility, they are shipped to the consolidation center in a UN4G fiberboard box. The containers are packaged and labeled by DOT hazard class. The containers are shipped to the consolidation center using a HMR. A current MSDS for each product must accompany the shipment.

6.1.2 Batteries. Initially the consolidation center accepts only those batteries listed below. As recyclers are identified, other types of batteries will be included.

- Ni-Cad (Dry Cell)
- Alkaline
- Zinc-Chloride (or Carbon-Zinc)
- Lithium
- Polapulse or Radiosonde

Generators collect the batteries in a UN4G fiberboard box, which is labeled "Batteries for Recycling." The batteries are segregated by acid and alkali composition and by DOT hazard class. The major risk(s) associated with

the batteries is marked on the containers, as well as the proper shipping name, UN number, and DOT hazard class label. When the container is full, it is securely closed and shipped to the consolidation center with a HMSR. Current MSDSs accompany all shipments.

6.1.3 DOP Light Ballasts. Generators collect the DOP light ballasts in a UN1A-2 open top, 30-gallon drum for scrap metal reclamation. The drum is labeled "Nonleaking DOP Light Ballasts for Reclamation," and the major risk associated with the DOP light ballasts is added to the label (i.e., carcinogenic).

A container log sheet entitled "Nonleaking DOP Light Ballasts for Reclamation" is used to track the material added to the drum. Management controls used at the generating facilities ensure that only nonleaking DOP light ballasts (not PCB ballasts) are placed in the drum. When the 30-gallon drum of nonleaking DOP light ballasts is full, it is closed with a drum ring and shipped to the consolidation center using a HMSR.

6.2 Criteria for Consolidation Center

The consolidation center also has strict management criteria it adheres to as well to ensure it is managed in full compliance with all laws and regulations. These criteria are listed below.

- Satellite accumulation containers are established for each waste stream generated at the consolidation center and managed in accordance with WAC 173-303-200.
- The hazardous material specialist receives all incoming shipments and inspects them to ensure they meet the following requirements: containers are in good condition, copies of inventory sheets are provided with MSDSs, shipping papers match the shipment, and the radioactive release is provided for each container.
- The consolidation center staff reserves the right to refuse any shipments that do not pass inspection. It is up to the facility manager where the unacceptable shipments originated from to make arrangements for return of any refused containers.
- Materials stored at the consolidation center while awaiting recycling are managed appropriately and kept neat and orderly.
- Periodic compliance self-assessments will occur to ensure operations remain in full compliance with all applicable regulations. Additionally, as new waste streams are evaluated for reduction and recycling opportunities, approval will be requested from Ecology to add the waste stream to their list of items that are collected for transport to the consolidation center.
- The consolidation center is available to all site contractors.

The staff at the consolidation center conducted an internal media campaign before beginning operations to inform all site workers of the center and its requirements. Labels were provided for the containers going to the consolidation center, and include the telephone number of the center. In the future, the consolidation center may provide containers to its customers to ensure the proper-size containers are used (based on trending) and that they are compatible with the waste.

7.0 STAFFING

The consolidation center is managed by Maintenance Environmental Services South, ICF Kaiser Hanford. A hazardous materials specialist from this organization provides services to the center as required. This individual accepts shipments and coordinates all offsite visitors (inspections and tours) and any additional services as necessary. This individual also has various administrative tasks including maintaining the MSDS files, conducting inventories, and annual reporting.

8.0 COSTS

The costs to prepare the consolidation center for use were minimal and included equipment costs for the center's startup (drum cabinets, product cabinets, drum dollies, etc.), facility modifications, and procedure development. The annual operating costs include space rent as well as the costs to manage the batteries, aerosol cans, and DOP light ballasts.

8.1 Cost for Current Method of Disposal

It currently costs almost \$1,000 per container to dispose of hazardous waste at the Hanford Site. The breakdown of these per-container costs is as follows:

- ~\$970 charged per container stored at the 616 Facility
- ~\$200 for destruction costs
- ~\$100 to perform a preshipment inspection
- ~\$200 to transport the container to the 616 Facility.

8.2 Cost for Proposed Method of Disposal

It is expected to cost a generator approximately \$400 per container to dispose of the waste streams discussed in this proposal at the consolidation center. The breakdown of these per-container costs is as follows:

- ~\$300 charged for each container shipped to the consolidation center

- ~\$100 to transport the container to the consolidation center (the difference in cost is because it takes longer to unload a shipment at the 616 Facility than at the consolidation center). This amount is not billed by the center, but by the transportation organization.

The expected savings from implementation of the consolidation center is approximately \$600 per container. This means that for the three wastes initially handled at the center, the costs to manage these will be cut in half. The savings will increase as additional waste streams are accepted at the center.

9.0 PROGRAM BENEFITS

In addition to the cost savings that would be realized, there are other benefits to the consolidation center. There are fewer satellite accumulation areas and less-than-90-day waste accumulation areas, fewer administrative duties to maintain these areas, and fewer dangerous waste shipments offsite, which then leads to numerous environmental benefits.

Implementation of the consolidation center also reduces the hazardous wastes being landfilled. Office waste is not segregated (nonhazardous and hazardous), and batteries and aerosol cans generated in an office are being sent to the landfill. By having a consolidation center, collection points for these hazardous wastes will be established in offices, and office workers will be able to recycle these wastes properly.

10.0 MEASUREMENT OF SUCCESS

During the first year of operation, the center will be expected to demonstrate its successes in reducing Hanford's total waste stream as well as identify additional waste streams that can be reduced. Methods to measure the success of the center are described below.

- Show an increase in the materials recycled.
- Provide both hard and soft dollar savings.
- Show a reduction in the numbers of containers being shipped offsite as dangerous waste, and an increase in the amount of material being sent to offsite recycling facilities.

Besides the definitive measurements described above, more subtle and long-term ways to measure the success of the center are described below.

- Demonstrate that waste management, as opposed to pollution prevention and waste minimization, is now the poorest choice and most costly alternative for generators on the Hanford Site by changing the way generators are billed and rewarded.

- Encourage worker attitudes at Hanford to be more proactive and creative in their approach to pollution prevention and waste minimization.
- Demonstrate to taxpayers and congress the contractor teaming arrangements and improved regulator relationships that result from the center's operations.

Any failures will undergo a lessons-learned approach to determine what went wrong and identify any corrective actions. Lessons learned will be shared with other government agencies.

APPENDIX A

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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April 18, 1995

Mr. James Rasmussen, Program Manager
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Dear Messrs. Rasmussen, Dixon, and Dixon:

Re: Comments to January 1995, Proposed Centralized Consolidation/Recycling
Center on the Hanford Site

This letter conveys the Washington State Department of Ecology's (Ecology) concurrence with the United States Department of Energy's (USDOE) January 1995, proposal to begin operation of a centralized consolidation and recycling center in the 400 Area of the Hanford Site.

The January 1995, proposal is in the spirit of "resource conservation and recovery," and represents what Ecology hopes will be an expanding effort for waste reduction and recycling of commonly generated "nuisance" hazardous wastes by USDOE and all its contractors throughout the Hanford Site. With reduction and recycling as the goal, Ecology is confident that regulatory pathways for recycling of numerous commonly generated hazardous wastes can be determined.

Ecology is interested in assisting USDOE in its efforts to reduce the use of hazardous materials or to recycle them wherever possible, and looks forward to working towards that end on additional projects on the Hanford Site in the future.

Mr. James Rasmussen
Mr. William Dixon
Mr. Brian Dixon
April 18, 1995
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Should you have any questions regarding this letter, please call Donovan Dorsey at (509) 736- 3032 or Robert Wilson at (509) 736-3031.

Sincerely,

A handwritten signature in cursive script, appearing to read "David L. Lundstrom", with a long horizontal flourish extending to the right.

David L. Lundstrom
200 Area Section Manager
Nuclear Waste Program

DL:RW:mf

cc: Dennis Poor, KEH
Lynn St Georges, WHC

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