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Department of Energy  
Washington, DC 20585

DOT/RSPA/OHMS  
UNIT

SEP 22 2004

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ATTN: Exemptions, DHM-31  
Associate Administrator for Hazardous Materials Safety  
Research and Special Programs Administration  
U.S. Department of Transportation  
400 7<sup>th</sup> Street, SW  
Washington, D.C. 20590-0001

04 OCT 5 AM 11:49  
U.S. DEPARTMENT OF TRANSPORTATION

**Subject:** Request for the U.S. Department of Transportation Exemption and Party-to-Status regarding the one-time shipment of two induction pumps, both containing relatively small amounts of sodium, UN1428, Division 4.3, Packing Group I

**References:** Title 49, *Code of Federal Regulations*, Part 173.244, "Bulk packaging for certain pyrophoric liquids (Division 4.2), dangerous when wet (Division 4.3) materials, and poisonous liquids with inhalation hazards (Division 6.1)"

Dear Associate Administrator:

The U.S. Department of Energy (DOE) and its contractors Fluor Hanford and their subcontractor Duratek Federal Services, Incorporated (Duratek), located at the Hanford Site near Richland, Washington, are requesting a U.S. Department of Transportation (DOT) Exemption for the DOE, and Party-to-Status for the identified contractors. This request seeks relief from bulk packaging requirements for the one-time, one-way shipment of two inductions pumps, both containing relatively small amounts of non-radioactive Sodium, UN1428, Division 4.3, Packing Group I.

The sodium contaminated induction pumps are a result of decommissioning and subsequent cleanup of the Nuclear Energy Sodium Legacies Program, located at the Hanford Site. The resources allocated for decommissioning and cleanup of the Legacies Program, coupled with an identified use of the pumps by Sandia National Laboratories, make it advantageous to obtain regulatory relief to conserve government funds in the Program's budget. The cost of manufacturing a custom container suitable to package, and transport these units, and the sodium material contained for final disposition, would be expensive and would not provide any significant safety enhancement.



We intend to comply with the terms and conditions specified in the Exemption including the expiration date assigned. See the following attachment for a description of the exemption proposal and its justification in accordance with 49 Code of Federal Regulations (CFR) 107.105 (c) and (d).

The following identifies the names, addresses, and telephone numbers applicable to this request. The Exemption applicant is listed below:

U.S. Department of Energy  
Office of Licensing  
EM-24, CLOV  
Washington, D.C. 20585  
Attention: Dr. James M. Shuler  
Telephone Number: 301-903-5513  
Fax: 301-903-7613  
E-mail: [James.Shuler@em.doe.gov](mailto:James.Shuler@em.doe.gov)

In addition, we are requesting with this Exemption proposal, the issuance of Party-to- Status for our contractors as identified below. Party-to-Status applicants are:

Fluor Hanford Attention: Mr. G. C. Triner Post Office Box 1000, MS A3-02 Richland, Washington 99354 Telephone: (509) 372-0771 Fax: (509) 372-1902 E-mail: <a href="mailto:glen_c_triner@rl.gov">glen_c_triner@rl.gov</a>	Duratek Federal Services, Incorporated Attention: Mr. J. H. Portsmouth 345 Hills Street Richland, Washington 99354 Telephone: (509) 376-7164 Fax: (509) 376-1435 E-mail: <a href="mailto:jim_portsmouth@duratekinc.com">jim_portsmouth@duratekinc.com</a>
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Mr. Dennis Claussen, DOE-Richland Operations Office (RL), Transportation Manager is the designated applicant's technical agent and should be contacted for questions or concerns regarding the technical specifics of this request. Please contact Mr. Claussen at (509) 372-0938. The Hanford Site switchboard number is (509) 376-7411 and can be used to contact the above government offices and their contractors.

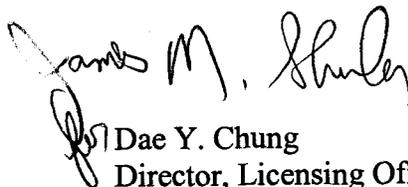
Attachment 1 provides information required per 49 CFR 107.105 paragraphs (a) through (d), and 49 CFR 107.107 paragraphs (a) through (d).

Applicant: The Exemption applicant is:

U.S. Department of Energy EM-24 Washington, D.C. 20585
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If you have any further questions, please call Dr. James Shuler at 301-903-5513.

Sincerely,

A handwritten signature in black ink that reads "James M. Shuler". The signature is written in a cursive style with a large, looping initial "J".

Dae Y. Chung  
Director, Licensing Office  
Environmental Cleanup and Acceleration  
Office of Environmental Management

cc w/ enclosures:  
Dr. James Shuler, EM-24  
Dennis Claussen, DOE-RL

## **Attachment 1 – Exemption Proposal and Justification**

Applicant: The Exemption applicant is:

U.S. Department of Energy Office of Licensing, EM-24 Washington, D.C. 20585 301-903-5513
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### **Description of Exemption Proposal (per paragraph 107.105(c)):**

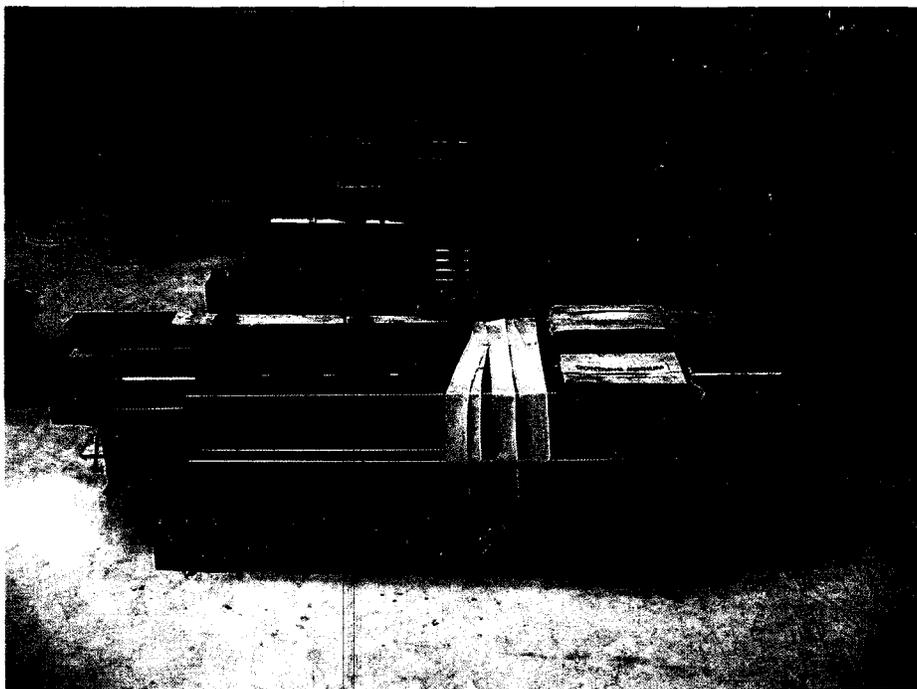
1. **Citations:** Title 49, *Code of Federal Regulations* (CFR), Part 173.244, “Bulk packaging for certain pyrophoric liquids (Division 4.2), dangerous when wet (Division 4.3) materials, and poisonous liquids with inhalation hazards (Division 6.1),”
2. **Mode of Transport:** Truck/Highway transport only; one-time, and one-way shipment.
3. **Description of Proposed Exemption:** The referenced regulation (49 CFR 173.244) applicable to the shipment of these two pumps requires transporting the hazardous material in bulk packaging meeting U.S. Department of Transportation (DOT) Specification 51 Portable Tanks.

The U.S. Department of Energy (DOE) proposes using the existing containment systems of the pumps, stainless steel (SS) pipe sections, made of ASME SA-240 Type 304 SS, as the primary packaging for transportation. See paragraph 8 below for further description details. This one-time, one-way shipment would be prepared and shipped to Sandia National Laboratories, Post Office Box 5800, Albuquerque, New Mexico, 87185.

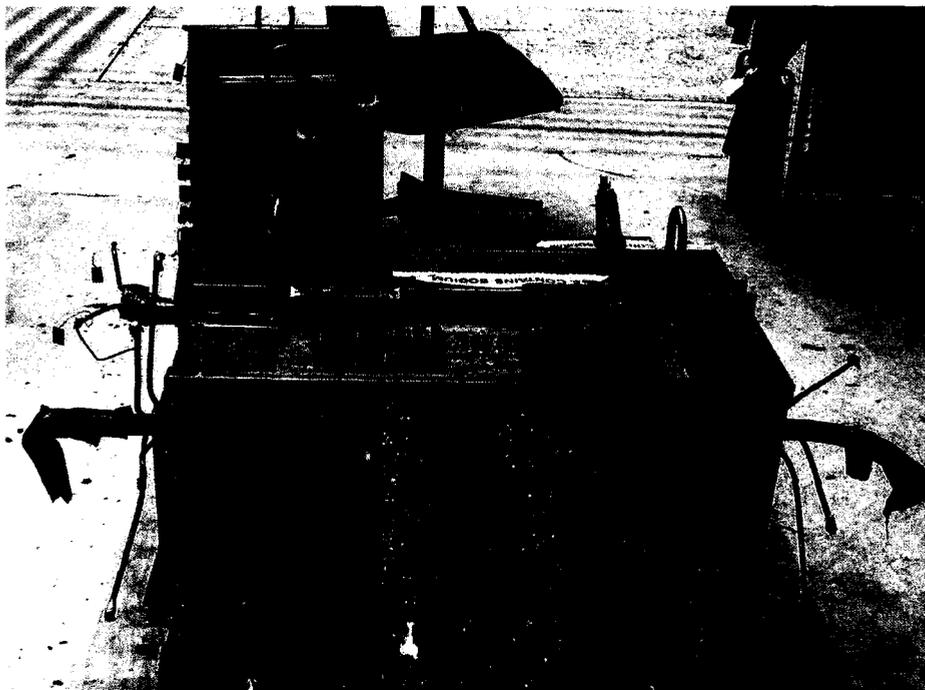
4. **Proposed Duration:** This Exemption is being requested for a one-time, one-way shipment to be made within a 12-month time frame starting upon issuance of the approved Exemption. This would allow time for preparing the shipment, scheduling the carrier, and actual transportation to the Sandia National Laboratory destination in Albuquerque, New Mexico.
5. **Basis for Regulatory Relief:** The DOE believes the ASME SA-240 Type 304 SS piping associated with these pumps, when welded and sealed as described below, provides adequate packaging and containment of the sodium for this one-time, one-way shipment. Paragraph 8 below, further describes the complete packaging system proposed, as the basis for regulatory relief. The DOE believes this packaging will provide an equivalent level of safety to that achieved when placing sodium metal directly into a DOT Specification 51 Portable Tank as authorized in 49 CFR 173.244.

6. Emergency processing: Not required.
7. Identification of Hazardous Materials to be Transported under this Exemption:  
The sodium offered for transportation is nonradioactive sodium metal. The sodium is at ambient temperature and therefore solid (sodium has a melting point of 97.8°C [208°F]). The sodium is contained within the SS piping array of the pump structure. The piping has been drained of sodium but due to the configuration of the pump some sodium still remains in the pump piping. (It is estimated that no more than ½ lb of sodium remains in each pump). Each pump has a 2-inch Schedule 40 inlet and outlet Type 304 SS nozzle, which will have SS caps seal welded in place. The linear induction pumps, as prepared for transportation, will be capable of withstanding normal transport conditions. (Further pump specifications given below).
8. Description of the Packaging: The two pumps are a version of the Model L-100-6 linear induction pump manufactured by MSA Research Corporation of Evans City, Pennsylvania, in accordance with ASME Boiler and Pressure Vessel Code Standards. The piping containing the sodium will function as the hazardous material packaging and is made of Type 304 SS with 0.04 percent minimum carbon content ordered to applicable ASTM standards and nondestructively examined in accordance with RDT 3-37 and ANSI B31.7. Each sodium inlet and outlet nozzle will have a stainless steel cap welded in place for transportation. See pictures of pumps below (pictures taken prior to preparation for shipment).

Pump #1.



Pump #2.



When prepared for transport, Pump #1 will weigh 408 (kg) (900 lb) and will be 216 cm (85 in.) long, by 40 cm (16 in.) wide, by 48 cm (19 in.) in height. Pump #2 will weigh 227 kg (500 lb), and will be 137 cm (54 in.) in length, by 50 cm (20 in.) in width, by 69 cm (27 in.) in height. The pumps will be placed horizontally and secured onto wooden pallets and wood forms and bracing will be used to provide additional protection for the piping nozzles. The pumps will be secured to the transport vehicle, marked, labeled, and otherwise prepared for transportation in full compliance with DOT and other Federal and state regulations. The carrier to be used for this one-time shipment will be fully qualified and licensed to haul hazardous materials of this description.

9. Alternative Packagings: Not applicable.

**Justification of Exemption Proposal (per paragraph 107.105 (d)):**

1. Relevant Shipping and Incident Experience: These particular induction pump packages have not been shipped with sodium metal; however, several cold traps and other articles of similar size and makeup have been shipped without incident from the Hanford Site. One shipment being under DOT-E-13048. This shipment was a one-time, one-way shipment and was completed without incident about two years ago. The DOT recently issued DOE Exemption, DOT-E-13445, for the shipment of additional sodium filled units, which were shipped August 24, 2004, without incident. DOE, and its contractors, have made numerous other sodium metal shipments in DOT authorized bulk and

non-bulk packagings from the Hanford Site. All shipments have been completed without incident.

2. Identification of Potential Increased Risk to Safety or Property: DOE and their contractors, as listed, do not believe there is any increased risk to public safety or property under the provisions of this proposed Exemption since the packaging system to be utilized provides substantial containment of the sodium for transport and this will be a single, one-way shipment under exclusive use agreement with the carrier.
3. Analysis of Proposed Alternative to Achieve Equivalent Safety: The ASME vessels, as proposed, provide the required containment and protection of the sodium metal during normal transport conditions and will perform in a manner superior to authorized DOT Specification 51 Portable Tanks. The design pressure for DOT Specification 51 Portable Tanks is 100 to 500 psi. A 2 inch Schedule 40 Type 304 pipe has a burst pressure in excess of 3,000 psi. Welding socket caps over the piping projections using approved ASME welding procedures will mitigate any potential path for moisture to contact the sodium. Additionally, securing each pump to a wooden pallet and placing wood forms and bracing around the piping projections provide additional protection during transport. The ASME vessel (package) design and materials of construction provide adequate protection equivalent to DOT Specification 51 Portable Tank performance requirements. The small quantity of material at risk and the ruggedness of the complete packaging system provide equivalent safety necessary to support this exemption request.

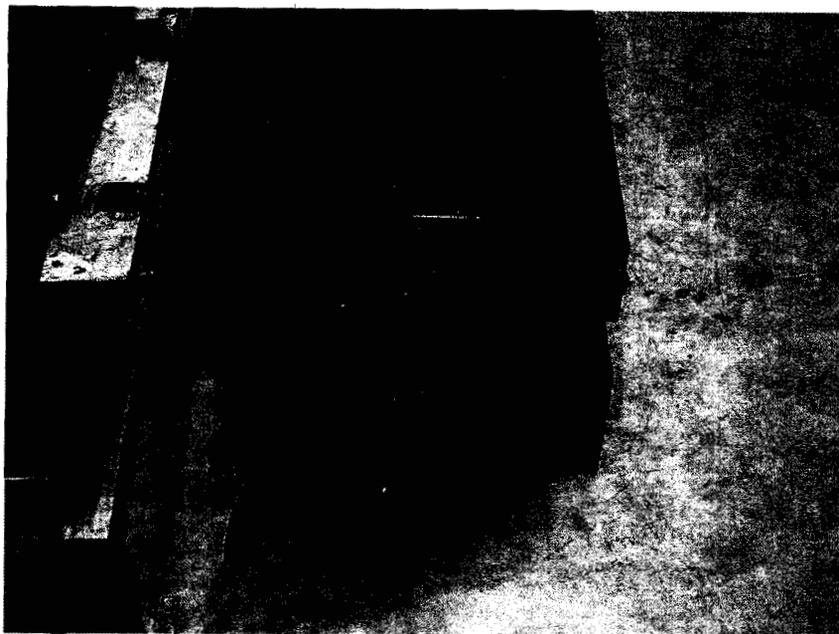
A large portion of each pump is the structure support and electrical circuits; probably 95 percent of the make-up of the pump. The only part that contains sodium is the piping section identified by dark tape wrapped on the ends. (Caps will be welded in place prior to shipping). The small bent portions with the lighter colored tape are cal-rod heaters and do not contain sodium.

Additional views of Pump #1 and Pump #2 are shown below.

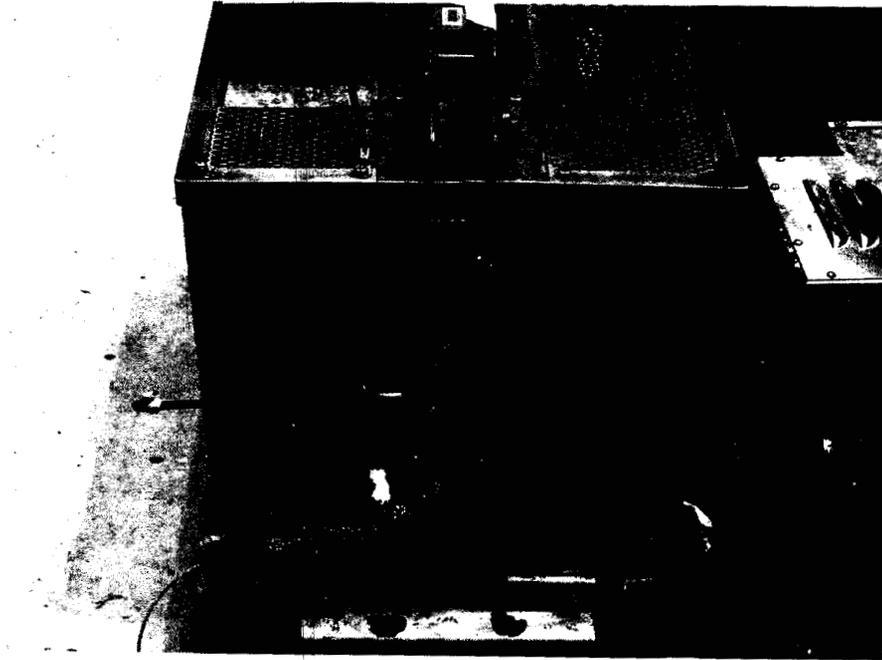
Pump #1.



Pump #1.



Pump #2.



Pump #2.

