

## THE WIPP TRANSPORTATION SYSTEM - REFINEMENT IN MOTION\*

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### ABSTRACT

The Department of Energy (DOE) has developed an integrated transportation system to transport transuranic (TRU) waste from ten widely dispersed generator sites to the Waste Isolation Pilot Plant (WIPP). The contract for a transuranic waste carrier was awarded in November 1988. In June 1989, the National Academy of Sciences reviewed the transportation system and concluded that: "The system proposed for transportation of TRU waste to WIPP is safer than that employed for any other hazardous material in the United States today and will reduce risk to very low levels." Since that review, numerous improvements in the transportation system have been made. In October 1991, the carrier was reviewed under the DOE Motor Carrier Evaluation Program and achieved the highest score of any carrier evaluated since the inception of the carrier evaluation program. Since that time, further improvements have been made. The evaluation criteria to be used for the follow-on carrier contract is patterned after the DOE Motor Carrier Evaluation Program criteria and will result in the DOE again having a carrier that meets only the highest standards.

### INTRODUCTION

When the DOE developed the initial transportation program for the transport of transuranic waste to the WIPP site, it was keenly aware that the system would be under close scrutiny, both internal and external. Due to the nature of the cargo, care had to be given so as not to develop criteria that were so high that they would leave a false impression of the hazardous nature of the cargo being transported.

### BACKGROUND

In November 1988, the DOE developed an integrated system to transport transuranic waste from ten widely dispersed generator sites to the WIPP. The system consisted of a type "B" container, a specially designed trailer, a lightweight tractor, the DOE "TRANSCOM" satellite based vehicle tracking system, and uniquely qualified, highly trained drivers. In June 1989, the NAS reviewed this transportation system and concluded that: "The system proposed for transportation of TRU waste to WIPP is safer than that employed for any other hazardous material in the United States today and will reduce risk to very low levels."

Although this is very complimentary for the DOE and the designers of the system, what is equally or more important is the refinements that have been made since that time. To continue to transport radioactive materials in a safer manner, the DOE can not allow tradition to be unhampered by progress.

Since the June 1989 statement by the NAS, numerous improvements have been made in equipment, satellite tracking, computer software, driver qualifications, training and evaluation, emergency response procedures, daily operational procedures and most of all, safety.

The result of these continuing efforts was illustrated in the evaluation received by the carrier under the DOE Motor Carrier Evaluation Program. The current carrier received a rating of "Excellent" and the distinction of having received the

highest numerical score of any carrier since the inception of the carrier evaluation program. Further refinements have been made since then and additional measures are under consideration.

### DRIVER HIRING PROCESS

The current driver hiring process ensures that all drivers meet Department of Transportation requirements and have a valid Commercial Drivers License. As we approach the fourth anniversary of the contract, the carrier has had a zero driver turnover rate, no driver citations for moving violations or accidents, and no vehicles placed out of service. Drivers operate under a severe penalty system. One chargeable moving violation or accident and their employment is terminated. These rules apply to the driver's personal vehicle also. Review of this criteria and comparison to other elements of the transportation industry prompted a suggestion by the DOE that perhaps the personal vehicle aspect might be a little severe and should be modified. When the drivers opinions were sought on this matter a unanimous decision was made not to change the criteria.

Obtaining and keeping drivers of this caliber presents a challenge for management. To assist in this effort a three month probationary period was instituted as part of the hiring process. To ensure management was aware of the quality of the drivers while not under their direct observation during the probationary period, a peer review system was established to confirm that a prospective driver had no bad habits and would be a desirable member of the team. To ensure that a prospective candidate is financially stable a pre-employment credit check is now required.

### DRIVER TRAINING

To the list of training requirements and to enhance the vehicle maintenance posture, drivers are now required to complete a certified North America Standard CVSA Vehicle

\* Work supported by the U.S. Department of Energy Assistant Secretary for Defense Programs Office of Defense Waste and Transportation management under DOE Contract No. DE-AC04-86AL31950.

inspection course. Drivers now have the same credentials as those inspecting them at weigh stations and ports of entry while in-route and drivers are more attuned to inspection requirements and potential deficiencies in their own vehicle. Pride in their accomplishment is reflected in the driver's display of the "CVSA Certified" pin on their "Dawn Enterprise" hats. The mechanic that inspects the vehicle prior to departure is also equally qualified.

The motive for the CVSA training was predicated on the fact that the states from which shipments are made will conduct an independent CVSA inspection of each loaded shipment prior to its departure for the WIPP site. Also, states such as Colorado have laws that require them to conduct a similar inspection on those shipments which pass through their state. The WIPP host state will also conduct a post trip CVSA inspection. With this in mind, and to make in-route driver vehicle inspections more meaningful, the CVSA inspection training requirements was initiated.

One of the requirements of the transportation system is that the tractors carry, and the drivers be qualified in the use of, radiation detection instruments. To ensure that the drivers have actually used the instruments they carry in an actual radioactive environment, the drivers are now required to complete a course at the Inter-service Nuclear Weapons School at Kirkland Air Force Base, New Mexico. During the course the drivers have the opportunity to use their instruments and detect alpha, beta and, gamma radiation and go thru a "hot line" after having entered an "accident site" contaminated with a thorium sludge and Cobalt 90 source. This has significantly enhanced driver confidence and proficiency with the instruments they carry.

As the transportation system evolved, one of the continuing questions encountered was: "What do you do if a TRUPACT-II becomes separated from the trailer as the result of an accident?" In response to this a TRUPACT-II Recovery Guide has been developed and tested in preparation for the unlikely event. The procedure was demonstrated for members of the WGA and is part of the scenario for the Idaho state TRUPACT-II transportation accident exercise TRANSAX '92.

Drivers are trained in and can implement this guide. A copy of the guide is carried with the tractor for each shipment and is also available at appropriate state emergency response offices as well as the DOE regional response centers. This procedure was made a part of the TRANSAX '92 (TRUPACT-II emergency response exercise) in Idaho.

#### DRIVER EMPLOYMENT

To ensure that drivers are aware of their manner of performance and steps they can take to improve themselves, an annual driver evaluation report was instituted with a mid-year review with each driver. This then forms the basis for management to performance base any raise given to each driver. To add credibility to the report drivers are also evaluated by their peers.

The score given each employee by management also reflects input from a separate peer review of each driver. This provides management with a more in-depth look into each driver's manner of performance. It also makes the drivers work as a team and strive to perform to the best of their ability.

Although the penalty system influences driving in a safe manner, an additional safety incentive program that provides

a monetary reward on a quarterly basis has also been implemented. Drivers receive an hourly increase in pay with "points" deducted for maintenance records problems and any errors in log book entries.

#### EQUIPMENT AND PROCEDURES

Through the Western Governors' Association (WGA), state officials have developed procedures to notify the WIPP Central Monitoring Room operator of adverse weather conditions that might influence shipment safety. In most cases a decision can be made to delay a shipment and thus preclude the shipment from encountering adverse weather, or appropriate action can be taken to ensure the safety of a shipment. This may include diversion to a "Safe Parking" area.

The Federal Code of Regulations pertaining to transportation allows for the use of reflective or retroreflective materials providing proper color codes are used. Following a recommendation made by the Oregon Hanford Advisory Committee reflective placards were custom made and installed on all WIPP trailers. Coincidentally, the reauthorization of the Hazardous Materials Uniform Transportation Safety Act on November 16, 1990, contained provisions addressing the use of reflective placards.

The previous tracking system utilized a commercial service that employed the use of Loran-C towers to assist in locating a vehicle. The accuracy of this system was highly dependent upon the density of Loran-C towers along the carrier routes. On some routes the location accuracy was acceptable, in others, e.g. Wyoming, it was intolerable. On occasion the system would "lock up" due to insufficient signal input. Weather and terrain seemed to influence vehicle location also. Under certain conditions the system failed or provided errors of eighty (80) miles from the known vehicle location.

With the announcement that dual satellite tracking testing was complete and commercially available, the WIPP vehicles were the first within DOE to upgrade to the new technology. Results were impressive. Accuracy has been demonstrated to be within 500 feet. Vehicles which were known to be following each other were displayed as overlapping icons on the operators PC monitor. This also was the case for vehicles parked side by side. Weather and terrain are no longer a factor. It couldn't be better.

In a recent report the National Transportation Safety Board called for mandatory automatic slack adjusters and antilock brakes. These features are already being incorporated into the fleet. Drivers have reported a significant increase in the handling of trailers and are much more comfortable with the new equipment.

#### TODAY'S STATUS

In October 1991, the WIPP carrier, Dawn Enterprises, Inc., was audited under the provisions of the DOE's Motor Carrier Evaluation Program. The program was initiated to provide the DOE field offices with the tools necessary to help ensure, during this period of motor carrier deregulation, that only highly qualified carriers will assist DOE in maintaining their excellent performance record in the safe transport of hazardous commodities. Dawn received a rating of "excellent" and the distinction of having achieved the highest numerical score received by a carrier since the inception of the program. Improvements have been made since then.