



## MEMORANDUM

18 March, 1986

**TO: Denise Fort, Director**  
**FROM: C. H. Persson-Reeves, Emergency Response**  
**RE: BDM PRESENTATION, January 14, 1986**  
**Monitoring and Control of Nuclear Waste Transport**

BDM proposes to develop a monitoring system of sensors, processors and communications equipment to track WIPP-bound transporters. The SCC is the intended lead agency. The state must obtain funding from one or more federal sources to create such a system. BDM maintains that once this system is operational it can be expanded to include all shipments of hazardous materials (HM) within the state. The system is costly and requires a lot of equipment, manpower and maintenance. It does not address the actual problem of accident prevention through transportation safety. Neither the DOE or DOT will support this system.

The BDM proposal was reviewed and compared with several existing state HM transportation programs. Each of these programs provides a more effective, less costly approach to the problem. The five year old Illinois program allows specially trained and equipped state troopers to complete on-the-spot vehicle inspection give regulatory authority to take a vehicle out of service until the violation has been corrected. It works effectively, has reduced the cause of most transportation accidents by 50%, is acceptable to the DOT, and has already been adopted by several states. Transportation accidents involving hazardous materials are a major problem, but must be effectively addressed. I highly recommend the Illinois program for New Mexico.

The EID is charged with enforcement of state regulations governing the accidental release of hazardous materials. These regulations mirror USEPA requirements which are also included under federal DOT regulations. The EID should encourage the state to actively pursue the implementation of a program which champions accident prevention rather than accident discovery.

The attached summary includes:

- I. Background
- II. Summary of Proposed Program
- III. Comments
- IV. Specific Issues, Goals and Recommendations
- V. Copy of BDM handout

cc: R. Holland, Deputy Director  
S. Larcombe, Chief Planner

attachments



**SUMMARY OF BDM PRESENTATION  
MONITORING AND CONTROL OF NUCLEAR WASTE TRANSPORT  
JANUARY 14, 1986**

**I. Background**

On January 14, 1986, a briefing was held at BDM's offices in Albuquerque, New Mexico. The meeting was attended by representatives of several state agencies and legislators. A copy of the BDM handout is attached. BDM contracted to the State Corporation Commission (for just under \$5,000) to prepare a Scope of Work to develop, test and implement a system for monitoring shipments of nuclear waste bound for the WIPP site. Results of the BDM study were presented to the Radio-active Materials Committee by the SCC at the December, 1985, meeting of the committee. BDM held the January briefing at the request of the committee. The committee expressed grave concern (and justifiably so) over the fact that none of the state agencies who had a genuine interest in WIPP activities and related matters (such as nuclear waste transportation) had any prior knowledge of the study.

Briefly, BDM proposes a five phase research effort to design, test and implement a system that will monitor shipments of nuclear waste being transported to WIPP. They intend to develop this system using existing, proven "off-the-shelf" equipment and software to design a system of sensors, processors and communicators that will be used initially for WIPP shipments (the "test case"); but, the system can be modified at a later point in time to monitor all other classes of hazardous materials transportation (note, currently about 87,000 vehicles cross our state each year that carry some sort of hazardous materials). Subsequent modification may require additional add-ons and software redesign.

Section II summarizes the proposed development program. Section III offers comments; and Section IV presents recommendations based on these comments. Specific issues are identified that include WIPP-bound transportation and the larger, more inclusive, and more pertinent issue of hazardous materials transportation.

**II. Summary of BDM's Proposed Program**

BDM's proposal is as follows: as a WIPP shipment enters New Mexico at a designated Port of Entry (POE), the vehicle stops, and sensors (radiation scintillation detector), communications and data acquisition equipment are installed on the vehicle and performance verified. Vehicle identity, cargo volume and content, and other required information is transmitted to the command post. En route, the command post computer queries the truck system at frequent intervals. Sensor alarm or loss of contact will trigger a pre-planned response. The system is removed at WIPP and then returned to where it is needed.

This system is proposed in support of the New Mexico SHMED (State Hazardous Materials Enforcement Development) Program. BDM's principal point is that the transportation of hazardous materials (HM) in New Mexico and across the country pose a large and very serious potential problem, principally in the area of emergency response. Their solution is to develop a telecommunications system designed for a single, specific category of HM transportation, use WIPP as the test case, then, expand the system to monitor all other areas/classes of HM transportation. New Mexico, they maintain, will become a leader in the field of state-of-the-art telecommunications monitoring of HM transportation.

The BDM credo is "keep it simple; match the system to the state's requirements; use proven off-the-shelf equipment; carefully structure the program to minimize technical risks; achieve a cost-effective system; and provide growth capacity."

The final system design will be assembled based on the specific needs of the state. BDM favors a system that relies on a (simple) meteor-burst network for communications (see p. 16-19 of handout), and cites several examples of its use by other agencies, principally, large-scale federal projects. In addition to the sensors, an elaborate array of equipment is also required (p. 20 - 27 of handout) including a master system, remote data terminals and remote communications terminals. The system design is flexible and can be adapted (with additional equipment and software) to support a variety of systems. The system will be designed to meet current and future needs. Hardware and software integration requirements will be met and programs will be fully tested by BDM.

BDM proposes a five phase development scheme:

- Phase I System Definition and Scope
  - Requirements Definition
  - Definition of Candidate Equipment
  - Operational Procedures
  - Cost and Schedules (estimates)
- II Trade Studies, Prototyping, Test and Evaluation
- III Final System Design
- IV Acquisition, Installation and Checkout
- V Full-scale Operation

No timetable for completion is given; nor is an estimated cost for services and system. It is presumed that the work will be completed by October, 1988 (WIPP becomes operational). The key to the entire operation is Phase I System and Scope - Requirements Definition; New Mexico must identify its needs.

Suggestions for expansion into the broader area of HM include adaptation that will monitor vehicle identification and/or classification, weight in motion/vehicle size/axle loading, traffic patterns and highway use.

## II Comments

### 1. BDM's approach overlooks the obvious:

- the principal cause of HM accidents is a result of vehicle and or driver safety violations;
- IMPROPER PLACARDING AND IMPROPER MANIFEST PAPERS are the two principal categories of regulations violations (which, then, obviously, makes a PROPER - which is different from timely - response a sporting proposition)
- the OBJECTIVE should be PREVENTION rather than MONITORING

### 2. The DOE, in all probability, will never allow this type of monitoring system

a) A system similar to BDM's is already used by the DOE to track nuclear shipments

b) Provisions have been made in the Supplemental Stipulated Agreement that permit point of origin inspection and monitoring; BDM's system would be an unnecessary duplication of effort

3. The proposed BDM system is elaborate and will require extensive equipment, manpower, specialized training, initial equipment costs, and subsequent maintenance costs.

4. The initial system is so narrowly defined than any future growth potential may require additional equipment, possible additional training, possible additional manpower, and definite additional cost.

5. At this very moment, New Mexico's POEs are so severely understaffed that manifest papers are not checked. One could argue that one or two WIPP trucks would not add much of a burden to the existing workload; however, with over 87,000 trucks/year rolling through (thats 200 + per day), the logistics of physically attaching sensing equipment to a vehicle becomes an more of a theoretical ideal rather than a practical reality.

6. Neither the DOE nor FEMA provide funding for projects (just equipment and training, folks) and it is highly doubtful that the federal DOT would fund the development of a system such as this (see #8 and #16 below).

7. BDM's claim that their proposed telecommunications system will make New Mexico a leader in the field is not true; right now, today, New Mexico lags far behind much of the country.

8. Section 112(a) of the federal Hazardous Material Transportation Act (HMTA) prohibits any state or local government requirement that is "inconsistent" with the federal act. Section 112(b) also provides that an inconsistent state or local requirement will not be preempted if DOT determines that the requirement

1) affords an equal or greater level of portection than the federal requirements

2) does not unreasonably burden commerce.

a) In Kentucky, a "prenotification requirement" caused a 4-hour delay and had the effect of requiring carriers to interrupt transportation to provide prenotification.

The Materials Transportation Bureau (MTB) ruled that this was inconsistent; increased risks from transportation delays outweighed any safety benefits.

9. Several studies have been completed around the country. The Puget Sound Council of Governments Study (PSCGS) indicated that prenotification requirements were neither feasible nor effective given the volume of traffic.

10. The proposed BDM system falls within the general category of prenotification and will require extensive delays at a POE; the DOE contractor carrier and the commercial carrier industry will also certainly view this as unduly burdensome.

11. State and national studies (including New Mexico) have shown that flammable liquids are the largest class of HM being transported on the highways today.

12. The majority of HM accidents involve vehicles carrying flammable liquids; accidents involving RAM (radioactive materials) account for less than 1% of all HM accidents nation-wide and New Mexico follows the national trend.

13. The federal DOT regs incorporate definitions of HM from the Clean Water Act, RCRA and CERCLA; primary responsibility for enforcement of regulations regarding accidental releases of HM falls under the jurisdiction of the EPA and state EID.

14. Although the SCC has general authority in the transportation area, it is unclear as to why they should retain primacy in an area that is clearly the responsibility of the EID and DOT.

15. Where effective enforcement programs have been implemented, the problems of vehicle safety, improper placarding, improper manifest papers and improper loading have been drastically reduced.

16. Several states have implemented either a system of permits and licensing (South Carolina, low-level radioactive waste) and/or a system similar to one initiated by the State of Illinois (six other states, including California are using this system). Fines, penalties and fees are part of these two programs.

a) The Illinois program allows state troopers specially equipped and trained in enforcement of truck regulations and hazardous materials to pull vehicles off the road for inspection. State regulations have been amended to permit complete inspection of the vehicle (including off-loading) and the authority to declare a vehicle out-of-service until the violation is corrected. Violations have dropped almost 50% in 5 years. Fines have generated over \$200,000 since the program began.

Illinois now operates their own training program which mirrors the former Transportation Safety Institute in Oklahoma (funded by the now defunct SHMED Program). Funding for their program is provided by the federal Motor Carrier Safety Assistance (MCSA) Program.

Their training program is available to anyone and charges no fee; a potential funding source for New Mexico participants is the MCSA Program.

In Illinois, the major problems encountered are vehicle maintenance and safety, improper placarding and improperly prepared manifest papers.

Violations for radiological shipments center around the improper transportation of radiopharmaceuticals (taxi drivers go out to the airport, pick up a package of radiopharmaceuticals, toss it into the trunk, then pick up a human fare before delivering the package).

b) South Carolina requires permits and licensing for RAM carriers. Before a permit is issued the carrier must

- 1) certify adequate liability insurance
- 2) certify compliance with regulations
- 3) give advance notice of transport
- 4) notify, in advance, of any route changes

This program was initiated to stop improper packaging and loading of commercial vehicles transporting material to South Carolina's low-level waste facility.

c) Wisconsin and Kansas have implemented permit and licensing fees; Kansas has generated surplus revenues.

17. The Motor Carrier Safety Act (MCSA) and Surface Transportation Assistance Act provide funding for the development and implementation of enforcement programs applicable to motor carrier safety. However, the State must

- 1) adopt the MCS reg's and highway portion of the HM reg's
- 2) designate a lead agency
- 3) devote adequate resources to the administration of the program
- 4) have sufficient legal authority for right of entry into vehicles

### III SPECIFIC ISSUES, GOALS AND RECOMMENDATIONS

The proposed BDM plan is elaborate and costly; it will not adequately address the real problem of hazardous materials transportation accidents in New Mexico; the DOE and DOT will never allow this program to be implemented.

**Two specific issues must be addressed:**

1. How to develop a program which will be effective in promoting vehicle safety for all classes of hazardous materials in the state of New Mexico while still assuring the public that WIPP-bound shipments will be adequately "monitored."
2. What is the specific role and jurisdiction of the SCC in developing programs such as this.

**Three goals are defined:**

1. Define the principal problem that exists in New Mexico vis. HM transportation - i.e., determine, to the extent possible, the most probable cause of accidents.
2. Develop a program that will work effectively for the state for all classes of HM transportation .

3. Develop that program so that it will, as much as is possible, work in concert with the plan(s) being developed to monitor WIPP-bound vehicle and cargo safety.

**Recommendations to achieve goals:**

1. Arrange a meeting with the Emergency Management Task Force, the SCC, the Radioactive and Hazardous Materials Committee and other interested agencies to present EID's position on the proposed BDM system and other, more viable, alternatives.

- a) prepare a summary of existing programs for the presentation
- b) develop EID's position

2. Have Trooper Fritz Mueller, Illinois State Police, come to New Mexico to present their program (he's even willing to pay his own way; but, if the SCC can afford to hire BDM, perhaps they can fork over travel expenses for Trooper Mueller).

3. Compile federal and state regulations (New Mexico) and define responsibility for enforcement in the area of HM transportation (safety, spills, etc)

- a) prepare a policy statement

4. Compile reports, regulations, etc., from states which have existing programs in enforcement, permits and licensing, evaluate, and analyze potential for New Mexico

- a) prepare a policy statement

5. Prepare a study which will characterize HM transportation in New Mexico (federal funding may be possible). Address the following areas:

- 1) identify risks determined by types and quantities
- 2) evaluate roles, responsibilities and capabilities of agencies with hazardous materials capabilities
- 3) look at state and federal programs which might apply
- 4) use these results to develop options

6. Using the results of 1 - 5, develop a system that will be effective for all classes of HM as well as WIPP shipments.

- 1) look at implementing existing systems as much as possible.  
(5 year old problems have most of the bugs worked out)
- 2) evaluate for cost, manpower, equipment suitability

7. Use the results of Nos. 5 and 6 to better train, equip and integrate the existing state HMER Plan with the realities of emergency response in new Mexico.

8. Actively participate in the western states Keystone Conference and the Western Interstate Energy Board (WINB).

9. Develop a timetable for each task.