

**State of Nevada
Agency for Nuclear Projects
Nuclear Waste Project Office**

**Robert J. Halstead
Transportation Advisor**

presentation before

**United States
Nuclear Waste Technical Review Board**

Amargosa Valley, Nevada

August 17, 1990

Repository Transportation Concerns

1. Unresolved Safety Issues
2. Yucca Mountain Transportation Issues
3. DOE OCRWM Transportation Program
4. Public Perception of Transportation Risks

1. UNRESOLVED TRANSPORTATION SAFETY ISSUES

- a. Relevance of Nuclear Industry's Past Safety Record
- b. Health Effects of Routine Shipments
- c. Probability of Severe Transportation Accidents
- d. Adequacy of Federal Safety Regulations
- e. Shipping Cask Performance in Severe Accident or Terrorist Attack

NUCLEAR INDUSTRY TRANSPORTATION SAFETY RECORD

- No releases since early 1960's but accidents have occurred, equipment has failed, and at least one case of attempted sabotage is known
- Number of shipments will increase dramatically
- Average length of shipments will increase significantly
- DOE's transportation safety record may not equal the nuclear utilities' record

**COMMERCIAL SHIPMENTS OF SPENT FUEL
IN THE UNITED STATES**

1964 - 1989

8,962 Assemblies Shipped

1,861 MTUs shipped

47% by rail

53% by truck

2,576 Cask-Shipments

9% by rail

91% by truck

**Source: R.B. Pope, International Experience in Cask
Design and Operations, February, 1990**

TOTAL NUCLEAR WASTE SHIPMENTS TO A REPOSITORY

DOE Proposed Plan - With MRS

1,388 Dedicated Trains
(10 casks per train, 5 containing SNF)

2,091 Rail Casks (general freight)

7,234 Truck Casks

DOE Alternative Plan - No MRS

7,879 Rail Casks (general freight)

26,600 Truck Casks

NWPO Maximum Shipment Scenario - No MRS, All Trucks

76,000 Truck Casks

**SPENT NUCLEAR FUEL (SNF) AND HIGH LEVEL
RADIOACTIVE WASTE (HLW) SHIPMENTS TO A REPOSITORY
(100% TRUCK)**

Cask Capacity Assumption

	NWPO (1.0 MTU/Cask)	OCRWM (2.0 MTU/Cask)
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Base Case (70,000 MTU)

SNF	63,020	31,510
HLW	12,980	12,980
TOTAL	76,000	44,490

Maximum Shipment Case (No second repository, all defense HLW)

SNF	87,000	43,500
HLW	55,280	98,780
TOTAL	142,280	98,780

Source: NWPO 8/10/90, Based on ACR 8 Report

HEALTH EFFECTS OF ROUTINE SHIPMENTS

- Neutron and Gamma Radiation During Incident-free Transport
- Past Instances of Excess Surface Contamination
- Health Effects Assumptions (RADTRAN)

PROBABILITY OF SEVERE ACCIDENTS

- Use of Probabilistic Risk Assessment (PRA)
- RADTRAN/Transnet
 - Model Validation
 - Route-Specific Data

WGA RESOLUTION ON HMTA

Strict Regulation of Highly Radioactive Materials Transport

- Maintain State Authority to Designate Alternative Highway Routes**
- Apply Provisions to All Federal Shipments**
- Additional Regulations**
 - Rail Routing Guidelines**
 - Use Special Trains for Rail Shipments to Repository**
 - Operating Guidelines for Truck Shipments (Convoys, Escorts, Time-of-Day, Adverse Weather, etc.)**
 - Radiological Inspection of Casks at Origin and Destination**
 - Safety Inspections at Origin and En Route**

SHIPPING CASK PERFORMANCE

- Licensing standards may not reflect credible worst case accident or attack conditions
- Physical testing of full-scale casks is not required under current regulations.
- Potential human error

AUDIN ON MODAL STUDY

- Use of Strain as Primary Variable to Define Damage
- Inadequate Data on Accident Conditions
- Inadequate Attention to Interactive Processes
- Failure to Consider Human Error

MODAL STUDY VERSUS REPOSITORY TRANSPORTATION

- Different Spent Fuel Characteristics
- Larger Cask Payloads
- New Cask Designs and Materials
- Rail/Truck Modal Mix Uncertainties
- Different Shipment Characteristics

2. YUCCA MOUNTAIN TRANSPORTATION ISSUES

- a. General Considerations - Systems Impacts
- b. Lack of Rail Access
- c. Limited Access to Interstate Highway System
- d. Future Population Growth along Routes through the Las Vegas Valley
- e. Potential Conflicts with U.S. Air Force Operations
- f. Impact on Nevada Indian Tribes

COMPARISON OF TRANSPORTATION IMPACTS FOR 1ST REPOSITORY CANDIDATE SITES

Impact Issues

Potential Sites

	Davis Canyon, Utah	Deaf Smith, Texas	Hanford, Washington	Richion, Mississippi	Yucca Mountain, Nevada
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System Impacts of Spent Fuel Shipments from the MRS Facility to the Repository *

Total Cask Miles for Shipments

100-ton Casks (one-way million miles)	20.6	15.3	25.0	6.3	26.3
150-ton Casks (one-way million miles)	6.7	5.0	8.7	2.1	11.2

Total Transportation Costs

100-ton Casks (million 1985 dollars)	881	771	876	509	974
150-ton Casks (million 1985 dollars)	386	344	431	252	569

Nonradiological Accident Risk**

Injuries	216	156	230	57	266
Fatalities	20	15	22	5	25

* Assumes Oak Ridge, TN location for MRS; all spent fuel shipped to the repository from the MRS by dedicated trains; includes casks carrying secondary wastes from rod consolidation at the MRS

** Assumes shipment in 100-ton casks, spent fuel shipments only

Source: ACR 8, based on DOE, 1986a, 1986b, 1986c, 1986d, 1986e

**COMPARISON OF TRANSPORTATION IMPACTS
FOR 1ST REPOSITORY CANDIDATE SITES**

<u>Impact Issues</u>	<u>Potential Sites</u>				
	Davis Canyon, Utah	Deaf Smith, Texas	Hanford, Washington	Richion, Mississippi	Yucca Mountain, Nevada
Proximity to National Transportation Network					
Nearest Mainline Railroad (miles)	74	25	51	17	100
Nearest Alternative Carrier Mainline Railroad (miles)	NA	40	101	26	265
Nearest Interstate Highway (miles)	89	14	28	26	100
Nearest Alternative Route Interstate Highway (miles)	198	200	72	84	208
Minimum Requirements for Access to the National Transportation Network					
<u>Rail Access</u>					
New Construction (miles)	39	26	3	26	100
Cost (million 1985 dollars)	142	21	6	16	151
<u>Truck Access</u>					
New Construction (miles)	25	1	3	4	16
Upgrading (miles)	0	4	0	23	0
Cost (millions of 1985 dollars)	79	2	6	9	12

Source: ACR 8, based on DOE, 1986a, 1986b, 1986c, 1986d, 1986e

YUCCA MOUNTAIN TRANSPORTATION CONSIDERATIONS

Site Distance from National Transportation Network

Rail

· Nearest Mainline Railroad - 100 miles

Nearest Alternative Mainline - 265 miles

Truck

Nearest Interstate Highway - 100 miles

Nearest Alternative Interstate - 208 miles

Source: ACR 8, p. 54

3. DOE OCRWM TRANSPORTATION PROGRAM

State of Nevada Recommendations

- a. Revise Mission Plan and Transportation Plan
 - (a) Program Assumptions
 - (b) Sensitivity Analysis

- b. Redirect OCRWM Cask Program
 - (a) Systems Analysis
 - (b) Dual Purpose Casks

- c. Implement NWPAA Section 180(c)
 - (a) Systems Planning
 - (b) Corridor State Participation

Public Concern - SAFETY

Highway and Rail Accidents Will Occur in
Transporting the Wastes to the Repository

	<u>Statewide</u>	<u>Nye County</u>
Somewhat Agree	40.8%	39.2%
Strongly Agree	36.6%	24.0%

Source: November 1989 State of Nevada Telephone Survey

4. Public Perception of Transportation Risks

- a. Potential Adverse Socioeconomic Impacts
- b. Concern About Accidents
- c. Concern About Terrorism and Sabotage

Public Concern - SABOTAGE/TERRORISM

Shipments of Nuclear Wastes Can be Made Safe
from Sabotage or Attack by Terrorists

	<u>Statewide</u>	<u>Nye County</u>
Strongly Disagree	40.4%	23.0%
Somewhat Disagree	21.0%	26.0%

Source: November 1989 State of Nevada Telephone Survey

NEVADA NUCLEAR WASTE STUDY COMMITTEE

A Nevada citizens committee for a responsible repository policy

Good afternoon. My name is Rick Dale. For the record, I would like to state that I am an employee of Weddle/Caldwell, a public relations firm that receives a grant from the U.S. Council for Energy Awareness to provide staff assistance for a private citizens group called the Nevada Nuclear Waste Study Committee.

I am speaking today at the request of Hugh J. Anderson, III, co-chairman of the 9,000 member Nevada Nuclear Waste Study Committee (NNWSC).

The Nevada Nuclear Waste Study Committee is a non-partisan group of responsible citizens that believe the only basis for determining if Yucca Mountain is, or is not, a suitable site for the proposed repository is through exhaustive scientific characterization of the site.

Frequently, we read reports attributed to Nevada's elected officials that all Nevadans are against the study of Yucca Mountain. This is simply not true. There are large numbers of Nevada citizens who understand the need and the potential impact of the proposed repository, should the site be scientifically proven to be safe.

This understanding is in part borne out of Nevada's nuclear heritage. The Nevada Test Site has been an important element in the development of this area for nearly 40 years. Hundreds of nuclear weapons tests have been conducted at the site, and quantities of nuclear materials have been transported on our highways during this time. These activities have made the Test Site a de facto repository.

These activities have resulted in huge amounts of scientific research and understanding. It is scientific research and understanding, and not political rhetoric, that is the common thread amongst these Nevadans for advocating continued study of the repository.

Scientific study is the key.

As a private citizens group, the NNWSC will dedicate its efforts toward ensuring that the technical studies of the high level repository proposed for Yucca Mountain proceed in an orderly and scientific manner. The NNWSC believes that the public health and safety of Nevada citizens must be the primary focus of all scientific investigations related to the repository program, and that all questions be answered fully and completely prior to any operation of a repository.

No other project in the history of the United States, perhaps the world, will be more thoroughly researched, studied, or scrutinized than the proposed Yucca Mountain repository. Given the intense scientific scrutiny by prestigious and independent scientific groups, such as the National Academy of Sciences, the United States Nuclear Waste Technical Review Board, The Nuclear Regulatory Commission, and the Environmental Protection Agency, there should be little room for "bad science."

It is the belief of the NNWSC that the transportation studies undertaken to date have been well thought-out, have included numerous opportunities for public comment, and have addressed Nevadan's concerns about not transporting high level nuclear waste through highly populated areas.

While we are satisfied with the progress to date, we realize many more studies and years of research will be necessary to accurately determine the transportation impact of the proposed repository.

It is the desire of the NNWSC to insist that the members of the Technical Review Board vigorously carry out their Yucca Mountain oversight mission, and not to compromise your scientific activities for political considerations. As residents of Nevada, and citizens of the United States, we can expect nothing less.

You have a major responsibility before you. We wish you well in your mission. Thank you for this opportunity.

August 17, 1990

My name is Bill Gries and I have been a resident of Clark County, Nevada, since early 1962. I happen to be one of those so-called dinosaurs who have been fortunate in surviving the anti-nuclear vendetta here in Nevada over Yucca Mountain. My background includes over 40 years work experience in the field of nuclear energy and I would hope that means that I have the right to have opinions that are not shaped by political posturing and/or scare headlines in our local newspapers.

For the record, I feel very comfortable with the U.S. Department of Transportation's regulations governing the shipment of radioactive waste to the proposed high level waste repository at Yucca Mountain.

Furthermore, I feel confident as to the future safety and welfare of our successor generation(s) of residents regardless of what the newscasters report. My wife and I have raised our two children here in southern Nevada and we have a grandson and, also, a granddaughter who will start elementary school in Las Vegas this month.

If either my wife or I had any qualms, whatsoever, regarding the validity of the proposed Yucca Mountain investigative program and the potential effects on our children; and their children; and their children's children, then we most assuredly would oppose it.

I have come here today to speak to the members and rep-

representatives of the Nuclear Waste Technical Review Board as a citizen who is concerned with the future energy needs of our nation.

I would like to conclude my remarks by saying that I understand that the Nevada Department of Transportation has recently concluded its' risk analyses of alternate highway routes and that I look forward to learning more about the inter-relationships between the federal and State of Nevada departments of transportation. It is vital that they reach agreement on how best to select access routes to Yucca Mountain.

Submitted by:

William E. Gries
709 Sea Pines Lane
Las Vegas, Nevada 89107

NEVADA NUCLEAR WASTE TASK FORCE, INCORPORATED

Alamo Plaza
4550 W. Oakey Blvd.
Suite 111
Las Vegas, NV 89102
702-878-1885
FAX 702-878-0832
800-927-9809

NWTRB, Transportation Panel Public Hearing
Amargosa Valley, Nevada
August 17, 1990

My name is Judy Treichel. I am the Executive Director of the Nevada Nuclear Waste Task Force. We maintain a full time office in the Alamo Executive Office Plaza at 4550 W. Oakey Blvd., Las Vegas, Nevada, with a local phone number, as well as a toll-free 800 number.

The Task Force is a non-profit organization, serving the State of Nevada by developing and implementing a program which promotes public participation in the U.S. Department of Energy's high-level nuclear waste program in Nevada. Our basic purpose is to promote an informed citizenry.

The Task Force activities must be performed in strict conformance with the provisions of a contract with Nevada Agency for Nuclear Projects/ Nuclear Waste Project Office and related laws of the State of Nevada. Our operations are subject to audit of the State of Nevada, the U.S. Department of Energy, the Internal Revenue Service, and the U.S. General Accounting Office. We have been under contract to the State since February, 1988.

The vast majority of Nevadans are opposed to the siting of a high-level nuclear waste repository anywhere within the State. During the last sessions of the Nevada State Legislature, a law and two resolutions were passed opposed to or prohibiting the storage of high-level waste in Nevada. A great deal of pressure was put on legislators to pass those measures. In a major poll that was taken to determine citizen attitudes about the proposed facility, it was interesting to note that concerns about transportation were even stronger than about the repository itself.

I've given you an idea of what our office is and what we do. Now I want to talk about what people tell us.

We receive lots of requests for information about transportation. Most of the material we have is similar to what you've heard from some of the previous speakers. But when people talk to us, both before and after reading this information, they talk about their own experiences and "common sense" issues. As a matter of fact, many people feel that one of the few parts of the whole repository issue that they understand is highway transportation.

When people talk to us about accidents, they don't think in terms of rads, rems or technical probabilities. They talk about highly visible accidents with deadly danger that is invisible. They know that news in or near Las Vegas is big news nationally because it's interesting to the millions of tourists they rely on to vacation here.

Radiation is different from other hazards. Because it can't be seen, there are no immediate guarantees on the level of danger. People are skeptical about government standards for safe levels of radiation. They have even less confidence in the honest evaluation of an accident by the Department of Energy.

We are also told that federal indemnity of this program, or the Price Anderson Act, is not good enough. Comparisons are now being made to the S & L situation; for instance, if the people handling the material aren't responsible for their actions, will they be as worried about the danger? Wouldn't a serious accident be another huge taxpayer burden? If an accident ruins our tourism economy, does the government buy us a new industry?

When DOE tells folks here that most of the waste will come by rail, they don't take it seriously because, as you can see, there's no railroad track out here.

Another question we get is -- what if they get it out here and the mountain doesn't work the way it's supposed to? DOE's answer to this is, "That's why we have a system of retrievability." Certainly there's no doubt that the waste should be retrievable, but to the people concerned

about transportation, retrieving the waste just means additional and unanticipated transport.

I'm sure that today nobody has to tell you about highway travel in the Great Basin. You undoubtedly know that you didn't have a choice of routes to come here. When road hazards occur in other parts of the country, highway patrols reroute traffic. In many cases here, they stop travel.

In dealing with the people of Nevada we hear a lot of questions -- questions that are difficult, if not impossible to answer. In many cases their questions aren't for us to answer but to pass along to the decision makers.

These are intelligent, patriotic citizens who are offended when they are accused of not doing their duty on the waste issue. They know when they aren't told the truth.

We all get told to trust the experts. Well, when it comes to Nevada and the Great Basin, these folks have generational expertise. It's hard to believe that ten or even twenty years of study will give these new experts the answers necessary for thirty years of safe transportation and 10,000 years of successful high-level nuclear waste isolation in Nevada.

PROFESSIONAL FIRE FIGHTERS



Live Line



FEDERATED FIRE FIGHTERS OF NEVADA

LIVE LINE

SUMMER 1990

YUCCA MOUNTAIN — OR YUCCA NUCLEAR WASTE REPOSITORY?

by M. Light

The Nuclear Waste Policy Act (NWPA) of 1982 was enacted into law on January 7, 1983, to provide a national policy for permanent disposal of high level nuclear waste. The Department of Energy (DOE) was mandated responsibility to site and construct a repository; site a second repository; and begin accepting waste for disposal by January 31, 1998.

In addition, the NWPA directed DOE to complete and submit to Congress a study of the need and feasibility of one or more Monitored Retrievable Storage (MRS) facilities. The MRS facilities would receive, consolidate, and temporarily store limited amounts of spent fuel prior to shipment to a permanent repository.

In April 1985, the DOE identified three candidate sites. The preferred site was the Clinch River Breeder Reactor site in Oak Ridge, Tennessee. One alternate site was also in Oak Ridge; the other was near Hartsville, Tennessee. In 1987, the DOE submitted a proposal to Congress recommending the Clinch River site for the MRS facility.

For the permanent repository, nine potential sites were identified by DOE in 1983. In 1986, President Reagan approved further study for three of these sites, which were determined to be the most feasible of the nine locations: Yucca Mountain, Nevada; Deaf Smith County, Texas; and Hanford, Washington.

In December 1987, Congress amended

the Nuclear Waste Policy Act to specify only Yucca Mountain to undergo site characterization studies. Under the Amendments Act, if Yucca Mountain were found to be an unsuitable site, all study activities would stop. Then Congress and the Governor and the Legislature of Nevada would be notified, and the site would be restored to pre-study status. Within six months, the DOE would provide Congress with recommendations for further studies.

Yucca Mountain is located about 100 miles northwest of Las Vegas on the southwest edge of the Nevada Test Site (see maps on page 4). Yucca Mountain's proximity to Las Vegas caused many

(Contd. on page 4)

ly against having the repository in Nevada. And their voices were heard.

On March 8, 1990, Senator Richard Bryan (D-Nevada) introduced a Senate bill (the Independent Spent Nuclear Fuel Storage Act). The proposed bill calls for storage of high level radioactive waste in safe, above-ground storage containers at nuclear power reactor sites for up to 100 years — delaying the need for a permanent repository.

Within 100 years, it is hoped that our scientists may be able to discover an alternative to our dependence upon nuclear energy. Isn't it possible to manufacture machinery that could use alternate sources of energy?

If the Senate bill passes, it would amend the Nuclear Waste Policy Act amendments of 1987, which named Yucca Mountain as the only study site for the permanent repository.

The Nuclear Regulatory Commission has already determined the safety of, and has licensed storage of nuclear waste in dry casks for up to 100 years. Storage at the reactor sites would provide the necessary safety, and would be far less costly than the \$30 billion estimated for the permanent repository.

If the dry storage casks have been thoroughly tested to withstand crash, fire, and explosion and have been determined safe for transport purposes — it is impossible to believe these dry casks would not provide safe storage at the nuclear plant sites.

The elimination of transporting the waste across the country would remove the potential for catastrophes in communities all across the United States, through which the waste material would be transported.

Senator Bryan believes his proposed plan is "more fair and equitable," since the communities which produce the nuclear waste, and which benefit financially from having the nuclear plants in their area, should bear the responsibility of storing the waste material.

HOW DOES ALL THIS IMPACT FIRE FIGHTERS IN NEVADA?

The most serious threat is in transporting nuclear waste materials across the country.

Currently, Yucca Mountain lacks rail service; a rail spur is not anticipated to be operational until after the year 2000.

Of the potential railroad routes to Yucca Mountain studied by DOE, three were determined to have the least land-use conflict, while still having access to regional carriers. The three routes recommended for further study were: Jean, Caliente, and Carlin. The remaining routes, which will continue to be monitored for changes that could affect their potential feasibility, are: Arden, Cherry Creek, Crucero, Dike, Ludlow, Mina, Valley, and three proposed Lincoln County options.

If Yucca Mountain is selected as the site for the repository, then, the majority of transport will be by trucks, which will use major highways in Nevada, and which will pass through many Nevada communities.

Vehicles carrying storage casks containing nuclear waste will travel on the same highways and bridges as all other automobile and truck traffic. The primary truck routes are: U.S. 95 from Las Vegas to Yucca Mountain; south along I-15 into Las Vegas; and north along I-15 into Las Vegas. It is estimated that 55% of the trucks would enter into Nevada from the east, and 45% from the west.

The nuclear waste transport system is projected to begin in the late 1990s. It is estimated that 96 to 1,380 trucks per year — or about four every day of the year — will transport nuclear waste into Nevada for storage at Yucca Mountain. Over a 25-year period of operation of the repository, it is estimated that there would be 20,690 shipments.

Any future changes made in alternating highway routes outside Nevada and the number of shipments within Nevada, due to limited access routes into Nevada and the long distance between Nevada and the majority of the nuclear power plants and storage sites.

Add to the volume of truck traffic the human factor of who is driving the truck (exhaustion, poor judgment, risk-taking), and the environmental factor of weather (glaring sun, snow, ice) — and the possibility of a major catastrophe is not remote!

As a fire fighter, picture the scenario of pulling up as first responder to such a scene in the middle of your community.

Do you even know what you are fighting? The DOE has regional offices which can mobilize an emergency response team within two hours; the team can arrive at an accident scene within eight hours. While you are waiting — are you prepared to handle the emergency with the knowledge and equipment on hand?

Can you protect yourself and your fellow fire fighters from serious injury or even death — much less any innocent citizens who may have been in the wrong place at the wrong time?

What will this potential hazard do to Nevada's image as the "fun" place to play?

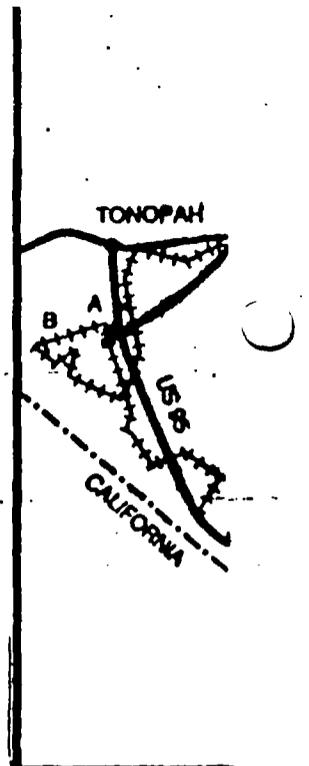
Much of Nevada's economy depends upon tourism and leisure activities. Isn't it naive to think people will continue to visit Nevada with its added "attraction" of truck after truck of nuclear waste passing through? Would you?

Do you want to maintain the high quality of life we are so fortunate to enjoy in Nevada? Do you want to be able to pass that on to your children?

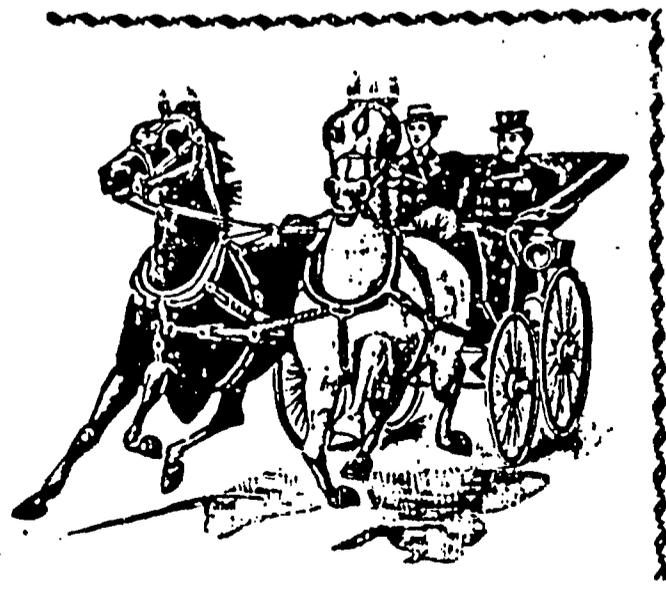
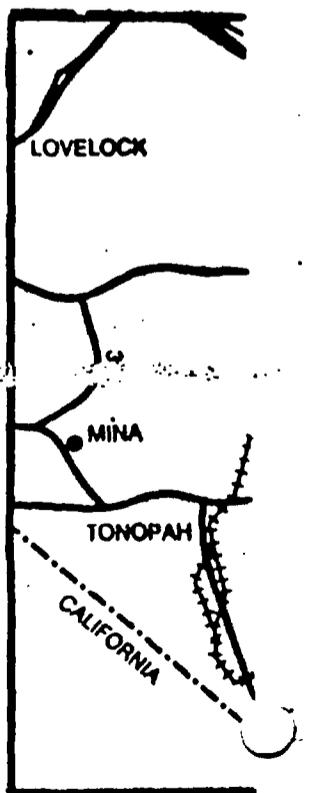
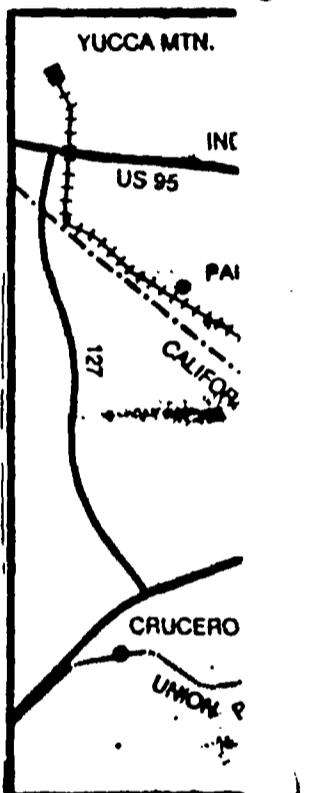
What can you do? For a start, inform yourself of what is going on around you and really think about it. Then, make your opinions known to those whom you have elected to represent you. If your elected officials don't respond — vote at the next elections for those who will.

Senator Bryan must have heard from many Nevadans — and he listened and acted upon what he heard.

If you don't exercise your voice — you lose it. Stand up and be counted, whatever your point of view. Nevada's future really is in your hands — today.



Caliente and After



Good Evening

My name is Ken Carey. I have lived in this community for 27 years and have worked for various contractors at the Nevada Test Site.

I am ~~a graduate~~ ^{a graduate} engineer and retired from Westinghouse Electric after completion of the Spent Fuel Demonstration Program at E Mad Facility in area 25.

I worked on my first nuclear project in 1959, and have been associated with nuclear projects since that time. Most notably was the disassembly of 21 reactor assemblies used in the King & Phoenix test series and a ram jet ~~unit~~ ^{reactor} for Pluto series tests. The spent fuel demonstration program utilized 17 ~~Spent Fuel Assemblies~~ ^{Spent Fuel Assemblies} from the Turkey Point Power Plant. I continue in the nuclear industry as a consultant engineer on projects including decontamination and site clean up work. As a matter of fact, I was on Yucca Mountain this noon and ~~missed~~ ^{regretfully} missed the opening remarks of this Review Board

One meeting that I did attend and caught the opening remarks was the International Waste Management Meeting held this spring in Las Vegas. As many of you are aware, the governor of

Nevada called this meeting of the foremost experts in the world a fraud perpetrated by the Department of Energy. ~~The rest of the presentation was continued~~ ~~to~~ Governor Miller was late and spoke out of order from the program so the gentleman sitting next to me from Peking University was confused and asked who the speaker was. My comment: A politician trying to communicate with science. He nodded full comprehension.

Comments from our Las Vegas neighbors this afternoon were interesting. One of my functions in the Nye County reserve deputy program is to attend classes and instruction as a first responder to hazardous material accidents. When I get ~~to~~ detained at Spring Mountain or Wyoming rail crossings. I look at ~~in~~ the code book of hazardous material numbers posted on the rail cars that are passing. I see: Liquefied Petroleum, Bromine, Chlorine, Sulfuric Acid and similar materials. I was also on Tropicana Avenue when Pepcon exploded both times. Needless to say, I am more comfortable here in Amargosa where I can look out my living room window and see Yucca Mountain.

Here we have a community monitoring station operated by the EPA with continuous air sampling, tritium molecular sieve and ion chamber connected by satellite relay ~~to~~ along with eighteen similar stations to a central laboratory. I have ~~the~~ full set of ~~the~~ instruments issued by EPA for emergency use including a micro R meter, milli-R meter and high level Gamma detector. This equipment is provided to monitor and protect our community as well as provide background data for the Yucca Mountain Studies.

~~The Nevada Test Site, I feel, is an ideal location to consider for a high level waste repository.~~

Go to typed section

RESPONSES TO AMARGOSA VALLEY PUBLIC HEARING COMMENTS

COMMENT 35

MR. KEN GAREY: Good evening. My name is Ken Garey. I have lived in this community of Amargosa Valley for approximately 25 years, and I have worked for various contractors and agencies at the Nevada Test Site. I'm a graduate engineer, retired after the completion of the spent fuel demonstration program in 1987 at the "Hemat" facility in area 25.

I worked on my first nuclear project in 1959, and I have been associated with nuclear projects since that time.

I am presently working as a consultant on a TRU Clean II Volume Reduction Program with equipment at the Nevada Test Site in Johnson Island, Pacific Ocean. I'm also station manager for the EPA community monitoring station located in this building complex.

From previous and continuing experience in the nuclear industry I try to keep informed of developments, and waste management is certainly one of the aspects in the industry. In my opinion it is solvable with existing technology and experience available.

→ The Nevada Test Site, I feel, is an ideal location to conduct studies and for consideration of storage of high level nuclear waste.

The National Laboratories scientific community and most of all experienced personnel are available here.

The security is in place and many corporate entities have had good experiences at the Test Site.

A waste repository is just a continuation of the ongoing nuclear development.

The Nuclear Regulatory Commission has set forth rules and regulations requiring compliance. Notably these are spelled out in the 10 CFR and 40 CFR regulations, and in addition the workmanship standards and materials are required to comply with the NQA-1 requirements for NRC licensing. With these guidelines in place, investigation, design, construction of the nuclear repository will be carried out in a safe and responsible manner in my opinion.

The public or these public informational exchanges such as the one we are attending today are examples of the NRC standards and regulations. Public opinion and comment is a necessary part.

I am confident that the nuclear industry can and must move forward into the next generation of reactors if this world is going to meet its energy requirements. A responsible approach to waste management is one aspect of energy development, and the Yucca Mountain repository investigation is an important part of that development.

The investor-owned public utilities acknowledge their responsibility by funding.

Board of County Commissioners of Lincoln County, Nevada

COUNTY COMMISSIONERS
ED WRIGHT
LENARD SMITH
KEITH WHIPPLE

P.O. BOX 90, PIOCHE, NEVADA 89043
TELEPHONE 962-5390

DISTRICT ATTORNEY
JAMES L. WADSWORTH

COUNTY CLERK
CORRINE WALKER

September 17, 1990

RECEIVED
SEP 20 1990
NUCLEAR WASTE TRB

Ms. Paula Alford, Director
External Affairs
Nuclear Waste Technical Review Board
1100 Wilson Blvd., suite 910
Arlington, VA. 22209
Attn: Chairman of the NWTRB Transportation Panel

RE: Nuclear Waste Technical Review Board First Public Hearing on
Transportation Issues, Held August 17 in Amargosa Valley

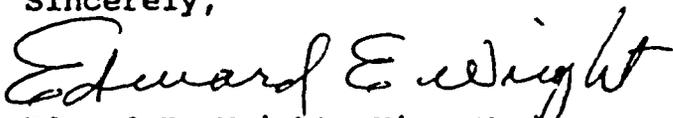
Dear Ms. Alford:

Enclosed please find a copy of the written testimony Lincoln
County wishes to submit for the record in lieu of appearing before
the Board.

We would also like to request four (4) transcripts of the hearing.
If there is any charge to fill this request please send a letter or
statement with amount required and a check will be promptly
remitted to you.

If you have any questions or comments please feel free to contact
Geri Ann Stanton at the Lincoln County Nuclear Waste Project Office
(702) 962-5497.

Sincerely,



Edward E. Wright, Vice-Chairman
Lincoln County Board of Commissioners

EW/gs

cc: Corrine Walker, County Clerk
Judy Foremaster, City of Caliente
Mike Baughman, Intertech Consultants
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Lincoln County is pleased to provide the Nuclear Waste Technical Review Board with input concerning transportation issues which we believe must be considered by DOE.

Lincoln County participates cooperatively in repository oversight and impact assessment activities with the City of Caliente through the City/County Joint Impact Alleviation Committee. The Committee was established by the Board of Lincoln County Commissioners and the Caliente City Council under a Memorandum of Agreement initially adopted in May of 1984. The memorandum requires that Lincoln County and the City of Caliente cooperate in the evaluation of possible repository related impacts and in the planning of possible mitigative or compensative measures related thereto.

In June of 1988, Energy Secretary Herrington designated Lincoln County as one of three affected units of local government pursuant to Section 131 of the Nuclear Waste Policy Amendments Act. As one of three affected units of local government in Nevada, Lincoln County enjoys certain rights of participation in the repository planning process envisioned by the Nuclear Waste Policy Amendments act of 1987.

Planning activities of Lincoln County, the City of Caliente, and their Joint Committee are funded by DOE under provisions of Section 5032 of the Nuclear Waste Policy Amendments Act. The Joint Committee was created to evaluate possible repository related impacts on the County and City and to assist state and federal planners in developing an impact assessment, mitigation, and monitoring framework. To this end, Lincoln County and the City of Caliente have retained Intertech Consultants, Inc. to provide technical and management assistance to the County/City Joint Impact Alleviation Committee.

Lincoln County and the City of Caliente are concerned about possible adverse impacts which may accrue to the area as a result of siting a high level nuclear waste repository at Yucca Mountain. Although the County and City are concerned about the overall operation and safety of the nuclear waste program, the issues which directly affect Lincoln County and the City of Caliente are those related to transportation of high level nuclear waste through portions of the County and City. because the mainline of the Union Pacific Railroad crosses through Lincoln County and bisects the City of Caliente and because two State highways potentially are State designated routes for nuclear waste shipments, the County and City are concerned that shipments of high level nuclear waste to the Nevada Test Site will result in possible environmental, social, and economic impacts.

The Board is encouraged to consider transportation related impacts in light of the overall configuration of the waste management system which is likely to affect:

1. The number of shipments

2. Shipment miles
3. Number of routes
4. Public health and safety

A significant portion of high level radioactive waste is created by nuclear power plants operating in the eastern portion of the country. A repository located in the western portion of the United States, such as the one proposed at the Yucca Mountain site, will require a nuclear waste shipping campaign of unprecedented magnitude. Although the total number of shipments is not known, in all likelihood, four to five rail shipments and numerous truck shipments per week, will be required to transport the projected volume of waste. Such shipments must pass through a number of states in route to a repository in the West.

The repository program will no longer be an issue of concern for primarily one state, Nevada, but for numerous states and hundreds of communities located on or near rail and truck corridors throughout the United States. Local and state governments will have their own issues of concern and potential impacts with the expectations that DOE will address such concerns and provide mitigation for impacts associated with the transportation of waste.

The transportation of waste across the United States will bring increasing national attention to the repository program. Program decisions made by DOE will come under the scrutiny of affected states, local and tribal governments, as well as an array of special interest groups across the Country. Therefore, the criteria for evaluating the need and feasibility of an MRS should also include transportation related impacts, as well as operational costs and benefits.

We hope the Board will consider transportation related impacts as part of its process in making recommendations to DOE regarding repository and MRS facility design and operational enhancements. The Board is also asked to consider mitigation of impacts as part of the overall cost of the waste management system and how the configuration of a waste management system will affect total costs. Information from the State of New Mexico and Nevada can provide an understanding of potential issues and costs associated with repository system impact mitigation.

Lincoln County and the City of Caliente are currently in the process of identifying impacts potentially associated with the transportation of high level nuclear waste through their communities. Although many of the impacts identified are specifically related to the Lincoln County area, it can be assumed that similar issues will arise in rail and truck corridor communities throughout the United States. The County and City have currently identified four main areas of concern:

1. Impacts on public infrastructure;
2. Ability of local governments to fund, implement, and maintain emergency response capabilities;

3. Impacts on community and economic development; and
4. Overall risk to population.

The overall configuration of a waste management system is likely to affect both the need and cost of public infrastructure. Infrastructure requirements will vary depending upon system configuration. Such requirements may include construction of new route segments, upgrades to existing routes, bypasses and beltways around cities, and bridges and overpasses for both rail and truck routes. These facilities would have to be designed and constructed, not only to accommodate nuclear waste shipments, but also community growth expected during waste shipments to the repository.

The cost of inspection and maintenance of new and existing infrastructure should also be considered by the Board. The Board is encouraged to consider the potentially significant relationship between transportation related institutional and technical issues. The best laid technical plans may not pass institutional scrutiny.

In addition to basic public infrastructure requirements, a number of system support facilities may need to be constructed. Such facilities include vehicle maintenance stations, cask inspection facilities, rail and road maintenance facilities, as well as safe havens for vehicle stops, especially for dedicated trains.

Although the above discussion provides only a limited view of public infrastructure needs, the Board will at least have a basic understanding of major issues likely to surface during the course of the repository program. Again, the implications of having or not having an MRS on public infrastructure requirements should be considered by the Board in light of the total number of potentially affected communities, and number of waste shipments.

Another concern of Lincoln County and the City of Caliente is local emergency response capabilities. The ability of local fire departments, especially those in rural communities, to function as primary respondents to an incident involving radioactive materials, is extremely limited. For instance, resource limitations restrict the ability of Lincoln County to fund, implement, and maintain emergency response capabilities for radioactive waste incidents.

In general, Lincoln County or the City of Caliente will not be able to establish an emergency response program similar to the one recommended by FEMA-REP-5 entitled, Guidance for Developing State and Local Radiological Emergency Response Plans and Preparedness for Transportation Accidents. Because other communities may face similar constraints, it is suggested that the Board consider the technical options for conforming transportation systems to better fit local emergency response capabilities.

Constraints to implementing such a program are as follows. First, the capability of local governments to fund emergency

and city may be concerned about real or perceived health risks associated with shipments of high level nuclear waste through the area. In fact, the perceived health risks may also deter visitors from coming to the area. For instance, Lincoln County currently has five state parks, all of which are within 30 miles of the Union Pacific rail line. A decrease in the number of visitors, due to the perceived risk of accidents involving nuclear waste, could have severe impact on the local economy.

Furthermore, the desirability of Lincoln County and the City of Caliente as retirement areas may also be jeopardized by waste shipments through the area. Again, the Board is asked to consider potential waste transportation impacts as they relate to economic development and growth, not only in Lincoln County, but all potential corridor communities in arriving at its recommendations to Congress.

As is true with most communities, a major concern to Lincoln County and the City of Caliente will be the health risk associated with continuous shipments of high level nuclear waste through Lincoln County and the City of Caliente. As defined in Chapter 5 of DOE's Draft Environmental Assessment, Yucca Mountain Site, Nevada Research and Development Area (EA), the maximally exposed individual is defined as a person who is standing about 100 feet from the rail line and exposed to all shipments passing at a speed of approximately 15 miles per hour.

Within the City of Caliente, many of the businesses located immediately adjacent to the Union Pacific rail line represent the areas where the maximally exposed individual assumption will be met. In fact, the City of Caliente Municipal Complex is located within 60 feet of the Union Pacific mainline.

Section 5.3.2.1. of the Draft Environmental Assessment for the Yucca Mountain Site, suggests that the greatest contributing factor to radiological exposure under normal operating conditions is associated with transport vehicle stops, particularly those in populated areas. The Draft EA analysis of health risks is based upon the RADTRAN II computer model which is specified using a series of unit risk factor which are based upon nationally aggregated data. In reviewing the transportation appendix to the aforementioned draft EA, it is clear that the assumptions under which the RADTRAN II risk model is run do not come near to representing the real world conditions which exist in Lincoln County, the City of Caliente, and for rail communities across the United States.

For example, the RADTRAN II model assumed that train speeds in rural areas are greater than in urban areas. Because of the extreme physiographic characteristics which characterize the rail corridor through Lincoln County, rail operating speeds are significantly lower than those assumed in risk analyses. Consequently, it is possible that radiological exposure risks in the City of Caliente are greatly different from those predicted in

the RADTRAN II model. Many assumptions included in the RADTRAN II methodology appear to be misstated when one considers Lincoln County and the City of Caliente. Review of RADTRAN III and IV, DOE's updates to RADTRAN II, suggest that little improvement in overcoming these problems has occurred. In addition to train speed, stop rates appear far greater in the Lincoln County/City of Caliente areas than those assumed in DOE's EA risk analyses.

A study of 46 miles of rail corridor within Lincoln County completed by ETS Pacific, Inc. in 1986, made the following observations:

The geology of the area has produced rugged terrain for a railroad system to be constructed through. The quantity and sharpness of curves on the railroad, as stated previously in this report, is a result of the mountainous nature of the study area. Train crew expertise and care for handling trains through the study area is greater than that required for normal or "flat land" train operations.

The potential for flooding in the washes, canyons, and streams can cause washout of track and structures or sliding of slopes and rocks onto the tracks. Diligent inspection and patrol of the rail corridor, coupled with increased awareness during train operations, is required for the safe passage of trains.

The winds blowing out of Rainbow Canyon make Caliente a potential down wind fallout area in the event of a nuclear waste train accident that released radiation in the canyon.

Conditions in the rail corridor obviously increase the potential for serious accidents and health risks associated with such accidents.

Lincoln County and the City of Caliente are presently working closely with DOE as it evaluates the technical feasibility of constructing a rail spur across the County to the Yucca Mountain site. Such a route would allow such shipments to by-pass the populated Las Vegas area. We would request that the Board consider perceived risk and institutional issue aspects of such an alternative. It is further requested that DOE be advised to consider such issues as they may bear on the overall feasibility of alternate rail spur options.

Additionally, Lincoln County and the City of Caliente are concerned about rod consolidation procedures. The county and city are particularly concerned about the increased number of shipments which may occur as a result of unconsolidated fuel. We do not believe that rod consolidation poses additional risk to workers at an MRS Facility over and above the risk incurred by workers if rod

consolidation took place at the repository or reactor site.

Lincoln County and the City of Caliente are also concerned about cask maintenance and inspection procedures. Questions to consider concerning such procedures would include:

1. Where will said inspections and maintenance occur?
2. How often will inspections and maintenance take place?
3. Will there be proper oversight and control of such procedures?

Although many of the risks and safety issues discussed here relate specifically to Lincoln County and the City of Caliente, it would not be unreasonable to assume that similar situations and concerns exist in other transportation corridor communities. Again, we would ask the Board to consider the aforementioned issues and concerns in formulating recommendations to DOE. We would ask the Board to consider the transportation related impacts which include: the number of affected communities, public infrastructure requirements, emergency response capabilities, and effects upon economic development. Again, these issues should be considered in light of the overall configuration of the waste management system.

Lincoln County appreciates the opportunity to provide the Board with testimony related to issues we believe need to be considered by DOE. We hope that testimony provided today will be useful in formulating the Board's final recommendations to the Department.