RAS 2228

William D. (Bill) Peterson
Pigeon Spur Fuel Storage Facility
NRC Docket No. 72-23
4010 Cumberland Road
Holladay, Utah, 84124
Tel/FAX 801-277-3981
E-Mail BillPeterson@OlympicHost.com
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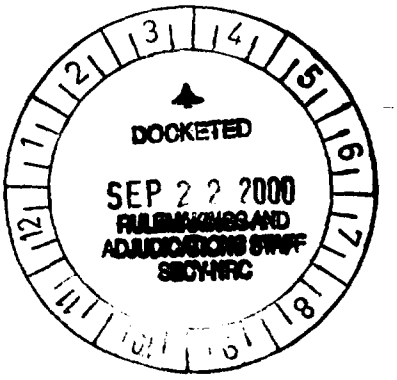

UNITED STATES
NUCLEAR REGULATORY COMMISSION
Washington D.C. 20555-0001

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:
G. Paul Bollwerk, III, Chairman
Dr. Jerry R. Kline
Dr. Peter S. Lam

Before Review Panel:
NRC - Susan Shankman, Mark Deligatti, Scott Flanders
BLM - Glen Carpenter, BIA - David Allison
STB - Charles Gardiner

In the Matter of	Docket No. 72-22-ISFSI
PRIVATE FUEL STORAGE, L.L.C., (PFS)	Ref ASLBP No. 97-732-02-ISFSI
(Independent Spent Fuel Storage Installation)	

CERTIFICATE OF SERVICE / DELIVERY

Copies of the included document[s] were previously sent by E-mail and this day they were sent by U.S. Postal Mail, First Class to counsel for (1) applicant PFS; Jay E. Silberg (2) interveners Skull Valley Band of Goshute Indians, John Paul Kennedy, Sr., Esq., Ohngo Gaudadeh Devia, Diane Curran, Esq.; Confederated Tribes of the Goshute Reservation, Danny Quintana, Esq., Southern Utah Wilderness Alliance, Joro Walker, Esquire, and the State. Daniel Moquin, Denise Chancellor, Esq.; and (3) the staff, G. Paul Bollwerk III, Esq., Dr. Peter S. Lam, Dr. Jerry R. Kline, Catherine L. Marco, Esq., Sherwin E. Turk, Esq., Adjudicatory File: Office of the Secretary - (Original and two copies)

Dated this 13th day of September, 2000.

William D. (Bill) Peterson
Pigeon Spur Fuel Storage Facility
NRC Docket No. 72-23

Included document[s]:

Sept 3, 2000, Motion to enlarge time, Sept 7 petition for consideration letter to Mark Delligatti with EIS screening sheet, Sept 13 letter of memorandum sent to Mark Delligatti, Sept 14 petition to intervene, Sept 18, 2000, copy of letter sent to General Bergren. Hill Air Force Base.

Template = SECY-037

SECY-02

P&A Engineers
William D. (Bill) Peterson
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Holladay, Utah 84124
Tel/FAX 801/277-3981

Mr. Mark Delligatti
Senior Project Manager for the
Box Elder Spent Fuel Storage Initiative
Mail Stop O6F18 Tel 301/415-8518
Nuclear Regulatory Commission FAX 301/415-8555
Washington, D.C. 20555

September 13, 2000

Subject: Box-Elder Spent Fuel Storage Initiative, or
Pigeon Spur Fuel Storage Facility (PSFSF)
Nuclear Regulatory Commission docket No. 72-23

Dear Sir:

On this day MEMORANDUM in support of our PETITION FOR CONSIDERATION of the PIGEON SPUR FUEL STORAGE FACILITY site is sent by U.S. Mail, first class. Twenty three pounds nine ounces (23 lb 9.4 oz) is sent in the form of five books containing information in support of our petition that the PSFSF site in Box-Elder County, Utah, is superior to the Private Fuel Storage (PFS) site on the Skull Valley Band of Goshute Indian reservation in Tooele County Utah. The package is registered for U.S. Postal Service Delivery Confirmation by Receipt No. 20555, and inquiries can be made by telephoning 1-800-222-1811, or accessing the Internet web site at www.usps.com . The package has is also registered having a return receipt No. VA 271-154-249 US. The package should arrive Friday Sept 15, 2000, or Saturday, or Monday. A copy of our Letter of Petition and FUEL STORAGE SITE PROPOSAL INITIAL SCREENING sheet is attached with this E-mail letter.

The package contains five books:

- PETITION FOR CONSIDERATION
  With support memorandum from LICENSE APPLICATION information
- ENVIRONMENTAL REPORT
- SAFETY ANALYSIS REPORT
- EMERGENCY PLAN
- REFERENCE INFORMATION BOOK
- SAFEGUARDS (controlled document) is noted but withheld

Sincerely yours,

William D. (Bill) Peterson, M.S., P.E.
Pigeon Spur Fuel Storage Facility, P&A Engineers

File - D:\p\nuc\nrc\l\pigeon\b-nrc-97.let

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Pigeon Spur Fuel Storage Facility
NRC Docket No. 72-23
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and paengineers@juno.com

UNITED STATES OF AMERICA
BEFORE THE
NUCLEAR REGULATORY COMMISSION

In the matter of the License Application of Private Fuel Storage (PFS) NRC Docket No. 72-22 v State of Utah & Governor, Intervener	2nd MOTION for ENLARGEMENT of TIME Amendment, 60 days requested Ref: Third Party COMPLAINT for Intervener's use of State Law to deprive Peterson and PSFSF of rights Of Storage of SNF by Federal Law
William D. (Bill) Peterson Pigeon Spur Fuel Storage Facility (PSFSF) NRC Docket No. 72-23 Third Party Intervener & Plaintiff v State of Utah & Governor, Third Party Intervener & Defendant	Adjudications Staff And Judge G. Paul Bollwerk, III, Chairman Judge Dr. Jerry R. Kline Judge Dr. Peter S. Lam

Third Party Plaintiff & Intervener, Engineer Peterson has a "real stake" in these proceedings and in its issues. The State of Utah is an intervener in this matter. To some extent, Governor Leavitt is driving the intervention of the State of Utah. Peterson entered the matter as an intervener to see twenty two Utah representatives in the Spent Nuclear Fuel (SNF) issue where they appear to be wrongly influenced by Utah's Governor . That list has been expanded to 42 representative leaders in Utah. Information on the Spent Nuclear Fuel (SNF) issue has been served to them.

No reply response by any of the 42 leaders has yet been made. At this point in time, Peterson sees only that either the Utah leaders do not have sufficient knowledge to see the SNF

issue; or, do not care to see the SNF issue; or, are suppressed to see the SNF issue by such as the Governor; and/or, they may not now wish to assert opinion or authority in the SNF matter from what they now know. Additional information has been provided and additional plea for response has been made. To further this the Third Party Intervener pleads for more time for providing more information and to make more pleas to the rep-leaders for their seeing and respond to the SNF matter. In more time more information will be provided and more pleas to see the SNF matter will be made. More telephone calls and personal conferences will be done. Group discussions will be offered and held if accepted. Knowledge, care, or suppression to assert authority will be better concluded. Additional pleas. The representative leader group now includes:

> Senator - Orrin Hatch, Senator - Robert Bennett, Congressman - Merrill Cook, State Science Advisor - Dr. Danny Bauer, State Science Advisor - Dr. Suzzanne Winters, Governor Michael Leavitt, Lt. Gov. Olene Walker, Director of Constituent Affairs - Linda Kendra, Director Utah DEQ-Dr. Dianne Nielson, Division of Radiation Control Board Secretary - Bill Sinclair, Mayor Salt Lake City - Rocky Anderson, Mayor South Salt Lake - Randy Fitts, Mayor Murray - Daniel C. Snarr, Mayor Midvale - JoAnn Seghini, Sandy Mayor - Tom Dolan, Tooele County Commissioners - Teryl Hunsaker, Chair, Gary M. Griffith, Dennis Rockwell, Box-Elder County Commissioners - Royal Norman, Lee Allen, Suzanne (Mrs. Frank) Rees, Salt Lake County Commissioners Brent Overson, Mary Callaghan, Mark Shurtleff, BLM Jack Brown, Governor candidate - Bill Orton, Lt. Gov. cand. Karen Hale, U.S. Senate D cand. Scott Howell, Congressman, R 1st Dist. Jim Hansen, Con. cand. D 1st Dist., Kathleen McConkie-Collinwood, Con. cand. R 2nd Dist, Derek Smith, Con. cand. D 2nd Dist. Jim Matheson, Rep. 3rd Dist. Chris Cannon, Con. cand. D 3rd Dist., Donald Dunn, just-retired State Senate President - R. Lane Beattie, State Senate #8 - Jim McConkie, House Speaker - Martin R. Stephens, State Rep. D #7 - Garth Day, State Rep. D #24 - Ralph Becker, State Rep, D #25 - Scott Daniels, State Rep. D #41 - Patrice Arent, Hill-AFB Public Affairs Office - Frances Kosakowsky, Vice Commander Col. Ron Oholendt,

In the Salt Lake Tribune of Saturday, July 22, 2000, the formation of a group called the "Citizens Against Nuclear Waste in Utah" was announced. The announcement said that Governor had lost several key battles in his quest to stop the PFS-Goshute proposal. Names of persons in the new group "Citizens Against Nuclear Waste in Utah" include:

Norm Bangerter, former Governor
Ted Wilson, former Salt Lake City Mayor
Jim McConkie, SLC Attorney
Scott Howell, state Senate
Wayne Owens, former U.S. Representative
Brent Ward, former U.S. Attorney
Jake Garn, former U.S. Senator
Frank Moss, former U.S. Senator
Tom Dolan, Sandy Mayor
JoAnn Seghine, Midvale Mayor
Dan Snarr, Murray Mayor
Dave Jones, former state Senator
Paula Julander, Utah State Representative
Ralph Becker, Utah State Representative
Rabbi Frederick Wenger
Kalthleen McConkie-Collinwood, Democratic candidate for Utah's 1st Cong. Dist
Bradley Parker, SLC Attorney
Robert Bradley, SLC Attorney
Rocky Navarro, retired Unisis executive
Anne Sward Hansen, actress
Henry Clayton, American Indian
Alberta Mason, American Indian

Peterson and his advisors have likewise provided information to the Citizens. Some have expressed that they have not known and seen the information provided. They have asked to see more. They have tentatively accepted an offer of Peterson and advisors to talk to and have discussions with members of the Citizens group. Like the rep-leaders group Peterson seeks additional time to provide more information, have discussion, and obtain their input.

Peterson has previously requested for an enlargement of time of 40 days. Peterson herewith requests for an additional enlargement of time of 60 days. This request for enlargement of time is made in the 40-day proper time of the prosecution of this matter.

Time has been enlarged for the intervener State of Utah. The facts are not complete. Peterson moves for an extension of time to obtain the facts for and against SNF storage. Peterson's information to reply with the comments of the rep-leader and citizens groups is not complete, Peterson does not have the facts. Utah's and UDEQ's report is incomplete.

Peterson moves for an enlargement of time to see the options of findings for resolving his petition for a third party complaint and petition to intervene.

The Petitioner's group has again been turned down for a meeting with Governor Leavitt to see his "policy" and his complaints that SNF storage is "morally wrong". E-mail copies of the information provided to the representative leaders and the citizens is provided with and supports this motion for an enlargement of time.

Dated this 3rd day of September, 2000.

William D. (Bill) Peterson, M.S., P.E.
Third Party Plaintiff, Petitioning Intervener

Enclosures (previously served to representative-leaders and Citizens):

NVedingsm.doc	8,174	Concerns of Nev Governor, Sandquist
rw044535.wpf	26,527	Multi-Purpose Canister System Evaluation, DOE
Editgms.doc	8,292	Resolving the Nuclear Waste Issue, Sandquist
HotEnough.wpd	10,726	Is It Hot Enough For You, Barrowes
Civ-HLW.wpf.wpd	65,451	The Nuclear Waste Primer*, pgs 38-63
explain.wpd	18,196	Explain SNF Terms and Issues, Peterson
Dnews822.wpd	8,588	Mayor speaks against N-Dump, Des News
SN-SLT.827.wpd	8,029	Nuc Storage Would Benefit Utah, Northard
17off-SB.let.wpd	155,933	Rep-Leader let, Energy, Electric Power
SLT-SB8.130.wpd	10,777	Spent Nuc Fuel Moved Safely, Barrowes
ROOS730.SLT.wpd	8,875	Temp. Storage Could be Permanent, Roos
WDPcc81.let.wpd	64,625	SNF Storage issues, Peterson
GS122098.SLT.wpf.wpd	14,553	Kyoto Treaty Isn't Enough, Associated Pr Nuc Power Cut Greenhouse, Sandquist

*from and by permission of League of Women Voters Fund

Certificate of Service (E-mail)

Copies of this document were sent this date by Internet e-mail transmission to the NRC Judges and to counsel for (1) applicant PFS; (2) interveners Skull Valley Band of Goshute Indians, the State; and (3) the NRC staff.

WDP file copy - D:\P\NUC\NRC\L\Tim903rq.wpd

P&A Engineers
William D. (Bill) Peterson
4010 Cumberland Drive
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Tel/FAX 801/277-3981

September 7, 2000

Mr. Mark Delligatti
Senior Project Manager for the
Box Elder Spent Fuel Storage Initiative
Mail Stop O6F18 Tel 301/415-8518
Nuclear Regulatory Commission FAX 301/415-8555
Washington, D.C. 20555

Subject: Box-Elder Spent Fuel Storage Initiative, or
Pigeon Spur Fuel Storage Facility (PSFSF)
Nuclear Regulatory Commission docket No. 72-23

In response to the Draft Environmental Impact Statement (EIS) NUREG-1714 for NRC Docket No. 71-22 Private Fuel Storage (PFS), L.L.C, for intermediate spent nuclear fuel (SNF) storage on the Skull Valley Band of Goshute Indian Reservation in Tooele County, Utah, the EIS is deficient. In APPENDIX F - Site Selection valuation forms in the EIS - it fails to compare the Box Elder Fuel Storage Alternative, NRC Docket No 72-23, also named the Pigeon Spur Fuel Storage Alternative - NRC Docket No. 72-23. The Pigeon Spur site has significant advantages over the PFS site including but not limited to the following:

1. The Pigeon Spur site contains an operating RR siding of the main line of the Southern Pacific RR Continental line. The site also has the berm for a prior spur which entered into the property, where track can be reinstalled for a reasonable cost. In comparison, PFS is 32 miles from the nearest RR line, which is an E-W, UP RR main line. (Note that the Southern Pacific RR was recently purchased by Union Pacific RR.) The point is that the Pigeon Spur RR siding will not involve either time delays or possible difficulties in being established.

2. The Union Pacific RR line from Wyoming to the Pigeon site traverses less than 1/10 of Utah's population by county. The RR route to Pigeon does not travel down the Wasatch Front. This compares to the UP RR line from Wyoming to the PFS site which traverses in excess of 2/3 of Utah's population by county. The Wyoming to PFS RR transport route requires traversing down the Wasatch Front from Ogden to Salt Lake City, then going west through metropolitan West Valley out towards Tooele. The RR route to PFS is through Utah's main area of population.

3. The Pigeon Spur site is in an area of unrestricted public air space. In fact, Pigeon Spur is only a few miles from a public aviation navigating VorTac. Pigeon Spur is about 30 miles northwest of a corner of the boundary of the Wendover Bombing and Gunnery Training Range. The Pigeon Spur site is separated from the Training Range by the twenty mile long Newfoundland mountain range. Going east from the site for 25 miles, the Southern Pacific RR track passes by the north end of the Newfoundland mountain range, then proceeds east another

25 miles to Lakeside, along here the RR track goes somewhat parallel within three miles of the north boundary of the Wendover Training Range. The Wendover Training Range and Dugway Proving Grounds and Test Center areas are used by Hill Air Force Base to hone pilot's skills. Corridors between the adjacent mountain ranges are used by Hill aircraft to enter the ranges for flight training. The PFS site is less than 10 miles from the Dugway Proving Grounds and is apparently in a flight corridor. Pigeon is out almost 30 miles and is not in a military flight corridor.

4. Seismic activity in western Utah is basically associated with the Wasatch Fault. The Pigeon site is 100 miles west of the Wasatch Fault. The Pigeon site is 26 miles west of the nearest recorded seismic activity of 11,000 events recorded in the Utah and Nevada area. Pigeon Spur is in a region classified as seismic zone 2. In comparison the PFS site is on a known seismic fault and in a region classified as seismic zone 3.

5. The Box-Elder County Commission has said that Western Box-Elder County, Utah, is possibly the most desolately populated region of the nation and would be ideal for locating a SNF storage site. In five thousand square miles there are only about 150 families and their numbers are declining since their principal occupation is cattle range ranching, the economics of which is forcing the residents to leave to find employment elsewhere. See the Map Case and 1997 newspaper articles previously furnished to NRC. Records show that no one lives in the one hundred (100) square miles centered around the Pigeon site. In the 1,000 square miles centered around the site the last population census showed about a dozen residents. The closest significant population is about a dozen families living at Grouse Creek, 30 miles north. Next closest is Park Valley about 50 miles to the northeast, having about two dozen families.

6. By contrast, Skull Valley, though sparsely populated now, is near Tooele, one of the fastest growing cities in the nation. In 40 years significant Tooele area population growth will expand the short distance west into Skull Valley. There are already workers at a nearby laboratory and native American residents live only a few miles from the PFS site. There is a significant amount of ground water available in Skull Valley. It is conceivable that water can be piped into Skull Valley from the Wasatch mountains east. With these sources there is water available to support a growing population in Skull Valley. In comparison water is in great shortage in western Box-Elder County. The Pigeon project of storage of SNF is ideal for western Box-Elder County which would need very little water to support the facility.

7. Construction work at Pigeon Spur is not likely to encounter historical items or artifacts.

8. The project at Pigeon Spur will not exploit any minority.

9. The residents of western Box-Elder county are hardworking cattle ranchers. They want an employment opportunity. See the newspaper articles with the furnished map case. We have met with them in town meetings and have shown the project and discussed work possibilities. They declined a five million dollar per year perk to their community like the U.S. Government has offered Caliente, Nevada, for a train to truck SNF transfer site. They countered saying that they agreed that help of $1M per year benefit would be very acceptable. What they really want are jobs. These western ranchers are well educated and have good practical skills. They are already experienced or can be easily trained to operate the heavy machinery required for building the Pigeon storage facility and then to operate and maintain the site. The residents have relatives and friends who have lived there who would move back if employment were there. In a petition one hundred twenty two (122) people signed for acceptance of the PSFSF project while

only two (2) signed in opposition.

10. The Pigeon Spur project can be done more economically, in terms of railroad access (there is no need to ask the government to build a 32 mile RR spur), in terms of site construction, and in terms of operation.

11. Proprietary SNF storage technologies have been developed for the railroad gear and canister transfers for the SNF storage. On October 19, 1998, a license application was submitted for the Pigeon Spur facility. The license application in NRC Docket No. 72-23 will be perfected.

12. PSFSF will offer an electric utility location on site "dry pool" storage alternative.

13. The PSFSF will have its storage field operations computer programmed, remotely controlled and have Internet type accessible storage records of daily convection air temperature, monthly cask radiation mapping, and semi-annual canister internal inert gas pressure. The site operation of the PSFSF will invoke public confidence and acceptance.

14. SNF contains 92% U238. At some point in time it will be cost effective to process the SNF and use it for fuel rather than to continue its storage. PSFSF will be prepared to participate in future reprocessing of SNF.

15. When reprocessing of SNF is eventually started, the Pigeon Spur central western location will offer shorter transportation routes with less mileage in heavily populated areas.

Pigeon Spur wants to do storage of spent nuclear fuel and petitions to do so. In the EIS the advantages of the Pigeon Spur site must be considered. A form FUEL STORAGE SITE PROPOSAL INITIAL SCREENING for the Pigeon Spur Fuel Storage Facility is included with this letter. For support of this request letter we submit the information contained in our documents of our licence application dated October 19, 1998. It will amplify the above and show additional advantages. In other words the text of this request includes our text of six volumes of the Docket No. 72-23 license application of October 19, 1998, which includes:

- LICENSE APPLICATION
- ENVIRONMENTAL REPORT
- SAFETY ANALYSIS REPORT
- EMERGENCY PLAN
- SAFEGUARDS (controlled document)
- REFERENCE INFORMATION BOOK

We herewith petition for consideration of the PSFSF at Pigeon Spur per 40 CFR 1502.14(b). Dated this seventh (7th) day of September, 2000.

Sincerely yours,

William D. (Bill) Peterson, M.S., P.E.
Pigeon Spur Fuel Storage Facility, P&A Engineers

Enclosures are listed above.
Screening Form GS829
Books sent separately

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FUEL STORAGE SITE PROPOSAL INITIAL SCREENING
PIGEON SPUR FUEL STORAGE FACILITY (PSFSF)
BOX ELDER COUNTY, UTAH

TRANSPORTATION
Within 25 miles of mainline railroad? Yes
Railroad on site? Yes
Site Access to one or more highways? Yes

SEISMIC
At least two miles from capable fault? Yes
At least five miles from capable fault, no faults on site? Yes
Ground accelerations 0.5g or less and within existing vendor design criteria? Yes

FLOODING
Above 100 year return frequency flood per USGS? Yes
Above 300 year return frequency flood per USGS? Yes

HOST
Has sovereign immunity? Unknown
Does not require Federal Land transfer? Yes
Is a tribe or community of less than 4000 population? Yes
Is a tribe or community of less than 500 population? Yes
Is providing a site for lease or at a reasonable cost within jurisdiction? Yes
Is providing a site with at least two 150-acre locations within a 5000-acre area? Yes
Is providing a site with a population density below 25/square mile within 2 miles of the site? Yes
Is providing a site free of known historical sites, major recreational areas and endangered species? Yes

PUBLIC ACCEPTANCE
Is in an area free of history of pro-active *antinuclear referenda? Yes
Has a vote of host population on record in support of the facility? Yes
Has a resolution of the governing body on record in favor of the facility? Unknown

ANY UNIQUE FINDINGS
No significant impact upon current US Airforce (Hill Airforce Base) aircraft operations in area. Site is about 30 miles NW distant from the Wendover Bombing and Gunnery Training Range boundary. Population within a five mile radius is zero. The 1,000 square miles centered by the site (18 mi R) has a population of around 12 people. Site location is in seismic zone 2, is 26 miles from nearest recorded activity of 11,000 events of the Wasatch fault. Site is immediately adjacent to the main line of the Southern Pacific Continental railroad. The RR route using Pigeon Spur avoids Utah's Wasatch Front. The Pigeon Spur project has been shown for past five years at the county fair. In town meetings closest to the site, western Box-Elder County residents have expressed majority wants and needs for the project and work opportunity. Pigeon Spur has proprietary storage technologies. Pigeon Spur has these advantages over PFS - NRC Docket No. 72-22 which must be considered in the advancement of the PFS EIS. Pigeon Spur has a submitted license application. NRC Docket No. 72-23 will be perfected.

REASONS FOR REJECTION
Under negotiation

ref EIS pages F-3 thru F-40

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UNITED STATES
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Washington D.C. 20555-0001

ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of	Docket No. 72-22-ISFSI
PRIVATE FUEL STORAGE, L.L.C., (PFS)	Ref ASLBP No. 97-732-02-ISFSI
(Independent Spent Fuel Storage Installation)	September 14, 2000

PETITION FOR INTERVENTION INTO THE EIS
(Responses to 9/5/00 Action of NRC Board)

Third Party Plaintiff & Intervener, Engineer Peterson is an individual working for storage of spent nuclear fuel (SNF) at the Pigeon Spur of the Southern Pacific Railroad in western Box Elder County, Utah. Peterson is working to license SNF storage in NRC Docket No. 72-23.

Peterson has a "real stake" in the outcome of licensing the similar PFS project in NRC Docket No. 72-22. William D. Peterson is seeking party status in this proceeding as a late-filed intervener. In his May 31, 2000 filing, petitioner Peterson attempted to address the five late-filing factors in 10 C.F.R. § 2.714(a)(1). Peterson has apparently not, however, complied with the requirement of 10 C.F.R. § 2.714(b)(2) that he provide a statement of the contentions (with supporting bases) that he wishes to have admitted to this proceeding for litigation. Accordingly, Peterson petitions to the Board for reconsideration, ref 10 C.F.R. § 2.714a(a).

Peterson is an engineer not so experienced in dealing with the NRC for licensing. Communication between NRC and Peterson has been deficient. Peterson made his initial proposals for the Pigeon Spur Fuel Storage Facility (PSFSF) site for storage of SNF to Negotiators David Leroy and Richard Stallings. Peterson's basic storage principles were published September 5, 1995 in U.S. Patent No. 5,448,604.

Peterson's records show that on September 29, 1995 Peterson talked with a Mr. Joe Gilliland in the NRC and inquired of who to talk to about licencing. Mr. Gilliland had Dr. Sue Shankman call. Dr. Shankman instructed Mr. Peterson to talk to Mr. Charles Haughney. For some time Peterson corresponded extensively with Mr. Haughney. They eventually met personally in Salt Lake City, and/or Tooele. Eventually Mr. Haughney instructed Peterson to deal with NRC through Mr. Mark Delligatti.

The staff at NRC had substantial knowledge of Peterson's intentions and efforts to develop the PSFSF. The EIS NUREG-1714 in the Appendix F lists 38 potential sites considered for the proposed spent nuclear fuel facility. The EIS failed to list and consider the PSFSF site when the NRC had knowledge of Peterson's intentions and efforts. The EIS is deficient for not

listing and considering the PSFSF site. The NRC erred when it did not notify Peterson of consideration of the PSFSF site. September 7, 2000 Mr. Peterson made a declaration that the PSFSF site has advantages over the PFS proposed site. September 13, 2000 Mr. Peterson mailed memorandum to support his declaration. According to federal law the NRC must compare the PSFSF site with the PFS site and select the better site where justified.

1st Contention: The NRC erred in not considering the PSFSF in the EIS. The NRC erred in not informing Peterson of his status regarding consideration. Where Peterson was not informed, Peterson did not know of the petition to intervene opportunity in the NUREG-1714 EIS matter. Peterson's PSFSF was wrongly not recognized by the NRC as a spent nuclear fuel facility for consideration. Peterson did not have proper notice to enable him to timely intervene, consequently, Peterson must be allowed to intervene late.

2nd Contention: In general, the people of Utah have not been sufficiently informed to see and make correct assessments in the SNF issue. In the hearings, members of the public have made this complaint. This problem rests squarely with Utah's Governor Michael O. Leavitt. The Governor has known for at least five years, possibly eight years of Peterson's intentions to do SNF storage in Box Elder County. The Governor has not yet met with Peterson. The Governor has been resisting implementation of Federal law. The Governor has wrongly used the SNF issue for his personal political exploitation. The Governor has intentionally kept the people of Utah uninformed. He has interfered with and blocked Utah's nuclear scientists from speaking and being heard on the SNF issue. The Governor has brought the likes of Dr. Marvin Resnikaff, and activist Kevin Kemp to Utah to intentionally mis-inform the public and cause unjustified fear and mistrust of the NRC, the Federal Government, PFS, and PSFSF. The Governor has not

listened to Utah's own and best technical experts including Utah's Radiation Control board, the Governor's science advisors, and Utah Universities staffs of nuclear engineering. In just the last three months the Governor has initiated three different board panels to contend against SNF storage, a federal requirement, mandated by federal law. No one in the Governor's three boards (66 people in all) has sufficient knowledge to make judgment of the SNF issue. Peterson has a "real stake" in the outcome of this licensing matter and needs to intervene with his professional staff to see that Utah's leaders and representatives are informed to correctly see the SNF issue. Peterson petitions to participate, have his technical staff make remarks where appropriate, and obtain a true unbiased consensus from the 66 people of the three board panels and provide true unbiased opinion to the NRC. Peterson must be allowed late intervention to do this.

3rd Contention: About August 21, 2000, petitioning intervener William D. Peterson challenged Dr. Dianne R. Nielson's estimated costs of clean up for railroad accident incidents involving shipments of spent nuclear fuel (SNF). In her scenarios for a train wreck clean up Dr. Nielson expressed costs appearing to be elevated by a factor of 10,000 or more. Intervener Peterson challenged Dr. Nielson's findings and moved for her to show and certify her record, that it may be compared to other studies and perfect the record. Peterson has a "real stake" in the outcome of this licensing matter and needs to intervene to see his contention of Dr. Nielson's assertions in this issue.

4th Contention: About August 21, 2000, Realtor Mac Brubaker's stated there would be a high loss potential in property values near a SNF transportation corridor. In an August 21, 2000 action* Peterson challenged Mr. Brubaker's contentions. Peterson has a "real stake" in the outcome of this licensing matter and needs to intervene to have fairly seen the contention of Mr.

Brubaker's assertions in this issue. *(D:\p\nuc\nrc\l\nrc-ut\chalang2.wpd)

5th Contention: Utah's Governor is complaining of railroad transpiration exposure to Utah, a seismic hazard at the PFS site, and interference with Hill AFB air traffic onto the Utah test flight range. The Pigeon site reduces by six fold the drive by exposure of railroad transport within Utah. The Pigeon site is in seismic zone 2 and is 26 miles from any recorded seismic event. Pigeon spur is 30 miles from Hill AFB test flight range and has the 7,005 ft high Newfoundland mountain range and the 5,369 ft high Little Pigeon mountain interposed between the storage site and the flight test range. Pigeon is directly on a main line railroad, where PFS will require construction of a 32 mile long RR-spur. September 7, 2000 Peterson petitioned for NRC consideration to see the advantages of the PSFSF site. Peterson has a "real stake" in the outcome of this licensing matter and needs to intervene to have better seen his assertion that the PSFSF site is a better alternative for SNF storage than the PFS site.

Peterson needs to intervene into the PFS NUREG -1714 licencing matter to protect Peterson's "real stake" in the outcome of the licensing process. Peterson petitions for reconsideration to be a legitimate intervener in the licensing matter, ref 10 C.F.R. § 2.710.

Dated this 14th day of September, 2000.

William D. Peterson

William D. (Bill) Peterson
Pigeon Spur Fuel Storage Facility
NRC Docket No. 72-23

CERTIFICATE OF SERVICE / DELIVERY

Copies of this PETITION were sent this date by Internet e-mail transmission to counsel for (1) applicant PFS; (2) intervenors Skull Valley Band of Goshute Indians, Ohngo Gaudadeh Devia, Confederated Tribes of the Goshute Reservation, Southern Utah Wilderness Alliance, and the State; and (3) the staff.

See Attachments D:\p\nuc\nrc\l\B914Tapl.wpd

P&A Engineers
William D. (Bill) Peterson
4010 Cumberland Drive
Holladay, Utah 84124
Tel/FAX 801/277-3981

September 18, 2000

General Bergren
Hill Air Force Base
c/o Ellie McDonald, General's Secretary
Brent Kendall General's Action Officer
Frances Kosakowsky, Public Affairs Office

Subject: Spent Nuclear Fuel Storage Facilities

Dear Sir:

For nearly a decade now we have been working to do spent nuclear fuel storage at the Pigeon Spur of the Southern Pacific Railroad. The Pigeon Spur is five miles east of old RR town of Lucin, Utah, 12 miles east of the Nevada Border, 45 miles south of the Idaho border. The Pigeon site at an elevation of around 4,400 feet at the west base of the Little Pigeon Mountain, elevation 5,369 feet. Pigeon Spur is roughly 30 miles north-west of the Wendover Test and Training Range. Both the Newfoundland mountain range, elevation 7.005 and the Pigeon mountains are between the Hill AFB training range and the Pigeon Spur Fuel Storage Facility (PSFSF). The storage area has 36 rows of parallel railroad tracks spaced fifty feet apart in total occupying an area of around 60 acres. A twenty foot high earthen berm will surround the storage field so at ground elevation the 16 foot high nine feet diameter concrete storage casks will be substantially out of view.

We began showing the project to the Box Elder people five years ago and every year since at the Box Elder County Fair in Tremonton. We have also shown the project at town meetings in Grouse Creek and Park Valley. To further see this matter, last March the management of western Box Elder County ask us to talk to Hill AFB about this where they want to be sure that the project will not hamper Hill AFB's test and training operations in Box Elder County.

There has been an over 20 year need for the facility as we are proposing. In 1987 the congress established the office of the Nuclear Waste Negotiator just for get a SNF storage facility. This was a five year office under the President. David Leroy, Boise, was the first negotiator under President Bush, former Congressman Richard Stallings succeeded him under President Clinton. In all of the nation, two sites were offered - the Skull Valley Band of Goshute Indian Reservation and Pigeon Spur site north of the Southern Pacific continental RR main line. It is critical that one or both of these project proceed. The spent nuclear fuel storage issue is holding up plans and construction of all new electric power plant facilities. This is becoming very critical where a 60% increase in electric demand is projected over the next 20 years. Today's electric power plants are running at 95% capacity, but were designed to operate at 80% capacity so they are being overly-run. Nuclear power is needed to replace coal power for a start

to slow global warming. We are championing reprocessing of SNF. SNF contains 92% U238 which can be used for its energy and reprocessing is needed to make mix-oxide fuel from SNF which would be mixed with weapons plutonium for its consumption and destruction.

I first talked Ms Kosakowsky back in March. She said that Vice Commander Col. Ron Ohelent would be writing to me on this but I now understand that he is no longer with the Base. We have petitioned to for interpleader status in the Private Fuel Storage (PFS) proceeding in its process for licensing SNF storage on the Goshute Indian Reservation. The issue of the storage facility's affect on aircraft flight and test operations has been raised. As part of the license application we address the situation of an aircraft impacting into the field of storage casks. We do not expect that storage canisters will be breached. If they are, and if SNF pellets are scattered, we have a clean up procedure. The concrete cask housings will not be forgiving to aircraft structure. They are very robust and will probably remain mostly intact upon impact of a flight vehicle and a fuel fire that might result will also not cause damage that will cause a SNF leak.

Our experts - Dr. Steven Barrowes, Dr. Gary Sandquist, and Robert Hoffman would be glad talk to you about this. We have other consultants from Idaho National Engineering and Environmental Laboratory (INEEL) and people from Scientists for Secure Storage including Professor Richard Wilson of Harvard University who would gladly talk to you and answer your questions. This is a very important issue. The Congress, the electric power industry, and the public of the United States very much need this temporary SNF storage. Twenty years ago the utilities had three facilities for reprocessing SNF. Presidents Ford and Carter put a stop on them. President Reagan overruled them and reprocessing is now allowed. The rest of the world is reprocessing using procedures developed at INEEL. A reprocessing facility costs around $4 billion. In time the utilities will build facilities and reprocess SNF to recovery the 92% U238 and use-up the nation's stockpile of plutonium. But before this happens they need and want the storage of SNF that they are and have been paying $3 million per day for the past twenty years.

I am confidant that we can plan and operate SNF storage so that it will not impact test and training operation of Hill AFB. The citizens of western Box Elder county want and need the employment and income opportunity of the PSFSF. This operation will greatly improve the security and emergency response of western Box Elder County which can actually improve conditions for Hill AFB's activities in the western Box-Elder county area. Please set some time which we can come to Hill AFB and talk to you and your staff about this. We well be responsive to your concerns and we can also put them to the U.S. Nuclear Regulator Commission.

Sincerely yours,

William D. (Bill) Peterson, M.S.. P.E.
P&A Engineers, Pigeon Spur Fuel Storage Facility

Attachments: GS122098.SLT
HotEnoug.wpf
SLT-SB8.130
explain
Civ-HLW.wpf

RESPONDING TO THE CONCERNS OF THE NEVADA GOVERNOR'S OFFICE

Dr. Gary M. Sandquist

The Nevada (NV) Governor's Office recently responded to my opinion piece "Don't let myths perpetuate inaction on nuclear waste storage" published in the Deseret News on 30 Jan 2000. I wish to respond to the Governor's Office.

NV Governor's Office Claim: The 40,000 metric tonnes of spent nuclear fuel presently stored at 72 nuclear power plant sites in 36 states are safe and secure where they are, but deep geological disposal at a site such as Yucca Mountain is unsafe for these dangerous and long-lived materials and vulnerable to sabotage and terrorism.

FACT: The National Academy of Sciences with far greater scientific resources than the NV Governor's Office concluded in an exhaustive study reported to the US Congress that these wastes could and should be disposed of in a deep geological repository. Furthermore, the American people through their elected representatives passed the 1987 Nuclear Waste Policy Act that mandated geological disposal. Both the public and scientific community believe that spent nuclear fuel should be disposed of properly and safely in a deep geological repository. The political agenda alluded to by NV Governor's office reduces to the will (or agenda) of the American people and scientific community and the political agenda of the NV Governor's Office.

NV Governor's Office Claim: Yucca Mountain is not a safe location for disposal of this spent fuel because the area is prone to earthquakes and is impacted by 34 known faults and highly fractured. FACT: If the Yucca Mountain site that lies only 90 miles northwest from Las Vegas is so prone to seismic instability, then the potential for property damage measured in $millions and loss of life in thousands in the highly overbuilt tourist and gambling mecca should be of great concern to the Governor's Office. Furthermore, a seismic event of sufficient magnitude to breach reinforced spent fuel containers at Yucca Mountain might also induce failure of Hoover Dam that would inundate Las Vegas. The risk from radiation released from a seismic disturbance at Yucca Mountain would be insignificant compared to collapsed buildings, uncontrolled fires, widespread flooding, and great loss of life. Perhaps the

Governor's Office should reexamine its building codes for Las Vegas, close unsafe buildings, and warn tourists of this potential risk.

NV Governor's Office Claim: The commercial nuclear power industry (that provides over 20% of US electrical power to 50 million citizens) is promoting the Yucca Mountain site at the expense of the health and safety of Nevadans and Californians.

FACT: The primary risk from a large release of radiation is that cancer may result. Very conservative estimates project that possibly 1 latent cancer fatality in the public from spent fuel disposal at the site and 18 fatalities throughout the entire US from transportation of the spent fuel may result over the life of the Yucca Mountain Repository. If this level of cancer threat is a great concern to the Governor's Office then it should review the cancer incidence statistics published by the American Cancer Society. Nevada has one of the highest rates of lung cancer of any state in the United States (72.5-male and 46.0-female deaths per 100,000 people during 1991-1995). A concerted effort on the part of the Governor's office to educate its residents, particularly its youth to the dangers of smoking is advisable. Such an effort, if it could reduce the cancer incidence rate to that of its neighbor, Utah (31.8-male and 14.0-female), would result in saving the lives of hundreds Nevada residents each year just from lung cancer.

OBSERVATION: Nevada is an intense user of electrical power as witnessed by any visitor to Las Vegas and Reno. It would seem reasonable that NV would support the safest and most environmentally benign source for producing this power - namely nuclear power. However, if the NV Governor's Office really believes that the power industry is conspiring against NV and that nuclear power is unnecessary and expendable, then perhaps the resulting 20% reduction in US electrical capacity should begin with NV and the power industry should simply trip the electrical breaker for the state.

Multi-Purpose Canister System Evaluation

A Systems Engineering Approach
September 1994

U.S. Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585
Tel 800-225-NWPA

DOE/RW-0445

3.5 MINED GEOLOGIC DISPOSAL SYSTEM

This section presents an evaluation of the impacts of the MPC system on the current MGDS preliminary design. It also discusses MGDS requirements that have been factored into the design of the MPC system. Information is obtained from the *Mined Geological Disposal System Multi-Purpose Canister Design Considerations Report, in* Volume V of the MPC System CDR, and from other documents. The MGDS is affected by interface of the MPC system with the disposal container, waste handling operations, and subsurface emplacement operations. Each of these interfaces has been evaluated to identify key MGDS impacts attributable to implementation of the MPC system.

This section discusses MGDS operations relevant to the MPC system, waste package issues, repository thermal loading issues, surface facility impacts, and subsurface design considerations.

3.5.1 MGDS Operations

In the MGDS conceptual design, MPCs are received at the waste handling building where they are transferred from transportation casks to disposal containers. Transfer operations are performed inside a heavily shielded, confined transfer room. The disposal containers containing MPCs, referred to as waste packages, are sealed by welding inner and outer lids to complete the containment of the containers. The waste packages are then moved to a transfer vault, where they are loaded

onto an underground waste transporter for movement into the repository. As assumed in the concept of operations, any individual SNF assemblies received at the second repository are transferred into large waste packages in a shielded transfer cell and then placed in the repository similar to MPCs.

The transporter containing the waste package descends into the repository via a ramp and travels to the waste emplacement drift. The transporter is controlled by an on-board operator until it reaches the entrance to the drift. In order to minimize worker radiation exposure, workers do not enter the waste emplacement rooms that contain radioactive waste packages. The transporter stops outside the emplacement area, and operation of the transporter is taken over remotely. A radiation barrier is opened, and the transporter transfers the waste package to a waste package emplacement machine. The waste package emplacement machine places the waste package in its designated disposal position in the drift. Retrieval of waste packages can be accomplished, if necessary, by reversing the emplacement process.

3.5.2 Waste Package Issues

A major design objective of the waste package is to provide an engineered barrier to the release of radionuclides that meets the requirements of 10 CFR Part 60. Currently, major issues associated with the waste package design and the impact of the MPC on this design remain undetermined. As the design of the total repository system develops, interface requirements with the MPC will be incorporated into the design. A number of important issues that may affect the MPC design are discussed in this section. These include waste package issues related to materials compatibility, long-term criticality control, and thermal design. These issues have been considered in the conceptual design of the MPC system, and

will continue to be the subject of system evaluations and trade-off studies in later design phases.

Materials

For the conceptual design, 316L stainless steel was selected as the MPC shell material. This material possesses adequate thermal conductivity to transmit heat away from the SNF and into the disposal container. The disposal overpack will include a corrosion-resistant inner barrier (such as Alloy 825) and a corrosion allowance outer barrier (such as low-carbon steel) in order to meet long-term performance requirements for the waste package.

Basket material properties selected for the MPC conceptual design must provide good thermal conductivity, high neutron absorption cross-section, and sufficient corrosion resistance to maintain criticality control for SNF over the extended period of waste isolation. Thermal conductivity is important during the early part of the disposal period when the thermal load from the SNF is highest. The requirement for criticality control is important during the life of the system. Since MPCs will be vacuum dried and backfilled with an inert gas before sealing, the basket material will not be subjected to oxidation during the storage and transportation periods. During the latter period of disposal when the repository temperature has dropped below the boiling point of water, the aqueous corrosion properties of the basket could become important. At that time, water could potentially intrude into the repository environment and penetrate the overpack, the MPC shell, and the basket of the MPC. This leads to the requirement for corrosion resistant basket materials for the design of the MPC.

A combination of 316L stainless steel and borated aluminum are used for MPC basket materials in the MPC conceptual design. 316L stainless steel is not vulnerable to nitric acid corrosion, although it has some vulnerability to formic and oxalic acids. Aggressive environments that may penetrate a multi-barrier waste package would also attack an austenitic stainless steel basket by pitting attack or stress corrosion; however, these forms of localized attack will not greatly degrade the ability of the fuel basket to maintain criticality control. Borated aluminum alone, which has been used in baskets for storage and transportation casks, may not have adequate corrosion properties to withstand environments that are expected during long-term repository disposal. By cladding borated aluminum with stainless steel, a cost-effective and efficient neutron

absorber material is provided for the MPC conceptual design.

Long-Term Criticality Control

Long-term criticality control for SNF following emplacement in the MGDS is a major issue. It is anticipated that a probablistic analysis approach will be used to demonstrate criticality safety. It is expected that this approach will include taking credit for the reduced reactivity of the SNF (bumup credit) and taking credit for supplemental neutron absorbing materials. The issue is that the criticality potential of SNF changes with time and neutron absorber materials may degrade over a period of time.

After discharge from the reactor, the reactivity of SNF decreases for approximately 200 years, and then increases for approximately 20,000 years before decreasing again. Figure 3.5-1 provides a graphic representation of the time effects on criticality potential assuming a fully

flooded condition. The initial decrease in criticality potential is primarily caused by the decay of Pu-241, a fissile material. The subsequent increase in criticality potential results from the radioactive decay of neutron absorbers, like Pu-240. Conceptual design of the MPC accounts for this increase in criticality potential and provides for criticality control during the entire "isolation" phase, as specified in 10 CFR Part 60 and 40 CFR Part 191.

1.3

1.2

1.1

1.0

0.9

0.8

0.7
10o

Time Effects on Criticality Potential
21 PWR Bumup Credit MPC Design
(No Additional Neutron Absorbers Added)

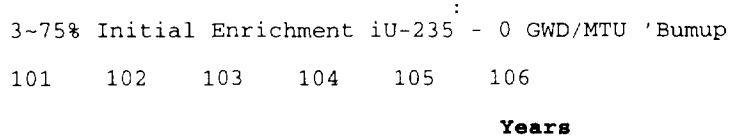

Figure 3.5-1 Time Effects on Criticality Potential

Materials used for constructing the MPC basket will degrade over the life of the repository. Degradation of the neutron absorber material over the disposal period needs to be addressed with regard to criticality control. Neutron absorber material may be depleted due to neutron flux and as a result of physical leaching caused by corrosion. Preliminary evaluations indicate that a reduction of up to about 16 percent of boron-10 could *occur* during the disposal period. Sufficient neutron absorbing material is provided in the MPC conceptual design to satisfy these concerns by including an additional 25 percent boron-10 content in the neutron absorber material.

Thermal Design

The number of SNF assemblies and the SNF assembly thermal output must be balanced to provide acceptable MPC internal temperatures and to maintain MGDS thermal goals. The thermal behavior of the waste package depends on a variety of factors. Thermal loading of the near-field (drift-scale) host rock is dependent on the waste package design. Since the MPC will form part of the waste package, effects of the MPC on the MGDS have been considered in the MPC conceptual design. In contrast, details of the waste package have a minimal impact on repository far-field (mountain-scale) thermal behavior, since far-field effects are dictated primarily by the heat imparted to the area over the long term. Therefore, far-field

repository thermal response is independent of the waste package configuration. Section 3.5.3 discusses repository thermal loading considerations in more detail.

As part of the waste package, the MPC conceptual design complies with potential MGDS near-field temperature requirements. Two potential MGDS requirements affecting

the MPC design include maintaining the drift wall temperature below 200° C and maintaining the SNF cladding temperature below 350° C. Local drift wall temperatures are controlled primarily by waste package thermal output and waste package spacing. Near-field temperature profiles are determined by such factors as the number of SNF assemblies per waste package, the age of the SNF, initial SNF enrichment and bumup, materials of construction, and configuration of the waste package. The MPC design can meet thermal design goals, and thermal output can be accommodated through additional SNF aging and emplacement approaches to meet MGDS thermal requirements.

Based on the conceptual design of the MPC and its associated disposal container design, a basis for the MPC thermal output at the repository was evaluated. Analysis of the large, 21-PWR burnup credit MPC assumes emplacement of 10-year old SNF with 40 GWD/MTU burnup. At initial emplacement, each SNF assembly generates 676 W of heat, resulting in a total initial package heat output of 14.2 kW. Analysis of the MPC in its disposal container indicates peak cladding temperatures of 354°C, which occur approximately one year after emplacement. This peak temperature is slightly above the cladding temperature goal of 350°C. The analysis also indicates that MPCs with different capacities, but with the same total package heat load of 14.2 kW, would also result in peak internal temperatures near the 350°C goal. Longer SNF cooling times are required to accommodate larger MPC capacities.

3.5.3 Repository Thermal Loading Considerations

In an effort to optimize waste disposal, a wide range of repository thermal loading options is being considered and evaluated. These options extend from minimally perturbed, in which the bulk average temperatures in the rock do not exceed the boiling point of water, to extended hot, where the repository center remains above boiling for thousands of years. Each of these thermal loading options may result in different requirements relative to the design of the waste package and its maximum power output. A decision has not been made on which thermal loading option will be used for design of the repository; however, a number of activities are underway to support the thermal loading decision process. These activities include a thermal loading system study,

performance assessment code evaluations, laboratory testing, and field testing. The MPC conceptual design provides the flexibility to accommodate either MGDS thermal loading option.

Thermal loading affects near-field and far-field temperatures experienced in the repository as a result of heat generated by emplaced SNF. Near-field temperatures are primarily those affecting the engineered barrier system and rock temperatures at distances of no more than a few tens of meters from the drift. Near-field temperatures are primarily influenced by the areal power density (APD in watts per square meter or kilowatts per acre), which changes over time as the SNF decays, and by emplacement mode details. Near-field temperature effects on waste package design are discussed in Section 3.5.2. Far-field temperature changes result from heat generated by the SNF and occur over hundreds of meters. Far-field temperatures are

primarily influenced by the density of emplaced waste, which is defined as areal mass loading (AML in kilograms uranium per square meter or metric tons uranium per acre), rather than the details of the waste package. As such, the MPC design has no impact on the MGDS for far-field temperatures.

Given the schedule for the thermal loading decision, it is apparent that an MPC design must be finalized before full compatibility with the repository design is ensured. Contingency options are available to remedy problems that may be found later with compatibility of the MPC design with the MGDS. These contingencies are discussed in Section 4.6. In order to mitigate any risks, results of repository studies and experiments must be integrated into the MPC design in a timely manner to ensure conformance with repository and overall CRWMS requirements.

3.5.4 Surface Facilities Design Impacts

Impacts of the MPC system on MGDS surface facilities are limited primarily to the waste handling building (WHB). MPCs are expected to arrive clean from Purchaser sites and the MRS facility. Even if an MPC arrives with its

exterior contaminated, the contamination is expected to be far less than what would be produced from handling uncanistered SNF assemblies. As such, handling MPCs in the WHB is a cleaner operation than handling uncanistered SNF assemblies. Areas handling individual, uncanistered SNF assemblies are likely to be contaminated as a result of dust released from the cladding. Facilities for transferring MPCs and individual SNF assemblies at the MGDS are similar to the transfer facility described for the MRS facility in Section 3.4. If final repository design indicates the need for filler material in the MPC, this function can be assigned to the MGDS surface facilities. The CMF described as part of the MRS facility may be located at the MGDS if there is not an MRS facility.

Significant time savings are realized by handling MPCs as compared to handling individual, uncanistered SNF assemblies. As a result of these time savings, fewer parallel waste handling paths are needed. This results in a smaller WHB that costs less to construct and maintain.

Individual, uncanistered SNF assemblies arriving at the MGDS will be placed into large disposal containers in the WHB. This method has been selected in lieu of using MPCs for individual SNF assembly packaging because significant cost savings can be realized by not having to use a waste container that meets storage and transportation requirements. This method of disposal packaging for individual SNF assemblies will be used primarily at the second MGDS, which will receive significant amounts of individual SNF assemblies after the MRS facility is decommissioned.

3.5.5 Subsurface Design Impacts

Subsurface facilities at the MGDS have been investigated to determine the impacts of MPC system implementation. Several emplacement modes have been considered, including vertical, horizontal long-bore hole, and in-drift emplacement of MPCs. In-drift emplacement has been selected as the repository emplacement mode for MPC waste packages and large waste containers for individual SNF assemblies received at the MGDS. MPC waste packages are

placed on the invert surface of the drift lengthwise along the centerline or adjacent to the opening wall.

In general, evaluations indicate that implementation of the MPC system does not have strong impacts on subsurface repository operations when compared with other subsurface waste handling options.

Resolving the Nuclear Waste Issue pg AA8

Salt Lake Tribune February 6 and March 12, 2000 by Gary M. Sandquist

President Clinton and his administration have shown little interest in resolving the nuclear waste problem. But the fact remains that highly radioactive transuranic waste from the defense programs and spent nuclear fuel from power plants must go somewhere. Over the last few years, the President's failure to resolve the problem has been elevated from a lack of focus to gross neglect. He has recently threatened to veto a bill supported by more than 200 Democrats and Republicans in Congress that would establish an interim storage facility for nuclear waste in Nevada until a proposed repository becomes available for permanent disposal. The implication is that this critical issue will again be postponed for a latter Administration and Congress to resolve. Furthermore, the President signed the Kyoto protocol on climate change, which committed the U.S. to a drastic reduction in greenhouse-gas emissions. This is an international commitment that the U.S can not realistically meet without the continued use of emission-free nuclear power.

Unless spent fuel is removed from nuclear plants within the next few years; it is highly likely that many plants will be forced to close. Nuclear plants provide over 20% of the nation's power and cannot be ignored. That's worth considering in view of the Department of Energy public hearing on the Yucca Mountain repository in Salt Lake City on January 13. This meeting was one of a series of public hearings around the country concerning the proposed nuclear waste repository's impact on the environment.

There are several myths about nuclear waste management and disposal that should be addressed. One myth is that we have no experience in transporting radioactive materials. The fact is that we ship millions of packages a year of such materials ranging from medical isotopes to spent nuclear fuel. The record is that there has been not one radiation injury or death to the public from the transportation of radioactive materials. Another myth is that spent fuel and other high-level waste can remain indefinitely at the 72 nuclear power facilities and five DOF sites. Responsible, safe management of this inventory of radioactive materials demands disposal that can be accomplished by geological disposal at a site such a Yucca Mountain.

The safety and technology of the Yucca Mountain site is supported by a large body of science documented in DOE's viability assessment and now presented in their Environmental Impact Statement. "One way or another we've got to advance toward geologic disposal," DOE Undersecretary Ernest Moniz said recently. Moniz, a former professor at MIT, is in charge of

science at Yucca Mountain. Moniz said that scientists who have been examining the site's geologic characteristics have found no reason to delay construction of the repository. "We're pushing it hard. The science case is building up nicely. If we have to delay in the end, we'll delay. But I see no reason not to push forward."

Second, leaving radioactive waste at various, diverse sites around the country will eventually pose a danger to public health and safety. While storage at these sites is safe today, these sites were not designed for long-term or perpetual waste disposal. The irresponsible claim that this material can be left where it is cannot be condoned. This material exists, and it must be responsibly managed by proper geological disposal at a facility such as Yucca Mountain.

Continued inaction in resolving this waste management issue might please anti-nuclear activists who really seek to close all nuclear plants throughout the world. However, if we significantly reduce nuclear power generation we must increased fossil fuel consumption, causing far greater quantities of sulfur and nitrogen oxides, methane, and ash to be spewed into the atmosphere. Furthermore, the burning of coal and natural gas will increase levels of carbon dioxide, which is the major greenhouse gas that environmentalists believe, is linked to climate disruption.

Those considerations provide compelling reasons for qualifying and licensing the Yucca Mountain facility. We cannot pretend that the waste issue will go away or postpone it for later congressional or administrative action. If we are to have a reliable and non-polluting power system, the time to remove obstacles to nuclear power's future is now.

Dr. Gary M. Sandquist is an Engineering Professor at the University of Utah and a Resident of Salt Lake City.

IS IT HOT ENOUGH FOR YOU?

Dr. Steven Barrowes comments to the NRC in the public hearing of July 27, 2000

Global warming has apparently started, and will go even faster if this new group, Citizens Against Nuclear Waste in Utah, can block interim storage of spent nuclear fuel (SNF) in Utah. Why is that? Because people will not willingly go without power, and without more nuclear power they will certainly demand more fossil-fueled power, which accelerates global warming.

Making a big problem out of storage of spent nuclear fuel is a roadblock by which environmentalists seek to shut down nuclear power in the U.S., just as they seek to stop other forms of affordable electricity (see editorial).

The truth about moving and storing SNF is that it can be done safely, much more safely than the energy-equivalent amount of coal. According to the 1996 Encyclopedia Americana, getting enough coal to fuel power plants involves "several hundred deaths per year," while if we had a thriving nuclear industry, the transportation of SNF would cause less than one death per century. The same article "Power from Fission" estimates other risks, with the conclusion that coal causes far more pollution and sickness, including cancer deaths.

All of our energy comes from nuclear burning. Nuclear fusion keeps the sun shining, leading to biomass energy, fossil-fuel energy, solar-cell energy, wind power, hydroelectric power, and the energy of our food. From radioactive elements in the earth we get geothermal and nuclear power. Without nuclear energy, there would never have been any life on earth.

When we fly in commercial airplanes, we get extra cosmic ray radiation, as much per hour as is allowed for nuclear power plant workers. On the average, pilots and flight attendants get 50 percent more radiation per year than nuclear power plant workers, but still not enough to seriously threaten their health.

Standing near a transportation cask loaded with SNF is four times as hazardous as flying the friendly skies, if a person is only one meter (3.3 feet) away from the cask. The safe thing is: don't stand there very long. At five meters the risk is the same as flying, and at 10 meters one could safely spend 24 hours per day. Storage casks are safer still because of their extra concrete shielding.

The shipping casts are built and tested to not break in 80 mph train wrecks, followed by a 30 minute gasoline fire and 8 hours under water. If a train did wreck at the allowed speed of 30 mph, it would be no difficult task to keep the public back at a safe distance until the shipment could resume.

It is ludicrous to assert, as some environmentalists do, that transportation of SNF across our state would jeopardize the health and safety of every person in the state. It would be equally in error to say that the storage of SNF would hurt anyone not working at the site. At the site, the

workers would be monitored with radiation badges to assure their individual safety, and exposure levels would ordinarily be far lower than the maximum safely allowed.

With our hot summers we would already be having brown-outs and power failures if a certain energy company had not been buying up inefficient and neglected nuclear power plants and getting them working again at good efficiency. Nuclear power provides over 20 percent of our electricity, but no new power plants are being built because of the political uncertainties, not even coal plants. Even though we have no nuclear plants in Utah, our electric power, as shared on the power grid, is about five percent nuclear.

Why in Utah? Utah currently has the only two applications in to the Nuclear Regulatory Commission for interim storage of SNF. Utah thus becomes the focus of the environmentalists' misguided efforts. We have some ideal locations, where there are no other effective uses of the land, but where jobs and the local economy can receive a great boost from helping this industry, which is vital to our country.

Global warming is almost universally acknowledged by scientists, with its hotter summers, melting of icecaps in Greenland and Antarctica, rising sea level, weather disruptions, and future extinctions of species. Nuclear power offers the only affordable, plentiful supply of energy that can reduce global warming. Until we develop other energy sources, it is extreme folly to fight against the cleanest, most environmentally friendly, and safest energy supply we have.

Steve Barrowes, Ph.D., Member
Scientists for Secure Waste Storage

THE NUCLEAR WASTE PRIMER

Pages 38 thru 63

THE: LEAGUE OF
WOMEN VOTERS EDUCATION FUND

3804 South Highland Dr., Holladay, Ut 84106 801-272-8683

LYONS & BURFORD, PUBLISHER
1992

Note for today - 8/24/00, announced today on Ch 7, 11:30 PM: **Kilimanjaro**, now half gone due to global warming, in less than another century, the ice caps of Africa will be totally gone.

Almost all spent fuel rods are now being stored underwater in large pools at reactor sites or, to a lesser extent, in heavily shielded air-cooled casks. Other radioactive wastes generated at nuclear power plants include fission product gases, such as krypton and xenon; carbon-14, mostly as CO2, from damaged or defective fuel rods; filter media, left over from treating contaminated cooling and cleaning water; and miscellaneous solid waste, such as protective clothing and cleaning paper.

In many other countries, the next step in the fuel cycle is to separate the uranium and plutonium from the fission products in the spent fuel by a chemical process called reprocessing, in order to use the uranium and plutonium again. This process also produces large amounts of radioactive waste. At present,

commercial spent fuel is not reprocessed in the United States (see: Reprocessing and the Nuclear Fuel Cycle, page 39).

SPENT FUEL MANAGEMENT

Most civilian high-level nuclear waste in the United States is in the form of spent fuel and is now stored in pools near the reactors that produced the waste. Some of these pools are nearly full. The following section explains storage practices of the past, present storage and disposal options, and alternative approaches to disposal.

REPROCESSING AND THE NUCLEAR FUEL CYCLE

The commercial nuclear power system that exists today in the United States is dominated by one kind of reactor, the light-water reactor (LWR), and by a fuel cycle based on "once-through" uranium use. Once through means that only fresh uranium oxide fuel is used; spent fuel, rather than being reprocessed and used again, is stored until a method of permanent disposal is established.

The once-through cycle uses uranium fuel in a form that cannot be used easily for nuclear weapons. The fission of the uranium fuel in light-water reactors creates plutonium, some of which undergoes further fission and helps generate energy. If the remaining plutonium is never separated from the fuel by reprocessing, it never appears in a form accessible for nuclear weapons. To limit the proliferation of nuclear weapons globally, both President Ford and President Carter imposed indefinite bans on commercial reprocessing in this country, although other nations did not follow the U.S. initiative. In 1981, President Reagan lifted the U.S. moratorium on reprocessing of commercial spent fuel. However, U.S. private industry has no plans to pursue reprocessing because of unfavorable economics, uncertainty about future government policies, and the worldwide abundance of uranium for fabricating reactor fuel. Reprocessing also increases worker exposure and creates significant quantities of liquid high-level waste, transuranic waste, and low-level waste.

Storage

Storage facilities for spent fuel rods were designed on the assumption that spent fuel would be stored underwater at reactor sites for a short time (about five months to three years) and

then shipped away for reprocessing and final disposal. Such a system has not materialized, and most spent fuel remains stored at reactor sites. By the early 1970s, about 515 tons--six percent of the commercial spent fuel existing at the time--had been shipped and "temporarily" stored in deep water pools at reprocessing plants in West Valley, New York, and Morris, Illinois. The West Valley facility did reprocess some commercial spent fuel rods before it closed in 1972, but because of design problems, the Morris plant never operated. A third reprocessing plant was constructed at Barnwell, South Carolina, but it was never used because of design and political problems.

Except for 125 spent fuel assemblies owned by DOE, the spent fuel that was stored at the West Valley facility in anticipation of reprocessing has been returned to the nuclear power plants from which it originated. The Morris site is still being used for spent fuel storage. However, the storage capacity of the Morris facility--approximately 720 metric tons is fully committed under existing contracts with three utilities.

Most spent fuel rods are being stored in pools at reactor sites around the country, and some of these pools are nearly full. According to a 1992 DOE report, 26 reactors will require storage expansion beyond the maximum capacity of their current storage pools by the year 2000. To deal with this problem, most utilities have increased their pools' storage capacity, a step that must be licensed by NRC, by reracking fuel-assembly storage modules to the greatest extent possible. A few power plant operators have moved spent fuel from crowded pools to less-crowded pools at other reactor sites. Some utilities are now using NRC licensed dry storage technologies. The most fully developed storage technology uses heavily shielded, air-cooled storage casks. Multipurpose casks that can be used to store and transport spent fuel are also being developed. One reactor site in Virginia, one in Maryland, two in South Carolina, and one in Colorado were using storage casks by the end of 1992, with other facilities planning to add dry storage. More than 2,000 storage casks are in use in Europe and Canada.

Disposal

Geologic Disposal

Current federal policy on high-level waste disposal calls for building at least one geologic repository to house the nation's high-level waste permanently. As the following section on policies and programs explains in more detail, Congress in 1987 directed DOE to confine its siting investigations for this facility to Yucca Mountain, Nevada. If constructed, the repository would isolate nuclear waste in a stable geologic (rock) formation at least one thousand feet below ground. A combination of natural geologic features and engineered components is expected to provide a series of barriers to prevent

the uncontrolled release of radionuclides into the environment. The barriers will include the chemical and physical form of the waste; the covering (cladding) on the fuel rods; the canister that will hold the waste; any packing material around the canister; and the natural characteristics of the rock formation itself.

The concept of geologic disposal of high-level waste and spent fuel has widespread international acceptance in much of the scientific community. A 1992 report from the National Academy of Sciences notes that most countries have concluded that "the best means of long-term disposal of high-level radioactive waste is deep geological emplacement, always including some form of engineered containment or encapsulation and generally with some limited retrieval capability, at least initially:"

Geologic disposal has been the focus of federal research for more than 30 years. As early as 1957, a National Academy of Sciences report to the Atomic Energy Commission recommended the burial of high-level and transuranic waste in geologic formations. The Academy urged the investigation of a large number of potential sites and specifically recommended further research on salt beds and salt domes.

In addition to investigating salt extensively (see Chapter 6), DOE has conducted research on geologic formations of basalt, tuff, and crystalline rock (granite) as potential nuclear waste disposal sites. The department conducted experiments in basalt at the Hanford Reservation in Washington and in granite and other kinds of rock formations at the Nevada Test Site, in addition to participating in international research projects.

Shale, alluvium, and argillite formations also have been considered in more preliminary studies. Unlike salt, these types of geologic formations are always fractured to some degree. If these cracks are connected to one another, groundwater can pass through the rock. Shale, alluvium, and argillite (and, to a more limited extent, basalt and granite) formations have the ability to hold onto chemically or to adsorb some waste elements. Thus, if moving groundwater were to leach wastes from a repository and carry it through the rock formation toward aquifers or toward the surface, the ability of the rock to adsorb some radionuclides would retard their movement and help prevent the contamination of water supplies.

Most studies to date suggest that, in a properly sited repository, the odds are very low that groundwater might leach radionuclides from the wastes and carry them to humans and the environment in health-threatening concentrations.

Of course, there are other ways in which radionuclides might be released into the environment, and these must be considered in estimating the risks associated with a potential repository site. Particularly difficult to predict is the likelihood of an accidental release of radionuclides by future human activities,

such as exploratory drilling or mining. DOE siting guidelines and procedures, as well as research projects investigating alternative materials and methods, seek to decrease the risk of such occurrences. The guidelines include requirements to consider the likelihood of valuable minerals in the area that might encourage mining and drilling and to post signs warning future generations of the existence of a hazardous site.

Another subject of debate is how 10ng nuclear waste should be retrievable from a repository in case unexpected problems occur or in case future generations wish to recover the buried material. Current NRC regulations require that waste be retrievable for 50 years after a repository begins operation and that the retrieval be no more difficult than the initial excavation.

Some scientists cite the "Oklo" phenomenon as convincing evidence in favor of disposing of high-level waste in stable geologic formations. Two billion years ago, natural events operating on a very rich uranium deposit in what is now Gabon, in Africa, led to nuclear fission reactions. This "natural" nuclear reactor produced the same types of wastes as today's reactors. Studies of the site, near a village called Oklo, show that most of the fission products and virtually all of the transuranic elements, including plutonium, have moved less than six feet from where they were formed 20 million centuries ago.

Alternatives to Geologic Disposal

While disposal deep within geologic formations has dominated both scientific and policy discussions, other methods for disposing of high-level waste have been considered. The 1980 DOE Generic Environmental Impact Statement evaluated various disposal methods before designating geologic disposal as the preferred alternative.

Subseabed disposal. The only other alternative that has been actively researched is disposal under deep-sea sediments. In a program that began in 1973 in cooperation with several other countries, the United States investigated the feasibility of burying waste packages in geologic formations beneath the deep-ocean floor. Research focused on certain areas in international waters (more than 200 miles from shore) in the western North Pacific and the North Atlantic. In these areas, the ocean is 3,000 to 5,000 meters deep, the sea floor is fiat, and the sediments are thick and uniform over a large area. These areas are very stable geologically, isolated from the rest of the planet, and thought to be virtually bereft of life. Sediments in these areas consist of extremely fine-grained clay that would be expected to adsorb most of the radionuclides in the waste. These sediments are considered the primary barrier to the release of

radionuclides into the biosphere. The depth of the ocean in these areas would pose a significant barrier to human intrusion.

Research thus far has not revealed any major flaws in the subseabed concept, but important technical questions remain to be answered. These include: whether or not water flows through ocean sediments; if it flows, at what rate it moves; and what effect the heat generated by waste packages may have on the surrounding sediment. The U.S. research project planned to report on the feasibility of the subseabed concept in the 1990s. However, the program was terminated in 1986 by DOE.

The Organization for Economic Cooperation and Development (an organization of economically developed nations, including the United States, Japan, and countries in Western Europe) coordinated the international research program. In 1988 they found that subseabed disposal was technically feasible, but that before subseabed disposal could actually occur, more research was needed to reduce technical uncertainty and an international system was needed to regulate and manage the disposal process.

Currently, the 1976 Convention on Prevention of Marine Pollution by Dumping of Wastes and Other Matter (also known as the London Dumping Convention and signed by most coastal nations) regulates ocean dumping of radioactive and hazardous waste. Although disposal within the subseabed clays differs from dumping on the ocean floor, member nations agreed that none of them should begin subseabed disposal without further research and that, if a nation were to implement a program of subseabed disposal, the London Convention could provide an appropriate international regulatory regime.

Other alternatives. Several other suggested alternatives appear to be impractical. A proposal to bury canisters of waste in the Antarctic ice sheet was abandoned because of uncertainty about the stability of the ice caps over the thousands of years required for radioactive decay of waste. Similarly, although the idea of rocketing nuclear waste into space was ruled technically feasible by the National Aeronautics and Space Administration, it is no longer under investigation because both the cost of such disposal and the risk of a launch accident are considered too high.

Some people argue that we can safely delay taking action on nuclear waste disposal for 50 or more years while continuing to research disposal methods. They recommend storing spent fuel rods in pools of water or in air-cooled above-ground casks or vaults and maintaining continuous human surveillance until the radioactivity and heat given off by the short-lived nuclides have decreased to more manageable levels. Sweden and France, for example, have incorporated long-term (15-30 years) storage as an element of their waste disposal plans, although they also are

proceeding to develop geologic disposal.

Proponents of long-term storage for the United States point out that such a plan would buy more time for the development of disposal options. Others, including some critics of the government's lack of progress on nuclear waste management, see this proposal as a delaying tactic. They say this country must develop a permanent solution now before making further commitments to nuclear power. They also argue that long-term temporary storage may become *de facto* permanent storage and that it is wrong to leave this problem for future generations to solve and finance.

POLICIES AND PROGRAMS

Legislation

Before 1982, there was no major legislation in the United States governing the search for a scientifically, technically, and politically acceptable system for managing high-level waste and spent reactor fuel. First the Atomic Energy Commission, then the Energy Research and Development Administration, and now the Department of Energy have been responsible for radioactive waste management. As administrations, agencies, personnel, and political conditions change, so do the answers to basic management policy questions: Should temporary storage be at reactors or away from reactors? Should the facilities be provided by the federal government or by the utilities? Is reprocessing necessary,

economically feasible, or politically wise? Is long-term storage desirable, or would it serve only to delay decisions? By what criteria should a permanent disposal site be chosen? What roles should various levels of government, Indian tribes, and the public play in making waste management decisions?

In late 1982, the picture seemed to become clearer. The Nuclear Waste Policy Act, signed into law by President Reagan in January 1983, provided a framework for making decisions about disposal of high-level waste and spent fuel and assigned responsibility for implementing those decisions. The act was based on broad consensus concerning some issues and compromises aimed at balancing interests on others.

Although some of its provisions were altered by amendments in 1987, the Nuclear Waste Policy Act of 1982 set basic policies concerning:

- *Geologic Repository Development.* The act gave highest priority to Permanent disposal in geologic repositories and set a schedule for siting two high-level waste repositories and for constructing and operating one.
- *Storage.* The act authorized provisions for a limited amount of emergency interim storage and for developing a proposal

to site and construct a monitored retrievable storage (MRS) facility on a firm schedule.

- *Intergovernmental Relations.* The act set requirements for interactions between the federal government and states, local governments, and Indian tribes.
- *Other Federal Responsibilities.* The act assigned the responsibility for nuclear waste management to specific federal agencies.
- *Waste Fund.* The act required the establishment of a fund to cover nuclear waste disposal costs paid for by user fees on electricity generated by nuclear power.

Five years later, faced with controversy over some DOE decisions and with concern growing about the slow process and

increasing cost of finding a site, Congress passed the Nuclear Waste Policy Amendments Act of 1987, significantly revising the 1982 policies. The 1987 act:

- Directed DOE to characterize a site at Yucca Mountain, Nevada, to determine whether it is suitable as a repository site, to cease all other repository siting activities, and to postpone consideration of the need for a second repository until the year 2007;
- Authorized the siting, construction, and operation of a monitored retrievable storage facility subject to certain conditions that link the operation of the MRS very tightly to the construction of a repository;
- Provided financial incentives for states or Indian tribes on whose land a repository or MRS is sited;
- Increased external oversight by establishing the Nuclear Waste Technical Review Board, authorizing on-site oversight representatives of host states, Indian tribes, and localities, and providing for increased local government participation;
- Established the Office of the Nuclear Waste Negotiator to attempt to reach an agreement with a state or Indian tribe willing to host a repository or MRS facility.

Disposal and Storage Siting Efforts

Siting high-level waste facilities has not been easy for a number of reasons, ranging from national policy shifts to states' resistance and local communities' concerns.

Disposal

After studies of many other sites and repeated policy changes summarized below, efforts to site a high-level waste repository have narrowed to a single site at Yucca Mountain,

Nevada.

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First repository. In !970, the Atomic Energy Commission tentatively selected a full-scale repository site in the salt deposits near Lyons, Kansas. The site was chosen without a formal search, mainly because it had been used in Project Salt Vault, a test of the effects of heat on salt caverns. Under considerable political and technical fire, the Lyons site was abandoned two years later because of concern that nearby salt mine drilling had compromised the geologic formation's integrity. The government then switched program emphasis from finding suitable underground conditions to developing engineered above-ground structures for storing the waste for an extended period.

But after strong objections that such storage facilities might become *de facto* permanent repositories, in 1974 the federal government again began a search for possible permanent repository sites, beginning with a survey of underground rock formations in 36 states.

In February 1983, following the passage of the 1982 Nuclear Waste Policy Act, DOE formally identified nine potentially acceptable sites located in Louisiana, Mississippi, Nevada, Texas, Utah, and Washington. In draft environmental assessments issued in December 1984, the department recommended further study of sites at Yucca Mountain, Nevada; Deaf Smith County, Texas; and Hanford, Washington.

After President Reagan approved the recommendation of these three sites, DOE began work in 1986 to prepare site characterization plans and establish working relationships with the host states. Although a few local groups welcomed the prospect of site characterization for potential economic benefits, all three state governments opposed the study of sites within their states.

Second repository. The Nuclear Waste Policy Act of 1982 also required DOE to identify a site for a second high-level waste repository. Although not explicitly stated in the act, the intent of the requirement appeared to be to provide some regional equity, with the understanding that the first repository was likely to be in the West while the second would be in another part of the nation.

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Indeed, the search for a second site centered on granite formations in 17 eastern, southern, and mid-western states.

DOE issued Draft Area Recommendation Reports in February 1986 and held hearings to discuss the reports throughout the 17 states. Most of the hearings were contentious and packed with citizens who were well organized, well informed, and dead set against further consideration of areas in their states. Governors and members of Congress were alarmed at the uproar, and in May the Secretary of Energy announced that the department was

"indefinitely deferring" the "second round" repository program, thus upsetting the act's tenuous regional balance. DOE maintained that, due to a decrease in the projected growth of nuclear power, the second repository would not be needed on the schedule established in the Nuclear Waste Policy Act.

Subsequently, the irate "first round" states allied with the still-uneasy "second round" states to eliminate all funds in the 1988 federal budget for studying the first round sites and for siting the second repository. The siting program ground to a halt as Congress sought a solution to the impasse. The legislated compromise, the Nuclear Waste Policy Amendments Act of 1987, established the potential financial benefits for a host state, terminated all work in Texas and Washington and on second repository siting, and specified that the site at Nevada's Yucca Mountain would be the only one studied.

Characterizing a single site: Yucca Mountain. Not surprisingly, the state of Nevada strongly objected to being singled out by what they viewed as a political rather than a scientific process. The state passed what it considered a legal notice of disapproval of the site under provisions of the Nuclear Waste Policy Act (see Intergovernmental Relations below) and refused to issue permits necessary for DOE to begin site characterization. The U.S. Court of Appeals ruled and the U.S. Supreme Court upheld that the notice was premature; that is, the state could officially disapprove only when site characterization was complete and when the President had recommended to Congress that the site be developed as a repository. The state agreed to process the necessary permits.

In 1987, as required, DOE submitted a site characterization plan to the state and to the NRC and held public hearings. In 1991, the department began conducting surface studies at the site and preparing to construct a facility for underground tests and exploration.

The site at Yucca Mountain is in tuff, a rock formed of compacted volcanic ash. Unlike other proposed sites, Yucca Mountain is in an unsaturated zone; that is, it is above the current water table.

The Nuclear Waste Technical Review Board was established by Congress to provide technical oversight of the repository studies. Its members are appointed by the President from a list of scientists and engineers nominated by the National Academy of Sciences. Issues that the Technical Review Board has stressed for study include seismic vulnerability (the likelihood that adverse consequences will result from earthquake ground motion or fault displacement) and the role that engineered barriers, especially very durable canisters, can play in providing additional protection. The review board maintains that these issues can be resolved only by underground studies at the site.

Issues of particular concern to the state and to local communities in Nevada are groundwater movement, faults in the

rock, the potential for earthquakes and volcanic activity at the site over the long time period for which the repository must remain secure, and the possibility of negative impacts on tourism and economic development. Furthermore, Yucca Mountain is within a significant mining district, and there is a possibility of deep gas or oil deposits in the area. Thus, state officials and residents are also concerned that people might unknowingly drill or mine into the repository after it is closed.

If at any time during site characterization the department determines the site to be unsuitable for development as a repository, the Secretary of Energy must terminate activities at the site
and, within six months, recommend to Congress what alternative action should be taken to "assure the safe, permanent disposal of spent nuclear fuel and high-level radioactive waste."

Once the characterization process is complete (a task expected in 1992 to take seven to ten more years at a total cost of $6.5 billion), if the site is determined to be suitable under the siting guidelines, DOE will prepare an environmental impact statement and send a recommendation to the President that the site be developed as the first U.S. permanent high-level nuclear waste repository. The recommendation will include comments from the NRC and the state of Nevada. If the President agrees that the Yucca Mountain site is qualified, the recommendation will go to Congress. At that time, the state of Nevada may issue a notice of disapproval. That notice, or veto, will stand unless overridden by a joint resolution of Congress.

When a repository site has been designated, DOE must submit a license application to the NRC for construction authorization. The commission must make a decision on the application within three years, though a one-year extension is possible.

EPA is charged with setting environmental protection standards for a repository. The agency issued standards in 1985 setting limits on radiation releases to the general environment and exposure to humans. However, ruling in 1987 on a lawsuit brought by environmental groups and states, the U.S. Court of Appeals for the First Circuit instructed EPA to reconsider some parts of the standards because of inconsistencies with the Safe Drinking Water Act and inadequacies in the standard governing individual exposure. By mid-1992, EPA had circulated for comment a series of drafts of proposed revised standards but had not issued final standards. However, the Energy Policy Act of 1992, passed in October, mandated a new process for issuing standards specifically for a repository at Yucca Mountain. It directs (1) the National Academy of Sciences to form a committee to provide "findings and recommendations on reasonable standards for the protection of public health and safety" no later than December 31, 1993, and (2) to issue standards for the Yucca Mountain site consistent with these findings and recommendations within one year after receiving them.

In 1981, the NRC issued regulations, based on anticipated EPA standards, for a mined geologic repository. These standards have been amended several times and will be revised, if necessary, to be compatible with EPA's new standards when they are final.

Storage

The Nuclear Waste Policy Act of 1982 emphasized the responsibility of the owners and operators of civilian nuclear power reactors to provide interim storage by maximizing the effective use of existing storage facilities and by adding new on-site storage capacity. The 1982 act also required DOE to study the need for and feasibility of a facility for the long-term storage of spent fuel (monitored retrievable storage) and to submit a proposal to Congress for the construction of one or more such facilities.

In April 1985, DOE recommended the construction of a monitored retrievable storage facility as part of an integrated waste management system and proposed consideration of three sites in Tennessee. The report described a facility that would receive spent fuel from commercial power reactors, consolidate and package the spent fuel, and then store the fuel temporarily, pending shipment to a repository. It would be centrally located near the majority of reactors, and the impact of transportation to the final disposal facility would be minimized by shipping spent fuel in large rail casks on dedicated "unit trains" used only to transport this cargo.

The department's preferred site was near Oak Ridge, Tennessee. Although the city of Oak Ridge concluded that a monitored retrievable storage facility would be acceptable under certain conditions, the slate of Tennessee sued to block the submission of DOE's report to Congress, arguing that the act required DOE to consult with the state before choosing a specific site. Eventually, Tennessee's legal petition was denied, but its point had been made. The Nuclear Waste Policy Amendments Act of 1987 revoked the proposal.

The 1987 Nuclear Waste Policy Amendments Act did authorize DOE to site and construct a monitored retrievable storage facility, with strong restrictions. The department cannot select an MRS site until a permanent repository site has been recommended, and construction cannot begin until the NRC has issued a construction license for a repository. Only a limited amount of spent fuel can be stored at any time--spent fuel equivalent to 10,000 metric tons of heavy metal before a repository is operating or 15,000 metric tons of heavy metal when a repository is operating. The act instructed DOE to evaluate the use of dry cask storage at reactor sites in consultation with the

NRC.

In addition, the Office of the Nuclear Waste Negotiator, created by the 1987 act, is to "attempt to find a state or Indian tribe willing to host a monitored retrievable storage facility at a technically qualified site on reasonable terms" and to negotiate an agreement with the governor of that state or governing body of that Indian tribe. To become effective, the agreement must be enacted into law by Congress. Responding to an invitation from the negotiator, some counties and Indian tribes have been willing to explore the possibility of siting a monitored retrievable storage facility. As of December 1992, four counties and 16 Indian tribes had applied for grants to study the feasibility of locating a storage facility in their jurisdictions; three counties and seven tribes were awarded grants. However, one county and four tribes subsequently withdrew from the process.

DOE initially decided not to conduct a siting process of its own but to rely on the voluntary process described above to identify a site for an MRS in time for a facility to be operating by January 1998. That date is important because contracts between DOE and utilities specify that DOE will begin to take responsibility for spent fuel beginning in 1998. However, utilities have become increasingly concerned that, without an MRS or repository available by then, the federal government will be unable to meet its commitment. Indeed, according to the department, a volunteer site for an MRS would need to have been identified before October 1992 for all the steps necessary to construct an MRS to be completed before 1998.

Utilities and state rate-setting commissions have pointed out that they are collecting fees from consumers for the Nuclear Waste Fund in exchange for the federal government's assuming the obligation to begin accepting spent fuel in 1998. They also have pointed out that reactor sites had been chosen and licensed for reactors with lifetimes of 40 years, not as sites for indefinite storage of spent fuel.

Responding to these concerns, DOE announced a major change in policy in December 1992. DOE will look for interim spent fuel storage capacity at nuclear weapons facilities and other federal sites that could be ready to receive nuclear utility spent fuel by January 1998. The department also will begin considering ways to compensate nuclear utilities that may have to pay for additional on-site spent fuel storage after January 1998 and before a federal facility is opened.

Intergovernmental Relations

Relations have been less than harmonious between the federal government and the states that either contain identified sites for waste management facilities or fear they may be next on the list. In fact, more than a dozen states, responding to pressure

from citizens, have enacted'laws.. intended either to prohibit flatly or to make it difficult to establish within their borders disposal facilities for radioactive waste. However, such prohibitions on nuclear waste facilities may not pass constitutional muster because of! conflicts with the commerce clause of the U.S. Constitution.

Why do so many state and local governments want to restrict or prohibit nuclear waste disposal and even temporary storage within their boundaries? One reason is that adverse experiences with other federal and private projects involving hazardous substances have made states wary of possible future problems from nuclear waste facilities. Citizens and state and local officials want assurances that the facilities will be properly constructed and operated, and that they will pose no significant risks to people or to the environment now or in the future. Some want their states to play no part in disposal or storage under any conditions.

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Western states feel they have long been targeted for hazardous facilities. These states have been the sites for many federally sponsored hazardous activities in the past, including uranium mining, milling, and tailings disposal; nerve gas production, testing, and storage; and atomic bomb testing. Often, these remote locations were selected to minimize risk to the population at large. But as one Westerner put it, "The government has used the wide open spaces as a dumping ground for almost four decades and inflicted a lot of wounds on us. Well, we've just had enough." On the other hand, some people living near potential sites welcome a nuclear waste repository or storage facility for the economic benefits they hope it will bring.

Both the Nuclear Waste Policy Act of 1982 and Nuclear Waste Policy Amendments Act of 1987 provide some protection for state and local governments. Yet, by narrowing site investigations to Yucca Mountain largely through a political rather than a technical process, Congress also set the stage for confrontation between the state of Nevada and the federal government.

Nevada has refused to discuss entering into a benefits agreement, which under the Nuclear Waste Policy Amendments Act would require the state to waive its right to disapprove the site. The state of Nevada and certain affected localities are receiving grants from DOE to assist them in independent oversight of the program, reviewing the department's work, assessing potential impacts, providing information to Nevada residents, and monitoring, evaluating, and commenting on site characterization activities.

No legislation can guarantee agreement between states and the federal government. Tension is inevitable since state, local, and federal governments have different responsibilities and often different goals.

RADIOACTIVE WASTE ISSUES

IN INDIAN COUNTRY

The participation of Indian tribes in feasibility studies for the monitored retrievable storage facility for spent nuclear fuel surprised many people who questioned tribal involvement in something they considered so alien to the tribal experience. However, the MRS study is not the first aspect of nuclear energy and radioactive waste in which Indian tribes have played a role. They have been intimately involved in or affected by nuclear energy and radioactive waste since the very beginning of the atomic era. The Trinity test site, the site of the first human-made nuclear explosion, is not far from the home of the Mescalero Apaches, one of the tribes now studying the MRS. The uranium for nuclear bombs was enriched at Hanford on lands ceded by the Yakima Indian Nation and adjacent to lands in which the Nez Perce Tribe and Confederated Tribes of the Umatilla Indian Reservation have treaty interests. Some of the uranium used to build our nation's nuclear stockpile, fuel ships and submarines of the U.S. Navy, and power the commercial reactors came from mines on land of the Navajo Nation, the Spokane Tribe, and the Pueblo of Laguna.

By the late 1970s and early 1980s, it became apparent that nuclear power was not going to enjoy the kind of expansion that utility and governmental proponents had anticipated. As interest in the exploration and development of tribal uranium resources waned, and as uranium mining and milling in Indian country and in the United States generally ground to a halt, the dark legacy of such exploration and development manifested itself in abandoned and unreclaimed mines, in mine tailings and tailings ponds throughout Indian country, and in increased numbers of Indian uranium miners sick and dying of cancer.

(continued)

Also during the 1970s and early 1980s, the extensive contamination of the enormous nuclear weapons complex came to light. Awareness of this environmental problem and the end of the Cold War changed DOE's mission from building atomic weapons to cleaning up the weapons complex.

Indian tribes today are affected by these changes in our national defense posture and by changes in the energy mix. Following are current examples of tribal involvement in radioactive waste management.

Uranium mining impacts. Uranium mining on Navajo land was conducted in a less-than-safe manner that increased miners' exposure to radioactivity and led to a

higher-than-normal incidence of cancer and lung disease among the miners. Federal legislation to compensate the miners and their families was recently enacted. The Spokane Tribe today is faced with an enormous unreclaimed mine and a large tailings pond that pose a threat to the water systems in the region. In general, exploratory digs on Navajo, Pine Ridge, and other Indian reservations have not been reclaimed, and they present health and safety as well as environmental problems.

Transportation of wastes through Indian lands. Indian tribes have regulatory authority on their lands. Spent nuclear fuel and wastes generated by the cleanup of the nuclear weapons complex are and will continue to be transported through Indian lands. This transport requires tribes to develop and implement transportation, emergency response, and heal-h and safety programs. The Shoshone-Bannock Tribes in Idaho, the Confederated Tribes of the Umatilla Indian Reservation in Oregon, and the Acoma Pueblo in New Mexico are among those tribes that have developed some emergency response capability.

Tribal treaty rights on lands occupied by the nuclear weapons complex. Tribes in the Pacific Northwest and in Nevada have or claim treaty rights---including hunting, gathering, and access for religious purposes---on lands currently occupied by the DOE weapons complex. With DOE financial assistance, the Yakima Indian Nation, the Confederated Tribes of the Umati!la Indian Reservation, and the Nez Perce Tribe are involved in the cleanup of the radioactive contamination and other contamination at Hanford.

Tribal sovereignty issues. The question of tribal sovereignty has arisen in the context of the MRS studies by Indian tribes. Even when the underlying concern is environmental protection, health, safety, or the belief that temporary custody of spent nuclear fuel by Indian tribes is somehow contrary to Indian values, the argument generally focuses on whether or not tribal sovereignty should extend to tribal involvement in radioactive waste management.

Transportation issues also have jurisdictional implications. Radiological emergency response capability is extraordinarily expensive to put into place and to maintain. Regional intergovernmental approaches to emergency response planning and program development are encouraged by federal agencies and by the practical realities of the limited financial resources available for building state and tribal capabilities. Unlike states, many tribes lack basic emergency response capabilities and, therefore, will need to enter into regional or local cooperative services

arrangements or obtain the funding and technical assistance needed to develop the ability to respond to emergencies. Routing decisions, reciprocity in vehicle inspections, and development of driver standards all have jurisdictional and intergovernmental implications.

--Mervyn L. Tano
Council of Energy Resource Tribes

Other Federal Responsibilities

The Nuclear Waste Policy Act of 1982 established the Office of Civilian Radioactive WasteManagement, within DOE, to implement the act, and also required that DOE assess alternative ways of managing the civilian waste management program. In 1984, a committee appointed by the Secretary of Energy recommended that an independent, federally chartered corporation be set up to manage the civilian nuclear waste program. However, an internal DOE review committee rejected that proposal and the Secretary of Energy concluded that the present structure (the DOE Office of Civilian Radioactive Waste Management) should be retained, at least through the siting and licensing stages.

The act gave DOE two other responsibilities: to develop transportation and interim storage plans and to make a final recommendation about whether defense waste should be disposed of in civilian repositories. In April 1985, President Reagan accepted DOE's recommendation to dispose of defense waste in civilian repositories, making such waste subject to NRC requirements.

Waste Fund

The Nuclear Waste Fund, provided for in the Nuclear Waste Policy Act of 1982, is supported by user fees intended to underwrite fully the costs of the DOE civilian radioactive waste management program mandated in the legislation. In exchange for these payments from utilities, the government was required to enter into contracts with the owners and generators of high-level waste to begin accepting waste from utilities for disposal by January 31, 1998.

Based on the assumption that consumers of electrical power generated by nuclear energy should bear waste disposal costs, the fund assesses two kinds of fees: (1) a one-time charge for commercial high-level waste or spent fuel in existence before April 1983 and (2) an adjustable fee, initially one mill (.1 of a cent) per kilowatt hour, levied on electricity generated by nuclear reactors after April 1983. This fee is subject to annual review and adjustments to ensure that it covers all costs. Despite concern by the General Accounting Office and others that the I mill is inadequate, DOE has not recommended an increased fee.

By mid-1992, the fund had received a total of $7 billion in fees and interest. The fund is expected to receive annually an additional $600 million from fees (the exact amount will depend on how much electricity nuclear power plants sell to consumers) and $200 million from interest. This money is kept in the U.S. Treasury and cannot be used for other projects. However, Congress must appropriate funds in the federal budget before they can be used. Approximately $3.3 billion has been spent to date. In 1992, DOE estimated that site characterization alone will cost more than $6.5 billion dollars to complete.

WHAT OTHER COUNTRIES ARE DOING

At the start of 1992, 417 nuclear power reactors were operating in 31 countries and were producing 17 pergent of the world's electricity. Nearly all of these countries have waste management programs. Although situations vary from country to country, most waste management programs for high-level waste assume that spent fuel will be reprocessed and that the resulting high-level waste will be vitrified into glass and then disposed of in a deep geologic repository. To date, no permanent disposal of high-level waste has taken place in any country. Most countries face political opposition to siting high-level waste facilities; as a consequence, some nations are only researching disposal alternatives and are contracting with other countries for reprocessing services. Standard processes for disposal of low-level waste range from shallow land burial to underground disposal in played-out mines or in near-surface or deep repositories especially constructed for the purpose.

(Continued)

Cooperative International Research Programs

The Nuclear Energy Agency (NEA) is a 23-member agency of the Organization for Economic Cooperation and Development (OECD). The International Atomic Energy Agency (IAEA) is a 113-member independent organization under the aegis of the United Nations. These two agencies coordinate multinational research programs. The NEA facilitates the exchange of information on nuclear waste issues, conducts and sponsors international research and development projects (focusing particularly on performance and safety assessment), and coordinates *in situ* research, site investigations, and underground demonstration projects by its members. The IAEA programs in which the United States participates concentrate

on radioactive waste safety standards, safeguards for spent fuel storage and handling, and transportation regulations.

The United States has also signed bilateral agreements to undertake research on nuclear waste management with each of the following countries: Belgium, Canada, the Commission of the European Communities, France, Germany, Japan, the former Soviet Union, Spain, Sweden, Switzerland, and the United Kingdom.

Figure 12. High-level waste burial program in other countries. *Source:* adapted from "Nuclear Waste: The Problem that Won't Go Away. *Worldwatch Institute,* December 1991, pp. 24-25.

Country	*Earliest Planned Year*	*Status of Program*
Belgium	2020	Underground laboratory in clay at Mol.
Canada	2025	Independent commission conducting four-year study of government plan to bury irradiated fuel in granite at yet-to-be-identified site.
China	none announced	irradiated fuel to be reprocessed; Gobi desert sites under investigation
Finland	2020	Field studies being conducted; final site selection due in 2000.
France	2010	Two sites to be selected and studied; final site not to be selected until 2006.
Germany	2008	Gorleben salt dome sole site to be studied.
India	2010	Irradiated fuel to be reprocessed, waste stored for twenty years, then buried in yet-to-be-identified granite site.
Italy	2040	Irradiated fuel to be reprocessed and waste stored for 50--60 years before burial in clay or granite.
Japan	2020	Limited site studies. Cooperative program with China to build underground research facility.
Netherlands	2040	Interim storage of reprocessing

		waste for 50-100 years before eventual burial, possibly sub-seabed or in another country.
Russia	none announced	Current Russian program uncertain.
Spain	2020	Burial in unidentified clay, granite, or salt formation.
Sweden	2020	Granite site to be selected in 1997; evaluation studies under way at Aspo site near Oskarshamn nuclear complex.
Switzerland	2020	Burial in granite or sedimentary formation at yet-to-be identified site.
United States	2010	Yucca Mountain, Nevada, site to be studied, and if approved, receive 70,000 tons of waste.
United Kingdom	2030	Fifty-year storage approved in 1982; explore options including sub-seabed burial.

Explanations of Spent Nuclear Fuel Terms and Issues

PRELIMINARY DOCUMENT

airborne potential of SNF: 4) **It's a myth** is that radioactive materials or radiation from the storage site could somehow affect people miles away. 5) A worker could safely work within arms reach of one storage cask for eight hours per day, or safely live 24 hours per day at about 80 feet from the whole array of 4,000 casks. 6) Actually they will be kept a much larger distance away, behind additional shielding. Workers will wear a radiation monitoring badge. At Pigeon Spur, workers will never occupy the storage field. Work in the filed will be done with remote controls. **alternative power** sources are coal power plants or hydroelectric electric generation. Nether coal power or hydroelectric generation can expand. Nuclear power is the source of energy for future expansion needs.

atomic bomb fallout: There is no fallout from spent nuclear fuel (SNF). SNF cannot become airborn. 36) It is important that SNF be understood and be dealt with fairly. 37) In Utah SNF is confused with atomic bomb fallout because both are nuclear terms.

Bureau of Land Management, (BLM) is responsible for the balanced management of the public lands (300 million acres) and resources and their various values so that they are considered in a combination that will best serve the needs of the American people. Management is based upon the principles of multiple use and sustained yield, a combination of uses that takes into account the long term needs of future generations for renewable and non-renewable resources. These resources include recreation, range, timber, minerals, watershed, fish and wildlife, wilderness and natural, scenic, scientific and cultural values.

chest X-ray is an amount of radiation dosage that can be compared to situations around SNF. Radiation exposure during a cross county flight is another comparison.

concrete casks: SNF is stored in concrete casks having walls that are 27" thick. The casks stand vertical. There is a three inch (3") wide air passage between the storage canister and the concrete casks. At Pigeon Spur each cask will be examined monthly for cracks and imperfections. A canister and cask combination will weigh 130 tons.

concrete storage pads support four (4) casks with canisters. The pads are three feet thick and thirty feet square. Each pad will provide storage support for four (4) SNF storage canisters, one each being inside a concrete casks. Casks are not anchored. In an earthquake the cask may slide on the surface of the pad. This freedom to slide prevents an overturning force.

convection air cool SNF casks being stored. At Pigeon Spur cooling air temperature is monitored daily. There is no cooling fan only natural air rise convection. A rise in cooling air temperature is a sign of cooling air blockage. Remotely operating cleaning equipment will be used to clean air passages.

dosage rate of radiation in the proximity of SNF in storage:

earthquake: will not damage SNF canisters in storage casks in the storage field. Storage casks are not anchored down so that it is not anticipated side movement of the earth will cause a cask to topal. If there is substantial horizontal earth movement casks might move sideways.

fallout of nuclear material does not happen with SNF: Spent nuclear fuel (SNF) is in the form of pellets which are sealed inside of fuel rods. The SNF pellets are are in the shape of little cylinders approximately 3/8 inches in diameter and 3/4 inches long. Fuel rods are made of zirconium are around ½ inch in diameter and twelve (12') feet long. Fuel rods are assembled in racks making up a bundles. Many bundles are stored in one storage cylinder. Storage cylinders are around five feet in diameter and fourteen (14") feet long. Storage cylinders normally stand vertical. Storage cylinders loaded with SNF are sealed welded closed. The void space inside a storage canister is charged with inert helium gas. No oxidation or corrosion can occur without an oxygen atmosphere. No oxidation can occur inside a canister.

fire: cannot damage SNF in storage. There is nothing in a SNF storage field that will burn.

global warming is being attributed to burning of fossil fuels: 11) An environmental issue of great concern is that any increase in the burning of fossil fuels will further accelerate global warming. 12) Nuclear energy is the only option that can provide clean, non-fossil energy in the quantity and price to **slow down global warming**.

helium gas is used to charge to void inside a storage canister around the SNF rods. No oxidation or corrosion can occur without an oxygen atmosphere. In the Pigeon Spur SNF storage facility canister internal pressure of the helium will be check every six months.

Kilimanjaro, its ice caps are now half gone due to global warming. In less than another century, the ice caps of Africa will be totally gone. Not resolving the SNF issue is obstructing nuclear energy replacement of fossile fuel burning which would slow down global warming.

leakage of SNF from storage canister: 7) Leakage from a canister is a **highly exaggerated idea**. 8) The fuel pellets themselves are a ceramic material, uranium dioxide, resembling hard rock. 9) They are in stainless tubes, welded shut, and stored inside a sealed stainless steel canister with walls half an inch thick, all placed in a reinforced concrete cocoon with walls over two feet thick. 10) The spent fuel is not a gas or liquid, and the pellets could not escape unless the canister were attacked with heavy military weaponry in an act of war.

metric ton, one is 2,200 pounds or 1.1 U.S. tons.

nuclear power, increasing world dependency: 13) In the United States 104 nuclear power plants supply 22 % of the country's electricity. 14) In the next twenty years our demand for electricity will increase 60%. 15) This new electric need cannot be supplied from new coal powered plants because of global warming. 16) Hydro- electric generation is not an alternative, where existing dams are being threatened with removal. 17) The only reasonable source for this

additional electric energy is nuclear power, and it is stymied because of the SNF storage issue. 18) It is critical that the nuclear power industry be allowed its SNF storage, as was provided by law when the plants first went into operation; otherwise, existing power plants cannot continue operating and new nuclear plants cannot be built. 19) Our nation should today be building 200 new nuclear power plants, possibly including some in Utah. 20)This is why I am working to provide SNF storage.

Nuclear Regulatory Commission, (NRC) regulates medical, academic and commercial uses of nuclear materials to protect public health and safety and the environment and to ensure the common defense, and security. The agency issues licenses for nuclear power plants, other types of commercial and research nuclear reactors, the production and use of reactor fuel, and the processing and use of radioactive material produced in reactors. The NRC also certifies packages for the transportation of nuclear materials and regulates the shipment of the materials and the disposal of radioactive wastes.

perception: 41) Peterson with Pigeon Spur has intervened into the licensing process of NRC Docket No. 72-22 (PFS) because of the misconceptions being propagated which may affect the licensing of NRC Docket No. 72-23 (Pigeon Spur). 42) Peterson has petitioned to see Utah's leaders' perception of SNF storage in its reality, unbiased by wrong and misleading statements made about SNF.

plutonium destruction of weapons materials: 26) Another necessity of reprocessing SNF is that it provides the only effective way to permanently rid ourselves of plutonium removed from atomic weapons. 27) Plutonium can be used for making mixed oxide (MOX) fuel in reprocessed SNF rods, which can then be consumed for needed energy. 28) Our country has a joint agreement with Russia to destroy many of the nuclear weapons, which is not being fully honored thus far. 29) Reprocessing can thus help create a more bomb-free world. Is it not "morally wrong" to fail in this regard?

plutonium from nuclear weapons needs to be consumed as nuclear fuel:

plutonium, in nuclear fuel: Nuclear power plant reactors are not breeder reactors, but they are converters. In operation, ever more plutonium is being consumed for fuel. Power is derived by Eystine's mass conversion to energy formula E = MC^2, or energy = mass times the speed of light squared. In a power reactor some of the U238 uranimum is converted to U239 plutonium. About the time when SNF is removed from service around 40% of the energy is being made from U239 converted from U238.

radiation, exposure, potential dosage : 1) The primary public concern with storage of spent nuclear fuel (SNF) is safety. 2) Yet recent newspaper guest editorials show convincingly that a person living next to the busiest route in the country cannot accumulate a harmful dose of radiation even by standing within 10 feet while all the SNF in the country rolls past. 3) The myth that every person within a half mile receives harmful doses is a **serious hoax**.

radiation from SNF

rail-road shipping of SNF

reprocessing of SNF: 21) The congress is committed to doing permanent burial in Yucca Mountain, but scientists recognize that SNF contains 92% unused U238 and other useable isotopes. 22) Burying SNF would be a waste of 95% of our nation's nuclear energy reserves. 23) **Temporary storage of SNF, with eventual future reprocessing** is the solution I am championing. 24) This would simplify the waste storage problem by reducing the needed storage time from 10,000 years down to 600 years. 25) Although in 1981 President Reagan lifted President Carter's ban against reprocessing, the storage issue and the economic uncertainties in the industry have continued to discourage it.

shipping cask are used to encapsulate SNF storage canisters during shipping. A canister loaded shipping cask will weigh around eighty (80) tons.

spent nuclear fuel (SNF):- 95% U238 which can be reprocessed in a breeder reactor making a portion into U239 which is fissionable fuel.

two Utah sites are proposed for storage of SNF: 30) For a decade **two groups** have been developing sites for storage of SNF--**Private Fuel Storage** (PFS) on the Skull Valley Band of Goshute Indian reservation in Tooele County, Utah, and the **Pigeon Spur** facility adjacent to the Southern Pacific railroad in Box-Elder County. 31) Pigeon Spur is 12 miles east of the Nevada-Utah border and 45 miles south of the Idaho-Utah border. 32) Both storage projects were started during the time of the Nuclear Waste Negotiator David Leroy. 33) With President Clinton entering office, Leroy was replaced by Richard Stallings. 34) Note that the Uniform Building Handbook rates regions in the U.S. for lifetimes of concrete, and the central west, Utah through Colorado, rates best in the nation because of temperature and humidity, contributing to the desirability of storage sites in Utah.

waste is what SNF is not: 38) SNF is also erroneously called waste; even the DOE and NRC often make this mistake. 39) DOE/EM -0266, page 24, says, "spent fuel is not categorized as waste. 40) "SNF contains 95% of the energy it had before it was first put into service; it just needs to be reprocessed, using technology developed at INEEL in Idaho.

Yucca Mountain proposed permanent burial site. SNF contains unused fuel. SNF needs to be reprocessed and reused.

WDP file: D:\P\NUC\board\Steve\explain
Aug 26, 2000

Tuesday, August 22, 2000

DeseretNews.com
Utah News

Mayor speaks out against N-dump

Residents at final hearings make opposition clear

By Angie Welling
Deseret News staff writer

Republican Gov. Mike Leavitt and Democratic state Sen. Scott Howell have already voiced their opposition to it.

Environmental groups and protesters have marched against it.

Now, at a public hearing about the placement of a high-level nuclear waste dump on Goshute tribal lands in Tooele County, Salt Lake Mayor Rocky Anderson finally had his say.

Anderson cited health and financial risks, the unwillingness of Eastern utilities to pay for handling of their own waste products, and an exploitation of the poverty-stricken Goshutes, among other reasons for his opposition.

"For all these reasons, I vigorously oppose the development of the proposed high-level waste storage facility," Anderson said.

Two meetings Monday offered the public its last chance to voice opinions before the U.S. Nuclear Regulatory Commission decides whether to allow Private Fuel Storage (PFS) to store 40,000 metric tons of spent nuclear waste at an 800-plus acre facility in Skull Valley, 40 miles west of Salt Lake City.

Monday's hearing was added after opponents at last month's public hearings urged the commission to hold additional ones.

The proposal has divided the Goshute tribe's 125 members. Goshute Chairman Leon Bear signed a lease with PFS in 1997, contending it will help bring in revenue and jobs to the impoverished tribe. Yet Sammy Blackbear, one of only about two dozen Goshutes still living on the reservation, has balked at the project.

Leavitt and other state leaders have fought it, too. And a bipartisan group, Citizens Against Radioactive Waste in Utah, has recently organized to oppose it.

The tone of Monday's meeting was clear: Citizens want the waste to stay where it was generated.

"What a great idea," said Katilin Backlund of the grass-roots organization Citizen Alert. "How about constructing individual spent fuel storage on site?" Backlund's statement was met with nodding heads and applause.

Backlund said transporting the radioactive material, which would come from as far east as New York and as far south as Florida, puts the 53 million Americans along the rail line at risk.

That's not true, said the commission's Susan Frant Shankman, who lives just 150 feet from the proposed rail line in Maryland.

In 30 years and 1,300 shipments of transporting radioactive waste, Shankman said there has never been an accidental release of the material. That's a record that should speak for itself, Shankman said.

And, in what was definitely the minority Monday, engineer Bill Peterson agreed with Shankman.

"What we're shipping here is a whole lot safer than a rocket motor," Peterson said. "And we never had meetings like this for those."

Peterson, who has worked in the aerospace and power industries for a combined 40 years, said the public doesn't completely understand the process of storing spent fuel.

The waste is a solid material and is stored inside one-half inch stainless steel fuel rods inside a vessel which is sealed with helium. There is no possible way for the material to escape, Peterson said.

"Nothing is getting out," Peterson said. "People are unwarrantly scared."

Shankman said it's natural for people to be concerned when dealing with radioactive waste. However, they need to realize how harmful the waste actually is.

If a person stood at the site's boundary 24 hours a day, seven days a week for an entire year, they would receive approximately half as much radiation as a chest X-ray emits. And since the closest person is 800 acres away, she said, "The nearest neighbor would get significantly less than that."

But some people still aren't buying it.

In the midst of politicians, doctors, scientists and real estate agents, Jani Iwamoto attended the hearing simply as a concerned citizen.

"I moved two years ago from the Bay area for a better environment for my children," Iwamoto said, adding that the children are exactly who would be hurt if the storage facility is allowed to move into Utah.

"What a great thing to show for the Olympics," Iwamoto said. "A place where the environmental beauty is really a cesspool."

The commission will accept public comment until Sept. 21, a final environmental impact statement is expected in early 2001 and the commission will approve or deny the site's 20-year license in January 2002.

E-MAIL: awelling@desnews.com

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The Salt Lake Tribune OPINION
Sunday, August 27, 2000

Nuclear Storage Would Benefit Utah

BY SCOTT D. NORTHARD

I commend Jeri Roos and Duane Horton ('Temporary' Storage of Nuclear Waste Could Be a Permanent Problem for Utah, Opinion, July 30) for being among the growing number of Utah citizens who are taking an active interest in the proposal to temporarily store spent nuclear fuel on the Skull Valley Goshute Reservation. Even though they are opposed to our proposal, we welcome the opportunity for a dialogue with concerned citizens of Utah. I would like to address some inaccurate statements in their opinion piece.

"Storing someone else's nuclear waste will have no significant benefits to Utah or its residents." If licensed and operated for the maximum 40 years of an extended license period, the project is worth more than $3 billion, much of which would be spent in Utah for goods, services, taxes and fees.

"As [a limited liability company], each member utility company that forms PFS is not individually liable, nor will its assets be individually at risk." In fact, each utility company that stores fuel at PFS retains ownership and liability for its fuel while it is transported and as long as it is stored in Utah. Each company is covered by the Price Anderson Act, which requires private insurance, as well as industry pool insurance, to cover any cleanup costs from a transportation accident. Each company must pay into an external decommissioning fund, prior to shipping any fuel to PFS, so that sufficient funds will be available to remove the fuel and decommission the site. In addition, PFS will carry both off-site liability insurance and nuclear property insurance sufficient to clean up on-site or off-site accident damage even though such damage is extremely unlikely.

PFS's motive for temporary storage is simple: to provide a centralized, economical option for interim storage only until the federal government is ready to take the spent fuel. As a holder of a federal license to store spent nuclear fuel, PFS could not disappear without fully removing the spent fuel and decommissioning the site.

"Unlike federal shipment of nuclear waste, private shipments are not required to meet the strict standards demanded by the Department of Energy." In fact, PFS is governed by the same NRC and Department of Transportation regulations that apply to government shipments. And PFS, which is just as concerned about the public's perception of risk as it is the experts' assessment of risk, will go beyond the regulations to ensure safety.

For example, though not required to move spent fuel on separate, dedicated trains, PFS has committed to do so. Each train will be followed by an emergency-response team prepared to arrive and take charge of any incident within minutes. Thanks to the robust design of the transportation casks, there is less risk in spent-fuel transportation than in transporting chemicals and other hazardous materials.

"Contrary to statements by nuclear industry supporters, the casks are not infallible." While those of us in the industry frequently explain the robust nature of the casks and why the possibility of a breached canister is extremely remote, no one has ever said the casks are infallible. Yes, there have been manufacturing defects ---- detected in rigorous quality-assurance

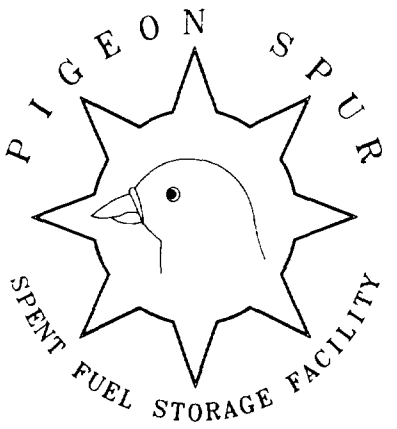
inspections. Yes, there have been rare problems during the welding of canister lids ---- again caught and corrected by plant quality-assurance programs and investigated by NRC inspectors. There is no human endeavor that is infallible; that is why most industries, and especially the nuclear industry, have such rigorous quality-assurance programs. The important thing is that in none of these incidents was there an injury, a fatality, nor anyone in danger of radiation exposure.

I share Ms. Roos' and Mr. Horton's belief that the storage casks will not be safe for 10,000 years. That is not the intended life of the casks, nor the temporary PFS facility. The storage system ---- stainless-steel canisters, transportation and storage casks ---- has been certified by the NRC to do the job for which it was intended: transportation and storage for 20-40 years under even the most adverse conditions, including earthquakes, fires, immersion in water, drops or impacts.

Finally, Ms. Roos and Mr. Horton "fear that once [spent-fuel containers] are moved to Utah, it will undoubtedly be the last move and storage will become permanent." In fact, the federal government, by law, has the responsibility to permanently store or dispose of spent fuel. The cost of interim storage is the industry's motivation to close the PFS facility just as quickly as possible and move it to a federal facility.

If those opposed to the PFS facility, including Gov. Mike Leavitt, would spend their time and energy encouraging the federal government to expedite the authorization and licensing of the federal repository, the PFS facility would be needed for less time and we would all have what we really need, a permanent place to safely store the spent fuel.

Scott D. Northard is the project manager for Private Fuel Storage.



P&A Engineers

William D. (Bill) Peterson P.E.
4010 Cumberland Road
Holladay, Utah 84124

ENGINEERS FOR
Box Elder Fuel Storage Initiative
NUCLEAR REGULATORY COMMISSION
Docket No. 72-23

August 10, 2000

Utah Public Leader
State of Utah

Subject: Energy, Electric Power,

Dear Sir,

1) The primary public concern with storage of spent nuclear fuel (SNF) is safety. 2) Yet recent newspaper guest editorials show convincingly that a person living next to the busiest route in the country cannot accumulate a harmful dose of radiation even by standing within 10 feet while all the SNF in the country rolls past. 3) The myth that every person within a half mile receives harmful doses is a **serious hoax**.

4) **Another myth** is that radioactive materials or radiation from the storage site could somehow affect people miles away. 5) A worker could safely work within arms reach of one storage cask for eight hours per day, or safely live 24 hours per day at about 80 feet from the whole array of 4,000 casks. 6) Actually they will be kept a much larger distance away, behind additional shielding, and wear a radiation monitoring badge.

7) Leakage from a cask is also a **highly exaggerated idea**. 8) The fuel pellets themselves are a ceramic material, uranium dioxide, resembling hard rock. 9) They are in stainless tubes,

welded shut, and stored inside a sealed stainless steel canister with walls half an inch thick, all placed in a reinforced concrete cocoon with walls over two feet thick. 10) The spent fuel is not a gas or liquid, and the pellets could not escape unless the canister were attacked with heavy military weaponry in an act of war.

11) An environmental issue of great concern is that any increase in the burning of fossil fuels will further accelerate global warming. 12) Nuclear energy is the only option that can provide clean, non-fossil energy in the quantity and price to **slow down global warming**.

13) In the United States 104 nuclear power plants supply 22 % of the country's electricity. 14) In the next twenty years our demand for electricity will increase 60%. 15) This new electric need cannot be supplied from new coal powered plants because of global warming. 16) Hydro- electric generation is not an alternative, where existing dams are being threatened with removal. 17) The only reasonable source for this additional electric energy is nuclear power, and it is stymied because of the SNF storage issue. 18) It is critical that the nuclear power industry be allowed its SNF storage, as was provided by law when the plants first went into operation; otherwise, existing power plants cannot continue operating and new nuclear plants cannot be built. 19) Our nation should today be building 200 new nuclear power plants, possibly including some in Utah. 20)This is why I am working to provide SNF storage.

21) The congress is committed to doing permanent burial in Yucca Mountain, but scientists recognize that SNF contains 92% unused U238 and other useable isotopes. 22) Burying SNF would be a waste of 95% of our nation's nuclear energy reserves. 23) **Temporary storage of SNF, with eventual future reprocessing** is the solution I am championing. 24) This would simplify the waste storage problem by reducing the needed storage time from 10,000 years down to 600 years. 25) Although in 1981 President Reagan lifted President Carter's ban against reprocessing, the storage issue and the economic uncertainties in the industry have continued to discourage it.

26) Another necessity of reprocessing SNF is that it provides the only effective way to permanently rid ourselves of plutonium removed from atomic weapons. 27) Plutonium can be used for making mixed oxide (MOX) fuel in reprocessed SNF rods, which can then be consumed for needed energy. 28) Our country has a joint agreement with Russia to destroy many of the nuclear weapons, which is not being fully honored thus far. 29) Reprocessing can thus help create a more bomb-free world. Is it not "morally wrong" to fail in this regard?

30) For a decade **two groups** have been developing sites for storage of SNF--**Private Fuel Storage** (PFS) on the Skull Valley Band of Goshute Indian reservation in Tooele County, Utah, and the **Pigeon Spur** facility adjacent to the Southern Pacific railroad in Box-Elder County. 31) Pigeon Spur is 12 miles east of the Nevada-Utah border and 45 miles south of the Idaho-Utah border. 32) Both storage projects were started during the time of the Nuclear Waste Negotiator David Leroy. 33) With President Clinton entering office, Leroy was replaced by Richard Stallings. 34) Note that the Uniform Building Handbook rates regions in the U.S. for lifetimes of concrete, and the central west, Utah through Colorado, rates best in the nation because of temperature and humidity, contributing to the desirability of storage sites in Utah.

35) Storage of SNF is an **extremely important issue**. 36) It is important that it be understood and be dealt with fairly. 37) In Utah SNF is confused with atomic bomb fallout because both are nuclear terms. 38) SNF is also erroneously called waste; even the DOE and NRC often make this mistake. 39) DOE/EM -0266, page 24, says, "spent fuel is not categorized as waste. 40) "SNF contains 95% of the energy it had before it was first put into service; it just needs to be reprocessed, using technology developed at INEEL in Idaho.

41) I have intervened into the licensing process of NRC Docket No. 72-22 (PFS) because of the misconceptions being propagated which may affect the licensing of NRC Docket No. 72-23 (Pigeon Spur). 42) I have petitioned to see Utah's leaders' perception of SNF storage in its reality, unbiased by wrong and misleading statements made about SNF.

43) We want to know your concerns on this issue. 44) No stone should be left unturned in designing a safe and sensible operation. 45) Please read this letter and tell us where you may have a differing opinion or understanding. 46) We will make a record of this inquiry with your reply and we will assemble this data into a report that will be filed with the NRC and seen in the licensing application of NRC Docket No. 72-22, which is the PFS facility on the Goshute Indian Reservation. 47) We will send you a copy of this report. 48) In addition we will personally respond to any concerns that you express.

49) Because of requests, the NRC is holding an additional hearing on August 21st on the Environmental Impact Statement (EIS) of Docket No. 72-22. 50) Comments will be heard by the NRC 2:00 pm - 4:00 pm and 6:00 pm - 9:00 pm in the Ballroom of the Little America Hotel. 51) Inquiries on the EIS should address issues pertinent to the EIS, but you are welcome to see our staff there at the NRC hearing and have them step aside and answer any question.

Sincerely yours,

William D. (Bill) Peterson, M.S., P.E.
P&A Engineers,
Pigeon Spur Fuel Storage Alternative

Enclosure: Certificate of Delivery

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

G. Paul Bollwerk, III, Chairman
Dr. Jerry R. Kline
Dr. Peter S. Lam

In the Matter of	Docket No. 72-22-ISFSI
PRIVATE FUEL STORAGE, L.L.C.	ASLBP No. 97-732-02-ISFSI
(Independent Spent Fuel Storage Installation)	August 11, 2000

CERTIFICATE OF DELIVERY

I hereby certify that a copy of the Intervener's letter to inform was delivered to: _____ to him / her personally or his office at: _____ by personal delivery, deposit in the U.S. mail, first class, postage prepaid, or by E-mail, this _____ Day of August,

2000.

SPENT NUCLEAR FUEL MOVED SAFELY

(Published in the Salt Lake Tribune, Sunday, August 13, 2000)

The pioneers didn't know it, but, like us, they lived in an age when all of their energy supplies ultimately came from nuclear reactions, mainly from fusion reactions deep in the heart of the sun. From this came the sunshine to make hay and grow crops, also the energy for fossil fuels, wind power, hydro power, and, in our day, solar cells. Geothermal power comes from radioactive elements in the earth itself, as does energy for volcanoes and earthquakes. Without nuclear energy, the earth would be frozen, dark and lifeless.

What distinguishes the modern "nuclear age" is that we know where our energy comes from and can go directly to the source. Knowledge gives us the key to the storehouse, so we need not continue to disturb fossil fuels and bring on more serious global warming. Nuclear power is the only non-fossil fuel that can supply energy at a price and quantity to reduce global warming.

Two key disagreements between the environmentalists who want to kill the nuclear industry and the scientists who want to save it are: the issues of safely transporting spent nuclear fuel (SNF) and safely storing it for a long enough time. Because the radiation can't be seen or measured by the layman, anti-nuke activists have a huge opportunity to use fear and inflated rhetoric. On the other side, the truth can help, but first must be understood.

To evaluate unfamiliar risks we must compare them to risks which we commonly accept, such as exposure to a chest x-ray (equivalent to 10 milirems) or flying in a commercial airplane for four hours (also 10 milirems). We accept these two risks without question for their benefits.

Another risk we all accept is the normal background radiation, about 360 milirems per year for people living in Utah. About 180 milirems of this is radon gas, which seeps up through the earth into basements, if not well sealed or well ventilated. About 25 to 30 milirems comes from rocks and soil, a similar amount from our own bodies, and about this much from cosmic rays if one lives at sea level. For each mile above sea level, the cosmic ray exposure doubles. Medical radiation adds another 50 milirems of the total.

The exposure when standing one meter (3.3 feet) away from a shipping cask full of spent nuclear fuel is not allowed to be more than 10 milirems per hour, according to Department of Transportation (DOT) regulations. Shielding must be thick enough to guarantee this. So what is the exposure to a person living along the transportation route? Is it enough to endanger people out to a radius of half a mile, as claimed in anti-nuke literature?

The secret here is that the railroad cask goes by at 30 miles per hour, taking only 0.3 seconds to pass. Thus one must watch 12,000 casks go by to get an hour of exposure. Exposure is further reduced by the fact that railroads require a nine foot clearance between the center of the track and the nearest fence. Taking this into account, 19,000 casks would have to pass a person leaning against such a fence to get the equivalent of one chest x-ray. Who has time for that? In the whole country there

are not a fourth of that many casks expected to be shipped, so unless there is a serious accident, no person along even the busiest shipping route could get significant radiation.

The alleged radiation hazard along the shipping routes is a big hoax. If such tiny exposures were dangerous, we should certainly avoid airplane flights, living in brick houses (which contain a few radioactive isotopes), and living thousands of feet above sea level, all of which give thousands of times more radiation exposure than being passed by a few nearby shipping casks full of spent nuclear fuel. And do we care enough to evaluate and take steps to reduce the largest radiation hazard in our lives, radon in our basements?

In past decades 3,000 shipments of spent nuclear fuel have occurred in the U.S. and ten times that number worldwide. No accidents have occurred which released radioactive material or killed anyone, a safety record which is the envy of other industries. Every year about three dozen U.S. citizens are likely to die in coal mining, and many others die of cancer from breathing uranium particles and other carcinogens in the coal smoke. Which is the safe alternative?

Citizens ask why, if SNF can be so safely managed, does it need to be moved? The basic answer is so the industry will not become logjammed. Power plants were built with pools to store SNF for at least five years, allowing most of the radioactivity to decay while shielded by the water, and the SNF rods to be kept cool. After five years, the rods can be stored in air, with concrete barriers to shield workers from radiation. The point is that many power plants are running out of such temporary on-site storage space and will be forced to move some SNF, or shut down their reactors.

A remote, interim storage facility, such as proposed on the Goshute reservation or at Pigeon Spur, near the ghost town of Lucin, would clear the logjam and allow nuclear power plants to be operated without the constant threat of having to shut down. More nuclear plants could be planned and built, providing the only relief in sight from the growing threats of global warming. Anti-nuke protestors fight this with all their energy--not because they want the massive problems that global warming is bringing, but because they want to completely shut down the nuclear power industry, regardless of the costs to the public.

How safe is the interim storage project itself, under normal conditions? Instead of eight inches of stainless steel, the shielding is three feet of reinforced concrete, which reduces the radiation for a person within touching distance to 2.5 milirems per hour. A worker could safely work at that distance eight hours per day, if necessary. In fact, the 130-ton casks would be handled by heavy equipment, rarely requiring workers to be that close to a cask. Other workers or visitors would be further shielded by distance and/or earthen berms, and all would wear radiation badges to verify that their exposure was small. Anyone outside the restricted area would get only minuscule exposure.

Some citizens want assurance that this storage would be temporary. The current plan is to permanently store SNF in Yucca Mountain, which is already 12 years behind schedule. Scientists would prefer not to permanently bury all the energy contained in SNF (92 percent of its uranium), but rather to reprocess it. This would leave the non-fuel parts as waste melted into glass, which would only require storage

for 600 years, not 10,000 years, while the uranium and plutonium parts would be used in new fuel rods for more energy. The waste problem would thus be greatly reduced. Reprocessing would also provide the only known means of actually disposing of plutonium from nuclear weapons, as required by treaty. With either plan, the interim storage would not be permanent. Environmentalists should be able to appreciate this second, more sensible plan; these fuel rods are definitely worth recycling.

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Member, Scientists for Secure Waste Storage

Dr. Steven C. Barrowes has taught physics at several universities and is a member of Scientists for Secure Waste Storage. (U of Utah, LSU in Louisiana, MSU in Mississippi, and ISU in Illinois.)

For more information on Scientists for Secure Waste Storage, You may contact Richard Wilson, Mallinckrodt Prof. of Physics at Harvard, SSWS, at 617-495-3387.

The Salt Lake Tribune
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'Temporary' Storage of Nuclear Waste Could Be a Permanent Problem for Utah
BY JERI ROOS and DUANE HORTON

The proposal by a consortium of nuclear power companies, Private Fuel Storage (PFS), to "safely" move and "temporarily" store 88 million pounds of radioactive waste in Utah's West Desert on the Goshute Indian Reservation is dangerous and unfair to Utah residents. The nuclear waste is currently stored at the power-generating sites, and once moved to Utah it would be "moved again" to a permanent site at some indefinite future date.

Gov. Mike Leavitt has opposed this, saying they would do it "over my dead body." Discussions with residents of the state reveal that most people oppose moving the waste here, but assume that Leavitt will be able to stop it. He isn't all-powerful, and in order to stop the move he needs the assistance of concerned citizens. We would like to share several concerns.

Storing someone else's nuclear waste will have no significant benefits to Utah or its residents. Utah is being asked to accept all the risk involved in this venture. Private Fuel Storage is a limited liability umbrella company with no assets of its own, established by a consortium of eight powerful nuclear power companies from across the nation. As such, each member utility company that forms PFS is not individually liable, nor will its assets be individually at risk if and when the waste is moved to Utah. If moving and storing the waste is so safe, why then did these companies form a shell company isolating themselves from liability should an accident occur. We submit to you that they are not certain themselves that this type of storage is as safe as they would have us believe.

Why is it wise or logical to move radioactive waste from one temporary site to another temporary site? The U.S. General Accounting Office (GAO) has already determined there is sufficient temporary storage capacity at the power plants that generate the waste, and that most of the power plants could expand their on-site storage if they want. Why then are they providing another temporary site? That just doesn't make sense. PFS's preoccupation with "temporarily" storing its nuclear waste in Utah calls its motives into question. Since present on-site storage exists, its billions of dollars would be better spent seeking a permanent solution. Or is there a hidden agenda? Is the "shell" company going to "assume" responsibility, dump its waste in Utah and vanish, leaving Utah taxpayers to deal with any resultant problems -- earthquake damage, leakage, design errors, fires, or unproven technology with the storage casks?

The Nuclear Regulatory Commission is not requiring PFS to demonstrate that it will be able to obtain sufficient funds to build, operate, maintain and close the proposed Goshute facility. The NRC has allowed PFS to label the majority of PFS's financial information to be proprietary and not subject to public scrutiny. Here again, Utahns may be left holding the bag as we were with the Atlas tailings. The Atlas problem resulted because the NRC failed to verify that Atlas had the funds required to clean up the site after uranium processing ended. Atlas declared bankruptcy, and thus dodged responsibility for the cleanup. Are we heading in the same direction by "temporarily" storing someone else's spent uranium?

If storing nuclear waste is as safe as the Nuclear Regulatory Commission and Private Fuel Storage contend, then all eight PFS nuclear power companies should be individually liable to the full amount of the assets of each individual company. Holding each power company liable would ensure that Utahns are not responsible for maintenance and cleanup as in the Atlas incident. These companies are not willing to take that risk. They are going to let us take it so they can walk away from any problem with their assets intact.

Unlike federal shipments of nuclear waste, private shipments are not required to meet

the strict standards demanded by the Department of Energy. PFS is not required to have an assessment for emergency-response needs, local emergency-response training, nor to have sufficient safety and cleanup equipment for radioactive problems in case an incident occurs. In other words, the Nuclear Regulatory Commission has absolved PFS of all responsibility should an accident take place.

The proposed dry-cask storage has only been used for 14 years, and contrary to statements by nuclear industry supporters, the casks are not infallible. These nuclear waste canisters and casks have not been subject to tests. Some of the casks in use today have had numerous problems such as hairline fractures during manufacturing, an explosion due to a chemical reaction during loading of a cask, and cask-weld failures. Contrary to nuclear industry supporters, the casks are not infallible. We do not believe they will be safe for the next 10,000 years -- particularly when stored in the proposed seismically active zone.

Every time those casks are moved, it is very costly and there is a potential for danger and damage to them and to bystanders. We think they should be moved as little as possible. We fear that once they are moved to Utah, it will undoubtedly be the last move and storage will become permanent. These power companies knew there was this problem before they ever started generating nuclear energy. Now they are shoving their problem on us. Forcing their nuclear waste on Utah is neither moral nor honest. Areas that reap the benefits of cheap energy and millions of dollars in taxes from these companies should assume the consequent risks of storing the byproduct. The material should stay where it is until a permanent solution is found.

Jeri Roos, a teacher, and chemical engineer Duane Horton, Ph.D., live in Provo.

w d peterson wrote:

> datacenter@sltrib.com
>
> In an OPINION letter by Scott D. Northard pg AA6 Sunday August 27, 2000 he referrers to an article by Jeri Roos and Duane Horton "Temporary Storage of Waste Could Be a Permanent Problem for Utah" July 30, 2000, I wish to see that article.
>
> Sincerely yours
>
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August 1, 2000

Concerned Citizen
Citizens Against Nuclear Waste in Utah

Subject: Spent Nuclear Fuel Storage (SNF) issues

Dear Concerned Citizen,

Like you, I am concerned about nuclear waste materials. I engineered the moving of the Vitro uranium tailings to Clive, Utah. I have done much work in the nuclear field. I have also done much work in other fields of energy including coal, even making oil from coal. I have worked in the manufacture of Utah rocket motors. In addition to energy and aero-space I have worked in the field of medicine. World wide, every organ held for life - for transplant, shipped from a donor to a recipient does so according to my patented method, or the organ dies. I am a serious engineer. I am a professional engineer. I am seeing the SNF issue.

For ten years two groups have been working to provide for the nation's forty-year demand for a solution for spent nuclear fuel - the Private Fuel Storage Utilities and myself. Until this dilemma is solved, our nation will not have an energy policy, no plans will be made for making new electricity, we will do nothing to reverse the global warming trend, and we cannot destruct and eliminate plutonium from weapons. I am championing the reprocessing of SNF for the above reasons and for its contained 92% U238 uranium which will eventually be used by future generations to make electricity. Permanent burial of SNF is not a responsible solution.

Now, you have come forward expressing your concerns for Utah's temporary storage of SNF. It is a huge issue. I for one will listen to you. Through my intervention in the matter of the NRC v. PFS in its proposed storage of SNF by NRC licence application Docket No. 72-22, you also may enter the legal process of the Nuclear Regulatory licensing of SNF storage.

To establish a common ground, for a starting place to talk, by e-mail on July 25 I sent to you a letter about SNF storage. In my intervention in NRC v. PFS I complained that Utah has very capable people to teach of this matter who should be used instead of nuclear activist Marvin Resnikoff and anti-nuclear provocateur Kevin Kemp. With me, I have Utah's and the Nation's best scientists. We want to see your concerns and answer them. Please see the enclosed documents. Please provide answers to every averment to me and to the people of the list on page 8. From your response your concerns will be seen by the Nuclear Regulatory Commission and the nation's best scientists. Please call me with your questions about this.

Sincerely yours,

William D. (Bill) Peterson, M.S., P.E.
Pigeon Spur, NRC Docket No. 72-23
Ref. PFS, NRC Docket No. 72-22

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UNITED STATES OF AMERICA
BEFORE THE
NUCLEAR REGULATORY COMMISSION

In the matter of the License Application of Private Fuel Storage (PFS) NRC Docket No. 72-22 v State of Utah & Governor, Intervener	MOTION to FIND MISUSE of STATE LAW Enlarge Third Party COMPLAINT for Intervener's use of State Law to deprive Peterson and PSFSF of rights Of Storage of SNF by Federal Law
William D. (Bill) Peterson Pigeon Spur Fuel Storage Facility (PSFSF) NRC Docket No. 72-23 Third Party Intervener & Plaintiff v State of Utah & Governor, And "Citizens Against Nuclear Waste in Utah" Third Party Intervener & Defendant	Adjudications Staff And Judge G. Paul Bollwerk, III, Chairman Judge Dr. Jerry R. Kline Judge Dr. Peter S. Lam

1) Management of spent nuclear fuel (SNF) issue has a history of over four decades of indecision and inaction. 2) About 1987 the US Congress established the office of the "Nuclear Waste Negotiator" within the DOE to find temporary sites for the storage of SNF. 3) The Negotiator's office was established to find some entity that would host storage of SNF. 4) Viable candidates included Indian tribes (Native Americans) because of the independence and sovereignty. 5) William D. Peterson (Peterson) attempted to identify candidate Indian tribes

including the Shoshone - Bannock Indian Tribe near Pocatello, Idaho, the Paiute tribe in Millard county Utah, and the Unita and Ouray, and the Navajo tribes in Utah. 6) Peterson was unable to persuade any Indian tribe to consider SNF storage. 7) However, Peterson did identify a site at the Pigeon Spur on the Southern Pacific Railroad spur in Box Elder County, Utah. 8) A consortium of eastern utilities formed the PFS, LLC and attempted to work with the Mascelero Apache in New Mexico. 9) This failed, 10) but PFS did establish an agreement with the Skull Valley Band of Goshute Indians in Tooele County, Utah. 11) It is Peterson's understanding, that, 12) these two sites were the only sites offered to the Negotiator in the time of his office. 13) It has taken a decade to develop the PFS - Skull Valley, Goshute site and Pigeon Spur site to the point that they have pending license applications before the NRC. 14) These sites must be pursued and successfully completed to meet the mandates of the Nuclear Waste Policy Act and resolve this critical issue of management of SNF.

15) Admittedly, 16) the management of nuclear waste and materials in any form is a challenging issue that has both technical issues and political issues. 17) These nuclear issues stir fear and anger among many US citizens. 18) The Congress probably targeted sovereign Indian lands for a SNF storage site because of the difficult political sensitivity storage of SNF has attained with states and governors.

19) The nuclear issue has a very high profile history in Utah where fallout from atmospheric testing of nuclear weapons impacted many residents. 20) Protecting people from the risks of radiation in Utah has become a very highly political concern, 21) which is paramount in Utah. Nevertheless, 22) the management of nuclear waste is a federal issue, 23) defined and governed by federal law and regulations. 24) Peterson's position is that 25) the only legitimate right that any state Governor can exert in such a federal action is that of insuring the health and safety of his residents and that 26) the Governor's statutory duties are restricted to only these matters in the storage of SNF. Thus, 27) the governor may and should deal with the Nuclear Regulatory Commission (NRC) and the Department of Energy (DOE) only in such health and safety actions. 28) To site SNF storage, 29) these agencies have made concerted efforts to work amicably with state governors and allow them a high degree of freedom. 30) Nevertheless,

Peterson maintains that 31) SNF is a federal matter like the siting of military installations and national parks, and 32) the authority to act and grant approval and licenses for such facilities is solely a federal prerogative. 33) Peterson believes that 34) the Utah Governor's actions in the storage of SNF is politically motivated and is not justifiable on the sole basis of protection of health and safety of Utahns, 35) but is directed as a personal political agenda.

36) It is different when the Federal Government works with a qualified individual (Peterson is a licensed, registered Professional Engineer in the State of Utah) like Peterson for a site for storage of SNF, than when working with an Indian tribe, or a public utility[s], or a State Government, or even a private corporation. 37) The Constitution grants individual citizens like Peterson rights not given to states, businesses, or Indian tribes. 38) In the instance of SNF storage in Utah, 39) Peterson appeals to these rights and laws to engage in his licensed practice and be able to pursue federally approved activities without political constraint. 40) Under NRC Docket No. 72-22 the 41) State of Utah and Governor Michael O. Leavitt must deal with the Nuclear Regulatory Commission (NRC) in regard to the Skull Valley Goshute Indians by a different set of regulations and laws than does the State in dealing with and individual (Peterson) relative to legitimate right to seek storage of SNF a Pigeon Spur, ref NRC Docket No. 72-23. 42) Peterson also has unique claims to his competence, intent and right to seek storage of SNF as evidenced by his U.S. Patent No. 5448604 and others that have been issued to him relative to SNF storage. 43) Peterson asserts his rights to propose SNF storage and is being unlawfully prevented from such by the actions of the Governor.

44) Primacy of storage of SNF resides with the Federal Government and Governor Leavitt must recognize this. 45) The Governor's own State science advisors Suzanne Winters and Danny Bowers have informed Peterson that 46) SNF storage is a not a technical matter for the Governor, but rather a highly sensitive, political issue. 47) Governor Leavitt believes that his political future and electability require that he oppose SNF storage in Utah. Recently, 48) the Governor has admitted the possibility that a 49) storage license may be granted to PFS. 50) But the Governor does not want to sustain this defeat by himself because of his 51) previous guarantees that such siting would not occur. 52) Therefore, the Governor assembled a group called the "Citizens

Against Nuclear Waste in Utah" 53) using the resources of his office and the tax dollars of Utahns 54) to make a final desperate assault against SNF storage in Utah and 55) ease the political embarrassment of the Governor in the event that the license is granted. 56) Now, 57) its not just the Governor and his staff in the State Offices of Utah, but 58) also the group "Citizens Against Nuclear Waste in Utah" 59) who are misinforming the public.

60) The "Citizens Against Nuclear Waste in Utah" hired at taxpayer expense, the anti-nuclear activists, Marvin Resnikoff from New York and Kevin Kemp from Washington D.C. to 61) make frightening, but 62) presumably technical presentations regarding the dangers of SNF. 63) Both these persons are anti-nuclear provocateurs 64) well known both by the nuclear industry and the NRC. 65) Mr. Resnikoff is not a Utah licensed professional Engineer 66) nor is he qualified to give testimony on SNF storage in Utah. 67) Utah has far more qualified people who can do this but 68) the Governor did not seek their opinions because 69) they disagree with his claim that SNF storage is a dangerous activity. Instead, 70) the "Citizens Against Nuclear Waste in Utah" had to seek a nonresident, "hired gun" 71) to misinform the Utah public about SNF. 72) The amount paid Mr. Resnikoff is unknown, but 73) it was a considerable sum that was taxpayer money passed through the "Citizens Against Nuclear Waste in Utah." 74) Mr. Resnikoff and Mr. Kemp did mislead the Utah public. 75) Their presentation was made at a so called "Citizens Against Nuclear Waste in Utah" in a rally at the Salt Lake City Commission Chambers Wednesday, at 7:00 PM, July 26, 2000. Thus, 76) Utah tax money was used to deprive Peterson and PFS of their rights to pursue the storage of SNF according to the Federal laws of 10CFR part 72.

Where 77) Utah has and continues to use State offices and resources to 78) prevent Peterson (and PFS) from doing his work according to his rights in Federal law, 79) Utah is liable to Peterson for real damages.

> Title 42 U.S.C. § 1983 provides that "[e]very person" who acts under color of state law to deprive another of a constitutional right shall be answerable to that person in a suit for damages.

80) In pursuing this challenging work opportunity, 81) Peterson (and PFS) has earnestly attempted

to present his work fairly and honestly. Where 82) Peterson has lacked knowledge in certain technical and legal areas he has sought advice from the best sources available in Utah and the Nation. 83) Peterson claims that 84) Utah has unjustly represented Peterson's work as harmful to the public, the electric utilities, and the NRC. 85) Utah is slandering Peterson's work and 86) harming him by the actions of the Governor.

87) Utah by way of its Governor and the "Citizens Against Nuclear Waste in Utah" has intentionally misinformed the public about risks of transporting and storing SNF. 88) The Governor has intentionally withheld accurate knowledge of the nuclear subject from the public. 89) The "Citizens Against Nuclear Waste in Utah" has used public monies to misinform the public.

90) Governor Leavitt used antinuclear advocates because 91) no responsible nuclear scientist in Utah supports Governor Leavitt's policy that storage of spent fuel is "morally wrong or politically inexpedient". 92) What is "morally wrong" is that 93) not achieving a safe, temporary storage site for SNF while the nation develops a permanent disposal site; 94) not having a realistic energy policy, 95) not allowing adequate electric energy production, 96) not reducing fossil fuel burning to reduce global warming, and 97) not truly eliminating plutonium by consumption as MOX fuel in nuclear reactors.

98) After Utah's unfortunate use of unlawful influence to obtain the 2002 Winter Olympics, 99) one would expect that 100) Utah officials would cease unlawful practices to influence others.

101) Peterson moves for a third party complaint against the Utah group named "Citizens Against Nuclear Waste in Utah" attorney James McConkie II, its representative. 102) Peterson moves that the NRC Board find that its Governor and "Citizens Against Nuclear Waste in Utah" have used their elected offices and violated their fiduciary trust to 103) deprive Peterson of his rights to

engage in his lawful pursuit of seeking storage of SNF in the state of Utah. 104) An accompanying letter to "Citizens Against Nuclear Waste in Utah" supports this motion and serves as memorandum in support of this motion.

Dated this 31st day of July, 2000.

William D. (Bill) Peterson, M.S., P.E.
Third Party Plaintiff, Petitioning Intervener

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In the matter of the License Application of Private Fuel Storage (PFS) NRC Docket No. 72-22 State of Utah & Governor, Intervener	CERTIFICATE OF SERVICE DELIVERY, E-MAIL
William D. (Bill) Peterson Pigeon Spur Fuel Storage Facility (PSFSF) NRC Docket No. 72-23 Third Party Intervener & Plaintiff v State of Utah & Governor, Third Party Intervener & Defendant	Adjudications Staff And Judge G. Paul Bollwerk, III, Chairman Judge Dr. Jerry R. Kline Judge Dr. Peter S. Lam

CERTIFICATE OF SERVICE / DELIVERY

This is to certify that on this day a true and correct copy of the foregoing _____ Motion _____ was sent by electronic mail July ___31st__, 2000 and sent by U. S. Postal service August __1st__, 2000 as shown on the attached list.

Dated this __1st__ day of August, 2000.

_____
William D. (Bill) Peterson

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Office of the Secretary
Attention: Rulemakings and Adjudications Staff
U.S. Nuclear Regulatory Commission e-mail: hearingdocket@nrc.gov
Washington, D.C. 20555-0001 (Original and two copies)

Office of the Commission Appellant
Adjudication

* Adjudicatory File
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July 25, 2000

Concerned Citizen
Citizens Against Nuclear Waste in Utah

Subject: The Cost of not having spent nuclear fuel storage
Spent Nuclear Fuel Storage Alternatives

Dear Concerned Citizen,

Please consider the cost of not having spent nuclear fuel storage. With no solution for spent nuclear fuel (SNF) storage, electric utilities are hesitant to build any more nuclear power plants. Although the ratepayers for decades have paid the federal government $3 million per day for it, permanent storage is already 12 years behind schedule. In addition the utilities are not building coal-fired power plants because of the global warming caused by all fossil fuels. As a

result electric capacity is stagnated while demand continues to climb, a sure recipe for trouble. The nation thus has no policy or plan sufficient to meet these energy needs.

The power plants of today were designed to operate at 80% of capacity, but U.S. power generation is running at 95% of capacity. Plants running at 95% cannot be maintained, thus today's power plants are being run into the ground. In twenty years we will be needing 60% more electrical energy. Our utilities do not have the capacity to produce this power. New plants to produce this power are not even being designed.

The lack of interim storage for SNF perpetuates these problems and prevents our country from having a working energy policy. The only thing worse than having the central government micromanage a vital industry is having political activists micromanage a vital industry. It is time to release the logjam and go forward.

It is foolish to permanently bury SNF in Yucca Mountain or anywhere else. We have the technology to recycle or reprocess the SNF to use the remaining 92 percent of energy contained therein. This would bring many good results: a) provide a great amount of energy for the future, b) drastically reduce the amount of waste that must be stored, c) reduce the required storage time from 10,000 years to only 600 years, and d) provide the best way to get rid of old weapons plutonium by burning it in reactors for its energy. Reprocessing should be part of our energy policy, and reprocessing would be facilitated by a working interim storage site.

I am working to do both spent fuel storage and spent fuel reprocessing. It has been done safely for nearly 40 years and it can be done even more safely today. When you want to know about what we can do, talk to me. Even if you want to keep the SNF where it is, talk to me and I will tell you about dry pool storage. In the mean time consider the following facts. If you have a problem with them, please talk to me.

For each of the following numbered statements, please consider whether they are true and relevant.

Storage of spent nuclear fuel (SNF) is affecting the achievement of four global requirements:

1) an Electric energy policy and plan (True ___ , False ___, Don't know ___),
2) use of nuclear fuels to reduce global warming (True ___ , False ___, Don't know ___),
3) recovery of U238 energy in SNF, i.e. reprocessing SNF
   (True ___ , False ___, Don't know ___),
4) Disposal of weapons plutonium by consuming MOX fuel in nuclear reactors
   (True ___ , False ___, Don't know ___).

Electric Energy Policy and Plan

5) Electrical power plants were designed to operate at 80% capacity. 6) Today the electric power plants of the United States are operating at around 95% capacity. 7) At this operation rate, there is not time or opportunity for proper maintenance. 8) In the next twenty

years, the demand for electrical power is expected to increase by 60%. 9) The power industry does not have means to furnish this power. 10) Today, except for natural gas peaking plants, there are no new electrical power generation plants on drafting boards, in engineering or in planning. 11) New coal burning plants cannot be built because of the need to reduce carbon dioxide (CO2) gas to reduce the effects of global warming. 12) Existing hydroelectric plants are being threatened by dam removal. 13) The nation's only other high energy source is nuclear power and it is stymied by the SNF storage and disposal issue. 14) To meet future demands there should be at least 200 new nuclear power plants on the nation's drawing boards today. 15) At a time when the United States desperately needs to be planning, the U.S. does not have a national energy policy and plan. 16) A national energy policy and plan cannot be made until the U.S. has a solution for storage and disposal of SNF.

Use of Nuclear Fuels to Reduce Global Warming

17) World scientists are reporting a change in the world's atmosphere. 18) The world's high consumption and burning of fossil fuels is being blamed for increased quantities of CO2 in the atmosphere. 19) The world's increased usage of fossil fuels over the last century is being blamed for atmospheric changes that are causing global warming. 20) Global warming will be devastating to the world as we know it. 21) The only way to reverse this trend is to curtail the burning of fossil fuels. 22) The first, easiest, and most obvious change the world can make to reduce the global warming trend is to replace coal-burning power plants with nuclear power plants. 23) To reduce global warming trends there should be many new nuclear power plants on the nation's drawing boards today.

Recovery of Energy in Spent Nuclear Fuel, i.e. Reprocessing SNF

24) Nuclear fuel contains a mixture of isotopes, only some of which fission and produce energy. 25) The prominent active components in nuclear fuel are U235 uranium and Pu239 plutonium. 26) Pu239 is breeder-reactor made from U238 uranium. 27) Nuclear fuel contains 97% U238 uranium which serves as a fission catalyst. 28) Spent nuclear fuel (SNF) still contains 92% U238 uranium. 29) Almost all of SNF can be reprocessed and recovered for continued use and an atomic material source to make energy in a nuclear power reactor. 30) If we bury SNF in Yucca mountain, in time, 92% of the nation's nuclear energy resources will end up buried in Yucca Mountain. 31) This is a huge waste. 32) There is no scientific support for burying SNF.

Disposal of Weapons Plutonium, by Consuming MOX Fuel in Nuclear Reactors

33) Over 40 tons of plutonium has been removed from U.S. nuclear weapons. 34) It takes only three (3) pounds of plutonium to make an atomic bomb. 35) For this to happen it also takes a sophisticated triggering mechanism. 36) After plutonium is converted chemically to an oxide, the oxide can not be configured to make a bomb. 37) The United States has a joint agreement with Russia to dispose of weapons plutonium. 38) Russia's commercial atomic power reactors continually produce fifteen (15) tons of plutonium every year. 39) This plutonium also needs disposal. 40) Plutonium can be disposed of only by a nuclear reaction--a bomb, or reduction in a nuclear power reactor--either way producing a great amount of energy. 41) One gram of

plutonium (1/454 pounds) produces the energy equivalent to a ton of coal. 42) By weight, this is a factor of one million. 43) It does not make sense, and there is absolutely no need for the U.S. to store away 92% of its nuclear energy for 10,000 years of controlled storage in Yucca Mountain. 44) The technologies for reprocessing of SNF was developed at INEEL in Idaho. 45) France, England, and Sweden are reprocessing SNF by the techniques developed at INEEL. 46) New SNF reprocessing plants are being built in Japan, Australia, and India. 47) Third party intervener Peterson has applied for licenses for both intermediate storage and reprocessing of SNF.

Licensing of Storage of SNF at PFS and Pigeon Spur in Tooele and Box-Elder Counties, NRC Docket Nos. 72-22 and 72-23 Must Proceed.

48) The current requirement of SNF intermediate storage is for 70,000 metric tons of SNF. 49) The PFS facility in Tooele County, Utah, and the Pigeon Spur facility in Box-Elder County, Utah, can each be licensed to store 40,000 metric tons of SNF. 50) Licensing of Storage of SNF at PFS and Pigeon Spur in Tooele and Box-Elder Counties, NRC Docket Nos. 72-22 and 72-23 must proceed. 51) To further these two facilities, development funding should be made to P@A Engineers / Pigeon Spur for research and demonstration of: a) an Integrated transport, storage, monitoring, and retrieval system for heavy casks of hazardous materials, Ref. spent nuclear fuel rods, b) dry-pool canister transport, storage, monitoring, and retrieval system, c) crane load drop cushion, critical material fall protection, varying height under load support, for monitoring, storage and retrieval system, and d) a storage pad design, test proven, for ease of decommissioning.

52) In 1997 Peterson brought a court action against Utah's Governor in U.S. District Case No. 2:97CV 0691C in the court of U.S. Judge Teena Cambell. 53) Peterson complained of the political hysteria Governor Leavitt's public displays were making of the subject of Peterson's work. 54) Governor Leavitt was creating a scare in the public by his talk of pink clouds hovering over his grandmother's house in Cedar City, Utah, after bomb tests in the test desert area of Nevada. 55) Governor Leavitt or his family are apparently so called "down winders". 56) Peterson himself is a "down winder". 57) But pink clouds have nothing whatever to do with storage of spent fuel. 58) Spent fuel is made up of variety of materials that are a mixed conglomerate in individual fuel rods which are held separated with racks. 59) Around the rods is an inert gas atmosphere. 60) From every aspect there simply is no way that spent nuclear fuel can form to make a bomb. 61) In Peterson's proposed reprocessing, the plutonium is only in a MOX (mixed-oxide) form, in which state the plutonium ingredient cannot possibly result in a critical mass to make a bomb.

62) Nuclear fuel is in the form of heavy pellets which are confined in fuel rods, which are sealed in canisters in an inert gas atmosphere. 63) In the engineered storage configuration the SNF is never exposed to the outside atmosphere. 64) But then, even if a cannister and its fuel rods were to be broken apart, the pellets would only lay around on or in the ground where they could be easily found with a Geiger counter.

65) Where the SNF is stored in concrete storage casks, a person even laying against and embracing the concrete casks would receive only a few millirems per hour of radiation (less than 3mrem). 66) In comparison in a typical aircraft commercial flight, one is being exposed to 5

millirems of radiation from cosmic rays. 67) If we allowed living in the SNF storage field, it would be a safer place as for radiation than working in a flying commercial aircraft.

68) A nuclear utility engineer points out that if one takes all of the SNF so-called waste from a nuclear power plant for twenty five years, and spread it out over a football field, the material would stack only six inches high. 69) In comparison, 8% of the residue from coal burning is solid material. 70) The rest of the 92% goes up the stack and is spread out over the land as CO2 gas and smoke. 71) Coal contains reactive materials including uranium. 72) Exposure to uranium from coal smoke is five million times as great as being around a plant which makes energy from nuclear fission. 73) Getting back to that 8% of solid ash, for twenty five years if you stack that on a football field, the pile would be over a mile high. 74) No matter how one looks at energy from nuclear materials it is far cleaner and safer than energy from coal.

75) Peterson finds no basis for Governor Leavitt to impede his work for SNF storage. 76) Peterson tried to meet with Governor Leavitt and talk this out but Governor Leavitt made himself inaccessible. 77) To attempt to resolve the issue, Peterson brought a complaint against the Governor. 78) Peterson thought the matter was resolved with the suit. 79) But in the time since, Governor Leavitt just keeps talking about the pink clouds over his grandmother's house and still today expounds a "policy" of not seeing SNF transported, stored, or processed in Utah.

80) There is no reason to single out and make fear of SNF except that "nuclear" is a word that commands immediate attention. 81) This is partially the fault of our use of nuclear material for weapons. 82) For over a half a century nuclear material has been a fear subject of the whole world. 83) Even today, how nuclear weapons materials are processed and used in weapons is kept secret, and what people don't know keeps them in fear. 84) In this context, the Federal Government targeted the lands of Indian reservations for storage of SNF. 85) This targeted storage had the immediate appearance of hiding the subject or trying to skirt the issue around the general public. 86) This created a major problem for engineer Peterson or anyone else attempting to make a storage facility for SNF. 87) Eventually, however, in an intelligent society, a community with a good education system, the truth of nuclear material can be taught. 88) Utahns are exceptionally well educated and exceptionally concerned people. 89) If there is anywhere in the U.S. that residents will listen and then act responsibly for a national cause, Utah is the place.

90) Saving the environment, ridding the world of nuclear weapons, and preserving our energy solution to the spent nuclear fuel issue. 96) The federal laws for interstate transport, and for use of nuclear materials to make electricity do not exclude any state. 97) In reality, in Washington they have to support any alternative on the table for storage of SNF. 98) They have to do this for the future of the environment, the future of electric power, the future of energy resources, and the future of a safe, nuclear-weapons free world.

99) This issue of SNF storage in Utah has created a polarized atmosphere that must now be resolved. 100) The spent nuclear fuel issue is beyond politics. 101) The politics was done twenty years ago. 102) Today the solution needs to be engineered.

103) Utah's governor Michael O. Leavitt's "policy" and stand against storage of SNF may have affected the reader's understanding and stand relative to storage of SNF, but the reader is asked to consider the facts and make up his or her own mind.

Facts and knowledge of spent nuclear fuel have been abused, misused and corrupted. What is herein said may be new to you. Fundamental facts like that SNF consists of 92% U238 which is further usable to make power are not widely known. Some the nation's best scientists

have looked at this document and found everything written herein to be true.

Dated this __25th__ day of July, 2000,

William D. (Bill) Peterson, M.S., P.E.
Pigeon Spur, NRC Docket No. 72-23
Ref. PFS, NRC Docket No. 72-22

The Salt Lake Tribune UTAH/WORLD Friday, November 13, 1998

Critics Say U.S. OK of Treaty Isn't Enough

THE ASSOCIATED PRESS

-- BUENOS AIRES, Argentina --The United States' signing of a global-warming accord Thursday energized last-hour talks in Argentina on how to implement the treaty's key provisions, for Cutting pollutants.

But critics said U.S. intentions, conveyed at the environmental summit by Undersecretary Of State Stuart Eizenstat, appeared short on concrete action. The United States -- the world's largest polluter -- was the last of the major industrial nations to sign the agreement reached last December in Kyoto, Japan.

The accord calls for reductions in heat-trapping gases by industrialized nations by 2012.

The U.S. signing, which took place Thursday at U.N. headquarters in New York, is largely symbolic because it still needs to be ratified by Congress,
where it faces firm opposition.

Developing nations, which are not legally bound to emissions targets under the treaty but are under pressure to participate, say the United States isn't taking climate change seriously enough.

The developing nations say emission controls place a greater burden on their economies than on the United States' -- and they generally oppose controls.

But on Wednesday, Argentina became the first major developing nation to promise voluntary action to curb green house gasses, a move seen as a break-through by U.S. officials.

China and India, two of the biggest contributors of greenhouse-gas pollution, have steadfastly refused to participate.

Eizenstat told representatives of more than 160 countries in Buenos Aires that Washington was promoting new energy-efficiency standards for appliances, and cleaner technologies for industry, but gave few other specifics on how the United States would cut emissions.

Alden Meyer Of the Washington-based Union of concerned Scientists praised the signing but said the united States needs to do more to cut pollution from
coal burning power plants and cars. "If we had to grade Eizenstat, we'd give him an 'incomplete' on [cleaning up] power plants," he said. "And he does nothing to deal with our gas-guzzling passenger-vehicle fleet."

Sen. Joe Lieberman, D-Conn., a treaty proponent, said the signing was essential for the United States if it wants to be a

,"full player" as the talks near their conclusion.

By signing the agreement, the administration confers on the United States the authority and credibility it needs to continue its leadership role," he said.

The Salt Lake Tribune OPINION Sunday, December 20, 1998

Nuclear Power Is the Only Way for U.S. to Cut Its Greenhouse

BY GARY M. SANDQUIST

No longer able to ignore the danger of climate change, the federal government wants to increase the use of renewable energy sources to limit global warming. Yet, while there's no argument that solar, wind and other renewable energy sources should be encouraged and supported, federal policy-makers are deluding themselves if they think nuclear power should or can be ignored in controlling greenhouse gas emissions.

Even the best solar photovoltaic cells developed to date are of limited value in providing the electrical power a developed nation demands. The fact is not something federal energy officials admit, particularly since President Clinton set a goal of installing 1 million solar energy systems on buildings across the country by the year 2010. The fact is that photovoltaic and other renewable energy sources (excluding hydrdelectric power) produce less than 1 percent of the nation's electricity and will remain only small contributors to the nation's energy supply for the foreseeable future.

If the United States really expects to reduce greenhouse emissions by 40 percent within the next two decades, as required by last December's Kyoto protocol on climate change that was signed in Japan, we will need a demonstrated and assured supply of non-carbon energy. Nuclear power is the only major source of electrical power that produces no carbon dioxide emissions or other greenhouse gases and will allow us to meet the Kyoto protocol.

Yet no new nuclear plants have entered commercial service in this country for six years, due in part to extensive regulation and endless construction delays and our national failure to resolve the high-level nuclear waste issue. The refusal of the Department of Energy to take the waste is a severe hindrance to existing and future nuclear plants and is a violation of the Nuclear Waste Policy Act. In fact, we have the technology to dispose of spent nuclear fuel safely today, but we do not have the technology to process the earth's atmosphere to reduce greenhouse gases.

The irony is that we are creating the very situation that the global warming treaty was designed to avoid. If existing nuclear