

65 FR 39206  
June 23, 2000

(16)

Atomic Safety and Licensing Board: Nuclear Regulatory Commission  
In the Matter of Private Fuel Storage  
Limited appearance statement by Mr. Robert Hoffman on behalf of:

William T. Anders<sup>+%S</sup>, Steven Barrowes, Hans Bethe<sup>&</sup>, Nicolaas Bloembergen<sup>&</sup>, Allan Bromley<sup>\*</sup>, Max Carbon, Bruce Church, Bernard Cohen, Gerard Debreu<sup>&</sup>, Sheldon Glashow<sup>&</sup>, Robert Hoffman, Daniel M. Kammen, John Landis, Ralph Lapp, Otto Raabe, Norman Ramsey<sup>+&</sup>, Marcus Rowden<sup>S</sup>, Glenn Seaborg<sup>&S</sup> (deceased), Allen Sessoms, Jacob Shapiro, Richard Wilson, (spokesman)

+ former ambassador; & Nobel Laureate; % astronaut; \* former Presidential Science Advisor, \$ former Chairman of AEC or NRC.

Appearance by Mr. Robert Hoffman 7 PM July 27<sup>th</sup> 2000 in Salt Lake City.

On behalf of SSWS Richard Wilson appeared before the licensing board on June 23rd 2000 and made a brief statement. The written version was checked with each member of SSWS and small errors in spelling, grammar and so on were corrected in a final version sent to you on July 10<sup>th</sup> 2000. In this appearance and statement we partially repeat the introductory three paragraphs.

The above group of scientists formed Scientists for Secure Waste Storage (SSWS) to support the Goshute Indians in their desire to allow nuclear waste to be stored "in their back yard". We argue firstly that Skull Valley Goshutes have a right to run their own affairs and should be supported in doing so, provided that they do not impinge on the rights of others, and secondly we argue that the reservation is an excellent location for storage of nuclear waste.

The first proposition is to us self evident. It is a right that is governed by the treaty negotiated with the United States of America, The Skull Valley Goshutes have accepted the jurisdiction of the Nuclear Regulatory Commission in this matter. Those Americans who are immigrants or descendants of immigrants in the last couple of centuries (and that is most of us) have an especial duty to help the Goshutes exercise this right, because our ancestors have not always treated the tribe well and pushed them into territory that has few productive uses. We believe that the Goshutes have chosen wisely in selecting this activity. It will bring them employment; be useful to the rest of the United States in which they live; bring them appropriate compensation and be consonant with the land that they have inherited. It will bring them back to the reservation with its pristine air, away from the air pollution of Salt Lake City, since a simple visual inspection shows that the particle concentration is less in Skull Valley than in Salt Lake City. The proposed facility is likely to make it financially attractive for many more of the Skull Valley band to live on their reservation and thereby improve their health and well being.

This statement argues the second proposition that the reservation is an excellent location for nuclear waste. We do not claim that it is the best location, but claim that it is one of many scientifically acceptable locations from which society can choose on other criteria. That the Goshutes want it is clearly an excellent criterion. Nor do we argue that the site is good for a permanent waste storage although it may be - but we do point out that the time limit need not be specified. The difference between the requirements for temporary fuel storage and permanent fuel disposal derives from the fact that temporary

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fuel storage is monitored, whereas with permanent fuel storage we all hope to be able to forget about the material after burial.

This hearing is to hear comments upon the Draft Environmental Impact issued by NRC in cooperation with the US Bureau of Indian Affairs, the US Bureau of Land Management and the US Surface Transportation Board (NUREG-1714) released in June 2000. The NRC statement is considerably longer (292 pages plus executive summary and appendices) than this statement but comes to the same general conclusion. The inevitable adverse impact on the environment will be small, local, and can be reduced by attention to detail. SSWS have no doubt that Private Fuel Storage and the Skull Valley Band of Goshute Indians will pay this attention to detail. The length of the NRC report should not obscure the fact or blind the hearing board or the public to the fact that the facility is a simple one and can simply be shown to be free of any major environmental impact. In our request for intervention in February 1998 and in the appearance before you we outlined the simple technical reasons why this is so and provided you and the public with reference material. For convenience I repeat them in the written record but not in the oral presentation.

- (a) Almost all the radioactive material in the fuel rods will be solid.
- (b) The heat generated by the waste will be very small and not nearly enough to evaporate or disperse any material. As a fraction of the nuclear fission power at the time of operation it is 0.01% after 10 years. This will be less than one millionth of the power in the "excursion" that blew apart the Chernobyl reactor.
- (c) Therefore not only is it impossible for the heat in a fuel storage facility to evaporate the fuel, but also any accident can only proceed slowly. This contrasts with Three Mile Island which took place in 2 hours and Chernobyl within a few seconds. Therefore any release of material is expected to be very small, will happen slowly, and can therefore be noticed by monitoring and can be corrected. [an obvious exception would be a direct (within 100 feet) hit by a hydrogen bomb. But such a hit would involve many more consequences to the Goshute tribe and the United States of America which would be far more serious]
- (d) The safety hazard of exposure to radiation can be controlled by three factors; distance, shielding and time. Even the Goshute community is 2 miles away; the casks are well shielded, and even the Goshutes (and others) who will monitor the facility will only spend a short time close to the casks.

The details of the radionuclides produced in nuclear fission are well known and exceptionally well documented. Often they are found merely by reference to a computer code such as the ORIGEN code that has been available from Oak Ridge National Laboratory and widely compared with direct experimental data. But there are four generic references that can be used in discussion of the specific points raised above (and of the several other erroneous contentions in this case). In order to simplify the reference they are referred to here as A, B, C and D.

(A) David Bodansky, "Nuclear Energy; Principles, Practice and Prospects," *American Institute of Physics*, Woodbury NY

(B) Bernard L. Cohen, "High Level Radioactive Waste from Light-Water Reactors," 49(1) *Reviews of Modern Physics* 1-20 (January 1977)

(C) L. Charles Hebel, et al., "Report to the American Physical Society (APS) by the Study Group on Nuclear Fuel Cycles and Waste Management", 50(1) *Reviews of Modern Physics*, Part II, S1-S185 (January 1978)

(D) Richard Wilson, et al., "Report to the American Physical Society (APS) of the Study Group on Radionuclide Release from Severe Accidents at Nuclear Power Plants," 57(3) *Reviews of Modern Physics*, Part II, S1-S154 (July 1985)

The Draft Environmental Impact Statement should not be taken as a complete discussion of the overall impact of the facility. By convention such impact assessments tend to be limited to direct effects of the facility. But these direct impacts are very small. Indirect effects are likely to be larger and positive - NOT adverse. Just a few are worth enumerating;

Locally: the facility will result in employment and increased prosperity of the Indian community. This and the sense of satisfaction that doing a useful job well provides will increase their health and well being. We note that health is, by convention, included among environmental impacts.

Regionally: The proposed facility is a part of a nationwide program which provides about 20% of the electricity in the United States. The "no action" alternative in the Environmental Impact statement might well have an indirect effect of a shut down of nuclear power plants in Arizona. The most likely substitute for them would be coal fired power plants. Even with particulate and gas control as presently practiced, this would result in increased particulate levels downwind in Utah.

Globally: Substitution of the electricity from nuclear fuel by burning of any fossil fuel would inevitably increase CO<sub>2</sub> emissions. These are likely to result in global warming. The USA made international commitments under two successive administrations, President Bush in Rio de Janeiro and the Clinton administration in Kyoto, to reduce these emissions. Already we will fall short of our commitment. Any adverse effect on the nuclear power program will make the shortfall worse.

These positive indirect impacts may be small. But in general SSWS argue that the adverse environmental impacts attributable to a waste storage facility are very small, smaller than the positive impacts and much smaller than many societal risks. In particular they are smaller than the risks of living in Salt Lake City with its particulate air pollution.

The scientists in SSWS believe that the proposal of Private Fuel Storage to store spent nuclear fuel in the Skull Valley Indian reservation, is in principle a sensible proposal to cope with one of the steps in the technology of nuclear power in a safe and environmentally acceptable way. They have little doubt that such a storage facility can be built and operated safely. There have been vocal complaints that the nuclear waste should stay where it is generated. This is NOT done with other wastes. Several of SSWS live in the eastern United States. We do not want the fine particles that blow in from states upwind, particularly of course Ohio and Illinois but also Wyoming and Utah. Unlike the nuclear wastes which are under close control and cause no health hazard, these fine particles are believed by many scientists to adversely affect health at low levels.

As in our previous appearances, SSWS request that the record be kept open for us to circulate the statement to each and every member of SSWS, and to make corrections based on any comments received. Most of the scientists in SSWS have worked much of their lives in research on the science and technology of nuclear energy and in planning and regulating nuclear energy (as set forth succinctly in the qualifications beside the names, with exceptions noted) and we believe that our collective knowledge and experience can be of help to the board and therefore to the public at large. None of the scientists in

SSWS have personal financial or property interests in the proceeding. Our interest however is great, but is solely an interest in the public good and a desire to ensure that the public good be properly considered.

SSWS are deeply disappointed that a group have decided to form an organization to oppose the facility - "Citizens against nuclear waste in Utah". John McLaughlin, writing in the Ogden Standard Examiner on June 13<sup>th</sup> this year likened the behavior of the opponents of the facility to "circling the wagons" as in the old days when the pioneers also prayed "God save our faithful people from these savages" while they stole their land. Several of the members of SSWS have had the opportunity and pleasure of meeting the Skull Valley Band of Goshute Indians and their chief Mr. Leon Bear. We have observed their thoughtful and dignified behavior. We respect their intelligence. We can contrast it with the unintelligent rhetoric of the Governor of Utah and "Citizens Against Nuclear Waste in Utah". If these opponents have the ability to read and the desire to understand, they will see that the environmental impact statement shows unequivocally that none of them will be adversely affected. We call upon them to reconsider their positions; to read carefully, and understand the Draft Environmental Impact Statement; to respect both the letter and the spirit of the treaty with the Skull Valley Band of Goshute Indians, and to behave in a responsible manner in the technological society of the 21<sup>st</sup> century.

Presented by Robert Hoffman on behalf of SSWS July 27th 2000 at Salt Lake City

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APPENDIX

Biographical data of the members of "Scientists for Secure Waste Storage"

William T. Anders, former Astronaut  
former Chairman Nuclear Regulatory Commission  
former Ambassador to Norway  
former Chairman, General Dynamics Corp.  
Resident in Eastsound, Washington

Steven Barrowes, consultant physicist, resident in Salt Lake City

Hans Bethe, Professor of Physics Emeritus, Cornell University  
Nobel Laureate in Physics (for understanding the energy in the sun)  
Resident in Ithaca, NY

Nicolaas Bloembergen, Gerhard Gade University Professor Emeritus  
Harvard University, Professor of Physics  
Nobel Laureate in Physics  
Resident in Lexington, Massachusetts

Allan Bromley, Dean of Engineering, Yale University  
Sterling Professor of the Sciences  
Past President American Physical Society  
formerly The Assistant to President George Bush for Science and Technology  
Resident at or near New Haven, Connecticut

Max Carbon, Professor of Nuclear Engineering Emeritus  
University of Wisconsin,  
formerly member of Advisory Committee on Reactor Safeguards, AEC/NRC  
formerly INPO accreditation board  
Resident of Madison, WI

Bruce W. Church, Desert Research Institute, University of Nevada  
Adjunct research Professor University of Cincinnati  
formerly head of Environmental Health and Safety  
DOE Nevada operations office.  
Resident in Logandale, NV  
Native of Southern Utah

Bernard L. Cohen, Professor of Physics, University of Pittsburgh  
author of many papers on nuclear waste disposal  
Resident at or near Pittsburgh, Pennsylvania

\*Gerard Debreu, Professor of Economics, University of California  
Nobel Laureate in Economics  
Resident at or near Berkeley, California

Sheldon L. Glashow, Higgins Professor of Physics, Harvard University  
Nobel Laureate in Physics (for his work on the "standard model")  
Resident in Brookline, Massachusetts

Robert J. Hoffman, Certified Health Physicist  
Radiation Safety Consultant  
Formerly Chairman Radiation Control Board of the State of Utah  
Resident in Salt Lake City

\*Daniel M. Kammen, Assistant Professor of Public Policy and International Affairs  
Princeton University  
expert on solar energy in developing countries  
Resident in Princeton, New Jersey

John Landis, Past President, American Nuclear Society  
formerly Senior Vice President, Stone & Webster Corporation  
Past Chairman American National Standards Association  
Resident in Weston, Massachusetts

Ralph Lapp, Safety Consultant  
author of books on dangers of radiation  
Resident in Alexandria, Virginia

Otto G. Raabe, Professor University of California  
Institute of Toxicology and Environmental Health  
Former president Health physics Society  
Resident in Davis, CA

Norman F. Ramsey, Higgins Professor of Physics Emeritus  
Harvard University,  
Nobel Laureate in Physics  
former Science Ambassador to NATO  
former President, Universities Research Association  
Resident in Brookline, Massachusetts

Marcus T Rowden Esq.,  
former Chairman Nuclear Regulatory Commission  
Resident at or near Washington, DC

Glenn T. Seaborg, Professor of Chemistry Emeritus, University of California  
formerly Chancellor University of California  
formerly Chairman Atomic Energy Commission  
Nobel Laureate in Chemistry  
Resident in Lafayette, California (now deceased)

Allen Lee Sessoms, President, Queens College, New York  
formerly Science Counselor, U.S. Embassy, Paris  
formerly Deputy Chief of Mission, Department of State, Mexico City  
Department of Energy, Energy Advisory Committee  
As a person with native American ancestry, he has a particular concern for, and understanding of, many of the issues.  
Resident in Newton, Massachusetts

Jacob Shapiro, Radiation Safety Officer Harvard University (retired)  
Author of a major text on radiation health physics  
Resident in Massachusetts

Richard Wilson, Mallinckrodt Research Professor of Physics, Harvard University  
expert on nuclear physics and risk analysis, especially effects of radiation and air pollution  
advisor on risks to many US agencies and foreign governments  
Resident in Newton, Massachusetts

Collectively SSCW have expertise in most of the matters before the committee including fundamental physics and chemistry, numerical assessment of risks, and effects of radiation. However the signatories marked with an asterisk note that they do not have as much experience in nuclear energy as the others.