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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Reply to:

1050 East Flamingo Road
Suite 319
Las Vegas, Nevada 89119
(Tel: (702) 388-6125
FTS: 598-6125

MEMORANDUM

DATE: June 6, 1988

FOR: John J. Linehan, Section Leader, Operations Branch
Division of High-Level Waste Management

FROM: Paul T. Prestholt, Sr. OR - NNWSI

SUBJECT: NNWSI Site Report for the month of May, 1988

I. QUALITY ASSURANCE

A. Obtained a copy of the QA video tape that was shown at the 50% ESF Design Review meeting. The tape was sent to John Linehan.

B. There is a QA audit of the USGS scheduled to start on June 8. The audit team will spend the 9th and 10th at the Nevada Test Site reviewing the hydrologic field activities conducted by the USGS. I arranged badging so that the four man NRC observation team will have access to the Test Site.

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C. The WMPO 88-9 QA document has been sent to the NRC for staff review. I understand that the document has been received.

D. Mr. Mitchel Kunich, WMPO Acting Deputy Manager has accepted the position of NVO QA Manager. In this position, Mr. Kunich will be reporting to Mr. Nick Aquilino, Nevada Operations Office (NVO) Manager. Mr. Ed Wilmot, DOE-Hq has been appointed WMPO Deputy Manager.

E. Mr. Joe Holonich, Senior Project Manager, Operations Branch, gave a critique of the NNWSI audit of the USGS - Menlo Park, CA, activities on the Yucca Mountain Project. His remarks were well received. Mr. Carl Gertz, WMPO Manager told me that he appreciates staff comments on audits.

II. GEOLOGY

A. DOE-Hq has directed WMPO to plan a "multi-purpose" bore hole to be drilled between the exploratory shaft locations. The "multi-purpose" bore hole will be designed to obtain data on the hydrologic and geophysical properties of the various tuff formations in the close vicinity of the shafts (possibly as close as 60' to ES-1). There is some discussion that the bore hole should penetrate the saturated zone. I understand that WMPO will suggest that a second "multi-purpose" hole be drilled between the two shaft locations. This is still in the planning stage.

B. There are 123 mining claims filed on Yucca Mountain. As I understand it, these are not new claims, filed to take advantage of the repository situation, but have been in existence for some time. Mr. Tony Perchetti of Tonapah, Nevada, has filed ten claims along Yucca crest. Mr. Perchetti has informed DOE that he plans to do some trenching on these claims. Yucca crest is on BLM multi-use land and on Air Force land. The claims are on the multi-use portion.

C. The Sample Management Facility (SMF) is scheduled for a grand opening on the 18th of July. The press and the public will be invited. I'm planning to visit the facility the first week in June. The work of transferring the core from the USGS facility in Mercury to the SMF continues. It's been estimated that all material will be transferred by calendar year 1989.

III. HYDROLOGY

A. Dr. Don Jorganson is the new USGS Hydrology lead for NNWSI activities. Dr. Jorganson will be on board in August.

B. The activities of the USGS hydrologists, working out of Test Cell "C", Area 25 of the Nevada Test Site, are the same as noted last month.

IV. GEOCHEMISTRY

The work by the project in geochemistry is centered around finalizing the SCP and writing study plans. I'm not aware of any new work in this area.

V. REPOSITORY ENGINEERING

A. The exploratory shaft facility 50% Title I Design Review was held during the week of May 9. NRC staff that attended the meeting included John Linehan, Mysore Nataraja, Dinesh Gupta, and John Peshel. Dr. Jaak Daeman and Mr. Loren Lorig, contractors to the NRC, also attended.

A great number of comments were generated by the reviewers (in excess of 800; Fennix & Scisson reported 400 comments on drawings and 176 comments on specifications; Holmes and Narver reported 200+ comments on design).

On Thursday, May 26, DOE-WMPO sent a copy of the comment package to Dr. Dinesh Gupta's home by overnight mail so that Dr.

Gupta could evaluate the comments and recommend whether or not the NRC staff should observe the comment resolution meeting scheduled for the week of June 6.

B. On Thursday, May 12, I escorted Dr. Mysore Nataraja, Section Leader, Technical Review Branch, on a tour of the Nevada Test Site. Places visited include "G" tunnel, Sedan Crater and Yucca Mountain, including the proposed location of the two exploratory shafts in Coyote Wash.

C. Prototype testing is continuing in "G" tunnel. Two test programs are presently underway:

- Engineered barrier design test.
- Cross-hole test. This test is designed to measure the time taken by a chemical tracer injected in one borehole (horizontal) to reach a second horizontal hole.
- A diffusion test is scheduled to begin in mid-June.

I don't have any details on these tests. Mr. Ron Oliver, FTS: 544-7815 can be contacted for details.

D. In last month's report I stated that the USGS is waiting for an air quality permit from the State of Nevada before work can proceed in deepening test pits at Fran Ridge. I received a letter from Mr. Carl Johnson, State of Nevada, that states, "DOE/WMPD has requested an air quality permit from the State for all activities on Yucca Mountain and vicinity for the period of site characterization." The letter also states that, "The State is awaiting additional information on field activities before the permit application can be processed."

In talking about this with Mr. Dean Eppler, SAIC, Mr. Eppler said that the State Environmental Agency had indicated that they

didn't want air quality permit applications piecemeal and that he isn't aware of any request for more information.

A copy of Mr. Johnson's letter is enclosed.

VI. WASTE PACKAGE

The work being performed by the project on the waste package is centered around finalizing the SCP and writing study plans. I'm not aware of any new work in this area.

VII. PERFORMANCE ASSESSMENT

The performance assessment group at Sandia National Laboratory is working on the effect of site characterization work on site performance.

SNL is developing a position as to why it is necessary for the Exploratory Shaft and/or boreholes to extend below the repository horizon. There are a number of proposed boreholes in the repository block that will be drilled to a depth of 2000 feet below land surface. These boreholes would bottom well below the repository horizon and, in some cases, in the saturated zone.

VIII. SITE ENVIRONMENTAL ACTIVITIES

See item D, Section V, Repository Engineering.

IX. LICENSING AND NRC-DOE INTERACTIONS

A. SAIC licensing personnel are working on the outline for the Safety Analysis Report (SAR) that will accompany the license-to-construct application. They are also developing proposed amendments to 10 CFR 51, 10 CFR 61, and 40 CFR 191.

B. The SAIC licensing group have reviewed the following NRC documents and forwarded review comments to DOE-Hq.

- GTP on Anticipated and Unanticipated events.
- The SCP Review Plan, both technical and administrative parts.
- Plan for review of Project Study Plans.

C. A ±320 square foot office has been reserved for NRC use in the Area 25 (NTS) office building that will be used to support the ESF work. The building is presently being renovated and is scheduled for occupancy in the Spring of 1989.

Question: Who will furnish this office?

D. Dr. Bruce Crowe, LANL, is moving to Las Vegas and will represent Dr. Donald Oakley, LANL TPO in day to day interaction with the NNWSI Project.

E. It is rumored that the Waste Management Project Office and Nevada Nuclear Waste Storage Investigation names will be changed to the Yucca Mountain Project (YMP).

F. The June TPO meeting has been postponed until July 6. The reason is the scheduled presentation by the Project to the Advisory Committee on Nuclear Waste. The Project is taking this presentation very seriously and wishes to do a good job.

G. Meetings Attended:

- I have a scheduled meeting with Mr. Carl Gertz, WMPO Manager, every Monday morning. During May this meeting did not take place on the 9th and 23rd. Mr. Gertz was out of town. These meetings last, on the average, one-half hour and general subjects of interest are discussed.
- The monthly Project Manager-Technical Project Officer

(TPO) meeting. I believe this is the most important meeting of the month. Much of the data in this report comes from this meeting.

- The State of Nevada Legislative Committee meeting. State Senator Tom Hickey is the chairman. This is the group that watches the High-Level Waste Program (both Federal and State) for the State Legislature.
- The Exploratory Shaft 50% Title One Design Review meeting.
- The State of Nevada Commission on High-Level Waste meeting. This is the body that oversees Bob Loux's office and is considered part of the Governor's family.
- In addition to the above, I've had many interactions with project personnel, both in person and on the telephone.

X. SCP AND STUDY PLANS

Two Study Plans were given to the NRC during the week of May 23, for review and comment. The two plans are:

- Excavation Investigation 8.3.1.15.1.5
- C1-36 Tracer Tests 8.3.1.2.2.2

The State of Nevada also received the above study plans for review and comments.

XI. STATE INTERACTIONS

A. On May 11, 1988, the Nevada Legislature's Committee on High-Level Radioactive Waste met at the Thomas and Mack Center in

Las Vegas. This committee is chaired by State Senator Thomas J. Hickey.

Mr. Carl Gertz, Manager, DOE-WMPO, gave an update of the NNWSI Project. A copy of the handout that accompanied Mr. Gertz's talk is attached.

Mr. Robert Loux, Director, Nevada's Agency for Nuclear Projects, presented an update of Nevada's program for review of the DOE's activities. No handout of Mr. Loux's remarks is available, however, the documentation supporting the State's grant request that was forwarded in April documents the State program in detail.

Enclosed are the Minutes of the Committee Meeting held in Reno on October 20, 1987. I did not attend that meeting.

B. On May 27, 1988, the State of Nevada Commission on Nuclear Projects met at McCarran International Airport in Las Vegas. Mr. Grant Sawyer is the chairman of the commission. This is the body that oversees the activities of the Nevada Agency for Nuclear Projects, Mr. Robert Loux is the Director.

The outcome of this meeting that is of interest to the staff was the proposal and approval of a resolution (copy enclosed) to the State's elected officials and population that states:

"RESOLVED, That the Commission urges the Nevada Legislature to formally advise DOE by proper resolution that the 1989 Legislature will not approve the withdrawal from public use of any land at or near Yucca Mountain for the purpose of characterizing, building or operating a repository and that a ~~roll-call~~ vote on such resolution be taken in each house of the 1989 Legislature; and be it further

(*Wording removed by
Commission during this meeting)

"RESOLVED, That the Commission recommends that the Attorney General vigorously pursue litigation which will confirm Nevada's right to approve or disapprove land withdrawals for a repository at Yucca Mountain and that the Legislature make available necessary funds for such litigation; and be it further

"RESOLVED, That the Agency for Nuclear Projects and affected units of local government expeditiously pursue various programs of technical and socioeconomic impact studies in order that health and safety issues relative to the Yucca Mountain site can be quickly and adequately examined and the real economic and other consequences of a repository can be understood."

C. Enclosed is a letter (general mailing) from Congressman James H. Bilbray, 1st District, Nevada, concerning the transport of High-Level waste. This letter is soliciting support for H.R. 3836 and explaining why Mr. Bilbray is supporting this bill.

Also enclosed is a mailing by the "Nevada Nuclear Waste Study Committee". This group is generally considered to be in favor of a repository at Yucca Mountain. This document takes Nevada Governor Bryan to task for not signing a "Benefits Agreement" with DOE.

These documents give some perspective to the type of mailings the population of the State is receiving.

D. Enclosed is a newspaper article from the May 22 Reno Gazette-Journal concerning the LANL-USGS studies of the Lathrop Wells cinder cone that indicate a possible age of last eruption of 20,000 years before present or less. Dr. Bruce Crowe, LANL, presented this study at the March, 1987 TPO meeting (March 25) and I reported it in my monthly report dated March 27, 1987. There have been suggestions (not in this story) that DOE has tried to hide this data. This is not the case.

E. Enclosed is the May 1988 "High-Level Radioactive Waste Newsletter" published by the National Conference of State Legislatures.

XII. MISCELLANEOUS

A. I have been asked to conduct a tour of the NTS for Ms. Joyce Amenta, Deputy Director, Information Resources Management and Mr. Avi Bender on June 28, 1988. I have arranged for visitor badges and will escort Ms. Amenta and Mr. Bender to "G" tunnel, Sedan Crater and Yucca Mountain.

B. Enclosed is a copy of an article by Mr. Fred C. Shapiro that appeared in the "New Yorker" magazine. The article is about the Yucca Mountain Project.

cc: With enclosures: K. Stablein, R. E. Adler, J. E. Latz

Without enclosures:

C. P. Gertz	R. E. Browning
R. R. Loux	G. Cook
M. Glora	J. K. Goodmiller
D. M. Kunihero	L. Kovach
	S. Gagner

Enclosures: A Reporter At Large (New Yorker); High-Level Radioactive Waste Newsletter, May 1988; Reno Gazette-Journal (Article); Information from Nevada Nuclear Waste Study Committee, 5/26 & 5/27/88; Letter dated 5/17/88 from Congressman Bilbray and his 5/12/88 Testimony; Agenda of 5/27/88 NV Commission on Nuclear Projects Meeting; Resolution dated May 27, 1988; Nevada Legislature's Committee on High-Level Radioactive Waste Meeting Notice & Agenda for 5/11/88 and Minutes of 10/20/87 Meeting; Status of the NNWSI Project by Carl Gertz, 5/11/88; Handout from TPO Meeting 5/4/88; Letter dated 5/23/88 from Carl Johnson, State of Nevada; Status - 50 Percent ESF Title I Design Review; Agenda, NNWSI Project Manager-TPO Meeting 5/25/88; TPO Presentation 5/25/88 by Carl Gertz

A REPORTER AT LARGE

YUCCA MOUNTAIN

DURING the month of September, 1969, the operators of Dresden Nuclear Power Station Unit 1, in Morris, Illinois, completed the removal of ninety-four spent fuel assemblies from the reactor's core. "Spent fuel" is perhaps the most misleading term in the nuclear lexicon. Uranium assemblies are removed from commercial reactors after three years' "burnup," but not because their radiation is in any way "spent;" rather, they are removed because they have become too radioactive for further efficient use. The type of uranium assembly that powers a boiling-water commercial reactor, such as Dresden 1, consists of a bundle of thin zirconium-alloy tubes filled with uranium pellets. These assemblies are about fourteen feet long and five and a half inches square and weigh seven hundred and five pounds, and when they are removed from the core of a reactor the assemblies are among the most radioactive entities on earth. The ninety-four uranium assemblies at Dresden were now maneuvered, one by one, by remote control, on the hook of an overhead crane, and transferred to a pool adjoining the reactor. There they were locked into an upright position under fourteen feet of water, which, as long as it is kept constantly recirculating, constitutes a containment barrier to both heat and radiation.

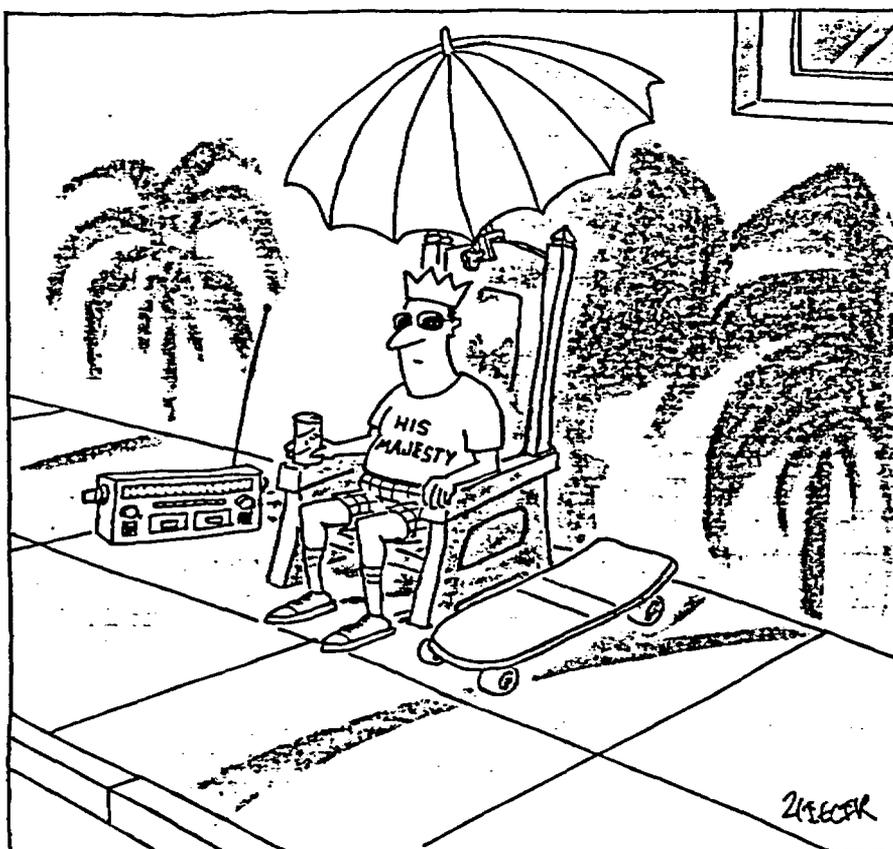
At that time, twelve years after the country's first commercial reactor, at Shippingport, Pennsylvania, generated its first power, the operator of Dresden 1, the Commonwealth Edison Company of Illinois, anticipated having to hold its spent fuel assemblies for several years at most before shipping them off to be reprocessed—crushed, dissolved in acid, and treated chemically to reclaim their unfissioned uranium and plutonium. These still fissionable elements continue to be recovered from the spent fuel of military and research reactors in the United States and from all forms of reactors in a number of other countries, but reprocessing of American electric-utility spent fuel ended in 1972, when the only commercial plant ever to undertake the work, in West Valley, New York, shut down, leaving the Dresden assemblies in their

pool while the federal government carried on studies to determine when and where—and, most important, how—they could be disposed of.

The ostensible reason for the shutdown of the West Valley plant was a demand by the Atomic Energy Commission that a study be made of its construction to determine whether it met earthquake-resistance standards. Preliminary findings indicated that it did, but reprocessing was not resumed, apparently for two reasons. The first was economic: freshly mined uranium has always sold for a small fraction of the cost of uranium reprocessing. (Even with federal subsidies, the West Valley plant was estimated to have lost twelve million dollars in the six years it operated.) The second reason was that reprocessing, although it removes the unfissioned elements, leaves behind hundreds of isotopes, many of them highly radioactive and long-lived, dissolved in a large volume of acids.

It is true that such material can be

neutralized and solidified and stored in massive underground steel tanks, but, like the spent fuel assemblies that have been accumulating in the pools of American power reactors since 1972, they will remain "hot," both thermally and radioactively, for thousands of years. Since 1945, when the first nuclear bombs were produced, billions of dollars have been spent on efforts to find ways to isolate nuclear wastes from the environment forever. Options such as shooting the wastes into space, burying them under the tectonic plates in the deep ocean, depositing them on a remote Pacific atoll, and even leaving them to melt their way through the Antarctic ice cap, were investigated by scientists, but for political or environmental reasons these were all passed over in favor of the idea of burying them in a mined repository. Then came more years of research, costing more millions of dollars, to determine where, and in what underground geological medium, this repository should be



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sited. Last December, without making more than passing reference to all this research, and without waiting for five additional years of scientific examination that an earlier congressional bill had called for, Congress inserted in the appropriations legislation that annually marks its rush toward Christmas adjournment a measure designating Yucca Mountain, in Nevada, the sole site to be considered for this country's first, and probably only, repository for high-level nuclear waste and spent fuel.

YUCCA, which is described by government geologists as a "typical small fault-block" mountain, stands about a hundred and ten miles west and slightly north of Las Vegas. The mountain rises out of barren but beautiful desert land that is apportioned among the jurisdictions of the Department of Energy, which uses a thousand three hundred and fifty square miles for a nuclear-test site; the Department of Defense, whose Nellis Air Force Base Bombing and Gunnery Range covers four thousand one hundred and twenty square miles; and the Department of the Interior, whose Bureau of Land Management administers most of the remaining land in the area. One morning last summer, before the temperature reached its noonday peak of a hundred and six degrees, I drove there from Las Vegas with Chris West, an information officer with the Energy Department. We parked at the end of a graded road that climbs Yucca's east face and walked the last few hundred feet, to a surveyor's stake that marks the mountain's summit, at fifty-five hundred and seventy feet. From there I could see, to the east, Jackass Flats, part of the nuclear-test site; to the northwest, the Nellis Air Force Base range; and, to the southwest, an unused tract of public land. The site's nearest neighbors—the inhabitants of a legal brothel—live about eighteen miles away in that direction. Twenty miles beyond them is the California border and Death Valley.

"We're standing on a layer of basalt, but underneath it is at least six thousand feet of welded volcanic tuff—rock that is from thirteen to twenty million years old," West said. Below us, on a nearby slope, a United States Geological Survey crew was drawing samples from one of thirty test wells that had been drilled in the formation. "We

aren't going to put the exploratory shaft here on the top of the mountain," West went on. "It will be a few hundred feet down there to the east." Ultimately, the shaft will go down fourteen hundred and eighty feet, into a three-hundred-and-fifty-foot-thick tuff formation, but even then it will be two hundred and eighty feet above the desert water table. Among all the land sites that were considered for the repository, Yucca Mountain is unique in that the spent fuel and the reprocessing effluents are to be placed above the topmost subsurface aquifer. The significance of that is that the chambers holding the waste will inevitably be penetrated by rainwater percolating down through the mountain. However, the Nevada desert doesn't get much rain—only about six inches a year—and ninety-seven per cent of it evaporates before reaching the level that has been proposed for the repository. Department of Energy geologists estimate the travel time of underground water from the repository to the groundwater level at a minimum of nine thousand three hundred and forty-five years.

Last December, when this arid, desolate, and, to all appearances, invulnerable rock outcropping was designated our national repository for high-level nuclear waste, Congress was acting in somewhat understandable frustration. Five years previously, after protracted hearings and much debate, it had enacted carefully crafted legislation mandating a competition among many sites that would be scientifically evaluated for their suitability for isolating nuclear wastes. It was understood that ultimately two sites, one in the East and one in the West, would be selected by the Secretary of Energy and nomi-

nated by the President, and repositories would be constructed under the supervision of the Department of Energy and then licensed by the Nuclear Regulatory Commission. There was also a provision for an optional facility for "monitored retrievable storage," or M.R.S., where some fifteen thousand metric tons of spent fuel would be stored until the first repository (the one in the West) was opened to receive it, in 1998. To help pay for all this—the 1987 General Accounting Office estimate of the cost of the entire program was between twenty-one and forty-one billion 1985 dollars—utilities would be assessed one-tenth of a cent per kilowatt-hour of power generated by nuclear means. These fees, which are passed on to consumers, now run about five hundred million dollars annually.

In rather short order, the program fell apart. First, the Department of Energy, citing the complexity of the studies it was required to perform to "characterize" three candidate sites for each of the repositories, expanded the entire timetable, so that even the Western repository would not conceivably be able to receive spent fuel until the year 2002—four years after the government was required under the legislation to take title to it. That removed the "optional" label from the monitored-retrievable-storage facility, and the Energy Department duly proposed to Congress three sites in Tennessee, including two on the outskirts of Oak Ridge. Although Oak Ridge has a long and preëminent nuclear history (the town was established, in 1942, to support wartime facilities for the production of uranium and, in small quantities, plutonium), opposition in the rest of Tennessee impelled the state to challenge this order all the way to the Supreme Court. The Supreme Court refused to hear the case, thereby upholding an appeals-court ruling in favor of the Energy Department, but opposition continued, with Oak Ridge's congresswoman, Marilyn Lloyd, who is the chairman of the House Energy Research and Development Subcommittee, among the leaders.

Then, just in advance of the 1986 congressional elections—and in time for a number of candidates in the affected states to claim credit for the action—the search for the Eastern repository was either cancelled or put on "indefinite" suspension. (The Department of Energy issued conflicting



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statements at the time on whether the search would ever be resumed, and the legislation that was passed last December failed to resolve the ambiguity.) That left the foreseeable burden of being "host" to the nation's spent fuel entirely on the West, even though most of the power derived from it had benefited the East.

A third major setback to the 1982 program, at least in a public-relations sense, was a disclosure in congressional hearings that considerations other than scientific ones had gone into the Department of Energy's designation of the three Western sites to be characterized. Besides Yucca Mountain, these were a salt deposit beneath some of the nation's most productive farmland, in Deaf Smith County, Texas, and a basalt formation underneath the five-hundred-and-seventy-square-mile Hanford Nuclear Reservation, in southeastern Washington.

BECAUSE Hanford has a nuclear history that goes back almost as far as that of Oak Ridge, and because it is already storing, in underground steel tanks, a greater volume of reprocessed defense waste than any other place in the country, it was an early favorite in the competition for the repository, and in fact there was considerable local support for siting the repository there. However, principally for environmental reasons (the prospective site, only four miles from the Columbia River, turned out to be subject to a risk of flooding from a nearby "ephemeral, discontinuous" creek), but also because a repository would cost approximately four billion dollars more to construct and operate there than at any other site, the Department of Energy's own "multiattribute, utility-analysis, decision-aiding methodology" had originally ranked Hanford *last* among five candidates under active consideration.

Then why was Hanford nominated? The explanation of the Department of Energy's Office of Civilian Radioactive Waste Management was that the department had decided to eliminate cost as a consideration, and that the Secretary of Energy, who made the formal designation, was required by the 1982 law to consider sites in "diverse" geological mediums. If Hanford had been eliminated, the characterization competition would have wound up with two sites in salt (Deaf Smith County and one near Richton, Missis-

issippi). However, at a White House luncheon, and in the presence of President Reagan, Donald Regan, then the Presidential chief of staff, offered another reason. Nevadans needn't worry about the repository, he reassured Hank Greenspun, the editor-publisher of the *Las Vegas Sun*, because "Hanford wants it." Perhaps Hanford, in the sparsely populated eastern half of Washington, did want it, but it turned out that the rest of the state certainly didn't: a referendum in November, 1986, showed that eighty-four per cent of the state's voters were opposed to the project. Anti-repository sentiment is also believed to have contributed to the defeat of the state's Republican Senator Slade Gorton, who was running for reelection that year.

Probably there was even greater public opposition in Texas—particularly in the Panhandle, where the repository project would have required the condemnation of nine square miles of farmland in a center for seeds and organically grown produce. Moreover, reaching the salt formation, nearly three thousand feet below the surface, would have meant drilling through two large aquifers, and the upper one, the Ogallala, was (and is) an important source of water for Midwestern states as far away as South Dakota. Department of Energy engineers claimed that it was feasible (though expensive) to penetrate both aquifers without contaminating either, but several local food-processing firms—the region's largest employers—threatened to move out of Deaf Smith County if the project went ahead. Twenty-one anti-repository organizations, affiliated as the Texas Nuclear Waste Task Force, plastered the state with red-white-and-blue "Don't Waste Texas" bumper stickers, and put up a prominent billboard on the other side of a highway from an office that the Department of Energy had opened in Deaf Smith County. Senator Phil Gramm, a Republican, perhaps having pondered the election results in Washington, also opposed the project.

There was also public opposition in Nevada to the siting of the repository at Yucca Mountain—notably from the anti-nuclear group Citizen Alert—but the Las Vegas Chamber of Commerce, though it admitted being concerned about the repository's possible effects on the city's casinos and tourism, took no official position. The most vocal

opponents of the project were Hank Greenspun and Robert Loux, the director of the state's Agency for Nuclear Projects, under Governor Richard Bryan, a Democrat. As for the state legislature, it may have sent a mixed signal to Congress and the Department of Energy planners. Noting that the 1982 law committed the federal government to paying "grants equal to taxes" (or GETT) that the project, if it were privately owned, would pay in real-estate taxes, the legislature acted last May to surround Yucca Mountain with a new county, to be called Bullfrog (after a nearby mining district, which got *its* name from the green color of quartz there). Bullfrog County covered a hundred and forty-four square miles and didn't have a single resident, but it did have the state's highest permissible tax rate—five dollars per hundred dollars of assessed value—and also a provision in its charter stipulating that GETT funds unused for county purposes could revert to the Nevada Treasury.

Paul May, the chairman of the State Assembly's Taxation Committee, is the legislator who formulated the Bullfrog concept, and after I returned to Las Vegas I looked him up at his office in a real-estate brokerage a few blocks from the famous "strip." When I talked to him there, he said, "I've consistently opposed the repository, because of the negative effect it might have on both our water supply and our tourist economy, but I felt that if it does come here we should be in a position to make as much as possible out of it."

Ultimately, however, it looked as if this fiscal tactic might wind up costing the state money, because both Governor Bryan and State Attorney General Brian McKay declined to defend Bullfrog County from the court challenges of Nye County, the jurisdiction that stood to lose the GETT payments, and the legislature had to retain—and pay—private attorneys to act for it. The first—and possibly final—judicial round was decided in favor of Nye County in February, when a Nevada district court ruled that the formation of Bullfrog County violated the state constitution "every which way." One of the plaintiffs in the action, Robert Revert, who operates a gas station and convenience store in Beatty, west of Las Vegas, and is a commissioner of Nye County, blames the legislature for

encouraging Congress to site the project in Nevada. "The state always claimed it didn't want the repository, but when it came to money the legislature prostituted itself," he told me.

Beyond GETT, however, early versions of the legislation siting the repository at Yucca Mountain contained no financial incentives for the state, and even the Senate Energy and Natural Resources Committee chairman, J. Bennett Johnston, who was the chief proponent of the bill, conceded that the state was about to be victimized by "a cruel trick on Christmas Eve: the waste and no goodies."

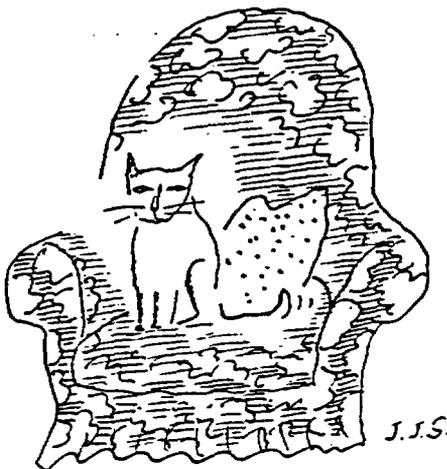
Although Nevada has little clout in Washington—the sparsely populated state has only two representatives, and both its senators are freshmen and so lack important committee chairmanships—Congress did eventually rustle up a couple of "goodies" for it. Under the legislation that was ultimately enacted, Nevada could receive ten million dollars a year while the repository was under characterization and construction, and twenty million dollars annually once the depositing of spent fuel began. If the repository should take fourteen years to characterize and construct—and that is the current estimate—and twenty-four more years to fill to its assigned capacity, of seventy thousand metric tons, these payments would amount to six hundred and twenty million dollars. In addition, the legislation specified that Nevada would be given "special consideration" for the siting of future federal research projects. However, these "goodies" came with strings attached: in order for the state to receive the payments, it would have to sign an agreement accepting the repository, and thus give up its option of challenging the legislation in court. And the worth of the "special

consideration" clause may be judged by the fact that shortly after the repository legislation was enacted Nevada was left off the list of states to be considered for construction of a nuclear-research project it really wanted—a fifty-three-mile particle accelerator that will bring both industry and scientific expertise to the region that wins it. "If another state wants a project, Nevada can't have it," Governor Bryan told reporters that week. "But if no other state wants it, like the nuclear repository, Nevada is considered for it."

Still, as long as Congress was in a Christmas mood, it also permitted Nevada's senior senator, Chic Hecht—a Republican, who is up for reelection this year—to insert in the legislation a couple of clauses he could claim credit for back home. Among them were provisions tightening safety standards for the packaging and shipment of spent fuel, and a stipulation that the Department of Energy revive a dormant research project concerning the possibility of sub-seabed disposal. Although burying nuclear waste under the tectonic plates in the deep Pacific could conceivably be challenged under international maritime law, the Department of Energy has been directed to create "a university-based Subseabed Consortium involving leading oceanographic universities and institutions" to investigate its "technical and institutional feasibility."

Of course, Senator Hecht was not the only member of Congress whose political concerns were addressed in the legislation drafted by Senator Johnston (with the help of Representative Morris Udall, the author of the 1982 law, which this bill technically amends). There were also the representatives of Eastern states that had been considered as "hosts" of the second repository. Although an Eastern repository is still a theoretical possibility, formations of granite—which is the principal medium so far considered in the East—have been disqualified from future consideration, as the result of a floor amendment introduced by Eastern legislators. Besides, on-site investigations will no longer be permitted—at least, not until the Department of Energy reports to Congress on the need for a second repository, which it plans to do sometime between 2007 and 2010.

Also returned to Square One is the M.R.S. facility that the Department of

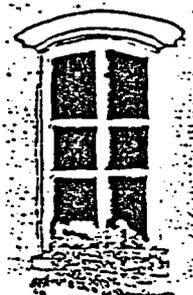


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Energy had hoped to begin constructing in the Oak Ridge district of Representative Lloyd. The designation of that site has been repealed. There could still be an M.R.S., and it could still be in Oak Ridge, but a three-member commission is to be appointed by Congress to study the question of whether a halfway house for spent fuel between reactors and a repository is really necessary; a possible alternative would be to continue storing these assemblies at reactor sites, either in pools or in iron or concrete casks capable of withstanding the great heat and radiation. If the commission decides that an M.R.S. is needed, the search for a site will begin anew, but construction of the facility will be tied in with that of the repository. If for any reason work on the repository is suspended, construction of the M.R.S. will stop as well.

And, in the end, there are both scientific and political grounds for wondering whether construction of the repository at Yucca Mountain will have to be stopped—or, if it is completed, whether the facility can be licensed by the Nuclear Regulatory Commission. In designating the site, Congress went ahead without waiting for the Department of Energy to answer some technical questions about the mountain's ability to store high-level wastes and spent fuel assemblies for thousands of years. The questions listed in a published environmental assessment of the site have to do with the possibility that the tuff formation will be found to be too narrow to accommodate any expansions of the repository; the possibility of flash flooding; visible signs of active earthquake faults (Chris West pointed out one from the top of the mountain); evidence that the magnitude of earthquakes may increase in the region; and the possibility that a combination of water and oxygen found in the tuff might contribute to the dissolution of spent fuel. One of the Department of Energy's own scientists, Jerry Szymanski, finds the combination of the last two points disturbing. However, Szymanski's recommendation that "serious consideration should be given to abandoning the Yucca Mountain site and declaring it as unsuitable for the purposes of permanent disposal of the high-level nuclear wastes" was not

disclosed publicly until a month after Congress voted to designate it. His finding, which was sent to Governor Bryan through unofficial channels, is that, despite the desert's apparent aridity, "both short and long term instabilities of the water table can be expected at the Yucca Mountain site," and that in extreme cases "these displacements can result in the flooding of the repository and in expulsion of groundwater at the ground surface."



Szymanski explained after his report was publicized that he was saying not that groundwater would rise under Yucca Mountain to flood the repository but only that more years of research were required to make sure that it wouldn't. Still, his warning was underscored by the Department of Energy's

confirmation at about the same time that a seven-hundred-million-dollar underground repository now under construction for a less hazardous form of nuclear waste has begun to fill with corrosive brine. Because it was originally intended solely for defense wastes, this Waste Isolation Pilot Plant, excavated two thousand one hundred and fifty feet below desert land twenty-six miles east of Carlsbad, New Mexico, does not have to be licensed by the Nuclear Regulatory Commission, and the Department of Energy is going ahead with plans to bury in it some of the transuranic (heavier than uranium) residues of nuclear weapons production. However, in the face of a warning by scientists from the University of New Mexico that the repository could fill with the brine, federal planners decided to follow a recommendation made by a National Academy of Sciences committee that the four chambers of the repository now be loaded to only two or three per cent of their capacity, of close to a million fifty-five-gallon barrels of waste. The project's senior scientific adviser, Dr. Wendell Weart, says that "engineering and technical fixes" can be found to keep these barrels dry, but, nevertheless, plans to put a hundred and fifty cubic feet of high-level waste materials in the cavern have been at least temporarily abandoned. Although the New Mexico repository was not designed to hold high-level waste, the Energy Department had planned to put this limited amount there and then dig it out, be-

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fore the transuranic facility was sealed, specifically to demonstrate the presumed capability of underground mined repositories to isolate high-level waste forever *without* engineering "fixes," and, in fact, without further intervention by man.

Of course, the New Mexico salt deposit and Nevada's mountain of welded tuff are not geologically comparable, but, if they were, the transuranic repository would enjoy the advantage of having been constructed in a region relatively untroubled by man; the spent-fuel and high-level-waste repository is to adjoin land sorely distressed by man—an aerial-bombardment range and a nuclear-bomb-testing range. The Nuclear Regulatory Commission has expressed concern that earthquake faults around Yucca Mountain may already have been "reactivated by nuclear weapons tests, suggesting that stress magnitudes in the vicinity of the faults are at or close to values at which failures could occur."

BYOND even the question of whether underground and above-ground explosions nearby have already compromised the integrity of the Yucca Mountain site, there is one of common sense: Is it prudent to put nuclear waste, which must be isolated for thousands of years, halfway between a range where nuclear bombs *continue* to be exploded and one that *continues* to be subjected to aerial bombardment? Yucca Mountain actually straddles the unmarked border between the two, and both the repository itself and its "fuel-receiving facility," where canisters of waste will be held until they can be emplaced, will be directly under the flight path of practicing fighters and bombers. Accidents from this practice have already scarred the desert outside the range: in 1973, a Nellis plane dropped six five-hundred-pound bombs on a nearby Fish and Wildlife Service facility. And when the repository is built the Department of Energy expects that there will be low-altitude flights by Air Force planes over trains transporting casks of waste. To address these concerns, the department says that it is prepared to "harden" the spent-fuel-receiving facility to enable it to "withstand the input of strikes of an aircraft containing live ordnance," and to route the rail spur leading to the repository away

from ranges where strafing is practiced.

But five-hundred-pound bombs are firecrackers compared with the nuclear explosions, of up to a hundred and fifty kilotons, that rock Yucca Mountain approximately twice each month. Since 1963, four hundred and sixty-nine "announced" tests have been conducted beneath the test site, and the Natural Resources Defense Council says that its scientists have identified at least a hundred and seventeen secret tests during the same period. While I was in Nevada, I brought up the issue of the bomb tests with Donald Vieth, a Department of Energy engineer, who directed the planning for the Yucca Mountain repository project for five years; recently, he was promoted to a post that makes him responsible for safety procedures at the test site.

"People with technical competence have looked at this, and they see no reason for concern that continued weapons testing would compromise the repository," he assured me. "The closest a nuclear test could come to us is fifteen miles, and at that distance we can't identify a physical effect. Some of our tunnels on the test site are much closer, and they're undamaged."

How about the overhead bombers? I asked.

Dr. Vieth shrugged. "Suppose somebody did drop a five-hundred-pound bomb right onto our repository—that wouldn't affect the spent fuel's isolation. Nuclear reactors are far more vulnerable to the kind of thing you're talking about than our repository would be."

Not surprisingly, the Nevada opponents of the Yucca Mountain project have not been reassured. For some time now, Hank Greenspun has been attempting to marshal opposition to the combination of underground tests and the repository, and I asked him how he felt about the two.

"Not good," he said. "They've made all these surveys to show us how slow the travel time is from Yucca Mountain to our water sources, just in case the repository doesn't hold the waste, but who knows whether the next nuclear blast at the test site won't open a new fissure that will constitute a fast pathway downstream?"

Even if continued testing doesn't compromise the integrity of the repository site, it will inevitably compromise the integrity of the siting process. The

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Department of Energy's plan for building the repository promises the host state "full, open and timely sharing of technical information," and that appears to include the results of tectonic monitoring done to test the strength of the formations beneath Yucca Mountain. However, some of these data, if they should be made public, might reveal the timing and the extent of the secret underground nuclear explosions, and therefore compromise highly classified information. The department says that the findings will be given to the Nuclear Regulatory Commission only in closed sessions—if at all. An obvious way to resolve the conflict would be to end the testing (after more than five hundred such "experiments," how many more can be needed to demonstrate the lethal potential of nuclear weapons?), but the Reagan Administration says that the government has no intention of stopping the tests. The repository's opponents say, however, that even if the tests do end they'll continue to fight the repository. "Testing won't go on forever," Greenspun said to me. "Sooner or later, we'll make a deal with the Russians, but once spent fuel goes underground, that is forever."

If, for any of these reasons, Yucca Mountain is found to be an unfeasible place to dispose of nuclear waste (the ultimate decision is in the hands of the Nuclear Regulatory Commission, which has three years to consider licensing the construction of the repository after the seven years or so that it will take the Department of Energy to characterize the site), the question of where to put spent fuel and the effluents of reprocessed spent fuel will return to Congress. Meanwhile, high-level waste accumulates. At the beginning of this year, in this country, there were thirty-four thousand one hundred boiling-water-reactor assemblies, of the Dresden I type, and twenty-two thousand eight hundred and ninety-eight pressurized-water-reactor assemblies (these are slightly shorter but are larger in diameter, more than twice as heavy, and thus even more radioactive), in the pools of a hundred and nine operating commercial power reactors. So far, two-thirds of these reactors have been forced to expand their pools—twice in some cases—and during 1988, the Department of Energy estimates, commercial nuclear power will generate thirty-eight hundred and

twelve more boiling-water assemblies and twenty-one hundred and eighty-eight more pressurized-water assemblies.

Most of this spent fuel will survive in the pools long after the reactors that produced it have shut down. Dresden I, for example, was closed in 1984, after twenty-five years of operation, and its irradiated assemblies were transferred, in lead-lined steel casks, to the pools of two other reactors in Morris. If these two units also last for twenty-five years, they will be shut down well before the repository at Yucca Mountain could conceivably accept their spent fuel. Military high-level waste, too, is accumulating. More than twelve million cubic feet of it is being stored in underground tanks at four nuclear facilities: at Hanford; at the Savannah River nuclear reprocessing plant, in South Carolina; at the Idaho National Engineering Laboratory, near Idaho Falls; and at the site of the defunct commercial reprocessing plant in West Valley, New York. These effluents have been accumulating at the rate of about two hundred thousand cubic feet a year over the past decade.

"Nuclear waste disposal is a political problem, not a technical problem," Dr. Edward Teller, one of the founding scientists of the atomic age, said about a decade ago, in advertisements promoting nuclear power. And so it has proved—and is still proving—to be. The taking of a state's land—forever, for all practical purposes—and the raising of the approximately fifty billion dollars that will be required to characterize, construct, and operate a spent-fuel and high-level-waste repository are political problems: political problems of a magnitude that the United States has never before confronted in peacetime. And certainly they are too important to have been addressed, without hearings and virtually without debate, solely on the basis of political criteria, by a Congress rushing to get home for Christmas.

—FRED C. SHAPIRO

CASEY STENGEL LIVES!

[From the *Topeka Capital-Journal*]

HAINES CITY, Fla. (AP)—George Brett says he regrets smashing a reporter's camera against a wall.

"I regret what I did," said the first baseman of the Kansas City Royals. "But I'm not sorry I did it."

HIGH-LEVEL RADIOACTIVE WASTE NEWSLETTER

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NATIONAL CONFERENCE OF STATE LEGISLATURES
1050 Seventeenth Street, Suite 2100
Denver, Colorado 80265

William T. Pound, Executive Director

Barbara Foster
Contributor

Cheryl Runyon
Contributor

The purpose of this newsletter is to provide legislators, their staffs and other interested parties with information on high-level radioactive waste. Information on meetings, publications and other items of interest will be gratefully accepted and published in this newsletter as space permits. Funding for this publication is provided by the U.S. Department of Energy. Any opinions, findings or conclusions in this publication are those of the NCSL staff and do not necessarily reflect the views and policies of the U.S. Department of Energy.

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CONGRESSIONAL/AGENCY ACTIVITY

● Secretary of Energy John Herrington announced on February 16, 1988, that the N-Reactor located on the Hanford Reservation near Richland, Washington, will not resume operation. The N-Reactor, which supplied plutonium for weapons production, was closed down in January 1987 for safety-related upgrade work. Secretary Herrington stated that the N-Reactor's plutonium output will not be needed due to the present stockpile of defense material. The closure is expected to result in the termination of 2,600 Westinghouse Hanford employees during the next two years. Westinghouse is the Department of Energy (DOE) contractor responsible for the management of the Hanford Reservation. Remaining responsibilities at Hanford include reprocessing the N-Reactor fuel and the final cleanup of the Reservation. When those tasks are completed in approximately 1994, the remaining 3,800 workers will lose their jobs.

● DOE has submitted a budget request to Congress for an appropriation of \$448.8 million from the Nuclear Waste Fund for fiscal year (FY) 1989 to finance the high-level waste program. DOE received an appropriation of \$360 million for FY88. The current request is an increase of \$88.8 million, or 21 percent, over the previous budget authorization. The majority of the funds requested were for repository-related activities. The request for DOE program management and review includes funding for the office of the special negotiator (located within the Executive Office of the President) and the technical review board and the monitored retrievable storage (MRS) review commission. The department is planning to

act quickly after the MRS review commission report is submitted to Congress in June 1989 and has requested a large increase in funds to initiate the survey and evaluation of potential MRS sites, as well as development of the actual facility.

The NRC also submitted a \$7.4 million request for funding from the Nuclear Waste Fund to support its activities related to the high-level waste program. These activities include the licensing of a high-level nuclear waste repository, independent spent fuel storage and an MRS.

The chart on page 2 indicates the difference in dollars between the FY88 and FY89 budgets for major sections within DOE. For more information, contact Richard Levan, Office of Resource Management, OCRWM, U.S. DOE, 1000 Independence Avenue, S.W., Washington, D.C. 20585, 202/586-8953.

● DOE has renewed its cooperative agreement with NCSL for 1988-89. The funding will be used by NCSL to develop and staff a tour of the Nevada Test Site and high-level waste concurrent session at the Annual Meeting in Reno; research and write several state legislative reports on high-level waste related issues; publish this newsletter; and conduct technical assistance for interested state legislatures. NCSL has received funding from DOE since 1984 to provide assistance to state legislatures on this issue. For more information, contact Dwight Connor, NCSL, Suite 2100, 1050 17th Street, Denver, CO 80265, 303/623-7800.

FY 1989 Nuclear Waste Appropriations Request

<u>Activity</u>	<u>Budget Authority (In Millions)</u>		
	<u>FY 1988 Estimate</u>	<u>FY 1989 Request</u>	<u>% Change</u>
First Repository	\$ 240.9	\$ 289.7	20
Second Repository	3.5	0.0	—
Monitored Retrievable Storage	4.0	15.0	275
Transportation and Systems Integration	37.0	43.6	18
Program Management, Technical Support	56.8	62.2	10
Capital Equipment	17.8	23.3	31
TOTAL Program	\$360.0	\$433.8	21
NRC Fees	0.0	\$ 15.0	
TOTAL NUCLEAR WASTE FUND	\$360.0	\$448.8	25
Anticipated Interest Income derived from Federal Treasury Instruments		\$176.4	

Source: "OCRWM Bulletin," February 1988, Submitted to Congress by DOE on February 18, 1988.

● The U.S. Department of Transportation (DOT) announced in the April 7, 1988, Federal Register an Advance Notice of Proposed Rulemaking (ANPRM) covering the highway routing of non-radioactive hazardous materials. Highway route controlled quantities of radioactive material (spent fuel) already are regulated in HM-164. There is a six-month comment period, to October 11, 1988, and public hearings on June 14 in Sacramento and on September 15 in Washington, D.C. All affected parties, including states, can make their opinions known in this time period. For more information, contact Joseph Nalavanko, Policy Development and Information Systems Division (202/366-4484) or Lee Jackson, Standards Division (202/366-4488), Office of Hazardous Materials Transportation, RSPA, U.S. DOT, Washington, D.C. 20590. (Note: Many of the questions asked in the ANPRM are

similar to those states might want a state routing agency to consider if addressing state radioactive materials routing regulations.)

● In the April 7, 1988, Federal Register, DOT denied the appeal of Nevada regarding the inconsistency ruling (IR-19) that found Nevada's regulations governing the transportation of hazardous materials to be inconsistent with federal law. The Nevada hazardous materials definition included low specific activity radioactive materials.

● The new toll-free phone number for the NRC's recorded announcement of upcoming technical meetings between the NRC and DOE on the high-level waste repository program is 1-800/368-5642, ext. 20436.

- The NRC plans to continue its negotiated rulemaking on the licensing support system (LSS) for the high-level waste repository. The LSS will be the computer system used to store, research and retrieve, in full text, the reports and records needed for geologic repository licensing. The High-Level Waste Licensing Support System Advisory Committee has been reduced in membership to the state of Nevada; a coalition of Nevada local governments; a coalition of nonprofit environmental groups; Edison Electric Institute and the Utility Nuclear Waste Management group, jointly; DOE; and the NRC. Meetings were held in March, April and May, with the final meeting to be held in Reno on June 15-16, 1988. For more information, contact Francis X. Cameron, Office of the General Counsel, U.S. NRC, Washington, D.C. 20555, 301/492-1623.

DOE awarded a \$5.28 million contract to SAIC to provide support for the LSS. SAIC's responsibilities include: defining the requirements for submission and management of documents concerning the licensing of a geologic repository; designing a computer system to meet those requirements; preparing the specifications for computer hardware, software and telecommunications needs; testing the system; developing training procedures and materials; and guaranteeing the satisfactory loading of approximately four million pages of data into the system. The contract runs from September 30, 1987, until March 29, 1990.

- The State, Local and Indian Tribe Program of the NRC has moved to Rockville, Maryland. The new address is State, Local and Indian Tribe Programs, Mail Stop WF-3-D-23, U.S. NRC, Washington, D.C. 20555, 301/492-0321.

- The speaker of the House of Representatives and the president *pro tem* of the Senate named the members of the Monitored Retrievable Storage (MRS) Review Commission on March 21, 1988, as required by the Nuclear Waste Policy Act Amendments (NWPAA). The members are: Victor Gilinsky, a former NRC commissioner; Alex Radin, a former American Public Power Association executive director; and Dale Klein, a professor at the University of Texas. Mr. Gilinsky resigned from the commission on April 7; a replacement has not yet been named.

Legislation

- HR 4041 (Buechner-MO) Requires DOE to receive certification from the Nuclear Regulatory Commission (NRC) for casks used to transport high-level waste and spent fuel.

- HR 4069 (Howard-NJ, deceased) DOT-sponsored bill for reauthorization of the Hazardous Materials Transportation Act (HMTA).

- HR 4121 (Sharp-IN, Bryant-TX) Creates an independent safety oversight board for DOE nuclear facilities.

- HR 4134 (Moorhead-CA) Reorganizes the NRC with a single administrator.

- HR 4139 (Sharp-IN, Bryant-TX) Requires the appointment of an inspector general within the NRC.

- HR 4140 (Sharp-IN, Bryant-TX, Gejdenson-CT) Requires an office of inspections within the NRC.

o **HR 4224 (Morrison-WA)** Requires DOE to demonstrate the technical feasibility of burning nuclear fuel from dismantled weapons in DOE reactors and to ask the president to invite the USSR to participate in the demonstration.

o **HR 4283 (Skeen-NM)** Provides independent scientific evaluation of WIPP by the Environmental Evaluation Group (EEG). The EEG would be responsible to the state Institute of Mining and Technology, not to the governor. The legislation also would prohibit pre-review of EEG's work. The EEG would have offices in Albuquerque and Carlsbad, New Mexico, and the director would select the site of the main office. (Note: This bill also will be offered as an amendment of HR 2504, the land withdrawal legislation for WIPP.) This bill is a companion to S 2220.

o **S 2191 (Reid-NV)** Establishes a Western Center for Nuclear and Groundwater Research.

o **S 2220 (Bingaman-NM, Domenici-NM)** A companion to HR 4283.

o **S _____ (Breux-LA)** Replaces the Nuclear Regulatory Commission with a single administrator heading the Nuclear Safety Agency (NSA). Authorizes funding for the NSA and improves nuclear plant security. Also establishes an independent, three-member safety board within the NSA to investigate safety events. Criteria for safety events include: 1) moderate exposure to or release of radioactive materials; 2) major degradation of essential safety-related equipment; and 3) major deficiency in design, construction, operation or management controls. The board will submit its findings to Congress, (the administrator) with recommendations for prevention of fu-

ture occurrences. The administrator will have 120 days to adopt the recommendations or provide the reasoning for failing to do so. The bill also creates an inspector general whose office would assume the duties of investigating internal agency waste, fraud and abuse. (Note: This is a "clean" bill being reviewed in committee; a bill number will be assigned when it is introduced in the Senate.)

STATE/TRIBAL ACTIVITY

● Senior Justice David Zenoff of Nevada's Fifth District Judicial Court determined on February 11, 1988, that the creation of Bullfrog County was special legislation affecting county government and illegal under the state constitution. The legislature passed and the governor signed into law a bill creating Bullfrog County—a 144-mile area of uninhabited, federally-owned land with no population—as a method of maximizing DOE payments equal to taxes if Yucca Mountain were selected as the repository site. The state attorney general declined to represent the state and the governor decided not to answer the lawsuit filed by the commissioners of Nye County (the county from which Bullfrog was carved). The legislature hired special counsel to represent it in the litigation.

The state legislative commission appointed an *ad hoc* subcommittee to examine the state's options in light of the judge's ruling. The subcommittee met on March 1, 1988, in Las Vegas to consider whether to appeal, draft a new law that could withstand a constitutional challenge, or create a special "health and safety district" with the authority to tax the nuclear waste repository.

The subcommittee reported its findings to the legislative commission on March 8, 1988. The committee recommended that the legislative commission should not appeal the trial court's decision to the state Supreme Court. The committee also recommended that it be allowed to continue to meet and develop new legislation for consideration during the 1989 session. (The Nevada Legislature is not in session in 1988.)

- The Washington House of Representatives considered a resolution, SHCR 4430, which established a joint select committee on nuclear affairs to monitor and discuss nuclear issues. The resolution died in the Senate Energy and Utilities Committee. The committee was to consist of eight members, two each from the minority and majority caucus of each house. Each member appointed was to be from a different congressional district and jointly appointed by the speaker of the House and the president of the Senate. The committee would have been jointly chaired by a member of each majority caucus, with staff support provided from the energy and utilities committees in the House and Senate.

- The Washington State Institute for Public Policy (WSIPP) announced that the January 1988 issue of Nuclear Waste Update was the final newsletter. The Washington legislature is closing out its high-level waste activities as required by the NWPA.

- The Radioactive Transportation Committee for the Pacific States Agreement (ID, OR, WA) met in Oregon on March 14. The committee intends to draft a proposal to DOE to test the Commercial Vehicle Safety Alliance (CVSA) draft standards that have been developed for the Office of Civilian Radioactive Waste Management

(OCRWM). Since there will be a large number of radioactive waste shipments to the Waste Isolation Pilot Plant (WIPP) site in New Mexico through these three states, it will give OCRWM a testing ground to ascertain the frequency of various kinds of truck breakdowns, and it will give the states the opportunity to identify the need for inspections in general and for the inspection of certain items in particular. For more information, contact Bob Robison, Radioactive Materials Transportation Coordinator, Siting and Regulation Division, Oregon Department of Energy, 625 Marion Street, NE, Salem, OR 97310, 503/378-3194.

- Representative James Mitchell was elected chairman of the Maine Advisory Commission on Radioactive Waste on January 14, 1988. Representative Mitchell has served in the state legislature since 1980 and has represented Maine in previous meetings of the NCSL Legislative Working Group on High-Level Waste. To learn more about the group's activities, contact the Advisory Commission on Radioactive Waste, State House Station 120, Augusta, ME 04333, 207/289-3059.

- Maine and Wisconsin, former second repository site candidates, have expressed ongoing concern about the need for a second repository. Specific concerns are: (1) no changes have been made in the 70,000 metric ton (MTU) capacity limit for the first repository, and if changes are made, Yucca Mountain's limit may be only 90,000 MTU; and (2) the Yucca Mountain site may prove to be unsuitable. Two key variables that can affect storage capacity are the amount of defense waste disposed of in the repository and the length of time spent fuel is cooled before it goes to the repository. For more information, contact Representative James

Mitchell, listed above, or Bob Halstead, Radioactive Waste Review Board, 620 Tenney Building, 3 South Pinckney, Madison, WI 53702, 608/266-1832.

● The NCSL State Federal Assembly Energy Committee passed three resolutions of interest at the March meeting in Washington, D.C.

—In high-level waste, NCSL supports (1) consultation with the executive and legislative branches in Nevada or any other host state in all steps of repository development; (2) independent compensation for the legislative and executive branches, as well as funding for independent technical assessments; (3) compliance with reasonable state laws regarding construction, operation and decommissioning of a repository; (4) consideration of risk minimization for transportation issues and state input on all risk issues; (5) DOE's work with NCSL and similar organizations; and (6) state input into site selection criteria and consideration of potential sites if there is a second repository.

—The second resolution speaks to the proposed reorganization of the NRC. The NCSL committee supports the appointment of a single administrator to provide a centralized and consistent administration in order to reform the licensing and regulation procedures.

—The third resolution addresses the reauthorization of the Price-Anderson Act, which places a ceiling on liability should there be a nuclear-related accident. The Energy Committee urges (1) reauthorization for 10 years; (2) an increase in the first tier of liability payments; (3) a maximum liability payment of \$63 million per reactor; (4) extending the statute of limitations to three

years from the time the victim should have known of his injury; and (5) lowering the threshold for an Extraordinary Nuclear Occurrence. On issues related to high-level waste, the committee supports: (1) adding a separate subtitle for transportation-related liability; (2) holding DOE strictly liable for accidents related to the transporting and siting of nuclear waste; (3) holding states and tribes harmless for all nuclear-related accidents; and (4) reimbursing states and tribes for expenses incurred in responding to a nuclear accident.

These resolutions will be considered for adoption by all NCSL members at the Annual Meeting in Reno, Nevada, July 25-29, 1988. To request a copy of any or all of the resolutions, contact Leann Stelzer, NCSL, Suite 2100, 1050 17th Street, Denver, CO 80265, 303/623-7800.

INTEREST GROUP ACTIVITY

● The Energy Committee of the Western Interstate Energy Board met in Denver, Colorado, February 9-11, 1988. The routing task force presented its proposal that DOE, states and other interested parties develop a route selection methodology and that DOE, as the shipper signing contracts, specify the routes the carrier should take.

—The Western Governor's Association expressed increasing interest in the OCRWM program, since many western states will be affected.

—There was lengthy discussion about the emergency response training to be given to the western states prior to the announcement of the WIPP shipments in October. States want to make sure the training will meet the needs of the responders.

—Personnel from Battelle discussed forthcoming studies: Dedicated Train Study; Analysis of Train Accident Data, "Hefty" Cask and Rail Car and a Comparative Analysis of Transport Modal Options.

For more information, contact Lori Friel, WIEB, 6500 Stapleton Plaza, 3333 Quebec Street, Denver, CO 80207, 303/377-9459.

- Nuclear Power Update - The United States now has 103 operating nuclear reactors, plus three with fuel power licenses not yet operating, plus three with low-power operating licenses. For more information, contact Pat Bryant, U.S. Council for Energy Awareness, 1776 I Street, N.W., Suite 400, Washington, D.C. 20006-2495, 202/293-0770.

- The operations and regulatory compliance division of Science Applications International Corporation, responsible for DOE-sponsored radioactive material transportation training programs, has moved. The new address is SAIC, P.O. Box 2501, Oak Ridge, TN 37831, 615/482-9031, ext. 403.

TRANSPORTATION

- The Center for Nuclear Waste Analysis, located in the Southwest Research Institute in San Antonio, is a federally-funded research and development center (FFRDC) under contract solely to the Nuclear Regulatory Commission to support its work in the licensing of a nuclear waste repository. The four key elements to be studied are geology, repository design and operation, engi-

neered barriers and transportation. Applicable regulations in 49 CFR and 10 CFR will be studied to identify any uncertainties that need to be investigated. In the transportation area, the center will look at old studies, risk assessment, etc., and will work with Sandia National Laboratories' Transportation Technology Center and the NRC Safeguards program. For more information, contact Richard N. Pierce, Manager, Transportation/Special Projects and Analytical Evaluations, Center for Nuclear Waste Regulatory Analysis, P.O. Drawer 28510, San Antonio, TX, 78284, 512/522-5151.

- In July, Sandia National Laboratories TRANSNET users can access StateGEN/StateNET, a code that provides a methodology to assess local-area routing alternatives for highway radioactive materials transportation. For more information, contact Christine Erickson, Sandia National Laboratories, Division 6321, P.O. Box 5800, Albuquerque, NM 87185, 505/844-8906.

- Transuranic waste shipments to New Mexico are still scheduled to begin in 1988, but their number will be reduced. The first shipments will be from western states and will impact Arizona, California, Colorado, Idaho, New Mexico, Nevada, Oregon, Utah and Washington.

- Secretary of Transportation James Burnley has established the Office of Safety Program Review within the Department of Transportation. The move represents a shift from the Safety Review Task Force to a permanent office. The office will report to Caroline Mederos, deputy assistant secretary for safety. The office will review the implementation of the task force recommendations and conduct additional reviews, and direct special safety initiatives to Secretary

Burnley. For more information, contact Ms. Mederos at the Office of Safety Program Review, U.S. DOT, 400 7th Street, S.W., Washington, D.C. 20590, 202/566-4450.

- Although transportation routes for shipment of materials from reactors to repository have not yet been determined, the map below gives some idea of the likely transportation corridors.

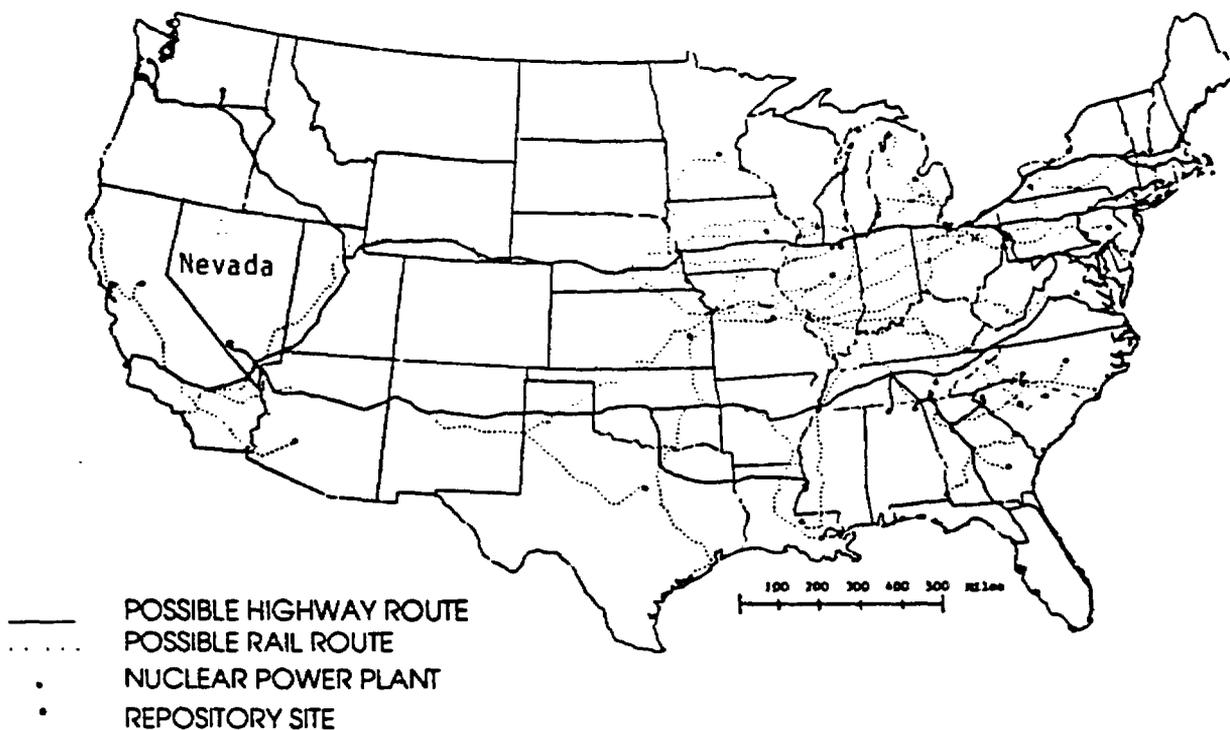
- Department of Energy/Defense Programs will offer emergency response training to state emergency responders as well as Indian tribes along WIPP shipment routes. For more information, contact Tom Hindman, Deputy Director, Office of De-

fense Waste and Transportation Management, A-214B GTN, Germantown Building, Germantown, MD 20545, 301-353-3956.

- The Transportation Coordinating Group (TCG) met in Atlanta, Georgia, March 29 and 30. The Department of Energy discussed the OCRWM reorganization and plans for the coming year from the Chicago, Idaho and Oak Ridge operations offices, and the Nevada Project Office. The Southern States Energy Board, Western Interstate Energy Board, National Conference of State Legislatures and National Congress of American Indians reported on their contract activities. New cask designs were reviewed, as well as the status of the study on fuel

DOE/OCRWM/TRAN 3-M2

HIGHWAY AND RAIL ROUTES FOR DIRECT SHIPMENTS FROM ALL REACTORS TO A REPOSITORY IN YUCCA MOUNTAIN, NEVADA



burn-up credit. The new cask designs assume fuel burn-up credit will be given. Noteworthy items include:

1. The Western Shoshone Indians, who have legal rights in Nevada near the test site and in other states (California, Idaho and Utah) that may involve transportation corridors, intend to become actively involved in the program.

2. Representatives from tribes along I-40 in Oklahoma wish to become more involved in the program.

3. Representatives from the executive branch of the state of Nevada have strongly encouraged DOE to proceed with the resolution of institutional issues, since some major activities—e.g., transportation-related construction—may take 10 years to complete after the first dollar becomes available.

4. The Nevada executive branch representatives also encouraged DOE to see that the environmental impact statement (EIS) scoping includes national transportation impacts.

5. There are polarized opinions as to whether or not the DOT routing rule, HM-164, can work for Nuclear Waste Policy Act (NWPA) shipments. Some feel that the volume and funnel effect to Nevada were not anticipated in HM-164. Others feel it can work because at some point states have to resolve any differences that may exist.

6. The nuclear power utilities reminded everyone that all the money for all the activities comes from states' citizens, who are ratepayers.

7. DOE plans to hold a workshop on emergency response in April 1989. The object is to bring together all the key players—federal, state, tribal, local and industry—and to attempt to identify any gaps that may exist in the system.

8. Another Transportation Coordinating Group meeting is anticipated in 1988.

For more information, contact Ralph Stein, Office of Systems Integration and Regulations, RW-33, OCRWM, DOE, 1000 Independence Avenue, S.W., Washington, D.C. 20585, 202/586-6046.

INTERNATIONAL

● In a special edition (January 15, 1988), Nuclear Fuel reported that the operating license of a German firm was suspended for the possible violation of the Nonproliferation Treaty (NPT). Proof has not been produced, but the company is accused of shipping weapons grade uranium to Pakistan or Libya. The German Nuclear Safety Minister has presented the Bundestag (parliament) with the following regulatory controls as security measures: (1) government notification of all nuclear waste transports 48 hours before shipment; (2) mandatory alpha and gamma spectroscopic measurement of packaged waste prior to shipment; (3) establishment of a program to sample contents of conditioned wastes; (4) intensified spot sampling; and (5) documentation of all waste transports.

The minister also added that in the future German utilities will be required to condition low- and medium-level wastes on reactor sites and that a German facility for low-level waste incineration will be built to eliminate transportation of low- and medium-level wastes outside the country.

PUBLICATIONS/VIDEOS

- The following publications currently are available from DOE.

—Additional Information on Monitored Retrievable Storage (DOE/RW-0166, November 1987).

—Consultation Draft Site Characterization Plan, Overview, Yucca Mountain Site, Nevada Research and Development Area (DOE/RW-0161, January 1988).

—Environmental Monitoring and Mitigation Plan for Site Characterization, Nevada Nuclear Waste Storage Investigations Project, Revision 1 (DOE/RW-0176, January 1988).

—Draft Environmental Regulatory Compliance Plan for Site Characterization of the Yucca Mountain Site, Nevada Nuclear Waste Storage Investigations Project (DOE/RW-0177, January 1988).

—Socioeconomic Monitoring and Mitigation Plan for Site Characterization, Nevada Nuclear Waste Storage Investigations Project, Revision 1 (DOE/RW-0179, January 1988).

—Characteristics of Spent Fuel, High-Level Waste, and Other Radioactive Wastes Which May Require Long-Term Isolation (DOE/RW-0184, December 1987), Vol. 1 of 6.

—OCRWM Backgrounders:

—Radiation and High-Level Radioactive Waste (DOE/RW-0167, February 1988);

—Geographic Distribution of High-Level Radioactive Waste (DOE/RW-0168, February 1988);

—Health and Safety Protection in the Management of the Nation's High-Level Radioactive Waste (DOE/RW-0169, February 1988); and

—The Multiple Barrier System of Geologic Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste (DOE/RW-0170, February 1988).

- The Office of Transportation Systems and Planning (OTSP), Battelle Memorial Institute, has issued a technical report, Considerations in Rail Routing of Radioactive Materials, With Emphasis on the Relationship Between Track Class and Train Accidents, (BMI/OTSP-02, UC-71), January 1988. For a copy, contact Mimslyn K. Shuck, Assistant Public Information Specialist, Public Information and Outreach Section, Office of Transportation Systems and Planning, Battelle Memorial Institute, 505 King Avenue, Columbus, OH 43201-2693, 614/424-4332.

- The U. S. Department of Energy, Idaho Operations Office, has a series of videotapes on low-level waste available for state legislators and other interested parties. The series is divided into nine modules of varying length on current low-level waste topics. For instance, Tape 8, "Site Development," discusses the merits of alternative technologies and costs in relation to volume. Tape 9, "Issues Affecting Progress," reviews the political, legal, institutional, liability, financing and other issues that are impeding states' progress toward a facility development. For copies of the tapes, contact Beth Reyes, TSB, EG&G Idaho, INEL, P.O. Box 1625, Idaho Falls, ID 83415, 208/526-1651.

- Spent Nuclear Fuel Transportation: Public Issues and Answers (DOE/NE/44139-17), by W. Dean Hoffman, July 1986,

a report prepared as an account of work performed by West Valley Nuclear Services Company, Inc., under contract No. AC07-81NE44139, is available from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

● The NRC has issued The U.S. Nuclear Regulatory Commission Program with State and Local Governments and Indian Tribes (NUREG-1309, March 1988). The State, Local and Indian Tribe Programs (SLITP) was created within the Office of Governmental and Public Affairs by a reorganization of the NRC. The report reviews the NRC's relations with state and local governments and Indian tribes. To request a copy, contact State, Local and Indian Tribe Programs, Office of Governmental and Public Affairs, U.S. NRC, Washington, D.C. 20555, 301/492-0321.

● The following reports have been issued by the NRC:

Long-Term Performance of High-Level Glass Waste Forms, NUREG/CR-4795, BMI-2143, November 1987, \$9.

Long-Term Performance of Container Materials for High-Level Waste, NUREG/CR-4955, BMI-2155, November 1987, \$20.

The Sealing Performance of Bentonite/ Crushed Basalt Borehole Plugs, NUREG/CR-4983, November 1987, \$13.

To obtain copies of these reports, contact Superintendent of Documents, U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013-7082, 202/275-2060.

● The Third Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program (SECY-88-39, February 9, 1988) issued by the NRC, contains an enclosure that delineates NRC activities required by the NWP, including the December redirection. Some dates are estimates, contingent upon DOE activities. For more information, contact Wayne Walker, Nuclear Materials Safety and Safeguards, U.S. NRC, Washington, D.C. 20555, 202/492-0447.

● The General Accounting Office (GAO) has issued Nuclear Waste Quarterly Report on DOE's Nuclear Waste Program as of December 31, 1987 (GAO/RCED-88-99FS February 1988). To request a copy of this report, contact U.S. GAO, P.O. Box 6015, Gaithersburg, MD 20877, 202/275-6241.

● On March 7, 1988, the NRC released NRC Staff Review of the Department of Energy's January 8, 1988, Consultation Draft Site Characterization Plan for the Yucca Mountain Site. The report contains NRC's objections, comments and questions, and points out that comments and questions may become objections if not quickly addressed. For a copy, contact Eileen T. Tana, Licensing Assistant, Operations Branch, Division of High-Level Waste Management, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, 202/492-3387.

● The Nevada Agency for Nuclear Projects/Nuclear Waste Project Office has issued the following technical reports dealing with aspects of the hydrology and geochemistry of Yucca Mountain, the proposed candidate site for the repository:

—Environmental Program Planning for the Proposed High-Level Nuclear Waste Repository at Yucca Mountain, Nevada (NWPO-TR-001-87).

—Physics and Chemistry of the Transition of Glass to Authigenic Minerals (NWPO-TR-002-87).

—Technical Review: Two-Dimensional Steady-State Model of Groundwater Flow, Nevada Test Site and Vicinity, Nevada-California (NWPO-TR-003-87).

—Review of Modeling Efforts Associated with Yucca Mountain, Nevada (NWPO-TR-004-87).

—Characterization of Infiltration into Fractured Welded Tuff Using Small Borehole

Data Collection Technique—Inventory of Numerical Codes Available for High-Level Nuclear Waste Repository Performance Modeling at Yucca Mountain, Nevada ((NWPO-TR-006-87).

To request copies of these reports, contact the Nevada Agency for Nuclear Projects/Nuclear Waste Project Office, Capitol Complex, Carson City, NV 89710, 702/885-3744.

● Civilian Nuclear Programs: The United States, France and Japan by Terrell Erikson (January 1988), describes French and Japanese nuclear fuel technologies, nonproliferation policies and waste disposal programs, and compares them with the U.S. programs. To request a copy, contact WSIPP, The Evergreen State College, Seminar Building, Olympia, WA 98505 206/866-6000, ext. 6454.

● WSIPP has issued Nuclear Futures, a report on its session addressing life for nuclear power after the NWP. The session, held December 1, 1987, addressed the issue from the perspectives of regulatory

agencies, the legal profession, industry, the press and the public. To request a copy of the report, contact WSIPP, The Evergreen State College, Seminar Building, Olympia, WA 98505, 206/866-6000, ext. 6454.

● The state of New Mexico's Environmental Evaluation Group has published two reports related to the WIPP site: A Cultural Assessment of the Continuous Air Monitoring System at the Waste Isolation Pilot Plant (EEG-38, March 1988), and Chemical and Radiochemical Characteristics of Groundwater in the Culebra Dolomite, Southeastern New Mexico (EEG-39, March 1988). The Environmental Evaluation Group provides an independent analysis of the WIPP site for the New Mexico Health and Environment Department. To request copies of these reports, contact Robert Neill, Director, Environmental Evaluation Group, P.O. Box 3149, Carlsbad, NM 88220, 505/885-9675.

● Department of Transportation Inconsistency Rulings, a State Legislative Report (SLR) by Barbara Foster, now is available to state legislators and staff at no charge and to the general public at \$5 per copy. To obtain a copy, contact the NCSL Marketing Department, Suite 2100, 1050 17th Street, Denver, CO 80265, 303/623-7800.

● The League of Women Voters of Bucks County, Pennsylvania, has produced a 30-minute videotape (1/2-inch VHS) on environmental mediation. "Without Blood: Mediation of Environmental Disputes" discusses the key aspects of environmental mediation and includes a roundtable discussion on the issue. The purchase fee for the video is \$35. For more information, write "AT ISSUE," Bucks County League of Women Voters, R.D. #3, Box 7-A, New Hope, PA 18938.

● The National Association of Regulatory Utility Commissioners (NARUC) has published a report, Survey of Spent Nuclear Fuel Storage, which indicates that 78 of 118 nuclear power plants will have reached their storage capacity for spent fuel by the year 2003. The NRC sets limits on the number of fuel rods a storage pool can hold; therefore, a power plant at capacity will be forced to use reracking, fuel consolidation or dry cask storage until a repository is completed. NARUC also plans to study the comparative costs of these options. To request a copy of the survey, send \$6 to NARUC, P.O. Box 684, Washington, DC 20044.

● Have Waste, Will Travel: An Examination of the Implications of High-Level Nuclear Waste Transportation, published in July 1987, is available at a cost of \$4.50 from the Natural Hazards Research and Applications Information Center, Institute of Behavioral Science #6, Campus Box 482, University of Colorado, Boulder, CO 80309, 303/492-6818.

● A presentation of interest to state, local and tribal officials was made at Waste Management '88 in Tucson. Public Concerns About RAM Transport—Communicating Engineering Data on Risk (SAND87-2656A, TTC-0762) by James McClure, et al., is available from NCSL. For a copy, contact Leann Stelzer, NCSL, Suite 2100, 1050 17th Street, Denver, CO 80265, 303/623-780

FUTURE MEETINGS

NCSL Annual Meeting, Reno, Nevada, July 24-29, 1988.

● NCSL will sponsor a tour of the Nevada Test Site and Yucca Mountain, the site DOE is studying as a potential host for a high-level waste repository. The tour will be held July 22, 1988, and will depart from and return to Las Vegas. The tour is limited to 45 participants with a required security clearance.

● NCSL also will host a concurrent session, "Nuclear Waste Comes to Nevada's Backyard," during the Annual Meeting. Mr. Ed Kay, acting director of the Office of Civilian Radioactive Waste Management, which is responsible for the repository program, is an invited speaker for the session.

For more information, contact Cheryl Runyon, NCSL, Suite 2100, 1050 17th Street, Denver, CO 80265, 303/623-7800.

● The **DOE Model Conference**, Oak Ridge, Tennessee, October 3-7, 1988. Contact Cynthia Kendrick, ORNL, P.O. Box Y, Oak Ridge, TN 37831-6029, 615/576-2632.

● The **9th International Symposium on the Packaging and Transportation of Radioactive Materials (PATRAM '89)**, Washington, D.C., June 11-16, 1989. Call for papers has been issued. Contact Judith Gale, Social and Scientific Systems, Inc., Suite 610, 7101 Wisconsin Avenue, Bethesda, MD 20814, 301/986-4870.

Reno Gazette-Journal

Sunday

May 22, 1988

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Study cites nuke-dump danger

Volcanic risk greater than previous estimates

By Mike Norris/Gazette-Journal

Chances of a volcanic eruption at Nevada's Yucca Mountain, proposed for the nation's first high-level nuclear waste dump, are much greater than earlier studies had estimated, according to new data compiled by scientists in New Mexico.

The study fuels concerns that the proposed \$30 billion deep-shaft storage project poses the potential for an environmental disaster should eruptions or earthquakes destroy metal canisters and release radioactive waste into the environment only 75 miles from Las Vegas.

The report was presented to the Department of Energy more than a year ago by Stephen Wells, a geomorphologist with the University of New Mexico-Albuquerque, and Les McFadden of the U.S. Geological Survey in Menlo Park.

The study puts the age of the Lathrop Wells volcanic cone 12 miles from the proposed repository site at less than 20,000 years — compared to previous estimates of about 300,000 years.

The younger a volcano, the more likely it is to erupt.

"It's much younger than people thought and it is definitely more complicated than was previously thought," Wells said.

Under DOE rules, the age of a volcano isn't enough to disqualify a proposed repository site. But John Bell, one of several UNR geologists advising the state on the issue, said Yucca Mountain could be disqualified if it is shown not to be safe for waste storage.

"The real concern is . . . it may suggest the likelihood of an eruption is much greater than was thought," said Robert R. Loux, director of the Nevada Nuclear Projects Agency.

The government plans to store up to 70,000 metric tons of waste — equal to more than 3,500 tractor-trailer loads — about 1,000 feet beneath the surface in a 2,000-acre area. It will contain 300,000 times the amount of radioactivity released into the atmosphere by all above-ground nuclear tests. The Chernobyl reactor accident in the Soviet was significantly less dangerous.

The spent fuel rods from commercial

From page 1A

reactors and some military nuclear weapons production waste that would be at the site could be strongly radioactive for 10,000 years.

Environmentalists and Nevada officials have raised fears that tremors could damage the repository and send clouds of radioactive material into the atmosphere. They've also pointed to the proximity of the Nevada Test Site, where the DOE regularly sets off powerful atomic devices — explosions that sometimes shake chandeliers in Las Vegas.

There also have been concerns that nuclear waste could make its way into ground water supplies.

Environmentalists: 'Great news'

Officials of Citizen Alert, a 1,100-member Reno-based environmental group fighting the dump, hailed Wells' evidence as an addition to other reports generated within DOE that question the Nevada site's stability.

"It's just another good sign of evidence of a flaw in Yucca Mountain," said Bob Fulkerson, executive director. "Along with the Syzmanski report covering the earthquake potential, this is great news."

In a report released Jan. 21 by Gov. Richard Bryan, Jerry S. Syzmanski, a senior member of the DOE Yucca Mountain team that has studied the site since 1984, said that because it is impossible to predict when earthquakes, faulting or other geological disasters could occur, "serious consideration should be given to abandoning the Yucca Mountain site and declaring it unsuitable for the purposes of permanent disposal of the high-level nuclear wastes."

Congress approved legislation in December 1987 that authorized DOE to abandon site studies in Texas and Washington and concentrate on Nevada. The action increased concern among Nevada officials and environmental groups such as Fulkerson's that DOE is sacrificing valid scientific principles to politics.

Under mandates of the 1954 Atomic Energy Act, the federal government is required to promote nuclear power to reduce U.S. dependence on foreign fuel sources. More than 100 reactors have been built since then, amassing up to 30,000 metric tons of spent fuel rods.

Some critics have said the Energy Department's scientific procedures don't adequately interrelate all features of Yucca Mountain's geology, geomorphology (the study of landforms) and hydrogeology.

"We're not totally convinced the DOE site characterization draft is as complete as it should be," said Judy Triechel, executive director of the Nevada Nuclear Waste Task Force, an independent group based in Las Vegas. "We're worried Yucca Mountain wasn't being considered as part of the full Great Basin. This report (Wells') sort of ties all this in."

Conflicting studies on volcano

Bruce Crowe, a geochemist at Los Alamos National Laboratory under whom Wells works, had estimated the age of Lathrop Wells at about 300,000 years. But "when Bruce saw our data in February (1987) he became convinced we were on the right track," said Wells, who has studied basaltic cones for the last seven years.

Wells and McFadden compared data on soil and rock samples from Lathrop Wells with data from a 15,000-year-old volcano

See STUDY, page 10A

Study warns of volcanic danger at nuclear-dump site

called the A-cone about 15 miles southwest of Bakersfield, Calif.

More studies, lasting up to three years, must be performed to obtain a more precise figure.

"Now we're trying to get more accurate on that and find out if it is less than 10,000 years old, or even 5,000 years."

"It's a little bit early to assess this very preliminary data," said Brent Turrin, research geologist of the U.S. Geological Survey. "But it's good data at this point as far as we can tell."

Crowe, who could not be reached for comment last week, and Wells are planning to publish details of their findings in scientific journals this summer.

"We want a very strong data set trying to define the precise age of Lathrop Wells, how many times it has erupted and the style of eruptions," Wells said. "That goes into Bruce Crowe's risk-assessment study."

Target opening: year 2005

But even as information that appears to question the suitability of Yucca Mountain is being accumulated, congressional leaders — including Rep. Morris K. Udall, the Arizona Democrat once considered an ally of Nevada in its fight to keep the dump out of the state — are already discussing issues involved with transporting the waste to Nevada. Under current plans, the dump could open around 2005.

The tenor of the discussion suggests that, at least in the minds of most members of Congress, the location question is settled. But some scientists — such as Wells — believe the DOE has become more open to data that might question the site.

"The important thing is there is new science being injected and DOE is fiscally supporting it," Wells said.

Bell, the University of Nevada-Reno geologist, said: "I know there are common complaints within the scientific community that information that appears to be detrimental to DOE's case has difficulty surfacing."

That could be due in part, he said, to DOE's rigorous review procedures. But some critics of the project contend the lengthy reviews are merely a cover for deeper political motivations.

"They submit their science to an extremely long review process which can be a matter of years," Bell said.

This was the case with Szymanski's report, which was submitted to Bryan long after the department had received it. Responding to criticisms DOE had buried the report, department officials said at the time it had yet to complete a review of the data.

Loux agreed with DOE officials that Wells' original report was never suppressed — Nevada representatives received an abstract — but that "the real problem with DOE is science is getting in the way of good politics."

Information 2 years old

McFadden and Wells gathered the data in summer 1986 and reported it to DOE and the Geological Survey in February 1987. A little more than a year later, in March 1988, it was presented at a Las Vegas meeting of the Geological Society of America.

"The report is of significant interest, although more studies are required," said Carl Gertz, director of DOE waste-management operations in Nevada. "But, all things considered, the odds we had of a volcanic eruption were one chance in a billion a year over 10,000 years. Now, they might be one chance in 10 million."

Yucca Mountain is composed of tuff, a dense yet brittle rock formed from volcanic eruptions. Openings occur when melted gaseous rock called magma belches upward from deep in the Earth and blasts through the surface. Most magma forms 50 to 100 miles beneath the surface.

An eruption at Lathrop Wells, a cinder cone volcano, could rupture the earth under Yucca Mountain.

"The main concern is that such a crack might form under Yucca Mountain, and the material come up from below," said Carl Johnson, technical programs administrator for the Nevada Nuclear Projects Agency.

"The result would be you'd basically be melting the canister and releasing the spent fuel."

If the lava itself did not reach the repository, the dump could still be threatened by hot water, which Johnson called a more likely scenario.

"The problem there is it contains a lot of dissolved materials — mainly salts and acids — that would attack and dissolve the canisters themselves."

Hearings to start next year

Hearings are scheduled to begin next year on the scientific procedures DOE plans to use in studying the site. In addition, construction of two 1,000-foot test shafts could begin next summer — further accelerating the momentum toward using Yucca Mountain.

The facility would have to be licensed by the Nuclear Regulatory Commission, which is considering changing the regulations governing the way it will treat environmental reviews of the repository.

Under current law, agencies such as DOE must submit impact statements for any federal action that would affect the environment. Licensing the DOE to receive and possess high-level radioactive waste at a geologic repository falls under that category, said NRC spokesman Greg Cook.

Lathrop Wells is one of six small cones ranging up to a few hundred yards high in the immediate region of Yucca Mountain, and one of many more scattered throughout an area called the Basin and Range Physiographic Province, of which the Great Basin is a part.

This area covers about a million square miles in Nevada, southeastern California to the Colorado River, southern Arizona, southern and central New Mexico and parts of Oregon and Idaho.

The youngest volcanoes are in Nevada, including some at the Carson Sink, and in Arizona, especially the Sunset Crater at Flagstaff, which U.S. Geological Survey scientists said is in its infancy — a mere 1,000 years old.

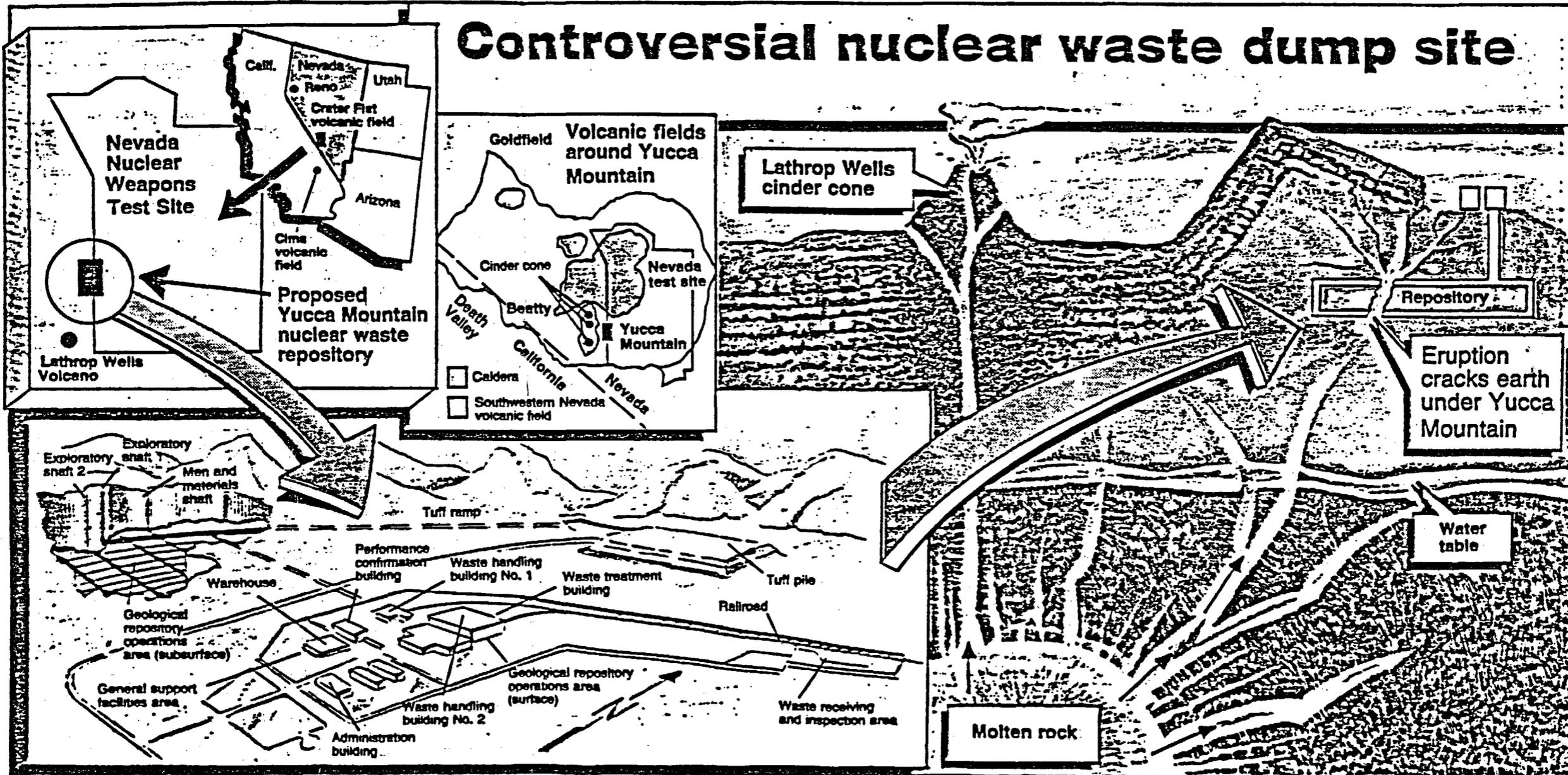
Others are in the Snake River Plain of central Idaho and eastern Oregon, the closest ones 300 miles northwest of Reno. Other young cones are in the Amboy Crater of California in the Mojave Desert only 20 miles off Interstate 40 and about 100 miles southeast of Barstow.

"There's a lot of these volcanic fields active off and on, but typically the occurrence between eruptions is hundreds and thousands of years," said research geologist John Dohrenwend of the U.S. Geological Survey.

Dohrenwend, other Geological Survey scientists and even Wells himself stressed the preliminary nature of the new data on Lathrop Wells.

"Of course, a lot more work has to be done around Lathrop Wells so we can pin this down better than it has been," Dohrenwend said. "I don't think anything is definite yet."

Controversial nuclear waste dump site



NEVADA NUCLEAR WASTE STUDY COMMITTEE

MEMBER ALERT

MAY 27, 1988

Gov. Bryan Refuses to Sign Benefits Agreement with DOE

Earlier this week, Gov. Richard Bryan announced that he had refused to sign a benefits agreement with the U.S. Department of Energy that would have made Nevada eligible to receive direct benefits payments totalling \$600 million for hosting a site for the nation's first high level nuclear waste repository. The governor said he was refusing to sign the agreement, or even to negotiate its terms, because it would not permit the state to fight the repository in the courts, and would eliminate the governor's right to veto a selection of a site by the President.

It was the feeling of the Nevada Nuclear Waste Study Committee that this action on the part of the governor was made for political reasons rather than in the best long term interests of the state. Accordingly, our spokesman Bob Dickinson issued a news release yesterday, a copy of which is enclosed.

The points made by Bob in his news release are valid criticisms of the governor's action. It is simply not appropriate for Nevada to be saying "absolutely not" to any economic benefits that might be forthcoming with the repository program, both during characterization and operation, if scientific studies prove the safety of handling nuclear waste materials in the manner now being contemplated.

As for the governor's argument that the courts or a veto could prevent a repository from being built in Nevada, that is unlikely. The courts have not shown a disposition to override clear Congressional action, and a veto by whoever is governor when a decision is finally made needs only a majority vote in Congress to be overridden. It is fairly clear from last year's attempts by Nevada officials to change this program what would most likely happen again by any state versus Congress dispute.

We hope you will take the time to express your views on this issue by writing a letter to your local newspaper.

Thank you.

NEVADA NUCLEAR WASTE STUDY COMMITTEE

May 26, 1988

CONTACT: David Cooper
702/ 382-1515

FOR IMMEDIATE RELEASE

**CITIZENS COMMITTEE FAULTS
GOVERNOR'S REFUSAL TO SIGN BENEFITS AGREEMENT**

The head of a citizens committee supportive of the Yucca Mountain high level repository study has criticized Gov. Richard Bryan's decision to refuse to sign a benefits agreement that could mean more than \$600 million to Nevada.

Bob Dickinson, co-chairman of the Nevada Nuclear Waste Study Committee, said the governor's decision was inappropriate at this time because it will be another seven years before scientific studies on the repository will determine if the site is suitable. "What we have here is a decision that seems to be more in tune with the governor's political campaign than in the long-term interests of the state. It doesn't appear that the governor even attempted to improve the benefits agreement, or to bring it more in line with his view of state policy. Rather, his flat refusal may now cost the state nearly \$100 million even if Yucca Mountain were to be found unsuitable at the conclusion of the site characterization process," Dickinson said.

Dickinson was referring to Gov. Richard Bryan's decision earlier this week to refuse to sign a benefits agreement with the Department of Energy that would have provided \$10 million each year of characterization, and \$20 million each year during operation of the repository. Under the current timetable for the program, that would mean a total of \$600 million for a state accepting a repository after licensing by the U.S. Nuclear Regulatory Commission.

(MORE)

Governor's Decision Faulted--page 2

"We can appreciate the governor's concern over the state's role in the entire repository process, and we share his concern, especially on the issues of safety and protection of public health and the environment. But his refusal to negotiate those issues and at the same time deny hundreds of millions of dollars for the state, does not seem to be very good state policy.

"As to the governor's point about giving up the state's right to veto a final selection of a repository site by the President, that seems to be a rather hollow argument for two reasons. First, despite aggressive lobbying by the governor, our congressional delegation, the Nuclear Projects Commission and others last year, Congress voted to change the site characterization program from three sites to just one--Nevada.

"Secondly, Gov. Bryan will certainly not be the person to make that decision on behalf of the state, and the governor at that time may have a totally different point of view on the subject. Also, after scientific studies have been completed, with the state's cooperation and oversight, arguments either for or against the Yucca Mountain site will then be based on scientific evidence, and not political rhetoric," Dickinson said.

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