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Dr. S. Lawroski, Chairman
ACRS Subcommittee on Radioactive Waste Management
Advisory Committee on Reactor Safeguards
Washington, D.C. 20555

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ADVISORY COMMITTEE ON
REACTOR SAFEGUARDS, U.S.N.R.C.

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COMMENTS ON WASTE CONFIDENCE RULEMAKING

Dear Dr. Lawroski:

I am an independent consultant under contract to the ACRS and as such participated in the meetings of the Waste Management Subcommittee held in Washington on November 13 and 14. In the course of the meeting you requested that participants present in writing their position in regard to the principal issues of the Waste Confidence Rulemaking proceedings, i.e., the feasibility of interim storage, the prospects for safe alternate disposal of wastes, and the schedule under which a waste storage repository could be put into operation. I am pleased to present my views on these matters.

Interim Storage

The safety and practicality of interim storage of spent fuel in reactor water basins has been demonstrated for periods of 15-20 years at reactor sites throughout the world and there can be no reasonable doubt that with continued minimal maintenance and surveillance safe storage could be continued very much longer in the absence of any catastrophic exogenous event. The reason for this confidence is not only the demonstrated performance cited above but the compelling logic that fuel and fuel cladding materials which are designed to remain intact in the severe environments of operating reactors -- cir. 300°C, high radiation fluxes, high coolant flowrate -- with only occasional inconsequential failures will be essentially inert in the room temperature environment of a storage basin where the governing corrosion, erosion and diffusion rates are many orders of magnitude less. In addition, a spent fuel storage basin, unlike an operating water reactor, has no confined latent energy subject to sudden and possibly damaging release in the event of an accident or malfunction. It is difficult to imagine any accident or malfunction in a storage basin which would not allow an ample period of time for corrective action to prevent any serious consequences.

In addition, dry surface and near-surface storage of spent fuel has been studied extensively at Hanford, Nevada Test Station, Sweden, Canada and other places. If preceded by a few years of water basin storage to allow fission product decay and thereby reduce the heat generation rate, dry storage in caissons or air-cooled vaults would be free of risk and require even less surveillance than a water basin. Admittedly, the extent of demonstrated performance is less than in the case of reactor basin storage but there is no reason to suspect unpleasant surprises in a properly designed and tested dry storage system.

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AFR storage facilities are, of course, only water basins or dry storage facilities serving a number of reactors at some central location. They introduce no problems not encountered at dispersed reactor facilities other than the need to transfer the waste to the AFR site. Transportation of properly packaged spent fuel or HLW is in the opinion of this observer a non-problem, even if it's not always so perceived by the lay public.

The Prospects for Safe Ultimate Disposal of Wastes

Assuming that the program of DOE/NE 0007, the DOE Statement on Position on Waste Confidence Rulemaking, is carried out as there described, there can be no reasonable doubt that a waste repository could be built, operated until decommissioned, and allowed to function as a repository for an indefinitely long geologic period with complete safety. The program is replete with redundancies, safety factors, supporting R & D work, step-by-step testing, peer reviews, regulatory safeguards, etc. A safe geologic repository can be built, and in any of several different geologic media.

Schedule

In regard to when a repository could or is likely to be placed in operation, I should like to consider this question for each of two different sets of assumptions: 1) full adherence to the currently prevailing policy and regulatory guidelines and program plans as outlined in DOE/NE 0007, and 2) revised policy guidelines and relaxed regulatory and State concurrence practices but with no compromise of requirements for assured safety of operation.

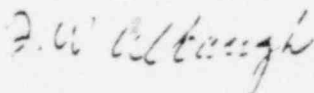
Case 1 above, the current program plan, shows an earliest operational start of about 1997 and a latest of about 2007 with this difference depending on host rock selection and contingencies in regard to geologic uncertainties, the imponderables of consultation and concurrence, regulatory processes and other matters. In the opinion of the writer, the stated schedules, even though apparently very long, may still not be long enough, in part because of the open-ended nature of the many environmental reports and statements and regulatory reviews required, in part because of the lack of any cap on the extent of delays that could result from State and regional consultation and concurrence and, in part, because I do not agree that it is a good calculated risk to invest all the time and resources required to select and license a site without first taking the precaution of sinking a small exploratory test hole to repository depth with lateral drifts to provide information on horizontal inhomogeneities and discontinuities that could invalidate the site. This concern does not apply to salt domes and some bedded salt sites, but it does apply to other candidate media.

The second case for which I wish to consider schedule implications assumes the following:

- A choice of a first site as soon as two or three good, not necessarily the best, sites can be identified and which are located in places where public attitudes are likely to be favorable and where technical evaluation is fairly well advanced. Realistically this means a choice between a salt dome site, a bedded salt site, perhaps Los Medanos, and a Hanford basalt site.
- An expanded effort on overall system analysis work to provide a more reliable basis for cutting back on some of the excessive redundancies and safety factors which add to the complexities of the site and repository design and of the scope of the extensive R & D work which support the design.
- A conscious effort on the part of the three federal agencies primarily involved in the geologic repository program, DOE, NRC and EPA, to minimize overlapping and duplicating regulatory requirements and to achieve an early repository startup in addition to a repository of assured safety.

If the above policies were to be adopted, I believe a geologic repository could be in operation within about 10 years and the exaggerated concern about the lack of "demonstrated" disposal of nuclear waste would then be put to rest. Thereafter subsequent repository requirements could be addressed in a more deliberate fashion.

Very truly yours,



F. W. Albaugh

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