



**AGENCY FOR NUCLEAR PROJECTS
NUCLEAR WASTE PROJECT OFFICE**

Capitol Complex
Carson City, Nevada 89710
Telephone: (702) 687-3744
Fax: (702) 687-5277

November 9, 1990

Mr. John J. Linehan, Director
Repository Licensing and Quality Assurance
Division of High-Level Waste Management
United States Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Linehan:

**RE: Draft Technical Position on Regulatory Considerations in the
Design and Construction of the Exploratory Shaft Facility**

This letter contains the comments of the State of Nevada, Agency for Nuclear Projects Nuclear Waste Project Office, on the subject Draft Technical Position issued by the Nuclear Regulatory Commission on August 14, 1990 (see Federal Register Notice of Availability, 55 FR 33193).

The purpose of the TP is to provide regulatory guidance to the U.S. Department of Energy (DOE) on an approach acceptable to the NRC staff for consideration of the requirements of 10 CFR Part 60 related to the Exploratory Shaft Facility (ESF) for a potential high-level nuclear waste repository. The TP addresses the design control process, coordination of ESF design with the design of the geologic repository operations area (GROA), consideration of alternatives, excavation methods, test interference, and site characterization.

The TP is stated to be based on the premise that the ESF will eventually become part of a future GROA, although it is also acknowledged that the primary purpose of the ESF is to support site characterization activities. As a result of this premise, all 10 CFR Part 60 requirements applicable to the GROA design are considered applicable to the ESF design.

In order to meet the objectives of 10 CFR Part 60, two general guidelines are employed by the NRC staff relative to their considerations of an ESF: 1) the ESF design, construction, and operation should limit adverse impacts on waste isolation

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capabilities of the site; and 2) the ESF design, construction, and operation should not preclude the collection of needed site data.

In previous comments on the DOE's repository conceptual design, ESF Title I design, and ESF alternative locations we have indicated concern for the safe design and construction of an ESF, and the presumption of future incorporation of an ESF into a geologic repository.

The example scheme in the draft TP of an acceptable approach to achieve compliance of the ESF design with 10 CFR Part 60 requirements (page 16) points up the fundamental problem with the presumption that the ESF will become part of the repository. Such a presumption requires the development of repository conceptual designs and identification of features potentially important to waste isolation prior to the development of the ESF conceptual design. Backfitting the ESF conceptual design to the GROA conceptual design is fundamentally incompatible with the stated primary purpose of the ESF, which is to support site characterization activities. And the first and most important goal of site characterization is to determine whether the site itself provides acceptable waste isolation performance characteristics.

One of the many other purposes of the ESF during site characterization is to collect data to facilitate the design of the GROA, yet it is some of these same data that are necessary to design, construct and operate the ESF in a manner that complies with the 10 CFR Part 60 requirements for the GROA. As such, it can be argued that the ESF cannot be designed, constructed and operated with confidence that it is in accord with all applicable requirements of 10 CFR Part 60. The NRC staff response to this apparent "catch - 22" is that while the ESF design will be required to meet applicable GROA requirements, uncertainties associated with the limited data available should be accounted for in the design of the ESF itself.

From a conceptual standpoint, the ESF is intended to facilitate subsurface site characterization. Hence, the design objective of the ESF should not be to conform to the location and conceptual design of the GROA, but rather the GROA should be designed to incorporate the existing ESF, if the site is determined to be acceptable and the ESF meets, or can meet the applicable 10 CFR Part 60 requirements to be included in the GROA.

The TP places considerable emphasis on the use of the ESF to assist future design of the GROA, rather than on the design of the ESF itself. Notwithstanding the NRC staff's apparent interpretation that the GROA conceptual design should be the driver for ESF conceptual design, we believe more appropriate guidance for ESF considerations should be: 1) the ESF should be designed to facilitate data collection necessary to meet site characterization

purposes; and 2) the ESF should be designed so as not to preclude advantageous location and design options for the GROA.

With respect to the excavation methods, drifting, and overall layout of an ESF, the TP points out the need for ensuring the waste isolation capabilities of the site are not compromised by the excavation methods and construction techniques employed. Yet it offers little in resolving the problem of maximizing necessary data collection by sufficient drifting to demonstrate representative data have been collected, versus the risk of drifting and drift layout compromising the waste isolation capabilities of the site.

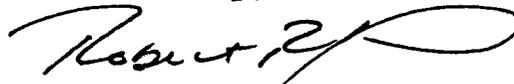
The TP acknowledges that extensive drifting may be the best approach to reducing uncertainty regarding such matters as fault movements, thermal behavior, tectonic activity, etc. Yet it also states that it "presents one of the more difficult challenges for coordination of the ESF design with the GROA design." This difficulty may be considerably mitigated if the design objective were not presumed to be the necessity to fit the ESF to a premature GROA conceptual design, but rather to preserve what may be advantageous GROA design options, if possible.

The TP further notes: "Optimum drift orientation and length may not necessarily coincide with preferred GROA layout. A careful balancing of the site characterization needs with the geologic repository performance objectives will be essential." Until the site is fully characterized, it is difficult to conceive a "preferred GROA layout", especially at a site with highly variable geologic conditions. Optimum access for subsurface data collection should not be traded against, or balanced with repository performance objectives in an effort to preserve a so called "preferred GROA layout" when that preference is largely based upon speculation about the site's geologic characteristics. Instead, the objectives should be first the collection of all necessary data for site characterization purposes, and then, if possible, the preservation of advantageous GROA design options.

In conclusion, it appears that the NRC staff in this TP has committed itself to an interpretation that the ESF must be backfit to a GROA conceptual design and the features potentially important to waste isolation relative to that design. This does not appear to be the only option for meeting the requirements of 10 CFR Part 60. A number of potentially advantageous conceptual GROA designs can be generated, based upon initial site data. ESF design, construction and operation, with a priority on necessary data collection, can then be coordinated with these options, to the extent possible during the site characterization period, eventually leading to the determination of a preferred GROA design, if appropriate for the site.

We appreciate the opportunity to comment on this draft Technical Position and are available to further discuss our views on this issue at your convenience.

Sincerely,



Robert R. Loux
Executive Director

RRL:cs

cc: John Bartlett, DOE
Carl Gertz, DOE-YMPO
Don Deere, NWTRB
Dade Moeller, ACNW-NRC