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Mr. Jeff Pohle
Division of Waste Management
Mail Stop SS-623
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Jeff:

In response to your request we have examined the information on "An Issues Hierarchy Approach to Site Characterization and Regulatory Compliance" and have several comments regarding the concept. We found the accompanying explanation a bit brief so we are not really certain about how DOE intends to use the issues hierarchy approach; nevertheless some comments can be made.

As you probably know, we have never been satisfied completely with the issues concept, particularly in the rather expanded form in which it now exists. From a technical standpoint many of the issues tend to be repetitive and are often difficult to separate from one another. We found this problem particularly acute when called upon to write justifications for each individual issue on the BWIP project several years ago. For this reason we find the DOE approach somewhat more appealing and technically workable. The organization of the issues seems more logical with definition of four key issues. These key issues ultimately are the questions that have to be answered to satisfy licensing requirements. Characterization issues, design issues, and performance issues are separated within each of the four key issues. This separation, we believe, would help sort out information needs, along with related review priorities, for each phase of the project. In addition, rather than attempting to define several levels of issues, each issue is accompanied by a list of information necessary to achieve issue resolution. This arrangement is very appealing because it facilitates evaluation of information and evaluation of issue resolution without the necessity of producing formalized responses to several levels of related, and often overlapping, issues. We believe that our job

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of providing technical support to the NRC might be simplified if a standardized issue set similar to the DOE approach were adopted.

Despite its initial appeal some questions regarding the operation of the issue hierarchy approach must be addressed. Specifically, information which accompanied the issues indicates that a detailed synopsis of each information need will be produced. This synopsis apparently will specify the parameters and data to be collected and how these data and parameters ultimately are determined to be "necessary and sufficient" for site characterization. Determining what is necessary and sufficient may prove difficult, particularly if this determination is to be attempted prior to field investigations. Additionally, while it may be useful to DOE to have a predetermined limit placed on data and parameter collection, such a limit may not be in the NRC's best interest.

A difference in perspective also seems to exist between the DOE and the NRC approach to issues which probably can be resolved only by the respective agencies. The DOE generated issues tend to focus the study and data gathering effort on the question of meeting licensing requirements, whereas the NRC issues tend to be more encompassing. Technically, it seems desirable for both organizations to use the same approach; however, a fundamental question arises when considering embracing the DOE approach. If the NRC abandons its approach in favor of the DOE's method, does the possibility exist that some critical component or parameter will be overlooked or studied insufficiently so that future licensing and/or future operation ultimately is jeopardized? Technically, this situation seems improbable because we believe that the same level of scrutiny of the same criteria, processes, and data will be applied regardless of whether each is spelled out as a separate issue or not. We do not feel qualified, however, to judge whether from both a philosophical and licensing standpoint it would be unwise for the NRC and DOE to adopt the same set of issues and to embrace the issues hierarchy approach.

In addition to these general observations a comment regarding DOE's approach to groundwater travel times also seems appropriate. Issue 1.15 asks "Is the pre-waste-emplacment ground-water travel time at least 1000 years along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment?" This issue and subissues 1.15.1, 1.15.4, and 1.15.5 use the phrase "fastest path". We believe that this phrase dictates a deterministic approach for estimating ground water travel times. We are not sure that this intent is appropriate considering the recent trends evident in estimating travel times. BWIP, in particular, and the NRC apparently are at

the forefront of an effort to place heavy emphasis on stochastic approaches to estimating travel time.

Conversely, removal of the word "fastest" creates a strong connotation that a deterministic approach is not required. We do not believe that this is the intent of the issue. The stochastic approach certainly is a valid method for estimating travel times but we do not believe that a stochastic approach will survive without a viable deterministic model which at minimum substantiates the direction in which ground water is flowing. Similarly no stochastic field tests exist for measurement of hydraulic properties. All field test measurement techniques require a deterministic model.

The current wording of issue 1.15 implies that an extensive characterization program will be required at the sites due to the deterministic nature of the wording. This characterization program may require much fore field testing, particularly with respect to the number of tests, test facilities, and time required for acquiring adequate baseline potentiometric data than would be required if non field test oriented a stochastic approach were acceptable. A stochastic approach introduces ranges of input data into a hypothetical model without the requirement of field measurements. A stochastic approach is a method of treating data, not a method of acquiring it.

The time aspect of sit characterization is most evident if certain events at BWIP are reviewed in the context of field measurements. The low hydraulic conductivities(?) at BWIP are causing slow water level recoveries in the Grande Ronde flows in cluster wells DC-19, -20, and -22; the water levels are recovering from drilling induced stresses (water pumped from basalt flows during air rotary drilling). In addition, the hydraulic gradients at the BWIP site, in the vertical and areal directions, are quite low. It becomes quite difficult to ascertain the direction of groundwater flow because water levels are still recovering from drilling almost two years after the drilling. Site characterization could be delayed because of this slow recovery. Again, experience at BWIP indicates that other drilling activities at the site can perturb the water level recoveries significantly; hence, additional drilling and testing could be delayed until the direction of ground water flow has been determined adequately. Testing for quantification of hydrogeologic parameters could be delayed because the principal testing effort would be along the fastest flow path to the accessible environment. The flow path cannot be determined until the gradients (areal and vertical distribution of heads) are known. A stochastic approach would simply analyze the effect of a defensible range of gradients. Field measurements would not be

required; consequently they would not slow down the site characterization process.

These issues also need editing. For instance, "pre-waste-emplacment" is used in Issue 1.15 in conjunction with the phrase "disturbed zone". The phrases are mutually exclusive; one cannot have a "pre-waste-emplacment" travel time if the repository has been excavated which is the only way to create the "disturbed zone".

We believe that the DOE approach may facilitate technical review of characterization studies by providing both the DOE and the NRC with a common framework from which to operate. We do not know, however, whether such commonality is philosophically desirable.

Sincerely,



Roy E. Williams

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