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MEMORANDUM FOR: John Linehan, Acting Chief
Operations Branch, DHLWM

THRU: Ronald L. Ballard, Chief
Technical Review Branch, DHLWM

FROM: Tilak Verma, Acting Section Leader
Hydrology Section
Technical Review Branch, DHLWM

SUBJECT: REVISION AND ISSUANCE OF FINAL GTP ON GROUNDWATER TRAVEL
TIME

The Hydrology Section is revising the Generic Technical Position (GTP) on groundwater travel time. In addition to taking into account comments received on the Draft GTP, revisions will: 1) provide a simpler definition of pre-waste-emplacement groundwater travel time in keeping with the Commission's intent that groundwater travel time be a simple measure of overall repository quality and 2) shift emphasis away from prescribing how to treat variability in groundwater travel time calculations to establishing the staff's position on the need for DOE to develop methods for identifying, treating, and expressing uncertainty in demonstrating compliance with 10 CFR 60.113 (a)(2).

A simplified concept of groundwater travel time will be based on average seepage velocity and will no longer consider particle transport mechanisms such as matrix diffusion and dispersion. Variances from the definition of groundwater travel time, in consideration of site specific complexities, will be implemented through site technical positions.

The staff's position on uncertainty results from the generic implementation issue dealing with a methodology for establishing a compliance demonstration case for 10 CFR 60.113 (a)(2) as identified in the pre-waste-emplacement groundwater travel time work plan developed under the High-Level Waste Division's five-year plan. Sections of the Draft GTP prescribing a cumulative distribution function to express spatial variability and uncertainty may be included in an appendix only as an example of a possible approach for expressing uncertainty. As suggested by the work plan, generic guidance that will allow DOE to develop an acceptable compliance demonstration strategy for groundwater travel time in a license application is needed. Uncertainty in estimating groundwater travel time is a major feature of the generic implementation issue and it is important that all elements of the generic implementation issue related to uncertainty be addressed in the Final GTP.

An outline of the revised statement of position (Section 3.2 of the Draft GTP) and schedule for revising and issuing the Final GTP are attached. For each site being evaluated, uncertainty analyses against 10 CFR 60.113 (a)(2) should form the basis for continuing NRC/DOE discussions during the SCP progress report period and DOE should be encouraged to seek early consultation and

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agreement on technical position items 2 through 5. The recommendation for early consultation and agreement may be stated either directly in the position or in a cover letter to DOE upon release of the Final GTP. Milestone dates for preparing guidance on the various elements of uncertainty are keyed to the preparation by the NRC of topical reports needed to support the Final GTP either directly by reference or as appendices. However, our current position on uncertainty was not recognized as an important concept until after the Draft GTP was released for comment. Therefore, the Hydrology Section hopes that the schedule for release of the Final GTP is flexible to allow us to take advantage of the additional scoping analysis on uncertainty resulting from the ground-water travel time work plan exercise. Furthermore, scheduling flexibility may be necessary because completion of the third topical report (Methods for Expressing Uncertainty) within existing schedules is questionable.



Tilak Verma, Acting Section Leader
Hydrology Section
Technical Review Branch, DHLWM

Attachments:
As stated

MEMORANDUM FOR: John Linehan, Acting Chief
Operations Branch, DHLWM

THRU: Ronald L. Ballard, Chief
Technical Review Branch, DHLWM

FROM: Tilak Verma, Acting Section Leader
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STATEMENT OF POSITION FOR GROUNDWATER TRAVEL TIME

In order for the DOE to demonstrate compliance with 10 CFR 60.113(a)(2) in a manner that will enable the NRC to reach the requisite regulatory finding by the time of licensing, the following approach is recommended:

1. DOE should adopt the definition of pre-waste-emplacement groundwater travel time presented in the Final Generic Technical Position.
2. DOE should identify and present to NRC each source (category) of uncertainty related to (a) knowledge of the groundwater flow system, (b) groundwater flow system testing program and (c) methodology used to calculate the GWTT. (The GTP will be largely non-prescriptive for calculation methods. Topical Report #1, Sources of Uncertainty, will support this element of the technical position).
3. DOE should develop a detailed technical rationale that leads to their decision to reduce, minimize or ignore each source of uncertainty. The impact of individual uncertainties on calculated GWTT needs to be evaluated. (This will likely take the form of uncertainty analyses. Both the rationale and analyses should be presented to the NRC).
4. DOE should develop and present to the NRC the technical approaches used to either reduce or minimize individual sources of uncertainty. (This will likely be a combination of testing, QA and professional judgement. Topical Report #2, Treatment of Uncertainty, will support this element of the technical position).
5. The DOE should develop and present to the NRC a methodology that allows expression of the overall uncertainty in calculated groundwater travel time. (The position will be non-prescriptive; an example of the use of the Cumulative Distribution Function will be presented in the appendix. Topical Report #3, Expression of Uncertainty, will support this element of the technical position).

SCHEDULE FOR REVISING GTP ON GROUNDWATER TRAVEL TIME

- 1. Revise Definition of Groundwater Travel Time**
6/1/87
- 2. Develop Report on Sources of Uncertainty**
7/1/87
- 3. Develop Report on Technical Approaches to Reduce or Minimize
Uncertainty**
8/1/87
- 4. Develop Report on Methods for Expressing Overall Uncertainty**
9/1/87
- 5. Complete Revisions of GTP Text**
9/15/87
- 6. Issue Final GTP**
9/30/87