

SEP 16 1987

MEMORANDUM FOR: David Brooks
Philip Justus
Mysore Nataraja
Donald Chery
Rick Weller

THRU: Ronald L. Ballard, Chief, HLTR

FROM: Richard Codell, Senior Hydraulics Engineer

It is time to finalize the Generic Technical Position on the definition of the disturbed zone. This position was sent out for public comment in June 1986, along with the GTP on groundwater travel time. All in all, the comments on the disturbed zone position are relatively minor, and I feel that the final position can go forward.

Most of the comments dealt with the justification for the disturbed zone, and topics beyond the intended purview of the GTP since they deal more with changes to the rule than its implementation. Of the remaining comments, the most substantive deal with issues of rock mechanics and the applicability of the GTP to disturbances in unsaturated rock. A copy of the comments will be circulated to each section, and I would appreciate your review and mark-ups or written comments. The most significant comments address rock mechanics issues and thus it requested that the Rock Mechanics Section respond to those comments dealing with rock mechanics, namely H1, D2, D3, D4, D5, D6 and D7. These comments are summarized in the attachment. Note that the DOE comments from the NNWSI Projects Office were never submitted to NRC formally.

Please complete your review of the comments and make suggested changes to the text if necessary, by October 16, 1987. Contact me at X7-4558 if you have any questions.

RS

Richard Codell, Senior Hydraulic Engineer

Attachment:
as stated

87300254	WM Record File: 108.12
WM Project: WM-1	LPDR yes
PDR yes	
(Return to WM, 623-65)	

8905240548 870916
PDR WASTE
WM-1 PDR

PUBLIC COMMENTS ON DISTURBED ZONE

State of Nevada

- N1. Cover letter - Site specific GTP's should be developed, one for each site.
- N2. Make it clear that GWTT was intended to reflect post-emplacement conditions and must not reflect effect of heat. The disturbed zone must encompass zone of thermal buoyancy.
- N3. A smaller accessible environment is a poor justification for a smaller disturbed zone.

State of Texas

- T1. Guidance is too prescriptive. It is not the purpose of a GTP to specify the size of the disturbed zone. The NRC should identify the significant criteria for determining the size of the disturbed zone.

Yakima Nation comments on proposed amendments to 10 CFR 60

- Y1. In 1983, NRC did intend to include buoyancy effects. The NRC did not distinguish between rock and fluid effects. The original disturbed zone was envisioned to be on the scale of kilometer.
- Y2. The statement in the Federal Register notice that disturbed zone effects are now modelable is doubted.
- Y3. A nearer accessible environment (5 vs. 10 km.) is an inappropriate basis to liberalize the size of the disturbed zone.

Hanford Reach Project

- H1. The disturbed zone should be extended to include shafts and boreholes.

DOE NNWSI Project Office

- D1. Questions whether credit can be taken for rock in disturbed zone adjacent to fuel for the purpose of calculating releases from the engineered barrier system.
- D2. GTP interprets performance of repository in terms of groundwater travel time only. Should significant changes in the hydrologic properties be identified only along the fastest path of likely radionuclide travel, or should the calculation of significance be based on the average properties through which ground water could travel to the accessible environment?

- D3. There is a disconnect between the definition of disturbed zone in 10 CFR 60 and GTP. Relative changes in rock properties could constitute a "disturbed" area, yet would not affect performance, therefore not making much sense.
- D4. Most effects of disturbance to the rock would affect saturated flow but have little effect on unsaturated flow. NRC should state that the hydrologic properties most affected by disturbance affect fractures, and would not have a negative effect on matrix properties of the rock.
- D5. The boundaries of the disturbed zone based on redistribution of stress cannot be demonstrated from linear elastic analysis because the effects can be shown to extend to infinity. therefore the analysis would provide no useful information.
- D6. Distance to contour of not significant changes to permeability would be considerably smaller than the five diameters for circular openings used in the GTP for stress redistribution.
- D7. Questions the wisdom of requiring detailed information on a zone of rock that cannot contribute to the repository's performance analysis.

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OFFICIAL CONCURRENCE AND DISTRIBUTION RECORD

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DATE:

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R. Ballard

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