N. Ott

UNITED STATES
NUCLEAR REGULATORY COMMISSION
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MEMORANDUM TO: E. Conti, Chief
Waste Management Branch, RES

THROUGH: Leon L. Beratan, Chief
Earth Sciences Branch, RES

FROM: F. L. Doyle
Earth Sciences Branch, RES

SUBJECT: REVIEW OF HYDROLOGIC PART OF BWIP DRAFT EA (FEBRUARY 1983)

This review covers section 2.42, Hydrogeology of the subject document (p.2-10 and 2-11), 2.5.5 Hydrology (p.2-21 and 2-22), and 3.4.4 Geohydrology (p. 3-78 to 3-80).

The text is short and of necessity generalized, yet sufficient statements are made to convince me that this suffers from the same flaws as does the BWIP SCR:

- a dearth of valid, defensible representative hydrologic data,
- unbridled optimism in interpolation, extrapolation, analysis and synthesis of that data; and,
- inconsistency in judgment.

For example, on p. 9-10 in the DEA it is stated that "... the minimum ground water travel time from the repository site to the accessible environment...appear to be greater than 10,000 years." This is in keeping with their statement in the BWIP SCR (p. 12.4-53) that "... Rockwell and other independent organizations unanimously agree that the minimum travel time... under natural, pre-waste-emplacement conditions is likely to be on the order of 10,000 years or longer." However, both statements are made despite their explicit recognition of insufficient data, to wit (p. 12.4-52, BWIP SCR) "... the lack of a general consensus in these predictions [of ground water travel time] clearly reflects the uncertainty in the existing hydrologic conceptual model. In essence, this means that the hydrologic data base is not, as yet, sufficient to provide a single (and widely accepted) interpretation of the... Pasco Basin." This is important because the RRL is understood only with relation to the Basin. Thus the lack of data is recognized yet conclusions based on them are not couched in terms reflecting the reservations which seem to be called for. The need for such reserve is underscored because work by or for NRC casts considerable doubt on the possibility of a 10,000 year travel time.

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The bent toward believing the least conservative counsel is further exemplified (p. 2-10, DEA) by the implicit scientific philosophy behind the statement, "Detailed site characterization studies in the area of hydrology are planned to verify that the pre-emplacement groundwater travel times near the repository are sufficiently long..." The use of "verify" seems to indicate a mind-set not in keeping with use of multiple working hypotheses. This is a fundamental principle used in earth science in which the least tenable explanations for the known facts are discarded. The remaining hypothesis is then subjected to scrutiny with a view to disproving (not verifying) it. Thus the fittest survives, if worthy.

Some reason must exist for the DEA having been prepared at this time. Nevertheless, there is an element of prematurity about it because of the tenuousness of knowledge about the BWIP site. This may be another manifestation of the preoccupation with early synthesis of meager data and extrapolation in time (through computer modeling) at the expense of the methodical building of a sufficient data base with which to form a well-founded concept of the hydrologic system.

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