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January 14, 1985

WGC - R531

Mr. Benjamin Rice, Project Manager  
 Geotechnical Branch  
 Division of Waste Management  
 Office of Nuclear Material Safety & Safeguards  
 U.S. Nuclear Regulatory Commission  
 Washington, DC 20555

Subject: Richton Dome Site, Mississippi DEA Review Comments

Dear Mr. Rice:

The enclosed comments are the result of Weston Geophysical's review of the above referenced DEA. Our comments are presented in the format described in "Standard Review Plan for Draft Environmental Assessments", dated December 12, 1984.

As directed by you and your fellow staff members, we have concentrated our comments on significant aspects of the DEA documents which impact guideline criteria.

Should you have any questions or require clarification regarding this submittal, please contact us.

Very truly yours,

WESTON GEOPHYSICAL CORPORATION

*[Handwritten Signature]*  
 John P. Imse

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DEA

RICHTON DOME SITE, MISSISSIPPI

REVIEW COMMENTS  
PREPARED BY  
WESTON GEOPHYSICAL CORPORATION

FOR  
THE UNITED STATES NUCLEAR REGULATORY COMMISSION

MAJOR COMMENT #1

DEA: RICHTON

Subject: Groundwater Quality

Comment: Applicable guidelines regarding release of radionuclides appear to have been satisfied, but impairment of groundwater quality due to post-closure effects, which are not associated with release, have not been assessed. Saline anomalies have been detected in two wells south of the dome. The cause for these anomalies may be vertical leakage from deeper brine aquifers. Site characterization activities are planned to address these anomalies, but those studies should also assess the following possibility. If the leakage is fault controlled, will either long term subsidence or thermal expansion intensify the existing anomalies and/or result in additional water quality impairment?

DETAILED COMMENT #3-1

DEA: RICHTON

Section: 3.2.2.1 Physiography, p. 3-8, para. 6

Comment: The authors state that drainage pattern over the dome is controlled by lithology, yet the same reference [ONWI-120] also states that some of drainage pattern may be due to uplift and/or subsidence of the dome [p. 13-150].

DETAILED COMMENT #3-2

DEA: RICHTON

Section: 3.2.5.1 Faulting, p. 326, para. 6

Comment: Seismic reflection and structure contour data are referenced in The Earth Technology Corporation [1984] yet this reference is not included with reference list to identify and review the data source.

DETAILED COMMENT #3-3

DEA: RICHTON

Section: 3.2.5.1 Faulting, p. 3-28, para. 0 and 1

Comment: see Comment 3-1.

DETAILED COMMENT #3-4

DEA: RICHTON

3.2.5.1 Faulting, p. 3-28, para. 1

Comment: The authors state that seismic reflection studies have not detected displacement of post-Paleocene sediments. The F-7 fault is shown to displace post-Paleocene sediments in ONWI-120 [Figure 13-48]. In addition, the seismic reflection data do not show any results over the dome or near surface due to acquisition parameters. It was noted in ONWI-120 [p. 13-148] that the surface projection of Fault F-7 was nearly parallel or coincident with Bogue Homo River

DETAILED COMMENT #3-95

DEA: RICHTON

Section: 3.2.5.4 Uplift and subsidence, p. 3-33, para. 4

Comment: The authors site ONWI-484 correctly, stating that the estimated uplift rate based on uplift of the Citronelle Formation is 10cm/1000yr. [0.32 ft./1000yr.]. The calculations in ONWI-484 are incorrect. The stated value is the erosion rate of 400 ft/1.2 million years, while the uplift rate was 500 ft./1.2 million years as stated in ONWI-484. Therefore, the rate of uplift based on the Citronelle Formation is approximately .41 ft/1000yr.

DETAILED COMMENT #3-6

DEA: RICHTON

Section: 3.2.5.5 Folding, p. 3-34, para. 4

Comment: The authors state that little or no post-Miocene upwarping is indicated. This is in the middle of a discussion on seismic reflection results which do not show any data on post-Miocene strata because the acquisition parameters were such that resolution was not possible at these shallow depths. In fact, post-Miocene deformation is indicated by deformation of the Miocene-Pliocene age Hattiesburg sediments.

DETAILED COMMENT #6-1

DEA: RICHTON

Section: 6.3.1.7.3 Analysis of Potentially Adverse Conditions, p. 6-98, para. 2

Comment: See Comment 3-4 regarding the stated uplift rates.

DETAILED COMMENT #6-2

DEA: RICHTON

Section: 6.3.1.7.5 Conclusions, p. 6-98, para. 7

Comment: See Comment 3-4 regarding uplift rates.

Section: 6.4.2.2.3 Geologic Subsystem, p. 6-175, para. 5

Comment: The TDS content for Upper Claiborne is stated here as 3,000 to 40,000 parts per million. TDS content for the Upper Claiborne is stated earlier as 24,500 to 30,000 mg/liter which is equivalent to 24,000 to 30,000 parts per million. If the Upper Claiborne is characterized by TDS values less than 10,000 parts per million, the favorable conditions regarding release of radionuclides into high TDS groundwater are not present.