



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

PDR

APR 23 1981

WMUR:DMG
Docket No. 40-8745

Ogle Petroleum, Inc.
ATTN: Mr. Glenn J. Catchpole
Project Manager
150 North Nichols Avenue
Casper, Wyoming 82601



Gentlemen:

Based on our review of your report entitled, "Bison Basin Project, Evaporation Ponds Information Supplement to Environmental Report" and submitted by letter dated October 13, 1980, we have identified the need for additional information. Information pertaining to the following items should be submitted no later than May 29, 1981, for NRC review:

1. Your statement that NRC Regulatory Guide 3.11 is not specific with regard to the design precipitation event for freeboard determination is incorrect. The guide specifically states that the Probable Maximum Flood (PMF) series is to be used for design purposes. The remoteness of the location of the project has no effect on the selection of a rainfall event. In view of the relatively low hazard potential and the small size of the ponds, the duration of the rainfall may be limited to 6 hours. An acceptable design rainfall for computing the PMF series is the 6-hour Probable Maximum Precipitation (PMP), plus 40% of the 6-hour PMP, plus the 6-hour 100 year rainfall.

Your wave run-up calculations however, as you state are somewhat conservative. We suggest you reappraise the wind and fetch conditions so as not to overdesign that part of the freeboard required for protection from wave overtopping.

Acceptable calculation methods are given in "Shore Protection Manual," U. S. Army Coastal Engineering Research Center, 1977, and Army Corps of Engineers ETL 1110-2-221, "Wave Runup and Setup on Reservoir Embankments."

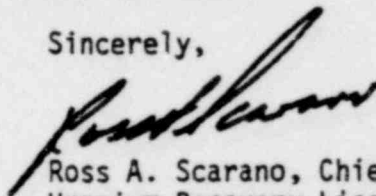
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2. Provide gradations and permeabilities of the material forming the layer in which the leak detection pipes are placed, and of the subgrade material. The subgrade material should be at least two orders of magnitude less permeable than the leak detection layer.
3. A geotechnical investigation of the proposed site for the evaporation ponds must be conducted. General requirements are outlined in Attachment 1, "Staff Branch Position on Explorations for Design and Evaluation of Uranium Mill Tailings Retention Systems." As a minimum, five borings 15 feet deep should be drilled and sampled, and the engineering properties of the evaporation pond foundation soils reported. Provide boring logs, boring locations, standard penetration test values, and laboratory test results.
4. Your statement that the embankments will be compacted to 85% of proctor density is unacceptable. Compaction of the embankment materials should be to 95% of the maximum density as determined by ASTM D-698, or to 90% of the maximum density as determined by ASTM D-1557.
5. Provide details regarding the construction of the existing R&D evaporation pond. Include the results of embankment soils testing during construction and a discussion of the liner and leak detection system installation.
6. Installation details and properties of the proposed synthetic liner must be submitted. This should include testing requirements for liner seams and compatibility of the liner with the waste product, methods of installation and subgrade preparation, and the qualifications of the individuals who will perform the installation and testing. In addition, for synthetic liners without soil covers, a discussion of methods that will be used to control damage due to ice and the intrusion of sharp-hoofed animals should be included.

If you have any questions regarding these matters, please contact Mr. Daniel M. Gillen of my staff at (301) 427-4088.

Sincerely,



Ross A. Scarano, Chief
Uranium Recovery Licensing Branch
Division of Waste Management

STAFF BRANCH POSITION ON
EXPLORATIONS FOR DESIGN AND EVALUATION OF
URANIUM MILL TAILINGS RETENTION SYSTEMS

Summary

This Branch position has been formulated to reduce problems similar to the type that have developed in investigations for several uranium mill tailing retention projects. The position describes minimum requirements on spacing, depth and sampling for explorations that are necessary to provide an adequate design and evaluation base for a retention embankment.

Proposed Staff Position

At least one boring should be drilled per 250 ft. length along axis of retention structure and at critical locations perpendicular to the axis to establish geological sections and groundwater conditions. Additional borings at closer spacing are required where:

1. Geologic site conditions are non-uniform
2. Cavities or foundation discontinuities of engineering significance are present
3. Important abutment or transition conditions require close definition
4. Construction is to be attempted over hydraulically deposited fill materials

The depth of borings should be deep enough to permit evaluation of the potential for deep soil stability problems and of underseepage. Generally borings should extend a depth into the natural soils at least equal to the height of the ultimate embankment section. A minimum of 15 ft. into natural soils should be required for small retention structures. Borings may be terminated after coring 10 ft. into sound rock if continuity of this formation is known from previous reconnaissance and explorations. Borings should not be terminated in weak or highly compressible or loose soils.

Disturbed sampling of soils in borings at the recommended 250 ft. spacing should be with split-spoon sampler and hammer and conducted in conformance with the Standard Penetration Test Procedure (ASTM D 1568-67). Generally split-spoon sampling of soils should be at regular intervals not to exceed 5 ft. in depth and at changes in strata. Samples should be accurately described according to the Unified Soil Classification System. Visual sample details should be reported on boring logs giving stratification thicknesses and

sequence. Continuous sampling with depth (split-spoon or alternating with cone penetrometer or undisturbed) should be performed in at least two strategically located borings. Where undisturbed sampling is required, the undisturbed samples should be at least 3 inches in diameter. Undisturbed samples should be obtained with a suitable fixed piston-type, thin-wall tube sampler (ASTM D 1587-67) or method that yields undisturbed samples of equivalent quality. Samplers which use a drive hammer to assist in the recovery of an undisturbed sample are not acceptable.

Groundwater levels should be observed in borings at the time explorations are made. Observation of groundwater conditions should be recorded over a sufficient period to permit the groundwater depths and range of seasonal fluctuations to be established.