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Docket 40-8745
PDR

JUN 30 1981

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Docket No. 40-8745

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MEMORANDUM FOR: Ross A. Scarano, Chief
Uranium Recovery Licensing Branch

THRU: John J. Linehan, Section Leader
Operating Facilities Section I
Uranium Recovery Licensing Branch

FROM: Terry L. Johnson
Operating Facilities Section I
Uranium Recovery Licensing Branch

Daniel M. Gillen
New Facilities Section
Uranium Recovery Licensing Branch

SUBJECT: REVIEW OF PROPOSED EVAPORATION PONDS - OGLE PETROLEUM, INC., BISON BASIN PROJECT - AMENDMENT NO. 1 TO LICENSE NO. SUA-1396

On June 29, 1981, we recommended that the subject license be modified by the addition of License Condition Nos. 81 and 82. These license conditions approved previous information supplied by the licensee and also required additional information regarding the licensee's proposed QA program for evaporation pond construction. On June 30, 1981, OPI submitted the required QA program. We have reviewed the document and find that it meets the criteria suggested in our staff technical position on liners, and is, therefore, acceptable.

We have determined that License Condition No. 65 has been satisfied. We recommend, therefore, that License Condition No. 65 be modified to reflect our review and approval of submitted data. We also recommend that the previously proposed license conditions be deleted.

License Condition No. 65 would now read as follows:

65. The licensee shall comply with the following requirements regarding construction and operation of the evaporation ponds:

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DATE ▶ 7/7							

a. The site of the ponds shall be that site investigated in the report entitled, "Geotechnical Investigation, Reservoirs for In Situ Uranium Mining, Bison Basin Mine" by Howard-Donley Associates, Inc. dated May 12, 1981.

b. The pond embankments shall have a maximum height of 17 feet, exterior and interior slopes of 2H:1V and 3H:1V respectively, and a crest width of 10 feet. The embankment fill shall consist of silty sand materials excavated from the site and compacted to 90 percent of the maximum dry density and placed within ±3 percent of the optimum moisture content as determined by ASTM D1557. Prior to placing the material forming the layer in which the leak detection pipes are placed, the subgrade shall be compacted, tested for permeability, and graded to a surface tolerance of less than or equal to 0.1 feet over a 10-foot straightedge. If necessary, clay materials shall be added to the subgrade to achieve a base that is at least two orders of magnitude less permeable than the leak detection layer.

   The licensee shall implement the QA program described in the licensee's June 30, 1981 submittal. This program shall be implemented for construction and testing of embankments, subgrade and leak detection layer with regard to excavation, fill placement, grading, compaction, and moisture control.

c. The leak detection system for each pond shall consist of a 4-inch diameter PVC piping network placed in a bedding layer of sand and/or gravel directly beneath the pond liner. An inspection tube connected to the system shall extend up the southeast slope of each pond. Prior to liner placement, the leak detection system shall be tested as described in the licensee's June 30, 1981 submittal.

d. The ponds shall be lined with a 30 mil reinforced Hypalon liner anchored in trenches at the crest of the impoundments. The licensee shall install and test the liner and liner seams as documented in a letter dated May 13, 1981, from Glenn Catchpole, Ogle Petroleum, Inc. to Ross Scarano, NRC, and in the attached "Hypalon Installation Instructions", Watersaver Company, Inc.

e. The licensee shall maintain at least two feet of freeboard between the enbankment crest and the pond level.

f. The licensee shall at all times maintain sufficient reserve capacity in the evaporation pond system to enable the transfer of the contents of a pond to other ponds in the event of a leak.

g. A fence that prevents the intrusion of game animals into the evaporation pond areas shall be maintained.

h. Within 6 months after completion of the ponds, the licensee shall submit a report detailing the construction methods, construction controls, quality assurance programs, and testing methods that were actually utilized in the construction of the ponds and the installation of the leak detection system and liner. This report shall also provide test results obtained during construction and as-built drawings showing details of construction of the various components of the pond.

i. The licensee shall notify Region IV, USNRC, Office of Inspection and Enforcement, Arlington, Texas and the Uranium Recovery Licensing Branch, USNRC, Washington, D. C., at least three weeks prior to the completion of the ponds to provide adequate time for on-site inspections by the NRC.

The conditions detailed above were discussed between Mr. Glenn Catchpole and Mr. Ted Johnson by telephone and at meetings held in Silver Spring, Md. on June 19, 1981 and June 30, 1981.

As stated in our June 29 memo, (copy attached) the environmental aspects of the proposed operations were addressed in the FES. No significant incremental impacts are anticipated as a result of modification of this license condition.

Original Signed by:

Terry L. Johnson
Operating Facilities Section I
Uranium Recovery Licensing Branch
Division of Waste Management

Original Signed by
D. M. Gillen

Daniel M. Gillen
New Facilities Section
Uranium Recovery Licensing Branch
Division of Waste Management

Attachment:
As stated
6/30/81

Case closed: 04008745N01D

OFFICE	WMUR	WMUR	WMUR				
SURNAME	TLJohnson:mb	DMGillen	[illegible]Linehan				
DATE	6/30/81	6/30/81	6/[illegible]/81				

NRC FORM 318 (10-80) NRCM 0240 OFFICIAL RECORD COPY * USGPO 1980—326-824

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40-8745/DG/TJ/06/25/81/2

Docket No. 40-8745

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

THRU: John J. Linehan, Section Leader
Operating Facilities Section I
Uranium Recovery Licensing Branch
Division of Waste Management

FROM: Dan M. Gillen
New Facilities Section
Uranium Recovery Licensing Branch
Division of Waste Management

Ted L. Johnson
Operating Facilities Section I
Uranium Recovery Licensing Branch
Division of Waste Management

SUBJECT: REVIEW OF PROPOSED EVAPORATION PONDS, OGLE PETROLEUM, INC., BISON BASIN PROJECT; AMENDMENT NO. 1 TO LICENSE NO. SUA-1396

Based on our review of the report entitled "Bison Basin Project, Evaporation Ponds Information Supplement to Environmental Report," we requested additional information in a letter to Ogle Petroleum dated April 23, 1981. By letter dated May 13, 1981, Ogle submitted responses to our requests including a geotechnical investigation report by Howard-Donley Associates, Inc.

The proposed evaporation pond system consists of the existing R&D pond plus three adjacent ponds each having a capacity of 24.7 acre-feet. The evaporation pond embankments would be constructed from the materials obtained during the excavation of the pond cavities. The topsoil would be removed and stockpiled nearby as per the Reclamation Plan presented in the Environmental Report. Areas to receive fill would be stripped of native vegetation and scarified to a minimum depth of 6 inches. Foundation soil moisture content would be adjusted to be within ±3% of

optimum as determined by ASTM D1557. The foundation materials and subsequent lifts of embankment fill would be compacted to a minimum density of 90% of the maximum density as determined by ASTM D1557. The maximum height of the embankments would be 17 feet, and the side slopes would be no steeper than 2H:1V and 3H:1V on the outside and inside, respectively.

Once excavation and embankment construction are complete, the leak detection piping network would be put into place and a 30 mil reinforced Hypalon liner would be installed. The leak detection system would consist of 4 inch diameter perforated PVC pipes placed in a bedding layer of sand and arranged as shown on the attached figure. Each of the three ponds would have an independent leak detection system.

The three ponds would not receive runoff from the surrounding area since the tops of the embankments would be above the natural grade. At maximum storage capacity, it would be required that a freeboard of two feet be maintained in the ponds.

Based on the review of Ogle's submittals, we conclude that the embankment design is conservative with regard to stability requirements and that the design freeboard of two feet is adequate for the proposed project. It should be noted, however, that the applicant incorrectly calculated both the probable maximum precipitation and wave runup, but off-setting differences produced acceptable results. We also conclude, subject to comments below, that the liner and other aspects of the proposed design meet the suggested criteria of Staff Technical Position, "Design, Installation, and Operations of Natural and Synthetic Liners at Uranium Recovery Facilities.

In addition, we recommend that an amendment to the License No. SUA-1396 be issued, with License Conditions 81 and 82 added as follows:

81. The licensee shall at all times maintain sufficient reserve capacity in the system to enable the transfer of the contents of a pond to other ponds in the event of a leak.

82. The licensee shall comply with the following requirements regarding construction of the evaporation ponds:

    a. The site of the ponds shall be that site investigated in the report entitled "Geotechnical Investigation, Reservoirs for

In-Situ Uranium Mining, Bison Basin Mine" by Howard-Donley Associates, Inc., dated May 12, 1981.

b. The pond embankments shall have a maximum height of 17 feet, exterior and interior slopes of 2H:1V and 3H:1V respectively, and a crest width of 10 feet. The embankment fill shall consist of silty sand materials excavated from the site and compacted to 90 percent of the maximum dry density and placed within ±3 percent of the optimum moisture content as determined by ASTM D1557. Prior to placing the material forming the layer in which the leak detection pipes are placed, the subgrade shall be compacted, tested for permeability, and graded to a surface tolerance of less than or equal to 1 inch. If necessary, clay materials shall be added to the subgrade to achieve a base that is at least two orders of magnitude less permeable than the leak detection layer. The licensee shall submit a QA program for construction and testing of embankments, subgrade and leak detection layer with regard to excavation, fill placement, grading, compaction, and moisture control. This QA program must be approved by the NRC in the form of a license amendment prior to the start of construction.

c. The leak detection system for each pond shall consist of a 4-inch diameter PVC piping network placed in a bedding layer of sand and/or gravel directly beneath the pond liner. An inspection tube connected to the system shall extend up the southeast slope of each pond. Prior to liner placement, the leak detection system shall be tested by the introduction of liquid samples into the sand layer to assure that it functions properly. Resulting flow paths, flow volumes, travel times and system performance shall be determined.

d. The ponds shall be lined with a 30 mil reinforced Hypalon liner anchored in trenches at the crest of the impoundments. The licensee shall install and test the liner and liner seams as documented in a letter dated May 13, 1981, from Glenn Catchpole, Ogle Petroleum Inc., to Ross Scarano, NRC and in the attached "Hypalon Installation Instructions", Watersaver Company, Inc.

e. The licensee shall maintain at least two feet of freeboard between the embankment crest and the pond level.

f. A fence that prevents the intrusion of game animals into the evaporation pond areas shall be maintained.

g. Within 6 months after completion of the ponds, the licensee shall submit a report detailing the construction methods, construction controls, quality assurance programs, and testing methods that were actually utilized in the construction of the ponds and the installation of the leak detection system and liner. This report shall also provide test results obtained during construction and as-built drawings showing details of construction of the various components of the pond.

h. The licensee shall notify Region IV, USNRC, Office of Inspection and Enforcement, Arlington, Texas and the Uranium Recovery Licensing Branch, USNRC, Washington, D.C., at least three weeks prior to the completion of the ponds to provide adequate time for on-site inspections by the NRC.

Environmental aspects of the proposed operations were adressed in the FES. No significant incremental impacts are anticipated as a result of the addition of the above license conditions.

Original Signed by
D. M. Gillen
Dan M. Gillen
New Facilities Section
Uranium Recovery Licensing Branch
Division of Waste Management

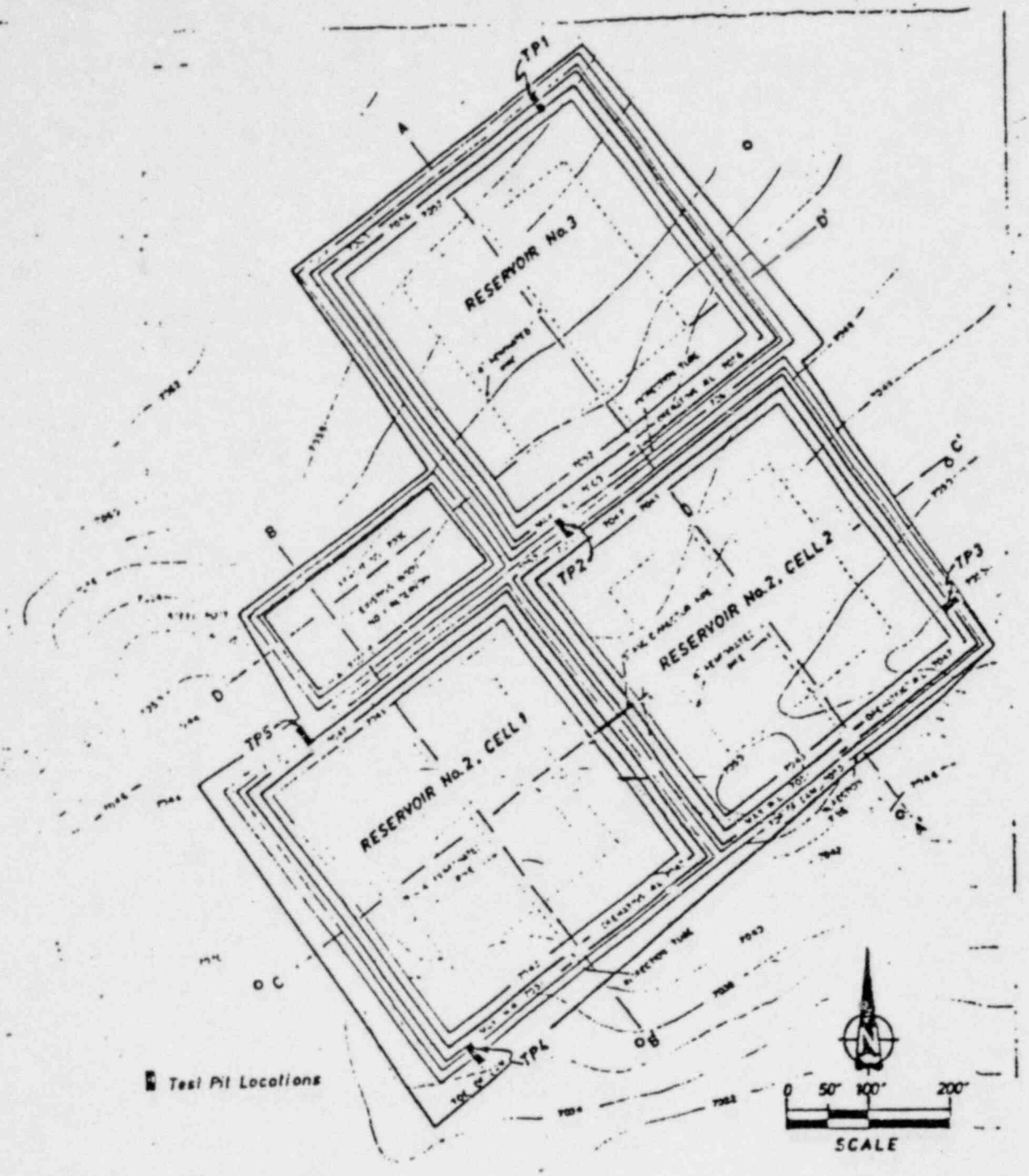
Original Signed By:
Ted L. Johnson
Operating Facilities Section II
Uranium Recovery Licensing Branch
Division of Waste Management

Case Closed: 04008745N01D

REVISIONS BY DATE

FILE 1182-0

CHECKED BY DATE



SITE PLAN

HOWARD • DONLEY ASSOCIATES, INC.
CONSULTING ENGINEERS & GEOLOGISTS

PLATE 3