04008904 1800

40-8904

INTERA

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Austin, Texas 78731

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September 15, 1988 RETURN ORIGINAL TO ... , Inc.

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Mr. Edward Hawkins, Chief
Licensing Branch 1
Uranium Recovery Field Office
Region IV
Box 25325
Denver, Colorado 80225

RE: Docket No. 04008904 1800, Response to September 2, 1988 NRC Comments

Dear Mr. Hawkins:

Please find enclosed five (5) copies of INTERA/BP AMERICA responses to comments 1 to 7 from the NRC letter of September 2, 1988. This letter requested additional information pertaining to geotechnical issues in the L-Bar Reclamation Plan. The requested information is included in our comment responses.

Sincerely,

Thomas Osborn

T.G. Osborn
Project Coordinator

TGO:lli
Enclosure

cc: G.E. Grisak
Ralph DeLeonardis

NF-02
1/1

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PDR ADOCK 04008904
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Certified By Mary C. Hardy

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Add'l Info
88-1252

INTERA'S RESPONSE TO NRC COMMENTS OF SEPTEMBER 2, 1988

COMMENT 1a.

The discussion on the proposed settlement monitoring program contained several items that need further substantiation. Please provide the following:

a. Core Samples were reportedly taken from the deepest portion of the pond. As this program is the basis for the settlement calculation, the complete exploration program should be submitted including a location map, boring logs, and any associated testing.

REPLY TO COMMENT 1a.

Two samples of bottom slimes were taken from the central, and what was determined to be deepest, portion of the tailings pond (see attached map). Samples were taken by driving 2" PVC pipe through the bottom sediments into the underlying clay far enough to form a clay plug in the bottom of the PVC pipe. The PVC pipe was then extracted, shortened to the core length, capped at both ends, and delivered upright to the laboratory for testing. The samples were tested for one dimensional consolidation properties by Fox and Associates of New Mexico, Inc., of Albuquerque N.M. These test results are attached. The semi-liquid nature of the material made testing very difficult and it actually extruded from the testing apparatus during testing. The results are considered to be of marginal value.

8803

FOX

5 times

FOX & ASSOCIATES OF NEW MEXICO, INC.

CONSULTING ENGINEERS AND GEOLOGISTS

ALBUQUERQUE OFFICE 3412 BRYN MAWR DRIVE, NE
ALBUQUERQUE, NEW MEXICO 87107
(505) 884-0900

April 22, 1988

Alan Kuhn
13212 Manitoba Drive, N.E.
Albuquerque, New Mexico 87111-2955

Job No. 3-4264-5946-00

Subject: Results of One Dimensional Consolidation Properties of Soils (ASTM D-2435) Testing for L-Bar Mine
L-Bar Uranium
Facility - Seboyeta

Gentlemen:

Transmitted herein is the detailed test data for the subject project.

FOX & ASSOCIATES OF NEW MEXICO, INC.

Martin F. Barker, P.E.
Area Manager

Copies: Addressee (2)

Attached: Table 1
Figures 1, 2 and 3

REVISED COPY

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TEST RESULTS

PROJECT: L-Bar Uranium Facility - Seboyeta **PROJECT NO.:** 3-4264-5946-00 **DATE:**

LOCATION: **REPORT NO.:** **TIME:**

SOURCE: Alan Kuhn **SAMPLE NO.:** **ENGINEERING TECHNICIAN:**

SUBJECT: Laboratory test results of one dimensional consolidation properties of soil on materials delivered to our laboratory on February 27, 1988, by client. Results are tabulated in Table 1 and graphically represented in Figures 1 through 3.

SAMPLE NO. 1

TABLE 1

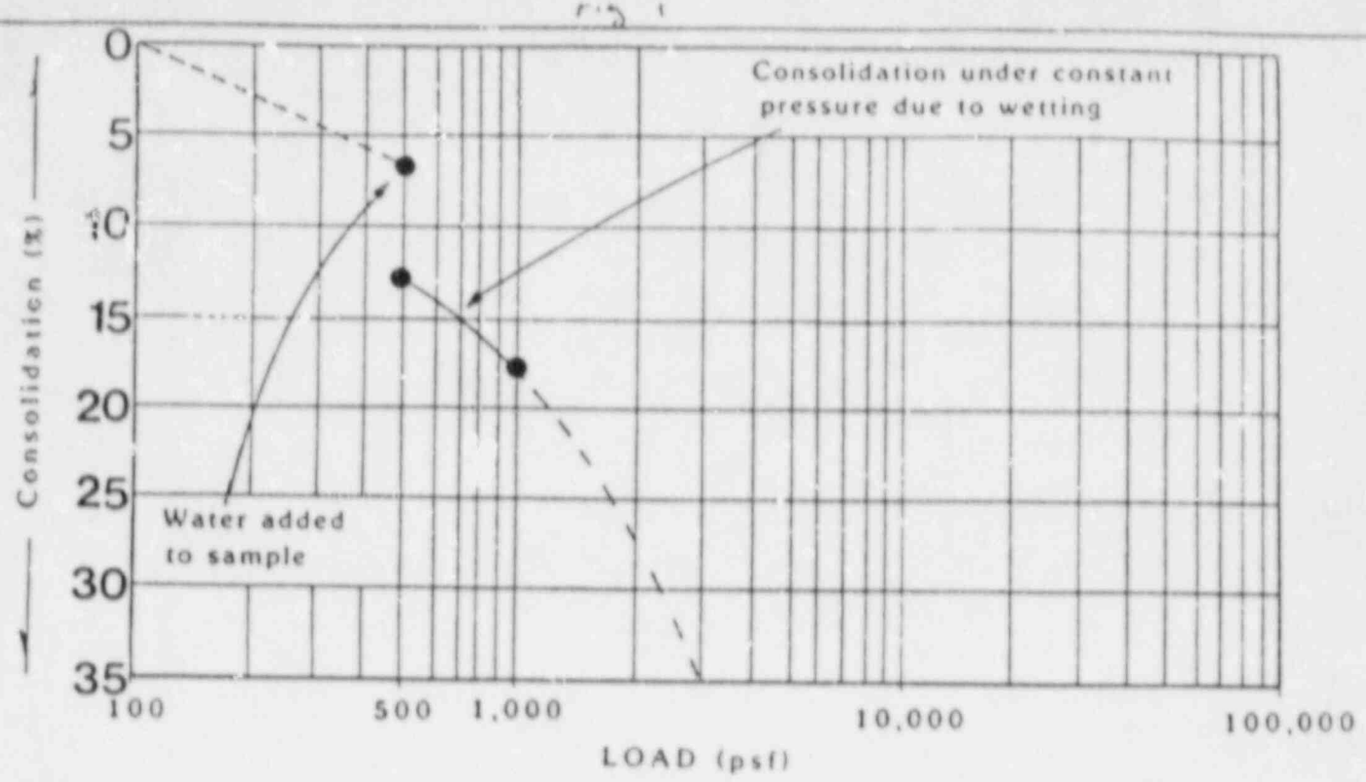
Moisture Content	Dry Density (pcf)	Maximum Load Applied (psf)	% Deformation
231.3%	28.5	500	100
162.7%	34.1	500	100
140.0%	37.5	500	100
125.7%	39.8	1K	17.1
112.0%	44.0	2K	16.6
60.8%	61.8	8K	16.2

Natural Moisture Content (when recieved in lab) 232.4%

SAMPLE NO. 2

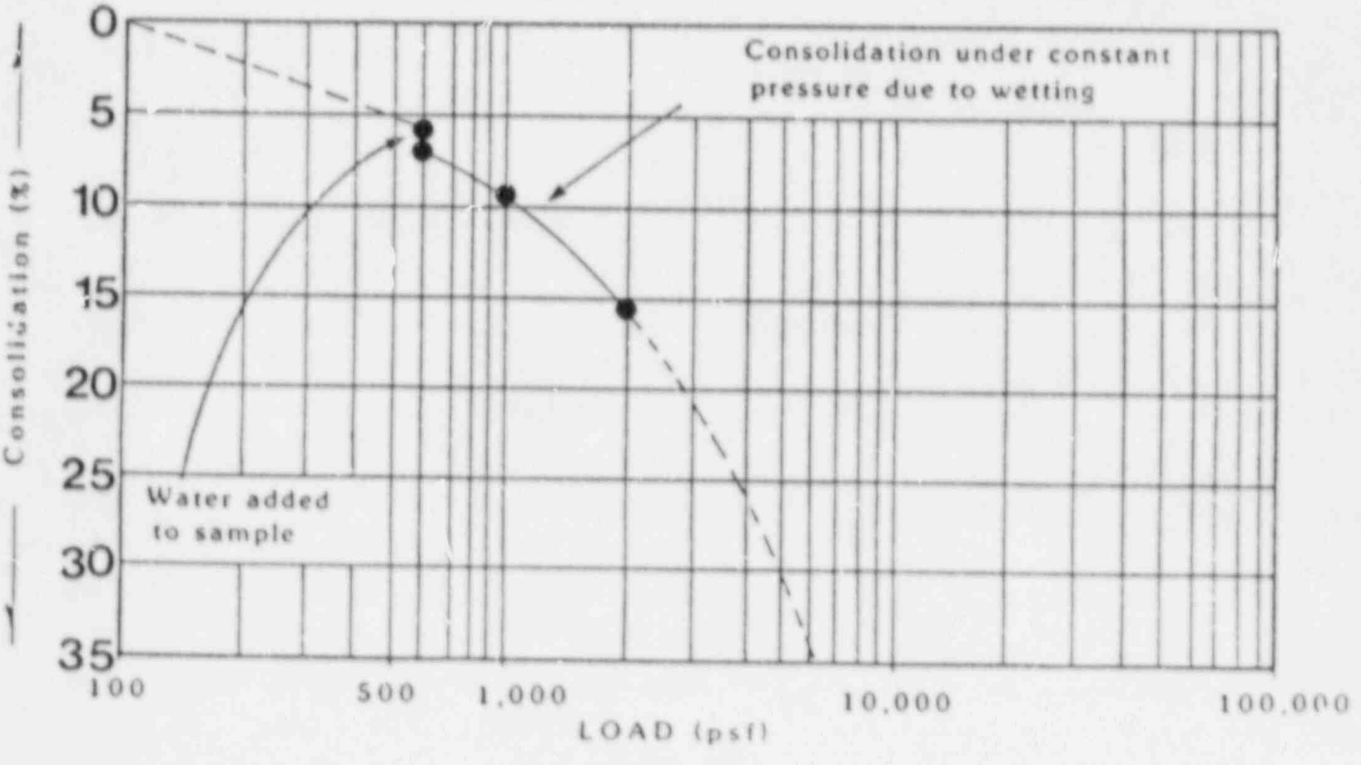
Moisture Content	Dry Density (pcf)	Maximum Load Applied (psf)	% Deformation
193.8%	30.5	500	100
137.6%	36.4	500	100
121.3%	41.6	2K	15.5
108.7%	47.1	2K	15.9
56.4	66.0	8K	15.1

Natural Moisture Content (when recieved in lab) 230.9%



Sample 1

Moisture Content 125.7 % Dry Density 39.8 pcf.

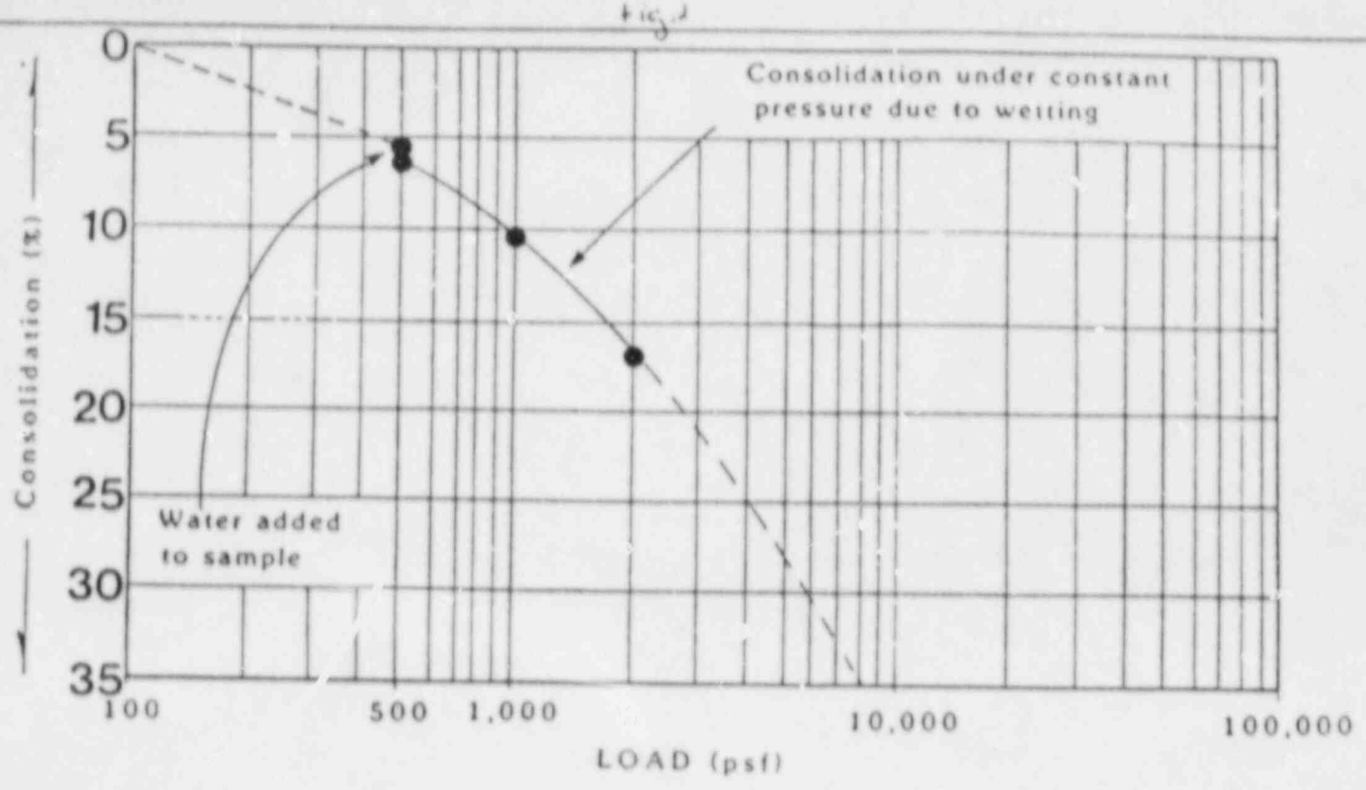


Sample 2

Moisture Content 121.3 % Dry Density 41.6 pcf.

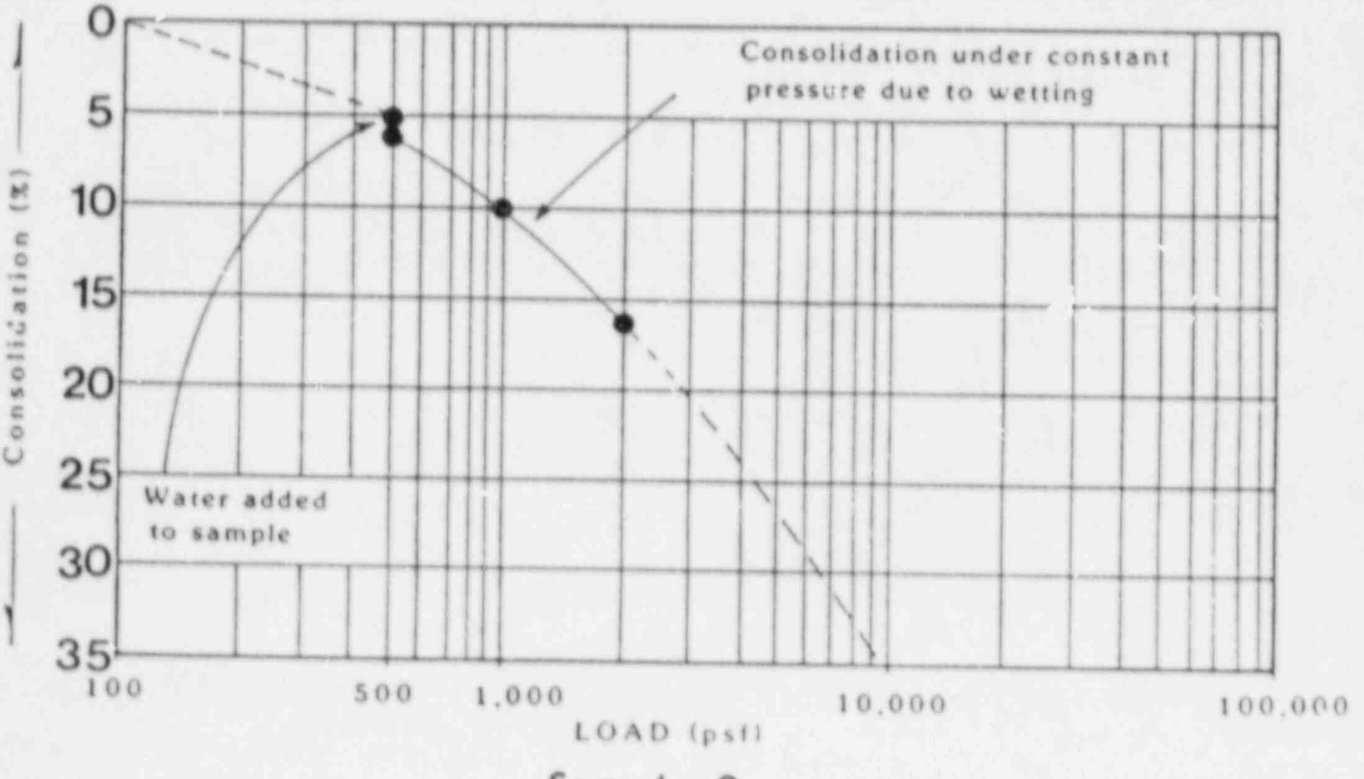
SWELL · CONSOLIDATION TESTS	Job No 3-4264-5946-00
FOX Consulting Engineers and Geologists	Date 4-22-88
	Figure 1

Fig. 2



Sample 1

Moisture Content 112.0 % Dry Density 44.0 pcf.

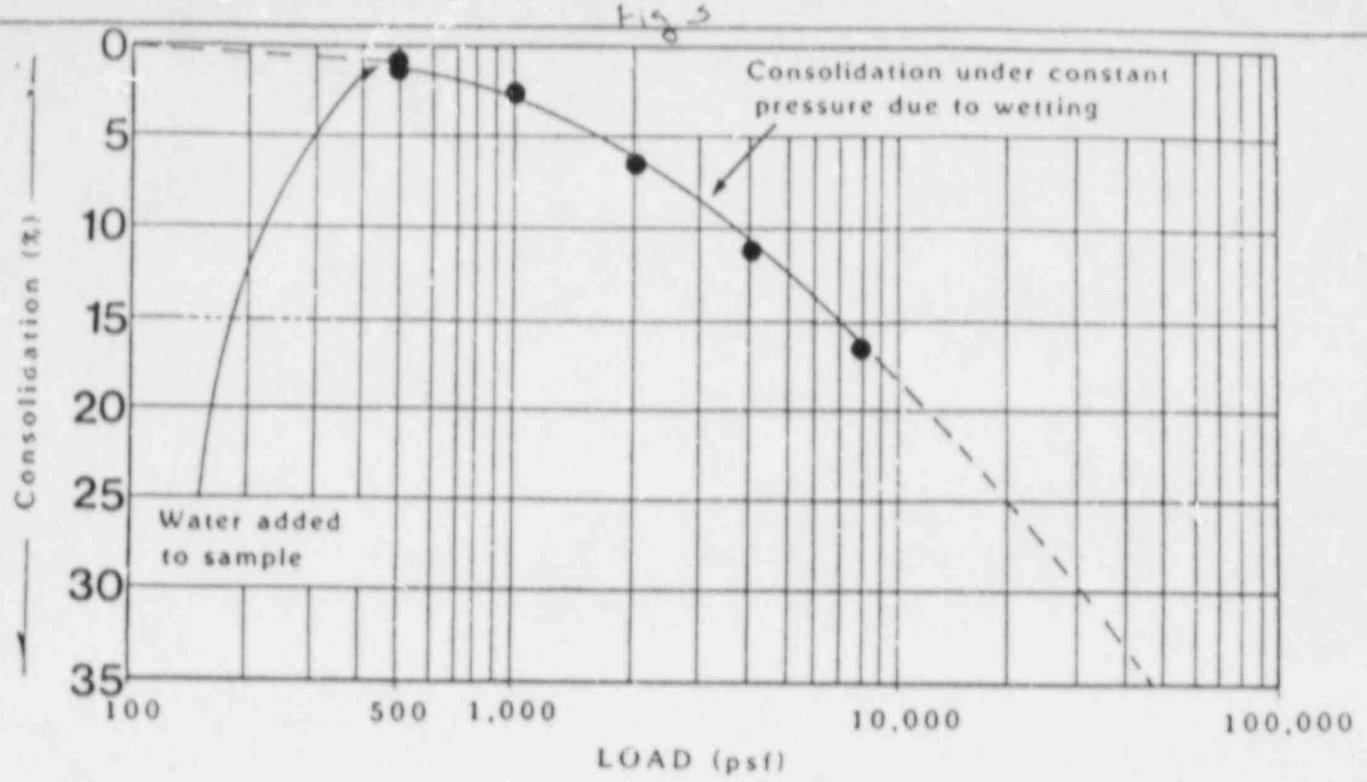


Sample 2

Moisture Content 108.7 % Dry Density 47.1 pcf.

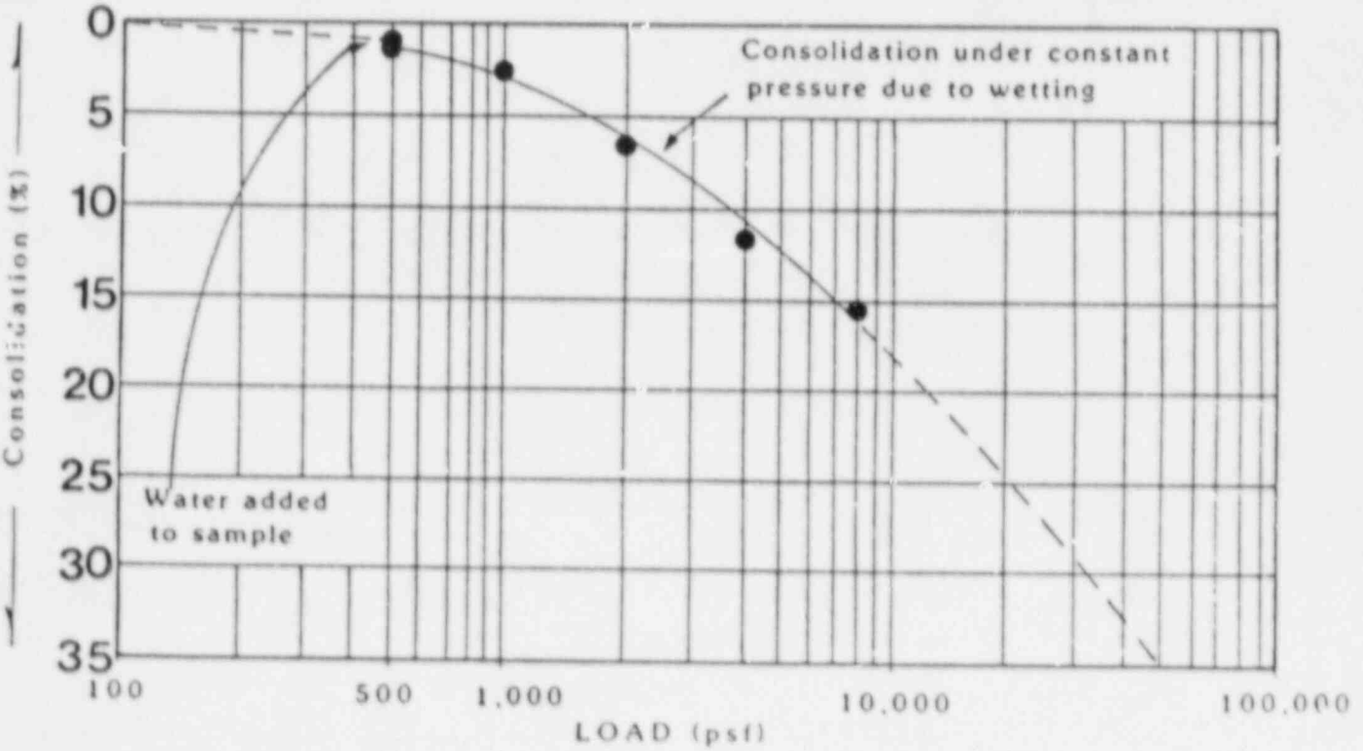
SWELL - CONSOLIDATION TESTS	Job No 3-4264-5946-00
FOX Consulting Engineers and Geologists	Date 4-22-88
	Figure 2

Fig 3



Sample 1

Moisture Content 60.9 % Dry Density 61.8 pcf.



Sample 2

Moisture Content 56.4 % Dry Density 66.0 pcf.

SWELL · CONSOLIDATION TESTS	Job No. 3-4264-5946-00
FOX Consulting Engineers and Geologists	Date 4-22-88
	Figure 3

COMMENT 1b.

The discussion on the proposed settlement monitoring program contained several items that need further substantiation. Please provide the following:

b. Prior to accepting the proposed approach to settlement, please define acceptable cover performance and the extent and method of rework of any unacceptable areas of performance.

REPLY TO COMMENT 1b.

Acceptable cover performance is the satisfaction of 10 CFR 40 App. A criteria relating to the cover, namely:

1) The cover limits the radon flux to specified limits (20 pCi/m^2-s).
2) The cover effectively prevents infiltration of surface water to the tailings.
3) Positive slopes are maintained across the cover surface to prevent ponding of runoff.
4) Erosion losses will not cause breach of the cover or reduction in thickness below that required for radon protection.

The "extend and method of rework" would depend on the extent and type of defect in the cover. Rework would likely consist, at least partially, of disking or plowing the present cover and recompacting the material. Should settlements develop that would require more extensive rework, additional clay soil can be placed to re-establish design grades, thicknesses, etc.

COMMENT 2.

The location map for the exploration program for the radon barrier was not included in the submittal. Please provide this information as the locations of test pits are instrumental in evaluating the characteristics of the available materials. (This item was requested from Mr. T. Osborn of INTERA during a telephone conversation on August 23, 1988 in an attempt to expedite our review process. A duplicate submittal is not necessary if the requested information has already been submitted).

REPLY TO COMMENT 2.

The location points of the test pits are plotted on the same map included showing slime sampling locations.

COMMENT 3.

The radon barrier model is not consistent with the discussion of settlement presented in References 1,2, and 3. Please submit a new model which reflects the assumptions presented in the settlement discussion, or discuss how the current model is conservative.

REPLY TO COMMENT 3.

The radon barrier modeling was carried out at a time when it was assumed that slime thickness at the bottom of the pond were of the order of 5 feet in depth. Subsequent measurements have shown that these estimates were too high by at least a factor or two. Our modeling, therefore, is conservative in that it assumed a depth of source material twice that which actually exists at the site. In our June 16, 1988 discussion of settlement we stated that a two to three foot layer of slimes would likely mix with a sand and rock layer placed on top of it with heavy equipment. In our radon flux modeling, this mixing could result in a three layer system rather than the four layer system modeled. Nonetheless, the reduction of source material by half would reduce the amount of radon flux reaching the base of the radon barrier thereby assuring that the conservatism of the original model will not only be maintained but likely increased.

COMMENT 4.

Please submit the 1981 D'Appolonia investigation referenced by calculation 84-103.C6.

REPLY TO COMMENT 4.

The D'Appolonia letter report entitled, "Field and Laboratory Investigations, Tailings Dam, L-Bar Uranium Operations, Seboyeta, New Mexico" March 1981 has been reproduced and is included in this package.

COMMENT 5.

The calculations submitted to support the availability of cover material are bank volumes and do not take into account unsuitable material in the excavation and loss due to compaction. However, even assuming all excavated material is acceptable for radon barrier fill, NRC calculations show that the project may be short by almost 100,000 cubic yards of materials. As discussed above, the evaluation of the suitability of the excavated materials will depend largely on the locations of the test pits. Please notify the source of any additional radon barrier and erosion protection fill that may be required.

REPLY TO COMMENT 5.

Our calculations on the amount of radon barrier material required and the amount available from channel excavation indicates that we have more than enough material available. However, in the event that more material is needed, there are plentiful supplies of suitable material in the vicinity. Mancos Shale radon barrier material is available throughout the region but specifically we would initially utilize acceptable radon barrier material from the valley to the southeast of the site. Other possible sources include areas to the immediate east of the site, the entire area surrounding Lobo Mountain to the northeast, and Bohart Creek to the northeast.

Erosion protection material (gravel and rip rap) is available along the hill and mountain flanks surrounding the site, along the flanks of Lobo Mountain to the northeast and from the channel and surrounding areas of Bohart Creek to the northeast. These materials on Lobo Mountain and along Bohart Creek have been reserved by BP AMERICA for possible use in the site reclamation.

COMMENT 6.

The pond regrading calculations appear to indicate that there is an imbalance between the fill requirements and available fill (from cuts and windblown). Please clarify by indicating the source of the additional fill material that may be required. The depths of materials utilized in the radon barrier model should be in agreement with the fill calculations.

REPLY TO COMMENT 6.

Our calculations indicate that a balance exists between fill requirements and available fill. However, if additional fill is required the Mancos Shale available from the southeastern valley would be utilized as additional fill. Additional fill sources exist from the areas around and adjacent to the site, from Lobo Mountain to the northeast and along the course of Bohart Creek to the northeast.

COMMENT 7.

The proposed modifications to technical specifications are acceptable. Accordingly, please provide revised specifications that incorporate these modifications.

REPLY TO COMMENT 7.

A reclamation construction contract has already been awarded containing the original testing specifications. It would be inappropriate to revise and re-issue these specifications at this time. Rather, the revised testing program will be accommodated by INTERA, in its work plan, supplementing compaction testing of the common fill an radon barrier to bring the total incidence of testing up to the levels proposed in our June 6, 1988 response to NRC comments. In summary, common fill will be compaction tested at least once for every 10,000 cubic yards of fill emplaced, and radon barrier material will be compaction tested at least once every work shift. Based on the contractors schedule, th. should result in one test every 2000 to 8000 cubic yards for radon barrier testing.

The advantage to this approach is that in addition to assuring that adequate compaction testing is provided, it als. allows INTERA to independently verify that the construction contractor is attaining the compaction requirements placed on the contract.

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