

DOCKETED

EXHIBIT 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION²⁶

'83 APR 18

Before the Atomic Safety and Licensing Board

In the Matter of)
)
ARIZONA PUBLIC SERVICE COMPANY,)
et al.)
)
(Palo Verde Nuclear Generating)
Station, Units 1, 2 and 3))
)

Docket Nos. STN 50-528
STN 50-529
STN 50-530

AFFIDAVIT OF ROBERT H. TURNER

I, Robert H. Turner, being duly sworn, do depose and say:

1. For the period from January 1974 through May 1974, I was asked by Mohan Thadani and Larry Perez, both of the NUS Corporation, to manage the technical development of the project analyzing the environmental effects of the seepage of salt water from the evaporation ponds into the aquifer below the ponds.

As technical project manager I coordinated field tests and mathematical analyses of the possible seepage from the evaporation ponds. I performed some of the mathematical analyses myself and coordinated the analyses of others.

(In contrast, the "project manager" was the person responsible for fulfilling the spirit and letter of the contract between the NUS Corporation and NUS's client, the Arizona Public Service Company ("APS") to ensure that the work contracted for was completed in a satisfactory manner.)

Although the NUS Corporation organizational chart may not list the position of "technical project manager," my line supervisor

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PDR
G

assigned me to this *function*, apparently because he considered me eminently qualified to perform this work.

2. I never saw Dr. Goldman on the Palo Verde site. Nor did I at any time report directly to him. He may not have been aware of the extent of my responsibilities for this particular project.

3. Paragraph 9 of Dr. Goldman's affidavit states that "Dr. Turner apparently misunderstood the objective of the studies and analyses he was directed to perform...."

I understood the objective of the project to be to estimate and assess the environmental consequences of salt water infiltration of the aquifer. As such the technical analysis which *and my associates* ~~I~~ performed determined the design criteria for the evaporation ponds, and, additionally, the environmental harm which would occur if the liner for the evaporation ponds failed.

After we made the technical determination that there existed the potential for massive environmental damage, management made the political decision not to publish the results of our analysis.

4. Dr. Goldman states in paragraph 11 of his affidavit that "there was no purpose to be served by publication of [my] analyses since they were hypothetical in nature...."

If our analysis had indicated that there was no problem with seepage from the evaporation ponds into the aquifer, it is very likely that NUS would have published it.

BT
Further, ~~our~~ analysis assessed the environmental consequences of a failure of the lining. Since it is certainly possible for the liner to fail, APS should have considered these possible environmental consequences in determining the environmental effects of the evaporation ponds.

5. The final summary of our analysis (see, Exhibit J to Turner Affidavit I) states that a soil lining is a viable option even though our analysis determined that a soil lining was no better than no lining at all. Relying on our analysis APS could have informed the Nuclear Regulatory Commission as early as 1974 that a number of alternatives were unacceptable because of the serious environmental consequences which would occur if they were used.

6. In requesting that my name not be associated with this project, I spoke directly to Larry Perez, who was my supervisor and part of NUS Corporation management. Obviously I had no reason to speak to Dr. Goldman about the matter because as far as I knew he did not participate in this particular project in any way other than in top management overview.

7. According to Dr. Goldman, the Environmental Report-Construction Permit Stage, Section 3.6.3.2 states that the evaporation pond would be lined with a "suitable material to limit seepage to the groundwater." Goldman Affidavit, par. 10, at 4.

This statement omits to mention the environmental consequences from a failure of the liner for the evaporation ponds.

It also does not state that both a soil liner and a concrete liner had been determined by our analysis to be insufficient to prevent contamination.

8. Neither Dr. Goldman nor the APS Environmental Report-OL addresses the question of whether salt will be removed from the evaporation ponds by dredging, or some other method. If APS does

not remove the salt from the ponds, sooner or later the liners for the ponds will fail and salt water from the ponds will cause serious environmental damage. The only difference will be that this environmental damage will occur at a time later than if no liner at all were used.

Robert H. Turner
ROBERT H. TURNER

SUBSCRIBED AND SWORN TO before me
this 11 day of APRIL, 1983.

Annelise Wink
Notary Public

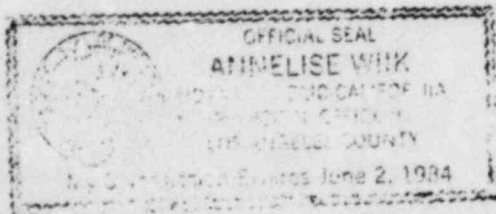
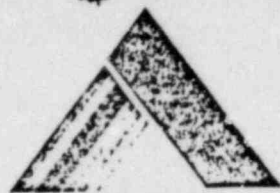


EXHIBIT 2

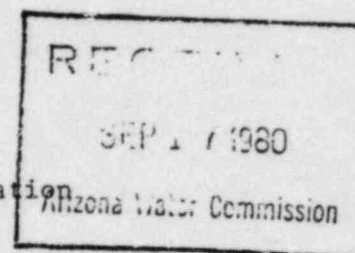


September 17, 1980
ANPP-16376-ACR/JSK

7-54

Mr. Benson Scott
Chief Supervisor of Dam Safety
Arizona Department of Water Resources
222 N. Central Avenue - 8th Floor
Phoenix, AZ 85004

Subject: Evaporation Pond
Palo Verde Nuclear Generating Station
File: 80-003-028.6/CM-020



Reference: ANPP-16339-ACR/JSK dated September 11, 1980

Dear Mr. Scott:

This letter transmits to you, the application for the approval of the plans and specifications for the construction of the evaporation pond at Palo Verde Nuclear Generating Station.

We have attached the following:

- 1) Application form with enclosed fee of \$14,800
- 2) Drawings (2 copies)
 - 13-C-ZVA-005, Rev. 1
 - AO-C-ZVC-453, Rev. 0
 - AO-C-TBC-350, Rev. 1
 - AO-C-TBC-353, Rev. 0
 - AO-C-TBC-355, Rev. 1
- 3) Construction Schedule (1 copy)
- 4) Engineers Report (2 copies)
- 5) Evaporation Pond Study (2 copies)
- 6) Specification 13-CM-020, Exhibit D, D-1 and D-2 (2 copies)

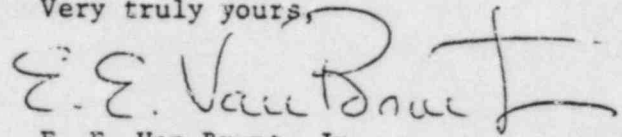
Additionally, please note that the evaporation ponds do not show a liner. The liner type has not been selected as of this date. We believe that this should not affect your review since the dikes are safe against piping and slope failure without considering the liner into the calculations. As an added feature of safety, we are proceeding with the design of a toe drain to be placed on the higher slopes. We forecast submittal of the toe drain drawings during the week of October 6, 1980. Please inform us if the toe drain design will delay your review.

We are also now in the process of revising the reservoir drawings to show the existing elevation. We will enclose 1 copy of these drawings along with the toe drain design.

Finally, we have enclosed our latest construction schedule. Please note we are now out for bids and will mobilize by December 15, 1980.

Should you have any additional questions, please do not hesitate to call.

Very truly yours,



E. E. Van Brunt, Jr.
APS Vice President,
Nuclear Projects
ANPP Project Director

EEVBJr/JSK/sb
Enclosures:

13-C-ZVC-069, Rev. 9 (3 copies)
AO-C-TBC-190, Rev. 5 (3 copies)
AO-C-TBC-191, Rev. 2 (3 copies)
AO-C-TBC-350, Rev. 2 (3 copies)
AO-C-TBC-353, Rev. 2 (3 copies)
AO-C-TBC-355, Rev. 2 (3 copies)
AO-C-ZVC-463, Rev. 1 (3 copies)
Specification 13-CM-020, Exhibit
D, D-1 and D-2 (3 copies)
Construction Schedule (3 copies)

cc: A. C. Rogers
J. M. Allen
D. B. Fasnacht
W. L. Hurst
J. R. Mann
R. E. Kary
W. H. Wilson
W. G. Bingham
D. B. Wood
B. Ghadiali
E. Euge (Fugro)
L. T. Klein (NUS) (w/encl.-1 copy of dwg.)

7-54)

November 18, 1980

ugh, Jerry Cox from Safety of

anders from APS.

ut for bids now. Bid award will be
tion should begin January 1, 1981.

APS was... location map as part of the submittal,
locating... reference to I-10. If one is available it
will be placed.

A standard requirement for new dam construction drawings is a profile of the entire dam, showing existing ground elevations, proposed limits of excavation and soil boring logs. APS has not provided a profile for Palo Verde Evaporation Pond. This is not a "standard" dam, however. The dam is 2½ miles long, encircling an offstream pond. Excavation for the foundation will be 5 feet into alluvial soils. Little variation is expected in foundation conditions along the entire length of the dam. Soil borings were made for the entire pond area and do not often coincide with the dike alignment. APS feels that under these circumstances the cross-sections provided give adequate information for construction and inspection of the dam.

The inlet pipe will be constructed under specification 13-CM-335 which has not been submitted. APS will provide a copy of this specification and all other contract documents. It was noted that the energy dissipation structure is over-designed. APS was requested to clarify whether the 954 gallons/minute/plant figure given in the Engineer's Report is a maximum discharge from the outlet. The answer, provided later by phone by Joe Kanovich, is that the maximum discharge will be 4500 GPM. APS will investigate the need for thrust blocks or other measures where the inlet pipe crosses the embankment. APS will also provide calculations showing that the inlet pipe is properly designed to handle patrol road traffic with less than one foot of cover.

It has been noted previously that agreement between the contours shown on the evaporation pond drawings and the USGS Quandrangle Map

("Arlington", 15-minute series) is poor. APS has had the evaporation pond area surveyed, and in the surveyed area the USGS Map, the contours shown on the plans, and the new survey match reasonably well.

As shown on the current drawings, there are gaps in the toe drains. The toe drains should be provided along the entire length of the downstream toe. Invert elevations should be given for the perforated pipe used in the toe drains. Filter material in the toe drains should be compatible with the perforation size used in the drain pipe. Section 4.1 of the engineer's report says "cross-sections may be altered during construction to balance cut and fill." This would refer to random fill only, the controlled embankment sections will not be changed.

Settlement markers along the dike crest tied to a solid bench will be required. If evidence of seepage is discovered after impoundment begins, installation of piezometers may be required in the embankment and at the toe.

The drawings are contradictory concerning the dimensions of foundation cuts. According to APS, the contract documents require a vertical cut from the toe of the dam to a minimum of 5 feet below existing grade. Discussion: It will be difficult to get the specified compaction along the vertical face. It is the contractor's responsibility to provide the specified compaction. Do the specs call for special testing for the required compaction near the embankment/foundation interface? APS will look into it.

The shear parameters given on Page 8 of the Fugro Report are not substantiated by test data. Response: Fugro has provided a final report with more information. The data needed should be supplied by the new report.

The Fugro Report recommends a maximum 6" to 8" compacted lift thickness depending on the equipment used. The specifications require a maximum uncompacted lift thickness. The specifications should follow the recommendations of the report, or else an explanation for not following the report should be given. APS will change the specifications.

/ Before construction begins, APS must supply Safety of Dams with additional information concerning the pond lining. Question from APS: < Since the dam is designed to be safe even without the lining in place, why is Safety of Dams so interested in the lining? Response: The toe drain is one safety feature to guard against piping, the lining is another safety feature. Either might be sufficient, but since both are being used, both should be properly constructed. >

Information required on the lining is:

1. Experience on the lining subcontractor.
2. Jointing pattern.

3. Method of lining termination at top of embankment and dissipator box apron.
4. Sequence or construction.
5. Method for holding the lining in place.

Drawings Numbered 00A-004 and 00A-005 should be included in the submittal.

Normally the owner's engineer is the owner's agent in contact with Safety of Dams. For this project, the owner, APS, will be the Safety of Dams contact. Someone from Safety of Dams will attend the pre-construction conference. APS was reminded that, according to the terms on the application, no foundation may be covered with material for the dam until the Department of Water Resources has been given the opportunity to inspect.

Additional Activity:

The site for the proposed Palo Verde Evaporation Pond was inspected.

APS transmitted a revised soils report and three copies of Drawing No. FGD-1384C to be included with original submittal.

PLS

M E M O R A N D U M

TO: Files

FROM: M.L. Arbaugh *MLA*

DATE: December 1, 1980

SUBJECT: Palo Verde Evaporation Pond (7-54)
General description and hazard
classification.

EXHIBIT 4

Description. The proposed Palo Verde Evaporation Pond is an offstream lake formed partly by excavation and partly by construction of a perimeter embankment which entirely surrounds the excavation. The pond is rectangular in shape, approximately 3700 feet long by 3100 feet wide. Total length of the surrounding embankment is approximately $2\frac{1}{2}$ miles. The height of the dam varies from 13 feet to 30 feet above existing ground. The crest has a constant elevation of 942 feet (datum mean sea level). The reservoir has a surface area of approximately 250 acres, and a storage capacity of approximately 5000 acre-feet at the maximum anticipated operating level, which is 3.5 feet below the top of the dam. Storage capacity is approximately 6000 acre-feet for water level at the top of the dam. Foundation for the embankment will be a minimum excavation of 5 feet into alluvial soils. Embankment material will come from the pond excavation. The upstream slope of the controlled embankment will be 3:1, downstream $2\frac{1}{2}$:1. There will be an additional zone of random fill placed along the downstream face of the controlled fill, and a toe drain installed at the toe of the controlled fill.

As implied by the name, the purpose of the pond is evaporation. Highly saline wastewater from the power plant cooling towers, demineralizer, and domestic water system will be stored in the pond while evaporation takes place. Inlet flow will be entirely controlled. Water will enter the reservoir from a 12-inch reinforced concrete pipe. The maximum anticipated inflow rate is 4540 gpm, or 10 cfs. This would give a maximum rise in reservoir water surface elevation of one inch per day. The pond will be provided with an impervious liner. There will be no outlet and no emergency spillway. Therefore all reductions in water surface elevation will be due to evaporation.

In the case of the Palo Verde Evaporation Pond the lack of an outlet is justified by the following circumstances:

1. The impounded water will have an extremely high concentration of dissolved solids (salts). If problems with the embankment do occur, lowering the reservoir water surface by drainage of the poor quality water into a natural wash is not advisable.

2. Water flow into the reservoir is entirely controlled and can be shut off at any time if necessary.
3. Maximum operating inlet flow is small, resulting in a very slow rise in reservoir level.

Hazard Classification. Although no design storm will be studied for this dam since it does not receive runoff, it is still prudent to assign a hazard classification to the dam. Based on a height of 30 feet and a storage capacity of approximately 6000 acre-feet, this is a medium sized dam. (See Arizona Department of Water Resources Spillway Design Flood Criteria, Attachment 1). In the event of failure, drainage would be to the south along a local shallow wash, crossing a Southern Pacific Railroad track at about $3\frac{1}{2}$ miles, entering the Centennial Wash at about $4\frac{1}{2}$ miles, and then traveling the additional $4\pm$ miles to the south-east along the Centennial Wash alignment to where the wash is apparently intercepted by the Arlington Canal. In the $1\frac{1}{2}$ miles through Arlington Valley from the Arlington Canal to the Gila River there are a number of buildings apparently residences. These are located between 9 and 10 miles from the pond.

A breach would be expected to cause downstream damage to the railroad, roads and homes but loss of life is unlikely. Based on these observations the Palo Verde Evaporation Pond is given a moderate hazard rating.

Emergency Spillway. Because this is an offstream dam, an emergency spillway is not required. Only precipitation which falls directly on the pond will contribute to a rise in water level. Since the surface area of the pond is nearly constant with depth, one inch of rainfall would result in a corresponding one-inch rise in reservoir surface elevation. Probable maximum 72-hour precipitation in the area of the Palo Verde Evaporation Pond is about 28 inches. Since the pond will be operated with a minimum 3.5 feet of freeboard, no overtopping would occur, even in the event of a PMP.

Erosion Control. An energy dissipator box with surrounding gunnite apron is more than adequate for the 10 cfs inlet flow. The pond floor and upstream face of the embankment will be protected from seepage and wave action by the impervious liner. The soils report has identified a piping potential in the embankment material, so it is particularly important that the impervious liner function correctly. The toe drain should give some warning if a leak does develop in the liner.

Conclusions and Recommendations. If the operating procedures developed during the design stage are followed, the Palo Verde Evaporation Pond should be a safe structure without the usual safety features of an outlet at natural ground elevation and an emergency spillway. To insure that operations are conducted in accordance with the original design assumptions it is recommended

that a License of Approval to store water be issued subject to the following conditions:

1. Maximum reservoir surface elevation shall be 3.5 feet below the top of dam.
2. The inflow rate shall not exceed 12 cfs.

plg

INSPECTION OF DAM CONSTRUCTION

EXHIBIT 5A

PROJECT P.V.N.G.S. Evaporation Pond (7-54) SHEET 1 of 1CONTACTS Dick McGregor - APSKen Euge & Bill DuBois - Ertec WesternIMPORTANT ACTIONS TAKEN:

Inspected the lining operation at pond bottom.

DESCRIPTION OF WORK:

The lining subcontractor ARCO has so far placed about 300 ft. of the asphalt rubberized lining at the pond bottom at an average rate of $2\frac{1}{2}$ acres per day (about 3 lane x 10' = 30 ft. width). Two trucks are being used now, another one may be brought soon.

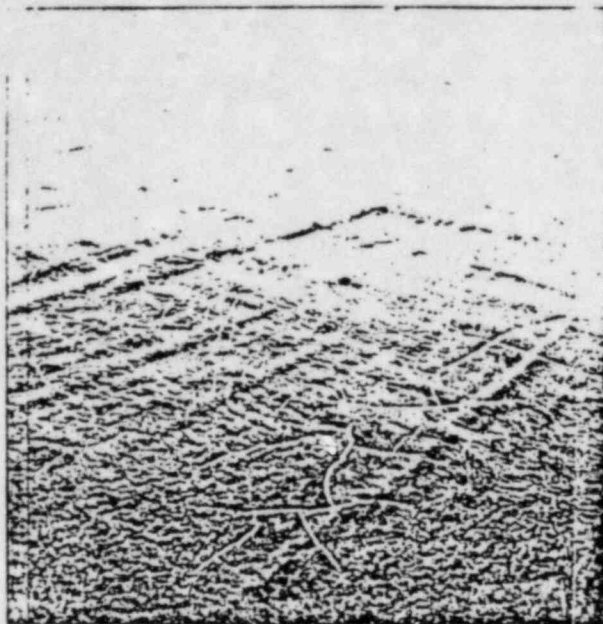
COMMENTS:

It appears that with aging, the lining is already developing shrinkage cracks (alligator pattern). As can be seen in the photographs, these cracks start appearing 3 to 4 days after the placement. Probably because of the unusually hot weather, the lining is still too soft to walk on the surface. Hence it wouldn't be determined whether these cracks are rupturing the lining material or they are only surficial. I checked with Ken Euge and Bill DuBois on the finished thickness (after shrinkage) of the lining and was told the tests are indicating the contractor is providing the specified thickness of $2/10"$. I believe that the contractor should be asked to recheck his mix design or make some more trial runs to accurately estimate the shrinkage factor and viscosity etc. It is important to correct the error at this stage since it will be difficult to run any equipment on the liner to make up for the deficiency. I have asked Dick McGregor of APS to discuss this matter with ARCO, Granite and Bechtel staff.

Construction of the east dike and the remaining halves of the north and south dikes is progressing well.

Goodrich Co., the subcontractor for the upstream slope hypalon liner haven't showed up on the site as yet. They were supposed to have started on August 27, 1981. Their revised schedule is not known.

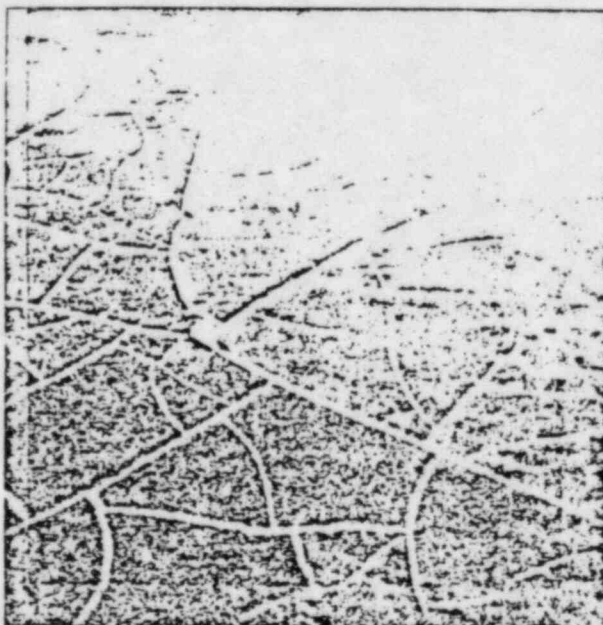
INSPECTED BY  ON 9-1-81 PHOTOS Yes



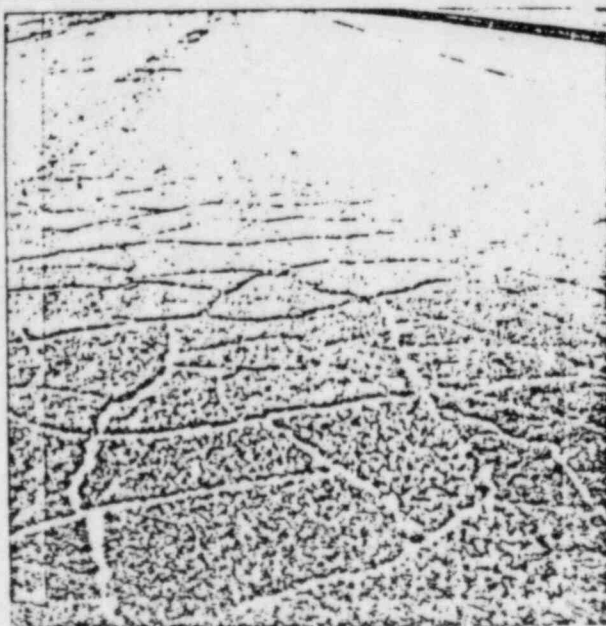
P.V.N.G.S. Evap. Pond (7-54)
K.M. Hussain
9-1-81

[Handwritten signature]

Pond lining at bottom.
View looking north. Layer
placed 4 days ago (8-28-81).
Notice development of
shrinkage cracks.



Pond ling at bottom. View
looking north. Layer
placed a week ago.

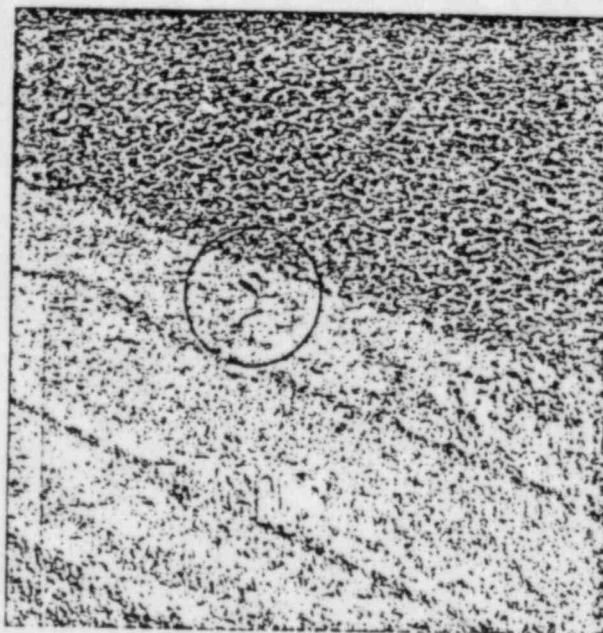


Same as above.

P.V.N.G.S. Evap. Pond(7-54)
K.M. Hussain
9-1-81



First layer of pond lining
at bottom starting near
the u/s toe of the west
dike. View looking south.
Notice gravel sticking out
of the lining material
and the surface
irregularities.



View looking east.
A 2.5" ^{hr} rattlesnake
in the foreground

INSPECTION OF DAM CONSTRUCTIONPROJECT P.V.N.G.S. Evaporation Pond (7-54)

SHEET 1 of 1

CONTACTS Dick McGregor - APSIMPORTANT ACTIONS TAKEN:

Inspected the plastic liner placement on the upstream face of the dikes.

DESCRIPTION OF WORK:

Placement of the Hypalon plastic liner was started on Tuesday, September 15 and has been completed at the southwest corner so far. Approximately 3000 linear feet (along the crest) has been placed while 4 to 5 rolls (150'L x 76'W each) have been unrolled awaiting the loose ends to be anchored at the upstream toe and the crest. Because of the high wind velocity at the time of inspection, the contractor had suspended the placement for the rest of the afternoon.

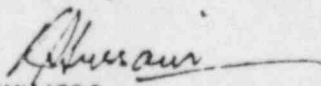
Comments:

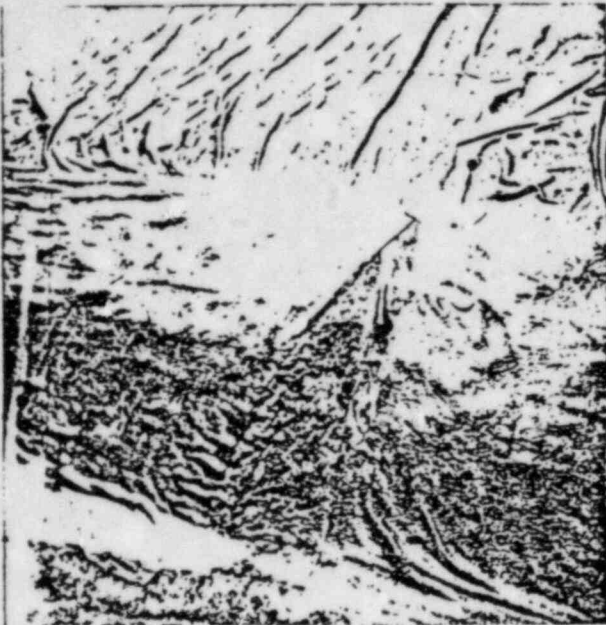
1. The liner appears to be sound and sturdy and quite satisfactory.
2. The jointing of the different sections and the 3 ft. overlap is in accordance with the specifications.
3. The rupture in the lining material noticed at few locations is patched up with sufficient overlap.
4. Termination of the liner at the downstream toe is not completed.
5. There are some questions about the contractor's methods of terminating the upper end of the liner on the upstream end of the crest. The construction drawings (which were reviewed and approved with the understanding that the liner will be placed according to the manufacturer's specifications) call for 12" deep trench, whereas the manufacturer's specifications require a minimum of 18" deep trench.

In my opinion, the trench depth giving a soil cover of 12" is not sufficient to prevent movement or the downward drag of the liner due to settlement, wave action and the hydrostatic forces.

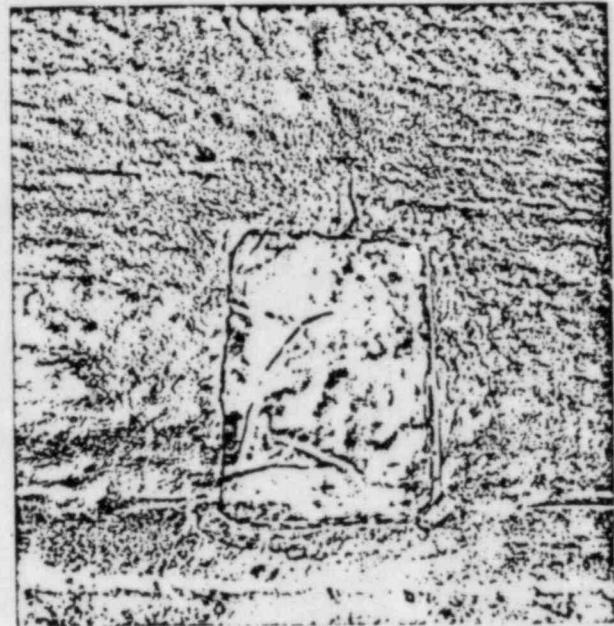
I discussed this with Dick McGregor at the site and Joe Kanovich (both of APS) after my return to the office and asked them to look into the matter before it is too late. To insure sufficient anchorage we would require that the manufacturer's specifications of the 18" minimum trench depth be followed. Further, the contractor is presently backfilling the trench without compaction. I suggested, 6" layers of uncompacted thickness should be hand tamped with proper care taken to protect the liner from damage. Joe Kanovich told me he will discuss these points with Goodrich and Bechtel staff and call me back.

I expect to visit the site again on Wednesday, September 23, 1981.

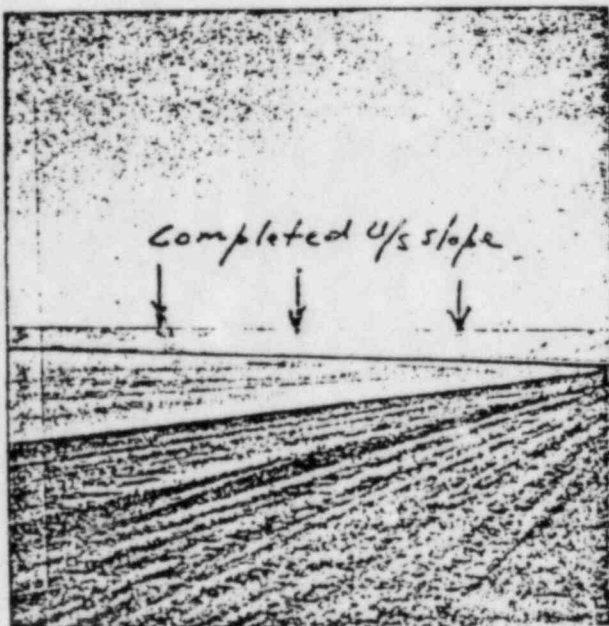
INSPECTED BY  ON 9-18-81 PHOTOS Yes



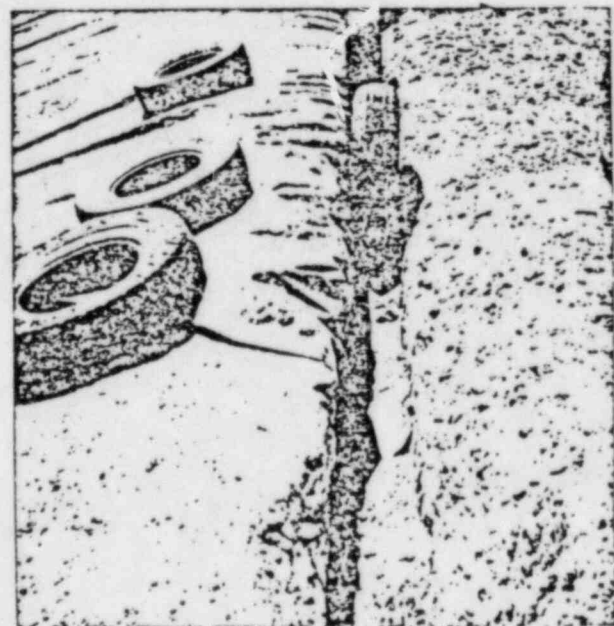
Notice rupture in the hypalon liner near the u/s toe. Location: South dike, near southwest corner, Station 27+00.



Similar rupture in the liner patched up. Location: Approx. 150 feet west of Station 27+00, near southwest corner.



Hypalon liner placed on the upstream slope of the south dike at the southwest corner. View from West Dike.



The hypalon liner being terminated on the upstream side of the crest. Trench dimensions: 12" w x 12" d.

INSPECTION OF DAM CONSTRUCTION

EXHIBIT 5C

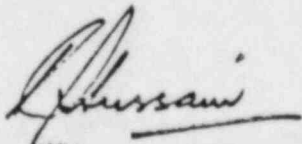
PROJECT P.V.N.G.S. - Evaporation Pond (7-54) SHEET 1 of 1CONTACTS Dick McGregor - APSDick Anderson - BechtelIMPORTANT ACTIONS TAKEN:

Inspected the construction of the south and east dikes and also the lining operation at north west portion of the dikes.

Discussed with Dick McGregor and Dick Anderson the discrepancy between the manufacturer's specifications and the construction drawings on the required depth of trench to terminate upper end of the hypalon liner near the upstream crest. It was finally agreed that Bechtel will issue the work stoppage notice (NCR) to the contractor and refer the problem to their design office in Downey, California to verify if the 12 inch depth of trench (as is being built according to the drawings) or the manufacturer's specifications requiring 18" depth should be followed. The hypalon lining work was, as such, stopped from the afternoon of 9-23-81.

The lining of the pond bottom is continuing. With three trucks, the contractor is now averaging about 7 acres (about 8 lane widths) per day.

The contract period ends tomorrow. Bechtel has recommended one month's extension to which APS has not agreed to date. There is no penalty clause in the agreement.

INSPECTED BY  ON 9-23-81 PHOTOS No

INSPECTION OF DAM CONSTRUCTION

EXHIBIT 5D

PROJECT P.V.N.G.S. Evaporation Pond (7-54) SHEET 1 of 1CONTACTS Dick McGregor - APSIMPORTANT ACTIONS TAKEN:

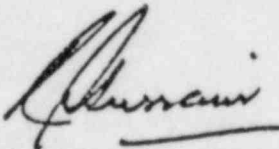
Discussed with Dick McGregor the controversy over the required depth of trench to bury the upper end of the hypalon liner on the crest.

DESCRIPTION OF WORK:

Inspected the dikes construction and excavation at the pond bottom. It appears 95% of the work on these two items has been completed and the contractor is planning to wind up the cut and fill operations by next week (October 7th), however the lining work will continue up to October 24, 1981. The APS has extended the contract by one month from Sept. 24th.

About one half of the pond bottom has been laid with the rubberized asphalt liner and the work appeared satisfactory.

Hypalon liner has been placed on the entire west dike and approximately one half each of the north and south dikes. There is still some confusion on the depth of trench required to terminate the upper end of the hypalon liner near the upstream crest. The manufacture's specifications require an 18" deep trench, whereas only 12" depth is shown on the drawings. Liner placement has been stopped until the Bechtel's Downey office completes the analysis and investigation in view of the changed conditions of slope, friction value between the liner material and the soil, etc.

INSPECTED BY  K.M. Hussain ON 9-29-81 PHOTOS No

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
DIVISION OF SAFETY OF DAMS

EXHIBIT 5E

INSPECTION OF OPERATIONAL DAM

NAME OF DAM P.V.N.G.S. Evaporation Dam DAM NO. 7-54
TYPE OF DAM Earth FREEBOARD --- Ft.
STORAGE LEVEL Varying from 1" to 3"
at center of pond () Above SPILLWAY CREST
bottom () Below
CONTACTS Paul McNeere and Rich Badsgard - Nuclear Operations Support -
Arizona Public Service

Inspected the dikes and the inlet and outlet structures. There are no sign of cracks, settlement or holes at the crest. The upstream hypalon liner is in good shape. The asphalt liner at the pond's bottom was too soft to walk at certain places probably due to heat and absence of water. Few small holes 1" to 2" in diameter were also observed in the bottom liner. Gravel and cobbles rolling down the slopes penetrate through the soft surface and are found to rip the liner. Suggested to the APS' staff that they should put about 6" to 8" deep water to cool the surface and protect the liner. The downstream slope was also inspected and found to be in good condition.

Comments:

1. The dikes and the appurtenant works are in excellent condition. No specific recommendations are made at this time.
2. All the required instruments (8 settlement markers and 10 neutron moisture probes) have been installed at the crest.
3. I believe Bechtel hasn't yet officially transferred the pond to the Operations Support Group of the APS. As a result, the APS staff is neither involved nor aware if Bechtel is carrying periodic instrument readings and the visual inspection as stated in the APS' Operations Procedure Manual submitted for this project and approved by the Department. We have been emphasizing in our various meetings and letters to the APS that the settlement readings should be started immediately following the construction completion and the data sent to us on a regular basis. We haven't received any record of observation either from the APS or Bechtel so far.

P.S.

At his request a copy of this report was sent to Mr. Richard Badsgard of Nuclear Operations Support, APS on July 12, 1982.

Inspected By: K.M. Hussain
Date of Inspection: 6-3-82
Date of Report: 6-4-82
Photos: Yes XX No ---

Suggest we should write a letter and ask APS to explain why the monitoring of the settlement markers hasn't started yet?

4. Discussed with the APS staff the installation of the flow meter to accurately measure the inflow into the pond required in the computation of the water budget. Because of the space limitation, it is difficult to put it inside the inlet box. I told them that so long as it is properly protected, we don't have any objection to installing it outside of the inlet box or wherever convenient.

Dan

State of Arizona
DEPARTMENT OF WATER RESOURCES

99 E. Virginia Avenue, Phoenix, Arizona 85004



BRUCE BABBITT, Governor
WESLEY E. STEINER, Director

February 24, 1983

EXHIBIT 6

Arizona Public Service Company
P.O. Box 12666
Phoenix, Arizona 85036

Attention: Mr. John Vorees, Manager
Nuclear Operations Support

Subject: P.V.N.G.S. Evaporation Pond Dam (07.54)

Dear Mr. Vorees:

Thank you for your letter of December 13, 1982 and the accompanying Affidavit of Total Construction Cost with the check in the amount of \$7,135.00 to cover the balance of the application fee. We have reviewed our files and find that all the necessary documents have been submitted and are satisfactory to the Department.

Enclosed is the License of Approval for the operation of the Palo Verde Nuclear Generating Station Evaporation Pond Dam and its appurtenant works. The License is issued in accordance with the Arizona Revised Statutes, and the operation of the facility is subject to the conditions stated therein.

Should any unusual or alarming circumstances develop that may adversely affect the safety of this dam or its appurtenant structures, please notify this office immediately.

Sincerely

DAN ROGER LAWRENCE, P.E.
Chief
Division of Safety of Dams

Enclosure

Think Conservation!

Office of Director 255-1554

Administration 255-1550, Water Resources and Flood Control Planning 255-1566, Dam Safety 255-1541,
Flood Warning Office 255-1548, Water Rights Administration 255-1581, Hydrology 255-1586.

State of Arizona
DEPARTMENT OF WATER RESOURCES
Division of Safety of Dams

LICENSE OF APPROVAL

Pursuant to Chapter 3, Title 45-Waters, of the Arizona Revised Statutes, the DIRECTOR, Department of Water
P.V.N.G.S. EVAPORATION

Resources authorizes the use of: POND Dam and Reservoir, Application Number 07.54

Located in Sec. 3 & 4, Tp. 1S, R. 6W, G. & S.R.B. & M. Maricopa County, State of Arizona

impound water in accordance with and subject to the following terms and conditions:

1. The permanent storage shall not exceed elevation 937.50 feet.
2. The instruments provided at this structure shall be monitored at the agreed frequency, and the data be sent to the Division of Safety of Dams with the analyses and conclusions.

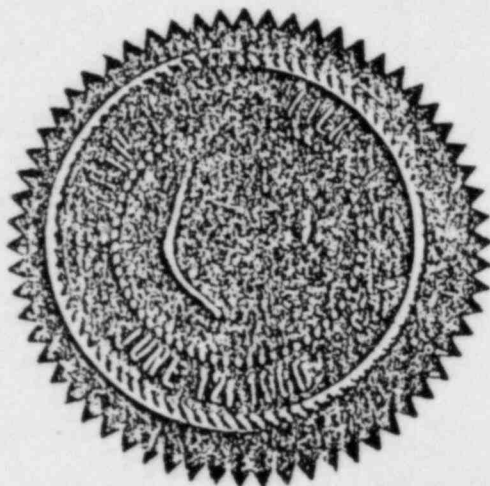
This license of approval supersedes every previous consent for use issued by the State of Arizona relative to said dam and reservoir

Witness my hand and seal of the Arizona Department
of Water Resources

24th day of February, 1963

WESLEY E. STEINER
DIRECTOR

Dan Roger Lawrence
DAN ROGER LAWRENCE
By Chief, Division of Safety of Dams, P.E. No. 8162.



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of)
)
ARIZONA PUBLIC SERVICE COMPANY,)
 et al.)
)
(Palo Verde Nuclear Generating)
Station, Units 1, 2 and 3))
)

Docket Nos. STN 50-528
STN 50-529
STN 50-530

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing Supplemental
Response of Intervenor Patricia Lee Hourihan to Joint Applicants' and NRC
Staff's Motion to Strike Intervenor's Motion for Leave to File Response
have been served upon the following persons by deposit in the
United States mail, first class, postage prepaid, this 16th day
of April, 1983.

*Docketing and Service Section
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Chairman, Maricopa County
Board of Supervisors
111 South Third Avenue
Phoenix, Arizona 85004

*Dr. Richard F. Cole
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

*Atomic Safety and Licensing
Appeal Board Panel
U.S. Nuclear Regulatory
Commission

Charles A. Bischoff
3100 Valley Bank Center
Phoenix, Arizona 84073

*Robert M. Lazo, Esq.
Chairman, Atomic Safety and
Licensing Board
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Dr. Dixon Callahan
Union Carbide Corporation
P.O. Box Y
Oak Ridge, Tennessee 37830

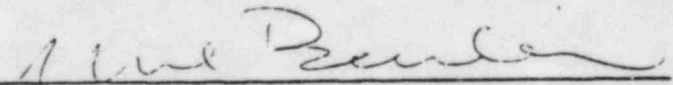
*Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

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U.S. Nuclear Regulatory
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Washington, D.C. 20037

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Snell & Wilmer
3100 Valley Bank Center
Phoenix, Arizona 85073


LYNNE BERNABEI

*Served by deposit in the NRC Internal Mails.