



including, but not limited to, memoranda, correspondence, reports, surveys, evaluations, charts, books, minutes, notes, agenda, diaries, logs, transcripts, microfilm, accounting statements, telephone and telegraphic communications, speeches, and all other records, written, electrical, mechanical or otherwise. "Documents" shall also mean copies of documents, even though the originals thereof are not in the possession, custody or control of West Valley, its members, or consultants.

4. For all references to documents requested in these Interrogatories, identify such documents by author, title, date of publication and publisher if the reference is published; and if it is not published, identify the document by the author, title, the date it was written, the qualification of the author relevant to this proceeding, and where a copy of the document may be obtained.

5. In your answer, repeat each Interrogatory set forth herein and then set forth an answer thereto separately and fully. As to any Interrogatory, section or subsection of said Interrogatory that you refuse to answer or which is objected to for any reasons, separately state the grounds for any such refusal. Where a complete answer to a particular Interrogatory, section or subsection of said Interrogatory is not possible, such Interrogatory, section or subsection of said Interrogatory should be answered to the extent possible and a statement made indicating the reason for the partial answer.

6. Identify any documents used as the basis for the answer to each Interrogatory.

7. If the answer to any Interrogatory is based upon a calculation, describe (a) the calculation, (b) identify any documents setting forth such calculation, (c) identify the person who performed each calculation, (d) when it was performed, (e) each parameter used in such calculation, each value assigned to the parameters, and the source of your data, (f) the results of each calculation, and (g) how each calculation provides basis for the answers.

8. If the answer to any Interrogatory is based upon conversations, consultations, correspondence or any other type of communications with one or more individuals (a) identify each such individual by name and address, (b) state the educational and professional background of each such individual, (c) describe the information received from such individual and its relation to your direct answer, (d) identify each writing or record related to each such conversation, consultation, correspondence or other communication with such individual.

9. In accordance with 10 C.F.R. § 2.740(e), these Interrogatories require prompt supplemental answers should West Valley obtain or identify supplemental information or documents.

10. Pursuant to the agreement of the parties regarding the discovery schedule for this proceeding, answers to these interrogatories are due by April 15, 1983.

#### INTERROGATORIES

##### INTERROGATORY 1

Identify all documentary or other material that you intend to use during this proceeding to support West Valley's Contention(s) and that

you may offer as exhibits on these contentions or refer to during your cross-examination of witnesses.

INTERROGATORY 2

- a) Upon what person or persons do you rely to substantiate in whole or in part West Valley's contention(s)?
- b) Provide the address and education and professional qualifications of any persons named in your response to 2a above.
- c) Identify which of the above persons or any other persons you may call as witnesses and identify which portions of each West Valley Contention(s) that each such person will support.

INTERROGATORY 3

In Section I.B.(iii) of West Valley's intervention petition, it is inferred that the salt deposition increases after six years of operation at the Chalk Point Power Plant were due to cooling tower deterioration. Set out the complete basis on which such statement was made including all technical studies of their occurrence. Provide data from the Chalk Point Plant on changes in power level, intake water salinity, and meteorological conditions. Set out all other factors which West Valley or its consultants believe may have also influenced salt deposition increases at the Chalk Point Plant, and any change in those factors.

INTERROGATORY 4

Section I.C.(vi) of West Valley's Intervention Petition asserts that the FOG model would be underpredicting the true salt deposition by a factor between ten and seventy. Explain the basis for this statement, including all computations made by West Valley or its consultant in support of the statement. Does the fact that no measurements of salt deposition has been made in a desert climate for circular mechanical draft cooling towers affect your answer? Explain the basis for this conclusion.

INTERROGATORY 5

In Appendix II.A (p. 14) of Dr. Davis' September 28, 1982 Report attached to West Valley's Petition to Intervenor, he contends that "typical" values of erodibility and high wind speeds are used. Explain how these "typical" values were arrived at and provide the data from

which these values were obtained. Also provide the basis for the inherent assumption that these ponds are always dry. Also provide the basis for assuming that drift droplet distributions from the cooling towers can be used for evaporation pond silt. Set out drift droplet distribution and size from evaporation ponds you maintain will be caused by PVNGS, and all calculations and other reasoning leading to such conclusions.

#### INTERROGATORY 6

Based upon West Valley's presumption that considerable damage may be done to farm land by the operation of Palo Verde cooling towers, evaporation ponds and spray ponds, provide the relative effect (by percentage of overall salt deposition) of each of these facilities upon farms within ten miles of the Palo Verde facility.

#### INTERROGATORY 7

In Section III.A.(i) of West Valley's Petition to Intervene it is asserted that the PVNGS region has a history of a large number of small rain events during the summer and these rain events are frequently of such low intensity that it is unlikely that they would remove salts accumulated on crop leaves. a) Explain the basis for the conclusion that it is unlikely rain events would remove salts accumulated on crop leaves and provide all relevant data thereto. b) List all rains, their amount and their duration in the area that might be affected by salt deposition from PVNGS from January 1, 1978, to date. Set out how these matters were determined.

#### INTERROGATORY 8

In Section III.A.(iii) of West Valley's Petition to Intervention, it is suggested that the very dry environment at PVNGS would create problems similar to those observed at Chalk Point during a drought year. Provide the reasoning and calculations on which the basis for this suggestion is based. Account for the fact that crops near PVNGS are irrigated and the relative humidities are quite different between the two locations, even during drought conditions in the Chalk Point vicinity.

#### INTERROGATORY 9

Provide the basis, including data, for Dr. Mulchi's statement (p. 15 of Report attached to West Valley Petition) that the Pittsburg Generating Station experiences climatic conditions which are similar to those at PVNGS and that the damage to native plants near the Pittsburg Station is expected to show similarities to the cultivated crop damage near PVNGS.

INTERROGATORY 10

Provide the basis supporting the claim in West Valley's proposed Contention III.A(ii) in its Intervention Petition that climatic conditions in the PVNGS vicinity are such that deposited salts are dissolved, move, and collect along leaf margins resulting in leaf necrosis. Specify each crop to which this will happen, location of crop by farm, direction, and distance to PVNGS cooling towers, and the amount of acreage of each crop.

INTERROGATORY 11

In proposed Contention III.B. in West Valley's Intervention Petition, it is stated that the expected salt deposition levels in the areas of PVNGS are likely to cause injury to crops. Identify farm areas having irrigated cotton and other crops grown near PVNGS, expected to be damaged by salt drift. Provide the following for each farm:

(a) location (distance in miles and compass direction) of all cropland, hay and pasture land within 10 miles of the PVNGS cooling towers;

(b) crop, hay and pasture acreage to include amount and type of each crop on each farm identified in (a) for 1978, 1979, 1980, 1981 and 1982.

(c) as to each crop, identify the percentage of crops on each farm which will be 1) lost or, 2) adversely affected and the value connected to such loss or adverse affect by crop and farm.

(d) Set out by farm the profit or loss realized from each of the crops it is claimed would be affected by salt deposition for each year from 1978 through 1982.

INTERROGATORY 12

Regarding West Valley's proposed Contention III.B.(ii), what levels of aerial salt deposition would result in leaf damage and lowered production in cotton plants? Provide all supportive data including studies, computations, and reasoning demonstrating the cause-effect relationship between aerial salt deposition and reduced cotton production and production of cotton with poor quality fibers.

INTERROGATORY 13

Identify power plant site(s) in the eastern U.S. referred to in West Valley Proposed Contention C(i) where harm was noted to plants at salt deposition levels of 2-4 lbs/acre/wk. What plants showed injury at these deposition levels? Provide complete citations to all documents supporting your response.

INTERROGATORY 14

Provide the basis for concluding in proposed Contention C(ii) of the West Valley Petition to Intervene that salt deposition will be 2-4 lbs/acre/wk near PVNGS. Identify and set out the deposition model, and all other calculations and reasoning used to arrive at these values. Identify 1) acreage, type and location (compass direction and distance from PVNGS cooling towers) of all agricultural land subjected to salt depositions of 2-4 lbs/acre/wk, and 2) the estimated total yearly salt deposition per acre.

INTERROGATORY 15

In the report attached to the West Valley Petition to Intervene authored by Dr. Mulchi entitled, "Review of the Environmental Impact of the Palo Verde Station on Agriculture", the suggestion is made that salts deposited on leaves will be dissolved in dew and water droplets from low intensity rainfall events. In the case of dew formation set out whether the potential for leaf damage would occur on a regular or irregular interval assuming dew formation is an important factor in leaf damage to agricultural crops. If available, provide the following data:

- (a) normal time and duration of dew formation for a typical day during the growing season;
- (b) days of dew formation per month during the growing season (March through September) for a typical year.
- (c) days on which leaf damage would occur by time of year during a typical year.
- (d) the extent of leaf damage to be so caused by area and crop.

INTERROGATORY 16

Provide a complete reference (to include author, title, date and publisher) to the study referred to in Proposed Contention I.A(i) of West Valley's Intervention Petition. Does the sampling method utilized by the

vendor routinely overestimate or underestimate the drift ratio? What is the mean error?

INTERROGATORY 17

Provide a complete reference (to include author, title, date and publisher) to the report of the Chalk Point studies referred to in Proposed Contention I.A.(iii) of West Valley's Intervention Petition. What were the measured tower salinity levels? How frequently did they occur? How were salinity levels stated in the "tower's design features?"

INTERROGATORY 18

As referred to in Proposed Contention I.D.(i) of West Valley's Intervention Petition, provide your estimates of cooling water salinity along with your method of calculation.

INTERROGATORY 19

Describe what records the Buckeye Irrigation Company has regarding water quality referred to in West Valley's Proposed Contention I.D.(ii). Describe how Buckeye's water sampling program was conducted to include a description of where the samples are collected, how frequently the samples are collected and what analyses are performed on the samples. List the salt content versus frequency of occurrence as they are reflected in Buckeye's records.

INTERROGATORY 20

List and describe the sources of West Valley's information for the allegation in Contention I.D.(iv) regarding the 49 wells. Describe how this indicates a shift from Phoenix sewage effluent. Are these wells to be used to provide water to PVNGS? If so, to what extent? Are these water supply or monitoring wells?

INTERROGATORY 21

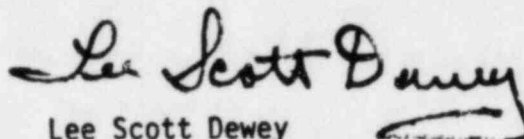
Identify the source and furnish a list of the "figures available to West Valley" regarding blow-off from the evaporation pond referred to in West Valley Contention I.E.(i).



INTERROGATORY 22

Provide the basis for the statement in West Valley proposed Contention I.F.(ii) regarding the refueling interval experience at "most other similar stations." Identify the stations where it is alleged that refueling intervals are longer and provide the refueling interval for each.

Respectfully submitted,



Lee Scott Dewey  
Counsel for NRC Staff

Dated at Bethesda, Maryland  
this 15th day of March, 1983

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 2 and 3)

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}  
}  
}  
} )  
Docket Nos. STN 50-529  
STN 50-530

CERTIFICATE OF SERVICE

I certify that copies of NRC STAFF'S FIRST SET OF INTERROGATORIES TO WEST VALLEY AGRICULTURAL PROTECTION COUNCIL, INC. in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class or, as indicated by an asterisk, through deposit in the Nuclear Regulatory Commission's internal mail system, this 15th day of March, 1983:

Robert M. Lazo, Esq., Chairman\*  
Administrative Judge  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dr. Richard F. Cole\*  
Administrative Judge  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dr. Dixon Callihan  
Administrative Judge  
Union Carbide Corporation  
P.O. Box Y  
Oak Ridge, TN 37830

Arthur C. Gehr, Esq.  
Charles Bischoff, Esq.  
Snell & Wilmer  
3100 Valley Center  
Phoenix, AZ 85073

Rand L. Greenfield  
Assistant Attorney General  
P.O. Drawer 1508  
Santa Fe, New Mexico 87504-1508

Ms. Lee Hourihan  
6413 S. 26th Street  
Phoenix, AZ 85040

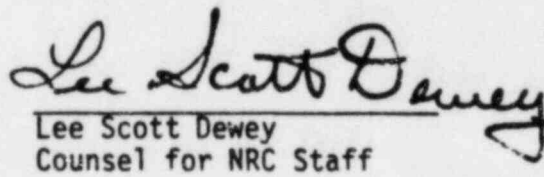
Atomic Safety and Licensing  
Board Panel\*  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Atomic Safety and Licensing  
Appeal Board\*  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Lynne Bernabei, Esq.  
Harmon & Weiss  
1725 I Street, N.W.  
Suite 506  
Washington, D.C. 20006

Kenneth Berlin  
Winston & Strawn  
Suite 500  
2550 M Street, N.W.  
Washington, D.C. 20037

Docketing and Service Section\*  
Office of the Secretary  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

  
Lee Scott Dewey  
Counsel for NRC Staff