

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

| | | |
|---------------------------|---|------------------------|
| In the Matter of |) | |
| ARIZONA PUBLIC SERVICE |) | |
| COMPANY, <u>et at.</u> , |) | |
| |) | Docket Nos. STN 50-529 |
| (Palo Verde Nuclear |) | STN 50-530 |
| Generating Station, Units |) | |
| 2 and 3) |) | |

WEST VALLEY AGRICULTURAL PROTECTION
COUNCIL, INC.'S RESPONSE TO JOINT APPLICANTS
SECOND SET OF INTERROGATORIES

General Objections

1. West Valley objects to interrogatories which seek specific information on the identities and farming activities of its members (Nos. 1, 3-7, 9-33, 59). West Valley considers these interrogatories burdensome and irrelevant. The question in this proceeding is whether the salt drift from the PVNGS Units may affect area crops, not whether and in what amount individual West Valley members may incur damage. That significant environmental question is one that the NRC must answer, not West Valley. Joint Applicants' interrogatories seek to shift the burden of environmental analysis from the Staff to West Valley, a tactic which would subvert the NEPA process, harrass West Valley's members, and impose tremendously burdensome costs.

West Valley's interest in this proceeding is to see a sound analysis of the salt drift issue. To that end, it hired experts to review the environmental studies performed for PVNGs; their reports have been filed since October. To that end, West Valley is currently reviewing publicly available area land and crop records and will provide the data it compiles on area land use to the NRC and Joint Applicants. However, West Valley will not undertake the task of compiling detailed data on the crop yields and profits of its individual members. Such a compilation would not answer the broader question concerning areawide PVNGS salt drift impacts. Moreover, the task of conducting the environmental analysis of those impacts falls under federal statute to the NRC Staff, not to one particular group of area residents.

2. West Valley objects to interrogatories or portions of interrogatories which seek the disclosure of privileged communications or of attorney work product.

Interrogatories and Answers

1. State whether each of the following individuals is a current director of West Valley:

- (a) Dan Saylor
- (b) Rick Landra
- (c) Phil Ladra
- (d) Paul Perry

- (e) Harry W. Porterfield
- (f) Gary Accomazzo
- (g) Bob Sheppard
- (h) Jim Gladden
- (i) Delbert Beyer
- (j) Don Narramore
- (k) Bill Odom
- (l) F. Ronald Rayner
- (m) Stephen P. Pavich
- (n) Jackie Meck
- (o) W.T. Gladden

ANSWER: Object on the basis of General Objection No.

1.

2. State the precise legal description of the area which you believe will be affected the the salt drift which you claim will result from the Operation of PVNGS.

ANSWER: West Valley is unable at this time to provide such a legal description. West Valley will provide a description of the area likely to be affected upon completion of its reviews of area land records.

3. In your Petition, you allege that West Valley has 56 farmer members. Identify the 56 members who comprise West Valley and state, for each, his or her address.

ANSWER: Object on the basis of General Objection No.

1.

4. For each member named in response to the preceding interrogatory, state the precise legal description of the land owned and/or leased and/or operated by such member, using the UTM or Arizona Coordinate System to describe such property; also state the total number of acres owned and/or operated by each such member.

ANSWER: Object on the basis of General Objection No.

1.

5. For each parcel of property described in answer to the preceding interrogatory, state whether you claim that such parcel, or any part thereof, will be affected or may potentially be affected by salt drift deposition from the PVNGS. If you claim that only a portion of any parcel listed herein will or may be affected, describe specifically the part thereof which you claim will or may be affected.

ANSWER: Object on the basis of General Objection No.

1.

6. For each parcel of property listed in answer to the preceding interrogatory, state the amount of drift per acre which you claim will be deposited thereon on a daily, monthly and annual basis.

ANSWER: Object on the basis of General Objection No.

1.

7. Describe the precise method by which the deposition figures given in response to the preceding interrogatory were calculated. Include in your answer all facts, assumptions, and calculations upon which such figures are based.

ANSWER: Object on the basis of General Objection No. 1.

8. Your answer to Interrogatory No. 7, Joint Applicants' First Set of Non-Uniform Interrogatories, states that the "facts on which they [Professors Davis and Golay] will rely are set forth in the answers to these interrogatories and in the Davis and Golay reports." Identify the specific facts upon which Drs. Davis and Golay will rely, or, alternatively, the precise answer(s) to Joint Applicants' First Set of Non-Uniform Interrogatories in which such facts are contained. Also specify the exact pages of the Davis and Golay reports which purportedly contain such facts.

ANSWER: See Davis Report p. 8-13
 See Golay Report p.8-13
 See Petitioners' Response to Joint Applicants First Set of Interrogatories numbers: 6, 28, 30, 32, 36, 38, 39, 41, 48, 50, 51, 57, 60, 61, 63, 64, 66, 67, 68, 70, 73, 89, 92, 94, 101, 103, 169, 171, 173, 174, 176, 177, 178.

9. For each parcel of land described in answer to Interrogatory No. 4, state whether the farmer member of West Valley owns such land, leases it, or farms it under any other form of ownership or control. If the farmer member leases the land described, state the name of the owner/lessor; if the farmer member does not own or lease such property, describe the relationship pursuant to which the farmer member operates the land in question.

ANSWER: Object on the basis of General Objection No. 1.

10. Identify each person having knowledge, or claiming to have knowledge, of the facts set forth in your answer to the preceding interrogatory. As to each such person, state the specific facts concerning which they have knowledge or claim to have knowledge.

ANSWER: Object on the basis of General Objection No. 1.

11. Identify each and every document which refers or related in any way to the facts set forth in your answer to Interrogatory No. 9.

ANSWER: Object on the basis of General Objection No. 1.

12. For each parcel of land described in response to Interrogatory No. 4, indicate for each of the last ten

years, the percentage of such acreage which was actually planted in crops and further state for each of the last ten years:

(a) The crop(s) which were planted on such acreage, or any part thereof, and the number of acres which were planted in each such crop.

(b) For each crop identified in response to subpart (a) of this interrogatory, state the approximate date upon which each crop was planted, the approximate leafout date of such crop and the harvest date thereof.

(c) Define the yield (in pounds, bales, bushels, etc. per acre) of each crop planted on each of the parcels of property described in response to Interrogatory No. 4.

(d) As a continuation of the preceding subparts of this interrogatory, state the market price per harvest unit of the crops identified in subpart (a) above, for each parcel of land listed in response to Interrogatory No. 4.

(e) With respect to the information provided in subpart (d) of this interrogatory, state the individual or entity to whom the crop(s) or any part thereof was sold, the date upon which the crop was sold and the means by which the sale price was established.

ANSWER: Object on the basis of General Objection No.

1.

13. Identify each person having knowledge, or claiming to have knowledge, of the facts set forth in your answer to the preceding interrogatory. As to each such person, state the specific facts concerning which they have knowledge or claim to have knowledge.

ANSWER: Object on the basis of General Objection No. 1.

14. Identify each and every document which refers or relates in any way to the facts set forth in your answer to Interrogatory No. 12.

ANSWER: Object on the basis of General Objection No. 1.

15. For each parcel of land described in response to Interrogatory No. 4, indicate for each of the last three years, the percentage of such acreage which was actually planted in crops and further state for each of the last three years:

(a) The crop(s) which were planted on such acreage, or any part thereof, and the number of acres which were planted in each such crop.

(b) For each crop identified in response to subpart (a) of this interrogatory, state the approximate date upon which each crop was planted, the approximate leafout date of such crop and the harvest date thereof.

(c) Define the yield (in pounds, bales, bushels, etc. per acre) of each crop planted on each of the parcels of property described in response to Interrogatory No. 4.

(d) As a continuation of the preceding subparts of this interrogatory, state the market price per harvest unit of the crops identified in subpart (a) above, for each parcel of land listed in response to Interrogatory No. 4.

(e) With respect to the information provided in subpart (d) of this interrogatory, state the individual or entity to whom the crop(s) or any part thereof was sold, the date upon which the crop was sold and the means by which the sale price was established.

ANSWER: Object on the basis of General Objection No. 1.

16. Identify each person having knowledge, or claiming to have knowledge, of the facts set forth in your answer to the preceding interrogatory. As to each such person, state the specific facts concerning which they have knowledge or claim to have knowledge.

ANSWER: Object on the basis of General Objection No. 1.

17. Identify each and every document which refers or related in any way to the facts set forth in your answer to Interrogatory No. 15.

ANSWER: Object on the basis of General Objection No. 1.

18. For each parcel of property listed in response to Interrogatory No. 4, and for each crop which you claim was grown thereon during the past ten years, identify the irrigation method used for each such crop and the frequency with which such crop was irrigated. Your answer should include, but not be limited to, the total quantity of water applied per acre per day, per month, and per growing season, and the source of the irrigation water.

ANSWER: Object on the basis of General Objection No. 1.

19. Identify each person having knowledge, or claiming to have knowledge, of the facts set forth in your answer to the preceding interrogatory. As to each such person, state the specific facts concerning which they have knowledge or claim to have knowledge.

ANSWER: Object on the basis of General Objection No. 1.

20. Identify each and every document which refers or relates in any way to the facts set forth in your answer to Interrogatory No. 18.

ANSWER: Object on the basis of General Objection No. 1.

21. For each parcel of property listed in response to Interrogatory No. 4, and for each crop which you claim was grown thereon during the past three years, identify the irrigation method used for each such crop and the frequency with which such crop was irrigated. Your answer should include, but not be limited to, the total quantity of water applied per acre per day, per month, and per growing season, and the source of the irrigation water.

ANSWER: Object on the basis of General Objection No. 1.

22. Identify each person having knowledge, or claiming to have knowledge, of the facts set forth in your answer to the preceding interrogatory. As to each such person, state the specific facts concerning which they have knowledge or claim to have knowledge.

ANSWER: Object on the basis of General Objection No. 1.

23. Identify each and every document which refers or relates in any way to the facts set forth in your answer to Interrogatory No. 21.

ANSWER: Object on the basis of General Objection No. 1.

24. Describe the water quality (i.e., the content in parts per million (ppm)), for the irrigation water referred to in Interrogatory No. 18, of any minerals, nutrients, or other solids, including -- but not limited to -- salt; further state the source of your information regarding the water quality described herein.

ANSWER: Object on the basis of General Objection No. 1.

25. Identify each person having knowledge, or claiming to have knowledge, of the facts set forth in your answer to the preceding interrogatory. As to each such person, state the specific facts concerning which they have knowledge or claim to have knowledge.

ANSWER: Object on the basis of General Objection No. 1.

26. Identify each and every document which refers or relates in any way to the facts set forth in your answer to Interrogatory No. 24.

ANSWER: Object on the basis of General Objection No. 1.

27. For each crop planted on each parcel of property described in response to Interrogatory No. 4, and for each of the last ten years, identify any and all crop and/or soil treatments applied to the crop at any time during its growing season. Your answer should include, but not be limited to, a description of all herbicides, pesticides, fertilizers, soil leaching practices, etc., administered to the crop and/or to the soil, and a description of the phase of the crop's life at which such practices were administered. Further include in your answer, the purpose of such practice, the method of administration, the frequency thereof, and the approximate cost of each administration.

ANSWER: Object on the basis of General Objection No. 1.

28. Identify each person having knowledge, or claiming to have knowledge, of the facts set forth in your answer to the preceding interrogatory. As to each such person, state the specific facts concerning which they have knowledge or claim to have knowledge.

ANSWER: Object on the basis of General Objection No. 1.

29. Identify each and every document which refers or relates in any way to the facts set forth in your answer to Interrogatory No. 27.

ANSWER: Object on the basis of General Objection No. 1.

30. Your Petition alleges that West Valley members produce ninety six million dollar's (\$96,000,000) worth of agricultural products per year. Describe in precise detail the method by which you arrived at the \$96,000,000 figure and the year or growing season(s) to which such figure applies. Also state the alleged value of crops grown by each farmer member for each of the last ten years, or by his predecessor if the farmer member has not owned, leased or operated his land for the last ten years.

ANSWER: Object on the basis of General Objection No.

1.

31. Identify each person having knowledge, or claiming to have knowledge, of the facts set forth in your answer to the preceding interrogatory. As to each such person, state the specific facts concerning which they have knowledge or claim to have knowledge.

ANSWER: Object on the basis of General Objection No.

1.

32. Identify each and every document which refers or relates in any way to the facts set forth in your answer to Interrogatory No. 30.

ANSWER: Object on the basis of General Objection No.

1.

33. Your Petition (paragraph 1, pg. 2) alleges that all West Valley members are located "within the area likely to be affected" by salt deposition. Give the legal description, the owner of each parcel thereof, and the total acreage included, in your definition or calculation of the area which you claim will be affected.

ANSWER: Object on the basis of General Objection No. 1.

34. In response to Interrogatory No. 30, Joint Applicants' First Set of Non-Uniform Interrogatories, you claim that the "statement which is made concerning isokinetic sampling systems is based upon Professor Golay's experience in conducting a comparative assessment of drift measurement methods in which various devices were tested in a spectrum of simulated environments." With specific reference to "Professor Golay's experience," state the following:

(a) Each and every test, examination, or study which constitutes the "experience" in connection with comparative assessments of drift measurement methods.

ANSWER: Relevant experiences of Professor Golay include the following MIT Projects: "Evaluation of Industrial Drift Eliminator Performance," 1974-1977. "Evaluation of Alternative Methods for Drift Measurement," 1979-1983.

(b) Each and every document relating to or generated as a result of the Golay experience.

ANSWER: J. Chan and M.W. Golay, "Numerical Simulation of Cooling Tower Drift Eliminator Performance, "Numerical/Laboratory Computer Methods in Fluid Mechanics, Symp. Proc., A.A. Pouring, ed., Amer. Soc. Mech. Engrs., 229 (1976).

J.K. Chan and M.W. Golay, "Design Study of Cooling Tower Drift Eliminators," Trans. Amer. Nucl. Soc., 26 113 (1977).

J. Chan and M.W. Golay, "Comparative Performance Evaluation of Current Design Evaporative Cooling Tower Drift Eliminators," Atmospheric Environment, 11, 775 (1977).

J.K. Chan and M.W. Golay, "Comparative Evaluation of Cooling Tower Drift Eliminator Performance," MIT Energy Lab. Report, MIT-EL 77-004 (1977).

J.K. Chan and M.W. Golay, "DRIFT - A Numerical Simulation Solution for Cooling Tower Drift Eliminator Performance," MIT Energy Lab. Report, MIT-EL 77-006 (1977).

J.K. Chan and M.W. Golay, "Design Studies of Current Design and Improved Cooling Tower Drift Eliminators," In Cooling Tower Environment - 1978, R.S. Nietubicz, Ed., Univ. of Maryland (1978).

W.J. Glantsching, F.R. Best, M.W. Golay and J. Bartz, "Comparison of Methods for Measurement of Cooling Tower Drift,"

Conf. Paper, Amer. Power Conf., Chicago, IL (1983).

W.J. Glantsching, F.R. Best and M.W. Golay, "Experimental Comparison of Cooling Tower Drift Measurement Methods," Electric Power Research Inst. report in press (1983).

W.J. Glantsching, M.W. Golay, S.H. Chen and F.R. Best, "Design and Operation of a Light Scattering Device for Sizing and Velocimetry of Large Droplets," Electric Power Research Inst. report in press (1983).

35. With specific reference to the "simulated environments" mentioned in your answer to Interrogatory No. 30, state the following:

(a) The specific environmental parameters which were simulated.

(b) The data surveys upon which such simulated environments were based.

(c) The person or persons responsible for conducting or preparing the environmental simulations.

(d) The date upon which each such simulated environmental drift measurement was conducted.

(e) A description of the quality assurance program under which each such measurement was conducted.

ANSWER: See Glantsching et al. American Power Conf. paper, and subsequent reports.

36. Contention I.A.(ii) alleges that the sampling methods utilized in determining the drift ratio failed to

recognize wind effects within the fill and drift elimination system. Describe precisely the wind effects which you claim were not recognized and further describe the precise manner in which you claim such wind effects will impact upon the drift ratio.

ANSWER: See M.W. Golay, "Examination of Salt-Drift-Related and Water-Consumption-Related Aspects of the Palo Verde Nuclear Generating Station," pp. 11-13 (1982).

37. Identify each person having knowledge, or claiming to have knowledge, of the facts set forth in your answer to the preceding interrogatory. As to each such person, state the specific facts concerning which they have knowledge or claim to have knowledge.

ANSWER: Professor M.W. Golay

38. Identify each and every document which refers or relates in any way to the facts set forth in your answer to Interrogatory No. 36.

ANSWER: See answer to Interrogatory No. 36.

39. Interrogatory No. 39, Joint Applicants' First Set of Non-Uniform Interrogatories, asked for a description of the draft losses which you claim will arise from the water distribution canal and the manner in which such losses will contribute to or affect the drift rates. Your answer to that

interrogatory states that any losses would add to the total. State the precise amount of salt you claim will be added.

ANSWER: No claim is made regarding a specific amount of drift which would be added by this source. What is claimed is that the Environmental Statement-CP and Environmental Statement-OL fail to recognize the existence of such a drift source, and to quantify its effects.

40. Identify each person having knowledge, or claiming to have knowledge, of the facts set forth in you answer to the preceding interrogatory. As to each such person, state the specific facts concerning which they have knowledge or claim to have knowledge.

ANSWER: Professor M.W. Golay.

41. Identify each and every document which refers or relates in any way to the facts set forth in your answer to Interrogatory No. 39.

ANSWER: See answer to Interrogatory No. 39.

42. Contention I.D.(ii) alleges that records from the Buckeye Irrigation Company show that some water samples taken from the Phoenix sewage effluent which will be utilized at the PVNGS contain twice the salt content listed in the ER and the EIS. Describe each and every "record" which you are relying on the support that allegation and further state:

(a) The date upon which each and every sample referenced in such records was collected.

(b) The person or persons responsible for the collection of the sample.

(c) The collection methods utilized to obtain the samples.

ANSWER: (a)-(c) West Valley's expert Dr. Charles Mulchi, inspected Buckeye Irrigation Company water quality records dating back to the 1960's during his August, 1982 visit to Arizona. Dr. Mulchi did not make notes or obtain copies of these records, nor does West Valley have copies of these records. West Valley therefore cannot state the dates of sample collection or identify the persons responsible. Should West Valley further inspect or obtain copies of the Buckeye Irrigation Company records, it will supplement this response.

43. Identify each person having knowledge, or claiming to have knowledge, of the facts set forth in your answer to the preceding interrogatory. As to each such person, state the specific facts concerning which they have knowledge or claim to have knowledge.

ANSWER: a. Dr. Charles Mulchi -- inspected records and noticed some records indicating salt levels twice the salinity assumed for PVNGS cooling water.

b. Mr. Steven Pavich -- accompanied Dr. Mulchi to Buckeye Irrigation Co.

c. Buckeye Irrigation Co. officials would presumably be familiar with these records.

44. Identify each and every document which refers or relates in any way to the facts set forth in your answer to Interrogatory No. 42.

ANSWER: See answer to Interrogatory No. 42.

46. Contention I.F.(ii) alleges that the ER unrealistically expects refueling intervals for each tower to be one month per year when experience at most other similar stations has shown that a larger value would be more realistic. Identify each and every station to which that allegation refers, the dates of refueling outages at each such station and the "larger value" which you allege would be more realistic for refueling intervals.

ANSWER: See West Valley Agricultural Protection Council, Inc.'s Response to Joint Applicants' First Set of Interrogatories, No. 95.

46. Identify each person having knowledge, or claiming to have knowleddge, of the facts set forth in your answer to the preceding interrogatory. As to each such person, state the specific facts concerning which they have knowledge or claim to have knowledge.

ANSWER: See answer to Interrogatory No. 46 above.

47. Identify each and every document which refers or relates in any way to the facts set forth in your answer to Interrogatory No. 45.

ANSWER: See answer to Interrogatory No. 46 above.

48. Identify each and every fact upon which you rely for your selection of the "larger value" referred to in contention I.F.(ii).

ANSWER: See answer to Interrogatory No. 46, above.

49. Identify each person having knowledge, or claiming to have knowledge, of the facts set forth in your answer to the preceding interrogatory. As to each such person, state the specific facts concerning which they have knowledge or claim to have knowledge.

ANSWER: See answer to Interrogatory No. 46, above.

50. Identify each and every document which refers or relates in any way to the facts set forth in your answer to Interrogatory No. 48.

ANSWER: See answer to Interrogatory No. 46, above.

51. Contention III.A.(i) alleges that it is "unlikely" that the rain events in the PVNGS region would remove salts accumulated on crop leaves. Identify each and every fact, theory, premise or conclusion upon which you rely to support that allegation.

ANSWER: Meteorological data for the PVNGS region, summarized in the Environmental Impact Statement, provide rainfall totals and numbers of rain events. Dr. Mulchi divided the totals for the summer months by the number of rain events and concluded that these rain events, on average, were unlikely to remove salts from leaves.

In addition, Dr. Mulchi experienced several summer storms during his August 1982 visit. In his opinion, the low level of rainfall from these storms was unlikely to wash crop leaves free of salts.

52. Identify each person having knowledge, or claiming to have knowledge, of the facts set forth in your answer to the preceding interrogatory. As to each such person, state the specific facts concerning which they have knowledge or claim to have knowledge.

ANSWER: See answer to Interrogatory No. 51.

53. Identify each and every document, particularly those containing the meteorological data, if any, which refers or relates in any way to the facts set forth in your answer to Interrogatory No. 51.

ANSWER: A. Environmental Impact Statement - 1973
B. Soil Survey of Maricopa County,
Arizona, September 1977

54. Dr. Davis' report at page 6, further that "several persons connected with the project have been contacted to discuss various details of the model." With reference to that statement, identify the following:

(a) Each person contacted.

ANSWER: The persons and their affiliation are given on p. 6 and 7 of Dr. Davis' report, namely, Mr. Jim Carson and

Mr. Jim Lee of Argonne National Laboratory, Mr. Ron Stoner of NVS Corporation, Mr. George Fisher, formerly with NVS, and Mr. Ivan Kuharic and Mr. Kent Martens of the Marley Company.

(b) The individual who contacted each person, if other than Dr. Davis.

ANSWER: No one.

(c) The manner in which and the place at which each person was contacted.

ANSWER: By telephone.

(d) The substance of each and every conversation held with each individual listed in response to subpart (a) hereof.

ANSWER: See Dr. Davis' report pp. 6 and 7.

(e) Whether or not any notes, memorandum or other written memorializations were made regarding the conversations referred to above. _____ If your answer to subpart (e) hereof is in the affirmative, identify the custodian of such reports, notes, or other memorizlizations.

ANSWER: Handwritten telephone notes are in the custody of Dr. Davis.

55. Your answer to Interrogatory No. 175, Joint Applicants' First Set of Non-Uniform Interrogatories, fails to include an address of G. Fisher. Please provide Mr. Fisher's address.

ANSWER: Unknown. Telephone number as of August 24, 1982, was (301)854-6086.

56. Do you or your attorneys, have in your possession, or know the existence of, any written or recorded statements from any of the persons (excluding West Valley member) identified in your answer to Interrogatory No. 188, Joint Applicant's First Set of Non-Uniform Interrogatories, or from any other person or entity who has any knowledge or the facts and events related to the issues in this proceeding?

ANSWER: West Valley has the reports from its three experts previously attached to the Petition to Intervene. In addition, West Valley has written comments from Dr. Mulchi on the University of Arizona Crop Study.

57. In your answer to Interrogatory No. 5, Joint Applicants' First Set of Non-Uniform Interrogatories, you state that Petitioner has turned over to the NUS Corporation a computer tape of the cooling tower drift model relied upon in the Davis report. With specific reference to that cooling tower drift model, state the following:

(a) The name, or other descriptive title, by which such model is referred to or known.

ANSWER: APLPAD

(b) Describe any and all validation efforts, including calculations, undertaken or performed in connection with, or as a result of, the above-referenced model.

ANSWER: There are described in Ref. 6 (pp. III-5 through III-18) listed in Dr. Davis' report on p. 4. The details of model predictions were compared to field measurements.

(c) Describe each and every equation and/or algorithm upon which the model is based, or which is utilized in the model.

ANSWER: See Ref. 6 and references therein. Also see the computer program documentation (listing).

(d) State whether any hard copies of such drift model exist, and, if so, the present custodian of each such copy.

ANSWER: NUS was provided documented hardcopy of the model.

(e) Describe the quality assurance program in connection with the development, utilization and interpretation of the model.

ANSWER: The model predictions were compared to available field test data.

(f) Identify the originators and developers of the model.

ANSWER: Dr. Davis and associated members of the staff of the Environmental Assessment Group at Johns Hopkins University/Applied Physics Laboratory.

(g) State the basis upon which the model referred to above, in lieu of any others, was utilized by Dr. Davis in connection with his work in this case.

ANSWER: Its predictions for similar cooling towers at Maryland sites were used to compare to the applicant's predictions for PVNGS. Its theoretical basis and experience with its use were also used in analyzing the performance of the applicant's FOG model.

(h) Describe specifically the output data which the above referenced model is capable of generating.

ANSWER: See Refs. 5 and 6 of Dr. Davis' report. The model output gives the salt deposition patterns around the cooling tower for each month of the year. Various other detailed output can also be generated.

58. In your answer to Interrogatory No. 5, Joint Applicants' First Set of Non-Uniform Interrogatories, you state that "petitioner's preliminary calculations of these and other relevant figures are contained in its experts' reports." With reference to your phrase "preliminary calculations," state the following:

(a) Each and every fact, theory, or assumption upon which the preliminary calculations are based, including all data and other specific factual input upon which such calculations are based.

ANSWER: These are described in detail in Dr. Davis' report. In general, the data provided in the applicant's ER-OL were used in conjunction with results in Ref. 5 in Dr. Davis' report to roughly estimate salt deposition at PVNGA (Exhibit 5).

Fall velocities and evaporation rates of water droplets (from Smithsonian Tables) were used to predict travel distances of cooling tower drift (Exhibit 3).

(b) Identify all documents, including specifically, notes and/or records, upon which such preliminary calculations are based, or which were generated as a result of such preliminary calculations.

ANSWER: See Dr. Davis' report and references cited therein. There are no other notes or records that have been retained.

(c) Identify each and every person involved in the calculations or interpretation of the "preliminary calculations" to which you refer in answer to Interrogatory No. 5.

ANSWER: Dr. Davis only.

(d) The date upon which said preliminary calculations were developed.

ANSWER: September 28, 1982.

(e) Describe the quality assurance program utilized in connection with the development, calculation, and/or interpretation of your "preliminary calculations."

ANSWER: The calculations were checked for accuracy several times and were performed in a different manner to arrive at the same result.

59. If you are claiming that the PVNGS operations will result in decreased yields and/or decreased marketability or agricultural products of the West Valley members, provide the following:

(a) The name of each and every agronomist, plant pathologist, plant physiologist, county extension agent, or other individual having any expertise, or claiming to have any expertise relating to that specific subject, who you have contacted or who has provided you with any information relative to that specific subject.

(b) Describe each and every document in your custody or control relating to that specific subject.

ANSWER: Object on the basis of General Objection No. 1.

60. Your answer to Interrogatory No. 42, Joint Applicants' first set of Non-Uniform Interrogatories, refers to "subsequent verbal reports" to Professor Mulchi. With specific reference to those "verbal reports," state the following:

(a) The name of the person making the report, and the entity on behalf of which the report was made.

ANSWER: Professor Mulchi does not recall. The person was encountered informally at an agricultural meeting of county agents and farmers.

(b) The date upon which each such report was purportedly made.

ANSWER: Approximately one year ago. Dr. Mulchi is uncertain as to the precise date.

(c) The subject matter of each such report.

ANSWER: The conversation concerned salt impacts from the Unit 3 cooling tower at Chalk Point.

(d) Whether there were any other witnesses, other than Professor Golay and the reporter, to such reports.

ANSWER: None that Professor Mulchi can recall.

(e) The identification of each and every document, notation, or other memorialization relating to any such reports.

ANSWER: None

61. In response to Interrogatory No. 58 Joint Applicants' First Set of Non-Uniform Interrogatories, you state that the fifteen downwind distances utilized in connection with the FOG model result in droplets being released "too high" above the ground. With specific reference to the phrase "too high," please state the distance (in feet or meters) at which you claim the droplets are released, and further state the distance (in feet or meters) at which you claim they should be released.

ANSWER: The droplets are released at the fifteen downwind distances. For each of these distances this includes droplets that should have been released at distances closer to the tower but were held until the given release point. Since the cooling tower plume is rising, this delay in release causes droplets to be released "too high" above the ground.

62. Your answer to Interrogatory No. 69, Joint Applicants' First Set of Non-Uniform Interrogatories, which asked for an identification of each person having knowledge of the facts set forth in your answer to Interrogatory No. 68, merely references your answer to No. 52, which in turn identifies Professor Davis. State whether Professor Davis is the only individual with knowledge of the facts upon which your answer to Interrogatory No. 68 is based. If your answer is in the negative, please state the name, address, current employment, and telephone number of each and every other individual who has knowledge of such facts. Also, state the role or responsibility of each such individual with respect to the preparation, conduct, or analysis of the reference studies.

ANSWER: Dr. Davis is the only West Valley source of that information.

63. Your answer to Interrogatory No. 75, Joint Applicants' First Set of Non-Uniform Interrogatories, uses the term "all

Petitioner's experts." If that phrase is intended to refer to Drs. Golay, Mulchi, and Davis only, please so state. If there are experts in addition to Drs. Davis, Golay and Mulchi, please identify such individuals, and state the particular area of expertise for each.

ANSWER: Drs. Golay, Mulchi and Davis are West Valley's only experts at this time.

64. In response to Interrogatory No. 77, Joint Applicants' First set of Non-Uniform Interrogatories, you state, at a(5): "Salt drift from the cooling towers into the water storage area will increase the salinity of the tower makeup water." Specify the exact amount of salinity increase which you allege will result from salt drift into the water storage area.

ANSWER: West Valley does not allege a precise level of increase. Amounts would vary depending upon wind direction, size of storage area, rate of evaporation from the storage area and other factors.

(a) Identify each and every fact, theory, premises, calculation or conclusion upon which your answer to this interrogatory is based.

ANSWER: 1. Since mechanical draft cooling towers deliver a substantial percentage of their salts near the towers, salinity in the water storage reservoir adjacent to the towers presumably would increase.

2. Evaporation from the water storage area would also produce some increase.

3. Salts blowing from the evaporation ponds might also contribute an increase in makeup water salinity.

(b) Identify each and every document referring or relating to the facts set forth in response to this interrogatory.

ANSWER: None. The EIS does not address this possibility.

65. In response to Interrogatory No. 77, Joint Applicants' First Set of Non-Uniform Interrogatories, you state at subpart (c): "Salinity records show variability in the salinity of the waste treatment water from the City." Specify each and every record to which your answer refers, and include a description of the data or information contained therein. Also, describe each and every calculation, or assumption upon which you rely to base your conclusion that there is a variability in the salinity of the waste water from the city.

ANSWER: See answer to Interrogatory No. 42.

66. Your answer to Interrogatory No. 79, Joint Applicants' First Set of Non-Uniform Interrogatories, refers to "Buckeye Irrigation Co. records." Specify each and every record upon which you rely, and include a description of the data or information contained therein.

ANSWER: See answer to Interrogatory No. 42.

67. Your answer to subpart (b) of Interrogatory No. 79, Joint Applicants' First Set of Non-Uniform Interrogatories, refers to "records at the Phoenix Waste Water Treatment Plant." Specify each and every record upon which you rely, and include a description of the data or information contained therein.

ANSWER: West Valley's expert, Dr. Charles Mulchi, inspected representative records of the Phoenix Waste Water Treatment facility analyzing waste water samples during his August 1982 visit. Dr. Mulchi did not make notes or copy any of these records, nor does West Valley have copies of these records. West Valley therefore cannot specify particular records or describe particular data at this time, but will supplement this response should it further inspect or make copies of these records.

71. Your answer to Interrogatory No. 89, Joint Applicants' First Set of Non-Uniform Interrogatories, references only "the Davis report." Specify the particular facts within that report upon which you rely for the information contained in answer to Interrogatory No. 89, or, alternatively, state the specific page(s) of the report upon which you rely.

ANSWER: See pages 8, 14, 15 of the Davis Report and references cited therein.

69. Interrogatory No. 121, Joint Applicants' First Set of Non-Uniform Interrogatories, asks for a definition of the term "PVNGS region" as used in your contention III.A.(i). Your answer was "the area surrounding the PVNGS." Specify the specific coordinates, or the precise legal description, of the area to which you are referring.

ANSWER: See answer to Interrogatory No. 2.

70. Your answer to Interrogatory No. 122, Joint Applicants' First Set of Non-Uniform Interrogatories, states that the amount of water, "will be ample" to wash to salts from the crop foiliage. Describe precisely your definition, or calculation of the amount of water which will "be ample" to wash to salts from the crops.

ANSWER: West Valley's expert Dr. Charles Mulchi, suggests that for the crops he has examined (corn, soybeans and tobacco), in excess of 0.2 inches of rainfall per rain event would be necessary to wash salts from these crops.

(a) Identify each and every fact, theory, premise, calculation or conclusion upon whatever answer to this interrogatory is based.

ANSWER: Dr. Mulchi's conclusion is based upon the over 20 field experiments he conducted from 1978-1979 involving those three crops.

(b) Identify each and every document referring or relating to the facts set forth in response to the interrogatories.

ANSWER: Journal of Environmental Quality 10:541-547 (1981).

74. In answer to Interrogatory No. 122, Joint Applicants' First Set of Non-Uniform Interrogatories, you referenced certain "research studies simulating cooling tower drift" which were apparently conducted during 1977. For each such study, state the following"

(a) Each and every fact, theory or conclusion upon which the development of the simulation was premised.

(b) All documents pertaining to the development of the simulation.

ANSWER: (a) and (b) These Chalk Point research studies are summarized in the publications previously cited in response to Joint Applicants' First Set of Interrogatories. These publications, which will be made available to Joint Applicants, include:

1. Cooling Tower Effect on Crop and Soils-Post Operational Report No. 3, Md. Dept. Nat. Res.-Power Plant Siting Program. PPSP-CPCTP-23.

2. Journal of Environmental Quality 10:541-547 (1981).

3. Journal of Environmental Quality 12:127-132 (1983).

4. Journal of Environmental Quality, in review.

5. Chloride Effects on Agronomic, Chemical and Physical Properties of Maryland Tobacco-II. Response to Soil vs. Foliar Applied Salts of Cooling Tower Origin. To appear in Tobacco Science, April 1983 issue.

72. Your answer to interrogatory No. 122, Joint Applicants' First Set of Non-Uniform Interrogatories, refers to "trace" precipitation. With specific reference to that term, describe specifically the amount of precipitation to which you refer.

ANSWER: Trace precipitation is rainfall of less than measurable amounts. Depending on instrument calibration, the minimum measurable amount is generally in the range of 0.01 inch to 0.1 inch.

73. In answer to Interrogatory No. 138, Joint Applicants' First Set of Non-Uniform Interrogatories, you set forth two equations, one applicable to soy beans and one applicable to corn. State the source of each of those equations.

ANSWER: Journal of Environmental Quality 10:541-547 (1981), figures 1 and 2.

74. In response to Interrogatory No. 143, Joint Applicants' First Set of Non-Uniform Interrogatories, you state that "salt stress studies conducted during 1973 and 1978

identified numerous cases in which plant symptions resembled drought distress symptions." State the precise method by which salt stress was induced in the studies to which you refer. Include also a description of the studies, including the individual(s) responsible for the conduct of the studies, and any and all documents generated as a result of, or which refer to, such studies.

ANSWER: These studies are described in the Journal of Environmental Quality articles cited above (Vol. 10:541-547; Vol. 12:127-132) in response to Interrogatory No. 71, which will be made available to Joint Applicants. The individuals responsible for the studies are the authors of the publications, Dr. Charles Mulchi and Dr. J.A. Armbruster.

75. Interrogatory No. 169, Joint Applicants' First Set of Non-Uniform Interrogatories, asked for a precise definition of your term "near the plant" as utilized in contention III.C(ii). Your answer failed to define that term; please define that term as used in contention III.C.(ii).

ANSWER: West Valley cannot at this time provide a precise legal description of the term "near the plant."

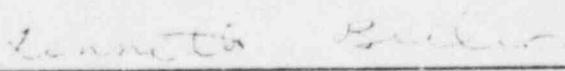
76. In answer to Interrogatory No. 177, Joint Applicants First Set of Non-Uniform Interrogatories, you state merely "see Davis report." Please specify the precise page(s) of the Davis

report upon which you rely to support the facts referenced in Interrogatory No. 177.

ANSWER: See page 8 of Davis Report and references cited therein.

Washington, D.C.):

I, KENNETH BERLIN, being duly sworn, depose and say that I am Counsel for Petitioner in the referenced action; that I have read the foregoing answers to Interrogatories; that the information contained therein was gathered under my supervision; that said answers are based on information provided by Petitioner's experts; and that they are true to the best of my knowledge and to the best of the knowledge of the persons who helped in their compilation.


KENNETH BERLIN

SUBSCRIBED AND SWORN to before me this 1st day of June,
1983.


NOTARY PUBLIC

My commission expires: My Commission expires June 14, 1985

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
ARIZONA PUBLIC SERVICE COMPANY) Docket Nos. STN 50-529
) STN 50-530
(Palo Verde Nuclear Generating)
Station, Units 2 and 3))
_____)

CERTIFICATE OF SERVICE

I hereby certify that copies of the attached Petitioner West Valley Agricultural Protection Council, Inc.'s Response to Joint Applicants' Second Set of Interrogatories, dated June 1, 1983, have been served upon the following listed persons by deposit in the United States mail, properly addressed and with postage prepaid.

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Dated: April 1993



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