

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

'83 APR 18 AIO:16

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
ARIZONA PUBLIC SERVICE
COMPANY

(Palo Verde Nuclear
Generating Station,
Units, 2 and 3)

Docket Nos. STN 50-529
50-530

JOINT APPLICANTS' RESPONSE TO
WEST VALLEY'S FIRST SET OF INTERROGATORIES

PREFACE AND GENERAL OBJECTIONS

1. CFR §2.740(b)(2) provides that a party may obtain discovery of documents and other tangible things otherwise discoverable and prepared in anticipation of litigation or for the hearing by or for another party's representative only upon a showing that the party seeking discovery has substantial need of the materials and is unable without undue hardship to obtain the substantial equivalent of the materials by other means. Joint Applicants therefore object to those interrogatories which request an identification of documents to the extent that such an identification

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1 would require the disclosure of documents not discoverable
2 under 10 CFR §2.740(b)(2), or documents subject to the
3 attorney-client privilege and/or the attorney work product
4 privilege.

5 2. Joint Applicants also object to those inter-
6 rogatories which purport to require the identification with-
7 out limitation, of individuals who "worked on or reviewed"
8 studies or analyses, or of all persons with knowledge of a
9 particular subject, on the grounds that such an all-
10 encompassing identification would be burdensome and oppres-
11 sive. Joint Applicants have, in response to such interroga-
12 tories, identified those persons with the most knowledge of
13 the particular subject area.

14 3. Joint Applicants object to West Valley's
15 Instruction No. 18 to the extent it purports to alter the
16 applicable rules and regulations relating to the duty of a
17 party to supplement its responses. See, 10 CFR §2.740(e).

18
19 INTERROGATORY NO. 1

20 1. State the date on which Joint Applicants
21 forecast they will begin fuel loading of Unit 2 of the PVNGS
22 (hereinafter referred to as the "Date").

23 a) Identify the date on which it was deter-
24 mined that the Date described was the target date for the
25 beginning of fuel loading for Unit 2 above.

26

1 b) Identify all documents which relate or
2 refer to the setting of the Date.

3 c) Identify all documents which relate or
4 refer to whether: (i) the Date will be delayed beyond the
5 Date described above; and (ii) by how much the Date will be
6 delayed.

7 d) Identify all oral communications since
8 the Date was forecast relating or referring to whether or
9 not fuel loading will begin on the Date.

10 ANSWER

11 a) The presently scheduled fuel loading
12 date for Unit 2 is August, 1984. That date was determined
13 in July, 1982.

14 b) 1) Letter from Olan Parr to E. E Van
15 Brunt, Jr., dated May 25, 1976.

16 2) Letter from E. E. Van Brunt to
17 Director of Nuclear Reactor Regulation, NRC, dated Octo-
18 ber 12, 1982.

19 3) Joint Applicants' Answer to West
20 Valley's Motion for Ruling on Contentions, etc., dated Feb-
21 ruary 14, 1983.

22 4) Letter from E. E. Van Brunt, Jr. to
23 T H. Novak, NRC, dated August 11, 1982.

24 c) None.

25 d) Discovery is continuing; Joint Appli-
26 cants will supplement.

1 INTERROGATORY NO. 2

2 2. Identify each person who, prior to the com-
3 pletion of the EIS, worked on or reviewed any studies or
4 analyses relating or referring to the amount of salt drift
5 emitted from the PVNGS cooling towers (i.e., the quantity of
6 salt emitted and the drift droplet distribution) (herein-
7 after referred to as cooling tower salt emissions), with:

- 8 i) NUS
9 ii) Bechtel
10 iii) Marley
11 iv) Joint Applicants
12 v) Any other entity

13 a) State the role and responsibility of
14 each person and organization identified above.

15 b) Identify all documents prepared prior to
16 the completion of the EIS-OS, including but not limited to
17 all reports and correspondence, relating or referring to the
18 cooling tower salt emissions.

19
20 ANSWER

21 Interrogatory No. 2 seeks information relative to
22 the amount of salt drift "emitted from the PVNGS cooling
23 towers." Assuming that this Interrogatory is directed to-
24 wards predicted emission data from the PVNGS towers, the
25 answer is as follows:

- 26 (i) (a) NUS:

1 1) George E. Fisher; developed and
2 applied the FOG code, which includes both mass emission rate
3 and droplet size distribution.

4 2) Philip M. Altomare; up to Nov. 1976
5 reviewed Fisher's work.

6 3) Henry Firstenberg; from Nov. 1976
7 to Nov. 1979 reviewed Fisher's work.

8 4) John H. Taylor; from Nov. 1979 to
9 Mar. 1981 reviewed Fisher's work.

10 5) Morton I. Goldman; overall respon-
11 sibility for PVNGS work.

12 (ii) (a) BECHTEL:

13 1) W. G. Bingham; Reviewed analyses.

14 2) D. G. Keith; Reviewed analyses.

15 3) R. R. Steins; Reviewed analyses.

16 4) S. H. Shepherd; Reviewed analyses.

17 5) V. Najarian; Reviewed analyses.

18 6) W. W. Boles; Reviewed analyses.

19 (iii) (a) MARLEY:

20 1) Ohler L. Kinney, Jr.; Project
21 Engineer; drift measurement and eliminator development.

22 2) Ivan F. Kuharic; Supervising Senior
23 Engineer; supervision, technical services on drift rating.

24 3) Paul A. Lindahl, Jr.; Senior Engi-
25 neer; technical service on drift rating.

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1 4) Joyce D. Holmberg; Sciences Direc-
2 tor; management of various drift-related activities.

3 5) J. B. Dickey, Jr.; Engineering
4 V.P.; division management.

5 6) W. V. McCoy; Regional V.P.; liason
6 with Bechtel and APS.

7 7) J. O. Kadel; V.P. - Sales; division
8 management.

9 8) R. K. Landon; Manager - Major Proj-
10 ects; project manager, cooling tower contract.

11 9) A. R. Thompson; V.P. - Sales; divi-
12 sion management.

13 (iv) (a) APS:

14 1) E. E. Van Brunt, Jr.; corporate
15 officer responsible for engineering, design, construction
16 and licensing of PVNGS; review/submit the required licensing
17 documents to the NRC, such as the Environmental Report,
18 which include results of such analyses.

19 2) John M. Allen; Nuclear Engineering
20 Manager for Electrical, Instrumentation/Control, and Li-
21 censing Engineering; manage submittal of required licensing
22 documents to the NRC.

23 3) Don Karner; Senior Licensing Engi-
24 neer; review submit licensing documents to N.R.C.

25 4) John R. Mann; Senior Health Physi-
26 cist; review/submit licensing documents to NRC.

2. b) 1) ER-CP
- 2) ER-OL
- 3) CP Hearing Record, testimony of M. I. Goldman
- 4) Letter from D. Robb to W. V. McCoy, dated July 8, 1975. Custodian: Bechtel.
- 5) Memorandum from G. Fisher to C. G. Mattsson, dated Nov. 13, 1975. Custodians: NUS, Bechtel.
- 6) Letter from R. D. Landon to D. Robb, dated October 8, 1975. Custodian: Bechtel.
- 7) Memorandum from W. G. Bingham to V. Najarian dated October 20, 1975. Custodian: Bechtel.
- 8) Letter from W. V. Coane to Lawrence T. Klein, dated October 22, 1975. Custodian: Bechtel.
- 9) Letter from C. G. Mattsson to E. E. Van Brunt, Jr., dated October 29, 1975. Custodian: Bechtel.
- 10) Letter from C. G. Mattsson to W. V. Coane, dated October 31, 1975. Custodian: Bechtel.
- 11) Letter from C. G. Mattsson to W. V. Coane, dated November 6, 1975. Custodian: Bechtel.
- 12) Inter-office correspondence from G. Fisher to C. G. Mattsson, dated October 31, 1975. Custodians: Bechtel, NUS.
- 13) Letter from W. V. McCoy to Duncan Robb, dated November 19, 1975. Custodian: Bechtel.

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1 14) Letter from C. G. Mattsson to M. V.
2 Coane, dated November 18, 1975. Custodian: Bechtel.

3 15) Inter-office correspondence from G.
4 Fisher to C. G. Mattsson, dated November 13, 1975.
5 Custodian: Bechtel.

6 16) Letter from C. G. Mattsson to W. V.
7 Coane, dated December 11, 1975. Custodian: Bechtel.

8 17) Letter from W. H. Wilson to E. E.
9 Van Brunt, dated December 19, 1975. Custodian: APS.

10 18) Letter from J. J. DiNunno to E. E.
11 Van Brunt, dated March 10, 1976. Custodian: Bechtel.

12 19) Letter from T. A. Ritter to W. H.
13 Wilson, dated December 19, 1978. Custodian: Bechtel.

14 20) Letter from Lawrence T. Klein to E.
15 E. Van Brunt, dated May 29, 1979. Custodian: Bechtel.

16 21) ER-OL four-party reviews of Sec-
17 tions 2.3, 3. 3.4, 5.1, 5.3, 6.2. Custodian: Bechtel.

18 22) ER-CP four-party reviews of Sec-
19 tions 3.3, 3.4, 6.2.5, 10.1, and 10.3. Custodian: Bechtel.

20 23) Service Request dated July 3, 1973,
21 from Major Projects, Marley Sales distribution for a Class
22 600 rectangular tower for Arizona Nuclear. Includes re-
23 sponse dated July 16, 1973, from I. F. Kuharic. Custodian:
24 Marley.

25 24) Letter from Richard D. Landon to
26 William V. McCoy, dated July 17, 1973. Custodian: Marley.

- 1 25) Inter-Office letter from J. O.
2 Kadel to J. B. Dickey, dated May 2, 1974. Custodian:
3 Marley.
- 4 26) Letter from Mark Margetts to J. D.
5 Holmberg, dated June 11, 1974. Custodian: Marley.
- 6 27) Letter from Mark Margetts to Joyce
7 Holmberg, dated September 10, 1974. Custodian: Marley.
- 8 28) Curve dated July 19, 1974, and
9 accompanying data sheets from the Marley Development Center.
10 Custodian: Marley. (Proprietary)
- 11 29) Report dated September, 1974, by
12 Ronald O. Webb of Environmental Systems Corporation, "Forked
13 River Pre-Bid Qualification Test Utilizing Sensitive Paper
14 Drift Measurement for The Marley Company." Custodian:
15 Marley. (Proprietary)
- 16 30) Marley Engineering Change Notice
17 No. 6257, dated January 23, 1975. Custodian: Marley.
- 18 31) Marley Engineering Specification
19 No. 26214, Revision 1, dated January 23, 1975. Custodian:
20 Marley. (Proprietary)
- 21 32) Service request dated June 25,
22 1975, from Major Projects to Ratings Section requesting
23 alternate tower selections for Palo Verde using 5DNA100
24 eliminators. Custodian: Marley.
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1 33) Telex dated July 8, 1975, from
2 W. V. McCoy to David Rand, Major Projects. Custodian:
3 Marley.

4 34) Memorandum from Paul Lindahl to
5 Dick Landon, dated September 11, 1975. Custodian: Marley.

6 35) Service request IP-1110, dated
7 November 5, 1975, from Major Projects to Rating Section and
8 attached response from Paul Lindahl to Dave Rand. Cus-
9 todian: Marley.

10 36) Letter from W. V. McCoy to Mr.
11 Duncan Robb, dated November 19, 1975. Custodian: Bechtel.

12 37) Product Description, Page 1, of
13 Palo Verde Proposal by Marley (no date). Custodian:
14 Marley.

15 38) Contract Work Order No. 12-345-76
16 for the 16-fan round towers for Palo Verde. Custodian:
17 Marley.

18 39) Marley Engineering Specification
19 26214, Revision 2, dated March 14, 1978. Custodian:
20 Marley. (Proprietary)

21 40) Marley Engineering Change Notice
22 6275, dated April 6, 1978. Custodian: Marley.

23 41) Change order No. 39 to Contract
24 Work Order No. 12-341-76, dated April 11, 1978. Custodian:
25 Marley.

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1 42) Marley Engineering Specification
2 26214, Revision 3, dated June 6, 1978. Custodian: Marley.
3 (Proprietary)

4 43) Letter from A. R. Thompson to Joe
5 Gosmano dated August 16, 1978. Custodian: Marley.

6 44) Inter-office letters dated Au-
7 gust 16, 1978, from Joe Gosmano to D. W. Meeker and Wayne
8 Struchtemeyer. Custodian: Marley.

9 45) Letter from W. V. McCoy to W. G.
10 Bingham, dated September 21, 1978. Custodian: Bechtel.

11 46) Change Order #61 to Contract Work
12 Order No. 12-341-76, dated December 8, 1978. Custodian:
13 Marley.

14 47) Purchase Order Number 10407-13-
15 MM-015, dated February 10, 1976, including all revisions
16 thereto, from Arizona Public Service Company to Marley.
17 Custodian: Bechtel. (Proprietary)

18 48) The following Marley drawings:

19 Drawing No.	Date	Title
20 75-41531F	9-29-77	Schematic Views-Class 700 Round Mechanical Draft Tower
21 75-41532H	10-10-80	Cross Section-Class 700 Round Mechanical Draft Tower
22 78-41406L	3-3-81	5DV-75 (Polyvinyl Chloride) Eliminator Pack Assembly
23 78-41786E	12-16-80	5DV-75 Eliminator Pack Instal- 24 lation Class 700 Round Tower 25

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1 78-41778C 3-9-82 Fill Beam Installation Class
2 700 Round Tower

3 78-41802B 5-22-81 Firewall Installation

4 Custodian: Marley. (Proprietary)

5 49) U. S. Patent No. 4,040,824, issued
6 August 9, 1977, "Dual Path Eliminator Structure and Method
7 for Crossflow Cooling Tower." Custodian: Marley

8 INTERROGATORY NO. 3

9 3. Identify each person who, since the EIS-OS
10 was completed, is reviewing or will review on behalf of
11 Joint Applicants the ER and the EIS as they relate or refer
12 to cooling tower salt emissions, with:

- 13 i) NUS
14 ii) Bechtel
15 iii) Joint Applicants
16 iv) Marley
17 v) Any other entity

18 a) State the responsibility and role of
19 each person identified in this interrogatory in reviewing
20 the ER and EIS as they relate or refer to cooling tower salt
21 emissions.

22 b) Identify all documents prepared since
23 the completion of the EIS-OS, including but not limited to
24 all reports and correspondence, relating or referring to
25 cooling tower salt emissions.

1 ANSWER

2 (i) (a) NUS:

3 1) T. F. Iaccarino; Project Manager,
4 March 1983 to present; Responsible for direction and manage-
5 ment of all technical work associated with the PVNGS.

6 2) M. Septoff; Principal Environmental
7 Meteorologist and Project Manager (July, 1982 to March
8 1983); Responsible for assisting in technical work asso-
9 ciated with the cooling tower salt emissions.

10 3) M. I. Goldman; Senior Vice-
11 President and Technical Director; Responsible for technical
12 direction and approval of all work associated with the PVNGS.

13 (ii) (a) BECHTEL:

- 14 1) W. G. Bingham; Review.
15 2) D. G. Keith; Review.
16 3) R. R. Steins; Review.
17 4) S. H. Shepherd; Review.
18 5) W. W. Boles; Review.
19 6) N. A. Blum; Review.

20 (iii) (a) APS

21 1) E. E. Van Brunt, Jr.; corporate
22 officer responsible for engineering, design, construction
23 and Licensing of PVNGS; review/submit ER to NRC; review EIS
24 as a result of ER submittals to identify any unresolved con-
25 cerns.

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1 2) A. C. Rogers; Nuclear Engineering
2 Manager; direct engineering and licensing activities of
3 Nuclear Engineering Department.

4 3) W. F. Quinn; Licensing Supervisor;
5 day-to-day interface with NRC Licensing Project Manager
6 for licensing of PVNGS.

7 (iv) (a) MARLEY:

8 1) Ivan F. Kuharic; Supervising Senior
9 Engineer.

10 2) Ohler L. Kinney, Jr.; Project
11 Engineer.

12 3) Joyce D. Holmberg; Sciences
13 Director.

14 3. b) See Preface and General Objections,
15 paragraph 1.

16 1) Marley Telcon Memo, dated Septem-
17 ber 29, 1982.

18 INTERROGATORY NO. 4

19 4. Identify each person who, prior to the com-
20 pletion of the EIS, worked on or reviewed any studies or
21 analyses relating or referring to the amount of salt drift
22 emitted from the PVNGS spray ponds (i.e., the quantity of
23 salt emitted and the drift droplet distribution) (herein-
24 after referred to as spray pond salt emissions), with:

25 i) NUS

26 ii) Bechtel

1 iii) Marley

2 iv) Joint Applicants

3 v) Any other entity

4 a) State the role and responsibility of
5 each person and organization identified above.

6 b) Identify all documents prepared prior to
7 the completion of the EIS-OS, including but not limited to
8 all reports and correspondence, relating or referring to
9 spray pond salt emissions.

10
11 ANSWER

12 Interrogatory No. 4 seeks information relative to
13 the amount of salt drift "emitted from the PVNGS spray
14 ponds." Assuming that this Interrogatory is directed to-
15 wards predicted drift emission data from the PVNGS ponds,
16 the answer is as follows:

17 (i) (a) NUS: No one

18 (ii) (a) BECHTEL:

19 1) W. W. Bingham; Review.

20 2) D. G. Keith; Review.

21 3) P. A. Barbour; Perform analysis.

22 (iii) (a) MARLEY: Not applicable

23 (iv) (a) APS: No one

24 4. b) 1) PVNGS PSAR; PVNGS FSAR;

25 2) Bechtel Proprietary Calculation

26 13-NC-SP-200.

1 INTERROGATORY NO. 5

2 5. Identify each person who, since the EIS-OS
3 was completed, is reviewing or will review on behalf of
4 Joint Applicants the ER and the EIS as they relate or refer
5 to spray pond salt emissions, with:

- 6 i) NUS
7 ii) Bechtel
8 iii) Joint Applicants
9 iv) Marley
10 v) Any other entity

11 a) State the responsibility and role of
12 each person identified in this interrogatory in reviewing
13 the ER and EIS as they relate or refer to spray pond salt
14 emissions.

15 b) Identify all documents prepared since
16 the completion of the EIS-OS, including but not limited to
17 all correspondence, relating or referring to spray pond salt
18 emissions.

19
20 ANSWER

21 (i) (a) NUS:

22 1) Morton I. Goldman; evaluated drift
23 transport.

24 (ii) (a) BECHTEL:

25 1) W. W. Bingham; Review.

26 2) D. G. Keith; Review.

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- 3) W. W. Boles; Review.
- 4) P.A. Barbour; Review.
- 5) S. H. Shepherd; Review.

(iii) (a) APS: See response to Interrogatory No. 3(iii) (a).

(iv) (a) MARLEY: Not Applicable.

5. b) Joint Applicants are unaware at this time of the existence of any documents described in this Interrogatory which are not subject to the attorney-client privilege, the attorney work-product privilege, or which were not prepared in anticipation of this litigation. See Preface and General Objections, paragraph 1.

INTERROGATORY NO. 6

6. Identify each person who, prior to the completion of the EIS, worked on or reviewed any studies or analyses relating or referring to the amount of salt drift or dust emitted from the PVNGS evaporation ponds (i.e., the quantity of salt emitted and the particulate size distribution) (hereinafter referred to as evaporation ponds salt emissions), with:

- i) NUS
- ii) Bechtel
- ii') Marley
- iv) Joint Applicants
- v) Any other entity

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1 a) State the role and responsibility of
2 each person and organization identified above.

3 b) Identify all documents prepared prior to
4 the completion of the EIS-OS, including but not limited to
5 all reports and correspondence, relating or referring to
6 evaporation ponds salt emissions.

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8 ANSWER

9 Interrogatory No. 6 seeks information relative to
10 the amount of salt drift "emitted from the PVNGS evaporation
11 ponds." Assuming that this Interrogatory is directed towards
12 predicted emission data from the PVNGS evaporation ponds,
13 the answer is as follows:

14 (i) (a) NUS:

15 1) Morton I. Goldman; Review.

16 (ii) (a) BECHTEL:

17 (1) W. G. Bringham; Review.

18 (2) D. G. Keith; Review.

19 (iii) (a) MARLEY: Not applicable.

20 (iv) (a) APS: None

21 6. b) 1) ER-CP.

22 INTERROGATORY NO. 7

23 7. Identify each person who, since the EIS-OS
24 was completed, is reviewing or will review on behalf of
25 Joint Applicants the findings in the ER and the EIS relating
26 or referring to evaporation ponds salt emissions, with:

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- i) NUS
 - ii) Bechtel
 - iii) Joint Applicants
 - iv) Marley
 - v) Any other entity
- a) State the responsibility and role of each person identified in this interrogatory in reviewing the ER and EIS as they relate or refer to evaporation ponds salt emissions.
- b) Identify all documents prepared since the completion of the EIS-OS, including but not limited to all correspondence, relating or referring to evaporation ponds salt emissions.

ANSWER

- (i) (a) NUS:
 - 1) T. F. Iaccarino, performed re-analysis.
 - 2) M. I. Goldman, review Iaccarino re-analysis
- (ii) (a) BECHTEL:
 - 1) W. G. Bingham; Review.
 - 2) W. W. Boles; Review.
 - 3) S. H. Shepherd; Review.
 - 4) D. G. Keith; Review.

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1 (iii) (a) APS: See response to Inter-
2 rogatory 3(iii) (a).

3 (iv) (a) MARLEY: Not applicable.

4 7. b) See response to Interrogatory No. 5(b).

5 INTERROGATORY NO. 8

6 8. Identify all documents, including but not
7 limited to studies, reports and correspondence, which relate
8 or refer to alternative designs for the PVNGS (i) cooling
9 towers, (ii) spray pond and (iii) evaporation ponds which
10 would reduce salt emissions.

11
12 ANSWER

13 (i) 1) CP hearing record;

14 2) Memo, W. McCoy to D. G. Keith dated
15 January 30, 1976. Custodian: Bechtel.

16 3) Draft response to ASLB (CP) Ques-
17 tion 10, dated February 4, 1976. Custodian: Bechtel.

18 4) Memo from P. Lindahl to D. Rand,
19 dated January 28, 1976.

20 5) See also items 23, 24, 32, 35, 36
21 and 47 listed in response to Interrogatory No. 2(b).

22 (ii) and (iii): Joint Applicants are
23 not aware of the existence of any documents described in
24 Interrogatory No. 8 (ii) and (iii).

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1 INTERROGATORY NO. 9

2 9. State:

3 a) the basis for the choice in the ER of
4 the size distribution of salt drift droplets emitted from
5 the PVNGS cooling towers;

6 b) whether that choice is consistent with
7 the salt drift droplet size distribution utilized by Marley;

8 c) if there is a difference, the basis for
9 the size distribution used in the ER.

10
11 ANSWER

12 a) The size distribution of the salt drift
13 droplets used in the analysis of the PVNGS cooling towers
14 was based upon data from Research-Cottrell, Inc. in 1971.

15 b) That size distribution is not the same
16 droplet distribution utilized by Marley.

17 c) See response to subpart (a) herein.

18 INTERROGATORY NO. 10

19 10. Identify:

20 a) all documents prepared prior to the com-
21 pletion of the EIS relating or referring to the size distri-
22 bution of salt emitted from the PVNGS cooling towers;

23 b) all such documents prepared after the
24 completion of the EIS;

25 c) each person with knowledge of the choice
26 of the salt drift droplet size distribution emitted from the

1 PVNGS cooling towers with (i) NUS, (ii) Bechtel, (iii)
2 Marley, (iv) Joint Applicants, and (v) any other entity.

3
4 ANSWER

5 No data exists, to our knowledge, relative to the
6 size of salt particles emitted from cooling towers. Fur-
7 ther, this Interrogatory seeks information relative to the
8 size distribution of salt "emitted from the PVNGS cooling
9 towers." Assuming that this Interrogatory is directed to-
10 wards the predicted droplet size distribution data from the
11 PVNGS towers, the answer is as follows:

12 a) 1) ER-CP; 2) Marley Engineering Specifi-
13 cation 26214, Revision 5, dated March 31, 1980. (Proprietary)

14 b) See response to Interrogatory No. 5(b).

15 c) (i) NUS:

16 1) G. Fisher

17 2) M. I. Goldman

18 (ii) BECHTEL:

19 (1) W. G. Bingham

20 (2) D. G. Keith

21 (iii) MARLEY: K. Martens

22 (iv) APS: None

23 INTERROGATORY NO. 11

24 11. State the basis for statements by Joint Appli-
25 cants in their response to West Valley's Petition to Intervene
26 that the evaporation ponds will at all times be covered by water.

1 ANSWER

2 With all three units operating, the rate of blow-
3 down discharged to the evaporation ponds exceeds the evapo-
4 ration rate from the evaporation ponds.

5 INTERROGATORY NO. 12

6 12. Identify each person who works for each of
7 the following companies with knowledge of the subject matter
8 referred to in Interrogatory 11:

- 9 i) NUS
10 ii) Bechtel
11 iii) Joint Applicants
12 iv) Marley
13 v) Any other entity

14
15 ANSWER

- 16 (i) NUS:
17 1) T. F. Iaccarino;
18 2) M. I. Goldman
19 (ii) BECHTEL:
20 1) W. G. Bingham;
21 2) D. G. Keith;
22 3) W. W. Boles;
23 4) S. H. Shepherd;
24 5) P. Su.
25 (iii) APS:
26 1) E. E. Van Brunt, Jr.;

1 2) A. C. Rogers;

2 3) W. L. Hurst

3 (iv) MARLEY: None

4 INTERROGATORY NO. 13

5 13. State:

6 a) the basis for the decision that spray
7 ponds would be used as the ultimate heat sinks for the
8 PVNGS;

9 b) wheth and what alternatives to spray
10 ponds were taken into account for this purpose.

11
12 ANSWER

13 a), b) PVNGS is a desert site which constrains
14 the design and selection of an ultimate heat sink. Possible
15 designs considered to meet the desert design criteria in-
16 cluded cooling towers, spray canals, and spray ponds.
17 Bechtel's recent favorable experience with the design and
18 licensing of spray ponds as an ultimate heat sink for the
19 Rancho Seco station provided the basis for the selection of
20 spray pond for PVNGS.

21 INTERROGATORY NO. 14

22 14. Identify each person who works for each of
23 the following companies with knowledge of the matter re-
24 ferred to in Interrogatory 13:

25 i) NUS

26 ii) Bechtel

- 1 iii) Joint Applicants
2 iv) Marley
3 v) Any other entity
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5 ANSWER

- 6 (i) NUS: None
7 (ii) BECHTEL: W. G. Bingham
8 (iii) APS: E. E. Van Brunt, Jr.
9 (iv) MARLEY: None

10 INTERROGATORY NO. 15

11 15. State whether it is your position that the ER
12 and EIS fully evaluated salt drift quantity and deposition
13 patterns from the spray ponds.
14

15 ANSWER

16 APS prepared the PVNGS-ER following the guidance
17 provided by NRC's Regulatory Guide 4.2. The EIS is an NRC
18 document and as such the EIS evaluations are not subject to
19 APS control.

20 INTERROGATORY NO. 16

21 16. If your answer to Interrogatory 15 is yes,
22 state the basis for your contention and list each page in
23 the ER, EIS and hearing record which you believe supports
24 your position.
25

26

1 ANSWER

2 1) ER-CP, figure 3.3-1.

3 2) ER-OL, figure 3.3-1.

4 INTERROGATORY NO. 17

5 17. State:

6 a) the drift droplet size distribution ex-
7 pected from the PVNGS spray ponds; and

8 b) the basis for this choice.

9
10 ANSWER

11 a) See figure 13-10407-M185-26-1-017 at-
12 tached hereto and incorporated herein by reference.

13 b) Manufacturer's testing results.

14 INTERROGATORY NO. 18

15 18. Identify:

16 a) all documents prepared prior to the
17 completion of the EIS relating or referring to the droplet
18 size distribution of salt emitted from the PVNGS spray
19 ponds;

20 b) all such documents prepared after the
21 completion of the EIS;

22 c) each person with knowledge of the choice
23 of the droplet size distribution of salt emitted from the
24 PVNGS spray ponds with (i) NUS, (ii) Bechtel, (iii) Marley,
25 (iv) Joint Applicants, and (v) any other entity.

26

FIGURE 13-10407-M185-26-1-017

HISTOGRAM OF SPRAY TYPE
17-2316-26 NOZ. SPRAYING WATER
VERTICALLY UPWARD AT 7 PSIG
AND AT AN ELEVATION IN LINE
WITH NOZZLE ORIFICE UNDER
LABORATORY CONDITIONS.

R & D 10-25-75

R5425

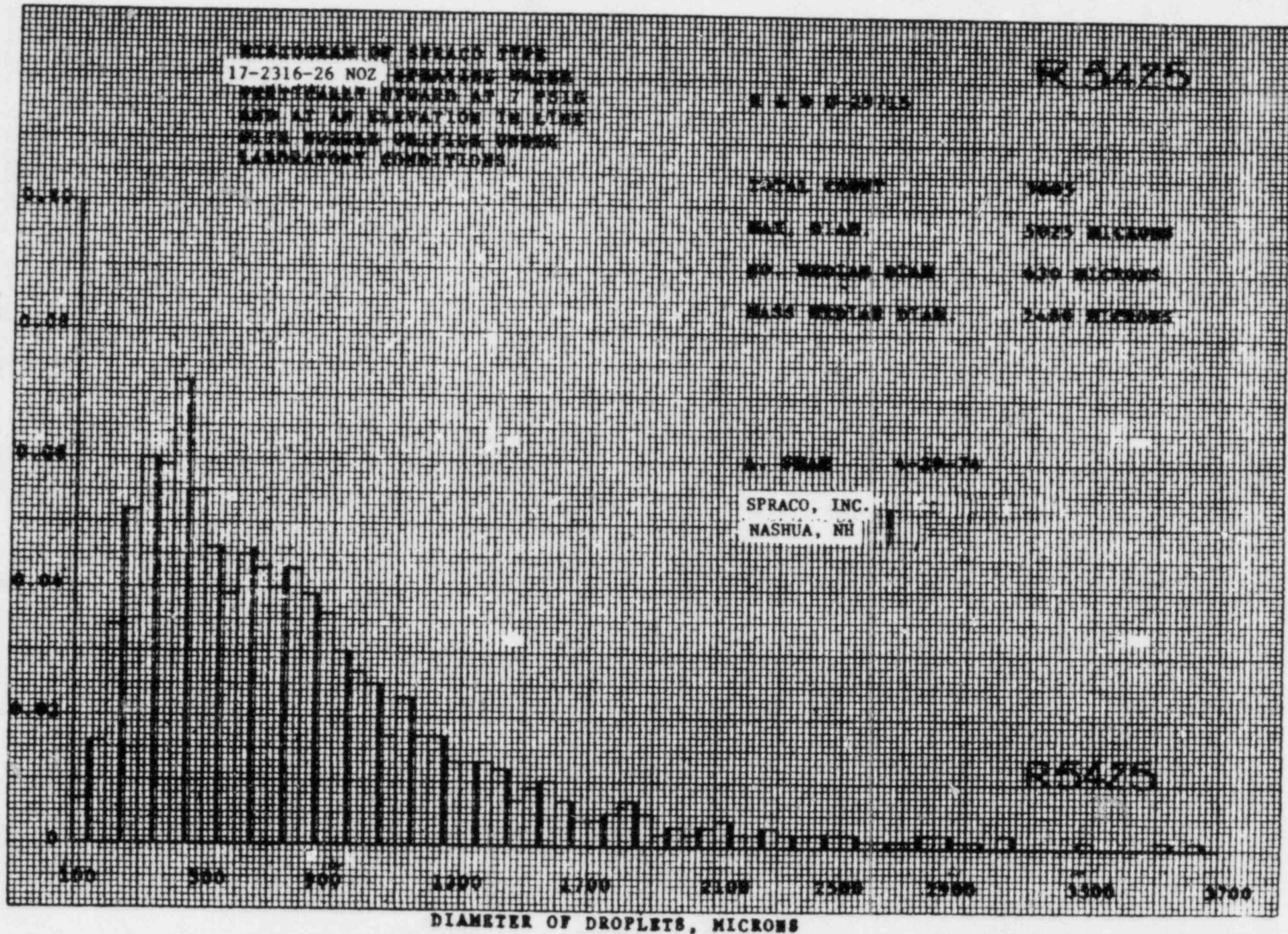
TOTAL COUNT	9685
MAX. DIAM.	5025 MICRONS
50% MEDIAN DIAM.	630 MICRONS
MASS MEDIAN DIAM.	2486 MICRONS

A. SPRAY 4-20-74

SPRACO, INC.
NASHUA, NH

R5425

RELATIVE FREQUENCY (COUNT)



1 ANSWER

2 Interrogatory No. 18 seeks information relative to
3 the amount of salt drift "emitted from the PVNGS spray
4 ponds." Assuming that this Interrogatory is directed towards
5 predicted emission data from the PVNGS spray ponds, the
6 answer is as follows:

7 a) "Droplet Size Spectrum Tests Report for
8 Spray Pond Cooling Nozzle," SPRACO, Inc.

9 b) See the response to Interrogatory 5(b).

10 c) (i) NUS: M. I. Goldman

11 (ii) BECHTEL:

12 1) W. G. Bingham;

13 2) S. H. Shepherd;

14 3) W. W. Boles;

15 4) P. A. Barbour;

16 5) D. G. Keith

17 (iii) MARLEY: None

18 (iv) APS: None

19 (v) OTHERS: Arvind M. Shah; Vice Presi-
20 dent in Charge of Engineering, SPRACO, Inc., Two East Spit
21 Brook Road, Nashua, New Hampshire 03060.

22 INTERROGATORY NO. 19

23 19. Identify each person who, prior to the com-
24 pletion of the EIS, worked on or reviewed any studies or
25 analyses relating or referring to the quantity of salt drift
26 deposition deposited per acre as a function of distance from

1 the cooling towers (including, but not limited to, all per-
2 sons who worked on or reviewed the FOG or other models of
3 salt drift deposition patterns) (hereinafter referred to as
4 salt drift deposition patterns), with:

- 5 i) NUS
- 6 ii) Bechtel
- 7 iii) Marley
- 8 iv) Joint Applicants
- 9 v) Any other entity

10 a) State the role and responsibility of
11 each person and organization identified above.

12 b) Identify all documents prepared prior to
13 the completion of the EIS-OS, including but not limited to
14 all reports and correspondence, relating or referring to the
15 salt drift deposition patterns.

16
17 ANSWER

18 (i) (a) NUS:

19 1) G. E. Fisher; developed and applied
20 the FOG code.

21 2) P. M. Altomare; up to Nov. 1976 re-
22 viewed Fisher's work

23 3) H. Firstenberg; from Nov. 1976 to
24 Nov. 1979 reviewed Fisher's work.

25 4) J. H. Taylor; from Nov. 1979 to
26 Mar. 1981 reviewed Fisher's work.

1 5) M. I. Goldman; overall responsi-
2 bility for PVNGS work.

3 (ii) (a) BECHTEL:

4 (1) W. G. Bingham; Review.

5 (2) D. G. Keith; Review.

6 (3) S. H. Shepherd; Review.

7 (iii) (a) APS: See response to Inter-
8 rogatory 2(iv)(a).

9 (iv) (a) MARLEY: None

10 19. b) 1) ER-CP.

11 2) Memorandum from G. Fisher to C. G.
12 Mattsson, Nov. 13, 1975.

13 3) CP Hearing Record, testimony of M.
14 I. Goldman.

15 4) ER-OL.

16 5) See also response to Interrogatory
17 No. 2(b).

18 INTERROGATORY NO. 20

19 20. Identify each person who, since the EIS-OS
20 was completed, is reviewing or will review on behalf of
21 Joint Applicants the ER and EIS as they relate or refer to
22 salt drift deposition patterns:

23 i) NUS

24 ii) Bechtel

25 iii) Joint Applicants

26 iv) Marley

- 1 v) Any other entity
- 2 a) State the responsibility and role of
- 3 each person identified in this interrogatory in reviewing
- 4 the ER and EIS as they relate or refer to salt drift deposi-
- 5 tion patterns.
- 6 b) Identify all documents prepared since
- 7 the completion of the EIS-OS, including but not limited to
- 8 all reports and correspondence, relating or referring to
- 9 salt drift deposition patterns.

10

11 ANSWER

- 12 (i) (a) NUS:
- 13 (1) T. F. Iaccarino;
- 14 (2) M. I. Goldman.
- 15 (ii) (a) BECHTEL:
- 16 (1) W. G. Bingham; Review.
- 17 (2) D. G. Keith; Review.
- 18 (3) W. W. Boles; Review.
- 19 (4) S. H. Shepherd; Review.
- 20 (5) N. A. Blum; Review.
- 21 (iii) (a) APS: See response to Inter-
- 22 rogatory No. 3(iii)(a) above.
- 23 20. b) See response to Interrogatory No. 3(b).
- 24
- 25
- 26

1 INTERROGATORY NO. 21

2 21. State:

3 a) The basis for the choice in the ER of
4 the "FOG" model to describe salt drift deposition patterns.

5 b) The basis for the choice of the "FOG"
6 model over other models which descibed salt drift deposition
7 patterns.

8
9 ANSWER

10 a) NUS had the responsibility for prepara-
11 tion of the ER-CP, including analyses of drift deposition in
12 ER-CP and ER-OL. Since NUS had a proprietary model of its
13 own ("FOG"), that model was used for the required analyses.

14 b) See a) above.

15
16 INTERROGATORY NO. 22

17 22. Identify:

18 a) The person most familiar with the rea-
19 sons why the FOG model was chosen over other models which
20 describe salt drift deposition patterns.

21 b) All documents which relate or refer to
22 why the FOG model was chosen over other models which de-
23 scribe salt drift deposition patterns.

24
25 ANSWER

26 a) Morton I. Goldman.

1 b) None

2 INTERROGATORY NO. 23

3 23. Identify each person who, prior to the com-
4 pletion of the EIS, worked on or reviewed any studies or
5 analyses relating or referring to the impact of salt drift
6 on agricultural crops grown in the vicinity of PVNGS (here-
7 inafter referred to as "effects on crops"), with:

8 (i) NUS

9 (ii) Bechtel

10 (iii) Marley

11 (iv) Joint Applicants

12 (v) Any other entity

13 (a) State the role and responsibility of
14 each person and organization identified above.

15 (b) Identify all documents prepared prior to
16 the completion of the EIS-OS, including but not limited to
17 all reports and correspondence, relating or referring to
18 effects on crops.

19
20 ANSWER

21 (i) (a) NUS:

22 (1) M. K. Bland;

23 (2) M. I. Goldman;

24 (3) Paul B. Morgan.

25 (ii) (a) BECHTEL:

26 (1) W. G. Bingham; Review.

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(2) D. G. Keith; Review.

(iii) (a) APS: See response to Interrogatories Nos. 2(iv)(a) and 3(iii)(a) above.

23. b) ER-CP.

INTERROGATORY NO. 24

24. Identity each person who, since the EIS-OS was completed, is reviewing or will review on behalf of the Joint Applicants the findings in the ER and EIS relating or referring to effects on crops, with:

- i) NUS
- ii) Bechtel
- iii) Joint Applicants
- iv) Marley
- v) Any other entity

a) State the responsibility and role of each person identified in this interrogatory in reviewing the ER and EIS as they relate or refer to effects on crops.

b) Identify all documents prepared since the completion of the EIS-OS, including but not limited to all reports and correspondence, relating or referring to effects on crops.

ANSWER

- (i) (a) NUS: M. I. Goldman
- (ii) (a) BECHTEL:

.

- 1 (1) W. G. Bingham; Review.
2 (2) D. G. Keith; Review.
3 (3) N. A. Blum; Review.
4 (4) S. H. Shepherd; Review.
5 (5) R. R. Steins; Review.

6 (iii) (a) APS: See answer to Interroga-
7 tory No. 3(iii)(a) above.

8 24. b) See response to Interrogatory No. 5(b).

9 INTERROGATORY NO. 25

10 25. State whether Joint Applicants have, since
11 the completion of the EIS-OS, undertaken or plan to under-
12 take any studies of the effect of salt drift on agricultural
13 crops.

14 ANSWER

15 Yes.

16 INTERROGATORY NO. 26

17 26. If the answer to Interrogatory 25 is yes,
18 describe each such study, including but not limited to:

- 19 a) each plant which will be studied;
20 b) how the study will be conducted; and
21 c) the time period of each such study.

22

23 ANSWER

24 See proposal from the University of Arizona to
25 Snell & Wilmer, previously provided to West Valley, de-
26 scribing the scope of the study, including the plants which

1 will be studied, the manner in which the study will be con-
2 ducted, and the time frame within which the study will be
3 completed.

4 INTERROGATORY NO. 27

5 27. Identify each person with Joint Applicants
6 and each entity involved in each such study identified in
7 Interrogatories 25 and 26.

8
9 ANSWER

10 Joint Applicants object to Interrogatory No. 27 on
11 the grounds that it is vague and ambiguous. Specifically,
12 the term "involved" is susceptible to varying interpreta-
13 tions. Without waiving that objection, Joint Applicants
14 respond as follows.

15 The study referred to in Interrogatory 26 is being
16 conducted by the University of Arizona, in consultation with
17 Dr. Charles Curtis of the University of Delaware, Dr.
18 Delbert McCune of the Boyce-Thompson Institute, and Dr. Leon
19 Bernstein, formerly of the U. S. Salinity Labs in Riverside,
20 California. No individuals employed by Joint Applicants are
21 involved in the conduct of the study.

22 INTERROGATORY NO. 28

23 28. If the answer to Interrogatory 25 is yes,
24 identify:

25 a) all documents relating or referring to
26 those studies; and

1 b) all persons who have worked or will work
2 on those studies.

3
4 ANSWER

5 a) See proposal from the University of
6 Arizona.

7 b) See proposal from the University of
8 Arizona.

9 INTERROGATORY NO. 28A

10 28A. State whether Joint Applicants or any other
11 entity has prepared or is planning to prepare a "worst case"
12 analysis relating or referring to the effect of salt drift
13 deposition from the PVNGS on agricultural crops.

14
15 ANSWER

16 Joint Applicants position on the necessity for a
17 "worst case" analysis is fully set forth in their prior
18 pleadings on this matter.

19 INTERROGATORY NO. 29

20 29. Describe the program you have implemented to
21 monitor salt drift from the PVNGS, including:

22 a) the date on which each monitor was in-
23 stalled;

24 b) the location of each monitor;

25 c) the type of monitor; and

26 d) the data gathered by each monitor.

1 ANSWER:

2 The Salt Deposition and Impact Monitoring Plan for
3 PVNGS Units 1, 2 and 3, February 1983, describes the use of 6
4 existing low volume samples used for the station preoperational
5 phase Radiological Monitoring. The samplers are in current use.

6 a) The six samplers were installed for
7 radiological monitoring between June and August, 1981 and
8 were operational by the end of 1981. Salt data has been
9 collected since October, 1982.

10 b) (1) See the Salt Deposition and Impact
11 Monitoring Plan for PVNGS Units 1, 2 and 3, February 1983.

12 (2) See ER-OL, Section 6.1.

13 c) The existing monitors are: Schmidt
14 Model 2-AXP-O.

15 d) Salt leachates are reported as mg/total
16 sample for Calcium, Chloride, Fluoride, Iron, Magnesium,
17 Nitrogen (Nitrate as N), Phosphate (Total as P), Potassium,
18 Sodium, and Sulphate.

19 INTERROGATORY NO. 29A

20 29A. Describe the monitoring program you plan to
21 implement to determine the quantity of salt emitted from the
22 PVNGS and its impact on area agriculture, including, but not
23 limited to:

24 a) How you plan to monitor the salinity of
25 the drift emitted from the (i) cooling towers, (ii) spray
26 ponds and (iii) evaporation ponds.

1 b) How you plan to monitor the size and
2 quantity of the salt particles emitted from the (i) cooling
3 towers, (ii) spray ponds and (iii) evaporation ponds.

4 c) How you plan to monitor the salt drift
5 per acre as a function of the distance and direction from
6 the plant.

7 d) How you plan to monitor the impact of
8 salt drift from the plant on area agriculture.

9 e) What baseline monitoring studies, in
10 addition to those described in Interrogatory 29, you plan to
11 undertake prior to operation of PVNGS Unit 1 to determine
12 current salt conditions.

13 f) How you plan to monitor each of the
14 factors described in a-e over the life of the plant.

15 g) How you plan to verify the accuracy of
16 the monitoring and associated analysis used in determining
17 salt drift per acre as a function of the distance and direc-
18 tion from the plant.

19
20 ANSWER

21 a)(i) The salinity of the drift emitted from
22 the cooling towers will be detrmind by periodically
23 sampling the circulating cooling water in the cooling tower
24 basin.

25

26

1 (ii) and (iii) There are no plans to monitor
2 salinity of the spray ponds and evaporation ponds for the
3 purpose of determining drift salinity.

4 b)(i), (ii) and (iii) There are no plans to
5 implement a monitoring program to monitor drift mass or
6 drift droplet size distribution or the size and quantity of
7 salt particles emitted from the cooling towers, spray ponds
8 or evaporation ponds.

9 c) See the Salt Deposition and Impact
10 Monitoring Plan for the PVNGS Units 1, 2 and 3, February
11 1983.

12 d) See the Salt Deposition and Impact
13 Monitoring Plan for the PVNGS Units 1, 2 and 3, February
14 1983.

15 e) See the Salt Deposition and Impact
16 Monitoring Plan for the PVNGS Units 1, 2 and 3, February
17 1983.

18 f) See the Salt Deposition and Impact
19 Monitoring Plan for the PVNGS Units 1, 2 and 3, February
20 1983. The monitoring program will be conducted until the
21 impacts of plant operations are determined.

22 g) See the Salt Deposition and Impact
23 Monitoring Plan for the PVNGS Units 1, 2 and 3, February
24 1983.

25

26

1 INTERROGATORY NO. 30

2 30. Describe each monitoring device you are using
3 or plan to use in monitoring the operation of PVNGS as de-
4 scribed in Interrogatories 29 and 29A, state why that device
5 was chosen over other devices, and identify all documents
6 that relate to the accuracy and reliability of each device.
7

8 ANSWER

9 The basic monitoring devices which are being used
10 or planned to be used are as follows:

11 1. Dustfall Jars, Model 190-18 from Anderson
12 Samplers, Inc. The jars are planned to be used to monitor
13 for drift deposition density. These jars conform to ANSI-
14 ASTM D 1739-70, "Standard Method for Collection and Analysis
15 of Dustfall (settleable particulates). This jar was chosen
16 because it meets the requirements of the cited standard and
17 its physical dimensions (6 inch diameter x 18 inch depth) are
18 most suitable for sampling in desert environment.

19 2. Low-Volume Samplers, from Schmidt, Inc. The
20 samplers were selected because they are currently in opera-
21 tion as part of the APS radiological monitoring program.
22 The filters from the samplers will be used to determine
23 airborne salt concentration.

24 3. Camera, using Kodak aerochrome IR 2443 color
25 infrared film and a minus-blue filter (or equivalent). This
26 camera film type was chosen because it will allow an assess-

1 ment through the use of aerial infrared photography of any
2 vegetative stress due to natural or artificially induced
3 conditons and provide a documented historical record of
4 existing environmental conditions.

5 INTERROGATORY NO. 31

6 31. Identify each person who works for:

- 7 a) NUS
8 b) Bechtel
9 c) Joint Applicants
10 d) Marley
11 e) Any other entity

12 with knowledge of the monitoring programs or monitors re-
13 ferred to in Interrogatories 29, 29A and 30.
14

15 ANSWER

- 16 a) 1) T. F. Iaccarino
17 2) M. Septoff
18 3) M. I. Goldman
19 b) 1) W. G. Bingham
20 2) S. H. Shepherd
21 3) N. A. Blum
22 c) 1) E. E. Van Brunt, Jr.
23 2) A. C. Rogers
24 3) W. F. Quinn
25 4) J. R. Mann
26 d) None

1 e) 1) Charles Curtis; University of Dela-
2 ware, Newark, Delaware, 19711.

3 2) Delbert McCune; Boyce-Thompson
4 Institute, Cornell University, Tower Road, Ithaca, New York
5 14853.

6 3) Leon Bernstein; 2412 Daventry Road,
7 Riverside, California 92506.

8 4) See University of Arizona proposal
9 for others.

10 INTERROGATORY NO. 32

11 32. Identify each document which relates or
12 refers to the monitoring programs referred to in Interroga-
13 tories 29, 29A and 30.

14
15 ANSWER

16 1. Salt Deposition and Impact Monitoring Plan
17 for the PVNGS Units 1, 2 and 3, February 1983.

18 2. ER-CP.

19 3. ER-OL.

20 4. CP Hearing Transcript.

21 5. Transcript from ASLB Pre-Hearing Conference
22 on Application for Operating Licenses for PVNGS Units 1, 2
23 and 3, February 24, 1983.

24 6. Letter from Warren E. Platt to Robert M.
25 Lazo, Esq. et al., dated March 28, 1983.

1 INTERROGATORY NO. 33

2 33. State whether water desalinization was con-
3 sidered as a salt drift mitigation strategy prior to the
4 completion of the EIS-OS.
5

6 ANSWER

7 Water desalinization was not considered as a salt
8 drift mitigation strategy prior to the completion of the
9 EIS-OS.
10

11 INTERROGATORY NO. 34

12 34. If the answer to Interrogatory 33 is yes,
13 identify:

14 a) all documents which relate or in any way
15 refer to the use of salt desalinization as a salt drift
16 mitigation strategy;

17 b) all persons with knowledge of the use of
18 salt desalinization as a salt drift mitigation strategy.
19

20 ANSWER

21 Not applicable.

22 INTERROGATORY NO. 35

23 35. State whether you are now considering or have
24 considered since the completion of the EIS-OS water desali-
25 nization as a salt drift mitigation strategy.
26

.

1 ANSWER

2 Water desalinization has not been and is not being
3 considered as a salt drift mitigation strategy.

4 INTERROGATORY NO. 36

5 36. If the answer to Interrogatory 35 is yes,
6 identify:

7 a) all documents which relate or in any way
8 refer to the use of salt desalinization as a salt drift
9 mitigation strategy; and

10 b) each person who is involved with the
11 consideration of this issue.

12
13 ANSWER

14 Not applicable.

15 INTERROGATORY NO. 37

16 37. State whether blowdown treatment and water
17 recirculation were considered as salt drift mitigation
18 strategies prior to the completion of the EIS-OS.

19
20 ANSWER

21 Blowdown treatment and water recirculation were
22 not considered as salt drift mitigation strategies prior to
23 the completion of the EIS-OS.

24 INTERROGATORY NO. 38

25 38. If the answer to Interrogatory 37 is yes,
26 identify:

1 a) all documents which relate or in any way
2 refer to blowdown treatment and water recirculation as a
3 salt drift mitigation strategy; and

4 b) each person who was involved with con-
5 sideration of this issue.

6
7 ANSWER

8 Not applicable.

9 INTERROGATORY NO. 39

10 39. State whether you are now considering blow-
11 down treatment and water recirculation as a salt drift miti-
12 gation strategy.

13
14 ANSWER

15 Blowdown treatment and water recirculation are not
16 now being considered as a salt drift mitigation strategy.

17 INTERROGATORY NO. 40

18 40. If the answer to interrogatory 39 is yes,
19 identify:

20 (a) all documents which relate or in any way
21 refer to the use of blowdown treatment and water recircula-
22 tion as a salt drift mitigation strategy; and

23 (b) each person who is involved with the
24 consideration of this issue.

25
26

1 ANSWER

2 Not applicable

3 INTERROGATORY NO. 41

4 41. State whether prior to the completion of the
5 EIS-OS any off design conditions were taken into account in
6 evaluating the salt drift and salt drift related environ-
7 mental effects from the PVNGS cooling towers, spray ponds
8 and evaporation ponds.

9
10 ANSWER

11 Some off design operating conditions were taken
12 into account.

13 INTERROGATORY NO. 42

14 42. If the answer to interrogatory 41 is yes,
15 describe each such effect considered and describe whether
16 and how each such effect influenced the evaluation in the
17 ER. If some off design operating conditions were considered
18 but not taken into account, explain the basis for that deci-
19 sion.

20
21 ANSWER

22 Cooling tower operation was assumed to be con-
23 tinuous for 12 months every year. This assumption led to
24 overestimation of the amount of salt drift from the cooling
25 towers. Circulating water chemistry concentrations were
26 assumed to exceed those expected at 15 cycles of concen-

1 tration. This assumption led to overestimation of the
2 salinity of the salt drift from the cooling towers.

3 INTERROGATORY NO. 43

4 43. Identify all persons with knowledge of the
5 subject matter contained in interrogatories 41 and 42.

6
7 ANSWER

- 8 1) D. G. Keith;
9 2) W. W. Boles;
10 3) S. H. Shepherd;
11 4) R. R. Steins;
12 5) W. G. Bingham.

13 INTERROGATORY NO. 44

14 44. State:

15 (a) the basis for the figures contained in
16 the ER and EIS on the salinity of the effluent to be used
17 for cooling at the PVNGS;

18 (b) whether you know if any water district
19 statistics indicate that the effluent can reach a higher
20 salintiy than indicated in the ER and EIS.

21
22 ANSWER

23 (a) The basis for the salinity figures is
24 chemical analyses performed on City of Phoenix sewage efflu-
25 ent and demonstration testing at the Circulating Water Test
26 Facility.

1 (b) Joint Applicants are not aware of any
2 such statistics

3 INTERROGATORY NO. 45

4 45. If the answer to interrogatory 44(b) is yes,
5 state the basis for the decision to use the figures in the
6 ER and EIS.

7
8 ANSWER

9 Not applicable

10 INTERROGATORY NO. 46

11 46. Identify all persons with knowledge of the
12 subject matter referred to in interrogatories 44 and 45.

13
14 ANSWER

- 15 1) W. G. Bingham;
16 2) D. G. Keith;
17 3) R. R. Steins;
18 4) W. W. Boles;
19 5) J. W. Kluesener;
20 6) S. H. Shepherd.

21 INTERROGATORY NO. 47

22 47. Describe the maintenance plans for the PVNGS
23 cooling tower drift eliminators.

24
25

26

1 ANSWER

2 The maintenance plans for the PVNGS cooling towers
3 have not yet been written. APS intends to use the Marley
4 Cooling Tower Company's Operation and Maintenance Instruc-
5 tions Manual as guidance for developing future APS plans.

6 INTERROGATORY NO. 48

7 48. Identify:

8 (a) all documents relating or referring to
9 PVNGS cooling tower drift eliminators; and

10 (b) all persons with knowledge of this sub-
11 ject matter.

12 ANSWER

13 Joint Applicants object to Interrogatory No. 48 on
14 the ground that it is overbroad, ambiguous, oppressive and
15 burdensome; Joint Applicants further object to this Inter-
16 rogatory to the extent it would require identification of
17 documents subject to work product and/or attorney-client
18 privilege. See Preface and General Objections, paragraph 1.
19 Without waiving those objections, the answer is as follows:
20

21 (a) See documents listed in response to
22 Interrogatory 2(b).

23 (b) Those persons listed in response to
24 Interrogatory 3(a) have the most knowledge of the subject
25 matter.

26

1 INTERROGATORY NO. 49

2 49. State whether the cooling tower vendor:

3 (a) makes or has made cooling towers of the
4 type being installed at PVNGS with a drift elimination
5 system that removes more salt from the drift than the system
6 being installed at PVNGS; and

7 (b) can make cooling towers of the type
8 being installed at PVNGS with a drift elimination system
9 that removes more salt from the drift than the system being
10 installed at PVNGS.

11
12 ANSWER

13 Joint Applicants object to Interrogatory No. 49 on
14 the grounds that it is unintelligible. Drift elimination
15 systems do not remove salt from drift.

16 INTERROGATORY NO. 49A

17 49A. If your answer to interrogatory 49 is yes,
18 describe the drift elimination systems referred to in inter-
19 rogatory 49, and state the basis for choosing the drift
20 elimination system used in the PVNGS cooling towers.

21
22 ANSWER

23 Not applicable

24

25

26

1 INTERROGATORY NO. 50

2 50. Identify all documents relating or referring
3 to alternative cooling tower drift elimination system
4 designs.

5
6 ANSWER

7 See documents listed in response to Interroga-
8 tories Nos. 2(b) and 3(b).

9 INTERROGATORY NO. 51.

10 51. Identify each person who works for:

- 11 i) NUS
12 ii) Marley
13 iii) Bechtel
14 iv) Joint Applicants
15 v) Any other entity

16 with knowledge of consideration of alternative cooling tower
17 drift elimination systems as well as the person at Marley
18 most familiar with Marley's cooling tower drift elimination
19 system.

20
21 ANSWER

22 (i) NUS: No one
23 (ii) MARLEY: Those persons listed in
24 response to Interrogatory 3(i)(a); J. D. Holmberg has the
25 most knowledge about Marley's cooling tower drift elimina-
26 tion system.

1 (iii) BECHTEL: No one

2 (iv) APS: No one

3 INTERROGATORY NO. 52

4 52. State whether prior to the completion of the
5 EIS-OS Joint Applicants conducted or had conducted for them
6 any studies on the tolerance of crops grown within 10 miles
7 of the PVNGS to aerosol salt deposition.
8

9 ANSWER

10 There were no such studies conducted.

11 INTERROGATORY NO. 53

12 53. If your answer to interrogatory 52 is yes,
13 identify:

- 14 a) each such study;
15 b) each such crop studied; and
16 c) each person who worked on each such
17 study.
18

19 ANSWER

20 Not applicable

21 INTERROGATORY NO. 54

22 54. State whether prior to the completion of the
23 EIS-OS you had information in your possession relating or
24 referring to the tolerance to aerosol salt deposition of
25 crops grown within 10 miles of the PVNGS.
26

1 ANSWER

2 Joint Applicants and their consultants possessed
3 such information.

4 INTERROGATORY NO. 55

5 55. If your answer to interrogatory 54 is yes,
6 describe that information for each of the crops grown in the
7 vicinity of the PVNGS.
8

9 ANSWER

10 The information is contained in the ER-CP, Section
11 5.4.2, and in reference No. 35 to that section.

12 INTERROGATORY NO. 56

13 Identify each person whom the Joint Applicants ex-
14 pect to call as an expert witness at the hearing (including,
15 without limitation, each such expert's full name, present
16 address, present employment or other professional affilia-
17 tion, and qualifications.
18

19 ANSWER

20 56. Joint Applicants have not yet determined who
21 will be called as expert witnesses at the hearing. Joint
22 Applicants will supplement this Interrogatory in accordance
23 with the applicable Rules and Regulations when such informa-
24 tion becomes available. However, it is anticipated at this
25 time that Joint Applicants may call the following as expert
26 witnesses at the hearing:

- 1 1) M. I. Goldman
2 2) Charles Curtis
3 3) Delbert McCune
4 4) Leon Bernstein
5 5) Ken Foster
6 6) W. G. Bingham

7 INTERROGATORY NO. 57

8 State the subject matter on which each expert
9 identified in the answer to interrogatory 56 is expected to
10 testify.

11

12 ANSWER

13 57. 1) M. I. Goldman may testify about the
14 modeling procedures and calculations utilized in predicting
15 the mass emission rate and the droplet size distribution of
16 the cooling tower emissions and also the predicted deposi-
17 tion patterns of the drift.

18 2) - 5) Drs. Curtis, McCune, Bernstein and
19 Foster may testify about the study described in the Univer-
20 sity of Arizona crop study proposal previously provided to
21 West Valley.

22 6) W. G. Bingham may testify about the
23 engineering and design of PVNGS, including but not limited
24 to, salt drift source terms.

25

26

1 INTERROGATORY NO. 58

2 58. State the substance of the facts and opinions
3 to which each expert identified in the answer to interroga-
4 tory 56 is expected to testify and summarize the grounds for
5 each opinion.
6

7 ANSWER

8 58. M. I. Goldman may testify regarding the
9 amount of salt which Joint Applicants predict will or may be
10 deposited per acre as a function of distance from the site.
11 The remaining individuals listed in response to Interroga-
12 tory No. 56 have not completed the study referred to and
13 Joint Applicants are therefore unable to provide the sub-
14 stance of the facts and opinions to which they may testify.

15 INTERROGATORY NO. 59

16 59. With respect to each opinion set forth in the
17 answer to interrogatory 58, identify each document which the
18 expert rendering the opinion based his opinion upon, or has
19 relied upon in forming his opinion, or will rely upon during
20 the hearing, testify to, or otherwise claim to support his
21 opinion.
22

23 ANSWER

24 59. Unknown at this time. Joint Applicants will
25 supplement the Interrogatory in accordance with the appli-
26

1 cable Rules and Regulations when such documents have been
2 identified.

3 INTERROGATORY NO. 60

4 60. Identify each person who prepared answers to
5 these interrogatories and the interrogatories on which each
6 such person worked.

7
8 ANSWER

9 Joint Applicants object to Interrogatory No. 60 on
10 the grounds that such information is irrelevant and non-
11 discoverable.

12
13
14
15 RESPECTFULLY SUBMITTED this 15th day of April,
16 1983.

17 SNELL & WILMER

18
19 By 

20 Arthur C. Gehr
21 Warren E. Platt
22 Charles A. Bischoff
23 Vaughn A. Crawford
24 3100 Valley Bank Center
25 Phoenix, Arizona 85073
26 Attorneys for Joint Applicants

IDENTIFICATION OF APS PERSONNEL
(Current Titles)

Name/Address

Title

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PVNGS Technical Support
Manager

Donald B. Karner
Arizona Public Service Company
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Mail Station 4900
Phoenix, Arizona 85036

Manager, Four Corners
Fossil Generating Station

William F. Quinn
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J. R. Mann
Arizona Public Service Company
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Corporate Health Physicist
and Emergency Planner

W. L. Hurst
Arizona Public Service Company
P.O. Box 21666
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Phoenix, Arizona 85036

Civil Engineering Supervisor

IDENTIFICATION OF BECHTEL PERSONNEL

<u>Name/Address</u>	<u>Current Position</u>	<u>Position at Time in Question</u>
William G. Bingham Bechtel Power Corporation (BPC) P.O. Box 60860 Terminal Annex Los Angeles, CA 90060	Project Engineering Manager	Project Engineer
Dennis G. Keith BPC	Assistant Project Engineer	Nuclear Group Supervisor
Robert R. Stiens BPC	Project Engineer	Assistant Project Engineer
Peter Su BPC	Engineering Specialist	Geotechnical Specialist
Paul A. Barbour BPC	Nuclear Group Supervisor	Engineering Specialist
William W. Boles BPC	Deputy Group Supervisor	Mechanical Engineer
Stephen H. Shepherd BPC	Deputy Group Supervisor	Nuclear Engineer
Nora A. Blum BPC	Group Leader	
Vasken Najarian BPC	Assistant Project Engineer	Mechanical Group Supervisor
John W. Kluesener Bechtel Civil and Minerals, Inc. 50 Beale Street San Francisco, CA 94105	Project Engineer	Assistant Project Engineer, Process Engineer

IDENTIFICATION OF NUS PERSONNEL

<u>Name/Address</u>	<u>Present Position</u>	<u>Position at Time in Question</u>
Morton I. Goldman NUS Corporation 910 Clopper Road Gaithersburg, MD 20878	Senior Vice President, Technical Director	V.P., Environmen- tal Safeguards Division; Senior V.P., Environmen- tal Systems Group
George E. Fisher 3175 Rt. 94 Woodbine, MD 21797	Unknown	Environmental Meteorologist
Marilyn K. Bland 378 Cambridge Ave. Suite K Palo Alto, CA 94306	Unknown	Staff Ecologist
Ronald R. Stoner NUS Corporation 910 Clopper Road Gaithersburg, MD 20878	Manager, Atmospheric Sciences Department, Environmental Services Division	Same
Thomas F. Iaccarino NUS Corporation 910 Clopper Road Gaithersburg, MD 20878	NUS ANPP Project Manager	Air Quality Analyst
Philip M. Altomare 4409 Cambria Ave. Garrett Park, MD 20766	Nuclear Regulatory Commission	Manager, Air Quality Assess- ments - through November 1976
John H. Taylor Box 145 Solomons, MD 20688	Retired	Manager, Meteoro- logical Programs Department - November 1979 - March 1981
Henry Firstenberg NUS Corporation 910 Clopper Road Gaithersburg, MD 20878	Senior Executive Analyst	Manager, Air Quality Assessments, November 1976 - November 1979
Michael Septoff NUS Corporation 910 Clopper Road Gaithersburg, MD 20878	Assistant Manager, Atmospheric Sciences Department	Project Meteorolo- gist, ANPP Project Manager

<u>Name/Address</u>	<u>Present Position</u>	<u>Position at Time in Question</u>
Terry A. Ritter NUS Corporation Raritan Plaza III, King George Road Edison, NJ 08837	Deputy Regional Project Manager, NUS Superfund Division	NUS ANPP Project Manager, 1980-81
Lawrence T. Klein NUS Corporation 14011 Ventura Blvd. Sherman Oaks, CA 91423	Manager, Southwest Regional Operations	NUS ANPP Project Management, 1972- 1980
Joseph T. DiNunno NUS Corporation 910 Clopper Road Gaithersburg, MD 20878	Vice President, Major Projects Division (retiring 4/15/83)	Vice President, Environmental Safeguards
Carl G. Mattsson Mobil Oil Corporation Mining and Coal Div. P.O. Box 17772 Denver, CO 80217	Unknown	Coordinator Environmental Studies, Western area, Environmental Systems Group
Paul B. Morgan (unknown)	Unknown	Vice President, Ecological Sciences Division


IDENTIFICATION OF MARLEY PERSONNEL

<u>Name/Address</u>	<u>Present Position</u>	<u>Position at Time in Question</u>
Ohler L. Kinney, Jr. 5800 Foxridge Dr. Mission, KS 66202	Senior Design Consultant	Project Engineer and Senior Engineer
Ivan F. Kuharic 5800 Foxridge Dr. Mission, KS 66202	Supervising Senior Engineer	Same
Paul A. Lindahl, Jr. 5800 Foxridge Dr. Mission, KS 66202	Project Engineer	Senior Engineer
Joyce D. Holmberg 5800 Foxridge Dr. Mission, KS 66202	Sciences Director	Supervisory Con-- sultant and Sciences Director
Joe Ben Dickey, Jr. 2900 W. 53rd Fairway, KS	Retired	Engineering Vice President
William V. McCoy 217 West Las Tunas San Gabriel, CA 91778	Regional Vice President, Western Marketing Area	Same
J. O. Kadel 5800 Foxridge Dr. Mission, KS 66202	Executive Vice Presi- dent, International Operations	Vice President, Sales Division
Richard D. Landon 5800 Foxridge Dr. Mission, KS 66202	Executive Vice Presi- dent, Domestic Operations	Manager - Major Projects
A. R. Thompson 5800 Foxridge Dr. Mission, KS 66202	Senior Vice President, Sales Division	Vice President, Sales Division

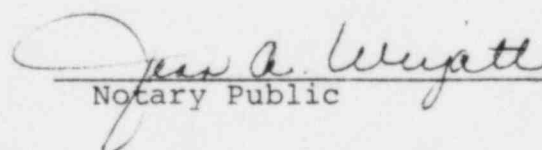
1 STATE OF ARIZONA)
2) ss.
3 COUNTY OF MARICOPA)

4 CHARLES A. BISCHOFF, being first duly sworn upon
5 his oath, deposes and says:

6 That he is one of the attorneys for Arizona Public
7 Service Company in the foregoing entitled and numbered matter,
8 that he has read the above and foregoing Answers to West Valley's
9 First Set of Interrogatories and knows the contents thereof;
10 that all of the matters and things therein contained are true
11 to the best of his knowledge and belief, except those matters
12 alleged upon information and belief, and as to those, verily
13 believes them to be true.

14 
15 Charles A. Bischoff

16
17 SUBSCRIBED AND SWORN to before me this 15th day of
18 April, 1983.

19 
20 Notary Public

21 My Commission expires:

22 March 11, 1986
23
24
25
26

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

DOCKETED
UNITED

*83 APR 18 10:17

OFFICE OF THE SECRETARY
DOCKETING & SERVICE
BRANCH

In the Matter of)	
)	
ARIZONA PUBLIC SERVICE)	Docket Nos. STN 50-528
COMPANY, et al.)	STN 50-529
)	STN 50-530
(Palo Verde Nuclear)	
Generating Station,)	
Units 1, 2 and 3))	
_____)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "Joint Applicants' Response to West Valley Agricultural Protection Council, Inc.'s First Set of Interrogatories" have been served upon the following listed persons by deposit in the United States mail, properly addressed and with postage prepaid, this 15th day of April, 1983.

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Washington, D.C. 20555

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

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

Atomic Safety and Licensing Board Panel
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