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*83 March 18, 1983

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

Before Administrative Judges: Gary J. Edles, Chairman Dr. W. Reed Johnson Howard A. Wilber

In the Matter of

UNITED STATES DEPARTMENT OF ENERGY PROJECT MANAGEMENT CORPORATION TENNESSEE VALLEY AUTHORITY

(Clinch River Breeder Reactor Plant)

Docket No. 50-537

ASLBP Docket No. 75-291-12

NATURAL RESOURCES DEFENSE COUNCIL, INC. AND THE SIERRA CLUB EXCEPTIONS TO THE ASLB PARTIAL INITIAL DECISION (LIMITED WORK AUTHORIZATION) OF FEBRUARY 28, 1983

Pursuant to 10 CFR § 2.762(a), Intervenors, Natural
Resources Defense Council, Inc., and the Sierra Club, take
exception to the Atomic Safety and Licensing Board's Partial
Initial Decision (Limited Work Authorization) dated February 28,
1983, and state that the Licensing Board erred in the following
respects:

I. Intervenors' Contentions 1, 2, 3, and 11(d)

Intervenors' Contentions 1, 2, 3, and 11(d) are discussed at pages 16-30 of the ASLB Opinion, paragraphs 1-40 of the ASLB Findings of Fact, paragraphs 4-7 of the ASLB Conclusions of Law, paragraphs 1-132 of Intervenors Proposed Findings of Fact, and paragraphs 1-14 of Intervenors' Proposed Conclusions of Law.

Intervenors' exceptions to the PID on Intervenors' Contentions 1, 2, 3, and 11(d) are as follows:

A. Contentions 1 and 3

- 1. The Board erred in failing to resolve Intervenors'
 Contention 1(a); that is, whether core disruptive accidents
 should be considered credible and treated as design basis
 accidents for the purpose of site suitability analysis under 10
 CFR §§ 50.10(e)(2) and Part 100. (Opinion, p. 22).
- 2. The Board erred in failing to find that CDAs are credible events that should be included within the CRBR design basis.
- 3. The Board erred in concluding that it did not need to find at this juncture (the LWA-1 proceeding) that the CRBR will be built and operated in a manner that precludes the necessity for considering CDAs within the design basis. (Opinion, p. 22).
- 4. The Board erred in concluding that Intervenors have identified no threshold matters that would prevent CRBR from attaining the objective of preventing DBAs from progressing to CDAs. (Opinion, p. 22).
- 5. The Board erred in disregarding and failing to confront evidence demonstrating that, according to Staff and Applicants'

own analysis, a core disruptive accident should be included within the CRBR design basis, since there is greater than one chance in a million (10^{-6}) per reactor year of a CRBR CDA radioactive release with potential consequences greater than the 10 CFR Part 100 dose guidelines.

- 6. The Board erred in failing to find that the reliability of the CRBR auxiliary feedwater system, which is no better than 10^{-4} per reactor year, is unacceptable in terms of public health and safety.
- 7. The Board erred in failing to rule that Applicants and Staff are unable to justify excluding CDAs as DBAs because a showing of design feasiblity is not adequate to demonstrate that design intent will be achieved. (Findings of Fact, ¶ 13).
- 8. The Board erred in finding that the potential for, and actions to minimize, human error and common cause failures have been considered in the design to assure the likelihood that common cause failures or human error could cause a CDA is made extremely low. (Findings of Fact, ¶ 16).
- 9. The Board erred in relying in any way on the evidence that the Applicants have proposed, and the Staff will require, implementation of a reliability program for assurance that the reliability inherent in the CRBR design characteristics will be realized and will not be degraded by potential common cause failures. (Findings of Fact, ¶ 16).
- 10. The Board erred in relying in any way on the evidence that Applicants have undertaken a series of systems interaction

studies, such as key systems reviews, as support for the conclusion that human error, system interdependencies and common cause failures will not affect the CRBR systems reliability.

(Findings of Fact, ¶ 16).

- 11. The Board erred in failing to find that an LMFBR requires a higher standard of protection against CDAs than an LWR, and should thus include CDAs within the design basis.
- 12. The Board erred in failing to require that loss of coolant accidents caused by a large primary coolant pipe break, which could lead to CDAs, be included within the CRBR design basis.

B. Contention 2

- 13. The Board erred in concluding that, based upon the available information and review to date, there is reasonable assurance that the proposed site is a suitable location for a reactor of the general size and type proposed in the application from the standpoint of radiological health and safety considerations. (Conclusions of Law, ¶ 4).
- 14. The Board erred in failing to resolve whether the designated site suitability source term (SSST) results in radiological consequences that envelope the spectrum of credible accidents.
- 15. The Board erred in failing to resolve the issue of whether the proposed containment design will reduce off-site doses to levels within the dose guidelines values recommended for site suitability analysis.

- 16. The Board erred in giving significant weight to the Staff conclusion that feasible design concepts and remedial actions can be implemented to provide satisfactory containment system protective capability, as related to both environmental impacts and the health and safety of the public. (Findings of Fact, ¶ 30).
- 17. The Board erred in failing to determine whether the containment system "feasible design concepts and remedial actions" suggested by the Staff would, if implemented, result in a reactor of the general size and type as that proposed in the CRBR application. (Findings of Fact, ¶ 30).
- 18. The Board erred in disregarding and failing to confront substantial evidence demonstrating that the site suitability source term chosen by the Staff would result in bone doses at the LPZ boundary well in excess of the bone dose guideline value specified by the Staff for the CP (and LWA-1) review.
- 19. The Board erred in failing to rule that the Staff's site suitability dose calculations for the LPZ are in error for failing to use current dosimetric and metabolic models.
- 20. The Board erred in failing to rule that the Staff's site suitability dose calculations for the LPZ are in error for failing to use conservative plutonium isotopic concentrations.
- 21. The Board erred in failing to rule that the Staff's site suitability dose calculations for the LPZ are in error for failing to consider the dose from the entire passage of the cloud (10 CFR 100.11(a)(2)).

- 22. The Board erred in failing to rule that the Staff's site suitability dose calculations for the LPZ are in error for failing to consider releases via the containment vent/purge system.
- 23. The Board erred in failing to rule that the Staff's site suitability dose calculations for the LPZ are in error for failing to consider the integrated dose commitment beyond 50 years.
- 24. The Board erred in failing to rule that the Staff's site suitability dose calculations for the LPZ are in error for failing to assume a bounding fuel release fraction from the core (SSST).
- 25. The Board erred in failing to find that, at a minimum, the site suitability source term plutonium fraction should be set at a level high enough to bound CDAs, should the CDA be included in the CRBR design basis after a full safety review.
- 26. The Board erred in failing to resolve whether the CRBR radiological source term chosen by the Staff would result in potential hazards not exceeded by those from any accident considered credible, as required by 10 CFR 100.11(a), fn. 2.
- Applicants did not use appropriately conservative assumptions in their site suitability analysis, as required by 10 CFR § 100.2(b), in order to take into account the lack of experience with a reactor of the general size and type as the CRBR, which is novel in design and unproven as a prototype or pilot plant.

- 28. The Board erred in finding that the DBA dose results are considered to be acceptable because they fall well below the dose guidelines of 10 CFR Part 100. (Opinion, p. 21).
- 29. The Board erred in failing to require that the CRBR dose guideline values be reduced by a factor of ten at the construction permit stage to take into account continuing uncertainty in plutonium dose and health effects models.
- 30. The Board erred in finding that the Morgan hypothesis does not affect the validity of the Staff's recommended dose guideline values. (Findings of Fact, ¶ 24).
- 31. The Board erred in finding that the record presents no evidence of a logical nexus between the "warm particle" hypothesis and the validity of the 10 CFR Part 100 dose guideline values. (Findings of Fact, ¶ 25).
- 32. The Board erred in failing to find that the dose guideline values selected by Staff for use in the site suitability review are inadequate to prevent serious injury to individuals offsite if an unlikely, but still credible, accident should occur, as required by 10 CFR Part 100.
- 33. The Board erred in finding that Applicants concluded that the CRBR can accompodate \underline{most} CDAs with a resultant risk that can be made acceptably low. (Findings of Fact, ¶ 29).
- 34. The Board erred in finding that DBAs are of insufficient severity to cause a loss of coolable geometry within the core.

 (Opinion, fn. 19).

- 35. The Board erred in finding that the 10 CFR Part 100 dose guideline values do not represent design or accident mitigation objectives. (Opinion, fn. 25).
- 36. The Board erred in finding that the Staff has incorporated in its SSST dose model various design features of CRBR that will be incorporated to prevent DBAs from progressing to CDAs.

 (Findings of Fact, ¶ 18).
- 37. The Board erred in failing to find that in light of all the deficiencies outlined above, the Staff's ultimate cost/benefit balancing under NEPA is arbitrary and capricious.

II. Intervenors' Contention 5(b)

Intervenors' Contention 5(b) is discussed at pages 26-30 of the ASLB Opinion, paragraphs 41-54 of the ASLB Findings of Fact, paragraphs 133-148 of Intervenors' Proposed Findings of Fact, and paragraphs 15-17 of Intervenors' Proposed Conclusions of Law.

Intervenors' exceptions to the PID on Intervenors' Contention 5(b) are as follows:

- 38. The Board erred in failing to find that the Y-12 plant is vital to national security.
- 39. The Board erred in failing to find that the consequences of long-term evacuation of Y-12 would be unacceptable in terms of national security risk.
- 40. The Board erred in failing to find that the Applicants' and Staff's analyses of a site suitability source term (SSST) accident upon the Y-12 plant and other nearby facilities are

inadequate because they fail to take into account operation of the containment vent/purge system in the course of such an accident.

- 41. The Board erred in failing to determine whether short- or long-term evacuation of the Y-12 plant and other nearby facilities would be required in the event of an SSST accident in which the CRBR containment vent/purge system is called into operation.
- 42. The Board erred in finding that the consequences of the SSST release are more severe than the consequences of any design basis accident. (Findings of Fact, ¶ 49).
- 43. The Board erred in failing to find that the Applicants' and Staff's analyses of the effects of CRBR accidents upon the Y-12 plant and other nearby facilities are inadequate, since the analyses fail to analyze adequately the <u>risks</u> of CDA accidents more severe than Staff's CDA Class 1 or Applicants' HCDA Case 2, which involves equal consideration of both probabilities and consequences.
- 44. The Board erred in failing to find that the Applicants' and Staff's analyses of the effects of CRBR accidents upon the Y-12 plant and other nearby facilities are inadequate, since the analyses do not take into account the use in CRBR of plutonium recovered from LWR high burnup spent fuel, which has higher isotopic concentrations of Pu-238 and Pu-241 and, therefore, more serious dose consequences.

45. The Board erred in failing to rule that Applicants' and Staff's analysis of whether long-term evacuation of nearby facilities would be required in the event of an SSST accident are inadequate, since these analyses rely solely on the EPA's Protective Action Guidelines.

III. Intervenors' Contentions 4 and 6(b)(4)

Intervenors' Contentions 4 and 6(b)(4) are discussed at pages 35-46 of the ASLB Opinion, paragraphs 70-122 of the ASLB Findings of Fact, paragraphs 5-7 of the ASLB Conclusions of Law, paragraphs 223-288 of Intervenors' Proposed Findings of Fact, and paragraphs 26-27 of Intervenors' Proposed Conclusions of Law.

Intervenors' exceptions to the PID on Intervenors'
Contentions 4 and 6(b)(4) are as follows:

- 46. The Board erred in failing to find that the three primary criteria utilized by the Staff in analyzing safeguards risks and consequences at the CRBR and its supporting fuel cycle facilities do not provide "high assurance" that safeguards objectives will be met and the Commission's safeguards regulations satisfied.
- 47. The Board erred in finding that there is no evidence to support Intervenors' argument that the safeguards requirements of DOE Orders may not be enforced. (Findings of Fact, ¶ 120).
- 48. The Board erred in giving significant weight to the testimony of Applicants' witnesses that Applicants have committed to meet all DOE safeguards and security Orders. (Opinion, p. 45).

- 49. The Board erred in failing to find that the Staff's conclusion that risks associated with the CRBR and its fuel cycle are not greater than risks associated with other, similar licensed and non-licensed facilities, is based upon an inadequate NEPA analysis.
- 50. The Board erred in failing to find that the Staff's analysis of CRBR safeguards risks and consequences is inadequate in that it lacks an independent analysis of Applicants' submissions.
- 51. The Board erred in failing to find that the Staff's analysis of CRBR safeguards risks and consequences is inadequate in that it failed to take account of significant uncertainties with respect to the nature and scope of the safeguards systems, and their effectiveness, at the facilities which will reprocess CRBR fuel.
- 52. The Board erred in failing to find that, given the lack of independent effectiveness of the material control and accounting and physical security systems, it cannot reasonably be concluded at this time that safeguards objectives, i.e., high assurance of deterrence, detection and apprehension of diversion or theft of formula quantities of special nuclear material, can or will be achieved at CRBR fuel cycle facilities.

IV. Intervenors' Contentions 6(b)(1) and 6(b)(3)

Intervenors' Contentions 6(b)(1) and 6(b)(3) are discussed at pages 47-51 of the ASLB Opinion, paragraphs 123-140 of the

ASLB Findings of Fact, paragraphs 5-7 of the ASLB Conclusions of Law, paragraphs 154-178 of Intervenors' Proposed Findings of Fact, and paragraphs 19-21 of Intervenors Proposed Conclusions of Law.

Intervenors' exceptions to the PID on Intervenors' Contentions 6(b)(1) and 6(b)(4) are as follows:

- 53. The Board erred in finding that the fuel composition used by the Applicants in their fuel cycle analyses is equivalent to LWR fuel with a burn-up on the order of 20,000 megawatt days per metric ton. (Findings of Fact, ¶ 127).
- 54. The Board erred in concluding that there is an adequate supply of the lower burnup LWR spent fuel proposed for CRBR use. (Opinion, pp. 48-49).
- 55. The Board erred in disregarding and failing to confront substantial evidence that the plutonium isotopic concentrations assumed by the Staff and Applicants in their SSST and fuel cycle analyses are more reasonably associated with a burnup of 12,000-14,000 megawatt days per metric ton.
- 56. The Board erred in failing to find that for a reactor of the general size and type as the CRBR, the Staff and Applicants should assume that it will be fueled at some point in its operating lifetime by plutonium recovered from LWR high burnup spent fuel, and should analyze the CRBR environmental impacts and site suitability based upon the use of such fuel.
- 57. The Board erred in finding that the analysis of the Developmental Reprocessing Plant with an assumed total release of

tritium and carbon-14 bounds all potential and alternative reprocessing facilities. (Findings of Fact, ¶ 131).

- 58. The Board erred in finding that Intervenors contend that the containment factor for the CRBR fuel reprocessing facility will likely be a factor of ten greater than that claimed by the Staff and Applicants, based on operational experience at Hanford and Savannah River. (Findings of Fact, ¶ 133).
- 59. The Board erred in failing to find that the Staff failed to perform an in-depth, searching analysis of the potential impacts of reprocessing CRBR spent fuel at plants other than the conceptual Development Reprocessing Plant.
- Applicants' analyses of the environmental impacts from reprocessing CRBR fuel are inadequate in that they fail to analyze liquid effluents at the Savannah River Plant or the Hanford PUREX plant.
- 61. The Board erred in failing to find that the Staff's and Applicants' analyses of the environmental impacts from reprocessing CRBR fuel are inadequate in that they fail to analyze transuranic releases at the Savannah River Plant or the Hanford PUREX plant.
- 62. The Board erred in failing to find that the Staff's and Applicants' analyses of the environmental impacts from reprocessing CRBR fuel are inadequate in that they fail to analyze accidental or bypass leakage at the Savannah River Plant or the Hanford PUREX plant.

Applicants' analyses of the environmental effects of the CRBR fuel cycle are inadequate in that they fail to disclose and consider significant uncertainties regarding potential radiological releases from CRBR waste management activities.

V. Intervenors Contentions 5(a) and 7(c)

Intervenors' Contentions 5(a) and 7(c) are discussed at pages 52-57 of the ASLB Opinion, paragraphs 141-179 of the ASLB Findings of Fact, paragraphs 5-7 of the ASLB Conclusions of Law, paragraphs 179-198 of Intervenors' Proposed Findings of Fact, and paragraphs 22-23 of Intervenors' Proposed Conclusions of Law.

Intervenors' exceptions to the PID on Intervenors' Contentions 5(a) and 7(c) are as follows:

- 65. The Board erred in finding that none of the ten alternative sites is environmentally preferable to or substantially better than the CRBR site. (Findings of Fact, ¶ 146).
- 66. The Board erred in finding that the evidence of record does not indicate that substantial accident risk reductions would accrue with a change of site. (Opinion, p. 56).
- 67. The Board erred in relying upon the Staff's analysis of CRBR accident risks in FESS Appendix J for its ruling that "the

reduction in doses that are calculated at the alternative sites does not lead to the conclusions that the alternative sites are either substantially better or obviously superior." (Opinion, p. 54).

- 68. The Board erred in relying upon the Staff's conclusion that, because the CRBR O to 30 mile population density projected at the time of plant startup is below the 500 person per square mile "trip" level of Regulatory Guide 4.7, the numerical differences in population between the Clinch River site and each of the alternative sites are not significant. (Findings of Fact, ¶ 174).
- 69. The Board erred in failing to find that each of the alternative sites within the TVA region would meet the CRBR programmatic objective of utility participation.
- 70. The Board erred in finding that since no offsetting benefits were present at alternative sites, delays in moving to alternative sites would not be consistent with DOE's timing objective under the LMFBR program.

VI. Intervenors' Contentions 7(a) and 7(b)

Intervenors' Contentions 7(a) and 7(b) are discussed at pages 58-65 of the ASLB Opinion, paragraphs 180-229 of the ASLB Finding of Fact, paragraphs 5-7 of the ASLB Conclusions of Law, paragraphs 199-222 of Intervenors' Proposed Findings of Fact, and paragraphs 24-25 of Intervenors' Proposed Conclusions of Law.

Intervenors' exceptions to the PID on Intervenors'

Contentions 7(a) and 7(b) are as follows:

- 71. The Board erred in failing to find that the alternative steam generator testing program suggested by the GAO would be a substantially better design approach since there is significant uncertainty concerning the ability of the steam generator to withstand sharp temperature transients.
- 72. The Board erred in failing to find that the Staff's analysis of the CRBR programmatic objective of economic feasibility is inadequate in that it failed to include an examination of the actual and projected costs of the CRBRP.
- 73. The Board erred in finding that the CRBRP is reasonably likely to meet the objective of demonstrating economic feasibility. (Findings of Fact, ¶ 207).
- 74. The Board erred in finding that a no-vent containment is not shown to be a substantially better alternative than the present design. (Findings of Fact, ¶ 228).

Other Contentions

- 75. The Board erred in refusing to admit for litigation Intervenors' Contention 16. (Order Following Conference With Parties, April 14, 1982, at 6-7).
- 76. The Board erred in refusing to admit for litigation Intervenors' Contention 17. (Order Following Conference With Parties, April 14, 1982, at 7-8).
- 77. The Board erred in refusing to admit for litigation Intervenors' Contention 22. (Order Following Conference With

Parties, April 14, 1982, at 9-10).

- 78. The Board erred in deferring Intervenors' Contention 1(b) for purposes of litigation and discovery until after the LWA-1 evidentiary hearing and partial initial decision. (Order Following Conference With Parties, April 22, 1982, at 5).
- 79. The Board erred in deferring Intervenors' Contention 3(a) for purposes of litigation and discovery until after the LWA-1 evidentiary hearing and partial initial decision. (Order Following Conference With Parties, April 22, 1982, at 6).
- 80. The Board erred in deferring Intervenors' Contention 9 for purposes of litigation and discovery until after the LWA-1 evidentiary hearing and partial initial decision. (Order Following Conference With Parties, April 14, 1982, at 8-9, 16).
- 81. The Board erred in limiting the scope of Intervenors' Contention 1(a) at the LWA-1 stage. (Order Following Conference With Parties, April 22, 1982, at 2-4).
- 82. The Board erred in limiting the scope of Intervenors' Contention 2(a)-2(d) at the LWA-1 stage. (Order Following Conference With Parties, April 22, 1982, at 5-6).
- 83. The Board erred in limiting the scope of Intervenors' Contention 3(b)-3(d) at the LWA-1 stage. (Order Following Conference With Parties, April 22, 1982, at 6-7).

Procedural Errors

84. The Board erred in granting the portion of Applicants' March 29, 1982 Motion for a Protective Order regarding discovery

requests related to Intervenors' Contention 4. (Order Following Conference With Parties, April 14, 1982, at 14, paragraph 2).

- 85. The Board erred in granting Applicants' April 2, 1982 Motion for a Protective Order. (Order Following Conference With Parties, April 14, 1982, at 14-15).
- 86. The Board erred in granting Applicants' May 4, 1982, Motion for a Protective Order. (Protective Order, May 27, 1982).
- 87. The Board erred in denying Intervenors' July 27, 1982 "Motion to Reschedule Hearings". (Order Following Conference With Parties, August 5, 1982, at 2-6).
- 88. The Board erred in denying Intervenors' motion to qualify Dr. Thomas B. Cochran as an expert interrogator. (Tr. 1244-46).
- 89. The Board erred in denying Intervenors' October 20, 1982 "Motion for Qualification of an Expert Interrogator Under 10 CFR § 2.733". (Order Regarding Procedural Motions, November 1, 1982, at 3-7).
- 90. The Board erred in denying Intervenors' July 29, 1982
 "Motion to Reconsider Rulings on Contentions". (Order Following
 Conference With Parties, August 5, 1982, at 6).
- 91. The Board erred in denying in large part Intervenors' August 23, 1982 "Motion to Strike Portions of the Testimony and Exhibits of Applicants". (Tr. 1295-1350).
- 92. The Board erred in denying Intervenors' September 9, 1982 "Motion to Strike and Motion to Amend Applicants' Exhibit 1 to Conform With the Licensing Board's April 22, 1982". (Order, September 27, 1982).

- 93. The Board erred in striking portions of Intervenors' Exhibit 3. (Tr. 2810-71; 7094-7104).
- 94. The Board erred in striking portions of Intervenors' Exhibit 4. (Tr. 3051-99; 7094-7104).
- 95. The Board erred in granting Applicants' November 12, 1982 "Motion to Strike Portions of the Testimony of Dr. Thomas B. Cochran (Part III)". (Intervenors' Exhibit 13) (Tr. 4478-4517; 4572-82; 4603-10).
- 96. The Board erred in granting Staff's motion to strike portions of Intervenors' Exhibit 13. (Tr. 4517-24, 4591-94; 4924-44).
- 97. The Board erred in granting portions of Applicants'
 November 12, 1982 "Motion to Strike Portions of the Testimony of
 Dr. Thomas B. Cochran (Part V)". (Tr. 3767-88; 3887-3992).
- 98. The Board erred in granting portions of the Staff's motion to strike portions of Intervenors' Exhibit 12. (Tr. 3870-86).
- 99. The Board was in error in excluding evidence on Applicants' Reliability Program (Appendix C of the PSAR).

 Tr. 1692).
- 100. The Board erred in denying Intervenors' motion to strike portions of Applicants' Exhibit 46. (Tr. 5345-74; 5377-5420).

101. The Board erred in denying Intervenors' motion to strike portions of Staff's Exhibit 17. (Tr. 5710-46; 5748-5800).

Respectfully submitted

Barbara A. Finamore
S. Jacob Scherr
Natural Resources Defense
Council, Inc.
1725 I Street, N.W.
Suite 600

Washington, D.C. 20006 (202) 223-8210

Ellyn R. Weiss
Dean R. Tousley
HARMON & WEISS
1725 I Street, N.W.
Suite 506
Washington, D.C. 20006
(202) 833-9070

ATTORNEYS FOR INTERVENORS NATURAL RESOURCES DEFENSE COUNCIL INC. AND THE SIERRA CLUB

Dated March 18, 1983

I hereby certify that copies of INTERVENORS' EXCEPTIONS TO THE ASLB PARTIAL INITIAL DECISION (LIMITED WORK AUTHORIZATION) OF FEBRUARY 28, 1983 and APPLICATION OF THE NATURAL RESOURCES DEFENSE COUNCIL, INC. AND THE SIERRA CLUB FOR STAY OF THE EFFECTIVENESS OF THE ASLB PARTIAL INITIAL DECISION (LIMITED WORK AUTHORIZATION) OF FEBRUARY 28, 1983 were served this 18th day of March 1983 upon:

CERTIFICATE OF SERVIC

- * Nunzio Palladino, Chairman U.S. Nuclear Regulatory Commission Washington, D.C. 20555
- * Victor Gilinsky, Commissioner U.S. Nuclear Regulatory Commission Washington, D.C. 20555
- * James Asselstein, Commissioner U.S. Nuclear Regulatory Commission Washington, D.C. 20555
- * John Ahearne, Commissioner U.S. Nuclear Regulatory Commission Washington, D.C. 20555
- * Thomas Roberts, Commissioner U.S. Nuclear Regulatory Commission Washington, D.C. 20555
- * Gary J. Edles, Chairman Atomic Safety and Licensing Appeal Board U.S. Nuclear Regulatory Commission Washington, D.C. 20555
- * Dr. W. Reed Johnson Atomic Safety and Licensing Appeal Board U.S. Nuclear Regulatory Commission Washington, D.C. 20555
- * Howard A. Wilber
 Atomic Safety and Licensing Appeal Board
 U.S. Nuclear Regulatory Commission
 Washington, D.C. 20555

^{*} Denotes Hand Delivery

Certificate of Service - 2

- * Marshall E. Miller, Esq. Chairman Atomic Safety & Licensing Board U.S. Nuclear Regulatory Commission Washington, D.C. 20555
- * Gustave A. Linenberger Atomic Safety & Licensing Board U.S. Nuclear Regulatory Commission Washington, D.C. 20555

Dr. Cadet H. Hand, Jr.
Director
Bodega Marine Laboratory
University of California
West Side Road
Bodega Bay, California 94923

- * Atomic Safety & Licensing Board Panel U.S. Nuclear Regulatory Commission 1717 H Street, NW, Room 1121 Washington, D.C. 20555
- * Docketing & Service Section Office of the Secretary U.S. Nuclear Regulatory Commission 1717 H Street, NW, Room 1121 Washington, D.C. 20555 (3 copies)
- * R. Tenney Johnson, Esq.
 Leon Silverstrom, Esq.
 Warren E. Bergholz, Jr., Esq.
 Michael D. Oldak, Esq.
 L. Dow Davis, Esq.
 Office of General Counsel
 U.S. Department of Energy
 1000 Independence Ave., SW, Rm. 6A245
 Washington, D.C. 20585
- * Sherwin E. Turk, Esq. Stuart Treby, Esq. Office of Executive Legal Director U.S. Nuclear Regulatory Commission 7735 Old Georgetown Road Bethesda, MD 20014
- * George L. Edgar, Esq.
 Irvin N. Shapell, Esq.
 Thomas A. Schmutz, Esq.
 Gregg A. Day, Esq.
 Frank K. Peterson, Esq.
 Morgan, Lewis & Bockius
 1800 M Street, NW, 7th Floor
 Washington, D.C. 20036

Certificate of Service - 3

Herbert S. Sanger, Jr., Esq. Lewis E. Wallace, Esq. James F. Burger, Esq. W. Walker LaRoche, Esq. Edward J. Vigluicci, Esq. Office of the General Counsel Tennessee Valley Authority 400 Commerce Avenue Knoxville, TN 37902

William M. Leech, Jr., Esq., Attorney General William B. Hubbard, Esq., Chief Deputy Attorney General Michael D. Pearigen, Esq. State of Tennessee Office of the Attorney General 450 James Robertson Parkway Nashville, TN 37219

Lawson McGhee Public Library 500 West Church Street Knoxville, TN 37219

William E. Lantrip, Esq. City Attorney Municipal Building P.O. Box 1 Oak Ridge, TN 37830

Oak Ridge Public Library Civic Center Oak Ridge, TN 37820

Joe H. Walker 401 Roane Street Harriman, TN 37748

Commissioner James Cotham Tennessee Department of Economic and Community Development Andrew Jackson Building, Suite 1007 Nashville, TN 32219