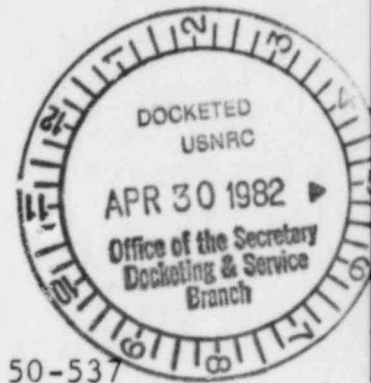


4/30/82

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION



In the Matter of)

UNITED STATES DEPARTMENT OF ENERGY)
PROJECT MANAGEMENT CORPORATION)
TENNESSEE VALLEY AUTHORITY)

Docket No. 50-537

(Clinch River Breezer Reactor Plant))

APPLICANTS' UPDATED RESPONSE TO
NATURAL RESOURCES DEFENSE COUNCIL, INC.
AND THE SIERRA CLUB SEPTEMBER 16, 1976
REQUEST TO APPLICANTS FOR ADMISSIONS (39-67)

Pursuant to 10 C.F.R. § 2.742, and in accordance with the Board's Prehearing Conference Order of February 11, 1982, the Department of Energy, Project Management Corporation, and the Tennessee Valley Authority (the Applicants), hereby submit their Updated Responses to Intervenor, Natural Resources Defense Council, Inc. and the Sierra Club, September 16, 1976 Request to Applicants for Admissions (39-67).^{1/}



^{1/} Applicants responded to Admissions 39-67 on October 6, 1976, and supplemented certain responses (50, 55, 56) on January 21, 1976.

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ADMISSION.

39. Alpha-phase ^{239}Pu (low ^{240}Pu content metal with a normal density of about 19.8 g/m^3) at 25°C has a spherical critical mass of approximately 4.2 kg in a thick (4 inch) Be reflector.

RESPONSE.

39. The Applicants admit this statement.

ADMISSION.

40. For a uniform compression of this ^{239}Pu sphere and Be reflector (both densities increased by the same factor) the critical mass varies as the inverse square of the density.

RESPONSE.

40. The Applicants admit this statement.

ADMISSION.

41. Using a shaped charge of a suitable chemical high explosive (e.g., Composition B plastic explosive), normal density alpha-phase ^{239}Pu (low ^{240}Pu) sphere of approximately 4 inches Be reflector can be compressed to several times normal density.

RESPONSE.

41. The Applicants admit this statement to the extent that the material can be compressed using high

explosives, however, insufficient information has been provided to determine the extent of such compression in this instance.

ADMISSION.

42. In an implosion type nuclear explosive, the amount of fission explosive material required to produce a nuclear explosion of significant yield (at least equivalent to 100 tons of high explosive), depends on the maximum compressions that can be achieved.

RESPONSE.

42. The Applicants admit this statement to the extent that compression is one of the factors that determines the amount of material required to produce a nuclear explosion.

ADMISSION.

43. The quantity of strategic SNM required to construct a nuclear explosive device is less than the 5 kg formula as defined in 10 CFR 73.1(b).

RESPONSE.

43. The Applicants deny this statement. See generally 34 F.R. 6277 (April 9, 1969); 38 F.R. 3073-3083 (Feb. 1, 1973); 38 F.R. 35430 (Dec. 28, 1973).

ADMISSION.

44. Contrary to the NRC's answer to III.5 of NRDC's Sixth Set of Interrogatories to the NRC Staff, there is no "margin of safety" introduced "by arbitrarily establishing the critical amount at the level of the 5 kg formula", as defined in 10 CRF 73.1(b).

RESPONSE.

44. The Applicants deny this statement. The factor between the 10 CRF 73.1(b) formula and the amount of material required to construct an improvised nuclear explosive device incorporates a sufficient margin of safety.

ADMISSION.

45. Small quantities of plutonium can be converted into a nuclear bomb which if used could cause widespread death and destruction.

RESPONSE.

45. The Applicants cannot truthfully admit or deny this statement. "Small quantities" needs to be further defined as does "widespread death and destruction."

ADMISSION.

46. Small quantities of plutonium can be converted into a plutonium-dispersal device which if used could cause widespread death.

RESPONSE.

46. The Applicants cannot truthfully admit or deny this statement for the reasons stated in No. 45.

ADMISSION.

47. Plutonium in an easily usable form will be available in substantial quantities at the CRBR and at supporting fuel cycle facilities.

RESPONSE.

47. The Applicants deny this statement. CRBRP plutonium will not be in form that is "easily usable" for malevolent purposes. At supporting fuel cycle facilities, plutonium will be present in varying chemical and physical forms, most of which would require, as would the CRBRP fuel, substantial reprocessing. The CRBRP fuel has an additional burden to potential malefactors -- i.e., it will be intensely radioactive after a brief period of burnup. This statement uses the phrase "will be available in substantial quantities" in reference to plutonium. This is not true to the extent plutonium will only be "available" to those who have a legitimate purpose with the material; i.e., those specifically authorized persons involved in its handling, processing, shipping, etc. As has been previously discussed (e.g., Preamble to Applicants' Response to NRDC, et al.'s Interrogatories V through XIII of the Eighth Set), the

Applicants' safeguards system will operate to assure that potential malefactors do not have plutonium or other materials associated with CRBRP made "available" to them.

ADMISSION.

48. Analyses of the potential threat from terrorists, saboteurs and thieves conducted by the Federal Government demonstrate several credible scenarios which could result in plutonium diversion or releases of radiation (both purposeful and accidental) and against which no adequate safeguards have been proposed by the Applicant.

RESPONSE.

48. The Applicants cannot truthfully admit or deny this statement. A more specific identification of "Analyses of the potential threat...conducted by the Federal Government" must be supplied before the Applicants can make a determination as to the adequacy of the proposed safeguards in the face of such threats. However, the Applicants believe that the proposed CRBRP safeguards will be adequate.

ADMISSION.

49. Acts of sabotage or terrorism could be the initiating cause for CDA's or other severe CRBR accidents.

RESPONSE.

49. The Applicants admit this statement to the extent that it is not impossible that acts of sabotage or terrorism could be the initiating cause for CDA's or other severe CRBRP accidents. However, as discussed in detail in the Applicants response to Interrogatory Set Eight Number IV, it is highly improbable that this could occur.

ADMISSION.

50. The probability of such acts occurring has not been analyzed in predicting the probability of a CDA.

RESPONSE.

50. The Applicants admit this statement to the extent that quantitative analyses of probabilities have not been performed. On a qualitative basis, the Applicants' position that such acts of sabotage are highly improbable and a defense-in-depth approach to effectively preclude such acts has been implemented is described in the Applicants' response to item IV of the Eighth Set of Interrogatories.

ADMISSION.

51. The Applicant does not analyze the health and safety consequences of acts of sabotage, terrorism or theft directed against the CRBR or supporting facilities.

bomb, was directed to Orlando city officials. For several reasons, including the possibility the material emanated from some foreign source, the AEC could not forthwith assure the city government that the threat lacked credibility. Payment of the ransom was under consideration when the threat was determined to be a hoax by a 14 year old boy.

RESPONSE.

53. The Applicants admit this statement to the extent that:

- a) there was a hoax perpetrated by an Orlando, Florida, area youth (a 10th grade student)
- b) an extortion demand for one million dollars was made with a twenty-four hour response time.

The Applicants deny this statement with regard to:

- a) the AEC not being able to "forthwith assure the city government that the threat lacked credibility," and
- b) the "possibility that the material emanated from some foreign source" as being supportive of the hoax's credibility.

What, in fact, transpired was that the AEC, upon determination that the material claimed by the hoaxer had not been diverted and that the sketch of the device provided by the hoaxer as proof of his ability was in fact a meaningless schematic, determined that the extortion threat was likely a hoax and so informed the Orlando city authorities.

ADMISSION.

54. It is possible, following the successful theft of sufficient plutonium, that a credible atom bomb blackmail threat could occur.

RESPONSE.

54. The Applicants cannot truthfully admit or deny this statement. Knowledge that "a sufficient amount of plutonium" has been stolen does not provide sufficient information to assess the credibility of an atom bomb blackmail threat. Credibility would depend upon many factors, including circumstances of the theft and the form of plutonium stolen.

ADMISSION.

55. It is possible that, given the possession of a sufficient quantity of plutonium, a terrorist group might have the skills and equipment required to construct and explode an atom bomb with a yield of at least 100 tons (TNT equivalent).

ADMISSION.

56. It is possible that, with a sufficient quantity of plutonium, a terrorist group might have the skills and equipment required to construct and explode an atom bomb with a yield of at least 1000 tons (TNT equivalent).

RESPONSE.

55 and 56. The Applicants admit these statements given the possession of a sufficient quantity of plutonium. However, it is the Applicants' position that the probability that such skills and equipment will be available to a terrorist group is low.

ADMISSION.

57. The Applicant has received a copy of the NRC Staff's response to the Sixth and Eighth Set of Interrogatories to the NRC Staff, propounded by NRDC, et al.

RESPONSE.

57. The Applicants admit this statement.

ADMISSION.

58. In the Preamble to the Applicants' response to NRDC, et al.'s Interrogatories V through X-II of the Eighth Set, the Applicant truthfully stated:

In general, while the regulatory responsibilities of NRC and the developmental responsibilities of the Applicant (ERDA) must be clearly separated, the activities of the two agencies toward improved safeguards will be coordinated. It is the Applicant's policy that there be parity between safeguards in the private sector and in the government sector. To secure parity, the Applicant, in accordance with the provisions of the Energy Reorganization Act of 1974 (PL 93-438), consults and coordinates with NRC planning related to threats, theft and sabotage of special nuclear material (Section 204). Thus will the Applicant comply not just with the letter of license conditions, but also with their spirit, since the Applicant will be party to evolution of those requirements. In particular, the Applicant will make its experience in safeguards system design and operating experience available to the industry and to NRC.

RESPONSE.

58. The Applicants deny this statement. See the preamble to updated Responses to NRDC's Eighth Set of Interrogatories, V - XIII.

ADMISSION.

59. Regardless of the NRC Staff responses to NRDC, et al.'s Interrogatories, regardless of the coordination between ERDA and NRC on safeguard matters, and regardless of the fact that the CRBR will be licensed under NRC safeguard regulations, the Applicant adheres to the response given to the admissions 3, 4, 5, 13, 15, 16, and 18 on Contention 5, namely:

The Applicants cannot truthfully admit or deny this statement. The Applicants do not possess sufficient information concerning NRC's internal deliberative process and the parameters of the inquiry conducted by NRC with regard to this topic to make such a determination.

RESPONSE.

59. The Applicants admit this statement.

ADMISSION.

60. Regardless of the NRC Staff response (3 and 9) to Part III of the Sixth Set of Interrogatories propounded by NRDC, et al., the Applicant adheres to the response given to admissions 14 and 19 on Contention 5.

RESPONSE.

60. The Applicants admit this statement.

ADMISSION.

61. In the response to Interrogatory XI:1.4 of the Eighth Set of Interrogatories to the Applicant propounded by NRDC, et al., the Applicant truthfully stated:

The Applicants' posture with respect to guard forces is that they are engineered to meet credible external/internal threats.

RESPONSE.

61. The Applicants deny this statement. See Updated Response to NRDC's Eighth Set of Interrogatories, XIII, 4.

ADMISSION.

62. Regardless of the Applicants' statement quoted in Admission 61, the Applicant adheres to the response given for Admission 28 on Contention 5, wherein the Applicant denies that guard forces should be engineered to meet credible external/internal threats.

RESPONSE.

62. The Applicants can neither admit nor deny this statement. See Response 24 above, and updated Answer XIII .4 to NRDC's Eighth Set of Interrogatories to Applicants.

ADMISSION.

63. In the response to Interrogatory XIII.4 of the Eighth Set to the Applicant propounded by NRDC, et al., the Applicant truthfully stated:

The Applicant's posture with respect to guard forces is that they are engineered to meet the credible external/internal threats. In order to assure that guard forces remain effective in meeting postulated threats, their response adequacy is tested routinely as a force...

RESPONSE.

63. The Applicants deny this statement. See Updated Response to NRDC's Eighth Set of Interrogatories, XIII, 4.

ADMISSION.

64. At the present time, included in the credible external threats mentioned in the quote in Admission 61, as stated in the Preamble to the Applicant's response to Interrogatories V through XIII of the Eighth Set is the threat of a group of less than 10 well-trained outsiders armed with automatic weapons and assisted by a single insider.

RESPONSE.

64. The Applicants deny this statement. See Response 61.

ADMISSION.

65. The maximum number of well-trained outsiders armed with automatic weapons in the spectrum of credible threats is (select one):

- (a) 1
- (b) 2
- (c) 3
- (d) 4
- (e) 5
- (f) 6
- (g) 7
- (h) 8
- (i) 9

RESPONSE.

65. The Applicants cannot truthfully admit or deny this statement. There can be no singular definition of a maximum number in the spectrum of credible threats since:

- a) the threat is dynamic in nature and reflects changing socio-economic political conditions, and
- b) the range of numbers of individuals within the spectrum of credible threats is dependent on the type of of scenario being considered.

ADMISSION.

66. The maximum number of well-trained outsiders armed with automatic weapons in the spectrum of postulated threats against which the response adequacy of the guard forces are tested is (select one):

- | | | |
|-------|--------|----------|
| (a) 1 | (g) 7 | (m) 13 |
| (b) 2 | (h) 8 | (n) 14 |
| (c) 3 | (i) 9 | (o) 15 |
| (d) 4 | (j) 10 | (p) more |
| (e) 5 | (k) 11 | than 15 |
| (f) 6 | (l) 12 | |

RESPONSE.

66. The Applicants deny this statement. The response adequacy of the guard forces is not tested in isolation against a given number of "well-trained outsiders" but rather as but one element of the safeguards system at a given facility. The Applicants, in defending against specific threats, will deploy the various elements of his safeguards system consistent with the defense-in-depth concept which does not necessarily respond in kind to a given singular threat (in this instance, numbers of outsiders) but rather seeks to meet the performance objectives of defeating the attack and minimizing adverse consequences.

ADMISSION.

67. The number of insiders that comprise the spectrum of credible internal threats to which the guard forces are engineered involves (select one):

- (a) 1
- (b) 1 to 2
- (c) 1 to 3
- (d) 1 to more than 3

RESPONSE.

67. The Applicants deny this statement. See response to No. 66.

1. *Phragmites australis* (Cav.) Trin. ex Steud. (Common reed)

DOCKET NO. 50-537

1. That he is employed as Deputy Director, Office of Safeguards and Security, U.S. Department of Energy, and that he is duly authorized to answer 9/16/76 Admissions number 64.
2. That the above-mentioned and attached answer is true and correct to the best of his knowledge and belief.

SUBSCRIBED and SWORN to before me this 30 day of April, 1982.

My Commission expires _____, 19__.

PATRICIA G. CILIMBERG
NOTARY PUBLIC STATE OF MARYLAND
My Commission Expires July 1, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of)
Department of Energy)
PROJECT MANAGEMENT CORPORATION and,)
TENNESSEE VALLEY AUTHORITY)

DOCKET NO. 50-537

AFFIDAVIT OF Thomas H. Isaacs, being duly sworn, deposes and
says as follows:

1. That he is employed as Deputy Director, Office of Safeguards and Security, U.S. Department of Energy, and that he is duly authorized to answer 8/13/76 Admissions numbers 1, 2, 5, 9, 10, 11, 12, 17, 23, and 27 and 9/16/76 Admissions numbers 46, 48, 51, 52, 53, 54, 57, 58, 59, 60, and 65.
2. That the above-mentioned and attached answers are true and correct to the best of his knowledge and belief.

Thomas H. Isaacs
Signature

SUBSCRIBED and SWORN to before me this 29 day of April, 1982.

Joseph P. Indurri
Notary Public

My Commission expires March 30, 1984

JOSEPH P. INDURRI
Notary Public, State of New York
County of Franklin
Commission Expires March 30, 1984

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of ,)
Department of Energy ,)
PROJECT MANAGEMENT CORPORATION and,)
TENNESSEE VALLEY AUTHORITY ,)

DOCKET NO. 50-537

AFFIDAVIT OF William A. Higinbotham, being duly sworn, deposes and
says as follows:

1. That he is employed as Senior Scientist, Department of Nuclear
Energy, Brookhaven National Laboratory, and that he is duly
authorized to answer 9/16/76 Admissions number 47.
2. That the above-mentioned and attached answer is true and correct
to the best of his knowledge and belief.

William A. Higinbotham
Signature

SUBSCRIBED and SWORN to before me this 29 day of April, 1982.

Joseph P. Indussi
Notary Public

My Commission expires March 30, 1984.

JOSEPH P. INDUSSI
Notary Public
New York
Commission Expires March 30, 1984

UNITED STATES OF AMERICA

In the matter of

Department of Energy

PROJECT MANAGEMENT CORPORATION and,)

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-537

AFFIDAVIT OF Major General William W. Hoover, USAF, being duly sworn,
deposes and says as follows:

1. That he is employed as Deputy Assistant Secretary for Military Application, U.S. Department of Energy, and that he is duly authorized to answer 8/13/76 Admissions numbers 30 and 32, and 9/16/76 Admissions numbers 39-45, 55, and 56.

William W. Homan
Signature

SUBSCRIBED and SWORN to before me this 28 day of April, 1982.

Notary Public

My Commission expires _____, 19__.

PATRICIA G. CHURCH
NOTARY PUBLIC STATE OF MARYLAND
My Commission Expires July 1, 1992

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of
UNITED STATES DEPARTMENT OF ENERGY
PROJECT MANAGEMENT CORPORATION
TENNESSEE VALLEY AUTHORITY
(Clinch River Breeder Reactor Plant)

Docket No. 50-537

CERTIFICATE OF SERVICE

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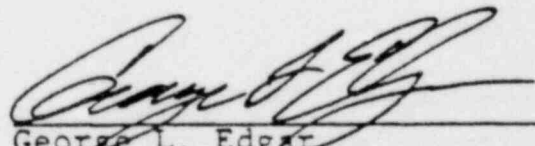
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DATED: April 30, 1982

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