

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Director, Office of Nuclear Reactor Regulation

In the Matter of)
)
THE CLEVELAND ELECTRIC ILLUMINATING)
COMPANY, ET AL.) Docket Nos. 50-440/441
) 2.206 Petition
(Perry Nuclear Power Plant, Units 1)
and 2))
_____)

PETITION FOR IMMEDIATE ACTION TO RELIEVE
UNDUE RISK POSED BY THE INADEQUATE SEISMIC
DESIGN OF THE PERRY NUCLEAR POWER PLANT

I. INTRODUCTION

Pursuant to 10 CFR 2.206, the Ohio Citizens for Responsible Energy, Inc. ("OCRE") hereby petitions the Director, Office of Nuclear Reactor Regulation, to take immediate action to relieve undue risks to the public health and safety posed by the inadequacy of the seismic design of the Perry Nuclear Power Plant. OCRE reserves the right to reply to any and all responses to this petition which the Cleveland Electric Illuminating Company may submit and to have such replies considered by the Director before a decision is rendered on this Petition.

II. DESCRIPTION OF PETITIONER

Petitioner OCRE is a private, nonprofit corporation organized under the laws of the State of Ohio. OCRE specializes in research and advocacy on issues of nuclear

reactor safety and has as its goal the promotion and application of the highest standards of safety to such facilities. OCRE was an intervenor in the operating license proceeding for the Perry Nuclear Power Plant. Members of OCRE live and own property within 15 miles of Perry.

III. GROUNDS FOR RELIEF

On January 31, 1986 an earthquake of magnitude 5.0 occurred with an epicenter about 10 miles south of the Perry Nuclear Power Plant. Concerned about the implications of seismicity in close proximity to PNPP, OCRE retained a consultant, Dr. Yash P. Aggarwal, to research the matter. Dr. Aggarwal's conclusions, presented in the Affidavit of Dr. Yash P. Aggarwal and associated report, "Seismicity and Tectonic Structure in Northeastern Ohio: Implications for Earthquake Hazard to the Perry Nuclear Power Plant", attached and incorporated herein as Appendix A, are that the January 1986 earthquake and historical seismicity can be associated with a tectonic structure revealed by magnetic data; that this fault, which probably passes within a few miles of PNPP, is capable of generating much larger earthquakes; that a magnitude 6.5 earthquake is a realistic possibility for the purposes of determining the proper Safe Shutdown Earthquake for Perry; and that the present SSE of $m_b = 5.3 \pm 0.5$ does not provide the margin of safety required for nuclear power plants.

These conclusions reveal that PNPP is in a state of regulatory non-compliance, and, as such, poses an undue risk to

the health and safety of the public. Specifically:

1. Licensees have failed to comply with the requirements of 10 CFR 100, Appendix A, Part IV, "Required Investigations", in that they have not identified and evaluated all tectonic structures in the region surrounding the site (Part IV.(a)(2)); they have not correlated epicenters or locations of highest intensity of historically reported earthquakes with tectonic structures (Part IV.(a)(6)); and they have not conducted a reasonable investigation, using suitable geologic and geophysical techniques, of all faults in the region to determine whether they are to be considered as capable faults (Part IV.(a)(7)).

2. Licensees have failed to comply with the requirements of 10 CFR 100, Appendix A, Part V, "Seismic and Geologic Design Bases", in that they have failed to evaluate the maximum earthquake potential associated with tectonic structures in the region, applying the procedures of Part V in a conservative manner, nor have they assumed that the epicenters of the earthquakes of greatest magnitude related to the tectonic structure are situated at the point on the structure closest to the site (Part V.(a)(1)); and as a result, the present SSE for PNPP is insufficient.

3. Licensees have failed to comply with 10 CFR 50, Appendix A, General Design Criterion 2, "Design Bases for Protection Against Natural Phenomena", and 10 CFR 100, Appendix A, Part

VI, "Application to Engineering Design," in that they have not demonstrated that systems, structures, and components necessary to assure (i) the integrity of the reactor coolant pressure boundary, (ii) the capability to shut down the reactor and maintain it in a safe condition, and (iii) the capability to prevent or mitigate the consequences of accidents, including but not limited to the 8x8 fuel spacer (see Appendix B attached and incorporated herein), can withstand the vibratory ground motion resulting from a near-field magnitude 6.5 earthquake, including aftershocks and applicable concurrent functional and accident-induced loads, and remain functional at all stages of their design life.

4. Licensees have failed to comply with 10 CFR 50, Appendix A, General Design Criterion 2, "Design Bases for Protection Against Natural Phenomena", and 10 CFR 100, Appendix A, Part VI, "Application to Engineering Design," in that they have not demonstrated that systems, structures, and components necessary to assure (i) the integrity of the reactor coolant pressure boundary, (ii) the capability to shut down the reactor and maintain it in a safe condition, and (iii) the capability to prevent or mitigate the consequences of accidents, including but not limited to the 8x8 fuel spacer (see Appendix B attached and incorporated herein), can withstand the vibratory ground motion resulting from that earthquake which appropriate geologic and geophysical research, and conservative application of the procedures of Part V of 10 CFR 100 Appendix A, reveal to be the proper SSE, including aftershocks and applicable

concurrent functional and accident-induced loads, and remain functional at all stages of their design life.

5. Licensees have failed to comply with the requirements of 10 CFR 100, Appendix A, Part V.(a)(2) in that the Operating Basis Earthquake for PNPP is insufficient; licensees have not demonstrated that plant features necessary for continued operation without undue risk to the health and safety of the public can withstand the maximum vibratory ground motion which appropriate geologic and geophysical research, and conservative application of the procedures of Part V, reveal to be appropriately associated with the proper OBE, and remain functional at all stages of their design life.

IV. RELIEF REQUESTED

Because this lack of compliance with the NRC's regulations raises substantial health and safety issues (see Northern Indiana Public Service Co. (Bailly Generating Station, Nuclear-1), CLI-78-7, 7 NRC 428, 433 (1978), aff'd sub nom. Porter County Chapter v. NRC, 606 F.2d 1363 (D.C. Cir. 1979), the granting of relief is appropriate. OCRE requests that:

1. The operating license for Perry Unit 1 and the construction permit for Perry Unit 2 be suspended.
2. Prior to reinstating the Perry Unit 1 operating license and the Perry Unit 2 construction permit:

(a) the Cleveland Electric Illuminating Company should be required to engage in appropriate geologic and geophysical research, including but not limited to the recommended confirmatory studies set forth at pp. 25-26 of the report "Seismicity and Tectonic Structure in Northeastern Ohio: Implications for Earthquake Hazard to the Perry Nuclear Power Plant", for the purpose of determining the appropriate SSE. In accordance with the recommendation therein, the unprocessed data from such research should be made available to disinterested investigators;

(b) CEI must evaluate whether applicable systems, structures, and components important to safety can withstand and remain functional, throughout their design lives, the vibratory ground motion (and concurrent normal and accident loads) resulting from (i) a near-field magnitude 6.5 earthquake; and (ii) the earthquake which appropriate geologic and geophysical research reveals to be the proper SSE for Perry. Should these systems, structures, and components, as built and installed in the plant, be unable to withstand either the magnitude 6.5 earthquake or the appropriate SSE, corrective actions, including redesign and/or replacement, must be taken such that these seismic events can be withstood;

(c) In every other respect, CEI must take corrective actions to remedy all areas of noncompliance set forth in this petition;

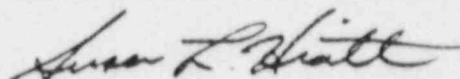
(d) a formal, public adjudicatory hearing should be held to determine whether the corrective actions taken are sufficient to achieve a level of safety that ensures that plant operation will not pose undue risk to the health and safety of the

public; and

(e) all changes found by the hearing board to be necessary to achieve that level of safety should be fully implemented at Perry Unit 1 and incorporated as conditions in the construction permit of Unit 2.

3. Unless the conditions enumerated in paragraph 2. above are met, the operating license for Perry Unit 1 and the construction permit for Perry Unit 2 should be revoked.

Respectfully submitted,



Susan L. Hiatt
OCRE Representative
8275 Munson Road
Mentor, OH 44060
(216) 255-3158

DATED: JAN. 22, 1988

APPENDIX A

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Director, Office of Nuclear Reactor Regulation

In the matter of)
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THE CLEVELAND ELECTRIC) Docket No. 50-440/441
ILLUMINATING CO. ET AL.) 2.206 Petition
)
(Perry Nuclear power)
Plant, Units 1 and 2)
)

AFFIDAVIT OF DR. YASH P. AGGARWAL

STATE OF NEW YORK)
) ss.:
COUNTY OF *Rockland*

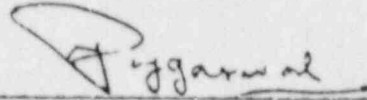
I, YASH P. AGGARWAL, being duly sworn according to law, do hereby state the following as true:

- 1) I am president of Sensearth, Inc. Sensearth, Inc. is a corporation incorporated in the State of New York and engaged in the business of providing consulting services in the field of Geophysics, especially pertaining to earthquake hazard related problems. A statement of my professional qualifications is attached hereto as Exhibit A.
- 2) I am responsible for the preparation of the report entitled "Seismicity and Tectonic Structure in Northeastern Ohio: Implications for Earthquake Hazard to the Perry Nuclear Power Plant." This report is true and correct to the best of my knowledge and belief. (Report attached as Exhibit B and incorporated herein).
- 3) Based upon a recent review of seismological and geophysical data for northeastern Ohio (as documented in the above-mentioned report), it is my professional opinion that an earthquake of magnitude 6.5 or larger is probable in the vicinity of the Perry Nuclear Power Plant.
- 4) The design basis of the Perry Nuclear Power Plant is a magnitude 5.3 + or - 0.5 or a Modified Mercalli Intensity VII earthquake. Given my findings, it is my professional opinion

that the Safe Shutdown Earthquake for PNPP should be substantially larger than the design earthquake used for PNPP.

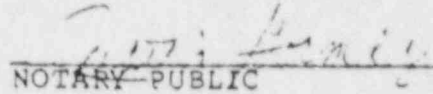
5) Affiant further sayeth naught.

Dated: 6/9/87



Yash P. Aggarwal

Sworn to and subscribed before me, a Notary Public, on this 9 day of June, 1987, at New City, New York.


NOTARY PUBLIC

JUDITH GORMLEY
NOTARY PUBLIC, STATE OF NEW YORK
No. 4780589
Qualified in Rockland County
Commission Expires 6/27/89

EXHIBIT A

CURRICULUM VITAE

YASH PAL AGGARWAL

Business Address

SENSEARTH Inc., 17 Tarry Hill Drive, New City, N.Y. 10956

(914) 6341980

Position: President

Home Address

2 Rookery Circle, New City, N.Y. 10956

Education

Ph.D. Seismology, Columbia University, 1975

M.Sc. Geophysical Engineering, Institut de Physique du Globe
Strasbourg, France, 1970

B.Sc. University of Strasbourg, France, 1966
(Math. & Physics Major)

B.Sc. Fergusson College, University of Poona, India, 1962
(Physics Major)

Awards and Scholarships

UNESCO support to study the Rift Valley in Kenya, 1970

French Government Scholarship, 1964-1970

Best student award, Nairobi, Kenya, 1958

Professional Activities

Member American Geophysical Union

Expert witness and consultant to the State of New York on earthquake
related problems, 1976-1977

Consultant to the Govt. of Venezuela, earthquake hazard to large
engineering projects, 1980-1985

Consultant to the Town of Clakstown, N.Y., on Quarry blasts related
problems, 1985

- 1971 Microearthquakes and the Rift Valley in Kenya (Master's Thesis, in French), University of Strasbourg, France, 1-57 pp.
- 1971 A microearthquake survey in Kenya, with P. Molnar, Bull. Seismol. Soc. Am., 61, no. 1, 195-201.
- 1972 P and S travel times in the Tonga-Fiji region: A zone of low velocity in the uppermost mantle behind the Tonga Island arc, with B. Muawia and B. Isacks, J. Geophys. Res., 77, no. 2, 6427-6434.
- 1972 New results in the field of earthquake prediction, Proceedings of the Eleventh Annual Conference on Recent Advances in Physics, Chapel Hill, 59-63.
- 1972 The Adirondacks, New York, earthquake swarm of 1971 and tectonic implications, with M. L. Sbar and J. Armbruster, Bull. Seismol. Soc. Am., 62, no. 5, 1303-1317.
- 1973 Premonitory changes in seismic velocities and prediction of earthquakes, with L. R. Sykes, J. Armbruster and M. L. Sbar, Nature, 241, 101-104.
- 1973 Earthquake prediction: A physical basis, with C. H. Scholz and L. R. Sykes, Science, 181, 803-810.
- 1974 Can we predict earthquakes, Science Today, 13-17. A Times of India Publication, Bombay, India, February 1974.
- 1975 Spatial and temporal variations in t_0/t , and in P-wave residuals at Blue Mountain Lake, New York: Application to earthquake prediction, with L. R. Sykes, D. Simpson and P. G. Richards, J. Geophys. Res., 80, no. 5, 718-732.
- 1975 Earthquake prediction: Dilatancy-fluid diffusion mechanism of earthquake precursors (review paper), Encyclopedia Universalis, Paris, France (in French).
- 1977 Testimony on behalf of the State of New York, before the Atomic Safety and Licensing Appeal Board, NRC, concerning Indian Point Units, 1, 2, and 3, filed February 25, 1977.
- 1978 Earthquakes, faults and nuclear power plants in southeastern New York-northern New Jersey, with L. R. Sykes, Science, 200, 425-429.
- 1980 Seismicity and tectonics of Philippine Islands, with H. K. Acharya, J. Geophys. Res., 85, 3239-3250.

- 1981 Seismotectonics of northeastern North America and adjacent Canada, with J.-P. Yang, J. Geophys. Res., 86, 4981.
- 1981 Present-day tectonics of the southeastern Caribbean and northern Venezuela, with O. Perez, J. Geophys. Res., 86, 10791.
- 1981 Investigaciones sismológicas en el occidente de Venezuela para las consideraciones sísmicas en el Proyecto Uribante-Caparo, FUNVISIS, Caracas, Nov. 1981, pp. 1-14.
- 1982 Sismos locales registrados por la Red Sismológica de Uribante-Caparo: Implicaciones para el diseño antisísmico de las presas y las probabilidades de sísmicidad inducida, FUNVISIS, Caracas, Marzo, 1982.
- 1984 Actividad sísmica en la región de Uribante-Caparo, Enero 1983 - Marzo 1984, FUNVISIS, Caracas, Mayo 1984.
- 1984 Actividad sísmica en la región de Uribante-Caparo, Abril - Agosto 1984, FUNVISIS, Caracas, Oct. 1984.
- 1984 Long-term seismic behavior of the focal and adjacent regions of great earthquakes during two successive shocks, with O. Perez and C. Scholz, J. Geophys. Res., in press.
- 1985 Ground vibrations and airblasts generated by blasting at Trap Rock Quarry: Seismological, Legal, and Health and Safety Aspects. Report to the Town Board, Town of Clarkstown, Rockland Co., N.Y.