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RELATED CORRESPONDENCE

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
CAROLINA POWER & LIGHT COMPANY)	
and NORTH CAROLINA EASTERN)	Docket No. 50-400 OL
MUNICIPAL POWER AGENCY)	
)	
(Shearon Harris Nuclear Power)	
Plant))	

APPLICANTS' SUPPLEMENTAL RESPONSE
TO EDDLEMAN INTERROGATORY NO. 57-C-3-3(b)

INTERROGATORY NO. 57-C-3-3(b): Have you (i) conducted any tests (ii) collected any information (iii) known any information, concerning the ability of each notification method you will use for Harris accidents at night, especially between 1 am and 6 am, to awaken persons with the EP2?

RESPONSE: Applicants have not conducted tests and have not collected information specific to the capabilities of different notification methods at night. NUREG-0654 was

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utilized as guidance in designing the notification system within the Harris EPZ. NUREG-0654 addresses the requirements for 24-hour notification by siren outdoor warning systems. It has been demonstrated that nighttime ambient background noise is substantially lower than daytime.

Dated: September 20, 1984.

Respectfully submitted,



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Delissa A. Ridgway
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Hill Carrow
CAROLINA POWER & LIGHT COMPANY
P.O. Box 1551
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Counsel for Applicants

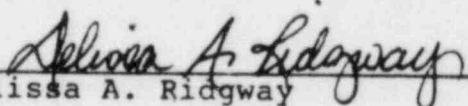
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CERTIFICATE OF SERVICE

I hereby certify that copies of "Applicants' Supplemental Response To Eddleman Interrogatory No. 57-C-3-3(b)" were served this 20th day of September, 1984, by deposit in the U.S. mail, first class, postage prepaid, upon the parties listed on the attached Service List.



Delissa A. Ridgway

Date: September 20, 1984

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NUCLEAR REGULATORY COMMISSION

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SERVICE LIST

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University of Minnesota
Minneapolis, Minnesota 55455

Spence W. Perry, Esquire
Associate General Counsel
FEMA
500 C Street, S.W., Suite 480
Washington, D.C. 20740

Resume of:

Dr. M. Reada Bassiouni
Principal Consultant

Education

Syracuse University, Syracuse, New York -
Ph.D. in Mechanical Engineering, Major: Acoustics (1976)

Syracuse University, Syracuse, New York -
Selected courses in Business Administration

Carleton University, Ottawa, Ontario, Canada -
M.E. in Mechanical Engineering (1972)

Alexandria University, Alexandria, Egypt -
B.S. in Mechanical Engineering (1969)

Technical Societies

National Forensic Center -
chosen as an expert in acoustics, noise and vibration control

Institute of Noise Control Engineering (INCE) - member

American Society of Testing Materials (ASTM) - member

American Society of Mechanical Engineers (ASME) - member

Acoustical Society of America (ASA) - member

Detailed Experience Record

1980-
Present ACOUSTIC TECHNOLOGY, INC.
 BOSTON, MASSACHUSETTS

Founded Acoustic Technology, Inc. (ATI) and is the principal technical consultant in acoustics, vibration, and noise control for utilities, manufacturers, and agencies. His area of specialization has been design and implementation of prompt notification warning systems required by NUREG-0654/FEMA REP-1, Appendix 3. As an acoustic expert, he has witnessed and conducted various siren performance tests in conjunction with determining the actual siren acoustic capabilities for utilities and siren manufacturers. Under his direction ATI developed a computer model for prediction of siren acoustic coverage for varying meteorological and ground conditions.

Also, he has had an active role in field testing installed warning systems including documentation and testifying results for the NRC. Under his technical direction ATI has provided consulting services to the following nuclear utilities:



ACOUSTIC TECHNOLOGY INC.

1. Arizona Public Service Company
Palo Verde 1, 2, 3, Nuclear Generating Stations
2. Cincinnati Gas & Electric Company
Wm. H. Zimmer Nuclear Power Station
3. Florida Power & Light Company
Turkey Point Power Plant
St. Lucie Power Plant
4. GPU Nuclear Corporation
Three Mile Island Nuclear Power Station
5. Jersey Central Power & Light
Oyster Creek Nuclear Generating Station
6. Louisiana Power & Light
Waterford-3 Nuclear Station
7. Mississippi Power & Light
Grand Gulf Nuclear Station
8. Omaha Public Power District
Fort Calhoun Nuclear Power Station
9. Public Service Electric & Gas Company
Salem Nuclear Generating Station
10. Rochester Gas and Electric Corporation
R.E. Ginna Nuclear Power Station
11. Sacramento Municipal Utility District
Rancho Seco Nuclear Generating Station
12. South Carolina Electric & Gas Company
V.C. Summer Nuclear Power Station
13. Toledo Edison Company
Davis-Besse Nuclear Power Station
14. Virginia Electric & Power Company
Surry Station
North Anna Station
15. Gulf States Utilities Co.
River Bend Station
16. Public Service Indiana
Marble Hill Nuclear Generating Station
17. Duquesne Light Company
Beaver Valley Nuclear Power Station



18. Philadelphia Electric Company
Limerick Generating Station
19. Duke Power Company
Catawba Nuclear Station
20. Indiana & Michigan Electric Company
Donald C. Cook Nuclear Station
21. Illinois Power Company
Clinton Power Station
22. Carolina Power & Light Company
H. B. Robinson Plant
Brunswick Steam Electric Plant
Shearon Harris Nuclear Power Plant

Additionally, Dr. Bassiouni has been called upon as an expert witness by many legal firms. He has had extensive experience in analyzing hearing damage claims and OSHA violations which require testing and measurements of high noise levels and determination of their effects on humans. He has also conducted acoustic analyses of tape recordings to identify recorded voices and tape tampering. Dr. Bassiouni has prepared and reviewed environmental noise impact statements. His activities include computer analysis and advanced field measurements. He has performed evaluations of airport noise impacts due to changes in air traffic volume.

1976-1980

**STONE & WEBSTER ENGINEERING CORPORATION (S&W)
BOSTON, MASSACHUSETTS**

- a. Acoustic Specialist for the Prompt Notification System required by NUREG-0654/FEMA REP-1 Appendix 3. Responsible for computer modelling and ambient noise surveying and support of siren system design.
- b. Noise control engineering for nuclear and fossil-fueled power projects to meet the Occupational Safety and Health Act (OSHA) criteria, property line sound level regulations imposed by local regulatory agencies or individual plant criteria selected to prevent noise complaints from the community.
- c. Acting as a consultant to diagnostic vibrations and noise measurements to evaluate equipment performance deviation for existing plants.
- d. Preparing noise control specifications for new equipment, limiting the noise to allowable levels such that the resultant sound level in the plant area does not exceed the OSHA regulations.



ACOUSTIC TECHNOLOGY INC.

- e. Designing and developing noise control devices for dominant noise sources within the plant.
- f. Selecting the acoustical materials to control in-plant and exterior sound levels.
- g. Measurements, predictions, and evaluation of noise control data.

Dr. Bassiouni performed work for the following clients:

- 1. Cincinnati Gas & Electric
W.H. Zimmer Nuclear Power Station
- 2. Baltimore Gas & Electric
Calvert Cliffs Nuclear Power Station
- 3. Occidental Petroleum
Geothermal Power Plant
- 4. Great Northern Paper Company
Millinocket, Maine
- 5. Atlantic City Electric Company
Deep Water Station - Return to Coal Firing
- 6. Stone & Webster Engineering Corporation
Reference Nuclear Power Plant (RNPP)
- 7. Texaco, Inc.
Light Olefins Unit, Port Arthur, Texas
- 8. Sacramento Municipal Utility District (SMUD)
Geothermal Power Plant
- 9. Virginia Electric & Power Company
North Anna Unit Nos. 3 and 4
- 10. Duquesne Light Company
Beaver Valley Power Station - Unit No. 2
- 11. Niagara Mohawk Power Corporation
Nine Mile Unit 2
- 12. Power Authority of the State of New York
Greene County Projects



1975-1976

**AVCO EVERETT RESEARCH LABORATORY, INC.
EVERETT, MASSACHUSETTS**

Senior Acoustic Scientist

Duties consisted of the following:

1. Experimental acoustic design for laser systems. Acoustic elements design and material compatibility and acoustic properties testing.
2. Design and analysis of special design acoustic mufflers and silencers.

1975

**TERRY CORPORATION, a subsidiary of INGERSOLL-RAND COMPANY
WINDSOR, CONNECTICUT**

Noise Consultant

Duties consisted of the following:

1. Developed noise data for use by marketing in presenting and guaranteeing noise levels to customers.
2. Developed practical acoustic enclosure systems for use on turbine and gears.
3. Analyzed existing products (single and multistage turbines and gear units) to determine compliance with the national noise standards.
4. Ensured that OSHA noise standards were met in the new product design.
5. Reviewed new industrial noise standards applied to the company products.
6. Determined the impact of existing and proposed noise control legislation and regulations on corporate activities.

1972-1975

**SYRACUSE UNIVERSITY
SYRACUSE, NEW YORK**

Mechanical and Aerospace Engineering Department

Duties consisted of the following:

1. Conducted extensive acoustic measurements using various techniques.
2. Performed supporting diagnostic techniques for the associated flow field.



ACOUSTIC TECHNOLOGY INC.

3. Acoustic data reduction methods, data analysis, and results reporting.
4. Investigated and evaluated noise reduction methods.

1971

CARLETON UNIVERSITY
OTTAWA, ONTARIO, CANADA
(AEROTHERMODYNAMICS DIVISION)

Research Assistant - Engineering Department

Fields: Fan and compressor acoustic design and tested acoustic liners

Instructor of Mechanical Engineering

Full and part-time Consulting Engineer in air conditioning and refrigeration systems, Alexandria, Egypt.

Publications

Authored:

1. "Outdoor Sound Propagation over Ground with Several Impedance Discontinuities"; Acoustical Society of America Paper; presented November 1982; Orlando, Florida

Co-authored the following:

1. "Prompt Siren Notification System Design" POWER ENGINEERING, March 1983
2. "Prediction and Experimental Verification of Far-field sound propagation over Varying Ground Surfaces" Internoise "83" paper.
3. "Acoustic and Flow Characteristics of Cold High-Speed Coaxial Jets," AIAA Paper No. 78-241, January 1978
4. "Supersonic Jet Noise Suppression by Coaxial Cold/Heated Jet Flows," AIAA Paper No. 76-507, July 1976
5. "Some Recent Developments in Supersonic Jet Noise Reduction," AIAA Paper No. 75-503, March 1975
6. "Potential of Coaxial Multi-Nozzle Configurations for Reduction of Noise from High Velocity Jets," Second Interagency Symposium of University Research in Transportation Noise, North Carolina University, 1974
7. "Reduction of Noise from Supersonic Jets by Coaxial Multi-Nozzle Schemes," Eighth International Congress on Acoustics, London, 1974

8. "Quarterly Progress Reports, Nos. 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14, submitted to Office of Noise Abatement, Department of Transportation, Washington, D.C.
9. "A High-Speed High-Temperature Flow Facility" Final report under Grant SSF (70)-25, submitted to New York State Science and Technology Foundation

