November 2, 1984

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
PHILADELPHIA ELECTRIC COMPANY	)	Docket Nos. 50-352
	)	50-353
(Limerick Generating Station, Units 1 and 2)	)	

NRC STAFF TESTIMONY OF THOMAS URBANIK, II
CONCERNING LIMERICK CONTENTION LEA-24/FOE-1

Q1. State your name and occupation.

A1. My name is Thomas Urbanik, II. I am an Associate Research Engineer associated with the Texas Transportation Institute of the Texas A&M University System, College Station, Texas.

Q2. Have you prepared a statement of your professional qualifications?

A2. Yes. A statement of my professional qualifications is attached to this testimony.

Q3. In what capacity are you testifying in this proceeding?

A3. I am testifying on behalf of the NRC staff, for which I serve as a subcontractor through the Battelle Pacific Northwest Laboratories which is responsible under contract to the Nuclear Regulatory Commission for reviewing evacuation time estimates of nuclear facilities.

Q4. Briefly summarize your experience with evacuation time estimate studies for nuclear facilities.

A4. I was principal author of NUREG/CR-1745, "Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones" (November 1980), which described the limitations of several methodologies and some alternatives for determining evacuation time estimates. Also, I provided input to the development of the current guidance for evacuation time estimate studies which appear in Appendix 4 to NUREG-0654, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (NUREG-0654/FEMA-REP-1, Rev. 1, November 1980). In addition, I reviewed the initial evacuation time estimate study submittals of approximately 52 operating and near term nuclear facilities for the NRC against the guidance of NUREG-0654/FEMA-REP-1, Revision 0, the results of which are published in NUREG/CR-1856, "An Analysis of Evacuation Time Estimates Around 52 Nuclear Power Plant Sites" (May 1981). I am currently reviewing revisions to evacuation time estimate studies and new submittals against NUREG-0654, Revision 1.

Q5. What is the purpose of this testimony?

A5. The purpose of this testimony is to address the LEA-24/FOE-1 contention which states:

> There is no assurance that plans for evacuation of the ten mile radius will not be impeded by traffic congestion in the vicinity of Marsh Creek State Park, Exton Area (involving Route 100) and Valley Forge Park, King of Prussia area.
>
> These areas should either be included in the Emergency Planning Zone or adequate plans for traffic control and

direction should be made to avoid adverse effects on EPZ evacuation.

Q6. Should plans be developed to assure that traffic outside the 10 mile Emergency Planning Zone will not impede evacuating traffic?

A6. Yes. Local plans should include traffic control outside the EPZ in the areas designated in the contention (i.e., Marsh Creek State Park, Exton Area, Valley Forge Park, and King of Prussia area) to provide priority to evacuating traffic and to control traffic on routes that are not a part of the primary (planned) traffic route. Contingency plans for closing or controlling the Pennsylvania Turnpike traffic also appears to be appropriate.

Q7. Is traffic beyond the EPZ unmanageable in Marsh Creek State Park, the Exton Area, Valley Forge Park and the King of Prussia area, and should the EPZ be expanded to account for traffic problems in these areas?

A7. No. Traffic beyond the EPZ is not an unmanageable problem in these areas, and the EPZ need not be expanded. The critical element for traffic outside the EPZ is establishement of traffic control points similar to those established for the EPZ.

Q8. Is the routine occurrence of traffic jams indicative of the inability to evacuate the area in a timely fashion?

A8. By way of background, neither the Commission's regulations nor guidance of NUREG-0654 establish a standard for timely evacuation. The purpose of evacuation time estimate studies is to indicate the range of times required

to evacuate the emergency planning zone under a limited number of commonly occurring events. In the event of an actual emergency, decisionmakers will have a good basis on which to make informed decisions based on actual conditions. It is not the intent of evacuation time estimate studies to include estimates of the exact conditions during an evacuation, but to indicate the sensitivity of the analysis to a limited number of commonly occurring events.

A secondary purpose of evacuation time estimate studies is to assist emergency planners in deploying resources during an evacuation. A prime example would be the use of traffic control at congested locations. Also, in some cases, special traffic control procedures might be used in a limited number of locations to reduce the evacuation time due to a bottleneck in the roadway network.

The projected evacuation time for the Limerick EPZ is generally about 5 hours or more. Significant traffic queueing (traffic jams) is going to occur during the evacuation. Traffic jams indicate a short-term capacity deficiency. With time, capacity catches up to demand and all vehicles are accommodated. Accordingly, the routine occurrence of traffic jams is not an indication of the inability to evacuate an area in a timely fashion.

February 1984

BIOGRAPHICAL DATA

URBANIK II, THOMAS
Program Manager, Texas Transportation Institute
Lecturer, Civil Engineering Department, Texas A&M University

Education

Ph.D., Civil Engineering, Texas A&M University, 1982.
M.S., Civil Engineering, Purdue University, 1971.
B.S., Civil Engineering, Syracuse University, 1969.
B.S., Forest Engineering, State University of New York, 1968.

Experience

Program Manager, Texas Transportation Institute, Texas A&M University System, 1983-Present.
Assistant Research Engineer, Texas Transportation Institute, Texas A&M University System, 1977-1983.
Lecturer, Civil Engineering, Texas A&M University, 1982-Present.
Traffic Engineer, City of Ann Arbor, Ann Arbor, Michigan, 1972-1976.
Transportation Planning Engineer, City of Ann Arbor, Ann Arbor, Michigan, 1971-1972.
Research Assistant, Joint Highway Research Project, Purdue University, 1970-1971.

Professional Licenses

Registered Professional Engineer, Texas and Michigan

Memberships

American Society of Civil Engineers
Institute of Transportation Engineers
Sigma Xi
Chi Epsilon

SIGNIFICANT REPORTS AND PUBLICATIONS

Traffic Engineering

Speed/Volume Relationships on Texas Highways, State Department of Highways and Public Transportation, Research Report 327-2F, Austin, Texas, October 1983.
Priority Treatment of Buses at Traffic Signals. Transportation Engineering, November 1977.
Priority Treatment of High-Occupancy Vehicles on Arterial Streets. State Department of Highways and Public Transportation, Report 205-5, 1977.
Evaluation of Alternative Concepts for Priority Use of Urban Freeways in Texas, 1977.
Driver Information Systems for Highway-Railway Grade Crossings. Highway Research Record Number 414, 1972.

Evacuation-Planning

An Independent Assessment of Evacuation Times For a Peak Population Scenario in the Emergency Planning Zone of the Seabrook Nuclear Power Station, U.S. Nuclear Regulatory Commission, NUREG/CR-2903, 1982.

CLEAR (Calculates Logical Evacuation And Response). A Generic Transportation Net-work Model for the Calculation of Evacuation Times Estimates, U.S. Nuclear Regulatory Commission, NUREG/CR-2504 October 1981.

Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones, U.S. Nuclear Regulatory Commission, NUREG/CR-1745, 1980.

Analysis of Evacuation Times Around 52 Nuclear Power Plant Sites. U.S. Nuclear Regulatory Commission, NUREG/CR-1856 Volume 1, 1980.

Hurricane Evacuation Demand and Capacity Estimation. Florida Sea Grant College, Report Number 33, 1980.

Texas Hurricane Evacuation Study. The Texas Coastal and Marine Council, 978.

Public Transportation

Intercity Bus Riders in Texas, Transportation Research Record 887, 1982.

The Intercity Bus Industry in the U.S. and Texas. State Department of Highways and Public Transportation, Technical Report 0965-1F,1981.

Bryan-College Station Energy Contingency Study. Metropolitan Planning Organization of Bryan-College Station, 1980.

Bryan-College Station Transit Improvement Plan. Metropolitan Planning Organization, 1979.

Ann Arbor Dial-A-Ride Project Final Report, Ann Arbor Transportation Authority, 1973.

Ann Arbor Dial-A-Ride Operations, Highway Research Board Special Report 136, 1973.

The Greater Lafayette Area Bus Transit Study. Joint Highway Research Project, Purdue University, 1971.

Elderly and Handicapped Transportation

Evaluation of Selected Human Services Transportation Providers. State Department of Highways and Public Transportation, 1980.

Cost-Effectiveness of Accessible Fixed-Route Buses in Texas. Technical Report 1061-1F, 1979.

Transportation of the Elderly and Handicapped in Texas: A Case Study. State Department of Highways and Public Transportation, Technical Report 1056-2F, 1979.

Total Accessibility Versus Equivalent Mobility of the Handicapped. Institute of Transportation Engineers, Compendium of Technical Papers, 49th Annual Meeting, 1979.

Survey of Vehicles and Equipment for Elderly and Handicapped Transportation. State Department of Highways and Public Transportation, Technical Report 1056-1, 1978.

Corpus Christi Elderly and Handicapped Transportation Study. City of Corpus Christi, Texas, 1978.

Expert Witness

Presented expert testimony before the Atomic Safety and Licensing Board, U.S. Nuclear Regulatory Commission, concerning evacuation times at several nuclear power plant sites including Three-Mile Island, Diablo Canyon, Indian Point, Seabrook and Shoreham.