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TESTIMONY OF ROBERT L. MORRIS

ON BEHALF OF THE UNION OF CONCERNED SCIENTISTS
AND THE NEW YORK PUBLIC INTEREST RESEARCH GROUP,
INC.

RELATING TO BOARD CONTENTIONS 3.1, 3.3, 3.6

JUNE 21, 1982

My name is Robert L. Morris, a registered professional engineer and traffic consultant, registered in eleven states including the State of New York. I have been qualified as an expert in my field in a number of jurisdictions, including the State of New York. My professional qualifications are appended to this statement.

I have reviewed reports concerning the Indian Point nuclear power station prepared by Parsons Brinckerhof Quade and Douglas, Inc. (hereinafter referred to as P-B), including "Evacuation Time Estimates for Areas Near the Site of Indian Point Power Plants" (January 31, 1980), "Methodology to Estimate Roadway Travel Time During Evacuations " (January, 1981), and "Methodology to Calculate Evacuation Travel Time Estimates for the Indian Point Emergency Planning Zone " (November, 1981). As a result of my review of these documents, I have the following comments.

1) The levels of service used by P-B, reportedly from the Highway Capacity Manual (H.C.M.) do not correspond with the H.C.M. For example, in the November

PP

1981 report, P-B states that:

... (S)peeds would be low, flow would be unstable, and there would be stoppages of momentary duration.

The H.C.M. clearly states that when speeds drop below 30 miles per hour, the level of service is F, with capacities ranging from a maximum value equal to level of service E down to zero. These slow speeds, in addition to the P-B description quoted above, can be roughly calculated using the P-B evacuation speed formula:

$$\frac{\text{free flow speed}}{0.25 (V/C)^4 + 1}$$

The free flow speed at level of service D (P-B's upper level) is 30-35 miles per hour (H.C.M.). Using P-B's adverse weather capacities in all of the links that cross the five mile circle, and assuming that 85% of the 31,681 vehicles within that circle would try to evacuate, the V/C would be:

$$\frac{0.85 \times 31,681}{11,240} = 2.4$$

and the evacuation speed, from the formula would be 3.2 - 3.8 miles per hour. Even using P-B's good weather capacities, which are questionable (representing the maximum values at level of service E in the H.C.M.), the average evacuation speed would be 19-22 miles per hour, also level of service F, not E. For both times and capacities, P-B should use level of service F, not E.

2) P-B has worked only with highway links, ignoring the traffic constraints of intersections. As a minimum, time penalties should be assigned to the link nodes, depending upon the number of vehicles that would be crossing or merging with the principal traffic flow.

3) The use by P-B of several computer runs to arrive at the best system balance is an appropriate technique for evaluating normal daily traffic conditions

where drivers can make decisions to avoid congestion. For an emergency evacuation, an unconstrained traffic assignment should be used.

4) P-B has ruled out factors such as the percentage of trucks and the type of terrain in its analysis. This is improper; the effect on capacity can be significant. Even if the normal proportion of trucks is minimal (there is no assurance of that), a fully loaded bus has the same operating characteristics as a large truck. If the proportion of trucks and buses is ten percent in rolling terrain, the capacity of a two-lane road would be reduced by almost 30 percent.

5) An emergency evacuation traffic analysis should be based on a worst case condition. As noted in the points listed above, P-B has made assumptions that are inconsistent with emergency conditions. For the purpose for which the reports were prepared, they have no validity. Standard traffic forecasting practice requires conservative assumptions to allow for unforeseen impediments to traffic flow in day-to-day operation. P-B's use of optimistic assumptions would be inappropriate in normal circumstances and is particularly inappropriate in planning for an emergency situation.

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Acting Assistant Commissioner of Traffic, Baltimore

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ORGANIZATIONS Past President, Washington Section
Past Chairman, Delegation to National Committee
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American Planning Association - Member
American Institute of Certified Planners

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Robert L. Morris

PROFESSIONAL QUALIFICATIONS

Registered Professional Engineer

Connecticut
Delaware
Florida
Kentucky
Maryland
New Jersey
New York
Ohio
Pennsylvania
Tennessee
Virginia

Member of the Bar

Maryland
U.S. Supreme Court

Qualified as Expert Witness, Traffic and Transportation

Connecticut
Delaware
District of Columbia
Louisiana
Maine
Maryland
Michigan
New Hampshire
New Jersey
New York
North Carolina
Ohio
Pennsylvania
Vermont
Virginia
Texas
Utah

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RESPONSIBLE STUDIES

Downtown Transportation, Circulation and Accessibility

Buffalo, New York
Chicago, Illinois
Clearwater, Florida
Fort Lauderdale, Florida
Kansas City, Missouri
Louisville, Kentucky
Salem, Virginia
Salt Lake City, Utah
Washington, D.C.

New Town Transportation Planning

Columbia, Maryland
Fort Lincoln, D.C.
Germantown, Maryland
Lysander, New York
Maumelle, Arkansas
Panther Valley, Pennsylvania
Reston, Virginia
Soul City, North Carolina
West Valley, Illinois

Parking Studies

Annapolis
Charles Center, Baltimore
Downtown Baltimore
Inner Harbor, Baltimore
Chicago
Johns Hopkins Hospital
Louisville
Vanderbilt University
Washington, D.C.
Williamsport, Pennsylvania

Shopping Center Traffic Planning

Various Locations in:

Delaware
Maryland
Pennsylvania
New Jersey
New York
Virginia

Pedestrian Studies

Oklahoma City
Salt Lake City
Washington, D.C.

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Responsible Studies (Continued)

Traffic Planning Studies

Falls Church, Virginia
Germantown, Maryland
Harristown, Pennsylvania
Judiciary Square, D.C.
Mattawoman, Maryland
Montgomery Village, Maryland

Traffic Impact Studies

District of Columbia
Delaware
Maryland
 Baltimore City
 Baltimore County
 Calvert County
 Carroll County
 Charles County
 Howard County
 Montgomery County
 Prince George's County
Massachusetts
New Jersey
North Carolina
Pennsylvania
Virginia

Site Access Studies

Philadelphia Bicentennial
Washington Visitors' Center
Battery Park City
Southwest Washington Employment Area
Suitland, Maryland

Restaurant Access Studies

Burger King
Gino's
Hamburger Hamlet
La Potagerie
Le Steak
Marriott
Roy Rogers

Chancery Studies *

Bangladesh
France
Italy
Japan
Philippines
Saudi Arabia

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Responsible Studies (Continued)

Hospital Access Studies

Johns Hopkins Medical Institutions
Vanderbilt University
Veterans Administration, Little Rock
Doctors Hospital, Washington, D.C.
Charleston, W. Va., Medical Center

Accident and Safety Studies

Connecticut
District of Columbia
Maryland
Pennsylvania
New York
Virginia

Transit Planning

Minibus in Downtown Washington
Columbia, Maryland
Bus Circulation Plan, Washington
Subway Alignment, Washington
Germantown Transit
Fairfax Minibus
I-270 Corridor

Highway Planning

Traffic Assignment, Jones Falls Expressway
Major Arterial Plan, Baltimore
Gravity Model Analysis, Baltimore
Prince George's Freeway Analysis
Montgomery County Arterials

Environmental Impacts

Connecticut
Iowa
Maryland
Massachusetts
Michigan
New Hampshire
North Carolina
Pennsylvania
South Carolina
Utah
Vermont
Virginia
Wisconsin

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Responsible Studies (Continued)

Model Cities Transportation Planning

Rochester, New York

Norfolk, Virginia

Demonstration Project Design

Minibus

F Street Plaza

Mass Transit Information

Traffic Laws and Ordinances Review and Analysis

Buffalo, New York

Macon, Georgia

Augusta, Georgia

Tallahassee, Florida

Middlesex, New Jersey

Jersey City, New Jersey

Right Turn on Red

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