

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

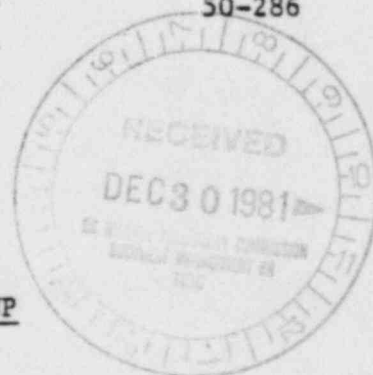
In the Matter of)

CONSOLIDATED EDISON COMPANY OF NEW YORK)
(Indian Point, Unit 2))

POWER AUTHORITY OF THE STATE OF NEW YORK)
(Indian Point, Unit 3))

enq
Docket Nos. 50-247
50-286

CONTENTIONS OF JOINT INTERVENORS
UNION OF CONCERNED SCIENTISTS
AND NEW YORK PUBLIC INTEREST RESEARCH GROUP



The Union of Concerned Scientists (UCS) and the New York Public Interest Research Group, Inc. (NYPIRG) submit the following contentions for litigation in this investigative adjudicatory proceeding on the safety of Indian Point Units 2 and 3. The contentions relate specifically to the questions posed by the Commission in its January 8, 1981, and September 18, 1981, Orders, and they are grouped according to the issues presented in the joint UCS/NYPIRG Joint Petition for Leave to Intervene in this proceeding.

UCS and NYPIRG have many of the same concerns in this proceeding and are therefore filing jointly as a means of expediting matters and to save time and avoid duplication. Whenever possible, Joint Intervenor UCS and NYPIRG will have the same spokesperson in the hearings, but they reserve

DS03
11/1

8112310239 811202
PDR ADDCK 05000247
G PDR

the right to be represented separately when and if the situation demands.

The Board will see that we have attempted to state these issues in the form of contentions that would be admissible in a normal licensing proceeding. We have done so because the Commission has ordered that 10 CFR Part 2 should govern the proceeding in most respects. However, the Commission has specified that "the Board will not be bound by the provisions of 10 CFR Part 2 with regard to the admission and formulation of . . . contentions" relating to the Commission's seven questions (Commission Memorandum and Order, September 18, 1981, revising footnote 4 to the January 8, 1981, Memorandum and Order). The Commission itself has delineated the issues that the Board is to consider. Any serious attempt to address the Commission's concerns requires that the Staff address all matters relevant to the issues that the Commission has raised, regardless of whether or not they appear in intervenors' contentions, and intervenors should be permitted to present any relevant information either in support of or contrary to the Staff's assertions in order to assure a complete record. Since this is an investigation, rather than an adjudication, the goal should be to obtain as much relevant information as possible. Accordingly, while intervenors are being required to submit contentions, this should be viewed by the Board as a means of assisting the organization and conduct of the hearing, and not as a means of restricting the information that any party might provide or as a means of restricting the scope of the investigation for which the Staff is responsible. The Staff must assure that the Board has before it the most complete information possible with respect to each of the Commission's issues, and all other parties should be encouraged to provide any probative information that they may have on any

of the issues, particularly if that information contradicts anything provided by the Staff or other parties.

CONTENTIONS

As previously stated, our contentions are organized according to the issues stated in our Joint Petition. We believe that the fifth issue relating to the individual and societal consequences of an accident at Indian Point, to be the single most important aspect of the consideration of the hazards of the plants and the site. However, when our issues are framed in terms of contentions, the question of consequences arises in several areas, so that we do not state specific contentions under the fifth issue. Nonetheless, we believe that proper conduct of this investigative proceeding requires the Board to adopt the following general question, with respect to which all parties may provide relevant information:

What are the individual and societal consequences of an accident at Indian Point (including accidents which exceed the design basis of the Indian Point units) to the health, safety, and property of the population surrounding the Indian Point site?

ISSUE I: Whether the emergency planning for the protection of the public in the event of an accident at Indian Point (including accidents which exceed the design basis of the Indian Point units) is adequate to protect the public health and safety.

This issue relates primarily to Question 3 as stated in the Commission's Order, with specific attention to emergency planning and the effectiveness or adequacy of emergency response within the plume exposure pathway emergency planning zone and the ingestion exposure pathway emergency planning zone as presently hypothesized and delineated. We will refer to the plume exposure pathway emergency planning zone and the ingestion exposure pathway emergency planning zone (as hypothesized and delineated in the New York State Radiological Emergency Response Plan, August 1981, pages IP-5 and IP-10 through IP-12) as the "plume EPZ" and the "ingestion EPZ", respectively. However, as indicated in our Contention II(B), we do not believe that these EPZ's comply with the Commission's regulations at 10 CFR 50.33(g), 10 CFR 50.47(c)(2), 10 CFR 50.54(s)(1), and 10 CFR Part 50, Appendix E, Section I, footnote 2. As reflected in our contentions, and as supported by the evidence that we will present to the investigatory Board, we believe that emergency planning for the Indian Point area is not adequate to protect the public health and safety.

CONTENTION I:

I(A). Emergency planning for Indian Point Units 2 and 3 is inadequate to protect the health and safety of the public because the existing plans do not conform to the requirements of 10 CFR 50.47, in that they do not meet any of the sixteen mandatory standards of 10 CFR 50.47(b).

BASIS FOR I(A):

- * The sixteen substantive standards at 10 CFR 50.47(b) must be met by each and every plan for which the standards are applicable. The language of 10 CFR 50.47(b) clearly states that "(t)he onsite and offsite emergency response plans for nuclear power reactors must meet the following standards . . .".
- * Both NRC and FEMA regard all 6 of these substantive standards as "essential for an adequate radiological emergency plan" [See, NUREG-0654, Rev. 1, November 1980, page 5].
- * 10 CFR 50.47(b)(1) is not met because the emergency plans fail to delineate the relationships of the licensees, the State and governments, and support organizations to the total planning and response effort. Further, the emergency response organizations (including the licensees, Federal, State, and Local governments, and support organizations) have failed to fully document the existence of appropriate letters of agreement with support organizations and agencies; moreover, where letters of agreement are provided, they are outdated (more than 1 year old), and fail to describe mutually agreed upon provisions for the exchange of information relevant to the provision of such emergency measures and services [Appendix A, Indian Point Unit 2 Emergency Plan, December 1980]. Thus, there is no reasonable assurance that the emergency plans have been integrated into a functional, total

plan, and there is no reasonable assurance that conflicts between the provisions of the various plans have been avoided.

- * 10 CFR 50.47(b)(2) is not met because the licensees have failed to demonstrate that each person in the line of succession for the "emergency coordinator" position is qualified and fully trained in order to adequately fulfill that role in an actual emergency. Further, the licensees have not committed to meet the "minimum staffing requirements" of Table B-1 of NUREG-0654, Rev. 1, November 1980, pages 37-38. The licensees have not demonstrated the prompt availability of sufficient operational, maintenance, supervisory, technical support, and administrative personnel to adequately respond to an accident, including accidents which are beyond the design basis of the Indian Point units.
- * 10 CFR 50.47(b)(3) is not met because the licensees have failed to make arrangements to participate in the Federal Radiological Monitoring and Assessment Program (FRMAP), nor have the licensees demonstrated that they have made arrangements with any other support organization that has the same capabilities as FRMAP. In addition, the plans generally fail to indicate in what time frames the expected emergency response support and resources will be available for implementation. There exist no criteria in the plans for use in determining the most efficient and most productive use (in terms of protecting the public health and safety) of available services and resources should such services and resources

become wholly or partially unavailable or should such services and resources be inadequate to respond to a particular emergency situation. Further, adequate diverse communications capabilities with all required offsite support organizations have not been provided to assure the availability of communications under such circumstances as loss of normal power, technical problems with commercial telephone service, and adverse weather affecting normal communications systems.

- * 10 CFR 50.47(b)(4) is not met because the licensees have failed to establish adequate "emergency action level" (EAL) criteria as provided for in Appendix 1 to NUREG-0654, Rev. 1, November 1980. Further, the licensees have provided no basis upon which there can be reasonable assurance that their specified EAL's constitute a sufficient set of parameters and action levels for all possible accidents. Absent such a basis, there can be no reasonable assurance that all accident sequences with offsite consequences will be timely recognized in order to permit the effectuation of the emergency response plans. In addition, there has been no demonstration that the EAL's chosen by the licensees adequately account for the lead times necessary to implement protective actions which will be required in response to the emergencies which caused the EAL's to be exceeded [See, William W. Chenault, et. al., Evacuation Planning in the TMI Accident, RS 2-8-34, January 1980, prepared by Human Sciences Research, Inc., for the Federal Emergency Management Agency; the report states that "(t)hose

charged with the 'scientific' analysis of a hazard will frequently not take account of the lead times required to execute population protection measures. That is, they will tend to decide when a causal agent has become dangerous to people--without allowing for the time required to react to the threat and protect people."; page 44].

- * 10 CFR 50.47(b)(5) is not met because the prompt notification capability (as required at 10 CFR Part 50, Appendix E, Section IV.D.3) has not been fully implemented. Moreover, the licensees have not provided reasonable assurance that the prompt notification system (even once it is fully installed) will be operable when it is needed in response to a radiological emergency at Indian Point Units 2 and 3 (there have been siren alerting system tests at several nuclear power plants in which a number of sirens have failed to function on demand). The content of EDS messages is insufficient to adequately assure proper response. Further, the proposed prompt notification system fails to provide adequate notice to non-English speaking residents of the plume EPZ, to the deaf and hearing-impaired, to members of the population with learning disabilities, "latch-key" children, and other special populations. Further, the annual distribution of emergency-related information required by Appendix E to 10 CFR Part 50, Section IV. D.2., has not been performed, nor have the materials proposed to be distributed been publicly released, thus preventing any consideration of the adequacy of such materials.

- * 10 CFR 50.47(b)(6) is not met because it has not been demonstrated that sufficient and diverse communications capabilities exist between and among the emergency response organizations to assure effective emergency response under a range of conditions, including heavy traffic on commercial communications, adverse weather, and loss of normal power sources (See, Post Exercise Assessment -- Exercise of the New York State and Oswego County Radiological Emergency Plans for Nine Mile Point Nuclear Power Station, September 30, 1981, attached to letter from Vincent Forde, Acting Regional Director, FEMA Region II to William C. Hennessy, Chairman, Disaster Preparedness Commission State of New York).
- * 10 CFR 50.47(b)(7) is not met because transients who may be in the plume EPZ during an accident are not adequately notified of the existing emergency response system and what they are expected to do in a radiological emergency. Further, the public education program is not adequately developed; see above under 10 CFR 50.47 (b)(5) . The number of transients for Westchester County alone is potentially ten to thirteen thousand persons (Memorandum dated February 18, 1981 from Joseph Caverly, Commissioner to David Smith, Office of the County Executive).
- * 10 CFR 50.47(b)(8) is not met because the licensees' emergency response facilities (Technical Support Center,

and Emergency Operations Facility) do not comply with applicable provisions of the regulatory guidance contained in NUREG-0696. Further, there has been no demonstration by the licensees that these facilities are sufficiently equipped and staffed to promptly and adequately respond to an accident at Indian Point (including accidents which exceed the design basis of the Indian Point units). In addition, there has been no demonstration that the emergency radiation monitoring capabilities of the emergency response organizations (in terms of equipment and trained staff members) is sufficient to permit a prompt and adequate response to such accidents (See, Post Exercise Assessment, op. cit., item I.8; also, Memorandum dated February 25, 1981 from Calvin E. Weber, Assistant Commissioner of Health to Anita S. Curran, Commissioner of Health, Westchester County). In NUREG-0396, the joint EPA/NRC Task Force on Emergency Planning took the position that "[A]cceptable values for emergency doses to the public under the actual conditions of a nuclear accident cannot be predetermined." The Task Force goes on to state, "The emergency actions taken in any individual case must be based on the actual conditions that exist and are projected at the time of an accident." [NUREG-0396, December, 1978, pages 2-3]. If this is the case (and we take the position that this is an incorrect and inadequate position), then the adequacy of local accident assessment capabilities is an essential

component of the emergency plans, since local governments will best know the real-time status of local conditions and capabilities. Indeed, the NRC has itself cited the licensee for Indian Point Unit 2 for "significant deficiencies" in its onsite emergency preparedness program, including "ineffective administration" of the program, "(i)ll-defined emergency organization and nonspecific assignment of personnel", "improperly equipped emergency facilities, and lack of onsite emergency equipment", and "(t)he existence of incomplete and deficient procedures for implementing the Emergency Plan" [See, letter dated August 21, 1981, from Boyce H. Grier, Director, NRC Region I, to John D. O'Toole, Vice President - Nuclear, Consolidated Edison Company of New York, Inc.].

- * NUREG-0396 takes the position that "(A)cceptable values for emergency doses to the public under the actual conditions of a nuclear accident cannot be predetermined." The report goes on to state, "The emergency actions taken in any individual case must be based on the actual conditions that exist and are projected at the time of an accident." [See, NUREG-0396, op. cit., pages 2-3]. If this is the case (and we take the position that this is inadequate and incorrect), then the adequacy of local accident assessment capabilities is an even more essential component of the emergency plans.
- * 10 CFR 50.47(b)(9) is not met because reliance on the ARAC and MIDAS assessment systems has not been demonstrated to be sufficient for a range of accident conditions, including

heated releases and a range of meteorological conditions and the local conditions present in the Indian Point area (i.e., the location in a "bowl", surrounded by high ground on almost all sites some 600 to 1000 feet high, topography which "decisively" influences the meteorology of the area; Technical Report #372.1, "A Micrometeorological Survey of the Buchanan, New York, Area--Summary of Progress to 1 December 1955, Indian Point Unit #3, FSAR, Section 2.6). Further, it has not been demonstrated that sufficient accident assessment capabilities exist in the emergency response organizations to make rapid assessments of the potential magnitude and locations of radiological hazards caused by liquid and/or gaseous releases from Indian Point.

- * 10 CFR 50.47(b)(10) is not met because the plans contain insufficient bases or criteria upon which to make choices of protective actions in the event of a radiological emergency at Indian Point Units 2 and 3. Further, the evacuation time estimates prepared by NSAD Research Corporation and Parsons, Brinckerhoff, Quade and Douglas, Inc., are inadequate for use in making protective action decisions (See, Contention I(B)(2), *infra*). In addition, it has not been demonstrated that sufficient thyroid protection is available to emergency workers in order for those workers to perform accident assessment and related emergency functions [See, Post Exercise Assessment, *op. cit.*,

Item J.10.e]. Further, a range of protective actions has not been developed in that the plans rely primarily on evacuation and sheltering as protective actions for the plume EPZ. It has not been demonstrated that these two protective actions, either singly or in combination, will be effective in protecting the public health and safety in the event of an accident at Indian Point Units 2 and 3 (including accidents which exceed the design basis for these units). In addition, it has not been demonstrated that there is sufficient, adequate sheltering capabilities within the plume EPZ for all residents and transients; indeed, even the sheltering afforded by the structures within the plume EPZ varies considerably in effectiveness.

- * 10 CFR 50.47(b)(11) is not met in that methods for permanent record-keeping of emergency response personnel radiation exposures have not been included within the plans [See, Post Exercise Assessment, op. cit., Item K.3.a]. Further, there has been no demonstration that decontamination facilities, equipment, supplies, and trained personnel to conduct such decontamination are available in sufficient quantity to adequately respond to an accident at Indian Point Units 2 and 3 (including accidents which exceed the design basis for these units). In addition, it has not been demonstrated that emergency response organizations have adequate capabilities to assess doses to emergency workers while they are responding to such accidents, nor has it been demonstrated that there is a sufficient supply of promptly available personnel dosimetry to respond to such accidents [See, Review of New York State Radiological

Emergency Preparedness (REP) Plan, Section K, attached to letter dated April 6, 1981, from Vincent Forde, Acting Regional Director, FEMA Region II, to William C. Hennessy, Chairman, Disaster Preparedness Commission, State of New York]. Further, it has not been demonstrated that sufficient means for radiological monitoring of evacuees at relocation centers can be established in a timely and adequate manner.

- * 10 CFR 50.47(b)(12) is not met in that existing hospital or other suitable medical facilities are not capable of caring for large numbers of irradiated and contaminated persons resulting from accidents at Indian Point (including accidents which exceed the design basis for the Indian Point units). It has also not been demonstrated that there are sufficient transportation resources available to transport such irradiated and contaminated persons to available facilities, nor that such transportation can be accomplished in a timely manner given that an evacuation may be in progress concurrent with the need to transport such persons [See, Post Exercise Assessment, op. cit., Item L.4].
- * 10 CFR 50.47(b)(13) is not met in that a method for periodically estimating the total population exposure is not set forth in the plans [See, Post Exercise Assessment, op. cit., Item M.4]. Further, there is no guidance regarding the uses for such data in terms of the need to implement supplemental or additional protective actions. In addition, recovery plans and procedures are not sufficiently

detailed as to provide reasonable assurance that the public health and safety will be adequately protected. There are no action level criteria or other objective criteria upon which to base decisions regarding the return of the general public to areas affected by a nuclear power plant accident at Indian Point Units 2 and 3 [See, Post Exercise Assessment, op. cit., Item M.1].

- * 10 CFR 50.47(b)(14) is not met in that the conduct of and planning for drills and exercises is not sufficiently detailed in the plans. There is no assurance that such exercises and drills provide a sufficiently realistic test of emergency plans and response capabilities. Indeed, to the extent that participants in such drills and exercises have prior knowledge of the dates, times, and other details about such drills and exercises, such drills and exercises do not test preparedness, but rather provide only a minimal test of the ability of the involved organizations to follow procedures.
- * 10 CFR 50.47(b)(15) is not met in that training criteria for emergency response personnel are not adequately set forth in the plans, thus there is no demonstration that such training is adequate. Accountability programs are not described in the plans to assure that the requisite training is in fact received by all necessary emergency response personnel. In fact, most of the necessary training has not yet taken place [See, Post Exercise Assessment, Item O.4.a through O.4.j].

- * 10 CFR 50.47(b)(16) is not met in that there is not sufficient assurance that the public will be adequately informed of revisions to the emergency plans. There are no provisions for updating public information programs. There are no provisions for updating evacuation time estimates to account for new construction, long-term unavailability of major routes due to repair work, or changes in population. Further, it has not been demonstrated that the emergency response organizations possess sufficient expertise to properly utilize the evacuation time estimates given the actual conditions as opposed to the idealized conditions assumed for the purposes of the time estimate studies. There is no assurance that an adequate and appropriate level of preparedness will be maintained for so long as the Indian Point units operate.

I(E). Emergency planning for Indian Point Units 2 and 3 is inadequate to protect the public health and safety because existing plans do not provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency, as is required by 10 CFR 50.47(a), in that:

- (1) The plans are based on unproved assumptions of human response during radiological emergencies.

BASIS FOR I(B)(1):

- * The "public" in the plume EPZ consists of hundreds of thousands of people who have different needs, situations, capabilities, and debilities. These factors have not adequately been taken into account in the development of the emergency plans for Indian Point Units 2 and 3.
- * Human response to hazards which involve the threat of contamination has been repeatedly shown to be qualitatively different from response to hazards in which the extent of the danger is more immediately determined by human senses, and this has not been given adequate consideration in the formulation of the Indian Point emergency plans; See, Prepared Testimony of Kai T. Erickson, Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit No. 1), Docket No. 50-289 (RESTART).
- * It is an unproved assumption that people will respond to radiological threats in the same way as people generally respond to other non-contamination hazards like fires and floods.
- * It is an unproved assumption that family members will willingly evacuate or take other protective actions when separated without communications from other family members, or will willingly allow schools, hospitals, nursing homes or other institutions to assume care for children, invalids, or other family members, especially when the

location, destination, or safety of the family members is not known (See, Erickson, op. cit.).

- * It is an unproved assumption that when public information pamphlets are finally distributed, that they will be read, understood, remembered, and kept in a location for easy access during emergencies, or that the information will be at all assimilated by those persons who do not speak or read English, by the blind, or by the learning-impaired.
- * It is an unreliable assumption that the deaf, hearing-impaired or non-English speaking persons at risk will be able to promptly and adequately understand mass media protective action messages during a radiological emergency at Indian Point Units 2 and 3.
- * The evacuation from the area around the Three Mile Island Unit 2 reactor which began on March 28, 1979, demonstrated that more than fifty times as many persons responded to advisories to evacuate as were requested to (approximately 144,000 persons actually evacuated, rather than the 2,500 for which evacuation was recommended), that persons evacuated to an average distance of approximately 100 miles (which far exceeds any other evacuation in U.S. history from natural hazards), and that persons evacuating the area displayed a strong tendency to chose "upwind" destinations (See, Donald J. Liegler, et. al., "Evacuation from a Nuclear Technological Disaster," Geographical Review, Vol.

71, No. 1, January 1981, pages 7-9) . There was no confirmation that the persons who were advised during that accident to shelter in fact did so; indeed, a very large proportion of those who were advised to shelter evacuated instead (sheltering was recommended for all persons within 10 miles who were not in the recommended evacuation categories of pregnant women and young children, but nearly half of the population within 10 miles chose to evacuate instead; See, Ziegler, et. al., op. cit., page 7). None of these factors has been adequately considered in the emergency plans for Indian Point Units 2 and 3.

- * Both the emergency plans themselves and the evacuation time estimate studies performed by CONSAD and Parsons Brinckerhoff fail to account for the "evacuation-shadow phenomenon". This phenomenon involves the tendency of an official evacuation advisory to cause departure of citizens from a much larger area than was officially intended. Although this may be a minor consideration for natural hazards emergency planning, it may be a major consideration for nuclear power plant accidents due to the lack of geographic delineation of radiation hazards (See, Ziegler, et. al., op. cit., page 7; See, also, Stanley D. Brunn, et. al., Final Report on a Social Survey of Three Mile Island Area Residents, Department of Geography, Michigan State University, August 1979, pages 14-15, 29, and 47).

meltdown) in which the Protective Action Guidelines (PAG's) can be exceeded far beyond the present plume exposure EPZ (given a PWR atmospheric accident, there is a 10% "conditional" probability that the whole body PAG of 1 Rem will be exceeded at 200 miles, a 10% probability that the 5-Rem whole body PAG will be exceeded at over 100 miles, a 50% probability that the 1-Rem whole body PAG will be exceeded at over 100 miles, and a 50% probability that the 5-Rem whole body PAG will be exceeded about 50 miles; See, NUREG-0396, November 1978, Figure I-16, page I-47). Thus, there is a substantial probability that given the very accident which requires the most expeditious evacuation of the plume EPZ, persons outside the recommended EPZ will self-evacuate or be advised to evacuate.

- * The studies fail to adequately account for accidents with such large releases that traffic control officers would be subject to large personal exposure to radiation or to provide for the contingency that no personnel will be able to stand in the open and direct traffic due to high radiation dose rates. In addition, it has not been demonstrated that there are sufficient numbers of trained traffic control personnel available to effect the degree of traffic control upon which the studies rely.
- * The studies assume different procedures for the evacuation of school children than the plans themselves actually call for.

- * The studies have not taken adequate account of the special transportation needs of the handicapped and invalids, and the effect on the overall evacuation time that these special transportation problems will have.
- * There are no provisions in the studies nor in the emergency plans for updating the evacuation time studies annually to reflect changes in population, roadway network characteristics, and changes to the plans.
- * The time estimate studies are inadequate in that they do not adequately address local meteorological and climatological conditions which occur in the Indian Point area, particularly in terms of the impact of adverse weather conditions on the ability to perform evacuations.

(3) The emergency plans and proposed protective actions do not adequately take into account the full range of accident scenarios and meteorological conditions for Indian Point Units 2 and 3.

BASIS FOR I(B)(3):

- * Sheltering has been demonstrated to be useful for no more than a two-hour period in terms of protecting the public from inhalation doses [See, Testimony of Margaret A. Reilly, Department of Environmental Resources, Commonwealth of Pennsylvania, under

cross-examination, transcript page 18,539, In the Matter of METROPOLITAN EDISON COMPANY (Three Mile Island Nuclear Station, Unit No. 1), RESTART]. The minimum time in which evacuation could be effectuated is greater than this time period, much greater in many circumstances. The protective actions developed for persons at risk from the Indian Point reactors are limited to sheltering and evacuation. Therefore, there are accident scenarios (in combination with meteorological conditions common to the Indian Point area) for which there are no adequate protective actions to protect the public health and safety.

- * The emergency plans and protective actions do not adequately address the special circumstance of precipitation occurring at the time of a release of radioactivity from Indian Point during an accident. Such precipitation would "scavenge" radioiodines and radio-particulates from the plume very efficiently (See, WASH-1400, Appendix VI, "Calculations of Reactor Accident Consequences," Section 6 and Appendix B), resulting in very different conditions than would pertain to a case involving only dry deposition. These conditions have not been adequately addressed in the plans nor by the proposed protective action alternatives.
- * The emergency plans and proposed protective action alternatives fail to adequately address the nature of the

river valley and mountain system in the Indian Point area. The geography and geomorphology of the Indian Point area is such that the Indian Point site is situated in a "bowl", surrounded on nearly all sides by high ground ranging from 600 to 1000 feet high; such topography has a decisive influence on the meteorology of the area, and, therefore, on considerations of accident consequences from Indian Point Units 2 and 3 (See, Technical Report #372.1, B. Davidson, op. cit., pages Q-5 to Q-6).

- * The emergency plans and proposed protective action alternatives fail to adequately address the conditions which would prevail during inversions or other adverse meteorology (such as prevailed during the early hours of the TMI-2 accident). Inversion conditions in the Indian Point area may be more common than expected due to the geographical and geomorphological conditions of the site area.
- * The emergency plans and proposed protective action alternatives fail to adequately address the impact of snow and/or icing upon the ability of emergency response organizations and the general public to effectuate evacuation as a protective action.

(4) The proposed protective actions that might be taken in the event of an accident at Indian Point

Units 2 and 3 are not sufficiently integrated to assure that the proper action or mix of actions is taken under particular accident conditions and there are inadequate criteria in the plans for determining which actions should be taken.

BASIS FOR I(B)(4):

- * The plans fail to contain adequate criteria for use in determining which protective actions are appropriate in different accident conditions.
- * The plans fail to address the point at which the relative merits of sheltering are outweighed by the relative merits of evacuation and the basis for determining this transition point.
- * The plans fail to contain adequate protective actions for accident scenarios and meteorological conditions that will require thyroid prophylaxis and/or respiratory protection against radiiodines and/or radio-particulates.
- * The plans fail to consider the doses received by persons crossing radioactive plumes from Indian Point in following evacuation directions which may be inappropriate for the particular accident scenario, in making "extra" trips (to join with family members, to go to the bank, or to obtain fuel), or in taking an alternative evacuation route which

evacuees may choose on their own.

- (5) The accident consequences that would be suffered by the public in the area of the Indian Point reactors before any protective actions could be or would be implemented in the event of a radiological accident at Indian Point Units 2 and 3 are unacceptable for some accidents (including accidents which exceed the design basis for the Indian Point units). Even if heroic emergency measures are implemented in accordance with the abilities, training, equipment, and degree of preparedness of the State and Local emergency response organizations, the health consequences to the public from such accidents will include prompt fatalities, early fatalities, early and latent illnesses, fatal and non-fatal cancers, thyroid nodules, and genetic defects.

BASIS FOR I(B)(5):

- * In order for a protective action to be implemented, several key steps must occur in sequence. First, the accident sequence must manifest itself in some form which is recognized by the plant operators. Second, plant operators must promptly and correctly take note of the accident manifestation (such as a control room alarm) and also

assess the particular malfunction based upon the symptoms available. Third, the operators must notify offsite emergency response authorities. Fourth, the offsite emergency response authorities must determine which, if any, protective action to implement. Fifth, the public must be notified of the emergency and what actions are required as a result of the accident. Sixth, the emergency response organizations and the public must implement the correct protective action. Delay in any of these steps will increase both the likelihood that adverse consequences will not be avoided and the magnitude of those consequences.

- * It has not been established, in contradiction to 10 CFR 50.47(b)(4), that appropriate "emergency action levels" (EAL's) have been established which will allow prompt recognition of the range of possible accidents at Indian Point Units 2 and 3 (including those accidents which exceed the design basis for the Indian Point Units 2 and 3 reactors). No basis has been provided by the licensees to demonstrate that their sets of EAL's are comprehensive, and that the EAL's are annunciated clearly to the plant operators. Thus, there is not adequate assurance that accidents will be promptly recognized by plant operators, and that once it is recognized that an accident is in progress, that plant operators will correctly diagnose such accidents in order to recommend the appropriate protective action(s).

- * The emergency plans are in part based on the detection of radioactivity in monitored release pathways. This precludes or limits knowledge of releases from unmonitored release pathways; such releases were a complicating factor during the TMI-2 accidents during which releases were occurring from portions of the plant not normally containing radioactivity, but which contained such radioactivity due to the accident. Lack of knowledge about releases of radioactivity from unmonitored leakage pathways could lead to an improper or inadequate protective action decision being made on an inadequate or incomplete data base.
- * The licensees have not demonstrated compliance with Regulatory Guide 1.97, Revision 2, thus compromising their ability to adequately monitor the course of accidents at Indian Point Units 2 and 3.

(6) There is no objective basis for judging the adequacy of emergency planning for the Indian Point area in the absence of an established maximum acceptable level of radiation exposure for the general public as a consequence of reactor accidents.

BASIS FOR I(B)(6):

- * The public radiation dose guidelines in 10 CFR Part 20 are inapplicable to abnormal operations and accident conditions.

- * The exposure levels in 10 CFR Part 100 are not meant to indicate acceptable levels of exposure, but are rather design guidance against which the adequacy of siting and plant engineered safety features are assessed in the design review process used by the NRC Staff. These exposure levels are inapplicable to actual accident conditions, and are not meant to constitute acceptable dose limits for the general public under accident conditions (See, NUREG-0396, op. cit., page III-9).
 - * The Protective Action Guides (EPA-520/1-75-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," U.S. Environmental Protection Agency, September 1975) are not acceptable dose levels, but rather "trigger levels" for emergency planning decision-making (See, NUREG-0396, op. cit., page 4).
 - * There are no established criteria which can be utilized to judge the adequacy of emergency planning which are objective in nature, i.e., no maximum acceptable evacuation time, no maximum acceptable radiation dose levels, etc.
- (7) The NRC's attitude toward emergency planning, as it stands on its own and as it is reflected in the emergency planning attitudes of the licensees, their contractors, and Local and State emergency

response officials, has caused and continues to cause a failure to perform emergency planning for for accidents which are held by the NRC to be "not credible." In order for effective emergency plans to be created, NRC must promote an awareness that nuclear power plant accidents with substantial offsite consequences are possible for Indian Point Units 2 and 3 and must be planned for.

BASIS FOR I(B)(7):

- * Finding by the NRC's Special Inquiry Group that the principal finding related to emergency planning is that the root cause of most of the inadequacies in governmental emergency response to the TMI-2 accident, and a contributory cause of all of the inadequacies, was the NRC's failure to promote an awareness that nuclear power plant accidents with substantial offsite consequences are possible and must be planned for (See, NUREG/CR-1250, Volume II, Part 3, pages 1046-47).
- * An early draft of the TMI Action Plan (NUREG-0660) contained a chapter dealing with the attitude problem cited by the Kemeny Commission as its major conclusion, but later versions, including the final NUREG-0660 version, deleted this chapter without explanation.

- * Although the Commission concluded in adopting new emergency planning regulations that "onsite and offsite emergency preparedness as well as proper siting and engineered design features are needed to protect the health and safety of the public" [See, 45 F.R. 55402, 55402, August 18, 1980], the degree of change of practice has not been great. Emergency planning requirements are not pursued with the same degree of effort as plant hardware requirements. The same or similar standards are not applied to emergency planning requirements as are applied to hardware, i.e., none of the emergency planning-related hardware is required to meet safety-grade standards (for instance, alert sirens need not have redundant power sources and are not required to be environmentally qualified), nor are emergency planning-related hardware and procedures subjected to the quality control requirements as opposed to the manner in which plant engineered safety features hardware are handled. Emergency planning is not, in practice, viewed by the NRC Staff to be as important in protecting the public as siting and plant design.

ISSUE II: Whether the operation of the Indian Point reactors would be inimical to the public health and safety in the light of the lack of plume exposure pathway emergency planning beyond the current plume EPZ for accidents at Indian Point Units 2 and 3 (including accidents which exceed the design basis for these units).

This issue relates to Questions 1, 3, and 5 as stated by the Commission. The relevant contentions focus on the fact that the potential accident consequences beyond the current plume EPZ requires development of effective emergency plans for that area, the fact that no such plans exist, and the fact that it would not be possible to implement such plans to protect the public health and safety in the event of an accident.

CONTENTION II:

II(A). The consequences of a severe radiological accident at Indian Point Units 2 and 3 would involve massive damage to the public health and safety beyond the current plume EPZ, so that effective emergency planning is required for that area in order to protect the public health and safety beyond the current plume EPZ.

BASIS FOR II(A):

- * Releases of radioactivity from Indian Point Units 2 and 3 during a radiological accident would contain large quantities of radioiodines and radio-particulates in many accident scenarios [See, WASH-1400, Appendix VI, "Calculations of Reactor Accident Consequences," October 1975, Table VI 2-1 (page 2-5), and Table VI 3-1 (page 3-3).
- * Such radioiodines and radio-particulates are efficiently scavenged from a plume by precipitation (including rain and snow) [See, WASH-1400, op. cit., Appendix E].
- * Precipitation occurring at some time following release and at some distance from the release point could cause scavenging of significant amounts of radioiodines and radio-particulates at distances much farther from the plant than the extent of the current plume EPZ, including the metropolitan New York City area.
- * Even ignoring the scavenging effect and precluding precipitation, consequences from a PWR "atmospheric" accident such as is described in the Reactor Safety Study (WASH-1400) could result in doses exceeding the PAG's at considerable distances from the Indian Point site (see pages 20-21, supra).
- * Doses in such situations would be sufficiently high to require prompt protective action in order to adequately protect public health and safety.

- * Given the extremely high population density in the New York City metropolitan area, it would be impossible to timely implement appropriate protective measures given the circumstances described above.
- * No plans exist beyond the plume EPZ except for control of agricultural products and drinking water supplies, and these measures are inadequate to protect the public health and safety in circumstances such as described above.

II(B). Local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, jurisdictional boundaries, and particularly access routes and the proximity of the metropolitan New York City area require substantially greater emergency planning beyond the present plume EPZ than currently exists or is contemplated.

BASIS FOR II(B):

- * The roadway network is strongly oriented in a roughly North/South direction, thus limiting the direction of evacuation for the majority of potential evacuees.
- * Population density and absolute numbers increase dramatically in the direction of the New York City metropolitan area.
- * The direction of the roadway network and the direction of increased population density and absolute numbers of population

are in the direction toward which winds frequently blow in the Indian Point area, thus strongly influencing the course of events in an evacuation.

- * Consequences from accidents at Indian Point would be manifested at distances considerably farther from the site than the extent of the current plume EPZ (See, pages 20-21, *supra*).
- * There is no basis for assuming that the New York City metropolitan area would permit the influx of large numbers of potentially or actually irradiated and/or contaminated persons evacuating from the Indian Point area.
- * The topography of the Indian Point area (mountains and river valley geomorphology) will strongly influence emergency planning needs; this has not been adequately addressed in the present plans. (See, pages 11-12, *supra*).
- * The extent of affected areas and the population contained in those areas (as well as the numbers of facilities and special populations) increase dramatically with distance from Indian Point, thus necessitating detailed, advance emergency preparedness planning in order to provide adequate assurance of prompt protection of the public health and safety.

II(C). Emergency planning for Indian Point Units 2 and 3 is inadequate to protect the public health and safety because the existing plans

within the current plume EPZ do not conform with the requirements of 10 CFR Part 50 and Appendix E to Part 50, therefore there is no basis for assuming that such plans form an adequate basis for ad hoc protective actions beyond the current plume EPZ.

BASIS FOR II(C):

- * Existing emergency plans fail to conform with the requirements of 10 CFR 50.47(b)(1-16), 50.54(s)(2), and Appendix E to Part 50.
- * Beyond the plume EPZ there are much larger numbers of persons at risk, much larger numbers of special facilities (such as schools, prisons, hospitals, nursing homes, etc.), and a much larger special population (invalids, hearing-impaired, vision-impaired, etc.) than within the present plume EPZ. There is no basis for assuming that ad hoc protective actions could be successfully implemented for the population at risk outside the present plume EPZ, especially considering that the existing plans within the plume EPZ are themselves inadequate.
- * Some accident scenarios (including accidents which exceed the design basis for the Indian Point units), alone or in combination with adverse meteorology (such as inversions and/or precipitation), will have adverse health consequences beyond the current plume EPZ (See, pages 20-21, *supra*).

- * There are no radiological emergency plans for Indian Point Units 2 and 3 beyond the current plume EPZ which are adequate and capable of providing adequate protection for the public health and safety.

ISSUE III: Whether "future" and "feasible" improvements in emergency planning, once the plume and ingestion EPZ's are corrected as in Contention II(B), will be adequate to protect the public health and safety in the event of accidents at Indian Point Units 2 and 3 (including accidents which exceed the design basis for these units).

This issue relates most closely to Commission Questions 4 and 5. Fundamentally, our position is that it is not feasible to improve emergency planning to such an extent that protection of the public health and safety could be adequately assured.

CONTENTION III:

III(A). It is essential, although not necessarily sufficient, that the following emergency planning measures and protective actions be implemented or capable of being implemented within 10 miles (plume EPZ) of the Indian Point reactors in order to protect the public health and safety in the event of an accident at Indian

Point Units 2 and 3. However, none of the following measures have either been implemented, are now capable of being implemented, or are planned to be implemented:

- a. Potassium iodide must be provided in an appropriate form for all residents within the plume EPZ and a sufficient supply and adequate distribution system for transients within the plume EPZ must be provided.
- b. Adequate sheltering capability must be provided to all residents and transients within the plume EPZ.
- c. License conditions must be placed on the operating licenses for Indian Point Units 2 and 3 which prohibit power operation during periods when the roadway network becomes degraded due to adverse weather conditions. Such conditions would include temperature inversions, flooding, snowfall, and icing on the roadways.
- d. License conditions must be placed on the operating licenses for Indian Point Units 2 and 3 which prohibit power operations with less than a fully operable complement of any safety-grade and/or safety-related equipment.
- e. The roadway network must be made capable of being used to successfully evacuate all at-risk residents of the plume EPZ before the plume can reach them for the shortest plume arrival time.
- f. A filtered, vented containment system must be installed

at Indian Point Units 2 and 3 to help prevent containment failure by overpressurization.

- g. A "core-catcher" must be installed at Indian Point Units 2 and 3 to provide additional protective action time in the event of a "melt-through" accident in which the reactor pressure vessel is breached by molten fuel.
- h. A separate containment structure must be provided into which excess pressure from accidents and transients can be relieved without necessitating releases to the environment, thereby reducing the risk of containment failure by overpressurization.

BASIS FOR III(A):

- * Potassium iodide distribution for residents and transients in the plume EPZ would provide substantial protection against adverse health consequences caused by uptake of radioiodines.
- * It has not been demonstrated that adequate sheltering capability exists in the plume EPZ for all residents and transients at risk during an accident at Indian Point Units 2 and 3. Such capability is necessary if sheltering is to be used as a protective action alternative for these plants.
- * Plant operation should be prohibited during any weather conditions or combination of conditions which would impair the ability of the public to promptly evacuate the plume EPZ.

Operation of the plants during such times is an unnecessary risk which is far outweighed by the benefits of prohibiting operation during these periods of time.

- * In view of the magnitude of the risks posed by the operation of Indian Point Units 2 and 3, plant operation should not be permitted with any safety-grade or safety-related component in an inoperable condition. Operation during periods of time of inoperable safety-grade or safety-related equipment reduces the margin of safety for the Indian Point Units 2 and 3 reactors; due to the risks posed by accidents at these reactors, it is necessary that the margin of safety be maintained as high as is feasible. Therefore, operation during degraded modes related to the operability of safety-grade or safety-related equipment should be prohibited.
- * The present roadway network is incapable of supporting an evacuation in the time period provided from the initiation of an accident to the time the plume reaches persons at risk for the most limiting accidents, thus the plant poses an unacceptable risk to the public health and safety which can only be remedied by the requisite improvements in the roadway network.
- * Filtered vented containment systems are capable of being constructed at Indian Point Units 2 and 3 to permit controlled

venting of the containment buildings during accidents to prevent or mitigate overpressurization of the containments [See, UCLA-ENG-7775, December 1977, Post-Accident Filtration as a Means of Improving Containment Effectiveness, B. Gossett, et. al., UCLA School of Engineering and Applied Science, Project Director, David Okrent].

- * A core-catcher would contain molten core material following vessel failure, and, in so doing, would provide an increase in the amount of time available to effectuate necessary protective actions before the containment would be breached by melt-through.
- * Increasing the containment volume by providing a separate, large-volume, leak-tight containment structure would provide for decreasing main containment pressure during accidents (See, NUREG-0850, Volume I, Preliminary Report, November 1981, page 3-99).

I(B). Under certain accident conditions, consequences within the present plume EPZ would be so severe that even heroic emergency measures would not be sufficient to protect the public health and safety from unacceptable immediate and long-term consequences, including prompt fatalities from acute radiation exposure, early and latent cancer cases and fatalities, thyroid nodules, and genetic defects. The deficiencies in the existing emergency plans within the plume

EPZ are so deficient that there are no feasible "interim" measures which can be implemented to correct these deficiencies.

BASIS FOR III(B):

- * The emergency plans meet none of the sixteen required standards of 10 CFR 50.47(b)(1-16).
- * Thus, the deficiencies are pervasive and massive.
- * There exist no feasible interim measures which could sufficiently correct such pervasive and massive planning deficiencies.
- * Under severe accident conditions, the impact of these present deficiencies would be greatly magnified in the form of large increases in consequences.

III(C). It is essential, although not necessarily sufficient, that the present plume EPZ be extended sufficiently to encompass the entire population which is at risk from all consequences of accidents at Indian Point Units 2 and 3, including not only prompt fatalities (upon which the present EPZ and plans are based), but also early and latent cancer cases and fatalities, thyroid nodules, and genetic defects. Further, this measure has not been implemented for Indian Point Units 2 and 3 and is not now being developed for implementation.

BASIS FOR III(C):

- * The present plume EPZ will only provide prior emergency planning coverage for a portion of those persons at risk for prompt fatalities. This ignores the greater bulk of the consequences from severe accidents at Indian Point Units 2 and 3 which would result in much greater numbers of fatal and non-fatal cancers, thyroid nodules, and genetic defects. As such, the present emergency plans are inadequately based to adequately protect the public health and safety from accidents at Indian Point Units 2 and 3 [See, NUREG-0396, op. cit., pages 16-17; the EPZ's are sized to provide only for reduction of early severe health effects, thus implying the acceptability of some undefined level of deaths and, in addition, other consequences from severe accidents; See, NUREG-0396, also, at page I-34; in addition, page I-51 notes that "atmospheric" accidents could result in "significant numbers of early fatalities and injuries"].

I(D). The consequences of severe accidents at the Indian Point reactors (including accidents which exceed the design basis for Indian Point Units 2 and 3) represent an unacceptable threat to the public health and safety that is not limited to the present plume EPZ, but which extends to the New York City metropolitan area and beyond.

Under certain accident conditions, the consequences would be so severe that even heroic emergency measures would not be sufficient to protect the public health and safety from unacceptable immediate and long-term consequences, including prompt fatalities from acute radiation exposure, early and latent cancer cases and fatalities thyroid nodules, and genetic defects. There are no feasible "interim" measures which can be adopted to remedy this situation.

BASIS FOR III(D):

- * Under certain meteorological conditions, including precipitation following a significant release of radioiodines and radio-particulates from Indian Point Units 2 and 3, the New York City metropolitan area would be subject to life-threatening levels of radiation exposure.
- * There are no established radiological emergency plans for this area which would adequately protect the public health and safety in such circumstances.
- * Given the massive emergency management problems faced in this area due to the very high population density, there are no feasible "interim" measures that could be adopted to alleviate this situation and adequately protect the public health and safety.

- * According to preliminary calculations performed by Dr. Jan Beyea, given the present state of emergency preparedness, a PWR-2 accident as described in WASH-1400 would result in prompt and early fatalities and injuries out to at least five miles from the site if evacuation takes 12 hours.

ISSUE IV: What are the energy, economic, environmental, and other consequences of an accident at Indian Point Units 2 and 3.

This issue relates to Commission Questions 1 and 5 in particular. It is also central to the Commission's entire inquiry since it is impossible to examine the risks of operating Indian Point Units 2 and 3 without knowing the consequences of an accident. Indeed, we believe that the use of contentions in this area is particularly inappropriate since the Board's goal here is not to accept one position or another, but to investigate the matter fully. Nonetheless, we have framed the following contentions,

CONTENTION IV:

IV(A). The economic, environmental, safety, health, and other consequences of an accident at Indian Point Units 2 and 3 are so severe, and the threat to the public health and safety so great, that the reactors must be shut down regardless of the energy, economic, environmental, or other consequences of a preventive shutdown.

BASIS FOR IV(A):

- * The economic consequences of a severe accident at Indian Point Units 2 and 3 are extremely large, and far exceed the cost of building and operating the units. These costs arise from lost productivity, loss of land and other property, health-related costs (arising from fatal and non-fatal illnesses), contamination of water supplies and the consequent loss of drinking water sources, cleanup costs, and the loss of scenic and aesthetic resources.
- * The safety and public health consequences of a severe accident at Indian Point Units 2 and 3 would be so large as to exceed the medical capabilities of the region and the nation as a whole to care for the many thousands of irradiated and/or contaminated persons.

8 The environmental consequences of severe accidents at Indian Point Units 2 and 3 are very large, arising from contamination of the environment over a very large area, thus preventing access to or use of this area, and rendering it unsuitable for many forms of life. Contamination of water supplies would also be massive; indeed, the Indian Point site is underlain by fractured limestone which can have a high permeability and low ability to absorb dissolved radionuclides. In addition, the Hudson River, on whose shore the Indian Point Units 2 and 3 reactors are sited, is heavily used for commerce and recreation, and leads into the United States' busiest port (New York City). Not only would contamination of the Hudson River affect nearby areas, but beaches as far away as Coney Island and Rockaway Beach could be affected by contaminated sediments (See, NUREG-0850, Volume I, Preliminary Report, op. cit., Appendix D).


IV(B). The energy, economic, and other such consequences of preventive shutdown are irrelevant as a matter of law to the question of whether Indian Point Units 2 and 3 must be shutdown to protect the public health and safety.

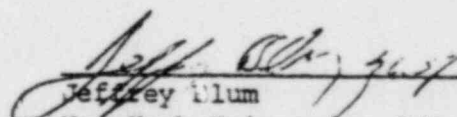
BASIS FOR IV(B):

- * This is a legal assertion which does not require a factual basis.

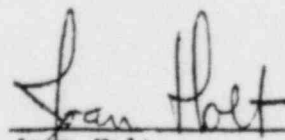
DATED: December 2, 1981

RESPECTFULLY SUBMITTED,


William S. Jordan, III
Harmon and Weiss
1725 I Street, N.W., Suite 506
Washington, D.C. 20006
(202) 833-9070


Jeffrey Blum
New York University School of Law
40 Washington Square S.
Room 423
New York, NY 10011
(212) 598-3452

Counsel for UCS


Joan Holt
New York Public Interest Research
Group, Inc.
5 Beekman Street
New York, NY 10038
(212) 349-6460

For NYPIRG