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)	Docket Nos. 50-247 SP 50-286 SP 19 July 1982

UCS/NYPIRG FIRST SET OF INTERROGATORIES AND DOCUMENT REQUESTS TO LICENSEES ON BOARD QUESTIONS ONE, TWO, AND FIVE

Pursuant to 10 C.F.R. 2.740 and 10 C.F.R. 2.741, UCS/NYPIRG requests that the Consolidated Edison Company of New York, Inc., and the Power Authority of the State of New York ("licensees") serve upon counsel for UCS/NYPIRG sworn answers to the following interrogatories and document requests.

PRELIMINARY MATTERS

As used herein:

1. "Licensees" refers to the Consolidated Edison Company of New York, Inc., and the Power Authority of the State of New York, or their employees, officers, consultants, or contractors, organizationally, collectively, and individually.

2. Whenever the terms "Indian Point", "Indian Point reactors", or "Indian Point units" are used, the licensees shall identify and state with

particularity any and all differences existing between Indian Point Unit 2 and Indian Point Unit 3 with respect to the matter(s) requested.

3. Whenever the licensees are asked to state or quantify the probability of the occurrence of an event, accident, transient, scenario, or other occurrence resulting in the release of radioactive materials to the environment, the licensees shall state the probability of that event, accident, transient, scenario, or other occurrence resulting in the release of radioactive materials to the environment, quantify the uncertainty associated with that probability by specifying the confidence levels, variance, maximum and minimum values and/or all other appropriate statistical expressions which have been calculated, set forth the method by which the probability and uncertainty were calculated, set forth the assumptions and data used in the calculations, and set forth the sources the assumptions and data used in the calculation of the probability and assumptions. If reference is made to the Indian Point Probabilistic Safety Study, licensees shall specify any and all pages upon which they rely in responding to the interrogatory and/or document request.

4. "Document" as used herein includes all writings and recordings in the possession, custory or control of the licensees, whether sent or received or neither. "Writings" and "recordings" consist of letters, words, symbols, numbers, or their equivalent, set down by handwriting, typewriting, printing, xerography, photostating, photography, magnetic impulse, mechanical or electronic recording, or other form of data compilation, and include but are not limited to papers, books, correspondence, telegrams, cables, telex messages, memoranda, notes, notations, work papers, transcripts, minutes, reports, and recordings of telephone or other conversations, or of interviews, or of conferences, or of other meetings (including, but not limited to

meetings of boards of directors and committees thereof), affidavits, statements, summaries, opinions, reports, studies, analyses, evaluations, contracts, agreements, journals, statistical records, desk calendars, appointment books, diaries, lists, tabulations, sound recordings, video recordings, financial statements, computer printouts, data processing input and output, microfilms, microforms, all other records kept by electronic, photographic, video, photographic or mechanical means, and any things similar to any of the foregoing however denominated by the licensees. Unless otherwise specified, a request for a document includes a request for the original thereof. If data are stored in a computer or similar device, any printout or other input or output readable by sight which reflects the data accurately is an "original". If the original or non-identical copy cannot be produced, a duplicate, specifically identified as a duplicate, may be produced. Documents "in the possession, custody, or control of the licensees" include but are not limited to documents which the licensees have a legal right to obtain, possess, or control. "Documents" shall also mean copies of documents, even though the originals thereof are not in the possession, custody or control of the licensees.

5. All references to "licensees" include members, employees, officers, directors, contractors, consultants, partners, servants, or agents of same, past and present, and persons in active concert or participation with them.

6. Document requests concerning Indian Point include requests for documents pertaining to Indian Point Unit 2 and/or Indian Point Unit 3.

7. "Identify" means:

a. with respect to a natural person, name, present or last known home and business addresses, present or last known job title or position, and the dates of tenure in that position;

b. with respect to a document, the type of document (for example, letter, record, list, memorandum, memorandum of telephone or face-to-face conversation), date of the document, name of the person(s) who prepared the document, organizational affiliation(s) of the person(s) who prepared the document, name of the person(s) for whom the document was prepared or to whome the document was delivered, the organiational affiliation(s) of the person(s) for whom the document was prepared or to whom it was delivered, the name and address of the publisher(s) of the document, and any identifying number(s) associated with the report.

8. "Person" includes individuals, organizations, the Nuclear Regulatory Commission (NRC), the Federal Emergency Management Agency (FEMA), Sandia National Laboratory (SNL), Brookhaven National Laboratory (BNL), Argonne National Laboratory (ANL), Oak Ridge National Laboratory (ORNL), Lawrence Livermore Laboratory (LLL), Department of Energy (DOE), Energy Research and Development Administration (ERDA), Atomic Energy Commission (AEC), and other federal agencies and/or laboratories sponsored or funded by same, state agencies, corporations, partnerships, associations, joint ventures, or other actual or legal entities. References to entities include (and references to individuals include status as) members, sponsors, officers, employees, directors, proprietors, partners, or agents, both past and present.

9. Whenever the licensees are asked to "specify" they should set forth each and every fact and the source of each and every fact upon which the allegation, belief, conclusion, opinion, graph, and/or other representation is based, describe in detail the reasoning which supports same, identify any and all documents containing evidence or information bearing upon or relating to same (whether supportive or contrary to it), and identify all persons having information, knowledge, or documents relating to same.

INTERROGATORIES AND DOCUMENT REQUESTS

1. With respect to each person whom the licensees intend to call as a witness regarding Board Questions 1 and 2 in this proceeding:

a. identify the name, address, and organizational affiliation(s) of each such person;

b. state in full the educational and professional background of each such person, including occupation, institutional and professional affiliations, professional certifications and/or licenses, publications, papers, books and/or other published writings of each such person;

c. provide copies of all such publications, papers, books, and/or other published writings of each such person pertaining to probabilistic risk assessment, consequences of nuclear reactor accidents, probabilities of nuclear reactor accidents, and risk comparisons between different nuclear powerplants and/or between nuclear powerplants and non-nuclear electrical generating stations, whether such publications, papers, books, and/or other published writings are generic in nature or deal with Indian Point;

d. identify the contention as to which each such person will testify;

e. describe the nature and subject matter(s) of the testimony which will be presented by each such person, including an identification of all documents which the person will rely upon in the testimony; and

f. identify by court, agency, or other body, and by proceeding, date, subject matter, and transcript pages all prior testimony by and direct and cross-examination of all prior testimony by each such person.

2. Provide all documents which contain and/or pertain to evaluations, assessments, critiques, and/or criticisms of the licensees' "Indian Point

Probabilistic Safety Study", including appendices and attachments thereto. Such documents include but are not limited to such evaluations, assessments, critiques, and/or criticisms whether or not done at the request of or under contract to the licensees, and specifically include all such evaluations, assessments, critiques, and/or criticisms performed by Norman Rasmussen, Ian Wall, and Saul Levine, either singly or in combination.

3. Regarding all accidents at Indian Point discussed, analyzed, or evaluated in the Indian Point Probabilistic Safety Study or otherwise considered or evaluated by the licensees in preparing testimony for this proceeding:

a. specify the types of nuclear accidents or other accident scenarios considered, quantify the probability of occurrence of each accident, and if such quantification is generic or for another plant, state how the quantification would vary for Indian Point, identify the features or conditions at Indian Point which vary the quantification, state the basis for this answer, and provide all documents which contain and/or pertain to such quantification;

b. describe the fission product inventory within the containment, including type, chemical forms and quantities of isotopes, for each accident considered;

c. specify the source reduction factors used to calculated plateout, washout, filtering, and all other fission product removal processes, whether dependent upon natural processes or initiated as a consequence of the operation, misoperation, or malfunction of plant equipment and/or systems for each accident considered;

d. specify the release categories assumed, including the percent released for all classes of radionuclides released, and provide all documents which contain and/or pertain to these release categories and the percent release for each radionuclide class assumed;

e. quantity the probability of occurrence of each such release category, and provide all documents which contain and/or pertain to these release categories and their probabilities;

f. specify all mechanical and structural containment failure modes assumed and the timing of such failures relative to the initiation of each accident considered, and identify precisely how such failure modes would be identified by licensed operators at Indian Point with specific reference to instrumentation (whether or not safety grade and specify which) and the associated indication on that instrumentation corresponding to the failure mode assumed, and provide all documents which contain and/or pertain to these analyses;

g. quantify the probability of the occurrence of each failure mode described in Interrogatory No. 3e;

h. specify all assumptions made in the analysis concerning containment safeguard features and calculations of the availability of each feature;

i. specify all action(s) a licensed operator can take or direct to be taken to terminate a degraded core accident before reactor pressure vessel failure occurs, specify precisely how such an operator would become aware of the existence of such a degraded core accident, specify what procedures would be utilized by such an operator in responding to such a degraded core accident and provide copies of the same, and quantify the probability of the operator correctly identifying the existence of a degraded core accident and correctly

initiating and completing the proper corrective action in sufficient time to prevent reactor pressure vessel failure;

j. fully describe all training received by licensed operators related to degraded core accident mitigation as described in Interrogatory No. 3i;

k. specify the pressures, temperatures, humidity, hydrogen gas concentrations, and oxygen gas concentrations assumed and/or calculated for the containment during the accidents discussed, analyzed, or evaluated, specify all other assumptions, both conservative, realistic, and non-conservative, and specify the effects of both the conservative and non-conservative assumptions upon the release of radioactivity to the environment;

l. specify the accident scenarios and/or accident progressions which form the basis of the calculations and assumptions described in Interrogatory No. 3k, and provide all documents which contain and/or pertain to such calculations;

m. specify the containment leakage rate which forms the basis of the calculations and assumptions described in Interrogatory No. 3k;

n. specify the degree of radiation exposure assumed to produce any and all health effects discussed in the Indian Point Probabilistic Safety Study, and provide all documents which contain and/or pertain to the doses and effects and the relationship between the doses and effects assumed;

o. specify how public response to all accidents discussed, analyzed, or evaluated was modelled, including each and every response option modelled, the probability of each response option modelled (including the methods by which the probability was calculated, the uncertainty of the probability, and the assumptions used in calculating the probability and the uncertainty), the distance to which sheltering, evacuation, thyroid prophylaxis, relocation, and

any and all other protective response options modelled were assumed to be utilized and the degree of effectiveness of each such protective response option, and specify how special population groups, including but not limited to persons who are deaf, blind, too young to understand instructions, who do not speak English, who are immobile, or who suffer from or are affected by any condition which could limit the extent to which such persons could understand and/or comply with protective action instructions, were treated in the analyses;

p. specify the demographic and population distributions which wre utilized, including the source(s) of all such data;

q. specify the meteorological dispersion model(s) and measurements which were utilized, including the source of all measurements, the location of all measurement stations, the instrumentation at each such measurement stations, and the accuracy of each such instrument expressed as a percent of the value being reported by the instrument or other appropriate expression, and provide all documents which contain and/or pertain to these analyses;

r. specify the geographic area(s) considered, and provide legible, clearly delineated maps which set forth these geographic areas with reasonable specificity;

s. specify the size(s) of the assumed plume exposure and ingestion exposure pathways;

t. specify the population(s) assumed to be evacuated, the assumed rates and paths of eavcuation, and delay time between any Emergency Broadcast System announcements and the beginning of the evacuation, the time assumed to be required to complete public notification of the need for an evacuation, and the time assumed to be required to complete the evacuation;

u. state whether different age groups were treated differently with respect to evacuation;

v. specify the number of persons assumed to be sheltered within the plume and ingestion exposure pathways, and specify the degree of sheltering assumed to exist for these persons (in terms of protection factors, dose reduction factors, or other appropriate criterion);

w. provide all documents which contain and/or pertain to the sheltering assumed to exist for all persons in the plume and ingestion exposure pathways as discussed in Interrogatory No. 3v;

x. specify the assumed time estimates for commencing sheltering and the assumed duration of sheltering as discussed in Interrogatory No. 3v; and

y. specify the degree to which probabilistic analysis was considered and/or utilized with respect to meteorological condntions, containment failure modes, accident scenarios, and release categories, and provide all documents which contain and/or pertain to these analyses.

4. Provide all documents which contain and/or pertain to the Emergency Action Levels established for Indian Point, including but not limited to, any and all analyses, evaluations, and/or discussions of engineering or other analysis upon which these Emergency Action Levels are based.

5. State whether the possibility and consequences of sabotage were considered in the Indian Point Probabilistic Safety Study (IPPSS) as a possible initiating condition or aggravating condition for the accidents evaluated therein, and:

a. if so, specify how the possibility and consequences of sabotage were treated and/or modelled in the IPPSS, and provide all documents which contain

and/or pertain to the consideration of the possibility and consequences of sabotage, whether specific to Indian Point or generic in nature, which were relied upon in performing the analyses contained in the IPPSS;

b. if not, specify precisely the bases for not considering the possibility and consequences of sabotage as a possible initiating condition or aggravating condition for accidents evaluated in the IPPSS, and provide all dodcuments which contain and/or pertain to this position, including but not limited to those documents which set forth in detail the basis for not so including sabotage.

6. State whether and specify how common-mode failures, common-cause failures, common-environment failures, and systems interaction were treated and/or modelled in the IPPSS, and provide all documents which contain and/or pertain to these matters and how they were treated and/or modelled in the IPPSS.

7. Specify any and all factors which could either initiate, aggravate, or mitigate accidents discussed, analyzed, or evaluated in the IPPSS which were not treated or modelled therein, discuss the basis for decisions not to treat or model each such factor, and provide all documents which contain and/or pertain to the decision to include and/or exclude each such factor.

8. Discuss and specify precisely how all uncertainties in meteorological conditions, populations, release categories, radionuclide inventories, containment failure mode probabilities, accident probabilities, and any other input factor to the IPPSS were propogated through the analyses and expressed in the final results of probabilities and consequences.

9. Discuss and specify precisely now the existence of, magnitude of, and relevant characteristics of unmonitored release pathways are determined for Indian Point under accident conditions, how this information is incorporated into dose projections and protective action decision-making, and provide all documents which contain and/or pertain to unmonitored release pathways at Indian Point.

10. State whether it is licensees' position that exposure to ionizing radiation cannot cause genetic effects in subsequent generations, and provide all documents which contain and/or pertain to the relationship assumed by the licensees to exist (or lack thereof) between exposure to radiation and the occurrence of genetic effects in subsequent generations.

11. Define, as used by the licensees in the IPPSS and licensees' testimony in this proceeding:

a. risk;

b. probability;

c. acute fatality;

d. acute injury (as this term relates to exposure to ionizing radiation);

e. thyroid nodule;

f. thyroid cancer;

g. cancer fatality;

h. morbidity;

i. man-rem;

j. initial leukemia;

k. total whole body;

l. total leukemia;

m. evacuation;

n. relocation;

o. sheltering;

p. interdiction;

q. impoundment;

r. decontamination;

s. plume;

t. latent effect;

u. risk curve; and

v. sensitivity study.

12. Specify the dose levels and/or man-rem totals at which the following health effects consequences are assumed by the CRACIT model in the IPPSS to occur:

a. acute injury;

b. acute fatality;

c. latent effect;

d. leukemia;

e. thyroid nodule; and

f. thyroid cancer.

13. Specify the criteria adopted in the IPPSS for decontamination (i.e., how it is determined what areas require decontamination in order to permit restricted and/or unrestricted access by the general public following an accidental release of radioactivity to the environment from Indian Point).

14. State whether the CRACIT code has the capability to calculate the maximum distance to which the following health effects consequences will occur as a result of a specified release of radioactivity:

a. acute injury;

b. acute fatality;

c. latent effect;

d. cancer;

e. thyroid cancer;

f. thyroid nodule; and

g. leukemia.

15. If the response to any portion of Interrogatory No. 14 is yes, state whether and which CRACIT runs which formed the basis for the results in the IPPSS calculated such results, provide all such results together with an identification of the release category, meteorological assumptions, and public response assumptions associated with each such result.

16. If the response to any portion of Interrogatory No. 14 is yes, provide all cumulative complementary distribution functions, risk curves, and/or other probabilistic expressions of the probability of causing the specified health effectrs consequences versus distance.

17. State what the licensees believe to be the relationship (if any) between the population density in the region surrounding Indian Point and the magnitude of the consequences resulting from accidental releases of radioactivity from Indian Point, specify the basis for this relationship, and

provide all documents which contain and/or pertain to this relationship or the lack thereof of any such relationship.

18. State whether the licensees have compared the risk of continued operation of Indian Point to the risk of continued operation of any other nuclear powerplant in the United States, and for each such plant so compared, specify the name of the plant, the method by which the risk posed by that plant was calculated, the uncertainty in the risk and the method by which it was calculated, how the method by which the risk and uncertainty in the risk were calculated for these plants differs from the method by which these parameters were calculated for Indian Point, the population surrounding each such plant, the types of accidents and release categories considered in the assessment of the risk posed by continued operation of each such plant, and state the basis for comparison of the risk posed by continued operation of each such plant with the risk posed by the continued operation of Indian Point.

19. Provide all documents which contain and/or pertain to the analyses described in Interrogatory No. 18.

20. State whether the licensees have evaluated the risk posed by accidents at non-nuclear electrical generating facilities, and for each such evaluation, specify the type of facility, the size of the facility (in megawatts electrical generating capacity), the location of any such facility, the method by which the risk posed by accidents at each such facility was calculated, the uncertainty in the results of the risk calculations for each such facility, the types of accidents occurring at such facilities and their probability of occurrence, the types of consequences resulting from accidents

at such facilities, the magnitude of consequences resulting from accidents at such facilities, and the distribution of such consequences with distance from such facilities.

21. Provide all documents which contain and/or pertain to the evaluations and analyses described in Interrogatory No. 20.

22. Figure 6.2-1 in the IPPSS depicts graphically the "Indian Point Meteorological Regions" surrounding Indian Point. Specify the sources of all meteorological data from Indian Point Meteorological Regions 2 through and including (in sequence) 14.

23. Identify the sources of the population totals and evacuation vectors contained in Tables 6.2-5, 6.2-6, 6.2-7, 6.2-8, and 6.2-9 in the IPPSS, and provide all documents which contain and/or pertain to these data and the means by which they were derived or generated.

24. Identify the sources of the "Evacuation Data" contained in Tables 6.2-13A, 6.2-13B, 6.2-13C, 6.2-13D, and 6.2-13E in the IPPSS, and provide all documents which contain and/or pertain to these data and the means by which they were derived or generated.

25. Identify the sources of the "Time of Release", "Duration of Release", "Warning Time", and "Energy Release" data contained in Table 6.2-16 in the IPPSS, and provide all documents which contain and/or pertain to these data and the means by which they were derived or generated.

26. Specify how the wind roses on pages 6.2-57 and 6.2-58 of the IPPSS are interpreted, i.e., state whether the lines represent the direction from which the wind is blowing or whether the lines represent the direction in which the wind is blowing.

27. Provide copies of the wind roses on pages 6.2-57 and 6.2-58 with the compass headings noted on them, or specify precisely where the compass heading of North is located on these wind roses.

28. State whether the CRACIT model incorporates an assumption that releases of radioactivity are distributed evenly between day and night and evenly between the 12 months of the year, and, if not, state what assumptions are incorporated into the CRACIT model regarding the start times of releases and day and night and the months of the year, and, in either case, provide all documents which contain and/or pertain to these relationships and the means by which they were derived or generated.

29. State whether the CRACIT model can compute results for up to four "multi-phased" releases, define "multi-phase" releases, and specify how the time of release, duration of release, height of release, magnitude and isotopic makeup of the release, heat content of the release, and warning time for the release is determined for each such phase.

30. Provide copies of all documents which contain and/or pertain to a description of the CRACIT model, the user's manual or guide for the CRACIT model, the computer program(s) used in the CRACIT model, evaluations,

criticisms, and assessments of the CRACIT model, and descriptions of the differences between CRACTIT and the CRAC and CRAC2 models.

31. Provide all final results output from CRACIT model runs which were used in the IPPSS, including total consequences, distance versus magnitude data, magnitude versus probability data, release categories and leakage fractions assumed, source term assumptions, public response assumptions, release category probability assumptions, and an identification of which Indian Point reactor is analyzed for each such run.

32. Specify the basis for the assumption as expressed on page 6.1-11 of the IPPSS that an individual's exposure to a cloud of radioactivity released from Indian Point would last only about an hour, and provide all documents which contain and/or pertain to this assumption and the technical basis therefore.

33. State whether the CRACIT model assumes that chronic radiation exposure for the general public will occur for only one season for crops, and if so, specify the basis for that assumption, and provide all documents which contain and/or pertain to that assumptions and the basis therefore.

34. State whether the ORIGEN computer code was used to calculate the radionuclide inventory at the time of the accidents discussed, evaluated, or assessed in the IPPSS, and if so, specify all uncertainties in the results of the use of the ORIGEN code, whether the uncertainty will result in a conservative or non-conservative result and the magnitude of that result, and

the impact such uncertainties have on the health effects consequences estimated using the CRACIT model for Indian Point.

Respectfully submitted,

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