UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION



ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:
Louis J. Carter, Chairman
Frederick J. Shon
Dr. Oscar H. Paris

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| In the Matter of | : | |
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| CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. (Indian Point, Unit No. 2) | : | Docket Nos. 50-247 SP<br>50-286 SP |
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| POWER AUTHORITY OF THE STATE OF NEW YORK, (Indian Point, Unit No. 3) | : | June 7, 1982 |
| | : | |

CON EDISON'S TESTIMONY IN REGARD
TO ON-SITE EMERGENCY PLANNING

SUBMITTED BY:

CONSOLIDATED EDISON EMERGENCY PLANNING PANEL

Lester A. Cohen
Charles W. Jackson
George Liebler
William A. Monti

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# CON EDISON EMERGENCY PLANNING PANEL

## I. INTRODUCTION

### A. Purpose of this Testimony

The purpose of this testimony is to discuss Con Edison's responsibilities regarding emergency planning. This testimony addresses Commission Questions 3 and 4. The testimony will address Con Edison's Indian Point on-site emergency plan, the relationship of this plan to other emergency measures for Indian Point, the training received by Con Edison personnel, the emergency facilities and equipment maintained by Con Edison, the communications system designed to deal with an emergency and, finally, Con Edison's role in monitoring releases of radioactivity off-site.

### B. Professional Qualifications of Members of the Panel

Charles W. Jackson

Mr. Jackson is Vice President, Nuclear Power for Consolidated Edison Company of New York, Inc. He was elected to this position effective March 1, 1981. As Vice President, Nuclear Power, Mr. Jackson is responsible for overall facility operation at Con Edison's Indian Point facility, including plant operations, maintenance, radiation protection, training and on-site emergency planning.

Mr. Jackson was first employed by Con Edison in 1968 after receiving a Bachelor of Science in Nuclear Engineering from New York University. After completing various engineering assignments in Power Generation and Nuclear Engineering, Mr. Jackson was assigned as the Division Engineer in the Nuclear Licensing Division in 1973. In this position he was responsible for obtaining and maintaining licenses for Con Edison's nuclear activities. In 1979 Mr. Jackson was appointed Director, Quality Assurance and Reliability. He was responsible for administering quality assurance activities at the corporate level, including the monitoring of all nuclear quality assurance activities. During this time, Mr. Jackson was designated Project Manager for Emergency Planning and was responsible for the corporate coordination of the Emergency Plans related to the Indian Point Station.

Lester A. Cohen

Mr. Cohen was hired by Con Edison as a Senior Engineer in the Emissions Control Bureau of the Nuclear and Emissions Control Engineering Department in 1972. In this position Mr. Cohen was responsible for planning administrative technical support for meteorological programs and air quality related to corporate facilities. In 1978, Mr. Cohen was transferred to the Environmental Affairs Department as Senior Meteorologist in the Air and Noise section, where he continued to perform the same functions as in the Emissions Control

Bureau. Mr. Cohen currently is a member of the Con Edison Radiation Safety Subcommittee.

Mr. Cohen received both his Bachelor of Arts in Meteorology (1960) and Master of Science in Meteor logy (1963) from New York University. Mr. Cohen was employed as a research assistant by the NYU College of Engineering in the Meteorology Department from 1960-1963. His duties included research, teaching courses in weather forecasting, weather observations and reporting.

In April 1963 Mr. Cohen joined Brookhaven National Laboratory in Upton, N.Y. as an associate in the Meteorology Group of the Instrumentation and Health Physics Department. These programs at Brookhaven were sponsored by the Atomic Energy Commission and were designed to provide field data to document atmospheric processes.

While at Brookhaven, Mr. Cohen planned and directed airborne and ground level tracer experiments which involved tracking plumes and collecting atmospheric samples. Additional activities involved plume rise experiments, development of airborne samples and meteorological acquisition systems. He has published technical papers on the aforementioned activities in scientific journals. Mr. Cohen has also worked as a private meteorological consultant to utilities and industrial clients.

In 1971 Mr. Cohen was employed by Enviro Metrics, Inc. as Eastern Field Manager for air quality instrumentation and then by Dames and Moore as a Senior Meteorologist.

Mr. Cohen's professional associations have included the American Meteorological Society, the Air Pollution Control Association, the American Nuclear Society Standards Working Group 2.5, "Guidelines for Determining Meteorological Information Appropriate for Power Reactor Sites," and the Atomic Industrial Forum subcommittee on meteorological criteria related to NUREG-0654.

George Liebler

Mr. Liebler is the Emergency Planning Director at the Con Edison Indian Point Unit 2. Mr. Liebler has been involved in radiation safety at Indian Point since 1962 when Unit No. 1 began operations. Prior to that, Mr. Liebler was involved for two years in the preoperational environmental survey mandated by the then Atomic Energy Commission. In 1965 he became the Health Physics Supervisor on Unit No. 1. He was promoted in 1969 to Supervising Engineer in charge of the Technical Services Bureau responsibilities for Units 1, 2 and 3. During 1964 Mr. Liebler became actively involved in developing the forerunner of today's emergency plan. In 1976 Mr. Liebler became the Radiological Engineer with responsibility for work on emergency planning. In 1979 he started his present full-time duties of coordinating emergency planning at the Indian Point site.

Additionally, he has been a member of the Health Physics Society since 1968.

William A. Monti

Mr. Monti is Con Edison's Nuclear Consultant-Power Generation. His responsibilities include assistance to the Power Generation Department in the operation and maintenance of Indian Point Unit 2. Mr. Monti was graduated from the State University of New York - Maritime College with a Bachelor of Marine Engineering in 1962. Upon graduation from college, Mr. Monti was employed from 1962 to 1964 by Foster Wheeler Corporation which manufactures components for nuclear reactors for U.S. Navy submarines. While at Foster Wheeler, Mr. Monti was involved in the design and fabrication of reactor vessels and steam generators. In 1964 Mr. Monti was employed by General Dynamics/Electric Boat Division. While at General Dynamics, Mr. Monti participated in the design of nuclear reactor plant systems for submarines. In 1967 Mr. Monti was hired by Con Edison as a Production Engineer at the Indian Point Station. Since 1967 Mr. Monti has been employed in a number of positions at Indian Point including Test Engineer, Operations Engineer Unit 1, Plant Engineer, Refueling Engineer and General Manager - Nuclear Power Generation. Mr. Monti was responsible for the operation and maintenance of Indian Point 2 from 1978 to 1981.

## II. THE CONTEXT OF ON-SITE EMERGENCY PLANNING

On-site emergency planning for the Con Edison Indian Point Units is contained in two documents: 1) The Emergency Plan (The Plan) and 2) The Emergency Procedures Document. The Plan describes the responsibilities of Con Edison personnel at the Indian Point Site during emergency situations. It identifies an On-site Emergency Organization, describes facilities and equipment, assigns responsibilities and authorities, and identifies proceesses for responding to all emergencies from minor injury to personnel to conditions having off-site radiological consequences. The procedures for implementing this Plan are presented in the Emergency Procedures Document. These procedures identify the elements of the On-site Emergency Organization and the interface with off-site support agencies. The plan also includes the arrangements and agreements that have been made with off-site agencies to furnish support during emergency situations.

Although the testimony of this panel is limited to Con Edison's role in emergency planning for an accident at Indian Point, it must be realized that the emergency planning effort at Indian Point is not limited to Con Edison's on-site emergency plans. In addition to the Power Authority's separate plan for Indian Point 3 which, like the Indian Point Unit 1 and 2 plan, consists of a "plan" and "procedures document", Con Edison and the Power Authority

have entered into a Memorandum of Understanding to provide for joint planning and implementation of emergency response activities at Indian Point. In addition to the on-site emergency planning activities of Con Edison and the Power Authority, overall planning for a radiological emergency at Indian Point includes the following:

1. The State Plan - This plan, which was prepared by the State and sets out the responsibilities of various state agencies in the case of a radiological emergency, applies to all commercial nuclear facilities in the state.

2. The County Plans - Separate radiological emergency response plans were prepared for the use of each of the four counties with areas within the Indian Point plume Emergency Planning Zone (EPZ).

3. Contiguous State Plans - These are plans prepared by the contiguous states within a 50-mile radius of Indian Point.

Just as it is important to recognize the role of on-site emergency planning in the overall scheme for radiological emergency planning in the Indian Point area, it is essential to recognize the role of the on-site emergency planning effort in the day-to-day operations of the unit. The ability to determine the existence of a potential emergency condition, to assess and mitigate its impact and

to take appropriate actions to inform responsible utility and off-site governmental agency officials in the case of an emergency are assured through the integration of emergency planning concerns in the day-to-day operations of the plant.

Plant operators receive intensive training to familiarize themselves with the operation of various components of the plant. An important part of plant operators' training involves use of an interactive control room simulator which simulates the actual operations of the plant and permits operators to deal with facsimile representations of numerous abnormal plant conditions. The simulator is an integral component of the program to train operators to learn how to recognize and to respond quickly to these abnormal conditions.

The training received by plant operators is reinforced and supported by procedures dealing with the operation of the plant components. The procedures provide plant personnel who are monitoring the components with the expected or normal operating ranges of these components. If an abnormal condition were to occur, the operators would initiate actions specified in abnormal operating and emergency operating procedures for those components in order to control and mitigate this off-normal condition and to assess the impact of the condition on other parts of the plant.

The plant emergency operating procedures detail

the specific instruments, parameters or equipment status which identify the overall severity of the emergency condition in terms of Emergency Action Levels (EAL's). These procedures also provide a list of the immediate actions and subsequent actions to be taken to ensure that the situation is being properly controlled and its consequences are being mitigated. The various initiating conditions and EAL's specified in the emergency operating procedures are used as a basis for determining if plant conditions warrant activation of the emergency plan and the declaration of one of the four emergency classifications specified in NUREG-0654, Rev. 1. These emergency classifications are: Unusual Event, Alert, Site Area Emergency and General Emergency. Each of the emergency action levels is listed in the on-site Emergency Plan and categorized with respect to the four classifications of emergencies.

The EAL's for Indian Point 2 have been developed based upon the guidance provided by NUREG-0654, Rev. 1. The Indian Point EAL's provide a detailed listing of possible abnormal conditions of plant systems and components and are all based upon a thorough evaluation of the specific components installed at Indian Point 2. The ability of the plant operators to deal with these abnormal conditions in a specified manner, to correctly classify the conditions according to the classification system of NUREG-0654, Rev. 1, and to make the required notifications to utility

and governmental personnel is assured through formal training of plant personnel and through their familiarity with emergency operating procedures. In addition, staffing levels in the control room have been established to provide the means to obtain an independent assessment of plant operating conditions.

The training on-site personnel receive and the detailed procedures provided to plant personnel provide reasonable assurance that they will correctly perceive and classify emergency conditions, will take the steps necessary to mitigate and control the situation, and will timely notify appropriate utility and off-site government personnel.

The ability of plant personnel to adequately perceive abnormal conditions, and to notify governmental officials of these conditions is shown by the history of regular notification of these officials by plant personnel.

## III. OVERVIEW OF ON-SITE EMERGENCY PLANNING AT INDIAN POINT

Planning is a continuing process, in which improvements are made to reflect changed conditions and increased knowledge over time. Emergency planning has been in effect at Indian Point since the commencement of operations at Indian Point 1 more than twenty years ago. Emergency planning has continuously evolved to meet changing regulatory requirements and other circumstances. The current on-site emergency plan for Indian Point was developed in accordance with the guidance provided

in NUREG-0654, Rev. 1. As part of our on-going effort to improve our emergency preparedness, Con Edison has taken action to effect improvements to each of the items identified by the NRC in its appraisal of emergency preparedness at Indian Point Units 1 and 2 in May, 1981. Con Edison has completed all identified items except for the back-up radio system for the Utilities/New York State/County hotline.

Primary responsibility for licensee emergency response has been assigned and the emergency responsibilities of the various licensee support organizations have been specifically established by the Emergency Plan. All of the principal on-site response organizations have staff assignments designated in the Emergency Plan to insure initial response and further augmentation on an appropriate basis. The staffing guidance of NUREG-0654 for on shift personnel (Staffing Level I), for 60 minute augmentation (Staffing Level II), and for corporate support (Staffing Level III), is fully provided for in the Emergency Plan .

Arrangements have been made to accommodate federal, state and local governmental staff at the licensees's Emergency Control Center and federal personnel at the Recovery Center. The Emergency Control Center is located in the Con Edison Buchanan Service Center complex and comprises two levels. The lower level is for the licensee emergency organization to use in gathering data on plant conditions, on-site and off-site radiological conditions, and performing

off-site dose assessment. The upper level is to accommodate Nuclear Regulatory Commission, Federal Emergency Management Agency, New York State, and County representatives. In addition, a back-up facility is available at the Con Edison Eastview Service Center. The Recovery Center is located on-site in the Simulator Building. Overall coordination of plant operations, accident assessment and recovery operations would be directed from this Center.

Other organizations that may assist the licensee during emergencies have been identified in the plan. They include fire, ambulance, the United States Coast Guard, hospitals, police, Department of Energy Radiological Assistance Plan, Westinghouse, and a laboratory facility to assist in conducting environmental radiological assessment. Letters which set forth agreements with each of these organizations are included in Appendix A of the Plan.

The State, County and Licensee emergency plans, as well as NUREG-0654, Rev. 1, look to the Licensees to perform the required evaluation of plant systems and effluent parameters, to categorize the emergency as per the NUREG-0654, Rev. 1. four classification system for potential emergencies, and to immediately notify the off-site authorities via the Radiological Emergency Communications System (RECS), giving them the dose

estimates and recommendations for protective actions to be taken by the off-site population. The RECS is a direct line - multiparty line phone connecting the licensees with the State and County Warning Points. Con Edison's program for assessing off-site radiation levels is described in Section IV of the testimony.

Procedures contained in the Licensee's Emergency Procedures Document provide for notification of emergency personnel. A radio paging system is used for notifying emergency personnel who may be off-site at the start of the emergency and who would be needed to meet the 60 minute minimum staffing level of NUREG-0654, Rev. 1.

Standard messages have been prepared for initial and follow-up messages from the the Licensee to the off-site authorities. This information is used by the authorities for accident evaluation and to formulate notification messages to the public.

The means to provide early notification and clear instructions to the public within the plume EPZ have been instituted. It consists of an Alert Notification System (ANS) and the use of the Emergency Broadcast System (EBS). In addition, back-up contingency provisions are made in the State and County plans for notification of the public. The ANS has been designed to provide public alert consistent with the guidance provided in NUREG-0654, Rev. 1. Sirens which did not operate

or were suspect during the Indian Point March 3, 1982 exercise have been repaired, and individual tests have recently confirmed the operability of each of the 88 sirens. Further testing of the ANS will occur subsequent to development of final FEMA acceptance criteria for nuclear power plant systems.

Communication equipment is available to the Licensee emergency forces at the site and in the field to enable them to perform their emergency duties and communicate with each other. The plant has a page/party system to provide for communication with personnel throughout the plant. In addition, there is a conventional telephone system available. Radio communications have been designed for on-site forces to communicate with survey teams in the field, security forces on-site, Corporate Headquarters, County Emergency Operations Centers, New York State Southern District Office of Disaster Preparedness and the New York State Police at Annsville. In addition, there is a direct hotline to the NRC headquarters in Bethesda, Maryland, as well as a Health Physics Network Line to the NRC's Regional office in King of Prussia, Pennsylvania and the Bethesda headquarters. The various communication systems are tested on a periodic basis to insure operability.

Information on emergency planning has been made available to the public by means of an information booklet mailed to households and businesses within the plume EPZ. The booklet includes information on how the public would

be notified of an emergency, of protective actions that might be instituted (such as sheltering), and the method for evacuation if it should become necessary. This mailing is to be repeated on a yearly basis and the booklet will be revised to ensure that it continues to provide adequate information to the public.

In order to ensure that the public would be adequately informed via the news media of developments during an emergency, an Emergency News Center has been established in the Verplanck Firehouse. The News Center would be utilized by Licensee, NRC, State and County Public information personnel to provide information to the news media regarding an emergency.

Adequate emergency facilities and equipment have been provided and are maintained at the site to support the emergency response effort. These facilities include the Control Room, where the plant operators would work to mitigate the accident; the Technical Support Center, where technical personnel would evaluate the accident and propose methods for the emergency forces to use in mitigating the accident; the Operational Support Center, where operational support personnel would respond as required to perform plant radiation surveys, and repair work on plant equipment; the Emergency Control Center where the Emergency Director would interface with Federal, State and County representatives and direct off-site surveys

and dose assessments the Recovery Center, where overall coordination of plant operations, accident assessment, and recovery operations would be directed. These facilities have been designed and equipped pursuant to NUREG-0654, Rev. 1. Dedicated emergency equipment is located at each of these facilites and is checked each month.

Adequate methods, systems and equipment for monitoring and assessing actual and potential offsite consequences of a radiological emergency include the following:

1. Plant parameter instrumentation which reads out in the control room to allow the Senior Reactor Operator to monitor plant systems.

2. Radiation detection instrumentation which monitors plant effluents to measure any radioactive releases to the environment.

3. A method for determining the magnitude of radiological releases and the effect on the off-site population using release rates and the meteorological conditions at the time of release. This results in estimates of whole body and thyroid exposure to the off-site population.

4. A ring of 16 radiation detectors located approximately one to two miles from the plant. Data from each detector and associated wind set (direction and wind speed) are continuously telemetered to the Meteorological Dose Assessment System (MIDAS).

5. MIDAS continuously reports the meteorological conditions (wind speed, direction and stability) from the primary and back-up tower and the wind sets discussed in (4). When radiological release data are supplied to MIDAS, dose rate assessment at the plume center line for the site boundary and downwind distances are computed.

6. Off-site monitoring teams using radio equipped vehicles, perform radiation field surveys and

airborne contamination surveys in the environment to supplement plume tracking information.

A more comprehensive discussion of Indian Point meteorology and Con Edison's role in calculating and monitoring off-site radiation levels is presented in Section IV of this testimony.

Protective actions have been developed for the plume EPZ for emergency workers and the public. Protective actions, i.e., sheltering or evacuation, are based on the Environmental Protection Agency guidelines for exposure to the population at large. In the event of a release the Licensees recommend protective actions to the off-site authorities based on the actual and projected assessment of radiation dose to the population. In this regard it should be noted that the NRC, the State and the Counties can independently access MIDAS to obtain meteorological and atmospheric diffusion data. Protective actions for the 50 mile ingestion exposure pathway (50 mile EPZ) have been developed by the State of New York and are included in its emergency plan.

Radiation exposure control for emergency workers at the site is defined in the emergency plan implementation procedures which follow the EPA guidelines. In addition, all plant personnel are trained in radiation protection and are provided with radiation detection devices.

If emergency medical service is needed for an injured site worker who may be radioactively contaminated, arrangements have been made, and agreement letters signed, with the Peekskill Community Hospital and the Northern Westchester Hospital Center and to provide medical treatment and further decontamination at the hospital. Annual training and drills that include participation by Con Edison, ambulance service and hospital staff have demonstrated the effectiveness of this arrangement.

An annual exercise in which major portions of the emergency response capabilities are exercised in a hypothetical accident scenario involving the off-site authorities is conducted at Indian Point. It includes accident classification, notification, dose assessment, recommendations of protective actions and off-site surveys. In addition, separate fire emergency and medical drills are conducted with the Verplanck Volunteer Fire Department and hospital/ambulance corps. Deficiencies which are identified in the drills and exercise are corrected. Comments received as a result of drills and exercises are evaluated and improvements are made when necessary.

Radiological emergency response training is provided on an annual basis to all Con Edison personnel who may be

called upon to assist in an emergency in order to ensure they are familiar with their assigned responsibilities. Emergency response training is provided both through classroom lectures and through periodic drills using emergency facilities and equipment. In addition, training is offered to members of the New York State Police, local fire departments, ambulance corps and designated hospitals who may be called upon to respond to an emergency at the Indian Point Site.

Continuing efforts ensure that the Emergency Plan is updated and improved to meet changed circumstances. Responsibilities for Plan development, review, distribution and updating have been established and are delineated in the licensee's Plan. The Nuclear Regulatory Commission, N.Y.S. Dept. of Health, and the counties of Westchester, Rockland, Putnam and Orange receive copies of all revisions of the Plan.

## IV. Monitoring and Calculating of Off-Site Radiation Levels

This section deals with Con Edison's role in monitoring and calculating radiation levels offsite in case of a radiological emergency at Indian Point. Part A discusses the characteristics of Indian Point meteorology, while Part B

discusses the programs in place to calculate and monitor offsite radiation levels.

A. Indian Point Meteorology

New York University (NYU), under contract to Con Edison, began studying meteorological characteristics related to Indian Point and environs in 1955. Original studies conducted by Dr. Ben Davidson, and later by Dr. James Halitsky and Mr. Edward Kaplin, have documented the characteristics of the wind system in the Hudson Valley around Indian Point. Observations taken by the U.S. Weather Bureau in 1932-34 at the Peekskill Military Academy, later by NYU at Indian Point in 1956, 1968, 1970 and by Con Edison/Power Authority since 1973, and studies by York Service Corporation serve to confirm topographical and meteorological conditions in the area. This information is sufficient to satisfy the guidance for determining off-site radiation levels as set forth in NUREG-0654 Rev. 1.

Since the original wind study conducted by NYU in 1955, using an on-site 300 foot meteorological tower, several other on-site towers were erected, with a present 122 meter meteorological tower erected in 1973. This tower is the primary on-site meteorological tower. A separate ten meter backup tower is also located on-site. Both of these towers are supported by emergency power and provide on-site real time meteorological data to ancillary systems. The towers are instrumented in accordance with criteria established in

NRC Reg. Guide 1.23 "Meteorological Programs in Support of Nuclear Power Plants" and FEMA/NRC NUREG-0654, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response and Preparedness in Support of Nuclear Power Plants."

B. Licensees' Program For Calculating and Monitoring Off-Site Radiological Levels

In response to the regulatory requirements for meteorological systems at nuclear power plants, Con Edison/PASNY enhanced the on-site meteorological program to include a computerized MIDAS located in the Emergency Control Center. In accordance with Appendix 2 of NUREG-0654 Rev. 1, the primary and backup on-site meteorological tower parameters are continuously telemetered into MIDAS, providing a real time data base. Supplementing the onsite meteorological systems are real time off-site wind speed and direction sensors, one located in each of the sixteen meteorological wind sectors at distances ranging from one half to two miles from Indian Point. Also, at each of these sixteen locations is a radiation detector. All of the meteorological and radiation data are continuously telemetered to an onsite minicomputer which interfaces to MIDAS. In addition, a 24 hour weather forecast from an independent weather service provides hourly wind speed, wind direction, atmospheric stability and precipitation data which is inputted into MIDAS every three hours.

In summary MIDAS receives data from the following sources:

- o Primary meteorological tower
- o Backup meteorological tower
- o Sixteen offsite wind sensors
- o Sixteen offsite radiation monitors
- o Independent 24 hour Weather forecast service

MIDAS has the capability to store months of data and perform atmospheric diffusion calculations for use in emergency preparedness Telephone and microwave communication interfaces permit off-site users (NRC, New York State and the four counties) to gain access to actual meteorological data. Digital and graphic displays of meteorological parameters and radiation levels are available to the onsite emergency response teams for offsite plume dispersion calculations.

Meteorological data are also continuously transmitted to both Unit 2 and 3 control rooms providing digital and analog outputs of wind direction, wind speed and atmospheric stability. A secondary microprocessor system at the primary and backup meteorological towers can also be interrogated by telephone for real time data.

Information from a 350 foot meteorological tower located at Orange and Rockland Utilities, Inc. Bowline Point plant, approximately four miles south of Indian Point, can also be interrogated by telephone for real time data.

The total valley wind monitoring capability within four miles of the site consists of twenty-three sensors. The network includes: four wind sensors at Indian Point; three on the primary meteorological tower and one on the backup tower;

three at Bowline Point; and one in each of the sixteen meteorological wind sectors. This data provides a detailed wind flow assessment for atmospheric transport characteristics used in emergency response planning.

In addition, a portable battery operated wind monitoring system is also available for use off-site to determine wind speed and direction.

In addition to the above data base, emergency personnel have access to meteorological data from the National Weather Service (NWS) stations within a fifty mile radius of Indian Point by telephone. Similar meteorological data can be obtained from an independent computer system accessed by telephone, to acquire necessary NWS data using a portable computer terminal. Data from these NWS stations provide an overview of the meteorological conditions existing within the fifty mile radius of Indian Point.

A minicomputer system interfaced to ARAC (Atmospheric Release and Advisory Capability) has been installed at Indian Point, with an identical unit at the New York State Radiological Health Offices in Albany. Both of these systems acquire meteorological data from the primary on-site tower and transmit data over telephone lines to the ARAC central computer at Lawrence Livermore Laboratory in Livermore, California. ARAC and MIDAS have the capability to perform plume transport and atmospheric diffusion calculations. These systems have been

described in NUREG/CR-2162 "Minicomputer Capabilities Related Meteorological Aspects of Emergency Response."

A separate method, independent of MIDAS can be used to calculate offsite concentrations. Transparent diffusion overlays, developed from meteorological studies in the Indian Point area are used to determine offsite concentrations. The overlays illustrate the relative dispersion characteristics, incorporating effects of topography and atmospheric stability. A specific overlay would be placed over an area map to depict the plume transport and relative concentration.

The site representative meteorological data and results of the various studies conducted by NYU and York Services Corporation have been incorporated into the License emergency planning activites. Training programs have been undertaken to instruct personnel in acquiring representative meteorological data and utilizing these data in making subsequent dose assessments.

Utilization of the MIDAS computer will enable emergency response to address all types of releases on a real time basis within minutes. The meteorological studies conducted at Indian Point and the results obtained are continously reviewed and programs are modified as required. The meteorological equipment in place at Indian Point assures that licensees have the ability to quickly provide accurate recommendations for off-site protective actions.

## V. CONCLUSIONS

Con Edison's emergency planning activities at Indian Point 2 fully comply with the Commission's emergency planning regulations in that they have been developed and conducted pursuant to the guidance stated in NUREG-0654, Rev. 1. This planning effort and the training received by the plant personnel provides reasonable assurance that the personnel will respond correctly to abnormal conditions and will promptly inform authorities of these conditions.

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CERTIFICATE OF SERVICE

I certify that I have served copies of "Con Edison's Testimony in regard to On-Site Emergency Planning" on the following parties by first class mail, postage prepaid, this 7th day of June 1982.

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