ATTACHMENT A

Technical Specification
Page Revisions

Consolidated Edison Company of New York, Inc.
Indian Point Unit No. 2
Docket No. 50-247
July, 1986

3.14 HURRICANE ALERT

Applicability

Applies when there is a hurricane with sustained surface winds in excess of 87 knots (approximately 100 mph) within 500 nautical miles and south of Indian Point AND a Hurricane Warning has been issued for any coastal area west of New Haven, Connecticut.

Objective

To define actions to be taken during the applicable hurricane condition.

Specifications

A. Hurricane Alert Condition

After receipt of a National Weather Service (NWS) hurricane warning indicating that all of the conditions in Table 3.14-1 are met, the following actions will be taken:

(1) Within one hour notify the NRC Operations Center. (This notification is in lieu of the reporting requirements of 10 CFR 50.72 and 10 CFR 50.73.)

(2) Ensure that meteorological support is available to provide meteorological guidance on the progress of the hurricane, its forecast motion and intensity.

B. Hurricane Shutdown Condition

If the criteria in Table 3.14-1 continue to be met and the hurricane eye moves to within 320 nautical miles of Indian Point, and unless meteorological guidance indicates it is unlikely that hurricane sustained surface winds at Indian Point will exceed 87 knots, the following actions shall be taken:

(1) Indian Point Unit 2 shall be placed in the hot shutdown condition within four (4) hours.

(2) Appropriate steps to ensure that the plant is in the Cold Shutdown condition prior to arrival on site of hurricane sustained surface winds exceeding 87 knots.

C. Termination of Shutdown

If subsequent meteorological guidance indicates that sustained surface winds will not or no longer exceed 87 knots at the site, actions taken toward plant shutdown may be terminated and the plant may resume normal operation.

Basis:

Specification 3.14 provides for the shutdown of Indian Point 2 prior to arrival of hurricane sustained surface winds in excess of 87 knots at the site. It also recognizes that most hurricanes entering the area defined in Specification 3.14.B will weaken over colder ocean waters north of the Gulf Stream or will turn and take a more northeasterly course so as to exit the action area without threatening the Indian Point site. Specification 3.14, during the applicable hurricane condition, allows the plant to maintain or return to normal operation in any of the following three situations:

(1) The NWS cancels hurricane warnings altogether for the coastal areas described in Table 3.14-1.

(2) Although warnings for hurricane winds (defined as greater than or equal to 64 knots by NWS) remain in effect for the coastal areas described in Table 3.14-1, the NWS issues a report indicating that the hurricane no longer has sustained surface winds in excess of 87 knots and is not expected to reintensify.

(3) Although a hurricane with sustained surface winds in excess of 87 knots remains in the area described in paragraph 3.14.B, and hurricane warnings remain in effect for some portion of the area, Indian Point is so far abeam of the

hurricane track that sustained surface winds in excess of 87 knots are not expected to reach Indian Point. Factors that would be considered by qualified meteorologists in making such a determination include:

(a) the angle between the direction from the hurricane to Indian Point and the direction of current hurricane movement,

(b) the probability of any change in the hurricane direction of movement during the next 12 hours, and

(c) Distribution of both 87 knot and hurricane force (64 knot) winds extending outward from the position of the hurricane eye, and the distance from the outer edge of these hurricane force winds to Indian Point, recognizing that maximum hurricane winds generally occur in the northeast quadrant of the storm.

(d) Expected changes in the wind speed associated with the hurricane as it approaches the Indian Point site.

With respect to consideration (b), an analysis of hurricane tracks during the period 1881 to 1980 indicates that hurricane tracks usually deviate only slightly from straight lines in mid latitudes. For all hurricanes

located within 320 nautical miles of Indian Point, the probability that the direction change of the storm track from one 12-hour period to next will be less than 21° is 87%, the probability that it will be less than 47° is 95%, and the probability that it will be less than 62° is 99%. As the translational velocity of the storm increases, the direction change is less; for example, if the translational velocity is greater than 20 mph (17.4 knots), there is a 99% probability that the direction change will be less than 36°. There is an equal chance that the direction change will be toward Indian Point or farther away from Indian Point than the straight line path. Therefore, the probability of the hurricane direction changing to one closer to Indian Point than would occur with a straight line track is only half the complement of probability stated above. That is, the probability of a direction change of 36° closer to Indian Point is only 0.5% when the translational velocity is greater than 20 mph.

Within technical specification 3.14, meteorological support, guidance, and determination provided by qualified meteorological personnel means support, guidance and determination by Con Edison meteorologists or meteorologists providing support to Con Edison.

TABLE 3.14-1

Criteria for Indian Point Hurricane Alert

1. The hurricane warning area covers any coastal area that is west of 72 degrees 54 minutes West Longitude (the longitude of New Haven, Connecticut) and is within 500 nautical miles of Indian Point;

2. The hurricane has maximum sustained surface winds exceeding 87 knots (approximately 100 miles per hour), and

3. The eye of the hurricane is within 500 nautical miles and south of Indian Point.

4.17 HURRICANE ALERT

Applicability

Applies to the monitoring requirements of a hurricane within 500 nautical miles and south of Indian Point and when Hurricane Warnings are issued for any coastal area west of New Haven, Connecticut.

Objective

To begin tracking hurricane movement for the purpose of taking the actions of Specification 3.14.

Specification

A. Upon receipt of Hurricane Warnings from the National Weather Service (NWS), as defined in Section 3.14.A, take the following actions:

1. Monitor the NWS reports (bulletins and advisories) as issued, recording hurricane direction, translational velocity and maximum surface wind speed.

2. Continue to monitor NWS reports and record data until the NWS cancels hurricane warnings for the area described in Table 3.14-1 of Section 3.14.

ATTACHMENT B

Safety Assessment

Consolidated Edison Company of New York, Inc.
Indian Point Unit No. 2
Docket No. 50-247
July, 1986

Safety Assessment

The proposed Technical Specification changes revise the limiting conditions for operation (LCO's) and surveillance requirements for a severe hurricane condition in the vicinity of Indian Point Unit No. 2 (IP-2). These proposed changes resulted from a review of historical hurricane track data for the eastern coast of the United States and our recent experience with Hurricane "Gloria" in relation to existing technical specifications. Our review indicated the need to:

1. provide consistency with terminology;

2. clearly present the initiating conditions and necessary plant actions;

3. allow plant restart or to remain at normal operation if, based on qualified meteorological guidance, hurricane sustained surface winds in excess of 87 knots will not impact the site, even though the hurricane is within 320 nautical miles of the plant; and

4. provide a "Basis" section that would describe the primary meteorological factors to be considered in making the determination that hurricane sustained surface winds in excess of 87 knots will not impact the site.

Historical meteorological data illustrate the following characteristics for most North Atlantic hurricanes.

1. Tropical storms generally diminish in intensity as they proceed northward, and the wind speed is always reduced as the storm moves onto land because of the frictional effects of the terrain and the unavailability of moisture on land.

2. Hurricanes generally track east of IP-2.

3. For landfalling hurricanes along the Mid-Atlantic coast, the median and near-maximum translational speeds are 20 and 35 knots, respectively.

4. Maximum hurricane winds do not occur near the center or to the west of the storm path but well to the northeast.

Hurricane Gloria, demonstrating the characteristics described above, affected the New York coastal area on September 27, 1985. Gloria pursued a track paralleling the eastern United States coastline and weakened in strength as it moved northward. Based on the September 27, 1985, 2 am NWS advisory, it was estimated that Hurricane Gloria would be within 320 nm of Indian Point by 3 am. As a result IP-2 commenced hot-shutdown procedures by 3 am. The 6 am NWS advisory indicated that Gloria was located 50 miles east of Norfolk, VA with maximum sustained winds of 130 mph. Based on the information in this advisory, it was estimated that the eye of the

hurricane would make landfall on Long Island between noon and 2 pm. In view of the maximum sustained wind speeds reported in aviation weather reports along the east coast and the fact that New York City was forecast to be west of the eye the storm, the forecast indicated that sustained surface winds of 87 knots would not be expected to occur onsite at IP-2. Gloria made landfall at noon, September 27, 1985, passing northward across Long Island and Connecticut. At this time the latest NWS advisory reported sustained winds in excess of 87 knots, but the highest measured wind at IP-2 was a gust (not a sustained wind) of only 59 knots at the 122 meter level. Had the proposed technical specification change been in effect IP-2 could have proceeded to restore normal operation at this time.

The proposed Technical Specification is contained in Attachment A to this Application and is written such that when the hurricane no longer meets the conditions requiring shutdown or a determination has been made by qualified meteorological personnel that the site will not experience winds in excess of 87 knots, shutdown actions may be obviated. The reasonableness and reliability of a determination not to shut down is assured due to the fact that it must be made by qualified meteorological personnel, and because there is an extensive 100 year data base on the behavior of hurricanes.

A hurricane with a wind speed of 87 knots at the IP-2 plant site represents a wind loading that is within the design basis of the safety related structures. Nevertheless, the proposed technical specifications are conservative in that they will provide sufficient time to allow an orderly safe shutdown when a hurricane is within a 320 nautical mile radius of the plant and forecasts indicate on-site sustained surface winds in excess of 87 knots are likely.

Specification 3.14.A requires prompt reporting to the NRC of any hurricane with sustained winds in excess of 87 knots and the hurricane eye is located within 500 nautical miles of the facility. In addition, Specification 3.14.A ensures that meteorological support is available to monitor and to analyze hurricane data in order to advise on projected hurricane movement and intensity. The existing basis for selecting the 500 nautical miles as a point to notify the NRC is not affected by the proposed change. This basis provides approximately a 24 hour advance warning with respect to landfalling hurricanes averaging 20 knots forward speed. The 24 hour advance notice is consistent with NWS criteria used to issue Hurricane Warnings for the New York City Coastal Area.

Unless meteorological guidance indicates it is unlikely that the site will experience sustained surface winds in excess of 87 knots, Specification 3.14.B would require the unit to be placed in the hot shutdown condition within four (4) hours when a hurricane with winds in excess of 87 knots is within 320 nautical miles of the IP-2 site. In addition, Specification 3.14.B would ensure that the Unit is in a cold shutdown condition prior to arrival of the hurricane on site unless forecasts indicate that the hurricane is unlikely to impact the site with sustained surface winds in excess of 87 knots. The basis for selecting 320 nautical miles as the point to initiate action to place the unit in hot shutdown within four (4) hours has not changed as a result of the proposed change. The total time to achieve a normal plant shutdown from

full power to cold shutdown is approximately 16 hours, and this time can be reduced to six hours, if necessary. Thus, even a fast moving hurricane with 87 knot winds would not reach IP-2 prior to cold shutdown.

Specification 3.14.C recognizes the fact that many hurricanes entering the area defined in Specification 3.14.B (i.e., within 320 nautical miles of IP-2) would be expected to weaken over the colder ocean waters north of the Gulf Stream or to turn and take a more northeasterly course so as to exit the proximate areas before threatening the IP-2 site. Thus, even though a hurricane with sustained surface winds in excess of 87 knots remains in the area, IP-2 is so far west of the hurricane track that these surface winds will not reach the site. Under these circumstances and after a qualified meteorological determination is made, Specification 3.14.C would obviate plant shutdown action. Such a meteorological determination would be made by qualified Con Edison or consultant meteorological personnel using data and analyses of hurricane movement, information provided by the NWS, and would include consideration of the following factors:

(a) hurricane positions and forecast movement,

(b) the angle between the direction from the hurricane to Indian Point and the direction of current hurricane movement,

(c) the probability of any change in the hurricane direction of movement during 12 hours,

(d) distribution of both 87 knots and hurricane force wind (64 knots) extending outward from the position of the hurricane eye, and the distance from the outer edge of these hurricane force winds to Indian Point, recognizing that maximum hurricane winds generally occur in the northeast quadrant of the storm, and

(e) expected changes in the wind speed associated with the hurricane as it approaches the Indian Point site.

With respect to Item (c), an analysis of hurricane tracks during the period 1881 to 1980 indicates that hurricane tracks usually deviate only slightly from straight lines in mid-latitudes. For hurricanes located within 320 nautical miles of Indian Point, the probability that the direction change of the storm track from one 12-hour period to the next will be less than 21^{o} is 87%, the probability that it will be less than 62^{o} is 99%. As the translational velocity of the storm increases, the direction change is less; for example, if the translational velocity is greater than 20 mph (17.4 knots), there is a 99% probability that the direction change will be less than 36^{o}. There is an equal chance that the direction change will be toward Indian Point or farther away from Indian Point than the straight line path. Therefore, the probability of the hurricane direction changing to one closer to Indian Point than would occur with a straight line track is only half the complement of probability stated above. That is, the probability of a direction change of 36^{o} closer to Indian Point is only 0.5% when the translational velocity is greater than 20 mph.

BASIS FOR NO SIGNIFICANT HAZARDS DETERMINATION

In accordance with the requirements of 10 CFR 50.92, the proposed technical specification change is deemed to involve no significant hazards consideration because operation of Indian Point Unit No. 2 (IP-2) in accordance with this change would not:

(1) Involve a significant increase in the probability or consequences of an accident previously evaluated, since the unit is required to be in the same shutdown status prior to arrival of winds on-site with sufficient intensity to threaten plant structures. The original IP-2 Hurricane Technical Specification requirement was requested by NRC as a result of its review of the IPSSS and was issued as Amendment No. 83 to the IP-2 Operating License on December 23, 1982. The original basis and intent of the issued Safety Evaluation with Amendment No. 83 are not degraded by the changes proposed in the enclosed application, since under both Amendment No. 83 and the proposed specification plant shut down is required prior to arrival of sustained surface winds exceeding 87 knots on site. Furthermore, the proposed specification would avoid possible unnecessary cycling of the plant which might occur under the present specification in instances where there is essentially no probability that hurricane sustained surface winds exceeding 87 knots will impact the site. The proposed technical specification changes would continue to require a prompt report in the event of a hurricane and action to ensure that the plant is in a cold shutdown condition prior to arrival on site of hurricane sustained surface winds in excess of 87 knots. Therefore this change cannot increase the probability or consequences of an accident previously evaluated,

(2) Create the possibility of a new or different kind of accident from any accident previously evaluated for the same reasons described in Item (1), although safety may be enhanced to some extent by the avoidance of unnecessary cycling of the unit, and

(3) Involve a significant reduction in a margin of safety. Several proposed modifications to Technical Specification 3.14 are purely administrative changes which relate to providing consistency in terminology and clear presentation of initiating condition and subsequent actions. The other changes which are not administrative relate to allowing a level of decision-making to occur as part of Technical Specification 3.14.B. "Hurricane Shutdown Condition" and 3.14.C "Termination of Shutdown" in making a determination to obviate shutdown actions. The reasonableness and reliability of a determination not to shutdown is assured due to the fact that it must be made by qualified meteorological personnel using factors described above in the safety assessment, and because there is an extensive 100 year data base on the behavior of hurricanes.

The factors that will be considered by qualified meteorological personnel will tend to generate a conservative forecast in determining if surface winds greater than 87 knots will impact IP-2. Our experience with Hurricane Gloria, an extremely dangerous Category 4 hurricane, demonstrated that our forecast projection of hurricane movement and intensity in relation to the IP-2 site was reliable and conservative. Therefore the proposed changes will not involve a significant reduction in the margin of safety.

The proposed changes have been reviewed by both the Station Nuclear Safety Committee and the Con Edison Nuclear Facilities Safety Committee. Both Committees concur that the proposed changes do not represent a significant hazards consideration and will not cause any change in the types or an increase in the amounts of effluents or any change in the authorized power level of the facility.