

R.6

February 3, 2003

NOTE TO COMMISSIONER ASSISTANTS

OCM/RM

- Dennis Rathbun
- Mike Tschiltz
- Alan Levin
- Jennifer Uhle
- Keith McConnell
- Bob McOsker
- Marian Zobler
- Karen Henderson
- Clare Kasputys
- Barbara Gabriel
- Linda Herr
- Terry Agneu
- Antoinette Waller

OCM/GJD

- Brad Jones
- Cynthia Jones
- Tom Hiltz
- Mike Layton
- Eric Benner
- Donna Smith
- Noble Green

OCM/EM

- Jeffry Sharkey
- Steve Hom
- James Beall
- Heather Astwood
- Linda Lewis
- Judy Ledbetter

OCM/ND

- Maria Lopez-Otin
- Roger Davis
- Rick Croteau
- Diane Flack
- Vicki Bolling
- Kia Jackson

OCM/JM

- Margie Doane
- John Thoma
- Spiros Droggitis
- Jake Zimmerman
- Lorna Kipfer
- Tojuana Fortune

FROM: John W. Craig /RA by Melinda Malloy Acting For/
Assistant for Operations, OEDO

SUBJECT: STAFF COMMENTS ON THE DRAFT REPORT ISSUED BY JAMES LEE WITT
ASSOCIATES ENTITLED "REVIEW OF EMERGENCY PREPAREDNESS AT
INDIAN POINT AND MILLSTONE-DRAFT," ISSUED JANUARY 10, 2003

The staff performed a preliminary review of the conclusions and recommendations contained in subject draft report. The draft report was prepared at the request of the State of New York, and was released for public comment on January 10, 2003. The comment period ends on February 7, 2003. The staff comments were limited to misunderstandings of the application of NRC regulatory requirements and guidance on the emergency preparedness planning and implementation process, and factual errors. The staff comments on the report are attached for your information. At this time, the staff does not intend to distribute these comments to any other organizations.

Attachment: As stated

- cc: W. Travers, EDO (w/attachment)
- C. Paperiello, DEDMRS (w/o attachment)
- W. Kane, DEDR (w/attachment)
- P. Norry, DEDM (w/attachment)
- J. Craig, AO (w/attachment)
- H. Nieh, OEDO (w/attachment)
- S. Collins, NRR (w/attachment)
- SECY (w/attachment)
- OGC (w/attachment)
- OCA (w/attachment)
- OPA (w/attachment)
- OIP (w/o attachment)
- CIO (w/o attachment)
- CFO (w/o attachment)
- EDO R/F (w/attachment)

E/1

NRC STAFF COMMENTS

- *The draft report concluded that "the current radiological response system and capabilities are not adequate to overcome their combined weight and protect people from an unacceptable dose of radiation in the event of a release from Indian Point, especially if the release is faster or larger than the design basis release." Additionally, the Executive Summary of the draft report identifies the need to consider terrorism annexes or components to the plans.*

We believe the report does not accurately characterize the status of a number of issues for which NRC is responsible and which figure prominently in the report's conclusion. The report does not adequately recognize features of emergency preparedness programs which are designed to cope with a spectrum of accidents including those involving rapid, large releases of radioactivity. Emergency preparedness exercises have invariably included large releases of radioactivity which occur within only a few hours of the start of events. Causes of events - be they terrorist acts or plant equipment problems - are bounded by these challenging exercise scenarios.

Undue weight appears to have been given to the impact of potential acts of terrorism. The report does not reflect significant steps that have been taken to strengthen security of Indian Point and other nuclear plants since the September 2001 terrorist attacks. While for many years, all nuclear power plants have been required to have security programs sufficient to defend against violent assaults by well-armed attackers, numerous additional steps have been taken since September 2001 to thwart terrorist acts.

- *The draft report compared the licensee's as well as the county and state emergency plans against the stated criteria in NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." The reviewers held the emergency plans to literal compliance with each line item within NUREG-0654/FEMA-REP-1. The report classifies line items that the reviewers could not or did not verify as a requirement "not met."*

The report was too conservative in its interpretation of NUREG-0654 guidance when evaluating the licensee, State, and County plans. In NRC's regulatory structure, the regulatory requirements are the sixteen planning standards of 10 CFR 50.47. NUREG-0654/FEMA-REP-1 is broad guidance to be used for development of emergency plans. Literal compliance with this NUREG does not consider the improvements and enhancements made to the emergency planning process since the document's publication in 1980. Licensees and offsite authorities have implemented a variety of methods that meet the regulatory requirements and satisfy the intent of this NUREG and other NRC and FEMA guidance documents. The report does not recognize the flexibility afforded licensees and State and local officials in developing and implementing emergency plans to best suit their particular needs.

In addition, the report is misleading when referring to items that were not verified as requirements not being met (i.e., Appendix C: Individual Plan Review Compliance Matrices). For NUREG-0654 line items that could not be verified, efforts should have been made to confirm any related concerns before characterizing them as not meeting requirements. It appears that the reviewers failed to consider information contained in licensee, State, and County emergency plan implementing procedures and other related documents.

The staff notes that the Witt reviewers did not contact the NRC Emergency Preparedness staff during their review. We believe these misunderstandings could have been avoided.

- *The draft report describes general problems with the dose assessment and plume modeling process. These include, but are not limited to, inability to include wind shifts in plume modeling, terrain effects, lack of standardization of dose assessment models, and dose attainment time.*

The report recommends newer, more sophisticated models that the staff considers to be an enhancement to, but not required for initial protective action decision-making, which more practically relies upon knowledge of the plant conditions. The NRC regulations require that licensees have "Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use." Variations, such as wind direction, plume meander, terrain effects, will occur and models are unable to predict the exact location of the plume. NUREG-0654/FEMA-REP-1, Supplement 3, accounts for such variability by recommending a "keyhole" strategy for protective actions. The keyhole strategy is evacuation of the 2-mile ring around the plant site and 5 miles downwind in the affected and the two adjacent sectors. Such a strategy accounts for a plume meander caused by micro meteorological effects as well as terrain effects that the plume model may not directly include. Our past inspections and joint reviews with FEMA and other Federal agencies indicate that Indian Point and Millstone plans are consistent with this strategy.

- *The draft report describes general problems with the protective action decision-making and implementation process. For example, page 60 of the report states "Calculations of the optimal strategies for protecting the public safety and health are best done during the planning phase and incorporated into the emergency plans. There are no such comprehensive analyses incorporated as a part of the plans for the Indian Point facility, counties, or the State of New York." Additionally, the report states that decisions regarding public protective actions could take a considerable length of time and are dependent on dose assessment. Page 26 states that "Once accident impact analysis (or dose assessment) has been done, emergency managers can recommend public protective evacuation or sheltering in an attempt to reduce the doses received by the public and the consequences of the release. The decisions made in the early phase*

(usually considered to be the first four days) are largely dependent on observations made by plant personnel (e.g., "there's a breach to the containment vessel") and computer modeling . . . "

Whether a general emergency is declared as the result of slowly degrading plant conditions or a sudden, catastrophic plant event, the nuclear power plant licensee must notify the State and recommend protective actions within 15 minutes of the declaration of the general emergency. Initial protective action recommendations are based upon degrading plant conditions rather than waiting for dose assessment results or field monitoring information. These notifications and protective actions are made in this manner such that the protective actions can be implemented before a release of radioactivity occurs. NRC regulations require that a range of protective actions be developed and incorporated into emergency plans for the population within the plume exposure pathway EPZ and the ingestion pathway EPZ. The licensee, State, and County plans describe the appropriate protective action strategies, sheltering, evacuation, or some combination, to be taken for a variety of events and meteorological conditions.

- *The report identifies general problems with the evacuation time estimates in the communities surrounding Indian Point and Millstone. These include, but are not limited to, ability of the population to evacuate, shadow evacuation, out dated evacuation time estimates (ETEs), and the general belief, as stated on page 87, "For a successful evacuation to occur, the population must clear the affected area before receiving a critical dose of radiation as specified in federal guidelines."*

Evacuation time estimates are tools to assist offsite authorities to determine egress routes and traffic controls. ETEs do not reflect the ability of the population to be evacuated prior to receiving a specified radiation dose. Federal guidelines do not specify a critical dose of radiation to be avoided. The guidelines represent values at which the protective action is recommended if it reduces overall risk, not just the risk from the radiological threat. For chemical release scenarios, critical dose/hazard is a very important parameter since chemical releases may pose acute lethalties due to exposure. This is not the case for radiological exposures. Entergy has stated that the Indian Point ETEs are being updated to include 2000 census data and will include shadow evacuation considerations.

- *Page 106 identified that the NRC had a problem with the maintenance of Personal Home Alert Devices (PHADs) in use at Indian Point.*

The NRC has not identified any problems with such devices at Indian Point. PHADs are not used by Indian Point as part of the Alert Notification System. The NRC had identified such a problem with PHADs at the Beaver Valley Nuclear Power Station in Pennsylvania.

~~Internal Use Only – Not For Public Disclosure~~

- *Page 26 of the draft report identified an NRC dose limit for natural background radiation (excluding man-made sources) to be 500 millirem per year.*

The NRC does not regulate exposure to natural background radiation. 10 CFR 20.1301 states "Each licensee shall conduct operations so that the total effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1 millisievert) in a year, exclusive of the dose contribution from background radiation..."

- *Page 111, Section 5.3.2.4, "The indicator is calculated every 12 months by dividing the total number of alert and notification system siren tests by the number of successful alert and notification system siren tests."*

Performance indicators are calculated quarterly.

- *Page 145, "The Nuclear Regulatory Commission requires tests to ensure that training has been effective. Qualification examinations are required by position. These tests must be sufficiently different from year to year. The qualification examinations are required at specified frequency to ensure that skills and knowledge are retained."*

The NRC does not require tests or qualification examinations for emergency response organization personnel. The requirements for training for emergency response personnel are contained in 10 CFR 50.47(b)(15) and Appendix E to 10 CFR 50. The NRC evaluates the licensee's critique of the performance of the emergency preparedness personnel in key areas such as classification of emergencies, notification of offsite authorities, and development of protective action recommendations.

- *Page 24, states that "The important thing to remember is that 1000 millirem add up to 1 rem-the Environmental Protection Agency Evacuation standard."*

The EPA has not established a standard. Specifically, the EPA states in section 2.1.1, EPA 400, "These Protective Action Guidelines (PAGs) are expected to be used for planning purposes for example, to develop radiological emergency response plans and to exercise those plans. They provide guidance for response decisions and should not be regarded as dose limits."

- *Page 22 of the draft report identifies "Very high, short-term doses of radiation can cause early effects such as vomiting and diarrhea, skin burns, cataracts, and even death. Receiving such high doses can be compared to receiving a total of four lifetimes of normal background radiation in an extremely short time span, such as a few days or less."*

~~Internal Use Only – Not For Public Disclosure~~

The report identifies the average radiation dose received yearly to be approximately 360 millirem. Acute exposure to four lifetimes of natural background radiation would be approximately 100 rem, well below the lowest entry in the table of effects presented 4 pages (page 26) later in the draft report:

The table of Whole Body Radiation Dose Effects:

1,000 rem - death occurs within 30 days of exposure in 100 percent of the cases.

450 rem - 50 percent die within 30 days of exposure, if untreated

200 rem - 1 percent die within 30 days if untreated. Five percent suffer nausea.

- *The Executive Summary identifies a concern with the Alert Notification System, stating "In providing warning to the people, there is an over reliance on outdated sirens and the Emergency Alert System. Newer technologies, such as tone alert radios, have not been widely implemented."*

The siren system around the Indian Point Energy Center is in the process of a major upgrade to include new siren components, a dedicated frequency for siren activation feedback, online monitoring capabilities, redundancy capability in every siren, and battery backup. Tone alert radios are not a new technology and have been an integral part of the ANS for many nuclear power plants for many years, including Hatch, Cooper, Wolf Creek, Grand Gulf, Indian Point, Fitzpatrick, Nine Mile, Farley and Vogtle.

- *In many places throughout the report, words such as "dangerous" are used as an adjective to "a radioactive plume." Deleterious health effects are implied to occur from exposure to a radioactive plume.*

A plume containing radioactive materials is not necessarily dangerous. Nuclear power plants routinely release gaseous effluents that are "radioactive plumes." There are many factors that affect the level of radioactive material in a plume, such as wind speed, atmospheric stability, driving pressure of the release, and precipitation. As the plume moves away from its source, it will become less concentrated simply through normal dispersion. Therefore, a radioactive plume that results from an accident may not be dangerous. Additionally, exposure to such a radioactive plume will not necessarily result in deleterious health effects.