Indian Point Nuclear Generating Units 2 and 3
Docket Nos. 50-247/ 50-286-LR

NRC Staff's Response in Opposition to State of New York's Motion for Partial Summary Disposition of NYS Contention 16/16A

Exhibit 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
ENTERGY NUCLEAR OPERATIONS, INC.	)	Docket Nos. 50-247/50-286-LR
	)	
	)	
(Indian Point Nuclear Generating	)	
Units 2 and 3)	)	

AFFIDAVIT OF STEPHEN F. LAVIE IN SUPPORT OF
NRC STAFF'S RESPONSE IN OPPOSITION TO STATE OF NEW YORK'S
MOTION FOR PARTIAL SUMMARY DISPOSITION OF NYS CONTENTION 16/16A

Stephen F. LaVie, being duly sworn, does hereby states as follows:

1. I am employed as a senior emergency preparedness specialist in the Office of Nuclear Security and Incident Response of the United States Nuclear Regulatory Commission ("NRC" or "Commission"). I am responsible for developing emergency preparedness policies, regulations, programs, and guidelines for both currently licensed nuclear reactors and potential new nuclear reactors. I provide support to regional inspection activities and provide oversight and technical direction for the emergency preparedness cornerstone of the reactor oversight program. Prior to accepting appointment to my current position I was employed as a health physicist in the Office of Nuclear Reactor Regulation of the NRC where I was responsible for reviews of licensee submittals involving assessments of the radiological consequences of design basis accidents, and for the preparation of regulatory guidance for performing these analyses. During my employ with the NRC, I have served as a Radiological Assessment Assistant Director of the Protective Measures Team in the NRC's Incident Response Center during declared emergencies at nuclear power plants. In addition, I have twenty years of experience in the commercial nuclear power field, including radiation protection, radiological emergency preparedness, atmospheric dispersion, radiation shielding, and analyses of the

radiological consequences of design basis accidents. For fifteen of these twenty years, I was direly involved in providing radiological and meteorological support to the operating, emergency planning, and engineering departments at a commercial pressurized water reactor. My resume, including a list of presentations, is attached (Exhibit A - Resume of Stephen F. LaVie).

2. The purpose of my declaration is to clarify the record in this proceeding regarding a presentation I made in a workshop that I conducted on April 20, 2009 at the 19th Annual National Radiological Emergency Preparedness ("NREP") Conference held in Norfolk, VA, entitled "What's in the Black Box Known as Emergency Dose Assessment?"

3. During the workshop I discussed modules that are used in emergency planning and response to determine "Source Term," "Dispersion," and "Dose Calculation" in connection with a release of radionuclides from a nuclear power plant. The abstract for this workshop was posted on the conference website[1] and stated in part:

> Dose assessment can appear as black box—you put in source term data, meteorology data, dose factors, and out comes the projected dose. In this training workshop, we will pry open that black box and have a look at what methods, principles, and assumptions are inside. After a brief discussion of the role of dose assessments in emergency response, we will divide the dose assessment process into its three major components (1) assessing the magnitude and composition of the radioactive material available to be released, and the rate of that release; (2) assessing how the released material is dispersed and transported from the release point to the downwind receptors; and (3) assessing the radiation exposure to the receptors from that material. Our objective in this program is not to be able to write our own dose assessment software, but rather to gain an understanding of the capabilities, limitations and uncertainties of dose assessments in general—to be a better consumer of the data our dose assessors prepare. This training workshop will not focus on a particular dose assessment package, but rather, the methods incorporated in typical dose assessment packages.

4. In keeping with the above abstract, my presentation addressed dispersion from the standpoint of emergency dose assessments and in the context of emergency planning and

[1] http://www.nationalrep.org/2009Presentations/2009%20NREP%20Program_Agenda_rev.%201_2-04-09.pdf

response.

5. In emergency planning and response, NRC licensees and Staff estimate the radioactive dose that results from an accidental release of radionuclides from a nuclear power plant. In order to estimate radioactive dose, licensees and Staff take actual data from the event and analyze that data in accordance with the emergency response plan for that specific plant.[2] As the event progresses and radionuclides are released and transported, data about the release comes in from the field. Data obtained from actual measurements in the field during a release are used to confirm dose assessment results and allow the dose assessor to re-consider analysis inputs, and if necessary, re-perform the assessments. The resulting estimate of dose is used to determine what response (i.e., evacuation, sheltering in place, no action, and/or administration of potassium iodide) should be taken for specific areas surrounding the plant. Accordingly, the estimate of dose should be as accurate as possible to maximize the efficacy of the response and minimize health risks.

6. If an accident were to occur, the time and date, nature of release and the source terms associated with the release would be known. The meteorological data at the time of the release would also be known, as would the meteorological data from field readings for the period of time during which radionculides are being transported and deposited. The topography of the area surrounding the plant would also be known. Thus, actual data would be available and would be used to model dispersion. Emergency planning and response uses actual data from actual events.

7. Ultimately, dose assessment in emergency planning and response is an estimate and, as such, is subject to some degree of uncertainty. The degree of uncertainty is reduced by the use of actual data from the event and the fact that the assessment is confirmed or refined based on actual data obtained from the field. Moreover, upon the declaration of a General

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[2] Where an event is in progress but has not yet resulted in a release, the Staff uses projected data for source term and kind of release as well as projected meteorological data. The projected data is, however, based on the actual event in progress.

Emergency, the NRC expects its licensees to implement a default minimum protective action recommendation of evacuation for a 2 mile, 360 degree band around the plant and a downwind wedge to 5 miles from the plant, without regard to results from dose assessments. These two considerations, the default minimum protective action recommendation of protective measures and the availability of field data, compensate for modeling uncertainty in many situations.

8. In my presentation, I pointed out that, when estimating dispersion for purposes of emergency planning and response, a straight-line Gaussian model *may* provide less reliable dispersion estimates for a site characterized by complex terrain or complex meteorological regimes than more advanced models such as segmented plume, puff, or modified potential field models. I also stated that Gaussian model results could be highly uncertain, and I identified complex terrain and complex meteorological regimes as sources of uncertainty that must be considered in emergency planning and response. More advanced models that take complex meteorology and topography into account may provide greater certainty in emergency planning or response situations. My presentation was limited to a discussion of the models that are used to estimate dispersion for emergency planning and response purposes.

9. My presentation was not intended to address severe accident mitigation alternatives (SAMA) analyses and I did not discuss such analyses in my presentation. My presentation was limited to the use of modeling in deterministic analyses and did not consider or address any probabilistic analyses, including SAMA analyses.

10. I did not discuss the appropriateness of the use of a straight-line Gaussian model for SAMA analyses. I did not state that a straight-line Gaussian model should not be used in SAMA analyses. I did not state that segmented plume, puff, or modified potential field models could or should be used in SAMA analyses.

11. I did not discuss SAMA analyses for Indian Point Nuclear Generating Station, Units 2 and 3 (Indian Point) or SAMA analyses generally, nor did I discuss the use of the MACCS2 Code or ATMOS for that site or for the license extension application proceeding.

12. I have not been involved with the review of the Indian Point license renewal application or its SAMA analyses. I have no direct knowledge of the bases and limitations of the MACCS2 code or its use of the ATMOS dispersion module. I have not performed any evaluation of the atmospheric dispersion characteristics for the Indian Point environs. I am not in a position to make any conclusion regarding the acceptability or non-acceptability of MACCS2 or ATMOS for Indian Point SAMA analyses.

13. My presentation addressed dispersion generally. I did not address dispersion at Indian Point or at any other specific site.

14. I did not address dispersion of radionuclides as a result of a release at Indian Point. I did not discuss Indian Point's topographical features, its meteorological regimes, or the acceptability or non-acceptability of any particular dispersion assessment methodology for Indian Point.

15. I have read the State of New York Motion for Summary Disposition, its Statement of Material Facts not in Dispute, and the Declaration of Bruce A. Egan, Sc.D. My declaration is limited to those statements that relate to my NREP presentation of April 2009. I do not dispute the reported fact that my presentation addressed the generic limitations of straight-line Gaussian models for emergency planning and response purposes, particularly where the release involves complex terrain or complex meteorological regimes. However, I do take exception to certain statements in the Motion and its supporting documents that appear to conflate statements made in my presentation with the State's conclusions regarding the applicability of my presentation to Indian Point SAMA analysis. The statements in the Motion have the potential to mislead the reader into assuming that my presentation addressed the Indian Point proceeding, or provided conclusions, concessions, or admissions regarding the acceptability of any dispersion model for the SAMA analysis for Indian Point or for SAMA analyses generally. My statements did not address the Indian Point SAMA analysis and should not be interpreted as providing any opinion with respect to the Indian Point SAMA analysis or

SAMA analyses in general.

16. My presentation was prepared using relevant information from NRC publications, other documents in the open literature, and from my experiences in operating and maintaining an emergency dose assessment capability at a commercial nuclear power plant, my experiences serving on the NRC's Protective Measures Team, and my experiences supporting the inspection of licensee dose projection capabilities. A such, this presentation took the form of a "survey" report, rather than that of a technical paper presenting the results of research activities or new insights drawn from those results. My presentation cannot be viewed as providing any new information that has not been previously considered by the NRC.

17. I hereby certify that the information contained above is true and correct to the best of my knowledge, information and belief.

Stephen F. LaVie

Sworn and subscribed to

Before me this 8th day of October, 2009.

My Commission expires 11/01/09.

HERALD M. SPEISER
Notary Public-Maryland
Montgomery County
My Commission Expires
November 01, 2009