



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 25, 2015

The Honorable Sandy Galef
New York Assemblywoman
95th Assembly District
2 Church Street
Ossining, NY 10562

SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3 – RESPONSE
TO LETTER DATED AUGUST 4, 2015

Dear Ms. Galef:

In your letter of August 4, 2015, you expressed continued concerns regarding the safety of the proposed Spectra Energy Algonquin Incremental Market (AIM) natural gas pipeline and its proximity to the Indian Point Energy Center (Indian Point). As you know, the U.S. Nuclear Regulatory Commission (NRC) is the Federal agency charged with regulating the Nation's civilian use of radioactive materials, and its mission is to protect public health and safety. The NRC's regulations require that licensees of nuclear power plants evaluate external hazards near their plant. As you have noted, one of the external hazards near Indian Point would be the proposed AIM natural gas pipeline.

As required by NRC regulations, the licensee for Indian Point, Entergy Nuclear Operations, Inc. (Entergy), prepared a hazard analysis of the proposed AIM natural gas pipeline. The NRC staff performed an onsite inspection of Entergy's hazard analysis, conducted a walk-down of the proposed pipeline routing, and assessed the adequacy of analysis controls under Entergy's quality assurance program. As part of its inspection, the staff thoroughly reviewed Entergy's hazard analysis and reviewed the qualifications of the individual who performed the hazard analysis. Through the inspection and review, the staff confirmed the results of Entergy's hazard analysis.

In addition to the licensee's hazard analysis, the NRC staff also independently analyzed the effect of a possible natural gas pipeline rupture and subsequent explosion and fire on the Indian Point facility. The NRC's independent confirmatory analysis made conservative assumptions that produced more severe results than could possibly occur if there were a real pipeline rupture. These assumptions include the following:

- Based on input from Spectra Energy, the initial analysis assumed a closure time of 3 minutes on pipeline isolation valves. In addition to the 3-minute valve closure case, the NRC evaluated a bounding case. This second case assumes the upstream side of the ruptured pipe is connected to an infinite source of gas for 1 hour.
- The NRC staff modeled a pipe break at the location closest to plant structures. Because of a limitation of the ALOHA software, the staff doubled the predicted gas release from the upstream side of a pipe break to account for flow escaping from both sides of the break. This approach is conservative because in the event of an actual break, the

downstream side of the pipe would release much less gas than the estimated release from the upstream side.

- For the evaluation of the explosion hazard, the NRC used the peak gas release rate resulting from a pipe rupture to estimate the mass of natural gas. This approach predicts more gas released than other approaches such as a time dependent gas release or a release averaged over time.

Because of the conservative assumptions above, the bounding analysis prepared by the staff postulates more severe results than a transient analysis would estimate. An attachment to your letter described a transient analysis. The description assumed that the release of gas from a ruptured pipeline would be averaged over time. The staff's analysis assumed that the maximum release rate was sustained and did not decline in the manner that a transient analysis would predict. This conservative approach assumes more gas is available to explode than in a transient analysis, and produces results that bound more detailed analyses, such as a transient analysis.

On April 30, 2015, the NRC, the Federal Energy Regulatory Commission, and the Department of Transportation met with you to discuss the proposed natural gas pipeline, the enhanced construction of the pipeline near Indian Point, and the NRC's independent hazard analysis. We discussed the unlikely nature of a pipeline rupture, and how the enhancements near Indian Point make a rupture an extremely unlikely event. To summarize the results of the NRC staff's independent analysis, a postulated explosion at the pipeline would produce a pressure wave at safety-related structures on the Indian Point site of less than 1 pound-per-square-inch. To provide context, a pressure wave of this magnitude would be able to shatter glass. However, it would not be able to damage the robust safety-related structures at Indian Point. Likewise, a postulated fire at the gas pipeline would create a heat flux at the Indian Point site fence that could be a threat to humans, but would not be sufficient to melt plastic. As mentioned above, the conservative assumptions of the staff's independent analysis produced results that are more severe than what could possibly occur during an actual event. In addition, a transient analysis would produce results that are less severe than those in the independent analysis and discussed with you at the April 30 meeting.

S. Galef

- 3 -

The NRC's independent analysis computed conservative results that demonstrate that an extremely unlikely fire or explosion at the proposed pipeline would not affect the safe operation or shutdown of the Indian Point reactors. Thank you for contacting the NRC to discuss your safety concerns. We appreciate and share your interest in the safety of New York's nuclear power plants.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark A. Satorius". The signature is fluid and cursive, with the first name "Mark" being the most prominent.

Mark A. Satorius,
Executive Director
for Operations

Docket Nos. 50-247 and 50-286

cc: See next page

cc:

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S. Galef

- 3 -

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Sincerely,

/RA/

Mark A. Satorius,
Executive Director
for Operations

Docket Nos. 50-247 and 50-286

Identical Letter Sent To: The Honorable David Buchwald

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