Accufacts Inc.
"Clear Knowledge in the Over Information Age"

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October 12, 2015

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

Re: Accufacts' Observations on NRC Response Letter Dated September 25, 2015 Concerning "Indian Point Nuclear Generating Unit Nos. 2 and 3 – Response to Letter Dated August 4, 2015."

I have reviewed the above NRC September 25, 2015 letter to you and continue to find the NRC demonstrating an inability to grasp simple but important scientific and engineering process safety concepts related to whether the Indian Point nuclear facility is at risk in the event of a rupture of the nearby proposed 42-inch high pressure gas transmission pipeline. The NRC's assumptions and comments instill no confidence that their analysis is either relevant or appropriate. Their approach and statements clearly demonstrate that the NRC does not grasp the tremendous energy releases and dynamics associated with pipeline rupture of this very large diameter pipeline, and therefore should not be using their current approaches to evaluate gas transmission pipeline rupture impacts on their facilities. Attempting to use inappropriate models that fail to capture the unique transient impacts of a high-pressure large diameter gas transmission pipeline rupture in a highly sensitive site is a poor and inappropriate approach that Accufacts has found in far too many incident investigations associated with misinformation. A true transient release dynamics graph (release rate versus time) of the proposed 42-inch pipeline rupture case near the Indian Point nuclear facility should clearly demonstrate the many flaws in the NRC's recent letter to you for this very uniquely sited pipeline.

While the case to be calculated should not be that difficult to set up, it requires that certain information declared "secret or confidential" be disclosed. The transient calculations for this gas transmission system pipeline rupture near the nuclear site can be quite involved, however, and are not well nor scientifically captured by models or unwise assumptions never intended for such purpose, such as the ALOHA model cited by the NRC. I would advise that you continue to pursue this effort until the NRC produces such a transient analysis that actually reflects a rupture impact of the high-pressure 42-inch gas transmission pipe near the nuclear facility. There should be mechanisms that would permit you, as an Assemblywoman, to gain access to declared sensitive information that would allow you to reach a prudent conclusion that an analysis is complete and prudent concerning their rupture approach, which appears is not the case for the NRC's position cited in their recent letter.

A closer review of the NRC letter's three major stated assumptions will also clearly demonstrate the NRC's approach **is not conservative** and is seriously flawed. For example:

NRC Assumption Statement

> "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."

Accufacts Observation

> This NRC statement is meaningless and does not permit an independent evaluation that the parties performing such a potential impact analysis understand the extremely high transient rupture gas rates and very high heat fluxes that can be released on this pipeline system at this site. For example, a three minute closure time does not indicate how long the gas has been releasing (at incredibly high rates) out of a pipeline rupture on this specific system at this location before valve and, ironically, after valve closure. The NRC assumption also appears not to consider that gas release even with closed valves will continue at very high rates for a considerable period of time. A transient graph of mass release versus time will indicate a characteristic gas pipeline rupture fingerprint form that will dispel any attempts to quickly remotely identify, much less actually trigger, valve closure even for automatic valves. Such a graph will also reveal the case irrelevancy of a ruptured pipeline connected to an infinite source of gas for one hour in the matter of this safety analysis.

NRC Assumption Statement

> "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."

Accufacts Observation

> Based on many past pipeline rupture investigations, Accufacts believes a true transient graph of rupture mass release versus time on this system at the specific location near the Indian Point nuclear plant will easily demonstrate that mass rate of release will be much higher than "double" as assumed by the NRC. While it is true that the downstream side of the rupture pipe will eventually release gas at lower rates than the upstream side, the gas release rates will still be considerable, especially in the early stages of the rupture release. A transient analysis will further demonstrate this point and also prove the NRC analysis <u>is not conservative</u> on this remotely monitored system at this highly sensitive site.

NRC Assumption Statement

> "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."

Accufacts Observation

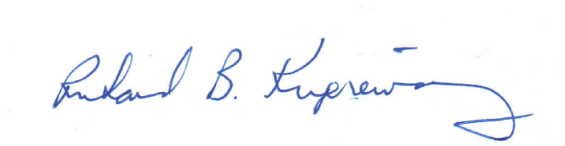
> Accufacts cannot reach any conclusions concerning "peak gas release rate resulting from a pipeline rupture," from the above NRC assumption statement, but given the less than accurate information released to date and our experience in rupture investigations, such a peak rate will most likely be well above that utilized in the NRC analysis. Transient release rates for a 42-inch pipeline rupture so close to a compressor station will significantly increase "peak rupture rates" well above those of pipeline design capacity, compressor design capacity, and well above "double," as pipe system pressure curves are significantly reduced, compressors run out on their curves, and initial pipeline pressure at time of rupture on both the upstream and downstream ends of the rupture release at the sonic speed in the gas which is higher than the speed of sound. Our experience indicates pipeline rupture gas rates of release will be incredibly high, well above the NRC's inferred "double," for quite some time.

The NRC's further comment that they are using a conservative assumption by arguing that they are using peak rates over a longer period appear to be disingenuous. Pipeline ruptures of this magnitude generate incredibly high gas rates with extremely high heat fluxes that I have seen melt steel and vaporize aluminum at considerable distances. Such averaging misses the incredibly high heat fluxes associated with transient gas pipeline rupture releases. Lastly, I must comment on an additional statement made in the NRC letter to you that: "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." While the above statement does not define the distance to the fence line from the rupture point it is my understanding that there is Indian Point "safety critical equipment" (approximately 100 feet from the pipeline) that is nearer than the fence boundary, and needed to safely cool down the facility during a plant emergency shutdown. A clear drawing needs to be provided to you that identifies the location of such "safety critical" equipment and its distance from the pipeline rupture site utilized in any process safety evaluation.

In conclusion, the NRC does not have the expertise nor have they called on appropriate expertise to provide a thorough and complete evaluation of the impact of this "first of its kind" proposed installation of a large diameter high-pressure natural gas transmission pipeline near a nuclear facility in a highly sensitive area. Such a prudent review requires special precautions to assure analyses are scientific, complete, and thorough (including possible interactions). It appears the claims of "need for security" have undercut verification that such a prudent analysis has been adequately performed. The NRC's review is not conservative and I would advise that you continue your pursuit of this matter until a complete and proper transient graph and subsequent analysis, as well as other important information is provided that would permit verification that

the 42-inch pipeline rupture will not prevent the safe shutdown of the Indian Point nuclear facility. It is my understanding that the close proximity of the plant switchgear station handling power leaving the nuclear plant would most likely be quickly lost in a nearby pipeline rupture, necessitating a nuclear facility emergency shutdown. It is thus important that parties demonstrate that such an event, even if low probability, will not prevent the nuclear facility from an emergency trip cool down. While I can appreciate the need for some security concerns, such concerns should not justify the use of poor tools or assumptions that provide little confidence that this issue has been adequately or prudently analyzed.

Respectfully,



Richard B. Kuprewicz,
President,
Accufacts Inc