
From: Bower, Fred
Sent: Monday, March 16, 2015 7:15 AM
To: aceactivists@comcast.net
Cc: Ennis, Rick; Bower, Fred; OPA1 RESOURCE; Schmidt, Wayne; Cook, William; Barber, Scott; Nieh, Ho; Scott, Michael; Klukan, Brett; DiPaolo, Eugene
Subject: ACE_1-25-15 Earthquake, Limerick, Seismic Monitors, and Disclosure - [EDATS 2015-0029]

The Alliance for a Clean Environment (ACE)

ACE - 1-25-15 Earthquake and Limerick [EDATS R1-2015-0029]

Dr. Cuthbert (ACE),

I am responding to your January 28, 2015, email (ML15029A011) in which you raised a number of questions related to a minor seismic event that occurred on January 25, 2015. The event to which you refer was near Downingtown, Pennsylvania which is about 20 miles from the Limerick Generating Station (LGS). The earthquake was not felt at Limerick. On January 27, 2015, I provided a response (ML15028A029) to a January 26, 2015, ACE email (ML15027A318), which raised similar questions. The below response has been coordinated with various Region I technical and public affairs staff.

U.S. nuclear power plants are built to withstand environmental hazards, including earthquakes. The NRC requires that safety-significant structures, systems and components be designed to take into account the most severe natural phenomena historically reported for the site and surrounding areas. The NRC then adds margin for error to account for the limitations on historical data. In other words, U.S. plants are designed to be safe based on historical environmental data, including the area's predicted maximum credible earthquake. Design standards for domestic light water reactors are contained in 10 CFR Part 50, Appendix A. General Design Criterion (GDC) 2, "Design Bases for Protection Against Natural Phenomena," requires, in part, that structures, systems, and components (SSCs) important to safety be designed to withstand the effects of earthquakes without loss of capability to perform their safety functions.

The earthquake against which these plant features are designed is defined as the safe shutdown earthquake (SSE) in 10 CFR Part 100, Appendix A, Seismic and Geologic Siting Criteria for Nuclear Power Plants. The SSE is based upon an evaluation of the maximum earthquake potential and is that earthquake which produces the maximum predicted acceleration and vibratory ground motion for which SSCs important to safety are designed to remain functional. Those plant features that are designed to remain functional if an SSE occurs are designated Seismic Category I in Regulatory Guide (RG) 1.29. NRC Regulations ([10 CFR](#)) and [Regulatory Guides](#) can be access on our website (www.nrc.gov).

Title 10 CFR Part 100, Appendix A defines the Operating Basis Earthquake (OBE) as that earthquake which, considering the regional and local geology and seismology of surface and subsurface materials, could reasonably be expected to affect the plant site during the operating life of the plant. The OBE is that earthquake which produces the vibratory ground motion for which those features of the nuclear power plant necessary for continued operation without undue risk to the health and safety of the public are designed to remain functional.

At Limerick the SSE and the OBE are each presented in the UFSAR as a Ground Motion Response Spectra curves based on spectral frequency of horizontal ground motion verse the ground acceleration. The design basis is the 15% of gravity at peak ground acceleration (0.15g pga) SSE as depicted with 5% dampening in the curve below. The OBE is 0.075g pga, and would be depicted by a Ground Motion Response Spectra curve with acceleration value for each frequency at one half the values in the SSE curve. In addition, the values for

the vertical ground motion component of the design response spectra are 2/3 of the horizontal design response spectra.

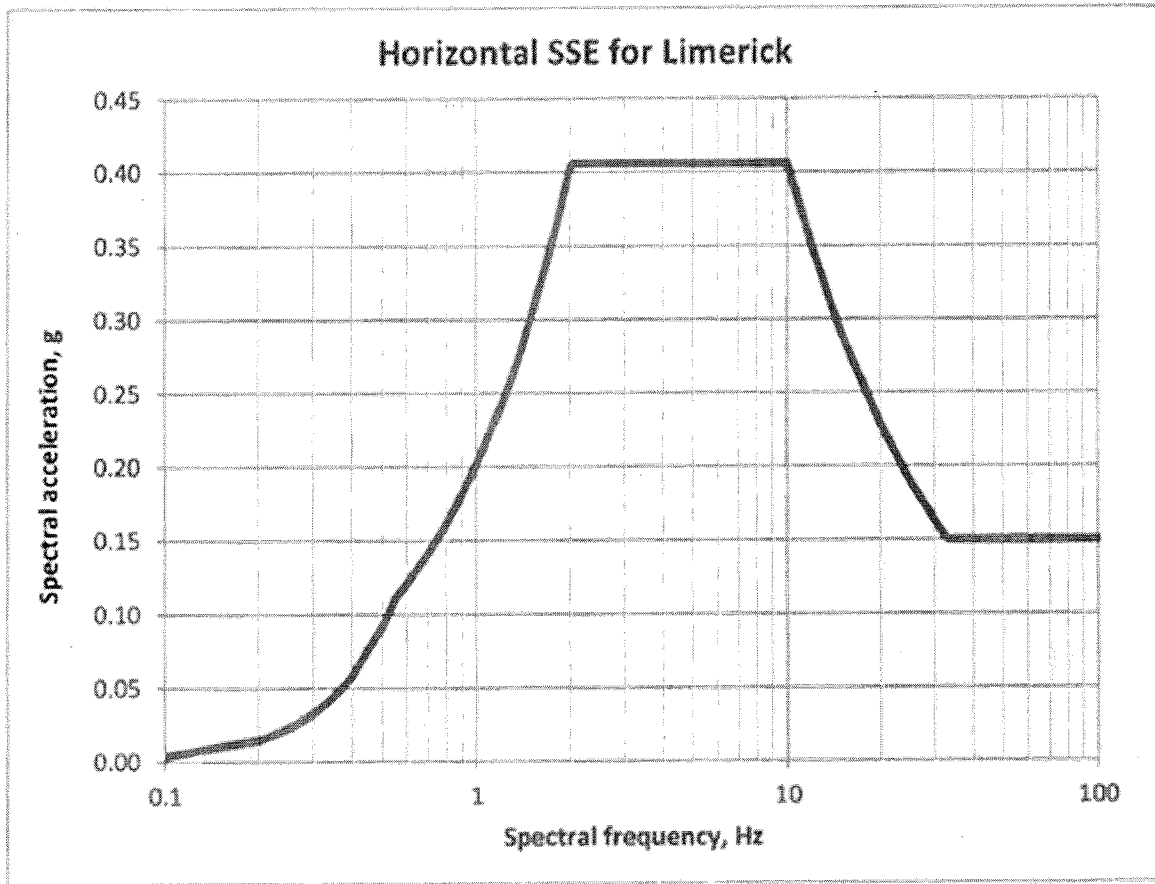


Figure 3.1-1 Horizontal SSE for LGS (5% of critical damping response spectrum)

Consistent with reports from NRC's resident inspectors, the minor seismic event on January 25 did not exceed SSE or OBE levels of ground acceleration at the site based on their discussions with licensee personnel and inspection of plant records. NRC regulations and the licensing basis of the plant would require Exelon to declare and report an unusual event for an earthquake sensed onsite at the lowest detectable (0.005g) earthquake that can be measured on the LGS seismic instrumentation. This is less than 10 percent of the OBE.

For seismic monitoring instruments which is actuated during a seismic event greater than or equal to 0.01g, regulatory requirements and the licensing basis of the plant require a Special Report shall be prepared and submitted to the Nuclear Regulatory Commission pursuant to Specification 6.9.2 of the Technical Specifications within 10 days describing the magnitude, frequency spectrum and resultant effect upon unit features important to safety. No such report was required associated with minor seismic event located 20 miles from LGS.

The event occurred on a Sunday evening and the NRC resident inspectors were not on site at the time. The U.S. Geological Survey (USGS) does send reports to the NRC on seismic events that meet certain parameters.

I trust this addresses your questions.

Sincerely,

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From: Bower, Fred
Sent: Thursday, January 29, 2015 6:56 AM
To: aceactivists@comcast.net
Cc: Evan Brandt; Bower, Fred
Subject: Re: ACE_1-25-15 Earthquake, Limerick, Seismic Monitors, and Disclosure - [EDATS 2015-0029]

ACE: 1-25-15 Earthquake, Limerick, Seismic Monitors, and Disclosure - [EDATS 2015-0029]

To: The Alliance For A Clean Environment (ACE)
Dr. Lewis Cuthbert, ACE President

This email acknowledges receipt of your below email.

My brief initial review of your email did not identify any immediate nuclear safety concerns; therefore, we will respond to your email as soon as we are able to do so, likely within 30 – 45 days.

Fred Bower

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From: aceactivists@comcast.net [<mailto:aceactivists@comcast.net>]
Sent: Thursday, January 29, 2015 6:25 AM
To: Bower, Fred
Cc: DiPaolo, Eugene; Evan Brandt
Subject: 1-25-15 Earthquake, Limerick, Seismic Monitors, and Disclosure

1-28-15

To: **Fred Bower, NRC**

From: The Alliance For A Clean Environment (ACE)
Dr. Lewis Cuthbert, ACE President

RE: Request for Direct Responses Related to 1-25-15 Earthquake, Limerick, Seismic Monitors, and Disclosure

Mr. Bower,

Your 1-27-15 reply to our 1-26-15 e-mail about the 1-25-15 earthquake near Limerick did not answer several of our important questions.

Your reply, like your previous e-mails, is unresponsive because you failed to provide full, accurate, and honest disclosure about Limerick Nuclear Plant safety issues. We did not ask NRC about what could be found at the USGS website, which is what you provided. Instead, we asked you to provide information related to Limerick Nuclear Plant concerning the 1-25-15 earthquake.

To avoid misunderstandings, we will restate some questions you ignored and new questions triggered by your response, which we believe need and deserve answers:

1. We were informed that the 1-25-15 earthquake near Limerick was map-wise, in line with the fault that heads to Limerick.

- **Is this true? If not, please provide documented proof, not just your "interpretation".**

1. 2. Your 1-27-15 e-mail indicates that you did not know about this earthquake and had to go to the USGS website to get details about this earthquake near Limerick. This suggests to us that NRC is not receiving automatic seismic reports, even for regional earthquakes.
 - **Is this true? If not, in this automated world, why wouldn't NRC request automated notices of earthquakes at least within 100 miles of Limerick?**
 - **We recommend that NRC request automatic notifications of any seismic activity within 100 miles of Limerick, especially since 8-23-11 Virginia earthquake jolted Limerick. Immediate notice to NRC is crucial since Limerick's reactors, fuel pools, and other vital buildings sit directly on top of earthquake fault fractures and earthquakes can trigger meltdowns at Limerick.**

1. 3. You stated that USGS reported that the Chester County earthquake occurred on Sunday, 1-25-15, at 6:25 P.M. You said resident inspectors confirmed the event was not noticed at the Limerick site and did not cause any operational impacts or nuclear safety concerns.
 - **Was there a resident inspector on the Limerick site on SUNDAY 1-25-15 at 6:25 P.M? If so, which inspector? When was this confirmed and by whom? If not, how did you conclude that the event was not noticed at the Limerick site?**
 - **While an earthquake that small would not cause visible damage, it could impact the miles of buried pipeline and cables vital to preventing meltdowns. Many of these 30 year old pipelines constantly transport highly radioactive and corrosive fluids. A weakness or dislodged fitting from even a mild earthquake could cause dangerous leaks.**
 - **How can resident inspectors document that a seismic event did not impact Limerick safety?**
 - **Were all Limerick's pipeline monitors and gauges working at the time of the 1-25-15 earthquake?**

1. 4. You failed to confirm whether all Limerick's seismic monitors were operable 1-25-15.
 - **When did NRC last confirm that all Limerick's seismic monitors are operable? We can have no confidence without proof, since NRC negligently allowed Limerick's seismic monitors to be inoperable for 1 year and four months prior to the 8-23-11 Virginia earthquake and to our knowledge didn't even fine Exelon for this violation.**
 - **Even after the 8-23-11 Virginia earthquake that jolted Limerick, NRC allowed Exelon to stall for another 3 months before fixing one of the monitors, a violation of NRC regulations.**
 - **Now, 3 1/2 years later, we need to know: Are all Limerick's seismic monitors operable?**
 - **Are monitors calibrated to detect small earthquakes that disrupt underground pipes and cables?**

Other Issues Related To Your Response:

It has been difficult, if not impossible, to get direct honest answers from you, which is why we contact resident inspectors about issues of extreme concern at Limerick Nuclear Plant.

It's infuriating that you repeatedly have failed to take unprecedented risks at Limerick Nuclear Plant seriously enough to give us straight answers with full and accurate disclosure. This is yet another example.

You continue to cleverly dodge or just plain fail to answer extraordinarily important questions. We can only conclude that the straight answers we request could potentially be very embarrassing to you and would reveal NRC's failed oversight at Limerick.

- **You stated you don't want us e-mailing Limerick resident inspectors. We can only conclude that is because in the past they have given us far more honest, reliable, and accurate answers than you have.**
- **Your repeated attempts to suggest that we contact you off-the-record with a brief phone call are shameful. Limerick's complex issues require written requests from us and written responses from NRC to avoid confusion.**

You have directed resident inspectors to "forward to the regional office any public inquiries that cannot be resolved in a brief phone call."

- **We object. You are not on-site and do not have direct access to critical information that Limerick's resident inspectors would have.**
- **This is an unacceptable elimination of public access to resident inspectors.**
- **It is unacceptable that you will not allow a resident inspector to communicate with us by e-mail regarding questions or matters about the safety of the public.**
- **Over the past 15 years, we have presented only a handful of inquiries about serious concerns to resident inspectors.**
- **The issues are complex and need written clarification to avoid misunderstandings.**

It is not enough for you to simply declare that Limerick Nuclear Plant is safe, despite the unresolved and critical safety issues. The public needs and demands that Limerick actually BE SAFE.

- **The public needs documentation that all of Limerick's seismic monitors were and continue to be operational. Earthquakes are increasing dramatically due to massive fracking in PA and bordering states.**
- **NRC needs to increase oversight to be sure that earthquake disturbances are not interrupting the miles of vital buried pipes and cables under Limerick.**
- **An earthquake impacting Limerick could be devastating to the health, safety, and financial interests of millions of people living in the entire Greater Philadelphia Region for generations.**

This time, please respond to specific questions and issues above.

Thank you,
Dr. Lewis Cuthbert
ACE President