

R1DRSWORKFLOW RESOURCE

From: Krohn, Paul
Sent: Monday, March 16, 2015 11:11 AM
To: R1DRSWORKFLOW RESOURCE
Subject: FW: Risky Limerick Permanent Plant Modifications Approved AFTER Relicensing

Categories: Assigned to Grace

Keith, Gerry, Grace,

Please also put this email into ADAMS. It should be attached to ML15037A724. Thanks.

Paul

From: aceactivists@comcast.net [mailto:aceactivists@comcast.net]
Sent: Monday, March 16, 2015 10:51 AM
To: Krohn, Paul
Subject: Re: Risky Limerick Permanent Plant Modifications Approved AFTER Relicensing

Mr. Krohn,

We did NOT receive your reply earlier, but plan to now carefully review your response.

Donna Cuthbert

From: "Paul Krohn" <Paul.Krohn@nrc.gov>
To: aceactivists@comcast.net
Cc: "Neil Sheehan" <Neil.Sheehan@nrc.gov>, "Diane Screnci" <Diane.Screnci@nrc.gov>, "Fred Bower" <Fred.Bower@nrc.gov>
Sent: Monday, March 16, 2015 10:30:13 AM
Subject: FW: Risky Limerick Permanent Plant Modifications Approved AFTER Relicensing

Dr. Cuthbert,

I noticed in your recent email to Mr. Bower dated 3/16/15 that you indicated that you hadn't received an email response from me regarding your email of 1/19/15 that asked about Plant Changes, Tests, and Experiments.

Actually, I responded to you via email on 2/9/15 (see email response below). I am resending this response in the event you had overlooked or missed my previous reply.

Paul Krohn

From: Krohn, Paul
Sent: Monday, February 09, 2015 12:30 PM
To: 'aceactivists@comcast.net'
Cc: Bower, Fred; Ennis, Rick
Subject: RE: Risky Limerick Permanent Plant Modifications Approved AFTER Relicensing

Dr. Lewis Cuthbert, ACE President

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Regarding your views on the license renewal process at Limerick, Mr. Bower responded to your concerns previously via email on January 27, 2015, with an extensive list of references as to how comments from ACE and other external stakeholders were dispositioned (ML15028A032).

In addition, you posed several questions regarding a White NRC finding related to the reactor core isolation cooling (RCIC) system on Unit 2 and subsequent changes to technical specifications that included moving electrical breaker thermal overload specifications for motor-operated valves (MOVs) to the Technical Requirements Manual (TRM). The preliminary White finding and the NRC's final disposition are fully described and docketed in ML11308B146 and ML113410132. Furthermore, our program requires NRC follow-up to confirm that Limerick's actions regarding the White finding are adequate. The NRC conducted this follow-up inspection in 2012 (ML12215A272). In addition, some of your questions on this topic were previously answered in an email from the Chief, Projects Branch 4 in June 2013 (ML13176A064).

Notwithstanding, the TS amendment in question was issued on March 13, 2013 (ML13023A410). The amendment did not take MOVs out of the plant technical specifications. Rather, it relocated MOV thermal overload protection to the TRM. The amendment was approved because the thermal overload function was not required by 10 CFR 50.36 and therefore did not need to be included in the technical specifications. As stated in the safety evaluation, future changes to the relocated requirements are subject to the provisions in 10 CFR 50.59, which are reviewed under inspection procedure 71111.17T as discussed above.

Regarding contact with state officials, the NRC attempts to contact the State for every proposed amendment in accordance with NRC regulations. Specifically, requirements with respect to State consultation are contained in 10 CFR 50.91(b). 10 CFR 50.91(b)(3) and (b)(4) require that: (1) the NRC make a good faith effort to contact the State official, prior to amendment issuance, to determine if the State has any comments; and (2) consider any comments of the State official.

Sincerely,

Paul G. Krohn, P.E.
Chief, Engineering Branch 2
Region I, Division of Reactor Safety

From: aceactivists@comcast.net [mailto:aceactivists@comcast.net]
Sent: Monday, January 19, 2015 3:35 PM
To: Krohn, Paul
Cc: Bower, Fred; Ennis, Rick; NRDC; Evan Brandt
Subject: Risky Limerick Permanent Plant Modifications Approved AFTER Relicensing

January 19, 2015

To: Paul Krohn, NRC Chief Engineering Branch 2

From: Dr. Lewis Cuthbert, ACE President

Re: Limerick Nuclear Plant Changes, Tests, Experiments, and Permanent Plant Modifications Approved by NRC, Based On Exelon's Self-Serving, Self-Assessment

It is alarming that problems identified by NRC in 1984, before Limerick Nuclear Plant's original license was approved, have persisted up to and through NRC's 10-14 relicensing of Limerick. Your 12-23-14 letter to Exelon exposes the unresolved complexity of Limerick's problems. Your letter and attachment to Exelon reveals an alarming NRC hands-off-safety trend at Limerick.

Limerick's safety problems were not resolved before Limerick was originally licensed. The NRC section chief in 1984 stated that his staff wanted four items cleared up before licensing Limerick (Mercury 8/31/84). Items he identified included:

1. Improper procedures
2. Incomplete safety measures
3. Faulty valves
4. A defective hydrogen remover

- **Three of the four items identified by NRC in 1984 remain unresolved to this day (Confirmed by NRC's safety reports for Limerick relicensing).**
- **It is unclear whether or not the fourth item, a defective hydrogen remover, was ever repaired or replaced.**

- We are concerned because At Limerick, at least one accident occurred involving a hydrogen leak. This documented hydrogen leak, identified by NRC in a safety report occurred after Exelon submitted its application for Limerick relicensing.
- We are concerned about Limerick's original defective hydrogen remover because at TMI, it was a hydrogen explosion that rocked the control room during the TMI partial meltdown.

UNACCEPTABLE

History repeated itself for Limerick relicensing. Your letter to Exelon indicates that permanent Limerick plant modifications were initiated by Exelon BEFORE NRC's approval of Limerick relicensing (10-14).

- **NRC allowed Exelon to put the cart before the horse and rubberstamped its approval of those modifications two months AFTER NRC relicensed Limerick (12-23-14).**

EVEN WORSE

Exelon assessed the "adequacy" of changes it made at Limerick based on its own reviews.

- **Of major concern: Exelon concluded that an NRC safety evaluation was NOT required for risky changes, including experiments, that Exelon had already begun implementing at Limerick.**

Changes include:

- Experiments
- Calculations
- Analyses
- Design Change Documentation
- Procedures
- NRC's Technical Specifications (TS)
- Plant Drawings
- Updated Final Safety Assessment Report (UFSAR)

NRC's reviews and acceptance of Exelon's self-evaluations put the public at risk.

1. **We have no confidence in Exelon's self-assessment of its own changes for Limerick operations because Exelon obviously has a vested interest in the outcome. Evidence shows Exelon's data and reports fail to provide full, accurate, and timely disclosure.**
2. **It is reckless for NRC to have failed to conduct its own independent rigorous testing for Exelon's risky changes at Limerick.**
3. **It is irresponsible for NRC to relicense Limerick without requiring Exelon to comply with Commitment #46, which required the testing of Exelon's aging-management program for Limerick.**
4. **NRC is putting on blinders and failing to protect the public, while mindlessly allowing Exelon's self-serving reports to substitute for actual safeguards.**

DANGEROUS PERMANENT LIMERICK PLANT MODIFICATIONS TO LIMERICK'S MOV SYSTEM:

Background:

In 2011, NRC issued a "white violation" citing Exelon with noncompliance of a legally binding requirement involving the failure of the feedwater Motor Operated Valve (MOV) which resulted in loss of Reactor Core Isolation Coolant (RCIC) for longer than specifications allow, according to NRC's Technical Specifications (TS).

- **NRC defined the violation as a “weakness in maintaining long-term plant stability”.**
- **NRC stated that this was a “Violation of a legally binding requirement”.**

In 2012, Exelon requested an amendment taking the MOV out of Technical Specifications (TS), under NRC regulatory control, and into the Technical Manual (TM), under Exelon's control and *not* regulated by NRC. NRC contacted an unnamed state official for comment on this amendment prior to its approval. It is far from routine for the NRC to ask a state official for comment on its amendment approvals. The NRC stated, in its approval, that the unnamed state official had no comment.

In 2013, the NRC inexplicably granted Exelon's request to remove the MOV valve from NRC's Technical Specifications (TS)

The reason this is a major concern is because at TMI, on March 28, 1979, the immediate cause of the loss-of-coolant accident that allowed the uncovering of the core and the melting of about half of it was a **valve** that stuck open and allowed large volumes of water to escape.

EXELON CHANGES CLEARLY CREATE A SEVERE SAFETY HAZARD.

- **In 2014, Exelon made design changes to the Motor Operated Valve system for delivering water to the reactor core that included:**
 - **permanently fixing the valves in an open position**
 - **cutting the power to the valve alarms**
 - **removing loss-of-power/overload alarms**
1. **How can this be? Isn't the opening and closing of valves essential to preventing core meltdowns?**
 2. **Was this done because the MOV valve stem broke? If so, when did that happen?**
 3. **The MOV valve was inoperable for a month, verified by an NRC inspection report letter to Exelon dated 11-4-11.**
 4. **The 11-4-11 letter shows NRC issued a white violation, stating that it may require additional NRC inspection, yet now NRC has abandoned rigorous oversight of the MOV and its associated systems and alarms.**
- **NRC IS WILLFULLY BLIND TO THE RISKS INVOLVED WITH THIS DANGEROUS EXPERIMENT.**
 - **NRC IGNORED LIMERICK'S HISTORY OF VALVE PROBLEMS TO RELICENSE LIMERICK.**

QUESTIONS RELATED TO YOUR 12-23-14 LETTER TO EXELON ABOUT LIMERICK:

1. Because the MOV is associated with plant stability, the potential consequences of NRC's lax oversight could be catastrophic.

- **Why would NRC excuse Exelon from compliance with original NRC regulations?**
- **It appears that Exelon's MOV experiment would violate NRC regulations if the MOV was still in NRC's Technical Specifications (TS). Isn't that true?**

2. Was the defective hydrogen remover ever repaired or replaced? If so, when?

3. Your 12-23-14 letter to Exelon refers to a "team". Was this team comprised of NRC engineers? If not, what company or contractor supplied the engineers? Are they a permanent engineering inspection team for Limerick?

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January 19, 2015

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I think we would readily agree that we have a mutual goal in ensuring safety at operating nuclear plants. Candidly, if my staff was to perform the necessary level of research to find detailed answers to your questions (some from circa 1980 which require an extensive historical records search); I would actually be pulling my inspection staff out of the field for issues that have been previously reviewed and adjudicated by the NRC. The extensive research would, in turn, prevent my staff from performing direct inspections at operating plants. I think we would both agree that this is not a desirable outcome and it would not promote our overall, common safety goals. Therefore, my following responses are of a high level nature. I have provided easily accessible references so that your organization may research the topics and issues at your leisure.

Regarding your reference to problems identified in 1984 before the Limerick plant was granted an operating license, the NRC concluded in the original safety evaluation report (SER) and its nine supplements (circa 1983 to 1985) that there is reasonable assurance that the activities at Limerick can be conducted without endangering the health and safety of the public, and that such activities are conducted in compliance with the Commission's regulations. Sections of the SERs (they all have a common structure) that you will find helpful regarding procedures, safety measures, valves, and hydrogen recombiners include 3.9, 6.2, 6.3, 6.6, and 13.5. You will find the remaining answers to your questions and all of the SERs and supplements for Limerick under NUREG-0991. NRC staff in the Public Document Room (800-397-4209) can help you locate and obtain these materials. Referencing ADAMS Accession numbers ML12005A234 (original SER), ML8401100034 (Supplement 1), ML 091310375 (Supplement 2), ML8411210188 (Supplement 3), ML8508210037 (Supplement 6), ML8905110317 (Supplement 7), ML8907060264 (Supplement 8), and ML12298A564 (Supplement 9) will greatly assist you in your search and allow you to determine the final disposition of these issues.

Regarding plant modifications that occurred at Limerick before re-licensing (October 2014), it is important to appreciate that plant modification inspections and license renewal inspections are two separate processes with different objectives. It is common practice for all nuclear plants to perform plant modifications throughout their operating life as components age and need to be replaced. The NRC recognizes this reality and devotes a specific inspection procedure (71111.17T, "Evaluations of Changes, Tests, and Experiments and Permanent Plant Modifications") to inspecting this topic on a triennial basis. The objective of the permanent plant modifications inspection is to independently monitor and verify the effectiveness of the utility's 10 CFR 50.59 program (i.e., the regulation that covers plant modifications and changes) and to ensure that the modifications maintain the licensing and design basis of the plant. NRC staff conduct a 3-person team inspection on up to 52 pieces of risk-significant equipment over the course of a two-week onsite inspection. Conduct of inspection procedure 71111.17T provides reasonable assurance that the licensing and design basis of the plant is being maintained in real time. We will continue to perform this inspection every three years, as long as the plant is operating. License renewal inspections, however, are more focused on ensuring that the licensee has established adequate programs to monitor system and equipment performance during the period of extended operations (i.e., 40 to 60 years). The objectives of the 71111.17T and license renewal inspections are fundamentally different and the relative timing and issuance of the reports are independent of each other.

Regarding your views on the license renewal process at Limerick, Mr. Bower responded to your concerns previously via email on January 27, 2015, with an extensive list of references as to how comments from ACE and other external stakeholders were dispositioned (ML15028A032).

In addition, you posed several questions regarding a White NRC finding related to the reactor core isolation cooling (RCIC) system on Unit 2 and subsequent changes to technical specifications that included moving electrical breaker thermal overload specifications for motor-operated valves (MOVs) to the Technical Requirements Manual (TRM). The preliminary White finding and the NRC's final disposition are fully described and docketed in ML11308B146 and ML113410132. Furthermore, our program requires NRC follow-up to confirm that Limerick's actions regarding the White finding are adequate. The NRC conducted this follow-up inspection in 2012 (ML12215A272). In addition, some of your questions on this topic were previously answered in an email from the Chief, Projects Branch 4 in June 2013 (ML13176A064).

Notwithstanding, the TS amendment in question was issued on March 13, 2013 (ML13023A410). The amendment did not take MOVs out of the plant technical specifications. Rather, it relocated MOV thermal overload protection to the TRM. The amendment was approved because the thermal overload function was not required by 10 CFR 50.36 and therefore did not need to be included in the technical specifications. As stated in the safety evaluation, future changes to the relocated requirements are subject to the provisions in 10 CFR 50.59, which are reviewed under inspection procedure 71111.17T as discussed above.

Regarding contact with state officials, the NRC attempts to contact the State for every proposed amendment in accordance with NRC regulations. Specifically, requirements with respect to State consultation are contained in 10 CFR 50.91(b). 10 CFR 50.91(b)(3) and (b)(4) require that: (1) the NRC make a good faith effort to contact the State official, prior to amendment issuance, to determine if the State has any comments; and (2) consider any comments of the State official.

Sincerely,

Paul G. Krohn, P.E.
Chief, Engineering Branch 2
Region I, Division of Reactor Safety

From: aceactivists@comcast.net [<mailto:aceactivists@comcast.net>]
Sent: Monday, January 19, 2015 3:35 PM
To: Krohn, Paul
Cc: Bower, Fred; Ennis, Rick; NRDC; Evan Brandt
Subject: Risky Limerick Permanent Plant Modifications Approved AFTER Relicensing

January 19, 2015

To: Paul Krohn, NRC Chief Engineering Branch 2

From: Dr. Lewis Cuthbert, ACE President

Re: Limerick Nuclear Plant Changes, Tests, Experiments, and Permanent Plant Modifications Approved by NRC, Based On Exelon's Self-Serving, Self-Assessment

It is alarming that problems identified by NRC in 1984, before Limerick Nuclear Plant's original license was approved, have persisted up to and through NRC's 10-14 relicensing of Limerick. Your 12-23-14 letter to Exelon exposes the unresolved complexity of Limerick's problems. Your letter and attachment to Exelon reveals an alarming NRC hands-off-safety trend at Limerick.

Limerick's safety problems were not resolved before Limerick was originally licensed. The NRC section chief in 1984 stated that his staff wanted four items cleared up before licensing Limerick (Mercury 8/31/84). Items he identified included:

1. Improper procedures
2. Incomplete safety measures
3. Faulty valves
4. A defective hydrogen remover

- **Three of the four items identified by NRC in 1984 remain unresolved to this day (Confirmed by NRC's safety reports for Limerick relicensing).**
- **It is unclear whether or not the fourth item, a defective hydrogen remover, was ever repaired or replaced.**
 - We are concerned because At Limerick, at least one accident occurred involving a hydrogen leak. This documented hydrogen leak, identified by NRC in a safety report occurred after Exelon submitted its application for Limerick relicensing.
 - We are concerned about Limerick's original defective hydrogen remover because at TMI, it was a hydrogen explosion that rocked the control room during the TMI partial meltdown.

UNACCEPTABLE

History repeated itself for Limerick relicensing. Your letter to Exelon indicates that permanent Limerick plant modifications were initiated by Exelon BEFORE NRC's approval of Limerick relicensing (10-14).

- **NRC allowed Exelon to put the cart before the horse and rubberstamped its approval of those modifications two months AFTER NRC relicensed Limerick (12-23-14).**

EVEN WORSE

Exelon assessed the "adequacy" of changes it made at Limerick based on its own reviews.

- **Of major concern: Exelon concluded that an NRC safety evaluation was NOT required for risky changes, including experiments, that Exelon had already begun implementing at Limerick.**

Changes include:

- Experiments
- Calculations
- Analyses
- Design Change Documentation
- Procedures
- NRC's Technical Specifications (TS)
- Plant Drawings
- Updated Final Safety Assessment Report (UFSAR)

NRC's reviews and acceptance of Exelon's self-evaluations put the public at risk.

1. **We have no confidence in Exelon's self-assessment of its own changes for Limerick operations because Exelon obviously has a vested interest in the outcome. Evidence shows Exelon's data and reports fail to provide full, accurate, and timely disclosure.**
2. **It is reckless for NRC to have failed to conduct its own independent rigorous testing for Exelon's risky changes at Limerick.**
3. **It is irresponsible for NRC to relicense Limerick without requiring Exelon to comply with Commitment #46, which required the testing of Exelon's aging-management program for Limerick.**
4. **NRC is putting on blinders and failing to protect the public, while mindlessly allowing Exelon's self-serving reports to substitute for actual safeguards.**

DANGEROUS PERMANENT LIMERICK PLANT MODIFICATIONS TO LIMERICK'S MOV SYSTEM:

Background:

In 2011, NRC issued a "white violation" citing Exelon with noncompliance of a legally binding requirement involving the failure of the feedwater Motor Operated Valve (MOV) which resulted in loss of Reactor Core Isolation Coolant (RCIC) for longer than specifications allow, according to NRC's Technical Specifications (TS).

- **NRC defined the violation as a "weakness in maintaining long-term plant stability".**
- **NRC stated that this was a "Violation of a legally binding requirement".**

In 2012, Exelon requested an amendment taking the MOV out of Technical Specifications (TS), under NRC regulatory control, and into the Technical Manual (TM), under Exelon's control and *not* regulated by NRC. NRC contacted an unnamed state official for comment on this amendment prior to its approval. It is far from routine for the NRC to ask a state official for comment on its amendment approvals. The NRC stated, in its approval, that the unnamed state official had no comment.

In 2013, the NRC inexplicably granted Exelon's request to remove the MOV valve from NRC's Technical Specifications (TS)

The reason this is a major concern is because at TMI, on March 28, 1979, the immediate cause of the loss-of-coolant accident that allowed the uncovering of the core and the melting of about half of it was a **valve** that stuck open and allowed large volumes of water to escape.

EXELON CHANGES CLEARLY CREATE A SEVERE SAFETY HAZARD.

- **In 2014, Exelon made design changes to the Motor Operated Valve system for delivering water to the reactor core that included:**
 - **permanently fixing the valves in an open position**
 - **cutting the power to the valve alarms**
 - **removing loss-of-power/overload alarms**
- 1. **How can this be? Isn't the opening and closing of valves essential to preventing core meltdowns?**
- 2. **Was this done because the MOV valve stem broke? If so, when did that happen?**
- 3. **The MOV valve was inoperable for a month, verified by an NRC inspection report letter to Exelon dated 11-4-11.**
- 4. **The 11-4-11 letter shows NRC issued a white violation, stating that it may require additional NRC inspection, yet now NRC has abandoned rigorous oversight of the MOV and its associated systems and alarms.**
- **NRC IS WILLFULLY BLIND TO THE RISKS INVOLVED WITH THIS DANGEROUS EXPERIMENT.**
- **NRC IGNORED LIMERICK'S HISTORY OF VALVE PROBLEMS TO RELICENSE LIMERICK.**

QUESTIONS RELATED TO YOUR 12-23-14 LETTER TO EXELON ABOUT LIMERICK:

1. **Because the MOV is associated with plant stability, the potential consequences of NRC's lax oversight could be catastrophic.**
 - **Why would NRC excuse Exelon from compliance with original NRC regulations?**
 - **It appears that Exelon's MOV experiment would violate NRC regulations if the MOV was still in NRC's Technical Specifications (TS). Isn't that true?**
2. **Was the defective hydrogen remover ever repaired or replaced? If so, when?**
3. **Your 12-23-14 letter to Exelon refers to a "team". Was this team comprised of NRC engineers? If not, what company or contractor supplied the engineers? Are they a permanent engineering inspection team for Limerick?**

