

**Eric Joseph Epstein's Comments on Behalf of
Three Mile Island Alert, Inc.
Re: Nuclear Regulatory Commission's Draft
Environmental Report for Three Mile Island
Nuclear Plant License Renewal Application**

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February 24, 2009

U.S. NRC
Division of License Renewal
Brian Holian, Director
Renewal Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation
Washington, DC 20555-0001

12/09/08

73 FR 74766

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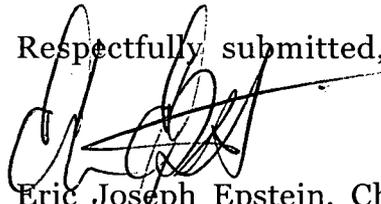
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Enclosed please find "Eric Joseph Epstein's Comments on Behalf of Three Mile Island Alert, Inc. Re: Nuclear Regulatory Commission's Draft Environmental Report for Three Mile Island Nuclear Plant License Renewal Application."

Respectfully submitted,



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Att = S. Lopez (5442)

I. Background

I am not here to discuss relicensing. That's a done deal. Three Mile Island Unit-1 (TMI-1) will be relicensed as will every nuclear power plant that applies for a license extension. That's a fact of life. And that's why Three Mile Island Alert, Inc. (TMIA) did not challenge the license extension, and why I entered into a Settlement with Exelon.

The Nuclear Regulatory Commission (NRC's) relicensing process is designed to fast track and approve, minimize public input, and put a smily face on a nuclear bailout.

The Commission views "public participation" as a regulatory burden. The NRC's institutional hubris marks the agency's determination to return to the regulatory world of pre-March 28, 1979.

Tonight we're here to congratulate the Nuclear Regulatory Commission on it's partnership with nuclear industry. The Agency should be recognized on its successful efforts to collaborate with the American Nuclear Society, the Institute for Nuclear Power Operations, and the Nuclear Energy Institute.

On a solemn note, Three Mile Island Alert is still awaiting responses to the Testimony and questions I offered on behalf of TMI-Alert dating back to March 25, 2008 and officially filed on May 1 and 5, 2008.

While I reviewed the entire document and prepared detailed testimony relating to gaps in socioeconomics and emerging issues, I have opted not to enter those comments into the official record. Instead, I am only going to review the process as I experienced to date, and make additions to Appendix E: Chronology of Environmental Review.

II. The Process

Back on March 25, 2008, I asked for responses to the questions and issues TMIA planned to raise on May 1, 2008. Sarah Lopas, Project Manager Division of License Renewal replied quickly that same day at 11:19 am:

I will do my best to answer any of the environmental license renewal questions regarding TMI Unit 1, or any questions you might have on the license renewal process in general. Regarding consumptive water use, groundwater monitoring, biofoul control of the circulating water system, NPDES-regulated discharges to the Susquehanna, and fish kills - we are just in the very beginning stages of the preparing the draft EIS, so I can't make any definitive statements until December, when we tentatively plan to publish the draft. And of course we will have the draft EIS public meetings (tentatively scheduled for late January 2009) to answer questions on our findings, and take comments on the draft.

The FRN of Intent to Prepare an EIS/Conduct Scoping will be published March 31, and we'll be back up to Middletown for the scoping meetings on Thursday, May 1. The scoping comment period will end May 30, so I encourage you to submit your comments for consideration via email before then, or at the May 1 meetings. I'll forward the PDFs of the FRN and meeting notice on to you when they are available.

On May 5, 2008 at 9:15 Sarah Lopas, Project Manager Division of License Renewal even requested a copy of TMIA's testimony, "if you have it available, would it be possible to get a PDF (or Word) version of the most recent testimony you submitted? That will make it easier for me to put it in the Scoping Summary Report." I provided the material in PDF format that same day.

So far, so good. Not really.

If you look hard, you can see how the NRC altered the intent and content of TMIA's questions, and melded the responses into a massaged composite format. But you have to squint real hard, otherwise you wont be able to connect the regulatory dots. (4.32 through 4.42, A- 1 through A-8)

For example, despite well-defined and researched questions relating to invasive species, you would have to get out your microscope, but you can find references in the NRC evasive response to Asiatic Clams (2-3 and 2-32) and Zebra Mussels (2-32.)

The question is listed on A-5, but there no responses.

As part of the cost-benefit analysis of nuclear power plant licensing applications, the NRC is required to assess likely socioeconomic impacts of power plant construction and operation on local communities and the surrounding region. This is interesting relicensing standard since the NRC has no statutory authority to collect tariffs from licensees or enforce decommissioning savings.

However, I persisted.

On May 5, 2008, at 9:15 AM, Sarah Lopas wrote, "He [Jeff Rickoff] wasn't able to come to the meetings on Thursday - I apologize for that. He has been CC'ed on this email. I will ask him to give you a call to discuss sometime this week. "

Since the NRC's socioeconomic designate, Mr. Jeff Rickoff, did not attend the May 1, 2008 meeting, I followed up with Ms. Lopas and requested a meeting with the NRC representative on socioeconomic impacts.

Two months later Mr. Rickoff had not not contacted me. I e-mailed Ms. Lopas on August 05, 2008 4:00 and stated, "Actually there are numerous EJ issues and we're still waiting to be contacted by Jeff [Rickoff]."

¹ Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies. N E W S R E L E A S E COMMONWEALTH OF PENNSYLVANIA, Dept. of Environmental Protection, 1/27/2009

On August 5, 2008 at 4:14 pm Sarah Lopas wrote: "If you have specific questions regarding EJ (environmental justice) and the TMI-1 license renewal I can forward them on to him, although keep in mind scoping is over, and we're putting the draft SEIS together now. Which is why I recommend waiting until the draft is published so you can review the analysis and go from there.

I answered Ms. Lopas:

One of the special needs' populations that is also an EJ issue is the status of alerting and evacuating the Amish who don't own cars or use phones and may not have access to KI...

However, the Amish as well as some Mennonite sects (are mostly agricultural communities), and will likely stay behind which causes problems beyond their enclaves, i.e., sale of produce and livestock, chronic health issues, low birth weight for mid-wife delivery, dedicated water contamination, etc.

This is why we wanted to meet w/ a live a human: visual inspections and the reality of the problems we experienced in 1979 don't jump off of the pages.

The GEIS does not factor the special needs of Old Order Mennonites and Amish living with ten miles of Three Mile Island. As witnessed by ^{the} meltdown in 1979 and the Nickel Mines tragedy on September 30, 2006, this agricultural based population requires and deserves dedicated planning since they do not use telecommunication devices, operate motor vehicles or utilize electronics. (2-57, 2-62 and EJ 4.97)

Since the NRC can make a population disappear, I was curious if they could also rewrite weather patterns. Pleased note that under 4.10 III. Evaluation of New & Potentially Significant Information: This section has either omitted or failed To Identify Severe Weather Events. The NRC stated severe weather is "generally uncommon" (p. 2-24); however, an earthquake, tornado and drought have impacted the TMI vicinity in recent years.

- **Earthquake: December 27, 2008**

(Lebanon County, 12:04 a.m., 12/27/08) A 3.4 magnitude earthquake occurred northwest of the city of Lancaster, Lancaster County. The quake was felt by residents in Berks, Cumberland, Dauphin, Lebanon and Lancaster. No damage or injuries were reported.

The incident was terminated at 6:23 a.m.

Notifications: Departments of Health, Environmental Protection (Southcentral Regional Office and Headquarters) and Transportation, Public Utility Commission, Federal Emergency Operations Center, Turnpike Commission, PA-1 Call, Millersville University Geology Department, National Earthquake Information Center, State Police, affected counties and PEMA Central and Eastern Area Offices

- **F3 Tornado: July 14, 2004**

An F3 tornado, with wind speeds estimated between 175 and 200 mph, pounded Campbelltown in Lebanon County Pennsylvania. The severe storm which produced the tornado over 100 homes in a development in Campbelltown. This thunderstorm also produced a weaker F1 tornado in northern York County as it moved eastward on Wednesday afternoon. The storm injured twenty-four people in Campbelltown.

Pennsylvania Emergency Management (PEMA) reports showed that 32 houses were destroyed, 37 homes suffered major damage, and an additional 50 homes suffered some form of damage from the storm (Figure 1). Two people were hospitalized by the storm, one was critically injured. Fortunately, there were no fatalities with the tornado. In addition to the homes damaged winds that affected other areas of Dauphin and Lebanon Counties. A few farmhouses and houses in other areas of Lebanon County were damaged by the strong straight line winds.

Source: Lebanon County F3 Tornado , 14 July 2004 *Richard H. Grumm and Kevin Fitzgerald National Weather Service Office , State College, PA 16803*

- **Drought: Summer 2002**

During the 2002 drought nuclear power plants were exempted from water conservation efforts and participate in a “voluntary” program. In Pennsylvania, 24 counties were designated as “drought emergencies”, and another 31 were on “drought watch.

III. Conclusion

I am submitting the same 50 questions in the same format from the May 1, 2008 meeting hoping somebody or something at the NRC will actually answer the questions.

Based on my prior experiences with relicensing at the Susquehanna Steam Electric Station, I realize that the NRC won't respond to the questions directly. The Agency will distill and homogenize and tailor their responses to meet some limited, low-hanging NRC metric(s).

However, I can continue to participate in regulatory "whiteout" and a linguistic shell game.

Or, in the alternative, I can formally cease to exist.

I choose not to be part of a perforated record.

Please expunge and strike all of my previous comments and Testimony.

Please disregard all of the comments I made this evening.

IV. Appendix E:

Chronology of Environmental Review

The information provided on the Timeline from E-1 to E-7 is incomplete and fails to include the following:

- May 1 and 5, 2008: TMIA's Testimony was submitted to the NRC.
- May 19, 2008: Joint Press Release: "Exelon and EFMR Sign Community Based Agreement."
- August 18, 2008 "Re: Findings and Responses of the NRC Office of the Inspector General Report on the License Renewal Program" from Senator Jeffrey E. Piccola (R-15th Senatorial District) and Rep. Eugene A. DePasquale (D-95th Legislative District)
- May 28, 2008 Letter to Peter Bramford from Douglas Beddel, for Communications Manager for TMI, Re: Relocation of Joint Information Center to Coatesville.
- July 23, 2008: Summary of Conference Call With AmerGen Company To Discuss Responses to Request for Additional Information For Sections 4.2 and 4.4 of the Three Mile Island Unit 1 License Renewal Application (TAC NO. MD 7701)
- August 20, 2008: Request for Additional Information For Sections 2.3. 3 and 2.3.4 of the Three Mile Island Unit 1 License Renewal Application (TAC NO. MD 7701)
- August 22, 2008: Summary of Conference Call With AmerGen Company To Discuss Responses to Request for Additional Information For Sections 2.2, 2.3., 2.4 and 2.5 of the Three Mile Island Unit 1 License Renewal Application (TAC NO. MD 7701)
- August 22, 2008: Request for Additional Information For Sections 2.2, 2.3, 2.4 and 2.5 of the Three Mile Island Unit 1 License Renewal Application (TAC NO. MD 7701)
- November 12, 2008: Three Mile Island Unit 1 - Request for Additional Information, Regarding Review of Steam Generator Inspection Report for the 2007 Outage (TAC NO. MD 8268)

- October 24, 2008 - Exelon Announces Third Quarter Results; Increases Fourth Quarter Common Dividend by 5 Percent

“Unrealized losses of \$60 million, or \$0.09 per diluted share, related to nuclear decommissioning trust fund investments primarily related to the AmerGen Energy Company, LLC (AmerGen) nuclear plants.”

- November 17, 2008: Summary of Conference Call With AmerGen Company To Discuss Responses to Request for Additional Information For Sections 2.3. and 2.3.4 of the Three Mile Island Unit 1 License Renewal Application (TAC NO. MD 7701)
- December 23, 2008: The Nuclear Regulatory Commission approved the formal transfer of the operation licenses for these facilities to Exelon Generation on Dec. 23, 2008, which was a key step in the final integration process.
- January 8, 2009: Exelon Generation today officially integrated the nuclear generation assets held by its AmerGen Energy Company LLC subsidiary into Exelon Nuclear and dissolved the AmerGen legal entity.

The Nuclear Regulatory Commission approved the formal transfer of the operation licenses for these facilities to Exelon Generation on Dec. 23, 2008, which was a key step in the final integration process.

- January 5, 2009: Request for Additional Information For Sections 2.3. and 2.3.4 of the Three Mile island Unit 1 License Renewal Application (TAC NO. MD 7701)

Attachment 1:

**Testimony of Eric J. Epstein, Chairman
Three Mile Island Alert Inc.***

May 1, 2008

**Re: NRC SEEKS PUBLIC INPUT ON ENVIRONMENTAL IMPACT
STATEMENT FOR THREE MILE ISLAND 1 LICENSE RENEWAL
APPLICATION**

“This application does not involve the adjoining Three Mile Island 2 reactor, where a severe accident occurred in 1979. That unit has been out of service since the event. It has been defueled and decontaminated to the extent that the plant is in a safe, stable condition suitable for long-term monitoring.”

(NRC Press Release)

The core melt accident occurred at TMI-2 in March-April 1979 was followed by a tax payer and ratepayer subsidized \$1 billion de-fueling process. Post De-fueling Monitored Storage was approved in 1993. There is no significant dismantlement underway. GPU Nuclear retains ownership of TMI-2, and contracts to AmerGen for maintenance and surveillance activities. Both units are currently expected to be decommissioned together in 2014. Most of spent fuel was removed except for debris, defuel and contaminated parts in the primary systems. The fuel is currently in storage at the Idaho National Engineering and Environmental Laboratory. The Department of Energy has taken title and possession of the fuel.

The costs to defile TMI-2 do not include nuclear decontamination and decommissioning or restoring the site to “Greenfield”.

* *Mr. Epstein is the Chairman of Three Mile Island Alert , Inc., tmia.com, a safe-energy organization based in Harrisburg, Pennsylvania and founded in 1977. TMIA monitors Peach Bottom, Susquehanna, and Three Mile Island nuclear generating stations.*

Legacy Issues at TMI-2

- 1) How much fuel is left in the reactor vessel? What is the K-effective? (1)
- 2) What is the status of cork seam leakage at TMI-2? (2) Is there an underground plume? If so, has the plume migrated towards the River?
- 3) How many fires have occurred at this “safe and stable plant” since 1990? (3)
- 4) How many non conforming conditions adverse to quality or safety have been identified at Unit-2? (ADAMS, MLO73531346)
- 5) Does the plant have any economic value? (4) Does the NRC consider TMI-2 to be a “Brownfield” site?
- 6) Is this a historic site? It has a PHMC designation.
- 7) A historic district requires or site requires "architectural compatibility.: Zoning ordinances usually preclude construction within certain areas of the historic district or site. Is this the reason TMI-1's is not decontaminated or decommissioned.
- 8) How many people work at TMI-2?
- 9) How would you characterize the relationship between FirstEnergy and Exelon?
- 10) How would you characterize the most recent FirstEnergy tour of Three Mile Island?
- 11) How much was in the decommissioning fund at the time of the accident? How much is the fund now? (5)
- 12) How much will be needed to actual decommission the plant, i.e., real 2008 dollars?

- 13) What is the targeted funding level for nuclear decommissioning?
- 14) Is there any reason TMI-2 can not be decommissioned or decontaminated while TMI-1 is operating? Please provide the safety and technical challenges that preclude immediate cleanup of TMI-2.
- 15) How many other licensees does holding a POL or materials license have been convicted of a felony? (6)
- 16) Please provide a study or empirical data that demonstrates it is safe to store high level radioactive waste on an island next to a river that empties into the Chesapeake Bay?
- 17) What assurances exist that TMI-2 will not become a HLRW site for spent fuel from other Exelon sites?

Three Mile Island Unit-1

“Three Mile Island 1 was not affected by the accident and has had a safe operating record for many years.”(NRC Press Release)

- 18) How many people work at TMI-1? How many people worked at TMI-1 when AmerGen purchased the plant from GPU? How many people does the NRC project will be working at TMI-1 in 20 years?
- 19) Is it unusual for a licensee to go through four vice presidents for one nuclear reactor in eight years? What is the average industry term a Vice president serves at a reactor site?
- 20) Can you factor economics, staffing levels, or the tax base into a relicensing decision?
- 21) Can the NRC relicense a plant for less than 20 years? Has the NRC extended a license for more than 40 years, but less than 20 years? If so, please identify the plant and the extension conditions. (7)
- 22) Hasn't TMI's license already be extended by 6 years? (8)

23) TMI-1 continues to operate with the most damaged steam generating tubes in the country. From November 1981 to January 1982, GPU discovered it had damaged over 29,000 steam generator tubes at TMI-1.
(9)

Is there an operating plant with more plugged steam generating (SG) tubes? If so please identify the plant and the number of plugged tubes.

24) Is there an operating plant with more plugged SG tubes as an overall percentages? If so please identify the plant and the percentage of plugged tubes.

25) Is there an operating plant with more sleeved steam generating tubes? If so please identify the plant and the number of sleeved tubes.

26) Is there an operating plant with more sleeved SG tubes as an overall percentage? If so please identify the plant and the percentage of sleeved tubes.

27) Exelon Nuclear has selected Washington Group International and Areva Inc. to replace two steam generators at Three Mile Island.

“The project will require workers to cut a hole through the 4-foot-thick concrete walls of the reactor containment building. The work will be done during the refueling and maintenance outage in the fall of 2009, said Ralph DeSantis, spokesman for AmerGen Energy, operator of TMI and a subsidiary of Exelon. Exelon has budgeted \$280 million for the work.”
(The Patriot News, October 28, 2006)

Is it realistic to believe that the NRC would not factor a \$280 million investment in the license extension process?

28) “The major overhaul will put the nuclear power plant in better position to be re-licensed in 2014, the company said.”

How is this not a down payment on relicensing?

29) Shouldn't the NRC extend the life of TMI to coincide with its inability to offload its fuel core? (10)

30) The National Academy of Sciences issued a report that had been requested by Congress in March 2005. The report questioned the safety and security of highly crowded spent fuel pools currently storing the nation's nuclear inventory. The report concluded that the government does not fully understand the risks that a terrorist attack could pose to the pools and ought to expedite the removal of the fuel to dry cask storage casks that are more resilient to attack.

Since reracking has produced very dense spent fuel pools at TMI, shouldn't the utility also be applying for additional spent fuel storage capacity? When will TMI-1 lose off-load capacity?

31) Barnwell S.C. announced that it will close to generators on June 20, 2008.

The NRC staff concluded that there was no new and significant information and therefore there would be no impacts of low level waste storage and disposal associated with the renewal term. The GEIS stated that, "...The maximum additional on-site land that may be required for low-level waste storage during the term of a renewed license and associated impacts will be small."

TMI is located on Susquehanna River so any leaking contaminants from waste storage facilities will flow towards and eventually into the Bay. There are no monitoring wells lining the shoreline.

We deserve to know what the LLRW storage plans are before the application is decided; so that the re-licensing decision does not prejudice any LLRW storage decision.

Where will the LRW going to be stored? For how long? And will the location be above the flood plain?

32) The federal relicensing system used to ensure nuclear plants are safe to operate for an extended period beyond their original license of 40 years, has come under sharp criticism. The Nuclear Regulatory Commission's (NRC) Office of Inspector General (OIG), Audit of NRC's Renewal Program (OIG-07-A--15) found key safety evaluations lacked critical documentation.

Essentially , DLR [the Division of Licensing Renewal] lacks a complete report quality assurance process to ensure documentation of the staff's aging management program review methodology and substantive support for staff conclusions.

(OIG-07-A-15, September, 2007, p.11.)

Currently, Pennsylvania has three nuclear stations involved in the relicensing process: Beaver Valley Nuclear Generating Station (Shippingport), the Susquehanna Steam Electric Station (Berwick), and the Three Mile Island Nuclear Generating Station (Londonderry Township).

What guarantees exist that the NRC will not perform a "cut and paste" job at TMI?

Essentially , DLR [the Division of Licensing Renewal] lacks a complete report quality assurance process to ensure documentation of the staff's aging management program review methodology and substantive support for staff conclusions.

(OIG-07-A-15, September, 2007, p.11.)

33) Why not emulate the conditions in Sarbannes Oxley for corporate officers, and allow NRC staff to sign-off on the license extension subject to a bonus for good performance and a felony for material false statements?

34) How many NRC staff members are here this evening?

35) How many staff members will be here in 20 years?

36) The disposal of highly radioactive waste contained in nuclear reactors' used, or spent, fuel rods poses another serious problem. This waste must be isolated for at least tens of thousands of years, if not longer. It ultimately should be stored in a permanent, underground geologic repository, but the proposed site at Yucca Mountain in Nevada may never be licensed. The report recommends that the Department of Energy identify other potential sites. In the interim, the report concluded that the waste can be stored safely in dry casks for the next 50 years, but only if the casks are hardened against attack by surrounding them with earthen berms. Currently, casks are sited in the open on concrete slabs.

When will TMI build dry cask storage casks at TMI to store spent fuel?

37) How many DOE employees are in attendance?

38) What's the industry average for "inattentive" or "sleeping" workers compared to the number of incidents at TMI over the last two years?

39) The Ninth Circuit Court said the NRC violated the National Environmental Policy Act when it didn't include a terrorist attack in an environmental impact report for an application to create dry cask storage at the Diablo Canyon Power Plant?

What impact will Diablo Canyon spent fuel case have on the TMI license extension? (11)

40) What is the impact of an aging workforce on relicensing? What is the average age of the TMI workforce and how does it compare to the industry average?

41) Tritium and other leaks – examples and NRC policy on self-monitoring - also exist at Three Mile Island. How has the NRC changed modified its relicensing process to evaluate tritium monitoring?

42) How does the NRC plan to deal with the following water related issues and structural challenges caused by:

Micro fouling versus macro foiling, micro biologically influenced corrosion, biofilm's disease causing bacteria such as Legionella and listeria, the difficulty in eliminating established biofilms, oxidizing versus non-oxidizing biocides, chlorine versus bleach, alkaline versus non-alkaline environments, possible decomposition into carcinogens, and the eastward migration of Asiatic clams, zebra mussels and the anticipated arrival quagga mussels?

43) "Whether the kills are legal or not, a former southern Lancaster County worker at the Peach Bottom nuclear plant said he was "sickened" by the large numbers of sport fish he saw sucked out of the Susquehanna. "When the water comes in, fish would swim in through tunnels and swim into wire baskets," said the man who lives in southern Lancaster County and asked that his name not be used. "There were hundreds and hundreds of fish killed each day. Stripers and bass and walleye and gizzard shad and all kinds of fish. It took a forklift to carry them out. "Every species in the river comes in there when they turn those big intakes on." (*Intelligencer Journal*, January 15, 2005)

TMI has a similar system for disposing of the fish and other organisms that make it through the intake maze. "If they get that far, they're not going back," said Pete Ressler, a spokesman for TMI owner Exelon Nuclear. "They are dumped into a container and disposed of."

Will this system function in the same manner for an additional 20 years?

"The NRC has approved license renewal for 48 generating stations and 38 other license renewal applications are pending or have been announced."
(TMI Press Release)

44) How many companies applying for license extensions have been denied?

- 45) How many companies applying for license extensions are actually incorporated in the same state as the operating plant?
- 46) How many Company's applying for a license extension have been fined for stealing water?
- 47) Can TMI afford to shutdown or is the decommissioning fund underfunded? (12)
- 48) How much money does TMI have in its dedicated decommissioning fund? (13)
- 49) What is the targeted funding level for decommissioning TMI-1?
- 50) What is the funding level for decommissioning TMI-1 in real, 2008 dollars?
- 51) How much high level radioactive waste is currently stored at TMI?
- 52) How much additional HLRW will be stored if the plant if it is relicensed?
- 53) In January, the NRC's Inspector General issued a report highly critical of the NRC, noting the agency has known since 1994 that the Hemyc barrier fails fire tests in minutes – less than half the duration required by NRC regulations. Of the 16 plants the IG found to be in violation, six are owned by NC-based Progress Energy and Duke Energy. To compensate for the years of noncompliance – the NRC is allowing the plants to rely on “interim” measures that have been neither tested nor approved by the agency.

What interim fire protection measures have been deployed at TMI?

54) On September 12, 2007, Mr. Epstein filed a “Petition For Rulemaking Requiring Periodic Comprehensive NRC Review Of Emergency Planning Around U.S. Nuclear Power Plants During The License Renewal Process?” Also pursuant to NRC Regulations Section (D) of §2.802, this petition requests the Commission immediately suspend all licensing proceedings throughout the United States until validation of “reasonable assurance of adequate protection of the population” has been re-established by the NRC for all US Licensees. (14)

What impact does this filing on the present proceeding?

ENDNOTES

1 **CORK FILLED CONSTRUCTION JOINT within AUXILIARY BUILDING SEAL INJECTION VALVE ROOM**

- **October 22, 1993** (pm) In a phone conversation with **Dave Beaulieu (NRC/TMI)**, Eric Epstein reported a safety allegation relating to the inability of the cork in an Auxiliary Building joint to contain the spread of radioactive contamination. Mr. Epstein also stated that the issue should have been included in the PDMS close out schedule. Mr. Beaulieu recorded Mr. Epstein's allegation and reported to NRC Region I.

In response to Mr. Epstein's concerns, Mr. Beaulieu stated: "...hasn't been written in Inspection reports...Contamination there and moving slowly...and not [an] immediate safety concern...Radiation can deteriorate lining if it is high enough...Talked about making it a PDMS issue...It's a concern to me, to Lee [Thonus/NRC] to everybody...[GPU is at the stage of] data collection process."

- **October 24, 1993** (evening) Phoned **Rich Janati, DER/BRP**, and left a message on his home phone informing Mr. Janati of the safety allegation.

- **October 25, 1993** (8:30 am) Mr. Janati returned Mr. Epstein's call: "Aware of this issue...General Review Group brought it up twice [Mr. Miles]...They're aware of it...We do have a concern...Couple of options considering: 1) Remove whole thing...very costly. 2) Other option: find where the leaks are and stop the leaks. Come up with new materials [foam]...We're hoping they're doing it as soon as possible. Expressed our concern to NRC, but we don't have enforcement authority. Going to cost bucks...Removing is probably the last [option] because [of] the cost and material disposal issues.

- **October 25, 1993** (8:45 am) Ralph DeSantis, **GPU Nuclear** was informed of Mr. Epstein's concern. A letter was prepared and sent to GPU, their legal counsel, Mr. Epstein's counsel and the ASL&B. (See enclosure.)

- **October 25, 1993** (8:50 am) Mr. Epstein contacted Dr. Michael Masnik, **NRC/Bethesda** and informed of previous discussions. Mr. Masnik explained: "...part of the problem [GPU/NRC] weren't sure of the extent of the contamination...conflicting information...came to a head within the last couple of weeks. I have a better understanding. It is going to be a PDMS issue. No way they're going into PDMS with water [500 gallons] in crack. They owe us a letter."

- **October 25, 1993** (1:00 pm) Michelle Evans, Senior Resident Inspector NRC/TMI, phoned Mr. Epstein to request that he withdraw the allegation for the time being and proceed informally. Mr. Epstein agreed.
- **October 26, 1993** (pm) Mr. Epstein recontacted Lee Thonus, NRC/TMI-2, and arranged to meet with him to discuss the cork seal problem.
- **October 27, 1993** (8-9:30 am) Lee Thonus NRC/TMI-2 explained issues relating to cork seal problem: "Cork does not serve any structural purpose...Just keeps them [concrete slab flow] from separating...Prevent ground water from getting in...Radioactive water leaking in...[Cork] in tact on bottom...Captured [in punch list on Auxiliary Building] and we won't break out separate item." GPU now pursuing with a "higher level of interest." The water was pumped out but leaked backed in "gradually." The water contains Cesium-137 and "significantly" smaller amounts of Strontium. Tritium levels are "very, very small .009...more than a factor of two below AGW...10-20 curies in cork seal..." Approximately 600-1000 gallons in seal cork boundary. Leaks occurring from roof, horizontal and vertical joints. Expecting letter from GPU on November 15, 1993. Radioactivity can not degrade plastic [liner] over 40 years: "Radiation contamination calculation was 3% of depletion..."
- Conversation with Lee Thonus of NRC (Third week, **March, 1996**): "We closed out cork seam. On tracking system...On autopilot...[GPU] has an adequate program to look at it...It hasn't evaporated...[Check cork seam] At least weekly..."
- **July 23, 1996** Telephone message from Ralph DeSantis, GPU Nuclear: There was extra water "about three months ago...primarily from winter snow and rain. At no time was there a problem with the processing [of] that amount of water. Levels well within system capacity for processing the water." The water levels have returned to normal.

2 SUMMARY OF REMAINING FUEL at TMI-2

Video estimate of remaining fuel at TMI-2 (GPU) GPU concluded there was **850 kilograms** of fuel remaining at TMI-2.

Defueling Completion Report (GPU) - GPU's video camera and visual inspection of the amount of fuel remaining in TMI-2: **608 kilograms; Criticality 94.** According to Dr. Mike Masnik supervisor of the NRC effort at TMI-2, the NRC was intimately involvement in this project.

Safety Evaluation (NRC) - The NRC staff approves GPU's fuel estimate based on their own visual analyses.

Distenfeld Study (GPU) - As part of the fuel storage agreement with the Department of Energy (DOE), GPU predicted there was **1,322 kilograms** of fuel remaining in TMI-2. GPU tried to determine how much fuel was left at, and around, the reactor vessel by subtracting the amount of fuel used when TMI-2 began operation from the amount of fuel remaining at TMI-2. The difference was supposed to be in DOE's possession. Clearly, **Distenfeld's** figures raised "concern" for GPU and the NRC and both entities recognized there was a "potential for more fuel." However, Dr. Masnik noted "Quite frankly we had some questions on Distenfeld's [criticality analyses study.] " *

When Dr. Michio Kaku asked Lee Tonus (NRC site staff) for a copy of Distenfeld's study he was told it was available in the Public Document Room. Then Tonus admitted he didn't know where it was published.

In fact the document is so obscure and the only record of its contents is a conference proceeding of the Institute for Nuclear Material Management.

* Phone conversations with NRC staff in early to mid April, 1993.

Rasmussen Study (GPU) - GPU commissioned Norman Rasmussen to critique Distenfeld's study; however, nowhere in Rasmussen's study is Distenfeld name's found. Rasmussen concluded there was **935 kilograms** of fuel remaining at the bottom of TMI-2. According to Dr. Masnik, Rasmussen's study is the "best estimate." This study concedes that **super-criticality** could result with the removal of the neutron "poison" (borated water.) This scenario is unlikely but possible during an explosion, fire or crash.

Kaku's Study (TMI-Alert/TMI-Legal Fund): After evaluating the above mentioned studies, Dr. Kaku noted: "It appears that every few months, since 1990, a new estimate is made of the core debris, often with little relationship to the previous estimate...estimates range from **608.8 kg to 1322 kg**...This is rather unsettling, because there is significantly more than enough uranium debris to give critical mass. The still **unanswered questions** are therefore: precisely how much uranium is left in the core, and how much uranium can collect in the bottom of the reactor to initiate re-criticality."

3 August 5, 1992 - GPU "declared an event of potential public interest when the Unit-2 west cooling tower caught fire." The fire lasted for ten minutes.

"On July 2, [2003] area firefighters and the Pennsylvania State Police responded to the electrical fire that damaged the turbine building's switchgear room at TMI Unit 2. "Although a five-member AmerGen fire brigade also responded to the blaze, Akron, Ohio-based FirstEnergy is responsible for the operation of TMI Unit 2..."

"The company will spend more than \$100,000 to replace the damaged 55-gallon drum-sized transformer, switchgear, wires and other equipment damaged in the smoky blaze, he said.

"For the next two months, while workers repair the equipment, TMI Unit 2 will use temporary lights, Wilkins said. "It's not unusual for a transformer to fail," Wilkins said. "It's not unheard of." (*York Daily Record*)

4 Unit 2 at TMI was pronounced worthless by First Energy in a lawsuit against Dauphin County." The deal means the plant will be exempt from property taxes after the assessment on the reactor and its contaminated site was readied from \$16.2 million to zero...First Energy Spokesman Scott Shields said the company considers Unit 2 useless and has absolutely no plans for building on the land." (Nuclear Engineering International, April 1, 2005)

TMI-2's turbine(s), which is for sale, has value and use if accelerated stress corrosion or relicensing force TMI-1 to seek a replacement.

TMI-1 and TMI-2 were built with Westinghouse turbines, and 1500 and 1800 rpm pressure turbine discs. The NRC staff, and Westinghouse's Turbine Division determined on November 20, 1979 that cracking attributed to stress corrosion phenomena had been found in these turbines.

Resale value needs to be determined, but a high-quality used turbine at TMI-2 could have enormous resale value. The Cooper Nuclear power plant in Nebraska is replacing both turbines. Cooper is a 778-MWe, BWR that came on line at roughly the same time as TMI-1 (July, 1974). The price for replacing both turbines to accommodate a 20-year relicensing extension is **\$35 million**.

5 In July 1990, GPU submitted its funding plan for placing \$229 million in escrow for radiological decommissioning.

February, 1997 - In their *1997 Annual Report*, GPU reported that the cost to decommission TMI-2 doubled in four years. The original \$200 million projection has been increased to \$399 million for radioactive decommissioning. An additional \$34 million will be needed for non-radiological decommissioning. The new funding "target" is \$433 million; or a 110% increase in just 48 months.

According to the NRC , as of September, 2004, \$421 million resides in the TMI-2 Decommissioning Fund (2003 dollars.)

A recent withdrawal for an undisclosed amount was made on February 14, 2005 to dispose of TMI-2 filters stored at the INEGL in Idaho.

6 February 29, 1984 - A plea bargain between the Department of Justice and Met Ed settled the Unit 2 leak rate falsification case. Met Ed plead guilty to one count, and no contest to six counts of an 11 count indictment.

The Company also agreed to pay a \$45,000 fine, and establish a \$1 million dollar interest-bearing account to be used by the Pennsylvania Emergency Management Agency. The Settlement stipulated that the fines, emergency preparedness fund, and legal cost of the prosecution, would not be paid by GPU/Met Ed rate share holders. (See May 22, 1979, for initial complaint.)

7 "The California Public Utilities Commission approved a massive \$680 million renovation that would extend the life of the San Onofre Nuclear Generating Station by at least 13 years.

"The commission on Thursday gave Southern California Edison the green light to replace four aging steam generators that power the two nuclear reactors at the seaside plant about 60 miles south of Los Angeles. (AP Wire: Regulators approve plan to extend life of SoCal nuclear plan, Fri, Dec. 16, 2005)

- 8 Three Mile Island began commercial operations in September 1974.
- 9 Status of damaged SG tubes at TMI. The limit on out-of -service tubes is 2,000 per generator out of **15,531** per generator.

A: 14,019 in service at the end of 2003.

B: 14,979 in service at the end of 2003.

The new standard will increase the plugging limit to **3,106**.*

NRC reported plugging at Steam Generator A: **1,300**

NRC reported plugging at Steam Generator B: **395**

Sleeved in A: **248 (Examined)**

Sleeved in B: **253 (Examined)**

Update provided by Rich Barkely: #610-337-5065 of the Nuclear Regulatory Commission.

The old SGT limit is 2,000 per generator out of **15,531** per generator.

* The new standard will increase the plugging limit to **3,106**.

NRC reported plugging at Steam Generator:

A: **1,300** A: **1,512** (2003)

NRC reported plugging at Steam Generator

B: **39** B: **552** (2003)

Sleeved in A: **248**

Sleeved in B: **253**

10 Exelon is in the process expanding of a spent-fuel storage capacity. The project will last from 2002-2009 and re-rack "wet storage". AmerGen is increasing capacity through three phases:

Source: AmerGen and Exelon Meeting with EFMR on January 23, 2003, at the Three Mile Island Training Center, S 1-2: Peach Bottom-2 & -3 and Three Mile Island-1, Meeting & Action Items.

- Phase 1 - Complete;
- Phase 2 - Completed in mid-2003. An additional 216 re-racked cells added were installed, or enough for three refueling cycles, were installed.
- Phase 3 - To be completed by mid-2009, and would add another 432 re-racked cells extending storage capacity through 2018. (4)Because of the additional capacity, and Three Mile Island-1 core size, (177) the Company will not lose full core off-load capability until 2018. In other words, lack of waste storage space will not force TMI to close prior to its license expiration.

"The configuration of spent fuel pools is essentially the same for all nuclear power plants. The pools are rectangular in vertical and horizontal cross section. The spent fuel assemblies are stored in racks at the bottom of the pool. Insertion or removal of the fuel assemblies is accomplished vertically from above the storage racks. The 13.5 to 14.5 foot long fuel rods must remain submerged during fuel removal or insertion into the racks; thus, for this reason alone, the spent fuel pool must be at least 27 feet deep. However, an additional eight to ten feet of water is required for shielding an irradiated fuel assembly just removed from the reactor. The spent fuel pool depth must therefore be approximately 40 feet. The direct radiation at the the pool surface from the fuel stored at the bottom is very low because of the water depth of about 25 feet above the top of the irradiated fuel assemblies is equivalent to about 10 to 11 feet of concrete shielding value." (David Lochbaum, Union of Concerned Scientists, "Nuclear Waste Disposal Crisis", Spent Fuel Pools, p. 52., 1996.)

11 WASHINGTON, Jan. 19, 2007 (UPI) -- The U.S. Supreme Court decision Tuesday not to hear an appeal by a California nuclear company means federal regulators will have to decide how to factor in terrorist attacks when evaluating environmental impacts of nuclear waste storage.

In denying Pacific Gas & Electric's appeal of a June 2 ruling by the Ninth Circuit Court of Appeals in San Francisco, the high court may have forced the U.S. Nuclear Regulatory Commission to address the threat of terrorist attacks on nuclear facilities like it hasn't in the past.

The appellate court said the NRC violated the National Environmental Policy Act when it didn't include a terrorist attack in an environmental impact report for an application to create dry cask storage at the Diablo Canyon Power Plant near San Luis Obispo, Calif.

12 **Study: Yankee can't afford shutdown**

Rutland Herald Nov 15, 2007 By Susan Smallheer Herald Staff

“VERNON If Vermont Yankee nuclear plant shut down today, or even in 2012 when its federal license expires, there would not be enough money in its decommissioning fund to pay for it to be dismantled and disposed of safely.”

“The plant would have to be essentially mothballed for 12 to 15 years for its stock market-invested trust fund to build so there was enough money to dismantle it, Entergy Nuclear engineer David McElwee told the Vermont State Nuclear Advisory Panel Tuesday evening.”

13 Exelon manages the money in an externally, segregated sinking fund. According to AmerGen, the last official accounting for the fund demonstrated the Company was making progress towards their savings goal:

The amount of decommissioning funds accumulated through December 31 , 2002 was \$ **285.2 million**. However, [u]nder the plant purchase agreement, there is no remaining amount to be collected from the previous owner [.] A two percent annual real rate of return is being assumed on the decommissioning trust funds. Financial assurance for decommissioning continues to be provided by the prepayment method, coupled with an external trust fund. (Jeffrey A. Benjamin, Vice President, Licensing and Regulatory Affairs, AmerGen Energy Company, LLC, March 31, 2003)

As part of the purchase agreement between GPUN and AmerGen, GPUN agreed to prefund the TMI-1 decommissioning trust account for at least **\$303 million**. This amount exceeds the minimum amount required by the generic formulas in 10 CFR 50.75(c), and thus allows AmerGen to buy TMI-1 without providing additional assurance for any unfunded portion of the decommissioning cost estimate. However, in an effort to forestall any adverse Federal income tax consequences from the sale of TMI-1 and the buildup of additional decommissioning funding required under the terms of the sale, GPUN and AmerGen proposed that GPU Energy (the three owner subsidiaries of GPU, Inc., the parent company of GPUN) hold the decommissioning trust until such time as the U.S. Internal Revenue Service (IRS) issued a favorable ruling on the tax consequences related to the transfer of TMI-1 decommissioning funds. (Dr. William Travers, EDO, NRC, "Lessons Learned from the Transfer of the Operating Licenses of the Three Mile Island-1 and Pilgrim Nuclear Power Stations, July 1, 1999).

Several months later, Exelon spokesman Craig Nesbitt stated, "All of our sites are **fully funded** for decommissioning. They are on track to be fully funded now, and they will be fully funded when the time comes to decommission" (*Lancaster New Era*, December 3, 2003).

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September 12, 2007

Ms. Annette Vietti-Cook
Secretary
US Nuclear Regulatory Commission
Washington, DC 20555

Re: Petition For Rulemaking Requiring Periodic Comprehensive NRC Review Of
Emergency Planning Around U.S. Nuclear Power Plants During The License
Renewal Process

Dear Ms. Vietti-Cook,

Pursuant to the NRC's §2.802 rulemaking process, I'm writing to submit a
petition for rulemaking.

This petition seeks new NRC rulemaking requiring periodic comprehensive
NRC review of emergency planning around U.S. nuclear power plants during the
license renewal process for the purpose of making a new finding of reasonable
assurance of adequate protection of the population.

Also pursuant to NRC Regulations Section (D) of §2.802, this petition
requests the Commission immediately suspend all licensing proceedings
throughout the United States until validation of "reasonable assurance of
adequate protection of the population" has been re-established by the NRC for all
US Licensees. Thank you for your assistance with this issue.

Sincerely,

Eric Epstein
Three Mile Island Alert
4100 Hillsdale Rd.
Harrisburg, PA 17112
(717) 541-1101

Preliminary Results of the Three Mile Island Nuclear Station, Unit 1 License Renewal Environmental Review



February 24, 2009

Meeting Overview

- Project and process background
- Results of environmental review
- Environmental review schedule
- How to submit comments outside this meeting
- Accept oral and written comments

NRC's Regulatory Oversight

- **NRC's Governing Statutes**
 - Atomic Energy Act
 - National Environmental Policy Act (NEPA)

- **NRC Mission**
 - Protect Public Health and Safety
 - Promote Common Defense and Security
 - Protect the Environment

3

License Renewal

- **Three Mile Island Nuclear Station, Unit 1 (TMI-1) current operating license expires April 19, 2014**

- **AmerGen Energy Company, LLC (now Exelon Generation Company, LLC) requests authorization to operate TMI-1 for an additional 20 years**

License Renewal

- National Environmental Policy Act (NEPA) requires Federal agencies to use a systematic approach to consider environmental impacts
- NRC prepares a Supplemental Environmental Impact Statement (EIS) for all proposed license renewals
- Public involvement is part of this process

Environmental Review

- Scope
 - Generic Environmental Impact Statement
 - 69 Category 1 (generic) issues
 - Site-specific Supplemental Environmental Impact Statement
 - 23 remaining (site-specific) issues
 - New and Significant Information

How Impacts are Quantified

- NRC-defined impact levels:
 - **SMALL**: Effect is not detectable or too small to destabilize or noticeably alter any important attribute of the resource.
 - **MODERATE**: Effect is sufficient to alter noticeably, but not destabilize important attributes of the resource.
 - **LARGE**: Effect is clearly noticeable and sufficient to destabilize important attributes of the resource.

Decision Standard for Environmental Review

To determine whether or not the adverse environmental impacts of license renewal for TMI-1 are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.

Generic Environmental Impacts of Continued Operation

- Refurbishment – surface and groundwater quality and use, aquatic resources, public and occupational radiation exposures, aesthetic impacts
- Altered current patterns at intake and discharge structures
- Temperature effects on sediment transport capacity
- Scouring caused by cooling water discharge
- Eutrophication
- Discharge of chlorine, biocides, sanitary wastes, spills, metals in waste water
- Accumulation of contaminants in sediments or biota
- Entrainment of phytoplankton and zooplankton
- Cold shock and heat shock (cooling towers)
- Thermal plume barrier to fish
- Distribution of aquatic organisms
- Premature emergence of aquatic insects
- Gas supersaturation (gas bubble disease)
- Low dissolved oxygen in discharge
- Losses from predation, parasitism, and disease among organisms exposed to sublethal stresses
- Stimulation of nuisance organisms
- Entrainment and impingement of fish and shellfish (cooling towers)

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Generic Environmental Impacts of Continued Operation Cont'd

- Bird collisions with cooling towers, power lines
- Power line ROW management, land use and aesthetic impacts; floodplains and wetlands in ROWs
- Electromagnetic field impacts on flora and fauna
- Air quality effects of transmission lines
- Microbiological organisms (occupational health)
- Onsite land use
- Noise and aesthetic impacts
- Public and occupational radiation exposures
- Public services – public safety, social services, tourism and recreation, education
- Design basis accidents
- Offsite radiological impacts
- Nonradiological impacts of uranium fuel cycle
- Low-level and mixed waste storage and disposal
- Onsite spent fuel
- Nonradiological waste
- Transportation
- Decommissioning – radiation doses, waste management, air quality, ecological resources, socioeconomics

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Radiological Impacts

- Category 1 Issues
 - Radiation exposures to the public
 - Occupational radiation exposures

- Preliminary Findings
 - No new and significant information
 - GEIS concluded impacts are SMALL

Site-Specific Environmental Impacts of Continued Operation

Issues	Impact
Ground Water use conflicts (plants using >100 gpm; make-up from a small river)	SMALL
Surface Water use conflicts (make-up from a small river)	SMALL
Air Quality – refurbishment	SMALL
Terrestrial Resources – refurbishment	SMALL
Threatened or Endangered Species - license renewal; refurbishment	SMALL
Microbiological Organisms (public health)	SMALL
Electromagnetic Fields (acute effects)	SMALL
Socioeconomics - license renewal; refurbishment (housing, education, transportation, land use, public utilities, and historic and archaeological resources)	SMALL
Environmental Justice – license renewal; refurbishment	–
Severe Accident Mitigation Alternatives (SAMA) Analysis	–

Cumulative Impacts

- Considered impacts of renewal term operations combined with other *past, present, and reasonably foreseeable future actions*
- Evaluated to end of 20-year renewal term
- Preliminary Findings
 - SMALL to MODERATE impact on aquatic resources

Alternatives

- No Action (license not renewed)
- Conservation/Energy Efficiency
- Alternative Energy Sources
 - Coal-Fired Supercritical Generation
 - Natural Gas Combined-Cycle Generation
- Purchased Power
- Combination of Alternatives

Alternatives

- Preliminary Findings
 - Potential environmental impacts from NOT renewing the TMI-1 license could reach MODERATE significance regarding socioeconomics
 - Potential environmental impacts of likely power-generation alternatives could reach MODERATE to LARGE significance regarding air quality, aquatic and terrestrial resources, and land use
 - Energy efficiency/conservation is the environmentally-preferred alternative

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Preliminary Conclusions

- Potential environmental impacts of license renewal are SMALL for all resource areas
- Potential environmental impacts of likely power-generation alternatives, including not renewing the TMI-1 license, could reach MODERATE to LARGE in some resource areas
- The NRC staff's preliminary recommendation is that the environmental impacts of license renewal for TMI-1 are not so great that license renewal would be unreasonable

TMI-1 Environmental Review Milestones

Application Received	January 8, 2008
Information Public Meeting	March 5, 2008
Notice of Intent	March 28, 2008
Scoping Public Meeting	May 1, 2008
Scoping Period Ended	May 30, 2008
Scoping Summary Report	August 8, 2008
Draft SEIS	December 2, 2008
Draft SEIS Public Meeting	February 24, 2009
Draft SEIS Comments Due	March 4, 2009
Final SEIS	July 2009

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Additional Information

- Environmental PM: **Sarah Lopas**
(800) 368-5642, Ext. 1147
sarah.lopas@nrc.gov
- Safety PM: **Jay Robinson**
(800) 368-5642, Ext. 2878
jay.robinson@nrc.gov
- The draft SEIS can be viewed at:
 - Londonderry Township Municipal Building: 893 S. Geyers Church Rd., Middletown, PA
 - Middletown Public Library: 20 N. Catherine St., Middletown, PA
 - Penn State Harrisburg Library: 351 Olmsted Dr., Middletown, PA
 - Online: NRC Reading Room
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437>

Submitting Comments

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