EARTHQUAKES

CAN TRIGGER

LIMERICK MELTDOWNS

EARTHQUAKE THREATS ARE FAR WORSE THAN WE KNEW AND INCREASING!

LIMERICK IS 3RD
ON THE U.S. EARTHQUAKE-RISK LIST.

- **TWO FAULT LINES ARE FAR TOO CLOSE TO LIMERICK NUCLEAR PLANT - JUST 9 AND 17 MILES AWAY**
- **LIMERICK NUCLEAR PLANT SHOULD NEVER HAVE BEEN ALLOWED TO BE CONSTRUCTED IN THIS LOCATION. WERE FAULTS COVERED UP FOR LIMERICK LICENSING AS AT NORTH ANNA IN VIRGINIA?**
- **A "KEY SAFETY MECHANISM" MAY NOT WORK IN AN EARTHQAUKE. SOME LIMERICK SYSTEMS, STRUCTURES, AND COMPONENTS COULD BE UNRELIABLE IN AN EARTHQUAKE.**

FRACKING CAN TRIGGER EARTHQUAKES

- **4,200 Gas Wells Were Drilled In PA Since 2007**

LIMERICK MUST CLOSE
TO PREVENT MELTDOWNS
TRIGGERED BY AN EARTHQUAKE!

EARTHQUAKES

Alliance For A Clean Environment Summary January, 2012

LIMERICK NUCLEAR POWER PLANT

IS HIGHLY VULNERABLE TO EARTHQUAKES

AN EARTHQUAKE COULD CAUSE A CATASTROPHIC MELTDOWN AT LIMERICK NUCLEAR POWER PLANT

WHY LIMERICK MUST CLOSE AS SOON AS POSSIBLE

- **Two Faults Are Within 17 Miles of Limerick - One Just 9 Miles Away.**
  9 Miles East of Limerick - Chalfont Fault
  17 miles Northwest of Limerick Near Reading - Ramapo Fault

- **Limerick Is Ranked 3rd Worst** by Federal Officials - Of 65 U.S. Nuke Plants, For Earthquake Risk For Potential Core Damage Which Could Result in a Disastrous Meltdown.

- **Either or Both Limerick Reactors Are At Risk Of Serious Earthquake Damage. Limerick's Estimated Risk Increased By 141%,** taking into account odds for the chance of a serious earthquake.
  - ✓ An Earthquake Could Cause More Core Damage At Limerick, Than At 98 Other Nuclear Reactors.
  - ✓ September 2011, the Associated Press published a report analyzing NRC data and concluding that *"the risk an earthquake would cause a severe accident at a U.S. nuclear plant is greater than previously thought — 24 times as high in one case*."

- **A "KEY SAFETY MECHANISM" "MIGHT NOT WORK" During An Earthquake**
  "Flaw Found in Safety Mechanism at Limerick Nuke Plant" **- (Mercury 10-5-11)**
  - ✓ This malfunction of control rods could contribute to a meltdown.
  - ✓ Rods are inserted between nuclear fuel rods to shut it down quickly - called a "scram" - used in an emergency and more slowly during scheduled downtime.
  - ✓ GE Hitachi issued a warning to the Nuclear Regulatory Commission in September 2010
  - ✓ GE Hitachi confirmed the concern again September, 2011
  - ✓ To date, NRC took no action on these warnings.

- **Corners Were Cut During Limerick Construction That Could Impact Disastrous Consequences If An Earthquake Hit Close To Limerick.** According to testimony 9-22-11

at Limerick's EIS public hearing, from a Limerick resident who worked for Bechtel in quality assurance during Limerick construction a number of serious errors occurred during construction which were not corrected.

- **Limerick Containment Is Substandard, Meaning Limerick Could Release Far More Radioactivity In A Meltdown (According to NRC Records compiled in a 2006 Greenpeace Report).**

- **Inferior Cement Was Used Constructing Limerick's Fuel Pools. An Earthquake Could Cause The Walls To Collapse, Leading To An Unthinkable High-Level Radioactive Waste Disaster.**

- **Limerick Is Among 27 Nuclear Plants That Need Upgrades For Earthquake Risks,** according to a preliminary NRC review (After Fukushima). However, both Exelon and NRC are stalling to avoid costs to Exelon.

Earthquakes Are Becoming Stronger and More Frequent.

- **Japan's Catastrophic Meltdowns Were Triggered by an Earthquake,** Followed By Loss Of Power, Then Loss Of Cooling Water. Fukushima meltdowns, started March 2011. Catastrophic consequences continue to date, January, 2012. Radioactive fallout spread through Japan, across the northern hemisphere, and arrived in the U.S. six days later; millions were exposed, many will become ill, some will die. Studies have shown even in the U.S. we had elevated infant mortality and an excess of 14,000 deaths in the U.S. following the meltdowns.

- **Meltdown Narrowly Avoided from an Virginia Earthquake**
  A 5.8 magnitude earthquake in Virginia on August 23, 2011 cut power to North Anna nuclear plant, 11 to 12 miles from the epicenter. The earthquake exceeded what the plant was designed to withstand.
  - ✓ The 8-23-11 Earthquake in Virginia was felt from North Carolina to New York, including at Limerick Nuclear Plant. It seriously damaged the Washington Monument.
  - ✓ A safety alert was prompted at Limerick Nuclear Plant after this 8-23-11 Virginia earthquake.
  - ✓ Four backup generators (one of which failed) prevented another Fukushima.
  - ✓ However, 115 ton radioactive waste casks (25) were moved.
  - ✓ Cracks were found in the reactor containment building.
  - ✓ There are concerns about unidentified leaks in miles of buried pipes and cables.

  - ➢ **A similar earthquake happening at Limerick Nuclear Plant could have led to meltdown, because there is a question about whether Limerick could have been shut down safely before a meltdown started. Limerick is a similar design to the nuclear plants melting down at Fukushima. Limerick Nuclear Plant is a different design than Santa Anna in Virginia.**

- **Two small earthquakes recently occurred in Philadelphia**, just over 20 miles from Limerick Nuclear Plant, the most recent May 29, 2011, causing residents' houses to shake after a big boom.

- **11 earthquakes occurred in Ohio in 2011.**

- **Earthquakes Are Exacerbated By Fracking**
  Evidence indicates earthquakes are likely to become even more frequent in PA as a result of hydraulic fracturing, which is increasing dramatically in PA.
  - ✓ Earthquake faults are exacerbated by fracking according to U.S.G.S.
  - ✓ Since 2007, about 4,200 gas wells were drilled in PA, according to PA DEP
  - ✓ With 2 faults just 9 and 17 miles from Limerick, risks for an earthquake affecting Limerick and all of its aging and underground pipes and cables are increased substantially by fracking.
  - ✓ August 24, 2011, a USGS employee listed how, why and where fracking is causing earthquakes.
  - ✓ Fracking DID cause 11 earthquakes in Ohio in 2011, according to U.S.G.S., reported 1-9-12.

LIMERICK'S EARTHQUAKE RISKS CAN'T BE ELIMINATED

WITH ANY STUDY, UPGRADE, OR REGULATION.

After Fukushima We Learned, Limerick Nuclear Plant's EARTHQUAKE DESIGN BASIS IS SIGNIFICANTLY FLAWED

Specifications for Limerick Nuclear Plant could not be approved for a new facility today.

Earthquake risk was considered low when Limerick's two reactors were commissioned - the first in 1985 and the second in 1989. As a result,

LIMERICK'S NUCLEAR REACTORS WERE NOT DESIGNED OR BUILT TO WITHSTAND A MAJOR EARTHQUAKE.

The Japan earthquake far exceeded Fukushima's earthquake design basis, just as it could at Limerick. The Virginia earthquake exceeded North Anna's earthquake design basis just as it could at Limerick.

DECADES AFTER CONSTRUCTION, IT IS NOT CREDIBLE FOR NRC OR EXELON TO CLAIM LIMERICK CAN BE MADE FAILSAFE FORM A MELTDOWN TRIGGERED BY AN EARTHQUAKE, EVEN IF EXELON PAID FOR UPGRADES.

LIMERICK MUST CLOSE TO AVOID A MELTDOWN WHICH COULD EASILY BE TRIGGERED BY STRONGER AND MORE FREQUENT EARTHQUAKES!

EARTHQUAKE RISK FACTORS FOR LIMERICK NUCLEAR PLANT CALL FOR NRC TO CLOSE LIMERICK NUCLEAR PLANT AS SOON AS POSSIBLE TO AVOID A CATASTROPHIC MELTDOWN AND DISASTER.

BUT, WE CAN'T DEPEND ON NRC FOR PRECAUTION OR PREVENTION!

NEITHER NRC NOR EXELON ARE GOING FAR ENOUGH TO PROTECT OUR FUTURE.

Limerick's alarming earthquake risks suggest NRC should not even consider Limerick license renewal.

Yet, the Mercury reported 9-21-11

NRC MAY IGNORE EARTHQUAKE RISK IN LIMERICK'S LICENSE RENEWAL PROCESS,

NRC said, "*Whether or not earthquake risk is a factor in the current relicensing request for Limerick remains to be seen*."

- **THAT IS NEGLIGENT!**

CONTACT ELECTED OFFICIALS TODAY!

1. **URGE THEM TO CONSIDER THE FACTS IN THIS REPORT ON EARTHQUAKE RISKS FOR LIMERICK AND NRC'S NEGLIGENCE.**

2. **ASK THEM TO DEMAND THAT LIMERICK NUCLEAR PLANT CLOSE AS SOON AS POSSIBLE TO PREVENT A CATASTROPHIC MELTDOWN.**

WHAT IS NEEDED FOR PRECAUTION AND PREVENTION:

1. **Extend Back-Up Power To Last For Days, Not Just Hours**
2. **Extend Limerick's Evacuation Zone From 10 To 50 Miles**
3. **STOP Additional Uprates That Would Run Limerick Harder**
4. **CLOSE Limerick In 2029 - NOT Relicense Until 2049**

The Following Summaries, News, and Facts About NRC Can Be Helpful

Facts Below Compiled by ACE January, 2012

Earthquake Risks and Limerick Design Flaws Should Be A Wake-Up Call To Close Limerick Nuclear Plant To Prevent Meltdowns.

- **Earthquakes can lead to a meltdown at Limerick Nuclear Plant. Earthquake risks in our region are increasing dramatically. No NRC study or correction can eliminate the inherent and increasingly high risk and potential catastrophic consequences of a meltdown at Limerick.**
  - ✓ Limerick ranks 3rd on the Earthquake Risk List for U. S. reactors most at risk.
  - ✓ Limerick is located in a high risk seismic zone.
  - ✓ Two fault lines are too close to Limerick - Chalfont - 9 miles Ramapo - 17 miles)

- **Limerick should never have been built with such risk around so many people.**
  - ✓ Faults may have been covered up when Limerick was licensed.
  - ✓ A 1973 U.S. Justice Department memo proves decades ago, industry and NRC staff covered up geologic faulting at North Anna.
  - ✓ When the motivations for nuclear power are money over life, what unscrupulous politicians and bureaucrats allow should not be accepted when the truth is revealed.

- **Serious Design Flaws at Limerick Nuclear Plant dramatically increase risk and consequences from an earthquake at Limerick. Some Limerick's systems, structures, and components could be unreliable in an earthquake.**
  - ✓ Flaw Found In "Key Safety Mechanism" to shut down Limerick - GE Warning Tied To Renewed Focus on Earthquake Risk. Reported to NRC September 2010 - Again September 2011
  - ✓ A Limerick Quality Control Engineer testified to NRC 9-21-12, that he witnessed major mistakes during Limerick construction - multiple design flaws and construction mistakes.
  - ✓ A terrible mistakes was made with cement during construction of fuel pools.
  - ✓ An earthquake could cause Limerick's fuel pool walls to collapse, leading to loss of cooling water with an unstoppable radioactive fire, that could cause tens of thousands of deaths up to 500 miles away (NRC study). Deaths could occur among people living as far as 60 miles downwind.
  - ✓ Limerick fuel pools are packed, containing almost all Limerick's deadly waste produced since 1985 estimated to be 6,203 Assemblies - 1,143 Tons in 2011. Each year Limerick operates 40 more tons will be produced.
  - ✓ 2006 a study revealed that Limerick's reactor containment is substandard, meaning more radiation would be released in a meltdown.

- **Earthquakes can lead to fires. Fires can lead to meltdown.**
  - ✓ Limerick's Fire prevention seals may not tolerate a "seismic event".
  - ✓ Limerick does not follow the safest fire safety rules.

- **"Fracking" Drastically Increases Earthquake Risks At Limerick. Fracking For Natural Gas Causes Earthquakes, According to a 2011 USGS study. Of major concern:**
  - ✓ PA approved more than 4,200 gas wells for drilling since 2007.
  - ✓ USGS confirmed that 11 earthquakes in Ohio in 2011, and recent earthquakes in Oklahoma, and other states were direct results of "fracking".

- **Fukushima's catastrophic meltdowns were triggered by an earthquake shortly after relicensing. <u>This should be a wake-up call.</u>**
  - ✓ Earthquakes are more frequent and dangerous, as evidenced in 2011.
  - ✓ Even the 8-23-11 VA earthquake caused tremors at Limerick, requiring Exelon to do a Limerick inspection.

Speak Up To Close Limerick Before We Have Catastrophic Meltdowns.

NO NRC Inspection, Study, Or Reports Can Lead To Changes That Will Prevent A Meltdown At Limerick Nuclear Plant.

- **LIMERICK'S MAJOR DESIGN FLAWS CAN'T BE FIXED.**
- **Exelon won't spend the money required to address smaller flaws and corrections for precaution.**
- **NRC weakened safety regulations so Exelon can avoid costs. Fires can lead to meltdowns, yet Limerick has not been required to be in compliance with the safest fire safety regulations.**
- **Even though Limerick's earthquake risks are extraordinary and increasing, and we have seen what can happen at Fukushima, NRC is failing to require immediate changes.**
- **NRC absurdity ignores reality and claims it can't happen here.**
- **NRC refused to expand US evacuation zones from 10 to 50 miles, in spite of PA Senator Casey's quest to expand the evacuation zone to 50 miles as in Japan.**
- **NRC PROTECTS NUCLEAR INDUSTRY PROFITS, NOT OUR INTERESTS.**
  - ✓ **A scorching indictment of NRC by the Associated Press revealed reduced protection standards and lax enforcement of regulations**
  - ✓ **The NRC has been characterized as a lapdog to the industry, rather than a watchdog agency**
  - ✓ **NRC's study on cancers around nuclear plants is labeled a smokescreen for delay on requiring protective action.**

EVEN AFTER FUKUSHIMA - NRC NEGLIGENCE AND LAX NRC OVERSIGHT

- ✓ **January 13, 2010, NRC announced that due to language from Congress in this year's appropriations bill, NRC accelerated the requirement for new protections for US nuclear plants.**
- ✓ **March 11, 2010, one year after Fukushima, NRC said it will announce that nuclear plants will have two more years to meet more stringent requirements to protect against events "greater than previously considered".**
- ✓ **This would expand the agency's regulations for protecting against disasters such as a major explosion or airline impact, imposed following the September 11, 2001, terrorist attacks.**

NEI JEOPARDIZES US YET AGAIN

- ✓ **Nuclear industry representatives (NEI) said NRC's proposals for deadlines to provide new seismic and other analyses were too short, claiming the probabilistic risk analysis needed will take more than the 3 years proposed by NRC staff. NEI told NRC, "We can't do it" in three years.**
- ✓ **NEI is proposing its own more flexible plan AGAIN. Another dangerous delay tactic to avoid costs for the nuclear industry at our expense, just as NEI did with fire safety.**

EARTHQUAKES - GETTING STRONGER - MORE FREQUENT

LIMERICK MUST BE CLOSED, NOT RELICENSED!

1. **Limerick Is Highly Vulnerable To Earthquakes** - Limerick ranked 3rd worst of 65 U.S. nuke plants by federal officials for potential core damage from earthquake risk, which could result in a disastrous meltdown.[i] Earthquakes are becoming stronger and more frequent.

2. **An Earthquake Affecting Limerick Could Cause More Core Damage Than At 98 Other Nuclear Plants** - Estimate shows Limerick's risk rose 141%, taking into account odds for the chance of a serious earthquake.[ii]

3. **Flaw Found in Safety Mechanism at Limerick Nuke Plant - (Mercury 10-5-11)**
   GE Hitachi issued a warning to the Nuclear Regulatory Commission in September 2010 and confirmed the concern again September, 2011, that a key safety mechanism at Limerick might not work during an earthquake. This malfunction of control rods could contribute to a meltdown. Incredibly, NRC took no action on these warnings. Reason enough, to close Limerick Nuclear Plant as soon as possible.

4. **Japan's Catastrophic Meltdowns Were Caused by Earthquake, Then Loss Of Cooling Water** Fukushima meltdowns started March 2011, and are still not controlled seven months later. Radioactive fallout spread through Japan, across the northern hemisphere, and arrived in the U.S. six days later; millions were exposed, many will become ill, some will die.

5. **Meltdown Narrowly Avoided from Virginia Earthquake** - An earthquake in Virginia on August 23, 2011 cut power to North Anna nuclear plant, 11 miles from epicenter. Four backup generators (one of which failed) prevented another Fukushima. However, 115 ton radioactive waste casks (25) were moved. Cracks were found in the reactor containment building. There are concerns about unidentified leaks in miles of buried pipes and cables.
   A safety alert was prompted at Limerick Nuclear Plant after this 8-23-11 Virginia earthquake.

6. **Earthquakes Actually Occur in Philadelphia** – Two small earthquakes occurred recently in Philadelphia. Philadelphia is just 20 miles from Limerick Nuclear Plant. The most recent earthquake occurred May 29, 2011, causing residents' houses to shake after a big boom.[iii]

7. **Limerick Contains Massive Radioactivity.** Limerick reactors 1 and 2 contain far more radioactivity in their cores, waste pools, and dry casks of waste, than Chernobyl 4 when it melted down in 1986.

8. **A Limerick Meltdown Could Harm Millions**. A government study based on the 1980 census, estimated that a meltdown to Limerick's core could cause 684,000 residents (most of any U.S. reactor) within 20 miles to suffer from radiation poisoning (74,000 would die), and 34,000 cancer deaths would occur[iv]. From 1980 to 2010, the area's population increased by 183%[v].
9. **Philadelphia Region Can't Be Safely Evacuated**. Safe evacuation would be impossible after a meltdown at Limerick, since 8 million people live within 50 miles. Philadelphia is just 20 miles away. In this very heavily populated region for example, just one main road, Route 422, is considered one of the region's toughest commutes, even on a normal day.[vi]

10. **Government Regulations on Earthquakes Can't Eliminate Risks.**
    Earthquake threats at Limerick are far greater than expected during construction. 9-22-11 we learned corners were cut during construction.
    - Updated review and regulations won't prevent an earthquake disaster.
    - Limerick was not built based on the most protective earthquake design basis or standards, but instead on outdated seismology science of the 1950s and 60s.
    - The inadequacy is both obvious and dangerous.
    - A new era of seismic understanding shows that earthquakes can go far beyond design basis.
    - After the fact regulation changes cannot correct unprotective design flaws and limitations.
    - Logically, it is not feasible to retroactively redesign inadequate Limerick earthquake design flaws.

- It is impossible to believe Limerick's inadequate and outdated 30-year old "design basis" construction for seismic activity ever can or will ensure safety.

11. **Emerging Evidence Indicates Earthquakes Are Likely To Become More Frequent In PA -** There is emerging evidence that seismic activity can increase as a result of hydraulic fracturing, which is increasing dramatically in PA.[vii] August 24, 2011, a USGS employee listed how, why and where fracking is causing earthquakes.[viii]

12. **Why NRC's Earthquake Review Won't Prevent A Disaster** – NRC relies on nuclear industry self-evaluations and reports on what Limerick can or cannot withstand.
    - Despite evidence that earthquakes are becoming more severe, NRC blindly accepts claims made by the nuclear industry about their nuclear plants withstanding the largest credible quake.
    - In fact, NRC ignored USGS statements elsewhere that were in direct conflict with nuclear industry claims.
    - Compliance with new NRC regulations is voluntary, not mandatory. Industry will not spend the money on improved safety unless required to do so.

13. **Community Concerns Rise With Recent Earthquakes and Self-Policing** – With Exelon doing its own analysis, our community has little confidence in full and accurate disclosure of earthquake risks at Limerick. Evidence shows that we cannot believe or trust Exelon's self-evaluation. See ACE report on Exelon deception.

After witnessing Fukushima devastation, other nations like Germany, Switzerland, and Italy have decided to close their nuclear reactors.

- But NRC has been dismissive of catastrophic threats and continues to relicense dangerous, aging nuclear plants like Limerick.

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16. **Financial Pressure Reduced E'quake Standards** - Reported Sep 17, 2011
    - NRC stated, "We were under a lot of pressure to ease up on standards from nuclear-plant engineers who felt the 2006 revisions were too strict and weren't practical or economically feasible for commercial reactors," he said..... While industry pushed the standard-setters to ease up in 2006, some critics at the time said they were too lenient.
    - *"We didn't focus on worst-case scenarios, but rather what were believed to be the most likely outcomes," said Mr. Irikura, 71, who coedited a book on advanced seismic-hazard assessment published earlier this year. "The risk of outliers like tsunamis was evaluated, but our advice...was that plant operators should be aware of these—not necessarily to expect them to occur."*

A Limerick Meltdown Could Harm Millions. A government study based on the 1980 census, estimated that a meltdown to Limerick's core could cause 684,000 residents (most of any U.S. reactor) within 20 miles to suffer from radiation poisoning (74,000 would die), 34,000 cancer deaths would occur. From 1980 to 2010, the population increased by 128%.

Philadelphia Region Can't Be Safely Evacuated. Safe evacuation would be impossible after a meltdown at Limerick, since 8 million people live within 50 miles. Philadelphia is just 20 miles away. In this very heavily populated region for example, just one main road, Route 422, is considered one of the region's toughest commutes, even on a normal day.

After Witnessing Fukushima Meltdowns and Devastation, other nations like Germany, Switzerland, and Italy Decided to Close Their Nuclear Reactors.

- **But NRC has been dismissive and in denial of catastrophic threats in the U.S. and continues to relicense dangerous, aging nuclear plants like Limerick.**

NRC failed to take immediate action to require Exelon to reduce earthquake risk at Limerick, even after knowing:

A. **Risk of earthquake damage at Limerick is 141% greater than originally anticipated.**
B. **Limerick is 3rd on the nation's earthquake risk list for U.S. reactors.**
C. **Recent science and reality prove stronger quakes than predicted can happen.**
D. **Earthquakes in the east can be far stronger than Limerick's "design basis" can withstand**
E. **The earthquake all the way down in Virginia caused shaking in PA at Limerick Nuclear Plant.**
F. **Two small earthquakes in 2011, occurred in Philadelphia (just 21 miles from Limerick)**

All this, yet NRC is allowing Exelon to stall yet again. We got another self-serving industry study asserting no action is needed. This saves Exelon money, while earthquakes continue to be too huge a risk for meltdown in our future.

EVIDENCE SHOWS WHY WE CAN'T TRUST NRC REVIEWS, CONCLUSIONS, OR ENFORCEMENT FOR PREVENTION OF A CATASTROPHE CAUSED BY AN EARTHQUAKE NEAR LIMERICK.

- **NRC started a new seismic analysis in 2003, yet 8 years later, in October of 2011, NRC still has taken no action to reduce earthquake risks.** **NRC experts worried privately that U.S. nuclear plants needed stronger safeguards to account for far higher risk assessment increases for earthquakes and other natural disasters. For example, Limerick's earthquake risk assessment increased by 141%.**

- **By the time this summary was completed December 2011, 9 months after witnessing Fukushima March, 2011,** the worst nuclear disaster in history which was partially triggered by an earthquake, **NRC has still failed to actually reduce threats from earthquakes at U.S. nuclear plants.**

- 9-19-11, the NRC issued a new report urging the agency to "immediately require operators to reevaluate whether U.S. nuclear plants can withstand earthquakes and floods". **The NRC report identifies "seven steps NRC should take without delay". Yet, NRC delays.**

- The Nuclear Energy Institute (NEI) an industry group – noted it could take as long as 2 years to implement changes recommended. **NRC may capitulate and allow the nuclear industry to stall for years more to avoid spending the resources to reduce earthquake risks, even on the seven steps NRC's own report identified should be taken without delay.**

- NRC and the industry try to claim reactors are safe for now. **BUT e-mails obtained by the AP show NRC experts were worried privately this year that plants needed stronger safeguards to account for the higher risk assessments. Claiming U.S. nukes are safe for now is yet another irresponsible delay tactic by NRC and the nuclear industry to avoid responsibility and save the industry money.**

- **This shameful delay tactic leaves our region dangerously vulnerable to a nuclear catastrophe caused by an earthquake or other natural disaster. With full knowledge of the potentially catastrophic consequences, NEI and the nuclear industry are attempting to circumvent new requirements and avoid the responsibility to reduce earthquake related risks and associated costs.**

Limerick was required to check for damage following the 8-23-11 VA earthquake that was felt at Limerick Nuclear Plant and locations throughout our region. That earthquake rocked the VA nuclear plant 12 miles from the earthquake epicenter.

While the VA 8-23-11 earthquake revealed a threat to Limerick Nuclear Plant, NRC simply asked Limerick to visually check on its own damaged underground pipes and cables.
- **Shaking and breaking could have occurred in miles of buried underground pipes and cables at Limerick, yet NRC announced no damage had been found after they did a "visual" inspection of Limerick.**
- **The June AP investigation highlighted numerous long-standing leaks and corroded underground pipes that went in some cases undiscovered and unrepaired for years.**

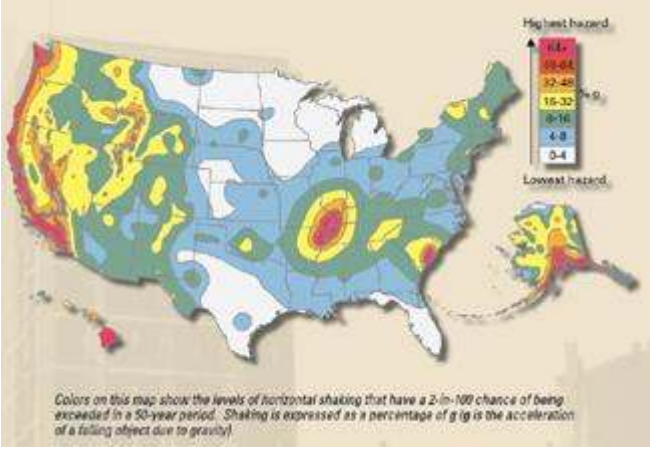
NRC confirmed damage to underground infrastructure at Limerick is only identified through irregularities in flows on gauges. With a meltdown in the balance, it is unnerving to know NRC determines damage from a "visual" inspection for miles of buried underground pipes and cables.
- **While they claim to depend on gauges to identify problems, it is important to note that when Limerick loses power, gauges won't work.**
- **Problems may not be identified until it is too late.**

The Earthquake 12 miles from North Anna Nuclear Plant, is an example of how NRC makes deceptive claims to downplay actual risk:
- The 8-23-11 VA earthquake triggered shaking in excess of what the North Anna Nuclear Plant design basis was designed to handle.
- NRC claimed North Anna Nuclear Plant temporarily lost power during the 8-23-11 VA earthquake, but 10-14-11 it was reported that NRC announced North Anna will remain shut-down even after October 21, two months after the VA earthquake shut it down. In fact, it was still closed in November, 2011.
- NRC claimed damage to North Anna reactors, just 12 miles from the epicenter was minimal. **BUT:** NRC's claim of "minimal" damage to the Santa Anna nuclear plant is hard to understand.
  - ✓ 25 spent fuel containers were shifted – each weighing 115 tons. So what happened to underground pipes and cables?

- ✓ The Washington Monument, 90 miles away, cracked and was closed due to damage caused by the 8-23-11 Virginia Earthquake. Nuclear plants from North Carolina to New York were suspected of having potential damage from the earthquake in Virginia 8-23-11.
  Logically, damage whould be more than minimal at the nuclear plant only 12 miles away!

Limerick plant ranked 3rd on U.S. quake-risk list

Published: Thursday, March 17, 2011 By Evan Brandt ebrandt@pottsmerc.com



LIMERICK -- Data in a Nuclear Regulatory Commission study released less than a year ago has led an MSNBC investigation to **conclude that Exelon Nuclear's Limerick Generating Station is the third most at risk of damage from earthquake of all 104 nuclear plants in the nation.**

The ranking takes on particular significance as the world watches Japan grapple with a cascading nuclear disaster caused by a Pacific Ocean earthquake and subsequent tsunami on March 11.

The NRC study came about as a result of the U.S. Geologic Survey's 2008 updating of earthquake risks around the country, which used better data and more sophisticated measurements and modeling than were used in the 1996 and 2002 efforts. As a result of the new seismic data, the NRC study looked at all 104 nuclear plants in the country and increased the risk probability of an earthquake damaging many of them. In fact, only eight had their risk of earthquake damage lowered, MSNBC reported.

The risk of an earthquake damaging either or both reactors at Limerick was increased by 141 percent, now making it the third most at risk, after the Pilgrim Nuclear Plant in Plymouth Mass. and the Indian Point Atomic Generating Station in Buchanan, N.Y., according to the analysis by MSNBC.

That analysis found the chance of an earthquake damaging the plant was raised in the study to 1 in 18,868. The previous risk rating was 1 in 45,455. For comparison purposes, as outlined in an MSNBC article, the chance of winning the grand prize in the next Powerball lottery is 1 in 195,249,054.

The analysis also reveals that of the top 10 nuclear plants most at risk from earthquake damage, three are in Pennsylvania, more than any other state. The other two are the Shippingport Atmonic Power Station in Beaver County and the Three Mile Island plant in Dauphin County. Continued...

As a next step, the NRC has now selected several plants from which it will seek additional data in order to get a better estimate of the possibility of catastrophic failure from an earthquake.

Sheehan confirmed on March 12 that the NRC has selected Limerick as one of the plants requiring further study.

Joe Szafran, a spokesman for the Limerick facility, said Exelon is aware of the analysis and is cooperating with NRC's latest inquiry. He also noted that Exelon is confident in the Limerick plant's ability to withstand whatever earthquakes might strike a region not known for them. "These plants are designed with historic data and seismic information and designed to withstand the largest considered likely and then an extra margin of safety is added" in the design and construction, Szafran said. An NRC fact sheet notes that plants are designed to withstand "the area's maximum credible earthquake" and also requires plants "to assess their potential vulnerability to earthquake events, including those that might exceed the design basis."

The Ramapo fault line has several smaller fault systems associated with it, including the Chalfont, Flemington and Hopewell faults, but maps seem to show it traversing Pennsylvania several miles to the north of the immediate area near Limerick.

Although this fault is not known for major tremblors, several earthquakes have been recorded in its proximity, most of them in northern New Jersey. The most recent were two small earthquakes recorded there in February 2009.

Sheehan said on March 12 he does not know if the Ramapo fault was a factor in the NRC's decision to put Limerick on the list of plants that will be getting an updated seismic analysis.

The most powerful recorded earthquake in Pennsylvania was 5.2 in 1998 in the northwestern part of the state. In 1984, a earthquake that registered 4.1 on the Richter scale occurred in Lancaster County. The epicenter of that quake was near the Peach Bottom nuclear plant in York County, according to the Lancaster Intelligencer-Journal. Continued...

Peach Bottom, which is also owned by Exelon, is also on the list of plants which will get a new earthquake assessment from the NRC, that newspaper reported. That plant placed 34th on the earthquake risk rankings compiled by MSNBC.Although the latest NRC study has altered the risk statistics for the nation's plants, the agency does not conclude that this risk is inordinately high.

"Overall seismic risk estimates remain small," notes the NRC report, released Sept. 2, 2010. "There is no immediate safety concern."

However, several factors pushed the NRC to take a closer look at certain plants. The primary cause is a better understanding of seismology resulting from better equipment, better measuring and better computer models. So in 2008, the U.S. Geologic Survey updated its assessment of seismic threats. Among the changes was "a broader range of earthquake magnitudes for the central and eastern U.S.," according to a USGS release on the update. Another important change was "several new and updated ground-shaking models for earthquakes in the central and eastern U.S. were implemented in the maps," USGS wrote.

In effect, nothing has changed but the government's understanding of how earthquakes work, what those changes mean to specific locations, and how that new understanding could affect what the agency previously considered the risk of earthquake damage to be. Consider for example that the risk rankings put together by MSNBC from the new NRC study do not put plants in California, Oregon or Washington near the top of the list.

That's because the earthquake risk was more pronounced in those locations and those plants were built with additional protections to account for that higher risk.

The earthquake risk at Limerick was considered low when its two reactors were commissioned, the first in 1985 and the second in 1989. As a result, it was not designed or built with the necessity of withstanding a major earthquake in mind.

And the NRC study may well find that the precautions in place are adequate. Or it may require some retrofitting at the plant, which Exelon will undertake if required, Szafran said.

"These things change as new information becomes available," said Szafran. "New data becomes available and agencies have to respond to that. We understand that. Who knows, maybe in another ten years, more data will be available and our numbers will

be re-adjusted again."

Nevertheless, said Szafran, "Our top priority is the health and safety of the community and our employees."

The Pottstown Mercury (**pottsmerc.com**), Serving Pottstown, PA

Flaw Found in Safety Mechanism at Limerick Nuke Plant

Wednesday, October 5, 2011 By Evan Brandt, **ebrandt@pottsmerc.com**

LIMERICK — Even before an earthquake and tsunami refocused the world's attention on the dangers inherent in nuclear power, the manufacturer of a key safety mechanism at many nuclear power plants, including Limerick Generating Station, was warning it might not work during an earthquake.

GE Hitachi first issued the warning to the Nuclear Regulatory Commission in September 2010 and confirmed the concern again last month.

The concern refers to the "control rods" for boiling water reactor models, the type of reactor at Exelon Nuclear's plant along the Schuylkill River. The control rods are inserted into the reactor between the rods of nuclear fuel in order to shut it down quickly, a procedure called "a scram," and are meant to be used in an emergency and more slowly during scheduled downtime. The control rods work by absorbing neutrons, shutting down the nuclear fission reaction that creates the heat that boils the water and drives the turbine to create electricity.

But engineering evaluations by GE Hitachi showed the design for the mechanism that inserts the control rods "do not address the potential impact of a seismic event on the ability to scram," according to its first Sept. 3, 2010, notice.

The problem, NRC spokesman Neil Sheehan said, is friction in the assembly that moves the control rods into position might be made worse by an earthquake.

On Sept. 26, GE Hitachi informed NRC it had "determined that the scram capability of the control rod drive mechanism" in reactors like those at Limerick and Peach Bottom Atomic Generating Station on the Susquehanna "may not be sufficient to ensure the control rod will fully insert."

The problem only occurs, according to GE's analysis, "when the reactor is below normal operating pressure" and an earthquake hits.

"In this scenario, a substantial safety hazard results because the affected control rods might not fully insert to perform the required safety function," the company told NRC.

"There need to be three conditions present for this kind of scenario to happen," Sheehan explained in an email.

"1) The control rods (or at least some of them) already have to be 'sticky,' or for some friction to already be present. That can occur when fuel gets older and bowing of fuel rods sometimes takes place," Sheehan wrote.

"2) The reactor is operating at low pressure. The control rod mechanisms (the pistons that force boiling water reactor control rods

in from the bottom of the vessel) use pressure from the reactor vessel to inject the rods. There is less forcing pressure when the reactor is running at low pressure," wrote Sheehan.

"3) A severe earthquake," he concluded.

While there may have been a time when the chances of such a string of events happening at once might have been dismissed as too unlikely, the earthquake and subsequent tsunami in Japan in March, and the earthquake in Virginia in August have given such "what-if" scenarios added credence.

More significantly, Sheehan confirmed that some of the reactors at the Fukushima plant affected by the Japanese earthquake are boiling water reactors, similar to those at Limerick.

He wrote that "the loss of power at Fukushima knocked out safety systems. That was the major contributor to the accident. Details of exactly what happened, including the insertion of control rods or lack thereof, are still being determined."

He also confirmed that the 5.8 magnitude earthquake centered in Louisa County, Va., that struck on Aug. 23 and was felt as far north as New York City was beyond what the nearby North Anna Nuclear Plant had been designed to withstand. The reactors at that plant are of a type known as pressurized water reactors and so were not subject to the concerns highlighted by GE Hitachi.

Nevertheless, reactors at that plant in Virginia remain shut down while the owners, Dominion Power, and the NRC determine whether the plant sustained any damage. NRC announced last week more inspections would need to be conducted before a decision is made about starting North Anna's reactors up again.

The North Anna plant is among 27 that a preliminary NRC review recently found may need upgrades to protect against earthquake risk. That list also includes the Limerick Generating Station's two reactors.

Joe Szafran a spokesman for Exelon Nuclear's Limerick Generating Station did not respond to requests for comment.

Sheehan said the NRC does not believe the potential problem is cause for extreme concern.

"The plants have procedures for dealing with stuck control rods. They also have procedures for dealing with rods that only insert partially," Sheehan wrote in an email.

"Plant operators can also inject boron to halt fissioning. Based on these capabilities, we believe the plants remain safe to operate as work on this issue continues," Sheehan wrote.

"While GE Hitachi will be working with each potentially affected plant on remedies, it is also developing a long-term solution that involves a redesign that would result in fewer tolerances, i.e., less friction, between the control rods and the nuclear fuel," Sheehan wrote.

In the meantime, GE Hitachi has recommended plants monitor the equipment for any problems.

The NRC began re-examining the issues related to earthquakes as early as 2003 and continued in the wake of new analysis of seismic risks in the eastern half of the U.S. by the U.S. Geological Survey.

On Sept. 19, according to the Associated Press, the NRC issued a new report urging the agency to "immediately require operators to re-evaluate whether U.S. nuclear plants can withstand earthquakes and floods."

The report identifies “seven steps the NRC should take ‘without delay’” including “immediate reviews of seismic and flooding risks at the nation’s 104 reactors.”

Sheehan wrote that although the matter of the control rods is “a separate and distinct issue,” that “seismic vulnerabilities will clearly be among the key areas to be reviewed as part of our post-Fukushima reviews.”

Last month, the Associated Press published a report analyzing NRC data and concluding that “the risk an earthquake would cause a severe accident at a U.S. nuclear plant is greater than previously thought — 24 times as high in one case.”

The AP analysis mirrored one done by **MSNBC.com** in March that also used NRC data to determine that the risk of earthquake damage was greater than once thought by the federal agency. The **MSNBC.com** report ranked Limerick as the plant with the third highest risk of being damaged by an earthquake.

The risk of an earthquake damaging either or both reactors at Limerick was increased by 141 percent under the **MSNBC.com** analysis. That analysis found the chance of an earthquake damaging the plant was raised in the study to 1 in 18,868. The previous risk rating was 1 in 45,455.

The NRC disavowed both the **MSNBC.com** and AP analysis, saying NRC data had been used in a way that is inconsistent with how the agency measures risk.

You can follow Evan Brandt on Twitter @PottstownNews

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URL: http://www.pottsmerc.com/articles/2011/10/05/news/doc4e8bcf5633f4b997473556.prt

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Why We Are Worried - Lessons From the Japan Nuclear Disaster

1. The Nuclear Industry Cannot Be Believed
   - Nuclear power kills (deaths from industry related accidents 1961 to 2004)
   - Reports show Limerick had two near misses 1995 and 2001
   - Accident Statistics for Limerick (1980 CRAC Calculations vs. 2000 estimates)
   - Nuclear plant fuel pools pose enormous risk threats
   - A pattern of delayed and intentionally minimized notifications of public threats
   - "Science for sale" is often used to deny, ignore, suppress, or censor the actual facts

2. Governments Cannot Be Trusted
   - History suggests that timely and complete information for the public won't be provided
   - In meltdown situations, exposure risks are not fully disclosed, typically only Iodine and Cesium
   - Harmful impacts of meltdown worst case consequences (1974 Rasmussen Report)
   - Nuclear plant worker safety is not always a high priority during emergencies
   - Examples of Outright Lies - Three Mile Island 1979 - Chernobyl 1986 - Fukushima, Japan 2011

3. Regulators Cannot Be Relied Upon For Protection
   - Japan's regulators failed on many levels to protect their citizens
   - U.S. NRC oversight is a dangerous delusion, based on outdated regulations
   - NRC often openly promotes the industry it is supposed to regulate
   - Evacuation Plans are inadequate (10 mile EPZ vs. 50 mile "safe evacuation" in Japan)
   - NRC is viewed as the most severely compromised federal agency by many experts

4. Culture of Complicity a Pattern in Both Japan and the U.S.
   - Appearances of collusion among nuclear power companies, regulators, and politicians
   -Tokyo Electric Power failed to take action to complete needed repairs reported to them
   - Regulators divulged the identity of the whistleblower to TEPCO
   -Weeks before the nuclear accident, regulators approved a 1-year extension beyond 40 years
   - Similar problems plague the NRC including Vermont Yankee Plant and others
   - Shortly after releases in Japan, NRC raised radiation dose limits in the U.S.
   - The "revolving door" of related employment benefits all participants in both countries

7. Known Health Harms of Radiation Exposure
   - No safe dose of radiation exposure
   - Infants and children are uniquely susceptible to harmful effects
   - Japan raised radiation exposure limits for schools and playgrounds to 2,000 millirems per year
   - Chernobyl's children suffered increased cancers, infant mortality, birth defects ...
   - Cuba treated over 25,000 children from the Ukraine and Russia for leukemia
   - World Health Organization and IAEA have shamelessly understated Chernobyl victims

9. Conclusions for Tri-County Area Residents to Consider
   - The "unthinkable" needs to be rethought - a disaster could happen here
   - Limerick is 3rd on the Earthquake Risk List in the U.S. - a real concern
   - A disaster/meltdown can be triggered as a result of fire, human error, terrorist attack, equipment failure, or a catastrophic hurricane/tornado event
   - Lesson to be learned from Japan - redundant safety systems can fail
   - Radioactive fuel rods are among the most deadly materials on earth
   -Transporting radioactive wastes is too risky to consider (photos of transport)
   - We need to oppose approval of uprates by NRC
   - We need to oppose renewal of Limerick's license for an additional 20 years by NRC
   - Additional precautions are needed at Limerick (Extended back-up power, safest fire
   - regulations, enhance protection against terrorists, extend EPZ to 50 miles, safer storage of spent fuel rods on site in above ground casks ...)

NRC's Stall Tactics To Avoid Immediate Action Are Negligent!

The Study Below Shows NRC Has Known The Horrific Estimated Consequences of a Meltdown Since 1974

All About Meltdowns

Excerpts from the
Reactor Safety Study (WASH-1400)
(commonly known as the Rasmussen Report)

published by the US Nuclear Regulatory Commission in 1974

What is the bottom line as described in the Rasmussen Report?

MELTDOWN CONSEQUENCES - 1974 NRC Worst Case - **Rasmussen Report**

- **45,000** **Cases Radiation Sickness** (Requiring Hospitalization)
- **3,300** **Prompt Deaths** (From Acute Radiation Sickness)
- **45,000** **Fatal Cancers** (over 50 years)
- **250,000** **Non-Fatal Cancers** (over 50 years)
- **190 Per Year** **Defective Children Born**
- **$14 Billion** **(1974 Dollars) Property Damage; NOT Insurable**

WHY WE ARE SO CONCERNED ABOUT A MELTDOWN AT LIMERICK NUCLEAR PLANT

Over 200 MELTDOWN RADIONUCLIDES

Reactor Safety Study (WASH-1400) (commonly known as the Rasmussen Report)
Published by the US Nuclear Regulatory Commission 1974

The Following 54 Are Among The Most Dangerous Radionuclides Released In A Meltdown With Half-Lives Up To 24,000 Years

No.	Radionuclide	Radioactive Inventory (Source Term in curies)	Half Life
1	Cobalt-58	780 thousand	10.1 weeks
2	Cobalt-60	290 thousand	5.25 years
3	Krypton-85	560 thousand	10.8 years
4	Krypton-85m	24 million	4.4 hours
5	Krypton-87	47 million	1.25 hours
6	Krypton-88	68 million	2.8 hours
7	Rubidium-86	26 thousand	2.67 weeks
8	Strontium-89	94 million	7.4 weeks
9	Strontium-90	3 million 700 thousand	30.2 years
10	Strontium-91	110 million	9.7 hours
11	Yttrium-90	390 thousand	2.67 days
12	Yttrium-91	120 million	8.4 weeks
13	Zirconium-95	150 million	9.3 weeks
14	Zirconium-97	150 million	17.0 hours
15	Niobium-95	150 million	5.0 weeks
16	Molybdenum-99	160 million	2.8 days
17	Technetium-99m	140 million	6.0 hours
18	Ruthenium-103	110 million	5.64 weeks
19	Ruthenium-105	72 million	4.44 hours
20	Ruthenium-106	25 million	1.0 years
21	Rhodium-105	49 million	1.50 days
22	Tellurium-127	5 million 900 thousand	9.38 hours
23	Tellurium-127m	1 million 100 thousand	15.6 weeks
24	Tellurium-129	31 million	1.15 hours
25	Tellurium-129m	5 million 300 thousand	8.16 hours
26	Tellurium-131m	13 million	1.25 days
27	Tellurium-132	120 million	3.25 days
28	Antimony-127	6 million 100 thousand	3.88 days
29	Antimony-129	33 million	4.30 hours

30	Iodine-131	85	million	8.05	days
31	Iodine-132	120	million	2.30	hours
32	Iodine-133	170	million	21.0	hours
33	Iodine-134	190	million	53	minutes
34	Iodine-135	150	million	6.72	hours
35	Xenon-133	170	million	5.28	days
36	Xenon-135	34	million	9.2	hours
37	Cesium-134	7 million 500	thousand	2.05	years
38	Cesium-136	3	million	13.0	days
39	Cesium-137	4 million 700	thousand	30.1	years
40	Barium-140	160	million	12.8	days
41	Lanthanum-14 0	160	million	1.67	days
42	Cerium-141	150	million	4.6	weeks
43	Cerium-143	130	million	1.38	days
44	Cerium-144	85	million	40.6	weeks
45	Praseodymium-143	130	million	13.7	days
46	Neodymium-147	60	million	11.1	days
47	Neptunium-239	1 billion 640	million	2.35	days
48	Plutonium-238	57	thousand	89.0	years
49	Plutonium-239	21	thousand	24,000	years
50	Plutonium-240	21	thousand	6,571	years
51	Plutonium-241	3 million 400	thousand	14.6	years
52	Americium-241	1 thousand 7	hundred	410.7	years
53	Curium-242	500	thousand	23.3	weeks
54	Curium-244	23	thousand	18.1	years

The Truth Seldom Gets Told To Protect The Nuclear Industry

TABLE VI 3-1 Adapted From Appendix VI of WASH-140 - INITIAL ACTIVITY OF RADIONUCLIDES IN THE NUCLEAR REACTOR CORE AT THE TIME OF THE HYPOTHETICAL ACCIDENT

- **The kind of meltdown accidents envisaged in WASH-1400 require a much more extensive evacuation** plan than any that is currently envisaged in Canada, as indicated in this very brief excerpt from Appendix VI of WASH-1400. *[comentary by Dr. Gordon Edwards]*

When Over 200 Different Radioactive Substances Are Released In Fuel Rod Melting Accidents Only Iodine And Cesium Are Reported After Fukushima

EXPOSURE RISKS NOT FULLY DISCLOSED

06/16/11 **NRC hearing raises questions about safety at nuclear plants**
http://www.csmonitor.com/USA/2011/0615/NRC-hearing-raises-questions-about-safety-at-nuclear-plants The Christian Science Monitor - CSMonitor.com By Mark Clayton, posted June 15, 2011

A hearing of the Nuclear Regulatory Commission (NRC) pointed to apparent weaknesses in the regulation of nuclear plants. A safety task force staff ... noted that: • In many cases, older "vintage" plants that undergo relicensing examinations to operate an added 20 years are not required to bring those plants fully up to current safety standards.

• NRC regulations have never formally recognized the possibility of an extreme event – like an earthquake or tornado – simultaneously knocking out both on-site and off-site power at a nuclear plant, as happened at the Fukushima Daiichi plant in Japan.

• The nation's nuclear plants have "different licensing bases and associated safety margins," with variations among the plants depending upon their age.

• "Hardened vents" installed to protect US boiling water reactors with the same design as the Fukushima plant were "not included in regulations" and, as a result, were not subject to regular inspections to ensure that they operate properly in an emergency.

• Key valves associated with the hardened vents "were not specifically designed for operation during a long-term station blackout" and therefore might be difficult to open in the event of a Fukushima like incident. [**Editor's note:** *The original version misstated the task force's finding on this point.*]

NRC Whistleblowers

BOSTON (By Scott Malone) – U.S. regulators privately have expressed doubts that some of the nation's nuclear power plants are prepared for a Fukushima-scale... :

U.S. Nuclear Regulators Privately Doubted Power Plants Despite Expressing Public Confidence, Documents Show

Three former members of the Nuclear Regulatory Commission's Office of the Inspector General told ProPublica that the OIG's office has rewritten critical reports, buried other damaging reports and stopped an investigation into whether the NRC is relying on outdated methods to predict damage from an aircraft crashing into a plant. In a report by John Sullivan and PBS Newshour's Cameron Hickey, the whistleblowers say the OIG has shied away from challenging the NRC right when we need them most in the aftermath of the Fukushima meltdown.

One whistleblower, George Mulley who was an award-winning chief investigator at the OIG, told ProPublica that a report he wrote detailed lapses by several NRC inspectors over six years and cited systemic problems in the way the NRC tries to prevent corrosion. "The revised report shifted much of the blame to the plant's owner, Exelon, instead of NRC procedures. And instead of designating it a public report and delivering it to Congress, as is the norm, the office put it off-limits."

Two other former OIG investigators told ProPublica that the OIG has become reluctant to probe anything that could become controversial or raise difficult questions for the NRC. Each asked not to be named to protect their current jobs.

Read the full account here - http://www.propublica.org/article/whistleblowers-say-nuclear-regulatory-commission-watchdog-is-losing-its-bar - and see all of ProPublica's reporting on nuclear safety here.

- *Thankfully some at NRC value public health and safety over nuclear industry profits. It we are to be protected from deadly, dangerous nuclear plants we need more at NRC to have integrity, soul, and caring.*

Evidence of growing risk from U.S. meltdowns is everywhere, yet NRC is failing to see the urgency of taking immediate action to at least attempt to better guard against a meltdown.

- **The need to shut down old, troubled plants like Limerick to minimize risk of meltdown is clear, yet NRC keeps rubber stamping permits.**

- Our concerns are that NRC's Dual Role as a Promoter and Regulator is a dangerous conflict of interest that can lead to meltdown and disaster at Limerick. NRC's Promotion Far Outweighs Regulation - A fact ACE officers have witnessed all too often over the past 11 years.

- NRC is repeatedly turning a blind eye and falling down as the cop on the beat.

- NRC's check the box attitude can lead to a Limerick meltdown and disaster.

- NRC doesn't take the threats and harms seriously, a fact we have observed over and over.

- NRC is far too soft on nuclear enforcement, leaving us vulnerable to all kinds of risks for meltdown.

- NRC is clearly a captive of the industry it supposedly regulates. NRC executives are too cozy with industry. This has led to weakened safety standards that jeopardize our region's residents and the entire nation.

- NRC abandons its duty to be tough in regulatory authority to keep us safe, using deceptive and irrational terms to minimize risks and to protect industry profits like:
  - ✓ "Reasonably Expected Not to Fail"
  - ✓ "Safe Enough".
  - ✓ "We don't have to worry about particulates landing on us"
  - ✓ "Meltdown is no worry for the U.S. - Industry has an excellent record" - Absurd!!!!!

- NRC is not achieving safety standards due to money. It has happened at Limerick over and over. NRC has made comments and sent us correspondence that minimized risk to save Exelon money.

- NRC is not doing their job effectively when problems are identified, and NRC fails to get industry to immediately correct them. Examples:
  - ✓ Instead of requiring fire safety compliance over the past several decades - NRC allowed industry to make a different set of fire safety rules, which is what Limerick is using.
  - ✓ 102 of 104 nukes leaked radiation into groundwater and drinking water. Yet, NRC is allowing the nuclear industry years more to come up with their own solution. We are concerned about spreading groundwater contamination at Limerick. Leaks were never cleaned up.
  - ✓ NRC ignored alarming corrosion for decades which ate through steel, yet allowed plant to go back on line.

NRC Needs To Do Far More Faster to Fortify Limerick Nuclear Power Plant.
NRC NEEDS TO STOP MINIMIZING RISKS TO SAVE EXELON MONEY.

NRC OVERSIGHT - A DANGEROUS DELUSION

Many in our region have long been concerned about NRC's lax oversight and enforcement leading to a meltdown from accidents or a terrorist attack at Limerick Nuclear Plant.

- Claims that NRC oversight will prevent meltdowns are delusional. NRC's decisions are based largely on baseless "beliefs", NOT science or reality.
- **NRC's track record** - They put nuclear industry profits ahead of public safety. NRC is too close to the industry. They promote nuclear power, not regulate it.

- NRC's negligence concerns many in our region.

ACE identified great cause for concern at Limerick. Examples Of NRC Negligence at Limerick Nuclear Plant:

- ✓ **FIRE** - NRC acquiesced to nuclear industry convenience and bottom line by developing a second weaker set of fire safety standards which allow Limerick to deceptively claim compliance. NRC says it's "SAFE ENOUGH". Knowing fires can cause meltdowns, we need the safest fire barriers and other safeguards and object to "Reduced Regulatory Burden", "Exemptions", and "Flexibility".

- ✓ **TERRORISTS THREATS** - NRC failed to require Limerick to guard against a 9/11 type terrorist attack by plane or missile. Either could lead to a nuclear fire and meltdown. Limerick Airport is about one mile away.

- ✓ **AL-QAIDA SUSPECT** worked at Limerick 2002 to 2007. How effective are NRC screening requirements for the 2000 workers that come to refuel each year?

- ✓ **RADIOACTIVE FUEL RODS MOVED TOO SOON!** NRC is allowing Limerick's high-level radioactive fuel rods to be removed from cooling pools far sooner than the 5 years originally considered safe.

- ✓ **"REDUNDANT SAFEGUARDS" FAIL** - Safeguards that work on paper don't necessarily work during a real meltdown. Glaring vulnerabilities in the multiple layers of safeguards have become obvious.

- ✓ **LOSS of POWER - INADEQUATE BACK-UP POWER -** A "Station Blackout" (A Threat to All Nuclear Plants), poses the greater proportion of risk compared to all other factors that could lead to a meltdown, according to NRC studies - 2003 and 2005. Yet, there is not enough back-up power at Limerick Nuclear Plant.
    - Limerick needs back-up power available for days, not just hours. A weather event shut down power in a neighboring community for five days recently.
    - Limerick needs enough back-up power for reactors and fuel pools
    - Limerick needs to test all generators more often. Like combustion engines, they don't always start if they have not been turned on for weeks.
    - Japanese batteries had 8 hours of power storage - not long enough
    - The danger of power failure - Total Blackout Risk - National Average 17.5 percent.

    - ✓ Hurricane Andrew - Turkey Point (Florida) lost off-site power for more than 5 days. Because Florida Power & Light Company (FPL) did not bring in a shift change by helicopter, the same crew worked around the clock to keep the generators going.One worker said they held it together basically with paper clips and rubber bands at one point, because diesel generators are really not designed to run continuously.

    - ✓ Hurricane Gustav (2008) - River Bend shut down. Hurricane tore the sheet metal off three sides of the plant's turbine building.

Deception Will Continue And Politicians Won't Take Action To Close Limerick Nuclear Without Your Voice!

Summary Of Article Below Shows Collusion Between Nuclear Plant Owners, Regulators and Politicians That Jeopardize Public Health, Safety, and Quality Of Life!

Culture of Complicity Tied To Stricken Nuclear Plant
New York Times 4-26-11

This Article Shows How Collusion Between Nuclear Power Companies, Regulators, and Politicians JEOPARDIZES REGIONS AROUND NUCLEAR PLANTS

Japan's Nuclear Catastrophe Has Major Implications Related To Limerick Nuclear Plant Relicensing

The MOST SERIOUS SAFETY COVER-UP in the history of Japanese nuclear power happened at Fukushima. It was exposed by an outsider. In 2000, a Japanese-American nuclear inspector who did work for GE at Daiichi, told Japan regulators about a concealed, cracked steam dryer.

- **Tokyo Electric Power didn't want to undertake costly repairs.**

Despite a new law shielding whistle-blowers, the regulators divulged the whistle-blower's identity to TEPCO,

- **Effectively blackballing the whistle-blower from the industry.**

Investigators may take months to decide to what extent:

- **Safety problems and/or weak regulation contributed to this worst disaster since Chernobyl.**

Japanese and Western experts believe non-consistent, nonexistent, or unenforced regulations played a role in the nuclear plant accident.

- **Despite warnings about its safety and subsequent admissions by Tokyo Electric, they failed to carry out proper inspections of critical equipment,**

- **Just weeks before Japan's nuclear disaster, regulators approved a 1-year extension, beyond the reactor's 40 year limit.**

It's all about the money.

- ✓ Nuclear power's main players are more interested in protection of their interests than increasing safety. Consequences: Lax Inspections, Mild Punishment metered out for past safety infractions.
- ✓ Revolving door - The Political Establishment (beneficiaries of the nuclear power industry), show little interest in bolstering safety.
- ✓ Lax regulations serve political interests. Costly renovations get in the way of building new plants.

ACE Conclusion:

Similar dangerous decisions could be made for the same reasons, risking meltdowns at Limerick and other U.S. nuclear power plants.

THE FOLLOWING SHOWS HOW NRC IS JEOPARDIZING OUR FUTURE

The Following List of Articles and Reports Provides Overwhelming Evidence That Residents Of The Philadelphia Region Will NOT Be Protected By NRC Now Or In The Future:

- ✓ Ineffective, Unprotective, Negligent Policies
- ✓ Weakened Regulations, Lowered Standards
- ✓ Unsubstantiated Conclusions, Failed Oversight

5-12-11 **"The United States' nuclear reactors are old, faulty and dangerous – but regulators are ignoring the risks and boosting industry profits"** Rolling Stone Magazine article: **"America's Nuclear Nightmare", documents that the NRC is "little more than a lap dog to the nuclear industry".**
http://www.rollingstone.com/politics/news/america-s-nuclear-nightmare-20110427

09/05/11 **NRC Exemptions, aka "No Significant Hazards"** NRC's Dangerous Exemptions for nuclear plants can be documented in NRC's Biweekly Notices on Applications and Amendments to Nuclear Facility Operating Licenses. NRC posts them as "No Significant Hazard Considerations

03/25/11 Report: Defects At U.S. Nuke Plants Not Reported WASHINGTON (AP) -- Companies that operate U.S. nuclear power plants are not telling the government about some equipment defects that could create safety risks, according to a report released Thursday. An audit by the inspector general of the Nuclear Regulatory Commission also raised questions about the agency's oversight, saying reporting guidelines for the nuclear industry are "contradictory and unclear."

04/18/11 **U.S. Nuclear Regulator a Policeman or Salesman?** By Reuters - The Nuclear Regulatory Commission exists to police, not promote, the domestic nuclear industry--but diplomatic cables show that it is sometimes used as a sales tool to help push American technology to foreign governments. The cables, obtained by WikiLeaks and provided to Reuters by a third party, shed light on the way in which U.S. embassies have pulled in the NRC when lobbying for the purchase of equipment made by Westinghouse and other domestic manufacturers.

04/22/11 **U.S. Nuclear Regulatory Commission oversight called too lenient** By SHAY TOTTEN New England Center for Investigative Reporting. Internal government watchdogs and outside experts alike say the U.S. Nuclear Regulatory Commission is too lenient on the industry it is charged with regulating, often making decisions based on the industry's profit margins rather than safety.

04/22/11 **U.S. Nuclear Regulators Privately Doubted Power Plants Despite Expressing Public Confidence, Documents Show**
www.huffingtonpost.com/2011/04/06/us-nuclear-regulators-doubts_n_845819.html BOSTON (By Scott Malone) – U.S.

regulators privately have expressed doubts that some of the nation's nuclear power plants are prepared for a Fukushima-scale disaster, undercutting their public confidence since Japan's nuclear crisis began, documents released by an independent safety watchdog group show. Internal Nuclear Regulatory Commission e-mails and memos obtained by the Union of Concerned Scientists questioned the adequacy of the back-up plans to keep reactor cooling systems running if off-site power were lost for an extended period.

May 7, 2011

Nuclear Agency Is Criticized as Too Close to Its Industry

New York Times By TOM ZELLER Jr.

Exelon Corporation, had long known that corrosion was thinning...pipes. But rather than fix them, it repeatedly lowered the minimum thickness it deemed safe. By the time the pipe broke, Exelon had declared that pipe walls just three-hundredths of an inch thick — less than one-tenth the original minimum thickness — would be good enough. ...Safety experts say if enough pipes had ruptured during a reactor accident, the result could easily have been a nuclear catastrophe. Exelon's risky decisions occurred under the noses of on-site inspectors from the federal Nuclear Regulatory Commission. No documented inspection of the pipes was made by anyone from the N.R.C. for at least the eight years preceding the leak, and the agency also failed to notice that Exelon kept lowering the acceptable standard, according to a subsequent investigation by the commission's inspector general.

N.R.C.'s decision to back down in a standoff with the operator of an Ohio plant a decade ago meant that a potentially dangerous hole went undetected for months. The number of civil penalties paid by licensees has plummeted nearly 80 percent since the late 1990s — a reflection, critics say, of the commission's inclination to avoid ruffling the feathers of the nuclear industry and its Washington lobbyists.

The agency's own internal monitors say the N.R.C. is prone to dither when companies complain that its proposed actions would cost time or money. The promise of lucrative industry work after officials leave the commission probably doesn't help, critics say, pointing to dozens over the years who have taken jobs with nuclear power companies and lobbying firms.

David Lochbaum,... who recently worked as a reactor technology instructor there, said the agency too often rolled the dice on safety. "The only difference between Byron and Fukushima is luck," he said.

NO REJCTIONS - Vermont Yankee nuclear plant ...has had several serious operational problems. That reactor is similar in design to the stricken plant in Japan and suffered the partial collapse of a cooling tower in 2007. In January 2010, the plant's operator, Entergy, discovered that nearby soil and groundwater had been contaminated by radioactive tritium, which had leaked from underground piping. Months before, the company assured state lawmakers that no such piping existed at the plant. The Vermont Senate, concerned about the problems, voted overwhelmingly last year to prevent the plant from operating beyond the scheduled expiration of its license, 2012. But one day before the quake and tsunami that set Japan's crisis in motion, the N.R.C. approved Vermont Yankee's bid for license renewal — just as it has for 62 other plants so far. Its fate is now the subject of a federal lawsuit.

- "How does a place like that get a license renewal?" Mr. Lochbaum said. "Because they asked for one. Absent dead bodies, nothing seems to deter the N.R.C. from sustaining reactor operation." No renewal application has been turned down by the agency since the first one was granted in 2000.
- With billions of dollars of revenue and investment at stake for each plant, the N.R.C. changed the rules in 1995, scrapping the requirement that operators prove they were complying with their current license. But James Riccio, a nuclear policy analyst with Greenpeace, said, "The N.R.C. rule change gutted a substantive process and replaced it with a rubber stamp. They placed industry profits ahead of public safety."

N.R.C.'s slowness in addressing serious problems is another concern.

- In 1975, a blaze at Browns Ferry plant crippled electrical wiring used to control critical cooling equipment in one of the reactor units. ...That triggered new fire protection regulations in 1980.
- But over the next three decades, according to two internal agency investigations, the commission approved a succession of faulty or ineffective fire barrier materials. It then dragged its feet in the face of mounting evidence that the materials, even after being installed in dozens of plants, were failing to perform as advertised.
- ...Thermo-lag, which the commission approved based on what turned out to be fraudulent lab tests submitted by an obscure company. "No inspector ever bothered to check out the lab or to question the results," said Mr. Mulley, who investigated the case for the agency.
- Last year, the N.R.C. issued a 355-page report in which it suggested that the fire barrier issue had been finally sorted out, even though most plants were technically still not complying with the regulations.

The agency has little choice but to tolerate violations, said Mr. Lochbaum, who heads the Nuclear Safety Project with the Union of Concerned Scientists, an environmental and nuclear watchdog group based in Cambridge, Mass. "Otherwise, nearly all the U.S. reactors would have to shut down," he said.

Mr. Mulley suggested that the companies themselves played a role in delaying the rules. ...But some plant operators kept complaining that they were too expensive. So tests from a lab that no one has ever heard of tested material cheaper than anything else on the market, and the N.R.C. says, 'Perfect! Use this!'

The agency's deferential attitude also brought Davis-Besse to the brink of the worst American nuclear accident since the Three Mile Island meltdown of 1979. On Aug. 3, 2001, armed with mounting evidence of potentially dangerous cracks and leaks in control nozzles that penetrate the vessel heads at most reactors, the commission asked 12 nuclear plants to conduct inspections. The inspections required a temporary but expensive shutdown, so regulators gave the plants until the end of the year to comply, and most did so. the N.R.C. blinked, agreeing to allow FirstEnergy to operate until mid-February.

- On March 6, 2002, workers finally conducted the inspections and found that acid used in the cooling water had eaten almost completely through the lid of the reactor.
- "They should have just shut them down," said Mr. Mulley, who investigated the case. "But the attitude at N.R.C. was always, 'You can't shut them down. They'll fight us in court.' "

Mr. Lochbaum said the slap on the wrist delivered to Exelon ensured that similar incidents would occur in the future. "There's no real regulatory discomfort imposed, so this sort of thing just continues,"

"The N.R.C. is like a prep school for many of these guys, because they know they've got a good shot at landing much higher-paying work with the people they're supposed to be keeping in line," Mr. Mulley said. "They're not going to do anything to jeopardize that."

05/20/11 **Nuclear power safety: Latest on Japan crisis fuels new concern in US** http://www.csmonitor.com/USA/2011/0520/Nuclear-power-safety-Latest-on-Japan-crisis-fuels-new-concern-in-US Nuclear Regulatory Commission still insists that US nuclear plants with same design as Japan's stricken Fukushima Daiichi facility are safe. **But watchdog groups cite failed venting system, which led to hydrogen explosions.**

05/22/11 **Jaczko [NRC Chairman] says NRC has nothing on station blackout "into the longer time frame"** ***(from NRC April 28 meeting on Japan and station blackouts)** http://public-blog.nrc-gateway.gov/2011/04/22/the-nrc-were-ready-to-respond/ Amy Still May 14, 2011 at 12:36 pm Comments from the NRC Station Blackout Meeting, April 28th, 2011: http://www.nrc.gov/reading-rm/doc-collections/commission/tr/2011/20110428a.pdf
CHAIRMAN JACZKO: ...And I think...we don't necessarily look beyond 24 hours for this kind of situation, into the longer, longer time frame.'
CHAIRMAN JACZKO:.but in the event that there is a station blackout, that's externally driven, I'm not convinced that, in that situation, four hours is a reasonable time to restore off-site power.

(ADDED by ACE - Limerick appears to only have battery back-up for 4 hours on generators, and no guarantee to keep cooling fuel pools in event of loss of power)

05/24/11 **NRC Exempts Nuclear Power Plant Security (crytome.org)** http://cryptome.org/0004/nrc052411.htm
NRC Exempts Nuclear Power Plant Security
[Federal Register Volume 76, Number 100 (Tuesday, May 24, 2011)] [Notices] [Pages 30204-30205]
From the Federal Register Online via the Government Printing Office [www.gpo.gov] [FR Doc No: 2011-12784]

06/02/11 **Some fear U.S. nuclear agency is playing 'regulatory roulette'** http://edition.cnn.com/2011/US/06/01/nuclear.plant.regulation/index.html

Radioactive spills are a problem nationwide. [102 of104 of the country's 104 reactors have suffered significant tritium leaks or spills]. The worst was at Exelon's Braidwood plant, in Chicago, which leaked more than 6 million gallons of radiation contaminated water into drinking water wells Many leaks are the result of corroding underground pipes that have not been maintained. That can lead to a variety of radioactive compounds entering groundwater, but tritium travels fastest through the soil.

New Jersey's Department of Environmental Protection is concerned about tritium entering the underground aquifers, and a plume of tritium headed toward Oyster Creek surface water. The state demanded Exelon clean up the contaminated groundwater. "Once that water moved off the plant into the water supply of the state of New Jersey, we felt that it was in our responsibility to go after and protect that water supply," said New Jersey Department of

Environmental Protection Commissioner Bob Martin. "...our number-one job was to protect the health and safety of people in New Jersey."

The groundwater is processed through the Oyster Creek plant's cooling system, where it is diluted. Then it pours into the Oyster Creek.

The commission did not order Exelon to clean up the spill at Oyster Creek, an example, some scientists claim, of the agency's failure to fully protect the public. "The NRC's almost acting like they're waiting till somebody dies till they enforce the regulation. Tombstone regulation -- that's too high a price to pay by Americans," said David Lochbaum, director of the Nuclear Safety Project of the Union of Concerned Scientists. Lochbaum, a nuclear engineer and former instructor for the NRC, claims the commission is playing what he calls "regulatory roulette," sanctioning plant owners and demanding a clean-up in some cases, such as the Braidwood spill, but not in other instances, like Oyster Creek. "The NRC can't have a 'Wheel of Misfortune' that decides when it acts and when it doesn't. The NRC needs to consistently enforce its regulations so that all Americans living in all states are protected," Lochbaum said.

Last year NRC conducted a self-analysis to determine if it was responding adequately to nuclear plant leaks. The commission's Groundwater Task Force found that the "NRC response to incidents could be enhanced to be more reliable." "It's fair to say that we're inconsistent in our response," concedes Martin Virgilio, deputy executive director for reactor and preparedness programs at the commission.

06/16/11 NRC hearing raises questions about safety at nuclear plants

http://www.csmonitor.com/USA/2011/0615/NRC-hearing-raises-questions-about-safety-at-nuclear-plants The Christian Science Monitor - CSMonitor.com By Mark Clayton, posted June 15, 2011

A hearing of the Nuclear Regulatory Commission (NRC) pointed to apparent weaknesses in the regulation of nuclear plants. A safety task force staff ... noted that: • In many cases, older "vintage" plants that undergo relicensing examinations to operate an added 20 years are not required to bring those plants fully up to current safety standards.

- NRC regulations have never formally recognized the possibility of an extreme event – like an earthquake or tornado – simultaneously knocking out both on-site and off-site power at a nuclear plant, as happened at the Fukushima Daiichi plant in Japan.
- The nation's nuclear plants have "different licensing bases and associated safety margins," with variations aMong the plants depending upon their age.
- "Hardened vents" installed to protect US boiling water reactors with the same design as the Fukushima plant we e "not included in regulations" and, as a result, were not subject to regular inspections to ensure that they operate properly in an emergency.
- Key valves associated with the hardened vents "were not specifically designed for operation during a long-term station blackout" and therefore might be difficult to open in the event of a Fukushima like incident. [**Editor's note:** *The original version misstated the task force's finding on this point.*]

When new safety issues emerge, nuclear plants – old or new – undergo an NRC "back fit" review to see if additional safety requirements should be imposed, notes Edwin Lyman, a nuclear expert at the Union of Concerned Scientists, a nuclear industry watchdog group. But any back fit, unless required by existing regulations to bring a facility into compliance, must pass a cost-benefit test they often fail, ending with the recommended changes not being made, Dr. Lyman says. That position runs counter to rising concerns among international experts. A International Atomic Energy Agency, letter called for older reactors to have special oversight. If they could not meet contemporary standards, they should be closed.

At the hearing, other safety issues popped up raising questions about whether the NRC's regulatory system was as tight as it has been portrayed. Miller's testimony that the "hardened vents" were not part of an inspection regime to ensure they would function in an emergency was in contrast to NRC assurances early after the Fukushima event. "It really shows the emperor has no clothes," Dr. Lyman of UCS says. "As it turns out, Japan also had hardened vents, but had issues accessing and opening valves. Now the NRC is admitting they don't have hardened vent inspections. As a result, they haven't actually analyzed the issue of the functionality of the system in extreme events."

06/16/11 "Nuclear Never Safe" - Direct Communication to NRC & US Senate

http://www.greenpeace.org/usa/en/news-and-blogs/campaign-blog/nuclear-never-safe/blog/35323

Despite NRC testimony and the propaganda spewed by industry lobbyists, nuclear is never safe. No nuclear plant in the United States or on the planet can withstand a meltdown of the radioactive fuel rods. All of the containments will fail because they were never designed to withstand the forces unleashed by a core meltdown; they were designed to

withstand pipe break. Rather than dither over regulations that are insufficient to protect the public health and safety, the United States should follow the lead of Germany, Switzerland and Italy and begin phasing out nuclear reactors and replacing them with clean renewable energy. Managing the end of the nuclear era is a daunting task but we need to begin the transition now. We need to shutdown nuclear reactors before they meltdown and devastate the US like they have in the Ukraine and now Japan.

06/27/11 New Exposé Reveals Nuclear Regulatory Commission Colluded with Industry to Weaken Safety Standards

Democracy Now! digest@democracynow.org

Three U.S. senators called for a congressional probe on safety issues at the nation's aging nuclear plants following a pair of new exposés.

1. In a special series called "Aging Nukes," the Associated Press revealed that the U.S. Nuclear Regulatory Commission and the nuclear power industry have been working in tandem to weaken safety standards to keep aging reactors within the rules. Just last year, the NRC weakened the safety margin for acceptable radiation damage to reactor vessels.

   The nuclear industry and their government regulators have been working together to lower safety standards as aging nuclear systems and parts and plants come close to violating those standards and those rules. And that's been a pattern for decades now, and we're seeing a lot of it as these plants get older and older.

2. The AP report also revealed radioactive tritium has leaked from 48 of the 65 U.S. commercial nuclear power sites, often into groundwater from corroded, buried piping. Leaks from at least 37 of those facilities contained concentrations exceeding the federal drinking water standard—sometimes at hundreds of times the limit.

   Plants had piping buried underneath, underground, covered underground for so long the piping can't be properly inspected. It's rarely looked at carefully, visually. It's rarely dug up. And it's been so long now that a lot of that is corroding, and you have leaks, that we've documented, at three-quarters of the sites.
   - ✓ A Government Accountability Office, the congressional investigative arm, had a report released a that the Nuclear Regulatory Commission, the federal regulators say there have been either leaks or spills of tritium and other radionuclides at all the plants. Lots of cases you see other more powerful radioactive substances that do more health harm than tritium, in equal amounts, after you see the tritium

Parts or systems are coming close to the standard, even sometimes violating the standard.
Again and again standards are lowered. Regulators sometimes can't get the systems and parts back within the rules, so then they begin issuing waivers or amendments or special exceptions that still allow the nuclear plants to keep running.

GAO report points out that industry and the regulators don't really have a good handle on what's happening in those pipes and vaults and all that equipment under the ground. And they don't have technologies that allow them to see that very well. GAO report says we don't really know about how bad the leaks are and that bears on public health.

It raises questions about the integrity of the plants, about the integrity of their cooling systems. Some piping carries water that's used to cool the reactors. And in an emergency, as we saw in Japan, you desperately need that water to cool the reactors, because the radiation produces a lot of heat, and you've got to keep it cool. What do all these leaks say about the integrity of that piping and, even in a broader sense, about the integrity of a lot of parts that can't easily be seen in nuclear power plants, like all those miles of electrical cable underneath the power plants that are needed by the operators to see what's going on in the plant.

One of the biggest areas of aging difficulties has been in so-called embrittlement of the steel around the reactors. And what that means is that if you bombard something with neutrons from a chain reaction for years and years, like the one that goes on inside reactors, it gets more brittle. As it gets more brittle, it's more likely to suddenly shatter, to break. The vessels are these gigantic steel tubs that surround the chain reaction, the radioactive fuel, and they provide a shield from it, and they hold it. They keep the area around it safe. And so, over the years, they've got increasingly brittle. One reactor in the early 1990s, Yankee Rowe in Massachusetts, was closed largely because of concerns about its vessel getting brittle.

Government and regulators started to notice that reactors were approaching the embrittlement standard for the vessels, and in some cases even violating that standard. Instead of saying, "OK, what can we do to get the reactors back within the standard? Is it possible to do a process called annealing, that would make them less brittle? Is it possible to replace them?" Industry and government launched another round of research, then decided, "We can back off a little bit on the standard and allow the vessels to become more brittle." That's continued. A second round took place that just culminated in the last year or two, where they raised that safety standard again, claiming "We didn't need to be so strict." In other words, "We didn't need to be so safe. It's safe enough."

06/27/11 Fudging nuke numbers

http://news.bostonherald.com/news/opinion/editorials/view/20110626fudging_nuke_numbers/srvc=home&position=recent
By Boston Herald Editorial Staff | Sunday, June 26, 2011 | **http://www.bostonherald.com** | **Editorials**

Many aging nuclear power reactors have won extensions of their operating licenses. More are trying to. The disturbing news is that a major study by The Associated Press has found that government inspectors have been relaxing standards right and left to permit the award of extensions.

06/28/11 AP IMPACT: NRC and industry rewrite nuke history

07/27/11 Whistleblowers Say NRC Watchdog Is Pulling Its Punches. "NRC Shied Away From Challenging...When We Need Them Most"

Three former members of the Nuclear Regulatory Commission's Office of the Inspector General told ProPublica that the OIG's office has rewritten critical reports, buried other damaging reports and stopped an investigation into whether the NRC is relying on outdated methods to predict damage from an aircraft crashing into a plant.

In a report by John Sullivan and PBS Newshour's Cameron Hickey, the whistleblowers say the OIG has shied away from challenging the NRC right when we need them most in the aftermath of the Fukushima meltdown.

One whistleblower, George Mulley who was an award-winning chief investigator at the OIG, told ProPublica that a report he wrote detailed lapses by several NRC inspectors over six years and cited systemic problems in the way the NRC tries to prevent corrosion. "The revised report shifted much of the blame to the plant's owner, Exelon, instead of NRC procedures. And instead of designating it a public report and delivering it to Congress, as is the norm, the office put it off-limits."

Two other former OIG investigators told ProPublica that the OIG has become reluctant to probe anything that could become controversial or raise difficult questions for the NRC. Each asked not to be named to protect their current jobs.

Read the full account here - http://www.propublica.org/article/whistleblowers-say-nuclear-regulatory-commission-watchdog-is-losing-its-bar - and see all of ProPublica's reporting on nuclear safety here. We hope you will share this story with your audience

07/28/11 Markey: NRC Stands For "No Recommendations Considered"

It is now clear that the NRC will not act quickly to even vote on, let alone adopt, the safety upgrades recommended by some of the Commission's most senior technical staff.

"Commissioners Ostendorff, Magwood and Svinicki have made it all too clear that they believe that the Nuclear Regulatory Commission stands for "No Recommendations Considered," said Rep. Markey. "They have done this country a tremendous disservice in their collective votes to ensure that the NRC will not lead efforts to ensure the safety of the nuclear industry sector in this country, but will instead actively aid and abet the nuclear industry's dilatory efforts to ignore, perhaps indefinitely, the recommendations of the Commission's expert and dedicated staff."

By MATTHEW L. WALD
07/29/11

N.R.C. Lowers Estimate of How Many Would Die in Meltdown

The health effects of a catastrophic meltdown were hypothetical until the 1979 accident at Three Mile Island. That destroyed a billion-dollar reactor but caused no apparent physical harm to nearby residents, immediately or over time. Debate has persisted over whether the United States skirted a disaster or whether that accident was about as bad as it could get.

Edwin Lyman, a nuclear physicist with the Union of Concerned Scientists, contends that the nuclear commission has consistently painted an overly rosy picture and that its latest study does as well. He noted that the study assumed a successful evacuation of 99.5 percent of the people within 10 miles, for example. The report also assumes "average" weather conditions, he noted. But if a rainstorm were under way during a release of radioactive materials, he said, it could wash contaminants out of the air into a small area, producing a high dose there.

Jennifer L. Uhle, the deputy director of the commission's office of nuclear regulatory research, said the report was intended to present the "best estimate" and not the worst case.

Dr. Lyman said the earlier estimate was of a different accident, a major pipe break. The new study considered that accident too unlikely to analyze.

Dr. Lyman suggested that in projections of fatal cancer cases, the focus should be on people who live within 50 miles. The average population within 10 miles of an American nuclear plant is 62,000; within 50 miles, it is about five million.

The commission's old projection of eventual cancer deaths was one for every 2,128 people exposed within 50 miles; the new study projects one cancer death for every 6,250 people exposed, which still comes to hundreds of cancer deaths within the 50-mile circle, in addition to the hundreds of thousands who would be expected to die of cancer from other causes.

Dr. Lyman countered that when dealing with estimates based on so many variables — including more than 100 reactors of different designs and vintage, in areas with disparate population densities — a difference of a factor of three is not important. In his view, the study

07/30/11 **UPDATE: US Nuclear Industry Group Backs 5-Year Timeline For Safety Changes (nasdaq)….who's in charge ????**

By Ryan Tracy Of DOW JONES NEWSWIRES http://www.nasdaq.com/aspx/stock-market-newsstory.aspx?storyid=201107261325dowjonesdjonline000358&title=updateus-nuclear-industry-group-backs-5-year-timeline-for-safety-changes

UPDATE: US Nuclear Industry Group **Backs 5-Year Timeline For Safety Changes**

-- Industry group chief supports some changes, questions others
-- Nuclear group CEO Fertel: near-term costs 'not terribly expensive'
-- Fertel: nuclear agency should decide how to proceed by end of week
(Updates throughout including additional background starting in fourth paragraph and additional comment from Fertel starting in fifth paragraph.)

Populations around some nuclear plants have swelled as much as 4 1/2 times since 1980, but some estimates of evacuation times have not been updated in decades. Meanwhile, aging reactors have been operating at higher power, risking larger radioactive releases.

An NRC task force recommended a series of changes last month to increase protection at U.S. nuclear sites, including better response to prolonged power blackouts or damage to multiple reactors. The commission set an Oct. 3 deadline for staff to recommend action on 11 of 12 task force recommendations. Staffers were given 18 months to consider a broader recommendation to revamp the agency's overall approach to regulation and safety.

09/02/11 Nuclear Energy Advocates Insist U.S. Reactors Completely Safe Unless Something Bad Happens

http://www.theonion.com/articles/nuclear-energy-advocates-insist-us-reactors-comple,19740/ - UCS and the ONION -eerily similar in interpretation of NRC's reckless, unsubstantiated reassurances about U.S. nuclear plants.
WASHINGTON- Nuclear Regulatory Commission sought to reassure nervous Americans that U.S. reactors were 100 percent safe and posed absolutely no threat to the public health as long as no unforeseeable system failure or sudden accident were to occur. "With the advanced safeguards we have in place, the nuclear facilities in this country could never, ever become a danger like those in Japan, unless our generators malfunctioned in an unexpected yet catastrophic manner, causing the fuel rods to melt down," said NRC chairman Gregory Jaczko, insisting that nuclear power remained a clean, harmless energy source that could only lead to disaster if events were to unfold in the exact same way they did in Japan, or in a number of other terrifying and totally plausible scenarios that have taken place since the 1950s. "When you consider all of our backup cooling processes, containment vessels, and contingency plans, you realize that, barring the fact that all of those safety measures could be wiped away in an instant by a natural disaster or electrical error, our reactors are indestructible." Jaczko added that U.S. nuclear power plants were also completely guarded against any and all terrorist attacks, except those no one could have predicted.

09/16/11

WSJ-Financial Pressure Reduced E'quake Standards

"We were under a lot of pressure to ease up on standards from nuclear-plant engineers who felt the 2006 revisions were too strict and weren't practical or economically feasible for commercial reactors," he said..... While industry pushed the standard-setters to ease up in 2006, some critics at the time said they were too lenient.

"We didn't focus on worst-case scenarios, but rather what were believed to be the most likely outcomes," said Mr. Irikura, 71, who coedited a book on advanced seismic-hazard assessment published earlier this year. "The risk of outliers like tsunamis was evaluated, but our advice...was that plant operators should be aware of these—not necessarily to expect them to occur."

NRC's Failure To Value Human Life and The Environment By Taking Immediate Action Is Mind-Boggling, Given Documented Evidence Of Increased Risk.

The risk that an earthquake would cause a severe accident at a U.S. nuclear plant is greater than previously thought, 24 times as high in one case, according to an AP analysis of preliminary government data.

The nation's nuclear regulator believes a quarter of America's reactors may need modifications to make them safer.

Limerick is among 27 in the eastern and central U.S. that a preliminary Nuclear Regulatory Commission review has said may need upgrades.

Those plants are more likely to get hit with an earthquake larger than the one their design was based on. It is negligent for NRC to allow and wait for operators to recalculate their own seismic risk.

- **SELF-EVAULATING BY THOSE WITH A VESTED INTEREST IN THE OUTCOME IS INSANITY, ESPECIALLY WHEN AN APOLOCLYPTIC OUTCOME IS IN THE BALANCE.**

The truth about nuclear plant disasters has been distorted and hidden by the industry, their regulators, supporters, and even the corporate owned media. Documented facts below make it clear that NRC should consistently require all the most stringent fire safety regulations to be followed without exceptions, to prevent a nuclear plant disaster.

- **THE TRUTH MUST BE TOLD FOR PRECAUTION AND PREVENTION!**

We simply can't afford a disaster at Limerick Nuclear Power Plant, in human, environmental, or financial costs. It is unacceptable for NRC to continue to be evasive about Limerick Nuclear Power Plant's full compliance with all of the most protective, stringent regulations.

Think What A Meltdown Would Mean At Limerick Nuclear Plant

Limerick Nuclear Plant Accident Calculations - Reported to Congress in 1982
Accident Statistics Calculated For Limerick Nuclear Plant - 1980 numbers

- ✓ 74,000 Early Fatalities
- ✓ 610,000 Early Injuries (most for any U.S. reactor)
- ✓ 34,000 Cancer Deaths

Numbers above from 1980 would be more than double today.
2000 Census Shows Limerick Area Population Growth

- ✓ 1980'S 26 % INCREASE
- ✓ 1990'S 102% INCREASE

POPULATION HAS INCREASED BY 183% SINCE 1980.

Estimated Costs For An Accident or Terrorist Attack At Limerick In 2004 Dollars
$417 Billion – Limerick 1 $386 Billion – Limerick 2

COSTS ARE NOW ESTIMATED AT OVER $1 TRILLION

EVERY PRECAUTION SHOULD BE TAKEN NOW, INCLUDING CLOSING LIMERICK

LIMERICK CAN'T BE MADE FAILSAFE

There Is Too Much At Stake For Too Many People!

- **Over 8 Million People Live Within 50 Miles Of Limerick Nuclear Plant**
- **Philadelphia Is Just Over 20 Miles Downwind, Downstream**
- **Limerick's Evacuation Zone Should Be 50 Miles – NOT 10**

History Shows A 10-Mile Evacuation Zone Is Not Protective.

- **Residents Within 50 Miles Of Fukushima Were Told to Evacuate or "Shelter In Place".**

Safe Evacuation Is An Illusion

- Traffic Gridlock Even In Rush Hour Shows Why
- There Is Not Enough Shelter and Supplies
- In The 10 Mile Zone There Has Been Enormous Population Growth Since 1980
  183% INCREASE in Population From 1980 to 2010 (2000 and 2010 Census Data)

Summarizing the facts, Limerick's Earthquake Risks Should Justify Closing Limerick.

1. Risk of damage at Limerick Nuclear Plant was increased by 141%.

2. Limerick is ranked 3rd in the nation for nuclear plants at the highest risk of becoming damaged from earthquakes.

3. TWO fault lines are dangerously close to Limerick Nuclear Plant.
   - ✓ 9 Miles East of Limerick – Chalfont Fault
   - ✓ 17 Miles Northwest of Limerick –Ramapo Fault

   It is alarming to know there are two fault lines this close to Limerick Nuclear Plant, knowing the VA earthquake so far away caused shaking and concern at Limerick.

4. Limerick Nuclear Plant is one of 27 nuclear plants more likely to be hit by earthquakes that cause ground shaking exceeding design parameters, according to a NRC preliminary review. There is a good chance that an earthquake can exceed Limerick's "design basis", and cause a severe accident, risking a Limerick nuclear meltdown disaster and the health and safety of our entire region.

5. The 8-23-11 Virginia Earthquake caused 25 North Anna massive nuclear spent-fuel storage casks to move on their concrete pads. Each weighed 115 tons. (Reported 8-31-11 in Richmond Times-Dispatch) What happens if there is internal combustion or leaking from Limerick's casks, and an earthquake has made it impossible to remove the rods from the casks?

6. Imagine what happens from an earthquake to the miles of underground pipes and cables, when above ground casks weighing 115 tons each are moved.

7. A key mechanism to safely shut down Limerick in the event of an earthquake or other disaster was found faulty. (Reported 10-5-11 Pottstown Mercury). North Anna was able to be shut down safely 8-23-11, but Limerick is a different nuclear plant design that might not be able to shut down safely when an earthquake hits. NRC apparently has no intention of actually dealing with this in a meaningful way.