

OPSMPEm Resource

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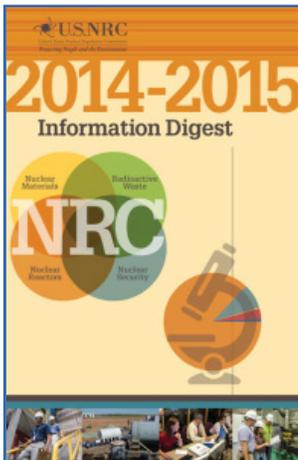
U.S. NRC Blog

Archive file prepared by NRC

The NRC Information Digest Knowledge Hunt

posted on Tue, 02 Sep 2014 15:15:33 +0000

Ivonne Couret
Public Affairs Officer



Today marks the debut of the 26th edition of the [NRC Information Digest](#) — an award winning publication that provides a summary of information about us and the industries we regulate. The Digest is used by a wide array of people, including the public, industry stakeholders, government agencies and the media. It strives to provide a handy primer of the agency's regulatory responsibilities and licensing activities. The Digest includes some of the quick facts and short answers to commonly asked questions about the NRC. Here are some of the questions for which you can find answers in the Digest.

1. What is the statutory authority that created the independent NRC from a portion of the former Atomic Energy Commission and what day did this agency begin its operation? *Hint - NRC: An Independent Regulatory Agency section, page 4*
2. What is the renewal date for our international agreement with the United Kingdom? *Hint - U.S. and Worldwide Nuclear Energy section, page 23*
3. How many current operating nuclear reactors are there and in what section can you find a listing of the operating nuclear reactors and their general licensing information? *Hint - Nuclear Reactors section, page 33*
4. What is the total number of material licenses in NRC Jurisdiction? *Hint - Nuclear Materials section, page 65*
5. What are the names of the nuclear reactors currently undergoing decommissioning in DECON status? *Hint - Radioactive Waste section, page 95*

We're always interested in what you have to say about the Info Digest as we continue to work to make it better and more useful. Let us know with your comments below or send us an email at opa.resource@nrc.gov. *Answers:*

1. *The Energy Reorganization Act of 1974 created the NRC from a portion of the former Atomic Energy Commission. The new agency was to independently oversee—but not promote—the commercial nuclear industry. The agency began operations on January 18, 1975.*
2. *2018*
3. *100 reactors and Appendix A begins on 116*
4. *2,857*
5. *LaCrosse, Zion 1 & 2 and Humboldt Bay 3*

Comments

comment #465241 posted on 2014-09-03 12:10:56 by Jeff Mitman

It would be great if there was a version for specifically formatted for iPhone and Android smart phones.

comment #465269 posted on 2014-09-03 12:43:22 by Moderator in response to comment #465241

We are working toward that! Ivonne Couret

comment #464458 posted on 2014-09-02 14:52:19 by Moderator in response to comment #464456

There are two ways you can download the document. You can download the entire 22.5mb PDF file, which is the link on the page that looks like this: NUREG-1350, Volume 26 (PDF - 22.5 MB). Or you can download only the sections you are interested in, which are the subsequent bullets. Moderator

comment #464456 posted on 2014-09-02 14:46:00 by CaptD

How about posting a link for the entire document so readers can access it via the web instead of having to download multiple pdf documents?

“Continued Storage” – What It Means and What it Doesn’t

posted on Thu, 04 Sep 2014 13:07:36 +0000

David McIntyre
Public Affairs Officer

UPDATE: The NRC’s final rule on the continued storage of spent nuclear fuel was [published in the Federal Register](#) on September 19, 2014, becoming effective October 20. The final Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel is [available on the NRC website](#). There has been some confusion in media reports about the purpose of the NRC’s new [rule](#) on continued storage of spent nuclear fuel. The rule, approved by the Commission August 26, will be published soon in the *Federal Register* and take effect 30 days later. The continued storage rule specifically deals with the period of time *after* the reactor has ceased operating. The rule adopts the NRC staff’s assessments of the environmental effects of storing spent nuclear fuel at a reactor site for various periods of time *following* the reactor’s licensed life for operation. It adopts the conclusions of the agency’s [Generic Environmental Impact Statement](#) (GEIS) on the Continued Storage of Spent Nuclear Fuel, also approved August 26 by the Commission.

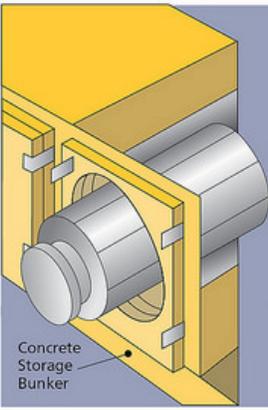
Dry Storage of Spent Nuclear Fuel

At some nuclear reactors across the country, spent fuel is kept onsite, typically above ground, in systems basically similar to the ones shown here.

1 Once the spent fuel has sufficiently cooled, it is loaded into special canisters that are designed to hold nuclear fuel assemblies. Water and air are removed. The canister is filled with inert gas, welded shut, and rigorously tested for leaks. It is then placed in a cask for storage or transportation. The NRC has approved the storage of up to 40 PWR assemblies and up to 68 BWR assemblies in each canister. The dry casks are then loaded onto concrete pads.



2 The canisters can also be stored in above ground concrete bunkers, each of which is about the size of a one-car garage.



For each new reactor, license renewal application, and storage facility specific license or renewal, the NRC performs a thorough safety review of reactor operations and spent nuclear fuel management at the site. Separately, the National Environmental Policy Act requires the NRC to perform an environmental analysis of each licensing action, which considers impacts on the surrounding environment. The continued storage rule, when implemented, will allow the NRC to process license

applications and renewals for nuclear reactors and spent fuel storage facilities without assessing the portion attributed to the *environmental impacts of continued storage*. This is because such impacts have now been generically assessed by the NRC in the GEIS. The GEIS analyzed three scenarios:

- A geologic repository for disposing of spent fuel becomes available 60 years following the licensed life of a reactor (short-term storage);
- A repository becomes available 100 years beyond the short-term scenario, or 160 years after the licensed life of a reactor (long-term storage); and
- A repository never is available (indefinite storage).

In evaluating the third scenario, the GEIS assumed that licensee control and regulatory oversight, or “institutional controls,” will remain in place to ensure the safety and security of the waste as long as needed. The short-term and long-term scenarios reflect current U.S. policy that spent nuclear fuel will be disposed of in a deep geologic repository. The indefinite storage scenario is included because the Appeals Court that struck down the earlier version of the rule directed the NRC to consider the possibility a repository may never be built. The rule is *not* a safety decision or licensing action for any site; it does not authorize the initial or continued operation of any nuclear power plant, and it does not authorize storage of spent fuel. The NRC licenses spent fuel storage through other means: Spent fuel pools are covered by a plant’s operating license, and dry cask storage is permitted either through a general license or a separate license, with licenses or certificates for casks issued for up to 40 years. Media headlines proclaiming that nuclear waste will be stored in place indefinitely under this rule, or that safety controls on spent fuel storage will be weakened, do not accurately reflect the rule’s purpose or effect. Ultimate responsibility for the disposition of spent fuel lies with Congress and the [Department of Energy](#). DOE’s most recently stated goal is to have a repository available by 2048. The NRC is committed to ensuring that spent fuel remains safe and secure, wherever it is stored or disposed.

Comments

comment #466514 posted on 2014-09-04 21:59:20 by dick0645

Get real! The only storage will be Forever On-site Storage and you know it. AKA how to make every US nuclear power plant site a juicer and juicer terrorist target. There are other countries you know who are storing their high level waste responsibly in safe permanent repositories. Thanks for compromising our national security and our public safety.!

comment #467965 posted on 2014-09-06 14:29:15 by CaptD

Continuous Storage is a more realistic name, since this will insure that any 60 year nuclear power plant (NPP) will become a 100 year profitable installation for whoever can get them built while at the same time all the expenses (and there will be plenty of billion dollar expenses if San Onofre NNP is any example) will be paid by the Utility ratepayers. Since Solar Development is just getting started, the above ratepayers are going to be really unhappy in the future, since the price of Solar will continue to drop, which will make NPP's ever more expensive, and that is if everything goes according to plan, which we all know is not always the case. Here is just an example of the above, while Big Utility still has political control over ratepayers: Japan/Westinghouse, Blue Castle sign two-unit AP1000 deal - See more at: http://analysis.nuclearenergyinsider.com/supply-chain/westinghouse-blue-castle-sign-two-unit-ap1000-deal?utm_campaign=NEI%20Newsletter%2003SEPT14&utm_medium=email&utm_source=Eloqua&elq=c4282bf763224101ab00aff1c84bb7a9&elqCampaignId=304

comment #491678 posted on 2014-09-11 10:29:35 by Clint Wolfe in response to comment #466514

Perhaps Dick would share with us his source supporting his comment.

comment #480310 posted on 2014-09-08 18:46:57 by RKWilson

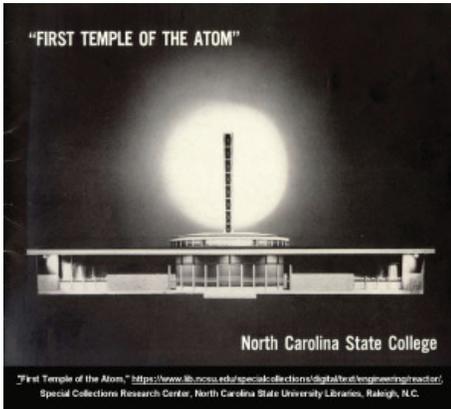
You need to recall Harry Reid and get yucca mountain working, it is a lot better than storing it around the country near flooding rivers, terrorists, and tsunamis. Good grief, what are you thinking????

Part I -- The First Temple of the Atom: The AEC and the North Carolina State Research Reactor

posted on Mon, 08 Sep 2014 14:30:25 +0000

Thomas Wellock
NRC Historian

In January 1955, *Newsweek* reported, “It is the envy of thousands of scientists and hundreds of college presidents. It has made Raleigh, North Carolina’s capital, an atomic mecca, attracting such disparate types as President Celal Beyar of Turkey, a band of junketing North Carolina peanut growers, some German school teachers, as well as a procession of industrialists from all over the world.”



All had come to see the world's first research reactor open for public view at North Carolina State College (NC State). Proposed by NC State in 1950, the reactor was an audacious idea when the most basic information about the fission process was a Cold-War secret. Industry and universities were unwilling to pursue civilian applications of nuclear energy that required expensive security clearances. Where others saw obstacles, Clifford Beck spied an opportunity. A physicist at NC State, Beck proposed to the Atomic Energy Commission the nation's first nuclear engineering program built around a declassified reactor. His timing was perfect. The announcement in September 1949 that the Soviet Union had exploded an atomic bomb tipped the debate within the AEC toward those who favored declassifying atomic secrets. Former AEC Chairman David Lilienthal called on the AEC to "free the atom" for U.S. industrial use. AEC officials were elated with Beck's proposal since it provided them with a concrete reason to declassify reactor information. They assured him they were "practically unanimous" that it would be approved. In late 1950, the AEC made public for the first time information on fission research and small research reactors, including the NC State reactor. Taking advantage of its status as the world's only public reactor, NC State included a viewing auditorium with thick water-shielded windows so the public could see nuclear energy was, as Beck claimed, "just another type of tool, not something mysterious and super-secret." In the first year of operation, the reactor had more than 6,000 visitors who came to see a reactor that was "guarded by nothing more than a physics student with a guest book." One intrigued journalist dubbed it "The



First Temple of the Atom." [caption id="attachment_5692" align="alignleft" width="300"] NC State Observation Room[/caption] Ending secrecy cleared only the first hurdle for NC State. The AEC had to confront difficult safety and security questions. In 1950, the 1946 Atomic Energy Act strictly limited uses of fissionable material. How could the agency provide bomb-grade fuel to a civilian reactor? How could it prevent sabotage of an unguarded reactor? How could the AEC ensure safe operation on a densely populated college campus? And who in the AEC should approve the reactor? In answering these questions, the agency foreshadowed many of the later practices it followed in licensing nuclear power reactors. We will turn to that story on Wednesday.

Comments

comment #485891 posted on 2014-09-09 09:08:10 by

This is NRC at work? Give me a break. I don't need an NRC historian. Who pays for this? Licensees?

comment #500213 posted on 2014-09-12 09:14:33 by Garry Morgan in response to comment #488507

Nuclear regulators talking about a religious experience concerning atomic energy does not instill faith in the regulator. Why not just discuss the subject without the imposition of delusional thinking. The delusional thinking is also reflected when the NRC traveled to Fukushima. Not once did our regulatory authorities say what actually occurred in their video report, the meltdown and subsequent contamination of Japan, the Pacific Ocean, and the disaster still continues to this day. From a Human Reliability standpoint, the NRC has a serious problem which leads to distrust as a result of expressed delusional thinking. It has been noted that this type of thinking, "temple of the atom delusion," has been witnessed at various universities providing instructions on nuclear physics., it is dangerous way to approach nuclear energy. For the regulator to pander such nonsense reflects negatively on the NRC.

comment #488507 posted on 2014-09-10 06:51:50 by Olaf

Why do you all attack the article? History is also very useful information. And it's now we can discuss the ways of making the atomic energy more accessible and more protected, reusable and stable. But that time it was very hard to predict the aftermath of AEC operation. It was like a deal with paranormal phenomena, something like religion. That's why article named such way I think.

comment #479516 posted on 2014-09-08 15:11:15 by Garry Morgan

First Temple of the Atom? Give me a break, nuclear reactors are not temples, they are engineered machines which require extensive maintenance and operations by qualified scientists, operators, engineers and regulators. The relegation of nuclear power to a religious like status is propaganda and reflects delusional thinking. Not where the public needs their regulator to go, or for that matter nuclear physics students.

comment #479242 posted on 2014-09-08 13:47:35 by CaptD

And so began the Install Nuclear on Campus Program that provided money to Colleges so that they could also join the Nuclear Campus Club.

comment #756103 posted on 2014-10-16 12:13:38 by Garry Morgan

Speaking of religious endorsements of nuclear power and the "First Temple" concept - this directly refers to "Solomon's Temple," a Jewish Temple. Reference - http://www.jewishvirtuallibrary.org/jsource/Judaism/The_Temple.html Is the NRC endorsing the Jewish religion? Or maybe the NRC is endorsing Christian Protestantism as a religion since they hold NRC meetings regarding the Sequoyah Nuclear Plant at the Soddy Daisy City Hall and on the wall at Soddy Daisy, Tn. City Hall above and to the right of the NRC hand out table is a display of the Protestant 10 Commandments. Since the NRC's title of this article in part states "The First Temple" the question comes to mind: Is the NRC endorsing a religion in nuclear power as it relates to Jews or Christians exclusively in violation of the First Amendment of the U.S. Constitution. Maybe it is North Carolina State that is endorsing a religious preference. Whichever, the endorsement of any religion as it relates to nuclear power is contrary to rational thought and the First Amendment of the United States Constitution. Then again, we would not be having this discussion if Stewardship Principles of religious teachings were practiced; the destructiveness of atomic power is contrary to any peaceful religious practice except devil worship. Maybe that is what the First Temple represents - death and demise of humanity. Is that the meaning of your temple, NRC? You and N.C. State may want to reconsider your endorsement of the Atom's "First Temple." The beginnings of nuclear power was and is directly related to nuclear weaponry. "Trinity" - "I have become death, the destroyer of worlds," quote by Robert Oppenheimer. Like the "Atom's For Peace" (AFP) program, this article, and the AFP program are propaganda to support the trillion dollar nuclear industry.

Part II: Ensuring Safety in the First Temple of the Atom

posted on Wed, 10 Sep 2014 15:12:11 +0000

Thomas Wellock
NRC Historian



As noted in Part I of this story on the NC State research reactor, the Atomic Energy Commission (AEC) was very anxious to promote the world's first civilian reactor. But its enthusiasm was tempered by the challenge of placing a reactor safely on a busy college campus and developing an approval process for non-AEC reactors. The AEC turned to its Reactor Safeguard Committee, the forerunner of today's Advisory Committee on Reactor Safeguards. The Committee was formed in 1947 to evaluate the safety of new reactors proposed by AEC laboratories and contractors. "The committee was about as popular—and also necessary—as a traffic cop," recalled Safeguard Committee Chairman Edward Teller. The Committee's most significant contribution was establishing a conservative approach to safety given the engineering uncertainty of that era. "We could not follow the usual method of trial and error," Teller said. "The trials had to be on paper because the actual errors could be catastrophic." The Committee developed a "simple procedure" of challenging a reactor designer to write a "hazard summary report" that imagined the worst "plausible mishap"—soon known as a "maximum credible accident"—and demonstrate the reactor design could prevent or mitigate it. [caption id="attachment_5698" align="alignright" width="630"]



Five NC State physics professors designed

the reactor. Here, in the reactor control room, (left to right front row) are Clifford K. Beck and Arthur C. Menius, Jr. Standing is Newton Underwood, three unidentified students, Arthur Waltner and Raymond L. Murray. [caption] The Committee focused on several hazards, including a surge in the chain reaction called a reactor “runaway,” a catastrophic release of radioactive material from fire, sabotage, or an earthquake, and hazards from routine operation that might result from leaks or inadvertent exposures. The Committee asked NC State to address these concerns in a “hazards summary report.” To meet the Committee’s desire for inherent safety, NC State proposed a “water boiler” reactor, which was believed to have “student-proof” safety margin given its strongly “negative coefficient” of reactivity that limited greatly the possibility of a runaway. NC State also developed interlocks and an extremely dense concrete shielding to discourage sabotage. In order for NC State to commit the funds to such a long-term project, it needed an early approval. This created a dilemma since the college did not yet have a detailed, complete design. The AEC used a two-step conditional approval that was similar to its later construction permit/operating license process. In step one, construction did not begin until NC State addressed the most important design safety issues. When it did, the AEC agreed by contract to supply enriched fuel. The fuel was not delivered, however, until NC State resolved all outstanding safety questions and a final inspection took place. With that, the first civilian reactor in history went critical in September 1953. The AEC approach to safety at NC State foreshadowed many later regulatory practices. As important as the 1954 Atomic Energy Act is to current regulatory practice, it is interesting to see that many of the critical elements have even deeper roots back toward the beginning of the atomic era.

Comments

comment #498502 posted on 2014-09-11 23:27:45 by Garry Morgan

Did they worship the atom in the first temple? "Temple" definition - noun, a building devoted to the worship, or regarded as the dwelling place, of a god or gods or other objects of religious reverence. How does human reliability relate to the delusional religious status bestowed on this so called "temple?"

comment #488685 posted on 2014-09-10 11:35:33 by dick0645

A conservative approach to safety is as this article explained a crucial original founding principle. So were the early nuclear power plant so-called General Design Criteria (GDC). These design criteria are the holy grail of nuclear power plant safety. Why then does the NRC allow nuclear power plants to operate in clear violation of them?! The latest example is the situation at the Fort Calhoun Nuclear Station in NE. If a Missouri River flood event of sufficient magnitude occurs, a single active failure of one component at the plant will result in the complete loss of a safety system. This is in direct conflict with one of the general design criteria. Please explain how this demonstrates a conservative approach to nuclear safety?!

comment #489002 posted on 2014-09-10 18:17:19 by CaptD

Notice all the cooling grills in be rear of the cabinetry that housed al of what are now referred to as "steam gages". Another interesting thing to note in this picture is that the Prof.'s all are wearing white shirts and neck ties while the students are not. Training in the nuclear "class" system started early for all those seeking to be accepted into the ♣ circle.

comment #489004 posted on 2014-09-10 18:23:19 by CaptD in response to comment #488685

dick0645 - Back in the day, nuclear safety was much more important as compared to now because the nuclear industry now believes that they have less to fear since they have not yet had any Fukushima's in the USA and if they do them the Price-Anderson Act will protect them and their shareholders from being responsible for it. In short, they have nothing to fear, unlike the rest of us.

comment #517462 posted on 2014-09-16 20:49:57 by James C. Brittingham

I was a nuclear engineering student at North Carolina State from September 1960 through August 1965. I don't recall anyone referring to the reactor building as the First Temple of the Atom.

Be Aware, Take Action to Prepare

posted on Tue, 16 Sep 2014 14:07:04 +0000

Patricia Milligan
Senior Level Advisor for Emergency Preparedness



September is National Preparedness Month, a time each year to reflect on the importance of knowing what to do before, during and after an emergency. The first step in preparing is to know your hazard. Once you do, [FEMA](#) has a wealth of [resources](#) to help you plan. If you live near a nuclear power plant, you probably know it has operated safely and securely for decades. You should still be prepared in the unlikely event of a plant emergency. The two most important things to know are: 1) if you hear a siren or alert, tune in for instructions from state or local officials, and 2) follow those instructions. A key part of the NRC's mission is to make sure adequate plans are in place to protect the health and safety of the public. We require plant operators to develop emergency preparedness plans and regularly practice carrying them out in emergency exercises that include first responders and local and other federal government agencies. These exercises test the skills of those who would respond in a real emergency and identify any areas that need to be addressed. We assess the operators' performance during exercises. As part of our regular inspections, we also make sure the operators' emergency plans meet our requirements and are capable of protecting the public. While the NRC holds to operator to account for their on-site performance, FEMA evaluates how well the offsite response organizations perform during exercises to ensure that they are meeting FEMA requirements. If you live near an operating nuclear power plant, you should already know whether you work or reside in the "Emergency Planning Zone." This information would come from your state or local government. You could also receive an annual mailing from the plant. The exact zones and their configurations depend on a number of factors, such as specific site conditions, population and local emergency response. In the event of an emergency, the plant operator will be in close contact with state and local officials, including emergency responders. Local officials, not the NRC, will make decisions regarding the best course of action. These decisions will factor in technical information about the plant and the weather, as well as other details regarding local emergency plans. That is why it's important to tune in to their instructions. It is important to keep in mind that evacuation is not always the best course of action. Depending on your location, you may or may not be advised to take potassium iodide as a way to protect your thyroid. State and local officials are in the best position to make these decisions, so do not take action until you receive instruction from them. If you want more information on emergency planning, see our [website](#). For more information on National Preparedness Month, check out this [website](#). And don't forget that FEMA has set aside Sept. 30 for [America's PrepareAthon](#), an opportunity for everyone to prepare for specific hazards that might affect them.

Comments

comment #516419 posted on 2014-09-16 11:54:46 by richard123456columbia

If the cause of the emergency takes out power to the communications what should one do. Should the elderly or injured in nursing homes or hospitals be moved. When it is required to evacuate how could this be done in high populated areas. The statement of staying in place makes me think that will be the orders from now on because it will be the safest compared to being on foot after the traffic jam. The best would be to get as far away from the plant because pro nukes say the radiation disperses with distance(I do not believe that). Still the best would be far away where the radiation will not get to.

comment #517074 posted on 2014-09-16 16:43:54 by Moderator in response to comment #516419

The licensee must be able to contact local, state, and federal officials in an emergency, even when the power goes out. The licensee would use backup means to notify offsite responders and alert them to the need for public protective actions. The responders would activate the alert and notification system to notify the public. Offsite responders also have a backup means of alerting the public should it be required—generally by public service vehicles driving through communities and providing warnings with loud speakers but also including other methods such as Reverse 911™. Neither of these backup means of communication require AC power from the local utility. The Federal Emergency Management Agency evaluates the primary and backup alert systems. Each jurisdiction in the emergency preparedness zone develops and maintains emergency plans and procedures for implementing protective action for all segments of the population. These procedures provide for actions to protect residents of nursing homes, patients in hospitals, students in schools, people with mobility constraints and visitors. Annually, offsite responders provide public information mailings that

explain what to do if an evacuation is ordered. FEMA evaluates these plans. The licensees and responders work together to establish protective action recommendations and decisions for the emergency planning zone. In an emergency, the licensee would recommend protective actions to offsite responders, who would evaluate, and possibly change, the recommendation—whether it’s sheltering in place, evacuation, or administration of potassium iodide to protect the thyroid. The most important action on the part of the public is, when alerted, to continue to listen to local radio and TV stations for instructions from local officials, then act on those instructions. Local officials will have the best information about the location of any radioactive material released in an emergency, and the concentrations of that material in different locations. Those concentrations will depend on a number of factors – including wind speed and direction and distance. That information is an important consideration in any public protection actions that would be recommended. For example, officials might order an evacuation from certain areas but not from others. It is essential that people listen for these recommendations and follow them—to minimize unnecessary traffic tie-ups and ensure those in the areas with the greatest potential risk can move to safer locations. Stephen LaVie, Senior Emergency Preparedness Specialist

comment #517107 posted on 2014-09-16 17:09:46 by dick0645

Yes we need to be aware so we can take appropriate action. To be aware we need to be informed. How can we be informed if you keep secrets from us?! For example, the NRC and the Army Corps of Engineers have info on just how bad flooding would be on the Missouri River if old earthen dams fail. Why is this need-to-know info being kept from us?!

comment #517165 posted on 2014-09-16 17:39:35 by richard123456columbia

If I understand this right, a emergency happens no one is told about it till a group in charge finds out the wind direction from 10ft to 20,000ft(I do not know how) because an explosion lifts material high into the atmosphere. Also wait for readings to analyze the danger and if there is danger send trucks out with bull horns telling people to evacuate the area as the streets fill up with cars that may prevent the bull horns from moving because the public is calling friends and relatives all over the city that they are told to evacuate. This seems silly to me,.

comment #517296 posted on 2014-09-16 19:04:22 by CaptD

What plan does the NRC have should the USA suffer a massive Solar Flare or EMP "strike" caused by Nature or man? Are our reactors and all their control systems "hardened" against EMP (like military aircraft) and if not, why not?

comment #520589 posted on 2014-09-17 09:35:27 by Dan Williamson in response to comment #517074

Mr. LaVie, I appreciate your diligence in providing a comprehensive answer to the anonymous commenter. But since, by his own confession, his ideological blindness has trumped the ability to understand a basic law of physics (it’s not just something dreamed up by the “pro nukes”), I’m afraid you’re engaged in a futile effort. His assigned mission for the day has been fulfilled in the contamination of this posting and delivery of yet another FUD bomb – botched grammar notwithstanding.

comment #520788 posted on 2014-09-17 10:11:00 by Moderator in response to comment #517296

We discussed this issue in a blog post here: <http://public-blog.nrc-gateway.gov/2011/10/31/keeping-u-s-reactors-safe-from-power-pulses/> Since that was posted several years ago, we'll look at updating the information and putting up a future blog post on the subject. Moderator

The Latest Chapter in Diablo Canyon’s Seismic Saga

posted on Fri, 12 Sep 2014 18:21:34 +0000

Lara Uselding
Public Affairs Officer, Region IV

Scott Burnell
Public Affairs Officer, HQ

Today, the NRC is looking over a 1,400-page report produced by the owners of the [Diablo Canyon](#) nuclear power plant for California state officials who had asked for new seismic information about the plant. Specifically, Pacific Gas & Electric produced the report to meet part of a 2006 California law, [California Assembly Bill 1632](#). PG&E shared the report with the NRC as they’re required to do as part of the plant’s existing long-term seismic research program. Earlier research examined the Shoreline fault, just offshore of Diablo Canyon. Both PG&E and



the NRC had previously concluded, in [2009](#) and [2012](#), the fault could only generate a quake weaker than one from the Hosgri fault, which Diablo Canyon is designed to safely withstand. For the new report, PG&E performed state-of-the-art surveys of faults near the plant, including the Shoreline fault. The new report’s more detailed information and updated analysis indicates the Shoreline fault is both longer than previously thought and able to produce a slightly stronger earthquake. As part of its NRC requirements, PG&E must assess the report’s impact on plant operations. NRC Resident Inspectors and Region IV staff experts have already looked at PG&E’s

assessment and so far the information provides confidence the plant can keep the public safe after a seismic event. While PG&E's new seismic information adds detail about the faults in the plant's immediate vicinity, the company's evaluation claims an earthquake generated by movement on the Shoreline fault would not be as energetic as previous studies say a Hosgri-generated earthquake would be. Just as with the earlier Shoreline fault reports, the NRC will thoroughly review the new information through our existing oversight methods. The agency will take whatever action is appropriate if our review questions PG&E's conclusions. PG&E will also use this new information as it re-evaluates its overall seismic hazard as part of the NRC's [response](#) to the 2011 Fukushima nuclear accident. PG&E's re-evaluation is due to the NRC in March 2015. The NRC remains committed to integrating new information into our understanding of safety at all reactors.

Comments

comment #549654 posted on 2014-09-22 14:14:59 by Vinod Arora

Preliminary Opinion of AVP Arora International (Public Charity) on Diablo Canyon Power Plant Seismic Issues for the benefit of Northern Californians, CPUC, DSCC, PG&E and NRC (To be updated) From: Vinod K. Arora, California P.E. (CA- Mechanical) MS Engineering, BS Chemical Engineering President, AVP Arora International (IRS Approved Public Charity) Former San Onofre Engineer/Nuclear Oversight Auditor Former San Onofre FP/EP/Hazards Barrier Engineer Former San Onofre 10CFR 50.59/Operability Engineer Former Rancho Seco/Vogtle HELB/Flooding Analysis/FP/50.59 Engineer Former Member of the Society of Fire Protection Engineers Former Shift Chemical Engineer, Century Chemicals, India Conclusions: Based on a comprehensive review of IAEA, FEMA, NRC, ASME Rules/Data, PG&E Diablo Canyon Power Plant (DCPP) advanced seismic study documents, world-wide benchmarking of earthquake data and numerous operability/10CFR 50.59 Screens conducted on San Onofre degraded, non-conforming and unanalyzed conditions for SSCs, AVP Arora International concludes that NRC & PG&E updated Diablo Canyon Power Plant seismic analysis, operability evaluations and studies meet the intent of federal regulations and are more logical and technically convincing/robust than personal opinions reported by Dr. Peck in his DPO. The NRC rules and inspection procedures are very clear for seismic qualifications, operability determinations, use of safety, engineering & code margins, alternative analyses approaches and use of professional engineering judgment. All the issues regarding the design basis, technical, operating and licensing violations for seismic criteria and "circular logics" pointing to the non-performance of NRC's Prejudiced Special Panel and bending NRC Rules at DCCP cited in Dr. Peck's Report and Response have been addressed more than satisfactorily by NRC. It seems like NRC Region IV is learning from its San Onofre RSGs Catastrophic Design/Regulatory/Public Communication Mistakes and non-concurrence of its actions by NRC ASLB Judges. However, PG&E & NRC are addressing and communicating the seismic issues in a very complex technical and defensive way, which the common people do not really understand. In light of Dr. Peck's DPO, NRC Region IV & PG&E communication with the concerned public has to be pro-active/transparent and not defensive/evasive/wishy-washy like San Onofre. NRC & PG&E need to follow the example of American Government's pro-active and open public communication approach against ISIS and Russian Terrorism. The communication emphasis is recommended to be in the following order: 1. As First Line of Defense, installation of redundant seismic monitoring and safety system designed to shut down the reactors promptly in the event of significant ground motion offers significant advantages to Plant Operators and early warning to residents in the LPZ and EPZ, 2. As the Second Line of Defense, Westinghouse's Multiple Reactor Safety Systems have a proven 70 year history of Safe Operation minimizing the potential radiological consequences of any earthquake accident, 3. As the Third Line of Defense PG&E's surveillance and maintenance procedures ensure that all the safety systems are tested to ensure high degree of reliability/operability and availability in a high state of readiness to mitigate the highly, but unlikely potential consequences of a seismic/radiological accident, and 4. PG&E's Emergency Planning & Disaster Management Preparedness/Procedures, Operator Training and Drills conform to the NRC Regulations to adequately protect the health and safety of public in case of a nuclear event.

A. Definitions: 1. Peak ground acceleration (PGA) is a measure of earthquake acceleration on the ground and an important input parameter for earthquake engineering, also known as the design basis earthquake ground motion (DBEGM). Unlike the Richter and moment magnitude scales, it is not a measure of the total energy (magnitude, or size) of an earthquake, but rather of how hard the earth shakes in a given geographic area (the intensity). The peak horizontal acceleration (PHA) is the most commonly used type of ground acceleration in engineering applications, and is used to set building codes and design hazard risks. In an earthquake, damage to buildings and infrastructure is related more closely to ground motion, rather than the magnitude of the earthquake. For moderate earthquakes, PGA is the best determinate of damage; in severe earthquakes, damage is more often correlated with peak ground velocity. 2. Spectral acceleration (SA) is a unit measured in g (the acceleration due to Earth's gravity, equivalent to g-force) that describes the maximum acceleration in an earthquake on an object – specifically a damped, harmonic oscillator moving in one physical dimension. This can be measured at (or specified for) different oscillation frequencies and with different degrees of damping, although 5% damping is commonly applied. The SA at different frequencies may be plotted to form a response spectrum. Spectral acceleration, with a value related to the natural frequency of vibration of the building, is used in earthquake engineering and gives a closer approximation to the motion of a building or other structure in an earthquake than the peak ground acceleration value, although there is normally a correlation between [short period] SA and PGA. Some seismic hazard maps are also produced using spectral acceleration. 3. Critical damping is the minimum amount of viscous damping that results in a displaced system returning to its original position without oscillation. Damping is a term used to assist in mathematically modeling and solving dynamic equations of motion for a vibratory system in which energy is dissipated. In general, damping increases with the magnitude of excitation and the resulting stress levels. It is shown that system damping, which is considered as the predominant damping mechanism for primary coolant loop components, yields damping values higher than those being used. 4. Review of operating earthquake history and world-wide earthquake damage assessment confirms that High frequency ground motions are not damaging to well engineering SSCs. Summary: So we establish that low frequency ground motions combined with the use of highest spectral acceleration spectrum g values are the best factors for the seismic design to prevent damage and ensure operability of SSCs. B. PG&E Seismic Design Basis The new seismic design ground motions for DCCP were developed after the discovery of the Hosgri fault. In 1977, the largest magnitude of the design ground motions for Hosgri Fault exceeded the 1965 design ground motion (DDE). The Hosgri Fault earthquake was estimated at magnitude 7.5 and peak ground acceleration at 0.75g. The average spectral acceleration for 3 to 8.5 Hz (the frequency range of importance for DCCP structures) was estimated at 2.1g. The 1977 design ground motion g values exceeds the

1965 design ground motion (DDE). The 1977 HE Spectrum and 1991 LSTP SSER34 design ground motions are more conservative than the 1965 design ground motion (DDE) and bound Los Osos, Shoreline, Bay, San Luis Given and Linked Hosgri & San Simon ground motions. Therefore, no NRC license amendment was required to incorporate and update the revised findings into PG&E documents. DCPD modifications were made to the plant to accommodate the larger 1977 Hosgri Fault ground motion exceeds the 1965 design ground motion (DDE), so that it would withstand the increased design ground motions. The data based on PG&E and Dr. Peck's Reports is shown below: (1) Type of Fault/Spectrum (2) Magnitude (3) Peak Spectral Acceleration (g) (4) Approximate Spectral Frequency (HZ) (5) Peak Ground Acceleration (g) @ 100 HZ Frequency (1) PG&E Original Design Basis (5) 0.40 (1) Los Hosgri & San Simon (2) 7.3 (3) 1.3 (4) 2.5 (5) N/A (1) Shore Line Faults (2) 6.7 (3) 1.3 (4) 2.5 (5) 0.62 (1) San Luis Bay (2) 6.4 (3) 1.45 (4) 2.5 (5) 0.70 (1) 1977 Hosgri (2) 7.5 (3) 4 (4) 2.1 (5) 0.75 The exceptions cited by Dr. Peck's DPO are noted below. Type of Structure DDE (% of Critical Damping), @ Frequency 100 Hz and PGA 0.4g HE (% of Critical Damping) @ Frequency 2.1 Hz and SA 4.0 g NRC RG 1.161 (% of Critical Damping Containment structure and all internal concrete structures 5.0 7.0 7.0 Welded structural steel assemblies 1.0 4.0 4.0 Bolted or riveted steel assemblies 2.0 7.0 7.0 PG&E mechanical purchased components 2.0 4.0 3.0 Vital piping systems (except reactor coolant pump) 0.5 3.0 4.0 Reactor coolant loop 1.0 4.0 4.0 Pacific Gas and Electric Seismic Prompt Operability Determination 2011 - PG&E concluded that all SSCs were operable because the new seismic deterministic ground motion spectrums were bound by HE design basis. The POD stated that HE safety analysis, including methods, design basis values/inputs, and acceptance criteria, was an acceptable alternative method for concluding that all plant SSC met the specified safety functions for the DDE. The NRC staff concluded that the revised operability determination provided an initial basis for concluding a reasonable assurance that plant equipment would withstand the potential effect of the new vibratory ground motion. AVP Arora International agrees with NRC & PGE on these conclusions.

comment #506982 posted on 2014-09-14 15:39:58 by Donna Gilmore

<http://sanonofresafety.org/earthquake-and-tsunami-risks/> Where do the following facts fit within the NRC's analysis? The USGS states no one has ever predicted a major earthquake. They do not know how. The size of an earthquake fault can change AFTER an earthquake starts. No one's can predict the g-force of a large earthquake.

comment #551484 posted on 2014-09-22 20:46:40 by Vinod Arora

Thought of the Day – Diablo Canyon PR AID FOR NRC Region IV, NRC Executive Director of Operations, NRC ACRS Executive Director or PG&E NEWS Room PG& E Fact Sheet states, “The dominant seismic feature in the vicinity of Diablo Canyon is the Hosgri Fault. In 1975 the NRC, in collaboration with the USGS, concluded that the maximum earthquake on the Hosgri fault could be as high as M 7.5 - resulting in ground motions of 0.75 g at DCPD. In 1978 PG&E seismically retrofitted all structures, systems, and components at DCPD to withstand the 0.75 g ground motion. In 1985, with advice from the Advisory Committee on Reactor Safeguards (ACRS), the NRC required four licensing conditions to be resolved to approve the final operating license. This seismic safety reevaluation was named the Long Term Seismic Program (LTSP). During the program, improved earthquake models showed that the maximum earthquake on the Hosgri fault was M 7.2 and improved ground motion models gave a ground motion of up to 0.83 g. The plant structures, systems, and components were shown to have adequate seismic safety margin to withstand ground motions of 0.83 g. The LTSP report and conclusions were approved by the NRC in 1991 (NRC-SSER-34). PG&E and the NRC agreed to make the LTSP a permanent Program as part of the operating license which continually evaluates seismic issues, and applies new information to assure that the plant is seismically safe.” NRC, PG&E, CPUC & DCSC will be ahead in the Public Relations, Public Communications, Public Trust and Public Safety Game especially after the San Onofre fiasco, If PG&E posted on their website what exactly PG&E did to seismically retrofit all structures, systems, and components at DCPD to withstand the LTSP Hosgri Fault M7.2, 083 g ground motion ground motion. Did PG&E or Bechtel power Corporation perform the retrofit work and how much money was spent? The request is to ensure that public gets solid and visual information because the public does not understand complicated scientific information. That is for NRC and the scientists. Just thinking ahead? Thanks Ms. Lara Uselding Mr. Scott Burnell for posting the blog. AVP Arora International (IRS Approved Public Charity, Promoter of Safe Nuclear Power & Transparent Public Communications)

comment #505455 posted on 2014-09-13 17:36:00 by Joseph J. Racano in response to comment #500694

The definitive studies were done by famed Seismologist Jim Brune in the 1980's, showing Diablo was a danger because of parallel faults that could interact to destroy the plant. <http://crack.seismo.unr.edu/htdocs/brune.html> Those threats now loom large as Fukushima pours radioactivity into the ocean with nothing to stop the flow for hundreds of years. Note the complete absence of Fukushima from the news. Very frightening. The Diablo Canyon Atomic Reactor is now a dangerous storage site for highly-irradiated by product they try to call 'spent'. That's not the word for it. A better word is volatile. And that's not the place for it. A better place is in a bad dream. Joey Racano, Director Ocean Outfall Group www.oceanoutfallgroup.com

comment #500694 posted on 2014-09-12 15:26:54 by CaptD

Lets hope that the information just released about Diablo Canyon is also addressed in the review. I'm especially glad that the Chairman of the NRC is a World Class Geologist, because earthquakes pose a major threat to all nuclear power plants!

comment #532561 posted on 2014-09-20 02:01:41 by Vinod Arora

Major nuclear accidents could have been prevented provided: (1) Operating, maintenance, design, testing and surveillance procedures and the design basis standards were followed to the Letter of the Law, and (2) Academic Research, Industrial Benchmarking, Critical

Questioning & Investigative Attitude and Use of Human Performance Tools were consistently encouraged, monitored and enforced by manufacturers, utilities and regulators before making design changes outside the established standards. Three Mile Island, Chernobyl, Fukushima and shutdown of San Onofre Units 2 & 3 are now part of the unforgettable and unforgivable nuclear legacy. Diablo Canyon seismic safety issues are very complex and cannot be resolved using the technology for oil and gas exploration, three-dimensional geophysical seismic reflection mapping and other advanced techniques to explore fault zones. Earth is in a constant change of unpredictable flux. Earthquakes are violent and unpredictable as a result of balancing of the forces of nature; they are manifestations of energy in wave-form that may not be detected accurately. Currently satellites used for global positioning systems may have the capabilities to detect electromagnetic radiation similar to emissions noticed prior to earthquakes. Such satellites could be enhanced to detect and record electromagnetic waves and magnetic fields propagating from future locations of earthquakes providing weeks, rather than hours, of notice before the event. In order to do this, there are several technologies that would require acute development and enormous expense. Some of the technologies that will be used in future will include: 1. Superconducting antennae and solenoid coils, which will be able to measure miniscule electromagnetic radiation field changes, and detect the present of ELF radiation. 2. Advanced Radar and Infrared Cameras, which will take a series of images both over a long period of time and over short time frames, and collect data to be processed to recognize signs of impending earthquakes. 3. Advanced Interferometry Synthetic Aperture Radar, which, developed by the European Space Agency, provides probable fault movement over a period of years, but if developed, could give predictions over a period of months or even weeks. 4. Modems and Data Processing Centers, to receive the data collected by the satellites at given intervals, and to analyze the trends recognized in the electromagnetic emissions, radar pictures, infrared readings, and ELF emissions data. Long-term seismic and geodetic monitoring of the DCCP region using the PG&E Central Coast Seismic Network (CCSN, including the Point Buchon Ocean Bottom Seismometer (OBS) network), and the USGS Central California Coast Region (CCCR) geographic positioning system (GPS) arrays cannot reliably predict earthquakes. So, if we can't predict earthquakes, what can we do to prepare for them? In my opinion, PG&E & NRC are addressing and communicating the seismic issues in a very complex way (By citing 3-D reflection mapping modeling techniques & expert studies), which the common people do not really understand. In light of Dr. Peck's DPO, NRC & PG&E communication with the concerned public has to be pro-active/transparent and not defensive/evasive/wishy-washy like San Onofre. NRC & PG&E need to follow the example of American Government's pro-active and open public communication approach against ISIS and Russian Terrorism. The communication emphasis has to be in the following order: 1. As First Line of Defense-in-Depth Approach, installation of redundant seismic monitoring and safety system designed to shut down the reactors promptly in the event of significant ground motion offers significant advantages to Plant Operators and early warning to residents in the LPZ and EPZ, 2. As the Second Line of Defense, Westinghouse's Multiple Reactor Safety Systems have a proven 70 year history of Safe Operation minimizing the potential radiological consequences of any earthquake accident, 3. As the Third Line of Defense PG&E's surveillance and maintenance procedures have to ensure that all the safety systems are tested to ensure high reliability/operability and availability in a high state of readiness to mitigate the highly, but unlikely potential consequences of a radiological accident, and 4. PG&E's Emergency Planning & Disaster Management Preparedness/Procedures, Operator Training and Drills conform to the NRC Regulations to adequately protect the health and safety of public in case of a nuclear event.

comment #561866 posted on 2014-09-24 11:19:51 by Vinod Arora

Comparing Diablo Canyon Power Plant (DCCP) with Fukushima Daiichi nuclear disaster A review of DCCP documents indicates that DCCP is robustly designed against Tsunamis, earthquakes and other natural hazards compared with Fukushima Daiichi nuclear plant disaster events. The plant's Westinghouse safety systems, back-up systems and fire/emergency response systems are well designed/maintained and prepared to mitigate the consequences of any design basis and radiological/natural events to adequately protect the health & safety of the public. DCCP is a very crucial asset for meeting the electrical requirements of Northern Californians, reducing the global pollution and is an important economical resource. Vinod K. Arora, California P.E. (CA-Mechanical) MS Engineering, BS Chemical Engineering President, AVP Arora International (IRS Approved Public Charity) Former San Onofre Engineer/Nuclear Oversight Auditor Former San Onofre FP/EP/Hazards Barrier Engineer Former San Onofre 10CFR 50.59/Operability Engineer Former Rancho Seco/Vogtle HELB/Flooding Analysis/FP/50.59 Engineer Former Member of the Society of Fire Protection Engineers Former Shift Chemical Engineer, Century Chemicals, India

comment #512790 posted on 2014-09-15 15:48:06 by Moderator in response to comment #506982

The science of earthquake prediction is still developing. Seismologists cannot predict exactly when and where a quake will strike. However, seismologists have well-defined methods for identifying areas with higher earthquake potentials. Seismologists also have mature models to describe how a fault rupture's energy will travel to and affect a given site on the Earth's surface. Scott Burnell

comment #660216 posted on 2014-10-06 15:27:15 by Rochelle Becker

October 6, 2014 PG&E Subverted State Review of Diablo Canyon Seismic Studies and Squandered Ratepayer Money, According to A4NR Regulatory Filing The same attributes which have earned PG&E the distinction of being America's only nuclear licensee facing criminal prosecution from the U.S. Department of Justice—including a leading charge of obstruction of justice—extend to the company's conduct of the AB 1632 seismic studies. What the Alliance For Nuclear Responsibility (A4NR) filing demonstrates is PG&E's attempt to subvert the oversight of a state sanctioned independent review panel, which PG&E successfully dodged with a trumpeted submittal of its "final" seismic study to the NRC before the peer review panel had even been shown the results. Notes A4NR attorney John Geesman, "Without independent review, this report is propaganda, not science." AB 1632, sponsored by then Assembly Member Dr. Sam Blakeslee, mandated updated studies to determine if new hazards in the seismic setting of the Diablo Canyon nuclear plant posed a risk that could impact the cost and reliability of the electric supply. In 2012, the CPUC authorized \$64M in ratepayer funds for PG&E to do the study. At the same time, admitting that the CPUC had no internal staff to determine the

validity of the study and its results, the CPUC established an Independent Peer Review Panel (IPRP) comprised of members including the California Geologic Survey, Coastal Commission, Energy Commission, Seismic Safety Commission, County of San Luis Obispo, and others. As A4NR's filing reveals, internal PG&E emails detailing strategy and containment plans are clearly fearful that the IPRP could request a reinterpretation of the raw data bolstering PG&E's claims of seismic safety at the reactor site. One document authored by Senior Vice President Ed Halpin baldly asserts: They could recommend additional processing methods be applied or other interpretation techniques be utilized. The IPRP make-up does not have members who are experienced in processing and interpretation, but they could seek an independent review by others Mitigation: When presenting the results to the IPRP PG&E will stress that advanced processing methods and interpretation techniques recommended by industry and academia experts were used. Make processed data available to IPRP before the technical reports are provided for their review. [emphasis added] The IPRP clearly had a different process in mind, as revealed in the peer review panel's second public report: The IPRP expects that: • PG&E will provide its study plans and draft completed study findings to the IPRP for review. These include studies summarized in CPUC Decision 10-08-003 including off-shore, on-shore, and ocean bottom studies, and seismic studies recommended in the AB 1632 Report. [emphasis added] The IPRP was to hold quarterly public meetings—and did—all of which abruptly stopped in July of 2013 after the IPRP issued a report critical of PG&E's methodologies and assumptions. Alarming, this email from PG&E government affairs representative Mark Krausse to PG&E's regulatory relations staff paints a somewhat dire penalty for the persistent inquiries of the IPRP: When PG&E submits its final findings on its enhanced imaging (by May of 2014), do you believe we could get the IPRP "decommissioned?" And the director of PG&E's geosciences department, Richard Klimczak replies: Mark, The final report is scheduled for June 2014, Rich At one point, the emails note PG&E intended to give the IPRP up to two months of advance review before releasing the study. Even that concession evaporated. As IPRP member and San Luis Obispo County Supervisor Dr. Bruce Gibson opined in the SLO Tribune: "PG&E chose to finalize its entire report and release it to the public before it sought any comment from — or even contacted — the peer review panel. It appears to me that PG&E's public relations staff advised them to get their story to the public before any detailed questions might be asked." Among the other unanswered questions in the study: • Why did PG&E unilaterally abandon pursuit of offshore high energy underwater seismic surveys of Diablo after the preliminary rejection of its ill-prepared permit application before the Coastal Commission, when the CPUC had specified it first wanted to receive the recommendation of the IPRP? • Why didn't PG&E notify the NRC immediately, as required, when early results revealed that the Shoreline fault could rupture jointly with the Hosgri fault, causing higher ground motions than previously reported to the NRC? A4NR's legal brief concludes, "The incorrigible quality of PG&E's efforts to evade regulatory compliance, and the culture rot that pervades so many of its interactions with the Commission, should give all Californians pause. Is this the type of institution that an advanced civilization entrusts with mankind's single most dangerous non-military activity?" Adds A4NR Executive Director Rochelle Becker, "PG&E's failure to conduct thorough seismic testing lead to over \$4 billion in costly retrofits when the plant was built over three decades ago. The CPUC failed to implement adequate oversight then, and runs the risk of having history repeat itself in an even more costly fashion if they don't permit the IPRP established under their purview to perform the tasks for which it was created." Download the legal filing at: <http://a4nr.org/?p=3297>

comment #567076 posted on 2014-09-25 13:48:45 by Vinod Arora

Dr. Peck and Dr. Budnitz on Diablo Canyon and AVP Arora International's Response/Opinions Dr. Peck in his latest response to the NRC Panel & PG& E's recent advanced seismic evaluation and research studies of Diablo Canyon Nuclear Plant controversial seismic design basis states, "The assumption that the HE was a facility SSE appeared to be in direct conflict with the PG&E facility license application (FSAR). I followed up with the Panel Chairman to better understand the basis for their assumption and my error. He directed me to an FASR Section. Interestingly, this section was included in the September 2013 revision following the NRC Project Manager's direction to add the Shoreline fault to the FSAR. NRC Rules state that FSAR changes that potentially affect how the facility design basis are met, are required to be screened to determine if a license amendment is required. These changes were flagged by PG&E as exempt from this screening requirement based on "correspondence from the NRC." From my view, the Panel appeared to use circular logic as basis for their underlying assumption and then used this assumption to support their conclusion." Dr. Budnitz of DCCP Safety Committee states, "He does not understand where the DCCP seismic design basis is and how large the earthquake is, but all the safety structures, systems and components are designed and tested to withstand the largest earthquake." Dr. Peck has cited the following examples in his DPO, which he believes at DCCP do not meet the NRC Operability and Seismic Regulations: □ Control Rod Drive Mechanism Bending Moments □ ECCS MOV's & Instruments located at 88' Containment Valve □ PG&E purchased mechanical components I will say that Dr. Peck and Dr. Budnitz have good points but their concerns and comments do not reflect short and long term nuclear safety concerns. Dr. Peck and Dr. Budnitz's may have questions about the seismic design basis, but their questions raising more questions for the Public. Dr. Peck and Dr. Budnitz's comments are providing more ammunition for the Critics to file an appeal before the NRC Commission/ASLB to hold public hearings to determine DCCP's ability to meet facility design, licensing/operating/technical specification basis and NRC Regulations, NRC, PG&E need to explain to the Public, Critics, NRC ASLB, NRC ACRS and others: (1) DCCP has 3 emergency core cooling systems to cool the reactor in case of a LOCA or Main Steam Line break resulting from the largest earthquake. Each system has 2, 100-percent capacity trains. These system components are tested based on the scheduled frequency and declared functional, inoperable, operable, degraded or non-conforming based on the results of testing. Corrective actions and compensatory measures are implemented and operability determinations are conducted immediately to meet the requirements and safety significance of these components per plant procedures, facility design, licensing/operating/technical specification basis and NRC Regulations, (2) In addition, the plant can rely on fire protection and other cooling systems to provide cooling water to the core in event of a seismic bases potential nuclear accident, (3) As First Line of Defense, installation of redundant seismic monitoring and safety system designed to shut down the reactors promptly in the event of significant ground motion offers significant advantages to Plant Operators and early warning to residents in the LPZ and EPZ, (4). As the Second Line of Defense, Westinghouse's Multiple Reactor Safety Systems have a proven 70 year history of Safe Operation minimizing the potential radiological consequences of any earthquake accident, (5) As the Third Line of Defense PG&E's surveillance and maintenance procedures ensure that all the safety systems are tested to ensure high reliability/operability and availability in a high state of readiness to mitigate the highly, but unlikely potential consequences of a radiological accident , and (6)

PG&E's Emergency Planning & Disaster Management Preparedness/Procedures, Operator Training and Drills conform to the NRC Regulations to adequately protect the health and safety of public in case of a nuclear event. A review of DCCP documents indicates that DCCP is robustly designed to handle the adverse effects of Tsunamis, earthquakes and other natural hazards compared with Fukushima Daiichi nuclear plant disaster events. The plant's Westinghouse safety systems, back-up systems and fire/emergency response systems are well designed/maintained and prepared to mitigate the consequences of any design basis and radiological/natural events to adequately protect the health & safety of the public. DCCP is a very crucial asset for meeting the electrical requirements of Northern Californians, reducing the global pollution and is an important economical resource for Californians. The recent earthquake studies conducted by PG&E and NRC Evaluations is a reminder that the safety issues brought out by the critics/Dr. Peck have no sound basis/technical merit and will not hold in any court of law or in front of the NRC Atomic Safety Licensing Board. After the dismissal and negligent performance of SCE San Onofre Senior Leadership Team and NRC Region IV AIT Team in San Onofre, TEPCO and Japanese Government in Fukushima Daiichi nuclear disaster, the solid team work & alignment and display of critical questioning & Investigative attitude by PG&E, CPUC and NRC Region IV and NRC Executive Director of Operations is a new and fresh attempt & precedent in restoring nuclear safety and public trust. Vinod K. Arora, California P.E. (CA- Mechanical) MS Engineering, BS Chemical Engineering President, AVP Arora International (IRS Approved Public Charity) Former San Onofre Engineer/Nuclear Oversight Auditor Former San Onofre FP/EP/Hazards Barrier Engineer Former San Onofre 10CFR 50.59/Operability Engineer Former Rancho Seco/Vogtle HELB/Flooding Analysis/FP/50.59 Engineer Former Member of the Society of Fire Protection Engineers Former Shift Chemical Engineer, Century Chemicals, India

comment #551191 posted on 2014-09-22 19:34:15 by Vinod arora

Thought of the Day - Diablo Canyon Seismic Quiz To NRC Region IV, NRC Executive Director of Operations, NRC ACRS Executive Director or PG&E Seismic Qualifications Department Lower the damping value assumed, larger the seismic stress attenuated through the plant, higher the assurance of the component to perform its safety function during a SSE. Damping values higher than RG 1.61 may also be used provided they were approved for the specific application and material. PG&E mechanical purchased components used a damping value of 4 under Hosgri Fault Evaluation (HE), the SSE approved by NRC for Diablo Canyon Power Plant (DCPP), whereas RG 1.61 only recommends a damping value of 3. Was this exception approved by NRC or an Operability assessment performed by PG& E to document a degraded, non-conforming, unanalyzed condition, any compensatory measures or corrective actions required? Just trying to look ahead... Thanks PG&E mechanical purchased components PG&E SSE Hosgri Fault Damping – 4.0 NRC Regulatory Guide 1.161 Damping 3.0

REFRESH: In Nuclear Power Plants – Behavior Is Under Observation

posted on Thu, 18 Sep 2014 19:33:19 +0000

Mark Resner

Access Authorization Program Coordinator



The NRC requires that all nuclear power plants follow strict access authorization regulations that are intended to make sure only trusted individuals have the OK to be in the most sensitive areas of the plant. These access authorization regulations require fingerprint checks, drug and alcohol screening, psychological testing and other hurdles when employees are first hired, and must be periodically updated if the individuals are to continue to have access to these areas. But even once a worker has been granted so-called unescorted access, they are still subject to a “behavioral observation program.” In other words, the NRC requires that every plant have a program in which all employees and supervisors are trained in detecting problems such as drug or alcohol abuse or other impairments of employees. As part of the program, all employees are required to report to their supervisors any suspicious behavior they see among their coworkers. Suspicious behavior could be a worker observed in an area of the plant where they don’t have authorization to be, or if a worker made threatening statements about harming people or plant equipment. The NRC regulations even require workers to report on themselves or “self-disclose” if they, for whatever reason, believe they are no longer mentally and physically fit to safely perform their duties. An example of this is an employee undergoing marital problems that are causing them stress that interferes with their duties. Such an employee may be referred to an Employee Assistance Program or their assigned duties may be changed until the person is deemed fit for duty. If a determination is made to deny the person unescorted access for any reason, their name and that fact is entered into an information sharing database that NRC requires all U.S. nuclear power plants to use. Should that person attempt to enter (or get a job at) another nuclear plant, the information about their access status would be available for review by the plant they were attempting to access. Ultimately, a determination that an employee is not trustworthy or reliable – based on behavior observation or self reporting — has serious implications for that person maintaining their access authorization but such determinations are necessary to keep nuclear power plants operating safely in their communities. *REFRESH is an occasional series where we revisit previous blog posts. This one originally ran in May 2012.*

Comments

comment #546931 posted on 2014-09-22 07:36:26 by Dan Williamson in response to comment #530989

Thank you, Moderator, for going the extra mile to expose the "commenter" as just another purveyor of FUD making his daily rounds. Such lies must not go unchallenged.

comment #710278 posted on 2014-10-11 18:00:45 by Nicolas

Well, I'm happy to see strict security measures at a nuclear plants. Trying to limit human mistakes is the best thing to do for our security.

comment #527751 posted on 2014-09-18 17:06:31 by stock

Those consideration alone with not allow nuclear to "operate safely in the community". They should all be far away from communities, all the Mark 1s should be shut down, and a direct cost analysis compared to Solar PV with all outyears costs including on the nuke ledger should be forced, including competitive bids for solar farms with or without storage as needed by the load profile and other RE sources. Notwithstanding, there are multiple instances of drug and alcohol abuse within the industry, including a worker at Kewaunee pounding beer in containment while on duty. Mixing humans and criticality reactions is wrong on such a basic level. Thank you.

comment #531062 posted on 2014-09-19 15:19:06 by stock

The often out of the way small town settings where many nuke plants reside makes drinking an easy hobby. This 21 YO girl indicates how a superior supervisor at the nuke plant gave her clothing emblazoned with "Dose Babes" and the crew went out drinking where she got 4 beers for \$1. Just saying the potential for alcohol and substance abuse is high in these scenarios of remote locations and good pay and not much to do. It's an inherent problem, not a failing of the NRC per se.
<http://www.nukeworker.com/forum/index.php?topic=888.0;imode> [NRC Moderator: This comment has been edited to remove personally identifiable information.]

comment #531066 posted on 2014-09-19 15:20:51 by Garry Morgan

Human Reliability and Security is one of the most important "wheels" in the machine we call a nuclear reactor and the materials associated with producing nuclear power. It is more than drug and alcohol screening, character and behavior must be evaluated. Human Reliability and Security must involve every person in operations, maintenance, security, and the decision making chain involving all nuclear materials and the operation of all nuclear devices and facilities. Repetitive errors in corrective action program problem resolutions should trigger management and employee evaluations as to why a reactor, section or people make continuous errors. Some nuclear facilities continuously demonstrate a lack of attention to detail in problem resolution connected to corrective action programs. Shouldn't such repetitive failures be evaluated by a psychologist focusing on groups and culture within a facility or section? Should the corporate executives involved in nuclear power operations, materials production and the NRC Commissioners themselves be subjected to psychological scrutiny in a Human Reliability-Security Program??

comment #530987 posted on 2014-09-19 14:26:06 by CaptD

One would hope that all employees (including Supervisors) are being "observed" in the same manner. I know employees that used to work at San Onofre that have been discriminated against after the NRC shared comments they made as employees with Plant Supervisors. If the NRC does not provide strict access to all submitted information, employees that are concerned with safety will end up being "blackballed" from working in the nuclear industry simply because they spoke up about plant safety and/or other similar topics.

comment #530989 posted on 2014-09-19 14:27:33 by Moderator in response to comment #527751

Drug and alcohol abuse is an issue for every industry. NRC's Fitness for Duty regulations are designed to deter, detect and deal with instances at NRC-licensed facilities. We asked the commenter for information about his claim, and he referred to NRC Event Report 47355, from October 19, 2011. That event report states: OPENED ALCOHOLIC BEVERAGE CONTAINER IN PROTECTED AREA "At 1244 CST a prohibited substance (can of beer) was discovered open in the protected area. The non-supervisory, non-licensed individual involved did not consume any alcohol and was tested under the FFD program. The prohibited substance (alcohol) has been confiscated and FFD test results were negative for consumption. The can of beer was inadvertently brought in the person's lunch box and opened before the individual realized the error. "This report is being made in accordance Significant Fitness-Far-Duty Events 10 CFR 26.719 (b) Significant FFD policy violations or programmatic failures. The following significant FFD policy violations and programmatic failures must be reported to the NRC Operations Center by telephone within 24 hours after the licensee or other entity discovers the violation: '(1) The use, sale, distribution, possession, or presence of illegal drugs, or the consumption or presence of alcohol within a protected area.' "The licensee notified the NRC Resident Inspector." The incident occurred in the Protected Area, not "containment," and that the employee was not "pounding" alcohol but in possession of it. Moderator

comment #531022 posted on 2014-09-19 14:53:04 by Moderator in response to comment #530987

The commenter raises two issues: 1) As the blog states, employees and supervisors are trained in behavioral observation and able to report any suspected substance abuse. 2) The NRC emphasizes the importance of a safety conscious work environment where employees feel free to raise safety issues without fear of retaliation or discrimination. Anyone who is aware of employees being retaliated against for raising safety concerns is encouraged to file an allegation with the NRC. Information about reporting safety concerns (as well as the NRC's safety conscious work environment policy) is available here at <http://www.nrc.gov/about-nrc/regulatory/allegations/safety-concern.html>. Moderator

comment #531049 posted on 2014-09-19 15:09:17 by stock in response to comment #530989

Who is to believe that a can of beer accidentally got into a nuke worker lunch box? My mistake about containment....at nuke plants "containment" has a different connotation than other government SKIF high security areas. OF course I did not mean to imply he was in the reactor itself. At other government top secret facilities containment simply means passed through the high level checkpoint (i.e. not the guard at the drive in gate) Occams Razor would imply that rather an isolated event, this is more likely to be a routine event that finally got caught. The Razor also implores to look at what is not being said....which is, if there was only one beer in the lunch box (i.e. the open one as per the NRC report) that I as an investigator and writer of the report would certainly point out that there was no other beer present. This was not stated. And are we to believe this person opened the beer, realized his mistake, and then immediately reported himself rather than just sneaking to a bathroom and disposing the evidence. Just saying, what is not being said is often where the truth lies (pun intended)

Checking the Links in the Nuclear Supply Chain

posted on Thu, 25 Sep 2014 15:09:47 +0000

*Mary Anderson
Vendor Inspector
Office of New Reactors*

The NRC's focus on nuclear power plant safety doesn't stop at the plants. Since the 1970s (at that time under the Atomic Energy Commission), NRC inspectors have kept a watch on the companies that provide safety-related components and services to U.S. plants.



The agency believes plants and vendors have effective quality assurance programs in place to proactively prevent the use of counterfeit, fraudulent and suspect items. These programs include careful supplier selections, effective oversight of sub-suppliers, and the authority to challenge a part's "pedigree" when necessary. The NRC oversees these quality activities by inspecting nuclear power plants and their vendors. Vendor inspection can include site visits to production facilities. We create and share information and guidance for the nuclear industry to improve detection of counterfeit and fraudulently marketed products. We also incorporate this information into our inspection programs. The NRC has yet to see any instance of these items in safety-related systems in U.S. plants, but constant vigilance by the licensees and the NRC is essential to make sure it stays that way. These days our Vendor Inspection Center of Expertise operates out of the Office of New Reactors to cover both operating reactors and those under construction. NRC staff experts inspect vendors, and observe when plants audit their suppliers, to determine if the plants are properly overseeing their supply chain. Importantly, the NRC also verifies that the plants and their vendors comply with our [quality assurance criteria](#) and our "Part 21" requirements for [reporting defects and noncompliance](#), as well as applicable codes and standards. The center's staff also inspect companies applying for design certificates, early site permits or combined licenses. We check on whether the applicants have effective quality assurance processes and procedures for activities related to their applications. Right now, we're working on several vendor-related issues, including evaluating the industry's process for safely upgrading commercial products that aren't specifically made for nuclear applications to be used in some plant systems. Common items such as gaskets, nuts and bolts, and electrical relays could be acceptable for nuclear plant use, for example. We're updating and simplifying Part 21, the NRC regulation that covers counterfeit, fraudulent and suspect items. We're also confirming effective controls are in place to prevent such items from making their way into the U.S. safety-system supply chain. We're clarifying the processes for evaluating and reporting defects, and the acceptance criteria for off-the-shelf commercial products. The Center is developing regulatory guides so plants and vendors better understand these processes. The NRC's [vendor workshop](#) in Portland, Ore., gave us a forum to put this issue in the spotlight. Among a range of vendor topics, this year's workshop included an industry perspective on counterfeit, fraudulent, and suspect items. The NRC has also been actively involved with our international partners to address the risk of counterfeit and fraudulent items. We've collaborated with the International Atomic Energy Agency and the Nuclear Energy Agency to share best practices and recommend options to strengthen inspection programs and increase information sharing.

Comments

comment #566258 posted on 2014-09-25 11:31:41 by stock

Per the article "The agency BELIEVES plants and vendors have effective quality assurance programs in place to proactively prevent the use of counterfeit, fraudulent and suspect items. " As a quality control manager, I am from Missouri, show me. I don't believe anything that vendors or suppliers portend meets standards until I or my team have personally reviewed the item, and if we have to rely on a vendor statement of quality control then that statement (if lied about) will carry definite negative ramifications to the person who signed it (they get fired in most cases) and there are fines against the company. San Onofre is a glaring example of lack of NRC oversight. On a multi hundred million dollar purchase, the item that separates the radioactive from the neighborhood it sits in, it is a glaring and obvious failure of the NRC to either approved with "proof" or negligently didn't even look at the drawings and see the components were obviously different. The SAn Onofre issue is "like for like", and it wasn't and it just about blew up in our faces.

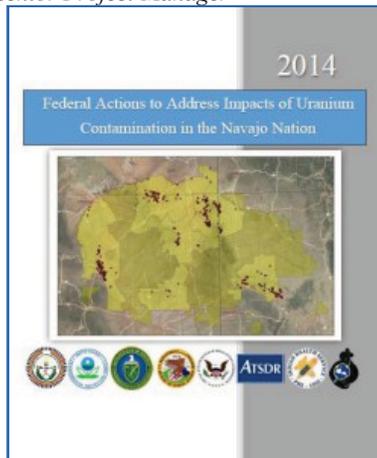
comment #566266 posted on 2014-09-25 11:33:06 by stock

"Effective controls" what the NRC needs is clear cut, and significant penalties, including criminal charges for misrepresenting a product or test result.

NRC Joins Five Other Agencies in Addressing Uranium Contamination on the Navajo Nation

posted on Mon, 29 Sep 2014 14:06:18 +0000

Dominick Orlando
Senior Project Manager



Last year, after five years of work to reduce risks from uranium contamination on territory that is part of the Navajo Nation, the NRC, along with four other federal agencies, reported on our progress to Congress. This week, the five federal agencies issued a [plan](#) that spells out how we'll continue coordinating that work for the next five years. The agencies' second Five-Year Plan builds on lessons learned from the first five years. It reflects new information and defines the next steps to address the most significant risks to human health and the environment. The new plan commits us to working together to reduce these risks and find long-term solutions. In October 2007, Congress asked the agencies to develop a plan to address the contamination on Navajo land, which dates back to the 1940s when uranium was in high demand. The Navajo Nation had large uranium deposits but regulations were not what they are today and mining companies left extensive contamination requiring cleanup. Legislation and new regulatory provisions were put in place to address these issues. The 2013 report capped off a five-year program the agencies conducted, in consultation with Navajo and Hopi tribal officials, to address uranium contamination on their land. Part of this work was government-to-government consultations with the Navajo. The program was a joint effort among EPA, the NRC, the Department of Energy, the Bureau of Indian Affairs, the Centers for Disease Control and the Indian Health Service. It focused on collecting data, identifying the most imminent risks, and addressing contaminated structures, water supplies, mills, dumps, and mines with the highest levels of radiation. We also learned more about the scope of the problem and the work that still remains. The NRC's role is to oversee the work done by DOE, which is the long-term custodian for three sites storing uranium mill tailings—a sandy waste left over from processing uranium—and one former processing site. We do that by reviewing and, if acceptable, concurring on DOE's plans to clean up contaminated groundwater, visiting the sites to evaluate how DOE is performing long-term care activities, and reviewing DOE's performance and environmental reports. We will work closely with EPA, DOE, the New Mexico Environment Department, and the Navajo during the cleanup of the Northeast Church Rock site—which EPA and Navajo officials identified as the highest priority site for cleanup. The NRC will also be part of outreach activities detailed in the plan, including participating in stakeholder workshops and contributing, as appropriate, to educational and public information activities. Five years from now, we look forward to being able to say that with close coordination among all the parties, we have continued to make major progress in addressing concerns about uranium contamination.

Comments

comment #611193 posted on 2014-09-30 15:21:13 by Moderator

The report discussed in this blog post is the 2014-2018 plan for addressing uranium contamination on the Navajo Nation. Information on the progress from 2007 to 2012 can be found in the 2013 report at: <http://www.epa.gov/region9/superfund/navajo-nation/pdf/NavajoUraniumReport2013.pdf> Maureen Conley

comment #595846 posted on 2014-09-29 14:47:29 by Norman Pierce

If I read your article correctly, then I surmise that no work on cleanup has been done in the first 5 years and the progress you report is in planning that is well informed and coordinated.

comment #650969 posted on 2014-10-05 09:58:31 by Jan Boudart

(sarcastic comment ahead) I guess the industry didn't know that uranium was radioactive and the precautions should have been taken

from the beginning. Why, why, why was this allowed to happen?

comment #615233 posted on 2014-09-30 19:07:46 by CaptD

One thing about ☢ contamination is that it is the "gift" that keeps on giving, at least as seen from the point of view of those that get paid to deal with it. I think it would be wise to insert large penalties (paid by posted bonds) into all contracts that deal with potential radioactive contamination, so that if one occurs, those that caused it will not just be able to change their Corp. name and leave the US Gov't. (and all US tax payers) on the hook for it! If my suggestion was implemented, then I believe that it would save taxpayers huge amounts of money, since the nuclear Industry would be forced to work more carefully!

Throwback Thursday -- The First Regulatory Information Conference

posted on Thu, 02 Oct 2014 14:07:53 +0000



The NRC's first Regulatory Information Conference was held at the Mayflower Hotel in Washington D.C. on April 18-20, 1989. It began as a small conference (some 500 attendees at the first one) on nuclear safety regulation. Today, it is a large public meeting with more than 3,000 attendees from some two dozen nations. In 2015, it will be held at the Bethesda North Marriot Hotel and Conference Center in North Bethesda, Md., from March 10 through 12th. Registration will open early in 2015. Now for our history question: Which Executive Director for Operations made introductory comments at that first RIC?

Comments

comment #630206 posted on 2014-10-02 11:54:13 by CaptD

Hopefully this upcoming Conf. will be streamed via the Web and allow questions from the global audience for all those that cannot attend in person.

comment #630200 posted on 2014-10-02 11:52:12 by CaptD

I predict that more non-NRC professional than ever before attend the upcoming Conf. because of the heightened awareness caused by Fukushima and San Onofre, not to mention the radioactive waste problems at DOE/DOD installation.

comment #630098 posted on 2014-10-02 11:31:31 by Moderator

Yes, correct. Victor Stello, Jr. Did any of you attend that first RIC and want to share your memories? Moderator

comment #630036 posted on 2014-10-02 11:18:22 by

Victor Stello, Jr was the EDO in 1989.

comment #630690 posted on 2014-10-02 13:57:28 by dick0645

I am surprised that other nations would even bother to attend a US NRC Regulatory Information Conference. Thanks to the NRC and the DOE we have set a very poor example for the global nuclear industry on safely storing high level nuclear waste. The US is letting it pile up all over our country. This of course creates a huge national security and public safety problem as it makes all of our nuclear sites prime terrorist targets. Other countries are responsibly placing high level wastes in safe centralized repositories far away from major population centers. Perhaps, tongue in cheek, the NRC is waiting for a Chernobyl-type accident to occur in the US to solve our high level waste problem. As you know there is still a 20-mile exclusion zone around Russia's Chernobyl accident site, 28 years since the accident! The Russians now store their high-level waste from their other reactors within this zone. How much longer is the NRC going to screw around with US public safety?!

comment #629859 posted on 2014-10-02 10:42:19 by Steven Hutchins

Was it Mr. Victor Stello Jr.?

comment #630739 posted on 2014-10-02 14:10:02 by dick0645

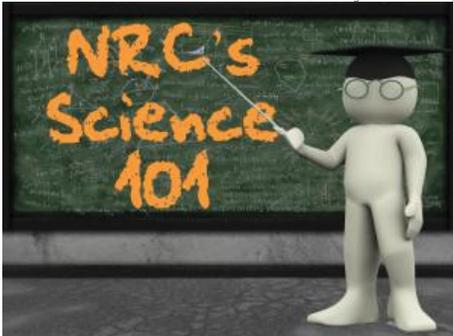
The NRC baseline nuclear power plant inspection program is also seriously flawed. Another reason for other countries not to attend this information conference. Unless, of course, they want to find out what not to do. US nuclear plant after nuclear plant gets on the NRC "troubled plant list" not because of any NRC inspection findings at the plant but because the plants experience serious operational events. Furthermore, once the plants have been shutdown the NRC gets all over them and low and behold between the plant and the NRC many other problems at the site are found. Where the hell was the NRC?! Licensees each pay millions of dollars every year for NRC baseline inspection services. Why should they continue to invest when the services rendered are so poor?!

Science 101: How a Chain Reaction Works in a U.S. Nuclear Reactor

posted on Tue, 14 Oct 2014 15:29:03 +0000

Paul Rebstock

Senior Instrumentation and Control Systems Engineer



The primary active ingredient in nuclear reactor fuel is a particular variety, or "isotope," of uranium, called U235. U235 is relatively rare -- only about 0.7% of uranium as it exists in nature is U235. Uranium must be enriched to contain about 5% U235 to function properly as fuel for a U.S. commercial nuclear power plant. U235 has 92 protons and 143 neutrons. Protons and neutrons are some of the almost unimaginably tiny particles that make up the nucleus of an atom — see [Science 101 Blog #1](#). All other isotopes of uranium also have 92 protons, but different isotopes have slightly different numbers of neutrons. Uranium is a radioactive element. Uranium atoms break apart, or disintegrate, into smaller atoms, releasing energy and a few leftover neutrons in the process. This happens very slowly for U235. If you have some U235 today, in about 700 million years you will have only half as much. You will have the remaining U235, plus the smaller atoms. The energy released will have gone into the environment too slowly to be noticed, and the extra neutrons will have been absorbed by other atoms. While this happens very slowly, the disintegration of each individual atom happens very quickly, and the fragments are ejected at a very high speed. Those high-speed fragments are the source of the heat generated by the reactor. Under the right man-made conditions, the number of U235 atoms that disintegrate each second can be increased. When a U235 atom disintegrates, it releases some neutrons. Some of those neutrons can be made to interact with other U235 atoms, causing them to disintegrate as well. Those "target" atoms release more neutrons when they disintegrate, and then those neutrons interact with still other U235 atoms, and so on. This is called a "chain reaction." This process does not work well for other isotopes of uranium, which is why the uranium needs to be enriched in U235 for use as nuclear fuel. Most of the energy released when a U235 atom disintegrates is in the form of kinetic energy — the energy of physical motion. The fragments of the disintegrated atom collide with nearby atoms and set them vibrating. That vibration constitutes heat. The fuel rods get hot as the reaction progresses. The faster the chain reaction — that is, the larger the number of U235 atoms that disintegrate each second — the faster energy is released and the hotter the fuel rods become. The uranium in a U.S. commercial nuclear reactor is thoroughly mixed with neutral material and formed into pellets about half inch wide and three-quarters of an inch long. The pellets are stacked tightly in metal tubes, forming "fuel rods" that are several feet long. Each fuel rod is just wide enough to hold a single column of pellets. The fuel rods are sealed, to keep all of the radioactive materials inside. There are thousands of these fuel rods in a typical reactor. They contain around 60 tons of uranium – but only about three tons are U235. (The majority of the uranium in the reactor is in the form of the most abundant naturally occurring isotope of uranium, U238, which cannot sustain the fission process without the help of an elevated concentration of the isotope U235.) The people in charge of the reactor can control the chain reaction by preventing some or all of the released neutrons from interacting with U235 atoms. The physical arrangement of the fuel rods, the low U235 concentration, and other design factors, also limit the number of neutrons that can interact with U235 atoms. The heat generated by the chain reaction is used to make steam,

and that steam powers specialized machinery that drives an electrical generator, generating electricity. Science 101 will look at how that works in more detail in a later issue.

The author has a BS in Electrical Engineering from Carnegie-Mellon University.

Comments

comment #733652 posted on 2014-10-14 17:05:03 by Moderator in response to comment #733365

Thanks for your comment. We've revised the post to specify that fuel must be enriched for use in current U.S. commercial nuclear power plants. As for your other comment, yes, all Uranium isotopes decay (the definition of radioactive). I used "disintegrate" as a reasonable synonym for "fission" in this post, which was intentionally written at a middle-school level. For that reason, it does leave out some of the finer points that experts know. Paul Rebstock

comment #766051 posted on 2014-10-17 12:03:27 by blackout in response to comment #757027

Aye Captain, the airborne monitoring also shows increased radiation readings after earthquakes 4 and larger in the Fukushima area. I have coined this the "Shake and Bake" effect of joustling the coriums. Admittedly, for me it is a tough one to model. But it should be modeled to determine risk and costs, as compared to the herculean task of "Lift and Seperate" the coriums. Especially important and in light of just week, Oak Ridge research proving beyond a doubt that elements can reorder themselves even in a solid matrix (like a mostly cooled corium) and that heavy elements in particular, like plutonium, are even better at moving in solids than lighter elements. Beside the gravity weight separation from beigin a pretty fluid state at the initial meltdown, and subsequent heavy element reordering, what are the risks that a high enough mass of plutonium is shoved together with another mass pf mostly plutonium during a shake and bake earthquake, and the whole kit and kaboodle goes prompt critical sky high. They are just beginning to understand some of this from the WIPP radiation explosion, but the risks from out of vessel coria are dramatically higher.

comment #733365 posted on 2014-10-14 15:06:55 by Thomas B. Cochran

This piece contains an egregious error in the second sentence, "Uranium must be enriched to contain about 5% U235 to function properly as fuel for a nuclear power plant." As most students of nuclear engineering surely know, reactors can be designed to operate successfully using natural uranium fuel, e.g, the first reactor built by Fermi, the early production reactors at Hanford and the CANDU reactors in Canada and elsewhere. The piece is also confusing in its reference to uranium being a "radioactive element" and references to "disintegration" in its failure to distinguish between radioactive decay, spontaneous fission and and the fission chain reaction in a reactor. Who writes this stuff? Who at NRC reviews it before posting?

comment #757027 posted on 2014-10-16 14:48:09 by CaptD

I'd like to see the NRC post something about the spontaneous fissioning like those that are occurring at Fukushima, due to the corms interactions with ground/seawater water, which I call The Fuky Effect (which is the on-again, off-again fissioning of one of more of the corium(s), as they interact with water below Fukushima).

comment #757026 posted on 2014-10-16 14:47:02 by CaptD in response to comment #733365

Good comment!

The NRC Commission Has Held 5,000 Meetings—Give or Take

posted on Thu, 09 Oct 2014 15:14:20 +0000

*Annette Vietti-Cook
Secretary of the Commission*

After one of our commissioners noted a milestone in July – the 5,000th meeting of the NRC's Commission – we thought it might be useful to share what the Secretary of the Commission does behind-the-scenes in planning Commission meetings. There is much more planning than



you might think. [caption id="attachment_5766" align="alignright" width="300"] The NRC Commissioners conduct a public meeting. Annette Vietti-Cook is on the left.[/caption] First some background. The "Commission," in NRC-

speaking, means the presidentially-appointed, Senate-confirmed Commissioners acting together. At full-strength there are five Commissioners. The [Commission](#) sets policy for the NRC, develops regulations on nuclear reactor and nuclear materials safety, issues orders to licensees and adjudicates legal matters. The federal [Sunshine Act](#) requires that any time the Commissioners meet to conduct agency business, the meeting must be public. Exceptions to this requirement are made when the Commission discusses matters such as security or confidential legal, personnel, personal or proprietary information. Our regulations lay out how we will meet the Sunshine Act requirements. Public Commission meetings are held at NRC headquarters in the Commissioners' Conference Room, with planning starting months in advance. This is where the staff members in the NRC's Office of the Secretary (we call it SECY) come into play. To prepare for the meeting, SECY works with NRC staff to plan agendas for proposed public meetings, including lists of potential internal and external contributors, which are intended to provide the Commission with a range of perspectives. In the weeks ahead of a meeting, the NRC staff and other presenters send background materials and slides to the Commissioners. This advance information allows the Commissioners to come prepared to get their questions answered. Meanwhile about a half-dozen people in SECY are making sure of the details—arranging parking and pre-registration for external participants, getting relevant information posted on our public website, creating a seating chart for those who will brief the Commission. As meeting day approaches, SECY ensures other logistics are in order. They make sure the room is set up properly, with name tags, microphones, and water pitchers placed on the conference table, chairs arranged, flags properly positioned. On meeting day, these preparations probably won't be noticed by the 50-60 people who may come to the meeting and the untold number tuning into the webcast. (Incidentally, the room holds 155). The Chairman opens the meeting and turns the meeting over to the presenters. Following the presentations, the Commissioners have an opportunity to ask questions. Even after the meeting ends, SECY has more to do. All public Commission meetings are webcast, recorded and transcribed. The transcript must be validated and posted to the NRC website. The webcast is archived. And following most every meeting, SECY develops a memo to give the staff direction (we call this an SRM, or staff requirements memorandum), which must be approved by the Commission. So you see, a lot of work goes into organizing the 5,000 or so Commission meetings we've held since the inception of the NRC almost 40 years ago – not just in my office. We hope you'll tune in or attend a Commission meeting in the future. You can find the Commission's meeting schedule [here](#) and a complete schedule of NRC public meetings [here](#).

Comments

comment #698098 posted on 2014-10-11 01:10:15 by David Burg

As we know that NRC's OIG auditor has observed over 10,000 secret meetings held by the NRC staff, all under the veil of SGI-information (Safeguards Information). This classification is unique to the NRC and which is used in addition to the Confidential classification used by the federal institutes. Now this is just not enough for the NRC to simply honor just information that is classified Confidential. An independent audit of the NRC should be conducted on timely basis as they are appearing to overuse their authority to withhold information from the general public. They think themselves to be CIA. It is noteworthy that nobody is stopping them from acting like this. At this time, an independent audit is a must.

comment #685681 posted on 2014-10-09 14:37:14 by dick0645

I am so impressed by all the public meetings the Commission has held! That must mean that they are really living up to what they say about regulatory openness and transparency! Not mentioned is how many secret meetings they have held. More importantly is the fact that these meetings are well orchestrated in advance to make sure that meeting itself is just an exercise in rubber-stamping. The real nitty-gritty stuff is all worked out in advance. There is, like any open government meeting, really nothing controversial discussed and certainly no need for independent thought. Besides the real cloak and dagger stuff is handled by the NRC staff not the Commissioners. Even the NRC's own OIG audit pointed that there were over 10,000 secret meetings held by the NRC staff, all under the cloak of SGI-information, i.e. Safeguards Information. This SGI classification is unique to the NRC and is used in addition to the Confidential classification used by all federal agencies. It is just not enough for the NRC to simply honor just information that is classified Confidential, they go much further. It is high time for an independent audit of the NRC for they are overusing and abusing their authority to withhold information from the public. They are acting like the CIA and being allowed to get by with it!

comment #691402 posted on 2014-10-10 11:24:02 by dick0645 in response to comment #690988

Thanks for the prompt informative reply. You brought up a number of 5000 in your discussion of the meetings held by the Commission as it was favorable for you to do so. How about some numbers so the public can better put this info in perspective. How many secret Commission meetings have been held over the same time period? How many Commission meetings have been at least partially closed to the public? How many closed and partially-closed meetings have been held between power plant licensees and NRC? How many times have meetings been closed to the public because they involved SGI? You say SGI is a special category of sensitive yet unclassified info that must be protected. If it is really sensitive and concerns the physical protection of operating power reactors why is it not classified confidential in the first place?! If SGI info cannot be classified as confidential then it seems to me the NRC is hiding stuff that other agencies would make available to the public. This is yet another example of inappropriate NRC secrecy. So much for talk from the NRC Commissioners about NRC openness and transparency?!

comment #690988 posted on 2014-10-10 10:30:34 by Moderator in response to comment #685681

Meetings are public between the NRC staff and licensees, certificate holders, potential applicants, and external stakeholders except in cases outlined in our [policy on public meetings](#). You can find the staff's schedule of these meetings—even those closed to the public—on our [website](#). To clarify, safeguards information is a special category of sensitive unclassified information that must be protected. SGI concerns the [physical protection](#) of operating power reactors, spent fuel shipments, [strategic special nuclear material](#), or other radioactive material. This category of information was mandated by Congress in the Atomic Energy Act to guard against the

theft, diversion or sabotage of nuclear material that could harm public health or the common defense and security. For additional detail, see [Information Security](#).

comment #684323 posted on 2014-10-09 11:40:49 by adrossin

The stated purpose of these meetings and even the Sunshine Act is the Public's Right to Know. Opportunities are provided for Comments. The right to know and to comment must not be interpreted as The Power to be Obeyed. Commissioners must make their decisions and submit them for NRC action. That is their duty. The public has no further input unless a new issue is raised for NRC action and new Public Comment Opportunity..

REFRESH: Do Not Fear Your Smoke Detector – It Could Save Your Life

posted on Mon, 06 Oct 2014 14:35:34 +0000

Maureen Conley
Public Affairs Officer



We sometimes get calls from people worried about radiation from smoke detectors in their homes. There are many reasons why the public need not fear these products. Ionization chamber smoke detectors contain very small amounts of nuclear material. They might use americium-241, radium-226 or nickel-63. These products detect fires early and can save lives. [We explained how smoke detectors work in greater detail in an earlier [blog post](#).] The Atomic Energy Commission granted the first license to distribute smoke detectors in 1963. These early models were used mainly in factories, public buildings and warehouses. In 1969, the AEC allowed homeowners to use smoke detectors without the need for a license. Their use in homes expanded in the early 1970s. The NRC took over from the AEC in 1975. Makers and distributors of smoke detectors must get a license from the NRC. They must show that the smoke detector meets our health, safety and labeling requirements.



Most smoke detectors sold today use 1 microcurie or less of Am-241. They are very safe. A [2001 study](#) found people living in a home with two of these units receive less than 0.002 millirems of radiation dose each year. That is about the dose from space and the earth that an East Coast resident receives in 12 hours. Denver residents receive that dose in about three hours. These doses are part of what is known as “background radiation.” The radioactive source in the smoke detector is between two layers of metal and sealed inside the ionization chamber. The seal can only be broken by the deliberate use of force, which obviously we discourage. Still, even then it would result in only a small radiation dose. The foil does not break down over time. In a fire, the source would release less than 0.1 percent of its radioactivity. It’s important to understand that none of the sources used in smoke detectors can make anything else radioactive. What about disposing of smoke detectors? A [1979 analysis](#) looked at the annual dose from normal use and disposal of Am-241 smoke detectors. The study used actual data and assumptions that would overstate the risk. It allowed the NRC to conclude that 10 million unwanted smoke detectors each year can be safely put in the trash. The [2001 study](#) looked at doses from misuse. It found that a teacher who removed an americium source from a smoke detector and stored it in the classroom could receive 0.009 millirems per year. If the teacher used the source in classroom demonstrations, handling it for 10 hours each year would give less than a 0.001 mrem dose. A person who swallowed the source would receive a 600 mrem dose while it was passing through the body. I hope this information allays concerns. Unless you remove and swallow the source, your dose from a smoke detector could not be distinguished from what you get throughout your day. And that smoke detector could save your life. REFRESH is an occasional series during which we revisit previous blog posts. This originally ran on June 11, 2013. We are rerunning now in honor of Fire Prevention Week. According to the National Fire Protection Association, the week was established to commemorate the Great Chicago Fire, which killed more than 250 people, left 100,000 homeless, destroyed more than 17,400 structures and burned more than 2,000 acres. This year’s theme is Smoke Alarms Save Lives: Test Yours Every Month.

Comments

comment #683692 posted on 2014-10-09 09:28:12 by christinakilimanjaro

i think smoke dectors should be put under spotlight to let entrepreneurs find new safer ways to detect fires/smoke

comment #673446 posted on 2014-10-08 07:01:33 by Dan Williamson in response to comment #659589

I'd say the NRC needs no help at all in that area. They can't seem to post anything at all here without it being promptly dusted with a thick layer of conjecture, innuendo, fear-mongering, and outright lies. "Other countries have responsibly provided for safe, centralized, permanent underground waste repositories for their nuclear waste." Really?!? Having fought tooth and nail to derail Yucca Mountain, you have the gall to criticize NRC for not allowing it to come online? Please continue to perpetuate the stereotype....your message becomes more ridiculous and irrelevant by the day.

comment #659112 posted on 2014-10-06 12:51:35 by Fresh

Well 10% of the Americium ionizations are gamma which won't be stopped by air or even a wall, so we will "receive" those. It's probably small, but unnecessary. We understand that it won't make other things radioactive, that can only be done by "activation" by a neutron source such as in a reactor or in a moderated prompt criticality as is possible in a run away MOX reaction. That said, just because it can't make something else radioactive, doesn't mean that it can't deliver a blow of energy, disrupting cells, making free radicals, breaking strands of DNA. There are new smoke detectors that get the job done without any radiation. And think of those 10's of millions of radioactive smoke detectors that end up in landfills every year....they will ALL eventually leech into our drinking groundwater. There are no laws against disposal of smoke detectors. I think there should be.

comment #660006 posted on 2014-10-06 14:49:53 by dick0645

I am glad the NRC continues to address public concerns regarding the safety of nuclear radioactive sources in our home smoke detectors. Public concerns about radioactivity persist even though folks see a great benefit to their use in many applications. What is much harder for people to understand is the use of radioactivity when there is no perceived benefit in its use. For example, when the use of radioactivity poses a huge potential public safety problem. Nuclear weapons, nuclear power, and high-level nuclear waste all fall into that category. Nuclear power, never too cheap to meter, is now one of the most expensive power sources on the planet. It is fraught with dangers. Talk to those who survived the accidents at TMI, Chernobyl, and Fukushima. The nuclear plants in operation in the US are mostly old with ancient technology. It is good that no new nuclear plants have been brought on-line in this country for several decades. Nuclear waste has been allowed to pile up at nuclear plants across our country. Of course allowing this waste to pile up makes all our nuclear facilities even more tempting terrorist targets. Other countries have responsibly provided for safe, centralized, permanent underground waste repositories for their nuclear waste. It is high time to preserve the beneficial uses of radioactivity and to phase out the dangerous ones!

comment #659589 posted on 2014-10-06 13:44:27 by CaptD

The comment above point out that the NRC needs to do a bit more to insure that these blogs don't just become a Pro-Nuclear pat on the back if they really want to be considered as factually providing the big picture of how radiation is being treated in the USA and beyond.

comment #659179 posted on 2014-10-06 12:58:09 by Ace Hoffman (@AceHoffman)

This information would be much more complete if it also talked about the non-nuclear alternatives and why they are either too expensive, or not up to the task in some way. Also, the estimates which compare a pair of smoke detectors in someone's house to 12 hours on the East Coast or 3 hours in Denver are misleading comparisons for two reasons: First, because there are benefits from living various places that far outweigh the added risk from the differences in background radiation (which one seldom knows about when moving from city to city anyway, trust me...), and Second, because all radiation exposure is normally considered cumulative (as a rough mathematical estimate of a complex group of biological processes), so if one chooses to make such comparisons, one should say it ADDS a risk -- perhaps one might say a year's worth of two smoke detectors adds a risk similar to: "taking the family to the beach one extra day in August (instead of keeping them inside a non-granite building...)... but continuously in small daily doses." As to your comparisons about the risk from swallowing the radioactive isotope, I think a comparison to typical medical doses would have fit well there. (Admitting that medical doses vary from machine to machine, targeting capabilities of the machine and its operator, sensitivity of the receptor plates on the device, etc. etc..) Not being able to "distinguish" the risk from smoke detectors versus the risk from everyday life, or from television screens, or what-have-you does not make such things harmless. Statistically, an effect has to be pretty substantial to be noticed at all: Typically 1 in 20 off from a normal value. Small changes in risk are difficult to quantify statistically, and impossible to notice in the real world, just by estimating and guesswork. And that's without confounding factors! To allay my concerns, I would like to also know how the workers at the factories, where surely there is quite a bit more Americium-241 in one place, are protected, as well as those who "manufactured" (created, along with a lot of other isotopes) the Am-241 (in a reactor, I presume) and transported it. It's only one 12 hour period on the east coast (3 in Denver). But how many other things that we come in contact with in life are radioactive because we keep thinking each one's dose is a small amount? Dozens? Hundreds? Thousands? Clock dials? After all, we need to know the time at 3:00 am! A higher daily dose may be unavoidable if one wants to live in Denver, but that is one's choice. What are my other choices here?

comment #675248 posted on 2014-10-08 12:01:35 by dick0645 in response to comment #673446

Dan W, I can see I think where you are coming from. I do look for the other side of the coin when the NRC comes out with blatant pro-nuclear stuff. I have rarely complimented the NRC on anything except their excellent work on implementing the lessons learned from the Fukushima accident. Got me wrong on Yucca Mountain though. Yucca mountain was and is an excellent site for a

permanent high level waste repository. I am all for it! NIMBY was allowed sink it. Perhaps we need a suitable site that is already under total government/military control. There are vast military reservations in the West especially. Using that land we wouldn't have to try and tip-toe through all the political "tulips". Need to declare the lack of a permanent high-level storage area the national security issue it is and get on with solving the problem.

comment #675303 posted on 2014-10-08 12:10:20 by dick0645 in response to comment #673446

Dan, check out the underground test facilities and nuclear waste repository sites around the globe at http://en.wikipedia.org/wiki/Deep_geological_repository

comment #675327 posted on 2014-10-08 12:15:00 by dick0645

Dan, as you know, the NRC is supposed to be the NRC "watchdog". The "dog and pony show" is already aptly done by the nuclear industry and the DOE.

comment #803471 posted on 2014-10-20 17:40:06 by Angela Kale

Old smoke detectors must begin to change? Is it possible to emit more radiation when smoke detectors were old over time. A friend had told me, cactus blocking radiation. Is that right? In this case, mobile phones are causing to more radiation than smoke detectors.

Making Sure SAFER Resources Are Ready To Go

posted on Thu, 16 Oct 2014 14:01:26 +0000

Jack Davis
Director, Japan Lessons Learned Division



Part of the U.S. nuclear power industry's response to the NRC's post-Fukushima [Mitigation Strategies](#) Order involves emergency equipment centers in Memphis, Tenn., and Phoenix, Ariz. The centers have multiple sets of generators, pumps and other equipment. The centers would send needed equipment to a U.S. nuclear plant to maintain safety functions indefinitely if an event disabled that plant's installed safety systems. The NRC's been reviewing how an industry group, the Strategic Alliance for FLEX Emergency Response (SAFER), can move equipment from the response centers to plants. We [observed](#) two demonstrations SAFER ran in July and reviewed SAFER's equipment, procedures, and deployment strategy. Overall, the [NRC staff concludes](#) that having the response centers and the group's plans and procedures in place will enable plants to comply with the final phase of the Order. The group has contracted with Federal Express (for both truck and aircraft shipment) to get supplies to a plant within 24 hours of a request. SAFER's documentation of FedEx's capabilities included a proven ability to work with the Federal Aviation Administration to get proper access to otherwise restricted airspace in the event that equipment must be flown to a nuclear power plant site. One SAFER demonstration sent equipment by road from Memphis to the Three Mile Island plant in Pennsylvania. The NRC staff noted some areas for improvement, such as clarifying who's responsible for unloading equipment at a site or where the equipment's first tank of fuel will come from. SAFER responded by adding details to its plans and beefing up its training program. The other demonstration simulated airlift of equipment from Phoenix to the Surry plant in Virginia. After the NRC shared its observations, SAFER gave our staff additional details on how it would obtain helicopters to bring supplies to a plant if area roads are impassable. We also reviewed a report on the Memphis center's test of packing the equipment to efficiently load and fit onto FedEx's planes. Although the test generated a delivery schedule a few minutes longer than the industry expected, the NRC is satisfied that SAFER has applied lessons learned to streamline its approach and ensure SAFER can meet its own deadlines. Our website's Japan Lessons Learned section can give you [more information](#) about the mitigation strategy requirements and related guidance.

Comments

comment #832629 posted on 2014-10-22 17:28:34 by dick0645 in response to comment #832310

Good to hear Scott. Why are the details of these preparations kept secret? There is just way too much secrecy associated w the NRC. The NRC behaves like the CIA. Public confidence is enhanced by openness and transparency, something that the Commission only gives lip-service too.

comment #837691 posted on 2014-10-23 12:20:28 by Moderator in response to comment #803673

You can read the details on requirements for a plant's Mitigation Strategies on the NRC website: <http://www.nrc.gov/reactors/operating/ops-experience/japan-dashboard/mitigation-strategies.html> Many of the plants' integrated plans for the strategies are also available on our website: <http://www.nrc.gov/reactors/operating/ops-experience/japan-dashboard/japan-plants.html> In certain circumstances, details may be withheld if the systems involved would also play a part in keeping the reactor safe if attackers caused large fires or explosions on the site. Scott Burnell

comment #756741 posted on 2014-10-16 13:46:38 by CaptD

Jack Davis - A good first steps, but what happens if the USA gets hit will a really big Quake that also takes out Reactor infrastructure that also has to be replaced before the backup power can be used? Fukushima had a large amount of damage caused by the Big Quake that started the reactor coolant leakage "problem" and that could easily happen here if a beyond basis event occurred at the same time! I'd also suggest that all critical equipment be stored on pallets and/or configured so that it can be air lifted by large transport helicopters so that should any roadways be blocked, replacements could be delivered via air after a disaster.

comment #756521 posted on 2014-10-16 13:19:09 by dick0645

This additional layer to support defense in depth at our nuclear plants is simply outstanding. The industry, these contractors, and the NRC are to be commended. I cannot think of a single safety initiative that has done more to make safe even safer! Now one call does it all. One if by land, two if by air! (-)

comment #832310 posted on 2014-10-22 16:28:00 by Moderator in response to comment #803673

Each site's approach to meeting Phase 3 requirements accounts for the possibility of limited access to the site. There are no instances of Phase 3 approaches that deal with delivering items that would challenge any building load limits. Scott Burnell

comment #757041 posted on 2014-10-16 14:52:16 by Vinod Arora

Demand for safer, reliable and transparent nuclear energy is increasing throughout the world to eradicate poverty, provide employment, develop new infrastructure, factories, cities, hospitals, feed and uplift the lives of billions of uneducated and starving people and reduce thermal pollution. NRC can act as a Leading Model Global Agency in helping achieve this goal, which will indirectly promote world peace and reduce terrorism and drug trafficking. Chernobyl, Fukushima, Mihama, Three Mile Island and Shutdown of SONGS 2 & 3 (as concluded by NRC ASLB and NRC OIG) was caused by Human Errors and Equipment Failures. Nuclear and Public Safety should be based on Defense-in-Depth and Preventive Approach and not-after-fact Mitigating Approach and NRC/FEMA will deal with the consequences of an accident after it happens. Because of lack of budget, manpower, training and Industry/Utility/Lobby/Political Pressure, NRC may have learnt lessons but has not been able to apply nuclear safety lessons in the case of SONGS as concluded by NRC ASLB and NRC OIG. Therefore NRC has to learn to respect verbatim & strict enforcement of regulations and not cave into Industry?Utility Pressure as NRC AIT Team did in case of SONGS Senior Leadership Team.

comment #812202 posted on 2014-10-21 10:33:48 by dick0645 in response to comment #803673

Like the ability to deliver needed equipment to the affected site by air if necessary. If a nuclear plant is swamped by a flood this equipment would have to be delivered on a roof top. Rooftops at these sites are typical construction grade. They are not designed as helo landing pads or for the delivery of heavy pallets. Are roofs at these sites being upgraded?

comment #803673 posted on 2014-10-20 18:10:04 by Michael Antonelli in response to comment #756741

All the SAFER equipment CAN be airlifted. The response centers have contracted out to both land and helicopter transport groups and all equipment is sized so that it can be delivered on site via air if necessary and still be delivered within the 24 hour timeframe. Also there is still no evidence that shows the earthquake caused any leaks of the primary reactor coolant system at Fukushima. In fact, there is more and more overwhelming evidence that is not the case. Reference: <http://www.cas.go.jp/jp/seisaku/icanps/eng/final-report.html> (see attachment 1), <http://www.neimagazine.com/news/newsdaiichi-accident-caused-by-tsunami-not-earthquake-japanese-regulator-concludes-4322346> , and , http://www.tepco.co.jp/en/press/corp-com/release/2013/1233101_5130.html

comment #864161 posted on 2014-10-26 10:35:16 by John King

i wish america could just build a mega nuclear plant say in greenland or some desert and then supply the whole world electricity because some african countries will never get the simple thing of electricity supply right.

Watts Bar – Making History In Yet Another Century

posted on Tue, 21 Oct 2014 17:31:10 +0000

*Jeanne Dion
Project Manager
Watts Bar Special Projects Branch*

[Unit 1](#) at the Watts Bar Nuclear Plant in Spring City, Tenn., has a claim to fame as the last U.S. commercial nuclear reactor to come online in the 20th century. Now, the Tennessee Valley Authority aspires to have its sister reactor (Watts Bar Unit 2) make its own historic claim.



[caption id="attachment_5789" align="alignright" width="300"] Numerous cranes helped complete construction of the Watts Bar Nuclear Plant Unit 1 containment building in front of the plant's cooling towers in 1977.[caption] If the NRC concludes that the reactor is safe to operate and approves its operating license next year, Watts Bar Unit 2 could become the first new commercial nuclear reactor to come online in the U.S. in the 21st century. To understand a little of the history of Watts Bar Nuclear Plant, let's rewind to a time when *Schoolhouse Rock* premiered and the first mobile phone call was made in New York City — a time predating the NRC. In 1973, the Atomic Energy Commission greenlighted construction of Watts Bar Units 1 and 2 under the "two-step licensing process," where construction permits and operating licenses were issued separately. In 1985, construction quality issues at its plants caused TVA to stop work at both Watts Bar Units. Eventually, TVA resolved the issues and completed construction of Unit 1, and the NRC issued its operating license in 1996. Fast-forward to more recent activities. TVA decided in 2007 to reboot the Watts Bar Unit 2 construction and licensing process. They submitted an update to their original license application to the NRC in 2009. Other recent applicants have elected to use the [combined license application process](#), where we issue a single license to both construct and operate a nuclear power plant at a specific site. However, because of the unique history of Watts Bar Unit 2, TVA chose to continue under the two-step licensing process. So, NRC staff developed a regulatory framework and established a licensing approach tailored specifically to the project. We updated our construction inspection program associated with the two-step licensing process to provide guidance that reflects current NRC practices. For example, the NRC staff identified areas for further inspection at Unit 2 by screening applicable communications, allegations and other open items in the review. The NRC staff also developed inspection guidance specific to TVA's refurbishment program, which replaces or refurbishes systems and components at Watts Bar Unit 2. TVA's resolution of key safety issues and the continued progress of construction inspection activities drive our review schedule. If the operating license is issued next year, the NRC's job doesn't just end. We'd continue to inspect start-up testing required for power ascension and to oversee that Unit 2 transitions into the [NRC's Reactor Oversight Process](#) before it can begin producing commercial power. And, of course, the Resident Inspectors, the agency's eyes and ears at the plant, would continue to carry out day-to-day inspection work to ensure safety and security is monitored and inspected during licensing and throughout the transition to commercial operation. For more information about the Watts Bar Unit 2 project, visit the NRC's [website](#). There will be a Commission briefing Oct. 30 at 9 a.m. on the license application review. You get details about the briefing from the [meeting notice](#). We'll also do a [live webcast](#).

Comments

comment #838702 posted on 2014-10-23 16:34:35 by dick0645

Dr Frankenstein is Back! TVA's Dr. Frankenstein is at it again! The good doctor has already brought back one old nuclear power plant from the dead at TVA and is now hooking up another for resurrection. The Watts Bar nuclear units (Units 1 & 2) were designed a half-century ago. Unit 1 finally entered service in 1996. TVA is planning to get Unit 2 running late next year. These old nuclear plant fossils were designed at the same time as the stricken Fukushima reactors in Japan. To their credit TVA has replaced some unused old equipment at Unit 2 with new equipment. Unit 1 has operated quite successfully since its start-up, logging two continuous operating runs of 512 and 437 days prior to 2008. But the downside is TVA's poor regulatory performance record. Both nuclear units have been assessed large civil penalties (and we know who pays those) for falsifying documents; for using non-certified parts; for retaliating against an employee for raising safety concerns; for withholding adverse information on potential flooding; & for multiple challenges to a safety system. Another civil penalty was narrowly avoided because the TVA "lawyered-up" and got an out-of-court settlement with the NRC. More recently the TVA has been granted an extension of time to complete a flooding re-evaluation at the site. This evaluation must assume catastrophic earthen dam failures upstream from the site. Not an easy evaluation as there are 17 upstream dams involved. Based on TVA's poor handling of prior flooding analysis, a complete independent evaluation of TVA's analysis should be performed before the NRC authorizes the start-up of Unit 2. In my opinion the TVA has gone overboard on expensive nuclear power. TVA is behaving like a moth drawn to a flame. And we know who pays the price for that too!

comment #830611 posted on 2014-10-22 10:43:54 by Jim Riccio

Nice revisionist history! The NRC licensed TVA's Watts Bar 1 by betraying TVA's whistle blowers. NRC & TVA entered into a MOU to handover those who came to NRC to raise safety issues. NRC betrayed nuclear workers who were trying to do the right thing. The MOU was signed by NRC's Ben Hayes and TVA's Norman Zigrossi. Hayes was fired by NRC, TVA gave Zigrossi a

bonus! According to NRC OIG: On July 14, 1994, the NRC OIG issued its Report of Investigation for Case No. 93-85H, "Investigation of Improper Disclosure of Allegers' Identities By the NRC Office of Investigations (OI) to the Tennessee Valley Authority, Office of the Inspector General (TVA-OIG)." OIG investigated allegations raised by TVA employees that they believed NRC granted them "confidentiality" when they reported safety concerns but subsequently disclosed their names to the TVA-OIG without their consent. These individuals further alleged that these disclosures were facilitated by a Memorandum of Understanding (MOU) entered into by the TVA-OIG and the NRC Office of Investigations (OI). Four findings were made. The investigation determined: OI disclosed to the TVA-OIG without the individuals' consent or knowledge the identities of allegers who believed their identities would be held confidential. OI did not have an adequate system in place to track referrals made to the TVA-OIG. Region II employees were misleading allegers as to the degree they could expect their identities to be protected, based upon a regional office instruction. interpretation of Freedom of Information Act (FOIA) exemptions was contrary to the general NRC practice until revised at the direction of the Deputy Executive Director for Operations in May 1991, thus allowing the release of allegers' names who had not signed confidentiality agreements. http://www.nrc.gov/reading-rm/doc-collections/insp-gen/1996/96-01s.html#_1_7 Here's the MOU: <http://pbadupws.nrc.gov/docs/ML0124/ML012410412.pdf>

comment #837643 posted on 2014-10-23 12:05:07 by Garry Morgan

Histrionics? The TVA has nearly bankrupted itself due to unnecessary nuclear construction and ill advised projects such as Watts Bar, Bellefonte and now the revisited Clinch River site with a SMR project over a sinkhole and Karst terrain. That is not "histrionics," as a ratepayer I'm not a satisfied customer as I detest waste and abuse. Lets discuss the so called drama of Bellefonte, Yellow Creek, Phipps Bend and Hartsville, all nuclear projects cancelled during the construction phase due to the ever present intentional underestimation of costs, over estimation of power needs and facilitation of deceit to the public. Or how about the woeful shortage of nuclear decommissioning funds and personnel retirement fund shortages in TVA's coffers. All due to nuclear power expenditures - this includes Watts Bar. TVA financial problems are not drama nor emotion, unless you are one of the employees or retirees who are concerned about their retirement money. For some nuclear PR types and the supporters of nuclear power the accusation of emotion and drama, histrionics, in a factual presentation where there was no "histrionics" fills their need for transference of reality. Mr. Riccio stated facts, not drama nor emotion. The complete history of Watts Bar needs to be told, not just a partial history from the NRC, TVA or the NEI's historical accounts. There have been many improvements and many sacrifices made due to the "whistleblowers," to say discussion of whistleblowers and their contributions is "histrionics" is fallacy, not fact. The purpose of history is to learn from the past so that we do not repeat the mistakes of our past history - nothing dramatic or emotional about that, just part of a wise decision making process.

comment #832160 posted on 2014-10-22 15:57:25 by Dan Williamson in response to comment #830611

The blogger writes an 11-paragraph 20,000-foot view of the entire history of Watts Bar, and you make her out to be a liar for not delving into an isolated event that aligns with your worldview? Please.....take your histrionics elsewhere.

comment #862417 posted on 2014-10-26 06:06:28 by John King

is nuclear the best option for our energy needs. if we are going to use nuclear, we need to find nuclear disposable mechanisms which make the waste products of nuclear plants not harmful

NRC Employee Survey Shows Agency as a Top Performer

posted on Mon, 27 Oct 2014 19:27:28 +0000

Miriam Cohen
Chief Human Capital Officer

Every year, the U.S. [Office of Personnel Management](#) polls federal workers and asks how they feel about their jobs, their leaders and their work culture, among other things. And now the results of the 2014 Federal Employee Viewpoint Survey are in. How did the NRC do? We're happy to say the NRC remains as a top performer. NRC employees gave high marks to the agency in such categories as:

- Quality of Hire *Q21* - *My work unit is able to recruit people with the right skills. (22.5 percent above the government average)*
- Resource Sufficiency *Q9* - *I have sufficient resources (for example, people, materials, budget) to get my job done. (21.9 percent above the government average)*
- High-Quality Recognition *Q31* - *Employees are recognized for providing high quality products and services. (19.3 percent above the government average)*



The NRC also remains above the government-wide average in all categories -- with the largest increases over last year in favorable responses centering on training and our ability to recruit the right people with the right skills. We saw an increase this past year in pay and job satisfaction along with significant progress in the area of talent management, which generally means everything done to recruit, retain, develop, and reward employees. Leadership and Knowledge Management dropped a single percentage point. The rest of our scores either stayed the same or improved. This is the second survey in which OPM scored agencies in diversity and inclusion, which includes questions that measure characteristics of an agency that improve diversity and inclusion, such as being fair, open, cooperative, supportive and empowering. The so-called "IQ Index" for the NRC increased slightly from last year and remains well above the government benchmark. The Employee ViewPoint Survey is anonymous, web-based, and offered to all permanent NRC employees. This year, 68 percent of NRC employees completed the survey (about 2,467 respondents out of 3,624). Obtaining employee input and taking action based on this input is a key component of our agency's continuous improvement efforts and a major reason why we have a highly engaged workforce. As we have done in the past, the agency will analyze the survey results and identify focus areas. We believe that as a result of our collective efforts the NRC remains a great place to work. We've posted our results on the agency [website](#).

Comments

comment #890813 posted on 2014-10-29 13:05:50 by blackout in response to comment #882018

The companies "footing the bill" think the NRC is doing just fine as they allow them to leave spent fuel in pools for decades, and they get power uprates and license extensions. But let's call a spade a spade. Those companies do not foot the bill, they just write the check, and that cost is put into the energy rate case with the local utility commission, and the CITIZENS, the rate payers, pay the bill. How do you feel about the recent political speech that concluded "businesses don't create jobs"...a litmus test of sorts. But I would recommend that you keep your commentary professional. saying things like "your skewed little world" are insulting and not up to the standards of this fine blog in which the NRC is really trying to reach out to people. stock out.

comment #875707 posted on 2014-10-27 15:39:01 by stock

That all is commendable. Now I would like to see a poll taken of say 100 people from each state, your bosses i.e. the citizens who pay your salary. I would like to see that poll results on how well people think the NRC is doing its job.

comment #876302 posted on 2014-10-27 17:29:18 by dick0645

Glad the NRC is doing so well in the eyes of some of its employees. Not a single thing you can improve on. Why don't you survey your licensees and the public at large?! You might find a few areas for improvement if you do so!

comment #876343 posted on 2014-10-27 17:35:15 by dick0645

Is the NRC's pro-nuclear PR department trying to outdo all the industry's pro-nuclear propaganda folks?!

comment #876364 posted on 2014-10-27 17:39:02 by dick0645

And I was once foolish enough to think that the spin stopped with the agency that is supposed to be the nuclear industry's watchdog.

comment #877539 posted on 2014-10-27 20:36:09 by Nikohl Vandel

Reblogged this on [Niki.V.all.ways.My.way](#), and commented: Hmmmmm ... i wonder what questions they actually ask. And, I wonder how this "Chief Human Capital Officer" thinks about how the NRC and the EPA put an actual dollar value on human life? are we really this far from a reality where every life is "priceless" so as to think of our federal employees as "human capital"? wrong mindset for certain for "We The People"!

comment #905450 posted on 2014-10-31 10:11:10 by blackout in response to comment #904177

@Mod, I see your post that 90% is from license fee, what is the other 10% from. Also, to make it very clear, Public Utility Commission set the amount of profit companies can make. Companies submit ALL of their costs as part of a rate case. These costs are added into the cost per kWh to sell power. The license fees are added in the cost, and thus into the cost per kWh to sell power to the consumer, the rate payer. Therefore the funds to run the NRC come from the consumers of the power. In other words, the consumers are "the boss" and the boss ought to do an annual review of it's employees. I request the NRC do a pilot program and ask for a public review of it's performance.

comment #905706 posted on 2014-10-31 10:22:13 by Dan Williamson in response to comment #899816

You mean, so that my contentions can be dismissed out of hand if I don't happen to agree with (you)? "...could otherwise be productive private land..."? Your position is that the NRC shouldn't even exist?? Sorry, I'm doing nothing to harm your "traction." It's lost already. License holders make a vital product and sell it....and then are assessed part of their earnings for the privilege of being regulated. Quite a different situation than a taxpayer having a sizable portion of his earnings confiscated. Moderator note: Some verbiage removed to adhere to comment guidelines.

comment #905737 posted on 2014-10-31 10:23:39 by Moderator in response to comment #899816

A full explanation of the NRC funding mechanism is available here: <http://www.nrc.gov/about-nrc/plans-performance.html#par>
Moderator

comment #882018 posted on 2014-10-28 06:55:10 by Dan Williamson in response to comment #875707

Here's a little inconvenient truth for you. "Citizens" do not pay the NRCs salary. That agency enjoys a very unique funding arrangement. The very companies that hold operating licenses are the sole source of the NRCs operating budget, to the tune of several million dollars per year for each reactor. If your skewed little view of the world doesn't allow you to believe the apparently favorable opinions of the NRC employees, you should be advocating that the companies footing the bill should be polled on how this operation is being run.

comment #882822 posted on 2014-10-28 09:16:33 by Moderator

To be clear -- this survey is developed and administered by the U.S. Office of Personnel Management to all federal agencies. From the OPM blog on the latest survey results: "It is one of the most valuable tools that OPM provides to agencies because it helps leaders understand how employees feel about their jobs, their ability to advance, their training opportunities and their sense of empowerment in the workplace. The survey allows employees to comfortably share their opinions and it makes it possible for agency leadership to make changes based on real data about their employees' honest and crucial feedback." For the full post: <https://www.opm.gov/blogs/Director/2014/10/24/FEVS-Highlights-Employee-Commitment-to-Service/> Moderator

comment #899705 posted on 2014-10-30 16:56:56 by Dan Williamson

@blackout A litmus test? You're going to pass judgment on my qualification to post on this blog??

comment #899816 posted on 2014-10-30 17:23:47 by stock in response to comment #899705

Dan the "litmus test" registers an overall view, and by understanding your viewpoint we can more readily have a legitimate discussion with some empathy. However, when you are throwing insults around like "your skewed little view of the world" its hard to get traction on a real conversation. The ratepayers foot the whole bill for the NRC, except maybe the citizens also pay some of the cost, via things like NRC buildings sitting on federal that could otherwise be productive private land, things like that. The ratepayers and taxpayers should be given a poll to see how well they think the NRC is doing their job.

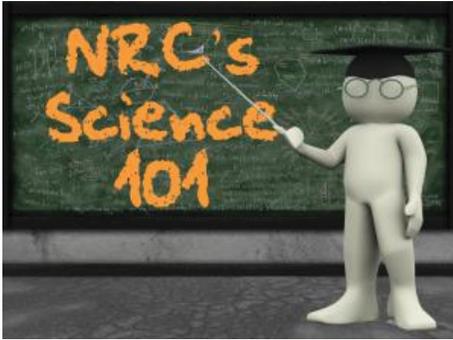
comment #904177 posted on 2014-10-31 09:02:50 by Moderator in response to comment #899816

By law, approximately 90 percent of the NRC's budget is recovered from licensee fees. The NRC collects the fees and transfers them to the U.S. Treasury. Moderator

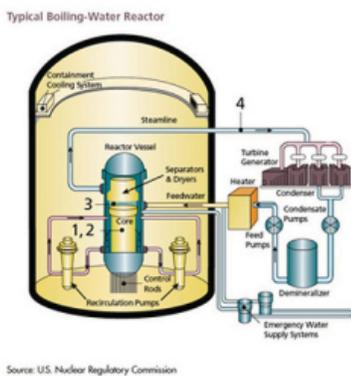
NRC Science 101: How a Nuclear Reactor Generates Electricity

posted on Fri, 24 Oct 2014 14:30:32 +0000

Paul Rebstock
Senior Instrumentation and Control Systems Engineer



How does a nuclear reactor generate electricity? Well — it doesn't, really. Let's begin at the end and see how it all fits together. We begin by looking at an electric motor. A motor consists primarily of two major components: a *stator*, which stands still, and a *rotor*, which rotates within the stator. When electricity is applied to the motor, electromagnets within the stator and the rotor push and pull on each other in a way that causes the rotor to rotate. The magnets in the stator pull magnets in the rotor toward them, and then, as the rotor magnets pass by reverse themselves and push the rotor magnets away. The parts are arranged so the pulling and pushing are all in the same direction, so the rotor spins inside the stator. The electrical energy applied to the motor results in mechanical energy in the rotor. But that same machine can be used in reverse: If some outside force causes the rotor to spin, the interaction of the magnets causes electricity to be produced: the "motor" is now a "generator," producing electrical energy as a result of the mechanical energy applied to its rotor. That's the most common way to make large quantities of electricity. So how do you make the rotor spin? That's where the [nuclear reactor](#) comes in, although still indirectly. Recall that a nuclear reactor generates heat. The fuel rods get hot because of the nuclear reaction. That heat is used to boil water, and the steam from that boiling water is used to spin the rotor. As we have seen, when the rotor spins, electricity comes out of the stator. When water boils, the steam that is produced occupies much more physical space than the water that produced it. So if you pump water through some sort of a heat source — like a nuclear reactor, or a coal-fired boiler — that is hot enough to boil the water, the exiting steam will be travelling much faster than the water going in. That steam runs through a machine called a turbine, which acts something like a highly-sophisticated windmill. The physical structure is vastly different from a windmill, and a large turbine can be far more powerful than any windmill that has ever been made, but the effect is somewhat the same: the steam, or wind, causes part of the machine to spin, and that spinning part can be connected to a generator to produce electricity. The steam leaving the turbine is collected in a device called a condenser — essentially a metal box the size of a house, with thousands of pipes running through it. Cool water flows through the pipes, and the steam from the turbine is cooled and condenses back into water. Then the water is pumped back through the heater and the cycle continues. Now, back to the nuclear reactor . . . We have seen how the reactor generates heat, and we have seen how heat is used to generate steam and how the steam then powers the turbine, which spins the generator that produces electricity. The final piece in the puzzle is how the heat from the nuclear reaction generates the steam. The fuel rods are suspended in a water bath contained in a large metal container



Source: U.S. Nuclear Regulatory Commission

somewhat like a gigantic pressure cooker. A typical "reactor vessel" might be 15 feet in diameter and 20 feet high, and some are much larger than that. In some types of reactors, the water is allowed to boil, and the heat generated in the fuel rods is carried away in steam. These are called "boiling water reactors" (or "BWR"). In others, the water is held at a very high pressure — on the order of 2000 pounds per square inch. (By the way, that is more than 60 times the pressure in the tires of a typical car.) In that situation, the water cannot expand and cannot boil. The water in that type of reactor carries the heat away while remaining liquid, and that heat is then transferred to another water system where the boiling occurs. This transfer takes place in a device aptly named a "steam generator." These are called "pressurized water reactors" (or "PWR"). A small PWR might have two steam generators. A large one might have four. Some have three. The steam from all of the steam generators is typically combined into a single "main steam line" that carries the steam to the turbine, so the reactor and all of the steam generators act together as a single steam source. The water from the condenser is pumped directly into the reactor vessel for a BWR, or into the steam generators for a PWR. So there you have it: the nuclear reaction heats the fuel, the fuel heats the water to make steam, the steam spins the turbine, the turbine turns the generator, and the generator makes electricity. The author has a BS in

Electrical Engineering from Carnegie-Mellon University.

Comments

comment #845852 posted on 2014-10-24 10:52:59 by dick0645

Excellent fundamental discussion of how a nuclear reactor generates electricity. How about follow-up discussions about how a nuclear reactor can generate a public nightmare! Or "How a Nuclear Reactor Can Generate a Nuclear Melt-down"! For example, boil down, pun intended, the accidents at Three Mile Island, Chernobyl, and Fukushima. As our industry's nuclear "watchdog" you really should discuss both sides of this nuclear reactor coin.

comment #847254 posted on 2014-10-24 15:37:59 by CaptD in response to comment #845852

Well Said. Educating people about Nuclear should include not just Pro-Industry discussions, since nuclear generation has been proven to have risks that mankind cannot ignore.

comment #847393 posted on 2014-10-24 16:03:34 by CaptD

I'd suggest that the NRC use San Onofre Unit 2 and Unit 3 Reactors as a textbook example of what happens when nuclear steam generators are not designed with a full review by seasoned steam generator experts, since it put all of Southern California at risk of a nuclear incident or worse a nuclear accident. Once people understand that leaking and/or ruptures of any significant number of the steam generator tubes located inside the steam generators cannot only rapidly drain the reactor of its core coolant (if a major industrial accident occurs) but it could also allow that massive amount of radioactivity to escape to the atmosphere, since inside each steam generator at San Onofre there were 9,747 tubes packed far too close together, each with a wall thickness of less than a credit card. FACT: San Onofre has more tube damage than all the rest of the US reactors, put together! Here is a chart listing the staggering amount of tube damage that occurred in the short time that San Onofre was in operation after these "replacement" steam generators were installed: <http://sanonofresafety.files.wordpress.com/2011/11/steamgeneratortubesplugged1.pdf> Here is an industry article where both SCE and MHI's engineers bragged about all the changes they "got away with" using the flawed "Like For Like" loophole that has still not been sealed by the NRC, or even the Inspector General's review of San Onofre, which failed to pinpoint exactly what happened at San Onofre! BTW: This article was published the very same month that San Onofre started leaking and was shut down... <https://s3.amazonaws.com/s3.documentcloud.org/documents/347889/col-nrc-tech-paper.pdf>

comment #862619 posted on 2014-10-26 06:27:32 by John King

loved it, learnt a lot about nuclear reactors in one article than i have in a whole life-time. making science easy

comment #872954 posted on 2014-10-27 07:04:12 by Dan Williamson in response to comment #845852

Perhaps you missed the title of this piece. This is an elementary summation of how the technology actually works. It's not meant to be a speculative dissertation on some vague scenario of your choosing. If your day is not complete without a dose of baseless fear-mongering written by the oil company shills, just call up one of the innumerable sites littered with such trash, curl up in the fetal position, and revel in your "nightmare."

comment #873610 posted on 2014-10-27 09:22:40 by Moderator

This blog post had a very narrow focus as part of our NRC Science 101 series. However, there are many blog posts about the nuclear accident at Fukushima and other safety-related subjects. Here are a few: <http://public-blog.nrc-gateway.gov/2011/03/page/3/> <http://public-blog.nrc-gateway.gov/2011/05/27/lessons-learned-from-japan-and-elsewhere/> <http://public-blog.nrc-gateway.gov/2013/06/04/before-the-browns-ferry-fire-antiquated-notions-that-electricity-and-water-didnt-mix/> <http://public-blog.nrc-gateway.gov/2012/02/16/nrc-talking-research-next-week-in-virginia-pennsylvania/> The NRC's website has additional discussions on Three Mile Island: <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/3mile-isle.html> Chernobyl: <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/chernobyl-bg.html> and Fukushima: <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/japan-events.html> Scott Burnell

National Cyber Security Awareness Month – It's For Everyone

posted on Wed, 29 Oct 2014 19:08:58 +0000

Joan Rolf
Senior Cyber Security Coordinator



October is National Cyber Security Awareness Month and – before we head into November – it's now a good time to remember the importance of [cyber security](#). Cyber crime threatens our work, personal life, identity and privacy. Here at the NRC, we're committed to protecting our internal digital assets and information, as well as ensuring that our regulated facilities' critical digital systems of are well protected. This vigilance supports the NRC's security and safety missions. All NRC employees are required to complete annual training on computer security. Some of the concepts we teach our employees are useful for everyone:

- Set strong passwords and don't share them with anyone.
- Keep your operating system, browser, and other critical software optimized and secure by installing updates.
- Maintain an open dialogue with your family, friends, and community about Internet safety.
- Limit the amount of personal information you post online, and use privacy settings.
- Be cautious about what you receive or read online; if it sounds too good to be true, it probably is.

The NRC ensures operating power reactor licensees and applicants seeking new licenses implement appropriate protections against cyber threats. Since 2009, the NRC has required each power plant to have a cyber security program in place to protect their computer and communications systems. Over the last two years we have conducted more than 35 cyber security inspections and actively engaged licensees to ensure all identified issues are addressed. In the recently released "Strategic Plan: Fiscal Years 2014-2018," we highlight the importance of cyber security guidance for nuclear power reactors, fuel cycle and spent fuel storage facilities, non-power reactors, decommissioned nuclear facilities, and materials licensees. The NRC is developing a final rule, 10 CFR part 73.77, "Cyber Security Event Notifications," which, if approved, will require timely notification of cyber security events. This rule is intended to improve the NRC's ability to respond to cyber

security-related plant events, enable the NRC to more effectively evaluate potential threats, and aid the NRC's overall situational awareness.



In our Cyber Security Directorate, part of the Office of Nuclear Security and Incident Response, we continue to work with federal partners to protect the United States' critical infrastructure. The NRC joins the Department of Homeland Security in its interagency and public-private efforts under the Sector Specific Agency Nuclear Sector. And we join with other government regulators on the newly-established [Cyber Security Forum for Independent and Executive Branch Regulators](#), led by Chairman Allison Macfarlane. These partnerships strengthen our mutual knowledge base and provide agencies with an opportunity to share methods and approaches to enhance overall cyber security protection. During Cyber Security Awareness Month, federal agencies are holding a variety of events to promote the conversation – among employees and the public – on this important topic. One of the most important things for our employees and our stakeholders to realize is the individual computer user is the first line of defense in cyber security.

Comments

NRC Team Ready to Get to Work at Pilgrim Nuclear Power Plant

posted on Fri, 31 Oct 2014 16:30:25 +0000

*Neil Sheehan
Public Affairs Officer
Region I*

When the [Pilgrim nuclear power plant](#) got a second “white” performance indicator in the same area of performance in 2014 it meant we



would ratchet up our level of scrutiny until the underlying issues were resolved. Starting Monday, that scrutiny will take the form of a team inspection at the Plymouth, Mass., facility. Eight NRC inspectors will begin performing evaluations in several key areas. For one, they will review the evaluation done by Entergy, the plant's owner and operator, looking at why the problems that triggered the indicator changes occurred. The team will also dig into the fixes, or corrective actions, put in place by the company to prevent the issues from happening again. They will also look at whether the issues could have affected other parts of plant operations. The timeframe for the inspection gave Pilgrim time to evaluate and fix the problems, so the NRC inspectors can make sure the corrective actions are adequate. Another area the team will assess will be whether there were any safety culture weaknesses that caused or played a part in the performance issues. The NRC defines nuclear safety culture as values and behaviors that emphasize safety over competing goals to ensure protection of people and the environment. Once the team's on-site work is finished, the inspectors will brief Entergy at a high level regarding what it has found. That is followed by an inspection report issued within 45 days. We also plan to conduct a public meeting with Entergy after the inspection is wrapped up. This meeting, which would likely occur in December or January near the plant, will provide a forum for the NRC and the company to discuss the performance issues, their underlying causes and any improvement steps. The NRC will provide notice on the date, time and location for this session. As a refresher on earlier developments, the Pilgrim plant's performance indicator for Unplanned Scrams (shutdowns) with Complications crossed the threshold from “green” to “white” following the third quarter of 2013. Then, in the fourth quarter of last year, the performance indicator for Unplanned Scrams per 7,000 Hours of Operation also changed to “white,” something that occurs if a plant has more than three such shutdowns during the designated period. This placed Pilgrim in the Degraded Cornerstone Column of the [Action Matrix](#) used by the NRC to assess plant performance. And that, in turn, requires the heightened NRC attention to be paid during the team inspection this week.

Comments

comment #915859 posted on 2014-10-31 15:59:09 by dick0645

Well, well Scott. As usual the NRC only gets excited if a nuke plant has performance problems. The NRC never gets involved due to the results of their own baseline inspection program which each licensee pays millions of dollars for each year! NRC inspections just do not find anything. But if the licensee has significant events, too many scrams, too many screw-ups then and only then does the

NRC do something. The NRC then sends in more inspectors with a vengeance and lo and behold they usually find many more problems that the NRC had no clue existed before. Your baseline inspection program and the way it is administered is seriously flawed. Please don't continue to do the same unproductive, reactive thing.

comment #915854 posted on 2014-10-31 15:58:42 by Moderator

This discussion seems to have veered away from the topic of the blog post. If you wish to continue, please post your comments to our Open Forum page. Moderator

comment #915843 posted on 2014-10-31 15:57:49 by Moderator in response to comment #913643

The NRC, under the authority of the Atomic Energy Act, can order the shut down of any U.S. nuclear power plant for an imminent safety concern of any cause. The NRC's guidance on protecting electrical equipment does not include Faraday cages. Scott Burnell

comment #910396 posted on 2014-10-31 12:52:41 by blackout

I have followed many of the Entergy plants, and I have to say, they seem to have the most problems and the oldest plants. The competing interests between profits and safety are not going to ever be resolved by a Corporation whose only purpose is to pursue profits, and usually in a very short sighted way. We need the NRC to REGULATE, and penalize. And when they do penalize, we have to be absolutely sure that the utility cannot include paying those penalties into a future rate case that lets them jack up the rates that the citizens have to pay.

comment #910306 posted on 2014-10-31 12:49:38 by blackout

Excellent, this is the type of work that lets the ratepayers who fund NRC know they are getting something for their money. Problems and lack of training to handle emergency shutdown of plants (sometimes happening during other coincident civil emergencies) is the most dangerous aspect of nuclear plants. Without a proper shutdown, that can lead to melt down. I would also ask the Mod to explain if the NRC has the power to DEMAND that nuke plants shut down and fully disconnect from the grid in the event of Carrington event (massive sunspots and subsequent CME thrown at earth). How the the NRC judge the likelihood of the CME taking down the grid, in terms of what X level at which point they would command a shutdown. How does NRC judge whether a CME is likely to be geoeffective (i.e. not just its size but its spatial vector) I think a multiple, or even dozens or meltdown are possible in a Carrington Event, and thus poses one of the largest risks to the US of A

comment #914011 posted on 2014-10-31 14:39:05 by blackout in response to comment #913643

Scott, thanks for the reply, I read them. Maybe I missed it or maybe its not there, but to reiterate my question, does the NRC have the authority to tell a nuclear plant or perhaps all 100 nuclear plants to shut down, say 2 days in advance of arrival of a CME that was deemed extremely hazardous? Once the CME or EMP hits, it won't just be computers that are fried, even things like the charge controller that send power from the battery backup bank to the emergency panelboard, or the emergency panel board itself could be fried. The gensets all rely on electronics for operation, so those could all be down also. Does the NRC require faraday cages around any specific equipment? Thank you.

comment #913643 posted on 2014-10-31 14:25:02 by Moderator in response to comment #910306

NRC research includes examination of how U.S. nuclear power plants safely withstand solar flares or manmade electromagnetic pulses. <http://public-blog.nrc-gateway.gov/2011/10/31/keeping-u-s-reactors-safe-from-power-pulses/>
<http://pbadupws.nrc.gov/docs/ML1235/ML12353A410.pdf> Beyond that, NRC requirements for U.S. nuclear power plants will cause them to shut down if the grid is compromised or unavailable, regardless of the cause. The National Oceanic and Atmospheric Administration's Space Weather Prediction Center (<http://www.swpc.noaa.gov/>) is one of several agencies worldwide that monitor solar activity and provide advance notice of potentially disruptive events. The NRC and the Federal Energy Regulatory Commission (which oversees the nation's electric grid) continue their collaboration on grid stability and its effects on U.S. nuclear power plants. Scott Burnell