

OPSMPEm Resource

From: West, Stephanie
Sent: Wednesday, May 06, 2015 3:20 PM
To: OPSMNPEm Resource; OPSMPEm Resource
Subject: Blog archive for March & April 2015
Attachments: blog-published-2015-05-01@08-52-20.pdf

OPA

NRC

Hearing Identifier: NRC_OfficialPresenceSocialMedia_Public
Email Number: 64

Mail Envelope Properties (C0A338EE37A11447B136119705BF9A3F0288164A2020)

Subject: Blog archive for March & April 2015
Sent Date: 5/6/2015 3:19:44 PM
Received Date: 5/6/2015 3:19:51 PM
From: West, Stephanie

Created By: Stephanie.West@nrc.gov

Recipients:
"OPSMNPEm Resource" <OPSMNPEm.Resource@nrc.gov>
Tracking Status: None
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Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

Files	Size	Date & Time
MESSAGE	17	5/6/2015 3:19:51 PM
blog-published-2015-05-01@08-52-20.pdf		3941220

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

U.S. NRC Blog

Archive file prepared by NRC

Understanding Nuclear Power Plant Risk

posted on Tue, 03 Mar 2015 15:59:52 +0000

Mark Caruso Senior Risk Analyst Office of New Reactors When it comes to the safety of using nuclear power to generate electricity, the NRC mission is protecting people from health risks by licensing and regulating nuclear power plant design and operation. In a perfect world there would be no risk at all. In the real world, we focus on managing and reducing risk below its already very low levels.



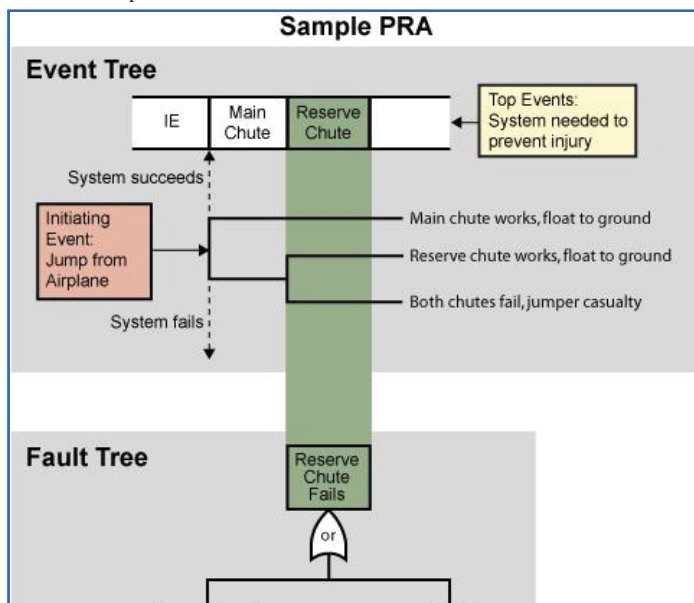
For instance, you can reduce the risk of a bicycle accident by ensuring you have working brakes and reflectors/lights. Wearing a helmet and leaving your headphones in a pocket while riding also reduce risk, but wrapping yourself in bubble wrap is probably going too far! We all understand things in our lives that we consider “risks,” like riding a bicycle, by looking at how severe a bad outcome is and how likely that outcome is. The NRC asks three questions when considering risk:

1. What can go wrong?
2. How likely is it to go wrong?
3. What are the consequences?

These three questions are called the *risk triplet*. Let’s apply the risk triplet to lifting a piano. What can go wrong? A crane could drop the piano while lifting it to a building’s upper floors. How likely is a piano drop? Since crane workers take lots of precautions that’s very unlikely. What could a falling piano do? If the piano did fall and you were unlucky enough to be underneath it...you can imagine the consequences! This event has a low likelihood and a high consequence. There are also high likelihood/low consequence events and high likelihood/high consequence events. The NRC’s risk-management effort starts by identifying and eliminating high likelihood/high consequence events at U.S. nuclear power plants before moving to less-likely events. Engineers use a method called probabilistic risk assessment (PRA) when analyzing risk at nuclear power plants. These assessments use engineering and math to find the answers to the risk triplet questions and create tools called the *event tree* and the *fault tree*. These trees map out possible ways and likelihoods of reaching a desirable or undesirable outcome in an organized way. Engineers use these maps to understand and manage nuclear power plant risk. An event tree starts with a trigger (initiating) event and then tracks the different possible resulting events that either reach or prevent an undesirable outcome. In the sample PRA below, a skydiver jumping from a plane is the initiating event. The event tree follows what could normally occur next and then considers what happens if those events succeed or fail. For example, these events include attempting to deploy the main and reserve parachutes. The desirable outcome occurs if either parachute opens successfully. The undesirable outcome occurs if both chutes fail to open. Since a skydiver would not normally start with the reserve parachute, this event tree contains three event sequences:

1. Main parachute opens -- desirable outcome
2. Main parachute fails, reserve parachute opens -- desirable outcome
3. Both parachutes fail to open -- undesirable outcome

Fault trees help determine a percentage between zero (outcome never occurs) and one hundred (outcome always occurs) for the outcome of each event sequence in the tree. A fault tree shows all the combinations of things that must go wrong to “fail” an event in an event tree. The diagram shows the ways a reserve parachute can fail to open.



Think of a fault tree as a sort of family tree. Rectangles represent either “parent” or “child” events and circles represent pure “child” events. The “and” symbol between parent and child events indicates all child events must occur for their parent event to occur. The “or” symbol indicates any child event can cause their parent event. Engineers use the tree to identify the different combinations of child events leading to the event at the top of the tree. Historical parachute performance data helps provide a numerical value for the likelihood of each pure child event (e.g., dead battery). A mathematical formula combines individual event likelihoods to provide the numerical value of the likelihood of each combination of child events. Event trees and fault trees are two basic parts of risk assessment, just like the brakes and gas pedal are basic parts of a car. In the same way all the other parts under the hood make the car work, risk assessments have lots of other moving parts that we could discuss in the future. The bottom line, however, is that risk assessments help the NRC and nuclear power plant engineers properly reduce already very small health risks, resulting in safely produced electricity at nuclear power plants.

Comments

comment #1501596 posted on 2015-03-13 16:48:02 by Darragh McCurragh

The problem with your approaches "what can go wrong" and "how likely is it" is that you can never know every accident "path", i.e. all the things that could lead to a fatal accident. You can make educated guesses. You can maybe guess 99% right (although there is no way of determining that percentage). Proof: all really bad accidents so far have not adhered to the "pathways" they were "pre-ordained" by the nuclear priesthood of safety engineers. Their phantasy was either still too limited and/or the nuclear power stations might not have conformed to specifications. The "likelihood" is also not determinable under today's circumstances. To do that you would have to know the failure rates (e.g. MTTF) of all components in a given accident path. However, unlike with automobiles with their hundreds of thousands of years of component usage and their crash tests, most nuclear power stations are singular events with idiosyncratic builds. Every mathematician/statistician knows that all you can "calculate under such circumstances is something as nonsensical as "fails once every million years - plus or minus ten million years" ... And again: all known accidents have not conformed in any way to any pre-calculated probabilities. Q.e.d.

comment #1494396 posted on 2015-03-10 19:03:52 by Erica Gray

3/11/15 marks 4 years of the ongoing nuclear disaster in Fukushima Japan. This is real, not just a hypothesis! The NRC should be concentrating on closing down the nuclear power stations in seismic zones and in highly populated areas, Work on securing the waste....NOT making more of it! [http://www.theguardian.com/environment/video/2015/mar/10/fukushima-japan-nuclear-video?](http://www.theguardian.com/environment/video/2015/mar/10/fukushima-japan-nuclear-video?CMP=share_btn_fb)

comment #1490445 posted on 2015-03-08 09:46:29 by Public Pit Bull in response to comment #1481274

Good info as usual from mjd. Although I admit I am a novice when it comes to the mechanics or usefulness of a PRA or fault-tree analysis, I would think that looking at an actual accident would be helpful in assessing the accuracy of the many assumptions made with regard to operator actions and equipment performance. I have looked at these analyses for plant events and there are a number of numbers that are plugged into the analyses. How do we know these assumed numbers closely reflect real conditions? If not a PRA how about the fault tree analysis showing the daisy-chain of actions (proper and improper) that lead to the accident? Seems at a minimum this would be a valuable training tool and would support the case studies on TMI and Chernobyl (and hopefully soon for Fukushima) that have been developed by INPO.

comment #1487256 posted on 2015-03-06 16:37:09 by Erica Gray in response to comment #1481483

Consequences over exaggerated? Published Date: 02/24/2015 Detention Without Physical Examination of Products from Japan Due to Radionuclide Contamination Added to the list: For milk, filled milk, *** and milk-based infant formula, *** from the affected prefectures of Fukushima, ***Iwate, Miyagi and Gunma*** and Tochigi in Japan: "The article is subject to refusal of admission pursuant to Section 801(a)(3) in that it appears to contain a radionuclide, a poisonous or deleterious substance which may render it injurious to health. □[Adulteration, Section 402(a)(1)]" OASIS Charge Code: RADIONUC AND, for the listed products from the indicated prefectures: AOMORI PREFECTURE: Wild Mushrooms CHIBA PREFECTURE: Shitake mushrooms; Bamboo shoots; Common Carp; Sliver Crucian Carp ***Eel*** Boar FUKUSHIMA PREFECTURE: ***Raw*** Milk; Wild Aralia Sprout; Azuki Bean; Bamboo Shoot; Non-head type leafy vegetables (i.e. turnip), flower head brassicas (i.e. broccoli and cauliflower); Head type leafy vegetables (i.e. Spinach, Lettuce, Celery, Cress, Endive, Escarole, Chard, and Collards); Chestnuts; *** *** Wild Japanese Butterbur Scrape; Japanese Royal Fern; Kiwi Fruit; Koshiabura (wild tree sprout); Log-grown Shitake mushrooms; Log-grown Pholiota Nameko (outdoor cultivation) Mushroom; Ostrich Fern; Pteridium Aquilinum (bracken fern); Rice; Soybean; ***Turnips*** Ume; Giant Butterbur; Uwabamiso; Yuzu Fruit; Alaska Pollock; Ayu(excluding farm raised); Barfin Flounder; Black cow-tongue; Black rockfish; ***Brass blotched rockfish;*** Brown hakeling; Salmon (landlocked) (excluding farm raised); Common Carp (excluding farm raised); Conger Eel; *** *** Fat Greenling; Flathead; *** *** Fox Jacobever; Goldeye rockfish; *** *** Black Porgy; Dace; Eel; Sandlance (excluding juvenile); Seabass; *** *** Long Shanny; Marbled Flounder; Nibe Croaker; Ocellate Spot Skate; Olive Flounder; Pacific Cod; Panther Puffer; Poacher; Red Tongue Sole; Ridged-eye Flounder; Rockfish (Sebastes cheni); ***Scorpion Fish*** Sea Raven; Shotted Halibut; Slime Flounder; Spotted Halibut; *** *** Starry Flounder; Stone Flounder; Surfperch; Venus Clam; Vermiculated Puffer; Whitespotted Char(excluding farm raised); Bear meat; Beef; Boar; Cooper Pheasant; Green Pheasant; Hare Meat; Spot-Billed Duck GUMMA PREFECTURE: Wild Mushrooms; Salmon (landlocked) (excluding farm raised); Whitespotted Char (excluding farm raised); Bear meat; Boar; Copper Pheasant; Venison; IBARAKI PREFECTURE: Log-grown Shitake mushrooms; *** *** Bamboo shoots; Koshiabura (wild tree sprout); Seabass; Eel; Rockfish; *** *** Ocellate Spot Skate; Channel Catfish(excluding farm raised); *** *** Stone Flounder; Sliver Crucian Carp(excluding farm raised); Boar IWATE PREFECTURE: Bamboo shoots; Log-grown Brick-cap mushrooms (outdoor cultivation) Log-grown Shitake mushrooms; Log-grown Pholiota Nameko (outdoor cultivation) Wild Mushrooms; Wild Japanese parsley; *** *** Royal fern; Koshiabura (wild tree sprout); Pteridium aquilinum (bracken fern); Soybean; Dace; Black Porgy; Seabass; Whitespotted Char(excluding farm raised); Bear meat; Beef; Venison; Cooper Pheasant MIYAGI PREFECTURE: *** *** Royal Fern; Bamboo Shoots; Koshiabura (wild tree sprout); ***Wild Aralia Sprout*** Ostrich Ferns; Rice; Log-grown Shitake mushrooms(outdoor cultivation); Wild Mushrooms; Soybean; Ayu(excluding farm raised); Salmon (landlocked) (excluding farm raised); Black Porgy; Dace; Seabass; *** *** Whitespotted Char (excluding farm raised); Beef; Bear Meat; Boar meat NAGANO PREFECTURE: Wild Mushrooms *** Koshiabura*** NIIGATA PREFECTURE: Bear Meat SAITAMA PREFECTURE: Wild Mushrooms SHIZUOKA PREFECTURE: Wild Mushrooms TOCHIGI PREFECTURE: Wild Aralia Sprouts; Bamboo Shoots; Chestnuts; Wild Japanese Peppers; Wild Royal Fern; Koshiabura (wild tree sprout); Wild Pteridium aquilinum (bracken fern); Wild Ostrich Ferns; Log-grown Brick-cap mushrooms (outdoor cultivation) Log-grown Shitake mushrooms; Log-grown Pholiota Nameko (outdoor cultivation) Wild Mushrooms; Whitespotted Char (excluding farm raised); Beef; Boar meat; Venison YAMAGATA PREFECTURE: Bear Meat YAMANASHI PREFECTURE: Wild Mushrooms http://www.accessdata.fda.gov/cms_ia/importalert_621.html

comment #1482385 posted on 2015-03-04 13:24:47 by in response to comment #1481483

Fukushima consequences were greatly over exaggerated? Turd, your remark is outrageous and unconscionable. This catastrophic nuclear accident has, still is and will continue to cause human, animal and environmental harm/damage/suffering. There is no end in sight! 300 + tons of radioactive water have been entering the Pacific everyday for almost 4 YEARS, not counting the thousands of storage tanks on site holding the radioactive water that they keep pumping from the destroyed reactors. (I'm assuming you are of the mind set to just dump it in the ocean) And what to do with three corimus? TEPCO has not been able to effectively deal with an increasing amount of contaminated water, used to cool the crippled reactors and molten fuels inside them and kept in large storage tanks on the plant's vast campus. Adding to TEPCO's headaches has been the persistent flow of groundwater from nearby mountains travelling under the contaminated plant before washing to the Pacific Ocean. The International Atomic Energy Agency recently said TEPCO has made "significant progress" in cleaning up the plant, but suggested that Japan should consider ways to discharge treated waste water into the sea as a relatively safer way to deal with the radioactive water crisis. <http://www.msn.com/en-us/news/world/fresh-nuclear-leak-detected-at-fukushima-plant/ar-BBhQtos>

comment #1481274 posted on 2015-03-04 08:22:29 by mjd in response to comment #1478344

PPB, There is nothing to be gained from running a PRA on an actual event, if it even could be done, given the event has happened already. If it has happened, what can the probability calc tell you after it has happened? A PRA establishes the "probability" of one event relative to another, constrained by the input assumptions. Its usefulness therefore lies in comparison; the more likely one event compared to another, and the consequences, it can be a tool used to help decide where the best use of limited resources can be used for maximum gain. Mr Caruso also either doesn't understand PRA or he oversimplified the example for a public forum, as wearing a helmet on a bicycle can do absolutely nothing to reduce the likelihood of a bike accident; it may in fact reduce the consequences (head injury), but it can not affect the probability except possibly in a negative way. That helmet may actually increase the risk of the bike accident if wearing it reduces your situational awareness. It is all in the assumptions. I am a retired operator, so I understand PRA is a fantasy world tool having limits in the real world. It can be useful, but like all tools it can be harmful. My methodology is much simpler. I give it all 50/50, it will happen or it won't, and if it happens to me it will be on midnight shift, first night of shift rotation when my situational awareness may be lowered. Also for the record, DBNPP did not have a precursor accident, we had a transient (I know, I was the Shift Supervisor). I agree your conclusion that TMI2 was 100% preventable is correct as in "what was the Root Cause", however it has nothing to do with PRA. It has to do with an organization that is truly mature can admit its own mistake and take responsibility for it.

comment #1481483 posted on 2015-03-04 09:18:50 by Turd Ferguson in response to comment #1478807

What do you know about risk? More people have fallen to their deaths installing/maintaining home rooftop solar than working in nuclear. Having met the late great Norm Rasmussen, which BTW came when I was in my formative years, he instilled in me that risk equals the product of consequences multiplied by likelihoods. You seem to overestimate both by a very wide margin. Fukushima consequences were greatly over exaggerated and the likelihood of the planets aligning to produce the initiating conditions are beyond incredible.

comment #1481520 posted on 2015-03-04 09:26:57 by Turd Ferguson in response to comment #1478812

There you go again. The outcomes is not infinitely negative as you erroneously state unless you believe we are all doomed. The analysts and professionals at NRC are fulfilling their mission just fine. Moderator Note: Some verbiage removed to adhere to the comment guidelines

comment #1481733 posted on 2015-03-04 10:18:51 by richard123456columbia

Regarding public perception of NRC and others allowable risk management, when we see a NPP built on a shore that has been hit with higher tsunamis than the safety wall to protect it, makes one question what is the acceptable risks allowed. We find out after Fukushima what risks they allow, using non submersible pumps that failed (Saving Money), under sized battery backup on many sites (Saving Money), we see a NPP that uses an inner tube to stop a flood from a river!!! There are NPP down stream from dams that are questionable with foundation problems. We see the fuel pools filled to the max taking more risk if a quake hits. We see barrels of nuclear waste at the bottom of oceans and waste draining into the oceans. We have seen 6 NPP's fail badly and the risk because of age increasing. We see how vulnerable these plants are to attack and some are now in a war zone. I'll quit here but there is much more. How can the public believe that NRC is handling risk properly or is it too complicated.

comment #1482033 posted on 2015-03-04 11:36:52 by turnages in response to comment #1479164

Erica, I hope you weren't one of the "informed citizens" that attended and disrupted the democratic process at the recent Battleboro, VT meeting, video and discussion to be found here: <http://canadianenergyissues.com/2015/03/03/free-speech-monty-python-and-civil-war-reconstruction-anti-nukes-are-not-funny> . At the very least, I hope you would thoroughly disown such appalling conduct.

comment #1482660 posted on 2015-03-04 15:17:25 by Public Pit Bull in response to comment #1482385

Plus Turd over 1000 Japanese have died just going through the scary evacuation process. But Turd they are mainly senior citizens and handicapped folks. Moderator Note: Some verbiage removed to adhere to comment guidelines.

comment #1485408 posted on 2015-03-05 09:35:53 by Erica Gray in response to comment #1479164

Turnages, thank you for the video. I don't always make the time to watch meetings that are taking place in other states. No I wasn't

there and disrupting meetings isn't my style....well at least not yet. I can understand why citizens, specially ones living next to these ticking time bombs are completely frustrated with the system. One thing is certain: The danger that nuclear energy presents is resonating across the world.

comment #1479164 posted on 2015-03-03 23:46:26 by Erica Gray in response to comment #1478485

Your Wikipedia link sums up the arrogant attitude of some "experts" "The problem, from the perspectives of the experts, was a difference between scientific facts and an exaggerated public perception of the dangers" TMI, Chernobyl and the ongoing 3 core meltdown in Fukushima are NOT just perceptions, but are lessons learned/FACTS. What must be recognized, is there is a growing number of citizens that are informed. We attend the meetings, read the documents and have colleagues that are engineers. . And when it comes to a worse case scenario, the industry doesn't have what it takes and that's NOT just a perception either: A top American government nuclear expert – William D. Magwood – told the U.S. Senate Committee on Environment and Public Works: (re:Fukushima) 9/12/12 It is very difficult to overstate how difficult the work is going to be at that site. There will need to be new technologies and new methodologies created to be able to enable them to clean the site up and some of these technologies don't exist yet, so there's a long way to go with that There's a long, long way to go. <https://www.youtube.com/watch?v=5yAaDbyBgZQ&t=50> Plus the nuclear industry has had over 1/2 century to figure out what to do with their waste and there's still no real solution.

comment #1479337 posted on 2015-03-04 00:49:17 by msvivphd

I just read all the comments in this thread, and they are all intelligent ones from intelligent people. I find it a supreme pity that the NRC (which doesn't know what it doesn't know and all the things it is refusing to know) will not take them seriously. They will be relegated to the dust bin. The NRC has its mind made up; it is composed of "true believers" and it is no use confronting "true believers" with facts. The only slight chance we had for salutary change was Gregory Jascko (sp?.), but he was forced out. What you have left are the regular yes men and nuclear enthusiasts we've had since the days of the AEC and Lewis Strauss. We learn nothing because we're incapable of learning.

comment #1478275 posted on 2015-03-03 11:34:35 by devolpi

Some of this is tragic self-delusion, as it omits low-cost preventive measures, such as ex-vessel monitoring that could track water-level and other thermodynamic parameters in reactors and spent-fuel pools in order to terminate an impending accident before extensive meltdown (e.g. TMI and Fukushima)..

comment #1478273 posted on 2015-03-03 11:33:36 by Erica Gray

"Engineers use a method called probabilistic risk assessment (PRA) when analyzing risk at nuclear power plants" We don't need a PRA .in deciding to build a nuclear power plant on a known earthquake fault/zone. We just need to use common sense! And to make matters worse, is to think the NRC would even consider approving a brand new untested & unproven nuclear reactor to be built in a KNOWN active seismic zone. (North Anna 3 ~ Central Virginia Seismic Zone) The NRC's mission statement should be changed from "Protecting People and the Environment" to "Protecting the Nuclear Industry at all costs"!

comment #1478262 posted on 2015-03-03 11:30:27 by Nikohl Vandel

Unfortunately, this article fails to make anyone feel confident the NRC is a viable oversight body for nuclear power. The assessment of risk does not include some real obvious problems like the fact we have, still, no #RealNuclearWasteConfidence, confirming that we have zero threshold of safety on a permanent level, because it doesn't exist. That unknown factor, along with its threat of catastrophic deadly impact (still not fully assessed from other historic events for their long term impacts), which the author fails to even present, cannot and does not justify a "safe" label by any thinking person alive today. To do so is irresponsible as a human, parent, citizen, scientist, professional. Nuclear anything may not be considered safe any more than one could consider the space program as a "safe" one. #Fukushima taught us that. The disingenuousness and lack of candor reveals that the NRC is not listening to the Inspector General's assessment of the Commission and its work. Given actual history and events, the detailing of "normal" safety precautions do little too reassure anyone that either industry or the NRC really takes safety seriously enough to protect our planet with an source of energy this great. This article is a bit insulting given the real risks and dangers of nuclear energy, even for us novices. #nuclearizedwater does NOT freeze. That risk isn't even addressed. How are we supposed to take this article seriously?

comment #1510555 posted on 2015-03-19 14:34:56 by Moderator in response to comment #1478344

The NRC's Office of Nuclear Regulatory Research carries out the Accident Sequence Precursor program. This program examines real-world events at U.S. nuclear power plants to identify, document, and rank the events' potential to affect plant safety. The Office of Research sends the Commission an annual paper on the latest program findings. Searching for "precursor" on each year's listing <http://www.nrc.gov/reading-rm/doc-collections/commission/secys/> will provide that year's paper. The most recent paper includes discussion of Pilgrim's 2013 shutdown during a severe winter storm: <http://www.nrc.gov/reading-rm/doc-collections/commission/secys/2014/2014-0107scy.pdf> The NRC website also has an earlier report on the program from the year 2000: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr4674/> Scott Burnell

comment #1478279 posted on 2015-03-03 11:34:56 by Mary Lampert

Two thoughts: (1) If the consequences of an accident are extremely large then no matter how small the probability of the accident occurring is inconsequential. (2) Garbage in, garbage out: In calculating risk if the assumptions and data put into the risk equation are "garbage" then what comes out of the analysis is "garbage" also.

comment #1478283 posted on 2015-03-03 11:37:16 by Nikohl Vandel

Reblogged this on [Niki.V.all.ways.My.way](#), and commented: I find risk assessment fascinating, especially with the issue is a nuclear power plant. Unfortunately, the basis for beginning risk assessment doesn't include the underlying risks we are choosing to engage in just by continuing down the nuclear path.

comment #1478308 posted on 2015-03-03 11:49:59 by richard123456columbia

I am not sure about how the nuclear risk calculations work. I assume if the risk of a melt down is 1 in a 1,000,000 per 50 year operation then if 512 plants are built the risk would double 10 time making the risk approximately 1 in 2000 for 50 year of operation of plants. What I am trying to point out is all the published risk I have seen are for one plant not an expected group of plants running at the same period of time. Is the above correct or is there a formula for multiple risks?

comment #1478344 posted on 2015-03-03 12:05:39 by Public Pit Bull

Very informative. Now how about providing an actual PRA and an actual fault tree involving an actual event at a nuclear power plant (NPP)?! How about using the Pilgrim NPP loss of offsite power events as an example? Losing offsite power at Pilgrim (located in the backyard of Boston) is, unfortunately, not a rare occurrence, it has happened around 20 times since the plant came on line. It is almost a routine event at the plant. Two total loss of offsite power events occurred at Pilgrim a couple of years ago (back to back) and earlier this year a partial loss of offsite power occurred. Please provide the NRC's PRA and fault tree analyses for these events. Also, to show a worst case example, please provide the PRA and fault tree analyses for the Three Mile Island (TMI) accident and the precursor accident at Davis Besse which occurred two years prior to the TMI accident. If the industry and the NRC has its act together back then the lessons learned from the Davis Besse near-miss would have prevented the TMI accident. Thanks for bringing up this important subject. I am looking forward to how this methodology works in the real world.

comment #1478495 posted on 2015-03-03 13:33:30 by Charles J Wilhelm

The comments I have seen so far seem only to support negative conclusions. Nonsense, the examples cited fail to support the idea Nuclear Power is too dangerous to be used. The records show that in most cases it is human error that is the root, in management and application in the use of these reactor facilities.

comment #1478485 posted on 2015-03-03 13:24:28 by Gene Cramer

ENC COMMENT: The article totally misses an important point. We have known since the 1960s that PUBLIC PERCEPTION OF RISK is not limited to the mathematical/engineering definition of risk, but includes a psychological component originally lumped together as "dread". So long as the public is allowed to interact in licensing decisions, this must be recognized., I refer you to http://en.wikipedia.org/wiki/Risk_perception article on Risk Perception.

comment #1478807 posted on 2015-03-03 19:21:25 by stock

Interesting to have this post on risk, just after Pilgrim was one step away from releasing massive radiation after a "snow storm" Pilgrim was very close to being forced to directly vent radioactive steam into the environment / neighborhood. They used every last line of defense they had, including dumping radioactive steam into the old BWR Torus aka Surge Tank. Even then the heat in the surge tank got so high, they had to use an emergency heat exchanger to cool the surge tank. Fortunately it worked. If that last piece of equipment had failed it would have been a serious accident with radiation exposure to the public. Pilgrim had the same types of equipment problems in the last 2 years, and FAILED to fix them, and the NRC failed on adequate follow up. <http://nukeprofessional.blogspot.com/2015/02/pilgrim-nuclear-in-boston-came-very.html>

comment #1478812 posted on 2015-03-03 19:26:45 by stock

If the outcome of an event is infinitely negative, then no matter how small the risk, the expected value is infinitely negative. Accepting an infinitely negative expected value is nothing short of reckless insanity Example: destruction of humane genome is infinitely negative, there no amount of nuclear power can be allowed. Example: Carrington event causes 150 nuclear plants to melt down, Acute toxic poisoning of the planet and elimination of almost all life within 5 years, therefore no amount of nuclear power can be allowed.

comment #1478821 posted on 2015-03-03 19:46:54 by Mark L

Nice Job Mark. Very simple description of a complex process.

comment #1478901 posted on 2015-03-03 21:30:08 by razzz42 in response to comment #1478495

Rather than trying to control something that is not controllable, wouldn't it be easier to shut down all existing power generating nuke reactors and not build anymore? I the know the nuke industry supports a low percentage of job creation at a monetary loss which is in turn is paid for by the population as an exercise in a socialist agenda, so why continue a losing unneeded governmental misadventure? The dilemma of safe storage of wasted spent nuke fuel will continue for hundreds of years (not to mention thousands of tons of plutonium) because of a government agenda. Must be a reason they stopped above ground nuke bomb testing. Nuke power generating reactors are nuke bomb fallout in slow motion. Why? Because the background levels of radiation, traceable to nuke reactors, continues to rise after nuke bomb testing has ceased. What a waste of time, energy, money and resources. Take 10 years to build a nuke plant, run it for 40 years if you are lucky, take another 60 years to decommission it (hide the radioactive parts

underground)...genius, for letting the taxpayers foot the long term costs and related health issues.

comment #1487085 posted on 2015-03-06 11:44:04 by Public Pit Bull in response to comment #1487062

Thanks for providing this information. But take a look at this article...<http://www.japantoday.com/category/national/view/post-tsunami-deaths-due-to-stress-illness-outnumber-disaster-toll-in-fukushima> The tsunami and the nuclear plant accident displaced thousands. I am sure it is hard to separate evacuation casualties from the tsunami versus the Fukushima nuclear melt-downs but one thing is sure-many people died from not only being evacuated but from having to live in temporary shelters away from their homes for extended periods of time, with no end in sight. That is the legacy of nuclear plant accidents. After almost 30 years there is still a 20-mile radius exclusion zone around the Chernobyl reactor in the Ukraine. There is no telling how long Japanese citizens will be kept from their homes in Japan. Please read the article. It is just heart-breaking how it has affected especially those folks who are most vulnerable. Nuclear power needs to be phased out ASAP. Too many people in this country live in the backyard of our nuclear plants. Literally millions of people in NYC, Boston, and Chicago live close to nuclear plants just to name a few. Even a false alarm at these plants will kill folks due to the resulting panic and voluntary evacuation. Just not worth it period!!

comment #1487062 posted on 2015-03-06 10:42:25 by Moderator in response to comment #1481483

Moderator Note: According to the Japanese government's Nuclear Accident Independent Investigation Commission <http://warp.da.ndl.go.jp/info:ndljp/pid/3856371/naic.go.jp/en/report/> , "Approximately 150,000 people were evacuated in response to the accident" (page 15 of the report) "approximately 850 patients were hospitalized ... Among these patients, approximately 400 were seriously ill, who either had serious medical conditions, such as those requiring regular artificial dialysis or the regular suction removal of phlegm, or were bedridden ... at least 60 people died in the seven hospitals and in long-term care health facilities by the end of March 2011." (pages 319-320 of the report)

Flashback Friday -- A Presidential Visit

posted on Fri, 06 Mar 2015 15:33:02 +0000



Here, President Carter visits the TMI-2 Control Room in April 1979, joined by Pennsylvania Governor Richard Thornburgh, and the NRC's Harold Denton. Since this visit, what other sitting president visited a nuclear power plant and at which site? Photo courtesy of the Jimmy Carter Library

Comments

comment #1487586 posted on 2015-03-06 23:27:03 by richard123456columbia

Carter was at TMI to ease tension from the public that could not trust that they were being told the truth.

comment #1487253 posted on 2015-03-06 16:35:08 by Public Pit Bull in response to comment #1487248

Yes I am talking to myself again! The nuclear power industry has been in decline for a long time in this country, thank goodness. The focus has been on wringing out every blessed MW from existing ancient nuke plants. (Doesn't sound very safe as I think about it).

Despite government incentives, like taxpayer-funded insurance, these plants simply cost too much to build and operate and cannot compete with other sources of power. On a level playing field nuclear plants would never have been built in the first place decades ago. No private insurer would take the risk and neither should we.

comment #1487248 posted on 2015-03-06 16:23:08 by Public Pit Bull in response to comment #1487134

Dang it Steven! If Obama hears about that visit he will blame Bush for that too! And Steven just how many new nuclear plants in the US have been started up since Bush's historic nuke plant visit almost 10 years ago?! Boy, like everything else those government incentives, well, they really do the trick. How about a little friendly wager on when the next new nuclear plant comes on line? I'd say about the time a permanent spent fuel repository is constructed in the US or when pigs fly whichever comes first.

comment #1487220 posted on 2015-03-06 15:34:05 by Moderator in response to comment #1487134

Great! Thanks for that information. We'd consulted the NRC's previous historian, but he'd not recalled that visit. Moderator

comment #1487134 posted on 2015-03-06 12:55:25 by HUTCHINS, Steven

As an Exelon Employee, I know that in May of 2006, President Bush promoted nuclear power with a visit to the Limerick Generating Station Wednesday as part of his answer to energy and environmental problems as more companies consider taking advantage of government incentives to build the nation's first new nuclear plant in decades. Steven P. Hutchins Senior Project Manager Nuclear Energy Institute

comment #1487130 posted on 2015-03-06 12:45:34 by Moderator in response to comment #1487063

We are not aware of any presidential trip to Limerick. Moderator

comment #1487131 posted on 2015-03-06 12:46:54 by Moderator

Yes, President George W. Bush visited Calvert Cliffs, in Maryland, in 2005. Thanks for the reminder that he also visited Browns Ferry. Moderator

comment #1487129 posted on 2015-03-06 12:45:04 by Moderator in response to comment #1487069

It was just an official visit. The plant is close to Washington, D.C. There was no accident. Moderator

comment #1487927 posted on 2015-03-07 04:34:46 by Public Pit Bull

Glad the NRC is flashing back to America's near catastrophic nuclear accident. Over the years since TMI, the NRC and the nuclear industry have grown complacent with nuclear technology in my opinion. A cavalier approach to safety is setting us up for another accident I am afraid. But the Chinese may be even more of a threat. What if a Chinese Reactor Melts Down? It will be a miracle, or a tragedy (depending on your perspective), if a new nuclear power plant is ever brought on line in the US. The nuclear industry in the US has been on the decline for decades. Even with massive, age-old government (that is taxpayer) subsidies, nuclear plants cannot compete economically with gas, coal, or oil-fired power plants. This while China has rapidly built and operated over 30 new nuclear power plants with plans underway for over 30 more. Now China wants to export its nuclear power plant technology to other countries. Trouble is that technology is substandard just like the ill-fated Russian design that gave us Chernobyl. We probably need to fear the melt-down of a Chinese reactor plant more than we do the melt-down of an American reactor. And what will the Chinese call such a melt-down? Probably "The America Syndrome" as opposed to "The China Syndrome".

comment #1487114 posted on 2015-03-06 12:27:42 by David White

President Bush visited Browns Ferry in June 2007

comment #1487103 posted on 2015-03-06 12:17:49 by CaptD

Anyone else notice that President Jimmy Carter is looking at not onen but two meters (2nd and 3rd up from lower left) that are "pegged"... something he did not see too often in the Navy, unless it was in nuclear engineering training.

comment #1487096 posted on 2015-03-06 12:00:24 by adrossin

Dr. A. David Rossin - - Charming picture of Jimmy Carter at TMI. But he had already killed the future of nuclear power with his poorly reasoned and very poorly researched Executive Order to stop programs cor reprocessing and later recycle of spent fuel. This killed the breeder reactor and generated fear and distrust among the general public. And today we still are stuck with no repository for radioactive civilian power plant nuclear waste.

comment #1487070 posted on 2015-03-06 11:12:51 by Russell Thompson

George W. Bush visited Browns Ferry Nuclear Plant in June 2007

comment #1487069 posted on 2015-03-06 11:11:42 by Public Pit Bull

What was the occasion? What brought the Pres to Calvert? Don't recall another nuke plant accident.

comment #1487065 posted on 2015-03-06 10:49:11 by Schrader, Eric

George W. Bush Calvert Cliffs

comment #1487063 posted on 2015-03-06 10:43:36 by JB

Wasn't it Limerick?

comment #1487061 posted on 2015-03-06 10:41:58 by Frank Mand

George W. Bush, visiting Iraq's secret mobile reactor and WOMD cafe. ;~)

comment #1487059 posted on 2015-03-06 10:40:43 by ADT

June 2007, President George W. Bush visited TVA's Browns Ferry Nuclear Plant.

comment #1487056 posted on 2015-03-06 10:37:08 by Kory

George W. Bush Calvert Cliffs

Spreading the Sunshine!

posted on Tue, 10 Mar 2015 17:43:39 +0000

Stu Reiter Co-Chair Open Government Advisory Group Given the terrible winter much of the U.S. has been experiencing, you may be excited to learn that next week is "Sunshine Week." But before you break out the beach towels, you should know that the week actually celebrates the public's right to know its government's business. In fact, this year marks the initiative's 10th anniversary.



Sunshine Week was launched by the American Society of News Editors in March 2005. This non-partisan, non-profit initiative is celebrated in mid-March each year to coincide with James Madison's birthday on March 16. We thought it an excellent time to highlight the NRC's actions to be open and transparent about its business. The NRC has a long history of commitment to openness and transparency and encouraging stakeholder and public engagement. Most recently, we've used Web streaming and conferencing technologies to enhance public participation in our public meetings, regardless of stakeholder location. And our web-based systems make it easier to share public meeting information before and after, and for the public to provide feedback on these meetings. And, we have embraced President Obama's Open Government efforts to make the federal government even more open and accountable and to increase citizen participation, collaboration, and transparency in government. In January, 2009 the President instructed OMB to issue an Open Government Directive. To comply with the directive, each agency was required to develop and publish an Open Government Plan (updated every two years) describing how it will improve transparency and integrate public participation and collaboration into its activities. NRC's most recent plan can be found [here](#). Examples of commitments highlighted in our plan include:

- Reducing the average FOIA request processing time and backlog.
- Enhancing availability and delivery of official agency information throughout the public Website.
- Making it easier for mobile users to find/access regulatory information.
- Continued use of Social Media to share information with the public - launching Facebook.
- Promoting the objective of clear communications, the use of plain language.
- Increasing the transparency of our rulemaking activities.

President Obama then went further, and in September 2010, he challenged members of the United Nations General Assembly to work together to make all governments more open and accountable to their people. To meet that challenge, in July 2011, President Obama joined the leaders of seven other nations in announcing the launch of the [Open Government Partnership](#) – a global effort to encourage transparent, effective, and accountable governance. Now, some 60 nations participate, affecting more than 2 billion people around the world. As an organization, the NRC is dedicated to continuous improvement. We will continue to focus on what is important to our stakeholders and public -- FOIA responsiveness, maintaining our public Web site as the agency's central information portal and providing a mobile-friendly

Web site, growing our social media programs and modernizing our records management program.

Comments

comment #1503243 posted on 2015-03-14 22:13:03 by CrabDiving Progressive Radio

You'll allow us some hesitance in believing the "transparency" in government thing. I guess time will tell if the FOIA requests go through quicker, etc. Actions speak louder than blog posts.

comment #1497444 posted on 2015-03-11 15:57:21 by CaptD

What NRC SUNSHINE? Why no mention of 03/11/11 being The 4th Anniversary of Fukushima ☹ Polluting the Earth? The NRC is now doing what other MSM is doing, filtering the sunshine and calling it a bright sunny day! I'm not surprised that on especially this day the NRC Blog chooses to run a story on "how much sunshine they generate"...

comment #1497449 posted on 2015-03-11 15:59:12 by CaptD in response to comment #1493755

Great comment, Salute... BTW: You might enjoy looking at the telephone book sized glossary that the NRC uses...

comment #1498648 posted on 2015-03-12 10:58:39 by Public Pit Bull in response to comment #1497449

I would love to see the NRC PC Book, CaptD. Would you know how I can gain access to it? Though it is probably classified safeguards information like most of the stuff at the NRC.

comment #1493875 posted on 2015-03-10 15:03:21 by Nikohl Vandel

Oh, heck. We ALL know James Madison would be the first one screaming, "60 years and NO nuclear waste system in place? WTF are y'all trying to do, kill us all? Tell those yoohoo industrialist to wait until we get it together!" No, seriously, happy Sunshine Week, we started early here in Cali! Loving the warm beautiful weather here, come visit!! I'll show you a place here where nuclear material would be sooooo much safer than on our earthquake faults on our California coasts. Screw Yucca Mountain, we need that material off the ocean before we are SUPER #FuqaFukushimied! #WereRadioactive and we are probably not supposed to be! #ShutDownDiabloCanyon

comment #1493755 posted on 2015-03-10 14:23:16 by Public Pit Bull

Wow, great minds think along the same lines. I just posted the following about clear language on the NRC Open Forum site... The PC Virus has Infected the NRC You would think that a regulatory agency with the critical mission of protecting the public would be the last place where politically-correct (PC) lingo would manifest itself. Yet, sad to say, the PC Virus has even infected the Nuclear Regulatory Commission (NRC). Plain language has never been a strong suit at the NRC but things have gotten progressively worse. Examples... NOW... • A violation is called a finding. • A near-miss accident is called a precursor event. • A green color is used to categorize nuclear plant performance even though federal violations are involved. What is driving this trend toward techno-speak at the NRC? Perhaps there are just more paralysis-by-analysis folks employed there and more techno-speak just naturally follows? But the more likely reason, I think, is that the NRC likes watering down the wording so it sounds less alarming. Then the NRC can open up more stuff to public scrutiny. The public won't understand what the stuff really is, but the info is out there, right?! And the bonus is that it will sound a lot better than it actually is. Reminds me of what smashing-the-earth supporters now call "fracking", you know the process to bleed more natural gas from our planet. They now prefer to use the term "well stimulation". And the NRC can claim that it is following the President's call for regulatory transparency and openness, even though the POTUS does not believe that applies to him, his WH, or his self-appointed czars. Strange that our President would do this in spite of the fact he signed into law a couple of years back the so-called Plain Language Law. It just might take the NRC a lot longer to comply than other federal agencies as they have already been badly infected with the PC Virus. Finally, I am afraid the NRC is just a step away from adopting these PC terms... • Propose strongly instead of demand • Non-traditional success instead of failure • Alternate answer instead of incorrect • Unjust self-esteem reducer instead of criticism The PC Virus will be terminal if the NRC follows the White House lead and calls terrorists, misguided criminals. Kidding aside I think the NRC has to ensure that this is not behind their lack of clear language and communication. It is a quote by George Orwell... "The greatest enemy of clear language is insincerity."

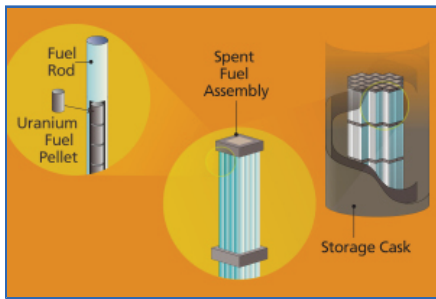
comment #1518461 posted on 2015-03-22 19:42:55 by Onelove1

Your plan is very ambitious but will it really be a reality? Transparency isn't what the government is known for, no matter how each president touts that.

Dry Cask Storage – The Basics

posted on Thu, 12 Mar 2015 18:36:00 +0000

Michele Sampson Chief, Spent Fuel Licensing Branch Division of Spent Fuel Management



You may have read our recent Science 101 [posts](#) in which we explained the basics of nuclear fuel and what happens when it is taken out of the reactor. We mentioned storing it in a pool, something every reactor in this country does immediately after removing the fuel. Today we want to talk about the option of storing spent nuclear fuel in dry casks. Pools can only hold so much spent fuel. As they began filling up, utilities started looking for other ways to manage their fuel. A handful of companies developed dry storage systems. The idea is that after the fuel spends some time cooling in the pool, it can be loaded into a cask that is sealed to keep the radioactive material inside and protected. At its most basic, a dry storage system is a cylinder that is lowered into the pool and filled with spent fuel. When full, the cylinder is raised and dried before it is sealed and placed outdoors. There are many varieties of spent fuel storage casks. All storage casks need to manage the spent fuel's heat and contain its radioactivity, and to prevent nuclear fission (the chain reaction that allows a reactor to produce heat). The casks must resist earthquakes, tornadoes, floods, temperature extremes and other scenarios. Casks come in different sizes. They are tall enough to hold spent fuel, which can be 14 feet long, and they can weigh up to 150 tons—as much as 50 midsize cars. In fact, plants may need a special crane that can handle heavy loads to be able to lift a loaded cask full of water out of their pool for drying. After the casks are dried and filled with helium, robotic equipment welds them closed to keep doses to workers as low as possible. Then the canisters are tested to ensure they are sealed. And once the dry, welded canister is placed inside thick shielding, the plants use a special transporter to move the cask outdoors to where it will be stored. At that point, the radioactivity from the cask must be less than 25 millirem per year at the site boundary. That means the highest dose to someone standing at the fence for a full year would be about what you would get going around the world in an airplane. The actual dose at the site boundary is typically much lower. As of December 2014, just over 2,000 casks have been loaded and are safely storing nearly 84,000 spent fuel assemblies. Cask designers must show their cask systems meet our regulatory requirements. The NRC staff reviews their applications in detail. We only issue an approval to systems that we know can perform safely. Most dry storage systems in use today have the spent fuel placed into an inner metal canister that is welded shut, then placed into a large metal or metal-and-concrete cask. The canisters are designed so they can be removed and put into transportation casks for eventual shipment offsite. Some casks store the fuel horizontally, the others vertically. The NRC inspects the design, manufacturing and use

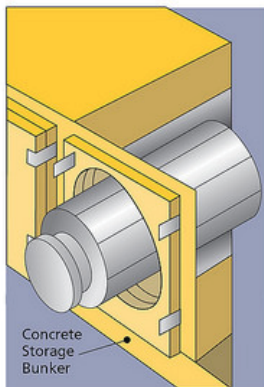
Dry Storage of Spent Nuclear Fuel

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.



of dry casks. These inspections ensure licensees and vendors are following safety and security requirements and meeting the terms of their licenses and quality assurance programs. NRC inspectors also observe practice runs before utilities begin moving their spent fuel into dry casks. There are strict security requirements in place to protect the stored fuel. Security has multiple layers, including the ability to detect and respond to an intrusion. There have been no known or suspected attempts to sabotage cask storage facilities. Since the first casks were loaded in 1986, dry storage has released no radiation that affected the public or contaminated the environment. Tests on spent fuel and cask components after years in dry storage confirm that the systems are providing safe storage. The NRC also analyzed the risks from loading and storing spent fuel in dry casks. That study found the potential health risks are very, very small. To ensure continued safe dry storage of spent fuel, the NRC is further studying how the fuel and storage systems perform over time. The NRC is also staying on top of related research planned by the Department of Energy and nuclear industry. We'll talk about "high burnup spent fuel," which is receiving a lot of attention at shutdown reactor sites, in an upcoming blog post.

Comments

comment #1500532 posted on 2015-03-13 06:52:00 by Joe Holtzman

donna Gilmore spoke to the NRC author of this post just a day before she did this post and a day before I sent an email to the NRC Chairman and other key people about these issues. I'm guessing she did this post in response to that communication. My comments are waiting moderation. <http://public-blog.nrc-gateway.gov/2015/03/12/dry-cask-storage-the-basics/#comments> Donna Gilmore March 12, 2015 at 10:56 pm Your comment is awaiting moderation. NRC initial certification is only for 20 years for most dry storage system, but excludes requirements for aging management that may be needed after the initial 20 years. NRC quote from the pending approval of the Holtec UMAX system: "There are currently no technical or regulatory requirements for the inclusion of AMPs [aging management plans] for the initial 20-year CoC [Certificate of Compliance] term. AMPs are required for spent fuel storage cask renewal which allows storage beyond 20 years, as provided in 10 CFR 72.240." <http://www.gpo.gov/fdsys/pkg/FR-2015-03-06/html/2015-05238.htm> NRC 8/5/2014 stress corrosion cracking meeting summary states: "Based on estimated crack growth rates as a function of temperature and assuming the conditions necessary for stress corrosion cracking continue to be present, the shortest time that a crack could propagate and go through-wall was determined to be 16 years after crack initiation." This meeting summary also mentions the NRC is giving the nuclear industry 5 years develop the capability to inspect the thin (1/2" to 5/8" stainless steel canister exterior for corrosion and cracks. And the NRC plans to allow up to a 75% crack in the thin canisters. However, has produced no seismic analysis to support this. <http://pbadupws.nrc.gov/docs/ML1425/ML14258A081.pdf> A Diablo Canyon canister has all the conditions for cracking in a two-year old canister. No one knows if it has cracked yet, because inspection technology is inadequate to determine this. <https://sanonofresafety.files.wordpress.com/2011/11/diablocanyonsec-2014-10-23.pdf> Thousands of U.S. thin canisters remain uninspected. Thin steel canister technology is immature, so it will be a few years before we can expect a through-wall crack. I hope we don't need to wait for a through-wall crack before the NRC raises their dry storage standards to require a system that can be inspected, maintained, and not susceptible to cracking. And thin canisters do not have an early warning leak detection system BEFORE a radiation leak. Only thick bolted lid casks meet all these requirements. However, as long as the NRC allows inferior standards, it is unlikely utilities will buy anything better. Most other countries in the world use thick bolted-lid cask systems and add extra environmental protection by housing them in buildings. The devil is in the details. Learn more here. <https://sanonofresafety.files.wordpress.com/2011/11/reasonstobuythickcasks2015-01-30.pdf>

comment #1500502 posted on 2015-03-13 06:36:21 by Joe Holtzman

Interesting to see that mythology and misinformation is spewing forth from the NRC in such abundance. The author provides little if any substance in fact to back up her statements. In fact storage casks as presently designed will leak after 8-10 years with MO ability to on site address that issue. The public is being devolved outright by Polyanna.

comment #1501801 posted on 2015-03-13 20:22:38 by Jeff Steinmetz

This statement by Michele Sampson- Chief, Spent Fuel Licensing Branch is a HUGE STRETCH even for a representative of the NRC. "The NRC inspects the design, manufacturing and use of dry casks. These inspections ensure licensees and vendors are following safety and security requirements and meeting the terms of their licenses and quality assurance programs. NRC inspectors also observe practice runs before utilities begin moving their spent fuel into dry casks." Michele- please explain to the public what surface area percentage of the steel canisters in use and encased in concrete are being inspected presently? Also please tell the public how many canisters at each site is being inspected and how often? Then explain to the public how and why if these systems are being inspected in use today The NRC gave the vendors 5 years to come up with a method to inspect the steel canisters? Again, the NRC is more than a little short on the details.

comment #1499084 posted on 2015-03-12 18:57:50 by Interest member of the public

Nice blog!

comment #1501395 posted on 2015-03-13 13:51:50 by Public Pit Bull

Let George Do It Or more precisely let George the Brit or Pierre the Frenchman do it. Even Japan (You know the country that was knitting with only one needle when they made that cowardly attack on Pearl Harbor) has taken action to do the right thing with High Level Waste (HLW). They have England and France take care of it for them. Yes Japan has taken the lead in doing the responsible thing with HLW. But it is not unusual; in fact it seems to be the rule, that other countries are taking the lead on most things anymore, anyway. For years Japan has been sending its nuclear plant spent fuel to both England and France. Long ago Japan entered into contracts with these countries to not only take their high level wastes but to reprocess them as well. Since only about 3% of spent fuel contains the fission products (the real nasty highly radioactive stuff), when the spent fuel is reprocessed only a very small amount of the hot stuff remains and has to be placed in storage. Japan has an interim (30-50 year) storage facility to take this so-called vitrified waste (waste that is safely sealed in a glass-like compound) as it is sent back from France and England. Therefore in Japan spent fuel does not sit around its nuclear plants and in the backyards of its citizens. Even with the fears of some in this country about reprocessing, we can at least let other countries carry the water for us like we let them do in so many areas anymore. And perhaps we can even pay those countries a little more to keep all this sh...stuff! In fact I doubt we would have to pay them anything for completely taking care of all our HLW. Provided we let them keep all the good unused fuel that is recovered. This so-called mixed-oxide fuel has been powering nuclear power plants in England and France for years.

comment #1501142 posted on 2015-03-13 11:57:57 by Public Pit Bull

When pigs fly and a central permanent repository for this HLW (High Level Waste) is finally constructed in the US, is the waste stored at 93 nuclear sites in the US in a form to be readily transported directly to this repository without the risk associated with further handling and radiation exposure? Why hasn't the US at least provided a central interim storage facility like the one that has been utilized in Sweden for some time? The Swedes did not tolerate having this dangerous HLW stored in their backyards all around

their country. Even Japan has a centralized interim (30-50 year) storage facility. In your blog article you mentioned the low-level radiation limit that cannot be exceeded at the "site boundary" from HLW storage containers (25 millirem/year). The site boundary is a significant distance from the nuclear power plant itself, even a considerable distance from the secured protected area of the plant. As radiation dose drops off as the square of the distance, what is the radiation dose on the surface of these canisters when they are first off-loaded from the overloaded spent fuel pools at these plants? You mention that robotics must be used to protect plant personnel from this radiation, but fail to mention just how high the radiation field is directly on the surface of one of these freshly loaded canisters. Perhaps you could also put that radiation dose rate into a layman's perspective by telling us just how long it would take for a person next to a freshly-loaded canister to receive a lethal dose of radiation. Would it be a few minutes or an hour or so?

comment #1518919 posted on 2015-03-23 09:51:26 by Moderator in response to comment #1501142

During loading and storage, the canisters in dry spent fuel storage systems are always shielded. A person would not stand directly next to a freshly-loaded canister without the shielding in place. Maximum doses on the surface of a freshly-loaded dry storage system (with the canister placed inside the storage overpack) can range from a few millirem per hour (comparable to what you would receive flying in an airplane on a coast-to-coast flight) to a few rem per hour (comparable to an X-ray computed tomography, or CT, scan), depending on the type of spent fuel loaded and the specific cask design. At those maximum dose rates, the hypothetical scenario of standing next to a loaded cask 24 hours a day and 7 days a week for an entire month would not expose a person to enough radiation to be lethal. Michele Sampson

comment #1518941 posted on 2015-03-23 11:40:00 by Donna Gilmore in response to comment #1518919

Would you provide a link to the technical and health studies and reports you are referencing? Also, it's not just a lethal dose that is of concern. There are many health conditions that can be caused by this radiation. Also, does your estimate assume fuel cladding is intact? Does it assume the thin steel canister is not cracking? Thanks.

comment #1518943 posted on 2015-03-23 11:42:58 by Public Pit Bull in response to comment #1518919

Thanks for the response. The storage overpack obviously cuts down drastically on the maximum dose rate. But what is the contact dose rate on the surface of a freshly-loaded canister before the overpack is placed? And therefore the reason it has to be handled with remote equipment.

comment #1499520 posted on 2015-03-12 22:56:19 by Donna Gilmore

NRC initial certification is only for 20 years for most dry storage system, but excludes requirements for aging management that may be needed after the initial 20 years. NRC quote from the pending approval of the Holtec UMAX system: "There are currently no technical or regulatory requirements for the inclusion of AMPs [aging management plans] for the initial 20-year CoC [Certificate of Compliance] term. AMPs are required for spent fuel storage cask renewal which allows storage beyond 20 years, as provided in 10 CFR 72.240." <http://www.gpo.gov/fdsys/pkg/FR-2015-03-06/html/2015-05238.htm> NRC 8/5/2015 stress corrosion cracking meeting summary states: "Based on estimated crack growth rates as a function of temperature and assuming the conditions necessary for stress corrosion cracking continue to be present, the shortest time that a crack could propagate and go through-wall was determined to be 16 years after crack initiation." This meeting summary also mentions the NRC is giving the nuclear industry 5 years develop the capability to inspect the thin (1/2" to 5/8" stainless steel canister exterior for corrosion and cracks. And the NRC plans to allow up to a 75% crack in the thin canisters. However, has produced no seismic analysis to support this. <http://pbadupws.nrc.gov/docs/ML1425/ML14258A081.pdf> A Diablo Canyon canister has all the conditions for cracking in a two-year old canister. No one knows if it has cracked yet, because inspection technology is inadequate to determine this. <https://sanonofresafety.files.wordpress.com/2011/11/diablo Canyon scc-2014-10-23.pdf> Thousands of U.S. thin canisters remain uninspected. Thin steel canister technology is immature, so it will be a few years before we can expect a through-wall crack. I hope we don't need to wait for a through-wall crack before the NRC raises their dry storage standards to require a system that can be inspected, maintained, and not susceptible to cracking. And thin canisters do not have an early warning leak detection system BEFORE a radiation leak. Only thick bolted lid casks meet all these requirements. However, as long as the NRC allows inferior standards, it is unlikely utilities will buy anything better. Most other countries in the world use thick bolted-lid cask systems and add extra environmental protection by housing them in buildings. The devil is in the details. Learn more here. <https://sanonofresafety.files.wordpress.com/2011/11/reasonstobuythickcasks2015-01-30.pdf>

comment #1499535 posted on 2015-03-12 23:06:07 by Erica Gray

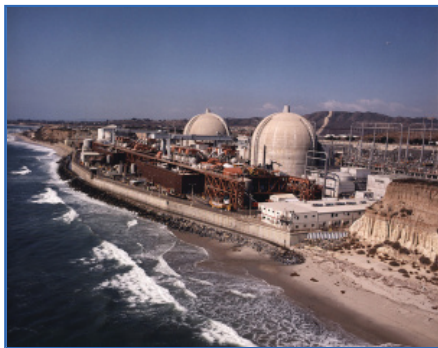
We'll talk about "high burnup spent fuel," which is receiving a lot of attention at shutdown reactor sites, in an upcoming blog post. Well since the NRC approved the use of high burnup fuel some time ago, seems it has little to do with shutdown reactors. But points out the fact that the NRC allowed the nuclear industry to put the cart before the horse. Testing continues on high burnup spent fuel and the set of available data is growing. Cask designers use the results to redesign their casks for higher burnups and additional fuel types. As more data becomes available, the NRC expects to be able to certify more casks. Cask designers also need this data to demonstrate the long-term safety of their systems so they can continue storing spent fuel beyond the initial license term. <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/bg-high-burnup-spent-fuel.html> As a Virginian, I am extremely concerned that the citizens in our state were not asked or informed over Dominion's plan to make North Anna nuclear power station a test site for high burnup spent fuel. High Burnup Dry Storage Cask Research and Development Project Final Test Plan Prepared by: the Electric Power Research Institute <http://www.energy.gov/sites/prod/files/2014/03/f8/HBUDry%20StrgeCaskRDfinalDemoTestPlanRev9.pdf> Locating the test site at the nuclear power station that was knowingly built on a fault line....the same station where both reactors 1 & 2 were knocked offline by the 5.8 earthquake in 2011. The earthquake that exceeded the plants design basis for ground motion and moved 25 or the 27 dry casks some up to 4 1/2 inches. Of course Dominion was granted an exemption. North Anna Power Station Independent Spent Fuel Storage Installation, 10726-10727 [2015-04133]

<http://regulations.justia.com/regulations/fedreg/2015/02/27/2015-04133.html> So in reality, you guys don't know how this high burnup spent fuel will perform in the long term. At one of the last NRC meetings on dry casks that I attended via phone, I asked how many dry casks have ever been opened up and examined and the answer was 1. (and that was lower burn up..shaking head) September 26, 2014 Evaluation of the Technical Basis for Extended Dry Storage and Transportation of Used Nuclear Fuel December 2010 http://www.nwtrb.gov/reports/eds_rpt.pdf The purpose of this research effort is to determine the effects of canister/cask vacuum drying and storage on radial hydride precipitation in high-burnup (HBU) pressurized water reactor (PWR) cladding alloys during cooling for a range of peak drying-storage temperatures, internal gas pressures, and hoop stresses. The HBU PWR cladding alloys have a wide range of hydrogen contents and varying hydride morphology after in-reactor service. <http://www.energy.gov/ne/downloads/effects-multiple-drying-cycles-hbu-pwr-cladding-alloys> Nov 12, 2014 US Government Accountability Office Figure 8: Four Major Types of Challenges Identified By Experts and Stakeholders on Federal Efforts to Manage Spent Nuclear Fuel at Consolidated Interim Storage Facilities Legislative: * Siting, licensing, constructing, and operating of interim storage facilities included in the Department of Energy's strategy have not been authorized; * Development of a new waste management and disposal organization has not been authorized; * Funding for the Department of Energy's past work on spent nuclear fuel management was unpredictable. Regulatory: * The Nuclear Regulatory Commission licensing process could take more time than the Department of Energy has allowed. Technical: * High burn-up fuel has uncertainties related to long-term storage and future transportation; * Some stored spent nuclear fuel may not be readily transportable; * Current transportation infrastructure may not be adequate; * Repackaging requirements, if any, are uncertain. Societal: * Development of interim storage facilities depends on achieving sustainable public acceptance, which may be difficult without a coordinated outreach strategy. <http://www.gao.gov/assets/670/666817.txt> All this proves is the nuclear industry and it's regulating (term used loosely) agency have placed people and the environment in harms way and what makes it beyond criminal is both the NRC and the nuclear industry see no reason to stop making yet even more of this waste.

Continuing to Learn the Lessons of San Onofre

posted on Tue, 17 Mar 2015 13:12:32 +0000

Rebecca Sigmon Reactor Systems Engineer Office of Nuclear Reactor Regulation Almost two years after the [San Onofre nuclear power plant](#) shut down permanently, the NRC has kept an eye on what we can learn from the events that led to the plant's closure. The latest product of this work [reviews](#) the agency's procedures related to Southern California Edison's (SCE) installation of new steam generators at the plant.



This work builds on our response to the steam generator damage San Onofre discovered in January 2012. At the time, our inspections and reviews aimed to understand what had happened and ensure public safety would be maintained before the plant could restart. Even after SCE decided in June 2013 to shut San Onofre down, the NRC continued its reviews to try to prevent something similar from happening at other reactors. A year ago, our Executive Director for Operations [asked](#) the offices of Nuclear Reactor Regulation and New Reactors, as well as our Region IV office, to review the NRC's own actions. The effort focused on the event and the NRC's response to find any areas for improving our processes. The review covers issues raised in a 2014 NRC [Inspector General report](#). The review examines eight basic topics and discusses 17 actions to enhance what are already effective tools for overseeing U.S. operating reactors. Some of the topics include: better identification of potential design issues before they lead to problems; better assurance that plants comply with our requirements in 10 CFR 50.59, "Changes, Tests, and Experiments;" and improving communications with the public. The review touched on all aspects of the NRC's involvement in the San Onofre event, from on-site inspection to

Congressional briefings, from technical review to website maintenance. The review team discussed some of these issues with industry experts. The team also sought comments from members of the public who participated in meetings about the San Onofre event and subsequent technical analyses. The review concludes, among other things, that the 50.59 process is appropriate for plant activities that replace large components, such as steam generators. The review also finds that the staff properly used a Confirmatory Action Letter as an oversight tool in responding to the San Onofre events. The staff's already working on many of the review's 17 actions. For instance, the staff is working on documents that clarify several areas of NRC guidance on following the 50.59 process. The NRC is also working on additional training for agency staff to improve their 50.59 reviews and associated activities. All of this ongoing work will help ensure U.S. nuclear power plants continue to safely operate, maintain and repair their systems.

Comments

comment #1558095 posted on 2015-04-30 17:43:28 by sheyla in response to comment #1512161

I agree with you 100% you are very well spoken Good job !!!

comment #1511193 posted on 2015-03-19 20:47:22 by perdjaz

The lesson is that if you shut down a nuclear plant it will be replaced by something dirtier and more dangerous. Plug that into your event trees and fault trees.

comment #1511200 posted on 2015-03-19 20:55:31 by perdjaz in response to comment #1510201

Do you think the NRC has a way or preventing earthquakes and tsunamis? Nothing happened at Fukushima. It is trivial as an industrial accident. If you disagree, it's only because you are not familiar with industrial accidents. The existing regulations are absurdly over-conservative for the nuclear power industry. They are based on little more than hysteria and superstition. The shame is that other more dangerous forms of electricity generation, which would be everything except nuclear power, benefit from

comparatively lax regulation and media disinterest in actual accidents.

comment #1512161 posted on 2015-03-20 13:13:41 by joy cash in response to comment #1511193

There is nothing "dirtier" than literally thousands of years of nuclear waste. Ask Chernobyl or Fukushima victims. Solar, wind, wind, hydro are our future. Creating far more living wage jobs, as well.

comment #1519039 posted on 2015-03-23 15:27:12 by

The NRC clearly doesn't learn lessons from the past. SONGS steam generator replacement required prior NRC approval in the form of a license amendment. Per 50.59, a license amendment was needed because Southern California Edison used new and less conservative methods and assumptions in safety analysis supporting use of the new design. The same exact approach Pacific Gas and Electric used to conclude that the new (more capable) earthquake faults are within the Diablo Canyon design basis (Sept 2014). The NRC not only doesn't learn from the past but also doesn't enforce their own rules.

comment #1512251 posted on 2015-03-20 15:15:20 by joy cash in response to comment #1511200

My point exactly, we have had decades of industrial accidents. Only ones that leave behind literally hundreds/thousands of years of clean up efforts & human/environmental devastation are nuclear accidents. "Human error" is a known factor, nature's unpredictably is known factor. If a solar system blows, clean up is relatively harmless when compared to any nuclear accident.

comment #1509944 posted on 2015-03-19 08:03:44 by Skeptical Observer

PPB, the problem with your analogy is, with the EPA there are forests, cows and ecosystems that are not in compliance with some of their hare-brained restrictions! NRC lives in the REAL world! If you would prefer to live in the 'cold and dark' I'm sure there are 3rd and 4th world countries that would love to have you.

comment #1510114 posted on 2015-03-19 10:22:00 by Moderator in response to comment #1509791

The agency's website lists information regarding the San Onofre steam generator tube degradation, including relevant inspection reports: <http://www.nrc.gov/info-finder/reactor/songs/tube-degradation.html> The blog post also provides a link to an Inspector General report on the matter: <http://pbadupws.nrc.gov/docs/ml1427/ML14276A478.pdf> Scott Burnell

comment #1510125 posted on 2015-03-19 10:27:22 by Public Pit Bull in response to comment #1509625

This is my "Ode to Joy". (-) Very good comments! I think that the real culprit is indeed the nuclear industry. Through their mouth-piece and lobbyist, the Nuclear Energy Institute (NEI) they line the pockets of congressional reps who "oversee" the NRC. The NRC is thereby really "captured" by a God-awful nuclear industry who is only interested in perpetuating their own selfish interests.

comment #1510201 posted on 2015-03-19 11:06:31 by Public Pit Bull in response to comment #1509944

You make a good point SO. I think the EPA has over-regulated in some cases. But isn't overregulation better than under regulation? Isn't the public better served by erring on the side of safety?! I do not discount the fact that nuclear plants currently provide around 20% of our nation's electricity on a 24/7 basis. They are indeed part of the backbone of our nation's vital electric grid. But we can and should wean ourselves from nuclear power for a whole host of reasons, public safety first and foremost. Another indicator for me that the EPA is erring on the side of public safety is the fact that I constantly hear about how God-awful the EPA is; that they are just unreasonable; that they don't bend on enforcing regulations. The nuclear industry rarely bitches about anything the NRC does. Don't you find that somewhat ironic?! Also if the EPA doesn't do its job the consequences aren't nearly as grave as the NRC not doing its job. For example, existing nuclear power plant accident PREVENTION should be the top priority. However, the NRC is seriously considering allowing the nuclear industry to just better MITIGATE a Fukushima-type accident here and NOT PREVENT one here in the US?! Would you have supported just mitigating another Three Mile Island accident here years ago?! High time to phase out nuclear power. Certainly no new nuclear plants, no license extensions for existing plants, and much tougher enforcement by the NRC of existing regulations.

comment #1510210 posted on 2015-03-19 11:16:20 by MikeMcDevitt in response to comment #1507335

MikeMcpuck No question in my mind that you are right. The plant response to the initiating event demonstrated that San Onofre was well equipped to prevent this difficult technical problem from introducing even the tiniest risk to the community, and the initial approach for restarting this valuable zero-CO2 energy producer in Southern California had an over abundance of conservative measures to protect the public safety interest. There are no technically competent arguments to the contrary, including within the NRC. Edison was being paid a marginal return on the operating costs for this \$4 Billion plus investment from me and other ratepayers. Given the choice between pandering to incompetent politicians and self proclaimed nuclear 'experts' for fraction of the yearly San Onofre operating costs, or abandoning my \$4 Billion investment in favor of selling me another \$4 Billion CO2 pumping generator while gaining access to yet another \$4 Billion plus Decommissioning Piñata, what responsible Board of Directors would ever walk away from an opportunity like that? No, the NRC failed to be decisive with information they fully understood for supporting restart, and set the stage for the sleeping California Public Utilities Commission to step in and protect the public from the only real threat in this whole sad story. I blame the CPUC for not protecting me and my environment.

comment #1510271 posted on 2015-03-19 11:52:06 by joy cash

All nuclear plants leak radiation & create tons of radioactive waste, for which we have yet to come up with a clear resolution. 60 yrs. is enough to learn this is an experiment gone very wrong. Chernobyl & Fukushima are just 2 examples of unending aftermath of our species arrogance in science. One caused by human error, one caused by nature's laws. And yet we continue down this path of self destruction, deluding ourselves that we are in control. Facts speak for themselves, we are not in control. And to the extent we continue our folly nuclear path, we will reap what fools we be.

comment #1507229 posted on 2015-03-17 11:09:14 by James Greenidge

Outside whatever issue, this steam generator incident could've and has occurred in other type power plants. It's NOT unique nor related to nuclear and should not be willfully construed as such to the unwashed. End of facts.

comment #1507261 posted on 2015-03-17 11:42:31 by Public Pit Bull

Sad that the NRC is so conflicted. Let's see...protect the public or the nuclear industry???? Really no choice at all-the survival instinct favors a bloated federal agency over anything else. Kill the cow and there goes the milk!

comment #1507314 posted on 2015-03-17 12:30:22 by joffan7

You say that "The review also finds that the staff properly used a Confirmatory Action Letter as an oversight tool in responding to the San Onofre events." However, going down that unnecessary and unmandated path led directly to the loss of non-carbon generating capacity in California. The Confirmatory Action process was effectively used to stop a safe plant from ever restarting. So my question is, while you were holding yourselves blameless for this destructive Confirmatory Action process, what alternatives did you consider that might have been used instead?

comment #1507315 posted on 2015-03-17 12:31:41 by joffan7 in response to comment #1507137

It's a pretty sad and limited viewpoint that holds that you can only improve processes if they are ineffective.

comment #1507323 posted on 2015-03-17 12:40:00 by Greg Wilson

I have the best plan. It is called switch to Wind and Solar. I have a patent on a new type of Wind Energy Called WindJammer Generators which will be built by WindJammer Energy. They cost much less per unit than a Nuclear Power Plant and will make Nuclear Power obsolete. No one can predict every possible event that could destroy a Nuke in the blink of an eye. No one has developed a solution for the Indefinite Spent Fuel Storage Problem which will be a 250,000 nightmare for future generations. Windjammer Generators are Eco Friendly to People, Birds and Wildlife and can be installed in Big Cities or everywhere electricity is needed.

comment #1507335 posted on 2015-03-17 13:00:01 by devolpi

Nonsense from NRC. I live about 10 miles from San Onofre and following the events. It's my observation that NRC regs and actions gave the owners all the excuse they needed to shutdown two reliable reactors that only needed a single steam-generator fix.

comment #1509164 posted on 2015-03-18 15:22:58 by CaptD

Rebecca Sigmon - I suggest that you and your team begin by reviewing all the statements submitted to the NRC (which also includes your Office) about the Inspector General investigation (which was in itself was a white wash) into the San Onofre AIT Report . At least one Ph.D. now retired NRC Senior nuclear engineering expert has submitted documentation describing our current situation, where the NRC no longer has the in-house capability to analyze replacement steam generators designs and now must depend upon Utilities to submit plans that they and their sub-contractors have "verified" as being workable! Said another way, the Utilities are now self approving their own designs which then the NRC accepts and then approves as meeting NRC guidelines. This practice is not acceptable! If nothing else, San Onofre proved that Utilities are focused on making profits and that includes bringing to market replacements that allow them to keep their downtime to a minimum. SCE came so very close to causing a nuclear incident(619) accident because they figured that they could self design something that their own engineers had no business designing, especially since it would not be reviewed by either the NRC or the public for compliance! Here is a January 2012 industry article from Nuclear Engineering International by Boguslaw Olech and Tomoyuki Inouetwo, two engineers (one from SCE and one from MHI) where they "brag" about all the things they did without having to submit to a full 50.59 process. It is interesting to note that the RSGs for San Onofre Unit 3 failed the same month this was published: Improving like- for-like RSGs <https://s3.amazonaws.com/s3.documentcloud.org/documents/347889/col-nrc-tech-paper.pdf> SCE installed Unit 2 and ran it conservatively until it was due for a scheduled fuel replacement at just about the same time they fired up Unit 3 and pushed it over the stated limitations because they thought everything was OK with their design. They had no idea that these new replacement steam generators had more internal damage that all the rest of the US Nuclear fleet combined. <https://sanonofresafety.files.wordpress.com/2011/11/steamgeneratortubesplugged1.pdf> I wish you well and suggest that you reach out to those that have submitted papers to the NRC about San Onofre, since they can best help you to prevent another San Onofre multi-billion dollar safety debacle!

comment #1507137 posted on 2015-03-17 09:45:53 by Public Pit Bull

This is your oxymoron statement of the year NRC: "...17 actions to enhance what are already effective tools for overseeing US operating reactors." If these tools are already effective why bother enhancing them?! Also how do you know existing tools are already effective in overseeing US operating reactors? On the contrary, sir, your oversight activities are flawed as numerous commenters have

noted. Furthermore NRC, you can enhance away as long you don't cost nuclear plants one dime. The NRC does not want to hurt, in any way, nuclear plant competitiveness. The NRC does not want to look a gift horse in the mouth. For example the NRC is seriously considering letting the nuke industry off the hook on the lessons learned after the Fukushima accident. They do not want to force the industry to actually do stuff to prevent a Fukushima-type accident here as it would be costly for the industry to do so. Instead of requiring appropriate design changes to our nuke plants to prevent such an accident, the NRC wants the industry to be able to better handle the consequences of such an accident when it occurs! In effect lets let the cow out of the barn but come up with a means to more quickly chase it down. How sad that the NRC would even be considering such a thing. Isn't the primary responsibility of the NRC to protect the public?!

comment #1507659 posted on 2015-03-17 20:23:28 by Public Pit Bull in response to comment #1507315

Good point 7. What concerns me that with the EPA, for example, if you can't comply and can't afford to get into compliance you go out of business. With the NRC they simply relax the rules for the nuke industry.

comment #1507565 posted on 2015-03-17 18:42:10 by mj4

I have a technical question for Rebecca Sigmon. I do understand SONGS committed to return to 70% (with later S/D for tests) in their response to the CAL, maybe voluntarily. When I read the NRC document at the "reviews" link above, and specifically page 21 of the PDF, I note in RAI 32 that NRC simply asked a question. SONGS didn't even attempt to answer it? They just asked for a license amendment instead! Wow, shows a total lack of understanding of design bases, TSs and TS bases, TS Action Statements and SR Tests and SR intervals, etc. and how it all fits together. When asked how "their" plan would demonstrate structural integrity performance criterion in Technical Specifications (TS) 5.5.2.11.b.1 at 100%, they simply should have said "like we and everybody else always does. We'll go to 100% and run the appropriate STs for SG & RCS leakage; when that passes we'll back down to 70%. That's all any ST can do; a snap shot operability. But that would demonstrate functional integrity at 100% power. They had a time-at-high-power related problem, not an inability to prove integrity at 100% power. U2 ran a whole cycle and never sprung a leak. The whole TS package fits together as an integral process just for this reason, stuff can fail after passing tests. It's like any plant that ever sprung a SG tube leak has invalidated their "proof of integrity" done earlier? I don't think so, and never was the intent of the whole TS package. Would NRC have balked at such a justification, and if so specifically why? But of course that approach would require SONGS (and NRC) to both be absolutely convinced there was no problem at 70%. If they didn't believe that, they never should have proposed it in the first place.

comment #1509791 posted on 2015-03-19 05:54:49 by drbillcorcoran

What is the extent of this dysfunctional performance? What is the causation of the extent?

comment #1509625 posted on 2015-03-19 01:00:49 by joy cash

For decades San Onofre held very bad safety records. Only when it became very public did NRC step up, after Senators asked for criminal investigation. Now ex-head of Cal PUC is under investigation. The entire nuclear energy industry is a dying dinosaur in it's death throes. Clean renewables are out pacing nuclear hazardous energy. We are left with what to do with 60 yrs. of highly toxic waste. It's a tragic story of our contemporary times. Not enough proper oversight of Big corporate endeavors.

Photo Friday -- The NRC Operations Center

posted on Fri, 20 Mar 2015 14:52:33 +0000



Visitors got a rare glimpse of the NRC's Operation Center last week when tours were offered as part of the annual Regulatory Information Conference. Here, NRC officials show off the Executive Team room, from where an NRC response effort would be managed. Other sections of the center include the Reactor Safety team, the Protective Measures team, the Liaison team and the Public Affairs team, among others. The Op Center is staffed 24/7 by specially trained Headquarters Operations Officers.

Comments

comment #1513733 posted on 2015-03-21 06:31:37 by prophetjoshua

looks like quite an interesting place to work in, i would jump at the opportunity. i suggest they have these tours for high school students also and highlight the career opportunities in government department

comment #1512089 posted on 2015-03-20 11:38:02 by Public Pit Bull

How many exercises are conducted annually to allow NRC responders to practice? I know the NRC requires nuclear power plants to conduct emergency exercises periodically but how often is a full activation of this NRC Operations Center practiced? Also have such full-scale exercises included doomsday scenarios? That is, a worst case nuclear accident involving core melt, containment breach, and total prolonged loss of the ability to cool all spent fuel stored in overloaded spent fuel pools?! One such scenario is a jet-liner crash into the auxiliary building surrounding the reactor containment building. The raging fire that results causes a complete loss of the plant reactor operator's ability to monitor, let alone control the reactor.

comment #1518104 posted on 2015-03-22 16:23:47 by CaptD

I'd like to know how big the restrooms are for this area and how many it can seat, since if we get one or more Fukushima's there will a BIG demand as everyone tries to access them at once!

comment #1518909 posted on 2015-03-23 08:38:46 by Moderator in response to comment #1512089

The HQ Operations Center participates in full activation exercises approximately four times a year. These exercises involve a variety of safety and security scenarios that require the staff to conduct an independent assessment of any protective actions the participating plant is recommending to protect the public. Both the NRC and FEMA assess and grade the participating plant's efforts to adequately protect public health and safety. Impartial evaluators also grade the NRC's notification/coordination with our local, state, and federal partners. Additionally, the NRC may participate in government-wide National Level Exercises on an annual basis, depending on the extent to which nuclear materials are involved. Scott Burnell

comment #1520147 posted on 2015-03-24 08:15:45 by Moderator in response to comment #1518909

During an incident the NRC would independently assess Protective Action Recommendations provided by the licensee and, if necessary, the NRC would provide additional support and information to state or local decision-makers, who have the authority to implement Protective Action Decisions within their jurisdiction. The NRC regularly exercises coordination with other federal agencies, as well as state and local organizations, to stay prepared for possible accidents. Our website has more information at <http://www.nrc.gov/about-nrc/emerg-preparedness/about-emerg-preparedness/federal-state-local.html> and <http://www.nrc.gov/about-nrc/emerg-preparedness/about-emerg-preparedness/protective-action-recommendations.html> . Scott Burnell

comment #1520321 posted on 2015-03-24 10:51:38 by frank in response to comment #1518104

The people working in these facilities are not only physically but also mentally fit. Moderator: Some verbiage removed to adhere to comment guidelines.

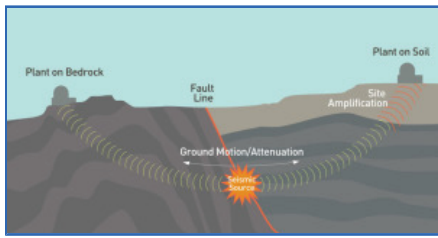
comment #1518945 posted on 2015-03-23 11:55:28 by Public Pit Bull in response to comment #1518909

Glad to hear that the NRC practices what it preaches. As I understand it the NRC has the final say in signing off on any required protective actions. If the NRC disagrees with the licensee's proposed protective action recommendations, the NRC can overrule the licensee. The same is even true if the NRC feels that the state or even FEMA is not carrying out adequate public protective actions. Is this true? If it is true then a federal agency can overrule a state authority, even the governor, if the NRC so chooses. This is an awesome responsibility. Do your exercises include the resolution of conflicts between FEMA, the NRC, the state, and the licensee? Practicing such conflict resolution I believe would be very critical and important. Unless timely conflict resolution is achieved the public may not be well served.

Western U.S. Reactors are Completing Their Seismic Picture

posted on Wed, 25 Mar 2015 13:35:34 +0000

Lauren Gibson Project Manager Japan Lessons-Learned Division An ongoing lesson from 2011's Fukushima Dai-ichi accident involves U.S. reactors better understanding their earthquake hazard. Reactor owners in the Western parts of the country have had to assemble a particularly complex jigsaw puzzle of seismic information. They've just sent the NRC their detailed re-analysis.



The graphic shows the three pieces of information U.S. reactor owners have used to analyze their specific hazard:

- Where quakes are generated (seismic source)
- How the country's overall geology transmits quake energy, (ground motion/attenuation) and
- How an individual site's geology can affect quake energy before it hits the reactor building (site amplification).

Central and Eastern U.S. reactors benefitted from region-wide [updated earthquake source information](#) and [a model of quake energy transmission](#) for the first two pieces. Plants west of the Rockies, however, had to deal with the West's more active and interconnected faults. [Columbia](#), [Diablo Canyon Part I](#) and [Part II](#) and [Palo Verde](#) used the Senior Seismic Hazard Analysis Committee (SSHAC) approach to develop site-specific source models and ground-motion models. This group of independent seismic experts develops guidance on major seismic studies such as this. The group has met several times the past few years to ensure the Western plants properly conduct and document their seismic activities. The NRC carefully considers SSHAC comments and recommendations before the agency comes to its own conclusions on seismic issues. We're currently evaluating the Western plants' reports and will issue our short-term screening and prioritization review later this spring. As for the Central and Eastern U.S. plants' March 2014 submittals, we screened them to determine what other actions the plants might have to take. Plants that have more to do were [grouped into three priority groups with staggered deadlines](#). Many of those plants submitted additional analyses in December 2014, and the NRC continues reviewing both that information and the March 2014 submittals.

Comments

comment #1523766 posted on 2015-03-26 20:03:29 by CaptD

Fukushima proved that Nature can destroy any land based nuclear reactor, any place anytime 24/7 despite what spec.'s the NRC or any other entity can specify and that does not even include mankind manipulation of Murphy's Law!

comment #1550795 posted on 2015-04-20 18:28:36 by Dick Meehan

In re seismic safety of Diablo Canyon and others, the framework for such evaluations has shifted from "engineering judgement" in the mid 20th century to probabilistic approaches now dominated by "geoscientists" but bearing many fossil engineering concepts. Both of these approaches have proven to be seriously flawed and have consequently now been reformed by the SSHAC movement which invokes a vague "community of experts" and is being used on current NRC submittals. But this technique like other such efforts carries the stamp of typical American quasi-religious movements and it is not unlikely that it too will give way to something new, perhaps a wholesale abandonment of PRA as a failed paradigm. NRC reviewers of the current batch of submittals should be aware of this history. A little boning up with Feyerabend and Lakatos might be in order.

comment #1525820 posted on 2015-03-27 12:47:28 by joy cash in response to comment #1523766

Nuclear energy industry will continue as long as federal subsidies & investors bring trillions into their coffers. Petition your elected officials to end these taxpayer funded subsidies. We need to fund solar, wind, wave, hydro projects now. Creating vastly more permanent jobs than nuclear energy. On so many levels, nuclear energy industry is a dying dinosaur in it's death throes. The sooner it goes the safer our shared world will become.

comment #1525875 posted on 2015-03-27 13:24:15 by richard123456columbia

When Fukushima was been built it was known that tsunamis were very high in that area(many had grandparents that experienced it). Proof do a search, there is no way that people in the field of earth quacks and tsunamis would lie, so who did?

comment #1525887 posted on 2015-03-27 13:34:48 by Nikohl Vandel in response to comment #1525820

We definitely need global #RealNuclearWasteConfidence and we need our states to initiate personal responsibility and jurisdiction where the NRC needs help to implement a comprehensive program to get this entire science/industry back to a fundamental #SafetyFirst mindset.

comment #1521821 posted on 2015-03-25 18:44:15 by drbillcorcoran in response to comment #1521396

richard123456columbia Can you provide links to substantiate your allegations? What were the lies? What information was withheld?

comment #1522402 posted on 2015-03-26 10:09:50 by Moderator in response to comment #1521821

Please note that allegations will not be posted as comments on the blog, per the comment guidelines. For information on how to submit an allegation, please go here: <http://www.nrc.gov/about-nrc/regulatory/allegations/safety-concern.html> Moderator

comment #1521262 posted on 2015-03-25 12:43:27 by joy cash

What's to consider? We are now storing SONGS spent fuel between 2 known major active earthquake faults. When, not if, these 2 shift, we lose control over this spent nuclear fuel storage. Millions of our citizens are told "shelter in place" without adequate preparations, as freeways will become stalled parking lots of panicked/irrational crowds. Parents will attempt to reach their children at schools. Teachers will be "sheltering in place" without emergency supplies with or without help of 1 class aide. What could possible go very wrong with our current plans? Time to remove all spent nuclear fuel to unpopulated areas.

comment #1521290 posted on 2015-03-25 13:09:34 by drbillcorcoran

How come Fukushima was not designed for the tsunami that was predicted to be concomitant with the earthquakes it was designed for? This is like designing for a hurricane, but not designing for the flooding that goes with it.

comment #1521396 posted on 2015-03-25 14:24:34 by richard123456columbia

Why is the NRC accepting reports from the plants (they have lied and held information before). Recieve studies direct from those in the field of earthquakes. How can we trust that plant owners will not hold back negative results or over ride risk evaluation.

comment #1521137 posted on 2015-03-25 11:05:15 by Nikohl Vandel

Good. Because then we can close them down. Nuclear powe plant on earthquake fault is a picture we are too smart to continue paying for and just worry about. We don't need that stress no more. Close down the old plants and get that nuclear material off or oceans! #realnuclearwadeconfidence I trust someone is discussing the desert conservancy plan here in california and we can integrate a SANE response to our past stupid decisions! I don't know, maybe I AM the moron in the room, just no one has yet to tell me #fuqafukushima #nuclearizedwater actually can freeze so my ice cubes are safe! Shutdown Diablo canyon. Move the nuclear material to a safer location before it doesn't matter we even bothered having this conversation we should not be having if all, if things were equally and we knew then what we know now. Even the industry will thank you one day.

Listen In On Our Watts Bar Unit 2 Meeting with TVA

posted on Thu, 26 Mar 2015 16:20:53 +0000

Jeanne Dion Project Manager Office of Nuclear Reactor Regulation The NRC's been closely observing the Tennessee Valley Authority's



work in completing Unit 2 at the Watts Bar Nuclear Plant near Spring City, Tenn. Our meeting tonight will [discuss](#) where TVA stands in its effort to get an operating license for Unit 2. If you can't make it in person, we're offering a teleconference and Web-based access to the meeting presentation. You can get the phone and webinar details from [me](#) or my NRC co-worker [Christopher Even](#). For those who can attend, we'll be available to answer questions and discuss issues with local residents and interested members of the public. During the meeting we'll lay out the inspections and licensing activities the NRC must complete before we could decide whether Watts Bar 2 qualifies for an operating license. Some of our senior managers will explain how we've reached this point and what we need to see before we could conclude that the plant is safe to operate. While we're still reviewing a few issues, all the information we've seen so far indicates TVA is on track to meet the safety and security requirements for a reactor operating license. If we issue Watts Bar Unit 2 an operating license, TVA would still have to load fuel and begin a series of tests during plant startup and a gradual increase in power output. The NRC would continue inspecting and overseeing the completion of these startup activities prior to Unit 2 generating full power and starting commercial operation. If licensed, Unit 2 would be the first plant to begin commercially operating in the U.S. since Watts Bar Unit 1 started in 1996. For more information please visit the [NRC public webpage on Watts Bar Unit 2](#).

Comments

comment #1523776 posted on 2015-03-26 20:06:18 by CaptD

Yet another "put the cart before the horse" situation where the NRC says everything is wonderful when in reality it is N☛T.

comment #1526451 posted on 2015-03-27 21:36:49 by Nikohl Vandel in response to comment #1525357

Uhm, yeah, except for those who we've lost to ... Seriously, did you know #nuclearizedwater from fuqafukushima does not freeze (at least that's what They say), and what that means to a closed quantum system like water?

comment #1522754 posted on 2015-03-26 14:06:26 by Nikohl Vandel

Tell the TVA, if they don't know what they are going to do with the nuclear waste from their operations, that they are going to have to WAIT for their licensing until we have #RealNuclearWasteConfidence -- Safety First is long, long over due for this industry.

comment #1540247 posted on 2015-04-06 07:02:40 by Dissenter

Remember Jurassic Park. Resurrecting dinosaurs is not always wise.

comment #1525357 posted on 2015-03-27 07:30:55 by frank in response to comment #1522754

Safety first has been the major motivation at all (US) nuclear plants for a long time. You are safer working at a nuclear generation plant than as an accountant in an insurance company. Apart from that, how deadly is your kilowatt, it is the least deadly form of electricity per kWh.

CRUD: Another Acronym Bites the Dust

posted on Tue, 31 Mar 2015 13:26:33 +0000

Thomas Wellock Historian Chalk River Unidentified Deposits (CRUD). The nuclear industry loves its acronyms, and the myth behind CRUD—a term for corrosion particles that become radioactive—is almost as fabled as [Safety Control Rod Axe Man](#) (SCRAM). But in reality, crud, like scram, is not an acronym at all, but popular slang appropriated by Manhattan Project personnel. The idea that crud was an acronym came from a 1959 article by Commander E.E. Kintner. In 1953, Kintner headed the Advanced Design Group under Hyman Rickover developing the Mark I prototype reactor for the first nuclear powered submarine, the Nautilus. To verify that the reactor's fuel elements would not corrode, Kintner recalled, samples were placed in a research reactor located at Chalk River, Canada. After several months of irradiation, the fuel elements were covered in deposits—Chalk River Unidentified Deposits. This was worrisome since the deposits might block the flow of coolant around the fuel causing them to overheat and melt. While the problem was resolved by adjusting water chemistry, “CRUD” lived on as an acronym for radioactive deposits. [caption id="attachment_6190" align="alignright" width="630"]



Crud was a term used early by the Hanford Engineering Works. Seen here is the site's F Reactor complex under construction. Photo courtesy of the Department of Energy[/caption] Kintner likely did not know that by 1953 the word crud had already been in use for nearly a decade at Atomic Energy Commission facilities. The word appeared in a technical manual as early as May 1944 at in the Hanford Engineering Works in Washington State. The manual described the use of chemical treatments “to seep insoluble ‘crud’ and mud from the solution.” By 1947, “crud” was a common enough in the AEC that reports from Hanford and Oak Ridge no longer used quotation marks to describe the “crud deposition problem.” Thus, CRUD is really an example of a backronym -- where words are identified to fit the letters of an existing word. So, why was “crud” used to describe radioactive deposits in the first place? Crud was a common word well before World War II that likely derives from the Welsh *cryd*, meaning disease or plague. By the early 1930s, crud became slang for unpalatable food, filth, a sloppily dressed man or an illness, as in, “I’ve got the crud.” By World War II, soldiers called any unknown illness “the crud,” and a comic book of the era featured a Corporal Crud as one of its characters. It seems likely that the negative connotations of crud made it a fitting descriptor for contamination associated with radioactive deposits. The etymology of scram and crud, then, reveals how Manhattan Project workers tried to make sense of the uncommon new world of the atom through common language.

Comments

comment #1534535 posted on 2015-03-31 16:02:14 by CaptD

I think it would be great if the NRC tried much harder to make sense of the "uncommon new world of the atom" through common language instead of what we now have which is a huge glossary of terms that only NRC insider are familiar with. The ADAM Search tool should be much more user friendly and allow for searching for words and phrases that those outside the NRC would use. This would allow many more users of the NRC website to find what they are looking for without becoming frustrated. Perhaps the new Chairman of the NRC will make it a priority to have an "information" line established so that all those that are having problems with ADAM can actually talk to a human being who can then also "update" ADAM to accept new terminology as required so that the same questions don't have to be asked again.

comment #1533873 posted on 2015-03-31 10:59:32 by Mikael Ros

Nice, please write more similar articles.

comment #1537753 posted on 2015-04-02 15:08:22 by John M Riddle

When I was at Bettis in the 60s we knew the real story behind "CRUD", and accordingly I set the record straight in my radiochemistry lectures. During my career I have had to set the record straight dozens of times, only to encounter "CRUD" as Chalk River Unidentified Deposits again and again..

comment #1537798 posted on 2015-04-02 16:26:21 by drbillcorcoran in response to comment #1537753

Can someone give us the real story on "SCRAM?"

comment #1535866 posted on 2015-04-01 20:23:32 by drbillcorcoran in response to comment #1534535

CaptD is on the money. NRC documents are full of indecipherable circumlocutory gobbledygook that baffle even old time industry insiders. Each commissioner should have to read one inspection report per week and brief the other commissioners on its readability.

comment #1538380 posted on 2015-04-03 08:03:29 by Moderator in response to comment #1537798

Here is the link to the blog post the NRC Historian wrote on the history of the term SCRAM: <http://public-blog.nrc-gateway.gov/2011/05/17/putting-the-axe-to-the-scam-myth/>. If you review the comments, you will see a lively conversation related to various versions of how SCRAM got its name. Moderator

Throwback Thursday -- The First Swearing-In

posted on Thu, 02 Apr 2015 16:07:40 +0000



The first NRC Commissioners were sworn in during a ceremony at the U.S. Capitol on Jan. 23, 1975. In addition to the NRC Commissioners, the photo includes Vice President Nelson A. Rockefeller and what other high-ranking dignitary?

Comments

comment #1537764 posted on 2015-04-02 15:31:35 by Moderator

Yes, those who identified the Supreme Court justice are correct. Moderator

comment #1537681 posted on 2015-04-02 13:12:16 by Jack Coupal

To actually [try to] answer the question, Supreme Court Justice Harry Blackmun?

comment #1537678 posted on 2015-04-02 13:05:19 by Mike Bear

Supreme Court Justice Harry A. Blackmun

comment #1537677 posted on 2015-04-02 13:04:08 by

Supreme Court Justice Harry A. Blackmun

comment #1537670 posted on 2015-04-02 12:52:54 by joy cash

I second Vandel's motion!

comment #1537662 posted on 2015-04-02 12:47:18 by Nikohl Vandel

oh, and i dunno, who is it? one woman in the room, that's nice. 40 years later not much different . . . hmmmmmm. sigh. #work2do have a great day.

comment #1537661 posted on 2015-04-02 12:45:29 by Nikohl Vandel

QUICK: What's the Mission of the NRC?!

comment #1537659 posted on 2015-04-02 12:42:22 by Nikohl Vandel

Reblogged this on [Niki V all ways My way](#) and commented: Just like Net Neutrality, there was a time when we needed to make a decision how we are going to do things together: those who want to pursue person ambitions (now often embodied in corporations) to discover or just bring an idea to life in the space we all share together. Often, the unknown that beckons those ideas to come forth in the first place bares, over time, challenges and obstacles, hazards and new revelations pushing us further into the unknown with experiences now known. When, in science we have a corporate/collective ambition such as ways to create energy, we need to THINK about the inadvertent consequences such as the #nuclearization of our ocean waters beyond a measure we can control or may even know if humanity and life on earth may continue to survive and resemble any form of life we currently experience. The decline in species diversity, in particular, comes to mind. It is time THIS agency model the authority it takes to formulate and embody #RealNuclearWasteConfidence which may underscore the future of this industry to truly achieve its mission for the People who decided it was a good idea to assert authentic authority on a really exciting project that impacts us all so powerfully. Our ambitions and movement from a mindset of wholistic, integral safety for every level of existence on our planet, have gotten too far out of hand in this global industry to continue without doing some drastic reformation and policy approaches to the continued use of nuclear power in our nation. Human lives are a part of an invaluable creation for which we must be #TrueStewards for our children and those they choose to bring here for us to play with in our older ages.

NRC & Your Community – The Video

posted on Mon, 06 Apr 2015 12:49:34 +0000

Ivonne Couret Public Affairs Officer Every work day, 3,000+ of your friends, neighbors, relatives and community members head to their jobs at the NRC. They're headed to one of four regional offices, our large headquarters site, our teaching facility in Tennessee or are stationed at one of the nearly 100 nuclear power plants around the country. They're managers, technical staff, nuclear experts, lawyers, librarians,



inspectors, accountants and more. This "people" perspective is often lost in larger conversations about rulemaking, concerns about radiation, and the risks and benefits of nuclear power. But the NRC is much more than a large regulatory body. It's an organization made up of people who care – people just like you. So a class of the next generation of NRC leaders – called the Senior Executive Service Candidate Development Program – decided to make a [video](#) focusing on the people behind the NRC seal, and how they help support society as a whole and the communities in which they – and you – live. So, please take a few minutes to watch the [video](#). We'll also be presenting this at public meetings, making it available to schools and community groups, and augmenting it with other materials as part of a broader information campaign.

Comments

comment #1544281 posted on 2015-04-11 22:03:24 by TheCompleteStory

I appreciate the fact that there are many conscientious and hard-working professionals at the NRC. You talk about the important human element in the agency. But what of the important humans that comprise the public you are serving? Especially those folks and their offspring who have been killed, injured, maimed, or traumatized by nuclear power plants?! You sent key members of your staff to view first hand the devastation wrought by the latest nuclear power plant accident in Japan. They wrote touching and memorable accounts of the human element associated with this disaster when they returned. Yet despite this, it seems your heart continues to be

hardened as far as making sure such an accident like Fukushima cannot occur in this country. Please do not let the nuclear industry off the hook from making meaningful changes here to prevent a similar accident."

comment #1542793 posted on 2015-04-10 07:54:22 by Roni Shalev

Congrats, excellent video. Get the word out.

comment #1542688 posted on 2015-04-10 02:01:36 by Shimul in response to comment #1541989

Same thinking here mate

comment #1542843 posted on 2015-04-10 10:52:49 by xvideos

this video is really wonderful, congratulations!

comment #1544051 posted on 2015-04-11 16:03:03 by Public Pit Bull in response to comment #1541989

Diversity in race, sex, and culture is very important. Diversity of thought and perspective is also important. A pro-nuclear culture at the NRC has clouded their objectivity as a fair and impartial regulator. Public safety is assumed by the NRC not assured.

comment #1542101 posted on 2015-04-09 08:25:41 by cahsolo30

nice video

comment #1541989 posted on 2015-04-09 03:20:25 by Musa Kilimanjaro

Great video really shows the human face of nrc, although from the video i would think the organisation needs to become more multicultural

comment #1542156 posted on 2015-04-09 11:01:58 by Thanh Ca Nguyen Sang

Information useful for me

comment #1542616 posted on 2015-04-09 23:34:07 by giant9x

Nice NRC

REFRESH -- What is a Reactor Trip and How Does it Protect the Plant?

posted on Thu, 09 Apr 2015 13:24:48 +0000

Samuel Miranda
Senior Reactor Systems Engineer

Note: Last week, the Prairie Island nuclear power plant "tripped." So, it seemed like a good time to revisit a blog post we did two years ago on the subject.

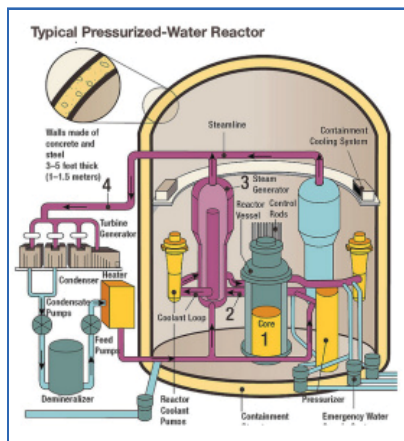


On occasion, a nuclear power plant will "trip," meaning something happened that caused the reactor to automatically shut down to ensure safety. In other words, a trip means a plant is doing what it's supposed to do. Let's look at the term a bit more closely.

Key operating parameters of a nuclear power plant, such as coolant temperature, reactor power level, and pressure are continuously monitored, to detect conditions that could lead to exceeding the plant's known safe operating limits, and possibly, to damaging the reactor core and releasing radiation to the environment.

If any of these limits is exceeded, then the reactor is automatically shut down, in order to prevent core damage. In nuclear engineering terms, the automatic shutdown of a nuclear reactor is called a reactor trip or scram. A reactor trip causes all the control rods to insert into the reactor core, and shut down the plant in a very short time (about three seconds).

How do control rods do their job?



The control rods are composed of chemical elements that absorb neutrons created by the fission process inside the reactor. They are placed methodically throughout the nuclear reactor as a means of control. For example, as the control rods are moved into the reactor, neutrons are absorbed by the control rods and the reactor power is decreased. Inserting them all at the same time shuts down the reactor. Control rods can also be inserted manually, if necessary.

The plant operator then determines the reason for the trip, remedies it and, when it's determined to be safe, restarts the reactor. So, while not common, a reactor trip is an important way to protect the components in a nuclear power plant from failing or becoming damaged.

REFRESH is an occasional series where we re-run previous blog posts. This post originally ran in December 2012.

Comments

comment #1545856 posted on 2015-04-13 08:08:56 by mjd

@drbillcorcoran April 10, 2015 at 11:04 am "The Kemeny Commission was shooting from the hip. They had no basis for the statement they made." The Kemeny Commission was never tasked with finding single Root Cause, therefore they had no basis for statements claiming Corrective Actions to Prevent Recurrence were all covered. From your Operational Experience reference document, page 8 of the PDF: "Although "no harm, no foul" precludes negligence from a legal standpoint, it is counter to nuclear Safety Culture to preclude negligence based on the absence of a nuclear accident. Fundamental to nuclear Safety Culture is the practice of analyzing human errors regardless of consequence with the belief that corrective actions taken based on low consequence events might someday mitigate circumstances that might have otherwise resulted in a high consequence event." Exactly, the Kemeny Commission made no attempt to identify or even admit "human error" resulted in the failure of the AEC/NRC to recognize and act on the four TMI2 precursor events that certainly would "someday mitigate circumstances that might have otherwise resulted in a high consequence event."

comment #1542848 posted on 2015-04-10 11:04:29 by drbillcorcoran in response to comment #1542252

Garry, Thanks ever so much. Isn't it ironic that all but one major U.S. nuclear power mishap involve nonconformance with the existing regulations, but the one that did not resulted from inadequate regulations? The Kemeny Commission was shooting from the hip. They had no basis for the statement they made.

comment #1542126 posted on 2015-04-09 09:39:36 by drbillcorcoran

For completeness, it should be noted that the control rods are not the only means by which a nuclear reactor can be shut down. See the Operational Experience article at <http://nuclearsafety.info/international-nuclear-safety-journal/index.php/INSJ/issue/view/3>

comment #1542143 posted on 2015-04-09 10:23:49 by richard123456columbia

Why didn't this prevent Fukushima from melting down, we heard this years ago, making us believe that it was impossible to have a melt down, but since Fukushima we find that with out removing the heat a melt down will happen. It is like saying a car is safe because the gas pedal controls the moter speed but not saying with out brakes working properly may kill you.

comment #1542167 posted on 2015-04-09 11:17:12 by TheCompleteStory

Also for completeness, it should be noted that the NRC dragged its feet on protecting reactor and public safety with respect to a so-called Anticipated Transient Without Scram (ATWS) accident. It took an actual incident at a nuke plant to get the NRC off its backside even though this potential safety threat was identified earlier. This significant safety problem surfaced more than a decade before an appropriate NRC rule was issued. The nuclear industry contended that no action was needed because this event "could not happen". Then a Browns Ferry's failure to scram incident showed the need for ATWS and the rule was soon adopted. Had the NRC sufficient spine, this rule would have been issued sooner and perhaps this near-miss avoided.

comment #1542252 posted on 2015-04-09 14:02:53 by Garry Morgan in response to comment #1542126

LOST IN THE ENGINEERING SECTION, CAN'T FIND PATHWAY TO SAFETY CUTURE Dr. Corcoran - Thanks for the link to the "Operational Experience" article. A quote from the article holds true today: "We note a preoccupation with regulations. It is, of course, the responsibility of the Nuclear Regulatory Commission to issue regulations to assure the safety of nuclear power plants. However, we are convinced that regulations alone cannot assure safety. ... This Commission believes that it is an absorbing concern with safety that will bring about safety – not just the meeting of narrowly prescribed and complex regulations." Kemeny Commission, 1979" "Nuclear Regulatory Commission (NRC) defines nuclear safety culture as the core values and behaviors resulting from a collective commitment by leaders and individuals to emphasize safety over competing goals to ensure protection of people and the environment." In this blog article you speak about protecting economic assets, "protecting the plant," there are no mentions at all about the "bottom line" purpose of any safety system in a nuclear reactor, "protection of the people and environment," your mission NRC, as well as each nuclear operator. The article is informative, but in my opinion, does not facilitate leading, thinking, communicating and acting in a culture which emphasizes safety.

comment #1542431 posted on 2015-04-09 18:51:56 by billpk

The blog post says: "A reactor trip causes all the control rods to insert into the reactor core, and shut down the plant in a very short time (about three seconds)." As was pointed out regarding the three reactor accidents at Fukushima, that while inserting the control rods does abruptly stop the power generating fissioning process in the reactor core; it by no means "shuts down the plant." Why not acknowledge that there are many additional things that must happen in order for the full NP Plant to be brought to a safe shutdown condition; "shutdown" that is in the sense that most people outside the industry are accustomed to "shutdown" (e.g. with their car or dishwasher)? Certainly by now any likely reader of this blog will understand that the continuity of electrical power and coolant circulation after the Reactor Trip is vital to the public's protection. Oversimplifying the full basis for confidence in that protection is negligent public affairs. Better to have several blog posts than one that is incorrect. We understand too, from four, accident-scraped Light Water Reactors that giving the public an incomplete picture of the range of possible outcomes can create avoidable panic and lead to needless post-accident response and serious, measurable public health and well-being consequences which have nothing to do with direct exposure to radiation. What's NRC doing about that issue? If no one on Staff detected the patronizing nature of this piece then this forum needs better supervision and editorial oversight.

Three Minutes with an NRC Health Physicist

posted on Tue, 14 Apr 2015 14:29:33 +0000

Sophie Holiday Health Physicist By now most of you have heard of STEM (science, technology, engineering and math) or STEAM (which also includes the arts). These terms are shorthand for the school subjects that experts believe are essential to prepare students for today's workforce. What may not be as familiar is the range of jobs available to students in STEM fields.



At the NRC, we are always looking for students with good STEM backgrounds. But we don't only hire nuclear engineers. In fact, there are many health physicists as part of our workforce. This important specialty is the [subject](#) of one of our latest YouTube videos. Health physicists are trained in protecting people, members of the public and patients from the potential hazards of using radioactive materials. Radioactive materials can be used in diagnosing and treating illnesses, conducting research, producing electricity or any number of industrial processes. Besides physics, health physicists might study biology, health, engineering, technology or environmental science. At the NRC, health physicists fill a variety of roles. They review applications for new reactors and amendments to existing reactors. They make sure our regulations will be met by facilities involved in processing uranium into nuclear fuel. They oversee the safety of medical, academic and industrial uses of radioisotopes. They perform inspections at the facilities we license. Health physicists are essential to fulfilling the NRC's mission of protecting people and the environment. Check out our [video](#) to learn more about the important role health physicists play in our society.

Comments

comment #1550487 posted on 2015-04-19 17:31:37 by matikiri

thanks for sharing

comment #1547048 posted on 2015-04-14 17:30:35 by Carol Moyer

I'm sure glad that a health physicist enabled my Tc-99 bone scan, so that my stress fracture could receive the proper diagnosis and treatment. I recognize that exposure to ionizing radiation can bring dangers, so I am grateful for scientists who manage these risks with the many benefits of these unique and powerful materials.

comment #1547062 posted on 2015-04-14 17:51:11 by Garry Morgan in response to comment #1546921

Some folks do pay attention Joy, I agree with you that it is folly to rely on government to protect your health. The nuclear industry's Health Physicist does not serve as an advocate for public health or a healthy community surrounding nuclear facilities. They are there to monitor radiation in the facility, the workers, and in the community surrounding a nuclear facility as stipulated by either corporate policy state or federal policy. They support ALARA, as low as reasonably achievable, radiation levels. ALARA does not consider cumulative ionizing radiation effects on community health. ALARA is an economic standard, not a public health standard. There is no safe dose of ionizing radiation. Unfortunately there is an effort in the nuclear industry to compromise Human Reliability Standards as they apply to Radiation Safety. Political and economic pressure is being applied on the NRC, and in political circles, to deregulate nuclear power and drop the no-linear-threshold dose response standard. This is a dangerous move on the part of the nuclear industry and their political puppets, as it compromises the pyramidal base of nuclear reliability and safety. There are those who care more for profit than they do human health. The nuclear industry has paid for questionable studies regarding radiation safety. This same tactic was attempted by the tobacco industry regarding cigarette smoking. A video which debunks an MIT study regarding low level radiation exposure. https://youtu.be/ZJrqj_RzUI

comment #1546875 posted on 2015-04-14 11:15:34 by Nancy Allen

Health Physicist...it sounds so innocuous. But in reality it means someone trained to permit the use of ionizing radiation.

comment #1546898 posted on 2015-04-14 11:56:13 by TheCompleteStory

Years ago I knew personally one fine HP that worked for the NRC as an inspector. He really knew his stuff and inspected our nuke plant fairly yet firmly. I would like to think there are many more like him working for the Commission. How would you like, though, being an HP at Chernobyl or Fukushima? Talk about a depressing yet necessary job. Imagine talking to concerned citizens about the radiation exposure they received from the accident and the possible effects on their offspring. Did you know, for example, that the abortion rate for pregnant mothers is very high in the Chernobyl region. A few abortions are spontaneous but most are intentional. After all, what caring mother would want to take the chance of bringing a mutated child into the world. And this is just one of the many scars left on people due to nuclear power plant accidents. It is high time to put this gruesome nuclear genie back in the bottle.

comment #1546921 posted on 2015-04-14 12:41:26 by joy cash

Public health & radioactive substances don't exist safely in any realm, except in PR ploys of nuclear energy industry & governmental coalitions. Suspension of reality & truth is commonplace in our shared world today. As a species we are slow learners & fast forgetters. Overwhelmed by stressors of contemporary life, most are too distracted to pay discerning attention to this & other matters. Trusting any governmental protections of our health is unintelligent at best.

comment #1548736 posted on 2015-04-16 11:35:16 by TheCompleteStory in response to comment #1548672

Dear Dan, You bring up stuff that supports your point of view and it is interesting and convincing. And then I read an article in the Feb '15 edition of the Scientific American on the "Swallows of Fukushima". It covers the two largest laboratories for the study of the effects of low-level radiation (LLR), Chernobyl and Fukushima. Butterflies and swallows seem to be especially sensitive to LLR. At Chernobyl it was found that not only were butterflies born with malformed wings, legs, and eyes but mutations could be passed on from generation to generation and that the rate of genetic abnormalities increased w each new generation. It acknowledges and then refutes a study that said radiation around Chernobyl resulted in a wildlife windfall. That is what is so damning about having to contend with nuke plants and radiation. Even the experts disagree. Ask the traumatized survivors of TMI, Chernobyl, and Fukushima what experience tells them that experts never can.

comment #1548672 posted on 2015-04-16 09:36:01 by Dan Williamson in response to comment #1547062

For any readers that are interested in becoming informed on the topic rather than taking Mr. Morgan's "no safe dose" fact-like declaration at face value, maneuver your way over to radiationeffects.org and do some browsing. You will likely be surprised at what decades of actual, real-world experience have shown us. FUD has no place in this discussion.

comment #1549399 posted on 2015-04-17 07:27:39 by Garry Morgan in response to comment #1547062

Dan, you represent the problem with the nuclear industry, they, including you, do not tell the truth concerning health relationships and nuclear energy; that is a Human Reliability failure. Below, I will explain why you and the nuclear industry are a Human Reliability failure in these matters. "There is no safe dose," are not my words, they are the words of distinguished scientists who invented the terms of Health Physics in our nuclear age. People such as Dr. Karl Morgan, Dr. John Gofman and many others. I take up those words because of my studies and experience. Each of the men I just mentioned, Dr Morgan and Dr. Gofman, had a problem with the nuclear industry, the problem is people who attempt to deceive the public. Take it personal fella, all within the nuclear industry who deceive the public should take it personal, Human Reliability is personal - just as Health Physics is personal. NO SAFE DOSE - "There is no safe level of exposure and there is no dose of (ionizing) radiation so low that the risk of a malignancy is zero." – Dr. Karl Morgan, the father of Health Physics. Also concluded by the National Academy of Sciences BEIR VII, Phase 2, 2006 study, pg 15: reference link below, quote - "There is a "no-threshold dose-response relationship between exposure to ionizing radiation and the development of cancer in humans."" Dr. Gofman proved beyond a reasonable doubt that there is no safe dose after many years of research and study. Both Morgan and Gofman were harassed and funding stopped by the industry because of their reports based on scientific findings of fact. Their scientific evidence and facts are protective of people, not the bottom line of the nuclear industry. Reference is the Bier VII Report http://www.nap.edu/catalog/11340/health-risks-from-exposure-to-low-levels-of-ionizing-radiation?utm_source=WIDu12164872011041280841&utm_medium=Widgetv3&utm_content=11340&utm_campaign=Widget&utm_term=homeview The civilian nuclear industry is a financial profit motivated industry, healthy people and communities are secondary to the profit motivation of the nuclear power industry. That is why we have a regulator which must do their job (110%), insuring that the people

and communities remain safe from those who would deceive the public and "sell their souls" for financial profit. Unfortunately, we as American voters have a problem with politicians and lobbyists who attempt to compromise nuclear safety via corrupt influences of nuclear industry money, and deceitful industry representatives..

comment #1547723 posted on 2015-04-15 09:47:06 by Garry Morgan in response to comment #1546898

Friend, in my opinion the "nuclear genie" will never be placed back into the bottle on U.S. soil until the nuclear industry has a disaster which leaves a U.S. city or area a no mans land, much like Fukushima or Chernobyl. Fortunately our regulatory structure at this time helps to prevent such a disaster. Unfortunately, there are paid for politicians and nuclear industry lobbyists which are attempting to change the regulatory protections currently in place; it has been my experience that the nuclear industry deceives the American people at every opportunity for the purpose of increasing the corporate bottom line.. . Deregulating the nuclear industry and eliminating the no linear threshold standard is like saying, "spraying gasoline on your body and striking a match will not burn you." Some folks within the nuclear industry corporate structure are only concerned with the money they make. Money before human health is a dangerous proposition when considering "all things nuclear."

comment #1548046 posted on 2015-04-15 18:46:45 by TheCompleteStory in response to comment #1546875

I have also found that in my experience HP also means "Helpful Person". HPs have saved this radiation worker's bacon several times.

comment #1548043 posted on 2015-04-15 18:44:09 by TheCompleteStory in response to comment #1547723

You Mr. Morgan are spot on once again! It is depressing to think that a federal agency that is tasked with protecting us really does not have our backs after all!

comment #1548026 posted on 2015-04-15 18:22:13 by TheCompleteStory in response to comment #1547048

Thank God for the life-saving aspects of radioactivity and radiation. What a wonderful story of the successful use of radiation to diagnose and treat disease! There are countless benefits derived from the use of radioactivity and radiation. But there are two radiation sources that we must no longer count on: A-bombs and A-plants. A most worthy goal has been to reduce and eventually eliminate A-bombs. An increasing number of folks now also wish to reduce and eventually eliminate A-plants. After all who really benefits from atomic power?! For certain the nuclear industry, their stockholders, and the Nuclear Regulatory Commission (NRC) benefit. But certainly not the public or planet Earth. A-plants have left lasting scars on people and our planet. Let's face it, nuclear plants are dangerous neighbors. Just like we would like to do with a grossly offensive neighbor, we should either evict them or at least put a restraining order on them. Unfortunately, we are currently stuck with a lot of aging nuclear power plants for which the NRC is a lax regulator. We can, however, at least place a restraining order on nuclear power. The order should... Require absolutely no more new nuke plants; Deny any more license extensions for existing nuke plant dinosaurs; Shut down existing nukes that literally place millions of people at risk because they are in the backyard of large metropolitan areas. Nukes near New York City, Boston, and Chicago are examples; Require that the government move stockpiled high level radioactive waste (currently at 93 separate sites, many near large cities) to a central, safe, isolated area until an underground permanent storage repository is operational. Require that our nuclear power plants be regulated by an outfit like the EPA, not a self-serving, nuclear industry cheerleader like the NRC. I certainly do not want to throw out the radiation baby with the bathwater. I just want to throw out the dangerous nuclear power plant bathwater. Besides, supplying our energy needs is no longer just a matter of choosing between two poisons, fossil or fission; big oil or big nuclear. Nuclear lost out to renewables long ago. However, for the first time, fossil just lost the race against renewables. It is finally the beginning of the end for fossil generation. The world is now adding more capacity for renewable power each year than for fossil power. What great news for the people of this planet!

Throwback Thursday – The Nuclear Savannah

posted on Thu, 16 Apr 2015 13:50:56 +0000



NS (Nuclear Ship) Savannah, the first commercial nuclear-powered cargo vessel, is seen here heading to the World's Fair in Seattle. Built in the late 1950s at a cost of \$47 million, including a \$28 million nuclear reactor and fuel core, the Savannah was a demonstration project for the potential use of nuclear energy. She was launched in July 1959 and named for the SS Savannah, the first steamship to cross the Atlantic Ocean. NS Savannah was in service between 1962 and 1972 as one of only four nuclear-powered merchant ships ever built. Anyone know where she is moored today? Photo courtesy of National Archives and Records Administration

Comments

comment #1551055 posted on 2015-04-21 11:35:13 by Half-TruthSlayer in response to comment #1550701

I believe Will, Donna. I think he is a straight shooter and very knowledgeable. As I recall those early days of nuclear power, documentation was scarce. At most there was a ship's or engineering log entry that cited date and time. No telling therefore how much or how radioactive any of the waste dumped into the sea was at the time. I hope record-keeping has vastly improved since then. But I am also quite sure that any documentation is "salted" away and even classified confidential or safeguards information. Can't afford to let the truth out!

comment #1551059 posted on 2015-04-21 12:05:06 by Half-TruthSlayer in response to comment #1550701

Perhaps our moderator can enlighten us Donna. 10 CFR Part 20 contains requirements for radiation record keeping. The only info that I could find there pertaining to privacy or confidentiality was with regard to personal radiation exposure information. I assume therefore that all other radiation info including waste disposal records are public information. Please address this Mr. Moderator. Could you provide some links to this information?

comment #1551130 posted on 2015-04-21 15:46:25 by Will Davis in response to comment #1548746

The matter was covered at the NS Savannah Association website. Go to ns-savannah.org and look for the post entitled {NSSA Response to BBC Article "The Ship That Totally Failed to Change the World"} and you will find the press release on this subject.

comment #1551155 posted on 2015-04-21 16:38:17 by Moderator

Our ADAMS database contains all our publicly-available documents pertaining to this license. It can be found here: <http://adams.nrc.gov/wba/> Our documentation of the NS Savannah license can be accessed by selecting the Advance Search tab and under Document Properties, selecting "Docket Number" then inputting "05000238" for the value. Our project manager checked with the U.S. Department of Transportation's Maritime Administration, which owns the NS Savannah, and reported that: • Liquids were drained from all rad systems early on in the layup/SAFSTOR process and are long gone from the ship. • During operational life, it was serviced at the Todd Shipyards, in Galveston, Texas • All liquid wastes were processed at the shipyards and residual low-level waste solids were disposed at an authorized facility, in accordance with Texas and federal regulations and standards. Primary system fluids were sent to the Barnwell low-level waste disposal facility. Maureen Conley

comment #1550497 posted on 2015-04-19 18:18:52 by Al Kempf, Jr

If you are using Google Earth (or any other) She is at 39 deg 15 min North, 76 deg, 33 min west. I am honored to have been one of the Deck Officers to have served upon this ship. She was built as a demonstrator, and never intended to be an economical success on her own. That would be like expecting the Wright Brothers first airplane to be an economic success. We proved that the concept worked. We demonstrated a safety record and procedures of the highest standards. Yes, liquid nuclear waste was disposed of at sea, in full compliance with all regulations and laws. What is not mentioned is that the " waste" was of very low concentration, in most cases barely detectable or with no radiation readings above background, but classed as waste just due to where that humidity had condensed. (Believe it or not the humidity in the air condenses inside the hull below the water line where the outside water is colder.). It was interesting that monitoring the radiation exposures of the crew the Deck Officers who navigated the ship always had higher radiation exposures than the Reactor Operators, who were sitting about 75 feet from the reactor. They were inside a steel box, and we were exposed to sunlight. Just like international airline pilots who get more radiation exposure due to the altitudes they fly at. Measurable, yes, dangerous, No. , And if you want to know what is going to happen to her, well, She is a National Landmark, and as such can not be significantly altered, so she can not have the reactor removed (All of the fuel was removed in Galveston, Tx in 1971) and she still has a reactor license from the NRC (Formerly the AEC), which can not be given up until the reactor is dismantled. I was very honored to have served with some of the greatest mariners who have ever sailed. RIP Capt. Arnold "Pete " Block and Chief Engineer Eddie Rafelle. You were visionaries. Alvin R. Kempf, Jr.

comment #1550681 posted on 2015-04-20 13:46:57 by Public Pit Bull in response to comment #1550307

Gosh, Dave, I did not know this was an anti-nuclear blog site either. I thought just the opposite Dave. I thought this was a pro-nuclear blog site. I even thought that NRC stood for "Nuclear Reactor Cheerleader"!

comment #1549163 posted on 2015-04-16 20:44:42 by CaptD in response to comment #1548746

Donna - SALUTE for an awesome comment, one that I hope the NRC moderator actually responds to, since it is relevant to the ongoing dumping of ☢ waste at sea, not to mention what the Japanese are doing at Fukushima! Left unsaid is that the NS (Nuclear Ship) Savannah proved that using nuclear propulsion was far to expensive to pencil out, even back then, which is why the Navy is the only ones that can afford to have Nuclear powered vessels, since cost is not an issue despite what tax payers are told. Perhaps the NS Savannah was the tipping point for using Nuclear, the Nuclear Industry just has not accepted the fact since they, like the Navy, have friends in powerful positions that have pushed using Nuclear despite the risks and costs to mankind.

comment #1548728 posted on 2015-04-16 11:08:29 by TheCompleteStory

Other info on Nuclear Ship (NS) Savannah from Wikipedia..."She performed well, her safety record was impressive, and her gleaming white paint was never smudged by exhaust smoke." It was also interesting to note that she visited many countries and ports of call during her 10 years of service from '62 to '72. However it was noted that "Savannah was excluded from ports in Australia, New

Zealand, and Japan." Perhaps one could understand at the time Japan's reluctance to have anything nuclear visiting their country. Then the [Japanese] turn around and built 40 or so nuke plants. Then the TMI, Chernobyl, and Fukushima nuke plant accidents. And all [Japanese] reactors have been shutdown since 3/11/11. Too bad Japan didn't stick to "no nukes are good nukes" back then?! Moderator Note: Minor editing to adhere to comment guidelines

comment #1548746 posted on 2015-04-16 12:14:59 by Donna Gilmore

The Savannah was designed to contain more than 10,000 gallons of liquid radioactive waste (at least 100 days accumulation). However, actual waste output initially exceeded storage capacity. During her first year in operation, she released more than 115,000 gallons of radioactive waste at sea. Modifications were made later to bring the amount of waste resulting from valve leaks in line with the ship's onboard storage capacity. When operating properly, radioactive wastes were stored in the ship until disposal could be arranged at a licensed facility, or it could be discharged to its special servicing barge, the N.S.V. (Nuclear Servicing Vessel) Atomic Servant. Where is this waste now?

comment #1548801 posted on 2015-04-16 13:45:44 by Wayne Veiock

The SAVANNAH is located at Canton Marine Terminal Pier 13, 4601 Newgate Ave, Baltimore, MD 21224

comment #1548690 posted on 2015-04-16 10:04:44 by Steven Hutchins

I think it's at Pier 13, Canton Marine Terminal, Baltimore, MD

comment #1548703 posted on 2015-04-16 10:38:35 by TheCompleteStory

Had to look it up-Pier 13 of the Canton Marine Terminal in Baltimore, MD.

comment #1548706 posted on 2015-04-16 10:43:24 by Will Davis

NS SAVANNAH is presently in Baltimore; the ship will be open for tours National Maritime Day weekend (May 17, 2015).

comment #1548722 posted on 2015-04-16 10:55:26 by Moderator

Yes, the Savannah is located in the Port of Baltimore, Maryland, under a long-term lay berth contract with Canton Marine Terminals. According to its web site, the Maritime Administration intends to maintain the Savannah in protective storage for some years into the future. Under current law and regulation the decommissioning process must be completed and the Savannah's operating license terminated by December 2031. Moderator

comment #1549918 posted on 2015-04-17 20:11:59 by Donna Gilmore in response to comment #1548722

Do you have an answer yet as to where the waste is currently stored, or did all of it eventually end up in the ocean? "During her first year in operation, she released more than 115,000 gallons of radioactive waste at sea. Modifications were made later to bring the amount of waste resulting from valve leaks in line with the ship's onboard storage capacity. When operating properly, radioactive wastes were stored in the ship until disposal could be arranged at a licensed facility, or it could be discharged to its special servicing barge, the N.S.V. (Nuclear Servicing Vessel) Atomic Servant."

comment #1549843 posted on 2015-04-17 18:20:31 by James Greenidge in response to comment #1548728

I see. So just to placate one's nuclear-phobia and prejudice and nuclear-conspiracy theories you're willing to sacrifice tens of millions of lives in Japan (and Germany) to certain and traceable and recordable non-vaporware fossil fuel related health maladies and environmental pollution, not to mention occasional lethally horrific accidents. It just amazes me how anti-nukers strut the shallow conscience to sweep such mortal fossil casualties under the rug just because they've phantom fears and grievances against nuclear. Some need some SERIOUS education. Go Nuclear blog -- You can pack ALL the _documented_ worker/public fatalities incurred by nuclear plant operations since the 1950s _worldwide_ on just ONE Greyhound bus. You couldn't build enough ocean liners to accommodate victims of fossil fuel use that same period alone. James Greenidge Queens NY

comment #1550307 posted on 2015-04-18 20:30:25 by dave flanagan

I didn't realize this was an anti-nuclear blogsite.

comment #1549374 posted on 2015-04-17 06:08:59 by TheCompleteStory in response to comment #1548746

Where is this waste now you ask Donna? Our oceans have been the dumping ground for radioactive waste for decades. The nuke ship I was on had only one restriction on dumping radioactive resins into Davey Jones locker. The ship had to be at least 12 miles from the nearest land. Our vast nuclear submarine fleet had the same "restriction". Lord knows what restrictions other countries had with regard to dumping waste into the sea. You never hear talk of all this nuclear dumping, all this littering of our planet. What you do hear is that the two nuclear subs we lost at sea, the Thresher and the Scorpion, are resting peacefully at the bottom of the sea and that there is no radioactive leakage from their nuclear reactors. You talk about us getting the mushroom treatment and not getting even half the truth. I guess if we knew the extent of this nuclear conspiracy, to keep the dark side of nuclear from us, the public would have rebelled years ago. This sad, sick nuclear industry has got to go.

comment #1549396 posted on 2015-04-17 07:22:39 by Tom Clements

The NS Savannah is indeed a pretty vessel and I had the opportunity to kayak around her when she was anchored with the "ghost fleet" in the James River Newport News, VA, back in 2006. But her beauty doesn't make up for the fact that the project was a failure. Still under an NRC license, she languishes at dock in Baltimore, just sitting there until something happens...like a floating museum (but who pays for that?) or to the scrap heap. Tom Clements, Savannah River Site Watch, Columbia, SC, www.srswatch.org (born in Savannah, GA so that may explain a soft spot I have for the ship despite her failed mission)

comment #1550695 posted on 2015-04-20 14:23:09 by Public Pit Bull in response to comment #1549843

Please James don't throw me under that nuclear bus of yours! Why should I have to choose between two poisons anyway?! Fossil or nuclear?! Big Nuclear or Big Oil?! Both are obscene, antiquated methods of producing electricity. All both produce is death and destruction. You know I have been off cigarettes now for over 30 years but I still love the smell of cigarette smoke. At least I can see and smell smoke. Radiation is that CO2 type-poison that none of your senses can detect. And I have to rely on you pro-nuclear folks to give me the "straight" scoop. And time and time again you have failed to do so. The nuclear world-the realm of secrecy and half-truths.

comment #1550701 posted on 2015-04-20 14:32:35 by Will Davis in response to comment #1548746

The "waste" was WATER. Water which met the US AEC standards for overboard discharge in force at the time, as well as international limits.

comment #1550703 posted on 2015-04-20 14:33:35 by Will Davis in response to comment #1549163

The Russians have been operating nuclear powered ships in non-military service since 1959.

comment #1550699 posted on 2015-04-20 14:30:09 by Will Davis in response to comment #1549396

NS Savannah was most certainly not a failure. Her primary goals -- to demonstrate that a reliable and safe nuclear merchant ship could be built, and to get agreements signed with foreign countries to allow nuclear ships into their waters -- were both achieved admirably. In fact, the availability of the nuclear plant was 99% -- surely one of the highest nuclear plant availabilities of any of the era.

comment #1550696 posted on 2015-04-20 14:28:03 by Will Davis in response to comment #1550497

Alvin, Thanks for leaving a comment. I am glad you did, although I am about to as well. The ship will be open for tours on National Maritime Day - maybe we'll see you there. Will Davis, Communications Director, NS Savannah Association, Inc.

comment #1550737 posted on 2015-04-20 16:07:55 by NRC in response to comment #1549918

As others have said, the NS Savannah discharged some of its waste in accordance with the regulations, and disposed of other waste, again in accordance with the regulations. Our project manager is not available to respond at this time, but you may be able to get an answer from the licensee.

comment #1550749 posted on 2015-04-20 16:39:45 by Donna Gilmore in response to comment #1550701

Do you have some official technical documentation to substantiate that claim? If so, please link in this post for all to see.

@NRCgov_jobs Joins Twitter

posted on Mon, 20 Apr 2015 14:15:30 +0000

Kimberly English Recruitment Program Manager There is a new way to hear about careers and career-related information at the NRC. Beginning today, you'll be able to find out about the latest vacancy announcements and employment information by just following the new



Twitter feed. The tweets will go out the same time a vacancy announcement is open to the public or when we attend career fairs or just want to share information related to careers at the NRC. Follow NRC's careers tweets at [@NRCgov_jobs](https://twitter.com/NRCgov_jobs). The NRC's jobs account will be listed and then simply click the "Follow" button underneath. We also recently launched a careers page on LinkedIn where we share information on jobs and interesting factoids as well as information on why the NRC is a great place

to work and seen as an employer of choice. Log into your [LinkedIn](#) account and in the search field type U.S. Nuclear Regulatory Commission and join the more than 10,000 people following our careers page. We don't just hire engineers! Take a look and who knows... Your most rewarding career move could be to the NRC!

Comments

comment #1550900 posted on 2015-04-21 01:04:12 by Nikohl Vandel

Yeah, twitter is fun, i have about 7 accounts i think :-). @UronimoFO The "Stakeholder" and "flourescent green haired troll" are jobs enough, and i can 420 all day long AND think about #fuqafukushima and how to get enough people thinking about it so we find our solution. If the NRC wants to pay me for that, cool. As for @LinkedIn. #JustSayNo to those #slutshamers who would not, for MY SECURITY, confirm my identity with my own mother. I know the NRC have some of those equality, sexist issues too, sigh. sometimes it's hard to be a girl and think and, you know, sometimes understand things. Create safe space and true equal opportunities, not just jobs for your friends and those who play the game a certain way (ala The Police State) leaving some of our best minds completely alienated and unavailable to help us solve our biggest problem: #RealNuclearWasteConfidence. Yet, if i do have an idea someone likes, i do hope you use it rather than resent me for having been the one with it, me being a troll and all. Cheers! :-)

comment #1551081 posted on 2015-04-21 13:30:23 by James Henry

Nice post

comment #1550826 posted on 2015-04-20 20:41:27 by tuesdayclean

Very nice. Thanks for getting in with the modern times.

comment #1550680 posted on 2015-04-20 13:31:18 by Jean Staton

THE ONLY PROBLEM WITH THIS IS THE MAJORITY OF THE COMPANIES WILL NOT GIVE US ACCESS TO TWITTER OR FACEBOOK OR WHATEVER.

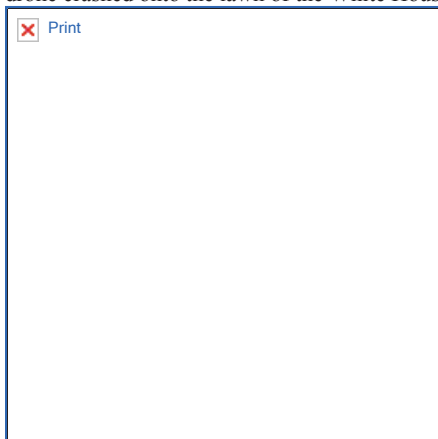
comment #1551628 posted on 2015-04-22 11:02:56 by david mark

Amazing post!

Droning On Over Nuclear Power Plants

posted on Thu, 23 Apr 2015 12:56:47 +0000

Monika Coflin Technical Assistant Division of Security Policy Drones, or unmanned aerial vehicles, have been in the news lately. Last fall, unidentified drones breached restricted airspace over 13 of France's 19 nuclear power plants in a seemingly coordinated fashion. In January, a drone crashed onto the lawn of the White House. And this week, a drone was found on the roof of the Japanese prime minister's office.



Drones may be fun toys, but they pose a number of concerns. They can be used to conduct surveillance to gather intelligence about facility security. They can also be used to deliver payloads that could include explosives. While the majority of drones currently in use are relatively small, larger ones are becoming available that could possibly deliver payloads capable of causing damage to facilities that are not hardened. Security experts haven't yet identified who was responsible for the French flyovers, but with the prices of drones falling and their popularity rising, the potential threat will likely continue to grow. There are ways to detect and intercept drones, such as jamming radio signals or using helicopters to pursue encroaching drones. Chinese scientists are developing a laser weapon that can detect and shoot down small, low-flying aircraft, and interception drones have the ability to drop nets over intruding drones. However, there are many legal issues that challenge the use of these techniques. The Federal Aviation Administration (FAA) has a long-standing "Notice to Airmen" warning pilots not to linger over nuclear power plants. The FAA has also issued guidelines on where users should not fly drones, but the industry is largely unregulated as more companies look to use the relatively new technology in their businesses. The FAA has been working to craft a comprehensive regulatory framework for drones, following calls from Congress and the President, and recently issued draft regulations for the commercial use of drones. President Obama likened the drone industry to cyberspace, which has

brought new technologies that U.S. laws are still trying to catch up to. "These technologies that we're developing have the capacity to empower individuals in ways that we couldn't even imagine 10-15 years ago," the President said, pledging to work to create a framework that "ensures that we get the good and minimize the bad." Given the evolving nature of technology and the need to balance the threat with the potential benefits of drones, the NRC is actively engaging with the departments of Homeland Security, Energy, and Defense to move this government collaboration effort forward. For example, we have reached out to the FAA to examine available legal and regulatory options, and attended inter-agency meetings to learn about how other agencies are addressing potential impacts from drones. In addition, NRC will participate in a U.S.-initiated drone working group under the nuclear counterterrorism umbrella with the governments of France and the United Kingdom. The NRC has provided, and will continue to provide, pertinent information on this topic in a timely manner to its licensees to ensure continued safe and secure operations.

Comments

comment #1556257 posted on 2015-04-28 08:47:19 by GRUPA TENSE

Every new invention delivers new possibilities. There will be always some bad guys with the strong need to use new technology in a bad way. And in most cases they are out of control. What shall we do? Get used to it :/

comment #1556322 posted on 2015-04-28 12:31:35 by Vevomack

True fascinating facts

comment #1552915 posted on 2015-04-23 15:21:52 by Garry Morgan

Of course - regulate drone operators - who will regulate the NRC's failure to enforce law and policy relating to not enforcing Fire Regulations, Aging Management, or nuclear security, certainly not Congress? Thus far, drone incursions are a demonstration of the failure of Nuclear Security and Human Reliability on the part of nuclear operators. Plus a blatant failure of any nuclear regulator, in this nation or other nations, to implement effective preventive measures for the protection of human life relating to aerial incursions to susceptible nuclear facilities. Drones are a tool, a tool and technology which have tremendous potential in radiological and security monitoring applications, particularly at nuclear facilities. If I have a drone, and fly it outside any restricted airspace for the purpose of radiological monitoring, will I be regulated, arrested or harassed? Regulation is not an answer to all problems, particularly when the regulator fails to enforce the regulations or be proactive in preventing problems. Action which secures nuclear facilities from overhead aerial attack is a solution. Unfortunately, as has been previously discussed at many NRC meetings and this blog site, spending money to protect the public from either negligent nuclear operators or terrorists is not a high priority on the part of nuclear facility owners or the NRC. The NRC has not yet required reinforcement of sheet metal structures of GE Mark 1 Reactors. Reinforcement of defective designs would solve many potential problems. By the way, the NRC's failure to require overhead reinforcement of GE MARK 1 Nuclear Reactors is negligent on the part of the NRC. Regulation will not stop a terrorist intent on destroying a nuclear reactor. Actions which harden defective nuclear facility designs will stop an intrusion. The last thing we need in this matter is political/industry subterfuge. Drones are not the problem, the problem here is a failure to reinforce nuclear facility structures and proper Defense in Depth procedures to protect public safety.

comment #1557443 posted on 2015-04-29 22:47:43 by Mike White

At the end of the day Drones are just tools. It's too bad people want to explore the negative and overlook the amazing technology. We need to start seeing stories about how drones are saving lives and being used in search and rescue. Or to performing dangerous tasks that normally cost human lives every year. Like any new technology it takes time for people to understand and accept it.

comment #1552763 posted on 2015-04-23 12:08:04 by Half-TruthSlayer

With Our Drone Achmed is Never Alone Like nuclear power itself, drones are yet another "gift" wrought by technology that can be very dangerous. This is a very timely blog NRC. Agree that drone operators need to be regulated. However, as we know with gun control, the bad folks don't follow the laws. Reports have it that ISIS elements are already in Mexico near our border. I hope the day never comes when we have to use drones to attack insurgents in our own country like we have been using drones to attack the bad guys overseas for some time. Can you imagine the threat not only from terrorists in our country but from the threat to our privacy, personal security, and even our liberties?!

comment #1554437 posted on 2015-04-25 19:46:54 by CaptD

Garry Morgan - I agree with you, drones are not the real issue, all reactors need to be hardened in such a way as to make them safe from any attack short of War but as we now know the Nuclear Industry will not support doing that since it will make using Nuclear even less competitive with using Solar (of all flavors). So what we are left with is just more regulatory "sleight of hand" that is somehow supposed to solve a problem.

comment #1555374 posted on 2015-04-27 07:06:21 by in response to comment #1552915

Speaking of "droning on".....

Plenty of Progress to Report on Fukushima-related Enhancements

posted on Tue, 28 Apr 2015 16:51:07 +0000



Scott Burnell Public Affairs Officer

The NRC's technical staff, industry executives and a public interest group will [brief the Commissioners](#) Thursday on the agency's efforts to implement what we've learned from the Fukushima nuclear accident. The bottom line is the NRC is ahead of schedule on several fronts. Some of the best news involves U.S. reactors meeting requirements from two of the NRC's Fukushima-related Orders issued in March 2012. By the end of this spring, almost a quarter of the U.S. fleet will comply with the [Mitigation Strategies](#) and [Spent Fuel Pool Instrumentation](#) Orders. We expect more than half the fleet will meet those Orders by the end of December, which is a full year before the Orders' deadline. Every U.S. reactor will comply with the instrumentation requirements by the December 2016 deadline. Every reactor will also comply by that time with a major Mitigation Strategies requirement – additional, well-protected onsite portable equipment to support key safety measures if an extreme event disables a plant's installed systems. The U.S. industry has already set up [two response centers](#) with even more equipment that can be transported to any U.S. reactor within 24 hours. By the time we say good-bye to 2016, almost every reactor will also have made all modifications needed to use those portable systems. In preparing to meet the deadlines, U.S. reactors have already enhanced their ability to keep the public safe. About a dozen plants will have made all those modifications except changes closely related to the third Order, which requires [Hardened Vents](#) for reactors with designs similar to those at Fukushima. These vents would safely relieve pressure in an emergency and help other systems pump cooling water into the core. All the reactors subject to the Order have completed plans for the first set of vent enhancements or installation of new vents. The NRC staff finished reviewing these plans earlier this month, ahead of schedule, and issued written evaluations to each plant. The agency is also about ready to issue guidance on how these plants can meet the second part of the Order, which involves an additional vent or other methods to protect the structure surrounding the reactor. The staff's presentation will also cover topics including revising the NRC's rules in these areas, as well as the ongoing effort to re-evaluate flooding hazards for all U.S. nuclear power plants. The NRC's regional offices will provide their perspective on the overall implementation effort's progress.

Comments

comment #1556986 posted on 2015-04-29 09:43:26 by Half-TruthSlayer in response to comment #1556872

Dear Bonds, I dutifully drank the pro-nuke Kool-Aid for over 30 years as an SRO at a nuke plant. Then I decided to think for myself! Let's discount and forget about the over 1,000 Japanese, mainly seniors and physically-challenged folks, who have died there just as a result of being evacuated with no hope of ever returning to their homes due to radioactive contamination. Did you not know that besides radiation, Mr. HP, stress kills as well?! How many millions of folks have been traumatized by accidents and near-misses at nuke plants? Why should we live in fear of nuclear plants when there are, contrary to what you have said, much safer alternatives? We need to break unhealthy "Bonds"!

comment #1556872 posted on 2015-04-29 07:20:14 by Bonds 25

That "unforgiving and dangerous method of producing electricity" happens to be the SAFEST. This is fact. Fukushima and TMI didn't cause one fatality from an overexposure and major health organizations believe local increases in cancer rates will be insignificant if at all. Being a logical Nuclear Health Physics Tech, I 100% agree. The plant I work at has spent 70 MILLION alone on Fukushima upgrades.....a plant that is 3 1/2 hours from the ocean. Hardly doing nothing regarding "prevention" of a Fukushima-type accident. The ONLY reason Fukushima happened is because of an EPIC tsunami.....one that was much larger than any model predicted and one that killed 20,000 people. Put down the Anti-Nuke Kool Aid and embrace the safest, cleanest and most efficient method for producing massive amounts of base load power.

comment #1556351 posted on 2015-04-28 14:13:20 by Half-TruthSlayer

Strike Three-the Public is Out! Just like a 100 mph fast ball, the NRC and the nuclear industry have smoked another major issue right past the public. And now they brag about it! According to this stilted account we can all sit back and relax; a Fukushima-type disaster can never happen in this country. The NRC and the nuclear industry have come up with, and partially implemented, "mitigation" strategies. What?! Not "prevention" strategies but only "mitigation" strategies?! Thankfully, a Three Mile Island-type accident has not happened again in this country. And that is so because we accepted only "mitigation" strategies after that accident in 1979?! No, it is because we figured out many ways to "prevent" another TMI accident. Recall how after the terrible Chernobyl accident in the Ukraine in 1986 our nuclear industry said such an accident could not happen here. I still believe they made the right call then, as that Soviet-designed reactor was inherently unsafe and had no robust containment structure around it to help prevent the release of radioactivity. The Fukushima reactors in Japan are carbon copies of many of the reactors operating here. Instead of doing the right thing, nothing regarding "prevention" of a Fukushima-type accident here is even being considered. This simply defies logic in my opinion. This proves to me that the NRC has caved to the nuclear industry. This is like a defendant being found guilty of a capital crime and being released. No one has had the audacity to lie and say that a Fukushima-type accident cannot occur here in the US. In fact they have admitted that it can happen here. The only sentence for pleading "no contest" is that WHEN an accident occurs here we

expect you to do a better job of “mitigating” its consequences. It would be akin to having the EPA say that WHEN you have a devastating oil spill, you only have to have suitable cleanup equipment available. Although I have had heartburn with some of the overreach and overkill of the EPA, they always seem to “error” on the side of protecting the public. The EPA, however, does not have the handicap the NRC has. The EPA will not enforce its way out of existence. In doing the right thing, however, the NRC may harm the very host that sustains them. I have lost hope in the NRC. As they are configured they will never, ever be able to put public safety ahead of preserving the viability of an unforgiving and dangerous method of producing electricity.

comment #1557421 posted on 2015-04-29 22:04:27 by CURTIS A ROBINSON

You all are doing a great job (NRC) is doing what it supposed to do it's working just as it should . Thank You , All that make this possible

comment #1556456 posted on 2015-04-28 17:24:55 by Nikohl Vandel

Excellent. Especially the Disaster Response Centers ... not that i don't wonder how effective any real response other than, "guess we got to let it go until we can get near it," is the actual first response, having a disaster center where training those who specialize in nuclear disasters is an minimal, yet expensive, step i hope Industry is exclusively subsidizing and supporting. As for shutting down reactors and removing nuclear material from earthquake/flood zones Well, THAT could have been our GOVERNMENT'S RESPONSIBLE first response to Fukushima. #stillwaiting for actual basic sanity to kick in here! Just saying. Really, NRC, given the irresponsible nature and habits of this industry thus far in nuclear development, we can push industry standards way more, and must do so if this industry is going to survive such pitiful operating standards they are accustom to maintaining. Irresponsible companies don't need to be messing with nuclear reactors, and Tepco and PG&E, et al., have demonstrated a severe lack of safety competence and even some criminally self-serving justifications in their participation in this industry.

The NRC Blog – Its First Four Years

posted on Thu, 30 Apr 2015 18:00:01 +0000

Eliot Brenner Public Affairs Director Four years ago, just six weeks before the nuclear accident at Fukushima, the NRC initiated this blog. As we said at the time: the blog is intended to serve as a vehicle for informing, explaining and clarifying the actions, roles and responsibilities of the NRC, raising awareness about our agency and its mission, and – most importantly – giving us another opportunity to hear from you.



We believe the blog has served that purpose well. In the past four years, we have published some 540 posts on a wide variety of subjects from tiny jelly fish affecting a nuclear power plant to updates on Hurricane Sandy and posts on nuclear history (some of our most popular posts). Posts have been written by staff throughout the agency and the regions, including the Chairman and Executive Director for Operations, as well as technical staff and public affairs officers. We have strived to model plain language in our blog posts – contrary, perhaps, to some of our official communications – so that these subjects are more readily understood by the public, for whom the blog is intended. We have also found the blog to be a lively source of comments. Some 4,800 comments have been approved and posted in the past four years. A quick review of the comments reflects how liberally the NRC applies its blog comment guidelines. At times, though, comments may contain personal attacks, “four-letter-words,” or other violations of our comment policy. When that occurs, we remove that verbiage (and note that) and then post the comment. We also may occasionally move some comments to our Open Forum section if they’ve strayed too far from the original post. Very few of the submitted comments are not posted (with the exception of duplicates). Over the past four years or so, there have been more than 650,000 views to NRC blog. We’re happy the information is reaching an audience. If you have suggestions for topics for future blog posts, please let us know in the comments below. I should note that the blog is the oldest but not the only social media platform the NRC uses. We also use [Twitter](#), [Facebook](#) and [YouTube](#) and the photo gallery platform [Flickr](#) as well.

Comments

comment #1557920 posted on 2015-04-30 14:44:14 by Joey Racano

I read yesterday that the NRC said Diablo was safe from a quake. That means you are a bunch of knuckleheads! love joey xoxoxo
Joey Racano: 'Weapon of mass discussion' www.OceanOutfallGroup.com

comment #1557913 posted on 2015-04-30 14:37:56 by Nikohl Vandel

Oh, shoot, i love your blog ... or our blog really, huh?! I soooooo appreciate it exists, even if in an iReality that has yet to understand #RealNuclearWasteConfidence cannot exist with nuclear material on an earthquake fault! In the real world, out there, offline, here, in California. #nepalearthquake will send the plates readjusting again, will it be our turn next? Sigh. Thanks for ALL you do.

comment #1557912 posted on 2015-04-30 14:37:46 by Garry Morgan

The NRC Blog is an excellent interactive communications tool. Many thanks!
