OPSMPEm Resource

From: West, Stephanie
Sent: Thursday, November 05, 2015 4:42 PM
To: OPSMNPEm Resource; OPSMPEm Resource
Subject: Blog Posts for September/October 2015
Attachments: blog-published-2015-11-02@13-13-38.pdf

OPA

NRC

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Created By: Stephanie.West@nrc.gov

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U.S. NRC Blog

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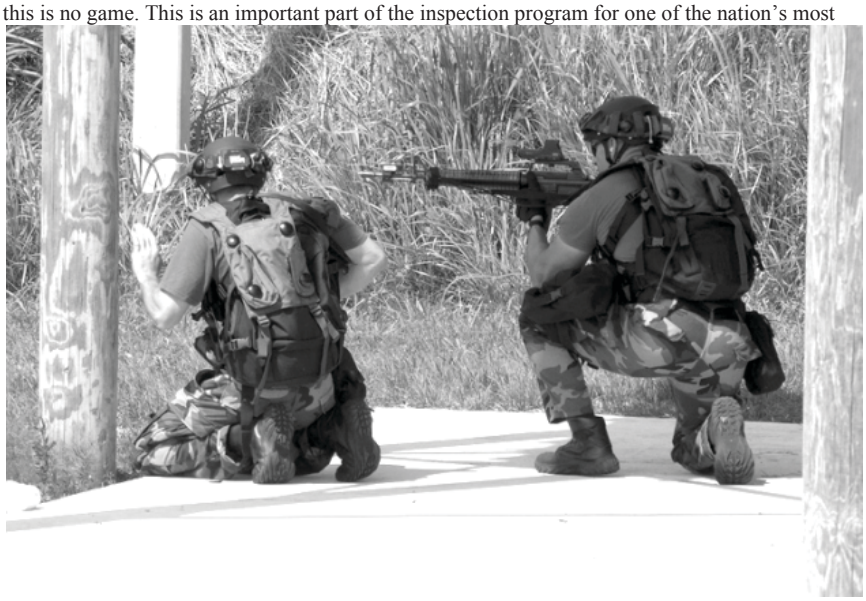
Intense Exercises Help Keep Nuclear Plants Secure

posted on Wed, 02 Sep 2015 14:31:01 +0000

Melissa Ralph Technical Advisor Division of Security Operations Demonstrating an intense focus, stealth, and military-style tactics, a team moves in concert to destroy a specific target. The team plans and executes each action with deliberate purpose. Who are they? What are they after? This could easily be mistaken for any civilian war-game. But this is no game. This is an important part of the inspection program for one of the nation's most



critical assets -- commercial nuclear power plants.
These mock attacks, called force-on-force exercises, are one time when the so-called "bad guys" are part of the plan. Known as the national "Composite Adversary Force," or CAF, they are usually security professionals from other nuclear plants across the country. CAF members complete a rigorous selection process and training to prepare them for this two-year assignment. At each site, the CAF attempts to gain access to and destroy its target -- equipment that if compromised could impact the safety of the plant and the surrounding community. The "attackers" normally use various routes, methods of entry and tactics to challenge the ability of the plant's security force to protect the facility. Security forces must be able to defend the site against a standard set of characteristics called the "design basis threat," or DBT. Specific details of the DBT are not disclosed, for obvious reasons, but the DBT's scope is laid out in the NRC's regulations. The simulated attacks occur over two days and nights, but the full inspection lasts two weeks. During the first week, NRC inspectors have unrestricted access to the site. The inspectors take multiple tours and review the site's protective strategy and security plan. The inspection team works with the CAF to develop mission plans for a second trip to the site, called the exercise week. During the exercise week, the CAF performs two mock assaults on the site. The full inspection concludes with a management critique after the last exercise. Senior management at the site participate in these critiques to use lessons from the exercises to help improve the overall security program. Any vulnerabilities identified are addressed before the NRC inspectors leave. The NRC has been conducting force-on-force exercises since 1991, but they were significantly modified after the Sept. 11, 2001, attacks. The NRC conducts a force-on-force inspection at each nuclear power plant every three years. The NRC inspection teams are drawn from a diverse group. A core team of NRC headquarters staff is augmented by NRC regional and resident inspectors and active duty military members from the U.S. Special Operations Command. You may not have heard much about the specific details or results of the force-on-force program due to its security-sensitive nature. Simply put, the NRC doesn't want the real bad guys to obtain information about the security strategies and plans at the plants. The force-on-force inspection is part of the baseline inspection process, which the NRC uses to provide an overall assessment of safety and security for each plant. While the specific details of security inspection findings or violations are not made public, overall site performance under the reactor oversight process is made available through the NRC's website. The NRC will continue to explore ways to enhance the force-on-force program and will announce future meetings on possible enhancements as they occur. More information on force-on-force inspections is available in the NRC's backgrounder. General information on nuclear power plant security requirements is also on the NRC's website.

Comments

comment #1609809 posted on 2015-09-02 16:42:09 by stock

> Mod: What is the NRC doing to address drones? Scenario: Men setup a large sling shot and fling 10 long chains at the wiring feeding the primary substation. Station blackout, now relying on DG's. Men then fly in a 5 drones loaded with anthrax and release into the control room OA intake and into the reactor building.....Total cost about $5000. Total Impact, priceless sacrifice zone. Would the NRC and the company operating the plant force 20 key employees to effectively sacrifice their lives to supervise shutdown, or would they evacuate and rely on "hormesis" to enhance the community.

comment #1610231 posted on 2015-09-04 14:11:34 by Leonard Suschena in response to comment #1609774

So, you are advocating that the NRC pick some civilians, then grant them access to safeguards information so they can evaluate the if the security forces are adequate. That is in itself a violation of nuclear security. Did you read the article? The CAF is composed of NRC personnel, security forces for other sites and just some plain old ordinary military guys. You know, like US Army Rangers, US Navy Seals and others, you know guys with little or no experience breaching fortresses and taking out the bad guys. I think they call them Special Forces! Seriously, you would have a better chance getting a bar of gold out of Fort Knox, then getting access to a vital area at an NNP.

comment #1610211 posted on 2015-09-04 12:18:06 by Jim Hopf in response to comment #1609809

A whole lot cheaper and easier plan would be to simply attack a large high school with machine guns (security in almost all such places with large numbers of people being essentially negligible). Casualties in the thousands. That compared to few if any deaths even from a worst-case meltdown. BTW, anthrax takes a long time to kill a person, and does not disable anyone. Such an attack would have no impact on the situation.

comment #1610213 posted on 2015-09-04 12:27:17 by Jim Hopf

Question for NRC, How many other sites in the US are required to repel a force of dedicated, skilled attackers, the way nuclear plants are? I'm talking about dams, chemical plants, refineries, LNG terminals, other industrial facilities, large/tall buildings, and any place where large crowds gather (e.g., stadiums). For ALL the things I listed above, a successful attack would result in a LARGER number of casualties than even a complete, worst-case meltdown. Unless the US is willing to put a similar security force (able to repel a large force of skilled, dedicated attackers) in ALL such places (e.g., all schools and all tall buildings), then requiring them for nuclear plants only is arbitrary and indefensible. This policy is just one more example of the double standard that nuclear power is held to, which results mainly from the deep prejudice that the public holds against it, and all nuclear-related risks.

comment #1610228 posted on 2015-09-04 13:54:01 by Leonard Suschena in response to comment #1609809

Due to the sensitive nature of how the plants are protected, no one without a safeguards clearance and a need to know will ever be told. My guess, your not on the list.

comment #1611168 posted on 2015-09-08 10:14:01 by Moderator in response to comment #1610833

Please note that the NRC neither manufactures nor licences nuclear weapons. Moderator

comment #1610833 posted on 2015-09-07 02:34:46 by Rahul Sharma

Nuclear power could be very dangerous for mankind in future.....so please stops manufacturing of nuclear bombs

comment #1612893 posted on 2015-09-14 21:58:25 by Half-TruthSlayer in response to comment #1612890

Our useless bloated Congress is really to blame for our country's problems and this is certainly a very big one. After 9/11 a critical recommendation was ignored by our Congress. There are 79 Congressional oversight committees that have responsibilities for countering anti- terrorism threats. A post-9/11 recommendation was to reduce that number to only four. Congress only cut the number from 83 to 79!

comment #1610347 posted on 2015-09-04 23:32:53 by Whedan

I agree with comment from Leonard that you would have a better chance getting a bar of gold out of Fort Knox, then getting access to a vital area at an NNP. I hope it would take into consideration for all better things

comment #1612890 posted on 2015-09-14 21:50:52 by Half-TruthSlayer in response to comment #1610213

Excellent points Jim. The NRC has set a security standard for nuclear plants that should indeed be matched by similar security upgrades for other US critical infrastructures. However it will take another successful terrorist attack with many casualties for that to happen. Our federal government is unfortunately only a tombstone regulator.

comment #1609963 posted on 2015-09-03 09:10:02 by Moderator in response to comment #1609809

We addressed the subject of drones in this blog post: http://public-blog.nrc-gateway.gov/2015/04/23/droning-on-over-nuclear-power-plants/ Moderator

comment #1610468 posted on 2015-09-05 13:05:50 by Half-TruthSlayer in response to comment #1610213

With a successful attack on a dam you get double trouble. Not only do you cause massive human casualties & property damage immediately but you also destroy a nuclear plant or two. For example, there are two nuclear plants on the Missouri River downstream from several old earthen dams. If terrorists attack the dam that is farthest upstream its failure will cause flood waters that will overtop and cause the failure of all dams downstream. The Army Corps of Engineers has said that this would cause the worst man-made disaster in US history. Of course these vulnerable dams are virtually unsecured and would even fail during an earthquake. So it is true that protecting nuclear plants themselves is dumb if you do not protect upstream dams as well. It is reassuring to know that these dams do have a big sign protecting them which is quite visible even from the air. It says words to the effect that these dams are off-limit targets in the event of war!

comment #1609774 posted on 2015-09-02 13:25:05 by CaptD

RE: DBT's & CAF's I urge the NRC to allow "outsiders" to give input into what scenarios are considered (but not published them) so that each of these CAF "attacks" are different and not just repeated at all NPP's. I understand the goal is the training of NPP security personal, but wonder if the actual result is that in reality that every NPP passes. The NRC would be smart to grade each NPP's security team and then retest all those NPP security teams that score in the lowest 25% far more often until they are no longer scoring so low. Because the Utility is paying for these training/inspections, they should be motivated to insure that their security teams score high so that they do not have to repeat these trainings more

than every three years. NPP Security is serious business so it makes sense to also include some "surprise" inspections that occur with the shortest possible notice to the NPP Security Teams so that these inspections cannot be "gamed".

comment #1612058 posted on 2015-09-11 13:43:42 by fermi2 in response to comment #1610231

Leonard obviously has never worked in the industry. The members of the CAF are by no means ex special forces. The drills are slow and unrealistic and in truth I doubt they can be more realistic. I have written security plans at two utilities and have taken part in force on force drills. A determined adversary will get through and cause damage

comment #1612051 posted on 2015-09-11 13:11:32 by Mike

I can tell Leonard has never been in the industry. I have been in these drills. They move slow as molasses and the people participating in CAF are nowhere near the quality you will see in the Rangers or SEALs. I have actually helped write, implement and revise these plans. The CAF is limited in scope and a determined adversary will ALWAYS I repeat ALWAYS get and screw the plant up.

Back to School – The Student Corner

posted on Wed, 09 Sep 2015 13:52:08 +0000

Allison Balik Summer Media Assistant While students have been out on summer break, the NRC has been hard at work updating its Student Corner website – launching today. The Student Corner includes educator resources, basic information about the NRC and nuclear subjects and fun activities. Although the site was intended for students and educators, its resources are useful for anyone interested in the NRC and nuclear basics. Opening the Student Corner reveals a vibrant dashboard filled with buttons and banners. Users can click on these icons to easily navigate between different sections. Some sections feature accordion-style menus, which makes it easier to get information without having to open up several new pages. Complete, printable versions of these pages can be downloaded as PDFs. Teachers can use the full lesson plans available on the For Educators page. Each lesson plan has objectives, questions and classroom activities designed to engage students who can, for example, find the footprints of radiation in a cloud chamber. Educators can also create their own lesson plans using the additional resources provided. The Student Corner also has resources for those who want to learn more about the agency and nuclear related concepts. Sections contain photos of nuclear power plants, diagrams of reactors or other graphics to make information easier to visualize. Information about the NRC's role in the nuclear industry and the history of nuclear power are available on the NRC Facts page. For more in-depth information, students can check out the Science 101 Series written by NRC experts. Science 101 covers topics such as Geiger counters, nuclear chain reactions, how a nuclear power plant works and more. Students can test their knowledge with the "What do You Know?" quiz. The Careers page introduces career paths in the nuclear industry and at the NRC. Available links to video interviews with NRC employees, such as health physicists and thermal engineers, give students a look at potential jobs. Middle and high school students can use the *A Journey to Your Future: Make Discovering Your Career an Adventure* guide to learn about different career tracks. High school and college students interested in working for the NRC can also visit the page to learn more about NRC internships. Additional links to photos, videos, schematics and other diagrams are located on the Multimedia page. The Resource page also contains an extensive list of links to educational websites of other organizations and federal agencies. We launched the Student Corner just in time for the start of the school year. We'll be adding additional activities and resources later in the school year.

Comments

comment #1611491 posted on 2015-09-09 13:29:19 by CaptD

The NRC can spend big bucks on Industry R&D and PR (including PR specifically designed or school children) while at the same time canceling its widely touted study on the Health effect of living near reactors due to lack of funds! I'm ashamed of the NRC's decision, this is an epic failure to protect the American public (especially women and school children), since similar studies in Europe have positively identified that there are health problems associated with living near Reactors.

September 11th -- National Day of Service and Remembrance

posted on Fri, 11 Sep 2015 12:56:46 +0000

Comments

comment #1611988 posted on 2015-09-11 09:07:22 by Andrea

> I willl never forget!

comment #1612266 posted on 2015-09-12 08:40:06 by Public Pit Bull

> Thank you for remembering all those directly impacted by this awful cowardly attack on innocent people. I think there is no other federal agency that has done as much to improve our ability to thwart a future terrorist attack as has the NRC. I wish other federal agencies responsible for protecting our nation's vital infrastructure had done even half as much!

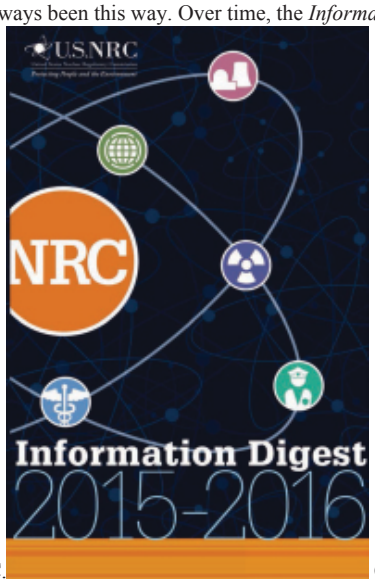
comment #1612284 posted on 2015-09-12 11:13:06 by John Coupal

> A strong U.S.NRC will prevent a recurrence of 09-11-2001.

Something Old, Something New – The Information Digest

posted on Tue, 15 Sep 2015 18:28:28 +0000

Allison Balik Media Assistant Today's *Information Digest* is filled with infographics and photos, depicting the work of the NRC and its licensees. Anyone who wants to know anything about nuclear security, materials, waste and reactors can open up the *Information Digest* – in print or online – and find the answer. But, the book hasn't always been this way. Over time, the *Information Digest* has evolved to fit the changing needs of the public, the media, the industry and the NRC.



Our journey begins in January 1982 when the Office of the Controller issued the first quarterly *Summary Information*. Most people knew it as the *Brown Book*, aptly named for the document's cover. Unlike the current *Information Digest*, the *Brown Book* had white pages covered in black text with no photos or diagrams. The purpose of the *Brown Book* was to have a consistent source of industry data for budget justification. NRC staff needed a reliable source of information to which they could quickly refer when needed. There were no descriptions of processes or technology in the *Brown Book*. It was simply an aggregation of graphs, charts and

data. Despite the differences, there are quite a few similarities between the old and new versions. Like the current *Information Digest*, the *Brown Book* had a U.S. Nuclear Regulatory Commission Organization Chart, a map of the Agreement States and charts of operating reactors. The *Brown Book* evolved into the *Information Digest* in the late '80s. It was still the same size, but blue instead of brown. This new version was divided into two parts: an overview of the NRC and industry data. NRC staff began carrying copies of the book when briefing Congress and the public or when recruiting employees. Smaller, "pocket editions" of the *Information Digest* were also produced. Karen Olive, (now retired), remembers working on the *Digest* during her time in the Office of the Chief Financial Officer. There was a much less formal process of collecting information. She would call around the agency, asking employees if they had any information that needed to be included. Soon, people were contacting her with their own suggestions. The *Information Digest* continued expanding its audience during the '90s. Instead of being solely focused on data, the *Digest* became an educational tool for the public. The graphs and charts were now accompanied by text. A glossary was also added to explain terms used in the nuclear industry. Although the book shrank from 11 x 8½in. to 5 x 3in., it grew thicker as more information was added. After spending several years in the Office of the Chief Financial Officer, the *Information Digest* ended up in the hands of the Office of Public Affairs. There, Beth Hayden, former Deputy Director of the Office of Public Affairs (now retired), helped craft the document into a more user-friendly publication that was easier to read for a wider audience. To make the document even more accessible, Public Affairs started posting printable versions online. All of the maps, infographics, photographs, and data sets became available on the NRC Website. The 27th edition of the *Information Digest*, which came out today, is much like its predecessors – with changes too. Visual changes include an indigo cover with icons and a new layout. The online *Digest* is also more user-friendly. Maps are now more visible when printing in black and white, and you can also upload the PDF version to your smartphone. The *Info Digest* will continue to evolve as publishing practices and audience preferences change. But no matter what, the publication will remain a quality source of information about the NRC.

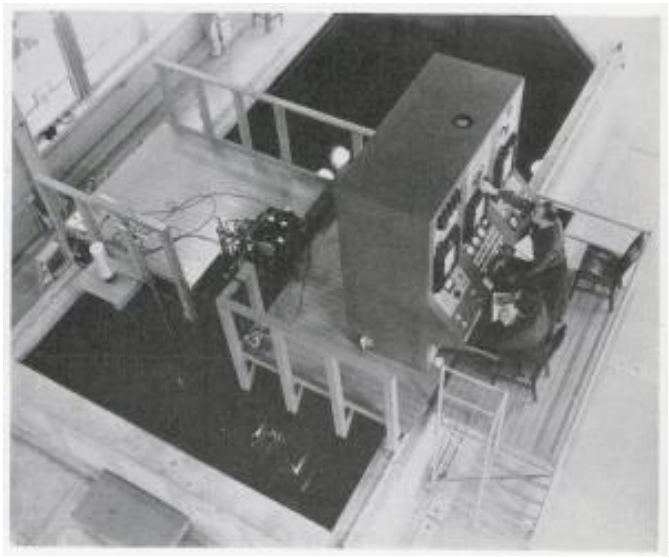
Comments

comment #1613069 posted on 2015-09-15 14:54:44 by CaptD

RE: " easier to read for a wider audience." Salute because it makes great sense.

Penn State University's Breazeale Reactor Celebrates 60 Years

posted on Thu, 17 Sep 2015 14:41:01 +0000



Thomas Wellock Historian Last month, Pennsylvania State University's Breazeale Research Reactor celebrated its 60th anniversary as the nation's oldest licensed reactor. The Breazeale reactor has been invaluable in research, training, and in establishing Penn State's well-regarded nuclear engineering program. As part of the Atoms for Peace program, it trained foreign engineers as reactor operators and tested fuel integrity for reactors exported to other nations. It is a historic marker of early reactor development. In the early 1950s, universities raced to build research reactors. North Carolina State College jumped ahead when it contracted with the Atomic Energy Commission (AEC) to build a reactor that started up in 1953. By 1955, 14 schools had applied to the AEC for the license required of new reactors under the Atomic Energy Act of 1954. Penn State had two important assets in this race: money and William Breazeale. Penn State's board of trustees committed ample funds for construction and operation. To win AEC approval, Penn State followed NC State's successful strategy of raiding the AEC for faculty talent and a reactor design. An electrical engineer by training, Breazeale had worked for several years at Oak Ridge National Laboratory supporting the design of thorium and uranium-fueled reactors. His signal accomplishment was in leading the design team for the Bulk Shielding Reactor, the prototype of the "swimming pool" research reactors built at Penn State and facilities around the world. Penn State hired Breazeale to serve as its first-ever professor of nuclear engineering. The swimming pool reactor was safe, inexpensive, and startlingly simple. Engineers just placed the reactor fuel at the bottom of a tank 30 feet deep so that the water served as a source of cooling and radiation shielding. Faculty and students could stand on a platform directly over the reactor to operate and view it. Nevertheless, the AEC's Advisory Committee for Reactor Safeguards (ACRS) made the path to licensing approval so challenging that a frustrated Breazeale once suggested the Committee did not "view the [reactor] hazard problem in its proper perspective." It wasn't the last time that ACRS safety concerns were challenged by applicants and

vendors. [caption id="attachment_6584" align="alignleft" width="300"] Earlier this month, NRC Chairman Stephen Burns (right) visited Penn State and toured the reactor. He's standing here with Kenan Unlu, Ph.D., Professor of Nuclear Engineering.[/caption] The ACRS fretted over the potential for theft of the fuel, power excursions, and the proximity of the reactor to college housing. The reactor's 3.6 kilograms of highly enriched fuel posed a safeguards risk, and the Committee demanded a combination of security guards and radiation monitors to protect it. Penn State had to carry out fuel test program and moved the reactor further away than planned from faculty housing. The ACRS also required an emergency plan for notifying local authorities, public evacuation, and cleanup. Ironing out these issues delayed licensing. When President Dwight Eisenhower gave the college's commencement address in June 1955, he could only look down into an empty tank with no fuel. But persistence led to success. On the morning of August 15, Breazeale and doctoral student Robert Cochran started the reactor for the first time. Both veteran Oak-Ridge operators, their approach to criticality was careful but confident enough that they paused so that Cochran could run to the registrar's office. At 11:30 a.m., the reactor went critical. Then Breazeale and Cochran shut down the reactor and stored the fuel in a vault for two weeks. It was, after all, summer vacation. The Breazeale reactor reminds us how much reactor safety has changed while staying the same. Its 1955 license was just two pages of conditions. When Penn State renewed it in 2009, the license had grown to 60 pages. Safety regulation is more complex today, but the inherent safety of Breazeale's reactor remains as important today as it was in 1955.

Comments

comment #1614698 posted on 2015-09-22 07:36:09 by Dan Williamson in response to comment #1613644

> Your eloquence knows no bounds. Keep up the good work.

comment #1613644 posted on 2015-09-17 17:52:23 by CaptD

> Another thing is still the same, those using Nuclear still insist that there Pareto many safe guards while the NRC and others in the public inside that their should be even more. How about a story on a University cyclotron, I bet that would be MUSIC to many of your readers.

comment #1613633 posted on 2015-09-17 16:46:05 by F. J. Remick

> Gosh, you forgot to mention that many, many moons ago a former ASLB member, ACRS member and chairman, and commissioner was once the director of the Breazeale Reactor (which was then named the Penn State Reactor) and gave the keynote address at the 60th anniversary celebration dinner affair. Shame! How easily we are forgotten. Cheers!

comment #1613803 posted on 2015-09-18 10:56:31 by Moderator in response to comment #1613633

> Yes, Former Commissioner Remick, your era came later and was during a time period I didn't cover in this blog post. But thank you for reading the post and reminding us of your contributions! Tom Wellock

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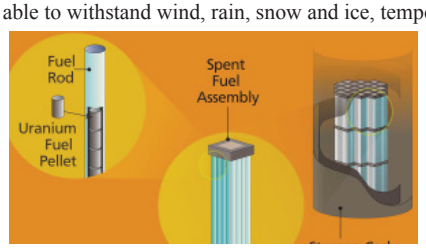
Spent Fuel Casks 101 -- What We Regulate and Why

posted on Tue, 22 Sep 2015 14:52:59 +0000

Mark Lombard Director, Division of Spent Fuel Management We talked back in March about dry casks for storing spent nuclear fuel and how they work. Today we want to introduce you to the different things the NRC looks at each time we review a cask application. To recap: spent fuel is placed into cooling pools at reactor sites when it can no longer efficiently sustain a nuclear reaction. Dry casks give utilities an alternate way to store their spent fuel, freeing up space in the pools. They were first developed back in the 1980s because space in the pools – designed for temporary storage – was growing short. Our requirements for dry cask storage can be found in 10 CFR Part 72. All structures, systems and components important to safety must meet quality standards for design, fabrication and testing. And they must be structurally able to withstand wind, rain, snow and ice, temperature extremes, hurricanes and tornadoes, earthquakes, and fires and explosions. Part 72 and related NRC guidance on casks and storage facilities also detail specific engineering requirements. Casks must be designed to keep water out so the fuel can't have a chain reaction, as it would in a reactor. The casks must also shield workers and the public from radiation. They must safely remove the heat remaining in the spent fuel. And the materials used in dry casks and their physical properties must be well-understood and analyzed. The NRC has dozens of experts in different scientific and engineering disciplines whose job is to review cask applications (which can be hundreds of pages long) and the detailed technical designs they contain. We will explain in more detail in later blog posts what our experts look for and how they go about approving a cask design.



Comments

comment #1614905 posted on 2015-09-23 08:29:56 by Moderator in response to comment #1614779

> Dry casks are an option but the NRC does not have a preference. We believe both methods are safe. Whether to move to dry storage casks is a business and operational decision made by the plant operator. Mark Lombard

comment #1614779 posted on 2015-09-22 15:53:59 by Jade

> So interesting. Are dry casks preferred in the US to continued storage in longer term storage pools?

The Open Forum is Open for Business

posted on Thu, 24 Sep 2015 18:47:41 +0000

Holly Harrington Blog Moderator We created the Open Forum section of the NRC blog more than four years ago. It was not part of our original plan, but our blog comment guidelines stipulated that comments needed to be related to the topic of the post to which they are submitted. We quickly realized there were a number of comments being submitted that didn't adhere to this guideline and would have therefore not been posted, but otherwise met the comment criteria. And we wanted to be able to post them. So we decided we needed a place where anyone could bring up any topic they wish (related to the NRC). And so the Open Forum section was created. Since its creation there have been more than 300 submitted comments on a wide range of topics including climate change, nuclear power's future and solar storms. Comments on the Open Forum (as with the rest of the blog) are moderated and must adhere to the Comment Guidelines. Otherwise, the platform is open for any NRC-related topic you'd like to bring up or to comment on. It's important to note that blog comments are not considered formal communication with the NRC. Questions and concerns can always be submitted in a variety of formal ways. Safety or security allegations should not be submitted via the blog, and will not be posted if submitted. For more information, go here. You can easily find the Open Forum section listed on left side of every page of the blog. You can also sign up to receive notice of new comments to the section by clicking on "Reply" at the bottom of the comments and then clicking the "Notify me of new comments via email" box.

Comments

comment #1619380 posted on 2015-10-13 11:59:15 by Moderator in response to comment #1618297

> The ACNW&M's oversight transitioned to the ACRS Subcommittee on Radiation Protection & Nuclear Materials, which meets as needed. So far in 2015 the subcommittee has met four times. You can find information on the subcommittee's meetings on the ACRS's meeting page: http://www.nrc.gov/reading-rm/doc-collections/acrs/agenda/2015/ Ed Hackett ACRS

comment #1624379 posted on 2015-10-29 13:55:53 by Moderator in response to comment #1624353

> We have some information here related to radiation and health effects: http://www.nrc.gov/about-nrc/radiation/rad-health-effects.html . You are likely to find more information at www.cdc.gov or www.epa.gov Moderator

comment #1624353 posted on 2015-10-29 11:18:33 by Don woods

> Do you have any information regarding radiation exposure and hypo thyroid disease?

comment #1618297 posted on 2015-10-09 19:05:27 by John Randall

> Who does oversight for nuclear waste and materials regulatory activities since the closing of the Advisory Committee on Nuclear Waste and Materials in 2008? Wasn't the ACNW&M supposed to become a subcommittee under the Advisory Committee on Reactor Safeguards? I've looked at the ACRS web site and I see no evidence of such a subcommittee.

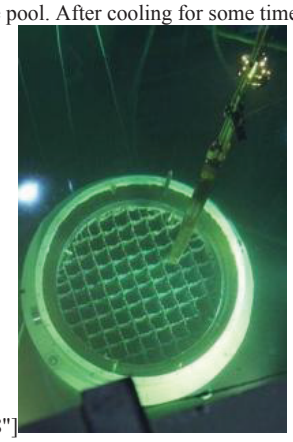
comment #1615333 posted on 2015-09-24 16:38:01 by Nikohl Vandel

Reblogged this on Niki.V.all.ways.My.way..

Dry Cask 101 – Criticality Safety

posted on Tue, 29 Sep 2015 13:05:25 +0000

Drew Barto Senior Nuclear Engineer In earlier Science 101 posts, we told you about how nuclear chain reactions are used to generate electricity in reactors. In a process known as fission, uranium atoms in the fuel break apart, or disintegrate, into smaller atoms. These atoms cause other atoms to split, and so on. This “chain reaction” releases large amounts of heat and power. Another word for this process is “criticality.” The potential for criticality is an important thing to consider about reactor fuel throughout its life. Fuel is most likely to go critical when it is fresh. It is removed from the reactor after several years (typically four to six) because it will no longer easily support a self-sustaining chain reaction. This “spent fuel” is placed into a storage pool. After cooling for some time in a pool, the fuel may be put into



dry storage casks. [caption id="attachment_6612" align="alignright" width="198"] Here, a spent fuel assembly is loaded into a dry storage cask.[/caption] When fuel is removed from the reactor, we require licensees to ensure it will never again be critical. This state is referred to as “subcriticality.” Preventing an inadvertent criticality event is one safety goal of our regulations. Subcriticality is required whether the fuel is stored in a pool or a dry cask. We require it for both normal operating conditions and any accident that could occur at any time. There are many methods that help to control criticality. The way spent fuel assemblies are positioned is an important one. How close they are to each other and the burnup of (or amount of energy extracted from) nearby assemblies all have an impact. This method of control is referred to as fuel geometry. Certain chemicals, such as boron, can also slow down a chain reaction. Known as a “neutron absorber,” boron captures neutrons released during fission, and keeps them from striking uranium atoms. Fuel burnup is another factor. As we said above, after some time in the reactor it is harder for fuel to sustain a chain reaction. The longer the fuel is in the reactor, the less likely it is to go critical. However, high burnup fuel generates greater heat loads and radiation, which must be taken into account. Spent fuel storage cask designs often rely on design features to make sure the fuel remains subcritical. When we review a cask design, this is one of the key elements the NRC looks at in detail. Casks have strong “baskets” to maintain fuel geometry. They also have solid neutron absorbers, typically made of aluminum and boron, between fuel assemblies. The applications that we review must include an analysis of all the elements that contribute to criticality safety. Part of the analysis is a 3-D model that shows how the fuel will act in normal and accident conditions. [caption id="attachment_6615" align="alignleft" width="300"]

A dry storage canister is loaded into a horizontal storage module.[/caption] Our technical experts review this analysis to make sure the factors that could affect criticality have been identified. We check to see that the models address each of these factors in a realistic way. In cases where the models require assumptions, we make sure they are conservative. That means they result in more challenging conditions than we would actually expect. We also create our own computer models to confirm that the design meets our regulatory requirements. We will only approve a storage cask design if, in addition to meeting other safety requirements, our criticality experts are satisfied that our subcriticality safety requirements have been met. Our reviewers look at several other technical areas in depth any time we receive an application for a spent fuel storage cask. We will talk about some of the others—materials, thermal, and shielding—in future posts.

Comments

comment #1616367 posted on 2015-09-30 07:12:45 by

We should be careful when we talk about fresh fuel. Since the article is discussion spent fuel, I am assuming that 'fresh' is along the lines of recently irradiated fuel. Some may consider new fuel as being the freshest fuel around.

comment #1616644 posted on 2015-10-01 14:56:59 by Moderator in response to comment #1616389

While NRC inspectors of course know how many are at their individual sites, the agency does not aggregate the numbers. The statistics are, however, tracked by and may be available from the Nuclear Energy Institute (www.nei.org). Maureen Conley

comment #1616289 posted on 2015-09-29 18:33:26 by Erica Gray

10 CFR 72.122(1) retrievability. North Anna's ISFSI is not designed for ready retrieval. Dominion stated they can not easily access all TN 32 casks.

comment #1616389 posted on 2015-09-30 09:50:59 by

Does anyone have figures on how dry cask systems are in use and how many are under construction?

comment #1617751 posted on 2015-10-07 07:42:51 by in response to comment #1616367

Incorrect, Fresh Fuel is fuel that has not been placed in the core, meaning it has never been irradiated. Spent Fuel is fuel after it is removed from the core.

REFRESH -- Who Sets National Nuclear Energy Policy?

posted on Thu, 01 Oct 2015 15:02:59 +0000

Who decides if the U.S. is going to use nuclear energy to meet this country's electric needs? It's a question we get here at the NRC not infrequently. The short answer: Congress and the President. Together they make the nation's laws and policies directing civilian nuclear activity – for both nuclear energy and nuclear materials used in science, academia, and industry. Federal laws, like the Atomic Energy Act, set out our national nuclear policy. For example, in the Atomic Energy Act, Congress provided that the nation will "encourage widespread participation in the development and utilization of atomic energy for peaceful purposes." Other federal laws, like the Energy Policy Act of 2005, call for the federal government to provide support of, research into, and development of nuclear technologies and nuclear energy. The President, as the head of the executive branch, is responsible for implementing these policies. But sometimes, things get confusing as to who does what when it comes to putting these laws into practice! Although the NRC is a federal government agency with the word "nuclear" in its name, the NRC plays no role in making national nuclear policy. Instead, the NRC's sole mission is to regulate civilian use of nuclear materials, ensuring that the public health, safety, and the environment are adequately protected. The NRC's absence from nuclear policymaking is no oversight, but a deliberate choice. Before there was an NRC, the U.S. Atomic Energy Commission (AEC) was responsible for both developing and regulating nuclear activities. In 1974, Congress disbanded the AEC, and assigned all of the AEC's responsibilities for developing and supporting nuclear activities to what is now the U.S. Department of Energy (DOE). At the same time, Congress created the NRC as an independent regulatory agency, isolating it from executive branch direction and giving it just one task – regulating the safety of civilian nuclear activities. Today, the DOE, under the direction of the President, supports federal research and development of nuclear technologies and nuclear energy in accordance with federal laws and policy goals. At the DOE, the Office of Nuclear Energy takes the lead on these programs. Since its creation four decades ago, the NRC's only mission has been to regulate the safe civilian use of nuclear material. For that reason, the most important word here in the NRC's name is not "Nuclear," but "Regulatory." Because the NRC has no stake in nuclear policymaking, the NRC can focus on its task of protecting public health and safety from radioactive hazards through regulation and enforcement. **REFRESH is an occasional series where we revisit previous posts. This originally ran in August 2012.**

Comments

comment #1616812 posted on 2015-10-02 14:45:36 by Kevin Krause

Actually what is being said here is true for most regulatory bodies. I work for the Michigan Public Service Commission and much of what I do is regulating the electrical and gas utilities. We get people commenting to us about how we need to tell the utilities to do this or that. Less nuclear, more solar, no smart meters, etc. All we do really is make sure the utilities are following statute and allowing them to recover the appropriate costs in rates. Policy is set at the State and Federal level, by governors, legislatures, and the President.

comment #1616679 posted on 2015-10-01 19:19:12 by CaptD

The Nuclear Industry is going to have to prove to the American public that not only can it be 100% safe but that it can be cost effective, and that is where the nuclear industry is most vulnerable, since now even Wall Street is now shying away from funding Nuclear. So we are left with a Powerful Industry with strong ties to the Military/Government Complex that is pushing Nuclear upon us, much like Japan is doing to its people who want N☢ part of using Nuclear! http://antinuclear.net/2015/09/11/world-nuclear-association-to-play-the-climate-change-card/#comment-163695 snip: Kind of hard to believe projections of too cheap to meter nuclear based on todays evidence. Kind of hard to believe based on any evidence. In fact, according to Citigroup, "On nuclear, Citi says cost overruns at the Vogtle plant under construction in Georgia -- now slated to cost $15 billion, way above expectations -- mean that nuclear is pricing itself out of the market. Citi puts nuclear's LCOE at 11 cents/kWh, which it said is relatively expensive, versus combined cycle gas plants and solar and wind." This article about the Hinkley C is relevant to new US reactors: Five reasons not to build Hinkley | Bloomberg New Energy Finance https://shar.es/1vL4So Parts of the above previously posted: http://ecowatch.com/2015/08/14/shut-down-diablo-canyon/

comment #1617406 posted on 2015-10-06 01:52:47 by Anni in response to comment #1616679

well said "CaptD" and thanks for information

comment #1616651 posted on 2015-10-01 15:15:11 by richard123456columbia

The ones responsible for the public safety are doing a piss poor job or they can be over ridden when it cost to much.

comment #1616657 posted on 2015-10-01 16:03:43 by steamshovel2002

"So, all those administrative arms of the federal government are only responsive to the wants and/or needs of the citizens of the United States..." I doubt many people is the USA would think your statement is true?

comment #1616622 posted on 2015-10-01 13:33:21 by John Coupal

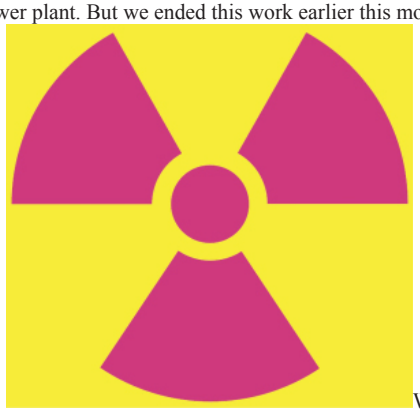
Mike Mulligan: "Is the agency truly and positively independent?" No. All agencies, administrations, authorities, commissions, etc.. of the federal government are assigned specific duties and responsibilities by Congress. So, all those administrative arms of the federal government are only responsive to the wants and/or needs of the citizens of the United States, or at least those who choose to vote in national elections.

comment #1616597 posted on 2015-10-01 12:54:09 by Mike Mulligan

If then the Congress and the President were captured by the rich special interest...would the NRC stand up for the nation's greater interest? Would you stand up for nuclear safety and the interest of the public...would the NRC independently make a painful stand for what is right? Would you stand up for the greater interest of the nuclear industry and the planet? Or just mindlessly follow your running orders? Is the agency truly and positively independent?

Examining the Reasons for Ending the Cancer Risk Study

posted on Tue, 06 Oct 2015 16:25:23 +0000

Scott Burnell Public Affairs Officer One way NRC regulations protect communities around U.S. nuclear power plants is by requiring the plants to regularly sample air, water, and vegetation around their sites. Results of this sampling are sent to the NRC (and in some cases state agencies) to show only very tiny amounts of radioactive material are released during normal operations. Even with this scrutiny -- and a 1990 study showing no difference in cancer mortality rates between those living near U.S. reactors and those living elsewhere -- questions persist about cancer risk from nearby reactors. The NRC had worked with the National Academy of Sciences (NAS) since 2010 on a study into the potential cancer risk of living near a U.S. nuclear power plant. But we ended this work earlier this month after a hard look at the low likelihood of getting usable results in a reasonable time frame.  Why are we comfortable that this decision, also driven by our budget situation, is in line with our mission to protect public health and safety? First and foremost, the staff considered existing conditions around U.S. reactors, as shown by the ongoing environmental sampling and analysis we mentioned earlier. That evidence supports the conclusion that the average U.S. citizen's annual radiation dose from natural sources, such as radon and cosmic rays, is about a hundred times greater than the largest potential dose from a normally operating reactor. This information shows how complicated it would be to single out an operating reactor's potential contribution to cancer risk. Researchers looking for small effects need a very large study population to be confident in their results. The NAS discussed this issue in its report on Phase 1 of the cancer risk study. The NAS said that the effort "may not have adequate statistical power to detect the presumed small increases in cancer risks arising from… monitored and reported releases." The NRC staff examined the NAS Phase 2 report plans to validate the methods recommended in Phase 1. The Academy was very clear that the pilot study at seven U.S. sites was unlikely to answer the basic risk question. The NAS proposal said: "any data collected during the pilot study will have limited use for estimating cancer risks in populations near each of the nuclear facilities or for the seven nuclear facilities combined because of the imprecision inherent in estimates from small samples." The pilot study would also examine potential differences between individual states' cancer registries. Large differences in registry quality or accessibility would hurt the study's chances of generating useful results. The NAS concluded they would need more than three years and $8 million to complete the pilot study. If the pilot succeeded, expanding the research to all U.S. operating reactors would require additional years and tens of millions of dollars. The NRC decided that in our current budget environment the time and money would not be well spent for the possible lack of useful results. The NRC agrees with the NAS that the study's overall approach is scientifically sound. Interested individuals or groups can examine the NAS Phase 1 and 2 reports for a more detailed discussion of the methods and resources needed to conduct the proposed study. The NRC staff will examine international and national studies on cancer risk to see if we should conduct any future work in this area.

Comments

comment #1617860 posted on 2015-10-07 19:29:43 by CaptD in response to comment #1617822

Scott - When San Onofre started leaking ☢ on 01/31/12, the amounts were never disclosed nor were a complete listing of exactly what leaked into the environment which left those living nearby angry at both SCE (the operator) and the NRC which is regulating them... In fact, the "leak was downplayed since it signaled the destruction of not just Unit 3 RSGs but also Unit 2 RSGs, since they both were found to have more tube damage than the rest of the US nuclear let combined. http://sanonofresafety.files.wordpress.com/2011/11/steamgeneratortubesplugged1.pdf Since we are now in the 21st Century, there is no reason at all (except protecting the Nuclear Industry) for all these measurements NOT to be posted online when they are taken. All those that are concerned should be able to view what any particular NPP or NRC regulated facility is measuring. Parts of the above posted at: http://public-blog.nrc-gateway.gov/2015/10/06/examining-the-reasons-for-ending-the-cancer-risk-study/comment-page-1/#comment-1617499

comment #1618849 posted on 2015-10-11 14:13:24 by atomikrabbit

Looking at some of the comments, Scott, I don't envy your job - if acrophobes were as common and as rabid as radiophobes, airliners would be required to taxi from town to town.

comment #1620956 posted on 2015-10-18 23:27:24 by charles ostdiek

http://www.counterpunch.org/2015/10/16/radiation-and-cancer-risks-of-leukemia-in-nuclear-workers-more-than-double-previous-estimate/ will you please evaluate this new study? thanks, --charles ostdiek cochair, green party of the u.s. cochair, nebraska green party

comment #1618503 posted on 2015-10-10 14:29:21 by Garry Morgan in response to comment #1618228

There are no nefarious motives, I do agree with you that it was a mistake to cancel the study. Why proceed into areas which attempt to manipulate via attacks? When folks make the ad hominem attack you are surrendering the argument to them, if it is caught. Attacks and fallacy display weakness in a presentation or argument. There are distinct differences between challenges and attacks. I have no problems with challenges or arguments regarding any of my comments, I appreciate them, either in agreement or disagreement; it is healthy to have dialogue or argue an issue, it is part of our great American System of responsible speech. Dialogues regarding nuclear issues, particularly in this case, the "Ending of the Cancer Study," are important as folks may actually learn something. I ask you Mr. Hall, since you claim to be a lay person, how do you know what anyone is saying is the truth or not? Yet, you immediately believe and agree with the pro-nuclear side. that is not a logical explanation to anything regarding nuclear matters. Thanks for mentioning where I may find the commentary to my posting. It has been my experience if there is a posting which has not been added within it is for reasons that are libelous, unproven allegations or blatant disrespectful comments. Personally, agree or disagree, I appreciate this blogs intent and all who post within, even if I do not agree with the NRC post or a poster's reply.

comment #1617822 posted on 2015-10-07 14:40:07 by Moderator in response to comment #1617499

As we noted in one of the post’s Web links, the NRC publishes all environmental monitoring reports from reactor operators on our website. The link to reports for specific reactors is: http://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-info.html Scott Burnell

comment #1617817 posted on 2015-10-07 14:01:14 by CaptD in response to comment #1617512

Gary Morgan — SALUTE for a stellar comment! I'd love for you to be the one in charge of all US ☢ monitoring/testing. Then we would be sure that our monitoring system would not be "down" for maintenance like it was when Fukushima occurred.

comment #1617513 posted on 2015-10-06 14:03:58 by richard123456columbia

The total cost will be to high, even if first phase shows high radiation.

comment #1617512 posted on 2015-10-06 14:02:34 by Garry Morgan

One word describes this article - FALLACY. The Nuclear Regulatory Commission's (NRC) mission to protect the public is compromised by politicians supported by Nuclear Special Interest Groups such as the NEI, Nuclear Energy Institute, applying pressure to decrease funding to the NRC. You are supporting the nuclear industry not the public. The NRC is not an agency which has separated itself from undue political and industry influences and pressures. A report of radiological contamination and its health effects could have been completed with less expense than $8 million dollars, accurately. The nuclear industry and the United States Government has much to hide regarding the failures to protect the public at large and in communities surrounding all nuclear facilities - this includes the uranium mining communities, the fuel facility communities, the nuclear hazardous waste communities, nuclear weapons communities and all nuclear reactor facility communities. The nuclear industry and the regulator does not report real time ionizing radiation from emission sources from any active nuclear facility; reporting is based on averages reported annually from nuclear facility locations. This type of reporting is skewered, and lacks scientific credibility due to not reporting emissions in a real time monitoring program with accurate radiological assessments from real time monitoring reports along with community resident health evaluations. Non-profit institutional examination of nuclear emissions and community health is demonstrating an entirely different story from that which the nuclear industry and the NRC reports. When there is contradictory evidence disputing the nuclear industry and the NRC, the NEI hires nuclear industry paid persons to contradict any information assimilated from private non-profit sources, regardless if the information is actually an accurate compilation from government sources with professional data assimilation and analysis. Example - The Browns Ferry Report http://best-matrr.org/pdfs/AL_BFN_Report_2013-final-dig2.pdf The examination of dispersal of radiological contaminating materials in East Tennessee presents a horror story of cancer, declining health and radionuclide contamination of the environment of East Tennessee communities along the Tennessee River and its' tributaries. The citizens of East Tennessee have become a sacrificial group since the beginnings of the nuclear age in 1945. Unfortunately, the Department of Energy (DOE) and the NRC are participants in this horror story of the atomic age, placing the money gained from atomic death industry before peoples health and welfare - shame on you. Shame on the NRC, DOE, and the many nuclear and nuclear defense industries for your continued deceit. This is the million pound weight in the room - the continuous deceit and placing money before human health in civilian nuclear and nuclear contractor programs, besides the continuous building of highly radioactive nuclear waste materials. The deceit demonstrated is a continuous failure to uphold Human Reliability Standards which is a cornerstone of any nuclear program, the failure due to deceit is tantamount to a disaster awaiting an outcome. Garry Morgan, U.S. Army Medical Department, Retired Director Health and Radiation Monitoring BEST/MATRR a local chapter of BREDL http://www.matrr.org

comment #1617510 posted on 2015-10-06 13:59:45 by richard123456columbia

Is it possible that the industry know how bad it is and will have to relocate many people at huge costs. How high is the tipping point.

comment #1617500 posted on 2015-10-06 12:51:12 by Nikohl Vandel

Ok, so rather than thinking of new ways to determine the impact on the community and risks (we know exist), we just stop? Hmm, what IS the mission of this Commission?

comment #1617499 posted on 2015-10-06 12:51:09 by CaptD

RE: "One way NRC regulations protect communities around U.S. nuclear power plants is by requiring the plants to regularly sample air, water, and vegetation around their sites. Samples are sent to state agencies (and in some cases to the NRC) to prove only very tiny amounts of radioactive material are released during normal operations." The NRC does not require the operators of NPP to disclose to the public what these measurements are and that is where the distrust of the NRC's regulation of the Nuclear Industry begins. Since we are now in the 21st Century, there is no reason at all (except protecting the Nuclear Industry) for all these measurements to NOT be posted online when they are taken. All those that are concerned should be able to view what any particular NPP or NRC regulated facility is measuring. This is especially important, since the Congress is now involved in having the EPA (and other Agencies) increase the "acceptable" levels of many things. Documents Detail How Nuclear Material Was Handled at San Onofre Nuclear Generating Station | NBC 7 San Diego http://www.nbcsandiego.com/news/local/Documents-Detail-How-Nuclear-Material-Was-Handled-at-San-Onofre-328292351.html The USA is lagging far behind other Countries like Germany, in providing the public with factual specific data of exactly what is being monitored and their levels at NPP's. Because Geiger counters are now becoming far more available, the NRC should step up its monitoring and insist that all NPP post their emissions as soon as they are taken; this will allow the NRC and others to know what is going on without having to rely on the very operators who for whatever reason may want to downplay disclosing an radiological event! Using TEPCO (which is owned by the Japanese Government) as an example, allows us to see how data made public has been "gamed" to protect the industry instead of those living nearby. Fukushima police sends nuclear contamination case against TEPCO execs to prosecutors http://www.rt.com/news/317474-fukushima-tepco-contamination-prosecution/#.VhP64MHTRLg.twitter If the NRC is proud of its methodology, then they should not be concerned about sharing DATA with the public, instead of platitudes like "acceptable". The NRC would be well advised to do a much better job of keeping the public informed about exactly what is happening at all the facilities it regulates because then the public will better understand exactly what is happening, instead of fearing the worst. Moderator Note: Correction made at the request of the comment author

comment #1617498 posted on 2015-10-06 12:47:49 by George Courser

The NRC failed the public trust in beginning a cancer risk study and refusing to complete it. The cited reasons for discontinuing this risk study could have been eliminated months before the risk study was even begun. A lack of funding excuse is ludicrous. NRC's refusal to complete even the phase one study ruins the already tattered reputation of the NRC as a sock puppet of the nuclear industry.Here's a clear example of lobbyists.defeating the public interest and public good. The NRC not only fails its mission it fails the taxpayers underwriting its dubious role of a regulatory agency.

comment #1617495 posted on 2015-10-06 12:35:15 by Joey Racano

Shameful, and so right out in the open. I live 6 miles from Diablo Canyon. My health has gone to sxxx since we moved in. Too expensive? Too long? What am I worth to you then?Shame on the Nuclear Regulators and their nuclear masters. Joey Racano: 'Weapon of mass discussion' "Most research is funded by industry to obfuscate dangers and postpone remedies" -joey racano Moderator Note: Verbiage amended to adhere to blog guidelines

comment #1618228 posted on 2015-10-09 11:53:41 by jon hall (poa)

Its a shame the moderation here is so shabby that responses to specific comments are so belated that flowing debate is almost impossible. I note on Rod Adams' site that his response to one of Gary Morgan's has not yet appeared here, so Rod has posted it at his own site, "AtomicInsights". In truth, to a lay person like myself, actions such as cancelling this study show a remarkable ignorance about human nature on the part of the decision makers at the NRC. The decision only opened the door for people like Morgan and Captd to pick up their megaphones and assert nefarious motives for this study's cancellation. The people, and science, would have been far better served had this study, once publically announced, gone forward. Even if the study proved to be inconclusive, as is a distinct possibility, at least the accusations of the NRC trying to "hide" science would not be able to beleveled. What those such as Morgan or Captd are loathe to admit, is the cancellation of this study does not support EITHER argument, including their own. All it did was open the door to bluster from both sides. However, if one looks at the bluster, as opposed to the attempt to offer scientific argument, one has to gives Adams the thumbs up for attempting to keep the argument civil and science based. And in my world, that goes a long way towards establishing credibility.

comment #1618004 posted on 2015-10-08 11:34:19 by Dan Williamson in response to comment #1617786

"Low doses of radiation do increase cancer risk." By "low doses," you mean those lower than the typical earthling receives every day? So, if you're already getting 300mr/year just by being here, how are you bestowing upon yourself the ability to root out those millirem coming from the neighborhood nuke, considering that those "special" millirem are not allowed by law to be more than a tiny percentage of your everyday dose? "The only definitive and reliable method of determining exposure and health risks to humans and our environment is real time, full time monitoring and reporting all emissions at the nuclear site and the surrounding area up to 100 miles." Would I be correct in assuming that you would not be willing to help foot the monstrous cost for such a quixotic pursuit in your monthly bill? In your little world, that would be chalked up to the nuke plant's price of admission?

comment #1618005 posted on 2015-10-08 11:39:16 by Mike Mulligan

The answer is the nuclear industry and their employees in the interest of the nation…open up all you dose and health record for scientific scrutiny. Then you could extrapolate it out to low level public dose. By the way, I had a guy who I work with for years who died of asbestosis. He got it at a nuclear plant. I worked on shift with him for years. He was my brother. What are the facts on that. What is worst at nuclear plants: asbestos or radiation? I believe the pressures to not do the radiation study comes from the congressional anti-government regulatory disruptors. These concentrated forces are severely disrupting plant NRC oversight and it is only going to get worst if the House and Senate are taken over by the extremist government hating forces. As the recent senate NRC budget hearing highlighted, if the inept NRC (Sen. Inhofe) can't keep tract of federal

spending documentation on $91 million dollars worth of reactor research, (me) do you think the documentation on plant oversight is any better? I keep thinking about the Pilgrim recent daily event report with the NRC missing the 1992 information notice on fire protection wire hot short issue.

comment #1618012 posted on 2015-10-08 12:16:44 by NRC in response to comment #1617860

Southern California Edison's report on the steam generator leak (http://pbadupws.nrc.gov/docs/ML1209/ML12090A153.pdf on page 3 of 3) clearly states the fully monitored event resulted in 0.0375 Curies of iodine and noble radioactive gases reaching the environment, which could lead to a dose of 0.00004 mrem. That dose would be less than one-hundredth of one percent of the average annual U.S. natural radiation dose. San Onofre's 2012 annual effluent release report (http://pbadupws.nrc.gov/docs/ML1314/ML13142A425.pdf on page 39) also describes the event. Scott Burnell

comment #1617968 posted on 2015-10-08 08:12:31 by rodadams2013

Scott: While I applaud the NRC's decision to halt the cancer study that Chairman Jaczko pushed, it would be nice to hear the scientific basis stated more assertively. There is no chance that the study would have found excess cancers. Of course, just by the laws of probability, there might have been a small population near one or more of the plants that seemed to have higher than average cancer incidence, but there would also have been other populations with lower than expected rates. When background dose rates are more than 100 times higher than possible plant releases, it is absurd to believe that the plant releases would have a detectable effect. Based on our vastly increased understanding of biology and genetics over that in existence in June 1956, when the "no safe dose" assumption first made headlines, we now know that DNA is subjected to continuous damage and repair. Ionizing radiation is just one of many sources stress on DNA stabilization mechanisms; at low doses, the stimulated repair mechanisms provide an overall health benefit not unlike that achieved with moderate exercise, moderate intakes of a variable diet, moderate red wine consumption and moderate consumption of vitamins and minerals. Career-long studies of DNA response and repair mechanisms have most recently been recognized with the awarding of the 2015 Nobel Prize in Chemistry to Tomas Lindahl, Paul Modrich and Aziz Sancar. http://www.nobelprize.org/nobel_prizes/chemistry/laureates/2015/press.html

comment #1618027 posted on 2015-10-08 13:40:57 by Dan Williamson

Thank you very much, Scott Burnell, for taking the time to help refute the blizzard of blatant lies put forth by the FUD (fear, uncertainty, death) specialists. Please keep up the good work.

comment #1618214 posted on 2015-10-09 09:44:35 by Rod Adams (@Atomicrod) in response to comment #1618153

@Mr. Morgan Mentioning the fact that Chairman Jaczko pushed the initial study hardly qualifies as me making "an attack." I freely admit to having attacked the former chairman -- and current professional antinuclear activist -- on a number of occasions on Atomic Insights, but the above comment was not one of those times. Ionizing radiation does not "bioaccumulate." In fact, ionizing radiation is a very short lived phenomenon that disappears as soon as the source is removed. The specific particles involved -- alphas, betas, and gammas -- give up their energy and merge into existing matter through ionization and absorption reactions. Radioactive isotopes, unlike some materials that are hazardous because of their chemical nature, decay and lose their radiation hazard over time. Some of the specific materials that have a radiation component to their hazard - like uranium - also have a chemical nature to their hazard which does not disappear over time any more than the hazard of lead or mercury disappears. Radiation hormesis is not a fallacy, but a heavily studied and repeatable phenomenon. Even the BEIR VII report, which stated that there was not sufficient evidence AT THAT TIME, to change regulations to incorporate the hormesis response, did not dismiss it as a fallacy. It devoted an entire appendix to the concept and described the results of several experiments that showed it was repeatable in a number of biological models. That report, published in 2006, was based on science that had been peer reviewed and published sometime before 2004. It recommended further research, much of which was conducted during a ten year long, reasonably supported Low Dose Radiation Research Program by the Department of Energy. The numerous studies produced as a result of that widespread, diverse research effort continues to add to the weight of evidence that shows the NAS BEAR 1 Genetics Committee was wrong when they overturned 50 years of observations on the effects of low level radiation on humans and issued a report declaring that all radiation was bad "from a genetics perspective." They had no evidence available to them. No experiments had been conducted at levels below about 50 Rad. The few that were in the neighborhood of 50 rad indicated that there was a distinct threshold response below which the irradiated subjects had results that were not distinguishable from the controls. The sad part of the story is that several of the scientists who knew about those results worked to obscure them from the record and to deny their important implications. They WANTED to teach us that all radiation was bad. One of them, Hermann Muller, had been pressing that outlier idea for nearly 3 decades. It apparently coincided with the interests of the Rockefeller Foundation, which steadily supported Muller. The Rockefeller Foundation initiated and provided 100% of the funding for the NAS committees on the Biological Effects of Atomic Radiation from 1954-1962. The Chairman of the Genetics Committee, which is the one whose report was covered on the front page of the New York Times on June 13, 1956 and was published in full in the same edition of the paper, served as the director of the Rockefeller Foundation natural science funding program from about 1933-1959. Both before and after he obtained unanimous consensus from his 12 member committee of geneticists, his program provided at least half of the members with most of their research funding. Bad science can exist and be promoted by people with economic interests. The RF, supported by an oil rich family with major investments in hydrocarbon focused companies, had a strong interest in scaring people away from radiation and limiting the growth of a formidable competitor. Rod Adams Publisher, Atomic Insights Moderator Note: Verbiage amended to adhere to blog guidelines

comment #1618220 posted on 2015-10-09 10:33:48 by

Left unsaid is that the promise of Electricity "too cheap to meter" somehow got forgotten and what we have now is nuclear reactors being run by Utilities that a far more concerned with profits than they are with safety; which is why they are continually opposing additional safety improvements, even though their ratepayers are footing the bills for all improvements as part of their very high electric bills. The high cost of Nuclear Energy is now making it very hard if not impossible to build new reactors, since they have been played by cost over runs that are giving the entire a black eye. It is also sad that on one hand the NRC can spend money creating Pro-Nuclear materials for students and other "educational" materials but they cannot fund a study to measure what the effects are of living near a reactor. I would like to see a post detailing the amounts of money spent by the NRC for health studies vs education and similar "promoting" efforts, since they BOTH are important. Because there are many trained professionals that do not agree with the what the NRC and the Nuclear Industry says, it even more important that these STUDIES be completed. Nuclear Power Kills: the Real Reason the NRC Canceled Its Nuclear Site Cancer Study by Chris Busby counterpunch.org/2015/09/22/nuclear-power-kills-the-real-reason-the-nrc-canceled-its-nuclear-site-cancer-study/ Chris Busby is an expert on the health effects of ionizing radiation. He qualified in Chemical Physics at the Universities of London and Kent, and worked on the molecular physical chemistry of living cells for the Wellcome Foundation. Professor Busby is the Scientific Secretary of the European Committee on Radiation Risk based in Brussels and has edited many of its publications since its founding in 1998. He has held a number of honorary University positions, including Visiting Professor in the Faculty of Health of the University of Ulster. Busby

currently lives in Riga, Latvia. Parts of the above were post: http://public-blog.nrc-gateway.gov/2015/10/06/examining-the-reasons-for-ending-the-cancer-risk-study/comment-page-2/#comment-1617820 captddd@gmail.com Comment moved here by moderator.

comment #1618257 posted on 2015-10-09 14:42:22 by Garry Morgan in response to comment #1617822

Here is the problem - The cumulative impact daily on the population and environment is not measured and that is part of the problem in emissions reporting. Regarding San Onofre, there was and has been tritium and other radionuclides released. All ionizing radiation is cumulative and the impact is cumulative on everything in the environment, humans included, this is not stated nor accurately measured. The cumulative impacts are the problem which indicates the need for real time 24/7 monitoring instead of the quarterly averaging with annual reporting. Examining Riverside Ca. - On shore winds to the nearest EPA daily monitor for the gross beta and gamma counts for the 2012-2013 period, there are considerable fluctuations in the counts during the time frame of concern. cdxnode64.epa.gov/radnet-public/query.do

comment #1618331 posted on 2015-10-09 21:48:03 by Dan Williamson

"All doses are cumulative"? So, by that theory, if we allow Joe Radworker to get his full federal limit of 5 rem/year for 20 years straight, he will demonstrably suffer the exact same effects as if he got 100 rem in one shot? A potentially lethal dose? Years of study of the workers in the military / shipyards says exactly the opposite. You need to come up with another strawman. "...generates tons of highly radioactive nuclear waste." Yes, and we know exactly where it all is, right there in that pool or in the storage casks out back, inaccessible to Paul Public. The same can't be said for all the naturally occurring radionuclides going up the stacks of the coal plants, whether it's burned here or in China. We know how to handle waste.

comment #1618536 posted on 2015-10-10 15:47:06 by Garry Morgan in response to comment #1618153

Mr. Adams - regarding the bioaccumulation issue. I submit to you evidence from very learned people regarding bioaccumulation. Radionuclides and ionizing radiation do bio-accumulate, Statement - "A federal advisory committee recommends that the lifetime exposure be limited to a person's age multiplied by 1,000 millirems (example: for a 65-year-old person, 65,000 millirems)." Link - http://news.mit.edu/1994/safe-0105 If there were no concern about the "bio-accumulation" of life time ionizing radiation there would be no need for rules regarding lifetime exposure. Study link about bioaccumulation of radiation in clams http://www.clarku.edu/mtafund/prodlib/hanford/HanfordClamReport.pdf Medical use of radiography, quote - "In the mid-’90s the Food and Drug Administration suggested a method for the lifelong recording of X-ray absorbed dose, and as recently as July 2005 the National Academy of Science published their most recent report underscoring the fact that any level of ionizing radiation may have carcinogenic effects." Note - "..lifelong recording of x-ray absorbed dose..." If there were no concerns about the bioaccumulation of the ionizing radiation, in this case x-rays, there would be no reason to record all lifelong absorbed doses of ionizing radiation. Link - Ionizing Radiation Exposure from Radiologic Imaging: The Issue and What We Can Do http://www1.radmd.com/media/126106/n-o100rev2-radsafety-provider-edu.pdf No doubt, there is a concern over the accumulation of radionuclides in our environment. There is no doubt that substances that contain elements or chemical compounds emitting ionizing radiation bio-accumulate in our environment and all living things. As you state, some radionuclides are expelled by natural processes, others decay and no longer pose a threat. However, that does not mean that the biological and physical damage has not been perpetrated upon the cellular structure of the organism, human or other living thing ingesting a radionuclide or exposed to ionizing radiation. The accumulation of damage in a living organism's cellular structure and the organisms failure to repair damage is bioaccumulation of damage due to toxicity. Ionizing radiation and radiation producing materials are classified as a toxic substance by the CDC: http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=86 The definition of bioaccumulation is simple - "Bioaccumulation occurs when an organism absorbs a toxic substance at a rate greater than that at which the substance is lost." It is important to realize that bioaccumulation applies to more than just chemical or elemental substances, it applies to energy which may destroy cellular structure quickly or over a period of time, such as ionizing radiation.

comment #1617573 posted on 2015-10-06 16:49:37 by Ray Lutz

Please reactivate the cancer study. Why did the cancellation occur? Most it because the industry desperately wants to avoid the likely results that radiation causes cancer. The fact that the NRC bent to the wishes of the industry speaks volumes about the agenda of the NRC -- Promote the nuclear industry, not regulate it. This is disgusting!

comment #1618244 posted on 2015-10-09 13:11:07 by Garry Morgan in response to comment #1618153

Apologies for my error - reference this paragraph in my post, which I'm referring to Mr. Adam's post - "You make this statement, quote: “When background dose rates are more than 100 times higher than possible plant releases, it is absurd to believe that the plant releases would have a detectable effect.” Where have you been, apparently deceiving the public at every opportunity? There have been many nuclear plant radioactive emissions releases which exceed your claim. Where in East Tennessee does the background radiation levels exceed 100 times 20,000+ bq/liter of tritium emissions? Tritium leaks in East Tennessee nuclear reactors have exceeded the maximum so called safe limit as established by the EPA. " >>>> Sentence should read - Where in East Tennessee does the background radiation levels exceed 100 times 20,000+ pCi/l, picocuries per liter of tritium emissions? 1 Becquerel bq = 27 pCi. This example lists radioactivity present, the real question is how does the tritium released equate into a dose received by the public at the emission source and downstream? What is the cumulative impact of tritium releases on the local environment? The cumulative impact on the population and environment is not measured and that is part of the problem in emissions reporting.

comment #1617668 posted on 2015-10-07 00:31:56 by nancy nolan

Is it any wonder that people are fed up with government when we get tantalized with something substantial as with this cancer study only to get the rug pulled out? Really, how do they sleep at night? Pathetic.

comment #1617643 posted on 2015-10-06 23:14:12 by Ace Hoffman (@AceHoffman)

The data from around San Onofre (one of the areas chosen for the study) would have been particularly helpful, because that pair of reactors suddenly closed approximately in the middle of the period of time that the study presumably would have considered. SoCal went from two massive behemoths to zero in the blink of an eye. But NRC, who has been holding their local meetings around the country in posh hotels for years, spending many tens of millions of dollars each year doing so, can't afford one little statistical review after decades of continued ignorance, to be used for many decades to come? Blarney! NRC was just afraid of the results -- and I don't blame them.

comment #1617786 posted on 2015-10-07 11:30:24 by Garry Morgan in response to comment #1617759

Do you support the radiation hormesis theory "Dr. Burn?" There is a one word description of assuming conclusions - FALLACY. Some of your conclusions are based on false assumptions; the current scientific information, rules and policies regarding ionizing radiation safety do not support your fallacies. I agree with this quote from you in part - "... To me, assigning numbers to risks that are orders of magnitude below the actual uncertainty of what is being measured seems unscientific & is not provable. The NAS acknowledged this in saying that this "may not have adequate statistical power to detect the presumed small increases in cancer risks arising from… monitored and reported releases." Current risk assessments surrounding U.S. Nuclear Facilities are skewered and unreliable due to the methodology of reporting emissions. The only definitive and reliable method of determining exposure and health risks to humans and our environment is real time, full time monitoring and reporting all emissions at the nuclear site and the surrounding area up to 100 miles. Then and only then may accurate exposures and health risks be assessed after examining the emissions data, cancer data, citizen health evaluations and environmental sampling. Averaging radiation emissions quarterly and reporting annually at nuclear facilities is not a scientific method of determining actual exposures, much less accurate health risk assessments. There has been no effort to conduct comprehensive health surveys in communities surrounding nuclear facilities. Low doses of radiation do increase cancer risk. No doubt each individual's risks are different, with a multitude of factors influencing risk, such as age, health, sex, type of radiation source, time of exposure(s) and the distance from the source, just to name a few but important risk factors. I would suggest studying the Beir VII report and its conclusions, which you will find at this link along with the statements of Dr. John Gofman (video) and his conclusions regarding ionizing radiation and health risks: radioactivepoison.blogspot.com It is bothersome that the NRC and the NAS will not examine the data relating to heath risks of populations surrounding nuclear facilities. This statement in the above NRC article displays a legitimate concern - "The pilot study would also examine potential differences between individual states' cancer registries. Large differences in registry quality or accessibility would hurt the study's chances of generating useful results." BEST/MATRR believes in certain areas where specific cancer rates are high and there is considerable evidence of radionuclide contamination in the environment, such as East Tennessee, where reports have been brought forward of high cancer rates, there may be an intentional effort to not report accurate cancer data to the national registry, particularly where large fluctuations of data have occurred. The NAS study should have discovered if skewering or withholding of health data was or is taking place.

comment #1621711 posted on 2015-10-22 02:12:23 by Garry Morgan in response to comment #1617786

Reply to Mr. Adams reference this statement: [Nuclear Fuel] has yet to cause a single injury, much less an early fatality. Not true, there have been injuries and deaths - http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/27/060/27060437.pdf In most cases the spent nuclear fuel is contained, but not always, particularly when a nuclear reactor has a fuel meltdown due to a loss of cooling water. Low level ionizing radiation is damaging - http://www.sc.edu/news/newsarticle.php?nid=5214#.Vih5R5Uo7IV Nuclear workers cancer risk - http://www.unc.edu/news/archives/jun05/wing8061605.htm "Low level ionizing radiation, including background radiation, is a cause of cancer, heritable mutations, and probably other significant health effects." http://webcache.googleusercontent.com/search?q=cache:SZhB_F4KMKAJ:www.psr.org/nuclear-bailout/resources/low-level-ionizing-radiation.doc+&cd=5&hl=en&ct=clnk&gl=us

comment #1617759 posted on 2015-10-07 08:38:18 by J Burn, PhD

Two Comments: 1. Thanks for the explanation & for saving taxpayers millions on an impossible study. Instead of funding studies that create paranoia by trying to measure the effects of fractions of a percent of natural radioactivity, our tax dollars could be better used in support of the third world by helping provide clean drinking water, feeding the hungry & immunizing children...or perhaps studying the LNT theory at very low doses: this theory may be accepted but there always has been much that disputes it. 2. While chemical & radiological risk assessments can provide needed relative risk numbers to rank risks against one another for use by professionals in the field, the general public incorrectly thinks that the results mean that these numbers represent actual risks to individual members of the public. Thus the results of modern risk assessments can often be used to support the modern equivalents of witch hunts. To me, assigning numbers to risks that are orders of magnitude below the actual uncertainty of what is being measured seems unscientific & is not provable. The NAS acknowledged this in saying that this "may not have adequate statistical power to detect the presumed small increases in cancer risks arising from… monitored and reported releases." Still, in my educated but humble opinion, the NAS is going to far in presuming that very low doses of radiation actually increases in cancer risk. This presumption alone shows a bias. The uncertainties are so large at such low doses that it is irresponsible to make such a presumption. While this assumption and basis for it (the LNT) are conservative, they are unproven &, more importantly, instill unfounded fear in the general public.

comment #1617766 posted on 2015-10-07 09:19:15 by Samantha Hopkins in response to comment #1617759

LNT is not a theory. It is a hypothesis. However it has been rebranded to be called a "model". either way it is not a theory.

comment #1617767 posted on 2015-10-07 09:20:41 by Samantha Hopkins in response to comment #1617495

perhaps you should move out.. after all you moved in when a reactor was already there...

comment #1618153 posted on 2015-10-09 01:45:13 by Garry Morgan in response to comment #1617968

The link you list Mr. Adams has this to say - "Each day our DNA is damaged by UV radiation, free radicals and other carcinogenic substances, but even without such external attacks, a DNA molecule is inherently unstable." There is a difference between UV radiation and ionizing radiation. Ionizing radiation bio-accumulates in our environment and all living things, UV radiation does not. You make an attack on the previous Chair of the NRC who expressed great concerns about nuclear facilities and people who pose a credible threat to health and safety and deceive the public. You make this statement, quote: "When background dose rates are more than 100 times higher than possible plant releases, it is absurd to believe that the plant releases would have a detectable effect." Where have you been, apparently deceiving the public at every opportunity? There have been many nuclear plant radioactive emissions releases which exceed your claim. Where in East Tennessee does the background radiation levels exceed 100 times 20,000+ bq/liter of tritium emissions? Tritium leaks in East Tennessee nuclear reactors have exceeded the maximum so called safe limit as established by the EPA. The releases of ionizing radiation emissions from all sources contribute to an increasing background level of radiation, depending on the specific radionuclide released and its specific half life. Our studies are demonstrating an increase in background ionizing radiation levels since 2012 by 15% in many areas of the Tennessee River Valley. Historically, some specific location background levels have increased by 50% since the mid 1980's. This statement is a fallacy, as no one could possibly no the outcome of a study which did not occur, quote: "There is no chance that the study would have found excess cancers." Another statement from you which is a fallacy: "Ionizing radiation...at low doses, the stimulated repair mechanisms provide an overall health benefit not unlike that achieved with moderate exercise, moderate intakes of a variable diet, moderate red wine consumption and moderate consumption of vitamins and minerals." Comparing ionizing radiation with vitamins and exercise is

ridiculous. Apparently you subscribe to the radiation hormesis fallacy. The bottom line is this Mr. Adams, and I understand that you support the nuclear industry, people involved in the nuclear energy industry who intentionally deceive people are freighting. Reason, they violate principles of Human Reliability. The question must be asked, if you'll deceive citizens with questionable statements and fallacy, what other deceitful stories are told about more serious events and conditions of nuclear facilities? By the way, this is the reason why all WANO and INPO reports should be released publically, many times they tell an entirely different story than what the NRC or nuclear operators report.

comment #1618159 posted on 2015-10-09 02:26:14 by Garry Morgan in response to comment #1617786

Since there is no reply button to Mr. Dan Williamson's comment to my posting, I'll answer here. All doses are cumulative, man made radionuclides add to the exposure and increase the adverse health risk. Law does not stop radiation emissions, unintended releases and accidents. Regarding costs, the cost and risk is already ridiculous for nuclear power, it should be abandoned. Nuclear power is an excuse to generate money for the nuclear energy industry. Current nuclear construction is increasing our power bills. Your comment Mr. Williamson indicates your willingness to sacrifice safety for money savings for the nuclear industry. I ask of you Mr. Williamson, please, do not say nuclear power is clean, as it generates tons of highly radioactive nuclear waste. The purpose for the nuclear reactor was and is to furnish materials for nuclear weapons.

comment #1618292 posted on 2015-10-09 18:43:37 by richard123456columbia

Seeing Roe Adams response, talks about how low dose is good for health is like me saying that a little sun is so great so take off all your close and jay out side to absorb it with out tanning oils, not to many would be alive the next day in mid summer. If he believes that the back ground radiation will not increase above the safe level, God help him. I would believe that anyone doing studies would say it is of little value. All so did these studies involve all types of radiation including SR-90 and mixes of types and for long exposure over years and ingesting the isotopes. He is hanging his hat on air.

comment #1619426 posted on 2015-10-13 15:28:24 by Garry Morgan

Upon reading some of the writings within, it is apparent that some supporters of nuclear energy are blinded by the money and fallacy it generates. Purposefully and cleverly attempting to fool the public into believing that ionizing radiation at low levels does not cumulatively destroy cellular life which may or may not be repaired, and in many cases cellular mutations occur which we call cancer. How do they do it? The nuclear industry needs a simple restricted belief system, with simple definitions to pawn off on the public contrary to bio-physical fact, a flat earth religious philosophy so to speak based on money; replacing the realities of a complicated bio-physical, factual world. The nuclear way is the right way, radiation hormesis is a fact, low level radiation is helpful, although the facts contradict the radiation hormesis claim. Have the ionizing radiation hormesis claims submitted by nuclear supporters to the NRC, for the purpose of changing the linear no-threshold model (LNT) rule, interfered with the NAS study? The proof that radiation hormesis is bunk and that low levels of radiation kills are cigarettes and radon - death from low level ionizing radiation http://www3.epa.gov/radtown/tobacco.html#about For all things nuclear, deceit and propaganda is a dangerous place to be, as that is an erosion of the Human Reliability standard and a precursor to a disastrous catastrophe as it breaks the basic laws of scientific reasoning and reporting of factual information.

comment #1621263 posted on 2015-10-20 12:37:35 by Garry Morgan in response to comment #1621238

Here is a larger group whose health problems have been confirmed. "The above numbers of applications filed represent 108,584 unique individual workers." Atomic Energy workers - http://www.dol.gov/owcp/energy/regs/compliance/weeklystats.htm Two other groups whose ill health effects have been confirmed as a result of low level radiation exposures - 1)Tobacco use group, largest cause of lung cancer: http://www3.epa.gov/radtown/tobacco.html#about 2) Radon exposure group: " Radon (chemical symbol Rn) is an odorless, colorless, radioactive gas. It is the leading cause of lung cancer for U.S. residents who have never smoked." http://www2.epa.gov/radiation/radionuclide-basics-radon Combine the cumulative effects of Radon exposure and Cigarette smoking, you have an example of the effects of compounding two known causes of cancer, both relate to low level ionizing radiation exposures. Combine the cumulative effects of ionizing radiation from the work place, individual exposures due to close proximity of an ionizing radiation source emitting radionuclides or energy sources such as x-ray or gamma, life styles, and radon exposure, the risk of cancer is greatly increased. This reasoning also dispels the radiation hormesis theory which 'nuclear fanatics' embrace and is before the NRC in an attempt to change the "no-threshold dose-response relationship between exposure to ionizing radiation and the development of cancer in humans." Radiation safety and health of the populace - Environmental bioaccumulation, cumulative health effects of pollution in communities where nuclear facilities are proposed or currently located are all issues which are not taken into consideration by the NRC regarding whether a nuclear reactor should be licensed or relicensed. The NRC's main focus is that of economics, not radiation safety as it applies to community health in licensing approvals. The NAS study would have interfered with your base value - money flowing into and from the nuclear industry which finances your existence, instead of studies which support radiation safety, human health and life.

comment #1621238 posted on 2015-10-20 08:29:46 by Moderator in response to comment #1620956

The study made many assumptions about a closely monitored population of radiation workers. From this the researchers concluded that there was an association (not a direct cause and effect) between those workers' doses and the occurrence of leukemia. It would be difficult to try and apply such study results to the general public. The study included more than 300,000 people from several countries. This is an example of the difficulty in assembling a large enough population to study very small health effects. Scott Burnell

comment #1619118 posted on 2015-10-12 12:01:58 by Rod Adams (@Atomicrod) in response to comment #1617786

@Gary Morgan "I ask of you Mr. Williamson, please, do not say nuclear power is clean, as it generates tons of highly radioactive nuclear waste. The purpose for the nuclear reactor was and is to furnish materials for nuclear weapons." The total quantity of high level "nuclear waste" (aka reusable nuclear fuel) generated in the US since 1957 is approximately 80,000 tons. That's certainly "tons of highly radioactive" material, but it is carefully contained and monitored and has yet to cause a single injury, much less an early fatality. Shielding is simple and uses robust material (water, lead, concrete, steel) with well understood engineering principles. Exposures are also limited by controlling exposure time and increasing distance from sources. The sole reason for developing commercial nuclear reactors is to produce vast quantities of heat that can be turned into useful products like electricity. During the period between 1971-2014, commercial nuclear plants in the US have produced 23.4 billion MWhrs of electricity. If that electricity is valued at a conservative $30 per MWhr, they have produced a vital product worth nearly $750 billion dollars. If that electricity had been produced using a combination of coal and natural gas that releases 600 kg CO2/MWhr, there would be an additional 14 billion tons of CO2 in the

atmosphere. IMO those reactors have been a very good investment in useful infrastructure by our parents generation. Now it is time for us to do even better for our children by investing in modern versions of capable, safe, emission free nuclear power plants. Rod Adams Publisher, Atomic Insights

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Moments in NRC History: Research and Test Reactors Series

posted on Thu, 08 Oct 2015 17:28:54 +0000

Thomas Wellock Historian One of the earliest proposals to meet "the promise of the peaceful atom" was a small research reactor so simple and inexpensive that universities could buy one for scholars and students. That was the plan back in April 1948. The Atomic Energy Commission (the NRC's predecessor agency) touted research reactors as a peaceful counterpoint to nuclear weapons. The AEC thought research reactors could jump-start a civilian industry at home and cultivate allies abroad. And in large measure, it worked. As the nation's first civilian owned reactors, they broke down military secrecy and demonstrated the atom's peaceful potential for education, medicine, research, and industry.

The first of a series of videos outlining this promise and the unique safety challenges of research reactors went live today on the NRC's YouTube channel. The video starts its journey with North Carolina State College's first civilian-owned reactor -- part of its new program in nuclear engineering. Then, two years later, Oak Ridge' research reactor made a debut in Geneva, Switzerland, in 1955. It was an inexpensive "swimming pool" reactor unveiled at the world's first international conference on the peaceful uses of nuclear energy. Over 60,000 people, including prime ministers, royalty, and presidents, lined up to peered down into the blue glow of the future. As the video points out, dozens of universities and corporations followed with their own research reactors. They were small, safe, and used only a small amount of uranium fuel compared to nuclear power plants. For only a small investment, researchers could open up the secrets of the atom and produce isotopes critical to medicine and industrial uses. Ultimately, these research reactors led to the innovative idea of testing the age of ancient pottery Worldwide more than 670 research reactors were built in 55 countries with 227 in the United States alone. We hope you'll take the time to watch the video. And look for the next one coming soon, focusing on key challenges in ensuring safety, preventing diversion of fuel for weapons, and preserving the benefits of research reactors even as their numbers have declined.

Comments

comment #1618848 posted on 2015-10-11 14:05:08 by atomikrabbit

Nicely done video, Thomas. I wish NRC would do more to publicize the results of the recent SOARCA study - the brochure is nice, but reaches a very limited audience: http://pbadupws.nrc.gov/docs/ML1234/ML12347A049.pdf

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Protecting Commercial Nuclear Facilities from Cyber Attack

posted on Tue, 13 Oct 2015 18:29:14 +0000

James Andersen Director, Cyber Security Directorate October is "Cyber Security Awareness" month. While we typically focus on how to secure our personal information, we'd like to update you on the NRC's efforts to ensure U.S. commercial nuclear

power plants are protected from cyber threats. The NRC has been very forward-thinking in developing cyber security requirements for nuclear power plants. The cyber threat is always evolving, and so is our approach. We first imposed cyber security requirements in Orders issued after the 9/11 terrorist attacks. Drawing on our experience with those steps, we formalized regulations in 2009. Our “cyber security roadmap” spells out how nuclear plant licensees were implementing our 2009 cyber regulations, as well as our approach to assessing cyber needs of other licensees. Nuclear plants are meeting these requirements in two phases. During Phase 1, they implemented controls to protect their most significant digital assets from the most prevalent cyber attack vectors. This phase was completed in December 2012, and our inspections of Phase 1 actions will be done late this year. During Phase 2, which will be completed in 2016-2017, licensees will complete full implementation of their cyber security programs. They will add additional technical cyber controls, cyber security awareness training for employees, incident response testing and drills, configuration management controls, and supply chain protection Like other NRC programs, cyber security involves “defense in depth.” Crucial safety- or security-related systems (both digital and analog) are isolated from the Internet, giving them strong protection. Such “air gaps” are important, but not sufficient. Licensees must also address wireless threats, portable media such as discs or thumb drives, and other avenues of attack. Physical security and access controls, including guarding against an insider threat to the plant, also add to cyber security, as do cyber intrusion detection and response capability. The NRC will soon publish a new regulation requiring nuclear plant licensees to notify the agency quickly of certain cyber attacks. With these efforts already accomplished or underway, you can see the NRC takes cyber security seriously, and we’re doing our best to stay flexible and ahead of the ever-changing threat. You can find more information about the NRC’s cyber security program on our website.

Comments

comment #1619580 posted on 2015-10-14 09:37:13 by Mimi German in response to comment #1619445

> The plant never needs to refuse a request made by the NRC; the NRC itself never oversees what its demands are and all a nuke plant has to do is nothing. No one is responsible. No one is in control.

comment #1619581 posted on 2015-10-14 09:44:28 by Mimi German

> I met a man in my practice who owned a cyber safety security company. When I meet my clients I ask them what they do. So I asked him what he feared most in the world regarding cyber security and hacks. Without a moment of hesitation, he said China hacking our grids to get to nuke plants. He didn't know anything about me or the fact that am ardently opposed to nukes. He said there is no way to prevent China from doing this. He said they've been doing it though not effectively enough yet. But it will come. There are a million reasons to shut down the nuclear industry. There is no reason to leave nukes operating. None. The argument regarding nukes as an energy source is now outdated since renewables work more efficiently, cleanly and cheaply than nukes. A wind generator is not going to cause one million deaths from meltdowns(enter and welcome to the trolls who want to counter this number and fact, post Chernobyl/Fukushima). So let's get real and shut down nukes, shall we? What have you got to lose except your lives? Oh, your children's lives. And their children's lives. Unless of course, you think that radiation is good for you...you know who you are. Me? I'll eat the apple a day instead.

comment #1619633 posted on 2015-10-14 13:31:01 by Moderator in response to comment #1619445

> There are a range of actions the NRC can take if licensees don’t follow NRC requirements. The basic enforcement action is issuing a notice of violation, which requires the licensee to correct the problem and take steps to keep it from happening again. Serious and/or deliberate violations can result in fines. If there are serious questions about the safety of NRC-licensed activities, the NRC can require the activities be stopped or an individual removed from work involving NRC-licensed materials. The NRC may modify, suspend, or revoke a license at any time. If the NRC stops licensed activities, they cannot begin again until the problems are fixed. Jim Andersen

comment #1619646 posted on 2015-10-14 15:00:06 by richard123456columbia

> How will the NRC force a plant to up grade when it is loosing money and has no credit to get the changes done.

comment #1619567 posted on 2015-10-14 08:10:06 by Richard Wood

> After decades of IT education and learning about and around some of the most sophisticated control systems on the planet, and the lesson from Y2K and every other attack you are not prepared or the NRC is scared of this possibility then you NRC are totally incompetent, to say the least. Or is the NRC just begging for more financial gifts to their benefactors of nuclear avarice. Really, you guys suck at IT and ITSec if this is a legitimate problem, really! You should just quit or jump off a bridge now for the incompetence you are sharing.

comment #1619576 posted on 2015-10-14 09:12:29 by Erica Gray in response to comment #1619463

> It highlighted insufficient funding and training, a "paucity" of regulatory standards, increasing use of digital systems and greater use of cheaper but riskier commercial "off-the-shelf" software. In addition there is a "pervading myth" that nuclear power plants are protected because they are "air gapped"—in other words not connected to the Internet. In fact, many nuclear facilities have gradually developed some form of Internet connectivity, and computer systems can be infected with a USB drive or other removable media devices. Read more at: http://phys.org/news/2015-10-nuclear-power-cyber.html#jCp

comment #1619749 posted on 2015-10-14 22:11:07 by Troy Martel

> It is my understanding that the NRC staff believes all digital platforms have a software flaw, which will only be revealed at the time of demand of normal or emergency action. There is no software management/QA system that will assure that the flaw is detected and removed. There is no testing methodology (factory acceptance, surveillance, etc.) that will assure the flaw is detected and removed. Employing redundancy is no solution, since the flaw is common, e.g. operating system, to all digital platforms. Only diverse, redundant digital platforms, cleverly arranged in a fault tolerant configuration, is acceptable. Yet, the NRC staff believes that the same professional engineers, who cannot develop a flaw-free digital platform, can develop protocols which will foil cyber attacks. How does one detect a software flaw intentionally inserted when they cannot detect one that was inserted accidently? Only analog and discrete logic (non-digital) platforms can provide the assurance required.

comment #1619445 posted on 2015-10-13 16:49:33 by richard123456columbia

When the NRC requests a change or add on, what happens if a plant refuses to make the change because the customers are paying a high price for power. In the past requests were denied and never changed to date.

comment #1619436 posted on 2015-10-13 16:10:05 by Erica Gray

NRC “cyber security roadmap” spells out how nuclear plant licensees were implementing our 2009 cyber regulations, as well as our approach to assessing cyber needs of other licensees. Looks good on paper. http://www.nrc.gov/reading-rm/doc-collections/commission/secys/2012/2012-0088scy.pdf "NRC inspections of Phase 1 actions will be done late this year". What, almost 7 years to even check to see if things have been done? "The NRC will soon publish a new regulation requiring nuclear plant licensees to notify the agency quickly of certain cyber attacks." Certain cyber attacks? Seems the "cyber security roadmap" should have already stated that ALL cyber attacks were to be reported immediately. 4/27/15 Moniz said the greatest risks to the nation's electric grid are cyberattacks and extreme weather. The frequency and source of cyberattacks on energy infrastructure are increasing, he said. http://www.bna.com/funding-mechanism-uncertain-n17179925868/ I'm very concerned because the NRC failed to even enforce reactor fire regulations. http://www.ucsusa.org/sites/default/files/legacy/assets/documents/nuclear_power/ucs-nrc-fire-regulations-5-2-13.pdf 10/12/15 Pilgrim nuclear plant never addressed 1992 NRC information notice http://www.metrowestdailynews.com/article/20151012/NEWS/151019585/0/breaking_ajax

comment #1619463 posted on 2015-10-13 18:16:53 by atomikrabbit

Most people don't realize that control and protection logic in legacy plants is still mostly relay and contact matrices - they are not connected to the outside world, and "hacking" would involve entry into a locked cabinet with screwdriver and pliers. The increasing emphasis on cybersecurity is due to the use of digital control and protection in the next generation plants, and the few legacy ones that are converting over from their original hard wired analog. As with many things, those who know most about the topic are the least likely to talk in detail about it. Those who know least are welcome to speculate wildly.

Entergy to NRC: Pilgrim Nuclear Power Plant To Cease Operations

posted on Wed, 14 Oct 2015 18:53:10 +0000

Neil Sheehan Public Affairs Officer Region I Over the past few years, five reactors have permanently stopped operation earlier than anticipated and began the process of decommissioning. A sixth will soon be joining that list, it was announced yesterday. Entergy, owner of the Pilgrim nuclear power plant, announced its plan to stop operations at the Plymouth, Mass., facility no later than June 1, 2019. The nuclear plant in Oyster Creek previously announced it was shutting down in 2019. Entergy has emphasized to the NRC its commitment to safe plant operations until Pilgrim’s control rods are inserted for the last time and the unit is shut down. The company has also told us it intends to get ready for and support NRC inspection activities associated with the plant’s recent transition to Column 4 of our Action Matrix. The NRC will continue to conduct inspections and provide oversight consistent with that required of a plant in that status, with a team inspection expected sometime in 2016. More broadly, the agency will keep close watch on Pilgrim’s performance through the end of its operational life. Additional information on the agency’s oversight activities at the plant are available on the NRC’s website. There are more than a dozen units in some stage of decommissioning under NRC oversight. The NRC has traditionally used operating reactor regulations for plants undergoing decommissioning, which requires the plants to seek exemptions when the regulations for operating reactors are no longer relevant or appropriate. While this approach is sound from a safety standpoint, the Commission has directed NRC staff to initiate a process for developing a reactor decommissioning rulemaking, with a final rule to be issued by early 2019. For information on decommissioning can be found on the NRC website.

Comments

comment #1619972 posted on 2015-10-15 14:27:33 by Mike Mulligan

If I knew what plant those refurbish SRVs came from, then I could do an Adams look-up on the operational history of that model and the particular valves...to see how safe they are? This unnecessary secrecy implies a cover-up in itself. Why couldn't they purchase high quality new valves? Why was Entergy's Mrs. Burm so inaccurate when she said they were "new valves". So they are refurbished valves. Did they come from Vermont Yankee? Why didn’t Energy just refurbish their old two stage 2010 valves to save money? Are the SRVs in the plant now identical to the pre 2010 ones? Cause if not, they needed a 10 CFR 50:59 and LAR. As you know, these valves could operate perfectly in another plant, but be inappropriate in Pilgrim. Remember most of our domestic fleet of nuclear plants are one-offs...each plant has a unique design. Blog: "The inspectors observed surveillance testing of the 2-stage SRVs during startup from the last refueling outage, and observed proper operation when actuated manually from the main control room. Basically the 3 stage SRVs were unfit to be in an operating reactor plant." They did exactly the same test at the beginning of the last operating period with the 3 stage SRVs and nobody ever discovered at the test that three SRVs were nonfunctional and required an immediate emergency shutdown. It is what you get when you can't insure the quality of the valve and its internals. Was the NRC observing this test too? There is increasingly widening gulf between what is documented in an “inspection report” and what really is going on in the plant. This is the story of the

SRVs, Pilgrim and the NRC since 2010. So we are going to make believe Entergy never wrote this 2010 evaluation and the document isn't in the docket? The valves that are in the plant right now! Are we to believe the NRC or Entergy? "The SRVs require replacement because the current two-stage Target Rock SRVs have been unreliable performers with respect to leaking while in-service and the subject of setpoint drift. SRV pilot valve leakage has led to multiple plant shutdowns and the setpoint drift problem resulted in exceeding current TS limits and numerous Licensee Event Reports (LERs). It has been determined that pilot valve leakage is due to low simmer margin and high as-found lift setpoints are due to corrosion bonding at the pilot valve disc/seat. To address current SRV performance problems, Entergy has performed extensive investigations and feasibility studies. The preferred option for correcting these problems is to replace all SRVs and SSVs during the next refueling outage. RFO-1 8 is currently planned to start on or about April 17, 2011." Mike Mulligan Hinsdale, NH http://steamshovel2002.blogspot.com/

comment #1621880 posted on 2015-10-22 13:52:30 by Mike Mulligan

So I think this is basically NRC engineering negligence and a cover-up. I like IR 2015002 and have carefully considered it. It is my opinion what the NRC is saying in that report; the valves meet all the licensing and tech specs. The 3 stage did also right to the end. The inspectors in that report never shows any indications they looked over the industry and Pilgrim's 2 stage operational and problems history what-so-ever. The NRC in any of this never indicates they evaluated the operational problems with these 2 stage. It's like the NRC just doesn't care about the 2 stage troublesome operating history. Many plants are trying to jump out of the troublesome 2 stage right at this moment and into the 3 stage. What it looks like is the agency picks and chooses what positive information it disclosed to the community in order to support the dangerous agenda of the licensee. It hides the information that is derogatory to the agenda of licensee. The NRC carefully references all the documents the inspectors looked at in IR 2015002 in the back section. You got a list of 15 pages on Entergy's documents the inspectors look over in the inspection and many of the list contain more than one document. It is specious as heck the proposed March 15, 2011 LAR with the derogatory operational historical "reliability problems isn't reference in the inspection report back page references. Not a word about reliability problems identified by Entergy in the 2010 document? Why does the NRC only list the partial 2011 LAR material...not the derogatory historical information? We can hear the NRC now if operational problems begin to show up on the 2 stage…we had no evidence of 2 stage historical reliability problems because we never read the description section in the 201O LAR not described in the IR 2015002. We certainly got our rear ends covered in the wording game. So this is what is in the IR back section. Nothing about 2 stage historical operational problems. *"Letter, NRC to Entergy Nuclear Operations – Amendment Issuance Regarding Revised TSs for Setpoint and Setpoint Tolerance Increases for SRVs and Spring Safety Valves, 3/28/11" *"Letter, Entergy Nuclear Operations, Inc. to NRC, Marked-up and Re-typed TS and Bases Pages for the Proposed License Amendment Related to Setpoint and Setpoint Tolerance Increases for SRVs and Spring Safety Valves, 2/18/11" This would be my example where the NRC systematically cherry picks public information disclosure only favorable to the licensee's agenda. They withhold derogatory descriptive historical information and exaggerated the value of limited licensing and tech spec information. The agency is continuing on with the word games that got us the 3 stage problem. Hope Creek is an interesting Feb 2015 example. They have fourteen SRVs. They have eleven 2 stage (7567F) and they are experimenting with three 3 stage like Pilgrim's failed SRV. Ninety one percent of the 2 stage failed technical specification testing and required immediate shutdown. There was no similar failures in the 3 stage. http://steamshovel2002.blogspot.com/2015/09/nearly-identical-to-pilgrims-srvs-71.html 'Nearly Identical To Pilgrim's SRVs: 71% Target Rock Two Stage SRV Tech Spec Failure Rate'

comment #1621897 posted on 2015-10-22 15:06:13 by steamshovel2002

It is as if you detected brake problems in your car. You go to your local dealer explaining your concerns. He puzzling asked to see your owner's manual. He quickly thumbs through the pamphlet. He says your car is perfectly safe. It meets all the state and federal safety requirements. He doesn't take the car for a test drive or check the pads on your brakes. Then says, that will be $100…

comment #1620294 posted on 2015-10-16 10:08:03 by Mike Mulligan

The rumor going on has it Pilgrim's 2 stage SRVs have been borrowed from this Hope Creek's SRV disaster? All three of the test 3 stage SRVs failed lift testing and 71% of their 2 stage failed also. Check out the date I wrote my blog entry. Would it make a difference to Pilgrim's continued operation if they had Hope Creek 2 stage SRV in the plant? http://steamshovel2002.blogspot.com/2015/09/nearly-identical-to-pilgrims-srvs-71.html Nearly Identical To Pilgrim's SRVs: 71% Target Rock Two Stage SRV Tech Spec Failure Rate I like the concept of DG load testing. They test these guys monthly or so at full design load. They don't test these guys at say 5% full plant design load. We got big quality troubles with both the 2 stage and 3 stage Target Rock safety relief salves. These failures are sending us a big signal something has to done about these problem. As most BWR plants during the worst case design accident…very infrequent…these Safety Relief Valves could/will have to be cycled up to 400 times. I don't think the current testing regime covers this worst duty at all. How do we know how these delicate valves will behave after 100 cycle in a short period time and environment? We are talking science and engineering here? I'd be test cycling a hunk of these valves some 400 times...one valve 400 times per outage. This is how the engineers screw the operations people when the plant is in the clutches of a terrible designed accident…they don't have our backs. Nope, seeing how important these guys are when 99% of the safety systems have been wiped off the table and unavailable, I be regularly test cycling these guys 800 times just to make sure something is working when everything else is gone. By the way, I got a great question for everyone. They say test stand lift or pressure testing damaged the internal just before going into the Pilgrim plant. Why hasn't the damaged proliferated to the other BWR plants who also used this test stand or similar? Why haven't I seen problems similar to Pilgrim's throughout the industry whose use similar test stand set-ups, testing regimes or procedures? Sincerely, Mike Mulligan Hinsdale, NH http://steamshovel2002.blogspot.com/

comment #1621495 posted on 2015-10-21 11:55:01 by Moderator in response to comment #1620596

The only additional information we can provide on the subject was discussed in NRC Inspection Report 2015002: • The Safety Relief Valves (SRVs) installed as replacements at Pilgrim are spare Target Rock 2-stage SRVs. • These spare valves were completely refurbished and tested in accordance with current practices, with vendor-recommended improvements, both in testing configuration and assembly with respect to torque values. We review plant documents but we do not retain them once the inspection was completed. Neil Sheehan

comment #1619688 posted on 2015-10-14 18:23:10 by steamshovel2002

Part 3 As a compensatory action on the degradations with the designs and safety margins with the dangerous 2 stage SRVs currently "installed in the operating plant" SRVs outlined in the Pilgrim 2010 LAR: I request Pilgrim to shutdown on any indication of a leaking SRVs or any out of normal range temperature readings on a tailpiece. I request Pilgrim to shutdown quarterly in order to detect the highly possible outside setpoint lift plus or minus 3% required tech spec shutdown vulnerabilities and unreliabilities. The OIG was really was involved with this...I request a outside the OIG and NRC investigation of this whole mess. It all leads to this...I am asking the NRC now. Is the 2 stage SRVs now installed in Pilgrim safe? Does these valve meet all codes and rules...do they meet the highest ethical and nuclear professional obligations. Could you direct me to a current

comprehensive engineering document discussing all the historic safety limitation in the currently installed 2 stage SRV valves and the compensatory action?

comment #1619696 posted on 2015-10-14 18:48:39 by CaptD

The NRC would be well advised to make NEW Decommissioning Rule Making a top priority, since as it is now, the Utilities can do just about what they want with little if any direction from the NRC since they will have access to the billions of dollars in decommissioning funds. SCE is now trying to purchase inferior casks for San Onofre Nuclear Waste despite the opposition from all those that live nearby that want them to purchase better quality casks. http://www.theinertia.com/surf/kelly-slater-weighs-in-on-the-state-decision-to-bury-nuclear-waste-at-san-onofre/

comment #1619685 posted on 2015-10-14 17:59:46 by steamshovel2002

Part 2 Entergy's LER: Notice how Entegy is allowed to pick and choose what information they release to the public. They aren't required to explain the vulnerabilities of defective 2 stage SRVs design outlined in their 2010 LAR going into plant after the 2015 spring outage. "All SRV body/bases were removed from the system during the current refueling outage. In place of the four SRV's removed from the plant during the current refueling outage, PNPS has installed 2-stage SRV's" This is a brazen cover-up on top of the first cover-up. It is mind boggling. Inspection Report 2015-002: Is this a full and accurate statement considering how defective and unsafe Entergy identified the 2 stage SRV in the 2010 LAR? Should the residents have discussed the limitation of the 2 stage SRVs in Inspection in Report 2015002? Should the NRC have forced Pilgrim to declare their "compensatory actions" for the defective and obsolete 2 stage SRVs outlined in the 2010 LAR now currently in the plant. I will below identify my proposed defective 2 stage SRV compensatory actions. This should be in effect until the 2 stage SRV valves are removed. "The inspectors concluded that the 2-stage SRV design did not invalidate any existing commitments or requirements." They are used valves from another plant and Entergy has indicated this model valve is defective and dangerous in their 201O LAR. They certainly aren't new. They basically grab them from a nuclear plant junk yard. They guy aren't being manufactured today. A proper "licensee amendment request (LAR)" for the 2 stage SRVs currently in the plant would have addressed the reason why the obsolete SRVs are going back into in and the compensatory actions needs to run the plant with the knowingly defective SRVs. Honestly Mrs. Burm new valves? "Entergy Senior Communication Specialist Lauren Burm: "Burm said four new safety relief valves were installed during a recent refueling and refitting of the reactor." Seriously Mr. Modl, is this below statement a true and complete statement? Bill Mohl, president of Entergy Wholesale Commodities: "Mohl said that the plant has previously addressed the safety relief valve issue and the plant is operating safely". Again the skimpy information gives Entergy the advantage to keep operating with the poorly designed and dangerous components. You notice both sides of the story; this is why Pilgrim needs to use the obsolete SRVs and this is the vulnerabilities of the design of the valve. You decide if it is safe or not. The NRC never treats us as adults with all information disclosed. A comprehensive report on the 2 stage SRV reliability and historic operability problem would have got all the problems on the table. Maybe Entergy could have put in a better model SRV? NRC Public Affairs specialist Mr. Sheehan: "The plant has since replaced all four valves" Sincerely, http://steamshovel2002.blogspot.com/ Mike Mulligan Hinsdale, NH

comment #1619673 posted on 2015-10-14 17:11:16 by steamshovel2002

Dear Sir, By the way, I am impressed with the NRC for allowing me to discuss problems like this on your blog. Am I the only one reading documents submitted by Entergy to the NRC anymore? Does the NRC keep up with reading pertinent documents like Pilgrims old 2010 SRV License Amendment Request (LAR). They are shifting from the 2 stage to the defective, unreliable and dangerous 3 stage SRVs. We now have these 2 stage SRVs back in Pilgrim. Basically Entergy in 2010 says the SRVs currently in the plant are dangerous, leak and unsafe in the below 2010 LAR document. These valves drift outside the tech spec set point often requiring a immediate shutdown wink, wink, but these dangerous inops are undetectable at power. This is why we went to the 3 stage. You might have inop (broken) two or more valves in the plant at the same time each requiring a immediate safety shutdowns. But the plant can't detect the dangerous deterioration. Don't be confused, I am not talking about the 3 stage SRV removed from the plant last spring…these are the guys (same model) "in" the plant right now In the docket: "Proposed License Amendment to Technical Specifications: Revised Technical Specification for Setpoint and Setpoint Tolerance Increases for Safety Relief Valves (SRV) and Spring Safety Valves (SSV), and Related Changes" March 15, 2010 http://pbadupws.nrc.gov/docs/ML1007/ML100770450.pdf The SRVs require replacement because the current two-stage Target Rock SRVs have been unreliable performers with respect to leaking while in-service and the subject of setpoint drift. SRV pilot valve leakage has led to multiple plant shutdowns and the setpoint drift problem resulted in exceeding current TS limits and numerous Licensee Event Reports (LERs). It has been determined that pilot valve leakage is due to low simmer margin and high as-found lift setpoints are due to corrosion bonding at the pilot valve disc/seat. To address current SRV performance problems, Entergy has performed extensive investigations and feasibility studies. The preferred option for correcting these problems is to replace all SRVs and SSVs during the next refueling outage. RFO-1 8 is currently planned to start on or about April 17, 2011." Sincerely, Mike Mulligan Hinsdale, NH http://steamshovel2002.blogspot.com/

comment #1620596 posted on 2015-10-17 13:02:54 by Mike Mulligan

Mr. Sheenhan, Somebody posed this question to me…could you please answer it? He sounds like a lawyer to me. We are all wondering what plant has Pilgrim's 2010 dangerous old 2 stage SRVs in them? "Please confirm the replacement SRVs installed this spring are refurbished Target Rock 2-stage, of the 7567F Series. yes or no? If yes, they are the same Target Rock Series and unit that Entergy declared defective in 2010 and replaced. Can you confirm that GE SIL 646, and SIL 196, Supplement 17 modifications as specified were all fully and completely implemented on these refurbished units, prior to installation at Pilgrim. If no, and the SRVs are indeed a different manufacturer, the NRC violated their rules and vetting in installing these units. Which one is it?" Sincerely, Mike Mulligan Hinsdale, NH http://steamshovel2002.blogspot.com/

comment #1622387 posted on 2015-10-23 23:22:37 by Public Pit Bull

With all these premature shutdowns dedicated utility professionals are losing their jobs. How many NRC personnel have or will be losing their jobs?

comment #1622389 posted on 2015-10-23 23:31:15 by Public Pit Bull

It is quite incredible that the NRC has still not addressed decommissioning requirements for all those plants that are already well into the process. And for those soon to be entering the process. This however is just the way the NRC operates. A half- century of licensing & operating nuclesr plants with no permanent off- site repository in place for all the high level waste that is piling up at 90 reactors sites all over the US, many in the backyard of large metropolitan areas. The word gross negligence comes to mind!

comment #1619953 posted on 2015-10-15 13:02:55 by Moderator in response to comment #1619688

> The NRC conducted an annual Problem Identification and Resolution Inspection sample at Pilgrim related to installation of these 2-stage safety relief valves (SRVs). As documented in the inspection report: • Entergy removed all four 3-stage SRVs and replaced them with refurbished 2-stage SRVs. • The 2-stage SRVs are of a design that is in use at other industry boiling water reactors. • The inspectors reviewed design documentation associated with this change. The inspectors determined that the modification and design of these 2-stage SRVs are consistent with Pilgrim's design and licensing bases. • The inspectors observed surveillance testing of the 2-stage SRVs during startup from the last refueling outage, and observed proper operation when actuated manually from the main control room. • The inspectors concluded that the 2-stage SRV design did not invalidate any existing commitments or requirements. Based on our inspection, we determined that use of the 2-stage SRVs was acceptable. Neil Sheehan

comment #1622196 posted on 2015-10-23 12:38:52 by Mike Mulligan

> This is what the inspectors and the NRC was trying to hide from you in 2015002. This is what Entergy was alluding to in their 2010 LAR at the top of the page. This below set of documents represents the disastrous decade (Target Rock) from 2000 to 2009 with the 2 stage SRVs. These "reliability problems" drove Pilgrim to the tragic 3 stage problems. As for the arc of SRVs problems in these BWRs, the first "new" operating 18 month period with the 3 stage SRVs consisted of a host leaks and a premature expensive shutdown do to a leaking SRV. Then in the outage they discovered three failed 3 stage SRVs in lift testing. Engineering wise, the arch of history, you knew the so called new era of the 3 stage SRVs was going to end up in a spectacular high speed car crash careening into a concrete wall. Post 2 stage era (we thought), within weeks of first start-up with the so called new 3 stage SRVs, barely before the SRVs were heated up, the plant had their first leak with the new 3 stage SRVs. I knew from that little leak the car was heading for the big crash at the concrete wall and going to disrupt the lives of many people. The arc of history in BWRs with SRV valves is fascinating. This is my example where systemically everyone accommodates poor designs of components in nuclear power plants. We are running around in a circle of poorly designed SRV models like a mad man off his medications. It is not the disciple to fix it right the first time mentality. We started out with the disastrous 3 stage model or design in the 1970s. The fix was 2 stage design. Everyone now has had burdensome problems with the 2 stage in which they can no longer tolerate. They are all running "back to past (Back To the Future)" to our 3 stage SRV failures of the 1970s. Honestly, this tremendously burdens (screws them) the control room operators the most and also the resident inspectors. It screws mostly the rather low level and highly skilled and trained technical people with the least power to do the right thing. I'll make the case this kind of valve destroyed TMI (pwr). We have traveled much further than a poorly designed component at a nuclear plant. It is not imaginable how much money and bureaucracy we wasted over this. We got 5 million components or parts in a nuclear power plant....what if they are treating all the parts and components like this? It would quickly overwhelm our document system and bureaucracy. It would lead us to total blindness. I know, it all according to the laws, rules and codes. It is really a severely dysfunctional organizational, bureaucratic or federal oversight behavior…it goes right straight to how we tolerate dysfunctional politics in the USA. Our self regulation sucks! It is a metabolic money related disease in the hearts or brains of all our organizations… The 2000 to 2009 model we got in the plant today through the lens of Entergy's LERs: ***https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML072330094 Licensee Event Report 2007-004-00 3 failed lift testing ***https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML052020297 Licensee Event Report 2005-003-00 3 failed All four pilot assemblies for main steam relief valves RV-203-3A, 3B, 3C and 3D were removed during the May 2005 Refueling Outage (RFO-15). RV-203-3C had experienced steam leakage problems while installed during the operating cycle (Cycle 15) The following corrective actions are planned. Engineering is working with industry representatives to evaluate actions and potential modifications to reduce or mitigate set-point drift. ***https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML041970239 Licensee Event Report 2004-003-00 2 Failed plus the leak In the January 2004 timeframe, the discharge pipe temperature of relief valves RV-203-3A (pilot serial number 1054) and RV-203-3D (pilot serial number 1049) increased, indicating pilot valve leakage. Pilgrim Station initiated and completed a planned shutdown on March 22, 2004. The purpose of the shutdown was to replace the pilot valves of RV-203-3A and -3D and other planned maintenance. Poor insulation around the SRV valves(the VY SRV story) ***https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML040780578 Licensee Event Report 2004-001-00 3 failed ***https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML011840249 LER 2001-004-00, 2 failed ***https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML013020429 (LER) 99-004-01 3 failed Issues of vessel flood up might later impair valves A review was conducted of Pilgrim Station LERs. The review focused on relief valve test related LERs that were submitted since 1984. The review identified LER 91-014-01, LER 93-011-00, and LER 99-004-00. Sincerely, Mike Mulligan Hinsdale, NH http://steamshovel2002.blogspot.com

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Throwback Thursday – Save the Date for the RIC

posted on Thu, 15 Oct 2015 15:34:06 +0000

The NRC's 28th Annual Regulatory Information Conference is scheduled for March 8-10, 2016, at the Bethesda North Hotel and Conference Center just off of Rockville Pike in North Bethesda, Md. So mark your calendars! Pre-registration will be available online beginning in early January 2016. In this photo, Commissioner Edward McGaffigan, Jr., gives a presentation during the 2004 RIC. This Boston native and self-described John Kennedy Democrat was first appointed to the Commission by President Clinton in 1996. Commissioner McGaffigan died Sept. 7, 2007, after a long battle with melanoma. He holds what distinction among former and present Commission members?

Comments

comment #1619946 posted on 2015-10-15 12:42:08 by CaptD

> Hopefully they will also enable everyone that cannot physically attend to add their voice, by opening up the Conf. to everyone via the web.

comment #1619950 posted on 2015-10-15 12:54:33 by Public Pit Bull

> Suggested Topic for your conference...The Premature Shutdown of the US Nuclear Plants. As more old nuclear power plants in the US are shutdown early due to not being economically viable in today's energy market and/or have safety and regulatory issues, how much is the US NRC downsizing as well? For example, Entergy, the owner and operator of the Pilgrim Nuclear Power Plant near Boston, just announced that they would be terminating operation of Pilgrim by 2019 or earlier due to economic and regulatory issues. Over 600 Entergy employees there will be losing their jobs. How many NRC employees will lose their jobs too as a result?

comment #1619934 posted on 2015-10-15 11:42:48 by Steven

> I believe that Commissioner McGaffigan has the distinction of being the longest serving Commissioner in NRC's history.

comment #1619935 posted on 2015-10-15 11:43:23 by Dolley, Steven

> Commissioner McGaffigan was the longest serving commissioner in the history of NRC. Steven Dolley

comment #1619938 posted on 2015-10-15 12:16:26 by Charles Wilhelm

> Any room for retirees? Charles Wilhelm Charles J Wilhelm 100 Monroe St. #301 Rockville, MD 20850-2501 (H)301-294-2292 (C)301-524-8200

comment #1619954 posted on 2015-10-15 13:03:23 by Moderator in response to comment #1619938

> The RIC is open to everyone. Moderator

comment #1619955 posted on 2015-10-15 13:05:40 by Moderator in response to comment #1619934

> Yes, he was the longest serving Commissioner in NRC history, appointed by President Clinton in 1996 and 2000, and by President Bush in 2005 to an unprecedented third term. Moderator

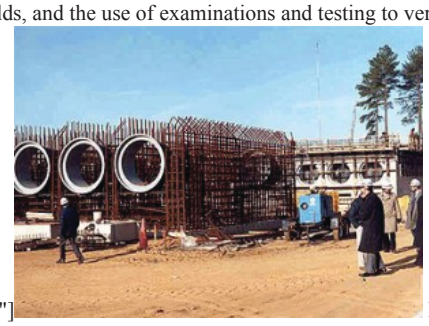
comment #1619956 posted on 2015-10-15 13:05:56 by Moderator in response to comment #1619935

> Yes, exactly. Moderator

Dry Cask 101: Storage and Transport – The Right Materials for the Job

posted on Tue, 20 Oct 2015 14:00:25 +0000

John Wise Materials Engineer Materials – the stuff of which everything is made. You might not give much thought to the materials around you: the metal in the door of your car, the plastic used in airplane windows, or the steel from which elevator cables are made. Yet, in each of these cases, the selection of appropriate materials is critical to our safety. Systems that transport and store spent nuclear fuel and other radioactive substances are made of a variety of materials. All of them are reviewed to confirm that those systems can protect the public and environment from the effects of radiation. The NRC does not dictate what materials are used. Rather, the NRC evaluates the choice of materials proposed by applicants that want NRC approval of systems to transport or store radioactive substances. We typically refer to these substances as radioactive *materials*, but that might make this discussion much too confusing. What makes a material "appropriate" to transport and store radioactive substances depends on a number of factors. First, materials must be adequate for the job. In other words, the mechanical and physical properties of the materials have to meet certain requirements. For example, the steel chosen for a transportation canister has to withstand possible impacts in a transport accident. Neutron-absorber materials need to block the movement of neutrons to control nuclear reactions in spent nuclear fuel. Next, when making complex metal system, parts often are fused together by partially melting, or welding, them in a way that ensures that the joints themselves are adequate for the job. It may not be obvious, but during the welding process, the welder is creating a new material at the joint with its own unique properties. That's why the NRC looks at how this is done, including the selection of weld filler metals, how heat is controlled to ensure good welds, and the use of examinations and testing to verify that no defects are present. [caption id="attachment_6664"



align="alignleft" width="300"] Horizontal storage systems under construction.[/caption] Finally, the NRC considers how materials degrade over time. In other words, we must take into account a material's chemical properties – how it reacts with its environment. We're all familiar with how iron rusts when it gets wet or how old elastic materials (e.g., rubber bands) become brittle. Often such degradation is not important. But sometimes it can cause concern. Thus, materials must be selected based on their present condition and their *projected* condition throughout their lifetimes. Best practices for appropriately selecting materials and the processes used to join them often can be found in *consensus codes and standards.* These guidelines are typically developed over many years of experience and through industry-wide and government agreement. But such guidelines may not cover all aspects of material selection. So we also rely on both historical operating experience and the latest materials testing data. The NRC has a team of materials experts that reviews every application we receive for approval of spent fuel storage and transportation systems. These experts must be satisfied that every material and the processes used to join them are up to the job. The materials review is one part of a comprehensive review the NRC does on every application. We will focus on other parts of our reviews in upcoming blog posts.

Comments

comment #1623657 posted on 2015-10-26 19:47:32 by Donna Gilmore in response to comment #1623602

> Mark, In your own words at the California Coastal Commission meeting you admitted inspecting thin canisters is "not a now thing". https://youtu.be/QtFs9u5Z2CA Even if the industry is able to adapt some technology to find cracks and measure depth with canisters filled with spent nuclear fuel it will note be adequate. The best way to find cracks is by putting a fluid dye inside the canister. You require this as part of the factory inspection, but this obviously cannot be done once the canister is loaded with spent fuel. Here is a report that evaluated various technologies for detecting cracks and crack depths. The most reliable one is putting fluid dye inside the canister. http://www.hse.gov.uk/research/rrpdf/rr902.pdf Why do you claim you can repair these canisters when even one of your licensed canister vendors, Holtec's Dr. Singh, states it's not feasible to repair without introducing another corrosion factor? He states it would "create a rough surface which becomes a new creation site for corrosion down the road". And he states even a microscopic crack will release millions of curies of radiation into the environment. https://youtu.be/euaFZt0YPi4 Regarding the amount of Cesium-137, look at this chart comparing the amounts of Cesium-137 at San Onofre compared to Chernobyl and other major radioactive events. https://sanonofresafety.files.wordpress.com/2013/06/chart-songs-chernobyl-otheralvarezfigure4.jpg San Onofre's spent fuel contains 89 times the amount of Cesium-137 released from Chernobyl. See this report for details and the above chart. http://libcloud.s3.amazonaws.com/93/22/3/3024/SONGS_Spent_Fuel_FINAL.pdf Regarding exactly what will happen with a microscopic or other through-wall crack in these thin (1/2" to 5/8" thick) canisters, please provide an answer and a source document for that answer, including one that addresses high burnup fuel and damaged fuel assemblies. Also, given that oxides form on the zirconium cladding with high burnup fuel and the higher the burnup, the thicker the oxides. (Higher burnup = higher oxide thickness = higher cladding failure). NWTRB 2010 p.56) See chart here from that NWTRB report: https://sanonofresafety.files.wordpress.com/2013/06/nwtrb2010-figure20burnup.jpg Here is link to the NWTRB report https://sanonofresafety.files.wordpress.com/2013/06/usnwtrb-evaloftechbasisforextendeddrystorageandtransportofusednuclearfuel2010-dec-eds_rpt.pdf Regarding thick concrete overpacks, they have air vents, so a canister through-wall crack will allow radioactive gases to escape. And air vents allow moist air to enter the vents which can trigger the cracking process if salts or other corrosive elements are present (assuming the temperature is low enough for the moisture to stay on the canister, which is the case at Diablo Canyon). "Maximum temperature of deliquescence is ~85ºC. Reference: Data Report on Corrosion Testing of Stainless Steel SNF Storage Canisters, FCRD-UFD-2013-000324, Sandia Lab, September 30, 2013. http://www.energy.gov/sites/prod/files/2013/12/f5/CorrosionTestStainlessSteelSNFStorContainer.pdf The unanswered question is at what point there will be an explosion from hydrogen or zirconium hydrides. I am still looking for a report that addresses this issue. If you have something, please share. Here is a declassified military report that shows even 5% oxygen in helium, can cause zirconium hydride powder to ignite. Any mechanical or chemical process that reduces the [zirconium] cladding to turnings, chips, granules, or powders can generate a pyrophoricity or

flammability hazard. http://www.osti.gov/scitech/biblio/4410914 or https://sanonofresafety.files.wordpress.com/2014/12/4410914explosivezirconiumdivofmines.pdf And here are other reports: http://www.osti.gov/scitech/servlets/purl/5791423 This MSDS for zirconium hydrides states: ignition temperature 270° C (580° F). Flammable when wet. Can explode when dry. Contact with water releases explosive hydrogen gas. http://www.espimetals.com/index.php/msds/780-zirconium-hydride The question is, how degraded will the zirconium get and how long will this take? Since no canisters with high burnup fuel have been opened and have not been in use that long, all we have are studies such as Billone, showing embrittlement of the cladding from high burnup fuel after dry storage. http://pbadupws.nrc.gov/docs/ML1218/ML12181A238.pdf Why do you continue to ignore data presented by your own staff, such as the Koeberg nuclear plant that had a similar component fail in 17 years with cracks up to 0.61", located in a similar environment as San Onofre -- on-shore winds, high surf, and frequent fog? All the thin canisters are only 0.50" or 0.625". Why do you continue to ignore the EPRI data showing all the conditions for cracking in a 2-year old Diablo Canyon canister? None of the existing canisters have been inspected for cracks. EPRI looked at partial surfaces of a few canisters, but that does not show you microscopic cracks or depth of cracks. EPRI's own slide says this "inspection" was not intended to find CISSC (chloride-induced stress corrosion cracks). https://sanonofresafety.files.wordpress.com/2013/06/epri-in-serviceinspectiondsc-2014-01-28.jpg And when will the NRC begin studying other factors that can cause stress corrosion cracks in stainless steel, such as sulfites? Also, why in your aging management plan (NUREG-1927 Rev 1 draft) why are you allow cracks and only requiring a canister be taken out of service if cracks are 75% through-wall? There is no seismic rating for a cracked canister and cracked canisters cannot be transported. NRC 10 CFR § 71.85 Packaging and Transportation of Radioactive Materials. Preliminary determinations. Before the first use of any packaging for the shipment of licensed material — (a) The certificate holder shall ascertain that there are no cracks, pinholes, uncontrolled voids, or other defects that could significantly reduce the effectiveness of the packaging. NRC Certificate of Compliance NUHOMS-MP197HB, Certificate 9302, April 23, 2014 (ML14114A099), Page 17, “For any DSC [Dry Storage Canister] that has been used in storage, the condition of the DSC must be evaluated, prior to transportation, to verify that the integrity of the canister is maintained.” How could you certify any canister, since you have no technology that can be implement now to detect cracks and depths of cracks or even check the full exterior of a canister for other corrosion or pitting? And even if you do find them, you cannot repair them. Mark, it's time to raise NRC minimum standards to require dry storage containers that: 1. Do not crack 2. Can be repaired and maintained 3. Can be transported 4. Have an early warning monitoring system prior to a radiation release. 5. Have a mitigation plan -- require spent fuel pools be retained after they are emptied until the DOE takes the fuel away from the current sites. This is the only method to replace a failing container. You require a canister be removed from service if it has a 75% crack, yet you allow the spent fuel pools to be removing, taking away the only method to comply with NUREG-1927. Where is the logic in that? Also, NRC's rationale claiming nothing can go wrong when fuel is in dry storage, is not based on current scientific data and needs to be updated. San Onofre has had thin canisters loaded since 2003. Right now we have no idea if any of those canisters are cracking or how deep the cracks are. And the only radiation monitoring you require is for an employee to walk around with a radiation monitor on a stick every three months. Our homes are not insured if something goes wrong. I-5 is adjacent to San Onofre. Closing I-5 would be an economic disaster to California and the country. Don't tell me the industry will figure out the problems. We have leaking tanks at Hanford; WIPP is shut down from leaks. Savannah River has leaks. These thin canisters have not been used long enough to start leaking, but they will be reaching that age soon and the waste stored in these is much more dangerous, as you know. It's time for you to do the right thing before it's too late. You need to raise NRC minimum standards. Donna Gilmore SanOnofreSafety.org

comment #1621541 posted on 2015-10-21 14:03:57 by AREVA U.S. (@AREVAus)

New Materials Enhance Dry Cask Safety -- There have been significant advancements in the materials and technology used to safely store used nuclear fuel here in the U.S., though some of these may not be well-known by the public. As a company that makes these modern storage systems, we’ve been researching durable materials and developing new inspection tools to enhance the long-term safety of these systems. Here’s an update on recent advancements … Our storage canister design resolves concerns of canister aging and chloride-induced stress corrosion cracking (CISCC) by incorporating durable Duplex Stainless Steel (DSS) as an option, especially for sites located in marine environments. The two-phase (austenite and ferrite) micro-structure of duplex stainless steel and its alloy content (including chromium, molybdenum, nitrogen and nickel) are especially suited for long-term nuclear fuel storage and provide numerous benefits including: - Resistance to chloride-induced stress corrosion cracking, pitting and crevice corrosion - Proven resistance in marine environments and other locations where there is exposure to high chloride levels and high temperatures Using duplex stainless steel is an important first line of defense when used in the fabrication of our high-performance double-welded canisters, and forms an additional significant layer of protection when placed inside thick-walled, steel-reinforced concrete horizontal storage modules. This above-ground concrete storage module system meets all shielding, flood and earthquake requirements, and the storage canisters slide out of the module like a drawer, so they are easy to monitor and inspect for long-term maintenance. The horizontal orientation also enables ease of transport away from the site to a consolidated storage facility in the future. Our NRC-approved aging management program features consistent inspections of the used fuel dry storage systems and components to ensure any potential aging effects are identified and effectively managed long before they would ever become a problem. Under NRC oversight, advanced materials and technologies are helping ensure continued safe and secure used fuel management. More information available at: http://us.areva.com/nuhoms, including FAQs about high burn-up or damaged fuel storage and transport, and an annotated illustration of a NUHOMS® used fuel storage facility.

comment #1621292 posted on 2015-10-20 16:33:22 by CaptD

Donna Gilmore made a presentation to the NRC about these issues and she also spoke with the Director of Spent Fuel Management. He told her that he sets the minimum standards for dry storage and transport and refuses to increase them. Him saying that he is "hopeful that any problems will be solved by the vendors before it's too late", is not good enough for either the people living near all nuclear waste "dumps" or those in the future that will have to deal with any mistakes made in cask selection/regulation by the NRC. Current failed containments at Hanford, Savannah River and WIPP should provide the NRC with the motivation to immediately halt all cask deployments until further investigations are conducted. Approving casks is nothing more than yet another gift to the Nuclear Industry since "cheap" casks offer them a way to comply with nuclear waste storage and do nothing to insure that tax payers with not get stuck with huge cleanup bills in the future. The NRC might think that they are better than the Department of Energy, but I don't agree, since the NRC has had plenty of regulatory problems. A great example is the RSG debacle at San Onofre, CA, where SCE used the like-for-like "loophole" to self design RSG's that failed soon after being installed, but received only a white violation from the NRC for something that will cost ratepayers billions of dollars. Now SCE want to spend over a billion to buy "cheap" casks. At the very least, the NRC should require Operators fund a bond in case any problems develop in the future, so that there will be plenty of money to pay for them. Here's a new video that Jim Heddle produced from the October 6, 2015 California Coastal Commission meeting. In it one of the Commissioners grills Mark Lombard about the inspection, cracking and transport issues. https://www.youtube.com/watch?v=g9wSxN_G7C0&feature=youtu.be

comment #1621283 posted on 2015-10-20 15:18:49 by Donna Gilmore

The NRC may not dictate what materials are used, but they can set the minimum standards for storage, transportation and aging management. Currently, the NRC standards are so low they approve 20-year licenses to store thin 1/2" to 5/8" stainless steel canisters that are subject to stress corrosion cracks, cannot be inspected for cracks or depth of cracks, cannot be repaired, cannot be transported if they develop any cracks, have no early warning system prior to radiation leaks and no plan in place plan to deal with leaking canisters. In addition, NUREG-1927 (Rev. 1) Aging Management proposes to allow up to 75% cracks in these canisters even though they know canisters cannot be transported with cracks. And there is no seismic rating for cracking canisters. Promises of future solutions are just vaporware -- needed capabilities that don't exist and may never exist. If NRC required products met these needed requirements now, utilities would be forced to choose thick cask technology (9" to 20" thick) used in most of the rest of the world. It's time for the NRC to increase their standards before it's too late and we have radiation releases all over the country. Each canister contains more radiation (Cesium-137) than released from Chernobyl. The Holtec HI-STORM UMAX system is even worse. It's an unproven underground system that does not allow for adequate inspection of the below ground concrete portion of the system and will be subject to moisture and chemical degradation from the ground. It's time for the NRC to take responsibility for setting higher minimum standards that vendors must meet. Approving dry storage systems that cannot adequately be maintained or monitored and accepting vendor promises of future solutions puts us all at risk for both short-term (up to 60 years after reactor lifespan) and long-term. Decommissioning funds are limited. Southern California Edison plans to spend about $1.3 billion (yes, billion) for Aging Management at San Onofre. Once that money is gone, there is no other billion available. The $1.3 billion assumes nothing will go wrong with this inferior technology. Thin canisters have been loading since 2003 at San Onofre. The NRC materials engineers know that these canisters are particularly susceptible to chloride-induced stress corrosion cracking from the marine environment. The NRC engineers say similar components, such as the tank at Koeberg nuclear plan leaked from cracks in 17 years. The largest crack was 0.61" deep. Most canisters are 0.50" thick. San Onofre's are 0.625" thick. A Diablo Canyon two-year old canister has all the conditions for stress corrosion cracking -- low enough temperature for the magnesium chloride salts found to dissolve on the canister, which can initiate stress corrosion cracking. The NRC states once cracks initiate, they can go through the wall of the canister in 16 years. Learn more at SanOnofreSafety.org.

comment #1623670 posted on 2015-10-26 20:14:29 by Donna Gilmore in response to comment #1621541

How about promoting your Areva thick TN-24 casks instead? They can be inspected, repaired, maintained and have an early warning detection system, prior to a radiation leak and they are transportable without a separate transport cask? Your thin canister system provides none of these capabilities. Why do you sell inferior products to the U.S., but use the TN series in most of the rest of the world, including France and even at Fukushima? I see Areva sold the TN-24e to Germany. Would you sell these to the U.S. if you had a customer that wanted them? http://www.tes.bam.de/de/umschliessungen/behaelter_radioaktive_stoffe/dokumente_veranstaltungen/patram_2013/PATRAM2013-Neumann-et-al-paper.pdf

comment #1623602 posted on 2015-10-26 15:26:26 by Moderator in response to comment #1621283

The Chernobyl event involved an explosion and fire inside an operating reactor with a fully loaded core that spread much of the contents into the surrounding environment. Each dry cask holds a few dozen assemblies of the type used at San Onofre—nowhere near the amount of radiation or cesium released from Chernobyl. Because they are no longer fueling a reactor, the assemblies in dry storage have far lower heat and pressure than at Chernobyl, and there is no driving force to spread radioactive material like there was at Chernobyl, even if there were a crack in a dry cask. Stainless steel canisters are placed into thick concrete or concrete-and-steel overpacks. The canisters and overpacks work as a system to provide radiation shielding and confinement of radioactive materials. Some of these systems are thicker than all-metal casks. Canister-based systems are different from metal casks, which by themselves provide both shielding and confinement. How the spent fuel is shielded and contained are key parts of our review and will be the subject of future blog posts. Both types of systems must meet our strict requirements before we will approve them. The stainless steel canisters can be repaired or replaced as needed. The industry has successfully demonstrated this many times over with stainless steel reactor components in much harder to reach places. Licensees and the NRC will be alerted to a radiation release because of radiation alarms that are required by our regulations. In nearly 30 years of storing spent fuel in dry casks, this has not occurred. Mark Lombard

comment #1621604 posted on 2015-10-21 18:15:49 by Rod Adams (@Atomicrod) in response to comment #1621283

@Donna Gilmore Can you describe what you think might possibly leak out of a used fuel storage container? Are you aware of the helium leak detection systems used? Can you tell us the source of the "stress" that is required before chloride stress corrosion conditions are actually established and cracks begin aggressive propagation? I will agree with you in one area. I'm not a fan of below ground storage systems like the UMAX. I prefer to keep the valuable material above ground within easy control of inspectors. I also like keeping it visible to innovators so they continue to be reminded of its value as an emission free fuel source that could be used to power the world's energy needs -- even if everyone achieves an American standard of living -- for hundreds or perhaps thousands of years. Out of sight, out of mind does not work for me. Rod Adams Publisher, Atomic Insights Host and producer, the Atomic Show podcast

comment #1621596 posted on 2015-10-21 18:06:56 by Rod Adams (@Atomicrod) in response to comment #1621292

@CaptD You betray your agenda by saying that a few known issues that have developed in reactor containment buildings - all of which are more than 30 years old and still meet integrity tests - prove that the NRC and the thousands of engineers involved in the process of designing, building and certifying reusable fuel storage containers don't know what they are doing. How much time have you spent in materials science or engineering courses? Do you have any idea of the details procedures that are followed to fabricate and weld materials and the testing that is done to ensure the finished product is satisfactory? Do you understand how we don't simply trust that everything is fine and we continue to monitor and inspect throughout the service life of the casks? They are simple, rugged devices that hold material with reasonably consistent and predictable properties. They are engineered with wide design margins. The public has been in no danger from reusable fuel storage in the past, it isn't now and it won't be in the future. If you don't worry about the risk you assume from getting up from the couch or sitting at your dining room table, you should not spend any time or brain cycles worrying about used nuclear fuel storage. There are plenty of professionals who have done their job and continue to do their jobs at the vendors, at the NRC, and at the locations where the casks are in use. Rod Adams Publisher, Atomic Insights Host and producer, the Atomic Show podcast

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The Inspection Beat Goes on at Watts Bar Unit 2

posted on Thu, 22 Oct 2015 15:44:15 +0000

William Jones Director of the Division of Construction Projects Region II [caption id="attachment_6668" align="alignleft" width="480"]


An NRC Construction Resident Inspector watches TVA staff perform construction activities at Watts Bar Unit 2.[/caption] The NRC has issued an operating license to the Watts Bar Unit 2 reactor in Tennessee, bringing the U.S. to 100 commercial reactors. The plant's owner, the Tennessee Valley Authority, had restarted construction of the incomplete reactor in 2007 and updated its application for Unit 2's license in 2009. Since 2007, NRC inspectors have devoted more than 200,000 hours to supporting the agency's decision that Unit 2 qualifies for a license. There's more to do, however, before Unit 2 starts splitting atoms and generating electricity, and the NRC's going to keep an eye on all of that. The NRC's two permanent Resident Inspectors at Watts Bar have another full-time resident inspector and additional regional inspectors on site during this period. The inspectors and NRC management follow a well-defined process to monitor a plant as it starts up for the first time. One of the most obvious steps we'll monitor is when TVA loads the uranium fuel into the Unit 2 reactor. Once Unit 2 is ready for the initial reactor startup, the NRC staff will verify TVA has properly calibrated the instruments that monitor the chain reaction even at the lowest sustainable level. The plant operators must also show they can manually shut off the chain reaction. When all those steps are done, the NRC inspectors will watch the operators' actions as they let Unit 2 start splitting a very small number of atoms. The next step involves testing the reactor at very low power levels. The chain reaction is affected by changes in coolant water temperature and chemicals in the water. The NRC inspectors will examine the low-power tests to ensure the plant has properly measured changes in the reaction. As each of these tests is passed, Unit 2 will increase power in small steps and examine the reactor's response to abnormal events. For instance, if the plant's turbine stops running the reactor's heat has lost its normal outlet, so the reactor must shut down. The reactor must also respond properly to shutdown commands from alternate control stations and a simulated loss of power from the electric grid. If TVA successfully completes all of these steps, Unit 2 will be ready to add about 1,100 megawatts to the electric grid in the Southeast. During this entire process, the NRC's inspectors will also be gathering and analyzing the information needed to gauge Unit 2's safety performance under the agency's Reactor Oversight Process. This process will guide NRC actions at Unit 2 as long as the plant continues to operate.

Comments

comment #1622029 posted on 2015-10-23 00:53:59 by Engineer-Poet in response to comment #1621888

> How would you compare starting up a 1973 Mustang that has been meticulously maintained and upgraded during its storage?

comment #1622030 posted on 2015-10-23 00:56:17 by Engineer-Poet in response to comment #1621890

> What this proves is that the NRC spends far too much time and money checking and verifying too much compared to its predecessor, the AEC. The waste of time and money makes fossil fuels more economic in comparison, and those FFs are far more deadly than even a Fukushima-sized event per decade could be.

comment #1622028 posted on 2015-10-23 00:49:41 by Engineer-Poet in response to comment #1621891

> The NRC is obsessively concerned with public health, to the point of using a dose-response threat model (linear no-threshold) that is provably wrong and calculates increases in cancers when actual experience (including the survivors of the 1945 bombings in Japan) shows decreases from moderate

doses. Yes, the 1945 bomb survivor data shows actual improvements to health as a consequence of smaller radiation exposures. This insistence on over-protection decreases both worker and general health, and drives costs through the roof. That same data proves that any deaths due to the nuclear industry are dwarfed a thousand times by the lives it has saved by displacing other polluting energy sources.

comment #1621886 posted on 2015-10-22 14:16:57 by stock

What does the average full time equivalent cost at the NRC per year? probably 230,000 just guessing. I mean the gross cost, not the employees wage. Budget/number of employees is a fairly good way to do this. thank you.

comment #1621888 posted on 2015-10-22 14:21:42 by stock

I would venture to say that your "well defined process" is suited to a brand new plant that has just been built. How would you compare starting up a 2015 Mustang to and 1965 Mustang that has been sitting in a barn for 40 years?

comment #1621890 posted on 2015-10-22 14:22:45 by stock in response to comment #1621868

Probably more like $40M to $50M and that is just what it costs to say yes, you have a license. it is fairly absurd.

comment #1621891 posted on 2015-10-22 14:25:28 by Garry Morgan

No false claim that Watts Bar 2 is the first new reactor of the 21st century, when in reality it is an old design began 40 years ago? No mention that the license to operate was approved by the commissioners before final testing? www.timesfreepress.com/news/business/aroundregion/story/2015/may/28/nrc-authorizes-staffissue-unit-2-license/306589/ Never mind the cost overruns, the faulty parts and whistleblowers warnings of various faults. The plant will operate, regardless of fault and the amount of jail time for previous mangers of the project, hmm? No mention of radiation safety and monitoring of ionizing radiation levels. Maybe that is not your first concern, money and propaganda is first in this game, ehh? The NRC does not consider the health of the community and the cumulative effects of radionuclide emissions on health and low level radiation risk relating to cancer when licensing a nuclear facility. A healthy community free of ionizing radiation pollutants is the least of your concerns, particularly when the DOE's Oak Ridge Labs have dumped thousands upon thousands of pounds of radioactive uranium into the local East Tennessee environment for 70 years. What is a few more picocuries per litre of additional tritium, cobalt, strontium, iodine and other ionizing radiation pollutants in the "sacrifice zone?" health.state.tn.us/ceds/oakridge/ORHASP.pdf By the way, utilizing ORNL's data in the above linked report (page 8 and the link involving death by tornado on "livescience" within this paragraph) there have been near 6000 deaths as a result of tornadoes since the beginning of the atomic age (www.livescience.com/34559-tornado-deaths-infographic.html), there is a 1 in 500,000 risk that you will be killed by a tornado. The risk of death by cancer from radiation or chemical exposure is 1 in 10,000, Death by cancer as a result of chemical or radiation from the nuclear industry is 50 times greater. Utilizing nuclear industry data there have been in excess of 300,000 deaths from cancer as a result of the nuclear industry. East Tennessee has a high cancer incident rate according to the CDC' National cancer Institute, so does other areas around nuclear facilities. It would seem the NRC's failure to consider health of a community in its licensing process neglects people's health and supports the nuclear industry.

comment #1621868 posted on 2015-10-22 12:26:46 by richard123456columbia

Who pays NCR for the 200,000+ hrs of work maybe $20,000,000.00+

comment #1624196 posted on 2015-10-28 16:52:11 by richard123456columbia in response to comment #1623266

At the time the protocol for safety was to evacuate, even after Chernobyl evacuation. They now say to stay in place because it is not practical to move many people in short order, not for safety. At the time of

comment #1624201 posted on 2015-10-28 17:27:47 by richard123456columbia in response to comment #1623266

Radon gas causes lung cancer and other lung problems, in many areas like my location use a special sealant a round basement walls were they meet the concrete floor to keep radon gas out of houses. We have many substances

comment #1624212 posted on 2015-10-28 18:25:58 by richard123456columbia in response to comment #1623266

The plant was not designed for the fuel, if it was the dome to hold in place would not have blown as it was to hold against a explosion.

comment #1623932 posted on 2015-10-27 15:38:18 by stock in response to comment #1623266

LOL "anti nukers" should be put in jail for crimes against humanity says the promoter of radiation and heavy metals.

comment #1623933 posted on 2015-10-27 15:41:10 by stock in response to comment #1621890

"too much time checking" and yet in 2012, 11 near misses, and more and more violations at plants, 1000 stopped for drugs and alcohol in USA in just 2014. We DONT need less inspection, we all encourage the NRC to keep up steady inspection, it does increase safety. The cost is a matter of the complexity. Make it as simple as you can BUT NO SIMPLER, a wise man once said that.

comment #1623266 posted on 2015-10-25 16:28:25 by Engineer-Poet in response to comment #1622202

still Fukushima happened because it cost to much to prepare against known tsunamis in the past 100 years

The historical tsunami that would have flooded the plant was older than that.

allowed the use of fuel that the plant was not designed for

The fuel was designed for the plant.

the only way to allow NPP is to convince the public that the cost or risk is acceptable

We know that Naoto Kan's evacuation order caused more than 10x as many fatalities as leaving people to shelter in place would have, even under the worst-case projections of radiation exposure and hazard from radiation. We know that the replacement coal and oil burned in the nuclear shutdown killed far more people from pollution than even the worst-case projection from Fukushima radiation. The problem is that the Japanese are, on average, clinically paranoid about radiation. This makes it very difficult even to take sensible protective measures (like raising seawalls) without causing a panic, and if Fukushima proved anything it is that panics are much deadlier than small amounts of radiation. Part of the problem is that certain "experts" and members of the press have made careers out of stoking this paranoia. Japan may have to put those people in jail to get the facts to the public past all of their noise. Face it, if someone had PURPOSEFULLY caused a panic that killed 2000 or more, they would be headed for jail. Purposefully causing the paranoia that turns a nearly harmless accident into thousands dead should get the same.

the plants leaking causing the areas around plants to increase in unwanted radiation

Meanwhile, people spent their time sunning on thorium-containing beaches, soaking in radium-rich hot springs, breathing radon-filled air and coming away rejuvenated and refreshed. Yes, even in Japan.

comment #1623338 posted on 2015-10-25 20:42:00 by Concerned Public

That's a great looking inspector. Shows they care about their job and their well-being.

comment #1624194 posted on 2015-10-28 16:19:15 by richard123456columbia in response to comment #1623266

We have known about this and many more for longer then 100 years, we know today many that occurred thousands of years ago with new geology study. These tsunamis were well known when they built these plants all around Japan. See tsunami at this site close to Fukushima in 1896, one of many. https://en.wikipedia.org/wiki/1896_Sanriku_earthquake See more here. https://en.wikipedia.org/wiki/1771_Great_Yaeyama_Tsunami

comment #1622195 posted on 2015-10-23 12:38:36 by stock in response to comment #1622028

Your perpetual cheerleading for the nuclear industry is duly noted. However your comment is a king without clothes.....What was involved was "do they have a license or not". Higher radiation and less supervision is the cheerleaders answer, to try to make nuclear even close to competitive with other energy sources. How sad that we have sunk so low.

comment #1622214 posted on 2015-10-23 13:34:34 by Garry Morgan in response to comment #1622028

An additional comment on the article linked by the Engineer-Poet - Atomic Bomb Health Benefits by T. D. Luckey - To say there are health benefits from a nuclear detonation is deceitful in the least, it is a deceitful article engineered by a fanatical element within the nuclear industry - it is dangerous on many levels. If one or more who wrote the article, and those who subscribe to the notion that a nuclear detonation has positive health effects/benefits are involved in nuclear programs, they should be medically evaluated regarding suitability to remain in any nuclear program. The fact that Luckey is teaching this nonsense at a university is disturbing. Garry Morgan, U.S. Army Medical Department, Retired Former PRP Evaluator

comment #1622197 posted on 2015-10-23 12:39:48 by stock in response to comment #1622029

The point is never started....machines like to move. Any engineer with hands on experience knows that like the back of his hand. You cannot "inspect" quality into a product.

comment #1622198 posted on 2015-10-23 12:44:07 by stock in response to comment #1622028

The NRC is trying to comfort the nuke industry by throwing out LNT (admittedly a silly concept of using nuclear bombs on humans in a one time event from 1945 on one particular culture with vastly different eating habit than most of the world) and replace it with "hormesis" radiation is good for you. Thus denying powerful (i.e. broadbased) epidemiological studies which are showing the low dose radiation is indeed harmful in a statistically significant way. Here is one report you should read. https://miningawareness.wordpress.com/2015/10/21/new-study-of-us-uk-french-nuclear-workers-supports-linear-no-threshold-model-radiation-is-bad-for-you-increased-dose-is-increased-risk-hormesis-debunked-funding-from-pro-nuclear-govts-nuclea/

comment #1622202 posted on 2015-10-23 12:59:18 by richard123456columbia

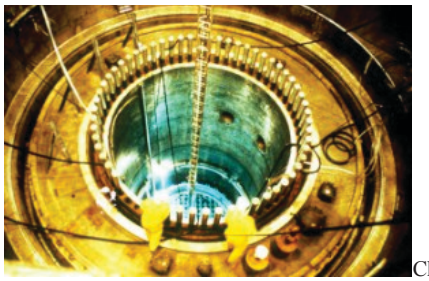
Fukushima plant designers, builders and inspectors from the USA spent all that money and time for safety and still Fukushima happened because it cost to much to prepare against known tsunamis in the past 100 years, allowed the use of fuel that the plant was not designed for, it happened because it cost to much to prepare against known tsunami s in the past 100 years, allowed the use of fuel that the plant was not originally designed for. It cost to much to protect against all probable events from mining to production so the only way to allow NPP is to convince the public that the cost or risk is acceptable, failing that just ram it through no matter what gets in the way. The trouble with risk today is we have seen far to many accidents and the plants leaking causing the areas around plants to increase in unwanted radiation, as time passes the radiation levels increase, how high is the tipping point when people will have to relocate. By then the cost will be to high and every one will be on their own to leave or stay, if there is a safer place to go to by then.

comment #1622203 posted on 2015-10-23 13:00:13 by Garry Morgan in response to comment #1622028

Wrong on all counts - "Even at low and very low dose categories, the SMR-H and SMR-O were significantly high for all deaths, all cancers, solid cancers, and liver cancers in male subjects, and for uterus and liver cancers in female subjects, respectively. The results show that, if the dose estimations of the dosimetry system 1986 (DS86) are correct, there are significantly increased risks of cancer among even survivors exposed to the very low dose level." http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2698250/ You are obviously another supporter of the radiation hormesis fallacy.

It's Mole Day for the Whole Day at the NRC

posted on Fri, 23 Oct 2015 15:26:54 +0000

 Chemistry fans often refer to Oct. 23 as “Mole Day,” since the numbers 10 and 23 are part of a basic constant in chemistry, the mole. This unit describes how many atoms exist in a given sample of any substance, so scientists use moles to simplify lots of calculations. For example, when an average nuclear reactor first starts up its core has about 120,000 kilograms of uranium in its fuel. A mole of uranium weighs about 238 grams, so a brand-new core has about 504,000 moles of uranium. A plant scientist or NRC specialist would base some core calculations on a more exact definition of moles in the core.

Comments

comment #1623883 posted on 2015-10-27 11:53:29 by Garry Morgan

> The "Public Pit Bull" brings forth a bit of info that extends out into other realms in our world of internet media about Avogadro Amedeo, the mole, the science and math of it all. http://www.wired.com/2015/10/mole-day-avogadro-didnt-even-know-avogadros-number/

comment #1622188 posted on 2015-10-23 11:55:03 by Public Pit Bull

> I knew about Groundhog Day but not Mole Day. Thanks for informing me. This 10 to the 23rd power is a mind-boggling huge number, a 10 with 23 zeroes added on. That huge number represents the number of atoms in just 12 grams of carbon. Incredible. This number is called Avogadro's number or constant. Did Avogadro determine it? Who was he?

comment #1622194 posted on 2015-10-23 12:35:06 by Garry Morgan

> Informative article, thank you. More about the 120,000kg of nuclear reactor fuel and "moles." When the120,000kg of nuclear fuel is finished with its' useful cycle, it becomes 264,000 pounds of highly radioactive spent fuel, suitable for various types of nuclear weapons, if processed or unprocessed (https://en.wikipedia.org/wiki/Nuclear_weapon_design or a dirty bomb https://en.wikipedia.org/wiki/Dirty_bomb) - "Used fuel will typically have about 0.9% U-235 and 0.6% fissile plutonium (almost 1% Pu total), with around 95% U-238." http://www.world-nuclear.org/info/Nuclear-Fuel-Cycle/Introduction/Nuclear-Fuel-Cycle-Overview/ Nuclear Reactors are critical to nuclear weapons materials. Those who claim a nuclear weapon cannot be built from spent reactor fuel are not telling the truth. Those who convey such nonsense are aware of their deceit or flunked nuclear physics and/or their class on nuclear materials security. To demonstrate the fallacy that spent nuclear fuel assemblies may not be utilized as a nuclear weapon I would suggest the reading of the study regarding nuclear criticality explosions at this link - http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/27/063/27063492.pdf A nuclear weapon is more than a fission device. "Mole" has several meanings, one of those meanings is that of an unscrupulous, disloyal person in an organization. You have described for us the amount of uranium which makes up 1 mole. It only takes 1 unscrupulous organizational mole in a high level position or a position which facilitates public deceit to destroy the credibility of an organization. In that realm, the nuclear energy industry has many moles facilitating deceit and destroying the concept of Human Reliability and public trust.

comment #1622253 posted on 2015-10-23 15:33:09 by Public Pit Bull in response to comment #1622211

> Holy Moly is right! Deceitful people in high places. Scary thought! Now even Japan admits to its first radiation death from the Fukushima disaster. The tally now from deaths due to the Fukushima disaster is well over 1,000 just from the adverse affects of being evacuated with no hope of returning to your home. Now we can add a death from radiation. Sadly this is probably the tip of the nuclear tombstone iceberg. Nuclear icebergs are now much more deadly than the iceberg that sunk the Titanic. High time for a moratorium on new nuclear plants in this country and no more license extensions on existing plants.

comment #1622224 posted on 2015-10-23 14:11:45 by gmax137 in response to comment #1622200

> around 119,997 kg

comment #1622211 posted on 2015-10-23 13:31:33 by CaptD in response to comment #1622194

> Holy Mole Gary — You are right on many levels and especially about saying that anything that is radioactive can be used as a weapon, if only as a threat to all those that want no part of living with "additional" radiation, that once scattered becomes almost impossible to get rid of, the wide spread radioactive waste now found all around Fukushima and the DU now located in many places in the middle east are both good perfect examples of what happens when Nuclear goes BAD. Thanks for your comment and I hope to read many more for you.

comment #1622200 posted on 2015-10-23 12:49:07 by stock

> using 120,000 kG as the starting point, what is the ending weight of the same core on a normal burnup cycle? TY!

Defining the Color of Oversight

posted on Tue, 27 Oct 2015 14:21:01 +0000

Lara Uselding Public Affairs Officer Region IV We regularly interact with various audiences from the media to the public and one question pops up often: Why does the NRC use colors to discuss issues found at a plant and what does it all mean?

The quick answer is that color-coding is a lot more understandable to people outside the agency than trying to interpret a probabilistic risk calculation of core damage frequency of 10-5. (The NRC uses probabilistic risk in assessing the potential safety significance of nuclear safety issues and plant performance indicators so inspections focus on those plant activities that could have the greatest impact on safety.) The colors we use -- green, white, yellow and red -- are used to prioritize the findings with greater safety significance. A more risk-significant issue is called a red finding and that will move an operating plant into our highest category for oversight followed by thousands of extra hours of inspection. An example would be a failure in a key safety-related component. A green finding might be given when an inspector finds that one of 10 bolts on a valve is looser than the others and should be tightened. While it may not sound like a big deal, the NRC has high standards for safety and a low threshold for issues. White and yellow findings are medium risk. In 2015, 428 green findings, 13 white findings and two yellow findings were issued. An example of a yellow finding was one given for seals that were not adequate to protect a room housing electrical equipment from flooding. An example of a white finding was for improper maintenance that resulted in a failed emergency diesel generator fan belt. Who decides the colors? Initially, the inspector determines the safety significance and assigns a tentative color. A green finding may not require additional analysis. But with the higher colors, there is a detailed assessment that could involve NRC risk experts and, in some cases, a discussion with the plant operator to obtain more information. The final outcome of the review -- evaluating whether the finding is green, white, yellow, or red -- will be used to determine what further NRC action may be called for, such as moving a plant up in the columns that comprise the NRC's performance "Action Matrix." When poor performance lands a plant in one of these higher oversight columns with increased inspections, it takes a lot of hard work to return the plant to a better standing.

Comments

comment #1623936 posted on 2015-10-27 15:50:46 by Garry Morgan in response to comment #1623873

> Please, an answer or a link to where the cumulative performance indicators and/or cumulative inspection findings may be found for each nuclear facility? Specifically interested in each facility's corrective action plans, CAPs, as it pertains to the NRC's probabilistic risk assessment as a cumulative or historical indicator of problems at the facility.

comment #1623917 posted on 2015-10-27 14:09:57 by CaptD

> The four color system is a sham. Especially the White Finding , which is really nothing more than "Now—Now don't do that again." When is the NRC going to "man-up" as some Pro-Nuclear Bloggers always say and start not only correctly identifying major screw ups by Nuclear Operators but also FINE them so that they and their industry cohorts stop "begging for forgiveness instead of asking for the NRC permission"? A perfect example of this is what the NRC did after SCE's RSG debacle at the San Onofre NPP. The operator SCE, got a White finding for sneaking in 4 RSG that NEVER should have even been allowed to be constructed, much less installed using the NRC CFR 10.59 "loophole" instead of the full NRC CRF 10.90 review process! Who is responsible for giving colored rating to the NRC itself, the answer is nobody? This is why even though the NRR, the ASLB, the NRC IG and many others outside the NRC first warned, then officially complained about #SanOnofreGate * the NRC just swept the entire thing under the rug to protect themselves, SCE, MHI and the entire Nuclear Industry from public ridicule. But as everyone knows, the dirt under the rug always does get discovered. Now separate investigations are being held and it will be interesting to see how the NRC handles them, since everything was so well documented. Redacted SCE, MHI and NRC documents will only make all involved more suspect, since San Onofre is now being decommissioned (which was conveniently done to stop the root cause investigation) so the claim of redacting documents to protect proprietary information is just a canard. * The new hashtag that will allow you to keep up to date on the ongoing investigation into the multi-billion $ SCE-CPUC ripoff.

comment #1623873 posted on 2015-10-27 11:36:08 by Garry Morgan

> Thank you for this informative article. 2 multiple part questions: 1) (a)How many findings at nuclear facilities have been issued over the past 5 years relative to Safety Culture failures as a result of corrective action program findings, CAP, not being followed up on to fix repetitive failures as identified on CAP's - (b)what colors were assigned to them? 2) (a)How many failures have been identified within the past 5 years relative to Safety

Culture where failures should have been placed on a corrective action program, CAP, but were not placed on the respective facilities CAP - (b)what colors were assigned to them?

comment #1624111 posted on 2015-10-28 11:26:33 by Garry Morgan

You are a regulator regulating the nuclear industry. Your color code system is an indicator of risk you assign to safety problems at each facility. Since you will not or cannot comment on the Corrective Actions Program cumulative issues which have been assigned a color on your scale, why as a regulator do you allow mediation in your regulatory functions? Are you unsure of your actions? Or do you allow the specific nuclear facility operator to determine, or participate in determining their own risk factor, color, which is assigned indicative of a failure. Reference mediation cases settled or not settled for the past 5 years, colorful charts: http://www.nrc.gov/about-nrc/regulatory/enforcement/adr/adr-trend-graph1.pdf end resolutions http://www.nrc.gov/about-nrc/regulatory/enforcement/adr/adr-trend-graph7.pdf

comment #1624122 posted on 2015-10-28 12:21:15 by Moderator in response to comment #1623873

The NRC does not issue inspection findings related to safety culture because there's no regulatory requirement related to safety culture. There is a Commission Policy Statement that communicates the Commission's expectation that licensees have a positive safety culture commensurate with the risks associated with nuclear power. However, the NRC does have a regulation governing quality of licensee quality assurance programs under which corrective action programs (CAPs) fall, 10 CFR 50 Appendix B, Criterion XVI. It states that licensees shall establish measures so that conditions adverse to quality, including failures, malfunctions, and deficiencies are promptly identified and corrected. For significant conditions adverse to quality, licensees shall assure that corrective action is taken to prevent recurrence. The NRC may issue a violation of Criterion XVI for several reasons: failure to identify a condition adverse to quality (and enter it into their CAP), failure to correct a condition adverse to quality in a timely manner, or failure to implement corrective actions to prevent recurrence for those failures considered to be significant conditions adverse to quality. Since January 1, 2010, there have been 475 Green findings, 13 White findings, and 1 Red finding associated with violations of Criterion XVI. Dan Merzke Project Manager

comment #1624142 posted on 2015-10-28 14:01:57 by Garry Morgan in response to comment #1624122

Thank you.

comment #1624137 posted on 2015-10-28 13:14:46 by Garry Morgan

How many nuclear power facilities have you issued RED Findings for pressurizer power-operated relief valves (PORVs) not meeting safety specifications of licensing criteria? Federal Register Notice on issue - http://www.gpo.gov/fdsys/pkg/FR-2015-07-17/html/2015-17510.htm A retired NRC employee states there are two dozen facilities which do not meet licensing criteria. http://pbadupws.nrc.gov/docs/ML1525/ML15259A016.pdf (ML1259A016). Are you going to give yourself a RED Finding for failing the citizenry of the United States of America by placing the financial concerns of nuclear corporations before the safety of communities? More than a decade you have been sitting on this serious problem without taking corrective action. This is a classic Human Reliability failure on your part as our regulator and the operators of the "two dozen" or so unnamed nuclear facilities which operate beyond their licensing criteria.

comment #1623913 posted on 2015-10-27 13:32:02 by Public Pit Bull

Defining the Color of Oversight In this recent NRC Blog, "Defining the Color of Oversight", unfortunately, the first color that came to my mind for NRC oversight was "Yellow". The NRC, in my mind, has become complacent and impotent. We have a cowardly agency that has been captured by the nuclear industry it is supposed to regulate. Recent examples are spelled out by the Union of Concerned Scientists in an article on their "allthingsnuclear" blog. This NRC article says, "…the NRC has high standards for safety and a low threshold for issues." I disagree. Almost every issue identified by the NRC has been classified as a "green" finding. Not a single issue was classified as a "red" finding (the most safety significant). Here are the numbers for 2015 to date provided by the NRC in this article: 428 green findings, 13 white findings and two yellow findings. These colors were chosen, the NRC says, because they are "a lot more understandable to people outside the agency". As a person outside the agency what does a color of "green" mean? I think it means "go", everything is hunky dory. Nothing could be farther from the truth. To the NRC "green" means we have found a violation of regulatory requirements but of the lowest safety significance. Therefore of 443 color-coded violations of regulatory requirements cited by the NRC, just this year, 428 were green findings. To this person outside the agency, this means the NRC is finding lots of violations but please consider them to mostly be "no-never-minds! Furthermore, this is in spite of the fact that very serious near-miss accidents have occurred at the Pilgrim nuclear plant, near Boston, and the Indian Point Nuclear Power Plant near New York City, just this year. No, the NRC is not a nuclear industry watchdog, they are a nuclear industry lapdog!

comment #1623895 posted on 2015-10-27 12:31:09 by Dan Williamson

Let the caterwauling begin.....

comment #1623884 posted on 2015-10-27 12:02:03 by Nikohl Vandel

Thank you. A helpful explanation.

comment #1624369 posted on 2015-10-29 13:00:59 by Garry Morgan in response to comment #1624348

Thank you for the reply. Are you saying there are no pressurizer power-operated relief valves which are installed which do not meet safety specifications as maintained by the retired NRC employee, who also states this is a long standing problem and involves licensing specifications. Or, are you saying that the pressurizer power-operated relief valves which do not meet specifications do not warrant a finding. Another possibility would be there have been no inspections related to this problem so no performance findings or inspection findings related to the deficiency have been found, if there is a deficiency. I doubt that since money and time have been spent, and is currently being spent on the issue as indicated by the notice and retired NRC employee documenting past activity regarding the issue of pressurizer power-operated relief valves not meeting specifications. Which is it?.

comment #1624348 posted on 2015-10-29 10:49:39 by Moderator in response to comment #1624137

After a search of Red findings, none were found related to pressurizer PORVs. There were three related to auxiliary feedwater. A search of yellow findings also found none related to pressurizer PORVs. There were two White findings, but not related to licensing criteria. One was for failure to implement corrective actions to prevent recurring failure, and other was for inadequate procedures which led to PORV actuation. Individual findings with final significance colors are available through the ROP public web page, by clicking on individual units. That page is here: http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/ Dan Merzke

comment #1624634 posted on 2015-10-30 18:43:58 by Garry Morgan in response to comment #1624348

Reference moderator comment: "If you have specific information regarding a plant not complying with their licensing basis, that information should be evaluated through our allegations process. Comments containing allegations cannot be posted to the blog. For more information on submitting an allegation, please go here: http://www.nrc.gov/about-nrc/regulatory/allegations/safety-concern.html " It is not my allegation, it is a retired NRC employee's allegation in an official document listed in your files on a pending issue. As such it is not my responsibility to investigate or take action, that is your job as it is an NRC retired employee filing the document which reports a failure to comply with licensing specifications. Reference: "A retired NRC employee states there are two dozen facilities which do not meet licensing criteria. http://pbadupws.nrc.gov/docs/ML1525/ML15259A016.pdf (ML1259A016)" Related to this Federal Register Notice. http://www.gpo.gov/fdsys/pkg/FR-2015-07-17/html/2015-17510.htm NRC DOCKET 2015-0167 Anticipated Transients That Could Develop Into More Serious Events. I'm not understanding why a critical part such as a pressurizer relief valve which is installed and does not meet safety specifications does not merit a red finding? Particularly since the valve has been in place for 10 years, identified as such and has not been replaced. This sounds very familiar, like in Browns Ferry 2010 familiar. In that situation INPO identified numerous valves while the NRC issued a Red finding for one valve.

comment #1624389 posted on 2015-10-29 15:32:06 by Moderator in response to comment #1624369

With respect to plant operation, pressurizer PORVs have surveillance requirements located in the plant's Technical Specifications that require the licensee to demonstrate the operability of those valves on a regular basis. NRC inspectors review licensee compliance with their Technical Specifications. Inspectors are concerned with ensuring all safety-related equipment is capable of meeting their safety function, which means they are concerned with the operability of all safety-related equipment. If a PORV were to fail a surveillance test, or be determined to be inoperable, inspectors will determine if there is a performance deficiency associated with the issue. If so, they will evaluate the significance and issue an inspection finding, if appropriate. There have been 31 inspection findings since ROP inception directly related to the operation of pressurizer PORVs: 29 of Green significance and 2 of White significance. The findings generally relate to inadequate maintenance, inadequate procedures, inadvertent opening of the PORV, etc. With respect to licensing, the staff conducts a Component Design Basis Inspection triennially that selects many safety-related components to review (which may include pressurizer PORVs) specifically focusing on the design basis and licensing basis of those components. However, no inspection findings related to the licensing basis of pressurizer PORVs have been identified. Dan Merzke Moderator Note: If you have specific information regarding a plant not complying with their licensing basis, that information should be evaluated through our allegations process. Comments containing allegations cannot be posted to the blog. For more information on submitting an allegation, please go here: http://www.nrc.gov/about-nrc/regulatory/allegations/safety-concern.html

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Counting the Costs on Advanced Reactor Reviews

posted on Thu, 29 Oct 2015 14:55:01 +0000

Anna Bradford, Chief Advanced Reactors and Policy Branch Office of New Reactors We're continuing to examine topics from the recent two-day public workshop we jointly hosted with the Department of Energy regarding non-light water reactor designs. One topic getting a lot of attention is the possible costs for NRC reviews of applications for these designs. [caption id="attachment_6691" align="alignright" width="371"]

Last month's workshop included presentations on the NRC's experience licensing non-light water designs, as well as discussions of proposed advanced reactor designs.[/caption] For instance, some people interpreted a DOE presentation on the Next Generation Nuclear Plant project as saying it costs $800 million to receive a final certification or license from the NRC. The bulk of that $800 million, however, falls outside of NRC fees and would be made up of the designer's costs to develop and test its design to ensure that it works as planned. In other words, the designer does not pay the NRC $800 million to review a reactor design. Looking at recent reviews of large light-water reactors, we see designers spent approximately $50 - $75 million for NRC fees to certify their designs. A recent Government Accountability Office assessment, "Nuclear Reactors: Status and Challenges in Development and Deployment of New Commercial Concepts" says costs can be "…up to $1 billion to $2 billion, to design and certify or license the reactor design." A different portion of the GAO report, however, pointed out most of these costs aren't attributable to the NRC review. The largest part of the price tag would be research, development, and design work to develop and test a new reactor design. We can also examine information from the public workshop on design development costs versus NRC review costs for the developer of a new small modular reactor design. The company said that of approximately $300 million in design investment to date, only $4 million of that amount (or slightly more than 1 percent) is from NRC fees for several years of pre-application interactions with the agency. Here's something to keep in mind: NRC review costs depend on the quality and maturity of the applicant's information. The NRC always aims to efficiently and effectively review designs. Incomplete or inadequate information will very likely increase costs, however, since the NRC will spend more time and effort getting the data necessary to determine whether the reactor could operate safely and securely. Everyone benefits from a common understanding

of NRC costs as we discuss the next generation of reactor designs. The NRC's website has more information on how the agency is approaching advanced and small modular reactor designs.

Comments

comment #1625064 posted on 2015-11-01 21:43:54 by Ram Subbaratham

> Anna: I was saddened to hear the sudden passing of Ralph and I connected the picture of him making a public presentation here projecting a very positive image of the Agency and in his passing makes him a real mortair. Indeed there are are devoted individuals like him to make this agency hold its shoulders still high. Ram P.S. The agency's organization chart needs a serious fix up. Looks rediculous showing Glen's and Brian's pics totally mixed up. Needs fixing, just a thought!!

comment #1624550 posted on 2015-10-30 10:29:24 by in response to comment #1624351

> NRC costs are 90% funded by industry in their application - as far as I know this isn't the case for other industries. Further, the government makes loan guarantees available but charges a high enough rate for them that sometime the industry chooses not to use it. The government does make money off of the nuclear loan guarantee program.

comment #1624376 posted on 2015-10-29 13:50:39 by

> Interesting take on things. 1) The Government is the people, any government cost is really a cost on the people 2) No nuclear "designer" or contractor or operator "pays" for anything. It is all ultimately foisted upon the backs of the rate payer. Even blatant mistake and lies like the "like for like" heat exchangers at San Onofre.

comment #1624351 posted on 2015-10-29 11:16:26 by CaptD

> Anna — Great article. I believe that "cost" numbers are always inflated because the Industry wants to complain about how much it costs them, hoping to get grants, subsidies and/or money from the Government. If they did a better job of listing the costs and describing what these costs were for, then the public would better understand who is paying for what and when. It always surprises me that since the Government often is involved in financing new reactors, nothing is ever heard about the Government recouping its money or receiving a return on its investment! I urge you to develop a better NRC accounting system that not only keeps track of costs but does so in an easy to understand format. This will allow everyone to better quantify the cost for new reactor R&D, designing specific reactors, the approval process and even the construction costs. This will not only keep taxpayers up to date on the overall cost of new nuclear but will allow fair comparisons between Nuclear and other forms of Energy Generation.

comment #1625196 posted on 2015-11-02 11:54:27 by Moderator in response to comment #1625064

> Thank for you noticing. We'll fix the org chart shortly. Moderator

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