

## OPSMPEm Resource

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**Sent:** Thursday, January 02, 2014 2:33 PM  
**To:** OPSMNPEm Resource; OPSMPEm Resource  
**Subject:** OPA Blog archival for November/December 2013  
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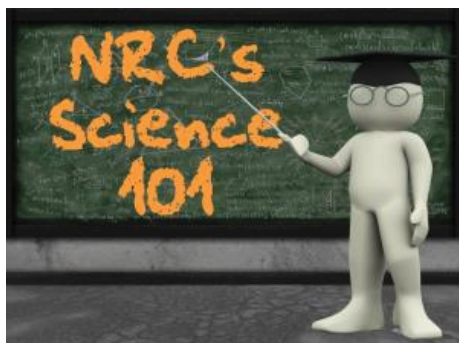
# U.S. NRC Blog

Archive file prepared by NRC

## NRC Science 101: What is Matter?

posted on Fri, 01 Nov 2013 14:01:35 +0000

*Suzanne Schroer  
Reliability and Risk Analyst  
Office of New Reactors*



In the last Science 101 [post](#), we talked a little about the law of conservation of mass. Again, that law states that mass can neither be created nor destroyed as part of an ordinary chemical change (or, for that matter, a physical change). In this post, we'll talk more in depth about what specifically "mass" is. Everything that exists is made up of matter. It has two fundamental properties: volume and mass. Volume simply refers to the space an object takes up. Depending on the physical state of an object, there are a couple ways to measure volume. If we are trying to measure the volume of a box, for instance, we would multiply the length of the box by its height and by its width. Let's say that we have a box with the following dimensions: length = 3 meters ("m"), height = 4m, and width = 5m. Based on those dimensions, our box would have a volume of 60m<sup>3</sup> (3m x 4m x 5m = 60m<sup>3</sup>). That is, again, a measure (in cubic meters) of how much three-dimensional space our box takes up. If, on the other hand, our object was a liquid, we could use a graduated cylinder (a scientific measuring cup) to measure the volume of our object. This measure would be reported in liters. Again, a liter is just a measure of



how much space a liquid takes up. For example, you can purchase soda in 2-liter bottles.

Since we've been talking a little about measurements, it might make sense at this point to distinguish between quantity and units. Thinking again about our example, the quantity we are trying to measure is volume. The unit we use to report this measurement is in liters or cubic meters. Now, let's now talk about the other fundamental property of matter -- mass. When we talk about mass, we are referring to how much "stuff" is in an object. To illustrate this, think about two pieces of candy, both of the same kind and both the same size, however one of them is hollow. The candy that isn't hollow has more mass compared to the hollow candy. Given that we often use scales to measure mass, you might think that mass and weight are the same thing. But they aren't. Mass is the measure of matter in a particular object. No matter where that object is in the vast universe, it will have the same mass. Weight, on the other hand, is a measure of how much gravitational force is exerted on an object. While the weight



of an object is proportional to its mass (the more mass of an object the more it will weigh), gravity varies according by where you are in the universe or even where you are on Earth—you actually weigh more, because there is a higher gravitational force, on the poles than you would at the equator. So, while an object will have a particular weight here on Earth, it will not have the same weight on the moon. It would, however, have the same mass both places. Now that we can determine if something is matter (if it has volume and mass), we can use another measurement, density, to determine what kind of matter a substance is. Density is the ratio of how much mass is in an object compared to the volume of that object. Density is calculated by dividing an object's mass by its volume. Think back to our box with a volume of 60m<sup>3</sup>. Let's say that our box has a mass of 240 grams (g). If that were the case, the density of our box would be 4 g/m<sup>3</sup> (240g / 60m<sup>3</sup>). Density is nothing more than a way of stating how much matter fits within a particular volume. Using the two pieces of candy, while both have the same size (or volume), the solid one has more

mass when compared to the hollow one and, as such, the solid candy is more dense (more matter in a particular volume) than the hollow candy. Because the density of a particular substance (something with a defined composition, such as pure copper), is the same for all pieces of that substance, regardless of size, density is often useful in determining the identity of a particular object. Once we've calculated the density of an object, we can compare that value to the known densities for substances to determine what substance we believe the object is. *The author has a bachelor's degree in Nuclear Engineering and a master's in Reliability Engineering.*

### Comments

comment #169703 posted on 2013-11-05 14:24:27 by Howard McShane

The second to the last paragraph has an error. In the first sentence you state the box has a mass of 240 grams. In the second sentence equation you used a mass of 120 grams. You have the correct answer, but the equation is set up incorrectly.

comment #167015 posted on 2013-11-01 11:07:18 by jeanstatonj

Very interesting article. I do wish you would include both SI units in addition to what we use here in the United States.

comment #171120 posted on 2013-11-07 15:25:56 by Moderator in response to comment #169703

That's correct; the parenthetical should read (240g/60m3). Thank you! Suzanne Shroer

comment #169096 posted on 2013-11-04 13:25:56 by bob

Lets, see, do all forms of carbon have the same density, like copper?

comment #169198 posted on 2013-11-04 16:58:25 by Moderator in response to comment #169096

No, not all forms of carbon have the same density. Diamond, for example, is more dense than graphite. Both are pure carbon, but they have different structural modifications because the atoms are bonded together in a different manner. Suzanne Shroer

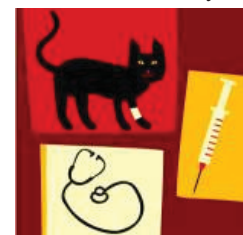
## Using Radioactive Materials to Help Fido and Fluffy

posted on Tue, 05 Nov 2013 16:15:53 +0000

*Betsy Ullrich*  
*Sr. Health Physicist*  
*Region I*

Radiation and radioactive materials aren't just used for human medical purposes. Animals that are sick or hurt benefit as well, in methods similar to those used by medical doctors. By far, the most common use of radiation in a veterinary practice is from x-ray machines. An x-ray machine uses electricity to produce low-energy radiation that passes through soft substances such as skin and muscle, but not through hard substances like bone or metal. So when a veterinarian suspects your dog has a broken leg, he uses an x-ray machine to obtain a picture, called a radiograph. Radiographs can also spot objects that animals have swallowed by mistake, such as lead sinkers lost in a pond or stream by a fisherman. While x-ray machines are regulated by state agencies, not the NRC, other activities performed by veterinarians do require an NRC license. One common radioactive material, technetium-99m or tech-99m as it's often called, is used to diagnose bone damage too small to be seen by x-rays. This type of diagnosis, called a "bone scan," is performed often in horses used for racing or jumping. The horse is injected with a tech-99m-labelled compound that acts like calcium and concentrates in the bones. The compound emits low-energy gamma rays that can be detected by a "gamma camera." Because most of the gamma radiation will come from the bony areas of the horse, a picture of the bone can be seen. Damaged areas will have high concentrations of the tech-99m, allowing the veterinarian to see what areas are causing

pain. The radioactive material decays away in a few days. The horse can then go home and be treated for the problems identified in the bone scan. Vets commonly use another isotope, iodine-131, to treat feline hyperthyroidism. This disease is caused by an overactive thyroid, and



cats with this disease become very thin and sick. One possible treatment involves surgery to remove part of the thyroid, so that the cat's thyroid activities are reduced to normal levels. Or a veterinarian can use radioactive iodine-131, known as I-131, to reduce thyroid activity. In this type of treatment, a cat is injected with I-131, which will concentrate in the cat's thyroid and emit gamma radiation that will damage some of the thyroid tissue and reduce thyroid activities to a more normal level. I-131 has an eight-day half-life, so cats treated with it must remain at the vet hospital for several days. Then owners must follow special handling precautions when they return home. While technetium-99m and iodine-131 are the most commonly used radioisotopes for treating animals, some large veterinary hospitals may also use lasers, computed tomography scans, positron-emission tomography scans, and magnetic resonance imaging. And animals of all sizes, from hamsters to horses, from owls to elephants, may need x-rays – thus benefitting from the careful medical use of radiation.

### Comments

comment #169982 posted on 2013-11-06 01:29:56 by john bowers

Is it true that in the aftermath of nuclear power accidents, pets often suffer the first, as they are closer to the ground, their hair acts as an air filter picking up dust, and they lick themselves?

comment #171060 posted on 2013-11-07 13:34:51 by Moderator

It's certainly possible that small animals would be closer to any ground contamination and, therefore, would have different radiation exposure and contamination issues than people. Animals that groom themselves, like dogs and cats, would ingest some small amounts of radioactive materials. This may be different for larger animals. The Center for Disease Control provides some recommendations for your pets during a radiological emergency at [http://www.bt.cdc.gov/radiation/selfdecon\\_pets.asp](http://www.bt.cdc.gov/radiation/selfdecon_pets.asp) Betsy Ullrich

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## NRC Continues to Be A Top Performer in the Annual Employee Work Survey

posted on Fri, 08 Nov 2013 21:25:08 +0000

*Mark A. Satorius*  
*Executive Director for Operations*

Every year, the Office of Personnel Management surveys federal workers for their level of satisfaction with their jobs, and their take on their agency's leadership and organizational culture. The NRC has traditionally scored well – often significantly higher than most other government agencies. And the NRC – even when faced with government-wide issues associated with pay and budgets – continues to rank



in the top performing agencies for [2013](#). We remain first in “Leadership and Knowledge Management,” second in “Job Satisfaction” and third in “Results-Oriented Performance Culture” categories. While the NRC remains above government-wide averages in most categories, we're particularly happy to report our results are: • higher than the government average in employees rating the quality of their work; • higher than the government average in employees knowing how their work relates to the agency mission; and • higher than the government average in employees believing the agency is accomplishing its mission. Also, eight in ten NRC employees recommend their organization as a good place to work – as compared to six in 10 employees government wide. And the NRC scored high on work/life questions that reflects how hard we work to attract and keep high-performing employees through such things as telework opportunities and alternative work schedules. But we also saw some indications of dissatisfaction among employees primarily related to pay, promotions, resources and training opportunities. These are issues across the federal government, as the NRC and other agencies confront the dual challenge of sequestration's impacts and pay freezes several years running. The NRC, for example, cut its external training budget in half – a decision that helped save the agency from having to resort to furloughs as an option for reducing the impact of sequestration. It's important to note that the FEVS survey is one tool the NRC uses to assess employee opinions and make key course corrections when necessary. The NRC's Office of the Inspector General also does a “safety culture” [survey](#) every few years, which we study closely and use as the impetus for needed operational and/or organizational changes. As we have in the past, we'll use the information in both the FEVS survey and the recent OIG survey to guide changes we feel we need to make to keep this organization meeting its important safety and security mission – and assuring the NRC continues to be an attractive employer for talented and dedicated professionals.

### Comments

comment #172803 posted on 2013-11-09 18:47:15 by

I can't understand this. As a nuclear engineer, I can never imagine working for Jackzo or Macfarlane. I don't even work for the NRC and it eats me up inside knowing that the likes of these can be appointed to run the NRC.

comment #174227 posted on 2013-11-11 20:01:24 by BobConnor

But really do people feel that way? How do we know this survey is not rigged? I once worked at a hospital where whenever there was a "best place to work survey" we were told by our supervisors that is we filled the survey out to be the best place to work we would receive days off we want, get assignments we want, and might even receive promotions but we had to be top-rated. If one of us told the truth - it was not such a great place to work - it would bring the score down and people would not get those things. So all the hype about this hospital being one of the best places to work was a total lie. Are NRC supervisors telling their people to "make us look good" to get the days off they want? Another example of this pressure is our high school had a music teacher who was nasty, she taught chorus. Yet students were writing letters to the editor of the town newspaper telling how wonderful she was. Those were the students getting A's in her classes. Meanwhile, the spring musical was the worst Brigadoon ever. When my father, who was hard of hearing, goes "Ugh, that Brigadoon" you know there is a bad problem. But the letter writers were lying. Again, how do we know

something like this is not happenning here?

comment #175228 posted on 2013-11-13 06:06:24 by BobConnor in response to comment #172803

But the idea is that you say they are wonderful to the whole world, you get your days off you want - or you get an A in chorus. Who cares if you're not telling the truth? Maybe those 2 said the same things about how wonderful their bosses were, hence why they are there.

comment #174904 posted on 2013-11-12 17:31:12 by BobConnor

I didn't mean incentives to take the survey, I meant being told what answers to write that would make the organization "look good". That is what happened at hospital I worked at and also what those students wrote about the music teacher. Though in that case, the public found out the truth by the way the musical sounded! What is being done to make sure those answers are the truth?

comment #174811 posted on 2013-11-12 14:45:52 by Chris in response to comment #174227

An NRC employee here. For myself, I can say that there has been no coercion or incentives by management to take the survey. If it helps, this is the email text we received asking us to complete the survey: 2013 Federal Employee Viewpoint Survey: Employees Influencing Change When it comes to knowing what it's like to work in the Federal Government, you're the expert. Your feedback helps provide a more complete picture of our Federal workforce. We can't get that complete picture without your wisdom, your insight, and your honesty. Please take a few moments of your time to complete the Federal Employee Viewpoint Survey and help influence change in your agency. click here to access your survey If the link does not take you directly to the survey, copy and paste the following into a browser window: <https://feedback.opm.gov/Community/.....> Please DO NOT forward this e-mail since it contains your personalized link to the survey. Answering the questions will take about 25 minutes, and you may use official time. While participation is voluntary, we hope you will respond. Your individual responses are confidential. Please reply to this message if you have any questions or difficulties accessing the survey, or call our Survey Support Center toll free at: 1-855-OPM-FEVS (1-855-676-3387). Thank you for taking the time to complete the survey.

## **“Reporting for Duty” Means Being Fit For Duty**

posted on Tue, 12 Nov 2013 18:35:38 +0000

*Melissa Ralph*  
*Fitness For Duty Specialist*

Watching over a nuclear reactor's controls or supervising nuclear power plant maintenance are jobs that need a person's full attention. Nuclear plant workers can't perform properly if they're overly tired, dealing with a medical concern or under the influence of drugs or alcohol. For those reasons, the NRC has strict "fitness for duty" requirements so companies can spot impaired workers and keep them out of the plant. Human factors were in the spotlight after the Three Mile Island accident in 1979. Afterward, we closely examined how human behavior affects nuclear plant safety. In 1989 the agency issued the first fitness for duty rules covering anyone with unescorted access to a nuclear plant, as well as workers whose duties affect safety, security or emergency preparedness.



Drug and alcohol testing is the program's most obvious feature. New hires are tested before they get access to the plant, and companies must also conduct random, unannounced drug and alcohol tests for workers. The tests must cover a specific minimum set of drugs (including marijuana, cocaine and amphetamines) and companies can expand the test for additional drugs. The rules also say workers can't drink alcohol for at least five hours before their shift, and blood alcohol concentrations as low as 0.02 constitute a "positive" test. (For comparison, driving while impaired in the United States requires a 0.08 blood alcohol level.) Plants must also test on-duty workers if they seem impaired or are behaving oddly, and workers must report anyone they think is impaired to management. Workers who feel impaired from being too tired must report themselves. Workers are automatically drug and alcohol tested and assessed for being overtired if they're involved in an onsite accident or event possibly caused by human error. Plants also test workers when they're working extended shifts. All of these multiple layers of testing help ensure plant workers are fit for duty. Plants give the NRC information from all



these tests regularly. Reviewing this information shows that most of the positive tests – two out of three – comes from pre-access testing. So these impaired individuals never get into the plant. In the other cases the worker's access is promptly revoked. What happens to a worker with a positive test? The first bans the worker from the site for at least 14 days; a second revokes the person's access for five years. If the worker has a third positive test or tries to cheat on a drug test the person is permanent banned from access to the site. Workers who want to restore access after a first or second positive test must go into a treatment program and have follow-up tests. In 2008, we updated NRC regulations to strengthen the drug and alcohol test requirements and to enhance how companies manage work hours to prevent worker fatigue. Since then, the overall positive test rates have remained steady at about 0.62 percent. Last year 179,135 tests spotted 1,114 cases where a worker was positive for either alcohol or a drug. We continue to examine new information about fitness for duty, as well as improvements in testing technology. We're working on proposed updates to our rules based on this information. You can read more about today's fitness-for-duty requirements on our [website](#).

## Comments

comment #179430 posted on 2013-11-19 14:37:13 by Anonymous in response to comment #179285

You are using the term "positive" more liberally than your regulations. The regulations do not say a first test result of 0.02 is an initial positive, all it says is that it requires a confirmatory test. And to my original point, if a worker was tested immediately after arriving at work and tested initial and confirmatory at 0.02, that would not result in the test being declared positive. To be positive immediately after arriving at work, he would have to test 0.04 (which is why you can't draw a parallel between 0.02 and the 0.08 driving limit).

comment #179285 posted on 2013-11-19 10:18:36 by Moderator in response to comment #178702

The NRC requirements use a time-dependent blood alcohol concentration (BAC) for an alcohol test to be confirmed positive and a sanction applied to the worker. A worker with a BAC of 0.02 percent or greater is identified as initially positive. The test is confirmed positive if a worker has a BAC of 0.02 percent or higher and has been in a work status for at least two hours or for at least 1 hour with a BAC of 0.03 percent or higher. A BAC greater than or equal to 0.04 percent BAC will always result in a confirmed positive alcohol test result. Melissa Ralph

comment #178702 posted on 2013-11-18 13:01:04 by Anonymous

To say that 0.02 constitutes a positive test and comparing it to a 0.08 standard for driving is not accurate. 0.02 is a positive test only if the person has already been at work for the past two hours, which means that either they consumed alcohol at work or they arrived to work with a BAC of at least 0.04. A person arriving at work and immediately testing at 0.02 would not be considered to have tested positive. I think saying that 0.04 is the nuclear standard for positive is far more accurate statement than 0.02.

comment #183095 posted on 2013-11-25 09:32:57 by CR in response to comment #174964

You obviously didn't read the article at all...typical anti-nuclear uneducated response.

comment #174964 posted on 2013-11-12 19:33:26 by John Bowers

What difference does it make if an employee is fit or not? In 2001 after 9-11 we were told there could be from 14,000 to 17,000 trained Islamic terrorists already infiltrated into the country. Just a couple platoons of such guys, thoroughly trained and heavily armed, would probably not have any trouble overpowering (killing) nuclear plant employees, armed or not, fat or not, able to run or not. They don't even have to get control of the facility, for that matter, just attack key components, which you the NRC can't really defend. Health of employees is a joke of a matter for discussion. Sorry to be unneighborly, but remember, all criticism is beneficial in pointing out things we need to know but may not see ourselves. Your guys' way of making a living, happens to involve an industry, which has the capacity to accidentally destroy the nation, or be used to deliberately destroy the nation. No amount of 'cheap' power is worth that risk. Again, in the odds-vs-stakes analysis, the odds are there and too high considering the stakes. If a coal plant has a problem, its a dust explosion or pile fire or mercury contamination from the ash heap. If a nuclear plant has a problem, half a nation become uninhabitable, forever. The commonsense thing that should have happened at Fukushima was the immediate dry-casking of all the common SFP contents. Nobody can even get that right.

comment #174862 posted on 2013-11-12 16:16:46 by Jim Creed

Great article. Brings back a lot of memories, working with Loren Bush as he championed this relatively unwelcome requirement. His tireless leadership and expertise transformed the program into an extremely valuable asset. Next, do an article on the BOP! Keep up good work

comment #174847 posted on 2013-11-12 15:50:24 by Rich Andrews

Considering that the most notorious of modern catastrophes such as the failure of the Space Shuttle Columbia and the crash of the Exxon Valdez have been attributed to human fatigue, the NRC Fitness for Duty Rule (10 CFR Part 26) is essential to safe nuclear plant operation. The NRC recognizes 8, 10, and 12-hour shift schedules and requires 2 to 3 days off per week depending on the type of work being performed. Armed security responders and reactor operators are among those with the most restrictive requirements. Not surprisingly, a 2004 study found that workers across a variety of occupations who worked 12-hour night shifts were more likely

than their day-shift-working colleagues to experience physical fatigue, smoke and abuse alcohol. As a result of fatigue science, it was found that by exposing experimental subjects to intermittent bright light during their night shifts and having them wear sunglasses on their way home and sleeping in very dark bedrooms, it was found that within about a week, they can shift someone's circadian rhythm to align perfectly with working a night shift and sleeping during the day. But that's unrealistic for most people. The problem is that adapting completely physiologically would leave you a nocturnal person, unable to sleep until very late on days off and being out of phase with regular day-working people. So researchers developed a compromise system in which people who work permanent night shifts adapt their circadian rhythms just enough to function well at night, but still be lively during their days off. It works like this: On his or her day off, the worker goes to sleep as late as possible (in the experiment, participants went to bed at 3 a.m. and woke up at noon). On a workday, he or she would be exposed to intermittent bright light, wear sunglasses on the way home from the night shift, then go to sleep as early as possible. So the difference between sleep on their night shift days and their days off would likely be less than what most shift workers have now. Tests showed that you don't have to be fully adapted to the night shift to get the benefits of shifting your circadian clock. However, it was pointed out that so far there is NO solution for workers who have a combination of night and day shifts because it's impossible to keep shifting their circadian rhythms to keep up with an ever-changing work schedule. It therefore falls on employers to assign shift work in blocks, giving workers enough time to adapt. You can't phase shift the circadian clock with a rapidly rotating shift schedule because the clock can't move that fast. The only thing you can do is symptomatic relief, meaning you'll have very sleepy people working at night, which is dangerous. In my reading of Part 26 there does not appear to be anything in the rule that requires nuclear plant workers to be assigned shift work in blocks so that workers are given enough time to adapt properly.

comment #174794 posted on 2013-11-12 14:10:17 by Rich Andrews

I have a concern about the trend toward 12-hour shifts for nuclear plant workers. Years ago 8-hour shifts were common, now, I believe 12-hour shifts are common. Has it been proven that 12-hour shifts are safer from a human performance standpoint? Operators love 12-hour shifts because they can get more days off in between shifts but aren't those shifts more demanding than shorter shifts? Also isn't rotating shift work, that is working nights, then days, then nights, tougher on workers than working straight shifts, i.e. all nights or all days? Bottom line, shouldn't fitness for duty requirements specify the best shift hours and the best shift rotations from a human biorhythms standpoint? Leaving working hours and shifts up to the workers may not be the best from a safety standpoint. I do not believe airline pilots or air traffic controllers work 12-hour shifts. Neither should reactor operators.

comment #174792 posted on 2013-11-12 14:08:47 by CaptD

Fitness for duty is just as important as protecting whistle-blowers from job harassment since both are related to power nuclear plant safety. Sadly harassment is much harder to spot since employees must call attention to what is happening and once they speak out the NRC responds in ultra slow motion which makes it easy for the Utility to sidestep any personnel issues.

comment #174781 posted on 2013-11-12 13:45:52 by Diane Smith

Human error will always be a problem. No way to get around it. :(

## Nuclear Fuel Facilities Prepare For Emergencies, Too

posted on Thu, 14 Nov 2013 14:58:26 +0000

*Michael Norris*  
Operating Reactor Licensing Team Leader

Nuclear power plants need uranium-based fuel to run, and while the NRC doesn't regulate mining of uranium ore, we do license and regulate the facilities that process uranium into reactor fuel. While these fuel facilities don't present the same concerns as a commercial power reactor, the NRC still requires them to plan for various types of events that might affect public health. All nuclear fuel facilities must



be prepared for fires, natural events such as hurricanes, and emergencies involving other hazardous chemicals. [Facilities in the uranium conversion and enrichment process](#) have to guard against a potential chemical hazard, not radioactive contamination. The uranium in these facilities is combined with fluorine, a very corrosive chemical. These plants' emergency



plans must be able to keep plant workers and the public safe if the uranium compound gets into the atmosphere. Facilities that create the fuel pellets have to be concerned with unintentionally collecting too much enriched uranium in a small space and causing a small-scale nuclear reaction, called a criticality. These plants' emergency plans must protect both plant staff and the public from the criticality's radiation. In their emergency plans, fuel facilities must address how they would respond to each of these potential accidents. They must describe the equipment that would be used, the responsibilities of various personnel, and how offsite response organizations would be notified in an emergency. In addition, fuel facilities must also participate in exercises to practice their response to simulated emergencies and indicate how they will train their employees to respond to emergency situations. The NRC reviews and inspects each site's emergency plan to make sure it meets federal requirements to adequately handle the types of emergencies that could happen at fuel facilities.

#### Comments

comment #179450 posted on 2013-11-19 15:22:04 by John Bowers

Sounds good. Still don't think you could have enough military around one to protect a NPP or SFP. Maybe there is technology for sending information from the future to the present and that's how destruction of one is actually prevented. Oh wait, obviously there is not because Fukushima is killing the Pacific Ocean, the arctic, and threatening all the genomes on the planet and nobody has prevented it.

comment #181816 posted on 2013-11-23 08:47:42 by halawiyat louz

Very good content. Thanks

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### Commission Sets Path Forward on Yucca Mountain

posted on Mon, 18 Nov 2013 17:22:12 +0000

*Dave McIntyre*  
*Public Affairs Officer*

The Commission today [directed](#) the NRC staff to finish the safety evaluation report (SER) for the Department of Energy's [Yucca Mountain](#) construction authorization application. This direction is the agency's response to the U.S. Court of Appeals for the District of Columbia Circuit, which in August ordered us to resume work on the application using approximately \$11 million in unspent money from the Nuclear



Waste Fund. The Commission reached this decision after obtaining views from numerous parties involved in the licensing process as to how it should proceed. By way of background, Yucca Mountain is the proposed repository for spent nuclear fuel and high-level nuclear waste, a site selected by DOE at the direction of Congress. DOE submitted its [license application](#) in June 2008, but two years later withdrew it after the Obama administration decided not to pursue the project. The NRC closed out its unfinished review of the Yucca Mountain application during Fiscal Year 2011. But a lot has happened since then, so it's important to clarify what today's action does and does not do. The Order issued by the Commission today DOES: • Direct the staff to complete and issue the SER left incomplete when the Yucca Mountain review was closed out; • Direct the NRC Secretary and other agency staff to enter thousands of documents from the old Licensing Support Network (LSN) into the NRC's ADAMS documents database so they will be available to the staff and eventually, assuming the availability of funding, to the public; • Ask the Department of Energy to complete a supplement to its environmental impact statement on Yucca Mountain as the NRC staff found to be necessary back in 2008. The Order DOES NOT: • Direct the staff to reconstitute the LSN, which was dismantled in FY 2011; • Restart the adjudicatory hearing on the application, which remains suspended; • Signal that a licensing decision is imminent. Before a final licensing decision can be made, the adjudicatory hearing must be completed, and the Commission must perform its own review. The Commission said it would consider the future of the LSN and the adjudicatory hearing once the tasks it directed today are completed and it can determine what tasks it can perform with whatever funds remain. The agency can only use money Congress has appropriated from the Nuclear Waste Fund for activities related to Yucca Mountain. The SER is the key technical document of the [NRC's review of the Yucca Mountain application](#). It was to be published in five volumes: Volume 1, essentially the introduction, was published in August 2010. Subsequent volumes were not completed before the review was shut down – they were eventually published as “technical evaluation reports,” which are less formal documents that don't contain regulatory conclusions about the proposed repository. Although a finished SER would contain those conclusions, it will not be equivalent to a licensing decision, as discussed above.

#### Comments

comment #179473 posted on 2013-11-19 16:08:52 by Dan Williamson in response to comment #178805

Rubbish. Loading a cask is not hazardous...I've loaded 11 of them, and I received a small percentage of my annual dose limit. It's not the utilities delaying the opening of Yucca Mountain....it's your federal government breaking the law. And everyone uses nuclear power, and hydro, and gas, and coal. It's one big grid.

comment #178734 posted on 2013-11-18 14:21:22 by Rich Andrews

Other countries with nuclear plants have dealt responsibly with high level waste by safely storing spent, but still highly radioactive, fuel in safe off-site repositories. The US has not. As a result spent fuel has piled up in over a hundred different locations in the US (i.e. at existing nuke plant sites). Spent fuel pools have been overloaded way beyond their original design basis. As a result an aircraft crash into any of these sites would result in an accident equivalent to a Chernobyl or Fukushima. There is an established no fly zone around these vulnerable sites which I am sure terrorists will respect. The delays associated with Yucca Mountain have resulted in a huge security threat for our country.

comment #179453 posted on 2013-11-19 15:28:17 by stock in response to comment #178697

It would be nice to see the rule of law return to our society and the way our government operates.

comment #179454 posted on 2013-11-19 15:29:47 by stock in response to comment #178805

Exactly....its like hey, if we wait 60 years that's 2 half lives, so 75% will be gone, and our money will be in the stock market during that time....so EXTEND THE RISK, so corporations can make more money.

comment #179452 posted on 2013-11-19 15:27:35 by stock in response to comment #179364

typical reply of those stuck in the nuke mode.....its tricky, so lets just keep using these nuke plants that blow up in our face and kill countries. It ain't my job to come up with the answers and smoothing out renewables, but there are plenty of answers to that and will vary depending on location, but to name a few, pumped hydro, hot salt systems, interconnected grids with the "stupid" controls removed (we don't need a smart grid, we just need a non stupid grid), battery farms (esp good after Elec car market really gets going and old batteries can be put to pasture), peaking generation (nat gas is great at that), flywheels, and other stuff still to be invented. Rather than have our best and brightest spend time abusing atoms, why not put some brainpower into the REAL solutions to our future.

comment #179444 posted on 2013-11-19 15:07:09 by Cory in response to comment #178805

The average 1100 MW plant is already paying in ~\$8,700,000/year to the DOE to fulfill their contractual obligation to remove the spent fuel. This was supposed to occur in 1998. It's 2013 and the plants are still paying in and still not receiving anything for their services. \$1,000,000/year would be a serious downgrade.

comment #181960 posted on 2013-11-23 14:34:47 by Dan Williamson in response to comment #181243

Noted. Keep us in line here.

comment #180663 posted on 2013-11-21 12:33:43 by stock in response to comment #180562

LOL, your argument if a false argument, based on irrelevance. They don't have to provide continuous power. My house AND business runs on all its own power during the highest power consumption during the day, and has excess power to cover the night. It is a no brainer, it is basic, it is cheap, it is clean. And there is no evacuation zone, and no hundreds of years of after effects and cost, no DNA damage, no cancer, no disease, no lies.

comment #180562 posted on 2013-11-21 07:27:19 by Dan Williamson

@stock, Nov. 19, 3:37pm Exactly NONE of which provide continuous power (except burning gas...at what price). All those pipedreams must first absorb power before they can release it. And you do not get all the MW back out that you put in. Pumped storage tops the field at 90% efficiency maximum...down to hydrogen generation at around 40%. And you forgot the rainbow dust.

comment #181243 posted on 2013-11-22 10:36:00 by Moderator

We very much welcome comments and discussion but they need to adhere to the comment guidelines, particularly being related to the post and not including personal attacks. If you wish to discuss a topic other than Yucca Mountain or spent fuel generally, please use the Open Forum section. Moderator

comment #181207 posted on 2013-11-22 09:24:15 by Dan Williamson in response to comment #180663

And the factories and refineries are going to run through the night on your "excess" watts? Fortunately, like you said, it "ain't your

job" to come up with the answers.

comment #181241 posted on 2013-11-22 10:31:44 by PavewayIV in response to comment #179444

Wrong, Cory. I - as in myself and every other extorted electric utility ratepayer - am paying \$8.7M/yr. to the crony-infested DOE for their self-declared tax. It's actually a small price to pay, considering that - even if the service was free - the DOE would do the wrong thing for the wrong reasons that had little to do with us peon radiation-absorption units \*or\* our safety. 'The plant', i.e. the utility, pays nothing and incurs NO risk - they never have and never will. You can ask any 87-year-old living in a cardboard box in a Fukushima gym today how much TEPCO has suffered. The burden is always passed on to all electric ratepayers whether they wanted or needed nuclear power. The only thing that tires me is the debate from either side about Yucca. Doing nothing is no longer an option. Being forced to chose between two bad choices is made all the worse by the debate. There is no 'right' decision at this point, except to export all power generation jobs to foreign countries and simply import the electricity. The AEC was never cost-effective, and nuclear was always a third-world-type power generation. The U.S. can no longer afford nuclear - not even with our fake accounting.

comment #181348 posted on 2013-11-22 14:31:07 by Bret W. Leslie, Ph.D.

Given NRC's mission includes both safety and security responsibilities I am not sure characterizing Volume 1 of the SER as "essentially the introduction" is accurate given that it is the one place where NRC reviewed security aspects of the Yucca Mountain license application. Both the physical protection plan (Chapter 3) and the material control and accounting program (Chapter 4) were reviewed in SER Volume 1 (<http://pbadupws.nrc.gov/docs/ML1024/ML102440298.pdf>).

comment #178697 posted on 2013-11-18 12:50:37 by Joffan (@Joffan7)

Issuing the SER is worth doing, but the court order directs the NRC to continue processing without the limits imposed by the Commission here. So you're trying to be half-legal, which is as meaningful as being half-pregnant. Just complete the application processing. It's the law.

comment #179059 posted on 2013-11-19 01:46:21 by stock in response to comment #178734

Agreed! Dry cask everything that can be. And shut them all down. We are living on borrowed time.

comment #183551 posted on 2013-11-26 01:33:34 by Anna

Nice posts keep up the good work.

comment #178715 posted on 2013-11-18 13:19:19 by CaptD

Salute: Well written and easy to understand! + One suggestion would be to include links to the documents you mentioned above so that readers could find them easily without having to wade through the NRC ADAMS system...

comment #179364 posted on 2013-11-19 13:02:15 by Dan Williamson in response to comment #179059

And replace 20% of the country's baseload round-the-clock 365 days-a-year rain-or-shine power with WHAT exactly? Come back when you have some real answers....not the same old utopian dream of running everything on rainbow dust and unicorn milk.

comment #178803 posted on 2013-11-18 16:46:44 by Moderator in response to comment #178715

We added some additional links. Moderator

comment #178805 posted on 2013-11-18 16:47:20 by richard123456columbia

My thoughts The government only does what the lobbyist want done. The nuclear industry do not want to move the fuel because of the cost, they will claim it is a high health risk for their workers and the public. They are playing a delaying game and finding ways to put the blame on others. The nuclear industry has had 50+ years to solve the fuel waste storage problem, they either do not want to or are not cable, if it is the later why are we allowing more plants. If it is that they are delaying it then charge each plant \$1,000,000.00 a year until they solve it safely because the cost must be much higher then the reserve monies at hand. This will protect the people that have not used nuclear power from paying for something they did not use. Where will we be when the owners of these plants go bankrupt and there is not enough money to store and baby sit the fuel for thousands of years. Anyone is there another reason, please inform me.

comment #189151 posted on 2013-12-04 04:48:02 by Priya

Thanks for the info. It is worth reading.

## Fifty Years of Laying Down the Law on Things Nuclear

posted on Wed, 20 Nov 2013 14:27:23 +0000

*Roy Hawkens  
Chief Administrative Judge  
ASLB Panel*

Fifty years ago, the U.S. was performing its first nuclear test at the Nevada Test Site, the Beach Boys introduced “surfin’ ” music, and three prisoners supposedly became the first and last to ever successfully escape from the prison on Alcatraz. And the first [Atomic Safety and Licensing Board](#) (ASLB) was created, and presided over a hearing on a proposed new nuclear reactor. ASLBs independently review the NRC’s actions to ensure they follow not only U.S. law, including the Atomic Energy Act and the National Environmental Policy Act, but also existing agency regulations and past precedent. A Board’s rulings can make the NRC staff reconsider technical and legal conclusions they may have reached on a matter, and can even mean denial of license applications or amendments. Board decisions, though, can be appealed to the five-member Commission. [caption id="attachment\_4793" align="alignright" width="300"]



ALSB Panel Chief Administrative Judge Roy Hawkens (center) discusses Board business with ASLB Panel Associate Chief Administrative Judge Paul Ryerson (left) and ASLB Judge Alex Karlin in the Board’s Hearing Facility at NRC Headquarters.[/caption] The original Atomic Energy Act in 1954 called for a single, legally-trained “hearing examiner” – today we’d say “administrative law judge” – to preside over legal and technical challenges to nuclear licensing and regulation. Later, when Congress amended the law in August 1962, the NRC’s predecessor agency was able to use, instead, an approach that more appropriately addressed the relevant legal, scientific and regulatory issues -- three-member Atomic Safety and Licensing Boards that included one or more judges with scientific expertise. The revised law’s section 191 generally calls for a Board to have two technical members and a chairman “qualified in the conduct of administrative proceedings,” a legislative term-of-art for “lawyer.” The Atomic Energy Commission initially staffed these Licensing Boards using a pool of four attorneys (three of whom were already hearing examiners) and 11 technical specialists in areas including physics, nuclear engineering and nuclear chemistry. The Board approach was put into practice in November 1962, for the Power Reactor Development Corp. case involving the Michigan-based Fermi I reactor. A week later the AEC appointed another Board to handle an uncontested construction permit case for a proposed Babcock and Wilcox test reactor near Lynchburg, Va. The Babcock and Wilcox Board conducted the first ASLB evidentiary hearing in Lynchburg on Dec. 10, 1962, and issued the first Board initial decision on Jan. 14, 1963. In April 1967, the AEC created a process by which individuals from a panel of judges are assigned to particular Boards. Today’s NRC refers cases to the ASLB Panel’s chairman, who selects judges from among the Commission-appointed pool of full-time and part-time members. All told, between November 1962 and today, these special judges have presided over some 900 cases, covering not only issuing and renewing nuclear power reactors licenses, but also nuclear fuel cycle issues such as uranium enrichment. The Boards’ work also examines licensing various medical, academic, and industrial uses of nuclear materials, as well as high and low-level nuclear waste disposal facilities (such as dry cask spent fuel storage); reactor and materials site decommissioning; and cases involving enforcement orders and civil penalties. As ASLBs have presided over all these cases, the Panel’s pool of experts has expanded beyond law, nuclear engineering, and physics. Over the years, Board members have had expertise in such disciplines as health physics, medicine, chemistry, marine and land biology, ecology and environmental science, oceanography, geology and geophysics, economics, and mechanical, civil, sanitary, and environmental engineering. The five-member NRC Commission appoints both the full-time and part-time Panel members for their technical and legal expertise.

### Comments

comment #180672 posted on 2013-11-21 12:44:40 by stock in response to comment #180336

yeah thats funny....create the data you need to justify the profits from running a old clunker in a dangerous location.

comment #181943 posted on 2013-11-23 13:51:02 by Diane Smith in response to comment #180792

Sen. Boxer brings up a legitimate concern: [http://a4nr.org/?p=3030&utm\\_source=feedburner&utm\\_medium=email&utm\\_campaign=Feed%3A+A4nrorg+%28a4nr.org%29](http://a4nr.org/?p=3030&utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+A4nrorg+%28a4nr.org%29)

comment #180792 posted on 2013-11-21 18:00:47 by hiddencamper in response to comment #180036

So.....when people say the plant isn't safe, and they try to prove it is, before they even collected data you say they are tampering the data? Please provide evidence that they are planning to tamper with the data to "justify" profits. The plant is safe, it meets all of its

requirements, its not an old clunker at all, it was brought online in 85, it's not even 30 years old. And the location is dangerous why? Earthquakes are only dangerous if you don't design for them. They did.

comment #181097 posted on 2013-11-22 04:57:12 by team4n10

The Board needs to take another look at Diablo Canyon in CA. By decreasing regulations for them regarding earthquake safety, they must be in violation of laws on the books somewhere. Diablo sets on several earthquake faults along the Pacific Rim.

comment #180336 posted on 2013-11-20 23:35:38 by hiddencamper in response to comment #180036

It's time to keep Diablo Canyon open. They are actively looking to get all the data they need to prove their seismic and structural capabilities are sufficient, and they have already been designed for standards far in excess of what they were required to withstand in terms of earthquake forces. They produce cost efficient, no emissions power, that is reliable and on 24/7. Diablo Canyon provides hundreds of high paying, high skill jobs, which are valuable to middle class workers. Unlike other sources of power, a large percentage of the cost for Diablo Canyon's energy goes to their workers, which in turn stimulate the local economy. Diablo Canyon pays millions in taxes, is a responsible operator, and should remain in service. I have never once seen that they are trying to avoid anything seismic, they are actually trying to go out of their way and do additional seismic studies to prove their capability, and anti-nuclear groups are attempting to stop them from this. Keep Diablo Canyon Going Strong!

comment #181315 posted on 2013-11-22 12:57:15 by CaptD

What is missing from this article is how regular people from outside the NRC can gain access to the ASLB and even more important, what determines the cases that the ASLB will accept, since "atomic" safety is such an important topic for not only all the people living near "atomic" locations but for the entire USA, since we can ill afford even one Fukushima type Trillion Dollar Eco-Disaster, since the Price Anderson Act maxes out at only about 12 Billion Dollars!

comment #181341 posted on 2013-11-22 14:11:49 by HingeThunder

If Diablo Canyon is "a (sic) old clunker", then things like Hoover Dam, Geysers Geothermal Plant, and Grand Coulee are ancient, ancient clunkers, because Diablo Canyon is newer than any of these. If being "a (sic) old clunker" is a concern to you, you'd be better off going after these other much more ancient "clunkers", which are much more dangerous to boot.

comment #181344 posted on 2013-11-22 14:21:33 by stock in response to comment #181315

Great comment Privatize the profit, socialize the risks. Typical Economic Hitman Move

comment #181345 posted on 2013-11-22 14:22:10 by Diane Smith in response to comment #180792

The plant sits on several earthquake faults, one of which runs right under a reactor. No one can predict with any certainty the magnitude of an earthquake along the Pacific Rim. PGE admitted to the CA Coastal Commission last year that should seismic testing show more retrofitting needs to be done, they are not planning to put the money into it.

comment #181389 posted on 2013-11-22 16:29:12 by stock in response to comment #181345

I think the testing should be done, and then a logical decision can be made to shut it down or invest the money.

comment #181371 posted on 2013-11-22 15:48:57 by Moderator in response to comment #181315

If the NRC is considering a significant licensing action, the agency will announce an opportunity for individuals or groups to intervene, or offer legal challenges to the proposed action. The ASLB will examine requests to intervene to determine two things: Could the licensing action affect the individual or group in a way that creates a legal right to participate; and Does the request include a challenge that the ASLB has the authority to rule on? If the answer to both parts is yes, then the ASLB will consider the challenge, up to and including a full hearing. Scott Burnell

comment #180045 posted on 2013-11-20 10:44:45 by stock

Whenever you have lawyer running a project, you can expect really large problems, and coverups.

comment #180036 posted on 2013-11-20 10:14:43 by earthnskystudio

The Board needs to take another look at Diablo Canyon in CA. By decreasing regulations for them regarding earthquake safety, they must be in violation of laws on the books somewhere. Diablo sets on several earthquake faults along the Pacific Rim. In light of Fukushima's dire ongoing problems, it's very questionable why the NRC would give them a "pass" regarding normal seismic regulations that other nuclear plants around the country must uphold. PG&E stated to the CA Coastal Commission during last year's seismic testing battle that they will not upgrade upgrade, even if seismic tests were to show they need to. So what conclusion can we come to other than the NRC has decreased the earthquake regulations on safety for them? It's time to shut down Diablo Canyon



completely.

comment #182101 posted on 2013-11-23 20:01:38 by hiddencamper in response to comment #180792

Well then it sounds like you have nothing to worry about if they were to perform their seismic studies. The plant will either be determined to be safe, or they won't pay to fix it and it will likely get shut down. Sitting on a fault line doesn't make a plant safe. It means you have to design for stronger earthquakes. The law of the land is that your plant must be capable of withstanding the worst environmental hazards your plant could be hit with. As long as their plant can do that, then it is safe, regardless of any other opinions out there. This logically makes sense, if it can withstand an earthquake, then it is safe against earthquakes. If Diablo does their seismic studies and finds they aren't designed for the hazards, then they will have to fix it or likely take the plant offline. In either of those two cases the plant is put into a safe place.

comment #183393 posted on 2013-11-25 18:57:48 by Diane Smith in response to comment #181389

We ratepayers have already been tagged for \$64 million for Diablo Canyon's seismic testing & should be refunded for it since the CA Coastal Commission denied their request Nov. 2012. No seismic testing. No relicensing. Why drag out a slow death?

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## Paving the Way To A Better Road

posted on Mon, 25 Nov 2013 14:08:33 +0000

*Betsy Ullrich  
Sr. Health Physicist  
Region I*

When you mention radioactive material, many people automatically think reactor or medical facility. They're not aware that radiation could be used right outside their door. One example -- portable gauges containing sealed sources of radioactive materials are often used during



construction or repair of roads. When paving a new road, construction crews need to know the amount of moisture in a roadbed and the density of the bed so the new road will last for many years. Portable gauges use small quantities of radioactive materials in sealed sources to make these measurements without damaging the roadbed. To ensure the roadbed is dense enough, a sealed source emitting gamma radiation is lowered from the portable gauge into a small hole drilled into the road bed, at a specific distance from the gauge. Inside the gauge, a detector measures the amount of radiation that travels through the soil from the bottom of the drilled hole. The denser the soil, the more gamma radiation will be absorbed by the roadbed material and not reach the detector. A computer program in the gauge calculates the density of the roadbed based on the amount of radiation that reaches the detector. Similarly, a sealed source containing a small amount of radioactive material that emits neutrons can be used to determine the amount of moisture in a roadbed. Neutrons are absorbed by water in the roadbed material, and scattered by mineral and other solid materials. The neutron source remains inside the portable gauge, and a shutter is opened to allow the neutrons to be emitted against the road bed surface. A detector inside the portable gauge detects neutrons that are scattered back from the road bed surface. This is why such source-detector combinations are referred to as "backscatter" devices. In this case, the more moisture in the roadbed, the more neutrons are absorbed and fewer neutrons are available to be scattered back into the detector. A computer program in the gauge calculates the amount of moisture in the roadbed material from the number of neutrons detected by backscatter. Although there are other ways to obtain this information, they may take more time, or require more invasive methods to obtain samples for analysis. The radiation from these sources is not detectable even a few feet away, as long as the devices are used as designed. Portable gauges must be used by workers trained in radiation safety and use of the devices. And, workers using the sources are required to keep the gauges with them at all times, unless they are locked or secured as required by regulation. NRC and [Agreement State](#) inspectors periodically inspect the companies that are licensed to operate portable gauges to ensure they're being used safely.

### Comments

comment #183144 posted on 2013-11-25 11:12:10 by Joffan (@Joffan7)



Interesting, thanks.

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## Thanksgiving Day Wishes From the NRC Family to Your Family

posted on Wed, 27 Nov 2013 13:54:59 +0000



The entire NRC family would like to extend our best wishes to all for a safe, warm and wonderful Thanksgiving Day. We hope you are able to enjoy time with loved ones and to reflect on the many things for which we all can be grateful. Our offices will be closed for the federal holiday on Thursday, but open again for business on Nov. 29th.

### Comments

comment #184624 posted on 2013-11-27 11:36:16 by Rich Andrews

Thank you for your Thanksgiving wishes. We all have much to be thankful for. US nuclear plants are safer today than at any time in our history. Proactive nuke plant changes @ US plants instituted after TMI, Chernobyl, and Fukushima have improved safety and the emphasis on safety. Looking ahead though I am concerned about our nuke plants in two key areas. A. Lack of a safe, off-site repository for spent, although highly radioactive, fuel. Other countries with nuclear plants have dealt responsibly with high level waste by safely storing spent, but still highly radioactive, fuel in safe off-site repositories. The US has not. As a result spent fuel has piled up in over a hundred different locations in the US (i.e. at existing nuke plant sites). Spent fuel pools have been overloaded way beyond their original design basis. As a result an aircraft crash into any of these sites would result in an accident equivalent to a Chernobyl or Fukushima. There is an established no fly zone around these vulnerable sites that, I am sure, terrorists will respect. The delays associated with Yucca Mountain have resulted in a huge security threat for our country. B. Inadequate flood protection for nuke plants that may be subject to a tsunami-type event. This concern not only applies to nuke plants on or near our oceans, but also to plants located on the Missouri River downstream of vulnerable earthen dams. The failure of even one of these upstream dams would result in a tsunami event for downstream nuke plants, Fort Calhoun and Cooper Nuclear Stations. The NRC estimated that such an event would result in a tsunami wave of nearly 50 feet above the elevation for which Fort Calhoun is designed to withstand. Although these nuke plants are designed to withstand a terrorist ground attack or a design basis earthquake, the upstream earthen dams are not. An earthquake at, or a terrorist attack on, an upstream earthen dam could lead to dam failure resulting in a catastrophic accident at these plants, especially during times of high reservoir levels at these dams. I believe the NRC is well aware of these concerns but there appears to be no real sense of urgency in their resolution. I will be thankful when meaningful and prompt action is taken to ensure the safety of the public.

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## New Op Center Makes NRC Response More Efficient

posted on Mon, 02 Dec 2013 14:11:57 +0000

*Bill Gott  
Chief, Operations Branch  
Division of Preparedness and Response*

The NRC's Emergency Operations Center in Rockville, Md., is the hot spot for agency responders during real events and exercises. It was there that experts convened when planes became terrorist tools in 2001 and when Fukushima's reactors began to fail after a massive tsunami in 2011. It's also been hub for countless exercises and smaller events that pull together trained responders from throughout the agency to staff teams responsible for monitoring reactor responses, planning for protective actions, and staying connected with stakeholders ranging from other federal agencies to Congress and the media. But the Op Center had issues as a work space. It was cramped, with low ceilings and a strange use of space to accommodate the "wagon wheel" design, with all teams arranged around the decision-making Executive Team. It was also a design based on people moving around and passing paper. As far back as 2008, the NRC began looking at options for redesigning and/or moving the Op Center. With the impending construction of the 3WFN building, the decision was made in 2010 to move the center across the street to the new addition to the headquarters complex. [caption id="attachment\_4815" align="alignright" width="630"]



A view of the agency's new Op Center,

with the Executive Team on the left and the Reactor Safety and Protective Measures teams on the right, seen here during an exercise. [caption] While the footprint is about the same in terms of square feet, the new center has a large open area and a better design with a more efficient use of space. A large "video wall" with six projectors and 80 linear feet of room allows maps, status information, chronologies, task check lists and news feeds to be presented simultaneously for all responders to see. LED lighting provides a better spectrum, saves energy and is easier on the eyes for responders often working 12-hour shifts during real emergencies. The new space also relies on web cams and head sets for responders to give briefings to the Executive Team. This reduces foot traffic, noise, and the need for team leaders to be away giving briefings when they are needed to be near their response staff. The Executive Team members – the agency's top managers – have their own laptop computers to stay better connected via email and the internet to response information without relying on the "transfer of paper" that was the norm previously. Separate spaces for the support teams include an expanded room for the Federal Liaison Team, which has increased its members since Fukushima. The room has space for liaisons from other federal agencies to be part of the NRC response. And there is a secure conference room and safeguards team room for discussion of classified information. Also in the new Op Center is space for the Headquarters Operations Officers – key personnel who staff the center 24-hours-a-day as the link between the agency and licensees. The Op Center's location in the basement of the new building is an additional plus. It has no windows and is considered more secure and robust in the event of a severe weather event that might have rendered the former Op Center temporarily unusable. All in all, the new Op Center helps the NRC be ready to respond to any incident involving its licensees.

#### Comments

comment #187992 posted on 2013-12-02 10:25:44 by Ace Hoffman (@AceHoffman)

Where are the identical redundant op-centers located? Without them, this is vulnerable to a single attack. At least I can presume the data is kept in multiple places and there are multiple completely independent electronic channels into this complex? As one of the top targets for Internet security breaches, if not THE top target (and you thought Congress was the only group that desperately wanted to see your top-secret records...) it seems gravely irresponsible to put all your eggs in one basket. Looks awesome, though. :) Maybe if your op-center was located in the basement of the Pentagon (which appears to be able to survive an airplane strike) I'd feel comfortable with there only being one center and it being all-electronic, but with ~30 years in the computer biz, I'm just not. You need two, at least, and maybe they should be based on completely different, non-redundant technologies. I do have a related question about data: Now that all the information is in digital form (at last!), what happens when a congressional investigator wants to explore the records? Surely the trail of their research would NOT be available to NRC staff, right? In other words, Congressional investigator's clearances would be higher than your own, is that correct? So there simply would be no way for NRC to search the Congressional investigator's person, or their computers, since the data would all be encrypted with passwords you wouldn't have? We've learned from Fukushima that one mistake on the part of the nuclear industry could cost the host country a trillion dollars or more. We also learned -- again -- that mistakes are bound to happen anywhere, especially in a time of crises. Mistakes in the design, placement, and operation of the General Electric Mark 1 and 2 style reactors are the "root cause" of the ongoing disaster in Fukushima. Grave mistakes continue to occur, such as shoddy construction of the 1000+ radioactive effluent holding tanks. There are nearly two dozen similar GE reactors operating in America, and some of the problems Fukushima revealed cannot be cost-effectively resolved. For example, adding larger vents to the GE Mark style reactors is generally considered cost-effective (except by the utilities and the Congresspersons who support them), but the even-better solution of adding an adequate cooling system so that the vents would never be needed is NOT considered cost-effective, so is that why it's not required? What if Davis-Besse's rusted-out reactor pressure vessel head's stainless steel liner had ruptured in 2002, after the RPVH itself had rusted away (the liner was bulging out when the problem was discovered)? Or what if Monticello's inoperable (for 30 years) Emergency Core Cooling System was actually needed at some point (shipping bolts on the baffles were never removed, which would have blocked the coolant flow completely)? Would the most sophisticated OP Center in the world have been able to stop a meltdown? How many reactor companies have similar Op Centers, or can even communicate with you fully electronically if needed? Shouldn't they all be required to immediately match your capabilities, just in case of an emergency? Shouldn't the "fleet" owners (such as Exelon and Entergy, etc.) be required to build their own Op Centers, which you could take over if anything were to happen to yours? It might save America a trillion dollars or more, so I think it's worth considering. Does the Op Center have the ability for ANY reactor anywhere in the world to call for help? If not, why not? If the guys in Chernobyl in 1986 had been able to just call you guys up and say, "hey, we want to do this experiment, does it sound safe?" you could have told them it didn't, right? Of course, with no solution to the waste problem, and none in sight, shutting the plants down is still the prudent thing to do. If only we had figured THAT out 65 years ago when the "intractable" problem of the waste first appeared, but it's never too late to stop making a mistake, and making nuclear waste is a mistake.

comment #188165 posted on 2013-12-02 16:22:24 by Moderator in response to comment #187992

The NRC has a second, back-up Operations Center in a geographically separate location. Moderator

comment #189291 posted on 2013-12-04 08:29:48 by Dan Williamson

Perhaps there should be a limit on rhetorical questions per post.

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## NRC Meetings “Go Viral”

posted on Thu, 05 Dec 2013 14:56:28 +0000

*Lance Rakovan*  
*Senior Communications Specialist*

Well, not viral, actually. But beginning this month, there is a new way to hear about our upcoming public meetings. By signing up for our new public meeting Twitter feed, you will get tweets whenever we schedule a public meeting, as well as if we cancel or change meeting details. The tweets will go out the same time a meeting notice is posted or changed and will include a link to a webpage that has details about the meeting. You can sign up to receive NRC’s public meeting tweets by registering for twitter or logging into your [Twitter](#) account. In the search field type NRCgov\_PMNS. The NRC’s public meeting account will be listed and then simply click the “Follow” button underneath.



Speaking of public meetings, for years, NRC has handed out a Public Meeting Feedback Form at all our public meetings. We wanted to know your opinion about what went well, as well as any suggestions you had about how we could make our meetings better. But, also beginning in December, you’ll notice a new and improved feedback system. We’ll still have the old hard copy form. You can still use that and hand it off to an NRC representative or drop it in the mail. But now you’ll be able to give feedback directly through your smartphone or your computer. Each form will have a Quick Response (QR) code. By using any of the free QR code reader apps that are available, you can scan the code and go directly to our feedback page right through your phone. You can then fill out the online form, which only takes a few minutes. You can also provide feedback through a computer by going to our [Public Meeting Schedule](#) and pressing the “Meeting Feedback Form” link for the specific meeting, or pressing the “[... more]” link for a specific meeting and then pressing the “Meeting Feedback Form” link on the “Meeting Details” page. Last NRC fiscal year (October 2012 – September 2013), we received only 76 comment forms. We held over 1,000 public meetings during that time. We do read every card and consider every comment. We also analyze the responses we receive each year to look for trends. In some cases, past comments have affected where NRC holds public meetings and how the meetings are conducted. With these improvements in hearing about meetings and giving us feedback about them, we hope you’ll find it easier to participate and more inclined to

give us your two cents.

### Comments

comment #194532 posted on 2013-12-10 10:07:13 by Moderator in response to comment #190392

Thank you for your input on meetings While we typically, do a thorough testing of all AV equipment before a meeting, that doesn’t mean things won’t go wrong, especially if we are using equipment at a non-NRC facility. The best thing to do is provide feedback using our form for that particular meeting. There is no guarantee the problem won’t happen again at the next public meeting, but we will certainly do our best to address it. Lance Rakovan

comment #190392 posted on 2013-12-05 13:01:19 by CaptD

What the NRC needs to do is post a link at the end of every meeting so that those that want to can fill out a form and/or list complaints about that specific meeting that should be fixed before the next NRC meeting! Items like these need to be fixed ASAP: Meeting notices without specific link to that meeting Lousy internet feeds Poor meeting audio over the internet Being dropped from the "ask a question" phone queue. Having the moderator say there are no more questions when you are on hold. Having to mute the computer audio, if you are waiting in the phone queue, because the audio is out of sync.

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## The NRC: Reducing Our Environmental Footprint With Sustainability Actions

posted on Mon, 09 Dec 2013 16:32:53 +0000

*Ian Fisher*  
*Sustainability Manager*

The NRC is committed to reducing the environmental impact of our agency by operating in a more sustainable way. We do this by conserving energy and other resources, and cutting the emission of gases that trap heat in the atmosphere, also known as greenhouse gases.



Once again this year, we met or beat our targets for improving our environmental footprint. We send the White House a report each year outlining our efforts. Our [2013 Sustainability Plan](#) reports our progress over the last fiscal year and our vision for continuing to meet and exceed federal goals. Our best performance was in improving the footprint of our facilities. We reduced their greenhouse gas emissions in FY2012 by 31 percent over our FY2008 baseline. We can also report a 41.5 percent decrease in energy intensity. Our agency diverted 71 percent of our waste by recycling. And we now include a clause in our contracts to encourage good environmental practices among NRC contractors. Our agency also cut by 14 percent emissions we do not directly control, such as from commuting and business travel. To improve these emissions going forward, we plan to make employees more aware of the options for using teleconferences, telework, flexible work schedules and transit subsidies. We will also promote the use of mass transit. To save water, we continue to install low-flow bathroom fixtures in our buildings. We also continually look for ways to reduce water usage associated with our heating and cooling systems and our irrigation system. We hope you'll take a minute to review our latest [update](#).

#### Comments

comment #193727 posted on 2013-12-09 11:38:52 by David Andersen

While it's nice to know that the NRC is reducing it's "Environmental Footprint," most visitors to this blog are more interested in nuclear energy related issues.

comment #195421 posted on 2013-12-11 14:41:04 by Rich A in response to comment #194763

Yep, nuke power has been around for decades and the highly radioactive has been stockpiled in overloaded spent fuel pools around the country. It is totally irresponsible not to already have a safe central repository to place this waste. As it is it presents a tempting terrorist target. Nuke plant after nuke plant was built with total disregard for safely taking care of the end product. No other industry operates this way and neither should the nuclear industry.

comment #196974 posted on 2013-12-13 12:18:50 by Rich Andrews in response to comment #196412

Good points hiddencamper! The NRC as an agency of the federal government is responsible for ensuring nuclear reactor safety. When they fall down on the job and do not even raise a fuss over valid national security issues you know they are being throttled by the government and the administration. Like the rest of us we are just pawns to a government who doesn't own up to its responsibilities to protect the public. Other countries have acted responsibly when it comes to taking ownership of nuclear waste and disposing of it safely. Our country has not. Very typical of the lack of leadership our country exhibits on other issues as well.

comment #193773 posted on 2013-12-09 12:52:18 by Garry Morgan

Even though nuclear power is high risk, expensive, not green-clean (as falsely claimed), nor a renewable-sustainable resource - it is good to see our nuclear regulator utilizing energy efficiency and sustainable energy resources to reduce their carbon footprint.

comment #193804 posted on 2013-12-09 13:26:36 by Rich Andrews

THE NRC HAS IGNORED A GREAT RECYCLING OPPORTUNITY The NRC touts the fact that "Our agency diverted 71 percent of our waste by recycling." While that is noteworthy it is just within the NRC itself. The NRC has totally neglected recycling high-level nuclear radioactive waste currently stored in vulnerable spent fuel pools around the country. Other countries with high-level nuclear waste recycle it by reprocessing the spent fuel. This allows the unused portion of the "spent" fuel to be recycled back as new fuel for nuclear reactors. In so doing a smaller amount of remaining radioactive spent fuel can then be permanently stored in safe, typically underground, repositories. The NRC not only does not allow the US to recycle nuclear fuel they have dragged their feet on creating a safe permanent repository for US nuke plant fuel. In the meantime spent fuel is piling up in spent fuel pools around the country in amounts that far exceed the amount anticipated in the original spent fuel pool designs. This has created a huge security



threat for our country in that an aircraft crash into just one of these spent fuel pools could result in a Fukushima-type catastrophe. If the NRC would either lead (or just get out of the way) our nation could establish a safe repository at Yucca Mountain and then allow for used fuel recycling. Then the NRC would really have something worthwhile to brag about!

comment #193919 posted on 2013-12-09 16:53:38 by Joffan (@Joffan7)

You could do a thousand times more for the environment by enabling easier nuclear power build. Instead of which, for example, the NRC has been roadblocking assessment of Yucca Mountain, failing to argue the case for Calvert Cliffs and (most wickedly) driving San Onofre to closure directly through regulatory dither

comment #194763 posted on 2013-12-10 16:43:36 by hiddencamper in response to comment #193773

Nuclear produces no fossil emissions (not just carbon) during operation. All of its waste is maintained securely on site until reprocessing or long term disposal is performed. It is long long term sustainable (see David MacKay's book [withouthotair.com](http://withouthotair.com)), relatively low risk in comparison (see NASA's look at deaths reduced by nuclear power in the world), and it has some of the most stable low cost energy production out there.

comment #196412 posted on 2013-12-12 18:39:03 by hiddencamper in response to comment #194763

You mean the industry who was told that they are not allowed to own the fuel material or dispose of it because of proliferation concerns? Nuclear plants do not own their fuel, they pay to use it, but it does not belong to them. Blame your government if you don't like how that is working out. They made a contract that they would take possession and haven't, and as a result billions of dollars have been and will continue to be wasted due to inaction on waste policy, along with the complete halting of breeding, transmutation, reprocessing, all things which would allow us to get up to 20 times more energy out of the same volume of waste product.

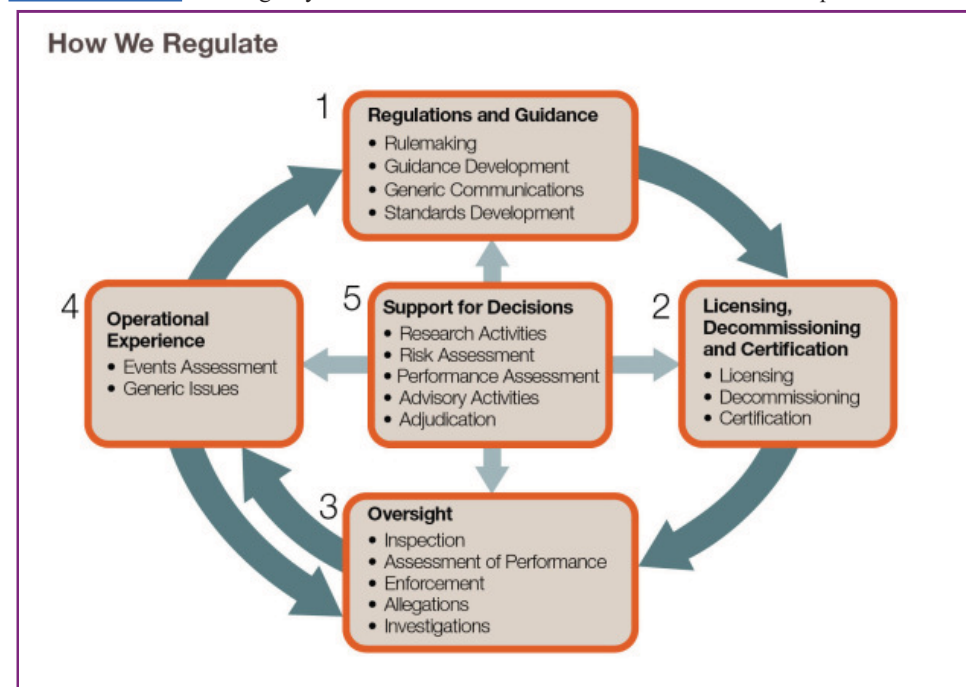
## Reexamining the NRC's Regulatory Framework

posted on Thu, 12 Dec 2013 19:15:50 +0000

*Mike Johnson*

*Deputy Executive Director for Reactor and Preparedness Programs*

The NRC's spent more than two years examining what changes to its regulations we should make based on lessons from the Fukushima accident in March 2011. After lots of public discussion and considering the options offered during that time, the NRC staff has made [recommendations](#) to the agency's five Commissioners for their consideration. This process started shortly after the accident, when the NRC



gathered several senior staff to consider what the accident taught us. This task force's [July 2011 report](#) included 12 broad recommendations. The first recommendation called for "a logical, systematic, and coherent regulatory framework for adequate protection that appropriately balances defense-in-depth and risk considerations." The Commission directed the staff in August 2011 to evaluate that recommendation and provide options for responding. Since then the staff has met with the public and other interested parties three times. The staff also released three white papers and met with the independent experts on the Advisory Committee on Reactor Safeguards six times. The staff for this effort included experts in reactor regulation, risk assessment, materials oversight, security, research and the legal aspects of revising NRC rules. The staff concluded the NRC's current regulations can maintain U.S. nuclear power plant safety and incorporate

Fukushima-related improvements. But the staff recommends these three enhancements: 1. Establish a new category for certain events that could extend current requirements 2. Establish Commission expectations for establishing multiple layers of defense against accidents and to protect public health 3. Clarify the role of voluntary industry initiatives in the NRC regulatory process The Commission will decide which recommendations, if any, to implement. The Commission will meet publicly to discuss the staff's work on Jan. 10, 2014. The meeting will be

[webcast](#) for those unable to attend in person. More information on the NRC's overall post-Fukushima efforts is available [here](#).

## Comments

comment #201685 posted on 2013-12-19 17:15:15 by Rich Andrews in response to comment #201545

A friend of mine remarked that the NRC is like a few volunteer fire departments. That is they get there in time to put water on the ashes!

comment #202424 posted on 2013-12-20 15:29:00 by Moderator in response to comment #202242

These comments have gotten "off topic" for this blog post. If you have questions specific to Fort Calhoun, or any other questions for the NRC on other matters, please submit them to [opa.resource@nrc.gov](mailto:opa.resource@nrc.gov) and we'll get responses back to you directly. Moderator

comment #202422 posted on 2013-12-20 15:26:15 by Moderator in response to comment #202242

Units 1 and 2 at the D.C. Cook nuclear power plant were in the Chapter 0350 process from the third quarter of 1998 until the first quarter of 2000. Davis-Besse was in the Chapter 0350 process from the second quarter of 2002 until the second quarter of 2005. Scott Burnell

comment #202255 posted on 2013-12-20 11:00:35 by Rich Andrews in response to comment #202213

My last question is a hard one to answer. If you don't know, you don't know. If you do know I am sure you would tell us. (-) However, you certainly can take steps to find out if you can answer the first question with a "yes".

comment #202242 posted on 2013-12-20 10:38:55 by Rich Andrews

Mr Moderator would you provide some information for me? I know the date that the Fort Calhoun Station was placed on NRC Inspection Manual Chapter 0350, i.e. December 13, 2011, and if I am correct they will continue to be on enhanced inspection for the foreseeable future. I believe there have been other nuclear power plants that were once on a Chapter 0350 program. I think one example was Davis Besse. Would you provide a list of those plants and the dates they were placed on 0350 and the dates they were removed from enhanced oversight? Thanks.

comment #196618 posted on 2013-12-13 01:06:05 by Nikohl Vandel

=) thank you for this. should be a fascinating meeting.

comment #201545 posted on 2013-12-19 13:35:17 by Rich Andrews

THE NRC IS REACTIVE NOT PROACTIVE The NRC only gets down on nuclear plants if they have significant operational screw-ups. They never get down on these plants through their own regulatory inspections. Why? Because they don't find problems through those NRC inspections. The NRC only found two problems at the problematic Fort Calhoun Station in 16 years. It took a serious fire at the plant to get their attention in 2011. Just prior to that in late 2010 the NRC did find one of those two problems through its inspection program that was a serious finding. A whole host of problems were found at the plant by Fort Calhoun personnel once the NRC finally got on them. The point is the NRC inspection program is seriously flawed and reactive. They only get interested if there are obvious plant performance problems that result in significant safety issues. As one blog commenter so aptly said, they get on a plant after the cow is out of the barn. As a typical federal agency, the NRC does not ever accept responsibility for their actions or inactions. That is the real scary part. They therefore never seek ways to improve their regulatory effectiveness. The public is not well served by such an attitude and mind-set.

comment #197008 posted on 2013-12-13 13:22:41 by Rich Andrews

The NRC came up with only three very nebulous areas for "enhancements". Otherwise it was stated that NRC's "current regulations" can maintain nuke plant safety, i.e. the status quo. Not once mentioned is the fact that the NRC itself is really not an independent agency. The NRC relies on the success of the nuclear industry for its very survival. The NRC is like the parasite attached to a shark. The parasite must rely on the shark for its very existence. Unlike the EPA who over regulates and kills our economy, the NRC is just the opposite. Significant safety and national security issues that would really hammer the nuke industry are minimized and sugarcoated. The NRC does not want to throw out the nuke baby with the bath water. No wonder the NRC comes up with such lame recommendations when it performs an incestuous review of its own operation.

comment #200781 posted on 2013-12-18 12:52:08 by Creighton Barrel in response to comment #200737

"...too cheap to meter..."..haha...I remember that it IS ironic that the old AEC was disassembled into ERDA and NRC (ERDA was later incorporated into DOE) to separate the promotion of nuclear power from the regulation of nuclear energy. And in reality (in today's world) the nuclear industry literally pays the salary of the people reviewing their applications. Guess what...not too many applications are denied....they are strung out though... for an extensive (costly) review process...requiring many manhours



comment #200754 posted on 2013-12-18 11:54:05 by Robert K in response to comment #200722

Rich is a genius and very observant. Decades of an insider observing the NRC and all the enablers of nuclear power, allows me to say he is exactly right. This is like the SEC regulating Wall Street just before the Great Recession.

comment #200753 posted on 2013-12-18 11:52:53 by Moderator in response to comment #200227

Many of the issues that led to the NRC invoking the Chapter 0350 process at Fort Calhoun were properly identified long before the December 2011 decision, as shown in the list of significant enforcement actions the NRC has taken regarding the plant: <http://www.nrc.gov/reading-rm/doc-collections/enforcement/actions/reactors/f.html#FortCalhoun> and several years of inspection reports: [http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/listofrpts\\_body.html#fcs](http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/listofrpts_body.html#fcs). The Reactor Oversight Process properly placed Fort Calhoun in the agency's second-highest level of increased oversight before the 0350 decision was made. As we've noted in the blog's Comment Guidelines, comments are not formal communication with the NRC. So if you have comments or issues for the Commission to consider, please send them to: [NRCExecSec@nrc.gov](mailto:NRCExecSec@nrc.gov). Scott Burnell

comment #200737 posted on 2013-12-18 11:26:05 by Robert K in response to comment #199219

Yes, they have become the proponents of nuclear, just like the now ineffective AEC of years gone past when atomic energy was too cheap to meter.

comment #200731 posted on 2013-12-18 11:24:00 by bob

The NRC's biggest problem is that they investigate after the cow is out of the barn. They need to think ahead and listen to the critics.

comment #200722 posted on 2013-12-18 11:12:15 by Rich Andrews in response to comment #200227

INPO as well as the NRC should be faulted for being AWOL Yes I am replying to myself. Yes the licensee, OPPD and the Fort Calhoun Nuclear Station are to blame for allowing their plant's performance to grossly degrade over time. But as I have tried to indicate in my previous blog, the NRC is to blame as well. BTW, while passing out blame, where was INPO?! The Institute of Nuclear Power Operations was the nuclear industry's initiative to promote the highest levels of safety and reliability at US nuclear plants. It was formed after the accident at TMI and, among other things, conducts periodic evaluations at all nuclear plants. Where was INPO when it came to pointing out the serious, long-term problems at the Fort Calhoun Station? Finding out where INPO went wrong is much harder to do because of the secret way they conduct their evaluations. Their evaluation reports are confidential and are not released to the public like NRC inspection reports. Therefore it is hard to determine just what they might have pointed out relative to the serious performance problems at Fort Calhoun. Whatever INPO did it was not nearly enough. The NRC assessed itself and I do not know if INPO has done any real assessments of its operation. Both organizations depend on the survival of the nuclear industry for their very existence so how critical can they be expected to be of their own operations. A long overdue, serious, independent review is in order for both the NRC and INPO. Unfortunately the chances of that happening are slim to none.

comment #208453 posted on 2013-12-28 01:45:36 by badger777

I am wondering when nuclear will become "too cheap to regulate" LOL, Happy Holiday folks

comment #202213 posted on 2013-12-20 09:42:40 by Rich Andrews

Mr Moderator let's, as they say, "cut to the chase" It has taken almost 3 years for the Fort Calhoun Nuclear Station to climb out of the performance hole they were in. They worked painstakingly to correct a large number of process, program, equipment, and management issues. It has been a little over 2 years since the NRC placed the plant on an enhanced inspection program per NRC Inspection Manual Chapter 0350. Mr Moderator can you provide me with any evidence that the following two questions were posed and addressed by the Commission? o Is there anything that the NRC could have done differently or better to have prevented one of our nation's nuclear power plants from getting into such a degraded state? o And, are there any other nuclear plants that are similarly degraded that the NRC does not know about?

comment #200889 posted on 2013-12-18 15:32:22 by Moderator in response to comment #200753

I don't know why your browser doesn't like that email address. You can try sending your email to [opa.resource@nrc.gov](mailto:opa.resource@nrc.gov) instead. Please Put Forward to Exec Sec in the subject line and it will get forwarded. Moderator

comment #200808 posted on 2013-12-18 13:27:41 by Rich Andrews in response to comment #200753

Thanks for your prompt response and all the additional information you provided. From that information I determined the following: • The NRC conducted over 160 inspections of the Fort Calhoun Station over about 16 years (about 10 inspections/year). • Only ten violations of NRC requirements were cited during that entire time. • Five of the cited violations were so-called "White" findings, which are those of the lowest category of safety significance. • Three of the violations cited in the late '90s were of the highest category of safety significance. Two of these violations were assessed civil penalties. • Of the ten violations, the NRC only identified two through their inspection effort. All the rest were identified and reported to the NRC by Fort Calhoun management. These were

self-revealing violations due to equipment malfunction and in one case, a fire. • To their credit the NRC identified one violation that prevented a major accident at the plant. The NRC found that one of the flood protection measures at the site was inadequate. As a result of that finding the Fort Calhoun staff found a number of additional flood protection deficiencies at the site. Corrective measures were taken allowing the plant to withstand a severe Missouri River flooding incident in early 2011. I draw the following conclusions from the above. The NRC identified only two violations through their inspection efforts over a 16-year period. This is an average of one NRC-identified violation per 80 inspections at the site. The NRC inspection effort did not result in the identification of any of the many program and process deficiencies later found by the licensee. My previous comments stand as written. In spite of evidence to the contrary, the NRC will not admit to any culpability in the problems at Fort Calhoun. This is sad and makes me very concerned that the NRC is really not doing its job of protecting the public.

comment #201777 posted on 2013-12-19 20:51:25 by Rich Andrews

ANOTHER REGULATORY ENHANCEMENT Ever since the NRC added the violation categories of “minor violation” and NCV (Non-cited Violation), there has been a large reduction in the number of violations that require a formal response from nuclear plant licensees. The jury is still out on whether this change has really enhanced nuclear safety. It certainly reduced the paperwork load on licensees. Now licensees only have to respond in writing to those violations that are considered to be of other than “very low safety significance”. In the case of Fort Calhoun Station this amounted to having to respond to only 10 violations in 16 years. Of these 10 violations the licensee reported 8 of those violations to the NRC. The NRC only found 2 violations that required a written response. Since there are far fewer required formal violation responses, the NRC should expect those responses to be “top drawer”. However, the NRC has never changed its violation response expectations. The same response format has been used for decades. It is as follows: • Reason for the violation • Corrective steps taken and the results achieved • Corrective steps that will be taken • Date when full compliance will be achieved The first bullet is the one that is woefully inadequate in my opinion. It does not require that the licensee address the following when coming up with the “reason for the violation”: o The results of a root cause or causal analysis. o The results of an extent of condition analysis, i.e. the extent to which the same condition exists with other plant processes, equipment, computer software, or human performance. o The extent of cause analysis, i.e. the extent to which the root cause(s) of the violation have impacted other processes, equipment, software, or human performance. o The common cause analysis, i.e. an analysis associated with a situation where a number of like or similar events have occurred. Especially important in cases where there have been repetitive failures. These tools are used in the nuclear industry and the results should be provided to the NRC as soon as they are available. Good plants already do this as a regular part of their corrective action programs. There would be little extra burden on licensees to do so.

comment #200818 posted on 2013-12-18 13:42:05 by Rich Andrews in response to comment #200753

Mr. Moderator, I have been unable to get through to the NRC Exec Sec link you provided. My browser tells me that the link is a "suspected phishing site". Can you help? Thanks.

comment #199219 posted on 2013-12-16 13:24:38 by Creighton Barrel in response to comment #197008

@Rich Andrews you hit the nail on the head...I happen to admire the professionalism and competence of the NRC staff...but truth be told....they are paid to make nuclear licensing happen....

comment #200227 posted on 2013-12-17 19:20:52 by Rich Andrews

To be fair I should come up with a constructive item that the NRC's self-assessment should have addressed. I have a real substantive item that should be added to the existing list of only three lame NRC “enhancements”. Here it is... An Real NRC “Enhancement” Why did the NRC's existing regulatory framework not detect performance problems at the Fort Calhoun Station well before those performance problems were self-revealing incidents and near misses? It has taken nearly three years for the problems at this plant to be completely addressed and corrected, almost as long as it took the plant to startup initially. In reviewing the huge list of problems at the plant I was hard pressed to find a program or process at the plant that was not found to be seriously flawed. Where was the NRC?! The NRC conducts numerous inspections, has a whole host of performance indicators, and two full-time inspectors at each nuclear site and yet long-term, pervasive, performance problems were not identified well before incidents and an historic Missouri River flood occurred at the plant in early 2011. In December 2011 the NRC finally decided that the plant deserved special treatment because of significant performance problems and significant operational events. When the NRC has to invoke enhanced inspection (under Inspection Manual Chapter 0350) it should be considered as a gross failure of the regulatory process. Unfortunately, Fort Calhoun is not the first plant to be so classified. I ask the NRC Commissioners to require that the Commission do an independent evaluation of their regulatory process and performance, one that is focused on uncovering real problems.

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## We're Waiting To Hear -- Your Comments are Due on Waste Confidence

posted on Mon, 16 Dec 2013 16:46:37 +0000

*Keith McConnell*  
*Director, Waste Confidence Directorate*

The public comment period on the [Waste Confidence](#) proposed rule and generic environmental impact statement (GEIS) ends December 20. During the 98-day public comment period (the end date was extended due to the government shutdown), the NRC staff conducted 13

meetings around the country to receive your feedback. We'd like to thank the more than 1,400 people who attended these meetings, either in person or by teleconference. We have posted transcripts of the public meetings on the [Public Involvement section](#) of our [Waste Confidence webpage](#). We appreciate all of you who spoke at the meetings providing your thoughtful comments. The safe storage of spent nuclear fuel and the impact on the environment are critical



issues in the country's nuclear policy. We here at the NRC are committed to ensuring that spent fuel remains safely stored until a repository can be built for permanent disposal. So what's next? The staff of the Waste Confidence Directorate is busy cataloguing the tens of thousands of public comments we have received so far. You can read the comments we've processed already using ADAMS and [http://www.regulations.gov/\(search for Docket ID NRC-2012-0246\)](http://www.regulations.gov/(search%20for%20Docket%20ID%20NRC-2012-0246)). We are continuing to post comments, and of course we expect to receive additional comments up to the December 20 deadline. Instructions on how to submit comments are on the [Public Involvement section](#) of our [Waste Confidence webpage](#). Once the comments are fully catalogued, the staff will consider them and prepare responses to be included in the final GEIS and rule. These final versions will of course include any changes from the drafts stemming from the comments. We are working to issue the final rule and environmental study later in 2014.

## Comments

comment #200793 posted on 2013-12-18 13:11:45 by stock in response to comment #199448

Dude, A report commissioned by Obama last year shows that reprocessing cost 10 times more than simply Dry Casking.

comment #200940 posted on 2013-12-18 16:49:05 by Rich Andrews in response to comment #200793

I'd like to see that report Dude! How about a link to it? I guess though if Obama says it's so you can always put your "stock" in that!

comment #199202 posted on 2013-12-16 12:52:55 by Nikohl Vandel

Reblogged this on [Niki.V.all.ways.My.way](#), and commented: oh, just in case ... it doesn't get approved: Your comment is awaiting approval => thanks for the reminder. but the truth is, you've probably already heard everything and everyone knows the right thing to do, the only question is, "are we going to do the right thing and make "Waste Confidence" a reality in our regulations?" Staff of the NRC and those who work in the industry know that we cannot have another #Fukushima because, the truth is we still don't know if we are going to survive Fukushima's meltdown. I believe everyone has that knowledge and is working to secure this industry for the practical reality that this may NEVER happen again without the KNOWLEDGE (read: CONFIDENCE) of how to handle it without threatening the survival of our species as it currently does now. The ugly truth we must integrate into our future structure.

comment #199205 posted on 2013-12-16 12:55:44 by Rich Andrews

The simple fact is that although spent fuel is being "safely stored" at nuclear plant sites all over the US it presents a huge terrorist target that other countries do not face. Other countries with nuclear plants have dealt responsibly with high level waste by safely storing spent, but still highly radioactive, fuel in safe off-site repositories. The US has not. As a result spent fuel has piled up in over a hundred different locations in the US (i.e. at existing nuke plant sites). Spent fuel pools have been overloaded way beyond their original design basis. As a result an aircraft crash into any of these sites would result in an accident equivalent to a Chernobyl or Fukushima. There is an established no fly zone around these vulnerable sites that, I am sure, terrorists will respect. The delays associated with Yucca Mountain have resulted in a huge security threat for our country.

comment #199283 posted on 2013-12-16 15:19:50 by CaptD

From 10/26/12 I've already suggested that the NRC offer a Million Dollar Prize for the best way to "solve" the nuclear waste storage problem" for the next 50 years, so please consider this idea as my "low cost" solution to America's "long term" radioactive waste storage problem: Make use of our Military Testing Bases and or our MOA's (Military Operation Area's) out west, which are really huge tracts of land (think tens of thousands of acres) used ONLY by the military and already secured by them 24/7! Placing these very large (heavy) concrete casks in a poke-a-dot pattern will allow for at least 50 to 100 years of storage, safe from everything except a War, (in which case every reactor is just as vulnerable) and then revisit the storage problem then; at which time, probably a future solution will allow for an even better, lower cost "final solution"... Because these casks would be very large and all look alike nobody would know what was in any one of them, which would be yet another level of security for the casks containing even higher levels of nuclear waste! An ideal outside coating for these casks would be similar to the spray-on "bed liner" used for pickup trucks that not only prevents rusting and or damage for the life of the vehicle but would also seal the casks to prevent leakage of any kind! Hopefully these casts would be similar in size to a large shipping container so that existing material handling equipment could be used to load, unload and or move them about without "inventing" a mega hauler vehicle. By keeping the "footprint" of these casks similar to a large 40 foot container, the stacking and or placement of them might also be semi or fully automated which would not only save money but again keep the exact location of any specific cask secret! The monitoring of these casks 24/7/365 could even be done via satellite since these casks are similar in size to rocket launchers which are easily seen from space. In another 50 to 100 years, storage technology will be such that, yet another lower cost solution for all this waste will be found, and then it can be considered verses continuing to using the above storage plan... Perhaps sometime In the future, a safe low cost solution like lifting it all into space via a space elevator\* and then shoving it in an orbit that will send it into the SUN for final recycling will present itself... BTW: Area 51 (which does not even exist officially) contains huge tracts of land that has already been used as a nuclear testing site (and is still contaminated and is now off limits to all but a few forever) would allow all this material to effectively disappear... \* The Space Elevator Project (LiftPort) <http://liftport.com/> is something that the NRC should help fund ASAP, because it represents the best way

to actually eliminate storing nuclear waste on Earth!

comment #199291 posted on 2013-12-16 15:33:49 by CaptD in response to comment #199202

Good comment, the more the NRC and the nuclear industry tries to downplay what is happening at Fukushima, the more informed people around the globe realize that the USA (or any other Country) is no better at safeguarding its nuclear reactors from acts of Nature than the Japanese ... In fact, the truth is that we have just been LUCKY that we have not had even more Fukushima's globally, because Nature can destroy any land based nuclear reactor, any place anytime 24/7 despite what the odds against it happening may be! Remember, despite the high odds, three separate reactors melted down at Fukushima in just 1-2 days, depending upon who you ask...

comment #199295 posted on 2013-12-16 15:37:27 by Nikohl Vandel

But, the truth is ... the security risk isn't in the nuclear waste, it is in our ethics and way we go about in this world. If we didn't create a reason someone may have to target us, maybe we wouldn't have such a fear-based reality. A girl's just sayin' ... we are acting like terrorists so we should fear the same.

comment #199310 posted on 2013-12-16 16:01:19 by Richard McPherson

Since 1977, when Governor Jerry Brown and the California Legislature used the lack of a national approved site for partially spent nuclear fuel organized minorities posing as anti-nuclear groups and individuals have used the government failure to identify and authorize a site or sites as a pretext to try and make commercial nuclear power uneconomical. When Congress passes laws the government has the responsibility to follow the law, not deal with it as a political football as the NRC and DOE have done for decades. People that are appointed as head of the NRC or DOE to achieve a political promise of those elected and do so should be charged with a criminal conspiracy. There are no technical issues in dealing with fissionable material. We have done so safely since World War II. The issues are political. Yucca Mountain was ready to be opened. Outright lies kept it from opening. Dry cask storage is a mature technology. It too is under attack by organized minorities posing as anti-nuclear activists. The NRC seems to be conducting its own public relations campaign instead of the business it was charged with doing over 36 years ago. Utilities operate under the every changing public policy governing them. The US Congress passed a law to have the government take partially spent fuel from the utilities having nuclear power plants. The government failed to do its job, thereby fuel pools were re-racked to hold additional partially spent fuel onsite. Today nuclear plants being decommissioned are additionally burdened by the government not doing its job even to take spent fuel casks. This is providing more fodder for organized minorities to hurt our economy and impact our national security.

comment #199361 posted on 2013-12-16 17:27:23 by Rich Andrews in response to comment #199283

Really like your suggestion. If it was up to me you would get the prize. It is something we could do now that would be much safer and would buy precious time. It is the right thing to do so that is why it will not even be seriously considered.

comment #199427 posted on 2013-12-16 19:42:32 by Rich A in response to comment #199283

CaptD Gets the Waste Confidence Prize I have already given my support to CaptD's idea for a safe, interim way to store nuclear plant spent, but still highly radioactive, fuel. Using just a very small portion of existing huge military areas (of the western US) to store spent fuel in very safe casks, is a brilliant idea. Currently this waste is piling up at over a hundred sites throughout the US. Some of it is already stored in casks but the vast majority of it is stored in overloaded spent fuel pools. A terrorist attack on even one of these pools would result in an accident comparable to Fukushima. Shipping all spent fuel (that no longer requires cooling water to keep it from overheating) to an existing military-controlled, centralized cask-storage area makes perfect sense. Also it would hold the government accountable. The government long ago promised to take ownership of spent fuel and to dispose of it safely. A promise they have failed miserably to keep. Instead of having this dangerous waste in over a hundred backyards around the country have it safely stored in the government's backyard. They might even then be more inclined to find a suitable permanent underground storage site like other countries have.

comment #199448 posted on 2013-12-16 20:33:21 by Marcel Williams

Spent fuel is not waste but an extremely valuable energy commodity owned by the Federal government and, therefore, the American people. The Federal government needs to take control of the spent fuel currently being housed in cask at commercial nuclear sites and relocate the cask to Federally protected sites on Federal land within each State that produces spent fuel. Spent fuel should be temporarily kept at these in-state Federal sites until the fuel is ready to be moved to Federal reprocessing facilities for the production of plutonium and uranium fuel. The uranium can be enriched and used as fuel at current commercial nuclear sites while the plutonium could be used as fissile material for next generation thorium reactors. Marcel F. Williams

comment #199625 posted on 2013-12-17 02:38:29 by ADRossin

Stop spending money on these comments and devote it to the review of the Yucca Mountain Safety Analysis Report.

comment #199878 posted on 2013-12-17 08:58:10 by Moderator in response to comment #199625



Waste Confidence and the Yucca Mountain safety evaluation report are both high priorities for the NRC. However, they are not competing for resources. The Waste Confidence program is paid for from the NRC's general budget, while the Yucca Mountain review is funded by carryover funds appropriated from the Nuclear Waste Fund. David McIntyre

comment #200029 posted on 2013-12-17 13:43:38 by CaptD in response to comment #199448

Don't expect to see any SMR change things anytime soon: DOE subsidy confirms SMRs not competitive in free market w/out government handouts <http://www.foe.org/news/news-releases/2013-12-doe-smr-subsidy-for-nuscale-power-llc-misguided> and SMR's get SMR wins Golden Fleece Award [http://www.taxpayer.net/images/uploads/downloads/Golden\\_Fleece\\_SMR\\_Press\\_Release\\_FINAL\\_w\\_logo.pdf](http://www.taxpayer.net/images/uploads/downloads/Golden_Fleece_SMR_Press_Release_FINAL_w_logo.pdf) + MSR Thorium Reactor Fort St. Vrain Power Station Experiment Failed <http://agreenroad.blogspot.ca/2012/12/thorium-reactor-fort-st-vrain-power.html> + The Promise and Peril of thorium - Oliver Tickell [http://wmdjunction.com/121031\\_thorium\\_reactors.html](http://wmdjunction.com/121031_thorium_reactors.html)

comment #200143 posted on 2013-12-17 16:20:32 by Bob Meyer

Yucca Mountain may have one small flaw, the storage cannot put canisters into the current design in the vertical position, as most plants have this type of dry storage. Has this been addressed? We need to look toward storage and reprocessing as part of our national energy policy.

comment #200258 posted on 2013-12-17 20:44:13 by CaptD in response to comment #199361

Thanks for your support! Good ideas come from outside the Nuclear industry also!

comment #200260 posted on 2013-12-17 20:46:38 by CaptD in response to comment #199427

A Military convoy could safely relocate the vast majority of nuclear waste and also do it at very low cost without sub-contractor cost plus price hikes, which would save the USA billions!

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## What is Your Favorite NRC Reg Guide?

posted on Wed, 18 Dec 2013 16:41:16 +0000



[caption id="attachment\_4865" align="alignright" width="300"]  
congratulates contest winner Adam Glazer.[/caption]

*Mekonen Bayssie*

*Regulatory Guide Development Branch  
Office of Nuclear Regulatory Research*

Commissioner Apostolakis

It was an unexpected pronouncement when, during the annual All Employees Meeting at the NRC, Commissioner George Apostolakis admitted [Regulatory Guide 1.174](#) – otherwise known as “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant Specific Changes to the Licensing Basis” -- was his favorite. It was not a surprising admission, though, since the Commissioner had been on the Advisory Committee on Reactor Safeguards and active in the development of the guide. But it got us thinking – Reg guides are important documents that offer guidance on ways agency regulations can be implemented. Does anyone else have a favorite Regulatory Guide? So we asked employees to submit their favorites. The winner would get \$50 donated to his or her favorite [Combined Federal Campaign](#) charity. Adam Glazer, an IT specialist, won the contest with his tongue-in-cheek tribute to [Regulatory Guide 10.8](#) – otherwise known as the “Guide for the Preparation of Applications for Medical Use Programs.” His tribute claimed that particular guide had been involved in historic events ranging from saving the troops at Valley Forge in 1775 to helping mediate peace during the Russo-Japanese War of 1904-1905. In a more serious vein, Julio Lara, of Region III, declared [Regulatory Guide 1.26](#) “Quality Group Classifications and Standards for Water-, Steam-, and Radioactive Waste-Containing Components of Nuclear Power Plants” as his favorite. That guide had tripped him up during his Inspector Qualification Oral Board in 1989, and he had to study it and twice demonstrate his knowledge of it before being certified as an inspector. Christine Lipa, also of Region III, also had a personal reason for her favorite regulatory guide. She cited [Regulatory Guide 1.97](#), “Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants.” This document provided guidance to the nuclear power industry as it implemented new requirements after Three Mile Island accident. “When I was a new inspector in Region III in 1990, this was

the first set of inspections I was involved in,” she wrote. In his submission, Stuart Richards, of the Office of Regulatory Research, declared [Regulatory Guide 1.1](#) “Net Positive Suction Head for Emergency Core Cooling and Containment Heat Removal System Pumps” as his favorite. He said it was the first safety guide (dated November 1970), it was only one page long and it has never been revised “so it must be good.” Mark King, of the Office of Nuclear Reactor Regulation, cited [Regulatory Guide 1.33](#) “Quality Assurance Program Requirements (Operation)” as “the most awesome.” He said it’s the foundation for licensees having proper procedures for operating the plant and handling emergencies, and is the most frequently cited Reg Guide by inspectors when writing up finding and violations. Other favorites included [Regulatory Guide 8.26](#) “Applications of Bioassay for Fission and Activation Products” and [Regulatory Guide 1.76](#) “Design-Basis Tornado and Tornado Missiles for Nuclear Power Plants.” So, the question is: Do you have a favorite Regulatory Guide?

#### Comments

comment #201413 posted on 2013-12-19 08:52:36 by Anonymous

Before I even read past the title, I knew my favorite is Safety Guide 1 (a.k.a. RG 1.1). Short, sweet, and it embodies the original intent of defense in depth: keep the RCS pressure boundary and containment analyses separate, don't rely on one to protect the other.

comment #200806 posted on 2013-12-18 13:26:04 by Nikohl Vandel

Reblogged this on [Niki.V.all.ways.My.way.](#) and commented: =) congratulations!! Who even knew we had "The Best Regulation Guide" category?!!!

comment #200937 posted on 2013-12-18 16:44:16 by Kjell Ringdahl (@Kjell\_Ringdahl)

My favourite is RG 1.70, although it now has been replaced by RG 1.206. RG 1.70 set the standard for format and content of a Safety Analysis Report, what could be more important than that? Still being used and referenced. I think the people behind RG 1.70 did an immense job and RG 1.70 have maybe meant more to reactor safety than any other RG.

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## Starting a Reactor Design Review the Right Way

posted on Fri, 20 Dec 2013 20:13:14 +0000

*Scott Burnell*  
*Public Affairs Officer*

A few months ago, Korea Hydro and Nuclear Power Co. gave the NRC an application to certify the company’s Advanced Power Reactor 1400 design for use in the U.S. We’d been having “pre-application” discussions with the company since April 2010. In September of this year, the company felt its information was ready for a full review. After our acceptance check of the application, however, we’ve [decided](#) the process should remain at the pre-application stage. While most of the application’s sections and chapters have enough information for the

After our acceptance check of the application, however, we’ve decided the process should remain at the pre-application stage.

NRC to review, there are important exceptions. For example, our technical experts don’t see a clear path for predictably and efficiently reviewing important areas such as instruments and controls, how human actions affect reactor operations, and assessing risk. We also didn’t see enough detail for

some specific technical issues, such as reactor coolant pump design, potential corrosion of some internal reactor parts and protecting plant staff from radiation. Other areas referenced technical reports to be submitted in the future. At this point it’s the company’s decision on how to proceed – if they wish to continue pre-application meetings and related discussions, we’ll certainly do so. The formal review, however, will have to wait until the NRC is satisfied the application has enough information for our staff to create a reasonable, reliable schedule and milestones for the certification process. Let’s be clear – none of this represents any sort of NRC technical conclusion regarding the Korean reactor design. We’re well aware that other countries are building or considering the design, and we continue to work with a multinational group discussing this and other new reactor designs. This decision doesn’t set any precedents, either. We’ve previously decided against accepting the initial applications for both a U.S.-based design certification and a new reactor operating license. The NRC also followed this path for a couple of applications to renew existing U.S. reactor licenses. The bottom line is that the NRC must ensure proposed reactor designs can meet our safety requirements. We owe it not only to the public to do that job properly, but also to applicants to do so effectively and predictably. The best way to do that is to have the appropriate information in hand before we begin our work.

#### Comments

comment #202428 posted on 2013-12-20 15:45:45 by Richard McPherson

Why is the NRC wasting even one minute on Foreign competition? We need to create jobs in America not be helping to create foreign jobs. The NRC need to focus on getting American not foreign designs certified.

comment #202462 posted on 2013-12-20 16:30:56 by joffan7



Effectively this is admitting that the NRC will squash any attempt at innovation.

comment #202500 posted on 2013-12-20 17:27:33 by Rufos in response to comment #202462

Or squash attempts to submit a pile of steaming .... papers where the NRC has to do design work instead of actual reviews

comment #202545 posted on 2013-12-20 19:03:30 by David Andersen

Has there been any thought given to creating an agency which could review reactor designs that would be approved for use by all members of the organization? I'm thinking something like France, Great Britain, Japan, the U.S. etc.

comment #204754 posted on 2013-12-23 13:13:50 by Jim Van Zandt in response to comment #202428

To ensure healthy competition for new power plants in the U.S..

comment #204756 posted on 2013-12-23 13:17:52 by Moderator in response to comment #202545

As we noted in the post, the NRC participates in what's called the Multinational Design Evaluation Program, which shares information and approaches to reviewing new reactor designs. While the program aims to achieve consistent review practices and standards, the participants agreed at the start that each country retains the legal authority to approve a design's use within its borders. Scott Burnell

comment #203904 posted on 2013-12-22 12:32:51 by CaptD

Great news that hopefully points to additional reviews of ALL applications and especially those that have anything to do with reactor safety. As new applicants (from any country) seek approval from the NRC, the NRC must refrain from granting any acceptance until these concepts are proven to be safe in the real world not just in a small laboratory experiment. Starting small and building upon real world success is far safer than building big and seeing what happens and since the USA cannot afford a Trillion Dollar Eco-Disaster like Fukushima, the NRC must guarantee that all approved designs are safe in the real world, not just under laboratory conditions. The replacement steam generator RSG debacle at San Onofre is a perfect example of what can happen when major review processes are "gamed" by Utilities that not only seek fewer delays, but also want to severely limit public scrutiny in the entire review process! This is a key issue because without un-redacted documents made public, those seeking to protect ratepayers from getting stuck with engineering debacles are essentially fighting with one hand tied behind their back, since Utilities only provide \*sanitized\* redacted documents. It is also important to mention that it is not only CA citizen groups like ANC and locally the [Coalition to Decommission San Onofre][1] (CDSO) are having problems with the CPUC but even CA Senator Boxer has now been forced to ask the NRC for [a full and complete set of San Onofre documents][2] having received informational packets from them with two different document listings, many of which were not initially provided, even though Senator Boxer Chairs the Committee on Environmental and Public Works, which oversee the NRC! [1]: <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M082/K964/82964664.PDF> [2]: [http://www.epw.senate.gov/public/index.cfm?FuseAction=PressRoom.PressReleases&ContentRecord\\_id=7c3702e1-92c7-bd1e-45d6-fa907ea0842a](http://www.epw.senate.gov/public/index.cfm?FuseAction=PressRoom.PressReleases&ContentRecord_id=7c3702e1-92c7-bd1e-45d6-fa907ea0842a)

comment #203914 posted on 2013-12-22 12:41:40 by CaptD in response to comment #202462

Reactor safety should always thump shoddy innovation, especially when reactor safety is concerned, despite what Big Utilities say, (since in the USA) they are not responsible for reactor accidents since they are indemnified by the Price-Anderson Act. Snip From Wiki The Price-Anderson Nuclear Industries Indemnity Act (commonly called the Price-Anderson Act) is a United States federal law, first passed in 1957 and since renewed several times, which governs liability-related issues for all non-military nuclear facilities constructed in the United States before 2026. The main purpose of the Act is to partially indemnify the nuclear industry against liability claims arising from nuclear incidents while still ensuring compensation coverage for the general public. The Act establishes a no fault insurance-type system in which the first approximately \$12.6 billion (as of 2011) is industry-funded as described in the Act. Any claims above the \$12.6 billion would be covered by a Congressional mandate to retroactively increase nuclear utility liability or would be covered by the federal government. At the time of the Act's passing, it was considered necessary as an incentive for the private production of nuclear power — this was because electric utilities viewed the available liability coverage (only \$60 million) as inadequate.[1] In 1978, the Act survived a constitutional challenge in the Supreme Court case *Duke Power Co. v. Carolina Environmental Study Group* (see below). The Act was last renewed in 2005 for a 20-year period.

comment #203917 posted on 2013-12-22 12:50:16 by CaptD in response to comment #202428

All designs considered for use in the USA (foreign or otherwise) must be approved for safety! This is especially important since many globally look to the NRC as one of the most trusted regulators to review designs, besides as the Trillion Dollar Eco-Disaster at Fukushima has shown even a nuclear accident in another country can have huge healthy implications upon the USA, since radioactive pollution spreads globally via both the Jet Stream and/or ocean currents. BTW, should any reactors get built in the USA, it will generate jobs in the USA for many decades both during its operation and also during the many decades of decommissioning all at ratepayer expense, since the Utilities and their shareholders profit on all activities at the nuclear power plant.

comment #202673 posted on 2013-12-20 23:00:10 by Aladar Stolmar

How refreshing to see such a commitment: start the design review of a nuclear power plant's reactor the right way! And "the NRC must ensure proposed reactor designs can meet our safety requirements" is very timely. Considering that already the third year is passing after the loss of three reactors in Fukushima Daiichi. The only problem I have that I'm not sure that the NRC safety requirements are good enough. I'm not sure that they include the prevention of ignition of the reducing reaction of cladding-coolant reaction in any circumstances or not? Also, I'm not sure that these safety requirements include the preservation of the containment in the event of a worst case detonation of generated Hydrogen, considering that the reducing reaction consumed all the zirconium inventory. For a little help: Zircaloy Mass in Fuel Cladding [kg / lb] 16,465 / 36,300 in the PWR and 40,580 / 89,500 in BWR from NRC-2012-0022-0002 and NRC-2012-0022-0003.  $Zr(91) + 2 H_2O(36) = ZrO_2(123) + 2 H_2(4) + 5 MJ/kgZr$  Water required for complete reaction for the PWR  $16,465 * 36/91 = 6513,6$  kg or about 6.5 m3 (available), it produces  $16,465 * 123/91 ZrO_2 = 22,255$  kg zirconium dioxide and  $16,465 * 4/91 = 723.7$  kg Hydrogen and 82,325 MJ heat. For a 10 second firestorm duration it gives 8GW power... or twice the full power of the reactor... Water required for complete reaction for the BWR  $40,580 * 36/91 = 16053.6$  kg or about 16 m3 (available), it produces  $40,580 * 123/91 ZrO_2 = 54,850$  kg zirconium dioxide and  $40,580 * 4/91 = 1784$  kg Hydrogen and 204,250 MJ heat. For a 10 second firestorm duration it gives 20GW power... or five-six times the full power of the reactor... The above back of the envelope calculated worst case scenario should be considered. Now if both of these requirements are the NRC's safety requirements – to prevent the ignition of zirconium-steam reaction and enclose the reactor in a containment which withstands the detonation of such large amounts of Hydrogen mixed with the air – then I would say we can assure that we will have safe nuclear power plants.

comment #204589 posted on 2013-12-23 08:45:08 by Anonymous in response to comment #202428

Maybe because a sizable portion of the APR1400 scope is by US-based suppliers?

posted on Tue, 24 Dec 2013 13:21:31 +0000



## Comments

comment #205537 posted on 2013-12-24 13:53:50 by CaptD

When it comes to reactor Safety, hopefully everyone will have a safe and healthy 2014...

comment #205432 posted on 2013-12-24 10:05:58 by Nikohl Vandel

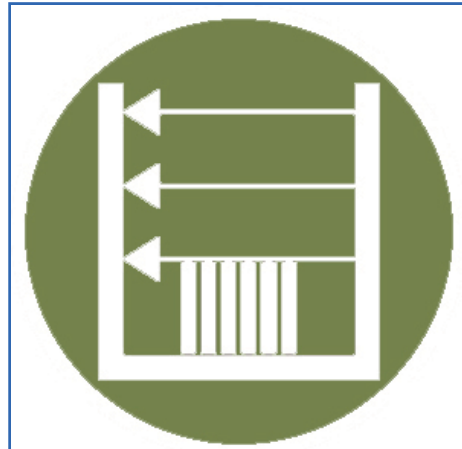
Thank you, you too!

## Keeping Proper Track of Spent Fuel Pool Conditions

posted on Thu, 26 Dec 2013 14:02:49 +0000

*Lauren Gibson  
Project Manager  
Japan Lessons-Learned Directorate*

While "spent fuel pool #4" at Fukushima Daiichi did keep its contents safe during the March 2011 accident, no one could confirm that during the accident. The plant's staff and other experts, including the NRC, simply didn't have enough information to know what was going on in



the pool. Why not? There was no reliable way to measure the pool's water level. Knowing the water level is important because if the pool had boiled dry, it would have damaged the fuel and added to the accident's radiation release. The Japanese plant's staff did the right thing in assuming the worst and making many attempts to add water to the pool. They even dropped water from helicopters. If they had known the pools were OK, however, they would have been able to focus on addressing the real problem: the damaged reactors. This experience led the NRC to order U.S. nuclear power plants to add instrumentation to their spent fuel pools. That way, if an accident occurs at a U.S. reactor, plant staff will be able to tell when the spent fuel pool needed attention. Spent fuel pool instrumentation will help plant staff properly prioritize their accident response and keep the public safe. U.S. reactors already monitor a small fraction of the water level in the spent fuel pool. However, this system may not work if power is lost, as it was at Fukushima, and can't provide advance warning of low water levels. The NRC's order requires U.S. reactors to be able to tell whether water is at or above certain important levels. The highest level means enough water is available for the normal cooling system to work. The second level marks the level of water needed to protect someone standing next to the pool from the fuel's radiation. The lowest level is still enough to cover the fuel, but the plant staff should begin adding more water to the pool. Of course, water may be added—and most likely would be—prior to reaching this point. The order also requires that plant staff must be able to read these levels from somewhere away from the pool, such as in the control room. U.S. reactors must install the new instruments no later than two refueling cycles after they submit their plan to the NRC or by the end of 2016, whichever comes first. All U.S. plants submitted their instrumentation plans in February 2013. We've been reviewing the plans and we recently issued interim staff evaluations. These documents give the plants feedback so they can continue on the right track for implementing the order. The evaluations also ask plants for additional information we need to complete our review. While the agency's final approval is yet to come, the interim evaluations give plants the confidence to order equipment and move forward with installing the instruments. We'll provide the plants a final staff evaluation when we can conclude that they'll comply with the order by the deadline by following their plan. We'll continue inspecting plants to confirm they've finished complying with the order. Our website's Japan Lessons Learned section has a [page](#) with more information about the order and related guidance.

## Comments

comment #207274 posted on 2013-12-26 17:21:51 by richard123456columbia

The report's Enclosure 2 relates to one of several methods Browns Ferry could use to maintain spent fuel pool water levels after an explosion or large fire. Since explosions and large fires can be caused by hostile action, it's appropriate to protect information on how a plant would respond to such an event. When one can drive a plane through the roof and smash into the fuel why would they need any other method.

comment #207108 posted on 2013-12-26 12:25:55 by Jim Van Zandt

How about rigging something simple involving a float, a pole, a flag, and some reference marks, that could be read from anywhere in sight of the pool, including a video camera that is probably in place for other reasons?

comment #207101 posted on 2013-12-26 12:13:42 by badger777

Are you guys kidding me? Just because you have no solution to spent fuel storage, do you guys put your head in the sand and just ignore the spent fuel, which incidentally is the most dangerous thing on earth. This is just being done now? Water levels in SFP were not monitored from the get go, even 60 years ago? This is beyond belief. And NRC is allowing 2 fuel cycles to implement? Jesus, what would this take....a few days of work at most? And what is the water source? Fire hose from a fire truck? Is the future of humanity relying on the presence of a fire hose?

comment #207047 posted on 2013-12-26 10:47:02 by Garry Morgan

No doubt Fukushima continues to be a disaster of worldwide implications, and is a great concern; but there are problems in the U.S. with the defective overhead cooling pools of the GE Mark 1 reactors such as in Browns Ferry Alabama. On December the 24th the NRC released a Fire Inspection report regarding Browns Ferry. Unfortunately you, the NRC, did not release the Fire Inspection report as it pertained to the cooling pools. There is a problem according to the NRC-there is a fire hazard identified in Enclosure 2 of that

report. The NRC classified it as a protected document. It seems you care more about protecting the failures of nuclear power safety rather than telling the public the truth. How do you expect the public to trust the NRC when you inappropriately classify a fire inspection report concerning cooling pool hazards instead of releasing it to the public? What are you protecting - it sure is not public safety.

comment #207153 posted on 2013-12-26 13:31:07 by Nikohl Vandel in response to comment #207108

Keep it simple smartie! Old school back up!

comment #207123 posted on 2013-12-26 12:43:09 by Moderator in response to comment #207047

All U.S. spent fuel pools continue to safely and securely store their contents. The pools meet very strong design requirements for safely withstanding severe events. All of the Browns Ferry report's issues (<http://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber='ML13354B743'>) were of very low safety significance and the plant has already taken appropriate steps to address the report's findings. The report's Enclosure 2 relates to one of several methods Browns Ferry could use to maintain spent fuel pool water levels after an explosion or large fire. Since explosions and large fires can be caused by hostile action, it's appropriate to protect information on how a plant would respond to such an event. Scott Burnell

comment #207151 posted on 2013-12-26 13:30:29 by Nikohl Vandel

Where the #NRC does itself no favors, "of course, water may be added -and most likely would be...." words like "may" and making assumptions of common sense of priorities, give economically intentioned corporations less than clear regulatory retirements, and they must first, because the nature of business and structure, make optional decisions based on the corporation's bottom line in the moment, which may or may not be public health and safety. There should be no options for that which is required for security and safety. Water MUST be added. Mind your words and stay on mission.

comment #207155 posted on 2013-12-26 13:32:18 by Garry Morgan in response to comment #207123

Your quote: "All U.S. spent fuel pools continue to safely and securely store their contents. The pools meet very strong design requirements for safely withstanding severe events." That is not a true statement. The GE Mark I cooling pools have no overhead reinforced containment above the cooling pool level other than a basic roof structure and sheet metal. The cooling pools of the GE Mark I are susceptible to natural disasters and human attack That is a design flaw which the NRC refuses to correct and deceives the public about. You can classify all you want, it will not change the obvious design flaws of the GE Mark I series of reactors relating to the cooling pools. The NRC has discouraged members of the public from discussing this obvious design flaw. Furthermore, the 1968 Tornado Safety report concerning the GE Mark I Cooling Pool Safety Report is seriously flawed. But yet the NRC accepts the report as scientific evidence, even though the disclaimer at the front of the report states the report may not be fact. The NRC has made no effort to undertake an updated, current scientific report concerning the cooling pool design flaws relating to tornado safety. The use of a shop vac as an example of a tornado's force, coupled with the unbelievable hypothesis that materials falling into or a direct hit of the unreinforced overhead structure will not displace water in the cooling pool is ridiculous. It is my observation the NRC intentionally classifies some reports not for the protection of the public but for the protection of the nuclear industry and the failures of the NRC. Particularly as they relate to the defective GE Mark I reactors.

comment #207228 posted on 2013-12-26 15:51:50 by CaptD

" two refueling cycles after they submit their plan to the NRC or by the end of 2016, whichever comes first." falls far short of what most would consider being proactive about nuclear safety and should a BIG problem occur before then, this ruling could prove to be the direct cause of a Trillion Dollar Eco-Disaster like Fukushima, "for want of a nail"...

comment #209304 posted on 2013-12-28 19:51:24 by devolpi

Although the NRC order requiring reliable spent-fuel-pool instrumentation was based on Fukushima accident uncertainties, the lessons-learned apply more tangibly to reactor water-level realities. After the Fukushima accident, responders were without means to determine reactor water level. Operators of Unit 2 lost ability to cool fuel after about 70 hours. Paraphrasing the NRC spent-fuel-monitoring order 2012-0067, lack of reactor water-level information contributed to poor understanding of potential radiation releases and adversely impacted prioritization of emergency response actions. Confusion was aggravated because reactor water-level instrumentation was (and still is) not available. Additional safety improvements could be made in light of Fukushima, improving capability of nuclear plants to mitigate beyond-design-basis accidents. Such augmentation would be consistent with a preventive defense-in-depth strategy. They would also reduce potential financial risk and public apprehension. Appropriate regulatory and industry response to the Fukushima accident should require reactor water-level instrumentation consisting of fixed independent high-energy gamma-radiation detectors mounted outside the reactor vessel (ex-vessel). Such ex-vessel instruments would provide autonomous and redundant measurements of reactor water level and density at all times, irrespective of power level. These independent instruments, installed within the biological shield -- external to the reactor pressure vessel -- would be qualified for temperature, humidity, and radiation levels consistent with extended reactor operation. Trained personnel would be able to monitor water level from the control room, or from external locations. The information display would continuously indicate reactor water level. A half-century of published experimental and intellectual technical base exists for autonomous gamma-ray water-level monitoring, derived in part from the TMI-2 loss-of-coolant billion-dollar accident which might very well have been prevented if such



ex-vessel instrumentation had been in place.

comment #210535 posted on 2013-12-30 10:30:33 by A Green Road (@AGreenRoad)

Spent Fuel Pool Risks At Nuclear Power Plants and High Burnup Plutonium Fuel Storage Problems; via @AGreenRoad  
<http://agreenroad.blogspot.com/2013/12/spent-fuel-pool-risks-at-nuclear-power.html>

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## Lights, Camera, Action -- NRC Raised the YouTube Bar in 2013

posted on Mon, 30 Dec 2013 14:47:49 +0000

*Ivonne L. Couret*  
*Public Affairs Officer*

We had a very productive year on our [YouTube Channel](#) in 2013. We posted more than 30 videos, including 15 produced in-



house with original content. The [latest](#) is a recap of some of the highlights and accomplishments of 2014. Other “original content” videos included four that spotlighted high-interest topics; six that included agency staff answering questions about NRC activities; two that reflected on historical events and two kid-friendly videos including our first cartoon. That cartoon, [A Day in the Life of an NRC Resident Inspector](#), made it to our No. 3 spot for all-time video views – quite a feat considering it was just posted in October. Another popular video was our historian’s recount of the [Three Mile Island Accident](#). Other videos include small segments of important Commission meetings, with links to the full video archive. We saw a 38 percent increase in our YouTube subscribers and growing interest in the platform. Almost half of our total YouTube views occurred in 2013 even though we debuted the platform back in 2011. Our [numbers](#) keep growing and the public continues to watch us. What’s next? Being mindful of the reduction of resources and budget, there will be a bit fewer videos produced in 2014. But we will be focusing our efforts on the higher interest topics. Currently in pre-production are two videos we think you’ll find worth watching. One is a conversation about the decommissioning process since five nuclear power



plants have announced they are shutting down. And we will be taking a historical look on how the NRC began. Also, next year we will be featuring more motion graphic videos that will provide quick, lively presentations of NRC information, activities and programs. What video topics would you like to see? Let us know through your blog comments or email us at [opa.resource@nrc.gov](mailto:opa.resource@nrc.gov).

### Comments

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