1/6/2012
77 FR 813

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Operation of St. Lucie Plant, Units 1 and 2 (St. Lucie 1 and 2) NRC-2011-0302

To: Nuclear Regulatory Commission: Cindy Bladey, Chief, Rules, Announcements, and Directives Branch (RADB), Office of Administration,

Mail Stop: TWB-05-B01M, U.S. Nuclear Regulatory Commission, Washington

RE: *Opposition to NCR permit approval for St. Lucie Plant, Florida Units 1 and 2 (St. Lucie 1 and 2)*

NRC-2011-0302

NCR permit review group,

I am opposed to the application to increase the power capacity at Port St. Lucie based on my concern over the following issues:

1. The applicant is requesting to increase the power capacity by nearly 12 % over what is presently allowed. This application presents significant safety and environmental concerns that in my determination and thereby make it unacceptable. The age of these plants alone should be enough to reject this permit, Unit 1 has operated since March 1, 1976 (36 yrs old) and Unit 2 began operations on April 6, 1983 (29yrs old).
2. The current amount of sea water withdrawn from the Atlantic, nearly 1 million gal/sec., will not be increased even though nearly 12 % more power will be produced. Based on my extremely limited understanding of thermodynamics it would appear that the amount of water necessary to cool these 2 reactors would also increase by an equal amount, 12 %. Which means the required amount should be an extra 100,00 gallons /sec. to meet reentry requirements. Rather than having to increase that amount and undergone the scrutiny of additional federal agencies, they propose heating the ocean as an alternative.
3. The seawater at withdrawal based on what has been determined, the water temp. beyond the mixing zone at exit, is 95 Deg. F. That too me seems extremely high but is the value the applicant has submitted. I would like verification that this is the temp @ the point of extraction. In my own research have found readings for Miami Beach which is South of Port St. Lucie, Florida and would have water temperatures on average higher than those found at the Port St. Lucie location.. Those values are found in the following web site (http://www.nodc.noaa.gov/dsdt/wtg12.html). The yearly water temperature in that region is 79 Deg. F. with a min. occurring in Jan of 71 Deg. F. and a Max. monthly ave of 86 Deg. F. occurring in July. The point is, at present they are taking 95 Deg. F. water and heating to 113 deg. F. and dumping it back into the ocean to begin cooling within the specified mixing zone. This increase is a total of 18 Deg. F. Under the new application this water would increase by 2 deg. F. to 115 Deg. F. It rather outrages me that the applicant has in any way associated the term, "nominal," as an expression relative to water use or temperature association above ambient values. I would further challenge these seemingly incorrect claims of a high starting ambient temperature when it appears that value should be reduced by another 16 Deg. F. meaning the difference between entering and exiting this nuclear facility would not be a gain of 18 Deg. F. as has been mentioned but rather 18 plus 16 for a more realistic total of 34 Deg. F. Based on the new request in increase the electrical output of the plant by 12%, using the same amount of seawater and my determined starting ambient temperature of 79 Deg F., we would have the heated water returning to the ocean not 2 Deg. F warmer but rather more than 4 Deg. F. warmer at the edge of the mixing zone. For starters I object to 2 degree allowance at the edge of the mixing zone but 4 Deg. F., as I contend, is extremely dangerous for the adjacent ocean

and will have additional unintended but detrimental effects on the life in the sea and the overall health of our planet. As a remedy for an accurate assessment of these temperatures for extracted and water returned to the ocean, thermal imaging techniques should be employed.

4. An astounding nearly 1 million gal./sec of water is pumped through the plant to cool the reactor. In my calculations every 17 hours a volume equal to the size of the New Orleans Super Dome(1 billion gallons) is basically sterilized and heated up and cooled back down to 113(presently) Deg F. which will be increase to 115 if approved before it returns to the ocean. If you could quantify just how much microscopic life is lost from the sea in every 17 hour period and have any doubt that the Atlantic Ocean is losing its life generating capacity you only need to look at this nuclear plant at Port St. Lucie. Every day 1 billion gallons is overheated, mashed against filter screens, and treated with chlorine to kill microscopic plants and animals before returning to the sea lifeless. The NRC has a responsibility to more than the shareholders of this particular corporate entity; the ocean is our home not a cesspool created for their disposal needs. The argument that "dilution is the solution," can no longer be used in corporate boardrooms, and in this case the by the authorizing NRC.
5. Based on my understanding, given the water amount will remain constant and 12% more heat will be generated to turn the power producing turbines, the temp and or pressure will increase by an equal amount. This will put the internal operation of all valves, gaskets, fittings, linings pumps and include any surface areas exposed to these temp or and pressure increases at risk of failure. The following document, a rather complete review of the nuclear industry and the aging nuclear facilities addresses this entire issue. Based on the limited time remaining before comments must be submitted this must suffice rather than a point by point examination of these findings. http://www.usatoday.com/money/industries/energy/2011-06-27-aging-nukes-safety_n.htm
6. The following incident, "Jellyfish swarm shuts down St. Lucie nuclear power plant," at this plant points out a couple of issues: A) the actual incident took place in Sept. and involved near criticality of the plant but was not publicly reported until Dec. of last year. The NCR must increase the timely reporting of such events which allow precautionary safety awareness and evacuation to proceed. B) Unpredictable events have and will occur beyond what has been anticipated. During Aug. of last year a massing of jellyfish became so encumbering, it prevented seawater from reaching the cooling loop. The following article describes what happened and I will use quotes directly from that source. http://www.palmbeachpost.com/news/jellyfish-swarm-shuts-down-st-lucie-nuclear-power-2019257.html "The four-day event began Aug. 22. The plant's three intake pipes, located almost a quarter-mile offshore, began sucking in an unusually large number of moon jellyfish. Travelling through the pipes at about 4.6 mph, the jellyfishes' poisonous tentacles broke off...Trash rakes and large, rotating metal screens that prevent debris from getting into storage tanks could not keep pace with the influx of dying and dead jellyfish and became clogged. That caused pressure to build in the pumps that keep the water flowing in the plant for cooling.....For fish trapped in the plant's intake canal, the situation became lethal. Unable to escape the canal, the poisonous tentacles attached to their gills, which became grossly swollen. Biologists from Inwater Research Group, a nonprofit that oversees the plant's turtle protection program, poured white vinegar on the gills of the giant grouper in an attempt to save them. Ten were rescued before divers were forced out of the water after they, too, were stung." What happened during those 4 days created one of those unforeseen events that cannot be predicted and will always remain an issue when we attempt to use living substances such as seawater then attempt to manipulate it for the sole purpose of satisfying man's whims and pleasures.

7. "Harmful Effects of the Once-Through System The environmental impact of diverting more than a billion gallons of water per unit per day from a water source such as an ocean or estuary, heating it up, and then discharging it at temperatures up to 25 degrees F higher than the surrounding water has been shown to cause significant damage. Not only are marine animals "entrained" or "impinged" by the intake system, but billions of smaller marine organisms, essential to the food web, are also sucked into the reactor operating system and largely destroyed in this process. Entrainment involves the drawing in of marine life through an intake tunnel, pipe, or canal at a velocity the marine animals cannot resist. Once drawn in, they are subject to impingement, becoming trapped against "prevention devices" such as screens, racks, bars, and barrier nets. Larger animals may then drown or suffocate after becoming impinged," quoted from the following:
   http://www.nirs.org/reactorwatch/licensedtokill/executivesummary.htm#.
8. Smaller fish and other organisms may be entrained through the entire reactor system and are often scalded by the heated water before being discharged into the waterway. Others, pulverized by the reactor condenser system, emerge as sediment that clouds the water around the discharge area, often blocking light from the ocean floor. The resulting shadow effect kills plant and animal life around reactor discharge systems by curtailing the light and oxygen they need to survive.

Our home planet, Earth, appears blue from space, water essential for all life was not designed to be heated by nuclear power plants. It is time that safety dominants the issuing of new permits for aging facilities such as this one at Port St. Lucie, Florida. There is no question that rather than modifying existing limits on rules governing nuclear plant operations, a new course must be stuck to elevate the ever complicating risks each new safety lower benchmark is established.

Edward W. Johnson

Since submitting this article have come across add. Artilces

http://www.msnbc.msn.com/id/42103936/ns/world_news-asiapacific/#.TzIYZlxsMoo

"It turns out that the U.S. Nuclear Regulatory Commission has calculated the odds of an earthquake causing catastrophic failure to a nuclear plant here. Each year, at the typical nuclear reactor in the U.S., there's a 1 in 74,176 chance of an earthquake strong enough to cause damage to the reactor's core, which could expose the public to radiation. No tsunami required. That's 10 times more likely than you winning $10,000 by buying a single ticket in the Powerball multistate lottery, where the chance is 1 in 723,145."

Here are the 10 nuclear power sites with the highest risk of an earthquake causing core damage, showing their NRC risk estimates based on 2008 and 1989 geological data.

6. Saint Lucie 1 and 2, Jensen Beach, Fla.: 1 in 21,739. Old estimate: N/A.

Rank. Reactor, nearby city, state: Chance each year of core damage from an earthquake, showing NRC estimates based on 2008 USGS data. Old estimate from 1989 data. Change in risk.

8. Saint Lucie 1, Jensen Beach, Fla.: 1 in 21,739 chance each year. Old estimate: N/A. Change in risk: N/A.
   8. Saint Lucie 2, Jensen Beach, Fla.: 1 in 21,739 chance each year. Old estimate: N/A. Change in risk: N/A.