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Submitter Information

Name: Steven Nesbit
Organization: Duke Energy Corporation

407

General Comment

See attached file(s)

Attachments

2015-11 Duke Energy Comments on Draft NUREG-2184 (YM EIS Supplement)

SUNSI Review Complete
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DUKE ENERGY.

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Cindy Bladey, Chief, Rules, Announcements, and Directives Branch (RADB)
Division of Administrative Services
Office of Administration (Mail Stop: OWFN-12-H08)
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Duke Energy Corporation Comments on Draft NUREG-2184, *Supplement to the U.S. Department of Energy's Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada* (August 2015)

Dear Ms. Bladey:

Duke Energy is the largest electric power holding company in the United States, supplying and delivering energy to 7.3 million retail electric U.S. customers, representing about 23 million people. Duke Energy operates 11 nuclear power reactors in North Carolina and South Carolina, and oversees one permanently shut down reactor in Florida. As one of the largest nuclear power plant operators in the United States, Duke Energy manages a large inventory of used nuclear fuel at its nuclear power plant sites. As of December 31, 2014

- Duke Energy stored 22,245 used fuel assemblies totaling 7961 metric tons of used fuel (about 11 percent of the U.S. inventory by mass).
- Duke Energy had 251 dry storage systems containing used fuel.
- The Duke Energy Oconee Nuclear Station has the nation's largest dry storage facility for commercial used fuel.
- Duke Energy customers had paid waste fees totaling $2.49 billion.

As these data demonstrate, Duke Energy has a significant interest in seeing the government re-establish a viable and functioning used fuel management program.

Duke Energy endorses the Nuclear Regulatory Commission's (NRC's) conclusion in draft NUREG-2184 that all of the potential direct, indirect, and cumulative radiological and nonradiological impacts of a proposed geologic repository at Yucca Mountain over a one million year period on the aquifer environment, soils, ecology, and public health,

as well as the potential for disproportionate impacts on minority or low-income populations, would be small.

Duke Energy highlights the fact that in calculating doses to future inhabitants near Yucca Mountain the NRC made the conservative assumption that inhabitants would make extensive use of ground water contaminated by radionuclides from the repository, with dose pathways from external exposure, inhalation, and ingestion of crops, meat, and soil (i.e., the "reasonably maximally exposed individual" concept). In this manner the NRC methodology conservatively estimates the dose that would be received by nearby inhabitants (actual average doses would be lower). Moreover, the NRC calculations assume that significant populations would live in the vicinity of Yucca Mountain for extended periods of time and have the energy and technology required to pump ground water extensively for personal and agricultural use; and yet those same inhabitants would not sample ground water for contaminants and would not take appropriate protective actions in the unlikely event of an elevated concentration of radionuclides. It would seem highly unlikely a future society would have the requisite technology to use groundwater resources, but would not analyze the content of the water and take action to remove radionuclide contamination, if warranted.

Even with NRC's conservative assumptions, the annual dose calculated for any individual living in the vicinity of Yucca Mountain over the next 1,000,000 years was 1.3 millirem (0.013 millisievert). To place that dose in context, Duke Energy provides a comparison table (see attachment) showing doses typically experienced in America today. The conservatively estimated annual dose from ground water near Yucca Mountain is a small fraction of the radiation an average American is exposed to every year from natural and man-made sources. Moreover, the conservatively estimated annual dose from ground water near Yucca Mountain is less than doses received from routine human activities like medical procedures and airline flights. Most notably, the 1.3 millirem calculated annual dose is substantially lower than the 4 millirem annual dose that is allowable from drinking water from treated public water systems in the United States.

Coming on the heels of the findings in the NRC staff's Yucca Mountain Safety Evaluation completed in early 2015, the NRC environmental impact statement supplement provides further evidence that used nuclear fuel and high-level radioactive waste can be disposed safely in a geologic repository at Yucca Mountain. Duke Energy urges the NRC to request funding from Congress to complete all facets of the statutorily-mandated licensing review of the Yucca Mountain repository construction authorization request.

Sincerely,

Bill Pitesa

John W. (Bill) Pitesa, Chief Nuclear Officer
Nuclear Generation

Attachment

Conservatively Projected Future Doses from Ground Water near a Yucca Mountain Repository Compared to Typical Doses Experienced by Americans Today

Radiation source or activity	Annual or single event dose	Yucca Mountain ground water annual dose as fraction of dose from this source or activity
Conservatively projected annual dose from Yucca Mountain ground water	1.3 mrem	
Single chest CT scan	700 mrem[1]	0.19%
Average American annual exposure from all sources	620 mrem[2]	0.21%
Average American annual exposure from cosmic rays	15.5 mrem[2]	8.4%
Average American annual exposure from radionuclides internal to the body	15.5 mrem[2]	8.4%
Average American annual exposure from consumer products	6.2 mrem[2]	21%
Allowable annual exposure from treated water systems	4 mrem[3]	32%
Single flight from New York to Seattle	2.8 mrem[4]	46%
Single dental X-ray	1.5 mrem[1]	87%

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1 NRC website "Doses in Our Daily Lives" (http://www.nrc.gov/about-nrc/radiation/around-us/doses-daily-lives.html).

2 NRC "Fact Sheet on Biological Effects of Radiation" (http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/bio-effects-radiation.html).

3 40 CFR Part 141.66, National Primary Drinking Water Regulations, U.S. Environmental Protection Agency, 2015 edition.

4 U. S. Department of Transportation Fact Sheet "What Aircrews Should Know About Their Occupational Exposure to Ionizing Radiation" (http://pbadupws.nrc.gov/docs/ML1004/ML100481076.pdf)