

CCNPP3COLA PEmails

From: Quinn, Laura
Sent: Tuesday, February 08, 2011 12:38 PM
To: Albert Nunez
Cc: CCNPP3COL Resource; Arora, Surinder; Schaaf, Robert
Subject: RE: Status of the Environmental Review for Calvert Cliffs Nuclear Power Plant, Unit 3, Combined License Application

Dear Mr. Nunez

Thank you for your e-mail of December 2, 2010, in which you requested information on the effects of climate change at the Calvert Cliffs Nuclear Plant Unit 3 site. Specifically, you requested information regarding the potential impacts of sea level rise and severe storm activity during operation of the proposed Calvert Cliffs Unit 3, and information regarding decommissioning of the facility and removal of spent fuel following cessation of plant operation. In addition to responding to your particular questions, this response provides background information to provide you with context for some of the details of the licensing process. The issues associated with climate change have safety as well as environmental implications; however, most of the issues you raised are related to safety or policy issues and are not part of the environmental review. A number of NRC products are available to help you become familiar with the site, site selection issues, and the NRC safety and environmental reviews; as you requested, this response provides links to these and other resources to assist you.

As you are aware, the NRC is currently reviewing an application for a combined license to build and operate an additional nuclear power plant at the Calvert Cliffs site. If approved, a nuclear power plant would be licensed to operate for a period not to exceed 40 years. A license holder can apply to renew its license for 20 years, which would prompt another review by the NRC. Please note that the activities at the Calvert Cliffs site (i.e., currently operating Units 1 and 2 and proposed Unit 3) should not be viewed as interdependent projects. Calvert Cliffs Units 1 and 2, which have renewed operating licenses and are authorized to operate until 2034 and 2036, respectively, would continue to operate independently of Unit 3, if authorized. —

The NRC's primary focus under the Atomic Energy Act (AEA) is to provide for the protection of public health and safety and to provide for the common defense and security. In addition to its safety obligations, the NRC has responsibilities under the National Environmental Policy Act (NEPA) to ensure that decisionmakers are well informed of the potential environmental impacts of proposed actions before granting certain permits, licenses, and authorizations. The licensing framework for new reactor applications is described in <http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0298/>. The requirements for applicants and the NRC staff are included in our implementing regulations at Title 10 of the Code of Federal Regulations (10 CFR) (see, <http://www.nrc.gov/reading-rm/doc-collections/cfr/>). For new reactor licensing, attention should be focused on 10 CFR Parts 50, 51, 52, and 100; for license renewal; i.e., continued operation beyond 40 years, attention should be focused on 10 CFR Parts 51 and 54.

The NRC requires that any applicant seeking approval for a permit, license, or authorization for a new nuclear power plant include a safety analysis report (SAR) (which is the principal licensing basis document for safety aspects) focusing on activities related to the design, construction (as defined by the NRC, see 10 CFR 51.4), and operation of the facility, as well as an environmental report (ER) to address the life cycle aspects of building, operating and decommissioning the proposed facility and alternatives thereto. The SAR and the ER are important resources for the NRC staff as it initiates the licensing review. The application for the proposed Calvert Cliffs Unit 3, including the SAR and the ER, can be found at: <http://www.nrc.gov/reactors/new-reactors/col/calvert-cliffs/documents.html>.

As part of its safety review under the AEA, the NRC considers site suitability issues and site safety issues. The NRC's evaluation of these issues would be contained in its safety evaluation report (SER), particularly in Chapter 2, site characteristics. In addition to describing the site setting, the NRC staff also considers the design bases of the facility to protect against natural phenomena. The NRC has established general design

criteria at 10 CFR Part 50, Appendix A (<http://www.nrc.gov/reading-rm/doc-collections/cfr/part050/part050-appa.html>). Criterion 2 requires that “[S]tructures, systems, and components important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety function.” These analyses are based on the most severe of the natural phenomena historically reported for the site area. While the effects of climate change may alter the trends observed in the historical data, the applicant, in its SAR, and the NRC staff, in its SER, consider safety margins to account for uncertainty to ensure that the analyses are sufficiently robust to deal with the 40-year term of the license.

As you noted in your e-mail, the change in climate over a 50-year time period would be gradual and unlikely to create significant changes in environmental conditions. Nevertheless, the NRC requires that license holders remain vigilant to ensure that changes to information contained in the SAR be updated on a periodic basis [see 10 CFR 50.71(e)]. The information in the SAR includes information regarding site characteristics (e.g., meteorological conditions, including regional climate). Consequently, if there are substantive changes to the site characteristics described in the SAR, the SAR would be updated to reflect the latest information.

Another possible effect of climate change alluded to in your e-mail is a potential increase in the frequency and severity of storms. From the meteorological perspective, those features of a nuclear power plant that are important-to-safety are designed to cope with extreme loads (probable maximum precipitation, wind loads, tornado missiles, floods, storm surge, etc.). Note that the proposed additional reactor at the Calvert Cliffs site would be located above the cliffs and well above 50 Ft Mean Sea Level (MSL).-

On February 23, 2010, the CEQ (see 75 FR 8046) issued draft guidance for public comment on the “Consideration of the Effects of Climate Change and Greenhouse Emissions.” CEQ proposed to advise federal agencies that they should adopt their actions to climate change impacts throughout the NEPA process and address these issues in their agency NEPA procedures. The NRC has considered the effects of climate change in environmental impact statements for new reactor projects for several years. The NRC considers in its new reactor environmental reviews that the affected environment is dynamic and that, during the period covered by the proposed action, resources may be affected by a changing climate. When the NRC takes an action to grant a permit or license, it recognizes that the affected environment may change over the duration of the permit or license. The principal resource used by the NRC for considering the effects of climate change in the various regions of the United States and across resource sectors is the 2009 report of the U.S. Global Change Research Program (see, <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>). Greenhouse gas (GHG) emissions and climate change are principally considered in the air quality sections of the EIS. The NRC’s environmental review for the proposed plant, documented in the Draft Environmental Impact Statement for the Combined License (COL) for the Calvert Cliffs Nuclear Power Plant Unit 3 (NUREG-1936), available at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1936/>, is the principal licensing basis document on environmental issues. -

Finally, your e-mail requested information regarding decommissioning of the proposed plant following cessation of operation, and removal of waste and spent fuel from the site. If an NRC license holder elects to cease operations at or before the end of its license term, then it is required to take certain actions related to decommissioning the facility (see 10 CFR 50.82 and 50.83). All decommissioning activities are expected to be completed within 60 years of cessation of operation. All radioactive wastes are managed in a manner that is protective of public health and safety and in a manner that is not inimicable to the common defense and security. For more information, please refer to Staff Responses to Frequently Asked Questions Concerning Decommissioning of Nuclear Power Reactors (NUREG-1628), available at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1628/>.

You may be aware of the recent Commission approval and issuance of its “Waste Confidence” findings and update of its regulations at 10 CFR 51.23 that was issued in the Federal Register on December 23, 2010 (75 FR 81032-81076). The Commission now finds that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 60 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor in a combination of storage in its spent fuel storage basin or at either onsite or offsite independent spent fuel storage installations (ISFSIs). It also finds reasonable assurance that sufficient mined geologic repository capacity will be available

for disposal of spent fuel when necessary. Also the Commission directed the NRC staff to conduct additional analysis for longer-term storage to ensure that we [the Commission] remain fully informed by current circumstances and scientific knowledge relating to spent fuel storage and disposal.”

The current circumstances related to licensing a high-level waste repository are in flux. In June 2008, the NRC received an application from the U.S Department of Energy (DOE), for a high-level waste repository in Nevada. In March 2010, the DOE filed a motion to withdraw its application, but a final determination has not been made on the withdrawal motion. Separately, the NRC staff is monitoring the activities of the Blue Ribbon Commission on America’s Nuclear Future (www.brc.gov) that was created by the DOE Secretary, “... to conduct a comprehensive review of policies for managing the back end of the nuclear fuel cycle, including all alternatives for the storage, processing, and disposal of civilian and defense used nuclear fuel, high-level waste, and materials derived from nuclear activities.” The Congress and The President establish the Nation’s policy on high-level waste (see the Nuclear Waste Policy Act), but the NRC has the responsibility for determining whether or not the site proposed provides for reasonable assurance of adequate protection for the public (see 10 CFR Part 63). That process involves safety and environmental reviews; such reviews will span the duration of changes in climate.

We hope that the above discussion provides you the requested information and access to resources on your topics of interest. If you have any questions or need additional information regarding the safety review for the combined license application for Calvert Cliffs, please contact the NRC Lead Project Manager, Mr. Surinder Arora at 301-415-1421 or by e-mail at Surinder.Arora@nrc.gov. If you have any questions regarding the environmental review for the combined license application for Calvert Cliffs, please contact the NRC Environmental Project Manager, Ms. Laura Quinn at 301-415-2220 or by e-mail at Laura.Quinn@nrc.gov. You can also submit questions to the NRC using the Agency’s new blog that is located at <http://public-blog.nrc-gateway.gov/>.

Thanks

*Laura Quinn
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Please consider the environment before printing this email.

From: solarnrgman@gmail.com [mailto:solarnrgman@gmail.com] **On Behalf Of** Albert Nunez
Sent: Monday, December 06, 2010 4:27 PM
To: Quinn, Laura
Cc: CCNPP3COL Resource
Subject: Re: Status of the Environmental Review for Calvert Cliffs Nuclear Power Plant, Unit 3, Combined License Application

Thank you for your reply. January is fine.... the one overriding question I guess is, are they still going to be built Unit 3 since the loan guarantee with the DOE was rejected by Constellation?

On Mon, Dec 6, 2010 at 3:45 PM, Quinn, Laura <Laura.Quinn@nrc.gov> wrote:

Mr. Nunez,

I received your email below and we are preparing a letter to address your concerns. I wanted to let you know that I have received your email. You have touched on several different topics and my experts in some of the areas are in and out of the office due to work and the holiday season. We will get a letter out to you in the coming weeks but I wanted to let you know that due to the holidays it will probably be mailed sometime in January.

Thanks

Laura Quinn

Project Manager

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Please consider the environment before printing this email.

From: Dent, Kimberly
Sent: Thursday, December 02, 2010 6:58 AM
To: Quinn, Laura
Cc: Albert Nunez
Subject: RE: Status of the Environmental Review for Calvert Cliffs Nuclear Power Plant, Unit 3, Combined License Application

Laura,

Can you address these questions that Mr. Nunez has?

Thanks,

Kim

From: solarnrgman@gmail.com [mailto:solarnrgman@gmail.com] **On Behalf Of** Albert Nunez
Sent: Wednesday, December 01, 2010 9:21 PM
To: Dent, Kimberly
Subject: Re: Status of the Environmental Review for Calvert Cliffs Nuclear Power Plant, Unit 3, Combined License Application

Thank you for sending this letter for my review.

I know that you may not be the most appropriate person and this most likely this is not the appropriate time or place to ask questions, but I never received what I felt were adequate answers when I asked them at one of the Public Hearings. I have to confess that I have not been following all the details of this process and am not familiar with all the available documentation, so please forgive me if these questions have been addressed, since they may have been, but I am just not aware. I did note that there is a referenced study which I am just now downloading and will read. - Climate change, nuclear power, and the adaptation-mitigation dilemma *Original Research Article, Energy Policy, Volume 39, Issue 1, January 2011, Pages 318-333* Natalie Kopytko and John Perkins.

The questions are: Are there any contingency plans for significant sea level rise or storm related tidal surges over the life of this proposed plant? By significant sea level rise I mean on the order of 23 to 24 feet which is the projected level that would occur if all of the ice on Greenland were to melt. Obviously, it is not likely that this will happen in a 50 year horizon but could possible occur in a 500 year period. So another question is, what if any remnants of this facility will remain on this site in 500 years and how would these remains, if any, be effected by a 23 foot mean sea level rise from today? Of course, with an increase in sever storm activity it is certainly possible that category 5 hurricane could create a storm surge that could flood the facility in its operating years. What contingency plans are there for such a tidal surge event?

If the premise is that this plant will have a useful life of ~60 years, then what? Would the plant be totally decommission/deconstructed and recycled or just abandoned in place? I assume that Units 1 & 2 would be decommissioned long before Unit 3, which will basically be replacing these two earlier/older units power output.

If the site is to be fully restored to it natural state and all of the structures and equipment and spent fuel will be removed, in <100 years, then the likelihood that sea level rise would have any significant impact would be near nil. But if the plant(s) and spent fuel were to be abandoned in place then that is an entirely different scenario.

If you have any available official studies that I can read on these issues I would appreciate receiving copies or web addresses where I can download them.

Thank you for taking the time to address these questions.

Sincerely,

Albert Nunez
202-270-5000

On Wed, Dec 1, 2010 at 4:15 PM, Dent, Kimberly <Kimberly.Dent@nrc.gov> wrote:

ADAMS Accession No.: ML102861867

TO: Greg Gibson

FROM: Robert G. Schaaf

DATE: November 24, 2010

SUBJECT: STATUS OF THE ENVIRONMENTAL REVIEW FOR CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT 3, COMBINED LICENSE APPLICATION

You may also access this document in NRC's Agencywide Documents Access and Management System (ADAMS) using the accession number listed in this e-mail at: <http://www.nrc.gov/reading-rm/adams/adams-public.html>

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Hearing Identifier: CalvertCliffs_Unit3Cola_Public_EX
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Unit 3, Combined License Application
Sent Date: 2/8/2011 12:38:15 PM
Received Date: 2/8/2011 12:38:14 PM
From: Quinn, Laura

Created By: Laura.Quinn@nrc.gov

Recipients:
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