

CCNPP3eRAIPEm Resource

From: Arora, Surinder
Sent: Wednesday, January 30, 2013 10:09 AM
To: Infanger, Paul; UNECC3Project@unistarnuclear.com
Cc: CCNPP3eRAIPEm Resource; Segala, John; Wilson, Anthony; Karas, Rebecca; Stieve, Alice; Ford, Tanya; McLellan, Judith
Subject: CCNPP3 - Draft RAI 385 RGS2 6950
Attachments: DRAFT RAI 385 RGS2 6950.doc

Paul,

Attached is Draft RAI No. 385 (eRAI No. 6950) pertaining to Section 2.5 of the FSAR for the Combined License Application for CCNPP3. You have until February 13, 2013 to review it and decide whether you need a conference call to discuss the RAI questions before the final issuance. After the phone call or after February 13, 2013, the RAI will be finalized and sent to you as "Final" for your response. You will then have 30 days to provide a technically complete response or an expected response date for the RAI.

Thanks

SURINDER ARORA, PE
PROJECT MANAGER,
Office of New Reactors
US Nuclear Regulatory Commission

Phone: 301 415-1421
FAX: 301 415-6406
Email: Surinder.Arora@nrc.gov

Hearing Identifier: CalvertCliffs_Unit3Col_RAI
Email Number: 291

Mail Envelope Properties (B46615B367D1144982B324704E3BCEEDD49572D7F9)

Subject: CCNPP3 - Draft RAI 385 RGS2 6950
Sent Date: 1/30/2013 10:08:56 AM
Received Date: 1/30/2013 10:09:02 AM
From: Arora, Surinder

Created By: Surinder.Arora@nrc.gov

Recipients:

"CCNPP3eRAIEm Resource" <CCNPP3eRAIEm.Resource@nrc.gov>
Tracking Status: None
"Segala, John" <John.Segala@nrc.gov>
Tracking Status: None
"Wilson, Anthony" <Anthony.Wilson@nrc.gov>
Tracking Status: None
"Karas, Rebecca" <Rebecca.Karas@nrc.gov>
Tracking Status: None
"Stieve, Alice" <Alice.Stieve@nrc.gov>
Tracking Status: None
"Ford, Tanya" <Tanya.Ford@nrc.gov>
Tracking Status: None
"McLellan, Judith" <Judith.McLellan@nrc.gov>
Tracking Status: None
"Infanger, Paul" <paul.infanger@unistarnuclear.com>
Tracking Status: None
"UNECC3Project@unistarnuclear.com" <UNECC3Project@unistarnuclear.com>
Tracking Status: None

Post Office: HQCLSTR01.nrc.gov

Files	Size	Date & Time
MESSAGE	740	1/30/2013 10:09:02 AM
DRAFT RAI 385 RGS2 6950.doc		43002

Options

Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

Request for Additional Information 385 (eRAI 6950)

DRAFT

Issue Date: 1/30/2013

Application Title: Calvert Cliffs Unit 3 - Docket Number 52-016

Operating Company: UniStar

Docket No. 52-016

Review Section: 02.05.01 - Basic Geologic and Seismic Information

Application Section:

QUESTIONS

02.05.01-70

In response to supplemental RAI 219, Question 2.5.1-65, April 30, 2010, UniStar provided a revised map with earthquakes from two seismicity catalogs, EPRI-SOG (1986) and the revised earthquake catalog (1985-2006). UniStar also provided information regarding the earthquake location uncertainty, especially with respect to the Newark and Richmond basins.

In support of 10 CFR 100.23, please revise these figures per the new earthquake catalog developed for the CEUS SSC and review and revise the previously provided discussion as needed with respect to earthquake location uncertainty.

02.05.01-71

This question pertains to supplemental response to RAIs 284, 322, and 345 and the COLA Markups submitted with letter UN#12-127, November 20, 2012.

In FSAR Section 2.5.1, Regional tectonic setting, staff notes that UniStar has deleted the discussion of Schulte and Mooney, 2005 and Johnston et al, 1994. In a previous RAI (2.5.1-63) concerned with seismicity and extended crust, NRC specifically asked that a discussion of these two investigations be included in the FSAR.

In support of 10 CFR 100.23, please reinstate this discussion in the FSAR.

02.05.01-72

This question pertains to supplemental response to RAIs 284, 322, and 345 and the COLA Markups submitted with letter UN#12-127, November 20, 2012.

In FSAR Section 2.5.1, Stafford Fault of Mixon, UniStar states: However, the interpretation of these offsets as tectonic in origin is equivocal, simply because the offsets are so small. UniStar also states: On this basis, the conclusions developed by Powars et al. (Powars, 2010b) are considered speculative, and the Stafford fault system is therefore not considered a capable tectonic source.

Staff notes that since Powars et al reports that the fault offsets Pleistocene terrace deposits, this is an indication that the fault might be Quaternary. In support of 10 CFR 100.23, please discuss the specific evidence provided by Powars et al about the fault. Justify how the dimensions of fault offset render the interpretation equivocal. Provide the basis for a conclusion that the SFS does not impact site suitability or design basis.

02.05.01-73

This question pertains to supplemental response to RAIs 284, 322, and 345 and the COLA Markups submitted with letter UN#12-127, November 20, 2012.

In FSAR Section 2.5.1, National Zoo Faults UniStar states: More recently, Southworth et al. (Southworth, 2007) suggested that some discrete younger thrust faults of the Rock Creek shear zone near the National Zoo have placed crystalline rocks against Tertiary and Quaternary sediments. Additional studies are planned by the USGS to further investigate the age of deformation in the area, and the lateral continuity of the faults. Nonetheless, it is concluded that the National Zoo faults are not a capable tectonic source, given the lack of seismicity spatially associated with the fault zone.

Staff notes that crystalline basement rock in fault contact with Quaternary age sediments indicates the fault is potentially Quaternary age. Staff also notes that geologically young faults are considered in the safety review for their impact on site suitability and design basis. In support of 10 CFR 100.23, please include this fault in the list of potential Quaternary faults within the 200 mi radius of the CCNPP. Provide the basis that supports a conclusion that the National Zoo faults do not impact site suitability or design basis.

02.05.01-74

This question pertains to supplemental response to RAIs 284, 322, and 345 and the COLA Markups submitted with letter UN#12-127, November 20, 2012,

In FSAR Section 2.5.1, with respect to the Central Virginia seismic zone:

a. UniStar states that paleoliquefaction sites of Obermeier and McNulty (Obermeier, 1998) reflect pre-historical occurrences of seismicity within the Central Virginia seismic zone, and do not indicate the presence of a capable tectonic source. In another paragraph UniStar also states: "A post-event report provided by the Geotechnical Extreme Events Reconnaissance (GEER) Association indicated that there were few instances of ground failure produced by the [Mineral 2011] earthquake (GEER, 2011). Only minor liquefaction and slumping was noted along some streams, along with rockfalls, and slope movements in marginally stable slopes. Most of these observations were in the earthquake epicentral region. Green and Lasley (Green, 2012) in an independent study indicated that only two definite liquefaction features, one likely feature, and one questionable feature were found near the epicenter."

In support of 10 CFR 100.23, please justify the basis for your conclusion that paleoliquefaction sites rule out 'the presence of a capable tectonic source'.

In addition, please discuss where the Mineral VA earthquake occurs with respect to the paleoliquefaction area of Obermeier and McNulty. If the recent liquefaction sites occur outside of the roughly defined paleoliquefaction zone of Obermeier and McNulty, provide a basis to explain how consideration of the Mineral earthquake would affect the seismic hazard using the CEUS-SSC model. If the recent liquefaction sites occur within the paleoliquefaction zone, provide the rationale that Mineral earthquake is consistent with the CEUS-SSC basis for the CVSZ (eg. recurrence, rate, M). Please substantiate your discussion with a map of the liquefaction site locations within the CVSZ: from the GEER group, from Green and Lasley and from Obermeier and McNulty sites. Include earthquake locations and the trace of any named fault (such as the Long Branch fault) on the same map.

b. Northeast trending faults in the region are currently being reevaluated by geologists (Spears, 2012; Horton et al, 2012; Harrison, 2012; Harrison et al, 2011; Hughes and Hibbard, 2012) following the Mineral VA earthquake as potential sources of the Mineral VA earthquake. Northeast trending Quaternary faults are consistent with the local, maximum horizontal stress direction as reported by Mazzotti and Townend, 2010, who report that the CVSZ has a statistically significant 48 degree clockwise rotation between the regional and the local stress directions.

In support of 10 CFR 100.23, please provide a discussion regarding specific information about the faults (such as the Long Branch and Quail faults among others (Horton et al, 2012)) and include these faults in the list of potential Quaternary faults within the 200 mi radius of the CCNPP. Include a figure or geologic map that shows fault traces, seismic events and liquefaction sites to support your discussion. Does the new information require any updates to the regional seismic source model defined NUREG 2115, as it does not have the CVSZ a separate seismic zone?