George H. Gellrich
Vice President

Calvert Cliffs Nuclear Power Plant, LLC
1650 Calvert Cliffs Parkway
Lusby, Maryland 20657
410.495.5200
410.495.3500 Fax

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CALVERT CLIFFS
NUCLEAR POWER PLANT

June 14, 2011

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Independent Spent Fuel Storage Installation
Material License No. SNM-2505, Docket No. 72-8
Responses to Request for Additional Information, RE: Calvert Cliffs Independent Spent Fuel Storage Installation License Renewal Application

REFERENCES:

(a) Letter from Mr. G. H. Gellrich (CCNPP) to Document Control Desk (NRC), dated September 17, 2010, Site-Specific Independent Spent Fuel Storage Installation (ISFSI) License Renewal Application

(b) Letter from Ms. D. Diaz-Toro (NRC) to Mr. G. H. Gellrich (CCNPP), dated April 15, 2011, Request for Additional Information to Support the Environmental Review of the Renewal Request for the Calvert Cliffs Independent Spent Fuel Storage Installation Site Specific License (TAC No. J00839)

In Reference (a), Calvert Cliffs Nuclear Power Plant, LLC (Calvert Cliffs) submitted Calvert Cliffs site-specific Independent Spent Fuel Storage Installation license renewal application. In Reference (b), the Nuclear Regulatory Commission issued a request for additional information to support their environmental review of Calvert Cliffs Nuclear Power Plant site-specific Independent Spent Fuel Storage Installation license renewal application. Attachment (1) contains Calvert Cliffs response to the request for additional information.

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Should you have questions regarding this matter, please contact Mr. Douglas E. Lauver at (410) 495-5219.

Very truly yours,

George Gellrich

STATE OF MARYLAND :
: **TO WIT:**
COUNTY OF CALVERT :

I, George H. Gellrich, being duly sworn, state that I am Vice President - Calvert Cliffs Nuclear Power Plant, LLC (CCNPP), and that I am duly authorized to execute and file this response on behalf of CCNPP. To the best of my knowledge and belief, the statements contained in this document are true and correct. To the extent that these statements are not based on my personal knowledge, they are based upon information provided by other CCNPP employees and/or consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.

George Gellrich

Subscribed and sworn before me, a Notary Public in and for the State of Maryland and County of St. Mary's, this 14th day of June, 2011.

WITNESS my Hand and Notarial Seal:

Paul L. Tully
Notary Public

My Commission Expires:

March 14, 2015
Date

GHG/KLG/bjd

Attachment: (1) Calvert Cliffs Response to NRC Request for Additional Information
Enclosures: (1) Maryland Coastal Zone Management Program Response
(2) Maryland Department of Natural Resources Letter of August 11, 2010
(3) Final Flora Survey Report
(4) Final Faunal Survey Report

cc: D. V. Pickett, NRC
W. M. Dean, NRC
Resident Inspector, NRC
S. Gray, DNR
J. Goshen, NMSS
E. Ghigiarelli, MDE
V. Ordaz, NMSS

ATTACHMENT (1)

CALVERT CLIFFS RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION

Calvert Cliffs Nuclear Power Plant, LLC
June 14, 2011

ATTACHMENT (1)

CALVERT CLIFFS RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION

RAI 1:

Provide documentation from the State of Maryland concerning the consistency certification required under the Coastal Zone Management Act of 1972.

- *By letter dated June 15, 2010, Calvert Cliffs Nuclear Power Plant (CCNPP) wrote to the Maryland Department of the Environment to request concurrence that renewal of the Independent Spent Fuel Storage Installation (ISFSI) license for 40 years is consistent with the Maryland Coastal Zone Management Program (see enclosures to the supplemental Environmental Report [ER].*
- *Pursuant to 15 CFR 930.62, the State agency is to notify the NRC and CCNPP whether the State concurs with or objects to the consistency certification.*

Provide determination by State of Maryland whether the proposed ISFSI license renewal is consistent with the state's Coastal Zone Management Plan program. This information is needed to fulfill NRC's requirements in meeting the provisions of the Coastal Zone Management Act of 1972.

CCNPP Response RAI 1:

In Reference 1, Calvert Cliffs Nuclear Power Plant (Calvert Cliffs) wrote to the Maryland Department of the Environment (MDE) to request concurrence that renewal of the ISFSI license for 40-years is consistent with the Maryland Coastal Zone Management Program. Calvert Cliffs has received an email from MDE indicating their concurrence that the renewal of Calvert Cliffs ISFSI license is consistent with the Maryland Coastal Zone Management Program. A copy of the email from MDE is provided in Enclosure 1.

RAI 2:

Provide information regarding presence of threatened, endangered, and special status species, or their critical habitat.

- *By letter dated June 3, 2010, CCNPP wrote to the U.S. Fish and Wildlife Service (USFWS) to request concerns and data related to the potential impact of the ISFSI license renewal to threatened and endangered species (see enclosures to the supplemental ER).*
- *By letter dated June 3, 2010, CCNPP wrote to the Maryland Department of Natural Resources, Wildlife and Heritage Service (MDNR) to request concerns and data related to the potential impact of the ISFSI license renewal to threatened and endangered species (see enclosures to the supplemental ER).*
- *On page E-10 of CCNPP's ISFSI license renewal application, it is stated that none of the endangered, threatened, or special animal or plant species identified in Table E3.3-1 of the supplemental ER are known to occur within the six-acre ISFSI facility site or areas of operation.*

Provide copies of any further .correspondence between CCNPP and the USFWS and MDNR related to the proposed ISFSI renewal and threatened and endangered species.

Additionally, provide further justification/support for the statement that none of the Federal or State threatened, endangered, or special status species are known to occur within the ISFSI area or area of operations.

This information is necessary to support NRC's determinations with respect to the Endangered Species Act of 1969, as amended.

CCNPP Response RAI 2:

In References 2 and 3, Calvert Cliffs wrote to the USFWS and MDNR to request concerns and data related to the potential impact of the ISFSI license renewal to threatened and endangered species. Calvert

Cliffs received a response letter from the MDNR (Reference 4). Calvert Cliffs has not received a written response from the USFWS.

Calvert Cliffs ISFSI is a developed upland industrial site. There are no wetlands or streams either within or directly adjacent to the ISFSI area. The ISFSI area does not have habitat appropriate to support any of the plant or animal species listed in Table E3.3-1 of Appendix E of our ISFSI license renewal submittal. In their response to our request for an environmental review of the ISFSI project, MDNR responded in Reference 4 that there were no state or federal records for rare, threatened, or endangered species within the boundaries of the project site. A copy of the letter is provided in Enclosure 2.

In addition, reports done in support of the Calvert Cliffs Unit 3 project in 2006 and that were summarized in Reference 5, fully encompassed the ISFSI area. In these reports no special status species were found to occur within the ISFSI area. These two reports are provided in Enclosures 3 and 4.

RAI 3:

Provide additional information and/or references to calculations of estimated public and occupational radiological doses over the proposed license renewal period.

- *Sections E4.1.1 and E4.1.2 of the supplemental ER refer the reader to Revision 17 of the CCNPP ISFSI Updated Safety Analysis Report (USAR) for a detailed discussion of public and occupational doses. This USAR revision is not a publicly available document.*
- *In Section E4.1.2 of the supplemental ER, CCNPP provides the estimated radiological dose to the maximum exposed member of the public from a full ISFSI and from the remaining uranium fuel cycle activities in the area. It is not clear if this is a bounding estimate of the expected doses that is reflective of (1) recent license amendments addressing use of a NUHOMS-32P DSC and increased burnup fuel; (2) the anticipated loading schedule for the ISFSI; and (3) the anticipated evolution of activities of Units 1 and 2 at the CCNPP site and the proposed construction and operation of Unit 3.*
- *In Section E4.1.2 of the supplemental ER, CCNPP provides an estimate of the collective dose to persons within two miles of the ISFSI and states that this estimate is less than one percent of the collective dose from the remaining fuel cycle operations. It is not clear if this collective dose is an annualized estimated dose or is a collective dose for the entire proposed license renewal period that is reflective of anticipated changes in activities at the CCNPP site and in the surrounding population.*

Provide publicly available discussions of CCNPP's assumptions and calculations used in estimating public and occupational radiological doses for the period of the proposed license renewal.

This information is necessary in order for the NRC staff to assess the environmental impacts of the proposed action as required by 10 CFR 51.30.

CCNPP Response RAI 3:

The discussion of occupational and public dose in Reference 6, Section E4.1, references Calvert Cliffs ISFSI Updated Safety Analysis Report (USAR) Chapter 7. This section of our ISFSI USAR can be accessed through ADAMS using Accession Number ML102590447. The site dose curves presented in Calvert Cliffs ISFSI USAR, Chapter 7 (Figures 7.4-1 and 7.4-2) bound both the NUHOMS-24P and NUHOMS-32P designs. However Calvert Cliffs ISFSI USAR is in the process of being revised to reflect the approval for the use of the increased burnup NUHOMS-32P design. The site dose curves that bound a fully loaded site of NUHOMS-24P, base NUHOMS-32P and extended burnup NUHOMS-32P are contained in Calvert Cliffs Calculation CA06751 (Tables 6-8 and 6-9 and Figures 8-1 and 8-2) which can be accessed through ADAMS Accession Number ML091680545. No credit is taken for radioactive

decay of the fuel during storage. These values presented are based solely on contribution from Calvert Cliffs ISFSI and do not include potential contributions from other facilities on site.

The second sentence of Reference 6, Section E4.1.2 has a typographical error and should be corrected to read, "The maximum exposed member of the public maintaining continuous occupancy in the nearest residence, which is **4,705** feet from the ISFSI facility, is less than 2 mrem/year when all 120 HSM are filled to capacity... ." The collective dose reported is an annualized estimate of dose based on a 2008 estimated population of 2,771. This dose includes only that from the ISFSI and does not include any anticipated changes in activities for Calvert Cliffs Nuclear Power Plant, Units 1 and 2.

RAI 4:

Provide additional information on the current monitoring and surveillance program.

- *Section E3.4 of the supplemental ER states that meteorology and climatology for the CCNPP site were addressed in the original 1989 Environmental Report for the ISFSI license application.*
- *Section E5.0 of the supplemental ER states that CCNPP performs routine monitoring activities to include: (1) the Radiological Environmental Monitoring Program for Units 1 and 2 and the ISFSI; (2) periodic monitoring of the horizontal storage modules (HSMs) and preventative maintenance as necessary; and (3) monitoring and maintenance of the perimeter and security fences.*
- *Section E2.2 of the supplemental ER states that flood water would need to rise at least 18 inches above yard grade to block the Horizontal Storage Module (HSM) air inlet.*
- *Section E4.3 of the supplemental ER provides an estimate of an increase in occupational dose due to an 8-hour debris removal period for the NUHOMS-24P and NUHOMS-32P. Documentation for this calculation is contained in Revision 17 to the USAR, which is not a publicly available document.*
- *Since original licensing of the ISFSI in 1991, the Federal Emergency Management Agency (FEMA) has made 11 "major disaster declarations" for the State of Maryland, to include Calvert County where the CCNPP ISFSI is located. These 11 declarations included hurricanes, snowstorms, blizzards, tornadoes, and severe storms / flooding.*

Provide publicly available discussion of CCNPP's response to severe weather events experienced at the site since 1991 to address flooding and/or blockage of the HSM air inlets of the ISFSI and the need for debris removal. This discussion should include mention of any instances of blockage of HSM air inlets, situations when on-site workers were needed to remove debris, and calculations of doses received during debris removal.

Clarify whether the estimates in estimated increases in occupational dose from debris removal are for a single HSM, multiple HSMs of the same design, or the full ISFSI reflective of the two HSM designs (i.e., NUHOMS-24P and NUHOMS-32P) and increased burnup fuel.

Additionally, revise section E3.4 of the supplemental ER, as needed, to address severe weather events experienced at the site since 1991.

This information is necessary in order for the NRC staff to assess the environmental impacts of the proposed action as required by 10 CFR 51.30.

CCNPP Response RAI 4:

As noted in Reference 6, Section E2.2 and more fully described in the ISFSI USAR, location and drainage design provisions ensure that flooding of the ISFSI and associated blockage of ISFSI horizontal storage module (HSM) air vents would not occur. Calvert Cliffs ISFSI is located at an elevation of 114 ft on a location free from flooding. This places the ISFSI 84 ft above the Calvert Cliffs maximum

postulated flood elevation of 28 ft (includes wind and wave run-up). However the potential does exist for other severe weather-induced blockage of HSM air vents (e.g., by snow, ice, windborne debris).

Calvert Cliffs Security personnel have conducted daily inspections of HSM inlet and outlet vents since November 19, 1993, when spent fuel was initially loaded into ISFSI HSMs. Normally, these inspections are done remotely via camera. However, in cases when remote visibility is impaired, inspections are done by Security personnel from the ISFSI periphery. Results of inspections are documented on daily logs.

From review of ISFSI HSM vent inspection daily logs from November 19, 1993 through March 6, 2011, observations of actual or potential blockage of vents were noted on only four occasions. Key information regarding these events is summarized in Table 1. Only two of the events (February 12, 2006 and February 7, 2010) were weather-related, both involving blockage by snow. As would be expected, neither of these weather-related events was due to flooding. The remaining two events (July 13, 2005 and June 3, 2008) relate to weeds growing in front of the vents, which can obscure view of the vents via the security cameras, and which present some eventual potential for blockage if not addressed.

As indicated in Table 1, two workers responded to each of these four incidents to remove snow from HSM vents or remove weeds, as indicated. Total estimated worker time in the ISFSI for these activities ranged from 1.4 to 3.2 person-hours. Corresponding estimated cumulative occupational doses (based on EPD readings) per event ranged from 0.0 mrem to 0.54 mrem.

TABLE 1
INCIDENCES OF POTENTIAL AND ACTUAL HSM VENT BLOCKAGE AND CLEARING
11/29/1993 – 03/06/2011

Date	Reported Condition	Weather-Related?	Response Activity	No. of Responders	Estimated Time Responders in ISFSI (Hours)	Estimated Occupational Dose (mrem)
2005/07/13	Weeds starting to grow in front of HSMs #16, 17, 18. Remaining vents (HSMs #1-15, 19-36, 61-71) clear.	No	Remove weeds	2	Worker 1 = 1.6 Worker 2 = 1.6 (Total = 3.2 person-hrs)	Worker 1 = 0.03 Worker 2 = 0.05 (Total 0.08)
2006/02/12	HSMs #1-36, 59-72. Multiple vents affected by wind and snow noted at 0724 hrs.	Yes	Remove snow	2	Worker 1 = 1.0 Worker 2 = 1.1 (Total = 2.1 person-hrs)	Worker 1 = 0.32 Worker 2 = 0.22 (Total 0.54)
2008/06/03	HSMs #16 and 71 have weeds in front of bottom vent. Remaining vents (HSMs # 1-15, 17-36, 53-70, 72) clear.	No	Remove weeds	2	Worker 1 = 1.1 Worker 2 = 0.3 (Total = 1.4 person-hrs)	Worker 1 = 0.40 Worker 2 = 0.03 (Total 0.43)
2010/02/07	HSMs #25-36 outer vents partially blocked by snow. Remaining vents (HSMs 1-24 and 49-72) clear.	Yes	Remove snow	2	Worker 1 = 1.3 Worker 2 = 1.3 (Total = 2.6 person-hrs)	Worker 1 = 0.0 Worker 2 = 0.0 (Total 0.0)

Table 2 below lists the Federal Emergency Management Agency (FEMA) disaster and emergency declarations for the state of Maryland since 1993. For each declaration, the table notes whether the declaration included Calvert County and documents whether blockage of HSM air inlet/outlet vents was recorded on the daily inspection log sheet. As indicated in Table 2, only the event of February 2, 2010 was concurrent with a FEMA weather-related Major Disaster or Emergency Declaration for Maryland (i.e., FEMA Severe Winter Storms and Snowstorms Major Disaster Declaration, February 5-11, 2010).

Table 2
FEMA Disaster and Emergency Declarations for MD and Concurrent CCNPP ISFSI Blockage and Removal Action Documentation

Incident Period	Incident Title	Declaration Type	Calvert Co. Included	Blockage Indicated on ISFSI Inlet/Outlet Vent Inspection Daily Log
02/05-11/2010	Severe Winter Storms and Snowstorms	Major Disaster	Yes	Yes 02/07/2010, HSM 25-36 outer vents partly blocked by snow.
12/18-20/2009	Severe Winter Storms and Snowstorms	Major Disaster	No	No
06/22-07/12/2006	Severe Storms, Flooding, Tornados	Major Disaster	No	No
08/29-10/01/2005	MD Hurricane Katrina Evacuation	Emergency	Yes	No
09/18-29/2003	Hurricane Isabel	Major Disaster	Yes	No
02/14-23/2003	MD Snowstorm	Emergency	Yes	No
04/28/2002	Tornado	Major Disaster	Yes	No
01/25-30/2000	Winter Storm	Major Disaster	Yes	No
09/16-20/1999	Hurricane Floyd	Major Disaster	Yes	No
09/06-09/1996	Hurricane Fran	Major Disaster	No	No
01/19-31/1996	Flooding	Major Disaster	No	No
01/06-12/1996	Blizzard	Major Disaster	Yes	No
02/08-18/1994	Ice Storms, Severe Storm, Winter Storm	Major Disaster	Yes	No
03/13-17/1993	MD Severe Snowfall and Winter Storm	Emergency	Yes	No

Reference 6, Section E4.3 provides an estimate of an increase in occupational dose due to an 8-hour debris removal period for a postulated accident that involved complete and total blockage of all HSM air inlets and outlets for a period of 48 hours. The estimated increase in occupational dose reported in the supplemental ER for 8-hour debris removal scenario for a single HSM load was calculated using a dose rate of 68 mrem/hr for the NUHOMS-32P design and 73 mrem/hr for the NUHOMS-24P design.

References

1. Letter from D. E. Lauver (CCNPP) to E. Ghigiarelli (MDE), dated June 15, 2010, Coastal Zone Management Consistency Determination
2. Letter from D. E. Lauver (CCNPP) to L. Miranda (USFWS), dated June 3, 2010, Nuclear Regulatory Commission Informal Consultation Preparation
3. Letter from D. E. Lauver (CCNPP) to L. Byrne (MDNR), dated June 3, 2010, Independent Spent Fuel Storage Installation Environmental Review
4. Letter from L. A. Byrne (MDNR) to D. E. Lauver (CCNPP), dated August 11, 2010, Environmental Review for Calvert Cliffs Nuclear Power Plant, Independent Spent Fuel Storage Installation, Calvert County, MD
5. NUREG-1936,Volume 2, May 2011, Environmental Impact Statement for the Combined License (COL) for Calvert Cliffs Nuclear Power Plant Unit 3 - Final Report
6. Letter from G. H. Gellrich (CCNPP) to Document Control Desk (NRC), dated September 17, 2010, Site-Specific Independent Spent Fuel Storage Installation (ISFSI) License Renewal Application

ENCLOSURE (1)

Maryland Coastal Zone Management Program Response

Calvert Cliffs Nuclear Power Plant, LLC
June 14, 2011

From: Elder Ghigiarelli [mailto:eghigiarelli@mde.state.md.us]
Sent: Friday, June 10, 2011 02:10 PM
To: Abernethy, Yvonne
Subject: Re: Calvert Cliffs ISFSI License Renewal Consistency Determination

Ms. Abernethy,

Thank you for your email and follow-up phone call regarding the Calvert Cliffs Nuclear Power Plant application to the Nuclear Regulatory Commission to renew the operating license for the CCNPP Independent Spent Fuel Storage Installation (ISFSI). Again, I apologize for my oversight in not responding to the CCNPP request for the State's concurrence with its certification that the license renewal action is consistent with Maryland's Coastal Zone Management Program (CZMP), as required by Section 307 of the Federal Coastal Zone Management Act of 1972, as amended (CZMA).

The proposed action involves the renewal of the operating license for an additional 40 years of operation. The CCNPP ISFSI is associated with the Units 1 and 2 generating facility, and began operation in 1992. The six-acre facility provides temporary storage of spent fuel generated by the operation of Units 1 and 2, and is located approximately 3,000 feet west of the Chesapeake Bay shoreline on the CCNPP site. The license renewal action will not involve any changes to operations or refurbishment to the facility.

Based on these considerations, the renewal of the operating license for the ISFSI is consistent with the Maryland CZMP, as required by Section 307 of the CZMA. Accordingly, the State concurs with the applicant's certification that the proposed activity is consistent with the Maryland CZMP.

If you have any questions, please contact me.

Elder A. Ghigiarelli, Jr.
Deputy Program Administrator
Federal Consistency Coordinator
Wetlands and Waterways Program
Maryland Department of the Environment
Phone: (410) 537-3763
Fax: (410) 537-3751

ENCLOSURE (2)

Maryland Department of Natural Resources Letter of August 11, 2010

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Joseph P. Gill, Deputy Secretary

August 11, 2010

Douglas Lauver
Calvert Cliff Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, MD 20657

RE: Environmental Review for Calvert Cliffs Nuclear Power Plant, Independent Spent Fuel Storage Installation, Calvert County, MD.

Dear Mr. Lauver:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2010.0715.ct

ENCLOSURE (3)

Final Flora Survey Report

Calvert Cliffs Nuclear Power Plant, LLC
June 14, 2011