Calvert Cliffs Nuclear Power Plant

1650 Calvert Cliffs Parkway
Lusby, Maryland 20657

Constellation Energy
Nuclear Generation Group

February 19, 2009

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Independent Spent Fuel Storage Installation; Docket No. 72-8
Report of Changes, Tests, and Experiments – 10 CFR 50.59 and 10 CFR 72.48

In accordance with 10 CFR 50.59(d)(2) and 10 CFR 72.48(d)(2), Calvert Cliffs Nuclear Power Plant, Inc. hereby submits a report containing brief descriptions of changes, tests, and experiments approved under the provisions of 10 CFR 50.59 and 10 CFR 72.48.

Attachment (1) of this report includes 10 CFR 50.59 and 10 CFR 72.48 evaluations recorded and approved between January 1, 2008 and December 31, 2008.

Should you have questions regarding this matter, please contact Mr. Jay S. Gaines at (410) 495-5219.

Very truly yours,

Mark D. Flaherty
Manager – Engineering Services

MDF/CAN/bjd

Attachment: (1) Calvert Cliffs Nuclear Power Plant Report of Changes, Tests, and Experiments [10 CFR 50.59(d)(2) and 10 CFR 72.48(d)(2)]

cc: D. V. Pickett, NRC
S. J. Collins, NRC
Resident Inspector, NRC
S. Gray, DNR
M. Weber, NMSS

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ATTACHMENT (1)

CALVERT CLIFFS NUCLEAR POWER PLANT

REPORT OF CHANGES, TESTS, AND EXPERIMENTS

[10 CFR 50.59(d)(2) and 10 CFR 72.48(d)(2)]

Calvert Cliffs Nuclear Power Plant, Inc.
February 19, 2009

ATTACHMENT (1)

CALVERT CLIFFS NUCLEAR POWER PLANT REPORT OF CHANGES, TESTS, AND EXPERIMENTS
[10 CFR 50.59(d)(2) and 10 CFR 72.48(d)(2)]

Document Id	Doc Type	Rev Status	Revision	Date Issued
SE00499	50.59	64	0003	03/09/2008

Subject	UNIT 1 CYCLE 19 CORE RELOAD
Summary	Approves Modes 1-3 2008 RFO

Proposed Activity:
The proposed activity is the Unit 1 Cycle 19 (U1C19) core reload.

Revision 0:
Authorized operation of the original core loading pattern for U1C19 in modes 5, 6, and defueled.

Revision 1:
During the 2008 RFO, fuel inspections identified three reinsert fuel assemblies to each have at least one failed fuel pin. Revision 1 allowed the leaking pin in 1X106 to be removed, fuel pin swaps within the assembly, and the insertion of a stainless steel pin. Leaking assembly 1X310 was replaced in U1C19 with assembly 1X412. Leaking assembly 1X508 was replaced in U1C19 with assembly 1X402. Unit 1 operation was limited to just mode 6 and defueled with the revised core loading pattern.

Revision 2:
Unit 1 operation in plant modes 4, 5, 6, and defueled was authorized for the revised core loading pattern.

Revision 3:
All safety analyses are now complete to allow Unit 1 operation in all plant modes with the revised core loading pattern.

Changes:
- High Burnup Lead Fuel Assemblies
- AREVA LFA Upper End Fitting Replacement
- Guide Tube Bleed Holes Circumferential Location
- Implement Standard Westinghouse Fuel Pellet Specification
- Zinc Injection
- Reuse of Reconstituted Batch 1W Fuel Assemblies from 2006 RFO
- CECOR Library Mid-Cycle Replacement
- Resolution of Stuck CEA 21
- PRE-APPROVED Contingency CEA Replacements
- PRE-APPROVED Contingency Core Loading Patterns
- PRE-APPROVED Contingency for Stainless Steel Pins
- PRE-APPROVED Contingency for Thermally Relaxed TURBO grid cage
- Update Tech Spec Bases 3.4.1
- Update Tech Spec Bases 3.4.2

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- Reinsert Center Fuel Assembly
- Reconstitution of 1X106
- Replacement of 1X310 and 1X508

Reason for Activity:
The proposed activity is required to support the biennial refueling of Unit 1 at Calvert Cliffs.

Activity Evaluation:
- Safety analyses were explicitly performed for the U1C19 Post-Trip Steam Line Break (UFSAR 14.14) and Containment Response (UFSAR 14.20 for both Unit 1 & 2). The remaining UFSAR Chapter 14 events were evaluated and confirmed to remain bounding for U1C19. The currently reported UFSAR accident doses remain bounding for operation of U1C19.

Conclusions:
1. U1C19 may now operate in all plant modes.
2. Although the safety analyses allow full power operation up to and including 2737 MWt, a License change is required prior to exceeding 2700 MWt.
3. Tech Spec Bases 3.4.1 and 3.4.2 will be rewritten.
4. The currently reported UFSAR accident doses remain bounding for operation of U1C19.
5. The proposed activity has been evaluated against the eight criteria of 10 CFR 50.59. It is concluded that no License Amendment is required prior to implementation since Tech Spec 4.2.1 has already been revised by the NRC to allow non-Zircaloy and non-ZIRLO cladding material in Unit 1 Cycle 19 and Tech Spec 5.6.5 has been revised to add a new methodology for Limited Scope High Burnup Lead Test Assemblies.

Document Id	Doc Type	Rev Status	Revision	Date Issued
SE00500	50.59	64	0000	01/30/2008

Subject	TIME TO RECONSTITUTION
Summary	License Amendments 233/209 allow placement of one or more assemblies on spent fuel rack spacers to support fuel reconstitution activities in the SFP. Assuming 19.8 feet of water over peak-power assemblies seated on rack spacers, 10 days of decay were required to compensate for the decreased iodine scrubbing post FHA via a simple bounding isotopic analysis. This activity calculates reduced decay times via detailed computational analyses with revised design basis dose limits, which include a minimal increase as defined by ES-017, and via a reduction in assembly specific radial power peaking factors. The SFP racks and water store spent fuel assemblies in a manner which maintains reactivity control, provides for adequate convective cooling of the assemblies, provides shielding from radioactive decay, and provides scrubbing of radioactive iodine released from an assembly post fuel handling accident (FHA). This activity will have no impact on SFP cooling, reactivity control, or shielding. The decay time required to place peak-power assemblies on rack spacers will be reduced from 10 days based on a simple bounding isotopic analysis to 6.75 days based on a detailed computational analysis. A further

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SE00500	50.59	64	0000	01/30/2008

reduction in decay time can be realized for non peak-power assemblies by correlating the radial power peaking factor with decay time (an RPF of 1.5 correlates to a decay time of 138 hours, an RPF of 1.4 correlates to a decay time of 120 hours, and an RPF of 1.3 correlates to a decay time of 100 hours). For conservatism, the maximum assembly radial peaking factor over the cycle should be utilized. For this activity, there is a minimal increase in dose as defined in ES-017. All offsite and control room doses remain well below the regulatory limits.

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SE00501	50.59	64		02/14/2008

Subject	REDUCTION IN 6 DAY SFP DECAY HEAT REQUIREMENT
Summary	This activity develops a new, bounding hypothetical operating/defueling sequence based on SAS2H/ORIGEN-S methodology, Appendix K power uprate, and revised fuel design (VAP fuel, higher enrichments) and operation (longer cycles, faster offloads). The hypothetical sequence is chosen to maximize the SFP decay heat load by choosing a limiting combination of cycle lengths and number of assemblies discharged per cycle. In addition, revised heat removal capacities are developed for the Spent Fuel Pool Cooling System (SFPCS) and the Shutdown Cooling (SDC) system based on component cooling (CC) and service water (SRW) temperatures and flowrates. The analyses show that the total SFP decay heat load is always less than the heat removal capacity for normal, seminormal, and abnormal operations.