February 20, 2001

Mr. Charles H. Cruse
Vice President - Nuclear Energy
Calvert Cliffs Nuclear Power Plant, Inc.
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, MD 20657-4702

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2 - REQUEST FOR RELIEF FROM AMERICAN SOCIETY OF MECHANICAL ENGINEERS BOILER AND PRESSURE VESSEL CODE, SECTION XI (TAC NOS. MB0544 AND MB0545)

Dear Mr. Cruse:

By letter dated November 21, 2000, Calvert Cliffs Nuclear Power Plant, Inc. submitted a request for relief from certain requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, 1998 Edition, for the third 10-year inservice inspection (ISI) interval of Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2. Relief Request ISI-15 requests relief from the requirement of the Code concerning reactor pressure vessel shell-to-flange weld examinations. The licensee proposed an alternative schedule in accordance with the provisions of Code Case N-623, "Deferral of Inspections of Shell-to-Flange and Head-to-Flange Welds of a Reactor Vessel."

The NRC staffs finds the licensee's request to be acceptable, and therefore, authorizes the proposed alternative. Use of Code Case N-623 is authorized for the third 10-year ISI interval at the Calvert Cliffs Nuclear Power Plant until such time as the code case is incorporated by reference in 10 CFR 50.55a. At that time, if the licensee intends to continue to implement this code case, the licensee must follow all provisions in Code Case N-623, with limitations as addressed in 10 CFR 50.55a, if any. The basis for the staff's determination is contained in the enclosed Safety Evaluation.

Sincerely,

/RA/ G. Vissing for

Marsha Gamberoni, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-317 and 50-318

Enclosure: As stated

cc w/encl: See next page

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*input provided by memo dated 01/30/01; incorporated with no significant changes

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE SECOND 10-YEAR INTERVAL INSERVICE INSPECTION (ISI)

RELIEF REQUEST NO. ISI-15 ON AMERICAN SOCIETY OF MECHANICAL ENGINEERS

BOILER AND PRESSURE VESSEL CODE (ASME CODE), SECTION XI

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-317 AND 50-318

1.0 INTRODUCTION

The inservice inspection (ISI) of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code(ASME Code) Class 1, 2, and 3 components is to be performed in accordance with Section XI of the ASME Code and applicable addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable editions of the ASME Code, Section XI, for the third 10-year ISI interval of Calvert Cliffs Units 1 and 2, is the 1998 Edition.

By letter dated November 21, 2000, Calvert Cliffs Nuclear Power Plant, Inc. submitted a request for relief from certain requirements of the ASME Code, Section XI, 1998 Edition, for the third 10-year ISI interval of Calvert Cliffs Units 1 and 2. Relief Request ISI-15 requests relief from the requirement of the Code concerning reactor pressure vessel shell-to-flange weld examinations, and proposes an alternative schedule in accordance with the provisions of Code Case N-623, “Deferral of Inspections of Shell-to-Flange and Head-to-Flange Welds of a Reactor Vessel.”

The NRC staff has evaluated the licensee's proposed alternative pursuant to 10 CFR 50.55a(a)(3)(i) for the third 10-year ISI interval of Calvert Cliffs Units 1 and 2.

2.0 DISCUSSION

2.1 Identification of Component

Reactor Pressure Vessel (RPV) Shell-to-Flange weld

2.2 Code Requirements

ASME Code, Section XI, 1998 Edition, Table IWB-2500-1, Examination Category B-A, Item B1.30 requires volumetric examination of the reactor vessel shell-to-flange weld. Partial deferral of the volumetric examination is permitted. Table IWB-2500-1, Category B-A, Note 3 states, in part;

"When using Inspection Program B, the shell-to-flange weld examination may be performed during the first and third periods, in which case 50% of the shell-to-flange weld shall be examined by the end of the first period, and the remainder by the end of the third period..."

2.3 Relief Requested

Relief is requested from performing examination of at least 50% of the reactor vessel shell-to-flange weld by the end of the first inspection period. Relief is requested to use ASME Code Case N-623, "Deferral of Inspections of Shell-to-Flange and Head-to-Flange Welds of a Reactor Vessel," for 100% deferral of the shell-to-flange weld examination to the end of the ISI interval.

2.4 Alternative Examination

Code Case N-623 is to be applied to the reactor vessel shell-to-flange weld for Calvert Cliffs Units 1 and 2. The required examination is to be performed by the end of the third 10-year ISI interval.

2.5 Licensee's Basis for Relief

The code case states that inspection of shell-to-flange and head-to-flange welds of a reactor vessel may be deferred to the end of the interval without conducting partial exams from the flange face provided the following conditions are met:

(a) No welded repair/replacement activities have ever been performed on the shell-to-flange or head-to-flange weld.

(b) Neither the shell-to-flange weld nor head-to-flange weld contains identified flaws or relevant conditions that currently require successive inspections in accordance with IWB-2420(b).

(c) The vessel is not in the first inspection interval.

The licensee stated that Calvert Cliffs Units 1 and 2 reactor vessels comply with the above requirements and, therefore, Code Case N-623 is applicable to these vessels. The licensee estimates that deferring all of the shell-to-flange weld examinations to the end of the inspection interval would save approximately 4 hours of critical path time and a cumulative dose of approximately 600 millirem.

3.0 EVALUATION

The licensee has requested relief from the requirement of the ASME Code, Section XI, 1998 Edition to perform partial examination of the reactor vessel shell-to-flange weld by the end of the first period, and approval to defer the examination of the entire reactor vessel shell-to-flange weld to the end of the third 10-year inspection interval. A partial examination of each weld normally performed by manual ultrasonics would consume critical path time during an outage and would result in personnel radiation exposure. However, the deferral of the shell-to-flange weld examination to the end of the interval will result in ALARA benefits to the licensee due to the performance of automated or remote ultrasonic examination of these welds in conjunction with the examination of other reactor pressure vessel welds that are also conducted at the end of the inspection interval.

Code Case N-623, “Deferral of Inspections of Shell-to-Flange and Head-to-Flange Welds of a Reactor Vessel” allows deferral of these welds to the end of the inspection interval without conducting partial examinations from the flange face under the following conditions;

(a) No welded repair/replacement activities have ever been performed on the shell-to-flange or head-to-flange weld.

(b) Neither the shell-to-flange weld nor head-to-flange weld contains identified flaws or relevant conditions that currently require successive inspections in accordance with IWB-2420(b).

(c) The vessel is not in the first inspection interval.

These conditions stemmed from the concern that deferral of inspection was not acceptable if the existence of a flaw was likely, and that such a flaw could propagate to a critical size during the inspection interval which would likely result in a failure of the component. The licensee’s compliance with the conditions of the code case provides reasonable assurance that flaws which could cause component failure within the inspection interval are not likely to be present, and thus, provides reasonable assurance of structural integrity of the reactor vessel shell-to-flange weld until its next examination at the end of the inspection interval.

4.0 CONCLUSION

The staff concludes that the licensee’s proposed alternative to use the provisions of Code Case N-623 in lieu of the Code requirement to perform partial examination of the reactor vessel shell-to-flange welds by the end of the first inspection period provides reasonable assurance of structural integrity and provides an acceptable level of quality and safety. Therefore, use of Code Case N-623 is authorized pursuant to 10 CFR 50.55a(a)(3)(i) at Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2. Use of Code Case N-623 is authorized for the third 10-year ISI interval at the Calvert Cliffs Nuclear Power Plant until such time as the code case is

incorporated by reference in 10 CFR 50.55a. At that time, if the licensee intends to continue to implement this code case, the licensee must follow all provisions in Code Case N-623, with limitations as addressed in 10 CFR 50.55a, if any.

Principal Contributor: P. Patnaik

Date: February 20, 2001