

## **Response to Action Item 6-13 Section 6.6**

### **DCD Tier 2, SECTION 6.6**

#### **Issue #1 (AI 6-13.3)**

Title 10 of the Code of Federal Regulations (CFR) Section 50.55a states that systems and components of pressurized water reactors (PWRs) must meet the requirements of the American Society of Mechanical Engineers (ASME) Code as specified in the regulation. The ASME Code requirements that address Class 2 and 3 components exempt from examination are ASME Code, Section XI, IWC-1220 and IWD-1220, respectively. If the criteria of ASME Section XI, IWC-1220 or IWD-1220 are met, then certain ASME Code Class 2 or 3 components (or portions of components) may be exempted from the examination requirements of ASME Section XI, IWC-2500 or IWD-2500, respectively. After reviewing the information provided in FSAR Section 6.6.1, the staff could not determine if any ASME Code Class 2 or 3 components would be exempted from examination for the APR1400 design.

Revise APR1400 FSAR Section 6.6.1 to clarify whether any ASME Code Class 2 or 3 components (or portions of components) in the APR1400 are exempted from the requirements of ASME Section XI, IWC-2500 or IWD-2500. For all components (or portions of components) exempt from examination, the applicant should provide sufficient information in the FSAR for the staff to determine whether the criteria of ASME Section XI, IWC-1220 or IWD-1220 are met.

#### **Response**

Exemptions from the Code examination requirements as permitted by ASME Code Section XI, IWC-1220 and IWD-1220 will be listed in the preservice inspection program and the inservice inspection program to be provided by the COL applicant.

#### **Impact on DCD**

DCD Section 6.6.1, 6.6.9, and Table 1.8-2 will be revised as indicated on Attachment.

#### **Impact on PRA**

There is no impact on the PRA.

#### **Impact on Technical Specification**

There is no impact on the Technical Specification.

#### **Impact on Technical/Topical/Environmental Report**

There is no impact on any Technical, Topical and Environmental Reports.

## **Response to Action Item 6-13 Section 6.6**

### **DCD Tier 2, SECTION 6.6**

#### **Issue #2 (AI 6-13.4)**

If the design of an APR1400 ASME Code Class 1 component is changed by a Combined License (COL) applicant, then APR1400 COL item 5.2(9) requires the COL applicant to address the provisions for accessibility to perform inservice inspection (ISI). However, there is no COL information item provided to address this issue for ASME Code Class 2 and 3 components. Revise FSAR Section 6.6 to include a COL information item to address the accessibility of ASME Code Class 2 and 3 components for ISI if the design of any APR1400 ASME Code Class 2 or Class 3 components is changed by a COL applicant.

#### **Response**

A COL item will be added in 6.6.2.

#### **Impact on DCD**

DCD Section 6.6.2, 6.6.9, and Table 1.8-2 will be revised as indicated on Attachment.

#### **Impact on PRA**

There is no impact on the PRA.

#### **Impact on Technical Specification**

There is no impact on the Technical Specification.

#### **Impact on Technical/Topical/Environmental Report**

There is no impact on any Technical, Topical and Environmental Reports.

## **Response to Action Item 6-13 Section 6.6**

### **DCD Tier 2, SECTION 6.6**

#### **Issue #3 (AI 6-13.5)**

FSAR Section 6.6.3 states that the examination techniques to be used for ISI include visual, surface, and volumetric examination methods. However, the FSAR does not identify which specific examination methods (e.g., magnetic particle, radiographic testing, etc.) will be used. This information is needed so that the staff can determine that the nondestructive examination methods used are in accordance with the ASME Code, Section XI requirements. Please describe the specific surface and volumetric examination methods that will be used for the preservice inspection and ISI of ASME Code Class 2 and 3 components.

#### **Response**

The examination techniques such as ultrasonic(volumetric), magnetic particle(surface), liquid penetrant(surface), and visual examination methods to be used for preservice and inservice inspection. It will meet the requirements of ASME Code Section XI as described in 6.6.3. The specific examination methods will be specified in the preservice inspection program and the inservice inspection program to be provided by the COL applicant.

#### **Impact on DCD**

DCD Section 6.6.3, 6.6.9, and Table 1.8-2 will be revised as indicated on Attachment.

#### **Impact on PRA**

There is no impact on the PRA.

#### **Impact on Technical Specification**

There is no impact on the Technical Specification.

#### **Impact on Technical/Topical/Environmental Report**

There is no impact on any Technical, Topical and Environmental Reports.

**APR1400 DCD TIER 2****6.6 In-service Inspection of Class 2 and 3 Components**

This section describes preservice and in-service inspection and system pressure test for ASME Section III Class 2 and 3 components. The COL applicant is to identify the implementation milestones for ASME Section XI in-service inspection program for ASME Section III Class 2 and 3 components in accordance with the requirements of 10 CFR 50.55a(g) (Reference 1) (COL 6.6(1)).

**6.6.1 Components Subject to Examination**

A preservice inspection (PSI) and an in-service inspection (ISI) are performed for the examination of ASME Code Class 2 and 3 components in accordance with ASME Section XI (Reference 2). Table 3.2-1 specifies safety Classes for components that have a safety function in accordance with ASME Section III (Reference 3), Article NCA-2000. Subsection 3.2.2 defines the relationship between these safety Classes and NRC Regulatory Guide (RG) 1.26 (Reference 4). The purpose of the in-service inspection is to periodically monitor the systems or components requiring in-service inspection in order to identify and repair the indications that do not meet acceptance standards.

ASME Code Class 2 and 3 pressure retaining components are examined in accordance with the requirements of ASME Section XI, Articles IWC-2500 and IWD-2500, respectively.

ASME Section XI, IWC-1220 or IWD-1220, allows exemption of examination to certain components or portions of components, and those exempted items are listed in the in-service inspection program. Approved Code Cases that are listed in NRC RG 1.147 (Reference 5) may be used. Subsection 3.13.2 describes the preservice and in-service inspection applicable to threaded fasteners in conformance with the criteria of ASME Code Section XI for bolting and mechanical joints.

ISSUE #1

the preservice inspection program and

**6.6.2 Accessibility**

ISSUE #1

(COL 6.6(4)).

Provisions for accessibility are incorporated in the design processes for ASME Code Class 2 and 3 components in accordance with ASME Section XI, IWA-1500.

**APR1400 DCD TIER 2**

The COL applicant is to address the accessibility of Class 2 or 3 components for ISI if the design of the APR1400 Class 2 or 3 components is changed from the DCD Design (COL 6.6(3))

design process. Provisions are made in the design and layout of Code Class 2 and 3 systems to allow for conformance with the in-service inspection requirements contained in ASME Section XI, Articles IWC-2000 and IWD-2000, and as defined in the in-service inspection program. ASME Code Class 2 and 3 components requiring inspection are designed for and are provided with access to enable the performance of ASME Section XI inspections onsite. Systems and components are designed so that design, materials, and geometry do not restrict inspections required by ASME Section XI.

Welds and other areas requiring periodic inspection are made accessible. Reinforcing pads, supports, piping, and equipment are located so as not to obstruct welds. Insulating materials are removable to provide accessibility for the required in-service inspection.

### 6.6.3 Examination Techniques and Procedures

The examination techniques to be used for in-service inspection include visual, surface, and volumetric examination methods. Procedures for all examinations are prepared to include descriptions of the equipment, inspection technique, operator qualifications, calibration standards, flaw evaluation, and records. The techniques and procedures meet the requirements of ASME Section XI, Articles IWC-2000 and IWD-2000. PSI and subsequent ISI are conducted with equivalent equipment and techniques.

For the preservice inspection, all of the items selected for in-service inspection are performed once in accordance with ASME Section XI, IWC-2000 and IWD-2000.

Ultrasonic examination personnel, equipment, and procedures are qualified in accordance with ASME Section XI, Appendix VII and VIII.

Approved Code Cases that are listed in NRC RG 1.147 are used.

ISSUE #3

### 6.6.4 Inspection Intervals

and will be specified in the preservice inspection program and the inservice inspection program (COL 6.6(4)).

Inspection schedules and intervals for Class 2 and 3 components are in accordance with ASME Section XI, Subarticles IWA-2400, IWC-2400, and IWD-2400.

**APR1400 DCD TIER 2**

COL 6.6(3) The COL applicant is to address the provisions to accessibility of Class 2 or 3 components for ISI if the design of the APR1400 Class 2 or 3 components is changed from the DCD Design.

extent of in-service examination completed during each inspection interval provides 100 percent volumetric examination of circumferential and longitudinal pipe welds within the boundary of these portions of piping.

- c. The areas subject to examination are defined in accordance with examination categories C-F-1 and C-F-2 for Class 2 piping welds in ASME Section XI, Article IWC-2000.

Information concerning areas subject to examination, method of examination and frequency of examination is contained in the in-service inspection program. The program includes the high-energy fluid piping systems described in Subsection 3.6.1 and 3.6.2.

An augmented in-service inspection is conducted to provide reasonable assurance of the structural integrity of cold-worked austenitic stainless steel components (refer to Subsection 6.1.1.1). The COL applicant is to identify the implementation milestone for the augmented in-service inspection program (COL 6.6(2)).

#### 6.6.9 Combined License Information

COL 6.6(1) The COL applicant is to identify the implementation milestones for ASME Section XI in-service inspection program for ASME Section III Class 2 and 3 components.

COL 6.6(2) The COL applicant is to identify the implementation milestone for the augmented in-service inspection program.

#### 6.6.10 References

1. 10 CFR 50.55a (g), "Inservice Inspection Requirements," U.S. Nuclear Regulatory Commission.
2. ASME Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," The American Society of Mechanical Engineers, the 2007 Edition with the 2008 Addenda.

COL 6.6(4) The COL Applicant is to provide the preservice inspection program and the inservice inspection program.

## APR1400 DCD TIER 2

Table 1.8-2 (9 of 29)

Item No.	Description
COL 6.1(1)	The COL applicant is to identify the implementation milestones for the coatings program.
COL 6.2(1)	The COL applicant is to identify the implementation milestone for the CILRT program.
COL 6.3(1)	The COL applicant is to prepare operational procedures and maintenance programs as related to leak detection and contamination control.
COL 6.3(2)	The COL applicant is to maintain complete documentation of system design, construction, design modifications, field changes, and operations.
COL 6.4(1)	The COL applicant is to provide automatic and manual operating procedures for the control room HVAC system, which are required in the event of a postulated toxic gas release.
COL 6.4(2)	The COL applicant is to provide the details of specific toxic chemicals of mobile and stationary sources and evaluate the MCR habitability based on the recommendations in NRC RG 1.78 to meet the requirements of TMI Action Plan Item III.D.3.4 and GDC 19.
COL 6.4(3)	The COL applicant is to identify and develop toxic gas detection requirements to protect the operators and provide reasonable assurance of the MCR habitability. The number, locations, sensitivity, range, type, and design of the toxic gas detectors are to be developed by the COL applicant.
COL 6.5(1)	The COL applicant is to provide the operational procedures and maintenance program as related to leak detection and contamination control.
COL 6.5(2)	The COL applicant is to maintain the complete documentation of system design, construction, design modifications, field changes, and operations.
COL 6.6(1)	The COL applicant is to identify the implementation milestones for ASME Section XI inservice inspection program for ASME Code Section III Class 2 and 3 components.
COL 6.6(2)	The COL applicant is to identify the implementation milestone for the augmented inservice inspection program.
COL 6.8(1)	The COL applicant is to provide the operational procedures and maintenance program for leak detection and contamination control.
COL 6.8(2)	The COL applicant is to provide the preparation of cleanliness, housekeeping, and foreign materials exclusion program.
COL 6.8(3)	The COL applicant is to maintain the complete documentation of system design, construction, design modifications, field changes, and operations.
COL 6.8(4)	The COL applicant is responsible for the establishment and implementation of the Maintenance Rule program in accordance with 10 CFR 50.65.
COL 7.5(1)	The COL applicant is to provide a description of the site-specific AMI variables such as wind speed, and atmosphere stability temperature difference.
COL 7.5(2)	The COL applicant is to provide a description of the site-specific EOF.

ISSUE #2	COL 6.6(3)	The COL applicant is to address the provisions to accessibility of Class 2 or 3 components for ISI if the design of the APR1400 Class 2 or 3 components is changed from the DCD Design.
ISSUE #1&#3	COL 6.6(4)	The COL applicant is to provide the preservice inspection program and the inservice inspection program.