

Serial: RNP-RA/09-0004

**JAN 30 2009**

United States Nuclear Regulatory Commission  
ATTN: Document Control Desk  
11555 Rockville Pike  
Rockville, Maryland 20852

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2  
DOCKET NO. 50-261/LICENSE NO. DPR-23

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION RELATED TO REQUEST FOR RELIEF FROM ASME BOILER AND PRESSURE VESSEL CODE, SECTION XI, SUBSECTIONS IWE AND IWL REQUIREMENTS FOR CONTAINMENT INSPECTIONS

Ladies and Gentlemen:

By letter dated April 4, 2008, Carolina Power and Light Company, also doing business as Progress Energy Carolinas, Inc. (PEC), submitted a request for relief from the requirements of the American Society of Mechanical Engineers (ASME) Code, Section XI, Subsections IWE and IWL related to containment inspections for H.B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. The proposed relief requests (RRs) IWE/IWL-RR-01, IWE/IWL-RR-02 and IWE/IWL-RR-03 pertain to certain requirements of the ASME Code, Section XI, Subsection IWE, 2001 Edition through 2003 Addenda, with regard to containment inspection examinations for the second 10-year containment inservice inspection (ISI) interval at HBRSEP. These RR's related to visual examination of the insulated containment liner, visual examination of moisture barriers, and successive examinations following a repair, respectively.

In a letter dated September 4, 2008, the NRC provided a Request for Additional Information (RAI) related to these RR's. In a letter dated October 20, 2008, the NRC extended the requested response deadline to January 30, 2009. The purpose of this letter is to respond to the NRC RAIs.

Attachment I provides the response to the RAIs. Based on the RAIs and associated responses, relief requests IWE/IWL-RR-01 and IWE/IWL-RR-02 are being revised and resubmitted and relief request IWE/IWL-RR-03 is being withdrawn. Attachment II provides a listing of the relief requests. Attachment III provides the revised relief requests IWE/IWL-RR-01 and IWE/IWL-RR-02, and each includes the applicable ASME B&PV Code requirement, a description of the relief requested, a justification for the requested relief, the proposed alternative examination, and the planned implementation schedule.

If you have any questions concerning this matter, please contact Mr. C. A. Castell at (843) 857-1626.

Sincerely,



Charles T. Baucom  
Manager – Support Services – Nuclear

RAC/rac

Attachments:

- I. Response to Requests for Additional Information
- II. List of Relief Requests
- III. Relief Requests

c: Mr. L. A. Reyes, NRC, Region II  
Ms. M. G. Vaaler, NRC, NRR  
NRC Resident Inspector

**H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2**

**REQUEST FOR RELIEF FROM ASME BOILER AND  
PRESSURE VESSEL CODE, SECTION XI, SUBSECTIONS  
IWE AND IWL REQUIREMENTS FOR CONTAINMENT INSPECTIONS**

**RESPONSE TO REQUESTS FOR ADDITIONAL INFORMATION**

1. NRC Request

Please provide the duration for which relief is being requested for RR IWE/IWL-RR-01, RR-02 and RR-03 (i.e. specify the planned start and end dates of the second containment ISI interval for which relief is being requested).

PEC Response

The dates associated with relief requests IWE/IWL-RR-01 and IWE/IWL-RR-02 are September 9, 2008 thru September 8, 2018. The relief request associated with IWE/IWL-RR-03 is being withdrawn.

2. NRC Request

With regard to RR IWE/IWL-RR-01, RR-02 and RR-03, it is the staff's understanding that during the process of obtaining a license renewal for HBRSEP, the licensee committed to complete a One-Time Inspection Program in order to monitor and assess the condition of the containment liner behind the insulation and the moisture barrier by the end of 2005. Please describe the inspections performed and the results of the one-time inspection program.

PEC Response

During the First Ten-Year Interval, inspections were performed under 108 insulation panels that were removed. This included the planned removal of the entire inventory of 62 panels at the lowest elevation, for which both liner and moisture barrier inspections were performed. A total of 46 panels at higher elevations were removed for various reasons. Once removed, a liner inspection was performed.

A review of the data associated with the First Ten-Year Interval for the liner inspections at locations where liner panels were removed indicated a degradation of the coating, which required coating removal and reapplication. Subsequent ultrasonic and visual examination after coating removal revealed the minimum liner wall thickness was not violated and was acceptable to the procedural criteria. Liner coatings were reapplied; as-left examinations were performed prior to panel insulation and sheathing replacement.

A review of the data associated with the First Ten-Year Interval for the moisture barrier inspections indicated a degradation of the moisture barrier, which required removal and reapplication. Subsequent visual examination after moisture barrier removal revealed the minimum wall thickness of the liner behind the moisture barrier was not violated and was acceptable to the procedural criteria. Liner coatings and the moisture barrier were reapplied and as-left examinations were performed prior to panel insulation and sheathing replacement.

### 3. NRC Request

RR IWE/IWL-RR-01 requests relief from the requirements of Table IWE-2500-1, Examination Category E-A, Item E1.11 of the ASME Code Section XI, 2001 Edition and 2003 addenda. This item requires a general visual examination of 100 percent of the accessible surfaces of containment during each period of the inspection interval in order to assess the general condition of containment surfaces and facilitate early detection of degradation that may affect containment structural integrity and/or leak-tightness. The "Alternative Examination(s)" section of RR IWE/IWL-RR-01 states that "the alternative examination proposed is to perform a general visual examination on those portions of the insulated containment liner that are exposed when a maintenance activity requires removal of the liner insulation. This examination will be completed if not previously performed in the inspection interval."

The proposed alternative, as written, could preclude any examination of portions of the containment liner during the inspection interval if there is no maintenance activity that requires removal of the liner insulation in that area. The licensee did not provide a list or schedule of planned maintenance activities to be performed during the inspection interval that would require removal of the insulation panels, thus enabling liner examination. Furthermore, the licensee does not identify target areas where these insulation panels would be removed and the liner examined. Also, there is no commitment on the part of the licensee to perform the general visual examination of at least the critical areas of the insulated containment liner by sampling a reasonable percentage of the inspection areas during the second 10-year containment ISI interval, as was done when similar relief was authorized for the first containment ISI interval.

Therefore, the staff has determined that the proposed alternative, as written, does not provide an acceptable level of quality and safety as required by 10 CFR 50.55a(a)(3)(i). The staff finds that in order for the proposed alternative to meet the requirements of 10 CFR 50.55a(a)(3)(i), the alternative should, as a minimum, commit to perform a general visual examination of critical areas of the insulated containment liner (e.g. the containment wall liner lower areas near the basemat, around openings and penetrations, structural discontinuities, etc.) at least once during the inspection interval by removing a reasonable sample of the insulation panels covering critical areas in order to facilitate liner inspection. Portions of the insulated containment liner that are exposed when a maintenance activity requires removal of the liner insulation may be included in the sample. Based on the above discussion, the licensee is requested to revise its proposed alternative examination to include

a commitment to perform a general visual examination of the containment liner and to identify the areas within the containment liner that would be included in future examination.

#### PEC Response

IWE/IWL RR-01 has been revised in its entirety and is provided in Attachment II. The revised version includes the proposed requirement to remove approximately one-third of the base mat level of insulation each period, ensuring 100% examination of the liner surface at the level considered to be the most susceptible to degradation over the entire interval. The revision also maintains the requirement to perform liner inspections when any panels are removed for maintenance purposes.

#### 4. NRC Request

RR IWE/IWL-RR-02 requests relief from the requirements of Table IWE-2500-1, Examination Category E-A, Item E1.30 of the ASME Code Section XI, 2001 Edition and 2003 addenda. This item requires a general visual examination of 100 percent of the containment moisture barriers during each period of the inspection interval in order to detect/prevent intrusion of moisture against the containment liner. The "Alternative Examination(s)" section of RR IWE/IWL-RR-02 states that "the alternative examination to the 100 percent per period general visual examination of the containment moisture barriers is to perform a general visual examination on those portions of the 228-foot elevation concrete-to-metal liner moisture barrier that are exposed when a maintenance activity requires removal of the associated barrier insulation."

The proposed alternative, as written, could preclude any examination of portions of the moisture barrier during the inspection interval if there is no maintenance activity that requires removal of the lower row liner insulation in that area. The licensee did not provide a list or schedule of planned maintenance activities to be performed during the inspection interval that would require removal (with extent) of the lower row insulation panels, thus allowing moisture barrier examination, as was done when similar relief was authorized for the first containment ISI interval. Furthermore, the licensee takes credit for the insulation covering the liner and moisture barrier as providing an additional moisture barrier, but has not committed to perform any general visual examination of the caulking/water seal (which act as a secondary moisture barrier) near the insulation-concrete slab interface at elevation 228 feet.

Therefore, the staff has determined that the proposed alternative, as written, does not provide an acceptable level of quality and safety as required by 10 CFR 50.55a(a)(3)(i). The staff finds that in order for the proposed alternative to meet the requirements of 10 CFR 50.55a(a)(3)(i), the alternative should, as a minimum, commit to perform a general visual examination of 100 percent of the caulking sealant and water seals at or near the insulation-concrete slab interface at elevation 228 feet (see Figure 2 contained in the licensee's submittal) during each inspection period of the second containment ISI interval. Further, the moisture barrier at the concrete-to-containment liner interface should be subject

to a general visual examination at least once during the second containment ISI interval when the lower row insulation panels are removed for maintenance activities and/or examination of the liner, per the alternative examination for RR IWE/IWL-RR-01 discussed in RAI 2. Considering the above, the licensee is requested to revise its proposed alternative examination to address the stated concern.

PEC Response

IWE/IWL-RR-02 has been revised in its entirety and is provided in Attachment II. The revised version includes the proposed requirement to remove approximately one-third of the base mat level of insulation each period, ensuring 100% examination of the moisture barrier over the entire interval. The revised relief request does not imply any assumed credit for the insulation panels providing a secondary moisture barrier. The justification for the relief is based on the fact that inspections performed to date, after 38 years of operation, have indicated no violation of the required minimum liner thickness, and a commitment to perform a 100% moisture barrier inspection over the Second Ten-Year interval.

5. NRC Request

With respect to relief request IWE/IWL-RR-03 regarding successive examinations following a repair, since the acceptance standards of IWE-3500 are Owner defined, please address the alternative examinations outlined in the relief request based on the following considerations and definitions of the term "repair": (i) if the repair (e.g. by weld overlay) brings the pressure boundary component and its coating to the "as designed" condition and the "root cause" of the degradation has been identified and eliminated, then no successive re-examination of the repaired area is required in the next inspection period, and (ii) if the repair (e.g. by coating repair) brings the pressure boundary component to an "acceptable condition" and the component is accepted for continued service as the result of an Engineering Evaluation, then successive re-examination of the repaired area is required if the root cause of the degradation has not been identified and eliminated. Also, please define the IWE-3500 Owner specified acceptance criteria being implemented at HBRSEP for containment surfaces.

PEC Response

IWE/IWL-RR-03 from the April 4, 2008 letter is being withdrawn by this letter.

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**REQUEST FOR RELIEF FROM ASME BOILER AND  
PRESSURE VESSEL CODE, SECTION XI, SUBSECTIONS  
IWE AND IWL REQUIREMENTS FOR CONTAINMENT INSPECTIONS**

**LIST OF RELIEF REQUESTS**

<b>Request Number</b>	<b>Applicable Code Section(s)</b>	<b>Title</b>	<b>Notes</b>
IWE/IWL-RR-01	Table IWE-2500-1, Examination Category E-A	Visual Examination of Insulated Containment Liner	Supersedes IWE/IWL-RR-01 submitted April 4, 2008
IWE/IWL-RR-02	Table IWE-2500-1, Examination Category E-A	Visual Examination of Moisture Barriers	Supersedes IWE/IWL-RR-02 submitted April 4, 2008
IWE/IWL-RR-03	Withdrawn	Withdrawn	Withdraws IWE/IWL-RR-03 submitted April 4, 2008

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**RELIEF REQUESTS**

## **H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2**

### **RELIEF REQUEST NO. IWE/IWL-RR-01** **VISUAL EXAMINATION OF INSULATED CONTAINMENT LINER**

#### **Code Requirements for Which Relief is Requested**

The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, 2001 Edition, 2003 Addenda, Section XI, Table IWE-2500-1, "Examination Categories," Examination Category E-A, Item Number E1.11, requires a general visual examination of 100% of the accessible surface areas of containment in accordance with acceptance standard IWE-3510, "Standards for Examination Category E-A, Containment Surfaces," paragraph IWE-3510.2, "Visual Examination of Coated and Noncoated Areas," for Class MC and metallic liners of Class CC components.

This relief was previously approved for the First Ten-Year IWE/IWL Inspection Interval under a Safety Evaluation Report (TAC No. MA4637) dated July 26, 1999.

#### **Specific Relief Requested**

Relief is requested from performing general visual examinations in accordance with ASME B&PV Code, 2001 Edition, 2003 Addenda, Section XI, Table IWE-2500-1, Examination Category E-A, Item Number E1.11 on the accessible surface areas of the containment liner which are insulated. The code requires 100% examination of the liner each examination period. Proposed alternative examinations are provided below.

This request for relief is applicable to the insulated portion of the containment liner classified as Class MC and subject to the requirements of Table IWE-2500-1, Examination Category E-A, at the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2 (Figure 1).

#### **Alternative Examination(s)**

Currently, the IWE/IWL Program/Plan identifies 62 insulation panels at the interface between the concrete and the containment base mat (228-foot Elevation). Approximately one-third of the panels at the base mat interface will be removed and a general visual examination of the containment liner performed each examination period during the Second Ten-Year Interval. This will ensure that over the Second Ten-Year Interval, a 100% general visual examination of the liner at the base mat elevation will be performed.

In addition, during the Second Ten-Year Interval, when an insulation panel at any elevation is removed for maintenance activities, a general visual examination of the liner beneath that panel will be performed.

### **Basis for Requesting Relief**

In accordance with 10 CFR 50.55a(a)(3)(i), relief is requested for HBRSEP, Unit No. 2, on the basis that the proposed alternative examinations, in conjunction with the examinations that have occurred during the First Ten-Year Interval, provide an acceptable level of quality and safety.

Table IWE-2500-1 Examination Category E-A does not address an insulated containment liner. The containment liner at HBRSEP, Unit No. 2, is partially insulated and covered by a stainless steel sheathing to provide for thermal protection of the liner during a design basis accident.

### **Justification for Granting Relief**

Relief is requested from the Code requirements for general visual examinations of the containment liner in areas that are insulated. Proposed alternative examinations provide an acceptable level of quality and safety.

The containment liner at HBRSEP, Unit No. 2, is partially covered by insulation and stainless steel sheathing. The insulation and stainless steel sheathing form part of the defense-in-depth philosophy of the containment liner at HBRSEP, Unit No. 2. The removal and reinstallation of the insulation sheathing panels has been determined to be time consuming and results in hardship and unusual difficulty.

During the First Ten-Year Interval, inspections were performed under 108 insulation panels that were removed. This included the planned removal of the entire inventory of 62 panels at the base mat elevation, for which both liner and moisture barrier inspections were performed. A total of 46 panels at higher elevations were removed for various reasons. Once removed, a liner inspection was performed.

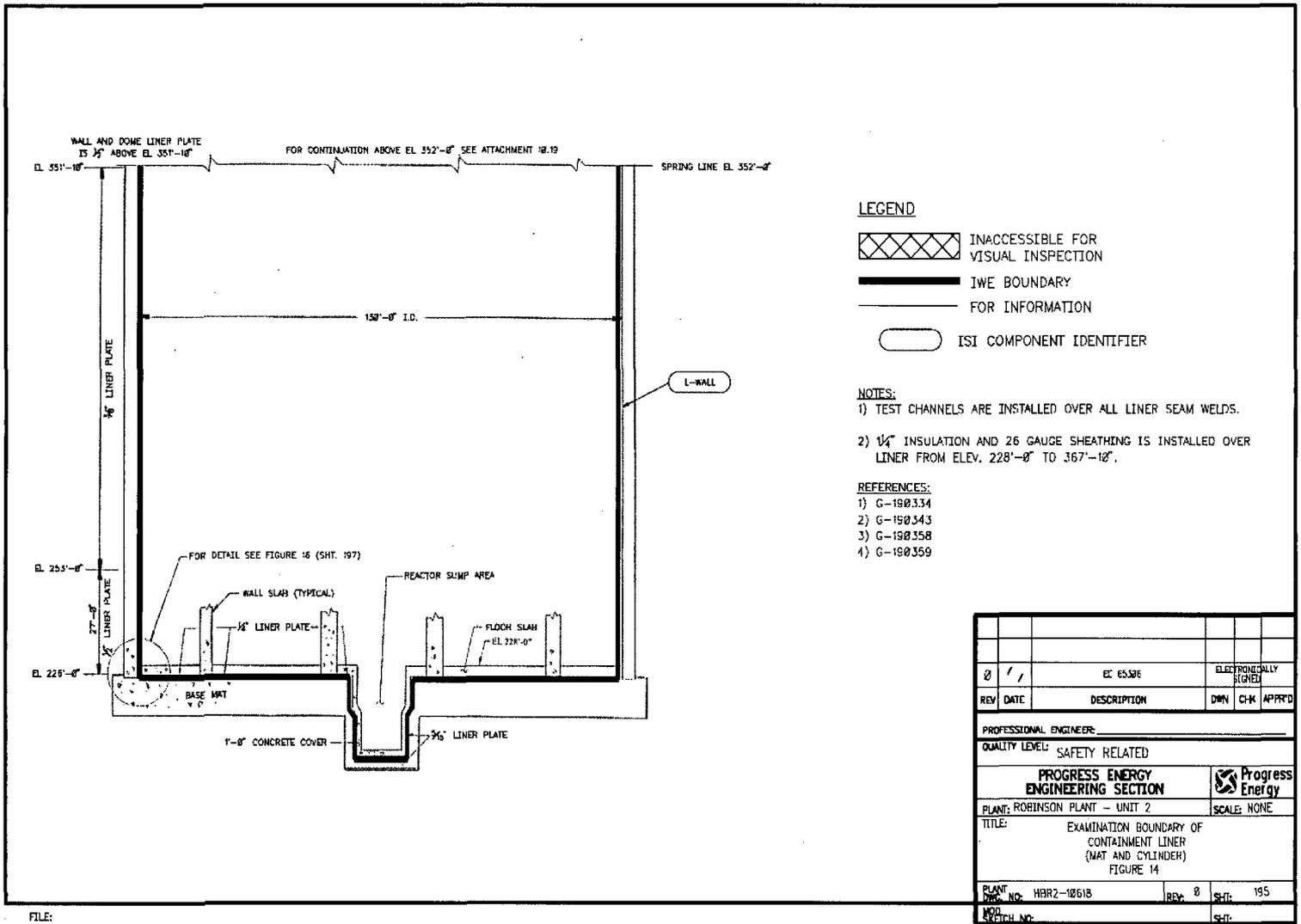
A review of the data associated with the First Ten-Year Interval for the liner inspections indicated a degradation of the coating, which required coating removal and reapplication. Subsequent ultrasonic and visual examination after coating removal revealed the minimum liner wall thickness was not violated and was acceptable to the procedural criteria. Liner coatings were reapplied and as-left examinations were performed prior to panel insulation and sheathing replacement.

The proposed alternative examinations provide an acceptable level of quality and safety.

### **Implementation Schedule**

This relief will be implemented during the HBRSEP, Unit No. 2, Second Ten-Year IWE/IWL Inspection Interval (September 9, 2008 thru September 8, 2018) for containment inspections required by ASME B&PV Code, 2001 Edition, 2003 Addenda, Section XI, Subsections IWE and IWL.

FIGURE 1



## **H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2**

### **RELIEF REQUEST NO. IWE/IWL-RR-02** **VISUAL EXAMINATION OF MOISTURE BARRIERS**

#### **Code Requirements for Which Relief is Requested**

The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, 2001 Edition, 2003 Addenda, Section XI, Table IWE-2500-1, "Examination Categories," Examination Category E-A, Item Number E1.30, requires a visual examination of the containment moisture barrier, in accordance with Figure IWE-2500-1, "Examination Areas for Moisture Barriers," for Class MC, and metallic liners of Class CC, components.

The required method is a general visual examination of 100% of the moisture barrier materials intended to prevent intrusion of moisture against inaccessible areas of the pressure-retaining metal containment shell or liner at concrete-to-metal interfaces and at metal-to-metal interfaces which are not seal-welded. Containment moisture barrier materials include caulking, flashing, and other sealants used for this application. Deferral of the test to the end of the interval is not applicable due to the 100% per period requirement.

This relief was previously approved for the First Ten-Year IWE/IWL Inspection Interval under a Safety Evaluation Report (TAC No. MA4637) dated July 26, 1999.

#### **Specific Relief Requested**

Relief is requested from performing general visual examinations, in accordance with ASME B&PV Code, 2001 Edition, 2003 Addenda, Section XI, Table IWE-2500-1, Examination Category E-A, on the containment moisture barriers. Proposed alternative examinations are provided below.

This request for relief is applicable to components classified as Class MC and subject to the requirements of Table IWE-2500-1, Examination Category E-A, at the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2 (See Figure 2).

#### **Alternative Examination(s)**

The IWE/IWL Program/Plan identifies 62 insulation panels at the interface between the concrete and the containment base mat (228-foot Elevation). Approximately one-third of the panels at the base mat interface will be removed and a general visual examination of the moisture barrier performed each examination period during the Second Ten-Year Interval. This will ensure that over the Second Ten-Year Interval, a 100% general visual examination of the moisture barrier will be performed.

Additionally, during the Second Ten-Year Interval, when an insulation panel on the 228-foot Elevation is removed for maintenance activities, a general visual examination of the moisture barrier will be performed.

### **Basis for Requesting Relief**

In accordance with 10 CFR 50.55a(a)(3)(i), relief is requested for HBRSEP, Unit No. 2, on the basis that the proposed alternative examinations, in conjunction with the examinations that have occurred during the First Ten-Year Interval, provide an acceptable level of quality and safety.

Table IWE-2500-1 Examination Category E-A does not address an insulated containment moisture barrier. The containment moisture barrier at HBRSEP, Unit No. 2, is covered by stainless steel sheathing and insulation to provide for thermal protection of the carbon steel liner during a design basis accident.

### **Justification for Granting Relief**

As shown in Figure IWE-2500-1, and noted in Table IWE-2500-1, moisture barrier materials are intended to prevent intrusion of moisture against inaccessible areas of the pressure-retaining metal containment shell or liner at concrete-to-metal interfaces and at metal-to-metal interfaces which are not seal-welded. For HBRSEP, Unit No. 2, the moisture barrier that meets this definition is the epoxy joint filler that interfaces with the concrete-to-containment liner interface at the 228-foot Elevation. Figures 1 and 2 provide details of that interface.

The containment internal moisture barrier is covered with a layer of insulation and stainless steel sheathing. The removal and reinstallation of the insulation sheathing panels has been determined to result in hardship and unusual difficulty.

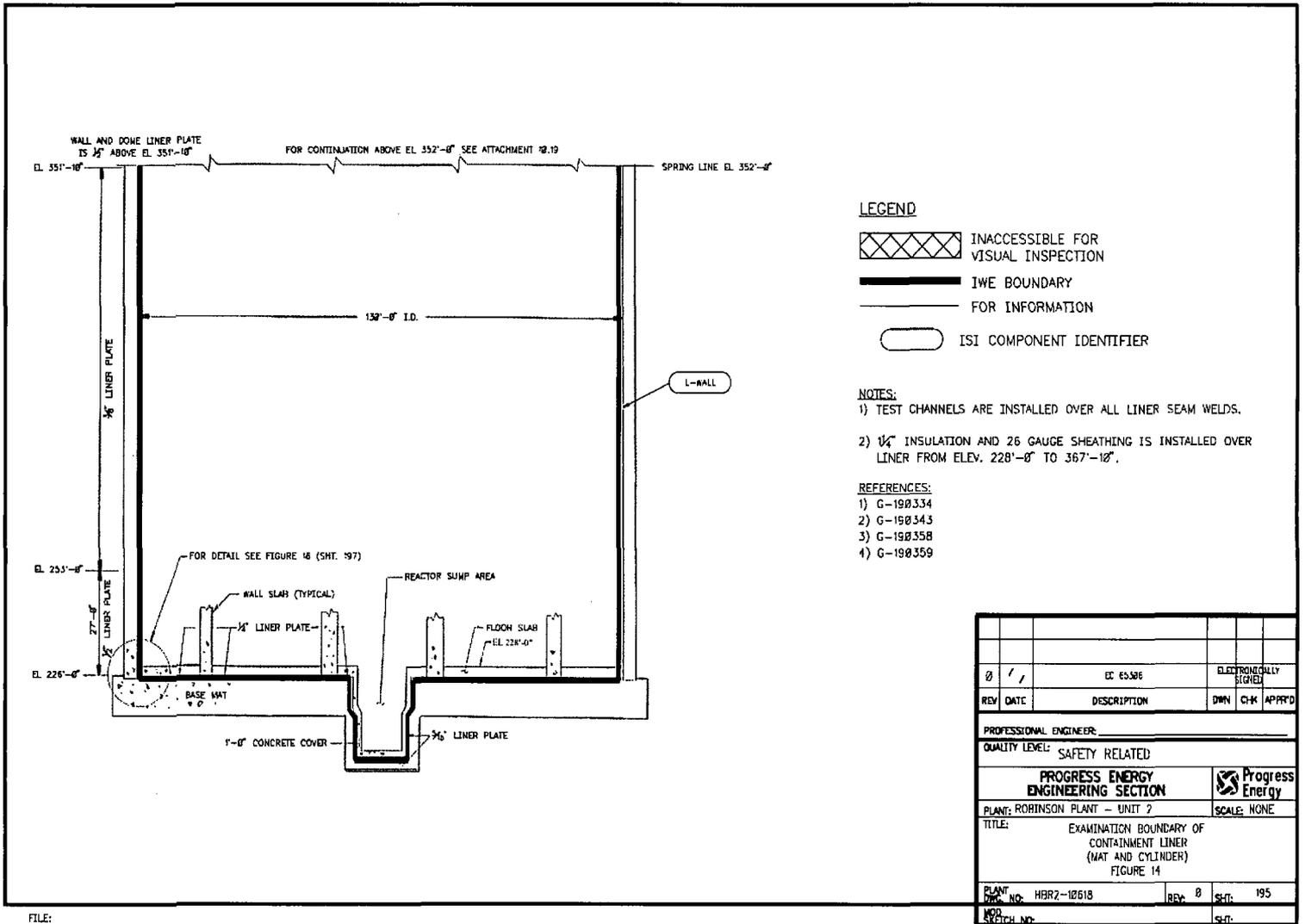
During the First Ten-Year Interval, 100% of the moisture barrier was inspected. A review of the data associated with the First Ten-Year Interval for the moisture barrier inspections indicated a degradation of the moisture barrier in some locations, which required removal and reapplication. Visual examination of the liner after moisture barrier removal revealed that the minimum wall thickness of the liner behind the moisture barrier was not violated and was acceptable to the procedural criteria. Liner coatings and the moisture barrier were reapplied and as-left examinations were performed prior to panel insulation and sheathing replacement.

The proposed examination, which will ensure 100% moisture barrier inspection over the Second Ten-Year Interval, provides an acceptable level of quality and safety while not presenting an undue challenge to the moisture barrier insulation panels.

### **Implementation Schedule**

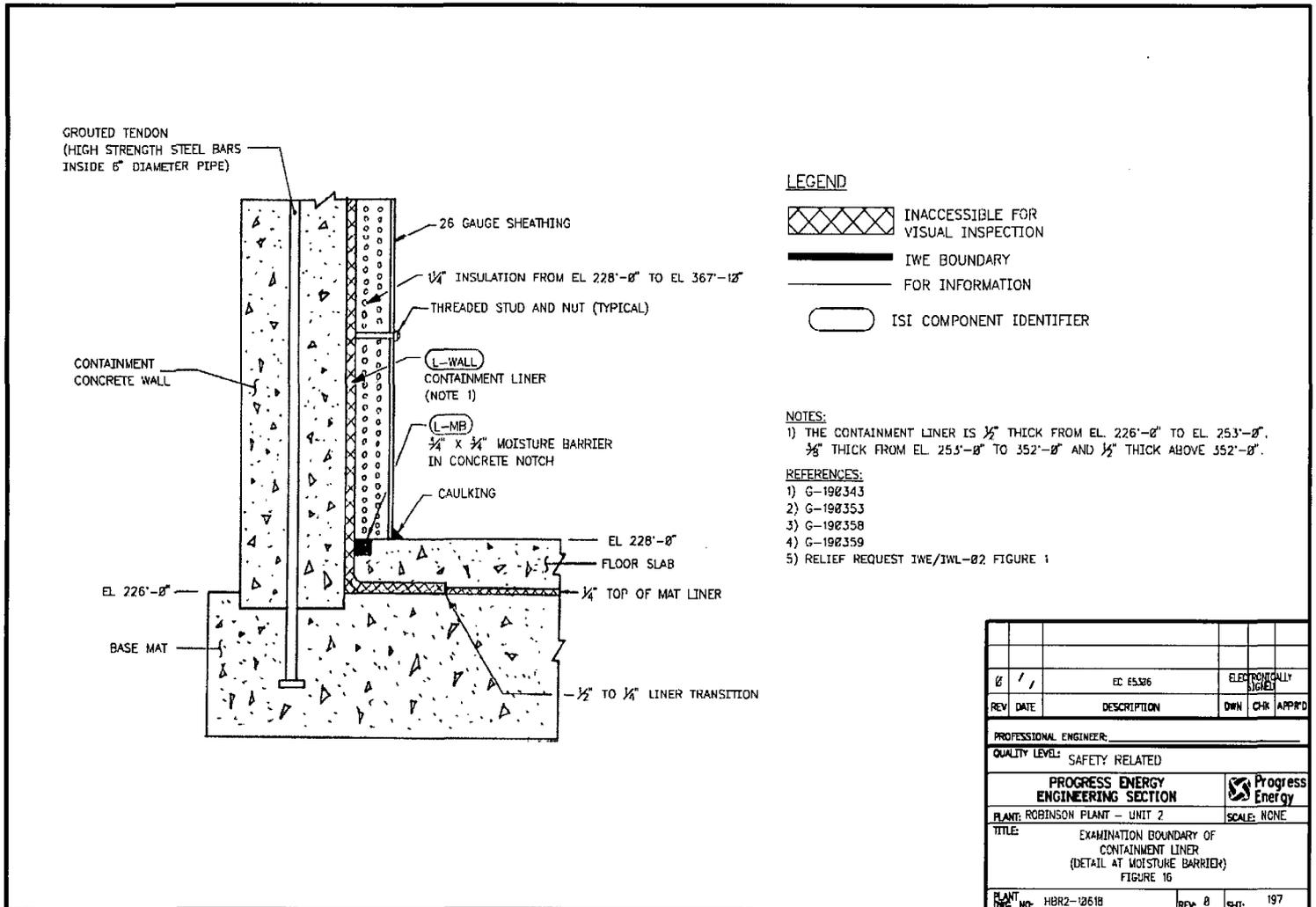
This relief will be implemented during the HBRSEP, Unit No. 2, Second Ten-Year IWE/IWL Inspection Interval (September 9, 2008 thru September 8, 2018) for containment inspections required by ASME B&PV Code, 2001 Edition, 2003 Addenda, Section XI, Subsections IWE and IWL.

FIGURE 1



FILE:

FIGURE 2



**LEGEND**

-  INACCESSIBLE FOR VISUAL INSPECTION
-  IWE BOUNDARY
-  FOR INFORMATION
-  ISI COMPONENT IDENTIFIER

**NOTES:**  
 1) THE CONTAINMENT LINER IS 1/2" THICK FROM EL. 226'-0" TO EL. 253'-0".  
 3/8" THICK FROM EL. 253'-0" TO 352'-0" AND 1/2" THICK ABOVE 352'-0".

- REFERENCES:**
- 1) G-190343
  - 2) G-190353
  - 3) G-190358
  - 4) G-190359
  - 5) RELIEF REQUEST IWE/IWL-02, FIGURE 1

REV	DATE	DESCRIPTION	DWN	CHK	APPRD
0		EC 65306			ELECTRONICALLY SIGNED
PROFESSIONAL ENGINEER:					
QUALITY LEVEL: SAFETY RELATED					
PROGRESS ENERGY ENGINEERING SECTION					
PLANT: ROBINSON PLANT - UNIT 2					
SCALE: NCNE					
TITLE: EXAMINATION BOUNDARY OF CONTAINMENT LINER (DETAIL AT MOISTURE BARRIER) FIGURE 1G					
PLANT	NO.	REV.	0	SHEET	197
NO.					
DRAWING NO.					
SHEET NO.					

FILE