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October 19, 2010

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attention: Mr. Jeffery A. Ciocco

Docket No. 52-021
MHI Ref: UAP-HF-10280

Subject: MHI's Response to US-APWR DCD RAI No. 632-5041

Reference: 1) "Request for Additional Information No. 632-5041 Revision 0, SRP Section: 03.07.04 - Seismic Instrumentation," dated 9/15/2010.

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") a document entitled "Response to Request for Additional Information No. 632-5041, Revision 0."

Enclosed is the response to the RAI contained within Reference 1. This transmittal completes the response to this RAI.

Please contact Dr. C. Keith Paulson, Senior Technical Manager, Mitsubishi Nuclear Energy Systems, Inc. if the NRC has questions concerning any aspect of this submittal. His contact information is provided below.

Sincerely,

Y. Ogata

Yoshiki Ogata,
General Manager- APWR Promoting Department
Mitsubishi Heavy Industries, LTD.

Enclosure:

1. Response to Request for Additional Information No. 632-5041, Revision 0

CC: J. A. Ciocco
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Enclosure 1

UAP-HF-10280
Docket No. 52-021

Response to Request for Additional Information No. 632-5041,
Revision 0

October, 2010

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

10/19/2010

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 614-4853 REVISION 0**
SRP SECTION:	**03.07.04 – Seismic Instrumentation**
APPLICATION SECTION:	**3.7.4**
DATE OF RAI ISSUE:	**9/15/2010**

QUESTION NO. RAI 03.07.04-4:

In the previous RAI response, RAI 03.07.04-3, MHI stated that it would be left to the COL applicant to verify the site-specific applicability of the standard plant monitors described in Subsection 3.7.4.2 and to determine if there is a need for free-field instrumentation as required by COL Item 3.7(16). Although the US APWR CSDRS is defined as a free surface ground motion referenced at the foundation level (equivalent to SSE), free-field seismic instrumentation at the ground surface is needed to understand ground motions before they are influenced by soil-structure interaction and other factors. Further, current site-response analysis only considers vertical propagating seismic waves with a one-dimension model, and some potential site-specific ground motion effects may occur when seismic waves propagate to a site. Installing free-field seismic instrumentation at the ground surface enables the detection of those site-specific phenomena. Using free field surface instrumentation coupling with in-structure instrumentation to monitor ground motion is a common industry practice, especially for critical facilities. Based on above, please modify COL information Item 16 to reflect the need for free-field seismic monitors at the ground surface. This request is in accordance with 10 CFR 100.23.

Reference: MHI response to RAI 538-4320, dated 3/30/2010, ML100950102

ANSWER:

MHI agrees that installing free-field seismic instrumentation at the ground surface can enable detection of certain phenomena associated with the site-specific ground motion effects and wave propagation, and also enable comparison to the in-structure instrumentation recordings. MHI proposes to modify the DCD text and COL Item 3.7(16) to reflect that the COL Applicant is expected to provide free-field seismic instrumentation in the vicinity of the power block area at surface grade, which shall be used for shutdown determination, unless otherwise justified. Note that the DCD prohibits the use of the cumulative absolute velocity (CAV) criteria for shutdown evaluation if free-field instrumentation is not required. This condition assumes that the CAV criteria are exceeded. Allowing the COL Applicant to forego installation of free-field instrumentation, provided that suitable justification is presented based on site-specific conditions, is considered acceptable based on the following discussion as well as the discussion previously presented in the response to RAI 538-4320, Question 03.07.04-3.

SRP 3.7.4 and RG 1.206 Sections C.I.3.7.4.1 and C.I.3.7.4.4 suggest that an applicant can provide justification for exceptions/deviations taken from guidance for seismic instrumentation such as type, location, installation, and other key instrumentation characteristics. While 10 CFR 100.23 states that the safe shutdown earthquake is to be characterized by free-field ground motion at the free ground surface, it does not explicitly require seismic instrumentation to be placed on the free-field ground surface. Although free-field instrumentation coupled with in-structure instrumentation is used at most existing plants, instrumentation used in the free-field alone and/or in combination with in-structure instrumentation may not be able to distinguish between all site-specific motion effects. Some of the uncertainty associated with ground motion obtained from site-specific investigations is addressed through appropriate analysis, such as a probabilistic seismic hazard analysis or suitable sensitivity analyses, as stated in 10 CFR 100.23.

MHI requires that the COL Applicant perform site-specific seismic analyses of seismic category I structures (reference DCD COL Items 3.7(22), 3.7(25), 3.7(10) and the previous response to DCD RAI 495-3980, Question 3.7.2-4). These analyses also account for uncertainties in the site-specific seismic response, including uncertainties due to site-specific soil-structure interaction effects. The site-specific analyses are used to establish OBE response motion that serves as a basis for direct comparison to any seismic motion measured by the in-structure instrumentation.

Unlike the free-field ground surface motion, the motion measured at plant foundations and within the plant superstructure is directly relevant to that motion experienced by plant SSCs. Therefore, it is anticipated that there may be sites at which in-structure instrumentation recordings alone will be suitable for evaluating the response of the plant in order to make a shutdown determination. For example, in-structure instrumentation may be suitable at sites where plant structures are founded at approximately the same depth on relatively stiff or hard rock with minimal SSI effects and no significant high-frequency content in the input ground motion. At other sites the input ground motion may be determined by site response analyses to be below a RG 1.60 spectral shape anchored at a 0.1 g PGA. In this case, the input ground motion used for design might envelope both the plant structure input motion as well as the free-field ground surface motion, regardless of any site-specific SSI or other influencing factors. Therefore, the COL Applicant may forego installation of free-field ground surface instrumentation provided that suitable justification is given based on site-specific conditions.

Impact on DCD

See the Attachment 1 mark-up of DCD Tier 2, Subsection 3.7.4, changes to be incorporated. The changes are summarized as follows.

- Replace the second and third paragraphs of DCD Subsection 3.7.4.1 with the following:

  "The criteria that define the vibratory motion that requires the shutdown of the US-APWR plant are based on the site-specific OBE. The 5% damping FIRS associated with the site-specific OBE must be enveloped by 1/3 of the 5% damping CSDRS. The conditions that require a shutdown of the US-APWR plant are defined by the site-specific OBE at the free-field instrumentation located at grade in the plant yard, unless otherwise justified by the COL applicant. Unless site-specific OBE is set at 1/3 of the site-specific SSE or lower, these spectra shall be obtained from analysis using as input the site-specific OBE ground motion and properties of the supporting media that are strain-compatible to the site-specific OBE ground motion. When the site-specific OBE is equal or lower than 1/3 of site-specific SSE, the spectra scaled from the 5% damping site-specific SSE response spectra may be used directly for OBE exceedance checks. An OBE exceedance check is performed in accordance with Section 4 of RG 1.166

(Reference 3.7-41) using both a response spectrum check and a cumulative absolute velocity (CAV) check. The comparison evaluation is to be performed within 4 hours of the earthquake using data obtained from the three components of the earthquake motion as defined by the three orthogonal axes of the standard plant (two horizontal and one vertical) on the uncorrected earthquake records. The evaluation is also to include a check on the operability of the seismic instrumentation as mandated by Section 4.3 of RG 1.166 (Reference 3.7-41).

The locations of seismic monitors for the US-APWR standard plant are provided in Subsection 3.7.4.2. The COL Applicant shall provide free-field seismic instrumentation in the vicinity of the power block area at surface grade, which shall be used for shutdown determination, unless otherwise justified. Any such justification shall be based on conditions and requirements specific to the site, and shall include justification for evaluation of OBE exceedance using only measurements from instrumentation installed on the buildings and the structures of the US-APWR standard plant."

- Replace the fifth and sixth paragraphs of DCD Subsection 3.7.4.1 with the following. The text includes portions of text modified in the response to DCD RAI 538-4320, Question 03.07.04-3:

  "The site-specific OBE is exceeded and plant shutdown is required in accordance with the criteria of RG 1.166 (Reference 3.7-41), if the first of the following three conditions in combination with either the second or third conditions are met:

  1. Any calculation of CAV described above yields a value that is greater than 0.16 g-second.
  2. 5% damping ARS generated by free-field ground motion ARS are higher than 0.2 g at frequencies between 2 and 10 Hz, or higher than the site-specific OBE ARS between 2 and 10 Hz, whichever is greater.
  3. 5% damping velocity response spectra generated by free-field ground motion are higher than 6 in./sec at frequencies between 1 and 2 Hz, or higher than the site-specific OBE velocity response spectra between 1 and 2 Hz, whichever is greater.

  If free-field instrumentation is not used, the criteria of RG 1.166 Appendix A are used for OBE exceedance checks, it is assumed that the checks of CAV and free-field ground spectra are exceeded, and shutdown of the plant is required if the 5% damping spectra are exceeded at any of the in-structure instrumentation."

- Add the following bullet to the bulleted list in DCD Subsection 3.7.4.2:

  - Unless otherwise justified by the COL Applicant based on site-specific conditions, at a surface grade location in the vicinity of the power block area, sufficiently far away from structures in order to appropriately measure free-field ground motion.

- Replace the first paragraph of DCD Subsection 3.7.4.4 with the following:

  "As previously discussed in Subsection 3.7.4.1, the seismic instrumentation and OBE exceedance checks meet the intent of RG 1.166 (Reference 3.7-41). In the case that the COL Applicant provides acceptable justification for not utilizing free-field instrumentation, the OBE exceedance checks can be performed using only uncorrected earthquake data for the three orthogonal plant directions (two horizontal and one vertical) obtained from seismic instrumentation installed at five plant locations (two

basemat locations and three upper level locations as described in Subsection 3.7.4.2). It should be noted that the use of five instrument locations is more conservative than the interim OBE exceedance guidelines given in Appendix A of RG 1.166 (Reference 3.7-41), which allow basemat-level only instrumental checks."

- Replace COL3.7(16) with the following:

  "The COL Applicant shall provide free-field seismic instrumentation in the vicinity of the power block area at surface grade, which shall be used for shutdown determination, unless otherwise justified. Any such justification shall be based on conditions and requirements specific to the site, and shall include justification for evaluation of OBE exceedance using only measurements from instrumentation installed on the buildings and the structures of the US-APWR standard plant."

See the Attachment 2 mark-up of DCD Tier 2, Chapter 1, changes to be incorporated.

- Replace COL3.7(16) with the following:

  "The COL Applicant shall provide free-field seismic instrumentation in the vicinity of the power block area at surface grade, which shall be used for shutdown determination, unless otherwise justified. Any such justification shall be based on conditions and requirements specific to the site, and shall include justification for evaluation of OBE exceedance using only measurements from instrumentation installed on the buildings and the structures of the US-APWR standard plant."

Impact on COLA

The R-COLA and S-COLA will be revised to incorporate impacts on the FSAR text due to the DCD revisions given above. There is no impact on the seismic instrumentation selection or location in the R-COLA or S-COLA due to the DCD impacts.

Impact on PRA

There is no impact on the PRA.

This completes MHI response to the NRC question.

ATTACHMENT 1
to RAI 632-5041

3.7.4.1 Comparison with Regulatory Guide 1.12

The proposed seismic instrumentation program is generally in accordance with RG 1.12 and RG 1.166 (References 3.7-40, 3.7-41), and consistent with the methodology used for seismic analysis that is discussed in Subsection 3.7.2. The seismic design of US-APWR standard plant is based on site-independent seismic response analysis of basemat resting on the surface of elastic half-space that is subjected to a control motion. The site independent OBE is defined as 1/3 of the CSDRS presented in Subsection 3.7.1.1. Verification of the site-independent standard design is performed during seismic analyses that consider site-specific conditions, such as soil layering, basemat embedment, water table depth etc. FIRS, which are developed from site-specific GMRS, define the site-specific control design motion.

The criteria that define the vibratory motion that requires the shutdown of the US-APWR plant are based on the site-specific OBE. The 5% damping FIRS associated with the site-specific OBE must be enveloped by 1/3 of the 5% damping CSDRS. The conditions that require a shutdown of the US-APWR plant are defined by the site-specific OBE ~~ISRS~~ at the free-field instrumentation located at grade in the plant yard, unless otherwise justified by the COL Applicant ~~locations of seismic instrumentation~~. Unless site-specific OBE is set at 1/3 of the site-specific SSE or lower, these spectra shall be obtained from ~~SSI~~ analysis using as input the site-specific OBE ground motion ~~FIRS~~ and properties of the supporting media that are strain-compatible to the site-specific OBE ground motion. When the site-specific OBE is equal or lower than 1/3 of site-specific SSE, the spectra scaled from the 5% damping site-specific SSE response spectra may be used directly for OBE exceedance checks. ~~The measured response spectra at each of the instrumentation locations in Subsection 3.7.4.2 are compared against the corresponding site-specific OBE instructure acceleration and velocity response spectra~~ An OBE exceedance check is performed in accordance with Section 4 of RG 1.166 (Reference 3.7-41) using both a response spectrum check and a cumulative absolute velocity (CAV) check. The comparison evaluation is to be performed within 4 hours of the earthquake using data obtained from the three components of the earthquake motion as defined by the three orthogonal axes of the standard plant (two horizontal and one vertical) on the uncorrected earthquake records. The evaluation is also to include a check on the operability of the seismic instrumentation as mandated by Section 4.3 of RG 1.166 (Reference 3.7-41).

The locations of seismic monitors for the US-APWR standard plant are provided in Subsection 3.7.4.2. The COL Applicant shall provide free-field seismic instrumentation in the vicinity of the power block area at surface grade, which shall be used for shutdown determination, unless otherwise justified. ~~is to verify the site-specific applicability of these monitors, and determine if there is a need for the installation of additional instrumentation for the measurement of the free-field ground motion~~ Any such justification shall be based on conditions and requirements specific to the site, and shall include justification for evaluation of OBE exceedance~~. The CAV is based on criteria for exceedance of OBE using measurements taken in the free-field, however the OBE exceedance can be evaluated by~~ using only measurements from instrumentation installed on the buildings and the structures of the US-APWR standard plant. ~~The seismic instrumentation for monitoring the free-field ground motion is not specifically required since both the site independent and site-specific design are based on control motions that are defined at the bottom of the basemats. The response spectra of the free-field ground motion are not directly relevant to the design of the US-APWR standard~~

~~plant nor are directly comparable to the design input ground motion as defined by the CSDRS and FIRS in Subsection 3.7.1.1.~~

The calculation of the CAV is performed in the manner provided in Electric Power Research Institute (EPRI) Report TR-100082 (Reference 3.7-42). As stated in RG 1.166 (Reference 3.7-41), the range of the spectral velocity limit should be 1.0 to 2.0 Hz which is different than that recommended by EPRI. In accordance with RG 1.166 (Reference 3.7-41), for each component of the free-field ground motion, the CAV should be calculated as follows: (1) the absolute acceleration (g units) time-history is divided into 1-second intervals, (2) each 1-second interval that has at least 1 exceedance of 0.025 g is integrated over time, (3) all the integrated values are summed together to arrive at the CAV. The approaches in EPRI Report NP-5930 (Reference 3.7-43) and EPRI Report TR-100082 (Reference 3.7-42) provide additional guidance on determining the CAV:

~~Acceleration and velocity spectra can be calculated from the measurement of free-field ground motion in order to set additional conditions for OBE exceedance in addition to the CAV check.~~ The site-specific OBE is exceeded and plant shutdown is required in accordance with the criteria of RG 1.166 (Reference 3.7-41), if the first of the following three conditions in combination with either the second or third conditions are met~~The site-specific OBE is exceeded only if all of the following three conditions identified in RG 1.166 (Reference 3.7-41) are met~~:

1. Any calculation of CAV described above yields a value that is greater than 0.16 g-second.
2. 5% damping ARS generated by free-field ground motion ARS are higher than 0.2 g at frequencies between 2 and 10 Hz, or higher than the site-specific OBE ARS between 2 and 10 Hz, whichever is greater.
3. 5% damping velocity response spectra generated by free-field ground motion are higher than 6 in./sec at frequencies between 1 and 2 Hz, or higher than the site-specific OBE velocity response spectra between 1 and 2 Hz, whichever is greater.

If free-field instrumentation is not used, the criteria of RG 1.166 Appendix A are used for OBE exceedance checks, it is assumed that the checks of CAV and free-field ground spectra are exceeded, and shutdown of the plant is required if the 5% damping spectra are exceeded at any of the in-structure instrumentation. ~~The shutdown of the plant is required only if all three of the above conditions are met and any of the 5% damping ARS obtained from the measurements of the instructure accelerations exceed the OBE spectra at the corresponding location. If the free-field ground motion is not measured, it is conservatively assumed that the checks of CAV and free-field ground accelerations and velocities are exceeded~~.

Additionally, low-level seismic effects would be included in the design of certain equipment potentially sensitive to a number of such events, based on a percentage of the responses calculated for the SSE.

3.7.4.2 Location and Description of Instrumentation

- Consistent with the guidance of RG 1.12 (Reference 3.7-40), the seismic instrumentation for the US-APWR standard plant is solid-state multi-channel

- On level 2F of PCCV at elevation 25 ft, 3 in., located in the southwest quadrant outside the steam generator and reactor coolant compartment.
- On level 4F of PCCV operating deck slab at elevation 76 ft, 5 in., located in the southwest quadrant outside the steam generator and reactor coolant compartment underneath the access stairs adjacent to the west PCCV buttress.
- On the basemat of the east PS/B on the B1F level at elevation -23 ft, 4 in., in the non safety-related turbine generator anteroom.
- On level 1F of the east PS/B at elevation 3 ft, 7 in., in the non safety-related turbine generator control room.
- Unless otherwise justified by the COL Applicant based on site-specific conditions, at a surface grade location in the vicinity of the power block area, sufficiently far away from structures in order to appropriately measure free-field ground motion.

The locations listed above correlate to structural elements in the structures which have been modeled as mass points in the dynamic analysis so that the measured motion can be directly compared to the design spectra. The instrumentation mounted at the locations listed above is not mounted on equipment, piping, supports, or secondary structural frame members. These locations have been reviewed in accordance with RG 8.8 (Reference 3.7-44) and determined to be consistent with maintaining dose rates as low as practical and maintaining occupational radiation exposures as low as is reasonably achievable for access and maintenance of the instrumentation.

A time-history analyzer/recorder is provided which has the capability to provide pre-event recording time of 3 seconds minimum and post-event recording time of 5 seconds minimum, and to record at least 25 minutes of sensed motion. The recorder portion of the time-history analyzer is to have the capability of a sample rate of at least 200 samples per second in each of the three orthogonal directions of the plant, a bandwidth of 0.20 Hz to 100 Hz, and a dynamic range of 1,000:1 zero to peak. The triaxial acceleration sensors are to have the same dynamic range as the time-history analyzer recorder and a frequency range of 0.20 Hz to 100 Hz. The triggers of the tri-axial acceleration sensor units are to be capable of being set within the range of 0.001g to 0.02g. Batteries are provided with enough capacity for a minimum of 25 minutes of system operation at any time over a 24-hour period, without recharging, in combination with a battery charger whose line power is connected to an uninterruptible power supply.

The seismic instrumentation serves no safety-related function and, therefore, has no nuclear safety design requirements. However, its design and location are in accordance with RG 1.12 (Reference 3.7-40), which requires that the seismic instrumentation:

- will not be affected by the failure of adjacent SSCs during an earthquake;
- will operate during all modes of plant operation, including periods of plant shutdown; and
- is protected as much as practical against accidental impacts.

As required by RG 1.12 (Reference 3.7-40), the seismic instrumentation is rigidly mounted and oriented so that the horizontal components are parallel to the horizontal axes of the standard plant used in the seismic analyses. These features of the seismic monitoring instrumentation are obtained by qualifying the equipment to IEEE Std 344-1987 (Reference 3.7-25); the seismic qualification program is discussed in Section 3.10.

3.7.4.3 Control Room Operator Notification

The US-APWR standard plant is designed such that triggering of the instrumentation described above is annunciated in the MCR of the plant. For sites which will have more than one US-APWR unit, only one unit is required to have seismic instrumentation, provided that the anticipated seismic response at each of the units is considered essentially the same and provided that annunciation is provided at all unit MCRs. The COL Applicant is to determine from the site-specific geological and seismological conditions if multiple US-APWR units at a site will have essentially the same seismic response, and based on that determination, choose if more than one unit is provided with seismic instrumentation at a multiple-unit site.

3.7.4.4 Comparison with Regulatory Guide 1.166

~~In accordance with RG 1.166 (Reference 3.7-41), it can be assumed that the checks of CAV and free-field ground accelerations and velocities are exceeded so the US-APWR standard plant does not have to rely upon seismic instrumentation located in the free-field for checks of OBE exceedance.~~ As previously discussed in Subsection 3.7.4.1, the seismic instrumentation and OBE exceedance checks meet the intent of RG 1.166 (Reference 3.7-41). In the case that the COL Applicant provides acceptable justification for not utilizing free-field instrumentation, the OBE exceedance checks can be performed using only uncorrected earthquake data for the three orthogonal plant directions (two horizontal and one vertical) obtained from seismic instrumentation installed at five plant locations (two basemat locations and three upper level locations as described in Subsection 3.7.4.2). It should be noted that the use of five instrument locations is more conservative than the interim OBE exceedance guidelines given in Appendix A of RG 1.166 (Reference 3.7-41), which allow basemat-level only instrumental checks.

The seismic instrumentation program must be in accordance with the guidelines of RG 1.166 (Reference 3.7-41) and EPRI NP-6695 (Reference 3.7-45) which are summarized as follows:

- Assure that a file containing information on all seismic instrumentation is maintained at the plant in accordance with regulatory position C1.1 of RG 1.166 (Reference 3.7-41).
- Implement planning for post-earthquake walkdown inspections by pre-selecting equipment and structures for inspections and pre-determining the content of the baseline inspections.
- Implement guidelines for actions to be performed immediately after an earthquake, including a check of the neutron flux monitoring sensors as part of the specific MCR board checks.
- Assure proper evaluation of ground motion records.
- Assure that after an earthquake at the plant site, an operability check is performed on the seismic instrumentation.
- If a shutdown is required, assure that the pre-shutdown inspections, including a check of the containment isolation system, are performed.

COL3.7(13) *The COL Applicant is to set the value of the OBE that serves as the basis for defining the criteria for shutdown of the plant, according to the site specific conditions.*

COL3.7(14) *The COL Applicant is to determine from the site-specific geological and seismological conditions if multiple US-APWR units at a site will have essentially the same seismic response, and based on that determination, choose if more than one unit is provided with seismic instrumentation at a multiple-unit site.*

COL3.7(15) *Deleted*

COL3.7(16) *The COL Applicant shall provide free-field seismic instrumentation in the vicinity of the power block area at surface grade which shall be used for shutdown determination, unless otherwise justified. Any such justification shall be based on conditions and requirements specific to the site, and shall include justification for evaluation of OBE exceedance using only measurements from instrumentation installed on the buildings and the structures of the US-APWR standard plant.* ~~*The COL Applicant is to verify the site-specific applicability of these monitors, and determine if there is a need for the installation of additional instrumentation for the measurement of the free-field ground motion based on conditions and requirements specific to the site.*~~

COL3.7(17) *Deleted*

COL3.7(18) *Deleted*

COL3.7(19) *The COL Applicant is to identify the implementation milestone for the seismic instrumentation implementation program based on the discussion in Subsections 3.7.4.1 through 3.7.4.5.*

COL3.7(20) *The COL Applicant is to validate the site-independent seismic design of the standard plant for site-specific conditions, including geological, seismological, and geophysical characteristics, and to develop the site-specific GMRS.*

COL3.7(21) *The COL Applicant is responsible for the seismic design of those seismic category I and seismic category II SSCs that are not part of the US-APWR standard plant.*

Table 1.8-2 Compilation of All Combined License Applicant Items for Chapters 1-19 (sheet 8 of 44)

COL ITEM NO.	COL ITEM
COL 3.7(13)	*The COL Applicant is to set the value of the OBE that serves as the basis for defining the criteria for shutdown of the plant, according to the site specific conditions.*
COL 3.7(14)	*The COL Applicant is to determine from the site-specific geological and seismological conditions if multiple US-APWR units at a site will have essentially the same seismic response, and based on that determination, choose if more than one unit is provided with seismic instrumentation at a multiple-unit site.*
COL 3.7(15)	*Deleted*
COL 3.7(16)	*The COL Applicant shall provide free-field seismic instrumentation in the vicinity of the power block area at surface grade which shall be used for shutdown determination, unless otherwise justified. Any such justification shall be based on conditions and requirements specific to the site, and shall include justification for evaluation of OBE exceedance using only measurements from instrumentation installed on the buildings and the structures of the US-APWR standard plant.* ~~*The COL Applicant is to verify the site-specific applicability of these monitors, and determine if there is a need for the installation of additional instrumentation for the measurement of the free-field ground motion based on conditions and requirements specific to the site.*~~
COL 3.7(17)	*Deleted*
COL 3.7(18)	*Deleted*
COL 3.7(19)	*The COL Applicant is to identify the implementation milestone for the seismic instrumentation implementation program based on the discussion in Subsections 3.7.4.1 through 3.7.4.5.*
COL 3.7(20)	*The COL Applicant is to validate the site-independent seismic design of the standard plant for site-specific conditions, including geological, seismological, and geophysical characteristics, and to develop the site-specific GMRS as free-field outcrop motions on the uppermost in-situ competent material.*
COL 3.7(21)	*The COL Applicant is responsible for the seismic design of those seismic category I and seismic category II SSCs that are not part of the US-APWR standard plant.*