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o:

April 11, 2016

10 CFR 52.3

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Subject: Duke Energy Carolinas, LLC
William States Lee III Nuclear Station - Docket Nos. 52-018 and 52-019
AP1000 Combined License Application for the William States Lee III
Nuclear Station Units 1 and 2 Update Roadmap
Ltr# WLG2016.04-02

Reference: Letter from Christopher Fallon (Duke Energy) to NRC Document Control Desk, *Update for William States Lee III Nuclear Station Units 1 and 2 Combined License Application*, dated April 11, 2016, WLG2016.04-01

This letter provides information supporting the recent Duke Energy update of the application for a combined license for William States Lee III Nuclear Station Units 1 and 2. Enclosed is a "roadmap" of the changes included in the recent update provided as an enclosure to the referenced letter, along with an explanation of the information contained in the roadmap.

If you have any further questions, or need additional information, please contact me at (704) 382-4046.

Sincerely,

Robert Kitchen
Director – Nuclear Licensing
Nuclear Development

Enclosure:

1) Lee Nuclear COLA Submittal 14 Update Roadmap.

D093
NRO

xc (w/o enclosure):

Laura Dudes, Deputy Regional Administrator, Region II

xc (w/ enclosure):

Brian Hughes, Senior Project Manager, DNRL

Enclosure 1

Duke Energy Carolinas, LLC (DEC)

William States Lee III Nuclear Station (WLS) Units 1 and 2

COLA Submittal 14 Update Roadmap

(82 pages including cover page)

Lee Nuclear COLA Submittal 14 Update Roadmap

Format Explanation (by column)

QB Change ID# - unique identifier for tracking purposes

COLA Rep - identifies the change as plant specific (WLS)

COLA Part A - affected COLA Part (Part 01 through Part 11)

Chapter A - affected FSAR chapter (FSAR 01 to 19)

Section/Page A - section and page number (if identified) specific to the document to be revised

Complete Change Description - description of the change

Basis for Change - source or reason for the change

Attachment:

APOG Tracking System - LEE COLA Roadmap of Submittal 14 (80 pages)

APOG Tracking System : COLA Changes | Lee COLA Roadmap of Submittal 14

APR-06-2016 11:45 AM

Lee COLA Roadmap of Submittal 14

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
Pt 01 (4 COLA Changes)						
12177	WLS	Pt 01		01.01.03.01	COLA Part 1, Section 1.1.3.1 is revised on the table listing the business address, names, current titles and citizenship of the current executive officers and senior nuclear leadership of Duke Energy Carolinas, LLC to remove "Weber, Jennifer L., Executive Vice President, External Affairs and Strategic Policy" from the table.	Duke Energy Organizational update
12179	WLS	Pt 01		01.01.03.02	COLA Part 1, Section 1.1.3.2 is revised on the table listing the business address, names, current titles and citizenship of the current directors of Duke Energy Corporation to add "Chairman of the Board" to the name, Good, Lynn J. and to add Moorman IV, Charles W. US.	Duke Energy Organizational update
12178	WLS	Pt 01		01.01.03.02	COLA Part 1, Section 1.1.3.2 is revised on the table listing the business address, names, current titles and citizenship of the current executive officers of Duke Energy Corporation to remove "Vice President" from the position of Good, Lynn J. and to remove the name, position and citizenship of "Weber, Jennifer, L.".	Duke Energy Organizational update
12176	WLS	Pt 01		01.01.F / F1.1-1	COLA Part 1, Figure 1.1-1 is revised to update the title of Duke Energy Indiana (under Cinergy Corp.) to read Duke Energy Indiana, LLC.	Duke Energy Organizational update
Pt 02 (170 COLA Changes)						
12174	WLS	Pt 02	FSAR 01	01.01.05	COLA Part 2, FSAR Chapter 1, Subsection 1.1.5, fifth sentence is revised as follows: The project timeline assures that the NRC licensing and adjudicatory process will result in the issuance of a license by 2016.	Duke Energy Annual Plan
12175	WLS	Pt 02	FSAR 01	01.04.02.08.09	COLA Part 2, FSAR Chapter 1 is revised to add new Subsection 1.4.2.8.9 as follows: 1.4.2.8.9 Westinghouse Electric Company LLC Westinghouse Electric Company LLC provided information on the design and safety analysis of the AP1000 for use in preparing the site-specific portions of the COL application and to address technical issues identified with the certified design.	Duke Energy identification of agents and contractors.
12038	WLS	Pt 02	FSAR 01	01.06.T / T1.6-202	COLA Part 2, FSAR Chapter 1, Table 1.6-202, Material Referenced, is added with left margin annotation, WLS DEP 6.4-1 (departure from DCD Table 1.6-1) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1 Item 2.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 2 WLG2016.02-03
12119	WLS	Pt 02	FSAR 01	01.08.T / T1.8-201 3.2-1	COLA Part 2, FSAR Chapter 1, Table 1.8-201, Summary of FSAR Departures from the DCD, entry for WLS DEP 3.2-1 is revised as reflected on Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 1.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
						Address Containment Condensate Return Cooling Design, Enclosure 7, Item 1, WLG2016.02-01
12205	WLS	Pt 02	FSAR 01	01.08.T / T1.8-201 3.2-1	COLA Part 2, FSAR Chapter 1, Table 1.8-201, Summary of FSAR Departures from the DCD, entry for WLS DEP 3.2-1 is revised to remove "9E.9" from the column heading "FSAR Section or Subsection" as a conforming change to Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 1.	Editorial correction to Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 1, WLG2016.02-01
11973	WLS	Pt 02	FSAR 01	01.08.T / T1.8-201 6.2-1	COLA Part 2, FSAR Chapter 1, Table 1.8-201, Summary of FSAR Departures from the DCD, is revised to add departure WLS DEP 6.2-1 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment, Enclosure Item 1.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment, Enclosure 3, Item 1 WLG2016.01-01
12037	WLS	Pt 02	FSAR 01	01.08.T / T1.8-201 6.4-1	COLA Part 2, FSAR Chapter 1, Table 1.8-201, Summary of FSAR Departures from the DCD, is revised to add departure WLS DEP 6.4-1 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1 Item 1.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 1 WLG2016.02-03
11984	WLS	Pt 02	FSAR 01	01.08.T / T1.8-201 6.4-2	COLA Part 2, FSAR Chapter 1, Table 1.8-201, Summary of FSAR Departures from the DCD, is revised to add departure WLS DEP 6.4-2 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 1.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 1, WLG2016.02-04
12200	WLS	Pt 02	FSAR 01	01.08.T / T1.8-201 6.4-2	COLA Part 2, FSAR Chapter 1, Table 1.8-201, Sheet 6 of 7 (WLS DEP 6.4-2) is further revised to remove Table 7.3-204 from the FSAR Section or Subsection column Table 7.3-204 is removed due to table re-numbering in FSAR Chapter 7.	Editorial update to Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
						Room Habitability Analysis, Enclosure 3, Attachment 1, Item 1, WLG2016.02-04
11967	WLS	Pt 02	FSAR 01	01.08.T / T1.8-201 7.3-1	COLA Part 2, FSAR Table 1.8-201, Departure Number WLS DEP 7.3-1 is revised to add Bases 3.3.1 to the Departure Summary and the FSAR Section or Subsection as a conforming change to Duke Energy Endorsement of Voluntary Submittal of Response to the LNP (DEF) Request For Additional Information Letter No. 135 Related To IEEE 603 And Source Range Nuclear Instrumentation Flux Doubling, WLG2016.02-05.	Editorial, conforming change to Duke Energy Endorsement of Voluntary Submittal of Response to the LNP (DEF) Request For Additional Information Letter No. 135 Related To IEEE 603 and Source Range Nuclear Instrumentation Flux Doubling, WLG2016.02-05.
12120	WLS	Pt 02	FSAR 01	01.09.04.02.02	COLA Part 2, FSAR Chapter 1 is revised to add Subsection 1.9.4.2.2 with left margin annotation WLS DEP 3.2-1 as follows: 1.9.4.2.2 Task Action Plan Items A-31 Residual Heat Removal Requirements Replace the first and second paragraphs of DCD Subsection 1.9.4.2.2, Action Plan Item A-31, AP1000 Response, with the following: The AP1000 employs safety-related core decay heat removal systems that establish and maintain the plant in a safe, stable condition following design basis events. It is not necessary that these passive systems achieve cold shutdown as defined by Regulatory Guide 1.139. The AP1000 complies with General Design Criteria 34 by using a more reliable and simplified system design. The passive core cooling system is employed for both hot-standby and long-term cooling modes. Hot-standby conditions are achieved immediately and a temperature of 420°F is reached within 36 hours as discussed in Subsection 19E.4.10.2. Reactor pressure is controlled and can be reduced to about 250 psig. The passive residual heat removal system provides a closed cooling system to maintain long-term core cooling. Passive feed and bleed cooling, using the passive injection features for the feed and the automatic depressurization system for bleed, provides safety-related cooling capability. See Section 7.4 for a discussion of safe shutdown and Section 6.3 for a description of the passive core cooling system.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 2, WLG2016.02-01
12039	WLS	Pt 02	FSAR 01	01.09.04.02.03	COLA Part 2, FSAR Chapter 1, Subsection 1.9.4.2.3 is revised to add Issue 83 with left margin annotation WLS DEP 6.4-1 as follows: Revise the second sentence in the first paragraph of the AP1000 Response for Issue 83 in DCD Subsection 1.9.4.2.3 as follows: If ac power is unavailable for more than 10 minutes or if "High-2" particulate or iodine radioactivity is detected in the main control room supply air duct, which would lead to exceeding General Design Criteria 19 operator dose limits, the protection and safety monitoring system automatically isolates the main control room and operator habitability requirements are then met by the main control room emergency habitability system (VES).	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 3 WLG2016.02-03
12121	WLS	Pt 02	FSAR 01	01.09.05.01.05	COLA Part 2, FSAR Chapter 1 is revised to add Subsection 1.9.5.1.5 with left margin annotation WLS DEP 3.2-1 as follows: 1.9.5.1.5 Station Blackout Replace the third paragraph of DCD Subsection 1.9.5.1.5, AP1000 Response, with the following:	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					The AP1000 safety-related passive systems automatically establish and maintain safe, stable conditions for the plant following design basis events, including an extended loss of ac power sources. The passive systems can maintain these safe, stable conditions after design basis events for at least 72 hours, without operator action, following a loss of both onsite and offsite ac power sources. DCD Subsection 1.9.5.4 provides additional information on long-term actions following an extended station blackout beyond 72 hours.	Condensate Return Cooling Design, Enclosure 7, Item 3, WLG2016.02-01
12040	WLS	Pt 02	FSAR 01	01.AA RG 01.052	COLA Part 2, FSAR Chapter 1, Appendix 1AA is revised with left margin annotation WLS DEP 6.4-1 as follows: Regulatory Guide 1.52, Rev. 3, 6/01 – Design, Inspection and Testing Criteria for Air Filtration and Adsorption Units of Post-Accident Engineered-Safety-Feature Atmosphere Cleanup Systems in Light-Water-Cooled Nuclear Power Plants Conformance with the design and operational aspects is as stated in the DCD., with the exception of Criteria Section C.4.9 and Table 1. Conformance with Section C.4.9 and Table 1 is documented below. C.4.9 Conforms Table 1 Conforms	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 4 WLG2016.02-03
12041	WLS	Pt 02	FSAR 03	03.01	COLA Part 2, FSAR Chapter 3, Section 3.1 is revised as follows: 3.1 CONFORMANCE WITH NUCLEAR REGULATORY COMMISSION GENERAL DESIGN CRITERIA This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 5 WLG2016.02-03
12042	WLS	Pt 02	FSAR 03	03.01.02	COLA Part 2, FSAR Chapter 3, Subsection 3.1.2 is added with left margin annotation WLS DEP 6.4-1 as follows: 3.1.2 Protection by Multiple Fission Product Barriers Revise the first sentence of the third paragraph of AP1000 Compliance section of Criterion 19 - Control Room of DCD Subsection 3.1.2 to read as follows: If ac power is unavailable for more than 10 minutes or if "High-2" particulate, low pressurizer pressure is detected, or "High-2" iodine radioactivity is detected in the main control room supply air duct, which would lead to exceeding General Design Criteria 19 operator dose limits, the protection and safety monitoring system automatically isolates the main control room and operator habitability requirements are then met by the main control room emergency habitability system (VES).	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 6 WLG2016.02-03
11990	WLS	Pt 02	FSAR 03	03.07.T / T3.7-202	COLA Part 2, FSAR Chapter 3, Table 3.7-202 is added with left margin annotation WLS DEP 6.4-2 (departure from DCD Table 3.7.3-1 (Sheets 1 and 2 of 3)) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment, Enclosure 3, Attachment 1, Item 2.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment, Enclosure 3, Attachment 1, Item 2, WLG2016.02-04
11991	WLS	Pt 02	FSAR 03	03.09.T / T3.9-202	COLA Part 2, FSAR Chapter 3, Table 3.9-202 is added with left margin annotation WLS DEP 6.4-2 (departure from DCD Table 3.9-12 (Sheet 6 of 7)) as reflected on Duke Energy Voluntary Submittal of Exemption Request	Duke Energy Voluntary Submittal of Exemption

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 3.	Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 3, WLG2016.02-04
11992	WLS	Pt 02	FSAR 03	03.09.T / T3.9-203	COLA Part 2, FSAR Chapter 3, Table 3.9-203 is added with left margin annotation WLS DEP 6.4-2 (departure from DCD Table 3.9-16 (Sheet 23 of 26)) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 4.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 4, WLG2016.02-04
11993	WLS	Pt 02	FSAR 03	03.09.T / T3.9-204	COLA Part 2, FSAR Chapter 3, Table 3.9-204, is added with left margin annotation WLS DEP 6.4-2 as follows (departure from DCD Table 3.9-17) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 5.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 5, WLG2016.02-04
12203	WLS	Pt 02	FSAR 03	03.09.T / T3.9-204	COLA Part 2, FSAR Chapter 3, Table 3.9-204, is further revised to add Notes 1 through 7 from DCD Table 3.9-17.	Editorial update to Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 5, WLG2016.02-04
11994	WLS	Pt 02	FSAR 03	03.11.T / T3.11-202	COLA Part 2, FSAR Chapter 3, Table 3.11-202, is added with left margins annotation WLS DEP 6.4-2 as follows (departure from DCD Table 3.11-1 (Sheets 17, 30 and 47 of 51)) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 6.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 6, WLG2016.02-04
11995	WLS	Pt 02	FSAR 03	03.D	COLA Part 2, FSAR Chapter 3, Appendix 3D is revised as follows: APPENDIX 3D METHODOLOGY FOR QUALIFYING AP1000 SAFETY-RELATED ELECTRICAL AND MECHANICAL	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					EQUIPMENT This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.	Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 7, WLG2016.02-04
12204	WLS	Pt 02	FSAR 03	03.D	COLA Part 2, FSAR Chapter 3, Appendix 3D is further revised to add the following: Figure 3D-201 replaces DCD Figure 3D.5-1, Sheet 1 of 3, Typical Abnormal Environmental Test Profiles: Main Control Room.	Editorial revision to Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 7, WLG2016.02-04
11996	WLS	Pt 02	FSAR 03	03.D.F / F3D-201	COLA Part 2, FSAR Chapter 3, Appendix 3D is revised to add FSAR Figure 3D-201 with left margin annotation WLS DEP 6.4-2 (departure from DCD Figure 3D.5-1 (Sheet 1 of 3)) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 8.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 8, WLG2016.02-04
11997	WLS	Pt 02	FSAR 03	03.I.T / T3I-201	COLA Part 2, FSAR Chapter 3, Appendix 3I is revised to add FSAR Table 3I-201 with left margin annotations WLS DEP 6.4-2 (departure from DCD Table 3I.6-2 (Sheet 11 of 28)) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 9.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 9, WLG2016.02-04
11998	WLS	Pt 02	FSAR 03	03.I.T / T3I-202	COLA Part 2, FSAR Chapter 3, Appendix 3I is revised to add FSAR Table 3I-202 with left margin annotations WLS DEP 6.4-2 (departure from DCD Table 3I.6-2 (Sheet 11 of 28)) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 10.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 10, WLG2016.02-04
12122	WLS	Pt 02	FSAR 05	05.04.05.02.01	COLA Part 2, FSAR Chapter 5, Subsection 5.4.5.2.1 is added with left margin annotation WLS DEP 3.2-1 as follows: 5.4.5.2.1 Pressurizer Add the following paragraph to the end of DCD Subsection 5.4.5.2.1:	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					The AP1000 pressurizer has metallic reflective insulation (MRI) installed on the external surfaces. The insulation is designed to reduce heat losses from the pressurizer, to reduce heat load on the containment cooling system, and to limit temperatures in nearby concrete or components. During normal operating conditions, the insulation has an average maximum heat transfer rate of 65 BTU/hr-ft2 at a containment design temperature of 120°F.	Address Containment Condensate Return Cooling Design, Enclosure 7, Item 4, WLG2016.02-01
12123	WLS	Pt 02	FSAR 05	05.04.14.01	COLA Part 2, FSAR Chapter 5, Subsection 5.4.14.1 is revised as follows: 5.4.14.1 Design Bases Replace the first sentence of the first paragraph of DCD Subsection 5.4.14.1 with the following information: The passive residual heat removal heat exchanger automatically actuates to remove core decay heat for 72 hours as discussed in Section 6.3, assuming the condensate from steam generated in the in-containment refueling water storage tank (IRWST) is returned to the tank. Revise the combined second and third paragraphs of DCD Subsection 5.4.14.1 to read as follows: The passive residual heat removal heat exchanger and the in-containment refueling water storage tank are designed to delay significant steam release to the containment for at least one hour. The passive residual heat removal heat exchanger will remove sufficient decay heat from the reactor coolant system to satisfy the applicable post-accident safety evaluation criteria detailed in DCD Chapter 15 for at least 72 hours. In addition, the passive residual heat removal heat exchanger will cool the reactor coolant system, with reactor coolant pumps operating or in the natural circulation mode, so that the reactor coolant system pressure can be lowered to reduce stress levels in the system if required. See Section 6.3 for a discussion of the capability of the passive core cooling system.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 5, WLG2016.02-01
11974	WLS	Pt 02	FSAR 06	06.02.04.05.01	COLA Part 2, FSAR Chapter 6, is revised with the addition of Subsection 6.2.4.5.1, Preoperational Inspection and Testing, with left margin annotation, WLS DEP 6.2-1, as follows: 6.2.4.5.1 Preoperational Inspection and Testing Revise the second paragraph of DCD Subsection 6.2.4.5.1, Hydrogen Ignition Subsystem, to read as follows: Pre-operational inspection is performed to verify the location of openings through the ceilings of the passive core cooling system valve/accumulator rooms with respect to the containment pressure boundary. The primary openings are those that constitute 98% of the opening area. The primary openings in Room 11206 that vent to Room 11300 are the equipment access opening and CMT-A opening. These openings are verified to be a minimum distance of 24.3 feet and 9.4 feet, respectively, from the containment shell. The primary opening in Room 11207 that vents to Room 11300 is the CMT-B opening, which is verified to be a minimum distance of 24.6 feet away from the containment shell. Other openings through the ceilings of these rooms are verified to be at least 3 feet from the containment shell.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment, Enclosure 3, Item 2, WLG2016.01-01
12124	WLS	Pt 02	FSAR 06	06.03.01.01.01	COLA Part 2, FSAR Chapter 6, Subsection 6.3.1.1.1, new first paragraph is added with left margin annotation WLS DEP 3.2-1 as follows: 6.3.1.1.1 Emergency Core Decay Heat Removal Replace the first paragraph of DCD Subsection 6.3.1.1.1 with the following information. For postulated non-LOCA events, where a loss of capability to remove core decay heat via the steam generators occurs, the passive core cooling system is designed to perform the following functions for at least 72 hours:	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 6, WLG2016.02-01
12125	WLS	Pt 02	FSAR 06	06.03.01.01.01		

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					COLA Part 2, FSAR Chapter 6, Subsection 6.3.1.1.1, second and third bullets are revised as follows: • The passive residual heat removal heat exchanger, in conjunction with the in-containment refueling water storage tank, condensate collection features and the passive containment cooling system, are designed to remove decay heat following a design basis event. Automatic depressurization actuation is not expected, but may occur depending on the amount of reactor coolant system leakage and when normal systems are recovered (refer to Subsection 6.3.1.1.4). • The passive residual heat removal heat exchanger is designed to maintain acceptable reactor coolant system conditions following a non-LOCA event. The applicable post-accident safety evaluation criteria are discussed in Chapter 15.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 7, WLG2016.02-01
12126	WLS	Pt 02	FSAR 06	06.03.01.01.01	COLA Part 2, FSAR Chapter 6, Subsection 6.3.1.1.1 is revised to add new second paragraph with left margin annotation WLS DEP 3.2-1 as follows: System operation beyond 72 hours is described in Subsection 6.3.1.2.1.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 8, WLG2016.02-01
12127	WLS	Pt 02	FSAR 06	06.03.01.01.04	COLA Part 2, FSAR Chapter 6, Subsection 6.3.1.1.4 is revised as follows: 6.3.1.1.4 Safe Shutdown Replace DCD Subsection 6.3.1.1.4 with the following information. The functional requirements for the passive core cooling system specify that the plant be brought to a safe, stable condition using the passive residual heat removal heat exchanger for events not involving a loss of coolant. As stated in Subsection 6.3.1.1.1, the passive residual heat removal heat exchanger in conjunction with the passive containment cooling system provides sufficient heat removal to satisfy the post-accident safety evaluation criteria for at least 72 hours. Additionally, the passive core cooling system, in conjunction with the passive containment cooling system and the automatic depressurization system, has the capability to establish long-term safe shutdown conditions in the reactor coolant system, as identified in Subsection 7.4.1.1. The core makeup tanks automatically provide injection to the reactor coolant system after they are actuated on low reactor coolant temperature or low pressurizer pressure or level. The passive core cooling system can maintain stable plant conditions for a long time in this mode of operation, depending on the reactor coolant leakage and the availability of ac power sources. For example, with a technical specification leak rate of 10 gpm, stable plant conditions can be maintained for at least 10 hours. With a smaller leak a longer time is available. In scenarios when ac power sources are unavailable for approximately 22 hours, the automatic depressurization system automatically actuates. However, after the initial plant cooldown following a non-LOCA event, operators assess plant conditions and have the option to perform recovery actions to further cool and depressurize the reactor coolant system in a closed-loop mode of operation, i.e., without actuation of the automatic depressurization system. After verifying the reactor coolant system is in an acceptable, stable condition such that automatic depressurization is not needed, the operators may take action to extend the passive residual heat removal heat exchanger operation by de-energizing the loads on the Class 1E dc batteries powering the protection and monitoring system actuation cabinets. After operators have taken action to extend its operation, the passive residual heat removal heat exchanger, in conjunction with the passive containment cooling system, has the capability to maintain safe, stable conditions for at least 72 hours. The automatic depressurization system remains available to maintain safe shutdown conditions at a later time. In most sequences the operators would return the plant to normal system operations and terminate passive	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 9, WLG2016.02-01

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					system operation within several hours in accordance with the plant emergency operating procedures. For loss of coolant accidents, when the core makeup tank level reaches the automatic depressurization system actuation setpoint and other postulated events wherethe passive residual heat removal heat exchanger operation is not extended or exhausted, the automatic depressurization system may be initiated. This results in injection from the accumulators and subsequently from the in-containment refueling water storage tank, once the reactor coolant system is nearly depressurized. For these conditions, the reactor coolant system depressurizes to saturated conditions at about 250°F within 24 hours. The passive core cooling system can maintain this safe shutdown condition indefinitely for the plant as identified in Subsection 7.4.1.1. The passive core cooling system functional requirements are met over the range of anticipated events and single failure assumptions. The primary function of the passive core cooling system during a safe shutdown using only safetyrelated equipment is to provide a means for boration, injection, and core cooling. Details of the safe shutdown design bases are presented in DCD Subsection 5.4.7 and DCD Section 7.4. The performance of the passive residual heat removal heat exchanger to bring the plant to 420°F in 36 hours is summarized in Subsection 19E.4.10.2.	
12181	WLS	Pt 02	FSAR 06	06.03.01.01.04	COLA Part 2, FSAR Chapter 6, Subsection 6.3.1.1.4, fourth paragraph, second sentence is further revised as follows: For loss of coolant accidents, when the core makeup tank level reaches the automatic depressurization system actuation setpoint and other postulated events where the passive residual heat removal heat exchanger operation is not extended or is exhausted, the automatic depressurization system may be initiated.	Editorial
12128	WLS	Pt 02	FSAR 06	06.03.01.02.01	COLA Part 2, FSAR Chapter 6, Subsection 6.3.1.2.1 is revised as follows: 6.3.1.2.1 Post Accident Core Decay Heat Removal The passive residual heat removal heat exchanger is designed to cool the reactor coolant system to 420°F in 36 hours, with or without reactor coolant pumps operating. This allows the reactor coolant system to be depressurized and the stress in the reactor coolant system and connecting pipe to be reduced to low levels. This non-bounding, conservative evaluation is discussed in Subsection 19E.4.10.2. The passive residual heat removal heat exchanger, in conjunction with the in-containment refueling water storage tank, the condensate return features and the passive containment cooling system, has the capability to maintain the reactor coolant system in the specified, long-term safe shutdown condition of 420°F for greater than 14 days in a closed-loop mode of operation. The automatic depressurization system can be manually actuated by the operators during the extended passive residual heat removal heat exchanger operation to initiate open-loop cooling. The operator actions necessary to achieve safe shutdown using the passive residual heat removal heat exchanger in a closed-loop mode of operation involve preventing unnecessary actuation of the automatic depressurization system as detailed in DCD Subsection 7.4.1. Eventually, if pressurizer heaters are not available, the pressurizer sub-cools due to ambient heat loss. When this happens, the steam void within the pressurizer is transferred to the RCS. It has been determined that this condition is safe, so long as PRHR performance is not affected. If PRHR performance is affected by sub-cooling (or other plant conditions) and non-safety systems to control core cooling are not reestablished, then the final, long term safe shutdown conditions may be achieved and maintained using ADS as discussed in Subsection 7.4.1.1.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 10, WLG2016.02-01
12129	WLS	Pt 02	FSAR 06	06.03.02.01.01	COLA Part 2, FSAR Chapter 6, Subsection 6.3.2.1.1, is revised as follows: Replace the seventh and eighth paragraphs of DCD Subsection 6.3.2.1.1 with the following: The passive residual heat removal heat exchanger, in conjunction with the in-containment refueling water storage tank, condensate return features and passive containment cooling system, can provide core cooling for at least 72 hours. After the in-containment refueling water storage tank water reaches its saturation temperature (in several hours), the process of steaming to the containment initiates. Containment pressure will increase as	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					steam is released from the in-containment refueling water storage tank. As containment temperature increases, condensation begins to form on the subcooled metal and concrete surfaces inside containment. Condensation on these heat sink surfaces transfers energy to the bulk metal and concrete until they come into equilibrium with the containment atmosphere. Condensation that is not returned to the in-containment refueling water storage tank drains to the containment sump. Condensation occurs on the steel containment vessel, which is cooled by the passive containment cooling system. Most of the condensate formed on the containment vessel wall is collected in a safety-related gutter arrangement. A gutter is located near the operating deck elevation, and a downspout piping system is connected at the polar crane girder and internal stiffener, to collect steam condensate inside the containment during passive containment cooling system operation and return it to the in-containment refueling water storage tank. The gutter normally drains to the containment sump, but when the passive residual heat removal heat exchanger actuates, safety-related isolation valves in the gutter drain line shut and the gutter overflow returns directly to the in-containment refueling water storage tank. Recovery of the condensate maintains the passive residual heat removal heat exchanger heat sink for greater than 14 days.	Design, Enclosure 7, Item 11, WLG2016.02-01
12130	WLS	Pt 02	FSAR 06	06.03.02.01.01	COLA Part 2, FSAR Chapter 6, Subsection 6.3.2.1.1, tenth paragraph is revised as follows: Revise the tenth paragraph to DCD Subsection 6.3.2.1.1 to read as follows: The duration the passive residual heat removal heat exchanger can continue to remove decay heat is affected by the efficiency of the return of condensate to the in-containment refueling water storage tank. The in-containment refueling water storage tank water level is affected by the amount of steam that leaves the tank and does not return. Resources are typically recovered within 72 hours, which would allow the operators to place active, defense-in-depth systems into service and to terminate passive system operation. If resources are not recovered within this time frame, closed-loop cooling using the passive residual heat removal heat exchanger can be extended as described in DCD Subsection 7.4.1.1 to maintain a safe, stable condition after a design basis event.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 12, WLG2016.02-01
12131	WLS	Pt 02	FSAR 06	06.03.02.02.05	COLA Part 2, FSAR Chapter 6, Subsection 6.3.2.2.5 is added with left margin annotation WLS DEP 3.2-1 as follows: 6.3.2.2.5 Passive Residual Heat Removal Heat Exchanger Replace the third paragraph of DCD Subsection 6.3.2.2.5 with the following: The passive residual heat removal heat exchanger is designed to remove sufficient heat so that its operation, in conjunction with available inventory in the steam generators, provides reactor coolant system cooling during loss of main feedwater or main feedline break events.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 13, WLG2016.02-01
12132	WLS	Pt 02	FSAR 06	06.03.02.08	COLA Part 2, FSAR Chapter 6, Subsection 6.3.2.8 is revised as follows: The operator can take action to avoid actuation of the automatic depressurization system when it is not needed. For non-LOCA events during which ac power has been lost for more than 22 hours, the protection and monitoring system will automatically open the automatic depressurization system valves to begin a controlled depressurization of the reactor coolant system and, eventually, containment floodup and recirculation prior to depletion of the actuation batteries. However, the operators can take action to block actuation of the automatic depressurization system should actuation be deemed unnecessary based on reactor coolant system conditions. This action allows closed loop passive residual heat removal heat exchanger operation to continue as long as acceptable reactor coolant system conditions are maintained. DCD Section 7.4 describes the anticipated operator actions to block the unnecessary automatic depressurization system actuation and to achieve recovery using available systems to remove decay heat. DCD Section 7.5 describes the post-accident monitoring instrumentation available to the operator in the main control room following an event.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 14, WLG2016.02-01
12133	WLS	Pt 02	FSAR 06	06.03.03		

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					COLA Part 2, FSAR Chapter 6, Subsection 6.3.3, second paragraph is revised as follows: In addition to mitigating the initiating events, the passive residual heat removal heat exchanger is capable of cooling the reactor coolant system to the specified safe shutdown condition of 420°F within 36 hours as described in Subsection 19E.4.10.2. A non-bounding, conservative analysis of the plant response during operator-initiated, extended operation of the passive residual heat removal heat exchanger is demonstrated in the shutdown temperature evaluation of Subsection 19E.4.10.2. The closed-loop cooling mode allows the reactor coolant system pressure to decrease and reduces the stress in the reactor coolant system and connecting pipe.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 15, WLG2016.02-01
12134	WLS	Pt 02	FSAR 06	06.03.03	COLA Part 2, FSAR Chapter 6, Subsection 6.3.3, fifth paragraph is revised as follows: The transient analyses summarized in DCD Chapter 15 are extended long enough to demonstrate the applicable safety evaluation criteria are met. It is expected that normal systems would be available such that operators could terminate the passive safety systems and proceed with an orderly shutdown. However, as discussed in Subsection 6.3.1.1.4, the passive systems are capable of bringing the plant to a safe, stable condition for at least 72 hours in closed loop cooling mode and for longer in an open loop mode.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 16, WLG2016.02-01
12135	WLS	Pt 02	FSAR 06	06.03.03.02.01.01	COLA Part 2, FSAR Chapter 6, Subsection 6.3.3.2.1.1, second, third and fourth paragraphs are revised into four paragraphs as follows: During most events, the passive systems would be terminated in hours. When an ac power source is restored and passive core cooling system termination criteria are satisfied, the operator terminates passive core cooling system operation and initiates normal plant shutdown operations (as discussed in Subsection 6.3.1.2.1.) However, if normal systems are not recovered as expected, the passive residual heat removal heat exchanger removes core decay heat and maintains acceptable reactor coolant system conditions for at least 72 hours. For a non-loss of coolant accident event where ac power is lost , the automatic depressurization system will actuate in approximately 22 hours if operators do not act to avoid actuation when it is not needed. For this long-term transient, it is assumed operators extend passive residual heat removal heat exchanger operation as described in DCD Subsection 7.4.1.1. The loss of main feedwater with loss of ac power event is analyzed for a 72 hour period, assuming operators extend closed-loop cooling beyond the time the automatic depressurization system would be actuated by the protection and safety monitoring system. This event mirrors the loss of ac power to the plant auxiliaries as described in DCD Subsection 15.2.6, but the loss of ac power extends to 72 hours. In this event, operation of the passive residual heat removal heat exchanger continues for 72 hours and maintains acceptable reactor coolant system conditions such that the applicable Condition II safety evaluation criteria are met. If non-safety systems capable of removing decay heat are not recovered, operator action to actuate ADS is eventually required. This condition would then be bounded by the Condition III event of inadvertent ADS actuation. Reactor coolant system leakage could limit closed-loop capacity. A reactor coolant system leak could produce conditions that would preclude the operators from de-energizing the loads on the Class 1E batteries, or could require the operators to re-energize the buses powered by the Class 1E batteries before 72 hours so that the automatic depressurization system valves could be actuated.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 17, WLG2016.02-01
12136	WLS	Pt 02	FSAR 06	06.03.03.04.01	COLA Part 2, FSAR Chapter 6, Subsection 6.3.3.4.1 is revised as follows: 6.3.3.4.1 Loss of Startup Feedwater During Hot Standby, Cooldowns, and Heat-ups Revise the last sentence of the fourth paragraph of DCD Subsection 6.3.3.4.1 to read as follows: This allows it to function as a heat sink for greater than 14 days, as discussed in Subsection 6.3.1.2.1.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
						Condensate Return Cooling Design, Enclosure 7, Item 18, WLG2016.02-01
12043	WLS	Pt 02	FSAR 06	06.04	COLA Part 2, FSAR Chapter 6, Section 6.4 is revised with left margin annotation WLS DEP 6.4-1 as follows: 6.4 HABITABILITY SYSTEMS Revise the first sentence of the third paragraph of DCD Section 6.4 as follows: If ac power is unavailable for more than 10 minutes or if "High-2" particulate or iodine radioactivity is detected in the main control room supply air duct, which would lead to exceeding General Design Criteria 19 operator dose limits, the protection and safety monitoring system automatically isolates the main control room and operator habitability requirements are then met by the main control room emergency habitability system (VES).	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 7 WLG2016.02-03
11999	WLS	Pt 02	FSAR 06	06.04.02.02	COLA Part 2, FSAR Chapter 6, is revised to add new Subsection 6.4.2.2 with left margin annotation WLS DEP 6.4-2 as follows: 6.4.2.2 General Description Revise the sixth paragraph of DCD Subsection 6.4.2.2 to read as follows: In the unlikely event that power to the nuclear island nonradioactive ventilation system is unavailable for more than 72 hours, MCR habitability is maintained by operating one of the two MCR ancillary fans to supply outside air to the MCR such that the maximum average Wet Bulb Globe Temperature index for the control room is less than 90° F (32.2° C). See Subsection 9.4.1 for a description of this cooling mode of operation. Doors and ducts may be opened to provide a supply pathway and an exhaust pathway. Likewise, outside air is supplied to division B and C instrumentation and control rooms in order to maintain the ambient temperature below the qualification temperature of the equipment.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 11, WLG2016.02-04
12000	WLS	Pt 02	FSAR 06	06.04.02.03	COLA Part 2, FSAR Chapter 6, is revised to add new Subsection 6.4.2.3 with left margin annotation WLS DEP 6.4-2 as follows: 6.4.2.3 Component Description Revise the first paragraph of DCD Subsection 6.4.2.3 and add a new fourteenth bullet to read as follows: The main control room emergency habitability system compressed air supply contains a set of storage tanks connected to a main and an alternate air delivery line and equipment to provide electrical load de-energization. Components common to both lines include a manual isolation valve and a pressure regulating valve. Single active failure protection is provided by the use of redundant, remotely operated isolation valves, which are located within the MCR pressure boundary. In the event of insufficient or excessive flow in the main delivery line, the main delivery line is isolated and the alternate delivery line is manually actuated. The alternate delivery line contains the same components as the main delivery line with the exception of the remotely operated isolation valves, and thus is capable of supplying compressed air to the MCR pressure boundary at the required air flowrate. The VES piping and penetrations for the MCR envelope are designated as equipment Class C. Additional details on Class C designation are provided in DCD Subsection 3.2.2.5. The classification of VES components is provided in DCD Table 3.2-3, as appropriate. • MCR Load Shed Panels The de-energization of the Main Control Room (MCR) electrical loads will be performed using Class 1E equipment. Equipment within each of the two electrical panels will be actuated from the "main control room isolation, air supply initiation and electrical load de-energization" engineered safety feature. The de-energization is separated into two stages to provide operators with the maximum available non-safety equipment, while maintaining the MCR heat load within the requirements of the VES. Each electrical panel will have redundant relays and timers controlled by both PMS Division A and PMS Division	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 12, WLG2016.02-04

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					C. Either division will be capable of actuating the timers and relays associated with each electrical panel independent of one another. This configuration prevents routine maintenance or single failures of a PMS cabinet from creating a spurious loss of MCR electrical loads, while still providing for single failure protection. In order to accomplish the "De-energize MCR Electrical Loads" function, one set of Stage 1 and Stage 2 timers in each electrical panel must receive the PMS command. Relays in both electrical panels must be actuated in order to carry out the overall function; however, overall actuation may occur via different combinations of Division A and Division C commands.	
12044	WLS	Pt 02	FSAR 06	06.04.02.06	COLA Part 2, FSAR Chapter 6, Subsection 6.4.2.6 is added with left margin annotation WLS DEP 6.4-1 as follows: 6.4.2.6 Shielding Design Revise DCD Subsection 6.4.2.6 to read as follows: The design basis loss-of-coolant accident (LOCA) dictates the shielding requirements for the main control room. Main control room shielding design bases are discussed in Section 12.3. In addition to shielding provided by building structural features, consideration is given to shielding provided by the VES filter shielding. Descriptions of the design basis LOCA source terms, main control room shielding parameters, and evaluation of doses to main control room personnel are presented in Section 15.6. The main control room and its location in the plant are shown in Figure 12.3 1.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 8 WLG2016.02-03
12045	WLS	Pt 02	FSAR 06	06.04.03.02	COLA Part 2, FSAR Chapter 6, Subsection 6.4.3.2 is added with left margin annotation WLS DEP 6.4-1 as follows: 6.4.3.2 Emergency Mode Revise the first bullet of the first paragraph of DCD Subsection 6.4.3.2 to read as follows: • "High-2" particulate or iodine radioactivity in the main control room supply air duct Revise the first sentence of the second paragraph of DCD Subsection 6.4.3.2 to read as follows: The nuclear island nonradioactive ventilation system is isolated from the main control room pressure boundary by automatic closure of the isolation devices located in the nuclear island nonradioactive ventilation system ductwork if radiation levels in the main control room supply air duct exceed the "High-2" setpoint or if ac power is lost for more than 10 minutes.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 9 WLG2016.02-03
12001	WLS	Pt 02	FSAR 06	06.04.03.02	COLA Part 2, FSAR Chapter 6, newly added Subsection 6.4.3.2 is revised to add the following with left margin annotation WLS DEP 6.4-2 to read: Revise the fifth paragraph of DCD Subsection 6.4.3.2 to read as follows: The temperature and humidity in the main control room pressure boundary following a loss of the nuclear island nonradioactive ventilation system remain within limits for reliable human performance (Reference 201) over a 72-hour period. The bounding initial values of temperature/relative humidity in the MCR are 75°F/60 percent. The temperature/relative humidity values calculated during the 72 hours following a design basis accident equate to a maximum average Wet Bulb Globe Temperature index for the control room of less than 90° F (32.2° C). The 90° F (32.2° C) Wet Bulb Globe Temperature index is the design limit for minimizing performance decrements and potential harm, and preserving well-being and effectiveness of the control room staff for an unlimited duration (Reference 201). Non-1E MCR heat loads are de-energized by PMS automatic actions and the 24 hour battery heat loads are terminated or exhausted at 24 hours to maintain the assumed heat load values in Table 6.4-203, which then maintains the occupied zone of the MCR and the zones containing qualified safety-related equipment within the temperature constraints at 72-hours post VES actuation. The occupied zone	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 13, WLG2016.02-04

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					is considered to be the area between the raised floor and 7 ft. above the floor, which encompasses the reactor operator and senior reactor operator consoles.	
12002	WLS	Pt 02	FSAR 06	06.04.04	COLA Part 2, FSAR Chapter 6, Subsection 6.4.4 is revised to add the following with left margin annotation WLS DEP 6.4-2: Revise the eleventh paragraph of DCD Subsection 6.4.4 to read as follows: During emergency operation, the main control room emergency habitability system passive heat sinks are designed to limit the temperature inside the main control room to remain within limits for reliable human performance (Reference 201) over 72 hours. The passive heat sinks limit the air temperature inside the instrumentation and control rooms to 120°F and dc equipment rooms to 120°F. The walls and ceilings that act as the passive heat sinks contain sufficient thermal mass to accommodate the heat sources from equipment, personnel, and lighting for 72 hours.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 14, WLG2016.02-04
12046	WLS	Pt 02	FSAR 06	06.04.04	COLA Part 2, FSAR Chapter 6, Subsection 6.4.4 is revised with left margin annotation WLS DEP 6.4-1 as follows: 6.4.4 System Safety Evaluation Revise the third paragraph of DCD Subsection 6.4.4 to read as follows: Doses were determined for the following design basis: VES Operating VBS Operating Large Break LOCA 4.33 rem TEDE 4.84 rem TEDE Fuel Handling Accident 1.5 rem TEDE 1.6 rem TEDE Steam Generator Tube Rupture (Pre-existing iodine spike) 3.4 rem TEDE 4.0 rem TEDE (Accident-initiated iodine spike) 1.0 rem TEDE 1.4 rem TEDE Steam Line Break (Pre-existing iodine spike) 1.1 rem TEDE 0.9 rem TEDE (Accident-initiated iodine spike) 1.3 rem TEDE 2.9 rem TEDE Rod Ejection Accident 3.6 rem TEDE 2.5 rem TEDE Locked Rotor Accident (Accident without feedwater available) 0.4 rem TEDE 0.7 rem TEDE (Accident with feedwater available) 0.2 rem TEDE 0.9 rem TEDE Small Line Break Outside Containment 0.4 rem TEDE 0.4 rem TEDE Revise the first bullet of the thirteenth paragraph of DCD Subsection 6.4.4 to read as follows: • "High-2" particulate or iodine radioactivity in MCR air supply duct Revise the last sentence of the sixteenth paragraph of DCD Subsection 6.4.4 to read as follows: The following cases are evaluated since they involve releases that extend beyond 24 hours after the initiation of the event: Large Break LOCA 4.4 rem TEDE Steam Line Break (Pre-existing iodine spike) 1.2 rem TEDE (Accident-initiated iodine spike) 2.0 rem TEDE	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 10 WLG2016.02-03
12003	WLS	Pt 02	FSAR 06	06.04.05.01	COLA Part 2, FSAR Chapter 6, is revised to add new Subsection 6.4.5.1 with left margin annotation WLS DEP 6.4-2 as follows: 6.4.5.1 Preoperational Inspection and Testing Revise the third paragraph of DCD Subsection 6.4.5.1 to read as follows:	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Temperatures within the MCR where the operators are located are verified by analysis and/or testing to remain within limits for reliable human performance (Reference 201) for a 72-hour period following a bounding scenario with MCR isolation and non-safety ac power available (see Table 6.4-203) and a station blackout (battery backed loads only).	Room Habitability Analysis, Enclosure 3, Attachment 1, Item 15, WLG2016.02-04
12004	WLS	Pt 02	FSAR 06	06.04.05.03	COLA Part 2, FSAR Chapter 6, is revised to add new Subsection 6.4.5.3 with left margin annotation WLS DEP 6.4-2 as follows: 6.4.5.3 Air Quality Testing Revise DCD Subsection 6.4.5.3 as follows: Connections are provided for sampling the air supplied from the compressed and instrument air system and for periodic sampling of the air stored in the storage tanks. Air samples of the compressed air storage tanks are taken quarterly and analyzed for acceptable air quality within the guidelines of Table 1 and Appendix C, Table C-1, of Reference 1 with a pressure dew point of 40°F or lower at 3400 psig or greater.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 16, WLG2016.02-04
12005	WLS	Pt 02	FSAR 06	06.04.08	COLA Part 2, FSAR Chapter 6, is revised to add new Subsection 6.4.8 with left margin annotation WLS DEP 6.4-2 as follows: 6.4.8 REFERENCES Add a new Reference 201 to DCD Subsection 6.4.8 as follows: 201. NUREG-0700, Revision 2, "Human-System Interface Design Review Guidelines," 2002	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 17, WLG2016.02-04
12006	WLS	Pt 02	FSAR 06	06.04.T / T6.4-203	COLA Part 2, FSAR Chapter 6, is revised to add new Table 6.4-203 with left margin annotation WLS DEP 6.4-2 (departure from DCD Table 6.4-3) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 18.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 18, WLG2016.02-04
12047	WLS	Pt 02	FSAR 06	06.04.T / T6.4-204	COLA Part 2, FSAR Chapter 6, Table 6.4-204 is added with left margin annotation WLS DEP 6.4-1 (departure from DCD Table 6.4-2) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 11.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 11 WLG2016.02-03
12007	WLS	Pt 02	FSAR 07	07.02	COLA Part 2, FSAR Chapter 7.2, is revised as follows: 7.2 REACTOR TRIP This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
						Room Habitability Analysis, Enclosure 3, Attachment 1, Item 19, WLG2016.02-04
12008	WLS	Pt 02	FSAR 07	07.02	COLA Part 2, FSAR Chapter 7, is revised to add new Figure 7.2-202 with left margin annotation WLS DEP 6.4-2 (departure from DCD Figure 7.2-1 (Sheet 13 of 21)) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 20	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 20, WLG2016.02-04
12184	WLS	Pt 02	FSAR 07	07.02	COLA Part 2, FSAR Chapter 7.2, is revised to add the following paragraph with left margin annotation WLS DEP 6.4-2 as follows: DCD Figure 7.2-1, Functional Diagram: Containment and Other Protection, Sheet 13 of 21 is replaced with Figure 7.2-202.	Editorial update to Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 19, WLG2016.02-04
12009	WLS	Pt 02	FSAR 07	07.03.01.02.17	COLA Part 2, FSAR Chapter 7, Subsection 7.3.1.2.17 is added with left margin annotation WLS DEP 6.4-2 as follows: Revise DCD Subsection 7.3.1.2.17 as follows: 7.3.1.2.17 Main Control Room Isolation, Air Supply Initiation, and Electrical Load De-energization Signals to initiate isolation of the main control room, to initiate the air supply, and to open the control room pressure relief isolation valves and to de-energize non-essential main control room electrical loads are generated from any of the following conditions: 1. High-2 control room air supply radioactivity level 2. Loss of ac power sources (low Class 1E battery charger input voltage) 3. Manual initiation Condition 1 is the occurrence one of two main control room air supply radioactivity monitors detecting a radioactivity level above the High-2 setpoint. Condition 2 results from the loss of all ac power sources. A preset time delay is provided to permit the restoration of ac power from the offsite sources or from the onsite diesel generators before initiation. The loss of all ac power is detected by undervoltage sensors that are connected to the input of each of the four Class 1E battery chargers. Two sensors are connected to each of the four battery charger inputs. The loss of ac power signal is based on the detection of an undervoltage condition by each of the two sensors connected to two of the four battery chargers. The two-out-of-four logic is based on an undervoltage to the battery chargers for divisions A or C coincident with an undervoltage to the battery chargers for divisions B or D. In addition, the loss of all ac power sources coincident with main control room isolation will de-energize the main control room radiation monitors in order to conserve the battery capacity. Condition 3 consists of two momentary controls. Manual actuation of either of the two controls will result in main	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 21, WLG2016.02-04

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					control room isolation, air supply initiation, and electrical load de-energization. The functional logic relating to main control room isolation, air supply initiation, and electrical load de-energization is illustrated in Figure 7.2-202.	
12048	WLS	Pt 02	FSAR 07	07.03.01.02.17	COLA Part 2, FSAR Chapter 7, Subsection 7.3.1.2.17 is added with left margin annotation WLS DEP 6.4-1 as follows: 7.3.1.2.17 Main Control Room Isolation and Air Supply Initiation Revise the first sentence of the second paragraph of DCD Subsection 7.3.1.2.17 to read as follows: Condition 1 is the occurrence one of two main control room air supply radioactivity monitors detecting the iodine or particulate radioactivity level above the High-2 setpoint.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 12 WLG2016.02-03
12173	WLS	Pt 02	FSAR 07	07.03.01.02.17	COLA Part 2, FSAR Chapter 7, Subsection 7.3.1.2.17 is added with left margin annotation WLS DEP 6.4-2 as follows: 1.) COLA Part 2, FSAR Chapter 7, Subsection 7.3.1.2.17, section title is revised as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 12 WLG2016.02-03 to read: 7.3.1.2.17 Main Control Room Isolation, Air Supply Initiation, and Electrical Load De-energization 2.) The second paragraph is revised as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 21, WLG2016.02-04 to read: Condition 1 is the occurrence one of two main control room air supply radioactivity monitors detecting the iodine or particulate radioactivity level above the High-2 setpoint.	Clarification of changes identified in: Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 12 WLG2016.02-03 And Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 21, WLG2016.02-04
12183	WLS	Pt 02	FSAR 07	07.03.01.02.17	COLA Part 2, FSAR Chapter 7, Subsection 7.3.1.2.17, first paragraph is further revised as follows: Signals to initiate isolation of the main control room, to initiate the air supply, and to open the main control room pressure relief isolation valves and to de-energize non-essential main control room electrical loads are generated from any of the following conditions:	Editorial
12185	WLS	Pt 02	FSAR 07	07.03.01.02.17	COLA Part 2, FSAR Chapter 7, Subsection 7.3.1.2.17, second paragraph is revised as follows: Condition 1 is the occurrence of one of two main control room air supply radioactivity monitors detecting a radioactivity level above the High-2 setpoint.	Editorial update to Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 21, WLG2016.02-04

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
12187	WLS	Pt 02	FSAR 07	07.03.T / T7.3-201	COLA Part 2, FSAR Chapter 7, Table 7.3-203 is removed with the relative information from 16 and 16a added to FSAR Table 7.3-201, Sheet 3 of 3 with left margin annotation WLS DEP 6.4-2 as follows: 16. Main Control Room Isolation, Air Supply Initiation and Electrical Load De-energization (Figure 7.2-202) a. High-2 main control room supply air radiation, 2, 1/2, None	Editorial update to Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 22, WLG2016.02-04
12010	WLS	Pt 02	FSAR 07	07.03.T / T7.3-203	COLA Part 2, FSAR Chapter 7, Table 7.3-203 is added with left margin annotations WLS DEP 6.4-2 (Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 22.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 22, WLG2016.02-04
12186	WLS	Pt 02	FSAR 07	07.03.T / T7.3-203	COLA Part 2, FSAR Chapter 7, Table 7.3-203 is removed with the relative information from 16 and 16a combined on FSAR Table 7.3-201, Sheet 3 of 3 with left margin annotation WLS DEP 6.4-2 as follows: 16. Main Control Room Isolation, Air Supply Initiation and Electrical Load De-energization (Figure 7.2-202) a. High-2 main control room supply air radiation, 2, 1/2, None	Editorial update to Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 22, WLG2016.02-04
12011	WLS	Pt 02	FSAR 07	07.03.T / T7.3-204	COLA Part 2, FSAR Chapter 7, Table 7.3-204 is added with left margin annotations WLS DEP 6.4-2 (departure from DCD Table 7.3-3 (Sheet 2 of 2)) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 23.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 23, WLG2016.02-04
12189	WLS	Pt 02	FSAR 07	07.03.T / T7.3-204	COLA Part 2, FSAR Chapter 7, Table 7.3-204 is re-numbered to 7.3-203.	Editorial - conforming change to QB 12186.
12137	WLS	Pt 02	FSAR 07	07.04	COLA Part 2, FSAR Chapter 7, Section 7.4 is revised to add the following with left margin annotation WLS DEP 3.2-1 as follows: 7.4 SYSTEMS REQUIRED FOR SAFE SHUTDOWN This section of the referenced DCD is incorporated by reference with the following departures and/or supplements. Replace the fifth paragraph of DCD Section 7.4 to read:	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 19, WLG2016.02-01

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					The long-term safe shutdown conditions are the same as the short-term conditions except that the coolant temperature shall be less than 420°F. This long-term condition must be achieved within 36 hours following a non-LOCA event using the passive residual heat removal heat exchanger as shown in Chapter 19E. These safe shutdown conditions can be maintained by the passive residual heat removal heat exchanger for greater than 14 days based on a non-bounding, conservative analysis that only credits using safety-related equipment. In addition, these safe shutdown conditions can be maintained indefinitely using ADS and passive injection / recirculation as discussed in Subsection 7.4.1.1.	
12138	WLS	Pt 02	FSAR 07	07.04.01.01	COLA Part 2, FSAR Chapter 7, Subsection 7.4.1.1 is revised with left margin annotation WLS DEP 3.2-1 as follows: Replace the first sentence of the first paragraph of DCD Subsection 7.4.1.1 as follows: The following describes the process that establishes safe shutdown conditions for the plant, based on a conservative, non-bounding analysis using the safety-related systems, and no operator action.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 20, WLG2016.02-01
12139	WLS	Pt 02	FSAR 07	07.04.01.01	COLA Part 2, FSAR Chapter 7, Subsection 7.4.1.1, second sentence of the sixth paragraph of DCD Subsection 7.4.1.1 is revised as follows: This prevents loss of water inventory from containment and permits operation of the passive residual heat removal heat exchanger and the in-containment refueling water storage tank for greater than 14 days.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 21, WLG2016.02-01
12140	WLS	Pt 02	FSAR 07	07.04.01.01	COLA Part 2, FSAR Chapter 7, Subsection 7.4.1.1, last sentence of the eighth paragraph of DCD Subsection 7.4.1.1 is revised as follows: The system provides core decay heat removal in this configuration for greater than 14 days with a limited increase in the containment water level.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 22, WLG2016.02-01
12141	WLS	Pt 02	FSAR 07	07.04.01.01	COLA Part 2, FSAR Chapter 7, Subsection 7.4.1.1, ninth paragraph of DCD Subsection 7.4.1.1 is revised as follows: Once the reactor coolant system and the safety systems are in this configuration, the plant is in a safe, stable shutdown condition. The reactor coolant system temperatures and pressures continue to slowly decrease. The passive residual heat removal heat exchanger has the capacity to maintain a safe, stable reactor coolant system condition during a design basis event for at least 72 hours in a closed-loop mode of operation. A non-bounding, conservative analysis of extended operation in this mode shows the passive residual heat removal heat exchanger cools the reactor coolant system to 420°F in 36 hours.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 23, WLG2016.02-01
12142	WLS	Pt 02	FSAR 07	07.04.01.01	COLA Part 2, FSAR Chapter 7, the last three sentences of the eleventh paragraph of DCD Subsection 7.4.1.1, are revised as follows: The operator assessment considers core makeup tank level, RCS hot leg level, temperature, and pressure. If automatic depressurization is not needed, the operator is directed to de-energize all loads on the Class 1E dc	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					batteries. This action preserves the capability for the operator to initiate automatic depressurization at a later time based on assessment of these same parameters.	DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 24, WLG2016.02-01
12012	WLS	Pt 02	FSAR 07	07.05.T / T7.5-203	COLA Part 2, FSAR Chapter 7, Table 7.5-203 is added with left margin annotations WLS DEP 6.4-2 (departure from DCD Table 7.5-1 (Sheet 11 of 12)) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 24.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 24, WLG2016.02-04
12013	WLS	Pt 02	FSAR 07	07.05.T / T7.5-204	COLA Part 2, FSAR Chapter 7, Table 7.5-204 is added with left margin annotations WLS DEP 6.4-2 (departure from DCD Table 7.5-7 (Sheet 4 of 4)) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 25.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 25, WLG2016.02-04
12049	WLS	Pt 02	FSAR 09	09.02.06.01.01	COLA Part 2, FSAR Chapter 9, Subsection 9.2.6.1.1 is added with left margin annotation WLS DEP 6.4-1 as follows: 9.2.6.1.1 Safety Design Basis Revise the first sentence of the first paragraph of DCD Subsection 9.2.6.1.1 to read as follows: The sanitary drainage system isolates the SDS vent penetration in the main control room boundary on High-2 particulate or iodine concentrations in the main control room air supply or on extended loss of ac power to support operation of the main control room emergency habitability system as described in Section 6.4.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 13 WLG2016.02-03
12014	WLS	Pt 02	FSAR 09	09.03.01.01.02	COLA Part 2, FSAR Chapter 9 is revised to add new Subsection 9.3.1.1.2, with left margin annotation WLS DEP 6.4-2 as follows: 9.3.1.1.2 Power Generation Design Basis Change the third paragraph in DCD Subsection 9.3.1.1.2, as follows: The high-pressure air subsystem consists of one compressor, its associated air purification system and controls, and a high-pressure receiver. It provides clean, oil-free, high-pressure air to recharge the main control room emergency habitability system cylinders, refill the individual fire fighting breathing air bottles, and recharge the generator breaker reservoir. Quality Verification Level E air as defined in ANSI/CGA G-7.1, with a pressure dew point of 40°F or lower at 3400 psig or greater, is produced by this subsystem. See Section 6.4 for a description of the main control room habitability system.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 26, WLG2016.02-04
12050	WLS	Pt 02	FSAR 09	09.04.01.01.01	COLA Part 2, FSAR Chapter 9, Subsection 9.4.1.1.1 is added with left margin annotation WLS DEP 6.4-1 as follows: 9.4.1.1.1 Safety Design Basis	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Revise the second bullet in the first paragraph of DCD Subsection 9.4.1.1.1 to read as follows: • Isolates the HVAC penetrations in the main control room boundary on High-2 particulate or iodine concentrations in the main control room supply air or on extended loss of ac power to support operation of the main control room emergency habitability system as described in Section 6.4.	Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 14 WLG2016.02-03
12051	WLS	Pt 02	FSAR 09	09.04.01.01.02	COLA Part 2, FSAR Chapter 9, Subsection 9.4.1.1.2 is added with left margin annotation WLS DEP 6.4-1 as follows: 9.4.1.1.2 Power Generation Design Basis Revise the third bullet in the first paragraph of DCD Subsection 9.4.1.1.2 to read as follows: • Isolates the main control room and/or CSA area from the normal outdoor air intake and provides filtered outdoor air to pressurize the main control room and CSA areas to a positive pressure of at least 1/8 inch wg when a High-1 radioactivity concentration (gaseous, particulate, or iodine) is detected in the main control room supply air duct.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 15 WLG2016.02-03
12015	WLS	Pt 02	FSAR 09	09.04.01.01.02	COLA Part 2, FSAR Chapter 9, newly added Subsection 9.4.1.1.2 is revised to add the following, with left margin annotation WLS DEP 6.4-2 to read: Post-72-Hour Design Basis Main Control Room Revise the first paragraph of DCD Subsection 9.4.1.1.2, under the sub-heading, Post-72-Hour Design Basis Main Control Room to read: The specific function of the nuclear island nonradioactive ventilation system is to maintain the main control room below a maximum average Wet Bulb Globe Temperature index of 90° F (32.2° C) based on operation at the maximum normal site ambient temperature.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 27, WLG2016.02-04
12052	WLS	Pt 02	FSAR 09	09.04.01.02.01.01	COLA Part 2, FSAR Chapter 9, Subsection 9.4.1.2.1.1 is added with left margin annotation WLS DEP 6.4-1 as follows: 9.4.1.2.1.1 Main Control Room/Control Support Area HVAC Subsystem Revise the second to last sentence of the second paragraph of DCD Subsection 9.4.1.2.1.1 to read as follows: These monitors initiate operation of the nonsafety-related supplemental air filtration units on High-1 radioactivity concentrations (gaseous, particulate, or iodine) and isolate the main control room from the nuclear island nonradioactive ventilation system on High-2 particulate or iodine radioactivity concentrations.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 16 WLG2016.02-03
12053	WLS	Pt 02	FSAR 09	09.04.01.02.03.01	COLA Part 2, FSAR Chapter 9, Subsection 9.4.1.2.3.1 is added with left margin annotation WLS DEP 6.4-1 as follows: 9.4.1.2.3.1 Main Control Room/Control Support Area HVAC Subsystem Abnormal Plant Operation Revise the second and third sentences of the first paragraph of the Abnormal Plant Operation section of DCD Subsection 9.4.1.2.3.1 to read as follows: The first is "High-1" radioactivity based upon radioactivity instrumentation (gaseous, particulate, or iodine). The second is "High-2" radioactivity based upon either particulate or iodine radioactivity instruments.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 17 WLG2016.02-03

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Revise the first sentence of the second paragraph of the Abnormal Plant Operation section of DCD Subsection 9.4.1.2.3.1 to read as follows: If "High-1" radioactivity is detected in the main control room supply air duct and the main control room/control support area HVAC subsystem is operable, both supplemental air filtration units automatically start to pressurize the main control room and CSA areas to at least 1/8 inch wg with respect to the surrounding areas and the outside environment using filtered makeup air. Revise the first sentence of the third paragraph of the Abnormal Plant Operation section of DCD Subsection 9.4.1.2.3.1 to read as follows: If ac power is unavailable for more than 10 minutes or if "High-2" particulate or iodine radioactivity is detected in the main control room supply air duct, which would lead to exceeding GDC-19 operator dose limits, the protection and safety monitoring system automatically isolates the main control room from the normal main control room/control support area HVAC subsystem by closing the supply, return, and toilet exhaust isolation valves.	
12016	WLS	Pt 02	FSAR 09	09.04.01.02.03.01	COLA Part 2, FSAR Chapter 9, newly added Subsection 9.4.1.2.3.1, is revised to add the following with left margin annotation WLS DEP 6.4-2 to read: Revise the eighth paragraph of DCD Subsection 9.4.1.2.3.1, Abnormal Plant Operation to read: When complete ac power is lost and the outside air is acceptable radiologically and chemically, MCR habitability is maintained by operating one of the two MCR ancillary fans to supply outside air to the MCR. It is expected that outside air will be acceptable within 72 hours following a radiological release. See subsection 6.4.2.2 for details. The outside air pathway to the ancillary fans is provided through the nonradioactive ventilation system air intake opening located on the roof, the mechanical room at floor elevation 135ft.-3in., and nonradioactive ventilation system supply duct. Warm air from the MCR is vented to the annex building through stairway S05, into the remote shutdown room and the clean access corridor at elevation 100ft.-0in.. The ancillary fan capacity and air flow rate maintain the MCR environment below a maximum average Wet Bulb Globe Temperature index of 90° F (32.2°C). The ancillary fans and flow path are located within the auxiliary building which is a Seismic Category I structure.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 28, WLG2016.02-04
12054	WLS	Pt 02	FSAR 09	09.04.F / F9.4-201	COLA Part 2, FSAR Chapter 9, FSAR Figure 9.4-201 is added with annotation WLS DEP 6.4-1 (departure from DCD Figure 9.4.1-1 (Sheet 5 of 7)), as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 18. This figure is also added to the List of Figures.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 18 WLG2016.02-03
12143	WLS	Pt 02	FSAR 09	09.05.T / T9.5.1-201	COLA Part 2, FSAR Chapter 9, Table 9.5.1-201, Sheet 1 of 2 is revised as reflected on Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 25. On Table 9.5.1-201 (Sheet 1 of 2) Under the "BTP CMEB 9.5-1 Guideline 73 Remarks" Column change the words "at least" to "greater than" in front of the words "14 days".	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 25, WLG2016.02-01
12055	WLS	Pt 02	FSAR 11	11.01	COLA Part 2, FSAR Chapter 11, Subsection 11.1 is revised as follows:	Duke Energy Voluntary Submittal of Exemption

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					11.1 SOURCE TERMS This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.	Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 19 WLG2016.02-03
12056	WLS	Pt 02	FSAR 11	11.01.T / T11.1-201	COLA Part 2, FSAR Chapter 11, FSAR Table 11.1-201 is added with annotation WLS DEP 6.4-1 (departure from DCD Table 11.1-4), as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 20.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 20 WLG2016.02-03
12057	WLS	Pt 02	FSAR 11	11.01.T / T11.1-202	COLA Part 2, FSAR Chapter 11, FSAR Table 11.1-202 is added with annotation WLS DEP 6.4-1 (departure from DCD Table 11.1-5), as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 21.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 21 WLG2016.02-03
12058	WLS	Pt 02	FSAR 11	11.01.T / T11.1-203	COLA Part 2, FSAR Chapter 11, FSAR Table 11.1-203 is added with annotation WLS DEP 6.4-1 (departure from DCD Table 11.1-6), as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 22.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 22 WLG2016.02-03
12059	WLS	Pt 02	FSAR 11	11.05.01.01	COLA Part 2, FSAR Chapter, Subsection 11.5.1.1 is added with left margin annotation WLS DEP 6.4-1 as follows: 11.5.1.1 Safety Design Basis Revise the third and fourth bullets in the third paragraph of DCD Subsection 11.5.1.1 to read as follows: • Initiate main control room supplemental filtration in the event of abnormally high particulate, iodine, or gaseous radioactivity in the main control room supply air (High-1) • Initiate main control room ventilation isolation and actuate the main control room emergency habitability system in the event of abnormally high particulate or iodine radioactivity in the main control room supply air (High-2)	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 23 WLG2016.02-03
12060	WLS	Pt 02	FSAR 11	11.05.02.03.01	COLA Part 2, FSAR Chapter 11, Subsection 11.5.2.3.1 is added with left margin annotation WLS DEP 6.4-1 as follows:	Duke Energy Voluntary Submittal of Exemption

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					11.5.2.3.1 Fluid Process Monitors Revise the second to last sentence of the first paragraph of the Main Control Room Supply Air Duct Radiation Monitors section of DCD Subsection 11.5.2.3.1 to read as follows: When predetermined setpoints are exceeded, the monitors provide signals to initiate the supplemental air filtration system on a High-1 gaseous, particulate, or iodine concentration, and to isolate the main control room air intake and exhaust ducts and activate the main control room emergency habitability system on High-2 particulate or iodine concentrations.	Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 24 WLG2016.02-03
12061	WLS	Pt 02	FSAR 12	12.02.01.03	COLA Part 2, FSAR Chapter 12, Subsection 12.2.1.3 is added with left margin annotation WLS DEP 6.4-1 as follows: 12.2.1.3 Sources for the Core Melt Accident Revise the last paragraph of DCD Subsection 12.2.1.3 to read as follows: 12.2.1.3.1 Containment If there is core degradation, core cooling would be provided by the passive core cooling system which is totally inside the containment such that no high activity sump solution would be recirculated outside the containment. The shielding provided for the containment addresses this post-LOCA source term. The source strengths as a function of time are provided in Table 12.2 20 and the integrated source strengths are provided in Table 12.2-21. 12.2.1.3.2 Main Control Room HVAC Filters During operation of the nuclear island nonradioactive ventilation system (VBS) supplemental filtration or the main control room emergency habitability system (VES), filters in the control room HVAC work to remove particulate and iodine from the air. As radioactivity accumulates within the filters, this becomes a potential source of dose. These source strengths as a function of time are provided in Table 12.2-201 and the integrated source strengths are provided in Table 12.2 202.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 25 WLG2016.02-03
12180	WLS	Pt 02	FSAR 12	12.02.01.03.01	COLA Part 2, FSAR Chapter 12, Subsection 12.2.1.3.1, last sentence is further revised to identify DCD as follows: The source strengths as a function of time are provided in DCD Table 12.2-20 and the integrated source strengths are provided in DCD Table 12.2-21.	Editorial for clarification
12062	WLS	Pt 02	FSAR 12	12.02.T / T12.2-201	COLA Part 2, FSAR Table 12.2-201 is added with left margin annotation WLS DEP 6.4-1 (departure from DCD Section 12.2 to add new DCD Table 12.2-28) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 26.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 26 WLG2016.02-03
12063	WLS	Pt 02	FSAR 12	12.02.T / T12.2-202	COLA Part 2, FSAR Table 12.2-202 is added with left margin annotation WLS DEP 6.4-1 as follows (departure from DCD Section 12.2 to add new DCD Table 12.2-29) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 27.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
						Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 27 WLG2016.02-03
12064	WLS	Pt 02	FSAR 12	12.03.02.02.07	COLA Part 2, FSAR Chapter 12, Subsection 12.3.2.2.7 is added with left margin annotation WLS DEP 6.4-1 as follows: 12.3.2.2.7 Control Room Shielding Design Revise DCD Subsection 12.3.2.2.7 to read as follows: The design basis loss-of-coolant accident dictates the shielding requirements for the control room. The rod ejection accident dictates the shielding requirements for the main control room emergency habitability (VES) filter in the operator break room. Consideration is given to shielding provided by the shield building structure. Shielding combined with other engineered safety features is provided to permit access and occupancy of the control room following a postulated loss of coolant accident, so that radiation doses are limited to five rem whole body from contributing modes of exposure for the duration of the accident, in accordance with General Design Criterion 19. Shielding of the VES filtration unit is accomplished by safety-related metal shielding. This shielding is composed of either tungsten that is 0.25 inches thick or stainless steel shown to provide an equivalent amount of shielding. The length and width of the shielding are designed to match the length and width of the filtration unit being shielded.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 28 WLG2016.02-03
12065	WLS	Pt 02	FSAR 12	12.03.F / F12.3-204	COLA Part 2, FSAR Figure 12.3-204 is added with annotation WLS DEP 6.4-1 as follows: COLA Part 2, FSAR Chapter 12, will be revised to add a departure from DCD Figure 12.3-1, Radiation Zones, Normal Operation/Shutdown, Nuclear Island, Elevation 100ft.-0in. & 107ft.-2in. (Sheet 6 of 16), with a LMA of WLS DEP 6.4-1: Note number 9 of DCD Figure 12.3-1 will be revised as follows as new FSAR Figure 12.3-204: 9. Blowdown Piping May Reach Zone III Levels With Concurrent Fuel Cladding Defects of 0.25% and Steam Generator Tube Leakage of 300 gpd.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 29 WLG2016.02-03
12017	WLS	Pt 02	FSAR 14	14.02.09.01.06	COLA Part 2, FSAR Chapter 14 is revised to add new Subsection 14.2.9.1.6, with left margin annotation WLS DEP 6.4-2 as follows: 14.2.9.1.6 Main Control Room Emergency Habitability System Testing General Test Acceptance Criteria and Methods Revise paragraph (f) of DCD Subsection 14.2.9.1.6, General Test Acceptance Criteria and Methods section, to read as follows: f) The ability to maintain the main control room environment within specified limits for 72 hours (Reference DCD Subsection 6.4.3.2) is verified with a test simulating a loss of the nuclear island nonradioactive ventilation system. This testing demonstrates the control room heatup from 0 to 6 hours with the actual heat loads from the battery powered equipment and personnel specified for this time period (for the MCR [room 12401], there is automatic de-energization of specific non-safety MCR heat loads). The control room temperature versus time versus heat load data are used to verify the analysis basis used to assure that the control room conditions remain within specified limits for the 72 hour time period. Periodic grab samples will be taken of the control room air environment to support analyses to confirm that specified limits would not be exceeded for 72 hours.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 29, WLG2016.02-04
12018	WLS	Pt 02	FSAR 14	14.03.T / T14.3-204	COLA Part 2, FSAR Chapter 14 is revised to add Table 14.3-204, with left margin annotation WLS DEP 6.4-2 (departure from DCD Table 14.3-7 (Sheet 1 of 3)) as reflected on Duke Energy Voluntary Submittal of	Duke Energy Voluntary Submittal of Exemption

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 30.	Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 30, WLG2016.02-04
12066	WLS	Pt 02	FSAR 14	14.03.T / T14.3-204	COLA Part 2, FSAR Table 14.3-204 is added with annotation WLS DEP 6.4-1 (departure from DCD Table 14.3-7 (sheet 2 of 3)) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 30.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 30 WLG2016.02-03
12067	WLS	Pt 02	FSAR 15	15.00.11.01	COLA Part 2, FSAR Chapter 15, Subsection 15.0.11.1 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.0.11.1 FACTRAN Computer Code Revise the first bullet of DCD Subsection 15.0.11.1 to read as follows: • A sufficiently large number of radial space increments to handle fast transients	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 31 WLG2016.02-03
12068	WLS	Pt 02	FSAR 15	15.00.11.06	COLA Part 2, FSAR Chapter 15, Subsection 15.0.11.6 is added with left margin annotation WLS DEP 6.4-1 as follows: Add the Subsection 15.0.11.6 following DCD Subsection 15.0.11.5 as follows: 15.0.11.6 ANC Computer Code The ANC computer code is used to solve the two-group neutron diffusion equation in three spatial dimensions. ANC can also solve the three-dimensional kinetics equations for six delayed neutron groups.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 32 WLG2016.02-03
12144	WLS	Pt 02	FSAR 15	15.00.13	COLA Part 2, FSAR Chapter 15, Subsection 15.0.13 is revised as follows: Revise the first sentence of the first paragraph of DCD Subsection 15.0.13 as follows: For events where the PRHR heat exchanger is actuated, the plant automatically cools down to a safe, stable shutdown condition. Revise the first sentence of the second paragraph of DCD Subsection 15.0.13 as follows: However, for these events, operator actions are not required to maintain the plant in a safe and stable condition for at least 72 hours.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 26, WLG2016.02-01
12069	WLS	Pt 02	FSAR 15	15.00.T / T15.0-201	COLA Part 2, FSAR Table 15.0-201 is added with left margin annotation WLS DEP 6.4-1 (departure from DCD Table 15.0-2 (Sheet 4 of 5)) as reflected on Duke Energy Voluntary Submittal of Exemption Request and	Duke Energy Voluntary Submittal of Exemption Request and Design

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 33.	Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 33 WLG2016.02-03
12070	WLS	Pt 02	FSAR 15	15.01	COLA Part 2, FSAR Chapter 15, Subsection 15.1 is revised as follows: 15.1 INCREASE IN HEAT REMOVAL FROM THE PRIMARY SYSTEM This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 34 WLG2016.02-03
12071	WLS	Pt 02	FSAR 15	15.01.05.04.01	COLA Part 2, FSAR Chapter 15, Subsection 15.1.5.4.1 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.1.5.4.1 Source Term Revise the fourth paragraph of DCD Subsection 15.1.5.4.1 to read as follows: The reactor coolant noble gas concentrations are assumed to be those associated with equilibrium operating limits for primary coolant noble gas activity. The reactor coolant alkali metal concentrations are based on those associated with the design basis fuel defect level. Revise the last paragraph of DCD Subsection 15.1.5.4.1 to read as follows: The secondary coolant is assumed to have an iodine source term of 0.01 microcurie/g dose equivalent I-131. This is 1 percent of the maximum primary coolant activity at equilibrium operating conditions. The secondary coolant alkali metal concentration is also assumed to be 1 percent of the primary concentration.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 35 WLG2016.02-03
12072	WLS	Pt 02	FSAR 15	15.01.05.04.06	COLA Part 2, FSAR Chapter 15, Subsection 15.1.5.4.6 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.1.5.4.6 Doses Revise the text of DCD Subsection 15.1.5.4.6 to read as follows: Using the assumptions from Table 15.1.5-1, the calculated total effective dose equivalent (TEDE) doses for the case with accident-initiated iodine spike are determined to be less than 0.6 rem at the site boundary for the limiting 2-hour interval (4.8 to 6.8 hours) and 1.1 rem at the low population zone outer boundary. These doses are small fractions of the dose guideline of 25 rem TEDE identified in 10 CFR Part 50.34. A "small fraction" is defined, consistent with the Standard Review Plan, as being 10 percent or less. The TEDE doses for the case with pre-existing iodine spike are determined to be less than 0.5 rem at the site boundary for the limiting 2-hour interval (0 to 2 hours) and 0.4 rem at the low population zone outer boundary. These doses are within the dose guidelines of 10 CFR Part 50.34. At the time the main steam line break occurs, the potential exists for a coincident loss of spent fuel pool cooling with the result that the pool could reach boiling and a portion of the radioactive iodine in the spent fuel pool could be released to the environment. The loss of spent fuel pool cooling has been evaluated for a duration of 30 days. The 30-day contribution to the dose at the site boundary and the low population zone boundary is less	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 36 WLG2016.02-03

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					than 0.01 rem TEDE. When this is added to the dose calculated for the main steam line break, the resulting total dose remains less than the values reported above.	
12073	WLS	Pt 02	FSAR 15	15.01.T / T15.1-201	COLA Part 2, FSAR Table 15.1-201 is added with left margin annotation WLS DEP 6.4-1 (departure from DCD Table 15.1.5-1) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 37.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 37 WLG2016.02-03
12145	WLS	Pt 02	FSAR 15	15.02	COLA Part 2, FSAR Chapter 15, Section 15.2 is revised with left margin annotation WLS DEP 3.2-1 as follows: 15.2 DECREASE IN HEAT REMOVAL BY THE SECONDARY SYSTEM This section of the referenced DCD is incorporated by reference with the following departures and/or supplements. Insert the following as a new third paragraph of DCD Section 15.2: For events in this section where PRHR HX actuation occurs, transients are presented until the PRHR HX heat removal matches decay heat generation. After that point in time, PRHR HX performance is driven by the performance of the passive containment cooling systems to control containment pressure and the ability of the condensate collection features to return condensate to the in-containment refueling water storage tank. The performance of these systems, for extended decay heat removal, is described in Subsection 6.3.1.1.1.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 27, WLG2016.02-01
12074	WLS	Pt 02	FSAR 15	15.03	COLA Part 2, FSAR Chapter 15, Section 15.3 is revised as follows: 15.3 DECREASE IN REACTOR COOLANT SYSTEM FLOW RATE This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 38 WLG2016.02-03
12075	WLS	Pt 02	FSAR 15	15.03.03.03.01	COLA Part 2, FSAR Chapter 15, Subsection 15.3.3.3.1 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.3.3.3.1 Source Term Revise the last paragraph of DCD Subsection 15.3.3.3.1 to read as follows: The initial secondary coolant activity is assumed to be 1 percent of the maximum equilibrium primary coolant activity for iodines and alkali metals.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 39 WLG2016.02-03
12076	WLS	Pt 02	FSAR 15	15.03.T / T15.3-201	COLA Part 2, FSAR Table 15.3-201 is added with left margin annotation WLS DEP 6.4-1 (departure from DCD Table 15.3-3 (Sheet 1 of 2)) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 40.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
						Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 40 WLG2016.02-03
12077	WLS	Pt 02	FSAR 15	15.04	COLA Part 2, FSAR Chapter 15, Section 15.4 is revised as follows: 15.4 REACTIVITY AND POWER DISTRIBUTION ANOMALIES This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 41 WLG2016.02-03
12078	WLS	Pt 02	FSAR 15	15.04.08.01.01.03	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.1.1.3 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.1.1.3 Reactor Protection Revise DCD Subsection 15.4.8.1.1.3 to read as follows: The reactor protection in the event of a rod ejection accident is described in WCAP-15806 P-A (Reference 4). The protection for this accident is provided by the high neutron flux trip (high and low setting) and the high rate of neutron flux increase trip. These protection functions are described in Section 7.2.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 42 WLG2016.02-03
12079	WLS	Pt 02	FSAR 15	15.04.08.01.02	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.1.2 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.1.2 Limiting Criteria Revise DCD Subsection 15.4.8.1.2 to read as follows: This event is a Condition IV incident (ANSI N18.2). See subsection 15.0.1 for a discussion of ANS classification. Because of the extremely low probability of an RCCA ejection accident, some fuel damage is considered an acceptable consequence. NUREG-0800 Standard Review Plan (SRP) 4.2, Revision 3 (Reference 24), interim criteria applicable to new plant design certification are applied to provide confidence that there is little or no possibility of fuel dispersal in the coolant, gross lattice distortion, or severe shock waves. These criteria are the following: • The pellet clad mechanical interaction (PCMI) failure criteria is a change in radial average fuel enthalpy greater than the corrosion-dependent limit depicted in Figure B-1 of SRP 4.2, Revision 3, Appendix B. • The high cladding temperature failure criteria for zero-power conditions is a peak radial average fuel enthalpy greater than 170 cal/g for fuel rods with an internal rod pressure at or below system pressure and 150 cal/g for fuel rods with an internal rod pressure exceeding system pressure. • For intermediate (greater than 5-percent rated thermal power) and full-power conditions, fuel cladding is presumed to fail if local heat flux exceeds thermal design limits (e.g., DNBR). • For core coolability, it is conservatively assumed that the average fuel pellet enthalpy at the hot spot remains below 200 cal/g (360 Btu/lb) for irradiated fuel. This bounds non-irradiated fuel, which has a slightly higher enthalpy limit. • For core coolability, the peak fuel temperature must remain below incipient fuel melting conditions. • Mechanical energy generated as a result of (1) non-molten fuel-to-coolant interaction and (2) fuel rod burst that must be addressed with respect to reactor pressure boundary, reactor internals, and fuel assembly structural integrity. • No loss of coolable geometry due to (1) fuel pellet and cladding fragmentation and dispersal and (2) fuel rod ballooning.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 43 WLG2016.02-03

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					• Peak reactor coolant system pressure is less than that which could cause stresses to exceed the "Service Limit C" as defined in the ASME code.	
12080	WLS	Pt 02	FSAR 15	15.04.08.02	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.2 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.2 Analysis of Effects and Consequences Revise DCD Subsection 15.4.8.2 to read as follows: Method of Analysis The calculation of the RCCA ejection transients is performed in two stages: first, an average core calculation and then, a hot rod calculation. The average core calculation is performed using spatial neutron kinetics methods to determine the average power generation with time, including the various total core feedback effects (Doppler reactivity and moderator reactivity). Enthalpy, fuel temperature, and DNB transients are then determined by performing a conservative fuel rod transient heat transfer calculation. A discussion of the method of analysis appears in WCAP-15806-P-A (Reference 4). Average Core Analysis The three-dimensional nodal code ANC (References 14, 15, 16, 17, 21, 22, and 27) is used for the average core transient analysis. This code solves the two-group neutron diffusion theory kinetic equation in three spatial dimensions (rectangular coordinates) for six delayed neutron groups. The core moderator and fuel temperature feedbacks are based on the NRC approved Westinghouse version of the VIPRE-01 code and methods (References 18 and 19). Hot Rod Analysis The hot fuel rod models are based on the Westinghouse VIPRE models described in WCAP-15806-P-A (Reference 4). The hot rod model represents the hottest fuel rod from any channel in the core. VIPRE performs the hot rod transients for fuel enthalpy, temperature, and DNBR using as input the time dependent nuclear core power and power distribution from the core average analysis. A description of the VIPRE code is provided in Reference 18. System Overpressure Analysis If the fuel coolability limits are not exceeded, the fuel dispersal into the coolant or a sudden pressure increase from thermal to kinetic energy conversion is not needed to be considered in the overpressure analysis. Therefore, the overpressure condition may be calculated on the basis of conventional fuel rod to coolant heat transfer and the prompt heat generation in the coolant. The system overpressure analysis is conducted by first performing the core power response analysis to obtain the nuclear power transient (versus time) data. The nuclear power data is then used as input to a plant transient computer code to calculate the peak reactor coolant system pressure. This code calculates the pressure transient, taking into account fluid transport in the reactor coolant system and heat transfer to the steam generators. For conservatism, no credit is taken for the possible pressure reduction caused by the assumed failure of the control rod pressure housing.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 44 WLG2016.02-03
12081	WLS	Pt 02	FSAR 15	15.04.08.02.01	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.2.1 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.2.1 Calculation of Basic Parameters Revise DCD Subsection 15.4.8.2.1 to read as follows:	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Input parameters for the analysis are conservatively selected as described in Reference 4. DCD Table 15.4-3 is deleted and not used.	Room Dose Analysis, Enclosure 3, Attachment 1, Item 45 WLG2016.02-03
12082	WLS	Pt 02	FSAR 15	15.04.08.02.01.01	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.2.1.1 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.2.1.1 Ejected Rod Worths and Hot Channel Factors Revise DCD Subsection 15.4.8.2.1.1 to read as follows: The values for ejected rod worths and hot channel factors are calculated using three-dimensional static methods. Standard nuclear design codes are used in the analysis. The calculation is performed for the maximum allowed bank insertion at a given power level, as determined by the rod insertion limits. Adverse xenon distributions are considered in the calculation. Appropriate safety analysis allowances are added to the ejected rod worth and hot channel factors to account for calculational uncertainties, including an allowance for nuclear peaking due to densification as discussed in Reference 4.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 46 WLG2016.02-03
12083	WLS	Pt 02	FSAR 15	15.04.08.02.01.02	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.2.1.2 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.2.1.2 Reactivity Feedback Weighting Factors Revise DCD Subsection 15.4.8.2.1.2 to read as follows: 15.4.8.2.1.2 Not Used	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 47 WLG2016.02-03
12084	WLS	Pt 02	FSAR 15	15.04.08.02.01.03	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.2.1.3 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.2.1.3 Moderator and Doppler Coefficients Revise DCD Subsection 15.4.8.2.1.3 to read as follows: The critical boron concentration is adjusted in the nuclear code to obtain a moderator temperature coefficient that is conservative compared to actual design conditions for the plant consistent with Reference 4. The fuel temperature feedback in the neutronics code is reduced consistent with Reference 4 requirements.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 48 WLG2016.02-03
12085	WLS	Pt 02	FSAR 15	15.04.08.02.01.04	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.2.1.4 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.2.1.4 Delayed Neutron Fraction, Beff Revise DCD Subsection 15.4.8.2.1.4 to read as follows: Calculations of the effective delayed neutron fraction (Beff) typically yield values no less than 0.50 percent at end of cycle. The accident is sensitive to Beff if the ejected rod worth is equal to or greater than Beff. To allow for future cycles, a pessimistic estimate of Beff of 0.44 percent is used in the analysis.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 49 WLG2016.02-03
12086	WLS	Pt 02	FSAR 15	15.04.08.02.01.05	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.2.1.5 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.2.1.5 Trip Reactivity Insertion	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Revise the first paragraph of DCD Subsection 15.4.8.2.1.5 to read as follows: The trip reactivity insertion accounts for the effect of the ejected rod and one adjacent stuck rod. The trip reactivity is simulated by dropping a limited set of rods of the required worth into the core. The start of rod motion occurs 0.9 second after the high neutron flux trip setpoint is reached. This delay is assumed to consist of 0.583 second for the instrument channel to produce a signal, 0.167 second for the trip breakers to open, and 0.15 second for the coil to release the rods. A curve of trip rod insertion versus time is used, which assumes that insertion to the dashpot does not occur until 2.47 seconds after the start of fall. The choice of such a conservative insertion rate means that there is over 1 second after the trip setpoint is reached before significant shutdown reactivity is inserted into the core. This conservatism is important for the hot full power accidents.	Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 50 WLG2016.02-03
12087	WLS	Pt 02	FSAR 15	15.04.08.02.01.07	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.2.1.7 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.2.1.7 Results Revise DCD Subsection 15.4.8.2.1.7 to read as follows: For all cases, the core is preconditioned by assuming a fuel cycle depletion with control rod insertion that is conservative relative to expected baseload operation. All cases assume that the mechanical shim and axial offset control RCCAs are inserted to their insertion limits before the event and xenon is skewed to yield a conservative initial axial power shape. The limiting RCCA ejection cases for a typical cycle are summarized following the criteria outlined in subsection 15.4.8.1.2. • PCMI and high cladding temperature (hot zero power) The resulting maximum fuel average enthalpy rise and maximum fuel average enthalpy are less than the criteria given in subsection 15.4.8.1.2. • High cladding temperature (greater than 5% rated thermal power) The fraction of the core calculated to have a DNBR less than the safety analysis limit is less than the amount of failed fuel assumed in the dose analysis described in subsection 15.4.8.3. • Core coolability The resulting maximum fuel average enthalpy is less than the criterion given in subsection 15.4.8.1.2. Fuel melting is not predicted to occur at the hot spot. There are no fuel failures due to the fuel enthalpy deposition, i.e., both fuel and cladding enthalpy limits were met. Additionally, the coolability criteria for peak fuel enthalpy and the fuel melting criteria were met. Therefore, the fuel dispersal into the coolant, a sudden pressure increase from thermal to kinetic energy conversion, gross lattice distortion, or severe shock waves are precluded. The nuclear power and fuel transients for the limiting cases are presented in Figures 15.4-201 through 15.4-203. The calculated sequence of events for the limiting cases is presented in Table 15.4-201. Reactor trip occurs early in the transients, after which the nuclear power excursion is terminated. The ejection of an RCCA constitutes a break in the reactor coolant system, located in the reactor pressure vessel head. The effects and consequences of loss-of-coolant accidents (LOCAs) are discussed in subsection 15.6.5. Following the RCCA ejection, the plant response is the same as a LOCA. The consequential loss of offsite power described in subsection 15.0.14 is not limiting for the enthalpy and temperature transients resulting from an RCCA ejection accident. Due to the delay from reactor trip until turbine trip and the rapid power reduction produced by the reactor trip, the peak fuel and cladding temperatures occur before the reactor coolant pumps begin to coast down.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 51 WLG2016.02-03
12088	WLS	Pt 02	FSAR 15	15.04.08.02.01.08	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.2.1.8 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.2.1.8 Fission Product Release	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Revise the first paragraph of DCD Subsection 15.4.8.2.1.8 to read as follows: It is assumed that fission products are released from the gaps of all rods entering DNB. In the cases considered, less than 10 percent of the rods are assumed to enter DNB based on a detailed three-dimensional kinetics and hot rod analysis. The maximum fuel average enthalpy rise of rods predicted to enter DNB will be less than 60 cal/g. Fuel melting does not occur at the hot spot.	DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 52 WLG2016.02-03
12089	WLS	Pt 02	FSAR 15	15.04.08.02.01.09	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.2.1.9 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.2.1.9 Peak Reactor Coolant System Pressure Revise first paragraph DCD Subsection 15.4.8.2.1.9 to read as follows: Calculations of the peak reactor coolant system pressure demonstrate that the peak pressure does not exceed that which would cause the stress to exceed the Service Level C Limit as described in the ASME Code, Section III. Therefore, the accident for this plant does not result in an excessive pressure rise or further damage to the reactor coolant system.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 53 WLG2016.02-03
12090	WLS	Pt 02	FSAR 15	15.04.08.03	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.3 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.3 Radiological Consequences Revise the first two paragraphs of DCD Subsection 15.4.8.3 to read as follows: The evaluation of the radiological consequences of a postulated rod ejection accident assumes that the reactor is operating with a limited number of fuel rods containing cladding defects and that leaking steam generator tubes result in a buildup of activity in the secondary coolant. See subsection 15.4.8.3.1 and Table 15.4-202. As a result of the accident, 10 percent of the fuel rods are assumed to be damaged (see subsection 15.4.8.2.1.8) such that the activity contained in the fuel cladding gap is released to the reactor coolant. No fuel melt is calculated to occur as a result of the rod ejection (see subsection 15.4.8.2.1.8).	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 54 WLG2016.02-03
12091	WLS	Pt 02	FSAR 15	15.04.08.03.01	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.3.1 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.3.1 Source Term Revise DCD Subsection 15.4.8.3.1 to read as follows: The significant radionuclide releases due to the rod ejection accident are the iodines, alkali metals, and noble gases. The reactor coolant iodine source term assumes a pre existing iodine spike. The reactor coolant noble gas concentrations are assumed to be those associated with equilibrium operating limits for primary coolant noble gas activity. The initial reactor coolant alkali metal concentrations are assumed to be those associated with the design fuel defect level. These initial reactor coolant activities are of secondary importance compared to the release of fission products from the portion of the core assumed to fail. Based on NUREG 1465 (Reference 12), the fission product gap fraction is 3 percent of fuel inventory. For this analysis, the gap fractions are modified following the guidance of Draft Guide 1199 (Reference 25), which incorporates the effects of enthalpy rise in the fuel following the reactivity insertion, consistent with Appendix B of SRP 4.2, Revision 3 (Reference 24). Draft Guide 1199 included expanded guidance for determining nuclide gap fractions available for release following a rod ejection. Reference 26 was issued as a clarification to the gap fraction guidance in Draft Guide 1199. An enthalpy rise of 60 cal/gm is used to calculate the gap fractions (see subsection 15.4.8.2.1.8). Also, to address the fact that the failed fuel rods may have been operating at power levels above the core average, the source term is increased by the lead rod radial peaking factor. No fuel melt is calculated to occur as a result of the rod ejection (see subsection 15.4.8.2.1.8).	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 55 WLG2016.02-03

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
12092	WLS	Pt 02	FSAR 15	15.04.08.03.05	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.3.5 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.3.5 Identification of Conservatisms Revise second bullet of DCD Subsection 15.4.8.3.5 to read as follows: • The reactor coolant activities are based on conservative assumptions (refer to Table 15.4-202); whereas, the activities based on the expected fuel defect level are far less (see Section 11.1).	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 56 WLG2016.02-03
12093	WLS	Pt 02	FSAR 15	15.04.08.03.06	COLA Part 2, FSAR Chapter 15, Subsection 15.4.8.3.6 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.8.3.6 Doses Revise the first paragraph of DCD Subsection 15.4.8.3.6 to read as follows: Using the assumptions from Table 15.4-202, the calculated total effective dose equivalent (TEDE) doses are determined to be 4.0 rem at the site boundary for the limiting 2-hour interval (0 to 2 hours) and 5.9 rem at the low population zone outer boundary. These doses are well within the dose guideline of 25 rem TEDE identified in 10 CFR Part 50.34. The phrase "well within" is taken as being 25 percent or less.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 57 WLG2016.02-03
12094	WLS	Pt 02	FSAR 15	15.04.10	COLA Part 2, FSAR Chapter 15, Subsection 15.4.10 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.4.10 References Revise DCD Subsection 15.4.10 References 4, 7, 8, 10 and 13, and add new References 14 through 27 as follows: 4. Beard, C. L. et al., "Westinghouse Control Rod Ejection Accident Analysis Methodology Using Multi-Dimensional Kinetics," WCAP-15806-P-A (Proprietary) and WCAP-15807-NP-A (Nonproprietary), November 2003. 7. Liu, Y. S., et al., "ANC – A Westinghouse Advanced Nodal Computer Code," WCAP-10965-P-A (Proprietary) and WCAP-10966-A (Nonproprietary), September 1986. 8. Not Used. 10. American National Standards Institute N18.2, "Nuclear Safety Criteria for the Design of Stationary PWR Plants," 1973. 13. Not Used. 14. Nguyen, T. Q., et al., "Qualifications of the PHOENIX-P/ANC Nuclear Design System for Pressurized Water Reactor Cores," WCAP-11596-P-A (Proprietary) and WCAP-11597-A (Nonproprietary), June 1988. 15. Ouisloumen, M., et al., "Qualification of the Two-Dimensional Transport Code PARAGON," WCAP-16045-P-A (Proprietary) and WCAP-16045-NP-A (Nonproprietary), August 2004. 16 Liu, Y. S., "ANC – A Westinghouse Advanced Nodal Computer Code; Enhancements to ANC Rod Power Recovery," WCAP-10965-P- A, Addendum 1 (Proprietary) and WCAP-10966- A Addendum 1 (Nonproprietary), April 1989. 17. Letter from Liparulo, N.J. (Westinghouse) to Jones, R. C., (NRC), "Notification to the NRC Regarding Improvements to the Nodal Expansion Method Used in the Westinghouse Advanced Nodal Code (ANC)," NTD-NRC-95-4533, August 22, 1995. 18. Sung, Y. X., Schueren, P., and Meliksetian, A., "VIPRE-01 Modeling and Qualification for Pressurized Water Reactor Non-LOCA Thermal-Hydraulic Safety Analysis," WCAP-14565-P-A (Proprietary) and WCAP-15306-NP-A (Nonproprietary), October 1999. 19. Stewart, C. W., et al., "VIPRE-01: A Thermal/Hydraulic Code for Reactor Cores," Volumes 1, 2, 3 (Revision 3, August 1989), and Volume 4 (April 1987), NP-2511-CCM-A, Electric Power Research Institute, Palo Alto, California.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 58 WLG2016.02-03

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					20. Foster, J. P. and Sidener, S., "Westinghouse Improved Performance Analysis and Design Model (PAD 4.0)," WCAP-15063-P-A, Revision 1 with Errata (Proprietary) and WCAP-15064-NP-A (Nonproprietary), July 2000. 21. Zhang, B., et al., "Qualification of the NEXUS Nuclear Data Methodology," WCAP-16045-P-A, Addendum 1-A (Proprietary) and WCAP-16045-NP-A, Addendum 1-A (Nonproprietary), August 2007. 22. Zhang, B., et al., "Qualification of the New Pin Power Recovery Methodology," WCAP-10965-P-A, Addendum 2-A (Proprietary), September 2010. 23. Smith, L. D , et al., "Modified WRB-2 Correlation, WRB-2M, for Predicting Critical Heat Flux in 17x17 Rod Bundles with Modified LPD Mixing Vane Grids," WCAP-15025-P-A (Proprietary) and WCAP-15026-NP-A (Nonproprietary), April 1999. 24. NUREG-0800, Standard Review Plan, Section 4.2, Revision 3, "Fuel System Design," Appendix B, "Interim Acceptance Criteria and Guidance for the Reactivity Initiated Accidents," March 2007. 25. Draft Regulatory Guide DG-1199, "Proposed Revision 1 of Regulatory Guide 1.183; Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," October 2009. NRC ADAMS Accession Number: ML090960464. 26. NRC Memorandum from Anthony Mendiola to Travis Tate, "Technical Basis for Revised Regulatory Guide 1.183 (DG-1199) Fission Product Fuel-to-Cladding Gap Inventory," July 2011. NRC ADAMS Accession Number: ML111890397. 27. Letter from Liparulo, N. J. (Westinghouse) to Jones, R. C. (NRC), "Process Improvement to the Westinghouse Neutronics Code System," NSD-NRC-96-4679, March 29, 1996.	
12098	WLS	Pt 02	FSAR 15	15.04.F / F15.4-201	COLA Part 2, FSAR Chapter 15, Figure 15.4-201 is added with annotation WLS DEP 6.4-1 as follows (departure from DCD Figure 15.4.8-1) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 62.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 62 WLG2016.02-03
12099	WLS	Pt 02	FSAR 15	15.04.F / F15.4-202	COLA Part 2, FSAR Chapter 15, Figure 15.4-202 is added with annotation WLS DEP 6.4-1 as follows (departure from DCD Figure 15.4.8-2) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 63.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 63 WLG2016.02-03
12100	WLS	Pt 02	FSAR 15	15.04.F / F15.4-203	COLA Part 2, FSAR Chapter 15, Figure 15.4-203 is added with annotation WLS DEP 6.4-1 as follows (departure from DCD Figure 15.4.8-3) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 64.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 64 WLG2016.02-03
12101	WLS	Pt 02	FSAR 15	15.04.F / F15.4-204	COLA Part 2, FSAR Chapter 15, Figure 15.4-204 is added with annotation WLS DEP 6.4-1 as follows (departure from DCD Figure 15.4.8-4) as reflected on Duke Energy Voluntary Submittal of Exemption Request	Duke Energy Voluntary Submittal of Exemption Request and Design

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 65.	Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 65 WLG2016.02-03
12095	WLS	Pt 02	FSAR 15	15.04.T / T15.4-201	COLA Part 2, FSAR Chapter 15, Table 15.4-201 is added with left margin annotation WLS DEP 6.4-1 (departure from DCD Table 15.4-1 (Sheets 2 and 3 of 3)) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 59.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 59 WLG2016.02-03
12097	WLS	Pt 02	FSAR 15	15.04.T / T15.4-202	COLA Part 2, FSAR Chapter 15, Table 15.4-202 is added with left margin annotation WLS DEP 6.4-1 (departure from DCD Table 15.4-4 (Sheets 1 and 2 of 2)) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 61.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 61 WLG2016.02-03
12096	WLS	Pt 02	FSAR 15	15.04.T / T15.4-203	COLA Part 2, FSAR Chapter 15, Table 15.4-203 is added to the List of Figures as follows: 15.4-203 - DCD Table 15.4-3 Not Used	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 60 WLG2016.02-03
12102	WLS	Pt 02	FSAR 15	15.06.02.06	COLA Part 2, FSAR Chapter 15, Subsection 15.6.2.6 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.6.2.6 Doses Revise the first paragraph of DCD Subsection 15.6.2.6 to read as follows: Using the assumptions from Table 15.6-201, the calculated total effective dose equivalent (TEDE) doses are determined to be 1.3 rem at the exclusion area boundary and 0.6 rem at the low population zone outer boundary. These doses are a small fraction of the dose guideline of 25 rem TEDE identified in 10 CFR Part 50.34. The phrase "a small fraction" is taken as being ten percent or less.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 66 WLG2016.02-03
12103	WLS	Pt 02	FSAR 15	15.06.03.03.01	COLA Part 2, FSAR Chapter 15, Subsection 15.6.3.3.1 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.6.3.3.1 Source Term	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Revise the last paragraph of DCD Subsection 15.6.3.3.1 to read as follows: The secondary coolant iodine and alkali metal activity is assumed to be 1 percent of the maximum equilibrium primary coolant activity.	Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 67 WLG2016.02-03
12104	WLS	Pt 02	FSAR 15	15.06.03.03.06	COLA Part 2, FSAR Chapter 15, Subsection 15.6.3.3.6 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.6.3.3.6 Doses Revise the first two paragraphs of DCD Subsection 15.6.3.3.6 to read as follows: Using the assumptions from Table 15.6-202, the calculated TEDE doses for the case in which the iodine spike is assumed to be initiated by the accident are determined to be 0.7 rem at the exclusion area boundary for the limiting 2-hour interval (0-2 hours) and 0.5 rem at the low population zone outer boundary. These doses are a small fraction of the dose guideline of 25 rem TEDE identified in 10 CFR Part 50.34. A "small fraction" is defined, consistent with the Standard Review Plan, as being ten percent or less. For the case in which the SGTR is assumed to occur coincident with a pre-existing iodine spike, the TEDE doses are determined to be 1.4 rem at the exclusion area boundary for the limiting 2-hour interval (0 to 2 hours) and 0.7 rem at the low population zone outer boundary. These doses are within the dose guideline of 25 rem TEDE identified in 10 CFR Part 50.34.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 68 WLG2016.02-03
12105	WLS	Pt 02	FSAR 15	15.06.05.03.02	COLA Part 2, FSAR Chapter 15, Subsection 15.6.5.3.2 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.6.5.3.2 In-containment Activity Removal Processes Add the following paragraphs at the end of DCD Subsection 15.6.5.3.2. Particulates removed from the containment atmosphere to the containment shell are assumed to be washed off the shell by the flow of water resulting from condensing steam (i.e. condensate flow). The particulates may be either washed into the sump, which is controlled to a pH greater than 7 post-accident or into the IRWST, which is not pH controlled post-accident. Due to the conditions in the IRWST, a portion of the particulate iodine washed into the IRWST may chemically convert to an elemental form and re-evolve, subject to partitioning, as airborne. A water-steam partition factor of 10 for elemental iodine is applied. This value bounds the time-dependent partition factors calculated using the NUREG/CR-5950 (Reference 35) models and the calculated IRWST water temperature and pH as a function of time. The IRWST is a closed tank with weighted louvers, and without boiling, there would be no motive force for the release of re-evolved gaseous iodine from the IRWST gas space to the containment. Thus, the assumption of boiling in the IRWST liquid is imposed to force the release of the re-evolved iodine to the containment atmosphere. A portion (3%) of the re-evolved elemental iodine is assumed to convert to an organic form upon its release to containment.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 69 WLG2016.02-03
12106	WLS	Pt 02	FSAR 15	15.06.05.03.05	COLA Part 2, FSAR Chapter 15, Subsection 15.6.5.3.5 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.6.5.3.5 Main Control Room Dose Model Revise the first sentence of the second paragraph of DCD Subsection 15.6.5.3.5 to read as follows: Alternatively, if the normal HVAC is inoperable or, if operable, the supplemental filtration train does not function properly resulting in increasing levels of airborne iodine in the main control room, the emergency habitability system (Section 6.4) would be actuated when High-2 iodine or particulate activity is detected. Revise the second sentence of the fourth paragraph of DCD Subsection 15.6.5.3.5 to read as follows:	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 70 WLG2016.02-03

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					With the VES in operation, airborne activity is removed from the main control room atmosphere via the passive recirculation filtration portion of the VES.	
12107	WLS	Pt 02	FSAR 15	15.06.05.03.08.01	COLA Part 2, FSAR Chapter 15, Subsection 15.6.5.3.8.1 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.6.5.3.8.1 Offsite Doses Revise the first sentence of the second paragraph of DCD Subsection 15.6.5.3.8.1 to read as follows: The reported exclusion area boundary doses are for the time period of 1.3 to 3.3 hours.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 71 WLG2016.02-03
12108	WLS	Pt 02	FSAR 15	15.06.05.03.08.02	COLA Part 2, FSAR Chapter 15, Subsection 15.6.5.3.8.2 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.6.5.3.8.2. Doses to Operators in the Main Control Room Revise the second and third sentence of the first paragraph of DCD Subsection 15.6.5.3.8.2 to read as follows: Also listed on Table 15.6-204 are the doses due to direct shine from the activity in the adjacent buildings, shine from radioactivity accumulated on the VES or VBS filters, and sky-shine from the radiation that streams out the top of the containment shield building and is reflected back down by air scattering. The total of these dose paths is within the dose criteria of 5 rem TEDE as defined in GDC-19.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 72 WLG2016.02-03
12109	WLS	Pt 02	FSAR 15	15.06.06	COLA Part 2, FSAR Chapter 15, Subsection 15.6.6 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.6.6 References Add the following to DCD Subsection 15.6.6. 35. Beahm, E. C. et al., NUREG/CR-5950, "Iodine Evolution and pH Control," December 1992.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 73 WLG2016.02-03
12110	WLS	Pt 02	FSAR 15	15.06.T / 15.6-201	COLA Part 2, FSAR Chapter 15, Table 15.6-201 is added with left margin annotation WLS DEP 6.4-1 (departure from DCD Table 15.6.2-1) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 74.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 74 WLG2016.02-03
12111	WLS	Pt 02	FSAR 15	15.06.T / 15.6-202	COLA Part 2, FSAR Chapter 15, Table 15.6-202 is added with left margin annotation WLS DEP 6.4-1 (departure from DCD Table 15.6.3-3) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 75.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis,

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
						Enclosure 3, Attachment 1, Item 75 WLG2016.02-03
12112	WLS	Pt 02	FSAR 15	15.06.T / 15.6-203	COLA Part 2, FSAR Chapter 15, Table 15.6-203 is added with left margin annotation WLS DEP 6.4-1 (departure from DCD Table 15.6.5-2 (Sheets 1-3 of 3)):as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 76.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 76 WLG2016.02-03
12113	WLS	Pt 02	FSAR 15	15.06.T / 15.6-204	COLA Part 2, FSAR Chapter 15, Table 15.6-204 is added with left margin annotation WLS DEP 6.4-1 (departure from DCD Table 15.6.5-3): as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 77.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 77 WLG2016.02-03
12114	WLS	Pt 02	FSAR 15	15.07.04.05	COLA Part 2, FSAR Chapter 15, Subsection 15.7.4.5 is added with left margin annotation WLS DEP 6.4-1 as follows: 15.7.4.5 Offsite Doses Revise the first sentence of the first paragraph of DCD Subsection 15.7.4.5 to read as follows: Using the assumptions from Table 15.7-201, the calculated doses from the initial releases are determined to be 2.8 rem TEDE at the site boundary and 1.2 rem TEDE at the low population zone outer boundary.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 78 WLG2016.02-03
12115	WLS	Pt 02	FSAR 15	15.07.T / T15.7-201	COLA Part 2, FSAR Chapter 15, Table 15.7-201 is added with left margin annotation WLS DEP 6.4-1 (departure from DCD Table 15.7-1) as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 79.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 79 WLG2016.02-03
12116	WLS	Pt 02	FSAR 15	15.A.03.01.02	COLA Part 2, FSAR Chapter 15, Appendix 15A, Subsection 15A.3.1.2 is added with left margin annotation WLS DEP 6.4-1 as follows: 15A.3.1.2 Secondary Coolant Source Term Revise the first sentence of the first paragraph of DCD Subsection 15A.3.1.2 to read as follows: The secondary coolant source term used in the radiological consequences analyses is conservatively assumed to be 1 percent of the primary coolant equilibrium source term.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 80 WLG2016.02-03

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
12117	WLS	Pt 02	FSAR 15	15.B	COLA Part 2, FSAR Chapter 15, Appendix 15B is revised as follows: APPENDIX 15B REMOVAL OF AIRBORNE ACTIVITY FROM THE CONTAINMENT ATMOSPHERE FOLLOWING A LOCA This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 81 WLG2016.02-03
12118	WLS	Pt 02	FSAR 15	15.B.01	COLA Part 2, FSAR Chapter 15, Appendix 15B, Subsection 15B.1 is added with left margin annotation WLS DEP 6.4-1 as follows: 15B.1 ELEMENTAL IODINE REMOVAL Revise the second full paragraph of DCD Subsection 15B.1 to read as follows: The available deposition surface is 251,000 ft2, (superscript 2) and the containment building net free volume is 2.06 x 106 ft3. (superscript 3) From these inputs, the elemental iodine removal coefficient is 1.9 hr-1. (superscript 1)	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 82 WLG2016.02-03
11975	WLS	Pt 02	FSAR 19	19.41	COLA Part 2, FSAR Chapter 19, Subsection 19.41 is revised as follows: 19.41 HYDROGEN MIXING AND COMBUSTION ANALYSIS This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment, Enclosure 3, Item 3, WLG2016.01-01
11976	WLS	Pt 02	FSAR 19	19.41.07	COLA Part 2, FSAR Chapter 19, Subsection 19.41.7 is added with left margin annotation, WLS DEP 6.2-1 as follows: 19.41.7 Diffusion Flame Analysis Revise the last two paragraphs of DCD Subsection 19.41.7, Diffusion Flame Analysis to read as follows: In the event that ADS stage 4 fails to adequately direct hydrogen away from confined compartments, the compartment vents are designed to release the hydrogen at locations where it burns, but does not challenge the containment shell integrity. Vents from the PXS and CVS compartments to the CMT room are located away from the containment shell and containment penetrations. Access hatches to the subcompartments that are near the containment shell are covered and secured closed such that they will not open as a result of a pipe break inside the compartment. Therefore, hydrogen releases to the CMT room from the subcompartments have been shown to not challenge the containment integrity	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment, Enclosure 3, Item 4, WLG2016.01-01
12146	WLS	Pt 02	FSAR 19	19.59.T / T19.59-201	COLA Part 2, FSAR Chapter 19, Table 19.59-201, Sheet 2 of 2 is revised as reflected on Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 28.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
						Condensate Return Cooling Design, Enclosure 7, Item 28, WLG2016.02-01
12147	WLS	Pt 02	FSAR 19	19E.02.03.02.06	COLA Part 2, FSAR Section 19E.2.3.2.6 is added with left margin annotation WLS DEP 3.2-1 as follows: 19E.2.3.2.6 Discussion of Safe Shutdown for AP1000 Replace the DCD Subsection 19E.2.3.2.6 with the following information: The functional requirements for the PXS specify that the plant be brought to a safe, stable condition using the PRHR HX for events not involving a loss of coolant. As stated in Subsection 6.3.1.1.1, the PRHR HX in conjunction with the passive containment cooling system provides sufficient heat removal to satisfy the post-accident safety evaluation criteria for at least 72 hours. Additionally, the PXS, in conjunction with the passive containment cooling system (pcs) and the automatic depressurization system, has the capability to establish long-term safe shutdown conditions in the reactor coolant system as identified in Subsection 7.4.1.1. The CMTs automatically provide injection to the RCS after they are actuated on low reactor coolant temperature or low pressurizer pressure or level. The PXS can maintain stable plant conditions for a long time in this mode of operation, depending on the reactor coolant leakage and the availability of ac power sources. For example, with a technical specification leak rate of 10 gpm, stable plant conditions can be maintained for at least 10 hours. With a smaller leak a longer time is available. In scenarios when ac power sources are unavailable for approximately 22 hours, the automatic depressurization system automatically actuates. However, after the initial plant cooldown following a non-LOCA event, operators assess plant conditions and have the option to perform recovery actions to further cool and depressurize the reactor coolant system in a closed-loop mode of operation, i.e., without actuation of the automatic depressurization system. After verifying the reactor coolant system is in an acceptable, stable condition, such that automatic depressurization is not needed, the operators may take action to extend passive residual heat removal heat exchanger operation by de-energizing the loads on the Class 1E dc batteries powering the protection and monitoring system actuation cabinets. After operators have taken action to extend its operation, the PRHR HX, in conjunction with the passive containment cooling system, has the capability to maintain safe, stable shutdown conditions. The automatic depressurization system remains available to maintain safe shutdown conditions at a later time. In most sequences the operators would return the plant to normal system operations and terminate passive system operation within several hours in accordance with the plant emergency operating procedures. For LOCAs and other postulated events, when the core makeup tank level reaches the automatic depressurization actuation setpoint, and other postulated events where the PRHR HX operation is not extended or exhausted, ADS may be initiated. This results in injection from the accumulators and subsequently from the in-containment refueling water storage tank, once the RCS is nearly depressurized. For these conditions, the RCS depressurizes to saturated conditions at about 250°F within 24 hours. The PXS can maintain this safe shutdown condition as identified in Subsection 7.4.1.1. The primary function of the PXS during a safe shutdown using only safety-related equipment is to provide a means for boration, injection, and core cooling. Analysis is provided in Subsection 19E.4.10.2 of this appendix that verifies the ability of the AP1000 passive safety systems to meet the safe shutdown requirements.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 29, WLG2016.02-01
12188	WLS	Pt 02	FSAR 19	19E.02.03.02.06	COLA Part 2, FSAR Section 19E.2.3.2.6, first paragraph is revised as follows: The functional requirements for the PXS specify that the plant be brought to a safe, stable condition using the PRHR HX for events not involving a loss of coolant. As stated in Subsection 6.3.1.1.1, the PRHR HX in conjunction with the passive containment cooling system provides sufficient heat removal to satisfy the post-accident safety evaluation criteria for at least 72 hours. Additionally, the PXS, in conjunction with the passive containment cooling system (PCS) and the automatic depressurization system, has the capability to establish long-term safe shutdown conditions in the reactor coolant system as identified in Subsection 7.4.1.1.	Editorial update to Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
						Design, Enclosure 7, Item 29, WLG2016.02-01
12182	WLS	Pt 02	FSAR 19	19E.02.03.02.06	COLA Part 2, FSAR Section 19E.2.3.2.6, fourth paragraph, second sentence is revised as follows: For LOCAs and other postulated events, when the core makeup tank level reaches the automatic depressurization actuation setpoint, and other postulated events where the PRHR HX operation is not extended or is exhausted, ADS may be initiated.	Editorial update to Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 29, WLG2016.02-01
12148	WLS	Pt 02	FSAR 19	19E.04.10.02	COLA Part 2, FSAR Section 19.E.4.10.2 is revised as follows: As discussed in Subsection 6.3.1.1.4, the passive residual heat removal heat exchanger is required to be able to cool the reactor coolant system to a safe, stable condition after shutdown following a non-LOCA event. The following summarizes a non-bounding, conservative analysis, which demonstrates the passive residual heat removal heat exchanger can meet this criterion and cool the RCS to the specified, safe shutdown condition of 420°F within 36 hours. This analysis demonstrates that the passive systems can bring the plant to a safe, stable condition and maintain this condition so that no transients will result in the specified acceptable fuel design limit and pressure boundary design limit being violated and that no high-energy piping failure being initiated from this condition results in 10 CFR 50.46 (DCD Reference 15) criteria. As discussed in DCD Subsection 6.3.3 and DCD Subsection 7.4.1.1, the PRHR HX operates to reduce the RCS temperature to the safe shutdown condition following a non-LOCA event. An analysis of the loss of main feedwater with a loss of ac power event demonstrates that the passive systems can bring the plant to a stable safe condition following postulated transients. A non-bounding, conservative analysis is represented in DCD Figures 19E.4.10-1 through 19E.4.10-4. The progression of this event is outlined in DCD Table 19E.4.10-1. Though some of the assumptions in this evaluation are based on nominal conditions, many of the analysis assumptions are bounding. The performance of the PRHR HX is affected by the containment pressure. Containment pressure determines the PRHR HX heat sink (the IRWST water) temperature. The WGOTHIC containment response model described in DCD Subsection 6.2.1.1.3 was used to determine the containment pressure response to this transient, which was used as an input to the plant cooldown analysis performed with LOFTRAN. Some changes were made to the WGOTHIC model to ensure the results were conservative for the long-term safe shutdown analysis. The PRHR HX performance is also affected by the IRWST water level when the level drops below the top of the PRHR HX tubes. The IRWST water level is affected by the heat input from the PRHR HX and by the amount of steam that leaves the IRWST and does not return to the IRWST through the IRWST gutter arrangement. The principal steam condensate losses include steam that stays in the containment atmosphere, steam that condenses on heat sinks inside containment other than the containment vessel, and dripping or splashing losses due to obstructions on the inner containment vessel wall. The WGOTHIC containment response model also provided the mass balance with respect to the steam lost to the containment atmosphere and to condensation on passive heat sinks other than the containment vessel. The WGOTHIC analysis inputs (including the mass of the heat sinks and heat transfer rates) were biased to increase steam condensate losses. The WGOTHIC model provides the time-dependent condensate return rate which was incorporated into the LOFTRAN computer code described in DCD Subsection 15.0.11.2 to demonstrate that the RCS could be cooled to 420°F within 36 hours. Summarizing this transient, the loss of normal ac power occurs (offsite and onsite), followed by the reactor trip. The PRHR HX is actuated on the low steam generator narrow range level coincident with low startup feed water flow rate signal. Eventually a safeguards actuation signal is actuated on Low cold leg temperature and the	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 30, WLG2016.02-01

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					CMTs are actuated. Once actuated, at about 2,700 seconds, the CMTs operate in recirculation mode, injecting cold borated water into the RCS. In the first part of their operation, due to the injection of cold water, the CMTs operate in conjunction with the PRHR HX to reduce RCS temperature. Due to the primary system cooldown, the PRHR heat transfer capability drops below the decay heat and the RCS cooldown is essentially driven by the CMT cold injection flow. However, at about 6,000 seconds, the CMT cooling effect decreases and the RCS starts heating up again (DCD Figure 19E.4.10-1). The RCS temperature increases until the PRHR HX can match decay heat. At about 46,700 seconds, the PRHR heat transfer matches decay heat and it continues to operate to reduce the RCS temperature to below 420°F within 36 hours. As seen from DCD Figure 19E.4.10-1, the cold leg temperature in the loop with the PRHR is reduced to 420°F at about 52,900 seconds, while the core average temperature reaches 420°F at about 120,900 seconds (approximately 34 hours). As discussed in DCD Subsection 7.4.1.1, a timer is used to automatically actuate the automatic depressurization system if offsite and onsite power are lost for about 24 hours. This timer automates putting the open loop cooling features into service prior to draining the Class 1E dc 24-hour batteries that operate the ADS valves. At approximately 22 hours, if the plant conditions indicate that the ADS would not be needed until well after 24 hours, the operators are directed to de-energize all loads on the 24-hour batteries. This action will block actuation of the ADS and preserves the ability to align open loop cooling at a later time. Operation of the ADS in conjunction with the CMTs, accumulators, and IRWST reduces the RCS pressure and temperature to below 420°F. The ability to actuate ADS and IRWST injection provides a safety-related, backup mode of decay heat removal that is diverse to extended PRHR HX operation. As discussed in DCD Subsection 6.3.3.2.1.1, the PRHR HX can operate in this mode for at least 72 hours to maintain RCS conditions within the applicable Chapter 15 safety evaluation criteria. In addition, the analysis supporting this Section shows the PRHR HX is expected to maintain safe shutdown conditions for greater than 14 days. One important consideration with regard to the duration closed-loop cooling can be maintained is the RCS leak rate. This duration of closed-loop cooling can be achieved with expected RCS leak rates. For abnormal leak rates, it may become necessary to initiate open-loop cooling earlier than 14 days.	
12151	WLS	Pt 02	FSAR 19	19E.04.10.F / F19E.4.10-201	COLA Part 2, FSAR Figure 19.E.4.10-201 is revised as reflected on Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 33.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 33, WLG2016.02-01
12152	WLS	Pt 02	FSAR 19	19E.04.10.F / F19E.4.10-202	COLA Part 2, FSAR Figure 19.E.4.10-202 is revised as reflected on Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 34.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 34, WLG2016.02-01
12153	WLS	Pt 02	FSAR 19	19E.04.10.F / F19E.4.10-203	COLA Part 2, FSAR Figure 19.E.4.10-203 is revised as reflected on Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 35.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
						for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 35, WLG2016.02-01
12154	WLS	Pt 02	FSAR 19	19E.04.10.F / F19E.4.10-204	COLA Part 2, FSAR Figure 19.E.4.10-204 is revised as reflected on Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 36.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 36, WLG2016.02-01
12150	WLS	Pt 02	FSAR 19	19E.04.10.T / T19E.4.10-201	COLA Part 2, FSAR Table 19.E.4.10-201 is revised as reflected on Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 32.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 32, WLG2016.02-01
12149	WLS	Pt 02	FSAR 19	19E.09	COLA Part 2, FSAR Section 19.E.9 is revised to delete the following: 19E.9 REFERENCES 14. Not used.	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 31, WLG2016.02-01
Pt 04 (20 COLA Changes)						
12019	WLS	Pt 04		03.03.02	COLA Part 4, Technical Specifications, TS 3.3.2, Required Action F.2.2 is revised with left margin annotation WLS DEP 6.4-2 as follows: F.2.2 Verify main control room isolation, air supply initiation and electrical load de-energization manual controls are OPERABLE.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 1, WLG2016.02-04
12020	WLS	Pt 04		03.03.02T / T3.3.2-1	COLA Part 4, Technical Specifications, TS 3.3.2, Table 3.3.2-1, page 11 of 13, FUNCTION 20 is revised with left margin annotation WLS DEP 6.4-2 as follows:	Duke Energy Voluntary Submittal of Exemption Request and Design

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					20. Main Control Room Isolation, Air Supply Initiation and Electrical Load De-energization a. Main Control Room Air Supply Radiation – High 2	Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 2, WLG2016.02-04
12155	WLS	Pt 04		03.07.04	COLA Part 4, Technical Specifications Section 3.7.4 is revised with left margin annotation WLS DEP 6.4-1 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 2, Item 1.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 2, Item 1 WLG2016.02-03
12021	WLS	Pt 04		03.07.06	COLA Part 4, Technical Specifications, TS 3.7.6, ACTIONS is revised with left margin annotation WLS DEP 6.4-2 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 1, Item 3.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 3, WLG2016.02-04
12022	WLS	Pt 04		03.07.06	COLA Part 4, Technical Specifications, TS 3.7.6, SURVEILLANCE REQUIREMENTS is revised with left margin annotation WLS DEP 6.4-2 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 4.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 4, WLG2016.02-04
11968	WLS	Pt 04		B, B03.03.01	COLA Part 4, Technical Specifications, Bases 3.3.1, Applicable Safety Analyses, LCOs, and Applicability, RTS Instrumentation, Reactor Trip System Function 16.a.3 is revised with left margin annotation WLS DEP 7.3-1 as follows: (3) on decreasing power, the P-6 interlock automatically resets the flux doubling block control ensuring the source range neutron flux doubling circuit is enabled. Normally, the source range neutron flux doubling circuit is manually blocked by the main control room operator during the reactor startup.	Duke Energy Endorsement of Voluntary Submittal of Response to the LNP (DEF) Request For Additional Information Letter No. 135 Related To IEEE 603 and Source Range Nuclear Instrumentation Flux Doubling, Enclosure Item 1, WLG2016.02-05.
11969	WLS	Pt 04		B, B03.03.02	COLA Part 4, Technical Specifications, Bases 3.3.2, Applicable Safety Analyses, LCOs, and Applicability, ESFAS protective functions 15 is revised with left margin annotation WLS DEP 7.3-1 as follows: 15. Boron Dilution Block The block of boron dilution is accomplished by closing the CVS makeup line isolation valves or closing the	Duke Energy Endorsement of Voluntary Submittal of Response to the LNP (DEF) Request For Additional Information Letter No. 135

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					demineralized water system isolation valve to CVS. This Function is actuated by Source Range Neutron Flux Doubling and Reactor Trip. 15.a. Source Range Neutron Flux Doubling A signal to block boron dilution in MODES 2 or 3, when not critical or during an intentional approach to criticality, and MODES 4 or 5 is derived from source range neutron flow increasing at an excessive rate (source range flux doubling). This Function is not applicable in MODES 3, 4 and 5 if the demineralized water makeup flow path is isolated. The source range neutron detectors are used for this Function. The LCO requires four divisions to be OPERABLE. There are four divisions and two out-of-four logic is used. On a coincidence of excessively increasing source range neutron flux in two of the four divisions, demineralized water is isolated (CVS demineralized water system isolation valves closed) from the makeup pumps and reactor coolant makeup is isolated (CVS makeup line isolation valves closed) from the reactor coolant system to preclude a boron dilution event. In MODE 6, a dilution event is precluded by the requirement in LCO 3.9.2 to close, lock and secure at least one valve in each unborated water source flow path. 15.b. Reactor Trip (Function 18.b) Demineralized Water Makeup is also isolated (CVS demineralized water system isolation valves closed and the boric acid aligned to the CVS makeup pumps) by all the Functions that initiate a Reactor Trip. The isolation requirements for these Functions are the same as the requirements for the Reactor Trip Function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead Function 18.b, (P-4 Reactor Trip Breakers), is referenced for all initiating Functions and requirements. A P-4 signal initiates isolation of RCS makeup from the CVS by closing the demineralized water system isolation valves, and aligning the CVS makeup pump suction to the boric acid tank. Unborated water source makeup isolation is initiated by all the Functions that initiate a Reactor Trip.	Related To IEEE 603 and Source Range Nuclear Instrumentation Flux Doubling, Enclosure Item 2, WLG2016.02-05.
11970	WLS	Pt 04		B, B03.03.02	COLA Part 4, Technical Specifications, Bases 3.3.2, APPLICABLE SAFETY ANALYSES, LCOs, and APPLICABILITY, ESFAS protective functions 18 is revised with left margin annotation WLS DEP 7.3-1 as follows: 18.c. Intermediate Range Neutron Flux, P-6 The Intermediate Range Neutron Flux, P-6 interlock is actuated when the respective NIS intermediate range channel increases to approximately one decade above the channel lower range limit. Above the setpoint, the P-6 interlock allows manual block of the source range neutron flux reactor trip. Below the setpoint, the P-6 interlock automatically energizes the source range detectors and unblocks the source range neutron flux reactor trip. As intermediate range flux decreases from above the setpoint to below the setpoint, the P-6 interlock automatically resets the flux doubling block function ensuring the source range neutron flux doubling function is enabled. Normally, the source range neutron flux doubling Function is blocked by the main control room operator during reactor startup. This Function is required to be OPERABLE in MODE 2.	Duke Energy Endorsement of Voluntary Submittal of Response to the LNP (DEF) Request For Additional Information Letter No. 135 Related To IEEE 603 and Source Range Nuclear Instrumentation Flux Doubling, Enclosure Item 2; WLG2016.02-05.
12201	WLS	Pt 04		B, B03.03.02	COLA Part 4, Technical Specifications, Bases 3.3.2, Applicable Safety Analyses, LCOs, and Applicability, ESFAS protective functions 18d is further revised with left margin annotation WLS DEP 7.3-1 as follows: 18.d. Reactor Coolant Average Temperature, P-8 The P-8 interlock is provided to permit a manual block of or to reset a manual block of the automatic Source Range Neutron Flux Doubling actuation of the Boron Dilution Block (Function 15.a). The automatic Source Range Neutron Flux Doubling actuation of the Boron Dilution Block Function may be manually blocked (disabled) to permit plant startup and normal power operation when above the P-8 reactor coolant average temperature setpoint. The manual block to disable the automatic Source Range Neutron Flux Doubling actuation of the Boron Dilution Block function is automatically reset upon decreasing reactor coolant average temperature to below the P-8 setpoint. Once reactor coolant average temperature Is below the P-8 setpoint, the Source Range Neutron Flux Doubling actuation of the Boron Dilution Block Function may also be manually blocked to prevent inadvertent actuation	Conforming change to Duke Energy Voluntary Submittal of Response to the LNP (DEF) Request For Additional Information Letter No. 135 Related To IEEE 603 and Source Range Nuclear Instrumentation Flux Doubling, NPD-NRC-2015-055, Enclosure 2, Item 3

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					during refueling operations and post-refueling control rod testing. When the Source Range Neutron Flux Doubling actuation of the Boron Dilution Block is manually blocked below P-8 during shutdown conditions, the CVS demineralized water system isolation valves will automatically close to prevent inadvertent boron dilution.	
12023	WLS	Pt 04		B, B03.03.02	COLA Part 4, Technical Specifications, Bases, B 3.3.2, APPLICABLE SAFETY ANALYSES, LCOs, and APPLICABILITY is revised with left margin annotation WLS DEP 6.4-2 as follows: 20. Main Control Room Isolation, Air Supply Initiation, and Electrical Load De-energization Isolation of the main control room and initiation of the VES air supply provides a breathable air supply for the operators following an uncontrolled release of radiation. De-energizing non-essential main control room electrical loads maintains the room temperature within habitable limits. This Function is required to be OPERABLE in MODES 1, 2, 3, and 4, and during movement of irradiated fuel because of the potential for a fission product release following a fuel handling accident, or other DBA. 20.a. Main Control Room Air Supply Radiation – High 2 Two radiation monitors are provided on the main control room air intake. If either monitor exceeds the High 2 setpoint, control room isolation is actuated.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 5, WLG2016.02-04
12024	WLS	Pt 04		B, B03.03.02	COLA Part 4, Technical Specifications, Bases, B 3.3.2, ACTIONS F.1, F.2.1, F.2.2 and K.1 are revised with left margin annotation WLS DEP 6.4-2 as follows: ACTIONS (continued) F.1, F.2.1, and F.2.2 Condition F is applicable to the main control room isolation, air supply initiation and electrical load de-energization function which has only two channels of the initiating process variable. With one channel inoperable, the logic becomes one out-of-one and is unable to meet single failure criterion. Restoring all channels to OPERABLE status ensures that a single failure will not prevent the protective Function. Alternatively, radiation monitor(s) which provide equivalent information and main control room isolation, air supply initiation and electrical load de-energization manual controls may be verified to be OPERABLE. These provisions for operator action can replace one channel of radiation detection and system actuation. The 72 hour Completion Time is reasonable considering that there is one remaining channel OPERABLE and the low probability of an event occurring during this interval. K.1 LCO 3.0.8 is applicable while in MODE 5 or 6. Since irradiated fuel assembly movement can occur in MODE 5 or 6, the ACTIONS have been modified by a Note stating that LCO 3.0.8 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, the fuel movement is independent of shutdown reactor operations. Entering LCO 3.0.8 while in MODE 5 or 6 would require the optimization of plant safety, unnecessarily. Condition K is applicable to the Main Control Room Isolation, Air Supply Initiation and Electrical Load De-energization (Function 20), during movement of irradiated fuel assemblies. If the Required Action and associated Completion Time of the first Condition listed in Table 3.3.2-1 is not met, the plant must suspend movement of the irradiated fuel assemblies immediately. The required action suspends activities with potential for releasing radioactivity that might enter the MCR. This action does not preclude the movement of fuel to a safe position.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 6, WLG2016.02-04
12156	WLS	Pt 04		B, B03.04.10	COLA Part 4, Technical Specifications Bases, Section 3.4.10, Applicable Safety Analyses, third paragraph, last sentence is revised with left margin annotation WLS DEP 6.4-1 as follows: The safety analysis assumes the specific activity of the secondary coolant at its limit of 0.01 microcurie/gm DOSE EQUIVALENT I-131 from LCO 3.7.4, "Secondary Specific Activity."	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
						DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 2, Item 2, WLG2016.02-03
12157	WLS	Pt 04		B, B03.07.04	COLA Part 4, Technical Specifications Bases, Section 3.7.4, APPLICABLE SAFETY ANALYSES and LCO are revised with left margin annotation WLS DEP 6.4-1 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 2, Item 3.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 2, Item 3, WLG2016.02-03
12158	WLS	Pt 04		B, B03.07.06	COLA Part 4, Technical Specifications Bases, Section 3.7.6, the first paragraph of the BACKGROUND is revised with left margin annotation WLS DEP 6.4-1 as follows: The Main Control Room Emergency Habitability System (VES) provides a protected environment from which operators can control the plant following an uncontrolled release of radioactivity, hazardous chemicals, or smoke. The system is designed to operate following a Design Basis Accident (DBA) which requires protection from the release of radioactivity. In these events, the Nuclear Island Non Radioactive Ventilation System (VBS) would continue to function if AC power is available. If AC power is lost or a High-2 iodine or particulate Main Control Room Envelope (MCRE) radiation signal is received, the VES is actuated. The MCRE radioactivity is measured by detectors in the MCR supply air duct, downstream of the filtration units. The major functions of the VES are: 1) to provide forced ventilation to deliver an adequate supply of breathable air (Ref. 4) for the MCRE occupants; 2) to provide forced ventilation to maintain the MCRE at a 1/8 inch water gauge positive pressure with respect to the surrounding areas; 3) provide passive filtration to filter contaminated air in the MCRE; and 4) to limit the temperature increase of the MCRE equipment and facilities that must remain functional during an accident, via the heat absorption of passive heat sinks.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 2, Item 4, WLG2016.02-03
12025	WLS	Pt 04		B, B03.07.06	COLA Part 4, Technical Specifications, B 3.7.6, Main Control Room Emergency Habitability System (VES), BACKGROUND is revised with left margin annotations WLS DEP 6.4-2 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 7.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 7, WLG2016.02-04
12159	WLS	Pt 04		B, B03.07.06	COLA Part 4, Technical Specifications Bases, Section 3.7.6, the first four paragraphs of the APPLICABLE SAFETY ANALYSES are revised with left margin annotation WLS DEP 6.4-1 as follows: APPLICABLE SAFETY ANALYSES The compressed air storage tanks are sized such that the set of tanks has a combined capacity that provides at least 72 hours of VES operation. Operation of the VES is automatically initiated by either of the following safety related signals: • Control Room Air Supply Iodine or Particulate Radiation – High-2 • Loss of all AC power for more than 10 minutes In the event that a High-1 radioactivity setpoint value is reached, the non-safety VBS re-aligns to supplemental	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 2, Item 5, WLG2016.02-03

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					filtration mode, providing MCRE pressurization, cooling, and filtration. Upon High-2 particulate or iodine radioactivity setpoint, a safety related signal is generated to isolate the MCRE and to initiate air flow from the VES storage tanks. Isolation of the MCRE consists of closing safety related valves in the lines that penetrate the MCRE pressure boundary. Valves in the VBS supply and exhaust ducts, and the Sanitary Drainage System (SDS) vent lines are automatically isolated. VES air flow is initiated by a safety related signal which opens the isolation valves in the VES supply lines.	
12027	WLS	Pt 04		B, B03.07.06	COLA Part 4, Technical Specifications, B 3.7.6, Main Control Room Emergency Habitability System (VES), LCO is revised with left margin annotations WLS DEP 6.4-2 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 7.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 7, WLG2016.02-04
12029	WLS	Pt 04		B, B03.07.06	COLA Part 4, Technical Specifications, B 3.7.6, Main Control Room Emergency Habitability System (VES), ACTIONS is revised with left margin annotations WLS DEP 6.4-2 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 7.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 7, WLG2016.02-04
12030	WLS	Pt 04		B, B03.07.06	Emergency Habitability System (VES), SURVEILLANCE REQUIREMENTS is revised with left margin annotations WLS DEP 6.4-2 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 7.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 7, WLG2016.02-04
12031	WLS	Pt 04		B, B03.07.06.F / FB3.7.6-2	COLA Part 4, Technical Specifications, B 3.7.6, Figure B 3.7.6-2 is revised as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis in Containment, Enclosure 3, Attachment 1, Item 7	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 2, Item 7, WLG2016.02-04
Pt 07 (19 COLA Changes)						
11977	WLS	Pt 07		A 6.2-1	COLA Part 7, Departures and Exemption Requests is revised to add the following departure to the table presented in Section A as follows:	Duke Energy Voluntary Submittal of Exemption

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Departure Number Description WLS DEP 6.2-1 The ITAAC Acceptance Criteria for the in-containment PXS compartment vents are revised to reflect the current plant configuration.	Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment, Enclosure 3, Item 5, WLG2016.01-01
12160	WLS	Pt 07		A 6.4-1	COLA Part 7, Departures and Exemption Requests is revised to add the following departure to the table presented in Section A as follows: Departure Number Description WLS DEP 6.4-1 MCR operator dose	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 3, Item 1, WLG2016.02-03
11985	WLS	Pt 07		A 6.4-2	COLA Part 7, Departures and Exemption Requests, is revised to add the following departure to the table presented in Section A as follows: Departure Number Description WLS DEP 6.4-2 Main Control Room Heatup	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 3, Item 1, WLG2016.02-04
12171	WLS	Pt 07		A.2 3.2-1	COLA Part 7, Departures and Exemption Requests, Section A.2 is revised at the entry for WLS DEP 3.2-1 as follows: Departure WLS DEP 3.2-1 is a departure from AP1000 Tier 1 information, in addition to Tier 2 information in the DCD; an exemption request and NRC approval is required prior to implementation. Departure Number: WLS DEP 3.2-1 Affected DCD/FSAR Sections: Tier 1 Table 2.2.3-1 and Table 2.2.3-2, Tier 2 Subsections 1.9.4.2.2 and 1.9.5.1.5, Table 3.2-3 (Sheet 16 of 75), Figure 3.8.2-1 (Sheet 3), Subsections 5.4.5.2.1, 5.4.11.2 and 5.4.14.1, Subsections 6.3.1.1.1, 6.3.1.1.4, 6.3.1.1.6, 6.3.1.2, 6.3.1.3, 6.3.2.1, 6.3.2.1.1, 6.3.2.2.5, 6.3.2.2.7, 6.3.2.8, 6.3.3, and 6.3.3.2.1.1, Chapter 6, Figure 6.3-1 (Sheets 1 through 3), Figure 6.3-2 (Not Used), Section 7.4, Subsection 7.4.1.1, Table 14.3-2 (Sheets 7 and 8 of 17), Subsections 15.0.13 and 15.2, Chapter 16 (TS Surveillance Requirement 3.5.4.7, TS Bases B 3.3.3 and B 3.5.4), Subsections 19E.2.3.2.6 and 19E.4.10.2, , Table 19E.4.10-1, and Figures 19E.4.10-1 through 19E.4.10-4. Summary of Departure: Modifications to the Polar Crane Girder (PCG), Internal Stiffener, and Passive Core Cooling System (PXS) gutter were made. The fabrication holes at the top surface of the PCG and in the stiffener are blocked, drainage holes in the bottom of the PCG boxes are blocked, and flow communication holes between PCG boxes are added. A downspout piping network is added to collect and transport condensation from the top and interior of the PCG and the stiffener to the PXS Collection Boxes. Eight new PXS downspout screens are added at the entrance of each of the downspouts at the top of the PCG and the stiffener to prevent any larger debris from blocking the downspout piping. Visual inspection requirements to verify that the return flow to the IRWST will not be restricted by debris have been added to the Technical Specifications and Technical Specification Bases. In	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 37, WLG2016.02-01

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change

addition, clarification of long-term safe shutdown conditions is provided.

Scope/Extent of Departure:

Upon actuation of the Passive Residual Heat Removal Heat Exchanger (PRHR HX), a series of air-operated valves are actuated to isolate the normal gutter drain path to the Liquid Radwaste System, and divert condensation to the In-containment Refueling Water Storage Tank (IRWST). It is important that sufficient condensate return is achieved during non-loss of coolant accident (LOCA) PRHR HX operation, since reduction of IRWST level to below the top of the tubes will begin to degrade the heat exchanger performance to the point where safe shutdown (<420 deg F in <36 hours) may not be achieved.

As steaming in the containment begins, following initiation of PRHR HX operation and saturation of the IRWST, there are a number of mechanisms, both thermodynamic and geometric, that can prevent the condensed steam from returning to the IRWST. The mechanisms are as follows:

a. Steam to pressurize the containment
b. Steam condensation on Passive Heat Sinks
c. Raining from the containment roof, Containment ring misalignment
d. Losses at the Polar Crane Girder and Stiffener
e. Losses at support plates attached to the containment vessel
f. Losses at the Equipment Hatch and Personnel Airlock
g. Losses at entry to IRWST gutter

Losses due to pressurization and condensation on heat sinks are quantified with development of two new calculations. One additional existing calculation was revised based on the results of the new calculations in order to quantify the PRHR HX performance with the revised value of the condensate return and to ensure that the safe shutdown requirements are met. Additionally, analyses were performed which confirm the achievement of the PRHR performance requirements when heat losses are modeled.

A full scale section of the containment wall was constructed to test condensate losses. As a result of the condensate return testing, modifications to the Polar Crane Girder (PCG), Internal Stiffener, and Passive Core Cooling System (PXS) gutter designs are made. The fabrication holes at the top surface of the PCG and in the stiffener are blocked, drainage holes in the bottom of the PCG boxes are blocked, and flow communication holes between PCG boxes are added. A downspout piping network is added to collect and transport condensation from the top and interior of the PCG and the stiffener to the PXS Collection Boxes. Eight new PXS downspout screens are added at the entrance of each of the downspouts at the top of the PCG and the stiffener to prevent any larger debris from blocking the downspout piping. Visual inspection requirements to verify that the return flow to the IRWST will not be restricted by debris have been added to the Technical Specifications and Technical Specification Bases.

In addition to the condensate return changes, clarification of long-term safe shutdown conditions is provided. This clarification identifies the time frames in which the PRHR HX, ADS and passive injection / recirculation can be relied upon to ensure long-term safe shutdown requirements are met.

Departure Justification:

The proposed change does not involve a significant reduction in the margin of safety. The proposed change does not reduce the redundancy or diversity of any safety-related SSCs. The proposed changes increase the amount of condensate available in the IRWST after the initiation of a design basis event compared to the design described in the AP1000 DCD Revision 19. Though the fraction of condensate returned is smaller than originally assumed, the proposed changes provide sufficient condensate return flow to maintain adequate IRWST water level for those events using the PRHR HX cooling function. While lower condensate return rates result in an earlier transition to PRHR HX uncovery, the long-term shutdown temperature evaluation results show that the PRHR HX would continue to meet its acceptance criteria.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) approval of the change will not be inimical to the common defense and security or to the health and safety of the public. Departure Evaluation: This Tier 2 departure performs modifications to the PCG, Internal Stiffener, and PXS gutter designs. The fabrication holes at the top surface of the PCG and in the stiffener are blocked, drainage holes in the bottom of the PCG boxes are blocked, and flow communication holes between PCG boxes are added. A downspout piping network is added to collect and transport condensation from the top and interior of the PCG and the stiffener to the PXS Collection Boxes. Eight new PXS downspout screens are added at the entrance of each of the downspouts at the top of the PCG and the stiffener to prevent any larger debris from blocking the downspout piping. Visual inspection requirements to verify that the return flow to the IRWST will not be restricted by debris have been added to Technical Specifications and Technical Specification Bases. This departure also provides clarification of long-term safe shutdown conditions. The proposed change does not involve a significant reduction in the margin of safety. The proposed change does not reduce the redundancy or diversity of any safety-related SSCs. The proposed changes increase the amount of condensate available in the IRWST after the initiation of a design basis event compared to the original design. Though the fraction of condensate returned is less than assumed in the original design, the proposed design does not result in significantly degraded overall PXS performance, in that the ability to achieve safe shutdown within the required time frame is accomplished. Therefore, this departure does not: 1. Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the plant-specific DCD. 2. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of an SSC important to safety and previously evaluated in the plant-specific DCD. 3. Result in more than a minimal increase in the consequences of an accident previously evaluated in the plant-specific DCD. 4. Result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD. 5. Create a possibility for an accident of a different type than any evaluated previously in the plant-specific DCD. 6. Create a possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously in the plant-specific DCD. 7. Result in a design basis limit for a fission product barrier as described in the plant-specific DCD being exceeded or altered. 8. Result in a departure from a method of evaluation described in the plant-specific DCD used in establishing the design bases or in the safety analyses. This Departure does not affect resolution of a severe accident issue identified in the plant-specific DCD. Therefore, this Departure has no safety significance. NRC Approval Requirement: This departure requires an exemption from the requirements of 10 CFR Part 52, Appendix D, Section III.B, which requires compliance with Tier 1 requirements of the AP1000 DCD and the generic Technical Specifications. Therefore, an exemption is requested in Part B of this COL Application Part.	
11978	WLS	Pt 07		A.2 6.2-1	COLA Part 7, Departures and Exemption Requests is revised to add the following departure to the table presented in Section A.2, Departures That Require NRC Approval Prior to Implementation as follows: Departure Number Description WLS DEP 6.2-1 The ITAAC Acceptance Criteria for the in-containment PXS compartment vents are revised to reflect the current plant configuration.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment,

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
						Enclosure 3, Item 6, WLG2016.01-01
11979	WLS	Pt 07		A.2 6.2-1	COLA Part 7, Departures and Exemption Requests is revised to add the following departure to the table presented in Section A.2, Departures That Require NRC Approval Prior to Implementation as follows: Departure Number WLS DEP 6.2-1: Affected DCD/FSAR Sections: Tier 1 Table 2.3.9-3, Tier 2 Subsections 6.2.4.5.1 and 19.41.7 Summary of Departure: The Containment Hydrogen Control System (VLS) has a function to limit the hydrogen concentration in containment following a severe accident so that it does not result in a failure of the containment shell (DCD Subsection 6.2.4). A severe accident (considered to be a beyond design basis event) involves a major core degradation or core melt that results in hydrogen production among other effects. A severe accident involving major core degradation/core melt is not a design basis accident; however, the VLS contains design features to address this scenario. The VLS promotes hydrogen burning soon after reaching the lower flammability limit. Burning off hydrogen at lower flammability limits is intended to prevent the hydrogen from reaching high concentration levels and potential adverse effects on containment integrity. There are hydrogen igniters positioned around various areas of containment to be able to burn off hydrogen in a controlled manner to help preserve containment integrity. Openings in the ceilings of the Passive Core Cooling System (PXS) valve/accumulator rooms A and B (identified as Rooms 11206 and 11207, respectively) communicate with the room above where the CMTs are located (Room 11300). These openings allow access for hydrogen to vent. Igniters are placed in these areas to allow the hydrogen to ignite and burn. Evolution of the AP1000 configuration moved some equipment and room layouts such that the existing VLS ITAAC and Subsections 6.2.4.5.1 and 19.41.7 wording is no longer consistent with the revised plant design. The CMT-A opening in Room 11206 was moved closer to the containment shell while the equipment hatch opening in the same room was moved farther away, and a weir was added for flood protection (not related to hydrogen venting). The CMT-B opening in Room 11207 was moved farther away from the containment shell. The changes proposed to the DCD by this departure reflect the current vent path configuration in Rooms 11206 and 11207, and provide clarification of "primary openings" in Rooms 11206 and 11207. Scope/Extent of Departure: The changes to the DCD addressed by Departure 6.2-1 revise Tier 1 ITAAC Table 2.3.9-3, Item 3, Acceptance Criteria iii and Tier 2 Subsections 6.2.4.5.1 and 19.41.7 to reflect the actual vent path configuration, clarify the meaning of primary openings for Rooms 11206 and 11207, identify the vent path locations will be verified by pre-operational inspection, and hydrogen released from these vent paths will not challenge the integrity of the containment shell. Departure Justification: The proposed changes correct information in the DCD regarding the plant layout of the primary openings in Containment Rooms 11206 and 11207 that will be used to vent hydrogen; specifically, changes involve the distance between the openings and the containment shell and clarifies what is designated as a primary opening for these rooms. An analysis demonstrates ignition of hydrogen venting through these openings will not result in failure of the containment shell. The proposed changes will not increase the frequency of occurrence of an accident, nor result in a malfunction of a structure, system or component (SSC). The proposed changes regarding the primary openings layout information to be applied to pre-operational measurements and clarification of the primary openings will not result in an accident or malfunction of an SSC. The revised hydrogen vent locations will not result in	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment, Enclosure 3, Item 7, WLG2016.01-01

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					containment shell failure and as such, will not impact a design basis limit for a fission product barrier. The updated DCD language for primary openings used for venting hydrogen is supported by analysis and does not affect resolution of an ex-vessel severe accident design feature. Departure Evaluation: The proposed changes correct information in the DCD regarding the plant layout of the primary openings in Containment Rooms 11206 and 11207 that will be used to vent hydrogen during a beyond design basis event (severe accident). Pre-operational measurements will verify the location of these openings, and an analysis demonstrates postulated hydrogen releases through these openings do not result in a failure of the containment shell. Therefore, this departure does not: 1. Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the plant-specific DCD. 2. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD. 3. Result in more than a minimal increase in the consequences of an accident previously evaluated in the plant-specific DCD. 4. Result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD. 5. Create a possibility for an accident of a different type than any evaluated previously in the plant-specific DCD. 6. Create a possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously in the plant-specific DCD. 7. Result in a design basis limit for a fission product barrier as described in the plant-specific DCD being exceeded or altered. 8. Result in a departure from a method of evaluation described in the plant-specific DCD used in establishing the design bases or in the safety analyses. 9. Affect resolution of an ex-vessel severe accident design feature identified in the plant-specific DCD. Therefore, this departure has no safety significance. NRC Approval Requirement: This departure requires an exemption from the requirements of 10 CFR Part 52, Appendix D, Section III.B, which requires compliance with Tier 1 requirements of the AP1000 DCD. Therefore, an exemption is requested in Part B of this COL Application Part.	
12161	WLS	Pt 07		A.2 6.4-1	COLA Part 7, Departures and Exemption Requests is revised to add the following departure to the table presented in Section A.2, Departures That Require NRC Approval Prior to Implementation as follows: Departure Number Description WLS DEP 6.4-1 MCR operator dose	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 3, Item 2, WLG2016.02-03
12162	WLS	Pt 07		A.2 6.4-1	COLA Part 7, Departures and Exemption Requests is revised to add the following departure in Section A.2, Departures That Require NRC Approval Prior to Implementation as follows: Departure Number WLS DEP 6.4-1: Affected DCD/FSAR Sections: Tier 1 Subsection 2.2.5, Tier 1 Table 2.2.5-1, Tier 1 Table 2.2.5-5, Tier 1	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Subsection 2.7.1, Tier 2 Table 1.6-1, Subsection 1.9.4.2.3, Appendix 1A, Subsection 3.1.2, Subsection 6.4, Subsection 6.4.2.6, Subsection 6.4.3.2, Subsection 6.4.4, Table 6.4-2, Subsection 7.3.1.2.17, Subsection 9.2.6.1.1, Subsection 9.4.1.1.1, Subsection 9.4.1.1.2, Subsection 9.4.1.2.1.1, Subsection 9.4.1.2.3.1, Figure 9.4.1-1 (Sheet 5 of 7), Table 11.1-4, Table 11.1-5, Table 11.1-6, Subsection 11.5.1.1, Subsection 11.5.2.3.1, Subsection 12.2.1.3.1, Subsection 12.2.1.3.2, Table 12.2-28, Table 12.2-29, Subsection 12.3.2.2.7, Figure 12.3-1 (Sheet 6 of 16), Table 14.3-7 (Sheet 2 of 3), Subsection 15.0.11.1, Subsection 15.0.11.6, Table 15.0-2, Subsection 15.1.5.4.1, Subsection 15.1.5.4.6, Table 15.1.5-1, Subsection 15.3.3.3.1, Table 15.3-3 (Sheet 1 of 2), Subsection 15.4.8.1.1.3, Subsection 15.4.8.1.2, Subsection 15.4.8.2, Subsection 15.4.8.2.1, Subsection 15.4.8.2.1.1, Subsection 15.4.8.2.1.2, Subsection 15.4.8.2.1.3, Subsection 15.4.8.2.1.4, Subsection 15.4.8.2.1.5, Subsection 15.4.8.2.1.7, Subsection 15.4.8.2.1.8, Subsection 15.4.8.2.1.9, Subsection 15.4.8.3, Subsection 15.4.8.3.1, Subsection 15.4.8.3.5, Subsection 15.4.8.3.6, Subsection 15.4.10, Table 15.4-1 (Sheets 2 and 3 of 3), Table 15.4-3 (Not Used), Table 15.4-4 (Sheets 1 and 2 of 2), Figure 15.4.8-1, Figure 15.4.8-2, Figure 15.4.8-3, Figure 15.4.8-4 (Not used), Subsection 15.6.2.6, Subsection 15.6.3.3.1, Subsection 15.6.3.3.6, Subsection 15.6.5.3.2, Subsection 15.6.5.3.5, Subsection 15.6.5.3.8.1, Subsection 15.6.5.3.8.2, Subsection 15.6.6, Table 15.6.2-1, Table 15.6.3-3,Table 15.6.5-2 (Sheets 1-3 of 3), Table 15.6.5-3, Subsection 15.7.4.5, Table 15.7-1, Subsection 15A.3.1.2, Subsection 15B.1, Chapter 16 LCO 3.7.4, SR 3.7.4.1, Bases 3.4.10, Bases 3.7.4, Bases 3.7.6. Summary of Departure: If high levels of particulate or iodine radioactivity are detected in the main control room supply air duct that could lead to exceeding General Design Criterion (GDC) 19 operator dose limits (5 rem), the protection and safety monitoring system (PMS) automatically actuates the VES to ensure compliance. The VES design includes a passive filtration feature consisting of a HEPA filter in series with a charcoal adsorber and a postfilter which work to remove particulate and iodine from the air to reduce potential control room dose during VES operation. During AP1000 design finalization, a number of issues were identified challenging the ability of the certified design to limit operator dose to less than 5 Rem. In order to address these issues, site-specific revisions to the AP1000 design and associated dose consequence analyses presented in DCD Revision 19 are made to ensure that operator dose following a DBA is maintained below the 5 rem GDC limit for the duration of the event. Some design changes apply to all MCR design basis accidents and ventilation system alignments evaluated in DCD Section 6.4, while others are design basis accident specific. A. Changes Impacting All MCR Design Basis Events AP1000 generic changes impacting all MCR operator dose evaluations presented in DCD Section 6.4 and Chapter 15 required to address MCR dose analysis errors include: 1. Radiation contributions from HVAC filters were not considered in MCR dose calculation results reported in DCD Revision 19 Section 6.4. Regulatory Guide 1.183 indicates that these contributions should be considered in plant design. The radiological dose analyses are therefore revised to include direct radiation contributions from radioactive material postulated to accumulate on filters in the VES and VBS HVAC systems during design basis events. 2. In order to reduce the MCR operator direct radiation dose contribution from radioactive material postulated to accumulate on VES filter media during design basis events, shielding is added around the filters and is accounted for in the revised radiation analysis model. Consequence analyses considering filter contributions assume that control room occupants are located below these filters, using the defined occupancy factors (DCD Revision 19, Table 15.6.5-2, sheet 2 of 3). 3. In order to partially offset increases in calculated MCR operator dose due to consideration of direct radiation from VES filter media and other corrections identified in this response, the VES filter efficiency for organic iodine is increased from 30% to 90% (DCD Revision 19 Table 15.6.5-2, sheet 2 of 3). DCD Revision 19 post accident dose analyses applied an organic iodine filter efficiency of 30% to VES filtration units based on Regulatory Guide 1.52 Revision 2 and a conservative assumption that relative humidity within the MCR could exceed 95% following an accident. As part of AP1000 detailed design, environmental conditions have been evaluated to	Address Main Control Room Dose Analysis, Enclosure 3, Attachment 3, Item 3, WLG2016.02-03

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					show that the humidity within the MCR is not expected to exceed 95%. Further, humidity is not expected to exceed 60% within the first 72 hours of an event, the time frame during which the filter would be operating, or exceed 95% at any time post accident. Thus, the higher filter efficiency can be credited in the MCR dose analyses consistent with Regulatory Guide 1.52 Revision 2. Additionally, it is noted that the analyses model an "overall" efficiency for each chemical form being filtered (elemental, organic, particulate). This overall efficiency accounts for filter media sizing (e.g. charcoal bed depth) and the potential for bypass around the filter. 4. During AP1000 detailed design and re-evaluation of MCR doses to include consideration of HVAC filter contributions (Item A.1.), it was determined that the VBS radiation monitor setpoints applied in MCR dose calculations supporting DCD Revision 19 were not selected in a manner that a) ensures compliance with the GDC-19 for all postulated accident conditions including Design Basis Accidents (DBAs) evaluated in DCD Revision 19 Chapter 15, or b) fully supports the AP1000 design objective to use VBS supplemental filtration mode (SFM) when available rather than VES actuation to provide the MCR radiological protection function. For postulated accident conditions involving a reduced source term or release rate other than evaluated for DBAs as part of the certified design, there may not be sufficient radioactivity within the MCR Envelope to prompt actuation of VES, and yet, enough radioactivity could exist that would lead to operator doses in excess of 5 rem without manual actuation. The radiation monitor setpoint values are therefore updated to ensure VBS or VES filtration mode actuation occurs for any radiological release event that could result in MCR operator doses in excess of GDC-19. One of the fundamental objectives of VBS as described in DCD Revision 19 Section 9.4.1 is to "...minimize the potential for actuation of the main control room emergency habitability system...". This change uses a non-safety High-1 signal to actuate VBS SFM and the existing safety-related signal (High-2) to actuate VES in a manner that ensures High-2 would only be reached if VBS SFM was not functioning properly or is insufficient. This change also addresses release scenarios where high concentrations of particulates or iodine may exist with low levels of noble gas. If such a release occurred without this VBS setpoint logic change, direct VES actuation could be induced without the opportunity for VBS SFM to be actuated. B. Large Break Loss of Coolant Accident (LOCA) Dose Consequence Changes AP1000 generic changes impacting the LOCA MCR operator dose evaluations presented in DCD Sections 6.4 and 15.6.5 required to address MCR dose analysis errors include: 1. Dose contributions from adjacent structure direct and skyshine radiation included MCR operator dose results for LOCA as reported in DCD Revision 19 are based upon AP600 post-accident dose calculations and assume the presence of shielding that was not included in the AP1000 design. Post-accident radiological dose calculations are therefore changed to use updated AP1000 detailed design inputs and analyses for skyshine and direct radiation. The added dose incurred by this change is partially offset by other proposed changes. 2. In order to partially offset increases in calculated MCR operator dose due to consideration of direct radiation from VES filter media and other corrections identified in this response, changes are made to the containment elemental iodine removal coefficient and re-suspension models supporting the DCD Revision 19 LOCA dose analysis. Changes are made to the IRWST iodine re-evolution model. The changes involve a) the water/vapor partition factor modeled for elemental iodine and b) the timing associated with the conversion of elemental iodine to organic iodine and its availability for release. These refinements and modeling changes define the production of organic iodine based on re-evolved elemental iodine. The iodine source term applied in the LOCA dose analysis supporting DCD Revision 19 is based upon the NUREG-1465 source term described in Regulatory Guide 1.183. The analysis models a staged release of core activity (i.e. gap release and early in-vessel) to the containment atmosphere over the first ~2 hours following the start of the event. The chemical form of iodine released is assumed to be 95% particulate, 4.85% elemental, and 0.15% organic, consistent with Regulatory Guide 1.183. Particulate removal via passive processes (i.e. diffusiophoresis, thermophoresis, and sedimentation) and elemental iodine removal via deposition are modeled.	

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Organic iodine removal via processes other than decay or leakage from containment is not modeled. Particulates removed to the containment shell are assumed to be washed off the shell by the flow of water resulting from condensing steam (i.e. condensate flow). The particulates may be either washed into the sump, which is controlled to a pH greater than 7 post-accident or into the IRWST, which is not pH controlled post-accident. Due to the assumed conditions in the IRWST, the particulate iodine washed into the IRWST may chemically convert to an elemental form and re-evolve, subject to partitioning, as airborne. A portion (3%) of that airborne elemental iodine is then assumed to convert to an organic form. This is consistent with elemental organic split assumed for the initial release from the core (4.85/0.15 = 97/3) and is consistent the Regulatory Guide 1.183 guidance for other events. The calculational approach to account for the iodine that is assumed to re-evolve from the IRWST post-LOCA is overly conservative in the certified design analysis. The certified design analysis applies a water-vapor partition factor of 5 for elemental iodine and neglects the time dependent formation of organic iodine from elemental iodine; the organic iodine that would be formed over time is assumed to be present at time zero. NUREG-1465 states that "It is unduly conservative to assume that organic iodine is not removed at all from containment atmosphere, once generated, since such an assumption can result in an overestimate of the long-term doses to the thyroid." The revised analysis approach applies a conservative water/vapor elemental iodine partition factor of 10, selected to conservatively bound the time-dependent partition factors calculated using the NUREG/CR-5950 models and IRWST temperature and pH as a function of time. Additionally, the conversion of elemental iodine to organic iodine is modeled on a time-dependent basis in which 3% of the evolved elemental iodine is assumed to convert to an organic form upon its release to containment. It is noted that this does not impact the percentage of iodine assumed to convert to the organic form. The passive containment elemental iodine deposition removal coefficient is also increased from the 1.7 hr-1 value applied in DCD Revision 19 LOCA dose calculations to 1.9 hr-1. The larger elemental iodine removal rate constant is calculated based on a larger containment deposition surface area documented during the AP1000 detailed design. The DCD Revision 19 elemental iodine removal rate constant was based on an assumed 219,000 ft2 deposition surface area. Updated detailed design calculations have documented a 251,000 ft2 deposition surface area. C. Main Steam Line Break (MSLB) Dose Consequence Changes AP1000 generic changes impacting the MSLB MCR operator dose evaluations presented in DCD Sections 6.4 and 15.1.5 required to address MCR dose analysis errors include: 1. The AP1000 steam line break accident analysis described in DCD Revision 19 assumes a 10 minute faulted steam generator (SG) blowdown based on a Hot Zero Power (HZP) SG mass released at an average rate. This HZP case is conservative for offsite dose. It was determined, however, that a full power SG mass could lead to SG dry-out occurring at ~200 seconds. Earlier dry-out is more limiting for the purposes of operator post-accident dose calculations. To ensure a conservative dose for both offsite and MCR, the HZP initial mass was retained, a bounding release rate was modeled until 300 seconds, and any remaining activity was released thereafter. 2. In order to offset increases in calculated MCR operator dose for MSLB due to consideration of a bounding release rate and other corrections identified in this response, the Technical Specification limit for secondary iodine activity is reduced from 0.1 to 0.01 microcurie/gram dose equivalent (DE) I-131 (Limiting Condition for Operation (LCO) 3.7.4). The current Technical Specification (TS) limit for secondary iodine activity is 0.1microcurie/gram dose equivalent (DE) I-131 (LCO 3.7.4). This is a standard value, however the TS bases refer to the steam line break analysis; in other words, the steam line break analysis defines the level of secondary activity that is acceptable. The maximum secondary activity is also limited by other TS limits. Specifically, the primary coolant specific activity concentration limit of 1 microcurie/gram DE I-131 (based on the design basis fuel defect of 0.25%) and the TS primary to secondary leakage limit of 300 gallons per day.	

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Using these values, the secondary side coolant activity is calculated to be 8.3E-4 microcurie/gram DE I-131, which is orders of magnitude below the current TS limit. The TS limit for secondary iodine activity is therefore revised from 0.1 microcurie/gram DE I-131 to 0.01 microcurie/gram DE I-131. The change does not impact the operational margin, as the secondary side specific activity is limited to values lower than the new proposed TS limit by the TS primary to secondary leakage limit and the design basis fuel defect. The revised value of 0.01 microcurie/gram DE I-131 is within the detection capability of existing instrumentation and is significantly above the typical secondary coolant activities observed at operating plants. No additional sampling or modifications to the frequency of LCO 3.7.4 are needed. D. Rod Ejection Accident (REA) Dose Consequence Changes AP1000 generic changes impacting the REA MCR operator dose evaluations presented in DCD Sections 6.4 and 15.4.8 required to address MCR dose analysis errors include: 1. The method for performing the REA dose analysis has changed from that applied in DCD Revision 19. As stated in NUREG-1793, the NRC accepted the use of NUREG-0800 Section 4.2 Revision 2 for design certification of the AP1000 plant. However, in NUREG-1793 Supplement 2 it is stated that: "For COL applicants or licensees who reference the AP1000 or AP600 certified designs, the staff will review any change or departure from the certified design that requires prior NRC approval as specified in Section VIII of Appendices C and D to 10 CFR Part 52, respectively. The staff will evaluate the reactivity-initiated accidents such as rod ejection accidents based on the acceptance criteria in effect 6 months before docketing the amendment request, such as the interim acceptance criteria specified in Appendix B to NUREG-0800 Section 4.2, Revision 3, if a change or departure in fuel design or other aspects is proposed that requires a reevaluation of final safety evaluation report Chapter 4, "Reactor," or Chapter 15, "Transient and Accident Analysis." Due to the need to incorporate other design changes in the REA MCR operator dose calculations, NUREG-0800 Section 4.2 Revision 3 is used for recalculation of the rod ejection dose analysis, which results in a significant impact to the rod ejection dose analysis. NUREG-0800 Section 4.2 Revision 3 precludes fuel melt, providing a dose benefit, but also connects the source term to the fuel enthalpy increase, which is a significant dose penalty. The dominant contributor to the increased dose is the increase by a factor of more than 5 in alkali metal releases. 2. The full-power moisture carryover from the steam generators used in the AP1000 REA dose analysis was increased from 0.1% to 0.35%. This input is used to calculate alkali metal releases from the SGs in the AP1000 REA dose analysis. This input was updated to be consistent with the updated AP1000 plant design. 3. The REA dose analysis results are updated to account for a reduction in the Technical Specification limit for secondary iodine activity from 0.1 to 0.01 microcurie/gram dose equivalent (DE) I-131 as described for the updated MSLB analysis in Item C.2., above. 4. The radial peaking factor has been adjusted to a value of 1.75. This provides a more conservative input than the DCD Revision 19 value and provides additional future core design margin. 5. The passive containment elemental iodine deposition removal coefficient is also increased from the 1.7 hr-1 value applied in DCD Revision 19 LOCA dose calculations to 1.9 hr-1. The larger elemental iodine removal rate constant is calculated based on a larger containment deposition surface area documented during the AP1000 detailed design. The DCD Revision 19 elemental iodine removal rate constant was based on an assumed 219,000 ft2 deposition surface area. Update detailed design calculations have documented a 251,000 ft2 deposition surface area. E. Steam Generator Tube Rupture (SGTR) Dose Consequence Changes	

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					AP1000 generic changes impacting the SGTR MCR operator dose evaluations presented in DCD Sections 6.4 and 15.6.3 required to address MCR dose analysis errors include: 1. The full-power moisture carryover from the intact steam generator used in the AP1000 SGTR dose analysis was increased from 0.1% to 0.35%. This input is used to calculate alkali metal releases from non-faulted SG in the AP1000 SGTR dose analysis. This input was updated to be consistent with the updated AP1000 plant design. 2. The full-power moisture carryover from the ruptured loop steam generator used in the AP1000 SGTR dose analysis was increased from 0.1% to 0.35%. This input is used to calculate alkali metal releases from the faulted SG in the AP1000 SGTR dose analysis. This input was updated to be consistent with the updated AP1000 plant design. 3. The SGTR results are updated to account for a reduction in the Technical Specification limit for secondary iodine activity from 0.1 to 0.01 microcurie/gram dose equivalent (DE) I-131 as described for the updated MSLB analysis in Item C.2., above. F. Locked Rotor Accident Dose Consequence Changes AP1000 generic changes impacting the locked rotor MCR operator dose evaluations presented in DCD Sections 6.4 and 15.3.3 required to address MCR dose analysis errors include: 1. The full-power moisture carryover from the steam generators used in the AP1000 locked rotor dose analysis was increased from 0.1% to 0.35%. This input was updated to be consistent with the updated AP1000 plant design. 2. The locked rotor results are updated to account for a reduction in the Technical Specification limit for secondary iodine activity from 0.1 to 0.01 microcurie/gram dose equivalent (DE) I-131 as described for the updated MSLB analysis in Item C.2., above. 3. The radial peaking factor has been adjusted to a value of 1.75. This provides a more conservative input than the DCD Revision 19 value and provides additional future core design margin. G. Small Line Break Outside Containment Dose Consequence Changes AP1000 generic changes impacting the small line break outside containment MCR operator dose evaluations presented in DCD Sections 6.4 and 15.6.2 required to address MCR dose analysis errors include: 1. The fraction of reactor coolant flashed was increased from the value used in DCD Revision 19 supporting calculations of 0.41 to 0.47 based on the updated detailed design. The certified design analysis used vessel average temperature (Tavg) as the basis for the flashing fraction. It was determined that the sample lines draw from the hot leg, thus, a hot leg temperature (which is greater than Tavg) was used. H. Fuel Handling Accident (FHA) Dose Consequence Changes AP1000 generic changes impacting the FHA MCR operator dose evaluations presented in DCD Sections 6.4 and 15.7.4 required to address MCR dose analysis errors include: 1. The radial peaking factor has been adjusted to a value of 1.75. This provides a more conservative input than the DCD Revision 19 value and provides additional future core design margin. 2. No unique accident specific changes. In addition to the required changes summarized above, other generic changes associated with AP1000 detailed design are incorporated in revised MCR dose calculations. These include: a) The MCR pressure boundary consists of the main control area, operator work area, mezzanine, operator	

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					break room, shift manager's office, kitchen area, and restrooms. The vestibule to enter the MCR and stairwell to the remote shutdown room is outside of the MCR pressure boundary. The MCR and MCR HVAC volumes are recalculated based on updated detailed design data, and are used as input to revised post-accident operator dose analyses. b) The VBS normal operation to VBS SFM switchover time and the response time to actuate VES used in DCD Revision 19 supporting analyses have been determined to be non-bounding. The certified design analyses used assumed/expected values that were ultimately not supportable by the updated detailed design. System-level requirements are developed for switch over and response times; these system-level requirements account for sample transport time, radiation detector response time, I&C response times, and VBS/VES equipment actuations (e.g. valves, dampers, etc.). The dose analyses for cases considering VBS SFM are revised to include a longer delay time between the point when airborne radioactivity in the control room reaches the High-1 setpoint concentration and when the VBS SFM is operational. The dose analyses for cases considering VES are revised to include a longer response time between the point when the High-2 setpoint is reached and when the VES is operational. c) DCD Revision 19 post accident dose calculations model a normal VBS inflow rate of 1925 cfm until MCR isolation. This is the path for the released activity to enter the MCR. This value is based on an assumed preliminary design value of 1750 cfm and adding a 10% penalty to account for instrumentation uncertainty. A VBS outside air intake flow rate calculated as part of detailed design indicates a nominal outside air flow rate of 1320 cfm. The normal VBS outside air flow rate assumption used in the accident operator dose calculations is therefore decreased accordingly. It is noted that during plant start-up, the HVAC system is balanced and dampers that have specific criteria under certain modes of operation are adjusted to have a preset position which can then be controlled from the MCR. To address a potential inaccuracy of the damper positioning, a nominal value of 1500 cfm is established for the normal VBS outside air flow rate. For dose analyses, the assumed normal VBS outside air flow rate will therefore be 1650 cfm, which corresponds to 1500 cfm +10%. d) The VBS ancillary fan MCR air intake flow rate is also increased to 1900 cfm. The previous assumption of 1700 cfm had been specified as a minimum as part of the detailed design. For conservatism, the 1700 cfm was increased by 10% and rounded up to 1900 cfm. Although these changes are considered as part of the updated MCR dose calculations, they are being implemented as general detailed design updates and are not specifically implemented to offset impacts of errors otherwise being addressed as part of this RAI response. Departure Justification: The proposed changes do not involve a significant reduction in the margin of safety. The proposed changes do not reduce the redundancy or diversity of any safety-related SSCs. The proposed changes improve the mitigating capabilities of the MCR Habitability System and address the MCR dose analysis errors. The MCR dose to the operators slightly decreases for the limiting DBA (LBLOCA) and the analysis shows that the results do not exceed the GDC-19 requirements of 5 rem. In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) approval of the change will not be inimical to the health and safety of the public or to the common defense and security. Departure Evaluation: This Tier 2 departure makes the changes stated above. The departure does not involve a significant reduction in the margin of safety and does not reduce the redundancy or diversity of any safety-related SSCs. Analysis results show that the MCR dose does not exceed GDC requirements of 5 rem. Therefore: 1. This proposed departure does not impact the frequency of occurrence of an accident previously evaluated in the plant-specific DCD. Therefore there is not more than a minimal increase in the frequency of occurrence.	

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					2. This proposed departure does not impact the likelihood of a malfunction of an SSC. Shielding is a passive function that does not impact HVAC function and is designed to remain in place under seismic conditions. The switchover times from normal HVAC in the control room (VBS) to either the VBS supplemental filtration mode or to the emergency habitability system (VES) are analyzed to determine conservative setpoints to establish bounding system-level requirements for each system participating in the switchover. 3. New analyses determined that the radiation dose to the operator during the limiting DBA (LBLOCA) decreased from 4.41 rem to 4.33 rem and continues to meet the GDC limit of 5 rem. However, the radiation dose to the operator during the rod ejection accident increased from 1.8 to 3.6 rem. Therefore, this departure does result in more than a minimal increase in the consequences of an accident previously evaluated in the plant-specific DCD. 4. Potential malfunctions of the HVAC system operation and switchover modes were analyzed and evaluated, and there were no design changes affecting or increasing source terms. Therefore, this departure will not result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD. 5. This departure does not impact the possibility of accidents, and therefore does not create a possibility for an accident of a different type than previously evaluated in the plant-specific DCD. 6. The operability of the HVAC system with the different modes of operation (VBS w/SFM vs. VES) along with the interface of the RMS was analyzed and evaluated for adverse effects. It was determined that this departure would not create a possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously in the plant-specific DCD. 7. This departure does not result in a design basis limit for a fission product barrier as described in the plant-specific DCD being exceeded or altered. 8. This departure proposes a refinement of the iodine evolution/re-evolution model, and a new computer code is used for recalculation of the rod ejection dose analysis. The use of the new iodine model and new rod ejection computer code is therefore considered to be a departure from a method of evaluation described in the plant-specific DCD used in establishing the design bases or in the safety analyses. This departure does not affect resolution of a severe accident issue identified in the plant-specific DCD. Therefore, this departure has no safety significance. NRC Approval Requirement: This departure requires an exemption from the requirements of 10 CFR Part 52, Appendix D, Section III.B, which requires compliance with Tier 1 requirements of the AP1000 DCD and the generic Technical Specifications. Therefore, an exemption is requested in Part B of this COL Application Part. This departure also requires NRC approval pursuant to 10 CFR Part 52, Appendix D, Section VIII.B.5.	
11986	WLS	Pt 07		A.2 6.4-2	COLA Part 7, Departures and Exemption Requests, is revised to add the following departure to the table presented in Section A.2 as follows: Departure Number Description WLS DEP 6.4-2 Main Control Room Heatup	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 3, Item 2, WLG2016.02-04
11987	WLS	Pt 07		A.2 6.4-2	COLA Part 7, Departures and Exemption Requests, is revised to add the following departure to Section A.2 as follows:	Duke Energy Voluntary Submittal of Exemption

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Departure WLS DEP 6.4-2 is a departure from AP1000 Tier 1 information, in addition to Tier 2 information in the DCD; an exemption request and NRC approval is required prior to implementation. Departure Number WLS DEP 6.4-2: Affected DCD/FSAR Sections: Tier 1 Tables 2.2.5-1, 2.2.5-4, 2.5.2-3, 2.5.2-4 Tier 2 Table 3.7.3-1 (Sheets 1 and 2 of 3), Table 3.9-12 (Sheet 6 of 7), Table 3.9-16 (Sheet 23 of 26), Table 3.9-17, Table 3.11-1 (Sheets 17, 30 and 47 of 51), Figure 3D.5-1 (Sheet 1 of 3), Table 3I.6-2 (Sheet 11 of 28), Table 3I.6-3 (Sheets 10 and 28 of 32), Subsections 6.4.2.2, 6.4.2.3, 6.4.3.2, 6.4.4, 6.4.5.1, 6.4.5.3 and 6.4.8, Table 6.4-3, Figure 7.2-1 (Sheet 13 of 21), Subsection 7.3.1.2.17, Table 7.3-1 (Sheet 7 of 9), Table 7.3-3 (Sheet 2 of 2), Table 7.5-1 (Sheet 11 of 12), Table 7.5-7 (Sheet 4 of 4), Subsections 9.3.1.1.2, 9.4.1.1.2, 9.4.1.2.3.1 and 14.2.9.1.6, Table 14.3-7 (Sheet 1 of 3), TS 3.3.2, TS 3.7.6, TS B 3.3.2, TS B 3.7.6, TS Figure B 3.7.6-2. Summary of Departure: The AP1000 Design Control Document (DCD), Revision 19 describes a Main Control Room (MCR) Emergency Habitability System (VES) design objective of maintaining a habitable environment in the main control room envelope (MCRE) for 72 hours after VES actuation. The MCRE temperature modeling was based on a scenario with normal ac power not available and therefore, no heat contribution from normal ac powered loads. However, a more limiting event has been identified where the VES actuates, resulting in the isolation of the MCRE, without a loss of normal ac power. With normal ac power available, all equipment in the MCRE continues to generate heat, potentially raising the temperature above the human engineering design and equipment qualification guidelines for temperature that are referenced in the DCD. Also, the original MCRE temperature modeling was based on the AP600 configuration. AP1000 design evolution and finalization, which included the addition of sixteen new wall panel displays, has increased the heat load in the MCRE. In order to address these issues, a departure from information presented in the generic DCD is necessary. This departure makes several changes to ensure that the VES can perform its design functions. These changes consist of adding load shedding devices, raising equipment qualification (EQ) temperature requirements, revising Technical Specifications (TS) and reclassifying VES components. These changes will make the VES system more robust and will ensure that habitability and EQ requirements are met in the most limiting event scenario. Scope/Extent of Departure: There are 4 basic changes proposed by this departure: 1. Non-essential equipment in the MCRE will be automatically de-energized by new load shedding devices. 2. TS will be modified to ensure that MCRE exterior temperatures do not exceed values assumed in supporting calculations, to ensure the quality of the air in the VES storage tanks and to ensure availability of the new VES load shedding function. 3. The EQ temperature requirement for safety related equipment in the MCRE will be increased. 4. Two valves in the VES system will be re-classified to "active" valves to facilitate offsite support following the depletion of compressed air in the VES. Change 1 - Load Shedding: To compensate for the increased heat loads, new load shedding equipment will be added to automatically shed non-essential, non-safety related loads, beginning upon actuation of VES. The new load shedding equipment is safety related and designed with the requisite redundancy, separation, isolation, and equipment qualification requirements. With these non-essential, non- safety related loads shed as described, the temperature modeling concludes that the 72 hour VES design objective for habitability will be met. However, even with the load shedding, the heat generation rate for the AP1000 design is greater than originally assumed, so values included in AP1000 DCD Tier 1 and Tier 2 tables will be revised. Change 2 - TS Changes: Ongoing construction of the AP1000 has revealed that insulating materials on some of the exterior walls of the	Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 3, Item 3, WLG2016.02-04

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					MCRE cannot be installed as indicated in the DCD. To compensate for the loss of insulating materials, assumptions were made in the revised MCRE heat up calculations concerning maximum initial room temperatures outside the MCRE prior to a VES actuation. These assumptions were determined to require new TS actions and surveillances addressing room temperature, the new electrical load shed function and air quality in the VES storage tanks. Change 3: Equipment Qualification Temperature Requirement: Utilizing the load shedding scheme described in Change 1, the MCRE will remain below the MCRE's maximum habitability temperature limit for the 72 hour design basis of VES. After 72 hours, the Nuclear Island Non-Radioactive Ventilation System (VBS) can be aligned to circulate air into the MCRE from outside the plant. Based on maximum anticipated outdoor temperature, the calculated temperature in the MCRE could reach a maximum of 110°F. Therefore, a new temperature requirement of 110°F is established for EQ of safety related equipment located in the MCRE. This will ensure that equipment will operate as required. Change 4: Two Valves Reclassified: The capability of offsite support is expanded by reclassifying two VES manual valves. These valves are to be changed from "non-active" valves to "active" valves in order to maintain open and close capabilities following design basis accidents. With this re-classification, these manually operated valves provide a connection for offsite support during the post 72 hour operation of VES. Changing the classification impacts a Tier 1 table in the DCD. Departure Justification: The proposed changes do not involve a significant reduction in the margin of safety. The proposed changes do not reduce the redundancy or diversity of any safety-related structures, systems or components (SSCs). The proposed changes ensure that the VES system can perform its design functions including maintaining an environment suitable for MCRE habitability and EQ. Based on these considerations: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) approval of the change will not be inimical to the common defense and security or to the health and safety of the public. Departure Evaluation: This departure adds safety related equipment to shed non-essential, non-safety related loads, increases the EQ temperature requirements for safety related equipment in the MCRE, and provides for a connection for offsite support following depleting of VES compressed air. This departure also adds TS actions and surveillances to ensure temperature limits are not exceeded and that equipment operates as designed. These changes will ensure that the MCRE habitability and EQ requirement are met in the most limiting event scenario. The departure does not involve a significant reduction in the margin of safety and does not reduce the redundancy or diversity of any safety-related SSCs. Therefore, this departure does not: 1. Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the plant-specific DCD. 2. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of an SSC important to safety and previously evaluated in the plant-specific DCD. 3. Result in more than a minimal increase in the consequences of an accident previously evaluated in the plant-specific DCD. 4. Result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD. 5. Create a possibility for an accident of a different type than any evaluated previously in the plant-specific DCD. 6. Create a possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously in the plant-specific DCD. 7. Result in a design basis limit for a fission product barrier as described in the plant- specific DCD being exceeded or altered.	

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					8. Result in a departure from a method of evaluation described in the plant-specific DCD used in establishing the design bases or in the safety analyses. This departure does not affect resolution of a severe accident issue identified in the plant- specific DCD. Therefore, this departure has no safety significance. NRC Approval Requirement: This departure requires an exemption from the requirements of 10 CFR Part 52, Appendix D, Section III.B, which requires compliance with Tier 1 requirements of the AP1000 DCD and the generic Technical Specifications. Therefore, an exemption is requested in Part B of this COL Application Part.	
11971	WLS	Pt 07		A.2 7.3-1	COLA Part 7, Departures and Exemptions Requests, Section A.2 is revised under the subheading Departure Number WLS DEP 7.3-1 as follows: Departure Number WLS DEP 7.3-1 Affected DCD/FSAR Sections: DCD Figure 7.2-1 (Sheet 3 of 21), Table 7.3-1 (Sheets 6 and 7of 9), Table 7.3-2 (Sheet 1 of 4), Subsections 7.3.1.2.14, 9.3.6.3.7, 9.3.6.4.5.1, 9.3.6.7, Table 14.3-2 (Sheets 9 and 12 of 17), Chapter 16 (TS Table 3.3.2-1 (Pages 9 and 10 of 13), TS Bases B 3.3.1 and B 3.3.2), and Subsection 19E.2.7.2.	Duke Energy Endorsement of Voluntary Submittal of Response to the LNP (DEF) Request For Additional Information Letter No. 135 Related To IEEE 603 and Source Range Nuclear Instrumentation Flux Doubling, Enclosure Item 3, WLG2016.02-05.
12172	WLS	Pt 07		B 3	COLA Part 7, Departures and Exemption Requests, Section B is revised at the entry for Exemption Request 3 as follows: 3) Containment Cooling Changes in regard to Passive Core Cooling System Condensate Return Applicable Regulation(s): 10 CFR Part 52 Appendix D, Section III.B Specific wording from which exemption is requested: "III. Scope and Contents B. An applicant or licensee referencing this appendix, in accordance with Section IV of this appendix, shall incorporate by reference and comply with the requirements of this appendix, including Tier 1, Tier 2 (including the investment protection short-term availability controls in Section 16.3 of the DCD), and the generic TS except as otherwise provided in this appendix. Conceptual design information in the generic DCD and the evaluation of severe accident mitigation design alternatives in appendix 1B of the generic DCD are not part of this appendix." Pursuant to 10 CFR §52.63(b)(1), an exemption from elements of the design as certified in the 10 CFR Part 52, Appendix D, design certification rule is requested for plant-specific Tier 1 material departures from the AP1000 DCD for Tier 1 information and for a material departure from the generic Technical Specifications. These material departures are contained in Tier 1 Subsection 2.2.3, Tables 2.2.3-1 and 2.2.3-2, and involve the addition of components to the condensate return design to enable the Passive Core Cooling System to more effectively perform its design functions. The material departures also include a change to Technical Specifications Surveillance Requirement 3.5.4.7 which involves adding the downspout screens. This exemption request is in accordance with the provisions of 10 CFR §50.12, 10 CFR §52.7, and 10 CFR Part 52, Appendix D. Discussion: The changes requested to Tier 1 Table 2.2.3-1 and Table 2.2.3-2 and associated Tier 2 changes to Subsections 1.9.4.2.2 and 1.9.5.1.5, Table 3.2-3, Figure 3.8.2-1, Subsections 5.4.5.2.1, 5.4.11.2 and 5.4.14.1, Subsections 6.3.1.1.1, 6.3.1.1.4, 6.3.1.1.6, 6.3.1.2, 6.3.1.3, 6.3.2.1, 6.3.2.1.1, 6.3.2.2.5, 6.3.2.2.7, 6.3.2.8, 6.3.3, and 6.3.3.2.1.1 and Figures 6.3-1 and 6.3-2, Section 7.4, Subsection 7.4.1.1, Table 14.3-2, Subsections 15.0.3 and 15.2, Technical Specifications Surveillance Requirement 3.5.4.7, Technical Specifications Bases B 3.3.3 and B 3.5.4, Subsections 19E.2.3.2.6 and 19E.4.10.2, Table 19E.4.10-1, and Figures 19E.4.10-1 through 19E.4.10-4	Duke Energy Supplement 2 to Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Containment Condensate Return Cooling Design, Enclosure 7, Item 38, WLG2016.02-01

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					provide additional equipment and surveillance requirements, provide reasonable assurance that the facility has been constructed and will be operated in conformity with the applicable design criteria, codes and standards, and demonstrate acceptable Passive Core Cooling System (PXS) system performance during design basis scenarios. Conclusion: This exemption request is evaluated in accordance with 10 CFR Part 52, Appendix D, Section VIII.A.4, 10 CFR §50.12, 10 CFR §52.7 and 10 CFR §52.63, which state that the NRC may grant exemptions from the requirements of the regulations provided the following six conditions are met: 1) the exemption is authorized by law [§50.12(a)(1)]; 2) the exemption will not present an undue risk to the health and safety of the public [§50.12 (a)(1)]; 3) the exemption is consistent with the common defense and security [§50.12(a)(1)]; 4) special circumstances are present [§50.12(a)(2)]; 5) the special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption [§52.63(b)(1)]; and 6) the design change will not result in a significant decrease in the level of safety [Part 52, Appendix D, VIII.A.1]. The requested exemption satisfies the criteria for granting specific exemptions, as described below. 1) This exemption is authorized by law The NRC has authority under 10 CFR §§ 50.12, 52.7, and 52.63 to grant exemptions from the requirements of NRC regulations. Specifically, 10 CFR §§50.12 and 52.7 state that the NRC may grant exemptions from the requirements of 10 CFR Part 52 with proper justification. No law exists that would preclude the changes covered by this exemption request. Additionally, granting of the proposed exemption does not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Accordingly, this requested exemption is "authorized by law," as required by 10 CFR §50.12(a)(1). 2) This exemption will not present an undue risk to the health and safety of the public The proposed exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would allow changes to elements of the plant-specific Tier 1 DCD to depart from the AP1000 certified (Tier 1) design information and a change to a Technical Specifications Surveillance Requirement to depart from the AP1000 certified (Tier 2) information. The plant-specific Tier 1 DCD will continue to reflect the approved licensing basis for the applicant, and will maintain a consistent level of detail with that which is currently provided elsewhere in Tier 1 of the plant-specific DCD. Because the change to the condensate return portion of the passive core cooling system description maintains its design functions, the changed design will ensure the protection of the health and safety of the public. Therefore, no adverse safety impact which would present any additional risk to the health and safety is present. The affected Design Description in the plant-specific Tier 1 DCD will continue to provide the detail necessary to support the performance of the associated ITAAC. Therefore, the requested exemption from 10 CFR 52, Appendix D, Section III.B would not present an undue risk to the health and safety of the public. 3) The exemption is consistent with the common defense and security The exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would change elements of the plant-specific Tier 1 DCD by departing from the AP1000 certified (Tier 1) design information relating to the condensate return portion of the passive core cooling system and departing from the Tier 2 generic Technical Specifications to include surveillance of added plant equipment. The exemption does not alter the design, function, or operation of any structures or plant equipment that are necessary to maintain a safe and secure status of the plant. The proposed exemption has no impact on plant security or safeguards procedures. Therefore, the requested exemption is consistent with the common defense and security. 4) Special circumstances are present	

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					10 CFR §50.12(a)(2) lists six "special circumstances" for which an exemption may be granted. Pursuant to the regulation, it is necessary for one of these special circumstances to be present in order for the NRC to consider granting an exemption request. The requested exemption meets the special circumstances of 10 CFR §50.12(a)(2)(ii). That Subsection defines special circumstances as when "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule." The rule under consideration in this request for exemption from Tier 1 Subsection 2.2.3, Tables 2.2.3-1 and 2.2.3-2, and the Tier 2 generic Technical Specifications is 10 CFR 52, Appendix D, Section III.B, which requires that an applicant referencing the AP1000 Design Certification Rule (10 CFR Part 52, Appendix D) shall incorporate by reference and comply with the requirements of Appendix D, including Tier 1 information and generic Technical Specifications. The WLS Units 1 and 2 COLA references the AP1000 Design Certification Rule and incorporates by reference the requirements of 10 CFR Part 52, Appendix D, including Tier 1 information and generic Technical Specifications. The underlying purpose of Appendix D, Section III.B is to describe and define the scope and contents of the AP1000 design certification, and to require compliance with the design certification information in Appendix D to maintain the level of safety in the design. The proposed changes to the condensate return portion of the passive core cooling system maintain the design margins of the Passive Core Cooling System. This change does not impact the ability of any structures, systems, or components to perform their functions or negatively impact safety. Accordingly, this exemption from the certification information in Tier 1 Subsection 2.2.3, Tables 2.2.3-1 and 2.2.3-2, and Technical Specifications Surveillance Requirement 3.5.4.7 will enable the applicant to safely construct and operate the AP1000 facility consistent with the design certified by the NRC in 10 CFR 52, Appendix D. Therefore, special circumstances are present, because application of the current generic certified design information in Tier 1 and the generic Technical Specification as required by 10 CFR Part 52, Appendix D, Section III.B, in the particular circumstances discussed in this request is not necessary to achieve the underlying purpose of the rule. 5) The special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption Based on the nature of the changes to the plant-specific Tier 1 information and Tier 2 generic Technical Specifications and the understanding that these changes support the design function of the Passive Core Cooling System, it is likely that other AP1000 applicants and licensees will request this exemption. However, if this is not the case, the special circumstances continue to outweigh any decrease in safety from the reduction in standardization because the key design functions of the Passive Core Cooling System associated with this request will continue to be maintained. This exemption request and the associated marked-up tables and Technical Specifications Surveillance Requirements demonstrate that the Passive Core Cooling System function continues to be maintained following implementation of the change from the generic AP1000 DCD, thereby minimizing the safety impact resulting from any reduction in standardization. Therefore, the special circumstances associated with the requested exemption outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption. In fact, as described in Condition 6 below, the exemption will result in no reduction in the level of safety. 6) The design change will not result in a significant decrease in the level of safety The exemption revises the plant-specific DCD Tier 1 information by adding components to Subsection 2.2.3, Tables 2.2.3-1 and 2.2.3-2, which were added to the condensate return design to enable the Passive Core Cooling System to more effectively perform its design functions. This exemption also revises the generic Technical Specifications Surveillance Requirement 3.5.4.7 to add the downspout screens to the surveillance. Because the Passive Core Cooling System design functions are met, there is no reduction in the level of safety. Therefore, the design change and associated change to the Technical Specifications will not result in a	

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					significant decrease in the level of safety. As demonstrated above, this exemption request satisfies NRC requirements for an exemption to the design certification rule for the AP1000.	
11972	WLS	Pt 07		B 4	COLA Part 7, Departures and Exemptions Requests, Section B is revised under the subheading "4) Source Range Neutron Flux Doubling Block Permissive" Discussion as follows: Discussion: The changes requested to Tier 2 changes, to Figure 7.2-1 (Sheet 3 of 21),Subsection 7.3.1.2.14,Table 7.3-1 (Sheet 6 of 9), Table 7.3-1 (Sheet 7), Table 7.3.2, (Sheet 1 of 4), Subsection 9.3.6.3.7, Section 9.3.6.4.5.1, Subsection 9.3.6.7, Table 14.3-2 (Sheet 9 of 17), Table 14.3-2 (Sheet 12), Subsection 19E2.7.2, Technical Specifications Table 3.3.2-1 (Page 9, 10 of 13), Tech Spec Bases Section B3.3.1 APPLICABLE SAFETY ANALYSES, LCOs, and APPLICABILITY, Subsection 16 (Page B 3.3.1-23), Tech Spec Bases Section B3.3.2 ACTIONS (Page 3.3.2-57), Tech Spec Bases Section B3.3.2, Subsection 15, Tech Spec Bases Section B3.3.2, add Subsection 18.d. provide additional equipment and TS requirements, provide reasonable assurance that the facility has been constructed and will be operated in conformity with the applicable design criteria, codes and standards, and demonstrates acceptable performance during design basis scenarios and reactor startup.	Duke Energy Endorsement of Voluntary Submittal of Response to the LNP (DEF) Request For Additional Information Letter No. 135 Related To IEEE 603 and Source Range Nuclear Instrumentation Flux Doubling, Enclosure Item 4, WLG2016.02-05.
11980	WLS	Pt 07		B 5	COLA Part 7, Departures and Exemption Requests, is revised to add the following exemption request to the listing in Section B, Lee Nuclear Station Exemption Requests as follows: B. Lee Nuclear Station Exemption Requests Duke Requests the following exemptions related to: 5) Combustible Gas Control in Containment	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment, Enclosure 3, Item 8, WLG2016.01-01
11981	WLS	Pt 07		B 5	COLA Part 7, Departures and Exemption Requests is revised to add the following exemption request to the discussion and justifications in Section B, Lee Nuclear Station Exemption Requests as follows: 5) Combustible Gas Control in Containment Applicable Regulation(s): 10 CFR Part 52, Appendix D, Section III.B Specific wording from which exemption is requested: "III. Scope and Contents B. An applicant or licensee referencing this appendix, in accordance with Section IV of this appendix, shall incorporate by reference and comply with the requirements of this appendix, including Tier 1, Tier 2 (including the investment protection short-term availability controls in Section 16.3 of the DCD), and the generic TS except as otherwise provided in this appendix. Conceptual design information in the generic DCD and the evaluation of severe accident mitigation design alternatives in appendix 1B of the generic DCD are not part of this appendix." Pursuant to 10 CFR §52.63(b)(1), an exemption from elements of the design as certified in the 10 CFR Part 52, Appendix D, design certification rule is requested for a plant-specific Tier 1 non-material departure from the AP1000 DCD for Tier 1 information. This exemption request is in accordance with the provisions of 10 CFR §50.12, 10 CFR §52.7, and 10 CFR Part 52, Appendix D. Discussion: The changes requested to Tier 1 Table 2.3.9-3 and associated Tier 2 changes to Subsections 6.2.4.5.1 and 19.41.7 provide a revised acceptance criteria for hydrogen venting inside containment, provide reasonable	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment, Enclosure 3, Item 9, WLG2016.01-01

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					assurance that the facility has been constructed and will be operated in conformity with the applicable design criteria, codes and standards, and demonstrate acceptable Containment Hydrogen Control System performance during design basis scenarios. Conclusion: Duke Energy evaluated this exemption request in accordance with 10 CFR Part 52, Appendix D, Section VIII.A.4, 10 CFR §50.12, 10 CFR §52.7 and 10 CFR §52.63, which state that the NRC may grant exemptions from the requirements of the regulations provided the following six conditions are met: 1) the exemption is authorized by law [§50.12(a)(1)]; 2) the exemption will not present an undue risk to the health and safety of the public [§50.12(a)(1)]; 3) the exemption is consistent with the common defense and security [§50.12(a)(1)]; 4) special circumstances are present [§50.12(a)(2)]; 5) the special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption [§52.63(b)(1)]; and 6) the design change will not result in a significant decrease in the level of safety [Part 52, Appendix D, VIII.A.4]. The requested exemption satisfies the criteria for granting specific exemptions, as described below. 1) This exemption is authorized by law The NRC has authority under 10 CFR §§ 50.12, 52.7, and 52.63 to grant exemptions from the requirements of NRC regulations. Specifically, 10 CFR §§50.12 and 52.7 state that the NRC may grant exemptions from the requirements of 10 CFR Part 52 upon a proper showing. No law exists that would preclude the changes covered by this exemption request. Additionally, granting of the proposed exemption does not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Accordingly, this requested exemption is "authorized by law," as required by 10 CFR §50.12(a)(1). 2) This exemption will not present an undue risk to the health and safety of the public The proposed exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would allow changes to elements of the plant-specific Tier 1 DCD to depart from the AP1000 certified (Tier 1) design information. The plant-specific Tier 1 DCD will continue to reflect the approved licensing basis for the applicant, and will maintain a consistent level of detail with that which is currently provided elsewhere in Tier 1 of the plant-specific DCD. Because the change to the ITAAC acceptance criteria in Tier 1 Table 2.3.9-3 maintains the design margins of the Containment Hydrogen Control System, the changed acceptance criteria will ensure the protection of the health and safety of the public. Therefore, no adverse safety impact which would present any additional risk to the health and safety of the public is present. The affected Design Description in the plant-specific Tier 1 DCD will continue to provide the detail necessary to support the performance of the associated ITAAC. Therefore, the requested exemption from 10 CFR 52, Appendix D, Section III.B would not present an undue risk to the health and safety of the public. 3) The exemption is consistent with the common defense and security The exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would change elements of the plant-specific Tier 1 DCD by departing from the AP1000 certified (Tier 1) design information relating to the control of combustible gas inside containment. The exemption does not alter the design, function, or operation of any structures or plant equipment that are necessary to maintain a secure status of the plant. The proposed exemption has no impact on plant security or safeguards procedures. Therefore, the requested exemption is consistent with the common defense and security. 4) Special circumstances are present 10 CFR §50.12(a)(2) lists six "special circumstances" for which an exemption may be granted. Pursuant to the regulation, one of these special circumstances must be present in order for the NRC to consider granting an exemption request. The requested exemption meets the special circumstances of 10 CFR §50.12(a)(2)(ii). That subsection defines special circumstances as when "Application of the regulation in the particular circumstances	

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule." The rule under consideration in this request for exemption from Tier 1 Table 2.3.9-3 is 10 CFR 52, Appendix D, Section III.B, which requires that an applicant referencing the AP1000 Design Certification Rule (10 CFR Part 52, Appendix D) shall incorporate by reference and comply with the requirements of Appendix D, including Tier 1 information. The Lee Units 1 and 2 COLA references the AP1000 Design Certification Rule and incorporates by reference the requirements of 10 CFR Part 52, Appendix D, including Tier 1 information. The underlying purpose of Appendix D, Section III.B is to describe and define the scope and contents of the AP1000 design certification, and to require compliance with the design certification information in Appendix D to maintain the level of safety in the design. The proposed change to the ITAAC acceptance criteria for combustible gas control maintains the design margins of the Containment Hydrogen Control System. This change does not impact the ability of any structures, systems, or components to perform their functions or negatively impact safety. Accordingly, this exemption from the certification information in Tier 1 Subsection Table 2.3.9-3 will enable the applicant to safely construct and operate the AP1000 facility consistent with the design certified by the NRC in 10 CFR 52, Appendix D. Therefore, special circumstances are present, because application of the current generic certified design information in Tier 1 as required by 10 CFR Part 52, Appendix D, Section III.B, in the particular circumstances discussed in this request is not necessary to achieve the underlying purpose of the rule. 5) The special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption Based on the nature of the changes to the plant-specific Tier 1 information and the understanding that these changes support the design function of the Containment Hydrogen Control System, other AP1000 applicants and licensees will likely request this exemption. However, if this is not the case, the special circumstances continue to outweigh any decrease in safety from the reduction in standardization because the key design functions of the Containment Hydrogen Control System associated with this request will continue to be maintained. This exemption request and the associated marked-up Tier 1 Table 2.3.9-3 demonstrates that the Containment Hydrogen Control System function continues to be maintained following implementation of the change from the generic AP1000 DCD, thereby minimizing the safety impact resulting from any reduction in standardization. Therefore, the special circumstances associated with the requested exemption outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption. In fact, as described in Condition 6 below, the exemption will result in no reduction in the level of safety. 6) The design change will not result in a significant decrease in the level of safety. The exemption revises the plant-specific DCD Tier 1 information by revising the acceptance criteria for an ITAAC in Table 2.3.9-3. There is no physical change to the plant associated with the change to the ITAAC acceptance criteria. Because the Containment Hydrogen Control System function is met, there is no reduction in the level of safety. Therefore, the change will not result in a significant decrease in the level of safety. As demonstrated above, this exemption request satisfies NRC requirements for an exemption to the design certification rule for the AP1000 plant.	
12163	WLS	Pt 07		B 6	COLA Part 7, Departures and Exemption Requests is revised to add the following exemption in Section B, William States Lee, Units 1 and 2 Exemption Requests as follows: B. Lee Nuclear Station Exemption Requests Duke requests the following exemptions related to:	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					6) Main Control Room Dose	Address Main Control Room Dose Analysis, Enclosure 3, Attachment 3, Item 4, WLG2016.02-03
12164	WLS	Pt 07		B 6	COLA Part 7, Departures and Exemption Requests, Exemption Request 6, Discussion and Justifications is added as follows: 6) Main Control Room Dose Applicable Regulation(s): 10 CFR Part 52, Appendix D, Section III.B Specific wording from which exemption is requested: "III. Scope and Contents B. An applicant or licensee referencing this appendix, in accordance with Section IV of this appendix, shall incorporate by reference and comply with the requirements of this appendix, including Tier 1, Tier 2 (including the investment protection short-term availability controls in Section 16.3 of the DCD), and the generic TS except as otherwise provided in this appendix. Conceptual design information in the generic DCD and the evaluation of severe accident mitigation design alternatives in appendix 1B of the generic DCD are not part of this appendix." Pursuant to 10 CFR §52.63(b)(1), an exemption from elements of the design as certified in the 10 CFR Part 52, Appendix D, design certification rule is requested for plant-specific Tier 1 departures from the AP1000 DCD for Tier 1 information and for a material departure from the generic TS. The Tier 1 departures are contained in Tier 1 Subsection 2.7.1 involving the revision of main control room emergency habitability system (VES) actuation signal name, and Tier 1 Subsection 2.2.5, Tier 1 Tables 2.2.5-1 and 2.2.5-5 involving the addition of VES filter shielding. The departures also include a change to TS LCO 3.7.4 and TS SR 3.7.4.1 which involves lowering allowable secondary iodine activity. This exemption request is in accordance with the provisions of 10 CFR §50.12, 10 CFR §52.7, and 10 CFR Part 52, Appendix D. Discussion: The changes requested to Tier 1 Subsections 2.7.1 and 2.2.5, Tier 1 Tables 2.2.5-1 and 2.2.5-5, TS LCO 3.7.4 and TS SR 3.7.4.1 provide reasonable assurance that the facility has been constructed and will be operated in conformity with the applicable design criteria, codes and standards, and demonstrate acceptable main control room operator dose during design basis scenarios. Conclusion: This exemption request is evaluated in accordance with 10 CFR Part 52, Appendix D, Section VIII.A.4, 10 CFR §50.12, 10 CFR §52.7 and 10 CFR §52.63, which state that the NRC may grant exemptions from the requirements of the regulations provided the following six conditions are met: 1) the exemption is authorized by law [§50.12(a)(1)]; 2) the exemption will not present an undue risk to the health and safety of the public [§50.12 (a)(1)]; 3) the exemption is consistent with the common defense and security [§50.12(a)(1)]; 4) special circumstances are present [§50.12(a)(2)]; 5) the special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption [§52.63(b)(1)]; and 6) the design change will not result in a significant decrease in the level of safety [Part 52, Appendix D, VIII.A.1]. The requested exemption satisfies the criteria for granting specific exemptions, as described below. 1. This exemption is authorized by law The NRC has authority under 10 CFR §§ 50.12, 52.7, and 52.63 to grant exemptions from the requirements of NRC regulations. Specifically, 10 CFR §§50.12 and 52.7 state that the NRC may grant exemptions from the requirements of 10 CFR Part 52 upon a proper showing. No law exists that would preclude the changes covered by this exemption request. Additionally, granting of the proposed exemption does not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 3, Item 5, WLG2016.02-03

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Accordingly, this requested exemption is "authorized by law," as required by 10 CFR §50.12(a)(1). 2. This exemption will not present an undue risk to the health and safety of the public The proposed exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would allow changes to elements of the plant-specific Tier 1 DCD to depart from the AP1000 certified (Tier 1) design information and a change to a TS LCO and SR to depart from the AP1000 certified (Tier 2) information. The plant-specific Tier 1 DCD will continue to reflect the approved licensing basis for the applicant, and will maintain a consistent level of detail with that which is currently provided elsewhere in Tier 1 of the plant-specific DCD. Because the change maintains the capability of the Main Control Room Emergency Habitability System and Nuclear Island Nonradioactive Ventilation System to perform their design functions, the changed design will ensure the protection of the health and safety of the public. Therefore, no adverse safety impact which would present any additional risk to the health and safety is present. Therefore, the requested exemption from 10 CFR 52, Appendix D, Section III.B would not present an undue risk to the health and safety of the public. 3. The exemption is consistent with the common defense and security The exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would change elements of the plant-specific Tier 1 DCD by departing from the AP1000 certified (Tier 1) design information relating to the Nuclear Island Nonradioactive Ventilation System and VES shielding and by departing from the generic TS to lower the allowable secondary iodine activity. The exemption does not alter the design, function, or operation of any structures or plant equipment that are necessary to maintain a safe and secure status of the plant. The proposed exemption has no impact on plant security or safeguards procedures. Therefore, the requested exemption is consistent with the common defense and security. 4. Special circumstances are present 10 CFR §50.12(a)(2) lists six "special circumstances" for which an exemption may be granted. Pursuant to the regulation, it is necessary for one of these special circumstances to be present in order for the NRC to consider granting an exemption request. The requested exemption meets the special circumstances of 10 CFR §50.12 (a)(2)(ii). That subsection defines special circumstances as when "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule." The rule under consideration in this request for exemption from Tier 1 Subsections 2.7.1 and 2.2.5, Tier 1 Tables 2.2.5-1 and 2.2.5-5 and the generic TS is 10 CFR 52, Appendix D, Section III.B, which requires that an applicant referencing the AP1000 Design Certification Rule (10 CFR Part 52, Appendix D) shall incorporate by reference and comply with the requirements of Appendix D, including Tier 1 information and generic TS. The Lee Units 1 and 2 COLA references the AP1000 Design Certification Rule and incorporates by reference the requirements of 10 CFR Part 52, Appendix D, including Tier 1 information and generic TS. The underlying purpose of Appendix D, Section III.B is to describe and define the scope and contents of the AP1000 design certification, and to require compliance with the design certification information in Appendix D to maintain the level of safety in the design. The proposed change to the name of the actuation signal does not impact the design functions of the Nuclear Island Nonradioactive Ventilation System. The proposed change to add the VES shielding to the Tier 1 VES design description maintains the design functions of the VES. These changes do not impact the ability of any structures, systems, or components to perform their functions or negatively impact safety. Accordingly, this exemption from the certification information in Tier 1 Subsections 2.7.1 and 2.2.5, Tier 1 Tables 2.2.5-1 and 2.2.5-5, TS LCO 3.7.4 and TS SR 3.7.4.1 will enable the applicant to safely construct and operate the AP1000 facility consistent with the design certified by the NRC in 10 CFR 52, Appendix D.	

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					Therefore, special circumstances are present, because application of the current generic certified design information in Tier 1 and the generic TS as required by 10 CFR Part 52, Appendix D, Section III.B, in the particular circumstances discussed in this request is not necessary to achieve the underlying purpose of the rule. 5. The special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption Based on the nature of the changes to the plant-specific Tier 1 information and generic TS and the understanding that these changes support the design function of the Main Control Room Emergency Habitability System and Nuclear Island Nonradioactive Ventilation System and establish limits for the specific activity in the secondary system, it is likely that other AP1000 applicants and licensees will request this exemption. However, if this is not the case, the special circumstances continue to outweigh any decrease in safety from the reduction in standardization because the key design functions of the Main Control Room Emergency Habitability System and Nuclear Island Nonradioactive Ventilation System associated with this request will be maintained with the implementation of these changes. This exemption request and the associated TS LCO and TS SR changes demonstrate that the Main Control Room Emergency Habitability System and Nuclear Island Nonradioactive Ventilation System functions continue to be maintained following implementation of the change from the generic AP1000 DCD, thereby minimizing the safety impact resulting from any reduction in standardization. Therefore, the special circumstances associated with the requested exemption outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption. In fact, as described in condition 6 below, the exemption will result in no reduction in the level of safety. 6. The design change will not result in a significant decrease in the level of safety The exemption revises the plant-specific DCD Tier 1 information by adding a shielding design function to Subsection 2.2.5 and by changing the name of the of the actuation signal (High-2) for isolating the main control room penetrations in Subsection 2.7.1. This change does not alter the ability of the Main Control Room Emergency Habitability System or Nuclear Island Nonradioactive Ventilation System to maintain their design functions. This exemption also revises the generic TS LCO 3.7.4 and TS SR 3.7.4.1 to lower the allowable secondary iodine activity. Because these functions are met, there is no reduction in the level of safety. Therefore, the design and TS changes will not result in a significant decrease in the level of safety. As demonstrated above, this exemption request satisfies NRC requirements for an exemption to the design certification rule for the AP1000 design.	
11988	WLS	Pt 07		B 7	COLA Part 7, Departures and Exemption Requests, is revised to add the following departure to Section B as follows: B. Lee Nuclear Station Exemption Requests 7) Main Control Room Heatup	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 3, Item 4, WLG2016.02-04
11989	WLS	Pt 07		B 7	COLA Part 7, Departures and Exemption Requests, is revised to add the following departure to Section B, under the discussion and justifications as follows: 7) Main Control Room Heatup Applicable Regulation(s): 10 CFR Part 52, Appendix D, Section III.B Specific wording from which exemption is requested:	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis,

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					"III. Scope and Contents B. An applicant or licensee referencing this appendix, in accordance with Section IV of this appendix, shall incorporate by reference and comply with the requirements of this appendix, including Tier 1, Tier 2 (including the investment protection short-term availability controls in Section 16.3 of the DCD), and the generic TS except as otherwise provided in this appendix. Conceptual design information in the generic DCD and the evaluation of severe accident mitigation design alternatives in appendix 1B of the generic DCD are not part of this appendix." Pursuant to 10 CFR §52.63(b)(1), an exemption from elements of the design as certified in the 10 CFR Part 52, Appendix D, design certification rule is requested for plant-specific Tier 1 departures from the AP1000 DCD for Tier 1 information and for material departures from the generic Technical Specification (TS). Discussion: The proposed changes are to Tier 1 Tables 2.2.5-1, 2.2.5-4, 2.5.2-3 and 2.5.2-4, and TS 3.3.2 and 3.7.6. These changes ensure the Main Control Room Emergency Habitability System (VES) design functions to: 1) maintain heat loads within the main control room envelope (MCRE) within design basis assumptions to limit the heat-up of the room, 2) ensure a 72-hour supply of breathable quality air for the occupants of the MCRE, 3) maintain the MCRE pressure boundary at a positive pressure with respect to the surrounding areas with a discharge of air through the main control room (MCR) vestibule, and 4) provide a passive recirculation flow of MCRE air to maintain MCR dose rates below an acceptable level during VES operation. Conclusion: DEC evaluated this exemption request in accordance with 10 CFR Part 52, Appendix D, Section VIII.A.4, 10 CFR §50.12, 10 CFR §52.7 and 10 CFR §52.63, which state that the NRC may grant exemptions from the requirements of the regulations provided the following six conditions are met: 1) the exemption is authorized by law [§50.12(a)(1)]; 2) the exemption will not present an undue risk to the health and safety of the public [§50.12 (a)(1)]; 3) the exemption is consistent with the common defense and security [§50.12(a)(1)]; 4) special circumstances are present [§50.12(a)(2)]; 5) the special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption [§52.63(b)(1)]; and 6) the design change will not result in a significant decrease in the level of safety [Part 52, Appendix D, VIII.A.4]. The requested exemption satisfies the criteria for granting specific exemptions, as described below. 1. This exemption is authorized by law. The NRC has authority under 10 CFR §§ 50.12, 52.7, and 52.63 to grant exemptions from the requirements of NRC regulations. Specifically, 10 CFR §§50.12 and 52.7 state that the NRC may grant exemptions from the requirements of 10 CFR Part 52 upon a proper showing. No law exists that would preclude the changes covered by this exemption request. Additionally, granting of the proposed exemption does not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Accordingly, this requested exemption is "authorized by law," as required by 10 CFR §50.12(a)(1). 2. This exemption will not present an undue risk to the health and safety of the public. The proposed exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would allow changes to elements of the plant-specific DCD Tier 1 design information and generic TS. The plant-specific Tier 1 DCD will continue to reflect the approved licensing basis for the applicant, and will maintain a consistent level of detail with that which is currently provided elsewhere in Tier 1 of the plant-specific DCD. Because the change to the VES system description and associated TS changes maintain VES design functions, the changed design will ensure the protection of the health and safety of the public. Therefore, no adverse safety impact which would present any additional risk to the health and safety of the public is present. The affected Design Description in the plant- specific Tier 1 DCD will continue to provide the detail necessary to support the performance of the associated ITAAC. Therefore, the requested exemption from	Enclosure 3, Attachment 3, Item 5, WLG2016.02-04

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					10 CFR 52, Appendix D, Section III.B would not present an undue risk to the health and safety of the public. 3. The exemption is consistent with the common defense and security. The exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would change elements of the plant-specific DCD Tier 1 design information relating to the operation of the VES and generic TS. The exemption does not alter the design, function, or operation of any structures or plant equipment that are necessary to maintain a secure status of the plant. The proposed exemption has no impact on plant security or safeguards procedures. Therefore, the requested exemption is consistent with the common defense and security. 4. Special circumstances are present. 10 CFR §50.12(a)(2) lists six "special circumstances" for which an exemption may be granted. Pursuant to the regulation, it is necessary for one of these special circumstances to be present in order for the NRC to consider granting an exemption request. The requested exemption meets the special circumstances of 10 CFR§50.12(a)(2)(ii). That subsection defines special circumstances as when "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule." The rule under consideration in this request for exemption from Tier 1 subsections 2.2.5 and 2.5.2, and the generic TS is 10 CFR 52, Appendix D, Section III.B, which requires that an applicant referencing the AP1000 Design Certification Rule (10 CFR Part 52, Appendix D) shall incorporate by reference and comply with the requirements of Appendix D, including Tier 1 information and generic TS. The Lee Units 1 and 2 COLA references the AP1000 Design Certification Rule and incorporates by reference the requirements of 10 CFR Part 52, Appendix D, including Tier 1 information and generic TS. The underlying purpose of Appendix D, Section III.B is to describe and define the scope and contents of the AP1000 design certification, and to require compliance with the design certification information in Appendix D to maintain the level of safety in the design. The proposed changes maintain the design functions of the VES. This change does not impact the ability of any structures, systems, or components to perform their functions or negatively impact safety. Accordingly, this exemption from the certification information in Tier 1 subsections 2.2.5 and 2.5.2 and from generic TS will enable the applicant to safely construct and operate the AP1000 facility consistent with the design certified by the NRC in 10 CFR 52, Appendix D. Therefore, special circumstances are present, because application of the current generic certified design information in Tier 1 and the generic TS as required by 10 CFR Part 52, Appendix D, Section III.B, in the particular circumstances discussed in this request is not necessary to achieve the underlying purpose of the rule. 5. The special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption. Based on the nature of the changes to the plant-specific Tier 1 information and generic TS and the understanding that these changes support the design function of the VES, it is likely that other AP1000 applicants and licensees will request this exemption. However, if this is not the case, the special circumstances continue to outweigh any decrease in safety from the reduction in standardization because the key design functions of the VES associated with this request will continue to be maintained. This exemption request and the associated DCD and TS changes demonstrate that the VES function continues to be maintained following implementation of the change from the generic AP1000 DCD, thereby minimizing the safety impact resulting from any reduction in standardization. Therefore, the special circumstances associated with the requested exemption outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption. In fact, as described in Condition 6 below, the exemption will not result in a reduction in the level of safety. 6. The design change will not result in a significant decrease in the level of safety.	

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
					The exemption revises the plant-specific DCD Tier 1 information by enabling the VES to more effectively perform its design functions. This exemption also revises the generic TS to ensure equipment operability and temperature conditions are maintained. Because the VES design functions are met, there is no reduction in the level of safety. Therefore, the design change and change to the TS will not result in a significant decrease in the level of safety. As demonstrated above, this exemption request satisfies NRC requirements for an exemption to the design certification rule for the AP1000.	
Pt 09 (1 COLA Change)						
12190	WLS	Pt 09		09-02-12.03.F / F12.3-204	COLA Part 9, FSAR Figure 12.3-204 is added with annotation WLS DEP 6.4-1 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 29. Note number 9 of new FSAR Figure 12.3-204 is updated as follows: 9. Blowdown Piping May Reach Zone III Levels With Concurrent Fuel Cladding Defects of 0.25% and Steam Generator Tube Leakage of 300 gpd.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 1, Item 29 WLG2016.02-03
Pt 10 (23 COLA Changes)						
12191	WLS	Pt 10		APP B AP1000 T1 ITAAC	COLA Part 10, Appendix B, Inspections, Tests, Analyses and Acceptance Criteria, is revised to relocate Passive Containment Cooling System ITAAC from the sub-heading Plant Specific ITAAC to the sub-heading AP1000 DCD Tier 1 ITAAC.	Editorial
12192	WLS	Pt 10		APP B AP1000 T1 ITAAC	COLA Part 10, Proposed License Conditions (Including ITAAC), Appendix B. Inspections, Tests, Analysis, and Acceptance Criteria is revised to relocate the Physical Security ITAAC from the sub-heading Plant Specific ITAAC to the sub-heading AP1000 DCD Tier 1 ITAAC.	Editorial
12170	WLS	Pt 10		APP B PS ITAAC	COLA Part 10, License Conditions and ITAAC, Appendix B is revised to add the following information: 2.7.1 Nuclear Island Nonradioactive Ventilation System ITAAC Revise the sixth and seventh sentences of the Design Description information in DCD Tier 1 Section 2.7.1 to read as follows: In addition, the VBS isolates the HVAC penetrations in the main control room boundary on "High-2" particulate or iodine radioactivity in the main control room supply air duct or on a loss of ac power for more than 10 minutes. The Sanitary Drainage System (SDS) also isolates a penetration in the main control room boundary on "High-2" particulate or iodine radioactivity in the main control room supply air duct or on a loss of ac power for more than 10 minutes.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 4, Item 4, WLG2016.02-03
12193	WLS	Pt 10		APP B AP1000 T1 ITAAC	COLA Part 10, License Conditions and ITAAC, Appendix B is revised relocate Nuclear Island Nonradioactive Ventilation System ITAAC from the sub-heading Plant Specific ITAAC to the AP1000 DCD Tier 1 ITAAC sub-heading.	Editorial update to Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 4, Item 4, WLG2016.02-03

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
12032	WLS	Pt 10		APP B PS ITAAC	COLA Part 10, Proposed License Conditions (Including ITAAC), Appendix B is revised to add the following departure as the first entry as follows: Add the following information to the information provided in the referenced DCD Tier 1 at the end of Section 2.2.5: Main Control Room Emergency Habitability System (VES) ITAAC VES components are identified as the preferred, safety-related connection point for post-72 hour supplemental air. Component numbers for temporary instrument isolation valves are included in Table 2.2.5-1. The heat load values for the Main Control Room Envelope (MCRE) shown in Table 2.2.5-4 are revised to correct for the most limiting design basis event and to account for actual equipment in the AP1000 design.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 4, Item 1, WLG2016.02-04
12194	WLS	Pt 10		APP B AP1000 T1 ITAAC	COLA Part 10, Proposed License Conditions (Including ITAAC), Appendix B is revised to relocate Main Control Room Emergency Habitability System (VES) ITAAC from the sub-heading Physical Security ITAAC to the AP1000 DCD Tier 1 ITAAC.	Editorial update to Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 4, Item 1, WLG2016.02-04
12165	WLS	Pt 10		APP B PS ITAAC	COLA Part 10, License Conditions and ITAAC, Appendix B will be revised to add the following information: 2.2.5 Main Control Room Emergency Habitability System Add item 7. e) to the Design Description information in DCD Tier 1 Section 2.2.5 to read as follows: 2.2.5 Main Control Room Emergency Habitability System 7. The VES provides the following safety-related functions: e) The system provides shielding below the VES filter that is sufficient to ensure main control room doses are below an acceptable level during VES operation.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 4, Item 1, WLG2016.02-03
12195	WLS	Pt 10		APP B AP100 T1 ITAAC	COLA Part 10, License Conditions and ITAAC, Appendix B will be revised to relocate Main Control Room Emergency Habitability System ITAAC from the Plant Specific ITAAC to the AP1000 DCD Tier 1 ITAAC.	Editorial update to Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 4, Item 1, WLG2016.02-03
12166	WLS	Pt 10		APP B PS ITAAC	COLA Part 10, License Conditions and ITAAC, Appendix B will be revised to add the following information: 2.2.5 Main Control Room Emergency Habitability System MCR filter shielding component is added to DCD Tier 1 Table 2.2.5-1, as Table 2.2.5-1, with a LMA of WLS DEP 6.4-1.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis,

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
						Enclosure 3, Attachment 4, Item 2, WLG2016.02-03
12196	WLS	Pt 10		APP B AP1000 T1 ITAAC	COLA Part 10, License Conditions and ITAAC, Appendix B is revised to relocate 2.2.5 Main Control Room Emergency Habitability System ITAAC from the sub-heading Plant Specific ITAAC to the sub-heading AP1000 DCD Tier 1 ITAAC.	Editorial update to Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 4, Item 2, WLG2016.02-03
12168	WLS	Pt 10		APP B PS ITAAC	COLA Part 10, License Conditions and ITAAC, Appendix B will be revised to add the following information: 2.2.5 Main Control Room Emergency Habitability System MCR filter shielding component is added to DCD Tier 1 Table 2.2.5-5, as shown on Table 2.2.5-5, with a LMA of WLS DEP 6.4-1.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 4, Item 3, WLG2016.02-03
12199	WLS	Pt 10		APP B AP1000 T1 ITAAC	COLA Part 10, License Conditions and ITAAC, Appendix B will be revised to relocate Main Control Room Emergency Habitability System ITAAC from the sub-heading Plant Specific ITAAC to the sub-heading AP1000 DCD Tier 1 ITAAC.	Editorial update to Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 4, Item 3, WLG2016.02-03
12033	WLS	Pt 10		APP B PS ITAAC	COLA Part 10, Proposed License Conditions (Including ITAAC), Appendix B is revised to add the following departure after the entry for 2.3.31 as follows: Add the following information to the information provided in the referenced DCD Tier 1 at the end of Section 2.5.2: Protection and Safety Monitoring System (PMS) ITAAC New load shed panels are added to automatically de-energize non-essential equipment in the Main Control Room Envelope (MCRE) to ensure the MCRE is maintained within human performance limits. The electrical load de-energization feature is added on Tables 2.5.2-3 and 2.5.2-4.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 4, Item 2, WLG2016.02-04
12197	WLS	Pt 10		APP B AP1000 T1 ITAAC	COLA Part 10, Proposed License Conditions (Including ITAAC), Appendix B is revised to relocate Protection and Safety Monitoring System (PMS) ITAAC from the sub-heading Plant Specific ITAAC to the sub-heading AP1000 DCD Tier 1 ITAAC.	Editorial update to Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis,

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
						Enclosure 3, Attachment 4, Item 2, WLG2016.02-04
11982	WLS	Pt 10		APP B PS ITAAC	COLA Part 10, Appendix B. Inspections, Tests, Analyses and Acceptance Criteria, AP1000 DCD Tier 1 ITAAC, is revised to add the following under the subheading Plant Specific ITAAC: Containment Hydrogen Control System ITAAC The ITAAC Acceptance Criteria for the in-containment PXS compartment vents are revised to reflect the current plant configuration. The ITAAC acceptance criteria for Table 2.3.9-3, Item 3, are clarified to read as shown on Table 2.3.9-3, with a left margin annotation WLS DEP 6.2-1.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment, Enclosure 3, Item 10, WLG2016.01-01
12198	WLS	Pt 10		APP B AP1000 T1 ITAAC	COLA Part 10, Appendix B. Inspections, Tests, Analyses and Acceptance Criteria, AP1000 DCD Tier 1 ITAAC, is revised to relocate Containment Hydrogen Control System ITAAC from the sub-heading Plant Specific ITAAC to the sub-heading AP1000 DCD Tier 1 ITAAC.	Editorial update to Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment, Enclosure 3, Item 10, WLG2016.01-01
12034	WLS	Pt 10		APP B.T / T2.2.5-1	COLA Part 10, Proposed License Conditions (Including ITAAC), Appendix B, Table 2.2.5-1 is added with left margin annotation WLS DEP 6.4-2 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 4, Item 3.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 4, Item 3, WLG2016.02-04
12167	WLS	Pt 10		APP B.T / T2.2.5-1	COLA Part 10, License Conditions and ITAAC, Appendix B will be revised to add Table 2.2.5-1, Sheet 2, with left margin annotation WLS DEP 6.4-1 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 4, Item 2.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 4, Item 2, WLG2016.02-03
12035	WLS	Pt 10		APP B.T / T2.2.5-4	COLA Part 10, Proposed License Conditions (Including ITAAC), Appendix B, Table 2.2.5-4 is added with left margin annotation WLS DEP 6.4-2 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 4, Item 4.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 4, Item 4, WLG2016.02-04

QB Change ID#	COLA REP	COLA Part A	Chapter A	Section / Page A	Complete Change Description	Basis for Change
12169	WLS	Pt 10		APP B.T / T2.2.5-5	COLA Part 10, License Conditions and ITAAC, Appendix B will be revised to add Table 2.2.5-5 with left margin annotation WLS DEP 6.4-1 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 4, Item 3.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Dose Analysis, Enclosure 3, Attachment 4, Item 3, WLG2016.02-03
11983	WLS	Pt 10		APP B.T / T2.3.9-3	COLA Part 10, Appendix B is revised to add Table 2.3.9-3 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment, Enclosure 3, Item 10.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Combustible Gas Control in Containment, Enclosure 3, Item 11, WLG2016.01-01
12036	WLS	Pt 10		APP B.T / T2.5.2-3	COLA Part 10, Proposed License Conditions (Including ITAAC), Appendix B, Table 2.5.2-3 is added with left margin annotation WLS DEP 6.4-2 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 4, Item 5.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 4, Item 5, WLG2016.02-04
12206	WLS	Pt 10		APP B.T / T2.5.2-4	COLA Part 10, Proposed License Conditions (Including ITAAC), Appendix B, Table 2.5.2-4 is added with left margin annotation WLS DEP 6.4-2 as reflected on Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 4, Item 6.	Duke Energy Voluntary Submittal of Exemption Request and Design Change Description for Departure from AP1000 DCD Revision 19 to Address Main Control Room Habitability Analysis, Enclosure 3, Attachment 4, Item 6, WLG2016.02-04

SUMMARY

COLA Part A	Number of COLA Changes
Pt 01	4
Pt 02	170
Pt 04	20

COLA Part A	Number of COLA Changes
Pt 07	19
Pt 09	1
Pt 10	23
Totals (6 groups)	**237**