

**Levy Nuclear Plant Units 1 and 2  
COL Application  
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CHAPTER 17  
QUALITY ASSURANCE

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**LIST OF FIGURES**

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None

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**CHAPTER 17**

**QUALITY ASSURANCE**

**17.1 QUALITY ASSURANCE DURING THE DESIGN AND CONSTRUCTION PHASES**

This **section** of the referenced DCD is incorporated by reference with the following departures and/or supplements.

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Replace the information in DCD **Section 17.1** with the following information.

LNP COL 17.5-1 Duke Energy, Inc (Duke Energy). is responsible for the establishment and execution of quality assurance program requirements during the design, construction and operations phases of the Levy Nuclear Power Plant Units 1 and 2. Duke Energy may and has delegated to others as described below the work of establishing and executing the quality assurance program, or any parts thereof, but retains responsibility for the quality assurance program.

Effective during the COL application development through COL issuance, the Quality Assurance Program Description defined in the Shearon Harris Nuclear Power Plant Unit 1 FSAR (current revision)(**Reference 201**) identifies the quality assurance requirements that will be in effect until the Quality Assurance Program Description (QAPD) discussed in **Section 17.5** becomes effective. Duke Energy will implement these quality assurance requirements through NGGM-PM-0030, Quality Assurance Plan for New Nuclear Plant Development and Construction Activities (**Reference 202**). This plan defines the interface between the Nuclear Plant Development organization and the existing quality assurance program implementing processes and procedures.

Duke Energy procured the COL application development and site characterization services in accordance with the quality assurance requirements identified in the Shearon Harris Nuclear Power Plant Unit 1 FSAR (current revision)(**Reference 201**), as implemented through NGGM-PM-0030 (**Reference 202**) and existing procedures from three companies that formed the Joint Venture Team; Sargent & Lundy LLC; Worley Parsons Group, Inc.; and CH2M HILL Inc. Each company was contracted to perform their assigned tasks in accordance with the requirements of their own Quality Assurance Program (**References 203, 204, and 205**) that had been reviewed and approved by Duke Energy for the conduct of safety-related work. The process of collection, review, and analysis of specific data for site characterization was performed under the CH2M HILL Quality Assurance Program as described in the Nuclear Business Group Quality Manual, NBG-QA-02-00 (**Reference 205**).

Duke Energy maintains oversight of the Joint Venture Team activities performed in support of the COL application development contract in accordance with the quality assurance program requirements that satisfy 10 CFR 50 Appendix B defined in the Shearon Harris Nuclear Power Plant Unit 1 FSAR (current

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revision)(Reference 201) and implemented through NGGM-PM-0030, Quality Assurance Plan for New Nuclear Plant Development and Construction Activities (Reference 202). Duke Energy oversight of the COL development activities is provided through conducting Quality Assurance audits and surveillances of the Joint Venture Team activities and processes, and by direct participation in COL development activities, including providing site-specific applicant input and review of COL application content, signing the COL application as the applicant at submittal, and working directly with the Joint Venture Team to respond to NRC requests for additional information.

The quality assurance program applied to the development of the AP1000 design is described in Section 17.3 of the DCD which is incorporated by reference.

The design and construction of the proposed AP1000 units would be a service procured by Duke Energy. This service would be performed in accordance with the supplier's quality assurance program that was evaluated and accepted by Duke Energy. Duke Energy would maintain oversight of these design and construction activities in accordance with the quality assurance program requirements of the Shearon Harris Nuclear Power Plant Unit 1 FSAR (current revision)(Reference 201) or the QAPD described in Section 17.5, depending on when these activities were performed.

Thirty days following the issuance of the first COL to Duke Energy, Duke Energy Florida will implement the Duke Energy Quality Assurance Topical Report for 10 CFR Part 52 Licenses, NGGM-PM-0033, as discussed in Section 17.5 and as provided in Part 11 of the COLA. The applicable portions of the QAPD will be utilized for activities related to the design, construction and operational phases for the new nuclear units. As stated in FSAR Table 13.4-201, full implementation of the operations phase requirements will begin no later than 30 days prior to the fuel load.

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17.2 QUALITY ASSURANCE DURING THE OPERATIONS PHASE

This **section** of the referenced DCD is incorporated by reference with no departures or supplements.

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17.3 QUALITY ASSURANCE DURING DESIGN, PROCUREMENT,  
FABRICATION, INSPECTION, AND/OR TESTING OF NUCLEAR  
POWER PLANT ITEMS

This **section** of the referenced DCD is incorporated by reference with no departures or supplements.

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**17.4 DESIGN RELIABILITY ASSURANCE PROGRAM**

This **section** of the referenced DCD is incorporated by reference with the following departures and/or supplements.

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|                |                                                                                                                                                                            |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| STD SUP 17.4-1 | The quality assurance requirements for non-safety related SSCs within the scope of D-RAP is in accordance with the Quality Assurance Program Description (QAPD), Part III. |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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|                |                                                                                                                                                                                                                                                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LNP SUP 17.4-1 | <div style="padding-left: 20px;">17.4.7.1.6      Site-Specific SSCs to be Included in D-RAP</div> <p><b>Table 17.4-201</b> lists the site-specific SSC (RCC bridging mat) included in the D-RAP. The rationale for inclusion of the SSC and the risk insights and assumptions are also described in the table.</p> |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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**Table 17.4-201  
Risk-Significant Site Specific SSC within the Scope of D-RAP**

LNP SUP 17.4-1

| <b>System, Structure, or Component (SSC)</b> | <b>Rationale</b> | <b>Insights and Assumptions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RCC Bridging Mat                             | SMA              | The RCC bridging mat supports the AP1000 Nuclear Island (NI) Structures. The RCC bridging mat has the least calculated CDFM HCLPF for all risk significant SSCs including the Fuel Assembly. In the AP1000 PRA-based Seismic Margin Assessment, the RCC bridging mat failure is conservatively assumed to fall within the gross structural collapse event. As gross structural collapse is assumed to directly lead to core damage, failure of the RCC bridging mat has the potential to drive the plant level HCLPF value. |

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STD DEP 1.1-1     17.5     QUALITY ASSURANCE PROGRAM DESCRIPTION – NEW LICENSE APPLICANTS

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LNP COL 17.5-1  
STD COL 17.5-2  
STD COL 17.5-4  
STD COL 17.5-8

The Quality Assurance Program in place during the design, construction, and operations phases is described in the QAPD, which is maintained as a separate document. This QAPD is incorporated by reference (see [Table 1.6-201](#)). This QAPD is based on NEI 06-14A, “Quality Assurance Program Description” ([Reference 206](#)).

Conformance statements for QA-related Regulatory Guides (including Regulatory Guides 1.28, 1.30, 1.33, 1.38, 1.39, 1.94, and 1.116) are provided in [Appendix 1AA](#). While many Regulatory Guide positions can be identified as applicable to the scope of work identified and addressed by the DCD and others can be identified as applicable to the scope of work identified and addressed by the COLA, some QA guidance related positions could be accomplished by either scope of work and thus be addressed in either the DCD or the COLA. These positions are primarily dependent on who performs the work. The DCD conformance statement indicates an exception to apply NQA-1. The COLA identifies an exception to apply NQA-1. Per DCD [Section 17.3](#), WEC work performed up to March 15, 2007 applied a 1991 version of the standard. A 1994 version of the standard is applied for work performed after that date by WEC. If the work is performed under the applicant’s COL program, the 1994 version of NQA-1 identified in the COLA QAPD is applied. Thus, DCD scope (identified in DCD [Appendix 1A](#)) and “remaining scope” differentiate the application of the guidance identified in these Regulatory Guides.

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LNP COL 17.5-1

The QAPD is NGGM-PM-0033, Duke Energy Quality Assurance Topical Report for 10 CFR Part 52 Licenses.

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LNP COL 17.5-1  
STD COL 17.5-2  
STD COL 17.5-4  
STD COL 17.5-8

[Table 13.4-201](#) provides milestones for operational quality assurance program implementation.

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LNP COL 17.5-1

The Quality Assurance Program in place prior to implementation of the QAPD is described in [Section 17.1](#).

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STD DEP 1.1-1     17.6     MAINTENANCE RULE PROGRAM

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STD SUP 17.6-1     This section incorporates by reference NEI 07-02A, “Generic FSAR Template  
STD COL 3.8-5     Guidance for Maintenance Rule Program Description for Plants Licensed Under  
10 CFR Part 52” ([Reference 207](#)), with the following supplemental information.  
See [Table 1.6-201](#).

[Table 13.4-201](#) provides milestones for maintenance rule program implementation.

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The text of the template provided in NEI 07-02A is generically numbered as “17.X.” When the template is incorporated by reference into this FSAR, section numbering is changed from “17.X” to “17.6.”

STD SUP 17.6-1     Descriptions of the programs listed in Subsection 17.6.3 of NEI 07-02A are  
provided in the following FSAR chapters/sections:

The maintenance rule program ([Section 17.6](#))

The quality assurance program ([Section 17.5](#))

Inservice inspection program ([Sections 5.2](#) and [6.6](#))

Inservice testing program ([Section 3.9](#))

The technical specifications surveillance test program ([Chapter 16](#))

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STD SUP 17.6-2     Condition monitoring of underground or inaccessible cables is incorporated into  
the maintenance rule program. The cable condition monitoring program  
incorporates lessons learned from industry operating experience, addresses  
regulatory guidance, and utilizes information from detailed design and  
procurement documents to determine the appropriate inspections, tests and  
monitoring criteria for underground and inaccessible cables within the scope of  
the maintenance rule (i.e., 10 CFR 50.65). The program takes into consideration  
Generic Letter 2007-01.

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STD DEP 1.1-1    17.7    COMBINED LICENSE INFORMATION ITEMS

**Section 17.5** of the referenced DCD is incorporated by reference with the following departures and/or supplements.

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LNP COL 17.5-1    This COL Item is addressed in **Sections 17.1** and **17.5**.

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STD COL 17.5-2    This COL Item is addressed in **Section 17.5**.

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STD COL 17.5-4    This COL Item is addressed in **Section 17.5**.

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STD COL 17.5-8    This COL Item is addressed in **Section 17.5**.

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STD DEP 1.1-1    17.8    REFERENCES

**Section 17.6** of the referenced DCD is incorporated by reference with the following departures and/or supplements.

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- 201.    Shearon Harris Nuclear Power Plant Unit 1 Final Safety Analysis Report (current revision), Docket Number 50-400.
  - 202.    Duke Energy Program Manual NGGM-PM-0030, Quality Assurance Plan for New Nuclear Plant Development and Construction Activities.
  - 203.    Sargent & Lundy (S&L) LLC, Nuclear Quality Assurance Program, Topical Report SL-TR-1A.
  - 204.    WorleyParsons Resources & Energy, Nuclear Quality Manual, NQM-01.
  - 205.    CH2M HILL Quality Assurance Program, Nuclear Business Group Quality Manual NBG QA-02-00.
  - 206.    Nuclear Energy Institute, Technical Report NEI 06-14A, "Quality Assurance Program Description," Revision 7, August 2010.
  - 207.    Nuclear Energy Institute, "Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed Under 10 CFR Part 52," NEI 07-02A, Revision 0, March 2008.
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