PMLevyCOLPEm Resource

From: Waters, David [David.Waters@pgnmail.com]
Sent: Monday, July 16, 2012 3:33 PM
To: Habib, Donald
Cc: Rose, Dana; Kitchen, Robert; Wilkins, Tillie
Subject: Draft Change Pages for Levy COLA R5 - Message 2
Attachments: Changed Pages from Part 5 LNP_EP_Rev4 draft.pdf; Changed Pages from LNP_FSAR_CHAP01_Rev5Draft.pdf; Changed Pages from LNP_FSAR_CHAP08 _Rev5Draft.pdf; Changed Pages from LNP_Part01 _General_and_Financial_Information_public_Rev4Draft071612.pdf; Changed Pages from LNP_Part10_Proposed_License_Conditions_including_ITAAC_Rev4_minus11F.pdf

Don

Attached are changed pages based on draft revisions to the Levy COLA Part 2 FSAR Chapters 1 and 8, Part 1, Part 5, and Part 10 that are planned to be submitted as part of LNP COLA R5, as requested. The changes involve changes due to organization changes resulting from the Progress Energy-Duke Energy merger, plus changes due to RAI responses and other updated information.

Dave Waters
Duke Energy Nuclear Development - Licensing
PEB 1095C, 344 Fayetteville Street (PO Box 1551), Raleigh, NC 27601
919-546-7171
david.waters@pgnmail.com

Hearing Identifier: Levy_County_COL_Public
Email Number: 1155

Mail Envelope Properties (7FD614EFA33B03448166AF44364F42AE0E68382EA6)

Subject: Draft Change Pages for Levy COLA R5 - Message 2
Sent Date: 7/16/2012 3:32:48 PM
Received Date: 7/16/2012 3:33:10 PM
From: Waters, David

Created By: David.Waters@pgnmail.com

Recipients:
"Rose, Dana" <Dana.Rose@pgnmail.com>
Tracking Status: None
"Kitchen, Robert" <robert.kitchen@pgnmail.com>
Tracking Status: None
"Wilkins, Tillie" <tillie.wilkins@pgnmail.com>
Tracking Status: None
"Habib, Donald" <Donald.Habib@nrc.gov>
Tracking Status: None

Post Office: WN000075.oak.zone1.progress-energy.com

Files	**Size**	**Date & Time**
MESSAGE	559	7/16/2012 3:33:10 PM
Changed Pages from Part 5 LNP_EP_Rev4 draft.pdf	111540	
Changed Pages from LNP_FSAR_CHAP01_Rev5Draft.pdf	415555	
Changed Pages from LNP_FSAR_CHAP08_Rev5Draft.pdf	117319	
Changed Pages from LNP_Part01_General_and_Financial_Information_public_Rev4Draft071612.pdf	132756	
Changed Pages from LNP_Part10_Proposed_License_Conditions_including_ITAAC_Rev4_minus11F.pdf	91705	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

d. Report Preparation Director: The Report Preparation Director is located in the EOF and reports to the EOF Director; responsible for initiating notifications to the state and counties of emergency status.

e. Technical Support Coordinator: The Technical Support Coordinator is located in the EOF and reports to the EOF Director; responsible for assisting the TSC Accident Assessment Team in identifying accident mitigation activities and monitoring critical safety system functions.

f. Representatives to the State/County EOCs: The representatives to the State/County EOCs are located at the following:

FL State EOC	State Administrative Building in Tallahassee, FL
Citrus County EOC	Lecanto, FL
Levy County EOC	Bronson, FL
Marion County EOC	Ocala, FL

These representatives act as technical liaisons to facilitate communications and the coordination of information flow between the EC or EOF Director and state/local authorities. They report to the Assistant EOF Director.

g. Emergency News Center (ENC): The ENC Staff is responsible for dissemination of information to the public and the news media under the direction of the Public Information Director.

Outside organizations that support LNP in an emergency include CR3 and other organizations as described in Section A, Assignment of Responsibility (Organizational Control).

6. INTERFACES BETWEEN FUNCTIONAL AREAS

Figure A-1 illustrates the interfaces among functional areas of LNP emergency response activity, Progress Energy corporate support, and the affected state, local, and federal government response organizations.

7. CORPORATE SUPPORT FOR THE PLANT STAFF

Within the overall corporate organization, additional elements exist to directly control and support the operation of LNP. The Plant General Manager and the entire LNP staff are a part of the Nuclear Generation organization. The Plant General Manager reports to the Site Executive, Levy Nuclear Plant, who, in turn, reports to the Senior Vice President – Nuclear Operations Site Group. The Senior Vice President – Nuclear Operations Site Group reports to the Executive

Vice President – Nuclear Generation / Chief Nuclear Officer, who, in turn, reports to the President and Chief Executive Officer – Duke Energy.

The Nuclear Generation organization consists of organizational elements that provide additional administrative and technical support to ensure continued safe plant operation in compliance with operational commitments and applicable licensing requirements and regulations. These elements include Engineering, Support Services, Training, and Nuclear Oversight.

Upon declaration of an Alert, Site Area Emergency, General Emergency, or Unusual Event, if conditions warrant, the EC directs the activation and notification of the on-site and off-site Emergency Response Facilities (ERFs). Progress Energy management, technical, and administrative personnel staff the EOF and other facilities and provide augmented support for the plant staff as shown in Table B-1.

In addition to the minimum required staff, additional personnel report to the EOF to augment the minimum staff. This augmentation would occur within the required time specified in Table B-1.

In the event of an emergency at LNP that requires personnel and other support resources beyond those available within the LNP Emergency Organization, augmentation is available from various off-site organizations. Primary off-site support is available from the Nuclear Generation organization. This support is initiated upon activation of the EOF. Corporate support is also available as described in plant procedures. The following list describes other areas of support within this Plan.

a. Logistics support for emergency personnel is addressed in Section A and Section B of this Plan.

b. Technical support for planning and reentry/recovery operations is addressed in Section M of this Plan.

c. The EOF Director has the ultimate responsibility for directing the corporate emergency response. Corporate support is coordinated between the Emergency Coordinator and the EOF Director. The EOF Director and staff serve as the point of contact among LNP personnel, the corporate emergency response staff, and governmental authorities.

d. The Corporate Communications organization coordinates with governmental authorities and controls the release of information to news media during emergencies. Section G of this Plan discusses the public information function.

P. RESPONSIBILITY FOR THE PLANNING EFFORT: DEVELOPMENT, PERIODIC REVIEW AND DISTRIBUTION OF EMERGENCY PLANS

This section addresses responsibilities associated with planning efforts. For example, Progress Energy implements an organizational structure and processes to ensure that this Plan is periodically reviewed, updated, audited, distributed, and controlled consistent with facility quality assurance and document control requirements. Progress Energy also implements a program to ensure personnel responsible for the emergency planning effort receive training appropriate to their duties and responsibilities.

1. TRAINING

Progress Energy develops and implements a process to ensure the Emergency Preparedness Supervisor and support staff are properly trained for effective implementation of the emergency planning effort, consistent with applicable regulatory requirements and guidance, license conditions, other commitments, and accepted good practices. Training is primarily through on-the-job related to Plan preparation, periodic revisions, or drills and exercises. Other training may include formal education, professional seminars, plant-specific training, industry meetings, and other activities and forums that provide for an exchange of pertinent information.

2. RESPONSIBILITY FOR RADIOLOGICAL EMERGENCY RESPONSE TRAINING

The Vice President, Corporate Governance and Operations Support holds the overall authority and responsibility for ensuring that an adequate level of emergency preparedness is maintained. Responsibility for the planning effort is delegated to the Emergency Preparedness Supervisor.

3. EMERGENCY PLANNING COORDINATION

The Emergency Preparedness Supervisor is designated as the Emergency Planning Coordinator, having lead responsibility for emergency planning. This individual is responsible for developing and updating the LNP Emergency Plan and coordination of this Plan with other response organizations. The Progress Energy corporate staff may augment these on-site efforts, as needed, to ensure a comprehensive emergency preparedness effort.

4. PLAN REVIEWS AND UPDATES

The Emergency Planning Coordinator will coordinate the updating of the Emergency Plan, Plant Emergency Procedures (PEPs), and Supporting Agreements, as needed, and will review and certify them to be current on an annual basis. Any revisions to the Plan will be reviewed in accordance with 10 CFR 50.54(q) requirements.

On an annual basis, the Emergency Planning Coordinator reviews the LNP procedures for emergency classification with the state and any affected local organizations. The annual review includes the content of the EALs with the state and county authorities.

5. DISTRIBUTION OF REVISED PLANS

Upon completion of the annual review, the Emergency Planning Coordinator or designee incorporates any necessary changes. Changed pages are marked and dated to highlight the changes.

Following approval of the updated plan by the Site Executive, Levy Nuclear Plant, the LNP document control organization distributes the updated plan to organizations/individuals with responsibility for implementing the plans.

6. SUPPORTING PLANS

Other plans that support this Plan are:

a. The State of Florida Radiological Emergency Management Plan (Annex A to the State of Florida Comprehensive Emergency Management Plan) (Reference O).

b. Appendix VI of the State Plan (Levy Nuclear Plant Site Plan) (Reference O).

c. Citrus County Sheriff's Office Radiological Emergency Preparedness (Rep) Plan For Crystal River and Levy Nuclear Power Plants (Reference EE).

d. Levy County Emergency Management Radiological Emergency Preparedness Plan (Reference FF).

e. Marion County Emergency Management Radiological Emergency Preparedness (REP) Plan For the Levy Nuclear Power Plant (Reference GG).

f. U.S. Nuclear Regulatory Commission, NUREG-0728, NRC Incident Response Plan (Reference Y).

g. National Response Framework (Reference J).

h. NRC Region II Incident Response Plan.

i. Institute of Nuclear Power Operations (INPO) Emergency Response Plan.

j. Citrus Memorial Hospital "Nuclear Accident Plan"

k. Seven Rivers Regional Medical Center "Radioactive Material Contamination Response Plan"

7. IMPLEMENTING PROCEDURES

Appendix 5 of this Plan provides a topical listing of implementing procedures and administrative procedures that support this Plan and includes the section(s) of the Plan to be implemented by each procedure.

Certain emergency plan features recommended by NUREG-0654 (e.g., Evaluation Criterion I.3, which addresses methods and techniques for determining source terms and the magnitude of releases) are procedural in nature and have been appropriately placed in LNP procedures. Changes to the affected portions of these procedures are developed and approved consistent with the requirements of 10 CFR 50.54(q) and the guidance provided in NRC Regulatory Information Summary 2005-02, “Clarifying the Process for Making Emergency Plan Changes (Ref III.A. 28).”

8. TABLE OF CONTENTS AND NUREG-0654 CROSS REFERENCE

This Plan contains a specific table of contents. Additionally, the format for this Emergency Plan directly follows the format of NUREG-0654, Rev. 1.

9. EMERGENCY PLAN AUDITS

Progress Energy’s Nuclear Oversight organization performs, or oversees the performance of, periodic independent audits of the Emergency Preparedness Program consistent with the requirements of 10 CFR 50.54(t). The audits include, at a minimum, the following:

a. The Emergency Plan.

b. Emergency Plan Implementing Procedures and practices.

c. The Emergency Preparedness Training Program.

d. Readiness testing (e.g., drills and exercises).

e. Emergency response facilities, equipment, and supplies.

f. Interfaces with state and local government agencies.

g. Required records and documentation.

Progress Energy’s Nuclear Oversight organization ensures that all audit findings are subject to management controls consistent with the facility’s corrective action program.

Progress Energy establishes and maintains the frequency of the periodic audits based on an assessment of performance as compared to performance indicators; however, the audit frequency may not be less than once every 24 months. In addition, Progress Energy conducts a program audit as soon as

reasonably practicable after a change occurs in personnel, procedures, equipment, or facilities that could potentially adversely affect emergency preparedness, but no longer than 12 months after the change.

Progress Energy's Nuclear Oversight organization documents audit results and improvement recommendations and reports these results to the LNP facility and Progress Energy management. Progress Energy makes those portions of the audits that address the adequacy of interfaces with state and local governments available to the affected governments.

Records Management shall file and maintain the following records for 5 years:

a. The review results and recommended improvements.

b. The answers to the recommended improvements.

c. A description of the corrective actions taken.

10. EMERGENCY TELEPHONE NUMBERS

The Emergency Planning Coordinator, or designee, is responsible for performing a quarterly review of the telephone numbers in emergency response procedures and for ensuring required revisions are completed.

CHAPTER 1

INTRODUCTION AND GENERAL DESCRIPTION OF THE PLANT

TABLE OF CONTENTS

TABLE CONTENTS (Continued)

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION AND GENERAL DESCRIPTION OF THE PLANT

1.1 INTRODUCTION

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

Add the following paragraphs to the end of DCD Section 1.1

STD SUP 1.1-1

This Final Safety Analysis Report (FSAR) incorporates the Design Control Document (DCD) (as identified in Table 1.6-201) for a simplified passive advanced light water reactor plant provided by Westinghouse Electric Company, the entity originally sponsoring and obtaining the AP1000 design certification documented in 10 CFR Part 52, Appendix D. Throughout this FSAR, the "referenced DCD" is the AP1000 DCD submitted by Westinghouse as Revision 19 including any supplemental material as identified in Table 1.6-201. Unless otherwise specified, reference to the DCD refers to Tier 2 information, including references to the sensitive unclassified non-safeguards information (including proprietary information) and safeguards information, contained in the AP1000 DCD. Such DCD information is included in this combined license application in the same manner as it is included in the AP1000 DCD, i.e., references in the DCD are included as references in the FSAR, and material incorporated by reference into the DCD is incorporated by reference into the FSAR. Appropriate agreements are in place to provide for the licensee's rights to possession (including constructive possession) and use of the withheld sensitive unclassified non-safeguards information (including proprietary information) and safeguards information referenced in the AP1000 DCD for the life of the project.

Appendix D to 10 CFR Part 52 is hereby incorporated by reference into the COL application.

LNP SUP 1.1-2

This FSAR is hereby submitted under Section 103 of the Atomic Energy Act by Florida Power Corporation, doing business as Progress Energy Florida, Inc. (PEF) to the Nuclear Regulatory Commission (NRC) as part of the application for two Class 103 combined licenses (COLs) to construct and operate two nuclear power plants under the provisions of 10 CFR 52 Subpart C.

1.1.1 PLANT LOCATION

Add the following text at the beginning of DCD Subsection 1.1.1:

LNP COL 2.1-1

The Levy Nuclear Plant Units 1 and 2 (LNP) site is located in Levy County, Florida (Figure 2.1.1-201). This is a large, primarily rural area located southwest of Gainesville and west of Ocala and approximately 15.5 kilometers (km) (9.6

miles [mi.]) northeast of the Crystal River Energy Complex, an energy facility also owned by PEF (Figure 2.1.1-201). The nearest towns from the site are Inglis and Yankeetown, which are located 6.6 km (4.1 mi.) southwest and 12.9 km (8.0 mi.) southwest from the site, respectively. The Gulf of Mexico is located approximately 12.8 km (7.9 mi.) west of the proposed LNP site and Lake Rousseau lies about 4.8 km (3.0 mi.) to the south (Figure 2.1.1-202).

Figure 2.1.1-201 identifies the site location. Figure 1.1-201 identifies the plant arrangement within the site.

1.1.5 SCHEDULE

Add the following text to the end of DCD Subsection 1.1.5:

LNP COL 1.1-1

Table 1.1-203 displays the anticipated schedule for construction and operation of two AP1000 units at the LNP site. A site-specific construction plan and startup schedule will be provided to the NRC after issuance of the COL.

1.1.6.1 Regulatory Guide 1.70

Add the following text to the end of DCD Subsection 1.1.6.1.

STD SUP 1.1-6

This FSAR generally follows the AP1000 DCD organization and numbering. Some organization and numbering differences are adopted where necessary to include additional material, such as additional content identified in Regulatory Guide 1.206. Any exceptions are identified with the appropriate left margin annotation as discussed in Subsection 1.1.6.3 and Table 1.1-202.

1.1.6.3 Text, Tables and Figures

Add the following text to the end of DCD Subsection 1.1.6.3.

STD SUP 1.1-3

Table 1.1-202 describes the left margin annotations used in this document to identify departures, supplementary information, COL items, and conceptual design information.

FSAR tables, figures, and references are numbered in the same manner as the DCD, but the first new FSAR item is numbered as 201, the second 202, the third 203, and consecutively thereafter. When a table, figure, or reference in the DCD is changed, the change is appropriately left margin annotated as identified above. New appendices are included in the FSAR with double letter designations following the pertinent chapter (e.g., 12AA).

When it provides greater contextual clarity, an existing DCD table or figure is revised by adding new information to the table or figure and replacing the DCD table or figure with a new one in the FSAR. In this instance, the revised table or figure clearly identifies the information being added, and retains the same numbering as in the DCD, but the table or figure number is revised to end with the designation "R" to indicate that the table or figure has been revised and replaced. For example, revised "Table 4.2-1" would become "Table 4.2-1R." New and revised tables and figures are labeled in the left margin as described in Table 1.1-202.

1.1.6.5 Proprietary Information

Insert the following text to the end of DCD Subsection 1.1.6.5.

STD SUP 1.1-4

Some portions of this FSAR may be considered as proprietary, personal, or sensitive and withheld from public disclosure pursuant to 10 CFR 2.390 and Regulatory Issue Summary (RIS) 2005-026. Such material is clearly marked and the withheld material is separately provided for NRC review.

1.1.6.6 Acronyms

Add the following text to the end of DCD Subsection 1.1.6.6.

LNP SUP 1.1-5

Table 1.1-201 provides a list of acronyms and abbreviations used in the LNP 1 and 2 FSAR in addition to the acronyms identified in DCD Table 1.1-1 and system designation identified in Table 1.7-201 and DCD Table 1.7-2.

1.1.7 COMBINED LICENSE INFORMATION

Add the following text to the end of DCD Subsection 1.1.7.

LNP COL 1.1-1

This COL Item is addressed in Subsection 1.1.5.

LNP SUP 1.1-5

Table 1.1-201 (Sheet 1 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
ºC	degrees Celsius
°F	degrees Fahrenheit
χ/Q	Chi/Q (atmospheric dilution factor)
ϕ’	effective friction angle
ϕ_{cv}	critical void ratio friction angle
v	Poisson’s ratio
µm	Micrometer
µCi/cm^3 or µCi/cc	microcuries per cubic centimeter
µCi/ml	microcuries per milliliter
2-D	two dimensional
3-D	three-dimensional
a_{max}	peak acceleration
AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ac.	Acres
ac.-ft.	acre-feet
ACI	American Concrete Institute
ADAMS	Agencywide Documents Access and Management System
AE	Architect Engineer
AFW	Auxiliary Feedwater System
AMS	American Meteorological Society

LNP SUP 1.1-5

Table 1.1-201 (Sheet 2 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
amsl	above mean sea level
ANSS	Advanced National Seismic System
AOV	air-operated valve
AP1000	Westinghouse's AP1000 Reactor
$^{40}A/^{39}A$	Argon isotope ratio
ASCE/SEI	American Society of Civil Engineers/Structural Engineering Institute
ASD	Allowable Strength Design
ASOS	Automated Surface Observing System
AST	above ground storage tank
ASTM	American Society for Testing and Materials
BAT	Barten Aerial Technologies
BE	best estimate
BEBR	Bureau of Economic and Business Research
BES	Bulk Electric System
BF – ITAAC	Backfill ITAAC
bgs	below ground surface
BMT	Becker Hammer Test
bpf	blow per foot
B&PVC	Boiler and Pressure Vessel Code
BTOC	below top of casing
Btu/hr	British Thermal Units per hour

LNP SUP 1.1-5

Table 1.1-201 (Sheet 3 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
BWR	boiling water reactor
c'	effective cohesion
$C_{\varepsilon\alpha}$	coefficient of secondary compression
C_c	compression index
C_r	unloading-reloading index
C-I	seismic Category I
C-II	seismic Category II
CAM	Continuous Air Monitors
CAV	cumulative absolute velocity
CCDP	conditional core damage probability
CCTV	Closed Circuit Television
CD	Compact disk
CDDIS	Crustal Dynamics Data Information System
CDE	Committed Dose Equivalent
CDF	core damage frequency
CDI	Conceptual Design Information
CDL	clandestine drug lab
CEDE	Committed Effective Dose Equivalent
CEO	Chief Executive Officer
CEUS	central and eastern United States
CFBC	Cross Florida Barge Canal
cfs	cubic feet per second

LNP SUP 1.1-5

Table 1.1-201 (Sheet 4 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
CH	fat clay
Chi/Q	atmospheric dilution factor
CL	lean clay
CLSM	controlled low strength material
cm	centimeter
cm^3/cm^3	cubic centimeter per cubic centimeter
cm/5 min	centimeter per 5 minutes
cm/hr	centimeter per hour
cm/sec	centimeters per second
cm^2/sec	square centimeters per second
cm^3/sec	cubic centimeters per second
CMT	centroid-moment-tensor
cm/y	centimeters per year
CNO	Chief Nuclear Officer
CO	carbon monoxide
Co-58	cobalt isotope 58
Co-60	cobalt isotope 60
COC	cycles of concentration
COCORP	Consortium for Continental Reflection Profiling
COL	Combined License
COLA	Combined License Application
conc.	concentration

LNP SUP 1.1-5

Table 1.1-201 (Sheet 5 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
CP&L	Carolina Power and Light Company
CPT	cone penetrometer test
cps	counts per second
CR	control room
CR3	Crystal River Unit No. 3 Nuclear Generating Plant
Cr-51	chromium isotope 51
CREC	Crystal River Energy Complex
CRR	Cyclic Resistance Ratio
CRS	Control Room Supervisor
CS	Creedmoor segment
CSDRS	certified design seismic design response spectra
CSR	Cyclic Stress Ratio
CSX	CSX Transportation, Inc.
CU	consolidated-undrained
CVS	Chemical Volume and Control System
d	distance from airport in kilometers (miles)
D	disturbance factor
d_{max}	maximum required depth for engineering purposes
D_r	relative density
DAC	Derived Air Concentration
DAC-hr	Derived Air Concentration-hr
DAM	Dames & Moore

LNP SUP 1.1-5

Table 1.1-201 (Sheet 6 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
$days^{-1}$	1 per day
DCD	Westinghouse Electric Company, LLC, AP1000 Design Control Document for the certified design as amended
DE	deaggregation earthquake
DEC	Duke Energy Corporation
DEH	high-magnitude deaggregation earthquake
DEL	low-magnitude deaggregation earthquake
DEM	middle-magnitude deaggregation earthquake
DEM	Digital Elevation Model
DEP	Department of Environmental Protection
DF	design factor
DHBRC	Department of Health, Bureau of Radiation Control
DHQ	mean diurnal high water inequality
DLQ	mean diurnal low water inequality
DNAG	Decade of North American Geology/the Geological Society of America's program that includes the Magnetic Anomaly Map of North America
DOT	Florida Department of Transportation
D/Q	Relative Deposition Factor
DRAP	Reliability Assurance Program for the design phase
DTL	mean diurnal tide level
DTPG	defined test plan groups
E	East

LNP SUP 1.1-5

Table 1.1-201 (Sheet 7 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
E	elastic Young's modulus
E_{50}	half of the failure stress
E_{pmt}	rock pressuremeter test modulus
E_{rm}	rock mass modulus
E-F	Enhanced-Fujita Tornado Scale
E&I	Environment and Infrastructure
EAB	exclusion area boundary
EAL	Emergency Action Level
ECC-GC	Extended Continental Crust-Gulf Coast
ECCS	Emergency Core Cooling System
ECFS	East Coast fault system
ECL	effluent concentration limit
ECS	Emergency Communications System
EDIS	Economic Development Information System
EDR	Environmental Data Resources. Inc.
EDTA	Ethylenediaminetetraacetic Acid
Emb	expected estimate of body wave magnitude
EnC	Enon fine sand loam occurs on slopes of 6 to 10 percent
ENE	east-northeast
ENS	Emergency Notification System
EOC	Emergency Operations Centers
EOF	Emergency Operations Facility

LNP SUP 1.1-5

Table 1.1-201 (Sheet 8 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
EOP	emergency operating procedure
EPC	engineering, procurement, and construction
EPRI-SOG	Electric Power Research Institute-Seismic Owners Group
EP-ITAAC	Emergency Planning-ITAAC
EQ	Environmental Qualification
EQMEL	Environmental Qualification Master Equipment List
ERDS	Emergency Response Data System
ERNS	Emergency Response Notification System
ERO	Emergency Response Organization
ESE	east-southeast
ESP	Early Site Permit
ESATCOM	Florida Emergency Satellite Communications system
EST	earth science team
ETSZ	East Tennessee seismic zone
E-W or EW	east-west
EWD	Engineering Weather Data
F_a	amplification factor
F0	Fujita tornado scale intensity 40 – 72 mph
F1	Fujita tornado scale intensity 73 – 112 mph
F2	Fujita tornado scale intensity 113 – 157 mph
F3	Fujita tornado scale intensity 158 – 206 mph

LNP SUP 1.1-5

Table 1.1-201 (Sheet 9 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
F4	Fujita tornado scale intensity 207 – 260 mph
F5	Fujita tornado scale intensity 261 – 318 mph
FAC	flow accelerated corrosion
FAA	Federal Aviation Administration
FAS	Floridan aquifer system
FB	Fault B
FC	Fault C
FDEP	Florida Department of Environmental Protection
FDLE	Florida Department of Law Enforcement
Fe-55	iron isotope 55
Fe-59	iron isotope 59
FEM	finite element model
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FFA	flood frequency analysis
FFD	Fitness for Duty
FGDL	Florida Geographic Data Library
FGS	Florida Geological Survey
FGT	Florida Gas Transmission Company
FHA	Fire Hazards Analysis
FHB	Fuel Handling Building
FIPS	Federal Information Processing Standards

LNP SUP 1.1-5

Table 1.1-201 (Sheet 10 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
FIRS	foundation input response spectra
FMG	Failure Mode Groups
fps	feet per second
FRCC	Florida Reliability Coordinating Council
FRS	Facility Registry Building
FS	factor of safety
FSAR	Final Safety Analysis Report
FSER	Final Safety Evaluation Report
ft.	foot/feet
ft^2	square feet
ft/day	feet per day
ft^2/day	square feet per day
ft^3/day	cubic feet per day
ft/ft	feet per foot
ft/mi	Foot per mile
ft/sec or f/s	feet per second
FTS	Federal Telephone System
g	gram
G	shear modulus
g	gravity acceleration
g/cm^3	grams per cubic centimeter
Ga	billion per year

LNP SUP 1.1-5

Table 1.1-201 (Sheet 11 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
gal.	gallon
gal/ft^3	gallon per cubic foot
GC	clayey gravel
GCSZ	Gulf Coastal Source Zones
GCVSZ	Giles County, Virginia, seismic zone
GG&S	Geotechnical, Geological, and Seismological
GI-LLI	gastrointestinal tract-lower large intestine (ingestion pathway organ)
GIS	Geographic Information System
GL	ground level
GMRS	ground motion response spectrum
GMT	Greenwich Mean Time
gpd	gallon per day
gpd/ft	gallon per day per foot
gpm or gal/min	gallons per minute
gpm/ft	gallon per minute per foot
GSI	geologic strength index
GSU	main setup transformer
GT	Great Diurnal Range
h or hr.	hour
H1	Category 1 hurricane
H2	Category 2 hurricane

LNP SUP 1.1-5

Table 1.1-201 (Sheet 12 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
H3	Category 3 hurricane
ha	hectares
ha	mangrove-swamp deposits
ha-m	hectare-meter
HAR	Shearon Harris Nuclear Power Plant
HCL	hydrochloric acid
HCLPF	high confidence, low probability of failure
HEC-HMS	Hydrologic Engineering Center-Hydrologic Modeling System
HEC-RAS	Hydrologic Engineering Center – River Analysis System
HE&EC	Harris Energy and Environmental Center
HES	Hurricane Evacuation Studies
HF	high-frequency
HiRAT	High Resolution Acoustic Televiewer probe
HMG	High Mobility Grout
HMR	Hydrometeorological Report
hPa/mb	hectoPascal/milliBar
HPN	Health Physics Network
HQWL	type of rock coring tool
HRHF	hard rock high frequency
hr.	hour
hrs/yr	Hours per year

LNP SUP 1.1-5

Table 1.1-201 (Sheet 13 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
HSS	Holly Springs segment
HV	high voltage
HWI	Greenwich high water interval (in hours)
Hz	Hertz
I_{50}	point load index
I-75	Interstate 75
IBC	International Building Code
ICIS	Integrated Compliance Information System
in.	inch
in/5 min	inch per 5 minutes
in./hr	inches per hour
in/in	inch per inches
ISG	Interim Staff Guidance
ISO	Independent System Operator
ISRM	International Society of Rock Mechanics
ITA	inspections, tests, or analyses
ITP	Initial Test Plan
JOG	Joint Owners Group
JPM	job performance measures
JTG	Joint Test Group
JTWG	Joint Test Working Group
k	standard deviation of ln

LNP SUP 1.1-5

Table 1.1-201 (Sheet 14 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
ka	thousand years before present
kcf	kips per cubic foot
kg	kilogram
kg/m^2	kilograms per square meter
kg/yr	kilograms per year
kip	kilopound (1000 pounds)
$kips/ft^3$	kips per cubic foot
km	kilometer
km^2	square kilometers
km/h or km/hr	kilometers per hour
kPa	Kilopascals
kPa/sec	kilopascals per second
ksf	kips per square foot
ksi	kips per square inch
KTS	knots
kV	kilovolt
kVA	kilovoltampere
l or L	liter
L/cm^3	liters per cubic centimeter
l/day or L/day	liters per day
l/min, L/min, lpm	liters per minute

LNP SUP 1.1-5

Table 1.1-201 (Sheet 15 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
l/yr or L/yr	liters per year
LAN	Local Area Network
LB	lower bound
lb.	pound
lb/ft^2	pounds per square foot
lb/in^2	pounds per square inch
lb/m^2	pounds per square meter
lbs	Pounds
LCD	local climatological data
LCFS	Central Florida South
LCO	Limiting Conditions for Operations
LER	licensee event report
LF	low-frequency, nominally 1 to 2.5 Hz
LFL	Lower flammability limit
LiDAR and LIDAR	light detection and ranging
LLB	Lower Lower Bound
LLNL	Lawrence Livermore National Laboratory
LMG	low mobility grout
LNP 1	Levy Nuclear Plant, Unit 1
LNP 2	Levy Nuclear Plant, Unit 2
LNP or LNP 1 and 2	Levy Nuclear Plant, Units 1 and 2
LOSP	loss of off-site power

LNP SUP 1.1-5

Table 1.1-201 (Sheet 16 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
LPC	Citrus 1 and Citrus 2
lpd	liters per day
LPG	liquefied petroleum gas
lpm	liters per minute
LPZ	low population zone
LSI	Liquefaction Severity Index
LT	local time
LUST	leaking underground storage tank
LWI	Greenwich low water interval (in hours)
LWSP	Local Water Supply Plan
m	meter
M	moment magnitude
m_b	body-wave magnitude
M_d	duration magnitude
m_i	material constant
M_I	intensity magnitude (considered equivalent to M)
M_l	local magnitude
M_{max}	maximum magnitude
M_{sw}	surface wave magnitude
M_S	surface-wave magnitude
M_w	moment magnitude
m/km	meters per kilometer

LNP SUP 1.1-5

Table 1.1-201 (Sheet 17 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
m/s or m/sec	meters per second
m^{-2}	$1/m^2$
m^2	square meters
m^2/day	square meters per day
m^3	cubic meters
m^3/s	cubic meters per second
Ma	million years before present
MAT	maximum astronomical tide
mb	beach and near shore deposits
mb	millibar
mb/s	millibars per seconds
MCL	Management Counterpart Link
MCS	Monte Carlo Simulations
MCSB	Mid-Cretaceous Sequence Boundary
MCU	Middle Counting Unit
MEOW	maximum envelope of water
MESE	Mesozoic and younger crustal region
mGal	milligal
mgd	million gallons per day
MH	elastic silt
MHHW	mean higher high water
MHW	mean high water

LNP SUP 1.1-5

Table 1.1-201 (Sheet 18 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
mi.	mile(s)
$mi.^2$	square miles
$mi.^3$	cubic miles
mi/hr	mile per hour
min	minute
MIS	marine oxygen isotope stage
Mg	milligram
MH	elastic silt
MHHW	mean higher high water
MHW	mean high water
ml	milliliter
ML	Silt
mld	milliliters per day
MLE	maximum likelihood estimate
ml/g	milliliters per gram
MLU	Multi-Layer Unsteady State
MLLW	mean lower low water
MLW	mean low water
mm	millimeter
MM	Modified Mercalli
MMI	Modified Mercalli Intensity
mm/h	millimeters per hour

LNP SUP 1.1-5

Table 1.1-201 (Sheet 19 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
mm/yr	millimeters per year
mm^2/s	square millimeters per second
MMI	Modified Mercalli Intensity
MN	mean range of tide
MOM	Maximum of Maximum
MPa	megaPascal
mph	miles per hour
MPSSZ	Middleton Place-Summerville seismic zone
MR	Maintenance Rule
mrad	millirad
mrem	millirem
mrem/yr	millirem per year
MSF	magnitude scaling factor
msl	mean seal level
mS/m	Millisiemens per meter
MSPI	mitigating systems performance indicators
mSv	milliSievert
MT	magnetic particle
MTL	mean tide level
MVA	megavoltampere
m.y.	million years
N	SPT blowcount

LNP SUP 1.1-5

Table 1.1-201 (Sheet 20 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
N	North
N_{60}	SPT blow counts corrected for a hammer with 60 percent energy transfer efficiency
NA, N/A	not applicable
Na, NA	not available
NAAQS	national ambient air quality standards
NAMAG	North American Magnetic Anomaly Group
NASA	National Aeronautics and Space Administration
NAV	Avon Park Rock at the north reactor site
NAV-1	LNP 2 Avon Park Limestone
NAVD	North American Vertical Datum
NAVD 1988	North American Vertical Datum of 1988
NAVD88	North American Vertical Datum of 1988
NCDC	National Climatic Data Center
NCEDC	Northern California Earthquake Data Center
NCEER	National Center for Earthquake Engineering Research
ND	no data available/ no data recorded for parameter
NDE	non-destructive examination
NE	northeast
NED	National Elevation Dataset
NEIC	National earthquake Information Center
NERC	North American Reliability Electric Corporation

LNP SUP 1.1-5

Table 1.1-201 (Sheet 21 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
NESC	National Electric Safety Code
NGA	Next Generation Attenuation Project
NGDC	National Geophysical Data Center
NGS	National Geodetic Survey
NGVD29	National Geodetic Vertical Datum of 1929
NHC	National Hurricane Center
NHVRy	New Hope Valley Railway
NI	nuclear island
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
NLO	non-licensed operator
NMESE	Mesozoic and older crustal region
NNE	north-northeast
NNW	north-northwest
NOAA	National Oceanic and Atmospheric Administration
NOS	Nuclear Oversight Section
NPD	Nuclear Plant Development
NPDES	National Pollution discharge Elimination System
NQWL	type of rock coring tool
NRC	U.S. Nuclear Regulatory Commission
NRCS	U.S. Department of Agriculture, Natural Resources Conservation Service

LNP SUP 1.1-5

Table 1.1-201 (Sheet 22 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
N-S	north-south
NS	Non-seismic
NSM	Nuclear Shift Manager
Nuc Ops	Nuclear Operations
NW	northwest
NWS	National Weather Service
OBE	Operating Basis Earthquake
OCB	oceanic convergent boundary
OCL	Operations Center line
OCR	over-consolidation ratio
ODCM	Off-Site Dose Calculation Manual
OE	operating experience information
Ohm-cm	Ohm-centimeter
OJT	on-the-job training
OM	Operations and Maintenance
OSC	Operations Support Center
OTF	oceanic transform fault
P*	Probability an EPRI-SOG seismic source is active
PBSRS	performance based surface horizontal and vertical response spectra
pcf	pounds per cubic foot
PCP	Process Control Program

LNP SUP 1.1-5

Table 1.1-201 (Sheet 23 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
PE&RAS	Performance Evaluation and Regulatory Affairs Section
PEC	Progress Energy Carolinas, Inc.
PEER	Pacific Earthquake Engineering Research Center
PEF	Progress Energy Florida, Inc.
PEZ	Paleozoic Extended Zone
person-hrs/year	person-hours per year
PGA	peak ground acceleration
PGM	Plant General Manager
pH	hydrogen (ion) concentration
PLS	Public Land Survey
PLT	point-load test
$PM_{2.5}$	particulate matter of 2.5 µm and smaller
PM_{10}	particulate matter of 10 µm and smaller
PMCL	Protective Measures Counterpart Link
PMF	probable maximum flood
PMH	probable maximum hurricane
PMP	probable maximum precipitation
PMS	probable maximum surge
PMT	probable maximum tsunami
PMT	pressure meter test
PMWP	probable maximum winter precipitation

LNP SUP 1.1-5

Table 1.1-201 (Sheet 24 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
POR	period of record
PORC	Plant Owner's Operations Review Committee
PORV	power operated relief valve
ppsm	people per square mile
PR	Peninsula Range
P-S	P- and S-wave (compression and shear wave)
psf	pounds per square foot
PS-ITAAC	Physical Security-ITAAC
PSHA	probabilistic seismic hazard analysis
psi	pounds per square inch
psi/sec	pounds per square inch per second
PST	preservice test
PR	Peninsula Range
PT	liquid penetrant
PTAC	Plant Transmission Activities Coordinator
PT&O	Plant Test and Operation
pu	per unit
P-wave	primary wave
PZR	Pressurizer
Qal	Quaternary alluvium
QAPD	Quality Assurance Program Description

LNP SUP 1.1-5

Table 1.1-201 (Sheet 25 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
QC	Quality Control
QAPD	Quality Assurance Program Description
QMS	Westinghouse Quality Management System
Q/T	Quaternary/Tertiary
R0	extremely weak rock
R1	very weak rock
R2	weak rock
R3	medium weak rock
R4	strong rock
RAI	request for additional information
RAT	Reserve Auxiliary Transformer
Rb-Sr	rubidium-strontium
RCA	Radiological Controlled Area
RCC	roller compacted concrete
RCPB	reactor coolant pressure boundary
RCRIS	Resource Conservation and Recovery Information Service
RCPB	reactor coolant pressure boundary
RCRIS	Resource Conservation and Recovery Information Service
re	sandy solution residuum
RE	reference (controlling) earthquake

LNP SUP 1.1-5

Table 1.1-201 (Sheet 26 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
RG	Regulatory Guide
RHR	residual heat removal
RIS	Regulatory Issue Summary
RLME	repeated large magnitude earthquake
RO	Reactor Operator
RP	radiation protection
RPS	Reactor Protection System
RPT	Radiation Protection Technician
RQD	rock quality designation
RRS	required response spectrum
RSCL	Reactor Safety Counterpart Link
RT	radiography techniques
RTDP	Revised Thermal Design Procedure
RTH	Rock Testing Handbook
RTNSS	Regulatory Treatment of Non-Safety Systems
RTO	Regional Transmission Organization
RV	recreational vehicle
S	south
Shmax	maximum horizontal stress axis
S-1	top soil layer
S-2	immediate soil layer

LNP SUP 1.1-5

Table 1.1-201 (Sheet 27 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
S-3	bottom soil layer
S_{hmin}	minimum horizontal stress axis
S_u	undrained shear strength
S-SO	Superintendent – Shift Operations
SA	Spectral Acceleration
SAMDA	Severe Accident Mitigation Design Alternatives
SAMG	Severe Accident Management Guidance
SAMSON	Solar and Meteorological Surface Observation Network
SASW	spectral analysis of surface waves
SAV	Avon Park Rock at the south reactor site
SAV-1	LNP 1 Avon Park Limestone
SBO	station blackout
SC	clayey sand
SCBA	self-contained breathing apparatus
SC DOT	South Carolina Department of Transportation
SCOR	soil column outcrop response spectra
SCR	stable continental region
SDP	Significance Determination Process
SE	southeast
Sec	second
sec/m^3	seconds per cubic meter
SECY	NRC Office of the Secretary

LNP SUP 1.1-5

Table 1.1-201 (Sheet 28 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
SEI/ASCE	Structural Engineering Institute/American Society of Civil Engineers
SERC	Southeastern Electric Reliability Corporation
SGTR	steam generator tube rupture
SIWP	Site Investigation Work Plan
SLOSH	Mathematical model that stands for sea, lake, and overland surge from hurricanes
sm	silty sand
SM	Shift Manager
SNC	Southern Nuclear Company
SNM	Special Nuclear Material
SO_2	sulphur dioxide
SOC	Security Operations Center
SOFIA	Southern Florida Information Access
SOG	Seismic Owners Group
SOV	solenoid-operated valve
SP	poorly graded sand
SPN	shotpoint number
SP-SM	poorly graded sand and silty sand
SPT	standard penetration testing
sq. ft.	square foot
SQG	small quantities generated
SR	soft rock

LNP SUP 1.1-5

Table 1.1-201 (Sheet 29 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
SR	State Route
Sr-89	Strontium isotope 89
Sr-90	Strontium isotope 90
SRO	Senior Reactor Operator
SRWMD	Suwannee River Water Management District
SSC	Seismic Source Characterization
SSC	Structures, Systems, and Components
SSE	safe shutdown earthquake
SSE	south-southeast
SSHAC	Senior Seismic Hazard Analysis Committee
SS-ITAAC	Site-Specific ITAAC
SSW	south-southwest
STA	Shift Technical Advisor
STP	South Texas Project
STPNOC	STP Nuclear Operating Company
SUB	subduction zone
SV	safety valve
Sv	Sievert
SW	southwest
SWAPP	Source Water Assessment and Protection Program
SWFWMD	South West Florida Water Management District
SWPT	State Warning Point – Tallahassee

LNP SUP 1.1-5

Table 1.1-201 (Sheet 30 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
T	trace amount
T	transmissivity
Tap	Avon Park Formation
TD	total depth
TD	tropical depression
TE	equivalent period of completeness
TEDE	Total Effective Dose Equivalent
TFR	temporary flight restriction
Tha	Hawthorne Group, Arcadia Foundation
That	Hawthorne Group, Tampa Member
TIP	Trial Implementation Program
TMI	Three Mile Island
TNT	Trinitrotoluene
To	Upper Eocene Ocala Limestone
TOC	top of casing
Ts	Lower Oligocene Suwannee Limestone
TS	Technical Specification(s)
TS	tropical storm(s)
TSO	Transmission System Operator
TSCSR	Truncated Soil Column Surface Response
TSP	Transmission System Provider

LNP SUP 1.1-5

Table 1.1-201 (Sheet 31 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
TRS	test response spectrum
TVA	Tennessee Valley Authority
TWTT	two-way travel time
UAT	Unit Auxiliary Transformer
UB	upper bound
UCO	Unit Control Operator
UCS	unconfined compressive strength
UCSS	updated Charleston seismic source
UHRS	uniform hazard response spectra
USACE	U.S. Army Corps of Engineers
USBR	U.S. Department of the Interior, Bureau of Reclamation
USCO	Unit Senior Control Operator
USD	Ultimate Strength Design
USDA	U. S. Department of Agriculture
USEPA	U. S. Environmental Protection Agency
USGS	U. S. Geological Survey
UST	underground storage tank
UT	ultrasonic techniques
UTC	Coordinated Universal Time
UTM	Universal Transverse Mercator
v	Poisson's ratio
V	Volt

LNP SUP 1.1-5

Table 1.1-201 (Sheet 32 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
V_P	compressional wave velocity
V_S	shear wave velocity
V/H	vertical to horizontal
V&V	Verification and Validation
VP-NP&C	Vice President – Nuclear Projects and Construction
VT-1, -2, -3	direct visual
W	West
WAC	Waste Acceptance Criteria
WEC	Westinghouse Electric Company
Westinghouse	Westinghouse Electric Company, LLC
WGC	Weston Geophysical
WLS	liquid radwaste system
WNW	west-northwest
Wo	open water
WNW	west-northwest
WSS	solid radwaste system
WSW	worst meteorological sector
WSW	west-southwest
WTP	water treatment plant
Wts.	weight
WUS	western United States
ww	wastewater

LNP SUP 1.1-5

Table 1.1-201 (Sheet 33 of 33)
Acronyms and Abbreviations Used in the FSAR

Acronym/Abbreviation	Definition
X/Q	atmospheric dilution factor
yrs	Years
zc	decomposition residuum on sand or mixed-composition sand and gravel on upland surfaces
zp	Smectitic-clay decomposition residuum
ZPA	zero period acceleration
ZRA	zone of river anomalies

STD SUP 1.1-3

Table 1.1-202 (Sheet 1 of 2)
Left Margin Annotations

Margin Notation	Definition and Use
STD DEP X.Y.Z-#	FSAR information that departs from the generic DCD and is common for parallel applicants. Each Standard Departure is numbered separately at an appropriate level, e.g., STD DEP 9.2-1, or STD DEP 9.2.1-1
NPP DEP X.Y.Z-#	FSAR information that departs from the generic DCD and is plant specific. NPP is replaced with a plant specific identifier. Each Departure item is numbered separately at an appropriate subsection level, e.g., NPP DEP 9.2-2, or NPP DEP 9.2.1-2
STD COL X.Y-#	FSAR information that addresses a DCD Combined License Information item and is common to other COL applicants. Each COL item is numbered as identified in DCD Table 1.8-2 and FSAR Table 1.8-202, e.g., STD COL 4.4-1, or STD COL 19.59.10.5-1
NPP COL X.Y-#	FSAR information that addresses a DCD Combined License Information item and is plant specific. NPP is replaced with a plant specific identifier. Each COL item is numbered as identified in DCD Table 1.8-2 and FSAR Table 1.8-202, e.g., NPP COL 4.4-1, or NPP COL 19.59.10.5-1
NPP CDI or STD CDI	FSAR information that addresses DCD Conceptual Design Information (CDI). Replacement design information is generally plant specific; however, some may be common to other applicants. NPP is replaced with a plant specific identifier. STD is used if it is common. CDI information replacements are not numbered.

STD SUP 1.1-3

Table 1.1-202 (Sheet 2 of 2)
Left Margin Annotations

Margin Notation	Definition and Use
STD SUP X.Y-#	FSAR information that supplements the material in the DCD and is common to other COL applicants. Each SUP item is numbered separately at an appropriate subsection level, e.g., STD SUP 1.10-1, or STD SUP 9.5.1-1
NPP SUP X.Y-#	FSAR information that supplements the material in the DCD and is plant specific. NPP is replaced with a plant specific identifier. Each SUP item is numbered separately at an appropriate subsection level, e.g., NPP SUP 3.10-1, or NPP SUP 9.2.5-1
DCD	FSAR information that duplicates material in the DCD. Such information from the DCD is repeated in the FSAR only in instances determined necessary to provide contextual clarity.

LNP COL 1.1-1

Table 1.1-203
Schedule for Construction and Operation of LNP 1 and LNP 2

Activity	Start	Finish
LNP 1		
Early Procurement Activities	1st Quarter 2008	
Site Preparation	3rd Quarter 2013	
Commence Construction (Safety-Related Activities)	3rd Quarter 2016 (or later)	
Fuel Load, Commence Start-Up	3rd Quarter 2023 (or later)	
Commence Operation		2nd Quarter 2024 (or later)
LNP 2		
Site Preparation	3rd Quarter 2013	
Commence Construction (Safety-Related Activities)	3rd Quarter 2016 (or later)	
Fuel Load, Commence Start-Up	1st Quarter 2025 (or later)	
Commence Operation		4th Quarter 2025 (or later)

1.2 GENERAL PLANT DESCRIPTION

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

1.2.2 SITE DESCRIPTION

In Subsection 1.2.2 of the DCD, replace the information entitled “Site Plan” with the following text.

Site Plan

LNP COL 2.1-1
LNP COL 3.3-1
LNP COL 3.5-1

A typical site plan for a single unit AP1000 reference unit is shown in DCD Figure 1.2-2. The directions north, south, east, and west used in this description are the conventions used in the DCD for the orientation of AP1000 structures and equipment and differ from geographic north, south, east and west.

The site plan for LNP 1 and 2 is shown on Figure 1.1-201. Principal structures and facilities, parking areas, and roads are illustrated. Orientation of the two AP1000 units is such that "plant north" faces 45 degrees east from true north. Unless otherwise noted, directions in this FSAR are based on true north. Similarly, plant elevation in the DCD is 100’-0”, whereas the plant building floor elevation for NGVD 88 is Elevation 51’-0”; therefore, DCD elevations are to be decreased by 49 ft. to be actual site elevations. The plant building floor elevation for design is NGVD 88 Elevation 51’-0” and corresponds to DCD Elevation 100’-0”. The actual plant grade floor elevation will vary to accommodate floor slope and layout requirements.

As stated in DCD Subsection 1.2.1.6.1, the power block complex consists of five principal building structures: the nuclear island, the turbine building, the annex building, the diesel generator building, and the radwaste building. Each of these building structures is constructed on an individual basemat. The nuclear island consists of the containment building, the shield building, and the auxiliary building, all of which are constructed on a common basemat.

DCD Figure 1.2-3 provides a functional representation of the principal systems and components that are located in each of the key AP1000 buildings. This figure identifies major systems and components that are contained in these structures.

Each of the two main cooling tower-circulating water pump complexes consist of mechanical draft cooling towers, a pump basin, circulating water pumps, and associated piping. The cooling towers are located west of the reactors. The circulating pumps are located near the cooling towers. The pumps circulate the cooling water from the pump basin to the main condensers and back to the cooling towers.

The makeup water pumps that provide makeup water to the circulating water system (part of the raw water pump system [RWS], saltwater subsystem) is

located south of the plant on the Cross Florida Barge Canal (CFBC). The pumps and wells of the RWS freshwater subsystem that supply the makeup requirements of the other plant systems are located south of the plant.

Road access to the site is from the west.

Construction of the LNP will utilize a barge slip located on the northern bank of the CFBC at the end of the barge slip access road from County Road 40 (CR-40). A heavy haul road will be used to transport equipment and materials from CR-40 to the LNP site.

During construction, a heavy lift crane is used to place major pieces of equipment such as the turbine-generator, the reactor vessel, the steam generators, containment ring sections, large structural modules, and other large or heavy equipment modules.

1.3 COMPARISONS WITH SIMILAR FACILITY DESIGNS

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

1.4 IDENTIFICATION OF AGENTS AND CONTRACTORS

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

1.4.1 APPLICANT – PROGRAM MANAGER

Add the following paragraphs as the first three paragraphs in DCD Subsection 1.4.1.

LNP SUP 1.4-1 Progress Energy Florida, Inc., (PEF) is the applicant for Combined Licenses for Levy Nuclear Plant Units 1 and 2 (LNP 1 and 2) and will own and operate LNP 1 and 2. PEF is a subsidiary of Progress Energy, Inc., an energy company based in Raleigh, North Carolina. Progress Energy, Inc. is a wholly-owned subsidiary of Duke Energy Corporation, an energy company based in Charlotte, North Carolina. PEF provides electricity and related services in central and northern Florida. The company serves more than 1.7 million customers in Florida.

Duke has over 45 years of experience in the design, construction and operation of nuclear power stations, and currently has twelve nuclear operating units.

Duke Energy Corporation (DEC), the largest electric power company in the United States, supplies and delivers energy to 7.1 million US customers. The company has over 58,000 megawatts of electric generating capacity in the Midwest, Florida and the Carolinas.

On December 31, 2008, PEF executed a contract for Engineering, Procurement, and Construction (EPC) of LNP 1 and 2 with a Consortium comprised of Westinghouse and Stone & Webster, Inc. (also referred to herein as Shaw Stone & Webster or simply Shaw). The Consortium will act as the AP1000 provider and architect-engineer for LNP 1 and 2. PEF, as the constructor of LNP, has delegated responsibility for physical construction activities to the Consortium.

Add the following paragraphs to the end of DCD Subsection 1.4.1:

Contractors participating in the preparation of the COL Application are addressed in Subsection 1.4.2.8.

LNP SUP 1.4-2 Shaw is a Fortune 500 company which has been an active participant in the nuclear industry for nearly 60 years, from providing engineering and design services for Shippingsport, the nation's first commercial nuclear power plant, to the restart of Tennessee Valley Authority's Browns Ferry Unit 1, which at the time was the largest nuclear construction project in the western hemisphere. Shaw continues to prove its leadership role in the nuclear industry by being part of the AP1000 Consortium. Shaw is part of a vertically integrated company, Shaw

Group, Inc., which has nearly 180 offices worldwide and over 21,000 employees, of which approximately 3,100 are nuclear professionals offering nuclear services on four continents.

Westinghouse is responsible for the overall plant design, AP1000 Design Certification revisions, procurement of primary NSSS equipment and power block major components including the Turbine Generator, and plant training simulator. Shaw is responsible for site development, construction, site specific design related work, secondary equipment procurement, module fabrication, and supply of bulk materials and commodities. Westinghouse and Shaw are jointly responsible for testing and startup. Fuel supply will be provided by Westinghouse under a separate contract.

Add the following new subsection after DCD Subsection 1.4.2.7:

LNP SUP 1.4-3

1.4.2.8 Other Contractors

Contractual relationships have been established with specialized consulting firms to assist in preparing the COL Application for LNP 1 and 2.

1.4.2.8.1 CH2M Hill, Inc.

CH2M Hill, Inc. is a full-service engineering, consulting, construction, and operations firm. They have experience in providing services in siting, licensing, site safety analysis reports, environmental reports, and emergency plans. CH2M Hill has demonstrated expertise with all aspects of nuclear facility development.

CH2M Hill, Inc has provided siting, environmental, emergency planning, site redress, geotechnical field investigation, geological, and seismological services to prepare the COL application for PEF.

1.4.2.8.2 Sargent & Lundy, LLC

Sargent & Lundy, LLC is a full-service architect-engineering firm with considerable nuclear plant expertise. The firm has demonstrated and proven capabilities in the design and licensing of nuclear plants both domestically and overseas. Sargent & Lundy, LLC has engineered, designed, planned, evaluated, and managed large, complex nuclear projects including 30 nuclear units.

Sargent & Lundy, LLC has provided engineering, management, and consulting services to prepare the COL application for PEF. This included project management and engineering services, developing Final Safety Analysis Report sections, developing the security plan, and preparing the COL application.

1.4.2.8.3 WorleyParsons Resources and Energy

WorleyParsons Resources and Energy is a full-service engineering firm with considerable nuclear plant expertise. The firm has demonstrated and proven

capabilities in the design and licensing of nuclear plants both domestically and overseas. WorleyParsons Resources and Energy has engineered, designed, planned, evaluated, and managed large, complex nuclear projects including 16 nuclear units and been involved in the development of an early site permit.

WorleyParsons Resources and Energy has provided engineering and consulting services to prepare the COL application for PEF. This included project management and engineering services, developing Final Safety Analysis Report sections, and preparing the COL application.

1.5 REQUIREMENTS FOR FURTHER TECHNICAL INFORMATION

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

1.6 MATERIAL REFERENCED

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

Add the following text to the end of DCD Section 1.6.

STD SUP 1.6-1

Table 1.6-201 provides a list of the various technical documents incorporated by reference in the FSAR in addition to those technical documents incorporated by reference in the AP1000 DCD.

Table 1.6-201 (Sheet 1 of 2)
Additional Material Referenced

	Author/ Report Number[(a)]	Title	Revision	FSAR Section	Document Transmittal	ADAMS Accession Number
STD SUP 1.6-1	Westinghouse/ APP-GW-GL-700	AP1000 Design Control Document	19	All	June 2011	ML11171A500
	NEI 07-08A	Generic FSAR Template Guidance for Ensuring That Occupational Radiation Exposures Are As Low As Is Reasonably Achievable (ALARA)	0	12.1	October 2009	ML093220164
	NEI 07-03A	Generic FSAR Template Guidance for Radiation Protection Program Description	0	Appendix 12AA	May 2009	ML091490684
	NEI 06-13A	Template for an Industry Training Program Description	2	13.2	March 2009	ML090910554
	NEI 07-02A	Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed Under 10 CFR Part 52	0	17.6	March 2008	ML080910149
	10 CFR Part 52 Appendix D	Design Certification Rule for the AP1000 Design	--	1.1	--	--
LNP SUP 1.6-1	EP	LNP 1 and 2 Emergency Plan	4	13.3	July 2012	TBD
	Security Plans	Physical Security Plan	4	13.6	June 2011	(b)
	Security Plans	Training and Qualification Plan	4	13.6	June 2011	(b)

Table 1.6-201 (Sheet 2 of 2)
Additional Material Referenced

LNP SUP 1.6-1

Author/ Report Number[(a)]	Title	Revision	FSAR Section	Document Transmittal	ADAMS Accession Number
Security Plans	Safeguards Contingency Plan	4	13.6	June 2011	(b)
Cyber Security	Cyber Security Plan	2	13.6	September 2011	(b)
QAPD	Progress Energy New Nuclear Plant Quality Assurance Program Description	5	17.5	July 2012	TBD

STD SUP 1.6-1

a) The NRC-accepted NEI documents identified by the A in the document number include the accepted template, the NRC safety evaluation, and corresponding responses to the NRC Requests for Additional Information. Only the accepted template is incorporated by reference. The remainder of the document is referenced but not incorporated into the FSAR.

LNP SUP 1.6-3

b) These documents are withheld from public disclosure.

(A) Denotes NRC approved document.

The LNP 1 and LNP 2 transmission lines are designed to meet or exceed the requirements of the ANSI C2 National Electrical Safety Code (DCD Section 8.2.6 Reference 1).

Galloping conductors are not anticipated at the LNP site and should not affect the reliability of the transmission lines. PEF has not experienced line outages resulting from galloping conductors most likely due to the lack of ice formation in the Central Florida Region. The proposed structure configuration further reduces the probability of flashover in the rare event that conductors should gallop.

The LNP 1 and LNP 2 common switchyard has multiple off-site power sources from the transmission network (refer to Table 8.2-201). Each of the off-site sources have sufficient capacity and capability to support start-up, normal running, generator/turbine trip, and normal shutdown for LNP 1 and LNP 2.

LNP CDI

A transformer area containing the main step-up transformers, unit auxiliary transformers (UAT), and reserve auxiliary transformers (RAT) is located next to each turbine building (DCD Figure 1.2-2).

8.2.1.1 Transmission Switchyard

Replace the information in the DCD Subsection 8.2.1.1 with the following information.

LNP COL 8.2-1

8.2.1.1.1 LNP 1 and LNP 2 Switchyard

LNP 1 and LNP 2 are served by a common 500 kV/230 kV switchyard. Each 500 kV and 230 kV switchyard has two full capacity main buses. Each bus is individually capable of supplying the entire load required for the 500 kV or 230 kV systems. Each of the four (4) incoming 500 kV transmission lines are normally connected to both buses. Two 500 kV to 230 kV step-down transformers, used to supply power to the RATs, are located in the 500 kV switchyard. Each transformer is capable of carrying the RAT's of both LNP 1 and LNP 2 and can be connected to both buses.

The 500 kV and 230 kV circuit breakers associated with the LNP 1 and LNP 2 switchyard are rated 3000A, 60 Hz, 3-pole gas type with interrupting capability of 50,000 amperes RMS.

The switchyard also has a number of disconnect switches, which are 3-pole and are rated on the same continuous current basis as the associated circuit breakers.

The various elements of the LNP1 and LNP 2 switchyard are connected via breaker-and-a-half and double breaker schemes as shown in Figure 8.2-201.

- In the event of loss of dc control power in one of the 500/230 kV autotransformers, the autotransformer primary relay is compensated for by redundant trip coils powered from a different source which allows the protective function to occur.

The analysis demonstrates that with a single event failure, one of the two 500 kV buses, one of the 230 kV buses, and one of the two autotransformers, at LNP 1 and LNP 2 switchyard, as a minimum, will be available to power the plant buses. A bus fault with a stuck breaker associated with either the LNP 1 or LNP 2 main step-up transformer output will cause the loss of normal and preferred power to the associated unit. The switchyard feeds to the reserve auxiliary transformers will still be available. A bus fault concurrent with any other stuck breaker will not cause a loss of power to either LNP 1 or LNP 2.

8.2.1.1.3 Transmission System Provider/Operator (TSP/TSO)

LNP SUP 8.2-2

The interfaces between LNP and PEF's Transmission Department are managed via a formal Interface Agreement. PEF conducts transmission system operations under a vertically integrated utility business model. Under this business model, the transmission system is not in an Regional Transmission Organization (RTO) or operated by an Independent System Operator (ISO). Instead, under a vertically integrated utility business model, the System Operators (Grid Operators) are the TSO, and operate both the transmission and generation systems (nuclear and non-nuclear) and work in the same company that will hold the license to operate LNP. LNP off-site power reliability is jointly managed by the system operators, transmission personnel, and licensed nuclear plant personnel through communications and actions governed and coordinated by the formal Interface Agreement.

The Interface Agreement specifies the responsibilities and lines of communication for the various organizations responsible for the operation, maintenance, and engineering of facilities associated with LNP, as well as the consideration of the impact their activities may have on the plant's facilities. The requirements for communication of planned activities and changes in plant structures, systems, and components (SSC) status, which may affect grid stability/reliability, are clearly defined. LNP operators are directed to notify the TSO of any plant activity that may impact generation capability. The TSO is also required to monitor system conditions to ensure adequate voltage is maintained to support LNP, and promptly notify the LNP operators of existing, or anticipated conditions, which would result in inadequate voltage support. The agreement, along with the operating procedures used by the TSOs, ensures that early notification of worsening grid conditions takes place.

The TSO and LNP plant operators coordinate operations to maintain the switchyard voltage such that the steady state voltage on the 26 kV isophase bus is within 0.95 – 1.05 pu of its nominal value.

systems, breaker failure protection schemes are also used. Transformer protection consists of two different high speed schemes.

LNP SUP 8.2-4 The protective devices controlling the switchyard breakers are set with consideration given to preserving the plant grid connection following a turbine trip.

LNP COL 8.2-1

8.2.1.3 Switchyard Control Building

A control building is included in the design to serve the needs of the LNP 1 and LNP 2 switchyard. The control building houses switchyard batteries (redundant battery systems are housed in separate battery rooms and appropriately ventilated) and accommodates a sufficient number of relay/control panels.

The 500 kV switchyard breakers associated with the main step-up transformers and all 230kV breakers are under the administrative control of the plant. Transmission line circuit breakers in the LNP1 and LNP2 500 kV switchyard are under the administrative control of TSO.

8.2.1.4 Switchyard and Transmission Lines Testing and Inspection

The Switchyard and Transmission Lines Testing and Inspection Program ensures that equipment, components, and systems are proactively maintained at intervals that promote safety and reliability. Results of an effective maintenance program include extended equipment life, lower total life cycle cost, enhanced system reliability, and improved customer satisfaction. Substation Maintenance, Transmission Line Maintenance, and Relay Maintenance procedures have been developed to achieve these goals.

An interface agreement between Transmission Department and LNP 1 and 2 for development, maintenance, calibration, testing, and modification of transmission lines, switchyards, transformer yards, and associated transmission equipment, provides the procedure, policy, and organization to carry out maintenance, calibration, testing, and inspection of transmission lines and switchyards.

An individual is assigned from the LNP engineering organization to serve as the Switchyard System Engineer (SSE) and an individual is assigned from the LNP maintenance organization to serve as the Plant Transmission Activities Coordinator (PTAC). The oversight responsibilities described below are coordinated and extend beyond the switchyard boundary to include the transmission lines, structures, and relaying from the nuclear plant out to and including the first remote circuit breakers at the opposite end of the transmission lines. The responsibilities include, but are not limited to the following:

- Serve as the single point of contact for transmission maintenance activities impacting LNP 1 and 2 . (PTAC)

- Interface with the local transmission area maintenance and Transmission Asset Management personnel. Monitor inspection schedules, results of inspections and tests, equipment material conditions, and maintenance backlogs to ensure that (SSE):

  – Appropriate inspections and testing are performed on schedule to ensure reliability.

  – Results are analyzed and appropriately prioritized actions are taken to resolve any negative findings.

  – Defective equipment is replaced or repaired before reliability is affected.

- Serve as the liaison regarding transmission maintenance interfaces between the nuclear plant organizations and other organizations. (PTAC)

- Coordinate transmission engineering activities requiring pre-planning and scheduling among various nuclear and non-nuclear organizations including, but not limited to (SSE):

  – Transmission Engineering

  – Power System Operations

- Provide system engineering oversight of the switchyard, off-site transmission lines through the next remote circuit breakers, and on-site equipment (transformers, circuit breakers, etc.) that Transmission services. (SSE)

PEF's transmission planning assessment practices are developed to test the ability of the planned system to meet criteria pursuant to comply with PEF, FRCC Regional Planning process and North American Electric Reliability Corporation (NERC) Reliability Standards TPL-001 through TPL-004. This involves the use of load flow and transient stability programs to model various contingency situations that may occur, and determining if the system response meets criteria.

NERC reliability standards used including, but not limited to the following:

- TPL-001-0 System Performance under Normal Conditions.

- TPL-002-0 System Performance Following Loss of a Single Bulk Electric System (BES) Element.

- TPL-003-0 System Performance Following loss of Two or More BES Elements.

- TPL-004-0 System Performance Following Extreme BES Events.

PEF's maintenance and testing program covers the following equipment as required by NERC Reliability Standards:

- Protective Relays
- Instrument Transformers
- Communications Systems
- Batteries

The protective relay maintenance program includes the necessary verification to ensure proper calibration of protective relays. Maintenance of protective relays is accomplished through procedures, which address visual and mechanical inspections, protective and auxiliary relays, and other relay protective schemes. The relay testing program includes the functional testing of the relay protection system to insure operations as designed. Functional testing of relays is performed periodically and in accordance with a functional guideline procedure.

Maintenance and testing interval schedules have been developed for maintenance of substation equipment. The equipment/programs included are as follows:

- Air break switches
- Structures
- Ground system
- Transformers
- Circuit breakers
- Neutral grounding equipment
- Batteries
- Infrared scan
- Instrument class transformers

Transmission verifies that these test results demonstrate compliance with design requirements and takes corrective actions as necessary. Transmission plans and schedules maintenance activities, notifying the plant and internal organizations in advance. Transmission also procures and stores necessary spare parts prior to the commencement of inspection, testing, and maintenance activities.

Transmission's surveillance and maintenance procedures include requirements for transmission line inspections through an aerial inspection program usually

8.3.2.2 Analysis

Replace the first sentence of the third paragraph of DCD Subsection 8.3.2.2 with the following:

STD DEP 8.3-1

The Class 1E battery chargers are designed to limit the input (ac) current to an acceptable value under faulted conditions on the output side, however, the voltage regulating transformers do not have active components to limit current; therefore, the Class 1E voltage regulating transformer maximum current is determined by the impedance of the transformer.

8.3.3 COMBINED LICENSE INFORMATION FOR ONSITE ELECTRICAL POWER

LNP COL 8.3-1

This COL Item is addressed in Subsections 8.3.1.1.7 and 8.3.1.1.8.

STD COL 8.3-2

This COL Item is addressed in Subsections 8.3.1.1.2.4, 8.3.1.1.6 and 8.3.2.1.4.

8.3.4 REFERENCES

Add the following information at the end of DCD Subsection 8.3.4.

201. Not used.

202. Institute of Electrical and Electronics Engineers (IEEE), “IEEE Guide for Safety in AC Substation Grounding,” IEEE Std 80-2000. August 4, 2000.

1.0 GENERAL AND FINANCIAL INFORMATION

1.1 GENERAL INFORMATION

Pursuant to Sections 103 and 185(b) of the Atomic Energy Act, and 10 CFR Part 52, Subpart C, Florida Power Corporation doing business as Progress Energy Florida, Inc., hereby applies to the U.S. Nuclear Regulatory Commission (NRC) for a combined license (COL) to construct and operate Levy Nuclear Plant, Units 1 and 2 (LNP 1 and 2). LNP 1 and 2 is a two-unit Westinghouse AP1000 standard design for a pressurized water reactor. Progress Energy Florida, Inc., also applies for such other licenses as would be required to receive, possess and use source, special nuclear and byproduct material in connection with the operation of LNP 1 and 2.

On July 2, 2012, a merger occurred between Duke Energy Corporation and Progress Energy, Inc., the holding company of Progress Energy Florida, Inc. Through this merger, Duke Energy Corporation became the holding company of Progress Energy, Inc. Progress Energy, Inc. continues to be the holding company of Progress Energy Florida, Inc. Following this merger, Duke Energy Corporation, as the ultimate holding company of Progress Energy Florida, Inc., is now the largest electric power holding company in the United States with more than $100 billion in total assets. Duke Energy Corporation is duly organized and existing under the laws of the State of Delaware. The company's general office, and principal place of business, is located in Charlotte, North Carolina, and through its subsidiaries, also transacts business on a regular basis in South Carolina, Kentucky, Ohio, Florida, and Indiana. It is an investor-owned corporation focused on electric power and gas distribution operations, and other energy services in both North and South America. Through its regulated electric and gas utility operating companies, Duke Energy Carolinas, Duke Energy Ohio, Duke Energy Indiana, Duke Energy Kentucky, Progress Energy Carolinas and Progress Energy Florida, Duke Energy Corporation operates more than 58,000 MW of regulated electric generation and 8,100 MW of unregulated electric generation in the United States. A diverse fuel mix of nuclear, coal-fired, hydro-electric and combustion-turbine generation allows Duke Energy Corporation to provide this generating capacity to more than 7 million electric and 0.5 million gas customers located in the combined service territories of these operating companies. Duke Energy Corporation is a Fortune 250 company, and its shares are publicly held and listed for trading on the New York Stock Exchange under the symbol DUK.

In addition to this Combined License Application (COLA) for LNP 1 and 2, Progress Energy Carolinas has submitted a COLA in 2008 to construct and operate two AP1000 nuclear units at the Shearon Harris Nuclear Power Plant site near Raleigh, North Carolina and Duke Energy Carolinas submitted a COLA in 2007 to construct and operate two AP1000 nuclear units at the Lee Nuclear site in Cherokee County, South Carolina.

This application and supporting environmental report are intended to provide sufficient information for the NRC to complete its technical and environmental reviews and allow the NRC to make the finding required by 10 CFR 52.97 in support of the issuance of a COL for LNP 1 and 2. The following is the application filing and content information required by 10 CFR 50.33.

1.1.1 NAME OF APPLICANT

Progress Energy Florida, Inc.

1.1.2 ADDRESS OF APPLICANT

Progress Energy Florida, Inc.
100 Central Avenue
St. Petersburg, FL 33701-3324

1.1.3 DESCRIPTION OF BUSINESS OCCUPATION OF APPLICANT

Progress Energy, Inc. is a holding company that includes regulated subsidiaries, Progress Energy Florida, Inc. (PEF) and Progress Energy Carolinas, Inc. (PEC). Progress Energy, Inc. is now a wholly-owned subsidiary of Duke Energy Corporation. PEF is primarily engaged in the generation, transmission, distribution, and sale of electricity in portions of central and north Florida. PEF serves approximately 1.7 million customers in a territory encompassing over 20,000 square miles, including the cities of St. Petersburg, Clearwater, and areas surrounding Orlando.

PEF is primarily engaged in the generation, distribution, and sale of electricity in portions of Florida. PEF owns and operates the Crystal River plant.

- Crystal River - The single-unit, 838-MW Crystal River Nuclear Plant is located near Crystal River, FL, on a site that also includes four coal-fired generating units that generate 2,313 MW.

Progress Energy, Inc. is subject to regulation by the Federal Energy Regulatory Commission (FERC) under the regulatory provisions of the Public Utility Holding Company Act of 2005 (PUHCA 2005). PEC and PEF are regulated public utilities. PEC is subject to the regulatory provisions of the North Carolina Utilities Commission (NCUC), the Public Service Commission of South Carolina (SCPSC), the NRC and the FERC. PEF is subject to the regulatory provisions of the Florida Public Service Commission (FPSC), the NRC and the FERC.

1.1.4 ORGANIZATION AND MANAGEMENT OF APPLICANT

PEF is a corporation organized and existing under the laws of the State of Florida. PEF is a wholly-owned subsidiary of Progress Energy, Inc., which is a wholly-owned subsidiary of Duke Energy Corporation. The shares of common stock of Duke Energy Corporation are publicly traded and widely held. The directors and officers of Duke Energy Corporation are U. S. citizens. Neither Duke Energy Corporation, Progress Energy, Inc., nor PEF are owned, controlled, or dominated by any alien, foreign corporation, or foreign government. PEF makes this application on its own behalf and is not acting as an agent or representative of any other person.

The names of Duke Energy Corporation directors and principal officers are listed below. The business address of the Duke Energy Corporation directors and principal officers is Duke Energy Corporation, 526 South Church Street, Charlotte, NC 28202. All persons listed are U. S. citizens.

Director
John D. Baker II
William Barnet III
G. Alexander Bernhardt, Sr.
Michael G. Browning
Harris. E DeLoach, Jr.
Daniel R. DiMicco
John H. Forsgren
Ann Maynard Gray
James H. Hance, Jr.
James B. Hyler, Jr.
E. Marie McKee
E. James Reinsch
James T. Rhodes
James E. Rogers
Carlos A. Saladrigas
Philip R. Sharp
Theresa M. Stone

Principal Officers[1]

James E. Rogers
President and Chief Executive Officer

Lynn J. Good
Executive Vice President and Chief Financial Officer

Dhiaa M. Jamil
Executive Vice President and Chief Nuclear Officer

Jeffrey (Jeff) J. Lyash
Executive Vice President – Energy Supply

Marc E. Manly
Executive Vice President and Chief Legal Counsel

B. Keith Trent
Executive Vice President
Regulated Utilities

Bill Tyndall
Senior Vice President and Special Policy Advisor

Jennifer L. Weber
Executive Vice President and Chief Human Resources

Lloyd M. Yates
Executive Vice President Customer Operations

Steven K. Young
Chief Accounting Officer and Controller

1.1.5 CLASS AND PERIOD OF LICENSE SOUGHT AND AUTHORIZED USES

PEF requests issuance of a Class 103 Facility Operating License for a period of no less than 40 years beyond the Commission's determination in 10 CFR 52.103(g) or allowing operation during an interim period under 52.103(c). LNP 1 and 2 will be used to produce electricity for sale.

[1] Due to the recent merger, several principal officer positions are currently vacant. Efforts are underway to name individuals to these roles.

In addition, this application is for the necessary licenses issued under 10 CFR 30, 10 CFR 40, and 10 CFR 70 to receive, possess, and use byproduct, source and special nuclear material. Special nuclear material shall be in the form of reactor fuel and spent fuel, in accordance with limitations for storage and amounts required for reactor operation, as described in Part 2 of this application. Byproduct, source, and special nuclear material shall be in the form of sealed neutron sources for reactor startup and sealed sources for reactor instrumentation, radiation monitoring equipment, calibration, and fission detectors in amounts as required. In preparation for the initial fuel loading, limitations on byproduct material and Part 40 specifically licensed source material will be as described in this application. Following the 52.103(g) finding, byproduct, source, and special nuclear material in amounts as required, without restriction to chemical or physical form, shall be for sample analysis, instrument and equipment calibration, or associated with radioactive apparatus or components.

1.1.6 ALTERATION SCHEDULE

PEF does not propose to alter any production or utilization facility in connection with this application.

1.1.7 REGULATORY AGENCIES AND LOCAL PUBLICATIONS

The Federal Energy Regulatory Commission and the FPSC are the principal regulators of PEF's electric operations in Florida.

Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

Area and local news publications and addresses are provided below.

Citrus County Chronicle
1624 N. Meadowcrest Blvd
Crystal River, FL 34429

Ocala Star Banner
2121 S. W. 19th Avenue Road
Ocala, FL 34474

Chiefland Citizen
PO Box 980
Chiefland, FL 32644

Nature Coast Newscaster
PO Box 64
Yankeetown, FL 34498

1.1.8 RADIOLOGICAL EMERGENCY RESPONSE PLANS

Progress Energy's approach for development of the Levy Nuclear Plant Units 1 and 2 Emergency Plan submitted as part of the COL application (COLA) involved development of an emergency plan based on current NRC and Federal Emergency Management Agency (FEMA) requirements and regulatory guidance into a document that addresses emergency preparedness for a new 2-unit site.

Emergency Preparedness Program elements described in the Levy Nuclear Plant Units 1 and 2 Emergency Plan are based, in part, on the elements currently in place at the Crystal River 3 (CR3) Nuclear Plant and described in the CR3 Radiological Emergency Response Plan, which meets all current NRC requirements and FEMA guidance.

Elements of the current CR3 Emergency Plan and the capability of the on-site and off-site emergency organizations to respond to, and recover from a classified emergency have been successfully demonstrated in actual events, periodic drills, and NRC/FEMA evaluated exercises in support of CR3. NRC Emergency Plan programmatic inspections and periodic independent 10 CFR 50.54 (t) audits indicate that the current CR3 Emergency Plan and Emergency Preparedness Program is maintained and updated appropriately in accordance with NRC requirements.

The Levy Nuclear Plant Units 1 and 2 Emergency Plan describes similar Emergency Preparedness Program elements and processes as the CR3 Radiological Emergency Response Plan; and both plans provide "reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency"."

The COLA emergency plan meets all current NRC requirements and regulatory guidance and was developed as a comprehensive "complete and integrated" emergency plan, in accordance with Regulatory Guide 1.206, Section C.I.13.3.1. The Levy Nuclear Plant Units 1 and 2 Emergency Plan, in conjunction with State and county plans, assures that adequate protective measures can be taken to protect on-site personnel and the public in the event of an emergency at the site.

2.0 FINANCIAL QUALIFICATIONS

2.1 CONSTRUCTION COSTS

Proprietary Information – Withheld under 10 CFR 2.390 (a)(4)
(See COL Application Part 9.1)

Proprietary Information – Withheld under 10 CFR 2.390 (a)(4)
(See COL Application Part 9.1)

2.2 OPERATING COSTS

Progress Energy Florida, Inc. (PEF) is a wholly-owned subsidiary of Progress Energy, Inc., which is in turn a wholly-owned subsidiary of Duke Energy Corporation. Progress Energy Florida, Inc. is an electric utility as defined in 10 CFR 50.2. PEF generates and distributes electricity and recovers the cost of this electricity through cost-of-service based rates established by the FPSC, and FERC. Thus, as addressed in 10 CFR 50.33(f), estimates of operating costs for the first 5 years of operation are not required to be submitted.

Facility by the LNP and Crystal River Unit 3 Emergency Response Organizations for a simulated emergency condition. Integrated communication and data capability and functionality will include the LNP and Crystal River Technical Support Center, NRC site-teams, NRC Incident Response Centers, and other Federal, State, and local coordination centers as appropriate.

E. PEF will distribute initial LNP public information publications, developed in coordination with CR3 and consistent with the LNP Emergency Plan, to the public within 180 days prior to fuel load at LNP.

12. FUKUSHIMA RESPONSE ACTIONS:
The implementation of applicable Fukushima response actions not completed prior to license issuance will be the subject of the following license condition:

PROPOSED LICENSE CONDITION:

A. MITIGATION STRATEGIES FOR BEYOND-DESIGN-BASIS EXTERNAL EVENTS

Prior to initial fuel load, PEF shall address the following requirements:

a. PEF shall develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment and spent fuel pool cooling capabilities following a beyond-design-basis external event.

b. These strategies must be capable of mitigating a simultaneous loss of all ac power and loss of normal access to the normal heat sink and have adequate capacity to address challenges to core cooling, containment, and spent fuel pool cooling capabilities at all units on the LNP site.

c. PEF must provide reasonable protection for the associated equipment from external events. Such protection must demonstrate that there is adequate capacity to address challenges to core cooling, containment, and spent fuel pool cooling capabilities at all units on the LNP site.

d. PEF must be capable of implementing the strategies in all modes.

e. Full compliance shall include procedures, guidance, training, and acquisition, staging, or installing of equipment needed for the strategies.

PEF shall within one (1) year after issuance of the LNP COL, submit to the NRC for review an overall integrated plan, including a description of how compliance with the requirements described in this license condition will be achieved.

PEF shall provide to the NRC an initial status report sixty (60) days following issuance of the LNP COL and at six (6) month intervals following submittal of the overall integrated plan described above which delineates progress made in implementing the requirements of this license condition.

B. RELIABLE SPENT FUEL POOL LEVEL INSTRUMENTATION

Prior to initial fuel load, PEF will fully implement the following requirements for spent fuel pool level indication.

a. The spent fuel pool level instrumentation shall include the following design features:

1. Arrangement: The spent fuel pool level instrument channels shall be arranged in a manner that provides reasonable protection of the level indication function against missiles that may result from damage to the structure over the spent fuel pool. This protection may be provided by locating the safety-related instruments to maintain instrument channel separation within the spent fuel pool area, and to utilize inherent shielding from missiles provided by existing recesses and corners in the spent fuel pool structure.

2. Qualification: The level instrument channels shall be reliable at temperature, humidity, and radiation levels consistent with the spent fuel pool water at saturation conditions for an extended period.

3. Power supplies: Instrumentation channels shall provide for power connections from sources independent of the plant alternating current (ac) and direct current (dc) power distribution systems, such as portable generators or replaceable batteries. Power supply designs should provide for quick and accessible connection of sources independent of the plant ac and dc power distribution systems. Onsite generators used as an alternate power source and replaceable batteries used for instrument channel power shall have sufficient capacity to maintain the level indication function until offsite resource availability is reasonably assured.

4. Accuracy: The instrument shall maintain its designed accuracy following a power interruption or change in power source without recalibration.

5. Display: The display shall provide on-demand or continuous indication of spent fuel pool water level.

b. The spent fuel pool instrumentation shall be maintained available and reliable through appropriate development and implementation of a training program. Personnel shall be trained in the use and the provision of alternate power to the safety-related level instrument channels.

PEF shall within one (1) year after issuance of the LNP COL, submit to the NRC for review an overall integrated plan, including a description of how compliance with the requirements described in this license condition will be achieved.

PEF shall provide to the NRC an initial status report sixty (60) days following issuance of the LNP COL and at six (6) month intervals following submittal of the overall integrated plan described above which delineates progress made in implementing the requirements of this license condition.

C. EMERGENCY PLANNING ACTIONS

Communications:

At least two (2) years prior to scheduled initial fuel load, PEF shall have performed an assessment of on-site and off-site communications systems and equipment required during an emergency event to ensure communications capabilities can be maintained during prolonged station blackout conditions. The communications capability assessment will be performed in accordance with NEI 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities", Revision 0.

At least one hundred eighty (180) days prior to scheduled initial fuel load, PEF shall complete implementation of corrective actions identified in the communications capability assessment described above, including any related emergency plan and implementing procedure changes and associated training.

Staffing:

At least two (2) years prior to scheduled initial fuel load, PEF shall have performed assessments of the on-site and augmented staffing capability to satisfy the regulatory requirements for response to a multi-unit event. The staffing assessments will be performed in accordance with NEI 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities", Revision 0.

At least two (2) years prior to scheduled initial fuel load, PEF shall revise the LNP Emergency Plan to include the following:

- Incorporation of corrective actions identified in the staffing assessments described above.
- Identification of how the augmented staff will be notified given degraded communications capabilities.