ENCLOSURE 2

VOLUME 15

ST. LUCIE PLANT
UNIT 1 AND UNIT 2

IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS CHAPTER 4.0
DESIGN FEATURES

Revision 0

ATTACHMENT 1

ITS Chapter 4.0, Design Features

Current Technical Specifications (CTS) Markup and Discussion of Changes (DOCs)

~~SECTION 5.0~~

~~DESIGN FEATURES~~

5.0 DESIGN FEATURES

5.1 SITE LOCATION

Plant

4.1 Insert 1 The St. Lucie nuclear units are located on Hutchinson Island in St. Lucie County, about halfway between the cities of Fort Pierce and Stuart on the east coast of Florida. The radius of the exclusion area is 0.97 miles from the center of the St. Lucie Plant. The low population zone ~~(LPZ)~~ includes that area within one mile of the center of the St. Lucie Plant.

a radius of

LA01

5.2 CONTAINMENT

CONFIGURATION

5.2.1 The containment structure is comprised of a steel containment vessel, having the shape of a right circular cylinder with a hemispherical dome and ellipsoidal bottom, surrounded by a reinforced concrete shield building. The radius of the shield building is at least 4 feet greater than the radius of circular cylinder portion of the containment vessel at any point.

5.2.1.1 CONTAINMENT VESSEL

a. Nominal inside diameter = 140 feet.

b. Nominal inside height = 232 feet.

c. Net free volume = 2.5 x 10^6 cubic feet.

d. Nominal thickness of vessel walls = 2 inches.

e. Nominal thickness of vessel dome = 1 inch.

f. Nominal thickness of vessel bottom = 2 inches.

~~Figure 5.1-1 Deleted~~

~~FIGURE 5.1-2~~

~~(Deleted)~~

DESIGN FEATURES

LA01

2.1.2 SHIELD BUILDING

a. Minimum annular space = 4 feet

b. Annulus nominal volume = 543,000 cubic feet

c. Nominal outside height (measured from top of foundation base to the top of the dome) = 230.5 feet

d. Nominal inside diameter = 148 feet

e. Cylinder wall minimum thickness = 3 feet

f. Dome minimum thickness = 2.5 feet

g. Dome inside radius = 112 feet

DESIGN PRESSURE AND TEMPERATURE

5.2.2 The containment vessel is designed and shall be maintained for a maximum internal pressure of 44 psig and a temperature of 264°F.

PENETRATIONS

5.2.3 Penetrations through the containment structure are designed and shall be maintained in accordance with the original design provisions contained in Sections 3.8.2.1.10 and 6.2.4 of the FSAR with allowance for normal degradation pursuant to the applicable Surveillance Requirements.

4.2 **5.3 REACTOR CORE**

FUEL ASSEMBLIES

4.2.1 5.3.1 The reactor core shall contain 217 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy or M5 clad fuel rods ~~and/or poison rods~~, with fuel rods having an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in non-limiting core regions.

LA02

~~5.3.1.1 Except for special test as authorized by the NRC, all fuel assemblies under control element assemblies shall be sleeved with a sleeve design previously approved by the NRC~~.

DESIGN FEATURES

CONTROL ELEMENT ASSEMBLIES

A02

4.2.2 5.3.2 The reactor core shall contain 73 ~~full length and no part length~~ control element assemblies. The control element assemblies shall be designed ~~and maintained in accordance with the original design provisions contained in Section 4.2.3.2 of the FSAR with allowance for normal degradation pursuant to the applicable Surveillance Requirements.~~ LA02

with control material of silver indium cadmium or boron carbide as approved by the NRC. M01

5.4 REACTOR COOLANT SYSTEM

DESIGN PRESSURE AND TEMPERATURE

5.4.1 The reactor coolant system is designed and shall be maintained: LA01

a. In accordance with the code requirements specified in Section 5.2 of the FSAR with allowance for normal degradation pursuant to the applicable Surveillance Requirements,

b. For a pressure of 2485 psig, and

c. For a temperature of 650°F, except for the pressurizer which is 700°F.

5.5 EMERGENCY CORE COOLING SYSTEMS

5.5.1 The emergency core cooling systems are designed and shall be maintained in accordance with the original design provisions contained in Section 6.3 of the FSAR with allowance for normal degradation pursuant to the applicable Surveillance Requirements.

4.3 **5.6 FUEL STORAGE**

CRITICALITY

are designed and

Add ITS 4.3.1.1.a M02

4.3.1.1 5.6.1.a The spent fuel ~~pool and spent fuel~~ storage racks shall be maintained with:

4.3.1.1.b 1. k_{eff} less than 1.0 when fully flooded with unborated water, which includes an allowance for biases and uncertainties as described in Section 9.1 of the Updated Final Safety Analysis Report.

4.3.1.1.d
4.3.1.1.e
4.3.1.1.f 2. A nominal 10.12 inches center to center distance between fuel assemblies in Region 1 of the spent fuel pool storage racks, a nominal 10.30 inches center to center distance between fuel assemblies in the Region 1 cask pit storage rack, and a nominal 8.86 inches center to center distance between fuel assemblies in Region 2 of the spent fuel pool storage racks.

4.3.1.1.c
Insert 2 3. A k_{eff} less than or equal to 0.95 when flooded with water containing 500 ppm boron, including an allowance for biases and uncertainties as described in Section 9.1 of the Updated Final Safety Analysis Report.

DESIGN FEATURES

CRITICALITY (Continued)

A04

4. For storage of enriched fuel assemblies, requirements of Criteria in 5.6.1.a.1 and 5.6.1.a.3 shall be met by positioning fuel in the spent fuel storage racks consistent with the requirements of Specification 5.6.1.c.

5. Vessel Flux Reduction Assemblies (VFRAs), as defined in Section 9.1 of the Updated Final Safety Analysis Report, may be placed in any allowable fuel storage location. LA03

6. Fissile material, not contained in a fuel assembly lattice, shall be stored in accordance with the requirements of Criteria in 5.6.1.a.1 and 5.6.1.a.3. A03

7. The Metamic neutron absorber inserts shall have a ^{10}B areal density greater than or equal to 0.015 grams $^{10}B/cm^2$.

b. The Region 1 cask pit storage rack shall contain neutron absorbing material (Boral) between stored fuel assemblies when installed in the spent fuel pool. LA03

c. Loading of spent fuel storage racks shall be controlled as described below. Criteria in 5.6.1.c.2, 5.6.1.c.3, 5.6.1.c.5 and 5.6.1.c.6 do not apply to the Region 1 cask pit storage rack.

1. The maximum initial planar average U-235 enrichment of any fuel assembly inserted in a spent fuel storage rack shall be less than or equal to 4.6 weight percent. See ITS 3.7.15

2. Fuel placed in Region 1 of the spent fuel pool storage racks shall comply with the storage patterns and alignment restrictions of Figure 5.6-1 and the minimum burnup requirements of Table 5.6-1.

3. Fuel placed in Region 2 of the spent fuel pool storage racks shall comply with the storage patterns or allowed special arrangements of Figure 5.6-2 and the minimum burnup requirements of Table 5.6-1. The allowed special arrangement for fresh fuel may be repeated, provided the applicable interface requirements specified by the safety analysis are met.

4. Any fuel satisfying criteria 5.6.1.c.1, including fresh fuel, may be placed in the Region 1 cask pit storage rack.

5. The same directional orientation for Metamic inserts is required for contiguous groups of 2x2 arrays where Metamic inserts are required.

6. Any 2x2 array of Region 2 storage cells that interface with Region 1 shall comply with the rules of Figure 5.6-3. The allowed special arrangement in Region 2 as shown in Figure 5.6-2 shall not be placed adjacent to Region 1.

4.3.1.2.a
4.3.1.2.b
4.3.1.2.c

d. The new fuel storage racks are designed for dry storage of unirradiated fuel assemblies having a maximum planar average U-235 enrichment less than or equal to 4.6 weight percent, while maintaining a k_{eff} of less than or equal to 0.98 under the most reactive condition. LA02

if fully flooded with unborated water or if moderated by aqueous foam including allowances for uncertainties as described in UFSAR Section 9.1 M02

Add ITS 4.3.1.2.d

ITS

A01

ITS 4.0

DRAINAGE

4.3.2 5.6.2 The fuel pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 56 feet.

CAPACITY

4.3.3 5.6.3 The spent fuel pool storage racks are designed and shall be maintained with a storage capacity limited to no more than 1706 fuel assemblies, and the cask pit storage rack is designed and shall be maintained with a storage capacity limited to no more than 143 fuel assemblies. The total Unit 1 spent fuel pool and cask pit storage capacity is limited to no more than 1849 fuel assemblies.

LA01

5.7 SEISMIC CLASSIFICATION

5.7.1 Those structures, systems and components identified as seismic Class I in Section 3.2.1 of the FSAR shall be designed and maintained to the original design provisions contained in Section 3.7 of the FSAR with allowance for normal degradation pursuant to the applicable Surveillance Requirement.

~~5.8 DELETED~~

~~5.9 DELETED~~

~~DELETED~~

~~SECTION 5.0~~

~~DESIGN FEATURES~~

5.0 DESIGN FEATURES

5.1 SITE LOCATION

~~EXCLUSION AREA~~

Plant

4.1 Insert 1 The St. Lucie nuclear units are located on Hutchinson Island in St. Lucie County, about halfway between the cities of Fort Pierce and Stuart on the east coast of Florida. The radius of the exclusion area is 0.97 miles from the center of the St. Lucie Plant. The low population zone ~~(LPZ)~~ includes that area within one mile of the center of the St. Lucie Plant.

a radius of

5.2 CONTAINMENT

LA01

CONFIGURATION

5.2.1 The reactor containment building is a steel building of cylindrical shape, with a dome roof and having the following design features:

a. Nominal inside diameter = 140 feet.

b. Nominal inside height = 232 feet.

c. Net free volume = 2.506 x 10^6 cubic feet.

d. Nominal thickness of vessel walls = 2 inches.

e. Nominal thickness of vessel dome = 1 inch.

f. Nominal thickness of vessel bottom = 2 inches.

5.2.1.2 SHIELD BUILDING

a. Minimum annular space = 4 feet.

b. Annulus nominal volume = 543,000 cubic feet.

c. Nominal outside height (measured from top of foundation mat to the top of the dome) = 228.5 feet.

d. Nominal inside diameter = 148 feet.

e. Cylinder wall minimum thickness = 3 feet.

f. Dome minimum thickness = 2.5 feet.

g. Dome inside radius = 112 feet.

DESIGN PRESSURE AND TEMPERATURE

5.2.2 The steel reactor containment building is designed and shall be maintained for a maximum internal pressure of 44 psig and a temperature of 264°F.

Figure 5.1-1 Deleted

4.2 **5.3 REACTOR CORE**

FUEL ASSEMBLIES

4.2.1 5.3.1 The reactor shall contain 217 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy, ZIRLO™ or M5® clad fuel rods ~~and/or poison rods~~, with fuel rods having an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions. LA02

CONTROL ELEMENT ASSEMBLIES

4.2.2 5.3.2 The reactor core shall contain 87 ~~full-length~~ control element assemblies ~~and no part-length control element assemblies~~. A02

The control material shall be silver indium cadmium or boron carbide as approved by the NRC. M01

~~**5.4 REACTOR COOLANT SYSTEM**~~

~~**DESIGN PRESSURE AND TEMPERATURE**~~

~~5.4.1 The Reactor Coolant System is designed and shall be maintained:~~

~~a. In accordance with the code requirements specified in Section 5.2 of the FSAR with allowance for normal degradation pursuant to the applicable Surveillance Requirements,~~

~~b. For a pressure of 2485 psig, and~~

~~c. For a temperature of 650°F, except for the pressurizer which is 700°F.~~

LA01

~~5.5 DELETED~~

4.3

5.6 FUEL STORAGE

CRITICALITY

Add ITS 4.3.1.1.a

M02

4.3.1.1 5.6.1 a. The spent fuel storage racks are designed and shall be maintained with:

4.3.1.1.b

1. A k_{eff} equivalent to less than 1.0 when flooded with unborated water, including a conservative allowance for biases and uncertainties as described in Section 9.1 of the Updated Final Safety Analysis Report.

4.3.1.1.c
Insert 2

2. A k_{eff} equivalent to less than or equal to 0.95 when flooded with water containing 500 ppm boron, including a conservative allowance for biases and uncertainties as described in Section 9.1 of the Updated Final Safety Analysis Report.

4.3.1.1.d
4.3.1.1.e
4.3.1.1.f

3. A nominal 8.965 inch center-to-center distance between fuel assemblies placed in the spent fuel pool storage racks and a nominal 8.80 inch center-to-center distance between fuel assemblies placed in the cask pit storage rack.

Region 1 and 2

Region 2

~~4. For storage of enriched fuel assemblies, requirements of Specification 5.6.1.a.1 and 5.6.1.a.2 shall be met by positioning fuel in the spent fuel pool storage racks consistent with the requirements of Specification 5.6.1.c.~~

~~5. Fissile material, not contained in a fuel assembly lattice, shall be stored in accordance with the requirements of Specifications 5.6.1.a.1 and 5.6.1.a.2.~~

A03

~~6. The Metamic neutron absorber inserts shall have a ^{10}B areal density greater than or equal to 0.015 grams $^{10}B/cm^2$.~~

~~b. The cask pit storage rack shall contain neutron absorbing material (Boral) between stored fuel assemblies when installed in the spent fuel pool.~~

LA03

c. Loading of spent fuel pool storage racks shall be controlled as described below.

See ITS 3.7.15

1. The maximum initial planar average U-235 enrichment of any fuel assembly inserted in a spent fuel pool storage rack shall be less than or equal to 4.6 weight percent.

2. Fuel placed in Region 1 of the spent fuel pool storage racks shall comply with the storage pattern definitions of Figure 5.6-1 and the minimum burnup requirements as defined in Table 5.6-1. (See Specification 5.6.1.c.7 for exceptions)

3. Fuel placed in Region 2 of the spent fuel pool storage racks shall comply with the storage pattern definitions or allowed special arrangement definitions of Figure 5.6-2 and the minimum burnup requirements as defined in Table 5.6-1. (See Specification 5.6.1.c.7 for exceptions)

CRITICALITY (continued)

See ITS 3.7.15

5.6.1 c. (continued)

4. The 2x2 array of fuel assemblies that span the interface between Region 1 and Region 2 of the spent fuel pool storage racks shall comply with the storage pattern definitions of Figure 5.6-3 and the minimum burnup requirements as defined in Table 5.6-1. The allowed special arrangements in Region 2 as shown in Figure 5.6-2 shall not be placed adjacent to Region 1. (See Specification 5.6.1.c.7 for exceptions)

5. Fuel placed in the cask pit storage rack shall comply with the storage pattern definitions of Figure 5.6-4 and the minimum burnup requirements as defined in Table 5.6-1. (See Specification 5.6.1.c.7 for exceptions)

6. The same directional orientation for Metamic inserts is required for contiguous groups of 2x2 arrays where Metamic inserts are required.

7. Fresh or spent fuel in any allowed configuration may be replaced with non-fuel hardware, and fresh fuel in any allowed configuration may be replaced with a fuel rod storage basket containing fuel rod(s). Also, storage of Metamic inserts or control rods, without any fissile material, is acceptable in locations designated as completely water-filled cells.

4.3.1.2.a
4.3.1.2.b
4.3.1.2.c

d. The new fuel storage racks ~~are designed for dry storage of unirradiated fuel assemblies~~ having a maximum planar average U-235 enrichment less than or equal to 4.6 weight percent, while maintaining a k_{eff} of less than or equal to 0.98 ~~under the most reactive condition~~ if fully flooded with unborated water or if moderated by aqueous foam including allowances for uncertainties as described in UFSAR Section 9.1.. LA02

DRAINAGE

Add ITS 4.3.1.2.d M02

4.3.2 5.6.2 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 56 feet.

CAPACITY

4.3.3 5.6.3 The spent fuel pool storage racks are designed and shall be maintained with a storage capacity limited to no more than 1491 fuel assemblies, and the cask pit storage rack is designed and shall be maintained with a storage capacity limited to no more than 225 fuel assemblies. The total Unit 2 spent fuel pool and cask pit storage capacity is limited to no more than 1716 fuel assemblies.

~~5.7 DELETED~~

A01

~~Pages 5-4C through 5-4F (Amendment 101) and page 5-4G (Amendment 135) have been deleted from the Technical Specifications.~~
~~The next page is 5-4h.~~

A01

~~DELETED~~

A01

~~DELETED~~

A01

~~DELETED~~

A01

~~DELETED~~

ADMINISTRATIVE CHANGES

A01 In the conversion of the St. Lucie Plant (PSL) Unit 1 and Unit 2 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1432, Rev. 5.0, "Standard Technical Specifications - Combustion Engineering Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 5.3.2 includes the descriptor “full length” and “no part length” in reference to control element assemblies (CEAs).

The purpose of the CTS requirement is to describe the number of CEAs and the control material used in the CEA design. Unit 1 and Unit 2 no longer use partial length CEA(s). Since partial length CEA(s) are no longer a design feature for Unit 1 and Unit 2, it is unnecessary to describe CEA types that PSL does not have. Therefore, the “full length” and “no partial length” descriptors used for CEA(s) are deleted. This change is designated as administrative and is acceptable because it does not result in a technical change to the CTS.

A03 Unit 1 CTS 5.6.1.a.6 requires compliance with CTS 5.6.1.a.1 and a.3. Unit 2 CTS 5.6.1.a.4 requires compliance with CTS 5.6.1.a.1 and a.2 when positioning fuel in the spent fuel pool storage racks consistent with the requirements of CTS 5.6.1.c. Unit 2 CTS 5.6.1.a.5 requires compliance with CTS 5.6.1.a.1 and a.2. This changes the CTS by not including a specific requirement to comply with another CTS requirement.

The purpose of CTS 5.6.1 requirements is to ensure the spent fuel storage racks are designed and maintained to comply with 10 CFR 50.68, “Criticality accident requirements.” Since the spent fuel storage racks are designed, as stated in CTS 5.6.1.a.1, a.2, and a.3 and Section 9.1 of the Updated Safety Analysis Report (UFSAR), to comply with the requirements of 10 CFR 50.68, it is unnecessary to restate that other CTS 5.6.1 Specifications shall be met when positioning fuel assemblies in the spent fuel storage racks and when storing fissile material not contained in a fuel assembly lattice. It is not an ITS convention to include this type of references to comply with other Technical Specification requirements. ITS 4.3.1.1 continues to require spent fuel storage racks be designed to comply with 10 CFR 50.68 regardless of whether fissile material is contained in a fuel assembly lattice or not and the requirements provided in CTS 5.6.1.c (ITS 3.7.15) continue to assure control of fuel storage in the spent fuel storage pool. This change is designated as administrative because unnecessarily duplicative requirements to comply with other Technical Specification requirements are eliminated with no technical change to the CTS.

A04 **Unit 1 only**: CTS 5.6.1.a.4 states that the spent fuel storage rack criteria of CTS 5.6.1.a.1 and 5.6.1.a.3 shall be met for storage of enriched fuel assemblies by positioning fuel in the spent fuel storage racks consistent with the requirements of Specification 5.6.1.c. ITS 4.3.1.1 does not include this statement of fact. The purpose of CTS 5.6.1.a.4 is to ensure enriched fuel assemblies are stored consistent with the pattern and location requirements specified in CTS 5.6.1.c to ensure the criticality requirements of CTS 5.6.1.a.1 and 5.6.1.a.3 are met. Compliance with the requirements of CTS 5.6.1.c are required for irradiated fuel assemblies, including enriched fuel assemblies. The location and pattern requirements of CTS 5.6.1.c ensure the requirements of CTS 5.6.1.a.1 and 5.6.1.a.3 are met. Therefore, it is unnecessary to include an explicit requirement for enriched fuel assemblies to be stored in a specific manner to ensure criticality limits are met. This change is designated as administrative because an unnecessarily duplicative requirement to comply with other Specification requirements is eliminated with no technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 ITS 4.2.2 requires the control material of the CEAs to consist of silver indium cadmium or boron carbide as approved by the NRC. The CTS does not include explicit detail on the type of CEA control material that must be used. This changes the CTS by adding specific CEA control material requirements.

The purpose of the CEA design feature requirement is to provide information considered as a design feature description as described in 10 CFR 50.36(c)(4). The specific CEA control material is considered a CEA material of construction, which, if altered or modified, would have a significant effect on safety. This change is designated more restrictive because design feature information is added to the CTS consistent with the ISTS.

M02 CTS 5.6.1.a requires the spent fuel storage racks to be maintained within specific criticality requirements; however, CTS does not specify U-235 enrichment for irradiated fuel assemblies. ITS 4.3.1.1.a requires fuel assemblies in the spent fuel storage racks (i.e., spent fuel pool and cask pit storage racks) to be limited to a maximum U-235 enrichment of 4.6 weight percent. This changes the CTS by adding a specific fuel assembly U-235 enrichment limit.

CTS 5.6.1.d requires new fuel storage racks, in part, to maintain a k_{eff} less than or equal to 0.98 under the most reactive conditions. ITS 4.3.1.2.b and c require new fuel storage racks to be designed and maintained with a $k_{eff} \leq 0.98$ if fully flooded with unborated water and if moderated by aqueous foam, respectively, including allowance for uncertainties described in Section 9.1 of the UFSAR. ITS 4.3.1.2.d also requires that new fuel storage racks are designed and maintained to have a nominal 21 inch, for Unit 1, and 23 inch, for Unit 2, center to center distance between fuel assemblies in order to prevent criticality of the fuel assemblies. This changes the CTS by adding specific reactivity conditions and fuel assembly spacing requirements for the design and maintenance of the new fuel storage racks.

The purpose of ITS 4.3.1.1 is to prevent criticality in the spent fuel storage pool and cask pit. U-235 enrichment is an important input in spent fuel pool and cask pit criticality analyses.

The purpose of ITS 4.3.1.2 is to prevent criticality in the new fuel storage vault. Unit 1 UFSAR Section 9.1.1.1 states that the new fuel storage racks are designed, in part, to provide sufficient spacing between the fuel assemblies to maintain a subcritical array during flooding with nonborated water. Unit 2 UFSAR Section 9.1.1.1 states that the new fuel storage racks are designed, in part, to provide sufficient spacing between the fuel assemblies to maintain a subcritical (Keff ≤ 0.98) array assuming the most reactive condition. The establishment of minimum spacing design requirements for the new fuel storage racks assists in meeting this design basis and provides assurance that no incident could occur that would result in a hazard to public health and safety. The specific new fuel keff criteria is added consistent with 10 CFR 50.68(b)(2) and (b)(3).

This change is acceptable because it provides appropriate limits for the new and spent fuel storage racks and is designated more restrictive because general design requirements in CTS have been replaced with specific requirements in ITS consistent with the ISTS and 10 CFR 50.68.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* Unit 1 and Unit 2 CTS 5.2 and 5.4 provide description details of the containment systems and the reactor coolant system (RCS), respectively. Unit 1 CTS 5.5 and 5.7 provides description details of the emergency core cooling systems (ECCS) and seismic classifications, respectively. This changes the CTS by moving the description details of these systems to the UFSAR.

The removal of these details, which are related to system description, from the Technical Specifications, is acceptable because this type of information is not considered a design feature requirement as described in 10 CFR 50.36(c)(4); and therefore, is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains requirements on containment systems OPERABILITY in ITS Section 3.6, “Containment Systems,” RCS OPERABILITY in ITS Section 3.4, “Reactor Coolant Systems (RCS),” and ECCS OPERABILITY in ITS Section 3.5, “Emergency Core Cooling Systems (ECCS).” Seismic classification requirements continue to be required as promulgated by regulation; specifically, Appendix B, Section III, Design Control, and Appendix S, Section IV, Application To Engineering Design, of 10 CFR 50. Also, this change is acceptable because the information will be adequately controlled in the UFSAR. Any changes to the UFSAR are made per the provisions of 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* Unit 1 CTS and Unit 2 CTS 5.3.1 state that each fuel assembly, in part, consists of "and/or poison rods." In addition, Unit 1 CTS 5.3.1.1 states that, except for special test as authorized by the NRC, fuel assemblies under CEAs must be sleeved with an NRC approved sleeve design. Unit 1 CTS 5.3.2 contains reference to the original CEA design provisions in the FSAR and allows for normal degradation allowance pursuant to applicable Surveillance Requirements. Unit 1 and Unit 2 CTS 5.6.1.d explicitly state that the new fuel storage racks are designed for dry storage of unirradiated fuel. ITS 4.2.1, 4.2.2, and 4.3.1.2 do not include this level of detail and is revised consistent with the ISTS. This changes the CTS by moving this level of detail to the UFSAR.

The removal of these details, which are related to system design, from the CTS is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retain fuel assembly and CEA material description (refer to DOC M01), which, if altered or modified, would have a significant effect on safety. Additionally, ITS retains requirements on CEA OPERABILITY in Section 3.1. ITS also retains sufficient criticality information associated with the new fuel storage racks, which, if altered or modified, would have a significant effect on safety. These requirements provide adequate assurance the fuel assemblies, CEAs, and new fuel storage racks are capable of performing their safety function. Additionally, the removed information is more appropriately contained in the UFSAR. The inclusion of the details of component design and material in the UFSAR is consistent with the content and purpose of the UFSAR. The UFSAR is controlled under 10 CFR 50.59 which ensures that changes to the material contained in the UFSAR are properly evaluated. Therefore, the removal of this information from the CTS and placement in the UFSAR is acceptable. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the CTS.

LA03 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* Unit 1 CTS 5.6.1.a.5 allows Vessel Flux Reduction Assemblies (VFRAs), as defined in Section 9.1 of the Updated Final Safety Analysis Report, to be placed in any allowable fuel storage location. Unit 1 CTS 5.6.1.a.7 and Unit 2 CTS 5.6.1.a.6 require the Metamic neutron absorber inserts to have a ^{10}B areal density greater than or equal to 0.015 grams $^{10}B/cm^2$ and Unit 1 and Unit 2 CTS 5.6.1.b requires the cask pit storage rack to contain neutron absorbing material (Boral) between stored fuel assemblies when installed in the spent fuel pool. ITS 4.3.1.1 does not include this level of detail and is revised consistent with the ISTS. This changes the CTS by moving this level of detail to the UFSAR.

The removal of these details, which are related to specific rack design, from the CTS is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains sufficient criticality information associated with the spent fuel and cask pit storage racks, which, if altered or modified, would have a significant effect on safety. The removed information is more appropriately contained in the UFSAR. The inclusion of the details of component design and material in the UFSAR is consistent with the content and purpose of the UFSAR. The UFSAR is controlled under 10 CFR 50.59 which ensures that changes to the material contained in the UFSAR are properly evaluated. Therefore, the removal of this information from the CTS and placement in the UFSAR is acceptable. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the CTS.

LESS RESTRICTIVE CHANGES

None

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

4.0 DESIGN FEATURES

5.1 4.1 Site Location INSERT 1 2

~~[Text description of site location.]~~

5.3 4.2 Reactor Core

5.3.1 4.2.1 Fuel Assemblies

The reactor shall contain ~~[~~217~~]~~ fuel assemblies. Each assembly shall consist of a matrix of ~~[~~Zircalloy or ~~ZIRLO]~~ [M5 clad] fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions. 2

5.3.2 4.2.2 ~~[~~Control [Element] ~~Rod]~~ Assemblies 2

DOC M01

The reactor core shall contain ~~[91]~~ [73] control element assemblies (CEAs). The control material shall be ~~[~~silver indium cadmium~~,~~ [or] boron carbide~~, or hafnium metal]~~ as approved by the NRC.

5.6 4.3 Fuel Storage

4.3.1 Criticality

5.6.1.a 4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

DOC M02

a. Fuel assemblies having a maximum [planar average] U-235 enrichment of ~~[4.5]~~ [4.6] weight percent, 1 2

b. k_{eff} ~~≤ 0.95~~ [< 1.0] if fully flooded with unborated water, which includes an allowance for uncertainties as described in ~~[~~Section 9.1 of the ~~FSAR]~~ [Updated Final Safety Analysis Report (UFSAR)], 3

[INSERT 2]

~~[c.~~ [d] A nominal ~~[9]~~ [10.12] inch center to center distance between fuel assemblies placed in ~~[~~the ~~high density fuel~~ [Region 1 spent fuel pool] storage racks~~]~~, ~~]~~ 2

~~[d.~~ [e] A nominal ~~[10.4]~~ [8.86] inch center to center distance between fuel assemblies placed in ~~[~~the ~~low density fuel~~ [Region 2 spent fuel pool] storage racks~~]~~, ~~]~~ [and] 3

[INSERT 3] 2

CTS

INSERT 1 (2)

5.1 The St. Lucie Plant nuclear units are located on Hutchinson Island in St. Lucie County, about halfway between the cities of Fort Pierce and Stuart on the east coast of Florida. The radius of the exclusion area is 0.97 miles from the center of the St. Lucie Plant. The low population zone is the area within a radius of one mile from the center of the St. Lucie Plant.

INSERT 2 (3)

5.6.1.a.3 c. $k_{eff} \leq 0.95$ if flooded with borated water at a soluble boron concentration of 500 ppm, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR;

INSERT 3 (2)

5.6.1.a.2 f. A nominal 10.30 inch center to center distance between fuel assemblies placed in the Region 1 cask pit storage rack.

CTS

4.0 DESIGN FEATURES

4.3 Fuel Storage (continued)

[e. New or partially spent fuel assemblies with a discharge burnup in the "acceptable range" of Figure [3.7.18-1] may be allowed unrestricted storage in [either] fuel storage rack(s), and]

[f. New or partially spent fuel assemblies with a discharge burnup in the "unacceptable range" of Figure [3.7.18-1] will be stored in compliance with the NRC approved [specific document containing the analytical methods, title, date, or specific configuration or figure].] 4

5.6.1.d 4.3.1.2 The new fuel storage racks are designed and shall be maintained with:

planar average 1

a. Fuel assemblies having a maximum U-235 enrichment of 4.6 [4.5] weight percent,

5.6.1.d DOC M02 b. $k_{eff} \leq 0.98$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in U [Section 9.1 of the FSAR],

5.6.1.d DOC M02 c. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in U [Section 9.1 of the FSAR], and

DOC M02 d. A nominal 21 [10] inch center to center distance between fuel assemblies placed in the storage racks. 2

5.6.2 4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 56 [23 ft].

5.6.3 4.3.3 Capacity

The spent fuel storage pool and cask pit are [is] designed and shall be maintained with a total storage capacity limited to no more than 1849 [1542] fuel assemblies with the spent fuel pool storage racks limited to no more than 1706 fuel assemblies and the cask pit storage rack limited to no more than 143 fuel assemblies. 1 1

CTS

4.0 DESIGN FEATURES

5.1 4.1 Site Location

INSERT 1 2

[Text description of site location.]

5.3 4.2 Reactor Core

5.3.1 4.2.1 Fuel Assemblies

The reactor shall contain [217] fuel assemblies. Each assembly shall consist of a matrix of [Zircalloy, or ZIRLO] fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions. 2

, or M5 clad

Element

5.3.2 4.2.2 [Control Rod] Assemblies

DOC M01

87

The reactor core shall contain [91] control element assemblies (CEAs). The control material shall be [silver indium cadmium, boron carbide, or hafnium metal] as approved by the NRC. 2

or

5.6 4.3 Fuel Storage

4.3.1 Criticality

5.6.1.a 4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

DOC M02

planar average 1

4.6 2

a. Fuel assemblies having a maximum U-235 enrichment of [4.5] weight percent,

< 1.0 3

b. k_{eff} ≤ 0.95 if fully flooded with unborated water, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR],

Updated Final Safety Analysis Report (UFSAR)

8.965 Region 1 spent fuel pool

INSERT 2

[c. A nominal [9] inch center to center distance between fuel assemblies placed in [the high density fuel storage racks],] 2

d

8.965 Region 2 spent fuel pool

[d. A nominal [10.4] inch center to center distance between fuel assemblies placed in [the low density fuel storage racks],]

e

and

3

INSERT 3 2

Amendment XXX 1

CTS

(2)

INSERT 1

5.1 The St. Lucie Plant nuclear units are located on Hutchinson Island in St. Lucie County, about halfway between the cities of Fort Pierce and Stuart on the east coast of Florida. The radius of the exclusion area is 0.97 miles from the center of the St. Lucie Plant. The low population zone is the area within a radius of one mile from the center of the St. Lucie Plant.

INSERT 2 (3)

5.6.1.a.2 c. $k_{eff} \leq 0.95$ if flooded with borated water at a soluble boron concentration of 500 ppm, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR;

INSERT 3 (2)

5.6.1.a.3 f. A nominal 8.8 inch center to center distance between fuel assemblies placed in the Region 2 cask pit storage rack.

CTS

4.0 DESIGN FEATURES

4.3 Fuel Storage (continued)

[e. New or partially spent fuel assemblies with a discharge burnup in the "acceptable range" of Figure [3.7.18-1] may be allowed unrestricted storage in [either] fuel storage rack(s), and]

[f. New or partially spent fuel assemblies with a discharge burnup in the "unacceptable range" of Figure [3.7.18-1] will be stored in compliance with the NRC approved [specific document containing the analytical methods, title, date, or specific configuration or figure].] 4

5.6.1.d 4.3.1.2 The new fuel storage racks are designed and shall be maintained with: 1

planar average

a. Fuel assemblies having a maximum U-235 enrichment of 4.6 [4.5] weight percent,

5.6.1.d DOC M02 b. $k_{eff} \leq 0.98$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in U [Section 9.1 of the FSAR],

5.6.1.d DOC M02 c. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in U [Section 9.1 of the FSAR], and

DOC M02 d. A nominal 23 [10] inch center to center distance between fuel assemblies placed in the storage racks. 2

5.6.2 4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 56 [23 ft].

5.6.3 4.3.3 Capacity

The spent fuel storage pool and cask pit are [is] designed and shall be maintained with a total storage capacity limited to no more than 1716 [1542] fuel assemblies with the spent fuel pool storage racks limited to no more than 1491 fuel assemblies and the cask pit storage rack limited to no more than 225 fuel assemblies. 1

1

JUSTIFICATION FOR DEVIATIONS
ITS 4.0, DESIGN FEATURES

1. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. The ISTS contains bracketed information and/or values that are generic to Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

3. The St. Lucie Plant (PSL) spent fuel storage criticality analyses for Units 1 and 2 indicate that to maintain keff ≤ 0.95 under normal conditions, boron concentration must be at least 500 ppm, including an allowance for biases and uncertainties as described in Section 9.1 of the Updated Final Safety Analysis Report (UFSAR). Additionally, if fully flooded with unborated water, spent fuel storage criticality analyses indicate keff will remain below 1.0, which includes an allowance for biases and uncertainties as described in UFSAR, Section 9.1. Therefore, these changes are made to reflect the PSL fuel storage criticality safety analyses.

4. The ISTS contains bracketed information and/or values that are generic to Combustion Engineering vintage plants. The bracketed information is not included in the PSL Unit 1 and Unit 2 ITS. The bracketed information is not related to the spent fuel storage rack design, but rather is related to storage allowances of specific fuel assemblies. PSL is adopting ISTS 3.7.18, “Spent Fuel Storage” (ITS 3.7.15), which defines the plant specific requirements for location of fuel assemblies in the spent fuel storage pool. In addition, specific requirements associated with fuel assembly storage are provided in UFSAR Section 9.1.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 4.0, DESIGN FEATURES

There are no specific No Significant Hazards Considerations for this Chapter.