Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

A. Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2568 megawatts thermal.

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 351 are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. This license is subject to the following antitrust conditions:

Applicant makes the commitments contained herein, recognizing that bulk power supply arrangements between neighboring entities normally tend to serve the public interest. In addition, where there are net benefits to all participants, such arrangements also serve the best interests of each of the participants. Among the benefits of such transactions are increased electric system reliability, a reduction in the cost of electric power, and minimization of the environmental effects of the production and sale of electricity.

Any particular bulk power supply transaction may afford greater benefits to one participant than to another. The benefits realized by a small system may be proportionately greater than those realized by a larger system. The relative benefits to be derived by the parties from a proposed transaction, however, should not be controlling upon a decision with respect to the desirability of participating in the transaction. Accordingly, applicant will enter into proposed bulk power transactions of the types hereinafter described which, on balance, provide net benefits to applicant. There are net benefits in a transaction if applicant recovers the cost of the transaction (as defined in ¶1 (d) hereof) and there is no demonstrable net detriment to applicant arising from that transaction.

1. As used herein:

(a) "Bulk Power" means electric power and any attendant energy, supplied or made available at transmission or sub-transmission voltage by one electric system to another.

(b) "Neighboring Entity" means a private or public corporation, a governmental agency or authority, a municipality, a cooperative, or a lawful association of any of the foregoing owning or operating, or

Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

A. Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2568 megawatts thermal.

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 353, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. This license is subject to the following antitrust conditions:

Applicant makes the commitments contained herein, recognizing that bulk power supply arrangements between neighboring entities normally tend to serve the public interest. In addition, where there are net benefits to all participants, such arrangements also serve the best interests of each of the participants. Among the benefits of such transactions are increased electric system reliability, a reduction in the cost of electric power, and minimization of the environmental effects of the production and sale of electricity.

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(b) "Neighboring Entity" means a private or public corporation, a governmental agency or authority, a municipality, a cooperative, or a lawful association of any of the foregoing owning or operating, or

Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

A. Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2568 megawatts thermal.

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 352 are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. This license is subject to the following antitrust conditions:

Applicant makes the commitments contained herein, recognizing that bulk power supply arrangements between neighboring entities normally tend to serve the public interest. In addition, where there are net benefits to all participants, such arrangements also serve the best interests of each of the participants. Among the benefits of such transactions are increased electric system reliability, a reduction in the cost of electric power, and minimization of the environmental effects of the production and sale of electricity.

Any particular bulk power supply transaction may afford greater benefits to one participant than to another. The benefits realized by a small system may be proportionately greater than those realized by a larger system. The relative benefits to be derived by the parties from a proposed transaction, however, should not be controlling upon a decision with respect to the desirability of participating in the transaction. Accordingly, applicant will enter into proposed bulk power transactions of the types hereinafter described which, on balance, provide net benefits to applicant. There are net benefits in a transaction if applicant recovers the cost of the transaction (as defined in ¶1(d) hereof) and there is no demonstrable net detriment to applicant arising from that transaction.

1. As used herein:

(a) "Bulk Power" means electric power and any attendant energy, supplied or made available at transmission or sub-transmission voltage by one electric system to another.

(b) "Neighboring Entity" means a private or public corporation, a governmental agency or authority, a municipality, a cooperative, or a lawful association of any of the foregoing owning or operating, or

3.7 PLANT SYSTEMS

3.7.12 Spent Fuel Pool Boron Concentration

LCO 3.7.12 The spent fuel pool boron concentration limit shall be within limits.

APPLICABILITY: When fuel assemblies are stored in the spent fuel pool and when fuel assemblies are in a dry spent fuel storage cask located in the spent fuel pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Spent fuel pool boron concentration not within limit.	------------------NOTE----------------- LCO 3.0.3 is not applicable. ---	
	A.1 Suspend movement of fuel assemblies in the spent fuel pool.	Immediately
	AND	
	A.2 Initiate action to restore spent fuel pool boron concentration to within limit.	Immediately

3.7 PLANT SYSTEMS

3.7.18 Dry Spent Fuel Storage Cask Loading and Unloading

LCO 3.7.18 The combination of initial enrichment, burnup and post-irradiation cooling time of each fuel assembly in a dry spent fuel storage cask shall meet the criteria of Table 3.7.18-1.

APPLICABILITY: Whenever any fuel assembly is in a dry spent fuel storage cask located in the spent fuel pool.

ACTIONS

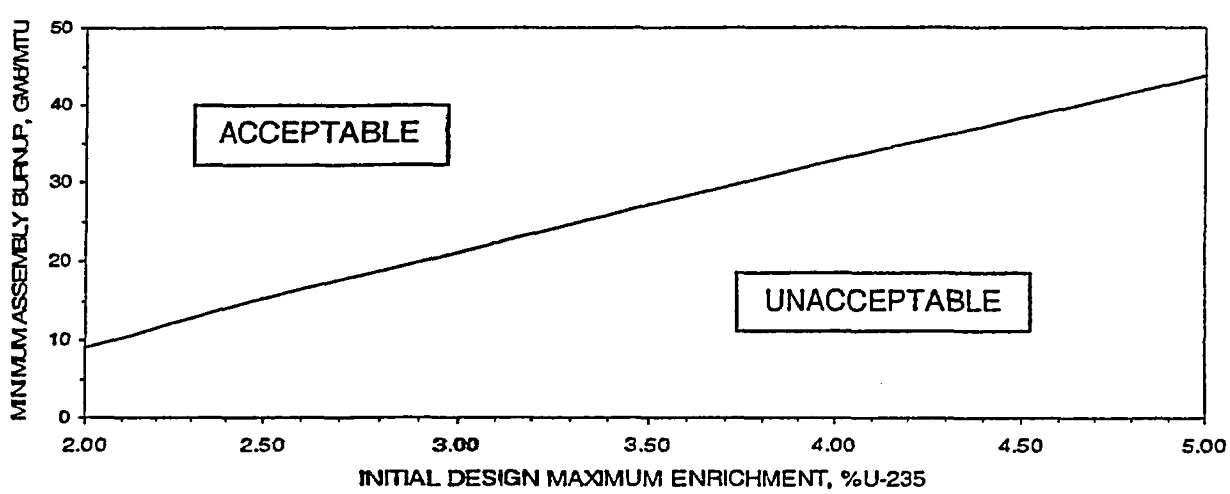
CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 -----------NOTE----------- LCO 3.0.3 is not applicable. ------------------------------ Initiate action to move the noncomplying fuel assembly to an acceptable storage location.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.18.1	Verify by administrative means the initial enrichment, burnup, and post-irradiation cooling time of the fuel assembly is in accordance with Table 3.7.18-1.	Prior to placing the fuel assembly into a dry spent fuel storage cask for loading <u>AND</u> Prior to placing a dry spent fuel storage cask into the spent fuel pool for unloading.

Table 3.7.18-1 (page 1 of 1)
Minimum Qualifying Burnup versus Design Maximum Enrichment
for Dry Spent Fuel Storage Cask Loading and Unloading

Initial Design Maximum Enrichment (Weight% U-235)	Minimum Assembly Burnup (GWD/MTU)
1.60 (or less)	0
2.00	8.93
2.50	15.34
3.00	21.02
3.50	27.12
4.00	32.78
4.50	38.33
5.00	43.77



NOTES:

The Design Maximum enrichment indicated above is the nominal maximum enrichment of any fuel pin in the fuel assembly being considered. The as-built enrichment of a fuel assembly may exceed its specified Design Maximum by up to 0.05 wt % U-235 and still be loaded in accordance with the above burnup limits for that Design Maximum enrichment. The minimum burnup requirements indicated above are based on a minimum post-irradiation cooling time of 5 years.

Fuel which differs from those designs used to determine the requirements of Table 3.7.18-1 may be qualified by means of an analysis using NRC approved methodology to assure that k_{eff} is less than 1.0 with no boron and less than or equal to 0.95 with credit for soluble boron.

4.0 DESIGN FEATURES

4.4 Dry Spent Fuel Storage Cask Loading and Unloading

4.4.1 Criticality

Dry spent fuel storage cask loading or unloading in the spent fuel pool shall be maintained with:

a. Fuel assemblies having a maximum nominal U-235 enrichment of 5.0 weight percent;

b. $k_{eff} < 1.0$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR;

c. $k_{eff} \leq 0.95$ if fully flooded with water borated to 430 ppm, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR. Maintaining the normal spent fuel pool boron concentration within the TS limits assures $k_{eff} \leq 0.95$ for any accident condition;

d. Dry spent fuel storage cask designs limited to NUHOMS®-24P or NUHOMS®-24PHB.

B 3.7 PLANT SYSTEMS

B 3.7.12 Spent Fuel Pool Boron Concentration

BASES

BACKGROUND

Each Oconee spent fuel pool (SFP) contains racks for fuel assembly storage and a cask pit area for loading assemblies into a NUHOMS® -24P/24PHB dry storage canister (DSC). Criticality analyses have been performed for both SFP rack storage and DSC loading/unloading operations, in accordance with the regulation (Ref. 1) and the guidance in References 2 and 3. The SFP and DSC criticality analyses each take credit for 430 ppm soluble boron during normal conditions, in order to achieve system $k_{eff} \leq 0.95$. This partial soluble boron credit is included in TS 4.3.1 c. (SFP storage racks) and 4.4.1 c. (DSC).

The SFP storage rack criticality analysis yields fuel assembly storage configuration requirements and associated minimum burnup values (as a function of initial U-235 enrichment), which are specified in LCO 3.7.13. The DSC criticality evaluation establishes minimum burnup requirements for the loading of fuel assemblies into a NUHOMS® -24P/24PHB DSC without location restrictions. The DSC burnup requirements are provided in LCO 3.7.18.

The minimum SFP boron concentration of 2220 ppm (per SR 3.7.12.1) allows sufficient time to detect and mitigate all credible boron dilution scenarios, well before the SFP boron concentration drops to 430 ppm. The minimum 2220 ppm boron is available for all accident conditions evaluated in the SFP rack and DSC criticality analyses, per the double contingency principle (Ref. 4).

APPLICABLE SAFETY ANALYSES

Reference 3 discusses several criticality accident conditions that should be considered in SFP storage rack criticality analyses. Applicable accidents for the Oconee SFP storage racks include: 1) drop of a fuel assembly on top of the SFP storage rack; 2) drop of a fuel assembly outside of the storage rack modules; 3) abnormal SFP water temperatures outside the normal temperature range; 4) the misloading of a fuel assembly in a storage cell for which restrictions on location, enrichment, burnup, or post-irradiation cooling time are not satisfied; and 5) the drop of a heavy load (transfer cask) onto the SFP storage racks (NUREG-0612). Of these SFP storage rack accidents, the heavy load drop event requires the largest amount of soluble boron (almost 2200 ppm) to maintain SFP $k_{eff} \leq 0.95$.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The accident scenarios (Ref. 3) that are valid for the loading/unloading of a NUHOMS® -24P/24PHB DSC include: 1) drop of a fuel assembly on top of the DSC storage cells; 2) drop of a fuel assembly immediately outside of the transfer cask containing the DSC; 3) abnormal SFP water temperatures beyond the normal temperature range; and 4) the misloading of a fresh 5.0 wt % U-235 fuel assembly in one of the DSC storage cells. Of these DSC accidents, the misload event requires the largest amount of soluble boron (630 ppm) to achieve a system $k_{eff} \leq 0.95$.

Note that it is plausible to consider a loss of normal SFP cooling accident occurring in conjunction with a boron dilution event in the Oconee SFPs. In this unlikely scenario, with SFP water temperatures up to 212°F, the largest concentration of soluble boron required to maintain system $k_{eff} \leq 0.95$ is 500 ppm (for the SFP storage racks). This amount of soluble boron is still much less than that remaining after the worst-case credible dilution event (825 ppm).

Therefore, maintaining the SFP boron concentration ≥ 2220 ppm per SR 3.7.12.1 ensures that $k_{eff} \leq 0.95$ for any accident conditions in the SFP storage rack or NUHOMS® -24P/24PHB DSC. This minimum boron concentration limit includes allowance for analytical, mechanical, and instrument measurement uncertainties.

The concentration of dissolved boron in the SFP satisfies Criterion 2 of 10 CFR 50.36 (Ref. 5).

LCO

The minimum concentration of dissolved boron in the SFP (2220 ppm) preserves the assumptions used in the analyses of the potential accident scenarios described above. The minimum boron concentration ensures that the system k_{eff} for the SFP storage rack or the NUHOMS® -24P/24PHB DSC will remain below 0.95 for all credible criticality accident scenarios and boron dilution events.

APPLICABILITY

This LCO applies whenever fuel assemblies are stored in the SFP storage racks, or whenever fuel assemblies are being loaded into a NUHOMS® -24P/24PHB DSC in the SFP.

ACTIONS

A.1 and A.2

The Required Actions are modified by a Note indicating that LCO 3.0.3 does not apply.

BASES

ACTIONS

A.1 and A.2 (continued)

If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, inability to suspend movement of fuel assemblies is not a sufficient reason to require a reactor shutdown.

When the concentration of boron in the SFP is less than required, immediate action must be taken to preclude the occurrence of an accident or to mitigate the consequences of an accident in progress. This is achieved by immediately suspending the movement of the fuel assemblies. This does not preclude movement of a fuel assembly to a safe position. Immediate action is also required to initiate action to restore the SFP boron concentration to within limits.

SURVEILLANCE REQUIREMENTS

SR 3.7.12.1

This SR verifies that the concentration of boron in the SFP is within the required limit. As long as this SR is met, the analyzed incidents are fully addressed. The 7 day Frequency is appropriate because no major replenishment of pool water is expected to take place over a short period of time. The COLR revision process assures that the minimum boron concentration specified in the COLR bounds the limit specified by this SR.

REFERENCES

1. 10 CFR 50.68(b).

2. American Nuclear Society, "American National Standard Design Requirements for Light Water Reactor Fuel Storage Facilities at Nuclear Power Plants," ANSI/ANS-57.2-1983, October 7, 1983.

3. Nuclear Regulatory Commission, Memorandum to Timothy Collins from Laurence Kopp, "Guidance on the Regulatory Requirements for Criticality Analysis of Fuel Storage at Light Water Reactor Power Plants," August 19, 1998.

4. Double contingency principle of ANSI N16.1-1975, as specified in the April 14, 1978 NRC letter (Section 1.2) and implied in the proposed revision to Regulatory Guide 1.13 (Section 1.4, Appendix A).

BASES

REFERENCES (continued)	5.	10 CFR 50.36.

B 3.7 PLANT SYSTEMS

B 3.7.18 Dry Spent Fuel Storage Cask Loading and Unloading

BASES

BACKGROUND

Fuel loading and unloading operations for the NUHOMS®-24P and NUHOMS®-24PHB dry storage canisters (DSCs) take place in the cask pit area of the spent fuel pool. The cask pit is adjacent to the spent fuel storage racks in each of the Oconee spent fuel pools, and is open to the rest of the spent fuel pool at all times. The NUHOMS®-24P and NUHOMS®-24PHB DSCs contain storage cells for 24 fuel assemblies. Eligible B&W 15x15 fuel assemblies (MkB2-B8, MkB9, and MkB10) with initial enrichments ≤ 5.0 wt % U-235 may be stored in the NUHOMS®-24P or NUHOMS®-24PHB DSC, as long as the fuel assemblies meet the minimum burnup and cooling time requirements specified in Table 3.7.18-1.

For normal conditions in the spent fuel pool, the NUHOMS®-24P and NUHOMS®-24PHB DSCs have been analyzed using credit for soluble boron as allowed in Reference 1. This ensures that the system multiplication factor, k_{eff}, is ≤ 0.95 as recommended in ANSI/ANS-57.2-1983 (Ref. 2) and NRC guidance (Ref. 3). The DSC is analyzed to allow loading/unloading of eligible fuel assemblies while maintaining k_{eff} ≤ 0.95, including uncertainties, tolerances, biases, and credit for 430 ppm soluble boron. Note that the criticality analysis accounts for a maximum as-built enrichment tolerance of 0.05 wt % U-235. For example, for a specified maximum design enrichment of 5.00 wt % U-235, an as-built enrichment up to 5.05 weight percent is acceptable. The 430 ppm soluble boron credit must provide sufficient subcritical margin to maintain the DSC k_{eff} ≤ 0.95. In addition, sub-criticality of the DSC (k_{eff} < 1.0) must be assured on a 95/95 basis, without the presence of any soluble boron in the spent fuel pool.

The dual k_{eff} criteria identified in the above paragraph are satisfied for fuel assemblies meeting the minimum burnup and post-irradiation cooling time requirements specified in Table 3.7.18-1. Reactivity reduction with cooling time is primarily attributable to Pu-241 decay and Gd-155 buildup (via Eu-155 decay).

Specification 4.4.1 c. requires that the DSC k_{eff} be ≤ 0.95 when flooded with water borated to 430 ppm. A spent fuel pool boron dilution analysis has been performed that confirms that sufficient time is available to detect and mitigate a dilution of the spent fuel pool before the 0.95 k_{eff}

BASES

BACKGROUND (continued)

design basis is exceeded. The spent fuel pool boron dilution analysis concluded that an unplanned or inadvertent event which could result in the dilution of the spent fuel pool boron concentration to 430 ppm is not a credible event.

APPLICABLE SAFETY ANALYSES

Several accident conditions (Ref. 3) are considered that could result in an increase in system k_{eff} for a DSC being loaded or unloaded in the spent fuel pool. These accident conditions include the drop of a fuel assembly on top of the DSC storage cells, the drop of a fuel assembly just outside the transfer cask containing the DSC, a higher than normal spent fuel pool water temperature, and the misloading of a fresh 5.0 wt % U-235 assembly in one of the DSC storage cells.

For an occurrence of these postulated accidents, the double contingency principle discussed in ANSI N-16.1-1975 and the April 1978 NRC letter (Ref. 4) can be applied. This double contingency principle does not require assuming two unlikely, independent, concurrent events to ensure protection against a criticality accident. Thus, for these postulated accident conditions, the presence of additional soluble boron in the spent fuel pool water (above the 430 ppm required to maintain $k_{eff} \leq 0.95$ under normal DSC loading/unloading conditions) can be assumed as a realistic initial condition since not assuming its presence would be a second unlikely event.

Calculations were performed to determine the amount of soluble boron required to offset the highest reactivity increase associated with these postulated accidents, in order to maintain $k_{eff} \leq 0.95$. It was found that a spent fuel pool boron concentration of 630 ppm was sufficient to maintain $k_{eff} \leq 0.95$ for the worst-case postulated criticality-related accident (the fresh fuel assembly misloaded in a DSC storage cell). Specification 3.7.12 ensures the spent fuel pool contains adequate dissolved boron to compensate for the increased reactivity caused by these postulated accidents.

For normal storage conditions, Specification 4.3.1 c. requires that the spent fuel rack k_{eff} be ≤ 0.95 when flooded with water borated to 430 ppm. A spent fuel pool boron dilution analysis was performed which confirmed that sufficient time is available to detect and mitigate a dilution of the spent fuel pool before the 0.95 k_{eff} design basis is exceeded. The spent fuel pool boron dilution analysis concluded that an unplanned or inadvertent event which could result in the dilution of the spent fuel pool boron concentration to 430 ppm is not a credible event.

BASES

APPLICABLE SAFETY ANALYSIS (continued)	The configuration of fuel assemblies in the DSC and the concentration of dissolved boron in the spent fuel pool satisfy Criterion 2 of 10 CFR 50.36 (Ref. 5)
LCO	The k_{eff} of the dry spent fuel storage cask (NUHOMS®-24P or NUHOMS®-24PHB DSC), during loading and unloading operations in the spent fuel pool, will always remain ≤ 0.95, assuming the spent fuel pool is flooded with water borated to at least 430 ppm, and that each loaded fuel assembly meets the initial enrichment, burnup, and post-irradiation cooling time of Table 3.7.18-1.
APPLICABILITY	This LCO applies whenever any fuel assembly is in a dry spent fuel storage cask located in the spent fuel pool.
ACTIONS	<u>A.1</u> Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply. If moving fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, in either case, inability to move fuel assemblies is not sufficient reason to require a reactor shutdown. When the configuration of fuel assemblies loaded in the NUHOMS®-24P or NUHOMS®-24PHB DSC is not in accordance with the LCO, immediate action must be taken to make the necessary fuel assembly movement(s) to bring the configuration into compliance with the LCO.
SURVEILLANCE REQUIREMENTS	<u>SR 3.7.18.1</u> This SR verifies by administrative means that the initial enrichment, burnup, and post-irradiation cooling time of the fuel assembly to be loaded into or removed from the NUHOMS®-24P or NUHOMS®-24PHB DSC is in accordance with Table 3.7.18-1.

BASES

REFERENCES

1. 10 CFR 50.68(b)(4)

2. American Nuclear Society, "American National Standard Design Requirements for Light Water Reactor Fuel Storage Facilities at Nuclear Power Plants," ANSI/ANS-57.2-1983, October 7, 1983.

3. Nuclear Regulatory Commission, Memorandum to Timothy Collins from Laurence Kopp, "Guidance on the Regulatory Requirements for Criticality Analysis of Fuel Storage at Light Water Reactor Power Plants," August 19, 1998.

4. Double contingency principle of ANSI N16.1-1975, as specified in the April 14, 1978 NRC letter (Section 1.2) and implied in the proposed revision to Regulatory Guide 1.13 (Section 1.4, Appendix A).

5. 10 CFR 50.36