PROPOSED CHANGE RTS-285A TO THE DUANE ARNOLD ENERGY CENTER TECHNICAL SPECIFICATIONS

The holders of license DPR-49 for the Duane Arnold Energy Center propose to amend Appendix A (Technical Specifications) to said license as indicated on the attached marked-up pages. The List of Affected Pages is given below.

LIST OF AFFECTED PAGES

Operating License Page 4
3.5-10
3.5-23
3.8-4
3.8-6*
5.5-1
6.5-3*
6.8-1*
6.8-2*

* Previously submitted as RTS-285, not affected by RTS-285A.

SUMMARY OF CHANGES:

The following list of proposed changes is in the order that the changes appear in the Technical Specifications.

Page	Description of Changes
Operating License page 4	Revise paragraph 2.C(4) to correct wording consistent with Amendment 47.
3.5-10	Revise Surveillance Requirement to require a determination that the OPERABLE EDG is not inoperable due to a common cause within 24 hours and retain the requirement to perform the OPERABILITY test each 72 hours.
3.5-23	Revise Bases to reflect above changes
3.8-4	Revise reference in TS Section 3.8.B.2.c from 3.7.D to 3.7.B.

Page	Description of Changes
3.8-6	Revise Surveillance Requirement for one ESW pump or loop inoperable to delete the reference to Surveillance Requirement 4.5.G.1 and reiterate the requirement to verify all low pressure core cooling and containment cooling subsystems and the diesel generator associated with the OPERABLE ESW are also OPERABLE.
5.5-1	Reformat Section 5.5 to be consistent in content and format with NUREG 1433, Improved Standard TS. RTS-285A removes the previously proposed limit on enrichment of new fuel.
6.5-3	Delete "and implementing procedures" from items i and j.
6.5-4	Replace "Procedures required by the Emergency Plan" with the word "Deleted."
6.8-2	Replace "Procedures required by the plant Security Plan" with the word "Deleted."

(3) Fire Protection

Revision to OL Amendment #190 01/93
Revision to OL Amendment #198 05/12/94

IES Utilities Inc. shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the Duane Arnold Energy Center and as approved in the SER dated June 1, 1978 and Supplement dated February 10, 1981, subject to the following provision:

The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

Added to OL Amendment #47 1/08/79

(4) The licensee is authorized to operate the Duane Arnold Energy Center following installation of modified safe-ends on the eight primary recirculation system inlet lines ~~which are described in the application for amendment specified in paragraph 1 above.~~ licensee letter dated July 31, 1978 and supplemented by letter dated December 8, 1978.

(5) Physical Protection

Added to OL Amendment #50 4/19/79

Revision to OL Amendment #65 3/03/81

Revision to OL Amendment #74 6/09/82

Revision to OL Amendment #112 2/26/85

The licensee shall fully implement and maintain in effect all provisions of the Commission approved physical security, guard training and qualification, and safeguards contingency plans, including amendments made pursuant to the authority of 10 CFR 50.54(p). The approved plans, which contain Safeguards Information as described in 10 CFR 73.21, are collectively entitled:

"Duane Arnold Energy Center Security Plan" dated December 1, 1978, January 19, March 9 and March 21 1978, as revised through revisions dated January 1984 (transmittal letter dated January 12, 1984), as revised by revision dated February 1984 (transmittal letter dated February 27, 1984), as revised by revision dated September 1984 (transmittal letter dated September 26, 1984); "Duane Arnold Energy Center Safeguards Contingency Plan," dated April 1980, as revised through revision dated January 1984 (transmittal letter dated January 12, 1984); "Duane Arnold Energy Center Guard Training and Qualification Plan" dated January 29, 1982, as revised April 1, 1982, as revised through revisions dated January 1984 (transmittal letter dated January 12, 1984), as revised by undated revisions (transmittal letter dated July 30, 1984), as revised by revision dated September 1984 (transmittal letter dated September 26, 1984) as revised by revision dated October 1984 (transmittal letter dated October 26, 1984).

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
G. Minimum Low Pressure Cooling and Diesel Generator Availability	G. Minimum Low Pressure Cooling and Diesel Generator Availability
1. During any period when one diesel generator is inoperable, continued reactor operation is permissible only during the succeeding seven days unless such diesel generator is sooner made OPERABLE, provided that the remaining diesel generator and all low pressure core and containment cooling subsystems supported by the OPERABLE diesel generator are OPERABLE. If this requirement cannot be met, an orderly SHUTDOWN shall be initiated and the reactor shall be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.	1. ~~When it is determined that one diesel generator is inoperable, the remaining diesel generator shall be demonstrated to be OPERABLE in accordance with Specification 4.8.A.2.a.1.a within the first 24 hours and every subsequent 72 hours thereafter.~~ In addition, all low pressure core cooling and containment cooling subsystems supported by the OPERABLE diesel shall be verified to be OPERABLE.
2. Any combination of inoperable components in the core and containment cooling systems shall not defeat the capability of the remaining OPERABLE components to fulfill the cooling functions.	With one diesel generator inoperable, determine that the OPERABLE diesel generator is not inoperable due to common cause failure within 24 hours and perform Surveillance Requirement 4.8.A.2.a.1.a within the first 72 hours and every 72 hours thereafter.
3. When irradiated fuel is in the reactor vessel and the reactor is in the COLD SHUTDOWN Condition or REFUEL Mode:	
a. If no work is being performed which has the potential for draining the reactor vessel, both core spray and RHR systems may be inoperable; or	
b. If work is being performed which has the potential for draining the reactor vessel, at least two of any combination of core spray and/or RHR (LPCI or shutdown cooling mode) pumps shall be OPERABLE (including the capability to inject water into the reactor vessel with suction from the suppression pool) except as	

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4.5 BASES

Core and Containment Cooling Systems Surveillance Frequencies

The testing interval for the core and containment cooling systems is based on industry practice, quantitative reliability analysis, judgement and practicality. The core cooling systems have not been designed to be fully testable during operation. For example, in the case of the HPCI, automatic initiation during power operation would result in pumping cold water into the reactor water vessel which is not desirable. Complete ADS testing during power operation causes an undesirable loss-of-coolant inventory. To increase the availability of the core and containment cooling systems, the components which make up the system, i.e., instrumentation, pumps, valves, etc., are tested frequently. The test intervals are based upon Section XI of the ASME Code. A simulated automatic actuation test once per year combined with frequent tests of the pumps and injection valves is deemed to be adequate testing of these systems.

When components and subsystems are out-of-service, overall core and containment cooling reliability is maintained by evaluating the operability of the remaining equipment. The degree of evaluation depends on the nature of the reason for the out-of-service equipment. For routine out-of-service periods caused by preventative maintenance, etc., the evaluation may consist of verifying the redundant equipment is not known to be inoperable and applicable surveillance intervals have been satisfied. However, if a failure due to a design deficiency caused the outage, then the evaluation of operability should be thorough enough to assure that a generic problem does not exist.

The RHR valve power bus is not instrumented. For this reason surveillance requirements require once per shift observation and verification of lights and instrumentation operability.

The Diesel Generators are critical to operation of all core and containment cooling systems. Therefore, it is imperative that they be maintained in a standby readiness condition. In the event that one Diesel Generator is made or found to be inoperable, the remaining Diesel Generator must be shown to not be susceptible to the same condition within 24 hours. This evaluation may be performed by analysis or inspection or by demonstration of OPERABILITY. The OPERABLE Diesel Generator must also be demonstrated to continue to be OPERABLE each 72 hours during the period that the other Diesel Generator is inoperable.

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LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
chargers for the 24 Volt Systems, two of the three battery chargers for the 125 Volt Systems, and one of the two battery chargers for the 250 Volt System shall be OPERABLE.	voltage shall be measured and recorded. b. Each three months the essential batteries' voltage of each cell to the nearest 0.01 Volt, specific gravity of each cell, and temperature of every fifth cell shall be measured and recorded. c. Once each OPERATING CYCLE, the essential batteries shall be subjected to a Service Discharge Test (load profile). The specific gravity and voltage of each cell shall be determined after the discharge and recorded. d. Once every five years, the essential batteries shall be subjected to a Performance Discharge Test (capacity). This test will be performed in lieu of the Service Test requirement of 4.8.B.1.c above.
2. Operation with Inoperable Components. a. With normal battery room ventilation unavailable, portable ventilation equipment shall be provided. b. With one of the two 125 Volt DC Systems inoperable, verify that Specification 3.5.G is met, and within 3 days either: 1) Restore the inoperable 125 Volt DC System to OPERABLE status, or 2) Be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. c. With the 250 Volt DC System inoperable, the HPCI System and other affected primary containment isolation valves shall be considered inoperable and the requirements of Specifications 3.5.D and 3.7.B respectively shall be met. d. With one of the 24 Volt DC Systems inoperable, the requirements associated with the affected instruments of Specifications 3.1 and 3.2 shall be met.	2. Surveillance Requirements with Inoperable Components. a. With the battery room ventilation unavailable, samples of the battery room atmosphere shall be taken daily for hydrogen concentration determination.

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LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
E. Emergency Service Water System	E. Emergency Service Water System
1. Except as required in Specification 3.8.E.2 below, both Emergency Service Water System loops shall be OPERABLE whenever irradiated fuel is in the reactor vessel and reactor coolant temperature is greater than 212°F.	1. Emergency Service Water System surveillance shall be as follows:
	a. Simulated automatic actuation test. — once/OPERATING CYCLE
	b. Pump and motor operated valve OPERABILITY. — As specified in the IST Program
	c. Flow Rate Test
	Each Emergency Service Water pump shall deliver at least that flow determined from Figure 4.8.E-1 for the existing river water temperature. — After major pump maintenance and once per 3 months, except weekly during periods of time the river water temperature exceeds 80°F. (87-06, 88-01)
2. With one of the Emergency Service Water System pumps or loops inoperable, REACTOR POWER OPERATION must be limited to seven days unless OPERABILITY of that system is restored within this period. During such seven days all active components of the other Emergency Service Water System shall be OPERABLE, provided the requirements of Specification 3.5.G are met. (92-02)	2. With one Emergency Service Water System pump or loop inoperable, the OPERABLE pump and loop shall be verified to be OPERABLE. ~~In addition, the requirements of Specification 4.5.G.1 shall be met.~~ In addition, all low pressure core cooling and containment cooling subsystems and the diesel generator supported by the OPERABLE ESW loop shall be verified to be OPERABLE.
3. If the requirements of Specification 3.8.E cannot be met, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.	

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5.5 SPENT AND NEW FUEL STORAGE

1. The new fuel storage facility shall be such that the effective neutron multiplication factor (k_{eff}) of the fuel, dry is less than 0.90 and flooded is less than 0.95. These k_{eff} values are satisfied if the maximum infinite lattice multiplication factor (k_∞) of the individual fuel bundles is $\leq$ 1.31.

2. The k_{eff} of the fuel in the spent fuel storage pool shall be less than or equal to 0.95. This k_{eff} value is satisfied if the maximum, exposure-dependent k_∞ of the individual fuel bundles is $\leq$ 1.31 and the initial uniform average enrichment is $\leq$ 4.6 wt% U-235.

3. Spent fuel shall only be stored in the spent fuel pool in a vertical orientation in approved storage racks.

Bases

The basis for the k_∞ limit is described in Reference 1 for the GE-designed new fuel storage racks. Compliance with this specification is demonstrated by comparing the beginning-of-life, uncontrolled k_∞ values for the fuel type of interest to the 1.31 limit. For GE-supplied fuel, k_∞ values can be found in Reference 2. The k_∞ values found in Reference 2 represent the maximum, exposure-dependent lattice reactivity and can be conservatively applied to the new fuel limit.

Calculations have been performed (Reference 3) to determine the bounding reactivity limits for bundles of GE-designed fuel, when stored in the spent fuel storage racks of an approved design. These analyses were performed conservatively assuming uniform average initial enrichments in a parametric evaluation for fuel with enrichments up to 4.6 wt% U-235 initially. The bounding limit of an infinite multiplication factor of 1.31 for fuel of 4.6 wt% enrichment (or less) was evaluated at the maximum k_∞ over burnup and includes a conservative allowance for possible differences between the rack design calculations and the fuel vendor calculations.

References

1) General Electric Standard Application for Reactor Fuel, NEDE-24011-P-A.*

2) General Electric Fuel Bundle Designs, NEDE-31152-P.*

3) Licensing Report for Spent Fuel Storage Capacity Expansion, Duane Arnold Energy Center, Holtec Report HI-92889.

*Latest NRC-approved revision.

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5.5.1 Criticality

5.5.1.1 The spent fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum k_∞ of 1.31 in the normal reactor core configuration at cold conditions and a maximum initial uniform average U-235 enrichment of 4.6 weight percent.

b. $k_{eff} \leq 0.95$ flooded with unborated water.

5.5.1.2 The new fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum k_∞ of 1.31 in the normal reactor core configuration at cold conditions, ~~and the maximum initial uniform average U-235 enrichment is 4.6 weight percent.~~

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b. $k_{eff} < 0.90$ dry and ≤ 0.95 flooded with unborated water.

5.5.2 Capacity

5.5.2.1 The spent fuel storage pool has been analyzed to allow storage of a maximum of 3152 fuel assemblies in a vertical orientation only.

5.5.2.2 The new fuel storage vault is equipped with racks for storage of up to 110 fuel assemblies in a vertical orientation only.

f. Review of all Reportable Events.

g. Review of facility operations to detect potential safety hazards.

h. Performance of special reviews, investigations or analyses and reports thereon as requested by the Chairman of the Safety Committee.

i. Review of the Plant Security Plan ~~and implementing procedures.~~

j. Review of the Emergency Plan ~~and implementing procedures.~~

k. Review of every unplanned release of radioactivity to the environs for which a report to the NRC is required.

l. Review of changes to the Offsite Dose Assessment Manual and changes to the Process Control Program.

m. Review of the Fire Protection Program and implementing procedures.

6.5.1.7 Authority

The Operations Committee shall:

a. Recommend to the Plant Superintendent-Nuclear written approval or disapproval of items considered under Specification 6.5.1.6 (a) through (d) above.

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6.8 PLANT OPERATING PROCEDURES

6.8.1 Written procedures involving nuclear safety, including applicable check-off lists and instructions, covering areas listed below shall be prepared, and approved as specified in Subsection 6.8.2. All procedures shall be implemented and maintained.

1. Normal startup, operation, and shutdown of systems and components of the facility.

2. Refueling operation.

3. Actions to be taken to correct specific and foreseen potential malfunctions of systems or components, including responses to alarms, suspected primary system leaks, and abnormal reactivity changes.

4. Emergency and off-normal condition procedures.

5. Preventive and corrective maintenance operations which could have an effect on the nuclear safety of the facility.

6. Surveillance and testing requirements of equipment that could have an effect on the nuclear safety of the facility.

7. ~~Procedures required by the Emergency Plan.~~ Deleted

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8. ~~Procedures required by the plant Security Plan.~~ Deleted
9. Operation of radioactive waste systems.
10. Fire Protection Program implementation.
11. A preventive maintenance and periodic visual examination program to reduce leakage from systems outside containment that would or could contain highly radioactive fluids during a serious transient to as low as practical levels. This program shall also include provisions for performance of periodic systems leak tests of each system once per OPERATING CYCLE.
12. Program to ensure the capability to accurately determine the airborne iodine concentration in vital areas under accident conditions, including training of personnel, procedures for monitoring and provisions for maintenance of sampling and analysis equipment.
13. Administrative procedures for shift overtime for Operations personnel to be consistent with the Commission's June 15, 1982 policy statement.
14. OFFSITE DOSE ASSESSMENT MANUAL.
15. PROCESS CONTROL PROGRAM.
16. Quality Control Program for effluents.

6.8.2 Procedures described in 6.8.1 above, and changes thereto, shall be reviewed by the Operations Committee as indicated in Specification 6.5.1.6 and approved by the Plant Superintendent-Nuclear or designee prior to implementation, except as provided in 6.8.3 below.

6.8.3 Temporary minor changes to procedures described in 6.8.1 above which do not change the intent of the original procedure may be made with the concurrence of two members of the plant management staff, at least one of whom shall hold a senior operator license. Such changes shall be documented and promptly reviewed by the Operations Committee and by the Plant Superintendent-Nuclear or designee. Subsequent incorporation, if necessary, as a permanent change, shall be in accord with 6.8.2 above.

Amendment No. 109,126,128,142,157, 199,202

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SAFETY ASSESSMENT

INTRODUCTION

By letter dated December 15, 1995, IES Utilities has proposed revisions to the Duane Arnold Energy Center (DAEC) Technical Specifications (TS) to provide administrative improvements. These changes include correcting erroneous references in the Operating License (OL) and TS Section 3.8.B.2.c, reformatting Section 5.5 on Spent and New Fuel Storage and Sections 6.5 and 6.8 to remove the requirement for Operations Committee review of procedures in support of the Emergency and Security Plans. The current Surveillance Requirement 4.8.E.2 inappropriately requires demonstration of Emergency Diesel Generator (EDG) OPERABILITY when one Emergency Service Water (ESW) pump or loop is inoperable. The current Surveillance Requirement, 4.5.G.1, requires demonstration of EDG OPERABILITY within 24 hours after having found the other inoperable. The proposed revision would require an evaluation of the OPERABLE EDG to verify that it is not inoperable due to a common cause within 24 hours and continue to require the demonstration of OPERABILITY every 72 hours.

ASSESSMENT

The proposed revisions will provide administrative enhancements to the OL and TS and the process for certain procedure revisions. No changes will be made to the existing limits on spent or new fuel storage. The previously approved analytical limits on fuel enrichment, design and quantity of spent fuel assembly storage will be incorporated. The proposed revisions are consistent with the Improved Standard TS, NUREG 1433.

Elimination of the requirement to review certain procedures will allow the Operations Committee to concentrate on other issues more pertinent to its function. The procedures implementing the Security and Emergency Plans will still be maintained and any changes will be reviewed by appropriate members of IES staff. This revision is consistent with the guidance provided in NRC GL 93-07.

The changes to Surveillance Requirements correct an inappropriate conditional surveillance and improve another. The revised requirements will still serve to assure OPERABILITY of the affected systems. The current conditional surveillance for ESW requires demonstration of EDG OPERABILITY. The purpose of any conditional surveillance is to prove that whatever condition or event degraded one division of equipment is not common to the other. The link between the ESW conditional surveillance and the EDG conditional surveillance is erroneous. A condition which makes one division of ESW inoperable would not typically be suspected to make the opposite division EDG inoperable. Therefore this conditional Surveillance may be eliminated with no adverse impact. In both cases, for inoperable components, a review is performed of the degradation to determine the likelihood of a similar situation existing in the opposite division. The EDG conditional Surveillance requires that when one EDG becomes inoperable, the other must be tested within 24 hours. This test is unnecessary

when the OPERABLE EDG can be shown to have not been affected by the condition making the other EDG inoperable. The surveillance would still require a demonstration of OPERABILITY every 72 hours.

ENVIRONMENTAL CONSIDERATION

10 CFR Section 51.22(c)(9) identifies certain licensing and regulatory actions which are eligible for categorical exclusion from the requirement to perform an environmental assessment. A proposed amendment to an operating license for a facility requires no environmental assessment if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant hazards consideration; (2) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite; and, (3) result in an increase in individual or cumulative occupational radiation exposure. IES Utilities Inc. has reviewed this request and determined that the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Section 51.22(c)(9). Pursuant to 10 CFR Section 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the amendment. The basis for this determination follows:

Basis

The change meets the eligibility criteria for categorical exclusion set forth in 10 CFR Section 51.22(c)(9) for the following reasons:

1. As demonstrated in Attachment 1 to this letter, the proposed Amendment does not involve a significant hazards consideration.

2. The proposed changes are administrative; no physical changes are made to the plant. The proposed changes do not alter any plant parameters, revise any safety limit setpoints or provide any new release pathways. Thus, there will be no change in the types or increase in the amounts of any effluents that may be released offsite.

3. The proposed changes are administrative; no physical changes are made to the plant. The proposed changes do not alter any plant parameters, revise any safety limit setpoints or provide any new release pathways. Thus, there will be no increase in either individual or cumulative occupational radiation exposure.