PROPOSED CHANGE (RTS-288) 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 by deleting certain current pages and replacing them with the attached, new pages. The List of Affected Pages is given below.

LIST OF AFFECTED PAGES

1.1-16
3.2-3
3.2-4
3.2-9
3.2-43

SUMMARY OF CHANGES:

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

Page	Description of Changes
1.1-16	Bases change to take exception to RWCU isolation at Reactor Low Water Level.
3.2-3	Remove Group 5 Isolation from Low Level Common Isolation Signal.
3.2-4	Add Reactor Water Level - Low-Low to RWCU isolation trip functions. Applicable Modes of Operation, Minimum Number of Channels Required and TS Action Statement are unchanged.
3.2-9	Add Surveillance Requirements for Reactor Water Level Low-Low setpoint to Table 4.2-A. Surveillance Requirements and Applicable Modes of Operation are unchanged.
3.2-43	Revise Bases to reflect above changes.

the IRM channel closest to the withdrawn rod is by-passed. The results of this analysis show that the reactor is scrammed and peak power limited to one percent of rated power, thus maintaining MCPR above the Safety Limit. Based on the above analysis, the IRM provides protection against local control rod withdrawal errors and continuous withdrawal of control rods in sequence and provides backup protection for the APRM.

B. Scram and Isolation on Reactor Low Water Level

The setpoint for the low level scram is above the bottom of the separator skirt. This level has been used in transient analyses dealing with coolant inventory decrease. Analyses show that scram and isolation of all process lines (except main steam and reactor water cleanup) at this level adequately protects the fuel and the pressure barrier, because MCPR is greater than the Safety Limit in all cases, and system pressure does not reach the safety valve settings. The scram setting is approximately 21 inches below the normal operating range and is thus adequate to avoid spurious scrams.

C. Scram - Turbine Stop Valve Closure

The turbine stop-valve closure scram anticipates the pressure, neutron flux, and heat flux increase that could result from rapid closure of the turbine stop valves. With a scram setting at 10 percent of valve closure, the resultant increase in surface heat flux

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3.2-3

Table 3.2-A
ISOLATION ACTUATION INSTRUMENTATION

TRIP FUNCTION	TRIP LEVEL SETTING	APPLICABLE OPERATING MODE	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM[a]	VALVE GROUPS ISOLATED BY SIGNAL	ACTION
Common Isolation Signals					
Reactor Water Level-Low	≥ 170 Inches	1,2,3	2	2	20
		1,2,3, and *	2	3[c]	26
		1,2,3	2	4, 5	23
Reactor Water Level - Low-Low-Low	≥ 18.5 Inches	1,2,3	2	1	21
		1,2,3	4[n]	7	20
Drywell Pressure - High	≤ 2.0 psig	1,2,3	2	2	20
		1,2,3	2	3[c]	26
		1,2,3	2	4	23
		1,2,3	1[f]	9	23
Main Steam Line Isolation					
Main Steam Line Pressure - Low	≥ 850 psig	1	2	1	22
Main Steam Line Flow - High	≤ 140% of Rated Steam Flow	1,2,3	2/line	1	20
Condenser Backpressure - High	≤ 20 In. Hg	1,2**,3**	2	1	21
Main Steam Line Tunnel Temperature - High	≤ 200°F	1,2,3	4[o]	1	21
Turbine Building Temperature - High	≤ 200°F	1,2,3	4	1	21
Main Steam Line Radiation - High	≤ 3 x Normal Rated Power Background[j]	1,2,3	2	1[b]	21

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3.2-4

Table 3.2-A (Continued)
ISOLATION ACTUATION INSTRUMENTATION

TRIP FUNCTION	TRIP LEVEL SETTING	APPLICABLE OPERATING MODE	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM[e]	VALVE GROUPS ISOLATED BY SIGNAL	ACTION
Secondary Containment					
Refuel Floor Exhaust Duct - High Radiation	≤ 9 mr/hr	1,2,3 and *	1	3[c]	26
Reactor Building Exhaust Shaft - High Radiation	≤ 11 mr/hr	1,2,3 and *	1	3[c]	26
Offgas Vent Stack - High Radiation	Note k	Note m	1	3[c]	27
RHR System Shutdown Cooling					
Reactor Vessel Pressure - High	≤ 135 psig	1,2,3	1	4	23
Reactor Water Cleanup					
RWCU Differential Flow - High	≤ 40 gpmd	1,2,3	1	5	23
RWCU Area Temperature - High	≤ 130°F	1,2,3	1	5	23
RWCU Area Ventilation Differential Temperature - High	Δ 14°F[d]	1,2,3	1	5	23
Standby Liquid Control System Initiation	NA	Note i	1/SBLC System	5[e]	23
RWCU Area Near TIP Room Ambient Temperature - High	≤ 111.5°F	1,2,3	1	5	23
Reactor Water Level - Low-Low	≥ 119.5 Inches	1,2,3	2	5	23

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Table 4.2-A (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATING MODES FOR WHICH SURVEILLANCE REQUIRED
RHR System Shutdown Cooling				
Reactor Vessel Pressure - High	NA	Q	Q	1,2,3
Reactor Water Cleanup				
RWCU Differential Flow - High	D	Q	Q	1,2,3
RWCU Area Temperature - High	NA	Q[a]	A	1,2,3
RWCU Area Ventilation Differential Temperature - High	NA	Q	A	1,2,3
Standby Liquid Control System Initiation	NA	R	NA	Note b
Reactor Water Level - Low-Low	Once/Shift	Q	Q	1,2,3
Reactor Core Isolation Cooling				
RCIC Steam Line Differential Pressure (Flow) - High	NA	Q	Q	1,2,3
RCIC Steam Supply Pressure - Low	NA	Q	Q	1,2,3
RCIC Turbine Exhaust Diaphragm Pressure - High	NA	Q	R	1,2,3
RCIC Equipment Room Temperature - High	D	Q	A	1,2,3
RCIC Room Ventilation Differential Temperature - High	D	Q	A	1,2,3
RCIC Leak Detection Time Delay	NA	NA	A	1,2,3
Suppression Pool Area Temperature - High	D	Q	A	1,2,3
Suppression Pool Area Ventilation Differential Temperature - High	D	Q	A	1,2,3
Manual Initiation	NA	R	NA	1,2,3
RCIC System Initiation (MO-2404 Not Full Closed)	NA	R	NA	1,2,3

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3.2 BASES

In addition to reactor protection instrumentation which initiates a reactor scram, protective instrumentation has been provided which initiates action to mitigate the consequences of accidents which are beyond the operator's ability to control, or terminates operator errors before they result in serious consequences. The objectives of the Specifications are:

1. To ensure the effectiveness of the protective instrumentation when required including periods when portions of such systems are out of service for maintenance. When necessary, one channel may be made inoperable for brief intervals to conduct required functional tests and calibrations.

2. To prescribe the trip settings required to assure adequate performance.

Some of the settings on the instrumentation that initiate or control core and containment cooling have tolerances explicitly stated where the high and low values are both critical and may have a substantial effect on safety. The setpoints of other instrumentation, where only the high or low end of the setting has a direct bearing on safety, are chosen at a level away from the normal operating range to prevent inadvertent actuation of the safety system involved and exposure to abnormal situations.

The instrumentation which initiates primary system isolation is connected in a dual bus arrangement.

The trip level settings given for reactor water level represent the indicated water level. The reactor water level trip settings are defined or described in "inches" above the top of active fuel. The term top of active fuel, however, no longer has a precise physical meaning since the length of the fuel pellet columns has changed over time from that of the initial core load. Since the basis of all safety analyses is the absolute level (inches above vessel zero) of the trip settings, the "top of the active fuel" has been arbitrarily defined to be 344.5 inches above vessel zero. This definition is the same as that given by Figure 5.1-1 of the Updated FSAR for the initial core and maintains the consistency between the various level definitions given in the FSAR and the technical specifications.

The low water level instrumentation set to trip at 170" above the top of the active fuel closes all isolation valves except those in Groups 1, 5, 6, 7 and 9. For valves which isolate at this level this trip setting is adequate to prevent uncovering the core in the case of a break in the largest line assuming a 60 second valve closing time. Required closing times are less than this.

The low-low reactor water level instrumentation is set to trip when reactor water level is 119.5" above top of the active fuel. This trip initiates the HPCI and RCIC, and trips the recirculation pumps and isolates RWCU. The low-low-low reactor water level instrumentation is set to trip when the water level is 18.5" above the top of the active fuel. This trip activates the remainder of the ECCS subsystems, closes Group 7 valves, closes Main Steam Line Isolation Valves, Main Steam Drain Valves, Recirc Sample Valves (Group 1) and starts the

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 a significant 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 change lowers the isolation setpoint for the Reactor Water Cleanup (RWCU) system from reactor low level to reactor low-low level. Changing the setpoint does not affect the ability of the RWCU system to isolate in order to preserve primary containment. Thus, there will be no significant change in the types or significant increase in the amounts of effluents that may be released offsite.

3. The proposed change does not represent a change in operational or primary containment protection strategies. Thus, no significant increase in either individual or cumulative occupational radiation exposure will result from this change.

SAFETY ASSESSMENT

1. Introduction

By letter dated January 18, 1996, IES Utilities Inc. requested changes to the Duane Arnold Energy Center (DAEC) Technical Specifications (TS). These changes will lower the isolation setpoint for the Reactor Water Cleanup (RWCU) system from reactor low level [170″ above top of active fuel (TAF)] to reactor low-low level (119.5″ above TAF), thereby reducing the potential for unnecessary RWCU system isolation. This change, presented in General Electric Service Information Letter 131, was recommended because the void collapse that occurs following a reactor scram from greater than 50% power is sufficient to result in an indicated water level below reactor low level, causing the RWCU isolation. The RWCU level isolation occurs to establish primary containment and limit fluid loss in the event of a Loss of Coolant Accident (LOCA).

This change will also reduce the potential for thermal stratification in the reactor vessel. This concern is documented in NRC Information Notice 93-62. Lowering the RWCU isolation setpoint from reactor vessel level 170″ to 119.5″ above TAF will maintain the integrity of drainline temperature indication thereby alerting the operator to the potential for thermal stratification.

These changes are consistent with the Improved Standard Technical Specifications for BWR-4 Plants, NUREG-1433, Revision 1.

2. Assessment

The RWCU level isolation occurs to establish primary containment and limit fluid loss in the event of a LOCA. These functions are preserved. For a RWCU piping break outside primary containment, high ambient temperature, high differential temperature and/or high differential flow will provide the RWCU isolation signal. In the unlikely event that these temperature and flow sensing devices fail, isolation will be initiated upon reactor level reaching 119.5″ above TAF. Using blowdown rates and valve closure times, analysis shows reactor level will not drop below 105″ above TAF. This is well above the TAF. Additionally, lowering the RWCU isolation setpoint does not increase the consequences of a LOCA.

These changes will result in no degradation of operational safety of the DAEC, nor will they result in a reduction in the margin to any fuel limits for normal operation or transients.

Based upon the above assessment, we conclude that this request is acceptable.