

PROPOSED CHANGE RTS-286 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

3.2-34
3.2-35
3.2-36
3.2-47

SUMMARY OF CHANGES:

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

<u>Page</u>	<u>Description of Changes</u>
3.2-34	Editorial clarification in paragraph 3.2.G.1, "(EOC)-RPT."
3.2.-35	Revise note "d" to clarify requirement that inputs are required from both the Turbine Stop Valves and the Turbine Control Valves. Add note "f" to the specified Applicable Operating Mode for "(EOC)RPT Logic." Add new note "f" to clarify that (EOC) RPT OPERABILITY requirement is dependent on reactor power. Revise "Action 81" to require that when (EOC) RPT is not OPERABLE, operating limit MCPR penalty is to be applied.
3.2-36	Change "(EOC) RPT Logic" "Channel Functional Test" frequency from monthly to quarterly. Clarify "Operating Modes for Which Surveillance Required" for "(EOC) RPT Logic" and "RPT Breaker" by adding notes "****" and "#," respectively. Revise "Response Time" test acceptance criteria to specify appropriate values for the two (EOC) RPT inputs and clarify the method of measuring that response time.
3.2-47	Revise Bases to reflect above changes.

LIMITING CONDITIONS FOR OPERATIONG. RECIRCULATION PUMP TRIP (RPT) AND
ALTERNATE ROD INSERTION (ARI)
INSTRUMENTATION

1. (ATWS) - RPT/ARI

The instrumentation that trips the recirculation pumps and initiates ARI as a means of limiting the consequences of a failure to scram during an anticipated transient shall be OPERABLE as shown in Table 3.2-G.

(EOC)-RPT

The instrumentation that trips the recirculation pumps during stop valve or control valve fast closure for transient margin improvement ~~(especially)~~ at end-of-cycle shall be OPERABLE as shown in Table 3.2-G with the RPT SYSTEM TIME RESPONSE as shown in Table 4.2-G.

Applicability:

As shown in Table 3.2-G

Action:

With one or more (ATWS)RPT/ARI or (EOC)-RPT instrument channels inoperable, take the ACTION required by Table 3.2-G.

SURVEILLANCE REQUIREMENTSG. RECIRCULATION PUMP TRIP (RPT) AND
ALTERNATE ROD INSERTION (ARI)
INSTRUMENTATION

1. Each RPT and ARI instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, FUNCTIONAL TEST and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.2-G.
2. LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all ATWS-RPT/ARI instrumentation channels shall be performed at least once per operating cycle.
3. Time response testing of the RPT breakers shall be performed at least once per operating cycle.

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Table 3.2-G

(ATWS) RPT/ARI AND EOC-RPT INSTRUMENTATION

TRIP FUNCTION	TRIP LEVEL SETTING	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM ^(a)	APPLICABLE OPERATING MODE	ACTION
(ATWS) RPT/ARI Reactor High Pressure	≤ 1140 psig	2 ^{(b)(c)}	1	80
(ATWS) RPT/ARI Reactor Water Level-Low-Low	≥ +119.5 inches	2 ^{(b)(c)}	1	80
(EOC) RPT Logic	NA	1 ^{(d)(e)}	1 ^(f)	81

- (a) There shall be one OPERABLE trip system for each parameter. If this cannot be met, one indicated ACTION shall be taken.
- (b) There are 2 trip systems. The instruments are arranged in a two-out-of-two once logic.
- (c) If an instrument(s) is(are) inoperable, it may be considered to be OPERABLE if placed in a tripped condition.
- (d) Two (EOC)RPT systems exist, either of which will trip both recirculation pumps. Insert
- (e) If the duration of required surveillance testing for a RPT system exceeds six consecutive hours, the RPT system shall be declared inoperable.
- (f) (EOC) RPT is required to be OPERABLE during power operation greater than or equal to 30% rated thermal power.

ACTION

- ACTION 80 - a. With one instrument channel inoperable, restore the inoperable instrument channel to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 24 hours.
- b. With both instrument channels inoperable, restore at least one instrument channel to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 24 hours.

- ACTION 81 - If both ^(EOC)RPT systems are inoperable or if one ^(EOC)RPT system is inoperable for more than 72 consecutive hours, an orderly power reduction shall be initiated and reactor power shall be less than 85% within 4 hours, apply the operating limit MCPR penalty specified in the COLR.

INSERT

Each TRIP SYSTEM consists of two channels monitoring inputs which sense Turbine Control Valve (TCV) fast closure or Turbine Stop Valve (TSV) closure, respectively. A minimum of one CHANNEL monitoring each (EOC)RPT input (TCV fast closure or TSV closure) shall be OPERABLE to ensure initiation of (EOC)RPT for either a turbine trip or load reject event.

Table 4.2-G

(ATWS) RPT/ARI AND EOC-RPT INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATING MODES FOR WHICH SURVEILLANCE REQUIRED
(ATWS) RPT/ARI Reactor High Pressure	NA	A	A	1
(ATWS) RPT/ARI Reactor Water Level-Low-Low	NA	A	A	1
(EOC) RPT Logic	NA	<u>MQ</u>	NA	1***
RPT Breaker	NA	R	NA	X#

END-OF-CYCLE (EOC) RECIRCULATION PUMP TRIP SYSTEM RESPONSE TIME

TRIP FUNCTION	RESPONSE TIME
RPT System (Turbine Control Valve Fast Closure)	≤ 140 msec *
RPT System (Turbine Stop Valve Closure)	≤ 120 msec **

* This response time is from ^{energization of the fast acting solenoid} ~~initiation of Turbine Control Valve Fast Closure or Turbine Stop Valve Closure~~ to actuation of the ^{RPT} breaker secondary (auxiliary) contact.

** This response time is from actuation of the Turbine Stop Valve position switch to actuation of the RPT breaker secondary (auxiliary) contact.

*** This surveillance is required only during those periods when the EOC(RPT) system is OPERABLE.

This surveillance is required to be performed during the Refuel Outage prior to the OPERATING CYCLE during which (EOC) RPT will be OPERABLE.

For each parameter monitored, as listed in Table 3.2.F, there are at least two (2) channels of instrumentation. By comparing readings between the two (2) channels, a near continuous surveillance of instrument performance is available. Any deviation in readings will initiate an early recalibration, thereby maintaining the quality of the instrument readings.

On July 26, 1984 the NRC published their final rule on Anticipated Transients Without Scram (ATWS), (10 CFR §50.62). This rule requires all BWR's to make certain plant modifications to mitigate the consequences of the unlikely occurrence of a failure to scram during an anticipated operational transient. The bases for these modifications are described in NEDE-31096-P-A, "Anticipated Transients Without Scram; Response to NRC ATWS Rule, 10 CFR 50.62," December, 1985. The Standby Liquid Control System (SLCS) was modified for two-pump operation to provide the minimum required flowrate and boron concentration required by the ATWS rule (see section 3.4 Bases). The existing ATWS Recirculation Pump Trip (RPT) was modified from a one-out-of-two-once logic to trip each recirc. pump to a two-out-of-two-once logic to trip both recirc. pumps, ("Monticello" design). This logic will also initiate the Alternate Rod Insertion (ARI) system, which actuates solenoid valves that bleed the air off the scram air header, causing the control rods to insert. The instrument setpoints are chosen such that the normal reactor protection system (RPS) scram setpoints for reactor high pressure or low water level will be exceeded before the ATWS RPT/ARI setpoints are reached. Because ATWS is considered a very low probability event and is outside the normal design basis for the DAEC, the surveillance frequencies and LCO requirements are less stringent than for safety-related instrumentation.

The End-of-Cycle (EOC) recirculation pump trip was added to the plant to improve the operating margin to fuel thermal limits, in particular Minimum Critical Power Ratio (MCPR). The EOC-RPT trips the recirc. pumps to lessen the severity of the power increases caused by either a closure of turbine stop valves or fast closure of the turbine control valves with reactor power greater than 30% and a simultaneous failure of the turbine bypass valves to open. The operating limit MCPR of section 3.12.C is calculated assuming an operable EOC-RPT system. If the requirements of Table 3.2-G are not met, then the reactor power level is reduced to a level (85% of rated) which will ensure that the full power MCPR limits of section 3.12.C will not be violated if such a transient were to occur. The operating limit MCPR penalty specified in the COLR shall be imposed to assure that the Fuel thermal limits are not violated in the event of a turbine trip or load reject transient.

Should it be determined that accepting the calculated operating limit MCPR penalty is more desirable than operating with the (EOC) RPT in service, the (EOC) RPT may be bypassed. During the period when the (EOC) RPT is bypassed, the Surveillance Requirements need not be performed.

The accident monitoring instrumentation listed in Table 3.2-H were specifically added to comply with the requirements of NUREG-0737 and Generic Letter 83-36. The instrumentation listed is designed to provide plant status for accidents that exceed the design basis accidents discussed in Chapter 15 of the DAEC UFSAR.

Action 94 of Table 3.2-H deviates from the guidance of Generic Letter 83-36 as continued operation for 30 days (instead of 7 days as recommended in the generic letter) is allowed with one of two torus water level monitor (TWLM) channels inoperable. Redundancy is available in that at least one channel of

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 amendment includes changes which affect the End of Cycle Recirculation Pump Trip ((EOC)RPT) system operability and surveillance requirements. The result will still be operation of the DAEC with no reduction in margin to the safety limit Minimum Critical Power Ratio (MCPR) for reactor fuel. Thus, there will be no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.
3. The proposed amendment includes changes which affect the End of Cycle Recirculation Pump Trip system operability and surveillance requirements. The result will still be operation of the DAEC with no reduction in margin to the safety limit Minimum Critical Power Ratio (MCPR) for reactor fuel. Thus, there will be no significant increase in either individual or cumulative occupational radiation exposure.

SAFETY ASSESSMENT

1. Introduction

By letter dated November 15, 1995, IES Utilities Inc. requested changes to the Duane Arnold Energy Center (DAEC) Technical Specifications (TS), Section 3.2.G. The requested changes would clarify "Applicable Operating Mode," "Minimum Operable Channels per Trip System," and the "Operating Mode for which Surveillance Required," and revise the "Action" for End of Cycle Recirculation Pump Trip ((EOC)RPT) inoperable, surveillance interval and Allowed Out of service Time (AOT) and response time test acceptance criteria. These changes will assure that the (EOC) RPT continues to perform as designed to mitigate the turbine trip transients and, in the event (EOC) RPT is not OPERABLE, require that additional margin be applied to the operating limit Minimum Critical Power Ratio (MCPR) to preclude exceeding the safety limit MCPR during the postulated transients.

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

2. Assessment

The proposed changes will clarify the functional requirements which must be satisfied in order to call the (EOC) RPT OPERABLE. They will also provide a new Action for those times when (EOC) RPT is inoperable. The result will be TS requirements which assure that the DAEC is operated with adequate margin to the safety limit MCPR under all conditions.

Other changes are proposed to provide editorial clarifications and to revise the surveillance interval and AOT. These changes are consistent with the argument used for the same changes to the RPS TS as documented in GE Topical Report NEDC-30851P-A, "Technical Specification Improvement Analysis for BWR Reactor Protection System" and "Technical Specification Improvement Analysis for BWR Control Rod Block Instrumentation," NEDC-30851P-A, Supplement 1, October 1988. These changes have been accepted as evidenced by their inclusion in NUREG-1433.

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.