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May 11, 1971

Dr. Peter A. Morris, Director
Division of Reactor Licensing
U.S. Atomic Energy Commission
Washington, D.C. 20545

Subject: Proposed Change No. 11 to Appendix A, DPR-19, AEC Dkt 50-237

Dear Dr. Morris:

Pursuant to Section 50.59 of 10 CFR Part 50 and paragraph 3.B of Facility License DPR-19, Commonwealth Edison hereby submits Proposed Change No. 11 to Appendix A of DPR-19 (Dresden Unit 2). The purpose of this change is to update the technical specification requirements resulting from the addition of an APRM scram in the start-up/hot standby mode, the addition of a new scram which has been added to ensure that the margins during reactor transients of the thermal hydraulic safety limit are not exceeded in the event of a failure of the control oil piping of the electro-hydraulic control system for the turbine. The specific changes are as follows:

1 - Change Item 2.1.A.1 to read as follows:

> "APRM - When the reactor mode switch is in the run position....."

2 - Delete Item 2.1.A.2 and replace it with the following:

> "APRM - When the reactor mode switch is in the start-up/hot standby position, the APRM scram shall be set at less than or equal to 15% of rated neutron flux."

3 - Add a new Item 2.1.A.3 to read as follows:

> "IRM - The IRM flux scram setting shall be set at less than or equal to 120/125 of full scale."

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215.1

4 - Add a new Item 2.1.I to read as follows:

> "Turbine Control Valve Fast Closure Scram on loss of control oil pressure shall be set at greater than or equal to 1100 psig."

5 - Under the Bases for Item 2.1.A, delete the present Bases for the IRM 15% scram and replace it with the following Bases:

> "For reactor operation in the startup mode while the reactor is at low pressure, the APRM scram setting of 15% of rated power provides adequate thermal margin between the setpoint and the safety limit, 18% of rated. The margin is adequate to accommodate anticipated maneuvers associated with power plant startup. Effects of increasing pressure at zero or low void content are minor, cold water from sources available during startup is not much colder than that already in the system, temperature coefficients are small, and control rod patterns are constrained to be uniform by operating procedures backed up by the rod worth minimizer. Worth of individual rods is very low in a uniform rod pattern. Thus, of all possible sources of reactivity input, uniform control rod withdrawal is the most probable cause of significant power rise. Because the flux distribution associated with uniform rod withdrawals does not involve high local peaks, and because several rods must be moved to change power by a significant percentage of rated power, the rate of power rise is very slow. Generally the heat flux is in near equilibrium with the fission rate. In an assumed uniform rod withdrawal approach to the scram level, the rate of power rise is no more than 5 percent of rated power per minute, and the APRM system would be more than adequate to assure a scram before the power could exceed the safety limit. The 15% APRM scram remains active until the mode switch is placed in the run position. This switch occurs when reactor pressure is greater than 850 psig. The analysis to support operation at various power and flow relationships has considered operation with either one or two recirculation pumps. During steady-state operation with one recirculation pump operating the equalizer line shall be open. Analyses of transients from this operating condition are less severe than the same transients from the two pump operation.

215.2

"The IRM scram provides protection for changes which occur both locally and over the entire core; i.e., the IRM scram provides protection against multiple rod withdrawal or single rod withdrawal changes. The IRM thus provides additional or backup protection to the APRM 15% scram in the start-up and hot standby mode. The most significant sources of reactivity change during a power increase are due to control rod withdrawals. For in-sequence control rod withdrawal, the rate of change of power is slow enough due to the physical limitation of withdrawing control rods that heat flux is in equilibrium with the neutron flux and the IRM scram would result in a reactor shutdown before any safety limits were exceeded even if the APRM 15% scram were not operable. For the case of single control rod withdrawal errors, Section 7.4.4.3 of the FSAR shows that for the worst control rod withdrawal error and the worst bypass conditions on the IRM, the IRM results in a reactor scram before thermal limits are exceeded."

6 - Add to the Bases of Specification 2.1, Item I to read as follows:

"The turbine hydraulic control system operates using high pressure oil. There are several points in this oil system where a loss of oil pressure could result in a fast closure of the turbine control valves. This fast closure of the turbine control valves is not protected by the generator load rejection scram since failure of the oil system would not result in th e fast closure solenoid valves being actuated. For a turbine control valve fast closure, the core would be protected by the APRM and high reactor pressure scrams. However, to provide the same margins as provided for the generator load rejection scram on fast closure of the turbine control valves, a scram has been added to the reactor protection system which senses failure of control oil pressure to the turbine control system. This is an anticipatory scram and results in reactor shutdown before any significant increase in pressure or neutron flux occurs. The transient response is very similar to that resulting from the generator load rejection."

215.3

7 - The following changes should be made to Table 3.1.1:

A - Add under APRM under the appropriate columns, the following:

2	High Flux (15% scram)	Specification 2.1.A.2	X	X	X(14)	A

B - Add the following items at the end of the table under the appropriate column headings:

2	Turbine Control- Loss of control oil pressure	Greater than or equal to 1100 psig	X	X	X	A or C

C - Add the following footnote:

"14. The APRM 15% scram is bypassed in the run mode."

8 - Add the following items to Table 4.1.1:

A - Add under APRM under the appropriate columns, the following:

High Flux (15% scram)	B	Trip output relays	Before each start-up

B - At the end of the table add the following items under the appropriate column headings:

Turbine Control- Loss of Control Oil Pressure	A	Trip channel and alarm	(1)

9 - Add to Table 4.1.2 under the appropriate column headings the following:

Turbine Control- Loss of Control Oil Pressure	A	Pressure Source	Every 3 months

In accordance with Section 50.59 of 10 CFR, the following safety analysis is submitted in support of the above changes.

215.4

During the start-up of Dresden Unit 2, it was determined that, as a result of the 15% scram on the IRM as specified in Section 2.1 of the Technical Specifications, the overlap between the IRM and APRM was marginal. The IRM system consists of eight in-core chambers located throughout the core and in various flux levels. Although the IRM instrumentation is calibrated to read core average power because of the difference of location, the inner set of chambers during a start-up will read higher than those located in the periphery. The above results in the inner IRM's reaching scram level before the outer IRM's reach the same level and the APRM reading has exceeded the downscale trip. To alleviate this problem and provide a better indication of core average power and, therefore, a better scram setting, modifications have been made to the plant to provide a fixed 15% scram on the APRM system when the mode switch is in the start-up/hot standby position. This new scram does not result in an unreviewed safety question but provides a better means of achieving a 15% scram in the low power region. The IRM scram will be set at 120/125 of full scale and will provide back-up protection to the APRM in addition to providing protection against single control rod withdrawal errors. By removing the restriction of a 15% scram on the IRM, all ranges of the IRM will now be available for indication and adequate overlap between the IRM and APRM will exist.

Modification 71-2 discusses the addition of a turbine control valve fast closure scram in loss of turbine control oil pressure. This modification discussed the changes which were made to the reactor protection system and also provided the safety analysis concerning this new scram.

In our opinion, the proposed change does not result in hazards different from or greater than those analyzed in the Final Safety Analysis Report. Specifically, there is (1) no increase in the probability of, or (2) no increase in the possible consequences of, or (3) no creation of a credible probability of an accident or equipment malfunction different from those previously evaluated in the FSAR. Therefore, the margin of safety as defined in the Bases for any Technical Specification is not reduced.

Proposed Change No. 11 has been reviewed and approved by Commonwealth Edison's Nuclear Review Board.

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In addition to three signed originals, 19 copies of Proposed Change No. 11 are also submitted.

Very truly yours,

Byron Lee Jr.

Byron Lee, Jr.
Assistant to the President

SUBSCRIBED and SWORN to
before me this 11th day
of May, 1971.

Patricia A. Nelson
Notary Public

215.6