



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Enclosure

EVALUATION
BY
OFFICE OF NUCLEAR REACTOR REGULATION
CONCERNING
INOPERABLE CONDITIONS FOR THE
DIESEL GENERATORS AND ASSOCIATED ALARMS
FOR THOSE CONDITIONS
FOR
ARKANSAS NUCLEAR ONE, UNIT NO. 2
DOCKET NO. 50-368

Introduction

A review of malfunction reports on diesel-generators at operating nuclear plants uncovered that in some cases the information available to the control room operator to indicate the operational status of the diesel-generator may be imprecise and could lead to misinterpretation. This can be caused by the sharing of a single annunciator station to alarm conditions that render a diesel-generator unable to respond to an automatic emergency start signal and to also alarm abnormal, but not disabling conditions. Another cause can be the use of wording of an annunciator window that does not specifically say that a diesel is inoperable (that is, unable at the time to respond to an automatic emergency start signal) when in fact it is inoperable for that purpose.

In this regard, we requested by letter dated November 11, 1977, the licensee to perform a review and, provide the results of an evaluation of the alarm and control circuitry for the diesel-generators at the Arkansas Nuclear One, Unit No. 2 facility to determine the conditions that could render a diesel generator unable to respond to an automatic emergency start signal and if they are alarmed in the control room. These conditions are to include not only the trips that lock out diesel start and require manual reset but also the control switch or mode switch positions that block automatic start, loss of control voltage, insufficient starting air pressure or the associated Class 1E battery voltage, etc. Also, this review was to consider all aspects of possible diesel generator operational conditions, such as test conditions and operations from local control stations. In addition, we requested a tabulation of the following information:

- (a) All conditions that render the diesel-generator incapable of responding to an emergency start signal;
- (b) The wording of the annunciator window in the control room that is alarmed for each of the conditions identified in (a);
- (c) Any other alarm signals (not included in (a) above) that also cause the same annunciator alarm;
- (d) Any conditions that renders the diesel generator incapable of responding to an automatic emergency start signal which is not alarmed in the control room; and

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(e) Any proposed modifications result from this evaluation.

The licensee responded by letter dated December 30, 1977.

Discussion

In response to item (a) the licensee has identified nine conditions that render each diesel generator incapable of responding to an emergency start signal. Relating to item (b) these nine conditions are annunciated in the main control room by four annunciators. The wording on these four annunciator windows are EMERG DIESEL GEN 2DG1 NOT AVAILABLE, EMERG DIESEL ENGIN/GEN 2DG1 TROUBLE, EMERG DIESEL GEN 2DG1 LOCKOUT RELAY TRIP, and EMERG DIESEL GEN 2DG1 CONT VOLTAGE FAILURE. There are four similar additional annunciator windows for the other diesel generator.

Concerning item (c) the licensee has identified seventeen other conditions (for each diesel) which are provided with local annunciator alarms. It is also noted that these local annunciator alarms in turn actuate an appropriate main control room annunciator. In addition, four other conditions will actuate the appropriate one of the remaining three annunciator windows in the main control room.

With regard to item (d) and (e), the licensee has documented that there are no conditions rendering the diesel generator incapable of responding to an automatic emergency signal which are not alarmed in the control room and that no modifications are proposed as a result of this investigation, respectively.

Evaluation

We have reviewed the information provided by the licensee and conclude that the related design features with regard to inoperable conditions of the diesel generators and associated alarms augmented by appropriate administrative controls meet our requirements and are acceptable.