



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 44 TO FACILITY OPERATING LICENSE NO. NPF-2

AND AMENDMENT NO. 35 TO FACILITY OPERATING LICENSE NO. NPF-8

ALABAMA POWER COMPANY

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-348 AND 50-364

INTRODUCTION

By letter dated February 17, 1984, supplemented May 3, 1984, Alabama Power (the licensee) requested a change to the specification for the Limiting Conditions for Operation (LCO) for the reactivity control systems. Specification 3.1.3.1 sets forth those actions which must be taken when a full length movable control rod assembly is inoperable. The definition of an operable component is addressed in the Section 1.0 of the Technical Specifications and includes the operability of all controls required for the component to perform its function. With regard to the specification for movable control rod assemblies, the definition of operability includes the rod control system.

The rod control system performs those actions which are required to position the movable control rod assemblies for reactivity control but it is not directly involved with the performance of any safety actions for mitigating the consequences of transients or accidents. As such the rod control system is classified as a nonsafety-related system.

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A feature of the rod control system is the capability to detect malfunctions of electrical components that are used to control the position of the control rod assemblies. When a malfunction occurs, a "rod control urgent failure alarm" is annunciated in the main control room. Subsequent movement of the selected bank of control rod groups by either manual or automatic control is prevented by an interlock within the rod control system. Therefore, the control rods in the group associated with the bank selected are inoperable based on the definition of operable control rod assemblies.

The present action statements under the LCO address the situation where more than one full length rod is inoperable or misaligned. In this case the unit must be in hot standby in the following six hours. In this operating mode the LCO on movable control rod assemblies is no longer applicable. Therefore, operation in this mode may continue until the rod control system is returned to an operable status. This action would then permit the unit to return to power operation.

The licensee has proposed to include a new action statement to address the inoperability of the movable control rod assemblies due to failures associated with the rod control system. This action would allow 36 hours to perform any required maintenance to restore the system to an operable status and

would only be applicable if the inoperable control rods are capable of insertion on a reactor trip.

EVALUATION

As justification for the proposed change in the LCO for operable control rod assemblies, the licensee provided a description of rod control system and the conditions under which a "rod control urgent failure alarm" could occur. Within the power cabinets of the rod control system the capability is provided to detect component failures. The functions included in the failure detection circuits are: regulation failure, phase failure, logic error, multiplexing error and missing circuit cards. Likewise, the logic cabinet includes similar failure detection circuits. When any of these failures occurs, the rod control urgent failure alarm is annunciated in the control room and interlocks block subsequent control rod movement.

Due to the types of failures which result in the rod control urgent failure alarm, the licensee concludes that this condition is only indicative of problems associated with the rod control system and is not an indication that would preclude the capability for control rod insertion on a reactor trip. Based on our review of this matter, we concur with the licensee's conclusion that the rod control

urgent failure alarm is an indication of a control system failure and is not related to control rods being untrippable.

Therefore, it is proposed to add an action statement to the LCO for movable control assemblies that would allow 36 hours for maintenance of the rod control system before action would be required to place the unit in hot standby. The time allowed for maintenance was based on an analysis of actions which may be required to restore the rod control system to an operable status.

As further justification of the proposed change, the licensee notes that the limitations imposed by the current action statements have a negative impact on plant safety since maintenance on the rod control system would take place concurrent with those actions required to assure that the unit is in hot standby within six hours. With a portion of the rod control system inoperable, unit shutdown would not be carried out in the normal manner and imposes additional operating precautions.

Since the inoperability of the rod control system does not present an immediate concern with regard to the capability of safety systems, we conclude that it is prudent not to require

actions which could lead to unusual operating circumstances.

The proposed changes to the LCO are the following:

1. The current action statement (b) would be modified to address only misaligned full length rods. (Inoperable full length rods are addressed by the new action statement.)
2. A new action statement (c) would be added as follows:
"With more than one full length rod trippable but inoperable for greater than 36 hours, be in HOT STANDBY within the following 6 hours."

The scope of "full length rods trippable but inoperable" is broader than that encompassed by control rods which are inoperable due to the interlock associated with the rod control failure urgent alarm. In this regard the licensee addressed the means available to distinguish whether inoperable control rods are trippable or not. Test points are located in the power cabinets for the rod control system which permit monitoring of the electrical current to coils in the control rod mechanism. If this data shows that the rod control system does not vary the current to the mechanism coils, the problem is isolated to failures in the rod control system. In this case it would be obvious that the malfunction is due to component failures

associated with the rod control system and not related to control rods being untrippable. Therefore, the new action statement would allow 36 hours for any repairs before action is required to place the unit in hot standby.

However, if the data on mechanism coil currents showed changes due to the action of the rod control system the problem could be due to a malfunction in either the rod control system or the control rod mechanism itself. In this case it would not be obvious that the control rods are trippable and the unit would be placed in hot standby within 6 hours of having entered the action statement.

The Technical Specifications require that full length rods shall be within ± 12 steps (indicated position) of their group counter demand position. If one full length rod does not satisfy this requirement, action statement (d) specifies the conditions under which continued power operation is permissible. Action statement (d) also addresses the case where one full length rod is inoperable due to causes other than addressed by action statement (a). Action statement (a) requires that the unit be placed in hot standby if one or more full length rods are inoperable due to being immovable as a result of excessive friction or mechanical interference or known to be untrippable. Thus, it is concluded that the present technical specification permit an assessment of whether full length

rods are trippable and that the manner in which this is accomplished is identical to that indicated for the proposed technical specification change related to more than one full length rod being inoperable but trippable. Therefore, we find that the proposed change does not require judgements on full length rods being trippable which are not already inherent in the existing action statements.

Therefore, based on this review we conclude that where the inoperability of control rod assemblies can be positively identified as being associated with malfunctions internal to the rod control system, it is acceptable to allow adequate time for maintenance before requiring that the unit be placed in hot standby. However, we find that a more explicit clarification of control rods being immovable due to rod control system failures should be incorporated in the proposed technical specification change. We have discussed this matter with the licensee and have reached a mutually agreeable revision of the proposed action statement. By letter dated May 3, 1984, the licensee revised its original proposal as follows and noted that the intent of the previous submittal has not been altered by this clarification. We consider this change non-substantive in nature.

The revised statement is:

"c. With more than one full length rod inoperable due to a rod control urgent failure alarm or obvious electrical problem in the rod control system for greater than 36 hours, be in HOT STANDBY within the following 6 hours."

Further, the licensee proposed to add the following to the BASES for the Technical Specification on movable control rod assemblies:

"For purposes of determining compliance with Technical Specification 3.1.3.1, any inoperability of full length control rod(s), due to being immovable, invokes ACTION statement "a".

The intent of Technical Specification 3.1.3.1 ACTION statement "a" is to ensure that before leaving ACTION statement "a" and utilizing ACTION statement "c" that the rod urgent failure alarm is illuminated or that an obvious electrical problem is detected in the rod control system by minimal electrical troubleshooting techniques. Expeditious action will be taken to determine if rod immovability is due to an electrical problem in the rod control system."

Thus, if more than one full length rod were inoperable due to being immovable and the cause has been determined to be a result of failures or problems internal to the rod control system, continued operation would be permitted for up to 36 hours since the cause of inoperability is not related to full length rods being untrippable.

With regard to action statement (d), it is noted that when a single full length rod is inoperable or misaligned, continued operation is permitted if the remainder of the rods in the group are aligned to within ± 12 steps of the inoperable rod. In this case the action statement may be satisfied and no limit is specified in which the inoperable rod must be restored to operable status. Further, the conditions specified under which continued operation is permissible with a misalignment of greater than ± 12 steps in action statement (d) also do not impose a time limit in which the inoperable rod must be restored to operable status. Therefore, it is concluded that 36 hours for maintenance of the rod control system in the case in

which two or more rods are inoperable but trippable is not unreasonable in contrast to no specified limit for the case where only one rod is inoperable.

SAFETY SUMMARY

In conclusion we find that the proposed changes, as modified and with the additional clarification of the BASES for the Technical Specification on movable control rod assemblies are acceptable.

ENVIRONMENTAL CONSIDERATION

We have determined that these amendments do not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendments involve an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of these amendments.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Dated: June 6, 1984

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