#### SAFETY EVALUATION

ENCLOSURE 1

EDWIN I. HATCH NUCLEAR PLANTS UNITS 1/2

# AVERAGE POWER RANGE MONITORS SETPOINTS

#### INTRODUCTION

By letter dated October 18, 1978, Georgia Power Company requested a Technical Specification change regarding the adjustment of the setpoints of the Average Power Range Monitors (APRM's). During the course of the staff's review, a question was raised about the possibility of causing indications that could be confusing to the reactor operator. This evaluation addresses that question.

During normal operation the actual core peaking factors can exceed the design values. This variance is accommodated by reducing the APRM setpoints to retain the same desired "margin to trip." The "margin to trip" can be reduced either by lowering the trip setpoint or by increasing the indicated power level. From the viewpoint of equipment performance, these two methods are equivalent. From the viewpoint of reactor operator performance, causing a power monitor to indicate a level that is different from the true power level introduces an additional source of possible operator confusion.

#### EVALUATION

IEEE Standard 279 Section 4.20 specifies the design principle that indications that could be confusing to the reactor operator should be minimized. Because the APRM setpoints are flow-biased, recalibration involves re-adjusting several parameters with external test equipment. Our review of the calibration procedure and discussion with operating personnel indicates that re-calibration requires about one hour for each of the six APRM channels. The design does not lend itself to a simple re-calibration procedure.

The present APRM instrumentation channels do have gain adjustments to adjust the channel response toward a more accurate indication with respect to true power as determined by a heat balance. Routine use of the gain adjustment to cause the channels to read less accurately is not consistent with the general design principles of IEEE 279.

When full power and temperature equilibrium are attained, setpoint re-adjustments are very infrequent. We have determined that use of the APRM gain adjustments to maintain an adequate "margin to trip" during full power operation is not a justifiable deviation from the general principles. During a reactor startup and approach to full power, the APRM setpoints may need to be re-adjusted several times. To require a lengthy six-hour calibration procedure several times during approach to full power is not reasonable nor in the best interest of safety. We have determined that, within certain limitations, use of the gain adjustment could be allowed during an approach to full power. The limitations appropriate for allowing the gain to be used to maintain the APRM "margin to trip" are as follows: (1) gain adjustment should be used only when the reactor is less than 90% of rated power; (2) the magnitude of such adjustments should be less than 10% of rated power; (3) any intentional inaccuracy of the APRM channels should be made obvious to the reactor operations staff at all times. Appropriate log entries are to be made for each such gain adjustment. Each affected APRM indicator should be marked in an obvious manner to identify the offset between true power and the power level indicated by the APRM instrumentation.

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#### CONCLUSIONS

We have determined that deviation from the prescribed APRM calibration procedures during full power operations is not consistent with the general principles of IEEE 279. However, during reactor startup and approach to full power, the APRM channel gain adjustments may be used, within limitations, to change the "margin to trip." The limitations involved are enumerated above.

# ATTENDANCE LIST

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