



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 37 TO FACILITY OPERATING LICENSE NO. DPR-63

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION, UNIT NO. 1

DOCKET NO. 50-220

I. INTRODUCTION

The licensee, Niagara Mohawk Power Corporation, in its submittals as listed under reference of this report has proposed certain modifications to the Reactor Protection Systems (RPS)/Engineered Safety Features (ESF). These modifications, developed by the General Electric Company (GE) involve installing a new design for safety systems instrumentation in the RPS/ESF of Boiling Water Reactors (BWR). The new design, referred to as the Analog Transmitter/Trip Unit System (ATTUS), is being supplied as original equipment in the GE/BWR 6 and has been made available to BWR owners as a backfit. The ATTUS is a replacement for mechanical sensor switches at the parameter sensor level and does not involve the logic levels of RPS/ESF systems. GE developed ATTUS to offset operating disadvantages of the direct pressure and differential pressure actuated switches of the original safety system instrumentation.

The new ATTUS is comprised of an analog transmitter and trip unit/calibration system (Model 510DU). GE presented ATTUS to the NRC staff for licensing under topical report NEDO-21617 of April 1977 and NEDO-21617-1 of January 1978. The staff reviewed and found acceptable ATTUS in its letter to GE dated June 27, 1978.

The staff in its approval of ATTUS required from those licensees who are backfitting their nuclear units certain plant specific information in order to interface the review with the staff's review of the topical report on the subject. The particular information required of the licensee is the environmental qualification and the divisional separation of the hardware installed for the plant backfit.

II. EVALUATION

The ATTUS, as stated above, is a replacement for the mechanical type sensor switches at the sensor level and not the logic level. Since the dual channel design (with two trip systems) of the RPS is not being altered, the safe and reliable operation of the trip system is not

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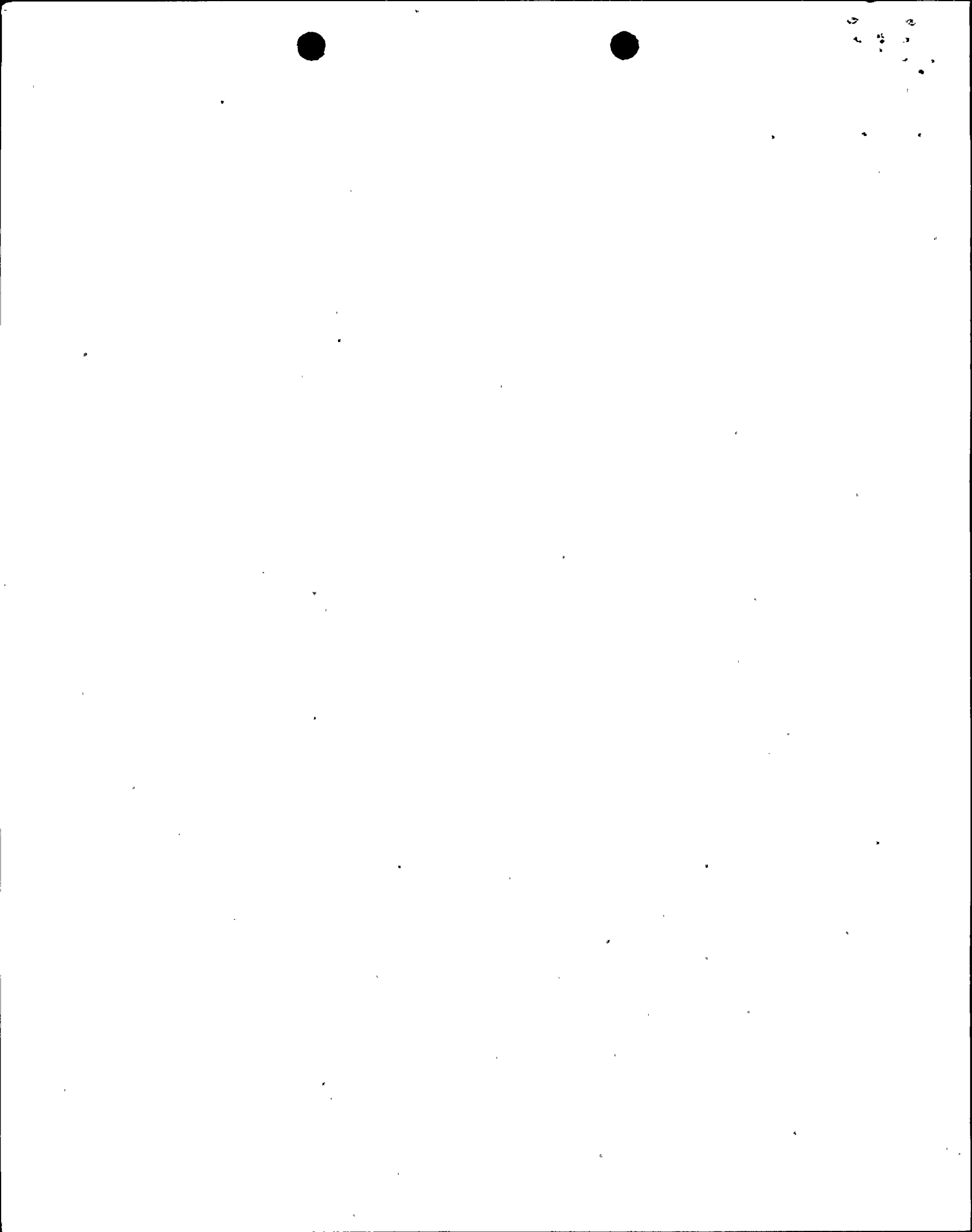
compromised. The automatic and manual initiation and protective action of essential systems remain unchanged. The parameter sensors being replaced with ATTUS along with the safety systems they actuate are listed below:

<u>Parameters Sensors</u>	<u>Safety Systems</u>
Main Steam Flow - High	RPS/Engineered Safety Features
Drywell Pressure - High	RPS/Engineered Safety Features
Reactor Vessel Level - High Reactor Vessel Level - Low	RPS/Engineered Safety Features
Reactor Vessel Level - Low, Low, Low	Engineered Safety Features
Reactor Vessel Pressure - High Reactor Vessel Pressure - Low	RPS/Engineered Safety Features
Reactor Vessel Pressure - High (Emergency Condenser Initiation) and Reactor Vessel Pressure Low (Opens Core Spray Discharge Valves)	Engineered Safety Features
Emergency Condenser Flow High	Engineered Safety Features

The new transmitters replacing the existing mechanical switches are Rosemount Model #1151DP for differential pressure indication and Rosemount Model #1151GP for pressure indication. Differential pressure transmitters are used for level and flow indication and pressure transmitters are used for all other pressure indication.

The four channel sensor system and local trip unit cabinets for the modifications to the RPS/ESF systems satisfies the single failure criteria and the applicable separation criteria in force when the plant was constructed. The new differential pressure and pressure transmitters sensors for the seven parameters being monitored are to be mounted in the four existing transmitter support racks located in the east, west, and north instrument rooms of the reactor building. The existing racks have been modified to accommodate the new transmitters and the rack supports have been modified to meet site seismic requirements.

Basically, the modification to the existing RPS is the rerouting of cables from the four transmitter support racks to the four new local trip unit cabinets (supplied with ATTUS) also located in the reactor building. These units at the 281' level are separated from one another



by a minimum distance between any two of approximately 52 feet. The cabling returns from these cabinets to the existing raceways between the reactor building and control room to connect to the RPS cabinets. The physical independence, separation, and isolation of the system have not been changed from the initial construction criteria. We find this acceptable.

The new ATTUS equipment, as indicated above, is located in the reactor building. The accident environmental conditions for the area where the equipment is located is: temperature 150°F, pressure 0.28 psig, relative humidity 100%, and radiation 1×10^5 R. The transmitters are environmental qualified to: 212°F, 50 psi steam, and 1.7×10^5 R. The local trip unit cabinets and components are environmentally qualified to: 156°F, 8" WC, 99% relative humidity and 1.7×10^5 R. The normal conditions in this area maintained by the ventilation system are: temperature 70/80°F; pressure - .25" WC, relative humidity 20-80% and radiation 5-15 mr/hr. Credit is not taken for post accident monitoring for this instrumentation. We find the environmental qualifications for the equipment to be acceptable.

Based on our review of the licensee's submittals, we conclude that the modifications to the reactor protection system satisfies the requirements for single failure, electrical isolation and physical separation, and environmental qualifications; and, therefore, are acceptable.

III. ENVIRONMENTAL CONSIDERATIONS

We have determined that this amendment does 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 this amendment involves an action which is insignificant from the standpoint of environmental impact, and pursuant to 10 CFR §1.5(d)(4) that an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

IV. CONCLUSION

We have concluded that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: May 2, 1980

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REFERENCES

1. LeBoeuf, Lamb, Leiby & MacRae, letter dated February 15, 1979.
2. Niagara Mohawk Power Corporation, letter dated March 27, 1979.
3. Niagara Mohawk Power Corporation, letter dated April 3, 1979

