

February 11, 1983

Mr. R. W. Starostecki, Director
U.S. Nuclear Regulatory Commission
Region I
Division of Project and Resident Programs
631 Park Avenue
King of Prussia, PA 19406

Re: Nine Mile Point Unit 2
Docket No. 50-410

Dear Mr. Starostecki:

Enclosed is a final report in accordance with 10CFR50.55(e) for the deficiency concerning hydrogen recombiners. Problems concerning this deficiency were reported via telephone to Mr. H. Kister of your staff on November 19, 1982 and January 18, 1983.

Very truly yours,

C. V. Mangan

C. V. Mangan
Vice President
Nuclear Engineering & Licensing

xc: Director of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Mr. R. D. Schulz, Resident Inspector

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT UNIT 2
DOCKET NO. 50-410

FINAL REPORT FOR A REPORTABLE DEFICIENCY
UNDER 10CFR50.55(e) CONCERNING
HYDROGEN RECOMBINERS

Description of the Deficiency

Rockwell International is currently undertaking a program to establish IEEE 323 qualification status of the post-LOCA hydrogen recombiners. As a result of this ongoing environmental qualification testing, Rockwell International has determined that deficiencies exist in some components of the hydrogen recombiners, as detailed below.

1. The ITT Barton pressure transducer (Part No. D4R-29098, 4-20 mA) will not withstand the test parameter for radiation of 1×10^7 rads. This problem was reported by Rockwell International to the Nuclear Regulatory Commission under 10CFR21 in a letter dated October 21, 1982 (enclosed).
2. During the IEEE 323 environmental qualification testing and following the irradiation and associated baseline functional test, the Square D disconnect switches (Part No. 9422-RC-1) failed when they were mechanically operated due to a plastic component breaking. This problem was reported by Rockwell International to the Nuclear Regulatory Commission under 10CFR21 in a letter dated November 3, 1982 (enclosed).

Analysis of Safety Implications

Rockwell International, in its 10CFR21 reports, has stated that the failure of these components could have resulted in the loss of the intended safety function of the recombiner. Therefore, we are of the opinion that if these problems were to have remained uncorrected, they could have adversely affected the safe operation of the plant.

Corrective Action

1. As stated by Rockwell International in its 10CFR21 report, the ITT Barton pressure transducers will be replaced with qualified transducers.
2. The corrective action for the disconnect switch is detailed in Rockwell International's letter dated November 3, 1982. The switch will be eliminated from the circuit. Rockwell International has stated that this modification is consistent with its current design, which does not use a switch for this function.

Energy Systems Group
8900 De Soto Avenue
Canoga Park, California 91304

Telephone: (213) 341-1000
TWX 910-494 1237
Telex 181017



Rockwell
International

October 21, 1982

In reply refer to 82ESG7725

US Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive
Arlington, Texas 76012

Attention: Mr. John Collins, Administrator, Region IV

Gentlemen:

Subject: Report of Deviation/Defect (10CFR21)

Energy Systems Group is currently undertaking a program to establish IEEE-323 qualification status of the post-LOCA Hydrogen Recombiners delivered by us. This program is designed to umbrella equipment delivered in the past as well as current designs, and therefore specifies environmental conditions severe enough to satisfy any expected customer specifications.

As a result of this qualification effort to date, it has been determined that the ITT Barton pressure transducers, 4-20 ma, ΔP or absolute pressure, Part Number D4R-29098 will not withstand our test parameter for radiation of 1×10^7 rads (and may not operate satisfactorily after radiation exposures in excess of 1×10^4 rads TID due to gradual drifting in readings resulting in ultimate total failure). These pressure transducers are installed in several delivered Recombiners and are used to measure Recombiner inlet gas flow, total flow, and inlet gas pressure. A total failure of the ΔP units would result in Recombiner shutdown, and the loss of its intended safety function. Plants to which this report applies are given in Table I, along with the radiation environment indicated by their specifications.

TABLE I

<u>Facility</u>	<u>No. of Recombiners</u>	<u>Date Shipped</u>	<u>Specified Radiation Requirement (TID)</u>
Limerick 1 & 2	4	06-77	6×10^5 rads
La Salle Co. 1 & 2	2	08-78	1.7×10^5 rads
Nine Mile Point 2	2	02-79	1.7×10^5 rads

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Rockwell
International

Mr. J. Collins
US Nuclear Regulatory Commission
Region IV
Arlington, Texas

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These transducers should be replaced with nuclear rated transducers. For an operating plant (LaSalle only from the Table 1 list) it is possible to operate the Recombiners with a relatively simple, temporary wiring modification in the control cabinet which will allow operation of the recombiner and performance of its safety function in the manual flow control mode. An Engineering Field Bulletin will be issued to provide instructions for the temporary fix by October 29, 1982. In the meantime, a preliminary draft of the field bulletin change is described in our letter of October 21, 1982 to the La Salle plant operator notifying them of this potential problem with the transducers. The permanent modification (replacement of the transducers) can then be made during plant shutdown when access to the recombiner skid is possible.

These ITT Barton transducers were also installed in the E. I. Hatch and Fermi Recombiners. Although there were no radiation requirements for these plants, the Utilities are being notified of the transducer operational limits so that they can evaluate the impact to them and take any action deemed appropriate. Since Hatch is an operating plant, they are also receiving the temporary wiring instructions for operating in the normal flow control mode as noted above for La Salle.

If you have any further questions or need more information, please call me at (213) 700-3926.

Very truly yours,

D. C. Empey
Director
Quality Assurance

Energy Systems Group
8900 De Soto Avenue
Canoga Park, California 91304

Telephone: (213) 341-1000
TWX: 910-494-1237
Telex: 181017



Rockwell
International

November 3, 1982

In reply refer to 82ESG7948

U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive
Arlington, Texas 76012

Attention: Mr. John Collins, Administrator
Region IV

- References:
- 1) ESG Letter 82ESG7725, D. C. Empey to John Collins
"Report of Deviation/Defect (10CFR21)" dated
October 21, 1982
 - 2) ESG Letter 82ESG8085, D. C. Empey to John Collins,
"Report of Possible Defect (10CFR21)" dated
November 3, 1982

Gentlemen:

Subject: Report of Possible Defect (10CFR21)

Energy Systems Group is currently undertaking a program to establish IEEE-323 qualification of our post-LOCA Hydrogen Recombiner designs. This program is structured to umbrella equipment delivered in the past as well as current and future production, and therefore specifies environmental conditions severe enough to satisfy any expected customer specifications.

As a result of this qualification effort to date, it has been determined that the below noted component may not operate properly following the radiation exposure given in the ESG qualification program.

COMPONENT DESCRIPTION

Square D disconnect switch, three-pole nonfusible unit, 30A, 15 hp at 480 VAC or 20 hp at 600 VAC, P/N 9422-RC-1.

Test Results

During the IEEE 323 Environmental Qualification testing and following the Irradiation and Associated Baseline Functional Test the disconnect switches failed when they were mechanically operated due to a plastic

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Mr. John Collins, Administrator
Region IV
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component breaking. It was concluded that the applied dose of 1.1×10^7 rads degraded the plastic sufficiently to initiate the failure. The switch is the main disconnect switch for the recombiner skid 480 VAC, 3-phase, power bus for the inlet gas, recirculating gas and water valve motor circuits; its failure would prevent operation of the recombiner.

Corrective Action/Comments

Failure analysis of the component shows that the switch could fail open during a seismic event thus disrupting the 480 VAC power to the recombiner skid. ESG has not determined whether or not the switch would fail with radiation doses less than 1.1×10^7 rads, but we believe that since there is a reasonable chance of failure, the switch should be eliminated from the circuit. This modification is consistent with current design which does not use a switch for this function.

An Engineering Field Bulletin has been issued with instructions to by-pass the switch.

Affected Plants

<u>Customer Name</u>	<u>NRC Licensed Facility/Activity</u>	<u>Qty</u>	<u>Date Shipped</u>	<u>Specified Radiation Dose Rads TID</u>
Detroit Edison	Fermi 2 NPS	2	08-76	Not specified
Philadelphia Electric Co.	Limerick 1 & 2 NPS	4	06-30-77	6×10^5
Georgia Power Company	Hatch 2 NPS	2	06-14-77	Not specified
Commonwealth Edison Co.	LaSalle County 1 & 2	2	08-29-78	1.7×10^5
Niagara Mohawk Power Corp.	Nine Mile Pt 2 NPS	2	02-23-79	1.7×10^5

Mr. John Collins, Administrator
Region IV
U.S. Nuclear Regulatory Commission

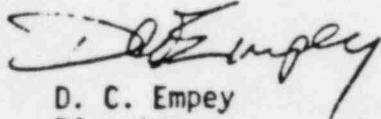
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Notifications

Each listed plant operator has been notified of the results of our IEEE-323 qualification testing along with the above mentioned bulletin on bypassing of the disconnect switch. Additional components which failed to function properly following the qualification program are given in the References.

If you require further information or clarification, please call me at (213) 700-3926.

Very truly yours,



D. C. Empey
Director
Quality Assurance

cc: (3)
Director, Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555