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January 9, 1987

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Dresden Station Unit 2
Systematic Evaluation Program IPSAR
Topic VII - 1.A; Isolation of the
Reactor Protection System (RPS) from
Non-Safety Systems
NRC Docket No. 50-237

Reference: Letter from B. Rybak to R. Gilbert dated
August 15, 1983.

Dear Mr. Denton:

SEP Topic VII - 1.A is subdivided into sections 4.24.1, 4.24.2, and 4.24.3. The above referenced letter provided preliminary information concerning sections 4.24.1 and 4.24.2, and details about the modifications that were made to address section 4.24.3.

The purpose of this letter is to provide the Staff with our commitment to resolve sections 4.24.1 and 4.24.2. With the acceptance of this commitment, and the already completed modifications for Section 4.24.3, SEP Topic VII-1.A should be complete.

Concern of 4.24.1:

The analog signals from the nuclear flux monitoring system intermediate range monitors (IRMs), local power range monitors (LPRMs), and average power range monitors (APRMs), are not isolated from the control room process recorders and indicating meters as required by IEEE Std. 279.

A limited PRA was performed for this issue. The PRA determined that a fault in the nonsafety part of the nuclear flux monitoring channel or APRM could fail the high neutron flux signal or APRM. However, the probability of reactor protection system (RPS) failure is totally dominated by common-mode mechanical faults associated with the control rod drive system, and eliminating the isolation problem would not effect RPS unavailability. Thus, the PRA classified the issue's importance to risk as low. However, the staff disagrees with the PRA.

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Concern of 4.24.1: (Cont'd)

The neutron flux monitoring system, consisting of the IRMs, LPRMs, and APRMs, is designed to provide the operator with information required for safe operation of the reactor core and provide inputs to the RPS and rod block circuitry to ensure that power density and level do not exceed present limits. Because of the safety significance of the neutron flux monitoring systems, it is the staff's position that the licensee provide assurance that common-mode electrical faults occurring in the control room process recorders and indicators will not disable the neutron flux monitoring systems.

Response:

To prevent common-mode electrical faults in the control room process recorders from affecting the flux monitoring system, Commonwealth Edison proposes to install Class 1E signal isolation devices at the inputs of each recorder. As this modification is outage related, it will be scheduled for completion during the next Dresden Unit 2 refueling outage (currently scheduled for the Summer of 1988).

The LPRM indicating meters on the Reactor Control Console (902-5 panel) will not cause a common-mode electrical fault for the following reasons:

(a) the meters are passive devices, i.e. they are not powered devices
(b) a short in any of the meters will not affect the function of the neutron flux trips because the signal to the meters passes thru a buffer amplifier. (See attached drawing 197R104)

Concern of 4.24.2:

The APRM scram function is derived from relay actuation resulting from amplified analog signals sensed by these relays. The amplified analog signals are input directly to the process computer with fuses as the isolation device. Fuses do not meet the intent of IEEE Std. 279 for isolation devices (e.g. fuses will not isolate ground faults). It is the staff's position that the licensee should address the adequacy of the isolation circuitry to ensure that the RPS is protected from potential common-mode electrical faults that could be propagated from the process computer.

Response:

Modifications that have been made to the process computer have included isolation circuitry, sometimes referred to as "flying capacitors", between the computer and the input signals. This scheme will prevent common-mode electrical faults propagating from the computer to the input signals. This arrangement is shown on the attached reference drawing, No. 51301228.

It is Commonwealth Edison's position that the information contained in this and the previously referenced letter, along with our proposed modification commitment, adequately address the concerns of SEP Topic VII-1.A.

Please address any questions you may have concerning this matter to this office.

Very truly yours,

J. R. Wojnarowski
Nuclear Licensing Administrator

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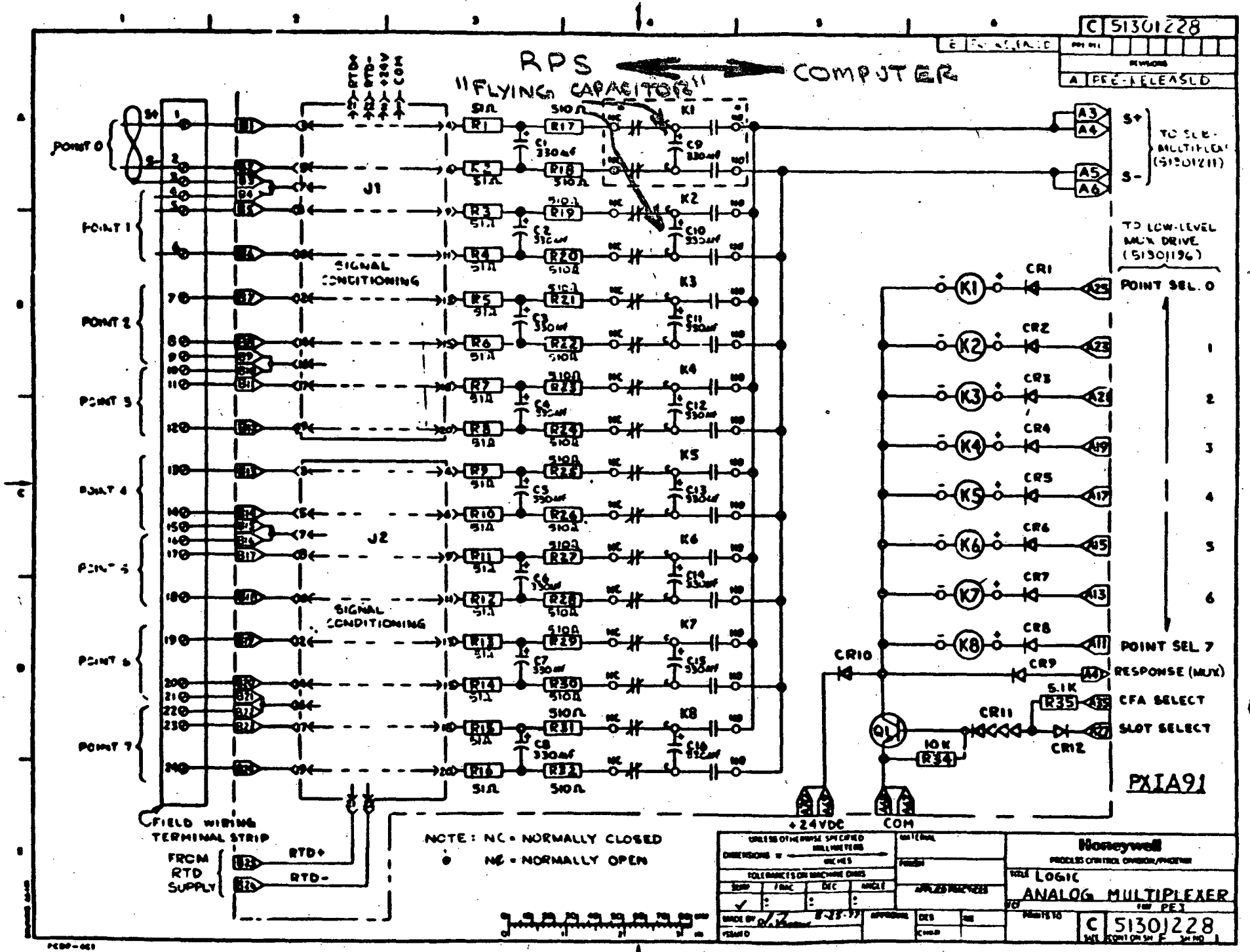
Attachment: Drawings for Information No. 51301228, No. 197R104

cc: J. Stang - NRR
Resident Inspector - Dresden
NRC Region III Regional Administrator

2581K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A PRE-RELEASED
RPS
"FLYING CAPACITOR"
COMPUTER
POINT 0
POINT 1
POINT 2
POINT 3
POINT 4
POINT 5
POINT 6
POINT 7
J1
J2
SIGNAL CONDITIONING
SIGNAL CONDITIONING
FIELD WIRING TERMINAL STRIP
FROM RTD SUPPLY
RTD+
RTD-
NOTE: NC = NORMALLY CLOSED
NO = NORMALLY OPEN
+24VDC
COM
TO SLE-MULTIPLEX (51301211)
S+
S-
TO LOW-LEVEL MUX DRIVE (51301196)
POINT SEL. 0
POINT SEL. 7
RESPONSE (MUX)
CFA SELECT
SLOT SELECT
PXIA91
Honeywell
PROCESS CONTROL DIVISION/PHOENIX
LOGIC
ANALOG MULTIPLEXER
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