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VPNPD-87-545
NRC-87-132

December 30, 1987

U. S. NUCLEAR REGULATORY COMMISSION
Document Control Desk
Washington, D.C. 20555

Attention: Mr. David Wagner, Project Manager
Division of Reactor Project III-3

Gentlemen:

DOCKET NOS. 50-266 AND 50-301
ADDITIONAL INFORMATION ATWS MITIGATING
SYSTEM ACTUATION CIRCUITS (AMSAC)
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

On November 6, 1987, Mr. David Wagner, the NRC's Point Beach Project Manager, telecopied to Wisconsin Electric a list of questions that resulted from the NRC Staff review of our letter dated April 23, 1987 concerning our plans to implement AMSAC at the Point Beach Nuclear Plant. A telephone conference call was held on November 18, 1987 between NRC and Wisconsin Electric representatives to discuss our responses to these questions. During this telephone conference the NRC requested that selected information be provided in writing. The attachment to this letter provides that information. The information is provided based on our understanding of the telephone conference discussions.

Please contact us if you have any additional questions concerning our AMSAC implementation.

Very truly yours,

C. W. Fay

C. W. Fay
Vice President
Nuclear Power

Attachment

Copies to NRC Regional Administrator, Region III
NRC Resident Inspector

A055
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ATTACHMENT TO VPNPD-87-545 NRC-87-132
RESPONSE TO NRC REQUESTS FOR INFORMATION REGARDING AMSAC

1. Variable Time Delays

The circuitry shown in WCAP-10858 for actuation of AMSAC based on feedwater pump breaker and feedwater control valve status contained a thirty second time delay prior to actuation. This time delay relay is labeled TDR on the circuit and logic diagrams. The purpose of this time delay was twofold. First, to prevent momentary control valve closings from actuating AMSAC and second, to insure that the Reactor Protection System (RPS) could actuate before AMSAC. The thirty seconds was chosen based on full power operation. Wisconsin Electric's letter dated April 23, 1987 proposed an AMSAC containing this fixed thirty second time delay.

Subsequent Westinghouse Owners Group studies indicated that at power levels between forty and 100% power the RPS may take longer than thirty seconds to actuate. In order to ensure that the RPS actuates first, Revision 1 to WCAP-10858 proposed a variable time delay for this function. The length of time to actuate was a function of the plant power level and was longer at lower power.

Wisconsin Electric chose not to implement the variable time delay but to retain the thirty second fixed time delay. The thirty seconds provides adequate protection against momentary closure of the control valves. The consequence of the fixed time delay is that at lower power levels AMSAC may cause a turbine trip prior to the RPS causing a reactor trip. The present plant design provides for turbine trip occurring prior to reactor trip. The actuation of an AMSAC caused turbine trip will appear no different than any other turbine trip. This event has been analyzed as Loss of Electrical Load which is described in Section 14.1.9 of the PBNP FSAR.

The second time delay is the time delay that keeps the circuit armed for 60 seconds after the turbine power level falls below 40% power or circuit power is lost. This time delay is labeled PWR TDR on the circuit and logic diagrams. Revision 1 to WCAP-10858 recommended that this time delay be variable and be 30 seconds longer than the TDR time delay. Since we are proposing a fixed 30 second time delay for the TDR relay a fixed 60 second time delay is appropriate for the PWR TDR relay.

2. Ten Second Power Loss on Loss of Offsite Power

During a loss of all offsite power, electrical power to the AMSAC will be lost for up to 10 seconds until the diesel generator comes up to speed. If an ATWS occurs during this period of time AMSAC will function on restoration of power and will start the auxiliary feedwater pumps. The PWR TDR relay will maintain continuity from the 120 VAC instrument bus power source to the logic contacts for a period of sixty seconds after loss of offsite power. When power is restored, the thirty second time delay relay is energized provided an AMSAC initiation signal is present. A consequence of the power loss is that it may take up to forty seconds to start the auxiliary feedwater pumps rather than thirty seconds. Another consequence is that the PWR TDR time delay relay will be held in for twenty seconds after AMSAC actuation rather than thirty seconds. The twenty seconds is adequate to ensure that the XA and XB output relays are latched to provide a continuous AMSAC signal until the circuit is manually reset.

3. Output Isolation Relays

The Westinghouse MG-6 relay, currently used in other 1E circuits at Point Beach, was tentatively selected as our output relay for AMSAC. Westinghouse MG-6 relays are not used in the existing reactor trip circuits at Point Beach. We will, however, investigate the use of relays manufactured by others, in particular Struthers Dunn, for this application.

4. Plant QA Compliance with Generic Letter 85-06

The quality assurance provisions and requirements defined in Generic Letter 85-06 have been reviewed and evaluated. This evaluation concluded that the specified requirements have been met by the existing Nuclear Power Department Quality Assurance Program as applied. In general, the modification is quality assurance scope and appropriate design control measures are applied.

The portions of the AMSAC which interface with existing safety-related portions of the plant are subject to the Nuclear Quality Assurance Program. The remainder of AMSAC is Non-QA scope. The controls applied to the Non-QA scope AMSAC system meet the requirements of Generic Letter 85-06.

5. Test Frequencies

Complete system testing of the AMSAC will be performed during refueling outages which are presently scheduled once per year. Testing of portions of AMSAC that can be tested at power will be performed semiannually. The logic matrix and output relays do not lend themselves to testing except during outages. Semiannual testing of the rest of the circuit is considered satisfactory since those components critical to operation are normally in a static condition and thus are less susceptible to failure. A failure of the bistable or the normally energized power time delay relay (PWR TDR) would be readily apparent by status light indications in the control room.

6. Environmental Qualification

The AMSAC equipment will be environmentally qualified where required in accordance with the administrative procedures established at Wisconsin Electric to ensure compliance with the NRC Rule 10 CFR 50.49, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants." Certain proposed AMSAC equipment, such as the valve position limit switches for the main feedwater regulating valves, are already qualified per these procedures. Other proposed AMSAC equipment does not require explicit environmental qualification, since it is either located in a mild environment, as defined in our procedures, or is not required to operate during or following exposure to potentially harsh environments resulting from design basis accidents. This other AMSAC equipment will be selected to operate under the environmental service conditions expected prior to or during an ATWS event. For most of this equipment, catalog specifications or product data sheets will be used for this determination. No formal testing or documentation of qualification for this hardware is planned.

7. Logic Diagram

A logic diagram of the proposed AMSAC is attached. Also attached is a circuit diagram.

8. Maintenance/Test Bypass

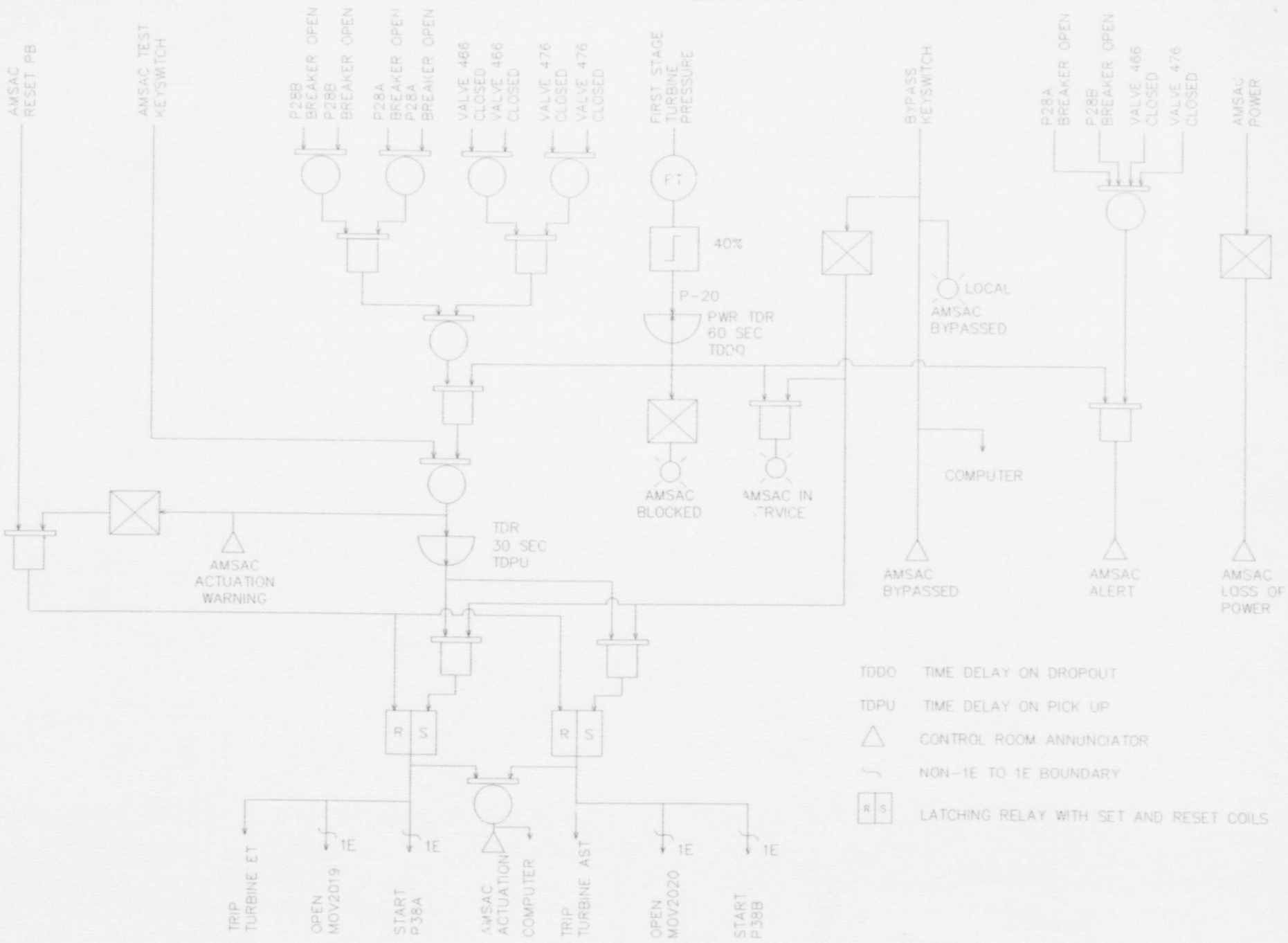
There will be a Bypass and a Test switch in AMSAC to permit partial testing of the circuitry while at power. These two key operated switches will be located on a local test panel and will be annunciated in the control room when positioned in the BYPASS or TEST positions, respectively. Operation of these switches will be administratively controlled by the test procedure such that the control room operator will know in advance of any testing.

A human factors review will be performed as part of the modification process which installs this circuitry, including the Bypass and Test switches.

9. **Addition of Test Point (TP4)**

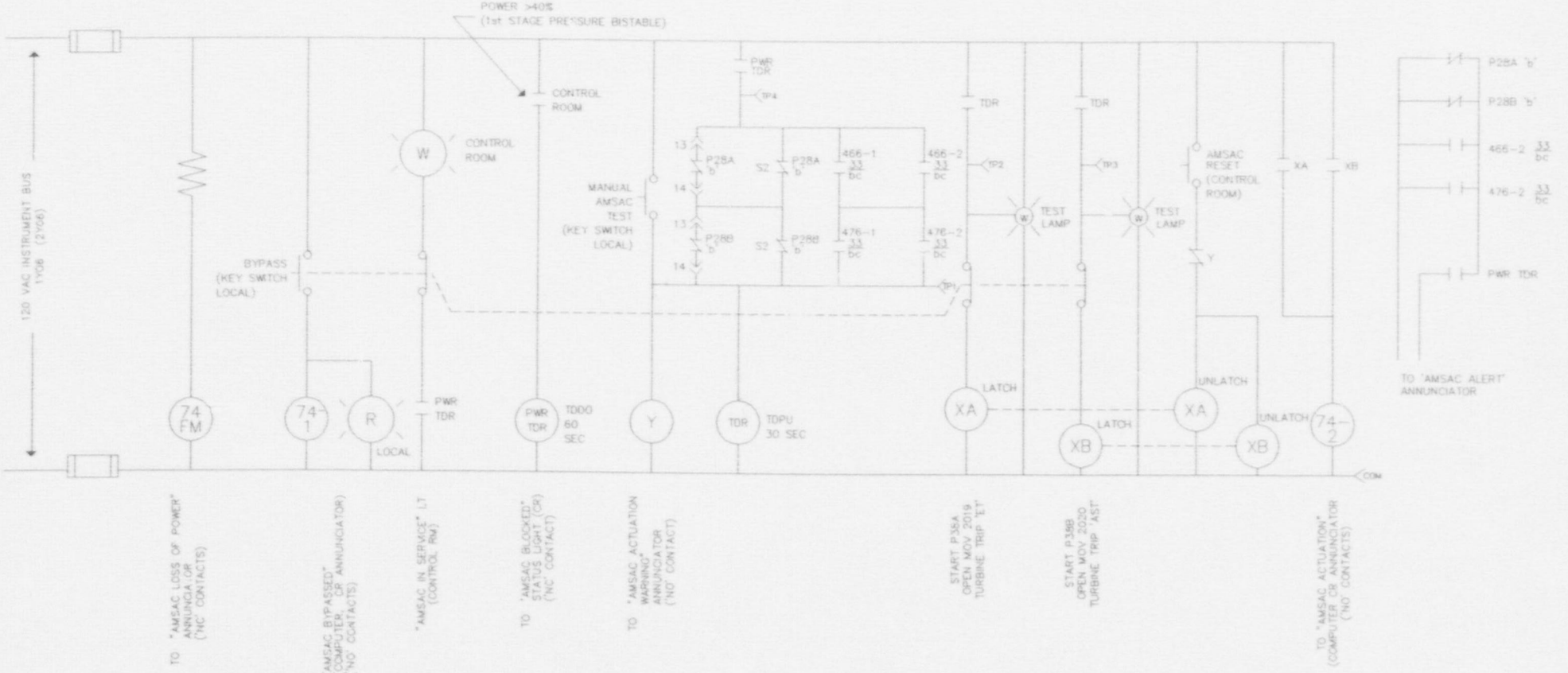
A test point (TP4) has been added to the circuit design between the PWR TDR contact and the logic matrix. The test point was added to allow verification of power to the logic matrix after cycling the PWR TDR relay.

PBNP AMSAC PRELIMINARY LOGIC DIAGRAM



PBNP AMSAC

PRELIMINARY CIRCUIT DIAGRAM



NOTES

1) ALL ANNUNCIATORS TO BE WIRED IN "NO" CONFIGURATION

2) LOCAL PANEL TO BE 1(2)C158

REVISED 12/11/87