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May 2, 1984

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

Subject: Byron Generating Station Units 1 and 2
Seismic Qualification of Equipment
NRC Docket Nos. 50-454 and 50-455

Reference (a): August 10, 1982 letter from T. R. Tramm
to H. R. Denton.

Dear Mr. Denton:

The status of seismic qualification of equipment for the Byron/Braidwood units was reported in reference (a). It now appears that qualification of a few components may not be complete by the time fuel is loaded at Byron 1. This letter documents our justifications for interim operation of those components.

Westinghouse OT-2 control switches are used extensively on our control boards. The seismic qualification of OT-2 switches has been established but, because of minor subcomponent changes, we are unable to assure that the installed switches are seismically identical to the tested switches. Replacement switches are not expected to be available in time for installation and testing prior to fuel load. All of the installed safety-related switches will therefore be replaced before the end of the first refueling outage. Attachment A to this letter contains the justification for interim operation for the OT-2 switches.

Attachment A also contains the justification for interim operation of the W-2 switches which are installed on our control boards. Current testing schedules indicate that these switches will be fully qualified by July 1, 1984. Approval for interim operation of W-2 switches is not being sought at this time.

Westinghouse 7300 series instrumentation is used in various NSSS and BOP applications. The results of recent supplemental seismic testing of this equipment are presently being evaluated. Test reports are expected to be available by July, 1984. If field changes are necessary, they may not be completed until the first refueling outage. Attachment A to this letter provides the justification for interim operation (JIO) of the NSSS portion of the 7300 equipment. A similar JIO for the BOP application will be provided by June 1, 1984.

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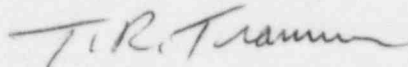
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The source and intermediate range neutron instrumentation is being modified to alert the reactor operator to reactivity changes associated with postulated boron dilution events. This equipment has been tested. It is expected that the test reports will be complete prior to July 1, 1984. Approval for interim operation is not being sought at this time but the justification for interim operation is contained in Attachment C to this letter.

We are requesting NRC review and approval for interim operation of the OT-2 switches and the NSSS 7300 series instrumentation. Further requests will be made if it becomes apparent that other components will not be fully qualified by the time of the Byron 1 fuel load. Please direct further questions regarding this matter to this office.

One signed original and fifteen copies of this letter and the attachments are provided for NRC review.

Very truly yours,



T. R. Tramm
Nuclear Licensing Administrator

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Attachments

Attachment A

Byron

Interim Justification Position for the
Seismic Qualification of the OT2 and
W2 Control Board Switches

Background

Westinghouse has investigated the acceptability of the presently installed OT2 and W2 switches in IE circuits. Similarity of design can be demonstrated for the OT2 switch, but Westinghouse has determined that direct traceability from tested to installed switches is not possible. The testing noted below provides assurance that the switch will operate properly until replacements are obtained. The installed W2 is similar in design to previously tested W2 switches and is currently being seismically qualified. As presented below, sufficient test data exists to establish seismic performance for interim operation until the test program is complete.

Previous Testing

OT2 Switch

A. Structural integrity was maintained on tests for the following projects:

1. Philippines Project at an SSE peak of 4.4 g's
2. Comanche Peak at an SSE peak of 5.0 g's
3. Watts Bar at an SSE peak of 8.0 g's
4. Diablo Canyon at an SSE peak of 32.0 g's and a ZPA of 7.4

B. Operability was demonstrated on tests for the following projects:

1. The criteria of less than 10 milliseconds of chatter was met for the Philippine Project at an SSE peak of 4.4 g's
2. Comanche Peak tests indicated no operating anomalies for an SSE peak of 5.0 g's
3. Watts Bar tests found no operating anomalies for an SSE peak of 8.0 g's
4. The criteria for the Diablo Canyon tests was less than 3 milliseconds of chatter at an SSE peak of 32.0 g's and a ZPA of 7.4. Two switches were tested. One passed and the other did not meet the criteria.

W2 Switch

A. Structural integrity was maintained on the following tests:

1. Westinghouse Switchgear Division at an SSE peak of 6.2 g's and a ZPA of 3.2 g's
2. Watts Bar at an SSE peak of 8.0 g's
3. Diablo Canyon at an SSE peak of 32.0 g's and a ZPA of 7.4

B. Operability was demonstrated through the following tests:

1. Westinghouse Switchgear Division reported no operating anomalies at an SSE peak of 6.2 g's and a ZPA of 3.2 g's
2. Watts Bar tests indicating no operating anomalies for an SSE peak of 8.0 g's
3. The criteria for the Diablo Canyon tests was less than 3 milliseconds of chatter at an SSE peak of 32.0 g's and a ZPA of 7.4. Of the two switches tested, one met the criteria and the other did not.

Conclusions

W2 and OT2 Switches

The Byron seismic criteria is for an SSE of 5.2 g's and a ZPA of 1.0 g maximum. Tests were conducted near or in excess of this level. Based on the results there is sufficient confidence to assume structural integrity and operability will be maintained in a seismic event.

Actions

The OT2 switches in the Main Control Board will be replaced with base line controlled/fully qualified switches when available.

The W2 switches from the Main Control Board are presently under going testing and are expected to be qualified prior to core load.

ATTACHMENT B

Byron

Interim Justification Position for the
Seismic and Environmental Qualification of the
7300 Process Protection System (ESE-13)

Westinghouse is presently evaluating the results of the supplemental abnormal environment and seismic testing recently completed. This supplemental testing was performed at several seismic levels, the last of which would upgrade the seismic qualification of the 7300 process protection system to a level above that required for Byron and to perform initial testing of some recently developed cards. With the exception of the NPC (Potentiometer), NRC (Relay), NCH (Function Generator) and the NSC (Converter) cards seismic qualification for Byron is documented by the following reports: El3A, "Process Protection (Seismic Testing)"; El3B, "Process Protection System (Environmental and Supplemental Seismic Testing)".

During this supplemental testing, the following was observed:

- a. The NRC card demonstrated proper operation during the tests.
- b. The NPC, NCH, and NSC cards exhibited errors which could result in minor changes in system accuracy. The NPC and NCH cards have potentiometers which demonstrated small shifts during the seismic testing. It is expected that the resultant system error will be less than 0.5% based on a maximum pot shift of 1%. The NSC card and cabinet power supply exhibited changes due to input voltage variations that exceeded specification by less than 0.5%. These errors are presently under evaluation by Westinghouse in order to determine the exact effect on the system, but initial evaluation indicates that margins are available to absorb these inaccuracies.

Although tested previously, the NTC (Temperature Channel Test) card exhibited contact bounce during this recent testing. The results have been evaluated and reported by Westinghouse to the NRC on June 1, 1983. Commonwealth Edison also reported this pursuant to 10 CFR 50.55(e) in a letter dated August 9, 1983 from T. R. Tramm to J. G. Keppler. Byron has this NTC card in the Overtemperature and Overpower delta T channels. This intermittent signal may cause saturation of downstream RTD amplifier (NRA) cards and could possibly prevent a trip from occurring on demand. Until a permanent resolution is prepared, Field Change Notices have been issued which will provide a method of bypassing these relays when in normal operation. Since these relays are only used to ease periodic testing of the channels, this interim modification will not interfere with plant operation.

The 7300 Process Protection System performance has been demonstrated to be acceptable for Byron by previous seismic testing. Anomalies which occurred during recent tests are being resolved and corrective actions will be taken as necessary based on the results of the Westinghouse evaluation.

All testing, including preparation of test reports, is scheduled for completion by July, 1984.

ATTACHMENT C

Byron

Interim Justification Position for the
Seismic and Environmental Qualification of the
Boron Dilution Fix (ESE-47)

The Boron Dilution Protection System equipment, which consists of the Source and Intermediate Range Drawers, Source/Intermediate Range Detector and Source Range Pre-Amplifier, has completed seismic and environmental testing. The seismic testing was successfully completed for all equipment. Abnormal environmental testing revealed that the log-current amplifier (located in the Intermediate Range drawer) exhibited errors which exceeded the acceptance criteria. For Byron this system is located in the control room which has Class 1E HVAC and will not experience an abnormal environment. All other equipment successfully passed the environmental tests.

Although the Source-Range Pre-amplifier successfully passed the seismic and environmental tests, it was noticed to be noise susceptible during system verification testing which leads to an operational concern.

For this reason, a new pre-amplifier (Model MK II) was designed. Byron will operate with this redesigned part. Seismic testing of the pre-amplifier was completed during the first quarter of 1984. Results of the tests were satisfactory, however, during the test the triaxial connector failed. Investigation revealed that the connector had been redesigned by the manufacturer without informing Westinghouse. The older style connector was installed and subsequent seismic test results were satisfactory. Since Byron pre-amplifiers presently have the new style connectors installed a Field Change Notice will be issued to replace the connectors prior to the scheduled fuel load date.

Upon completion of testing of the MK II pre-amplifier, a draft EQDP-ESE-47B report titled "Boron Dilution Fix (Source and Intermediate Range Drawers and Source Range Pre-Amplifier)" and an EQTR-E47C report titled "NIS Console, Source and Intermediate Range Drawers, Source Range Pre-Amplifier Box (Environmental Testing)" will be issued.

All testing, including reports, will be complete in June 1984.