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 RECIPIENT NAME RECIPIENT AFFILIATION
 DAVIS, A.B. Document Control Branch (Document Control Desk)

SUBJECT: Provides evaluation of environ qualification of Limitorque actuators installed in plant. *566 Rpt*

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AEP:NRC:0775AO

Donald C. Cook Nuclear Plant Units 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
DONALD C. COOK NUCLEAR PLANT ENVIRONMENTAL
QUALIFICATION INSPECTION - ADDITIONAL INFORMATION

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Attn: A. B. Davis

July 27, 1988

Dear Mr. Davis:

In response to a request from your staff we are providing our evaluation of the environmental qualification of certain Limitorque actuators installed in the Donald C. Cook Nuclear Plant.

At the time of the NRC environmental qualification inspection, the vendor recommended T-drains were not installed in the motors of the actuators. This issue and our subsequent actions were discussed in a previous letter (AEP:NRC:0775AN, dated June 24, 1988). Following the NRC review of our letter, we were asked for our opinion on whether these valve actuators were qualifiable without the T-drains, and we were requested to send a copy of Limitorque Test Report Number 600198.

Our evaluation of the qualification of the actuators is contained in Attachment 1. Limitorque Test Report 600198 is included as Attachment 2.

This document has been prepared following Corporate procedures which incorporate a reasonable set of controls to ensure its accuracy and completeness prior to signature by the undersigned.

Sincerely,

M. P. Alexich
Vice President

MPA/eh
Attachments

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RP PDC

Mr. A. B. Davis

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AEP:NRC:0775AO

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NRC Resident Inspector - Bridgman
A. B. Davis - Region III

Attachment 1 to AEP:NRC:0775A0

Analysis of Valve Actuator T-Drain Installation

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We were asked whether we considered the following valve actuators to be environmentally qualified in their previous configuration without T-drains (Prior to RFC-12-2930, TWL dated 6/9/86):

- 1, 2-IMO-51, 52, 53, 54 (Removed from EQ scope - no T-drains installed)
- 1, 2-IMO-315, 316, 325, 326 (T-drains installed by RFC-2930)
- 1, 2-FMO-211, 221, 231, 241 (T-drains installed by RFC-2930)

The T-drains were installed on EQ valve actuators to comply with Limitorques conservative recommendation that the installed configuration match the EQ tested actuator configuration. However, based on information provided by Limitorque to the Nuclear Utility Group (NUGEQ) in their report, "Clarification of Information Related to the Environmental Qualification of Limitorque Motorized Valve Operators," dated April 1986, the T-drains may be omitted for certain actuator configurations described below. The omission of T-drains in these configurations will not prevent proper actuator operation or violate environmental qualification.

The one applicable example provided in the NUGEQ Report is that the actuator orientation precludes the collection of moisture into the motor compartment. Instead, drainage would occur into the limit switch compartment, which is acceptable. This is true for the installed configuration of the above listed valve actuators. Limitorque qualified their actuators oriented with the limit switch compartment upward and the motor horizontal. The test actuator orientation provided a downward flow path for any condensate collecting in the limit switch compartment to flow into the motor. This orientation prompted the design enhancement by Limitorque to add motor T-drains.

The DCCNP actuators listed above were installed oriented with the limit switch compartment and motor both being horizontal. This orientation will not allow condensate to flow directly from the limit switch compartment to the motor with the expected amount of moisture build-up. Attached is a drawing illustrating the difference in tested versus installed actuator orientations.

The FMO valves listed above are unique in that the porthole between the motor and the limit switch compartment is essentially sealed with a potted material. Without the T-drains, the motor internals are not exposed to outside steam conditions through any intended opening. These valves are also located outside containment and would be subjected only to very short duration

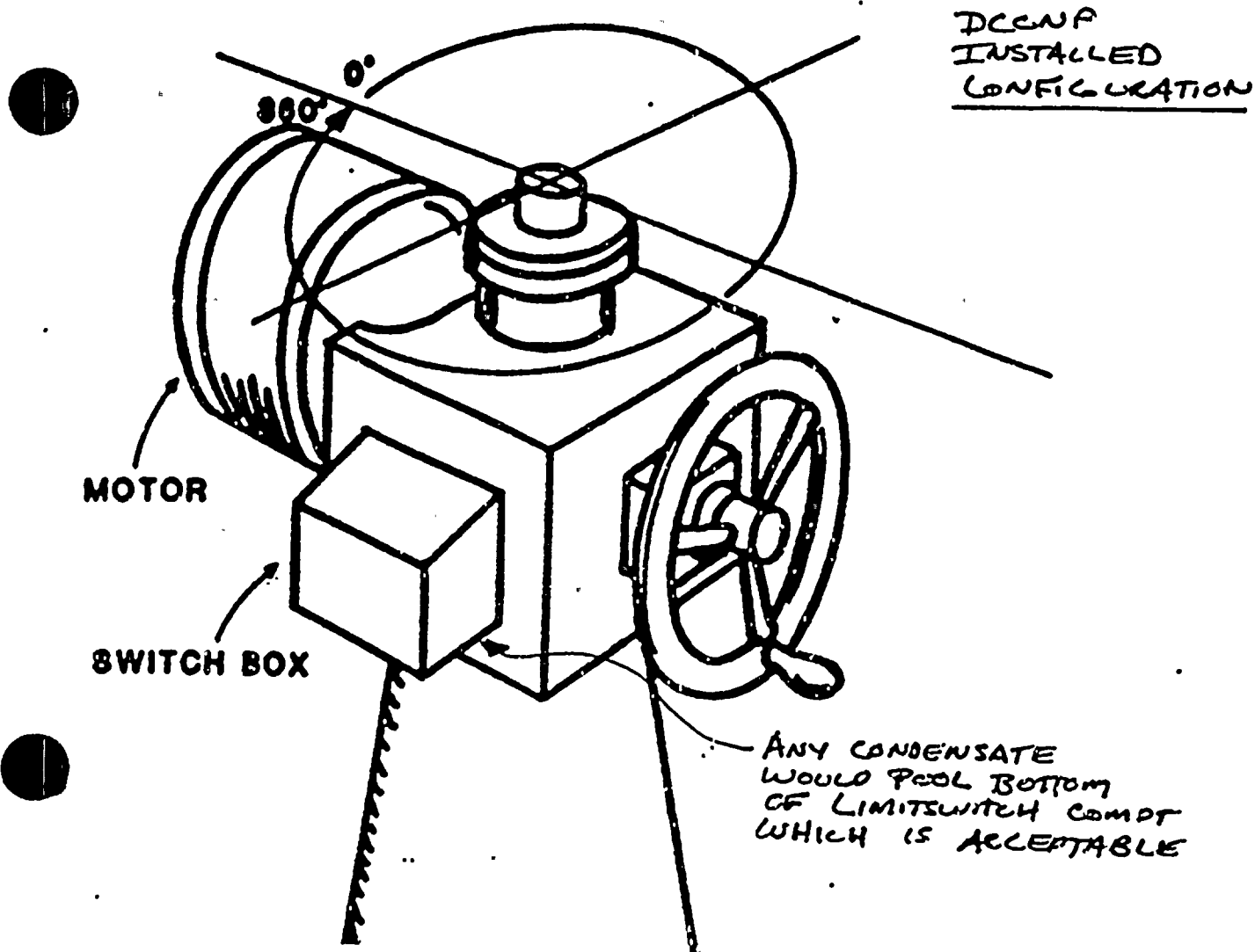
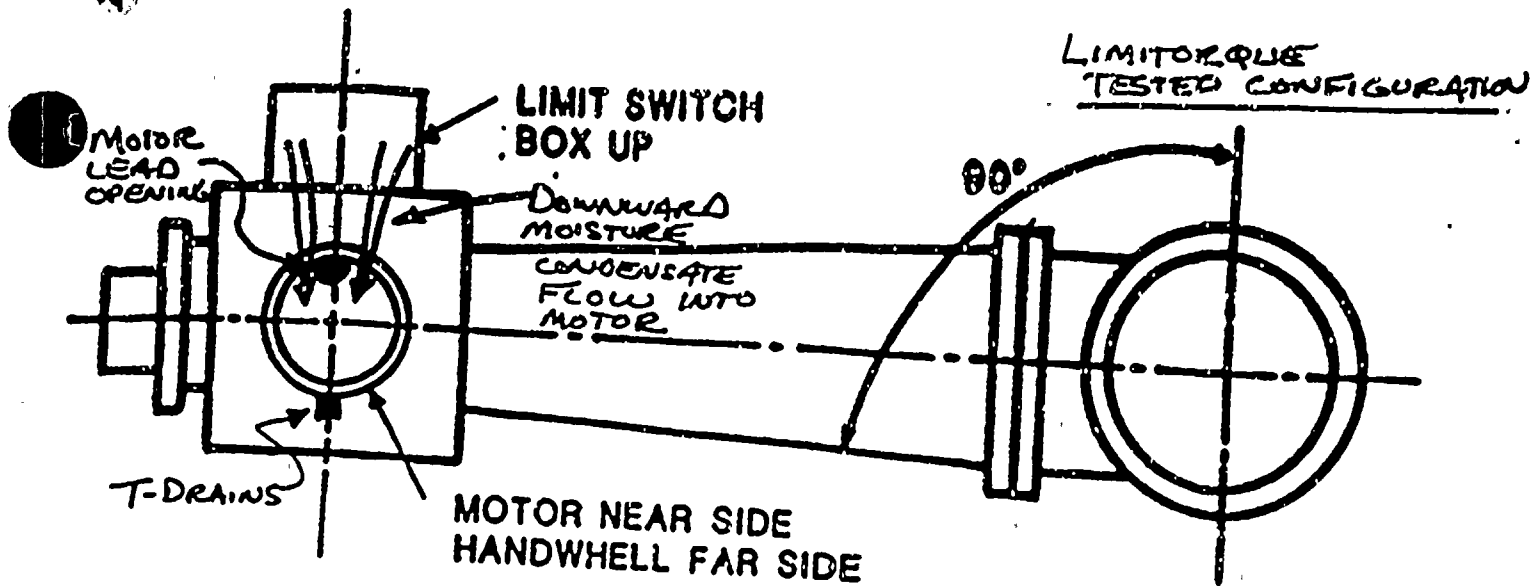
steam and pressure design basis accident conditions. Therefore, the accumulation of moisture inside the FMO valve motors as a result of a pipe break is considered insignificant.

The two groups of IMO valves are installed inside containment. The IMO-51 thru 54 valves are the BIT tank to RCS loop valves which were required to operate within 1/2 hour after a design basis accident. The IMO-315 to 326 valves are the cold to hot leg crossover valves which are required to operate within 1 day. These operating times are considered relatively short for any possible degradation of motor winding insulating material due to moisture. The RH class insulating systems used in the above IMO valves is considered by Limitorque to be superior to the Rad H and Class B systems used in earlier motors tested without T-drains. Therefore, even a small accumulation of moisture in these motors for the operating times mentioned above is not expected to degrade the valve operability.

The majority of the Donald C. Cook Nuclear Plant EQ valve actuators do not have T-drains or the necessary pipe plug holes required to install T-drains. These valves were qualified by an earlier inside-containment test report (Number 600198). This report envelopes the specified harsh environment conditions for the FMO and IMO valves listed above.

Except for certain upgrades in motor insulation, torque and limit switch materials, the valve actuators tested without T-drains and later with T-drains are essentially identical.

Sufficient similarity exists between the tested versus installed configuration of the Test Report 600198 actuator and the FMO and IMO valves listed above. These valves may therefore be considered qualified per 600198 without the T-drains installed.



Attachment 2 to AEP:NRC:0775A0

Limitorque Report No. 600198