



LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

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SNRC-1578

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

Temperature Profile Inside Primary Containment
Used For Environmental Qualification
Shoreham Nuclear Power Station - Unit 1
Docket No. 50-322

Gentlemen:

During the recent operational readiness assessment team inspection, LILCO provided NRC inspectors with a copy of the engineering calculation that was used to establish the enveloping temperature conditions used for environmental qualification of equipment in the primary containment. As a result of their review, the inspectors raised two questions which were addressed by LILCO during the inspection and were discussed at the March 23, 1989 exit meeting. This letter provides information that answers the questions and should enable NRC Staff environmental qualification specialists to consider the issue closed.

Primary Containment Temperature Exceeds the EQ
Temperature Limits For A Short Period of Time

A series of calculations have been performed to define the enveloping conditions to be used for environmental qualification of the equipment in the primary containment. Such analyses have been performed with multiple failures, no operator action, and in some cases additional margin of safety in order to assure that environmental qualification of the equipment would envelope the design basis accidents of Shoreham Nuclear Power Station. This multilevel of conservatism was desirable because the development of the EQ pressure and temperature envelopes was concurrent with some design changes being made to the primary containment (Mark II program) in the 1981-3 timeframe. These design modifications had significant impact on the pressure and temperature response of the primary containment to a LOCA.

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Page B2 of calculation US(B)-185 shows the primary containment temperature response to a loss-of-coolant accident with one train of RHR (one pump per train) and one core spray system being available for mitigation of a loss-of-coolant accident. The transient, called case D in the SNPS USAR, does not take any credit for operator action to actuate the primary containment spray system. A comparison of this temperature response with the EQ temperature limits (attached figure) shows that the primary containment temperature would exceed the EQ temperature limits for a relatively short period of time.

SWEC calculation 11600.02-EQ-39 has been performed to demonstrate that the EQ temperature profile used for qualification of the equipment in the primary containment (Figure D-1 of the EQ report) would have sufficient conservatism to bound the temperature response to LOCA case D as described in the USAR and calculation US(B)-185 and 169-2. This calculation, which was provided to an NRC inspector, shows that using the Arrhenius Methodology described in Section 3.4.5 of the Shoreham Environmental Qualification Report, the EQ temperature envelopes exceed the composite temperature profile of MSLB and LOCA case D of the SNPS-USAR with a margin of safety in excess of 25 percent.

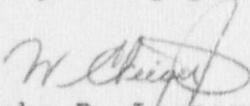
Notwithstanding the above referenced calculation, LILCO performed a review of EQ equipment in the drywell. A review of the actual test temperature profiles of the affected equipment was performed. The results indicate that sufficient margin exists in the tested temperature profile to envelope the supporting calculation and EQ profile in the time interval in question. LILCO intends to finalize the results of this review in a documented report.

30°F Addition

SWEC calculation 11600.02-US(b)-185 was performed to produce the above mentioned conservative upperbounds for the EQ envelopes. At the time of the original calculation, 30°F was suggested to be added to temperature limits due to unavailability of the building response to a main steamline break. Such added margin was later determined to be unnecessary due to the significant level of conservatism already existing in the design basis of the plant. Follow-up calculations such as 11600.02-US(b)-169-02 and 1160.02-ES-59-1 demonstrated that such margin was not needed. The design basis analyses documented in these two calculations, LOCA and MSLB respectively, were shown to be well within the EQ temperature limits defined previously and without the 30°F margin.

Should you have any questions on the information provided above,
please do not hesitate to call my office.

Very truly yours,



John D. Leonard, Jr.
Vice President - Nuclear Operations

GJG/ds

cc: S. Brown
W. Russell
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