

Docket Number 50-346

License Number NPF-3

Serial Number 2473

July 28, 1997

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555-0001

Subject: Response to NRC Generic Letter 96-06: Assurance of Equipment Operability and
Containment Integrity During Design-Basis Accident Conditions (TAC No. M96803)

Ladies and Gentlemen:

On September 30, 1996, the Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 96-06. That letter requested licensees, such as those for the Davis-Besse Nuclear Power Station (DBNPS) Unit Number 1, to address the following generic issues:

- (1) Cooling water systems serving the containment air coolers (CACs) may be exposed to the hydrodynamic effects of water hammer during either a loss-of-coolant accident (LOCA) or a main steam line break (MSLB). These cooling water systems were not designed to withstand the hydrodynamic effects of water hammer and corrective actions may be needed to satisfy system design and operability requirements. Licensees are to determine if their plant's CACs cooling water systems are susceptible to water hammer during postulated accident conditions.
- (2) Cooling water systems serving the containment air coolers may experience two-phase flow conditions during postulated LOCA and MSLB scenarios. The heat removal assumptions for design-basis accident scenarios were based on single-phase flow conditions. Corrective actions may be needed to satisfy system design and operability requirements. Licensees are to determine if their plant's CACs are susceptible to two-phase flow conditions during postulated accident conditions.

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- (3) Thermally-induced overpressurization of isolated water-filled piping sections in containment could: 1) jeopardize the ability of accident-mitigating systems to perform their safety functions, and 2) could also lead to a breach of containment integrity via bypass leakage. Corrective actions may be needed to satisfy system operability requirements. Licensees are to determine if the piping systems which penetrate their plant's containment are susceptible to thermal expansion of fluid so that overpressurization could occur.

On January 28, 1997, Toledo Edison (TE) provided by letter (Serial Number 2439) an interim response to GL 96-06. On February 28, 1997, TE provided by letter (Serial Number 2442) a summary report describing the actions taken to that date and the results of those actions. The summary report stated that TE would submit a letter to the NRC by July 30, 1997, 1) addressing the plans for final corrective actions for the piping penetrations, and 2) providing the final conclusion with respect to the water hammer effects on the CAC trains based on completion of the detailed calculations. The final plan for corrective actions and completion of the detailed calculations have been delayed because of the forced outage that occurred due to a plant trip on May 4, 1997. However, the following provides an update on the status of TE's progress in resolving these two issues.

Thermal Overpressurization of Piping Penetrations

During the forced outage, TE utilized the opportunity to install a modification to Containment Penetration Number 12, Component Cooling Water Supply to the Control Rod Drive Mechanisms. This modification was previously described to the NRC in TE's letter dated February 28, 1997 as Modification Number 97-0009. The modification installed a bypass check valve that vents the portion of pipe between the containment isolation valves to the piping inside of the containment thus providing an inherent relief path for the isolated piping section. Therefore, the overpressurization issue for Penetration Number 12 has been resolved.

During this time, further analysis was also performed on Containment Penetration Number 32 for the Reactor Coolant Drain Tank pipe. Penetration Number 32 was previously reported to the NRC as partially drained to prevent pressure increases in the isolated portion of piping. Further analysis of this penetration determined that the air operated valves used to isolate this penetration provide inherent pressure relief. Therefore, Penetration Number 32 will no longer be maintained in a partially drained condition.

The following table provides the current status of the thirteen containment penetrations that TE had identified in its February 28, 1997 letter as potentially adversely susceptible to post-LOCA thermal overpressurization.

Penetration	Name	Status
1	Pressurizer Sample Line	Meets ASME Code Faulted Stress Allowables
3	Component Cooling Water to Containment	Meets ASME Code Faulted Stress Allowables
14	RCS Letdown	Meets ASME Code Faulted Stress Allowables
56	Reactor Coolant Pump Seal Return	Meets ASME Code Faulted Stress Allowables
13	Containment Normal Sump	Meets DBNPS Interim Stress Allowables.
47a	Core Flood Tank Sample Line	Meets DBNPS Interim Stress Allowables.
74C	Pressurizer Auxiliary Spray	Meets DBNPS Interim Stress Allowables. Partially drained to ensure availability post-accident.
4	Component Cooling Water Return from Containment	Soft seat butterfly valve. LLRT documented leakage will prevent overpressurization.
12	Component Cooling Water to the Control Rod Drive Mechanisms	Action completed: Modification Number 97-0009 installed during the May 4, 1997 outage to prevent overpressurization.
21	Demineralized Water to Containment	AOV Globe valve—Provides inherent relief to prevent overpressurization.
32	Reactor Coolant Drain to Reactor Coolant Drain Tank	AOV Diaphragm Valve—Provides inherent relief to prevent overpressurization.
48	Pressurizer Quench Tank Outlet	AOV Globe valve—Provides inherent relief to prevent overpressurization.
49	Refueling Canal Fill	Used only during refueling outages. Partially drained to prevent overpressurization.

Four (1, 3, 14 and 56) of these thirteen piping penetrations have been determined to meet the American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel Code faulted allowable stress values and no further action would be required to reduce stress levels at these penetrations. Three penetrations (13, 47a and 74c) have been determined to meet DBNPS interim stress allowables and will require changes in order to reduce the stress values during the next refueling outage. In order to comply with the ASME Code pressure limitations under faulted conditions for the components of these seven penetrations, further engineering action is planned under Modification Number 97-0009.

As discussed above, Penetration Numbers 12 and 32 have had their overpressurization issues resolved. Engineering reviews for final resolution of the potential overpressurization issues for the other four penetrations (4, 21, 48 and 49) are ongoing. The issues for all twelve penetrations will be resolved prior to start-up from the next refueling outage which is currently scheduled to commence in April, 1998. Toledo Edison plans to provide a summary of its plans for final corrective actions for these penetrations in a letter to the NRC by September 30, 1997.

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Toledo Edison has determined that the penetrations and their associated components remain operable, as discussed in TE's February 28, 1997 letter.

Containment Air Cooler Water Hammer Effects

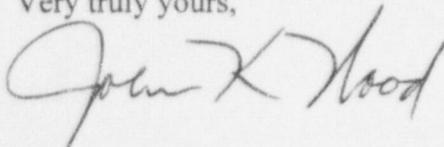
The status of the engineering evaluations of the water hammer conditions in the Containment Air Cooling System (CACS) is as follows:

A thermal-hydraulic evaluation was performed on each train of the CACS and also on simultaneously operated CACS trains. The thermal-hydraulic evaluations have been completed, with the results being used to evaluate the acceptability of the system piping stresses and the support/restraint loads. A preliminary time history analysis on all piping has been completed, with the results showing that the piping stresses are relatively low. The structural review revealed that the majority of the restraint loads are within the present design value, however, several exceed the conservative values used in the design basis calculations. The thermal-hydraulic evaluation has been revised to provide a more accurate model which will provide more representative loadings on the piping and, subsequently, the restraints. The revised data is currently being used to re-evaluate the piping restraint loads. The current review indicates that the CACS remains operable.

If modifications are required to restore the full qualification of any CACS components, Toledo Edison will establish a schedule for implementation based on operability considerations and the time required for modification design development. Toledo Edison plans to provide its final conclusions with respect to the water hammer effects and a description of any planned modifications in a letter to the NRC by September 30, 1997.

Should you have any questions or require additional information, please contact Mr. James L. Freels, Manager - Regulatory Affairs, at (419) 321-8466.

Very truly yours,



FWK/laj

cc: A. B. Beach, Regional Administrator, NRC Region III
A. G. Hansen, DB-1 NRC/NRR Project Manager
S. Stasek, DB-1 NRC Senior Resident Inspector
Utility Radiological Safety Board

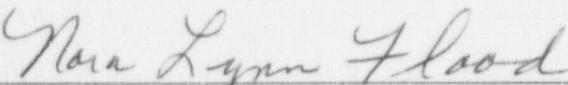
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RESPONSE
TO
NRC GENERIC LETTER 96-06
FOR THE
DAVIS-BESSE NUCLEAR POWER STATION
UNIT NUMBER 1

This letter is submitted pursuant to 10 CFR 50.54(f) and contains information pursuant to NRC Generic Letter 96-06, "Assurance of Equipment Operability and Containment Integrity During Design - Basis Accident Conditions" for the Davis-Besse Nuclear Power Station, Unit Number 1.

By: 
John K. Wood, Vice President - Nuclear

Sworn to and subscribed before me this 28th day of July, 1997.


Notary Public, State of Ohio
Nora Lynn Flood
My commission expires September 3, 1997.