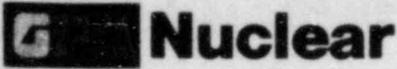


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May 20, 1985
5211-85-2097

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U.S. Nuclear Regulatory Commission
1717 H Street, N.W.
Washington, DC 2055

Gentlemen:

Re: Three Mile Island Nuclear Station Unit 1
License No. DPR-50
Docket No. 50-289SP

On May 3, 1985 the Union of Concerned Scientists (UCS) submitted to the Commission its views regarding three areas in which UCS claims that the NRC Staff allegedly failed to inform the Commission regarding deviations from lessons learned items, testimony before the Licensing and Appeal Boards and TMI-1 Technical Specifications related to the lessons learned and hearing items. In the enclosure to this letter, GPUN responds to each of the items raised by UCS and shows that UCS has not only misrepresented the facts but has attempted to "cast in concrete" preliminary information and ignored earlier opportunities to express its concerns.

GPUN concludes that these latest allegations made by UCS are without merit and in recognition of the charges represent either a lack of understanding of the technical facts and record or a deliberate attempt to impede the regulatory process aimed at a Restart decision. GPUN has in good faith complied with its commitments made in adjudicatory hearings and lessons learned items required for restart.

Sincerely,

P.R. Clark
President

8505230278 850520
PDR ADOCK 05000289
G PDR

cc: R. Conte
H. Denton
T. Murley
J. Stolz

1840f

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DS03

GPUN RESPONSE TO UCSs "ADDITIONAL SAFETY ISSUES
REQUIRING RESOLUTION PRIOR TO TMI-1 RESTART"

1.a. NUREG-0737, Item II.D.1, Performance
Testing of BWR and PWR Relief and
Safety Valves

UCS claims that the recent changes made by GPUN to the ring settings for the Dresser safety valves used at TMI-1 constitute a violation of a commitment made by Licensee during the restart proceeding and which was relied on by the Appeal Board. As discussed below, UCS is wrong on both scores.

During the 1983 reopened hearing before the Appeal Board, Licensee presented testimony regarding the ability of the pressurizer safety valves to perform the bleeding function in a feed and bleed cooling mode (a cooling mode on which the Appeal Board did not rely in its decision). Included in that testimony was discussion of the valve testing program performed by EPRI to fulfill the requirements of NUREG-0737, Item II.D.1. Based upon those tests, and in order to minimize valve instabilities, the safety valve inlet piping arrangement was changed and the valve ring settings were revised to conform to those used in the final EPRI tests and to allow blowdown of no more than 20%. See Jones and Lanese, ff. App. Tr. 111, at 4; App. Tr. 423 (Correa).

Subsequent to those hearings, Licensee, in conjunction with the B&W Owners Group, undertook additional analyses of the Dresser safety valves in order to determine the optimum ring settings for those valves. Those analyses and the resultant revision to the ring settings are described in GPUN's submittal of March 4, 1985 (5211-85-2046) to the Staff (Attachment 1).^{1/}, and approved by the staff on May 14, 1985 (Attachment 2). The newly implemented ring settings allow more stable valve performance and provide better clearance between the lower ring and the disc holder; blowdown is still limited to no more than 20%.

GPUN believes that, contrary to UCS's assertion, the revision to the safety valve ring settings does not constitute an 'abandonment' of the testimony given before the Appeal Board.^{2/} The ring settings adopted at the time of the Appeal Board hearings were based on data available at that time. Certainly Licensee should not be penalized for making adjustments to those settings which subsequent analyses have shown will result in improved performance.

Finally, GPUN strongly disagrees with UCS's claim that the Appeal Board relied on the ring settings in place at the time of the 1983 hearings. In finding that the EPRI valve testing program was adequate and that any limited damage during feed and bleed would not impair the operability of the safety valves, the Appeal Board did not even mention the ring settings.

^{1/} It should be noted that the vast majority of the B&W licensees have revised their safety valve ring settings in accordance with the results of these analyses.

^{2/} While Licensee's testimony described the revised ring settings, we do not believe that testimony can fairly be read as a commitment that those settings would never be revised.

Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit No. 1), ALAB-729, 17 N.R.C. 814, 851-53 and n. 170 (1983).

1.b. NUREG-0737, Item II.F.2, Design
Qualification of PWR Incore
Thermocouples

UCS contends that NUREG-0737 item II.F.2 is not complete because the incore thermocouples are not environmentally qualified.^{3/} GPUN requested and was granted a schedular extension from the requirements of 10 C.F.R. 50.49 for the incore thermocouple cables and connectors until November 30, 1985. As committed in previous correspondence with the Staff, GPUN tested the incore thermocouple cable and connector assemblies at Bailey Test Lab, Georgia Institute of Technology and Ohio State University from March 17 to April 14, 1985. The draft test report from Bailey Meter has been received and reviewed by GPUN. Although the GPUN EQ file has yet to be finalized and approved, information now exists to show that the incore cable and connector assemblies are environmentally qualified. The final test report is scheduled to be issued by the end of May 1985, at which time the EQ file will be approved by GPUN. Thus, this issue must be considered moot.

While the qualification of these components has now been established, Licensee is compelled to address UCS's allegation that GPUN has not provided a valid justification for operation without environmentally qualified incore

^{3/} UCS is correct that Item II.F.2 is not complete since the RCS Inventory Trending System is not fully tested and a final SER has not been issued by the Staff.

thermocouple instrumentation. UCS has misinterpreted the GPUN statement in Revision 1 of JIO-TI-84-6 attached to GPUN letter dated February 12, 1985. For design basis accidents, namely SBLOCA's and HELB's inside containment for which the incore thermocouples are required, subcooling margin can be calculated under natural circulation conditions using qualified RCS temperature and pressure instrumentation (once flow is verified in the RCS). Further, the incore thermocouples perform their safety function within the timeframe for which the cable assembly is qualified based on experience from the TMI-2 accident. Unfortunately, UCS does not appear to have reviewed Revision 2 of JIO-TI-84-6 on the incore thermocouples, attached to GPUN's letter dated March 25, 1985 (5211-85-2059), which is the basis for the March 29, 1985 schedular extension.

2. Pressurizer Heaters Undervoltage

Trip Setpoint

As was the case with its evaluation of the change in the safety valve ring settings, UCS here again has distorted the record below with respect to the undervoltage trip setpoint and, further, apparently misunderstands the effects of the trip setpoint change.

During the hearings before the Licensing Board (in January 1981), Licensee witness Torcivia testified that while the final setting for the undervoltage trip on the main feeder breaker had not yet been determined, GPUN's preliminary review indicated that should the voltage persist at 430

or below for 1-1/2 seconds, the relay would trip out the main feeder breaker serving the pressurizer heaters. Tr. 9425-26 and 9489. This value was subsequently noted by the Appeal Board as one of the main feeder breaker trip settings.^{4/} ALAB-729, supra, 17 N.R.C. at 858. Subsequent to the hearings, and in accordance with good engineering practice, GPUN performed an analysis of breaker coordination in order to establish the optimum undervoltage trip setpoint. As described in NRC Inspection Report 50-289/84-01, GPUN lowered the voltage and time settings in order to avoid undesired tripping. Although not recognized by UCS as such, this value is more conservative for shorter duration electrical faults, thereby increasing the reliability of the system.

Further, contrary to UCS's assumption, the change in the trip setpoint has not resulted in GPUN abandoning its commitment to abide with the conditions imposed by the Licensing and Appeal Boards: the heaters will not be reconnected until stabilization has occurred nor will they be connected to the emergency power supply unless the plant is subcritical or in hot standby condition. See LBP-81-59, 14 N.R.C. 1211, 1276 (1771) (1981); ALAB-729, 17 N.R.C. at 860 (1983). These conditions are incorporated in the applicable plant operating procedures.

^{4/} This trip setting was not discussed in the Licensing Board's Partial Initial Decision.

3. TMI-1 Technical Specifications

UCS expresses great concern with and surprise over the limiting conditions for operation (LCO's) for certain lessons-learned equipment as set forth in the TMI-1 Technical Specifications approved by the Staff. GPUN views these UCS concerns as disingenuous and untimely at best.

UCS complains about the LCO's for four specific items of equipment: (a) subcooling margin monitors; (b) PORV and safety valve position indication; (c) emergency feedwater flow indication, and (d) RCS high point vents. GPUN initially submitted for Staff review and approval proposed technical specifications for the first three items -- including LCO's -- in 1981; indeed, these proposed technical specifications were included in Section 11 of the Restart Report (Licensee Exhibit 1 in the Restart Evidentiary record) as early as 1979. In Amendment 78 to the TMI-1 License (dated October 20, 1982), the Staff issued these Technical Specifications.^{5/} See 47 Fed. Reg. 49,760 (Nov. 2, 1982). Amendment 78 included the LCO's for the subcooling margin monitor, relief and safety valve position indicators and EFW flow indicators which UCS now complains of -- in 1985. GPUN contends that

^{5/} As noted by UCS, Amendment 100 to the License issued on October 1, 1984, further revised the Technical Specification sections at issue. However, that Amendment addressed post-accident instrumentation which monitors high-range noble gas effluents and containment parameters -- which are not the subject of UCS's present complaints. See 49 Fed. Reg. 42,840 (Oct. 24, 1984).

this is merely a delaying ploy on UCS's part; UCS has been on notice of these Technical Specifications for over four years and their complaints are clearly untimely.^{6/}

The Technical Specifications for the reactor coolant system (RCS) high point vents were proposed by GPUN on February 9, 1984. On April 25, 1984, the Staff publicly noticed the receipt of Licensee's amendment request and its proposed finding of no significant hazards associated with the request. 49 Fed. Reg. 17,850 at 17,862-63. The Staff received no comments on its proposed no significant hazards finding and the requested Technical Specifications were issued as Amendment 97 to the License on June 21, 1984. See 49 Fed. Reg. 29,929 (July 24, 1984). UCS neither filed comments on the proposed Staff finding nor petitioned for a hearing on the license amendment request and therefore, under the Commission's regulations, UCS's complaints are manifestly untimely and should not be allowed to delay a Commission decision on restart.

Further, TMI-1 Technical Specifications are consistent with NRC model technical specifications of Generic Letter 83-37 dated October 31, 1983 which are in turn consistent with NUREG 0737. NUREG 0737 Item II.B.1 does not require a vent^{7/} at every high point and, furthermore, does not require that the vents collectively meet the single failure criterion.

^{6/} We would also note that, in their discussion of alternative indications in the event the valve position indicators and EFW flow indicators are inoperable, UCS fails to identify additional alternatives described in Technical Specifications: Reactor Coolant Drain Tank level for relief and safety valve leakage and Steam Generator level and EFW pump discharge pressure indicators for EFW flow indications.

^{7/} Each vent path consists of two vent valves in series.

Finally, UCS proposes a new philosophy for assessing the capability to repair equipment within the specified Technical Specification time limits. This is not an appropriate subject for a letter to the Commissioners on a specific plant operating license. UCS has had the opportunity in the past to comment upon the TMI-1 Technical Specifications. The UCS suggestions now should be viewed as totally irrelevant to decisionmaking in the Restart proceeding.


Nuclear

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 Writer's Direct Dial Number:

March 4, 1985
 5211-85-2046

Office of Nuclear Reactor Regulation
 Attn: J. F. Stolz, Chief
 Operating Reactors Branch No. 4
 Division of Licensing
 U.S. Nuclear Regulatory Commission
 Washington, D. C. 20555

Dear Mr. Stolz:

Three Mile Island Nuclear Station Unit 1 (TMI-1)
 Operating License No. DPR-50
 Docket No. 50-289
 Safety Valve Ring Setting

By letter dated October 28, 1983 (5211-82-260), GPUN committed to adjust the code safety valves, at TMI-1 to the EPRI ring setting in order to bound TMI-1 by the EPRI test results. Since that time, GPUN has had analytical work performed by CDI through the B&W Owners Group to obtain the optimum ring settings for the Dresser safety valves used at TMI-1.

In order to quantify the installation constraints for satisfactory valve operation, EPRI sponsored the development of a spring loaded safety valve dynamic model coupled to the unsteady motion in the upstream piping system resulting in the COUPLE Code. The results of this code have been validated against applicable EPRI test data for Dresser valves and the code has been shown to be reliable in predicting valve stem position, stability and percent blowdown across the range of tested steam pressurizer pressures valve ring settings, back pressures and piping configurations. The valve model developed incorporates the major geometrical and physical valve features (including spring rate) to predict valve performance in response to changes in mass flow rate and internal pressure forces acting within the tested valve types.

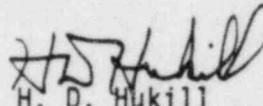
Stable valve performance at TMI-1 (including mass flow rates and percent blowdown) is predicted for a middle ring setting of -50 notches for the Dresser 31739A for a back pressure of 700 psig and steam inlet pressures between 2500 and 2750 psig. The lower ring setting was specified by B&W in accordance with Dresser recommendations for providing ample clearance between the lower ring and the disc holder when the valve is closed. Therefore, TMI-1 plant specific ring settings are as follows:

Lower ring + 8 notches
 Middle ring -50 notches
 Upper ring -48 notches

The reports describing the analyses performed to predict pressurizer safety valve performance during relief conditions of steam and water for Dresser Industries Model 31739A are available on site for review.

Further, GPUN has performed a 10FR50.59 evaluation of the ring settings and determined that there is no unreviewed safety question or Tech. Spec. Change required.

Sincerely,


H. D. Hukill
Director, TMI-1

HDH/LWH/lr:549e

cc: R. Conte
J. Van Vliet

Reference - NRC ltr 9/29/81
GPUN ltr 12/3/82 (5211-82-257)
NRC ltr 9/9/83
GPUN ltr 9/9/83 (5211-83-242)
NRC ltr 8/22/84

0187A



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555
May 14, 1985

Attachment 2

Docket No. 50-289

Mr. Henry D. Hukill, Vice President
and Director - TMI-1
GPU Nuclear Corporation
P. O. Box 480
Middletown, Pennsylvania 17057

Dear Mr. Hukill:

SUBJECT: SUPPLEMENT TO SER FOR THREE MILE ISLAND, UNIT 1 SAFETY
AND RELIEF VALVE TESTING, NUREG-0737, ITEM II.D.1

Previously you committed to adjust the ring setting of your Dresser Model 31739A code safety valves at TMI-1 so that they would be bounded by the Electric Power Research Institute (EPRI) test results. By letter dated March 4, 1984 you provided new ring settings based on an analysis performed by Continuum Dynamics Inc. through the B&W Owners Group.

One of the important considerations in the performance of safety valves is the specific ring setting adjustment. As indicated in the attached supplementary Safety Evaluation, the new ring settings for the TMI-1 safety valves have been shown to produce full lift and stable valve operations for steam discharge and be bounded by the EPRI test results. Therefore, we find that the information submitted demonstrates the ability of the safety valves to function under expected operating conditions for design basis transients and accidents as defined under NUREG-0737, Item II.D.1.

Sincerely,

A handwritten signature in cursive script that reads "John F. Stolz".

John F. Stolz, Chief
Operating Reactors Branch #4
Division of Licensing

cc: See next page

SUPPLEMENT TO SAFETY EVALUATION REPORT
TMI ACTION--NUREG-0737 (II.D.1)
RELIEF AND SAFETY VALVE TESTING
THREE MILE ISLAND UNIT 1
DOCKET NO. 50-289

MAY 1985

Introduction

In the TMI-1 SER for NUREG 0737, Item II.D.1, Performance Testing of Relief and Safety Valves, the applicability of the testing performed by the Electric Power Research Institute (EPRI) to the TMI-1 safety valves is discussed. One of the important considerations in the performance of the safety valves is the specific ring setting adjustment.

In a letter (Reference 1) dated October 28, 1983 GPUN committed to adjust the ring setting of the Dresser Model 31739A code safety valves at TMI-1 so that they would be bounded by the EPRI test results (Reference 2). Reference 3 presents the ring settings for the TMI-1 safety valves. The ring settings were based on an analysis performed by Continuum Dynamics Inc. (CDI) through the B&W owners group (see Reference 4).

This supplement to the Safety Evaluation Report in the TMI-1 relief and safety valve testing presents an evaluation of the ring settings based on a review of the CDI report (Reference 4) and the EPRI safety and relief valve test report (Reference 2).

Evaluation of TMI-1 Ring Settings

CDI used the valve dynamics simulation code COUPLE, which they validated against the EPRI safety valve test data (Reference 2), to optimize the ring settings of six B&W nuclear plants for steam discharge, including Three Mile Island Unit 1. The study optimized the ring settings for the expected range of inlet and back-pressures under steam discharge conditions. The resulting ring settings for TMI-1 are:

Upper ring	-48 notches
Middle ring	-50 notches
Lower ring	+ 8 notches

Reference 2 contains information for five tests that bound the TMI-1 ring settings.

Tests 322 and 324 have middle ring settings of -40 and -60 which bound the TMI-1 middle ring setting of -50. The test backpressures were 609 psia and 664 psia respectively. Both tests were stable and exhibited full lift, full discharge, and blowdowns of 11.1% and 12.6% respectively.

A comparison between tests 322, 324 and 1011 demonstrated that valve performance is not sensitive to lower ring settings. The lower ring settings were +11, +11 and +5 respectively, which bounded the TMI-1 lower ring setting of +8, and produced similar stable results. Test 320 demonstrated the effect of backpressure on valve lift and discharge. With a 866 psia backpressure, valve lift during Test 320 was 44% of rated and discharge was 64% of rated. However, valve performance was stable.

The results of tests 322, 324, 326 and 1011 demonstrated that full lift, full discharge and stable valve operation is achieved with back pressures between 196 psia and 669 psia which bounds the TMI-1 back pressure of 500 psia.

Conclusion

The ring settings for the TMI-1 safety valves have been shown to produce full lift and stable valve operations for steam discharge conditions by analysis and by comparison with the EPRI test results. Therefore, we find that the information submitted demonstrates the ability of the safety valves to function under expected operating conditions for design basis transients and accidents as defined under NUREG 0737, Item II.D.1.

References

1. J. F. Stolz, NRC from H. D. Hukill, GPU Nuclear, 5211-83-260, October 28, 1983.
2. EPRI PWR Safety and Relief Test Program Safety and Relief Valve Test Report, EPRI NP-2628-SR, December 1982.
3. J. F. Stolz, NRC from H. D. Hukill, GPU Nuclear, 5211-85-2046, March 4, 1985.
4. Safety Valve Dynamic Analysis for Dresser Industries' 31739A and 31759A valves, Rev.1, Prepared by Continuum Dynamics, Inc., for Babcock and Wilcox, C.D.I. Report No. 83-4, December 1983.

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