JUL 10 1992

bcc to DMB (IE51)

bcc distrib. by RIV:

R. D. Martin	Resident Inspector
DRP	Section Chief (DRP/A)
Lisa Shea, RM/ALF, MS: MNBB 4503	MIS System
DRSS-FIPS	RSTS Operator
Project Engineer (DRP/A)	RIV File
DRS	Chief, Technical Support Section

RIV:AC:DRP/A	NRR	D:DRS	AD:DRP	RA
MASatorius;df	MVirgilio	SJCollins	GLConstable	JLMilhoan
7/10/92	7/10/92	7/10/92	7/10/92	7/10/92

per telecon

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per telecon

Entergy Operations

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Route 3, Box 137G
Russellville, AR 72801
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July 9, 1992

1CAN079202

Mr. James L. Milhoan
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

Subject: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
Request for a Temporary Waiver
of Compliance

Dear Mr. Milhoan:

This letter provides the written documentation to follow-up the Arkansas Nuclear One, Unit One (ANO-1) verbal request on July 8, 1992, regarding a Temporary Waiver of Compliance from Technical Specifications Limiting Condition for Operation (LCO) Section 3.1.6.9. This LCO relates to the failure to meet leakage criteria for Reactor Coolant System (RCS) pressure isolation valves. The waiver was requested to allow corrective actions to be implemented to seat an unseated check valve thereby deferring the Technical Specifications requirement to shut down the reactor.

On July 8, 1992, at approximately 0205, Technical Specifications LCO 3.1.6.9 was entered upon determining that a RCS pressure isolation check valve in the 'A' train of the Low Pressure Injection system had back leakage in excess of Technical Specifications limits. This LCO required that the associated Reactor Building outboard isolation motor operated valve be deenergized in the closed position. Disabling this valve rendered the 'A' train of the LPI system inoperable requiring entry into Technical Specifications LCO 3.3.6.

At approximately 1300 on July 8, a conference call was held with members of your staff and representatives of NRR to brief them on the condition. At approximately 1930, a Continued Safe Operation (CSO) determination and the associated work plan to facilitate reseating the check valve was approved by the Plant Safety Committee. The CSO documentation supporting the waiver request was then forwarded to your staff for review. At approximately 2215, a conference call was conducted with members of your

staff and NRR personnel to discuss the verbal waiver request. At approximately 2240, your staff verbally granted a Temporary Waiver of Compliance from Technical Specification LCO 3.1.6.9. The stipulations of the waiver were:

- Waiver was for a duration of 4 hours.
- 4 hour clock would begin when power was restored to the MOV (CV-1401).
- Upon expiration of the waiver time or upon determining that the check valve would not seat, ANO was to close CV-1401, deenergize the valve and enter Technical Specification LCO 3.3.6, adhering to the original 36 hour hot shutdown requirement due to expire at 1400 on July 9, 1992.

At approximately 0046 on July 9, 1992, CV-1401 was reenergized, starting the waiver time clock. The valve was "bumped" open for approximately 1 second and immediately closed. There were no indications that CV-1401 had unseated. The valve was then bumped open for 2 seconds and reclosed at which time the check valve (DH-17) immediately seated. There was a very small amount of leakage after the initial actions as indicated by a slow increase in pressure. However, during the process of quantifying the amount of leakage, it decreased to less than measurable. Pressure upstream of CV-1401 did not exceed 40 psig during the bumping evolution. At 0057, CV-1401 was deenergized and disabled in the closed position, exiting the waiver and entering Technical Specification 3.3.6 pending restoration of associated valve line-ups and verification of system operability. LCO 3.3.6 was exited at approximately 0545 on July 9, 1992.

Your cooperation regarding this Waiver of Compliance is greatly appreciated. Should you have further questions regarding the attached information, please contact me.

Very truly yours,

James J. Fisicaro

James J. Fisicaro
Director, Licensing

JJF/RHS/mmg
Attachment

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Attachment to:
1CAN079202 Page 1

TEMPORARY WAIVER OF COMPLIANCE REQUEST

FOR "DH-17 BACK LEAKAGE"

Description of Condition/Requirements for which Waiver is Requested.

On July 8, 1992 at approximately 0010, an ANO-1 operator identified that the instrument isolation valves for pressure transmitter PT-1401 were shut instead of open as required by procedure. PT-1401 is located upstream of check valve DH-17, which is one of the two check valves which serve as inboard Reactor Building (RB) isolation for train 'A' of the Low Pressure Injection System and downstream of outboard RB isolation MOV CV-1401. (See drawing attached.) This pressure instrument, in conjunction with PT-1009, which senses pressure between the two check valves, is used to verify the leak tightness of the check valves.

PT-1401 being isolated had resulted in a failure to identify the slow buildup of pressure between DH-17 and CV-1401 due to slight back leakage through the valve. The line downstream of DH-17 is normally at 600 psig since the Core Flood Tank is connected to it. The back leakage through DH-17 eventually equalized pressure across the valve and resulted in the valve becoming unseated. The normal means of bleeding off pressure upstream of DH-17 is through a 3/8 inch instrument line which will not pass sufficient volume to reseat the check valve.

After verifying that the back leakage through DH-17 was in excess of the 5 gpm Technical Specification limit, the valve was declared inoperable and Technical Specification LCO 3.1.6.9 was entered at approximately 0205.

Technical Specification 3.1.6.9 which covers Primary Coolant System Pressure Isolation Valves, specifies two separate LCO's, one of which must apply, either:

1. The high pressure portion of the affected system must be isolated from the low pressure portion (the motor operated valve shall remain closed and power supply deenergized) within 4 hours and *Technical Specification 3.3.6 must then be applied. (LPI "A" INOP)

or

2. Be in hot shutdown within the next 6 hours and in cold shutdown within the following 30 hours.

* With the motor operated valve deenergized, one train of the LPI system is incapable of performing its safety function. Technical Specification 3.3.6 requires initiation of reactor shutdown and hot shutdown within 36 hours, and if not corrected, requires cold shutdown within an additional 72 hours.

At approximately 0205, the power supply to CV-1401 was deenergized and the action statement for Technical Specification 3.3.6 was entered.

ANO is respectfully requesting a temporary Waiver of Compliance from the action statement of T/S 3.1.6.9 so that CV-1401 may be reenergized and opened slightly to bleed off the backpressure on DH-17. The valve will only be open for a few seconds. It is expected that this action will result in reestablishment of adequate differential pressure across the check valve to allow it to seat.

ANO believes that 4 hours would be a sufficient waiver duration to safely accomplish the reseating evolution. A special work plan will be used to control the evolution.

Compensatory Actions

During performance of the evolution:

1. A large portion of the LPI discharge piping and the suction piping will be isolated from the flowpath. The isolated sections of suction and discharge piping have control room indication of pressure and will be monitored. The discharge and suction piping will be limited to 260 psig, well within design code allowable stresses.

2. Operations personnel will be stationed at the electrical breaker for CV-1401 in constant communication with the control room. They will trip the breaker if CV-1401 does not respond properly to electrical control signals, allowing manual operation of the valve.

3. Operations personnel at CV-1401 will be in constant communication with the control room. They will report the pressures at the locally mounted test gauge and will manually close CV-1401 in the event of a failure of the motor operator. During the crew brief, the requirement for valve wrenches to be available will be discussed to ensure that sufficient torque can be applied to close the valve.

4. In the event that DH-17 is not seated by this evolution and there is an inability to close CV-1401, the Core Flood Tank, T-2B, discharge isolation valve will be closed to limit the amount of flow out of T-2B. The workplan which will control this evolution contains provisions for returning the CFTs to within Technical Specifications limits. The breaker for this valve will be left in its open position and will be closed only if necessary. Appropriate LCOs will be entered, if necessary.

5. Pressure upstream of CV-1401 will be monitored when opening the valve to ensure that it does not exceed 260 psig. The valve which is a modulating type, will be "bumped" open, then closed while monitoring pressure.

Evaluation of Safety Significance

There are four safety considerations surrounding this evolution:

1. The first consideration is that the evolution progresses in accordance with the work plan and the check valve is seated with the higher differential pressure (DP) applied. Under the controls placed on this evolution, no safety concerns are postulated for this condition.

2. The second consideration is the opening of CV-1401 (i.e., moved off its seat to provide pressure relief), and the check valve fails or leaks severely. This is an extremely unlikely event since during startup from the last outage the check valve was verified to have less than measurable leakage. The pressure equalization permitted the valve to unseat and allow water to flow through it. The valve would be in a static environment so when a DP is applied across the valve, the DP will reseat the valve and stop flow.

   If the valve did fail or leak severely, the CFT could rapidly drain to the BWST. This is also unlikely due to the controls established by the workplan. In addition, other isolation capabilities in the system are available to prevent CFT draindown. However, if the CFT did drain, the plant would still be in Technical Specification 3.3.6 and no equipment would be damaged.

3. The third consideration is the classic Event V ISLOCA per WASH-1400. This would occur if the MOV was opened, DH-17 check valve fails, and DH-14B check valve currently retaining RCS pressure were to fail. Again this is extremely unlikely given the controls surrounding this evolution and the controlled manner in which the MOV will be manipulated.

   To assess the likelihood of this chain of events, the probability has been calculated. The frequency of the second check valve (DH-14B) leaking or rupturing (using generic industry data) is 9.46E-07/hr. Therefore, the probability of the valve failing during the time period of concern, assumed to be 10 minutes (well above that required), is:

   9.46E-07/hr(10/60) = 1.58E-07

   The probability of the first valve (DH-17) not seating with the higher DP applied is 1.63E-03. Therefore, the probability of both check valves failing to hold back RCS inventory can be conservatively estimated to be:

   1.58E-07(1.63E-03) = 2.57E-10

   This does not consider that CV-1401 may be closed to stop the loss of RCS inventory. Therefore, the likelihood of both check valves failing to hold pressure is very remote.

4. The fourth consideration is that activities to seat DH-17 may cause DH-14B to leak or fail in some way. This is postulated to occur due to cycling the pressure between DH-17 and DH-14B and would require the CFT to be isolated or depressurized, thereby increasing the seating force on DH-14B. There are two extremes to consider for this concern. The first is that when the MOV is cracked open, DH-17 does not reseat, and the pressure between DH-17 and DH-14B slowly decreases. Given that DH-14B is already seated, the pressure drop would only increase the seating force on DH-14B to hold back RCS inventory in a leak tight manner. The second extreme to consider is

that the MOV is opened suddenly, DH-17 does not reseat, and pressure between the valves decays in a rapid uncontrolled manner. If this were to occur, the valve would experience the same increase in seating force as the previous case, hence, DH-14B's pressure retaining ability would only be increased. Therefore, it is unlikely that the check valve seating activities planned would have any detrimental effect on the pressure retaining ability of DH-14B. If DH-14B were to fail, the operator dose would not be significant during manual closure of CV-1401.

Given the above discussion of the safety concerns surrounding this event the level or risk involved with this evolution is very small. This shows that the backseating of the check valve could easily and safely be performed during power operation. A shutdown of the plant to seat the leaking valve is not warranted.

In addition, the system has been evaluated for a complete loss of the discs in both CV-1401 and DH-17. This is an extremely conservative evaluation. It is not credible that DH-17 would fail completely open simultaneously with CV-1401 failing completely open. The resultant pressures in the event that both valves failed completely open would be less than 320 psig in the LPI discharge piping and less than 260 psig in the last section of test and recirculation piping. This pressure is below the maximum allowable working pressure for the LPI and test and recirculation piping utilizing code equations. Therefore, the core flood tank pressure of 600 psig will not produce unacceptable pressures in any piping in the flowpath for this evaluation.

Engineering Evaluation and Basis For No Significant Hazard Consideration

In order to seat DH-17, the Low Pressure Injection (LPI) crossover check valve, a method of producing a differential pressure and backflow is necessary. This will be achieved by momentarily opening the LPI discharge isolation valve, CV-1401, a small amount and allowing backflow from the piping upstream of DH-17 through CV-1401 to the Test and Recirculation Header and ultimately to the Borated Water Storage Tank (BWST). See the attached simplified P&ID for a flowpath. This should develop sufficient backflow and differential pressure to properly seat the valve.

There is a high degree of confidence that this evolution will effectively seat DH-17, meeting the allowable leakage limits. DH-17 was tested on May 5, 1992 by OP-1102.C01 supplement 4, with less than measurable leakage. Following this test, the section of piping between DH-17 and CV-1401 was completely isolated, allowing it to slowly pressurize and remove all differential pressure across DH-17. This went undetected since PT-1401 was isolated by the upstream instrument root valves. Elimination of any differential pressure across DH-17 allowed it to become unseated. A subsequent leakage check has shown an unacceptable reverse flow and the valve has not been reseated. Sufficient backflow to reseat DH-17 cannot be obtained with the available and accessible drains upstream of DH-17 (limited to 3/8" tubing). There has been no plant evolution or component evolution which would cause any degradation or material condition change of DH-17. Therefore, it is felt that as soon as sufficient backflow and differential pressure are applied to the valve it will effectively seat.

The proposed flow path for developing backflow and differential pressure across DH-17 will include a portion of the LPI discharge piping, a portion of test and recirculation header and the BWST. The LPI reactor isolation check valve, DH-14B currently has zero leakage as indicated by PT-1009, leakage detection pressure indicator. The only pressure source for flow through DH-17 when CV-1401 is opened is Core Flood Tank, T-2B, which is maintained at 600 psig, with a volume of approximately 8,000 gallons.

The BWST is vented to atmosphere. It has a capacity of 380,000 gallons, approximately 9,500 gallons per foot of height. The total volume of a core flood tank is approximately 8,000 gallons. The BWST has sufficient capacity to accept the total volume of a core flood tank without overpressurization or overflow.

The portion of the LPI discharge piping included in the flow path has a design pressure of 450 psig. The test and recirculation header up to the last isolation valve has the same design pressure. The unisolable portion of the test and recirculation header, from the last isolation valve, DH-10, to the BWST, has a design pressure of 130 psig.

CV-1401 will be controlled during the evolution to allow a maximum of 260 psig at the LPI discharge header just upstream of CV-1401. The pressure will be controlled by placing a test gauge on a tap just upstream of CV-1401 and monitoring the pressure gauge while CV-1401 is momentarily cracked open. A pressure of 260 psig immediately upstream of CV-1401 would result in a pressure less than 210 psig at the last section of the test and recirculation header. This has been calculated to be within the code allowable stresses for that piping.

CV-1401 is designed and tested to close with a differential pressure of 568 psig, with an associated thrust of 14,977 lbs. Actual thrust of the motor operator as measured at the last outage was 33,886 lbs. Therefore, the motor operator can fully close CV-1401 with full core flood tank pressure of 600 psig across the valve. The motor operator cannot close the valve against full Reactor Coolant pressure. It will close the valve most of the way. The valve can then be manually closed against full RCS pressure. A force of approximately 180 lbs. on the handwheel is sufficient to close against approximately 2525 lbs. differential pressure across the valve. (Reference VCV-1401-10) Actual RCS differential pressure is expected to be less than 2150 lbs.

In addition, the system has been evaluated for a complete loss of the discs in both CV-1401 and DH-17. This is an extremely conservative evaluation. It is not credible that DH-17 would fail completely open simultaneously with CV-1401 failing completely open. The resultant pressures in the event that both valves failed completely open would be less than 320 psig in the LPI discharge piping and less than 250 psig in the last section of test and recirculation piping. This pressure is below the maximum allowable working pressure for the LPI and test and recirculation piping utilizing code equations. Therefore, the core flood tank pressure of 600 psig will not produce unacceptable pressures in any piping in the flowpath for this evolution.

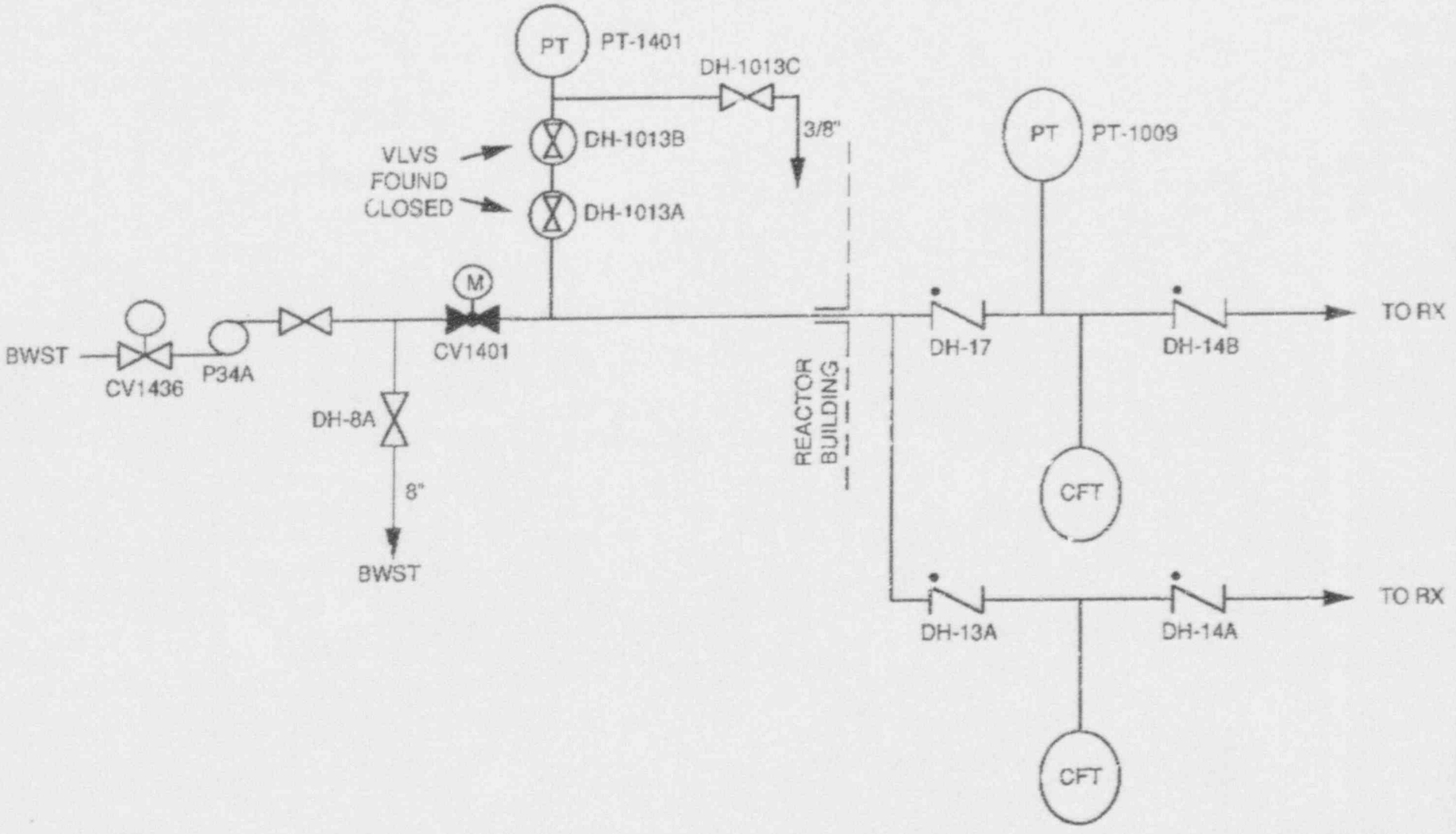
A review of the maintenance records was conducted for valves DH-14B, DH-17, and CV-1401. This included NPRDS information for similar valves. There were instances of body-to-bonnet leakage being corrected on the check valves. One instance of seat leakage by CV-1401 was caused by foreign material (metal shavings) in the valve seat. While there were instances of seat leakage contained in the NPRDS data from other plants, they were attributed to various causes and did not appear to represent any significant generic concern. The NPRDS data also confirmed that the failure rates of one ANO check valve type was less than the industry average and no failures were reported for the other type check valve. This review supports a conclusion that the valves have proven to be reliable in service. No present nonconforming conditions exist at ANO-1 on the subject valves which would impact operability.

Based on the safety evaluation discussions, the controlled work plan and compensatory measures identified herein, we conclude that the temporary Waiver of Compliance as requested offers no significant hazards.

Basis for No Environmental Consequences

This request for a temporary waiver of compliance does not have a significant affect, impact, or change on the quality of the human environment at ANO. This request, when implemented, does not impact the ANO Unit 1 Environmental Report - Operating License (ER-OL). Therefore, the request does not significantly involve irreversible environmental consequences.

ANO LPI SYSTEM SIMPLIFIED DRAWING



(SEE UNIT 1 SAR P&IDs
M-230 AND M-232)

P.11/11

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