



ARKANSAS POWER & LIGHT COMPANY

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August 17, 1983

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Director of Nuclear Reactor Regulation  
ATTN: Mr. J. F. Stolz, Chief  
Operating Reactors Branch #4  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555

SUBJECT: Arkansas Nuclear One - Unit 1  
Docket No. 50-313  
License No. DPR-51  
ANO-1 Safety Valves

Gentlemen:

The purpose of this letter is to provide you with the current status of the ANO-1 Dresser Safety Valve settings. As stated in your letter of April 27, 1983, (1CNA048305) ANO-1 utilizes two Model 31759A Dresser Safety Valves. During the refueling outage that began in November 1982, adjustments were made to both pressurizer safety valves. These adjustments included removal of a lift restriction and adjusting the ring settings.

When ANO-1 was originally supplied with these safety valves, the lift was physically restricted to match the capacity required for the present ANO-1 reactor power rating. Thus, the capacity of the valve could be increased by removing the lift restriction if reactor power rating were increased. A consultant, Continuum Dynamics, Inc. (CDI), has been retained by the B&W Owners Group to apply a computer code, COUPLE, developed for EPRI which predicts blowdown as a function of middle ring position. The code correlates observed blowdown data from the EPRI tests with physical characteristics of the valve by computing a force balance on the disk. Inputs include valve geometry parameters, spring rate and backpressure. The code, COUPLE, was being used to optimize the middle ring setting. However, when COUPLE was run for the 31759A valve with our lift restriction, it indicated choking under the disk instead of in the inlet nozzle because of the limited full lift position. This would create a relatively low pressure under the disk and insufficient upward force to assure full lift operation. Even though there is no test data or experience to verify this result, AP&L has removed the lift restriction to avoid the potential flow degradation implied by this calculation.

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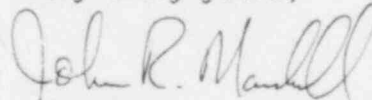
The upper ring of the ANO-1 pressurizer safety valves is set at -48 notches as originally received from Dresser. This setting was chosen due to all EPRI testing, with the exception of one test, being performed with the upper ring set 48 notches (one revolution) below the top of the compensating ports. In the one test which used a different setting, movement of the upper ring seemed to degrade the performance of the valve so the upper ring was returned to its original setting and testing resumed.

The middle ring was adjusted to 93 notches below the seat plane. This setting is geometrically equivalent to the lowest setting (-80) used during EPRI testing of the Model 31739A valve. Since this is the lower bound of the test data, AP&L considers this to be the lowest reasonable setting for this ring. This setting is considered appropriate because a maximum disk lifting force is desired to oppose the downward force resulting from backpressure. Blowdown with this ring setting has been estimated to be 8.5% using the COUPLE code. This is well within the 20% limit recommended by B&W to preclude hot leg voiding.

The position of the lower ring (nozzle ring) controls the steam exit area from the huddle chamber when the valve is closed. To allow the valve to open quickly at its setpoint and to assure a stable transition from closed to full open, the lower ring should be set as high as possible without introducing simmer. To allow for thermal expansion of the valve, the ring has been set by running it up until contact with the disk holder then turning it down seven notches. This procedure results in a lower ring setting of approximately five notches above the seat plane.

Therefore, the ANO-1 safety valves have been set in the manner described above with a setting of (-48, -93, +5) and no lift restriction. These adjustments assure that the ANO-1 safety valves will achieve 100% of their ASME rated capacity.

Very truly yours,



John R. Marshall  
Manager, Licensing

JRM:MCS:s1