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Carolina Power & Light Company

November 2, 1979

FILE: NG-3514(B) SERIAL NO.: GD-79-2816

Office Of Nuclear Reactor Regulation
Attention: Mr. T. A. Ippolito, Chief
Operating Reactors Branch No. 3
United States Nuclear Regulatory Commission
Washington, D.C. 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324
LICENSE NOS. DPR-71 AND DPR-62
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION ON CONTAINMENT PURGING

Dear Mr. Ippolito:

We have completed our review of your letter dated August 29, 1979, and its enclosure which was related to containment purging during normal operation at the Brunswick Steam Electric Plant. This letter is our response to the requests presented in that enclosure. Figure 1 is attached for reference.

1a. No specific provisions have been made to prevent debris from affecting isolation valve closure. However, the probability of such an occurrence is extremely remote for the following reasons:

A. Each penetration is provided with dual isolation valves. These valves are installed in series and operate simultaneously. In the unlikely event that debris is present in the air flow, the first valve would act as a trap for the second valve.

B. The large primary containment isolation valves are all butterfly valves. Since this type valve tends to wipe the seat area clean while closing, the probability of debris jamming the disc is much smaller than it would be for a gate or a globe valve.

C. The only debris that might possibly enter the valves would be pipe insulation which has been blown off at a pipe break in the immediate vicinity of the inside isolation valve. All of the insulation inside containment is reflective type metal insulation. Therefore, it is very unlikely that it would fragment into small enough pieces to enter the pipe stub upstream of the inside isolation valve and continue to be carried by the air flow past that valve and through the penetration to the outside isolation valve.

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1b. Provisions have not been made for testing the availability of the isolation function and the leakage rate of the isolation valves, individually, during reactor operation. The isolation function and the individual leakage rate test are required to be performed once per eighteen months and are scheduled during refueling outages. A valve operability check which cycles the valves is performed every ninety-two days while operating.

1c. The Standby Gas Treatment System (SBGT) filters and associated equipment (fans, heaters, etc.) were primarily designed for post-LOCA operation. As such they would not withstand being subjected to direct LOCA conditions via the large butterfly valves normally used for low pressure venting of the primary containment. However, the portion of the system from containment up to and including the equipment isolation valves is comprised of 150# ANSI (min.) pipe, fittings and valves and could withstand LOCA conditions. In addition, provision has been made for venting of the primary containment under pressurized conditions through two 1/2" valves SGT-V8 and SGT-V9. By utilizing only these valves for periodic containment venting, the post-LOCA equipment would be protected from damage in the event a LOCA occurs during the venting operation.

1d. The containment isolation valves used in the CAC System were specified to operate against containment design pressure, 62 psig. In addition, since these are butterfly valves with symmetric areas on either side of the pivot pin, differential pressure does not significantly affect the operability of the valves. The maximum specified allowable leakage rate at 62 psi differential pressure is 2 cc/hr per inch of seat diameter.

1e. A very conservative analysis has been performed to determine maximum off-site doses resulting from a LOCA which occurs during containment venting operations. The analysis is based on the assumptions that all of the large CAC containment isolation valves are fully opened at time 0 of the LOCA, that the valves require the maximum allowable technical specification limit of 15 seconds to close, and that the release occurs at ground level. No credit was taken for reduced flow during closure, for any filtration, or for pipe friction except valve inlet and exit losses.

The results of the analysis indicate that 6,051 lbs. of steam are released from containment resulting in a whole body (β and γ) dose of 0.161 rem (0.64% of the 10 CFR 100.11 limit) and a thyroid dose of 5.9 rem (2% of the 10 CFR 100.11 limit) at the site boundary.

2. The CAC containment valve isolation override logic has been removed from operation by specified wire removals due to the design not meeting single failure criteria. To perform post-LOCA venting, the valves must now be overridden by the use of jumpers. The necessary jumpers are listed in Emergency Instruction (EI) 1.2 and are associated with valves CAC-V5, V6, V7, V9, V22, V23, V47, V48, V49, V50, V55 and V56. It has also been noted that valves CAC-V4, V7, V8, V9, V10, V15, V49, V50, V55, V56 and V58 could reopen with no operator action upon the clearing or overriding of the isolation signal if the valves were open at the time of the isolation.

A modification is being prepared to correct both the single failure problem and the valve reopening problem mentioned above. This modification will separate the isolation override logic of the two valves in series in each vent path by placing the logic on separate switches. CAC-V7, V9 and V49 isolation override logic will be removed from control switch CAC-CS-2986 and placed on control switch CAC-CS-3452. The possible automatic reopening of the containment valves listed above is being prevented by replacing their two position "open" "close" switches with three position spring-return-to-neutral switches and appropriate holding contacts. A copy of the modification information will be sent to NRC as soon as it is completed.

3. Continental valves supplied by Fisher Controls were not utilized in the vent/purge systems at BSEP.

Should you have any additional questions on this matter, please contact our staff.

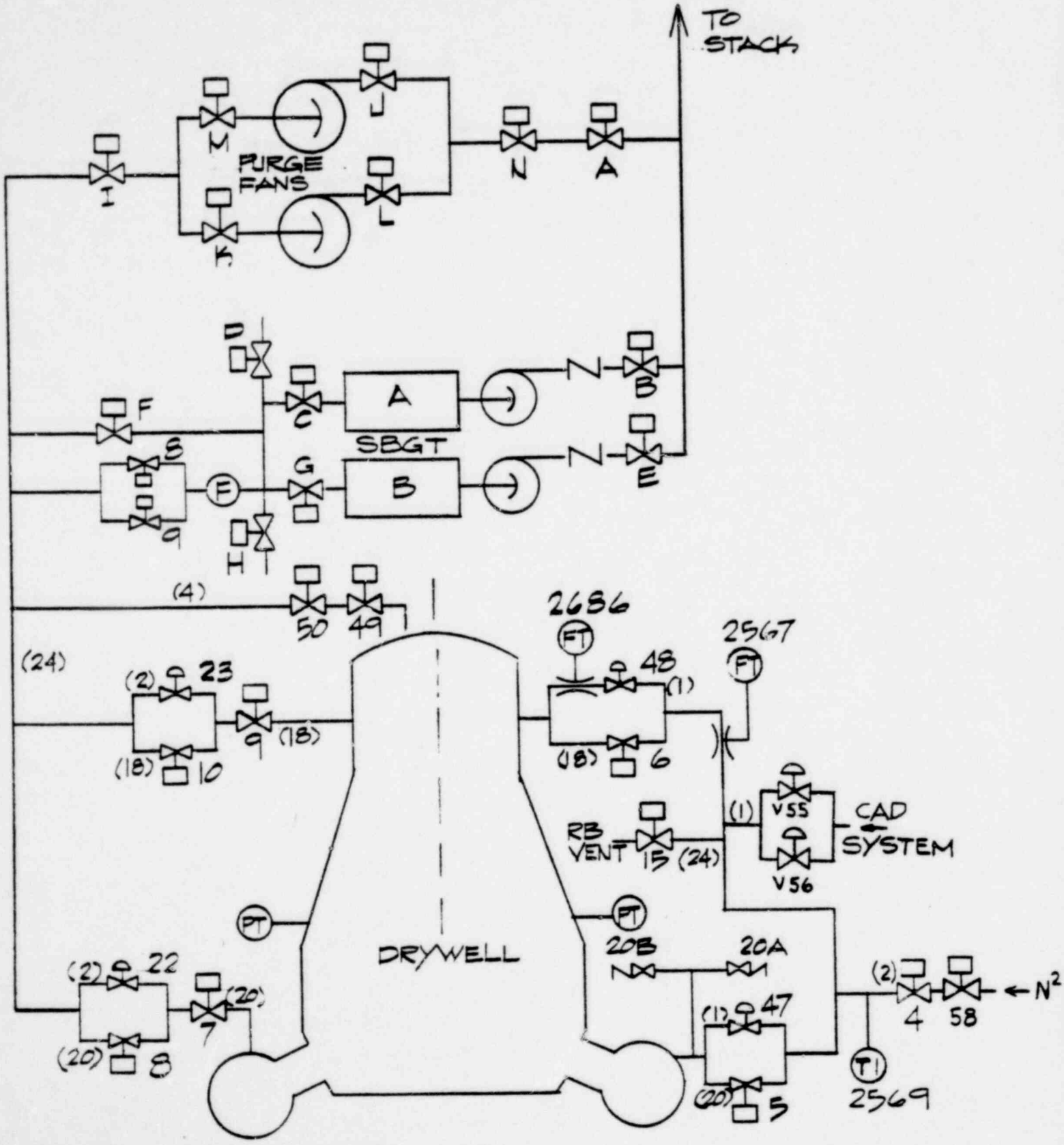
Yours very truly,

E. E. Utley
Executive Vice President
Power Supply & Customer Services

EEU/jcb

Attachment

FIGURE 1



8 - CAC VALVE NUMBER
(20) - VALVE OR LINE SIZE IN INCHES