ATTACHMENT A

Beaver Valley Power Station, Unit No. 1
Proposed Technical Specification Change No. 187

[redacted]

Revise the Technical Specifications as follows:

Remove Page	Insert Page
3/4 6-10	3/4 6-10

CONTAINMENT SYSTEMS

CONTAINMENT STRUCTURAL INTEGRITY

LIMITING CONDITIONS FOR OPERATION

3.6.1.6 The structural integrity of the containment shall be maintained at a level consistent with the acceptance criteria in Specification 4.6.1.6.1.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the structural integrity of the containment not conforming to the above requirements, restore the structural integrity to within the limits prior to increasing the Reactor Coolant System temperature above 200°F.

REPLACE WITH INSERT "A"

SURVEILLANCE REQUIREMENTS

4.6.1.6.1 Liner Plate and Concrete The structural integrity of the containment liner plate and concrete shall be determined during the shutdown for each Type A containment leakage rate test (reference Specification 4.6.1.2) by:

a. a visual inspection of the accessible surfaces and verifying no apparent changes in appearance or other abnormal degradation.

b. a visual inspection of accessible containment liner test channels prior to each Type A containment leakage rate test. Any containment liner test channel which is found to be damaged to the extent that channel integrity is impaired or which is discovered with a vent plug removed, shall be removed and a protective coating shall be applied to the liner in that area.

c. a visual inspection of the dome area prior to each Type A containment leakage rate test to insure the integrity of the protective coating. If a loss of integrity of the protective coating is observed, any vent plug to a test channel which may be in the area where the protective coating has failed shall be seal welded and then the protective coating shall be repaired.

4.6.1.6.2 Reports An initial report of any abnormal degradation of the containment structure detected during the above required tests and inspections shall be made within 10 days after completion of the surveillance requirements of this specification, and the detailed report shall be submitted pursuant to Specification 6.9.2 within 90 days after completion. This report shall include a description of the condition of the liner plate and concrete, the inspection procedure, the tolerances on cracking and the corrective actions taken.

ADD INSERT "B"

(Proposed Wording)

Attachment to "Containment Structural Integrity"

Insert "A"

4.6.1.6.1 Containment structural integrity shall be determined by performing one of the following surveillances:

a. Liner Plate and Concrete The structural integrity of the containment liner plate and concrete shall be determined during the shutdown for each Type A containment leakage rate test (reference Specification 4.6.1.2) by:

1. A visual inspection of the accessible surfaces and verifying no apparent changes in appearance or other abnormal degradation.

2. a visual inspection of accessible containment liner test channels prior to each Type A containment leakage rate test. Any containment liner test channel which is found to be damaged to the extent that channel integrity is impaired or which is discovered with a vent plug removed, shall be removed and a protective coating shall be applied to the liner in that area.

3. a visual inspection of the dome area prior to each Type A containment leakage rate test to insure the integrity of the protective coating. If a loss of integrity of the protective coating is observed, any vent plug to a test channel which may be in the area where the protective coating has failed shall be seal welded and then the protective coating shall be repaired.

b. *Containment Vessel Surfaces The structural integrity of the exposed accessible interior and exterior surfaces of the containment vessel, including the liner plate, shall be determined during the shutdown for each Type A containment leakage rate test (reference Specification 4.6.1.2) by a visual inspection of these surfaces. This inspection shall be performed prior to the Type A containment leakage rate test to verify no apparent changes in appearance or other abnormal degradation.

Insert "B"

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* Surveillance requirement 4.6.1.6.1.b is only applicable for the interval, including the Type A testing conducted during seventh refueling outage, up to the refueling outage for the next scheduled Type A test as per Surveillance requirement 4.6.1.2.a .

ATTACHMENT B

Beaver Valley Power Station, Unit No. 1
Proposed Technical Specification Change No. 187
REVISION OF TECHNICAL SPECIFICATION 4.6.1.6.1

A. DESCRIPTION OF AMENDMENT REQUEST

The proposed amendment would revise surveillance requirement 4.6.1.6.1 to include an alternative to the present surveillance requirement. The alternate surveillance requirement is consistent with the Standard Technical Specifications (STS), and does not contain specific details on the required actions pertaining to test channels. In addition, a footnote was added which limits the duration for which the alternate surveillance is applicable.

B. BACKGROUND

The Beaver Valley Power Station (BVPS) Unit No. 1 containment building has a continuously welded carbon steel membrane, supported by and anchored to the inside of the containment structure. Its function is to act as a leak tight membrane in the event of an accident. The cylindrical portion of the liner is 3/8" thick, the hemispherical dome liner is 1/2" thick, the flat floor liner covering the mat is 1/4" thick, with the exception of areas where the transfer of loads requires either bridging bars or bridging plates. The floor liner plate is covered with approximately 2 ft of reinforced concrete that insulates it from transient temperature effects. At the intersection of the containment liner and the concrete floor, a 1/2" joint is provided. This joint is filled with a 1/2 inch premolded joint filler. The top of the joint is sealed with two component polysulfide sealant. All welded seams are covered with continuously welded test channels which are zoned into test areas by dams welded to the ends of the sections of the channels. Channels in the hemispherical dome and containment mat are covered with concrete while those on the cylindrical liner wall are exposed. These test channels were installed to facilitate leak testing of welds during the containment liner erection. Test ports were provided for each zone of the leak chase channels and, after completion of weld testing, 1/8 inch NPT pipe plugs (vent plugs) were installed in the test ports. These plugs remain in place during subsequent Type A leak-rate testing. The design, analyses, and construction of the BVPS Unit No. 1 containment building is similar to BVPS Unit No. 2, and VEPCO's Surry and North Anna containment buildings. The test channels in BVPS Unit No. 1 are constructed utilizing a smaller channel but installed in a manner similar to BVPS Unit No. 2.

Surveillance requirement 4.6.1.6.1 is normally performed in support of conducting Type A containment leakage rate tests. When preparing to perform this test on Unit No. 2 during the second refueling outage, it was determined that the inspections conducted in support of the surveillance requirement did not include the vent plugs associated with test channels located on the containment basement floor. This resulted in requesting an emergency Technical Specification change on October 9, 1990.

Unit No. 1 was operating at the time the Unit No. 2 inspection was performed. It was unclear as to whether the floor test channel vent plugs had been verified to exist in Unit No. 1 during previous inspections in support of Type A tests. There was no recollection of this verification and procedures do not specifically call out verifying vent plugs associated with the test channels located in the floor. Technical Specification Surveillance 4.6.1.6.1.b infers inspections of the containment liner cylindrical walls because if a vent plug is found missing, the test channel is to be removed. The test channels are visible on the liner walls and their existence is obvious. Surveillance requirement 4.6.1.6.1.c addresses inspections of the containment dome. As a result, we were concerned that we had not verified the existence of the vent plugs on the floor test channel vents and were preparing to inspect this area during the next Unit No. 1 refueling outage, scheduled to begin in April 1991.

On January 21, 1991, Unit No. 1 prepared to shutdown due to an unrelated problem. During this shutdown, containment entries were made since the plant was being cooled to Mode 5 conditions and containment was being returned to atmospheric conditions. On January 22, 1991, a test engineer was performing specific containment integrity checks and determined that a number of vent plugs were missing.

The test channels which were found to have missing vent plugs are located under approximately two feet of reinforced concrete. This factor makes complying with the surveillance requirement of removing the test channels, coating the liner welds and returning the floor to its normal arrangement an extreme hardship. Therefore, we requested and were granted, on January 25, 1991, a Temporary Waiver which supported the plant restart without meeting the current surveillance requirement 4.6.1.6.1 until a Technical Specification change can be approved by the NRC. This amendment request is the follow-up to the above mentioned Temporary Waiver.

C. JUSTIFICATION

The proposed alternate surveillance requirement is consistent with the Standard Technical Specifications and 10 CFR 50 Appendix J. This proposed change adds a surveillance requirement that does not contain specific details on the required actions necessary if a test channel is found to be damaged or is discovered with a vent plug removed. The test channels, as stated in a Stone & Webster (S&W) Report titled "Containment Liner Test Channels at BVPS Unit No. 1" (submitted under Change Request 181/45 on October 1, 1990), are capable of withstanding all loads that might be imposed on them during normal, test, and

upset condition without any loss of function. The presence of the test channels do not in any way impair the performance of the containment liner itself. This report was prepared for Unit No. 1 and is an equivalent report when compared to the Unit No. 2 report submitted with Change Request 2A-46. The NRC recently (1989) determined the acceptability of these test channels as the containment pressure boundary at VEPCOs' Surry and North Anna Power Plants.

The containment liner welds associated with those test channels with missing vent plugs are considered acceptable for continued operation based on the following activities:

1. Sampling at affected floor locations
2. Installation of new stainless steel vent plugs
3. Seventh refueling outage Type A test

The inspection of the containment floor test channel vent plugs resulted in identifying 27 missing and 11 degraded carbon steel vent plugs. These are categorized as follows:

- 15 missing plugs located on the containment floor
- 12 missing plugs located on vent lines attached to containment columns at a 2 foot distance above the containment floor.
- 11 vent plugs located on the containment floor failed when disturbed for inspection purposes.

For each floor location, an effort was made to collect a sample of the contents (if any) of the test channel. In all but two cases samples of dirt, sand, and other materials were collected by forcing a capillary tube into the vent line. In some cases it is believed the capillary tube was extended fully into the test channel and no moisture was collected (it is believed these were dry). The samples will be sent out for analysis and the results will be available in approximately two weeks.

The sampling of the remaining two vent lines resulted in several drops of moisture being collected. Those two vent lines were part of the sample of 11 which had vent plugs disturbed during the inspection. An effort was made to analyze these samples. The quantity was insufficient to provide conclusive results. The pH of the samples was neutral; however, dilution may have made the results inconclusive.

The 12 vent lines located on columns could not be sampled due to configuration. A 90° fitting is located at the vent opening which does not permit insertion of a sampling tool. However, since these lines are elevated above the floor it is unlikely corrosive materials could get into the test channels.

The 11 vent plugs which failed when disturbed for inspection purposes, were located in the general vicinity of the containment sump. In this general area, the floor slopes toward the sump. In the event the sump is overfilled, these vent plugs would be among the first to be wetted by sump water. The containment sump water frequently is comprised of a boric acid solution. This factor would make these 11 vent plugs more susceptible to corrosion.

Visual inspection into the test channels associated with vent connections found with missing plugs using a fiber-optic boroscope was not attempted due to the poor results obtained while inspecting the test channels at Unit No. 2. The boroscope provided very good resolution, but had a limited area of view (approximately 1/4" - 3/8" dia.). The boroscope results were inconclusive because of the limited area of view.

From the above sampling, there is no indication that a corrosive environment exists within the test channels beyond that originally assumed. Additionally, since each floor vent line is either totally or partially plugged with dirt, there is no opportunity for reoxygenation of the test channel in a sufficient manner to promote accelerated corrosion. The Unit No. 2 vent line inspection also resulted in identifying dirt and debris left over from the construction of the containment. It is believed the same can be said for the Unit No. 1 test channel vent lines terminating at floor level.

The test channels are believed to be in good condition on the basis of a lack of conclusive information to prove otherwise. Preliminary assessments have resulted in the conclusion that the liner welds are still capable of performing their intended function.

The replacement of the 27 missing and 11 degraded carbon steel vent plugs with stainless steel plugs will further enhance the ability of liner to properly function. The combination of the carbon steel test channel, stainless steel vent tube and new stainless steel vent plugs forms a redundant barrier to preclude a fission product release. The new stainless steel plugs will also eliminate the source of possible reoxygenation to the test channels and prevent the introduction of fluids to the test channel environment, which could enhance corrosion of the liner.

Additionally, we successfully completed a Type A test in the fall of 1989 during the Unit No. 1 seventh refueling outage. This test provides added assurance that the liner is capable of performing its intended function. The affected vent plugs will be removed during the next scheduled Type A test (late 1992) and reinstalled following completion of that test. This will provide further assurance that the liner welds are capable of performing their intended function.

The completion of the above activities provides assurance of the integrity of the containment liner for the duration of this request for a Technical Specification change.

The proposed wording for the alternate surveillance requirement 4.6.1.6.1.b contains specific requirements to inspect the exposed accessible interior and exterior surfaces of the containment vessel. This inspection will verify that no apparent changes in appearance or other abnormal degradation have occurred.

The visual inspection will continue to include the accessible exposed test channels and associated vent plugs. This proposed change to the Technical Specifications does not relax the requirement to assure the containment liner remains capable of performing its intended function. Repairs, if any, to the liner will be made in accordance with the ASME Boiler and Pressure Vessel Code.

Therefore, this proposed change to include an alternate surveillance requirement 4.6.1.6.1.b does not affect the structural integrity or leak tightness of the containment vessel. The structural integrity of the containment vessel will still be verified by inspections and tests as required by 10 CFR 50, Appendix J, to ensure the containment structure will remain capable of performing its intended function.

D. SAFETY ANALYSIS

The structural integrity and leak tightness of the containment vessel will continue to be maintained to the original design standards for the life of the facility. The proposed change will not affect the capability of the containment vessel to withstand the maximum pressure expected for any postulated accident. The proposed wording for the alternate surveillance requirement is consistent with STS and the inspection criteria as stated in 10 CFR 50 Appendix J. The non-existance of the specific details pertaining to test channels and vent plugs in the alternate surveillance will not affect the ability of the containment vessel to meet its design function. Any apparent changes in appearance or other abnormal degradation discovered during the required inspection of the accessible interior and exterior surfaces of the containment vessel will be corrected in accordance with the ASME Boiler and Pressure Vessel Code prior to plant start-up. This inspection will continue to include accessible test channels, vent plugs and protective coatings.

Therefore, this change is considered safe based on the fact that the proposed amendment will continue to verify the structural integrity and leak tightness of the containment vessel. This verification will ensure that the original design standards, including the ability to withstand the maximum pressure expected in the event of a design basis accident, are being maintained for the containment vessel.

E. NO SIGNIFICANT HAZARDS EVALUATION

The no significant hazards considerations involved with the proposed amendment have been evaluated, focusing on the three standards set forth in 10 CFR 50.92(c) as quoted below:

> The commission may make a final determination, pursuant to the procedures in paragraph 50.91, that a proposed amendment to an operating license for a facility licensed under paragraph 50.21(b) or paragraph 50.22 or for a testing facility involves no significant hazards consideration, if operation of the facility in accordance with the proposed amendment would not:
>
> 1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
>
> 2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
>
> 3) Involve a significant reduction in a margin of safety.

The following evaluation is provided for the no significant hazards consideration standards:

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The structural integrity and leak-tightness of the containment vessel will continue to be maintained. The ability to provide a leak-tight barrier against the uncontrolled release of radioactive material to the environment remains unchanged.

   Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   There would be no change to system configurations, plant equipment or analysis as a result of this proposed amendment. The containment structural integrity and leak-tightness will not be affected by this proposed change.

   Therefore, the proposed changes do not create the possibility of a new or different kind from any accident previously evaluated.

3. Does the change involve a significant reduction in a margin of safety?

   The containment steel liner and external concrete surfaces will continue to provide the same structural integrity and leak-tightness assumed in the original design. Although not required, the existence of the plugged test channels provide additional protection in the form of a redundant barrier to the steel liner welds. The proposed amendment will continue to require that an inspection is conducted on the exposed accessible surfaces to verify no apparent changes in appearance or other abnormal degradation has occurred.

   Therefore, the proposed change does not involve a significant reduction in a margin of safety.

F. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

Based on the considerations expressed above, it is concluded that the activities asscciated with this license amendment request satisfies the no significant hazards consideration standards of 10 CFR 50.92(c) and, accordingly, a no significant hazards consideration finding is justified.

G. ENVIRONMENTAL EVALUATION

The proposed changes have been evaluated and it has been determined that the changes do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed changes meet the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22 (b), an environmental assessment of the proposed changes is not required.

ATTACHMENT C

Beaver Valley Power Station, Unit No. 1
Proposed Technical Specification Change No. 187

Typed Pages: 3/4 6-10
3/4 6-10a

CONTAINMENT SYSTEMS

CONTAINMENT STRUCTURAL INTEGRITY

LIMITING CONDITIONS FOR OPERATION

3.6.1.6 The structural integrity of the containment shall be maintained at a level consistent with the acceptance criteria in Specification 4.6.1.6.1.

APPLICABILITY: MODES 1, 2, 3 and 4

ACTION:

With the structural integrity of the containment not conforming to the above requirements, restore the structural integrity to within the limits prior to increasing the Reactor Coolant System temperature above 200°F.

SURVEILLANCE REQUIREMENTS

4.6.1.6.1 Containment structural integrity shall be determined by performing one of the following surveillances:

a. Liner Plate and Concrete The structural integrity of the containment liner plate and concrete shall be determined during the shutdown for each Type A containment leakage rate test (reference Specification 4.6.1.2) by:

1. A visual inspection of the accessible surfaces and verifying no apparent changes in appearance or other abnormal degradation.

2. a visual inspection of accessible containment liner test channels prior to each Type A containment leakage rate test. Any containment liner test channel which is found to be damaged to the extent that channel integrity is impaired or which is discovered with a vent plug removed, shall be removed and a protective coating shall be applied to the liner in that area.

3. a visual inspection of the dome area prior to each Type A containment leakage rate test to insure the integrity of the protective coating. If a loss of integrity of the protective coating is observed, any vent plug to a test channel which may be in the area where the protective coating has failed shall be seal welded and then the protective coating shall be repaired.

(Proposed Wording)

SURVEILLANCE REQUIREMENTS, Continued

b. *Containment Vessel Surfaces The structural integrity of the exposed accessible interior and exterior surfaces of the containment vessel, including the liner plate, shall be determined during the shutdown for each Type A containment leakage rate test (reference Specification 4.6.1.2) by a visual inspection of these surfaces. This inspection shall be performed prior to the Type A containment leakage rate test to verify no apparent changes in appearance or other abnormal degradation.

4.6.1.6.3 Reports An initial report of any abnormal degradation of the containment structure detected during the above required tests and inspections shall be made within 10 days after completion of the surveillance requirements of this specification, and the detailed report shall be submitted pursuant to Specification 6.9.2 within 90 days after completion. This report shall include a description of the condition of the liner plate and concrete, the inspection procedure, the tolerances on cracking and the corrective actions taken.

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* Surveillance requirement 4.6.1.6.1.b is only applicable for the interval, including the type A testing conducted during seventh refueling outage, up to the refueling outage for the next scheduled Type A test as per Surveillance requirement 4.6.1.2.a .

(Proposed Wording)