ATTACHMENT A

Revise the Beaver Valley Power Station, Unit No. 1
Proposed Technical Specification Change No. 183.

Revise the Technical Specifications as follows:

Remove Pages		Insert Pages	
3/4	6-6	3/4	6-6
3/4	6-7	3/4	6-7
3/4	6-14	3/4	6-14

INTERNAL PRESSURE

LIMITING CONDITION FOR OPERATION

3.6.1.4 Primary Containment internal air partial pressure shall be maintained ≥ 8.9 PSIA and within the acceptable operation range (below and to the left of the applicable containment temperature limit ~~line~~ line(s)) shown on Figure 3.6-1 as a function of river water temperature.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the containment internal air partial pressure < 8.9 PSIA or above the applicable containment temperature limit ~~line~~ line(s) shown on Figure 3.6-1, restore the internal pressure to within the limits within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.4 The primary containment internal pressure shall be determined to be within the limits at least once per 12 hours.

(Proposed Wording)

REPLACE WITH
INSERT "A"

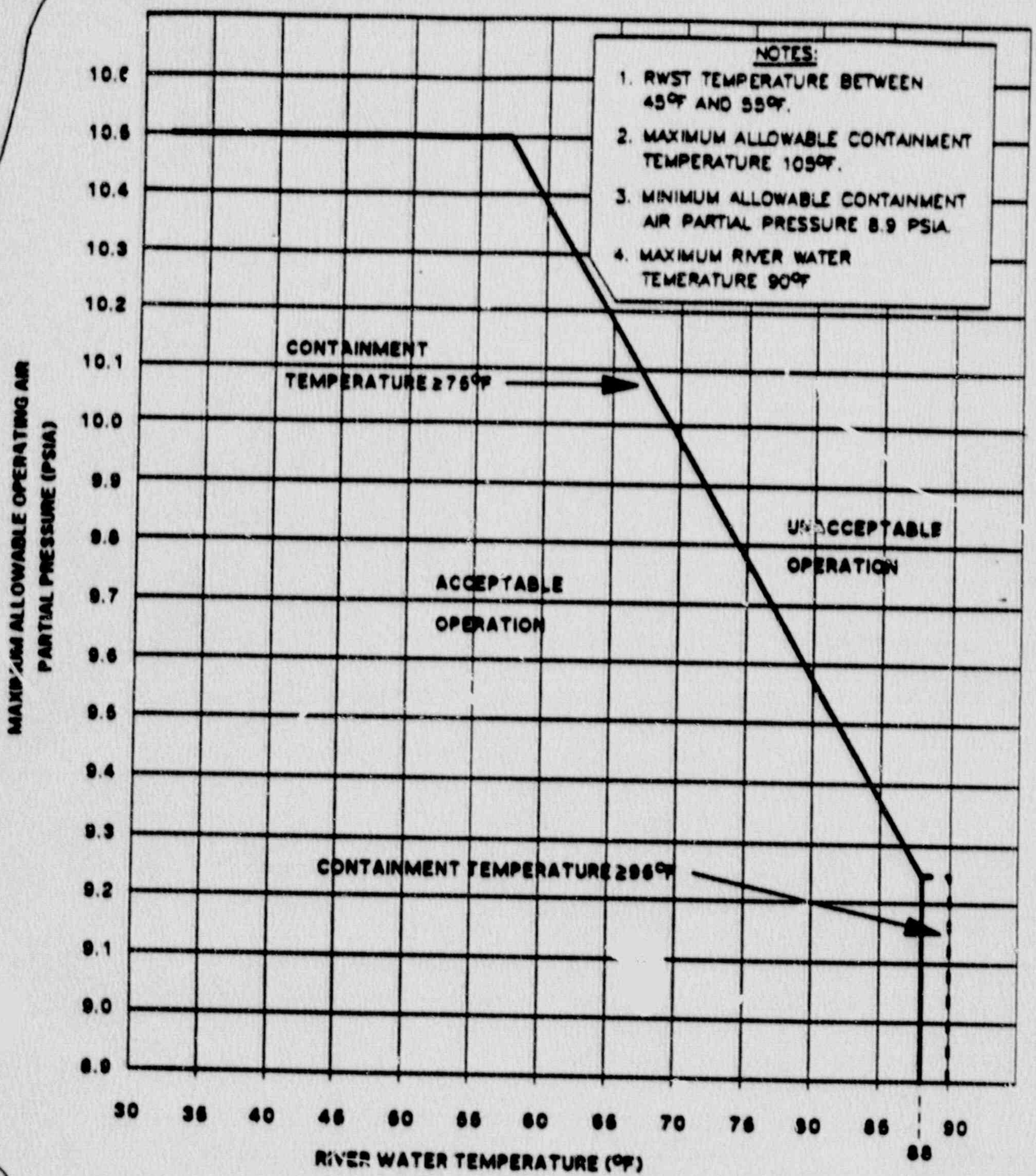

FIGURE 3.6-1

MAXIMUM ALLOWABLE PRIMARY CONTAINMENT AIR PRESSURE VERSUS RIVER WATER TEMPERATURE

(Proposed Wording)

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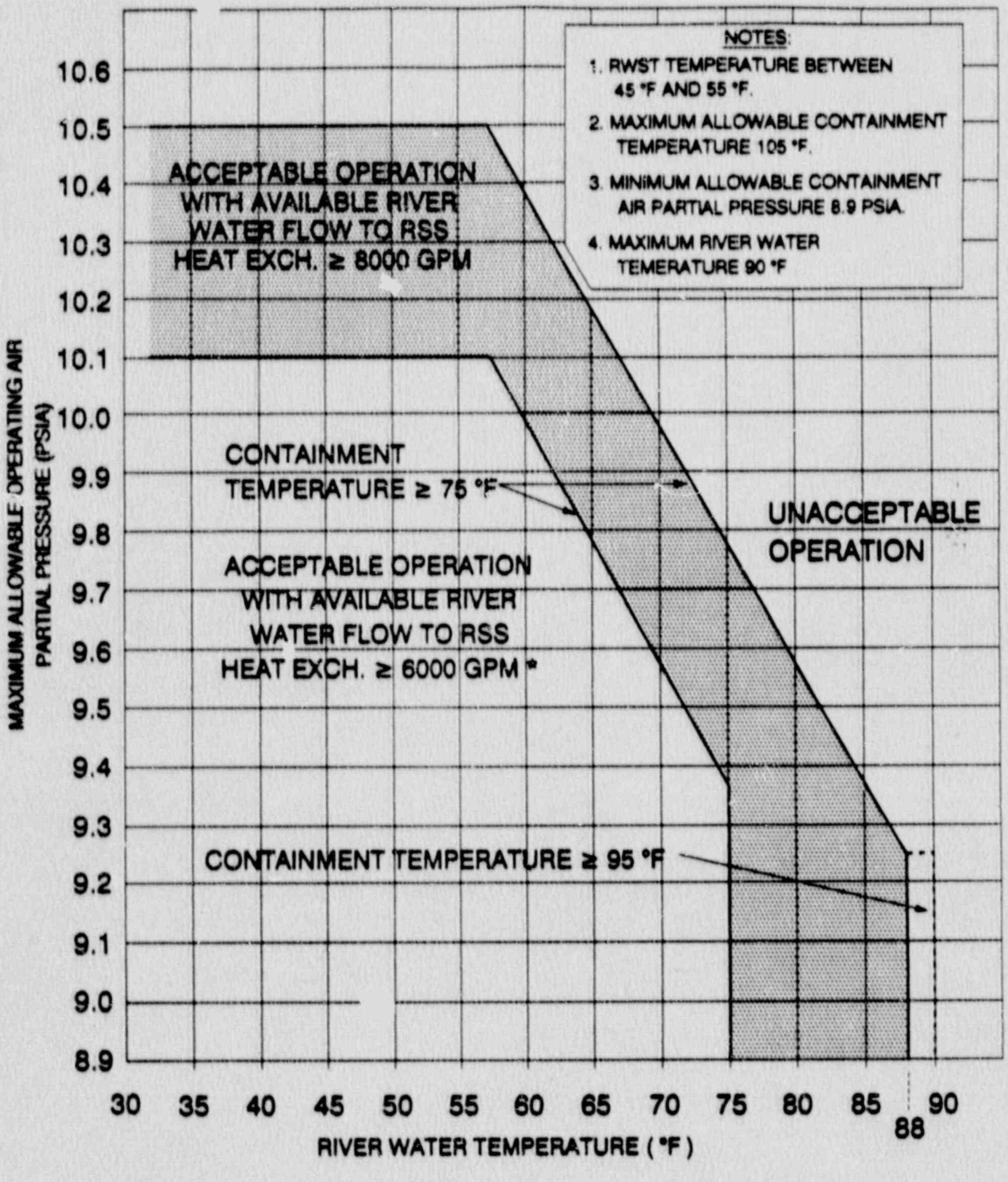

FIGURE 3.6-1
MAXIMUM ALLOWABLE PRIMARY CONTAINMENT AIR PRESSURE VERSUS RIVER WATER TEMPERATURE

* The 6000 GPM is applicable until the eighth refueling outage (8R) only and then reverts to 8000 GPM following 8R.

(Proposed Wording)

e. At least once per 18 months during shutdown, by:

1. Cycling each power operated (excluding automatic) valve in the flow path not testable during plant operation, through at least one complete cycle of full travel.

2. Verifying that each automatic valve in the flow path actuates to its correct position on a test signal.

3. Initiating flow through each River Water subsystem and its two associated recirculation spray heat exchangers, and verifying a flow rate of at least ~~8000 gpm~~.

f. At least once per [illegible] years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

(80[illegible] p[illegible]*)

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* The value of 8000 gpm may be lowered to 6000 gpm provided the additional operational restrictions imposed by Figure 3.6-1 of L.C.O. 3.6.1.4 are applied. This provision is only applicable until the eighth (8th) refueling outage.

(Proposed Wording)

ATTACHMENT B

Beaver Valley Power Station, Unit No. 1
Proposed Technical Specification Change No. 183
REVISION OF TECHNICAL SPECIFICATIONS 3.6.1.4 AND 3.6.2.2

A. DESCRIPTION OF AMENDMENT REQUEST

The proposed amendment would revise the Recirculation Spray System (RSS) heat exchangers river water flow requirement of surveillance requirement 4.6.2.2.e.3 to allow a reduced flow of greater than or equal to 6,000 gpm per train, until the eighth (8th) refueling outage, provided that additional operating restrictions are applied. These additional operating restrictions were added to Figure 3.6-1 of Technical Specification 3.6.1.4 and consist of a maximum allowable containment air partial pressure of 10.1 psia and a maximum allowable river water temperature of 75°F.

B. BACKGROUND

The Containment Depressurization System is designed, as discussed in Section 6.4.2 of the Beaver Valley Power Station Unit No. 1 UFSAR, to reduce the containment pressure below atmospheric pressure in less than 60 minutes following a LOCA and to maintain these conditions for a minimum of thirty (30) days. The Recirculation Spray System draws water from the containment sump and delivers it to spray headers. The recirculated spray water is cooled by heat exchangers, located inside the primary containment building, which use river water (RW) as a cooling medium. There are two (2) heat exchangers per train. The heat removal provided by the heat exchangers augments the Quench Spray System during depressurization and provides long-term heat removal to maintain sub-atmospheric conditions.

The minimum design basis accident river water flow requirements for various components using river water cooling is provided in UFSAR Table 9.9.3. The minimum flow required, under worst case initial conditions, for the two RSS heat exchangers associated with each river water subsystem is 8,000 gpm. This design requirement is reflected in Technical Specification Surveillance requirement 4.6.2.2.e.3.

Surveillance requirement (4.6.2.2.e.3) is performed once per 18 months to demonstrate adequate flow exists through the recirculation spray heat exchangers. During the seventh refueling outage, which ended December 25, 1989, this test was performed and a flow of 8400 gpm was recorded through each recirculation spray Train A and B subsystems.

Other surveillance testing is performed on a quarterly frequency to demonstrate pump and valve operability in accordance with the Inservice Test Program requirements. Since flow is established through the recirculation spray heat exchangers during this quarterly testing, we incorporated a flow measurement step within the surveillance test in December of 1989. This provides an opportunity to more closely monitor changes in flow conditions through the heat exchangers.

It was observed during the quarterly test conducted October 3, 1990, that the "A" Train (1A and 1C heat exchanger) flows were approaching the limits of surveillance requirement 4.6.2.2.e.3. As a result, additional testing was performed on the "A" train using the swing river water pump. This also indicated a significant reduction in flow as compared to the last completed test performed with this arrangement. In order to better quantify the apparent degrading flow as compared to the last completed test performed with this arrangement we performed the 18 month surveillance test which provides a more representative alignment of plant equipment for DBA conditions. This testing was conducted on October 12, 1990, and provided the basis for declaring the "C" heat exchanger of the "A" Train inoperable.

During this cycle, the "B" Train recirculation spray heat exchangers continued to show acceptable flows with less significant flow degradation observed. Flow information is shown on TABLE 1 for each quarterly pump test.

TABLE 1

	A Train (GPM)		B Train (GPM)		Notes
	A Pump	C Pump	B Pump	C Pump	
12/89	9,400	____	9,400	____	1
01/90	____	____	____	8,900	
02/90	8,600	8,700	9,200	____	
05/90	8,700	8,700	9,100	____	
08/90	7,400/8,500	____	8,700	8,600	2, 3
10/90	7,900/8,050	7,600/8,100	____	____	3

Note 1: Clean system following refueling outage
Note 2: Peak clam infestations occurred during July, August, and September
Note 3: Flushed system for 1 hour and obtained adequate gpm flow rate

The test data suggests that the peak clam infestion period had some impact on heat exchanger performance, however, video inspection of the tube sheets does not support excessive flow blockage due to clams. We cannot determine the extent of tube plugging beyond the tube sheet without shutting down and opening the heat exchangers. The "C" heat exchanger is downstream (parallel) of the "A" heat exchanger and has shown a propensity to foul earlier than the "A" heat exchanger. The "A" Train testing in October indicates a significant unexpected increase in system resistance following flushing of the heat exchangers. This resulted in efforts which eventually lead to declaring the "C" heat exchanger of the "A" Train inoperable.

A Temporary Waiver of Compliance from Technical Specification 3.6.2.2 was issued to Beaver Valley Power Station (BVPS) Unit No. 1, on October 19, 1990, to allow continued plant operation with less than 8000 gpm river water flow to the RSS heat exchangers until a one-time amendment request can be issued. This amendment request is the follow-up to the above mentioned Temporary Wavier.

C. JUSTIFICATION

The system design basis is defined by the minimum performance necessary to satisfy the acceptance criteria for the containment analyses. These acceptance criteria are maintaining the peak containment pressure less than the design pressure of 45 psig for all accidents, achieving sub-atmospheric conditions within one hour following a design basis accident, and maintaining sub-atmospheric containment conditions for an extended period following depressurization. Additional criteria are linked to this design basis due to dependencies on the system performance. These are maintaining adequate NPSH for the low head safety injection pumps and the recirculation spray pumps. Each criterion has specific limiting conditions which are comprised of system configuration, assumed failures, operations limits, initial conditions, and safety system performance. The effect of reduced river water flow to the recirculation spray heat exchangers was evaluated for each criterion. Where necessary, compensating restrictions on operating limits were investigated.

Analyses were performed to demonstrate acceptable results for each case using the LOCTIC computer program. The limiting cases have been established by sensitivity analyses. The sensitivity to reduced heat removal capability by the recirculation spray system is generally well understood and can be evaluated qualitatively for some cases. For other cases, LOCTIC program calculations must be made to determine the effects.

The containment peak pressure analysis is not affected by changes in the recirculation spray system. The peak pressure occurs at approximately 12 seconds post-accident while the recirculation spray system is not activated until 300 seconds following a CIB.

The recirculation spray pump NPSH analysis is minimally affected by changes in the heat removal capability. However, reduced heat removal tends to improve the results since the limiting case assumes maximum heat removal to reduce containment pressure.

For these two cases, no additional analyses are necessary. For the remaining cases, LOCTIC runs were required due to the sensitivity of these cases to reductions in the heat removal. The following discussion describes the approach taken to perform these analyses.

The LOCTIC input can be characterized by those parameters which define the physical characteristics of the systems and those which are defined by operating limits and system performance requirements. This characterization is made to distinguish between those parameters which are basically fixed and those over which some control can be exercised within practical limits. The river water flow limit is a system performance requirement Allowance for degradation of the system is the only practical control that exists without physically changing the system. However,if this allowance cannot be shown to be acceptable within the envelope of all other current operating limits,, then this allowance must be rejected unless other limits can be changed to compensate for the effects. Therefore, the approach taken was to decide, based on past analyses, what other operating limits provide the greatest sensitivity to heat removal capability in the river water temperature range of interest and investigate what changes must be made to provide acceptable results at reduced flows.

This approach led to the conclusions that the depressurization time analysis was the limiting analysis for the river water temperature range of interest and that the operating limit which is most sensitive to changes in heat removal capability is the containment air partial pressure. This limit is shown on Proposed Technical Specification Figure 3.6-1. The development of this curve essentially maximizes the allowable air partial pressure by taking advantage of the increased heat removal provided at lower river water temperatures. Therefore, lowering the limit reduces the heat removal requirement and allows reduced flow. LOCTIC runs were performed to determine the new limits which provided acceptable results at reduced river water flow of 6000 gpm per train. The results are shown as a new limit on Proposed Figure 3.6-1 and in Table 2.

Additional runs were made to demonstrate that the NPSH for the low head safety injection pump is adequate and that the peak pressure which occurs following RWST depletion remains sub-atmospheric. For both cases the results were acceptable.

D. SAFETY ANALYSIS

Reduction of the river water flow thru the recirculation spray heat exchangers does not effect the containment peak pressure analysis from a LOCA, but does effect the capability of the

containment depressurization system to depressurize the containment following the accident. A re-analysis of the containment depressurization following a LOCA has been performed using LOCTIC computer code (details of analysis are contained in Table 2). This analysis reduced the assumed river water flow for one train of recirculation spray heat exchangers to 6,000 gpm. The results of this analysis demonstrated that the design basis requirement for the Containment Depressurization System continues to be met at a reduced river water flow of 6,000 gpm provided additional restrictions are placed on allowable river water temperatures and allowable operating containment air partial pressure. As seen in proposed Figure 3.6-1, (Maximum allowable primary containment air pressure versus river water temperature), when the river water flow to the recirculation spray heat exchangers is less than 8,000 gpm but greater than or equal to 6,000 gpm, the maximum allowable river water temperature is 75°F and the maximum allowable containment air partial pressure is 10.1 psia. With these additional restrictions on plant parameters, analysis has shown that with a river water flow to one train of recirculation spray heat exchangers reduced to 6,000 gpm, the Containment Depressurization System continues to be capable of reducing the containment pressure to sub-atmospheric pressure within one hour and maintaining the containment pressure sub-atmospheric following a LOCA.

In order to ensure that the RSS heat exchangers will continue to meet the required river flow requirement of greater than or equal 6000 gpm, assumed in the analysis, we will increase our monitoring of the river water flow to a monthly basis and continue this test frequency, on any train which exhibits a flow of less than 8,000 gpm, until the eighth (8th) Refueling Outage. If our monitoring indicates that a trend exists illustrating a rapid degradation of river water flow, we will take the appropriate actions to place the plant in a safe condition.

Therefore, this change is considered safe based on the fact that the proposed amendment will continue to ensure that the design basis requirements of the Containment Depressurization System will continue to be met.

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?

   Decreasing the river water flow requirements thru the Recirculation Spray Heat Exchangers will not increase the probability of an accident previously evaluated. To ensure that the consequences of any accident previously evaluated will not be increased, the effected plant safety analysis has been re-evaluated. This evaluation has determined that the design basis requirements of the containment depressurization systems will continue to be met with the revised Recirculation Spray Heat Exchanger river water flow. The proposed Technical Specification change will ensure that the assumed river water flow in the revised containment depressurization analysis will remain valid.

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

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

   The proposed change does not involve any plant equipment or operating configurations changes within the plant.

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

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

   The revised Recirculation Spray Heat Exchangers river water flow requirement is based on a re-analysis of the containment depressurization safety analysis. This analysis has determined that with the revised river water flow requirement, the containment depressurization systems will be capable of depressurizing the containment within one hour and maintaining the containment at sub-atmospheric pressure. The proposed Technical Specification changes will ensure that the assumptions of this re-analysis will remain valid.

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 associated 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 amount of any effluents that may be released off site, 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.

TABLE 2 SUMMARY OF LIMITING CASES ANALYZED

Case	Type of Analysis (Limiting Result)	River Water Temp (°F)	Containment Initial Air Pressure (psia)	Contianment Initial Temp. (°F)	Depress Time[1] (Sec.)	Sub-Atmospheric Peak Pressure[2] (psig)	LHSI NPSH[3] (feet)
1	Depressurization Time	57	10.1	75	3560	- - - -	- -
2	Depressurization Time	75	9.37	75	3500	- - - -	- -
3	Sub-Atmospheric Peak	75	9.37	75	- -	(-.22)	- -
4	LHSI NPSH	75	8.9	105	- -	- - - -	11.3

NOTES:

1. Depressurization Time must be less than 3600 Sec. (1 hour).
2. Sub-Atmoshperic peak pressure must be less than 0 psig.
3. LHSI NPSH available, must be greater than 10.6 feet.
4. All cases run with 6000 GPM River Water Flow per RSS train.
5. RSS heat Exchangers combined UA=4373404 at 6000 GPM.
6. Includes RSS Heat Exchanger tube plugging margin.

ATTACHMENT C

Beaver Valley Power Station, Unit No. 1
Proposed Technical Specification Change No. 183

Typed Pages: 3/4 6-6
3/4 6-7
3/4 6-14

INTERNAL PRESSURE

LIMITING CONDITION FOR OPERATION

3.6.1.4 Primary Containment internal air partial pressure shall be maintained ≥ 8.9 PSIA and within the acceptable operation range (below and to the left of the applicable containment temperature limit line(s)) shown on Figure 3.6-1 as a function of river water temperature.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the containment internal air partial pressure < 8.9 PSIA or above the applicable containment temperature limit line(s) shown on Figure 3.6-1, restore the internal pressure to within the limits within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.4 The primary containment internal pressure shall be determined to be within the limits at least once per 12 hours.

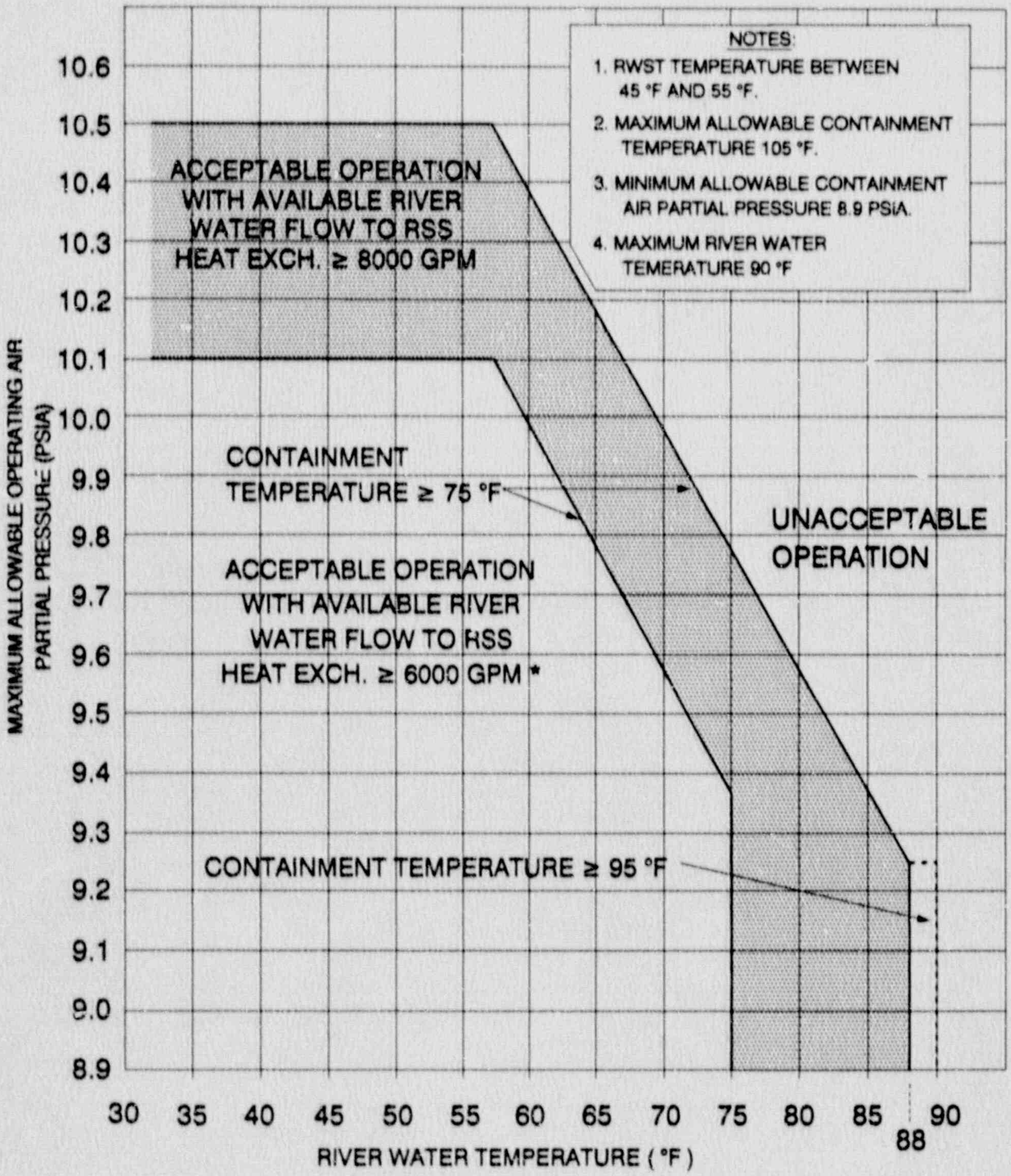

FIGURE 3.6-1

MAXIMUM ALLOWABLE PRIMARY CONTAINMENT AIR PRESSURE VERSUS RIVER WATER TEMPERATURE

* The 6000 GPM is applicable until the eighth refueling outage (8R) only and then reverts to 8000 GPM following 8R.

SURVEILLANCE REQUIREMENTS (continued)

e. At least once per 18 months during shutdown, by:

1. Cycling each power operated (excluding automatic) valve in the flow path not testable during plant operation, through at least one complete cycle of full travel.

2. Verifying that each automatic valve in the flow path actuates to its correct position on a test signal.

3. Initiating flow through each River Water subsystem and its two associated recirculation spray heat exchangers, and verifying a flow rate of at least 8000 gpm*.

f. At least once per 5 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

* The value of 8000 gpm may be lowered to 6000 gpm provided the additional operational restrictions imposed by Figure 3.6-1 of L.C.O. 3.6.1.4 are applied. This provision is only applicable until the eight (8th) refueling outage.

(Proposed Wording)