Exhibit B

License Amendment Request Dated March 1, 1988

Docket No. 50-263
License No. DPR-22

Exhibit B consists of marked up pages for the Monticello Nuclear Generating Plant Technical Specifications showing the proposed changes as listed below:

Page
93
95
97
99

3.0 LIMITING CONDITIONS FOR OPERATION

3.4 STANDBY LIQUID CONTROL SYSTEM

Applicability:

Applies to the operating status of the standby liquid control system.

Objective

To assure the availability of an independent reactivity control mechanism.

SPECIFICATION:

A. Normal Operation

The standby liquid control system shall be operable at all times when fuel is in the reactor and the reactor is not shut down by control rods, except as specified in 3.4.B.

4.0 SURVEILLANCE REQUIREMENTS

4.4 STANDBY LIQUID CONTROL SYSTEM

Applicability:

Applies to the periodic testing requirements for the standby liquid control system.

Objective:

To verify the operability of the standby liquid control system.

SPECIFICATION

A. The operability of the standby liquid control system shall be verified by performance of the following tests:

1. At least once per month -

   Demineralized water shall be recycled to the test tank. Pump minimum flow rate of ~~26~~ 24 gpm shall be verified against a system head of 1275 psig.

2. At least once during each operating cycle -

   a. Manually initiate one of the two standby liquid control systems and pump demineralized water into the reactor vessel. This test checks explosion of the charge associated with the tested system, proper operation of the valves and pump capacity. Both systems shall be tested and inspected, including each explosion valve in the course of two operating cycles.

COMPARISON OF THE MEASURED PUMP FLOW RATE AGAINST EQUATION 2 OF PARAGRAPH 3.4.C.1 SHALL BE MADE TO DEMONSTRATE OPERABILITY OF THE SYSTEM IN ACCORDANCE WITH THE ATWS DESIGN BASIS.

3.0 LIMITING CONDITIONS FOR OPERATION

C. Boron Solution Requirements

At all times when the Standby Liquid Control System is required to be operable:

1. The liquid poison tank shall contain a boron bearing solution that satisfies the volume, concentration and enrichment requirements of Figure 3.4.1, or compliance can be demonstrated by satisfying the following equations:

   Equation 1 (Original Design Basis):

   $$V \geq \left(\frac{71.18}{0.0051xC + 0.998}\right)\left(1+\frac{4821}{1101-E}\right)\left(\frac{19.8}{E}\right)\left(\frac{100}{C}\right) + 128 \text{ gal}$$

   Equation 2 (ATWS Design Basis):

   $$C \geq 8.28\left(\frac{86}{Q}\right)\left(\frac{19.8}{E}\right)$$

   where:

   V - Boron solution tank volume (gal) INDICATED
   E - Boron solution enrichment (atom%)
   C - Boron solution concentration (wt%) MEASURED
   Q - measured pump flow rate (gpm) at 1275 psig

   If Equation 1 is satisfied, but Equation 2 cannot be met, continued plant operation is permissible, provided that:

   a. Compliance with Equation 2 is demonstrated within 7 days or

   b. The Commission shall be notified and a special report provided outlining the actions taken and the plans and schedule for demonstrating compliance with the ATWS Design Basis.

2. The temperature shall not be less than the solution temperature presented in Figure 3.4.2.

3. The heat tracing on the pump suction lines shall be operable whenever the room temperature is less than the solution temperature presented in Figure 3.4.2.

4.0 SURVEILLANCE REQUIREMENTS

C. Boron Solution Surveillance

The availability of the proper boron bearing solution shall be verified by performance of the following tests:

1. At least once per cycle -

   Boron enrichment shall be determined. ~~In addition, the boron enrichment shall be determined any time new chemicals are added to the liquid poison tank.~~ The laboratory analysis to determine enrichment shall be obtained within 30 days of sampling or chemical addition.

2. At least once per month -

   Boron concentration shall be determined. In addition, the boron concentration shall be determined any time water or boron are added or if the solution temperature drops below the limits specified by Figure 3.4.2.

3. At least once per day -

   a. Solution volume shall be checked.

   b. The solution temperature shall be checked.

   c. The room temperature shall be checked in the vicinity of the standby liquid control system pumps.

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FIG. 3.4-1

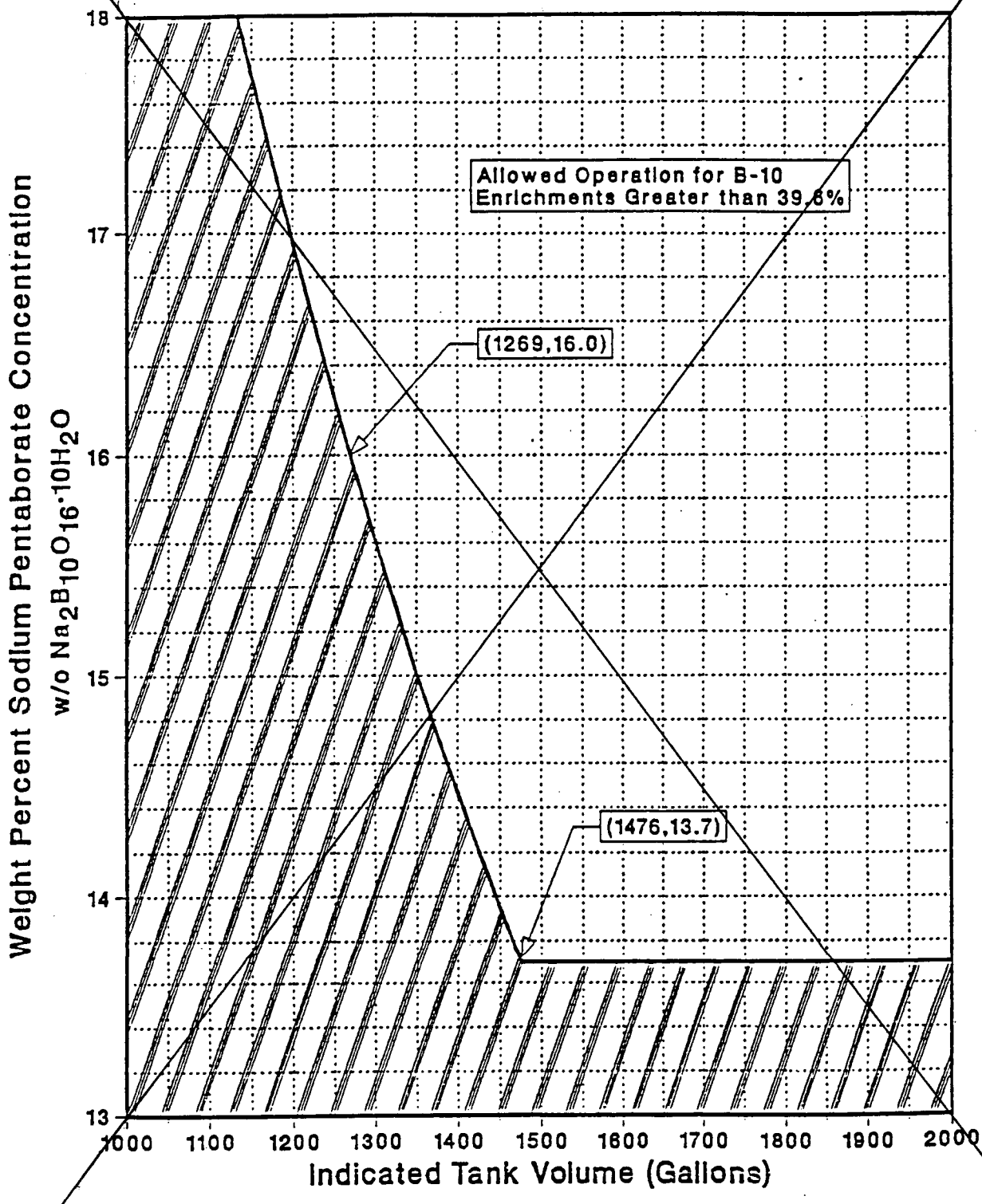

Figure 3.4-1 Sodium Pentaborate Solution Volume Concentration Requirements

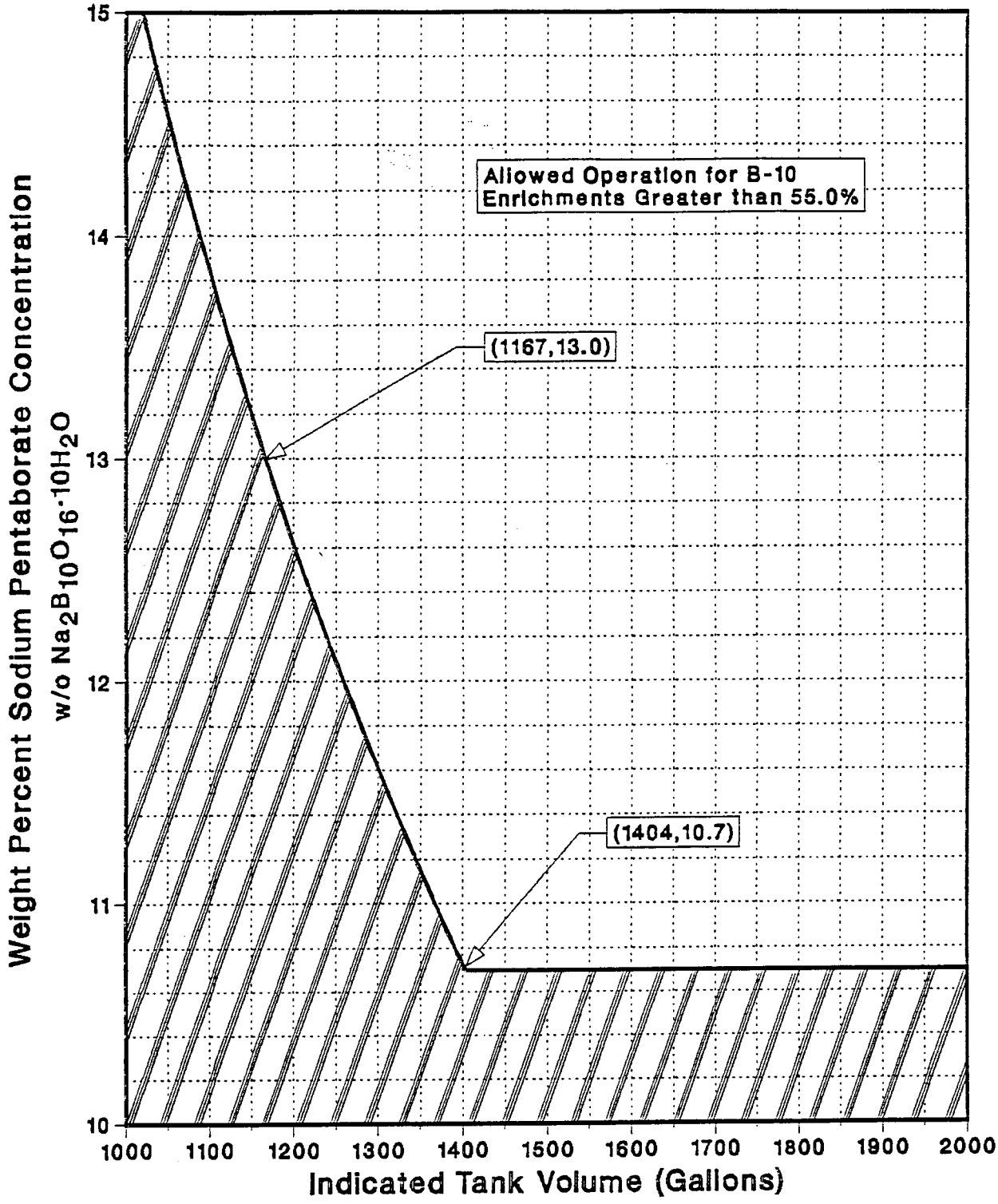

Figure 3.4-1 Sodium Pentaborate Solution Volume Concentration Requirements

Basis 3.4 and 4.4:

A. The design objective of the standby liquid control system is to provide the capability of bringing the reactor from full power to a cold, xenon-free shutdown assuming that none of the withdrawn control rods can be inserted. To meet this objective, the liquid control system is designed to inject a quantity of boron which produces a concentration of boron in the reactor core in less than 125 minutes sufficient to bring the reactor from full power to a 3% delta k subcritical condition considering the hot to cold reactivity swing, xenon poisoning and an additional 25% boron concentration margin for possible imperfect mixing of the chemical solution in the reactor water and dilution from the water in the cooldown circuit.

The time requirement (125 minutes) for insertion of the boron solution was selected to override the rate of reactivity insertion due to cooldown of the reactor following the xenon poison peak.

The ATWS Rule (10CFR50.62) requires the addition of a new design requirement to the generic SLC System design basis. Changes to flow rate, solution concentration or boron enrichment, to meet the ATWS Rule do not invalidate the original system design basis. Paragraph (c)(4) of 10CFR50.62 states that:

> "Each boiling water reactor must have a Standby Liquid Control System (SLCS) with a minimum flow capacity and boron content equivalent in control capacity to 86 gallons per minute of 13 weight percent sodium pentaborate solution" (natural boron enrichment).

The described minimum system parameters (equivalent to ~~26~~ 24 gpm, ~~13.7%~~ 10.7 concentration and ~~39.6~~ 55 atom percent Boron-10 enrichment) will ensure an equivalent injection capability that meets the ATWS rule requirement.

Boron enrichment concentration, solution temperature, and volume (including check of tank heater and pipe heat tracing system) are checked on a frequency to assure a high reliability of operation of the system should it ever be required. Experience with pump operability demonstrates that testing at a three-month interval is adequate to detect if failures have occurred.

The only practical time to test the standby liquid control system is during a refueling outage and by initiation from local stations. Components of the system are checked periodically as described above and make a functional test of the entire system on a frequency of less than once each refueling outage unnecessary. A test of explosive charges from one manufacturing batch is made to assure that the replacement charges for the tested system are satisfactory. A continual check of the firing circuit continuity is provided by pilot lights in the control room.

The relief valves in the standby liquid control system protect the system piping and positive displacement pumps which are nominally designed for 1500 psi from overpressure. The pressure relief valves discharge back to the standby liquid control solution tank.

Exhibit C

License Amendment Request Dated March 1, 1988

Docket No. 50-263
License No. DPR-22

Exhibit C consists of retyped pages for the Monticello Nuclear Generating Plant Technical Specifications showing the proposed changes as listed below:

Page
93
95
97
99

3.4 STANDBY LIQUID CONTROL SYSTEM

Applicability:

Applies to the operating status of the standby liquid control system.

Objective

To assure the availability of an independent reactivity control mechanism.

SPECIFICATION:

A. Normal Operation

The standby liquid control system shall be operable at all times when fuel is in the reactor and the reactor is not shut down by control rods, except as specified in 3.4.B.

4.4 STANDBY LIQUID CONTROL SYSTEM

Applicability:

Applies to the periodic testing requirements for the standby liquid control system.

Objective:

To verify the operability of the standby liquid control system.

SPECIFICATION

A. The operability of the standby liquid control system shall be verified by performance of the following tests:

1. At least once per month -

   Demineralized water shall be recycled to the test tank. Pump minimum flow rate of 24 gpm shall be verified against a system head of 1275 psig. Comparison of the measured pump flow rate against equation 2 of paragraph 3.4.C.1 shall be made to demonstrate operability of the system in accordance with the ATWS Design Basis.

2. At least once during each operating cycle -

   a. Manually initiate one of the two standby liquid control systems and pump demineralized water into the reactor vessel. This test checks explosion of the charge associated with the tested system, proper operation of the valves and pump capacity. Both systems shall be tested and inspected, including each explosion valve in the course of two operating cycles.

3.0 LIMITING CONDITIONS FOR OPERATION

C. Boron Solution Requirements

At all times when the Standby Liquid Control System is required to be operable:

1. The liquid poison tank shall contain a boron bearing solution that satisfies the volume, concentration and enrichment requirements of Figure 3.4.1, or compliance can be demonstrated by satisfying the following equations:

   Equation 1 (Original Design Basis):

   $$V \geq \left(\frac{71.18}{0.0051xC + 0.998}\right)\left(1+\frac{4821}{1101-E}\right)\left(\frac{19.8}{E}\right)\left(\frac{100}{C}\right) + 128 \text{ gal}$$

   Equation 2 (ATWS Design Basis):

   $$C \geq 8.28\left(\frac{86}{Q}\right)\left(\frac{19.8}{E}\right)$$

   where:

   V - indicated Boron solution tank volume (gal)
   E - measured Boron solution enrichment (atom%)
   C - measured Boron solution concentration (wt%)
   Q - measured pump flow rate (gpm) at 1275 psig

   If Equation 1 is satisfied, but Equation 2 cannot be met, continued plant operation is permissible, provided that:

   a. Compliance with Equation 2 is demonstrated within 7 days or

   b. The Commission shall be notified and a special report provided outlining the actions taken and the plans and schedule for demonstrating compliance with the ATWS Design Basis.

2. The temperature shall not be less than the solution temperature presented in Figure 3.4.2.

3. The heat tracing on the pump suction lines shall be operable whenever the room temperature is less than the solution temperature presented in Figure 3.4.2.

4.0 SURVEILLANCE REQUIREMENTS

C. Boron Solution Surveillance

The availability of the proper boron bearing solution shall be verified by performance of the following tests:

1. At least once per cycle -

   Boron enrichment shall be determined. The laboratory analysis to determine enrichment shall be obtained within 30 days of sampling or chemical addition.

2. At least once per month -

   Boron concentration shall be determined. In addition, the boron concentration shall be determined any time water or boron are added or if the solution temperature drops below the limits specified by Figure 3.4.2.

3. At least once per day -

   a. Solution volume shall be checked.

   b. The solution temperature shall be checked.

   c. The room temperature shall be checked in the vicinity of the standby liquid control system pumps.

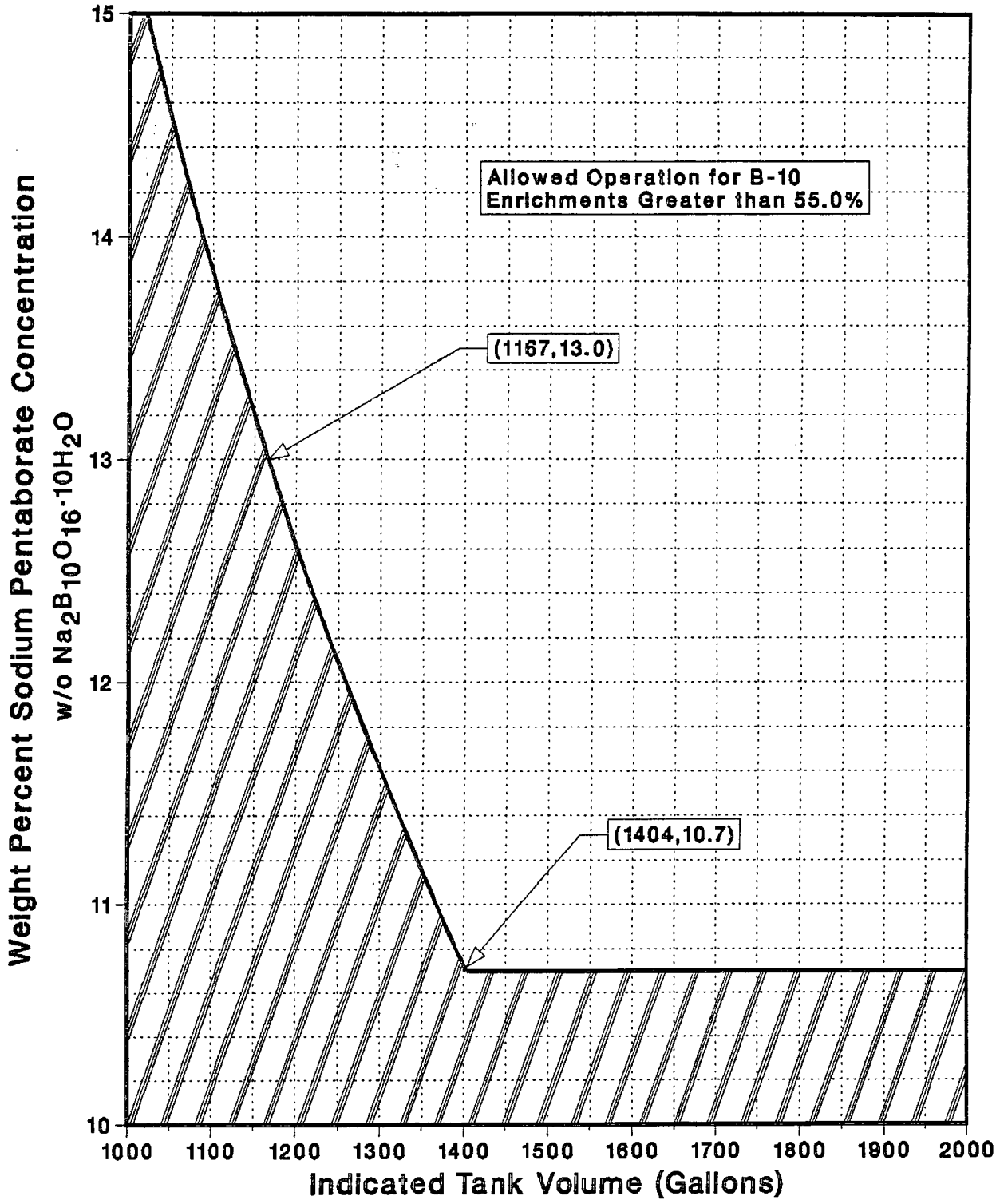

Figure 3.4-1 Sodium Pentaborate Solution Volume Concentration Requirements

Basis 3.4 and 4.4:

A. The design objective of the standby liquid control system is to provide the capability of bringing the reactor from full power to a cold, xenon-free shutdown assuming that none of the withdrawn control rods can be inserted. To meet this objective, the liquid control system is designed to inject a quantity of boron which produces a concentration of boron in the reactor core in less than 125 minutes sufficient to bring the reactor from full power to a 3% delta k subcritical condition considering the hot to cold reactivity swing, xenon poisoning and an additional 25% boron concentration margin for possible imperfect mixing of the chemical solution in the reactor water and dilution from the water in the cooldown circuit.

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