

PROCEDURE COVER SHEET

PENNSYLVANIA POWER & LIGHT CO. SUSQUEHANNA STEAM ELECTRIC STATION		SC-153-101 Revision 1 Page 1 of 8
CHEMISTRY SURVEILLANCE OF UNIT I STANDBY LIQUID CONTROL SYSTEM		
EFFECTIVE DATE <u>10/20/87</u>	EXPIRATION DATE <u>10/20/89</u>	
	REVISED EXPIRATION DATE _____	
PROCEDURE TYPE: (Check only one)	<input checked="" type="checkbox"/> PORC	<input type="checkbox"/> NON-PORC
REVIEW TYPE: (Check only one)	<input checked="" type="checkbox"/> PORC	<input type="checkbox"/> ALTERNATE <input type="checkbox"/> EXPEDITED
PORC MTG. NO. _____		
(N/A if NON-PORC or ALTERN. REV)		

Prepared by <u>James R. Wolfen</u>	Date <u>10-20-87</u>
Reviewed by <u>[Signature]</u>	Date <u>10-20-87</u>
Recommended <u>[Signature]</u> Section Head/Manager	Date <u>10/20/87</u>
Approved <u>[Signature]</u>	Date <u>10/20/87</u>



## 1.0 PURPOSE

The purpose of this procedure is to provide the required monthly surveillance of the weight of sodium pentaborate (SP) in the standby liquid control (SBLC) tank.

## 2.0 REFERENCES

- 2.1 Technical Specifications 4.1.5.b.2
- 2.2 CH-GC-005; Boron-Curcumin Method
- 2.3 CH-CC-006; Boron-Mannitol Method
- 2.4 AD-QA-422 Surveillance Testing Program

## 3.0 SPECIAL TOOLS/EQUIPMENT

- 3.1 Required Chemistry and Test Equipment
  - Spectrophotometer (if analyzed by CH-CC-005)
- 3.2 Additional Tools and Equipment
  - 3.2.1 Polyethylene sample bottle
  - 3.2.2 Dip sampling device
  - 3.2.3 Plastic bag

## 4.0 PRECAUTION

None

## 5.0 PREREQUISITES AND LIMITATIONS

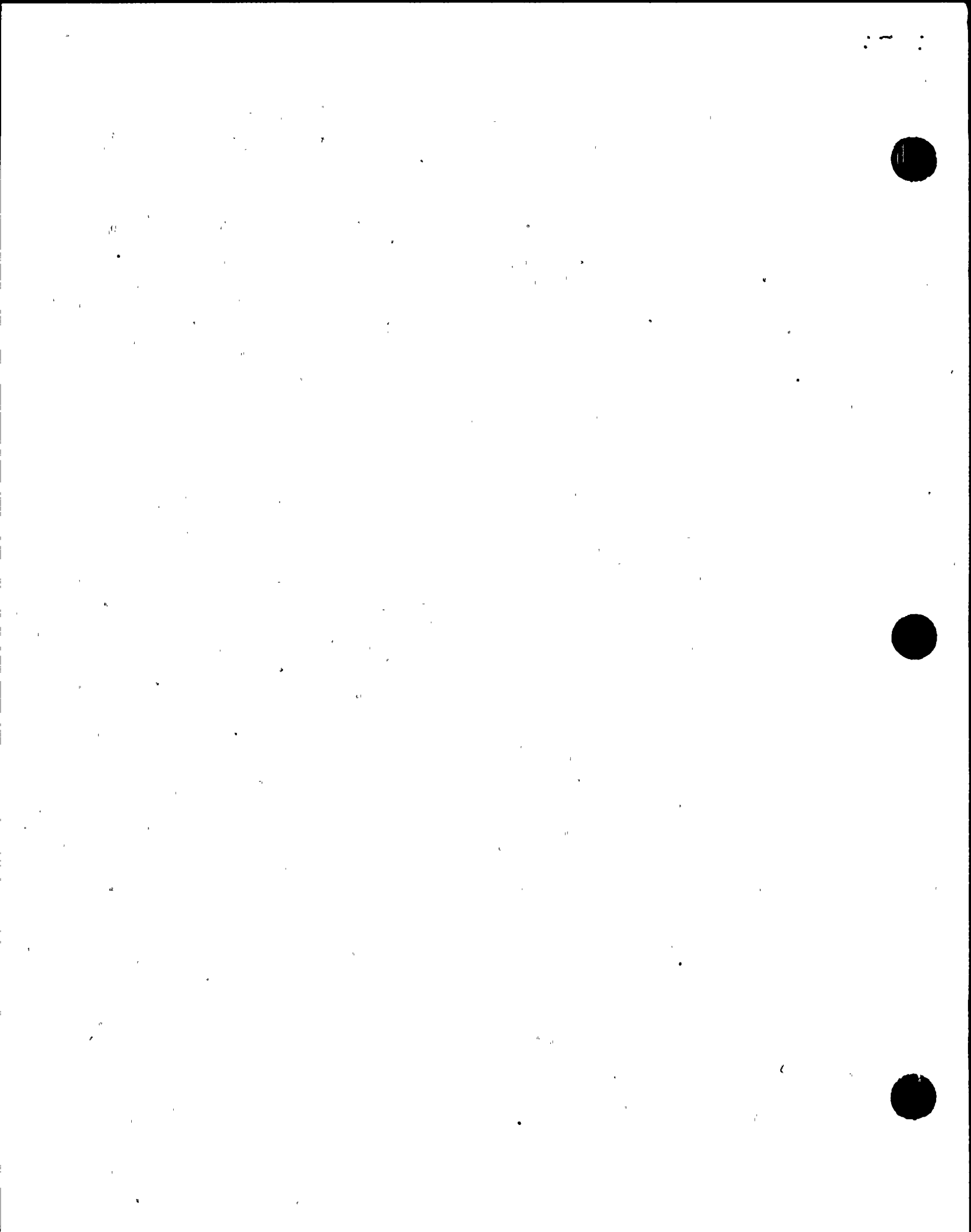
Those steps of this procedure designated by an asterisk (\*) immediately to the left of the step number require entry(ies) to be recorded on the Data Form.

- \* 5.1 Obtain tank level from LI-1R601 in the Control Room. If tank level indication is < 4700 gallons, request Operations to add water to increase level to 4800 gallons. Record initial volume.
- \* 5.2 Obtain final level indication and record.

- \* 5.3 Request air sparge be started to mix tank contents and record date and time of start. Allow tank to mix for at least 60 minutes before sampling. (Normally tank should be air sparged for approximately four hours).

## 6.0 PROCEDURE

- \* 6.1 Indicate reason for the surveillance test by checking the appropriate blanks on form.
- 6.2 Collect a sample from the Standby Liquid Control tank as follows:
  - 6.2.1 Open the top hatch on the tank and rinse off the dip sampling device with the sodium pentaborate solution. Pour the rinses back into the tank.
  - 6.2.2 Obtain a sample with the sampling device and transfer to a clean sample bottle.
  - 6.2.3 Close top hatch on tank.
  - 6.2.4 Place the sample bottle in a clean plastic bag and transfer to Chem Lab.
  - 6.2.5 Notify Control Room that sample has been collected and air sparge can be stopped.
- \* 6.3 Record sampling information and solution temperature (from TIC-1R002) on Form SC-153-101-1. Notify operations if temperature is  $< 80^{\circ}\text{F}$  or  $> 110^{\circ}\text{F}$ .
- 6.4 Analyze sample according to CH-CC-005 or CH-CC-006.
- \* 6.5 Record results as average % sodium pentaborate.



6.6 Calculate the net weight (pounds) of sodium pentaborate in the tank as follows:

$$\% \text{ SP} \times 1.074 \text{ g/ml} \times \text{net tank volume (gal)} \times 8.34 \text{ E-2} = \text{net weight SP (lbs.)}$$

where:  $8.34 \text{ E-2} = 3785 \text{ ml/gal} \div (100\% \times 454 \text{ g/lb})$

$1.074 \text{ g/ml}$  = the density which was used by I&C for level instrument calibration.

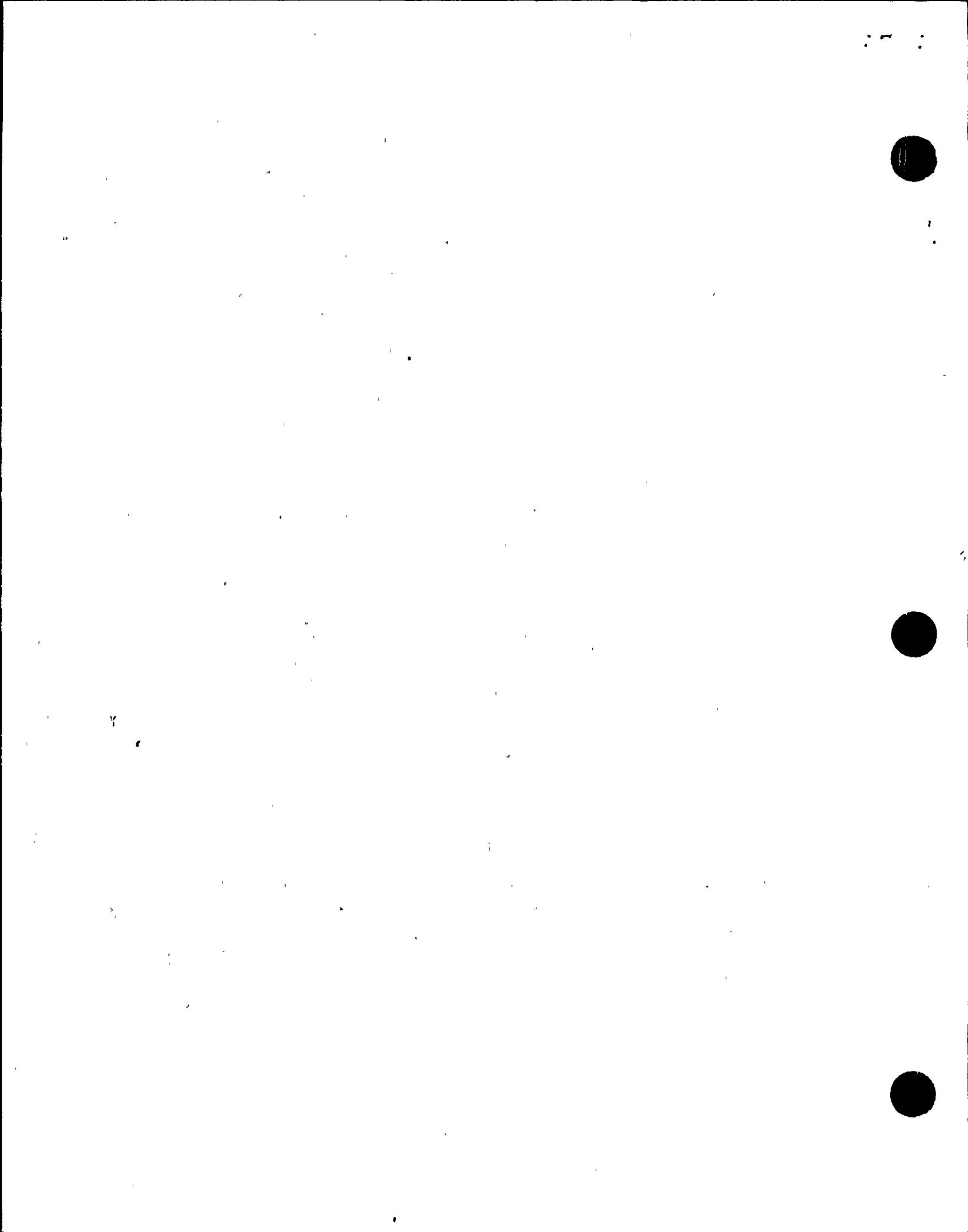
CAUTION

IF RESULTS ARE <5500 POUNDS OF SODIUM PENTABORATE, IMMEDIATELY INITIATE ANALYSIS OF A SECOND ALIQUOT OF THE SAMPLE.

- \* 6.7 Record result under Acceptance Criteria and Procedural Steps Completed.
- \* 6.8 Verify that the solution lies within the approved region indicated on Attachment B for the current concentration and net tank volume.
- \* 6.9 Verify that the temperature of the solution is greater than 80°F but less than 110°F.
- \* 6.10 If an unsatisfactory result is obtained, Shift Supervision shall immediately be notified.
- 6.11 If results are acceptable but net weight is less than 6100 pounds, notify Chemistry Supervision that chemical addition is required.
- \* 6.12 Determine the pounds of sodium pentaborate to be made up:  
pounds SP to be made up = 6300 - pounds SP in tank
- \* 6.13 Calculate pounds of borax and boric acid to be added by Operations in accordance with OP-53-001:  
lbs. borax = lbs. SP to be made up x 0.6461  
lbs. boric acid = lbs. SP to be made up x 0.6285

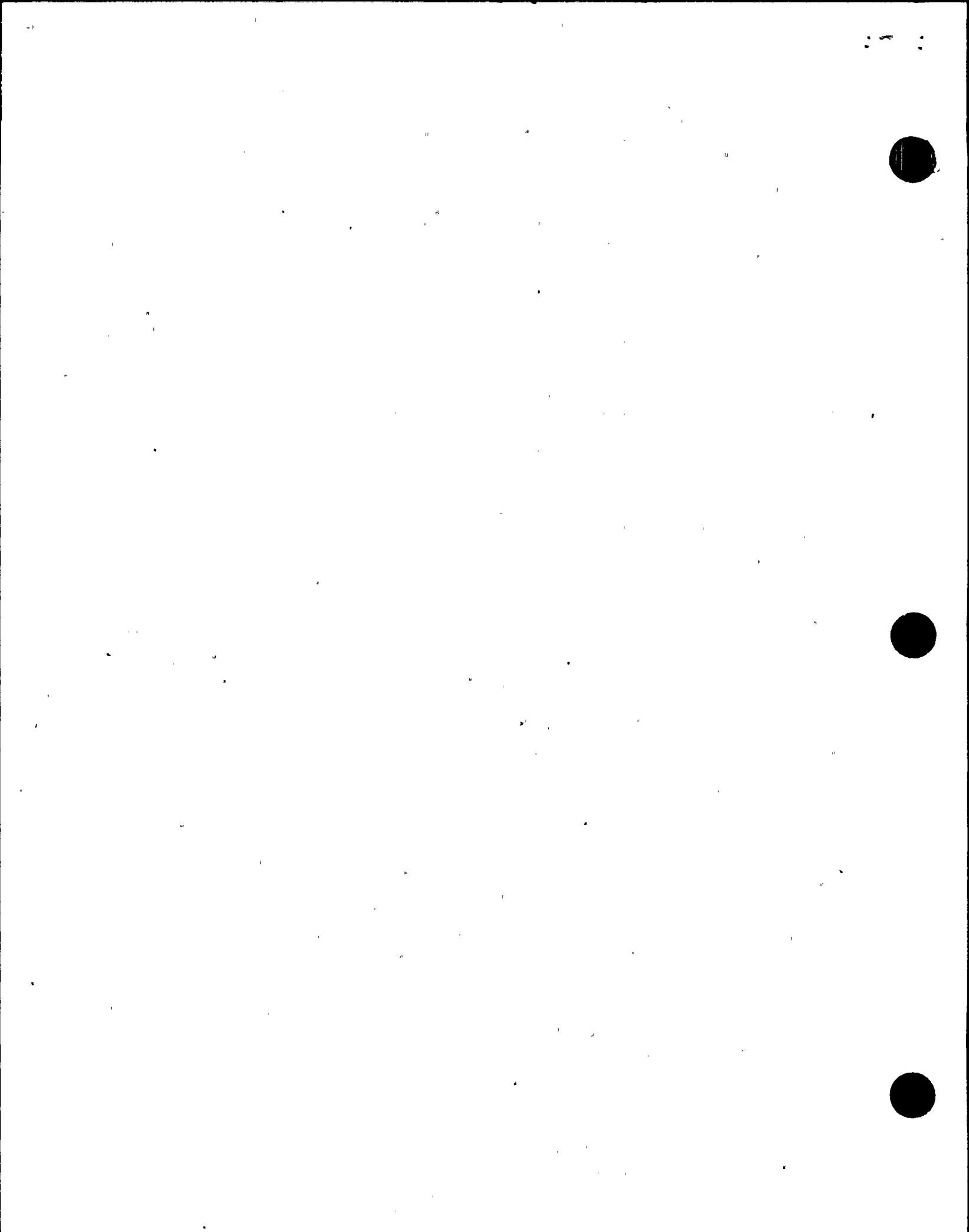
7:0 RECORDS

- 7.1 When the surveillance is complete, the responsible individual should forward the Surveillance Authorization cover sheet, data form and analysis data form (Form CH-CC-005-1 or CH-CC-006-1) to the Chemistry Foreman who will initiate the review process, in accordance with the surveillance program.
- 7.2 Upon completion of the review process, the completed record shall be stored by the DCC.









PREREQUISITES COMPLETED

INITIAL

5.1 Initial SBLC Tank level (LI-1R601) \_\_\_\_\_ gallons

\_\_\_\_\_

5.2 Final SBLC Tank level (LI-1R601) \_\_\_\_\_ gallons

\_\_\_\_\_

5.2 Air sparge started (Date/Time) \_\_\_\_\_/\_\_\_\_\_

\_\_\_\_\_

PROCEDURAL STEPS PERFORMED

INITIAL

6.1 Reason For Surveillance Test:

Once per 31 days \_\_\_\_\_

Water was added to the tank \_\_\_\_\_

Borax and/or boric acid was added  
to the tank \_\_\_\_\_

Solution Temp. dropped below limit \_\_\_\_\_

Other (specify) \_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_

6.3 Sample date/time \_\_\_\_\_/\_\_\_\_\_

Sample No. \_\_\_\_\_ Sampled by \_\_\_\_\_

Solution Temp. (TIC 1R002) \_\_\_\_\_

\_\_\_\_\_

6.5 Average % sodium pentaborate \_\_\_\_\_

6.7 Net weight SP in tank \_\_\_\_\_

$\%SP \times 1.074 \text{ g/ml} \times \text{Volume} \times 8.34E-2 =$  \_\_\_\_\_ pounds

\_\_\_\_\_

6.12 Complete the following if chemical addition is required:

6.12.1 Amount SP to be made up \_\_\_\_\_ pounds

\_\_\_\_\_

6.12.2 Amount of borax to be added \_\_\_\_\_ pounds

\_\_\_\_\_

Amount of boric acid to be added \_\_\_\_\_ pounds

\_\_\_\_\_



SODIUM PENTABORATE SOLUTION  
REGION OF APPROVED WEIGHT - VOLUME

