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August 9, 1985

United States
Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406
Mail Control No. 02241

Attn: Mr. Jack Davis

Dear Jack,

I am enclosing with this letter the corrected sample calculations which you requested in your letter (undated) concerning your review of our License No. 06-19165-01.

A I mentioned to you through our telephone conversation on the matter, all cited discrepancies were the result of typographical errors and have been corrected with this submittal. I hope that with this updated information you can continue your review of the license application. Also, if it would help convince you of our competence in performing leak tests and therefore the necessary calculations, we would be happy to visit you and demonstrate this.

Sincerely,

Andrew R. Soncha Sr.

Andrew R. Soncha, Sr.

AS:ch

enc.

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AMENDMENT TO
"APPLICATION FOR BYPRODUCT MATERIAL LICENSE"
REGISTRY SHEET NO. NR-291-D-102-G

ITEM 15

D. Leak Test Procedures

1). Immersion Type

- a. Dilute .5 ml alcohol with 0.5 ml water at 50 C;
- b. Immerse source using tweezers for one hour in above solution;
- c. Remove source from liquid with tweezers. Pour liquid onto the center of a three inch (3") diameter filter paper;
- d. After air drying for 1-1½ hours, put filter paper into the GM tube and sample stand portion of the Manual Wipe Test System (Nuclear Instrument Scaler Model 1000, Tube and Sample Stand Model TM-220, Thin end window GM tube Model N7232 and 1" thick lead shield model LS-1).
- e. Activity of material on filter paper should not exceed .005 Microcurie (11,100 counts/minute; as adjusted for the efficiency of instrument). If count rate exceeds this value:
 - i). new sources from manufacturer - return to manufacturer for credit;
 - ii). sealed sources from customer - deliver to licensed hazardous waste disposal organization for disposal.

2). Smear Type

"Rad Wipe" smears with attached record folders are wiped across the sealed source. The "Rad Wipe" smear is then tested with the leak test system as described above in part D.1.d to determine radiation levels.

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Sample Calculation

I. Constants Used for Calculations

a). Conversion Factor

$$\begin{aligned}\text{One Microcurie} &= 3.7 \times 10^4 \text{ disintegrations/sec.} \\ &= 22.2 \times 10^5 \text{ disintegrations/min.}\end{aligned}$$

II. Instrument Efficiency

Using a beta source of known activity

$$\text{Efficiency} = \frac{\text{Counts (as read for 1 min)}}{\text{Disintegration/min. (known activity)}}$$

III. Leak Test Activity Calculation

$$\text{Corrected Counts} = \frac{\text{Counts as displayed on Scaler}}{\text{Efficiency}}$$

Note: Counts will be for a 1 minute time period.

$$\text{Activity} = \frac{\text{Corrected Count Reading}}{\text{Conversion Factor}}$$

$$\text{Activity} = \frac{11,100/\text{min.}}{22.2 \times 10^5 \text{ Disintegrations/min/microcurie}} = .005 \text{ microcurie}$$

Note: The 11,100 Counts/Min. is just for example purposes.