


**Veterans  
Administration**

August 27, 1982

• Glen D. Brown, Chief  
Technical Program Branch  
Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Dr., Suite 1000  
Arlington, TX 76012



Ref: License No. 05-01401-02, Docket No. 30-01234

Dear Mr. Brown,

The following is our response to your letter of August 17, 1982, which detailed three items of noncompliance observed by Mr. R.C. Brown during his inspection of July 13-14, 1982.

Item 1. Failure to comply with the requirement for quarterly linearity checks of the dose calibrator.

Response: The dose calibrator was checked for linearity on 5/19/81, 10/6/81, and 1/29/82 (copies attached). As Mr. Brown and I discussed, the 5 months between 5/19 and 10/6 exceeds the quarterly requirement. This occurred as the result of an abrupt change in Radiation Safety personnel in August, 1981. The due date was consequently missed and not picked up until October. Quarterly linearity checks have been performed since that time. An annual schedule of dates for all wipe tests and instrument calibrations has been prepared and posted to prevent a reoccurrence of this type of problem.

Items 2 & 3. Failure to report total individuals and a statistical summary of doses to personnel for whom monitoring was required or provided.

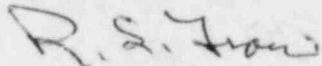
Response: I was unable to locate copies of the required reports at the time of Mr. Brown's inspection. Subsequent to the inspection, I located a copy of the 1978 report but have not located the 1979 report. I expressed my belief to Mr. Brown that both reports were submitted. I am submitting a copy of the 1978 report and a reconstruction of the 1979 data required for that report. To avoid further violations, a new file labeled "Summary Reports" has been created under "Personnel Exposures". In addition, a duplicate copy will be filed in our "ALARA" files.

In Reply Refer To:

8210220261 820928  
NMS LIC30  
05-01401-02 PDR

Please contact me if additional information concerning these matters is required. I also wish to express my sincere appreciation for the manner in which Mr. Brown conducted his inspection. He was very helpful and his suggestions have been most beneficial to our program.

Sincerely,



R. S. Trow  
Radiation Safety (115)  
FTS 322-3297

Enc: as

RST/clb

# Linearity check of Capintec Calibrator

5/19 - 5/20/81

## DOSE CALIBRATOR CHECK

### ENERGY RESPONSE AND ACCURACY

SOURCE	T <sub>1/2</sub>	ORIGINAL ACTIVITY (mCi)	ASSAY DATE	DECAYED ACTIVITY (μCi)	CALIBRATOR READING	READING-ACTUAL / ACTUAL x 100
Cs-137	30.3y	.21	8/2/77	<del>190</del> 190	1.92	0
Ba-133	<del>10.7y</del>	.277	5/20/77	<del>210</del> 210	232	970
Co-57	270d	5.65	12/5/80	<del>3299</del> 3299	3410	570

### LINEARITY CHECK

#### DATA COLLECTION:

TIME	DATE	TIME	OBSERVED ASSAY	BACKGROUND	NET ASSAY
0	5-19-81	10:10	44.7	0	44.7
4:20	5-19-81	14:30	26.4	0	26.4
7:10	5-19-81	17:20	19.60	0	19.60
24:25	5-20-81	10:35	2.63	0	2.63

#### PREDICTED ACTIVITY:

TIME	<del>30 HOUR</del> PREDICTED ACTIVITY	CORRECTION FACTOR	Actual PREDICTED ACTIVITY	PREDICTED-MEASURED / PREDICTED x 100
0	44.7	1	44.7	0
4:20	27.13	0.96	26.4	+ 3%
7:10	19.55	0.92	19.60	0
24:25	2.68	0.98	2.63	+ 2%

$$A = A_0 e^{-\lambda t} = A_0 e^{-\frac{0.693}{T_{1/2}} t}$$

10/6/81

R. Trow

DOSE CALIBRATOR CHECK

ENERGY RESPONSE AND ACCURACY

SOURCE	T <sub>1/2</sub>	ORIGINAL ACTIVITY (mCi)	ASSAY DATE	DECAYED ACTIVITY (μCi)	CALIBRATOR READING	READING-ACTUAL / ACTUAL x 100
Cs-137	30.3y	.21	8/2/77	0.192 <del>0.20</del>	0.196	1%
Ba-133	10.7y <del>7.2y</del>	.277	5/20/77	<del>0.18</del> 0.208 <del>0.22</del>	0.224	<del>4%</del> 7.7%
Co-57	270d	5.65	12/5/80	2.60	2.45	5.8%

LINEARITY CHECK

DATA COLLECTION:

TIME	DATE	TIME	OBSERVED ASSAY	BACKGROUND	NET ASSAY
0	10/6/81	10:45	187.8 m	< 10 μCi	187.8 mCi
9	"	11:45	168.4		
24	"	3:45	104.1		
30		5:00 p	91.8		
48	10/6/81	9:45	13.1		
	"	2:45	7.41		
	10/6/81	10:45 a	0.662		

PREDICTED ACTIVITY:

TIME	<del>30-HOUR</del> ACTIVITY	CORRECTION FACTOR	PREDICTED ACTIVITY	PREDICTED-MEASURED / PREDICTED x 100
0	187.8	32		0
9	167.3	16		-0.66%
24	105.5	2		1.33%
30	88.7	+		-3.49%
48	13.2	0.25		0.76%
28	7.43			0.3%
49	0.660			-0.3%

## DOSE CALIBRATOR CHECK

## ENERGY RESPONSE AND ACCURACY

SOURCE	T <sub>1/2</sub>	ORIGINAL ACTIVITY (mCi)	ASSAY DATE	DECAYED ACTIVITY (μCi)	CALIBRATOR READING	READING-ACTUAL / ACTUAL x 100
Cs-137	30.3y	.21	8/2/77			
Ba-133	7.2y	.277	5/20/77			
Co-57	270d	5.65	12/5/80			

LINEARITY CHECK 1-29-82 - 1-21-82 R. Trow

## DATA COLLECTION:

TIME	DATE	TIME	OBSERVED ASSAY	BACKGROUND	NET ASSAY
0					
0	3 Feb 82	8:25 a	103.2 mCi	-0.7 μCi	103.2
160 min	"	11:05 a	75.3 mCi	-0.2 μCi	75.3
24	"	3:20 p	46.5 μCi	-0.5 μCi	46.5
30	4 Feb	9:25 a	5.75 μCi	-0.9 μCi	5.75
25 hrs	" "	1:25 p	3.64 mCi	-0.9 μCi	218 μCi
48	5 Feb	1:25 p	219 μCi	-0.7 μCi	220 μCi

## PREDICTED ACTIVITY:

TIME	ACTIVITY	CORRECTION FACTOR	PREDICTED ACTIVITY	PREDICTED-MEASURED / PREDICTED x 100
0		32	103.2	
160 min	75.3 mCi	10	75.9	-0.8%
24	46.5	2	46.5	-0
30	5.75	+	5.77	-0.3%
48	3.64	0.125	3.64	-0

53 219 μCi 229 μCi -4.4%