



DEPARTMENT OF VETERANS AFFAIRS  
 Medical Center  
 4500 South Lancaster Road  
 Dallas TX 75216

January 26, 1994

In Reply Refer To: 549/11Q

Mr. L. J. Callan, Director  
 Nuclear Regulatory Commission  
 Regional Administrator, Region IV  
 611 Ryan Plaza Dr., Suite 400  
 Arlington, TX 76011-8064

FEB 2 1994

REF: License No: 42-00220-08  
 Docket No. 030-00503

Gentlemen:

1. In response to your findings on the alleged misadministration identified during the unannounced Radiation Safety Inspection conducted by Mr. G. L. Guerra, on July 14, 1993 and by Ms. L. L. Kasner on July 29-30 and August 2-3, and 6, 1993, we submit the following information:

- a. Licensee Name: Dallas VA Medical Center
- b. Prescribing Physician's Name: Dr. Minerva Gomez-Bowerman

2. A BRIEF DESCRIPTION OF THE EVENT:

**BACKGROUND:** A 51 year old white male with a known diagnosis of Epidemic Kaposi's Sarcoma (EKS), since May 1989, was referred to the Dallas VA Medical Center. A biopsy of his left heel revealed EKS. He received a single treatment of 700 cGy to both feet at the CTCRC in San Antonio, Texas on May 1, 1989 using the 6 Mev Linac. After his move to Dallas he received a treatment to lesions on his left arm with a good response. On July 31, 1991, both legs were treated with a single fraction of 800 cGy with the 60 CO machine. As the patient was then referred to the Dallas VA Medical Center with incapacitating pain, unable to be controlled with oral pain medications, Dr. Bowerman prescribed a treatment of 2000 cGy in 10 fractions of 200 cGy.

**EVENT:** FRACTIONS #1,2,3,4 - The treatment was prescribed at 200 cGy AP-PA to Dmax. The treatment was calculated with opposing ports. After the first four treatments were given, the physicist checked the chart. He apparently discovered that no consideration was given to the dose contribution

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from the opposing treatment ports in the initial calculation.

FRACTIONS #5,6,7,8 - It appears that, as a result of a discussion between the physicist and the physician, the treatment times were reduced by one-half to reduce the dosage and to come up with the correct amount at the end.

This is evidenced by an amendment to the prescription dated February 18, 1992.

On fraction #5, treatment to the lower legs was omitted. The reason for this is unclear.

FRACTIONS #9,10,11 - The prescription was amended again to give 100 cGy T.D. AP & PA. The treatment times were changed to give a full treatment to the legs and 1/2 treatment to the feet to make both treatments equal approximately 2100. (Enclosure)

3. THE EFFECT ON THE PATIENT:

Based on calculations at the time of treatment, as well as, current calculations performed by a Dallas VA Medical Center contracted Board Certified Physicist, there was no adverse consequences beyond the intended therapeutic effects for this patient.

4. WHAT IMPROVEMENTS ARE NEEDED TO PREVENT RECURRENCE:

No treatment change will be carried out unless there is a written directive by the attending physician.

5. ACTIONS TAKEN TO PREVENT RECURRENCE:

Prior to the NRC's identification of this case, the Radiation Therapy Section implemented weekly chart check meetings. A second review of calculations and changes to the treatment plan will be made in the written directive.

6. WHETHER THE LICENSEE NOTIFIED THE PATIENT OR PATIENTS RELATIVES OR GUARDIAN AND IF NOT, WHY NOT?

As this incident was identified in the 1993 NRC Inspection and due to the fact that the patient expired due to complications of Kaposi's Sarcoma, the family will not be notified.

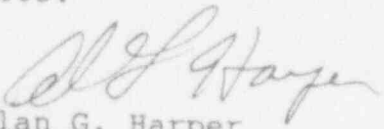
7. NOTIFY REFERRING PHYSICIAN:

Subsequent to the enforcement hearing, we made numerous attempts to contact the referring physician. It appears Dr. Bradfield referred this patient to Dr. Bowerman. We had hoped to find the referring physicians' "attending" physician and still were unable to locate him. We attempted to contact the San Antonio VA Medical Center as they were the original referral sight. However, as there were two physicians involved in the treatment of this patient between the time he arrived in Dallas, the San Antonio VA Medical Center felt that according to CFR Part 35.33(a)(3) they did not need to be notified.

8. REFERRING PHYSICIAN PERSONALLY INFORMS THE LICENSEE THAT EITHER HE WILL INFORM PATIENT OR THAT, BASED ON MEDICAL JUDGMENT, TELLING THE PATIENT WOULD BE HARMFUL:

After many attempts to contact the referring physician, and based on medical judgement and the adverse affect this communication would have on the family, it has been determined by the Acting Chief of Staff, that it would not be in the best interest of the family to contact them at this time. The patient expired due to complications of Kaposi's Sarcoma.

9. We await the supplemental report from your external reviewer that will provide final documentation on the alleged misadministration. If you have any questions or need further information on the response of this violation, please contact Ms. Lynn Stockebrand, Quality Management Coordinator, at 700-749-7005.

  
Alan G. Harper  
Medical Center Director

Encls.

6.01 T.D. Total T.D.

RX  
2

TECH NO	DATE	REGION	FIELD SIZE SKIN/ LESION	TIME	DAILY AIR/SKIN	TOTAL AIR/SKIN	DAILY LESION	TOTAL LESION	TOTAL (add) LESION	UNIT
2	2/11/92	AP Feet	22/30	1.88			208	328	328	
		PA Feet	22/30	1.88			187			
		AP Legs	25/20	1.90			208.6	321.6	321.6	
		PA Legs	25/20	1.90			208.6			
2	2/12/92	AP Feet	22/30	1.88			208	328	656	
		PA Feet	22/30	1.88			187			
		AP Legs	25/20	1.90			208.6	321.6	643.2	
		PA Legs	25/20	1.90			208.6			
3	2/17/92	AP Feet	22/30	1.88			208	328	984	
		PA Feet	22/30	1.88			187			
		AP Legs	25/20	1.90			208.6	321.6	964.8	
		PA Legs	25/20	1.90			208.6			
4	2/14/92	AP Feet	22/30	1.88			208	328	1312	
		PA Feet	22/30	1.88			187			
		AP Legs	25/20	1.90			208.6	321.6	1286.4	
		PA Legs	25/20	1.90			208.6			
5	2/18/92	AP Feet	22/30	.94			104	164	1976	
		PA Feet	22/30	.94			93.5			
6	2/19/92	AP Feet	22/30	.94			104	164	1640	
		PA Feet	22/30	.94			93.5			
		AP Legs	25/20	.95			104.3	160.8	1447.2	
		PA Legs	25/20	.95			104.3			
7	2/24/92	AP Feet	22/30	.94			104	164	1804	
		PA Feet	22/30	.94			93.5			
		AP Legs	25/20	.95			104.3	160.8	1608	
		PA Legs	25/20	.95			104.3			

RX  
2-18-92

GD 112 Total TD

TECH NO	DATE	REGION	FIELD SIZE SKIN/LESION	TIME	DAILY AIR/SKIN	TOTAL AIR/SKIN	JOB/LESION	TOTAL/LESION	TOTAL TD/LESION	INIT
8	2/21/92	AP Feet	22/30	94			104	164	1968	
		PA Feet	22/30	94			93.5			
		AP Legs	25/20	95			104.3	160.8	1768.8	
		PA Legs	25/20	95			104.3			

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9	2/24/92	AP Feet	22/30	94			104	164	2132	
		PA Feet	22/30	94			93.5			
		AP Legs	25/20	1.90			208.6	321.6	2090.4	
		PA Legs	25/20	1.90			208.6			

10	2/25/92	AP Feet	22/30	94			104	164	2296	
		PA Feet	22/30	94			93.5			
		AP Legs	25/20	1.90			208.6	321.6	2412	
		PA Legs	25/20	1.90			208.6			

11	2/26/92	AP Feet	22/30	94			104	164	2460	
		PA Feet	22/30	94			93.5			
		AP Legs	25/20	1.90			208.6	321.6	2733.6	
		PA Legs	25/20	1.90			208.6			

End RX 2209/11 TD

0.15 RX	GD Feet AP	1560 = .78 RX	2460 = 1.118 x RX TI
2000/10 GD	PA	1402.5 = .70 RX	2200 = 1.00 x RX GI
	GD legs AP	1773.1 = .886 RX	2733.6 = 1.243 x RX TI
2000/10 GD	PA	1773.1 = .886 RX	2733.6 = 1.133 x RX GI

Total Script 4 Fan of 200 GD plus } = 2460 TD Feet  
 2 Fan of 100 GD AP+PA } = 2412 TD Legs

2-11-92

Rx 2000 cGy in 10 AP+PA to Dmax

Please see Photographs

Use solid water phantom AP+PA Feet

Rx = 200/Fxn GD AP + 200/Fxn GD PA

Foot Fields = 22 x 30 cm

Leg Fields = 25 x 20 cm

Bdus AP .5 cm all

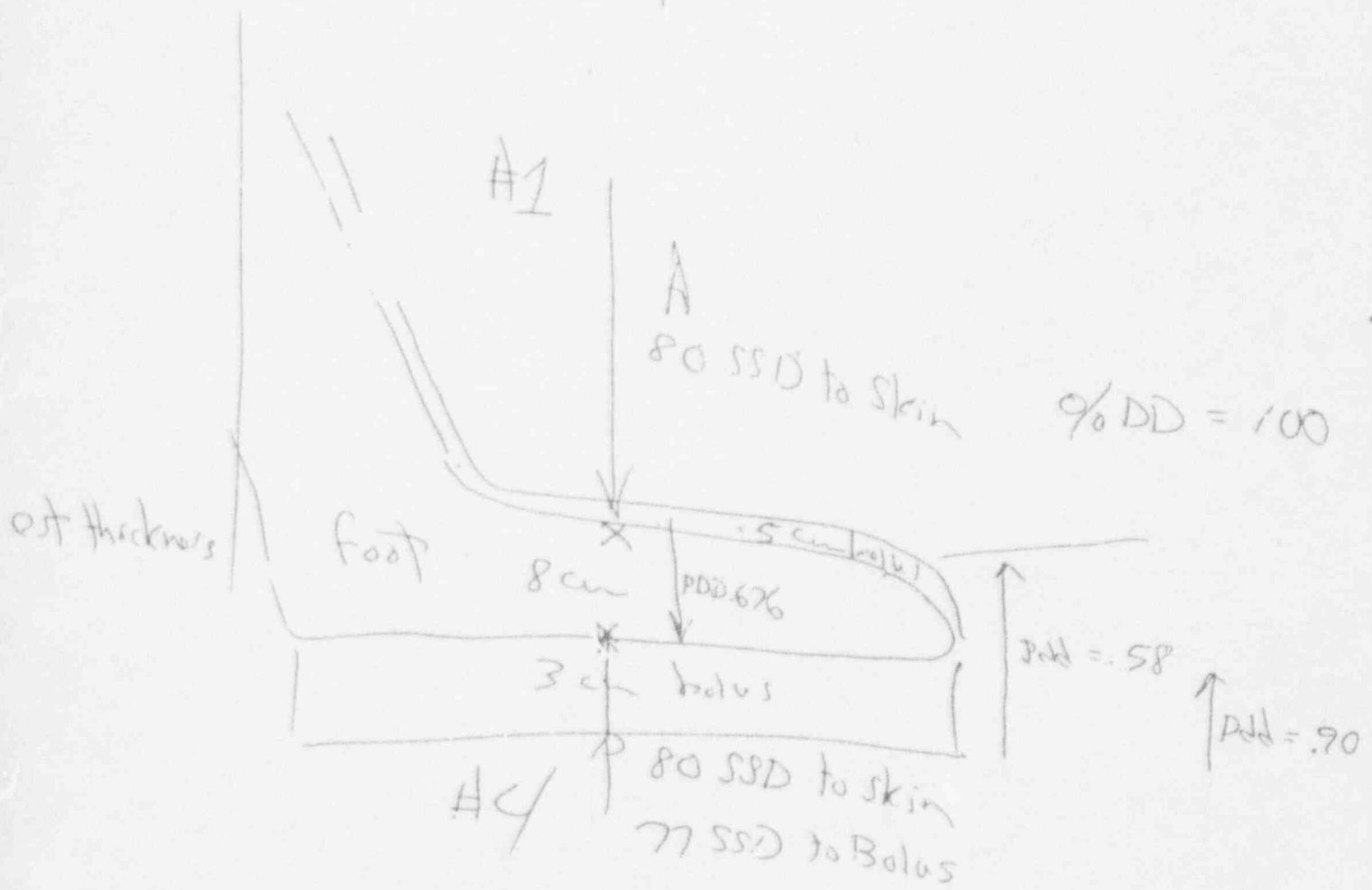
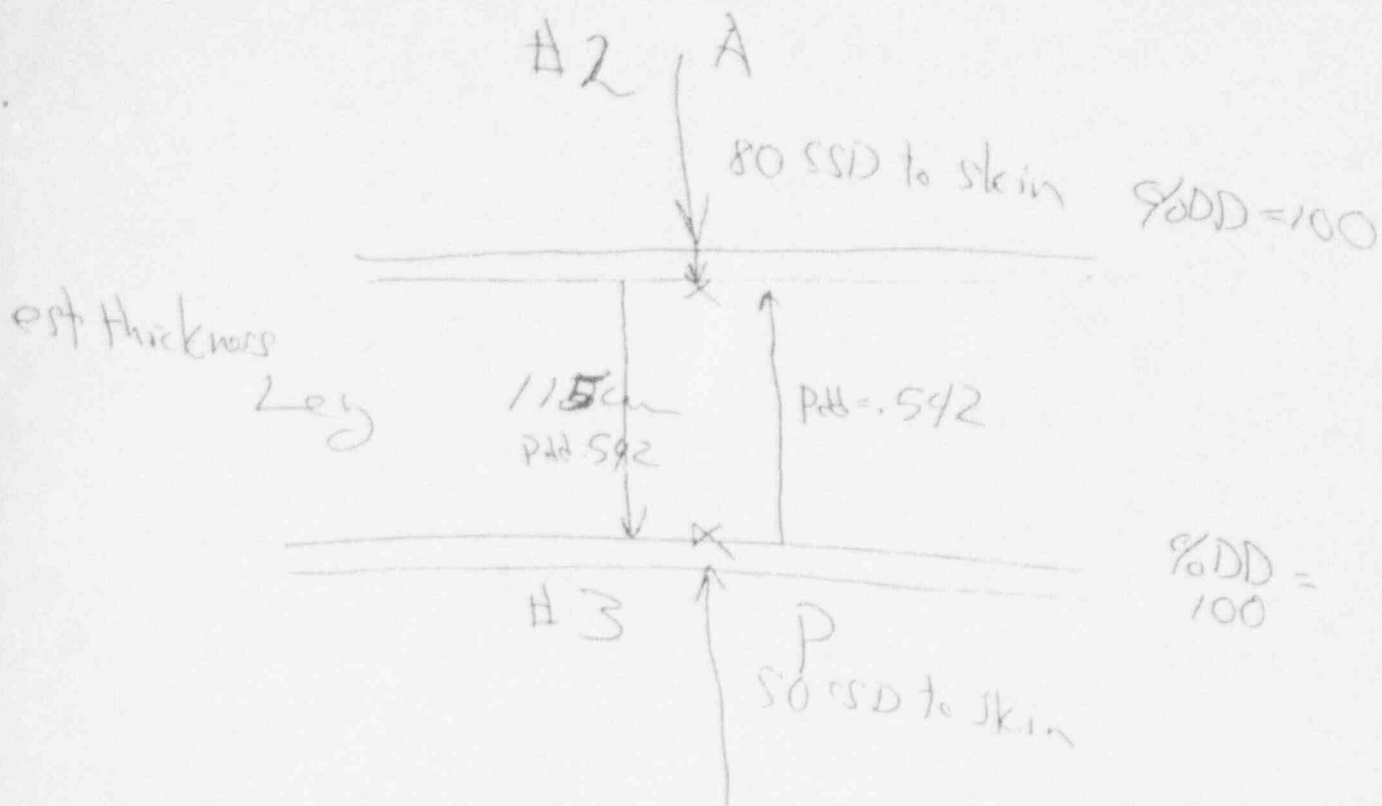
PA Foot 3 cm

PA leg .5 cm

Previous Treatment 700 cGy to both feet at CTCRC  
in San Antonio Tx on 5-1-89 with GX Linac

Previous Treatment 800 cGy to both legs at BUMC  
in Dallas Tx on 7-21-91 with Co60

Prescription note Pt to receive Tumor Dose of 2000 cG  
in 10 Fxn's of 200 cGy.



AP Feet 208 x 4 832

104 x 4 > 728

104 x 3 1560

PA Feet 187 x 4 748

93.5 x 4 7659.5

93.5 x 3 1402.5

MAP Logs 208.6 x 4 834.4

104.3 x 3 312.9

208.6 x 3 625.8

1773.1



Decay factor for  $^{60}\text{Co}$   $T = 1574$  days = 4.3089 yrs

Decay factor = .56746

OPF =  $173806 \times .56746 = 98.628$  cGy/min

Coll factors  $22 \times 30 = \text{Feet} = 1.052^2 = 1.066$  PSF  
~~1.048~~  
 $25 \times 20 = \text{Legs} = 22.05^2 = 1.062$  PSF  
 1.048

Field	OPF	PSF	Exit %DD	Coll fact	Exit %DD	Time
1	98.628	1.066	1.00 208 cGy	1.052	.676 140.5 cGy	1.88 min
2	98.628	1.062	1.00 208.6 cGy	1.048	.542 113.0 cGy	1.90 min
3	98.628	1.062	1.00 208.6 cGy	1.048	.542 113.0 cGy	1.90 min
4	98.628	1.066	.90 187 cGy	1.052	.58 120.6	1.88 min

CR calc. at Turner Dose

$\left\{ \begin{array}{l} \text{Ent 1} + \text{Exit 4} = 208 + 120.6 = 328.6 \text{ cGy TD} \\ \text{Ent 4} + \text{Exit 1} = 187 + 140.5 = 327.5 \text{ cGy TD} \end{array} \right.$   
 $\left\{ \begin{array}{l} \text{Ent 2} + \text{Exit 3} = 208.6 + 113 = 321.6 \text{ cGy TD} \\ \text{Ent 3} + \text{Exit 2} = 208.6 + 113 = 321.6 \text{ cGy TD} \end{array} \right.$

Given Dose Final Script = 1500 GD AP + PA

$$\text{Feet AP GD} = 1560 = 1.04 \times \text{Rx}$$

$$\text{Feet PA GD} = 1402.5 = 0.935 \times \text{Rx}$$

$$\text{Legs AP GD} = 1773.1 = 1.182 \times \text{Rx}$$

$$\text{Legs PA GD} = 1773.1 = 1.182 \times \text{Rx}$$

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2200 TD

2250

2460

2200      11.8