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April 16, 1985

TO:

Nuclear Regulatory Commission, Region III
Office of Inspection and Enforcement
799 Roosevelt Road
Glen Ellyn, IL 60137

This is to report on my measurements following the installation of a new Cobalt-60 teletherapy source in our teletherapy unit, under the provisions of License No. 12-03567-04.

Enclosed is a form, labelled Figure F-1, plus three pages of diagrams and measurement results of the head survey and output measurements. The output measurements were in air with collimator settings for a 10 by 10 cm. field at 80 cm. Also included is a sketch, not to scale, of the teletherapy room, and the results of survey measurements around the room with a calibrated ion chamber survey meter (Victoreen Model 470A). The source was installed on 21 March 1985, and the surveys were performed on 24 March 1985. The unit was not used for patient treatments until 25 March, after I had done the surveys and full calibration.

Arnold Feldman

Arnold Feldman, Ph.D.
Radiological Physicist

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Date 4/26/85
Log apr 35
By
Orig. To
Action Compl.

Survey Report

FEE EXEMPT

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REGION III

APR 22 1985

8512030079 851114
REG3 LIC30
12-03567-04 PDR

CONTROL NO. 78768

Results Of Survey Around Cobalt-60 Teletherapy Room
Methodist Medical Center of Illinois
Peoria, Illinois
March 1985

I. Beam directed vertically downward into masonite phantom 25 x 25 x 22 cm.
Collimators open to maximum

Location (See drawing)	mR/hr.
1.	0.2
2.	3.4 max. in small area near lock; 0.2 avg. elsewhere
3.	0.1
4.	less than 0.1
5.	"
6.	"
7.	"
8.	"
9.	"

Arnold Feldman, Ph D

II. Beam directed toward stairwell
Maximum field size. No scatterer
Head swivel angle: just less than limit of 140 degrees.
At location 4. : 0.1 mR/hr.

III. Beam directed horizontally toward 7.
Scatterer of masonite 25 x 25 x 22 cm. in beam.

Location	mR/hr.
1.	0.1
2.	3.8 max. in small area; 0.3 avg.
3.	less than 0.1
4.	"
5.	"
6.	"
7.	2.0 at 7 ft. high; 0.5 at 5 ft. high
8.	less than 0.1
9.	less than 0.1

IV. Beam directed at head swivel angle 282 degrees.
This is the maximum towards the space above.
The beam was directed toward 7. and continued to the limit, approximately 12 degrees above horizontal. No scatterer.

In space above (9.) less than 0.1 mR/hr.

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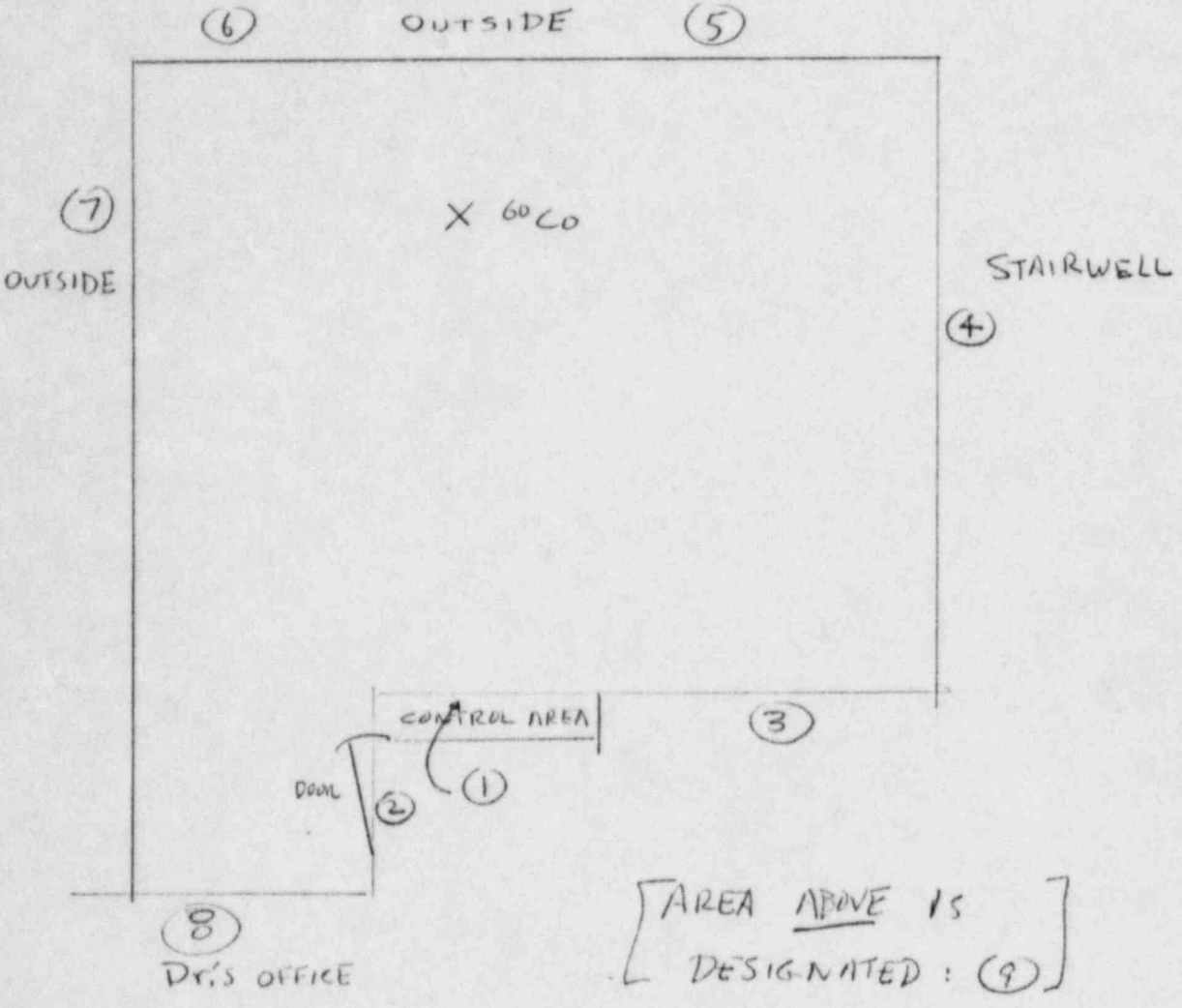


METHODIST MEDICAL CENTER OF ILLINOIS

^{60}Co TELETHERAPY ROOM

PEORIA, ILLINOIS

Figure F-1
TELETHERAPY HEAD SURVEY

METHODIST MEDICAL CENTER OF ILLINOIS
PEORIA, ILLINOIS

(Source in "OFF" position. Measurements taken one meter from source)

Position No.		Radiation Level (mr/hr)
View A	1	0.35
	2	impossible!
	3	0.3
	4	0.1
View B	5	
	6	
	7	
	8	
View C	9	
	10	
View D	11	
	12	
	13	
	14	
Average value		
Maximum value		

Date of survey 24 MARCH 1985

Instrument used VICTOREEN MODEL 470A

Manufacturer's name & model number of teletherapy source NEUTRON PRODUCTS INC. MODEL NPI-20-4800W

Date of installation 21 MARCH 1985

OUTPUT 82.3 ☐ RHM ☑ RMM

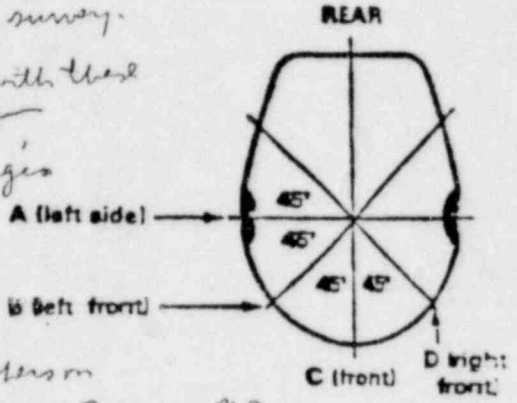
128.6 R/min @ 80 cm

Data of output measurement 24 March 1985

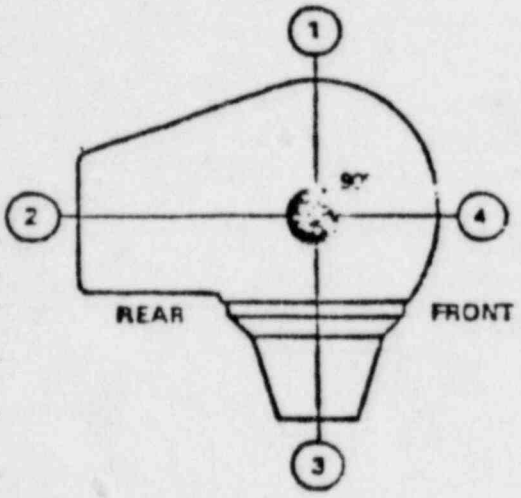
Arnold Feldman, Ph.D.

I selected 21 different points for my survey. Some coincide with these others do not. The attached 3 pages contain the results of my survey. The red numbers correspond to numbers on this page. Arnold Feldman, Ph.D.

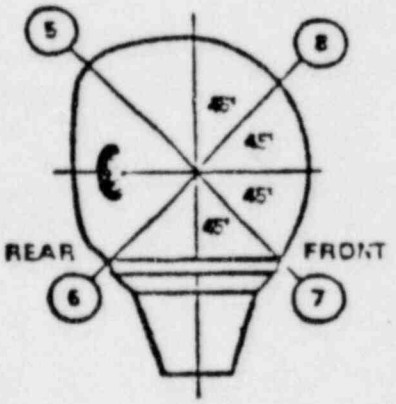
Top View Showing orientation of Views A through D



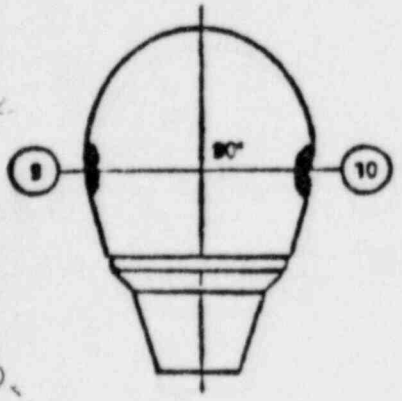
View A-Vertical from left side



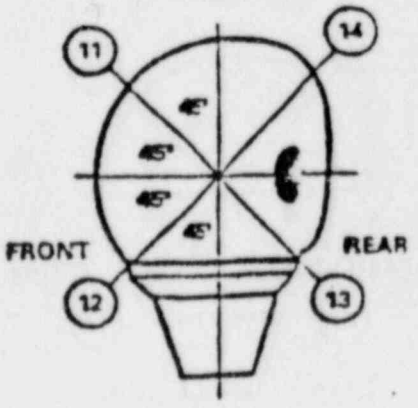
View B-Vertical from left front

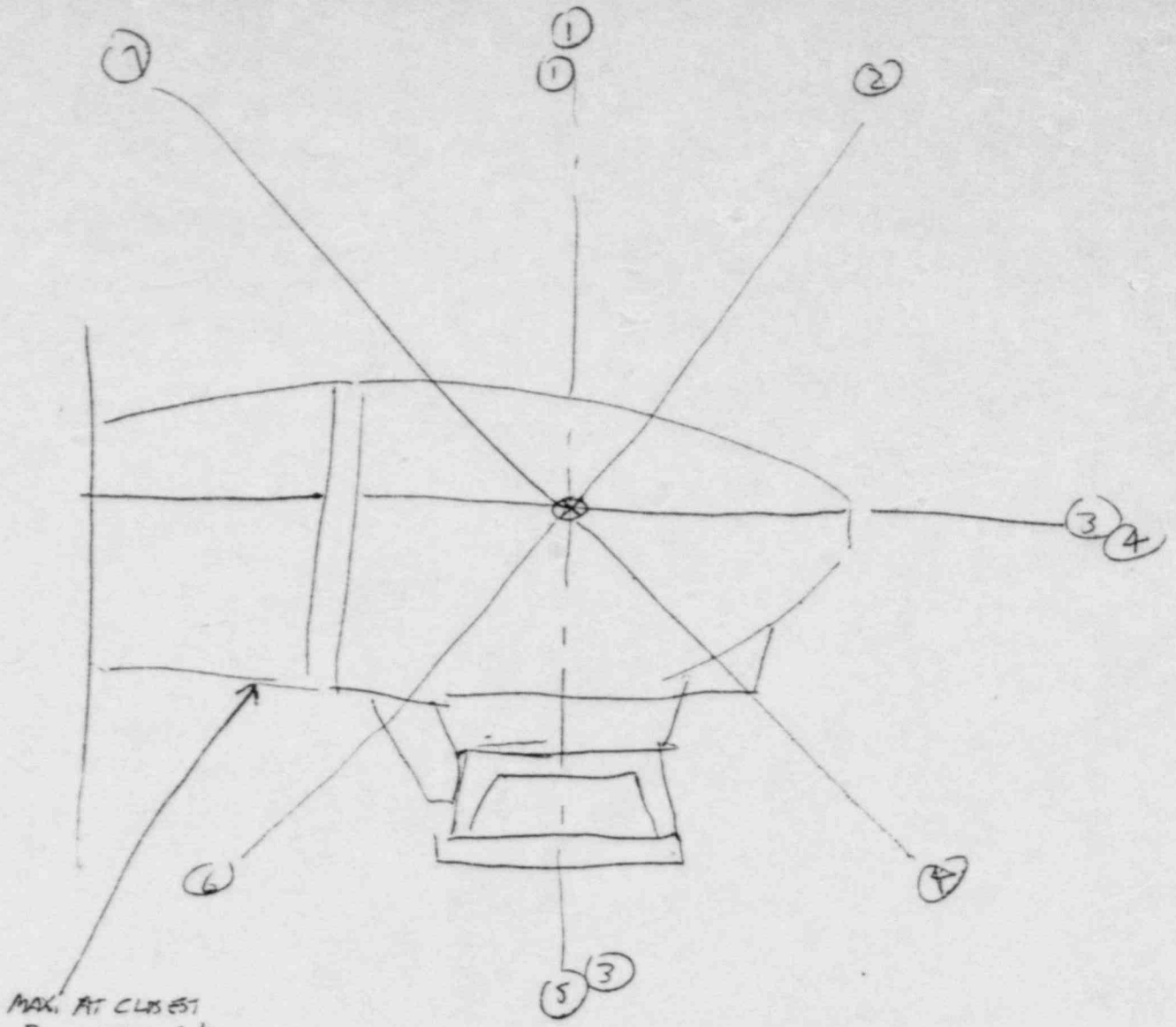


View C-Vertical from front



View D-Vertical from right front





MAX. AT CLOSEST POINT : 3.5 mR/hr.

ELEVATION VIEW (FROM LEFT SIDE)

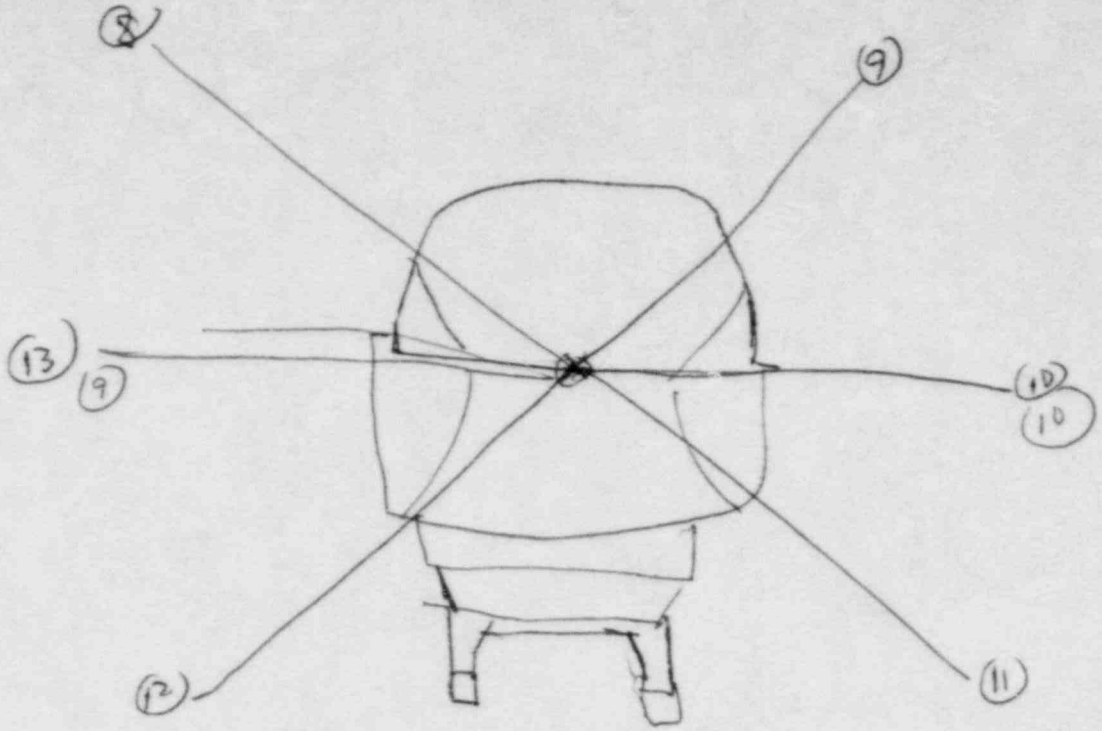
p.1 of 3 pgs

① 1. 0.35 mR/hr
2. 0.1
④ 3. 0.1
4. 0.1
③ 5. 0.3
6. 0.7
7. 0.35

avg. for 21 pts = .28
or ~.3 mR/hr
@ 1.0 m
max. @ 1.0 m = 0.6 mR/hr.

MMACI
24 March 1983

p. 2 of 7 pages.



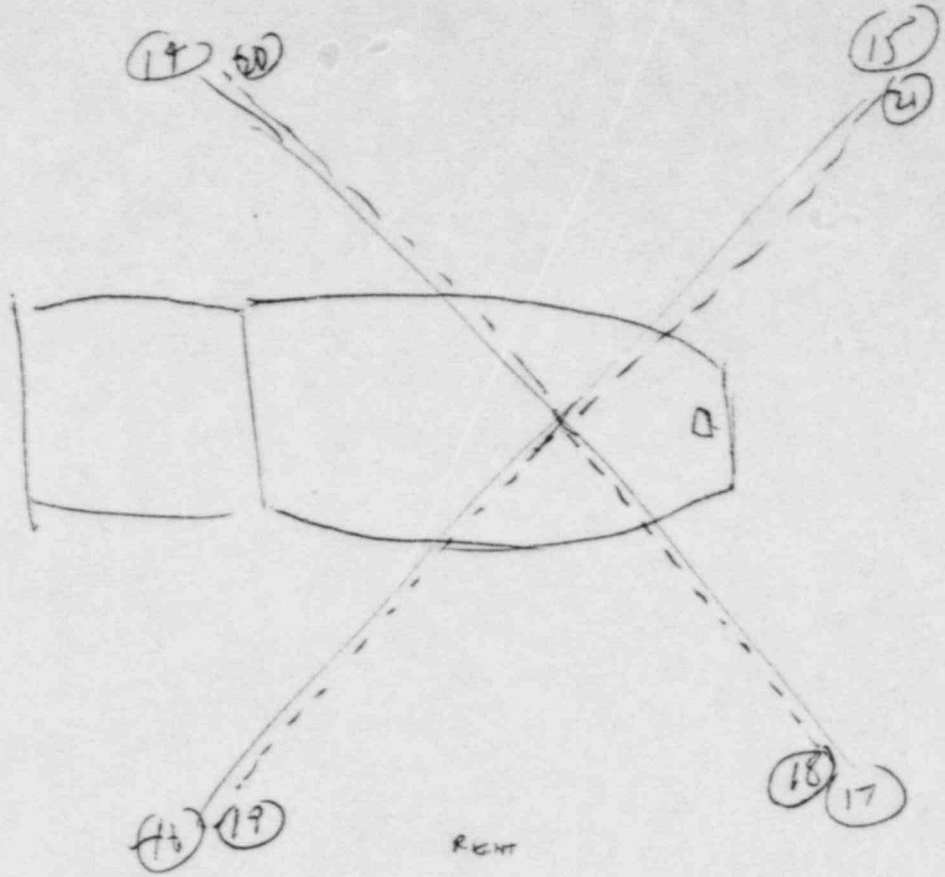
8. 0.2 m H/h.
9. 0.2
10. 0.2
11. 0.3
12. 0.3
13. 0.2

EN-FACE VIEW
(IN PLANE DEFINED BY LINE FROM (1) TO (5) IN ELEVATION VIEW)

mmcI
24 May, 1985

P 3 of 3 pages

L.A



14. 0.6 mR/hr.
15. 0.1
16. 0.5
17. 0.1
18. 0.1
19. 0.5
20. 0.5
21. 0.1

TOP VIEW (IN PLANE DEFINED BY (12), (13) and (3))

(18) (19) (20) and (24) are in vertical planes defined by lines joining (16) & (17) and joining (14) and (15), but at 45° "down"

ATTACH I

CONTROL NO. 78708