

THE RATRONICS

International Limited

November 24, 1997

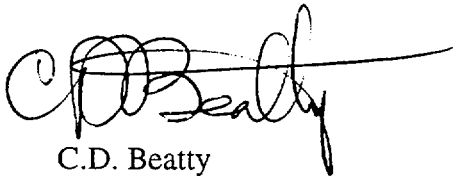
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
Attention: Doug Broaddus
Mail Stop T8-F5

Subject: Submission of Supplemental Data For Device Approval and Amendment
of Device Safety Registrations

Further to our telephone conversation of last week, enclosed please find sample head
radiation survey reports for the Theratron 780E and T1000E therapy units models.

I trust that the information will satisfy you requirements. Failing that, please call, fax or
E-Mail at (613) 591-2177, 592-3816 or beatty.d@theratronics.com respectively.

Yours truly,



C.D. Beatty
Regulatory Affairs

Enclosures:

413 March Road
P.O. Box 13140
Kanata Ontario Canada
K2K 2B7
(613) 591-2100
Fax (613) 592-3816

ISO 9001-1994



Cert # 001890

Kanata, Ontario, Canada

THE RATRONICS

SURVEY NO. 058-3UT SURVEY DATE APR 16/97

Surveyed in accordance with ICRP 15

CHECKED BY P. GIBLIN (DG)

TITLE RADIOGRAPHER

SURVEYED BY W. B. CRAIG

P.S. 46577

LOCATION EGYPT

CUSTOMER ALCAN

SERIAL No. 608

MODEL T780E

for

SURVEY RECORD

SURVEY DATA

Meter Type 1. VICTOREEN 660 2. VICTOREEN 440

Serial Number 1. 1049 2. 1854

Calibration Date 1. MAR 6/97 2. MAR 6/97

Background ✓ 660 = 0.2 ✓ 440 = 0.2 mrh. or less

Temperature 22 °C.

Barometric Pressure 100.8 kPa.

① Temp. Press. Correct. Factor 1.01

② Meter Correct. Factor 1 1.00 2 1.00

③ Distance Correct. Factor 1.00

④ Total Correct. Factor 1. 1.01

⑤ Total Correct. Factor 2. 1.01

⑥ Source Output on SEP 19/96 216.1 Rmm. (ICRU)

⑦ Source Output on Survey Date 200.3 Rmm. (ICRU)

Decay Factor 0.9267

CAPACITY CALCULATIONS

ICRP-15* CAPACITY (1 metre) = $\frac{\text{Highest reading at 1m} \times \text{④}}{\text{⑦} \times 2}$ Rmm(ICRU) = 233.0

CAPACITY (5cm) = $\frac{\text{Highest reading at 5cm} \times \text{⑤}}{\text{⑦} \times 20}$ Rmm(ICRU) = 361.0

Maximum Curie Capacity Based on Lowest Calculated Capacity x 67 Curies/Rmm(ICRU) 15,611 Curies.

NCRP-33* CAPACITY (Av. Field) = $\frac{\text{Total readings} \times \text{④}}{\text{⑦} \times 52}$ Rmm(ICRU) =

CAPACITY (Hot-spot) = $\frac{\text{Highest reading at 1m} \times \text{④}}{\text{⑦} \times 10}$ Rmm(ICRU) =

Maximum Curie Capacity Based on Lowest Calculated Capacity x 67 Curies/Rmm(ICRU) Curies.

SOURCE & HEAD DATA

NOTE: The radioactive source (Type C-146) & the source drawer (Standard with uranium plug) described below is a control assembly used specifically for survey procedures.

SOURCE SERIAL No. S-4938

RADIOACTIVE MATERIAL Co⁶⁰

SOURCE DIAMETER 2cm

SOURCE DRAWER No. G9095-051-6

DRAWER DIAMETER 2.4755

BORE DIAMETER 2.5005 - 2.5007

HEAD SERIAL No. 058-3 UT

Non-standard features of source head

SOURCE & HEAD DATA

NOTE: The radioactive source (Type C-146) & the source drawer (Standard with uranium plug) described below is a control assembly used specifically for survey procedures.

SOURCE SERIAL NO. S-4938

RADIOACTIVE MATERIAL Co 60

SOURCE DIAMETER 2 cm

SOURCE DRAWER NO. G9095-051-6

DRAWER DIAMETER 2.4755"

BORE DIAMETER 2.5008"/2.501"

HEAD SERIAL NO. 059-1W

Non-standard features of source head

SURVEY DATA

Meter Type 1. VICTOREEN 600 2. VICTOREEN 440

Serial Number 1. 1049 2. 1854

Calibration Date 1. MAR 6/97 2. MAR 6/97

Background $\sqrt{60} = 0.2$ $\sqrt{440} = 0.02$ mrh. or less

Temperature 20 °C

Barometric Pressure 101.3 kPa

Temp. Press. Correct. Factor 1.00

Meter Correct. Factor 1 1.00 2 1.00

Distance Correct. Factor 1.00

Total Correct. Factor 1. 1.00

Total Correct. Factor 2. 1.00

Source Output on SEP 19/96 date 216.1 Rmm. (ICRU)

Source Output on Survey Date 198.8 Rmm. (ICRU)

Decay Factor .9200

CAPACITY CALCULATIONS

ICRP-15*

CAPACITY (1metre) = $\frac{(7) \times 2}{\text{Highest reading at 1m} \times (4)}$
 = 249.0 Rmm(ICRU).

CAPACITY (5cm) = $\frac{(7) \times 20}{\text{Highest reading at 5cm} \times (5)}$
 = 331.0 Rmm(ICRU).

Maximum Curie Capacity Based on Lowest Calculated Capacity $\times 67$ Curies/Rmm(ICRU). 16683 Curies.

NCRP-33*

CAPACITY (Av. Field) = $\frac{(7) \times 52}{\text{Total readings} \times (4)}$
 = _____ Rmm(ICRU)

CAPACITY (Hot-spot) = $\frac{(7) \times 10}{\text{Highest reading at 1m.} \times (4)}$
 = _____ Rmm(ICRU)

Maximum Curie Capacity Based on Lowest Calculated Capacity $\times 67$ Curies/Rmm(ICRU) _____ Curies.

*ICRP-15 Based on limits of 2mrh. at 1 metre & 20mrh. at 5cm.
 *NCRP-33 Based on average field of 2mrh. at 1 metre & hot-spot field of 10mrh. at 1 metre.

SURVEY RECORD

for

MODEL T1000 E

SERIAL No. 44

CUSTOMER CIS

LOCATION ATHENS, GREECE

P.S. 46570

SURVEYED BY W.B. CRAIG

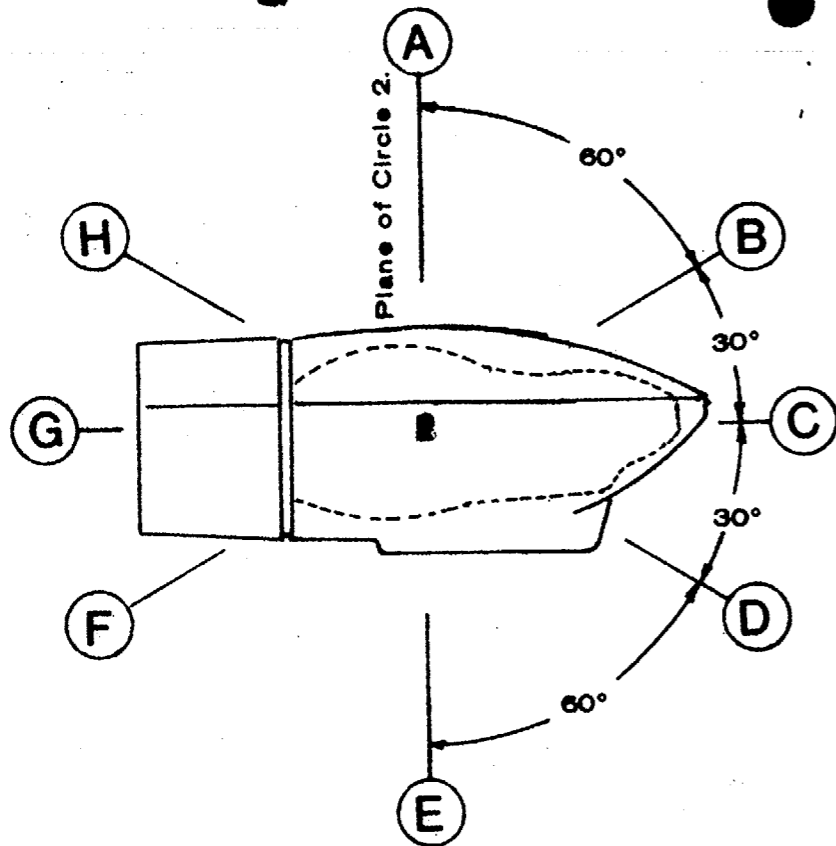
TITLE RADIOGRAPHER

CHECKED P. COBILL QA

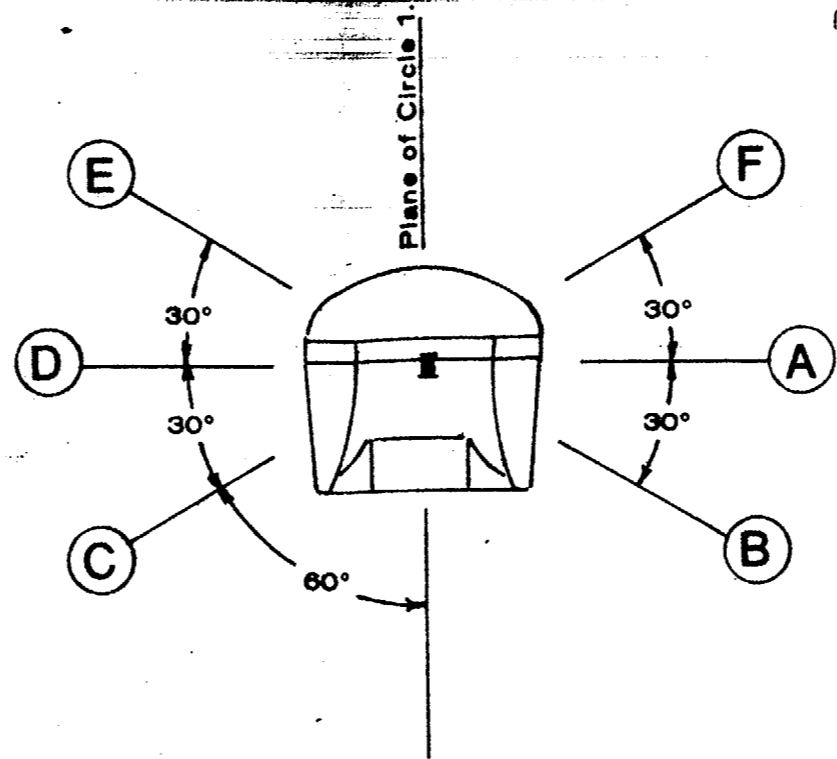
Surveyed in accordance with ICRP 15

SURVEY No. 059-1W SURVEY DATE MAY 7/97

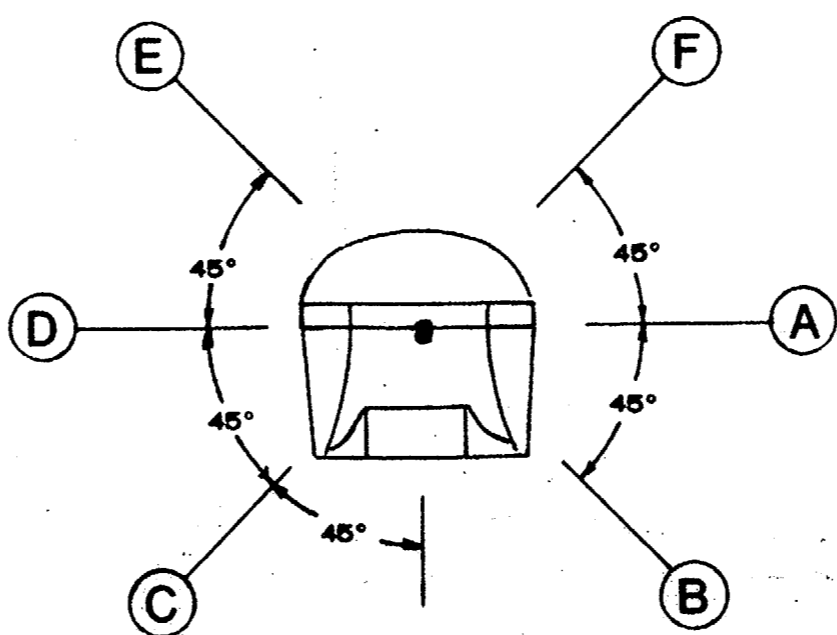
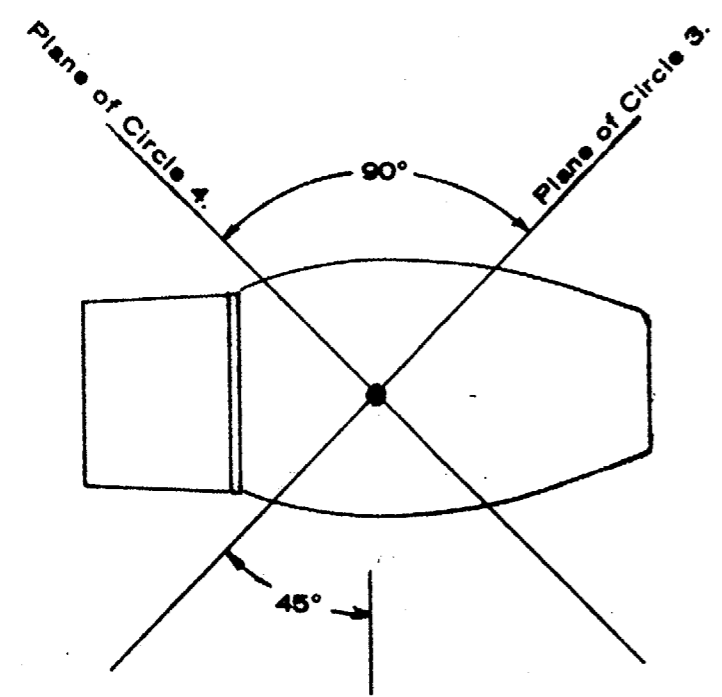
THERATRONICS



Circle 1.



Circle 2.



Circles 3&4.

READINGS (SOURCE OFF)

AT ONE METRE FROM BOTTOM FACE OF SOURCE

Point	A	B	C	D	E	F	G	H
Circle 1	1.2	0.3	1.7	0.3	1.2	0.7	1.2	0.8
Circle 2	0.9	1.0	1.1	1.0	0.8	0.7	Meter typ	
Circle 3	0.8	0.9	1.3	0.9	0.6	0.4	1660	
Circle 4	0.9	1.4	0.9	0.8	0.4	0.6		
Total								

AT 5cm FROM SURFACE OF UNIT*

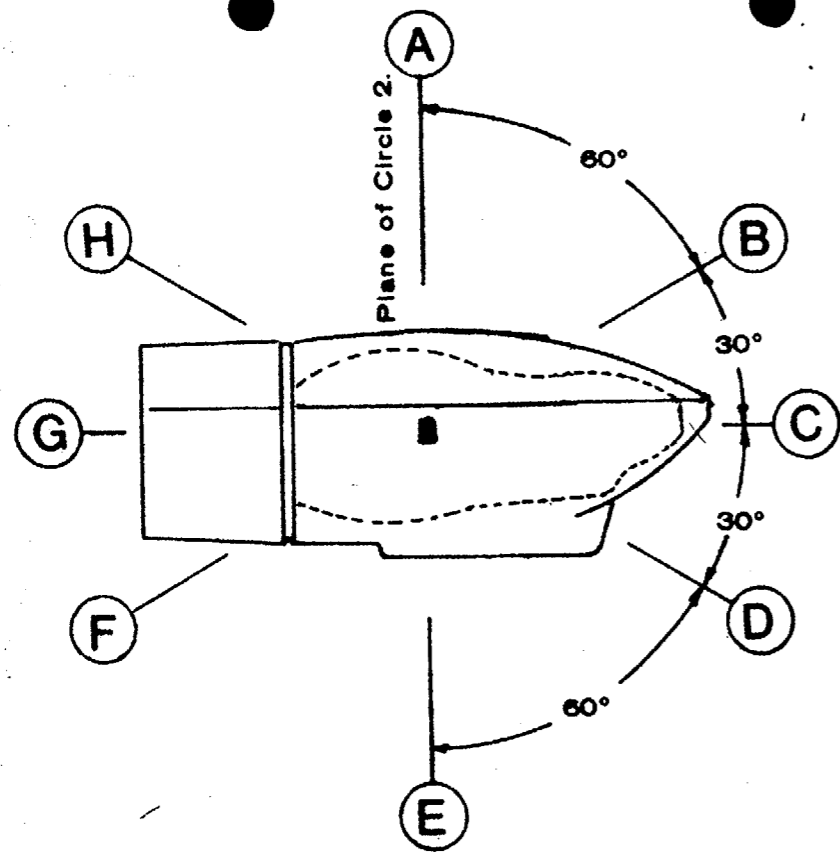
Point	A	B	C	D	E	F	G	H
Circle 1	11.0				8.0			
Circle 2							Meter typ	
Circle 3							1440	
Circle 4								

*Covers fitted to unit

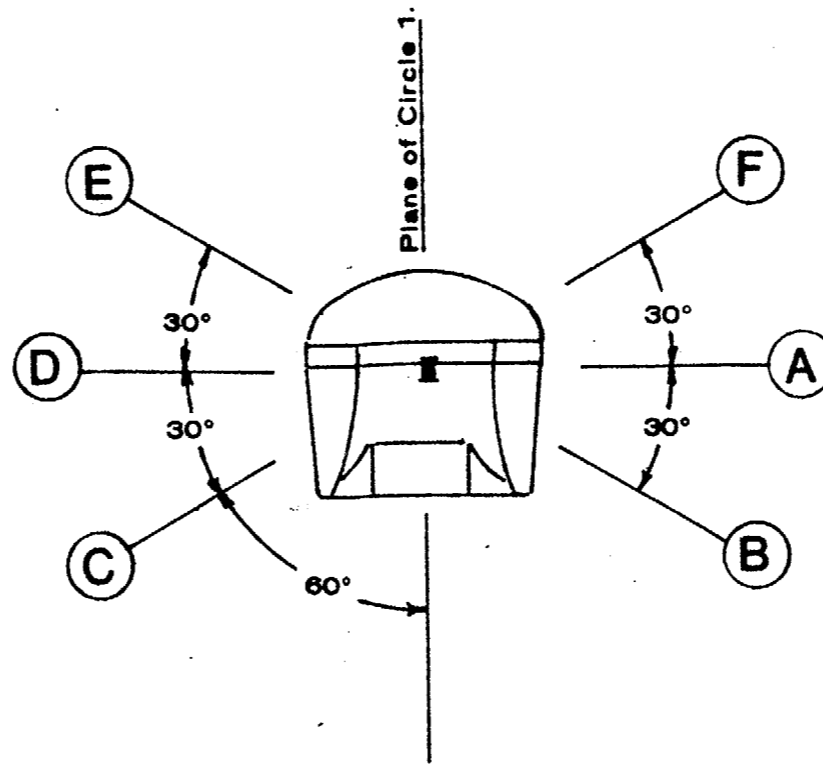
Highest reading at 1 metre 1.7 mreh. located C-1

Highest reading at 5cm 11.0 mreh located A-1

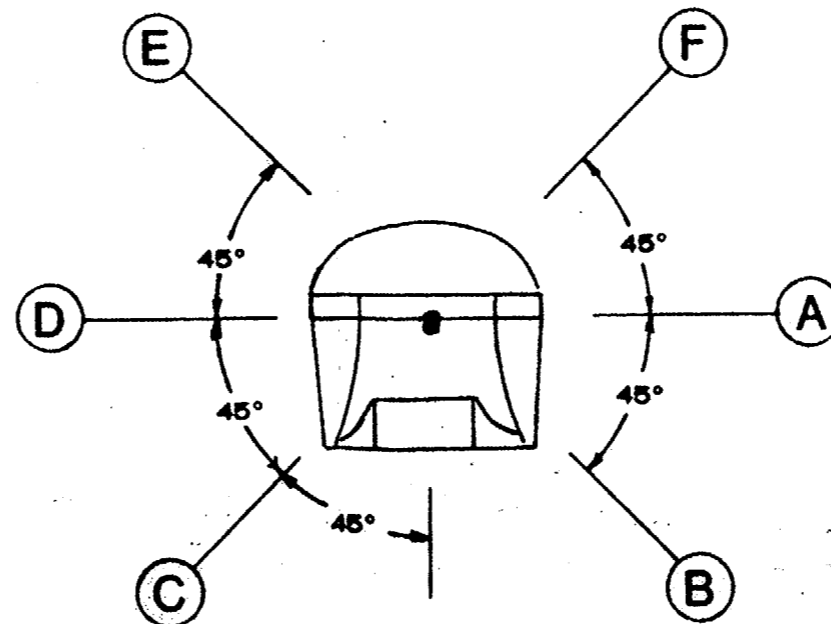
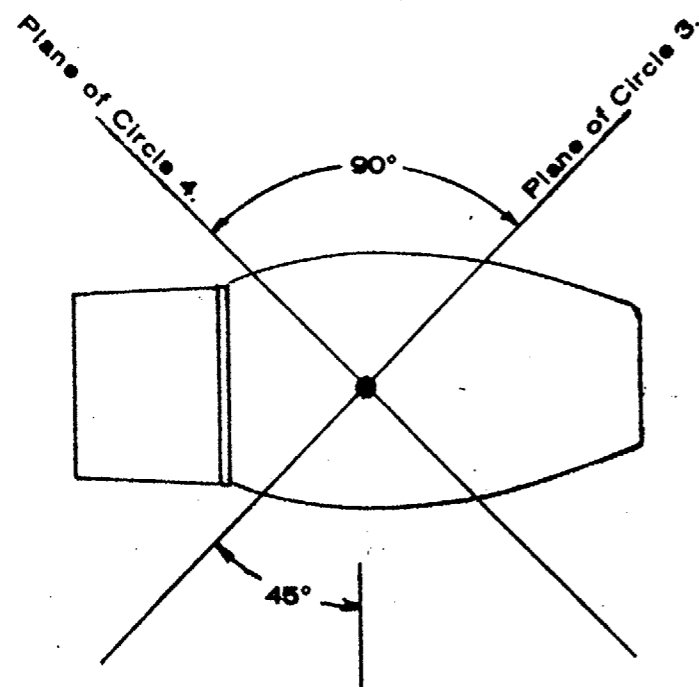
Comments



Circle 1.



Circle 2.



Circles 3&4.

READINGS (SOURCE OFF).

AT ONE METRE FROM BOTTOM FACE OF SOURCE

Point	A	B	C	D	E	F	G	
Circle 1	1.2	0.4	1.4	0.4	1.1	0.7	1.2	1.
Circle 2	1.3	1.3	1.2	1.2	0.8	0.9		Meter by
Circle 3	1.0	1.0	1.5	0.9	0.7	0.5		V-660
Circle 4	0.9	1.6	1.0	1.0	0.5	0.7		
Total								

AT 5cm FROM SURFACE OF UNIT *

Point	A	B	C	D	E	F	G	
Circle 1	12.0				8.0			
Circle 2								Meter by
Circle 3								V-440
Circle 4								

*Covers fitted to unit

Highest reading at 1 metre 1.6 mreh. located B 4

Highest reading at 5cm 12.0 mreh located A 1

Comments