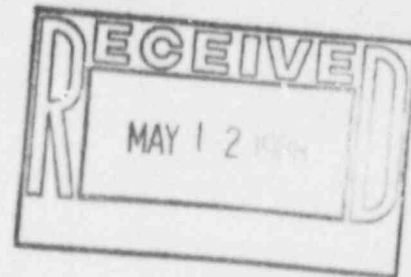


## OKLAHOMA OSTEOPATHIC HOSPITAL

744 West 9th • Tulsa, OK 74127 • (918) 587-2561

May 9, 1988



Jack Whitten  
Nuclear Materials Safety Section  
USNRC Region IV  
611 Ryan Plaza Drive, Suite 1000  
Arlington, TX 76011

Dear Jack,

This is in support of the application for the teletherapy license for Oklahoma Osteopathic Hospital submitted on February 10, 1988 (control number 461842). You may recall I called you on May 5, 1988 and you said we could have an extension on the 30 day time limit for reply indicated in your letter. In particular, we reply to your questions dated March 25, 1988.

1. The teletherapy unit is housed in a new radiation therapy addition on the hospital finished in early 1988. There is no special room number or building number. The radiation therapy addition is on the southeast corner of the hospital at basement level but the address is still:  
Oklahoma Osteopathic Hospital  
744 West 9th Street  
Tulsa, OK 74127
2. The physics tests will be periodic checks on the calibration factors for the ion chamber dosimetry systems and for periodic irradiation of thermoluminescent dosimeters to standardize their response. The total irradiation time for physics purposes would be for no more than 15 minutes in any month.
3. The form provided for showing training and experience is dual purpose for both authorized user and the radiation safety officer. Dean R. Fullingim D.O. is the radiation safety officer for Oklahoma Osteopathic Hospital and I included his credentials to that end. In no case was it intended that Dr. Fullingim would do any radiation therapy. His name is included only as the RSO. Dr. Varesko will be responsible for the radiation therapy for this license.

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OSTEOPATHIC HOSPITAL FOUNDERS ASSOCIATION, INC.

461842

4. Apparently the elevation view was not enclosed in the copy sent to the NRC. I apologize and it is now attached after the plan view. Much of the information requested was on that drawing. The ceiling shielding includes at least 48" of solid concrete with an additional 12" thick steel beam stop strip 12 feet wide directly above the gantry head and extending laterally. The shielding is designed to be sufficient for (sometime in the future) a 20 MV accelerator which would have no back stop. The radiation levels on the roof are shown at positions 12 and 13 (see elevation view) on the calculation pages as less than 0.001 mrem/week with maximum rate of less than 0.01 mrem/hr above background.
5. The height of dirt against the outside wall is indicated on the elevation view as approximately 9 feet above the floor level. A 6" thick concrete floor with solid dirt fill is also shown on the elevation view. There is no access available under the floor.
6. The walls were designed so the only penetrations through them are behind the maze, above the entrance doorway, at about 12 feet above floor level. The scatter load at the end of the maze is expected to be about 2 mrem/wk (as shown on the calculations for position 10 ). The radiation level at normal height above the floor will be increased by a small fraction of this and much less than the allowed maximum permissible doses at these restricted positions.
7. The question would have been answered if the elevation view had been included earlier. Please note from this view that the steel plating will be the primary beam stop section when the cobalt machine is replaced by an accelerator. A steel strip 12 feet wide and 13" thick centered on the beam axis runs from floor to ceiling up the east wall and a strip 12" thick and 12 feet wide runs across the center of the ceiling. The west wall is very thick concrete (74") and no steel is needed.
8. The teletherapy unit is equipped with electrical interlocks which can be set to restrict the angle of rotation of the beam away from the backstop. The electrical interlocks will be set to allow radiation at lateral directions with the head rotated away from the backstop by as much as  $\pm 91^\circ$ . The electrical system will be set so the head cannot be rotated front to back by more than  $\pm 2^\circ$  (nominal) from the backstop. This is as stated in 9.4. Note the calculations indicate the shielding is adequate for this operation (specifically at positions 1 and 6 ).

In practice rotation of the head away from the backstop is useful in only a few clinical situations and will be used only occasionally.

9. We will comply with the calibration procedures specified in Appendix B of Regulatory Guide 10.8, Revision 2.
10. A sample wipe test certificate is included with this letter.
11. The method for controlling use of the teletherapy unit was outlined in section 10.5b. of the original submission. The control keys for the unit will normally be put in the key drawer under the console desk after the unit is turned off. There will be only one set of  $^{60}\text{Co}$  unit keys in normal use. Any extra keys will be kept in the office of the chief technologist.
12. Emergency procedures for the teletherapy unit will be posted above the teletherapy console and technologists responsible for operating the machine will be instructed in these procedures when they first begin using the unit. All operators will be drilled in these procedures on a yearly basis.
13. The Radiation Safety Committee composition, duties and procedures will follow the specifications in 10 CFR 35.22.
14. In addition to the daily safety checks outlined in the original application, a dedicated check source will be used to check the in-room radiation monitor on a daily basis. Furthermore, the monthly spot checks will be utilized as indicated in 10 CFR 35.634 as an occasion for operational testing of interlocks, lights, stops and the like.
15. Survey instrument calibration will follow the specifications outlined in 10 CFR 35.51.
16. Full calibration of teletherapy units will follow the specifications outlined in 10 CFR 35.632.
17. Monthly spot check measurements will follow the specifications outlined in 10 CFR 35.634.
18. Five year inspection and servicing will follow the specifications outlined in 10 CFR 35.605 and 10 CFR 35.647.
19. Maintenance, repair and inspection of the unit will follow specifications of 10 CFR 35.605 and 10 CFR 35.647.

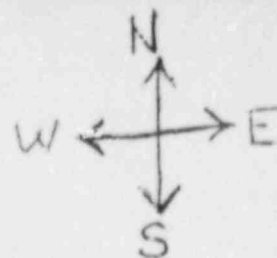
20. Reports and amendments regarding the teletherapy unit will be filed and/or maintained as specified in 10 CFR 35.606, 10 CFR 35.641 and 10 CFR 35.645.
21. Relocation of the teletherapy unit will be conducted in accordance with specifications in 10 CFR 35.641, and 10 CFR 35.645.
22. Individual records indicated in the initial application will be maintained for the duration of the license except possibly records of safety device checks, survey instrument checks, spot checks and personnel training which will be maintained for at least 2 years.
23. Disposal of licensed material will follow specifications of 10 CFR 20.301 and will be to an authorized recipient. The plan is to use the original supplier.

Sincerely,

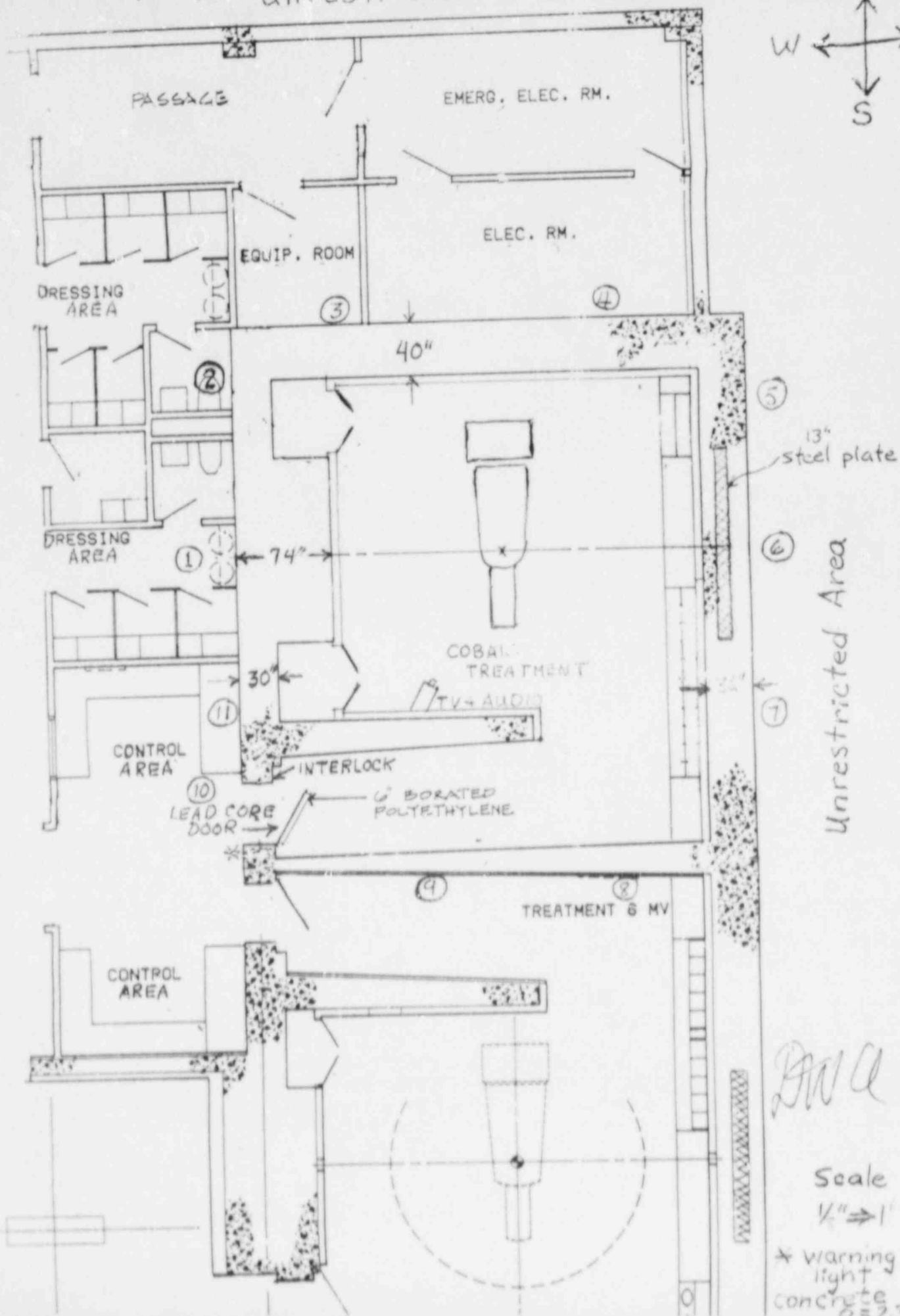
  
David W. Anderson, Ph.D.

DA/kc

Unrestricted Area

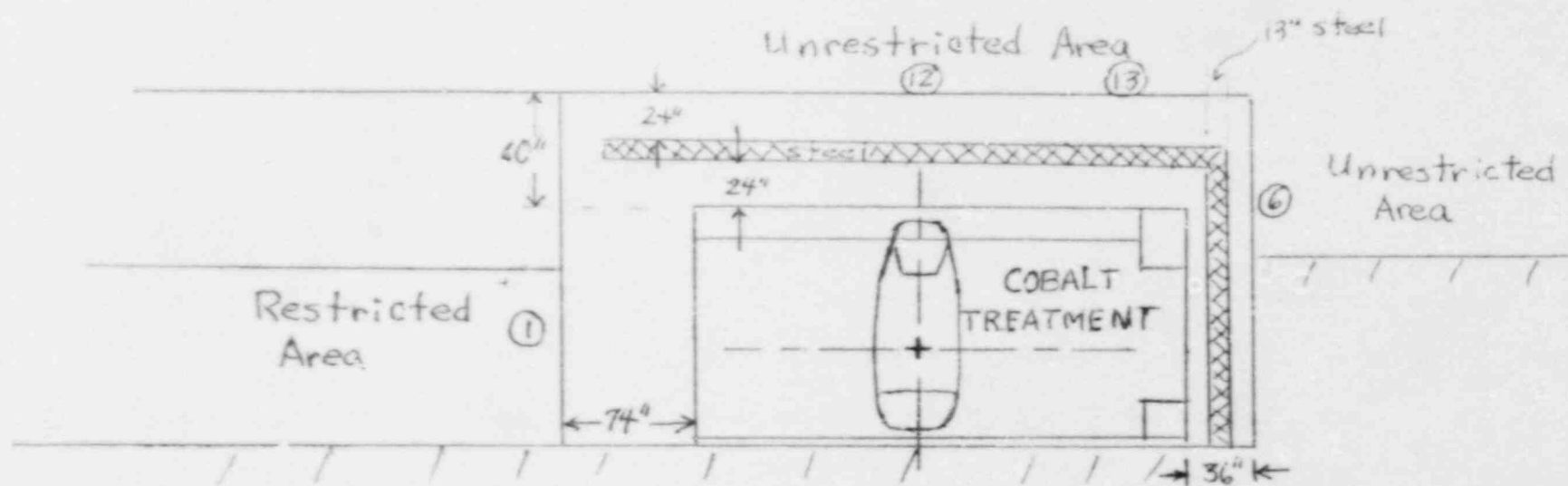


Restricted Area



Scale  $\frac{1}{8}'' \Rightarrow 1'$

concrete  $\rho = 2.35$



Solid Dirt

PKA

REPORT OF WIPE TEST RESULT

<sup>60</sup>Co TELETHERAPY UNIT AND SOURCE

DATE \_\_\_\_\_

SITE OF THE TELETHERAPY UNIT \_\_\_\_\_

IDENTIFICATION OF UNIT \_\_\_\_\_ manufacturer

\_\_\_\_\_ model number

\_\_\_\_\_ serial number

IDENTIFICATION OF SOURCE \_\_\_\_\_ supplier

\_\_\_\_\_ model number

\_\_\_\_\_ serial number

RESULTS OF TEST

1. ACTIVITY WIPED OFF COLLIMATOR \_\_\_\_\_  $\mu$  Ci

2. ACTIVITY WIPED OFF SOURCE HOLE  
OR CLOSEST AREA \_\_\_\_\_  $\mu$  Ci

SIGNATURE \_\_\_\_\_