



REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

APR 8 1982

For: Maryland tile

Exhibit 1

MEMORANDUM FOR: Vandy L. Miller, Chief, Materials Licensing Branch, Office
of Nuclear Materials Safety and Safeguards

FROM: John D. Kinneman, Chief, Materials Radiological Protection
Section, Region I

SUBJECT: ST. MARGARET'S HOSPITAL, HAMMOND, INDIANA

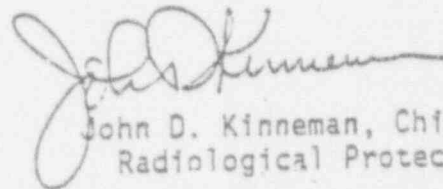
On March 10, 1982, I received a telephone call from Mr. Eric Ridout, Manager of Regulatory Affairs, Atomic Energy of Canada, Ltd., Ontario, Canada. Mr. Ridout indicated that he was very concerned about the handling of some recent problems with a teletherapy unit located at the subject hospital. Mr. Ridout stated that Neutron Products, Inc., Dickerson, Maryland, had recently installed a new source in a Theratron, Junior, Serial Number 70, teletherapy unit located at this hospital. From recent discussions with Mr. Pat Clemans, an employee of St. Margaret's, (219-932-2300) he determined that the source installed had an exposure rate of 100 rads per minute at 55 cm which is equivalent to 30 RMM. Following installation of this source, measured radiation levels at the surface of the head over the dome were 70 millirem per hour and at one meter, 30 millirem per hour. Based on a review of AECL file documents for this specific unit, Mr. Ridout concluded that there is a great likelihood that some error was made in the reassembly of the unit.

He believed that NRC and the licensee were considering adding additional shielding to the outside of the head and wanted to express his strong opposition to this course of action. It was Mr. Ridout's guess that one of two errors had been made. In this particular unit, the source drawer can be made of tungsten or uranium. From his calculations of the original manufacturing surveys of this unit, Mr. Ridout believes that a 16 to 18 RMM source would be possible with a tungsten drawer and a 30 to 35 RMM source would be possible with a uranium drawer. Therefore, he concluded that a tungsten rather than a uranium source drawer might have been used and would have caused the problem observed. Additionally, even if a uranium source drawer was used, if a tungsten or steel spacer had been used behind the source, this might have been expected to cause the elevated radiation levels. The spacer behind the source is a significant portion of the shielding in the dome area.

Apparently, the proposed corrective action is to place a pad of attenuating material, such as lead, over the area of increased radiation level. Mr. Ridout pointed out several problems with this course of action. The first problem would be that two to three inches of lead would be required to reduce the radiation level to an acceptable level. This would require a mass of about 150 pounds. A similar mass would have to be added to the counter

weight, resulting in a total increased weight of at least 300 pounds resulting in an increased load on the gantry which was not included in the original engineering analysis. This extra load would also bear on the drive mechanisms, of gears, and motors. This is an isocentric unit and an increase in size of the dome area would cause the unit to collide with the toe bearing when it is rotated. In addition, Mr. Ridout was concerned that the method of securing the material, whether it be welding or bolting, might cause a problem with the main head shielding, such as cracking.

I have provided this information to P. Vacca and D. Sreniawski, Region III, for such action as is deemed appropriate. I plan no additional action unless information is developed which indicates Neutron Products acted improperly or failed to follow their procedures. Since they were working under an NRC-241, we would like to follow up on this aspect or be able to refer it to the State of Maryland, if it appears appropriate.



John D. Kinneman, Chief, Materials
Radiological Protection Section

cc:

P. Vacca, NMSS ✓

D. Sreniawski, RIII

Exhibit 2

Parts ☐Distribute ☐

TELETHERAPY NOTICE

Five Year Inspection ☐INSTALL: Source ☒ Unit ☐ REMOVE: Source ☐ Unit ☐ SERVICE ☐ Warranty ☐Approved by [Signature] Date 4/1/81 Revisions: No./Date 1: 6-18-81 2: 7/22/81

CUSTOMER

THERAPIST

MEDICAL PHYSICIST 3: 7/24/81

Address: St. Margaret's Hospital

Mr. Charles Griffith

~~5454~~ 5454 Hohman Avenue
~~XXXXXX~~

Hammond, Indiana 46320

Phone: 219/932-2300

Fee Included: Yes ☐ No ☒
Mr. Richard Peterson, R.T.
219/932-2300 ext. 672P. O. No./Agreement Dated 6/11/81
~~XXXXXX/03/81~~ # 80993 - 6/11/81

Notified of Delivery Date 7/22/81 B: VMB

IDENT. CURES MANUF.

SOURCE INSTALLED: Model No. NPI-20-1900W S/N I-495 Front Slug 81739

Activity: Curies 1650 Date 6/1/81* Rear Slug

Drawer Installed: No. 51579 Pb.W.U. - Output: Predicted 1880 1913 Measured 1890 Date 6/1SOURCE REMOVED: Model No. NPI-20-1900W S/N 52507 Manufacturer AECLActivity: Curies 800 Date 8-13-81 Output: Predicted Measured 1913 DateDrawer Removed: No. 51579 Pb.W.U.UNIT: Manufacturer AECL Model No. Theratron Jr Head Model C S/N 70Customer License No. 13-02047-03 Status needed OK for State Approval Given PerElevator - Type freight Capacity 1800 # Ceiling Height 1800 Loading Dock Yes ☒Lamp - ☒ Yes ☐ No Length Access Through Physical Therapy Slope 2-3°Floors - Types Tile over concrete Covering Required yesTHERAPY: Other Units Simulator - Yes ☐ No ☐Area Monitor - Yes ☒ No ☐ Type Backup - Yes ☒ No ☐ Type

EXTRAS: Field Use Only - Parts

Extra Labor Man/Hours

Source Installer Russ Brown NO. READING EST. DOSE
Dosimeter: Whole Body 1850 10MR Wrist 50MRAssistant MILFORD MURRAY Dosimeter: Whole Body 9200 22MR Wrist 50MR

Assistant Dosimeter: Whole Body Wrist

SCHEDULE: Load Install Thurs. Aug. 13, 1981 Noon CompletedSPECIAL CONSIDERATIONS: PRIMARY CONTACT: Mr. Richard Peterson, R. T.~~XXXXXXXXXXXXXXXXXXXX~~~~22~~ Requested plywood be used on floors; was used at previous installation.~~22~~ No problems with unit.~~22~~ Maximum loading is 1900 RHM-should not be exceeded per Charles Griffith.~~XXXXXXXXXXXXXXXXXXXX~~

Jeff use tungsten drawer and maximum depleted uranium shielding.

Mr. Peterson must authorize use of elevator, as serviceman needs to release limitation switch prior to use. Serviceman will be present at 12 noon.

Mr. Griffith will call late Thursday to ask what time unit will be available for