

MOBILE MEDICAL SERVICES

*Specializing in Diagnostic Ultrasound and
Nuclear Medicine Procedures*

1021 C SOUTHWEST BLVD - SUITE #2
JEFFERSON CITY, MISSOURI 65101

314 - 635-8033

March 4, 1984

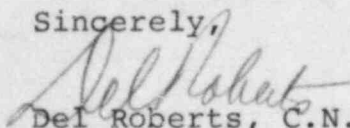
Ms. B.J. Holt\
U.S. Nuclear Regulatory Commission
Regional Licensing Section
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Re: Control # 75177

Dear Ms. Holt:

Enclosed is the information you requested in order to complete the evaluation of our license renewal. If additional information is needed, please do not hesitate to contact me.

Sincerely,


Del Roberts, C.N.M.T.
President

enclosure

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U.S. Nuclear Regulatory Commission
Regional Licensing Section
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Re: Control #75177

Gentlemen:

Following is our response to your request for additional information relating to our recent license renewal application. The responses are in the sequential order of your questions.

1. Question #1: Mobil Medical Services has adopted a Radiation Safety Committee. The membership will be:

Mr. Del Roberts, Nuclear Medicine Technologist,
President
Dr. William Voss, Nuclear Medicine Physician
Mr. Emory Larimore, Radiation Physicist
Mr. Jim Francis, Nuclear Medicine Technologist

The responsibilities listed in Appendix B of Reg. Guide 10.8 will be followed. we ask that an exemption be granted for having a nursing representative on the committee.

2. In our licesse renewal request various references were made to the consulting services provided by Syncor International (Safety Sciences Division). These references should be changed to indicate that Radiation Consultants of Mid-America will provide radiation physics services to Mobil Medical Services. The NRC license number for Radiation Consultants of Mid-America is 24-18831-01.

3. Question #2: In a letter to the NRC dated 10/16/82 we asked that Dr. Rodney C. Hartman be listed as an approved user. Supplements A & B for Dr. Hartman were submitted. This amendment request was approved by the NRC. Copies of the 10/16/82 letter and Supplements A & B for Dr. Hartman are enclosed.

4. Question #3a: When the facility located at Route 3, Karen Drive, Holt Summit, Missouri, was vacated, a radiation survey/wipe test was performed at the facility to insure that no radiation sources remained and that no loose surface contamination was present. A copy of this survey is enclosed.

5. Question #3 (b): The satellite facilities are located in the buildings indicated below:

a. 2402 Jefferson, Suite #4, Lexington, Missouri. This facility is a storage building. There are storage spaces surrounding the area used by Mobil Medical Services. The occupancy of the surrounding areas would be very low.

b. Goodtime Country Warehouse, Compartment #2, R.R. #4, Hwy 163 & 63, Columbia, Missouri. This is a warehouse/storage building. The area is surrounded by a parking lot. The occupancy of the surrounding area is very low.

c. Space Center, 3737 E. Tenth St., Suite #12, Joplin, Missouri. This is a rental storage building. The area surrounding the space occupied by Mobil Medical Services is used for storage; the occupancy of the surrounding areas is very low.

d. 2500 S. Halliburton, Building #3, Room 1A, Kirksville, Missouri. This is a rental storage space. The area surrounding the space utilized by Mobil Medical Services is used for storage. The occupancy of the surrounding area is very low.

6. Question #3 (c): A general description of the areas where nuclear medicine is performed at each facility is below:

<u>Facility</u>	<u>Type of Area</u> (X-ray room, ER area, etc.)
Community Memorial 319 Grand Avenue Moberly, Missouri 65270	X-ray Room
Grim-Smith Hospital and Clinic 112 East Patterson Avenue Kirksville, Missouri 63501	X-ray Room
John Fitzgibbon Memorial Hospital 868 South Brunswick Marshall, Missouri	Empty Room (Former patient room)
Wright Memorial Hospital 701 East First Street Trenton, Missouri	EKG Room
Cooper County Memorial Hospital Boonville, Missouri	X-ray Room
Scotland County Memorial Hospital Memphis, Missouri	X-ray Room
Putnam County Memorial Hospital Unionville, Missouri	X-ray Room

Hedrich Medical Office Building 103 East 11th Street, Suite 2A Chillicothe, Missouri 64601	X-ray Room
Sullivan County Memorial Hospital Milan, Missouri	X-ray Room
General John J. Pershing Memorial Hospital Brookfield, Missouri	X-ray Room
Laughlin Osteopathic Hospital 900 East Laharpe Street Kirksville, Missouri	X-ray Room
St. Francis Hospital 225 West Hayde Street Marceline, Missouri	X-ray Room
Callaway Memorial Hospital Fulton, Missouri	Empty Unused Room
Samaritan Memorial Hospital Macon, Missouri	X-ray Room
Hutchinson Clinic Northtown Shopping Plaza North Highway 63 Kirksville, Missouri	(Not Doing)
Valuck Clinic Northtown Shopping Plaza North Highway 63 Kirksville, Missouri	(Not Doing)
Albert M. Keller Memorial Hospital 600 West Morrison Street Waverly, Missouri	X-ray Room
Grove General Hospital 1310 South Main Grove, Oklahoma	X-ray Room
Community Hospital Bridge and Bay streets Sweet Springs, Missouri	(Unused surgery room)
McCune-Brooks Hospital 627 West Centennial Carthage, Missouri	(Not Doing)
Lee's Summit Community Hospital 530 North Murray Road Lee's Summit, Missouri 64063	X-ray

Lexington Memorial Hospital
15th & State
Lexington, Missouri

X-ray

Hedrick Medical Center
100 Central Street
Chillicothe, Missouri

X-ray

7. Question #3 (d): The office in Jefferson City (1021 C Southwest Blvd.) acts as a centralized location for some of the records generated for Mobil Medical Services. The Jefferson City address is responsible for maintaining the film badge exposure records, licensing records, inspection records, and physics consulting reports. Each satellite facility is responsible for maintaining records of receipt, use, and disposal. In addition, the records for radiation surveys/wipe tests at each of the participating hospitals is maintained at the satellite facility. On a routine basis the records maintained at the satellite facilities are reviewed by the consulting physicist. His findings are then reviewed at our quarterly Radiation Safety Committee meetings in Jefferson City.

8. Question #4: In our renewal application we indicated that the area survey procedures listed in Appendix I, Reg. Guide 10.8 would be followed. Since we do not have access at the satellite facilities to a counting system sensitive enough to detect 200 dpm per hundred cm squared, we wish that the modified survey procedure below be used:

1. All elution, preparation, and injection areas will be surveyed daily with an appropriate low-range survey meter and decontaminated if necessary.
2. Laboratory areas where only small quantities of radioactive material are used (less than 200 uCi) will be surveyed monthly.
3. Waste storage areas and all other laboratory areas will be surveyed weekly.
4. The weekly and monthly surveys will consist of:
 - a. A measurement of radiation levels with a survey meter sufficiently sensitive to detect 0.1 mR/Hr.
 - b. A series of wipe tests to measure contamination levels will be performed on a weekly basis. Alcohol swabs will be used to test the various areas. The wipe tests will be removed from an area where radiation sources might affect background levels. The wipe tests will be counted on a low level GM survey meter. The GM detector will have a thin window (1.4 - 2.0 mm per cm squared). Any radiation indication above background will be considered as contamination. If contamination

is found, the areas will be cleaned to background levels.

5. A permanent record will be kept of all survey results including negative results. The record will include:

- a. Location, date, and identification of equipment used, including the serial number and pertinent counting efficiencies.
- b. Name of person conducting the survey.
- c. Drawing of area surveyed, identifying relevant features such as active storage areas, active waste areas, etc.
- d. Measured exposure rates, keyed to location on the drawing (point out rates that require corrective action).
- e. Detected contamination levels, keyed to locations on drawing.
- f. Corrective action taken in the case of contamination or excessive exposure rates, reduced contamination levels or exposure rates after corrective action, and any appropriate comments.

9. Question 5 (a): The exhaust fan in Nuclear Medicine at Lexington Memorial Hospital will be operated at all times.

10. Question 5 (b): In the event of an accidental release of Xe-133 at the Hedrick Medical Center or Carroll County Hospital, the emergency procedure described in Item D of the Supplemental Information for Xe-133 used at Lee's Summit Hospital will be followed.

11. Question 5 (c): Please refer to the attached Xe-133 Supplement for information relating to the use of Xe-133 at Carroll County Hospital.

12. Question 5 (d): The ventilation rates at Lee's Summit Community Hospital, Lexington Memorial Hospital, Carroll County Hospital, and the Hedrick Medical Center will be checked on a semi-annual basis by Radiation Consultants of Mid-America. Records of these checks will be maintained for review by the NRC at the Jefferson City office.

13. Questions 6 (a): Patient doses are assayed at the satellite facility prior to departure. The doses are pre-calibrated to allow for decay based on anticipated injection time. The pre-calibrated dose will decay to a projected normal prescribed dose at the time of injection.

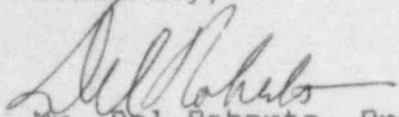
14. Question 6 (b): To prevent any unauthorized removal of radioactive materials located in the van, all doors to the van are locked whenever the nuclear medicine technologist is not physically present.

15. Question 6 (c): Prior to assuming responsibilities at a satellite facility and annually thereafter, the personnel working with radioactive materials are given instruction which includes how to handle spillage of radioactive materials and other emergencies. The procedures for handling radiation emergencies contained in Reg. Guide 10.8 are a major part of the instruction. In addition, instructions are given in the response to road traffic accidents or loss of sources.

16. Question 6 (d): Radioactive material is not stored in the vans over night. At the end of each day's use, the material is removed from the van and the van is monitored for any surface contamination. If contamination is found, the van is cleaned until the levels reach background readings.

If you have any questions relating to our responses above, please do not hesitate to call.

Sincerely,



Mr. Del Roberts, President
Mobil Medical Services.

Xe-133 Supplement

1. Quantities to be used:
 - a. 2 patients per week
 - b. 20 mCi/patient
 - c. possession limit: 100 mCi
2. Use area:

Please see the attached diagram of the nuclear medicine area.
3. Ventilation information:
 - a. Imaging area: The imaging area has 0 CFM supply and 840 CFM exhaust.
 - b. The exhausted air from nuclear medicine is vented on the top of the building. The exhaust rate of the system is 840 CFM. The system exhaust fan is located near the exhaust vent so that there is a negative pressure throughout the system. The nearest air intake vent is approximately 40 feet away.
 - c. Air flow rates will be insured by semi-annual preventive maintenance checks performed by Radiation Consultants of Mid-America.
4. Procedures for routine use:

A pulmonex Xe-133 delivery/trap system will be used. Procedures for its use will be as indicated in the instrument manual. In addition, patients will breath through a face mask to prevent the accidental loss of Xe-133. For patients that cannot be fitted with a face mask a nose clamp will be used to prevent exhaling into the room.
5. Emergency Procedure: In the event of an accidental release of Xe-133 into the room, proceed as follows:
 - a. Procure the low level survey meter, evacuate the area, and insure that all access doors to the area are closed (the low level survey meter shall be on hand and available as part of the equipment necessary while performing Xe-133 procedures).
 - b. Wait 30 minutes and resurvey the area. The room area must return to background levels before work may be resumed.

6. Air concentration of Xe-133

a. Restricted area:

1. Quantities to be used

(a) 2 patients per week

(b) 20 mCi per patient 4

(c) 40 mCi/week = 4.0×10^{-5} uCi/week

2.
$$v = \frac{A \times f}{c}$$

$$= \frac{(4.0 \times 10^{-5} \text{ uCi/week}) (2)}{1 \times 10^{-8} \text{ uCi/ml}} = 8.0 \times 10^{-8} \text{ ml/week}$$

The required ventilation rate is

$$\frac{8.0 \times 10^{-8} \text{ ml/week}}{40 \text{ hrs/week}} \times \frac{1 \text{ CFM}}{1.7 \times 10^{-6} \text{ ml/hr}} = 11.8 \text{ CFM}$$

The ventilation rate from nuclear medicine greatly exceeds the required value.

b. Unrestricted area: From the table in Appendix M, 6 (a-5) it can be seen that the exhaust rate on the roof (840 CFM) greatly exceeds the volume needed to dilute any Xe-133 that is lost from the patients/trap in nuclear medicine.

7. Saturated filters will be handled and replaced in the hot lab area using the manufacturer's suggested methods. Ample lead shielding (2" lead bricks) is available for storing the charcoal filters until they decay to background. The individual removing the filters will use lead gloves and wear a lead apron. The filters will be placed in a double plastic bag and sealed. After decay to background levels the filters will be monitored and disposed of as normal trash.