

Date: February 7, 2020

**Alliance Imaging
Mobile Van #54**

Annual Exposure Assessment For Exposures Received to "Members of the General Public"

The annual exposure evaluation was completed through a series of ambient exposure surveys, inverse square calculations and estimated occupancy times. Following this examination, it was concluded the annual exposure limit of 100 mrem had not been exceeded by this licensee. Please refer to the following for details:

Patient Injected Activity @ Time of Survey = 13.0 mCi F-18

Ambient Exposure Surveys completed with Victoreen, Model 451B Ion Chamber

Orange cones are placed at 2 meters around the mobile van to establish a security border.

Members of the General Public are required to maintain a minimum distance of 2 meters from the mobile van.

Survey Location(s)

<u>Location</u>		<u>Ambient Exposure Reading</u>
1.	6 inches from PET Patient (PET Resting Chair)	20.20 mR/hr
2.	1 meter from PET Patient (PET Resting Chair)	4.82 mR/hr
3.	1 meter from PET Patient (PET Resting Chair)	4.82 mR/hr
4.	1 meter from PET Patient (PET Resting Chair)	4.80 mR/hr
5.	1.5 meters from PET Patient (Imaging Table)	2.27 mR/hr
6.	1.5 meters from PET Patient (Imaging Table)	2.25 mR/hr
7.	1.5 meters from PET Patient (Imaging Table)	2.30 mR/hr
8.	1.0 meter from Outside Wall of PET Van, South Side (PET Resting Chair)	0.51 mR/hr
9.	2.0 meters from Outside Wall of PET Van, South Side (PET Resting Chair)	0.25 mR/hr
10.	1.0 meter from Outside Wall of PET Van, East Side (PET Resting Chair)	0.44 mR/hr
11.	2.0 meters from Outside Wall of PET Van, East Side (PET Resting Chair)	0.14 mR/hr
12.	1.0 meter from Outside Wall of PET Van, North Side (PET Resting Chair)	0.20 mR/hr
13.	2.0 meters from Outside Wall of PET Van, North Side (PET Resting Chair)	0.11 mR/hr
14.	1.0 meter from Outside Wall of PET Van, North Side (Imaging Room)	0.22 mR/hr
15.	2.0 meters from Outside Wall of PET Van, North Side (Imaging Room)	0.09 mR/hr
16.	1.0 meter from Outside Wall of PET Van, West Side (Imaging Room)	0.14 mR/hr
17.	2.0 meters from Outside Wall of PET Van, West Side (Imaging Room)	0.03 mR/hr
18.	1.0 meter from Outside Wall of PET Van, South Side (Imaging Room)	0.18 mR/hr
19.	2.0 meters from Outside Wall of PET Van, South Side (Imaging Room)	0.06 mR/hr

Assumptions:

1. Member of the General Public - Standing Outside the Mobile Van @ approximately 2 meters from the van and a Maximum Occupancy of 3.00 hours/year).
2. Distance From Radioactive Patient to Members of the General Public (2.00 meters(6.00 ft). Ambient exposure dose rate from exposure emitted from the radioactive patient @ an average of 6.00 ft = 0.25 mR/hr. Patient exposure @ 6 inches = 20.20 mR/hr - PET Patient lying in recliner in the PET quiet area of the mobile van.
3. Van Operating with PET patients and radioactive materials approximately 260 days/year. Hours of Operation: 8 hours/day.
4. Ambient exposure dose rates measured utilizing a Victoreen 451B Ion Chamber.

Calculations:

Maximum External Exposure received by a Member of the General Public, standing two 2 meters 6.0 ft (Area of Maximum Exposure) from outside of the exterior wall of the mobile van for 3 hours/year.

$$(0.250\text{mR/hr})(3.0 \text{ hrs/year})= 0.75 \text{ mrem/year (PET Patient Exposure)}$$

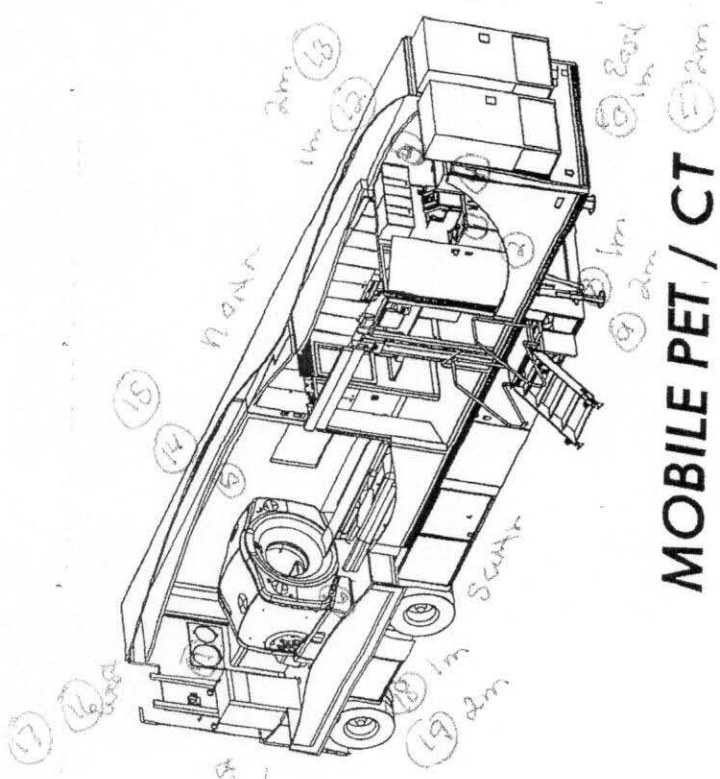
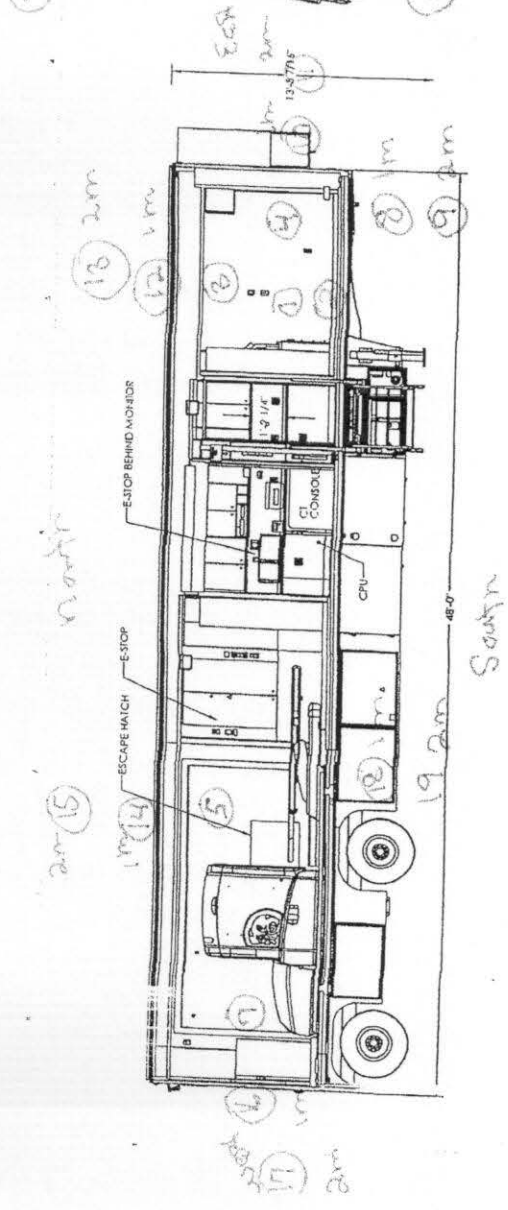
Exposure Received by a "Member of General Public" sitting 1.0 meter (3 ft) from the PET Patient resting in the PET Quiet Room, for a maximum period of 3.0 hours.

$$(4.80 \text{ mR/hr})(3 \text{ hrs/year}) = 14.40 \text{ mrem/year}$$

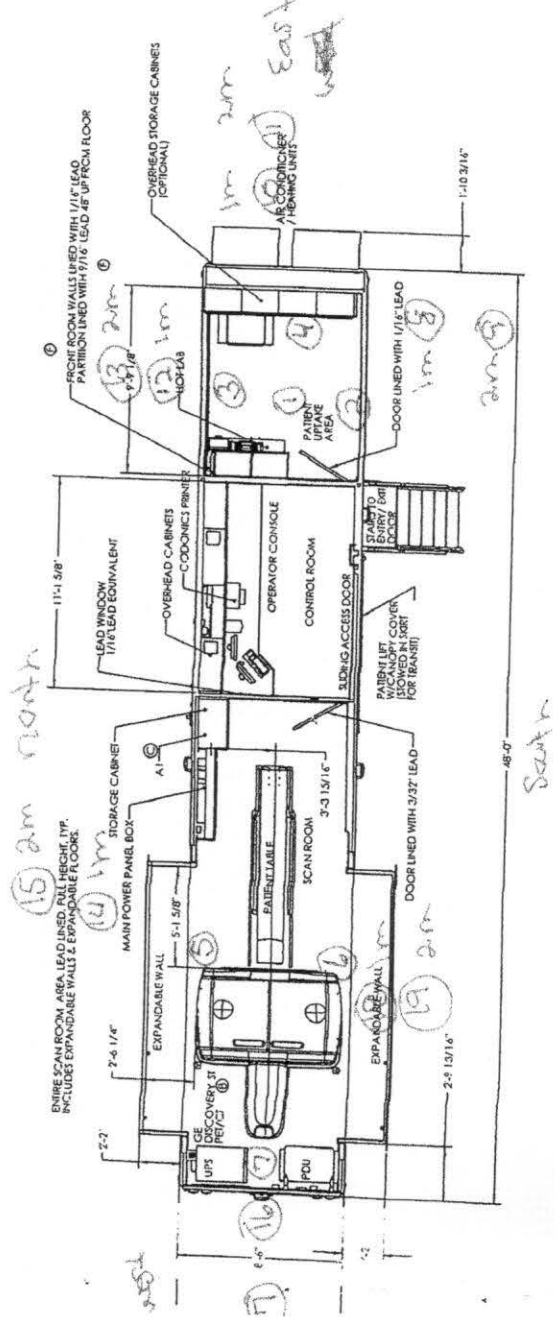
Based on this analysis, a "Member of the General Public" would not exceed 100 mrem/year.

Yearly analysis completed by Michael W. Lairmoe, M.S.

Alliance #54 Feb 7, 2020



MOBILE PET / CT GE Discovery ST



NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
1	GE DISCOVERY ST PET/CT	1	UNIT	
2	STORAGE CABINET	1	UNIT	
3	MAIN POWER PANEL BOX	1	UNIT	
4	EXPANDABLE WALL	1	UNIT	
5	EXPANDABLE FLOOR	1	UNIT	
6	PATIENT LIFT	1	UNIT	
7	PATIENT LIFT COVER	1	UNIT	
8	DOOR LINED WITH 3/32" LEAD	1	UNIT	
9	PATIENT ENTRY/EXIT DOOR	1	UNIT	
10	3.0" LG ACCESS DOOR	1	UNIT	
11	OPERATOR CONTROL ROOM	1	UNIT	
12	OPERATOR CONSOLE	1	UNIT	
13	OVERHEAD CABINETS	1	UNIT	
14	COORDINATES PRINTER	1	UNIT	
15	LEAD WINDOW 1/16" LEAD EQUIVALENT	1	UNIT	
16	FRONT ROOM WALLS LINED WITH 1/16" LEAD	1	UNIT	
17	PARTITION LINED WITH 1/16" LEAD 48" UP FROM FLOOR	1	UNIT	
18	OVERHEAD STORAGE CABINETS (OPTIONAL)	1	UNIT	
19	PATIENT UP/REAR AREA	1	UNIT	

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NOTICE
This is a drawing of the proposed design of the vehicle. It is not a contract. The actual design and construction of the vehicle may vary from the drawing. The drawing is for informational purposes only. The drawing is not to be used for any other purpose without the written consent of Medical Coaches, Inc.

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Scale: 1/8" = 1'-0"

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