CON Standard 1.12 – Compliance with 2014 FGI Guidelines for Design and Construction of Health Care Facilities
Section 2.2-3.6.3 Positron Emission Tomography (PET)

EXHIBIT 2

FGI Guideline Section Number	FGI Guideline Section Title	FGI Requirement	How Addressed by Proposed Project
2.2-3.6.3.1	General	(1) Application. When PET services are offered, space in the overall PET suite shall be provided to accommodate the equipment manufacturer's minimum technical specifications. (2) Location and layout. PET suites shall be designed and positioned in the hospital or facility to restrict incidental exposure to ionizing radiation sources by persons not immediately involved in the PET examination.	The proposed scanner and associated equipment have been incorporated into the existing room with modifications to the equipment closet as recommended by the vendor, Philips Medical, as shown on the attached Equipment Layout Drawing A-1. The PET suite, as shown on drawing CON 1.1, is always locked. Access control to the suite is maintained by a magnetic locking system which grants entry upon swiping of a valid magnetic proximity card. The proximity card is issued and tracked by UVMMC security services only to those individuals requiring access to the suite as deemed appropriate by radiology PET leadership.
2.2-3.6.3.2	PET Facility Space Requirements	(1) Scanner Room a) The scanner room shall be large enough to accommodate the PET equipment and clearances in accordance with the manufacturer's technical specifications. b) A scanner room that	As previously identified in section 2.2-3.6.3.1 General, the proposed scanner and associated equipment have been incorporated into the existing room with modifications to the equipment closet as recommended by the vendor, Philips Medical, as shown on the attached Equipment Layout Drawing A-1.

		accommodates both PET and CT scanning (PET-CT scanner room) shall be permitted. i. Additional space shall be provided when PET is combined with CT to accommodate the larger scanner. ii. A PET/CT scanner room shall also comply with the requirements of Section 2.2-3.4.2.1 (CT scanner room). (2) Cyclotron Room - Where radiopharmaceuticals are prepared on site, a cyclotron shall be provided. A cyclotron shall not be required when radiopharmaceuticals are provided by commercial sources. a) If provided, cyclotron facilities shall be located in access-restricted areas in accordance with applicable state and federal laws. b) Shielding requirements for cyclotron facilities shall be coordinated between the equipment manufacturer and a reviewing medical physicist.	A cyclotron room is not required as radiopharmaceuticals are sourced from a commercial vendor.

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2.2-3.6.3.3	Control Room	A control room shall be provided with a full view of the patient in the PET scanner.	Full viewing of the patient from the control room is provided by a window as shown in Philips Equipment Layout drawing A-1. Viewing at the rear of the bore is accomplished with a camera / monitor system.
2.2-3.6.3.4	Patient Uptake / Cool-Down Room	A shielded room with a dedicated toilet to accommodate radioactive waste and a hand-washing station shall be provided. (1) Uptake rooms shall be provided as appropriate to the examinations and radiopharmaceuticals used for the PET service. (2) Uptake rooms shall be configured and appointed to minimize patient movement during the radiopharmaceutical uptake period.	Patient hold and recovery takes place in the uptake rooms as shown on drawing CON 1.2. Shielding of the rooms is as shown by the shielding coordination legend as shown on drawing CON 1.2. Room 1242B as shown on drawing CON 1.2 is a shielded toilet facility. There are two major types of studies that are performed. For those utilizing F-18, the patient is injected in the area designated as uptake as shown on Drawing CON 1.2. The F-18 will be received in the dedicated hot lab, which has a work area shielded with 2 in thick lead bricks. Doses may be assayed and dispensed from this area or from a dedicated unit as subsequently described. The shielded work space is large enough to allow shielding of the doses, which are also shielded within tungsten shipping holders. When administering patient doses, the syringe is kept within syringe shields that are designed for 511 keV. UVMMC has two shields, one for 3cc and one for 5 cc syringes. We also utilize a dedicated bulk F-18 FDG dispenser that allows further reduction of dose to personnel and

			individualized dosage to patients. A specially designed tungsten shipping container is received and loaded into the dispenser. Once loaded, the unit is kept locked and is stored in the locked storage room adjacent to the hot lab as shown in Drawing CON 1.2. The shielding is such that exposure rates around the dispenser are minimal. The patient specific activity is dispensed via specialized tubing which allows the technologist to maintain a greater distance from the activity while providing necessary patient oversight.
2.2-3.6.3.5	Hand-washing Stations	Hand-washing stations shall be provided throughout the PET suite at locations of patient contact and at locations where radiopharmaceutical materials are handled, prepared, or disposed of.	Hand-washing stations are provided in Injection Room 1242A, Uptake Room 1242, and Exam Room 1243 as shown on drawing CON 1.1
2.2-3.6.3.6	Support Areas for PET Facilities	(1) Pre-procedure patient care and recovery area. A dedicated pre-procedure patient care and recovery area shall be provided to accommodate at least two stretchers. This area shall comply with Section 2.2-3.5.3 (Pre-Procedure and Recovery Patient Care Areas). (2) Computer equipment room. A computer equipment room shall be provided as indicated by the equipment manufacturer.	Patient hold and recovery takes place in the uptake rooms as shown on drawing CON 1.2. Three stretchers can be accommodated. The computer room as shown on Philips Medical Equipment Layout drawing A-1 as Equipment Closet 1243A indicates that all vendor supplied equipment can be accommodated. Hot materials are stored in storage room 1241 which is shown on drawing CON 1.2. Hot material areas are

		(3) Contaminated (hot) soiled holding. A contaminated soiled holding area shall be provided and operationally integrated to minimize incidental exposure to ionizing radiation by persons providing environmental services in the PET suite.	locked and access is granted only to those radiology staff requiring operational access. Spent syringe or tubing/IV needle are placed in shielded sharps storage for decay to background levels. For cardiac studies we utilize a Sr/Rb generator manufactured by Bracco. Rb 82 is a material with a half life of 75 seconds. This means that within 10 min of removing the Rb82 from the generator, there is effectively no radioactivity remaining. Thus, the procedure requires that the Rb 82 be administered intravenously while the patient is positioned in the PET scanner. The FDA approved delivery device, which contains very adequate shielding for the generator, is stored in the PET room in a locked closet when not in use. Specially approved administration sets are used. The IV is placed in the patient and the infusion started, at which time all personnel move to the shielded control area where the patient is monitored. By the time the study is completed, the activity has decayed to background. Thus, no patient specific shielding is required. Due to the rapid decay of the Rb82, there is no waste that is radioactive.
2.2-3.6.3.7	Special Design Elements for PET	(1) Manufacturer's siting requirements	The manufacturer's siting

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	Facilities	shall be met for combined PET/CT systems. (2) Shielding requirements for PET/CT scanners shall be determined by a medical physicist.	requirements have been provided by Philips Medical and are met as shown on Philips Medical Equipment Layout drawing A-1. The 2009 construction of the hot lab area included shielding which met the requirements established by the UVMMC Radiation Safety Officer. The Radiation Safety Officer is an American Board of Radiology certified medical nuclear physicist and an associate professor in the Department of Radiology at the University of Vermont. A review of shielding adequacy was conducted following the installation of the existing PET/CT. All exposure level mitigation conditions, as specified by the Nuclear Regulatory Agency and other advisory organizations, were met. The UVMMC Radiation Safety Officer has reviewed the radiation protection requirements related to the proposed PET scanner and has determined that no changes are required.