United States Nuclear
Regulatory Commission
Region IV
611 Ryan Plaza Drive
Suite 1000
Arlington, Texas 76011

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Dear Sirs:

A newly constructed area is nearing completion at Jane Phillips Episcopal Memorial Medical Center. This new area is designed to house radiology operations including our nuclear medicine program. A schematic of the new area is included with this correspondence. The new area is located on the same floor as the presently existing facility and is separated in distance by about 50 feet.

The nuclear medicine program as it presently exists will not be modified by the physical relocation of equipment. All presently used procedures will be maintained.

The new facility has been constructed with the intent to continue with our use of xenon studies. We have followed certain procedures given in the Regulatory Guide 10.8 and found that the room is suitable for xenon studies. We have followed the model procedure for calculating worker dose from concentrations of gases in the work area. We have developed a procedure for calculating spilled glass clearance times.

We wish to move our activities to the new area as soon as possible. Please amend our license in this regard. A check for $120.00 has been included to cover the cost of evaluation. Thank you for your attention in this matter.

Sincerely,

David S. Gooden

David S. Gooden, Ph.D.
Consulting Radiological Physicist

APPROVAL: [signature]

Log Nov-1-IV
Remitter
Check No. 127393
Amount $120
Fee Category 7C
Type of Fee Amd
Date Check Rec'd 11/7/88
Date Completed 11/7/88
By [signature]

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REG4 LIC30
35-01164-02 PDR

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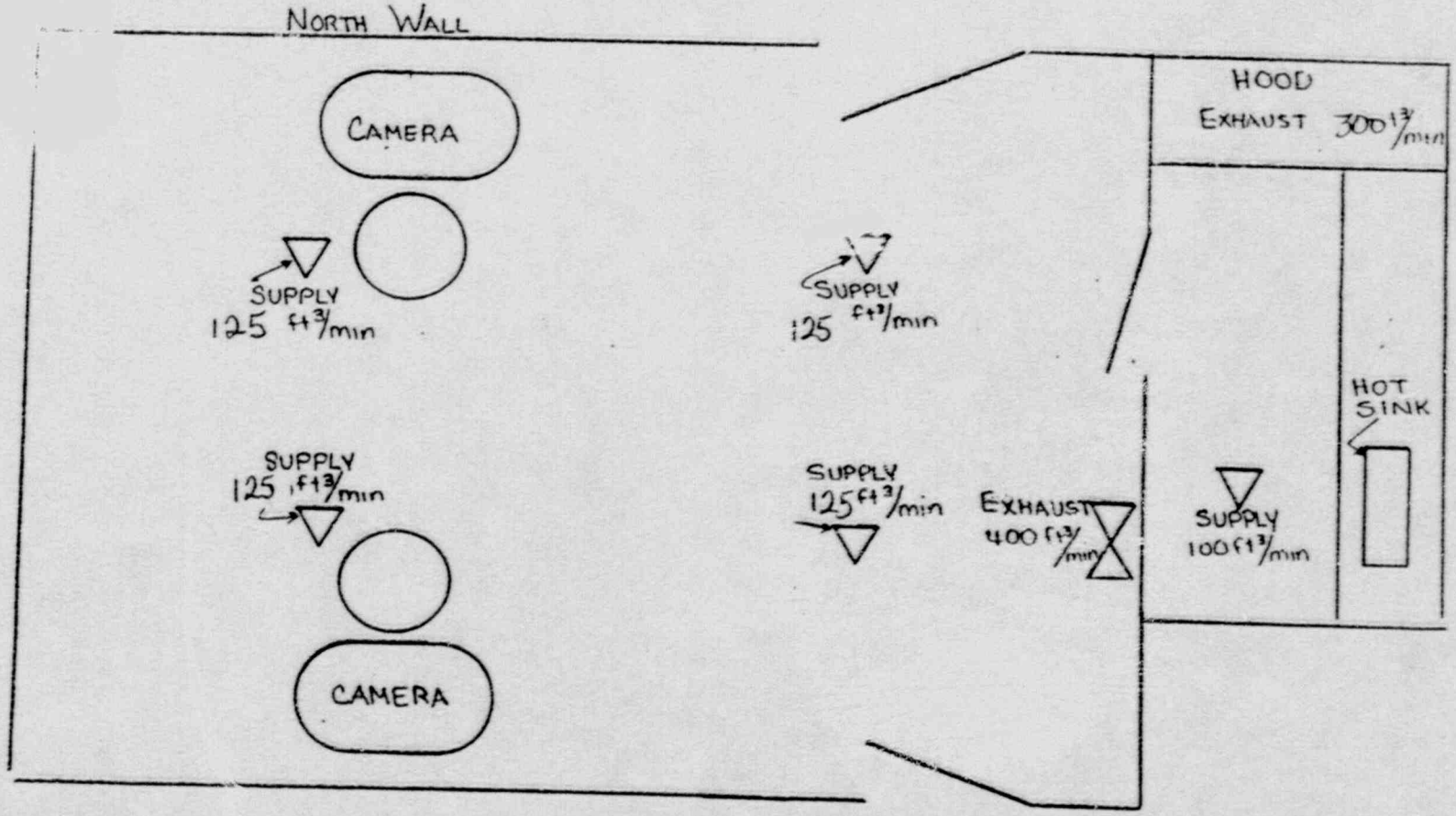
JANE PHILLIPS EPISCOPAL MEMORIAL MEDICAL CENTER

NEW NUCLEAR MEDICINE AREA



MODEL PROCEDURE FOR CALCULATING WORKER DOSE FROM CONCENTRATIONS OF GASES AND AEROSOLS IN WORK AREAS

1. Data:

   a. Estimated number of studies per week: 3 studies/week

   b. Activity to be administered per study: 20,000 µCi

   c. Estimated activity lost to the work areas per study: 0.20

   d. Measured airflow supplied by each vent in the imaging room: 600 cu ft min

   e. Measured airflow exhausted by each vent in the imaging room: 700 cu ft min

   f. Maximum permissible air concentrations in restricted and unrestricted areas, Xe-133, the maximum permissible values and 1×10^{-5} µCi/ml in restricted areas and 3×10^{-7} µCi/ml in unrestricted areas.

2. The following calculations must be made:

   a. The sum of all measured exhaust rates and the sum of all measured supply rates. If the former is larger than the latter, this ensures that the imaging room is at negative pressure.

      500 cu ft/min (supply) - 700 cu ft/min (exhaust) = -100 cu ft/min (negative pressure)

   b. The estimated average concentration in restricted areas.

      (1) The total activity released to the restricted area (activity used each week multiplied by estimated fractional loss per study) divided by the total air exhausted (sum of all exhaust rates multiplied by the length of the work week) must be less than the applicable maximum permissible value for a restricted area.

$$3\left(\frac{\text{studies}}{\text{week}}\right) \times 20{,}000 \left(\frac{\mu\text{Ci}}{\text{study}}\right) \times 0.2 \div 700 \left(\frac{\text{cuft}}{\text{min}}\right) \times 12 \times 2.54)^3 \left(\frac{\text{ml}}{\text{cuft}}\right) \times$$

$$7\left(\frac{\text{da}}{\text{wk}}\right) \times (24 \times 60) \left(\frac{\text{min}}{\text{da}}\right) = 1.925 \times 10^{-7} \frac{\mu\text{Ci}}{\text{ml}}$$

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MODEL PROCEDURE FOR CALCULATING SPILLED GAS CLEARANCE TIME

a. A, the highest activity of gas in a single container, in microcuries: 25,000

b. Measured airflow supply from each vent in the room (if different during heating and cooling seasons, use the lesser value) in milliliters per minute: 6.8×10^6

c. Q, the total room air exhaust determined by measuring, in milliliters per minute, the airflow to each exhaust vent in the room (the exhaust should be vented and not recirculated within the facility); this may be either the normal air exhaust or a specially installed gas exhaust system: 1.98×10^7

d. C, the maximum permissible air concentrations in restricted and unrestricted areas. For Xe-133, the maximum permissible values are 1×10^{-5} µCi/ml in unrestricted areas.

e. V, the volume of the room in milliliters. 1.51×10^8 ml

2. For each room make the following calculations:

a. The airflow supply should be less than the airflow exhaust to ensure the room is at negative pressure.

b. The room is a restricted area. The evacuation time, t, equals

$$t = \frac{V}{Q} \times \ln \left(c \times \frac{V}{A}\right)$$

$$t = \frac{1.51 \times 10^8}{1.98 \times 107} \times \ln \left(1 \times 10^{-5} \times \frac{1.51 \times 10^8}{25{,}000}\right)$$

$$= 21.4 \text{ minutes.}$$

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