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From: Commanding Officer, Navy Environmental Health Center

Subj: NAVAL RADIOACTIVE MATERIALS PERMIT (NRMP) INFORMATION NOTICE  
2001-03: SOURCE CHECK PROCEDURE FOR AN/PDQ-1 RADIAC

Ref: (a) SPAWAR ltr 9492 Ser 321SB/009 of 8 May 01  
(b) NAVENVIRHLTHCEN ltr 6470 Ser 31/1147 of 17 Mar 93  
(c) NAVENVIRHLTHCEN ltr 6470 Ser 31/3248 of 23 Jun 93

Encl: (1) Standard Operating Procedures for Determining the Apparent Exposure Rate from a  
Dedicated Check Source for the AN/PDQ-1 RADIAC

1. Per reference (a), your existing AN/PDR-27 survey instruments are being replaced with the new multi-function AN/PDQ-1 RADIAC. The AN/PDQ-1 RADIAC Set consists of an IM-265/PDQ RADIAC Meter, with an internal gamma detector, and an external DT-680/PDQ gamma/beta detector probe.

2. Title 10, Code of Federal Regulations, Part 35.51 requires medical use licensees to check each survey instrument for proper operation with a dedicated check source each day of use by comparison to the apparent exposure rate determined at the time of calibration. This requirement would entail shipping a check source with the survey instrument to the calibration facility, which is not allowed by current Navy calibration procedures for either the AN/PDR-27 or the AN/PDQ-1 instruments. As an alternate means of meeting the intent of the regulation, the Nuclear Regulatory Commission approved a procedure promulgated by references (b) and (c) to allow the command, instead of the calibration facility, to determine the apparent exposure rate from a dedicated check source and attach the result to the AN/PDR-27.

3. An administrative change is being made to the Navy's Master Material License of Broad Scope to replace the AN/PDR-27 with the AN/PDQ-1 RADIAC and to modify the current check source procedure for application to the AN/PDQ-1. The revised procedure is provided as enclosure (1). Incorporate enclosure (1) into your Standard Operating Procedures manual and ensure that appropriate personnel are trained in the revised procedure.

4. For additional information, please contact LCDR P. T. Fetherston, MSC, USN, Radiation Health Team Leader, at DSN 253-5575 or (757) 462-5575, Fax (757) 445-9481, or E-Mail at fetherstonp@nehc.med.navy.mil.

/s/  
P. T. FETHERSTON  
By direction

Distribution:  
All Medical Use NRMP Holders

STANDARD OPERATING PROCEDURES (SOP)  
FOR  
DETERMINING THE APPARENT EXPOSURE RATE FROM A  
DEDICATED CHECK SOURCE FOR THE AN/PDQ-1 RADIAC

1. Upon return of each AN/PDQ-1 from the calibration facility, the apparent exposure rate from a dedicated check source in a fixed geometry shall be determined. The apparent exposure rate and date determined shall be conspicuously posted on the instrument.

2. The following procedure shall be used to determine the apparent exposure rate.

a. Place the cesium-137 dose calibrator check source on a flat surface, such as a counter top, in a low background area. (Note: Other sealed sources containing cesium-137 may be used. If a source other than the dose calibrator check source is used, the source shall be identified in this paragraph for the command-specific SOP.)

b. Place the DT-680/PDQ gamma/beta probe on the same surface as the source, at a distance of twelve (12) inches from the source, as shown in the enclosed diagram. The "+" on the closed shield on the side of the probe marks the center of the detector and should be aligned with the center of the check source. The twelve inch distance should be measured from the "+" on the end of the probe which marks the centerline of the detector tube. (Note: If a source other than the dose calibrator source is used, the distance between the source and detector may need to be changed to provide an acceptable apparent exposure rate. In this case, the geometry of the setup including the distance between the source and detector shall be recorded in this paragraph, and a diagram provided, for the command-specific SOP.)

c. Record the apparent exposure rate, date determined, and the initials of the person who made the measurement on the instrument. This information should be recorded on a label and fixed to the detector probe.

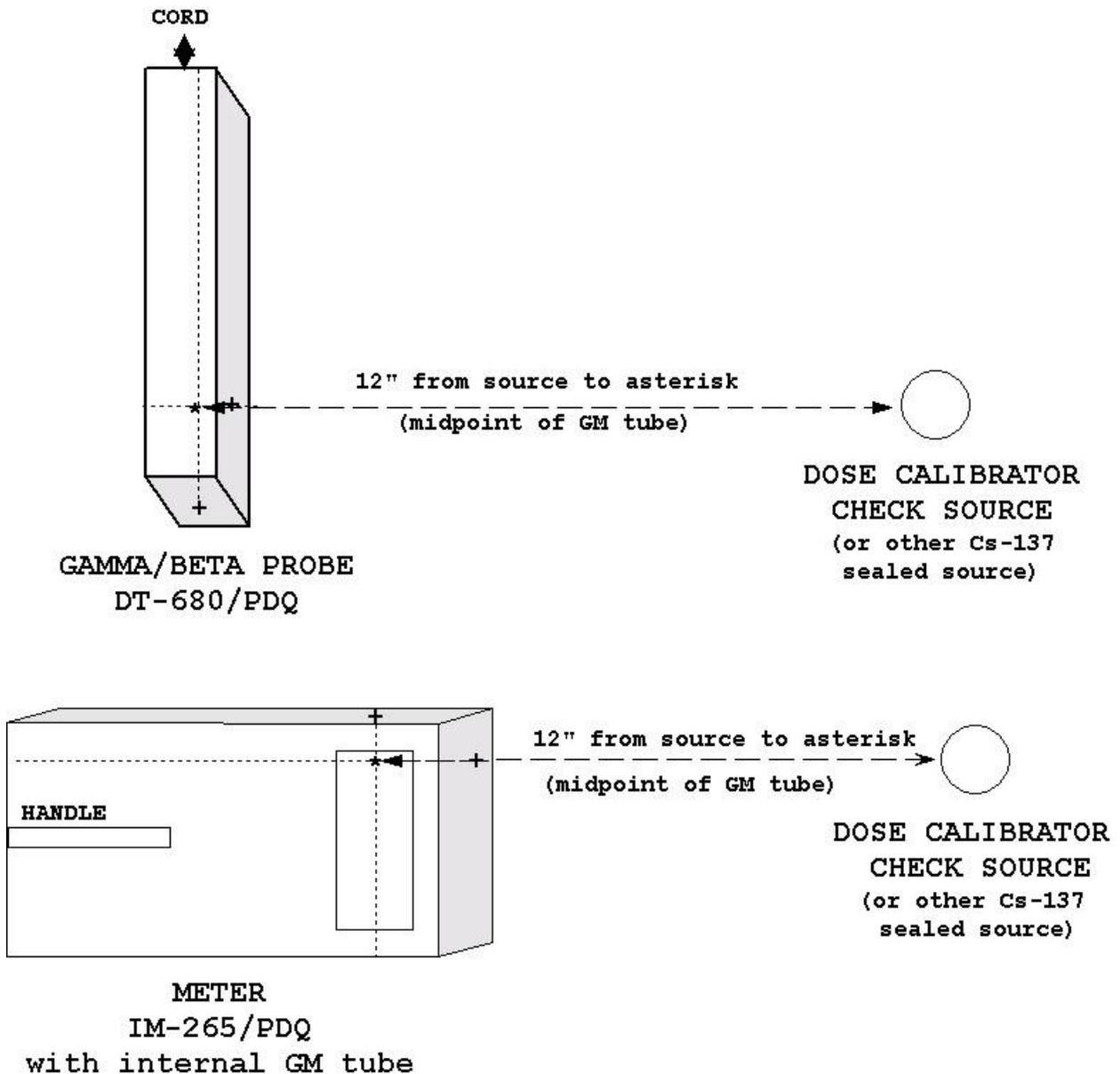
d. Repeat the measurement using the internal detector of the IM-265/PDQ RADIAC Meter, as shown in the enclosed diagram. The "+" on the end of the case marks the center of the detector and should be aligned with the center of the check source. The twelve inch distance should be measured from the "+" on the side of the meter case which marks the centerline of the detector tube. Attach the information to the meter case as in subparagraph c.

3. The procedure in paragraph 2 shall be used to check the instrument for proper operation each day of use as required by 10 CFR 35.51(c) by comparing the current apparent exposure rate to the apparent exposure rate recorded on the instrument. The source and detectors shall be placed at the same location used to determine the initial reading to limit any changes due to backscatter. The difference between the daily reading and the initial reading shall not exceed twenty (20) percent. No records of the daily check are required to be maintained.

Subj: SOP FOR APPARENT EXPOSURE RATE DETERMINATION FOR THE AN/PDQ-1

4. To ensure that there was no damage to the instrument during shipment from the calibration facility, the difference between the average of the last ten (10) apparent exposure rate determinations just prior to calibration and the rate determined upon return from calibration shall not exceed twenty (20) percent. If the difference exceeds twenty (20) percent, the instrument shall be returned to the calibration facility for recalibration.

## TOP VIEW



Use the "+"s marked on the sides of the gamma/beta probe and the meter to locate the midpoints of their respective GM tubes. The check source must be 12" from the midpoint, oriented as pictured above.