<table>
<thead>
<tr>
<th>Name of Policy:</th>
<th>Quality Control of Nuclear Medicine Equipment</th>
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<td>Policy Number:</td>
<td>3364-135-136</td>
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<td>Department:</td>
<td>Radiology</td>
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<tr>
<td>Approving Officer:</td>
<td>Chief Operating &amp; Clinical Officer Sr. Associate Dean for Clinical Affairs</td>
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<td>Responsible Agent:</td>
<td>Director, Radiology</td>
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<td>Scope:</td>
<td>Radiology</td>
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**Effective Date:** October 1, 2015  
**Initial Effective Date:** October 31, 2012

- **X** New policy proposal
- Major revision of existing policy
- Minor/technical revision of existing policy
- Reaffirmation of existing policy

(A) **Policy Statement**

Regular testing of nuclear medicine equipment shall be performed to ensure accurate patient dosing, appropriate image quality and compliance with state regulations.

(B) **Purpose of Policy**

To minimize the possibility of administering the wrong radio-pharmaceutical dosage, and ensure proper operation of the measurement and imaging systems used in nuclear medicine procedures.

(C) **Procedure**

Radioactive source inventory shall be conducted quarterly.

Sealed radioactive sources shall be tested for leakage semi-annually. Leakage shall not exceed 0.005 microCuries.

Dose calibrator accuracy: The dose calibrator will be tested upon installation and annually for accuracy relative to the activity of known calibrated sources. Accuracy shall be within 10% of the actual activity of the source.

Dose calibrator linearity: The dose calibrator will be tested upon installation and quarterly to be linear over the range of activities to be measured. The linearity shall be within 10% of the best fit line of the data.

Dose calibrator constancy: The dose calibrator will be tested for constancy and shall be performed daily. The measured activity shall be within 10% of the nominal value.

Sodium Iodide well counter and uptake probes should be tested daily or before use for constancy with a reference source. The measured count rate shall be within 10% of average baseline.

Nuclear Medicine and PET imaging systems shall have routine quality control testing in accordance with American College of Radiology (ACR) and Joint Commission standards. This is to include daily, weekly, and quarterly QC performed by the nuclear medicine technologist and an annual evaluation performed by a certified medical physicist.
The annual evaluation by medical physicist will include the following per ACR and Joint Commission requirements:

1) Nuclear medicine gamma camera
   a) Image uniformity (Intrinsic and system)
   b) High contrast resolution
   c) Sensitivity
   d) Energy resolution
   e) Count rate performance
   f) Artifact evaluation
   g) SPECT image quality (if applicable)

2) PET scanner
   a) Image uniformity
   b) High contrast resolution
   c) Low contrast resolution
   d) Artifact evaluation

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Review/Revision Date: 10/01/2015
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