

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Food and Drug Administration

21 CFR Part 900

Quality Mammography Standards

AGENCY: Food and Drug Administration, HHS.

ACTION: Final rule

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PART 900--MAMMOGRAPHY

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Authority: 21 U.S.C. 360i, 360nn, 374(e); 42 U.S.C. 263b.

Subpart A--Accreditation

Sec. 900.1 Scope.

The regulations set forth in this part implement the Mammography Quality Standards Act (MQSA) (42 U.S.C. 263b). Subpart A of this part establishes procedures whereby an entity can apply to become a Food and Drug Administration (FDA)-approved accreditation body to accredit facilities to be eligible to perform screening or diagnostic mammography services. Subpart A further establishes requirements and standards for accreditation bodies to ensure that all mammography facilities under the jurisdiction of the United States are adequately and consistently evaluated for compliance with national quality standards for mammography. Subpart B of this part establishes minimum national quality standards for mammography facilities to ensure safe, reliable, and accurate mammography. The regulations set forth in this part do not apply to facilities of the Department of Veterans Affairs.

Sec. 900.2 Definitions.

The following definitions apply to subparts A and B of this part:

- (a) Accreditation body or body means an entity that has been approved by FDA under Sec. 900.3(d) to accredit mammography facilities.
- (b) Action limits or action levels means the minimum and maximum values of a quality assurance measurement that can be interpreted as representing acceptable performance with respect to the parameter being tested. Values less than the minimum or greater than the maximum action limit or level indicate that corrective action must be taken by the facility. Action limits or levels are also sometimes called control limits or levels.
- (c) Adverse event means an undesirable experience associated with mammography activities within the scope of 42 U.S.C. 263b. Adverse events include but are not limited to:
 - (1) Poor image quality;
 - (2) Failure to send mammography reports within 30 days to the referring physician or in a timely manner to the self-referred patient; and
 - (3) Use of personnel that do not meet the applicable requirements of Sec. 900.12(a).
- (d) Air kerma means kerma in a given mass of air. The unit used to measure the quantity of air kerma is the Gray (Gy). For X-rays with energies less than 300 kiloelectronvolts (keV), 1 Gy = 100 rad . In air, 1Gy of absorbed dose is delivered by 114 roentgens (R) of exposure.
- (e) Breast implant means a prosthetic device implanted in the breast.

- (f) Calendar quarter means any one of the following time periods during a given year: January 1 through March 31, April 1 through June 30, July 1 through September 30, or October 1 through December 31.
- (g) Category I means medical educational activities that have been designated as Category I by the Accreditation Council for Continuing Medical Education (ACCME), the American Osteopathic Association (AOA), a state medical society, or an equivalent organization.
- (h) Certificate means the certificate described in Sec. 900.11(a).
- (i) Certification means the process of approval of a facility by FDA to provide mammography services.
- (j) Clinical image means a mammogram.
- (k) Consumer means an individual who chooses to comment or complain in reference to a mammography examination, including the patient or representative of the patient (e.g., family member or referring physician).
- (l) Continuing education unit or continuing education credit means one contact hour of training.
- (m) Contact hour means an hour of training received through direct instruction.
- (n) Direct instruction means:
 - (1) Face-to-face interaction between instructor(s) and student(s), as when the instructor provides a lecture, conducts demonstrations, or reviews student performance; or
 - (2) The administration and correction of student examinations by an instructor(s) with subsequent feedback to the student(s).
- (o) Direct supervision means that:
 - (1) During joint interpretation of mammograms, the supervising interpreting physician reviews, discusses, and confirms the diagnosis of the physician being supervised and signs the resulting report before it is entered into the patient's records; or
 - (2) During the performance of a mammography examination or survey of the facility's equipment and quality assurance program, the supervisor is present to observe and correct, as needed, the performance of the individual being supervised who is performing the examination or conducting the survey.
- (p) Established operating level means the value of a particular quality assurance parameter that has been established as an acceptable normal level by the facility's quality assurance program.

- (q) Facility means a hospital, outpatient department, clinic, radiology practice, mobile unit, office of a physician, or other facility that conducts mammography activities, including the following: Operation of equipment to produce a mammogram, processing of the mammogram, initial interpretation of the mammogram, and maintaining viewing conditions for that interpretation. This term does not include a facility of the Department of Veterans Affairs.
- (r) First allowable time means the earliest time a resident physician is eligible to take the diagnostic radiology boards from an FDA-designated certifying body. The “first allowable time” may vary with the certifying body.
- (s) FDA means the Food and Drug Administration.
- (t) Interim regulations means the regulations entitled “Requirements for Accrediting Bodies of Mammography Facilities” (58 FR 67558-67565) and “Quality Standards and Certification Requirements for Mammography Facilities” (58 FR 67565-67572), published by FDA on December 21, 1993, and amended on September 30, 1994 (59 FR 49808-49813). These regulations established the standards that had to be met by mammography facilities in order to lawfully operate between October 1, 1994, and April 28, 1999.
- (u) Interpreting physician means a licensed physician who interprets mammograms and who meets the requirements set forth in Sec. 900.12(a)(1).
- (v) Kerma means the sum of the initial energies of all the charged particles liberated by uncharged ionizing particles in a material of given mass.
- (w) Laterality means the designation of either the right or left breast.
- (x) Lead interpreting physician means the interpreting physician assigned the general responsibility for ensuring that a facility’s quality assurance program meets all of the requirements of Sec. 900.12(d) through (f). The administrative title and other supervisory responsibilities of the individual, if any, are left to the discretion of the facility.
- (y) Mammogram means a radiographic image produced through mammography.
- (z) Mammographic Modality means a technology, within the scope of 42 U.S.C. 263b, for radiography of the breast. Examples are screen-film mammography and xeromammography.
- (aa) Mammography means radiography of the breast, but, for the purposes of this part, does not include:
 - (1) Radiography of the breast performed during invasive interventions for localization or biopsy procedures; or

- (2) Radiography of the breast performed with an investigational mammography device as part of a scientific study conducted in accordance with FDA's investigational device exemption regulations in part 812 of this chapter.
- (bb) Mammography equipment evaluation means an onsite assessment of mammography unit or image processor performance by a medical physicist for the purpose of making a preliminary determination as to whether the equipment meets all of the applicable standards in Sec. 900.12(b) and (e).
- (cc) Mammography medical outcomes audit means a systematic collection of mammography results and the comparison of those results with outcomes data.
- (dd) Mammography unit or units means an assemblage of components for the production of X-rays for use during mammography, including, at a minimum: An X-ray generator, an X-ray control, a tube housing assembly, a beam limiting device, and the supporting structures for these components.
- (ee) Mean optical density means the average of the optical densities measured using phantom thicknesses of 2, 4, and 6 centimeters with values of kilovolt peak (kVp) clinically appropriate for those thicknesses.
- (ff) Medical physicist means a person trained in evaluating the performance of mammography equipment and facility quality assurance programs and who meets the qualifications for a medical physicist set forth in Sec. 900.12(a)(3).
- (gg) MQSA means the Mammography Quality Standards Act.
- (hh) Multi-reading means two or more physicians, at least one of whom is an interpreting physician, interpreting the same mammogram.
- (ii) Patient means any individual who undergoes a mammography evaluation in a facility, regardless of whether the person is referred by a physician or is self-referred.
- (jj) Phantom means a test object used to simulate radiographic characteristics of compressed breast tissue and containing components that radiographically model aspects of breast disease and cancer.
- (kk) Phantom image means a radiographic image of a phantom.
- (ll) Physical science means physics, chemistry, radiation science (including medical physics and health physics), and engineering.
- (mm) Positive mammogram means a mammogram that has an overall assessment of findings that are either "suspicious" or "highly suggestive of malignancy."

- (nn) Provisional certificate means the provisional certificate described in Sec. 900.11(b)(2).
- (oo) Qualified instructor means an individual whose training and experience adequately prepares him or her to carry out specified training assignments. Interpreting physicians, radiologic technologists, or medical physicists who meet the requirements of Sec. 900.12(a) would be considered qualified instructors in their respective areas of mammography. Other examples of individuals who may be qualified instructors for the purpose of providing training to meet the regulations of this part include, but are not limited to, instructors in a post-high school training institution and manufacturer's representatives.
- (pp) Quality control technologist means an individual meeting the requirements of Sec. 900.12(a)(2) who is responsible for those quality assurance responsibilities not assigned to the lead interpreting physician or to the medical physicist.
- (qq) Radiographic equipment means X-ray equipment used for the production of static X-ray images.
- (rr) Radiologic technologist means an individual specifically trained in the use of radiographic equipment and the positioning of patients for radiographic examinations and who meets the requirements set forth in Sec. 900.12(a)(2).
- (ss) Serious adverse event means an adverse event that may significantly compromise clinical outcomes, or an adverse event for which a facility fails to take appropriate corrective action in a timely manner.
- (tt) Serious complaint means a report of a serious adverse event.
- (uu) Standard breast means a 4.2 centimeter (cm) thick compressed breast consisting of 50 percent glandular and 50 percent adipose tissue.
- (vv) Survey means an onsite physics consultation and evaluation of a facility quality assurance program performed by a medical physicist.
- (ww) Time cycle means the film development time.
- (xx) Traceable to a national standard means an instrument is calibrated at either the National Institute of Standards and Technology (NIST) or at a calibration laboratory that participates in a proficiency program with NIST at least once every 2 years and the results of the proficiency test conducted within 24 months of calibration show agreement within +/- 3 percent of the national standard in the mammography energy range.

- (yy) Review physician means a physician who, by meeting the requirements set out in Sec. 900.4(c)(5), is qualified to review clinical images on behalf of the accreditation body.

Sec. 900.3 Application for approval as an accreditation body.

- (a) Eligibility. Private nonprofit organizations or State agencies capable of meeting the requirements of this subpart A may apply for approval as accreditation bodies.
- (b) Application for initial approval.
- (1) An applicant seeking initial FDA approval as an accreditation body shall inform the Division of Mammography Quality and Radiation Programs (DMQRP), Center for Devices and Radiology Health (HFZ-240), Food and Drug Administration, 1350 Piccard Dr., Rockville, MD 20850, marked Attn: Mammography Standards Branch, of its desire to be approved as an accreditation body and of its requested scope of authority.
 - (2) Following receipt of the request, FDA will provide the applicant with additional information to aid in submission of an application for approval as an accreditation body.
 - (3) The applicant shall furnish to FDA, at the address in Sec. 900.3(b)(1), three copies of an application containing the following information, materials, and supporting documentation:
 - (i) Name, address, and phone number of the applicant and, if the applicant is not a State agency, evidence of nonprofit status (i.e., of fulfilling Internal Revenue Service requirements as a nonprofit organization);
 - (ii) Detailed description of the accreditation standards the applicant will require facilities to meet and a discussion substantiating their equivalence to FDA standards required under Sec. 900.12;
 - (iii) Detailed description of the applicant's accreditation review and decisionmaking process, including:
 - (A) Procedures for performing accreditation and reaccreditation clinical image review in accordance with Sec. 900.4(c), random clinical image reviews in accordance with Sec. 900.4(f), and additional mammography review in accordance with Sec. 900.12(j);
 - (B) Procedures for performing phantom image review;
 - (C) Procedures for assessing mammography equipment evaluations and surveys;
 - (D) Procedures for initiating and performing onsite visits to facilities;
 - (E) Procedures for assessing facility personnel qualifications;
 - (F) Copies of the accreditation application forms, guidelines, instructions, and other materials the applicant will send to facilities during the accreditation process, including an accreditation history form that requires each facility to provide a complete history of prior accreditation activities and a statement that all information

and data submitted in the application is true and accurate, and that no material fact has been omitted;

- (G) Policies and procedures for notifying facilities of deficiencies;
 - (H) Procedures for monitoring corrections of deficiencies by facilities;
 - (I) Policies and procedures for suspending or revoking a facility's accreditation;
 - (J) Policies and procedures that will ensure processing of accreditation applications and renewals within a timeframe approved by FDA and assurances that the body will adhere to such policies and procedures; and
 - (K) A description of the applicant's appeals process for facilities contesting adverse accreditation status decisions.
- (iv) Education, experience, and training requirements for the applicant's professional staff, including reviewers of clinical or phantom images;
 - (v) Description of the applicant's electronic data management and analysis system with respect to accreditation review and decision processes and the applicant's ability to provide electronic data in a format compatible with FDA data systems;
 - (vi) Resource analysis that demonstrates that the applicant's staffing, funding, and other resources are adequate to perform the required accreditation activities;
 - (vii) Fee schedules with supporting cost data;
 - (viii) Statement of policies and procedures established to avoid conflicts of interest or the appearance of conflicts of interest by the applicant's board members, commissioners, professional personnel (including reviewers of clinical and phantom images), consultants, administrative personnel, and other representatives of the applicant;
 - (ix) Statement of policies and procedures established to protect confidential information the applicant will collect or receive in its role as an accreditation body;
 - (x) Disclosure of any specific brand of imaging system or component, measuring device, software package, or other commercial product used in mammography that the applicant develops, sells, or distributes;
 - (xi) Description of the applicant's consumer complaint mechanism;
 - (xii) Satisfactory assurances that the applicant shall comply with the requirements of Sec. 900.4; and
 - (xiii) Any other information as may be required by FDA.
- (c) Application for renewal of approval. An approved accreditation body that intends to continue to serve as an accreditation body beyond its current term shall apply to FDA for renewal or notify FDA of its plans not to apply for renewal in accordance with the following procedures and schedule:
- (1) At least 9 months before the date of expiration of a body's approval, the body shall inform FDA, at the address given in Sec. 900.3(b)(1), of its intent to seek renewal.

- (2) FDA will notify the applicant of the relevant information, materials, and supporting documentation required under Sec. 900.3(b)(3) that the applicant shall submit as part of the renewal procedure.
 - (3) At least 6 months before the date of expiration of a body's approval, the applicant shall furnish to FDA, at the address in Sec. 900.3(b)(1), three copies of a renewal application containing the information, materials, and supporting documentation requested by FDA in accordance with Sec. 900.3(c)(2).
 - (4) No later than July 28, 1998, any accreditation body approved under the interim regulations published in the Federal Register of December 21, 1993 (58 FR 67558), that desires to continue to serve as an accreditation body under the final regulations shall apply for renewal of approval in accordance with the procedures set forth in paragraphs (c)(1) through (c)(3) of this section.
 - (5) Any accreditation body that does not plan to renew its approval shall so notify FDA at the address given in paragraph (b)(1) of this section at least 9 months before the expiration of the body's term of approval.
- (d) Rulings on applications for initial and renewed approval.
- (1) FDA will conduct a review and evaluation to determine whether the applicant substantially meets the applicable requirements of this subpart and whether the accreditation standards the applicant will require facilities to meet are substantially the same as the quality standards published under subpart B of this part.
 - (2) FDA will notify the applicant of any deficiencies in the application and request that those deficiencies be rectified within a specified time period. If the deficiencies are not rectified to FDA's satisfaction within the specified time period, the application for approval as an accreditation body may be rejected.
 - (3) FDA shall notify the applicant whether the application has been approved or denied. That notification shall list any conditions associated with approval or state the bases for any denial.
 - (4) The review of any application may include a meeting between FDA and representatives of the applicant at a time and location mutually acceptable to FDA and the applicant.
 - (5) FDA will advise the applicant of the circumstances under which a denied application may be resubmitted.
 - (6) If FDA does not reach a final decision on a renewal application in accordance with this paragraph before the expiration of an accreditation body's current term of approval, the approval will be deemed extended until the agency reaches a final decision on the application, unless an accreditation body does not rectify deficiencies in the application within the specified time period, as required in paragraph (d)(2) of this section.
- (e) Relinquishment of authority. An accreditation body that decides to relinquish its accreditation authority before expiration of the body's term of approval shall submit a letter of such intent to FDA, at the address in Sec. 900.3(b)(1), at least 9 months before relinquishing such authority.

- (f) Transfer of records. An accreditation body that does not apply for renewal of accreditation body approval, is denied such approval by FDA, or relinquishes its accreditation authority and duties before expiration of its term of approval, shall:
 - (1) Transfer facility records and other related information as required by FDA to a location and according to a schedule approved by FDA.
 - (2) Notify, in a manner and time period approved by FDA, all facilities accredited or seeking accreditation by the body that the body will no longer have accreditation authority.

- (g) cope of authority. An accreditation body's term of approval is for a period not to exceed 7 years. FDA may limit the scope of accreditation authority.

Sec. 900.4 Standards for accreditation bodies.

- (a) Code of conduct and general responsibilities. The accreditation body shall accept the following responsibilities in order to ensure safe and accurate mammography at the facilities it accredits and shall perform these responsibilities in a manner that ensures the integrity and impartiality of accreditation body actions.
 - (1) (i) When an accreditation body receives or discovers information that suggests inadequate image quality, or upon request by FDA, the accreditation body shall review a facility's clinical images or other aspects of a facility's practice to assist FDA in determining whether or not the facility's practice poses a serious risk to human health. Such reviews are in addition to the evaluation an accreditation body performs as part of the initial accreditation or renewal process for facilities.
 - (ii) If review by the accreditation body demonstrates that a problem does exist with respect to image quality or other aspects of a facility's compliance with quality standards, or upon request by FDA, the accreditation body shall require or monitor corrective actions, or suspend or revoke accreditation of the facility.
- (2) The accreditation body shall inform FDA as soon as possible but in no case longer than 2 business days after becoming aware of equipment or practices that pose a serious risk to human health.
- (3) The accreditation body shall establish and administer a quality assurance (QA) program that has been approved by FDA in accordance with Sec. 900.3(d) or paragraph (a)(8) of this section. Such quality assurance program shall:
 - (i) Include requirements for clinical image review and phantom image review;
 - (ii) Ensure that clinical and phantom images are evaluated consistently and accurately; and
 - (iii) Specify the methods and frequency of training and evaluation for clinical and phantom image reviewers, and the bases and procedures for removal of such reviewers.
- (4) The accreditation body shall establish measures that FDA has approved in accordance with Sec. 900.3(d) or paragraph (a)(8) of this section to reduce the

possibility of conflict of interest or facility bias on the part of individuals acting on the body's behalf. Such individuals who review clinical or phantom images under the provisions of paragraphs (c) and (d) of this section or who visit facilities under the provisions of paragraph (f) of this section shall not review clinical or phantom images from or visit a facility with which such individuals maintain a relationship, or when it would otherwise be a conflict of interest for them to do so, or when they have a bias in favor of or against the facility.

- (5) The accreditation body may require specific equipment performance or design characteristics that FDA has approved. However, no accreditation body shall require, either explicitly or implicitly, the use of any specific brand of imaging system or component, measuring device, software package, or other commercial product as a condition for accreditation by the body, unless FDA determines that it is in the best interest of public health to do so.
 - (i) Any representation, actual or implied, either orally, in sales literature, or in any other form of representation, that the purchase or use of a particular product brand is required in order for any facility to be accredited or certified under Sec. 900.11(b), is prohibited, unless FDA approves such representation.
 - (ii) Unless FDA has approved the exclusive use and promotion of a particular commercial product in accordance with this section, all products produced, distributed, or sold by an accreditation body or an organization that has a financial or other relationship with the accreditation body that may be a conflict of interest or have the appearance of a conflict of interest with the body's accreditation functions, shall bear a disclaimer stating that the purchase or use of such products is not required for accreditation or certification of any facility under Sec. 900.11(b). Any representations about such products shall include a similar disclaimer.
- (6) When an accreditation body denies accreditation to a facility, the accreditation body shall notify the facility in writing and explain the bases for its decision. The notification shall also describe the appeals process available from the accreditation body for the facility to contest the decision.
- (7) No accreditation body may establish requirements that preclude facilities from being accredited under Sec. 900.11(b) by any other accreditation body, or require accreditation by itself under MQSA if another accreditation body is available to a facility.
- (8) The accreditation body shall obtain FDA authorization for any changes it proposes to make in any standards that FDA has previously accepted under Sec. 900.3(d).
- (9) An accreditation body shall establish procedures to protect confidential information it collects or receives in its role as an accreditation body.
 - (i) Nonpublic information collected from facilities for the purpose of carrying out accreditation body responsibilities shall not be used for any other purpose or disclosed, other than to FDA or its duly designated

- representatives, including State agencies, without the consent of the facility;
- (ii) Nonpublic information that FDA or its duly designated representatives, including State agencies, share with the accreditation body concerning a facility that is accredited or undergoing accreditation by that body shall not be further disclosed except with the written permission of FDA.
- (b) Monitoring facility compliance with quality standards.
- (1) The accreditation body shall require that each facility it accredits meet standards for the performance of quality mammography that are substantially the same as those in this subpart and in subpart B of this part.
 - (2) The accreditation body shall notify a facility regarding equipment, personnel, and other aspects of the facility's practice that do not meet such standards and advise the facility that such equipment, personnel, or other aspects of the practice should not be used by the facility for activities within the scope of part 900.
 - (3) The accreditation body shall specify the actions that facilities shall take to correct deficiencies in equipment, personnel, and other aspects of the practice to ensure facility compliance with applicable standards.
 - (4) If deficiencies cannot be corrected to ensure compliance with standards or if a facility is unwilling to take corrective actions, the accreditation body shall immediately so notify FDA, and shall suspend or revoke the facility's accreditation in accordance with the policies and procedures described under Sec. 900.3(b)(3)(iii)(I).
- (c) Clinical image review for accreditation and reaccreditation.
- (1) Frequency of review. The accreditation body shall review clinical images from each facility accredited by the body at least once every 3 years.
 - (2) Requirements for clinical image attributes. The accreditation body shall use the following attributes for all clinical image reviews, unless FDA has approved other attributes:
 - (i) Positioning. Sufficient breast tissue shall be imaged to ensure that cancers are not likely to be missed because of inadequate positioning.
 - (ii) Compression. Compression shall be applied in a manner that minimizes the potential obscuring effect of overlying breast tissue and motion artifact.
 - (iii) Exposure level. Exposure level shall be adequate to visualize breast structures. Images shall be neither underexposed nor overexposed.
 - (iv) Contrast. Image contrast shall permit differentiation of subtle tissue density differences.
 - (v) Sharpness. Margins of normal breast structures shall be distinct and not blurred.
 - (vi) Noise. Noise in the image shall not obscure breast structures or suggest the appearance of structures not actually present.

- (vii) Artifacts. Artifacts due to lint, processing, scratches, and other factors external to the breast shall not obscure breast structures or suggest the appearance of structures not actually present.
 - (viii) Examination identification. Each image shall have the following information indicated on it in a permanent, legible, and unambiguous manner and placed so as not to obscure anatomic structures:
 - (A) Name of the patient and an additional patient identifier.
 - (B) Date of examination.
 - (C) View and laterality. This information shall be placed on the image in a position near the axilla. Standardized codes specified by the accreditation body and approved by FDA in accordance with Sec. 900.3(d) or paragraph (a)(8) of this section shall be used to identify view and laterality.
 - (D) Facility name and location. At a minimum, the location shall include the city, State, and zip code of the facility.
 - (E) Technologist identification.
 - (F) Cassette/screen identification.
 - (G) Mammography unit identification, if there is more than one unit in the facility.
- (3) Scoring of clinical images. Accreditation bodies shall establish and administer a system for scoring clinical images using all attributes specified in paragraphs (c)(2)(i) through (c)(2)(viii) of this section or an alternative system that FDA has approved in accordance with Sec. 900.3(d) or paragraph (a)(8) of this section. The scoring system shall include an evaluation for each attribute.
- (i) The accreditation body shall establish and employ criteria for acceptable and nonacceptable results for each of the 8 attributes as well as an overall pass-fail system for clinical image review that has been approved by FDA in accordance with Sec. 900.3(d) or paragraph (a)(8) of this section.
 - (ii) All clinical images submitted by a facility to the accreditation body shall be reviewed independently by two or more review physicians.
- (4) Selection of clinical images for review. Unless otherwise specified by FDA, the accreditation body shall require that for each mammography unit in the facility:
- (i) the facility shall submit craniocaudal (CC) and mediolateral oblique (MLO) views from two mammographic examinations that the facility produced during a time period specified by the accreditation body;
 - (ii) Clinical images submitted from one such mammographic examination for each unit shall be of dense breasts (predominance of glandular tissue) and the other shall be of fat-replaced breasts (predominance of adipose tissue);
 - (iii) All clinical images submitted shall be images that the facility's interpreting physician(s) interpreted as negative or benign.
 - (iv) If the facility has no clinical images meeting the requirements in paragraphs (c)(4)(i) through (c)(4)(iii) of this section, it shall so notify the accreditation body, which shall specify alternative clinical image selection methods that do not compromise care of the patient.

- (5) Review physicians. Accreditation bodies shall ensure that all of their review physicians:
 - (i) Meet the interpreting physician requirements specified in Sec. 900.12(a)(1) and meet such additional requirements as have been established by the accreditation body and approved by FDA;
 - (ii) Are trained and evaluated in the clinical image review process, for the types of clinical images to be evaluated by a review physician, by the accreditation body before designation as review physicians and periodically thereafter; and
 - (iii) Clearly document their findings and reasons for assigning a particular score to any clinical image and provide information to the facility for use in improving the attributes for which significant deficiencies were identified.
 - (6) Image management. The accreditation body's QA program shall include a tracking system to ensure the security and return to the facility of all clinical images received and to ensure completion of all clinical image reviews by the body in a timely manner. The accreditation body shall return all clinical images to the facility within 60 days of their receipt by the body, with the following exceptions:
 - (i) If the clinical images are needed earlier by the facility for clinical purposes, the accreditation body shall cooperate with the facility to accommodate such needs.
 - (ii) If a review physician identifies a suspicious abnormality on an image submitted for clinical image review, the accreditation body shall ensure that this information is provided to the facility and that the clinical images are returned to the facility. Both shall occur no later than 10 business days after identification of the suspected abnormality.
 - (7) Notification of unsatisfactory image quality. If the accreditation body determines that the clinical images received from a facility are of unsatisfactory quality, the body shall notify the facility of the nature of the problem and its possible causes.
- (d) Phantom image review for accreditation and reaccreditation.
- (1) Frequency of review. The accreditation body shall review phantom images from each facility accredited by the body at least once every 3 years.
 - (2) Requirements for the phantom used. The accreditation body shall require that each facility submit for review phantom images that the facility produced using a phantom and methods of use specified by the body and approved by FDA in accordance with Sec. 900.3(d) or paragraph (a)(8) of this section.
 - (3) Scoring phantom images. The accreditation body shall use a system for scoring phantom images that has been approved by FDA in accordance with Sec. 900.3(b) and (d) or paragraph (a)(8) of this section.
 - (4) Phantom images selected for review. For each mammography unit in the facility, the accreditation body shall require the facility to submit phantom images that the facility produced during a time period specified by the body.

- (5) Phantom image reviewers. Accreditation bodies shall ensure that all of their phantom image reviewers:
 - (i) Meet the requirements specified in Sec. 900.12(a)(3) or alternative requirements established by the accreditation body and approved by FDA in accordance with Sec. 900.3 or paragraph (a)(8) of this section;
 - (ii) Are trained and evaluated in the phantom image review process, for the types of phantom images to be evaluated by a phantom image reviewer, by the accreditation body before designation as phantom image reviewers and periodically thereafter; and
 - (iii) Clearly document their findings and reasons for assigning a particular score to any phantom image and provide information to the facility for use in improving its phantom image quality with regard to the significant deficiencies identified.
 - (6) Image management. The accreditation body's QA program shall include a tracking system to ensure the security of all phantom images received and to ensure completion of all phantom image reviews by the body in a timely manner. All phantom images that result in a failure of accreditation shall be returned to the facility.
 - (7) Notification measures for unsatisfactory image quality. If the accreditation body determines that the phantom images received from a facility are of unsatisfactory quality, the body shall notify the facility of the nature of the problem and its possible causes.
- (e) Reports of mammography equipment evaluation, surveys, and quality control. The following requirements apply to all facility equipment covered by the provisions of subparts A and B:
- (1) The accreditation body shall require every facility applying for accreditation to submit:
 - (i) With its initial accreditation application, a mammography equipment evaluation that was performed by a medical physicist no earlier than 6 months before the date of application for accreditation by the facility. Such evaluation shall demonstrate compliance of the facility's equipment with the requirements in Sec. 900.12(e).
 - (ii) Prior to accreditation, a survey that was performed no earlier than 6 months before the date of application for accreditation by the facility. Such survey shall assess the facility's compliance with the facility standards referenced in paragraph (b) of this section.
 - (2) The accreditation body shall require that all facilities undergo an annual survey to ensure continued compliance with the standards referenced in paragraph (b) of this section and to provide continued oversight of facilities' quality control programs as they relate to such standards. The accreditation body shall require for all facilities that:
 - (i) Such surveys be conducted annually;
 - (ii) Facilities take reasonable steps to ensure that they receive reports of such surveys within 30 days of survey completion; and

- (iii) Facilities submit the results of such surveys and any other information that the body may require to the body at least annually.
 - (3) The accreditation body shall review and analyze the information required in this section and use it to identify necessary corrective measures for facilities and to determine whether facilities should remain accredited by the body.
- (f) Accreditation Body Onsite Visits and Random Clinical Image Reviews. The accreditation body shall conduct onsite visits and random clinical image reviews of a sample of facilities to monitor and assess their compliance with standards established by the body for accreditation. The accreditation body shall submit annually to FDA, at the address given in Sec. 900.3(b)(1), 3 copies of a summary report describing all facility assessments the body conducted under the provisions of this section for the year being reported.
- (1) Onsite visits.
 - (i) Sample size. Annually, each accreditation body shall visit at least 5 percent of the facilities it accredits. However, a minimum of 5 facilities shall be visited, and visits to no more than 50 facilities are required, unless problems identified in paragraph (f)(1)(i)(B) of this section indicate a need to visit more than 50 facilities.
 - (A) At least 50 percent of the facilities visited shall be selected randomly.
 - (B) Other facilities visited shall be selected based on problems identified through State or FDA inspections, serious complaints received from consumers or others, a previous history of noncompliance, or any other information in the possession of the accreditation body, inspectors, or FDA.
 - (C) Before, during, or after any facility visit, the accreditation body may require that the facility submit to the body for review clinical images, phantom images, or any other information relevant to applicable standards in this subpart and in subpart B of this part.
 - (ii) Visit plan. The accreditation body shall conduct facility onsite visits according to a visit plan that has been approved by FDA in accordance with Sec. 900.3(d) or paragraph (a)(8) of this section, unless otherwise directed by FDA in particular circumstances. At a minimum, such a plan shall provide for:
 - (A) Assessment of overall clinical image QA activities of the facility;
 - (B) Review of facility documentation to determine if appropriate mammography reports are sent to patients and physicians as required;
 - (C) Selection of a sample of clinical images for clinical image review by the accreditation body. Clinical images shall be selected in a manner specified by the accreditation body and approved by FDA that does not compromise care of the patient as a result of the absence of the selected images from the facility;
 - (D) Verification that the facility has a medical audit system in place and is correlating films and pathology reports for positive cases;

- (E) Verification that personnel specified by the facility are the ones actually performing designated personnel functions;
 - (F) Verification that equipment specified by the facility is the equipment that is actually being used to perform designated equipment functions;
 - (G) Verification that a consumer complaint mechanism is in place and that the facility is following its procedures; and
 - (H) Review of all factors related to previously identified concerns or concerns identified during that visit.
- (1) Clinical image review for random sample of facilities.
- (i) Sample size. In addition to conducting clinical image reviews for accreditation and reaccreditation for all facilities, the accreditation body shall conduct clinical image reviews annually for a randomly selected sample as specified by FDA, but to include at least 3 percent of the facilities the body accredits. Accreditation bodies may count toward this random sample requirement all facilities selected randomly for the onsite visits described in paragraph (f)(1)(i)(A) of this section. Accreditation bodies shall not count toward the random sample requirement any facilities described in paragraph (f)(1)(i)(B) of this section that were selected for a visit because of previously identified concerns.
 - (ii) Random clinical image review. In performing clinical image reviews of the random sample of facilities, accreditation bodies shall evaluate the same attributes as those in paragraph (c) of this section for review of clinical images for accreditation and reaccreditation.
 - (iii) Accreditation bodies should not schedule random clinical image reviews at facilities that have received notification of the need to begin the accreditation renewal process or that have completed the accreditation renewal process within the previous 6 months.
 - (iv) Selection of the random sample of clinical images for clinical image review by the accreditation body. Clinical images shall be selected in a manner, specified by the accreditation body and approved by FDA under Sec. 900.3(d) or paragraph (a)(8) of this section, that does not compromise care of the patient as a result of the absence of the selected images from the facility.
- (g) Consumer complaint mechanism. The accreditation body shall develop and administer a written and documented system, including timeframes, for collecting and resolving serious consumer complaints that could not be resolved at a facility. Such system shall have been approved by FDA in accordance with Sec. 900.3(d) or paragraph (a)(8) of this section. Accordingly, all accreditation bodies shall:
- (1) Provide a mechanism for all facilities it accredits to file serious unresolved complaints with the accreditation body;
 - (2) Maintain a record of every serious unresolved complaint received by the body on all facilities it accredits for a period of at least 3 years from the date of receipt of each such complaint;

- (h) Reporting and recordkeeping. All reports to FDA specified in paragraphs (h)(1) through (h)(4) of this section shall be prepared and submitted in a format and medium prescribed by FDA and shall be submitted to a location and according to a schedule specified by FDA. The accreditation body shall:
 - (1) Collect and submit to FDA the information required by 42 U.S.C. 263b(d) for each facility when the facility is initially accredited and at least annually when updated, in a manner and at a time specified by FDA.
 - (2) Accept applications containing the information required in 42 U.S.C. 263b(c)(2) for provisional certificates and in Sec. 900.11(b)(3) for extension of provisional certificates, on behalf of FDA, and notify FDA of the receipt of such information;
 - (3) Submit to FDA the name, identifying information, and other information relevant to 42 U.S.C. 263b and specified by FDA for any facility for which the accreditation body denies, suspends, or revokes accreditation, and the reason(s) for such action;
 - (4) Submit to FDA an annual report summarizing all serious complaints received during the previous calendar year, their resolution status, and any actions taken in response to them;
 - (5) Provide to FDA other information relevant to 42 U.S.C. 263b and required by FDA about any facility accredited or undergoing accreditation by the body.

- (i) Fees. Fees charged to facilities for accreditation shall be reasonable. Costs of accreditation body activities that are not related to accreditation functions under 42 U.S.C. 263b are not recoverable through fees established for accreditation.
 - (1) The accreditation body shall make public its fee structure, including those factors, if any, contributing to variations in fees for different facilities.
 - (2) At FDA's request, accreditation bodies shall provide financial records or other material to assist FDA in assessing the reasonableness of accreditation body fees. Such material shall be provided to FDA in a manner and time period specified by the agency.

Sec. 900.5 Evaluation.

FDA shall evaluate annually the performance of each accreditation body. Such evaluation shall include an assessment of the reports of FDA or State inspections of facilities accredited by the body as well as any additional information deemed relevant by FDA that has been provided by the accreditation body or other sources or has been required by FDA as part of its oversight initiatives. The evaluation shall include a determination of whether there are major deficiencies in the accreditation body's performance that, if not corrected, would warrant withdrawal of the approval of the accreditation body under the provisions of Sec. 900.6.

Sec. 900.6 Withdrawal of approval.

If FDA determines, through the evaluation activities of Sec. 900.5, or through other means, that an accreditation body is not in substantial compliance with this subpart, FDA may initiate the following actions:

- (a) Major deficiencies. If FDA determines that an accreditation body has failed to perform a major accreditation function satisfactorily, has demonstrated willful disregard for public health, has violated the code of conduct, has committed fraud, or has submitted material false statements to the agency, FDA may withdraw its approval of that accreditation body.
 - (1) FDA shall notify the accreditation body of the agency's action and the grounds on which the approval was withdrawn.
 - (2) An accreditation body that has lost its approval shall notify facilities accredited or seeking accreditation by it that its approval has been withdrawn. Such notification shall be made within a time period and in a manner approved by FDA.

- (b) Minor deficiencies. If FDA determines that an accreditation body has demonstrated deficiencies in performing accreditation functions and responsibilities that are less serious or more limited than the deficiencies in paragraph (a) of this section, FDA shall notify the body that it has a specified period of time to take particular corrective measures directed by FDA or to submit to FDA for approval the body's own plan of corrective action addressing the minor deficiencies. FDA may place the body on probationary status for a period of time determined by FDA, or may withdraw approval of the body as an accreditation body if corrective action is not taken.
 - (1) If FDA places an accreditation body on probationary status, the body shall notify all facilities accredited or seeking accreditation by it of its probationary status within a time period and in a manner approved by FDA.
 - (2) Probationary status shall remain in effect until such time as the body can demonstrate to the satisfaction of FDA that it has successfully implemented or is implementing the corrective action plan within the established schedule, and that the corrective actions have substantially eliminated all identified problems.
 - (3) If FDA determines that an accreditation body that has been placed on probationary status is not implementing corrective actions satisfactorily or within the established schedule, FDA may withdraw approval of the accreditation body. The accreditation body shall notify all facilities accredited or seeking accreditation by it of its loss of FDA approval, within a time period and in a manner approved by FDA.

- (c) Reapplication by accreditation bodies that have had their approval withdrawn.
 - (1) A former accreditation body that has had its approval withdrawn may submit a new application for approval if the body can provide information to FDA to establish that the problems that were grounds for withdrawal of approval have been resolved.

- (2) If FDA determines that the new application demonstrates that the body satisfactorily has addressed the causes of its previous unacceptable performance, FDA may reinstate approval of the accreditation body.
- (3) FDA may request additional information or establish additional conditions that must be met by a former accreditation body before FDA approves the reapplication.
- (4) FDA may refuse to accept an application from a former accreditation body whose approval was withdrawn because of fraud or willful disregard of public health.

Sec. 900.7 Hearings.

- (a) Opportunities to challenge final adverse actions taken by FDA regarding approval or reapproval of accreditation bodies, withdrawal of approval of accreditation bodies, or rejection of a proposed fee for accreditation shall be communicated through notices of opportunity for informal hearings in accordance with part 16 of this chapter.
- (b) A facility that has been denied accreditation is entitled to an appeals process from the accreditation body. The appeals process shall be specified in writing by the accreditation body and shall have been approved by FDA in accordance with Sec. 900.3(d) or Sec. 900.4(a)(8).
- (c) A facility that cannot achieve satisfactory resolution of an adverse accreditation decision through the accreditation body's appeals process may appeal to FDA for reconsideration in accordance with Sec. 900.15.

Secs. 900.8--900.9 [Reserved]

Subpart B--Quality Standards and Certification

Sec. 900.10 Applicability.

The provisions of subpart B are applicable to all facilities under the regulatory jurisdiction of the United States that provide mammography services, with the exception of the Department of Veterans Affairs.

Sec. 900.11 Requirements for certification.

- (a) General. After October 1, 1994, a certificate issued by FDA is required for lawful operation of all mammography facilities subject to the provisions of this subpart. To obtain a certificate from FDA, facilities are required to meet the quality

standards in Sec. 900.12 and to be accredited by an approved accreditation body or other entity as designated by FDA.

(b) Application.

(1) Certificates.

- (i) In order to qualify for a certificate, a facility must apply to an FDA-approved accreditation body, or to another entity designated by FDA. The facility shall submit to such body or entity the information required in 42 U.S.C. 263b(d)(1).
- (ii) Following the agency's receipt of the accreditation body's decision to accredit a facility, or an equivalent decision by another entity designated by FDA, the agency may issue a certificate to the facility, or renew an existing certificate, if the agency determines that the facility has satisfied the requirements for certification or recertification.

(2) Provisional certificates.

- (i) A new facility beginning operation after October 1, 1994, is eligible to apply for a provisional certificate. The provisional certificate will enable the facility to perform mammography and to obtain the clinical images needed to complete the accreditation process. To apply for and receive a provisional certificate, a facility must meet the requirements of 42 U.S.C. 263b(c)(2) and submit the necessary information to an approved accreditation body or other entity designated by FDA.
- (ii) Following the agency's receipt of the accreditation body's decision that a facility has submitted the required information, FDA may issue a provisional certificate to a facility upon determination that the facility has satisfied the requirements of Sec. 900.11(b)(2)(i). A provisional certificate shall be effective for up to 6 months from the date of issuance. A provisional certificate cannot be renewed, but a facility may apply for a 90-day extension of the provisional certificate.

(3) Extension of provisional certificate.

- (i) To apply for a 90-day extension to a provisional certificate, a facility shall submit to its accreditation body, or other entity designated by FDA, a statement of what the facility is doing to obtain certification and evidence that there would be a significant adverse impact on access to mammography in the geographic area served if such facility did not obtain an extension.
- (ii) The accreditation body shall forward the request, with its recommendation, to FDA within 2 business days after receipt.
- (iii) FDA may issue a 90-day extension for a provisional certificate upon determination that the extension meets the criteria set forth in 42 U.S.C. 263b(c)(2).
- (iv) There can be no renewal of a provisional certificate beyond the 90-day extension.

(c) Reinstatement policy. A previously certified facility that has allowed its certificate to expire, that has been refused a renewal of its certificate by FDA, or that has had

its certificate suspended or revoked by FDA, may apply to have the certificate reinstated so that the facility may be considered to be a new facility and thereby be eligible for a provisional certificate.

- (1) Unless prohibited from reinstatement under Sec. 900.11(c)(4), a facility applying for reinstatement shall:
 - (i) Contact an FDA-approved accreditation body or other entity designated by FDA to determine the requirements for reapplication for accreditation;
 - (ii) Fully document its history as a previously provisionally certified or certified mammography facility, including the following information:
 - (A) Name and address of the facility under which it was previously provisionally certified or certified;
 - (B) Name of previous owner/lessor;
 - (C) FDA facility identification number assigned to the facility under its previous certification; and
 - (D) Expiration date of the most recent FDA provisional certificate or certificate; and
 - (iii) Justify application for reinstatement of accreditation by submitting to the accreditation body or other entity designated by FDA, a corrective action plan that details how the facility has corrected deficiencies that contributed to the lapse of, denial of renewal, or revocation of its certificate.
- (2) FDA may issue a provisional certificate to the facility if:
 - (i) The accreditation body or other entity designated by FDA notifies the agency that the facility has adequately corrected, or is in the process of correcting, pertinent deficiencies; and
 - (ii) FDA determines that the facility has taken sufficient corrective action since the lapse of, denial of renewal, or revocation of its previous certificate.
- (3) After receiving the provisional certificate, the facility may lawfully resume performing mammography services while completing the requirements for certification.
- (4) If a facility's certificate was revoked on the basis of an act described in 41 U.S.C. 263b(i)(1), no person who owned or operated that facility at the time the act occurred may own or operate a mammography facility within 2 years of the date of revocation.

Sec. 900.12 Quality standards.

- (a) Personnel. The following requirements apply to all personnel involved in any aspect of mammography, including the production, processing, and interpretation of mammograms and related quality assurance activities:
 - (1) Interpreting physicians. All physicians interpreting mammograms shall meet the following qualifications:

- (i) Initial qualifications. Unless the exemption in paragraph (a)(1)(iii)(A) of this section applies, before beginning to interpret mammograms independently, the interpreting physician shall:
 - (A) Be licensed to practice medicine in a State;
 - (B) (1) Be certified in an appropriate specialty area by a body determined by FDA to have procedures and requirements adequate to ensure that physicians certified by the body are competent to interpret radiological procedures, including mammography; or
 - (2) Have had at least 3 months of documented formal training in the interpretation of mammograms and in topics related to mammography. The training shall include instruction in radiation physics, including radiation physics specific to mammography, radiation effects, and radiation protection. The mammographic interpretation component shall be under the direct supervision of a physician who meets the requirements of paragraph (a)(1) of this section;
 - (C) Have a minimum of 60 hours of documented medical education in mammography, which shall include: Instruction in the interpretation of mammograms and education in basic breast anatomy, pathology, physiology, technical aspects of mammography, and quality assurance and quality control in mammography. All 60 of these hours shall be category I and at least 15 of the category I hours shall have been acquired within the 3 years immediately prior to the date that the physician qualifies as an interpreting physician. Hours spent in residency specifically devoted to mammography will be considered as equivalent to Category I continuing medical education credits and will be accepted if documented in writing by the appropriate representative of the training institution; and
 - (D) Unless the exemption in paragraph (a)(1)(iii)(B) of this section applies, have interpreted or multi-read at least 240 mammographic examinations within the 6-month period immediately prior to the date that the physician qualifies as an interpreting physician. This interpretation or multi-reading shall be under the direct supervision of an interpreting physician.
- (ii) Continuing experience and education. All interpreting physicians shall maintain their qualifications by meeting the following requirements:
 - (A) Following the second anniversary date of the end of the calendar quarter in which the requirements of paragraph (a)(1)(i) of this section were completed, the interpreting physician shall have interpreted or multi-read at least 960 mammographic examinations during the 24 months immediately preceding the date of the facility's annual MQSA inspection or the last day of the calendar quarter preceding the inspection or any date in-between the two.

The facility will choose one of these dates to determine the 24-month period.

- (B) Following the third anniversary date of the end of the calendar quarter in which the requirements of paragraph (a)(1)(i) of this section were completed, the interpreting physician shall have taught or completed at least 15 category I continuing medical education units in mammography during the 36 months immediately preceding the date of the facility's annual MQSA inspection or the last day of the calendar quarter preceding the inspection or any date in between the two. The facility will choose one of these dates to determine the 36-month period. This training shall include at least six category I continuing medical education credits in each mammographic modality used by the interpreting physician in his or her practice; and
 - (C) Before an interpreting physician may begin independently interpreting mammograms produced by a new mammographic modality, that is, a mammographic modality in which the physician has not previously been trained, the interpreting physician shall have at least 8 hours of training in the new mammographic modality.
 - (D) Units earned through teaching a specific course can be counted only once towards the 15 required by paragraph (a)(1)(ii)(B) of this section, even if the course is taught multiple times during the previous 36 months.
- (iii) Exemptions.
- (A) Those physicians who qualified as interpreting physicians under paragraph (a)(1) of this section of FDA's interim regulations prior to April 28, 1999, are considered to have met the initial requirements of paragraph (a)(1)(i) of this section. They may continue to interpret mammograms provided they continue to meet the licensure requirement of paragraph (a)(1)(i)(A) of this section and the continuing experience and education requirements of paragraph (a)(1)(ii) of this section.
 - (B) Physicians who have interpreted or multi-read at least 240 mammographic examinations under the direct supervision of an interpreting physician in any 6-month period during the last 2 years of a diagnostic radiology residency and who become appropriately board certified at the first allowable time, as defined by an eligible certifying body, are otherwise exempt from paragraph (a)(1)(i)(D) of this section.
- (iv) Reestablishing qualifications. Interpreting physicians who fail to maintain the required continuing experience or continuing education requirements shall reestablish their qualifications before resuming the independent interpretation of mammograms, as follows:
- (A) Interpreting physicians who fail to meet the continuing experience requirements of paragraph (a)(1)(ii)(A) of this section shall:

- (1) Interpret or multi-read at least 240 mammographic examinations under the direct supervision of an interpreting physician, or
 - (2) Interpret or multi-read a sufficient number of mammographic examinations, under the direct supervision of an interpreting physician, to bring the physician's total up to 960 examinations for the prior 24 months, whichever is less.
 - (3) The interpretations required under paragraph (a)(1)(iv)(A)(1) or (a)(1)(iv)(A)(2) of this section shall be done within the 6 months immediately prior to resuming independent interpretation.
 - (B) Interpreting physicians who fail to meet the continuing education requirements of paragraph (a)(1)(ii)(B) of this section shall obtain a sufficient number of additional category I continuing medical education credits in mammography to bring their total up to the required 15 credits in the previous 36 months before resuming independent interpretation.
- (2) Radiologic technologists. All mammographic examinations shall be performed by radiologic technologists who meet the following general requirements, mammography requirements, and continuing education and experience requirements:
 - (i) General requirements.
 - (A) Be licensed to perform general radiographic procedures in a State; or
 - (B) Have general certification from one of the bodies determined by FDA to have procedures and requirements adequate to ensure that radiologic technologists certified by the body are competent to perform radiologic examinations; and
 - (ii) Mammography requirements. Have, prior to April 28, 1999, qualified as a radiologic technologist under paragraph (a)(2) of this section of FDA's interim regulations of December 21, 1993, or completed at least 40 contact hours of documented training specific to mammography under the supervision of a qualified instructor. The hours of documented training shall include, but not necessarily be limited to:
 - (A) Training in breast anatomy and physiology, positioning and compression, quality assurance/quality control techniques, imaging of patients with breast implants;
 - (B) The performance of a minimum of 25 examinations under the direct supervision of an individual qualified under paragraph (a)(2) of this section; and
 - (C) At least 8 hours of training in each mammography modality to be used by the technologist in performing mammography exams; and
 - (iii) Continuing education requirements.
 - (A) Following the third anniversary date of the end of the calendar quarter in which the requirements of paragraphs (a)(2)(i) and (a)(2)(ii) of this section were completed, the radiologic technologist

shall have taught or completed at least 15 continuing education units in mammography during the 36 months immediately preceding the date of the facility's annual MQSA inspection or the last day of the calendar quarter preceding the inspection or any date in between the two. The facility will choose one of these dates to determine the 36-month period.

- (B) Units earned through teaching a specific course can be counted only once towards the 15 required in paragraph (a)(2)(iii)(A) of this section, even if the course is taught multiple times during the previous 36 months.
 - (C) At least six of the continuing education units required in paragraph (a)(2)(iii)(A) of this section shall be related to each mammographic modality used by the technologist.
 - (D) **Requalification.** Radiologic technologists who fail to meet the continuing education requirements of paragraph (a)(2)(iii)(A) of this section shall obtain a sufficient number of continuing education units in mammography to bring their total up to at least 15 in the previous 3 years, at least 6 of which shall be related to each modality used by the technologist in mammography. The technologist may not resume performing unsupervised mammography examinations until the continuing education requirements are completed.
 - (E) Before a radiologic technologist may begin independently performing mammographic examinations using a mammographic modality other than one of those for which the technologist received training under paragraph (a)(2)(ii)(C) of this section, the technologist shall have at least 8 hours of continuing education units in the new modality.
- (iv) **Continuing experience requirements.**
- (A) Following the second anniversary date of the end of the calendar quarter in which the requirements of paragraphs (a)(2)(i) and (a)(2)(ii) of this section were completed or of April 28, 1999, whichever is later, the radiologic technologist shall have performed a minimum of 200 mammography examinations during the 24 months immediately preceding the date of the facility's annual MQSA inspection or the last day of the calendar quarter preceding the inspection or any date in between the two. The facility will choose one of these dates to determine the 24-month period.
 - (B) **Requalification.** Radiologic technologists who fail to meet the continuing experience requirements of paragraph (a)(2)(iv)(A) of this section shall perform a minimum of 25 mammography examinations under the direct supervision of a qualified radiologic technologist, before resuming the performance of unsupervised mammography examinations.

- (3) Medical physicists. All medical physicists conducting surveys of mammography facilities and providing oversight of the facility quality assurance program under paragraph (e) of this section shall meet the following:
- (i) Initial qualifications.
 - (A) Be State licensed or approved or have certification in an appropriate specialty area by one of the bodies determined by FDA to have procedures and requirements to ensure that medical physicists certified by the body are competent to perform physics survey; and
 - (B)
 - (1) Have a masters degree or higher in a physical science from an accredited institution, with no less than 20 semester hours or equivalent (e.g., 30 quarter hours) of college undergraduate or graduate level physics;
 - (2) Have 20 contact hours of documented specialized training in conducting surveys of mammography facilities; and
 - (3) Have the experience of conducting surveys of at least 1 mammography facility and a total of at least 10 mammography units. No more than one survey of a specific unit within a period of 60 days can be counted towards the total mammography unit survey requirement. After April 28, 1999, experience conducting surveys must be acquired under the direct supervision of a medical physicist who meets all the requirements of paragraphs (a)(3)(i) and (a)(3)(iii) of this section; or
 - (ii) Alternative initial qualifications.
 - (A) Have qualified as a medical physicist under paragraph (a)(3) of this section of FDA's interim regulations and retained that qualification by maintenance of the active status of any licensure, approval, or certification required under the interim regulations; and
 - (B) Prior to the April 28, 1999, have:
 - (1) A bachelor's degree or higher in a physical science from an accredited institution with no less than 10 semester hours or equivalent of college undergraduate or graduate level physics,
 - (2) Forty contact hours of documented specialized training in conducting surveys of mammography facilities and,
 - (3) Have the experience of conducting surveys of at least 1 mammography facility and a total of at least 20 mammography units. No more than one survey of a specific unit within a period of 60 days can be counted towards the total mammography unit survey requirement. The training and experience requirements must be met after fulfilling the degree requirement.
 - (iii) Continuing qualifications.
 - (A) Continuing education. Following the third anniversary date of the end of the calendar quarter in which the requirements of paragraph (a)(3)(i) or (a)(3)(ii) of this section were completed, the medical

physicist shall have taught or completed at least 15 continuing education units in mammography during the 36 months immediately preceding the date of the facility's annual inspection or the last day of the calendar quarter preceding the inspection or any date in between the two. The facility shall choose one of these dates to determine the 36-month period. This continuing education shall include hours of training appropriate to each mammographic modality evaluated by the medical physicist during his or her surveys or oversight of quality assurance programs. Units earned through teaching a specific course can be counted only once towards the required 15 units in a 36-month period, even if the course is taught multiple times during the 36 months.

- (B) Continuing experience. Following the second anniversary date of the end of the calendar quarter in which the requirements of paragraph (a)(3)(i) or (a)(3)(ii) of this section were completed or of April 28, 1999, whichever is later, the medical physicist shall have surveyed at least two mammography facilities and a total of at least six mammography units during the 24 months immediately preceding the date of the facility's annual MQSA inspection or the last day of the calendar quarter preceding the inspection or any date in-between the two. The facility shall choose one of these dates to determine the 24-month period. No more than one survey of a specific facility within a 10-month period or a specific unit within a period of 60 days can be counted towards this requirement.
- (C) Before a medical physicist may begin independently performing mammographic surveys of a new mammographic modality, that is, a mammographic modality other than one for which the physicist received training to qualify under paragraph (a)(3)(i) or (a)(3)(ii) of this section, the physicist must receive at least 8 hours of training in surveying units of the new mammographic modality.
- (iv) Reestablishing qualifications. Medical physicists who fail to maintain the required continuing qualifications of paragraph (a)(3)(iii) of this section may not perform the MQSA surveys without the supervision of a qualified medical physicist. Before independently surveying another facility, medical physicists must reestablish their qualifications, as follows:
 - (A) Medical physicists who fail to meet the continuing educational requirements of paragraph (a)(3)(iii)(A) of this section shall obtain a sufficient number of continuing education units to bring their total units up to the required 15 in the previous 3 years.
 - (B) Medical physicists who fail to meet the continuing experience requirement of paragraph (a)(3)(iii)(B) of this section shall complete a sufficient number of surveys under the direct supervision of a medical physicist who meets the qualifications of paragraphs (a)(3)(i) and (a)(3)(iii) of this section to bring their total

surveys up to the required two facilities and six units in the previous 24 months. No more than one survey of a specific unit within a period of 60 days can be counted towards the total mammography unit survey requirement.

- (4) Retention of personnel records. Facilities shall maintain records to document the qualifications of all personnel who worked at the facility as interpreting physicians, radiologic technologists, or medical physicists. These records must be available for review by the MQSA inspectors. Records of personnel no longer employed by the facility should not be discarded until the next annual inspection has been completed and FDA has determined that the facility is in compliance with the MQSA personnel requirements.
- (b) Equipment. Regulations published under Secs. 1020.30, 1020.31, and 900.12(e) of this chapter that are relevant to equipment performance should also be consulted for a more complete understanding of the equipment performance requirements.
- (1) Prohibited equipment. Radiographic equipment designed for general purpose or special nonmammography procedures shall not be used for mammography. This prohibition includes systems that have been modified or equipped with special attachments for mammography. This requirement supersedes the implied acceptance of such systems in Sec. 1020.31(f)(3) of this chapter.
 - (2) General. All radiographic equipment used for mammography shall be specifically designed for mammography and shall be certified pursuant to Sec. 1010.2 of this chapter as meeting the applicable requirements of Secs. 1020.30 and 1020.31 of this chapter in effect at the date of manufacture.
 - (3) Motion of tube-image receptor assembly.
 - (i) The assembly shall be capable of being fixed in any position where it is designed to operate. Once fixed in any such position, it shall not undergo unintended motion.
 - (ii) The mechanism ensuring compliance with paragraph (b)(3)(i) of this section shall not fail in the event of power interruption.
 - (4) Image receptor sizes.
 - (i) Systems using screen-film image receptors shall provide, at a minimum, for operation with image receptors of 18 x 24 centimeters (cm) and 24 x 30 cm.
 - (ii) Systems using screen-film image receptors shall be equipped with moving grids matched to all image receptor sizes provided.
 - (iii) Systems used for magnification procedures shall be capable of operation with the grid removed from between the source and image receptor.
 - (5) Light fields. For any mammography system with a light beam that passes through the X-ray beam-limiting device, the light shall provide an average illumination of not less than 160 lux (15 foot candles) at 100 cm or the maximum source-image receptor distance (SID), whichever is less.
 - (6) Magnification.
 - (i) Systems used to perform noninterventional problem solving procedures shall have radiographic magnification capability available for use by the operator.

- (ii) Systems used for magnification procedures shall provide, at a minimum, at least one magnification value within the range of 1.4 to 2.0.
- (7) Focal spot selection.
 - (i) When more than one focal spot is provided, the system shall indicate, prior to exposure, which focal spot is selected.
 - (ii) When more than one target material is provided, the system shall indicate, prior to exposure, the preselected target material.
 - (iii) When the target material and/or focal spot is selected by a system algorithm that is based on the exposure or on a test exposure, the system shall display, after the exposure, the target material and/or focal spot actually used during the exposure.
- (8) Compression. All mammography systems shall incorporate a compression device.
 - (i) Application of compression. Effective October 28, 2002, each system shall provide:
 - (A) An initial power-driven compression activated by hands-free controls operable from both sides of the patient; and
 - (B) Fine adjustment compression controls operable from both sides of the patient.
 - (ii) Compression paddle.
 - (A) Systems shall be equipped with different sized compression paddles that match the sizes of all full-field image receptors provided for the system. Compression paddles for special purposes, including those smaller than the full size of the image receptor (for "spot compression") may be provided. Such compression paddles for special purposes are not subject to the requirements of paragraphs (b)(8)(ii)(D) and (b)(8)(ii)(E) of this section.
 - (B) Except as provided in paragraph (b)(8)(ii)(C) of this section, the compression paddle shall be flat and parallel to the breast support table and shall not deflect from parallel by more than 1.0 cm at any point on the surface of the compression paddle when compression is applied.
 - (C) Equipment intended by the manufacturer's design to not be flat and parallel to the breast support table during compression shall meet the manufacturer's design specifications and maintenance requirements.
 - (D) The chest wall edge of the compression paddle shall be straight and parallel to the edge of the image receptor.
 - (E) The chest wall edge may be bent upward to allow for patient comfort but shall not appear on the image.
- (9) Technique factor selection and display.
 - (i) Manual selection of milliamperere seconds (mA's) or at least one of its component parts (milliamperere (mA) and/or time) shall be available.
 - (ii) The technique factors (peak tube potential in kilovolt (kV) and either tube current in mA and exposure time in seconds or the product of tube

current and exposure time in mA's) to be used during an exposure shall be indicated before the exposure begins, except when automatic exposure controls (AEC) are used, in which case the technique factors that are set prior to the exposure shall be indicated.

- (iii) Following AEC mode use, the system shall indicate the actual kilovoltage peak (kVp) and mA's used during the exposure. The mA's may be displayed as mA and time.
 - (10) Automatic exposure control.
 - (i) Each screen-film system shall provide an AEC mode that is operable in all combinations of equipment configuration provided, e.g., grid, nongrid; magnification, nonmagnification; and various target-filter combinations.
 - (ii) The positioning or selection of the detector shall permit flexibility in the placement of the detector under the target tissue.
 - (A) The size and available positions of the detector shall be clearly indicated at the X-ray input surface of the breast compression paddle.
 - (B) The selected position of the detector shall be clearly indicated.
 - (iii) The system shall provide means for the operator to vary the selected optical density from the normal (zero) setting.
 - (11) X-ray film. The facility shall use X-ray film for mammography that has been designated by the film manufacturer as appropriate for mammography.
 - (12) Intensifying screens. The facility shall use intensifying screens for mammography that have been designated by the screen manufacturer as appropriate for mammography and shall use film that is matched to the screen's spectral output as specified by the manufacturer.
 - (13) Film processing solutions. For processing mammography films, the facility shall use chemical solutions that are capable of developing the films used by the facility in a manner equivalent to the minimum requirements specified by the film manufacturer.
 - (14) Lighting. The facility shall make special lights for film illumination, i.e., hot-lights, capable of producing light levels greater than that provided by the view box, available to the interpreting physicians.
 - (15) Film masking devices. Facilities shall ensure that film masking devices that can limit the illuminated area to a region equal to or smaller than the exposed portion of the film are available to all interpreting physicians interpreting for the facility.
- (c) Medical records and mammography reports—
- (1) Contents and terminology. Each facility shall prepare a written report of the results of each mammography examination performed under its certificate. The mammography report shall include the following information:
 - (i) The name of the patient and an additional patient identifier;
 - (ii) Date of examination;
 - (iii) The name of the interpreting physician who interpreted the mammogram;

- (iv) Overall final assessment of findings, classified in one of the following categories:
 - (A) “Negative:” Nothing to comment upon (if the interpreting physician is aware of clinical findings or symptoms, despite the negative assessment, these shall be explained);
 - (B) “Benign:” Also a negative assessment;
 - (C) “Probably Benign:” Finding(s) has a high probability of being benign;
 - (D) “Suspicious:” Finding(s) without all the characteristic morphology of breast cancer but indicating a definite probability of being malignant;
 - (E) “Highly suggestive of malignancy:” Finding(s) has a high probability of being malignant;
 - (v) In cases where no final assessment category can be assigned due to incomplete work-up, “Incomplete: Need additional imaging evaluation” shall be assigned as an assessment and reasons why no assessment can be made shall be stated by the interpreting physician; and
 - (vi) Recommendations made to the health care provider about what additional actions, if any, should be taken. All clinical questions raised by the referring health care provider shall be addressed in the report to the extent possible, even if the assessment is negative or benign.
- (2) Communication of mammography results to the patients. Each facility shall send each patient a summary of the mammography report written in lay terms within 30 days of the mammographic examination. If assessments are “Suspicious” or “Highly suggestive of malignancy,” the facility shall make reasonable attempts to ensure that the results are communicated to the patient as soon as possible.
- (i) Patients who do not name a health care provider to receive the mammography report shall be sent the report described in paragraph (c)(1) of this section within 30 days, in addition to the written notification of results in lay terms.
 - (ii) Each facility that accepts patients who do not have a health care provider shall maintain a system for referring such patients to a health care provider when clinically indicated.
- (3) Communication of mammography results to health care providers. When the patient has a referring health care provider or the patient has named a health care provider, the facility shall:
- (i) Provide a written report of the mammography examination, including the items listed in paragraph (c)(1) of this section, to that health care provider as soon as possible, but no later than 30 days from the date of the mammography examination; and
 - (ii) If the assessment is “Suspicious” or “Highly suggestive of malignancy,” make reasonable attempts to communicate with the health care provider as soon as possible, or if the health care provider is unavailable, to a responsible designee of the health care provider.
- (4) Recordkeeping. Each facility that performs mammograms:

- (i) Shall (except as provided in paragraph (c)(4)(ii) of this section) maintain mammography films and reports in a permanent medical record of the patient for a period of not less than 5 years, or not less than 10 years if no additional mammograms of the patient are performed at the facility, or a longer period if mandated by State or local law; and
 - (ii) Shall upon request by, or on behalf of, the patient, permanently or temporarily transfer the original mammograms and copies of the patient's reports to a medical institution, or to a physician or health care provider of the patient, or to the patient directly;
 - (iii) Any fee charged to the patients for providing the services in paragraph (c)(4)(ii) of this section shall not exceed the documented costs associated with this service.
- (5) Mammographic image identification. Each mammographic image shall have the following information indicated on it in a permanent, legible, and unambiguous manner and placed so as not to obscure anatomic structures:
 - (i) Name of patient and an additional patient identifier.
 - (ii) Date of examination.
 - (iii) View and laterality. This information shall be placed on the image in a position near the axilla. Standardized codes specified by the accreditation body and approved by FDA in accordance with Sec. 900.3(b) or Sec. 900.4(a)(8) shall be used to identify view and laterality.
 - (iv) Facility name and location. At a minimum, the location shall include the city, State, and zip code of the facility.
 - (v) Technologist identification.
 - (vi) Cassette/screen identification.
 - (vii) Mammography unit identification, if there is more than one unit in the facility.
- (d) Quality assurance—general. Each facility shall establish and maintain a quality assurance program to ensure the safety, reliability, clarity, and accuracy of mammography services performed at the facility.
 - (1) Responsible individuals. Responsibility for the quality assurance program and for each of its elements shall be assigned to individuals who are qualified for their assignments and who shall be allowed adequate time to perform these duties.
 - (i) Lead interpreting physician. The facility shall identify a lead interpreting physician who shall have the general responsibility of ensuring that the quality assurance program meets all requirements of paragraphs (d) through (f) of this section. No other individual shall be assigned or shall retain responsibility for quality assurance tasks unless the lead interpreting physician has determined that the individual's qualifications for, and performance of, the assignment are adequate.
 - (ii) Interpreting physicians. All interpreting physicians interpreting mammograms for the facility shall:
 - (A) Follow the facility procedures for corrective action when the images they are asked to interpret are of poor quality, and

- (B) Participate in the facility's medical outcomes audit program.
- (iii) Medical physicist. Each facility shall have the services of a medical physicist available to survey mammography equipment and oversee the equipment-related quality assurance practices of the facility. At a minimum, the medical physicist(s) shall be responsible for performing the surveys and mammography equipment evaluations and providing the facility with the reports described in paragraphs (e)(9) and (e)(10) of this section.
 - (iv) Quality control technologist. Responsibility for all individual tasks within the quality assurance program not assigned to the lead interpreting physician or the medical physicist shall be assigned to a quality control technologist(s). The tasks are to be performed by the quality control technologist or by other personnel qualified to perform the tasks. When other personnel are utilized for these tasks, the quality control technologist shall ensure that the tasks are completed in such a way as to meet the requirements of paragraph (e) of this section.
- (2) Quality assurance records. The lead interpreting physician, quality control technologist, and medical physicist shall ensure that records concerning mammography technique and procedures, quality control (including monitoring data, problems detected by analysis of that data, corrective actions, and the effectiveness of the corrective actions), safety, protection and employee qualifications to meet assigned quality assurance tasks are properly maintained and updated. These quality control records shall be kept for each test specified in paragraphs (e) and (f) of this section until the next annual inspection has been completed and FDA has determined that the facility is in compliance with the quality assurance requirements or until the test has been performed two additional times at the required frequency, whichever is longer.
- (e) Quality assurance—equipment—
- (1) Daily quality control tests. Film processors used to develop mammograms shall be adjusted and maintained to meet the technical development specifications for the mammography film in use. A processor performance test shall be performed on each day that clinical films are processed before any clinical films are processed that day. The test shall include an assessment of base plus fog density, mid-density, and density difference, using the mammography film used clinically at the facility.
 - (i) The base plus fog density shall be within + 0.03 of the established operating level.
 - (ii) The mid-density shall be within +/- 0.15 of the established operating level.
 - (iii) The density difference shall be within +/- 0.15 of the established operating level.
 - (2) Weekly quality control tests. Facilities with screen-film systems shall perform an image quality evaluation test, using an FDA-approved phantom, at least weekly.

- (i) The optical density of the film at the center of an image of a standard FDA-accepted phantom shall be at least 1.20 when exposed under a typical clinical condition.
 - (ii) The optical density of the film at the center of the phantom image shall not change by more than +/- 0.20 from the established operating level.
 - (iii) The phantom image shall achieve at least the minimum score established by the accreditation body and accepted by FDA in accordance with Sec. 900.3(d) or Sec. 900.4(a)(8).
 - (iv) The density difference between the background of the phantom and an added test object, used to assess image contrast, shall be measured and shall not vary by more than +/- 0.05 from the established operating level.
- (3) Quarterly quality control tests. Facilities with screen-film systems shall perform the following quality control tests at least quarterly:
- (i) Fixer retention in film. The residual fixer shall be no more than 5 micrograms per square cm.
 - (ii) Repeat analysis. If the total repeat or reject rate changes from the previously determined rate by more than 2.0 percent of the total films included in the analysis, the reason(s) for the change shall be determined. Any corrective actions shall be recorded and the results of these corrective actions shall be assessed.
- (4) Semiannual quality control tests. Facilities with screen-film systems shall perform the following quality control tests at least semiannually:
- (i) Darkroom fog. The optical density attributable to darkroom fog shall not exceed 0.05 when a mammography film of the type used in the facility, which has a mid-density of no less than 1.2 OD, is exposed to typical darkroom conditions for 2 minutes while such film is placed on the counter top emulsion side up. If the darkroom has a safelight used for mammography film, it shall be on during this test.
 - (ii) Screen-film contact. Testing for screen-film contact shall be conducted using 40 mesh copper screen. All cassettes used in the facility for mammography shall be tested.
 - (iii) Compression device performance.
 - (A) A compression force of at least 111 newtons (25 pounds) shall be provided.
 - (B) Effective October 28, 2002, the maximum compression force for the initial power drive shall be between 111 newtons (25 pounds) and 200 newtons (45 pounds).
- (5) Annual quality control tests. Facilities with screen-film systems shall perform the following quality control tests at least annually:
- (i) Automatic exposure control performance.
 - (A) The AEC shall be capable of maintaining film optical density within +/- 0.30 of the mean optical density when thickness of a homogeneous material is varied over a range of 2 to 6 cm and the kVp is varied appropriately for such thicknesses over the kVp range used clinically in the facility. If this requirement cannot be met, a technique chart shall be developed showing appropriate

techniques (kVp and density control settings) for different breast thicknesses and compositions that must be used so that optical densities within ± 0.30 of the average under phototimed conditions can be produced.

- (B) After October 28, 2002, the AEC shall be capable of maintaining film optical density (OD) within ± 0.15 of the mean optical density when thickness of a homogeneous material is varied over a range of 2 to 6 cm and the kVp is varied appropriately for such thicknesses over the kVp range used clinically in the facility.
 - (C) The optical density of the film in the center of the phantom image shall not be less than 1.20.
- (ii) Kilovoltage peak (kVp) accuracy and reproducibility.
- (A) The kVp shall be accurate within ± 5 percent of the indicated or selected kVp at:
 - (1) The lowest clinical kVp that can be measured by a kVp test device;
 - (2) The most commonly used clinical kVp;
 - (3) The highest available clinical kVp, and
 - (B) At the most commonly used clinical settings of kVp, the coefficient of variation of reproducibility of the kVp shall be equal to or less than 0.02.
- (iii) Focal spot condition. Until October 28, 2002, focal spot condition shall be evaluated either by determining system resolution or by measuring focal spot dimensions. After October 28, 2002, facilities shall evaluate focal spot condition only by determining the system resolution.
- (A) System Resolution.
 - (1) Each X-ray system used for mammography, in combination with the mammography screen-film combination used in the facility, shall provide a minimum resolution of 11 Cycles/millimeters (mm) (line-pairs/mm) when a high contrast resolution bar test pattern is oriented with the bars perpendicular to the anode-cathode axis, and a minimum resolution of 13 line-pairs/mm when the bars are parallel to that axis.
 - (i) The bar pattern shall be placed 4.5 cm above the breast support surface, centered with respect to the chest wall edge of the image receptor, and with the edge of the pattern within 1 cm of the chest wall edge of the image receptor.
 - (3) When more than one target material is provided, the measurement in paragraph (e)(5)(iii)(A) of this section shall be made using the appropriate focal spot for each target material.
 - (4) When more than one SID is provided, the test shall be performed at SID most commonly used clinically.
 - (5) Test kVp shall be set at the value used clinically by the facility for a standard breast and shall be performed in the

AEC mode, if available. If necessary, a suitable absorber may be placed in the beam to increase exposure times. The screen-film cassette combination used by the facility shall be used to test for this requirement and shall be placed in the normal location used for clinical procedures.

- (B) Focal spot dimensions. Measured values of the focal spot length (dimension parallel to the anode cathode axis) and width (dimension perpendicular to the anode cathode axis) shall be within the tolerance limits specified in Table 1.

Table 1

Focal Spot Tolerance Limit		
Nominal Focal Spot Size (mm)	Maximum Measured Dimensions	
	Width(mm)	Length(mm)
0.10	0.15	0.15
0.15	0.23	0.23
0.20	0.30	0.30
0.30	0.45	0.65
0.40	0.60	0.85
0.60	0.90	1.30

- (iv) Beam quality and half-value layer (HVL). The HVL shall meet the specifications of Sec. 1020.30(m)(1) of this chapter for the minimum HVL. These values, extrapolated to the mammographic range, are shown in Table 2. Values not shown in Table 2 may be determined by linear interpolation or extrapolation.

Table 2

X-ray Tube Voltage (kilovolt peak) and Minimum HVL		
Designed Operating Range (kV)	Measured Operating Voltage (kV)	Minimum HVL (millimeters of aluminum)
Below 50	20	0.20
	25	0.25
	30	0.30

- (v) Breast entrance air kerma and AEC reproducibility. The coefficient of variation for both air kerma and mA's shall not exceed 0.05.
- (vi) Dosimetry. The average glandular dose delivered during a single cranio-caudal view of an FDA-accepted phantom simulating a standard breast shall not exceed 3.0 milligray (mGy) (0.3 rad) per exposure. The dose

shall be determined with technique factors and conditions used clinically for a standard breast.

- (vii) X-ray field/light field/image receptor/compression paddle alignment.
 - (A) All systems shall have beam-limiting devices that allow the entire chest wall edge of the x-ray field to extend to the chest wall edge of the image receptor and provide means to assure that the x-ray field does not extend beyond any edge of the image receptor by more than 2 percent of the SID.
 - (B) If a light field that passes through the X-ray beam limitation device is provided, it shall be aligned with the X-ray field so that the total of any misalignment of the edges of the light field and the X-ray field along either the length or the width of the visually defined field at the plane of the breast support surface shall not exceed 2 percent of the SID.
 - (C) The chest wall edge of the compression paddle shall not extend beyond the chest wall edge of the image receptor by more than one percent of the SID when tested with the compression paddle placed above the breast support surface at a distance equivalent to standard breast thickness. The shadow of the vertical edge of the compression paddle shall not be visible on the image.
- (viii) Uniformity of screen speed. Uniformity of screen speed of all the cassettes in the facility shall be tested and the difference between the maximum and minimum optical densities shall not exceed 0.30. Screen artifacts shall also be evaluated during this test.
- (ix) System artifacts. System artifacts shall be evaluated with a high-grade, defect-free sheet of homogeneous material large enough to cover the mammography cassette and shall be performed for all cassette sizes used in the facility using a grid appropriate for the cassette size being tested. System artifacts shall also be evaluated for all available focal spot sizes and target filter combinations used clinically.
- (x) Radiation output.
 - (A) The system shall be capable of producing a minimum output of 4.5 mGy air kerma per second (513 milli Roentgen (mR) per second) when operating at 28 kVp in the standard mammography (moly/moly) mode at any SID where the system is designed to operate and when measured by a detector with its center located 4.5 cm above the breast support surface with the compression paddle in place between the source and the detector. After October 28, 2002, the system, under the same measuring conditions shall be capable of producing a minimum output of 7.0 mGy air kerma per second (800 mR per second) when operating at 28 kVp in the standard (moly/moly) mammography mode at any SID where the system is designed to operate.
 - (B) The system shall be capable of maintaining the required minimum radiation output averaged over a 3.0 second period.

- (xi) Decompression. If the system is equipped with a provision for automatic decompression after completion of an exposure or interruption of power to the system, the system shall be tested to confirm that it provides:
 - (A) An override capability to allow maintenance of compression;
 - (B) A continuous display of the override status; and
 - (C) A manual emergency compression release that can be activated in the event of power or automatic release failure.
- (6) Quality control tests—other modalities. For systems with image receptor modalities other than screen-film, the quality assurance program shall be substantially the same as the quality assurance program recommended by the image receptor manufacturer, except that the maximum allowable dose shall not exceed the maximum allowable dose for screen-film systems in paragraph (e)(5)(vi) of this section.
- (7) Mobile Units. The facility shall verify that mammography units used to produce mammograms at more than one location meet the requirements in paragraphs (e)(1) through (e)(6) of this section. In addition, at each examination location, before any examinations are conducted, the facility shall verify satisfactory performance of such units using a test method that establishes the adequacy of the image quality produced by the unit.
- (8) Use of test results.
 - (i) After completion of the tests specified in paragraphs (e)(1) through (e)(7) of this section, the facility shall compare the test results to the corresponding specified action limits; or, for nonscreen-film modalities, to the manufacturer's recommended action limits; or, for post-move, preexamination testing of mobile units, to the limits established in the test method used by the facility.
 - (ii) If the test results fall outside of the action limits, the source of the problem shall be identified and corrective actions shall be taken:
 - (A) Before any further examinations are performed or any films are processed using a component of the mammography system that failed any of the tests described in paragraphs (e)(1), (e)(2), (e)(4)(i), (e)(4)(ii), (e)(4)(iii), (e)(5)(vi), (e)(6), or (e)(7) of this section;
 - (B) Within 30 days of the test date for all other tests described in paragraph (e) of this section.
- (9) Surveys.
 - (i) At least once a year, each facility shall undergo a survey by a medical physicist or by an individual under the direct supervision of a medical physicist. At a minimum, this survey shall include the performance of tests to ensure that the facility meets the quality assurance requirements of the annual tests described in paragraphs (e)(5) and (e)(6) of this section and the weekly phantom image quality test described in paragraph (e)(2) of this section.
 - (ii) The results of all tests conducted by the facility in accordance with paragraphs (e)(1) through (e)(7) of this section, as well as written

- documentation of any corrective actions taken and their results, shall be evaluated for adequacy by the medical physicist performing the survey.
- (iii) The medical physicist shall prepare a survey report that includes a summary of this review and recommendations for necessary improvements.
 - (iv) The survey report shall be sent to the facility within 30 days of the date of the survey.
 - (v) The survey report shall be dated and signed by the medical physicist performing or supervising the survey. If the survey was performed entirely or in part by another individual under the direct supervision of the medical physicist, that individual and the part of the survey that individual performed shall also be identified in the survey report.
- (10) Mammography equipment evaluations. Additional evaluations of mammography units or image processors shall be conducted whenever a new unit or processor is installed, a unit or processor is disassembled and reassembled at the same or a new location, or major components of a mammography unit or processor equipment are changed or repaired. These evaluations shall be used to determine whether the new or changed equipment meets the requirements of applicable standards in paragraphs (b) and (e) of this section. All problems shall be corrected before the new or changed equipment is put into service for examinations or film processing. The mammography equipment evaluation shall be performed by a medical physicist or by an individual under the direct supervision of a medical physicist.
- (11) Facility cleanliness.
- (i) The facility shall establish and implement adequate protocols for maintaining darkroom, screen, and view box cleanliness.
 - (ii) The facility shall document that all cleaning procedures are performed at the frequencies specified in the protocols.
- (12) Calibration of air kerma measuring instruments. Instruments used by medical physicists in their annual survey to measure the air kerma or air kerma rate from a mammography unit shall be calibrated at least once every 2 years and each time the instrument is repaired. The instrument calibration must be traceable to a national standard and calibrated with an accuracy of +/- 6 percent (95 percent confidence level) in the mammography energy range.
- (13) Infection control. Facilities shall establish and comply with a system specifying procedures to be followed by the facility for cleaning and disinfecting mammography equipment after contact with blood or other potentially infectious materials. This system shall specify the methods for documenting facility compliance with the infection control procedures established and shall:
- (i) Comply with all applicable Federal, State, and local regulations pertaining to infection control; and
 - (ii) Comply with the manufacturer's recommended procedures for the cleaning and disinfection of the mammography equipment used in the facility; or

- (iii) If adequate manufacturer's recommendations are not available, comply with generally accepted guidance on infection control, until such recommendations become available.
- (f) Quality assurance-mammography medical outcomes audit. Each facility shall establish and maintain a mammography medical outcomes audit program to followup positive mammographic assessments and to correlate pathology results with the interpreting physician's findings. This program shall be designed to ensure the reliability, clarity, and accuracy of the interpretation of mammograms.
 - (1) General requirements. Each facility shall establish a system to collect and review outcome data for all mammograms performed, including followup on the disposition of all positive mammograms and correlation of pathology results with the interpreting physician's mammography report. Analysis of these outcome data shall be made individually and collectively for all interpreting physicians at the facility. In addition, any cases of breast cancer among women imaged at the facility that subsequently become known to the facility shall prompt the facility to initiate followup on surgical and/or pathology results and review of the mammograms taken prior to the diagnosis of a malignancy.
 - (2) Frequency of audit analysis. The facility's first audit analysis shall be initiated no later than 12 months after the date the facility becomes certified, or 12 months after April 28, 1999, whichever date is the latest. This audit analysis shall be completed within an additional 12 months to permit completion of diagnostic procedures and data collection. Subsequent audit analyses will be conducted at least once every 12 months.
 - (3) Audit interpreting physician. Each facility shall designate at least one interpreting physician to review the medical outcomes audit data at least once every 12 months. This individual shall record the dates of the audit period(s) and shall be responsible for analyzing results based on this audit. This individual shall also be responsible for documenting the results and for notifying other interpreting physicians of their results and the facility aggregate results. If followup actions are taken, the audit interpreting physician shall also be responsible for documenting the nature of the followup.
- (g) Mammographic procedure and techniques for mammography of patients with breast implants.
 - (1) Each facility shall have a procedure to inquire whether or not the patient has breast implants prior to the actual mammographic exam.
 - (2) Except where contraindicated, or unless modified by a physician's directions, patients with breast implants undergoing mammography shall have mammographic views to maximize the visualization of breast tissue.
- (h) Consumer complaint mechanism. Each facility shall:
 - (1) Establish a written and documented system for collecting and resolving consumer complaints;

- (2) Maintain a record of each serious complaint received by the facility for at least 3 years from the date the complaint was received;
 - (3) Provide the consumer with adequate directions for filing serious complaints with the facility's accreditation body if the facility is unable to resolve a serious complaint to the consumer's satisfaction;
 - (4) Report unresolved serious complaints to the accreditation body in a manner and timeframe specified by the accreditation body.
- (i) Clinical image quality. Clinical images produced by any certified facility must continue to comply with the standards for clinical image quality established by that facility's accreditation body.
- (j) Additional mammography review and patient notification.
- (1) If FDA believes that mammography quality at a facility has been compromised and may present a serious risk to human health, the facility shall provide clinical images and other relevant information, as specified by FDA, for review by the accreditation body or other entity designated by FDA. This additional mammography review will help the agency to determine whether the facility is in compliance with this section and, if not, whether there is a need to notify affected patients, their physicians, or the public that the reliability, clarity, and accuracy of interpretation of mammograms has been compromised.
 - (2) If FDA determines that the quality of mammography performed by a facility, whether or not certified under Sec. 900.11, was so inconsistent with the quality standards established in this section as to present a significant risk to individual or public health, FDA may require such facility to notify patients who received mammograms at such facility, and their referring physicians, of the deficiencies presenting such risk, the potential harm resulting, appropriate remedial measures, and such other relevant information as FDA may require. Such notification shall occur within a timeframe and in a manner specified by FDA.

Sec. 900.13 Revocation of accreditation and revocation of accreditation body approval.

- (a) FDA action following revocation of accreditation. If a facility's accreditation is revoked by an accreditation body, the agency may conduct an investigation into the reasons for the revocation. Following such investigation, the agency may determine that the facility's certificate shall no longer be in effect or the agency may take whatever other action or combination of actions will best protect the public health, including the establishment and implementation of a corrective plan of action that will permit the certificate to continue in effect while the facility seeks reaccreditation. A facility whose certificate is no longer in effect because it has lost its accreditation may not practice mammography.
- (b) Withdrawal of FDA approval of an accreditation body.

- (1) If FDA withdraws approval of an accreditation body under Sec. 900.6, the certificates of facilities previously accredited by such body shall remain in effect for up to 1 year from the date of the withdrawal of approval, unless FDA determines, in order to protect human health or because the accreditation body fraudulently accredited facilities, that the certificates of some or all of the facilities should be revoked or suspended or that a shorter time period should be established for the certificates to remain in effect.
- (2) After 1 year from the date of withdrawal of approval of an accreditation body, or within any shorter period of time established by the agency, the affected facilities must obtain accreditation from another accreditation body, or from another entity designated by FDA.

Sec. 900.14 Suspension or revocation of certificates.

- (a) Except as provided in paragraph (b) of this section, FDA may suspend or revoke a certificate if FDA finds, after providing the owner or operator of the facility with notice and opportunity for an informal hearing in accordance with part 16 of this chapter, that the owner, operator, or any employee of the facility:
 - (1) Has been guilty of misrepresentation in obtaining the certificate;
 - (2) Has failed to comply with the standards of Sec. 900.12;
 - (3) Has failed to comply with reasonable requests of the agency or the accreditation body for records, information, reports, or materials that FDA believes are necessary to determine the continued eligibility of the facility for a certificate or continued compliance with the standards of Sec. 900.12;
 - (4) Has refused a reasonable request of a duly designated FDA inspector, State inspector, or accreditation body representative for permission to inspect the facility or the operations and pertinent records of the facility;
 - (5) Has violated or aided and abetted in the violation of any provision of or regulation promulgated pursuant to 42 U.S.C. 263b; or
 - (6) Has failed to comply with prior sanctions imposed by the agency under 42 U.S.C. 263b(h).
- (b) FDA may suspend the certificate of a facility before holding a hearing if FDA makes a finding described in paragraph (a) of this section and also determines that:
 - (1) The failure to comply with required standards presents a serious risk to human health;
 - (2) The refusal to permit inspection makes immediate suspension necessary; or
 - (3) There is reason to believe that the violation or aiding and abetting of the violation was intentional or associated with fraud.
- (c) If FDA suspends a certificate in accordance with paragraph (b) of this section:
 - (1) The agency shall provide the facility with an opportunity for an informal hearing under part 16 of this chapter not later than 60 days from the effective date of this suspension;
 - (2) The suspension shall remain in effect until the agency determines that:

- (i) Allegations of violations or misconduct were not substantiated;
 - (ii) Violations of required standards have been corrected to the agency's satisfaction; or
 - (iii) The facility's certificate is revoked in accordance with paragraph (d) of this section;
- (d) After providing a hearing in accordance with paragraph (c)(1) of this section, the agency may revoke the facility's certificate if the agency determines that the facility:
- (1) Is unwilling or unable to correct violations that were the basis for suspension; or
 - (2) Has engaged in fraudulent activity to obtain or continue certification.

Sec. 900.15 Appeals of adverse accreditation or reaccreditation decisions that preclude certification or recertification.

- (a) The appeals procedures described in this section are available only for adverse accreditation or reaccreditation decisions that preclude certification or recertification by FDA. Agency decisions to suspend or revoke certificates that are already in effect will be handled in accordance with Sec. 900.14.
- (b) Upon learning that a facility has failed to become accredited or reaccredited, FDA will notify the facility that the agency is unable to certify that facility without proof of accreditation.
- (c) A facility that has been denied accreditation or reaccreditation is entitled to an appeals process from the accreditation body, in accordance with Sec. 900.7. A facility must avail itself of the accreditation body's appeal process before requesting reconsideration from FDA.
- (d) A facility that cannot achieve satisfactory resolution of an adverse accreditation decision through the accreditation body's appeal process is entitled to further appeal in accordance with procedures set forth in this section and in regulations published in 42 CFR part 498.
 - (1) References to the Health Care Financing Administration (HCFA) in 42 CFR part 498 should be read as the Division of Mammography Quality and Radiation Programs (DMQRP), Center for Devices and Radiological Health, Food and Drug Administration.
 - (2) References to the Appeals Council of the Social Security Administration in 42 CFR part 498 should be read as references to the Departmental Appeals Board.
 - (3) In accordance with the procedures set forth in subpart B of 42 CFR part 498, a facility that has been denied accreditation following appeal to the accreditation body may request reconsideration of that adverse decision from DMQRP.

- (i) A facility must request reconsideration by DMQRP within 60 days of the accreditation body's adverse appeals decision, at the following address: Division of Mammography Quality and Radiation Programs (HFZ-240), Center for Devices and Radiological Health, Food and Drug Administration, 1350 Piccard Dr., Rockville, MD 20850, Attn: Facility Accreditation Review Committee.
- (ii) The request for reconsideration shall include three copies of the following records:
 - (A) The accreditation body's original denial of accreditation.
 - (B) All information the facility submitted to the accreditation body as part of the appeals process;
 - (C) A copy of the accreditation body's adverse appeals decision; and
 - (D) A statement of the basis for the facility's disagreement with the accreditation body's decision.
- (iii) DMQRP will conduct its reconsideration in accordance with the procedures set forth in subpart B of 42 CFR part 498.
- (4) A facility that is dissatisfied with DMQRP's decision following reconsideration is entitled to a formal hearing in accordance with procedures set forth in subpart D of 42 CFR part 498.
- (5) Either the facility or FDA may request review of the hearing officer's decision. Such review will be conducted by the Departmental Appeals Board in accordance with subpart E of 42 CFR part 498.
- (6) A facility cannot perform mammography services while an adverse accreditation decision is being appealed.

Sec. 900.16 Appeals of denials of certification.

- (a) The appeals procedures described in this section are available only to facilities that are denied certification by FDA after they have been accredited by an approved accreditation body. Appeals for facilities that have failed to become accredited are governed by the procedures set forth in Sec. 900.15.
- (b) FDA may deny the application if the agency has reason to believe that:
 - (1) The facility will not be operated in accordance with standards established under Sec. 900.12;
 - (2) The facility will not permit inspections or provide access to records or information in a timely fashion; or
 - (3) The facility has been guilty of misrepresentation in obtaining the accreditation.
- (c)
 - (1) If FDA denies an application for certification by a facility that has received accreditation from an approved accreditation body, FDA shall provide the facility with a statement of the grounds on which the denial is based.
 - (2) A facility that has been denied accreditation may request reconsideration and appeal of FDA's determination in accordance with the applicable provisions of Sec. 900.15(d).

Sec. 900.17 [Reserved]

Sec. 900.18 Alternative requirements for Sec. 900.12 quality standards.

- (a) Criteria for approval of alternative standards. Upon application by a qualified party as defined in paragraph (b) of this section, FDA may approve an alternative to a quality standard under Sec. 900.12, when the agency determines that:
 - (1) The proposed alternative standard will be at least as effective in assuring quality mammography as the standard it proposes to replace, and
 - (2) The proposed alternative:
 - (i) Is too limited in its applicability to justify an amendment to the standard; or
 - (ii) Offers an expected benefit to human health that is so great that the time required for amending the standard would present an unjustifiable risk to the human health; and
 - (3) The granting of the alternative is in keeping with the purposes of 42 U.S.C. 263b.

- (b) Applicants for alternatives.
 - (1) Mammography facilities and accreditation bodies may apply for alternatives to the quality standards of Sec. 900.12.
 - (2) Federal agencies and State governments that are not accreditation bodies may apply for alternatives to the standards of Sec. 900.12(a).
 - (3) Manufacturers and assemblers of equipment used for mammography may apply for alternatives to the standards of Sec. 900.12(b) and (e).

- (c) Applications for approval of an alternative standard. An application for approval of an alternative standard or for an amendment or extension of the alternative standard shall be submitted in an original and two copies to the Director, Division of Mammography Quality and Radiation Programs (HFZ-240), Center for Devices and Radiological Health, Food and Drug Administration, 1350 Piccard Dr., Rockville, MD 20850. The application for approval of an alternative standard shall include the following information:
 - (1) Identification of the original standard for which the alternative standard is being proposed and an explanation of why the applicant is proposing the alternative;
 - (2) A description of the manner in which the alternative is proposed to deviate from the original standard;
 - (3) A description, supported by data, of the advantages to be derived from such deviation;
 - (4) An explanation, supported by data, of how such a deviation would ensure equal or greater quality of production, processing, or interpretation of mammograms than the original standard;

- (5) The suggested period of time that the proposed alternative standard would be in effect; and
 - (6) Such other information required by the Director to evaluate and act on the application.
- (d) Ruling on applications.
- (1) FDA may approve or deny, in whole or in part, a request for approval of an alternative standard or any amendment or extension thereof, and shall inform the applicant in writing of this action. The written notice shall state the manner in which the requested alternative standard differs from the agency standard and a summary of the reasons for approval or denial of the request. If the request is approved, the written notice shall also include the effective date and the termination date of the approval and a summary of the limitations and conditions attached to the approval and any other information that may be relevant to the approved request. Each approved alternative standard shall be assigned an identifying number.
 - (2) Notice of an approved request for an alternative standard or any amendment or extension thereof shall be placed in the public docket file in the Dockets Management Branch and may also be in the form of a notice published in the Federal Register. The notice shall state the name of the applicant, a description of the published agency standard, and a description of the approved alternative standard, including limitations and conditions attached to the approval of the alternative standard.
 - (3) Summaries of the approval of alternative standards, including information on their nature and number, shall be provided to the National Mammography Quality Assurance Advisory Committee.
 - (4) All applications for approval of alternative standards and for amendments and extensions thereof and all correspondence (including written notices of approval) on these applications shall be available for public disclosure in the Dockets Management Branch, excluding patient identifiers and confidential commercial information.
- (e) Amendment or extension of an alternative standard. An application for amending or extending approval of an alternative standard shall include the following information:
- (1) The approval number and the expiration date of the alternative standard;
 - (2) The amendment or extension requested and the basis for the amendment or extension; and
 - (3) An explanation, supported by data, of how such an amendment or extension would ensure equal or greater quality of production, processing, or interpretation of mammograms than the original standard.
- (f) Applicability of the alternative standards.
- (1) Except as provided in paragraphs (f)(2) and (f)(3) of this section, any approval of an alternative standard, amendment, or extension may be implemented only by the entity to which it was granted and under the terms under which it was granted. Other entities interested in similar or identical

approvals must file their own application following the procedures of paragraph (c) of this section.

- (2) When an alternative standard is approved for a manufacturer of equipment, any facility using that equipment will also be covered by the alternative standard.
 - (3) The agency may extend the alternative standard to other entities when FDA determines that expansion of the approval of the alternative standard would be an effective means of promoting the acceptance of measures to improve the quality of mammography. All such determinations will be publicized by appropriate means.
- (g) Withdrawal of approval of alternative requirements. FDA shall amend or withdraw approval of an alternative standard whenever the agency determines that this action is necessary to protect the human health or otherwise is justified by Sec. 900.12. Such action will become effective on the date specified in the written notice of the action sent to the applicant, except that it will become effective immediately upon notification of the applicant when FDA determines that such action is necessary to prevent an imminent health hazard.

Dated: November 3, 1997.

William K. Hubbard,
Associate Commissioner for Policy Coordination.
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William K. Hubbard,
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William K. Hubbard,
Acting Deputy Commissioner for Policy.
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Margaret M. Dotzel,
Acting Associate Commissioner for Policy Coordination.
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