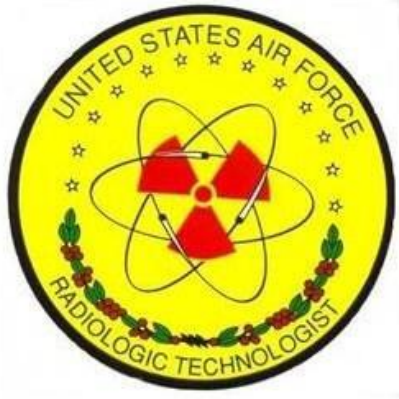
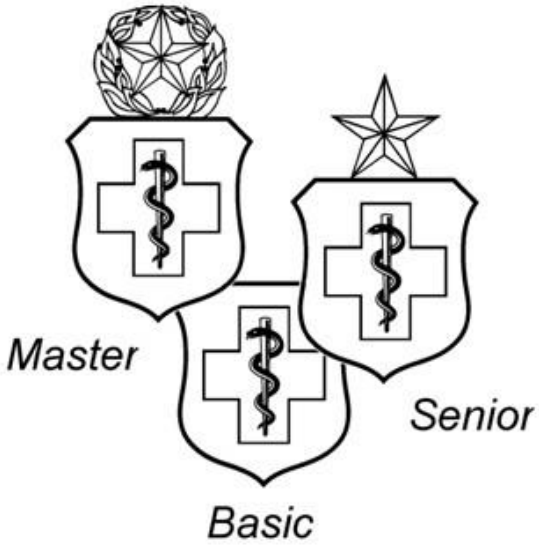
**DEPARTMENT OF THE AIR FORCE**
**Headquarters US Air Force**
**Washington, DC 20330-1030**

**CFETP 4R0X1**
**Parts I and II**
**15 January 2020**

# AFSC 4R0X1/A/B/C
# DIAGNOSTIC IMAGING SPECIALTY




## CAREER FIELD EDUCATION AND TRAINING PLAN

**ACCESSIBILITY: Publications and forms are available on the e-publishing website at www.e-publishing.af.mil for downloading or ordering.**

**RELEASABILITY: There are no releasability restrictions on this publication.**

**DIAGNOSTIC IMAGING SPECIALTY**
**AFSC 4R0X1/A/B/C**
**CAREER FIELD EDUCATION AND TRAINING PLAN**

**Table of Contents**

**PART II**



---

OPR: AF/SG1E

Certified By: CMSgt Kyle Scafidi (4R0X1 CFM, 59 TRG/XYAF)

Supersedes: CFETP4R0X1, 12 May 14, CFETP4R0X1C1, 6 Aug 14, CFETP 4R031C2, 4 Nov 14, CFETPC3, 24 Apr 15, CFETPC4, 13 Jul 16

Number of Pages: 71

**PART I**

**Preface**

**1.** This Career Field Education and Training Plan (CFETP) is a comprehensive education and training document identifying the legal scope of practice within the Air Force Medical Service, life-cycle education and training requirements, training support resources, and minimum core task requirements for this specialty. The CFETP will provide personnel a clear career path to success and will instill rigor in all aspects of career field training. **NOTE**: Civilians occupying associated positions will use Part II to support duty position qualification training.

**2.** The CFETP consists of two parts: supervisors plan, manage, and control training within the specialty using both parts of the plan.

**2.1. Part I** provides information necessary for overall management of the specialty. **Section A** explains how everyone will use the plan. **Section B** identifies career field progression information, duties and responsibilities, training strategies, and career field path. **Section C** associates each level with specialty qualifications (knowledge, education, experience, training, and other). **Section D** indicates resource constraints. Some examples are funds, manpower, equipment, and facilities. **Section E** identifies transition training requirements for SSgt through MSgt.

**2.2. Part II** includes the following: **Section A** identifies the Specialty Training Standard (STS) and includes duties, tasks, technical references to support training, AETC-conducted training, wartime course and core tasks, and correspondence course requirements. **Section B** contains the course objective list and training standards which supervisors will use to determine if Airmen satisfied training requirements. **Section C** identifies available support materials. An example is a Qualification Training Package (QTPs), which may be developed to support proficiency training. **Section D** identifies a training course index supervisors can use to determine resources available to support training. Included here are both mandatory and optional courses. **Section E** identifies MAJCOM unique training requirements supervisors can use to determine additional training required for the associated qualification needs. At unit level, supervisors and trainers will use Part II to identify, plan, and conduct training commensurate with the overall goals of this plan.

**3.** Using guidance provided in the CFETP will ensure individuals in this specialty receive effective and efficient training at the appropriate points in their career. This plan will enable us to train today's work force for tomorrow's jobs.

**FORMS**

**AF Form 623,** *Individual Training Record Folder*
**AF Form 623a,** *On-The-Job Training Record-Continuation Sheet*
**AF Form 797,** *Job Qualification Standard Continuation/Command JQS*
**AF Form 803,** *Report of Task Evaluations*
**AF Form 1098,** *Special Task Certification and Recurring Training*
**AF Form 1256,** *Certificate of Training*
**AF Form 2096,** *Classification On-The-Job Training Action*

**ABBREVIATIONS AND TERMS EXPLAINED**

**Air Education and Training Command (AETC).** Conducts basic training for all Air Force enlisted personnel, produces skilled flying and ground personnel, and trains many of the world's military forces. Along with basic military, technical, and flying training, AETC provides other types of training, such as aircrew transitional, special, advanced, lateral, and survival training.

**Air Force Career Field Manager (AFCFM).** The AFCFM is the Air Force (AF) focal point for the designated career field within a functional community. Serves as the primary advocate for the career field, addressing issues and coordinating functional concerns across various staffs. Responsible for the career field's policy and guidance.

**Air Force Specialty (AFS).** A group of positions (with the same title and code) that require common qualifications.

**Air Force Career Development Academy (AFCDA).** Provides instructional opportunities for customers beyond the confines of the formal classroom. AFCDA has an enrollment, distribution, tracking, and testing system in place for distance learning courses.

**Air Force Job Qualification Standard/Command Job Qualification Standard (AFJQS/CJQS).** A comprehensive task list that describes a particular job type or duty positions used by supervisors to document task qualifications. The tasks on AFJQS/CJQS are common to all persons serving in the described duty position.

**As Low As Reasonably Achievable (ALARA).** Describes a management philosophy of taking action to keep radiation exposure of patients and health care workers at the lowest practical level consistent with current technology.

**American Registry for Diagnostic Medical Sonography (ARDMS).** A nationally recognized certification body for diagnostic medical sonographers. Certified professionals may use the title "Registered Diagnostic Medical Sonographer" and its abbreviation "RDMS". RDMS specialty areas pertinent to this AFSC include abdomen, obstetrics and gynecology, vascular, and breast. Other associated titles include " Vascular Technologist" and its abbreviation "RVT". Noninvasive vascular technology is a specialty area in RVT.

**American Registry of Radiologic Technologists (ARRT).** A nationally recognized certification body for many radiologic science professionals. Certified professionals may use the title "Registered Technologist" and its abbreviation "R.T." after their name, along with the initial designating their certification specialty or subspecialty. Specialty certifications are offered for radiographers (R), nuclear medicine technologists (N), and radiation therapists (T). Subspecialty certifications are also offered in mammography (M), computed tomography (CT), magnetic resonance imaging (MR), cardiovascular-interventional technology (CV), bone densitometry (BM), sonography (S), vascular sonography (VS), breast sonography, and quality management (QM). SEI code 488 is reserved for those achieving this distinction.

**American Society of Radiologic Technologists (ASRT).** A national professional organization for radiologic science professionals. Through its legislative body, the House of Delegates and its appointees to the educational accreditation and professional certification bodies, the ASRT sets policy and direction for the profession. A military chapter was established in 1995, giving military radiologic science professionals a voice in the organization through the military delegates in the House of Delegates.

**Associate Career Field Managers (ACFMs)**. As Diagnostic Imaging is a diverse career field with modalities that require extensive training, many responsibilities are delegated to modality Functional Managers, or ACFMs

for each modality. The modalities with ACFMs include: Computed Tomography, Magnetic Resonance Imaging, Mammography, Nuclear Medicine, Picture Archive and Communication System (PACS), Interventional Radiography, and Diagnostic Medical Sonography.

**Career Development Course (CDC).** Self-study correspondence course to provide Airmen with fundamental knowledge of their AFS. For this AFS, CDCs were discontinued in 2016.

**Career Field Education and Training Plan (CFETP).** A comprehensive, core training document that identifies all education and training for a career field. It is a diagram for professional military and career technical development. The CFETP's singular design unites the training efforts of AETC and the using MAJCOMs to eliminate waste and thereby justify training budget requirements.

**Certification.** A formal indication of an individual's ability to perform a task to required standards.

**Certifying Official**. A person whom the commander assigns to determine an individual's ability to perform a task to required standards.

**Comprehensive Medical Readiness Program (CMRP).** Formerly Readiness Skills Verification (RSV). It's a program designed to maintain war skill core competencies for all radiologic technologists.
**Note**: Refer website for readiness skills requirements: https://kx2.afms.mil/kj/kx9/CMRP/Pages/home.aspx

**Core Task.** Tasks the AFCFM identifies as minimum qualification requirements for everyone within an Air Force Specialty Code (AFSC), regardless of duty position. Core tasks may be specified for a particular skill level or in general across the AFSC. Guidance for using core tasks can be found in the applicable CFETP narrative.

**Course Objective List (COL).** A publication derived from initial/advanced skills course training standard, identifying the tasks and knowledge requirements, and respective standards provided to achieve a 3-, 5-, 7-skill level in this career field. Supervisors use the COL to assist in conducting graduate evaluations in accordance with AFI 36-2201, *Air Force Training Program*.

**Digital Imaging and Communications in Medicine (DICOM).** Standard for handling, storing, printing, and transmitting information in medical imaging.

**Developmental Special Duty (DSD).** A nominative process by which Airmen are selected to fill key developmental positions in the Air Force. Positions include Military Training Instructor, Military Training Leader, AF Honor Guard, Career Assistance Advisor, Airman and Family Readiness Coordinator, PME Instructor, First Sergeant, USAFA Military Training NCO, and Recruiter.

**Educational Development Team (EDT).** Team of 4R career field leaders that evaluate personnel records for deliberate development opportunities, and key leadership roles in Diagnostic Imaging. These positions include (but are not limited to): MAJCOM Functional Managers, ACFMs, METC Service Lead, and Educational Leadership roles in Diagnostic Imaging.

**Electronic Health Record (EHR).** Integrated health system for capturing, managing and storing electronic health information for beneficiaries served. For the purposes of this document this includes the legacy CHCS system, and MHS Genesis systems.

**Functional Manager (FM).** Senior leaders, designated by the appropriate functional authority who provide day-to-day management responsibility over specific functional communities at the MAJCOM, field operating agencies

(FOA), direct reporting unit (DRU), or ARC level. While they should maintain an institutional focus in regards to resource development and distribution, FMs are responsible for ensuring their specialties are equipped, developed, and sustained to meet the functional community's mission as well as encourage force development opportunities to meet future needs of the total Air Force mission.

**High Reliability Organization (HRO).** Along with providing trusted care, an HRO is an organization following the AFMS vision of being a continuously learning and improving organization with a single-minded focus of safety and achieving zero harm to patients and medical staff.

**Hospital Information Systems (HIS).** Comprehensive, integrated information system designed to manage all aspects of hospital operation.

**Imaging Informatics.** Concerns how medical images are used and exchanged throughout complex health care systems.

**Initial Skills Training.** A formal school course which results in award of a 3-skill level AFSC for enlisted personnel.

**Instructional System Development (ISD).** A deliberate and orderly, but flexible process for planning, developing, implementing, and managing instructional systems. It ensures personnel are taught the knowledge and skills essential for successful job performance in a cost efficient way.

**Joint Review Committee (JRC).** Educational review committees formed of representatives from a medical profession (including the radiologic science profession) that publish standards for and render accreditation decisions on educational programs in the radiologic sciences. *The Joint Review Committee on Education in Radiologic Technology (JRCERT)* accredits the 4R0X1 educational program.

**Major Command (MAJCOM) Functional Manager (FM).** A person appointed as the senior representative for an AFS within a specific MAJCOM. Among other responsibilities, MAJCOM FMs work with the AFCFM to develop, implement, and maintain the CFETP.

**Master Task List (MTL).** A comprehensive list (100%) of all tasks performed within a work center and consisting of the current CFETP or Air Force Job Qualification Standard (AFJQS) and locally developed AF Form 797, (as a minimum). Should include tasks required for deployment and/or Unit Type Code (UTC) requirements.

**Master Training Plan (MTP).** Employs a strategy for ensuring the completion of all work center job requirements by using a MTL. It provides milestones for tasks, CDC completion, and prioritizes deployment/UTC, home station training tasks, upgrade, and qualification tasks.

**Nuclear Medicine Technology Certification Board (NMTCB).** A nationally-recognized certification body sponsored by the Society of Nuclear Medicine (SNM). Certified nuclear medicine technologists may use the title "Certified Nuclear Medicine Technologist" and its abbreviation "CNMT" after their name. Sub-specialty certifications are also offered in Computed Tomography (CT), Nuclear Cardiology Technologist (NCT), and Positron Emission Tomography (PET).

**Occupational Analysis Report (OAR).** A detailed report showing the results of an occupational survey of tasks performed within a particular AFS.

**On-the-Job Training (OJT).** Hands-on, over-the-shoulder training conducted to certify personnel in both upgrade (skill level award) and job qualification (duty position certification) training.

**Phase II Training.** Clinical and didactic training that is a continuation of a formal resident course that provides Airmen with realistic hands-on experience before beginning OJT at the permanent duty location.

**Picture Archiving and Communication System (PACS).** PACS is a network medical system consisting of the acquisition, display and storage of diagnostic images. The PACS supports diagnostic imaging and other departments capable of producing and transmitting DICOM objects. The PACS has the capability to transmit studies throughout the hospital, and AFMS via the AF and DHA network.

**Preceptor**. Qualified individuals to conduct performance and didactic training.

**Qualification Training (QT).** Hands-on performance-based training designed to qualify a trainee in a specific duty position. This training occurs both during and after upgrade training to maintain qualifications.

**Qualification Training Package (QTP).** An instructional package designed for use at the unit to qualify, or aid qualification in a position or program, on a piece of equipment or a performance item identified for competency verification within this CFETP. QTPs establish performance standards and are designed to standardize skills verification and validation of task competency. It may be printed, computer-based, or other media.

**Resource Constraints.** Resource deficiencies, such as money, facilities, time, manpower, and equipment that preclude desired training from being delivered.

**Radiology Information Systems (RIS).** Networked software suite for managing medical imagery and associated data.

**Special Experience Identifier (SEI).** A three-number code that identifies unique skills not otherwise identified in the personnel data system. For Diagnostic Imaging: PACS security coded personnel are 260 and 264, Mammography is 460, CT is 478, Interventional Radiography is 479, and the National Radiology Certification is tracked by code 488.

**Specialty Training Requirements Team (STRT).** A forum of MAJCOM AFS functional managers, subject matter experts, and AETC training personnel that determines career ladder training requirements. This occurs prior to, or in conjunction with the U&TW. AFI 36-2201 defines the primary purpose of the STRT: "is for the AFCFM and functional leaders to determine and present training requirements to the AETC TPM and TM.

**Specialty Training Standard (STS).** An Air Force publication that describes an Air Force specialty in terms of tasks and knowledge that an Airman in that specialty may be expected to perform or to know on the job. Also identifies the training provided to achieve a 3-, 5-, or 7-skill level within an enlisted AFS. It further serves as a contract between AETC and the functional user to show which of the overall training requirements for an AFSC are taught in formal schools and correspondence courses.

**Standard.** An exact value, a physical entity, or an abstract concept, established and defined by authority, custom, or common consent to serve as a reference, model, or rule in measuring quantities or qualities, establishing practices or procedures, or evaluating results. A fixed quantity or quality.

**Supplemental Training.** Training toward a portion of an AFS without change by AFSC. Formal training on new equipment, methods and technology that are not suited for on-the-job training.

**Total Force.** All collective Air Force components (active, reserve, guard, and civilian elements) of the United States Air Force.

**Trainer.** A trained and qualified person approved by the commander to teach personnel to perform specific tasks through on-the-job methods.

**Technical Reference (TR).** Teaching material used in the design and development of lesson plans, curriculum and objectives in support of STS items.

**Training Capacity.** The capability of a training setting to provide training on specified requirements, based on the availability of resources.

**Training Requirements Analysis.** A detailed analysis of tasks for a particular AFS to be included in the training decision process.

**Upgrade Training (UGT).** Mandatory training which leads to attainment of a higher level of proficiency.

**Utilization and Training Workshop (U&TW).** A forum of MAJCOM AFS functional managers, subject matter experts, and AETC training personnel that determines career ladder training requirements.

**Wartime Course.** A course structured to train only essential tasks and to produce the greatest number of graduates in the least amount of time. The course content is based on wartime tasks identified in the STS.

## Section A. General Information

**4. Purpose.** This CFETP provides the information necessary for AFCFM, MAJCOM FMs, ACFMs, commanders, training managers, supervisors and trainers to plan, develop, manage, and conduct an effective and efficient career field training program. The plan outlines the training that individuals in this AFS should receive in order to develop and progress throughout their career. This plan identifies initial skills, upgrade, qualification, advanced and proficiency training. IST is the AFS-specific training an individual receives upon entry into the AF or upon retraining into this specialty for award of the 3-skill level. Normally, this training begins with the Phase I program at the Medical Education and Training Campus (METC) at Ft Sam Houston, TX. This is followed by a Phase II program at one of multiple bases across the Department of Defense. Trainee throughput is managed by AETC in conjunction with, and working agreement with METC. UGT identifies the mandatory courses, task qualification requirements, and correspondence course completion requirements for award of the 3-, 5-, 7-, and 9-skill level. QT is actual hands-on task performance training designed to qualify an Airman in a specific duty position. This training program occurs both during and after the upgrade training process. It is designed to provide the performance skills and knowledge required to do the job. Advanced training is formal specialty training used for selected Airmen. Proficiency training is additional training, either in-residence or exportable advanced training courses, or OJT training provided to personnel to increase their skills and knowledge beyond the minimum required for upgrade. The CFETP has several purposes; some are:

**4.1.** Serves as a management tool to plan, manage, conduct, and evaluate a career field-training program. Also, it is used to help supervisors identify training at the appropriate point in an individual's career.

**4.2.** Identifies task and knowledge training requirements for each skill level in the specialty and recommends education and training throughout each phase of an individual's career.

**4.3.** Lists training courses available in the specialty, identifies sources of training, and the training delivery method.

**4.4.** Identifies major resource constraints that impact full implementation of the desired career field training process.

**5. Uses.** This plan will be used by FMs and supervisors at all levels to ensure comprehensive and cohesive training programs are available for each individual in the specialty.

**5.1.** AETC training personnel will develop or revise formal resident, non-resident, field, and exportable training based upon requirements established by the users and documented in Part II of the CFETP. They will also work with the AFCFM to develop acquisition strategies for obtaining resources needed to provide the identified training.

**5.2.** The MFMs will ensure their training programs complement the CFETP mandatory initial, upgrade and proficiency requirements. OJT, resident training, contract training, or exportable courses can satisfy identified requirements. MAJCOM-developed training to support this AFS must be identified for inclusion into the plan.

**5.3.** Each individual will complete the mandatory training requirements specified in this plan. The list of courses in Part II will be used as a reference to support training.

**6. Coordination and Approval of CFETP.** The AFCFM is the approval authority. Also, the AFCFM will initiate an annual review of this document to ensure currency and accuracy. MAJCOM representatives, AFCMs, and AETC training personnel will identify and coordinate on the career field training requirements. Using the list of courses in Part II, they will eliminate duplicate training.

## Section B. Career Progression and Information

### 7. Specialty Description.

**7.1.** ***Specialty Summary***. Operates equipment to produce diagnostic images and assists radiologist or physician with special procedures. Prepares equipment and patients for diagnostic studies and therapeutic procedures. Performs technical and administrative imaging activities. Ensures health protective measures such as standard and transmission-based precautions and radiation protection are established and employed. Manages diagnostic imaging functions and activities. Performs duty as Radiologic Technologist, Computed Tomography (CT) Technologist, Mammography Technologist, Diagnostic Medical Sonographer, Nuclear Medicine (NM) Technologist, Magnetic Resonance Imaging (MRI) Technologist, Interventional Radiography (IR) Technologist, Picture Archive and Communications System (PACS) Administrator, or in a supervisory role of the above. Related DOD Occupational Subgroup: 131300.

### 7.2. Duties and Responsibilities.

**7.2.1 Duty Tiles.** Appropriate duty titles for personnel working in this specialty depends on level of performance, and area of responsibility. *Approved Duty titles* - Radiologic Technologist, Computed Tomography Technologist, Diagnostic Medical Sonographer, Nuclear Medicine Technologist, MRI Technologist, Mammography Technologist, PACS Administrator, NCOIC for each element in Flight, Flight Chief, Section Chief, Course Supervisor, Diagnostic Imaging Superintendent, and student.

**7.2.2. Radiologic Technologists duties**. Operates fixed and portable radiographic equipment to produce routine diagnostic medical images. Computes technical factors and adjusts control panel settings such as kilovoltage, milliamperage, exposure time, and focal spot size. Positions patient to image desired anatomic structures. Selects image recording media, adjusts table or image receptor (cassette holder), aligns x-ray tube for correct distance and angle, and restricts radiation beam for maximum patient protection. Exposes and processes images. Utilizes PACS and EHR to manipulate, transmit, and store diagnostic images. Performs administrative duties (digital image library functions, scheduling, report disposition, additional duties) as

appropriate. Assists physicians with fluoroscopic, interventional, and special examinations. Instructs patients preparing for procedures. Prepares and assists with contrast media administration. Maintains emergency response cart. Assists physician in treating reactions to contrast material. Prepares sterile supplies and equipment. Operates accessory equipment such as automatic pressure injectors, and digital imagers, stereotactic biopsy devices, and vital signs monitoring equipment. Ensures only optimal examinations are presented to the radiologist for interpretation. Precepts/trains students and staff in the performance of providing diagnostic X-rays and quality care. Maintains and calibrates equipment.

**7.2.3. Computed Tomography (CT) Technologist**. Operates CT equipment to produce diagnostic medical images. Prioritizes patient throughput based upon patient needs. Determines if special patient preparation is needed. Coordinates care for routine, emergent, inpatient, and special needs patients with the appropriate clinical staff. Performs consent procedures prior to CT exams requiring documented consent from patients. Receives pediatric, adult and geriatric patients, explains method of procedure, positions patient, selects and sets technical factors, sets up and adjusts accessory equipment, and makes computed tomography (CT) exposures necessary for the requested procedure(s). Determines proper instrument technical factors and control settings to ensure correct calculated exposure of targeted body parts. Assures that sterile supplies, contrast materials, catheters, or other required materials are available and in place. Starts Intravenous lines for contrast administration. Prepares and administers contrast media orally, by enema, or intravenously under close supervision of a radiologist. Operates contrast power injector. Adjust injection rates. Understands and screens patients for contraindications to contrast use. Informs radiologists when a conflict exists prior to injection, and responds promptly to adverse contrast reactions if/when necessary. Independently performs routine and emergent computed tomography procedures imaging the head, neck, chest, abdomen, pelvis, spine, extremities, biopsy, CT angiography, multiphasic and other ancillary procedures. Builds and performs computed tomography protocols. Adjusts imaging parameters to include: window/levels, sets field of view, obtain part measurements, obtains regions of interest, reconstructs and reformats images. Performs digital reconstruction of acquired images in accordance with standard protocol, physician request and radiologist needs. Performs 3D reconstruction as appropriate to physician needs. As required by the procedure or the patient's condition, monitors vital signs such as blood pressure and heart rate and notifies radiologist of significant changes. Ensures only optimal examinations are presented to the radiologist for interpretation. Maintains records of patients examined, examinations performed, sequences taken, and technical factors used. Routinely performs digital image library functions to include acquiring, reformatting, transmission, storage, and loan procedures. Precepts/trains students and staff in the performance of providing diagnostic CT and quality care. Maintains and calibrates equipment.

**7.2.4. Nuclear Medicine Technologist**. Operates Nuclear Medicine equipment to produce diagnostic medical images. Prepares and administers radiopharmaceuticals to detect, diagnose, and treat a variety of diseases under direction of a physician. Prepares stock solutions of radioactive materials and calculates doses to be administered. Adds radioactive substances to biological specimens. Administers medical substances for imaging or other procedures. Subjects patients to radiation. Executes blood volume, red cell survival, and fat absorption studies following standard laboratory techniques. Detects and maps radiopharmaceuticals in patients' bodies, using a camera to produce photographic or computer images. Creates advanced digital images of patients using computer imaging systems. Processes cardiac function studies, using computer. Calculates, measures, and records radiation dosage or radiopharmaceuticals received, used, and disposed, using computer and following physician's prescription. Calculates numerical data for medical activities. Records patient medical histories. Produces a computer-generated or film image for interpretation by a physician. Records and processes results of procedures. Prepares stock radiopharmaceuticals, adhering to safety standards that minimize radiation exposure to workers and patients. Explains test procedures and safety precautions to patients and provide them with assistance during test procedures. Performs quality control checks on laboratory equipment or cameras. Disposes of radioactive materials and store radiopharmaceuticals, following radiation safety procedures. Gathers information on patients' illnesses and medical history to guide the choice of diagnostic procedures for therapy. Maintains and calibrates

radioisotope and laboratory equipment. Positions radiation fields and patients to allow for most effective treatment of patient's disease. Trains or supervises students or subordinate nuclear medicine technologists.

**7.2.5 Diagnostic Medical Sonographer (DMS)**. Operates computerized sonography equipment, capable of portability and adaptability, Doppler-wave, and color flow Doppler tests. Independently performs complex and highly specialized ultrasound procedures on all age groups (infant through geriatric), for diagnostic interpretation. Performs a wide variety of ultrasound examinations to include (but not limited to) thyroid, breast, abdomen, abdominal wall, renal, pelvis, OB (1st, 2nd, and 3rd trimesters), testicular, extremities, superficial lesions, and other soft tissue/mixed density areas. Performs portable examinations in the Emergency Department (ED), Intensive Care Unit (ICU), Ward and Operating Room (OR) as appropriate. Receives, prepares, and positions patients. Receives patients, explains method of procedures, positions patients, selects and sets the technical factors, selects the appropriate transducer(s), sets up and adjusts ultrasound equipment as required to obtain images for the requested examination(s). Independently conducts examinations after conferring with the radiologist to establish the examination requirements. Also directs the work of junior sonographers when procedures require assistance. Advises radiologist of urgent preliminary diagnostic evaluations and notifies him/her of studies requiring immediate attention while the patient remains in the examination area. Provides the radiologist with impression of findings after each examination. Recognizes the significance of all structures and the differences between artifact and normal pathology. Assists other technologists in correcting errors by recognizing contributing factors and offering solutions in technique, adjustment, position refinement, and patient cooperation. Performs Quality Control (QC) of all images taken to ensure they meet department criteria. Participates in on-call duties for emergent ultrasounds, in accordance with departmental policies. Images to be read remotely will be transmitted by the sonographer, according to department policies, utilizing PACS. Contacts remote radiologist with the exam impression prior to leaving the facility in the event more imaging is requested/required. Performs basic maintenance of equipment to insure operability for all required tests. Reports equipment problems to Medical Equipment and Maintenance promptly. Assists radiologist with biopsy procedures ensuring sterile techniques, positioning, and follow-up. Prepares room to include setting up any specialized equipment necessary for the procedure to include preparing sterile fields. Prepares sterile trays, contrast media, takes all required images and positions patients. Maintains proper drug levels within the emergency drug kit. Utilizes aseptic/sterile techniques in contrast/tray preparation.

**7.2.6. Magnetic Resonance Imaging (MRI) Technologist**. Operates MRI equipment to produce diagnostic medical images. Effectively works with the Radiologist and MRI staff as a member of the Diagnostic Imaging team, but is able to work independently when needed. Receives and reviews requests from physicians and other health care providers to identify age-specific needs and to coordinate MRI examinations of patients. Determines the condition(s) at issue and the procedures and equipment necessary to best meet the needs of the individual case. Assists in the triage of scheduling patients. Assures that MRI patients are screened in advance for any contraindicating conditions per Diagnostic Imaging policy. Explains methods and safety precautions of procedures, starts IVs when needed, positions patient and produces necessary images for the requested examination. Selects, sets up, adjusts and operates the MRI equipment. Prepares and administers contrast media orally, by enema, or intravenously under close supervision of a radiologist. Conducts examinations by adjusting technique, applying appropriate surface coils and other equipment. If unanticipated conditions or anomalies are discovered, extends and modifies procedure to insure full and accurate information as to findings and patient condition. Performs complex computerized 2D and 3D magnetic resonance imaging of heads, spines, extremities, and bodies to include; specialized cardiac imaging, adult and pediatric sedation examinations, whole body imaging, cardiac and brain perfusion, brain and whole body spectroscopy, liver elastography, breast imaging and biopsy procedures. As required by the procedure or the patient’s condition, monitors vital signs such as blood pressure and heart rate and notifies radiologist of significant findings. Maintains records of patients examined, examinations performed, views taken, and technical factors used. Precepts students and staff in the performance of MRI and all other pertinent aspects in providing diagnostic quality care.

**7.2.7. Mammography (Mammo) Technologist**. Operates mammography equipment to produce diagnostic medical images. Independently performs very difficult and highly specialized procedures that require precise positioning in producing quality mammographic images. Assists and advises co-workers on procedures and protocol. Uses digital format to schedule routine and complex examinations. Determines if special patient preparation is needed. Receives patients and explains procedures to be accomplished. Per protocol, consents patients prior to examinations. Reviews and records pertinent history and supportive clinical data. Secures confidence and cooperation of the patients during examination procedures. Positions patients for mammography examinations. Calculates technical factors to determine proper exposure, density and contrast. Assembles and adjusts accessory equipment making exposure necessary for requested procedures. After viewing mammography films, independently determines if any additional views are required before releasing patient. Advises radiologist of patient concerns, history and findings on mammographic examinations and notifies radiologist of exams requiring their immediate attention. Stages images for radiologist interpretation. Assists physicians during localization, biopsy and stereotactic biopsy procedures. Utilizes database to monitor exam and reporting completion. Aids in maintaining equipment, and Quality Control procedures as dictated by law, and local guidance. Precepts students and staff in the performance of mammography and all other pertinent aspects in providing diagnostic quality care.

**7.2.8. Interventional Radiography (IR) Technologist**. The Cardiovascular-Interventional Technologist, under direct supervision, assists radiologist in performing diagnostic treatment and interventional procedures on adult and geriatric patients according to the department protocol to achieve optimum diagnosis. The Cardiovascular-Interventional Technologist is expected to practice safe procedures and adheres to radiation safety measures under the supervision of the Radiology supervisor or the Radiologist. Determines if special patient preparation is needed. Coordinates care for emergent, inpatient, and special needs patients with the appropriate clinical staff. Performs two patient identifier verification of patients. Performs consent procedures prior to exams requiring written consent from patients. Receives pediatric, adult and geriatric patients, explains method of procedure, positions patient, selects and sets technical factors, sets up and adjusts accessory equipment, and makes exposures necessary for the requested procedure(s). Determines proper instrument technical factors and control settings to ensure correct calculated exposure of targeted body parts. Assures that sterile supplies, contrast materials, catheters, or other required materials are available and in place. Starts Intravenous lines for contrast administration. Scrubs-in and assists the physician in the surgical procedure. Circulates within the procedure room and procures all equipment needed for any given procedure. Maintains a high degree of accuracy and an awareness of all radiation and patient safety issues involved with any invasive procedure. Recognizes and resolves equipment problems and discrepancies, anticipate patient needs and concerns, and determine the appropriate care needed. Transports patients within department, to and from waiting area as required. Follows infection control and safety guidelines. The ability to communicate effectively and work as a team member in a high stress environment is essential. The Cardiovascular-Interventional Technologist must understand and accept the possibility of exposure to inside environmental conditions, such as radiation, noise, infectious/communicable diseases, blood and blood borne diseases, chemicals and/or chemical fumes, odors, gases and dusts. Prepared to handle frequent exposures to distressed patients, families or visitors. Precepts students and staff in the performance of IR and all other pertinent aspects in providing diagnostic quality care.

**7.2.9. Picture Archiving and Communication System (PACS) Administrator (Imaging Informatics).** PACS at all MTFs require dedicated and trained diagnostic imaging personnel who have completed the PACS administrator training requirements and complies with DoD Directive 8570.01 Chapter 3 and DoD Directive 8140.01. MTF's that have local radiologists, or support teleradiology services will identify on their UMD the "N" prefix, AAC assignment limitation code 43, and appropriate level SEI 260/264. Member shall attend system administration courses provided by commercial or government. Training documentation will be accomplished in their STS as described starting with 8.1. Basic/Advanced PACS Administration and AF Form 797 for site/system specific training if applicable. The PACS Administrator has the clinical healthcare and

information technology experience to support and maintain imaging informatics workflow in Radiology and other imaging departments. This includes but is not limited to managing third party components, data integrity, equipment quality control, operating systems and networks, EHR Radiology interface and voice dictation systems. The PACS Administrator will also be responsible for managing the regional archive and enterprise systems hosted at their facility. They are also responsible for the support and maintenance of connected teleradiology spoke systems. The administrator is responsible for securing and maintaining network integrity, obtaining equipment and software certifications, and ensuring system security. The PACS administrator will receive general direction and guidance from the AF PACS PMO and local Information Systems department. The new administrator will receive assignments in terms of overall objectives to be achieved, resources available, and priorities to be met. The Administrator is expected to independently follow assignments to completion, and bear the responsibility to resolve problems in a manner consistent with the Flight Commander or Flight Chief's direction and approval. Additionally, they are responsible for operating capital budget requests for medical imaging equipment in conjunction with the Diagnostic Imaging Senior Manager. They are responsible for leading the operational, fiscal, and human resources assigned to them. The PACS Administrator is the on-site contracting officer's technical representative (COTR) to ensure compliance with all aspects/provisions of the DIN-PACS contract. Furthermore, the PACS Administrator serves as liaison between the medical group and AF system support agencies in facilitating software and hardware upgrades, service and repairs, and necessary facility modifications.

**7.2.10. All AFSCs**. **Performs and supervises general diagnostic imaging activities**. Performs two patient identifier verification of all patients. Receives patients, schedules appointments, reviews patient questionnaires, counsels patients regarding the risks/benefits of the procedure and explains procedures and actions to allay fears and to secure maximum cooperation. Observes and reports patient responses to instructions, movement, touch, etc., if significant. Monitors patient condition during examination and, if necessary, renders emergency aid and summons assistance. Provides all pertinent information to radiologist or physician within the scope of their responsibility to assist in the interpretation of results. Cleans and inspects equipment and performs preventive maintenance. Selects imaging protocols, utilizes required accessories, and makes adjustments based on the specific examination requirements. Records and processes the image. Ensures quality and optimizes the recorded image using computer applications to produce diagnostic images. Enters and maintains data in the picture archiving and communication system (PACS), Electronic Health Record (EHR), radiology information systems (RIS) and hospital information system (HIS). Assists with phase II didactic and performance training, evaluation and counseling of students, and maintenance of student academic records. Participates in formal research projects.

**7.2.11. All AFSCs**. **Establishes and maintains standards, guidelines, and practices**. Composes protocols. Prepares routine positioning guides and technique charts. Reviews images to ensure quality standards are met. Performs equipment quality control checks. Monitors personnel to ensure protective procedures such as those in the As Low As Reasonably Achievable (ALARA) radiation safety, hazardous material communications, and Air Force occupational safety and health programs are followed. Performs tests on radiation protection equipment. Assesses staff competence, and monitors appropriateness of care and completeness of examination requests.

**7.2.12. All AFSCs**. **Plans, organizes, and supervises diagnostic imaging activities**. Analyzes workload and establishes production controls and performance standards for administrative and technical activities. Coordinates on interdepartmental issues that interface with diagnostic imaging. Prepares and implements financial plan, and monitors and analyzes annual expenditures. Prepares equipment purchase requests and justifications. Monitors equipment performance and preventive maintenance activities. Recommends new equipment procurement.

**8. Skill and Career Progression.** Adequate training and timely progression from the apprentice to the superintendent skill level play an important role in the Air Force's ability to accomplish its mission. It is

essential that everyone involved in training do their part to plan, manage, and conduct an effective training program. The guidance provided in this part of the CFETP will ensure each individual receives viable training at appropriate points in their career.

**8.1. Apprentice (3) Level.** Initial skills training in this specialty consist of the task and knowledge training provided in Phase I and Phase II. The decision to train specific task and knowledge items is based on JRCERT accreditation requirements, review of OAR data, and 4R0X1X subject matter expert input. After completing initial skills training, apprentices will work with qualified diagnostic imaging journeymen, craftsmen, and radiologists to further enhance their knowledge and skills. Job assignments will normally include duties in diagnostic imaging service administration, routine clinical radiography, and/or assisting in special clinical radiography. The apprentice will enter upgrade training receiving OJT required for certification in designated tasks listed in the STS. The apprentice should devote their full time to learning the medical field and their primary job. Completion of an Associate's degree or higher and subsequent national certification in radiography by the ARRT at the earliest opportunity is highly recommended.

**8.2. Journeyman (5) Level.** Following completion of the prerequisites for upgrade to the 5-skill level, new journeymen should consider expanding their personal and professional horizons as they enter into continuation training. Job assignment possibilities widen to include more emphasis in special clinical radiography areas, duties as a preceptor/clinical instructor for Phase II students, duties in diagnostic imaging logistics, and first line supervisory duties in routine clinical radiography or diagnostic imaging service administration areas. Completion of continuing education requirements is mandatory for maintaining current ARRT certification. At this level individuals are highly encouraged to consider training into one of the SEI, AFSC shred areas, or special duties. Individuals interested in becoming 4R instructors must have, or be able to complete requirements for an Associate Degree within 1 year following assignment to instructor duty. Additionally, all instructors must hold and maintain a national certification within their specialty. PACS administrators may be selected from this group. Active involvement in squadron and community activities is strongly encouraged. Individuals will begin preparation for promotion to Staff Sergeant under the Weighted Airman Promotion System (WAPS). Individuals will attend Airman Leadership School (ALS) upon selection for promotion to Staff Sergeant.

**NOTE: Individuals who retrain into the 4R0X1 specialty should not be assigned management responsibilities until they have obtained the 5-skill level, regardless of rank.**

**8.3. Craftsman (7) Level.** Upon selection for promotion to the grade of Staff Sergeant, journeymen may be entered into upgrade training for the 7-skill level (no earlier than the first day of the promotion cycle). Individuals must have been awarded the 5-skill level and be certified in all 5-level tasks within the capability of their institution. Craftsmen are expected to be knowledgeable and highly skilled in a wide variety of duties within the AFS. They may serve in supervisory, administrative, or management positions in the basic AFS areas, or in technical or supervisory positions in one of the subspecialty areas. PACS administrators, Phase II course supervisors, the career field technical writer, ACFMs for the modalities, instructors and instructor supervisors at the technical training school are normally selected from this group of widely experienced technologists. By now, individuals should have completed the CCAF degree. Individuals are encouraged to continue college education toward a baccalaureate or advanced degree in a specialty directly related to the AFSC (radiologic technology or health sciences), or one that would prepare the individual for the higher level management positions in the AFSC (business administration, personnel management, or education). Active involvement in squadron, base, and community activities to help build leadership and management abilities is strongly encouraged.

**8.4. Superintendent (9) Level.** Superintendents are normally assigned to top level supervisory positions at the regional hospital or medical center level. College courses in the areas of financial and personnel management should be included in the education program as the individual completes a baccalaureate or advanced degree.

Active involvement should continue in squadron, base, and community activities and in all levels of the career field's professional organizations with emphasis placed on assuming leadership roles. The Senior Noncommissioned Officer Academy (SNCOA) is required for all persons selected for promotion to Senior Master Sergeant.

**9. Training Decisions.** This CFETP uses a building block approach (simple to complex) to encompass the entire spectrum of training requirements for the Diagnostic Imaging Career Field. The spectrum includes a strategy for when, where, and how to meet these training requirements. Our strategy is apparent and affordable, eliminates duplication, and prevents a fragmented approach to training. The following decisions regarding training within the 4R0X1 career field were made during the STRT held at Fort Sam Houston, Texas, in January 2017 and U&TW in March 2018. Recommendations and decisions related to the U&TW are in Section D. Skill Resource Constraints. Training decisions made for this AFS have been, and must continue to be made with the full understanding of their impact on the external civilian accreditation of the programs.

**9.1. Initial Skills.** Initial skills training in this specialty begins with the tasks and knowledge training provided in the Phase I course (5 month course) conducted at the Medical Education and Training Campus (METC) at JBSA Fort Sam Houston, TX. Training at this course includes 2 days in the Expeditionary Medical Readiness Course. Upon graduation, trainees attend a Phase II course (8 month course) located at one of the larger Medical Treatment Facilities (MTFs).

**9.2 5-Level Upgrade Requirements.** Upgrade training to the 5-skill level in this specialty consists of completing all STS core tasks, and a minimum of 12 months UGT (9 months for retrainees).

**9.3. 7-Level Upgrade Requirements.** Upgrade training to the 7-skill level in this specialty consists of completion of all STS tasks, and a minimum 12 months UGT (6 months for retrainees).

**9.4. 9-Level Upgrade Requirement**. To be awarded AFSC 4R091, an individual must be a SMSgt (sewn on).

**9.5. Proficiency Training.** Nuclear Medicine and DMS upgrade to 3-skill level incorporates a Phase I and Phase II concept similar to the Radiology program. Completion of the in-resident MRI course will award the 3-skill level. The 5-skill level upgrade requirements will be accomplished via OJT.

**9.6. National Certification**. Within the 4R0X1 career field are specialties that require the National Certification. All members achieving National Certification standards will have the SEI 488 applied to their records. This identifies the most qualified members in the career field to fill key and critical roles within the MTFs. In an effort to demonstrate our commitment to Trusted Care and the "High Reliability Organization" concept, all 4R personnel must secure and sustain a minimum of an associate's degree and their national certification in Radiology through the American Registry of Radiologic Technologists and/or their primary discipline. To obtain your National Radiography registry through the ARRT you must have earned an associate's degree or higher and graduated from an ARRT approved radiography educational program. The general education courses required for an academic degree provide a foundation that supports the evolving role of the technologist and the lifelong learning abilities necessary to address continuing technological changes. The quantitative skills, communication skills, and understanding of human behavior that you'll acquire through general education classes will help you shape and advance the Registered Technologist's role in health care.

**9.7.** 4R personnel that graduate from Diagnostic Imaging Phase II training course L5ABO4R031 02AB after 1 Jan 2021 will have until Dec 31 2022 to complete their associate's degree, meeting the educational requirement for their ARRT eligibility and until 31 Dec 2023 to obtain their national Radiography certification through ARRT. 4R personnel who graduated from Diagnostic Imaging Phase II training course L5ABO4R031 02AB prior to 1 Jan 2021, including those that no longer meet ARRT eligibility requirements, will have until 1

Jan 2026 to meet this degree and national certification mandate. Eligibility can be regained through a variety of accredited Radiology degree awarding courses; for more information, personnel that require eligibility are encouraged to contact the 4R staff at METC. Failure to meet or sustain this requirement will result in adjustment of your Training Status Code to "T" negatively impacting your progress and future in the AFSC and potentially the United States Air Force. For more information regarding the process and impact of this TSC adjustment, please reference AFI 36-2651, Air Force Training Program, Table A2.1, Line 15.

**10. CCAF.** Enrollment in CCAF occurs upon completion of basic military training. The CCAF provides the opportunity to obtain an Associate of Applied Sciences Degree. Visit the CCAF at Web Link http://www.au.af.mil/au/ccaf/ for additional information. In addition to its associate degree program, the CCAF offers the following:

**10.1 CCAF Instructor Certification (CIC) Program.** CCAF offers the three-tiered CIC Program for qualified instructors teaching at CCAF affiliated schools who have demonstrated a high level of professional accomplishment. The CIC is a professional credential that recognizes the instructor's extensive faculty development training, education and qualification required to teach a CCAF course, and formally acknowledges the instructor's practical teaching experience.

**10. 2. CCAF Instructional Systems Development (ISD) Certification Program.** CCAF offers the ISD Certification Program for qualified curriculum developers and managers who are formally assigned at CCAF affiliated schools to develop and manage CCAF collegiate courses. The ISD Certification is a professional credential that recognizes the curriculum developer's or manager's extensive training, education, qualifications and experience required to develop and manage CCAF courses. The certification also recognizes the individual's ISD qualifications and experience in planning, developing, implementing and managing instructional systems.

**10.3. CCAF Professional Manager Certification (PMC).** CCAF offers the PMC Program for qualified Air Force NCO's. The PMC is a professional credential awarded by CCAF that formally recognizes an individual's advanced level of education and experience in leadership and management, as well as professional accomplishments. The program provides a structured professional development track that supplements Enlisted Professional Military Education (EPME) and Career Field Education and Training Plan (CFETP).

**10.4. Air Force Credentialing Opportunities On-Line (AF COOL).** The AF COOL Program is managed by CCAF and provides a research tool designed to increase an Airman's awareness of national professional credentialing and funding opportunities available for all Air Force occupational specialties. AF COOL also provides information on specific occupational specialties, civilian occupational equivalencies, AFSC-related national professional credentials, credentialing agencies, and professional organizations. AF COOL contains a variety of information about credentialing and licensing and can be used to:

- Get background information about civilian licensure and certification in general and specific information on individual credentials including eligibility requirements and resources to prepare for an exam.
- Identify licenses and certifications relevant to an AFSC.
- Learn how to fill gaps between Air Force training and experience and civilian credentialing requirements.
- Get information on funding opportunities to pay for credentialing exams and associated fees.
- Learn about resources available to Airmen that can help them gain civilian job credentials.

To learn more about AF COOL and funding processes, visit
https://afvec.langley.af.mil/afvec/Public/COOL/Default.aspx

**10.5. Air University Associate to Baccalaureate Cooperative Program (AU ABC Program).** Directs Airmen with Associate in Applied Science Degrees from the CCAF to a collection of accredited military friendly colleges and universities to consider when completing a four-year degree. The program maximizes the application of military career education and training, and provides a multitude of online academic and support services for the enlisted member.

**10.6. Additional Off-Duty Education.** Off-Duty education is a personal choice that is encouraged for all. Individuals desiring to become an Air Education and Training Command Instructor should be actively pursuing an associate degree. A degreed faculty is necessary to maintain accreditation through the Southern Association of Colleges and schools.

**11. Degree Requirements.** All Airmen are automatically entered into the CCAF program. Degree programs consist of a minimum of 64 semester hours (SH). Prior to completing an associate degree, the 5-skill level must be awarded and the following requirements must be met:

| Semester Hours: | |
|---|---|
| Technical Education | 24 |
| Leadership, Management, and Military Studies | 6 |
| Physical Education | 4 |
| General Education | 15 |
| Program Elective | 15 |
| Total | 64 |

| **Nuclear Medicine Technology 4R0X1A** | |
|---|---|
| **Technical Core** | **Maximum Semester Hours** |
| Applied Nuclear Medicine Physics and Chemistry (TC-1) | 9 |
| CCAF Specialty Internship (TC-2) | 18 |
| Nuclear Medicine Procedures, Clinical and Nonclinical (TC-3) | 24 |
| Radiation Instrumentation (TC-4) | 18 |
| Radiation Safety and Procedures (TC-5) | 14 |
| Radiopharmaceuticals (TC-6) | 8 |
| **Technical Electives** | |
| American Registry of Radiologic Technologist Certification Nuclear Medicine Registry (TE-1) | 12 |
| Computer Science (TE-2) | 6 |

| **Diagnostic Medical Sonography 4R0X1B** | |
|---|---|
| **Technical Core** | **Maximum Semester Hours** |
| CCAF Specialty Internship (TC-1) | 18 |
| Clinical Sonography Practicum I (TC-2) | 8 |
| Clinical Sonography Practicum II (TC-3) | 18 |
| Principles of Ultrasound Physics & Instrumentation (TC-4) | 6 |
| Sonographic Scanning (TC-5) | 10 |
| **Technical Electives** | |
| American Registry of Radiologic Technologist Certification (TE-1) | 12 |
| Computer Science (TE-2) | 6 |

| **Diagnostic Imaging Technology 4R0X1/4R0X1C** | |
|---|---|
| **Technical Core** | **Maximum Semester Hours** |
| CCAF Specialty Internship (TC-1) | 18 |
| Diagnostic Imaging Anatomy & Physiology (TC-2) | 6 |
| Diagnostic Imaging Clinical Practicum (TC-3) | 12 |

| | |
|---|---|
| Diagnostic Imaging Physics (TC-4) | 6 |
| Diagnostic Imaging Procedures (TC-5) | 14 |
| Diagnostic Imaging Functions (TC-6) | 6 |
| Introduction to Diagnostic Imaging Technology (TC-7) | 6 |
| **Technical Electives** | |
| Advanced Diagnostic Imaging Procedures (TE-3) | 12 |
| American Registry of Radiologic Technologists Certification (TE-4) | 12 |
| Computer Science (TE-2) | 6 |
| Diagnostic Imaging Clinical Education/Internship (TE-5) | 12 |
| Medical Readiness (TE-6) | 3 |

**11.1. Technical Education (24 semester hours)**. A minimum of 12 semester hours of Technical Core subjects and courses must be applied and the remaining semester hours applied from Technical Core or Technical Elective subjects and courses.

**11.2. Leadership, Management, and Military Studies (6 Semester hours)**. Professional military education, civilian management courses accepted in transfer and/or by testing credit.

**11.3. Physical Education (4 Semester Hours).** This requirement is satisfied by completion of basic military training.

**11.4. General Education (15 Semester hours).** Applicable courses must meet the criteria for application of courses to the General Education Requirements (GER) and be in agreement with the definitions of applicable General Education subject/courses as provided in the *CCAF General Catalog.*

**11.5. Program Elective (15 Semester Hours).** Satisfied with applicable Technical Education; Leadership, Management, and Military Studies; or General Education subjects and courses, including natural science courses meeting GER application criteria. Nine (9) semester hours of CCAF degree applicable technical credit otherwise not applicable to this program may be applied. See the *CCAF General Catalog* for details regarding the Associates of Applied Sciences degree for this specialty.

**11.6. Additional Information.** Off-duty education is highly encouraged for professional development. Individuals desiring to become AETC instructors must possess, as a minimum, an associate degree or be within 1 year of completion (45 semester hours). A degreed faculty is necessary to maintain accreditation through the Southern Association of Colleges and Schools.

**11.7. College of Allied Health Sciences Degree Requirements**. 4R personnel that graduate from Diagnostic Imaging Phase II training course L5ABO4R031 02AB after 1 Jan 2021 will have until Dec 31 2022 to complete their CCAF associate's degree. Figure 5.0 identify degree plan and pathway requirements under CAHS which will go into effect 1 Jan 2021.

## **11.8.** College of Allied Health Sciences

## Figure 5.0. RADIOLOGY DEGREE COMPLETION PATHWAY

**COLLEGE OF ALLIED HEALTH SCIENCES**

**DEGREE PLAN & COMPLETION PATHWAY**

**Degree: Associate of Science in Health Sciences (ASHS) Major: Radiology Technician (Air Force)**

The ASHS degree requires at least 60 semester hours with:

- GPA of at least 2.0 and a grade of C or better in all courses
- Residence of at least 25% of the degree plan
- General Education of at least 30 semester hours
- Major Technical Field of Study of at least 15 semester hours
- General Electives up to 15 semester hours (if needed to achieve 60 semester hours)

Prerequisite:

| **General Education Requirements (30)** | | **Hours** |
|---|---|---|
| Communication (6) | | |
| Oral | Transfer Coursework | 3 |
| Written I | Transfer Coursework | 3 |
| Quantitative Health Science (9) | | |
| **RADT 2302*** | **Calculations in Rad-Bio Protection** | **3** |
| **RADT 2301*** | **Anatomy & Physiology for Rad Tech** | **3** |
| **RADT 1302*** | **Princ Radiographic Imaging w/Lab** | **3** |
| Human Science (6) | | |
| **RADT 2308*** | **Ethical Considerations for the Rad Tech** | **3** |
| Social Sci 1 | Transfer Coursework | 3 |
| General Education (9) | | |
| **RADT 2505*** | **Rad Proc Extremities w/Lab** | **5** |
| **RADT 2407*** | **Advanced Medical Imagining w/Lab** | **4** |
| | | |
| **General Education Requirements Total** | | **30** |

| **Major Requirements (30)** | | **Hours** |
|---|---|---|
| Major Technical Field of Study (30) | | |
| **RADT 1101*** | **Introduction to Radiology** | **1** |
| **RADT 2506*** | **Rad Proc Skull & Spine w/Lab** | **5** |
| **RADT 2207*** | **Rad Proc Thorax & Abdomen w/Lab** | **2** |
| **RADT 2901*** | **Clinical Practicum I** | **9** |
| **RADT 2902*** | **Clinical Practicum II** | **9** |
| **RADT 2903*** | **Clinical Practicum III** | **9** |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| **Major Requirements Total** | | **35** |

**These courses are part of the Radiology Technician core requirement for Air Force personnel.*

**Degree Completion Plan:**

| **Requirement** | **Recommended Coursework** | **Hours Needed**** | **Proposed Coursework** |
|---|---|---|---|
| Oral Comm | Communication | 3 | Transfer (CLEP, AP, DANTES, TA, etc.) |
| Written Comm I | Composition I | 3 | Transfer (CLEP, AP, DANTES, TA, etc.) |
| Social Science 1 | Military Science I | 3 | CCAF Airman Basic Training |

*Equivalent coursework may also be considered. This includes CLEP, DANTES, College Board, and other mechanisms. **One class minimum.*

*To receive the ASHS Radiology Technician diploma, all CAHS students must:*

1) *Complete all recommended coursework above and send official transcript(s) to CAHS.*
2) *Submit CAHS request for graduation.*

**12. Career Field Path.**

Figure 5-1. Enlisted Career Pyramid

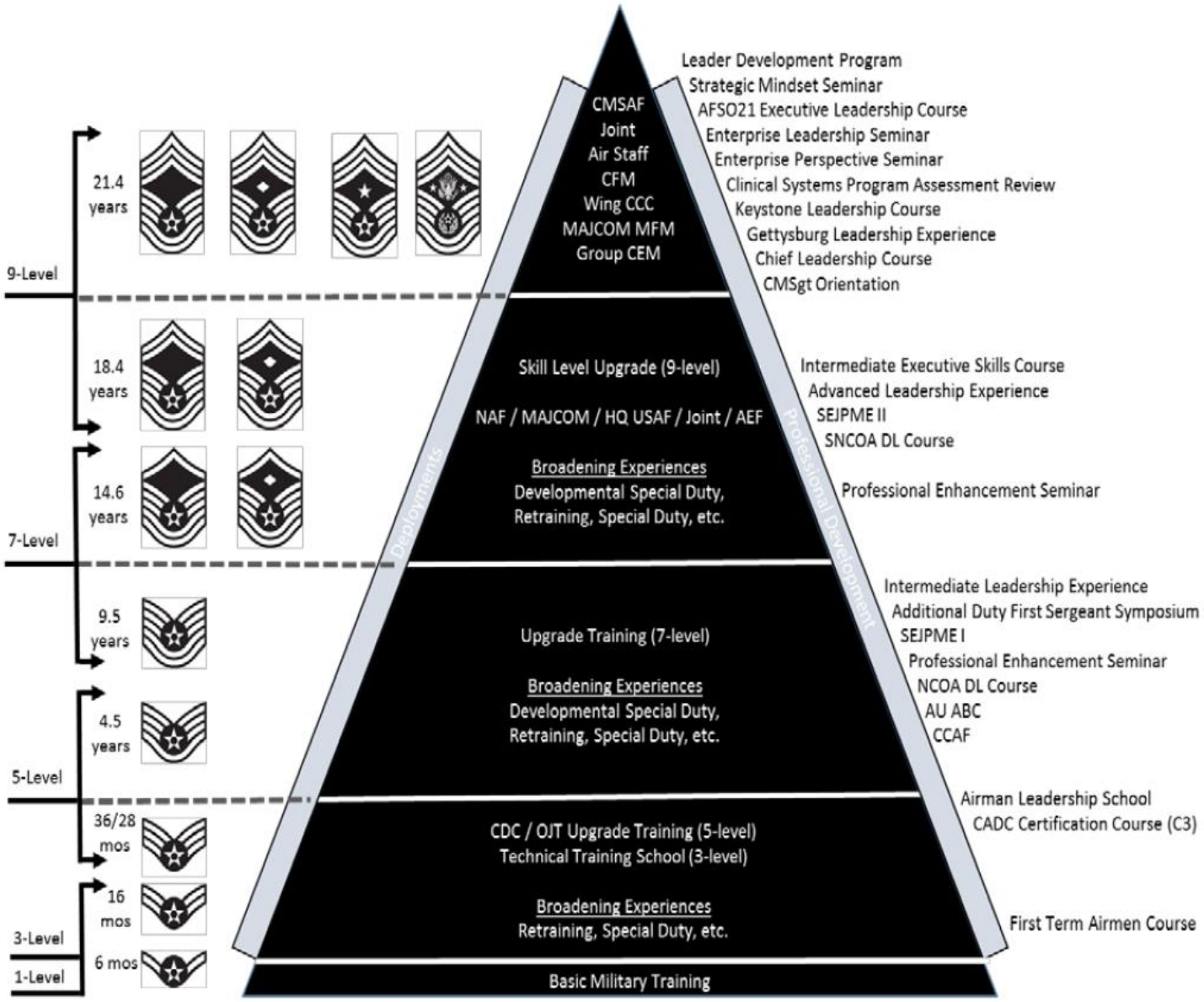


Figure 5-2. Enlisted Education and Training Path

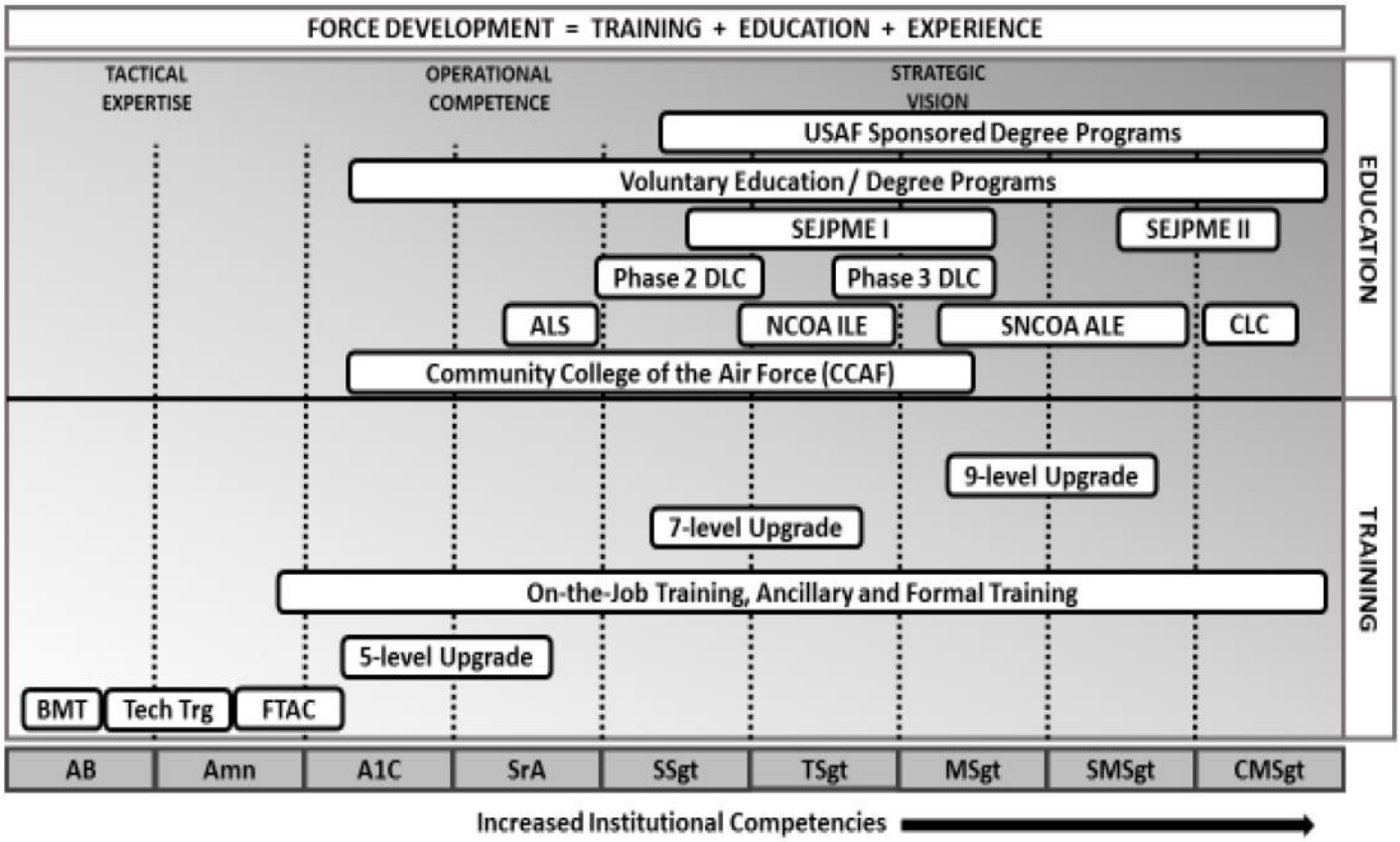



**Figure 5.2. Enlisted Career Path**

**Section C Skill Level Training Requirements**

**13. Purpose.** Skill level training requirements in this specialty are defined in terms of tasks and knowledge requirements. This section outlines the specialty qualification requirements for each skill level in broad, general terms and establishes the mandatory requirements for entry, award, and retention of each skill level. The specific task and knowledge training requirements are identified in the STS at Part II, Section A and B of this CFETP.

**13.1. Apprentice Level (3-Skill Level) Training:**

**13.1.1. Knowledge.** 4R031/A/B/C. Human anatomy and physiology; medical terminology and ethics; legal aspects of medicine; healthcare accreditation standards; radiation physics, biology, and protection; basic electronics theory; techniques of operating x-ray and specialized diagnostic imaging equipment; radiographic positioning; patient care and monitoring techniques; image recording media and processing techniques; quality control procedures; aseptic and sterile techniques; reactions to contrast media; cardiopulmonary resuscitation; methods of recording the fluoroscopic image; patient and equipment safety budget preparation and execution; and medical records administration.

**NOTE: Shreds.** Reinstatement of the 4R0X1 as the primary AFSC can be considered after the member has served at least 3 years at the 7 skill level of his/her particular shred. If a member is serving as a 4R0X1A/B/C in an OCONUS assignment, the member must serve their full initial tour prior to reinstatement. If a member serving in a shred is selected for and accepts a CONUS assignment, a 2 year commitment to serve in the particular shred at the new duty station is required. Coordination with the MFM is required prior to removing a shred. Submit a letter with concurrence from local flight and squadron approval to the respective MFM. If local leadership removes a shred without coordination with the MFM or utilizes a shred qualified member in another capacity, it does not automatically qualify for a backfill for the skillset.

**13.1.1.1. 4R031A.** Algebra, nuclear physics, clinical chemistry, nuclear pharmacology, and Nuclear Regulatory Commission regulations concerning use of radionuclides.

**13.1.1.2. 4R031B.** Ultrasound physics; techniques of operating specialized ultrasound components and equipment; basic knowledge of vascular and abdominal anatomy (topical and sectional), including normal variant anatomy, obstetric anatomy, and abnormal anatomy; and transducer characteristics, differences, and use.

**13.1.1.3. 4R031C.** Magnetic physics, magnetism, magnetic safety, and radio frequency; techniques of operating MRI equipment; and advanced knowledge of sectional anatomy applicable to MRI.

**13.1.2. Education.** For entry into this specialty, completion of high school or general education development equivalency with successful completion of courses in algebra, and biology or general science are mandatory. Successful completion of high school or collegiate courses in chemistry and physics is desirable.

**13.1. 3. Training.**

**13.1.3.1. Radiography.** For award of 4R031 AFSC, completion of the Diagnostic Imaging Apprentice course Phase I (L5AQJ4R031 01AA) and Phase II (L5ABO4R031 02AB) is mandatory.

**13.1.3.2. Computed Tomography.** Individuals will complete the ASRT's *CT Basics* course through distance learning (currently AFMS Swank Healthcare site).

**13.1.3.3. Mammography.** Completion of the Mammography Course (L5AZO4R051 00AB)

**13.1.3.4. Interventional Radiology.** Individuals will complete the ASRT's *Vascular-Interventional Essentials* course through distance learning (currently AFMS Swank Healthcare site).

**13.1.3.5. Nuclear Medicine (A-Shred)**. Completion of Nuclear Medicine Phase I (L5ALJ4R031A01AA), and Nuclear Medicine Phase II (L5ABO4R031A02AA) is mandatory for the award of the 3-skill level in the A-shred.

**13.1.3.6. Diagnostic Medical Sonography (B-shred)**. Completion of Diagnostic Medical Sonography Phase I (L5AQJ4R031B01AA), and Diagnostic Medical Sonography Phase II (L5ALO4R031B02AA) is mandatory for award of the 3-skill level in the B-shred 4R031B.

**13.1.3.7. Magnetic Resonance Imaging (C-shred).** Completion of the MRI Course (L5ALO4R031C00AA) is required for award of the 3-skill level in the C-shred.

**13.1.3.8. PACS Administrators (N-Prefix).** Individuals will complete the PACS and Advance PACS administrator requirements listed on the STS and AF form 797, Job qualification Standard Continuation/Command JQS for PACS Administrators local training specific to the PACS system they will be managing. Members will meet appropriate DoD 8570.01/DoD 8140.01 IAT level requirements for SEI260/264. Training will be documented on AFTR STS and AF form 797. (797 is maintained by PACS advisor and posted on the Knowledge Exchange Web Site.)

**13.1.4. Experience.** N/A

**13.1.5.** Selection for diagnostic imaging shred-out training (Nuclear Medicine/4R0X1A, Diagnostic Medical Sonography/4R0X1B, and Magnetic Resonance Imaging/4R0X1C) requires completion of the 5-skill level in radiography prior to acceptance into the shred training course.

**13.2. Training Sources and Resources.** Completion of the diagnostic imaging apprentice course Phase I (L5AQJ4R031 01AA) and Phase II (L5ABO4R031 02AB) satisfies the training requirements specified in the specialty qualification section (above) for award of the 3-skill level.

**13.3. Implementation.** Apprentice (3-skill level) training begins with entry in the diagnostic imaging apprentice course (Phase I). Satisfactory completion of the course (Phase I and Phase II) results in award of the 3-skill level. Job qualification training starts when graduates are assigned to their first duty position. Thereafter, it is initiated any time an individual is assigned duties he/she is not qualified to perform.

**13.4. Journeyman (5-Level) Training Requirements.**

**13.4.1. Specialty Qualification.**

**13.4.1.2. Knowledge.** Human anatomy and physiology; medical terminology and ethics; legal aspects of medicine; healthcare accreditation standards; radiation physics, biology, and protection; basic electronics theory; techniques of operating x-ray and specialized diagnostic imaging equipment; radiographic positioning; patient care and monitoring techniques; image recording media and processing techniques; quality control procedures; aseptic and sterile techniques; reactions to contrast media; cardiopulmonary resuscitation; methods of recording the fluoroscopic image; patient and equipment safety; budget preparation and execution; and medical records administration.

**13.4.1.3. Education**. N/A

**13.4.1.4. Training.** For the basic AFSC, SEI and all shred-outs, the following actions are required for award of the 5-skill level AFSC:

(a) Complete all STS core tasks (identified by an asterisk [*] in column 1 of the STS).
(b) Complete all STS tasks for the assigned duty position.
(c) Complete at least 12 months OJT (9 months for retrainees); supervisor recommendation and commander approval.
(d) Reserve component are allowed and highly encouraged to participate in seasoned training after Phase II.

**13.4.1.5. Experience.**

**13.4.1.5.1.** 4R0X1. Qualification and possession of AFSC 4R031. Also, experience operating x-ray equipment, and producing and processing radiographs.

**13.4.1.5.2.** 4R051A/B/C. Prior qualification in and possession of AFSC 4R031A/B/C respectively. Also, experience performing applicable shred (nuclear medicine, diagnostic medical sonography, or magnetic resonance imaging) functions and activities.

**13.4.1.5.3.** Selection for PACS Administrator (N-Prefix) position requires possession of the 5-skill level and minimum rank of SrA.

**13.4.1.5.4.** Mammography. Personnel performing mammography duties must possess a 5-skill level, be registered in radiography through the ARRT and meet all other training/experience requirements specified in the Mammography Quality Standards Act. All technologists completing the AF Mammography Course and completing 6 months OJT will be assigned the 460 SEI.

**13.4.1.5.5.** Selection for the Computed Tomography SEI requires possession of the 5-skill level, 6-months experience, and ARRT.

**13.4.1.6. Other.** For award and retention of these AFSCs, must maintain an Air Force Network License according to AFI 33-115, Volume 2, *Licensing Network Users and Certifying Network Professionals.*

**13.4.2. Training Sources and Resources.** The STS identifies all core tasks required for qualification. Upgrade and qualification training are provided by qualified trainers using available resources.

**13.4.3. Implementation.** Entry into 5-skill level upgrade training is initiated upon arrival at the first permanent duty station, following graduation from Phase II training. Qualification training is initiated any time an individual is assigned duties he/she is not qualified to perform.

**13.5. Craftsman (7-Level) Training Requirements.**

**13.5.1. Specialty Qualification.**

**13.5.1.1. Knowledge.** Human anatomy and physiology; medical terminology and ethics; legal aspects of medicine; healthcare accreditation standards; radiation physics, biology, and protection; basic electronics theory; techniques of operating x-ray and specialized diagnostic imaging equipment; radiographic positioning; patient care and monitoring techniques; image recording media and processing techniques; quality control procedures; aseptic and sterile techniques; reactions to contrast media; cardiopulmonary resuscitation; methods

of recording the fluoroscopic image; patient and equipment safety budget preparation and execution; medical records administration; and department administration and management.

**13.5.1.2. Education.** N/A

**13.5.1.3. Training.** The following actions are required for award of the 7-skill level AFSC:

(a) Be trained on all STS core tasks (identified by an asterisk (*) in column 1 of the STS).
(b) Be trained on all STS tasks for the assigned duty position.
(c) Minimum grade of SSgt.
(d) Complete at least 12 months upgrade training (6 months if previously awarded 7- level).

**13.5.1.4. Experience.**

**13.5.1.4.1.** 4R071. Prior qualification and possession of AFSC 4R051. Also, experience performing or supervising functions such as producing radiographs, assisting with fluoroscopy and special radiographic procedures, or treating disease by radiotherapy.

**13.5.1.4.2.** 4R071A/B/C. Prior qualification in and possession of AFSC 4R051A/B/C respectively. Also, experience performing or supervising nuclear medicine, diagnostic medical sonography, or MRI functions and activities.

**13.5.1.5. Other.** For award and retention of these AFSCs, must maintain an Air Force Network License according to AFI 33-115, Volume 2, *Licensing Network Users and Certifying Network Professionals.*

**13.5.2. Training Sources and Resources.** The STS identifies all core tasks required for qualification. Upgrade and qualification training are provided by qualified trainers using technical references listed in the STS, Part II, Section A of this CFETP.

**13.5.3. Implementation.** Entry into 7-skill level upgrade training is initiated when an individual possesses the 5-skill level and is selected for promotion to the grade of Staff Sergeant. Upgrade training may begin on the first day of the first month of the promotion cycle in which the individual has been selected for promotion. Qualification training is initiated any time an individual is assigned duties he/she is not qualified to perform. Completion of the 7-skill level course and all its prerequisites is required prior to award of the 7-skill level.

**13.6. Superintendent (9-Level) Training Requirements.**

**13.6.1. Specialty Qualification.**

**13.6.1.1. Knowledge.** Human anatomy and physiology; medical terminology and ethics; legal aspects of medicine; healthcare accreditation standards; radiation physics, biology, and protection; basic electronics theory; techniques of operating x-ray and specialized diagnostic imaging equipment; radiographic positioning; patient care and monitoring techniques; image recording media and processing techniques; quality control procedures; aseptic and sterile techniques; reactions to contrast media; cardiopulmonary resuscitation; methods of recording the fluoroscopic image; patient and equipment safety; budget preparation and execution; medical records administration; medical service organization and function, medical administrative procedures; personnel management and administration, Nuclear Regulatory Commission regulations governing medical use of radioisotopes, applicable environmental protection standards, management of non-military personnel, applicable accreditation standards and inspection procedures.

**13.6.1.2. Education. N/A**

**13.6.1.3. Training. N/A**

**13.6.1.4. Experience.** Prior qualification in and possession of AFSC 4R071, 4R071A, 4R071B, or 4R071C. Also, experience managing radiologic, nuclear medicine, diagnostic medical sonography, or MRI functions and activities; mandatory experience of medical service organization and function, medical administrative procedures, medical supply procedures, medical equipment management procedures, personnel management and administration, Nuclear Regulatory Commission regulations governing medical use of radioisotopes, applicable environmental protection standards, management of non-military personnel, applicable accreditation standards and inspection procedures, and preparation and execution of budgets.

**13.6.1.5. Other.** For award and retention of these AFSCs, must maintain an Air Force Network License according to AFI 33-115, Volume 2.

**13.6.2. Training Sources and Resources.** Required PME and intermediate qualifications.

**13.6.3. Implementation.** Entry into 9-skill level training is initiated when an individual is selected for SMSgt, and is a fully qualified 7-skill level. Qualification training is initiated any time an individual is assigned duties they are not certified to perform.

***Section D. Skill Resource Constraints***

**14. Purpose.** This section identifies known resource constraints, which preclude optimal and desired training from being developed or conducted, including information such as cost and manpower. Narrative explanations of each resource constraint and an impact statement describing what effect each constraint has on training are included. Also included in this section are actions required, office of primary responsibility, and target completion dates. Resource constraints will be, as a minimum, reviewed and updated annually.

**14.1. Computed Tomography (CT)** has increasingly become a heavily consumed function in the diagnostic imaging field, both in-garrison and in forward medical treatment facilities. As the demand for increased volume and technical expertise has grown, medical treatment facilities have locally created performance based training standards to produce technologists that meet that facility's basic imaging needs. This limited solution has often resulted in inconsistent, insufficient, low quality CT proficiency. The current training platform produces technologists that understand the fundaments of CT imaging in order to accomplish the mission, but they do not fully understand radiation dose-manipulation, complex exams involving multiple vascular phase or contrast imaging, post-processing concepts, pathology, etc. all of which are critical to safely performing CT imaging.

Additionally, as of 1 July 2016, The Joint Commission (TJC) mandated all CT technologists to have their ARRT registration, 16-hours of didactic training in their prescribed categories and practical experience supervised by a CT ARRT registered technologist or radiologist. As of the CFETP publication date, the Air Force, as well as sister services, have been given an "exception-to-policy" from TJC for an undetermined time period as the field works to formalize CT training within the AFMS in line with TJC standards. This exception to policy is subject to removal at any time TJC concludes MTF's are not conducting training as agreed upon when given the exception.

In order to meet the requirements of TJC, the field has made several updates to the CT STS which captures all basic CT requirements. It is the recommendation of the STRT that CT didactics increase to 20-hrs and 4 additional weeks (160 hours) be added to the Phase II course to accommodate the increase in performance based STS tasks. As the imminent threat of increased certification requirements, and the fact that over 70% of 4R0X1s are currently in facilities with CT capabilities, and most 4Rs will perform CT at some point in their careers, it is essential that continuity in training is created.

It has been noted that individuals are deploying without CT training to locations with CT capabilities. This limits capabilities of deployed techs, and raises concerns of radiation safety to those cared for in the AOR. Members must be prepared prior to deployment to handle these responsibilities. The committee has worked with vendors to find simulation training, and CBT that can familiarize deployers with knowledge of AOR equipment. However, this does not substitute for hands-on experience. The committee recommends placing a CT scanner (of the same platform as at major treatment facilities in deployed locations, currently Phillips), at JBSA-Camp Bullis, TX. This allows for familiarization/simulation training at EMEDS for members tasked to deploy. After familiarization with downrange CT scanners, coordination with SAMMC for trauma experience on a CT scanner would further prepare deployers with knowledge necessary to support the mission.

**14.2. Portable Radiography** - Limitations to portable radiography exists due to changes with existing MTF workload. As AOR capabilities are different at various locations, recommend members who are tasked to deploy, and not stationed at a major MTF with portable capabilities attend EMEDS training. Recommend 4 hours of EMEDS, or subsequent SAMMC pre-deployment training, be spent familiarizing on latest digital portable technology.

**14.3. Diagnostic Medical Sonography** - Diagnostic medical sonographers work closely with physicians and radiologists. They help interpret ultrasound images, and they present findings to the medical team. This level of competence and emphasis on public safety is achieved through experience. The primary constraint for the diagnostic medical sonography course is time. The programs for our civilian counterparts range from 2-4 year programs. The program condenses this training into 2 months, with only 4 months of clinical training. It is not possible for Sonographers to be proficiently qualified (3c level) in the time allotted. Currently members are trained to the 2b level, as it is not possible to gain the qualifications to operate independently within the given timeframe. This long-standing shortfall in the career field has challenged radiologists, and limits where an Ultrasound tech can be PCS'd. The committee recommends adding an additional 4 months for a total of 8 months performance training. As part of the additional 4 months, it is essential to add didactic training in Phase II. When the ultrasound course married with the Navy didactics were lost. The lack of didactics has diminished the capabilities of the Ultrasound graduates.

Another shortcoming in the Ultrasound AFSC is the lack of continuity in training. It is essential that continuity be built across the multiple Phase II training platforms. To ensure this continuity is attained, we request a 2 week TDY for all new instructors to gain an understanding of what is expected as an Ultrasound Phase II Instructor.

**14.4. PACS** - Radiology in the AFMS has grown from the days of the film file room to an interconnected infrastructures of digital medical systems which encompass various components like PACS, Voice Recognition, EHR, Specialty systems and all radiology modalities. When digital radiography began 20+ years ago, technologists started migrating from file room tasks into the digital world of managing digital files. Through the years the need for dedicated personnel in managing these systems became readily apparent, and so PACS administrators were identified at the larger facilities to coordinate efforts within the MTF, with equipment vendors for maintenance, and more recently throughout the AFMS (teleradiology) as we have become globally connected. Recently other areas are recognizing the need to manage their information through the PACS platform including cardiology, and opthalmology to name a couple. These areas are starting to experience issues as they don't currently have the personnel and infrastructure to manage the information.

PACS Administrators are essential to the day-to day operations of managing imaging files, fixing disconnects in image information, and supporting the transfer, interpretation, and storage of over 800,000 imaging studies per year. We have 70+ radiology sites with systems, 23 of which provide radiology interpretations for the entire AF through teleradiology.

Currently, we train our system administrators through vendor training which costs an estimated $15K per seat. There are 1 to 2 PACS Administrators per site which can amount to $2.1M in training every 2 years. This has also been accomplished OJT which limits our experience level and continuity across all sites. It takes at a minimum 8-12 months to train and code (apply SEI) an administrator for the position. We must be able to get their security plus certificates to enable their network access at all facilities. Threats to maintaining these administrators come in the form of DSD vectoring, local reassignment, 4R reassignments and retraining. Our vendor agreements are limited to only handling break/fix scenarios, and they do not provide preventive and security maintenance to our systems. At a cost of $8.4M annually we can dramatically decrease or altogether remove these SMA costs.

Recommend manpower study be conducted to identify shortcomings in imaging informatics career field. Additionally request all active duty positions be converted to civilian and/or contract positions.

***Section E. Transitional Training Guide***

**15.** There are currently no transition training requirements. This area is reserved.

**Part II**

***Section A - Specialty Training Standard (STS)***

**16. Implementation.** This STS will be used for technical training provided by HQ AETC.

**16.1. Purpose.** As prescribed in AFI 36-2201.

**16.1.1.** Lists, in column 1, the most common tasks, knowledge, and technical references (TR) necessary for Airmen to perform duties in the 3-, 5-, and 7-skill level. TRs in the source summary are commercial publications or other service publications that are essential for OJT and mission accomplishment and are referenced by title throughout the STS. The unit OJT section will consolidate the requirements for the unit supported and order publications through the hospital/clinic library activity. Column 1 identifies, with an asterisk (*), those task/knowledge items that are trained during the resident wartime course. Column 2 identifies core tasks, per skill level (i.e. "5" or "7"), for UGT requirements.

**16.1.2.** Provides certification for OJT. Column 3 is used to record completion of task training requirements and knowledge training requirements. Automated training management systems to document technician qualifications, will be used. Task certification must show a certification/completed date. (NOTE: As a minimum, use the following column designators: Training Complete, Certifier Initials).

**16.1.3.** Shows formal training and correspondence course requirements. Column 3 shows the proficiency to be demonstrated on the job by the graduate as a result of training on the task/knowledge and the career knowledge provided by the correspondence course.

**16.1.4. Qualitative Requirements.** Attachment 1 contains the proficiency code key used to indicate the level of training and knowledge provided by resident training and career development courses.

**16.1.5.** Used to document task when placed in AF Form 623, *Individual Training Record*, and used according to AFI 36-2201. Refer to AFI 36-2201 for further guidance on documentation, transcribing, decertification, and recertification.

**16.2. Documenting Career Knowledge.** The supervisor identifies STS training references that the trainee requires for career knowledge in accordance with (IAW) AFI 36-2201 and ensures, as a minimum, that trainees cover all mandatory items required in the STS and as specified in AFMAN 36-2108.

**16.3. Promotion.** The STS is a guide for development of promotion tests used in the Weighted Airman Promotion System (WAPS). Specialty Knowledge Tests (SKTs) are developed at the AETC Airman Advancement Division, by senior NCOs with extensive practical experience in their career fields. The tests sample knowledge of STS subject matter areas judged by test development team members as most appropriate for promotion to higher grades. Questions are based upon study references listed in the WAPS catalog. Individual responsibilities are in Chapter 1 of AFI 36-2605, AF Military Personnel Testing System. WAPS is not applicable to the ANG.

**16.4. Maintaining Core Task Certification.** Personnel working in the shred AFSCs (4R0X1A/B/C) must work a minimum of 2 weeks (10 duty days) per year performing basic radiography functions in order to maintain proficiency in wartime skills. In addition, shred personnel must be recertified every 2 years on all core

tasks identified in the basic AFSC STS. This requirement is waived for personnel filling a special duty position assigned outside of a medical treatment facility.

**16.5. Recommendations.** Report unsatisfactory performance of individual course graduates, inadequacies and recommended changes to this training standard to the 59 TRG/TGE, 2931 Harney, Fort Sam Houston, TX 78234 or use the Customer Service Information Line, DSN 420-1080 (commercial 210-808-1080) to report your findings. Be sure to reference specific STS paragraphs in the report.

BY ORDER OF THE SECRETARY OF THE AIR FORCE

OFFICIAL

DOROTHY A. HOGG
Lieutenant General, USAF, NC Surgeon General

9 Attachments

1. Qualitative Requirements
2. Diagnostic Imaging Specialty
3. Computed Tomography
4. Interventional Radiography
5. Mammography
6. Nuclear Medicine, A Shred
7. Diagnostic Medical Sonography, B Shred
8. Magnetic Resonance Imaging, C Shred
9. Bibliography and Cross Talk Listing of 4R0X1 Training References

# Attachment 1
# Diagnostic Imaging Specialty STS

| *This Block Is For Identification Purposes Only* | | |
|---|---|---|
| **Name Of Trainee** | | |
| **Printed Name (*Last, First, Middle Initial*)** | **Initials (Written)** | **SSAN** *(last 4)* |
| | | |

| **Printed Name Of Trainer, Certifying Official And Written Initials** | |
|---|---|
| *N/I* | *N/I* |
| *N/I* | *N/I* |
| *N/I* | *N/I* |
| *N/I* | *N/I* |
| *N/I* | *N/I* |
| *N/I* | *N/I* |
| *N/I* | *N/I* |
| *N/I* | *N/I* |

## QUALITATIVE REQUIREMENTS

| Proficiency Code Key | | |
|---|---|---|
| | **Scale Value** | **Definition: The individual** |
| Task Performance Levels | 1 | Can do simple parts of the task. Needs to be told or shown how to do most of the task. (Extremely Limited) |
| | 2 | Can do most parts of the task. Needs only help on hardest parts. (Partially Proficient) |
| | 3 | Can do all parts of the task. Needs only a spot check of completed work. (Competent) |
| | 4 | Can do the complete task quickly and accurately. Can tell or show others how to do the task. (Highly Proficient) |
| *Task Knowledge Levels | a | Can name parts, tools, and simple facts about the task. (Nomenclature) |
| | b | Can determine step by step procedures for doing the task. (Procedures) |
| | c | Can identify why and when the task must be done and why each step is needed. (Operating Principles) |
| | d | Can predict, isolate, and resolve problems about the task. (Advanced Theory) |
| **Subject Knowledge Levels | A | Can identify basic facts and terms about the subject. (Facts) |
| | B | Can identify relationship of basic facts and state general principles about the subject. (Principles) |
| | C | Can analyze facts and principles and draw conclusions about the subject. (Analysis) |
| | D | Can evaluate conditions and make proper decisions about the subject. (Evaluation) |

Explanations:
* A task knowledge scale value may be used alone or with a task performance scale value to define a level of knowledge for a specific task. (Example: b and 1b)
** A subject knowledge scale value is used alone to define a level of knowledge for a subject not directly related to any specific task, or for a subject common to several tasks.
- This mark is used alone instead of a scale value to show that no proficiency training is provided in the course or CDC.
X This mark is used alone in the course columns to show that training is required but not given due to limitations in resources.

***NOTE:*** All tasks and knowledge items shown with a proficiency code are trained during war time.

# Attachment 2
# Diagnostic Imaging Specialty

| 1. Tasks, Knowledge and Technical References | 2. Core/ Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1** | | A | B | C | D | E | A 3- Skill Level | | B 5- Skill | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| **1. MEDICAL READINESS** Initial Medical Readiness training, directed by AFI 41-106, is provided in the Emergency Medical Readiness course conducted at the 59th Training Group, JBSA Ft Sam Houston, Texas. Completed training is documented on AF Form 1098 for each course graduate. Continuing/on-going Medical Readiness training for the individual is the responsibility of each medical facility. | | | | | | | | | | |
| **2. CAREER LADDER PROGRESSION** | | | | | | | | | | |
| 2.1. USAF Medical Service<br>**TR**:<br>A . AFMS Knowledge Exchange (https://kx2.afms.mil/)<br>B. AFPD 44-1 (Medical Operations) | | | | | | | A | - | - | - |
| 2.2. Strategy, Mission & Vision<br>**TR**:<br>A. http://www.airforcemedicine.af.mil/About/Strategy/<br>B. https://kx2.afms.mil/kj/kx8/AFMSStrategyMgmt/Pages/home.aspx<br>C. DI Kx Website https://kx2.afms.mil/kj/kx9/DiagnosticImagingCFM/Pages/home.aspx | | | | | | | A | - | - | - |
| 2.3. Organization<br>**TR**: AFI 38-101 (AF Organization) | | | | | | | A | - | - | - |
| 2.4. Progression and 4R0X1 career ladder<br>**TR**:<br>A. 4R0X1 CFETP<br>B. AFI 36-2101 (Military Classifications)<br>C. AFI 36-2618 (Enlisted Force Structure) | | | | | | | A | - | - | - |
| 2.5. Duties of AFSCs 4R031/51/71<br>**TR**:<br>A. 4R0X1 CFETP<br>B. AFI 36-2101 (Military Classifications)<br>C. AFI 36-2618 (Enlisted Force Structure) | | | | | | | A | - | - | - |
| 2.6. 4R Modality Retraining Opportunities<br>**TR**:<br>A. 4R0X1 CFETP<br>B. MyPers Retraining Website – "Enlisted Classification Directory"<br>C. AFI 36-2626 (Amn Retraining Program)<br>D. DI Kx Website: https://kx2.afms.mil/kj/kx9/DiagnosticImagingCFM/Pages/home.aspx | | | | | | | - | - | - | - |
| 2.7. Understand the Assignments Process<br>**TR**: 36-2110 (Assignments) | | | | | | | - | - | - | - |
| 2.8. Understand the UMD/UPMR<br>**TR**:<br>A. DI Kx Website: https://kx2.afms.mil/kj/kx9/DiagnosticImagingCFM/Pages/home.aspx<br>B. AFI 38-201 (Manpower & Organization) | | | | | | | - | - | - | - |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 2.9. Understand the DSD/EDT Process<br>**TR**:<br>A. MyPers Website - (Developmental Special Duty Process)<br>B. PSD Guide (MyPers)<br>C. DI Kx Website https://kx2.afms.mil/kj/kx9/DiagnosticImagingCFM/Pages/ho | | | | | | | - | - | - | - |
| 2.10. JRCERT Accreditation Requirements<br>**TR**: www.jrcert.org | | | | | | | A | - | - | - |
| **3. SUPERVISION OF MILITARY AND NON-MILITARY PERSONNEL** | | | | | | | | | | |
| 3.1. Orient new personnel<br>**TR**:<br>A. AFI 36-2201 (AF Training Program)<br>B. MyPers Website – "Enlisted Classification Directory"<br>C. 4R0X1 CFETP<br>D. AFI 36-2103 (Intro Program)<br>E. AFI 38-101 (AF Organization)<br>F. 44-102 (Med Care Management) | | | | | | | - | - | - | - |
| 3.2. Plan work assignments and priorities<br>**TR:**<br>A. 4R0X1 CFETP<br>B. Locally Developed Procedures<br>C. AFI 44-102 (Med Care Management)<br>D. AFI 38-101 (AF Organization)<br>E. DI Kx Website: https://kx2.afms.mil/kj/kx9/DiagnosticImagingCFM/Pages/home.aspx | | | | | | | - | - | - | - |
| 3.3. Establish work methods and performance standards (OIs, policies, protocols, etc.)<br>**TR**:<br>A. AFI 44-102 (Med Care Management)<br>B. AFPC Web site Search<br>C. DI Kx Website: https://kx2.afms.mil/kj/kx9/DiagnosticImagingCFM/Pages/home.aspx | | | | | | | - | - | - | - |
| 3.4. Comprehensive Medical Readiness Program **TR:**<br>A. AFMS Kx CMRP Site https://kx2.afms.mil/kj/kx9/CMRP/Pages/home.aspx<br>B. DI Kx Website: https://kx2.afms.mil/kj/kx9/DiagnosticImagingCFM/Pages/home.aspx | | | | | | | - | - | - | - |
| 3.5. Evaluate work performance of subordinate personnel | | | | | | | - | - | - | - |

| 1. Tasks, Knowledge and Technical References | 2. Core/ Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1** | | A | B | C | D | E | A 3- Skill Level | | B 5- Skill | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| **4. ORGANIZATIONAL CLIMATE** | | | | | | | | | | |
| 4.1. 4R High Reliable Organization<br>**TR**:<br>A. Trusted Care Kx Website https://kx2.afms.mil/kj/kx3/TC_Public/Pages/home.aspx<br>B. DI Kx Website: https://kx2.afms.mil/kj/kx9/DiagnosticImagingCFM/Pages/home.aspx | | | | | | | A | B | - | - |
| 4.2. Diagnostic Imaging Process Improvement<br>**TR**:<br>A. AFI 44-119 (Medical Quality Operations)<br>B. Trusted Care Kx Site https://kx2.afms.mil/kj/kx3/TC_Public/Pages/home.aspx<br>C. DI Kx Website: https://kx2.afms.mil/kj/kx9/DiagnosticImagingCFM/Pages/home.aspx | | | | | | | A | B | - | - |
| 4.3. AFOSH Standards for AFSC 4R0X1<br>**TR**:<br>A. 91-203 (Air Force Consolidated Occupational Safety Instruction)<br>B. AFI 48-148 (Ionizing Radiation Protection) | | | | | | | A | B | - | - |
| 4.4. AF Radiation Protection<br>**TR**:<br>A. Bushong, S.C., Bontrager, & Merrills<br>B. AFMAN 48-125 (Personnel Ionizing Radiation Dosimetry)<br>C. AFI 48-148 (Ionizing Radiation Protection) | | | | | | | A | B | - | - |
| 4.5. Perform radiation protection procedures<br>**TR**:<br>A. Bushong, Bontrager, & Merrills<br>B. AFMAN 48-125 (Personnel Ionizing Radiation Dosimetry)<br>C. AFI 48-148 (Ionizing Radiation Protection) | | | | | | | 2b | 3c | - | - |
| 4.6. Infection Control<br>**TR**: Ehrlich, Bontrager, & Merrills | | | | | | | | | | |
| 4.6.1. Concepts of Infection Control | | | | | | | A | B | - | - |
| 4.6.2. Employ standard precautions | | | | | | | a | 3c | - | - |
| 4.6.3. Perform aseptic techniques | | | | | | | - | 3c | - | - |
| 4.6.4. Performs equipment cleaning | | | | | | | 1b | 3c | - | - |
| **5. PATIENT CARE**<br>**TR**: Ehrlich, Merrills, & Wilson | | | | | | | | | | |
| 5.1. Professional standards of ethics<br>**TR**: ARRT.org | | | | | | | A | B | - | - |
| 5.2. Professional relations with patients and medical personnel<br>**TR**: ARRT.org | | | | | | | A | B | - | - |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 5.3. Privacy Act and HIPAA<br>**TR**:<br>A. AFI 33-332 (Air Force Privacy and Civil Liberties Program)<br>B. 41-200 (Health Insurance Portability and Accountability Act (HIPAA) | | | | | | | A | B | - | - |
| 5.4. Demonstrate professional written and verbal communication skills | | | | | | | - | 2b | - | - |
| 5.5. Patient preparation and procedural education | | | | | | | A | B | - | - |
| 5.6. Patient Assessment | | | | | | | A | B | - | - |
| 5.7. Monitor vital signs | | | | | | | - | 2b | - | - |
| 5.8. Use proper body mechanics for patient movement | | | | | | | 2b | 3c | - | - |
| 5.9. Assist patient to/from wheelchair, gurney & exam table | | | | | | | 1a | 3c | - | - |
| 5.10. Transport patients | | | | | | | 1a | 3c | - | - |
| 5.11. Use of restraining devices (Pigg-O-Stat, Velcro straps, etc…) | | | | | | | - | - | - | - |
| 5.12. Use IV Precautions | | | | | | | a | 2b | - | - |
| 5.13. Monitor patients | | | | | | | a | 2b | - | - |
| 5.14. Assess patient lab results | | | | | | | - | - | - | - |
| **6. IMAGING SERVICE ADMINISTRATIVE DUTIES**<br>**TR**:<br>A. AFI 33-364 (Records Disposition – Procedures and Responsibilities)<br>B. AFRIMS<br>AFI 44-102 (Medical Care Management) | | | | | | | | | | |
| 6.1. Diagnostic Imaging Reception Duties | | | | | | | | | | |
| 6.1.1. Process examination imaging requests: Scheduling, Arriving, Ordering, Departing patients | * | | | | | | a | 2b | - | - |
| 6.1.2. Navigates EHR applications | | | | | | | a | 2b | - | - |
| 6.2. Image Library Functions | | | | | | | | | | |
| 6.2.1. Demonstrate exam loan procedures | | | | | | | - | - | - | - |
| 6.2.2. Copies images for patients and physicians/Documents transactions | | | | | | | - | 1b | - | - |
| 6.2.3. Understands timelines and disposition of: **TR**: AFRIMS | | | | | | | | | | |
| 6.2.3.1. Routine X-rays | | | | | | | - | A | - | - |
| 6.2.3.2. Mammography Files | | | | | | | - | A | - | - |
| 6.2.3.4. Medical-Legal Files | | | | | | | - | A | - | - |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1** | | A | B | C | D | E | A 3- Skill Level | | B 5- Skill | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| **7. QUALITY MANAGEMENT**<br>**TR**:<br>A. Bushong, Carlton & Papp<br>B. AFI 48-148 (Ionizing Radiation Protection) | | | | | | | | | | |
| 7.1. Quality assurance | | | | | | | A | - | - | - |
| 7.2. Quality control | | | | | | | | | | |
| 7.2.1. Monitoring equipment performance | | | | | | | a | 2b | - | - |
| 7.2.2. Inspect image receptors | | | | | | | a | 2b | - | - |
| 7.2.3. Perform lead protective devices check | | | | | | | - | 2b | - | - |
| 7.2.4. Perform image quality control | | | | | | | 1a | 2b | - | - |
| 7.3. Clean image receptors | | | | | | | a | 2b | - | - |
| 7.4. Perform repeat image analysis | | | | | | | - | - | - | - |
| 7.5. Radiographic Film Critique | | | | | | | B | - | - | - |
| **8. TECHNICAL ASPECTS OF RADIOLOGY**<br>**TR:** Bushong, Bontrager, Carlton, Merrills & Sherer | | | | | | | | | | |
| 8.1. Radiation physics | | | | | | | A | B | - | - |
| 8.2. X-Ray imaging systems | | | | | | | B | - | - | - |
| 8.3. X-Ray production | | | | | | | A | B | - | - |
| 8.4. Operate fixed radiographic equipment | * | | | | | | 2b | 3c | - | - |
| 8.5. Operate mobile radiographic equipment | | | | | | | 2b | 3c | - | - |
| 8.6. Radiobiology | | | | | | | A | B | - | - |
| 8.7. Beam Restriction | | | | | | | A | B | - | - |
| 8.8. Control scatter radiation | * | | | | | | 2b | 3c | - | - |
| 8.9. Grids | | | | | | | A | B | - | - |
| 8.10. Select prime exposure factors | * | | | | | | 2b | 3c | - | - |
| 8.11. Image quality evaluation | * | | | | | | A | B | - | - |
| 8.12. Digital radiography | | | | | | | | | | |
| 8.12.1. Computed radiography (CR) | | | | | | | A | B | - | - |
| 8.12.2. Direct Radiography (DR) | | | | | | | A | B | - | - |
| 8.12.3. Acquire images using digital radiography | * | | | | | | 2b | 3c | - | - |
| 8.13. Digital imaging process concepts | | | | | | | A | B | - | - |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1** | | A | B | C | D | E | A 3- Skill Level | | B 5- Skill | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| 8.14. Process digital images | | | | | | | 2b | 3c | - | - |
| 8.15. Fluoroscopy | | | | | | | A | B | - | - |
| **9. ANATOMY, PHYSIOLOGY, AND PATHOLOGY**<br>**TR**: Tortora | | | | | | | | | | |
| 9.1. Medical Terminology | | | | | | | | | | |
| 9.1.1. Root, prefix, and suffix | | | | | | | B | - | - | - |
| 9.1.2. Common medical terms | | | | | | | A | - | - | - |
| 9.2. Body Planes and Positioning | | | | | | | A | B | - | - |
| 9.3. Organization of the body | | | | | | | A | B | - | - |
| 9.4. Structure, function, and pathology of body systems | | | | | | | | | | |
| 9.4.1. Osteology | | | | | | | A | B | - | - |
| 9.4.2. Muscular | | | | | | | A | B | - | - |
| 9.4.3. Respiratory | | | | | | | A | B | - | - |
| 9.4.4. Cardiovascular | | | | | | | A | B | - | - |
| 9.4.5. Digestive | | | | | | | A | B | - | - |
| 9.4.6. Urinary | | | | | | | A | B | - | - |
| 9.4.7. Nervous | | | | | | | A | B | - | - |
| 9.4.8. Endocrine | | | | | | | A | B | - | - |
| 9.4.9. Reproductive | | | | | | | A | B | - | - |
| **10. CONTRAST MEDIA ADMINISTRATION**<br>**TR**: Ehrlich, Bontragers & Merrills | | | | | | | | | | |
| 10.1. Properties of Contrast Media | | | | | | | A | B | - | - |
| 10.2. Administer contrast media | | | | | | | | | | |
| 10.2.1. Oral | | | | | | | - | b | - | - |
| 10.2.2. Rectal | | | | | | | - | b | - | - |
| 10.2.3. Intravenous | | | | | | | - | b | - | - |
| 10.3. Perform venipuncture | | | | | | | a | 2b | - | - |
| 10.4. Document contrast media administration (charting medications) | | | | | | | a | 2b | - | - |
| 10.5. Contrast media reactions | | | | | | | A | B | - | - |
| 10.6. Medicine Mixing | | | | | | | - | b | - | - |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1** | | A | B | C | D | E | A 3- Skill Level | | B 5- Skill | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| **11. DIGITAL IMAGING FUNCTIONS (PACS), IMAGING INFORMATION SYSTEMS, HOSPITAL INFORMATION SYSTEMS**<br>**TR**: Carter | | | | | | | | | | |
| 11.1. Picture Archiving and Communication Systems (PACS) | | | | | | | | | | |
| 11.1.1. System Overview (Terminology/Topology) | | | | | | | A | B | - | - |
| 11.1.2. Hospital Information System/ Radiology Information Systems (HIS/RIS) | | | | | | | A | B | - | - |
| 11.1.3. Workflow | | | | | | | A | B | - | - |
| 11.1.4. Contingency Procedures | | | | | | | - | - | - | - |
| 11.2. Perform Workflow Process | | | | | | | 1a | 2b | - | - |
| 11.3. Perform System Functions | | | | | | | - | - | - | - |
| 11.4. Manage User Profiles | | | | | | | - | - | - | - |
| 11.5. Perform System Security Check | | | | | | | - | - | - | - |
| **12. ADVANCED PACS ADMINISTRATION (N-PREFIX)**<br>TR: (PACS) A Guide to Digital Revolution 2nd Ed. Springer 2006 | | | | | | | | | | |
| 12.1. Management | | | | | | | | | | |
| 12.1.1. Contracting Office Technical Representative (COTR) | | | | | | | - | - | - | - |
| 12.1.2. Identify Radiology System Requirements | | | | | | | - | - | - | - |
| 12.1.3. Network Security Requirements | | | | | | | - | - | - | - |
| 12.1.4. System Security Requirements | | | | | | | - | - | - | - |
| 12.1.5. Network Administration | | | | | | | - | - | - | - |
| 12.1.6. Windows OS Administration | | | | | | | - | - | - | - |
| 121.7. Database Administration | | | | | | | - | - | - | - |
| 12.1.8. Digital Imaging Communications in Medicine (DICOM) | | | | | | | - | - | - | - |
| 12.1.9. HL7 | | | | | | | - | - | - | - |
| 12.1.10. IHE | | | | | | | - | - | - | - |
| 12.2. System Tasks | | | | | | | | | | |
| 12.2.1. Maintain System | | | | | | | - | - | - | - |
| 12.2.2. Perform Contingency Procedures | | | | | | | - | - | - | - |
| 12.2.3. Configure Security Protocol | | | | | | | - | - | - | - |
| **13. ROUTINE IMAGING**<br>**TR**: Bontragers & Merrils | | | | | | | | | | |
| 13.1. Produce images of the: | | | | | | | | | | |
| 13.1.1. Upper extremities | * | | | | | | 2b | 3c | - | - |
| 13.1.2. Shoulder girdle | * | | | | | | 2b | 3c | - | - |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 13.1.3. Lower extremities | * | | | | | | 2b | 3c | - | - |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1** | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| 13.1.4. Pelvic girdle | * | | | | | | 2b | 3c | - | - |
| 13.1.5. Chest | * | | | | | | 2b | 3c | - | - |
| 13.1.6. Abdomen | * | | | | | | 2b | 3c | - | - |
| 13.1.7. Vertebral column | * | | | | | | 2b | 3c | - | - |
| 13.1.8. Ribs | | | | | | | 2b | 3c | - | - |
| 13.1.9. Sternum | | | | | | | b | - | - | - |
| 13.1.10. Skull | | | | | | | 1b | 2b | - | - |
| 13.1.11. Sinuses | | | | | | | 1b | 2b | - | - |
| 13.1.12. Facial bones | | | | | | | 1b | 2b | - | - |
| 13.1.13. Mastoids and petrous pyramids | | | | | | | - | - | - | - |
| **14. SPECIAL IMAGING**<br>**TR**: Bontragers & Merrils | | | | | | | | | | |
| 14.1. Perform: | | | | | | | | | | |
| 14.1.1. Alimentary tract Procedures (Phase II must sign-off on UGI or Contrast Enema) | | | | | | | 1b | 2b | - | - |
| 14.1.2. Biliary tract Procedures | | | | | | | - | - | - | - |
| 14.1.3. Genitourinary tract Procedures | | | | | | | 2b | - | - | - |
| 14.1.4. Arthrogram Procedures | | | | | | | a | 2b | - | - |
| 14.1.5. Scanography Procedures | | | | | | | - | - | - | - |
| 14.1.6. Mobile Fluoroscopy Procedures<br>**TR**: Local Operator's Manual | | | | | | | 1b | 3c | - | - |
| 14.2. Myelography Procedures | | | | | | | a | - | - | - |
| 14.3. Bone Densitometry Procedures | | | | | | | - | a | - | - |

# Attachment 3
# Computed Tomography, 478 SEI

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1** | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| **15. COMPUTED TOMOGRAPHY (SEI 478) TR**: Kelly, Merrill's & Seeram | | | | | | | | | | |
| 15.1. Safety | | | | | | | | | | |
| 15.1.1. Radiation | * | | | | | | A | B | - | - |
| 15.1.2. Mechanical | * | | | | | | - | B | - | - |
| 15.1.3. Laser | * | | | | | | - | B | - | - |
| 15.2. CT Physics | | | | | | | | | | |
| 15.2.1. Image formation | | | | | | | A | B | - | - |
| 15.2.2. Data acquisition | | | | | | | A | B | - | - |
| 15.2.3. Attenuation Coefficient | | | | | | | A | B | - | - |
| 15.2.4. Data processing | | | | | | | A | B | - | - |
| 15.3. CT Components | | | | | | | A | B | - | - |
| 15.4. CT Cross-Sectional Anatomy | | | | | | | | | | |
| 15.4.1. Head | * | | | | | | A | B | - | - |
| 15.4.2. Neck | * | | | | | | A | B | - | - |
| 15.4.3. Chest | * | | | | | | A | B | - | - |
| 15.4.4. Abdomen | * | | | | | | A | B | - | - |
| 15.4.5. Pelvis | * | | | | | | A | B | - | - |
| 15.4.6. Spine | | | | | | | A | B | - | - |
| 15.4.7. Extremities | | | | | | | - | - | - | - |
| 15.4.8. Vascular | | | | | | | - | - | - | |
| 15.5. Pathology | | | | | | | - | A | - | - |
| 15.6. Scanner operation | | | | | | | | | | |
| 15.6.1. Start CT unit | * | | | | | | - | 2b | - | - |
| 15.6.2. Shutdown CT unit | * | | | | | | - | 2b | - | - |
| 15.6.3. Perform Emergency shutdown | * | | | | | | - | b | - | - |
| 15.6.4. Perform Tube warm-up | * | | | | | | - | 2b | - | - |
| 15.6.5. Calibrate CT unit | * | | | | | | - | - | - | - |
| 15.6.6. Transmit CT images | * | | | | | | - | 2b | - | - |
| 15.6.7. Perform CT quality assurance tests | * | | | | | | - | 1a | - | - |
| 15.6.8. Operate power injector | * | | | | | | - | 2b | - | - |
| 15.7. Obtain images of the: | | | | | | | | | | |
| 15.7.1. Head | * | | | | | | - | 2b | - | - |
| 15.7.2. Paranasal sinuses | | | | | | | - | - | - | - |
| 15.7.3. Orbits | | | | | | | - | - | - | - |
| 15.7.4. Facial bones | | | | | | | - | - | | |
| 15.7.4. Temporal bone | | | | | | | - | - | - | - |
| 15.7.5. IAC | | | | | | | - | - | - | - |
| 15.7.6. Neck | | | | | | | - | 2b | - | - |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1** | | A | B | C | D | E | A<br>3- Skill Level | | B<br>5-Skill Level | C<br>7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| 15.7.7 C-spine | * | | | | | | - | 2b | - | - |
| 15.7.8 T-spine | | | | | | | - | - | - | - |
| 15.7.9. L/S-spine | | | | | | | - | - | - | - |
| 15.7.10. Abdomen | * | | | | | | - | 2b | - | - |
| 15.7.11. Kidneys | | | | | | | - | - | - | - |
| 15.7.12. Adrenals | | | | | | | - | - | - | - |
| 15.7.13. Spleen | | | | | | | - | - | - | - |
| 15.7.14. Pancreas | | | | | | | - | - | - | - |
| 15.7.15. Pelvis | * | | | | | | - | 2b | - | - |
| 15.7.16. S-I joints | | | | | | | - | - | - | - |
| 15.7.17. Chest | * | | | | | | - | 2b | - | - |
| 15.7.18. Aorta | | | | | | | - | - | - | - |
| 15.7.19. Upper extremity | | | | | | | - | - | - | - |
| 15.7.20. Lower extremity | | | | | | | - | - | - | - |
| 15.7.21. Calcium scoring | | | | | | | - | - | - | - |
| 15..8. Assist radiologist with procedure | | | | | | | - | - | - | - |
| 15.9. General imaging parameters | | | | | | | | | | |
| 15.9.1. Adjust windows/levels | | | | | | | - | 2b | - | - |
| 15.9.2. Set field of view | | | | | | | - | 2b | - | - |
| 15.9.3. Obtain part measurements | | | | | | | - | - | - | - |
| 15.9.4. Obtain region of interest | | | | | | | - | - | - | - |
| 15.10. Reconstruct image | * | | | | | | - | 1a | - | - |
| 15.11. Reformat image | * | | | | | | - | 1a | - | - |
| 15.12. Contrast studies | | | | | | | | | | |
| 15.12.1. Adjust injection rates | * | | | | | | - | - | - | - |
| 15.12.2. Perform multiphasic examination | | | | | | | - | - | - | - |
| 15.12.3. Perform head with contrast | | | | | | | - | - | - | - |
| 15.12.4. Perform neck with contrast | | | | | | | - | - | - | - |
| 15.12.5. Perform chest with contrast | * | | | | | | - | - | - | - |
| 15.12.6. Perform abdomen/pelvis with contrast | * | | | | | | - | - | - | - |
| 15.12.7. Perform extremities with contrast | | | | | | | - | - | - | - |
| 15.13. Special considerations for pediatrics | | | | | | | - | - | - | - |

# Attachment 4
# Interventional Radiography, 479 SEI

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1** | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| **16. INTERVENTIONAL RADIOGRAPHY (IR) (SEI 479)**<br>**TR**: Merrills | | | | | | | | | | |
| 16.1. Operate angiography equipment | | | | | | | | | | |
| 16.1.1. Image capturing | | | | | | | - | - | - | - |
| 16.1.2. Manipulate single/biplane | | | | | | | - | - | - | - |
| 16.1.3. 3D/axial rotation | | | | | | | - | - | - | - |
| 16.1.4. Ultrasound guidance equipment | | | | | | | - | - | - | - |
| 16.1.5. Thrombosis equipment | | | | | | | - | - | - | - |
| 16.1.6. Ablation equipment | | | | | | | - | - | - | - |
| 16.2. Procedure preparation/operation | | | | | | | | | | |
| 16.2.1. Procedure table | | | | | | | - | - | - | - |
| 16.2.2. Embolics table | | | | | | | - | - | - | - |
| 16.2.3. Prepare entry site/sterile field | | | | | | | - | - | - | - |
| 16.2.4. Perform backtable responsibilities | | | | | | | - | - | - | - |
| 16.2.5. Perform room circulation | | | | | | | - | - | - | - |
| 16.2.6. Perform scrub technician | | | | | | | - | - | - | - |
| 16.2.7 Prepare procedural medication | | | | | | | - | - | - | - |
| 16.3. Patient Care | | | | | | | | | | |
| 16.3.1. Apply dressing | | | | | | | - | - | - | - |
| 16.3.2. Closure techniques/devices | | | | | | | - | - | - | - |
| 16.3.3. Intravascular infusion pump | | | | | | | - | - | - | - |
| 16.4. Cardiovascular anatomy | | | | | | | | | | |
| 16.4.1. Extremities | | | | | | | - | - | - | - |
| 16.4.2. Head/neck | | | | | | | - | - | - | - |
| 16.4.3. Chest/abdomen/pelvis | | | | | | | - | - | - | - |
| 16.5. Procedural familiarization | | | | | | | | | | |
| 16.5.1. Biopsy | | | | | | | - | - | - | - |
| 16.5.2. Embolization | | | | | | | - | - | - | - |
| 16.5.3. Vertebroplasty/kyphoplasty | | | | | | | - | - | - | - |
| 16.5.4. Ablation | | | | | | | - | - | - | - |
| 16.5.5 Drain/tube placement | | | | | | | - | - | - | - |
| 16.5.6 Hemorrhage intervention | | | | | | | - | - | - | - |
| 16.5.7 Central line placement | | | | | | | - | - | - | - |
| 16.5.8 Thrombosis | | | | | | | - | - | - | - |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 16.5.9 Portacath placement | | | | | | | - | - | - | - |
| 16.6. Product Familiarization | | | | | | | | | | |
| 16.6.1. Needles | | | | | | | - | - | - | - |
| 16.6.2. Guidelines | | | | | | | - | - | - | - |
| 16.6.3. Catheters | | | | | | | - | - | - | - |
| 16.6.4. Embolization materials | | | | | | | - | - | - | - |

# Attachment 5
# Mammography, (460 SEI)

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Training Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1** | | A | B | C | D | E | A 3-Skill level | B 5-Skill Level | C 7 - Skill level | D AZO Mammo Course |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | | | | |
| **17. MAMMOGRAPHY (SEI 460) TR**: Merrill's MQSA Hologic | | | | | | | | | | Mammo |
| 17.1. Routine mammography | | | | | | | | | | |
| 17.1.1. Obtain craniocaudad (CC) images | | | | | | | - | - | - | 3c |
| 17.1.2. Obtain mediolateral oblique (MLO) images | | | | | | | - | - | - | 3c |
| 17.2. Additional procedures | | | | | | | | | | |
| 17.2.1. Perform spot compression images | | | | | | | - | - | - | c |
| 17.2.2. Perform magnification images | | | | | | | - | - | - | c |
| 17.2.3. Perform exaggerated craniocaudad images | | | | | | | - | - | - | b |
| 17.2.4. Perform cleavage images | | | | | | | - | - | - | b |
| 17.2.5. Perform axillary tail images | | | | | | | - | - | - | c |
| 17.2.6. Perform tangential images | | | | | | | - | - | - | b |
| 17.2.7. Perform rolled view | | | | | | | - | - | - | b |
| 17.2.8. Perform augmented breast (implants) images | | | | | | | - | - | - | b |
| 17.2.9. Perform 90-degree lateral images | | | | | | | - | - | - | b |
| 17.2.10. Perform lateromedial (LM) images | | | | | | | - | - | - | b |
| 17.2.11. Perform lateral medial oblique (LMO) images | | | | | | | - | - | - | b |
| 17.2.12. Perform caudocranial (reverse CC) images | | | | | | | - | - | - | b |
| 17.2.13. Perform superolateral to inferomedial oblique images | | | | | | | - | - | - | b |
| 17.2.14. Perform post-mastectomy images | | | | | | | - | - | - | b |
| 17.2.15. Perform Breast Tomosynthesis | | | | | | | - | - | - | a |
| 17.2.16. Provide breast MRI assistance | | | | | | | - | - | - | a |
| 17.3. Special procedures | | | | | | | | | | |
| 17.3.1.. Provide stereotactic biopsy assistance | | | | | | | - | - | - | a |
| 17.3.2. Provide needle localization assistance | | | | | | | - | - | - | a |
| 17.3.3. Perform aseptic techniques/sterile procedures | | | | | | | - | - | - | a |
| 17.3.4. Provide breast sonography assistance | | | | | | | - | - | - | a |
| 17.4. Accreditation Standards | | | | | | | | | | |
| 17.4.1. ACR | | | | | | | - | - | - | B |
| 17.4.2. MQSA | | | | | | | - | - | - | B |
| 17.4.3. Operate Medical Reporting System (MRS) | | | | | | | - | - | - | 2b |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Training Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1** | | A | B | C | D | E | A 3-Skill level | B 5-Skill Level | C 7-Skill level | D AZO Mammo Course |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | | | | |
| 17.5 Perform Tests | | | | | | | | | | |
| 17.5.1. Compression Test 2D/3D | | | | | | | - | - | - | 3c |
| 17.5.2. Phantom test 2D/3D | | | | | | | - | - | - | 3c |
| 17.5.3. Viewboxes | | | | | | | - | - | - | b |
| 17.5.4. Sensitometry test | | | | | | | - | - | - | 3c |
| 17.5.5. Detector (flat field) 2D/3D | | | | | | | - | - | - | 3c |
| 17.5.6. Signal to noise ratio (SNR) 2D/3D | | | | | | | - | - | - | 3c |
| 17.5.7. Contrast to noise ratio (CNR) 2D/3D | | | | | | | - | - | - | 3c |
| 17.5.8. Modulation transfer function (MTF) | | | | | | | - | - | - | b |
| 17.5.9. Conduct repeat analysis | | | | | | | - | - | - | b |
| 17.5.10. Visual checklist (mammography unit) | | | | | | | - | - | - | b |
| 17.5.11. Inspect image receptors | | | | | | | - | - | - | b |
| 17.5.12. Test laser film printer | | | | | | | - | - | - | b |
| 17.5.13. Clean monitor | | | | | | | - | - | - | b |
| 17.5.14. Breast Anatomy and physiology | | | | | | | - | - | - | B |
| 17.5.15. Breast Pathology | | | | | | | - | - | - | B |
| 17.5.16. Breast cancer Risk factors | | | | | | | - | - | - | B |
| 17.5.17. Benefits of Mammography | | | | | | | - | - | - | B |
| 17.5.18. Image artifacts | | | | | | | - | - | - | C |
| 17.5.19. Computer-Aided Detection (CAD) | | | | | | | - | - | - | A |
| 17.5.20. Gain Calibration 2D/3D | | | | | | | - | - | - | 3c |
| 17.5.21. Artifact Eval 2D/3D | | | | | | | - | - | - | 3c |
| 17.5.22. Geometric Calibration 3D | | | | | | | - | - | - | b |

# Attachment 6
# Nuclear Medicine, A Shred

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1A** | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| **18. NUCLEAR MEDICINE (A-shred)** **TR**: Nuclear Medicine Technology and Techniques (Current Ed); Introductory Physics of Nuclear Medicine (Current Ed); Principles and Practices of Nuclear Medicine (Current Ed); Essentials of Nuclear Medicine Imaging (Current Ed); Practical Nuclear Medicine (Current Ed); Review of Nuclear Medicine Technology (Current Ed); Principles of A&P (Current Ed) | | | | | | | | | | |
| 18.1. Bone scan imaging | | | | | | | | | | |
| 18.1.1. Obtain three phase images | * | | | | | | b | 3c | - | - |
| 18.1.2. Obtain whole body planar images | * | | | | | | b | 3c | - | - |
| 18.2. Endocrine imaging | | | | | | | | | | |
| 18.2.1. Obtain thyroid images | * | | | | | | b | 3c | - | - |
| 18.2.2. Assess thyroid uptake | * | | | | | | b | 3c | - | - |
| 18.2.3. Obtain metastatic thyroid images | | | | | | | b | 2b | - | - |
| 18.2.4. Obtain parathyroid images | | | | | | | b | 2b | - | - |
| 18.2.5. Obtain adrenal images | | | | | | | b | 1b | - | - |
| 18.3. Central nervous system Imaging | | | | | | | | | | |
| 18.3.1. Obtain planar brain scan images | | | | | | | a | 1a | - | - |
| 18.3.2. Obtain brain flow images | | | | | | | a | 1a | - | - |
| 18.3.3. Obtain brain death images | | | | | | | a | 1a | - | - |
| 18.3.4. Evaluate shunts | | | | | | | a | 1a | - | - |
| 18.3.5. Obtain cerebral spinal fluid (CSF) cisternography images | | | | | | | a | 1a | - | - |
| 18.4. Pulmonary imaging | | | | | | | | | | |
| 18.4.1. Obtain perfusion images | * | | | | | | b | 3c | - | - |
| 18.4.2. Obtain ventilation or Aerosol images | * | | | | | | b | 3c | - | - |
| 18.4.3. Obtain quantitative (split lung) images | | | | | | | b | 2b | - | - |
| 18.5. Gastrointestinal and hepatobiliary imaging | | | | | | | | | | |
| 18.5.1. Obtain liver images | * | | | | | | b | 3c | - | - |
| 18.5.2. Obtain spleen images | * | | | | | | b | 3c | - | - |
| 18.5.3. Assess hepatobiliary function | * | | | | | | b | 3c | - | - |
| 18.5.4. Gastroesophageal imaging | | | | | | | | | | |
| 18.5.4.1. Assess gastric emptying | * | | | | | | b | 3c | - | - |
| 18.5.4.2. Evaluate esophageal transit | | | | | | | a | b | - | - |
| 18.5.4.3. Evaluate gastroesophageal reflux | | | | | | | a | b | - | - |
| 18.5.5. Obtain GI bleed images | * | | | | | | b | 3c | - | - |
| 18.5.6. Detect Meckel's diverticulum | | | | | | | a | 2b | - | - |
| 18.6. Tumor and infection imaging | | | | | | | | | | |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1A** | | A | B | C | D | E | A 3- Skill Level | | B 5- Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| 18.6.1. Obtain Gallium-67 images | * | | | | | | a | 3c | - | - |
| 18.6.2. Obtain Iodine-131 MIBG images | | | | | | | a | 1a | - | - |
| 18.6.3. Obtain Indium-111 Monoclonal antibodies;white blood cells (MABS) images | | | | | | | a | 3c | - | - |
| 18.6.4. Obtain Indium-111 WBC images | * | | | | | | a | 3c | | |
| 18.6.5. Obtain breast images | | | | | | | a | 1a | - | - |
| 18.6.6. Obtain lymphoscintigraphic images | | | | | | | a | 2b | - | - |
| 18.6.7. Obtain sentinel node images | | | | | | | a | 3b | - | - |
| 18.7. Renal and Genitourinary imaging | | | | | | | | | | |
| 18.7.1. Renal imaging | | | | | | | a | 3c | - | - |
| 18.7.1.1. Assess renogram | * | | | | | | b | 3c | - | - |
| 18.7.1.2. Compute glomerular filtration rate | | | | | | | b | 1b | - | - |
| 18.7.1.3. Compute effective renal plasma flow rate | | | | | | | b | 3b | - | - |
| 18.7.1.4. Obtain diuretic interventional renographic images | | | | | | | b | 3c | - | - |
| 18.7.1.5. Obtain ACE-inhibitor interventional renographic images | | | | | | | b | 1b | - | - |
| 18.7.1.6. Obtain dynamic perfusion images | * | | | | | | b | 3c | - | - |
| 18.7.1.7. Evaluate transplant function | | | | | | | a | 2b | - | - |
| 18.7.1.8. Obtain renal cortical images | * | | | | | | b | 3c | - | - |
| 18.7.2. Obtain voiding cystourethrogram images | | | | | | | a | 1b | - | - |
| 18.7.3. Obtain testicular images | | | | | | | a | - | - | - |
| 18.8. Planar cardiac imaging | | | | | | | | | | |
| 18.8.1. Obtain myocardial perfusion images | * | | | | | | b | 3c | - | - |
| 18.8.2. Obtain infarct avid images | | | | | | | a | 1b | - | - |
| 18.8.3. Gated blood pool imaging | | | | | | | | | | |
| 18.8.3.1. Acquire resting multiple gated images | * | | | | | | b | 3c | - | - |
| 18.8.3.2. Acquire stress multiple gated images | | | | | | | a | 3c | - | - |
| 18.8.3.3. Compute ejection fraction | * | | | | | | b | 3c | - | - |
| 18.8.4. Radionuclide ventriculography | | | | | | | | | | |
| 18.8.4.1. explain first-pass study | | | | | | | a | b | - | - |
| 18.8.4.2. Detect left-to-right shunting | | | | | | | a | b | - | - |
| 18.8.4.3. Detect right-to-left shunting | | | | | | | a | b | - | - |
| 18.9. Single photon emission computed tomography (SPECT) procedures<br>**TR**: SPECT, Single Photon Computed Tomography, a Primer | | | | | | | | | | |
| 18.9.1. Obtain cardiac images | * | | | | | | b | 3c | - | - |
| 18.9.2. Obtain gated myocardial perfusion images | * | | | | | | b | 3c | - | - |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1A** | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| 18.9.3. Administer pharmacologic cardiac stress test | | | | | | | b | 3c | - | - |
| 18.9.4. Obtain bone images | * | | | | | | b | 3c | - | - |
| 18.9.5. Obtain abdomen images | | | | | | | a | 2b | - | - |
| 18.9.6. Obtain thoracic images | | | | | | | a | 2b | - | - |
| 18.9.7. Obtain brain images | | | | | | | a | 2b | - | - |
| 18.9.8. Obtain liver and spleen images | | | | | | | a | 2b | - | - |
| 18.10. Other imaging methods | | | | | | | | | | |
| 18.10.1. Obtain positron emission tomography (PET) images | | | | | | | a | 2b | - | - |
| 18.10.2. Obtain PET/CT images | | | | | | | a | 2b | - | - |
| 18.10.3. Obtain SPECT/CT images | | | | | | | a | - | - | - |
| 18.10.4. Obtain MRI fusion images | | | | | | | a | - | - | - |
| 18.11. Non-imaging nuclear laboratory procedures | | | | | | | | | | |
| 18.11.1. Conduct Schilling's test | | | | | | | a | - | - | - |
| 18.11.2. Perform therapy procedures | | | | | | | | | | |
| 18.11.2.1. Administer Phosphorus-32 therapy | | | | | | | a | - | - | - |
| 18.11.2.2. Administer Strontium-89 palliative therapy | | | | | | | a | - | - | - |
| 18.11.2.3. Administer Iodine-131 hypothyroidism therapy | | | | | | | | | | |
| 18.11.2.3.1. Instruct patients | | | | | | | b | 3c | - | - |
| 18.11.2.3.2. Instruct staff | | | | | | | b | 3c | - | - |
| 18.11.2.4. Administer Iodine 131 ablative therapy | | | | | | | | | | |
| 18.11.2.4.1. Prepare room | | | | | | | a | 2b | - | - |
| 18.11.2.4.2. Instruct patients | | | | | | | a | 2b | - | - |
| 18.11.2.4.3. Instruct staff | | | | | | | a | 2b | - | - |
| 18.11.2.4.4. Assess patient release levels | | | | | | | a | 2b | - | - |
| 18.11.2.4.5. Decontaminate room | | | | | | | a | 2b | - | - |
| 18.11.3. Radiopharmacy procedures<br>**TR**: Fundamentals of Nuclear | | | | | | | | | | |
| 18.11.3.1. Apply radiopharmaceutical safety techniques | * | | | | | | 2b | 3c | - | - |
| 18.11.3.2. Radionuclide generator | | | | | | | | | | |
| 18.11.3.2.1. Operate radionuclide generator | | | | | | | 2b | 3c | - | - |
| 18.11.3.2.2. Shield radionuclide generator | | | | | | | 2b | 3c | - | - |
| 18.11.3.2.3. Apply elution technique | | | | | | | 2b | 3c | - | - |
| 18.11.3.2.4. Extract radiation from wet-dry column | | | | | | | 2b | 3c | - | - |
| 18.11.3.2.5. Conduct molybdenum assay | | | | | | | 2b | 3c | - | - |
| 18.11.3.2.6. Conduct aluminum ion testing | | | | | | | 2b | 3c | - | - |
| 18.11.3.3. Prepare radiopharmaceutical kit | | | | | | | | | | |
| 18.11.3.3.1. Apply aseptic technique | * | | | | | | b | 3c | - | - |
| 18.11.3.3.2. Maintain quality control | * | | | | | | b | 3c | - | - |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1A** | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| 18.11.3.4. Operate dose calibrator | * | | | | | | b | 3c | - | - |
| 18.11.3.5. Radiopharmaceutical handling | | | | | | | | | | |
| 18.11.3.5.1. Handle radiopharmaceuticals | * | | | | | | b | 3c | - | - |
| 18.11.3.5.2. Radiopharmaceutical receipt methods | | | | | | | | | | |
| 18.11.3.5.2 .1. Inspect package | * | | | | | | b | 3c | - | - |
| 18.11.3.5.2 .2. Monitor package | * | | | | | | b | 3c | - | - |
| 18.11.3.5.2 .3. Maintain receipt logs | * | | | | | | b | 3c | - | - |
| 18.11.3.6. Radiopharmaceutical storage and disposal | | | | | | | | | | |
| 18.11.3.6.1. Monitor decay in storage | * | | | | | | b | 3c | - | - |
| 18.11.3.6.2. Package radiopharmaceuticals | * | | | | | | b | 3c | - | - |
| 18.11.3.6.3. Survey disposed radiopharmaceuticals | * | | | | | | b | 3c | - | - |
| 18.11.3.6.4. Dispose radiopharmaceuticals | | | | | | | b | 3c | - | - |
| 18.11.3.6.5. Transfer radiopharmaceuticals | | | | | | | b | 2b | - | - |
| 18.11.3.7. Radiopharmaceutical safety | | | | | | | | | | |
| 18.11.3.7.1. Operate survey instruments | * | | | | | | b | 3c | - | - |
| 18.11.3.7.2. Conduct swipe test analysis | * | | | | | | b | 3c | - | - |
| 18.11.3.7.3. Use syringe shields | * | | | | | | b | 3c | - | - |
| 18.11.3.7.4. Label radiopharmaceuticals | * | | | | | | b | 3c | - | - |
| 18.11.3.8. Inject radiopharmaceuticals | * | | | | | | b | 3c | - | - |
| 18.11.3.9. Blood cell labeling techniques | | | | | | | | | | |
| 18.11.3.9.1. Prepare in vivo labeling | * | | | | | | a | 2b | - | - |
| 18.11.3.9.2. Prepare modified in vitro labeling | | | | | | | a | 1b | - | - |
| 18.11.3.9.3. Prepare in vitro labeling | * | | | | | | a | 3c | | |
| 18.11.3.10. Prepare WBC labeling | | | | | | | a | - | - | - |
| 18.11.3.11. Secure lab | * | | | | | | b | 3c | - | - |
| 18.11.3.12. Compute staff bioassay | * | | | | | | b | 3c | - | - |
| 18.11.3.13. Radiopharmaceutical dose calculations | | | | | | | | | | |
| 18.11.3.13.1. Calculate adult dose | * | | | | | | 2b | 3c | - | - |
| 18.11.3.13.2. Calculate pediatric dose | * | | | | | | 2b | 3c | - | - |
| 18.12. Nuclear medicine safety | | | | | | | | | | |
| 18.12.1. Prepare a personnel dosimetry program | | | | | | | a | - | - | - |
| 18.12.2. Radioactive material authorizations | | | | | | | | | | |
| 18.12.2.1. Renew material license | | | | | | | a | - | - | - |
| 18.12.2.2. Amend material license | | | | | | | a | - | - | - |
| 18.12.2.3. Renew material permit | | | | | | | a | - | - | - |
| 18.12.2.4. Amend material permit | | | | | | | a | - | - | - |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1A** | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| 18.12.3. Determine radioactive material shielding requirements | | | | | | | 2b | 3c | - | - |
| 18.12.4. Prepare radiation accident protocol | | | | | | | b | 1b | - | - |
| 18.12.5. Prepare misadministration protocol | | | | | | | b | 1b | - | - |
| 18.12.6. Post Nuclear Regulatory Commission (NRC) notices | | | | | | | b | 1b | - | - |
| 18.12.7. NRC compliance | | | | | | | | | | |
| 18.12.7.1. Code of Federal Regulations (CFR) Title 10, Part 19 | | | | | | | B | - | - | - |
| 18.12.7.2. CFR Title 10, Part 20 | | | | | | | B | - | - | - |
| 18.12.7.3. CFR Title 10, Part 35 | | | | | | | B | - | - | - |
| 18.12.8. Area survey procedures | | | | | | | | | | |
| 18.12.8.1. Conduct weekly swipe test | * | | | | | | b | 3c | - | - |
| 18.12.8.2. Conduct daily contamination survey | * | | | | | | b | 3c | - | - |
| 18.13.1. Uptake probe quality control | | | | | | | | | | |
| 18.13.1.1. Calibrate uptake probe | | | | | | | 2b | 3b | - | - |
| 18.13.1.2. Determine sensitivity | | | | | | | 2b | 3b | - | - |
| 18.13.1.3. Determine crystal resolution | | | | | | | 2b | 3b | - | - |
| 18.13.1.4. Compute chi-square results | | | | | | | 2b | 3b | - | - |
| 18.13.1.5. Assess linearity | | | | | | | 2b | 3b | - | - |
| 18.13.2.1. Gamma camera quality control | | | | | | | | | | |
| 18.13.2.1.1. Acquire intrinsic field data | * | | | | | | b | 3c | - | - |
| 18.13.2.1.2. Acquire extrinsic field data | * | | | | | | 1a | 3c | - | - |
| 18.13.2.2. Field artifacts | * | | | | | | A | - | - | - |
| 18.13.2.3. Determine sensitivity | * | | | | | | 1a | 3c | - | - |
| 18.13.2.4. Determine uniformity | * | | | | | | 1a | 3c | - | - |
| 18.13.2.5. Determine system resolution | | | | | | | a | 3c | - | - |
| 18.13.2.6. Detector | | | | | | | | | | |
| 18.13.2.6.1. Calibrate energy | | | | | | | a | 3c | - | - |
| 18.13.2.6.2. Calibrate linearity | | | | | | | a | 3c | - | - |
| 18.13.2.6.3. Calibrate isotope peak (multiple window) | * | | | | | | a | 3c | - | - |
| 18.13.2.7. SPECT | | | | | | | | | | |
| 18.13.2.7.1. Assess center of rotation | * | | | | | | a | 3c | - | - |
| 18.13.2.7.2. Determine resolution | | | | | | | a | 3c | - | - |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1A** | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| 18.13.3. Dose calibrator | | | | | | | | | | |
| 18.13.3.1. Assess constancy | * | | | | | | b | 3c | - | - |
| 18.13.3.2. Assess accuracy | * | | | | | | b | 3c | - | - |
| 18.13.3.3. Assess geometry | * | | | | | | b | 3c | - | - |
| 18.13.3.4. Assess linearity | * | | | | | | b | 3c | - | - |
| 18.14. Nuclear medicine computer applications | | | | | | | | | | |
| 18.14.1. Acquire static images | * | | | | | | a | 3c | - | - |
| 18.14.1.1. Acquire dynamic images | * | | | | | | a | 3c | - | - |
| 18.14.1.2. Acquire gated images | * | | | | | | a | 3c | - | - |
| 18.14.1.3. Acquire SPECT images | * | | | | | | a | 3c | - | - |
| 18.14.1.4. Acquire SPECT gated images | | | | | | | a | 3c | - | - |
| 18.14.2. Image processing | | | | | | | | | | |
| 18.14.2.1. Format image | * | | | | | | a | 3c | - | - |
| 18.14.2.2. Obtain filter parameters | * | | | | | | a | 3c | - | - |
| 18.14.2.3. Measure region of interest | * | | | | | | a | 3c | - | - |
| 18.14.2.4. Reconstruct SPECT image | * | | | | | | a | 3c | - | - |
| 18.14.2.5. Correct attenuation | * | | | | | | a | 3c | - | - |
| 18.15. Nuclear Medicine Patient care **TR**: Patient Care in Radiography (Current Ed) | | | | | | | | | | |
| 18.15.2. Patient safety | | | | | | | A | B | - | - |
| 18.15.3. Monitor vital signs | * | | | | | | 2b | 3c | - | - |
| 18.15.4 Demonstrate lifting techniques | * | | | | | | b | 2b | - | - |
| 18.15.5. Perform venipuncture | * | | | | | | 2b | 3c | - | - |
| 18.15.6. Employ IV precautions | * | | | | | | 2b | 3c | - | - |
| 18.15.7. Monitor patients | | | | | | | b | c | - | - |
| 18.16. Operate patient emergency equipment (crash cart) | | | | | | | b | 2b | - | - |
| 18.17. Medication administration | | | | | | | | | | |
| 18.17.1. Administer oral medications: Captopril (e.g., Capoten) | | | | | | | a | - | - | - |
| 18.17.2. Administer intramuscular medications: B-12 | | | | | | | a | - | - | - |
| 18.17.3. Intravenous medications | | | | | | | | | | |
| 18.17.3.1. Administer adenosine | | | | | | | b | 3c | - | - |
| 18.17.3.2. Administer furosemide (e.g., Lasix) | | | | | | | b | 3c | - | - |
| 18.20.3.3. Administer cholecystokinin (e.g., CCK) | | | | | | | b | 3c | - | - |
| 18.17.3.4. Administer enalapril maleate (e.g., Vasotec) | | | | | | | a | - | - | - |
| 18.17.3.5. Administer regadenoson (e.g. Lexiscan) | | | | | | | b | 3c | - | - |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1A** | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| 18.17.3.6. Document medication administration | * | | | | | | b | 3c | - | - |
| 18.18. Applied Technical Mathematics | | | | | | | | | | |
| 18.18.1. Solve algebraic equations | | | | | | | 2b | 3b | - | - |
| 18.18.2. Solve mathematical problems using radicals/exponents | | | | | | | 2b | 3b | - | - |
| 18.18.3. Solve mathematical problems using logarithms | | | | | | | 2b | 3b | - | - |
| 18.18.4. Construct a linear and exponential graph to determine the physical half-life of a radionuclide | | | | | | | 2b | 3b | - | - |
| 18.18.5. Utilize decay formula | | | | | | | 2b | 3b | - | - |
| 18.18.6. Calculate/Process statistical data from imaging procedures | | | | | | | 2b | 3b | - | - |
| 18.19. Applied Nuclear Physics | | | | | | | | | | |
| 18.19.1. Solve mass-energy conversions | | | | | | | 2b | 3b | - | - |
| 18.19.2. Utilize decay formula | | | | | | | 2b | 3b | - | - |
| 18.19.3. Solve for the decay scheme for any radionuclide to stability | | | | | | | 2b | 3b | - | - |
| 18.19.4. Calculate the energy values for given particulate and electromagnetic radiation | | | | | | | 2b | 3b | - | - |
| 18.20. Applied Technical Chemistry | | | | | | | | | | |
| 18.20.1. Solve conversions among basic systems of measurement | | | | | | | 2b | 3b | - | - |
| 18.20.2. Configure the electron configuration of elements reflecting the change in valence states | | | | | | | 2b | 3b | - | - |
| 18.20.3. Solve conversions among molecules, atoms, or grams of a substance | | | | | | | 2b | 3b | - | - |
| 18.20.4. Formulate inorganic compounds and their chemical formulas | | | | | | | 2b | 3b | - | - |

# Attachment 7
# Diagnostic Medical Sonography, B Shred

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1B** | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| **19. DIAGNOSTIC MEDICAL SONOGRAPHY (B-shred)**<br>**TR**: Understanding Ultrasound Physics; Textbook of Diagnostic Sonography, Vol 1 & 2 (Current Ed) | | | | | | | | | | |
| 19.1. Principles of diagnostic ultrasound<br>**TR**: Understanding Ultrasound Physics | | | | | | | | | | |
| 19.1.1. Practical physics | | | | | | | B | - | - | - |
| 19..1.2. Instrumentation | | | | | | | B | - | - | - |
| 19.1.3. Artifacts | | | | | | | B | - | - | - |
| 19.1.4. Safety | | | | | | | B | - | - | - |
| 19.1.5. Doppler physics | | | | | | | B | - | - | - |
| 19.1.6. Vascular physics | | | | | | | B | - | - | - |
| 19.1.7. 3D/4D Physics | | | | | | | A | - | - | - |
| 19.1.8. Ethics<br>**TR**: 1999-2012 Society of Diagnostic Medical Sonography | | | | | | | B | - | - | - |
| 19.2. Basic operating procedures | | | | | | | | | | |
| 19.2.1. Adjust sonographic instrumentation | * | | | | | | 2b | 3c | - | - |
| 19.2.2. Adjust image display | * | | | | | | 2b | 3c | - | - |
| 19.2.3. Record ultrasound image | * | | | | | | 2b | 3c | - | - |
| 19.2.4. Prep patient | * | | | | | | 2b | 3c | - | - |
| 19.2.5. Apply ergonomics | | | | | | | 2b | 3c | - | - |
| 19.2.6. Perform 3D/4D Imaging | | | | | | | 1a | - | - | - |
| 19.2.7. Conduct equipment quality control | | | | | | | a | - | - | - |
| 19.2.8. Employ transducer cleaning techniques | | | | | | | b | 3c | - | - |
| 19.2.9. Interact with Patient | | | | | | | 1a | 2b | - | - |
| 19.3. Sonographic anatomy and physiology<br>**TR**: Ultrasonography: An Introduction to Normal Structure and Functional Anatomy | | | | | | | | | | |
| 19.3.1. Abdomen | | | | | | | B | - | - | - |
| 19.3.2. Pelvis | | | | | | | B | - | - | - |
| 19.3.3. Extremities | | | | | | | - | - | - | - |
| 19.3.4. Testicular | | | | | | | B | - | - | - |
| 19.3.5. Breast | | | | | | | B | - | - | - |
| 19.3.6. Thyroid | | | | | | | B | - | - | - |
| 19.3.7. Vascular | | | | | | | A | - | - | - |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| **STS 4R0X1B** | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| 19.3.8. Obstetrics | | | | | | | B | - | - | - |
| 19.4. Pediatric | | | | | | | | | | |
| 19.4.1. Neonatal brain | | | | | | | A | - | - | - |
| 19.4.2. Spine | | | | | | | - | - | - | - |
| 19.4.3. Hips | | | | | | | - | - | - | - |
| 19.5. Sonography imaging<br>**TR**: Textbook of Diagnostic Sonography, Vol 1 & 2 | | | | | | | | | | |
| 19.5.1. Obtain aorta images | * | | | | | | 2b | 3c | - | - |
| 19.5.2. Obtain liver images | * | | | | | | 2b | 3c | - | - |
| 19.5.3. Obtain gallbladder and biliary images | * | | | | | | 2b | 3c | - | - |
| 19.5.4. Obtain pancreas images | * | | | | | | 2b | 3c | - | - |
| 19.5.5. Obtain urinary system images | * | | | | | | 2b | 3c | - | - |
| 19.5.6. Obtain spleen images | * | | | | | | 2b | 3c | - | - |
| 19.5.7. Obtain abdominal Doppler data | | | | | | | a | - | - | - |
| 19.5.8. Obtain gastrointestinal (GI) tract images | | | | | | | a | - | - | - |
| 19.6. Pelvis | | | | | | | | | | |
| 19.6.1. Obtain transabdominal images | * | | | | | | 2b | 3c | - | - |
| 19.6.2. Obtain endovaginal images | * | | | | | | 2b | 3c | - | - |
| 19.7. Obstetrical | | | | | | | | | | |
| 19.7.1. Obtain first trimester images | * | | | | | | 2a | 2b | - | - |
| 19.7.2. Obtain second and third trimester images | | | | | | | 1b | 2b | - | - |
| 19.8. Peripheral vascular | | | | | | | | | | |
| 19.8.1. Obtain upper extremity vascular images | | | | | | | 1a | 1b | - | - |
| 19.8.2. Obtain lower extremity vascular images | * | | | | | | 2b | 3c | - | - |
| 19.8.3. Obtain carotid artery images | | | | | | | 2b | 3c | - | - |
| 19.8.4. Obtain thyroid images | * | | | | | | 2b | 3c | - | - |
| 19.8.5. Obtain testicular images | * | | | | | | 2b | 3c | - | - |
| 19.8.6. Obtain breast images | | | | | | | 1b | 2b | - | - |
| 19.8.7. Obtain superficial images | | | | | | | - | - | - | - |
| 19.8.9. Obtain musculoskeletal images (MSK) | | | | | | | - | - | - | - |
| 19.9. Transplant | | | | | | | | | | |
| 19.9.1. Obtain Renal transplant images | | | | | | | a | - | - | - |
| 19.9.2. Obtain liver transplant images | | | | | | | a | - | - | - |
| 19.9.3. Provide invasive procedure assistance | | | | | | | a | - | - | - |
| 19.10. Pediatrics | | | | | | | | | | |
| 19.10.1. Obtain neonatal head images | | | | | | | a | - | - | - |
| 19.10.2. Obtain neonatal spine images | | | | | | | - | - | - | - |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1B** | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| 19.10.3 Obtain neonatal hips | | | | | | | - | - | - | - |
| 19.11 Pathology<br>**TR**: Textbook of Diagnostic Ultrasonography, Vol 1 & 2 | | | | | | | | | | |
| 19.11.1. Abdomen | | | | | | | B | - | - | - |
| 19.11.2. Pelvis | | | | | | | B | - | - | - |
| 19.11.3. Extremities | | | | | | | B | - | - | - |
| 19.11.4. Testicular | | | | | | | B | - | - | - |
| 19.11.5. Breast | | | | | | | B | - | - | - |
| 19.11.6. Thyroid | | | | | | | B | - | - | - |
| 19.11.7. Vascular | | | | | | | B | - | - | - |
| 19.11.8. Obstetrics | | | | | | | B | - | - | - |
| 19.11.9. Neonatal head | | | | | | | A | - | - | - |
| 19.11.10. Musculoskeletal | | | | | | | A | - | - | - |
| 19.11.11. Superficial Structures | | | | | | | A | - | - | - |

# Attachment 8
# Magnetic Resonance Imaging, C Shred

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1C** | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| **20. MAGNETIC RESONANCE IMAGING (C-shred)**<br>**TR**:<br>**A.** Sectional Anatomy For Imaging Professionals (Current Ed)<br>**B.** MRI in Practice (Current Ed) | | | | | | | MRI Course | | | |
| 201.1. Safety in the magnetic resonance (MR) environment | | | | | | | | | | |
| 20.1.1. Contraindications for scanning | | | | | | | C | - | - | - |
| 20.1.2. Projectile Dangers | | | | | | | C | - | - | - |
| 20.1.3. Perform magnet quench | | | | | | | b | - | - | - |
| 20.1.4. Perform Emergency evacuation procedures | * | | | | | | 3c | - | - | - |
| 20.1.5. RF Irradiation | | | | | | | B | - | - | - |
| 20.1.6. MRI Zones | | | | | | | C | - | - | - |
| 20.2. Physics of magnetic resonance<br>**TR**: MRI in Practice | | | | | | | | | | |
| 20.2.1. Flip angles | | | | | | | B | - | - | - |
| 20.2.2. Time of inversion | | | | | | | B | - | - | - |
| 20.2.3. Matrices | | | | | | | B | - | - | - |
| 20.2.4. Signal averages | | | | | | | B | - | - | - |
| 20.2.5. Bandwidth | | | | | | | B | - | - | - |
| 20.2.6. Magnetism | | | | | | | B | - | - | - |
| 20.2.7. Free Induction Decay | | | | | | | B | - | - | - |
| 20.2.8. Resonance | | | | | | | B | - | - | - |
| 20.3. Image Weighting and Contrast TR: MRI in Practice | | | | | | | | | | |
| 20.3.1. Resolution | | | | | | | B | - | - | - |
| 20.3.2. T1 weighting | | | | | | | B | - | - | - |
| 20.3.3. T2 weighting | | | | | | | B | - | - | - |
| 20.3.4. Proton density weighting | | | | | | | B | - | - | - |
| 20.4. MR pulse sequences | | | | | | | | | | |
| 20.4.1. Spin echo | | | | | | | B | - | - | - |
| 20.4.2. Gradient echo | | | | | | | B | - | - | - |
| 20.4.3. Fast Spin Echo | | | | | | | B | - | - | - |
| 20.4.4. Echo Planer Imaging | | | | | | | B | - | - | - |
| 20.4.5. Inversion Recovery | | | | | | | B | - | - | - |
| 20.4.6. Diffusion Imaging | | | | | | | B | - | - | - |
| 20.4.7. Spectroscopy | | | | | | | A | - | - | - |
| 20.4.8. Cine | | | | | | | A | - | - | - |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1C** | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| 20.5. Adjusts Imaging Parameters | | | | | | | | | | |
| 20.5.1. Phase/Frequency direction | * | | | | | | 2b | - | - | - |
| 20.5.2. Echo Train Length | * | | | | | | 2b | - | - | - |
| 20.5.3. Time of Repetition | * | | | | | | 2b | - | - | - |
| 20.5.4. Time of Echo | * | | | | | | 2b | - | - | - |
| 20.5.5. Field of View | * | | | | | | 2b | - | - | - |
| 20.5.6. Phase Field of View | * | | | | | | 2b | - | - | - |
| 20.5.10. Flow Compensation | | | | | | | a | - | - | - |
| 20.5.11. Respiratory Compensation | | | | | | | a | - | - | - |
| 20.5.12. Parallel Imaging | | | | | | | a | - | - | - |
| 20.5.13. Cardiac gating | | | | | | | - | - | - | - |
| 20.5.14. Respiratory gating | | | | | | | a | - | - | - |
| 20.6. MR Angiography<br>**TR**: MRI in Practice | | | | | | | | | | |
| 20.6.1. Perform Time of flight | * | | | | | | 2b | - | - | - |
| 20.6.2. Phase contrast | | | | | | | B | - | - | - |
| 20.7. MR system components<br>Ref: MRI in Practice | | | | | | | | | | |
| 20.7.1. Magnet | | | | | | | B | - | - | - |
| 20.7.2. Operator's console | | | | | | | B | - | - | - |
| 20.7.5. Quench box | | | | | | | B | - | - | - |
| 20.7.8. Cryogen monitors | | | | | | | B | - | - | - |
| 20.7.9. Coils | | | | | | | B | - | - | - |
| 20.8 Sectional anatomy<br>**TR**: Sectional Anatomy for Imaging Professionals | | | | | | | | | | |
| 20.8.1. Brain | | | | | | | B | - | - | - |
| 20.8.2. Neck | | | | | | | B | - | - | - |
| 20.8.3. Spine | | | | | | | B | - | - | - |
| 20.8.4. Thorax | | | | | | | B | - | - | - |
| 20.8.5. Heart | | | | | | | B | - | - | - |
| 20.8.6. Abdomen | | | | | | | B | - | - | - |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1C** | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| 20.8.7. Pelvis | | | | | | | B | - | - | - |
| 20.8.8. Extremities | | | | | | | B | - | - | - |
| 20.9. MR contrast agents & administration **TR**: MRI in Practice | | | | | | | | | | |
| 20.9.1. Types of agents | | | | | | | B | - | - | - |
| 20.9.2. Contraindications to contrast | | | | | | | B | - | - | - |
| 20.10. Operate MRI system | | | | | | | | | | |
| 20.10.1. Start-up | * | | | | | | 2b | - | - | - |
| 20.10.2. Shutdown | * | | | | | | 2b | - | - | - |
| 20.10.3. Emergency shutdown | * | | | | | | 2b | - | - | - |
| 20.10.4. Tuning the magnet | | | | | | | - | - | - | - |
| 20.11. Prepare of examination | | | | | | | | | | |
| 20.11.1. Patient Prep | * | | | | | | 3c | - | - | - |
| 20.11.2. Room Prep | * | | | | | | 3c | - | - | - |
| 20.12. Perform examinations | | | | | | | | | | |
| 20.12.1. Obtain brain images | * | | | | | | 3c | - | - | - |
| 20.12.2. Obtain internal auditory canal images | | | | | | | - | - | - | - |
| 20.12.3. obtain pituitary gland images | | | | | | | - | - | - | - |
| 20.12.4. Obtain orbits images | | | | | | | - | - | - | - |
| 20.12.5. Obtain cranial nerve images | | | | | | | - | - | - | - |
| 20.12.6. Obtain C-spine images | * | | | | | | 3c | - | - | - |
| 20.12.7. Obtain T-spine images | * | | | | | | 3c | - | - | - |
| 20.12.8. Obtain L-spine | * | | | | | | 3c | - | - | - |
| 20.12.9. Obtain anterior neck images | | | | | | | - | | | |
| 20.12.10. Obtain shoulder images | * | | | | | | 3c | - | - | - |
| 20.12.11. Obtain elbow images | | | | | | | - | - | - | - |
| 20.12.12. Obtain wrist images | | | | | | | - | - | - | - |
| 20.12.13. Obtain hand/finger images | | | | | | | - | - | - | - |
| 20.12.14. Obtain knee images | * | | | | | | 3c | - | - | - |
| 20.12.15. Obtain pelvis/hip images | | | | | | | - | - | - | - |
| 20.12.16. Obtain ankle images | | | | | | | - | - | - | - |
| 20.12.17. Obtain foot/toe images | | | | | | | - | - | - | - |

| 1. Tasks, Knowledge and Technical References | 2. Core /Wartime Tasks | 3. Certification for OJT | | | | | 4. Proficiency Codes Used To Indicate Training/Information Provided | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **STS 4R0X1C** | | A | B | C | D | E | A 3- Skill Level | | B 5-Skill Level | C 7- Skill Level |
| | | Trng Start | Trng Complete | Trainee Initials | Trainer Initials | Task Certifier Initials | Phase I | Phase II | CDC | OJT |
| 20.12.18. Obtain long bone (e.g., tib/fib, femur, forearm) images | * | | | | | | 2b | - | - | - |
| 20.12.19. Obtain temperomandibular joint images | | | | | | | - | - | - | - |
| 20.12.20. Obtain heart images | | | | | | | - | - | - | - |
| 20.12.21. Obtain great vessel images | | | | | | | - | - | - | - |
| 20.12.22. Obtain abdomen images | | | | | | | - | - | - | - |
| 20.12.23. Obtain MR mammography images | | | | | | | - | - | - | - |
| 20.12.24. Perform Quality Control | | | | | | | 2b | - | - | - |
| 20.13. MR Artifacts<br>**TR:** MRI in Practice | | | | | | | - | - | - | - |
| 20.13.1. Flow | | | | | | | B | - | - | - |
| 20.13.2. Phase Mis-mapping | | | | | | | B | - | - | - |
| 20.13.3. Aliasing/Wrap Around | | | | | | | B | - | - | - |
| 20.13.4. Chemical Shift | | | | | | | B | - | - | - |
| 20.13.5. Chemical Mis-registration | | | | | | | B | - | - | - |
| 20.13.6. Truncation | | | | | | | B | - | - | - |
| 20.13.7. Magnetic Susceptibility | | | | | | | B | - | - | - |
| 20.13.8. Cross-Talk | | | | | | | B | - | - | - |
| 20.13.9. Zipper | | | | | | | B | - | - | - |
| 20.13.10. Shading | | | | | | | B | - | - | - |
| 20.13.11. Moire | | | | | | | B | - | - | - |
| 20.13.12. Magic Angle | | | | | | | B | - | - | - |

**Attachment 9**
**4R0X1 Training References Commercial**
**& Other Service Publications**

**Diagnostic Imaging Phase I:**


Bushong, S. C. (2008). *Radiologic Science for Technologists: Physics, Biology, and Protection* (9th ed. or later ed). St. Louis, Missouri: Mosby Elsevier.

Carlton, R. R., & Adler, A. M. (2006). *Principles of Radiographic Imaging: An Art and a Science* (4th ed. or later ed). Clifton Park, New York: Thomson Delmar Learning.

Ehrlich, R. A., & Daly, J. A. (2009). *Patient Care in Radiography: With an Introduction to Medical Imaging* (7th ed. or later ed). St. Louis, Missouri: Mosby Elsevier.

Ettinger, A. G., & Burch, P. F. (2007). *Medical Terminology: For Health Careers* (2nd ed. or later ed). St. Paul, Minnesota: Paradigm Publishing.

Lampignano, J. P., & Bontrager, K. L. (2014). *Textbook of Radiographic Positioning and Related Anatomy* (8th ed. or later ed). St. Louis, Missouri: Mosby Elsevier.

Mace, J. D., & Kowalczyk, N. (2008). *Radiographic Pathology for Technologists* (5th ed. or later ed). St. Louis, Missouri: Mosby Elsevier.

Papp. (2011). *Quality Management* (4th ed. or later ed). St. Louis, Missouri: Mosby Elsevier.

Selman, J. (2000). *The fundamentals of imaging physics and radiobiology* (9th ed. or later ed). Springfield, Illinois: Charles C. Thomas.

Smith, B. J., Long, B. W., & Frank, E. D. (2007). *Merrill's Atlas of Radiographic Positioning & Procedures* (11th ed. or later ed, Vols. I, II, III). St. Louis, Missouri: Mosby Elsevier.

Tortora, G. J., & Derrickson, B. (2009). *Principles of Anatomy and Physiology* (12th ed. or later ed). Hoboken, New Jersey: John Wiley & Sons, Inc.

Wilson, B. G. (1997). *Ethics and Basic Law for Medical Imaging Professionals.* Philadelphia, Pennsylvania: F.A. Davis.


**Diagnostic Imaging Phase II:**


Bushong, S. C. (2008). *Radiologic Science for Technologists: Physics, Biology, and Protection* (9th ed. or later ed.). St. Louis, Missouri: Mosby Elsevier.

Dewit, S. C. (2001). *Fundamental Concepts and Skills for Nursing.* St. Louis Missouri: W. B. Saunders Co.

Carter, C. & Veale, B. (2014). *Digital Radiography and PACS* (2nd ed. or later ed.). Philadelphia, Pennsylvania: Mosby Elsevier

Ehrlich, R. A., & Daly, J. A. (2009). *Patient Care in Radiography: With an Introduction to Medical Imaging* (7th ed. or later ed.). St. Louis, Missouri: Mosby Elsevier.

Kelly, L. & Peterson, C. (2013). *Sectional Anatomy for Imaging Professionals* (3rd ed. or later ed.) Mosby Elsevier

Lampignano, J. P., & Bontrager, K. L. (2014). *Textbook of Radiographic Positioning and Related Anatomy* (8th ed. or later ed). St. Louis, Missouri: Mosby Elsevier.

Seeram, E. (2016). *Computed Tomography: Physical Principles, Clinical Applications, and Quality Control* (4th ed. or later ed.) St. Louis, Missouri: Elsevier

Statkiewicz Sherer, M.A., Visconti, P., Ritenour, R. & Welch Haynes, K. (2014). *Radiation Protection in Medical Radiography* (7th ed. or later ed.) Maryland Heights, Missouri: Mosby Elsevier

Smith, B. J., Long, B. W., & Frank, E. D. (2007). *Merrill's Atlas of Radiographic Positioning & Procedures* (11th ed. or later ed., Vols. I, II, III). St. Louis, Missouri: Mosby Elsevier

Tortora, G. J., & Derrickson, B. (2005). *Principles of Anatomy and Physiology* (11th ed. or later ed.). Hoboken, New Jersey: John Wiley & Sons, Inc.

**Diagnostic Medical Sonography:**

Curry, Reva A and Tempkin, Betty Bates., et al. *Sonography: An Introduction to Normal Structure and Function*. (Current edition). St. Louis, Missouri: W. B. Saunders.

Edelman, Sidney K., PhD. (2012). *Understanding Ultrasound Physics*., ($4^{th}$ ed. or later ed). KnowledgeMasters, Inc.

Hagen-Ansert, S.L. (2012). *Textbook of Diagnostic Sonography. Vol's 1 & 2* (Current edition). St. Louis, Missouri: Mosby Elsevier.

**Interventional Radiography:**

Smith, B. J., Long, B. W., & Frank, E. D. (2007). *Merrill's Atlas of Radiographic Positioning & Procedures* (11th ed. or later ed, Vols. I, II, III). St. Louis, Missouri: Mosby Elsevier.

Mauro, M.A. (2014) *Image-Guided Interventions: Expert Radiology Series* (2nd ed. or later ed.)

Kandarpa, K. (2016) *Handbook of Interventional Radiologic Procedures* ((5th ed. or later ed.))

**Magnetic Resonance Imaging:**

Kelley, L. & Petersen, C.M. (2013). *Sectional Anatomy for Imaging Professionals* (3rd ed. or later ed.). Mosby Elsevier.

Westbrook, C., Talbot, J., & Roth, C. K. (2011). *MRI in Practice* (4th ed. or later ed.). Malden, Massachusetts: Wiley-Blackwell.

**Mammography:**

Hologic (2015). *Selenia Dimensions: Quality Control Manual (MAN-03706. Revision 4)*. Danbury, CT: Hologic Inc.

Smith, B. J., Long, B. W., & Frank, E. D. (2007). *Merrill's Atlas of Radiographic Positioning & Procedures* (11th ed. or later ed, Vol. II). St. Louis, Missouri: Mosby Elsevier.

https://www.fda.gov/downloads/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/ucm094441.pdf

*Mammography Quality Control Manual* (2016) U.S. Department of Health and Human Services; Food & Drug Administration

**Nuclear Medicine:**

Bureau of Radiological Health and the Training Institute Environmental Control Administration. (1970). *Radiological Health Handbook.* Rockville, Maryland: US Department of Health, Education and Welfare.

Bushong, S. C. (2001). *Radiologic Science for Technologists; Physics, Biology, and Protection* (7th ed. or later ed). St. Louis, Missouri: Mosby Elsevier.

English, R. J. (1986). *SPECT Single-Photon Emission Computed Tomography: A Primer* (3rd ed. or later ed). Reston, Virginia: The Society of Nuclear Medicine.

Kowalczyk, N., & Donnett, K. (1996). *Integrated Patient Care for the Imaging Professional.* St. Louis, Missouri: Mosby.

Kowalsky, R. J., & Falen, S. W. (2004). *Radiopharmaceuticals in Nuclear Pharmacy and Nuclear Medicine* (2nd ed. or later ed). Washington, District of Columbia: APhA.

Lee, K. (1991). *Computers in Nuclear Medicine: A Practical Approach.* New York, New York: The Society of Nuclear Medicine.

Mascetta, J. A. (1996). *Chemistry: The Easy Way* (3rd ed. or later ed). Hauppauge, New York: Barron's Educational Series, Inc.

Mettler, F. A., & Guiberteau, M. J. (2012). *Essentials of Nuclear Medicine Imaging* (6th ed. or later ed). Philadelphia, Pennsylvania: Elsevier Saunders.

Miller, T. R., Knox, H. D., & Baum, E. M. (Eds.). (2002). *Nuclides and Isotopes: Chart of the Nuclides* (16th ed. or later ed). KAPL, Inc. & Lockheed Martin.

Naval Education Training Command. (1985). *Mathematics, Volume 1: NAVEDTRA 10069-D1* (Vol. I). Washington DC: US Government Printing Office.

Powsner, E. R., & Powsner, R. A. (2006). *Essential Nuclear Medicine Physics* (2nd ed. or later ed). Malden, Massachusetts: Blackwell Publishing Ltd.

Saha, G. B. (2004). *Fundamentals of Nuclear Pharmacy* (5th ed. or later ed). New York, New York: Springer Science + Business Media, Inc.

Scott-Ennis, R. J., Hill, J. W., & Baum, S. J. (2000). *Chemistry and Life: An Introduction to General, Organic, and Biological Chemistry* (6th ed. or later ed). Upper Saddle River, New Jersey: Prentice Hall.

Sodee, B. D., & Early, P. J. (1995). *Principles and Practice of Nuclear Medicine* (2nd ed. or later ed). St. Louis , Missouri: Mosby.

Sorenson, J. A., Phelps, M. E., & Cherry, S. R. (2003). *Physics in Nuclear Medicine* (3rd ed. or later ed). Philadelphia, Pennsylvania: Saunders.

Tortora, G. J., & Derrickson, B. H. (2005). *Principles of Anatomy and Physiology* (11th ed. or later ed). Hoboken, New Jersey: John Wiley & Sons, Inc.

Trefzger, J. E., Gary, J. S., & Ewen, D. (2005). *Technical Mathematics* (2nd ed. or later ed). Upper Saddle River, New Jersey: Pearson Prentice Hall.

Visconti, P. J., Statkiewicz Sherer, M. A., & Ritenour, E. R. (2002). *Radiation Protection in Medical Radiography* (4th ed. or later ed). St. Louis, Missouri: Mosby Elsevier.

Waterstram-Rich, K. M., & Christian, P. E. (Eds.). (2007). *Nuclear Medicine and PET/CT: Technology and Techniques* (6th ed. or later ed). St. Louis, Missouri: Mosby Elsevier.

Watson, S., Warner, G., Snyder, W., & Ford, M. (1975). *MIRD Pamphlet No.11* (11 ed. or later ed). New York, New York: Society of Nuclear Medicine.

***Section B - Course Objective List (COL)***

**1. Course Objectives for Initial Skills Course.** To obtain a copy of a COL, contact:

Training Development Element
382 TRS/TRR
3480 Garden Avenue
Ft Sam Houston, TX 78234

Phone: DSN 420-2060 or Commercial: (210) 808-2060

1.1. Each proficiency coded task or knowledge item taught at the technical school is measured using an objective. An objective is a written instruction for the students, so they know what is expected of them to successfully complete training on each task or knowledge item. Each objective is composed of a condition, behavior, and a standard. The condition is the setting in which the training takes place (type of equipment or references when required). The behavior is the observable portion of the objective (perform hand washing). The standard is the level of performance that is measured to ensure the proficiency code level is maintained (e.g., to a 70% or with no instructor assists). All objectives use a progress check (PC), written test (W) or a (-) combination of both to measure a student's ability (skill) or knowledge.

1.2. Standard. The minimum standard for written examinations is 70% (which can be waived). Standards for performance measurement are indicated in the objective and delineated on the individual progress checklist. Instructor assistance is provided as needed during the progress check and students may be required to repeat all or part of the behavior until satisfactory performance is attained.

1.3. Proficiency Level. Behavior statements are taught at the analysis, evaluation, and application levels. Prerequisites for course attendance support or augment training provided in the Diagnostic Imaging course.

***Section C - Support Materials***

**1. Training Platforms (TPs).** There may be certain opportunities to be assigned to duties in a specific area that requires other than the normal Diagnostic Imaging formal training and the following training platforms will assist in 4R0X1 progression.

***Section D - Training Course Index***

**1. Purpose.** This section identifies training courses available for the specialty.

1.1. Air Force In-Residence Courses.

| COURSE NUMBER | TITLE | DURATION | LOCATION |
|---|---|---|---|
| L5AQJ4R031 01AA | Diagnostic Imaging Phase I Course | 97 Days | METC – Ft Sam Houston, TX |
| L5ABO4R031 02AB | Diagnostic Imaging Phase II Course | 165 days | Various Locations |
| L5ALJ4R031A01AA | Nuclear Medicine Phase I Course | 97 Days | METC – Ft Sam Houston, TX |
| L5ABO4R031A02AA | Nuclear Medicine Phase II Course | 161 Days | Various Locations |
| L5AQJ4R031B01AA | Diagnostic Medical Sonography Phase I Course | 54 Days | METC – Ft Sam Houston, TX |
| L5ALO4R031B02AB | Diagnostic Medical Sonography Phase II | 80 Days | Various Locations |

| COURSE NUMBER | TITLE | DURATION | LOCATION |
|---|---|---|---|
| L5AZO4R051 00AB | Diagnostic Imaging Mammography | 10 days | JBSA-Lackland AFB, TX |
| L5ALO4R031C00AA | Magnetic Resonance Imaging | 50 Days | JBSA-Lackland AFB, TX |

1.2. Air Force Career Development Academy (AFCDA) Courses.

| COURSE NUMBER | TITLE |
|---|---|
| CDC 4R051 | Diagnostic Imaging Journeyman |
| 00001 | Airman Leadership School Associate Program (Reserve and Guard only) |
| 00009 | Air Force Noncommissioned Officer Academy (Reserve and Guard only) |
| 00014 | Air Force Senior Noncommissioned Officers Academy Correspondence Course |

1.3. Other. MAJCOM, Forward Operating Agency, and/or training courses specifically for AETC instructors and CDC writers.

***Section E – MAJCOM-Unique Requirements***

There are currently no MAJCOM unique requirements. This area is reserved.

***Section F- Documentation of Training***

**1. Work Center Training Plans.** The purpose of this section is to provide guidelines and examples of proper documentation for the many electronic forms used in training of all enlisted medical personnel. Training documentation helps to assess readiness capability as well as individual strengths and weaknesses. It also aids compliance with all The Joint Commission, Accreditation Association for Ambulatory Health Care, and Health Services Inspections regulatory requirements. The enlisted training documentation has migrated from the hard copy to electronic AFTR. AFTR is accessible from the Advance Distance Learning Service via the AF Portal. Refer to your unit training manager (UTM) for the most current policies and guidance on training documentation.

**2. Air Force Training Record.** The AFTR is an enterprise-wide custom training management system designed to replace the paper-based training records system. It is the electronic equivalent of an AF Form 623 and will be used by career fields within the AFMS to document all training actions. The AFTR allows training plans to be established by; Career Field/AFSC, duty position/team member, trainee/trainer/certifier, and any group of tasks that require management, tracking, and documentation. The AFTR components managed by the supervisor are:

**2.1. Master Task List (MTL).** The MTL is a list containing all the tasks that are to be trained in a work center and is often broken out by specialty. The MTL consists of the Specialty Training Standard; AF Form 623 Parts II and III; AF Form 797 and AF Form 1098, *Special Task Certification and Recurring Training*; and Qualification Training Packages (QTPs). The supervisor creates the MTL by selecting tasks from the Unit Task List (UTL) produced by the UTM and the STS.

**2.2. Master Training Plan (MTP).** The MTP is a list containing a schedule of training for all tasks within a particular duty position. The MTP consists of the STS; 623 Parts II and III; AF Force Forms 797 and 1098 tasks; and QTPs. The supervisor creates the MTP by assigning training times and methods to tasks in the duty position. Refer to AFI 36-2201 and AFH 36-2235, Volume 11, *Information for Designers of Instructional Systems Application to Unit Training,* for guidance in developing the MTP.

**2.3. Duty Task List (DTL).** The DTL is a list containing all the tasks to be trained on in a duty position. The DTL consists of the STS; AF Form 623 Parts II and III; AF Force Forms 797 and 1098 tasks; and QTPs. The supervisor creates the DTL by selecting tasks from the MTL.

**2.4. Individual Training Record (ITR).** All training is documented in the ITR. This is the electronic version of the former Enlisted Training and Competency Folder. The ITR is made up of the AF Form 623 Parts I, II and III; AF Forms 623a, 797, 803 and 1098; QTPs and the JQS. This record is automatically populated based upon the duty position the individual is assigned to. Refer to AFI 36-2201 for guidance in documenting training on the various forms contained within the ITR. Maintenance of the CFETP is mandatory for all assigned MSgts and below.

2.4.1. The AFTR provides the capability to incorporate training source documents and/or to manually enter completed training into the ITR. The following documents will be incorporated into the ITR:

2.4.1.1. The member's initial MTF and clinic orientation checklists.

2.4.1.2. Recurrent training such as Basic Life Support and Health Insurance Portability and Accountability.

2.4.1.3. AF Form 2096.

2.4.1.4. AF Form 803, *Report of Task Evaluation*. AF Form 803 is used to conduct and document completion of task evaluations during training staff assisted visits, when directed by the commander, or when a task certification requires validation.

2.4.1.5. Other forms as appropriate.

**3. Documentation of Training.** The purpose of this section is to provide guidelines and examples of proper documentation on the many forms used in training Diagnostic Imaging personnel. Training documentation helps to assess mission capability and readiness, individual strengths and weaknesses, resources needed to support quality patient care, and defines requirements for individual career progression.

**3.1.** AF Form 797. The AF Form 797 (Figure 3.1) will be used to record training for tasks that are not otherwise documented in the CFETP.

**Figure 3.1. Sample, AF Form 797 Documentation**

| JOB QUALIFICATION STANDARD CONTINUATION/COMMAND JQS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| TASK NUMBER | TASK, KNOWLEDGE AND TECHNICAL REFERENCES | CERTIFICATION | | | | | | |
| | | START DATE | CERTIFYING OFFICIAL'S INITIALS | TRAINEES INITIALS | MAJCOM DIRECTED USE ONLY | | | COMPLETION DATE |
| 1 | Prepare job qualification standards | | | | | | | |
| 2 | Perform film loan procedures | | | | | | | |
| 3 | Operate Pressure Injector | | | | | | | |
| TRAINEE NAME DOG, DEPUTY A. | | | | | | | | |

AF FORM 797, AUG 02 *(Electronic File)* PREVIOUS EDITION IS OBSOLETE

3.2. AF Form 1098 (Figure 3.2.). Mandatory training requirements may vary from facility to facility. At a minimum, these requirements should be reviewed on an annual basis and updated as required.

**Figure 3.2. Sample, Recurring Mandatory Training Documentation (AF Form 1098)**

| SPECIAL TASK CERTIFICATION AND RECURRING TRAINING | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | EVALUATION OF TRAINING | | | |
| TASK OR RECURRING TRAINING AND TECHNICAL REFERENCES A | DATE COMPLETED B. | SIGNATURE OF CERTIFYING OFFICIAL C | INITIAL OF TRAINEE D | SCORE OR HOURS E | TYPE F | FREQUENCY G | DUE DATE H |
| COTR Training | 15 Jul 13 | | | 91 | | 1 Time | |
| CPR Training | 15 Sep 13 | | | P | | Annual | 091514 |
| CMRT | 28 Sep 13 | | | P | | Annual | 092814 |
| | | | | | | | |
| NAME OF TRAINEE (Last, First, Middle Initial)<br>DOO, SCOOBY D. | | | GRADE<br>A1C | | UNIT AND OFFICE SYMBOL<br>MDSS/SGSL | | |

AF FORM 1098, APR 85 *(Electronic File)* PREVIOUS EDITION IS OBSOLETE

3.3. Qualification Training Progress Records were developed to enhance OJT. It provides the trainer with a breakdown of task performance skills to aid in performance evaluation. The evaluations of each task results in either a satisfactory or unsatisfactory score (Figure 3.3).

**Figure 3.3. Sample, Qualification Training Progress Record**

Rank/Name

Qualification Upgrade Training to: 5-Skill Level 7-Skill Level

| PERFORMANCE ITEM | SAT | UNSAT |
|---|---|---|
| **STS Task 22.11** Radiopharmacy procedures | | |
| Maintain receipt logs | | |
| Radiopharmaceutical storage and disposal | | |
| Monitor decay in storage | | |
| Package radiopharmaceuticals | | |
| Maintain receipt logs | | |

3.4. AF Form 623A (Figures 3.4. thru 3.7.). Use the AF Form 623A available in the AFTR to document all progress of individual training. Document on AF Form 623A the start and completion dates of unit orientation, and reference the date of the orientation checklist. In addition, document the member's entry into upgrade training, initial evaluation results, and periodic evaluations of training progress to include CDC progress. Information on extensions, waiver requests, or breaks in training should be clearly documented. Document on the AF Form 623A any decertification proceedings, including dates, reasons for decertification, and other applicable information. Accomplish an initial evaluation when a new person arrives to the unit or when an individual changes duty positions.

**Figure 3.4. Sample, Orientation Documentation**

*ON - THE - JOB TRAINING RECORD CONTINUATION SHEET*

28 Jul 2013

A1C Scooby D. Doo is assigned to the Diagnostic Imaging Flight on this date. I have been assigned as his trainer and will orient A1C Scooby D. Doo to the Flight and Squadron using the Diagnostic Imaging Flight and Medical Support Squadron orientation checklists located in the Master Training Plan. An initial interview was accomplished on this date. A1C Scooby D. Doo is looking forward to working in Nuclear Medicine. He is enthusiastic and prepared to accept all challenges. He understands that he must question his trainers if uncertain of training provided.

Scooby D. Doo, A1C, USAF — Deputy A. Dog, MSgt, USAF Medical
Diagnostic Imaging Journeyman — NCOIC, Diagnostic Imaging

27 Aug 2013

A mid-orientation progress check was accomplished on this date. A1C Scooby D. Dog has progressed through the flight and squadron orientation with little to no difficulty. He is almost finished with the Medical Group orientation. He completed reviews of Operating Instructions for the Diagnostic Imaging Flight and the Medical Support Squadron. He has received his CDCs and is aware that he should complete all four volumes in 6 months or less.

Scooby D. Dog, USAF — Deputy A. Dog, MSgt, USAF Medical
Diagnostic Imaging Journeyman — NCOIC, Diagnostic Imaging

30 Sep 2013

A1C Scooby D. Doo has completed all training on the orientation requirements for the flight, squadron, and medical group. A review of the checklists with A1C Scooby D. Doo indicates he is knowledgeable of all items discussed. A1C Scooby D. Doo stated that he feels comfortable with the training provided and believes he is ready to be released from orientation. A1C Scooby D. Doo has been released from orientation on this date. He has also completed CDC Volumes 1 and 2.

Scooby D. Doo, A1C, USAF — Deputy A. Dog, MSgt, USAF Medical
Diagnostic Imaging Journeyman — NCOIC, Diagnostic Imaging

LAST NAME FIRST NAME MIDDLE INITIAL
*Doo, Scooby D.*

AF FORM 623A, MAR 79 (IMT-V1) or (EF -V2) PREVIOUS EDITION WILL BE USED

**Figure 3.5. Sample, Initial Upgrade Training Brief**

*ON - THE - JOB TRAINING RECORD*
*CONTINUATION SHEET*

*INITIAL BRIEFING*
*(Trainee Orientation)*

_____was briefed on the On-The-Job Training (OJT) program and how he/she fits into the program while in upgrade training (UGT). Upgrade training was explained as a dual-channel process designed to qualify an airman for skill level upgrade. Dual-channel OJT is a systematic reportable application of self-study and the craftsman/apprentice principal. Trainees acquire job qualification while performing on the job under supervision. This combination of knowledge and job position qualification constitutes the dual-channel concept.

Requirements from AFI 36-2101 and 36-2201 were discussed. AF Forms 623, 623A, 797, 2096, and the CFETP, STS/JQS or automated JQS, which serve to make up the individual training record, were explained. Responsibilities of the commander, base training, unit education and training manager, immediate supervisor, trainer, and trainee were discussed.

Requirements for upgrade in AFSC 4R0X1 are: (1) supervisor's or Task Certifier's certification of job qualifications with adequate hands on training; and (2) supervisor's recommendation for upgrade.

Personnel in grades E-1 through E-6 (and SNCOs in retraining status) have AF Form 623 and CFETP or JQS. The CFETP or JQS may contain 100 or more separate tasks, but it should be annotated to show only those tasks the airman is required to perform in the current duty position; mandatory requirements in AFI 36-2101 for upgrade, and core task requirements. The supervisor and trainee will initial appropriate areas in the JQS to certify training is complete. In the CFETP, the trainer, trainee, and certifier will initial appropriate areas when training is completed. After upgrade the CFETP or JQS will continue to be used to document further qualification training.

_____ _____ _____
***SUPERVISOR'S SIGNATURE*** ***TRAINEE'S SIGNATURE*** ***DATE***

**LAST NAME** **FIRST NAME** **MIDDLE INITIAL**

AF FORM 623A, MAR 79 (IMT-V1) or (EF -V2) PREVIOUS EDITION WILL BE USED

**Figure 3.7. Sample, Job Description Review**

**ON - THE - JOB TRAINING RECORD**
**CONTINUATION SHEET**

1 Aug 13
I know where to find a current copy of my job description and performance standards. I have read and discussed them with my supervisor, and understand my duties and responsibilities. If I have questions or concerns I will seek assistance from my supervisor.

Scooby D. Doo, AMN, USAF Medical
Diagnostic Imaging Journeyman

1 Sep 13

A1C Scooby D. Doo completed review of his job description and performance standards on this date. I am confident that he is thoroughly familiar with standards and expectations. At this time A1C Scooby D. Doo has no questions or concerns.

Deputy A. Dog, MSgt, USAF OJT
Trainer
NCOIC Diagnostic Imaging

**LAST NAME** **FIRST NAME** **MIDDLE INITIAL**

AF FORM 623A, MAR 79 (IMT-V1) PREVIOUS EDITION WILL BE USED