Department of Veterans Affairs
Washington, DC 20420

VA HANDBOOK 5005/54
Transmittal Sheet
June 7, 2012

STAFFING

1. REASON FOR ISSUE: To add the Gastroenterology (GI) specialty area to the current Department of Veterans Affairs (VA) qualification standard for Medical Instrument Technician, GS-649, appointed under 38 U.S.C. § 7401(3).

2. SUMMARY OF CONTENTS/MAJOR CHANGES: This handbook contains mandatory procedures on staffing. The pages in this handbook are added to the existing Appendix G27 in Part II of VA Handbook 5005. These standards are effective on the date of issuance of this handbook. This revision adds the Gastroenterology (GI) specialty area to the existing qualification standard for Medical Instrument Technician, GS-649. These standards are effective on the date of issuance of this handbook. These changes will be incorporated into the electronic version of VA Handbook 5005 that is maintained on the Office of Human Resources Management Web site.

3. RESPONSIBLE OFFICE: The Recruitment and Placement Policy Service (059), Office of the Deputy Assistant Secretary for Human Resources Management.

4. RELATED DIRECTIVES: VA Directive 5005, Staffing.

5. RESCISSIONS: None.

CERTIFIED BY:

/s/Roger W. Baker
Assistant Secretary for
Information and Technology

BY DIRECTION OF THE SECRETARY OF VETERANS AFFAIRS:

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Assistant Secretary for
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NOTE: This transmittal page accompanied the former VA Handbook 5005, Staffing publication. It is provided for reference to the revisions made to this qualification standard.

FORMER VA HANDBOOK REFERENCE: PART II APPENDIX G27
EFFECTIVE DATE: JUNE 7, 2012

MEDICAL INSTRUMENT TECHNICIAN QUALIFICATION STANDARD GS-649 Veterans Health Administration

1. COVERAGE. The following are requirements for appointment as a Medical Instrument Technician (MIT) in the Veterans Health Administration (VHA). This series includes positions that perform diagnostic examinations or medical treatment procedures as part of the diagnosis and treatment of patients. The work involves operating or monitoring diagnostic and therapeutic medical instruments and equipment associated with cardiac catheterization, pulmonary examinations and evaluations, heart bypass surgery/heart-lung transplant surgery (perfusion), electrocardiography, electroencephalography, polysomnography, hemodialysis, ultrasonography, [ ] vascular sonography[, and gastroenterology]. Positions in this series require knowledge of the capabilities and operating characteristics of one or more kinds of instruments and a practical knowledge of human anatomy and physiology. Positions also require a practical understanding of medical data generated by patient/equipment connections. Some positions may also require a practical knowledge of chemistry, pharmacology, physics, and mathematics.

Coverage under this standard and assignment of individuals to this occupation are restricted to the specific subspecialties identified above and those DIRECTLY DERIVED from these current subspecialties. For example, electroencephalography and polysomnography technicians perform duties using the same types of equipment and measure brain waves, the primary difference being the wake or sleep state of the patient. No individual will be assigned to this series (GS-649) without an approved parenthetical title.

Any additional parenthetical specialties developed as the result of new technologies must be directly derived from current specialties and must be approved by the Office of Human Resources Management, [Recruitment & Placement Policy] Service ([059]) in VA Central Office (VACO). Only after a decision has been made to include the identified new specialty in this qualification standard, and an approved parenthetical title and code have been developed, will an individual be assigned to this series.

2. AUTHORITIES.

a. P.L. 111-163, Caregivers and Veterans Omnibus Health Services Act of 2010;

b. 38 U.S.C. § 7401, Appointments in Veterans Health Administration;

c. 38 U.S.C. § 7402, Qualifications of appointees;

d. 38 U.S.C. § 7403, Period of appointments; promotions;

e. 38 U.S.C. § 7405, Temporary full-time appointments, part-time appointments and without-

compensation appointments;

f. 38 U.S.C. § 7407, Administrative provisions for section 7405 and 7406 appointments.

3. BASIC REQUIREMENTS

a. **Citizenship.** Citizenship of the United States. (Non-citizens may be appointed when it is not possible to recruit qualified citizens in accordance with chapter 3, section A, paragraph 3g, this part.)

b. **Education.** There are no specific educational requirements for this occupation. Education may be substituted for experience only at the GS-4 and GS-5 levels. See the grade requirements part of this standard for information regarding educational substitutions.

c. **Licensure or Certification.** Licensure or Certification is not required for this occupation; however, it is strongly desirable at GS-6 or above as evidence of possession of the essential knowledge, skills, and abilities. For certain functional areas at the higher levels or supervisory assignments, specific certifications appropriate to the specialty are indicated in this standard under "Titles and Certification/Registrations".

For all specialties identified in this standard, Basic and Advanced Cardiac Life Support certifications are desirable. Training which does not result in official certification does not meet this definition.

d. **Grandfathering Provision.** The following is the standard grandfathering policy for all Title 38 Hybrid qualification standards. Some of these provisions may not apply to this occupation. Please carefully review the qualification standard to determine the specific education and/or licensure/certification/ registration requirements that apply to this occupation.

All persons employed in VHA in this occupation on the effective date of this qualification standard are considered to have met all qualification requirements for the title, series and grade held, including positive education and licensure/certification/registration that are part of the basic requirements of the occupation. For employees who do not meet all the basic requirements required in this standard, but who met the qualifications applicable to the position at the time they were appointed to it, the following provisions apply:

Such employees in an occupation that does not require a licensure/certification/registration, may be reassigned, promoted, or demoted within the occupation.

Such employees in an occupation that requires a licensure/certification/registration, may be reassigned, promoted up to and including the full performance (journey) level, or demoted within the occupation, but may not be promoted beyond the journey level or placed in supervisory or managerial positions.

Such employees in an occupation that requires a licensure/certification/registration only at higher grade levels must meet the licensure/certification/registration requirement before they can be promoted to those higher grade levels.

Employees who are appointed on a temporary basis prior to the effective date of the qualification standard may not have their temporary appointment extended or be reappointed, on a temporary or permanent basis, until they fully meet the basic requirements of the standard.

Employees initially grandfathered into this occupation, who subsequently obtain additional education and/or licensure/certification/registration that meet all the basic requirements of this qualification standard must maintain the required credentials as a condition of employment in the occupation.

If an employee who was retained in an occupation listed in 38 U.S.C. § 7401(3) under this provision leaves that occupation, the employee loses protected status and must meet the full VA qualification standard requirements in effect at the time of reentry to the occupation.

e. **Physical Requirements.** See VA Directive and Handbook 5019.

f. **English Language Proficiency.** Medical Instrument Technicians must be proficient in spoken and written English in accordance with chapter 2, section D, paragraph 5a, this part.

4. GRADE REQUIREMENTS

a. **Definitions:** For purposes of this qualification standard the specialty areas of this occupation have been grouped into [seven] functional areas. These are:

Cardiovascular (Electrocardiograph Technician, Cardiac Catheterization Technician) Medical (Hemodialysis Technician)
Surgical (Perfusion Technician, Anesthesia Technician)
Neurology (Electroencephalograph Technician, Polysomnography Technician)
Pulmonary (Pulmonary Function Technician), and
Imaging (Diagnostic Ultrasound Technician, Echocardiograph Technician, and Vascular Technician) [Gastroenterology (GI Technician)]

Medical Instrument Technicians at GS-6 and above will have a functional assignment and reference should be made to the appropriate appendix for qualifications evaluation.

Grade level criteria, KSAs (core competencies), and typical assignment information for all GS-4 and GS-5 levels are defined generically in this part of the qualification standard. For higher level positions where the grade level/assignment is based on supervisory and/or managerial responsibilities, criteria are also included in the general portion of this qualification standard (for individuals in multiple function assignments) and/or the specific appendices.

For non-supervisory positions at GS-6 and above and for supervisory positions in a single specialty, the grade level criteria, KSAs, and types of assignments are discussed in appendices matching the title areas listed below. Reference should be made to the appropriate appendix in evaluating the qualifications of individuals for this occupation.

(1) **Titles and Certifications/Registrations:** All individuals assigned to this occupation MUST have an approved parenthetical title. For individuals at the GS-4 and GS-5 levels, the approved

title will be Medical Instrument Technician (Trainee). For supervisory positions over two or more approved specialties, the approved title will be Supervisory Medical Instrument Technician (Multiple Function). Supervisors over a single specialty will have that specialty as the parenthetical title; for example, Supervisory Medical Instrument Technician (Cardiac Catheterization). Non-supervisory individuals whose assignments involve two or more specialty areas will be assigned the parenthetical title for the predominant specialty considering both the intended function and qualifications background of the individual.

(a) **Anesthesia Technicians** perform logistical and technical support to anesthesiologists and nurse anesthetists. They maintain anesthesiology supplies and equipment, set-up anesthetizing locations and operate, monitor, and collect data from anesthesia related equipment.
In some cases Anesthesia Technicians will perform clinical laboratory functions, equipment preventive maintenance/repair, and specialized cardiac procedures such as cardiac output measurement, intra-aortic balloon pumping, vessel cannulation, and autotransfusion services. Certification at two distinct levels is offered by the American Society of Anesthesia Technologists and Technicians (ASATT). (See Appendix A)

(b) **Cardiac Catheterization Technicians** perform, under a physician's direction, diagnostic tests, both invasive and noninvasive, of the pulmonary system (lung) and the cardiovascular system (heart and circulation). They operate, monitor, and collect data from instruments used in procedures such as cardiac catheterization, angiography, valvuloplasty, angioplasty, electrophysiology studies, cardiac pacing, or cardiac pacemaker or leadwire insertion. Registration is offered by Cardiovascular Credentialing International (CCI) as a Registered Cardiovascular Invasive Specialist (RCIS). (See Appendix B)

(c) **Diagnostic Ultrasound Technicians** operate diagnostic ultrasonic scanning equipment to produce cross sectional and two dimensional pictures of internal organs and body structures used to diagnose diseases and other medical conditions. Registration is offered by Cardiovascular Credentialing International (CCI) or by the American Registry of Diagnostic Medical Sonographers (ARDMS). (See Appendix C)

Positions should be assigned to the Diagnostic Radiologic Technologist (DRT), GS-647 series, when both ultrasound and other modalities which require the delivery of ionizing radiation are performed. Positions in which ultrasound duties are performed exclusively (no other modalities are performed), should be assigned to the Medical Instrument Technician, GS-649 series, since ultrasound duties solely do not require the delivery of ionizing radiation.

(d) **Echocardiography Technicians** operate diagnostic equipment to graphically record the position and motion of the heart walls or the internal structure of the heart and neighboring tissue by the echo obtained from beams of ultrasonic waves directed through the chest wall. Registration is offered by Cardiovascular Credentialing International (CCI), as a Registered Cardiac Sonographer (RCS) or by the American Registry of Diagnostic Medical Sonographers (ARDMS) as a Registered Diagnostic Cardiac Sonographer (RDCS). (See Appendix D)

(e) **Electrocardiograph Technicians (EKG)** operate instruments used to record electrocardiograms, exercise tolerance tests, 24-48 heart monitoring and scanning, and pacemaker evaluations. Certification is offered by Cardiovascular Credentialing International (CCI) as a Certified Cardiographic Technician (CCT). (See Appendix E)

(f) **Electroencephalograph (EEG) Technicians** operate the electroencephalograph and other devices such as evoked potential equipment to record the electrical activity of the brain. Registration is offered by the American Board of Registration of EEG, CNIM & EP Technologists (ABRET) or the American Association of Electrodiagnostic Techs (AAET). (See Appendix F)

(g) **Hemodialysis Technicians** operate and monitor kidney dialysis instruments to provide dialysis treatment to patients with kidney failure or to maintain patients with irreversible kidney disorders. The agencies that offer national certification are Nephrology Certification Commission (NNCC), Board of Nephrology Examiners, Inc., Nursing and Technology (BONENT), National Nephrology Certification Organization (NNCO), and the International Certification Commission for Clinical Engineering and Biomedical Technology (ICC) in conjunction with the United States Certification Commission (USCC). (See Appendix G)

(h) **Perfusion Technicians** operate the heart-lung apparatus to take over functions of the patient's heart and lungs during coronary bypass surgery, heart and/or lung transplantation surgery, valve replacement, or respiratory failure. Certification is offered by the American Board of Cardiovascular Perfusion (ABCP). (See Appendix H)

(i) **Polysomnography Technicians** operate the electroencephalograph and other devices to record the electrical activity of the brain during sleep. Registration is offered by the Board of Registered Polysomnographic Technologists (BRPT). (See Appendix I)

(j) **Pulmonary Function Technicians** operate instruments to perform blood gas analysis; bronchoscopy with lung sampling; cardiopulmonary exercise stress tests; lung volume tests including spirometry (both pre and post medication); total lung capacity, functional residual capacity, and flow volume loops. Certification (RPFT) is offered by the National Board of Respiratory Care. (See Appendix J)

(k) **Vascular technicians** or **vascular sonographers** operate diagnostic equipment using ultrasound to record vascular information such as vascular blood flow, blood pressure, limb volume changes, oxygen saturation, cerebral circulation, peripheral circulation, and abdominal circulation. Registration is offered by Cardiovascular Credentialing International, (CCI) as a Registered Vascular Specialist (RVS) or by the American Registry of Diagnostic Medical Sonographers (ARDMS) as a Registered Vascular Technologist (RVT). (See Appendix K)

[(l) **Gastroenterology (GI) Technicians** assist the practitioner in endoscopic procedures, such as esophagogastroduodenoscopy (EGD), colonoscopy, endoscopic retrograde cholangiopancreatography (ERCP), and endoscopic ultrasound. The technicians ensure proper performance of equipment, set up equipment, and reprocess endoscopic reusable medical equipment (RME). Certification is offered by the Society of Gastroenterology Nurses and Associates (SGNA) for level one and level two training. GI endoscope reprocessing certification is offered through the Certification Board of Sterile Processing and Distribution (CBSPD). (See Appendix L)]

(2) **Creditable Experience - Knowledge of Current Medical Instrument Technician Practices.** To be creditable, the experience must have required the use of knowledge, skills, abilities and other characteristics associated with current Medical Instrument Technician practice appropriate to the identified specialty area. [Specialized developmental experience obtained under

supervision of appropriately certified individuals may be credited at higher levels and is addressed in individual appendices.]

(3) **Quality of Experience.** Experience is only creditable if it is equivalent to at least the next lower grade level and is directly related to the position/specialty to be filled.

(4) **Part-time Experience.** Part time experience is credited according to its relationship to a full time work week. For example, an individual employed 20 hours per week, or on a ½ time basis would receive one work week credit for each two weeks of service.

(5) **Fellowships.** N/A

(6) **Internships.** N/A

b. **Grade Determinations.** In addition to the basic requirements for employment, the criteria discussed in the applicable headings, or that defined in the appendices, must be met when determining the grade of candidates.

c. **Education/Training.** To be creditable education must have been gained in an accredited Community College, College, or University.

[(1) **Training.**] Completion of appropriate training such as in-service training programs, on the job training, training acquired while in the Armed Forces, government sponsored developmental training programs, and/or training under physicians certified in the functional area will be allowed on a month-for- month basis through the GS-5 level.

[(2)] **Foreign Education:** To be creditable, education completed outside the U.S. must have been submitted to a private organization that specializes in the interpretation of foreign educational credentials and such education must have been deemed at least equivalent to that gained in conventional U.S. programs. Specialized developmental experience obtained under supervision of appropriately certified individuals may be credited at higher levels and is addressed in individual appendices.

d. **Basic Developmental Levels**

(1) **GS-4**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the position to be filled. Six months of this experience may have been in medically related fields such as nursing assistant, practical nursing, or similar fields. The remaining six months must have been in operating diagnostic and therapeutic equipment covered by this occupation. Experience gained in the operation of equipment for animal diagnosis or treatment may be credited at this level. In addition, the candidate must demonstrate the following KSAs:

OR,

1. **Education.** Successful completion of two years of education above high school or an

associate's degree with a major field of study directly related to the medical instrument technician occupation.

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of basic medical terminology.

2. Ability to learn the components, operating characteristics, and settings of the equipment to be used.

3. Ability to learn typical patient reactions to the basic procedures involved and ability to recognize signs of distress.

4. Ability to learn the standard positions for the procedure being conducted.

5. Ability to communicate orally and in writing.

(c) **Assignments.** At this level assignments are trainee in nature. The medical instrument technician trainee is performing limited routine assignments of a developmental nature under close supervision.

(2) **GS-5**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the position to be filled. This would be experience in operating equipment related to the particular specialization for which application is made or in related functional areas. Experience gained in the operation of equipment for animal diagnosis or treatment may be credited through this grade level. In addition, the candidate must demonstrate the following KSAs:

OR,

(b) **Education.** Successful completion of [4 academic years above high school leading to a bachelor's degree with courses related to the occupation, or] a bachelor's degree in a major field of study appropriate to medical instrument technician functions.

(c) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of standard medical terminology to interpret physician orders or instructions.

2. Knowledge of common physical disabilities and ability to position patients for the examination or treatment.

3. Ability to learn the normal and abnormal results for routine procedures to recognize and report obvious abnormalities.

4. Ability to operate the equipment to administer routine/standard diagnostic treatment or

procedures.

5. Ability to perform standard operator maintenance on the equipment including the ability to disassemble, clean, reassemble, and calibrate the machine.

(d) **Assignment.** Medical Instrument Technicians (Trainee) at this level operate and monitor commonly used equipment performing routine procedures under normal supervision. The technician functions somewhat independently in carrying out these standardized procedures of limited complexity. Deviations from regular procedures, unanticipated problems, and unfamiliar situations are referred to the supervisor for a decision or help. Some assignments at this level also include developmental duties involving more complex procedures designed to prepare the technician for promotion to higher grades in a functional area. Such duties would be performed under closer supervision.

e. **Non-Supervisory positions at GS-6 and above.** For medical instrument technician positions with functional specialty titles, see the appropriate appendix for creditable experience, KSAs, and assignment definitions.

f. **Supervisory Medical Instrument Technician.** Supervisory positions in single specialties will be addressed in the applicable appendix, for example supervisory medical instrument technician (cardiac catheterization).

Typically, assignments for supervisory positions will be one grade (first line supervisor) or two grade (second line supervisor) levels above the full performance level of the employees supervised. The full performance levels are clearly identified in the separate appendices.

Supervisory medical instrument technician positions having oversight for two or more functional specialties will have "Multiple Function" as the parenthetical title. Grade levels for these positions should be determined by the full performance level of the positions supervised and other program management responsibilities. Individual appendices indicate the full performance level of identified specialties. Levels and complexity of supervisory positions are described below.

(1) **First Level Supervisor**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. This experience must demonstrate possession of the knowledge required in order to provide medical instrument technician services in the functional specialties supervised. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of the more complex examination and treatment procedures and techniques.

*2. Ability to manage and supervise employees in two or more functional specialties.

*3. Knowledge of Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and other regulatory requirements.

4. Ability to communicate effectively and professionally with employees at varying grade levels.

*5. Ability to provide, or provide for, staff development and training.

a. **Certification.** At this level, it is highly desirable that supervisors possess certification in one or more appropriate functional areas.

b. **Assignment.** Typically these positions are established one grade above the full performance level of the technicians supervised. Individuals in this assignment assume full administrative and professional responsibility for planning and directing the work of subordinate technicians. Typically these duties include assigning and evaluating the work of subordinate staff; providing Medical Instrument Technician services in more complex cases; reviewing and making recommendations regarding new and emerging procedures; providing instruction and training to new staff; interviewing candidates for positions; recommending selections, advancements, promotions; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs. For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

5. Higher Level Supervisor

a. **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. This would be specialized experience as a first level supervisor which demonstrates possession of the knowledge required to provide medical instrument technician services in the functional specialties supervised as well as supervisory knowledge, skills, and abilities. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

b. Demonstrated Knowledge, Skills, and Abilities

i. Advanced knowledge of complex and non-standard treatment and examination procedures and techniques.

*2. Ability to plan and assist in the establishment of a completely integrated treatment and examination program.

*3. Ability to evaluate new products and equipment and make recommendations concerning developments which would improve operations.

*4. Ability to manage the fiscal matters of the functions supervised (which would include fund controls, contracts, and equipment expenditures), forecast resource and equipment needs, and administer the allocated budget.

*5. Knowledge of and ability to provide the full range of supervisory duties which would include responsibility for assignment of work to be performed; performance evaluation; selection of staff; and recommendation of awards, advancements, and, when appropriate, disciplinary actions.

c. **Certification.** At this level, it is highly desirable that supervisors possess certification in two or more functional specialties. Participation in recognized professional organizations as a Board examiner, in the development of curricula for training, or testing for the Board is evidence of competence.

d. **Assignment.** Individuals at this level plan and direct programs at affiliated medical centers and their satellite outpatient clinics and have full supervisory responsibility for a large staff of non-supervisory personnel and at least one subordinate team leader or supervisor. Typically these duties include assigning and evaluating the work of subordinate staff resolving problems which may interfere with patient examination or treatment; providing medical instrument technician services in more complex and non-standard cases; evaluating new products and equipment and making recommendations concerning developments which would improve operations; participating as an instructor in the facility's clinical training program; making final decisions on selections based on recommendations from subordinate supervisors or leads; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs. For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

5. DEVIATIONS

a. The appointing official may, under unusual circumstances, approve reasonable deviations to the grade determination requirements for medical instrument technicians in VHA whose composite record of accomplishments, performance, and qualifications, as well as current assignments, warrant such action based on demonstrated competence to meet the requirements of the proposed grade.

b. [The placement of individuals in grade levels not described in this standard must be approved by the Under Secretary for Health, or designee, in VHA Central Office.]

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Appendix A – Medical Instrument Technician (Anesthesia)

(1) **GS-6**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills and Abilities**

1. Knowledge of human anatomy and physiology (specifically cardiac and pulmonary).

2. Knowledge and application of safety and infection control processes.

3. Ability to serve as a circulating technician for supplies and to assist with documentation of hemodynamic patient data.

4. Knowledge of anesthesiology supplies and equipment appropriate to less complex anesthetic procedures, such as those found in Ambulatory Surgery.

(c) **Certification.** No certification is required; however, it is desirable that employees at this level have Basic Cardiac Life Support (BCLS) certification.

(d) **Assignment.** The anesthesia technician at this level aids anesthesiologists and nurse anesthetists in less-complex anesthetic procedures such as regional anesthesia (epidural and spinal), laryngeal mask anesthesia, and monitored anesthesia care under close supervision. Technicians will exercise minimal independent judgment in anesthesia technology duties.

(2) **GS-7**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills and Abilities**

1. Knowledge of the fundamentals of standard equipment operation, calibration and function.

2. Knowledge of correct use of non-invasive patient monitoring equipment specific to anesthesiology.

3. Ability to appropriately interact with patients during anesthetic procedures.

4. Knowledge of anesthesiology supplies and equipment appropriate to routine anesthetic procedures, such as those found in typical inpatient settings.

(c) **Certification.** No certification is required; however, it is desirable that employees at this level have Basic Cardiac Life Support (BCLS) certification.

(d) **Assignment.** The anesthesia technician at this level assists anesthesiologists and nurse anesthetists in routine anesthetic procedures under general supervision. The technician will connect and operate non- invasive hemodynamic monitoring equipment, blood and fluid warmers (e.g., Hot Line and Ranger) and patient warming devices (e.g., Bair Hugger). The technician will exercise moderate independent judgment in anesthesia technology duties.

(3) **GS-8**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills and Abilities**

1. Knowledge of the correct use of invasive patient monitoring equipment specific to anesthesiology.

2. Knowledge of basic electrocardiography (EKG).

3. Skill and ability to troubleshoot equipment, often while the patient is anesthetized.

4. Skill and ability to maintain sterility during procedures.

5. Knowledge and understanding of arterial pressure line wave forms including the ability to recognize and distinguish normal from abnormal, artifact from abnormality, and forewarn the physician or anesthetist of an impending life-threatening situation.

6. Knowledge of anesthesiology supplies, medications, and equipment appropriate to more difficult anesthetic procedures such as those found in inpatient settings with more acutely ill patients.

(c) **Certification.** No certification is required; however, it is desirable that employees at this level have Basic Cardiac Life Support (BCLS) certification.

(d) **Assignment.** This represents the full performance level. The anesthesia technician at this level assists anesthesiologists and nurse anesthetists in difficult anesthetic procedures under minimal supervision. The technician will connect and operate invasive hemodynamic monitoring equipment (e.g., arterial pressure monitors), anesthesia machines, ventilators, intubation bronchoscopes, and ultrasonic scanning devices. Technicians prepare and administer medications as directed by the attending physician. They mentor and train lower graded technicians, nurses, medical students, and anesthesia residents on anesthesia technology procedures and assist the supervisor/manager with quality control and performance improvement activities. The technician will exercise a high degree of independent judgment in anesthesia technology duties.

(4) **GS-9.** In addition to the core competencies defined at the GS-8 full performance level, positions at this level may be lead, supervisory, or non-supervisory with specialized advanced knowledge and duties.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. This would include specialized experience as an anesthesia technician which demonstrates possession of the knowledge, skills, and abilities required to provide all aspects of anesthesia technician services including specialized duties. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1 through 6 are appropriate for all positions at this level. KSAs 7 and 8 are to be used in accordance with their appropriateness for the specific assignment.

1. Knowledge and comprehensive understanding of laboratory testing procedures to include maintenance, calibration, and quality control procedures. This includes the ability to perform these lab tests accurately and correctly.

2. Advanced knowledge of electronics and anesthesia equipment with skill in repairing and maintaining this equipment and repairing complex problems.

*3. Comprehensive knowledge of central venous and pulmonary artery (Swan-Ganz) catheterization procedures including measuring cardiac outputs and intra-aortic balloon counterpulsation procedures (i.e., balloon pump).

4. Knowledge and ability to assist with airway management techniques.

*5. Knowledge of JCAHO and other regulatory requirements.

6. Ability to communicate effectively and professionally with employees at varying grade levels.

*7. Ability to manage and supervise employees.

*8. Ability to provide, or provide for, staff development and training.

(c) **Certification.** Anesthesia technician certification through the American Society of Anesthesia Technologists and Technicians (ASATT) is highly desirable. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable for employees at this level.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** Perioperative programs at some facilities require that anesthesia technicians perform duties that exceed the full performance level. The anesthesia technician at this level performs difficult and responsible anesthesia technology duties with considerable latitude for the exercise of independent judgment. The technician may perform clinical laboratory tests for the unit (i.e., blood gas, activated clotting time and glucose) or perform more difficult equipment repairs. The technician may also participate in large-vessel cannulations (with subsequent monitoring) characteristic of open-heart, transplant and major vascular surgeries. These assignments are expected to be relatively few in number ad must represent substantial additional responsibility over the full performance level.

2. **Lead Anesthesia Technician.** There may be some perioperative programs that do not need a technician functioning at the full supervisory level. However, daily guidance of the anesthesia technicians may still be required and can be accomplished through a lead technician. Typically, the lead technician will only have the responsibility of seeing that the work flows smoothly, assuring coverage if needed and assigning work. Authority to approve leave, take disciplinary action, etc. will only be assigned to full supervisory positions.

3. **Supervisory Anesthesia Technician.** Individuals in this assignment assume full administrative and professional responsibility for planning and directing the work of subordinate technicians. Typically these duties include assigning and evaluating the work of subordinate staff; providing anesthesia technician services in more complex cases; reviewing and making recommendations regarding new and emerging procedures; providing instruction and training to new staff; interviewing candidates for positions; recommending selections, advancements, promotions; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

(5) **GS-10.** In addition to the core competencies defined at the GS-9 level, positions at this grade may be supervisory or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Knowledge of the more complex procedures and techniques in the practice of anesthesiology such as extracorporeal blood salvage, washing and return to patient (also known as autotransfusion or cell saving) and arterial and/or venous cannulation for the establishment of arterial pressure monitoring or intravenous fluid/medication delivery.

*2. Ability to plan and assist in the establishment of a completely integrated treatment and procedure program.

*3. Ability to evaluate new products and equipment and make recommendations concerning developments which would improve operations.

*4. Ability to manage the fiscal matters of the functions supervised (which would include fund controls, contracts and equipment expenditures), forecast resource and equipment needs and administer the allocated budget.

*5. Knowledge of and ability to provide the full range of supervisory duties which would include responsibility for assignment of work to be performed; performance evaluation; selection of staff; and recommendation of awards, advancements and, when appropriate, disciplinary actions.

(c) **Certification.** Anesthesia technician certification through the American Society of Anesthesia Technologists and Technicians (ASATT) is highly desired. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable for employees at this level. Participation in recognized professional organizations as a Board examiner, in the development of curricula for training, or testing for the Board is evidence of competence.

(d) **Assignments.** In addition to the core competencies defined at the GS-9 level, positions at this level may be supervisory or non-supervisory with specialized advanced knowledge and duties. For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** Perioperative programs at some facilities require that anesthesia technicians perform duties that exceed the full performance level. The anesthesia technician at this level performs highly difficult and responsible anesthesia technology duties with considerable latitude for the exercise of independent judgment. The anesthesia technician may perform autotransfusion services to ensure that the patient is receiving the safest possible blood transfusion (his/her own blood) and that the regional blood bank supply is not unnecessarily depleted. Additionally, the anesthesia technician may be an integral part of the Anesthesia Care Team and prepare the patients for surgery by establishing arterial or venous access for the anesthesiologists and nurse anesthetists.

2. **Supervisory Anesthesiology Technician.** Individuals at this level plan and direct programs at affiliated medical centers and their satellite outpatient clinics and have full supervisory responsibility for a large staff of non-supervisory personnel and at least one subordinate team leader or supervisor. Typically these duties include assigning and evaluating the work of subordinate staff; resolving problems which may interfere with patient examination or treatment; providing anesthesia technician services in more complex and non-standard cases; evaluating new products and equipment and making recommendations concerning developments which would improve operations; participating as an instructor in the facility's clinical training program; making final decisions on selections based on recommendations from subordinate supervisors or leads; evaluation performance; taking disciplinary action when necessary; and identifying educational or training needs.

Appendix B – Medical Instrument (Cardiac Catheterization)

(1) **GS-6**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of cardiac anatomy, physiology, and basic electrocardiography.

2. Knowledge of sterile techniques, catheterization laboratory supplies, and equipment used in the procedures.

3. Ability to circulate, assist, monitor, and document hemodynamics and electrocardiograms during the procedure.

4. Knowledge of and ability to prepare intra-aortic balloon catheters.

(c) **Certification.** Basic Cardiac Life Support (BCLS) certification is desirable.

(d) **Assignment.** The cardiac catheterization technician at this level aids physicians in aspects of cardiac catheterization and related invasive procedures such as coronary angioplasty, pulmonary angioplasty, and intra-aortic balloon insertion. The technician must be able to recognize cardiac arrhythmias and take appropriate action.

(2) **GS-7**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Ability to assist with insertion of temporary transvenous pacemaker catheters.

2. Ability to maintain intra-aortic balloon pump equipment during procedures.

3. Ability to complete individual cases by pulling sheaths and holding pressure to obtain hemostasis.

4. Ability to assist with closure devices.

5. Ability to appropriately educate patients and patient families regarding procedures and post- catheterization care.

(c) **Certification.** Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are desirable.

(d) **Assignment.** Cardiac catheterization technicians at this level aid physicians in all aspects of standard cardiac catheterization and related invasive procedures such as coronary angioplasty, pulmonary angioplasty, and intra-aortic balloon insertion. They select, set up, and calibrate surgical instruments, catheters, radiographic contrast injectors, and radiographic imaging devices. They prepare cardiac medication for administration by the physician and must be able to recognize cardiac arrhythmias and take appropriate action.

(3) **GS-8**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics of the positions to be filled. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Ability to scrub, circulate, and monitor advanced procedures (including electrophysiological) to include rotoblation, intravascular ultrasound, RADI or wave-wire, angiojet, filter wires, myocardial biopsies EPS, permanent pacemaker insertions, AICD insertions, and biventricular pacemaker insertion.

2. Advanced knowledge of equipment, medications, and supplies used in the Cardiac Catheterization Laboratory and the ability to set-up, calibrate, operate, and troubleshoot this equipment.

3. Knowledge and understanding of wave forms from the great vessels and all chambers of the heart including the ability to recognize and distinguish normal from abnormal, artifact from abnormality, and forewarn the physician of an impending life-threatening situation.

4. Knowledge of quality control and performance improvement indicators for the Cardiac Catheterization Laboratory and ability to prepare and analyze quality control of test results.

(c) **Certification.** Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are desirable.

(d) **Assignment.** This represents the full performance level. Cardiac catheterization technicians at this level function as full members of the Cardiac Catheterization Laboratory Team. They scrub, circulate, operate equipment, etc., on the most complex examination and treatment procedures including procedures such as endocardial biopsy, radio frequency ablation

procedures, and intra-aortic balloon pump therapy for very critical patients. They prepare and administer cardiac medications as directed by the attending physician. They mentor and train lower graded technicians, nurses, nursing students, and cardiopulmonary technology students on cardiac catheterization laboratory procedures and assist the supervisor/manager with quality control and performance improvement activities.

(4) **GS-9.** In addition to the core competencies defined at the GS-8 full performance level, positions at this grade may be lead, supervisory, or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. This would be experience which demonstrates possession of the knowledge required in order to provide all aspects of cardiac catheterization technician services. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities**. KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Knowledge of the more complex examination and treatment procedures and techniques in order to provide training and supervision in these procedures, to evaluate and initiate performance improvement projects, and to write policies, procedures, and protocols, that pertain to the Cardiac Catheterization Laboratory.

*2. Knowledge of JCAHO and other regulatory requirements.

3. Ability to communicate effectively and professionally with employees at varying grade levels.

*4. Ability to manage and supervise employees.

*5. Ability to provide, or provide for, staff development and training.

(c) **Certification.** Registration by Cardiovascular Credentialing International (CCI) as a registered Cardiovascular Invasive Specialist (RCIS) is highly desirable. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable for employees at this level.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** Non-supervisory medical instrument technician (cardiac catheterization) may have assignments that because of their nature substantially exceed the full performance level. The Professional Standards Board will review proposed non-supervisory special assignments for the GS-9 level and make a determination regarding their appropriateness. These assignments are expected to be relatively few in number and must represent substantial additional responsibility over the full performance level.

2. **Lead Medical Instrument Technician (Cardiac Catheterization).** In certain programs, either because of their size and scope or because of a lack of specific supervisory positions, lead positions may be appropriate.

3. **Supervisory Cardiac Catheterization Technician.** Individuals in this assignment assume full administrative and professional responsibility for planning and directing the work of subordinate technicians. Typically these duties include assigning and evaluating the work of subordinate staff; providing cardiac catheterization technician services in more complex cases; reviewing and making recommendations regarding new and emerging procedures; providing instruction and training to new staff; interviewing candidates for positions; recommending selections, advancements, promotions; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

(5) **GS-10.** In addition to the core competencies defined at the GS-9 level, positions at this grade may be supervisory or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. This would be experience that demonstrates possession of the knowledge required to provide the most complex cardiac catheterization technician services and/or supervisory knowledge, skills, and abilities. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Advanced knowledge of complex and non-standard treatment and examination procedures and techniques.

*2. Ability to plan and assist in the establishment of a completely integrated treatment and examination program.

*3. Ability to evaluate new products and equipment and make recommendations concerning developments which would improve operations.

*4. Ability to manage the fiscal matters of the functions supervised (which would include fund controls, contracts, and equipment expenditures), forecast resource and equipment needs, and administer the allocated budget.

*5. Knowledge of and ability to provide the full range of supervisory duties which would include responsibility for assignment of work to be performed; performance evaluation; selection of staff; and recommendation of awards, advancements, and, when appropriate, disciplinary actions.

(c) **Certification.** Registration by Cardiovascular Credentialing International (CCI) as a registered Cardiovascular Invasive Specialist (RCIS) is highly desirable. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable for employees at this level.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** There may be a rare non-supervisory position supporting this grade level. Such a position would typically include maintaining all data and research protocols for cardiac procedures and investigations as well as writing policies, procedures, and protocols for a cardiac catheterization laboratory.

2. **Supervisory Cardiac Catheterization Technician.** Individuals at this level plan and direct programs at affiliated medical centers and satellite outpatient clinics and have full supervisory responsibility for a large staff of non-supervisory personnel and at least one subordinate team leader or supervisor. Typically these duties include assigning and evaluating the work of subordinate staff resolving problems which may interfere with patient examination or treatment; providing cardiac catheterization technician services in more complex and non-standard cases; evaluating new products and equipment and making recommendations concerning developments which would improve operations; participating as an instructor in the facility's clinical training program; making final decisions on selections based on recommendations from subordinate supervisors or leads; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

Appendix C – Medical Instrument Technician (Diagnostic Ultrasound)

NOTE: Positions should be assigned to the DRT, GS-647 series, when both ultrasound and other modalities which require the delivery of ionizing radiation are performed. Positions in which ultrasound duties are performed exclusively (no other modalities are performed), should be assigned to the Medical Instrument Technician, GS-649 series, since ultrasound duties solely do not require the delivery of ionizing radiation.

(1) **GS-6**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of medical terminology and human anatomy in order to receive and interpret physician requests for routine, standardized ultrasonography procedures.

2. Knowledge of tissue harmonics and soundwave propagation within the body to adjust TGC (Time Gain Compensation) for optimal image quality.

3. Knowledge of the physics of velocity, frequency of soundwaves, and their physical properties.

4. Ability to set up and adjust the ultrasound equipment to meet the conditions of the examination and the patient and to operate the equipment for standardized, routine procedures.

5. Ability to interact with patients explaining procedures and positioning the patient for the procedure.

(c) **Certification.** Basic Cardiac Life Support (BCLS) certification is desirable.

(d) **Assignment.** At this level, medical instrument technicians (diagnostic ultrasound) perform examinations which are routine and standardized in nature. They position the patient as needed for the best test results, set up and adjust the ultrasound equipment to meet the condition of the examination and patient, move and adjust depths and types of scan in accordance with procedures, perform operator preventive maintenance and care of equipment, and assist higher graded technicians in performing more complicated examinations.

(2) **GS-7**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. This would be experience which provided the individual with the knowledge, skills, and abilities to independently conduct difficult but standardized diagnostic ultrasonography examinations. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Ability to set up and adjust the ultrasound equipment to meet the conditions of the examination and the patient and to operate the equipment for more complex, but standardized procedures.

2. Knowledge of zoom, expansion, prospectus, color Doppler, and pulsed echo Doppler.

3. Knowledge of the digital transmission of images.

4. Ability to alter standard, but complex procedures and protocols to meet patient needs and physical limitations.

(c) **Certification**. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are desirable.

(d) **Experience.** At this level the medical instrument technician (diagnostic ultrasound) performs complex, standardized procedures independently. They have the knowledge to alter procedures, equipment settings, transducers used, etc., to accommodate patient needs and still produce a quality image for diagnostic purposes. They will also be required to assist with the performance of more complicated procedures and non- standardized procedures in a developmental capacity.

(3) **GS-8**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. This would be experience which provided the overall knowledge, skills, and abilities to conduct diagnostic ultrasound examinations in complex and unusual cases. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Ability to perform diagnostic ultrasound examination on multiple areas of the body, including, but not limited to, the abdomen, pelvis, transvaginal, chest, small parts, thyroid, breast, and scrotum.

2. Ability to perform vascular studies such as vertebral, renal artery, aortic aneurysm, portal-systemic shunts, etc.

3. Ability to assist radiologists with biopsy procedures determining the location, depth, and required needle angle for the lesion to be sampled.

4. Ability to assist in surgical procedures and fluid aspirations.

(c) **Certification.** Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are desirable.

(d) **Assignment**. This represents the full performance level for medical instrument technician (diagnostic ultrasound). At this level the technician is required to perform a full range of procedures including special complicated examinations for which there are no standard instructions or procedures. They perform independent portable ultrasound examinations in the intensive care units, emergency room, surgery, and throughout the Medical Center when required. They also work independently on evenings, nights, and weekend tours of duty as scheduled and/or when on call.

(4) **GS-9.** In addition to the core competencies defined at the GS-8 full performance level, positions at this grade may be lead, supervisory, or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. This would be specialized experience which demonstrates possession of the knowledge required in order to provide all aspects of diagnostic ultrasonography services. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Knowledge of the more complex examination and treatment procedures and techniques in order to provide training and supervision in these procedures, to evaluate and initiate performance improvement projects, and to write policies, procedures, and protocols that pertain to diagnostic ultrasonography.

*2. Knowledge of JCAHO and other regulatory requirements.

3. Ability to communicate effectively and professionally with employees at varying grade levels.

*4. Ability to manage and supervise employees.

*5. Ability to provide, or provide for, staff development and training.

(c) **Certification.** Registration by Cardiovascular Credentialing International (CCI) or by the American Registry of Diagnostic Medical Sonographers (ARDMS) is highly desirable. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** Non-supervisory diagnostic ultrasound technicians may have assignments that because of their nature substantially exceed the full performance level. The Professional Standards Board will review proposed non-supervisory special assignments for the GS-9 level and make a determination regarding their appropriateness. These assignments are expected to be relatively few in number and must represent substantial additional responsibility over the full performance level.

2. **Lead Diagnostic Ultrasound Technician.** In certain programs, either because of their size and scope or because of a lack of specific supervisory positions, lead positions may be appropriate.

3. **Supervisory Diagnostic Ultrasound Technician.** Individuals in this assignment assume full administrative and professional responsibility for planning and directing the work of subordinate technicians. Typically these duties include assigning and evaluating the work of subordinate staff; providing diagnostic ultrasound technician services in more complex cases; reviewing and making recommendations regarding new and emerging procedures; providing instruction and training to new staff; interviewing candidates for positions; recommending selections, advancements, promotions; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

(5) **GS-10.** In addition to the core competencies defined at the GS-9 level, positions at this grade may be supervisory or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience**. At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Advanced knowledge of complex and non-standard treatment and examination procedures and techniques.

*2. Ability to plan and assist in the establishment of a completely integrated treatment and examination program.

*3. Ability to evaluate new products and equipment and make recommendations concerning developments which would improve operations.

*4. Ability to manage the fiscal matters of the functions supervised (which would include fund controls, contracts, and equipment expenditures), forecast resource and equipment needs, and administer the allocated budget.

*5. Knowledge of and ability to provide the full range of supervisory duties which would include responsibility for assignment of work to be performed; performance evaluation; selection of staff; and recommendation of awards, advancements, and, when appropriate, disciplinary actions.

(c) **Certification.** Registration by Cardiovascular Credentialing International (CCI) or by the American Registry of Diagnostic Medical Sonographers (ARDMS) is highly desirable. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** There may be a rare non-supervisory position supporting this grade level. Such a position would typically include knowledge of standards of medical practice in applicable medico-legal responsibilities in diagnostic ultrasound procedures; developing protocols and clinical research projects; developing and updating technical policy and procedure manuals; as well as teaching the correct methodology of diagnostic ultrasound procedures, theory of operations, and theory of interpretation of results to trainees.

2. **Supervisory Diagnostic Ultrasound Technician.** Individuals at this level plan and direct programs at affiliated medical centers and their satellite outpatient clinics and have full supervisory responsibility for a large staff of non-supervisory personnel and at least one subordinate team leader or supervisor. Typically these duties include assigning and evaluating the work of subordinate staff resolving problems which may interfere with patient examination or treatment; providing diagnostic ultrasonography technician services in more complex and non-standard cases; evaluating new products and equipment and making recommendations concerning developments which would improve operations; participating as an instructor in the facility's clinical training program; making final decisions on selections based on recommendations from subordinate supervisors or leads; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

Appendix D – Medical Instrument Technician (Echocardiography)

(1) **GS-6**

(a) Experience. At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of the anatomy and physiology of the heart and great vessels.

2. Knowledge of cardiac arrhythmias and their relationship to hemodynamic conditions of the cardiac cycle.

3. Knowledge of basic cardiac ultrasound physics and the acoustic mechanisms by which high quality cardiac images are obtained.

4. Ability to set up and adjust the ultrasound equipment to meet the conditions of the examination and the patient and to operate the equipment for standardized, routine procedures.

5. Ability to interact with patients explaining procedures and positioning the patient for the procedure.

(c) **Certification.** Basic Cardiac Life Support (BCLS) certification is desirable.

(d) **Assignment.** Echocardiography technician assignments at this level involve performing routine, standardized cardiac ultrasound examinations under the supervision of a fully qualified cardiac sonographer. The work involves generating adequate gray scale images to define cardiac borders and learning to perform Doppler integration of cardiac valves for determination of flow velocities.

(2) **GS-7**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. This would be experience which provided the individual with the knowledge, skills, and abilities to independently conduct difficult but standardized echocardiographic examinations. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Ability to scan transthoracic echocardiograms in all views with colorflow and some Doppler.

2. Ability to conduct cardiac testing to determine the severity and variety of cardiac problems, i.e., valvular dysfunction, myocardial wall kinesia, effusions, endocardial lesions, etc.

3. Knowledge of the set-up for transesophageal echocardiograms.

4. Ability to set up and adjust the ultrasound equipment to meet the conditions of the examination and the patient and to operate the equipment for more complex, but standardized procedures.

(c) **Certification.** Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are desirable.

(d) **Assignment.** At this level, medical instrument technicians (echocardiography) perform a range of standard, but complex, echocardiographic examinations with responsibility for calibrating all instruments prior to the procedure. They are expected to keep an accurate record of tests, daily logs, and videotapes. They maintain cidex logs.

(3) **GS-8**

(a) Experience. At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. This would be experience which provided the overall knowledge, skills, and abilities to conduct diagnostic echocardiography examinations in complex and unusual cases. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills and Abilities**

1. Ability to produce diagnostic quality images and Doppler frequency shift recordings using M-mode, two-dimensional, pulsed and continuous wave Doppler spectral display, and colorflow Doppler imaging.

2. Knowledge of normal echocardiographic findings and deviations produced by a wide variety of cardiovascular diseases.

3. Ability to perform complex procedures such as cardiac studies of the four chambers of the heart and valves using sector scanning techniques to detect stenotic and incompetent valves, chamber enlargement, and pericardial effusion and cardiovascular studies deriving pressure gradients across obstructed valves, etc.

4. Ability to perform complementary ultrasonic examinations (including noninvasive) transthoracic, Bubble studies and contrast echocardiography, (invasive) stress echocardiography, and transesophageal echocardiography.

5. Ability to adapt transducer positioning, instrument controls, and examination techniques to the individual patient being studied and the problem being evaluated including recognizing pertinent abnormalities and documenting abnormal findings.

(c) **Certification.** Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are desirable.

(d) **Assignment.** This represents the full performance level. Echocardiography technicians at this level identify and record anomalies indicative of disease, injury, or other medically significant condition from ultrasound imaging and simultaneous recordings of the Doppler. They incorporate the causes and results of a variety of symptoms and conditions into a plan of ultrasonic diagnostic examination. They change and develop sounding techniques to accommodate such variables as limited patient mobility, variation in physical condition or dimension of the patient, presence of prosthesis or foreign objects, and ultrasonic response of different body parts. They produce diagnostic quality images and Doppler frequency recordings using M-mode, two-dimensional, and Doppler ultrasound.

(4) **GS-9.** In addition to the core competencies defined at the GS-8 full performance level, positions at this grade may be lead, supervisory, or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. This would be experience which demonstrates possession of the knowledge required in order to provide all aspects of echocardiography services. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Knowledge of the more complex examination and treatment procedures and techniques in order to provide training and supervision in these procedures, to evaluate and initiate performance improvement projects, and to write policies, procedures, and protocols, that pertain to Echocardiography.

*2. Knowledge of JCAHO and other regulatory requirements.

3. Ability to communicate effectively and professionally with employees at varying grade levels.

*4. Ability to manage and supervise employees.

*5. Ability to provide, or provide for, staff development and training.

(c) **Certification.** Registration by Cardiovascular Credentialing International (CCI) as a Registered Cardiac Sonographer (RCS) or by the American Registry of Diagnostic Medical Sonographers (ARDMS) as a Registered Diagnostic Cardiac Sonographer (RDCS) is highly

desirable. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments**. Non-supervisory echocardiography technicians may have assignments that because of their nature substantially exceed the full performance level. The Professional Standards Board will review proposed non-supervisory special assignments for the GS-9 level and make a determination regarding their appropriateness. These assignments are expected to be relatively few in number and must represent substantial additional responsibility over the full performance level.

2. **Lead Echocardiography Technician.** In certain programs, either because of their size and scope or because of a lack of specific supervisory positions, lead positions may be appropriate.

3. **Supervisory Echocardiography Technician.** Individuals in this assignment assume full administrative and professional responsibility for planning and directing the work of subordinate technicians. Typically these duties include assigning and evaluating the work of subordinate staff; providing Echocardiography Technician services in more complex cases; reviewing and making recommendations regarding new and emerging procedures; providing instruction and training to new staff; interviewing candidates for positions; recommending selections, advancements, promotions; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

(5) **GS-10.** In addition to the core competencies defined at the GS-9 level, positions at this grade may be supervisory or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Advanced knowledge of complex and non-standard treatment and examination procedures and techniques.

*2. Ability to plan and assist in the establishment of a completely integrated treatment and examination program.

*3. Ability to evaluate new products and equipment and make recommendations concerning developments which would improve operations.

*4. Ability to manage the fiscal matters of the functions supervised (which would include fund controls, contracts, and equipment expenditures), forecast resource and equipment needs, and administer the allocated budget.

*5. Knowledge of and ability to provide the full range of supervisory duties which would include responsibility for assignment of work to be performed; performance evaluation; selection of staff; and recommendation of awards, advancements, and, when appropriate, disciplinary actions.

(c) **Certification.** Registration by Cardiovascular Credentialing International (CCI) as a Registered Cardiac Sonographer (RCS) or by the American Registry of Diagnostic Medical Sonographers (ARDMS) as a Registered Diagnostic Cardiac Sonographer (RDCS) is highly desirable. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable.

(d) **Assignments**. For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** There may be a rare non-supervisory position supporting this grade level. Such a position would typically include independently carrying out the most complex laboratory procedures such as real-time 3D cardiac ultrasounds utilizing on-line and off line computer enhancement and reconstruction technology and 3D reconstruction using off-line computers for rendering real-time 3D images to specified parameters as well as teaching the correct methodology of echocardiography procedures, theory of operations, and theory of interpretation of results to trainees.

2. **Supervisory Echocardiography Technician.** Individuals at this level plan and direct programs at affiliated medical centers and satellite outpatient clinics and have full supervisory responsibility for a large staff of non-supervisory personnel and at least one subordinate team leader or supervisor. Typically these duties include assigning and evaluating the work of subordinate staff resolving problems which may interfere with patient examination or treatment; providing echocardiography technician services in more complex and non-standard cases; evaluating new products and equipment and making recommendations concerning developments which would improve operations; participating as an instructor in the facility's clinical training program; making final decisions on selections based on recommendations from subordinate supervisors or leads; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

Appendix E – Electrocardiograph Technician (EKG)

(1) **GS-6**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills and Abilities**

1. Ability to recognize special patient needs such as disabilities, impaired mobility, and complicating medical conditions in order to prepare and position the patient for the prescribed procedure.

2. Knowledge of the specialized equipment and accessories appropriate to Holter monitoring and ability to perform such tests.

3. Knowledge of universal precautions and sterilization techniques and ability to follow CDC guidelines in cleaning equipment.

4. Ability to monitor the patient for adverse reactions and take appropriate action.

5. Ability to operate the equipment to perform standard and routine highly specialized procedures including exercise stress testing.

(c) **Certification.** No certification is required; however, it is desirable that employees at this level have BCLS (Basic Cardiac Life Support) certification.

(d) **Assignment.** Medical instrument technicians (EKG) at this level receive and interpret physician's requests for diagnostic procedures and/or treatments; explain the procedure to the patient to secure the patient's confidence and cooperation; document the patient's record; independently perform standardized testing monitoring the patient for adverse reactions; and operate, calibrate, and clean and/or sterilize commonly used equipment. Assignments at this level require knowledge of standard medical terminology as well as common diseases and their specific affects.

(2) **GS-7**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. This would be experience which provided knowledge of the equipment, standard tests and procedures, and typical readings including arrhythmias and abnormalities. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of typical patient reactions and signs of distress including the ability to recognize, report and treat potentially lethal arrhythmias.

2. Knowledge of common equipment settings and standardized procedures plus knowledge of common errors and corrective measures.

3. Ability to modify procedures/positions to obtain the correct results with patients with complicating conditions such as amputations, Parkinson's disease, structural defects, and scar tissue.

4. Ability to act as a mentor or preceptor to lower graded technicians.

5. Ability to conduct in-service training on the EKG equipment and related instrumentation.

(c) **Certification.** No certification is required; however, it is desirable that employees at this level have BCLS (Basic Cardiac Life Support) and ACLS (Advanced Cardiac Life Support) certifications.

(d) **Assignment.** This represents the full performance level. Medical instrument technicians (EKG) at this level operate and monitor electrocardiographic equipment to perform specialized examinations and studies involving exercise stress testing, ambulatory monitoring of arrhythmias, and indirect carotid pulse tracings on chronic patients. They monitor tracings to identify arrhythmias and when gross abnormalities appear, when to repeat certain procedures, when to stop test procedures, and when to get the immediate attention of a physician. They evaluate test results to determine appropriate machine adjustments and use alternative techniques and procedures when established procedures do not accomplish acceptable results. This includes adapting equipment and accessories to yield the best results during the examination. They edit and select an appropriate sample portion of the tracing for further interpretation by the physician.

(3) **GS-8.** In addition to the core competencies defined at the GS-7 full performance level, positions at this grade may be lead, supervisory, or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. This would be experience which provided knowledge of advanced specialized procedures, the pharmacology related to this occupation, and knowledge of related acute disorders and diseases and their effects on organs and methods of treatment. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, 3, and 4 are appropriate for all positions at this level. KSAs 5 and 6 are to be used in accordance with their appropriateness for the specific assignment.

1. Knowledge of pharmacology related to specialized procedures.

2. Ability to provide briefings and orientations to hospital staff including physicians.

3. Knowledge of a variety of related acute disorders and diseases, their effects on organs, and methods of treatment.

4. Ability to perform more complex procedures such as SAECG (Signal Averaged ECG), Tilt table monitoring, electrophysiology monitoring, and event monitoring.

*5. Ability to provide, or provide for, staff development and training.

*6. Ability to manage and supervise employees.

(c) **Certification.** No certification is required; however, it is desirable that employees at this level have BCLS (Basic Cardiac Life Support) and ACLS (Advanced Cardiac Life Support) certifications.

(d) **Assignments.** Medical instrument technicians (EKG) at this level perform complicated examinations or treatments for which there are no standard instructions or procedures. They utilize knowledge of anatomy and physiology including an in depth understanding of the functioning of the major systems and internal organs to interpret requests and to recognize the need for additional tests or a different position. Knowledge of pharmacology including the classification and administration of drugs, patient responses, and common dosages as related to this specialty is required. The technician has the ability to perform Signal Averaged ECG, Tilt table monitoring, electrophysiology monitoring, and event monitoring. For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** Non-supervisory medical instrument technician (EKG) may have assignments that because of their nature substantially exceed the full performance level. The Professional Standards Board will review proposed non-supervisory special assignments for the GS-8 level and make a determination regarding their appropriateness. These assignments are expected to be relatively few in number and must represent substantial additional responsibility over the full performance level.

2. **Lead Medical Instrument Technician (EKG).** In certain programs, either because of their size and scope or because of a lack of specific supervisory positions, lead positions may be appropriate.

3. **Supervisory Medical Instrument Technician (EKG).** Individuals in this assignment assume full administrative and professional responsibility for planning and directing the work of subordinate technicians. Typically these duties include assigning and evaluating the work of subordinate staff; providing medical instrument technician (EKG) services in more complex cases; reviewing and

making recommendations regarding new and emerging procedures; providing instruction and training to new staff; interviewing candidates for positions; recommending selections, advancements, promotions; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

(4) **GS-9.** In addition to the core competencies defined at the GS-8 level, positions at this grade may be lead, supervisory, or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Knowledge of the more complex examination and treatment procedures and techniques such as SAECG, ETT, Tilt table monitoring, electrophysiology monitoring, and event monitoring in order to provide training and supervision in these procedures, to develop analysis interpretation formats, and to receive inquiries concerning results.

*2. Knowledge of JCAHO and other regulatory requirements.

3. Ability to communicate effectively and professionally with employees at varying grade levels.

*4. Ability to provide, or provide for, staff development and training.

*5. Ability to manage and supervise employees.

(c) **Certification.** Certification by Cardiovascular Credentialing International (CCI) as a Certified Cardiographic Technician (CCT) is highly desirable at this level. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable for employees at this level.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** Non-supervisory medical instrument technician (EKG) may have assignments that because of their nature substantially exceed the GS-8 level. The Professional Standards Board will review proposed non-supervisory special assignments for the GS-9 level and make a determination regarding their appropriateness. These assignments are expected to be few in number and must represent substantial additional responsibility.

2. **Lead Medical Instrument Technician (EKG).** In certain programs, either because of their size and scope or because of a lack of specific supervisory positions, lead positions may be appropriate.

3. **Supervisory Medical Instrument Technician (EKG).** Individuals in this assignment assume full administrative and professional responsibility for planning and directing the work of subordinate technicians. Typically these duties include assigning and evaluating the work of subordinate staff; providing medical instrument technician (EKG) services in more complex cases; reviewing and making recommendations regarding new and emerging procedures; providing instruction and training to new staff; interviewing candidates for positions; recommending selections, advancements, promotions; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

Appendix F – Medical Instrument Technician (Electroencephalography)

(1) **GS-6**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of basic medical terminology, neuroanatomy, neurophysiology, and EEG interpretation.

2. Ability to position patients for the examination or treatment including using standard alternate positions for patient with common physical disabilities.

3. Ability to operate the appropriate EEG equipment to administer routine, standardized diagnostic or treatment procedures.

4. Knowledge of normal and abnormal results to recognize and report obvious abnormalities during procedures.

5. Knowledge of universal precautions and basic sterilization methods to clean instruments to prevent the spread of infectious diseases.

6. Knowledge of EEG and peripheral equipment to conduct routine maintenance and adjustment checks.

(c) **Certification.** No certification or registration is required; however, it is desirable that employees at this level have BCLS (Basic Cardiac Life Support) certification.

(d) **Assignment.** Operates and monitors EEG equipment in the EEG Lab, intensive care units, operating room, and the patient's bedside. Performs a full range of standard, routine EEG examinations including routine awake and sleep recordings, electrocerebral silence recordings, multiple sleep latency recordings, intraoperative monitoring, electrocorticography. Performs nerve conduction studies using electromyography equipment. Prepares recordings for interpretation and performs a preliminary review and interpretation of the recordings.

(2) **GS-7**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the positions to be filled. This would be experience which provided the individual with the knowledge, skills, and abilities to independently conduct difficult but standardized electroencephalography examinations. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Ability to perform more complex electroencephalography studies such as evoked potential (visual, auditory, somatosensory) and transcranial Doppler studies.

2. Knowledge of medication effects related to electroencephalography studies and clinical situations requiring medication.

3. Knowledge of life threatening or medically emergent testing or patient situations.

4. Ability to recognize artifacts (patient or environmental) and document, eliminate, or take proper measures to monitor the artifact.

(c) **Certification.** No certification or registration is required; however, it is desirable that employees at this level have BCLS (Basic Cardiac Life Support) and ACLS (Advanced Cardiac Life Support) certifications.

(d) **Assignment.** At this level, the medical instrument technician (EEG) independently performs routine but complex procedures and has advanced knowledge in certain areas. They are able to deal with difficult or more complex patients. They are able to identify and correct most artifacts. Procedures are fully explained to the patient and family members to set them at ease. Interpretative skills are sufficient to allow identification of more serious conditions requiring rapid intervention.

(3) **GS-8**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. This would be experience which provided knowledge of the more complex procedures, the pharma- cology related to this occupation, and knowledge of related acute disorders and diseases and their effects on organs and methods of treatment. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Ability to interpret testing data to evaluate critical information for surgeons and other medical staff during testing procedures.

2. Knowledge of anatomy and physiology of the nervous system and the ability to understand the relationship of EEG and evoked potential testing in detecting states of disease and health.

3. Knowledge of behavior assessment during seizure attacks in order to insure adequacy of recordings during seizure discharges.

4. Knowledge of a variety of advanced EEG equipment and peripheral equipment such as equipment for brain mapping, video EEG telemetry systems with seizure detection computers, and spike analysis software.

5. Knowledge of anticonvulsant medications and their effects on the EEG as well as other frequently used pharmaceuticals.

6. Ability to adapt neurodiagnostic devices, parameters, and procedures to complex, unusual, and often critical situations.

(c) **Certification.** No certification or registration is required; however, it is desirable that employees at this level have BCLS (Basic Cardiac Life Support) and ACLS (Advanced Cardiac Life Support) certifications.

(d) **Assignment**. This represents the full performance level. Medical instrument technicians (EEG) at this level are expected to provide independent performance of a full range of procedures. The technician consistently delivers high quality studies for the most complex and non-routine procedures in difficult or demanding environments such as research, intraoperative monitoring, or intensive care monitoring. Procedures are tailored to clinical questions to be answered and may require additional monitors, electrodes, or other devices as clinically indicated. The technician interprets study results and brings to the attention of the physician or supervisor more subtle abnormalities that may require intervention. The technician will highlight portions of recordings of clinical importance for review by the clinical neurophysiologist and will accurately describe the concurrent behavior of the patient. Positive interaction with other health care staff to inform them of the indications for testing; the value, possible outcomes, and limitations of testing; and the policies of the laboratory are expected.

(4) **GS-9.** In addition to the core competencies defined at the GS-8 full performance level, positions at this grade may be lead, supervisory, or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience**. At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Knowledge of the more complex examination and treatment procedures and techniques in order to provide training and supervision in these procedures.

*2. Knowledge of JCAHO and other regulatory requirements.

3. Ability to communicate effectively and professionally with employees at varying grade levels.

*4. Ability to manage and supervise employees.

*5. Ability to provide, or provide for, staff development and training.

(c) **Certification.** Registration by the American Board of Registration of EEG, CNIM &EP Technologists (ABRET) or the American Association of Electrodiagnostic Technologists (AEET) is highly desirable. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable for employees at this level.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** Non-supervisory Electroencephalography Technicians may have assignments that because of their nature substantially exceed the full performance level. The Professional Standards Board will review proposed non-supervisory special assignments for the GS-9 level and make a determination regarding their appropriateness. These assignments are expected to be relatively few in number and must represent substantial additional responsibility over the full performance level.

2. **Lead Electroencephalograpy Technicians.** In certain programs, either because of their size and scope or because of a lack of specific supervisory positions, lead positions may be appropriate.

3. **Supervisory Electroencephalography Technician.** Individuals in this assignment assume full administrative and professional responsibility for planning and directing the work of subordinate technicians. Typically these duties include assigning and evaluating the work of subordinate staff; providing medical instrument technician (EEG) services in more complex cases; reviewing and making recommendations regarding new and emerging procedures; providing instruction and training to new staff; interviewing candidates for positions; recommending selections, advancements, promotions; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

(5) **GS-10.** In addition to the core competencies defined at the GS-9 level, positions at this grade may be supervisory or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. This would be experience which demonstrates possession of the knowledge required to provide the

most complex EEG Technician services and/or supervisory knowledge, skills, and abilities. Participation in recognized professional organizations as a Board examiner, in the development of curricula for training, or testing for the Board is evidence of competence. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Advanced knowledge of the most complex and non-standard treatment and examination procedures and techniques.

*2. Ability to plan and assist in the establishment of a completely integrated treatment and examination program.

*3. Ability to evaluate new products and equipment and make recommendations concerning developments which would improve operations.

*4. Ability to manage the fiscal matters of the functions supervised (which would include fund controls, contracts, and equipment expenditures), forecast resource and equipment needs, and administer the allocated budget.

*5. Knowledge of and ability to provide the full range of supervisory duties which would include responsibility for assignment of work to be performed; performance evaluation; selection of staff; and recommendation of awards, advancements, and, when appropriate, disciplinary actions.

(c) **Certification.** Registration by the American Board of Registration of EEG, CNIM &EP Technologists (ABRET) or the American Association of Electrodiagnostic Technologists (AEET) is highly desirable. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable for employees at this level.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** There may be a rare non-supervisory position supporting this grade level. Such a position would typically include carrying out laboratory procedures independently in complex environments such as the operating room, monitoring suites, and clinical research laboratories as well as teaching the correct methodology of neurodiagnostic procedures, theory of operations, and theory of interpretation of results to trainees.

2. **Supervisory Electroencephalography Technician.** Individuals at this level plan and direct programs at affiliated medical centers and satellite outpatient clinics and have full supervisory responsibility for a large staff of non-supervisory personnel and at least one subordinate team

leader or supervisor. Typically these duties include assigning and evaluating the work of subordinate staff resolving problems which may interfere with patient examination or treatment; providing Medical Instrument Technician (EEG) services in more complex and non-standard cases; evaluating new products and equipment and making recommendations concerning developments which would improve operations; participating as an instructor in the facility's clinical training program; making final decisions on selections based on recommendations from subordinate supervisors or leads; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

Appendix G – Medical Instrument Technician (Hemodialysis)

(1) **GS-6**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Skill in setting up, operating, and performing calibrations as required on a variety of dialysis equipment.

2. Skill in performing and interpreting test results (dialysate chemistries, water treatment testing for contaminates, etc.) including the ability to analyze deviations from the expected norm and responding appropriately.

3. Knowledge of American Association of Medical Instrumentation (AMMI) standards and unit policies as they relate to water treatment.

4. Knowledge of physiological and psychological changes and conditions related to end stage renal disease.

5. Ability to calculate dialysis baths according to the physician's orders per patient by mixing critical concentrates, i.e., calcium, potassium, and bicarbonate.

6. Knowledge of Basic Cardiac Life Support (BCLS).

(c) **Certification.** No certification is required; however, it is desirable that employees at this level have BCLS (Basic Cardiac Life Support) certification.

(d) **Assignment.** Hemodialysis Technicians at this level operate and monitor dialysis systems for chronic patients; check patient condition and determine the proper treatment procedures, technique, and machine adjustments; understand medical treatment for patients with renal failure; administer prescribed medication and observe the patient for desired action or adverse reaction; and recognize and react to signs and symptoms that signal the onset of complications of dialysis including hypotension, disequilibrium, seizures, and arrhythmias.

(2) **GS-7**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. This would be experience which provided knowledge the equipment, standard procedures, and typical machine problems and/or patient reactions to treatment. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Ability to assist the physician in more complex procedures such as central venous catheter insertion.

2. Ability to assist in training patients in home/self-care by teaching components of machine operation including water treatment and monitoring patients for compliance.

3. Ability to act as a mentor or preceptor to lower graded technicians.

4. Ability to analyze deviations from the expected, determine whether the deviations are machine or patient related, and respond according to the findings.

(c) **Certification.** No certification is required; however, it is desirable that employees at this level have BCLS (Basic Cardiac Life Support) and ACLS (Advanced Cardiac Life Support) certifications.

(d) **Assignment.** At this level in addition to providing hemodialysis for chronic patients, hemodialysis technicians assist the physician during central venous catheter insertion, assist in the training of patients for home dialysis/self-care, and act as a mentor or preceptor to lower graded hemodialysis technicians. At this level, the technician accepts responsibility and accountability for his/her own actions.

(3) **GS-8**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. This would be experience which provided knowledge of the more complex procedures, the pharmacology related to this occupation, and knowledge of related acute disorders and diseases and their effects on organs and methods of treatment. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of the hemodialysis process and equipment needed for home/self care including knowledge of common machine problems and repairs to such equipment.

2. Knowledge of the equipment and procedures for peritoneal dialysis.

3. Ability to assist the physician with percutaneous renal biopsies and peritoneal catheter insertion.

4. Ability to provide instruction to dialysis patients in home/self care and in the maintenance of the equipment.

5. Ability to provide instruction for physicians, nurses, and other personnel in dialysis procedures, equipment operation and maintenance, etc.

(c) **Certification.** No certification is required; however, it is desirable that employees at this level have BCLS (Basic Cardiac Life Support) and ACLS (Advanced Cardiac Life Support) certifications.

(d) **Assignment.** This represents the full performance level. At this level the hemodialysis technician serves as a member of a dialysis team performing dialysis on acutely ill patients including those within an intensive care setting. Assignments involve performing both peritoneal and hemodialysis procedures. The dialysis technician may participate in percutaneous renal biopsies, watching the patient during the procedure and properly processing the specimen. Assists the physician in peritoneal catheter insertions and observes the patient for vital signs and provides post operative care. Provides instruction and monitors patients for home dialysis. Performs training of physicians, nurses, and technicians on hemodialysis and peritoneal dialysis techniques.

(4) **GS-9.** In addition to the core competencies defined at the GS-8 full performance level, positions at this grade may be lead, supervisory, or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Knowledge of the more complex examination and treatment procedures and techniques such as those provided for acutely ill patients and peritoneal dialysis in order to provide training and supervision in these procedures.

*2. Knowledge of JCAHO and other regulatory requirements.

3. Ability to communicate effectively and professionally with employees at varying grade levels.

*4. Ability to manage and supervise employees.

*5. Ability to provide, or provide for, staff development and training.

(c) **Certification.** Certification by one of the following organizations is highly desirable at this

level: Nephrology Certification Commission (NNCC), Board of Nephrology Examiners, Inc., Nursing and Technology (BONENT), National Nephrology Certification Organization (NNCO), and the International Certification Commission for Clinical Engineering and Biomedical Technology (ICC) in conjunction with the United States Certification Commission (USCC). Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable for employees at this level.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments**. Non-supervisory hemodialysis technicians may have assignments that because of their nature substantially exceed the full performance level. The Professional Standards Board will review proposed non-supervisory special assignments for the GS-9 level and make a determination regarding their appropriateness. These assignments are expected to be relatively few in number and must represent substantial additional responsibility over the full performance level.

2. **Lead Hemodialysis Technician.** In certain programs, either because of their size and scope or because of a lack of specific supervisory positions, lead positions may be appropriate.

3. **Supervisory Hemodialysis Technician.** Individuals in this assignment assume full administrative and professional responsibility for planning and directing the work of subordinate technicians. Typically these duties include assigning and evaluating the work of subordinate staff; providing dialysis technician services in more complex cases; reviewing and making recommendations regarding new and emerging procedures; providing instruction and training to new staff; interviewing candidates for positions; recommending selections, advancements, promotions; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

(5) **GS-10.** In addition to the core competencies defined at the GS-9 level, positions at this grade may be supervisory or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Advanced knowledge of the most complex and non-standard treatment and examination procedures and techniques.

*2. Ability to plan and assist in the establishment of a completely integrated treatment and examination program.

*3. Ability to evaluate new products and equipment and make recommendations concerning developments which would improve operations.

*4. Ability to manage the fiscal matters of the functions supervised (which would include fund controls, contracts, and equipment expenditures), forecast resource and equipment needs, and administer the allocated budget.

*5. Knowledge of and ability to provide the full range of supervisory duties which would include responsibility for assignment of work to be performed; performance evaluation; selection of staff; and recommendation of awards, advancements, and, when appropriate, disciplinary actions.

(c) **Certification.** Certification by one of the following organizations is highly desirable at this level: Nephrology Certification Commission (NNCC), Board of Nephrology Examiners, Inc., Nursing and Technology (BONENT), National Nephrology Certification Organization (NNCO), and the International Certification Commission for Clinical Engineering and Biomedical Technology (ICC) in conjunction with the United States Certification Commission (USCC). Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable for employees at this level.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** There may be a rare non-supervisory position supporting this grade level. Such a position would typically include advising physicians on the creation of dialysate formulations not commercially available, determining contract requirements for all dialysis equipment, and evaluating the home environment and coordinating the modifications necessary for home dialysis.

2. **Supervisory Hemodialysis Technician.** Individuals at this level plan and direct programs at affiliated medical centers and their satellite outpatient clinics and have full supervisory responsibility for a large staff of non-supervisory personnel and at least one subordinate team leader or supervisor. Typically these duties include assigning and evaluating the work of subordinate staff resolving problems which may interfere with patient examination or treatment; providing dialysis technician services in more complex and non-standard cases; evaluating new products and equipment and making recommendations concerning developments which would improve operations; participating as an instructor in the facility's clinical training program; making final decisions on selections based on recommendations from subordinate supervisors or leads; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

Appendix H – Medical Instrument Technician (Perfusion)

(1) **GS-9**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. This represents the entry level for medical instrument technician (perfusion) positions. Applicants must demonstrate experience, education, or training which provided the basic knowledge, skills, and abilities to maintain extracorporeal circulation during heart surgery. This may evidenced by certification by the American Board of Cardiovascular Perfusion (ABCP) as a Certified Clinical Perfusionist. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of the equipment and supplies needed for safe conduct of cardiopulmonary by-pass.

2. Knowledge of counter pulsation life support and insertion, maintenance, and removal of the intraaortic balloon pump.

3. Knowledge of blood sparing equipment (its uses, indications, and contraindications), blood banking procedures, blood storage and administration, and blood components (including platelet gel and sequestration).

4. Ability to operate ventricular assist devices (VAD) and assist with implantation, transportation, and removal of the device.

5. Knowledge of blood gases (using alpha stat or ph stat measures) and ability to analyze and apply lab results to patients under direct care on by-pass or VAD.

(c) **Certification.** Certification by the American Board of Cardiovascular Perfusion (ABCP) as a Certified Cardiovascular Perfusionist (CCP) is highly desirable.

(d) **Assignment.** Medical instrument technicians (perfusion) at this level operate the heart-lung machine, intra-aortic balloon pump, cell saver and blood salvaging equipment, and ventricular assist devices during open heart and coronary by-pass surgery. They analyze blood gasses and laboratory results in preparation for cardiopulmonary by-pass or while conducting cardiopulmonary by-pass.

(2) **GS-10**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the positions being filled. This would be experience as a clinical perfusionist which provided the knowledge, skills, and abilities to function as a full member of the surgical team on the most critical and complex cases. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of occupation specific pharmacology and ability to give drug therapy and medications as necessary to maintain homeostasis.

2. Ability to maintain intra-operative and initial post-operative files of extracorporeal circulation data records and patient response postoperatively.

3. Ability to provide instruction for physicians, nurses, residents, medical and nursing students, and other personnel in perfusion procedures, equipment operation and maintenance, etc.

(c) **Certification.** Certification by the American Board of Cardiovascular Perfusion (ABCP) as a Certified Cardiovascular Perfusionist (CCP) is highly desirable.

(d) **Assignment.** This represents the full performance level. Medical instrument technicians (perfusion) at this level operate the heart-lung machine, intra-aortic balloon pump, cell saver and blood salvaging equipment, and ventricular assist devices during open heart and coronary by-pass surgery for patients representing the most complex and critical cases. They analyze blood gasses and laboratory results in preparation for cardiopulmonary by-pass or while conducting cardiopulmonary by-pass. They may also operate the equipment during heart transplantation. This could include participating as part of the team for retrieval and transportation of the donor heart. They also provide training to lower grade perfusion technicians, cardiac catheterization technicians, and ICU staff regarding all aspects of perfusion services.

(3) **GS-11**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the position to be filled, and must fully meet the KSAs at that level. This would be experience as a clinical perfusionist which provided the knowledge, skills, and abilities to function as a chief technician and/or program manager. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities**

*1. Knowledge of quality assurance and performance improvement measures for perfusion programs.

*2. Ability to identify training needs for lower graded staff and provide, or provide for this training.

(c) **Certification.** Certification by the American Board of Cardiovascular Perfusion (ABCP) as a Certified Cardiovascular Perfusionist (CCP) is highly desirable.

(d) **Assignment.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed

by the incumbent at least 25% of the time. Medical Instrument Technicians (Perfusion) at this level function as Chief Technicians and/or program directors for the perfusion program. They are responsible for evaluating quality control and developing performance improvement programs for the program. They provide administrative oversight for lower graded Perfusion Technicians and for other personnel assigned to the program.

Appendix I – Medical Instrument Technician (Polysomnography)

(1) **GS-6**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of standard, computerized polysomnographs for recording continuous all night physiological data including EEG, EOG, EKG, EMG and respiratory parameters.

2. Knowledge of standard devices such as oximeters, respiratory effort devices, nasal pressure devices, thermistors, thermocouples, continuous positive airway pressure (CPAP) machines, and laboratory computers including the ability to calibrate and operate the equipment and recognize and eliminate recording artifacts.

3. Knowledge of medical terminology and medical record organization to review medical records, sleep study orders, consent forms, medical charts, etc.

4. Knowledge of polysmnographic procedural protocols (including overnight sleep studies, MSLT, MWT, PAP, etc.).

5. Knowledge of basic anatomy and physiology and the international 10-20 electrode placement system in order to conduct the sleep studies.

(c) **Certification.** No certification or registration is required at this level. Basic Cardiac Life Support (BCLS) certification is desirable.

(d) **Assignment.** Polysomnography (PSG) Technicians at this level perform a full range of standard, routine examinations including overnight sleep studies, MSLT (Multiple Sleep Latency Test), MWT (Maintenance of Wakefulness Test), and PAP (Positive Airway Pressure Titration).

(2) **GS-7**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. This would be experience which provided the individual with the knowledge, skills, and abilities to independently conduct difficult but standardized polysomnography examinations. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of CPAP function and operation to select and fit appropriate PAP patient interface devices.

2. Ability to independently titrate and document PAP level to achieve therapeutic goals.

3. Knowledge of indications, complications, and contraindications of CPAP therapy.

4. Knowledge of Bi-Level pressure titrations.

5. Ability to recognize changes seen during the PSG tracing and identify all stages of sleep. This includes the ability to score and analyze sleep stages in clinical polysomnography recordings.

(c) **Certification.** No certification or registration is required. Basic Cardiac Life Support (BCLS) certification is desirable.

(d) **Assignment.** At this level the Polysomnography Technician performs a full range of standard, but complex, polysomnography examinations with responsibility for properly and accurately calibrating all instruments prior to the beginning of the PSG tracing and selection of appropriate electrode montages and sensitivity and filter settings to elicit the best possible tracings. They independently determine the need for CPAP during all night sleep studies for sleep apnea. They may administer nerve conduction velocity tests.

(3) **GS-8**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. This would be experience which provided a knowledge of the more complex procedures as well as knowledge of the uncommon and/or rare sleep disorders. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Advanced knowledge or the International Classification of Sleep Disorders and the ability to recognize uncommon and/or rare sleep disorders.

2. Ability to summarize and report polysomnographic data in narrative form.

3. Knowledge of event characteristics (e.g., respiratory, cardiac, sleep stage, seizures, etc.) and ability to take appropriate action.

4. Ability to provide briefings and orientation to hospital staff including physicians.

(c) **Certification.** No certification or registration is required. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable for employees at this level.

(d) **Assignment.** This represents the full performance level. At this level Polysomnographic Technicians are able to interact fully with the patient and physician to diagnose sleep disorders including those that are uncommon or rare. They are able to conduct full sleep studies including overnight studies and evaluate the relationship of events, sleep stages, and possible medical conditions which influence or result from events occurring during sleep. They anticipate problems likely to occur during the sleep study and prepare for such situations, make changes in established procedures, or recommend alternative courses of action. They are able to mentor lower graded technicians.

(4) **GS-9.** In addition to the core competencies defined at the GS-8 level, positions at this grade may be lead, supervisory, or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. This would be experience which demonstrates possession of the knowledge required to provide all aspects of polysomnography services. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Knowledge of the more complex examination and treatment procedures and techniques in order to provide training and supervision in these procedures, to evaluate and initiate performance improvement projects, and to write policies, procedures, and protocols, that pertain to Polysomnography.

*2. Knowledge of JCAHO and other regulatory requirements.

3. Ability to communicate effectively and professionally with employees at varying grade levels.

*4. Ability to manage and supervise employees.

*5. Ability to provide, or provide for, staff development and training.

(c) **Certification.** Registration by the Board of Registered Polysomnographic Technologists (BRPT) is highly desirable. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable for employees at this level.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** Non-supervisory polysomnography technicians may have assignments that because of their nature substantially exceed the full performance level. The Professional Standards Board will review proposed non-supervisory special assignments for the GS-9 level and make a determination regarding their appropriateness. These assignments are expected to be relatively few in number and must represent substantial additional responsibility over the full performance level.

2. **Lead Polysomnography Technician.** In certain programs, either because of their size and scope or because of a lack of specific supervisory positions, lead positions may be appropriate.

3. **Supervisory Polysomnography Technician.** Individuals in this assignment assume full administrative and professional responsibility for planning and directing the work of subordinate technicians. Typically these duties include assigning and evaluating the work of subordinate staff; providing polysomnography technician services in more complex cases; reviewing and making recommendations regarding new and emerging procedures; providing instruction and training to new staff; interviewing candidates for positions; recommending selections, advancements, promotions; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

(5) **GS-10.** In addition to the core competencies defined at the GS-9 level, positions at this grade may be supervisory or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. This would be experience which demonstrates possession of the knowledge required to provide the most complex polysomnography technician services. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Advanced knowledge of complex and non-standard treatment and examination procedures and techniques.

*2. Ability to plan and assist in the establishment of a completely integrated treatment and examination program.

*3. Ability to evaluate new products and equipment and make recommendations concerning developments which would improve operations.

*4. Ability to manage the fiscal matters of the functions supervised (which would include fund controls, contracts, and equipment expenditures), forecast resource and equipment needs, and administer the allocated budget.

*5. Knowledge of and ability to provide the full range of supervisory duties which would include responsibility for assignment of work to be performed; performance evaluation; selection of staff; and recommendation of awards, advancements, and, when appropriate, disciplinary actions.

(c) **Certification**. Registration by the Board of Polysomnographic Technologists (BRPT) is highly desirable. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable for employees at this level.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** There may be a rare non-supervisory position supporting this grade level. Such a position would typically include producing preliminary polysomnographic interpretations and recommendations for presentations at case conferences as well as developing, updating, and annually reviewing all sleep laboratory policies and procedures to assure that the laboratory operates according to national standards of practice.

2. **Supervisory Polysomnographic Technician.** Individuals at this level plan and direct programs at affiliated medical centers and satellite outpatient clinics and have full supervisory responsibility for a large staff of non-supervisory personnel and at least one subordinate team leader or supervisor. Typically these duties include assigning and evaluating the work of subordinate staff resolving problems which may interfere with patient examination or treatment; providing polysomnography technician services in more complex and non-standard cases; evaluating new products and equipment and making recommendations concerning developments which would improve operations; participating as an instructor in the facility's clinical training program; making final decisions on selections based on recommendations from subordinate supervisors or leads; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

Appendix J – Medical Instrument Technician (Pulmonary Function)

(1) **GS-6**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of proper administration of metered dose inhalers and the various medications associated with bronchodilation including understanding of the contraindications and dangers of such pharmaceutical agents.

2. Knowledge of the proper use and placement of pulse oximetry equipment and sensors.

3. Knowledge of universal precautions and aseptic techniques for cleaning equipment to provide a safe environment for performing tests.

4. Ability to perform routine, standardized pulmonary function tests.

5. Ability to recognize adverse reactions to treatment that may indicate the need to terminate procedures and to call the physician's attention to unusual reactions to administered medications.

(c) **Certification.** No certification or registration is required; however it is desirable that technicians at this level have Basic Cardiac Life Support (BCLS) certification.

(d) **Assignment.** Technicians at this level perform routine pulmonary function tests in a hospital or clinic. They administer inhaled medications for the purpose of bronchodilator response. They operate, calibrate, and maintain commonly used instruments such as blood gas analyzers, oximeters, and gas nebulizers. They conduct standardized tests such as forced and slow vital capacity, blood gas analysis, and flow volume loops. They instruct patients when and how to perform breathing exercises. They calculate and measure blood gas values. They use aseptic methods to draw blood samples from patients and properly use and clean equipment.

(2) **GS-7**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. This would be experience which provided knowledge the equipment, standard tests and procedures, and typical readings. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Ability to perform arterial punctures, analyze blood gases, and interpret blood gas measurements including the ability to determine if the sample is accurate for reporting, assess for inaccuracy, and correct inaccurate samples.

2. Knowledge of lung mechanics and ability to perform a variety of spirometry and complex pulmonary function tests on both ambulatory and non-ambulatory patients.

3. Ability to determine the order of priority for administering multiple pulmonary function tests, choose the most appropriate equipment and techniques for the type of ventilatory problem, and determine the proper sequence of steps to complete the testing.

4. Ability to measure the pulmonary function of patients for the purpose of diagnosing disease, determining responsiveness to treatment, and assessing disability.

(c) **Certification.** No certification or registration is required; however, Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are desirable for employees at this level.

(d) **Assignment.** Assignments at this level require the technician to have knowledge of the basic principles of pulmonary physiology sufficient to understand impairment of lung function and to be able to utilize that information in the design of individualized tests to help solve specific problems. They perform complex but standardized tests and procedures. They fully explain procedures to the patient and are aware of possible complications and adverse reactions to the performance of pulmonary function testing.

(3) **GS-8**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. This would be experience which provided knowledge of the more complex procedures, the pharma- cology related to this occupation, and knowledge of related acute disorders and diseases and their effects on organs and methods of treatment. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Ability to perform special procedures pulmonary function testing which may include cardiopulmonary exercise testing, exercise induced asthma testing, Shunt testing, and/or P-100 testing.

2. Knowledge of airway management, pulmonary pharmacology, CPR, and oxygen administration.

3. Knowledge of bio-testing procedures, syringe quality control procedures, and ability to analyze results for compliance.

4. Ability to perform quality control on blood gas analyzers as required by accrediting bodies.

5. Ability to provide training to lower graded pulmonary function technicians and students including teaching the correct methodology of pulmonary function procedures and theory of interpretation of results.

(c) **Certification.** No certification or registration is required; however, Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are desirable for employees at this level.

(d) **Assignment.** This represents the full performance level. At this level assignments are characterized by performance of the complex, non-routine Pulmonary Function tests and procedures. Technicians are expected to provide emergency airway management when patients deteriorate in the Laboratory including bronchodilator nebulization, provision of supplemental oxygen, bag-and-mask ventilation, cardio- pulmonary resuscitation and to assist with or perform airway intubation and defibrillation.

(4) **GS-9.** In addition to the core competencies defined at the GS-8 full performance level, positions at this grade may be lead, supervisory, or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Knowledge of the more complex examination and treatment procedures and techniques such as cardiopulmonary pulmonary exercise testing, exercise induced asthma testing, Shunt testing, and/or P-100 testing in order to provide training and supervision in these procedures, to develop analysis interpretation formats, and to receive inquiries concerning results.

*2. Knowledge of JCAHO and other regulatory requirements.

3. Ability to communicate effectively and professionally with employees at varying grade levels.

*4. Ability to manage and supervise employees.

*5. Ability to provide, or provide for, staff development and training.

(c) **Certification.** Certification by the National Board of Respiratory Care as a Certified Pulmonary Function Technologist (CPFT) is highly desirable. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable for employees at this level.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** Non-supervisory pulmonary function technicians may have assignments that because of their nature substantially exceed the full performance level. The Professional Standards Board will review proposed non-supervisory special assignments for the GS-9 level and make a determination regarding their appropriateness. These assignments are expected to be relatively few in number and must represent substantial additional responsibility over the full performance level.

2. **Lead Pulmonary Function Technician.** In certain programs, either because of their size and scope or because of a lack of specific supervisory positions, lead positions may be appropriate.

3. **Supervisory Pulmonary Function Technician.** Individuals in this assignment assume full administrative and professional responsibility for planning and directing the work of subordinate technicians. Typically these duties include assigning and evaluating the work of subordinate staff; providing pulmonary function technician services in more complex cases; reviewing and making recommendations regarding new and emerging procedures; providing instruction and training to new staff; interviewing candidates for positions; recommending selections, advancements, promotions; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

(5) **GS-10.** In addition to the core competencies defined at the GS-9 level, positions at this grade may be supervisory or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Advanced knowledge of complex and non-standard treatment and examination procedures and techniques.

*2. Ability to plan and assist in the establishment of a completely integrated treatment and examination program.

*3. Ability to evaluate new products and equipment and make recommendations concerning developments which would improve operations.

*4. Ability to manage the fiscal matters of the functions supervised (which would include fund controls, contracts, and equipment expenditures), forecast resource and equipment needs, and administer the allocated budget.

*5. Knowledge of and ability to provide the full range of supervisory duties which would include responsibility for assignment of work to be performed; performance evaluation; selection of staff; and recommendation of awards, advancements, and, when appropriate, disciplinary actions.

(c) **Certification.** Certification by the National Board of Respiratory Care as a Certified Pulmonary Function Technologist (CPFT) is highly desirable. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable for employees at this level.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

Supervisory Pulmonary Function Technician. Individuals at this level plan and direct programs at affiliated medical centers and satellite outpatient clinics and have full supervisory responsibility for a large staff of non-supervisory personnel and at least one subordinate team leader or supervisor. Typically these duties include assigning and evaluating the work of subordinate staff resolving problems which may interfere with patient examination or treatment; providing pulmonary function technician services in more complex and non-standard cases; evaluating new products and equipment and making recommendations concerning developments which would improve operations; participating as an instructor in the facility's clinical training program; making final decisions on selections based on recommendations from subordinate supervisors or leads; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

Appendix K – Medical Instrument Technician (Vascular)

(1) **GS-6**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the position to be filled. This would be experience which demonstrates the knowledge, skills, and abilities to perform routine, standardized vascular ultrasound procedures where the technician is not expected to deviate from established procedures. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Ability to perform standardized, routine vascular ultrasound procedures and/or examinations of upper and lower extremity, abdominal, and extra-cranial cerebrovascular vessels.

2. Knowledge of anatomy and physiology including location and function of major body organs and structures as they relate to vascular ultrasonography.

3. Ability to prepare preliminary reports from the examination including documentation of procedural difficulties in the medical record.

(c) **Certification.** Basic Cardiac Life Support (BCLS) certification is desirable.

(d) **Assignment.** Assignments at this level are characterized by the performance of routine, standardized vascular ultrasound procedures and techniques in accordance with instructions.

(2) **GS-7**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the positions to be filled. This would be experience which demonstrates that the technician has the knowledge, skills, and abilities to perform complex procedures requiring the ability to select appropriate equipment based on symptomology and the objective of the examination and the ability to adapt procedures and techniques to enhance diagnostic results. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Ability to perform noninvasive vascular ultrasound procedures or examinations of upper and lower extremity, abdominal, and extra-cranial cerebrovascular vessels which require adaptation of procedures or instruments.

2. Knowledge of anatomy and physiology including location and function of major body organs and structures as they relate to vascular ultrasonography. This would also include knowledge of physiological influences on the hemodynamics of blood flow.

3. Knowledge of pharmacology and chemistry to understand drug reactions, action, effects, and method of administration specifically related to vascular ultrasonography.

4. Knowledge of disease entities that impact the vascular system and their influence on the test results to select the appropriate procedures.

5. Ability to obtain a patient history and perform and appropriate physical assessment based on patient presentation and type of exam to include observation, inspection, auscultation, and palpation.

(c) **Certification.** Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are desirable.

(d) **Assignment.** At the GS-7 level the medical instrument technician (vascular) is expected to perform complex noninvasive vascular testing for diagnostic purposes. These procedures are performed with a variety of testing equipment and modalities to include B mode scanning, duplex imaging, Doppler spectral analysis, photoplethysmography, and upper and lower extremity, digit, and pensile blood pressures. The technician must be able to deviate from normal technique when necessary.

(3) **GS-8**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, abilities, and other characteristics related to the duties of the position to be filled. This would be experience which demonstrates the knowledge, skills, and abilities to perform noninvasive vascular ultrasound procedures as a senior technician. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of cross-sectional and longitudinal vascular anatomy in normal and abnormal vessels, anatomical planes and tissue structures, physiologic effects of disease entities that impact the vascular system, signs and symptoms of acute and chronic vascular disease, and the characteristic appearance of aneurysms, pseudoaneurysms, thromboses, stenoses, occlusions, AV fistulae, and morphology of atherosclerotic plaque formulation.

2. Ability to provide Doppler information of peripheral vessels; demonstrate characteristic differences related to the organs they supply; accurately quantify carotid artery stenoses; and identify and correlate specific waveform analysis, plethysmographic tracings, velocity changes, and pressure gradients characteristic of normal, obstructed, or occluded vessels or grafts.

3. Ability to perform intracranial (transcranial) vascular examinations.

4. Ability to operate the instruments to extract the highest quality image utilizing the appropriate transducer frequency, Doppler angle, focal zones, gain, depth, color map, wall filter, and sample volume.

5. Ability to provide objective data to document progression or regression of disease.

(c) **Certification.** Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are desirable.

(d) **Assignment.** This represents the full performance level. At the GS-8 level the medical instrument technician (vascular) functions as a senior technician. They are expected to perform the full range of vascular ultrasound procedures including the most complex and non-routine and to make appropriate adjustments in established procedures and techniques to obtain the results required for clinical diagnosis and documentation. At this level the technician would also have the ability to perform intracranial (transcranial) vascular examinations.

(4) **GS-9.** In addition to the core competencies defined at the GS-8 full performance level, positions at this grade may be lead, supervisory, or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. This would be experience which demonstrates the knowledge, skills, and abilities to fully perform all vascular ultrasound tests and examinations and to function as a technical director of the vascular laboratory and provide oversight and/or guidance to other technicians. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Knowledge of the more complex examination and treatment procedures and techniques in order to provide training and supervision in these procedures, to evaluate and initiate performance improvement projects, and to write policies, procedures, and protocols, that pertain to vascular ultrasonography.

*2. Knowledge of JCAHO and other regulatory requirements.

3. Ability to communicate effectively and professionally with employees at varying grade levels.

*4. Ability to manage and supervise employees.

*5. Ability to provide, or provide for, staff development and training.

(c) **Certification.** Registration by Cardiovascular Credentialing International (CCI) as a Registered Vascular Sonographer (RVS) or by the American Registry of Diagnostic Medical

Sonographers (ARDMS) as a Registered Vascular Technologist (RVT) is highly desirable. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are also desirable.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** Non-supervisory vascular technicians may have assignments that because of their nature substantially exceed the full performance level. The Professional Standards Board will review proposed non-supervisory special assignments for the GS-9 level and make a determination regarding their appropriateness. These assignments are expected to be relatively few in number and must represent substantial additional responsibility over the full performance level.

2. Lead Vascular Technician. In certain programs, either because of their size and scope or because of a lack of specific supervisory positions, lead positions may be appropriate.

3. Supervisory Vascular Technician. Individuals in this assignment assume full administrative and professional responsibility for planning and directing the work of subordinate technicians. Typically these duties include assigning and evaluating the work of subordinate staff; providing Vascular Sonography services in more complex cases; reviewing and making recommendations regarding new and emerging procedures; providing instruction and training to new staff; interviewing candidates for positions; recommending selections, advancements, promotions; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

(5) **GS-10.** In addition to the core competencies defined at the GS-9 level, positions at this grade may be supervisory or non-supervisory with specialized advanced knowledge and assignments.

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level, which is directly related to the duties of the position to be filled, and must fully meet the KSAs at that level. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, and 3 are appropriate for all positions at this level. KSAs 4 and 5 are to be used in accordance with their appropriateness for the specific assignment.

1. Advanced knowledge of the most complex and non-standard treatment and examination procedures and techniques.

*2. Ability to plan and assist in the establishment of a completely integrated treatment and examination program.

*3. Ability to evaluate new products and equipment and make recommendations concerning developments which would improve operations.

*4. Ability to manage the fiscal matters of the functions supervised (which would include fund controls, contracts, and equipment expenditures), forecast resource and equipment needs, and administer the allocated budget.

*5. Knowledge of and ability to provide the full range of supervisory duties which would include responsibility for assignment of work to be performed; performance evaluation; selection of staff; and recommendation of awards, advancements, and, when appropriate, disciplinary actions.

(c) **Certification.** Registration by Cardiovascular Credentialing International (CCI) as a Registered Vascular Sonographer (RVS) or by the American Registry of Diagnostic Medical Sonographers (ARDMS) as a Registered Vascular Technologist (RVT) is highly desirable. Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) certifications are desirable.

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Special Assignments.** There may be a rare non-supervisory position supporting this grade level. Such a position would typically include knowledge of standards of medical practice in applicable medico- legal responsibilities in vascular ultrasound procedures as well as teaching the correct methodology of vascular ultrasound procedures, theory of operations, and theory of interpretation of results to trainees.

2. **Supervisory Vascular Technician.** Individuals at this level plan and direct programs at affiliated medical centers and their satellite outpatient clinics and have full supervisory responsibility for a large staff of non-supervisory personnel and at least one subordinate team leader or supervisor. Typically these duties include assigning and evaluating the work of subordinate staff resolving problems which may interfere with patient examination or treatment; providing vascular sonography services in more complex and non- standard cases; evaluating new products and equipment and making recommendations concerning developments which would improve operations; participating as an instructor in the facility's clinical training program; making final decisions on selections based on recommendations from subordinate supervisors or leads; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

[**Appendix L – Gastroenterology (GI) Technician**

(1) **GS-6**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, and abilities related to the duties of the position to be filled. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills and Abilities**

1. Ability to set up endoscopy equipment, ensuring endoscopes and ancillary equipment functions properly.

2. Ability to aid the physician with standard and routine procedures such as colonoscopy and esophagogastroduodenoscopy (EGD).

3. Knowledge of medical terminology and human anatomy in order to assist practitioner with routine standardized gastroenterology procedures.

4. Ability to interact with patients explaining procedures and positioning the patient for the procedure, recognizing disabilities or impaired mobility and assisting the patient as necessary.

5. Ability to reprocess and maintain specialty critical reusable medical equipment (RME), following approved Standard Operating Procedures (SOPs) and universal precautions.

6. Ability to use basic computer systems and programs to record patient and endoscopic data, adhering to patient privacy and information security policies.

7. Ability to manually clean and disinfect non-critical reusable equipment and surfaces, dispose of one- time-use equipment and trash per facility policy, and restock supplies such as linens, suction equipment, and cleaning products.

(c) **Certification.** No certification is required; however, it is desirable that employees at this level have Basic Life Support (BLS) certification.

(d) **Assignment.** Technicians at this level aid the staff with procedures which are routine and standardized in nature. They explain the procedure to the patient to secure the patient's confidence and cooperation; position patients for procedures; and restock linen and consumable supplies. They set-up, clean, and ensure proper performance of the endoscopic equipment; and prepare the procedure rooms for turn-over, adhering to universal precautions and SOPs. The technician logs procedure and reprocessing data, adhering to patient privacy and information security policy. Assignments at this level require knowledge of basic medical terminology as well as common gastrointestinal anatomy.

(2) **GS-7 GI Technician (Full Performance Level)**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, and abilities related to the duties of the position to be filled. This would be experience which provided knowledge of proper performance of endoscopic equipment and procedures. In addition, the candidate must demonstrate the following KSAs:

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Knowledge of endoscopic equipment and use in basic and complex endoscopic procedures.

2. Knowledge of anatomy and physiology related to the GI system, with ability to recognize and report obvious abnormalities during procedures.

3. Ability to assist physician with specialized, complex procedures.

4. Knowledge of universal precautions and disinfection techniques and ability to follow SOP's to clean reusable medical equipment (RME).

5. Ability to collaborate, communicate, and demonstrate customer service skills and interpersonal skills with all healthcare professionals to ensure quality and continuity of care.

6. Ability to use basic computer systems and programs to record patient and endoscopic data, adhering to patient privacy and information security policies.

7. Ability to deliver patient care, including vital sign measurements and medication administration.

(c) **Certification.** No certification is required; however, it is desirable that employees at this level have BLS certification.

(d) **Assignment.** This represents the full performance level. Technicians at this level function with minimal instruction, assisting the staff with complex specialized procedures such as ERCP and endoscopic ultrasound (EUS). They are proficient with GI endoscopic equipment and ensure proper performance of endoscopic equipment; select alternate equipment or adjust equipment settings to accommodate patient needs and produce high quality technique. They collect, process, and label all specimens; train other technicians in basic endoscopic procedures; work in and outside the GI unit offering technician support during emergent and on-call endoscopic cases; and assist the nurse in patient care duties such as obtaining vital signs, dressing and documenting all pertinent information in the patient's records. They inventory and maintain par levels of specialty equipment for the endoscopy unit.

(3) **GS-8** (Positions at this grade may be lead or non-supervisory with specialized advanced knowledge and assignments.)

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, and abilities related to the duties of the position to be filled. This

would be experience which provided knowledge of advanced specialized gastroenterology procedures. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities.** KSAs 1, 2, 3, and 4 are appropriate for all positions at this level. KSA 5 is to be used as appropriate for the specific assignment.

1. Knowledge of complex gastroenterology procedures, such as ERCP with spy glass, ablation procedures, mucosal resection procedures, fine needle aspiration procedures and capsule studies.

2. Ability to provide briefings and orientations to hospital staff including physicians.

3. Knowledge of regulatory and advisory agencies such as Joint Commission, Occupational Safety and Health Administration (OSHA), Society of Gastroenterology Nurses and Associates (SGNA), American Society for Gastrointestinal Endoscopy (ASGE), and applicable laws such as the Health Insurance Portability and Accountability Act (HIPPA).

4. Knowledge of medical terminology related to GI and biliary systems used to identify pathology or for specimen identification and procedure documentation and knowledge of advanced anatomy and physiology to recognize obvious abnormalities during procedures.

*5. Ability to provide staff development and training.

(c) **Certification.** No certification is required; however, it is desirable that employees at this level have SGNA core level one and two certifications (BLS and ACLS).

(d) **Assignments.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time.

1. **Advanced GI Technician.** Non-supervisory GI technicians may have assignments that because of the nature of the duties, substantially exceed the full performance level. They assist with the most highly complex procedures such as mucosal resection and ablation, fine needle aspiration, and double balloon colonoscopy, using a variety of highly complex ancillary equipment. They train technicians and other staff to assist with endoscopic procedures; may assist with daily assignments of technicians, procedural room assignments, and ordering of specialty equipment.

They may trial new equipment and coordinate major repairs or installation of equipment with vendors and other facility departments; arrange vendor training and other educational in-services for the endoscopy staff. They may serve on GI related committees, incorporating practice improvement measures.

2. **Lead GI Technician.** In certain programs, either because of size and scope or because of a lack of specific supervisory positions, lead positions may be appropriate to provide daily guidance to the GI technicians. Lead Technicians will be the "superusers" responsible for answering questions for all staff on the endoscopic equipment. They will have the responsibility for daily workload assessments, assigning work, and assuring proper staffing coverage; provide performance input for evaluation and award purposes; evaluate training records; and determine educational needs of the technician staff. They assist the practitioner with the most complex and non-standard procedures consisting of difficult endoscopic intubation through strictures. They assist special needs patients through the endoscopic procedure, ensuring those with physical or mental limitations are given the necessary physical or non- medicinal interventional support measures. They participate in quality improvement measures, recommending and implementing practice changes when indicated.

(4) **GS-9 Supervisory GI Technician**

(a) **Experience.** At least 1 year of experience comparable to the next lower grade level which demonstrates the knowledge, skills, and abilities related to the duties of the position to be filled. This would be experience which provided knowledge of advanced specialized gastroenterology procedures. In addition, the candidate must demonstrate the following technical KSAs and the potential to acquire the assignment specific KSAs designated by an asterisk (*):

(b) **Demonstrated Knowledge, Skills, and Abilities**

1. Advanced knowledge of complex gastroenterology procedures, such as ERCP with spy glass, ablation procedures, mucosal resection procedures, fine needle aspiration procedures and capsule studies.

*2. Ability to provide briefings and orientations, staff development and training to hospital staff including physicians.

*3. Knowledge of professional, legal, and ethical standards inherent to patient safety and rights.

*4. Ability to plan and assist in the establishment of integrated treatment and examination programs.

*5. Ability to evaluate new products and equipment and make recommendations concerning developments which would improve operations.

*6. Ability to manage the fiscal matters of the functions supervised (which would include fund controls, contracts, and equipment expenditures), forecast resource and equipment needs, and administer the allocated budget.

*7. Ability to provide the full range of supervisory duties which would include responsibility for assignment of work to be performed; performance evaluation; selection of staff; and recommendation of awards, advancements, and, when appropriate, disciplinary actions.

(c) **Certification.** No certification is required; however, it is desirable that employees at this level have SGNA core level one and two certifications (BLS and ACLS).

(d) **Assignment.** For all assignments above the full performance level, the higher-level duties must consist of significant scope, complexity (difficulty), and range of variety, and be performed by the incumbent at least 25% of the time. Individuals at this level plan and direct programs at affiliated medical centers and their satellite outpatient clinics and have full supervisory responsibility for a large staff of non-supervisory personnel. Typically these duties include assigning and evaluating the work of subordinate staff; resolving problems which may interfere with patient examination or treatment; providing GI Technician services in more complex and non-standard cases; evaluating new products and equipment and making recommendations concerning developments which would improve operations; participating as an instructor in the facility's clinical training program; making final decisions on selections based on recommendations from subordinate supervisors or leads; evaluating performance; taking disciplinary action when necessary; and identifying educational or training needs.

RESPONSIBLE OFFICE: Human Resources and Administration/Operations, Security and Preparedness (HRA/OSP) (006), Office of the Chief Human Capital Officer (OCHCO) (05), Recruitment and Placement Policy Service (059)