

QTP 4N0X1B-10
24 October 2014

NEURODIAGNOSTIC TECHNOLOGIST SPECIALTY



TOTAL FORCE, TOTAL CARE – EVERYTIME, ANYWHERE

Medical Education & Training Campus
Neurodiagnostic Technologist Program
3480 Garden Avenue, Bldg 1356
Fort Sam Houston, TX 78219-1200

QTP 4N0X1B-10

NEUROLOGY SPECIALTY

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INTRODUCTION

1. These Qualification Training Packages (QTPs) were developed to enhance on-the-job training for *Aerospace Medical Service Specialty* personnel. As a trainer, the QTPs provide you with the breakdown of tasks into teachable elements. The teachable elements will help you to guide the trainee toward sufficient proficiency for task performance ***without assistance***. QTPs are also used by the task certifiers/certification official to evaluate trainees concerning tasks which need third-party certification.
2. Review each volume and identify which modules of QTPs are needed for the trainee's job position. Core task items are identified with the number "5" on the STS Column 2; these items are the minimum mandatory skills which are required for all 4N0X1B personnel to be proficient in performing. You have the flexibility to arrange training for each module in the order that you decide.
3. Review the subject-area tasks in each module with the trainee. Direct the trainee to review the training references to gain a better understanding of the objective for each module. If the trainee has any questions about the objective, clarify the behavior that is expected in the objective. Review the performance checklist with the trainee, and allow him/her sufficient time to learn each step (some objectives may take longer to teach). Remember--the objective of each QTP is to standardize training and to allow sufficient time for the trainee to learn each task thoroughly in order to perform the task ***without assistance***.
4. When the trainee receives sufficient training and is ready to be evaluated on an objective, follow the evaluation instructions. The performance checklist must be used as you evaluate each task objective. When the trainee successfully accomplishes the objective, document task completion appropriately in the six-part folder.
6. The QTP task completion is to be annotated on AF Form 1098, *Special Task Certification and Recurring Training*, filed in Part 3, Section B in AFTR. **NOTE:** The individual checklists are **not** filed in each member's six-part training folder. A master checklist is filed in Part 3, Section B of the Master Training Plan (MTP) six-part training folder.
7. If the trainee does not accomplish the objective, review the areas which need remediation. Conduct a feedback concerning each module with the trainee, and document appropriately in AFTR. As the trainer, when you are satisfied that the trainee is qualified to perform the task, he/she will be re-evaluated until the objective is met.

8. If the task which is being trained requires third-party certification by a task certifier/certifying official, the trainer first must ensure that the trainee is qualified to perform the task *without assistance*. Then the trainee will be evaluated by a task certifier/certifying official. The tasks which require third-party certification are denoted with a “^” in Column 3E of the Career Field Education and Training Plan (CFETP). After third-party certification, training qualification is documented appropriately in AFTR.

9. The QTPs are a necessary tool for standardizing refresher/sustainment training. Such standardization will benefit the CFETP training concept throughout each member’s career. These documents also will be utilized for assessing/certifying the Aerospace Medical Service Specialist each time that he/she is assigned to a new duty position. The QTP developers’ goal is to publish a usable document for certifying officials, trainers, and trainees for the purpose of enhancing on-the-job training for *Aerospace Medical Service Specialty* personnel. We value your first-hand expertise, and we encourage your feedback. Direct all inquiries to:

383d TRAINING SQUADRON/XUEAA
c/o 4N0X1 CDC WRITER/MANAGER
2931 Harney Rd, BLDG 903
Fort Sam Houston, TX 78234
DSN: 420-5126

ROUTINE ELECTROENCEPHALOGRAM

SUBJECT AREA:	EEG Recording Process
TASK(s):	Perform appropriate recording methods to obtain brain waves.
CFETP/STS REFERENCE(s):	9.1.1, 9.1.3, 9.1.4, 9.2.1, 9.2.2.1, 9.2.2.2, 9.2.3, 9.4.1, 9.4.2, 9.4.3, 9.6.1, 9.6.2, 9.6.3, 9.7.1, 9.7.2, 9.7.3, 9.8.1.1, 9.8.1.2, 9.8.1.5, 9.8.1.6, 9.8.1.7, 9.8.1.8, 9.8.1.9, 9.8.1.10, 9.8.2.1, 9.8.2.2, 9.8.2.3, 9.8.2.4, 9.8.2.5, 9.9.1, 9.9.2, 9.9.3, 9.9.4, 9.9.5.
EQUIPMENT REQUIRED:	Electroeurodiagnostic Technologist (END) instrument, electrodes, material for headset (collodion/paste, china marker, tape measure with milliliter divisions), and a frequency ruler.
TRAINING REFERENCE(s):	Fundamentals of EEG Technology, Vol. I; Spehlmann's EEG Primer; American Clinical Neurophysiology Society Guidelines in Electroencephalography
REMARKS/NOTES:	Review steps of the process one-on-one with Neurodiagnostic Technologist (NDT) and/or other personnel skilled and verified in performing an electroencephalogram.
OBJECTIVE:	The trainee will set up and perform a routine electroencephalogram using END equipment for interpretation by an electroencephalographer.

MINIMUM REQUIREMENTS FOR SUCCESSFUL COMPLETION:

1. The procedure must be performed in the allotted time of 1 hour and 30 minutes for a paste headset (1 hour for the headset and 30 minutes for the EEG) and 1 hour and 45 minutes for a collodion headset (1 hour and 15 minutes for the headset and 30 minutes to run the EEG). If the procedure is not completed in the allotted time, it's an automatic UNSATISFACTORY. The trainee will be allowed to complete the duration of the PCL.
2. There can be no more than four electrode measurements with a 0.7-1.0 cm deviation; the fifth will result in an automatic UNSATISFACTORY. Any deviation greater than 1.0 cm will result in an automatic UNSATISFACTORY.
3. There can be no more than two electrode impedances above 5 K Ω : the third is an automatic UNSATISFACTORY.
4. The trainee must accomplish 10 of the 13 items in section three to successfully pass.
5. No violations of safety requirements.

EVALUATION INSTRUCTIONS:

1. After the trainee has received instruction, allow sufficient practice on each part of the task.
2. Trainee should be evaluated on this task utilizing a digital instrument.
3. The evaluator will **STOP** the procedure immediately and correct the trainee if performance could become detrimental to patient safety at any time.
4. Use the performance checklist to ensure all steps of the task are accomplished.
5. Document task competency upon completion of the evaluation in the trainee's AFTR. Initial evaluation should be documented in the CFETP. All recurring evaluations should be documented on AF Form 1098.

TASKS	TEST			RETEST		
	S	U	NA	S	U	NA
SECTION ONE: HEADSET						
A. HEADSET						
1. Applies headset in allotted time: Start _____ Stop _____						
2. Measures head IAW I 10-20 System						
3. Applies electrodes: Paste _____ Collodion						
SECTION TWO: EEG PROCEDURE						
B. ADMINISTRATION PROCEDURES						
1. Records pt history						
2. Completes technologist report						
3. Logs entries						
C. EEG PROCEDURE: PRE-PROCEDURE						
1. Performs EEG in allotted time: Start _____ Stop _____						
2. Checks machine for proper supplies						
3. Gives pt instructions for procedure						
4. Ensures pt safety						
PROCEDURAL ACTIONS STEPS D-K MUST BE PERFORMED IN SEQUENCE						
D. INSTRUMENT CALIBRATION						
1. Performs CAL						
2. Runs at least four complete square wave CAL						
E. BIOLOGICAL CALIBRATION						
1. Performs BIO-CAL						
2. Performs at least 10 secs of BIO-CAL						
F. LONGITUDINAL BIPOLAR MONTAGE: ACTIVATION						
1. Selects proper montage						
2. Annotates pt status & position						
3. Performs ELECTRODE TEST: corrects as below 5 KΩ						
4. Records for ONE MINUTE						
5. Performs EYES OPEN & EYES CLOSED: 10 secs						
6. Performs BLINK 5x						
7. Performs MENTAL ALERT						
8. Records for at least THREE MINUTES						
9. HYPERVENTILATION						
a. Performs HV						
b. Coaches pt as needed						

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TASKS	TEST			RETEST			
	RATING	S	U	NA	S	U	NA
c. Annotates overall pt effort							
d. Performs HV for at least THREE MINUTES							
e. Identifies & corrects artifacts							
12. POST HYPERVENTILATION							
a. Performs Post HV							
b. Performs E/O & E/C 25 secs post HV							
c. Performs Post HV for at least THREE MINUTES							
d. Identifies & corrects artifacts							
13. Records at least ONE MINUTE							
14. PHOTIC STIMULATION							
a. Performs Photic Stimulation							
b. Performs adequate frequency intervals							
15. Records at least TWO MINUTES							
16. Identifies & corrects artifacts							
G. TRANSVERSE MONTAGE							
1. Selects proper montage							
2. Annotates pt status & position							
3. Performs ELECTRODE TEST: corrects as below 5 KΩ							
4. Records for ONE MINUTE							
5. Performs EYES OPEN & EYES CLOSED: if pt is awake							
6. Records at least FOUR MINUTES							
7. Identifies & corrects artifacts							
H. REFERENTIAL MONTAGE							
1. Selects proper montage							
2. Annotates pt status & position							
3. Performs ELECTRODE TEST: corrects as below 5 KΩ							
4. Records for ONE MINUTE							
5. Performs EYES OPEN & EYES CLOSED: if pt is awake							
6. Records at least FOUR MINUTES							
7. Identifies & corrects artifacts							

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TASKS	TEST			RETEST			
	RATING	S	U	NA	S	U	NA
I. BIOLOGICAL CALIBRATION							
1. Performs BIO-CAL							
2. Performs at least 10 secs of BIO-CAL							
J. INSTRUMENT CALIBRATION							
1. Performs CAL							
2. Runs at least four complete square wave CAL							
K. POST PROCEDURAL ACTIONS							
1. Removes electrodes							
2. Cleans electrodes							
3. Ensures instrument is ready for next procedure							
SECTION THREE: RECORDS REVIEW							
L. CALIBRATION QUESTIONS							
1. States how to ensures electrical baseline							
2. States how to check mechanical baseline							
3. States how to checks time axis							
4. States the effects of pen dampening							
M. BIO-CAL QUESTIONS							
1. States the purpose of bio-cal							
2. Compares instrument and bio-cal							
N. MEASUREMENTS & CALCULATIONS							
1. Calculates voltage of waveform ($S = V/A$)							
2. Calculates duration of waveform (paper speed x mm)							
3. Calculates frequency of waveform (1/duration)							
4. Calculates paper divisions at different speeds							
O. LOCALIZATION & POLARITY							
1. Uses proper technique with montage (phase reversal)							
2. Identifies focus [electrode (s)]							
3. Identifies polarity (negative or positive)							
FINAL RESULT:							

FEEDBACK: Using this checklist as a source of information, discuss the trainee's performance indicating strengths, weaknesses, suggested improvements, etc. If the trainee performed all steps of the task satisfactorily, document the results in the trainee's AFTR.

VISUAL EVOKED RESPONSE TESTING

- SUBJECT AREA:** Visual Evoked Response.
- TASK(s):** Perform appropriate recording methods to obtain visual evoked response.
- CFETP/STS REFERENCE(s):** **9.1.1, 9.1.3, 9.1.4, 9.2.1, 9.2.2.1, 9.2.2.2, 9.2.3, 9.4.1, 9.4.2, 9.4.3, 9.6.1, 9.6.2, 9.6.3, 9.9.1, 9.9.2, 9.9.3, 9.9.4, 9.9.5, 9.11.1.1, 9.11.1.2, 9.11.2.1, 9.11.2.2, 9.11.2.3, 9.11.2.4.**
- EQUIPMENT REQUIRED:** EP system with operation manual, monitor with pattern reversal, visual acuity chart, eye patch and patient preparation equipment.
- TRAINING REFERENCE(s):** Spehlmans Evoked Potential Primer; American Clinical Neurophysiology Society Guidelines in Evoked Potentials
- REMARKS/NOTES:** Review steps of the process one-on-one with END technologist and/or other personnel skilled and verified in performing a visual evoked response.
- OBJECTIVE:** The trainee will set-up and perform a visual evoked response, using an evoked potential instrument for interpretation by an Electroencephalographer.

MINIMUM REQUIREMENTS FOR SUCCESSFUL COMPLETION:

1. Measure and apply appropriate electrodes for procedure within (+/-) 0.7 cm for each site of headset
2. Properly position patient from monitor and assess visual acuity prior to performing procedure
3. Complete procedure within allotted time of 2 hours
4. No unsatisfactory scores allowed on entire procedure
5. No violations of safety requirements.

EVALUATION INSTRUCTIONS:

1. After the trainee has received instruction, allow sufficient practice on each part of the task.
3. Trainee should be evaluated on this task utilizing both a digital and analog instrument when applicable.

3. The evaluator will **STOP** the procedure immediately and correct the trainee if performance could become detrimental to patient safety at any time.

4. Use the performance checklist to ensure all steps of the task are accomplished.
5. Document task competency upon completion of the evaluation in the trainee's AFTR. Initial evaluation should be documented in the CFETP. All recurring evaluations should be documented on AF Form 1098.

PERFORMANCE ITEM	RATING	TEST			RETEST		
		S	U	NA	S	U	NA
ADMINISTRATIVE PROCEDURES							
1. Determine the type of procedure to be performed							
2. Accurately records patient history.							
3. Completes technologist report.							
4. Accurate log entries.							
PRE-PROCEDURAL ACTIONS							
1. Time Start: Time End:							
2. Check instruments for adequate supply.							
3. Select, position, and apply electrodes appropriately.							
4. Instruct patient on procedure.							
5. Perform required safety checks.							
PROCEDURAL ACTIONS							
1. Set proper instrument settings:							
a. Set averager variables:							
(1) Channels							
(2) Averages							
(3) Sweep time							
b. Set amplifier variables:							
(1) Sensitivity							
(2) High frequency filter							
(3) Low frequency filter							
(4) 60 Hz (off)							
c. Set stimulus variables:							
(1) Rate							
(2) Duration							
(3) Type							
(4) Size							
2. Perform, correct, & annotate calibration checks.							
3. Set montage.							
4. Apply electrodes:							
a. Measure for the required electrode sites.							
b. Measure impedances:							
(1) All should be under 5 kohms.							
(2) Correct impedances over 5 kohms.							
5. Perform visual acuity measurement:							
a. Explain the procedure.							
b. Position chart proper distance from the patient.							
c. Determine left visual acuity.							
d. Determine right visual acuity.							
e. Document visual acuity findings.							
6. Begin with appropriate pattern stimulator setting for patient:							
a. Position pattern stimulator the required distance.							

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PERFORMANCE ITEM	TEST			RETEST			
	RATING	S	U	NA	S	U	NA
6. b. Determine pattern size.							
c. Full or partial field.							
d. Covers non-stimulated eye.							
7. Instruct patient to relax and focus on appropriate area.							
8. Average one set of waves:							
a. Display the required number of channels.							
b. Start averaging process.							
c. View input to identify artifact.							
d. Adjust display gain appropriately.							
e. Position waves appropriately.							
9. Average a second set of waves:							
a. Display the required number of channels.							
b. Start the averaging process.							
c. View input to identify artifact.							
d. Adjust display gain appropriately.							
e. Position waves appropriately.							
10. Determine reproducibility of the waves:							
a. Superimposes similar channels.							
b. Repeat the recording if the waves are not reproducible.							
11. Label the responses or record the required values:							
a. Correctly identify waves N75, P100, and N145 in mid occipital channel.							
b. Correctly identify N75 and P100 in the left and right occipital channels.							
c. Correctly measure the interpeak latencies of N75-P100 in all three channels.							
12. Print patient information and waveforms.							
13. Store completed study on appropriate medium.							
14. Properly log procedure.							
POST-PROCEDURAL ACTIONS							
1. Disconnect patient.							
2. Remove the eye patch and recording electrodes.							
3. Clean recording electrodes.							
4. Ensure patient room/area is clean.							
5. Ensure system is ready for next procedure.							

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RATING	TEST			RETEST		
	S	U	NA	S	U	NA
KNOWLEDGE						
1. Ensure technical adequacy.						
2. Identify and eliminate artifact.						
3. Identify normal waveform patterns.						
4. Identify abnormal waveform patterns.						
5. Troubleshoot and correct problems as needed.						
FINAL RESULT:						

FEEDBACK: Using this checklist as a source of information, discuss the trainee's performance indicating strengths, weaknesses, suggested improvements, etc. If the trainee performed all steps of the task satisfactorily, document the results in the trainee's AFTR.

BRAINSTEM AUDITORY EVOKED RESPONSE TESTING

SUBJECT AREA:	Auditory Evoked Response
TASK(s):	Perform appropriate recording methods to obtain auditory evoked response
CFETP/STS REFERENCE(s):	9.1.1, 9.1.3, 9.1.4, 9.2.1, 9.2.2.1, 9.2.2.2, 9.2.3, 9.4.1, 9.4.2, 9.4.3, 9.6.1, 9.6.2, 9.6.3, 9.9.1, 9.9.2, 9.9.3, 9.9.4, 9.9.5, 9.11.1.3, 9.11.2.1, 9.11.2.2, 9.11.2.3, 9.11.2.4.
EQUIPMENT REQUIRED:	EP system with operation manual, headphones, and patient preparation equipment
TRAINING REFERENCE(s):	Spehlman’s Evoked Potential Primer; American Clinical Neurophysiology Society, Guidelines in Evoked Potentials
REMARKS/NOTES:	Review steps of the process one-on-one with NDT and/or other personnel skilled and verified in performing an auditory evoked response
OBJECTIVE:	The trainee will set-up and perform an auditory evoked response using an evoked potential instrument for interpretation by an electroencephalographer

MINIMUM REQUIREMENTS FOR SUCCESSFUL COMPLETION:

3. Measure and apply appropriate electrodes for procedure within (+/-) 1.0 cm for each site of headset.
4. Properly fit patient with headphones and assess hearing level prior to performing procedure.
3. Complete procedure within allotted time of 2 hours.
4. No unsatisfactory scores allowed on entire procedure.
5. No violations of safety requirements.

EVALUATION INSTRUCTIONS:

1. After the trainee has received instruction, allow sufficient practice on each part of the task.
2. The evaluator will **STOP** the procedure immediately and correct the trainee if performance could become detrimental to patient safety at any time.
3. Use the performance checklist to ensure all steps of the task are accomplished.
4. Document task competency upon completion of the evaluation in the trainee's AFTR. Initial evaluation should be documented in the CFETP. All recurring evaluations should be documented on AF Form 1098.

PERFORMANCE ITEM	TEST			RETEST		
	RATING	S	U	NA	S	U
ADMINISTRATIVE PROCEDURES						
1. Determine the type of procedure to be performed.						
2. Accurately record patient history.						
3. Complete technologist report.						
4. Accurately log entries.						
PRE-PROCEDURAL ACTIONS						
1. Time Start: Time End:						
2. Check instruments for adequate supplies.						
3. Select, position, and apply electrodes appropriately.						
4. Give patient instructions for procedure.						
5. Perform required safety checks.						
PROCEDURAL ACTIONS						
1. Set proper instrument settings:						
a. Set average variables:						
(1) Channels						
(2) Averages						
(3) Sweep time						
b. Set amplifier variables:						
(1) Sensitivity						
(2) High Frequency Filter						
(3) Low Frequency Filter						
(4) 60 Hz (off)						
c. Set stimulus variables:						
(1) Rate						
(2) Duration						
(3) Type						
2. Perform, correct, & annotate calibration checks.						
3. Set montage.						
4. Apply electrodes:						
a. Measure for required electrode sites.						
b. Measure impedances:						
(1) Should all be under 5 k ohms.						
(2) Corrects impedances over 5 k ohms.						
5. Perform hearing threshold measurement:						
a. Explain the threshold test.						
b. Position headphones correctly.						
c. Determine left hearing threshold.						
d. Determine right hearing threshold.						
e. Document both hearing thresholds appropriately.						
6. Begin procedure by setting appropriate stimulus for patient:						
a. Stimulus type to tested ear.						

continued on next page

PERFORMANCE ITEM	TEST			RETEST			
	RATING	S	U	NA	S	U	NA
b. Masking to opposite ear.							
7. Instruct patient to relax.							
8. Average one set of waves:							
a. Display the required number of channels.							
b. Start averaging process.							
c. View input to identify artifact.							
d. Adjust display gain appropriately.							
e. Position waves appropriately.							
9. Average a second set of waves:							
a. Display the required number of channels.							
b. Start averaging process.							
c. View input to identify artifact.							
d. Adjust display gain appropriately.							
e. Position waves appropriately.							
10. Determine reproducibility of waves:							
a. Overlay similar channels.							
b. Repeat recording if waves are not reducible.							
11. Label responses or record the required values:							
a. Correctly identify waves I, II, III, IV, and V on the ipsilateral channels.							
b. Correctly measure the interpeak latencies of waves I-III, III-V, and I-V.							
c. Measures the amplitude of waves I and V.							
12. Print patient information and waveforms.							
13. Store completed study on the appropriate medium.							
14. Properly log procedure.							
POST-PROCEDURAL ACTIONS							
1. Disconnect patient.							
2. Remove the headphones and recording electrodes.							
3. Clean recording electrodes.							
4. Ensure patient room/area is clean.							
5. Ensure system is ready for next procedure.							

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PERFORMANCE ITEM	TEST			RETEST			
	RATING	S	U	NA	S	U	NA
KNOWLEDGE							
1. Ensure technical adequacy.							
2. Identify and eliminate artifacts.							
3. Identify normal waveform patterns.							
4. Identify abnormal waveform patterns.							
5. Troubleshoot and correct problems as needed.							
FINAL RESULT:							

FEEDBACK: Using this checklist as a source of information, discuss the trainee's performance indicating strengths, weaknesses, suggested improvements, etc. If the trainee performed all steps of the task satisfactorily, document the results in the trainee's AFTR.

SOMATOSENSORY EVOKED POTENTIAL TESTING - UPPER EXTREMITY

SUBJECT AREA:	Somatosensory evoked potential testing - upper extremity (USSEP)
TASK(s):	Perform appropriate recording methods to obtain somatosensory evoked potential (upper extremity)
CFETP/STS REFERENCE(s):	9.1.1, 9.1.3, 9.1.4, 9.2.1, 9.2.2.1, 9.2.2.2, 9.2.3, 9.4.1, 9.4.2, 9.4.3, 9.6.1, 9.6.2, 9.6.3, 9.9.1, 9.9.2, 9.9.3, 9.9.4, 9.9.5, 9.11.1.4, 9.11.2.1, 9.11.2.2, 9.11.2.3, 9.11.2.4.
EQUIPMENT REQUIRED:	EP system with operation manual, nerve stimulator, and patient preparation equipment
TRAINING REFERENCE(s):	Spehlmans Evoked Potential Primer; American Clinical Neurophysiology Society Guidelines in Evoked Potentials
REMARKS/NOTES:	Review steps of the process one-on-one with NDT and/or other personnel skilled and verified in performing a USSEP's
OBJECTIVE:	The trainee will set-up and perform an upper extremity somatosensory evoked potential (USSEP) using an evoked potential instrument for interpretation by an electroencephalographer.

MINIMUM REQUIREMENTS FOR SUCCESSFUL COMPLETION:

1. Measure and apply appropriate electrodes for procedure within (+/-) 0.7 cm for each site of headset.
2. Measure and apply somatosensory electrodes
3. Locate and properly stimulate nerve
4. Complete procedure within allotted time of 2 hours
5. No unsatisfactory scores allowed on entire procedure
6. No violations of safety requirements

EVALUATION INSTRUCTIONS:

1. After the trainee has received instruction, allow sufficient practice on each part of the task.
2. The evaluator will **STOP** the procedure immediately and correct the trainee if performance could become detrimental to patient safety at any time.
3. Use the performance checklist to ensure all steps of the task are accomplished.
4. Document task competency upon completion of the evaluation in the trainee's AFTR. Initial evaluation should be documented in the CFETP. All recurring evaluations should be documented on AF Form 1098.

PERFORMANCE ITEM	RATING	TEST			RETEST		
		S	U	NA	S	U	NA
ADMINISTRATIVE PROCEDURES							
1. Determine the type of procedure to be performed.							
2. Accurately record patient history.							
3. Complete technologist report.							
4. Accurate log entries.							
PRE-PROCEDURAL ACTIONS							
1. Time Start: Time End:							
2. Check instruments for adequate supplies.							
3. Select, position, and apply electrodes appropriately.							
4. Give patient instructions for procedure.							
5. Perform required safety check.							
PROCEDURAL ACTIONS							
1. Set proper instrument settings:							
a. Set averager variables:							
(1) Channels.							
(2) Averages.							
(3) Sweep time.							
b. Set amplifier variables:							
(1) Sensitivity.							
(2) High frequency filter.							
(3) Low frequency filter.							
(4) 60 Hz (off)							
c. Set stimulus variables:							
(1) Rate.							
(2) Duration.							
(3) Set the electric nerve stimulator.							
2. Perform, correct, and annotate calibration checks.							
3. Set montage.							
4. Apply electrodes:							
a. Measure for the required electrode site.							
b. Measure impedances:							
(1) All under 5 k ohms.							
(2) Correct any that are over 5 k ohms.							
5. Properly position stimulator:							
a. Determine stimulation site.							
b. Lower skin resistance at ground and stimulation site.							
c. Position the extremity ground.							
d. Places stimulator in correct location with cathode proximal and anode distal.							

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Vol.10 Module 4 (continued) Somatosensory Evoked Potential Testing (Upper Extremity)

PERFORMANCE ITEM	TEST			RETEST			
	RATING	S	U	NA	S	U	NA
6. Begin recording of USSEP procedure:							
a. Instruct patient to relax.							
b. Begin stimulus intensity at 0 and increase until muscle response is seen or until approximately 10 mA is reached (whichever occurs first)							
c. Reposition stimulator when no muscle response is evoked.							
7. Average one set of waves:							
a. Display the required number of channels.							
b. Start the averaging process.							
c. View input to identify artifacts.							
d. Adjust display gain properly.							
e. Position waves appropriately.							
8. Average second set of waves:							
a. Display the required number of channels.							
b. Start the averaging process.							
c. View input to identify artifacts.							
d. Adjust display gain properly.							
e. Position waves appropriately.							
9. Determine reproducibility of the waves:							
a. Overlay similar channels.							
b. Repeat the recording if the waves are not reproducible.							
10. Label the responses or record the required values:							
a. Correctly identify desired waves (N9, N9-N13, P14, & N20)							
b. Measure the desired interpeak latencies (N9-N13, N13-P20, & N9-20)							
c. Measure the distance from stimulus to Erb's point and calculate the conduction velocity.							
11. Print patient information and waveforms.							
12. Store completed study on appropriate medium.							
13. Properly log procedure.							
POST-PROCEDURAL ACTIONS							
1. Disconnect patient.							
2. Remove the stimulator, ground, and recording electrodes.							
3. Clean recording electrodes.							
4. Ensure patient room/area is clean.							
5. Ensure system is ready for the next procedure.							

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Vol.10 Module 4 (continued) Somatosensory Evoked Potential Testing (Upper Extremity)

PERFORMANCE ITEM	RATING	TEST			RETEST		
		S	U	NA	S	U	NA
KNOWLEDGE							
1. Ensure technical accuracy.							
2. Identify and eliminate artifacts.							
3. Identify normal waveform patterns.							
4. Identify abnormal waveform patterns.							
5. Troubleshoot and correct problems as needed.							
FINAL RESULT:							

FEEDBACK: Using this checklist as a source of information, discuss the trainee's performance indicating strengths, weaknesses, suggested improvements, etc. If the trainee performed all steps of the task satisfactorily, document the results in the trainee's AFTR.

SOMATOSENSORY EVOKED POTENTIAL TESTING - LOWER EXTREMITY

SUBJECT AREA:	Somatosensory evoked potential testing - lower extremity (LSSEP)
TASK(s):	Perform appropriate recording methods to obtain somatosensory evoked potential (lower extremity)
CFETP/STS REFERENCE(s):	9.1.1, 9.1.3, 9.1.4, 9.2.1, 9.2.2.1, 9.2.2.2, 9.2.3, 9.4.1, 9.4.2, 9.4.3, 9.6.1, 9.6.2, 9.6.3, 9.9.1, 9.9.2, 9.9.3, 9.9.4, 9.9.5, 9.11.1.5, 9.11.2.1, 9.11.2.2, 9.11.2.3, 9.11.2.4.
EQUIPMENT REQUIRED:	EP system with operation manual, nerve stimulator, and patient preparation equipment
TRAINING REFERENCE(s):	Spehlmans Evoked Potential Primer; American Clinical Neurophysiology Society Guidelines in Evoked Potentials
REMARKS/NOTES:	Review steps of the process one-on-one with NDT and/or other personnel skilled and verified in performing a LSSEP.
OBJECTIVE:	The trainee will set-up and perform a lower extremity somatosensory evoked response (LSSEP) using an evoked potential instrument for interpretation by an electroencephalographer

MINIMUM REQUIREMENTS FOR SUCCESSFUL COMPLETION:

1. Measure and apply appropriate electrodes for procedure within (+/-) 0.7 cm for each site of headset.
2. Measure and apply electrodes
3. Locate and properly stimulate lower extremity nerve.
4. Complete procedure within allotted time of 2 hours.
5. No unsatisfactory scores allowed on entire procedure.
6. No violations of safety requirements.

EVALUATION INSTRUCTIONS:

1. After the trainee has received instruction, allow sufficient practice on each part of the task.
2. The evaluator will **STOP** the procedure immediately and correct the trainee if performance could become detrimental to patient safety at any time.
3. Use the performance checklist to ensure all steps of the task are accomplished.
4. Document task competency upon completion of the evaluation in the trainee's AFTR. Initial evaluation should be documented in the CFETP. All recurring evaluations should be documented on AF Form 1098.

PERFORMANCE ITEM	RATING	TEST			RETEST		
		S	U	NA	S	U	NA
ADMINISTRATIVE PROCEDURES							
1. Determine the type of procedure to be performed.							
2. Accurately record patient history.							
3. Complete technologist report.							
4. Accurate log entries.							
PRE-PROCEDURAL ACTIONS							
1. Time Start: Time End:							
2. Check instruments for adequate supplies.							
3. Select, position, and apply electrodes appropriately.							
4. Give patient instructions for procedure.							
5. Perform required safety check.							
PROCEDURAL ACTIONS							
3. Set proper instrument settings:							
a. Set averager variables:							
(1) Channels.							
(2) Averages.							
(3) Sweep time.							
b. Set amplifier variables:							
(1) Sensitivity.							
(2) High frequency filter.							
(3) Low frequency filter.							
(4) 60 Hz (off)							
c. Set stimulus variables:							
(1) Rate.							
(2) Duration.							
(3) Set the electric nerve stimulator.							
2. Perform, correct, and annotate calibration checks.							
3. Set montage.							
4. Apply electrodes:							
a. Measure for the required electrode site.							
b. Measure impedances:							
(1) All under 5 k ohms.							
(2) Correct any that are over 5 k ohms.							
5. Properly position stimulator:							
a. Determine stimulation site.							
b. Lower skin resistance at ground and stimulation site.							
c. Position the extremity ground.							
d. Place stimulator between in the correct location with cathode proximal and anode distal.							

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Vol.10 Module 5 (continued) Somatosensory Evoked Potential Testing (Lower Extremity)

PERFORMANCE ITEM	TEST			RETEST			
	RATING	S	U	N A	S	U	N A
11. Begin recording of LSSEP procedure:							
a. Instruct patient to relax.							
b. Begin stimulus intensity at 0 and increase until muscle response is seen or until approximately 15mA is reached (whichever occurs first)							
c. Reposition stimulator when no muscle response is evoked.							
12. Average one set of waves:							
a. Display the required number of channels.							
b. Start the averaging process.							
c. View input to identify artifacts.							
d. Adjust display gain properly.							
e. Position waves appropriately.							
13. Average second set of waves:							
a. Display the required number of channels.							
b. Start the averaging process.							
c. View input to identify artifacts.							
d. Adjust display gain properly.							
e. Position waves appropriately.							
14. Determine reproducibility of the waves:							
a. Overlay similar channels.							
b. Repeat the recording if the waves are not reproducible.							
15. Label the responses or record the required values:							
a. Correctly identify desired waves (P27-N35 & P37-N45)							
b. Account for patient's height to calculate the conduction velocities.							
11. Print patient information and waveforms.							
12. Store completed study on appropriate medium.							
13. Properly log procedure.							
POST-PROCEDURAL ACTIONS							
1. Disconnect patient.							
2. Remove the stimulator, ground, and recording electrodes.							
3. Clean recording electrodes.							
4. Ensure patient room/area is clean.							
5. Ensure system is ready for the next procedure.							

Vol.10 Module 5 (continued) Somatosensory Evoked Potential Testing (Lower Extremity)

PERFORMANCE ITEM	TEST			RETEST			
	RATING	S	U	NA	S	U	NA
KNOWLEDGE							
1. Ensure technical accuracy.							
2. Identify and eliminate artifacts.							
3. Identify normal waveform patterns.							
4. Identify abnormal waveform patterns.							
5. Troubleshoot and correct problems as needed.							
FINAL RESULT:							

FEEDBACK: Using this checklist as a source of information, discuss the trainee's performance indicating strengths, weaknesses, suggested improvements, etc. If the trainee performed all steps of the task satisfactorily, document the results in the trainee's AFTR.