Potential Essential Element Testing Matrix

DOE defines essential elements as "protection and assurance elements necessary for the overall success of the S&S program at a facility or site, the failure of any one of which would result in protection effectiveness being significantly reduced or which would require performance of other elements to be significantly better than expected in order to mitigate the failure." Essential elements can include but are not limited to equipment, procedures, and personnel.

Sites must implement and maintain a performance assurance plan (PAP) that ensures that essential elements used to protect DOE S&S interests meet established requirements for reliability, operability, readiness, and performance prior to and during operational use. The assurance plan must (among other things):

- Encompass all S&S topical areas relating to Program Management Operations, Physical Protection, Protective Force, Information Security, Personnel Security, and Materials Control and Accountability that are relevant to protection of assets at the facility/site;

- Identify the essential elements relevant to protection of assets at the facility/site.

The PAP must ensure that essential elements are subjected to both:

- Operability tests to confirm, without any indication of effectiveness, that a system element or total system is operating as expected; and

- Effectiveness tests to provide assurance that essential elements of the system are working as expected, separately or in coordination, to meet protection program objectives.

Note: Some essential elements may not be capable of being subjected to either operability/functional or effectiveness testing. In those cases, "N/A" is entered in the appropriate box.

Essential Element	Operability/Functional Test	Effectiveness Test
Protection Program Management		
Planning:		
• Site Security Plans	N/A	N/A
• Tactical Doctrine	• Knowledge Test (e.g., fields of fire, over-watch, etc.)	• Force-On-Force • Large-Scale LSPT
• Vulnerability/Risk Assessments	N/A	N/A
• Deviations	N/A	N/A
• SECON	• Tabletop Exercise	• Full-Scale Exercise
• OPSEC	N/A	N/A
• Human Reliability Program	• LSPTs: Implementing off-shift testing for cause, etc. • Tabletop Exercises: Aberrant behavior observation, etc.	• Test of Collection Methods.
Oversight/Feedback:		
• Performance Assurance	N/A	N/A
• Surveys/Self-Assessments	• Review Schedule	N/A
• Issues Management	• Review Procedures	• Tabletop Exercises: Provide an issue and observe process
Conduct of Operations:		
• Delegation of Authority	N/A	N/A
• Direction	N/A	N/A
• Contract Management	N/A	N/A
Physical Security Systems		
Barriers (Active):		

Essential Element	Operability/Functional Test	Effectiveness Test
• Remote operated gates, "pop-up" barriers, etc.	• LSPT: Operability test	• Observation: Evaluate methods of defeat
Barriers (Passive):		
• Concrete Blocks, Fencing, Concertina Wire, Aircraft Cable, Etc.	N/A	• Observation: Evaluate methods of defeat
Intrusion Detection and Assessment Systems:		
• PIDAS Sensors	• Walk Test	• LSPT: Evaluate detection capability when methods are used to attempt to avoid detection (e.g., crawling, running, jumping)
• CAS/SAS Functionality & associated equipment	• Does equipment perform all pertinent functions consistently during all normal and off-normal operating conditions (e.g., CAS or SAS continued operation when the other facility is "instantly" taken off line)	• LSPT: Evaluate CAS/SAS operations during PF exercises, including man/machine interface (operator awareness of alarm activity), capability for accurate assessment, is operator overwhelmed with FAR/NAR, do alarms "stack up"
• Electrical & Auxiliary Power	• Disconnect primary power feed and verify generator, automatic transfer switch, and uninterruptable power supply perform properly • Verify that equipment and fuel supply is located in a security area.	N/A
• Interior Sensors	• Walk Test	• LSPT: Evaluate detection capability when methods are used to attempt to avoid detection (e.g., crawling, running, jumping)

Essential Element	Operability/Functional Test	Effectiveness Test
• CCTV Cameras & Associated Assessment System	• Walk test in daytime and nighttime lighting conditions to verify coverage area and resolution	• LSPT: Perform run and other maneuvers to determine operator capability to assess alarm events when considering actual field conditions, such as shadows
• Extended Range Sensors	• Walk Test	• LSPT: Evaluate detection capability when methods are used to attempt to avoid detection (e.g., crawling, running, jumping)
• Tamper Switches	• Verify operation	N/A
Access Control Systems:		
• Locks and Keys	• Evaluate key inventory process and procedural compliance by "spot checking" keys and key holder actions.	N/A
• Badging (badge fabrication & destruction process)	• Verify compliance	• LSPT: Attempt to modify badging database from both inside and outside the site firewall. • LSPT: Attempt to circumvent security controls (e.g., two-person rule, etc.) • LSPT: Attempt to circumvent destruction process.
• Electronic Access Control Systems that aid in human control of personnel access into security areas (includes verification of access authorization)	• Verify compliance with physical and personnel security requirements.	• LSPT: Circumvent electronic controls (e.g., biometrics, access lists, etc.) • LSPT: Attempt to modify access lists from both inside and outside firewall.

Essential Element	Operability/Functional Test	Effectiveness Test
Entry/Exit Inspections:		
• Detection equipment that aids in human identification of prohibited and controlled articles at security boundaries.	• Perform calibration tests in all portions of the detection zone	• LSPT: Attempt to bypass detection (e.g., pass around, kick through, etc.) • LSPT: Attempt to introduce prohibited and/or controlled items.
• Detection equipment that aids in human identification of unauthorized removal of security assets from security areas.	• Perform calibration tests in all portions of the detection zone	• LSPT: Attempt to bypass detection (e.g., pass around, kick through, etc.) • LSPT: Attempt to remove security assets.
Testing and Maintenance:		
• Acceptance Testing	• When necessary, evaluate comprehensiveness of procedures	N/A
• Calibration (Function Testing)	• Walk test or otherwise operate the associated device	N/A
• Testing After Maintenance (Performance Testing)	N/A	• Evaluate associated device(s) by performing actions the device(s) should detect in a manner that attempts to evade detection
• FAR/NAR	• Verify compliance	• See CAS/SAS
• Maintenance Backlog	N/A	• Verify compensatory measures are properly implemented when needed
• Compensatory Measures Associated with PSS Essential Elements	N/A	• Verify these measures are effective with same effectiveness test that is imposed on the equipment being compensated.

Essential Element	Operability/Functional Test	Effectiveness Test
Protective Force		
Emergency Response Skills:		
• Security Incident Response Plans	• Tabletop Exercises	• Force-on-Force (FoF) Exercises, ARAPTs, LSPTs
• Response Plan Execution	• Tabletop Exercises	• FoF, ARAPTs, LSPTs
• Individual Tactics	• Post Checks, Knowledge Tests • LSPT: Observe response	• FoF, ARAPTs
• Team Tactics	• LSPT: On-shift drills/exercises	• FoF, ARAPTs
• Command and Control	• Tabletop Exercises, Command Post Exercises (CPX)	• FoF, ARAPTs, LSPTs
• Primary Weapons Proficiency	• Pre-firing functionality LSPTs	• Qualification courses of fire • Combat courses • Live fire shoot house tests • Simulation system tests
• Specialty Weapons Proficiency	• Pre-firing functionality LSPTs	• Qualification courses of fire • Combat courses • Live fire shoot house tests • Simulation systems tests

Essential Element	Operability/Functional Test	Effectiveness Test
• Emergency Communications	• Review hourly radio check logs with all posts/patrols and/or observe hourly radio check • Review logs of daily checks of alternate channels and/or observe daily check • Review logs of daily check of PA system and/or observe check • Review logs of daily check of cellular bridge capability and/or observe check • Observe check of disabling individual radios • Observe duress system checks	• FoF, ARAPTS, LSPTs
• Knowledge of the Use of Force Continuum	• Knowledge Tests • Post Checks	• FOF, ARAPts, LSPTs, Simulation Testing – interactive video
• Tier II Response, e.g., protestors, active shooter, bomb threat, etc.	• Knowledge Tests • Post Checks	• LSPTs • FoF
Infrastructure:		
• Staffing	• Document Reviews • Interviews • Observations	• FoF
• Management/Bargaining Unit Relations	• Interviews • CBA Review • Grievance History • Observations/Interaction	N/A
• Basic Training	• Training Record Review	• FoF, LSPTs, ARAPTs
• Specialty Training (e.g., SRT, Breaching etc.)	• Training Record Review	• LSPTs, FoF
• Refresher Training	• Training Record Review	• LSPTs, FoF, Post Checks

Essential Element	Operability/Functional Test	Effectiveness Test
• Certifications, (e.g., K-9, Armorers, Instructors, etc.)	• Training and Certification Records Review	• Observation • LSPTs
• Facilities/Equipment	• Observations	N/A
Routine Duties:		
• Post Orders	• Document Reviews • Knowledge Tests	• Post Checks • Interviews (SPOs & Supervisors)
• Access Control	• Observation • Document Reviews (Post Orders) • Knowledge Test	• LSPTs • Interviews
• Contraband Detection	• Observation • Document Reviews (Post Orders)	• LSPTs • Interviews
• Use of Job Related Equipment (e.g., protective mask, thermal equipment IFF, X-ray machine, etc.)	• Document Reviews (Post Orders) • Observation	• Post Checks • LSPTs
• Mounted Patrol Procedures	• Document Review (Post Orders) • Observation	• LSPTs • FOF
• Dismounted Patrol Procedures	• Document Review (Post Orders) • Observation	• LSPTs • FoF
Material Control and Accountability		
Graded Safeguards/Nuclear Material Characterization		
Nuclear Material Loss Detection Capability		

Essential Element	Operability/Functional Test	Effectiveness Test
Nuclear Material Controls:		
• Access Controls	• See Physical Security Systems	• See Physical Security Systems
• Material Surveillance	• Observe operations	• LSPT: Attempt to circumvent procedures
• Tamper Indicating Devices	• Observe application • Observe periodic check • Conduct inventory/check	• LSPT: Deliberately tamper and observe response
Nuclear Material Accountability:		
• Accountability System	• Observe data entry	• LSPT: Enter anomaly and observe response
• Material Balance Areas	N/A	N/A
• Key Measurement Points	• Observe operations	• LSPT: Enter anomaly and observe response
• Measurements	• Observe operations	• LSPT: Enter anomaly and observe response
• Physical Inventory Program	• Observe inventory	• LSPT: Enter anomaly and observe response
Information Security		
Accountability for Top Secret Matter and Other Accountable Items	• Review access logs • Compare receipts to storage location inventory	• LSPT: Remove accountable matter from authorized storage location and then request it
Periodic Inventories of Accountable Items	• Review inventory records	• Conduct independent inventory
Approved Storage of Classified Matter	• Review storage locations	• Conduct physical security interior alarm effectiveness tests

Essential Element	Operability/Functional Test	Effectiveness Test
Technical Surveillance Countermeasures Services Based on Risk Management Scheduling	• Review survey schedules • Review risk assessment	N/A
Access to Storage Locations	• Review access logs	• LSPT: Attempt unauthorized access