OpsAuditHub opsauditihub.com	DOC ID: **SAF-0308**	REVISION: **Rev 2.4 (2026)**
	STANDARD: **NFPA 70E / OSHA 29 CFR 1910.269 / IEEE Std 525**	AUDIT FREQUENCY: **Monthly Audit**

High Voltage Electrical Substation Inspection Compliance Checklist

Operational Scope: Establishes a mandatory audit framework for high-voltage electrical substations in oil, gas, and energy facilities to mitigate arc flash, electrocution, and catastrophic equipment failure. Ensures strict adherence to federal and industry safety mandates prior to energized operations.

MANDATORY PPE:	Arc Flash Face Shield with Balaclava (NFPA 70E Category 4), Class 4 Rubber Insulating Gloves with Leather Protectors, Flame-Resistant (FR) Coveralls (NFPA 2112 Compliant), Hard Hat with Dielectric Protection (ANSI Z89.1 Class E), Electrical Hazard (EH) Rated Steel-Toe Boots (ASTM F2413)
PREREQUISITES:	Verify valid substation access authorization and confined space entry permits if applicable | Confirm completion of preliminary zero-energy verification and proper grounding protocols | Ensure calibrated non-contact voltage detectors and thermal imaging equipment are operational

PERIMETER SECURITY, GROUNDING, AND STRUCTURAL INTEGRITY

#	COMPONENT / ITEM	VERIFICATION CRITERIA & ACCEPTANCE STANDARD	SEVERITY	STATUS
1	**Substation Perimeter Fence & Grounding**	Chain-link fence and barbed wire are intact, continuous, and securely bonded to the main station ground grid with zero visible corrosion or breaks.	**Critical (Immediate Out of Service)**	**[ ] PASS [ ] FAIL [ ] N/A**
2	**Warning & Hazard Signage**	High voltage warning signs ('DANGER - HIGH VOLTAGE') are posted conspicuously on all sides, legible, and compliant with ANSI Z535 standards.	**Warning**	**[ ] PASS [ ] FAIL [ ] N/A**
3	**Substation Yard Surface & Drainage**	Crushed rock/gravel surfacing is maintained at proper depth (minimum 4 inches) to prevent weed growth and provide adequate step-and-touch potential protection; oil containment sumps are clear.	**Standard**	**[ ] PASS [ ] FAIL [ ] N/A**

TRANSFORMERS, SWITCHGEAR, AND BUSBAR INSPECTION

#	COMPONENT / ITEM	VERIFICATION CRITERIA & ACCEPTANCE STANDARD	SEVERITY	STATUS
4	**Main Power Transformer Oil Levels & Leaks**	Main tank and tap changer oil level gauges are within normal operational bands; zero active oil leaks or weeping gaskets observed on bushings and radiators.	**Critical (Immediate Out of Service)**	**[ ] PASS [ ] FAIL [ ] N/A**
5	**Transformer Bushings & Insulators**	Porcelain and composite insulators are free from cracks, chipping, heavy contamination, or tracking arcs; surge arresters show no signs of thermal distress or shattering.	**Critical (Immediate Out of Service)**	**[ ] PASS [ ] FAIL [ ] N/A**
6	**Busbars and Conductor Connections**	Thermal scan shows no abnormal hot spots or delta-T exceeding manufacturer thresholds; bolted connections show no discoloration or slip-joint displacement.	**Critical (Immediate Out of Service)**	**[ ] PASS [ ] FAIL [ ] N/A**
7	**Circuit Breakers & Disconnect Switches**	SF6 gas pressure or vacuum bottle indicators are within green operating zone; mechanical linkage and operating rods are properly lubricated and free of binding.	**Warning**	**[ ] PASS [ ] FAIL [ ] N/A**

AUXILIARY SYSTEMS, PROTECTION, AND SAFETY INTERLOCKS

#	COMPONENT / ITEM	VERIFICATION CRITERIA & ACCEPTANCE STANDARD	SEVERITY	STATUS
8	**Battery Bank & DC Control Power**	Station service DC battery bank float voltage is within specification, electrolyte levels are normal, and enclosure ventilation fans are fully functional.	**Critical (Immediate Out of Service)**	**[ ] PASS [ ] FAIL [ ] N/A**
9	**Relay Control House & Panel Alarms**	All protective relaying panels show zero active fault alarms; annunciator test performed successfully with functional audible and visual indicators.	**Warning**	**[ ] PASS [ ] FAIL [ ] N/A**
10	**Emergency Eye Wash & Safety Stations**	Emergency eye wash station is plumbed, inspected within the last 7 days, fully accessible, and unobstructed by stored materials or equipment.	**Standard**	**[ ] PASS [ ] FAIL [ ] N/A**

Certified Electrical Inspector / Substation Specialist Signature: _____	**Date / Time:** _____	**Badge / Cert #:** _____
Site Safety Supervisor / High Voltage Operations Manager Sign-off: _____	**Review Date:** _____	**Audit Status:** [ ] Approved [ ] Rectify

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