OpsAuditHub opsauditihub.com	DOC ID: **SAF-0305**	REVISION: **Rev 2.4 (2026)**
	STANDARD: **NFPA 70E & OSHA 29 CFR 1910.269**	AUDIT FREQUENCY: **Monthly Audit**

High Voltage Electrical Substation Inspection Safety Audit Checklist

Operational Scope: Establishes a mandatory audit framework for high-voltage electrical substations in oil, gas, and energy facilities to mitigate arc flash and electrocution hazards. Ensures strict adherence to NFPA and OSHA safety standards to maintain operational integrity and worker protection.

MANDATORY PPE:	NFPA 70E Arc Flash Suit (Cal/cm² rated for site hazard), Dielectric Rubber Insulating Gloves with Leather Protectors, Hard Hat with Electrical Insulation (ANSI Z89.1 Class E), Safety Glasses with Side Shields (ANSI Z87.1), Metatarsal EH-Rated Safety Boots (ASTM F2413), Flame-Resistant (FR) Clothing System
PREREQUISITES:	Verify valid authorization and Arc Flash Boundary permissions. | Conduct mandatory pre-entry tailboard briefing with designated safety watch. | Inspect all calibrated voltage detection and grounding equipment prior to use.

PERIMETER SECURITY, GROUNDING, AND ENVIRONMENTAL CONTROLS

#	COMPONENT / ITEM	VERIFICATION CRITERIA & ACCEPTANCE STANDARD	SEVERITY	STATUS
1	**Substation Perimeter Fencing and Gates**	Chain-link fence is fully intact, grounded continuously, and clearance gates are locked to prevent unauthorized entry.	**Critical (Immediate Out of Service)**	[ ] PASS [ ] FAIL [ ] N/A
2	**Warning Signage and Placards**	High voltage warning signs ('DANGER - HIGH VOLTAGE') are clearly visible on all sides and entrance gates per OSHA specifications.	**Warning**	[ ] PASS [ ] FAIL [ ] N/A
3	**Substation Ground Grid Integrity**	Main ground mat copper risers, structure bonds, and fence grounding connections show no signs of corrosion, breakage, or theft.	**Critical (Immediate Out of Service)**	[ ] PASS [ ] FAIL [ ] N/A

TRANSFORMERS, SWITCHGEAR, AND PROTECTION RELAYS

#	COMPONENT / ITEM	VERIFICATION CRITERIA & ACCEPTANCE STANDARD	SEVERITY	STATUS
4	**Power Transformer Oil Level and Leaks**	Main tank oil gauge is within normal operating temperature range; zero active oil leaks or weeping gaskets observed.	**Warning**	[ ] PASS [ ] FAIL [ ] N/A
5	**Transformer Silicagel Breather**	Breather desiccant color is active/dry (pink to blue transition); oil seal cup is filled to proper level.	**Standard**	[ ] PASS [ ] FAIL [ ] N/A
6	**SF6 Gas Density Monitors (Circuit Breakers)**	SF6 pressure gauge indicators reside strictly within the green operational zone with no low-pressure alarm actuation.	**Critical (Immediate Out of Service)**	[ ] PASS [ ] FAIL [ ] N/A
7	**Surge Arresters and Insulators**	Porcelain/polymer insulators are free from cracking, heavy contamination, flashover tracking, or structural damage.	**Critical (Immediate Out of Service)**	[ ] PASS [ ] FAIL [ ] N/A

AUXILIARY SYSTEMS, EMERGENCY PREPAREDNESS, AND HOUSEKEEPING

#	COMPONENT / ITEM	VERIFICATION CRITERIA & ACCEPTANCE STANDARD	SEVERITY	STATUS
8	**Emergency Trip and Interlock Systems**	Master trip pushbuttons and mechanical interlocks are unobstructed, clearly labeled, and functionally verified.	**Critical (Immediate Out of Service)**	[ ] PASS [ ] FAIL [ ] N/A
9	**Substation Yard Housekeeping and Vegetation**	Rock bed is clean, and vegetation, weeds, or stored combustible materials are completely cleared from equipment pads.	**Standard**	[ ] PASS [ ] FAIL [ ] N/A
10	**Emergency Eyewash and Fire Suppression**	Class C rated fire extinguishers and plumbed eyewash stations are inspected, tagged, and fully operational.	**Warning**	[ ] PASS [ ] FAIL [ ] N/A

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

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