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	STANDARD: **NFPA 70E & OSHA 29 CFR 1910.269**	AUDIT FREQUENCY: **Monthly Audit**

High Voltage Electrical Substation Inspection Inspection Checklist

Operational Scope: Establishes a mandatory audit framework for high-voltage electrical substations in oil, gas, and energy facilities to prevent arc flash and catastrophic equipment failure. Mitigates electrical and thermal hazards while ensuring strict compliance with regulatory safety mandates.

MANDATORY PPE:	Arc Flash Suit (Category 4), Dielectric Rubber Insulating Gloves with Leather Protectors, Hard Hat with Full Face Shield (ANSI Z89.1 / NFPA 70E), Electrical Hazard (EH) Rated Steel-Toe Boots, Safety Glasses (ANSI Z87.1), Flame-Resistant (FR) Clothing
PREREQUISITES:	Verify valid authorization and Arc Flash Boundary clearances before entry. | Review current substation switching logs and active permit-to-work documentation. | Conduct a mandatory pre-job safety briefing with all inspection personnel.

PERIMETER SECURITY, GROUNDING, AND STRUCTURAL INTEGRITY

#	COMPONENT / ITEM	VERIFICATION CRITERIA & ACCEPTANCE STANDARD	SEVERITY	STATUS
1	**Substation Perimeter Fence & Gates**	Chain-link fence and gates are structurally sound, undamaged, properly grounded, and free of unauthorized storage or vegetation encroachment.	Warning	[ ] PASS [ ] FAIL [ ] N/A
2	**Warning Signage & Danger Notices**	High-voltage warning signs are clearly visible, legible, and posted at all entry gates and fence perimeters per OSHA specifications.	Standard	[ ] PASS [ ] FAIL [ ] N/A
3	**Main Station Grounding Grid**	Exposed ground risers, copper connections, and pad-mounted equipment bonding straps are intact, free of corrosion, and mechanically secure.	Critical (Immediate Out of Service)	[ ] PASS [ ] FAIL [ ] N/A

TRANSFORMERS, SWITCHGEAR, AND AUXILIARY SYSTEMS

#	COMPONENT / ITEM	VERIFICATION CRITERIA & ACCEPTANCE STANDARD	SEVERITY	STATUS
4	**Power Transformer Oil Level & Leaks**	Main tank oil level gauge is within normal operating temperature range; zero active oil leaks or weeping gaskets observed on bushings or radiators.	Critical (Immediate Out of Service)	[ ] PASS [ ] FAIL [ ] N/A
5	**Transformer Bushings & Surge Arresters**	Porcelain insulators show no signs of cracking, chipping, heavy contamination, tracking, or thermal stress (using thermographic inspection).	Critical (Immediate Out of Service)	[ ] PASS [ ] FAIL [ ] N/A
6	**Circuit Breakers & Disconnect Switches**	SF6 gas density/pressure gauges are in the green operational zone; operating mechanisms are lubricated and free of mechanical binding.	Critical (Immediate Out of Service)	[ ] PASS [ ] FAIL [ ] N/A
7	**Control House Battery Backup System**	Substation DC trip battery bank shows normal float voltage, clean terminals, no electrolyte leakage, and operational ventilation fans.	Critical (Immediate Out of Service)	[ ] PASS [ ] FAIL [ ] N/A

ENVIRONMENTAL CONTROLS AND SAFETY EQUIPMENT

#	COMPONENT / ITEM	VERIFICATION CRITERIA & ACCEPTANCE STANDARD	SEVERITY	STATUS
8	**Oil Containment Sumps & Separators**	Substation secondary containment basins are free of standing water, oil sheen, and debris; drain valves are locked in the closed position.	Warning	[ ] PASS [ ] FAIL [ ] N/A
9	**Emergency Eyewash & Safety Stations**	Eyewash station is fully functional, inspected within the monthly interval, unobstructed, and supplied with potable flush water.	Standard	[ ] PASS [ ] FAIL [ ] N/A
10	**Portable Fire Extinguishers**	CO2 or dry chemical fire extinguishers are mounted securely, pressure gauges indicate full charge, and safety pins/seals are intact.	Standard	[ ] PASS [ ] FAIL [ ] N/A

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

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