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	STANDARD: **API 537 / OSHA 29 CFR 1910.119 / NFPA 37**	AUDIT FREQUENCY: **Monthly Audit**

Flare Stack Operational Safety Audit Inspection Checklist

Operational Scope: Establishes a rigorous operational inspection framework for upstream and downstream flare stack systems to mitigate catastrophic ignition, structural failure, and unlit hydrocarbon release risks. Ensures absolute compliance with environmental and process safety management mandates.

MANDATORY PPE:	FRC Coveralls (NFPA 2112), Hard Hat with Chin Strap (ANSI Z89.1), Flame-Resistant Safety Glasses (ANSI Z87.1), Metatarsal Steel-Toe Boots (ASTM F2413), Gas Monitor / H2S Multigas Detector, Fall Protection Harness and Lanyard (ANSI Z359)
PREREQUISITES:	Review active Process Safety Management (PSM) flare permits and weather conditions (wind speed < 30 mph). | Verify continuous purge gas flow and thermocouple temperature telemetry from the control room. | Conduct pre-audit safety briefing with the control room operator and designated area safety lead.

COMBUSTION AND IGNITION SYSTEMS

#	COMPONENT / ITEM	VERIFICATION CRITERIA & ACCEPTANCE STANDARD	SEVERITY	STATUS
1	**Pilot Burner Assembly**	Verify continuous pilot flame status via infrared camera and optical pyrometer; confirm zero flame impingement on structural tip.	**Critical (Immediate Out of Service)**	[ ] PASS [ ] FAIL [ ] N/A
2	**Electronic / High-Energy Ignition System**	Test backup ignition sequence from local panel and remote DCS; confirm spark generator delivers required voltage without electrical ground faults.	**Critical (Immediate Out of Service)**	[ ] PASS [ ] FAIL [ ] N/A
3	**Flame Front Generator & Piping**	Inspect fuel-gas supply lines for leaks using combustible gas indicator; check pressure regulators are set to OEM operational specifications.	**Warning**	[ ] PASS [ ] FAIL [ ] N/A
4	**Purge Gas Supply System**	Confirm positive pressure and continuous flow of nitrogen or natural gas purge to prevent air ingress and internal flashback.	**Critical (Immediate Out of Service)**	[ ] PASS [ ] FAIL [ ] N/A

STRUCTURAL INTEGRITY AND MECHANICAL SYSTEMS

#	COMPONENT / ITEM	VERIFICATION CRITERIA & ACCEPTANCE STANDARD	SEVERITY	STATUS
5	**Flare Tip and Windshield**	Inspect flare tip metallurgy for warping, scaling, cracking, or thermal oxidation; verify windshield and stabilizer tabs are secure.	**Critical (Immediate Out of Service)**	[ ] PASS [ ] FAIL [ ] N/A
6	**Guy Wires and Anchor Bolts**	Inspect guy wire tension, turnbuckles, and locking pins for corrosion or slackness; verify concrete anchor foundations show no cracking or displacement.	**Critical (Immediate Out of Service)**	[ ] PASS [ ] FAIL [ ] N/A
7	**Stack Derrick and Access Ladders**	Inspect structural steel framework, safety cages, and rest platforms for corrosion, loose bolts, and structural degradation.	**Warning**	[ ] PASS [ ] FAIL [ ] N/A
8	**Aircraft Warning Lights**	Verify dual obstruction beacon lamps are fully operational and photocell activation circuits respond correctly.	**Standard**	[ ] PASS [ ] FAIL [ ] N/A

PIPING, KNOCK-OUT DRUMS, AND SAFETY INTERLOCKS

#	COMPONENT / ITEM	VERIFICATION CRITERIA & ACCEPTANCE STANDARD	SEVERITY	STATUS
9	**Flare Knock-Out (KO) Drum Level Controls**	Verify liquid level transmitters, high-level alarms, and automatic pump-out systems are functional to prevent liquid carryover into the flare stack.	**Critical (Immediate Out of Service)**	[ ] PASS [ ] FAIL [ ] N/A
10	**Water Seal / Liquid Seal Drum**	Check water seal fluid level, makeup water supply, and freeze protection heat tracing systems (where applicable).	**Critical (Immediate Out of Service)**	[ ] PASS [ ] FAIL [ ] N/A
11	**Emergency Shutdown (ESD) Interlocks**	Audit integration between flare header pressure transmitters and automated diversion/isolation valves per safety instrumented system (SIS) logic.	**Critical (Immediate Out of Service)**	[ ] PASS [ ] FAIL [ ] N/A

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

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