

Aramco AIS — Board One-Pager & Checklist (Gas Operations | Req #15053)

Generated 2025-09-07

Role Fit (Req #15053)

- Hybrid path: $\approx 65\%$ ML Engineering (time-series, RUL, optimization, validation) + $\approx 35\%$ AI Engineering (RAG safety copilot, guardrails, productization).
- Core responsibilities: PoC→Pilot→Scale, value tracking, OT connectivity (OPC UA/PI), cyber & safety alignment (ISA/IEC-62443, NIST 800-82).

Portfolio (Acceptance Bars)

- P1 Compressors (IF + LSTM-AE): $AUROC \geq 0.90$, $FA/h \leq 0.1$, lead-time ≥ 10 min.
- P2 RUL (Cox vs XGB-AFT): $C\text{-index} \geq 0.70$, calibrated uncertainty bands.
- P3 RAG Safety Copilot: $\geq 90\%$ cited answers, 0 policy violations in red-team, < 2 s cached hits.
- P4 Energy Optimization (Safe BO): 2–5% energy intensity improvement (sim/demo).
- P5 Emissions/Flare: $\geq 30\%$ nuisance alert reduction at fixed detection rate.

Value Tracking & KPIs

- KPIs: Energy intensity, FA/h , lead-time, MTBF, CO_2e avoided, SAR benefit.
- Dashboards: Exec summary + Asset drill-down + Model health + monthly benefit realization curve.

12-Month Roadmap (Milestones)

- M0-2: Opportunity register (15–25), stage-gates, P1 anomaly baseline, Power BI shell.
- M3-4: P2 RUL with uncertainty; risk register; MLflow + Grafana.
- M5-6: P3 RAG Safety Copilot with redaction & guardrails; OPC UA/PI stubs; 62443 diagram.
- M7-9: P4 Safe Bayesian Optimization; P5 Emissions/Flare reduction; value model (SAR, CO_2e).
- M10-12: Pilot replay, operator feedback, alarm budget tuning (≤ 0.1 $FA/h/asset$), scale plan.

Governance, Cyber, Safety

- ISA/IEC-62443 zones & conduits; OPC UA SignAndEncrypt + cert lifecycle; PI Web API least-privilege.
- NIST SP 800-82 controls; change via MOC (OSHA 1910.119)—model card links MOC ID.
- SIS/SIF not in scope; advisory only unless engineered under IEC 61511.

Definition of Ready (Pilot Gate)

- Time-aware backtests; alarm-budget threshold; event-level delays.
- Model Card + cyber diagram; operator runbook; rollback plan.
- Prometheus/Grafana observability running; value sheet with explicit factors.