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TRANSVAC
Ejector Solutions

Flare Gas Recovery Using Ejector Technology

K Wright & P Ainge, February 2025

Scope Overview

- Four potential electric driven compressor types considered in identify project phase;
  - Liquid ring
  - Oil injected screw
  - Reciprocating
  - Rotary Vane
- Ejector considered as Bruce **currently** has significant oil and gas recycle flow
- Most suitable for application was Rotary Vane with 110kW VSD motor
  - Drawbacks compared to ejector; High OPEX, complex rotating equipment, two stage, coolers and scrubbers, utility requirements (Power supply, SW, Instrument Air, LO, Drains, Condensate handling) F&G and ICSS mods
- Option analysis determined ejector to be preferred technology

OPTION	CAPEX	RELIABILITY	EASE OF INSTALLATION	OPERABILITY / MAINTENANCE	FUTURE PROOFING	TOTAL
7a – Compressor	2.4%	6.3%	3.6%	4.1%	6.3%	21.6%
7b – Gas-driven Eductor	7.1%	9.4%	10.7%	7.1%	4.2%	38.5%
7c – Oil-driven Eductor	7.1%	9.4%	10.7%	5.4%	6.3%	38.9%

Considering future platform upgrades

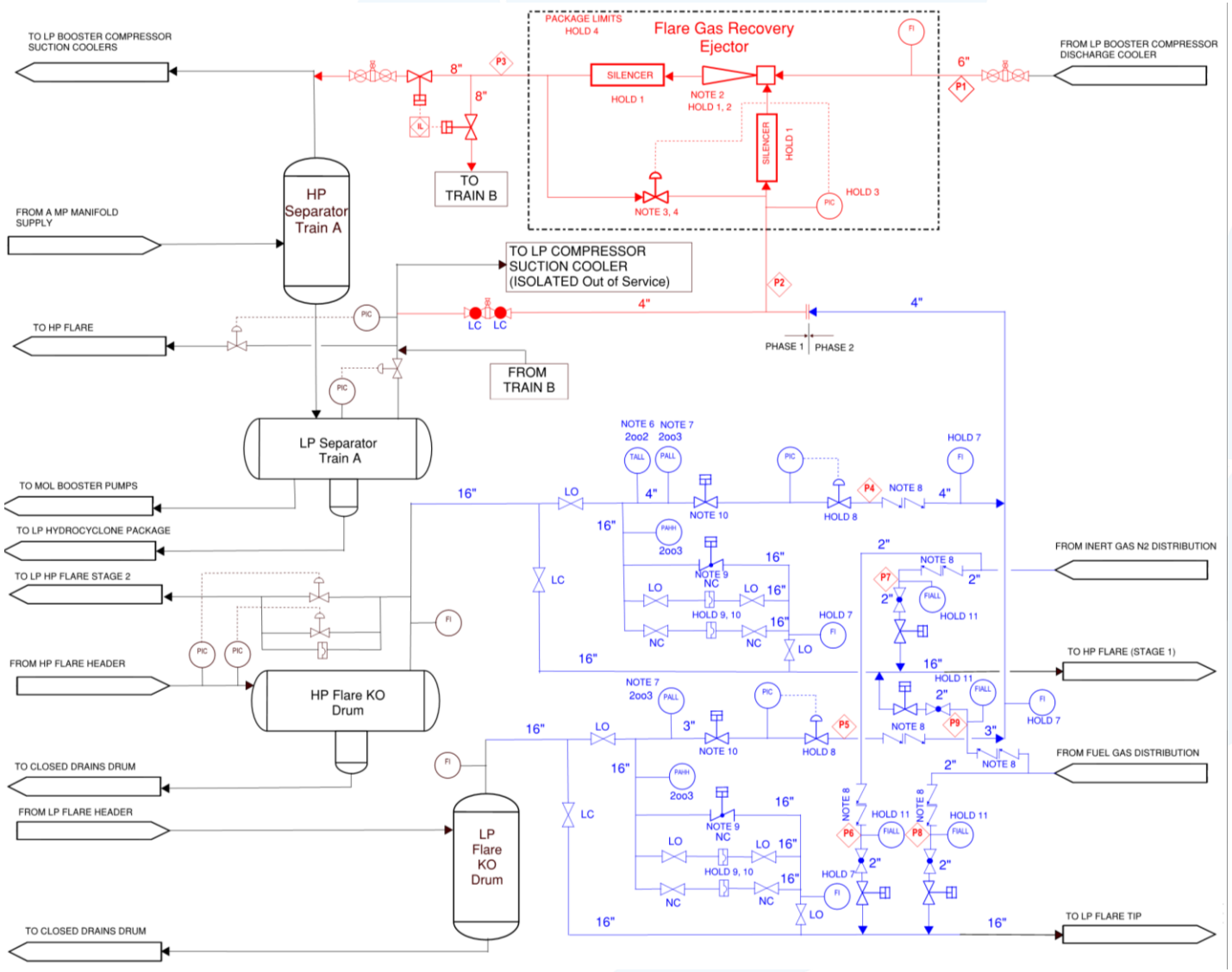
- Oil plant upgrade – 3 train operation (47mbpd per train) to duty standby export pump optimised at 6.5mbpd per pump. Removes the available motive fluid to recover the flare gas via ejector!
- LP Booster Compressor re-wheel – reduces the available motive fluid to recover the flare gas via ejector!

Back to option analysis???

- Compressor mapping to optimise suction pressure (reduce separator pressure)with high compression ratio means that some recycle required for most production profiles – gas available for motive fluid!

Flare Gas Recovery Design

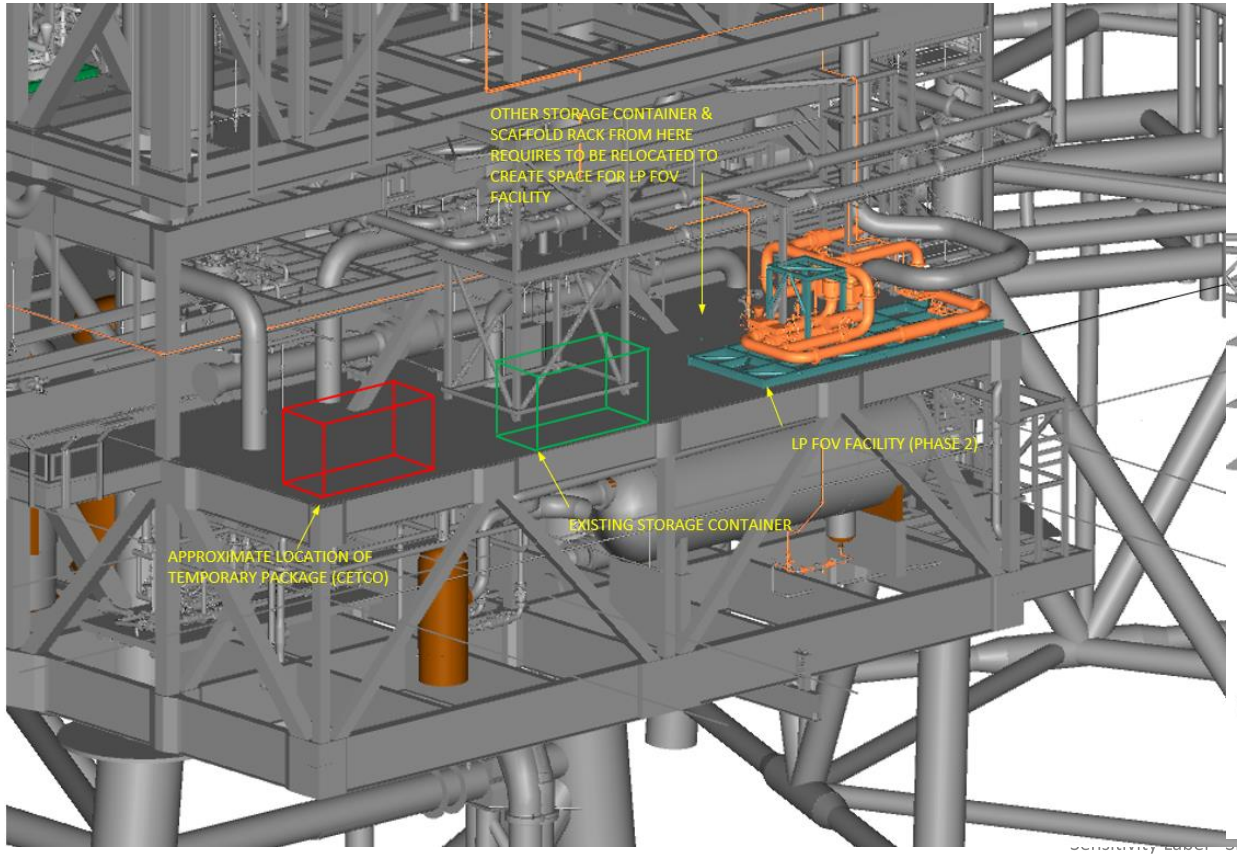
- Two Phase Project
  - **Phase 1** Gas Recovery System (recovering up to 80% of HP flaring via a single source into a new ejector package which can be reused for Phase 2).
  - **Phase 2** Flare Gas Recovery System to include closing the HP and LP Flare systems



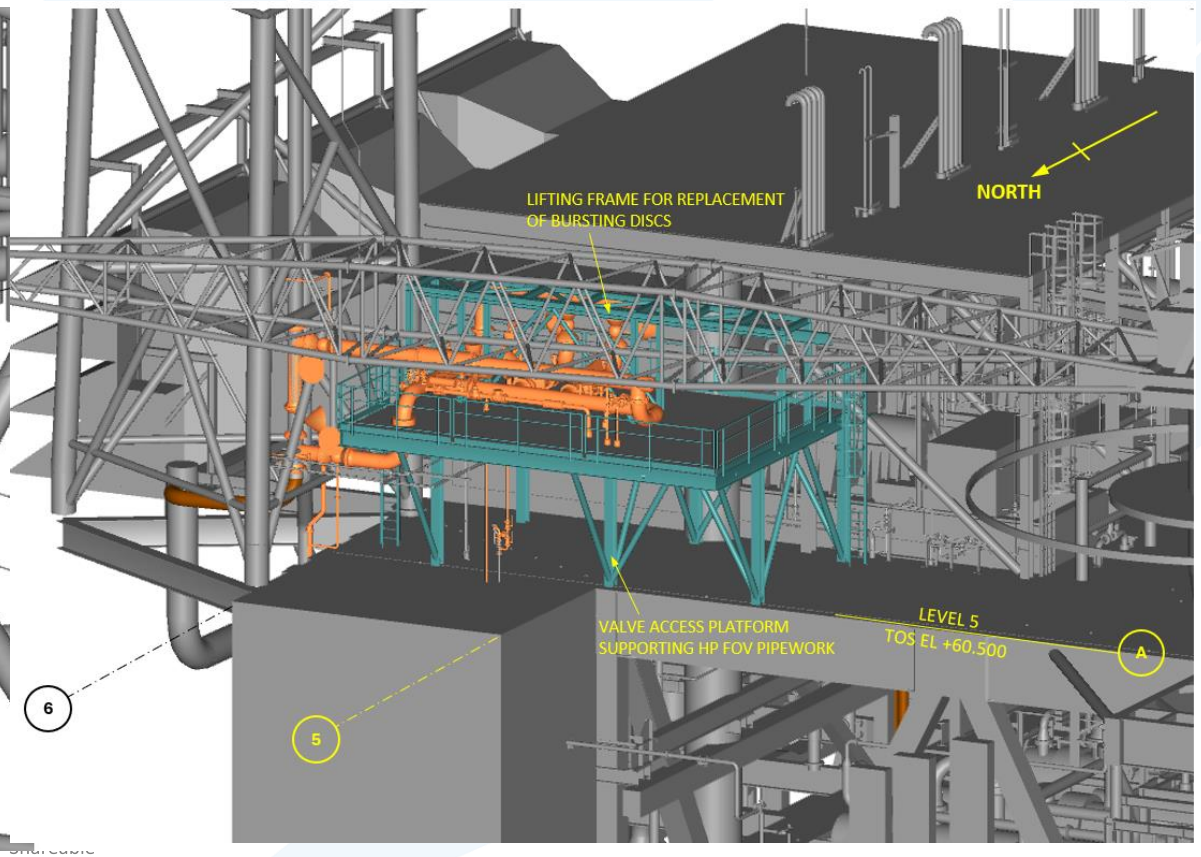
Phased Project Approach

- Phase 1 will recover around 80% of the HP operational flaring
- Phase 2 will recover the remaining HP and LP operational flaring
- All Cat. A recovered by 2030, zero operational flaring

Phase 2 – LP Flare FOV structure

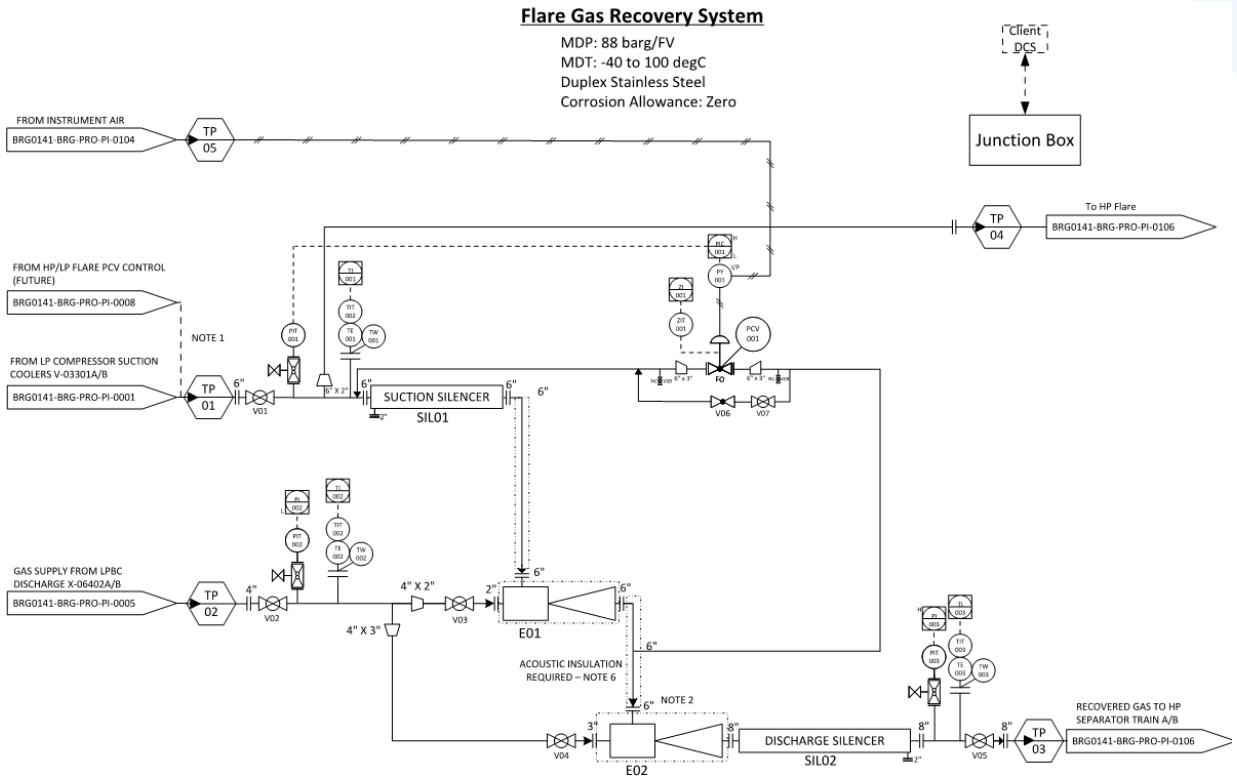


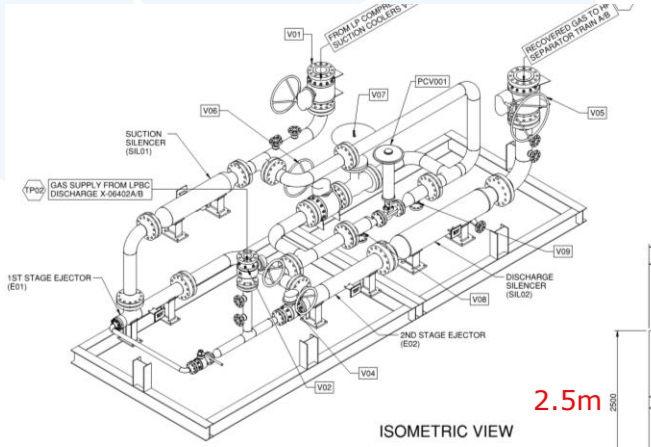
Phase 2 – HP Flare FOV structure



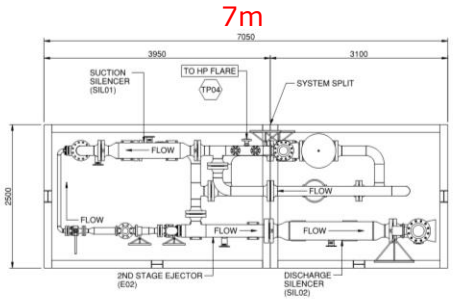
FGRS Technology – Transvac Study

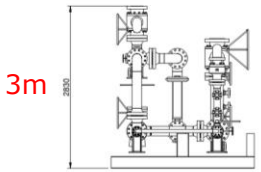
- 2 Stage Ejector – Single Stage for GRS (Phase 1) / Two-Stage for FGRS (Phase 2)
- Phase 2 Ejector Internal Change only

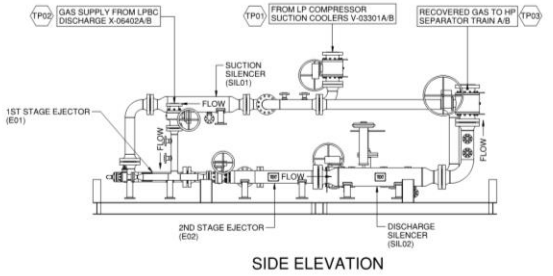




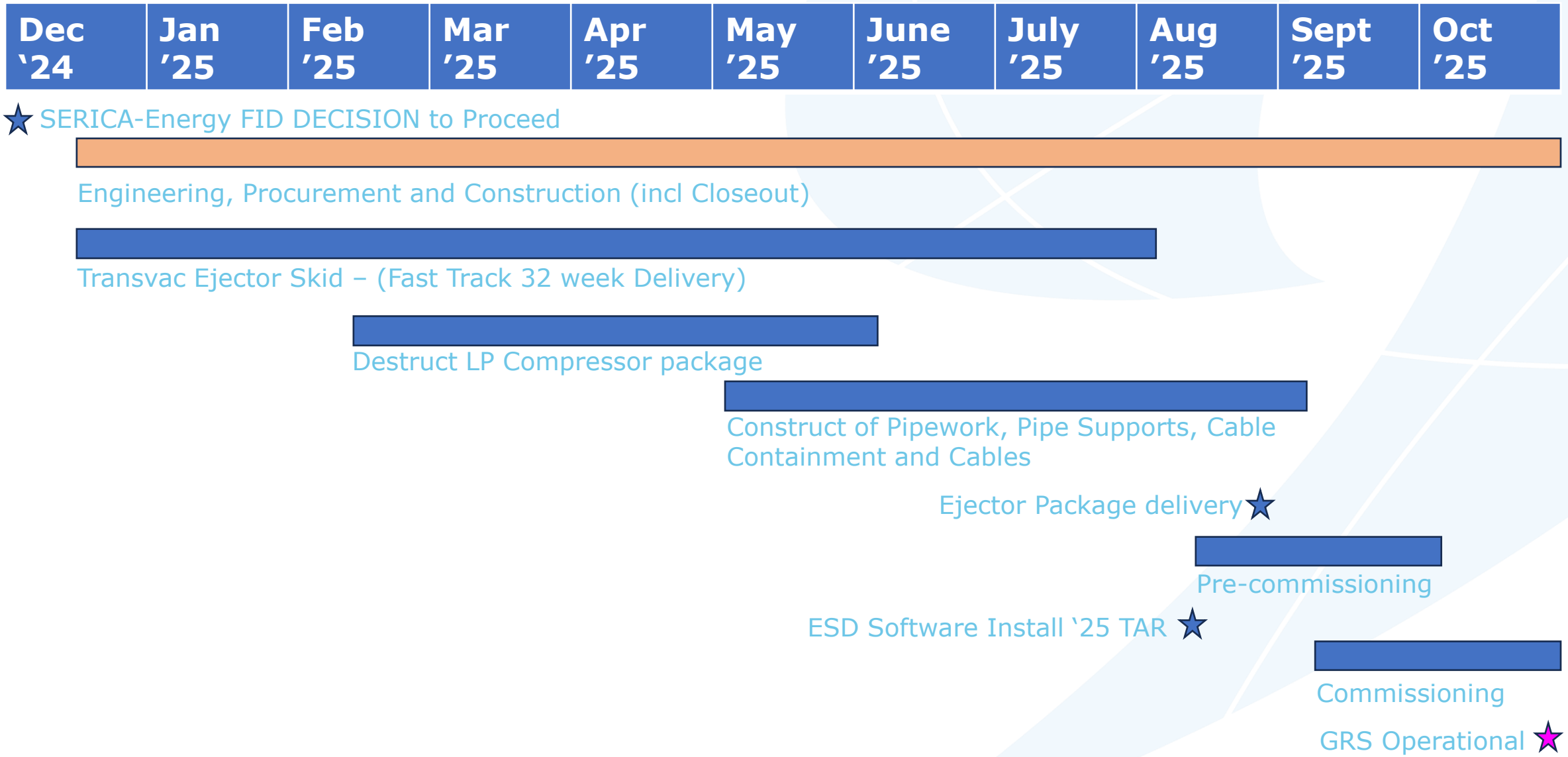
PRELIMINARY ONLY







Phase 1 schedule



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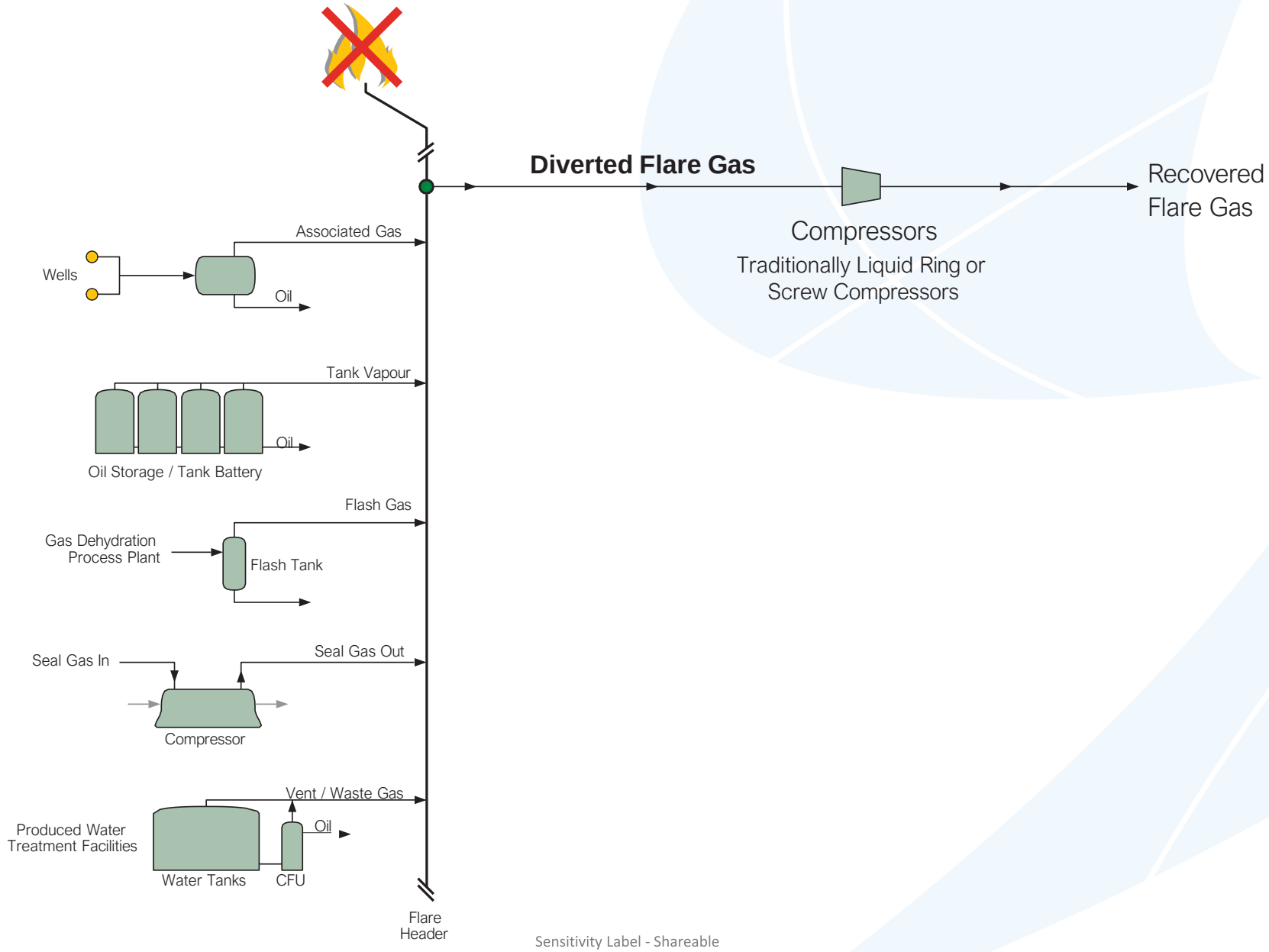
Flare Gas Recovery Overview



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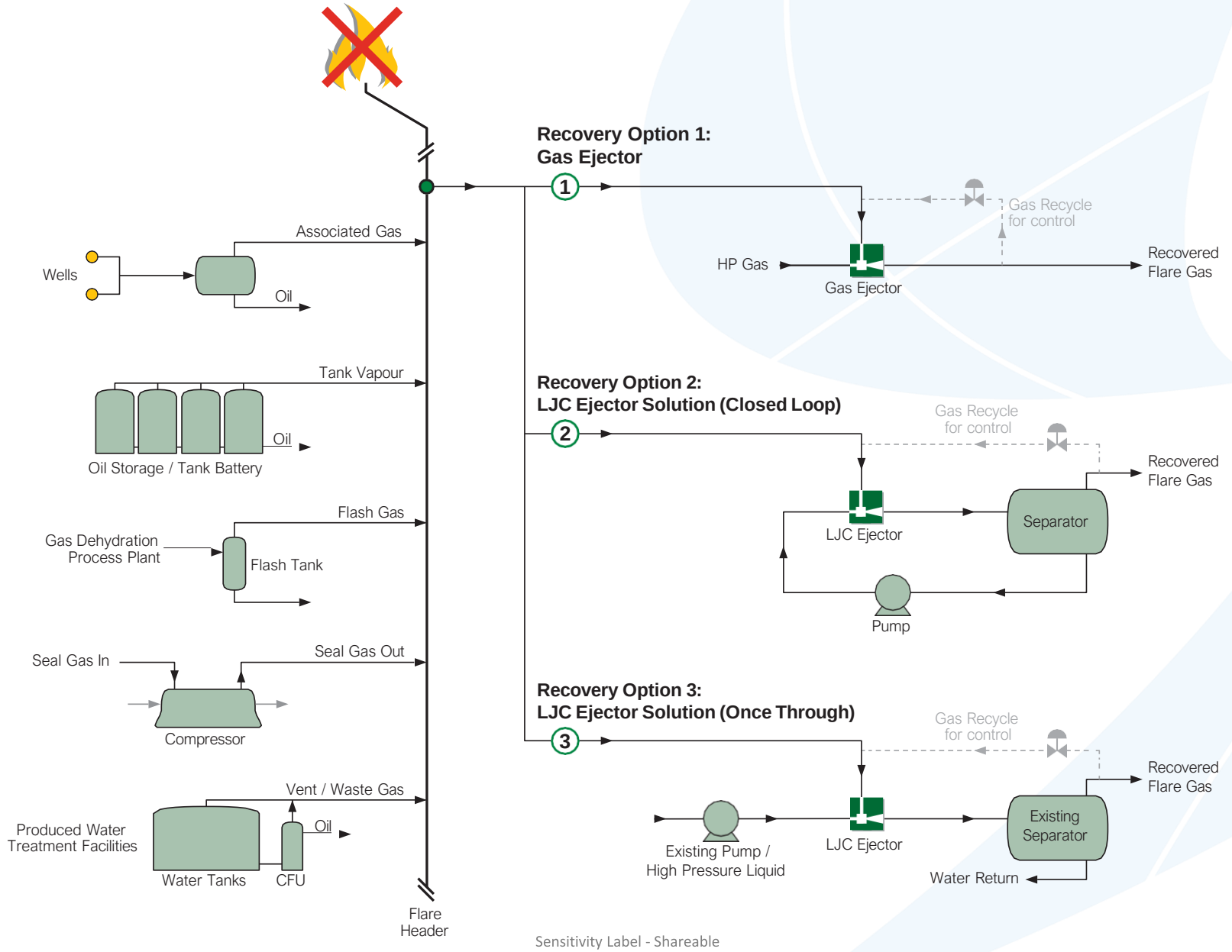

Principle of Operation

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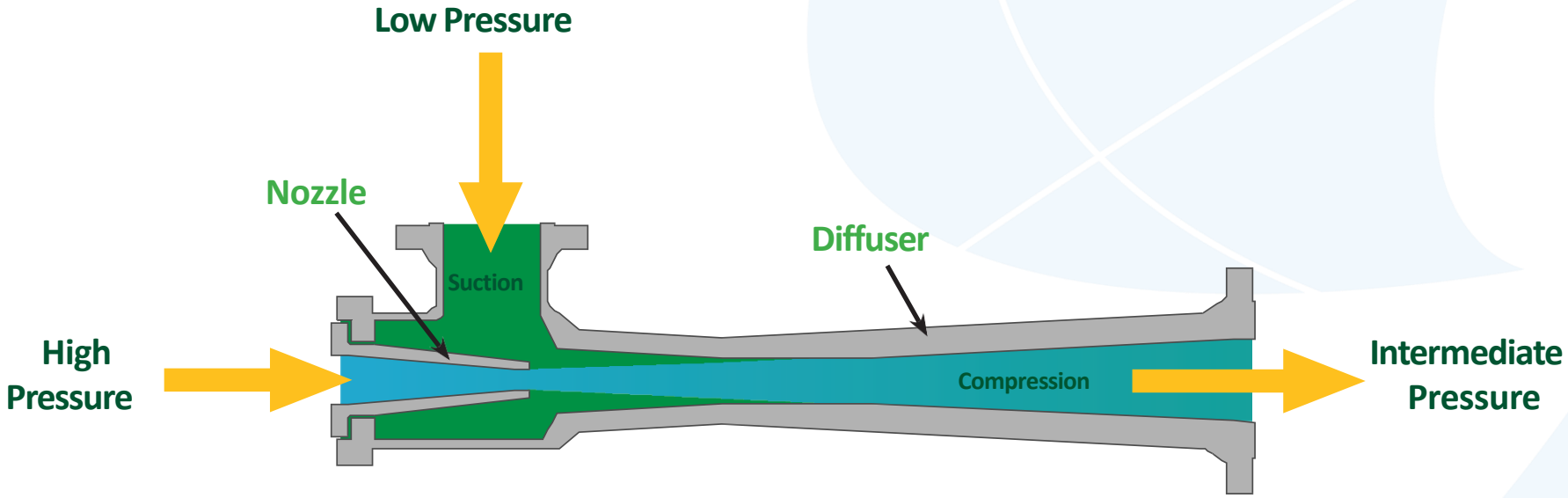

Ejectors use the energy of a high pressure fluid to entrain and compress a low pressure fluid.

Ejectors are Compressors!

No Moving Parts

Zero Maintenance

Highest Reliability of any Compression Technology

AOB

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