Cameron CFA32 compressor with Murphy Controller

Energy Control Procedure (ECP)

General Information			
Location		**Asset Number(s)/ Equipment ID(s)**	Priority Valve Panel, Compressor 1, Compressor 2. MCC 1, MCC 2
Manufacturer or Equipment Name	CNG Source/Murphy Controller with Cobey Priority Panel		

Hazardous Energy Identification				
☐ Chemical	☒ Electrical	☐ Gravitational potential	☐ Hydraulic potential	☐ Kinetic
☒ Mechanical	☒ Pneumatic potential	☐ Radiation	☐ Thermal	

Personal Protective Equipment Required (Beyond Basic PPE)
Hard Hat, Gloves, Eye Protection, Hearing Protection, Safety Toe Boots and High Vis Vest.

ONLY TRAINED AND AUTHORIZED PERSONNEL SHALL CONDUCT LOCKOUT/TAGOUT.

Shutdown Overview (Isolation Overview)
This document provides comprehensive instructions for the safe depressurization and de-energization of a CNG source package with a Cameron CFA32 compressor and Murphy controller. It is designed to guide technicians through a structured shutdown process that ensures personnel safety, equipment integrity, and regulatory compliance.

Depressurization and De-energization ECP for Service Instructions

1. Preparation & Safety

- Notify all affected personnel of the intended work and energy isolation.
- Review the system's operating status and ensure all maintenance is scheduled during safe conditions.
- Always Contact Chevron Call Center **(877-872-3966)** before starting work and when finishing work.
- Inspect the compressor for any damage before starting work.
- Never open a high voltage panel if natural gas is detectable in the atmosphere.
- Gather required PPE and verify all tools and LOTO devices are available.
- Complete Chevron Start Work Check.

NOTE: Report any safety concerns to Chevron and the Supervisor that may have been found before, during, or after servicing the compressor or compressor components. STOP WORK. Wait for further instructions.

2. De-energization (Electrical Isolation)

2.1 Open compressor control panel door and turn the Start Control to OFF (**Fig 2.**) Turn the Panel power OFF (**Fig 1.**)

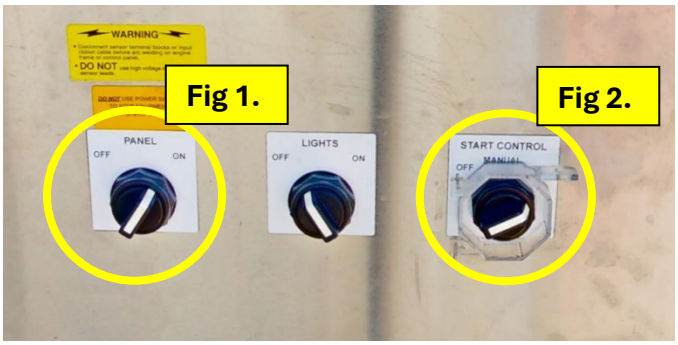
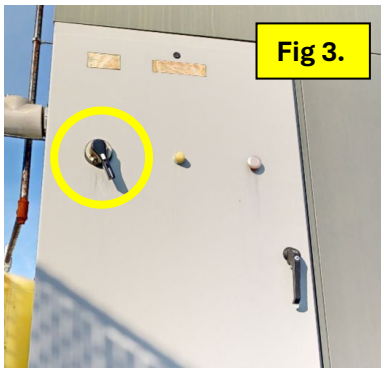
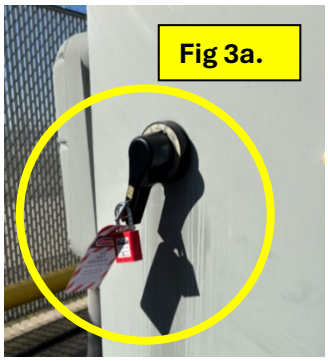


Fig 1.

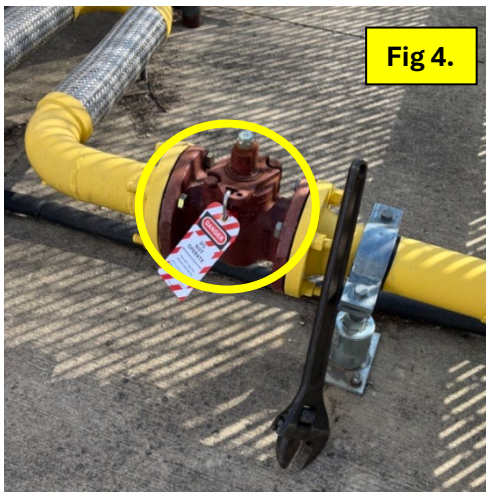
Fig 2.

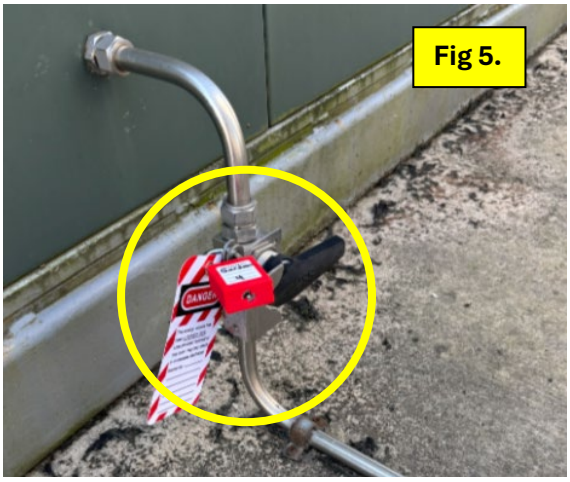
2.2 Turn the **MCC** power **OFF** on <u>both</u> Compressors and use Lock-out Tag-out procedure. (**Fig 3. and Fig 3a.**)





2.3 Close the Compressor Inlet (**Fig 4.**) and Final Discharge (**Fig 5.**) Valves. LOTO the valves



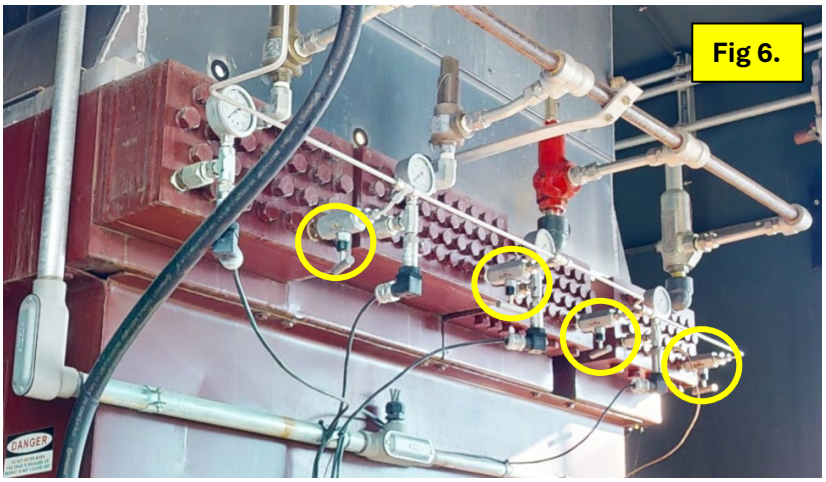


3. Depressurization (Gas Isolation)

NOTE: Ensure gas inlet and outlet isolation valves are closed and compressor panel is de-energized as this equipment may start automatically.

3.1 Open the Bleeder Needle Valve slowly for each stage of the compressor. Turn T-Handel counterclockwise circled below in (**Fig 6.**)

3.2 Confirm Zero pressure on the gauges



3.3 Place waste oil container under the Receiver Tank Drain. Slowly open the ball valve (**Fig 7. and Fig. 7.1**) depending on the compressor package layout.

3.4 Drain ALL oil and gas from the Receiver Tank. This process may take up to 15 minutes
3.5 Make sure to put all waste oil in the appropriately marked containers in the oil containment area.
3.6 Confirm zero pressure on the Receiver Tank gauge (**Fig 8.**)

Fig. 7

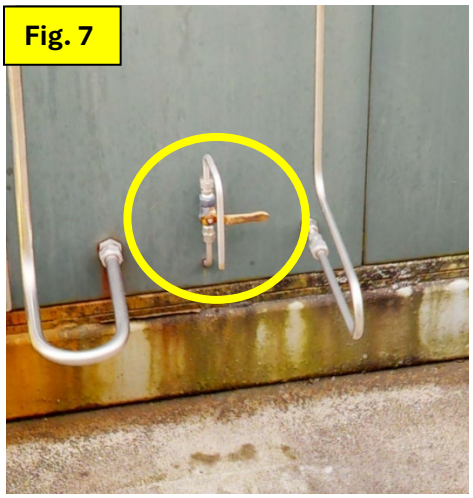


Fig. 7.1

Fig. 8

3.7 Confirm that **ALL** pressure and electrical energy is at a zero state and all valves and electrical shutoffs are locked out and tagged.

4. Zero Energy Verification

4.1 Contact a supervisor or Chevron Reliability Engineer to video verify lockout tag out procedures and safe work practices are in place before beginning service work.

5. Maintenance or Service

5.1 Only after completing the above steps, proceed with any required maintenance (e.g., filter changes, repairs).

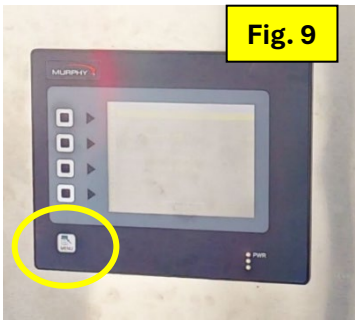
NOTE: Report any safety concerns that may have been found during servicing the compressor or compressor components to Chevron and the Supervisor and STOP WORK. Wait for further instructions.

Re-energization and Re-pressurization (After Service)

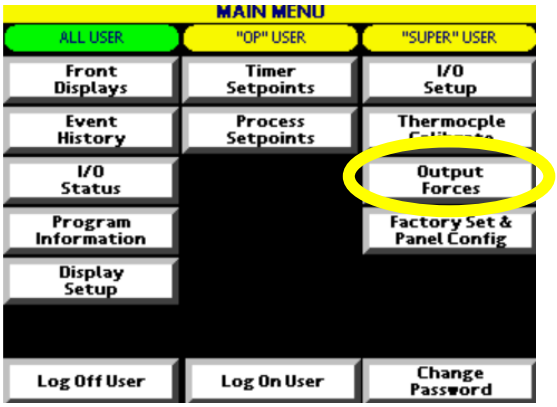
6. Restore Energy (Post-Maintenance)

6.1 Inspect system for readiness. Check the all nuts, bolt, fitting, electrical connections, etc. are tight and torqued to manufacture specifications.
6.2 Remove all tools and personnel.
6.3 Remove LOTO devices.
6.4 Close ALL bleeder needle valves for each stage of the compressor (**Fig 6.**)
6.5 Close Receiver Tank Drain Ball Valves (**Fig 7.** and **Fig 7.1**).
6.6 Remove LOTO and **Open** the Compressor Inlet slowly, listen for any noticeable leaking (**Fig 4.**) and Final Discharge Valves (**Fig 5.**), listen for any noticeable leaking.
6.7 Remove LOTO and Turn Main Power on the Compressor MCC **ON** (**Fig 3.**)

6.8 Turn the Compressor Panel Power **ON** (**Fig 1.**)
6.9 On the Compressor HMI Display side buttons, push the bottom **Menu Button (Fig 9).**



6.10 Select the **Output Forces.** *Note: Start Control **MUST BE** in **OFF Position** (**Fig 2.**)



6.11 Enter the Username: **Super** and Password: **133**

Forcing Digital Outputs (Inlet Actuator Solenoids)

6.12 All digital outputs (including solenoids) are set to **Forced OFF** by default.
6.13 The operator can toggle each digital output between **'Forced OFF'** and **'Forced ON'**
6.14 Press **'ENABLE OUTPUT FORCING'**
6.15 Select the Inlet/Blowdown Solenoid marked **SOL-121** to Open the valve to let Inlet gas in the compressor system.
6.16 While the Inlet Solenoid is opened, **Open** the Receiver Tank Drain valve halfway slowly and let gas flow through for 20 seconds to purge the Receiver Tank of Air. **Close** the valve after 20 seconds.
6.17 While Inlet Solenoid is opened, **Open** each Compressor Stage Bleeder Valve for 5 seconds to purge the Compressor system of air. **Close** each valve after 5 seconds.

NOTE: After the solenoid is initiated to open there is a set timer of 2 minutes before the solenoid will automatically close. If the process is not complete before the solenoid closes reinitiate the SOL-121, and the timer will reset for an additional 2 minutes. If the compressor is put in automatic mode on the start controller it will stop the output forces and return the compressor to normal operating position for these solenoids.

Starting and Testing Compressor

6.18 Once the Compressor has been purged free of air and **ALL** drain/bleed valves are **Closed,** switch the Start Control to **Auto.** The compressor's status will be **Ready to Start.**
6.19 If pressure conditions in the system are met, the compressor will automatically start.

6.20 While compressor is running monitor system pressures and temperatures using the HMI Display and the physical gauges.
6.21 Listen, look and smell for leaks and abnormal sounds that may indicate an operating issue.

NOTE: If for any reason the Compressor Unit needs to be shutdown, hit the ESD button.

6.22 If the compressor is running within normal operating parameters, let the compressor run until the unit shuts off automatically.
6.23 After the compressor has shut down, leak check the compressor unit with a portable methane detector or soapy water.
6.24 Repeat steps 2 -5 of ECP if the leaks are found or another issue is discovered where depressurization or de-energization is necessary.

7. Notify Affected Personnel

- Contact Chevron Call Center (**877-872-3966**) to make them aware of the Station/Equipment status.
- Contact the Supervisor and Chevron Reliability Engineer for an equipment status update.
- Complete all paperwork pertaining to the work before leaving the station.

Reference:

- The Manufacturers Compressor Manual can be found in the Files Section on Aetos.
- In the search bar, **enter**:
  CFA Compressor Manual (2647652_CNG Source_13E1701-992-932_Rev 0(1)).pdf

Version History and Approvals			
Version #	Date:	Name and Position:	Status: (Created/Approved/Annual Review*)
1.0	10/06/25	Harlan Brodie (Reliability Engineer)	Created
1.0	10/29/2025	Brent Tesla Renewables Project Manager	Approved

*Procedure must be annually reviewed