

Compressor Package FAT Procedure

Project Name	CNRL Smith Oil Project – FC220590
Project No.	101121
Location	NEXT Compression Corp.
Service Location	Balzac, AB

Revision	0	1	2	3	A	B	C	D	E	
Date	12/9/23									
Check	NP									
Review	KH									

Driver Make & Model	Teco Westinghouse 364T 60hp @ 1800 rpm
Compressor Make & Model	RoFlo SD8DE
Cooler	AXH 48EF
Control Panel	Allen Bradely Micrologix 1400

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1. INTRODUCTION

1.1 General

The Compressor package is being tested for CNRL (**101121**). The package will undergo Factory Acceptance Testing (FAT) as outlined in this document, prior to delivery.

The FAT will comprise of mechanical operation tests, control system and instrumentation tests, with maintenance checks after the Factory Acceptance Testing (FAT).

1.2 Package Overview

The package contains a skid mounted compressor, electric motor, control panel, also complete with lubricating oil system, cooling system, pressure vessels, pressure pipework, instrumentation and valves.

1.3 Test Methods

The following table indicates the items/ conditions that will be reviewed for each category of testing:

	FAT	Pre-Ship	On Site
Visual Review	<input checked="" type="checkbox"/>		
Operation	<input checked="" type="checkbox"/>		
Leaks / Spills	<input checked="" type="checkbox"/>		
Safe Guards	<input checked="" type="checkbox"/>		
Signage/Tags	<input checked="" type="checkbox"/>		

1.3.1 TE's with dry block

- NEXT provided TE's are tested and calibrated with a dry block (OEM equipment excluded).

1.3.2 PT's with pressure pump

- NEXT provided PT's are tested and calibrated with a pressure pump (OEM equipment excluded).

1.4 FAT Personnel

The following personnel will be required to witness the FAT test:

	Name/Position	Initials
Client Representative		
Vendor Representative(s) <ul style="list-style-type: none">• Start-up Mechanic• Project/Design Engineer		
Engineering IE Representative		
Panel Vendor Representative		

1.5 Location

The FAT package testing and review will take place at NEXT's Head Office

- 261122 Wagon Wheel Crescent, Rocky View County, Alberta

1.6 Package state of operation

The compressor will have all safety and operations equipment installed, including such items as valves, pressure safety devices, safety guards, etc.

2. SPECIALISED TOOLS & EQUIPMENT

The following tools and equipment will be required by vendor to perform the FAT procedure.

2.1 Mechanical

- Laser alignment tool

2.2 Instrumentation and Electrical

- Fluke (**Or equivalent**) meter for simulating and reading 4-20 mA signals
- Dry Block
- Pressure Pump
- Laptop w/ appropriate software, cables and connectors
- 24v DC power supply
- Instrument/Plant air supply

3. SHOP PERSONNEL REQUIREMENTS

The following personnel will be required to assist in carrying out the various activities in the FAT procedure:

- NEXT's Start-up Mechanic – trained in equipment operation to perform various mechanical pre-checks as outlined later in this document
- Instrument/Controls Technician (**Contractor**) – calibrate and troubleshoot all end devices and make any program changes if required

4. PRELIMINARY ACTIVITY CHECKS – Pre-Run FAT

The following initial activities are required to be completed prior to mechanical and electrical operation of the compressor package.

Item	Description	OK	Completed by
1	MDR reviewed for proper installation and completion against package construction.		
2	P&ID and BOM reviewed for completion against package construction.		
3	GA reviewed for completion against package construction.		
4	Hazardous Area Equipment and E&I drawings reviewed against package construction.		
5	Confirm installation of package PSV's and stated set-points as per P&IDs and or calibration certificates.		
6	Confirm that all vessels, filters, and piping were inspected to ensure no foreign material is present by reviewing QA package documentation.(i.e. Pipe covers, tape, etc.).		
7	Wiring (control panel) drawings reviewed for proper installation and completion. (Highlight schematics during review).		
8	All basic electrical tests including point to point and loop tests are completed to standards. (i.e. I/O List)		
9	Record compressor fluid types and confirm fill:		
10	Watchdog dipswitch settings against panel drawings.		

OBSERVATION/REVIEW CHECKLIST – Pre-Run FAT

Complete	Item or activity
	Coolant Level
	Personal Protection / Thermal Guards
	Fuel gas Pressure Valve
	Start Air Pressure Valve
	Package Positive Isolation
	Lube Oil System (Charges and Operational)
	Earthing Connections
	Power Supply Connections
	Flange Management Records
	Maintenance Overrides
	24V DC test supply prior to energization

Notes:

Enter any notes, comments or details of faults discovered in the space provided below.

NEXT Representative

Date:

Client Representative

Date:

5. COMPRESSOR PACKAGE RUN TESTING

5.1 Pre-run Activities

The following initial activities are required to be completed prior to mechanical and electrical operation of the compressor package.

Item	Description	OK	Completed by
1	Confirm that the process Suction and Discharge skid edge connections are uncovered and unobstructed. Suction Flange should have a coarse mesh screen.		
2	Visually coupling guards, verify cooler is empty & access hatch has been securely closed.		
3	Conduct a Pre-Start Hazard Assessment Meeting:		
4	Secure area around unit (Caution/Danger Flagging), mark area and notify office staff: "Test Run in Progress"		
5	Energization Checks 1.) Check all fuses and circuit breakers w/ Drawings 2.) Record voltage and current; Panel and ESM feeds. 24v Check Earth/Ground continuity; record resistance		
5.1.1 HMI Checks			
6	Confirm strong communications between equipment.		
7	Confirm HMI screen navigations		
8	Input operator password and confirm navigation to pages are allowed		

9	Confirm correct screen display graphics. Compare actual to printed copies (Provide highlighted copy of document)		
5.1.2 Instrumentation Air Checks			
10	Check and record I/A supply pressure		
11	Check I/P converter PCV set points		
5.1.3 Offline Checks			
5.1.3.1 Simulate Discrete Control Valve Operations			
12	Simulate dump operation in Stage 1 scrubber by tripping the level control switch.		
13	Simulate dump operation in Blowcase by tripping the level control switch.		
14	Simulate operation of Balance Piston Actuator.		

5.1.3.2 Test I/O Set Points & Calibration

Item	Description	OK	Completed by
15	Using I/O list attachment (Refer To Section 6) check device operation and calibration using method per Section 1.3 – The IO List and SD Key will be signed off as part of the Pre-Run FAT and scanned and submitted to CNR and will be attached to the Run FAT for final sign off and approval.		
16	Perform A Class “A” shutdown and confirm operation of valves using I/O list attachment (Refer to Section 6). Shutdown key		
17	All instrument fault shutdowns to be checked (as per shutdown key)		

5.1 Run Test Activities

The following activities will prove the full operation of the compressor. The key functional checks to be verified during this procedure shall include the following:

Item	Description	OK	Completed by
1	Complete Start-up and Shutdown Sequencing Control checks.		
2	Confirm the automatic suction control as follows: <ul style="list-style-type: none"> Observe the suction valve tracking with an adjustment in suction pressure. 		
3	Confirm the Recycle valve control as follows the low suction and high discharge control <ul style="list-style-type: none"> Simulate a drop in suction pressure and observe the recycle valve open to prevent a shutdown. 		
	<ul style="list-style-type: none"> Simulate a rise in discharge pressure and observe the recycle valve open to prevent a shutdown. 		
4	Start-up the compressor and perform a shutdown.		
5	Complete a walk around check of unit. Check for fluid leaks Oil pressures Oil Temperatures Coolant Temps		
6	Perform the above with sample Class "A", Class "B" then "Class "C" shutdown tests. Completing a shutdown each time performed.		
7	Start-up compressor and stand-by until "Ready To Load" state is completed.		

8	Monitor the compressor, engine temperatures along with pressure control valves. (Record values on I/O list including temperatures, vibration as needed)		
9	Perform skid walk-around to confirm general accessibility, identify any potential trip hazards, overhead piping (Head hazards), hot surfaces or unguarded moving parts.		
10	Verify all setpoints of PCV and TCV against P&IDs		
11	Test cooler auto louver control		
Completion of Run Test			

Notes:

Enter any notes, comments or details of faults discovered in the space provided below.

NEXT Representative

Date

Client Representative

Date

6. ATTACHMENTS

This completes the FAT procedure / report for this unit. This document concludes all test have been completed successfully and all defects are noted. Category A & B punch list items have been closed out and category C punch list items are fully listed in table with action.

NEXT to supply the following drawings with the latest revision at least 1 week prior to Pre-Run FAT

- IO List and SD Key
- Control Panel Drawings
- Control Panel Philosophy
- General Arrangement Drawings
- P&IDs
- LDT
- IFC Building Drawings