



CAMERON 1 OGDG

COGCC RULE 304.c.(7)

OPERATIONS SAFETY MANAGEMENT PROGRAM

PSSR AND CHANGE MANAGEMENT

SUBSTANTIALLY EQUIVALENT INFORMATION: One Operations Safety Management Plan for the Cameron 1 OGDG is being submitted to satisfy the two locations within. The purpose, safety guidelines, roles and responsibilities, pre-startup reviews, change control, and documentation remain the same for the individual locations within the OGDG.



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1. OVERVIEW

PDC Energy uses Critical Change Request and Pre-Startup Safety Reviews to provide a thoughtful and systematic approach when starting or changing equipment, systems, or processes. This approach provides management, employees, and support staff the opportunity to evaluate and choose the best process, system, or equipment that most effectively protects employees, the environment, and property and reduces downtime.

2. PURPOSE

The purpose of this manual is to provide facility operators a method to evaluate the need for changes in facility process, repair, or design and, if needed, provide a system to evaluate and implement changes that could otherwise effect environmental, occupational, and public safety, and health. This manual also provides general information pertaining to Pre-Startup Safety Review both within and apart from the Critical Change Request. This manual complies with the Colorado Oil and Gas Conservation Commission (COGCC) rules 304.c(7) and 602.d.

3. DEFINITIONS

- 3.1.1. **Critical Change Request** is the systematic approach to integrating new systems or changing old systems to ensure that the change does not create new, unrealized hazards. Pre-Startup Safety Review is conducted prior to the startup of new or modified equipment, after shut-in for repair, or after prolonged system shut-in or deactivation.
- 3.1.2. **Competent person** is defined as one who can identify existing and predictable hazards in the surrounding or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- 3.1.3. **Pre-Startup Safety Review (PSSR)** is intended to ensure the process or facility is safe before startup. While PSSR is part of Critical Change Request (CCR), a PSSR can also be performed independently of a Critical Change Request.

4. GENERAL SAFETY GUIDELINES

4.1. In general, while on location, PDC requires everyone observe the following in relation to Environment, Health, and Safety (EHS):

- All persons have the right and obligation to Stop Work to ensure the safety of all personnel and equipment, and protection of the environment.
- All persons must comply with safety and environmental rules and regulations established by local, state, and federal regulations and established best practices.
- No running on location except in case of emergency.
- Five (5) mph speed limit on PDC premises unless otherwise posted.
- Standard minimum PPE at all drilling, completions, production operations, and any other PDC Energy facility where PPE is required. These requirements are detailed in Section 18 of PDC's EHS Manual.
- The standard minimum safety equipment, a 4-gas monitor, must be worn.
- Smoking is prohibited, except in designated areas.
- To the level it is required, employees must be trained in and for the job tasks they perform.
- Interacting with wildlife is prohibited.
- Ensure proper secondary containment is in place for all required liquid containers.
- Use a "forward first" position while driving a company vehicle so that the first movement when the vehicle moves after being parked is forward, when it is safe to do so.

Please note that this list is not intended to be exhaustive, but rather a general list of safety rules that apply universally at PDC facilities.

5. ROLES AND RESPONSIBILITIES

- 5.1. **Lead Pumpers, Field Supervisors, and Area Foreman** are responsible for identifying when there is a need to initiate a PSSR or CCR process.
- 5.2. **EHS field representatives, Engineers,** and other specialists are responsible for assisting the Operations group with the CCR and/or PSSR process.
- 5.3. **Engineers** and other specialists are responsible for approving the CCR.

6. PRE-STARTUP SAFETY REVIEW

6.1. SCOPE

PDC Energy requires a Pre-Startup Safety Review (PSSR) on all new or existing facilities where new equipment, wells, or facilities are brought online for the first time; after prolonged, non-routine system shut-in; and after new equipment installment.

The level in which a PSSR is conducted should be consistent with the work performed and within the scope of the procedure, review, assessment, or checklist used to perform the startup.

6.2. OVERVIEW

In general, a PSSR will begin with a competent person performing a desktop and/or on-sight review to determine which checklist, procedure, section manual, and associated inspections will be used to initiate startup. Existing procedures and checklists should be reviewed to ensure they are applicable to the startup performed.

If a startup process or checklist does not exist, or if the existing process or checklist, and any associated inspections/tests, are inadequate for the task, qualified employees must assess the job tasks and create a process compliant with PSSR policy found in this section.

6.3. INSPECTIONS AND TESTING

Prior to startup, equipment will be inspected and tested. Examples of processes, checklist (see appendix for an example checklist), and analysis include but are not limited to:

- Construction New Location Checklist
- New Well Turn-On Checklist
- Job Hazard Analysis
- Standard Operating Procedures

- Field Manuals
- Surface Maintenance Post Project Completion Check Sheet.

Below are *examples* of testing and inspections typical to the various types of work performed. This is not an exhaustive list and some tests/inspections are only performed after specific installation events or change procedures:

Equipment	Test / Inspection
Wellhead	Valve Alignment
	Pressure Test
	Piping X-Ray
Separators	Valve Alignment Inspection
	Pressure Relief Valve Inspection (ensure factory testing and valve alignment)
	Pressure Test associated piping
	Dump Valve Test
Flowlines	Valve Alignment Inspection
	Pressure Test
	Piping X-ray (welded pipe)
	Poly Pipe Pressure testing
	JEEP Testing
	Cathodic Protection test
Flare / Combustion Units	Valve alignment Inspection
	Pilot / supply gas inspection
	Function / Operation Test
Production Tanks	Valve Alignment Inspection
	Ventilation System and piping inspection
	24-hour hydrostatic test (i.e. water vaults after new installation)
	Leak inspection
	Thief Hatch Inspection and Closure
	Automated gauge inspection/test

Compressor	Confirm Vendors have performed skid QA/QC
Automation	Function Test and Calibration
Other	Other inspections and test as required

7. CRITICAL CHANGE REQUEST

PDC Energy requires a Critical Change Request (CCR) before the installation or material change of any facility, system, policy, or procedure that may affect other facilities, systems, policies, or procedures. This applies to facilities in construction, where actual or potential construction design changes will be made, and all other existing facilities.

A CCR is not required for like-in-kind equipment swaps and routine maintenance.

7.1. DOCUMENTATION

All CCR's will be documented using the critical change request template informally called the CCR Form. This form serves as a guide to ensure that all hazards are identified, analyzed, and eliminated or mitigated as feasible. When completed the CCR form will document:

1. The necessity of any potential changes
2. A notation of whether the change is permanent or temporary and if temporary, how long the change will be in place.
3. Identification of the Engineer and other competent persons approving the change.
4. Assessments of additional hazard or risk to personnel, public, and environmental health and safety
5. Any mitigative actions based on newly presented hazards
6. Notations of any process or procedure revisions
7. Steps on how the change will be implemented
8. A Pre-Startup Safety Review
9. Employee / Affected training
10. Notes on the execution of the change to include any instances where the original CCR may have been modified during the execution phase due to unforeseen hazards; and
11. Description/inclusion of any changes to schematics, as-built drawings, or process diagrams.

8. DOCUMENT RETENTION, ACCESS, AND CONTROL

Documents are kept on PDC's internal network for a period of time no less than five years. In the event an appropriate, governing body requests to view CCR or PSSR documents, PDC Energy will provide the requested information to the requesting governing body in no more than 10 business



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days. If in good faith the information request cannot be submitted in the required time, PDC Energy will notify the governing body and arrange for an extension.



9. APPENDIX



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INSPECTION	DATE	YES	NO	COMMENTS
SEPARATORS				
Separator Interior Cabinet	DATE	YES	NO	COMMENTS
Automation ran to high/low controller?				
All factory fittings verified tight?				
All factory stainless steel fittings verified tight?				
All hammer unions verified tight and marked?				
Are back pressure regulators flowing the right way?				
Are proper gauges installed on back pressure regulators?				
Airline ran to necessary equipment if equipped?				
Proper gauges on fuel/scrubber pot? (120 psi)				
Sight glasses on oil and water legs? Verified tight and not cracked?				
1" Supply lines labeled? (Compressor, ECD, etc....)				
Are Coriolis meters level and tight?				
Has automation been installed on Coriolis meters?				
Dirt level inside cabinet with all balon valves ground level exposed?				
Is the scrubber fuel drain line exposed on the surface?				
All ¼", ½", 1" plugs installed?				
Have all check valves verified for proper flow?				
Separator Exterior	DATE	YES	NO	COMMENTS
Are all separators labeled with corresponding wellhead IDs?				
Are all flange bolts tight and verified?				
Properly valves installed? "Will this valve freeze and split?"				
Are all installed valves rated for the appropriate pressure?				
Are all Burner Management Systems installed?				
Are all separators level?				
Stainless airline ran to pneumatic dump valves? (if equipped)				
All hammer unions installed properly, verified tight and marked?				
Are 2x1 swages with 1" balon valves installed on each sales line?				
Are 2x1 swages with 1" balon valves installed on each header?				
All ¼", ½", 1" plugs installed?				
All pressure relief valves (PRVs, popoffs) correct rating and secure?				
Are above ground sales lines proper height? (if equipped)				



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Have all check valves verified for proper flow?				
Three Pack	DATE	YES	NO	COMMENTS
High pressure sight glasses installed?				
Heater installed with power ran to it?				
Proper valves installed? "Will this valve freeze and split?"				
All flange bolts verified tight and marked?				
Surge Vessel	DATE	YES	NO	COMMENTS
All flange bolts verified tight and marked?				
Inspection plate gasket in place?				
Inspection plate bolts verified tight and marked?				
Proper signage on surge vessel				
Surge vessel grounded?				
INSPECTION ITEM	DATE	YES	NO	COMMENTS
Landings/Crossovers installed on surge vessel?				
Stainless airline ran to necessary pneumatic devices?				
Emissions Control Devices	DATE	YES	NO	COMMENTS
Are all ECDs level?				
Are ARC boxes installed on all ECDs?				
Loadout control flare identified?				
Proper guarding around ECDs?				
All flange bolts verified tight and marked?				
Do all waste gas line gauges read in Oz.?				
Do all supply gas line gauges read PSI.?				
Does load out control flare have SAU ARC installed on it?				
All automation cable installed on flares?				
Do all overhead lines meet minimum requirements?				
Are all knockout pots level?				
Does the waste gas line have the proper slope? (for drainage)				
Production Tanks	DATE	YES	NO	COMMENTS
Correct labeling/stickers on tanks?				
Pressure relief valve/911s rated for the correct pressure?				
Are all inspection plate bolts verified tight?				
Equalizer lines installed. Does tank one have a lockable valve?				
Are all tanks equipped with Viton gaskets and washers?				
Do all tank gauges read Oz.?				
Do all load lines have plugs in the load line buckets				



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Are actuators installed on load lines and top valves?				
Knockouts level and plumbed to vaults?				
Are all tanks properly grounded?				
Are grounding rods located outside tank berm w/signage?				
Are the Landings safe and secure?				
Is the containment the proper size and free of damage?				
Are all drain lines shut and locked?				
Are all load lines shut?				
210BBL vaults have a 16" from bottom load line installed?				
Does tank one have a full port/flanged 4" valve installed?				
Meter Runs	DATE	YES	NO	COMMENTS
Are the rupture pin bleeders snug?				
½" plugs installed on Ts?				
Sales meters properly marked with well numbers?				
Compressors	DATE	YES	NO	COMMENTS
Solar panels installed if equipped?				
Suction motor valve installed and stainless plumbed?				
Automation installed on check meter?				
Are drain lines identified? (Fuel, 1 st , 2 nd , 3 rd stage drains)				
Check valves installed on drain lines?				
Skid numbers identifiable?				
INSPECTION ITEM	DATE	YES	NO	COMMENTS
General Facility	DATE	YES	NO	COMMENTS
PDC "No Spill" Signs throughout the facility?				
Are berms equipped with crossovers in the proper places?				
"Liner Do Not Dig" Signs?				
Good traffic flow?				
Bollards or Line/Equipment protection installed?				
Windsock installed?				
Does the facility have good egress routes?				
Underground Lines	DATE	YES	NO	COMMENTS
Pressure testing complete and documented?				
Have Insulated unions been tested?				
Have all anodes been tested?				
Has tracer wire been installed on all lines and easily accessible?				
Have all welds been inspected, primed, and taped?				

[illegible]

Creation:	[Date]
Last Updated:	[Date]
Review Cycle:	[Frequency]
Document Change Log	
Version # [Date]	[Type of Review (initial, annual, enhancements/necessary revisions)] [Description of Revisions Made] [Employees involved: Department, Position Title, Employee Name]
Version # [Date]	[Type of Review (initial, annual, enhancements/necessary revisions)] [Description of Revisions Made]



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	[Employees involved: Department, Position Title, Employee Name]
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<<BEGIN CCR FORM>>

CCR FORM

SITE NAME	DATE
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Assigned Engineers:

All CCR's must be approved by an engineer and, if necessary, competent specialists. The reviewing/approving engineers and specialist for this project are:

List Name / Title

OVERVIEW

Describe the operation, method of operation, equipment, or procedure to be changed:

CHANGE REQUEST

Describe what will be changed and why it is necessary

TEMPORARY OR PERMANENT

List either "PERMANENT" or "TEMPORARY." If the change is temporary describe how long the temporary change will be in place.

CURRENT PROCESS, REFERENCE, AND PROCEDURE REVIEW

List all involved processes, procedures, checklists, drawings, diagrams, and schematics.

#	<i>Name of Processes, Procedures, Checklists, Drawings, Diagrams, and Schematics.</i>
1	
2	
3	
4	
5	

ASSESSMENT

Environmental
Conducted By

MEREDITH KNAUF

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Insert Environmental Assessment summary here

Occupational Safety and Health

Conducted by

Insert Occupational Safety and Health Assessment summary here

Public Health

Conducted by

Insert Public Health Assessment summary here

Engineering review

Conducted by

Insert Engineering review here

Other

Conducted By

Insert Other Assessment here

HAZARD ELIMINATION AND MITIGATION

Hazard 1

Is it feasible to eliminate this hazard? If not, why not?

Describe the steps to mitigate this hazard

Hazard 2

Is it feasible to eliminate this hazard? If not, why not?

Hazard 3...

PROCESS, REFERENCE, AND PROCEDURE REVIEW

List all affected processes, procedures, checklists, drawings, diagrams, and schematics. List the date of review and, if needed, update.

	DOCUMENT NAME	REVIEW DATE	UPDATE DATE*
#			
1			
2			
3			



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**Place N/A if the document does not require update*

CHANGE IMPLEMENTATION STEPS

Proved Job Hazard Assessment / Job Safety Analysis for this job task

PRE-STARTUP SAFETY REVIEW

Provide PSSR here

TRAINING DOCUMENTATION

Training document is included in the appendix of this document. Training documentation, such as a sign in sheet, shows that all affected employees have been trained in the change to include any hazards or processes that may have been changed, eliminated, or created during the change.

CHANGE EXECUTION NOTES

Provide any notes/comments

APPROVALS

	SIGN	DATE
ENGINEERING		
EHS		
OPERATIONS MANAGER		
OTHER		

<<END CCR FORM>>