District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 89210
District III
1000 Rio Brazos Road, Aztec, NM 874 1 0
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit Original to Appropriate District Office

NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 07 2018

RECEIVED

GAS CAPTURE PLAN

Date: 3/26/2018

☒ Original
☐ Amended - Reason for Amendment: _____

Operator & OGRID No.: Mack Energy Corporation - 013837

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection C of 19.15.18.12 NMAC)

Well(s)/Production Facility - Name of facility

The well(s) that will be located at the production facility are shown in the table below

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Nome Federal #1H	30-015-45151	Sec. 3 T16S R28E	1700 FSL & 1675 FWL	50		

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to DCP Midstream and will be connected to DCP Midstream low/high pressure gathering system located in Chaves County, New Mexico. It will require 0 (existing) of pipeline to connect the facility to low/high pressure gathering system. Mack Energy Corporaiton provides (periodically) to DCP Midstream a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Mack Energy Corporaton and DCP Midstream have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at DCP Midstream Linam Ranch Processing Plant located in Sec. 6, Twn. 19S, Rng. 37E Lea County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on DCP Midstream system at that time. Based on current information, it is Mack Energy Corporation belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the Use Of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation - On lease
  Only a portion of gas is consumed operating the generator, remainder of gas will be flared

Compressed Natural Gas - On lease
Gas flared would be minimal, but might be uneconomical to operate when gas volume declines

NGL Removal - On lease
Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

	Top of segment 2 (ft)	1785	S.F.	Actual		Desire
Select	3rd segment from bottom		collapse	8.717538	>=	1.125
			burst-b	3.246357	>=	1.25
1785 ft	to 0 ft		burst-t	3.316667		
7	26 HCP-110 LT&C		jnt strngth	9.121422	>=	1.8
	Top of segment 3 (ft)	0	S.F.	Actual		Desire
Select	4th segment from bottom		collapse	#DIV/0!	>=	1.125
			burst-b	0	>=	1.25
0 ft	to 0 ft		burst-t	0		
0	0 0 0		jnt strngth	7.41049	>=	1.8
	Top of segment 4 (ft)		S.F.	Actual		Desire
Select	5th segment from bottom		collapse	#DIV/0!	>=	1.125
			burst-b	0	>=	1.25
0 ft	to ft		burst-t	0		
0	0 0 0		jnt strngth	0	>=	1.8
	Top of segment 5 (ft)		S.F.	Actual		Desire
Select	6th segment from bottom		collapse	#DIV/0!	>=	1.125
			burst-b	0	>=	1.25
0 ft	to ft		burst-t	0		
0	0 0 0		jnt strngth	0	>=	1.8
	Top of segment 6 (ft)		jnt strngth		>=	1.8

use in colapse calculations across different pressured formations

Three gradient pressure function

Depth of evaluation:	1,200 ft			516	psi @	1,200 ft
Top of salt:	2,400 ft	fx #1	516			
Base of salt:	3,700 ft	fx #2	900			
TD of intermediate:	4,600 ft	fx #3	540			

Pressure gradient to be used above each top to be used as a function of depth. ex. psi/ft

fx #1	fx #2	fx #3
0.43	0.75	0.45

1) Calculate neutral point for buckling with temperature affects computed also
2) Surface burst calculations & kick tolerance in surface pressure for burst
3) Do a comparison test to determine which value is lower joint strength or body yield to use in tensile strength calculations
4) Raise joint strength safety factor up to next level on page #2
5) Sour service what pipe can be used with proper degrading of strength factors and as function of temp

Adjust for best combination of safety factors

	Secondary
S.F. Collapse bottom of segment:	
S.F. Collapse top of segment:	6.55434
S.F. Burst bottom of segment:	
S.F. Burst top of segment	
S.F. Joint strength bottom of segment:	795.518
S.F. Joint strength top of segment:	
S.F. Body yield strength bottom of segment:	764.706
S.F. Body yield strength top of segment:	7.21499

Collapse calculations for 1st segment - casing evacuated

Buoyancy factor collapse:	0.85771	
calculations for bottom of segment @	2585 ft	
hydrostatic pressure collapse - backside:	1250.11 psi	
Axial load @ bottom of section	0 lbs	previous segments
Axial load factor:	0	load/(pipe body yield strength)
Collapse strength reduction factor:	1	Messrs. Westcott, Dunlop, Kemler,1940
Adjusted collapse rating of segment:	8580 psi	
Actual safety factor	6.86342	adjusted casing rating / actual pressure