

**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

**APPLICATION OF SPC RESOURCES,  
LLC TO AMEND ORDER NO. R-21096,  
AS AMENDED, EDDY COUNTY, NEW  
MEXICO.**

CASE NO. \_\_\_\_\_  
**ORDER NO. R-21096, As Amended**

**APPLICATION**

SPC Resources, LLC (“Applicant”) (OGRID No. 372262), through its undersigned attorneys, hereby files this application with the Oil Conservation Division to amend Order No. R-21096, as amended, to allow for an extension of time to drill an initial a well under the Order until February 17, 2024. In support of this application, Applicant states:

1. Division Order No. R-21096, entered on February 12, 2020 in Case No. 20762, created a 1,267.1-acre, more or less, standard horizontal spacing unit consisting of the W/2 and E/2 of Section 12, Township 22 South, Range 26 East, and the W/2 and E/2 of Section 7, Township 22 South, Range 27 East, NMPM, Eddy County, New Mexico (the “Unit”), and designated Applicant as the operator of the Unit. See **Exhibit A**.

2. Order No. R-21096 pooled the uncommitted interests in the Wolfcamp formation (Purple Sage; Wolfcamp Pool (Pool Code 98220)) in the Unit and dedicated the Unit to the following Proposed Wells: (1) the **Caveman #402H well** (API No. 30-015-47629), and (2) the **Caveman #442H well** (API 30-015-Pending).

3. On April 12, 2021, the Division entered Order No. R-21096-A in Case No. 21577 to (1) conform Order No. R-21096 to the amended order template (“Amended Order”) described in the Division Director’s April 9, 2020 *Letter to Counsel Regarding Amended CP Order Template*; (2) pool additional interest owners under the terms of Order No. R-21096; (3) extend

the time to commence drilling an initial well under Order No. R-21096 to February 12, 2022; and (4) update the names and locations of the initial Proposed Wells. *See* **Exhibit B**.

4. On May 17, 2021, the Division entered Order No. R-21096-B, pooling additional interest owners under the terms of Order No. R-21096 without modifying the February 12, 2022, drilling deadline.

5. Applicant now requests that Order No. R-21096, as amended, be opened and further amended to allow Applicant additional time to commence drilling an initial well under the Order until February 17, 2024.

6. Good cause exists for Applicant's request for an extension of time.

7. Applicant was under contract with a drilling crew and preparing to spud an initial well under Order No. R-21096 in July 2021 when the Division issued an emergency order suspending approval SPC's initial well. *See* **Exhibit C**.

8. Subsequently, the Division filed an application to revoke Order No. R-21096, as amended, and the approved APDs for the initial wells.

9. On October 19, 2021, the Division entered Order No. R-21888 temporarily suspending Order No. R-21096 pending remediation of the Carlsbad Brine Well project and until other certain conditions were met. *See* **Exhibit D**. All deadlines under Order No. R-21096 were tolled effective July 2, 2021 until the Division Director notified SPC that drilling and/or completion activities may resume. *See id.*

10. The Division notified SPC on July 7, 2022, that suspension of Order No. R-21096 had been lifted and that drilling and completion activities may resume. *See* **Exhibit E**. Pursuant to the tolling of Order No. R-21096, the current deadline to commence drilling an initial well is February 17, 2023.

11. Due to the disruption to SPC's initial drilling schedule, the suspension of its drilling and completion operations, and the uncertainty over when the suspension would be lifted, SPC requires additional time to plan, coordinate, and retain a drilling crew to drill its planned initial wells.

12. Accordingly, SPC requests the deadline to commence drilling an initial well under Order No. R-21096, as amended, be extended for one year until February 17, 2024.

WHEREFORE, Applicant requests that this application be set for hearing before an Examiner of the Oil Conservation Division on January 5, 2023, and after notice and hearing as required by law, the Division amend Order No. R-21096, as amended, to extend the time to commence drilling the proposed initial well until February 17, 2024.

Respectfully submitted,

HOLLAND & HART LLP

By:  \_\_\_\_\_

Michael H. Feldewert  
Adam G. Rankin  
Julia Broggi  
Paula M. Vance  
Post Office Box 2208  
Santa Fe, New Mexico 87504-2208  
(505) 988-4421  
(505) 983-6043 Facsimile  
mfeldewert@hollandhart.com  
agrarkin@hollandhart.com  
jbroggi@hollandhart.com  
pmvance@hollandhart.com

**ATTORNEYS FOR SPC RESOURCES, LLC**

**CASE \_\_\_\_\_: Application of SPC Resources, LLC to Amend Order No. R-21096, As Amended, Eddy County, New Mexico.** Applicant in the above-styled cause seeks to amend Order No. R-21096, as amended, to allow for an extension of time to drill an initial a well under the Order until February 17, 2024. The Unit is comprised of the W/2 and E/2 of Section 12, Township 22 South, Range 26 East, and the W/2 and E/2 of Section 7, Township 22 South, Range 27 East, NMPM, Eddy County, New Mexico. Order No. R-21096 pooled the uncommitted interests in the Wolfcamp formation (Purple Sage; Wolfcamp Pool (Pool Code 98220)). The Unit is dedicated to the **Caveman #402H well** (API No. 30-015-47629), and (2) the **Caveman #442H well** (API 30-015-Pending). Portions of said area are located within the city limits of Carlsbad, New Mexico.

**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

**IN THE MATTER OF APPLICATION FOR  
COMPULSORY POOLING SUBMITTED BY  
SPC RESOURCES, LLC**

**CASE NO. 20762  
ORDER NO. R-21096**

**ORDER**

The Director of the New Mexico Oil Conservation Division (“OCD”), having heard this matter through a Hearing Examiner on September 19, 2019, and after considering the testimony, evidence, and recommendation of the Hearing Examiner, issues the following Order.

**FINDINGS OF FACT**

1. SPC Resources, LLC (“Operator”) submitted an application (“Application”) to compulsory pool the uncommitted oil and gas interests within the spacing unit (“Unit”) described in Exhibit A. The Unit is expected to be a standard horizontal spacing unit. 19.15.16.15(B) NMAC. Operator seeks to be designated the operator of the Unit.
2. Operator will dedicate the well(s) described in Exhibit A (“Well(s)”) to the Unit.
3. Operator proposes the supervision and risk charges for the Well(s) described in Exhibit A.
4. Operator identified the owners of uncommitted interests in oil and gas minerals in the Unit and provided evidence that notice was given.
5. The Application was heard by the Hearing Examiner on the date specified above, during which Operator presented evidence through affidavits in support of the Application. No other party presented evidence at the hearing.

**EXHIBIT A**

**CONCLUSIONS OF LAW**

- 6. OCD has jurisdiction to issue this Order pursuant to NMSA 1978, Section 70-2-17.
- 7. Operator is the owner of an oil and gas working interest within the Unit.
- 8. Operator satisfied the notice requirements for the Application and the hearing as required by 19.15.4.12 NMAC.
- 9. OCD satisfied the notice requirements for the hearing as required by 19.15.4.9 NMAC.
- 10. Operator has the right to drill the Well(s) to a common source of supply at the described depth(s) and location(s) in the Unit.
- 11. The Unit contains separately owned uncommitted interests in oil and gas minerals.
- 12. Some of the owners of the uncommitted interests have not agreed to commit their interests to the Unit.
- 13. The pooling of uncommitted interests in the Unit will prevent waste and protect correlative rights, including the drilling of unnecessary wells.
- 14. This Order affords to the owner of an uncommitted interest the opportunity to produce his just and equitable share of the oil or gas in the pool.

**ORDER**

- 15. The uncommitted interests in the Unit are pooled as set forth in Exhibit A.
- 16. The Unit shall be dedicated to the Well(s) set forth in Exhibit A.
- 17. Operator is designated as operator of the Unit and the Well(s).
- 18. If the Surface Location or Bottom Hole Location of a well is changed from the location described in Exhibit A, Operator shall submit an amended Exhibit A, which the Division shall append to this Order.
- 19. If the location of a well will be unorthodox under the spacing rules in effect at the time of completion, Operator shall obtain the OCD's approval for a non-standard location before commencing production of the well.
- 20. The Operator shall commence drilling the initial well within one (1) year after the date of this Order; and (b) for an infill well, no later than thirty (30) days after completion of the well.

CASE NO. 20762  
ORDER NO. R-21096

21. Operator shall comply with the infill well requirements in 19.15.13.9 NMAC through 19.15.13.12 NMAC.
22. This Order shall terminate automatically if Operator fails to comply with Paragraphs 20 or 21.
23. Operator shall submit to OCD and each owner of a working interest in the pool ("Pooled Working Interest") an itemized schedule of estimated costs to drill, complete, and equip the well ("Estimated Well Costs") no later than: (a) for an initial well, no later than thirty (30) days after the date of this Order; (b) for an infill well proposed by Operator, no later than (30) days after the later of the initial notice period pursuant to 19.15.13.10(B) NMAC or the extension granted by the OCD Director pursuant 19.15.13.10(D) NMAC; or (c) for an infill well proposed by an owner of a Pooled Working Interest, no later than thirty (30) days after expiration of the last action required by 19.15.13.11 NMAC.
24. No later than thirty (30) days after Operator submits the Estimated Well Costs , the owner of a Pooled Working Interest shall elect whether to pay its share of the Estimated Well Costs or its share of the actual costs to drill, complete and equip the well ("Actual Well Costs") out of production from the well. An owner of a Pooled Working Interest who elects to pay its share of the Estimated Well Costs shall render payment to Operator no later than thirty (30) days after the expiration of the election period, and shall be liable for operating costs, but not risk charges, for the well. An owner of a Pooled Working Interest who fails to pay its share of the Estimated Well Costs or who elects to pay its share of the Actual Well Costs out of production from the well shall be considered to be a "Non-Consenting Pooled Working Interest."
25. No later than within one hundred eighty (180) days after Operator submits a Form C-105 for a well, Operator shall submit to OCD and each owner of a Pooled Working Interest an itemized schedule of the Actual Well Costs. The Actual Well Costs shall be considered to be the Reasonable Well Costs unless OCD or an owner of a Pooled Working Interest files a written objection no later than forty-five (45) days after receipt of the schedule. If OCD or an owner of a Pooled Working Interest files a timely written objection, OCD shall determine the Reasonable Well Costs after public notice and hearing.
26. No later than sixty (60) days after the later of the expiration of the period to file a written objection to the Actual Well Costs or OCD's order determining the Reasonable Well Costs, each owner of a Pooled Working Interest who paid its share of the Estimated Well Costs shall pay to Operator its share of the Reasonable Well Costs that exceed the Estimated Well Costs, or Operator shall pay to each owner of a Pooled Working Interest who paid its share of the Estimated Well Costs its share of the Estimated Well Costs that exceed the Reasonable Well Costs.

CASE NO. 20762  
ORDER NO. R-21096

Page 3

27. The reasonable charges for supervision to drill and produce a well ("Supervision Charges") shall not exceed the rates specified in Exhibit A, provided however that the rates shall be adjusted annually pursuant to the COPAS form entitled "Accounting Procedure-Joint Operations."
28. No later than within ninety (90) days after Operator submits a Form C-105 for a well, Operator shall submit to OCD and each owner of a Pooled Working Interest an itemized schedule of the reasonable charges for operating and maintaining the well ("Operating Charges"), provided however that Operating Charges shall not include the Reasonable Well Costs or Supervision Charges. The Operating Charges shall be considered final unless OCD or an owner of a Pooled Working Interest files a written objection no later than forty-five (45) days after receipt of the schedule. If OCD or an owner of a Pooled Working Interest files a timely written objection, OCD shall determine the Operating Charges after public notice and hearing.
29. Operator may withhold the following costs and charges from the share of production due to each owner of a Pooled Working Interest who paid its share of the Estimated Well Costs: (a) the proportionate share of the Supervision Charges; and (b) the proportionate share of the Operating Charges.
30. Operator may withhold the following costs and charges from the share of production due to each owner of a Non-Consenting Pooled Working Interest: (a) the proportionate share of the Reasonable Well Costs; (b) the proportionate share of the Supervision and Operating Charges; and (c) the percentage of the Reasonable Well Costs specified as the charge for risk described in Exhibit A.
31. Each year on the anniversary of this Order, and no later than ninety (90) days after each payout, Operator shall provide to OCD and each owner of a Non-Consenting Pooled Working Interest a schedule of the revenue attributable to a well and the Supervision and Operating Costs charged against that revenue.
32. Any cost or charge that is paid out of production shall be withheld only from the share due to an owner of a Pooled Working Interest. No cost or charge shall be withheld from the share due to an owner of a royalty interests. For the purpose of this Order, an unleased mineral interest shall consist of a seven-eighths (7/8) working interest and a one-eighth (1/8) royalty interest.
33. Except as provided above, Operator shall hold the revenue attributable to a well that is not disbursed for any reason for the account of the person(s) entitled to the revenue as provided in the Oil and Gas Proceeds Payment Act, NMSA 1978, Sections 70-10-1 *et seq.*, and relinquish such revenue as provided in the Uniform Unclaimed Property Act, NMSA 1978, Sections 7-8A-1 *et seq.*

CASE NO. 20762  
ORDER NO. R-21096

Page 4

- 34. The Unit shall terminate if (a) the owners of all Pooled Working Interests reach a voluntary agreement; or (b) the well(s) drilled on the Unit are plugged and abandoned in accordance with the applicable rules. Operator shall inform OCD no later than thirty (30) days after such occurrence.
- 35. OCD retains jurisdiction of this matter for the entry of such orders as may be deemed necessary.

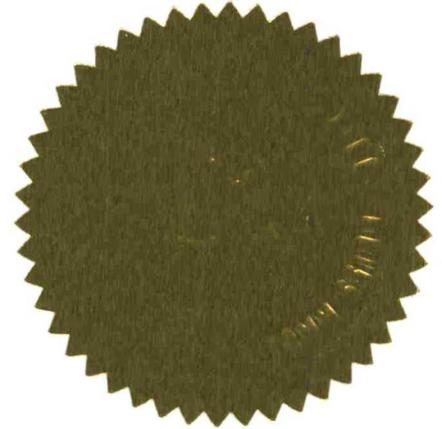
**STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION**



**ADRIENNE SANDOVAL  
DIRECTOR**

AS/jag

**Date: February 12, 2020**



CASE NO. 20762  
ORDER NO. R-21096

**Exhibit "A"**

Applicant: SPC Resources, LLC  
Operator: SPC Resources, LLC (OGRID 372262)

Spacing Unit: Horizontal Gas  
Building Blocks: Half Section Equivalent  
Spacing Unit Size: 1267.1 acres (more or less)  
Orientation of Unit: East/West

Spacing Unit Description:

W/2 and E/2 of Section 12, Township 22 South, Range 26 East, NMPM, Eddy County, New Mexico, and  
W/2 and E/2 of Section 7, Township 22 South, Range 27 East, NMPM, Eddy County, New Mexico.

Pooling this Vertical Extent: Wolfcamp Formation  
Depth Severance? (Yes/No): No

Pool: Purple Sage;Wolfcamp Gas (Pool code 98220)  
Pool Spacing Unit Size: Half Sections  
Governing Well Setbacks: Special Rules for the Purple Sage Gas Pool Apply  
Pool Rules: Purple Sage and Horizontal Well Rules

Proximity Tracts: No

Monthly charge for supervision: While drilling: \$8000 While producing: \$800  
As the charge for risk, 200 percent of reasonable well costs.

**Proposed Wells:**

**Caveman 7-12 WCXY Well No. 2H, API No. 30-015-Pending**

SHL: 2271 feet from the North line and 240 feet from the West line, (Unit E) of Section 8, Township 22 South, Range 27 East, NMPM.  
BHL: 1650 feet from the North line and 100 feet from the West line, (Unit E) of Section 12, Township 22 South, Range 26 East, NMPM.

Completion Target: Wolfcamp A at approx. 8780 feet TVD.  
Well Orientation: East to West  
Completion Location expected to be: standard

**Caveman 7-12 WCD Well No. 3H, API No. 30-015-Pending**

SHL: 2331 feet from the North line and 490 feet from the West line, (Unit E) of Section 8, Township 22 South, Range 27 East, NMPM.  
BHL: 1980 feet from the South line and 100 feet from the West line, (Unit L) of Section 12, Township 22 South, Range 26 East, NMPM.

CASE NO. 20762  
ORDER NO. R-21096

Completion Target: Wolfcamp D at approx. 9300 feet TVD.  
Well Orientation: East to West  
Completion Location expected to be: standard

CASE NO. 20762  
ORDER NO. R-21096

Page 7

**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

**IN THE MATTER OF APPLICATION FOR  
COMPULSORY POOLING SUBMITTED BY  
SPC RESOURCES, LLC**

**CASE NO. 21577  
ORDER NO. R-21096-A**

**ORDER**

The Director of the New Mexico Oil Conservation Division (“OCD”), having heard this matter through a Hearing Examiner on January 21, 2021, and after considering the testimony, evidence, and recommendation of the Hearing Examiner, issues the following Order:

**FINDINGS OF FACT**

1. SPC Resources, LLC (“Operator”), applied to conform Order R-21096 and Order (“Existing Order”) issued in Case No. 20762 with the Division’s recently amended order template (“Amended Template”). Operator also seeks to pool additional lately discovered interest owners, an extension of time to commence drilling, and to update the names and locations of the subject wells.
2. Subsequent to the issuance of Order R-21096, Operator discovered previously unidentified interest owner(s) in the Unit.
3. Operator provided evidence that it gave notice of the Application and the hearing to the previously unidentified interest owner(s).
2. Operator is in good standing under state-wide rules and regulations with respect to the Existing Order.
3. Operator has reviewed and agrees to the terms and conditions in the ordering paragraphs of the Amended Template.
4. The Application was heard by the Hearing Examiner on the date specified above, during which Operator presented evidence through affidavits in support of the Application. No other party presented evidence at the hearing.

**CONCLUSIONS OF LAW**

5. OCD has jurisdiction to issue this Order pursuant to NMSA 1978, Section 70-2-17.
6. Operator satisfied the notice requirements for the Application and the hearing as required by 19.15.4.12 NMAC.

**EXHIBIT B**

7. OCD satisfied the notice requirements for the hearing as required by 19.15.4.9 NMAC.
8. The previously unidentified interest(s) have not agreed to commit its interest to the Unit.
9. The pooling of the previously unidentified uncommitted interest(s) in the Unit will prevent waste and protect correlative rights, including the drilling of unnecessary wells.
10. This Order affords to the previously unidentified interest(s) the opportunity to produce their just and equitable share of the oil or gas in the pool.
11. This Order affirms the Findings of Fact and Conclusions of Law in the Existing Order and replaces the ordering paragraphs 15-35 in the Existing Order as stated below. This Order also grants the change of names and locations of subject wells as set forth in Exhibit A attached hereto, and grants a one-year extension until February 12, 2022, to commence drilling the subject wells.

### **ORDER**

12. The previously unidentified uncommitted interest(s) in the Unit are hereby pooled in the Unit. The uncommitted interests in the Unit are pooled as set forth in Exhibit A as appended to the original and amended orders and incorporated by reference herein.
13. The Unit shall be dedicated to the Well(s) set forth in Exhibit A attached hereto.
14. Operator is designated as operator of the Unit and the Well(s).
15. If the location of a well will be unorthodox under the spacing rules in effect at the time of completion, Operator shall obtain the OCD's approval for a non-standard location in accordance with 19.15.16.15(C) NMAC.
16. The Operator shall commence drilling the Well(s) by February 12, 2022, within one year after the date of this Order and complete each Well no later than one (1) year after the commencement of drilling the Well.
17. This Order shall terminate automatically if Operator fails to comply with Paragraph 16 unless Operator obtains an extension by an amendment of this Order for good cause shown.
18. The infill well requirements in 19.15.13.9 NMAC through 19.15.13.12 NMAC shall be applicable.

CASE NO. 21577  
ORDER NO. R-21096-A

Page 2 of 8

19. Operator shall submit to each owner of an uncommitted working interest in the pool ("Pooled Working Interest") an itemized schedule of estimated costs to drill, complete, and equip the well ("Estimated Well Costs").
20. No later than thirty (30) days after Operator submits the Estimated Well Costs, the owner of a Pooled Working Interest shall elect whether to pay its share of the Estimated Well Costs or its share of the actual costs to drill, complete and equip the well ("Actual Well Costs") out of production from the well. An owner of a Pooled Working Interest who elects to pay its share of the Estimated Well Costs shall render payment to Operator no later than thirty (30) days after the expiration of the election period, and shall be liable for operating costs, but not risk charges, for the well. An owner of a Pooled Working Interest who fails to pay its share of the Estimated Well Costs or who elects to pay its share of the Actual Well Costs out of production from the well shall be considered to be a "Non-Consenting Pooled Working Interest."
21. No later than one hundred eighty (180) days after Operator submits a Form C-105 for a well, Operator shall submit to each owner of a Pooled Working Interest an itemized schedule of the Actual Well Costs. The Actual Well Costs shall be considered to be the Reasonable Well Costs unless an owner of a Pooled Working Interest files a written objection no later than forty-five (45) days after receipt of the schedule. If an owner of a Pooled Working Interest files a timely written objection, OCD shall determine the Reasonable Well Costs after public notice and hearing.
22. No later than sixty (60) days after the expiration of the period to file a written objection to the Actual Well Costs or OCD's order determining the Reasonable Well Costs, whichever is later, each owner of a Pooled Working Interest who paid its share of the Estimated Well Costs shall pay to Operator its share of the Reasonable Well Costs that exceed the Estimated Well Costs, or Operator shall pay to each owner of a Pooled Working Interest who paid its share of the Estimated Well Costs its share of the Estimated Well Costs that exceed the Reasonable Well Costs.
23. The reasonable charges for supervision to drill and produce a well ("Supervision Charges") shall not exceed the rates specified in Exhibit A, provided however that the rates shall be adjusted annually pursuant to the COPAS form entitled "Accounting Procedure-Joint Operations."
24. No later than within ninety (90) days after Operator submits a Form C-105 for a well, Operator shall submit to each owner of a Pooled Working Interest an itemized schedule of the reasonable charges for operating and maintaining the well ("Operating Charges"), provided however that Operating Charges shall not include the Reasonable Well Costs or Supervision Charges. The Operating Charges shall be considered final unless an owner of a Pooled Working Interest files a written objection no later than forty-five (45) days after receipt of the schedule. If an owner

CASE NO. 21577  
ORDER NO. R-21096-A

Page 3 of 8

of a Pooled Working Interest files a timely written objection, OCD shall determine the Operating Charges after public notice and hearing.

25. Operator may withhold the following costs and charges from the share of production due to each owner of a Pooled Working Interest who paid its share of the Estimated Well Costs: (a) the proportionate share of the Supervision Charges; and (b) the proportionate share of the Operating Charges.
26. Operator may withhold the following costs and charges from the share of production due to each owner of a Non-Consenting Pooled Working Interest: (a) the proportionate share of the Reasonable Well Costs; (b) the proportionate share of the Supervision and Operating Charges; and (c) the percentage of the Reasonable Well Costs specified as the charge for risk described in Exhibit A.
27. Operator shall distribute a proportionate share of the costs and charges withheld pursuant to paragraph 26 to each Pooled Working Interest that paid its share of the Estimated Well Costs.
28. Each year on the anniversary of this Order, and no later than ninety (90) days after each payout, Operator shall provide to each owner of a Non-Consenting Pooled Working Interest a schedule of the revenue attributable to a well and the Supervision and Operating Costs charged against that revenue.
29. Any cost or charge that is paid out of production shall be withheld only from the share due to an owner of a Pooled Working Interest. No cost or charge shall be withheld from the share due to an owner of a royalty interests. For the purpose of this Order, an unleased mineral interest shall consist of a seven-eighths (7/8) working interest and a one-eighth (1/8) royalty interest.
30. Except as provided above, Operator shall hold the revenue attributable to a well that is not disbursed for any reason for the account of the person(s) entitled to the revenue as provided in the Oil and Gas Proceeds Payment Act, NMSA 1978, Sections 70-10-1 *et seq.*, and relinquish such revenue as provided in the Uniform Unclaimed Property Act, NMSA 1978, Sections 7-8A-1 *et seq.*
31. The Unit shall terminate if (a) the owners of all Pooled Working Interests reach a voluntary agreement; or (b) the well(s) drilled on the Unit are plugged and abandoned in accordance with the applicable rules. Operator shall inform OCD no later than thirty (30) days after such occurrence.
32. OCD retains jurisdiction of this matter for the entry of such orders as may be deemed necessary.

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION



ADRIENNE SANDOVAL  
DIRECTOR  
AES/kms

Date: 4/12/2021

CASE NO. 21577  
ORDER NO. R-21096-A

Page 5 of 8

## Exhibit "A"

<b>COMPULSORY POOLING APPLICATION CHECKLIST (pdf)</b>	
<b>ALL INFORMATION IN THE APPLICATION MUST BE SUPPORTED BY SIGNED AFFIDAVITS</b>	
<b>Case: 21577</b>	<b>APPLICANT'S RESPONSE</b>
<b>Date: January 21, 2021</b>	
Applicant	SPC Resources, LLC
Designated Operator & OGRID (affiliation if applicable)	SPC Resources, LLC (OGRID No. 372262)
Applicant's Counsel:	Holland & Hart LLP
Case Title:	APPLICATION OF SPC RESOURCES, LLC TO AMEND ORDER NO. R-21096, EDDY COUNTY, NEW MEXICO
Entries of Appearance/Intervenors:	
Well Family	Caveman wells
<b>Formation/Pool</b>	
Formation Name(s) or Vertical Extent:	Wolfcamp
Primary Product (Oil or Gas):	Oil
Pooling this vertical extent:	Wolfcamp formation
Pool Name and Pool Code:	Purple Sage; Wolfcamp Pool (Pool code 98220)
Well Location Setback Rules:	Statewide horizontal rules
Spacing Unit Size:	1,267.1 acres, more or less
<b>Spacing Unit</b>	
Type (Horizontal/Vertical)	Horizontal
Size (Acres)	1,267.1 acres, more or less
Building Blocks:	half sections
Orientation:	east/west
Description: TRS/County	W/2 and E/2 of Section 12, Township 22 South, Range 26 East, and the W/2 and E/2 of Section 7, Township 22 South, Range 27 East, NMPM, Eddy County, New Mexico
Standard Horizontal Well Spacing Unit (Y/N), If No, describe	Yes
<b>Other Situations</b>	
Depth Severance: Y/N. If yes, description	No
Proximity Tracts: If yes, description	N/A

CASE NO. 21577  
ORDER NO. R-21096-A

Page 6 of 8

Proximity Defining Well: if yes, description	N/A
Applicant's Ownership in Each Tract	See Exhibit B; see also Case No. 20762
<b>Well(s)</b>	
Name & API (if assigned), surface and bottom hole location, footages, completion target, orientation, completion status (standard or non-standard)	Add as needed
Well #1	<b>Caveman #402H Well (API No. 30-015-pending):</b> SHL: 2271 FNL and 240 FWL (Unit E) of Section 8, 22S, 27E BHL: 1650 FNL and 100 FWL (Unit E) of Section 12, 22S, 26E  Completion Target: Wolfcamp Well Orientation: east/west Completion Location expected to be: standard
Well #2	<b>Caveman #442H Well (API No. 30-015-pending):</b> SHL: 2291 FNL and 240 FWL (Unit E) of Section 8, 22S, 27E BHL: 2310 FNL and 100 FWL (Unit E) of Section 12, 22S, 26E  Completion Target: Wolfcamp Well Orientation: east/west Completion Location expected to be: standard
Horizontal Well First and Last Take Points	Exhibit B-3
Completion Target (Formation, TVD and MD)	See Case No. 20762 Exhibits 4B, 10
<b>AFE Capex and Operating Costs</b>	
Drilling Supervision/Month \$	\$8,000
Production Supervision/Month \$	\$800
Justification for Supervision Costs	See Case No. 20762 Exhibits 4B
Requested Risk Charge	200%
<b>Notice of Hearing</b>	
Proposed Notice of Hearing	Exhibit A
Proof of Mailed Notice of Hearing (20 days before hearing)	Exhibit B-5
Proof of Published Notice of Hearing (10 days before hearing)	Exhibit C
<b>Ownership Determination</b>	
Land Ownership Schematic of the Spacing Unit	Exhibit B-2
Tract List (including lease numbers and owners)	Exhibit B-2
Pooled Parties (including ownership type)	Exhibit B-2, B-4

CASE NO. 21577  
ORDER NO. R-21096-A

Page 7 of 8

Unlocatable Parties to be Pooled	Exhibit B-4
Ownership Depth Severance (including percentage above & below)	N/A
<b>Joinder</b>	
Sample Copy of Proposal Letter	See Case No. 20762 Exhibit 4B
List of Interest Owners (ie Exhibit A of JOA)	Exhibit B-4
Chronology of Contact with Non-Joined Working Interests	Exhibit B
Overhead Rates In Proposal Letter	See Case No. 20762 Exhibit 4B
Cost Estimate to Drill and Complete	See Case No. 20762 Exhibit 4B
Cost Estimate to Equip Well	See Case No. 20762 Exhibit 4B
Cost Estimate for Production Facilities	See Case No. 20762 Exhibit 4B
<b>Geology</b>	
Summary (including special considerations)	See Case No. 20762 Exhibits 7-10
Spacing Unit Schematic	See Case No. 20762 Exhibits 7-8
Gunbarrel/Lateral Trajectory Schematic	See Case No. 20762 Exhibits 7-8
Well Orientation (with rationale)	See Case No. 20762 Exhibits 7-8
Target Formation	See Case No. 20762 Exhibits 7-8
HSU Cross Section	See Case No. 20762 Exhibits 9-10
Depth Severance Discussion	N/A
<b>Forms, Figures and Tables</b>	
C-102	Exhibit C-3
Tracts	Exhibit B-2
Summary of Interests, Unit Recapitulation (Tracts)	Exhibit B-2, B-4
General Location Map (including basin)	See Case No. 20762 Exhibits 1A-1B
Well Bore Location Map	See Case No. 20762 Exhibits 1A-1B
Structure Contour Map - Subsea Depth	See Case No. 20762 Exhibits 7-8
Cross Section Location Map (including wells)	See Case No. 20762 Exhibit 9
Cross Section (including Landing Zone)	See Case No. 20762 Exhibit 10
<b>Additional Information</b>	
CERTIFICATION: I hereby certify that the information provided in this checklist is complete and accurate.	
Printed Name (Attorney or Party Representative):	Kaitlyn A. Luck
Signed Name (Attorney or Party Representative):	
Date:	4/7/2021

**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

**IN RE APPLICATION FOR PERMIT TO DRILL  
CAVEMAN 7-12 WCXY 2H FILED BY SPC RESOURCES, LLC**

**BEFORE THE OIL CONSERVATION DIVISION  
Santa Fe, New Mexico  
Exhibit No. A-8  
Submitted by: SPC Resources, LLC  
Hearing Date: September 9, 2021  
Case No. 22102**

**EMERGENCY ORDER**

The Director of the New Mexico Oil Conservation Division (“Division”) issues this Emergency Order to suspend its approval of the Application for Permit to Drill (“Application to Drill”) for the Caveman 7-12 WCXY 2H well, renamed the Caveman 402H well, filed by SPC Resources, LLC (“SPC”).

**FINDINGS OF FACT**

1. The Division has jurisdiction over SPC and the subject matter herein.
2. On November 5, 2020, SPC filed the Application to Drill the Caveman 7-12 WCXY 2H well. Exhibit 1.
3. On November 5, 2020, the Division approved the Application to Drill.
4. On March 11, 2021, SPC filed a sundry to rename the well as “Caveman 402H”. Exhibit 2.
5. On June 30, 2021, SPC informed the Division that it intends to commence drilling the Caveman 402H well on or about July 5, 2021.
6. Upon information and belief, SPC intends to complete the well immediately after drilling it.
7. The Division is managing a remediation project for the Carlsbad Brine Well which lies in proximity to the proposed location of drilling and completion for the Caveman 402H well.

**EMERGENCY ORDER RE APPLICATION FOR PERMIT TO DRILL  
CAVEMAN 7-12 WCXY 2H FILED BY SPC RESOURCES, LLC**

**PAGE 1 OF 2**

**EXHIBIT C**

8. To date, the state of New Mexico, Eddy County, and the City of Carlsbad have invested approximately \$85 million in the remediation project.

9. Work on the remediation project is ongoing, with the final phase still pending.

10. SPC's intent to drill and complete the Caveman 402H well on its proposed schedule poses a clear and immediate risk of harm to stability of the Carlsbad Brine Cavern and the successful completion of the remediation project.

11. Pursuant to Section 70-2-23 of the Oil and Gas Act, the Division finds that an emergency exists regarding SPC's intent to drill and complete the Caveman 402H well on its proposed schedule that requires the suspension of the Application to Drill without a hearing.

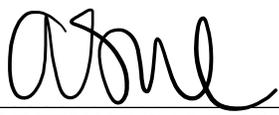
**ORDER**

12. To protect the Carlsbad Brine Well and the ongoing remediation project and to prevent collateral injury to life, property, environment, public infrastructure, and neighboring properties, the Division hereby ORDERS that SPC's Application to Drill the Caveman 402H well is suspended, and any action by SPC to drill or complete the Caveman 402 well is prohibited.

13. This Emergency Order shall remain in force for fifteen (15) days from the date of signature by the Division Director.

14. The Division retains jurisdiction of this matter for the entry of such further orders as it may deem necessary.

**STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION**

  
\_\_\_\_\_  
**ADRIENNE SANDOVAL  
DIRECTOR**

**Date:** 7/2/2021

**District I**  
1625 N. French Dr., Hobbs, NM 88240  
Phone:(575) 393-6161 Fax:(575) 393-0720

**District II**  
811 S. First St., Artesia, NM 88210  
Phone:(575) 748-1283 Fax:(575) 748-9720

**District III**  
1000 Rio Brazos Rd., Aztec, NM 87410  
Phone:(505) 334-6178 Fax:(505) 334-6170

**District IV**  
1220 S. St Francis Dr., Santa Fe, NM 87505  
Phone:(505) 476-3470 Fax:(505) 476-3462

**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

Form C-101  
August 1, 2011  
Permit 288270

**APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE**

1. Operator Name and Address SPC RESOURCES, LLC P.O. Box 1020 Artesia, NM 88211		2. OGRID Number 372262
		3. API Number 30-015-47629
4. Property Code 329783	5. Property Name CAVEMAN 7 12 WCXY	6. Well No. 002H

**7. Surface Location**

UL - Lot E	Section 8	Township 22S	Range 27E	Lot Idn E	Feet From 2271	N/S Line N	Feet From 240	E/W Line W	County Eddy
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**8. Proposed Bottom Hole Location**

UL - Lot E	Section 12	Township 22S	Range 26E	Lot Idn E	Feet From 1650	N/S Line N	Feet From 100	E/W Line W	County Eddy
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**9. Pool Information**

PURPLE SAGE;WOLFCAMP (GAS)	98220
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**Additional Well Information**

11. Work Type New Well	12. Well Type GAS	13. Cable/Rotary	14. Lease Type Private	15. Ground Level Elevation 3099
16. Multiple N	17. Proposed Depth 19472	18. Formation Wolfcamp	19. Contractor	20. Spud Date 1/4/2021
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

We will be using a closed-loop system in lieu of lined pits

**21. Proposed Casing and Cement Program**

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	54.5	425	430	0
Int1	12.25	10.75	40.5	2800	500	0
Prod	8.75	5.5	20	19458	2545	9152
Prod	9.875	5.5	20	9152	2020	0

**Casing/Cement Program: Additional Comments**

Plan to drill production interval from 1800 to bottom of curve at 9152 with 9-7/8" in order to have 7-5/8" contingency option. After tripping for a bit, we will drill 8.75" open hole in lateral. Then run 5.5" long string and cement with 4565 sxs of cement.

**22. Proposed Blowout Prevention Program**

Type	Working Pressure	Test Pressure	Manufacturer
Annular	3000	2000	Shaffer
Pipe	5000	3500	Shaffer
Blind	5000	3500	Shaffer

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify I have complied with 19.15.14.9 (A) NMAC <input checked="" type="checkbox"/> and/or 19.15.14.9 (B) NMAC <input checked="" type="checkbox"/> , if applicable.  Signature:	<b>OIL CONSERVATION DIVISION</b>		
	Printed Name: Electronically filed by Lelan J Anders	Approved By: Kurt Simmons	
	Title: Vice President of Operations	Title: Petroleum Specialist - A	
	Email Address: landers@santopetroleum.com	Approved Date: 11/5/2020	Expiration Date: 11/5/2022
	Date: 11/4/2020	Phone: 713-600-7502	Conditions of Approval Attached

**DISTRICT I**  
 1025 N. French Dr., Hobbs, NM 88240  
 Phone (575) 393-6161 Fax: (575) 393-0720  
**DISTRICT II**  
 811 S. First St., Artesia, NM 88210  
 Phone (575) 748-1288 Fax: (575) 748-9720  
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 1000 Rio Brazos Rd., Aztec, NM 87410  
 Phone (606) 334-6178 Fax: (606) 334-6170  
**DISTRICT IV**  
 1220 S. St. Francis Dr., Santa Fe, NM 87505  
 Phone (606) 476-3460 Fax: (606) 476-3462

State of New Mexico  
 Energy, Minerals and Natural Resources Department

Form C-102  
 Revised August 4, 2011

Submit one copy to appropriate  
 District Office

**OIL CONSERVATION DIVISION**  
 1220 South St. Francis Dr.  
 Santa Fe, New Mexico 87505

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

AMENDED REPORT

API Number	Pool Code 98220	Pool Name PURPLE SAGE WOLFCAMP GAS POOL
Property Code	Property Name CAVEMAN 7-12 WCXY	Well Number 2H
OGRID No.	Operator Name SPC RESOURCES, LLC	Elevation 3099

**Surface Location**

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	SOUTH/South line	Feet from the	East/West line	County
E	8	22 S	27 E		2271	NORTH	240	WEST	EDDY

**Bottom Hole Location If Different From Surface**

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	SOUTH/South line	Feet from the	East/West line	County
E	12	22 S	26 E		1650	NORTH	100	WEST	EDDY

Dedicated Acres 1267.1	Joint or Infill	Consolidation Code	Order No.
---------------------------	-----------------	--------------------	-----------

**NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION**

**OPERATOR CERTIFICATION**

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: *[Signature]* Date: 11/2/2020

Printed Name: Lelan J Anders

Email Address: LAnders@SantoPetroleum.com

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**SURVEYOR CERTIFICATION**

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date Surveyed: *[Signature]* 11/3/2020

Signature & Title of Professional Surveyor: *[Signature]*  
 7977

Certification Number: 7977

Scale: 1" = 4000'

Scale bar: 0' 2000' 4000' 6000' 8000'

Scale: 1" = 4000'

WO Num.: 34729

**BEFORE THE OIL CONSERVATION DIVISION**  
 Santa Fe, New Mexico  
**Exhibit No. 2A**  
 Submitted by: SPC Resources, LLC  
 Hearing Date: September 19, 2019  
 Case No. 20762

**District I**  
 1625 N. French Dr., Hobbs, NM 88240  
 Phone:(575) 393-6161 Fax:(575) 393-0720  
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**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

**GAS CAPTURE PLAN**

Date: 11/5/2020

Original Operator & OGRID No.: [372262] SPC RESOURCES, LLC  
 Amended - Reason for Amendment: \_\_\_\_\_

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 A 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
CAVEMAN 7 12 WCXY #002H	30-015-47629	E-8-22S-27E	2271N 0240W	2500	None	Plan to tie into Enterprise B-4 lateral. Will have 2 stage compressor at CTB on Douglas COM 1 Pad

**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 ENTERPRISE FIELD SERVICES L.L.C. and will be connected to ENTERPRISE FIELD SERVICES L.L.C. High Pressure gathering system located in Eddy County, New Mexico. It will require 7300' of pipeline to connect the facility to High Pressure gathering system. SPC RESOURCES, LLC provides (periodically) to ENTERPRISE FIELD SERVICES L.L.C. a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, SPC RESOURCES, LLC and ENTERPRISE FIELD SERVICES L.L.C. have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at ENTERPRISE FIELD SERVICES L.L.C. Processing Plant located in Sec. 31, Twn. 23S, Rng. 28E, Eddy 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 ENTERPRISE FIELD SERVICES L.L.C. system at that time. Based on current information, it is SPC RESOURCES, LLC's 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

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**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

Form APD Comments

Permit 288270

**PERMIT COMMENTS**

Operator Name and Address: SPC RESOURCES, LLC [372262] P.O. Box 1020 Artesia, NM 88211	API Number: 30-015-47629
	Well: CAVEMAN 7 12 WCXY #002H

Created By	Comment	Comment Date
------------	---------	--------------

**District I**  
 1625 N. French Dr., Hobbs, NM 88240  
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**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

Form APD Conditions  
 Permit 288270

**PERMIT CONDITIONS OF APPROVAL**

Operator Name and Address: SPC RESOURCES, LLC [372262] P.O. Box 1020 Artesia, NM 88211	API Number: 30-015-47629
	Well: CAVEMAN 7 12 WCXY #002H

OCD Reviewer	Condition
kpickford	Will require a directional survey with the C-104
kpickford	Surface casing must be set 25' below top of the salt in order to seal off protectable water
kpickford	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
kpickford	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.
kpickford	Will require administrative order for non-standard spacing unit
kpickford	The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud 2)- Drilling Sundries Form C-103 (Casing and Cement test are to be submitted within 10 days 3)- Completion Reports & Logs are to be submitted within 45 days
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing



## Hydrogen Sulfide Drilling Operations Plan

**SPC Resources, LLC  
101 S. 4th Street, Suite B  
Artesia, NM 88210  
(575) 736-3250**

1. H<sub>2</sub>S Safety Instructions to the following:
  - Characteristics of H<sub>2</sub>S.
  - Physical effects and hazards.
  - Principal and operation of H<sub>2</sub>S detectors, warning system and briefing areas.
  - Evacuation procedures, routes and First Aid.
  - Proper use of safety equipment and life support systems.
  - Essential personnel meeting medical evaluation criteria will receive additional training on the proper use of 30 min pressure demand air packs.
  
2. H<sub>2</sub>S Detection & Alarm Systems:
  - H<sub>2</sub>S sensor/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud returns pits by the shale shaker. Additional H<sub>2</sub>S monitors may be placed as deemed necessary.
  - An audio alarm system will be installed on the derrick, the floor, and in the doghouse.
  
3. Windsocks and Wind Streamers:
  - Windsocks at mud pit area should be high enough to be visible.
  - Windsock on the rig floor/top of doghouse should be high enough to be visible.
  
4. Condition Flags & Signs:
  - Warning sign on access road to location
  - Flags to be displayed on sign at entrance to location
    - i. Green Flag – Normal Safe Operation Condition
    - ii. Yellow Flag – Potential Pressure and Danger
    - iii. Red Flag – Danger (H<sub>2</sub>S present in dangerous concentrations) Only H<sub>2</sub>S trained personnel admitted on location
  
5. Well Control Equipment:
  - See attached APD



6. Communications:
  - While working under masks, chalkboards will be used for communications
  - Hand signals will be used where chalk board is inappropriate
  - Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at drilling foreman’s trailer or living quarters.
  
7. Drilling Stem Testing:
  - No Drill Stem Tests or hole coring is planned at this time.
  
8. Drilling contractor supervisor will be required to be familiar with the effects H<sub>2</sub>S has on tubular goods and other mechanical equipment.
  
9. If H<sub>2</sub>S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H<sub>2</sub>S scavenger chemicals if necessary.
  
10. Emergency Contacts:

Emergency Contact Information - Santo Personnel				
<b>Santo Petroleum, LLC</b>	<b>Artesia Office</b>	575-736-3250	<b>Houston</b>	713-600-7500
<b>Key Parties at Santo Petroleum</b>	<b>Title</b>	<b>Office</b>	<b>Mobile</b>	<b>Email</b>
Gary Waldrop	Field Land Manager	575-736-3256	469-261-3446	<a href="mailto:gwaldrop@santopetroleum.com">gwaldrop@santopetroleum.com</a>
Lelan J Anders	VP, Operations	713-600-7502	281-908-1752	<a href="mailto:landers@santopetroleum.com">landers@santopetroleum.com</a>
Hanson Yates	President	713-600-7503	713-412-2097	<a href="mailto:hyates@santopetroleum.com">hyates@santopetroleum.com</a>

Carlsbad, New Mexico:	
Ambulance	911
State Police	575-885-3137
City Police	575-885-2111
Sheriff's Office	575-887-7551
Fire Department	575-887-3798
Local Emergency Planning Committee	575-887-6544
New Mexico Oil Conservation Division	575-887-6544



<b>Santa Fe, New Mexico:</b>	
New Mexico Emergency Response Commission	505-476-9600
New Mexico Emergency Response Commission (24 hr)	505-827-9126
New Mexico State Emergency Operations Center	505-476-9635
<b>Federal Contacts:</b>	
Carlsbad BLM Office	575-234-5972
National Emergency Response Center (Washington, DC)	800-424-8802
<b>Medical:</b>	
Flight for Life - Lubbock, TX	806-743-9911
AeroCare - Lubbock, TX	806-747-8923
Med Flight Air Ambulance - Albuquerque, NM	505-842-4433
SB Air Med Service - Albuquerque, NM	505-842-4949
<b>Well Control/Other:</b>	
Wild Well Control	281-784-4700
Boots & Coots IWC	800-256-9688
B.J. Services	575-746-3569
Halliburton	575-746-2757



# Santo Petroleum

Eddy County, NM (NAD 83 - NME)

Caveman Unit

#402H

Wellbore #1

Plan: PERMIT

## Standard Survey Report

03 November, 2020



# PRELIMINARY



Company: Santo Petroleum  
 Project: Eddy County, NM (NAD 83 - NME)  
 Site: Caveman Unit  
 Well: #402H  
 Wellbore: Wellbore #1  
 Design: PERMIT

WELL DETAILS: #402H

Rig Name:	Est RKB = 25' @ 3124.00usft 3099.00					
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	512385.60	576482.00	32.408564	-104.219452	

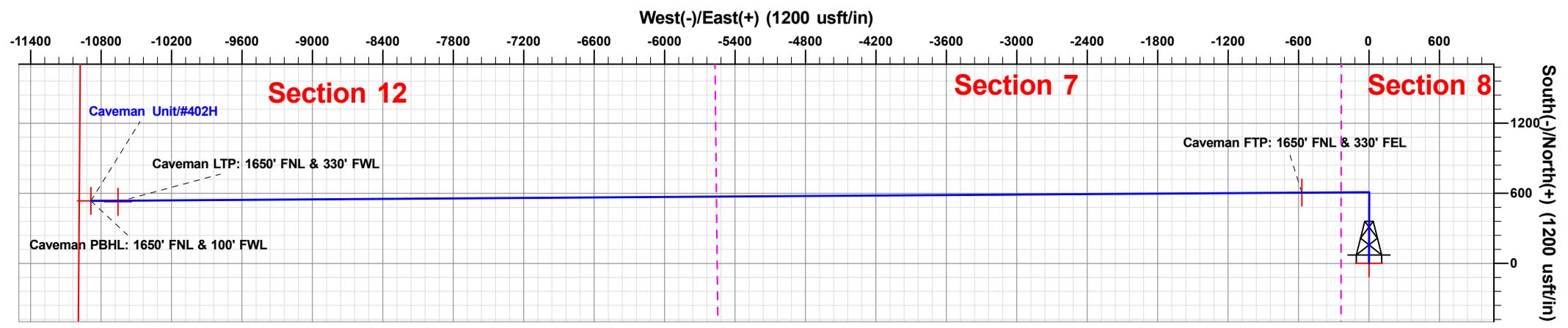
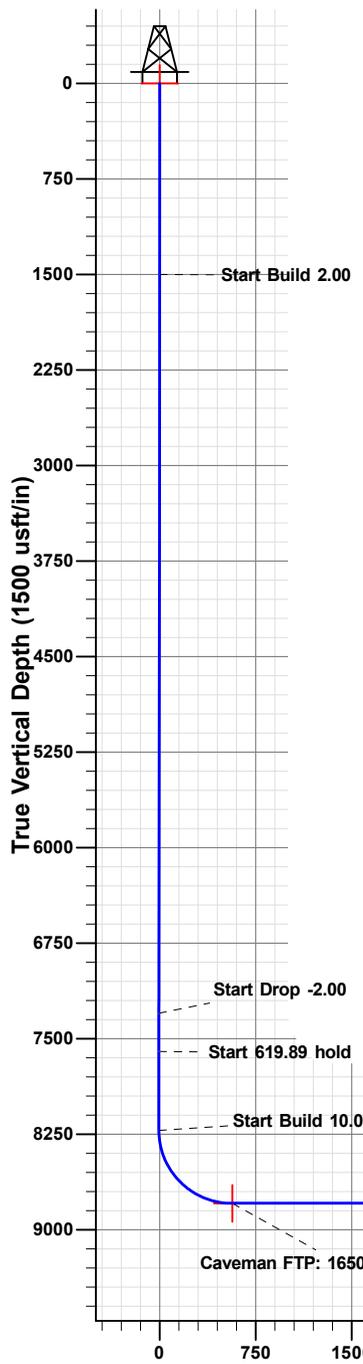


### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Caveman SHL: 2271' FNL & 240' FWL	0.00	0.00	0.00	512385.60	576482.00	32.408564	-104.219452
Caveman PBHL: 1650' FNL & 100' FWL	8694.99	534.60	-10886.20	512920.20	565595.80	32.410060	-104.254726
Caveman LTP: 1650' FNL & 330' FWL	8701.14	526.80	-10656.00	512912.40	565826.00	32.410039	-104.253980
Caveman FTP: 1650' FNL & 330' FEL	8792.85	605.60	-571.40	512991.20	575910.60	32.410230	-104.221301

### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.000	0.00	
3	1799.99	6.00	0.25	1799.44	15.69	0.07	2.00	0.248	-0.17	
4	7331.41	6.00	0.25	7300.56	593.86	2.58	0.00	0.000	-6.62	
5	7631.40	0.00	269.61	7600.00	609.55	2.64	2.00	180.000	-6.79	
6	8251.29	0.00	269.61	8219.89	609.55	2.64	0.00	0.000	-6.79	
7	9152.39	90.11	269.61	8792.85	605.60	-571.40	10.00	0.000	567.26	Caveman FTP: 1650' FNL & 330' FEL
8	16283.21	90.11	269.61	8779.16	556.52	-7702.04	0.00	0.000	7698.07	
9	16354.21	91.53	269.61	8778.14	556.03	-7773.03	2.00	0.177	7769.06	
10	19238.34	91.53	269.61	8701.14	536.41	-10656.07	0.00	0.000	10652.17	Caveman LTP: 1650' FNL & 330' FWL
11	19468.57	91.53	269.61	8694.99	534.84	-10886.20	0.00	0.000	10882.31	Caveman PBHL: 1650' FNL & 100' FWL



Vertical Section at 269.61° (1500 usft/in)

PROJECT DETAILS: Eddy County, NM (NAD 83 - NME)

Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: New Mexico Eastern Zone  
 System Datum: Mean Sea Level

Plan: PERMIT (#402H/Wellbore #1)  
 Created By: Matthew May Date: 20:08, November 03 2020



Survey Report

<b>Company:</b>	Santo Petroleum	<b>Local Co-ordinate Reference:</b>	Well #402H
<b>Project:</b>	Eddy County, NM (NAD 83 - NME)	<b>TVD Reference:</b>	Est RKB = 25' @ 3124.00usft
<b>Site:</b>	Caveman Unit	<b>MD Reference:</b>	Est RKB = 25' @ 3124.00usft
<b>Well:</b>	#402H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PERMIT	<b>Database:</b>	WBDS_SQL_2

<b>Project</b>	Eddy County, NM (NAD 83 - NME)		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	New Mexico Eastern Zone		

<b>Site</b>	Caveman Unit				
<b>Site Position:</b>		<b>Northing:</b>	512,385.60 usft	<b>Latitude:</b>	32.408564
<b>From:</b>	Map	<b>Easting:</b>	576,482.00 usft	<b>Longitude:</b>	-104.219452
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	0.061 °

<b>Well</b>	#402H					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	512,385.60 usft	<b>Latitude:</b>	32.408564
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	576,482.00 usft	<b>Longitude:</b>	-104.219452
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	3,099.00 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	11/02/20	6.903	60.086	47,633.77449642

<b>Design</b>	PERMIT				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00	
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00		269.61

<b>Survey Tool Program</b>	<b>Date</b>	
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>
0.00	19,468.57	PERMIT (Wellbore #1)
		<b>Tool Name</b>
		MWD+IGRF
		<b>Description</b>
		OWSG MWD + IGRF or WMM

<b>Planned Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	



Survey Report

<b>Company:</b>	Santo Petroleum	<b>Local Co-ordinate Reference:</b>	Well #402H
<b>Project:</b>	Eddy County, NM (NAD 83 - NME)	<b>TVD Reference:</b>	Est RKB = 25' @ 3124.00usft
<b>Site:</b>	Caveman Unit	<b>MD Reference:</b>	Est RKB = 25' @ 3124.00usft
<b>Well:</b>	#402H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PERMIT	<b>Database:</b>	WBDS_SQL_2

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	2.00	0.25	1,599.98	1.75	0.01	-0.02	2.00	2.00	2.00	0.00
1,700.00	4.00	0.25	1,699.84	6.98	0.03	-0.08	2.00	2.00	2.00	0.00
1,799.99	6.00	0.25	1,799.44	15.69	0.07	-0.17	2.00	2.00	2.00	0.00
1,900.00	6.00	0.25	1,898.90	26.15	0.11	-0.29	0.00	0.00	0.00	0.00
2,000.00	6.00	0.25	1,998.36	36.60	0.16	-0.41	0.00	0.00	0.00	0.00
2,100.00	6.00	0.25	2,097.81	47.05	0.20	-0.52	0.00	0.00	0.00	0.00
2,200.00	6.00	0.25	2,197.26	57.50	0.25	-0.64	0.00	0.00	0.00	0.00
2,300.00	6.00	0.25	2,296.71	67.96	0.29	-0.76	0.00	0.00	0.00	0.00
2,400.00	6.00	0.25	2,396.17	78.41	0.34	-0.87	0.00	0.00	0.00	0.00
2,500.00	6.00	0.25	2,495.62	88.86	0.39	-0.99	0.00	0.00	0.00	0.00
2,600.00	6.00	0.25	2,595.07	99.31	0.43	-1.11	0.00	0.00	0.00	0.00
2,700.00	6.00	0.25	2,694.52	109.77	0.48	-1.22	0.00	0.00	0.00	0.00
2,800.00	6.00	0.25	2,793.97	120.22	0.52	-1.34	0.00	0.00	0.00	0.00
2,900.00	6.00	0.25	2,893.43	130.67	0.57	-1.46	0.00	0.00	0.00	0.00
3,000.00	6.00	0.25	2,992.88	141.12	0.61	-1.57	0.00	0.00	0.00	0.00
3,100.00	6.00	0.25	3,092.33	151.57	0.66	-1.69	0.00	0.00	0.00	0.00
3,200.00	6.00	0.25	3,191.78	162.03	0.70	-1.81	0.00	0.00	0.00	0.00
3,300.00	6.00	0.25	3,291.24	172.48	0.75	-1.92	0.00	0.00	0.00	0.00
3,400.00	6.00	0.25	3,390.69	182.93	0.79	-2.04	0.00	0.00	0.00	0.00
3,500.00	6.00	0.25	3,490.14	193.38	0.84	-2.15	0.00	0.00	0.00	0.00
3,600.00	6.00	0.25	3,589.59	203.84	0.88	-2.27	0.00	0.00	0.00	0.00
3,700.00	6.00	0.25	3,689.04	214.29	0.93	-2.39	0.00	0.00	0.00	0.00
3,800.00	6.00	0.25	3,788.50	224.74	0.97	-2.50	0.00	0.00	0.00	0.00
3,900.00	6.00	0.25	3,887.95	235.19	1.02	-2.62	0.00	0.00	0.00	0.00
4,000.00	6.00	0.25	3,987.40	245.65	1.07	-2.74	0.00	0.00	0.00	0.00
4,100.00	6.00	0.25	4,086.85	256.10	1.11	-2.85	0.00	0.00	0.00	0.00
4,200.00	6.00	0.25	4,186.31	266.55	1.16	-2.97	0.00	0.00	0.00	0.00
4,300.00	6.00	0.25	4,285.76	277.00	1.20	-3.09	0.00	0.00	0.00	0.00
4,400.00	6.00	0.25	4,385.21	287.46	1.25	-3.20	0.00	0.00	0.00	0.00
4,500.00	6.00	0.25	4,484.66	297.91	1.29	-3.32	0.00	0.00	0.00	0.00
4,600.00	6.00	0.25	4,584.11	308.36	1.34	-3.44	0.00	0.00	0.00	0.00
4,700.00	6.00	0.25	4,683.57	318.81	1.38	-3.55	0.00	0.00	0.00	0.00
4,800.00	6.00	0.25	4,783.02	329.27	1.43	-3.67	0.00	0.00	0.00	0.00
4,900.00	6.00	0.25	4,882.47	339.72	1.47	-3.79	0.00	0.00	0.00	0.00
5,000.00	6.00	0.25	4,981.92	350.17	1.52	-3.90	0.00	0.00	0.00	0.00
5,100.00	6.00	0.25	5,081.38	360.62	1.56	-4.02	0.00	0.00	0.00	0.00
5,200.00	6.00	0.25	5,180.83	371.08	1.61	-4.13	0.00	0.00	0.00	0.00
5,300.00	6.00	0.25	5,280.28	381.53	1.65	-4.25	0.00	0.00	0.00	0.00



Survey Report

<b>Company:</b>	Santo Petroleum	<b>Local Co-ordinate Reference:</b>	Well #402H
<b>Project:</b>	Eddy County, NM (NAD 83 - NME)	<b>TVD Reference:</b>	Est RKB = 25' @ 3124.00usft
<b>Site:</b>	Caveman Unit	<b>MD Reference:</b>	Est RKB = 25' @ 3124.00usft
<b>Well:</b>	#402H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PERMIT	<b>Database:</b>	WBDS_SQL_2

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
5,400.00	6.00	0.25	5,379.73	391.98	1.70	-4.37	0.00	0.00	0.00	
5,500.00	6.00	0.25	5,479.18	402.43	1.74	-4.48	0.00	0.00	0.00	
5,600.00	6.00	0.25	5,578.64	412.89	1.79	-4.60	0.00	0.00	0.00	
5,700.00	6.00	0.25	5,678.09	423.34	1.84	-4.72	0.00	0.00	0.00	
5,800.00	6.00	0.25	5,777.54	433.79	1.88	-4.83	0.00	0.00	0.00	
5,900.00	6.00	0.25	5,876.99	444.24	1.93	-4.95	0.00	0.00	0.00	
6,000.00	6.00	0.25	5,976.45	454.69	1.97	-5.07	0.00	0.00	0.00	
6,100.00	6.00	0.25	6,075.90	465.15	2.02	-5.18	0.00	0.00	0.00	
6,200.00	6.00	0.25	6,175.35	475.60	2.06	-5.30	0.00	0.00	0.00	
6,300.00	6.00	0.25	6,274.80	486.05	2.11	-5.42	0.00	0.00	0.00	
6,400.00	6.00	0.25	6,374.25	496.50	2.15	-5.53	0.00	0.00	0.00	
6,500.00	6.00	0.25	6,473.71	506.96	2.20	-5.65	0.00	0.00	0.00	
6,600.00	6.00	0.25	6,573.16	517.41	2.24	-5.77	0.00	0.00	0.00	
6,700.00	6.00	0.25	6,672.61	527.86	2.29	-5.88	0.00	0.00	0.00	
6,800.00	6.00	0.25	6,772.06	538.31	2.33	-6.00	0.00	0.00	0.00	
6,900.00	6.00	0.25	6,871.52	548.77	2.38	-6.11	0.00	0.00	0.00	
7,000.00	6.00	0.25	6,970.97	559.22	2.42	-6.23	0.00	0.00	0.00	
7,100.00	6.00	0.25	7,070.42	569.67	2.47	-6.35	0.00	0.00	0.00	
7,200.00	6.00	0.25	7,169.87	580.12	2.52	-6.46	0.00	0.00	0.00	
7,300.00	6.00	0.25	7,269.32	590.58	2.56	-6.58	0.00	0.00	0.00	
7,331.41	6.00	0.25	7,300.56	593.86	2.58	-6.62	0.00	0.00	0.00	
7,400.00	4.63	0.25	7,368.86	600.21	2.60	-6.69	2.00	-2.00	0.00	
7,500.00	2.63	0.25	7,468.65	606.54	2.63	-6.76	2.00	-2.00	0.00	
7,600.00	0.63	0.25	7,568.61	609.38	2.64	-6.79	2.00	-2.00	0.00	
7,631.40	0.00	269.61	7,600.00	609.55	2.64	-6.79	2.00	-2.00	0.00	
7,700.00	0.00	0.00	7,668.60	609.55	2.64	-6.79	0.00	0.00	0.00	
7,800.00	0.00	0.00	7,768.60	609.55	2.64	-6.79	0.00	0.00	0.00	
7,900.00	0.00	0.00	7,868.60	609.55	2.64	-6.79	0.00	0.00	0.00	
8,000.00	0.00	0.00	7,968.60	609.55	2.64	-6.79	0.00	0.00	0.00	
8,100.00	0.00	0.00	8,068.60	609.55	2.64	-6.79	0.00	0.00	0.00	
8,200.00	0.00	0.00	8,168.60	609.55	2.64	-6.79	0.00	0.00	0.00	
8,251.29	0.00	269.61	8,219.89	609.55	2.64	-6.79	0.00	0.00	0.00	
8,300.00	4.87	269.61	8,268.55	609.54	0.57	-4.72	10.00	10.00	0.00	
8,350.00	9.87	269.61	8,318.12	609.49	-5.84	1.69	10.00	10.00	0.00	
8,400.00	14.87	269.61	8,366.94	609.42	-16.55	12.40	10.00	10.00	0.00	
8,450.00	19.87	269.61	8,414.64	609.32	-31.47	27.32	10.00	10.00	0.00	
8,500.00	24.87	269.61	8,460.87	609.19	-50.49	46.35	10.00	10.00	0.00	
8,550.00	29.87	269.61	8,505.26	609.03	-73.47	69.33	10.00	10.00	0.00	
8,600.00	34.87	269.61	8,547.47	608.84	-100.23	96.09	10.00	10.00	0.00	
8,650.00	39.87	269.61	8,587.20	608.63	-130.57	126.43	10.00	10.00	0.00	
8,700.00	44.87	269.61	8,624.12	608.40	-164.26	160.11	10.00	10.00	0.00	
8,750.00	49.87	269.61	8,657.98	608.15	-201.03	196.89	10.00	10.00	0.00	
8,800.00	54.87	269.61	8,688.49	607.88	-240.62	236.48	10.00	10.00	0.00	



Survey Report

<b>Company:</b>	Santo Petroleum	<b>Local Co-ordinate Reference:</b>	Well #402H
<b>Project:</b>	Eddy County, NM (NAD 83 - NME)	<b>TVD Reference:</b>	Est RKB = 25' @ 3124.00usft
<b>Site:</b>	Caveman Unit	<b>MD Reference:</b>	Est RKB = 25' @ 3124.00usft
<b>Well:</b>	#402H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PERMIT	<b>Database:</b>	WBDS_SQL_2

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,850.00	59.87	269.61	8,715.44	607.59	-282.71	278.57	10.00	10.00	0.00	
8,900.00	64.87	269.61	8,738.62	607.28	-327.00	322.86	10.00	10.00	0.00	
8,950.00	69.87	269.61	8,757.86	606.96	-373.13	368.99	10.00	10.00	0.00	
9,000.00	74.87	269.61	8,772.99	606.64	-420.77	416.63	10.00	10.00	0.00	
9,050.00	79.87	269.61	8,783.92	606.30	-469.54	465.40	10.00	10.00	0.00	
9,100.00	84.87	269.61	8,790.56	605.96	-519.08	514.94	10.00	10.00	0.00	
9,152.39	90.11	269.61	8,792.85	605.60	-571.40	567.26	10.00	10.00	0.00	
9,200.00	90.11	269.61	8,792.76	605.27	-619.01	614.88	0.00	0.00	0.00	
9,300.00	90.11	269.61	8,792.57	604.58	-719.01	714.88	0.00	0.00	0.00	
9,400.00	90.11	269.61	8,792.37	603.90	-819.01	814.88	0.00	0.00	0.00	
9,500.00	90.11	269.61	8,792.18	603.21	-919.00	914.88	0.00	0.00	0.00	
9,600.00	90.11	269.61	8,791.99	602.52	-1,019.00	1,014.88	0.00	0.00	0.00	
9,700.00	90.11	269.61	8,791.80	601.83	-1,119.00	1,114.88	0.00	0.00	0.00	
9,800.00	90.11	269.61	8,791.61	601.14	-1,219.00	1,214.88	0.00	0.00	0.00	
9,900.00	90.11	269.61	8,791.41	600.45	-1,318.99	1,314.87	0.00	0.00	0.00	
10,000.00	90.11	269.61	8,791.22	599.77	-1,418.99	1,414.87	0.00	0.00	0.00	
10,100.00	90.11	269.61	8,791.03	599.08	-1,518.99	1,514.87	0.00	0.00	0.00	
10,200.00	90.11	269.61	8,790.84	598.39	-1,618.98	1,614.87	0.00	0.00	0.00	
10,300.00	90.11	269.61	8,790.65	597.70	-1,718.98	1,714.87	0.00	0.00	0.00	
10,400.00	90.11	269.61	8,790.45	597.01	-1,818.98	1,814.87	0.00	0.00	0.00	
10,500.00	90.11	269.61	8,790.26	596.32	-1,918.98	1,914.87	0.00	0.00	0.00	
10,600.00	90.11	269.61	8,790.07	595.64	-2,018.97	2,014.87	0.00	0.00	0.00	
10,700.00	90.11	269.61	8,789.88	594.95	-2,118.97	2,114.87	0.00	0.00	0.00	
10,800.00	90.11	269.61	8,789.69	594.26	-2,218.97	2,214.87	0.00	0.00	0.00	
10,900.00	90.11	269.61	8,789.50	593.57	-2,318.97	2,314.87	0.00	0.00	0.00	
11,000.00	90.11	269.61	8,789.30	592.88	-2,418.96	2,414.87	0.00	0.00	0.00	
11,100.00	90.11	269.61	8,789.11	592.19	-2,518.96	2,514.87	0.00	0.00	0.00	
11,200.00	90.11	269.61	8,788.92	591.51	-2,618.96	2,614.87	0.00	0.00	0.00	
11,300.00	90.11	269.61	8,788.73	590.82	-2,718.96	2,714.87	0.00	0.00	0.00	
11,400.00	90.11	269.61	8,788.54	590.13	-2,818.95	2,814.87	0.00	0.00	0.00	
11,500.00	90.11	269.61	8,788.34	589.44	-2,918.95	2,914.87	0.00	0.00	0.00	
11,600.00	90.11	269.61	8,788.15	588.75	-3,018.95	3,014.87	0.00	0.00	0.00	
11,700.00	90.11	269.61	8,787.96	588.06	-3,118.95	3,114.87	0.00	0.00	0.00	
11,800.00	90.11	269.61	8,787.77	587.38	-3,218.94	3,214.87	0.00	0.00	0.00	
11,900.00	90.11	269.61	8,787.58	586.69	-3,318.94	3,314.87	0.00	0.00	0.00	
12,000.00	90.11	269.61	8,787.38	586.00	-3,418.94	3,414.87	0.00	0.00	0.00	
12,100.00	90.11	269.61	8,787.19	585.31	-3,518.94	3,514.87	0.00	0.00	0.00	
12,200.00	90.11	269.61	8,787.00	584.62	-3,618.93	3,614.87	0.00	0.00	0.00	
12,300.00	90.11	269.61	8,786.81	583.93	-3,718.93	3,714.87	0.00	0.00	0.00	
12,400.00	90.11	269.61	8,786.62	583.25	-3,818.93	3,814.87	0.00	0.00	0.00	
12,500.00	90.11	269.61	8,786.42	582.56	-3,918.93	3,914.87	0.00	0.00	0.00	
12,600.00	90.11	269.61	8,786.23	581.87	-4,018.92	4,014.87	0.00	0.00	0.00	
12,700.00	90.11	269.61	8,786.04	581.18	-4,118.92	4,114.87	0.00	0.00	0.00	



Survey Report

<b>Company:</b>	Santo Petroleum	<b>Local Co-ordinate Reference:</b>	Well #402H
<b>Project:</b>	Eddy County, NM (NAD 83 - NME)	<b>TVD Reference:</b>	Est RKB = 25' @ 3124.00usft
<b>Site:</b>	Caveman Unit	<b>MD Reference:</b>	Est RKB = 25' @ 3124.00usft
<b>Well:</b>	#402H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PERMIT	<b>Database:</b>	WBDS_SQL_2

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
12,800.00	90.11	269.61	8,785.85	580.49	-4,218.92	4,214.87	0.00	0.00	0.00	
12,900.00	90.11	269.61	8,785.66	579.80	-4,318.92	4,314.87	0.00	0.00	0.00	
13,000.00	90.11	269.61	8,785.46	579.12	-4,418.91	4,414.87	0.00	0.00	0.00	
13,100.00	90.11	269.61	8,785.27	578.43	-4,518.91	4,514.87	0.00	0.00	0.00	
13,200.00	90.11	269.61	8,785.08	577.74	-4,618.91	4,614.87	0.00	0.00	0.00	
13,300.00	90.11	269.61	8,784.89	577.05	-4,718.91	4,714.87	0.00	0.00	0.00	
13,400.00	90.11	269.61	8,784.70	576.36	-4,818.90	4,814.87	0.00	0.00	0.00	
13,500.00	90.11	269.61	8,784.50	575.67	-4,918.90	4,914.87	0.00	0.00	0.00	
13,600.00	90.11	269.61	8,784.31	574.99	-5,018.90	5,014.87	0.00	0.00	0.00	
13,700.00	90.11	269.61	8,784.12	574.30	-5,118.90	5,114.87	0.00	0.00	0.00	
13,800.00	90.11	269.61	8,783.93	573.61	-5,218.89	5,214.87	0.00	0.00	0.00	
13,900.00	90.11	269.61	8,783.74	572.92	-5,318.89	5,314.87	0.00	0.00	0.00	
14,000.00	90.11	269.61	8,783.54	572.23	-5,418.89	5,414.87	0.00	0.00	0.00	
14,100.00	90.11	269.61	8,783.35	571.54	-5,518.89	5,514.87	0.00	0.00	0.00	
14,200.00	90.11	269.61	8,783.16	570.86	-5,618.88	5,614.87	0.00	0.00	0.00	
14,300.00	90.11	269.61	8,782.97	570.17	-5,718.88	5,714.87	0.00	0.00	0.00	
14,400.00	90.11	269.61	8,782.78	569.48	-5,818.88	5,814.87	0.00	0.00	0.00	
14,500.00	90.11	269.61	8,782.58	568.79	-5,918.88	5,914.87	0.00	0.00	0.00	
14,600.00	90.11	269.61	8,782.39	568.10	-6,018.87	6,014.87	0.00	0.00	0.00	
14,700.00	90.11	269.61	8,782.20	567.42	-6,118.87	6,114.87	0.00	0.00	0.00	
14,800.00	90.11	269.61	8,782.01	566.73	-6,218.87	6,214.87	0.00	0.00	0.00	
14,900.00	90.11	269.61	8,781.82	566.04	-6,318.87	6,314.87	0.00	0.00	0.00	
15,000.00	90.11	269.61	8,781.62	565.35	-6,418.86	6,414.87	0.00	0.00	0.00	
15,100.00	90.11	269.61	8,781.43	564.66	-6,518.86	6,514.87	0.00	0.00	0.00	
15,200.00	90.11	269.61	8,781.24	563.97	-6,618.86	6,614.87	0.00	0.00	0.00	
15,300.00	90.11	269.61	8,781.05	563.29	-6,718.85	6,714.87	0.00	0.00	0.00	
15,400.00	90.11	269.61	8,780.86	562.60	-6,818.85	6,814.86	0.00	0.00	0.00	
15,500.00	90.11	269.61	8,780.66	561.91	-6,918.85	6,914.86	0.00	0.00	0.00	
15,600.00	90.11	269.61	8,780.47	561.22	-7,018.85	7,014.86	0.00	0.00	0.00	
15,700.00	90.11	269.61	8,780.28	560.53	-7,118.84	7,114.86	0.00	0.00	0.00	
15,800.00	90.11	269.61	8,780.09	559.84	-7,218.84	7,214.86	0.00	0.00	0.00	
15,900.00	90.11	269.61	8,779.90	559.16	-7,318.84	7,314.86	0.00	0.00	0.00	
16,000.00	90.11	269.61	8,779.70	558.47	-7,418.84	7,414.86	0.00	0.00	0.00	
16,100.00	90.11	269.61	8,779.51	557.78	-7,518.83	7,514.86	0.00	0.00	0.00	
16,200.00	90.11	269.61	8,779.32	557.09	-7,618.83	7,614.86	0.00	0.00	0.00	
16,283.21	90.11	269.61	8,779.16	556.52	-7,702.04	7,698.07	0.00	0.00	0.00	
16,300.00	90.45	269.61	8,779.08	556.40	-7,718.83	7,714.86	2.00	2.00	0.01	
16,354.21	91.53	269.61	8,778.14	556.03	-7,773.03	7,769.06	2.00	2.00	0.01	
16,400.00	91.53	269.61	8,776.92	555.72	-7,818.80	7,814.84	0.00	0.00	0.00	
16,500.00	91.53	269.61	8,774.25	555.04	-7,918.76	7,914.80	0.00	0.00	0.00	
16,600.00	91.53	269.61	8,771.58	554.36	-8,018.73	8,014.77	0.00	0.00	0.00	
16,700.00	91.53	269.61	8,768.91	553.68	-8,118.69	8,114.73	0.00	0.00	0.00	
16,800.00	91.53	269.61	8,766.24	553.00	-8,218.65	8,214.70	0.00	0.00	0.00	
16,900.00	91.53	269.61	8,763.57	552.32	-8,318.61	8,314.66	0.00	0.00	0.00	



Survey Report

<b>Company:</b>	Santo Petroleum	<b>Local Co-ordinate Reference:</b>	Well #402H
<b>Project:</b>	Eddy County, NM (NAD 83 - NME)	<b>TVD Reference:</b>	Est RKB = 25' @ 3124.00usft
<b>Site:</b>	Caveman Unit	<b>MD Reference:</b>	Est RKB = 25' @ 3124.00usft
<b>Well:</b>	#402H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PERMIT	<b>Database:</b>	WBDS_SQL_2

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
17,000.00	91.53	269.61	8,760.90	551.64	-8,418.57	8,414.62	0.00	0.00	0.00	
17,100.00	91.53	269.61	8,758.23	550.96	-8,518.54	8,514.59	0.00	0.00	0.00	
17,200.00	91.53	269.61	8,755.56	550.28	-8,618.50	8,614.55	0.00	0.00	0.00	
17,300.00	91.53	269.61	8,752.89	549.60	-8,718.46	8,714.52	0.00	0.00	0.00	
17,400.00	91.53	269.61	8,750.22	548.92	-8,818.42	8,814.48	0.00	0.00	0.00	
17,500.00	91.53	269.61	8,747.55	548.24	-8,918.38	8,914.45	0.00	0.00	0.00	
17,600.00	91.53	269.61	8,744.88	547.55	-9,018.35	9,014.41	0.00	0.00	0.00	
17,700.00	91.53	269.61	8,742.21	546.87	-9,118.31	9,114.37	0.00	0.00	0.00	
17,800.00	91.53	269.61	8,739.54	546.19	-9,218.27	9,214.34	0.00	0.00	0.00	
17,900.00	91.53	269.61	8,736.87	545.51	-9,318.23	9,314.30	0.00	0.00	0.00	
18,000.00	91.53	269.61	8,734.20	544.83	-9,418.19	9,414.27	0.00	0.00	0.00	
18,100.00	91.53	269.61	8,731.53	544.15	-9,518.16	9,514.23	0.00	0.00	0.00	
18,200.00	91.53	269.61	8,728.86	543.47	-9,618.12	9,614.20	0.00	0.00	0.00	
18,300.00	91.53	269.61	8,726.19	542.79	-9,718.08	9,714.16	0.00	0.00	0.00	
18,400.00	91.53	269.61	8,723.52	542.11	-9,818.04	9,814.12	0.00	0.00	0.00	
18,500.00	91.53	269.61	8,720.85	541.43	-9,918.00	9,914.09	0.00	0.00	0.00	
18,600.00	91.53	269.61	8,718.18	540.75	-10,017.97	10,014.05	0.00	0.00	0.00	
18,700.00	91.53	269.61	8,715.51	540.07	-10,117.93	10,114.02	0.00	0.00	0.00	
18,800.00	91.53	269.61	8,712.84	539.39	-10,217.89	10,213.98	0.00	0.00	0.00	
18,900.00	91.53	269.61	8,710.17	538.71	-10,317.85	10,313.95	0.00	0.00	0.00	
19,000.00	91.53	269.61	8,707.50	538.03	-10,417.81	10,413.91	0.00	0.00	0.00	
19,100.00	91.53	269.61	8,704.83	537.35	-10,517.78	10,513.88	0.00	0.00	0.00	
19,200.00	91.53	269.61	8,702.16	536.67	-10,617.74	10,613.84	0.00	0.00	0.00	
19,238.34	91.53	269.61	8,701.14	536.41	-10,656.07	10,652.17	0.00	0.00	0.00	
19,300.00	91.53	269.61	8,699.49	535.99	-10,717.70	10,713.80	0.00	0.00	0.00	
19,400.00	91.53	269.61	8,696.82	535.31	-10,817.66	10,813.77	0.00	0.00	0.00	
19,468.57	91.53	269.61	8,694.99	534.84	-10,886.20	10,882.31	0.00	0.00	0.00	



Survey Report



<b>Company:</b>	Santo Petroleum	<b>Local Co-ordinate Reference:</b>	Well #402H
<b>Project:</b>	Eddy County, NM (NAD 83 - NME)	<b>TVD Reference:</b>	Est RKB = 25' @ 3124.00usft
<b>Site:</b>	Caveman Unit	<b>MD Reference:</b>	Est RKB = 25' @ 3124.00usft
<b>Well:</b>	#402H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PERMIT	<b>Database:</b>	WBDS_SQL_2

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Caveman SHL: 2271' - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	512,385.60	576,482.00	32.408564	-104.219452
Caveman PBHL: 1650' - plan misses target center by 0.24usft at 19468.57usft MD (8694.99 TVD, 534.84 N, -10886.20 E) - Point	0.00	0.00	8,694.99	534.60	-10,886.20	512,920.20	565,595.80	32.410061	-104.254726
Caveman LTP: 1650' - plan misses target center by 9.61usft at 19238.34usft MD (8701.14 TVD, 536.41 N, -10656.07 E) - Point	0.00	0.00	8,701.14	526.80	-10,656.00	512,912.40	565,826.00	32.410039	-104.253980
Caveman FTP: 1650' - plan hits target center - Point	0.00	0.00	8,792.85	605.60	-571.40	512,991.20	575,910.60	32.410230	-104.221302

Checked By: _____	Approved By: _____	Date: _____
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SANTO OPERATING LLC  
GEOLOGIC WELL PROPOSAL

PROJECT AND PROSPECT			
Project Name:	Caveman	Operator:	Santo Operating LLC
Prospect Name:	Caveman	Geologist:	John Weihe
Lease Name:	Caveman 7-12 WCXY	Well Number:	002H
Type of Operation:	New Drill	Prognosis Date:	10/11/2019
Well Profile:	Horizontal	Well Type:	Development
Field Name(s):	Purple Sage Wolfcamp Gas Pool	API:	

WELL DESCRIPTION	
Wolfcamp A-XY; Y Sand Horizontal Development Well	

PROPOSED BOTTOM HOLE LOCATION			
Cnty/Parish:	Eddy	Latitude:	N 32.408564
State:	NM	Longitude:	W 104.219452
Description (include section line & distance & direction from nearest city):		Datum:	NAD 83
South end City of Carlsbad, NM 1650' FNL 100' FWL Section 12 22S 26E			

PROPOSED SURFACE HOLE LOCATION (IF DIFFERENT FROM BHL) (NOTE: INPUT FROM LAND DEPARTMENT REQUIRED)			
SHL (Same as BHL, Different from BHL, or TBD):			
Cnty/Parish:	Eddy	Latitude:	N 32.408564
State:	NM	Longitude:	W 104.219452
Elevation:	3,099	X Coord:	576,482.0
Description (include section line & distance & direction from nearest city):		Y Coord:	512,385.6
South end City of Carlsbad, NM 2271' FNL 240' FWL Section 8 22S 27E (or as deemed by L. Anders)		Datum:	NAD 83

ANTICIPATED GEOLOGIC MARKERS					
#	Marker*	MD (ft)	TVD (ft)	Subsea (ft)	Comments
1	Option 1: Kelly Bushing	3,124			assume 25' KB from GL
2	Ground Level Elevation	3,099			
3				3,124	
4	Top Salt (John)	456	456	2,668	
5	Base Salt (John)	1150	1,150	1,974	
6	Delaware	1651	1,651	1,473	
	Lamar Limestone	1700	1,700	1,424	
	Base Lamar Limestone	1963	1,963	1,161	
11	BONE SPRING	5146	5,146	-2,022	
18	Top 1st BSPG Sand (John)	6298	6,298	-3,174	
20	Top 2nd Bone Spring Carbonate (John)	6564	6,564	-3,440	
21	Top 2nd Bone Spring Sand (John)	6937	6,937	-3,813	
22	Top 3rd Bone Spring Carbonate (John)	7207	7,207	-4,083	
24	Top 3rd Bone Spring Sand (John)	8339	8,339	-5,215	
29	WOLFCAMP A (John)		8,694	-5,570	per directional plan
30	Y Sand Top (John)		8,779	-5,655	per directional plan
31	TOP WINDOW		8,782	-5,658	per directional plan
32	TARGET		8,794	-5,670	per directional plan
33	BASE WINDOW		8,806	-5,682	per directional plan
34					
35					
36	Proposed TD [feet]:				

\*All listed geologic markers are formation tops unless otherwise noted.

DRILLING TARGET(S) (Top to Bottom)				
1	Section Distance 7680' West:	TARGET	Target Lat:	per dir. Plan
	TVD:	8,779	Target Lon:	per dir. Plan
	Target Window:	+/- 12' TVD		
2	TD Target:	TARGET	Target Lat:	per dir. Plan
	TVD:	8,694	Target Lon:	per dir. Plan
	Target Window:	+/- 12' TVD		

Comments:	

NEARBY WELLS OF INTEREST		
API Number	Well Name	Comments
1		
2		
3		
4		
5		
6		
7		
8		

**SANTO OPERATING LLC  
GEOLOGIC WELL PROPOSAL**

PROJECT AND PROSPECT			
Project Name:	Caveman	Operator:	Santo Operating LLC
Prospect Name:	Caveman	Geologist:	John Weihe
Lease Name:	Caveman 7-12 WCXY	Well Number:	002H
Type of Operation:	New Drill	Prognosis Date:	10/11/2019
Well Profile:	Horizontal	Well Type:	Development
Field Name(s):	Purple Sage Wolfcamp Gas Pool	API:	

9		
10		
11		
12		

**ELECTRIC LOGGING**

	Interval		Logging Tool(s)
	Top (ft)	Bottom (ft)	
1	Surface Casing	Intermediate Casing	Triple Combo or equivalent w/ sonic
2			Triple combo to include: gamma ray spectroscopy
3	Intermediate Casing	TD	LWD gamma ray in build and lateral for geosteering
4			Important to get good LWD Gamma Ray in vertical portion below intermediate
5			to correlate top 3rd Bone Spring Sand
6			
7			
8			

Comments:

**OTHER EVALUATION (Mud Logging, DST, Whole Cores, Etc.)**

	Interval		Description
	Top (ft)	Bottom (ft)	
1	Intermediate Csg	TD	Mud Logging
2			
3			
4			
5			

Comments:

**ANTICIPATED PORE PRESSURES**

	Interval		Gradient (psi/ft)	Comments
	Top (ft)	Bottom (ft)		
1	surface	Top Bone Spring	0.430	
2	Top Bone Spring	Bone Spring 1 Sand	0.459	
3	Bone Spring 1 Sand	Bone Spring 2 Sand	0.445	
	Bone Spring 2 Sand	Bone Spring 3 Sand	0.490	
	Bone Spring 3 Sand	WCXY	0.502	
4	Lateral	Lateral	0.512	
5				

Comments:

**KNOWN ISSUES THAT COULD BE DRILLING OR SAFETY CONCERNS**

	Interval		Description
	Top (ft)	Bottom (ft)	
1			
2			
3			
4			
5			

Comments: Osprey 10 601H, 602H producing 1/2 miles to north west. Fairview 14 produced 25,646 bo from 1995 to present 1 mile due east.

Office
District I - (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II - (575) 748-1283
811 S. First St., Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV - (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)
1. Type of Well: Oil Well [ ] Gas Well [ ] Other [ ]
2. Name of Operator SPC Resources, LLC
3. Address of Operator P.O. Box 1020, Artesia, NM 88211
4. Well Location
Unit Letter E : 2271 feet from the N line and 240 feet from the W line
Section 8 Township 22S Range 27E NMPM Eddy County
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 3099

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:
PERFORM REMEDIAL WORK [ ] PLUG AND ABANDON [ ]
TEMPORARILY ABANDON [ ] CHANGE PLANS [ ]
PULL OR ALTER CASING [ ] MULTIPLE COMPL [ ]
DOWNHOLE COMMINGLE [ ]
CLOSED-LOOP SYSTEM [ ]
OTHER: Change Well Name and surface location [x]
SUBSEQUENT REPORT OF:
REMEDIAL WORK [ ] ALTERING CASING [ ]
COMMENCE DRILLING OPNS. [ ] P AND A [ ]
CASING/CEMENT JOB [ ]
OTHER: [ ]

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

The purpose of this C-103A is change the well name from Caveman 7-12 WCXY 2H to Caveman 402H. Also, we would like to change the surface location from 2271 FNL, 240 FWL, Unit E, Section 8, 22S, 27E, Elevation 3099' To 2420 FNL, 188 FEL, Unit H, Section 7, 22S, 27E, Elevation 3102'. I have attached a new C-102, and revised Directional Drilling Plan.

Spud Date: [ ]

Rig Release Date: [ ]

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE [Signature] TITLE VP, Operations DATE

Type or print name Lelan J Anders E-mail address: LAnders@SantoPetroleum.com PHONE: 713-600-7502

For State Use Only

APPROVED BY: John Garcia TITLE Petroleum Specialist DATE 3/12/2021

Conditions of Approval (if any):

New Property ID is 330286

**DISTRICT I**  
 1825 N. French Dr., Hobbs, NM 88240  
 Phone (575) 393-6161 Fax: (575) 393-0720

**DISTRICT II**  
 811 S. First St., Artesia, NM 88210  
 Phone (575) 748-1283 Fax: (575) 748-9720

**DISTRICT III**  
 1000 Rio Brazos Rd., Aztec, NM 87410  
 Phone (505) 334-6178 Fax: (505) 334-6170

**DISTRICT IV**  
 1220 S. St. Francis Dr., Santa Fe, NM 87505  
 Phone (505) 476-3480 Fax: (505) 476-3482

State of New Mexico  
 Energy, Minerals and Natural Resources Department

Form C-102  
 Revised August 4, 2011

Submit one copy to appropriate  
 District Office

**OIL CONSERVATION DIVISION**  
 1220 South St. Francis Dr.  
 Santa Fe, New Mexico 87505

AMENDED REPORT

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

API Number	Pool Code	Pool Name
	98220	PURPLE SAGE WOLFCAMP GAS POOL
Property Code	Property Name	Well Number
	CAVEMAN	402H
OGRID No.	Operator Name	Elevation
	SPC RESOURCES, LLC	3102'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	SOUTH/South line	Feet from the	East/West line	County
H	7	22 S	27 E		2420	NORTH	188	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	SOUTH/South line	Feet from the	East/West line	County
E	12	22 S	26 E		1650	NORTH	100	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
1267.10			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED  
 OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

**OPERATOR CERTIFICATION**

*I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unLEASEd mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.*

Signature \_\_\_\_\_ Date \_\_\_\_\_

Printed Name \_\_\_\_\_

Email Address \_\_\_\_\_

---

**SURVEYOR CERTIFICATION**

*I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.*

FEBRUARY 2021  
 GARY JONES  
 NEW MEXICO  
 PROFESSIONAL SURVEYOR  
 7977

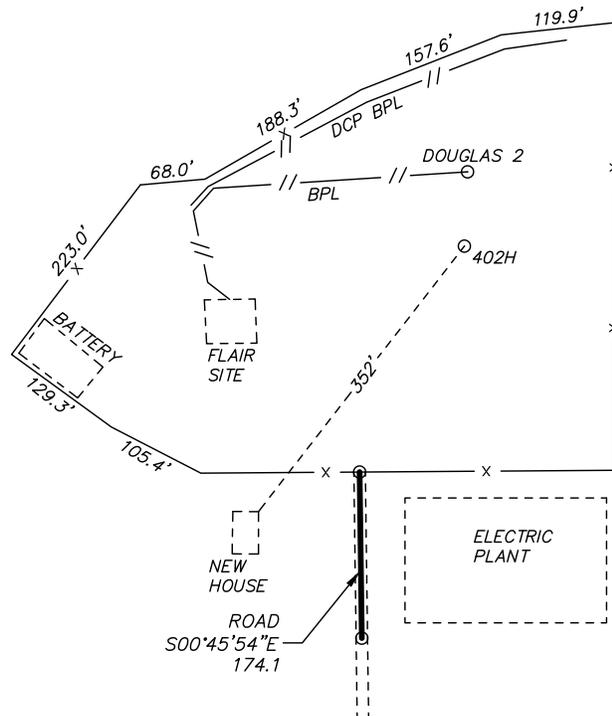
Date Surveyed \_\_\_\_\_  
 Signature & Seal of Professional Surveyor \_\_\_\_\_

Certificate No. GARY JONES 7977  
 BASIN SURVEYS

0' 1000' 2000' 3000' 4000' N  
 SCALE: 1" = 2000'  
 WO Num.: 34729

BOTTOM HOLE LOCATION	LAST TAKE POINT	FIRST TAKE POINT	SURFACE LOCATION
Lat - N 32.410061 Long - W 104.254726 NMSPC E 512920.2 E 565595.8 (NAD-83)	1650 FNL & 330 FWL Lat - N 32.410039 Long - W 104.253981 NMSPC E 512912.4 E 565826.0 (NAD-83)	1650 FNL & 330 FEL Lat - N 32.410231 Long - W 104.221300 NMSPC E 512991.2 E 575910.6 (NAD-83)	Lat - N 32.408132 Long - W 104.220836 NMSPC E 512227.9 E 576054.9 (NAD-83)

SECTION 7, TOWNSHIP 22 SOUTH, RANGE 27 EAST. N.M.P.M.,  
LEA COUNTY, NEW MEXICO.



SPC RESOURCES, LLC  
 CAVEMAN 402H  
 ELEV. - 3102'  
 Lat - N 32.408132  
 Long - W 104.220836  
 NMSPCE - N 512227.9  
 E 576054.9  
 (NAD-83)



CARLSBAD, NM IS ±1 MILES TO THE NORTHWEST OF LOCATION.  
 200 0 200 400 FEET  
 SCALE: 1" = 200'

**SPC RESOURCES, LLC**

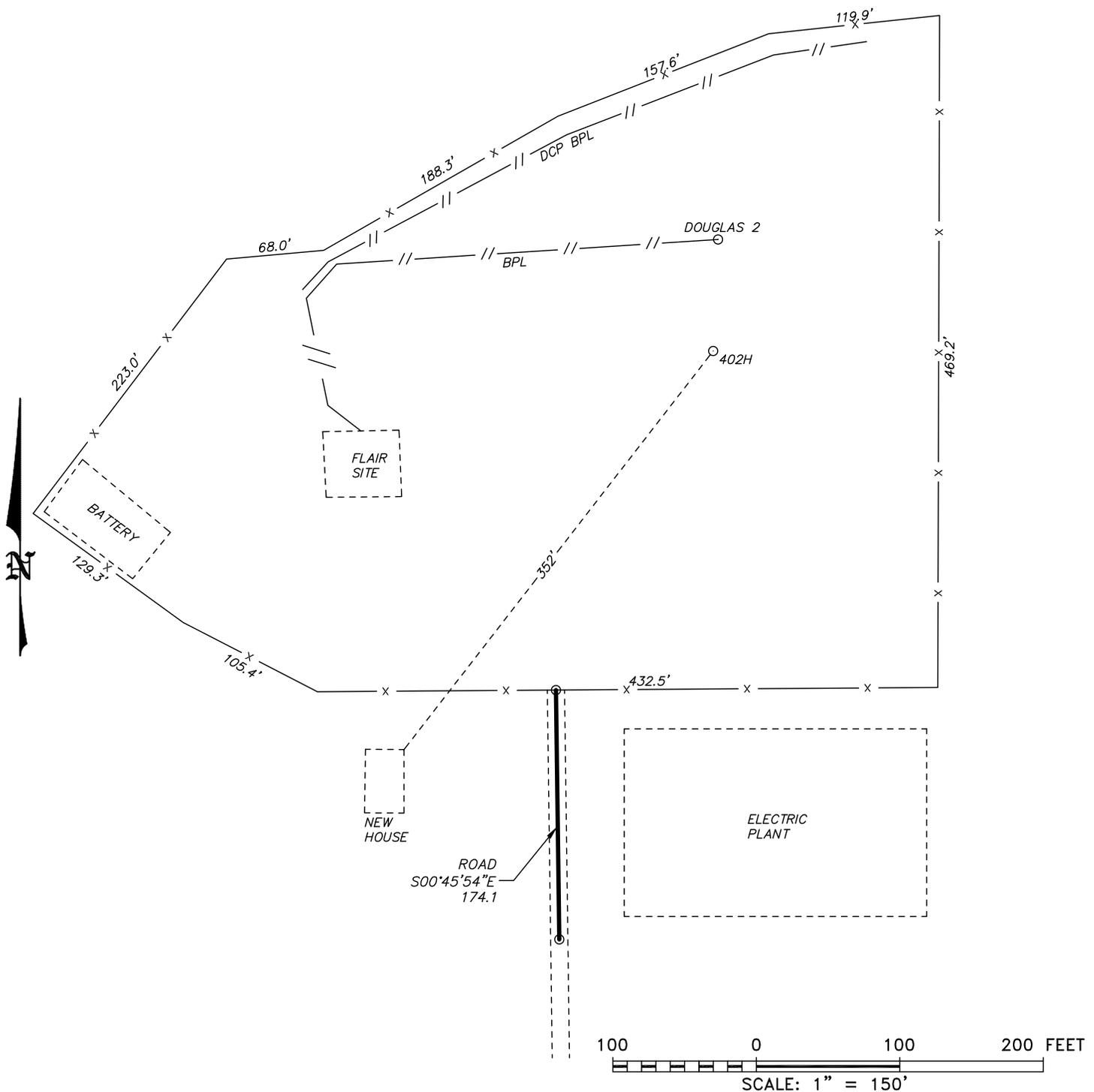
REF: CAVEMAN 402H / WELL PAD TOPO

THE CAVEMAN 402H LOCATED 2420' FROM  
 THE NORTH LINE AND 188' FROM THE EAST LINE OF  
 SECTION 7, TOWNSHIP 22 SOUTH, RANGE 27 EAST.  
 N.M.P.M., EDDY COUNTY, NEW MEXICO.

**basin surveys**  
 focused on excellence  
 in the oilfield

P.O. Box 1786 (575) 393-7316 - Office  
 1120 N. West County Rd. (575) 392-2206 - Fax  
 Hobbs, New Mexico 88241 basin-surveys.com

SECTION 7, TOWNSHIP 22 SOUTH, RANGE 27 EAST. N.M.P.M.,  
LEA COUNTY, NEW MEXICO.



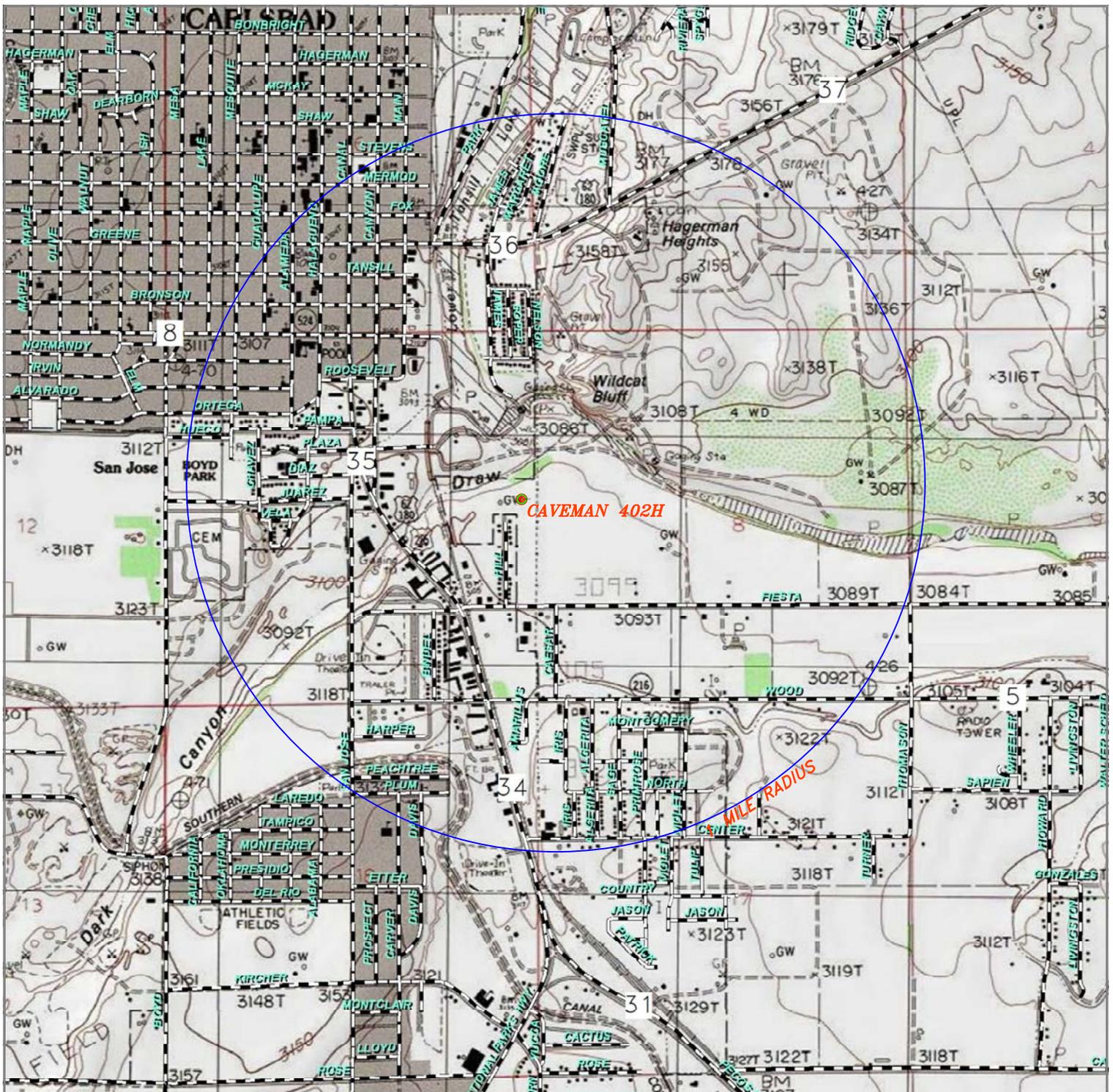
**SPC RESOURCES, LLC**

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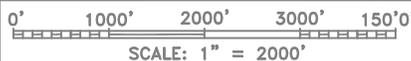


### CAVEMAN 402H

Located 2420' FNL and 188' FEL  
 Section 7, Township 22 South, Range 27 East,  
 N.M.P.M., Eddy County, New Mexico.



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 1120 N. West County Rd.  
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 basinsurveys.com



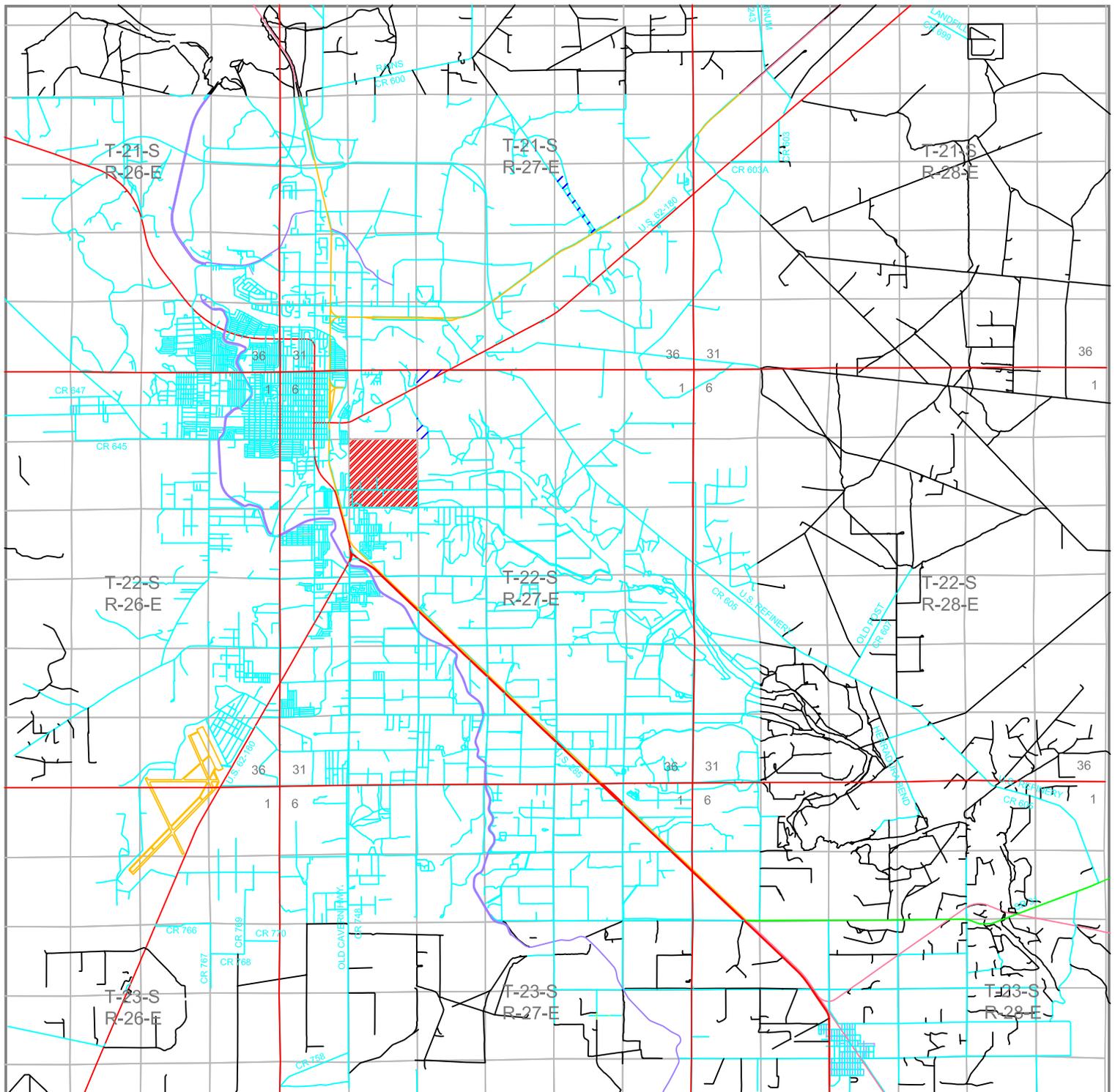
W.O. Number: JG 34729

Survey Date: 7-31-2019

YELLOW TINT - USA LAND  
 BLUE TINT - STATE LAND  
 NATURAL COLOR - FEE LAND



*SPC*  
**RESOURCES,**  
*LLC*

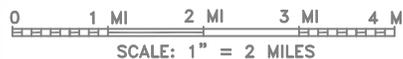


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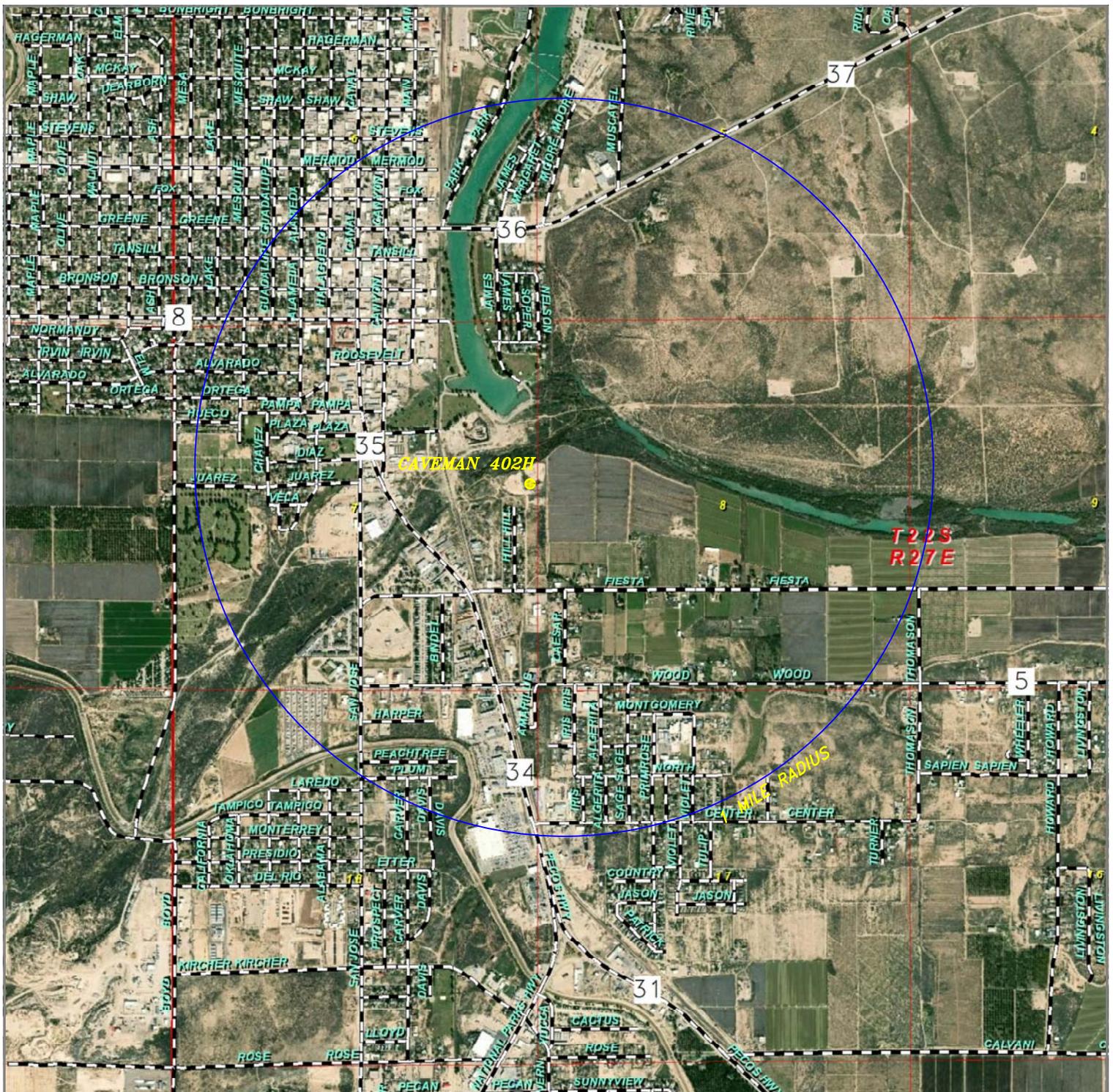
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*SPC*  
**RESOURCES,**  
*LLC*

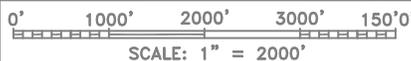


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 N.M.P.M., Eddy County, New Mexico.



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*SPC*  
**RESOURCES,**  
*LLC*



# Santo Petroleum

Eddy County, NM (NAD 83 - NME)

Caveman 7-12

#402H

ST01

Plan: ST01: Plan #4

## Standard Planning Report

08 March, 2021





Planning Report

<b>Database:</b>	WBDS_SQL_2	<b>Local Co-ordinate Reference:</b>	Well #402H
<b>Company:</b>	Santo Petroleum	<b>TVD Reference:</b>	RKB = 25' @ 3127.00usft
<b>Project:</b>	Eddy County, NM (NAD 83 - NME)	<b>MD Reference:</b>	RKB = 25' @ 3127.00usft
<b>Site:</b>	Caveman 7-12	<b>North Reference:</b>	Grid
<b>Well:</b>	#402H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ST01		
<b>Design:</b>	ST01: Plan #4		

<b>Project</b>	Eddy County, NM (NAD 83 - NME)		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	New Mexico Eastern Zone		

<b>Site</b>	Caveman 7-12				
<b>Site Position:</b>		<b>Northing:</b>	512,385.60 usft	<b>Latitude:</b>	32.408564
<b>From:</b>	Map	<b>Easting:</b>	576,482.00 usft	<b>Longitude:</b>	-104.219452
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	0.061 °

<b>Well</b>	#402H					
<b>Well Position</b>	<b>+N/-S</b>	-157.62 usft	<b>Northing:</b>	512,227.98 usft	<b>Latitude:</b>	32.408132
	<b>+E/-W</b>	-427.02 usft	<b>Easting:</b>	576,054.99 usft	<b>Longitude:</b>	-104.220836
<b>Position Uncertainty</b>	0.00 usft		<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	3,102.00 usft

<b>Wellbore</b>	ST01				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2020	3/10/2021	6.890	59.979	47,564.95128308

<b>Design</b>	ST01: Plan #4			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	8,272.68
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	269.61

<b>Plan Survey Tool Program</b>	<b>Date</b>	3/8/2021		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	8,272.68	19,220.06	ST01: Plan #4 (ST01)	MWD+IGRF OWSG MWD + IGRF or WM

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
8,272.68	0.00	0.00	8,224.04	765.32	160.09	0.00	0.00	0.00	0.000	
9,173.85	90.12	269.61	8,797.00	761.37	-414.02	10.00	10.00	-10.03	269.606	
16,035.02	90.12	269.61	8,783.00	714.14	-7,275.02	0.00	0.00	0.00	0.000	Caveman #402H D
16,093.59	91.29	269.61	8,782.28	713.74	-7,333.58	2.00	2.00	0.00	-0.002	
19,220.06	91.29	269.61	8,712.00	692.22	-10,459.18	0.00	0.00	0.00	0.000	PLAT PBHL: 1650'



Planning Report

<b>Database:</b>	WBDS_SQL_2	<b>Local Co-ordinate Reference:</b>	Well #402H
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<b>Site:</b>	Caveman 7-12	<b>North Reference:</b>	Grid
<b>Well:</b>	#402H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ST01		
<b>Design:</b>	ST01: Plan #4		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>PLAT #402H SHL: 2420' FNL &amp; 188' FEL</b>										
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,600.00	2.00	11.81	1,599.98	1.71	0.36	-0.37	2.00	2.00	0.00	
1,700.00	4.00	11.81	1,699.84	6.83	1.43	-1.48	2.00	2.00	0.00	
1,800.00	6.00	11.81	1,799.45	15.36	3.21	-3.32	2.00	2.00	0.00	
1,863.06	7.26	11.81	1,862.09	22.49	4.70	-4.86	2.00	2.00	0.00	
1,900.00	7.26	11.81	1,898.73	27.06	5.66	-5.84	0.00	0.00	0.00	
2,000.00	7.26	11.81	1,997.93	39.43	8.25	-8.52	0.00	0.00	0.00	
2,100.00	7.26	11.81	2,097.13	51.80	10.84	-11.19	0.00	0.00	0.00	
2,200.00	7.26	11.81	2,196.33	64.17	13.42	-13.86	0.00	0.00	0.00	
2,300.00	7.26	11.81	2,295.52	76.55	16.01	-16.53	0.00	0.00	0.00	
2,400.00	7.26	11.81	2,394.72	88.92	18.60	-19.20	0.00	0.00	0.00	
2,500.00	7.26	11.81	2,493.92	101.29	21.19	-21.88	0.00	0.00	0.00	
2,600.00	7.26	11.81	2,593.12	113.66	23.78	-24.55	0.00	0.00	0.00	
2,700.00	7.26	11.81	2,692.32	126.03	26.36	-27.22	0.00	0.00	0.00	
2,800.00	7.26	11.81	2,791.51	138.40	28.95	-29.89	0.00	0.00	0.00	
2,900.00	7.26	11.81	2,890.71	150.78	31.54	-32.56	0.00	0.00	0.00	
3,000.00	7.26	11.81	2,989.91	163.15	34.13	-35.24	0.00	0.00	0.00	
3,100.00	7.26	11.81	3,089.11	175.52	36.72	-37.91	0.00	0.00	0.00	
3,200.00	7.26	11.81	3,188.31	187.89	39.30	-40.58	0.00	0.00	0.00	
3,300.00	7.26	11.81	3,287.50	200.26	41.89	-43.25	0.00	0.00	0.00	
3,400.00	7.26	11.81	3,386.70	212.63	44.48	-45.93	0.00	0.00	0.00	
3,500.00	7.26	11.81	3,485.90	225.01	47.07	-48.60	0.00	0.00	0.00	
3,600.00	7.26	11.81	3,585.10	237.38	49.65	-51.27	0.00	0.00	0.00	
3,700.00	7.26	11.81	3,684.30	249.75	52.24	-53.94	0.00	0.00	0.00	
3,800.00	7.26	11.81	3,783.49	262.12	54.83	-56.61	0.00	0.00	0.00	
3,900.00	7.26	11.81	3,882.69	274.49	57.42	-59.29	0.00	0.00	0.00	
4,000.00	7.26	11.81	3,981.89	286.86	60.01	-61.96	0.00	0.00	0.00	
4,100.00	7.26	11.81	4,081.09	299.24	62.59	-64.63	0.00	0.00	0.00	
4,200.00	7.26	11.81	4,180.29	311.61	65.18	-67.30	0.00	0.00	0.00	
4,300.00	7.26	11.81	4,279.48	323.98	67.77	-69.97	0.00	0.00	0.00	
4,400.00	7.26	11.81	4,378.68	336.35	70.36	-72.65	0.00	0.00	0.00	
4,500.00	7.26	11.81	4,477.88	348.72	72.95	-75.32	0.00	0.00	0.00	
4,600.00	7.26	11.81	4,577.08	361.09	75.53	-77.99	0.00	0.00	0.00	
4,700.00	7.26	11.81	4,676.28	373.47	78.12	-80.66	0.00	0.00	0.00	
4,800.00	7.26	11.81	4,775.47	385.84	80.71	-83.33	0.00	0.00	0.00	
4,900.00	7.26	11.81	4,874.67	398.21	83.30	-86.01	0.00	0.00	0.00	
5,000.00	7.26	11.81	4,973.87	410.58	85.89	-88.68	0.00	0.00	0.00	
5,100.00	7.26	11.81	5,073.07	422.95	88.47	-91.35	0.00	0.00	0.00	



Planning Report

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<b>Project:</b>	Eddy County, NM (NAD 83 - NME)	<b>MD Reference:</b>	RKB = 25' @ 3127.00usft
<b>Site:</b>	Caveman 7-12	<b>North Reference:</b>	Grid
<b>Well:</b>	#402H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ST01		
<b>Design:</b>	ST01: Plan #4		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
5,200.00	7.26	11.81	5,172.27	435.32	91.06	-94.02	0.00	0.00	0.00	
5,300.00	7.26	11.81	5,271.46	447.70	93.65	-96.69	0.00	0.00	0.00	
5,400.00	7.26	11.81	5,370.66	460.07	96.24	-99.37	0.00	0.00	0.00	
5,500.00	7.26	11.81	5,469.86	472.44	98.83	-102.04	0.00	0.00	0.00	
5,600.00	7.26	11.81	5,569.06	484.81	101.41	-104.71	0.00	0.00	0.00	
5,700.00	7.26	11.81	5,668.26	497.18	104.00	-107.38	0.00	0.00	0.00	
5,800.00	7.26	11.81	5,767.45	509.55	106.59	-110.05	0.00	0.00	0.00	
5,900.00	7.26	11.81	5,866.65	521.93	109.18	-112.73	0.00	0.00	0.00	
6,000.00	7.26	11.81	5,965.85	534.30	111.76	-115.40	0.00	0.00	0.00	
6,100.00	7.26	11.81	6,065.05	546.67	114.35	-118.07	0.00	0.00	0.00	
6,200.00	7.26	11.81	6,164.25	559.04	116.94	-120.74	0.00	0.00	0.00	
6,300.00	7.26	11.81	6,263.45	571.41	119.53	-123.42	0.00	0.00	0.00	
6,400.00	7.26	11.81	6,362.64	583.78	122.12	-126.09	0.00	0.00	0.00	
6,500.00	7.26	11.81	6,461.84	596.16	124.70	-128.76	0.00	0.00	0.00	
6,600.00	7.26	11.81	6,561.04	608.53	127.29	-131.43	0.00	0.00	0.00	
6,700.00	7.26	11.81	6,660.24	620.90	129.88	-134.10	0.00	0.00	0.00	
6,800.00	7.26	11.81	6,759.44	633.27	132.47	-136.78	0.00	0.00	0.00	
6,900.00	7.26	11.81	6,858.63	645.64	135.06	-139.45	0.00	0.00	0.00	
7,000.00	7.26	11.81	6,957.83	658.01	137.64	-142.12	0.00	0.00	0.00	
7,100.00	7.26	11.81	7,057.03	670.39	140.23	-144.79	0.00	0.00	0.00	
7,200.00	7.26	11.81	7,156.23	682.76	142.82	-147.46	0.00	0.00	0.00	
7,300.00	7.26	11.81	7,255.43	695.13	145.41	-150.14	0.00	0.00	0.00	
7,400.00	7.26	11.81	7,354.62	707.50	148.00	-152.81	0.00	0.00	0.00	
7,500.00	7.26	11.81	7,453.82	719.87	150.58	-155.48	0.00	0.00	0.00	
7,600.00	7.26	11.81	7,553.02	732.24	153.17	-158.15	0.00	0.00	0.00	
7,685.57	7.26	11.81	7,637.91	742.83	155.39	-160.44	0.00	0.00	0.00	
7,700.00	6.97	11.81	7,652.22	744.58	155.75	-160.82	2.00	-2.00	0.00	
7,800.00	4.97	11.81	7,751.67	754.77	157.88	-163.02	2.00	-2.00	0.00	
7,900.00	2.97	11.81	7,851.43	761.55	159.30	-164.48	2.00	-2.00	0.00	
8,000.00	0.97	11.81	7,951.36	764.92	160.01	-165.21	2.00	-2.00	0.00	
8,048.64	0.00	0.00	8,000.00	765.32	160.09	-165.30	2.00	-2.00	0.00	
8,100.00	0.00	0.00	8,051.36	765.32	160.09	-165.30	0.00	0.00	0.00	
8,200.00	0.00	0.00	8,151.36	765.32	160.09	-165.30	0.00	0.00	0.00	
8,272.68	0.00	0.00	8,224.04	765.32	160.09	-165.30	0.00	0.00	0.00	
8,300.00	2.73	269.61	8,251.35	765.32	159.44	-164.64	10.00	10.00	0.00	
8,350.00	7.73	269.61	8,301.13	765.28	154.88	-160.09	10.00	10.00	0.00	
8,391.49	11.88	269.61	8,342.00	765.24	147.82	-153.02	10.00	10.00	0.00	
<b>Top 3rd Bone Spring Sand (John)</b>										
8,400.00	12.73	269.61	8,350.32	765.22	146.00	-151.21	10.00	10.00	0.00	
8,450.00	17.73	269.61	8,398.54	765.13	132.87	-138.08	10.00	10.00	0.00	
8,500.00	22.73	269.61	8,445.44	765.01	115.58	-120.79	10.00	10.00	0.00	
8,550.00	27.73	269.61	8,490.66	764.87	94.28	-99.48	10.00	10.00	0.00	
8,600.00	32.73	269.61	8,533.85	764.69	69.11	-74.31	10.00	10.00	0.00	
8,650.00	37.73	269.61	8,574.67	764.50	40.28	-45.48	10.00	10.00	0.00	
8,700.00	42.73	269.61	8,612.83	764.27	7.99	-13.20	10.00	10.00	0.00	
8,750.00	47.73	269.61	8,648.03	764.03	-27.49	22.29	10.00	10.00	0.00	
8,800.00	52.73	269.61	8,680.01	763.76	-65.91	60.71	10.00	10.00	0.00	
8,829.04	55.64	269.61	8,697.00	763.60	-89.46	84.26	10.00	10.00	0.00	
<b>WOLFCAMP A (John)</b>										
8,850.00	57.73	269.61	8,708.51	763.48	-106.97	101.77	10.00	10.00	0.00	
8,900.00	62.73	269.61	8,733.33	763.18	-150.36	145.16	10.00	10.00	0.00	
8,919.52	64.68	269.61	8,741.97	763.06	-167.85	162.66	10.00	10.00	0.00	
<b>PLAT FTP:1650' FNL &amp; 330' FEL</b>										



Planning Report

<b>Database:</b>	WBDS_SQL_2	<b>Local Co-ordinate Reference:</b>	Well #402H
<b>Company:</b>	Santo Petroleum	<b>TVD Reference:</b>	RKB = 25' @ 3127.00usft
<b>Project:</b>	Eddy County, NM (NAD 83 - NME)	<b>MD Reference:</b>	RKB = 25' @ 3127.00usft
<b>Site:</b>	Caveman 7-12	<b>North Reference:</b>	Grid
<b>Well:</b>	#402H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ST01		
<b>Design:</b>	ST01: Plan #4		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,950.00	67.73	269.61	8,754.27	762.87	-195.74	190.55	10.00	10.00	0.00	
9,000.00	72.73	269.61	8,771.17	762.55	-242.78	237.59	10.00	10.00	0.00	
<b>Caveman #402H: Pilot PBHL</b>										
9,041.29	76.86	269.61	8,782.00	762.27	-282.62	277.42	10.00	10.00	0.00	
<b>Y Sand Top (John)</b>										
9,050.00	77.73	269.61	8,783.91	762.21	-291.11	285.92	10.00	10.00	0.00	
9,055.22	78.25	269.61	8,785.00	762.18	-296.22	291.02	10.00	10.00	0.00	
<b>TOP WINDOW</b>										
9,100.00	82.73	269.61	8,792.40	761.88	-340.37	335.18	10.00	10.00	0.00	
9,150.00	87.73	269.61	8,796.55	761.53	-390.18	384.99	10.00	10.00	0.00	
9,172.36	90.12	269.61	8,797.00	761.38	-412.53	407.34	10.67	10.67	0.00	
<b>TARGET LANDING</b>										
9,173.85	90.12	269.61	8,797.00	761.37	-414.02	408.83	0.00	0.00	0.00	
<b>PLAN: LP</b>										
9,200.00	90.12	269.61	8,796.94	761.19	-440.17	434.98	0.00	0.00	0.00	
9,300.00	90.12	269.61	8,796.74	760.50	-540.17	534.98	0.00	0.00	0.00	
9,400.00	90.12	269.61	8,796.54	759.81	-640.17	634.98	0.00	0.00	0.00	
9,500.00	90.12	269.61	8,796.33	759.12	-740.17	734.98	0.00	0.00	0.00	
9,600.00	90.12	269.61	8,796.13	758.43	-840.16	834.98	0.00	0.00	0.00	
9,700.00	90.12	269.61	8,795.92	757.75	-940.16	934.98	0.00	0.00	0.00	
9,800.00	90.12	269.61	8,795.72	757.06	-1,040.16	1,034.98	0.00	0.00	0.00	
9,900.00	90.12	269.61	8,795.52	756.37	-1,140.16	1,134.98	0.00	0.00	0.00	
10,000.00	90.12	269.61	8,795.31	755.68	-1,240.15	1,234.98	0.00	0.00	0.00	
10,100.00	90.12	269.61	8,795.11	754.99	-1,340.15	1,334.98	0.00	0.00	0.00	
10,200.00	90.12	269.61	8,794.90	754.30	-1,440.15	1,434.98	0.00	0.00	0.00	
10,300.00	90.12	269.61	8,794.70	753.62	-1,540.15	1,534.98	0.00	0.00	0.00	
10,400.00	90.12	269.61	8,794.50	752.93	-1,640.14	1,634.98	0.00	0.00	0.00	
10,500.00	90.12	269.61	8,794.29	752.24	-1,740.14	1,734.98	0.00	0.00	0.00	
10,600.00	90.12	269.61	8,794.09	751.55	-1,840.14	1,834.98	0.00	0.00	0.00	
10,700.00	90.12	269.61	8,793.88	750.86	-1,940.14	1,934.98	0.00	0.00	0.00	
10,800.00	90.12	269.61	8,793.68	750.17	-2,040.13	2,034.98	0.00	0.00	0.00	
10,900.00	90.12	269.61	8,793.48	749.49	-2,140.13	2,134.98	0.00	0.00	0.00	
11,000.00	90.12	269.61	8,793.27	748.80	-2,240.13	2,234.98	0.00	0.00	0.00	
11,100.00	90.12	269.61	8,793.07	748.11	-2,340.13	2,334.98	0.00	0.00	0.00	
11,200.00	90.12	269.61	8,792.86	747.42	-2,440.12	2,434.98	0.00	0.00	0.00	
11,300.00	90.12	269.61	8,792.66	746.73	-2,540.12	2,534.98	0.00	0.00	0.00	
11,400.00	90.12	269.61	8,792.46	746.04	-2,640.12	2,634.98	0.00	0.00	0.00	
11,500.00	90.12	269.61	8,792.25	745.36	-2,740.11	2,734.98	0.00	0.00	0.00	
11,600.00	90.12	269.61	8,792.05	744.67	-2,840.11	2,834.98	0.00	0.00	0.00	
11,700.00	90.12	269.61	8,791.84	743.98	-2,940.11	2,934.98	0.00	0.00	0.00	
11,800.00	90.12	269.61	8,791.64	743.29	-3,040.11	3,034.98	0.00	0.00	0.00	
11,900.00	90.12	269.61	8,791.44	742.60	-3,140.10	3,134.98	0.00	0.00	0.00	
12,000.00	90.12	269.61	8,791.23	741.91	-3,240.10	3,234.98	0.00	0.00	0.00	
12,100.00	90.12	269.61	8,791.03	741.23	-3,340.10	3,334.98	0.00	0.00	0.00	
12,200.00	90.12	269.61	8,790.82	740.54	-3,440.10	3,434.98	0.00	0.00	0.00	
12,300.00	90.12	269.61	8,790.62	739.85	-3,540.09	3,534.98	0.00	0.00	0.00	
12,400.00	90.12	269.61	8,790.42	739.16	-3,640.09	3,634.98	0.00	0.00	0.00	
12,500.00	90.12	269.61	8,790.21	738.47	-3,740.09	3,734.98	0.00	0.00	0.00	
12,600.00	90.12	269.61	8,790.01	737.78	-3,840.09	3,834.98	0.00	0.00	0.00	
12,700.00	90.12	269.61	8,789.80	737.10	-3,940.08	3,934.98	0.00	0.00	0.00	
12,800.00	90.12	269.61	8,789.60	736.41	-4,040.08	4,034.98	0.00	0.00	0.00	
12,900.00	90.12	269.61	8,789.40	735.72	-4,140.08	4,134.98	0.00	0.00	0.00	
13,000.00	90.12	269.61	8,789.19	735.03	-4,240.08	4,234.97	0.00	0.00	0.00	



Planning Report

<b>Database:</b>	WBDS_SQL_2	<b>Local Co-ordinate Reference:</b>	Well #402H
<b>Company:</b>	Santo Petroleum	<b>TVD Reference:</b>	RKB = 25' @ 3127.00usft
<b>Project:</b>	Eddy County, NM (NAD 83 - NME)	<b>MD Reference:</b>	RKB = 25' @ 3127.00usft
<b>Site:</b>	Caveman 7-12	<b>North Reference:</b>	Grid
<b>Well:</b>	#402H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ST01		
<b>Design:</b>	ST01: Plan #4		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
13,100.00	90.12	269.61	8,788.99	734.34	-4,340.07	4,334.97	0.00	0.00	0.00	
13,200.00	90.12	269.61	8,788.78	733.65	-4,440.07	4,434.97	0.00	0.00	0.00	
13,300.00	90.12	269.61	8,788.58	732.97	-4,540.07	4,534.97	0.00	0.00	0.00	
13,400.00	90.12	269.61	8,788.38	732.28	-4,640.07	4,634.97	0.00	0.00	0.00	
13,500.00	90.12	269.61	8,788.17	731.59	-4,740.06	4,734.97	0.00	0.00	0.00	
13,600.00	90.12	269.61	8,787.97	730.90	-4,840.06	4,834.97	0.00	0.00	0.00	
13,700.00	90.12	269.61	8,787.76	730.21	-4,940.06	4,934.97	0.00	0.00	0.00	
13,800.00	90.12	269.61	8,787.56	729.52	-5,040.06	5,034.97	0.00	0.00	0.00	
13,900.00	90.12	269.61	8,787.36	728.84	-5,140.05	5,134.97	0.00	0.00	0.00	
14,000.00	90.12	269.61	8,787.15	728.15	-5,240.05	5,234.97	0.00	0.00	0.00	
14,100.00	90.12	269.61	8,786.95	727.46	-5,340.05	5,334.97	0.00	0.00	0.00	
14,200.00	90.12	269.61	8,786.74	726.77	-5,440.05	5,434.97	0.00	0.00	0.00	
14,300.00	90.12	269.61	8,786.54	726.08	-5,540.04	5,534.97	0.00	0.00	0.00	
14,400.00	90.12	269.61	8,786.34	725.39	-5,640.04	5,634.97	0.00	0.00	0.00	
14,500.00	90.12	269.61	8,786.13	724.71	-5,740.04	5,734.97	0.00	0.00	0.00	
14,600.00	90.12	269.61	8,785.93	724.02	-5,840.04	5,834.97	0.00	0.00	0.00	
14,700.00	90.12	269.61	8,785.72	723.33	-5,940.03	5,934.97	0.00	0.00	0.00	
14,800.00	90.12	269.61	8,785.52	722.64	-6,040.03	6,034.97	0.00	0.00	0.00	
14,900.00	90.12	269.61	8,785.32	721.95	-6,140.03	6,134.97	0.00	0.00	0.00	
15,000.00	90.12	269.61	8,785.11	721.26	-6,240.02	6,234.97	0.00	0.00	0.00	
15,100.00	90.12	269.61	8,784.91	720.58	-6,340.02	6,334.97	0.00	0.00	0.00	
15,200.00	90.12	269.61	8,784.70	719.89	-6,440.02	6,434.97	0.00	0.00	0.00	
15,300.00	90.12	269.61	8,784.50	719.20	-6,540.02	6,534.97	0.00	0.00	0.00	
15,400.00	90.12	269.61	8,784.30	718.51	-6,640.01	6,634.97	0.00	0.00	0.00	
15,500.00	90.12	269.61	8,784.09	717.82	-6,740.01	6,734.97	0.00	0.00	0.00	
15,600.00	90.12	269.61	8,783.89	717.13	-6,840.01	6,834.97	0.00	0.00	0.00	
15,700.00	90.12	269.61	8,783.68	716.45	-6,940.01	6,934.97	0.00	0.00	0.00	
15,800.00	90.12	269.61	8,783.48	715.76	-7,040.00	7,034.97	0.00	0.00	0.00	
15,900.00	90.12	269.61	8,783.28	715.07	-7,140.00	7,134.97	0.00	0.00	0.00	
16,000.00	90.12	269.61	8,783.07	714.38	-7,240.00	7,234.97	0.00	0.00	0.00	
16,035.02	90.12	269.61	8,783.00	714.14	-7,275.02	7,269.99	0.00	0.00	0.00	
<b>Caveman #402H Deflection Point</b>										
16,093.59	91.29	269.61	8,782.28	713.74	-7,333.58	7,328.55	2.00	2.00	0.00	
16,100.00	91.29	269.61	8,782.14	713.69	-7,339.99	7,334.96	0.00	0.00	0.00	
16,200.00	91.29	269.61	8,779.89	713.00	-7,439.96	7,434.94	0.00	0.00	0.00	
16,300.00	91.29	269.61	8,777.64	712.32	-7,539.93	7,534.91	0.00	0.00	0.00	
16,400.00	91.29	269.61	8,775.39	711.63	-7,639.91	7,634.89	0.00	0.00	0.00	
16,500.00	91.29	269.61	8,773.15	710.94	-7,739.88	7,734.86	0.00	0.00	0.00	
16,600.00	91.29	269.61	8,770.90	710.25	-7,839.85	7,834.84	0.00	0.00	0.00	
16,700.00	91.29	269.61	8,768.65	709.56	-7,939.82	7,934.81	0.00	0.00	0.00	
16,800.00	91.29	269.61	8,766.40	708.88	-8,039.80	8,034.78	0.00	0.00	0.00	
16,900.00	91.29	269.61	8,764.15	708.19	-8,139.77	8,134.76	0.00	0.00	0.00	
17,000.00	91.29	269.61	8,761.91	707.50	-8,239.74	8,234.73	0.00	0.00	0.00	
17,100.00	91.29	269.61	8,759.66	706.81	-8,339.71	8,334.71	0.00	0.00	0.00	
17,200.00	91.29	269.61	8,757.41	706.12	-8,439.69	8,434.68	0.00	0.00	0.00	
17,300.00	91.29	269.61	8,755.16	705.43	-8,539.66	8,534.66	0.00	0.00	0.00	
17,400.00	91.29	269.61	8,752.91	704.75	-8,639.63	8,634.63	0.00	0.00	0.00	
17,500.00	91.29	269.61	8,750.67	704.06	-8,739.60	8,734.61	0.00	0.00	0.00	
17,600.00	91.29	269.61	8,748.42	703.37	-8,839.58	8,834.58	0.00	0.00	0.00	
17,700.00	91.29	269.61	8,746.17	702.68	-8,939.55	8,934.56	0.00	0.00	0.00	
17,800.00	91.29	269.61	8,743.92	701.99	-9,039.52	9,034.53	0.00	0.00	0.00	
17,900.00	91.29	269.61	8,741.67	701.31	-9,139.49	9,134.51	0.00	0.00	0.00	
18,000.00	91.29	269.61	8,739.43	700.62	-9,239.46	9,234.48	0.00	0.00	0.00	
18,100.00	91.29	269.61	8,737.18	699.93	-9,339.44	9,334.46	0.00	0.00	0.00	



Planning Report

<b>Database:</b>	WBDS_SQL_2	<b>Local Co-ordinate Reference:</b>	Well #402H
<b>Company:</b>	Santo Petroleum	<b>TVD Reference:</b>	RKB = 25' @ 3127.00usft
<b>Project:</b>	Eddy County, NM (NAD 83 - NME)	<b>MD Reference:</b>	RKB = 25' @ 3127.00usft
<b>Site:</b>	Caveman 7-12	<b>North Reference:</b>	Grid
<b>Well:</b>	#402H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ST01		
<b>Design:</b>	ST01: Plan #4		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
18,200.00	91.29	269.61	8,734.93	699.24	-9,439.41	9,434.43	0.00	0.00	0.00
18,300.00	91.29	269.61	8,732.68	698.55	-9,539.38	9,534.41	0.00	0.00	0.00
18,400.00	91.29	269.61	8,730.43	697.86	-9,639.35	9,634.38	0.00	0.00	0.00
18,500.00	91.29	269.61	8,728.19	697.18	-9,739.33	9,734.36	0.00	0.00	0.00
18,600.00	91.29	269.61	8,725.94	696.49	-9,839.30	9,834.33	0.00	0.00	0.00
18,700.00	91.29	269.61	8,723.69	695.80	-9,939.27	9,934.30	0.00	0.00	0.00
18,800.00	91.29	269.61	8,721.44	695.11	-10,039.24	10,034.28	0.00	0.00	0.00
18,900.00	91.29	269.61	8,719.19	694.42	-10,139.22	10,134.25	0.00	0.00	0.00
18,989.86	91.29	269.61	8,717.17	693.80	-10,229.05	10,224.09	0.00	0.00	0.00
<b>PLAT LTP:1650' FNL &amp; 330' FWL</b>									
19,000.00	91.29	269.61	8,716.95	693.73	-10,239.19	10,234.23	0.00	0.00	0.00
19,100.00	91.29	269.61	8,714.70	693.05	-10,339.16	10,334.20	0.00	0.00	0.00
19,200.00	91.29	269.61	8,712.45	692.36	-10,439.13	10,434.18	0.00	0.00	0.00
19,220.06	91.29	269.61	8,712.00	692.22	-10,459.18	10,454.23	0.00	0.00	0.00
<b>PLAT PBHL: 1650' FNL &amp; 100' FWL</b>									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PLAT #402H SHL: 24' - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	512,227.98	576,054.99	32.408132	-104.220836
PLAT PBHL: 1650' FN - plan hits target center - Point	0.00	0.00	8,712.00	692.22	-10,459.18	512,920.20	565,595.80	32.410061	-104.254726
PLAT LTP:1650' FNL - plan misses target center by 9.38usft at 18989.86usft MD (8717.17 TVD, 693.80 N, -10229.05 E) - Point	0.00	0.00	8,717.18	684.42	-10,228.98	512,912.40	565,826.00	32.410039	-104.253980
Caveman #402H Defl - plan hits target center - Point	0.00	0.00	8,783.00	714.14	-7,275.02	512,942.12	568,779.96	32.410114	-104.244408
PLAT FTP:1650' FNL - plan misses target center by 56.03usft at 8919.52usft MD (8741.97 TVD, 763.06 N, -167.85 E) - Point	0.00	0.00	8,792.85	763.22	-144.38	512,991.20	575,910.60	32.410230	-104.221302
PLAN: LP - plan misses target center by 0.01usft at 9173.85usft MD (8797.00 TVD, 761.37 N, -414.02 E) - Point	0.00	0.00	8,797.00	761.37	-414.02	512,989.35	575,640.97	32.410226	-104.222175
Caveman #402H: Pilo - plan misses target center by 1198.57usft at 9000.00usft MD (8771.17 TVD, 762.55 N, -242.78 E) - Point	0.00	0.00	9,900.00	765.32	160.09	512,993.30	576,215.08	32.410235	-104.220315



Planning Report



<b>Database:</b>	WBDS_SQL_2	<b>Local Co-ordinate Reference:</b>	Well #402H
<b>Company:</b>	Santo Petroleum	<b>TVD Reference:</b>	RKB = 25' @ 3127.00usft
<b>Project:</b>	Eddy County, NM (NAD 83 - NME)	<b>MD Reference:</b>	RKB = 25' @ 3127.00usft
<b>Site:</b>	Caveman 7-12	<b>North Reference:</b>	Grid
<b>Well:</b>	#402H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ST01		
<b>Design:</b>	ST01: Plan #4		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
459.00	459.00	Top Salt (John)				
1,153.00	1,153.00	Base Salt (John)				
1,654.07	1,654.00	Delaware				
1,703.17	1,703.00	Lamar Limestone				
1,967.81	1,966.00	Base Lamar Limestone				
5,176.55	5,149.00	BONE SPRING				
6,337.86	6,301.00	Top 1st BSPG Sand (John)				
6,606.01	6,567.00	Top 2nd Bone Spring Carbonate (Jo				
6,982.03	6,940.00	Top 2nd Bone Spring Sand (John)				
7,254.21	7,210.00	Top 3rd Bone Spring Carbonate (Jol				
8,391.49	8,342.00	Top 3rd Bone Spring Sand (John)				
8,829.04	8,697.00	WOLFCAMP A (John)				
9,041.29	8,782.00	Y Sand Top (John)				
9,055.22	8,785.00	TOP WINDOW				
9,172.36	8,797.00	TARGET LANDING				

**District I**  
 1625 N. French Dr., Hobbs, NM 88240  
 Phone:(575) 393-6161 Fax:(575) 393-0720

**District II**  
 811 S. First St., Artesia, NM 88210  
 Phone:(575) 748-1283 Fax:(575) 748-9720

**District III**  
 1000 Rio Brazos Rd., Aztec, NM 87410  
 Phone:(505) 334-6178 Fax:(505) 334-6170

**District IV**  
 1220 S. St Francis Dr., Santa Fe, NM 87505  
 Phone:(505) 476-3470 Fax:(505) 476-3462

**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

COMMENTS

Action 20470

**COMMENTS**

Operator:	SPC RESOURCES, LLC	P.O. Box 1020	Artesia, NM88211	OGRID:	372262	Action Number:	20470	Action Type:	C-103A
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Created By	Comment	Comment Date
kpickford	KP GEO Review 3/12/2021	03/12/2021

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 1000 Rio Brazos Rd., Aztec, NM 87410  
 Phone:(505) 334-6178 Fax:(505) 334-6170

**District IV**  
 1220 S. St Francis Dr., Santa Fe, NM 87505  
 Phone:(505) 476-3470 Fax:(505) 476-3462

**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS

Action 20470

**CONDITIONS OF APPROVAL**

Operator:	SPC RESOURCES, LLC	P.O. Box 1020	Artesia, NM88211	OGRID:	372262	Action Number:	20470	Action Type:	C-103A
OCD Reviewer	Condition								
jagarcia	New Property ID is 330286								

**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

**APPLICATION OF NEW MEXICO OIL CONSERVATION DIVISION  
TO REVOKE ORDER NO. R-21096, AS AMENDED,  
AND APDS FOR CAVEMAN #402H AND  
CAVEMAN 7 12 WCD #003H WELLS,  
EDDY COUNTY, NEW MEXICO**

**Case No. 22102  
Order No. R-21888**

**ORDER**

This matter came before the Director (“Director”) of the New Mexico Oil Conservation Division (“Division” or “OCD”) on the Amended Application for Order to Revoke Order No. R-21096, As Amended, and APDs for Caveman #402H and Caveman 7 12 WCD #003H Wells. The Division conducted a public hearing on September 9, 2021. The Director, having considered the testimony and evidence presented, and being otherwise fully advised in the matter, enters the following findings of fact, conclusions of law, and order:

**FINDINGS OF FACT**

1. The Division gave notice of the hearing as required by 19.15 NMAC.
2. SPC Resources, LLC (“SPC”) is an oil and gas production company doing business in New Mexico.
3. The Division presented the testimony of two witnesses, Jim Griswold, OCD Special Projects Manager for the Carlsbad Brine Well, and Michael Rucker, Senior Associate Engineer for Wood Environment & Infrastructure Solutions, Inc. The Division offered twenty-two exhibits.

CASE NO. 22102  
ORDER NO. R-21888

**EXHIBIT D**

Page 1 of 12

4. SPC presented the testimony of one witness, Hanson Yates, President and Co-Managing Member of Santo Petroleum LLC and president of its affiliate, SPC. SPC offered eight exhibits.

**CAVEMAN PROJECT BACKGROUND**

5. SPC applied for Applications for Permit to Drill (“APDs”) for the Caveman #402H well (formerly known as the Caveman 7 12 WCXY 2H well) and Caveman 7 12 WCD #003H well (“Caveman #003H well”).
6. The Division approved SPC’s APD for the Caveman #402H well (API 30-015-47629) on November 5, 2020.
7. The proposed surface hole location and vertical borehole for the Caveman #402H well is located approximately 7,200 feet from the Carlsbad Brine Well Cavity (the “Cavity”).
8. The proposed lateral for the Caveman #402H well extends westward from the vertical borehole for approximately 10,500 feet at a depth of 8,797 feet beneath the surface.
9. The Division approved SPC’s APD for the Caveman #003H well (API 30-015-47689) on November 17, 2020.
10. The proposed surface hole location and vertical borehole for the Caveman #003H well is located approximately 6,800 feet from the Cavity.
11. The proposed lateral for the Caveman #003H well extends westward from the vertical borehole for approximately 11,000 feet at a depth of 9,300 feet beneath the surface.
12. On August 6, 2019, SPC filed an application to pool all uncommitted interests in and produce hydrocarbons from the Wolfcamp formation underlying a spacing unit comprised of the W/2 and E/2 of Section 12, Township 22 South, Range 26 East, and

- the W/2 and E/2 of Section 7, Township 22 South, Range 27 East, NMPM, Eddy County, New Mexico (the “Spacing Unit”).
13. On February 12, 2020, the Division granted SPC’s pooling application and issued Order No. R-21096.
  14. On April 12, 2021, the Division issued Order No. R-21096-A, which updated the form of order, granted an extension of time to commence drilling until February 12, 2022, pooled additional interest owners, and affirmed the material provisions of the Order No. R-21096.
  15. On May 17, 2021, the Division issued Order No. R-21096-B, which pooled additional interest owners and affirmed the material provisions of Order R-21096. Order No. R-21096, as amended by Order Nos. R-21096-A and R-21096-B, is hereinafter referred to as “Order R-21096”.

**HISTORY OF THE CARLSBAD BRINE WELL REMEDIATION**

16. The Carlsbad Brine Well is an abandoned brine well situated beneath the town of Carlsbad, New Mexico. See NMSA 1978, §75-11-1(G)(2) (definition of “Carlsbad brine well”).
17. The Cavity is the subsurface cavern formed as a result of mining salt from the Carlsbad Brine Well. The location of the Cavity is provided in the “Area Map” in the direct testimony of Jim Griswold.
18. The Cavity lies beneath substantial surface development, including the Carlsbad Irrigation District’s main canal, a mobile home park, a church, two commercial operations, the intersection of US 285 and 62/180, and a groundwater aquifer.

19. The Carlsbad Brine Well began production in 1978, and continuously operated under various ownership until its closure in 2008. On May 9, 2010, the owner, I&W, Inc. of Artesia, filed for bankruptcy.
20. The Division estimates that more than six million barrels of brine were produced from the Carlsbad Brine Well during its operation and more than 220,000 cubic yards of salt were removed.
21. The Energy, Minerals and Natural Resources Department (“EMNRD”) became aware of the potential for catastrophic collapses in brine wells generally, following the collapse of the Jim’s Water Service and Loco Hills Water Disposal wells in July and November of 2008, respectively. In both instances, the depth to the salt formation was less than 500 feet and the estimated width of the caverns exceeded 300 feet.
22. EMNRD determined that the stability of underground caverns associated with brine wells is a function of depth, size, and the strength of rocks which form the cavern roof.
23. EMNRD determined in 2008 that the Carlsbad Brine Well shared significant characteristics (depth to salt and breadth of cavern) with the Jim’s Water Service and Loco Hills Water Disposal wells that had previously collapsed, and that the Carlsbad Brine Well presented a significant risk of catastrophic collapse, and potential to materially impact critical infrastructure in the area.
24. Beginning in 2009, EMNRD began characterizing and monitoring the Carlsbad Brine Well. The efforts included installation of various monitors, creation of an alarm system, and coordinating with local agencies to develop emergency and contingency plans related to potential catastrophic collapse.

25. Beginning in 2013, EMNRD evaluated methodologies to stabilize the Cavity created by the brine well.
26. Beginning in 2018, EMNRD retained AMEC Environment & Infrastructure, Inc. (now Wood Environment & Infrastructure Solutions, Inc.) (collectively “Wood”) to conduct in-situ backfill of the Cavity.
27. The purpose of ongoing in-situ backfill operations is to reduce the void space as much as possible, reducing the likelihood of future raveling of the roof structure causing either surface subsidence or the migration of pressurized brine into the immediately overlying groundwater aquifer.
28. The Cavity currently exists in a state of partial collapse. The roof structure over the void space appears to have partially but substantially collapsed between 2000 and 2010.
29. In 2019, backfill operations utilizing the EMNRD’s selected grout method commenced as planned, stabilizing the southern extent of the Cavity.
30. In December of 2019, EMNRD became aware of the previously undetected void space within the northern extent of the Cavity, exceeding an additional 98,000 cubic yards. EMNRD switched from grout to sand backfill to address the increased void space in the northern portion of the Cavity.
31. After backfilling the Cavity with more than 100,000 cubic yards of sand, EMNRD determined that a significant percentage of the injected sand had settled into open spaces in the rubble pile on the floor of the Cavity created by prior roof rockfalls. Wood determined that the backfill operation would require an additional 60,000 cubic

yards of sand at a minimum. The project was temporarily suspended at that time due to a lack of available appropriations.

32. In August of 2020, Wood evaluated the risk currently posed by the partially filled void space. Wood determined that the remaining void in the Cavity still posed the risk of surface subsidence sufficient to damage US 285 and that, more likely, further damage to the roof of the cavity could permit pressurized brine to contaminate the overlying groundwater aquifer.
33. To date, the State of New Mexico, Eddy County, and the City of Carlsbad have invested nearly \$58 million and expect to invest an additional approximately \$24 million to stabilize the Cavity.
34. Remediation is currently projected for completion in Spring of 2022.

**DIVISION RESPONSE TO ACTIVITY NEAR THE CAVITY**

35. On or about April 14, 2021, the Division's Cavity remediation project manager (Jim Griswold) discovered that several wells were planned or had been drilled in proximity to the Cavity.
36. On June 17, 2021, SPC sent a letter to the Division stating its intent to commence drilling the Caveman #402H well in late June or early July 2021 and to complete the well in late September or early October 2021.
37. On June 30, 2021, the Division requested that SPC temporarily suspend its plan to drill and complete the Caveman #402H well for twelve (12) months to allow EMNRD to complete the project to stabilize the Cavity.
38. On July 1, 2021, SPC refused to temporarily suspend drilling and completing the Caveman #402H well.

39. On August 6, 2021, the Division requested that SPC temporarily suspend its plan to drill and complete the Caveman #003H well for twelve (12) months to allow EMNRD to complete the project to stabilize the Cavity.
40. On August 9, 2021, SPC refused to temporarily suspend drilling the Caveman #003H well.

**IMPACT OF SEISMICITY AND PRESSURE ON THE CAVITY**

41. On March 26, 2020, a Magnitude 5.0 seismic event occurred approximately 75 kilometers from the Carlsbad Brine Well.
42. Wood conducted sonar surveys of the Cavity in February and May of 2020. The surveys documented apparent changes in the void space occurring between the surveys.
43. The March 26, 2020 seismic event is likely to have caused significant roof fall or additional rubble pile settlement within the Cavity.
44. Seismic events have been detected at the Cavity and regional seismic activity is rapidly increasing.
45. Geological displacements caused by seismic activity can have a cumulative effect on the Cavity and EMNRD's ongoing efforts to stabilize it.
46. Drilling and completion activities have the potential to impact the stability of the unremediated Cavity.
47. Lower magnitude seismic events which occur closer to an area of concern can cause similar "Ground Motion Particle Velocity" as would be caused by larger magnitude events occurring farther away from the area of concern. For instance, a Magnitude 3.0

- event with a hypocenter distance of 3.3 kilometers will have an effect similar to a Magnitude 5.0 event occurring at a distance of 75 kilometers.
48. Seismic events can impact the structural integrity of the Cavity.
  49. Operators conducted drilling and completion activities in proximity to the brine well in March and April of 2021.
  50. The brine well experienced a change in annulus pressure at the Eugenie #1 well that appears to correlate to the drilling operations.
  51. Changes in formation hydraulic pressures around the cavity due to imposed drilling fluid pressures can impact the structural integrity of the cavity and EMNRD's ability to successfully complete Cavity remediation.
  52. The cumulative impact of seismic events, formation pressure changes, and pressure changes within the Cavity can impact the structural integrity of the Cavity.
  53. Drilling and completion activities associated with oil and gas production within the acreage affected by Order R-21096 could impact the structural integrity of the cavity, posing a risk to surface development and the overlying groundwater aquifer.

#### **CONCLUSIONS OF LAW**

54. Pursuant to NMSA 1978, § 70-2-6, the Division has jurisdiction over the parties and the subject matter herein.
55. The Division is authorized to make orders "to prevent crude petroleum oil, natural gas or water from escaping from strata in which it is found into other strata." NMSA 1978, § 70-2-12(B)(2).

56. The Division is authorized to make orders “to require wells to be drilled, operated and produced in such manner as to prevent injury to neighboring leases or properties.”  
NMSA 1978, § 70-2-12(B)(7).
57. SPC’s intent to drill and complete any well within the acreage affected by Order R-21096 poses a clear and immediate risk of harm to the stability of the Cavity and the successful completion of the ongoing Carlsbad Brine Well remediation project.
58. SPC’s intent to drill and complete any well within the acreage affected by Order R-21096 poses a clear and immediate risk of harm to surface development and the groundwater aquifer overlying the Cavity.
59. Based on testimony and evidence presented, the Director finds that SPC’s proposed activity, as well as any drilling or completion activities occurring within three miles of the Cavity, must be suspended until such time as the Division determines the remediation is completed and the Cavity sufficiently stabilized.

**ORDER**

60. Order R-21096 is suspended until such time as the Director determines that drilling and/or completion activities may commence.
61. SPC’s APDs for the Caveman #402H Well and the Caveman #003H Well are suspended, until such time as:
- a. The remediation of the Carlsbad Brine Well project is complete,
  - b. The Cavity is considered stabilized, and
  - c. The Director or her delegate has provided written confirmation to SPC that drilling and/or completion activities may commence, which confirmation shall be

provided 10 business days after the conditions in subparagraphs 61(a) and (b) above have been met.

62. SPC's APDs for Caveman #402H Well and the Caveman #003H Well are amended to include the following conditions, applicable to commencement of activity after stabilization of the Cavity:

- a. The APD is suspended, until such time as:
  - i. The remediation of the Carlsbad Brine Well project is complete,
  - ii. The Cavity is considered stabilized, and
  - iii. The Director or her delegate has provided written confirmation to SPC that drilling and/or completion activities may commence, which confirmation shall be provided 10 business days after the conditions in subparagraphs 62(a)(i) and (ii) above have been met.
- b. SPC shall provide notice to the Division of any drilling or completion activities at the Caveman #402H Well and the Caveman #003H Well either (i) 60 days prior to the start of such activities when possible, or (ii) if such activities are planned to start in less than 60 days, within 72 hours of scheduling drilling or completion activities. However, in all instances, the notice shall be provided at least 14 days prior to the start of any such activities.
- c. The Division retains the right to require the cessation of any drilling or completion activities associated with the permits due to concerns about potential impacts to ongoing or completed remediation activities at the Carlsbad Brine Well,

- i. If the Division orders cessation pursuant to this provision, the Division shall do so in a written communication (email is sufficient) simultaneously submitted to SPC that contains a high-level rationale for the Division's cessation order. The duration of the initial period for such cessation may be as follows:
  1. up to 45 days if SPC is more than 45 days from starting actual drilling or completion activities; or
  2. if SPC is within 45 days from starting actual drilling or completion activities, or is conducting actual drilling or completion activities, the initial period of cessation shall be limited to 72 hours (not including weekend or holiday time)
  3. whichever cessation period in subparagraphs 62(c)(i)(1) or (2) applies shall be referred to hereafter as the "Initial Period".
- ii. If the Division's concerns, as summarized in its written communication, are not resolved to the Division's satisfaction in its sole discretion during the Initial Period (up to 45 days or 72 hours, whichever is applicable), the Division may extend any such cessation until the earlier of (i) 45 additional days or (ii) a hearing before the Division; provided, however, that no cessation shall be authorized for a cumulative period of more than 90 days without a Division hearing.
- iii. During the Initial Period or any extension thereof, the Division and SPC shall discuss the Division's rationale for the cessation order and make a

good faith effort to determine whether SPC's current or planned operations can be carried out in a manner satisfactory to the Division.

- 63. Suspension of Order R-21096 and the APDs is effective as of the date of the Division's Emergency Order, July 2, 2021.
- 64. All deadlines associated with Order R-21096 and the APDs are tolled, effective July 2, 2021, until such time as the Director notifies SPC that drilling and/or completion activities may commence.
- 65. SPC may not commence any drilling or completion activities at any depth within the acreage affected by Order R-21096 until such time as the Director or her delegate notifies SPC that activities may commence. The Division will provide notice to SPC of the Division's determination that activities may commence at the same time it provides notice pursuant to paragraph 61.c.
- 66. The Division retains jurisdiction of this matter for the entry of such further orders as it may deem necessary.

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

  
ADRIENNE SANDOVAL  
DIRECTOR  
AES/bb

Date: 10/19/2021

State of New Mexico  
Energy, Minerals and Natural Resources Department

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Michelle Lujan Grisham  
Governor

Sarah Cottrell Propst  
Cabinet Secretary

Todd E. Leahy, JD, PhD  
Deputy Cabinet Secretary

Adrienne Sandoval Director  
Oil Conservation Division



July 7, 2022

By Electronic Mail

**Notice of Resumption of Certain Drilling and Completion Activity in Proximity to the Carlsbad Brine Well**

Dear Operators:

You are receiving this notice because you are the registered Operator of well(s) affected by temporary restrictions on drilling and completion activities planned within five miles of the Carlsbad Brine Well ("backfilled void"). These include activities affected by Division Orders R-21888, R-22063, R-21100-B, R-21104-C, and R-21123-C, or restricted by Conditions of Approval ("COAs") attached to Applications for Permits to Drill ("APDs") approved after July 2, 2021. This announces that such activities may resume at certain facilities, subject to the conditions detailed below.

Effective immediately, the Director of the Oil Conservation Division has determined that drilling and completion activities associated with oil and gas production may resume *outside of a one-mile radius* of the backfilled void. Wells, or any portion of wells, or any activity, planned within one mile of the backfilled void *may not* resume activity at this time.

The Conditions of Approval identified remain in effect and OCD intends to administer them as follows for activities outside of a one-mile radius:

- OCD requires that operators continue to comply with all notice requirements as prescribed in the applicable Division Order or COAs.
- Certain COAs required operators to submit notification of drilling or completion activities to OCD, subject to OCD approval. Operators may consider such activities approved by OCD *once operator complies with applicable notification requirements for activities outside of a one-mile radius of the backfilled void.*
- While OCD is requiring that operators continue to provide notice of planned drilling and completion activities within five miles of the backfilled void for informational and planning purposes, OCD does not intend to restrict or delay the planned activity occurring between one and five miles of the backfilled void.

This Notice is effective immediately, please contact Jesse Tremaine at [JesseK.Tremaine@state.nm.us](mailto:JesseK.Tremaine@state.nm.us) or (505) 231-9312 with any questions about this Notice, affected Division Orders, COAs, or individual activities.

Sincerely,

Adrienne Sandoval  
Director

**EXHIBIT E**