

District I
1625 N French Dr., Hobbs, NM 88249
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

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OCT 03 2012

NMOCD ARTESIA

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

Form C-144 CLEZ
July 21, 2008

For closed-loop systems that only use above ground steel tanks or haul-off bins and propose to implement waste removal for closure, submit to the appropriate NMOCD District Office.

Closed-Loop System Permit or Closure Plan Application

(that only use above ground steel tanks or haul-off bins and propose to implement waste removal for closure)

Type of action: ☒ Permit ☐ Closure

Instructions: Please submit one application (Form C-144 CLEZ) per individual closed-loop system request. For any application request other than for a closed-loop system that only use above ground steel tanks or haul-off bins and propose to implement waste removal for closure, please submit a Form C-144.

Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

1. Operator: Devon Energy Production Co., LP OGRID #: 6137
Address: 333 W. Sheridan OKC, OK 73102-8260
Facility or well name: Lava Tube "27" State 1H
API Number 30-015-40786 OCD Permit Number: 213541
U/L or Qtr/Qtr B Section 34 Township 21 S Range 31 E County: Eddy County, NM
Center of Proposed Design: Latitude _____ Longitude _____ NAD: ☐ 1927 ☐ 1983
Surface Owner: ☐ Federal ☒ State ☐ Private ☐ Tribal Trust or Indian Allotment

2. ☒ **Closed-loop System:** Subsection H of 19.15.17.11 NMAC
Operation: ☒ Drilling a new well ☐ Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent) ☐ P&A
☒ Above Ground Steel Tanks or ☒ Haul-off Bins

3. **Signs:** Subsection C of 19.15.17.11 NMAC
☐ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers
☒ Signed in compliance with 19.15.3.103 NMAC

4. **Closed-loop Systems Permit Application Attachment Checklist:** Subsection B of 19.15.17.9 NMAC
Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.
☒ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
☒ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
☒ Closure Plan (Please complete Box 5) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
☐ Previously Approved Design (attach copy of design) API Number: _____
☐ Previously Approved Operating and Maintenance Plan API Number: _____

5. **Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only:** (19.15.17.13.D NMAC)
Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment if more than two facilities are required.
Disposal Facility Name: CRI Disposal Facility Permit Number: R9166
Disposal Facility Name: _____ Disposal Facility Permit Number: _____
Will any of the proposed closed-loop system operations and associated activities occur on or in areas that will not be used for future service and operations?
☐ Yes (If yes, please provide the information below) ☒ No
Required for impacted areas which will not be used for future service and operations:
☐ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

6. **Operator Application Certification:**
I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.
Name (Print): Patti Riechers Title: Regulatory Specialist
Signature: Patti Riechers Date: 10/01/2012
e-mail address: Patti.Riechers@dvn.com Telephone: 405.228.4248

7. **OCD Approval:** ☒ Permit Application (including closure plan) ☐ Closure Plan (only)

OCD Representative Signature: AR Dade Approval Date: 10/11/12

Title: Dist H Supervisor OCD Permit Number: 213541

8. **Closure Report (required within 60 days of closure completion):** Subsection K of 19.15.17.13 NMAC

Instructions: Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closure report. The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete this section of the form until an approved closure plan has been obtained and the closure activities have been completed.

☐ Closure Completion Date: _____

9. **Closure Report Regarding Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only:**

Instructions: Please indentify the facility or facilities for where the liquids, drilling fluids and drill cuttings were disposed. Use attachment if more than two facilities were utilized.

Disposal Facility Name: _____ Disposal Facility Permit Number: _____

Disposal Facility Name: _____ Disposal Facility Permit Number: _____

Were the closed-loop system operations and associated activities performed on or in areas that *will not* be used for future service and operations?

☐ Yes (If yes, please demonstrate compliance to the items below) ☐ No

Required for impacted areas which will not be used for future service and operations:

☐ Site Reclamation (Photo Documentation)

☐ Soil Backfilling and Cover Installation

☐ Re-vegetation Application Rates and Seeding Technique

10. **Operator Closure Certification:**

I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.

Name (Print): _____ Title: _____

Signature: _____ Date: _____

e-mail address: _____ Telephone: _____

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State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised October 15, 2009
Submit one copy to appropriate
District Office
☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number	² Pool Code	³ Pool Name Lost Tank; Wolfcamp
⁴ Property Code	⁵ Property Name LAVA TUBE "27" STATE	⁶ Well Number 1H
⁷ OGRID No. 6137	⁸ Operator Name DEVON ENERGY PRODUCTION COMPANY, L.P.	⁹ Elevation 3491.5

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	34	21 S	31 E		1015	NORTH	1655	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

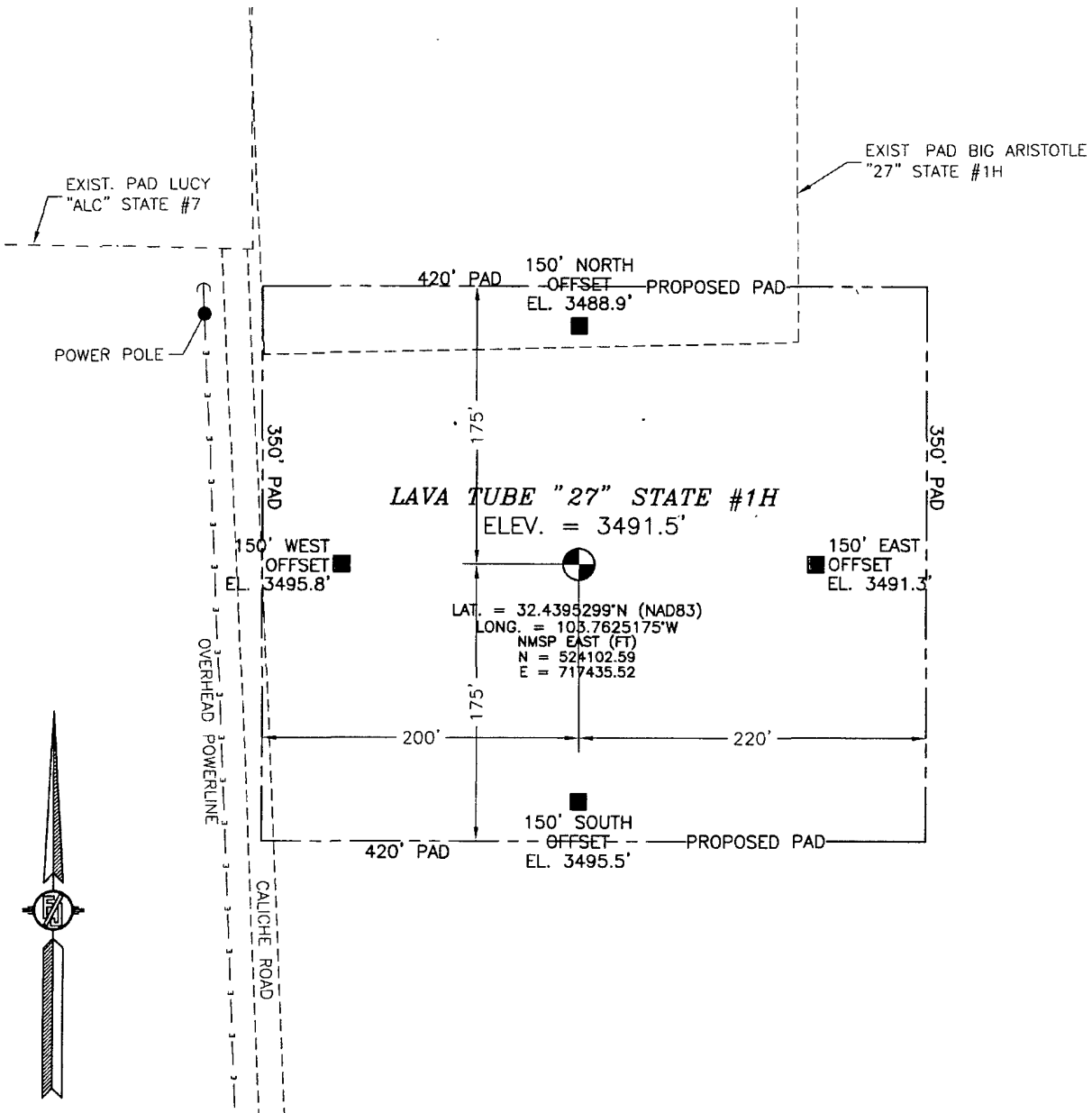
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	27	21 S	31 E		330	NORTH	1980	EAST	EDDY

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
320			

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.

		¹⁷ 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. <i>Patti Riechers</i> 10/1/12 Signature Date Printed Name Patti Riechers 10/01/2012
¹⁸ 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. JUNE 5, 2011 Date of Survey <i>[Signature]</i> Signature and Seal of Professional Surveyor Certificate Number: 511100041 LARANUT, PLS 12797 SURVEY NO 1073		

SECTION 34, TOWNSHIP 21 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO



010 50 100 200

SCALE 1" = 100'

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF HOBBS HIGHWAY 62/180 AND LOUIS WHITLOCK ROAD GO SOUTH ON LOUIS WHITLOCK ROAD 7.75 MILES (0.69 MILES PAST MILE MARKER 8) TO CALICHE LEASE ROAD ON LEFT, GO EAST ON CALICHE LEASE ROAD 0.1 MILES TO FIRST CALICHE ROAD ON LEFT, GO NORTH ON CALICHE LEASE ROAD 0.7 MILES, SITE IS ABOUT 200 FT ON RIGHT (EAST).

DEVON ENERGY PRODUCTION COMPANY, L.P.

LAVA TUBE "27" STATE #1H

LOCATED 1015 FT. FROM THE NORTH LINE

AND 1655 FT. FROM THE EAST LINE OF

SECTION 34, TOWNSHIP 21 SOUTH,

RANGE 31 EAST, N.M.P.M.

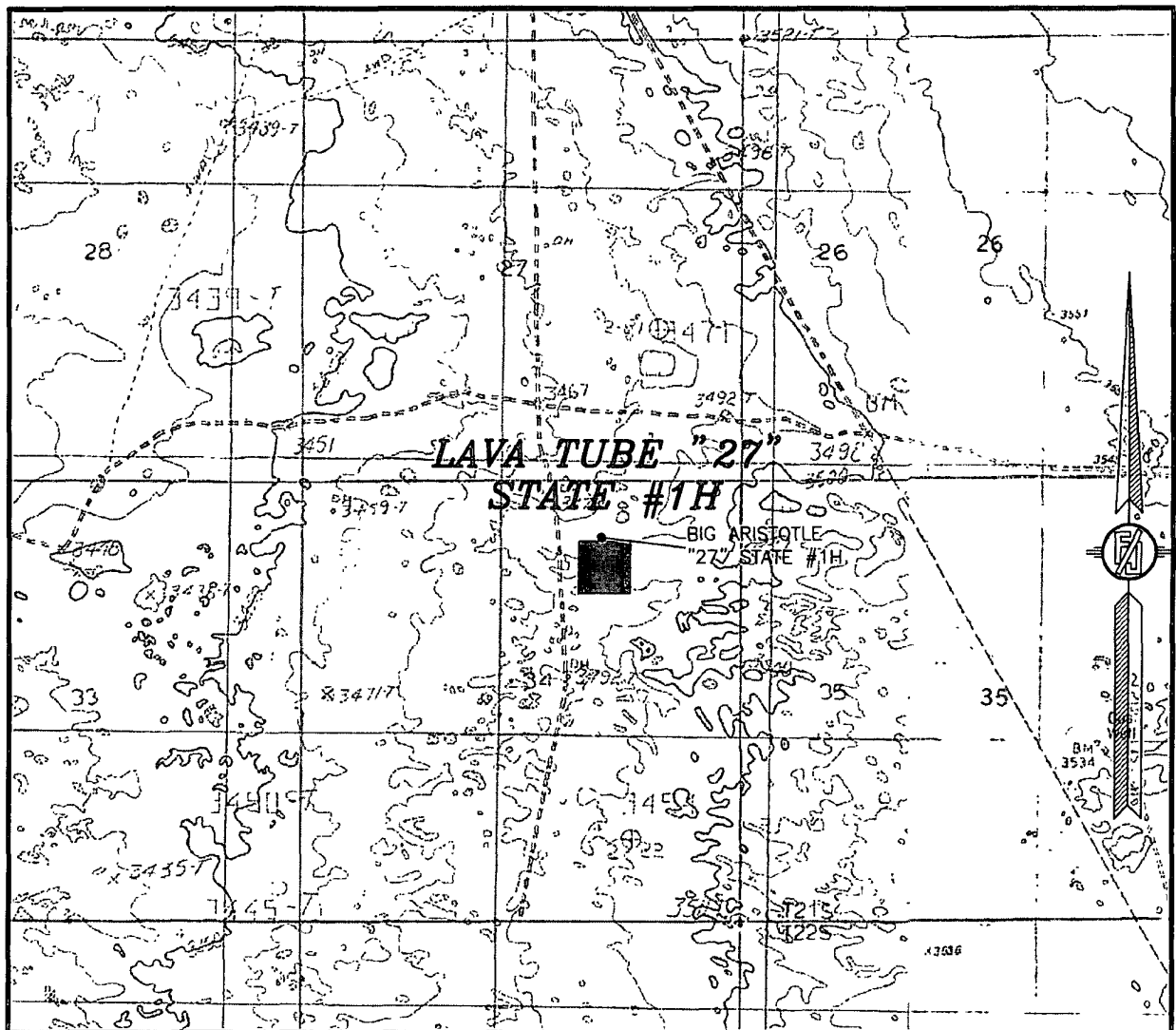
EDDY COUNTY, STATE OF NEW MEXICO

JUNE 5, 2012

SURVEY NO. 1073

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

SECTION 34, TOWNSHIP 21 SOUTH, RANGE 31 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 LOCATION VERIFICATION MAP



USGS QUAD MAP:
 LIVINGSTON RIDGE

NOT TO SCALE

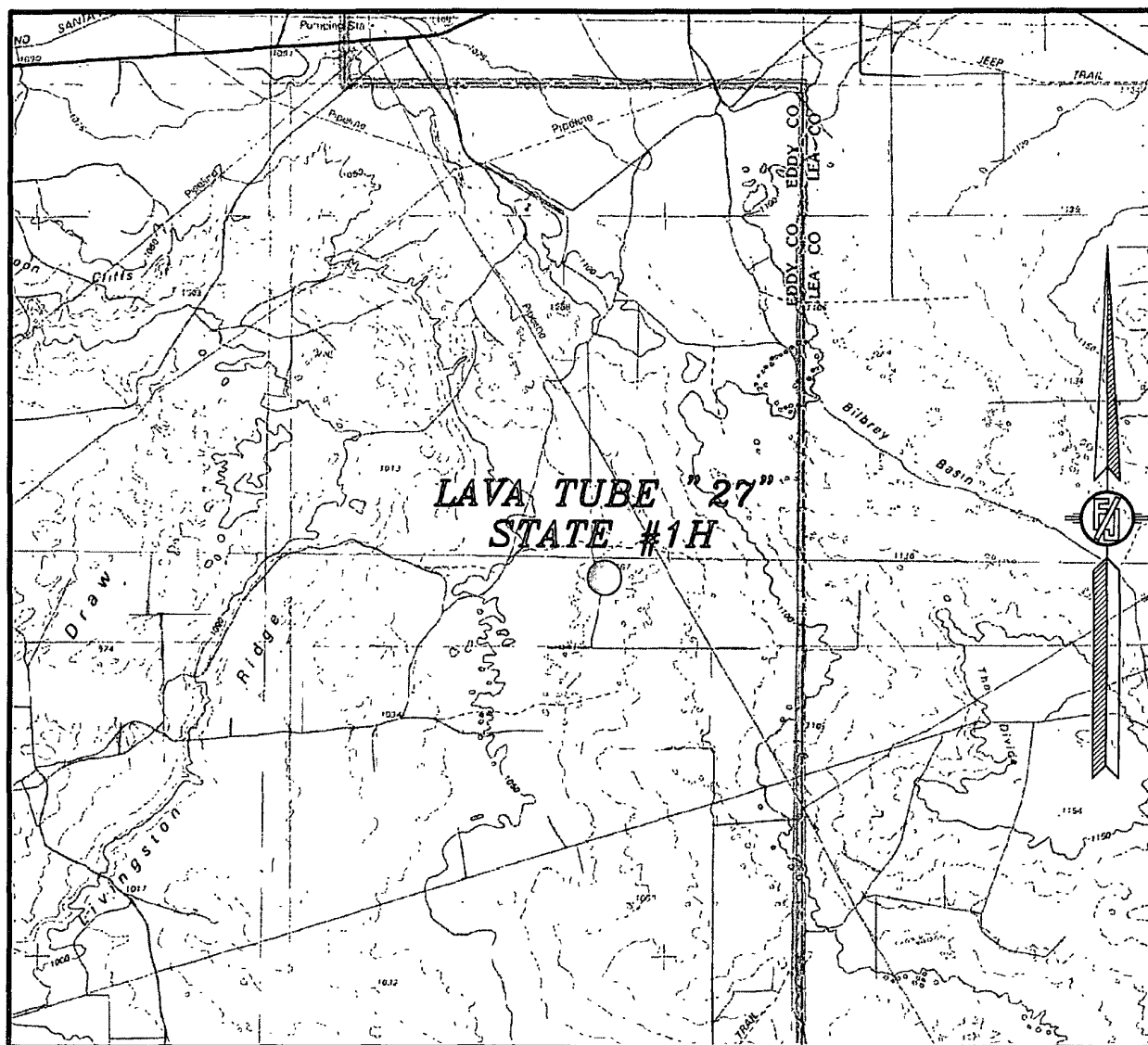
DEVON ENERGY PRODUCTION COMPANY, L.P.
LAVA TUBE "27" STATE #1H
 LOCATED 1015 FT. FROM THE NORTH LINE
 AND 1655 FT. FROM THE EAST LINE OF
 SECTION 34, TOWNSHIP 21 SOUTH,
 RANGE 31 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

JUNE 5, 2012

SURVEY NO. 1073

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
 (575) 234-3341

SECTION 34, TOWNSHIP 21 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
VICINITY MAP



NOT TO SCALE

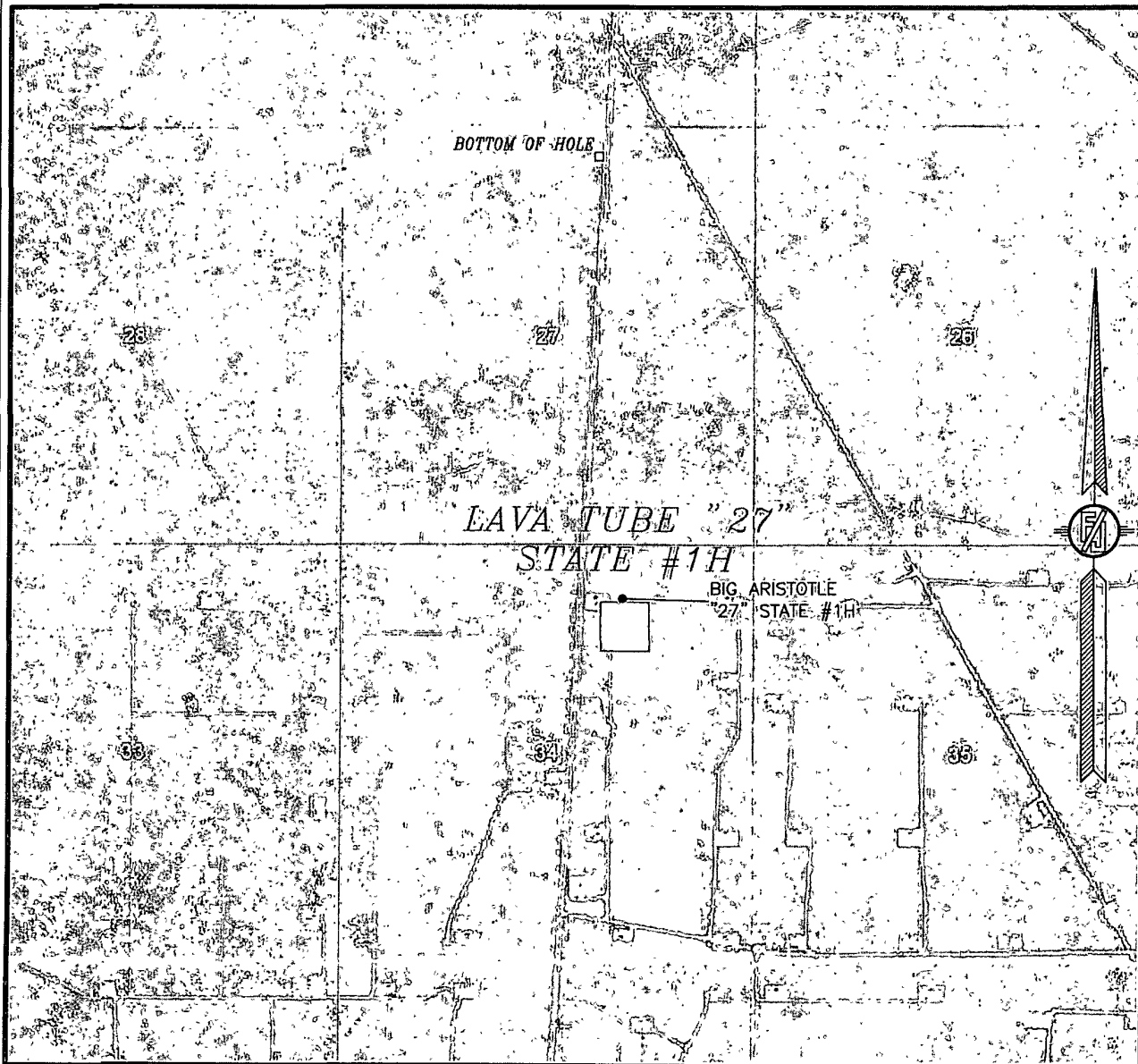
DEVON ENERGY PRODUCTION COMPANY, L.P.
LAVA TUBE "27" STATE #1H
LOCATED 1015 FT. FROM THE NORTH LINE
AND 1655 FT. FROM THE EAST LINE OF
SECTION 34, TOWNSHIP 21 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

JUNE 5, 2012

SURVEY NO. 1073

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

SECTION 34, TOWNSHIP 21 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
MARCH 2012

DEVON ENERGY PRODUCTION COMPANY, L.P.

LAVA TUBE "27" STATE #1H

LOCATED 1015 FT. FROM THE NORTH LINE
AND 1655 FT. FROM THE EAST LINE OF
SECTION 34, TOWNSHIP 21 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

JUNE 5, 2012

SURVEY NO. 1073

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

Devon Energy Corporation

HALLIBURTON | Sperry Drilling



Project: Eddy County, NM (NAD 83)
Site: Lava Tube 27 State
Well: Lava Tube 27 State 1H
Wellbore: Wellbore #1
Plan: Plan #1
Rig: Original Well Elev

SURFACE LOCATION

US State Plane 1983
 New Mexico Eastern Zone
 Elevation: GL 3491.5' + 25'KB @ 3516.50ft (Original Well Elev)
Northing 524102.59 **Easting** 717435.52 **Latitude** 32° 26' 22.308 N **Longitude** 103° 45' 45.063 W

CASING DETAILS

No casing data is available

SECTION DETAILS

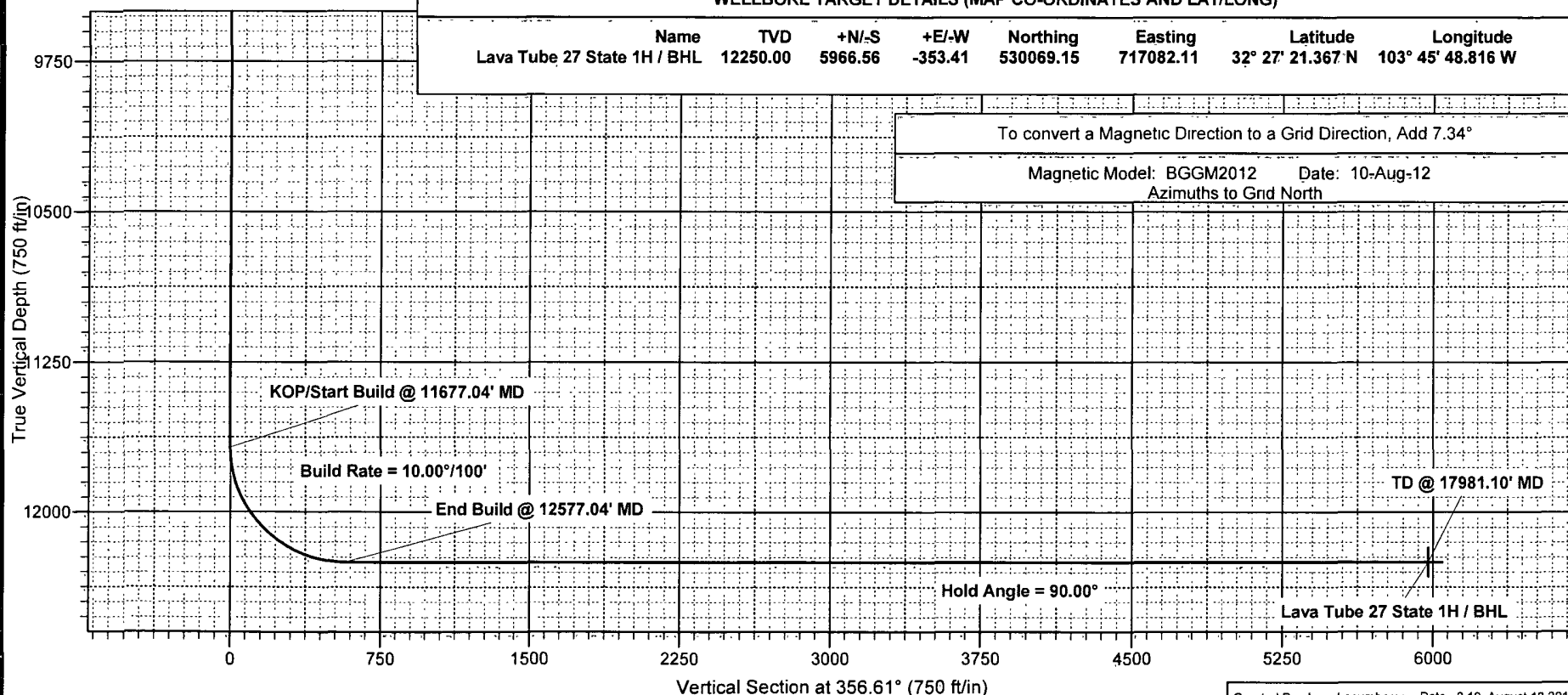
MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11677.04	0.00	0.00	11677.04	0.00	0.00	0.00	0.00	0.00	KOP/Start Build
12577.04	90.00	356.61	12250.00	571.96	-33.88	10.00	356.61	572.96	End Build
17981.10	90.00	356.61	12250.00	5966.56	-353.41	0.00	0.00	5977.02	TD

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Lava Tube 27 State 1H / BHL	12250.00	5966.56	-353.41	530069.15	717082.11	32° 27' 21.367 N	103° 45' 48.816 W

To convert a Magnetic Direction to a Grid Direction, Add 7.34°

Magnetic Model: BGGM2012 Date: 10-Aug-12
 Azimuths to Grid North



Project: Eddy County, NM (NAD 83)
Site: Lava Tube 27 State
Well: Lava Tube 27 State 1H
Wellbore: Wellbore #1
Plan: Plan #1
Rig: Original Well Elev

SURFACE LOCATION

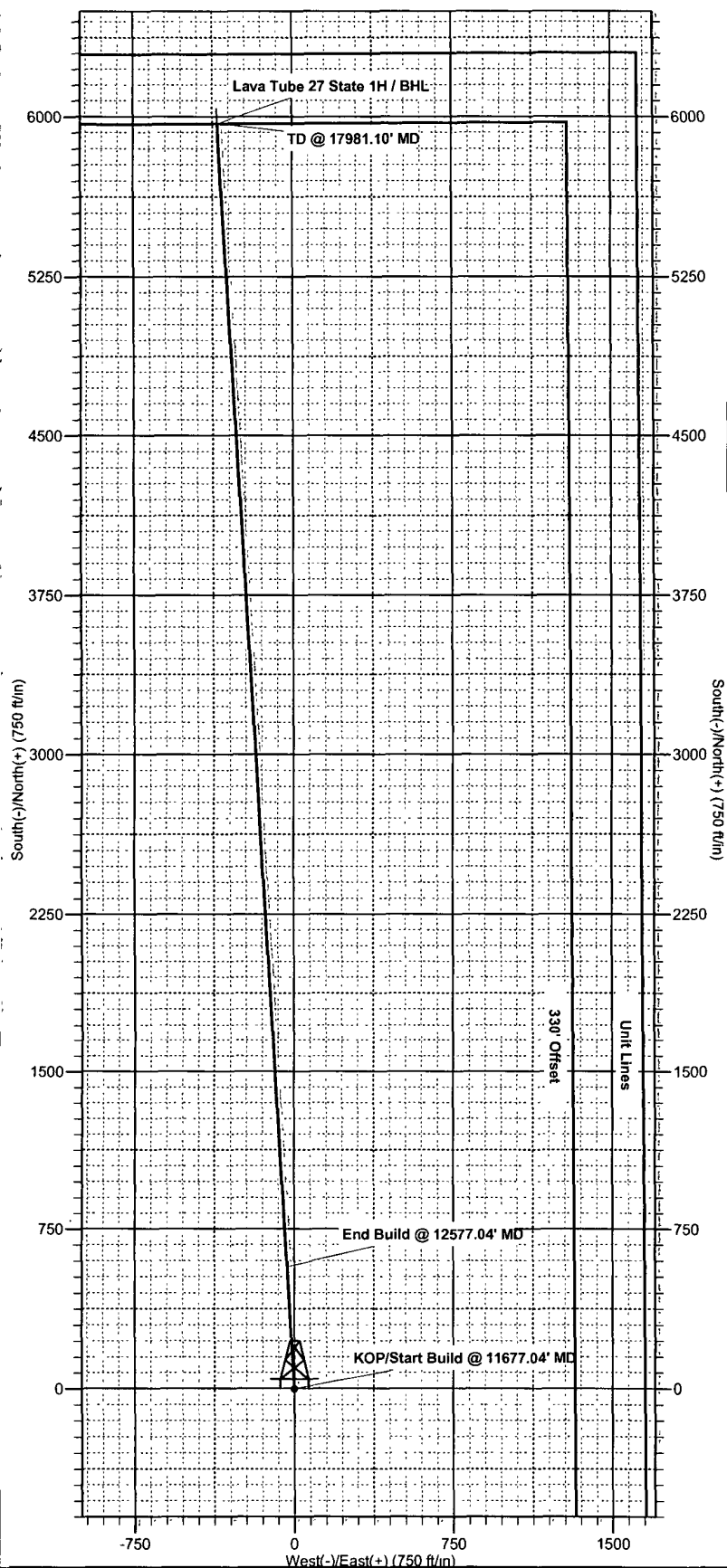
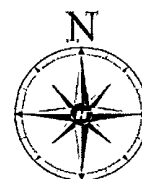
US State Plane 1983
 New Mexico Eastern Zone
 Elevation: GL 3491 5' + 25'KB @ 3516 50ft (Original Well Elev)

Northing	Easting	Latitude	Longitude
524102 59	717435 52	32° 26' 22 308 N	103° 45' 45 063 W

To convert a Magnetic Direction to a Grid Direction, Add 7 34°

Magnetic Model BGGM2012 Date: 10-Aug-12
 Azimuths to Grid North

devon



Devon Energy Corporation

Eddy County, NM (NAD 83)

Lava Tube 27 State

Lava Tube 27 State 1H

Wellbore #1

Plan: Plan #1

Sperry Drilling Services Proposal Report

13 August, 2012

Well Coordinates 524,102 59 N, 717,435 52 E (32° 26' 22 31" N, 103° 45' 45 06" W)

Ground Level: 3,491 50 ft

Local Coordinate Origin

Centered on Well Lava Tube 27 State 1H

Viewing Datum.

GL 3491.5' + 25'KB @ 3516 50ft (Original Well Elev)

TVDs to System

N

North Reference

Gnd

Unit System

API - US Survey Feet

Version 2003 16 Build 43I

HALLIBURTON

Plan Report for Lava Tube 27 State 1H - Plan #1

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
11,677 04	0 00	0 00	11,677 04	0 00	0 00	0 00	0 00	0 00	0 00	0 00
KOP/Start Build @ 11677.04' MD										
11,677 05	0 00	356 61	11,677 05	0 00	0 00	0 00	0 00	0 00	0 00	356.61
Build Rate = 10.00°/100'										
11,700 00	2 30	356 61	11,699 99	0 46	-0 03	0 46	10 00	10 00	0 00	356 61
11,800 00	12 30	356 61	11,799 06	13 12	-0 78	13 14	10 00	10 00	0 00	0 00
11,900 00	22 30	356 61	11,894 42	42 76	-2 53	42 84	10 00	10 00	0 00	0 00
12,000 00	32 30	356 61	11,983 17	88 48	-5 24	88 64	10 00	10 00	0 00	0 00
12,100 00	42 30	356 61	12,062 62	148 89	-8 82	149 15	10 00	10 00	0 00	0 00
12,200 00	52 30	356 61	12,130 35	222 16	-13 16	222 55	10 00	10 00	0 00	0 00
12,300 00	62 30	356 61	12,184 32	306 05	-18 13	306 59	10 00	10 00	0 00	0 00
12,400 00	72 30	356 61	12,222 86	398 02	-23 58	398 72	10 00	10 00	0 00	0 00
12,500 00	82 30	356 61	12,244 83	495 28	-29 34	496 15	10 00	10 00	0 00	0 00
12,577 04	90 00	356 61	12,250 00	571 96	-33 88	572 96	10 00	10 00	0 00	0 00
End Build @ 12577.04' MD - Hold Angle = 90.00°										
12,600 00	90 00	356 61	12,250 00	594.87	-35 24	595 92	0 00	0 00	0 00	0 00
12,700 00	90 00	356 61	12,250 00	694.70	-41 15	695 92	0 00	0 00	0 00	0 00
12,800 00	90 00	356 61	12,250 00	794.52	-47 06	795 92	0 00	0 00	0 00	0 00
12,900 00	90 00	356 61	12,250 00	894 35	-52 97	895 92	0 00	0 00	0 00	0 00
13,000 00	90 00	356 61	12,250 00	994.17	-58 89	995 92	0 00	0 00	0 00	0 00
13,100 00	90 00	356 61	12,250 00	1,094 00	-64 80	1,095 92	0 00	0 00	0 00	0 00
13,200 00	90 00	356 61	12,250 00	1,193 82	-70 71	1,195 92	0 00	0 00	0 00	0 00
13,300 00	90 00	356 61	12,250 00	1,293 65	-76 63	1,295 92	0 00	0 00	0 00	0 00
13,400 00	90 00	356 61	12,250 00	1,393 47	-82 54	1,395 92	0 00	0 00	0 00	0 00
13,500 00	90 00	356 61	12,250 00	1,493 30	-88 45	1,495 92	0 00	0 00	0 00	0 00
13,600 00	90 00	356 61	12,250 00	1,593 12	-94 36	1,595 92	0 00	0 00	0 00	0 00
13,700 00	90 00	356 61	12,250 00	1,692 95	-100 28	1,695 92	0 00	0 00	0 00	0 00
13,800 00	90 00	356 61	12,250 00	1,792 77	-106 19	1,795 92	0 00	0 00	0 00	0 00
13,900 00	90 00	356 61	12,250 00	1,892 60	-112 10	1,895 92	0 00	0 00	0 00	0 00
14,000 00	90 00	356 61	12,250 00	1,992 42	-118 01	1,995 92	0 00	0 00	0 00	0 00
14,100 00	90 00	356 61	12,250 00	2,092 25	-123 93	2,095 92	0 00	0 00	0 00	0 00
14,200 00	90 00	356 61	12,250 00	2,192 07	-129 84	2,195 92	0 00	0 00	0 00	0 00
14,300 00	90 00	356 61	12,250 00	2,291 90	-135 75	2,295 92	0 00	0 00	0 00	0 00
14,400 00	90 00	356 61	12,250 00	2,391 72	-141 67	2,395 92	0 00	0 00	0 00	0 00
14,500 00	90 00	356 61	12,250 00	2,491 55	-147 58	2,495 92	0 00	0 00	0 00	0 00
14,600 00	90 00	356 61	12,250 00	2,591 37	-153 49	2,595 92	0 00	0 00	0 00	0 00
14,700 00	90 00	356 61	12,250 00	2,691 20	-159 40	2,695 92	0 00	0 00	0 00	0 00
14,800 00	90 00	356 61	12,250 00	2,791 02	-165 32	2,795 92	0 00	0 00	0 00	0 00
14,900 00	90 00	356 61	12,250 00	2,890 85	-171 23	2,895 92	0 00	0 00	0 00	0 00
15,000 00	90 00	356 61	12,250 00	2,990 67	-177 14	2,995 92	0 00	0 00	0 00	0 00
15,100 00	90 00	356 61	12,250 00	3,090 50	-183 06	3,095 92	0 00	0 00	0 00	0 00
15,200 00	90 00	356 61	12,250 00	3,190 32	-188 97	3,195 92	0 00	0 00	0 00	0 00
15,300 00	90 00	356 61	12,250 00	3,290 15	-194 88	3,295 92	0 00	0 00	0 00	0 00
15,400 00	90 00	356 61	12,250 00	3,389 97	-200 79	3,395 92	0 00	0 00	0 00	0 00
15,500 00	90 00	356 61	12,250 00	3,489 80	-206 71	3,495 92	0 00	0 00	0 00	0 00
15,600 00	90 00	356 61	12,250 00	3,589 62	-212 62	3,595 92	0 00	0 00	0 00	0 00
15,700 00	90 00	356 61	12,250 00	3,689 45	-218 53	3,695 92	0 00	0 00	0 00	0 00
15,800 00	90 00	356 61	12,250 00	3,789 27	-224 45	3,795 92	0 00	0 00	0 00	0 00
15,900 00	90 00	356 61	12,250 00	3,889 10	-230 36	3,895 92	0 00	0 00	0 00	0 00
16,000 00	90 00	356 61	12,250 00	3,988 92	-236 27	3,995 92	0 00	0 00	0 00	0 00
16,100 00	90 00	356 61	12,250 00	4,088 75	-242 18	4,095 92	0 00	0 00	0 00	0 00
16,200 00	90 00	356 61	12,250 00	4,188 57	-248 10	4,195 92	0 00	0 00	0 00	0 00
16,300 00	90 00	356 61	12,250 00	4,288 40	-254 01	4,295 92	0 00	0 00	0 00	0 00
16,400 00	90 00	356 61	12,250 00	4,388 22	-259 92	4,395 92	0 00	0 00	0 00	0 00
16,500 00	90 00	356 61	12,250 00	4,488 05	-265 84	4,495 92	0 00	0 00	0 00	0 00
16,600 00	90 00	356 61	12,250 00	4,587 87	-271 75	4,595 92	0 00	0 00	0 00	0 00
16,700 00	90 00	356 61	12,250 00	4,687 70	-277 66	4,695 92	0 00	0 00	0 00	0 00

Plan Report for Lava Tube 27 State 1H - Plan #1

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
16,800.00	90.00	356.61	12,250.00	4,787.52	-283.57	4,795.92	0.00	0.00	0.00	0.00
16,900.00	90.00	356.61	12,250.00	4,887.35	-289.49	4,895.92	0.00	0.00	0.00	0.00
17,000.00	90.00	356.61	12,250.00	4,987.17	-295.40	4,995.92	0.00	0.00	0.00	0.00
17,100.00	90.00	356.61	12,250.00	5,087.00	-301.31	5,095.92	0.00	0.00	0.00	0.00
17,200.00	90.00	356.61	12,250.00	5,186.82	-307.22	5,195.92	0.00	0.00	0.00	0.00
17,300.00	90.00	356.61	12,250.00	5,286.65	-313.14	5,295.92	0.00	0.00	0.00	0.00
17,400.00	90.00	356.61	12,250.00	5,386.47	-319.05	5,395.92	0.00	0.00	0.00	0.00
17,500.00	90.00	356.61	12,250.00	5,486.30	-324.96	5,495.92	0.00	0.00	0.00	0.00
17,600.00	90.00	356.61	12,250.00	5,586.12	-330.88	5,595.92	0.00	0.00	0.00	0.00
17,700.00	90.00	356.61	12,250.00	5,685.95	-336.79	5,695.92	0.00	0.00	0.00	0.00
17,800.00	90.00	356.61	12,250.00	5,785.78	-342.70	5,795.92	0.00	0.00	0.00	0.00
17,900.00	90.00	356.61	12,250.00	5,885.60	-348.61	5,895.92	0.00	0.00	0.00	0.00
17,981.10	90.00	356.61	12,250.00	5,966.56	-353.41	5,977.02	0.00	0.00	0.00	0.00

Lava Tube 27 State 1H / BHL

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
11,677.04	11,677.04	0.00	0.00	KOP/Start Build @ 11677 04' MD
11,677.05	11,677.05	0.00	0.00	Build Rate = 10.00°/100'
12,577.04	12,250.00	571.95	-33.88	End Build @ 12577 04' MD
12,577.04	12,250.00	571.96	-33.88	Hold Angle = 90.00°
17,981.10	12,250.00	5,966.56	-353.41	TD @ 17981 10' MD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	Origin +E/-W (ft)	Start TVD (ft)
TD	No Target (Freehand)	356.61	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	17,981.10	Plan #1	MWD

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Lava Tube 27 State 1H / BHL	12,250.00	5,966.56	-353.41	Point

North Reference Sheet for Lava Tube 27 State - Lava Tube 27 State 1H - Wellbore

#1

All data is in US Feet unless otherwise stated Directions and Coordinates are relative to Gnd North Reference

Vertical Depths are relative to GL 3491.5' + 25'KB @ 3516.50ft (Original Well Elev) Northing and Easting are relative to Lava Tube 27 State 1H

Coordinate System is US State Plane 1983, New Mexico Eastern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is -104.33°, Longitude Origin 0° 0' 0.000 E°, Latitude Origin 0° 0' 0.000 N°

False Easting 541,337 50ft, False Northing 0.00ft, Scale Reduction 0 99994460

Gnd Coordinates of Well 524,102.59 ft N, 717,435.52 ft E

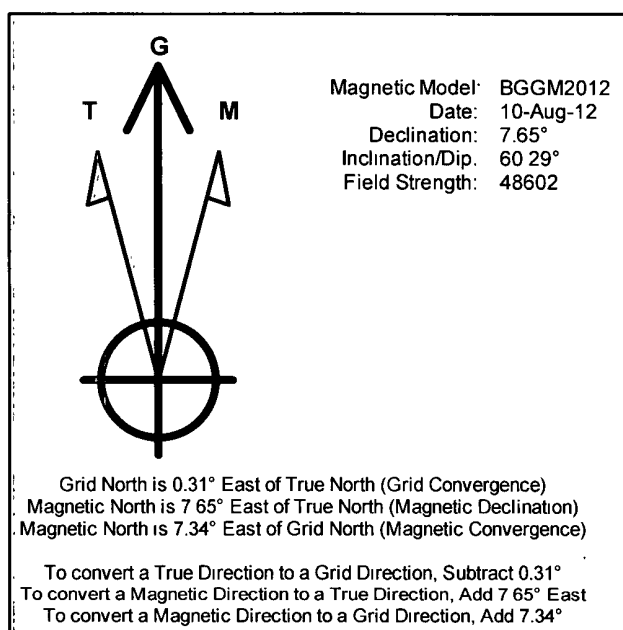
Geographical Coordinates of Well 32° 26' 22 31" N, 103° 45' 45 06" W

Gnd Convergence at Surface is 0.31°

Based upon Minimum Curvature type calculations, at a Measured Depth of 17,981.10ft

the Bottom Hole Displacement is 5,977 02ft in the Direction of 356 61° (Gnd).

Magnetic Convergence at surface is -7 34° (10 August 2012, , BGGM2012)



13-5/8" 3M BOPE & Closed Loop Equipment Schematic

