

Form 3160-5
(June 2019)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2021**SUNDRY NOTICES AND REPORTS ON WELLS**
Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.5. Lease Serial No. **NMNM014155**

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

ADVANCE ENERGY PARTNERS HAT MESA LLC

3a. Address

11490 WESTHEIMER, STE. 950
HOUSTON, TX 77077

3b. Phone No. (include area code)

(346) 444-9739

7. If Unit of CA/Agreement, Name and/or No.

8. Well Name and No.

MARGARITA FEDERAL COM 13/20H

9. API Well No. **3002550128**

10. Field and Pool or Exploratory Area

WC-025 G-10 S2133280;WOLFCAMP

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

SEC 13/T21S/R32E/NMP

11. Country or Parish, State

LEA/NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION				
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off	
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity	
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other	
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon		
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal		

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has detennined that the site is ready for final inspection.)

Requested change to APD as follows:

Move First Take Point From: 1420 FNL & 330 FEL, Section 13, T-21-S, R-32-E

To: 1419 FNL & 1430 FEL, Section 13, T-21-S, R-32-E

Move Bottom Hole Location From: 2540 FNL & 330 FEL, Section 25, T-21-S, R-32-E

To: 2590 FNL & 1430 FEL, Section 25, T-21-S, R-32-E

Change Target Formation From: Wolfcamp Carbonate

To: 3rd Bone Spring Sandstone

Please see attached drill plan, directional plan, and plats for additional information.

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)

CHRISTIE HANNA / Ph: (737) 300-4723

Title Senior Engineering Technician

Signature

Christie Hanna

Date 06/22/2022

THE SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

CHRISTOPHER WALLS / Ph: (575) 234-2234 / Approved

Title Petroleum Engineer

Date 07/06/2022

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office CARLSBAD

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations and reports of such operations when completed as indicated on Federal and Indian lands pursuant to applicable Federal law and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local area or regional procedures and practices, are either shown below, will be issued by or may be obtained from the local Federal office.

SPECIFIC INSTRUCTIONS

Item 4 - Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult the local Federal office for specific instructions.

Item 13: Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by the local Federal office. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to the top of any tubing left in the hole; method of closing top of well and date well site conditioned for final inspection looking for approval of the abandonment. If the proposal will involve **hydraulic fracturing operations**, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. 396; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3, and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c) and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.

ROUTINE USES: Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.

EFFECT OF NOT PROVIDING THE INFORMATION: Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3-4.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM collects this information to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

Response to this request is mandatory.

The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer (WO-630), 1849 C St., N.W., Mail Stop 401 LS, Washington, D.C. 20240

Additional Information

Location of Well

0. SHL: NENE / 460 FNL / 675 FEL / TWSP: 21S / RANGE: 32E / SECTION: 13 / LAT: 32.484914 / LONG: -103.622055 (TVD: 0 feet, MD: 0 feet)

PPP: NESE / 2640 FSL / 330 FEL / TWSP: 21S / RANGE: 32E / SECTION: 24 / LAT: 32.464404 / LONG: -103.620965 (TVD: 11900 feet, MD: 18900 feet)

PPP: NENE / 0 FNL / 330 FEL / TWSP: 21S / RANGE: 32E / SECTION: 24 / LAT: 32.471777 / LONG: -103.620943 (TVD: 11900 feet, MD: 16244 feet)

PPP: SESE / 1320 FSL / 330 FEL / TWSP: 21S / RANGE: 32E / SECTION: 13 / LAT: 32.475295 / LONG: -103.620951 (TVD: 11900 feet, MD: 14934 feet)

PPP: NESE / 2640 FSL / 330 FEL / TWSP: 21S / RANGE: 32E / SECTION: 13 / LAT: 32.478905 / LONG: -103.620886 (TVD: 11900 feet, MD: 13630 feet)

PPP: NENE / 948 FNL / 602 FEL / TWSP: 21S / RANGE: 32E / SECTION: 13 / LAT: 32.4835778 / LONG: -103.6218182 (TVD: 11781 feet, MD: 11859 feet)

BHL: SENE / 2540 FNL / 330 FEL / TWSP: 21S / RANGE: 32E / SECTION: 25 / LAT: 32.450181 / LONG: -103.620981 (TVD: 11900 feet, MD: 24072 feet)

Well Name: MARGARITA FEDERAL COM 13	Well Location: T21S / R32E / SEC 13 / NENE / 32.484914 / -103.622055	County or Parish/State: LEA / NM
Well Number: 20H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM014155	Unit or CA Name:	Unit or CA Number:
US Well Number: 300255012800X1	Well Status: Drilling Well	Operator: ADVANCE ENERGY PARTNERS HAT MESA LLC

Notice of Intent

Sundry ID: 2678345

Type of Submission: Notice of Intent	Type of Action: APD Change
Date Sundry Submitted: 06/22/2022	Time Sundry Submitted: 03:27
Date proposed operation will begin: 06/22/2022	

Procedure Description: Requested change to APD as follows: Move First Take Point From: 1420' FNL & 330' FEL, Section 13, T-21-S, R-32-E To: 1419' FNL & 1430' FEL, Section 13, T-21-S, R-32-E Move Bottom Hole Location From: 2540' FNL & 330' FEL, Section 25, T-21-S, R-32-E To: 2590' FNL & 1430' FEL, Section 25, T-21-S, R-32-E Change Target Formation From: Wolfcamp Carbonate To: 3rd Bone Spring Sandstone Please see attached drill plan, directional plan, and plats for additional information.

NOI Attachments

Procedure Description

MARGARITA_13_FED_COM_20H___SUNDRY___CHG_BHL_DEPTH__002__20220622152717.pdf

Received by OCD: 7/7/2022 8:17:30 AM

Page 5 of 85

Well Name: MARGARITA FEDERAL COM 13	Well Location: T21S / R32E / SEC 13 / NENE / 32.484914 / -103.622055	County or Parish/State: LEA / NM
Well Number: 20H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM014155	Unit or CA Name:	Unit or CA Number:
US Well Number: 300255012800X1	Well Status: Drilling Well	Operator: ADVANCE ENERGY PARTNERS HAT MESA LLC

Conditions of Approval

Additional

13_21_32_A_Sundry_ID_2678345_Margarita_Federal_Com_13_20H_Lea_NM014155_Advance_Energy_Partners_Hat_Mesa_LLC_13_22c_11_23_2020_LV_20220624094936.pdf
Margarita_Federal_Com_13_20H_Sundry_ID_2678345_20220624094936.pdf

Operator

I certify that the foregoing is true and correct. Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction. Electronic submission of Sundry Notices through this system satisfies regulations requiring a

Operator Electronic Signature: CHRISTIE HANNA	Signed on: JUN 22, 2022 03:27 PM
Name: ADVANCE ENERGY PARTNERS HAT MESA LLC	
Title: Senior Engineering Technician	
Street Address: 2901 VIA FORTUNA, SUITE 600	
City: AUSTIN	State: TX
Phone: (737) 300-4723	
Email address: CHANNA@AMEREDEV.COM	

Field

Representative Name: Shane McNeely	
Street Address: 2901 VIA FORTUNA STE. 600	
City: AUSTIN	State: TX
Phone: (737)300-4729	Zip: 78746
Email address: smcneely@ameredev.com	

BLM Point of Contact

BLM POC Name: CHRISTOPHER WALLS	BLM POC Title: Petroleum Engineer
BLM POC Phone: 5752342234	BLM POC Email Address: cwalls@blm.gov
Disposition: Approved	Disposition Date: 07/06/2022
Signature: Chris Walls	

CHANGE TO PLANS

Move First Take Point

From: 1420' FNL & 330' FEL, Section 13, T-21-S, R-32-E

To: 1419' FNL & 1430' FEL, Section 13, T-21-S, R-32-E

Move Bottom Hole Location

From: 2540' FNL & 330' FEL, Section 25, T-21-S, R-32-E

To: 2590' FNL & 1430' FEL, Section 25, T-21-S, R-32-E

Change Target Formation

From: Wolfcamp Carbonate

To: 3rd Bone Spring Sandstone

Please see attached drill plan, directional plan, and plats for additional information.

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 Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

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 August 1, 2011

Submit one copy to appropriate

District Office

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-025- 50128	² Pool Code 53560	³ Pool Name SALT LAKE;BONE SPRING
⁴ Property Code 328246	⁵ Property Name MARGARITA 13 FED COM	
⁷ OGRID No. 372417	⁸ Operator Name Advance Energy Partners Hat Mesa, LLC	⁶ Well Number 20H
		⁹ Elevation 3911'

¹⁰Surface Location

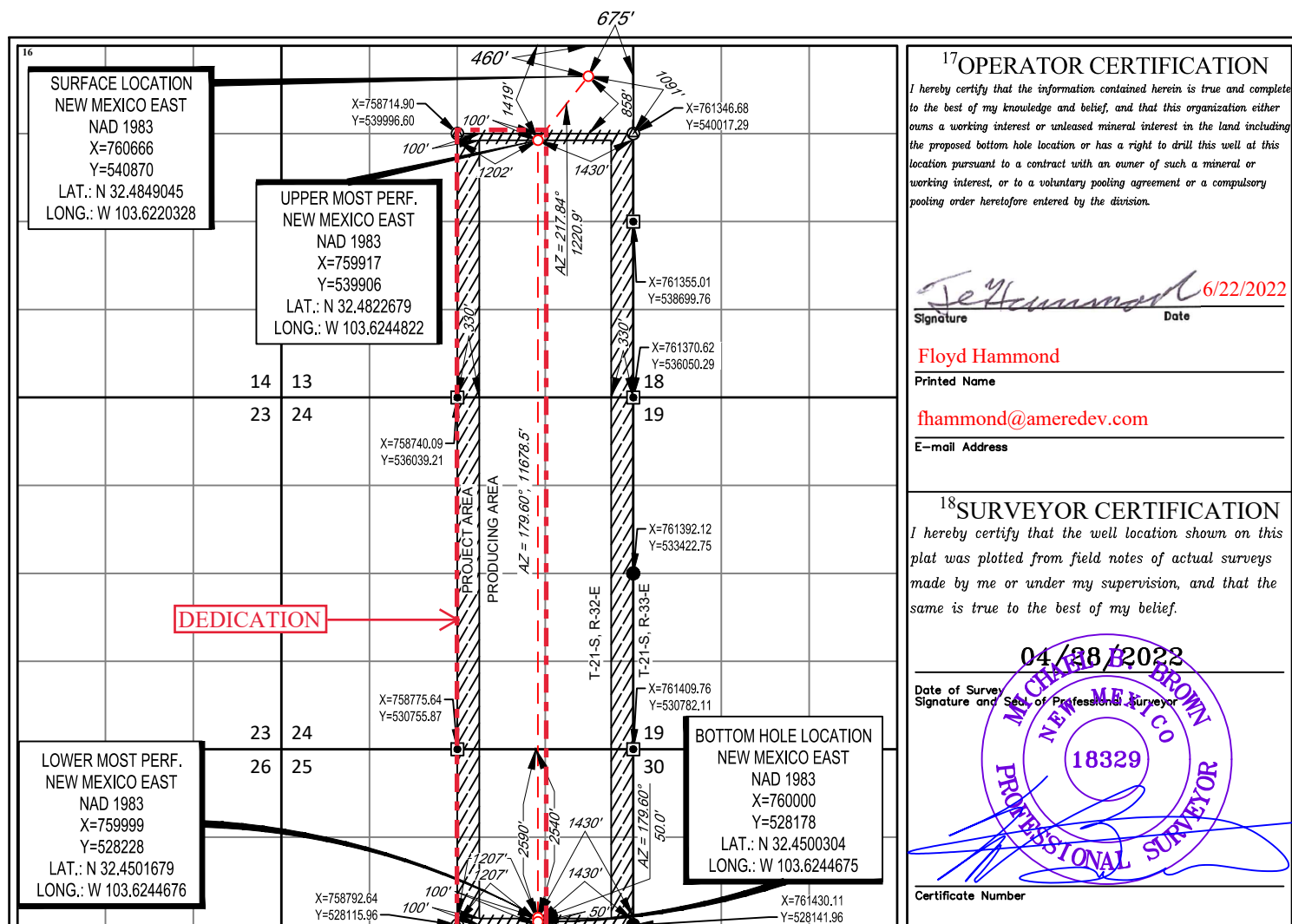
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	13	21-S	32-E	-	460'	NORTH	675'	EAST	LEA

¹¹Bottom Hole Location If Different From Surface

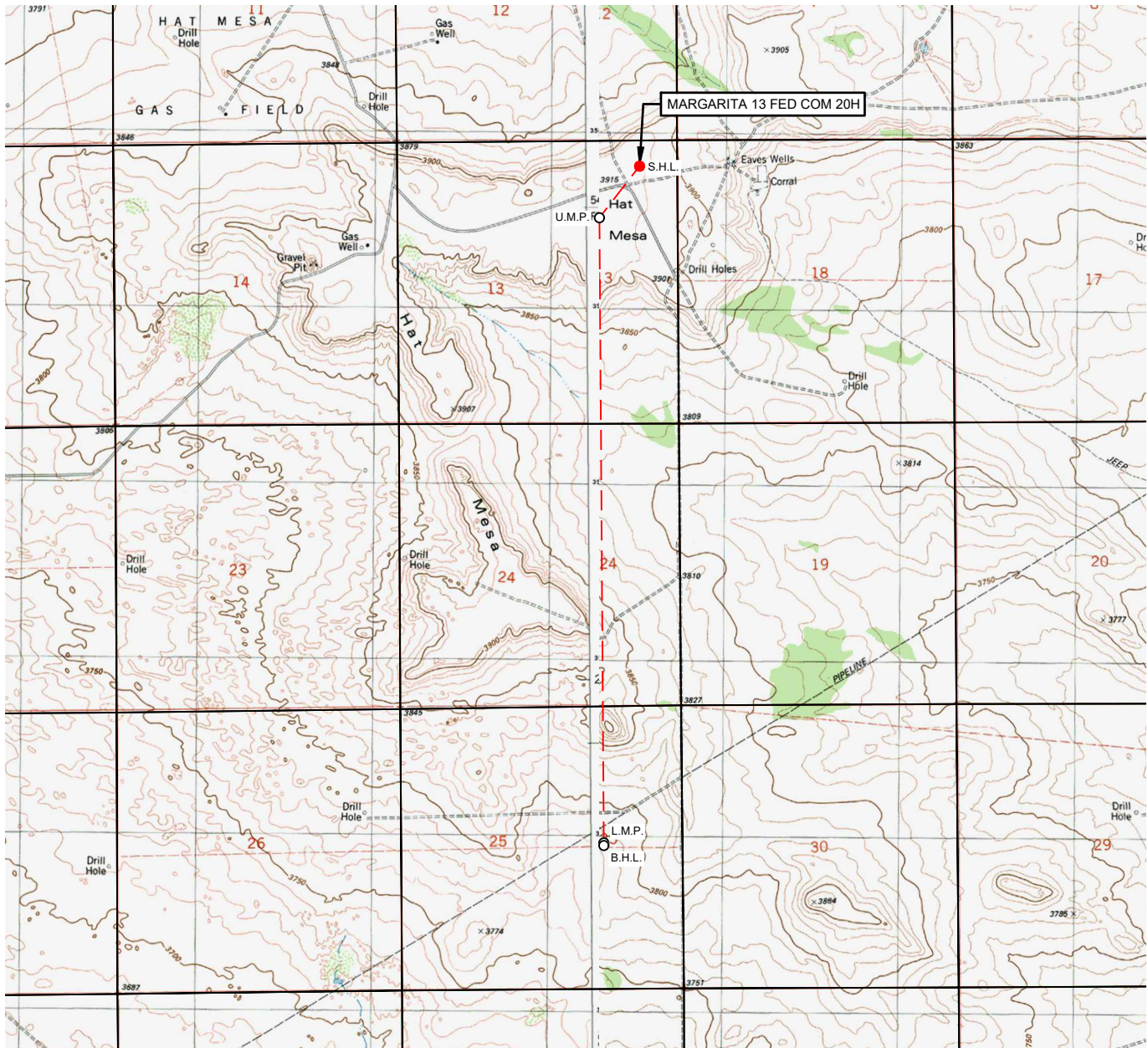
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
G	25	21-S	32-E	-	2590'	NORTH	1430'	EAST	LEA

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
360			

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.



LOCATION & ELEVATION VERIFICATION MAP

LEASE NAME & WELL NO.: MARGARITA 13 FED COM 20H

SECTION 13 TWP 21-S RGE 32-E SURVEY N.M.P.M.
 COUNTY LEA STATE NM ELEVATION 3911'
 DESCRIPTION 460' FNL & 675' FEL

LATITUDE N 32.4849045 LONGITUDE W 103.6220328

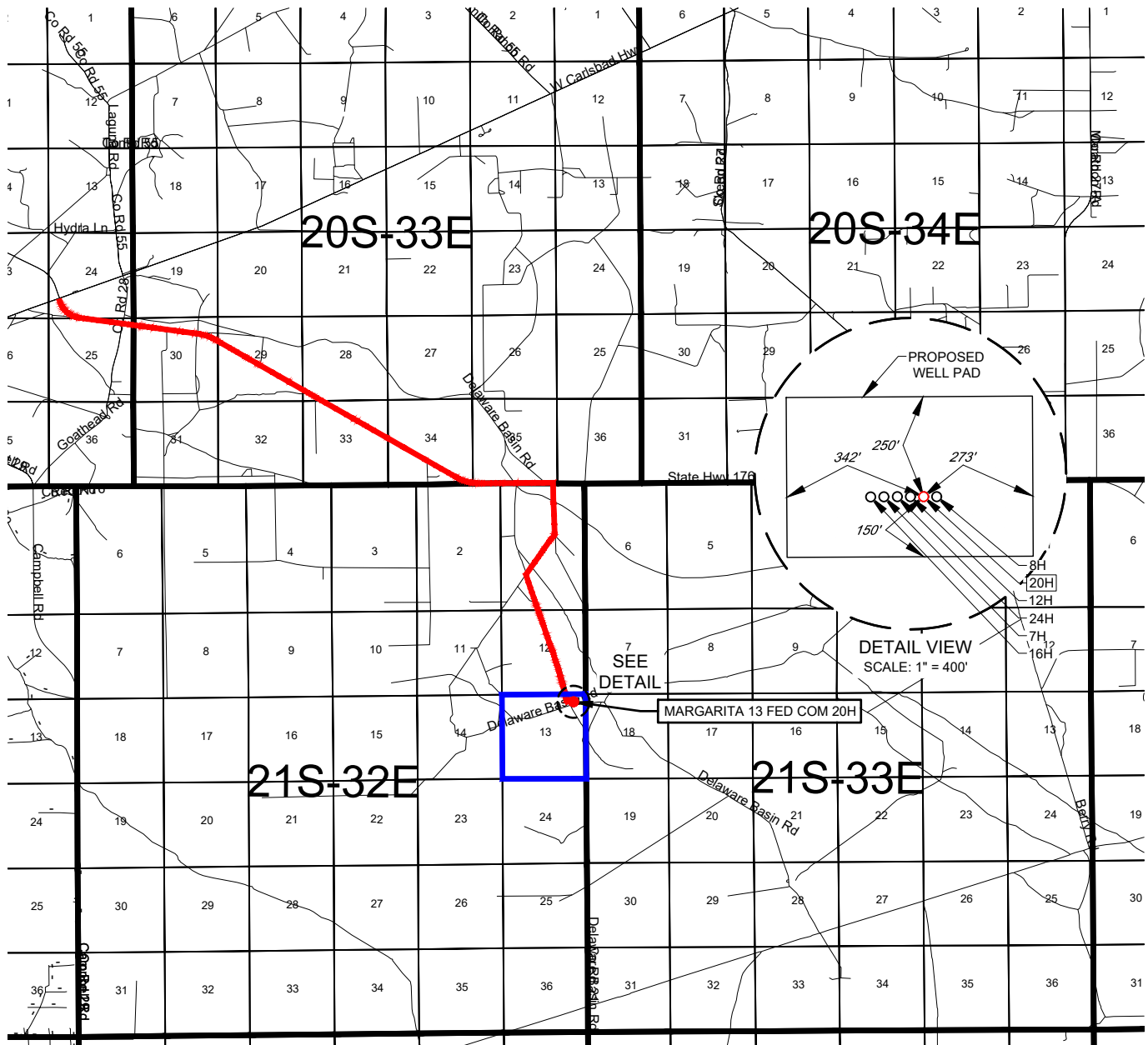
SCALE: 1" = 3000'
 0' 1500' 3000'



1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
 TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
 2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
 TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
 WWW.TOPOGRAPHIC.COM

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY AMEREDEV OPERATING, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.

EXHIBIT 2
VICINITY MAP

LEASE NAME & WELL NO.: MARGARITA 13 FED COM 20H

SECTION 13 TWP 21-S RGE 32-E SURVEY N.M.P.M.
COUNTY LEA STATE NM
DESCRIPTION 460' FNL & 675' FEL

DISTANCE & DIRECTION

FROM INT. OF NM-176 E. & US- 180 E. GO SOUTHEAST ON NM-176 E ± 6.4 MILES, THENCE SOUTH (RIGHT) ON A LEASE ROAD ± 1.2 MILES, THENCE SOUTHEAST (LEFT) ON DELAWARE BASIN ROAD ± 1.6 MILES TO A POINT ± 457 FEET WEST OF THE LOCATION.



SCALE: 1" = 10000'

0' 5000' 10000'



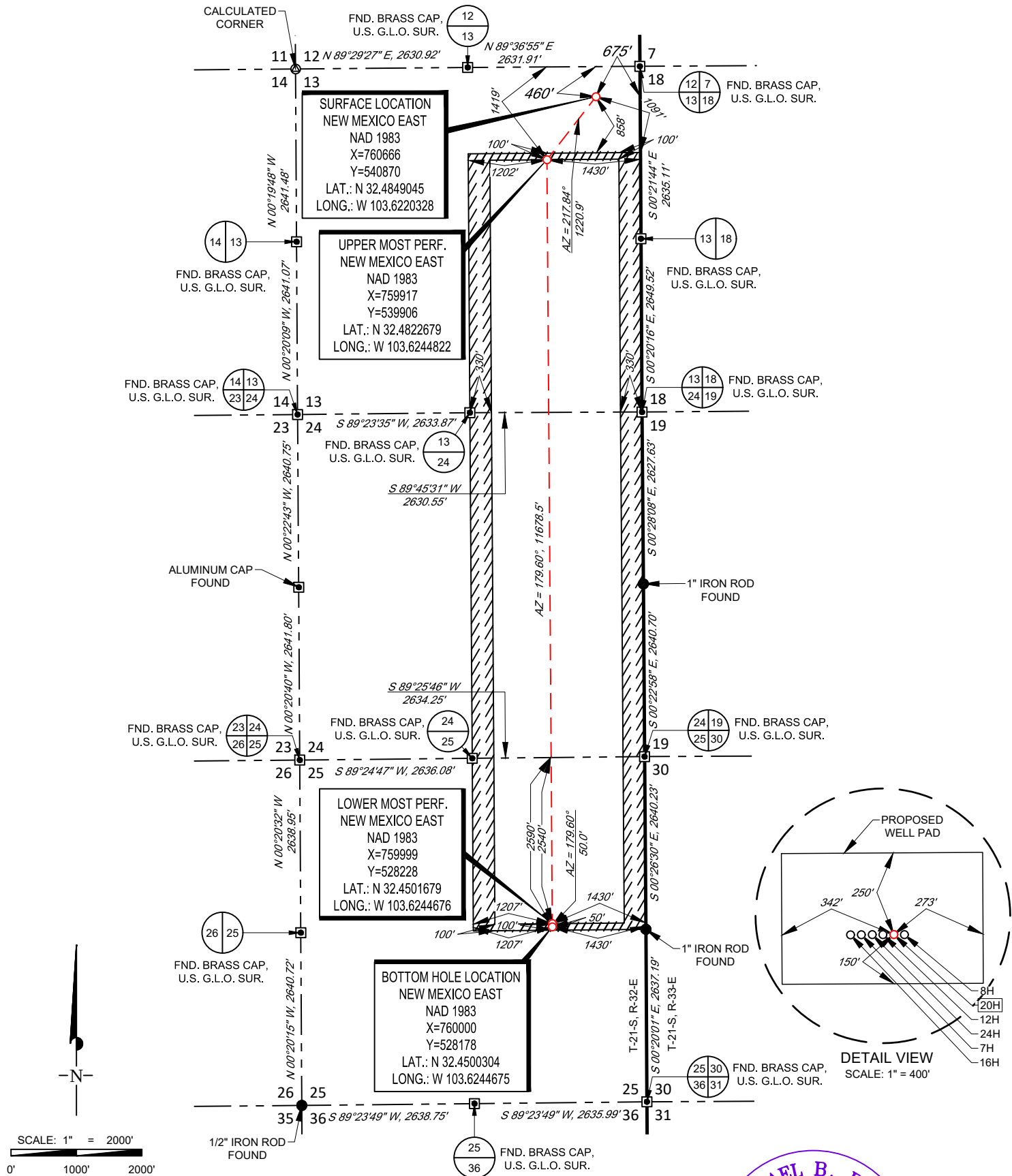
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY AMEREDEV OPERATING, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.

EXHIBIT 2A

SECTION 13, TOWNSHIP 21-S, RANGE 32-E, N.M.P.M.
LEA COUNTY, NEW MEXICO



LEASE NAME & WELL NO.: MARGARITA 13 FED COM 20H

SECTION 13 TWP 21-S RGE 32-E SURVEY N.M.P.M.
COUNTY LEA STATE NM
DESCRIPTION 460' FNL & 675' FEL

DISTANCE & DIRECTION
FROM INT. OF NM-176 E. & US- 180 E. GO SOUTHEAST ON NM-176 E
±6.4 MILES. THENCE SOUTH (RIGHT) ON A LEASE ROAD ±1.2 MILES.
THENCE SOUTHEAST (LEFT) ON DELAWARE BASIN ROAD ±1.6 MILES
TO A POINT ±457 FEET WEST OF THE LOCATION.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID
BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY
FEET.

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND
UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF
SURVEY, AND DATA PROVIDED BY AMEREDEV OPERATING, LLC. THIS CERTIFICATION IS MADE AND
LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS
NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY

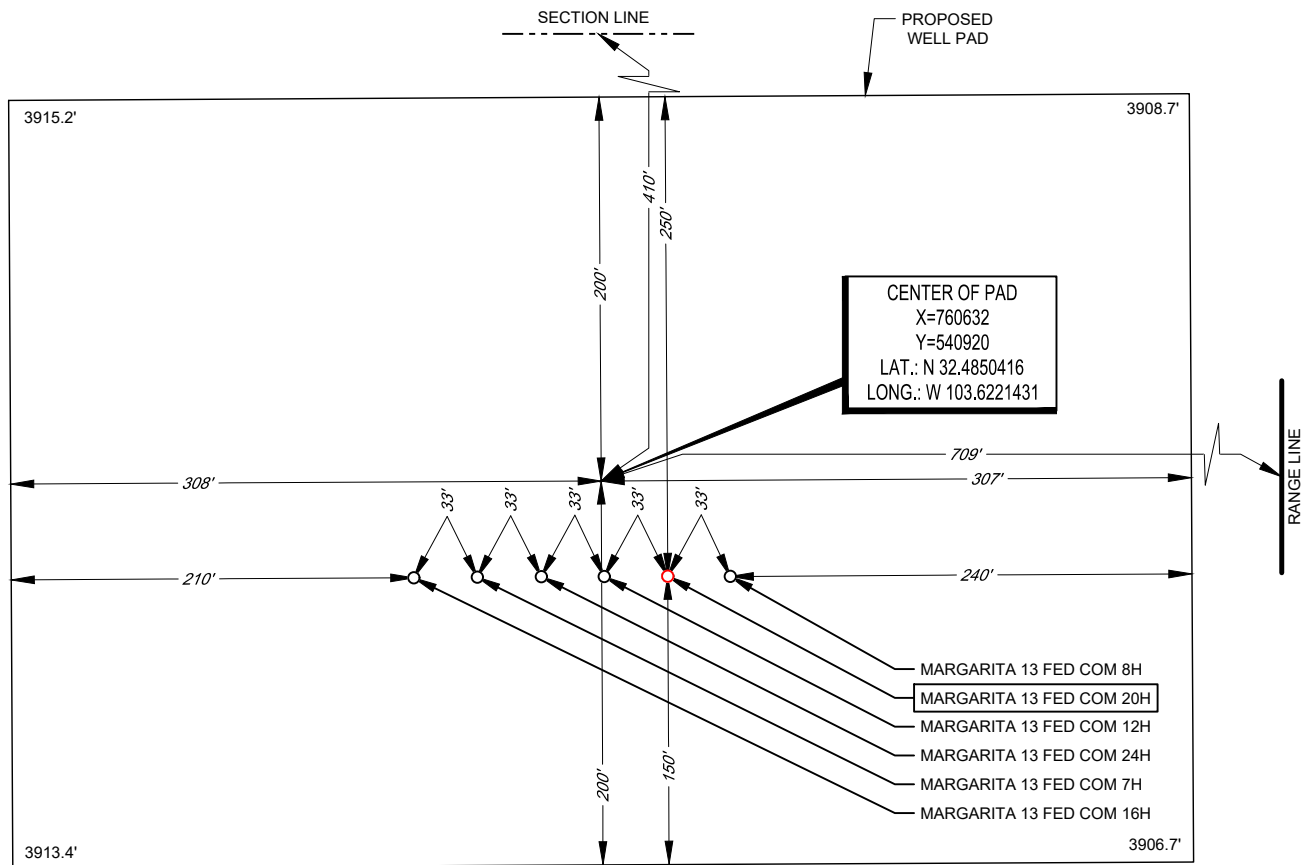
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

LEGEND

—— RANGE LINE
 - - - - SECTION LINE

SECTION 13, TOWNSHIP 21-S, RANGE 32-E, N.M.P.M.
 LEA COUNTY, NEW MEXICO

DETAIL VIEW
 SCALE: 1" = 100'



LEASE NAME & WELL NO.: MARGARITA 13 FED COM 20H
 20H LATITUDE N 32.4849045 20H LONGITUDE W 103.6220328

CENTER OF PAD IS 410' FNL & 709' FEL



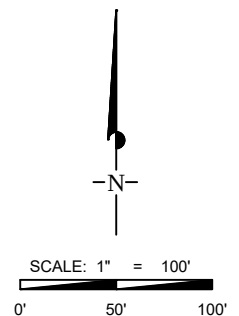
Michael Blake Brown, P.S. No. 18329

April 29, 2022

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET. ELEVATIONS USED ARE NAVD88, OBTAINED THROUGH AN OPUS SOLUTION.

THIS PROPOSED PAD SITE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY AMEREDEV OPERATING, LLC. ONLY THE DATA SHOWN ABOVE IS BEING CERTIFIED TO, ALL OTHER INFORMATION WAS INTENTIONALLY OMITTED. THIS PLAT IS ONLY INTENDED TO BE USED FOR A PERMIT AND IS NOT A BOUNDARY SURVEY. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

ORIGINAL DOCUMENT SIZE: 8.5" X 11"



TOPOGRAPHIC
 LOYALTY INNOVATION LEGACY

1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
 TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
 2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
 TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
 WWW.TOPOGRAPHIC.COM

Advance Energy Partners Hat Mesa, LLC
 Margarita Federal Com 13 22H
 SHL 460' FNL & 675' FEL Section 13
 BHL 2590' FNL & 1430' FEL Section 25
 T. 21 S., R. 32 E., Lea County, NM

DRILL PLAN PAGE 1

Drilling Program

1. ESTIMATED TOPS

Formation Name	TVD	MD	Bearing
Quaternary caliche	000'	000'	water
Rustler anhydrite	1668'	1668'	N/A
Base of Salt	2955'	2955'	Salt
Tansill dolomite	3318'	3318'	N/A
Yates sandstone	3361'	3361'	N/A
Seven Rivers gypsum	3565'	3565'	N/A
Capitan Reef	3706'	3706'	water
Bell Canyon limestone	5514'	5514'	hydrocarbons
Cherry Canyon shale	6990'	6990'	hydrocarbons
Lower Brushy Canyon sandstone	8615'	8626'	hydrocarbons
Avalon shale	9062'	9075'	hydrocarbons
1 st Bone Spring sandstone	9957'	9974'	hydrocarbons
2 nd Bone Spring sandstone	10495'	10514'	hydrocarbons
3 rd Bone Spring carbonate	11051'	11071'	hydrocarbons
(KOP)	11311'	11311'	hydrocarbons
3 rd Bone Spring sandstone	11596'	11655'	hydrocarbons
TD	11786'	23616'	hydrocarbons

2. NOTABLE ZONES

3rd Bone Spring sandstone is the goal. Closest water well (CP 00794 POD 1) is 0.5 miles east. Depth to water was not reported in the 160' deep well.

Advance Energy Partners Hat Mesa, LLC
 Margarita Federal Com 13 22H
 SHL 460' FNL & 675' FEL Section 13
 BHL 2590' FNL & 1430' FEL Section 25
 T. 21 S., R. 32 E., Lea County, NM

DRILL PLAN PAGE 2

3. PRESSURE CONTROL

See attached Helmerich & Payne BOP Testing – BLM manual for equipment and procedures for a 5000-psi system.

Variance is requested to use a co-flex hose between the BOP and choke instead of a steel line. See attached 3" I. D. x 10K test certificate. If this hose is unavailable, then a hose of equal or higher-pressure rating will be used.

Variance is requested to use a speed head (aka, multi-bowl wellhead) after setting intermediate 1. Advance has drilled >50 wells in immediate area to depths >5,000' and never encountered any type of flows. This will allow Advance to land the intermediate 1 and use the current proposed wellhead design. Advance will then NU BOPE on the 13.375" and continue using the BOPE to the completion of the well.

Variance is requested to use a sacrificial wellhead instead of a diverter. Advance will run surface casing with a sacrificial head so BOPE can be nipped up and tested as required by Onshore Order 2 before drilling out the surface casing. Once the intermediate 1 hole is drilled, cased, and cemented; then the sacrificial wellhead will be cut off and the 13.625" 5K MN-DS WH will be installed. BOPE will then be nipped up and tested as required by Onshore Order 2 before drilling out the intermediate 1 casing.

4. CASING & CEMENT

All casing will be API and new. See attached casing assumption worksheet.

Name	Hole OD	Casing OD	Tapered	Top MD	Bottom MD	Top TVD	BTM TVD	Grade	Weight	Thread	Collapse	Burst	Tension
Surface	24"	20"	No	0	1693	0	1693	J-55	94	BTC	1.125	1.125	1.6
1st Intermediate	17.5"	13.375"	No	0	3455	0	3455	J-55	54.5	BTC	1.125	1.125	1.6
2nd Intermediate	12.25"	9.625"	No	0	4000	0	4000	J-55	40	LTC	1.125	1.125	1.6
2nd Intermediate	12.25"	9.625"	No	4000	5464	4000	5464	HCL-80	40	LTC	1.125	1.125	1.6
Production	8.75"	5.5"	No	0	12047	0	11786	HCP-110	20	CDC-HTQ	1.125	1.125	1.6
Production	8.5"	5.5"	No	12047	23616	11786	11786	HCP-110	20	CDC-HTQ	1.125	1.125	1.6

Advance Energy Partners Hat Mesa, LLC
 Margarita Federal Com 13 22H
 SHL 460' FNL & 675' FEL Section 13
 BHL 2590' FNL & 1430' FEL Section 25
 T. 21 S., R. 32 E., Lea County, NM

DRILL PLAN PAGE 3

Bow spring centralizers will be installed on the surface (≈ 13.1 centralizers), intermediate 1 (≈ 24.8), and intermediate 2 (≈ 14) casing strings.

Approximately 37 single bow centralizers will be installed on the production casing from 5,364' to 10,947' (TVD). Approximately 31 double bow centralizers will be installed from 10,947' to 12,247'. Approximately 133 solid body centralizers will be installed from 12,247' to TD.

Variance is requested for an option to use a surface rig to drill the surface hole and set and cement the surface casing. If time between rigs would not be allow presetting the surface casing, then the primary rig will drill all of the well.

Cement additive names in following table are West Texas Cementers trade names. They, or equivalent, products will be used.

Name	Type	Top MD	Sacks	Yield	Cu. Ft	Weight	Excess	Cement	Additives
Surface	Lead	0	1095	1.9	2081	12.8	50%	B Poz + C	6% Gel + 5% SALT + 0.1% R-1300 + 0.25PPS Pol-E-Flake + 0.005GPS NoFoam V1A
	Tail	1354	350	1.35	473	14.8	20%	C	2% CaCl ₂ + 0.005GPS NoFoam V1A
1st Intermediate	Lead	0	1645	1.83	3010	12.8	50%	B Poz + C	2% Gel + 5% SALT + 0.1% R-1300 + 0.25PPS Pol-E-Flake + 0.005GPS
	Tail	2932	475	1.37	651	14.8	20%	C	5% SALT + 0.005GPS NoFoam V1A
2nd Intermediate	Lead	0	910	1.84	1674	12.8	50%	B Poz + C	2% Gel + 5% SALT + 0.15% R-1300 + 0.25PPS Pol-E-Flake + 0.005GPS NoFoam V1A
	Tail	4371	325	1.33	432	14.8	20%	C	0.005GPS NoFoam V1A
Production	Lead	5414	575	3.4	1955	10.7	35%	ProLite	5PPS Plexcrete STE + 2% SMS + 0.05% SuspendaCem 6302 + 0.4% R-1300 + 0.5% C-47B + 3PPS Gilsonite + 0.25 PPS Pol-E-Flake + 0.005GPS NoFoam V1A
	Tail	11147	2755	1.22	3361	14.5	20%	B Poz + H	5% SALT + 0.05% SuspendaCem 6302 + 0.65% C-20 + 0.5% C-47B + 0.005GPS NoFoam V1A

Advance Energy Partners Hat Mesa, LLC
Margarita Federal Com 13 22H
SHL 460' FNL & 675' FEL Section 13
BHL 2590' FNL & 1430' FEL Section 25
T. 21 S., R. 32 E., Lea County, NM

DRILL PLAN PAGE 4

5. MUD PROGRAM

An electronic pit volume totalizer (PVT) will be used to monitor volume, flow rate, pump pressure, and stroke rate. All necessary additives (e. g., barite, bentonite, LCM) to maintain mud properties and meet minimum lost circulation and weight increase needs will be on site at all times. Mud program may change due to hole conditions. A closed loop system will be used.

Name	Top	Bottom	Type	Mud Weight (ppg)	Visc	Fluid Loss
Surface	0	1693	FW Spud Mud	8.4 - 10.0	28 - 36	NC
Intermediate 1	1693	3455	Brine Water	10.0 - 10.5	28 - 30	NC
Intermediate 1	3455	5464	Fresh Water	8.4 - 8.6	28 - 30	NC
Intermediate 2	5464	12047	Cut Brine	9.0 - 9.2	28 - 30	NC
Production	12047	23616	Oil Based Mud	9.0 - 9.5	55 - 65	6 - 8

6. CORES, TESTS, & LOGS

No core, drill stem test, or open hole log is planned.

7. DOWN HOLE CONDITIONS

No abnormal pressure or temperature is expected. Maximum expected bottom hole pressure is ≈ 5980 psi. Expected bottom hole temperature is $\approx 245^{\circ}$ F.

H2S monitoring and detection equipment will be used from surface casing point to TD.

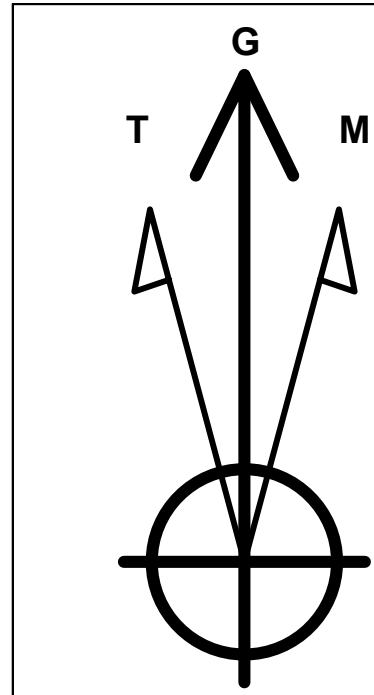
8. OTHER INFORMATION

It is expected it will take ≈ 3 -4 months to drill and complete the well.



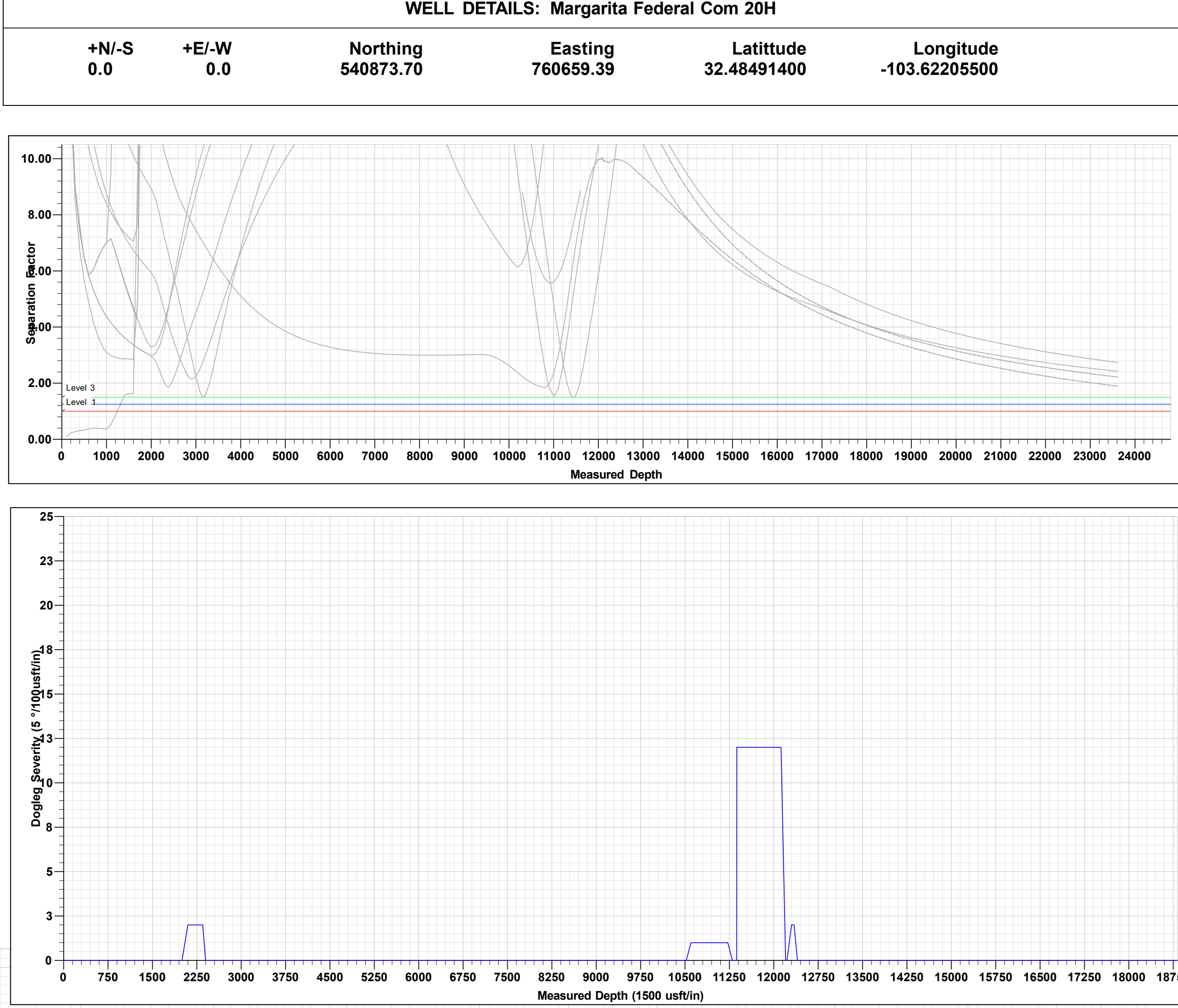
American Resource Development LLC.

Project: Hat Mesa
Site: Margarita Federal Com - Pad A
Well: Margarita Federal Com 20H
Wellbore: Margarita Federal Com 13 20H
Design: Prelim - 179.57
GL: 3911.0
WELL @ 3943.5usft (Original Well Elev)



Azimuths to Grid North
True North: -0.38°
Magnetic North: 6.10°

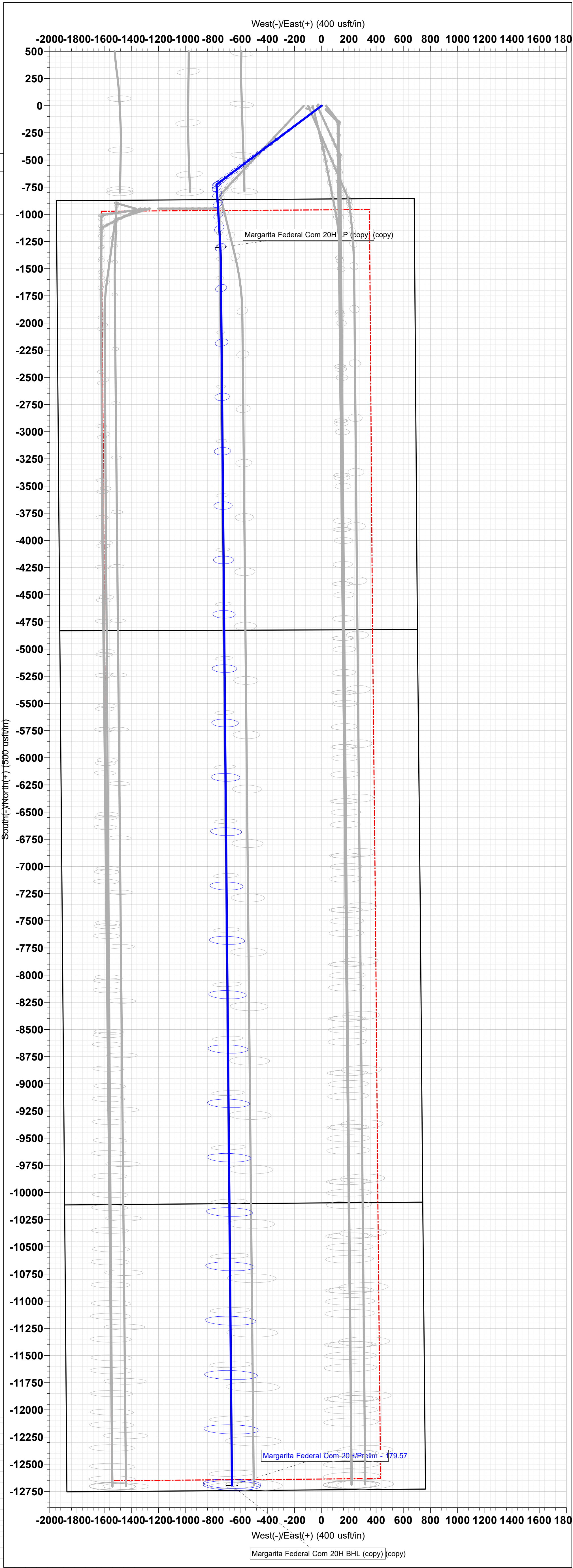
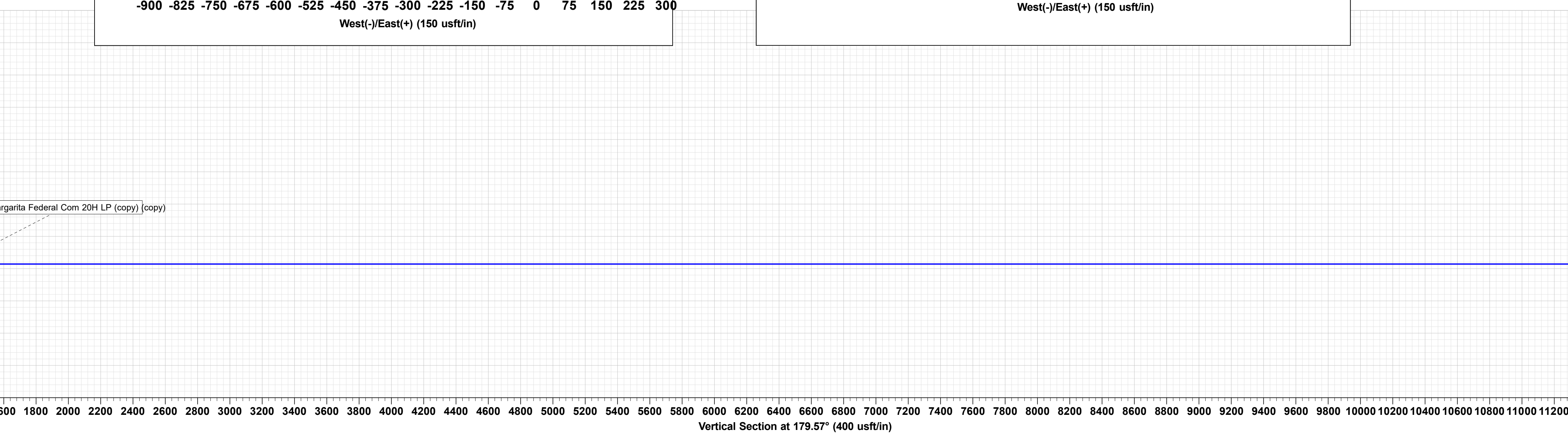
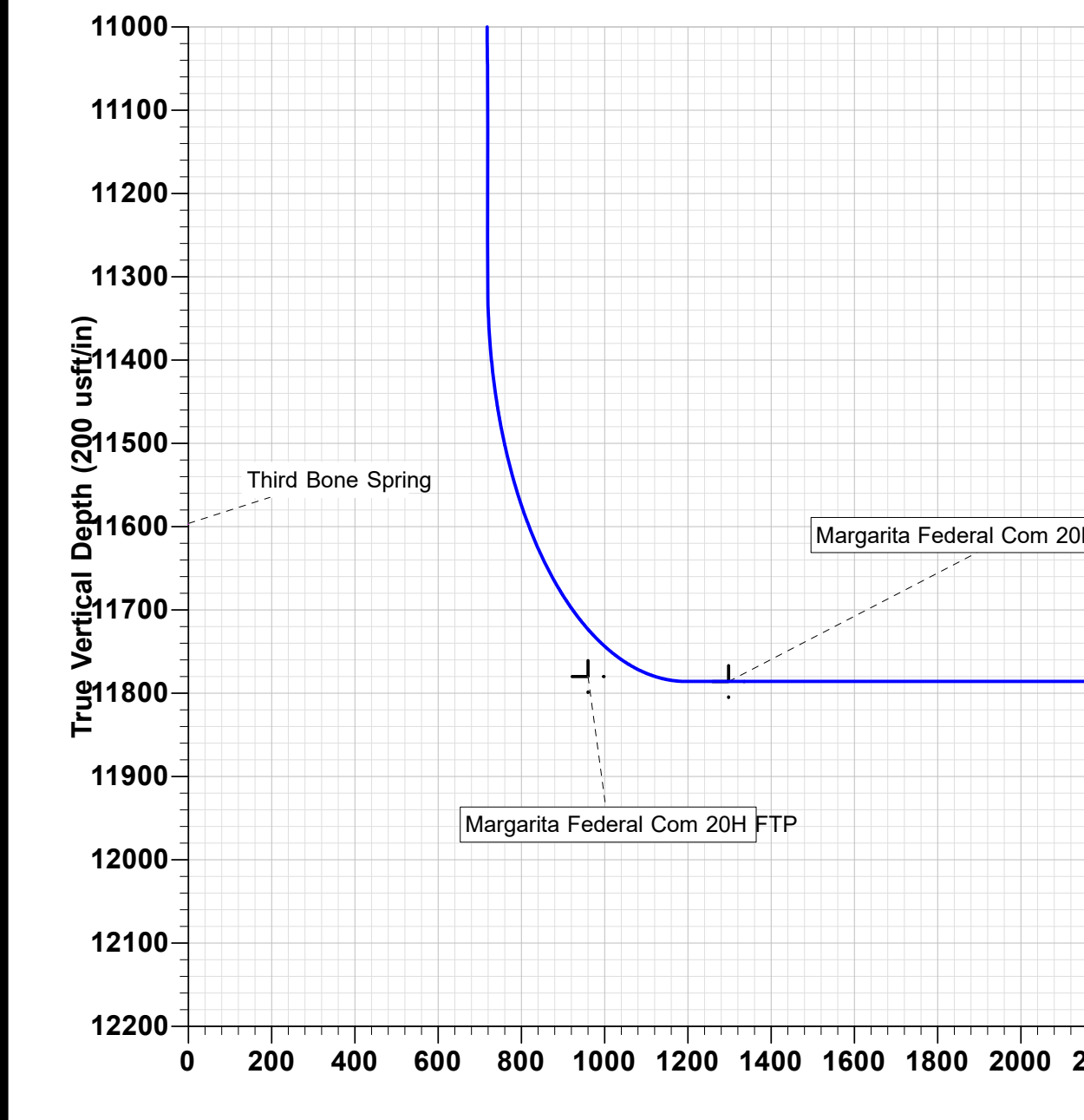
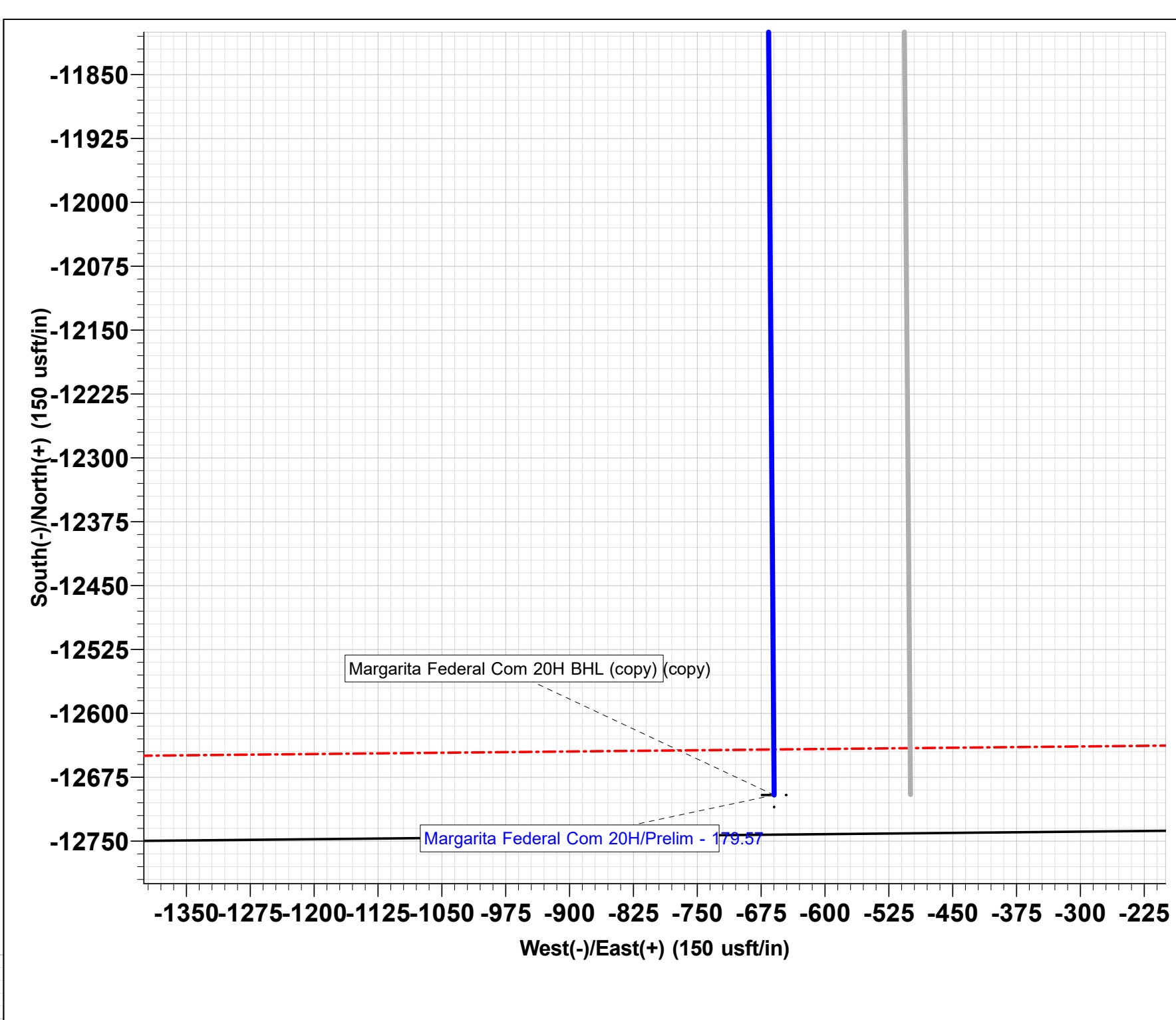
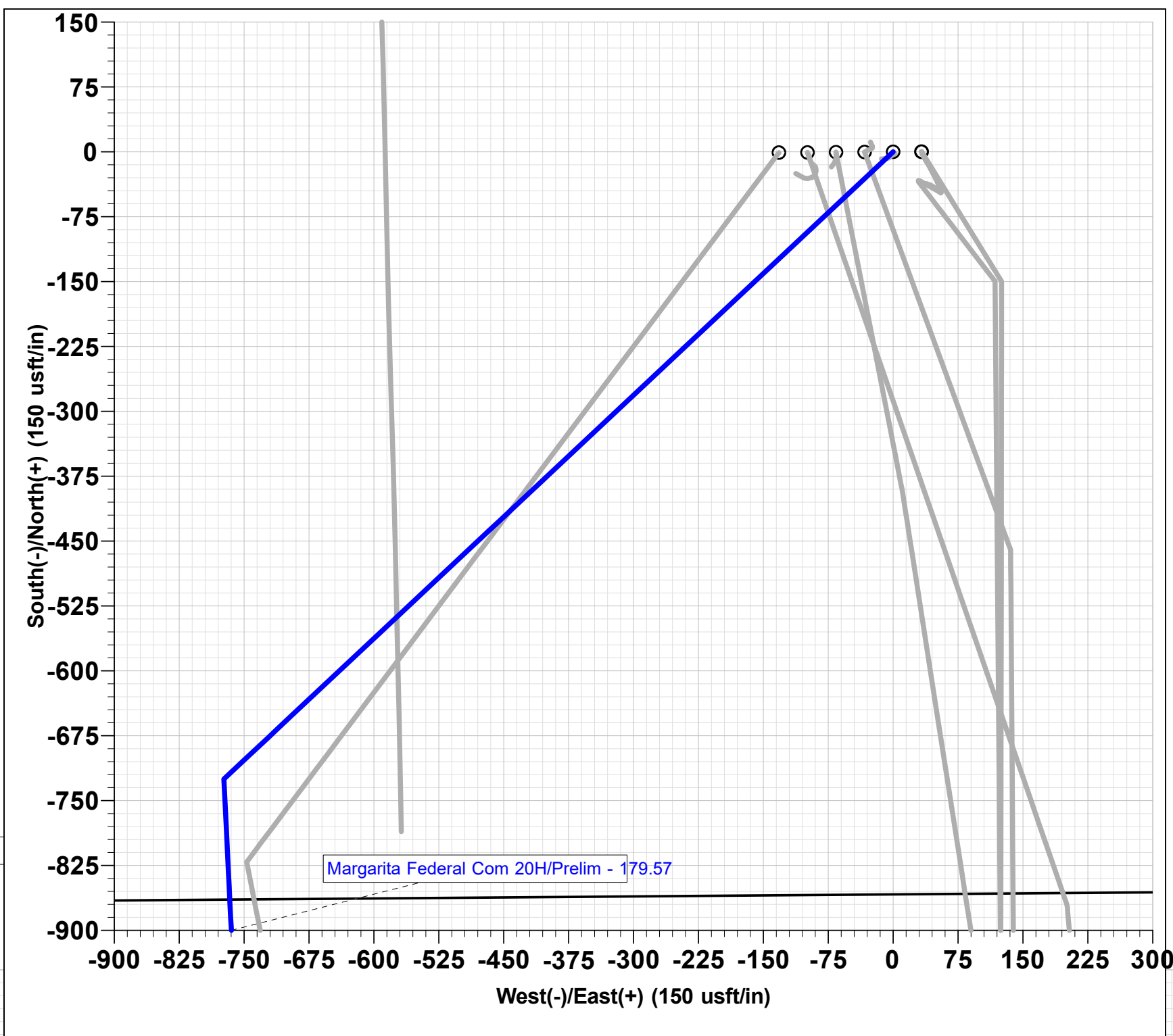
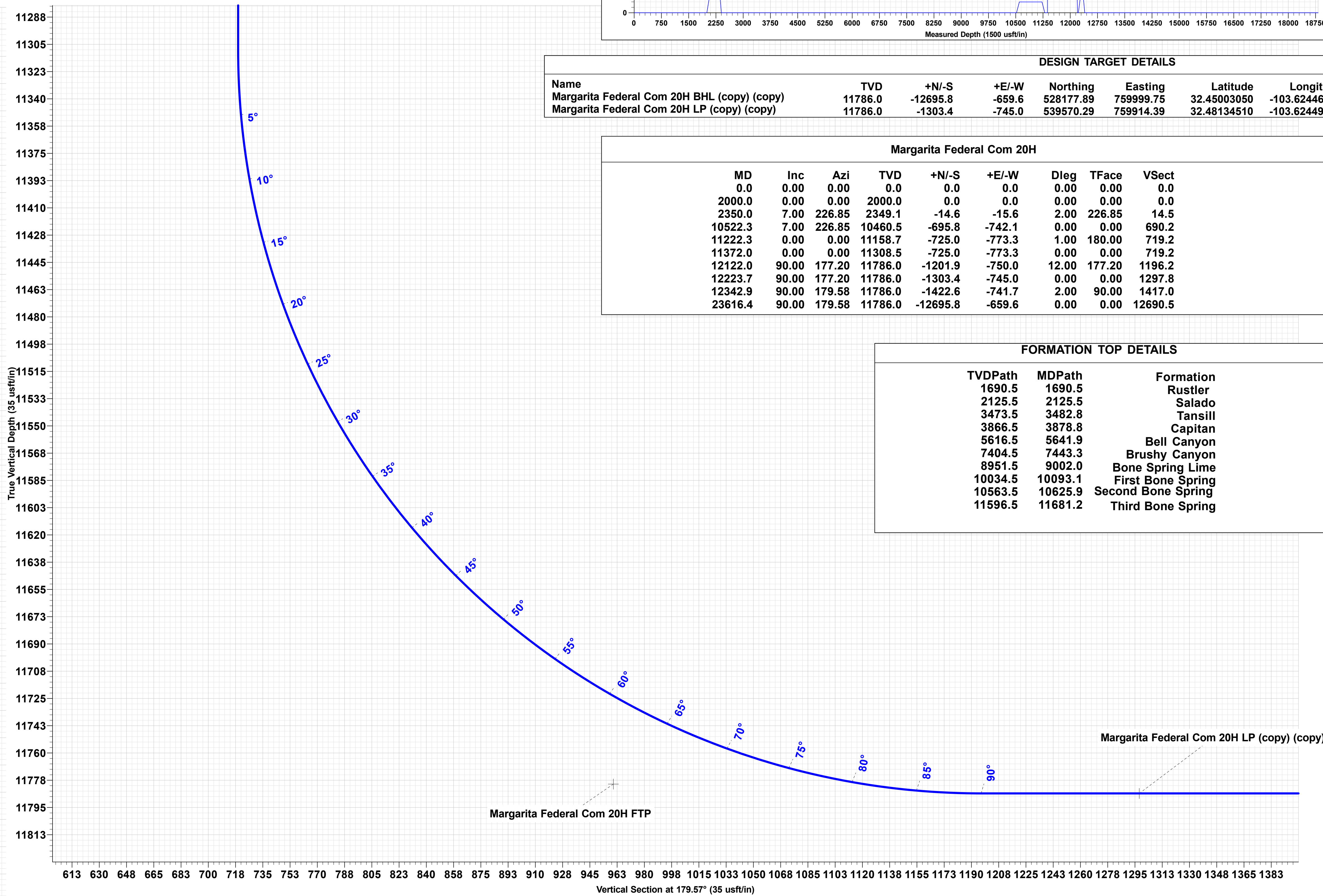
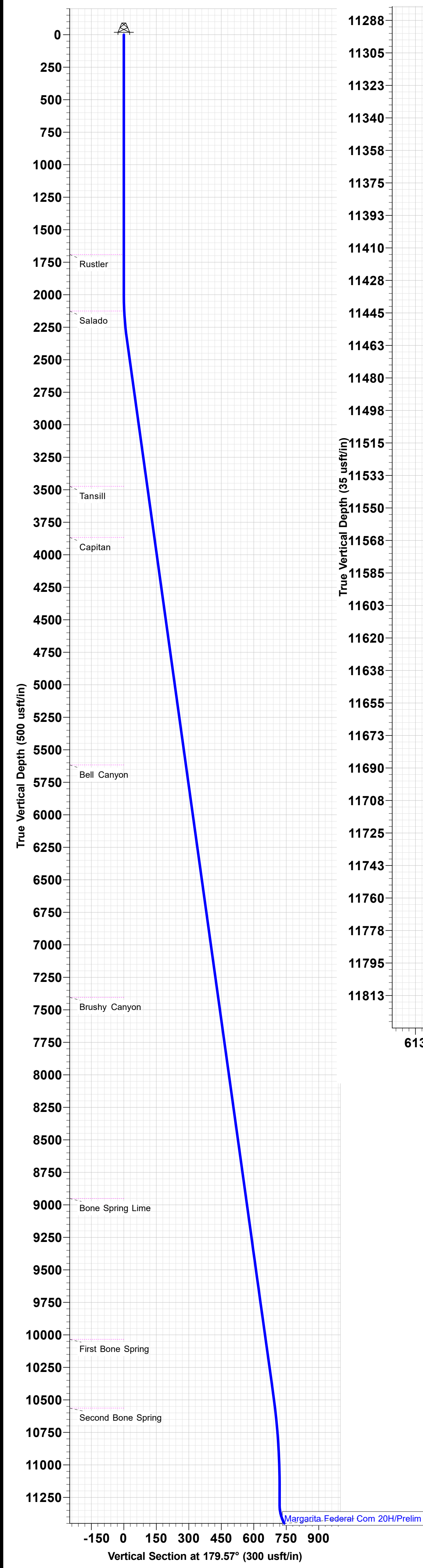
Magnetic Field
Strength: 47543.1nT
Dip Angle: 60.10°
Date: 5/19/2022
Model: IGRF2020



DESIGN TARGET DETAILS									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	
Margarita Federal Com 20H BHL (copy) (copy)	11786.0	-12695.8	-659.6	528177.89	759999.75	32.45003050	-103.62446755	Point	
Margarita Federal Com 20H LP (copy) (copy)	11786.0	-1303.4	-745.0	539570.29	759914.39	32.48134510	-103.62449902	Point	

Margarita Federal Com 20H									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.0	
2000.0	0.00	0.00	2000.0	0.0	0.0	0.00	0.00	0.0	
2350.0	7.00	226.85	2349.1	-14.6	-15.6	2.00	226.85	14.5	
10522.3	7.00	226.85	10460.5	-695.8	-742.1	0.00	0.00	690.2	
11222.3	0.00	0.00	11158.7	-725.0	-773.3	1.00	180.00	719.2	
11372.0	0.00	0.00	11308.5	-725.0	-773.3	0.00	0.00	719.2	
12122.0	90.00	177.20	11786.0	-1201.9	-750.0	12.00	177.20	1196.2	
12223.7	90.00	177.20	11786.0	-1303.4	-745.0	0.00	0.00	1297.8	
12342.9	90.00	179.58	11786.0	-1422.6	-741.7	2.00	90.00	1417.0	
23616.4	90.00	179.58	11786.0	-12695.8	-659.6	0.00	0.00	12690.5	

FORMATION TOP DETAILS			
TVDPath	MDPath	Formation	
1690.5	1690.5	Rustler	
2125.5	2125.5	Salado	
3473.5	3482.8	Tansill	
3866.5	3878.8	Capitan	
5616.5	5641.9	Bell Canyon	
7404.5	7443.3	Brushy Canyon	
8951.5	9002.0	Bone Spring Lime	
10034.5	10093.1	First Bone Spring	
10563.5	10625.9	Second Bone Spring	
11596.5	11681.2	Third Bone Spring	





American Resource Development LLC.

Ameredev Operating

Hat Mesa

Margarita Federal Com - Pad A

Margarita Federal Com 20H

Margarita Federal Com 13 20H

Plan: Prelim - 179.57

Standard Planning Report - Geographic

22 June, 2022



American Resource Development LLC

Planning Report - Geographic

Database:	AUS-COMPASS - EDM_15 - 32bit	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Company:	Ameredev Operating	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Project:	Hat Mesa	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site:	Margarita Federal Com - Pad A	North Reference:	Grid
Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Margarita Federal Com 13 20H		
Design:	Prelim - 179.57		

Project	Hat Mesa, Lea County, NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Margarita Federal Com - Pad A		
Site Position:		Northing:	540,873.26 usft
From:	Lat/Long	Easting:	760,593.40 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32.48491400
		Longitude:	-103.62226900

Well	Margarita Federal Com 20H, ACTIVE					
Well Position	+N/-S	0.0 usft	Northing:	540,873.70 usft	Latitude:	32.48491400
	+E/-W	0.0 usft	Easting:	760,659.38 usft	Longitude:	-103.62205500
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,911.0 usft
Grid Convergence:		0.38 °				

Wellbore	Margarita Federal Com 13 20H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	5/19/2022	6.48	60.10	47,543.13399832

Design	Prelim - 179.57			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	179.57

Plan Survey Tool Program	Date	6/22/2022		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	23,616.4 Prelim - 179.57 (Margarita Feder	MWD	
			OWSG MWD - Standard	



American Resource Development LLC

Planning Report - Geographic

Database:	AUS-COMPASS - EDM_15 - 32bit	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Company:	Ameredev Operating	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Project:	Hat Mesa	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site:	Margarita Federal Com - Pad A	North Reference:	Grid
Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Margarita Federal Com 13 20H		
Design:	Prelim - 179.57		

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,350.0	7.00	226.85	2,349.1	-14.6	-15.6	2.00	2.00	0.00	226.85	
10,522.3	7.00	226.85	10,460.5	-695.8	-742.1	0.00	0.00	0.00	0.00	
11,222.3	0.00	0.00	11,158.7	-725.0	-773.3	1.00	-1.00	0.00	180.00	
11,372.0	0.00	0.00	11,308.5	-725.0	-773.3	0.00	0.00	0.00	0.00	
12,122.0	90.00	177.20	11,786.0	-1,201.9	-750.0	12.00	12.00	0.00	177.20	Margarita Federal C
12,223.7	90.00	177.20	11,786.0	-1,303.4	-745.0	0.00	0.00	0.00	0.00	Margarita Federal C
12,342.9	90.00	179.58	11,786.0	-1,422.6	-741.7	2.00	0.00	2.00	90.00	
23,616.4	90.00	179.58	11,786.0	-12,695.8	-659.6	0.00	0.00	0.00	0.00	



American Resource Development LLC

Planning Report - Geographic

Database:	AUS-COMPASS - EDM_15 - 32bit	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Company:	Ameredev Operating	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Project:	Hat Mesa	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site:	Margarita Federal Com - Pad A	North Reference:	Grid
Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Margarita Federal Com 13 20H		
Design:	Prelim - 179.57		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
100.0	0.00	0.00	100.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
200.0	0.00	0.00	200.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
300.0	0.00	0.00	300.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
400.0	0.00	0.00	400.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
500.0	0.00	0.00	500.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
600.0	0.00	0.00	600.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
700.0	0.00	0.00	700.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
800.0	0.00	0.00	800.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
900.0	0.00	0.00	900.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
1,000.0	0.00	0.00	1,000.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
1,100.0	0.00	0.00	1,100.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
1,200.0	0.00	0.00	1,200.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
1,300.0	0.00	0.00	1,300.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
1,400.0	0.00	0.00	1,400.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
1,500.0	0.00	0.00	1,500.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
1,600.0	0.00	0.00	1,600.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
1,690.5	0.00	0.00	1,690.5	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
Rustler									
1,700.0	0.00	0.00	1,700.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
1,800.0	0.00	0.00	1,800.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
1,900.0	0.00	0.00	1,900.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
2,000.0	0.00	0.00	2,000.0	0.0	0.0	540,873.70	760,659.38	32.48491400	-103.62205500
Start Build 2.00									
2,100.0	2.00	226.85	2,100.0	-1.2	-1.3	540,872.51	760,658.11	32.48491074	-103.62205915
2,125.5	2.51	226.85	2,125.5	-1.9	-2.0	540,871.82	760,657.38	32.48490886	-103.62206155
Salado									
2,200.0	4.00	226.85	2,199.8	-4.8	-5.1	540,868.93	760,654.29	32.48490097	-103.62207161
2,300.0	6.00	226.85	2,299.5	-10.7	-11.4	540,862.97	760,647.93	32.48488470	-103.62209236
2,350.0	7.00	226.85	2,349.1	-14.6	-15.6	540,859.10	760,643.81	32.48487414	-103.62210583
Start 8172.3 hold at 2350.0 MD									
2,400.0	7.00	226.85	2,398.8	-18.8	-20.0	540,854.93	760,639.36	32.48486277	-103.62212034
2,500.0	7.00	226.85	2,498.0	-27.1	-28.9	540,846.59	760,630.47	32.48484002	-103.62214935
2,600.0	7.00	226.85	2,597.3	-35.4	-37.8	540,838.26	760,621.58	32.48481727	-103.62217836
2,700.0	7.00	226.85	2,696.5	-43.8	-46.7	540,829.92	760,612.69	32.48479452	-103.62220737
2,800.0	7.00	226.85	2,795.8	-52.1	-55.6	540,821.59	760,603.80	32.48477178	-103.62223638
2,900.0	7.00	226.85	2,895.0	-60.4	-64.5	540,813.25	760,594.91	32.48474903	-103.62226540
3,000.0	7.00	226.85	2,994.3	-68.8	-73.4	540,804.92	760,586.02	32.48472628	-103.62229441
3,100.0	7.00	226.85	3,093.5	-77.1	-82.3	540,796.58	760,577.13	32.48470353	-103.62232342
3,200.0	7.00	226.85	3,192.8	-85.5	-91.1	540,788.25	760,568.23	32.48468079	-103.62235243
3,300.0	7.00	226.85	3,292.0	-93.8	-100.0	540,779.91	760,559.34	32.48465804	-103.62238144
3,400.0	7.00	226.85	3,391.3	-102.1	-108.9	540,771.58	760,550.45	32.48463529	-103.62241045
3,482.8	7.00	226.85	3,473.5	-109.0	-116.3	540,764.67	760,543.09	32.48461645	-103.62243448
Tansill									
3,500.0	7.00	226.85	3,490.6	-110.5	-117.8	540,763.24	760,541.56	32.48461254	-103.62243946
3,600.0	7.00	226.85	3,589.8	-118.8	-126.7	540,754.91	760,532.67	32.48458980	-103.62246847
3,700.0	7.00	226.85	3,689.1	-127.1	-135.6	540,746.57	760,523.78	32.48456705	-103.62249748
3,800.0	7.00	226.85	3,788.3	-135.5	-144.5	540,738.24	760,514.89	32.48454430	-103.62252650
3,878.8	7.00	226.85	3,866.5	-142.0	-151.5	540,731.67	760,507.89	32.48452638	-103.62254935
Capitan									
3,900.0	7.00	226.85	3,887.6	-143.8	-153.4	540,729.90	760,506.00	32.48452155	-103.62255551
4,000.0	7.00	226.85	3,986.8	-152.1	-162.3	540,721.56	760,497.11	32.48449881	-103.62258452
4,100.0	7.00	226.85	4,086.1	-160.5	-171.2	540,713.23	760,488.22	32.48447606	-103.62261353
4,200.0	7.00	226.85	4,185.3	-168.8	-180.1	540,704.89	760,479.33	32.48445331	-103.62264254



American Resource Development LLC

Planning Report - Geographic

Database:	AUS-COMPASS - EDM_15 - 32bit	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Company:	Ameredev Operating	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Project:	Hat Mesa	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site:	Margarita Federal Com - Pad A	North Reference:	Grid
Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Margarita Federal Com 13 20H		
Design:	Prelim - 179.57		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
4,300.0	7.00	226.85	4,284.6	-177.1	-188.9	540,696.56	760,470.44	32.48443056	-103.62267155	
4,400.0	7.00	226.85	4,383.8	-185.5	-197.8	540,688.22	760,461.55	32.48440782	-103.62270056	
4,500.0	7.00	226.85	4,483.1	-193.8	-206.7	540,679.89	760,452.66	32.48438507	-103.62272957	
4,600.0	7.00	226.85	4,582.4	-202.2	-215.6	540,671.55	760,443.77	32.48436232	-103.62275858	
4,700.0	7.00	226.85	4,681.6	-210.5	-224.5	540,663.22	760,434.88	32.48433957	-103.62278760	
4,800.0	7.00	226.85	4,780.9	-218.8	-233.4	540,654.88	760,425.98	32.48431683	-103.62281666	
4,900.0	7.00	226.85	4,880.1	-227.2	-242.3	540,646.55	760,417.09	32.48429408	-103.62284562	
5,000.0	7.00	226.85	4,979.4	-235.5	-251.2	540,638.21	760,408.20	32.48427133	-103.62287463	
5,100.0	7.00	226.85	5,078.6	-243.8	-260.1	540,629.88	760,399.31	32.48424858	-103.62290364	
5,200.0	7.00	226.85	5,177.9	-252.2	-269.0	540,621.54	760,390.42	32.48422584	-103.62293265	
5,300.0	7.00	226.85	5,277.1	-260.5	-277.9	540,613.21	760,381.53	32.48420309	-103.62296166	
5,400.0	7.00	226.85	5,376.4	-268.8	-286.7	540,604.87	760,372.64	32.48418034	-103.62299067	
5,500.0	7.00	226.85	5,475.7	-277.2	-295.6	540,596.53	760,363.75	32.48415759	-103.62301968	
5,600.0	7.00	226.85	5,574.9	-285.5	-304.5	540,588.20	760,354.86	32.48413484	-103.62304869	
5,641.9	7.00	226.85	5,616.5	-289.0	-308.2	540,584.71	760,351.13	32.48412531	-103.62306085	
Bell Canyon										
5,700.0	7.00	226.85	5,674.2	-293.8	-313.4	540,579.86	760,345.97	32.48411210	-103.62307771	
5,800.0	7.00	226.85	5,773.4	-302.2	-322.3	540,571.53	760,337.08	32.48408935	-103.62310672	
5,900.0	7.00	226.85	5,872.7	-310.5	-331.2	540,563.19	760,328.19	32.48406660	-103.62313573	
6,000.0	7.00	226.85	5,971.9	-318.8	-340.1	540,554.86	760,319.30	32.48404385	-103.62316474	
6,100.0	7.00	226.85	6,071.2	-327.2	-349.0	540,546.52	760,310.41	32.48402111	-103.62319375	
6,200.0	7.00	226.85	6,170.4	-335.5	-357.9	540,538.19	760,301.52	32.48399836	-103.62322276	
6,300.0	7.00	226.85	6,269.7	-343.9	-366.8	540,529.85	760,292.62	32.48397561	-103.62325177	
6,400.0	7.00	226.85	6,368.9	-352.2	-375.6	540,521.52	760,283.73	32.48395286	-103.62328078	
6,500.0	7.00	226.85	6,468.2	-360.5	-384.5	540,513.18	760,274.84	32.48393012	-103.62330979	
6,600.0	7.00	226.85	6,567.5	-368.9	-393.4	540,504.85	760,265.95	32.48390737	-103.62333880	
6,700.0	7.00	226.85	6,666.7	-377.2	-402.3	540,496.51	760,257.06	32.48388462	-103.62336781	
6,800.0	7.00	226.85	6,766.0	-385.5	-411.2	540,488.18	760,248.17	32.48386187	-103.62339682	
6,900.0	7.00	226.85	6,865.2	-393.9	-420.1	540,479.84	760,239.28	32.48383912	-103.62342583	
7,000.0	7.00	226.85	6,964.5	-402.2	-429.0	540,471.50	760,230.39	32.48381638	-103.62345485	
7,100.0	7.00	226.85	7,063.7	-410.5	-437.9	540,463.17	760,221.50	32.48379363	-103.62348386	
7,200.0	7.00	226.85	7,163.0	-418.9	-446.8	540,454.83	760,212.61	32.48377088	-103.62351287	
7,300.0	7.00	226.85	7,262.2	-427.2	-455.7	540,446.50	760,203.72	32.48374813	-103.62354188	
7,400.0	7.00	226.85	7,361.5	-435.5	-464.6	540,438.16	760,194.83	32.48372539	-103.62357089	
7,443.3	7.00	226.85	7,404.5	-439.2	-468.4	540,434.55	760,190.97	32.48371553	-103.62358346	
Brushy Canyon										
7,500.0	7.00	226.85	7,460.7	-443.9	-473.4	540,429.83	760,185.94	32.48370264	-103.62359990	
7,600.0	7.00	226.85	7,560.0	-452.2	-482.3	540,421.49	760,177.05	32.48367989	-103.62362891	
7,700.0	7.00	226.85	7,659.3	-460.5	-491.2	540,413.16	760,168.16	32.48365714	-103.62365792	
7,800.0	7.00	226.85	7,758.5	-468.9	-500.1	540,404.82	760,159.27	32.48363440	-103.62368693	
7,900.0	7.00	226.85	7,857.8	-477.2	-509.0	540,396.49	760,150.37	32.48361165	-103.62371594	
8,000.0	7.00	226.85	7,957.0	-485.6	-517.9	540,388.15	760,141.48	32.48358890	-103.62374495	
8,100.0	7.00	226.85	8,056.3	-493.9	-526.8	540,379.82	760,132.59	32.48356615	-103.62377396	
8,200.0	7.00	226.85	8,155.5	-502.2	-535.7	540,371.48	760,123.70	32.48354340	-103.62380297	
8,300.0	7.00	226.85	8,254.8	-510.6	-544.6	540,363.15	760,114.81	32.48352066	-103.62383198	
8,400.0	7.00	226.85	8,354.0	-518.9	-553.5	540,354.81	760,105.92	32.48349791	-103.62386099	
8,500.0	7.00	226.85	8,453.3	-527.2	-562.4	540,346.47	760,097.03	32.48347516	-103.62389000	
8,600.0	7.00	226.85	8,552.5	-535.6	-571.2	540,338.14	760,088.14	32.48345241	-103.62391901	
8,700.0	7.00	226.85	8,651.8	-543.9	-580.1	540,329.80	760,079.25	32.48342966	-103.62394802	
8,800.0	7.00	226.85	8,751.1	-552.2	-589.0	540,321.47	760,070.36	32.48340692	-103.62397703	
8,900.0	7.00	226.85	8,850.3	-560.6	-597.9	540,313.13	760,061.47	32.48338417	-103.62400605	
9,000.0	7.00	226.85	8,949.6	-568.9	-606.8	540,304.80	760,052.58	32.48336142	-103.62403506	
9,002.0	7.00	226.85	8,951.5	-569.1	-607.0	540,304.63	760,052.40	32.48336098	-103.62403562	
Bone Spring Lime										



American Resource Development LLC

Planning Report - Geographic

Database:	AUS-COMPASS - EDM_15 - 32bit	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Company:	Ameredev Operating	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Project:	Hat Mesa	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site:	Margarita Federal Com - Pad A	North Reference:	Grid
Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Margarita Federal Com 13 20H		
Design:	Prelim - 179.57		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,100.0	7.00	226.85	9,048.8	-577.2	-615.7	540,296.46	760,043.69	32.48333867	-103.62406407
9,200.0	7.00	226.85	9,148.1	-585.6	-624.6	540,288.13	760,034.80	32.48331593	-103.62409308
9,300.0	7.00	226.85	9,247.3	-593.9	-633.5	540,279.79	760,025.91	32.48329318	-103.62412209
9,400.0	7.00	226.85	9,346.6	-602.2	-642.4	540,271.46	760,017.01	32.48327043	-103.62415110
9,500.0	7.00	226.85	9,445.8	-610.6	-651.3	540,263.12	760,008.12	32.48324768	-103.62418011
9,600.0	7.00	226.85	9,545.1	-618.9	-660.1	540,254.79	759,999.23	32.48322493	-103.62420912
9,700.0	7.00	226.85	9,644.3	-627.3	-669.0	540,246.45	759,990.34	32.48320219	-103.62423813
9,800.0	7.00	226.85	9,743.6	-635.6	-677.9	540,238.12	759,981.45	32.48317944	-103.62426714
9,900.0	7.00	226.85	9,842.9	-643.9	-686.8	540,229.78	759,972.56	32.48315669	-103.62429615
10,000.0	7.00	226.85	9,942.1	-652.3	-695.7	540,221.44	759,963.67	32.48313394	-103.62432516
10,093.1	7.00	226.85	10,034.5	-660.0	-704.0	540,213.69	759,955.40	32.48311277	-103.62435216
First Bone Spring									
10,100.0	7.00	226.85	10,041.4	-660.6	-704.6	540,213.11	759,954.78	32.48311119	-103.62435417
10,200.0	7.00	226.85	10,140.6	-668.9	-713.5	540,204.77	759,945.89	32.48308845	-103.62438318
10,300.0	7.00	226.85	10,239.9	-677.3	-722.4	540,196.44	759,937.00	32.48306570	-103.62441219
10,400.0	7.00	226.85	10,339.1	-685.6	-731.3	540,188.10	759,928.11	32.48304295	-103.62444120
10,500.0	7.00	226.85	10,438.4	-693.9	-740.2	540,179.77	759,919.22	32.48302020	-103.62447021
10,522.3	7.00	226.85	10,460.5	-695.8	-742.1	540,177.91	759,917.24	32.48301514	-103.62447667
Start Drop -1.00									
10,600.0	6.22	226.85	10,537.7	-701.9	-748.7	540,171.79	759,910.71	32.48299843	-103.62449797
10,625.9	5.96	226.85	10,563.5	-703.8	-750.7	540,169.91	759,908.70	32.48299329	-103.62450453
Second Bone Spring									
10,700.0	5.22	226.85	10,637.2	-708.7	-755.9	540,164.97	759,903.44	32.48297982	-103.62452171
10,800.0	4.22	226.85	10,736.9	-714.4	-762.0	540,159.34	759,897.43	32.48296445	-103.62454131
10,900.0	3.22	226.85	10,836.6	-718.8	-766.7	540,154.90	759,892.69	32.48295233	-103.62455676
11,000.0	2.22	226.85	10,936.5	-722.1	-770.2	540,151.65	759,889.23	32.48294347	-103.62456807
11,100.0	1.22	226.85	11,036.5	-724.1	-772.3	540,149.59	759,887.03	32.48293786	-103.62457522
11,200.0	0.22	226.85	11,136.5	-725.0	-773.3	540,148.73	759,886.11	32.48293550	-103.62457823
11,222.3	0.00	0.00	11,158.7	-725.0	-773.3	540,148.70	759,886.08	32.48293542	-103.62457833
Start 149.8 hold at 11222.3 MD									
11,300.0	0.00	0.00	11,236.5	-725.0	-773.3	540,148.70	759,886.08	32.48293542	-103.62457833
11,372.0	0.00	0.00	11,308.5	-725.0	-773.3	540,148.70	759,886.08	32.48293542	-103.62457833
Start Build 12.00									
11,375.0	0.36	177.20	11,311.5	-725.0	-773.3	540,148.69	759,886.08	32.48293540	-103.62457833
11,400.0	3.36	177.20	11,336.5	-725.8	-773.3	540,147.88	759,886.12	32.48293317	-103.62457822
11,425.0	6.36	177.20	11,361.4	-727.9	-773.2	540,145.77	759,886.23	32.48292736	-103.62457793
11,450.0	9.36	177.20	11,386.1	-731.3	-773.0	540,142.36	759,886.39	32.48291798	-103.62457746
11,475.0	12.36	177.20	11,410.7	-736.0	-772.8	540,137.65	759,886.62	32.48290505	-103.62457681
11,500.0	15.36	177.20	11,434.9	-742.0	-772.5	540,131.67	759,886.92	32.48288860	-103.62457599
11,525.0	18.36	177.20	11,458.9	-749.3	-772.1	540,124.43	759,887.27	32.48286870	-103.62457500
11,550.0	21.36	177.20	11,482.4	-757.7	-771.7	540,115.95	759,887.69	32.48284538	-103.62457384
11,575.0	24.36	177.20	11,505.4	-767.4	-771.2	540,106.26	759,888.16	32.48281872	-103.62457251
11,600.0	27.36	177.20	11,527.9	-778.3	-770.7	540,095.37	759,888.69	32.48278878	-103.62457101
11,625.0	30.36	177.20	11,549.8	-790.4	-770.1	540,083.32	759,889.28	32.48275565	-103.62456936
11,650.0	33.36	177.20	11,571.0	-803.6	-769.5	540,070.14	759,889.93	32.48271941	-103.62456756
11,675.0	36.36	177.20	11,591.5	-817.8	-768.8	540,055.87	759,890.63	32.48268018	-103.62456560
11,681.2	37.10	177.20	11,596.5	-821.5	-768.6	540,052.18	759,890.81	32.48267003	-103.62456509
Third Bone Spring									
11,700.0	39.36	177.20	11,611.3	-833.2	-768.0	540,040.55	759,891.37	32.48263805	-103.62456350
11,725.0	42.36	177.20	11,630.2	-849.5	-767.2	540,024.21	759,892.17	32.48259315	-103.62456126
11,750.0	45.36	177.20	11,648.2	-866.8	-766.4	540,006.92	759,893.02	32.48254558	-103.62455889
11,775.0	48.36	177.20	11,665.3	-885.0	-765.5	539,988.70	759,893.91	32.48249549	-103.62455639
11,800.0	51.36	177.20	11,681.4	-904.1	-764.5	539,969.61	759,894.85	32.48244302	-103.62455377
11,825.0	54.36	177.20	11,696.5	-924.0	-763.6	539,949.71	759,895.82	32.48238830	-103.62455104



American Resource Development LLC

Planning Report - Geographic

Database:	AUS-COMPASS - EDM_15 - 32bit	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Company:	Ameredev Operating	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Project:	Hat Mesa	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site:	Margarita Federal Com - Pad A	North Reference:	Grid
Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Margarita Federal Com 13 20H		
Design:	Prelim - 179.57		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
11,850.0	57.36	177.20	11,710.5	-944.7	-762.6	539,929.05	759,896.83	32.48233148	-103.62454821
11,875.0	60.36	177.20	11,723.5	-966.0	-761.5	539,907.68	759,897.88	32.48227273	-103.62454528
11,900.0	63.36	177.20	11,735.3	-988.0	-760.4	539,885.66	759,898.95	32.48221220	-103.62454226
11,925.0	66.36	177.20	11,745.9	-1,010.6	-759.3	539,863.06	759,900.06	32.48215006	-103.62453916
11,950.0	69.36	177.20	11,755.3	-1,033.8	-758.2	539,839.93	759,901.19	32.48208647	-103.62453599
11,975.0	72.36	177.20	11,763.5	-1,057.4	-757.0	539,816.35	759,902.34	32.48202162	-103.62453276
12,000.0	75.36	177.20	11,770.5	-1,081.3	-755.9	539,792.36	759,903.52	32.48195568	-103.62452947
12,025.0	78.36	177.20	11,776.1	-1,105.7	-754.7	539,768.05	759,904.71	32.48188883	-103.62452613
12,050.0	81.36	177.20	11,780.5	-1,130.2	-753.5	539,743.47	759,905.91	32.48182126	-103.62452276
12,075.0	84.36	177.20	11,783.7	-1,155.0	-752.3	539,718.70	759,907.12	32.48175314	-103.62451937
12,100.0	87.36	177.20	11,785.5	-1,179.9	-751.0	539,693.80	759,908.34	32.48168468	-103.62451595
12,122.0	90.00	177.20	11,786.0	-1,201.9	-750.0	539,671.81	759,909.42	32.48162421	-103.62451294
Start 101.6 hold at 12122.0 MD									
12,200.0	90.00	177.20	11,786.0	-1,279.8	-746.2	539,593.93	759,913.23	32.48141008	-103.62450226
12,223.7	90.00	177.20	11,786.0	-1,303.4	-745.0	539,570.29	759,914.38	32.48134510	-103.62449902
Start DLS 2.00 TFO 90.00									
12,300.0	90.00	178.73	11,786.0	-1,379.7	-742.3	539,494.01	759,917.10	32.48113537	-103.62449186
12,342.9	90.00	179.58	11,786.0	-1,422.6	-741.7	539,451.14	759,917.73	32.48101753	-103.62449073
Start 11273.5 hold at 12342.9 MD									
12,400.0	90.00	179.58	11,786.0	-1,479.7	-741.2	539,394.01	759,918.15	32.48086051	-103.62449062
12,500.0	90.00	179.58	11,786.0	-1,579.7	-740.5	539,294.01	759,918.87	32.48058564	-103.62449041
12,600.0	90.00	179.58	11,786.0	-1,679.7	-739.8	539,194.02	759,919.60	32.48031078	-103.62449021
12,700.0	90.00	179.58	11,786.0	-1,779.7	-739.1	539,094.02	759,920.33	32.48003591	-103.62449000
12,800.0	90.00	179.58	11,786.0	-1,879.7	-738.3	538,994.02	759,921.06	32.47976105	-103.62448980
12,900.0	90.00	179.58	11,786.0	-1,979.7	-737.6	538,894.02	759,921.78	32.47948618	-103.62448959
13,000.0	90.00	179.58	11,786.0	-2,079.7	-736.9	538,794.03	759,922.51	32.47921132	-103.62448939
13,100.0	90.00	179.58	11,786.0	-2,179.7	-736.1	538,694.03	759,923.24	32.47893645	-103.62448918
13,200.0	90.00	179.58	11,786.0	-2,279.7	-735.4	538,594.03	759,923.97	32.47866159	-103.62448898
13,300.0	90.00	179.58	11,786.0	-2,379.7	-734.7	538,494.04	759,924.69	32.47838673	-103.62448877
13,400.0	90.00	179.58	11,786.0	-2,479.7	-734.0	538,394.04	759,925.42	32.47811186	-103.62448857
13,500.0	90.00	179.58	11,786.0	-2,579.7	-733.2	538,294.04	759,926.15	32.47783700	-103.62448836
13,600.0	90.00	179.58	11,786.0	-2,679.7	-732.5	538,194.04	759,926.88	32.47756213	-103.62448816
13,700.0	90.00	179.58	11,786.0	-2,779.7	-731.8	538,094.05	759,927.60	32.47728727	-103.62448795
13,800.0	90.00	179.58	11,786.0	-2,879.7	-731.1	537,994.05	759,928.33	32.47701240	-103.62448775
13,900.0	90.00	179.58	11,786.0	-2,979.7	-730.3	537,894.05	759,929.06	32.47673754	-103.62448754
14,000.0	90.00	179.58	11,786.0	-3,079.6	-729.6	537,794.05	759,929.79	32.47646267	-103.62448734
14,100.0	90.00	179.58	11,786.0	-3,179.6	-728.9	537,694.06	759,930.51	32.47618781	-103.62448713
14,200.0	90.00	179.58	11,786.0	-3,279.6	-728.1	537,594.06	759,931.24	32.47591294	-103.62448693
14,300.0	90.00	179.58	11,786.0	-3,379.6	-727.4	537,494.06	759,931.97	32.47563808	-103.62448672
14,400.0	90.00	179.58	11,786.0	-3,479.6	-726.7	537,394.06	759,932.70	32.47536322	-103.62448652
14,500.0	90.00	179.58	11,786.0	-3,579.6	-726.0	537,294.07	759,933.42	32.47508835	-103.62448631
14,600.0	90.00	179.58	11,786.0	-3,679.6	-725.2	537,194.07	759,934.15	32.47481349	-103.62448611
14,700.0	90.00	179.58	11,786.0	-3,779.6	-724.5	537,094.07	759,934.88	32.47453862	-103.62448590
14,800.0	90.00	179.58	11,786.0	-3,879.6	-723.8	536,994.08	759,935.61	32.47426376	-103.62448570
14,900.0	90.00	179.58	11,786.0	-3,979.6	-723.0	536,894.08	759,936.33	32.47398889	-103.62448549
15,000.0	90.00	179.58	11,786.0	-4,079.6	-722.3	536,794.08	759,937.06	32.47371403	-103.62448529
15,100.0	90.00	179.58	11,786.0	-4,179.6	-721.6	536,694.08	759,937.79	32.47343916	-103.62448508
15,200.0	90.00	179.58	11,786.0	-4,279.6	-720.9	536,594.09	759,938.52	32.47316430	-103.62448488
15,300.0	90.00	179.58	11,786.0	-4,379.6	-720.1	536,494.09	759,939.24	32.47288943	-103.62448467
15,400.0	90.00	179.58	11,786.0	-4,479.6	-719.4	536,394.09	759,939.97	32.47261457	-103.62448446
15,500.0	90.00	179.58	11,786.0	-4,579.6	-718.7	536,294.09	759,940.70	32.47233970	-103.62448426
15,600.0	90.00	179.58	11,786.0	-4,679.6	-718.0	536,194.10	759,941.43	32.47206484	-103.62448405
15,700.0	90.00	179.58	11,786.0	-4,779.6	-717.2	536,094.10	759,942.16	32.47178997	-103.62448385
15,800.0	90.00	179.58	11,786.0	-4,879.6	-716.5	535,994.10	759,942.88	32.47151511	-103.62448364



American Resource Development LLC

Planning Report - Geographic

Database:	AUS-COMPASS - EDM_15 - 32bit	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Company:	Ameredev Operating	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Project:	Hat Mesa	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site:	Margarita Federal Com - Pad A	North Reference:	Grid
Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Margarita Federal Com 13 20H		
Design:	Prelim - 179.57		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
15,900.0	90.00	179.58	11,786.0	-4,979.6	-715.8	535,894.10	759,943.61	32.47124024	-103.62448344	
16,000.0	90.00	179.58	11,786.0	-5,079.6	-715.0	535,794.11	759,944.34	32.47096538	-103.62448323	
16,100.0	90.00	179.58	11,786.0	-5,179.6	-714.3	535,694.11	759,945.07	32.47069051	-103.62448303	
16,200.0	90.00	179.58	11,786.0	-5,279.6	-713.6	535,594.11	759,945.79	32.47041565	-103.62448282	
16,300.0	90.00	179.58	11,786.0	-5,379.6	-712.9	535,494.11	759,946.52	32.47014079	-103.62448262	
16,400.0	90.00	179.58	11,786.0	-5,479.6	-712.1	535,394.12	759,947.25	32.46986592	-103.62448241	
16,500.0	90.00	179.58	11,786.0	-5,579.6	-711.4	535,294.12	759,947.98	32.46959106	-103.62448221	
16,600.0	90.00	179.58	11,786.0	-5,679.6	-710.7	535,194.12	759,948.70	32.46931619	-103.62448200	
16,700.0	90.00	179.58	11,786.0	-5,779.6	-710.0	535,094.13	759,949.43	32.46904133	-103.62448180	
16,800.0	90.00	179.58	11,786.0	-5,879.6	-709.2	534,994.13	759,950.16	32.46876646	-103.62448159	
16,900.0	90.00	179.58	11,786.0	-5,979.6	-708.5	534,894.13	759,950.89	32.46849160	-103.62448138	
17,000.0	90.00	179.58	11,786.0	-6,079.6	-707.8	534,794.13	759,951.61	32.46821673	-103.62448118	
17,100.0	90.00	179.58	11,786.0	-6,179.6	-707.0	534,694.14	759,952.34	32.46794187	-103.62448097	
17,200.0	90.00	179.58	11,786.0	-6,279.6	-706.3	534,594.14	759,953.07	32.46766700	-103.62448077	
17,300.0	90.00	179.58	11,786.0	-6,379.6	-705.6	534,494.14	759,953.80	32.46739214	-103.62448056	
17,400.0	90.00	179.58	11,786.0	-6,479.6	-704.9	534,394.14	759,954.52	32.46711727	-103.62448036	
17,500.0	90.00	179.58	11,786.0	-6,579.6	-704.1	534,294.15	759,955.25	32.46684241	-103.62448015	
17,600.0	90.00	179.58	11,786.0	-6,679.6	-703.4	534,194.15	759,955.98	32.46656754	-103.62447995	
17,700.0	90.00	179.58	11,786.0	-6,779.6	-702.7	534,094.15	759,956.71	32.46629268	-103.62447974	
17,800.0	90.00	179.58	11,786.0	-6,879.5	-701.9	533,994.15	759,957.43	32.46601781	-103.62447953	
17,900.0	90.00	179.58	11,786.0	-6,979.5	-701.2	533,894.16	759,958.16	32.46574295	-103.62447933	
18,000.0	90.00	179.58	11,786.0	-7,079.5	-700.5	533,794.16	759,958.89	32.46546808	-103.62447912	
18,100.0	90.00	179.58	11,786.0	-7,179.5	-699.8	533,694.16	759,959.62	32.46519322	-103.62447892	
18,200.0	90.00	179.58	11,786.0	-7,279.5	-699.0	533,594.17	759,960.34	32.46491835	-103.62447871	
18,300.0	90.00	179.58	11,786.0	-7,379.5	-698.3	533,494.17	759,961.07	32.46464349	-103.62447851	
18,400.0	90.00	179.58	11,786.0	-7,479.5	-697.6	533,394.17	759,961.80	32.46436862	-103.62447830	
18,500.0	90.00	179.58	11,786.0	-7,579.5	-696.9	533,294.17	759,962.53	32.46409376	-103.62447809	
18,600.0	90.00	179.58	11,786.0	-7,679.5	-696.1	533,194.18	759,963.25	32.46381889	-103.62447789	
18,700.0	90.00	179.58	11,786.0	-7,779.5	-695.4	533,094.18	759,963.98	32.46354403	-103.62447768	
18,800.0	90.00	179.58	11,786.0	-7,879.5	-694.7	532,994.18	759,964.71	32.46326916	-103.62447748	
18,900.0	90.00	179.58	11,786.0	-7,979.5	-693.9	532,894.18	759,965.44	32.46299429	-103.62447727	
19,000.0	90.00	179.58	11,786.0	-8,079.5	-693.2	532,794.19	759,966.16	32.46271943	-103.62447707	
19,100.0	90.00	179.58	11,786.0	-8,179.5	-692.5	532,694.19	759,966.89	32.46244456	-103.62447686	
19,200.0	90.00	179.58	11,786.0	-8,279.5	-691.8	532,594.19	759,967.62	32.46216970	-103.62447665	
19,300.0	90.00	179.58	11,786.0	-8,379.5	-691.0	532,494.19	759,968.35	32.46189483	-103.62447645	
19,400.0	90.00	179.58	11,786.0	-8,479.5	-690.3	532,394.20	759,969.07	32.46161997	-103.62447624	
19,500.0	90.00	179.58	11,786.0	-8,579.5	-689.6	532,294.20	759,969.80	32.46134510	-103.62447604	
19,600.0	90.00	179.58	11,786.0	-8,679.5	-688.9	532,194.20	759,970.53	32.46107024	-103.62447583	
19,700.0	90.00	179.58	11,786.0	-8,779.5	-688.1	532,094.20	759,971.26	32.46079537	-103.62447562	
19,800.0	90.00	179.58	11,786.0	-8,879.5	-687.4	531,994.21	759,971.99	32.46052051	-103.62447542	
19,900.0	90.00	179.58	11,786.0	-8,979.5	-686.7	531,894.21	759,972.71	32.46024564	-103.62447521	
20,000.0	90.00	179.58	11,786.0	-9,079.5	-685.9	531,794.21	759,973.44	32.45997078	-103.62447501	
20,100.0	90.00	179.58	11,786.0	-9,179.5	-685.2	531,694.22	759,974.17	32.45969591	-103.62447480	
20,200.0	90.00	179.58	11,786.0	-9,279.5	-684.5	531,594.22	759,974.90	32.45942105	-103.62447459	
20,300.0	90.00	179.58	11,786.0	-9,379.5	-683.8	531,494.22	759,975.62	32.45914618	-103.62447439	
20,400.0	90.00	179.58	11,786.0	-9,479.5	-683.0	531,394.22	759,976.35	32.45887132	-103.62447418	
20,500.0	90.00	179.58	11,786.0	-9,579.5	-682.3	531,294.23	759,977.08	32.45859645	-103.62447398	
20,600.0	90.00	179.58	11,786.0	-9,679.5	-681.6	531,194.23	759,977.81	32.45832159	-103.62447377	
20,700.0	90.00	179.58	11,786.0	-9,779.5	-680.9	531,094.23	759,978.53	32.45804672	-103.62447356	
20,800.0	90.00	179.58	11,786.0	-9,879.5	-680.1	530,994.23	759,979.26	32.45777185	-103.62447336	
20,900.0	90.00	179.58	11,786.0	-9,979.5	-679.4	530,894.24	759,979.99	32.45749699	-103.62447315	
21,000.0	90.00	179.58	11,786.0	-10,079.5	-678.7	530,794.24	759,980.72	32.45722212	-103.62447295	
21,100.0	90.00	179.58	11,786.0	-10,179.5	-677.9	530,694.24	759,981.44	32.45694726	-103.62447274	
21,200.0	90.00	179.58	11,786.0	-10,279.5	-677.2	530,594.24	759,982.17	32.45667239	-103.62447253	
21,300.0	90.00	179.58	11,786.0	-10,379.5	-676.5	530,494.25	759,982.90	32.45639753	-103.62447233	



American Resource Development LLC

Planning Report - Geographic

Database:	AUS-COMPASS - EDM_15 - 32bit	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Company:	Ameredev Operating	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Project:	Hat Mesa	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site:	Margarita Federal Com - Pad A	North Reference:	Grid
Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Margarita Federal Com 13 20H		
Design:	Prelim - 179.57		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
21,400.0	90.00	179.58	11,786.0	-10,479.5	-675.8	530,394.25	759,983.63	32.45612266	-103.62447212	
21,500.0	90.00	179.58	11,786.0	-10,579.4	-675.0	530,294.25	759,984.35	32.45584780	-103.62447192	
21,600.0	90.00	179.58	11,786.0	-10,679.4	-674.3	530,194.25	759,985.08	32.45557293	-103.62447171	
21,700.0	90.00	179.58	11,786.0	-10,779.4	-673.6	530,094.26	759,985.81	32.45529807	-103.62447150	
21,800.0	90.00	179.58	11,786.0	-10,879.4	-672.8	529,994.26	759,986.54	32.45502320	-103.62447130	
21,900.0	90.00	179.58	11,786.0	-10,979.4	-672.1	529,894.26	759,987.26	32.45474833	-103.62447109	
22,000.0	90.00	179.58	11,786.0	-11,079.4	-671.4	529,794.27	759,987.99	32.45447347	-103.62447088	
22,100.0	90.00	179.58	11,786.0	-11,179.4	-670.7	529,694.27	759,988.72	32.45419860	-103.62447068	
22,200.0	90.00	179.58	11,786.0	-11,279.4	-669.9	529,594.27	759,989.45	32.45392374	-103.62447047	
22,300.0	90.00	179.58	11,786.0	-11,379.4	-669.2	529,494.27	759,990.17	32.45364887	-103.62447027	
22,400.0	90.00	179.58	11,786.0	-11,479.4	-668.5	529,394.28	759,990.90	32.45337401	-103.62447006	
22,500.0	90.00	179.58	11,786.0	-11,579.4	-667.8	529,294.28	759,991.63	32.45309914	-103.62446985	
22,600.0	90.00	179.58	11,786.0	-11,679.4	-667.0	529,194.28	759,992.36	32.45282428	-103.62446965	
22,700.0	90.00	179.58	11,786.0	-11,779.4	-666.3	529,094.28	759,993.08	32.45254941	-103.62446944	
22,800.0	90.00	179.58	11,786.0	-11,879.4	-665.6	528,994.29	759,993.81	32.45227454	-103.62446923	
22,900.0	90.00	179.58	11,786.0	-11,979.4	-664.8	528,894.29	759,994.54	32.45199968	-103.62446903	
23,000.0	90.00	179.58	11,786.0	-12,079.4	-664.1	528,794.29	759,995.27	32.45172481	-103.62446882	
23,100.0	90.00	179.58	11,786.0	-12,179.4	-663.4	528,694.29	759,995.99	32.45144995	-103.62446861	
23,200.0	90.00	179.58	11,786.0	-12,279.4	-662.7	528,594.30	759,996.72	32.45117508	-103.62446841	
23,300.0	90.00	179.58	11,786.0	-12,379.4	-661.9	528,494.30	759,997.45	32.45090022	-103.62446820	
23,400.0	90.00	179.58	11,786.0	-12,479.4	-661.2	528,394.30	759,998.18	32.45062535	-103.62446800	
23,500.0	90.00	179.58	11,786.0	-12,579.4	-660.5	528,294.31	759,998.90	32.45035048	-103.62446779	
23,600.0	90.00	179.58	11,786.0	-12,679.4	-659.8	528,194.31	759,999.63	32.45007562	-103.62446758	
23,616.4	90.00	179.58	11,786.0	-12,695.8	-659.6	528,177.89	759,999.75	32.45003050	-103.62446755	
TD at 23616.4										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Margarita Federal Cor - hit/miss target - Shape - Point	0.00	0.01	11,786.0	-1,303.4	-745.0	539,570.29	759,914.38	32.48134510	-103.62449902	
Margarita Federal Cor - plan hits target center by 247.0usft at 23616.4usft MD (11786.0 TVD, -12695.8 N, -659.6 E) - Point	0.00	0.00	12,033.0	-12,695.8	-659.6	528,177.89	759,999.75	32.45003050	-103.62446755	



American Resource Development LLC

Planning Report - Geographic

Database:	AUS-COMPASS - EDM_15 - 32bit	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Company:	Ameredev Operating	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Project:	Hat Mesa	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site:	Margarita Federal Com - Pad A	North Reference:	Grid
Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Margarita Federal Com 13 20H		
Design:	Prelim - 179.57		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,690.5	1,690.5	Rustler		0.00	
2,125.5	2,125.5	Salado		0.00	
3,482.8	3,473.5	Tansill		0.00	
3,878.8	3,866.5	Capitan		0.00	
5,641.9	5,616.5	Bell Canyon			
7,443.3	7,404.5	Brushy Canyon			
9,002.0	8,951.5	Bone Spring Lime			
10,093.1	10,034.5	First Bone Spring			
10,625.9	10,563.5	Second Bone Spring			
11,681.2	11,596.5	Third Bone Spring			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,000.0	2,000.0	0.0	0.0	Start Build 2.00
2,350.0	2,349.1	-14.6	-15.6	Start 8172.3 hold at 2350.0 MD
10,522.3	10,460.5	-695.8	-742.1	Start Drop -1.00
11,222.3	11,158.7	-725.0	-773.3	Start 149.8 hold at 11222.3 MD
11,372.0	11,308.5	-725.0	-773.3	Start Build 12.00
12,122.0	11,786.0	-1,201.9	-750.0	Start 101.6 hold at 12122.0 MD
12,223.7	11,786.0	-1,303.4	-745.0	Start DLS 2.00 TFO 90.00
12,342.9	11,786.0	-1,422.6	-741.7	Start 11273.5 hold at 12342.9 MD
23,616.4	11,786.0	-12,695.8	-659.6	TD at 23616.4



American Resource Development LLC.

Ameredev Operating

Hat Mesa

Margarita Federal Com - Pad A

Margarita Federal Com 20H

Margarita Federal Com 13 20H

Prelim - 179.57

Anticollision Report

22 June, 2022



Anticollision Report

Company:	Ameredeve Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Reference	Prelim - 179.57
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	Stations
Depth Range:	Unlimited
Results Limited by:	Maximum centre distance of 1,000.0usft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Pedal Curve
Casing Method:	Not applied

Survey Tool Program		Date	6/22/2022		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	23,616.4	Prelim - 179.57 (Margarita Federal Com 13 20H)	MWD	OWSG MWD - Standard	

Summary						
Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Big Bucks Fed Com						
Big Bucks Fed Com 502H - Big Bucks Fed Com 502H - t	11,000.0	17,092.3	202.2	71.2	1.543 SF	
Big Bucks Fed Com 502H - Big Bucks Fed Com 502H - t	11,018.6	17,092.9	201.4	71.1	1.545 CC, ES	
Big Stag Fed Com - Pad B						
Big Stag Fed Com 503H - Big Stag Fed Com 503H - Big	10,932.3	16,938.9	714.9	586.4	5.562 CC, ES, SF	
Big Stag Fed Com 703H - Big Stag Fed Com 703H - Big	11,445.0	17,968.1	197.2	64.6	1.487 Level 3, CC, ES, SF	
Margarita Federal Com - Pad A						
Margarita Federal Com 12H - Margarita Federal Com 13	946.1	947.2	24.3	16.7	3.214 CC	
Margarita Federal Com 12H - Margarita Federal Com 13	1,100.0	1,101.0	24.7	16.5	2.986 ES	
Margarita Federal Com 12H - Margarita Federal Com 13	1,600.0	1,601.0	27.8	18.0	2.839 SF	
Margarita Federal Com 12H - Margarita Federal Com 13	2,373.5	2,373.5	22.4	10.4	1.863 CC, ES, SF	
Margarita Federal Com 16H - Margarita Federal Com 13	3,759.2	3,749.7	106.2	87.1	5.574 CC	
Margarita Federal Com 16H - Margarita Federal Com 13	10,800.0	10,804.4	107.7	49.3	1.844 SF	
Margarita Federal Com 16H - Margarita Federal Com 13	10,812.0	10,814.5	107.6	49.3	1.844 ES	
Margarita Federal Com 20H - Margarita Federal Com 13	100.0	100.0	0.1	-1.2	0.107 Level 3, CC, SF	
Margarita Federal Com 20H - Margarita Federal Com 13	1,000.0	1,000.0	2.8	-4.8	0.366 Level 3, ES	
Margarita Federal Com 24H - Margarita Federal Com 13	299.7	300.7	65.8	61.7	16.205 CC	
Margarita Federal Com 24H - Margarita Federal Com 13	800.0	800.8	66.4	59.1	9.184 ES	
Margarita Federal Com 24H - Margarita Federal Com 13	1,600.4	1,600.6	72.5	62.2	7.056 SF	
Margarita Federal Com 24H - Margarita Federal Com 13	2,863.9	2,863.6	30.3	16.3	2.167 CC	
Margarita Federal Com 24H - Margarita Federal Com 13	2,900.0	2,899.6	30.5	16.2	2.138 ES, SF	
Margarita Federal Com 7H - Margarita Federal Com 7H -	970.3	966.6	91.1	83.7	12.225 CC	
Margarita Federal Com 7H - Margarita Federal Com 7H -	1,000.0	995.8	91.2	83.6	12.038 ES	
Margarita Federal Com 7H - Margarita Federal Com 7H -	1,700.0	1,693.1	112.8	102.7	11.143 SF	
Margarita Federal Com 7H - Margarita Federal Com 7H -	3,150.1	3,144.9	23.5	8.0	1.515 CC, ES, SF	
Margarita Federal Com 8H - Margarita Federal Com 8H -	2,000.0	2,000.0	33.0	21.9	2.975 CC, ES, SF	
Margarita Federal Com 8H - Margarita Federal Com 8H -	0.0	0.0	33.0			
Margarita Federal Com 8H - Margarita Federal Com 8H -	300.0	299.8	33.8	30.1	8.967 ES	
Margarita Federal Com 8H - Margarita Federal Com 8H -	600.0	597.7	42.1	34.9	5.859 SF	
Margarita Federal Com 8H - ST01 - Plan#7 - 179.53	0.0	0.0	33.0			
Margarita Federal Com 8H - ST01 - Plan#7 - 179.53	300.0	299.8	33.8	30.1	8.967 ES	
Margarita Federal Com 8H - ST01 - Plan#7 - 179.53	2,000.0	2,002.4	44.2	30.7	3.275 SF	
Margarita Federal Com 8H - ST01 - ST01	0.0	0.0	33.0			
Margarita Federal Com 8H - ST01 - ST01	300.0	299.8	33.8	30.1	8.967 ES	
Margarita Federal Com 8H - ST01 - ST01	1,674.1	1,676.0	52.9	40.6	4.300 SF	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Summary

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Margarita Federal Com - Pad B						
Margarita Federal Com 13 05H - 05H - PLAN#3 - 179.55	10,714.3	10,588.1	962.1	903.5	16.427	CC, ES
Margarita Federal Com 13 05H - 05H - PLAN#3 - 179.55	10,800.0	10,631.6	964.6	905.5	16.332	SF
Margarita Federal Com 13 06H - 06H - PLAN#3 - 179.55	10,195.9	10,135.3	284.3	238.0	6.136	CC, ES
Margarita Federal Com 13 06H - 06H - PLAN#3 - 179.55	10,200.0	10,137.8	284.3	238.0	6.135	SF
Margarita Federal Com 13 11H - 11H - PLAN#3 - 179.79	10,072.5	9,924.2	916.5	863.8	17.388	CC, ES
Margarita Federal Com 13 11H - 11H - PLAN#3 - 179.79	10,300.0	10,050.0	930.7	876.5	17.168	SF
Margarita Federal Com 13 15H - 15H - PLAN#3 - 179.58	11,093.7	11,025.0	757.5	704.6	14.338	CC
Margarita Federal Com 13 15H - 15H - PLAN#3 - 179.58	23,616.4	23,065.9	825.4	453.4	2.219	ES, SF
Margarita Federal Com 13 23H - AD - PLAN#3 - 179.58	12,018.0	11,771.6	869.3	809.9	14.617	CC
Margarita Federal Com 13 23H - AD - PLAN#3 - 179.58	23,616.4	23,360.2	962.1	610.8	2.739	ES, SF

Offset Design: Big Bucks Fed Com - Big Bucks Fed Com 502H - Big Bucks Fed Com 502H - Big Bucks Fed Com 502H

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Survey Program: Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Rule Assigned: Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
10,100.0	10,041.4	17,020.4	10,853.7	35.7	96.5	-159.66	-646.3	-571.0	928.1	841.3	86.83	10.689	
10,200.0	10,140.6	17,030.2	10,853.8	36.1	96.7	-157.40	-656.0	-570.7	831.6	743.4	88.21	9.428	
10,300.0	10,239.9	17,039.9	10,853.9	36.6	96.8	-155.08	-665.8	-570.5	736.0	646.1	89.93	8.184	
10,400.0	10,339.1	17,049.6	10,854.0	37.0	96.9	-152.72	-675.4	-570.3	641.5	549.4	92.17	6.961	
10,500.0	10,438.4	17,059.1	10,854.1	37.4	97.1	-150.34	-685.0	-570.1	548.9	453.7	95.20	5.766	
10,522.3	10,460.5	17,061.3	10,854.2	37.5	97.1	-149.80	-687.1	-570.0	528.6	432.5	96.02	5.505	
10,600.0	10,537.7	17,068.3	10,854.2	37.8	97.2	-147.17	-694.1	-569.9	458.9	359.4	99.46	4.614	
10,700.0	10,637.2	17,076.2	10,854.3	38.2	97.3	-144.11	-702.0	-569.7	373.0	267.4	105.61	3.532	
10,800.0	10,736.9	17,082.8	10,854.4	38.6	97.4	-141.53	-708.6	-569.6	294.9	180.4	114.53	2.575	
10,900.0	10,836.6	17,088.2	10,854.4	38.9	97.5	-139.51	-714.0	-569.5	232.9	107.2	125.66	1.853	
11,000.0	10,936.5	17,092.3	10,854.4	39.3	97.5	-138.12	-718.1	-569.4	202.2	71.2	131.06	1.543	SF
11,018.6	10,955.1	17,092.9	10,854.4	39.3	97.5	-137.93	-718.8	-569.4	201.4	71.1	130.31	1.545	CC, ES
11,100.0	11,036.5	17,095.2	10,854.5	39.6	97.6	-137.40	-721.0	-569.3	216.8	96.1	120.68	1.796	
11,200.0	11,136.5	17,096.9	10,854.5	39.8	97.6	-137.35	-722.7	-569.3	269.4	163.9	105.46	2.554	
11,222.3	11,158.7	17,097.1	10,854.5	39.8	97.6	89.42	-722.9	-569.3	284.5	181.7	102.74	2.769	
11,300.0	11,236.5	17,097.7	10,854.5	39.8	97.6	89.60	-723.6	-569.3	343.2	247.6	95.63	3.589	
11,372.0	11,308.5	17,098.3	10,854.5	39.8	97.6	89.76	-724.2	-569.3	403.4	311.7	91.74	4.397	
11,375.0	11,311.5	17,098.4	10,854.5	39.8	97.6	-86.82	-724.2	-569.3	406.0	314.4	91.62	4.431	
11,400.0	11,336.5	17,099.4	10,854.5	39.9	97.6	-81.25	-725.2	-569.3	427.7	337.0	90.71	4.715	
11,425.0	11,361.4	17,101.7	10,854.5	39.9	97.7	-75.18	-727.5	-569.2	449.7	359.8	89.98	4.998	
11,450.0	11,386.1	17,105.3	10,854.5	40.0	97.7	-68.84	-731.1	-569.2	471.9	382.5	89.39	5.279	
11,475.0	11,410.7	17,110.2	10,854.6	40.1	97.8	-62.48	-736.0	-569.1	494.0	405.1	88.91	5.556	
11,500.0	11,434.9	17,116.3	10,854.6	40.2	97.9	-56.34	-742.2	-569.0	516.1	427.6	88.54	5.829	
11,525.0	11,458.9	17,124.2	10,854.7	40.2	98.0	-50.55	-750.0	-568.9	538.1	449.8	88.26	6.096	
11,550.0	11,482.4	17,133.4	10,854.8	40.3	98.1	-45.30	-759.2	-568.7	559.7	471.7	88.06	6.356	
11,575.0	11,505.4	17,144.0	10,854.9	40.4	98.2	-40.63	-769.8	-568.5	581.1	493.1	87.92	6.609	
11,600.0	11,527.9	17,155.9	10,855.0	40.5	98.4	-36.56	-781.8	-568.3	602.0	514.1	87.83	6.853	
11,625.0	11,549.8	17,160.0	10,855.0	40.6	98.5	-33.74	-785.8	-568.3	622.4	534.7	87.69	7.098	
11,650.0	11,571.0	17,160.0	10,855.0	40.7	98.5	-31.54	-785.8	-568.3	642.6	555.0	87.52	7.342	
11,675.0	11,591.5	17,160.0	10,855.0	40.8	98.5	-29.55	-785.8	-568.3	662.4	575.0	87.35	7.583	
11,700.0	11,611.3	17,160.0	10,855.0	40.9	98.5	-27.76	-785.8	-568.3	681.9	594.7	87.18	7.821	
11,725.0	11,630.2	17,160.0	10,855.0	40.9	98.5	-26.15	-785.8	-568.3	701.0	614.0	87.01	8.057	
11,750.0	11,648.2	17,160.0	10,855.0	41.0	98.5	-24.69	-785.8	-568.3	719.7	632.9	86.82	8.289	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredeve Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Big Bucks Fed Com - Big Bucks Fed Com 502H - Big Bucks Fed Com 502H - Big Bucks Fed Com 502H												Offset Site Error:	0.0 usft
Survey Program: 147-MWD+HRGM												Offset Well Error:	0.0 usft
Reference	Offset	Rule Assigned:											
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
11,775.0	11,665.3	17,160.0	10,855.0	41.1	98.5	-23.38	-785.8	-568.3	738.0	651.4	86.63	8.519	
11,800.0	11,681.4	17,160.0	10,855.0	41.2	98.5	-22.19	-785.8	-568.3	755.9	669.5	86.43	8.746	
11,825.0	11,696.5	17,160.0	10,855.0	41.3	98.5	-21.11	-785.8	-568.3	773.4	687.2	86.21	8.971	
11,850.0	11,710.5	17,160.0	10,855.0	41.4	98.5	-20.13	-785.8	-568.3	790.4	704.4	85.98	9.193	
11,875.0	11,723.5	17,160.0	10,855.0	41.4	98.5	-19.24	-785.8	-568.3	806.9	721.2	85.72	9.413	
11,900.0	11,735.3	17,160.0	10,855.0	41.5	98.5	-18.43	-785.8	-568.3	822.9	737.5	85.45	9.630	
11,925.0	11,745.9	17,160.0	10,855.0	41.6	98.5	-17.69	-785.8	-568.3	838.5	753.3	85.16	9.846	
11,950.0	11,755.3	17,160.0	10,855.0	41.7	98.5	-17.02	-785.8	-568.3	853.5	768.6	84.85	10.058	
11,975.0	11,763.5	17,160.0	10,855.0	41.7	98.5	-16.41	-785.8	-568.3	867.9	783.4	84.52	10.269	
12,000.0	11,770.5	17,160.0	10,855.0	41.8	98.5	-15.85	-785.8	-568.3	881.8	797.7	84.16	10.478	
12,025.0	11,776.1	17,160.0	10,855.0	41.9	98.5	-15.34	-785.8	-568.3	895.2	811.4	83.79	10.684	
12,050.0	11,780.5	17,160.0	10,855.0	41.9	98.5	-14.87	-785.8	-568.3	908.0	824.6	83.39	10.889	
12,075.0	11,783.7	17,160.0	10,855.0	42.0	98.5	-14.45	-785.8	-568.3	920.2	837.3	82.97	11.091	
12,100.0	11,785.5	17,160.0	10,855.0	42.0	98.5	-14.06	-785.8	-568.3	931.9	849.3	82.53	11.291	
12,122.0	11,786.0	17,160.0	10,855.0	42.1	98.5	-13.75	-785.8	-568.3	941.6	859.5	82.12	11.465	
12,200.0	11,786.0	17,160.0	10,855.0	42.3	98.5	-13.75	-785.8	-568.3	977.8	897.2	80.64	12.126	
12,223.7	11,786.0	17,160.0	10,855.0	42.4	98.5	-13.75	-785.8	-568.3	989.8	909.6	80.17	12.345	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredeve Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Big Stag Fed Com - Pad B - Big Stag Fed Com 503H - Big Stag Fed Com 503H - Big Stag Fed Com 503H												Offset Site Error:	0.0 usft
Survey Program: 240-MWD+HRGM												Offset Well Error:	0.0 usft
Reference	Offset	Rule Assigned:											
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
10,300.0	10,239.9	16,895.4	10,718.8	36.6	95.8	48.52	-664.2	-1,481.6	969.6	859.5	110.11	8.806	
10,400.0	10,339.1	16,903.8	10,718.8	37.0	95.9	47.84	-672.7	-1,481.7	903.9	790.2	113.76	7.946	
10,500.0	10,438.4	16,912.3	10,718.9	37.4	96.0	47.16	-681.2	-1,481.9	844.9	727.4	117.56	7.187	
10,522.3	10,460.5	16,914.2	10,718.9	37.5	96.1	47.00	-683.1	-1,481.9	832.8	714.4	118.40	7.034	
10,600.0	10,537.7	16,921.0	10,718.9	37.8	96.1	46.13	-689.9	-1,482.0	794.4	673.1	121.31	6.548	
10,700.0	10,637.2	16,927.3	10,718.9	38.2	96.2	45.32	-696.2	-1,482.1	754.8	630.2	124.64	6.056	
10,800.0	10,736.9	16,933.0	10,718.9	38.6	96.3	44.66	-701.9	-1,482.2	728.1	601.0	127.15	5.726	
10,900.0	10,836.6	16,937.7	10,718.9	38.9	96.4	44.20	-706.6	-1,482.3	715.7	587.3	128.43	5.573	
10,932.3	10,868.9	16,938.9	10,719.0	39.0	96.4	44.09	-707.8	-1,482.3	714.9	586.4	128.53	5.562 CC, ES, SF	
11,000.0	10,936.5	16,941.2	10,719.0	39.3	96.4	43.94	-710.1	-1,482.3	718.4	590.2	128.23	5.602	
11,100.0	11,036.5	16,943.6	10,719.0	39.6	96.5	43.87	-712.5	-1,482.4	736.0	609.4	126.64	5.812	
11,200.0	11,136.5	16,944.8	10,719.0	39.8	96.5	44.00	-713.7	-1,482.4	767.5	643.6	123.96	6.192	
11,222.3	11,158.7	16,944.9	10,719.0	39.8	96.5	-89.10	-713.8	-1,482.4	776.3	653.0	123.25	6.299	
11,300.0	11,236.5	16,945.2	10,719.0	39.8	96.5	-89.12	-714.1	-1,482.4	811.0	690.5	120.57	6.727	
11,372.0	11,308.5	16,945.5	10,719.0	39.8	96.5	-89.14	-714.4	-1,482.4	848.3	730.3	118.01	7.189	
11,375.0	11,311.5	16,945.5	10,719.0	39.8	96.5	93.42	-714.4	-1,482.4	850.0	732.1	117.90	7.209	
11,400.0	11,336.5	16,946.4	10,719.0	39.9	96.5	91.31	-715.3	-1,482.4	864.0	747.0	117.03	7.383	
11,425.0	11,361.4	16,948.6	10,719.0	39.9	96.5	88.98	-717.5	-1,482.5	878.6	762.4	116.19	7.562	
11,450.0	11,386.1	16,952.1	10,719.0	40.0	96.6	86.46	-720.9	-1,482.5	893.6	778.2	115.39	7.744	
11,475.0	11,410.7	16,956.8	10,719.0	40.1	96.6	83.76	-725.7	-1,482.6	909.0	794.3	114.64	7.929	
11,500.0	11,434.9	16,962.8	10,719.1	40.2	96.7	80.92	-731.7	-1,482.7	924.6	810.7	113.94	8.115	
11,525.0	11,458.9	16,970.0	10,719.1	40.2	96.8	77.97	-738.9	-1,482.9	940.4	827.2	113.29	8.301	
11,550.0	11,482.4	16,978.5	10,719.1	40.3	97.0	74.96	-747.4	-1,483.0	956.4	843.7	112.70	8.486	
11,575.0	11,505.4	16,988.2	10,719.2	40.4	97.1	71.92	-757.1	-1,483.2	972.4	860.2	112.16	8.670	
11,600.0	11,527.9	16,999.1	10,719.3	40.5	97.2	68.90	-768.0	-1,483.4	988.4	876.7	111.68	8.850	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Big Stag Fed Com - Pad B - Big Stag Fed Com 703H - Big Stag Fed Com 703H - Big Stag Fed Com 703H													Offset Site Error:	0.0 usft
Survey Program: 200-MWD+HRGM													Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		Minimum Separation (usft)	Separation Factor	Warning	
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
10,500.0	10,438.4	17,931.8	11,257.9	37.4	98.8	69.97	-699.6	-971.2	971.4	879.4	92.04	10.554		
10,522.3	10,460.5	17,933.8	11,257.9	37.5	98.8	69.38	-701.5	-971.1	949.5	857.2	92.24	10.293		
10,600.0	10,537.7	17,940.1	11,257.9	37.8	98.9	63.50	-707.8	-970.9	873.0	780.0	93.01	9.386		
10,700.0	10,637.2	17,947.0	11,257.9	38.2	99.0	57.07	-714.7	-970.7	775.1	680.9	94.21	8.227		
10,800.0	10,736.9	17,952.6	11,257.9	38.6	99.0	51.92	-720.3	-970.6	678.0	582.2	95.75	7.081		
10,900.0	10,836.6	17,957.0	11,257.9	38.9	99.1	47.95	-724.7	-970.5	582.1	484.3	97.84	5.950		
11,000.0	10,936.5	17,960.2	11,257.9	39.3	99.2	45.01	-727.9	-970.4	488.3	387.5	100.84	4.843		
11,100.0	11,036.5	17,962.1	11,257.9	39.6	99.2	42.97	-729.8	-970.3	398.2	292.8	105.39	3.778		
11,200.0	11,136.5	17,962.8	11,257.9	39.8	99.2	41.72	-730.5	-970.3	314.8	202.2	112.56	2.797		
11,222.3	11,158.7	17,962.8	11,257.9	39.8	99.2	-91.61	-730.5	-970.3	297.7	183.1	114.62	2.598		
11,300.0	11,236.5	17,962.8	11,257.9	39.8	99.2	-91.59	-730.5	-970.3	244.9	121.9	123.02	1.991		
11,372.0	11,308.5	17,962.7	11,257.9	39.8	99.2	-91.57	-730.4	-970.3	210.3	79.7	130.57	1.611		
11,375.0	11,311.5	17,962.7	11,257.9	39.8	99.2	91.36	-730.4	-970.3	209.3	78.5	130.80	1.600		
11,400.0	11,336.5	17,963.5	11,257.9	39.9	99.2	92.02	-731.2	-970.3	202.3	69.9	132.34	1.528		
11,425.0	11,361.4	17,965.5	11,257.9	39.9	99.2	91.91	-733.2	-970.2	198.2	65.3	132.92	1.491 Level 3		
11,445.0	11,381.2	17,968.1	11,257.9	40.0	99.3	91.29	-735.8	-970.2	197.2	64.6	132.58	1.487 Level 3, CC, ES, SF		
11,450.0	11,386.1	17,968.9	11,257.9	40.0	99.3	91.06	-736.6	-970.1	197.3	64.9	132.38	1.490 Level 3		
11,475.0	11,410.7	17,973.5	11,257.9	40.1	99.3	89.49	-741.2	-970.0	199.4	68.6	130.77	1.525		
11,500.0	11,434.9	17,979.3	11,257.9	40.2	99.4	87.22	-747.0	-969.9	204.5	76.2	128.29	1.594		
11,525.0	11,458.9	17,986.4	11,257.9	40.2	99.5	84.31	-754.1	-969.7	212.1	86.8	125.27	1.693		
11,550.0	11,482.4	17,994.7	11,257.8	40.3	99.6	80.83	-762.4	-969.5	221.9	99.9	122.02	1.819		
11,575.0	11,505.4	18,004.2	11,257.8	40.4	99.8	76.86	-771.9	-969.2	233.5	114.6	118.82	1.965		
11,600.0	11,527.9	18,015.0	11,257.8	40.5	99.9	72.52	-782.7	-969.0	246.4	130.5	115.84	2.127		
11,625.0	11,549.8	18,027.0	11,257.7	40.6	100.1	67.98	-794.7	-968.7	260.2	147.0	113.18	2.299		
11,650.0	11,571.0	18,029.0	11,257.7	40.7	100.1	65.57	-796.7	-968.6	274.9	164.7	110.18	2.495		
11,675.0	11,591.5	18,029.0	11,257.7	40.8	100.1	63.38	-796.7	-968.6	290.6	183.2	107.39	2.706		
11,700.0	11,611.3	18,029.0	11,257.7	40.9	100.1	61.05	-796.7	-968.6	307.0	202.1	104.91	2.927		
11,725.0	11,630.2	18,029.0	11,257.7	40.9	100.1	58.61	-796.7	-968.6	324.2	221.5	102.72	3.156		
11,750.0	11,648.2	18,029.0	11,257.7	41.0	100.1	56.10	-796.7	-968.6	341.8	241.0	100.80	3.391		
11,775.0	11,665.3	18,029.0	11,257.7	41.1	100.1	53.54	-796.7	-968.6	359.9	260.7	99.11	3.631		
11,800.0	11,681.4	18,029.0	11,257.7	41.2	100.1	50.99	-796.7	-968.6	378.2	280.6	97.61	3.874		
11,825.0	11,696.5	18,029.0	11,257.7	41.3	100.1	48.47	-796.7	-968.6	396.7	300.4	96.28	4.120		
11,850.0	11,710.5	18,029.0	11,257.7	41.4	100.1	46.00	-796.7	-968.6	415.3	320.2	95.08	4.368		
11,875.0	11,723.5	18,029.0	11,257.7	41.4	100.1	43.62	-796.7	-968.6	434.0	340.0	93.99	4.618		
11,900.0	11,735.3	18,029.0	11,257.7	41.5	100.1	41.34	-796.7	-968.6	452.7	359.7	92.99	4.869		
11,925.0	11,745.9	18,029.0	11,257.7	41.6	100.1	39.16	-796.7	-968.6	471.4	379.3	92.06	5.121		
11,950.0	11,755.3	18,029.0	11,257.7	41.7	100.1	37.11	-796.7	-968.6	490.0	398.8	91.18	5.373		
11,975.0	11,763.5	18,029.0	11,257.7	41.7	100.1	35.17	-796.7	-968.6	508.4	418.1	90.35	5.627		
12,000.0	11,770.5	18,029.0	11,257.7	41.8	100.1	33.36	-796.7	-968.6	526.7	437.1	89.55	5.882		
12,025.0	11,776.1	18,029.0	11,257.7	41.9	100.1	31.67	-796.7	-968.6	544.8	456.0	88.77	6.137		
12,050.0	11,780.5	18,029.0	11,257.7	41.9	100.1	30.09	-796.7	-968.6	562.7	474.7	88.00	6.394		
12,075.0	11,783.7	18,029.0	11,257.7	42.0	100.1	28.63	-796.7	-968.6	580.3	493.1	87.25	6.651		
12,100.0	11,785.5	18,029.0	11,257.7	42.0	100.1	27.27	-796.7	-968.6	597.7	511.2	86.49	6.910		
12,122.0	11,786.0	18,029.0	11,257.7	42.1	100.1	26.16	-796.7	-968.6	612.7	526.9	85.83	7.139		
12,200.0	11,786.0	18,029.0	11,257.7	42.3	100.1	26.16	-796.7	-968.6	668.0	584.4	83.60	7.991		
12,223.7	11,786.0	18,029.0	11,257.7	42.4	100.1	26.16	-796.7	-968.6	685.7	602.7	82.97	8.264		
12,300.0	11,786.0	18,029.0	11,257.7	42.6	100.1	27.82	-796.7	-968.6	744.7	663.6	81.09	9.183		
12,342.9	11,786.0	18,029.0	11,257.7	42.8	100.1	28.82	-796.7	-968.6	778.9	698.7	80.14	9.720		
12,400.0	11,786.0	18,029.0	11,257.7	43.0	100.1	28.82	-796.7	-968.6	825.6	746.6	78.97	10.454		
12,500.0	11,786.0	18,029.0	11,257.7	43.5	100.1	28.82	-796.7	-968.6	910.2	833.0	77.23	11.787		
12,600.0	11,786.0	18,029.0	11,257.7	44.0	100.1	28.82	-796.7	-968.6	997.7	921.9	75.79	13.165		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

6/22/2022 11:16:04AM

Page 6

COMPASS 5000.16 Build 100



American Resource Development LLC

Anticollision Report

Company:	Ameredeve Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 12H - Margarita Federal Com 13 12H - M12H													Offset Site Error:	0.0 usft
Survey Program: 200-MWD													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre		Rule Assigned:		Distance		Minimum	Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor		
0.0	0.0	1.0	1.0	0.0	0.0	-90.38	-0.2	-33.0	33.0					
100.0	100.0	101.2	101.2	0.8	0.6	-90.18	-0.1	-32.7	32.7	31.3	1.38	23.662		
200.0	200.0	201.3	201.3	1.4	1.2	-89.55	0.2	-31.9	31.9	29.3	2.63	12.126		
300.0	300.0	301.3	301.3	1.9	1.8	-88.40	0.9	-30.9	30.9	27.3	3.66	8.456		
400.0	400.0	401.4	401.4	2.2	2.2	-86.77	1.7	-29.8	29.8	25.4	4.40	6.776		
500.0	500.0	501.3	501.3	2.5	2.6	-85.52	2.2	-28.6	28.7	23.7	5.05	5.682		
600.0	600.0	601.4	601.3	2.8	2.9	-84.42	2.7	-27.5	27.6	22.0	5.65	4.886		
700.0	700.0	701.4	701.4	3.1	3.2	-83.04	3.2	-26.0	26.2	20.0	6.21	4.223		
800.0	800.0	801.3	801.2	3.3	3.5	-81.22	3.8	-24.6	24.9	18.1	6.73	3.697		
900.0	900.0	901.1	901.1	3.6	3.9	-79.14	4.6	-23.9	24.3	17.0	7.27	3.342		
946.1	946.1	947.2	947.1	3.7	4.1	-78.28	4.9	-23.7	24.3	16.7	7.55	3.214 CC		
1,000.0	1,000.0	1,001.0	1,000.9	3.8	4.3	-77.42	5.3	-23.7	24.3	16.5	7.86	3.093		
1,100.0	1,100.0	1,101.0	1,100.9	4.0	4.6	-75.89	6.0	-24.0	24.7	16.5	8.29	2.986 ES		
1,200.0	1,200.0	1,201.0	1,200.9	4.2	4.8	-74.20	6.9	-24.2	25.2	16.6	8.60	2.926		
1,300.0	1,300.0	1,300.9	1,300.8	4.4	5.0	-72.84	7.6	-24.5	25.7	16.8	8.91	2.881		
1,400.0	1,400.0	1,400.9	1,400.8	4.5	5.1	-71.34	8.4	-25.0	26.4	17.2	9.20	2.867		
1,500.0	1,500.0	1,500.9	1,500.8	4.7	5.3	-69.73	9.4	-25.5	27.2	17.7	9.50	2.863		
1,600.0	1,600.0	1,600.9	1,600.8	4.9	5.5	-67.81	10.5	-25.8	27.8	18.0	9.81	2.839		
1,600.0	1,600.0	1,601.0	1,600.9	4.9	5.5	-67.81	10.5	-25.8	27.8	18.0	9.81	2.839 SF		
1,700.0	1,700.0	1,671.0	1,670.9	5.1	5.6	-66.57	11.3	-26.0	41.4	33.2	8.17	5.066		
1,800.0	1,800.0	1,671.0	1,670.9	5.2	5.6	-66.57	11.3	-26.0	133.2	126.8	6.33	21.028		
1,900.0	1,900.0	1,671.0	1,670.9	5.4	5.6	-66.57	11.3	-26.0	231.8	225.6	6.25	37.068		
2,000.0	2,000.0	1,671.0	1,670.9	5.5	5.6	-66.57	11.3	-26.0	331.3	325.0	6.30	52.593		
2,100.0	2,100.0	1,671.0	1,670.9	5.7	5.6	46.70	11.3	-26.0	431.0	424.6	6.37	67.638		
2,200.0	2,199.8	1,671.0	1,670.9	6.3	5.6	32.25	11.3	-26.0	530.6	524.1	6.46	82.170		
2,300.0	2,299.5	1,671.0	1,670.9	6.8	5.6	22.97	11.3	-26.0	630.1	623.6	6.55	96.159		
2,350.0	2,349.1	1,671.0	1,670.9	6.9	5.6	19.68	11.3	-26.0	679.8	673.2	6.60	103.005		
2,400.0	2,398.8	1,671.0	1,670.9	7.0	5.6	19.68	11.3	-26.0	729.5	722.9	6.65	109.701		
2,500.0	2,498.0	1,671.0	1,670.9	7.1	5.6	19.68	11.3	-26.0	829.0	822.3	6.76	122.692		
2,600.0	2,597.3	1,671.0	1,670.9	7.3	5.6	19.68	11.3	-26.0	928.6	921.8	6.87	135.231		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredeve Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 12H - Margarita Federal Com 13 12H - Plan#7 - 179.60														Offset Site Error:		0.0 usft	
Survey Program: Reference		0-MWD		Offset			Semi Major Axis		Offset Wellbore Centre		Rule Assigned: Distance				Offset Well Error:		0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning				
0.0	0.0	1.0	1.0	0.0	0.0	-90.38	-0.2	-33.0	33.0								
100.0	100.0	101.0	101.0	0.8	0.8	-90.38	-0.2	-33.0	33.0	31.5	1.53	21.615					
200.0	200.0	201.0	201.0	1.4	1.4	-90.38	-0.2	-33.0	33.0	30.2	2.79	11.814					
300.0	300.0	301.0	301.0	1.9	1.9	-90.38	-0.2	-33.0	33.0	29.3	3.71	8.898					
400.0	400.0	401.0	401.0	2.2	2.2	-90.38	-0.2	-33.0	33.0	28.6	4.44	7.424					
500.0	500.0	501.0	501.0	2.5	2.5	-90.38	-0.2	-33.0	33.0	27.9	5.08	6.495					
600.0	600.0	601.0	601.0	2.8	2.8	-90.38	-0.2	-33.0	33.0	27.3	5.65	5.840					
700.0	700.0	701.0	701.0	3.1	3.1	-90.38	-0.2	-33.0	33.0	26.8	6.17	5.347					
800.0	800.0	801.0	801.0	3.3	3.3	-90.38	-0.2	-33.0	33.0	26.3	6.66	4.958					
900.0	900.0	901.0	901.0	3.6	3.6	-90.38	-0.2	-33.0	33.0	25.9	7.11	4.640					
1,000.0	1,000.0	1,001.0	1,001.0	3.8	3.8	-90.38	-0.2	-33.0	33.0	25.5	7.54	4.375					
1,100.0	1,100.0	1,101.0	1,101.0	4.0	4.0	-90.38	-0.2	-33.0	33.0	25.0	7.95	4.149					
1,200.0	1,200.0	1,201.0	1,201.0	4.2	4.2	-90.38	-0.2	-33.0	33.0	24.6	8.35	3.953					
1,300.0	1,300.0	1,301.0	1,301.0	4.4	4.4	-90.38	-0.2	-33.0	33.0	24.3	8.73	3.781					
1,400.0	1,400.0	1,401.0	1,401.0	4.5	4.5	-90.38	-0.2	-33.0	33.0	23.9	9.09	3.628					
1,500.0	1,500.0	1,501.0	1,501.0	4.7	4.7	-90.38	-0.2	-33.0	33.0	23.5	9.45	3.492					
1,600.0	1,600.0	1,601.0	1,601.0	4.9	4.9	-90.38	-0.2	-33.0	33.0	23.2	9.79	3.369					
1,700.0	1,700.0	1,701.0	1,701.0	5.1	5.1	-90.38	-0.2	-33.0	33.0	22.9	10.13	3.257					
1,800.0	1,800.0	1,801.0	1,801.0	5.2	5.2	-90.38	-0.2	-33.0	33.0	22.5	10.46	3.155					
1,900.0	1,900.0	1,901.0	1,901.0	5.4	5.4	-90.38	-0.2	-33.0	33.0	22.2	10.78	3.061					
2,000.0	2,000.0	2,001.0	2,001.0	5.5	5.5	-90.38	-0.2	-33.0	33.0	21.9	11.09	2.975					
2,100.0	2,100.0	2,101.0	2,101.0	5.7	5.7	44.93	-0.2	-33.0	31.7	20.3	11.41	2.782					
2,200.0	2,199.8	2,200.8	2,200.8	6.3	5.9	52.49	-0.2	-33.0	28.3	16.4	11.83	2.391					
2,300.0	2,299.5	2,300.5	2,300.5	6.8	6.0	69.27	-0.2	-33.0	24.0	12.0	12.01	1.996					
2,350.0	2,349.1	2,350.1	2,350.1	6.9	6.1	82.76	-0.2	-33.0	22.6	10.6	12.00	1.883					
2,373.5	2,372.5	2,373.5	2,373.5	6.9	6.1	90.00	-0.2	-33.0	22.4	10.4	12.02	1.863 CC, ES, SF					
2,400.0	2,398.8	2,399.8	2,399.8	7.0	6.1	98.13	-0.2	-33.0	22.6	10.5	12.10	1.872					
2,500.0	2,498.0	2,499.0	2,499.0	7.1	6.3	124.33	-0.2	-33.0	27.2	14.5	12.69	2.143					
2,600.0	2,597.3	2,598.8	2,598.8	7.3	6.4	141.44	-1.0	-32.7	34.8	21.5	13.28	2.621					
2,700.0	2,696.5	2,698.7	2,698.7	7.5	6.5	153.33	-3.5	-31.8	43.0	29.2	13.78	3.120					
2,800.0	2,795.8	2,798.6	2,798.5	7.8	6.6	162.65	-7.5	-30.3	51.3	37.0	14.24	3.601					
2,900.0	2,895.0	2,898.6	2,898.2	8.0	6.7	170.64	-13.2	-28.2	59.6	44.9	14.66	4.063					
3,000.0	2,994.3	2,998.4	2,997.8	8.3	6.9	177.92	-20.6	-25.5	68.0	52.9	15.05	4.515					
3,100.0	3,093.5	3,098.1	3,097.1	8.6	7.1	-175.26	-29.5	-22.2	76.6	61.2	15.41	4.972					
3,200.0	3,192.8	3,197.4	3,195.7	8.8	7.3	-169.32	-39.2	-18.7	86.0	70.2	15.75	5.459					
3,300.0	3,292.0	3,296.6	3,294.4	9.1	7.5	-164.58	-49.0	-15.1	96.0	80.0	16.08	5.975					
3,400.0	3,391.3	3,395.8	3,393.1	9.4	7.7	-160.75	-58.7	-11.5	106.6	90.2	16.40	6.501					
3,500.0	3,490.6	3,495.0	3,491.7	9.8	7.9	-157.63	-68.4	-8.0	117.6	100.9	16.74	7.027					
3,600.0	3,589.8	3,594.2	3,590.4	10.1	8.2	-155.04	-78.2	-4.4	128.9	111.8	17.08	7.544					
3,700.0	3,689.1	3,693.4	3,689.1	10.4	8.4	-152.87	-87.9	-0.8	140.4	122.9	17.44	8.048					
3,800.0	3,788.3	3,792.6	3,787.7	10.7	8.7	-151.03	-97.7	2.8	152.0	134.2	17.81	8.536					
3,900.0	3,887.6	3,891.8	3,886.4	11.1	9.0	-149.46	-107.4	6.3	163.8	145.6	18.19	9.006					
4,000.0	3,986.8	3,991.0	3,985.1	11.4	9.3	-148.09	-117.1	9.9	175.7	157.1	18.58	9.457					
4,100.0	4,086.1	4,090.2	4,083.7	11.8	9.6	-146.90	-126.9	13.5	187.7	168.7	18.98	9.889					
4,200.0	4,185.3	4,189.4	4,182.4	12.1	9.9	-145.85	-136.6	17.0	199.8	180.4	19.39	10.302					
4,300.0	4,284.6	4,288.7	4,281.0	12.5	10.2	-144.92	-146.3	20.6	211.9	192.1	19.81	10.696					
4,400.0	4,383.8	4,387.9	4,379.7	12.9	10.5	-144.10	-156.1	24.2	224.0	203.8	20.24	11.071					
4,500.0	4,483.1	4,487.1	4,478.4	13.2	10.9	-143.35	-165.8	27.8	236.2	215.6	20.67	11.429					
4,600.0	4,582.4	4,586.3	4,577.0	13.6	11.2	-142.68	-175.5	31.3	248.5	227.4	21.11	11.770					
4,700.0	4,681.6	4,685.5	4,675.7	14.0	11.5	-142.08	-185.3	34.9	260.7	239.2	21.56	12.094					
4,800.0	4,780.9	4,784.7	4,774.4	14.4	11.9	-141.52	-195.0	38.5	273.0	251.0	22.01	12.403					
4,900.0	4,880.1	4,883.9	4,873.0	14.7	12.2	-141.02	-204.7	42.1	285.3	262.9	22.47	12.698					

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 12H - Margarita Federal Com 13 12H - Plan#7 - 179.60													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		Minimum Separation (usft)	Separation Factor	Warning	
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
5,000.0	4,979.4	4,983.1	4,971.7	15.1	12.6	-140.56	-214.5	45.6	297.7	274.7	22.94	12.978		
5,100.0	5,078.6	5,082.3	5,070.4	15.5	12.9	-140.13	-224.2	49.2	310.0	286.6	23.41	13.245		
5,200.0	5,177.9	5,181.5	5,169.0	15.9	13.3	-139.74	-233.9	52.8	322.4	298.5	23.88	13.500		
5,300.0	5,277.1	5,280.7	5,267.7	16.3	13.6	-139.37	-243.7	56.3	334.8	310.4	24.36	13.743		
5,400.0	5,376.4	5,380.0	5,366.4	16.6	14.0	-139.03	-253.4	59.9	347.2	322.3	24.84	13.974		
5,500.0	5,475.7	5,479.2	5,465.0	17.0	14.3	-138.72	-263.2	63.5	359.6	334.3	25.33	14.195		
5,600.0	5,574.9	5,578.4	5,563.7	17.4	14.7	-138.43	-272.9	67.1	372.0	346.2	25.82	14.406		
5,700.0	5,674.2	5,677.6	5,662.4	17.8	15.1	-138.15	-282.6	70.6	384.4	358.1	26.32	14.608		
5,800.0	5,773.4	5,776.8	5,761.0	18.2	15.4	-137.89	-292.4	74.2	396.9	370.0	26.81	14.801		
5,900.0	5,872.7	5,876.0	5,859.7	18.6	15.8	-137.65	-302.1	77.8	409.3	382.0	27.31	14.985		
6,000.0	5,971.9	5,975.2	5,958.4	19.0	16.2	-137.42	-311.8	81.4	421.7	393.9	27.82	15.161		
6,100.0	6,071.2	6,074.4	6,057.0	19.4	16.5	-137.21	-321.6	84.9	434.2	405.9	28.32	15.330		
6,200.0	6,170.4	6,173.6	6,155.7	19.8	16.9	-137.01	-331.3	88.5	446.7	417.8	28.83	15.492		
6,300.0	6,269.7	6,272.8	6,254.4	20.2	17.3	-136.81	-341.0	92.1	459.1	429.8	29.34	15.647		
6,400.0	6,368.9	6,372.0	6,353.0	20.6	17.7	-136.63	-350.8	95.6	471.6	441.7	29.86	15.795		
6,500.0	6,468.2	6,471.2	6,451.7	21.0	18.0	-136.46	-360.5	99.2	484.1	453.7	30.37	15.938		
6,600.0	6,567.5	6,570.5	6,550.3	21.4	18.4	-136.30	-370.2	102.8	496.6	465.7	30.89	16.075		
6,700.0	6,666.7	6,669.7	6,649.0	21.8	18.8	-136.14	-380.0	106.4	509.0	477.6	31.41	16.206		
6,800.0	6,766.0	6,768.9	6,747.7	22.2	19.2	-135.99	-389.7	109.9	521.5	489.6	31.93	16.333		
6,900.0	6,865.2	6,868.1	6,846.3	22.6	19.6	-135.85	-399.4	113.5	534.0	501.6	32.45	16.454		
7,000.0	6,964.5	6,967.3	6,945.0	23.0	19.9	-135.72	-409.2	117.1	546.5	513.5	32.98	16.571		
7,100.0	7,063.7	7,066.5	7,043.7	23.4	20.3	-135.59	-418.9	120.7	559.0	525.5	33.51	16.684		
7,200.0	7,163.0	7,165.7	7,142.3	23.8	20.7	-135.46	-428.7	124.2	571.5	537.5	34.03	16.795		
7,300.0	7,262.2	7,267.9	7,244.0	24.2	21.1	-135.40	-438.2	127.7	583.8	549.2	34.55	16.895		
7,400.0	7,361.5	7,371.1	7,346.9	24.6	21.5	-135.49	-446.0	130.6	595.5	560.4	35.09	16.971		
7,500.0	7,460.7	7,474.3	7,449.9	25.0	21.8	-135.75	-452.2	132.9	606.5	570.9	35.61	17.031		
7,600.0	7,560.0	7,577.6	7,553.1	25.4	22.2	-136.16	-456.6	134.5	616.9	580.8	36.12	17.078		
7,700.0	7,659.3	7,680.8	7,656.3	25.9	22.4	-136.72	-459.3	135.5	626.7	590.1	36.62	17.114		
7,800.0	7,758.5	7,784.0	7,759.4	26.3	22.6	-137.41	-460.2	135.8	636.0	598.9	37.06	17.160		
7,900.0	7,857.8	7,883.3	7,858.8	26.7	22.6	-138.14	-460.2	135.8	645.0	607.6	37.46	17.220		
8,000.0	7,957.0	7,982.6	7,958.0	27.1	22.7	-138.85	-460.2	135.8	654.2	616.3	37.87	17.275		
8,100.0	8,056.3	8,081.9	8,057.3	27.5	22.7	-139.54	-460.2	135.8	663.5	625.2	38.29	17.328		
8,200.0	8,155.5	8,181.1	8,156.5	27.9	22.7	-140.21	-460.2	135.8	672.8	634.1	38.71	17.379		
8,300.0	8,254.8	8,280.4	8,255.8	28.3	22.7	-140.87	-460.2	135.8	682.2	643.1	39.14	17.430		
8,400.0	8,354.0	8,379.6	8,355.0	28.7	22.8	-141.50	-460.2	135.8	691.8	652.2	39.58	17.480		
8,500.0	8,453.3	8,478.9	8,454.3	29.1	22.8	-142.12	-460.2	135.8	701.4	661.4	40.01	17.528		
8,600.0	8,552.5	8,578.1	8,553.5	29.5	22.8	-142.72	-460.2	135.8	711.1	670.6	40.46	17.576		
8,700.0	8,651.8	8,677.4	8,652.8	29.9	22.8	-143.31	-460.2	135.8	720.8	679.9	40.90	17.623		
8,800.0	8,751.1	8,776.6	8,752.1	30.4	22.9	-143.88	-460.2	135.8	730.6	689.3	41.35	17.669		
8,900.0	8,850.3	8,875.9	8,851.3	30.8	22.9	-144.43	-460.2	135.8	740.6	698.7	41.80	17.715		
9,000.0	8,949.6	8,975.1	8,950.6	31.2	22.9	-144.97	-460.2	135.8	750.5	708.3	42.26	17.759		
9,100.0	9,048.8	9,074.4	9,049.8	31.6	23.0	-145.50	-460.2	135.8	760.6	717.8	42.72	17.803		
9,200.0	9,148.1	9,173.7	9,149.1	32.0	23.0	-146.01	-460.2	135.8	770.7	727.5	43.18	17.847		
9,300.0	9,247.3	9,272.9	9,248.3	32.4	23.0	-146.51	-460.2	135.8	780.8	737.2	43.65	17.889		
9,400.0	9,346.6	9,372.2	9,347.6	32.8	23.0	-146.99	-460.2	135.8	791.0	746.9	44.11	17.932		
9,500.0	9,445.8	9,471.4	9,446.8	33.2	23.1	-147.47	-460.2	135.8	801.3	756.7	44.58	17.973		
9,600.0	9,545.1	9,570.7	9,546.1	33.7	23.1	-147.93	-460.2	135.8	811.6	766.6	45.06	18.014		
9,700.0	9,644.3	9,669.9	9,645.3	34.1	23.1	-148.38	-460.2	135.8	822.0	776.5	45.53	18.054		
9,800.0	9,743.6	9,769.2	9,744.6	34.5	23.2	-148.82	-460.2	135.8	832.4	786.4	46.00	18.094		
9,900.0	9,842.9	9,868.4	9,860.2	34.9	23.4	-149.15	-462.7	135.8	842.5	796.0	46.51	18.115		
10,000.0	9,942.1	10,025.4	9,997.2	35.3	24.3	-147.75	-492.7	136.0	848.6	801.6	47.05	18.036		
10,100.0	10,041.4	10,150.3	10,109.6	35.7	25.2	-144.69	-546.6	136.4	851.4	803.9	47.48	17.929		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 12H - Margarita Federal Com 13 12H - Plan#7 - 179.60													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre		Rule Assigned:			Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
10,200.0	10,140.6	10,252.7	10,191.2	36.1	25.8	-140.99	-608.0	136.8	854.0	806.1	47.87	17.840		
10,300.0	10,239.9	10,333.2	10,247.0	36.6	26.3	-137.41	-666.1	137.3	859.7	811.5	48.24	17.821		
10,400.0	10,339.1	10,396.0	10,284.5	37.0	26.6	-134.28	-716.4	137.6	871.2	822.6	48.58	17.933		
10,500.0	10,438.4	10,450.0	10,312.2	37.4	26.8	-131.40	-762.7	137.9	889.9	841.0	48.88	18.205		
10,522.3	10,460.5	10,450.0	10,312.2	37.5	26.8	-131.40	-762.7	137.9	895.2	846.3	48.89	18.308		
10,600.0	10,537.7	10,484.0	10,327.4	37.8	26.9	-129.67	-793.2	138.2	916.2	867.2	49.05	18.678		
10,700.0	10,637.2	10,514.7	10,339.5	38.2	27.0	-128.19	-821.3	138.4	949.6	900.4	49.14	19.324		
10,800.0	10,736.9	10,539.1	10,348.0	38.6	27.1	-127.12	-844.2	138.5	989.8	940.7	49.14	20.144		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 16H - Margarita Federal Com 13 16H - PLAN#7 - 179.31											Offset Site Error:	0.0 usft
Survey Program: 0-MWD											Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre		Rule Assigned:		Distance	Minimum	Separation	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor
0.0	0.0	1.0	1.0	0.0	0.0	-90.38	-0.9	-132.0	132.0			
100.0	100.0	101.0	101.0	0.8	0.8	-90.38	-0.9	-132.0	132.0	130.5	1.53	86.459
200.0	200.0	201.0	201.0	1.4	1.4	-90.38	-0.9	-132.0	132.0	129.2	2.79	47.257
300.0	300.0	301.0	301.0	1.9	1.9	-90.38	-0.9	-132.0	132.0	128.3	3.71	35.593
400.0	400.0	401.0	401.0	2.2	2.2	-90.38	-0.9	-132.0	132.0	127.5	4.44	29.696
500.0	500.0	501.0	501.0	2.5	2.5	-90.38	-0.9	-132.0	132.0	126.9	5.08	25.980
600.0	600.0	601.0	601.0	2.8	2.8	-90.38	-0.9	-132.0	132.0	126.3	5.65	23.362
700.0	700.0	701.0	701.0	3.1	3.1	-90.38	-0.9	-132.0	132.0	125.8	6.17	21.388
800.0	800.0	801.0	801.0	3.3	3.3	-90.38	-0.9	-132.0	132.0	125.3	6.66	19.831
900.0	900.0	901.0	901.0	3.6	3.6	-90.38	-0.9	-132.0	132.0	124.9	7.11	18.561
1,000.0	1,000.0	1,001.0	1,001.0	3.8	3.8	-90.38	-0.9	-132.0	132.0	124.4	7.54	17.499
1,100.0	1,100.0	1,101.0	1,101.0	4.0	4.0	-90.38	-0.9	-132.0	132.0	124.0	7.95	16.594
1,200.0	1,200.0	1,201.0	1,201.0	4.2	4.2	-90.38	-0.9	-132.0	132.0	123.6	8.35	15.810
1,300.0	1,300.0	1,301.0	1,301.0	4.4	4.4	-90.38	-0.9	-132.0	132.0	123.3	8.73	15.123
1,400.0	1,400.0	1,401.0	1,401.0	4.5	4.5	-90.38	-0.9	-132.0	132.0	122.9	9.09	14.513
1,500.0	1,500.0	1,501.0	1,501.0	4.7	4.7	-90.38	-0.9	-132.0	132.0	122.5	9.45	13.967
1,600.0	1,600.0	1,601.0	1,601.0	4.9	4.9	-90.38	-0.9	-132.0	132.0	122.2	9.79	13.475
1,700.0	1,700.0	1,701.0	1,701.0	5.1	5.1	-90.38	-0.9	-132.0	132.0	121.8	10.13	13.028
1,800.0	1,800.0	1,801.0	1,801.0	5.2	5.2	-90.38	-0.9	-132.0	132.0	121.5	10.46	12.620
1,900.0	1,900.0	1,901.0	1,901.0	5.4	5.4	-90.38	-0.9	-132.0	132.0	121.2	10.78	12.245
2,000.0	2,000.0	2,001.0	2,001.0	5.5	5.5	-90.38	-0.9	-132.0	132.0	120.9	11.09	11.900
2,016.7	2,016.7	2,017.5	2,017.5	5.6	5.6	42.78	-0.9	-132.0	132.0	120.8	11.14	11.850
2,100.0	2,100.0	2,100.0	2,100.0	5.7	5.7	42.99	-1.6	-132.5	131.2	119.9	11.36	11.551
2,200.0	2,199.8	2,198.2	2,198.2	6.3	5.8	43.68	-3.6	-134.0	129.0	117.2	11.81	10.917
2,300.0	2,299.5	2,296.8	2,296.7	6.8	5.9	44.88	-7.0	-136.6	125.3	113.0	12.25	10.224
2,350.0	2,349.1	2,346.1	2,345.9	6.9	6.0	45.70	-9.2	-138.2	122.9	110.5	12.36	9.939
2,400.0	2,398.8	2,395.5	2,395.2	7.0	6.1	46.50	-11.8	-140.2	120.4	108.0	12.45	9.674
2,500.0	2,498.0	2,494.2	2,493.6	7.1	6.2	47.66	-17.9	-144.8	116.3	103.6	12.69	9.166
2,600.0	2,597.3	2,593.1	2,592.1	7.3	6.4	48.17	-25.4	-150.4	113.2	100.2	12.98	8.721
2,700.0	2,696.5	2,692.1	2,690.4	7.5	6.7	47.95	-34.3	-157.0	111.0	97.7	13.31	8.340
2,800.0	2,795.8	2,791.0	2,788.5	7.8	6.9	46.98	-44.5	-164.7	109.7	96.0	13.68	8.019
2,900.0	2,895.0	2,890.9	2,887.4	8.0	7.2	45.53	-55.6	-173.0	109.0	94.9	14.10	7.729
3,000.0	2,994.3	2,990.9	2,986.4	8.3	7.4	44.05	-66.7	-181.4	108.4	93.8	14.56	7.445
3,100.0	3,093.5	3,090.8	3,085.4	8.6	7.7	42.57	-77.9	-189.7	107.9	92.8	15.05	7.167
3,200.0	3,192.8	3,190.8	3,184.4	8.8	8.0	41.06	-89.0	-198.1	107.4	91.8	15.57	6.896
3,300.0	3,292.0	3,290.7	3,283.4	9.1	8.4	39.55	-100.1	-206.4	107.0	90.9	16.13	6.635
3,400.0	3,391.3	3,390.7	3,382.4	9.4	8.7	38.03	-111.3	-214.8	106.7	90.0	16.71	6.384
3,500.0	3,490.6	3,490.7	3,481.3	9.8	9.0	36.50	-122.4	-223.1	106.4	89.1	17.33	6.144
3,600.0	3,589.8	3,590.6	3,580.3	10.1	9.4	34.96	-133.5	-231.5	106.3	88.3	17.97	5.915
3,700.0	3,689.1	3,690.6	3,679.3	10.4	9.7	33.42	-144.6	-239.8	106.2	87.6	18.64	5.698
3,744.4	3,733.1	3,735.0	3,723.3	10.6	9.9	32.73	-149.6	-243.5	106.2	87.2	18.95	5.604
3,759.2	3,747.8	3,749.7	3,737.9	10.6	9.9	32.51	-151.2	-244.7	106.2	87.1	19.05	5.574 CC
3,800.0	3,788.3	3,790.5	3,778.3	10.7	10.1	31.88	-155.8	-248.1	106.2	86.9	19.34	5.492
3,900.0	3,887.6	3,890.5	3,877.3	11.1	10.4	30.34	-166.9	-256.5	106.3	86.2	20.06	5.298
4,000.0	3,986.8	3,990.5	3,976.3	11.4	10.8	28.80	-178.0	-264.8	106.4	85.6	20.80	5.115
4,100.0	4,086.1	4,090.4	4,075.3	11.8	11.2	27.27	-189.2	-273.2	106.6	85.1	21.57	4.944
4,200.0	4,185.3	4,190.4	4,174.2	12.1	11.6	25.74	-200.3	-281.5	106.9	84.6	22.35	4.784
4,300.0	4,284.6	4,290.3	4,273.2	12.5	11.9	24.22	-211.4	-289.9	107.3	84.2	23.15	4.635
4,400.0	4,383.8	4,390.3	4,372.2	12.9	12.3	22.72	-222.5	-298.2	107.8	83.8	23.97	4.496
4,500.0	4,483.1	4,490.2	4,471.2	13.2	12.7	21.23	-233.7	-306.6	108.3	83.5	24.80	4.367
4,600.0	4,582.4	4,590.2	4,570.2	13.6	13.1	19.76	-244.8	-314.9	108.9	83.2	25.64	4.247
4,700.0	4,681.6	4,690.2	4,669.2	14.0	13.5	18.30	-255.9	-323.3	109.5	83.1	26.49	4.136

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 16H - Margarita Federal Com 13 16H - PLAN#7 - 179.31													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		Minimum Separation (usft)	Separation Factor	Warning	
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
4,800.0	4,780.9	4,790.1	4,768.2	14.4	13.9	16.86	-267.1	-331.6	110.3	82.9	27.34	4.033		
4,900.0	4,880.1	4,890.1	4,867.1	14.7	14.3	15.44	-278.2	-340.0	111.1	82.9	28.21	3.938		
5,000.0	4,979.4	4,990.0	4,966.1	15.1	14.7	14.04	-289.3	-348.3	112.0	82.9	29.08	3.850		
5,100.0	5,078.6	5,090.0	5,065.1	15.5	15.1	12.66	-300.5	-356.7	112.9	82.9	29.95	3.769		
5,200.0	5,177.9	5,190.0	5,164.1	15.9	15.5	11.31	-311.6	-365.0	113.9	83.1	30.83	3.695		
5,300.0	5,277.1	5,289.9	5,263.1	16.3	15.9	9.98	-322.7	-373.4	115.0	83.3	31.70	3.626		
5,400.0	5,376.4	5,389.9	5,362.1	16.6	16.3	8.68	-333.8	-381.7	116.1	83.5	32.58	3.563		
5,500.0	5,475.7	5,489.8	5,461.1	17.0	16.7	7.40	-345.0	-390.0	117.3	83.8	33.45	3.506		
5,600.0	5,574.9	5,589.8	5,560.1	17.4	17.1	6.15	-356.1	-398.4	118.5	84.2	34.33	3.453		
5,700.0	5,674.2	5,689.8	5,659.0	17.8	17.5	4.93	-367.2	-406.7	119.8	84.6	35.20	3.404		
5,800.0	5,773.4	5,789.7	5,758.0	18.2	18.0	3.73	-378.4	-415.1	121.2	85.1	36.06	3.360		
5,900.0	5,872.7	5,889.7	5,857.0	18.6	18.4	2.56	-389.5	-423.4	122.6	85.6	36.92	3.319		
6,000.0	5,971.9	5,989.6	5,956.0	19.0	18.8	1.41	-400.6	-431.8	124.0	86.2	37.78	3.282		
6,100.0	6,071.2	6,089.6	6,055.0	19.4	19.2	0.30	-411.7	-440.1	125.5	86.9	38.64	3.249		
6,200.0	6,170.4	6,189.6	6,154.0	19.8	19.6	-0.79	-422.9	-448.5	127.1	87.6	39.48	3.218		
6,300.0	6,269.7	6,289.5	6,253.0	20.2	20.0	-1.86	-434.0	-456.8	128.7	88.3	40.33	3.190		
6,400.0	6,368.9	6,389.5	6,351.9	20.6	20.4	-2.90	-445.1	-465.2	130.3	89.1	41.16	3.165		
6,500.0	6,468.2	6,489.4	6,450.9	21.0	20.9	-3.91	-456.3	-473.5	132.0	90.0	42.00	3.143		
6,600.0	6,567.5	6,589.4	6,549.9	21.4	21.3	-4.89	-467.4	-481.9	133.7	90.9	42.82	3.122		
6,700.0	6,666.7	6,689.3	6,648.9	21.8	21.7	-5.85	-478.5	-490.2	135.4	91.8	43.64	3.104		
6,800.0	6,766.0	6,789.3	6,747.9	22.2	22.1	-6.79	-489.7	-498.6	137.2	92.8	44.45	3.087		
6,900.0	6,865.2	6,889.3	6,846.9	22.6	22.5	-7.70	-500.8	-506.9	139.1	93.8	45.26	3.073		
7,000.0	6,964.5	6,989.2	6,945.9	23.0	23.0	-8.59	-511.9	-515.2	140.9	94.9	46.06	3.060		
7,100.0	7,063.7	7,089.2	7,044.8	23.4	23.4	-9.45	-523.0	-523.6	142.8	96.0	46.86	3.048		
7,200.0	7,163.0	7,189.1	7,143.8	23.8	23.8	-10.29	-534.2	-531.9	144.8	97.1	47.65	3.038		
7,300.0	7,262.2	7,289.1	7,242.8	24.2	24.2	-11.11	-545.3	-540.3	146.7	98.3	48.43	3.029		
7,400.0	7,361.5	7,389.1	7,341.8	24.6	24.6	-11.91	-556.4	-548.6	148.7	99.5	49.21	3.022		
7,500.0	7,460.7	7,489.0	7,440.8	25.0	25.1	-12.69	-567.6	-557.0	150.7	100.7	49.98	3.015		
7,600.0	7,560.0	7,589.0	7,539.8	25.4	25.5	-13.44	-578.7	-565.3	152.8	102.0	50.75	3.010		
7,700.0	7,659.3	7,688.9	7,638.8	25.9	25.9	-14.18	-589.8	-573.7	154.8	103.3	51.51	3.006		
7,800.0	7,758.5	7,788.9	7,737.8	26.3	26.3	-14.89	-600.9	-582.0	156.9	104.6	52.27	3.002		
7,900.0	7,857.8	7,888.9	7,836.7	26.7	26.8	-15.59	-612.1	-590.4	159.0	106.0	53.02	2.999		
8,000.0	7,957.0	7,988.8	7,935.7	27.1	27.2	-16.27	-623.2	-598.7	161.2	107.4	53.77	2.997		
8,100.0	8,056.3	8,088.8	8,034.7	27.5	27.6	-16.93	-634.3	-607.1	163.3	108.8	54.52	2.996		
8,200.0	8,155.5	8,188.7	8,133.7	27.9	28.0	-17.57	-645.5	-615.4	165.5	110.3	55.26	2.995		
8,300.0	8,254.8	8,288.7	8,232.7	28.3	28.5	-18.20	-656.6	-623.8	167.7	111.7	55.99	2.996		
8,400.0	8,354.0	8,388.7	8,331.7	28.7	28.9	-18.81	-667.7	-632.1	169.9	113.2	56.72	2.996		
8,500.0	8,453.3	8,488.6	8,430.7	29.1	29.3	-19.41	-678.8	-640.5	172.2	114.7	57.45	2.997		
8,600.0	8,552.5	8,588.6	8,529.6	29.5	29.7	-19.98	-690.0	-648.8	174.4	116.3	58.17	2.999		
8,700.0	8,651.8	8,688.5	8,628.6	29.9	30.2	-20.55	-701.1	-657.1	176.7	117.8	58.89	3.001		
8,800.0	8,751.1	8,788.5	8,727.6	30.4	30.6	-21.10	-712.2	-665.5	179.0	119.4	59.61	3.003		
8,900.0	8,850.3	8,888.5	8,826.6	30.8	31.0	-21.63	-723.4	-673.8	181.3	121.0	60.32	3.006		
9,000.0	8,949.6	8,988.4	8,925.6	31.2	31.4	-22.16	-734.5	-682.2	183.6	122.6	61.03	3.009		
9,100.0	9,048.8	9,088.4	9,024.6	31.6	31.9	-22.67	-745.6	-690.5	186.0	124.2	61.74	3.013		
9,200.0	9,148.1	9,188.3	9,123.6	32.0	32.3	-23.16	-756.8	-698.9	188.3	125.9	62.44	3.016		
9,300.0	9,247.3	9,288.3	9,222.5	32.4	32.7	-23.65	-767.9	-707.2	190.7	127.6	63.14	3.020		
9,400.0	9,346.6	9,389.1	9,322.4	32.8	33.2	-24.13	-779.1	-715.6	193.0	129.2	63.84	3.024		
9,500.0	9,445.8	9,492.4	9,424.9	33.2	33.6	-24.71	-789.5	-723.4	194.1	129.6	64.50	3.010		
9,600.0	9,545.1	9,595.8	9,527.6	33.7	34.0	-25.43	-798.4	-730.1	193.5	128.4	65.10	2.972		
9,700.0	9,644.3	9,699.0	9,630.5	34.1	34.4	-26.31	-805.8	-735.7	191.2	125.6	65.62	2.914		
9,800.0	9,743.6	9,802.2	9,733.3	34.5	34.8	-27.38	-811.8	-740.1	187.2	121.1	66.02	2.835		
9,900.0	9,842.9	9,905.1	9,836.1	34.9	35.1	-28.68	-816.2	-743.5	181.5	115.2	66.30	2.738		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 16H - Margarita Federal Com 13 16H - PLAN#7 - 179.31													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		Minimum Separation (usft)	Separation Factor	Warning	
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
10,000.0	9,942.1	10,007.7	9,938.7	35.3	35.5	-30.27	-819.2	-745.7	174.3	107.9	66.42	2.624		
10,100.0	10,041.4	10,110.0	10,040.9	35.7	35.7	-32.23	-820.7	-746.8	165.6	99.3	66.30	2.497		
10,200.0	10,140.6	10,210.7	10,141.6	36.1	35.8	-34.62	-820.9	-747.0	155.6	89.8	65.81	2.364		
10,300.0	10,239.9	10,309.9	10,240.9	36.6	35.8	-37.34	-820.9	-747.0	145.7	80.6	65.11	2.238		
10,400.0	10,339.1	10,409.2	10,340.1	37.0	35.8	-40.44	-820.9	-747.0	136.2	72.0	64.17	2.122		
10,500.0	10,438.4	10,508.5	10,439.4	37.4	35.8	-43.99	-820.9	-747.0	127.1	64.2	62.92	2.020		
10,522.3	10,460.5	10,530.5	10,461.5	37.5	35.8	-44.85	-820.9	-747.0	125.2	62.6	62.59	2.000		
10,600.0	10,537.7	10,607.8	10,538.7	37.8	35.8	-47.83	-820.9	-747.0	119.0	57.6	61.38	1.938		
10,700.0	10,637.2	10,707.3	10,638.2	38.2	35.8	-51.54	-820.9	-747.0	112.5	52.7	59.80	1.881		
10,800.0	10,736.9	10,804.4	10,735.4	38.6	35.9	-54.85	-821.0	-746.9	107.7	49.3	58.43	1.844 SF		
10,812.0	10,748.8	10,814.5	10,745.4	38.6	35.9	-55.18	-821.4	-746.9	107.6	49.3	58.37	1.844 ES		
10,900.0	10,836.6	10,888.0	10,818.5	38.9	36.1	-57.37	-828.9	-745.4	113.8	55.9	57.92	1.964		
11,000.0	10,936.5	10,968.3	10,896.4	39.3	36.5	-59.01	-847.6	-741.8	135.1	77.5	57.62	2.344		
11,100.0	11,036.5	11,042.3	10,965.3	39.6	36.8	-59.78	-874.1	-736.6	170.3	112.7	57.55	2.959		
11,200.0	11,136.5	11,108.3	11,023.3	39.8	37.1	-60.09	-904.9	-730.5	217.3	159.8	57.53	3.778		
11,222.3	11,158.7	11,121.8	11,034.7	39.8	37.1	166.71	-912.0	-729.1	229.2	171.7	57.52	3.985		
11,300.0	11,236.5	11,165.9	11,070.7	39.8	37.3	166.97	-937.0	-724.2	274.2	216.8	57.40	4.777		
11,372.0	11,308.5	11,200.0	11,097.1	39.8	37.5	167.15	-958.1	-720.1	319.8	262.7	57.12	5.599		
11,375.0	11,311.5	11,200.0	11,097.1	39.8	37.5	-10.00	-958.1	-720.1	321.8	264.8	57.05	5.641		
11,400.0	11,336.5	11,216.2	11,109.2	39.9	37.6	-9.51	-968.7	-718.0	337.9	280.7	57.17	5.910		
11,425.0	11,361.4	11,228.5	11,118.1	39.9	37.6	-9.13	-976.9	-716.4	353.4	296.2	57.11	6.187		
11,450.0	11,386.1	11,250.0	11,133.4	40.0	37.7	-8.82	-991.8	-713.5	368.5	311.1	57.39	6.420		
11,475.0	11,410.7	11,250.0	11,133.4	40.1	37.7	-8.51	-991.8	-713.5	382.6	325.7	56.83	6.732		
11,500.0	11,434.9	11,265.6	11,144.1	40.2	37.8	-8.29	-1,003.0	-711.3	396.2	339.4	56.85	6.970		
11,525.0	11,458.9	11,278.1	11,152.5	40.2	37.8	-8.10	-1,012.1	-709.5	409.2	352.5	56.73	7.213		
11,550.0	11,482.4	11,300.0	11,166.6	40.3	37.9	-8.00	-1,028.5	-706.3	421.8	364.9	56.95	7.406		
11,575.0	11,505.4	11,300.0	11,166.6	40.4	37.9	-7.79	-1,028.5	-706.3	433.4	377.1	56.34	7.692		
11,600.0	11,527.9	11,316.0	11,176.5	40.5	37.9	-7.71	-1,040.8	-703.9	444.4	388.1	56.32	7.892		
11,625.0	11,549.8	11,328.7	11,184.2	40.6	38.0	-7.64	-1,050.8	-702.0	454.9	398.7	56.16	8.100		
11,650.0	11,571.0	11,350.0	11,196.4	40.7	38.1	-7.66	-1,067.9	-698.6	464.7	408.4	56.30	8.255		
11,675.0	11,591.5	11,350.0	11,196.4	40.8	38.1	-7.51	-1,067.9	-698.6	473.7	418.0	55.65	8.511		
11,700.0	11,611.3	11,367.1	11,205.8	40.9	38.1	-7.54	-1,081.9	-695.9	482.0	426.4	55.62	8.666		
11,725.0	11,630.2	11,379.9	11,212.5	40.9	38.2	-7.54	-1,092.6	-693.8	489.7	434.2	55.43	8.835		
11,750.0	11,648.2	11,400.0	11,222.6	41.0	38.3	-7.64	-1,109.6	-690.5	496.7	441.3	55.48	8.953		
11,775.0	11,665.3	11,400.0	11,222.6	41.1	38.3	-7.54	-1,109.6	-690.5	503.0	448.1	54.82	9.175		
11,800.0	11,681.4	11,418.6	11,231.4	41.2	38.3	-7.66	-1,125.7	-687.3	508.5	453.7	54.80	9.278		
11,825.0	11,696.5	11,431.5	11,237.1	41.3	38.4	-7.74	-1,137.0	-685.1	513.3	458.7	54.58	9.404		
11,850.0	11,710.5	11,450.0	11,245.0	41.4	38.4	-7.90	-1,153.5	-681.9	517.5	462.9	54.56	9.486		
11,875.0	11,723.5	11,450.0	11,245.0	41.4	38.4	-7.84	-1,153.5	-681.9	521.0	467.1	53.89	9.668		
11,900.0	11,735.3	11,470.2	11,252.9	41.5	38.5	-8.06	-1,171.8	-678.3	523.6	469.7	53.91	9.713		
11,925.0	11,745.9	11,483.2	11,257.7	41.6	38.5	-8.20	-1,183.6	-676.0	525.6	471.9	53.67	9.792		
11,930.2	11,747.9	11,485.8	11,258.6	41.6	38.5	-8.23	-1,186.0	-675.5	525.9	472.3	53.63	9.806		
11,950.0	11,755.3	11,500.0	11,263.4	41.7	38.6	-8.42	-1,199.1	-672.9	526.9	473.3	53.57	9.835		
11,955.4	11,757.2	11,500.0	11,263.4	41.7	38.6	-8.41	-1,199.1	-672.9	527.0	473.6	53.43	9.864		
11,975.0	11,763.5	11,500.0	11,263.4	41.7	38.6	-8.40	-1,199.1	-672.9	527.5	474.6	52.92	9.968		
12,000.0	11,770.5	11,522.0	11,270.2	41.8	38.6	-8.74	-1,219.6	-668.9	527.2	474.2	52.98	9.952		
12,007.3	11,772.3	11,525.8	11,271.3	41.8	38.7	-8.80	-1,223.2	-668.2	527.0	474.1	52.91	9.961		
12,025.0	11,776.1	11,534.9	11,273.8	41.9	38.7	-8.96	-1,231.8	-666.5	526.3	473.6	52.75	9.979		
12,030.9	11,777.3	11,538.0	11,274.6	41.9	38.7	-9.01	-1,234.7	-666.0	526.0	473.3	52.69	9.983		
12,050.0	11,780.5	11,550.0	11,277.7	41.9	38.7	-9.24	-1,246.1	-663.7	524.7	472.2	52.59	9.979		
12,057.7	11,781.6	11,550.0	11,277.7	41.9	38.7	-9.25	-1,246.1	-663.7	524.1	471.7	52.40	10.003		
12,075.0	11,783.7	11,550.0	11,277.7	42.0	38.7	-9.28	-1,246.1	-663.7	522.6	470.7	51.98	10.055		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 16H - Margarita Federal Com 13 16H - PLAN#7 - 179.31													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		Rule Assigned: Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
+N/-S (usft)	+E/-W (usft)													
12,082.6	11,784.3	11,564.6	11,281.1	42.0	38.8	-9.56	-1,260.1	-661.0	521.6	469.4	52.23	9.987		
12,100.0	11,785.5	11,573.6	11,283.0	42.0	38.8	-9.76	-1,268.7	-659.3	519.4	467.4	52.08	9.974		
12,108.1	11,785.8	11,577.7	11,283.8	42.1	38.8	-9.86	-1,272.7	-658.5	518.3	466.3	52.01	9.966		
12,122.0	11,786.0	11,584.9	11,285.2	42.1	38.8	-10.04	-1,279.6	-657.2	516.2	464.3	51.89	9.949		
12,129.1	11,786.0	11,600.0	11,287.7	42.1	38.9	-10.33	-1,294.2	-654.3	515.3	463.2	52.16	9.880		
12,200.0	11,786.0	11,625.5	11,291.2	42.3	38.9	-10.81	-1,318.9	-649.5	506.6	455.3	51.29	9.877		
12,216.2	11,786.0	11,634.0	11,292.1	42.3	39.0	-10.96	-1,327.2	-647.9	505.3	454.2	51.18	9.874		
12,223.7	11,786.0	11,637.9	11,292.5	42.4	39.0	-11.03	-1,331.1	-647.1	504.8	453.7	51.13	9.873		
12,230.8	11,786.0	11,650.0	11,293.5	42.4	39.0	-11.26	-1,342.9	-644.8	504.5	453.2	51.29	9.837		
12,286.9	11,786.0	11,671.4	11,294.6	42.6	39.1	-11.70	-1,363.9	-640.7	502.8	452.0	50.75	9.907		
12,300.0	11,786.0	11,678.4	11,294.8	42.6	39.1	-11.83	-1,370.7	-639.4	502.9	452.2	50.68	9.922		
12,342.9	11,786.0	11,710.5	11,295.0	42.8	39.2	-12.44	-1,402.2	-633.2	504.2	453.6	50.62	9.960		
12,400.0	11,786.0	11,769.6	11,295.0	43.0	39.4	-13.54	-1,460.4	-622.9	506.4	455.6	50.81	9.967		
12,500.0	11,786.0	11,874.0	11,295.2	43.5	39.8	-15.14	-1,563.7	-607.5	509.7	458.4	51.25	9.945		
12,523.4	11,786.0	11,898.5	11,295.3	43.6	40.0	-15.46	-1,588.0	-604.5	510.3	459.0	51.38	9.933		
12,600.0	11,786.0	11,979.3	11,295.6	44.0	40.4	-16.33	-1,668.3	-595.8	512.2	460.3	51.85	9.879		
12,623.4	11,786.0	12,004.1	11,295.7	44.2	40.6	-16.55	-1,693.0	-593.7	512.6	460.6	52.01	9.857		
12,700.0	11,786.0	12,085.3	11,296.1	44.7	41.1	-17.11	-1,774.0	-588.0	513.6	461.1	52.57	9.771		
12,800.0	11,786.0	12,191.7	11,296.8	45.4	41.9	-17.47	-1,880.3	-584.0	513.9	460.5	53.39	9.626		
12,829.6	11,786.0	12,223.2	11,297.0	45.6	42.2	-17.50	-1,911.8	-583.6	513.8	460.1	53.64	9.577		
12,900.0	11,786.0	12,293.6	11,297.5	46.2	42.7	-17.52	-1,982.2	-583.1	513.3	459.1	54.13	9.482		
12,929.6	11,786.0	12,323.2	11,297.7	46.5	43.0	-17.53	-2,011.8	-582.8	513.1	458.7	54.35	9.439		
13,000.0	11,786.0	12,393.6	11,298.3	47.1	43.7	-17.55	-2,082.2	-582.3	512.6	457.7	54.88	9.340		
13,029.5	11,786.0	12,423.1	11,298.5	47.4	44.0	-17.56	-2,111.7	-582.0	512.4	457.2	55.11	9.297		
13,100.0	11,786.0	12,493.5	11,299.0	48.1	44.7	-17.58	-2,182.2	-581.5	511.9	456.2	55.67	9.194		
13,129.5	11,786.0	12,523.1	11,299.3	48.4	45.0	-17.59	-2,211.7	-581.3	511.6	455.7	55.92	9.149		
13,200.0	11,786.0	12,593.5	11,299.8	49.2	45.8	-17.61	-2,282.2	-580.7	511.1	454.6	56.52	9.044		
13,229.5	11,786.0	12,623.1	11,300.0	49.5	46.1	-17.62	-2,311.7	-580.5	510.9	454.2	56.78	8.999		
13,300.0	11,786.0	12,693.5	11,300.6	50.3	47.0	-17.65	-2,382.2	-579.9	510.4	453.0	57.40	8.892		
13,329.5	11,786.0	12,723.1	11,300.8	50.6	47.3	-17.66	-2,411.7	-579.7	510.2	452.5	57.68	8.846		
13,400.0	11,786.0	12,793.5	11,301.3	51.5	48.2	-17.68	-2,482.2	-579.2	509.7	451.4	58.34	8.738		
13,429.5	11,786.0	12,823.1	11,301.6	51.8	48.6	-17.69	-2,511.7	-578.9	509.5	450.9	58.62	8.691		
13,500.0	11,786.0	12,893.5	11,302.1	52.7	49.5	-17.71	-2,582.1	-578.4	509.0	449.7	59.31	8.582		
13,529.5	11,786.0	12,923.1	11,302.3	53.1	49.9	-17.72	-2,611.7	-578.2	508.8	449.2	59.61	8.536		
13,600.0	11,786.0	12,993.5	11,302.8	53.9	50.9	-17.74	-2,682.1	-577.6	508.3	448.0	60.32	8.427		
13,629.5	11,786.0	13,023.1	11,303.1	54.3	51.3	-17.75	-2,711.7	-577.4	508.1	447.5	60.63	8.380		
13,700.0	11,786.0	13,093.5	11,303.6	55.2	52.2	-17.77	-2,782.1	-576.8	507.6	446.2	61.37	8.271		
13,729.5	11,786.0	13,123.1	11,303.8	55.6	52.6	-17.78	-2,811.7	-576.6	507.4	445.7	61.69	8.224		
13,800.0	11,786.0	13,193.5	11,304.4	56.6	53.6	-17.80	-2,882.1	-576.0	506.9	444.4	62.46	8.116		
13,829.5	11,786.0	13,223.1	11,304.6	56.9	54.0	-17.81	-2,911.6	-575.8	506.7	443.9	62.79	8.070		
13,900.0	11,786.0	13,293.5	11,305.1	57.9	55.0	-17.84	-2,982.1	-575.3	506.2	442.6	63.58	7.961		
13,929.5	11,786.0	13,323.1	11,305.4	58.3	55.5	-17.85	-3,011.6	-575.0	506.0	442.1	63.92	7.916		
14,000.0	11,786.0	13,393.5	11,305.9	59.3	56.5	-17.87	-3,082.1	-574.5	505.5	440.7	64.73	7.808		
14,029.5	11,786.0	13,423.1	11,306.1	59.7	56.9	-17.88	-3,111.6	-574.3	505.3	440.2	65.08	7.763		
14,100.0	11,786.0	13,493.5	11,306.6	60.7	58.0	-17.90	-3,182.1	-573.7	504.8	438.8	65.92	7.657		
14,129.5	11,786.0	13,523.1	11,306.9	61.1	58.4	-17.91	-3,211.6	-573.5	504.6	438.3	66.28	7.613		
14,200.0	11,786.0	13,593.5	11,307.4	62.1	59.4	-17.93	-3,282.1	-572.9	504.1	436.9	67.13	7.508		
14,229.5	11,786.0	13,623.0	11,307.6	62.5	59.9	-17.94	-3,311.6	-572.7	503.8	436.4	67.50	7.465		
14,300.0	11,786.0	13,693.5	11,308.2	63.5	60.9	-17.96	-3,382.1	-572.2	503.4	435.0	68.38	7.362		
14,329.5	11,786.0	13,723.0	11,308.4	63.9	61.4	-17.97	-3,411.6	-571.9	503.1	434.4	68.75	7.318		
14,400.0	11,786.0	13,793.5	11,308.9	64.9	62.4	-18.00	-3,482.1	-571.4	502.6	433.0	69.65	7.217		
14,429.5	11,786.0	13,823.0	11,309.2	65.4	62.9	-18.01	-3,511.6	-571.1	502.4	432.4	70.03	7.175		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 16H - Margarita Federal Com 13 16H - PLAN#7 - 179.31													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		Minimum Separation (usft)	Separation Factor	Warning	
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
14,500.0	11,786.0	13,893.5	11,309.7	66.4	63.9	-18.03	-3,582.1	-570.6	501.9	431.0	70.94	7.075		
14,529.5	11,786.0	13,923.0	11,309.9	66.8	64.4	-18.04	-3,611.6	-570.4	501.7	430.4	71.33	7.034		
14,600.0	11,786.0	13,993.5	11,310.5	67.8	65.5	-18.06	-3,682.0	-569.8	501.2	429.0	72.26	6.937		
14,629.5	11,786.0	14,023.0	11,310.7	68.3	65.9	-18.07	-3,711.6	-569.6	501.0	428.4	72.66	6.896		
14,700.0	11,786.0	14,093.5	11,311.2	69.3	67.0	-18.09	-3,782.0	-569.0	500.5	426.9	73.60	6.800		
14,729.5	11,786.0	14,123.0	11,311.4	69.8	67.4	-18.10	-3,811.6	-568.8	500.3	426.3	74.00	6.761		
14,800.0	11,786.0	14,193.5	11,312.0	70.8	68.5	-18.13	-3,882.0	-568.3	499.8	424.9	74.97	6.667		
14,829.5	11,786.0	14,223.0	11,312.2	71.2	69.0	-18.14	-3,911.6	-568.0	499.6	424.2	75.38	6.628		
14,900.0	11,786.0	14,293.5	11,312.7	72.3	70.1	-18.16	-3,982.0	-567.5	499.1	422.8	76.35	6.537		
14,929.5	11,786.0	14,323.0	11,313.0	72.7	70.5	-18.17	-4,011.6	-567.2	498.9	422.1	76.77	6.499		
15,000.0	11,786.0	14,393.5	11,313.5	73.8	71.6	-18.19	-4,082.0	-566.7	498.4	420.6	77.76	6.410		
15,029.5	11,786.0	14,423.0	11,313.7	74.2	72.1	-18.20	-4,111.5	-566.5	498.2	420.0	78.18	6.373		
15,100.0	11,786.0	14,493.5	11,314.3	75.3	73.2	-18.23	-4,182.0	-565.9	497.7	418.5	79.18	6.286		
15,129.5	11,786.0	14,523.0	11,314.5	75.8	73.6	-18.24	-4,211.5	-565.7	497.5	417.9	79.61	6.249		
15,200.0	11,786.0	14,593.5	11,315.0	76.8	74.7	-18.26	-4,282.0	-565.1	497.0	416.4	80.62	6.164		
15,229.5	11,786.0	14,623.0	11,315.2	77.3	75.2	-18.27	-4,311.5	-564.9	496.8	415.7	81.05	6.129		
15,300.0	11,786.0	14,693.5	11,315.8	78.3	76.3	-18.29	-4,382.0	-564.4	496.3	414.2	82.08	6.046		
15,329.5	11,786.0	14,723.0	11,316.0	78.8	76.8	-18.30	-4,411.5	-564.1	496.1	413.6	82.52	6.012		
15,400.0	11,786.0	14,793.5	11,316.5	79.9	77.9	-18.32	-4,482.0	-563.6	495.6	412.0	83.56	5.931		
15,429.5	11,786.0	14,823.0	11,316.8	80.3	78.4	-18.33	-4,511.5	-563.4	495.4	411.4	84.00	5.897		
15,500.0	11,786.0	14,893.5	11,317.3	81.4	79.5	-18.36	-4,582.0	-562.8	494.9	409.8	85.05	5.818		
15,529.5	11,786.0	14,923.0	11,317.5	81.9	79.9	-18.37	-4,611.5	-562.6	494.7	409.2	85.50	5.786		
15,600.0	11,786.0	14,993.5	11,318.1	82.9	81.0	-18.39	-4,682.0	-562.0	494.2	407.6	86.56	5.709		
15,629.5	11,786.0	15,023.0	11,318.3	83.4	81.5	-18.40	-4,711.5	-561.8	494.0	407.0	87.01	5.677		
15,700.0	11,786.0	15,093.5	11,318.8	84.5	82.6	-18.42	-4,781.9	-561.2	493.5	405.4	88.08	5.602		
15,729.5	11,786.0	15,123.0	11,319.0	84.9	83.1	-18.43	-4,811.5	-561.0	493.3	404.7	88.53	5.571		
15,800.0	11,786.0	15,193.5	11,319.6	86.0	84.2	-18.46	-4,881.9	-560.5	492.8	403.1	89.62	5.499		
15,829.5	11,786.0	15,223.0	11,319.8	86.5	84.7	-18.47	-4,911.5	-560.2	492.6	402.5	90.07	5.468		
15,900.0	11,786.0	15,293.5	11,320.3	87.6	85.8	-18.49	-4,981.9	-559.7	492.1	400.9	91.17	5.397		
15,929.5	11,786.0	15,323.0	11,320.6	88.1	86.3	-18.50	-5,011.5	-559.5	491.8	400.2	91.63	5.368		
16,000.0	11,786.0	15,393.5	11,321.1	89.1	87.4	-18.53	-5,081.9	-558.9	491.4	398.6	92.73	5.299		
16,029.5	11,786.0	15,423.0	11,321.3	89.6	87.9	-18.54	-5,111.5	-558.7	491.1	398.0	93.19	5.270		
16,100.0	11,786.0	15,493.5	11,321.9	90.7	89.0	-18.56	-5,181.9	-558.1	490.6	396.3	94.30	5.203		
16,129.5	11,786.0	15,523.0	11,322.1	91.2	89.4	-18.57	-5,211.4	-557.9	490.4	395.7	94.77	5.175		
16,200.0	11,786.0	15,593.5	11,322.6	92.3	90.6	-18.59	-5,281.9	-557.4	489.9	394.1	95.89	5.110		
16,229.5	11,786.0	15,623.0	11,322.8	92.7	91.0	-18.60	-5,311.4	-557.1	489.7	393.4	96.36	5.082		
16,300.0	11,786.0	15,693.5	11,323.4	93.8	92.2	-18.63	-5,381.9	-556.6	489.2	391.8	97.48	5.019		
16,329.5	11,786.0	15,723.0	11,323.6	94.3	92.6	-18.64	-5,411.4	-556.3	489.0	391.1	97.96	4.992		
16,400.0	11,786.0	15,793.5	11,324.1	95.4	93.8	-18.66	-5,481.9	-555.8	488.5	389.4	99.09	4.930		
16,429.5	11,786.0	15,823.0	11,324.4	95.9	94.2	-18.67	-5,511.4	-555.6	488.3	388.8	99.57	4.904		
16,500.0	11,786.0	15,893.4	11,324.9	97.0	95.4	-18.70	-5,581.9	-555.0	487.8	387.1	100.71	4.844		
16,529.5	11,786.0	15,923.0	11,325.1	97.4	95.8	-18.71	-5,611.4	-554.8	487.6	386.4	101.19	4.819		
16,600.0	11,786.0	15,993.4	11,325.7	98.6	97.0	-18.73	-5,681.9	-554.2	487.1	384.8	102.34	4.760		
16,629.5	11,786.0	16,023.0	11,325.9	99.0	97.5	-18.74	-5,711.4	-554.0	486.9	384.1	102.82	4.736		
16,700.0	11,786.0	16,093.4	11,326.4	100.1	98.6	-18.77	-5,781.9	-553.5	486.4	382.4	103.97	4.678		
16,729.5	11,786.0	16,123.0	11,326.6	100.6	99.1	-18.78	-5,811.4	-553.2	486.2	381.8	104.46	4.655		
16,800.0	11,786.0	16,193.4	11,327.2	101.7	100.2	-18.80	-5,881.9	-552.7	485.7	380.1	105.62	4.599		
16,829.5	11,786.0	16,223.0	11,327.4	102.2	100.7	-18.81	-5,911.4	-552.4	485.5	379.4	106.11	4.576		
16,900.0	11,786.0	16,293.4	11,327.9	103.3	101.8	-18.83	-5,981.8	-551.9	485.0	377.7	107.28	4.521		
16,929.5	11,786.0	16,323.0	11,328.2	103.8	102.3	-18.85	-6,011.4	-551.7	484.8	377.0	107.77	4.499		
17,000.0	11,786.0	16,393.4	11,328.7	104.9	103.4	-18.87	-6,081.8	-551.1	484.3	375.4	108.94	4.446		
17,029.5	11,786.0	16,423.0	11,328.9	105.3	103.9	-18.88	-6,111.4	-550.9	484.1	374.7	109.43	4.424		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 16H - Margarita Federal Com 13 16H - PLAN#7 - 179.31													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		Minimum Separation (usft)	Separation Factor	Warning	
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
17,100.0	11,786.0	16,493.4	11,329.5	106.5	105.0	-18.90	-6,181.8	-550.3	483.6	373.0	110.61	4.372		
17,129.5	11,786.0	16,523.0	11,329.7	106.9	105.5	-18.91	-6,211.4	-550.1	483.4	372.3	111.11	4.351		
17,200.0	11,786.0	16,593.4	11,330.2	108.1	106.6	-18.94	-6,281.8	-549.6	482.9	370.6	112.30	4.300		
17,229.5	11,786.0	16,623.0	11,330.5	108.5	107.1	-18.95	-6,311.4	-549.3	482.7	369.9	112.79	4.279		
17,300.0	11,786.0	16,693.4	11,331.0	109.6	108.3	-18.97	-6,381.8	-548.8	482.2	368.2	113.98	4.230		
17,329.5	11,786.0	16,723.0	11,331.2	110.1	108.7	-18.98	-6,411.3	-548.6	482.0	367.5	114.49	4.210		
17,400.0	11,786.0	16,793.4	11,331.7	111.2	109.9	-19.01	-6,481.8	-548.0	481.5	365.8	115.68	4.162		
17,429.5	11,786.0	16,823.0	11,332.0	111.7	110.3	-19.02	-6,511.3	-547.8	481.3	365.1	116.18	4.143		
17,500.0	11,786.0	16,893.4	11,332.5	112.8	111.5	-19.05	-6,581.8	-547.2	480.8	363.4	117.39	4.096		
17,529.5	11,786.0	16,923.0	11,332.7	113.3	112.0	-19.06	-6,611.3	-547.0	480.6	362.7	117.89	4.077		
17,600.0	11,786.0	16,993.4	11,333.3	114.4	113.1	-19.08	-6,681.8	-546.4	480.1	361.0	119.10	4.031		
17,629.5	11,786.0	17,023.0	11,333.5	114.9	113.6	-19.09	-6,711.3	-546.2	479.9	360.3	119.60	4.012		
17,700.0	11,786.0	17,093.4	11,334.0	116.0	114.7	-19.12	-6,781.8	-545.7	479.4	358.6	120.82	3.968		
17,729.5	11,786.0	17,122.9	11,334.3	116.5	115.2	-19.13	-6,811.3	-545.4	479.2	357.9	121.32	3.950		
17,800.0	11,786.0	17,193.4	11,334.8	117.6	116.3	-19.15	-6,881.8	-544.9	478.7	356.2	122.54	3.906		
17,829.5	11,786.0	17,222.9	11,335.0	118.1	116.8	-19.16	-6,911.3	-544.7	478.5	355.4	123.05	3.889		
17,900.0	11,786.0	17,293.4	11,335.5	119.2	118.0	-19.19	-6,981.8	-544.1	478.0	353.7	124.27	3.846		
17,929.5	11,786.0	17,322.9	11,335.8	119.7	118.4	-19.20	-7,011.3	-543.9	477.8	353.0	124.79	3.829		
18,000.0	11,786.0	17,393.4	11,336.3	120.8	119.6	-19.22	-7,081.7	-543.3	477.3	351.3	126.01	3.788		
18,029.5	11,786.0	17,422.9	11,336.5	121.3	120.1	-19.23	-7,111.3	-543.1	477.1	350.6	126.53	3.771		
18,100.0	11,786.0	17,493.4	11,337.1	122.4	121.2	-19.26	-7,181.7	-542.6	476.6	348.8	127.76	3.731		
18,129.5	11,786.0	17,522.9	11,337.3	122.9	121.7	-19.27	-7,211.3	-542.3	476.4	348.1	128.27	3.714		
18,200.0	11,786.0	17,593.4	11,337.8	124.0	122.8	-19.30	-7,281.7	-541.8	475.9	346.4	129.51	3.675		
18,229.5	11,786.0	17,622.9	11,338.1	124.5	123.3	-19.31	-7,311.3	-541.5	475.7	345.7	130.03	3.658		
18,300.0	11,786.0	17,693.4	11,338.6	125.6	124.5	-19.33	-7,381.7	-541.0	475.2	343.9	131.26	3.620		
18,329.5	11,786.0	17,722.9	11,338.8	126.1	124.9	-19.34	-7,411.3	-540.8	475.0	343.2	131.78	3.604		
18,400.0	11,786.0	17,793.4	11,339.4	127.2	126.1	-19.37	-7,481.7	-540.2	474.5	341.5	133.03	3.567		
18,429.5	11,786.0	17,822.9	11,339.6	127.7	126.6	-19.38	-7,511.2	-540.0	474.3	340.7	133.55	3.551		
18,500.0	11,786.0	17,893.4	11,340.1	128.9	127.7	-19.40	-7,581.7	-539.4	473.8	339.0	134.80	3.515		
18,529.5	11,786.0	17,922.9	11,340.3	129.3	128.2	-19.41	-7,611.2	-539.2	473.6	338.3	135.32	3.500		
18,600.0	11,786.0	17,993.4	11,340.9	130.5	129.3	-19.44	-7,681.7	-538.7	473.1	336.5	136.57	3.464		
18,629.5	11,786.0	18,022.9	11,341.1	130.9	129.8	-19.45	-7,711.2	-538.4	472.9	335.8	137.10	3.449		
18,700.0	11,786.0	18,093.4	11,341.6	132.1	131.0	-19.48	-7,781.7	-537.9	472.4	334.0	138.35	3.414		
18,729.5	11,786.0	18,122.9	11,341.9	132.6	131.4	-19.49	-7,811.2	-537.6	472.2	333.3	138.88	3.400		
18,800.0	11,786.0	18,193.4	11,342.4	133.7	132.6	-19.51	-7,881.7	-537.1	471.7	331.6	140.13	3.366		
18,829.5	11,786.0	18,222.9	11,342.6	134.2	133.1	-19.52	-7,911.2	-536.9	471.5	330.8	140.66	3.352		
18,900.0	11,786.0	18,293.4	11,343.2	135.3	134.2	-19.55	-7,981.7	-536.3	471.0	329.1	141.92	3.319		
18,929.5	11,786.0	18,322.9	11,343.4	135.8	134.7	-19.56	-8,011.2	-536.1	470.8	328.3	142.46	3.305		
19,000.0	11,786.0	18,393.4	11,343.9	136.9	135.9	-19.59	-8,081.7	-535.5	470.3	326.6	143.72	3.272		
19,029.5	11,786.0	18,422.9	11,344.1	137.4	136.3	-19.60	-8,111.2	-535.3	470.1	325.8	144.25	3.259		
19,100.0	11,786.0	18,493.4	11,344.7	138.5	137.5	-19.62	-8,181.6	-534.8	469.6	324.1	145.52	3.227		
19,129.5	11,786.0	18,522.9	11,344.9	139.0	138.0	-19.64	-8,211.2	-534.5	469.4	323.3	146.05	3.214		
19,200.0	11,786.0	18,593.4	11,345.4	140.2	139.1	-19.66	-8,281.6	-534.0	468.9	321.6	147.33	3.183		
19,229.5	11,786.0	18,622.9	11,345.7	140.6	139.6	-19.67	-8,311.2	-533.8	468.7	320.8	147.86	3.170		
19,300.0	11,786.0	18,693.4	11,346.2	141.8	140.8	-19.70	-8,381.6	-533.2	468.2	319.1	149.14	3.139		
19,329.5	11,786.0	18,722.9	11,346.4	142.2	141.2	-19.71	-8,411.2	-533.0	468.0	318.3	149.67	3.127		
19,400.0	11,786.0	18,793.4	11,347.0	143.4	142.4	-19.74	-8,481.6	-532.4	467.5	316.5	150.95	3.097		
19,429.5	11,786.0	18,822.9	11,347.2	143.9	142.9	-19.75	-8,511.2	-532.2	467.3	315.8	151.49	3.085		
19,500.0	11,786.0	18,893.4	11,347.7	145.0	144.0	-19.77	-8,581.6	-531.6	466.8	314.0	152.77	3.056		
19,529.5	11,786.0	18,922.9	11,347.9	145.5	144.5	-19.78	-8,611.1	-531.4	466.6	313.3	153.31	3.043		
19,600.0	11,786.0	18,993.4	11,348.5	146.6	145.6	-19.81	-8,681.6	-530.9	466.1	311.5	154.60	3.015		
19,629.5	11,786.0	19,022.9	11,348.7	147.1	146.1	-19.82	-8,711.1	-530.6	465.9	310.8	155.14	3.003		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 16H - Margarita Federal Com 13 16H - PLAN#7 - 179.31													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		Minimum Separation (usft)	Separation Factor	Warning	
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
19,700.0	11,786.0	19,093.4	11,349.2	148.2	147.3	-19.85	-8,781.6	-530.1	465.4	309.0	156.43	2.975		
19,729.5	11,786.0	19,122.9	11,349.5	148.7	147.8	-19.86	-8,811.1	-529.9	465.2	308.2	156.97	2.964		
19,800.0	11,786.0	19,193.4	11,350.0	149.9	148.9	-19.89	-8,881.6	-529.3	464.7	306.4	158.26	2.936		
19,829.5	11,786.0	19,222.9	11,350.2	150.3	149.4	-19.90	-8,911.1	-529.1	464.5	305.7	158.81	2.925		
19,900.0	11,786.0	19,293.4	11,350.8	151.5	150.6	-19.92	-8,981.6	-528.5	464.0	303.9	160.10	2.898		
19,929.5	11,786.0	19,322.9	11,351.0	152.0	151.0	-19.94	-9,011.1	-528.3	463.8	303.2	160.65	2.887		
20,000.0	11,786.0	19,393.3	11,351.5	153.1	152.2	-19.96	-9,081.6	-527.8	463.3	301.4	161.94	2.861		
20,029.5	11,786.0	19,422.9	11,351.7	153.6	152.7	-19.97	-9,111.1	-527.5	463.1	300.6	162.49	2.850		
20,100.0	11,786.0	19,493.3	11,352.3	154.7	153.8	-20.00	-9,181.6	-527.0	462.6	298.8	163.79	2.824		
20,129.5	11,786.0	19,522.9	11,352.5	155.2	154.3	-20.01	-9,211.1	-526.7	462.4	298.1	164.34	2.814		
20,200.0	11,786.0	19,593.3	11,353.0	156.4	155.5	-20.04	-9,281.6	-526.2	461.9	296.3	165.64	2.789		
20,229.5	11,786.0	19,622.9	11,353.3	156.8	155.9	-20.05	-9,311.1	-526.0	461.7	295.5	166.19	2.778		
20,300.0	11,786.0	19,693.3	11,353.8	158.0	157.1	-20.08	-9,381.5	-525.4	461.2	293.7	167.50	2.754		
20,329.5	11,786.0	19,722.9	11,354.0	158.5	157.6	-20.09	-9,411.1	-525.2	461.0	293.0	168.05	2.743		
20,400.0	11,786.0	19,793.3	11,354.6	159.6	158.7	-20.12	-9,481.5	-524.6	460.5	291.2	169.36	2.719		
20,429.5	11,786.0	19,822.9	11,354.8	160.1	159.2	-20.13	-9,511.1	-524.4	460.3	290.4	169.91	2.709		
20,500.0	11,786.0	19,893.3	11,355.3	161.2	160.4	-20.15	-9,581.5	-523.9	459.8	288.6	171.22	2.686		
20,529.5	11,786.0	19,922.9	11,355.5	161.7	160.9	-20.17	-9,611.1	-523.6	459.6	287.9	171.78	2.676		
20,600.0	11,786.0	19,993.3	11,356.1	162.9	162.0	-20.19	-9,681.5	-523.1	459.1	286.0	173.09	2.653		
20,629.5	11,786.0	20,022.9	11,356.3	163.3	162.5	-20.20	-9,711.1	-522.8	458.9	285.3	173.65	2.643		
20,700.0	11,786.0	20,093.3	11,356.8	164.5	163.6	-20.23	-9,781.5	-522.3	458.4	283.5	174.97	2.620		
20,729.5	11,786.0	20,122.9	11,357.1	165.0	164.1	-20.24	-9,811.0	-522.1	458.2	282.7	175.52	2.611		
20,800.0	11,786.0	20,193.3	11,357.6	166.1	165.3	-20.27	-9,881.5	-521.5	457.7	280.9	176.84	2.588		
20,829.5	11,786.0	20,222.9	11,357.8	166.6	165.8	-20.28	-9,911.0	-521.3	457.5	280.1	177.40	2.579		
20,900.0	11,786.0	20,293.3	11,358.4	167.7	166.9	-20.31	-9,981.5	-520.7	457.1	278.3	178.72	2.557		
20,929.5	11,786.0	20,322.9	11,358.6	168.2	167.4	-20.32	-10,011.0	-520.5	456.8	277.6	179.28	2.548		
21,000.0	11,786.0	20,393.3	11,359.1	169.4	168.6	-20.35	-10,081.5	-520.0	456.4	275.7	180.61	2.527		
21,029.5	11,786.0	20,422.9	11,359.4	169.8	169.1	-20.36	-10,111.0	-519.7	456.1	275.0	181.17	2.518		
21,100.0	11,786.0	20,493.3	11,359.9	171.0	170.2	-20.39	-10,181.5	-519.2	455.7	273.2	182.50	2.497		
21,129.5	11,786.0	20,522.9	11,360.1	171.5	170.7	-20.40	-10,211.0	-519.0	455.5	272.4	183.06	2.488		
21,200.0	11,786.0	20,593.3	11,360.6	172.6	171.8	-20.43	-10,281.5	-518.4	455.0	270.6	184.39	2.467		
21,229.5	11,786.0	20,622.8	11,360.9	173.1	172.3	-20.44	-10,311.0	-518.2	454.8	269.8	184.95	2.459		
21,300.0	11,786.0	20,693.3	11,361.4	174.3	173.5	-20.47	-10,381.5	-517.6	454.3	268.0	186.29	2.439		
21,329.5	11,786.0	20,722.8	11,361.6	174.7	174.0	-20.48	-10,411.0	-517.4	454.1	267.2	186.85	2.430		
21,400.0	11,786.0	20,793.3	11,362.2	175.9	175.1	-20.51	-10,481.4	-516.8	453.6	265.4	188.19	2.410		
21,429.5	11,786.0	20,822.8	11,362.4	176.4	175.6	-20.52	-10,511.0	-516.6	453.4	264.6	188.75	2.402		
21,500.0	11,786.0	20,893.3	11,362.9	177.5	176.8	-20.55	-10,581.4	-516.1	452.9	262.8	190.09	2.382		
21,529.5	11,786.0	20,922.8	11,363.2	178.0	177.3	-20.56	-10,611.0	-515.8	452.7	262.0	190.66	2.374		
21,600.0	11,786.0	20,993.3	11,363.7	179.1	178.4	-20.59	-10,681.4	-515.3	452.2	260.2	192.00	2.355		
21,629.5	11,786.0	21,022.8	11,363.9	179.6	178.9	-20.60	-10,711.0	-515.1	452.0	259.4	192.57	2.347		
21,700.0	11,786.0	21,093.3	11,364.5	180.8	180.0	-20.63	-10,781.4	-514.5	451.5	257.6	193.92	2.328		
21,729.5	11,786.0	21,122.8	11,364.7	181.3	180.5	-20.64	-10,811.0	-514.3	451.3	256.8	194.48	2.320		
21,800.0	11,786.0	21,193.3	11,365.2	182.4	181.7	-20.67	-10,881.4	-513.7	450.8	255.0	195.83	2.302		
21,829.5	11,786.0	21,222.8	11,365.4	182.9	182.2	-20.68	-10,910.9	-513.5	450.6	254.2	196.40	2.294		
21,900.0	11,786.0	21,293.3	11,366.0	184.0	183.3	-20.71	-10,981.4	-513.0	450.1	252.4	197.75	2.276		
21,929.5	11,786.0	21,322.8	11,366.2	184.5	183.8	-20.72	-11,010.9	-512.7	449.9	251.6	198.32	2.269		
22,000.0	11,786.0	21,393.3	11,366.7	185.7	185.0	-20.75	-11,081.4	-512.2	449.4	249.7	199.68	2.251		
22,029.5	11,786.0	21,422.8	11,367.0	186.2	185.5	-20.76	-11,110.9	-511.9	449.2	249.0	200.24	2.243		
22,100.0	11,786.0	21,493.3	11,367.5	187.3	186.6	-20.79	-11,181.4	-511.4	448.7	247.1	201.60	2.226		
22,129.5	11,786.0	21,522.8	11,367.7	187.8	187.1	-20.80	-11,210.9	-511.2	448.5	246.3	202.17	2.218		
22,200.0	11,786.0	21,593.3	11,368.3	188.9	188.3	-20.83	-11,281.4	-510.6	448.0	244.5	203.53	2.201		
22,229.5	11,786.0	21,622.8	11,368.5	189.4	188.7	-20.84	-11,310.9	-510.4	447.8	243.7	204.11	2.194		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Amerdev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 16H - Margarita Federal Com 13 16H - PLAN#7 - 179.31													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Rule Assigned: Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
22,300.0	11,786.0	21,693.3	11,369.0	190.6	189.9	-20.87	-11,381.4	-509.8	447.3	241.9	205.47	2.177		
22,329.5	11,786.0	21,722.8	11,369.2	191.1	190.4	-20.88	-11,410.9	-509.6	447.1	241.1	206.04	2.170		
22,400.0	11,786.0	21,793.3	11,369.8	192.2	191.5	-20.91	-11,481.4	-509.1	446.6	239.2	207.41	2.153		
22,429.5	11,786.0	21,822.8	11,370.0	192.7	192.0	-20.92	-11,510.9	-508.8	446.4	238.5	207.98	2.147		
22,500.0	11,786.0	21,893.3	11,370.5	193.8	193.2	-20.95	-11,581.3	-508.3	446.0	236.6	209.35	2.130		
22,529.5	11,786.0	21,922.8	11,370.8	194.3	193.7	-20.96	-11,610.9	-508.0	445.8	235.8	209.92	2.123		
22,600.0	11,786.0	21,993.3	11,371.3	195.5	194.8	-20.99	-11,681.3	-507.5	445.3	234.0	211.30	2.107		
22,629.5	11,786.0	22,022.8	11,371.5	196.0	195.3	-21.00	-11,710.9	-507.3	445.1	233.2	211.87	2.101		
22,700.0	11,786.0	22,093.3	11,372.1	197.1	196.5	-21.03	-11,781.3	-506.7	444.6	231.3	213.25	2.085		
22,729.5	11,786.0	22,122.8	11,372.3	197.6	197.0	-21.05	-11,810.9	-506.5	444.4	230.5	213.82	2.078		
22,800.0	11,786.0	22,193.3	11,372.8	198.8	198.1	-21.08	-11,881.3	-505.9	443.9	228.7	215.20	2.063		
22,829.5	11,786.0	22,222.8	11,373.0	199.2	198.6	-21.09	-11,910.9	-505.7	443.7	227.9	215.78	2.056		
22,900.0	11,786.0	22,293.3	11,373.6	200.4	199.8	-21.12	-11,981.3	-505.2	443.2	226.0	217.16	2.041		
22,929.5	11,786.0	22,322.8	11,373.8	200.9	200.3	-21.13	-12,010.9	-504.9	443.0	225.3	217.74	2.035		
23,000.0	11,786.0	22,393.3	11,374.3	202.0	201.4	-21.16	-12,081.3	-504.4	442.5	223.4	219.12	2.019		
23,029.5	11,786.0	22,422.8	11,374.6	202.5	201.9	-21.17	-12,110.8	-504.2	442.3	222.6	219.70	2.013		
23,100.0	11,786.0	22,493.3	11,375.1	203.7	203.1	-21.20	-12,181.3	-503.6	441.8	220.7	221.08	1.998		
23,129.5	11,786.0	22,522.8	11,375.3	204.1	203.5	-21.21	-12,210.8	-503.4	441.6	219.9	221.66	1.992		
23,200.0	11,786.0	22,593.3	11,375.9	205.3	204.7	-21.24	-12,281.3	-502.8	441.1	218.1	223.05	1.978		
23,229.5	11,786.0	22,622.8	11,376.1	205.8	205.2	-21.25	-12,310.8	-502.6	440.9	217.3	223.63	1.972		
23,300.0	11,786.0	22,693.3	11,376.6	206.9	206.3	-21.28	-12,381.3	-502.0	440.4	215.4	225.02	1.957		
23,329.5	11,786.0	22,722.8	11,376.8	207.4	206.8	-21.30	-12,410.8	-501.8	440.2	214.6	225.60	1.951		
23,400.0	11,786.0	22,793.2	11,377.4	208.6	208.0	-21.33	-12,481.3	-501.3	439.7	212.7	227.00	1.937		
23,429.5	11,786.0	22,822.8	11,377.6	209.1	208.5	-21.34	-12,510.8	-501.0	439.5	212.0	227.58	1.931		
23,500.0	11,786.0	22,893.2	11,378.1	210.2	209.6	-21.37	-12,581.3	-500.5	439.1	210.1	228.98	1.917		
23,529.5	11,786.0	22,922.8	11,378.4	210.7	210.1	-21.38	-12,610.8	-500.3	438.8	209.3	229.56	1.912		
23,600.0	11,786.0	22,993.2	11,378.9	211.8	211.3	-21.41	-12,681.3	-499.7	438.4	207.4	230.96	1.898		
23,609.5	11,786.0	23,002.8	11,379.0	212.0	211.4	-21.42	-12,690.8	-499.6	438.3	207.1	231.15	1.896		
23,613.0	11,786.0	23,006.2	11,379.0	212.1	211.5	-21.42	-12,694.2	-499.6	438.3	207.1	231.22	1.896		
23,616.4	11,786.0	23,007.2	11,379.0	212.1	211.5	-21.42	-12,695.2	-499.6	438.3	207.2	231.02	1.897		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

Company:	Ameredeve Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 20H - Margarita Federal Com 13 20H - M20H													Offset Site Error:	0.0 usft
Survey Program: 188-MWD													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre		Rule Assigned:		Distance		Minimum	Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor		
100.0	100.0	100.0	100.0	0.8	0.6	121.10	-0.1	0.1	0.1	-1.2	1.35	0.107 Level 3, CC, SF		
200.0	200.0	200.0	200.0	1.4	1.2	121.29	-0.3	0.5	0.6	-2.0	2.57	0.223 Level 3		
300.0	300.0	300.0	300.0	1.9	1.7	130.54	-0.6	0.7	1.0	-2.6	3.56	0.272 Level 3		
400.0	400.0	400.0	400.0	2.2	2.1	131.25	-0.9	1.0	1.3	-3.0	4.30	0.308 Level 3		
500.0	500.0	500.0	500.0	2.5	2.4	132.02	-1.1	1.2	1.6	-3.4	4.95	0.322 Level 3		
600.0	600.0	600.0	600.0	2.8	2.7	130.32	-1.3	1.5	2.0	-3.5	5.55	0.362 Level 3		
700.0	700.0	700.0	700.0	3.1	3.0	125.57	-1.4	2.0	2.5	-3.6	6.09	0.405 Level 3		
800.0	800.0	800.0	800.0	3.3	3.4	137.69	-2.0	1.8	2.6	-4.1	6.75	0.393 Level 3		
900.0	900.0	900.0	900.0	3.6	3.7	152.79	-2.5	1.3	2.8	-4.4	7.20	0.384 Level 3		
964.9	964.9	964.9	964.9	3.7	3.8	159.82	-2.5	0.9	2.7	-4.7	7.43	0.364 Level 3		
1,000.0	1,000.0	1,000.0	1,000.0	3.8	3.8	168.33	-2.7	0.6	2.8	-4.8	7.52	0.366 Level 3, ES		
1,100.0	1,100.0	1,099.9	1,099.9	4.0	4.0	-162.76	-3.8	-1.2	4.0	-3.7	7.73	0.520 Level 3		
1,200.0	1,200.0	1,199.9	1,199.8	4.2	4.2	-148.77	-5.9	-3.6	7.0	-1.1	8.08	0.861 Level 3		
1,300.0	1,300.0	1,299.8	1,299.7	4.4	4.4	-137.04	-7.5	-7.0	10.2	1.8	8.45	1.212 Level 3		
1,400.0	1,400.0	1,399.8	1,399.6	4.5	4.6	-126.55	-8.2	-11.0	13.8	4.9	8.81	1.562		
1,500.0	1,500.0	1,500.2	1,500.0	4.7	4.9	-123.33	-8.2	-12.4	14.9	5.8	9.14	1.630		
1,600.0	1,600.0	1,600.1	1,599.9	4.9	5.1	-121.93	-8.2	-13.1	15.4	6.0	9.46	1.629		
1,700.0	1,700.0	1,640.0	1,639.7	5.1	5.1	-121.34	-8.2	-13.5	62.3	56.0	6.31	9.879		
1,800.0	1,800.0	1,640.0	1,639.7	5.2	5.1	-121.34	-8.2	-13.5	161.0	154.9	6.12	26.312		
1,900.0	1,900.0	1,640.0	1,639.7	5.4	5.1	-121.34	-8.2	-13.5	260.7	254.6	6.17	42.244		
2,000.0	2,000.0	1,640.0	1,639.7	5.5	5.1	-121.34	-8.2	-13.5	360.6	354.4	6.25	57.706		
2,100.0	2,100.0	1,640.0	1,639.7	5.7	5.1	6.19	-8.2	-13.5	460.5	454.1	6.33	72.714		
2,200.0	2,199.8	1,640.0	1,639.7	6.3	5.1	3.89	-8.2	-13.5	560.2	553.8	6.42	87.223		
2,300.0	2,299.5	1,640.0	1,639.7	6.8	5.1	2.69	-8.2	-13.5	659.7	653.2	6.52	101.208		
2,350.0	2,349.1	1,640.0	1,639.7	6.9	5.1	2.29	-8.2	-13.5	709.4	702.9	6.56	108.069		
2,400.0	2,398.8	1,640.0	1,639.7	7.0	5.1	2.29	-8.2	-13.5	759.1	752.5	6.61	114.782		
2,500.0	2,498.0	1,640.0	1,639.7	7.1	5.1	2.29	-8.2	-13.5	858.6	851.9	6.72	127.801		
2,600.0	2,597.3	1,640.0	1,639.7	7.3	5.1	2.29	-8.2	-13.5	958.2	951.4	6.83	140.365		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredeve Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 24H - Margarita Federal Com 13 24H - M24H													Offset Site Error:	0.0 usft
Survey Program: 197-MWD													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre		Rule Assigned:		Distance		Minimum	Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor		
0.0	0.0	1.0	1.0	0.0	0.0	-90.38	-0.4	-66.0	66.0					
100.0	100.0	101.0	101.0	0.8	0.6	-90.57	-0.7	-66.0	66.0	64.6	1.37	48.181		
200.0	200.0	201.1	201.1	1.4	1.2	-91.12	-1.3	-65.8	65.9	63.2	2.62	25.124		
299.7	299.7	300.7	300.7	1.9	2.2	-91.86	-2.1	-65.8	65.8	61.7	4.06	16.205 CC		
300.0	300.0	301.0	301.0	1.9	2.2	-91.86	-2.1	-65.8	65.8	61.7	4.06	16.188		
400.0	400.0	401.0	400.9	2.2	3.1	-92.65	-3.0	-65.8	65.9	60.6	5.30	12.416		
500.0	500.0	501.0	501.0	2.5	3.4	-93.41	-3.9	-65.8	65.9	60.0	5.87	11.219		
600.0	600.0	600.9	600.9	2.8	3.7	-94.28	-4.9	-65.9	66.1	59.7	6.36	10.393		
700.0	700.0	700.9	700.9	3.1	3.9	-95.14	-5.9	-65.9	66.2	59.4	6.80	9.732		
800.0	800.0	800.8	800.8	3.3	4.2	-96.01	-7.0	-66.0	66.4	59.1	7.23	9.184 ES		
900.0	900.0	900.7	900.7	3.6	4.4	-96.95	-8.1	-66.3	66.8	59.2	7.63	8.750		
1,000.0	1,000.0	1,000.6	1,000.6	3.8	4.7	-97.85	-9.2	-66.7	67.3	59.3	8.03	8.384		
1,100.0	1,100.0	1,100.7	1,100.6	4.0	4.9	-98.83	-10.4	-67.1	67.9	59.5	8.41	8.077		
1,200.0	1,200.0	1,200.6	1,200.6	4.2	5.1	-99.77	-11.6	-67.5	68.5	59.7	8.78	7.796		
1,300.0	1,300.0	1,300.5	1,300.4	4.4	5.4	-100.68	-12.8	-68.0	69.2	60.0	9.15	7.560		
1,400.0	1,400.0	1,400.4	1,400.3	4.5	5.6	-101.47	-13.9	-68.7	70.1	60.6	9.52	7.365		
1,500.0	1,500.0	1,500.2	1,500.1	4.7	5.9	-102.23	-15.1	-69.6	71.3	61.4	9.89	7.203		
1,600.0	1,600.0	1,600.2	1,600.1	4.9	6.1	-103.04	-16.4	-70.6	72.5	62.2	10.27	7.057		
1,600.4	1,600.4	1,600.6	1,600.5	4.9	6.1	-103.04	-16.4	-70.6	72.5	62.2	10.27	7.056 SF		
1,700.0	1,700.0	1,675.0	1,674.9	5.1	6.3	-103.71	-17.4	-71.3	77.9	67.7	10.19	7.646		
1,800.0	1,800.0	1,675.0	1,674.9	5.2	6.3	-103.71	-17.4	-71.3	145.9	138.4	7.57	19.284		
1,900.0	1,900.0	1,675.0	1,674.9	5.4	6.3	-103.71	-17.4	-71.3	237.7	231.0	6.78	35.039		
2,000.0	2,000.0	1,675.0	1,674.9	5.5	6.3	-103.71	-17.4	-71.3	334.3	327.7	6.58	50.765		
2,100.0	2,100.0	1,675.0	1,674.9	5.7	6.3	25.11	-17.4	-71.3	432.1	425.6	6.54	66.052		
2,200.0	2,199.8	1,675.0	1,674.9	6.3	6.3	21.11	-17.4	-71.3	530.3	523.7	6.57	80.709		
2,300.0	2,299.5	1,675.0	1,674.9	6.8	6.3	17.66	-17.4	-71.3	628.5	621.8	6.63	94.828		
2,350.0	2,349.1	1,675.0	1,674.9	6.9	6.3	16.16	-17.4	-71.3	677.5	670.9	6.65	101.848		
2,400.0	2,398.8	1,675.0	1,674.9	7.0	6.3	16.16	-17.4	-71.3	726.7	720.0	6.69	108.700		
2,500.0	2,498.0	1,675.0	1,674.9	7.1	6.3	16.16	-17.4	-71.3	825.3	818.5	6.77	121.887		
2,600.0	2,597.3	1,675.0	1,674.9	7.3	6.3	16.16	-17.4	-71.3	924.2	917.3	6.87	134.553		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 24H - Margarita Federal Com 13 24H - PLAN#7 - 179.41													Offset Site Error:	0.0 usft
Survey Program: 0-MWD							Rule Assigned:						Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	-90.38	-0.4	-66.0	66.0					
100.0	100.0	101.0	101.0	0.8	0.8	-90.38	-0.4	-66.0	66.0	64.5	1.53	43.230		
200.0	200.0	201.0	201.0	1.4	1.4	-90.38	-0.4	-66.0	66.0	63.2	2.79	23.629		
300.0	300.0	301.0	301.0	1.9	1.9	-90.38	-0.4	-66.0	66.0	62.3	3.71	17.796		
400.0	400.0	401.0	401.0	2.2	2.2	-90.38	-0.4	-66.0	66.0	61.5	4.44	14.848		
500.0	500.0	501.0	501.0	2.5	2.5	-90.38	-0.4	-66.0	66.0	60.9	5.08	12.990		
600.0	600.0	601.0	601.0	2.8	2.8	-90.38	-0.4	-66.0	66.0	60.3	5.65	11.681		
700.0	700.0	701.0	701.0	3.1	3.1	-90.38	-0.4	-66.0	66.0	59.8	6.17	10.694		
800.0	800.0	801.0	801.0	3.3	3.3	-90.38	-0.4	-66.0	66.0	59.3	6.66	9.916		
900.0	900.0	901.0	901.0	3.6	3.6	-90.38	-0.4	-66.0	66.0	58.9	7.11	9.281		
1,000.0	1,000.0	1,001.0	1,001.0	3.8	3.8	-90.38	-0.4	-66.0	66.0	58.4	7.54	8.750		
1,100.0	1,100.0	1,101.0	1,101.0	4.0	4.0	-90.38	-0.4	-66.0	66.0	58.0	7.95	8.297		
1,200.0	1,200.0	1,201.0	1,201.0	4.2	4.2	-90.38	-0.4	-66.0	66.0	57.6	8.35	7.905		
1,300.0	1,300.0	1,301.0	1,301.0	4.4	4.4	-90.38	-0.4	-66.0	66.0	57.3	8.73	7.561		
1,400.0	1,400.0	1,401.0	1,401.0	4.5	4.5	-90.38	-0.4	-66.0	66.0	56.9	9.09	7.257		
1,500.0	1,500.0	1,501.0	1,501.0	4.7	4.7	-90.38	-0.4	-66.0	66.0	56.5	9.45	6.984		
1,600.0	1,600.0	1,601.0	1,601.0	4.9	4.9	-90.38	-0.4	-66.0	66.0	56.2	9.79	6.738		
1,700.0	1,700.0	1,701.0	1,701.0	5.1	5.1	-90.38	-0.4	-66.0	66.0	55.9	10.13	6.514		
1,800.0	1,800.0	1,801.0	1,801.0	5.2	5.2	-90.38	-0.4	-66.0	66.0	55.5	10.46	6.310		
1,900.0	1,900.0	1,901.0	1,901.0	5.4	5.4	-90.38	-0.4	-66.0	66.0	55.2	10.78	6.123		
2,000.0	2,000.0	2,001.0	2,001.0	5.5	5.5	-90.38	-0.4	-66.0	66.0	54.9	11.09	5.950		
2,100.0	2,100.0	2,101.0	2,101.0	5.7	5.7	43.84	-0.4	-66.0	64.7	53.3	11.41	5.672		
2,200.0	2,199.8	2,200.8	2,200.8	6.3	5.9	47.29	-0.4	-66.0	61.1	49.2	11.87	5.142		
2,300.0	2,299.5	2,300.5	2,300.5	6.8	6.0	53.99	-0.4	-66.0	55.5	43.3	12.23	4.539		
2,350.0	2,349.1	2,350.3	2,350.3	6.9	6.0	58.85	-0.7	-65.9	52.3	40.0	12.25	4.268		
2,400.0	2,398.8	2,400.2	2,400.2	7.0	6.1	64.26	-1.3	-65.8	49.0	36.8	12.24	4.005		
2,500.0	2,498.0	2,500.1	2,500.1	7.1	6.2	75.97	-3.9	-65.3	43.2	30.9	12.31	3.509		
2,600.0	2,597.3	2,600.1	2,599.9	7.3	6.3	89.13	-8.1	-64.5	38.2	25.7	12.48	3.060		
2,700.0	2,696.5	2,700.1	2,699.8	7.5	6.5	104.24	-14.1	-63.3	34.0	21.2	12.83	2.653		
2,800.0	2,795.8	2,800.1	2,799.5	7.8	6.6	121.89	-21.8	-61.8	31.0	17.6	13.45	2.306		
2,863.9	2,859.2	2,863.6	2,862.7	7.9	6.7	134.38	-27.3	-60.7	30.3	16.3	13.97	2.167 CC		
2,900.0	2,895.0	2,899.6	2,898.5	8.0	6.8	141.52	-30.4	-60.1	30.5	16.2	14.27	2.138 ES, SF		
3,000.0	2,994.3	2,999.0	2,997.6	8.3	7.0	159.66	-38.9	-58.5	33.5	18.5	15.00	2.234		
3,100.0	3,093.5	3,098.4	3,096.7	8.6	7.2	173.70	-47.4	-56.8	39.2	23.7	15.50	2.530		
3,200.0	3,192.8	3,197.9	3,195.7	8.8	7.4	-176.24	-55.9	-55.1	46.7	30.8	15.87	2.940		
3,300.0	3,292.0	3,297.3	3,294.8	9.1	7.7	-169.09	-64.4	-53.5	55.1	38.9	16.19	3.405		
3,400.0	3,391.3	3,396.8	3,393.9	9.4	7.9	-163.89	-72.9	-51.8	64.2	47.7	16.50	3.892		
3,500.0	3,490.6	3,496.2	3,492.9	9.8	8.2	-160.00	-81.4	-50.1	73.7	56.9	16.82	4.382		
3,600.0	3,589.8	3,595.6	3,592.0	10.1	8.5	-157.01	-89.9	-48.5	83.4	66.3	17.15	4.865		
3,700.0	3,689.1	3,695.1	3,691.0	10.4	8.7	-154.65	-98.4	-46.8	93.3	75.8	17.49	5.336		
3,800.0	3,788.3	3,794.5	3,790.1	10.7	9.0	-152.74	-106.9	-45.1	103.4	85.5	17.85	5.791		
3,900.0	3,887.6	3,894.0	3,889.2	11.1	9.3	-151.17	-115.4	-43.5	113.5	95.3	18.22	6.230		
4,000.0	3,986.8	3,993.4	3,988.2	11.4	9.6	-149.86	-123.9	-41.8	123.7	105.1	18.60	6.652		
4,100.0	4,086.1	4,092.8	4,087.3	11.8	9.9	-148.75	-132.4	-40.1	134.0	115.0	18.99	7.056		
4,200.0	4,185.3	4,192.3	4,186.4	12.1	10.2	-147.80	-140.9	-38.5	144.3	124.9	19.39	7.443		
4,300.0	4,284.6	4,291.7	4,285.4	12.5	10.6	-146.97	-149.4	-36.8	154.6	134.9	19.79	7.813		
4,400.0	4,383.8	4,391.2	4,384.5	12.9	10.9	-146.25	-157.9	-35.1	165.0	144.8	20.20	8.167		
4,500.0	4,483.1	4,490.6	4,483.5	13.2	11.2	-145.61	-166.4	-33.5	175.4	154.8	20.62	8.506		
4,600.0	4,582.4	4,590.0	4,582.6	13.6	11.5	-145.05	-174.9	-31.8	185.8	164.8	21.05	8.829		
4,700.0	4,681.6	4,689.5	4,681.7	14.0	11.9	-144.54	-183.4	-30.1	196.2	174.8	21.47	9.139		
4,800.0	4,780.9	4,788.9	4,780.7	14.4	12.2	-144.09	-191.9	-28.5	206.7	184.8	21.91	9.435		
4,900.0	4,880.1	4,888.4	4,879.8	14.7	12.5	-143.68	-200.5	-26.8	217.1	194.8	22.34	9.718		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 24H - Margarita Federal Com 13 24H - PLAN#7 - 179.41													Offset Site Error:	0.0 usft
Survey Program: 0-MWD							Rule Assigned:						Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
5,000.0	4,979.4	4,987.8	4,978.9	15.1	12.9	-143.31	-209.0	-25.1	227.6	204.8	22.78	9.989		
5,100.0	5,078.6	5,087.3	5,077.9	15.5	13.2	-142.97	-217.5	-23.5	238.1	214.8	23.23	10.248		
5,200.0	5,177.9	5,186.7	5,177.0	15.9	13.6	-142.66	-226.0	-21.8	248.5	224.9	23.68	10.497		
5,300.0	5,277.1	5,286.1	5,276.0	16.3	13.9	-142.37	-234.5	-20.1	259.0	234.9	24.13	10.735		
5,400.0	5,376.4	5,385.6	5,375.1	16.6	14.3	-142.11	-243.0	-18.5	269.5	244.9	24.58	10.963		
5,500.0	5,475.7	5,485.0	5,474.2	17.0	14.6	-141.86	-251.5	-16.8	280.0	255.0	25.04	11.182		
5,600.0	5,574.9	5,584.5	5,573.2	17.4	15.0	-141.64	-260.0	-15.1	290.5	265.0	25.50	11.392		
5,700.0	5,674.2	5,683.9	5,672.3	17.8	15.3	-141.43	-268.5	-13.5	301.0	275.1	25.97	11.593		
5,800.0	5,773.4	5,783.3	5,771.4	18.2	15.7	-141.23	-277.0	-11.8	311.5	285.1	26.43	11.787		
5,900.0	5,872.7	5,882.8	5,870.4	18.6	16.1	-141.05	-285.5	-10.1	322.0	295.1	26.90	11.973		
6,000.0	5,971.9	5,982.2	5,969.5	19.0	16.4	-140.87	-294.0	-8.5	332.6	305.2	27.37	12.151		
6,100.0	6,071.2	6,081.7	6,068.5	19.4	16.8	-140.71	-302.5	-6.8	343.1	315.2	27.84	12.324		
6,200.0	6,170.4	6,181.1	6,167.6	19.8	17.1	-140.56	-311.0	-5.1	353.6	325.3	28.31	12.489		
6,300.0	6,269.7	6,280.5	6,266.7	20.2	17.5	-140.42	-319.5	-3.5	364.1	335.3	28.79	12.648		
6,400.0	6,368.9	6,380.0	6,365.7	20.6	17.9	-140.28	-328.0	-1.8	374.6	345.4	29.26	12.802		
6,500.0	6,468.2	6,479.4	6,464.8	21.0	18.2	-140.15	-336.5	-0.1	385.2	355.4	29.74	12.950		
6,600.0	6,567.5	6,578.9	6,563.9	21.4	18.6	-140.03	-345.0	1.5	395.7	365.5	30.22	13.093		
6,700.0	6,666.7	6,678.3	6,662.9	21.8	19.0	-139.92	-353.5	3.2	406.2	375.5	30.70	13.230		
6,800.0	6,766.0	6,777.7	6,762.0	22.2	19.3	-139.81	-362.1	4.9	416.8	385.6	31.19	13.363		
6,900.0	6,865.2	6,877.4	6,861.2	22.6	19.7	-139.71	-370.5	6.5	427.3	395.6	31.65	13.501		
7,000.0	6,964.5	6,977.9	6,961.5	23.0	20.0	-139.77	-378.0	8.0	437.7	405.5	32.13	13.623		
7,100.0	7,063.7	7,078.4	7,061.8	23.4	20.4	-140.04	-383.7	9.1	447.8	415.2	32.62	13.725		
7,200.0	7,163.0	7,178.9	7,162.2	23.8	20.7	-140.53	-387.6	9.9	457.7	424.6	33.13	13.815		
7,300.0	7,262.2	7,279.2	7,262.5	24.2	21.0	-141.21	-389.9	10.3	467.5	433.8	33.64	13.895		
7,400.0	7,361.5	7,379.2	7,362.5	24.6	21.1	-142.06	-390.4	10.4	477.1	443.0	34.12	13.984		
7,500.0	7,460.7	7,478.5	7,461.7	25.0	21.1	-142.94	-390.4	10.4	486.8	452.2	34.59	14.073		
7,600.0	7,560.0	7,577.7	7,561.0	25.4	21.1	-143.79	-390.4	10.4	496.6	461.5	35.08	14.156		
7,700.0	7,659.3	7,677.0	7,660.3	25.9	21.1	-144.60	-390.4	10.4	506.5	470.9	35.58	14.238		
7,800.0	7,758.5	7,776.2	7,759.5	26.3	21.2	-145.38	-390.4	10.4	516.5	480.4	36.08	14.318		
7,900.0	7,857.8	7,875.5	7,858.8	26.7	21.2	-146.13	-390.4	10.4	526.6	490.0	36.58	14.397		
8,000.0	7,957.0	7,974.7	7,958.0	27.1	21.2	-146.86	-390.4	10.4	536.8	499.7	37.09	14.474		
8,100.0	8,056.3	8,074.0	8,057.3	27.5	21.3	-147.55	-390.4	10.4	547.1	509.5	37.60	14.551		
8,200.0	8,155.5	8,173.2	8,156.5	27.9	21.3	-148.22	-390.4	10.4	557.4	519.3	38.11	14.627		
8,300.0	8,254.8	8,272.5	8,255.8	28.3	21.3	-148.87	-390.4	10.4	567.8	529.2	38.62	14.703		
8,400.0	8,354.0	8,371.8	8,355.0	28.7	21.3	-149.49	-390.4	10.4	578.3	539.2	39.14	14.777		
8,500.0	8,453.3	8,471.0	8,454.3	29.1	21.4	-150.09	-390.4	10.4	588.9	549.2	39.65	14.851		
8,600.0	8,552.5	8,570.3	8,553.5	29.5	21.4	-150.67	-390.4	10.4	599.5	559.3	40.17	14.924		
8,700.0	8,651.8	8,669.5	8,652.8	29.9	21.4	-151.23	-390.4	10.4	610.2	569.5	40.69	14.996		
8,800.0	8,751.1	8,768.8	8,752.1	30.4	21.5	-151.77	-390.4	10.4	620.9	579.7	41.21	15.068		
8,900.0	8,850.3	8,868.0	8,851.3	30.8	21.5	-152.29	-390.4	10.4	631.7	589.9	41.73	15.139		
9,000.0	8,949.6	8,967.3	8,950.6	31.2	21.5	-152.80	-390.4	10.4	642.5	600.3	42.24	15.209		
9,100.0	9,048.8	9,066.5	9,049.8	31.6	21.6	-153.29	-390.4	10.4	653.4	610.6	42.76	15.279		
9,200.0	9,148.1	9,165.8	9,149.1	32.0	21.6	-153.76	-390.4	10.4	664.3	621.0	43.28	15.348		
9,300.0	9,247.3	9,265.0	9,248.3	32.4	21.6	-154.22	-390.4	10.4	675.3	631.5	43.80	15.416		
9,400.0	9,346.6	9,364.3	9,347.6	32.8	21.7	-154.66	-390.4	10.4	686.3	642.0	44.32	15.484		
9,500.0	9,445.8	9,463.6	9,446.8	33.2	21.7	-155.09	-390.4	10.4	697.3	652.5	44.84	15.551		
9,600.0	9,545.1	9,562.8	9,546.1	33.7	21.7	-155.50	-390.4	10.4	708.4	663.1	45.36	15.618		
9,700.0	9,644.3	9,662.1	9,645.3	34.1	21.7	-155.90	-390.4	10.4	719.5	673.7	45.88	15.683		
9,800.0	9,743.6	9,761.3	9,744.6	34.5	21.8	-156.29	-390.4	10.4	730.7	684.3	46.40	15.749		
9,900.0	9,842.9	9,860.6	9,843.9	34.9	21.8	-156.67	-390.4	10.4	741.9	695.0	46.91	15.813		
10,000.0	9,942.1	9,959.8	9,943.1	35.3	21.8	-157.04	-390.4	10.4	753.1	705.7	47.43	15.878		
10,100.0	10,041.4	10,059.1	10,042.4	35.7	21.9	-157.39	-390.4	10.4	764.3	716.4	47.95	15.941		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 24H - Margarita Federal Com 13 24H - PLAN#7 - 179.41													Offset Site Error:	0.0 usft	
Survey Program: 0-MWD				Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned: Distance		Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
10,200.0	10,140.6	10,158.3	10,141.6	36.1	21.9	-157.74	-390.4	10.4	775.6	727.2	48.46	16.004			
10,300.0	10,239.9	10,257.6	10,240.9	36.6	21.9	-158.07	-390.4	10.4	786.9	737.9	48.98	16.066			
10,400.0	10,339.1	10,356.8	10,340.1	37.0	22.0	-158.40	-390.4	10.4	798.3	748.8	49.50	16.128			
10,500.0	10,438.4	10,456.1	10,439.4	37.4	22.0	-158.72	-390.4	10.4	809.6	759.6	50.01	16.189			
10,522.3	10,460.5	10,478.2	10,461.5	37.5	22.0	-158.79	-390.4	10.4	812.1	762.0	50.12	16.204			
10,600.0	10,537.7	10,555.4	10,538.7	37.8	22.1	-159.04	-390.4	10.4	820.5	770.0	50.51	16.245			
10,700.0	10,637.2	10,654.9	10,638.2	38.2	22.1	-159.32	-390.4	10.4	829.8	778.8	50.99	16.275			
10,800.0	10,736.9	10,754.6	10,737.9	38.6	22.1	-159.55	-390.4	10.4	837.5	786.1	51.44	16.280			
10,900.0	10,836.6	10,854.4	10,837.6	38.9	22.2	-159.72	-390.4	10.4	843.6	791.8	51.87	16.264			
11,000.0	10,936.5	10,954.2	10,937.5	39.3	22.2	-159.85	-390.4	10.4	848.1	795.8	52.26	16.227			
11,100.0	11,036.5	11,054.2	11,037.5	39.6	22.2	-159.93	-390.4	10.4	850.9	798.3	52.61	16.173			
11,200.0	11,136.5	11,154.2	11,137.5	39.8	22.3	-159.96	-390.4	10.4	852.1	799.2	52.90	16.109			
11,222.3	11,158.7	11,176.4	11,159.7	39.8	22.3	66.88	-390.4	10.4	852.1	799.2	52.93	16.100			
11,300.0	11,236.5	11,254.2	11,237.5	39.8	22.3	66.88	-390.4	10.4	852.1	799.2	52.97	16.087			
11,372.0	11,308.5	11,326.2	11,309.5	39.8	22.3	66.88	-390.4	10.4	852.1	799.1	53.01	16.075			
11,375.0	11,311.5	11,329.2	11,312.5	39.8	22.3	-110.32	-390.4	10.4	852.1	799.1	53.01	16.074			
11,400.0	11,336.5	11,354.2	11,337.5	39.9	22.3	-110.34	-390.4	10.4	852.4	799.4	53.06	16.065			
11,425.0	11,361.4	11,379.1	11,362.4	39.9	22.3	-110.39	-390.4	10.4	853.2	800.0	53.14	16.054			
11,450.0	11,386.1	11,418.1	11,401.4	40.0	22.4	-110.54	-391.5	10.6	854.2	800.9	53.30	16.028			
11,475.0	11,410.7	11,463.8	11,446.7	40.1	22.6	-110.64	-396.6	11.4	855.2	801.7	53.47	15.993			
11,500.0	11,434.9	11,509.7	11,491.6	40.2	22.8	-110.62	-406.1	12.8	856.0	802.3	53.64	15.958			
11,525.0	11,458.9	11,555.7	11,535.5	40.2	23.0	-110.48	-419.8	15.0	856.6	802.8	53.79	15.925			
11,550.0	11,482.4	11,601.5	11,577.6	40.3	23.3	-110.23	-437.5	17.7	857.1	803.2	53.93	15.893			
11,575.0	11,505.4	11,646.8	11,617.3	40.4	23.5	-109.86	-458.8	21.1	857.5	803.4	54.06	15.862			
11,600.0	11,527.9	11,691.3	11,654.3	40.5	23.7	-109.39	-483.3	24.9	857.7	803.5	54.18	15.831			
11,601.0	11,528.8	11,693.1	11,655.7	40.5	23.7	-109.37	-484.4	25.1	857.7	803.6	54.19	15.830			
11,625.0	11,549.8	11,734.8	11,688.0	40.6	23.9	-108.83	-510.5	29.1	857.9	803.6	54.30	15.799			
11,625.0	11,549.8	11,734.8	11,688.0	40.6	23.9	-108.83	-510.5	29.1	857.9	803.6	54.30	15.799			
11,650.0	11,571.0	11,777.2	11,718.3	40.7	24.1	-108.18	-539.8	33.7	857.9	803.5	54.41	15.766			
11,650.7	11,571.7	11,778.4	11,719.2	40.7	24.1	-108.16	-540.6	33.8	857.9	803.5	54.42	15.765			
11,675.0	11,591.5	11,818.3	11,745.1	40.8	24.3	-107.47	-570.6	38.5	857.9	803.4	54.54	15.729			
11,676.0	11,592.4	11,820.0	11,746.1	40.8	24.3	-107.44	-571.9	38.7	857.9	803.4	54.55	15.728			
11,700.0	11,611.3	11,858.2	11,768.4	40.9	24.5	-106.70	-602.5	43.5	857.9	803.3	54.69	15.688			
11,701.0	11,612.1	11,859.8	11,769.3	40.9	24.5	-106.66	-603.8	43.7	857.9	803.2	54.69	15.687			
11,725.0	11,630.2	11,896.6	11,788.2	40.9	24.6	-105.87	-635.0	48.5	858.0	803.1	54.85	15.643			
11,725.9	11,630.8	11,897.9	11,788.9	41.0	24.6	-105.84	-636.1	48.7	858.0	803.1	54.85	15.642			
11,750.0	11,648.2	11,933.6	11,804.8	41.0	24.7	-105.01	-667.7	53.6	858.0	803.0	55.03	15.592			
11,750.6	11,648.6	11,934.5	11,805.2	41.0	24.7	-104.99	-668.5	53.8	858.0	803.0	55.03	15.591			
11,775.0	11,665.3	11,969.3	11,818.3	41.1	24.8	-104.12	-700.4	58.7	858.2	802.9	55.24	15.536			
11,775.3	11,665.5	11,969.8	11,818.4	41.1	24.8	-104.11	-700.8	58.8	858.2	802.9	55.24	15.535			
11,800.0	11,681.4	12,003.7	11,828.9	41.2	24.9	-103.20	-732.7	63.7	858.4	803.0	55.47	15.475			
11,800.0	11,681.4	12,003.7	11,828.9	41.2	24.9	-103.20	-732.7	63.8	858.4	803.0	55.47	15.474			
11,825.0	11,696.5	12,036.8	11,836.9	41.3	24.9	-102.27	-764.4	68.7	858.8	803.1	55.74	15.407			
11,825.1	11,696.6	12,036.9	11,836.9	41.3	24.9	-102.27	-764.5	68.7	858.8	803.1	55.74	15.407			
11,850.0	11,710.5	12,068.7	11,842.5	41.4	25.0	-101.32	-795.4	73.5	859.3	803.3	56.03	15.336			
11,850.0	11,710.6	12,068.7	11,842.5	41.4	25.0	-101.32	-795.4	73.5	859.3	803.3	56.03	15.336			
11,875.0	11,723.5	12,099.4	11,845.8	41.4	25.0	-100.36	-825.6	78.2	860.0	803.7	56.35	15.261			
11,875.0	11,723.5	12,099.4	11,845.8	41.4	25.0	-100.36	-825.6	78.2	860.0	803.7	56.35	15.261			
11,900.0	11,735.3	12,128.8	11,847.2	41.5	25.0	-99.40	-854.6	82.8	860.9	804.2	56.70	15.182			
11,900.7	11,735.6	12,129.4	11,847.2	41.5	25.0	-99.38	-855.2	82.9	860.9	804.2	56.71	15.180			
11,925.0	11,745.9	12,151.5	11,847.6	41.6	25.0	-98.63	-877.0	86.3	862.0	804.9	57.10	15.095			
11,925.0	11,745.9	12,151.5	11,847.6	41.6	25.0	-98.63	-877.0	86.3	862.0	804.9	57.10	15.095			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 24H - Margarita Federal Com 13 24H - PLAN#7 - 179.41											Offset Site Error:		0.0 usft	
Survey Program: 0-MWD								Rule Assigned:				Offset Well Error:		0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
11,950.0	11,755.3	12,174.7	11,848.0	41.7	25.1	-97.89	-899.9	89.8	863.4	805.9	57.52	15.011		
11,950.0	11,755.3	12,174.7	11,848.0	41.7	25.1	-97.89	-899.9	89.8	863.4	805.9	57.52	15.011		
11,975.0	11,763.5	12,198.3	11,848.5	41.7	25.1	-97.19	-923.3	93.5	865.1	807.1	57.95	14.929		
12,000.0	11,770.5	12,222.3	11,848.9	41.8	25.1	-96.53	-947.0	97.2	867.0	808.6	58.40	14.846		
12,025.0	11,776.1	12,251.9	11,849.4	41.9	25.1	-95.86	-976.2	101.7	869.1	810.2	58.87	14.764		
12,050.0	11,780.5	12,287.2	11,850.1	41.9	25.1	-95.24	-1,011.1	106.7	871.0	811.7	59.34	14.678		
12,075.0	11,783.7	12,322.7	11,850.7	42.0	25.1	-94.76	-1,046.4	111.3	872.8	813.0	59.86	14.581		
12,075.0	11,783.7	12,322.7	11,850.7	42.0	25.1	-94.76	-1,046.4	111.3	872.8	813.0	59.86	14.581		
12,100.0	11,785.5	12,358.5	11,851.3	42.0	25.1	-94.43	-1,081.9	115.5	874.4	814.0	60.41	14.475		
12,100.0	11,785.5	12,358.6	11,851.3	42.0	25.1	-94.43	-1,081.9	115.5	874.4	814.0	60.41	14.475		
12,122.0	11,786.0	12,390.1	11,851.9	42.1	25.1	-94.26	-1,113.3	118.8	875.7	814.8	60.90	14.378		
12,122.1	11,786.0	12,390.3	11,851.9	42.1	25.1	-94.26	-1,113.5	118.8	875.7	814.8	60.90	14.378		
12,200.0	11,786.0	12,502.3	11,853.9	42.3	25.2	-94.37	-1,225.1	127.8	878.3	815.5	62.75	13.995		
12,200.4	11,786.0	12,502.8	11,853.9	42.3	25.2	-94.37	-1,225.6	127.9	878.3	815.5	62.76	13.993		
12,223.7	11,786.0	12,536.4	11,854.5	42.4	25.4	-94.41	-1,259.1	129.7	878.4	815.1	63.33	13.870		
12,239.8	11,786.0	12,559.7	11,855.0	42.4	25.5	-94.44	-1,282.4	130.8	878.4	814.7	63.73	13.783		
12,300.0	11,786.0	12,646.3	11,856.5	42.6	26.7	-94.54	-1,369.0	133.0	878.1	812.9	65.20	13.468		
12,331.8	11,786.0	12,680.7	11,857.2	42.7	27.2	-94.59	-1,403.4	133.3	877.9	811.9	65.97	13.307		
12,342.9	11,786.0	12,691.7	11,857.4	42.8	27.3	-94.60	-1,414.4	133.4	877.9	811.7	66.24	13.253		
12,342.9	11,786.0	12,691.8	11,857.4	42.8	27.3	-94.60	-1,414.4	133.4	877.9	811.7	66.24	13.253		
12,400.0	11,786.0	12,748.8	11,858.4	43.0	28.1	-94.67	-1,471.5	133.8	878.0	810.4	67.64	12.980		
12,400.0	11,786.0	12,748.9	11,858.4	43.0	28.1	-94.67	-1,471.5	133.8	878.0	810.4	67.64	12.980		
12,500.0	11,786.0	12,848.8	11,860.2	43.5	29.6	-94.78	-1,571.5	134.6	878.2	808.1	70.14	12.520		
12,500.0	11,786.0	12,848.8	11,860.2	43.5	29.6	-94.78	-1,571.5	134.6	878.2	808.1	70.14	12.520		
12,600.0	11,786.0	12,948.8	11,862.0	44.0	31.1	-94.90	-1,671.4	135.4	878.4	805.7	72.71	12.082		
12,600.0	11,786.0	12,948.8	11,862.0	44.0	31.1	-94.90	-1,671.4	135.4	878.4	805.7	72.71	12.082		
12,700.0	11,786.0	13,048.8	11,863.8	44.7	32.6	-95.02	-1,771.4	136.2	878.7	803.3	75.33	11.664		
12,700.0	11,786.0	13,048.8	11,863.8	44.7	32.6	-95.02	-1,771.4	136.2	878.7	803.3	75.33	11.664		
12,800.0	11,786.0	13,148.8	11,865.6	45.4	34.1	-95.13	-1,871.4	137.0	878.9	800.9	77.99	11.268		
12,800.0	11,786.0	13,148.8	11,865.6	45.4	34.1	-95.13	-1,871.4	137.0	878.9	800.9	77.99	11.268		
12,900.0	11,786.0	13,248.8	11,867.4	46.2	35.6	-95.25	-1,971.3	137.8	879.1	798.4	80.71	10.893		
12,900.0	11,786.0	13,248.8	11,867.4	46.2	35.6	-95.25	-1,971.3	137.8	879.1	798.4	80.71	10.893		
13,000.0	11,786.0	13,348.7	11,869.2	47.1	37.1	-95.37	-2,071.3	138.6	879.3	795.9	83.46	10.536		
13,000.0	11,786.0	13,348.8	11,869.2	47.1	37.1	-95.37	-2,071.3	138.6	879.3	795.9	83.46	10.536		
13,100.0	11,786.0	13,448.7	11,871.0	48.1	38.7	-95.48	-2,171.3	139.3	879.6	793.3	86.24	10.199		
13,100.0	11,786.0	13,448.7	11,871.0	48.1	38.7	-95.48	-2,171.3	139.3	879.6	793.3	86.24	10.199		
13,200.0	11,786.0	13,548.7	11,872.8	49.2	40.2	-95.60	-2,271.2	140.1	879.8	790.7	89.06	9.878		
13,200.0	11,786.0	13,548.7	11,872.8	49.2	40.2	-95.60	-2,271.2	140.1	879.8	790.7	89.06	9.878		
13,300.0	11,786.0	13,648.7	11,874.6	50.3	41.8	-95.72	-2,371.2	140.9	880.0	788.1	91.91	9.575		
13,300.0	11,786.0	13,648.7	11,874.6	50.3	41.8	-95.72	-2,371.2	140.9	880.0	788.1	91.91	9.575		
13,400.0	11,786.0	13,748.7	11,876.4	51.5	43.4	-95.83	-2,471.1	141.7	880.3	785.5	94.79	9.287		
13,400.0	11,786.0	13,748.7	11,876.4	51.5	43.4	-95.83	-2,471.2	141.7	880.3	785.5	94.79	9.287		
13,500.0	11,786.0	13,848.7	11,878.2	52.7	44.9	-95.95	-2,571.1	142.5	880.5	782.8	97.68	9.014		
13,500.0	11,786.0	13,848.7	11,878.2	52.7	44.9	-95.95	-2,571.2	142.5	880.5	782.8	97.69	9.014		
13,600.0	11,786.0	13,948.6	11,880.0	53.9	46.5	-96.07	-2,671.1	143.3	880.8	780.2	100.61	8.754		
13,600.0	11,786.0	13,948.7	11,880.0	53.9	46.5	-96.07	-2,671.1	143.3	880.8	780.2	100.61	8.754		
13,700.0	11,786.0	14,048.6	11,881.9	55.2	48.1	-96.18	-2,771.0	144.1	881.0	777.5	103.55	8.508		
13,700.0	11,786.0	14,048.6	11,881.9	55.2	48.1	-96.18	-2,771.0	144.1	881.0	777.5	103.55	8.508		
13,800.0	11,786.0	14,148.6	11,883.7	56.6	49.7	-96.30	-2,871.0	144.9	881.3	774.8	106.51	8.274		
13,800.0	11,786.0	14,148.6	11,883.7	56.6	49.7	-96.30	-2,871.0	144.9	881.3	774.8	106.51	8.274		
13,900.0	11,786.0	14,248.6	11,885.5	57.9	51.3	-96.42	-2,971.0	145.6	881.5	772.0	109.49	8.051		
13,900.0	11,786.0	14,248.6	11,885.5	57.9	51.3	-96.42	-2,971.0	145.6	881.5	772.0	109.49	8.051		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 24H - Margarita Federal Com 13 24H - PLAN#7 - 179.41													Offset Site Error:	0.0 usft
Survey Program: 0-MWD									Rule Assigned:				Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre		Distance					Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
14,000.0	11,786.0	14,348.6	11,887.3	59.3	52.9	-96.53	-3,070.9	146.4	881.8	769.3	112.49	7.839		
14,000.0	11,786.0	14,348.6	11,887.3	59.3	52.9	-96.53	-3,070.9	146.4	881.8	769.3	112.49	7.839		
14,100.0	11,786.0	14,448.6	11,889.1	60.7	54.5	-96.65	-3,170.9	147.2	882.1	766.6	115.49	7.637		
14,100.0	11,786.0	14,448.6	11,889.1	60.7	54.5	-96.65	-3,170.9	147.2	882.1	766.6	115.49	7.637		
14,200.0	11,786.0	14,548.6	11,890.9	62.1	56.1	-96.76	-3,270.9	148.0	882.3	763.8	118.52	7.445		
14,200.0	11,786.0	14,548.6	11,890.9	62.1	56.1	-96.76	-3,270.9	148.0	882.3	763.8	118.52	7.445		
14,300.0	11,786.0	14,648.5	11,892.7	63.5	57.7	-96.88	-3,370.8	148.8	882.6	761.1	121.55	7.261		
14,300.0	11,786.0	14,648.5	11,892.7	63.5	57.7	-96.88	-3,370.8	148.8	882.6	761.1	121.55	7.261		
14,400.0	11,786.0	14,748.5	11,894.5	64.9	59.3	-96.99	-3,470.8	149.6	882.9	758.3	124.60	7.086		
14,400.0	11,786.0	14,748.5	11,894.5	64.9	59.3	-96.99	-3,470.8	149.6	882.9	758.3	124.60	7.086		
14,500.0	11,786.0	14,848.5	11,896.3	66.4	60.9	-97.11	-3,570.8	150.4	883.2	755.5	127.65	6.919		
14,500.0	11,786.0	14,848.5	11,896.3	66.4	60.9	-97.11	-3,570.8	150.4	883.2	755.5	127.65	6.919		
14,600.0	11,786.0	14,946.3	11,898.7	67.8	62.5	-97.26	-3,668.5	151.1	883.5	752.8	130.69	6.761		
14,603.8	11,786.0	14,950.0	11,898.8	67.9	62.6	-97.27	-3,672.2	151.2	883.6	752.7	130.80	6.755		
14,700.0	11,786.0	15,042.4	11,904.0	69.3	64.1	-97.60	-3,764.4	151.9	884.3	750.6	133.70	6.614		
14,702.8	11,786.0	15,045.0	11,904.2	69.4	64.1	-97.62	-3,767.1	151.9	884.3	750.5	133.78	6.610		
14,800.0	11,786.0	15,139.8	11,912.3	70.8	65.6	-98.14	-3,861.5	152.6	885.5	748.8	136.70	6.478		
14,802.5	11,786.0	15,142.3	11,912.5	70.8	65.7	-98.15	-3,864.0	152.6	885.5	748.8	136.78	6.474		
14,900.0	11,786.0	15,239.4	11,921.3	72.3	67.2	-98.71	-3,960.7	153.4	886.9	747.1	139.73	6.347		
14,902.5	11,786.0	15,241.9	11,921.6	72.3	67.3	-98.73	-3,963.2	153.4	886.9	747.1	139.80	6.344		
15,000.0	11,786.0	15,339.0	11,930.4	73.8	68.9	-99.29	-4,059.9	154.1	888.3	745.6	142.75	6.223		
15,002.6	11,786.0	15,341.5	11,930.6	73.8	68.9	-99.31	-4,062.4	154.2	888.4	745.6	142.82	6.220		
15,100.0	11,786.0	15,438.6	11,939.4	75.3	70.5	-99.86	-4,159.0	154.9	889.9	744.1	145.75	6.105		
15,102.6	11,786.0	15,441.2	11,939.6	75.4	70.5	-99.88	-4,161.6	154.9	889.9	744.1	145.83	6.102		
15,200.0	11,786.0	15,538.2	11,948.4	76.8	72.1	-100.44	-4,258.2	155.7	891.5	742.8	148.75	5.994		
15,202.6	11,786.0	15,540.8	11,948.7	76.9	72.1	-100.45	-4,260.8	155.7	891.6	742.7	148.83	5.991		
15,300.0	11,786.0	15,637.8	11,957.5	78.3	73.7	-101.00	-4,357.4	156.4	893.3	741.5	151.73	5.887		
15,302.6	11,786.0	15,640.4	11,957.7	78.4	73.7	-101.02	-4,360.0	156.4	893.3	741.5	151.81	5.884		
15,400.0	11,786.0	15,737.3	11,966.5	79.9	75.3	-101.57	-4,456.6	157.2	895.1	740.4	154.70	5.786		
15,402.7	11,786.0	15,740.0	11,966.7	79.9	75.4	-101.59	-4,459.2	157.2	895.1	740.3	154.78	5.783		
15,500.0	11,786.0	15,836.9	11,975.5	81.4	76.9	-102.14	-4,555.7	157.9	897.0	739.3	157.66	5.689		
15,502.7	11,786.0	15,839.6	11,975.8	81.5	77.0	-102.15	-4,558.4	158.0	897.0	739.3	157.74	5.687		
15,600.0	11,786.0	15,936.5	11,984.5	82.9	78.6	-102.70	-4,654.9	158.7	899.0	738.4	160.60	5.598		
15,602.7	11,786.0	15,939.2	11,984.8	83.0	78.6	-102.71	-4,657.6	158.7	899.0	738.3	160.68	5.595		
15,700.0	11,786.0	16,036.1	11,993.6	84.5	80.2	-103.26	-4,754.1	159.4	901.1	737.5	163.53	5.510		
15,702.7	11,786.0	16,038.8	11,993.8	84.5	80.2	-103.27	-4,756.8	159.5	901.1	737.5	163.61	5.508		
15,800.0	11,786.0	16,135.7	12,002.6	86.0	81.8	-103.82	-4,853.3	160.2	903.2	736.8	166.44	5.427		
15,802.7	11,786.0	16,138.4	12,002.9	86.1	81.8	-103.83	-4,856.0	160.2	903.3	736.8	166.52	5.425		
15,900.0	11,786.0	16,235.3	12,011.6	87.6	83.4	-104.37	-4,952.4	161.0	905.5	736.1	169.33	5.347		
15,902.8	11,786.0	16,238.0	12,011.9	87.6	83.5	-104.39	-4,955.2	161.0	905.5	736.1	169.41	5.345		
16,000.0	11,786.0	16,334.9	12,020.7	89.1	85.0	-104.92	-5,051.6	161.7	907.8	735.6	172.20	5.272		
16,002.8	11,786.0	16,337.6	12,020.9	89.2	85.1	-104.94	-5,054.4	161.7	907.9	735.6	172.28	5.270		
16,100.0	11,786.0	16,434.5	12,029.7	90.7	86.7	-105.47	-5,150.8	162.5	910.2	735.2	175.06	5.200		
16,102.8	11,786.0	16,437.2	12,030.0	90.7	86.7	-105.49	-5,153.6	162.5	910.3	735.2	175.14	5.198		
16,200.0	11,786.0	16,534.0	12,038.7	92.3	88.3	-106.02	-5,250.0	163.2	912.7	734.8	177.90	5.131		
16,202.8	11,786.0	16,536.8	12,039.0	92.3	88.3	-106.03	-5,252.7	163.3	912.8	734.8	177.98	5.129		
16,300.0	11,786.0	16,633.6	12,047.8	93.8	89.9	-106.56	-5,349.1	164.0	915.3	734.6	180.71	5.065		
16,302.8	11,786.0	16,636.4	12,048.0	93.9	90.0	-106.57	-5,351.9	164.0	915.4	734.6	180.79	5.063		
16,400.0	11,786.0	16,733.2	12,056.8	95.4	91.6	-107.10	-5,448.3	164.8	918.0	734.5	183.51	5.002		
16,402.8	11,786.0	16,736.0	12,057.0	95.4	91.6	-107.11	-5,451.1	164.8	918.1	734.5	183.59	5.001		
16,500.0	11,786.0	16,832.8	12,065.8	97.0	93.2	-107.64	-5,547.5	165.5	920.7	734.5	186.29	4.943		
16,502.8	11,786.0	16,835.6	12,066.1	97.0	93.2	-107.65	-5,550.3	165.5	920.8	734.5	186.37	4.941		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 24H - Margarita Federal Com 13 24H - PLAN#7 - 179.41													Offset Site Error:	0.0 usft
Survey Program: 0-MWD									Rule Assigned:				Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre		Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
16,600.0	11,786.0	16,932.4	12,074.9	98.6	94.8	-108.17	-5,646.7	166.3	923.6	734.5	189.04	4.886		
16,602.8	11,786.0	16,935.2	12,075.1	98.6	94.9	-108.18	-5,649.5	166.3	923.7	734.5	189.12	4.884		
16,700.0	11,786.0	17,032.0	12,083.9	100.1	96.4	-108.70	-5,745.8	167.0	926.5	734.7	191.78	4.831		
16,702.9	11,786.0	17,034.8	12,084.1	100.2	96.5	-108.71	-5,748.7	167.0	926.6	734.7	191.86	4.830		
16,800.0	11,786.0	17,131.6	12,092.9	101.7	98.1	-109.23	-5,845.0	167.8	929.5	735.0	194.49	4.779		
16,802.8	11,786.0	17,134.4	12,093.2	101.8	98.1	-109.24	-5,847.8	167.8	929.6	735.0	194.57	4.778		
16,900.0	11,786.0	17,233.8	12,102.1	103.3	99.7	-109.76	-5,946.8	168.6	932.5	735.3	197.22	4.728		
16,903.3	11,786.0	17,237.5	12,102.4	103.3	99.8	-109.78	-5,950.5	168.6	932.6	735.3	197.32	4.726		
17,000.0	11,786.0	17,346.1	12,109.1	104.9	101.6	-110.16	-6,058.9	169.4	934.7	734.5	200.18	4.669		
17,000.0	11,786.0	17,346.2	12,109.1	104.9	101.6	-110.16	-6,059.0	169.4	934.7	734.5	200.19	4.669		
17,100.0	11,786.0	17,456.5	12,111.8	106.5	103.4	-110.32	-6,169.3	170.3	935.6	732.3	203.27	4.603		
17,100.2	11,786.0	17,456.8	12,111.8	106.5	103.4	-110.32	-6,169.5	170.3	935.6	732.3	203.28	4.602		
17,200.0	11,786.0	17,556.5	12,112.9	108.1	105.0	-110.38	-6,269.3	171.0	936.0	729.7	206.29	4.537		
17,200.2	11,786.0	17,556.8	12,112.9	108.1	105.0	-110.38	-6,269.5	171.0	936.0	729.7	206.30	4.537		
17,300.0	11,786.0	17,656.5	12,114.0	109.6	106.7	-110.44	-6,369.3	171.8	936.4	727.1	209.31	4.474		
17,300.2	11,786.0	17,656.7	12,114.0	109.6	106.7	-110.44	-6,369.5	171.8	936.4	727.1	209.32	4.474		
17,400.0	11,786.0	17,756.5	12,115.1	111.2	108.3	-110.50	-6,469.2	172.6	936.8	724.5	212.34	4.412		
17,400.2	11,786.0	17,756.7	12,115.1	111.2	108.3	-110.50	-6,469.5	172.6	936.8	724.5	212.34	4.412		
17,500.0	11,786.0	17,856.5	12,116.2	112.8	110.0	-110.56	-6,569.2	173.3	937.3	721.9	215.36	4.352		
17,500.2	11,786.0	17,856.7	12,116.2	112.8	110.0	-110.56	-6,569.4	173.3	937.3	721.9	215.36	4.352		
17,600.0	11,786.0	17,956.5	12,117.3	114.4	111.6	-110.63	-6,669.2	174.1	937.7	719.3	218.38	4.294		
17,600.2	11,786.0	17,956.7	12,117.3	114.4	111.6	-110.63	-6,669.4	174.1	937.7	719.3	218.39	4.294		
17,700.0	11,786.0	18,056.5	12,118.4	116.0	113.3	-110.69	-6,769.2	174.9	938.1	716.7	221.40	4.237		
17,700.2	11,786.0	18,056.7	12,118.4	116.0	113.3	-110.69	-6,769.4	174.9	938.1	716.7	221.41	4.237		
17,800.0	11,786.0	18,156.5	12,119.5	117.6	114.9	-110.75	-6,869.2	175.6	938.5	714.1	224.42	4.182		
17,800.2	11,786.0	18,156.7	12,119.5	117.6	114.9	-110.75	-6,869.4	175.6	938.5	714.1	224.43	4.182		
17,900.0	11,786.0	18,256.5	12,120.6	119.2	116.5	-110.81	-6,969.2	176.4	938.9	711.5	227.44	4.128		
17,900.2	11,786.0	18,256.7	12,120.6	119.2	116.5	-110.81	-6,969.4	176.4	938.9	711.5	227.45	4.128		
18,000.0	11,786.0	18,356.5	12,121.7	120.8	118.2	-110.87	-7,069.2	177.2	939.4	708.9	230.47	4.076		
18,000.2	11,786.0	18,356.7	12,121.7	120.8	118.2	-110.87	-7,069.4	177.2	939.4	708.9	230.47	4.076		
18,100.0	11,786.0	18,456.5	12,122.7	122.4	119.8	-110.93	-7,169.1	177.9	939.8	706.3	233.49	4.025		
18,100.2	11,786.0	18,456.7	12,122.7	122.4	119.8	-110.93	-7,169.4	177.9	939.8	706.3	233.49	4.025		
18,200.0	11,786.0	18,556.5	12,123.8	124.0	121.5	-110.99	-7,269.1	178.7	940.2	703.7	236.51	3.975		
18,200.2	11,786.0	18,556.7	12,123.8	124.0	121.5	-110.99	-7,269.3	178.7	940.2	703.7	236.51	3.975		
18,300.0	11,786.0	18,656.5	12,124.9	125.6	123.1	-111.06	-7,369.1	179.5	940.7	701.1	239.53	3.927		
18,300.2	11,786.0	18,656.7	12,124.9	125.6	123.1	-111.06	-7,369.3	179.5	940.7	701.1	239.53	3.927		
18,400.0	11,786.0	18,756.5	12,126.0	127.2	124.8	-111.12	-7,469.1	180.2	941.1	698.5	242.55	3.880		
18,400.2	11,786.0	18,756.7	12,126.0	127.3	124.8	-111.12	-7,469.3	180.2	941.1	698.5	242.55	3.880		
18,500.0	11,786.0	18,856.5	12,127.1	128.9	126.4	-111.18	-7,569.1	181.0	941.5	695.9	245.56	3.834		
18,500.2	11,786.0	18,856.7	12,127.1	128.9	126.4	-111.18	-7,569.3	181.0	941.5	695.9	245.57	3.834		
18,600.0	11,786.0	18,956.4	12,128.2	130.5	128.1	-111.24	-7,669.1	181.8	941.9	693.4	248.58	3.789		
18,600.2	11,786.0	18,956.6	12,128.2	130.5	128.1	-111.24	-7,669.3	181.8	941.9	693.4	248.59	3.789		
18,700.0	11,786.0	19,056.4	12,129.3	132.1	129.7	-111.30	-7,769.0	182.5	942.4	690.8	251.60	3.746		
18,700.2	11,786.0	19,056.6	12,129.3	132.1	129.7	-111.30	-7,769.3	182.5	942.4	690.8	251.61	3.745		
18,800.0	11,786.0	19,156.4	12,130.4	133.7	131.4	-111.36	-7,869.0	183.3	942.8	688.2	254.62	3.703		
18,800.2	11,786.0	19,156.6	12,130.4	133.7	131.4	-111.36	-7,869.3	183.3	942.8	688.2	254.62	3.703		
18,900.0	11,786.0	19,256.4	12,131.5	135.3	133.0	-111.42	-7,969.0	184.1	943.2	685.6	257.63	3.661		
18,900.2	11,786.0	19,256.6	12,131.5	135.3	133.0	-111.42	-7,969.2	184.1	943.2	685.6	257.64	3.661		
19,000.0	11,786.0	19,356.4	12,132.6	136.9	134.7	-111.48	-8,069.0	184.8	943.7	683.0	260.65	3.621		
19,000.2	11,786.0	19,356.6	12,132.6	136.9	134.7	-111.48	-8,069.2	184.8	943.7	683.0	260.65	3.620		
19,100.0	11,786.0	19,456.4	12,133.7	138.5	136.3	-111.54	-8,169.0	185.6	944.1	680.5	263.66	3.581		
19,100.2	11,786.0	19,456.6	12,133.7	138.5	136.3	-111.54	-8,169.2	185.6	944.1	680.5	263.67	3.581		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 24H - Margarita Federal Com 13 24H - PLAN#7 - 179.41													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
19,200.0	11,786.0	19,556.4	12,134.8	140.2	138.0	-111.60	-8,269.0	186.4	944.6	677.9	266.67	3.542		
19,200.2	11,786.0	19,556.6	12,134.8	140.2	138.0	-111.60	-8,269.2	186.4	944.6	677.9	266.68	3.542		
19,300.0	11,786.0	19,656.4	12,135.8	141.8	139.6	-111.66	-8,369.0	187.1	945.0	675.3	269.69	3.504		
19,300.2	11,786.0	19,656.6	12,135.8	141.8	139.6	-111.66	-8,369.2	187.1	945.0	675.3	269.69	3.504		
19,400.0	11,786.0	19,756.4	12,136.9	143.4	141.3	-111.72	-8,468.9	187.9	945.4	672.7	272.70	3.467		
19,400.2	11,786.0	19,756.6	12,136.9	143.4	141.3	-111.73	-8,469.2	187.9	945.4	672.7	272.70	3.467		
19,500.0	11,786.0	19,856.4	12,138.0	145.0	142.9	-111.79	-8,568.9	188.7	945.9	670.2	275.71	3.431		
19,500.2	11,786.0	19,856.6	12,138.0	145.0	142.9	-111.79	-8,569.2	188.7	945.9	670.2	275.71	3.431		
19,600.0	11,786.0	19,956.4	12,139.1	146.6	144.6	-111.85	-8,668.9	189.4	946.3	667.6	278.72	3.395		
19,600.2	11,786.0	19,956.6	12,139.1	146.6	144.6	-111.85	-8,669.1	189.4	946.3	667.6	278.72	3.395		
19,700.0	11,786.0	20,056.4	12,140.2	148.2	146.2	-111.91	-8,768.9	190.2	946.8	665.0	281.72	3.361		
19,700.2	11,786.0	20,056.6	12,140.2	148.2	146.2	-111.91	-8,769.1	190.2	946.8	665.0	281.73	3.361		
19,800.0	11,786.0	20,156.4	12,141.3	149.9	147.9	-111.97	-8,868.9	191.0	947.2	662.5	284.73	3.327		
19,800.2	11,786.0	20,156.6	12,141.3	149.9	147.9	-111.97	-8,869.1	191.0	947.2	662.5	284.74	3.327		
19,900.0	11,786.0	20,256.4	12,142.4	151.5	149.5	-112.03	-8,968.9	191.7	947.7	659.9	287.74	3.293		
19,900.2	11,786.0	20,256.6	12,142.4	151.5	149.5	-112.03	-8,969.1	191.8	947.7	659.9	287.74	3.293		
20,000.0	11,786.0	20,356.4	12,143.5	153.1	151.2	-112.09	-9,068.9	192.5	948.1	657.4	290.74	3.261		
20,000.2	11,786.0	20,356.6	12,143.5	153.1	151.2	-112.09	-9,069.1	192.5	948.1	657.4	290.75	3.261		
20,100.0	11,786.0	20,456.4	12,144.6	154.7	152.8	-112.15	-9,168.8	193.3	948.5	654.8	293.74	3.229		
20,100.2	11,786.0	20,456.6	12,144.6	154.7	152.8	-112.15	-9,169.1	193.3	948.6	654.8	293.75	3.229		
20,200.0	11,786.0	20,556.4	12,145.7	156.4	154.5	-112.21	-9,268.8	194.1	949.0	652.3	296.74	3.198		
20,200.2	11,786.0	20,556.6	12,145.7	156.4	154.5	-112.21	-9,269.1	194.1	949.0	652.2	296.75	3.198		
20,300.0	11,786.0	20,656.4	12,146.8	158.0	156.1	-112.27	-9,368.8	194.8	949.4	649.7	299.74	3.168		
20,300.2	11,786.0	20,656.6	12,146.8	158.0	156.1	-112.27	-9,369.0	194.8	949.4	649.7	299.75	3.167		
20,400.0	11,786.0	20,756.4	12,147.9	159.6	157.8	-112.33	-9,468.8	195.6	949.9	647.2	302.74	3.138		
20,400.2	11,786.0	20,756.6	12,147.9	159.6	157.8	-112.33	-9,469.0	195.6	949.9	647.2	302.75	3.138		
20,500.0	11,786.0	20,856.4	12,148.9	161.2	159.4	-112.39	-9,568.8	196.4	950.4	644.6	305.74	3.108		
20,500.2	11,786.0	20,856.6	12,149.0	161.2	159.4	-112.39	-9,569.0	196.4	950.4	644.6	305.75	3.108		
20,600.0	11,786.0	20,956.4	12,150.0	162.9	161.1	-112.45	-9,668.8	197.1	950.8	642.1	308.74	3.080		
20,600.2	11,786.0	20,956.6	12,150.0	162.9	161.1	-112.45	-9,669.0	197.1	950.8	642.1	308.74	3.080		
20,700.0	11,786.0	21,056.4	12,151.1	164.5	162.7	-112.51	-9,768.8	197.9	951.3	639.5	311.73	3.052		
20,700.2	11,786.0	21,056.6	12,151.1	164.5	162.7	-112.51	-9,769.0	197.9	951.3	639.5	311.74	3.051		
20,800.0	11,786.0	21,156.4	12,152.2	166.1	164.4	-112.57	-9,868.7	198.7	951.7	637.0	314.72	3.024		
20,800.2	11,786.0	21,156.6	12,152.2	166.1	164.4	-112.57	-9,869.0	198.7	951.7	637.0	314.73	3.024		
20,900.0	11,786.0	21,256.4	12,153.3	167.7	166.0	-112.63	-9,968.7	199.4	952.2	634.5	317.71	2.997		
20,900.2	11,786.0	21,256.6	12,153.3	167.7	166.0	-112.63	-9,969.0	199.4	952.2	634.4	317.72	2.997		
21,000.0	11,786.0	21,356.4	12,154.4	169.4	167.7	-112.69	-10,068.7	200.2	952.6	631.9	320.70	2.970		
21,000.2	11,786.0	21,356.6	12,154.4	169.4	167.7	-112.69	-10,068.9	200.2	952.6	631.9	320.71	2.970		
21,100.0	11,786.0	21,456.4	12,155.5	171.0	169.3	-112.75	-10,168.7	201.0	953.1	629.4	323.69	2.944		
21,100.2	11,786.0	21,456.6	12,155.5	171.0	169.3	-112.75	-10,168.9	201.0	953.1	629.4	323.70	2.944		
21,200.0	11,786.0	21,556.4	12,156.6	172.6	171.0	-112.81	-10,268.7	201.7	953.5	626.9	326.68	2.919		
21,200.2	11,786.0	21,556.6	12,156.6	172.6	171.0	-112.81	-10,268.9	201.7	953.5	626.9	326.69	2.919		
21,300.0	11,786.0	21,656.4	12,157.7	174.3	172.6	-112.87	-10,368.7	202.5	954.0	624.3	329.67	2.894		
21,300.2	11,786.0	21,656.6	12,157.7	174.3	172.6	-112.87	-10,368.9	202.5	954.0	624.3	329.67	2.894		
21,400.0	11,786.0	21,756.4	12,158.8	175.9	174.3	-112.92	-10,468.6	203.3	954.5	621.8	332.65	2.869		
21,400.2	11,786.0	21,756.6	12,158.8	175.9	174.3	-112.92	-10,468.9	203.3	954.5	621.8	332.65	2.869		
21,500.0	11,786.0	21,856.4	12,159.9	177.5	175.9	-112.98	-10,568.6	204.0	954.9	619.3	335.63	2.845		
21,500.2	11,786.0	21,856.6	12,159.9	177.5	175.9	-112.98	-10,568.9	204.0	954.9	619.3	335.64	2.845		
21,600.0	11,786.0	21,956.4	12,161.0	179.1	177.6	-113.04	-10,668.6	204.8	955.4	616.8	338.61	2.821		
21,600.2	11,786.0	21,956.6	12,161.0	179.1	177.6	-113.04	-10,668.8	204.8	955.4	616.8	338.62	2.822		
21,700.0	11,786.0	22,056.4	12,162.0	180.8	179.2	-113.10	-10,768.6	205.6	955.9	614.3	341.59	2.798		
21,700.2	11,786.0	22,056.6	12,162.1	180.8	179.2	-113.10	-10,768.8	205.6	955.9	614.3	341.59	2.798		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 24H - Margarita Federal Com 13 24H - PLAN#7 - 179.41													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre	Distance	Rule Assigned:								Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
21,800.0	11,786.0	22,156.3	12,163.1	182.4	180.9	-113.16	-10,868.6	206.3	956.3	611.8	344.56	2.775		
21,800.2	11,786.0	22,156.5	12,163.1	182.4	180.9	-113.16	-10,868.8	206.3	956.3	611.8	344.57	2.775		
21,900.0	11,786.0	22,256.3	12,164.2	184.0	182.5	-113.22	-10,968.6	207.1	956.8	609.2	347.54	2.753		
21,900.2	11,786.0	22,256.5	12,164.2	184.0	182.5	-113.22	-10,968.8	207.1	956.8	609.2	347.55	2.753		
22,000.0	11,786.0	22,356.2	12,165.3	185.7	184.2	-113.28	-11,068.6	207.9	957.3	606.7	350.51	2.731		
22,000.2	11,786.0	22,356.5	12,165.3	185.7	184.2	-113.28	-11,068.8	207.9	957.3	606.7	350.52	2.731		
22,100.0	11,786.0	22,456.2	12,166.4	187.3	185.8	-113.34	-11,168.5	208.6	957.7	604.2	353.48	2.709		
22,100.2	11,786.0	22,456.5	12,166.4	187.3	185.8	-113.34	-11,168.8	208.6	957.7	604.2	353.49	2.709		
22,200.0	11,786.0	22,556.2	12,167.5	188.9	187.5	-113.40	-11,268.8	209.4	958.2	601.7	356.46	2.688		
22,200.2	11,786.0	22,556.5	12,167.5	188.9	187.5	-113.40	-11,268.8	209.4	958.2	601.7	356.46	2.688		
22,300.0	11,786.0	22,656.2	12,168.6	190.6	189.2	-113.46	-11,368.5	210.2	958.7	599.2	359.42	2.667		
22,300.2	11,786.0	22,656.5	12,168.6	190.6	189.2	-113.46	-11,368.7	210.2	958.7	599.2	359.43	2.667		
22,400.0	11,786.0	22,756.2	12,169.7	192.2	190.8	-113.52	-11,468.5	210.9	959.1	596.7	362.39	2.647		
22,400.2	11,786.0	22,756.5	12,169.7	192.2	190.8	-113.52	-11,468.7	210.9	959.1	596.7	362.40	2.647		
22,500.0	11,786.0	22,856.2	12,170.8	193.8	192.5	-113.57	-11,568.5	211.7	959.6	594.3	365.35	2.627		
22,500.2	11,786.0	22,856.4	12,170.8	193.8	192.5	-113.58	-11,568.7	211.7	959.6	594.2	365.36	2.626		
22,600.0	11,786.0	22,956.2	12,171.9	195.5	194.1	-113.63	-11,668.5	212.5	960.1	591.8	368.32	2.607		
22,600.2	11,786.0	22,956.4	12,171.9	195.5	194.1	-113.63	-11,668.7	212.5	960.1	591.8	368.32	2.607		
22,700.0	11,786.0	23,056.2	12,173.0	197.1	195.8	-113.69	-11,768.5	213.2	960.6	589.3	371.28	2.587		
22,700.2	11,786.0	23,056.4	12,173.0	197.1	195.8	-113.69	-11,768.7	213.2	960.6	589.3	371.28	2.587		
22,800.0	11,786.0	23,156.2	12,174.1	198.8	197.4	-113.75	-11,868.4	214.0	961.0	586.8	374.24	2.568		
22,800.2	11,786.0	23,156.4	12,174.1	198.8	197.4	-113.75	-11,868.7	214.0	961.0	586.8	374.24	2.568		
22,900.0	11,786.0	23,256.2	12,175.2	200.4	199.1	-113.81	-11,968.4	214.8	961.5	584.3	377.19	2.549		
22,900.2	11,786.0	23,256.4	12,175.2	200.4	199.1	-113.81	-11,968.7	214.8	961.5	584.3	377.20	2.549		
23,000.0	11,786.0	23,356.2	12,176.2	202.0	200.7	-113.87	-12,068.4	215.5	962.0	581.8	380.15	2.531		
23,000.2	11,786.0	23,356.4	12,176.2	202.0	200.7	-113.87	-12,068.6	215.5	962.0	581.8	380.16	2.531		
23,100.0	11,786.0	23,456.2	12,177.3	203.7	202.4	-113.93	-12,168.4	216.3	962.5	579.4	383.11	2.512		
23,100.2	11,786.0	23,456.4	12,177.3	203.7	202.4	-113.93	-12,168.6	216.3	962.5	579.4	383.11	2.512		
23,200.0	11,786.0	23,556.2	12,178.4	205.3	204.0	-113.98	-12,268.4	217.1	962.9	576.9	386.05	2.494		
23,200.2	11,786.0	23,556.4	12,178.4	205.3	204.0	-113.99	-12,268.6	217.1	962.9	576.9	386.06	2.494		
23,300.0	11,786.0	23,656.2	12,179.5	206.9	205.7	-114.04	-12,368.4	217.8	963.4	574.4	389.00	2.477		
23,300.2	11,786.0	23,656.4	12,179.5	206.9	205.7	-114.04	-12,368.6	217.8	963.4	574.4	389.01	2.477		
23,400.0	11,786.0	23,756.2	12,180.6	208.6	207.3	-114.10	-12,468.4	218.6	963.9	572.0	391.95	2.459		
23,400.2	11,786.0	23,756.4	12,180.6	208.6	207.3	-114.10	-12,468.6	218.6	963.9	571.9	391.96	2.459		
23,500.0	11,786.0	23,856.2	12,181.7	210.2	209.0	-114.16	-12,568.3	219.4	964.4	569.5	394.90	2.442		
23,500.2	11,786.0	23,856.4	12,181.7	210.2	209.0	-114.16	-12,568.6	219.4	964.4	569.5	394.90	2.442		
23,600.0	11,786.0	23,956.1	12,182.8	211.8	210.6	-114.22	-12,668.3	220.1	964.9	567.0	397.84	2.425		
23,600.2	11,786.0	23,956.2	12,182.8	211.8	210.6	-114.22	-12,668.4	220.1	964.9	567.0	397.84	2.425		
23,616.4	11,786.0	23,972.6	12,183.0	212.1	210.9	-114.23	-12,684.7	220.3	965.0	566.6	398.32	2.423		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

6/22/2022 11:16:04AM

Page 28

COMPASS 5000.16 Build 100



American Resource Development LLC

Anticollision Report

Company:	Ameredeve Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 7H - Margarita Federal Com 7H - M7H													Offset Site Error:	0.0 usft	
Survey Program: 200-MWD				Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned: Distance		Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
0.0	0.0	0.0	0.0	0.0	0.0	-90.38	-0.7	-99.0	99.1						
100.0	100.0	96.2	96.2	0.8	0.6	-90.50	-0.9	-98.9	98.9	97.5	1.35	73.386			
200.0	200.0	196.4	196.4	1.4	1.2	-90.89	-1.5	-98.6	98.6	96.0	2.59	38.015			
300.0	300.0	296.8	296.8	1.9	2.0	-91.68	-2.9	-97.9	98.0	94.2	3.77	26.025			
400.0	400.0	396.7	396.6	2.2	2.4	-92.89	-4.9	-97.1	97.2	92.6	4.57	21.290			
500.0	500.0	496.5	496.4	2.5	2.8	-94.28	-7.2	-96.4	96.7	91.5	5.16	18.725			
600.0	600.0	596.5	596.4	2.8	3.1	-96.10	-10.2	-95.7	96.3	90.6	5.70	16.895			
700.0	700.0	697.7	697.5	3.1	3.4	-97.86	-13.0	-94.3	95.3	89.1	6.19	15.381			
800.0	800.0	798.1	797.9	3.3	3.7	-99.18	-14.9	-92.2	93.4	86.7	6.67	14.007			
900.0	900.0	897.4	897.2	3.6	4.1	-100.70	-17.0	-90.0	91.6	84.5	7.13	12.853			
970.3	970.3	966.6	966.3	3.7	4.3	-102.14	-19.2	-89.1	91.1	83.7	7.46	12.225 CC			
1,000.0	1,000.0	995.8	995.5	3.8	4.4	-102.79	-20.2	-89.0	91.2	83.6	7.58	12.038 ES			
1,100.0	1,100.0	1,094.5	1,094.2	4.0	4.6	-104.85	-23.7	-89.5	92.6	84.6	7.96	11.628			
1,200.0	1,200.0	1,193.5	1,193.0	4.2	4.9	-106.66	-27.3	-91.1	95.1	86.8	8.32	11.435			
1,300.0	1,300.0	1,292.7	1,292.2	4.4	5.2	-107.47	-29.6	-94.1	98.7	90.0	8.67	11.383			
1,400.0	1,400.0	1,392.4	1,391.8	4.5	5.4	-107.34	-30.6	-98.0	102.7	93.7	9.03	11.376			
1,500.0	1,500.0	1,493.1	1,492.4	4.7	5.6	-106.69	-30.6	-102.0	106.6	97.1	9.43	11.304			
1,600.0	1,600.0	1,593.6	1,592.8	4.9	5.7	-105.14	-28.6	-105.8	109.7	99.9	9.82	11.174			
1,700.0	1,700.0	1,693.1	1,692.3	5.1	5.8	-103.64	-26.6	-109.6	112.8	102.7	10.12	11.143 SF			
1,800.0	1,800.0	1,765.0	1,764.0	5.2	5.8	-102.50	-24.9	-112.4	119.5	109.3	10.17	11.751			
1,900.0	1,900.0	1,765.0	1,764.0	5.4	5.8	-102.50	-24.9	-112.4	175.1	166.7	8.42	20.806			
2,000.0	2,000.0	1,765.0	1,764.0	5.5	5.8	-102.50	-24.9	-112.4	259.0	251.5	7.44	34.823			
2,100.0	2,100.0	1,765.0	1,764.0	5.7	5.8	28.34	-24.9	-112.4	350.9	343.8	7.05	49.780			
2,200.0	2,199.8	1,765.0	1,764.0	6.3	5.8	25.70	-24.9	-112.4	445.4	438.5	6.92	64.328			
2,300.0	2,299.5	1,765.0	1,764.0	6.8	5.8	22.98	-24.9	-112.4	541.1	534.2	6.89	78.500			
2,350.0	2,349.1	1,765.0	1,764.0	6.9	5.8	21.65	-24.9	-112.4	589.2	582.3	6.88	85.661			
2,400.0	2,398.8	1,765.0	1,764.0	7.0	5.8	21.65	-24.9	-112.4	637.5	630.6	6.88	92.668			
2,500.0	2,498.0	1,765.0	1,764.0	7.1	5.8	21.65	-24.9	-112.4	734.7	727.8	6.92	106.113			
2,600.0	2,597.3	1,765.0	1,764.0	7.3	5.8	21.65	-24.9	-112.4	832.6	825.6	7.00	119.005			
2,700.0	2,696.5	1,765.0	1,764.0	7.5	5.8	21.65	-24.9	-112.4	931.0	923.9	7.09	131.399			

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 7H - Margarita Federal Com 7H - PLAN#9 - 179.58													Offset Site Error: 0.0 usft
Survey Program: 0-MWD													Offset Well Error: 0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		Minimum Separation (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.0	0.0	0.0	0.0	0.0	0.0	-90.38	-0.7	-99.0	99.1				
100.0	100.0	96.0	96.0	0.8	0.7	-90.38	-0.7	-99.0	99.0	97.5	1.49	66.444	
200.0	200.0	196.0	196.0	1.4	1.4	-90.38	-0.7	-99.0	99.0	96.2	2.76	35.827	
300.0	300.0	296.0	296.0	1.9	1.8	-90.38	-0.7	-99.0	99.0	95.3	3.69	26.854	
400.0	400.0	396.0	396.0	2.2	2.2	-90.38	-0.7	-99.0	99.0	94.6	4.43	22.362	
500.0	500.0	496.0	496.0	2.5	2.5	-90.38	-0.7	-99.0	99.0	93.9	5.06	19.545	
600.0	600.0	596.0	596.0	2.8	2.8	-90.38	-0.7	-99.0	99.0	93.3	5.64	17.565	
700.0	700.0	696.0	696.0	3.1	3.1	-90.38	-0.7	-99.0	99.0	92.8	6.16	16.075	
800.0	800.0	796.0	796.0	3.3	3.3	-90.38	-0.7	-99.0	99.0	92.3	6.64	14.900	
900.0	900.0	896.0	896.0	3.6	3.5	-90.38	-0.7	-99.0	99.0	91.9	7.10	13.943	
1,000.0	1,000.0	996.0	996.0	3.8	3.8	-90.38	-0.7	-99.0	99.0	91.5	7.53	13.143	
1,100.0	1,100.0	1,096.0	1,096.0	4.0	4.0	-90.38	-0.7	-99.0	99.0	91.0	7.94	12.462	
1,200.0	1,200.0	1,196.0	1,196.0	4.2	4.2	-90.38	-0.7	-99.0	99.0	90.6	8.34	11.872	
1,300.0	1,300.0	1,296.0	1,296.0	4.4	4.4	-90.38	-0.7	-99.0	99.0	90.3	8.72	11.354	
1,400.0	1,400.0	1,396.0	1,396.0	4.5	4.5	-90.38	-0.7	-99.0	99.0	89.9	9.08	10.896	
1,500.0	1,500.0	1,496.0	1,496.0	4.7	4.7	-90.38	-0.7	-99.0	99.0	89.5	9.44	10.485	
1,600.0	1,600.0	1,596.0	1,596.0	4.9	4.9	-90.38	-0.7	-99.0	99.0	89.2	9.79	10.115	
1,700.0	1,700.0	1,696.0	1,696.0	5.1	5.1	-90.38	-0.7	-99.0	99.0	88.9	10.12	9.779	
1,800.0	1,800.0	1,796.0	1,796.0	5.2	5.2	-90.38	-0.7	-99.0	99.0	88.5	10.45	9.473	
1,900.0	1,900.0	1,896.0	1,896.0	5.4	5.4	-90.38	-0.7	-99.0	99.0	88.2	10.77	9.191	
2,000.0	2,000.0	1,996.0	1,996.0	5.5	5.5	-90.38	-0.7	-99.0	99.0	87.9	11.08	8.931	
2,100.0	2,100.0	2,096.0	2,096.0	5.7	5.7	43.48	-0.7	-99.0	97.7	86.3	11.40	8.568	
2,200.0	2,199.8	2,195.8	2,195.8	6.3	5.8	45.73	-0.7	-99.0	94.0	82.1	11.88	7.911	
2,300.0	2,299.5	2,295.5	2,295.5	6.8	6.0	49.87	-0.7	-99.0	88.1	75.8	12.29	7.171	
2,350.0	2,349.1	2,345.4	2,345.4	6.9	6.0	52.77	-0.8	-98.9	84.5	72.1	12.34	6.843	
2,400.0	2,398.8	2,395.5	2,395.5	7.0	6.1	55.84	-1.4	-98.7	80.6	68.2	12.38	6.513	
2,500.0	2,498.0	2,495.6	2,495.6	7.1	6.2	62.12	-3.8	-97.9	72.8	60.3	12.50	5.828	
2,600.0	2,597.3	2,595.7	2,595.6	7.3	6.3	68.70	-7.9	-96.5	64.9	52.2	12.64	5.132	
2,700.0	2,696.5	2,695.9	2,695.6	7.5	6.5	75.89	-13.6	-94.5	56.6	43.8	12.82	4.419	
2,800.0	2,795.8	2,796.0	2,795.4	7.8	6.6	84.29	-20.9	-92.0	48.1	35.0	13.04	3.685	
2,900.0	2,895.0	2,895.9	2,894.9	8.0	6.8	95.15	-29.9	-88.9	39.3	25.9	13.36	2.938	
3,000.0	2,994.3	2,995.7	2,994.0	8.3	7.0	111.02	-40.5	-85.2	30.9	16.9	13.93	2.215	
3,100.0	3,093.5	3,095.3	3,092.7	8.6	7.2	136.47	-52.8	-81.0	24.6	9.6	14.96	1.645	
3,150.1	3,143.3	3,144.9	3,141.9	8.7	7.4	153.18	-59.3	-78.8	23.5	8.0	15.54	1.515 CC, ES, SF	
3,200.0	3,192.8	3,194.3	3,190.7	8.8	7.5	169.78	-65.8	-76.5	24.6	8.7	15.91	1.546	
3,300.0	3,292.0	3,293.2	3,288.8	9.1	7.7	-164.95	-78.8	-72.0	31.8	15.7	16.11	1.972	
3,400.0	3,391.3	3,392.2	3,386.8	9.4	8.0	-150.60	-91.8	-67.5	42.6	26.5	16.19	2.634	
3,500.0	3,490.6	3,491.2	3,484.8	9.8	8.3	-142.36	-104.8	-63.1	55.1	38.7	16.38	3.363	
3,600.0	3,589.8	3,590.2	3,582.8	10.1	8.6	-137.20	-117.9	-58.6	68.2	51.6	16.65	4.096	
3,700.0	3,689.1	3,689.2	3,680.8	10.4	8.9	-133.73	-130.9	-54.1	81.7	64.7	16.99	4.811	
3,800.0	3,788.3	3,788.1	3,778.9	10.7	9.2	-131.25	-143.9	-49.6	95.4	78.1	17.36	5.497	
3,900.0	3,887.6	3,887.1	3,876.9	11.1	9.6	-129.39	-156.9	-45.1	109.3	91.5	17.76	6.153	
4,000.0	3,986.8	3,986.1	3,974.9	11.4	9.9	-127.95	-170.0	-40.6	123.2	105.0	18.18	6.777	
4,100.0	4,086.1	4,085.1	4,072.9	11.8	10.3	-126.80	-183.0	-36.1	137.2	118.6	18.62	7.369	
4,200.0	4,185.3	4,184.1	4,170.9	12.1	10.6	-125.87	-196.0	-31.6	151.3	132.2	19.07	7.931	
4,300.0	4,284.6	4,283.1	4,268.9	12.5	11.0	-125.09	-209.0	-27.1	165.3	145.8	19.54	8.463	
4,400.0	4,383.8	4,382.0	4,367.0	12.9	11.3	-124.44	-222.1	-22.6	179.4	159.4	20.01	8.967	
4,500.0	4,483.1	4,481.0	4,465.0	13.2	11.7	-123.88	-235.1	-18.1	193.6	173.1	20.49	9.444	
4,600.0	4,582.4	4,580.0	4,563.0	13.6	12.1	-123.40	-248.1	-13.7	207.7	186.7	20.99	9.897	
4,700.0	4,681.6	4,679.0	4,661.0	14.0	12.4	-122.98	-261.1	-9.2	221.8	200.4	21.48	10.326	
4,800.0	4,780.9	4,778.0	4,759.0	14.4	12.8	-122.61	-274.1	-4.7	236.0	214.0	21.99	10.733	
4,900.0	4,880.1	4,876.9	4,857.1	14.7	13.2	-122.28	-287.2	-0.2	250.2	227.7	22.50	11.119	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 7H - Margarita Federal Com 7H - PLAN#9 - 179.58												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre		Rule Assigned:		Distance	Minimum	Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation Factor		
5,000.0	4,979.4	4,975.9	4,955.1	15.1	13.6	-121.98	-300.2	4.3	264.3	241.3	23.01	11.485	
5,100.0	5,078.6	5,074.9	5,053.1	15.5	14.0	-121.72	-313.2	8.8	278.5	255.0	23.54	11.834	
5,200.0	5,177.9	5,173.9	5,151.1	15.9	14.3	-121.48	-326.2	13.3	292.7	268.6	24.06	12.165	
5,300.0	5,277.1	5,272.9	5,249.1	16.3	14.7	-121.27	-339.3	17.8	306.9	282.3	24.59	12.480	
5,400.0	5,376.4	5,371.9	5,347.2	16.6	15.1	-121.07	-352.3	22.3	321.1	296.0	25.12	12.780	
5,500.0	5,475.7	5,470.8	5,445.2	17.0	15.5	-120.89	-365.3	26.8	335.3	309.6	25.66	13.066	
5,600.0	5,574.9	5,569.8	5,543.2	17.4	15.9	-120.72	-378.3	31.2	349.5	323.3	26.20	13.339	
5,700.0	5,674.2	5,668.8	5,641.2	17.8	16.3	-120.57	-391.4	35.7	363.7	336.9	26.74	13.599	
5,800.0	5,773.4	5,767.8	5,739.2	18.2	16.7	-120.43	-404.4	40.2	377.9	350.6	27.29	13.848	
5,900.0	5,872.7	5,866.8	5,837.2	18.6	17.1	-120.30	-417.4	44.7	392.1	364.2	27.84	14.085	
6,000.0	5,971.9	5,965.7	5,935.3	19.0	17.5	-120.18	-430.4	49.2	406.3	377.9	28.39	14.313	
6,100.0	6,071.2	6,064.7	6,033.3	19.4	17.9	-120.06	-443.4	53.7	420.5	391.6	28.94	14.530	
6,200.0	6,170.4	6,163.7	6,131.3	19.8	18.3	-119.96	-456.5	58.2	434.7	405.2	29.50	14.738	
6,300.0	6,269.7	6,262.7	6,229.3	20.2	18.7	-119.86	-469.5	62.7	448.9	418.9	30.05	14.937	
6,400.0	6,368.9	6,361.7	6,327.3	20.6	19.1	-119.76	-482.5	67.2	463.1	432.5	30.61	15.129	
6,500.0	6,468.2	6,460.7	6,425.4	21.0	19.5	-119.68	-495.5	71.7	477.3	446.2	31.17	15.312	
6,600.0	6,567.5	6,559.6	6,523.4	21.4	20.0	-119.59	-508.6	76.2	491.6	459.8	31.74	15.488	
6,700.0	6,666.7	6,658.6	6,621.4	21.8	20.4	-119.52	-521.6	80.6	505.8	473.5	32.30	15.658	
6,800.0	6,766.0	6,757.6	6,719.4	22.2	20.8	-119.44	-534.6	85.1	520.0	487.1	32.87	15.820	
6,900.0	6,865.2	6,856.6	6,817.4	22.6	21.2	-119.37	-547.6	89.6	534.2	500.8	33.44	15.977	
7,000.0	6,964.5	6,955.6	6,915.5	23.0	21.6	-119.31	-560.7	94.1	548.4	514.4	34.01	16.128	
7,100.0	7,063.7	7,054.6	7,013.5	23.4	22.0	-119.24	-573.7	98.6	562.7	528.1	34.58	16.273	
7,200.0	7,163.0	7,153.5	7,111.5	23.8	22.4	-119.18	-586.7	103.1	576.9	541.7	35.15	16.413	
7,300.0	7,262.2	7,252.5	7,209.5	24.2	22.8	-119.13	-599.7	107.6	591.1	555.4	35.72	16.547	
7,400.0	7,361.5	7,351.5	7,307.5	24.6	23.3	-119.07	-612.7	112.1	605.3	569.0	36.30	16.677	
7,500.0	7,460.7	7,450.5	7,405.5	25.0	23.7	-119.02	-625.8	116.6	619.5	582.7	36.87	16.803	
7,600.0	7,560.0	7,549.5	7,503.6	25.4	24.1	-118.97	-638.8	121.1	633.8	596.3	37.45	16.924	
7,700.0	7,659.3	7,648.4	7,601.6	25.9	24.5	-118.92	-651.8	125.6	648.0	610.0	38.02	17.041	
7,800.0	7,758.5	7,747.4	7,699.6	26.3	24.9	-118.88	-664.8	130.0	662.2	623.6	38.60	17.154	
7,900.0	7,857.8	7,846.4	7,797.6	26.7	25.3	-118.84	-677.9	134.5	676.4	637.2	39.18	17.264	
8,000.0	7,957.0	7,945.4	7,895.6	27.1	25.7	-118.79	-690.9	139.0	690.7	650.9	39.76	17.370	
8,100.0	8,056.3	8,044.4	7,993.7	27.5	26.2	-118.75	-703.9	143.5	704.9	664.5	40.34	17.472	
8,200.0	8,155.5	8,143.4	8,091.7	27.9	26.6	-118.72	-716.9	148.0	719.1	678.2	40.93	17.571	
8,300.0	8,254.8	8,242.3	8,189.7	28.3	27.0	-118.68	-730.0	152.5	733.3	691.8	41.51	17.667	
8,400.0	8,354.0	8,341.3	8,287.7	28.7	27.4	-118.64	-743.0	157.0	747.6	705.5	42.09	17.760	
8,500.0	8,453.3	8,440.3	8,385.7	29.1	27.8	-118.61	-756.0	161.5	761.8	719.1	42.67	17.851	
8,600.0	8,552.5	8,539.3	8,483.7	29.5	28.3	-118.58	-769.0	166.0	776.0	732.7	43.26	17.938	
8,700.0	8,651.8	8,638.3	8,581.8	29.9	28.7	-118.55	-782.0	170.5	790.2	746.4	43.84	18.023	
8,800.0	8,751.1	8,737.2	8,679.8	30.4	29.1	-118.52	-795.1	175.0	804.5	760.0	44.43	18.106	
8,900.0	8,850.3	8,836.2	8,777.8	30.8	29.5	-118.49	-808.1	179.4	818.7	773.7	45.02	18.186	
9,000.0	8,949.6	8,937.5	8,878.1	31.2	30.0	-118.46	-821.4	184.0	832.9	787.3	45.61	18.261	
9,100.0	9,048.8	9,046.2	8,985.9	31.6	30.4	-118.51	-834.2	188.5	846.3	800.0	46.22	18.309	
9,200.0	9,148.1	9,155.1	9,094.3	32.0	30.8	-118.68	-845.2	192.2	858.5	811.7	46.82	18.337	
9,300.0	9,247.3	9,264.3	9,203.0	32.4	31.3	-118.94	-854.2	195.3	869.7	822.3	47.39	18.350	
9,400.0	9,346.6	9,373.5	9,312.0	32.8	31.6	-119.32	-861.3	197.8	879.7	831.8	47.94	18.349	
9,500.0	9,445.8	9,482.8	9,421.1	33.2	32.0	-119.79	-866.4	199.5	888.7	840.2	48.46	18.337	
9,600.0	9,545.1	9,592.1	9,530.3	33.7	32.3	-120.36	-869.5	200.6	896.6	847.6	48.95	18.315	
9,700.0	9,644.3	9,701.2	9,639.5	34.1	32.6	-121.02	-870.7	201.0	903.5	854.1	49.39	18.292	
9,800.0	9,743.6	9,801.3	9,739.6	34.5	32.6	-121.68	-870.7	201.0	909.8	860.1	49.70	18.308	
9,900.0	9,842.9	9,900.6	9,838.9	34.9	32.6	-122.33	-870.7	201.0	916.3	866.3	50.01	18.322	
10,000.0	9,942.1	9,999.9	9,938.1	35.3	32.6	-122.96	-870.7	201.0	922.9	872.6	50.33	18.336	
10,100.0	10,041.4	10,099.1	10,037.4	35.7	32.6	-123.59	-870.7	201.0	929.7	879.0	50.66	18.350	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 7H - Margarita Federal Com 7H - PLAN#9 - 179.58													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre		Rule Assigned:			Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
10,200.0	10,140.6	10,198.4	10,136.6	36.1	32.7	-124.21	-870.7	201.0	936.5	885.5	51.00	18.364		
10,300.0	10,239.9	10,297.6	10,235.9	36.6	32.7	-124.82	-870.7	201.0	943.4	892.1	51.34	18.378		
10,400.0	10,339.1	10,396.9	10,335.1	37.0	32.7	-125.42	-870.7	201.0	950.5	898.8	51.68	18.391		
10,500.0	10,438.4	10,496.1	10,434.4	37.4	32.7	-126.01	-870.7	201.0	957.6	905.6	52.03	18.405		
10,522.3	10,460.5	10,518.2	10,456.5	37.5	32.7	-126.14	-870.7	201.0	959.2	907.1	52.11	18.410		
10,600.0	10,537.7	10,595.4	10,533.7	37.8	32.7	-126.61	-870.7	201.0	964.6	912.2	52.37	18.419		
10,700.0	10,637.2	10,694.9	10,633.2	38.2	32.7	-127.13	-870.7	201.0	970.6	917.9	52.70	18.418		
10,800.0	10,736.9	10,794.6	10,732.9	38.6	32.7	-127.55	-870.7	201.0	975.6	922.6	53.00	18.405		
10,900.0	10,836.6	10,894.4	10,832.6	38.9	32.8	-127.88	-870.7	201.0	979.6	926.3	53.29	18.382		
11,000.0	10,936.5	10,994.3	10,932.5	39.3	32.8	-128.13	-870.7	201.0	982.5	928.9	53.55	18.348		
11,100.0	11,036.5	11,075.0	11,013.2	39.6	32.9	-128.11	-873.2	201.2	985.1	931.4	53.77	18.321		
11,200.0	11,136.5	11,137.2	11,074.5	39.8	33.2	-127.60	-883.7	202.2	989.9	936.0	53.98	18.340		
11,222.3	11,158.7	11,150.0	11,086.8	39.8	33.3	99.41	-886.8	202.4	991.4	937.4	54.00	18.359		
11,300.0	11,236.5	11,200.0	11,134.4	39.8	33.5	100.28	-902.1	203.8	997.8	943.8	54.07	18.453		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 8H - Margarita Federal Com 8H - Baseline Plan #5 - 179.72													Offset Site Error:	0.0 usft	
Survey Program: 0-MWD+HRGM				Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned: Distance				Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
0.0	0.0	0.0	0.0	0.0	0.0	89.62	0.2	33.0	33.0						
100.0	100.0	100.0	100.0	0.8	0.8	89.62	0.2	33.0	33.0	31.5	1.52	21.705			
200.0	200.0	200.0	200.0	1.4	1.4	89.62	0.2	33.0	33.0	30.2	2.79	11.834			
300.0	300.0	300.0	300.0	1.9	1.9	89.62	0.2	33.0	33.0	29.3	3.70	8.907			
400.0	400.0	400.0	400.0	2.2	2.2	89.62	0.2	33.0	33.0	28.6	4.44	7.429			
423.5	423.5	423.5	423.5	2.3	2.3	89.62	0.2	33.0	33.0	28.4	4.59	7.188			
500.0	500.0	500.0	500.0	2.5	2.5	89.62	0.2	33.0	33.0	27.9	5.08	6.499			
524.4	524.4	524.4	524.4	2.6	2.6	89.62	0.2	33.0	33.0	27.8	5.22	6.325			
600.0	600.0	600.0	600.0	2.8	2.8	89.62	0.2	33.0	33.0	27.3	5.65	5.843			
633.3	633.3	633.3	633.3	2.9	2.9	89.62	0.2	33.0	33.0	27.2	5.82	5.669			
700.0	700.0	700.0	700.0	3.1	3.1	89.62	0.2	33.0	33.0	26.8	6.17	5.349			
800.0	800.0	800.0	800.0	3.3	3.3	89.62	0.2	33.0	33.0	26.3	6.65	4.959			
900.0	900.0	900.0	900.0	3.6	3.6	89.62	0.2	33.0	33.0	25.9	7.11	4.642			
1,000.0	1,000.0	1,000.0	1,000.0	3.8	3.8	89.62	0.2	33.0	33.0	25.5	7.54	4.376			
1,100.0	1,100.0	1,100.0	1,100.0	4.0	4.0	89.62	0.2	33.0	33.0	25.0	7.95	4.150			
1,200.0	1,200.0	1,200.0	1,200.0	4.2	4.2	89.62	0.2	33.0	33.0	24.6	8.35	3.954			
1,300.0	1,300.0	1,300.0	1,300.0	4.4	4.4	89.62	0.2	33.0	33.0	24.3	8.73	3.782			
1,400.0	1,400.0	1,400.0	1,400.0	4.5	4.5	89.62	0.2	33.0	33.0	23.9	9.09	3.629			
1,500.0	1,500.0	1,500.0	1,500.0	4.7	4.7	89.62	0.2	33.0	33.0	23.5	9.45	3.493			
1,600.0	1,600.0	1,600.0	1,600.0	4.9	4.9	89.62	0.2	33.0	33.0	23.2	9.79	3.369			
1,700.0	1,700.0	1,700.0	1,700.0	5.1	5.1	89.62	0.2	33.0	33.0	22.9	10.13	3.258			
1,800.0	1,800.0	1,800.0	1,800.0	5.2	5.2	89.62	0.2	33.0	33.0	22.5	10.46	3.156			
1,900.0	1,900.0	1,900.0	1,900.0	5.4	5.4	89.62	0.2	33.0	33.0	22.2	10.78	3.062			
2,000.0	2,000.0	2,000.0	2,000.0	5.5	5.5	89.62	0.2	33.0	33.0	21.9	11.09	2.975	CC, ES, SF		
2,100.0	2,100.0	2,099.7	2,099.7	5.7	5.6	-137.93	-0.5	33.4	34.7	23.4	11.36	3.057			
2,200.0	2,199.8	2,199.2	2,199.2	6.3	5.8	-139.67	-2.7	34.8	40.0	28.1	11.84	3.374			
2,300.0	2,299.5	2,298.5	2,298.3	6.8	5.9	-141.71	-6.4	37.1	48.7	36.4	12.35	3.946			
2,350.0	2,349.1	2,347.9	2,347.7	6.9	6.0	-142.68	-8.8	38.5	54.4	41.9	12.49	4.357			
2,400.0	2,398.8	2,397.3	2,397.0	7.0	6.1	-143.40	-11.5	40.2	60.7	48.1	12.61	4.814			
2,500.0	2,498.0	2,496.5	2,495.9	7.1	6.2	-144.13	-17.4	43.8	73.4	60.5	12.89	5.697			
2,600.0	2,597.3	2,595.7	2,594.9	7.3	6.4	-144.65	-23.3	47.5	86.2	73.0	13.20	6.530			
2,700.0	2,696.5	2,694.8	2,693.8	7.5	6.6	-145.03	-29.2	51.1	98.9	85.4	13.52	7.318			
2,800.0	2,795.8	2,794.0	2,792.7	7.8	6.9	-145.32	-35.1	54.7	111.7	97.8	13.86	8.059			
2,900.0	2,895.0	2,893.2	2,891.7	8.0	7.1	-145.56	-41.0	58.4	124.4	110.2	14.21	8.757			
3,000.0	2,994.3	2,992.4	2,990.6	8.3	7.3	-145.75	-46.8	62.0	137.2	122.6	14.57	9.413			
3,100.0	3,093.5	3,091.6	3,089.6	8.6	7.6	-145.91	-52.7	65.6	149.9	135.0	14.95	10.029			
3,200.0	3,192.8	3,190.8	3,188.5	8.8	7.8	-146.04	-58.6	69.2	162.7	147.3	15.34	10.606			
3,300.0	3,292.0	3,289.9	3,287.4	9.1	8.1	-146.15	-64.5	72.9	175.4	159.7	15.74	11.147			
3,400.0	3,391.3	3,389.1	3,386.4	9.4	8.4	-146.25	-70.4	76.5	188.2	172.0	16.15	11.654			
3,500.0	3,490.6	3,488.3	3,485.3	9.8	8.7	-146.34	-76.3	80.1	200.9	184.4	16.57	12.130			
3,600.0	3,589.8	3,587.5	3,584.3	10.1	8.9	-146.42	-82.2	83.8	213.7	196.7	16.99	12.577			
3,700.0	3,689.1	3,686.7	3,683.2	10.4	9.2	-146.48	-88.1	87.4	226.5	209.0	17.43	12.995			
3,800.0	3,788.3	3,785.9	3,782.2	10.7	9.5	-146.54	-94.0	91.0	239.2	221.3	17.87	13.389			
3,900.0	3,887.6	3,885.0	3,881.1	11.1	9.8	-146.60	-99.9	94.6	252.0	233.7	18.31	13.758			
4,000.0	3,986.8	3,984.2	3,980.0	11.4	10.1	-146.65	-105.8	98.3	264.7	246.0	18.77	14.105			
4,100.0	4,086.1	4,083.4	4,079.0	11.8	10.5	-146.69	-111.6	101.9	277.5	258.3	19.23	14.432			
4,200.0	4,185.3	4,182.6	4,177.9	12.1	10.8	-146.73	-117.5	105.5	290.2	270.6	19.69	14.740			
4,300.0	4,284.6	4,281.8	4,276.9	12.5	11.1	-146.77	-123.4	109.2	303.0	282.8	20.16	15.030			
4,400.0	4,383.8	4,381.0	4,375.8	12.9	11.4	-146.80	-129.3	112.8	315.8	295.1	20.63	15.303			
4,500.0	4,483.1	4,480.1	4,474.7	13.2	11.7	-146.83	-135.2	116.4	328.5	307.4	21.11	15.561			
4,600.0	4,582.4	4,580.5	4,574.9	13.6	12.0	-146.90	-140.9	120.0	341.2	319.6	21.56	15.823			
4,700.0	4,681.6	4,682.0	4,676.2	14.0	12.3	-147.21	-145.4	122.7	353.3	331.2	22.04	16.028			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 8H - Margarita Federal Com 8H - Baseline Plan #5 - 179.72													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HRGM													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre		Rule Assigned:		Distance	Minimum	Separation	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor		
4,800.0	4,780.9	4,783.5	4,777.7	14.4	12.6	-147.77	-148.3	124.5	364.8	342.2	22.52	16.195		
4,900.0	4,880.1	4,885.1	4,879.2	14.7	12.9	-148.55	-149.7	125.3	375.7	352.7	23.00	16.335		
5,000.0	4,979.4	4,985.2	4,979.4	15.1	13.0	-149.48	-149.8	125.4	386.2	362.8	23.40	16.501		
5,100.0	5,078.6	5,084.5	5,078.6	15.5	13.0	-150.37	-149.8	125.4	396.8	372.9	23.83	16.651		
5,200.0	5,177.9	5,183.7	5,177.9	15.9	13.1	-151.22	-149.8	125.4	407.4	383.2	24.27	16.789		
5,300.0	5,277.1	5,283.0	5,277.1	16.3	13.1	-152.02	-149.8	125.4	418.2	393.5	24.71	16.921		
5,400.0	5,376.4	5,382.2	5,376.4	16.6	13.2	-152.78	-149.8	125.4	429.0	403.8	25.16	17.048		
5,500.0	5,475.7	5,481.5	5,475.7	17.0	13.2	-153.51	-149.8	125.4	439.9	414.3	25.62	17.171		
5,600.0	5,574.9	5,580.7	5,574.9	17.4	13.3	-154.20	-149.8	125.4	450.8	424.8	26.08	17.289		
5,700.0	5,674.2	5,680.0	5,674.2	17.8	13.3	-154.86	-149.8	125.4	461.9	435.3	26.54	17.403		
5,800.0	5,773.4	5,779.2	5,773.4	18.2	13.4	-155.48	-149.8	125.4	472.9	445.9	27.00	17.513		
5,900.0	5,872.7	5,878.5	5,872.7	18.6	13.4	-156.08	-149.8	125.4	484.1	456.6	27.47	17.619		
6,000.0	5,971.9	5,977.8	5,971.9	19.0	13.5	-156.65	-149.8	125.4	495.2	467.3	27.94	17.722		
6,100.0	6,071.2	6,077.0	6,071.2	19.4	13.6	-157.20	-149.8	125.4	506.5	478.0	28.42	17.821		
6,200.0	6,170.4	6,176.3	6,170.4	19.8	13.6	-157.72	-149.8	125.4	517.7	488.8	28.90	17.917		
6,300.0	6,269.7	6,275.5	6,269.7	20.2	13.7	-158.22	-149.8	125.4	529.0	499.7	29.37	18.010		
6,400.0	6,368.9	6,374.8	6,368.9	20.6	13.7	-158.70	-149.8	125.4	540.4	510.5	29.85	18.101		
6,500.0	6,468.2	6,474.0	6,468.2	21.0	13.8	-159.16	-149.8	125.4	551.8	521.4	30.34	18.188		
6,600.0	6,567.5	6,573.3	6,567.5	21.4	13.8	-159.60	-149.8	125.4	563.2	532.4	30.82	18.274		
6,700.0	6,666.7	6,672.5	6,666.7	21.8	13.9	-160.02	-149.8	125.4	574.6	543.3	31.30	18.356		
6,800.0	6,766.0	6,771.8	6,766.0	22.2	14.0	-160.43	-149.8	125.4	586.1	554.3	31.79	18.437		
6,900.0	6,865.2	6,871.0	6,865.2	22.6	14.0	-160.82	-149.8	125.4	597.6	565.3	32.28	18.515		
7,000.0	6,964.5	6,970.3	6,964.5	23.0	14.1	-161.20	-149.8	125.4	609.1	576.4	32.77	18.591		
7,100.0	7,063.7	7,069.6	7,063.7	23.4	14.1	-161.56	-149.8	125.4	620.7	587.4	33.26	18.665		
7,200.0	7,163.0	7,168.8	7,163.0	23.8	14.2	-161.91	-149.8	125.4	632.3	598.5	33.75	18.737		
7,300.0	7,262.2	7,268.1	7,262.2	24.2	14.3	-162.24	-149.8	125.4	643.9	609.7	34.24	18.807		
7,400.0	7,361.5	7,367.3	7,361.5	24.6	14.3	-162.57	-149.8	125.4	655.5	620.8	34.73	18.875		
7,500.0	7,460.7	7,466.6	7,460.7	25.0	14.4	-162.88	-149.8	125.4	667.2	631.9	35.22	18.942		
7,600.0	7,560.0	7,565.8	7,560.0	25.4	14.4	-163.18	-149.8	125.4	678.8	643.1	35.71	19.007		
7,700.0	7,659.3	7,665.1	7,659.3	25.9	14.5	-163.48	-149.8	125.4	690.5	654.3	36.21	19.070		
7,800.0	7,758.5	7,764.3	7,758.5	26.3	14.6	-163.76	-149.8	125.4	702.2	665.5	36.70	19.132		
7,900.0	7,857.8	7,863.6	7,857.8	26.7	14.6	-164.03	-149.8	125.4	713.9	676.7	37.20	19.193		
8,000.0	7,957.0	7,962.8	7,957.0	27.1	14.7	-164.30	-149.8	125.4	725.7	688.0	37.69	19.252		
8,100.0	8,056.3	8,062.1	8,056.3	27.5	14.7	-164.55	-149.8	125.4	737.4	699.2	38.19	19.309		
8,200.0	8,155.5	8,161.4	8,155.5	27.9	14.8	-164.80	-149.8	125.4	749.2	710.5	38.68	19.366		
8,300.0	8,254.8	8,260.6	8,254.8	28.3	14.9	-165.04	-149.8	125.4	760.9	721.7	39.18	19.421		
8,400.0	8,354.0	8,359.9	8,354.0	28.7	14.9	-165.28	-149.8	125.4	772.7	733.0	39.68	19.475		
8,500.0	8,453.3	8,459.1	8,453.3	29.1	15.0	-165.50	-149.8	125.4	784.5	744.3	40.17	19.527		
8,600.0	8,552.5	8,558.4	8,552.5	29.5	15.1	-165.72	-149.8	125.4	796.3	755.7	40.67	19.579		
8,700.0	8,651.8	8,657.6	8,651.8	29.9	15.1	-165.93	-149.8	125.4	808.1	767.0	41.17	19.629		
8,800.0	8,751.1	8,756.9	8,751.1	30.4	15.2	-166.14	-149.8	125.4	820.0	778.3	41.67	19.679		
8,900.0	8,850.3	8,856.1	8,850.3	30.8	15.2	-166.34	-149.8	125.4	831.8	789.7	42.17	19.727		
9,000.0	8,949.6	8,955.4	8,949.6	31.2	15.3	-166.54	-149.8	125.4	843.7	801.0	42.66	19.774		
9,100.0	9,048.8	9,054.6	9,048.8	31.6	15.4	-166.73	-149.8	125.4	855.5	812.4	43.16	19.821		
9,200.0	9,148.1	9,153.9	9,148.1	32.0	15.4	-166.91	-149.8	125.4	867.4	823.7	43.66	19.866		
9,300.0	9,247.3	9,253.2	9,247.3	32.4	15.5	-167.09	-149.8	125.4	879.3	835.1	44.16	19.911		
9,400.0	9,346.6	9,352.4	9,346.6	32.8	15.6	-167.27	-149.8	125.4	891.2	846.5	44.66	19.954		
9,500.0	9,445.8	9,451.7	9,445.8	33.2	15.6	-167.44	-149.8	125.4	903.1	857.9	45.16	19.997		
9,600.0	9,545.1	9,550.9	9,545.1	33.7	15.7	-167.60	-149.8	125.4	915.0	869.3	45.66	20.039		
9,700.0	9,644.3	9,650.2	9,644.3	34.1	15.7	-167.76	-149.8	125.4	926.9	880.7	46.16	20.080		
9,800.0	9,743.6	9,749.4	9,743.6	34.5	15.8	-167.92	-149.8	125.4	938.8	892.1	46.66	20.120		
9,900.0	9,842.9	9,848.7	9,842.9	34.9	15.9	-168.08	-149.8	125.4	950.7	903.6	47.16	20.160		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredeve Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 8H - Margarita Federal Com 8H - Baseline Plan #5 - 179.72												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HRGM												Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Rule Assigned: Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,000.0	9,942.1	9,947.9	9,942.1	35.3	15.9	-168.23	-149.8	125.4	962.7	915.0	47.66	20.199	
10,100.0	10,041.4	10,047.2	10,041.4	35.7	16.0	-168.37	-149.8	125.4	974.6	926.4	48.16	20.237	
10,200.0	10,140.6	10,146.4	10,140.6	36.1	16.1	-168.51	-149.8	125.4	986.5	937.9	48.66	20.273	
10,300.0	10,239.9	10,245.7	10,239.9	36.6	16.1	-168.65	-149.8	125.4	998.5	949.3	49.16	20.310	
10,600.0	10,537.7	11,230.0	10,982.5	37.8	19.9	-143.26	-630.2	124.8	982.8	933.3	49.56	19.830	
10,700.0	10,637.2	11,289.3	10,989.0	38.2	20.0	-139.36	-689.2	124.7	948.5	899.1	49.47	19.174	
10,800.0	10,736.9	11,309.8	10,989.9	38.6	20.0	-137.88	-709.7	124.7	922.1	872.5	49.58	18.598	
10,900.0	10,836.6	11,319.0	10,990.0	38.9	20.0	-137.17	-718.9	124.7	904.5	854.8	49.70	18.197	
11,000.0	10,936.5	11,323.3	10,990.0	39.3	20.0	-136.84	-723.2	124.7	896.4	846.6	49.81	17.998	
11,031.8	10,968.3	11,324.1	10,990.0	39.4	20.0	-136.79	-724.0	124.7	895.9	846.1	49.83	17.980	
11,100.0	11,036.5	11,325.4	10,990.0	39.6	20.0	-136.73	-725.2	124.7	898.2	848.4	49.87	18.012	
11,200.0	11,136.5	11,326.2	10,990.0	39.8	20.0	-136.75	-726.1	124.7	909.8	859.9	49.87	18.243	
11,222.3	11,158.7	11,326.3	10,990.0	39.8	20.0	90.07	-726.1	124.7	913.7	863.8	49.85	18.331	
11,300.0	11,236.5	11,326.3	10,990.0	39.8	20.0	90.07	-726.1	124.7	931.2	881.5	49.72	18.730	
11,372.0	11,308.5	11,326.3	10,990.0	39.8	20.0	90.07	-726.1	124.7	952.8	903.2	49.61	19.206	
11,375.0	11,311.5	11,326.3	10,990.0	39.8	20.0	-87.00	-726.1	124.7	953.8	904.2	49.60	19.228	
11,400.0	11,336.5	11,327.1	10,990.0	39.9	20.0	-85.84	-726.9	124.7	962.5	912.9	49.58	19.412	
11,425.0	11,361.4	11,329.2	10,990.0	39.9	20.0	-84.53	-729.1	124.7	971.6	922.0	49.57	19.600	
11,450.0	11,386.1	11,332.6	10,990.0	40.0	20.0	-83.08	-732.5	124.7	981.2	931.6	49.58	19.791	
11,475.0	11,410.7	11,337.3	10,990.0	40.1	20.0	-81.50	-737.2	124.7	991.1	941.5	49.60	19.983	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredeve Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 8H - Margarita Federal Com 8H - Margarita Federal Com 8H												Offset Site Error:	0.0 usft
Survey Program: 195-MWD												Offset Well Error:	0.0 usft
Reference Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Rule Assigned: Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.62	0.2	33.0	33.0				
100.0	100.0	99.9	99.9	0.8	0.6	89.96	0.0	33.1	33.1	31.7	1.36	24.352	
200.0	200.0	199.9	199.9	1.4	1.2	90.96	-0.6	33.4	33.4	30.8	2.60	12.846	
300.0	300.0	299.8	299.8	1.9	2.0	93.04	-1.8	33.8	33.8	30.1	3.77	8.967 ES	
400.0	400.0	399.5	399.5	2.2	2.4	96.43	-3.9	34.6	34.8	30.2	4.56	7.639	
500.0	500.0	498.8	498.7	2.5	3.6	101.47	-7.4	36.5	37.2	31.5	5.75	6.471	
600.0	600.0	597.7	597.4	2.8	5.0	108.27	-13.2	39.9	42.1	34.9	7.19	5.859 SF	
700.0	700.0	697.4	696.7	3.1	5.5	114.96	-20.4	43.9	48.5	40.5	8.06	6.021	
800.0	800.0	797.0	795.9	3.3	5.7	120.38	-28.1	48.0	55.8	47.1	8.68	6.429	
900.0	900.0	897.4	896.0	3.6	6.0	124.46	-35.4	51.5	62.6	53.4	9.25	6.772	
1,000.0	1,000.0	997.7	996.0	3.8	6.3	127.69	-41.9	54.2	68.6	58.9	9.78	7.017	
1,100.0	1,100.0	1,053.0	1,051.2	4.0	6.4	129.06	-45.2	55.7	86.7	77.6	9.09	9.541	
1,200.0	1,200.0	1,053.0	1,051.2	4.2	6.4	129.06	-45.2	55.7	165.1	158.3	6.79	24.306	
1,300.0	1,300.0	1,053.0	1,051.2	4.4	6.4	129.06	-45.2	55.7	258.9	252.8	6.10	42.437	
1,400.0	1,400.0	1,053.0	1,051.2	4.5	6.4	129.06	-45.2	55.7	356.1	350.2	5.87	60.630	
1,500.0	1,500.0	1,053.0	1,051.2	4.7	6.4	129.06	-45.2	55.7	454.5	448.7	5.80	78.371	
1,600.0	1,600.0	1,053.0	1,051.2	4.9	6.4	129.06	-45.2	55.7	553.4	547.6	5.79	95.573	
1,700.0	1,700.0	1,053.0	1,051.2	5.1	6.4	129.06	-45.2	55.7	652.7	646.9	5.82	112.222	
1,800.0	1,800.0	1,053.0	1,051.2	5.2	6.4	129.06	-45.2	55.7	752.2	746.3	5.86	128.317	
1,900.0	1,900.0	1,053.0	1,051.2	5.4	6.4	129.06	-45.2	55.7	851.8	845.9	5.92	143.863	
2,000.0	2,000.0	1,053.0	1,051.2	5.5	6.4	129.06	-45.2	55.7	951.5	945.5	5.99	158.863	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 8H - ST01 - Plan#7 - 179.53													Offset Site Error:	0.0 usft
Survey Program:	195-MWD, 1164-MWD, 1164-MWD							Rule Assigned:					Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Reference	Offset	Highside	Offset Wellbore Centre	Distance	Between	Between	Minimum	Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Centres (usft)	Ellipses (usft)	Separation (usft)	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	89.62	0.2	33.0	33.0					
100.0	100.0	99.9	99.9	0.8	0.6	89.96	0.0	33.1	33.1	31.7	1.36	24.352		
200.0	200.0	199.9	199.9	1.4	1.2	90.96	-0.6	33.4	33.4	30.8	2.60	12.846		
300.0	300.0	299.8	299.8	1.9	2.0	93.04	-1.8	33.8	33.8	30.1	3.77	8.967 ES		
400.0	400.0	399.5	399.5	2.2	2.4	96.43	-3.9	34.6	34.8	30.2	4.56	7.639		
500.0	500.0	498.8	498.7	2.5	3.6	101.47	-7.4	36.5	37.2	31.5	5.75	6.471		
600.0	600.0	597.7	597.4	2.8	5.0	108.27	-13.2	39.9	42.1	34.9	7.19	5.859		
700.0	700.0	697.4	696.7	3.1	5.5	114.96	-20.4	43.9	48.5	40.5	8.06	6.021		
800.0	800.0	797.0	795.9	3.3	5.7	120.38	-28.1	48.0	55.8	47.1	8.68	6.429		
900.0	900.0	897.4	896.0	3.6	6.0	124.46	-35.4	51.5	62.6	53.4	9.25	6.772		
1,000.0	1,000.0	997.7	996.0	3.8	6.3	127.69	-41.9	54.2	68.6	58.9	9.78	7.017		
1,100.0	1,100.0	1,100.6	1,098.8	4.0	6.6	129.90	-47.1	56.3	73.4	63.1	10.27	7.144		
1,200.0	1,200.0	1,204.5	1,202.6	4.2	7.0	130.76	-46.5	54.0	71.3	60.6	10.67	6.680		
1,300.0	1,300.0	1,304.4	1,302.5	4.4	7.1	131.39	-44.7	50.7	67.6	56.6	11.00	6.149		
1,400.0	1,400.0	1,404.3	1,402.3	4.5	7.3	132.10	-42.9	47.4	64.0	52.6	11.35	5.638		
1,500.0	1,500.0	1,504.3	1,502.2	4.7	7.4	132.88	-41.0	44.2	60.3	48.6	11.70	5.156		
1,600.0	1,600.0	1,604.2	1,602.1	4.9	7.5	133.77	-39.2	40.9	56.7	44.6	12.05	4.702		
1,700.0	1,700.0	1,704.1	1,701.9	5.1	7.7	134.78	-37.3	37.6	53.1	40.6	12.42	4.273		
1,800.0	1,800.0	1,804.1	1,801.8	5.2	7.8	135.94	-35.5	34.4	49.4	36.7	12.78	3.868		
1,900.0	1,900.0	1,903.9	1,901.6	5.4	8.0	137.28	-33.7	31.1	45.9	32.7	13.15	3.487		
1,999.6	1,999.6	2,001.9	1,999.6	5.5	8.1	138.58	-33.1	29.2	44.2	30.7	13.48	3.276		
2,000.0	2,000.0	2,002.4	2,000.0	5.5	8.1	138.59	-33.1	29.2	44.2	30.7	13.48	3.275 SF		
2,100.0	2,100.0	2,100.8	2,098.4	5.7	8.2	-89.45	-34.9	29.8	45.8	32.2	13.66	3.357		
2,200.0	2,199.8	2,199.5	2,197.0	6.3	8.2	-94.58	-38.8	32.7	50.9	37.2	13.70	3.715		
2,300.0	2,299.5	2,299.1	2,296.4	6.8	8.2	-102.09	-43.2	36.1	57.7	43.9	13.73	4.201		
2,350.0	2,349.1	2,348.7	2,345.9	6.9	8.2	-106.34	-45.5	37.8	61.7	48.0	13.73	4.496		
2,400.0	2,398.8	2,398.3	2,395.4	7.0	8.3	-110.47	-47.7	39.5	66.2	52.5	13.74	4.820		
2,500.0	2,498.0	2,497.4	2,494.4	7.1	8.3	-117.19	-52.1	42.9	76.1	62.2	13.88	5.482		
2,600.0	2,597.3	2,596.6	2,593.4	7.3	8.4	-122.32	-56.5	46.3	86.7	72.7	14.09	6.157		
2,700.0	2,696.5	2,695.8	2,692.5	7.5	8.5	-126.32	-60.9	49.7	97.9	83.6	14.34	6.829		
2,800.0	2,795.8	2,794.9	2,791.5	7.8	8.6	-129.48	-65.3	53.0	109.5	94.9	14.63	7.487		
2,900.0	2,895.0	2,894.1	2,890.5	8.0	8.7	-132.03	-69.8	56.4	121.4	106.4	14.94	8.123		
3,000.0	2,994.3	2,993.3	2,989.5	8.3	8.9	-134.13	-74.2	59.8	133.4	118.1	15.27	8.733		
3,100.0	3,093.5	3,092.4	3,088.5	8.6	9.0	-135.88	-78.6	63.2	145.6	130.0	15.63	9.317		
3,200.0	3,192.8	3,191.6	3,187.5	8.8	9.1	-137.36	-83.0	66.6	157.9	141.9	15.99	9.872		
3,300.0	3,292.0	3,290.7	3,286.5	9.1	9.3	-138.62	-87.4	70.0	170.3	153.9	16.37	10.399		
3,400.0	3,391.3	3,389.9	3,385.5	9.4	9.4	-139.71	-91.9	73.4	182.7	166.0	16.77	10.898		
3,500.0	3,490.6	3,489.1	3,484.5	9.8	9.6	-140.67	-96.3	76.8	195.2	178.1	17.17	11.370		
3,600.0	3,589.8	3,588.2	3,583.5	10.1	9.8	-141.50	-100.7	80.2	207.8	190.2	17.58	11.817		
3,700.0	3,689.1	3,687.4	3,682.5	10.4	9.9	-142.25	-105.1	83.6	220.4	202.4	18.01	12.240		
3,800.0	3,788.3	3,786.6	3,781.5	10.7	10.1	-142.91	-109.5	87.0	233.0	214.6	18.44	12.639		
3,900.0	3,887.6	3,885.7	3,880.6	11.1	10.3	-143.50	-114.0	90.4	245.7	226.8	18.88	13.016		
4,000.0	3,986.8	3,984.9	3,979.6	11.4	10.5	-144.04	-118.4	93.8	258.4	239.1	19.32	13.373		
4,100.0	4,086.1	4,084.1	4,078.6	11.8	10.7	-144.52	-122.8	97.2	271.1	251.3	19.77	13.711		
4,200.0	4,185.3	4,183.2	4,177.6	12.1	10.9	-144.97	-127.2	100.6	283.8	263.6	20.23	14.030		
4,300.0	4,284.6	4,282.4	4,276.6	12.5	11.2	-145.37	-131.6	104.0	296.5	275.8	20.69	14.332		
4,400.0	4,383.8	4,381.6	4,375.6	12.9	11.4	-145.74	-136.1	107.4	309.3	288.1	21.16	14.618		
4,500.0	4,483.1	4,480.7	4,474.6	13.2	11.6	-146.08	-140.5	110.8	322.0	300.4	21.63	14.890		
4,600.0	4,582.4	4,581.4	4,575.1	13.6	11.8	-146.44	-144.7	114.0	334.7	312.6	22.08	15.159		
4,700.0	4,681.6	4,683.4	4,677.1	14.0	12.1	-147.02	-147.8	116.4	346.6	324.1	22.56	15.363		
4,800.0	4,780.9	4,785.5	4,779.1	14.4	12.3	-147.82	-149.4	117.6	357.8	334.7	23.06	15.518		
4,900.0	4,880.1	4,886.5	4,880.1	14.7	12.3	-148.80	-149.7	117.8	368.3	344.9	23.49	15.683		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 8H - ST01 - Plan#7 - 179.53

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Survey Program: Reference			Offset			Semi Major Axis			Rule Assigned:			Warning		
195-MWD, 1164-MWD, 1164-MWD			Offset			Reference			Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
5,000.0	4,979.4	4,985.7	4,979.4	15.1	12.4	-149.76	-149.7	117.8	378.8	354.9	23.92	15.836		
5,100.0	5,078.6	5,085.0	5,078.6	15.5	12.4	-150.66	-149.7	117.8	389.4	365.1	24.38	15.976		
5,200.0	5,177.9	5,184.3	5,177.9	15.9	12.5	-151.51	-149.7	117.8	400.1	375.3	24.83	16.113		
5,300.0	5,277.1	5,283.5	5,277.1	16.3	12.5	-152.32	-149.7	117.8	410.9	385.6	25.29	16.245		
5,400.0	5,376.4	5,382.8	5,376.4	16.6	12.6	-153.09	-149.7	117.8	421.7	396.0	25.76	16.373		
5,500.0	5,475.7	5,482.0	5,475.7	17.0	12.6	-153.82	-149.7	117.8	432.7	406.4	26.22	16.498		
5,600.0	5,574.9	5,581.3	5,574.9	17.4	12.7	-154.51	-149.7	117.8	443.6	416.9	26.69	16.620		
5,700.0	5,674.2	5,680.5	5,674.2	17.8	12.7	-155.17	-149.7	117.8	454.7	427.5	27.16	16.739		
5,800.0	5,773.4	5,779.8	5,773.4	18.2	12.8	-155.80	-149.7	117.8	465.8	438.2	27.64	16.854		
5,900.0	5,872.7	5,879.0	5,872.7	18.6	12.8	-156.40	-149.7	117.8	476.9	448.8	28.11	16.966		
6,000.0	5,971.9	5,978.3	5,971.9	19.0	12.9	-156.97	-149.7	117.8	488.2	459.6	28.59	17.076		
6,100.0	6,071.2	6,077.5	6,071.2	19.4	12.9	-157.52	-149.7	117.8	499.4	470.3	29.06	17.182		
6,200.0	6,170.4	6,176.8	6,170.4	19.8	13.0	-158.04	-149.7	117.8	510.7	481.2	29.54	17.286		
6,300.0	6,269.7	6,276.1	6,269.7	20.2	13.0	-158.54	-149.7	117.8	522.0	492.0	30.02	17.388		
6,400.0	6,368.9	6,375.3	6,368.9	20.6	13.1	-159.02	-149.7	117.8	533.4	502.9	30.50	17.486		
6,500.0	6,468.2	6,474.6	6,468.2	21.0	13.1	-159.48	-149.7	117.8	544.8	513.8	30.99	17.583		
6,600.0	6,567.5	6,573.8	6,567.5	21.4	13.2	-159.92	-149.7	117.8	556.2	524.8	31.47	17.677		
6,700.0	6,666.7	6,673.1	6,666.7	21.8	13.2	-160.34	-149.7	117.8	567.7	535.8	31.95	17.768		
6,800.0	6,766.0	6,772.3	6,766.0	22.2	13.3	-160.74	-149.7	117.8	579.2	546.8	32.43	17.858		
6,900.0	6,865.2	6,871.6	6,865.2	22.6	13.3	-161.13	-149.7	117.8	590.7	557.8	32.92	17.945		
7,000.0	6,964.5	6,970.8	6,964.5	23.0	13.4	-161.51	-149.7	117.8	602.3	568.9	33.40	18.031		
7,100.0	7,063.7	7,070.1	7,063.7	23.4	13.4	-161.87	-149.7	117.8	613.9	580.0	33.89	18.114		
7,200.0	7,163.0	7,169.3	7,163.0	23.8	13.5	-162.22	-149.7	117.8	625.5	591.1	34.38	18.195		
7,300.0	7,262.2	7,268.6	7,262.2	24.2	13.5	-162.55	-149.7	117.8	637.1	602.2	34.86	18.275		
7,400.0	7,361.5	7,367.9	7,361.5	24.6	13.6	-162.87	-149.7	117.8	648.7	613.4	35.35	18.353		
7,500.0	7,460.7	7,467.1	7,460.7	25.0	13.6	-163.18	-149.7	117.8	660.4	624.6	35.84	18.429		
7,600.0	7,560.0	7,566.4	7,560.0	25.4	13.7	-163.48	-149.7	117.8	672.1	635.8	36.32	18.503		
7,700.0	7,659.3	7,665.6	7,659.3	25.9	13.7	-163.77	-149.7	117.8	683.8	647.0	36.81	18.575		
7,800.0	7,758.5	7,764.9	7,758.5	26.3	13.8	-164.05	-149.7	117.8	695.5	658.2	37.30	18.646		
7,900.0	7,857.8	7,864.1	7,857.8	26.7	13.8	-164.33	-149.7	117.8	707.2	669.5	37.79	18.716		
8,000.0	7,957.0	7,963.4	7,957.0	27.1	13.9	-164.59	-149.7	117.8	719.0	680.7	38.28	18.784		
8,100.0	8,056.3	8,062.6	8,056.3	27.5	14.0	-164.84	-149.7	117.8	730.8	692.0	38.77	18.850		
8,200.0	8,155.5	8,161.9	8,155.5	27.9	14.0	-165.09	-149.7	117.8	742.5	703.3	39.26	18.915		
8,300.0	8,254.8	8,261.1	8,254.8	28.3	14.1	-165.33	-149.7	117.8	754.3	714.6	39.75	18.979		
8,400.0	8,354.0	8,360.4	8,354.0	28.7	14.1	-165.56	-149.7	117.8	766.1	725.9	40.24	19.041		
8,500.0	8,453.3	8,459.7	8,453.3	29.1	14.2	-165.78	-149.7	117.8	777.9	737.2	40.73	19.102		
8,600.0	8,552.5	8,558.9	8,552.5	29.5	14.2	-166.00	-149.7	117.8	789.8	748.5	41.22	19.162		
8,700.0	8,651.8	8,658.2	8,651.8	29.9	14.3	-166.21	-149.7	117.8	801.6	759.9	41.71	19.220		
8,800.0	8,751.1	8,757.4	8,751.1	30.4	14.4	-166.41	-149.7	117.8	813.4	771.2	42.20	19.277		
8,900.0	8,850.3	8,856.7	8,850.3	30.8	14.4	-166.61	-149.7	117.8	825.3	782.6	42.69	19.333		
9,000.0	8,949.6	8,955.9	8,949.6	31.2	14.5	-166.80	-149.7	117.8	837.2	794.0	43.18	19.388		
9,100.0	9,048.8	9,055.2	9,048.8	31.6	14.5	-166.99	-149.7	117.8	849.0	805.4	43.67	19.442		
9,200.0	9,148.1	9,154.4	9,148.1	32.0	14.6	-167.17	-149.7	117.8	860.9	816.8	44.16	19.495		
9,300.0	9,247.3	9,253.7	9,247.3	32.4	14.6	-167.35	-149.7	117.8	872.8	828.2	44.65	19.547		
9,400.0	9,346.6	9,352.9	9,346.6	32.8	14.7	-167.52	-149.7	117.8	884.7	839.6	45.14	19.597		
9,500.0	9,445.8	9,452.2	9,445.8	33.2	14.8	-167.69	-149.7	117.8	896.6	851.0	45.64	19.647		
9,600.0	9,545.1	9,551.5	9,545.1	33.7	14.8	-167.86	-149.7	117.8	908.5	862.4	46.13	19.696		
9,700.0	9,644.3	9,650.7	9,644.3	34.1	14.9	-168.02	-149.7	117.8	920.4	873.8	46.62	19.744		
9,800.0	9,743.6	9,750.0	9,743.6	34.5	14.9	-168.17	-149.7	117.8	932.4	885.3	47.11	19.791		
9,900.0	9,842.9	9,849.2	9,842.9	34.9	15.0	-168.32	-149.7	117.8	944.3	896.7	47.60	19.837		
10,000.0	9,942.1	9,948.5	9,942.1	35.3	15.1	-168.47	-149.7	117.8	956.3	908.2	48.10	19.882		
10,100.0	10,041.4	10,047.7	10,041.4	35.7	15.1	-168.61	-149.7	117.8	968.2	919.6	48.59	19.926		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 8H - ST01 - Plan#7 - 179.53														Offset Site Error:	0.0 usft
Survey Program: 195-MWD, 1164-MWD, 1164-MWD														Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Reference	Offset	Highside	Offset Wellbore Centre		Rule Assigned:		Distance	Minimum	Separation	Warning		
Measured	Vertical	Measured	Vertical	Reference	Offset	Toolface	+N/-S	+E/-W	Between	Between	Separation	Factor			
Depth	Depth	Depth	Depth	Reference	Offset	(°)	(usft)	(usft)	Centres	Ellipses	(usft)				
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)				(usft)	(usft)	(usft)				
10,200.0	10,140.6	10,147.0	10,140.6	36.1	15.2	-168.76	-149.7	117.8	980.2	931.1	49.08	19.970			
10,300.0	10,239.9	10,246.2	10,239.9	36.6	15.2	-168.89	-149.7	117.8	992.1	942.5	49.58	20.012			
10,600.0	10,537.7	11,193.5	10,975.3	37.8	18.8	-145.52	-593.9	121.5	979.9	929.4	50.57	19.376			
10,700.0	10,637.2	11,268.7	10,987.4	38.2	18.9	-140.70	-668.0	122.1	946.1	895.6	50.50	18.736			
10,800.0	10,736.9	11,295.6	10,989.3	38.6	18.9	-138.82	-694.9	122.3	919.8	869.1	50.63	18.166			
10,900.0	10,836.6	11,308.2	10,989.8	38.9	19.0	-137.90	-707.5	122.4	902.2	851.5	50.76	17.775			
11,000.0	10,936.5	11,314.7	10,989.9	39.3	19.0	-137.44	-713.9	122.4	894.2	843.4	50.83	17.591			
11,031.5	10,968.0	11,316.0	10,989.9	39.4	19.0	-137.35	-715.2	122.4	893.7	842.9	50.84	17.579			
11,100.0	11,036.5	11,318.0	10,989.9	39.6	19.0	-137.24	-717.2	122.5	896.0	845.2	50.84	17.626			
11,200.0	11,136.5	11,319.4	10,989.9	39.8	19.0	-137.23	-718.6	122.5	907.7	856.9	50.75	17.884			
11,222.3	11,158.7	11,319.5	10,989.9	39.8	19.0	89.60	-718.8	122.5	911.6	860.9	50.70	17.978			
11,300.0	11,236.5	11,323.3	10,990.0	39.8	19.0	89.84	-722.5	122.5	929.1	878.6	50.48	18.407			
11,372.0	11,308.5	11,323.3	10,990.0	39.8	19.0	89.84	-722.5	122.5	950.8	900.5	50.29	18.905			
11,375.0	11,311.5	11,323.3	10,990.0	39.8	19.0	-87.23	-722.5	122.5	951.8	901.5	50.28	18.928			
11,400.0	11,336.5	11,323.3	10,990.0	39.9	19.0	-86.12	-722.5	122.5	960.5	910.2	50.24	19.118			
11,425.0	11,361.4	11,323.3	10,990.0	39.9	19.0	-84.94	-722.5	122.5	969.6	919.4	50.22	19.310			
11,450.0	11,386.1	11,324.8	10,990.0	40.0	19.0	-83.60	-724.1	122.5	979.3	929.0	50.21	19.504			
11,475.0	11,410.7	11,329.6	10,990.0	40.1	19.0	-82.00	-728.8	122.6	989.3	939.1	50.21	19.703			
11,500.0	11,434.9	11,335.5	10,990.0	40.2	19.0	-80.29	-734.8	122.6	999.6	949.4	50.23	19.902			

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

Company:	Ameredeve Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad A - Margarita Federal Com 8H - ST01 - ST01													Offset Site Error:	0.0 usft
Survey Program: 195-MWD, 1164-MWD													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis		Rule Assigned:		Distance		Minimum		Separation		Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	89.62	0.2	33.0	33.0					
100.0	100.0	99.9	99.9	0.8	0.6	89.96	0.0	33.1	33.1	31.7	1.36	24.352		
200.0	200.0	199.9	199.9	1.4	1.2	90.96	-0.6	33.4	33.4	30.8	2.60	12.846		
300.0	300.0	299.8	299.8	1.9	2.0	93.04	-1.8	33.8	33.8	30.1	3.77	8.967 ES		
400.0	400.0	399.5	399.5	2.2	2.4	96.43	-3.9	34.6	34.8	30.2	4.56	7.639		
500.0	500.0	498.8	498.7	2.5	3.6	101.47	-7.4	36.5	37.2	31.5	5.75	6.471		
600.0	600.0	597.7	597.4	2.8	5.0	108.27	-13.2	39.9	42.1	34.9	7.19	5.859		
700.0	700.0	697.4	696.7	3.1	5.5	114.96	-20.4	43.9	48.5	40.5	8.06	6.021		
800.0	800.0	797.0	795.9	3.3	5.7	120.38	-28.1	48.0	55.8	47.1	8.68	6.429		
900.0	900.0	897.4	896.0	3.6	6.0	124.46	-35.4	51.5	62.6	53.4	9.25	6.772		
1,000.0	1,000.0	997.7	996.0	3.8	6.3	127.69	-41.9	54.2	68.6	58.9	9.78	7.017		
1,100.0	1,100.0	1,100.6	1,098.8	4.0	6.6	129.90	-47.1	56.3	73.4	63.1	10.27	7.144		
1,200.0	1,200.0	1,204.9	1,203.0	4.2	7.1	130.72	-46.4	53.9	71.2	60.5	10.67	6.672		
1,300.0	1,300.0	1,304.7	1,302.7	4.4	7.1	130.83	-43.8	50.7	67.1	56.1	10.98	6.111		
1,400.0	1,400.0	1,404.5	1,402.4	4.5	7.3	130.75	-41.2	47.8	63.1	51.8	11.29	5.588		
1,500.0	1,500.0	1,504.3	1,502.2	4.7	7.4	131.22	-39.1	44.6	59.3	47.7	11.63	5.099		
1,600.0	1,600.0	1,604.2	1,602.1	4.9	7.5	132.46	-37.5	41.0	55.6	43.6	11.99	4.636		
1,674.1	1,674.1	1,676.0	1,673.8	5.0	7.6	133.88	-36.6	38.1	52.9	40.6	12.30	4.300 SF		
1,700.0	1,700.0	1,676.0	1,673.8	5.1	7.6	133.88	-36.6	38.1	59.0	47.5	11.52	5.123		
1,800.0	1,800.0	1,676.0	1,673.8	5.2	7.6	133.88	-36.6	38.1	136.9	129.2	7.66	17.859		
1,900.0	1,900.0	1,676.0	1,673.8	5.4	7.6	133.88	-36.6	38.1	232.3	225.5	6.86	33.867		
2,000.0	2,000.0	1,676.0	1,673.8	5.5	7.6	133.88	-36.6	38.1	330.5	323.8	6.66	49.598		
2,100.0	2,100.0	1,676.0	1,673.8	5.7	7.6	-78.86	-36.6	38.1	429.5	422.9	6.62	64.835		
2,200.0	2,199.8	1,676.0	1,673.8	6.3	7.6	-62.91	-36.6	38.1	528.8	522.2	6.65	79.544		
2,300.0	2,299.5	1,676.0	1,673.8	6.8	7.6	-48.28	-36.6	38.1	628.2	621.5	6.70	93.708		
2,350.0	2,349.1	1,676.0	1,673.8	6.9	7.6	-42.11	-36.6	38.1	677.9	671.1	6.74	100.621		
2,400.0	2,398.8	1,676.0	1,673.8	7.0	7.6	-42.11	-36.6	38.1	727.5	720.8	6.78	107.384		
2,500.0	2,498.0	1,676.0	1,673.8	7.1	7.6	-42.11	-36.6	38.1	827.0	820.2	6.86	120.500		
2,600.0	2,597.3	1,676.0	1,673.8	7.3	7.6	-42.11	-36.6	38.1	926.6	919.7	6.96	133.144		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad B - Margarita Federal Com 13 05H - 05H - PLAN#3 - 179.55													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HRGM													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre		Rule Assigned:		Distance		Minimum	Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)			
10,400.0	10,339.1	10,356.7	10,344.1	37.0	21.1	17.06	-1,122.2	-1,618.1	988.4	931.5	56.97	17.349		
10,500.0	10,438.4	10,456.0	10,443.4	37.4	21.1	17.27	-1,122.2	-1,618.1	976.8	919.4	57.39	17.020		
10,522.3	10,460.5	10,478.1	10,465.5	37.5	21.1	17.32	-1,122.2	-1,618.1	974.2	916.7	57.48	16.949		
10,600.0	10,537.7	10,525.0	10,512.4	37.8	21.2	17.36	-1,122.9	-1,618.1	966.4	908.5	57.89	16.695		
10,700.0	10,637.2	10,575.0	10,562.1	38.2	21.2	17.15	-1,128.2	-1,618.2	962.2	903.7	58.47	16.455		
10,714.3	10,651.4	10,588.1	10,575.0	38.2	21.3	17.05	-1,130.4	-1,618.2	962.1	903.5	58.56	16.427 CC, ES		
10,800.0	10,736.9	10,631.6	10,617.3	38.6	21.4	16.59	-1,140.4	-1,618.3	964.6	905.5	59.06	16.332 SF		
10,900.0	10,836.6	10,675.0	10,658.5	38.9	21.5	15.94	-1,154.2	-1,618.5	974.0	914.4	59.56	16.352		
11,000.0	10,936.5	10,725.0	10,704.1	39.3	21.6	14.95	-1,174.6	-1,618.8	990.6	930.6	60.05	16.497		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad B - Margarita Federal Com 13 06H - 06H - PLAN#3 - 179.55													Offset Site Error:	0.0 usft
Survey Program:	0-MWD+HRGM		Offset	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Rule Assigned:		Offset Well Error:		0.0 usft	
Reference	Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	+N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
5,700.0	5,674.2	5,757.4	5,751.0	17.8	11.6	1.99	-946.7	-1,059.2	993.7	965.1	28.61	34.739		
5,800.0	5,773.4	5,855.3	5,848.5	18.2	11.9	1.64	-946.7	-1,049.8	974.4	945.2	29.20	33.366		
5,900.0	5,872.7	5,953.3	5,946.0	18.6	12.2	1.28	-946.7	-1,040.4	955.2	925.4	29.81	32.045		
6,000.0	5,971.9	6,051.2	6,043.5	19.0	12.4	0.91	-946.7	-1,031.0	935.9	905.5	30.41	30.776		
6,100.0	6,071.2	6,149.2	6,140.9	19.4	12.7	0.52	-946.7	-1,021.6	916.7	885.7	31.02	29.555		
6,200.0	6,170.4	6,247.1	6,238.4	19.8	13.0	0.11	-946.7	-1,012.3	897.6	866.0	31.63	28.382		
6,300.0	6,269.7	6,345.0	6,335.9	20.2	13.4	-0.31	-946.7	-1,002.9	878.5	846.3	32.23	27.254		
6,400.0	6,368.9	6,443.0	6,433.4	20.6	13.7	-0.75	-946.7	-993.5	859.4	826.6	32.84	26.170		
6,500.0	6,468.2	6,540.9	6,530.9	21.0	14.0	-1.22	-946.7	-984.1	840.4	807.0	33.45	25.126		
6,600.0	6,567.5	6,638.9	6,628.4	21.4	14.3	-1.70	-946.7	-974.7	821.5	787.4	34.05	24.123		
6,700.0	6,666.7	6,736.8	6,725.9	21.8	14.6	-2.21	-946.7	-965.3	802.6	768.0	34.66	23.158		
6,800.0	6,766.0	6,834.8	6,823.4	22.2	14.9	-2.74	-946.7	-955.9	783.8	748.5	35.26	22.230		
6,900.0	6,865.2	6,932.7	6,920.9	22.6	15.3	-3.30	-946.7	-946.5	765.0	729.2	35.85	21.338		
7,000.0	6,964.5	7,030.7	7,018.4	23.0	15.6	-3.88	-946.7	-937.2	746.4	709.9	36.45	20.479		
7,100.0	7,063.7	7,128.6	7,115.9	23.4	15.9	-4.50	-946.7	-927.8	727.8	690.7	37.03	19.653		
7,200.0	7,163.0	7,226.6	7,213.4	23.8	16.3	-5.14	-946.7	-918.4	709.2	671.6	37.61	18.859		
7,300.0	7,262.2	7,324.5	7,310.9	24.2	16.6	-5.82	-946.7	-909.0	690.8	652.6	38.18	18.095		
7,400.0	7,361.5	7,422.4	7,408.4	24.6	17.0	-6.54	-946.7	-899.6	672.5	633.8	38.74	17.360		
7,500.0	7,460.7	7,520.4	7,505.9	25.0	17.3	-7.30	-946.7	-890.2	654.3	615.0	39.29	16.653		
7,600.0	7,560.0	7,618.3	7,603.4	25.4	17.6	-8.10	-946.7	-880.8	636.2	596.4	39.83	15.975		
7,700.0	7,659.3	7,716.3	7,700.9	25.9	18.0	-8.95	-946.7	-871.4	618.2	577.9	40.35	15.322		
7,800.0	7,758.5	7,814.2	7,798.4	26.3	18.3	-9.84	-946.7	-862.1	600.4	559.5	40.85	14.696		
7,900.0	7,857.8	7,912.2	7,895.9	26.7	18.7	-10.79	-946.7	-852.7	582.7	541.4	41.34	14.095		
8,000.0	7,957.0	8,010.1	7,993.3	27.1	19.0	-11.80	-946.7	-843.3	565.2	523.4	41.81	13.519		
8,100.0	8,056.3	8,108.1	8,090.8	27.5	19.4	-12.87	-946.7	-833.9	547.9	505.6	42.25	12.968		
8,200.0	8,155.5	8,206.0	8,188.3	27.9	19.7	-14.02	-946.7	-824.5	530.8	488.1	42.67	12.440		
8,300.0	8,254.8	8,304.0	8,285.8	28.3	20.1	-15.23	-946.7	-815.1	513.9	470.8	43.05	11.936		
8,400.0	8,354.0	8,401.9	8,383.3	28.7	20.5	-16.53	-946.7	-805.7	497.2	453.8	43.40	11.455		
8,500.0	8,453.3	8,499.8	8,480.8	29.1	20.8	-17.92	-946.7	-796.3	480.8	437.1	43.72	10.998		
8,600.0	8,552.5	8,597.8	8,578.3	29.5	21.2	-19.40	-946.7	-787.0	464.7	420.7	43.99	10.564		
8,700.0	8,651.8	8,695.3	8,675.4	29.9	21.5	-20.97	-946.7	-777.6	449.0	404.7	44.21	10.156		
8,800.0	8,751.1	8,790.3	8,770.0	30.4	21.9	-22.49	-946.7	-769.5	434.0	389.6	44.42	9.771		
8,900.0	8,850.3	8,885.8	8,865.3	30.8	22.2	-23.93	-946.7	-763.0	420.0	375.4	44.62	9.413		
9,000.0	8,949.6	8,981.8	8,961.2	31.2	22.5	-25.25	-946.7	-758.0	406.9	362.1	44.82	9.080		
9,100.0	9,048.8	9,078.2	9,057.5	31.6	22.8	-26.44	-946.7	-754.6	394.7	349.7	45.02	8.767		
9,200.0	9,148.1	9,175.1	9,154.3	32.0	23.0	-27.49	-946.7	-752.8	383.2	337.9	45.23	8.471		
9,300.0	9,247.3	9,273.0	9,252.3	32.4	23.1	-28.38	-946.7	-752.5	372.3	326.9	45.42	8.196		
9,400.0	9,346.6	9,372.3	9,351.6	32.8	23.2	-29.30	-946.7	-752.5	361.6	316.0	45.59	7.931		
9,500.0	9,445.8	9,471.5	9,450.8	33.2	23.2	-30.27	-946.7	-752.5	351.0	305.2	45.76	7.671		
9,600.0	9,545.1	9,570.8	9,550.1	33.7	23.2	-31.30	-946.7	-752.5	340.5	294.6	45.90	7.418		
9,700.0	9,644.3	9,670.1	9,649.3	34.1	23.3	-32.40	-946.7	-752.5	330.1	284.1	46.02	7.173		
9,800.0	9,743.6	9,769.3	9,748.6	34.5	23.3	-33.56	-946.7	-752.5	319.9	273.8	46.12	6.936		
9,900.0	9,842.9	9,868.6	9,847.9	34.9	23.4	-34.81	-946.7	-752.5	309.8	263.6	46.19	6.707		
10,000.0	9,942.1	9,967.8	9,947.1	35.3	23.4	-36.13	-946.7	-752.5	299.8	253.6	46.23	6.485		
10,100.0	10,041.4	10,067.1	10,046.4	35.7	23.5	-37.55	-946.7	-752.5	290.0	243.8	46.24	6.272		
10,195.9	10,136.5	10,135.3	10,114.5	36.1	23.5	-38.65	-948.9	-752.5	284.3	238.0	46.34	6.136 CC, ES		
10,200.0	10,140.6	10,137.8	10,117.0	36.1	23.5	-38.69	-949.1	-752.5	284.3	238.0	46.34	6.135 SF		
10,300.0	10,239.9	10,200.0	10,178.3	36.6	23.5	-39.93	-959.4	-752.4	291.5	245.1	46.35	6.289		
10,400.0	10,339.1	10,259.8	10,235.5	37.0	23.5	-41.22	-976.8	-752.3	311.5	265.2	46.26	6.733		
10,500.0	10,438.4	10,315.7	10,286.6	37.4	23.5	-42.40	-999.4	-752.1	343.5	297.4	46.16	7.442		
10,522.3	10,460.5	10,325.0	10,294.8	37.5	23.5	-42.59	-1,003.7	-752.0	352.2	306.0	46.12	7.635		
10,600.0	10,537.7	10,366.6	10,330.6	37.8	23.5	-43.62	-1,025.0	-751.9	386.5	340.4	46.07	8.390		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad B - Margarita Federal Com 13 06H - 06H - PLAN#3 - 179.55													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HRGM													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Rule Assigned:			Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
10,700.0	10,637.2	10,412.0	10,367.2	38.2	23.5	-44.73	-1,051.6	-751.7	439.5	393.5	46.04	9.547		
10,800.0	10,736.9	10,450.0	10,395.9	38.6	23.5	-45.69	-1,076.6	-751.5	501.0	454.9	46.04	10.881		
10,900.0	10,836.6	10,486.1	10,421.2	38.9	23.6	-46.63	-1,102.3	-751.3	569.2	523.1	46.10	12.347		
11,000.0	10,936.5	10,515.8	10,440.6	39.3	23.6	-47.54	-1,124.9	-751.1	643.1	596.9	46.19	13.923		
11,100.0	11,036.5	10,541.4	10,456.1	39.6	23.6	-48.49	-1,145.2	-750.9	721.5	675.2	46.30	15.582		
11,200.0	11,136.5	10,563.5	10,468.5	39.8	23.7	-49.52	-1,163.4	-750.8	803.5	757.0	46.43	17.304		
11,222.3	11,158.7	10,575.0	10,474.7	39.8	23.7	177.12	-1,173.1	-750.7	822.2	775.7	46.51	17.678		
11,300.0	11,236.5	10,575.0	10,474.7	39.8	23.7	177.12	-1,173.1	-750.7	888.4	841.9	46.49	19.108		
11,372.0	11,308.5	10,600.0	10,487.3	39.8	23.7	177.23	-1,194.8	-750.5	950.7	904.0	46.68	20.368		
11,375.0	11,311.5	10,600.0	10,487.3	39.8	23.7	0.03	-1,194.8	-750.5	953.3	906.6	46.68	20.423		
11,400.0	11,336.5	10,600.0	10,487.3	39.9	23.7	0.03	-1,194.8	-750.5	974.7	928.0	46.70	20.870		
11,425.0	11,361.4	10,600.0	10,487.3	39.9	23.7	0.02	-1,194.8	-750.5	995.6	948.8	46.74	21.302		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report

Company:	Ameredeve Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad B - Margarita Federal Com 13 11H - 11H - PLAN#3 - 179.79													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HRGM													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Rule Assigned:		Distance		Minimum	Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)			
9,300.0	9,247.3	9,243.5	9,231.4	32.4	17.2	16.08	-1,046.7	-1,516.5	992.5	943.7	48.82	20.329		
9,400.0	9,346.6	9,363.5	9,351.4	32.8	17.4	16.33	-1,047.1	-1,517.6	981.8	932.4	49.34	19.898		
9,500.0	9,445.8	9,461.9	9,449.8	33.2	17.4	16.53	-1,047.1	-1,517.6	970.1	920.3	49.76	19.494		
9,600.0	9,545.1	9,561.2	9,549.1	33.7	17.4	16.74	-1,047.1	-1,517.6	958.4	908.2	50.20	19.092		
9,700.0	9,644.3	9,660.4	9,648.3	34.1	17.5	16.95	-1,047.1	-1,517.6	946.7	896.1	50.64	18.695		
9,800.0	9,743.6	9,759.7	9,747.6	34.5	17.6	17.17	-1,047.1	-1,517.6	935.1	884.0	51.08	18.305		
9,900.0	9,842.9	9,833.1	9,821.0	34.9	17.6	17.29	-1,047.9	-1,517.7	924.2	872.6	51.61	17.909		
10,000.0	9,942.1	9,886.1	9,873.7	35.3	17.7	17.13	-1,053.1	-1,518.3	917.9	865.6	52.24	17.571		
10,072.5	10,014.1	9,924.2	9,911.2	35.6	17.8	16.85	-1,059.9	-1,519.0	916.5	863.8	52.71	17.388 CC, ES		
10,100.0	10,041.4	9,950.0	9,936.2	35.7	17.9	16.58	-1,066.0	-1,519.7	916.8	863.9	52.94	17.320		
10,200.0	10,140.6	10,000.0	9,983.9	36.1	18.1	15.90	-1,081.0	-1,521.3	921.0	867.4	53.59	17.187		
10,300.0	10,239.9	10,050.0	10,030.0	36.6	18.3	15.00	-1,100.2	-1,523.4	930.7	876.5	54.21	17.168 SF		
10,400.0	10,339.1	10,084.4	10,060.6	37.0	18.4	14.26	-1,115.8	-1,525.1	946.0	891.4	54.65	17.311		
10,500.0	10,438.4	10,127.3	10,097.4	37.4	18.6	13.23	-1,137.8	-1,527.5	967.4	912.3	55.10	17.556		
10,522.3	10,460.5	10,136.5	10,105.0	37.5	18.6	12.99	-1,142.8	-1,528.0	973.0	917.8	55.19	17.629		
10,600.0	10,537.7	10,167.0	10,129.8	37.8	18.7	12.21	-1,160.5	-1,530.0	995.2	939.7	55.45	17.947		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad B - Margarita Federal Com 13 15H - 15H - PLAN#3 - 179.58												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HRGM												Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre		Rule Assigned:		Distance	Between	Minimum	Separation	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Ellipses (usft)	Separation (usft)	Factor	
8,700.0	8,651.8	8,661.3	8,656.8	29.9	15.5	22.47	-897.4	-1,509.1	993.9	951.0	42.96	23.138	
8,800.0	8,751.1	8,760.5	8,756.1	30.4	15.6	22.74	-897.4	-1,509.1	982.7	939.3	43.41	22.639	
8,900.0	8,850.3	8,859.8	8,855.3	30.8	15.6	23.02	-897.4	-1,509.1	971.4	927.6	43.85	22.151	
9,000.0	8,949.6	8,959.0	8,954.6	31.2	15.7	23.30	-897.4	-1,509.1	960.2	915.9	44.30	21.675	
9,100.0	9,048.8	9,058.3	9,053.8	31.6	15.8	23.60	-897.4	-1,509.1	949.0	904.3	44.74	21.210	
9,200.0	9,148.1	9,157.5	9,153.1	32.0	15.9	23.89	-897.4	-1,509.1	937.8	892.7	45.19	20.755	
9,300.0	9,247.3	9,256.8	9,252.3	32.4	15.9	24.20	-897.4	-1,509.1	926.7	881.1	45.63	20.311	
9,400.0	9,346.6	9,356.1	9,351.6	32.8	16.0	24.51	-897.4	-1,509.1	915.6	869.5	46.06	19.877	
9,500.0	9,445.8	9,455.3	9,450.8	33.2	16.1	24.83	-897.4	-1,509.1	904.5	858.0	46.50	19.453	
9,600.0	9,545.1	9,554.6	9,550.1	33.7	16.2	25.16	-897.4	-1,509.1	893.4	846.5	46.93	19.038	
9,700.0	9,644.3	9,653.8	9,649.3	34.1	16.3	25.49	-897.4	-1,509.1	882.4	835.1	47.36	18.633	
9,800.0	9,743.6	9,753.1	9,748.6	34.5	16.3	25.84	-897.4	-1,509.1	871.4	823.6	47.78	18.237	
9,900.0	9,842.9	9,852.3	9,847.9	34.9	16.4	26.19	-897.4	-1,509.1	860.4	812.2	48.20	17.850	
10,000.0	9,942.1	9,951.6	9,947.1	35.3	16.5	26.55	-897.4	-1,509.1	849.5	800.9	48.62	17.471	
10,100.0	10,041.4	10,050.8	10,046.4	35.7	16.6	26.92	-897.4	-1,509.1	838.6	789.6	49.04	17.101	
10,200.0	10,140.6	10,150.1	10,145.6	36.1	16.6	27.31	-897.4	-1,509.1	827.7	778.3	49.45	16.739	
10,300.0	10,239.9	10,249.3	10,244.9	36.6	16.7	27.70	-897.4	-1,509.1	816.9	767.1	49.86	16.385	
10,400.0	10,339.1	10,348.6	10,344.1	37.0	16.8	28.10	-897.4	-1,509.1	806.1	755.9	50.26	16.039	
10,500.0	10,438.4	10,447.9	10,443.4	37.4	16.9	28.51	-897.4	-1,509.1	795.4	744.7	50.66	15.701	
10,522.3	10,460.5	10,469.9	10,465.5	37.5	16.9	28.61	-897.4	-1,509.1	793.0	742.2	50.74	15.628	
10,600.0	10,537.7	10,547.2	10,542.7	37.8	16.9	28.88	-897.4	-1,509.1	785.1	734.1	51.04	15.383	
10,700.0	10,637.2	10,646.7	10,642.2	38.2	17.0	29.19	-897.4	-1,509.1	776.4	725.0	51.42	15.099	
10,800.0	10,736.9	10,746.3	10,741.9	38.6	17.1	29.46	-897.4	-1,509.1	769.2	717.4	51.79	14.853	
10,900.0	10,836.6	10,846.1	10,841.6	38.9	17.2	29.67	-897.4	-1,509.1	763.6	711.4	52.15	14.642	
11,000.0	10,936.5	10,946.0	10,941.5	39.3	17.2	29.82	-897.4	-1,509.1	759.4	707.0	52.49	14.468	
11,093.7	11,030.2	11,025.0	11,020.5	39.5	17.3	29.80	-898.9	-1,509.1	757.5	704.6	52.83	14.338 CC	
11,100.0	11,036.5	11,029.2	11,024.6	39.6	17.2	29.77	-899.2	-1,509.1	757.5	704.6	52.86	14.330	
11,200.0	11,136.5	11,100.0	11,094.5	39.8	17.2	28.99	-910.7	-1,509.4	760.6	707.3	53.33	14.262	
11,222.3	11,158.7	11,114.0	11,108.1	39.8	17.2	-104.41	-914.2	-1,509.4	762.1	708.7	53.42	14.265	
11,300.0	11,236.5	11,164.3	11,155.8	39.8	17.1	-105.55	-929.9	-1,509.8	769.2	715.5	53.73	14.315	
11,372.0	11,308.5	11,207.5	11,195.3	39.8	17.1	-106.80	-947.4	-1,510.1	778.7	724.6	54.05	14.405	
11,375.0	11,311.5	11,209.2	11,196.8	39.8	17.1	75.90	-948.2	-1,510.1	779.1	725.1	54.07	14.410	
11,400.0	11,336.5	11,225.0	11,210.8	39.9	17.1	74.97	-955.5	-1,510.3	783.0	728.8	54.20	14.446	
11,425.0	11,361.4	11,237.9	11,222.0	39.9	17.1	74.15	-961.8	-1,510.4	786.8	732.5	54.32	14.485	
11,450.0	11,386.1	11,250.0	11,232.4	40.0	17.0	73.37	-968.0	-1,510.5	790.7	736.2	54.43	14.527	
11,475.0	11,410.7	11,266.3	11,246.2	40.1	17.0	72.51	-976.8	-1,510.7	794.5	740.0	54.55	14.564	
11,500.0	11,434.9	11,280.5	11,257.9	40.2	17.0	71.74	-984.8	-1,510.9	798.3	743.7	54.67	14.604	
11,525.0	11,458.9	11,294.6	11,269.3	40.2	17.0	71.01	-993.1	-1,511.1	802.1	747.3	54.77	14.644	
11,550.0	11,482.4	11,308.7	11,280.5	40.3	17.0	70.31	-1,001.7	-1,511.2	805.8	750.9	54.88	14.683	
11,575.0	11,505.4	11,325.0	11,293.0	40.4	17.0	69.61	-1,012.1	-1,511.4	809.4	754.4	54.99	14.718	
11,600.0	11,527.9	11,336.8	11,301.9	40.5	17.0	69.02	-1,019.9	-1,511.6	812.8	757.7	55.07	14.759	
11,625.0	11,549.8	11,350.0	11,311.6	40.6	17.0	68.45	-1,028.8	-1,511.8	816.2	761.0	55.16	14.797	
11,650.0	11,571.0	11,364.8	11,322.1	40.7	17.0	67.90	-1,039.2	-1,512.0	819.4	764.1	55.25	14.829	
11,675.0	11,591.5	11,375.0	11,329.2	40.8	17.0	67.44	-1,046.5	-1,512.2	822.4	767.1	55.31	14.871	
11,700.0	11,611.3	11,392.8	11,341.2	40.9	17.0	66.94	-1,059.6	-1,512.4	825.3	769.9	55.42	14.891	
11,725.0	11,630.2	11,406.7	11,350.2	40.9	17.0	66.53	-1,070.2	-1,512.6	828.0	772.5	55.51	14.917	
11,750.0	11,648.2	11,425.0	11,361.6	41.0	17.0	66.13	-1,084.5	-1,512.9	830.6	774.9	55.63	14.929	
11,775.0	11,665.3	11,434.5	11,367.3	41.1	17.0	65.83	-1,092.2	-1,513.1	832.9	777.2	55.67	14.961	
11,800.0	11,681.4	11,450.0	11,376.3	41.2	17.0	65.55	-1,104.8	-1,513.4	835.0	779.2	55.76	14.974	
11,825.0	11,696.5	11,462.3	11,383.1	41.3	17.1	65.32	-1,115.0	-1,513.6	836.9	781.1	55.82	14.992	
11,850.0	11,710.5	11,475.0	11,389.9	41.4	17.1	65.13	-1,125.7	-1,513.8	838.6	782.7	55.89	15.005	
11,875.0	11,723.5	11,490.1	11,397.6	41.4	17.1	64.98	-1,138.7	-1,514.1	840.0	784.1	55.98	15.006	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad B - Margarita Federal Com 13 15H - 15H - PLAN#3 - 179.58													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HRGM													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis		Highside		Offset Wellbore Centre		Distance		Minimum	Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor		
11,900.0	11,735.3	11,500.0	11,402.4	41.5	17.1	64.87	-1,147.4	-1,514.2	841.3	785.3	56.00	15.022		
11,925.0	11,745.9	11,517.9	11,410.6	41.6	17.1	64.83	-1,163.3	-1,514.6	842.3	786.2	56.14	15.004		
11,929.8	11,747.8	11,525.0	11,413.7	41.6	17.1	64.84	-1,169.7	-1,514.7	842.5	786.3	56.22	14.987		
11,950.0	11,755.3	11,531.8	11,416.6	41.7	17.2	64.81	-1,175.8	-1,514.8	843.1	786.9	56.22	14.996		
11,955.1	11,757.1	11,534.6	11,417.7	41.7	17.2	64.82	-1,178.4	-1,514.9	843.2	787.0	56.24	14.994		
11,975.0	11,763.5	11,550.0	11,423.8	41.7	17.2	64.88	-1,192.5	-1,515.2	843.7	787.3	56.37	14.968		
11,980.4	11,765.1	11,550.0	11,423.8	41.7	17.2	64.87	-1,192.5	-1,515.2	843.8	787.4	56.34	14.976		
12,000.0	11,770.5	11,559.5	11,427.4	41.8	17.2	64.93	-1,201.4	-1,515.4	844.0	787.6	56.39	14.967		
12,005.7	11,771.9	11,562.7	11,428.5	41.8	17.2	64.95	-1,204.3	-1,515.4	844.1	787.7	56.41	14.963		
12,025.0	11,776.1	11,575.0	11,432.8	41.9	17.3	65.06	-1,215.9	-1,515.7	844.2	787.6	56.50	14.939		
12,050.0	11,780.5	11,587.4	11,436.7	41.9	17.3	65.21	-1,227.6	-1,515.9	844.1	787.5	56.57	14.920		
12,057.2	11,781.6	11,591.4	11,438.0	41.9	17.3	65.27	-1,231.4	-1,516.0	844.0	787.4	56.60	14.911		
12,075.0	11,783.7	11,600.0	11,440.5	42.0	17.3	65.40	-1,239.6	-1,516.1	843.7	787.1	56.65	14.895		
12,082.4	11,784.3	11,605.4	11,442.0	42.0	17.3	65.49	-1,244.8	-1,516.3	843.6	786.9	56.70	14.879		
12,100.0	11,785.5	11,615.2	11,444.6	42.0	17.4	65.67	-1,254.3	-1,516.4	843.2	786.5	56.77	14.854		
12,107.5	11,785.7	11,619.4	11,445.6	42.1	17.4	65.76	-1,258.4	-1,516.5	843.0	786.2	56.80	14.842		
12,122.0	11,786.0	11,625.0	11,446.9	42.1	17.4	65.89	-1,263.8	-1,516.6	842.6	785.8	56.82	14.831		
12,128.7	11,786.0	11,631.3	11,448.3	42.1	17.4	65.99	-1,269.9	-1,516.8	842.4	785.5	56.89	14.808		
12,182.3	11,786.0	11,661.7	11,454.1	42.2	17.5	66.40	-1,299.8	-1,517.4	841.6	784.5	57.15	14.727		
12,200.0	11,786.0	11,675.0	11,456.0	42.3	17.6	66.55	-1,312.9	-1,517.7	841.7	784.4	57.30	14.690		
12,205.2	11,786.0	11,675.0	11,456.0	42.3	17.6	66.55	-1,312.9	-1,517.7	841.8	784.5	57.27	14.698		
12,223.7	11,786.0	11,685.7	11,457.2	42.4	17.6	66.65	-1,323.5	-1,517.9	842.1	784.7	57.38	14.676		
12,239.8	11,786.0	11,700.0	11,458.6	42.4	17.7	66.76	-1,337.8	-1,518.2	842.5	784.9	57.57	14.634		
12,300.0	11,786.0	11,730.5	11,460.0	42.6	17.8	66.90	-1,368.2	-1,518.8	844.2	786.3	57.88	14.586		
12,309.1	11,786.0	11,737.0	11,460.0	42.6	17.9	66.91	-1,374.7	-1,518.9	844.5	786.5	57.97	14.569		
12,342.9	11,786.0	11,768.8	11,460.0	42.8	18.0	66.95	-1,406.5	-1,519.6	845.6	787.1	58.45	14.465		
12,355.1	11,786.0	11,781.1	11,460.0	42.8	18.1	66.96	-1,418.8	-1,519.8	845.9	787.2	58.65	14.423		
12,400.0	11,786.0	11,825.9	11,460.0	43.0	18.3	66.99	-1,463.6	-1,520.8	847.0	787.7	59.37	14.266		
12,422.1	11,786.0	11,848.0	11,460.0	43.1	18.5	67.01	-1,485.7	-1,521.2	847.6	787.9	59.74	14.188		
12,500.0	11,786.0	11,941.8	11,460.1	43.5	19.0	67.07	-1,579.5	-1,522.6	849.2	787.9	61.37	13.837		
12,600.0	11,786.0	12,049.6	11,460.7	44.0	19.8	67.11	-1,687.3	-1,522.0	849.1	785.8	63.32	13.409		
12,629.7	11,786.0	12,079.3	11,460.8	44.2	20.0	67.12	-1,717.0	-1,521.7	849.0	785.1	63.87	13.292		
12,700.0	11,786.0	12,149.6	11,461.2	44.7	20.6	67.14	-1,787.3	-1,521.2	848.9	783.7	65.21	13.017		
12,729.5	11,786.0	12,179.2	11,461.4	44.9	20.9	67.15	-1,816.9	-1,521.0	848.8	783.0	65.78	12.903		
12,800.0	11,786.0	12,249.6	11,461.8	45.4	21.5	67.17	-1,887.3	-1,520.5	848.6	781.4	67.18	12.632		
12,829.5	11,786.0	12,279.2	11,461.9	45.6	21.7	67.18	-1,916.9	-1,520.2	848.6	780.8	67.78	12.519		
12,900.0	11,786.0	12,349.6	11,462.3	46.2	22.4	67.21	-1,987.3	-1,519.7	848.4	779.2	69.23	12.255		
12,929.5	11,786.0	12,379.2	11,462.5	46.5	22.7	67.22	-2,016.9	-1,519.5	848.3	778.5	69.85	12.145		
13,000.0	11,786.0	12,449.6	11,462.9	47.1	23.4	67.24	-2,087.3	-1,519.0	848.2	776.8	71.34	11.889		
13,029.5	11,786.0	12,479.2	11,463.0	47.4	23.7	67.25	-2,116.9	-1,518.7	848.1	776.1	71.98	11.782		
13,100.0	11,786.0	12,549.6	11,463.4	48.1	24.4	67.28	-2,187.3	-1,518.2	847.9	774.4	73.52	11.533		
13,129.5	11,786.0	12,579.2	11,463.6	48.4	24.7	67.29	-2,216.9	-1,518.0	847.9	773.7	74.17	11.431		
13,200.0	11,786.0	12,649.6	11,464.0	49.2	25.4	67.31	-2,287.3	-1,517.5	847.7	772.0	75.75	11.191		
13,229.5	11,786.0	12,679.2	11,464.1	49.5	25.8	67.32	-2,316.9	-1,517.3	847.6	771.2	76.42	11.092		
13,300.0	11,786.0	12,749.6	11,464.5	50.3	26.5	67.34	-2,387.3	-1,516.7	847.5	769.4	78.03	10.860		
13,329.5	11,786.0	12,779.2	11,464.7	50.6	26.9	67.35	-2,416.8	-1,516.5	847.4	768.7	78.72	10.765		
13,400.0	11,786.0	12,849.6	11,465.0	51.5	27.7	67.38	-2,487.3	-1,516.0	847.2	766.9	80.36	10.543		
13,429.5	11,786.0	12,879.2	11,465.2	51.8	28.0	67.39	-2,516.8	-1,515.8	847.2	766.1	81.06	10.451		
13,500.0	11,786.0	12,949.6	11,465.6	52.7	28.8	67.41	-2,587.3	-1,515.2	847.0	764.3	82.73	10.238		
13,529.5	11,786.0	12,979.2	11,465.8	53.1	29.2	67.42	-2,616.8	-1,515.0	847.0	763.5	83.44	10.150		
13,600.0	11,786.0	13,049.6	11,466.1	53.9	30.0	67.44	-2,687.3	-1,514.5	846.8	761.7	85.14	9.946		
13,629.5	11,786.0	13,079.2	11,466.3	54.3	30.4	67.45	-2,716.8	-1,514.3	846.7	760.9	85.86	9.862		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design:Margarita Federal Com - Pad B - Margarita Federal Com 13 15H - 15H - PLAN#3 - 179.58													Offset Site Error:	0.0 usft	
Survey Program:		0-MWD+HRGM		Offset			Semi Major Axis		Offset Wellbore Centre		Rule Assigned:			Offset Well Error:	0.0 usft
Reference	Offset	Reference	Offset	Reference	Offset	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	(usft)	(usft)										
13,700.0	11,786.0	13,149.6	11,466.7	55.2	31.2	67.48	-2,787.3	-1,513.7	846.6	759.0	87.58	9.666			
13,729.5	11,786.0	13,179.2	11,466.9	55.6	31.6	67.49	-2,816.8	-1,513.5	846.5	758.2	88.31	9.585			
13,800.0	11,786.0	13,249.6	11,467.2	56.6	32.4	67.51	-2,887.3	-1,513.0	846.3	756.3	90.06	9.398			
13,829.5	11,786.0	13,279.2	11,467.4	56.9	32.8	67.52	-2,916.8	-1,512.8	846.3	755.5	90.79	9.321			
13,900.0	11,786.0	13,349.6	11,467.8	57.9	33.7	67.54	-2,987.3	-1,512.2	846.1	753.5	92.56	9.141			
13,929.5	11,786.0	13,379.2	11,467.9	58.3	34.1	67.55	-3,016.8	-1,512.0	846.0	752.7	93.30	9.068			
14,000.0	11,786.0	13,449.6	11,468.3	59.3	34.9	67.58	-3,087.3	-1,511.5	845.9	750.8	95.09	8.896			
14,029.5	11,786.0	13,479.2	11,468.5	59.7	35.3	67.59	-3,116.8	-1,511.3	845.8	750.0	95.84	8.825			
14,100.0	11,786.0	13,549.6	11,468.9	60.7	36.2	67.61	-3,187.3	-1,510.7	845.7	748.0	97.64	8.661			
14,129.5	11,786.0	13,579.2	11,469.0	61.1	36.6	67.62	-3,216.8	-1,510.5	845.6	747.2	98.40	8.593			
14,200.0	11,786.0	13,649.6	11,469.4	62.1	37.5	67.65	-3,287.2	-1,510.0	845.4	745.2	100.22	8.436			
14,229.5	11,786.0	13,679.2	11,469.6	62.5	37.9	67.66	-3,316.8	-1,509.8	845.4	744.4	100.98	8.371			
14,300.0	11,786.0	13,749.6	11,470.0	63.5	38.8	67.68	-3,387.2	-1,509.3	845.2	742.4	102.82	8.221			
14,329.5	11,786.0	13,779.2	11,470.1	63.9	39.2	67.69	-3,416.8	-1,509.0	845.1	741.5	103.59	8.159			
14,400.0	11,786.0	13,849.6	11,470.5	64.9	40.1	67.71	-3,487.2	-1,508.5	845.0	739.5	105.43	8.014			
14,429.5	11,786.0	13,879.2	11,470.7	65.4	40.5	67.72	-3,516.8	-1,508.3	844.9	738.7	106.21	7.955			
14,500.0	11,786.0	13,949.6	11,471.1	66.4	41.4	67.75	-3,587.2	-1,507.8	844.7	736.7	108.07	7.817			
14,529.5	11,786.0	13,979.2	11,471.2	66.8	41.8	67.76	-3,616.8	-1,507.5	844.7	735.8	108.85	7.760			
14,600.0	11,786.0	14,049.6	11,471.6	67.8	42.7	67.78	-3,687.2	-1,507.0	844.5	733.8	110.72	7.628			
14,629.5	11,786.0	14,079.2	11,471.8	68.3	43.1	67.79	-3,716.8	-1,506.8	844.5	733.0	111.50	7.573			
14,700.0	11,786.0	14,149.6	11,472.2	69.3	44.1	67.81	-3,787.2	-1,506.3	844.3	730.9	113.38	7.446			
14,729.5	11,786.0	14,179.2	11,472.3	69.8	44.5	67.82	-3,816.8	-1,506.0	844.2	730.1	114.17	7.394			
14,800.0	11,786.0	14,249.6	11,472.7	70.8	45.4	67.85	-3,887.2	-1,505.5	844.1	728.0	116.06	7.273			
14,829.5	11,786.0	14,279.2	11,472.9	71.2	45.8	67.86	-3,916.8	-1,505.3	844.0	727.1	116.86	7.222			
14,900.0	11,786.0	14,349.6	11,473.3	72.3	46.7	67.88	-3,987.2	-1,504.8	843.8	725.1	118.76	7.106			
14,929.5	11,786.0	14,379.2	11,473.4	72.7	47.1	67.89	-4,016.8	-1,504.5	843.8	724.2	119.56	7.058			
15,000.0	11,786.0	14,449.6	11,473.8	73.8	48.1	67.92	-4,087.2	-1,504.0	843.6	722.2	121.46	6.945			
15,029.5	11,786.0	14,479.2	11,474.0	74.2	48.5	67.93	-4,116.7	-1,503.8	843.6	721.3	122.27	6.899			
15,100.0	11,786.0	14,549.6	11,474.4	75.3	49.5	67.95	-4,187.2	-1,503.3	843.4	719.2	124.18	6.792			
15,129.5	11,786.0	14,579.2	11,474.5	75.8	49.9	67.96	-4,216.7	-1,503.1	843.3	718.3	124.99	6.747			
15,200.0	11,786.0	14,649.6	11,474.9	76.8	50.8	67.98	-4,287.2	-1,502.5	843.2	716.3	126.91	6.644			
15,229.5	11,786.0	14,679.2	11,475.1	77.3	51.2	67.99	-4,316.7	-1,502.3	843.1	715.4	127.72	6.601			
15,300.0	11,786.0	14,749.6	11,475.5	78.3	52.2	68.02	-4,387.2	-1,501.8	843.0	713.3	129.65	6.502			
15,329.5	11,786.0	14,779.2	11,475.6	78.8	52.6	68.03	-4,416.7	-1,501.6	842.9	712.4	130.46	6.461			
15,400.0	11,786.0	14,849.6	11,476.0	79.9	53.5	68.05	-4,487.2	-1,501.0	842.7	710.3	132.40	6.365			
15,429.5	11,786.0	14,879.1	11,476.2	80.3	54.0	68.06	-4,516.7	-1,500.8	842.7	709.4	133.21	6.326			
15,500.0	11,786.0	14,949.6	11,476.5	81.4	54.9	68.09	-4,587.2	-1,500.3	842.5	707.3	135.16	6.233			
15,529.5	11,786.0	14,979.1	11,476.7	81.9	55.3	68.10	-4,616.7	-1,500.1	842.4	706.5	135.98	6.195			
15,600.0	11,786.0	15,049.6	11,477.1	82.9	56.3	68.12	-4,687.2	-1,499.5	842.3	704.4	137.93	6.107			
15,629.5	11,786.0	15,079.1	11,477.3	83.4	56.7	68.13	-4,716.7	-1,499.3	842.2	703.5	138.75	6.070			
15,700.0	11,786.0	15,149.6	11,477.6	84.5	57.7	68.15	-4,787.2	-1,498.8	842.1	701.4	140.70	5.985			
15,729.5	11,786.0	15,179.1	11,477.8	84.9	58.1	68.16	-4,816.7	-1,498.6	842.0	700.5	141.52	5.949			
15,800.0	11,786.0	15,249.6	11,478.2	86.0	59.1	68.19	-4,887.2	-1,498.0	841.8	698.4	143.49	5.867			
15,829.5	11,786.0	15,279.1	11,478.4	86.5	59.5	68.20	-4,916.7	-1,497.8	841.8	697.5	144.31	5.833			
15,900.0	11,786.0	15,349.6	11,478.7	87.6	60.4	68.22	-4,987.2	-1,497.3	841.6	695.3	146.28	5.754			
15,929.5	11,786.0	15,379.1	11,478.9	88.1	60.9	68.23	-5,016.7	-1,497.1	841.6	694.4	147.10	5.721			
16,000.0	11,786.0	15,449.6	11,479.3	89.1	61.8	68.26	-5,087.1	-1,496.5	841.4	692.3	149.08	5.644			
16,029.5	11,786.0	15,479.1	11,479.4	89.6	62.2	68.27	-5,116.7	-1,496.3	841.3	691.4	149.90	5.612			
16,100.0	11,786.0	15,549.6	11,479.8	90.7	63.2	68.29	-5,187.1	-1,495.8	841.2	689.3	151.88	5.538			
16,129.5	11,786.0	15,579.1	11,480.0	91.2	63.6	68.30	-5,216.7	-1,495.6	841.1	688.4	152.71	5.508			
16,200.0	11,786.0	15,649.6	11,480.4	92.3	64.6	68.33	-5,287.1	-1,495.0	841.0	686.3	154.69	5.436			
16,229.5	11,786.0	15,679.1	11,480.5	92.7	65.0	68.34	-5,316.7	-1,494.8	840.9	685.4	155.52	5.407			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad B - Margarita Federal Com 13 15H - 15H - PLAN#3 - 179.58													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HRGM													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis		Highside		Offset Wellbore Centre		Distance		Minimum	Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor		
16,300.0	11,786.0	15,749.6	11,480.9	93.8	66.0	68.36	-5,387.1	-1,494.3	840.7	683.2	157.51	5.338		
16,329.5	11,786.0	15,779.1	11,481.1	94.3	66.4	68.37	-5,416.7	-1,494.1	840.7	682.3	158.34	5.309		
16,400.0	11,786.0	15,849.6	11,481.5	95.4	67.4	68.39	-5,487.1	-1,493.6	840.5	680.2	160.33	5.242		
16,429.5	11,786.0	15,879.1	11,481.6	95.9	67.8	68.40	-5,516.7	-1,493.3	840.4	679.3	161.17	5.215		
16,500.0	11,786.0	15,949.6	11,482.0	97.0	68.8	68.43	-5,587.1	-1,492.8	840.3	677.1	163.16	5.150		
16,529.5	11,786.0	15,979.1	11,482.2	97.4	69.2	68.44	-5,616.7	-1,492.6	840.2	676.2	164.00	5.123		
16,600.0	11,786.0	16,049.6	11,482.6	98.6	70.2	68.46	-5,687.1	-1,492.1	840.1	674.1	166.00	5.061		
16,629.5	11,786.0	16,079.1	11,482.7	99.0	70.6	68.47	-5,716.7	-1,491.8	840.0	673.2	166.84	5.035		
16,700.0	11,786.0	16,149.6	11,483.1	100.1	71.6	68.50	-5,787.1	-1,491.3	839.9	671.0	168.84	4.974		
16,729.5	11,786.0	16,179.1	11,483.3	100.6	72.0	68.51	-5,816.7	-1,491.1	839.8	670.1	169.68	4.949		
16,800.0	11,786.0	16,249.6	11,483.7	101.7	73.0	68.53	-5,887.1	-1,490.6	839.6	668.0	171.68	4.891		
16,829.5	11,786.0	16,279.1	11,483.8	102.2	73.4	68.54	-5,916.6	-1,490.3	839.6	667.0	172.52	4.866		
16,900.0	11,786.0	16,349.6	11,484.2	103.3	74.4	68.56	-5,987.1	-1,489.8	839.4	664.9	174.53	4.810		
16,929.5	11,786.0	16,379.1	11,484.4	103.8	74.8	68.57	-6,016.6	-1,489.6	839.4	664.0	175.37	4.786		
17,000.0	11,786.0	16,449.6	11,484.8	104.9	75.8	68.60	-6,087.1	-1,489.1	839.2	661.8	177.38	4.731		
17,029.5	11,786.0	16,479.1	11,484.9	105.3	76.2	68.61	-6,116.6	-1,488.8	839.1	660.9	178.23	4.708		
17,100.0	11,786.0	16,549.6	11,485.3	106.5	77.2	68.63	-6,187.1	-1,488.3	839.0	658.7	180.24	4.655		
17,129.5	11,786.0	16,579.1	11,485.5	106.9	77.7	68.64	-6,216.6	-1,488.1	838.9	657.8	181.09	4.633		
17,200.0	11,786.0	16,649.6	11,485.9	108.1	78.7	68.67	-6,287.1	-1,487.6	838.8	655.7	183.10	4.581		
17,229.5	11,786.0	16,679.1	11,486.0	108.5	79.1	68.68	-6,316.6	-1,487.4	838.7	654.7	183.95	4.559		
17,300.0	11,786.0	16,749.6	11,486.4	109.6	80.1	68.70	-6,387.1	-1,486.8	838.5	652.6	185.97	4.509		
17,329.5	11,786.0	16,779.1	11,486.6	110.1	80.5	68.71	-6,416.6	-1,486.6	838.5	651.7	186.82	4.488		
17,400.0	11,786.0	16,849.6	11,487.0	111.2	81.5	68.74	-6,487.1	-1,486.1	838.3	649.5	188.84	4.439		
17,429.5	11,786.0	16,879.1	11,487.1	111.7	81.9	68.75	-6,516.6	-1,485.9	838.3	648.6	189.69	4.419		
17,500.0	11,786.0	16,949.6	11,487.5	112.8	82.9	68.77	-6,587.1	-1,485.3	838.1	646.4	191.72	4.372		
17,529.5	11,786.0	16,979.1	11,487.7	113.3	83.3	68.78	-6,616.6	-1,485.1	838.0	645.5	192.57	4.352		
17,600.0	11,786.0	17,049.6	11,488.0	114.4	84.3	68.81	-6,687.1	-1,484.6	837.9	643.3	194.59	4.306		
17,629.5	11,786.0	17,079.1	11,488.2	114.9	84.7	68.82	-6,716.6	-1,484.4	837.8	642.4	195.45	4.287		
17,700.0	11,786.0	17,149.6	11,488.6	116.0	85.7	68.84	-6,787.0	-1,483.8	837.7	640.2	197.48	4.242		
17,729.5	11,786.0	17,179.1	11,488.8	116.5	86.1	68.85	-6,816.6	-1,483.6	837.6	639.3	198.33	4.223		
17,800.0	11,786.0	17,249.6	11,489.1	117.6	87.1	68.87	-6,887.0	-1,483.1	837.5	637.1	200.36	4.180		
17,829.5	11,786.0	17,279.1	11,489.3	118.1	87.6	68.88	-6,916.6	-1,482.9	837.4	636.2	201.21	4.162		
17,900.0	11,786.0	17,349.6	11,489.7	119.2	88.6	68.91	-6,987.0	-1,482.3	837.2	634.0	203.25	4.119		
17,929.5	11,786.0	17,379.1	11,489.9	119.7	89.0	68.92	-7,016.6	-1,482.1	837.2	633.1	204.10	4.102		
18,000.0	11,786.0	17,449.6	11,490.2	120.8	90.0	68.94	-7,087.0	-1,481.6	837.0	630.9	206.14	4.060		
18,029.5	11,786.0	17,479.1	11,490.4	121.3	90.4	68.95	-7,116.6	-1,481.4	837.0	630.0	207.00	4.043		
18,100.0	11,786.0	17,549.6	11,490.8	122.4	91.4	68.98	-7,187.0	-1,480.8	836.8	627.8	209.03	4.003		
18,129.5	11,786.0	17,579.1	11,490.9	122.9	91.8	68.99	-7,216.6	-1,480.6	836.8	626.9	209.89	3.987		
18,200.0	11,786.0	17,649.6	11,491.3	124.0	92.8	69.01	-7,287.0	-1,480.1	836.6	624.7	211.93	3.947		
18,229.5	11,786.0	17,679.1	11,491.5	124.5	93.2	69.02	-7,316.6	-1,479.9	836.5	623.7	212.79	3.931		
18,300.0	11,786.0	17,749.6	11,491.9	125.6	94.2	69.05	-7,387.0	-1,479.4	836.4	621.6	214.83	3.893		
18,329.5	11,786.0	17,779.1	11,492.0	126.1	94.7	69.06	-7,416.6	-1,479.1	836.3	620.6	215.69	3.877		
18,400.0	11,786.0	17,849.6	11,492.4	127.2	95.7	69.08	-7,487.0	-1,478.6	836.2	618.4	217.74	3.840		
18,429.5	11,786.0	17,879.1	11,492.6	127.7	96.1	69.09	-7,516.6	-1,478.4	836.1	617.5	218.59	3.825		
18,500.0	11,786.0	17,949.6	11,493.0	128.9	97.1	69.12	-7,587.0	-1,477.9	836.0	615.3	220.64	3.789		
18,529.5	11,786.0	17,979.1	11,493.1	129.3	97.5	69.13	-7,616.5	-1,477.6	835.9	614.4	221.50	3.774		
18,600.0	11,786.0	18,049.6	11,493.5	130.5	98.5	69.15	-7,687.0	-1,477.1	835.7	612.2	223.55	3.738		
18,629.5	11,786.0	18,079.1	11,493.7	130.9	98.9	69.16	-7,716.5	-1,476.9	835.7	611.3	224.41	3.724		
18,700.0	11,786.0	18,149.6	11,494.1	132.1	99.9	69.18	-7,787.0	-1,476.4	835.5	609.1	226.46	3.689		
18,729.5	11,786.0	18,179.1	11,494.2	132.6	100.3	69.19	-7,816.5	-1,476.1	835.5	608.1	227.32	3.675		
18,800.0	11,786.0	18,249.6	11,494.6	133.7	101.3	69.22	-7,887.0	-1,475.6	835.3	605.9	229.38	3.642		
18,829.5	11,786.0	18,279.1	11,494.8	134.2	101.8	69.23	-7,916.5	-1,475.4	835.3	605.0	230.24	3.628		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

6/22/2022 11:16:04AM

Page 48

COMPASS 5000.16 Build 100



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad B - Margarita Federal Com 13 15H - 15H - PLAN#3 - 179.58													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HRGM													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis		Highside		Offset Wellbore Centre		Distance		Minimum	Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor		
18,900.0	11,786.0	18,349.5	11,495.2	135.3	102.8	69.25	-7,987.0	-1,474.9	835.1	602.8	232.29	3.595		
18,929.6	11,786.0	18,379.1	11,495.3	135.8	103.2	69.26	-8,016.5	-1,474.6	835.0	601.9	233.16	3.581		
19,000.0	11,786.0	18,449.5	11,495.7	136.9	104.2	69.29	-8,087.0	-1,474.1	834.9	599.7	235.21	3.550		
19,029.6	11,786.0	18,479.1	11,495.9	137.4	104.6	69.30	-8,116.5	-1,473.9	834.8	598.8	236.08	3.536		
19,100.0	11,786.0	18,549.5	11,496.3	138.5	105.6	69.32	-8,187.0	-1,473.4	834.7	596.5	238.13	3.505		
19,129.6	11,786.0	18,579.1	11,496.4	139.0	106.0	69.33	-8,216.5	-1,473.2	834.6	595.6	239.00	3.492		
19,200.0	11,786.0	18,649.5	11,496.8	140.2	107.0	69.36	-8,287.0	-1,472.6	834.5	593.4	241.06	3.462		
19,229.6	11,786.0	18,679.1	11,497.0	140.6	107.5	69.37	-8,316.5	-1,472.4	834.4	592.5	241.92	3.449		
19,300.0	11,786.0	18,749.5	11,497.4	141.8	108.5	69.39	-8,387.0	-1,471.9	834.3	590.3	243.99	3.419		
19,329.6	11,786.0	18,779.1	11,497.5	142.2	108.9	69.40	-8,416.5	-1,471.7	834.2	589.3	244.85	3.407		
19,400.0	11,786.0	18,849.5	11,497.9	143.4	109.9	69.43	-8,486.9	-1,471.1	834.0	587.1	246.91	3.378		
19,429.6	11,786.0	18,879.1	11,498.1	143.9	110.3	69.44	-8,516.5	-1,470.9	834.0	586.2	247.78	3.366		
19,500.0	11,786.0	18,949.5	11,498.5	145.0	111.3	69.46	-8,586.9	-1,470.4	833.8	584.0	249.84	3.337		
19,529.6	11,786.0	18,979.1	11,498.6	145.5	111.7	69.47	-8,616.5	-1,470.2	833.8	583.1	250.71	3.326		
19,600.0	11,786.0	19,049.5	11,499.0	146.6	112.8	69.50	-8,686.9	-1,469.6	833.6	580.8	252.78	3.298		
19,629.6	11,786.0	19,079.1	11,499.2	147.1	113.2	69.51	-8,716.5	-1,469.4	833.6	579.9	253.64	3.286		
19,700.0	11,786.0	19,149.5	11,499.5	148.2	114.2	69.53	-8,786.9	-1,468.9	833.4	577.7	255.71	3.259		
19,729.6	11,786.0	19,179.1	11,499.7	148.7	114.6	69.54	-8,816.5	-1,468.7	833.4	576.8	256.58	3.248		
19,800.0	11,786.0	19,249.5	11,500.1	149.9	115.6	69.57	-8,886.9	-1,468.1	833.2	574.6	258.65	3.221		
19,829.6	11,786.0	19,279.1	11,500.3	150.3	116.0	69.58	-8,916.5	-1,467.9	833.1	573.6	259.52	3.210		
19,900.0	11,786.0	19,349.5	11,500.6	151.5	117.0	69.60	-8,986.9	-1,467.4	833.0	571.4	261.59	3.184		
19,929.6	11,786.0	19,379.1	11,500.8	152.0	117.5	69.61	-9,016.5	-1,467.2	832.9	570.5	262.46	3.174		
20,000.0	11,786.0	19,449.5	11,501.2	153.1	118.5	69.64	-9,086.9	-1,466.6	832.8	568.3	264.53	3.148		
20,029.6	11,786.0	19,479.1	11,501.4	153.6	118.9	69.65	-9,116.5	-1,466.4	832.7	567.3	265.40	3.138		
20,100.0	11,786.0	19,549.5	11,501.7	154.7	119.9	69.67	-9,186.9	-1,465.9	832.6	565.1	267.47	3.113		
20,129.6	11,786.0	19,579.1	11,501.9	155.2	120.3	69.68	-9,216.5	-1,465.7	832.5	564.2	268.34	3.102		
20,200.0	11,786.0	19,649.5	11,502.3	156.4	121.3	69.71	-9,286.9	-1,465.1	832.4	561.9	270.42	3.078		
20,229.6	11,786.0	19,679.1	11,502.4	156.8	121.8	69.72	-9,316.5	-1,464.9	832.3	561.0	271.29	3.068		
20,300.0	11,786.0	19,749.5	11,502.8	158.0	122.8	69.74	-9,386.9	-1,464.4	832.2	558.8	273.36	3.044		
20,329.6	11,786.0	19,779.1	11,503.0	158.5	123.2	69.75	-9,416.4	-1,464.2	832.1	557.9	274.24	3.034		
20,400.0	11,786.0	19,849.5	11,503.4	159.6	124.2	69.78	-9,486.9	-1,463.7	832.0	555.6	276.31	3.011		
20,429.6	11,786.0	19,879.1	11,503.5	160.1	124.6	69.79	-9,516.4	-1,463.4	831.9	554.7	277.18	3.001		
20,500.0	11,786.0	19,949.5	11,503.9	161.2	125.6	69.81	-9,586.9	-1,462.9	831.7	552.5	279.26	2.978		
20,529.6	11,786.0	19,979.1	11,504.1	161.7	126.0	69.82	-9,616.4	-1,462.7	831.7	551.5	280.14	2.969		
20,600.0	11,786.0	20,049.5	11,504.5	162.9	127.1	69.85	-9,686.9	-1,462.2	831.5	549.3	282.22	2.946		
20,629.6	11,786.0	20,079.1	11,504.6	163.3	127.5	69.86	-9,716.4	-1,461.9	831.5	548.4	283.09	2.937		
20,700.0	11,786.0	20,149.5	11,505.0	164.5	128.5	69.88	-9,786.9	-1,461.4	831.3	546.2	285.17	2.915		
20,729.6	11,786.0	20,179.1	11,505.2	165.0	128.9	69.89	-9,816.4	-1,461.2	831.3	545.2	286.04	2.906		
20,800.0	11,786.0	20,249.5	11,505.6	166.1	129.9	69.92	-9,886.9	-1,460.7	831.1	543.0	288.13	2.885		
20,829.6	11,786.0	20,279.1	11,505.7	166.6	130.3	69.93	-9,916.4	-1,460.4	831.1	542.1	289.00	2.876		
20,900.0	11,786.0	20,349.5	11,506.1	167.7	131.4	69.95	-9,986.9	-1,459.9	830.9	539.8	291.08	2.855		
20,929.6	11,786.0	20,379.1	11,506.3	168.2	131.8	69.96	-10,016.4	-1,459.7	830.9	538.9	291.96	2.846		
21,000.0	11,786.0	20,449.5	11,506.7	169.4	132.8	69.98	-10,086.9	-1,459.2	830.7	536.7	294.04	2.825		
21,029.6	11,786.0	20,479.1	11,506.8	169.8	133.2	70.00	-10,116.4	-1,458.9	830.6	535.7	294.92	2.817		
21,100.0	11,786.0	20,549.5	11,507.2	171.0	134.2	70.02	-10,186.8	-1,458.4	830.5	533.5	297.00	2.796		
21,129.6	11,786.0	20,579.1	11,507.4	171.5	134.6	70.03	-10,216.4	-1,458.2	830.4	532.6	297.88	2.788		
21,200.0	11,786.0	20,649.5	11,507.8	172.6	135.7	70.06	-10,286.8	-1,457.7	830.3	530.3	299.97	2.768		
21,229.6	11,786.0	20,679.1	11,507.9	173.1	136.1	70.07	-10,316.4	-1,457.5	830.2	529.4	300.84	2.760		
21,300.0	11,786.0	20,749.5	11,508.3	174.3	137.1	70.09	-10,386.8	-1,456.9	830.1	527.2	302.93	2.740		
21,329.6	11,786.0	20,779.1	11,508.5	174.7	137.5	70.10	-10,416.4	-1,456.7	830.0	526.2	303.81	2.732		
21,400.0	11,786.0	20,849.5	11,508.9	175.9	138.5	70.13	-10,486.8	-1,456.2	829.9	524.0	305.90	2.713		
21,429.6	11,786.0	20,879.1	11,509.0	176.4	138.9	70.14	-10,516.4	-1,456.0	829.8	523.1	306.77	2.705		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad B - Margarita Federal Com 13 15H - 15H - PLAN#3 - 179.58													Offset Site Error:	0.0 usft	
Survey Program:		0-MWD+HRGM		Offset			Semi Major Axis		Offset Wellbore Centre		Rule Assigned:			Offset Well Error:	0.0 usft
Reference	Offset	Reference	Offset	Reference	Offset	Highside Toolface	+N/-S	+E/-W	Distance	Distance	Minimum Separation	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	(usft)	(usft)	(°)	(usft)	(usft)	Between Centres (usft)	Between Ellipses (usft)	(usft)				
21,500.0	11,786.0	20,949.5	11,509.4	177.5	140.0	70.16	-10,586.8	-1,455.4	829.7	520.8	308.86	2.686			
21,529.6	11,786.0	20,979.1	11,509.6	178.0	140.4	70.17	-10,616.4	-1,455.2	829.6	519.9	309.74	2.678			
21,600.0	11,786.0	21,049.5	11,510.0	179.1	141.4	70.20	-10,686.8	-1,454.7	829.5	517.6	311.83	2.660			
21,629.6	11,786.0	21,079.1	11,510.1	179.6	141.8	70.21	-10,716.4	-1,454.5	829.4	516.7	312.71	2.652			
21,700.0	11,786.0	21,149.5	11,510.5	180.8	142.8	70.23	-10,786.8	-1,453.9	829.3	514.5	314.80	2.634			
21,729.6	11,786.0	21,179.1	11,510.7	181.3	143.2	70.24	-10,816.4	-1,453.7	829.2	513.5	315.68	2.627			
21,800.0	11,786.0	21,249.5	11,511.1	182.4	144.3	70.27	-10,886.8	-1,453.2	829.1	511.3	317.77	2.609			
21,829.6	11,786.0	21,279.1	11,511.2	182.9	144.7	70.28	-10,916.4	-1,453.0	829.0	510.4	318.65	2.602			
21,900.0	11,786.0	21,349.5	11,511.6	184.0	145.7	70.30	-10,986.8	-1,452.4	828.9	508.1	320.75	2.584			
21,929.6	11,786.0	21,379.1	11,511.8	184.5	146.1	70.31	-11,016.4	-1,452.2	828.8	507.2	321.63	2.577			
22,000.0	11,786.0	21,449.5	11,512.1	185.7	147.1	70.34	-11,086.8	-1,451.7	828.7	504.9	323.72	2.560			
22,029.6	11,786.0	21,479.1	11,512.3	186.2	147.5	70.35	-11,116.3	-1,451.5	828.6	504.0	324.60	2.553			
22,100.0	11,786.0	21,549.5	11,512.7	187.3	148.6	70.37	-11,186.8	-1,450.9	828.5	501.8	326.70	2.536			
22,129.6	11,786.0	21,579.1	11,512.9	187.8	149.0	70.38	-11,216.3	-1,450.7	828.4	500.8	327.58	2.529			
22,200.0	11,786.0	21,649.5	11,513.2	188.9	150.0	70.41	-11,286.8	-1,450.2	828.3	498.6	329.68	2.512			
22,229.6	11,786.0	21,679.1	11,513.4	189.4	150.4	70.42	-11,316.3	-1,450.0	828.2	497.6	330.56	2.505			
22,300.0	11,786.0	21,749.5	11,513.8	190.6	151.4	70.44	-11,386.8	-1,449.5	828.1	495.4	332.66	2.489			
22,329.6	11,786.0	21,779.1	11,514.0	191.1	151.9	70.45	-11,416.3	-1,449.2	828.0	494.5	333.54	2.482			
22,400.0	11,786.0	21,849.5	11,514.3	192.2	152.9	70.48	-11,486.8	-1,448.7	827.9	492.2	335.64	2.467			
22,429.6	11,786.0	21,879.0	11,514.5	192.7	153.3	70.49	-11,516.3	-1,448.5	827.8	491.3	336.52	2.460			
22,500.0	11,786.0	21,949.5	11,514.9	193.8	154.3	70.51	-11,586.8	-1,448.0	827.7	489.0	338.62	2.444			
22,529.6	11,786.0	21,979.0	11,515.0	194.3	154.7	70.52	-11,616.3	-1,447.7	827.6	488.1	339.50	2.438			
22,600.0	11,786.0	22,049.5	11,515.4	195.5	155.7	70.55	-11,686.8	-1,447.2	827.5	485.8	341.60	2.422			
22,629.6	11,786.0	22,079.0	11,515.6	196.0	156.2	70.56	-11,716.3	-1,447.0	827.4	484.9	342.48	2.416			
22,700.0	11,786.0	22,149.5	11,516.0	197.1	157.2	70.58	-11,786.8	-1,446.5	827.2	482.7	344.59	2.401			
22,729.6	11,786.0	22,179.0	11,516.1	197.6	157.6	70.59	-11,816.3	-1,446.2	827.2	481.7	345.47	2.394			
22,800.0	11,786.0	22,249.5	11,516.5	198.8	158.6	70.62	-11,886.8	-1,445.7	827.0	479.5	347.57	2.379			
22,829.6	11,786.0	22,279.0	11,516.7	199.2	159.0	70.63	-11,916.3	-1,445.5	827.0	478.5	348.46	2.373			
22,900.0	11,786.0	22,349.5	11,517.1	200.4	160.0	70.65	-11,986.7	-1,445.0	826.8	476.3	350.56	2.359			
22,929.6	11,786.0	22,379.0	11,517.2	200.9	160.5	70.66	-12,016.3	-1,444.7	826.8	475.3	351.44	2.353			
23,000.0	11,786.0	22,449.5	11,517.6	202.0	161.5	70.69	-12,086.7	-1,444.2	826.6	473.1	353.55	2.338			
23,029.6	11,786.0	22,479.0	11,517.8	202.5	161.9	70.70	-12,116.3	-1,444.0	826.6	472.2	354.43	2.332			
23,100.0	11,786.0	22,549.5	11,518.2	203.7	162.9	70.72	-12,186.7	-1,443.5	826.4	469.9	356.54	2.318			
23,129.6	11,786.0	22,579.0	11,518.3	204.1	163.3	70.73	-12,216.3	-1,443.3	826.4	469.0	357.42	2.312			
23,200.0	11,786.0	22,649.5	11,518.7	205.3	164.4	70.76	-12,286.7	-1,442.7	826.2	466.7	359.53	2.298			
23,229.6	11,786.0	22,679.0	11,518.9	205.8	164.8	70.77	-12,316.3	-1,442.5	826.2	465.8	360.41	2.292			
23,300.0	11,786.0	22,749.5	11,519.3	206.9	165.8	70.79	-12,386.7	-1,442.0	826.1	463.5	362.52	2.279			
23,329.6	11,786.0	22,779.0	11,519.4	207.4	166.2	70.81	-12,416.3	-1,441.8	826.0	462.6	363.41	2.273			
23,400.0	11,786.0	22,849.5	11,519.8	208.6	167.2	70.83	-12,486.7	-1,441.2	825.9	460.3	365.52	2.259			
23,429.6	11,786.0	22,879.0	11,520.0	209.1	167.7	70.84	-12,516.3	-1,441.0	825.8	459.4	366.40	2.254			
23,500.0	11,786.0	22,949.5	11,520.4	210.2	168.7	70.87	-12,586.7	-1,440.5	825.7	457.1	368.51	2.241			
23,529.6	11,786.0	22,979.0	11,520.5	210.7	169.1	70.88	-12,616.3	-1,440.3	825.6	456.2	369.40	2.235			
23,600.0	11,786.0	23,049.5	11,520.9	211.8	170.1	70.90	-12,686.7	-1,439.7	825.5	453.9	371.51	2.222			
23,609.6	11,786.0	23,059.0	11,521.0	212.0	170.2	70.90	-12,696.3	-1,439.7	825.4	453.6	371.79	2.220			
23,613.0	11,786.0	23,062.5	11,521.0	212.1	170.3	70.91	-12,699.7	-1,439.6	825.4	453.5	371.90	2.220			
23,616.4	11,786.0	23,065.9	11,521.0	212.1	170.3	70.91	-12,703.1	-1,439.6	825.4	453.4	372.00	2.219 ES, SF			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad B - Margarita Federal Com 13 23H - AD - PLAN#3 - 179.58													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HRGM													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis		Highside		Offset Wellbore Centre		Distance		Minimum	Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)			
9,100.0	9,048.8	8,994.5	8,986.8	31.6	17.3	18.73	-989.3	-1,524.0	999.6	951.8	47.81	20.909		
9,200.0	9,148.1	9,094.2	9,086.3	32.0	17.6	19.05	-990.5	-1,530.8	994.8	946.3	48.48	20.522		
9,300.0	9,247.3	9,193.9	9,185.7	32.4	17.9	19.38	-991.8	-1,537.5	990.0	940.8	49.14	20.145		
9,400.0	9,346.6	9,293.7	9,285.2	32.8	18.3	19.70	-993.1	-1,544.3	985.2	935.4	49.81	19.779		
9,500.0	9,445.8	9,393.4	9,384.7	33.2	18.6	20.03	-994.3	-1,551.1	980.5	930.0	50.48	19.422		
9,600.0	9,545.1	9,493.1	9,484.2	33.7	18.9	20.36	-995.6	-1,557.8	975.8	924.6	51.15	19.076		
9,700.0	9,644.3	9,592.8	9,583.7	34.1	19.2	20.70	-996.9	-1,564.6	971.1	919.3	51.82	18.738		
9,800.0	9,743.6	9,692.6	9,683.2	34.5	19.5	21.04	-998.1	-1,571.4	966.4	913.9	52.49	18.410		
9,900.0	9,842.9	9,792.3	9,782.7	34.9	19.8	21.38	-999.4	-1,578.2	961.8	908.7	53.17	18.091		
10,000.0	9,942.1	9,892.0	9,882.2	35.3	20.1	21.73	-1,000.7	-1,584.9	957.2	903.4	53.84	17.780		
10,100.0	10,041.4	9,991.8	9,981.7	35.7	20.5	22.08	-1,001.9	-1,591.7	952.7	898.2	54.51	17.478		
10,200.0	10,140.6	10,091.5	10,081.2	36.1	20.8	22.43	-1,003.2	-1,598.5	948.2	893.0	55.18	17.184		
10,300.0	10,239.9	10,191.2	10,180.6	36.6	21.1	22.78	-1,004.5	-1,605.2	943.7	887.9	55.85	16.898		
10,400.0	10,339.1	10,305.6	10,294.8	37.0	21.5	23.19	-1,005.8	-1,612.3	938.7	882.2	56.51	16.610		
10,500.0	10,438.4	10,424.3	10,413.4	37.4	21.8	23.59	-1,006.7	-1,617.3	931.7	874.6	57.15	16.302		
10,522.3	10,460.5	10,450.7	10,439.8	37.5	21.9	23.68	-1,006.9	-1,618.1	929.9	872.6	57.29	16.233		
10,600.0	10,537.7	10,542.8	10,531.8	37.8	22.1	23.94	-1,007.2	-1,619.9	923.2	865.5	57.72	15.996		
10,700.0	10,637.2	10,653.1	10,642.2	38.2	22.2	24.19	-1,007.3	-1,620.3	914.5	856.3	58.15	15.725		
10,800.0	10,736.9	10,752.8	10,741.9	38.6	22.3	24.37	-1,007.3	-1,620.3	906.9	848.4	58.52	15.499		
10,900.0	10,836.6	10,852.6	10,841.6	38.9	22.3	24.51	-1,007.3	-1,620.3	901.0	842.2	58.87	15.305		
11,000.0	10,936.5	10,952.5	10,941.5	39.3	22.4	24.62	-1,007.3	-1,620.3	896.7	837.5	59.21	15.145		
11,100.0	11,036.5	11,052.4	11,041.5	39.6	22.4	24.69	-1,007.3	-1,620.3	894.0	834.5	59.52	15.021		
11,200.0	11,136.5	11,152.4	11,141.5	39.8	22.5	24.72	-1,007.3	-1,620.3	892.8	833.1	59.77	14.937		
11,222.3	11,158.7	11,174.7	11,163.7	39.8	22.5	-108.43	-1,007.3	-1,620.3	892.8	833.0	59.80	14.929		
11,300.0	11,236.5	11,252.4	11,241.5	39.8	22.5	-108.43	-1,007.3	-1,620.3	892.8	832.9	59.84	14.919		
11,372.0	11,308.5	11,324.4	11,313.5	39.8	22.5	-108.43	-1,007.3	-1,620.3	892.8	832.9	59.88	14.910		
11,375.0	11,311.5	11,327.4	11,316.5	39.8	22.5	74.37	-1,007.3	-1,620.3	892.8	832.9	59.88	14.909		
11,400.0	11,336.5	11,352.4	11,341.5	39.9	22.6	74.44	-1,007.3	-1,620.3	892.6	832.7	59.91	14.900		
11,425.0	11,361.4	11,377.3	11,366.4	39.9	22.6	74.64	-1,007.3	-1,620.3	892.0	832.1	59.93	14.885		
11,450.0	11,386.1	11,396.3	11,385.4	40.0	22.6	74.89	-1,007.4	-1,620.3	891.2	831.2	59.96	14.862		
11,475.0	11,410.7	11,412.0	11,401.0	40.1	22.6	75.15	-1,008.0	-1,620.3	890.2	830.2	60.00	14.836		
11,500.0	11,434.9	11,425.0	11,414.0	40.2	22.6	75.40	-1,008.9	-1,620.3	889.2	829.2	60.04	14.809		
11,525.0	11,458.9	11,443.4	11,432.4	40.2	22.6	75.75	-1,010.7	-1,620.3	888.1	828.0	60.07	14.784		
11,550.0	11,482.4	11,459.2	11,448.0	40.3	22.6	76.09	-1,012.8	-1,620.3	887.0	826.9	60.10	14.759		
11,575.0	11,505.4	11,475.0	11,463.6	40.4	22.6	76.46	-1,015.5	-1,620.3	885.8	825.7	60.11	14.736		
11,600.0	11,527.9	11,490.9	11,479.2	40.5	22.6	76.85	-1,018.7	-1,620.3	884.6	824.5	60.12	14.713		
11,625.0	11,549.8	11,506.9	11,494.7	40.6	22.6	77.26	-1,022.4	-1,620.3	883.3	823.2	60.12	14.692		
11,650.0	11,571.0	11,525.0	11,512.1	40.7	22.6	77.74	-1,027.3	-1,620.3	882.1	822.0	60.12	14.672		
11,675.0	11,591.5	11,538.9	11,525.4	40.8	22.7	78.16	-1,031.4	-1,620.3	880.8	820.7	60.10	14.656		
11,700.0	11,611.3	11,555.1	11,540.7	40.9	22.7	78.64	-1,036.8	-1,620.3	879.6	819.5	60.08	14.640		
11,725.0	11,630.2	11,575.0	11,559.2	40.9	22.7	79.22	-1,044.0	-1,620.3	878.3	818.3	60.06	14.623		
11,750.0	11,648.2	11,587.7	11,570.8	41.0	22.7	79.66	-1,049.1	-1,620.4	877.1	817.1	60.01	14.615		
11,775.0	11,665.3	11,604.1	11,585.7	41.1	22.7	80.20	-1,056.1	-1,620.4	875.9	816.0	59.97	14.606		
11,800.0	11,681.4	11,620.7	11,600.5	41.2	22.7	80.75	-1,063.6	-1,620.4	874.8	814.9	59.93	14.598		
11,825.0	11,696.5	11,637.3	11,615.0	41.3	22.7	81.31	-1,071.7	-1,620.4	873.8	813.9	59.88	14.593		
11,837.4	11,703.6	11,645.7	11,622.2	41.3	22.7	81.60	-1,076.0	-1,620.4	873.3	813.4	59.85	14.591		
11,850.0	11,710.5	11,654.1	11,629.4	41.4	22.8	81.89	-1,080.4	-1,620.4	872.8	813.0	59.82	14.590		
11,861.7	11,716.7	11,662.1	11,636.1	41.4	22.8	82.16	-1,084.7	-1,620.4	872.4	812.6	59.80	14.588		
11,875.0	11,723.5	11,671.1	11,643.6	41.4	22.8	82.48	-1,089.7	-1,620.4	871.9	812.1	59.77	14.588		
11,886.0	11,728.8	11,678.6	11,649.8	41.5	22.8	82.74	-1,093.9	-1,620.4	871.6	811.8	59.74	14.588		
11,900.0	11,735.3	11,688.2	11,657.6	41.5	22.8	83.08	-1,099.5	-1,620.4	871.1	811.4	59.71	14.589		
11,910.4	11,739.8	11,695.4	11,663.3	41.5	22.8	83.33	-1,103.8	-1,620.4	870.8	811.2	59.69	14.590		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad B - Margarita Federal Com 13 23H - AD - PLAN#3 - 179.58												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HRGM												Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre		Rule Assigned:		Distance	Minimum	Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation Factor		
11,925.0	11,745.9	11,705.5	11,671.3	41.6	22.8	83.68	-1,110.0	-1,620.5	870.5	810.8	59.66	14.592	
11,934.8	11,749.7	11,712.3	11,676.7	41.6	22.8	83.92	-1,114.3	-1,620.5	870.3	810.6	59.64	14.593	
11,950.0	11,755.3	11,725.0	11,686.4	41.7	22.8	84.36	-1,122.4	-1,620.5	870.0	810.3	59.62	14.591	
11,959.4	11,758.6	11,729.6	11,689.9	41.7	22.8	84.53	-1,125.4	-1,620.5	869.8	810.2	59.58	14.598	
11,975.0	11,763.5	11,740.6	11,698.1	41.7	22.9	84.91	-1,132.7	-1,620.5	869.6	810.0	59.55	14.602	
11,983.6	11,766.0	11,746.8	11,702.6	41.8	22.9	85.12	-1,136.9	-1,620.5	869.5	810.0	59.54	14.605	
12,000.0	11,770.5	11,758.5	11,711.1	41.8	22.9	85.53	-1,145.1	-1,620.5	869.4	809.9	59.51	14.610	
12,008.0	11,772.4	11,764.3	11,715.2	41.8	22.9	85.73	-1,149.2	-1,620.5	869.4	809.9	59.49	14.613	
12,018.0	11,774.7	11,771.6	11,720.2	41.8	22.9	85.98	-1,154.4	-1,620.5	869.3	809.9	59.48	14.617 CC	
12,025.0	11,776.1	11,775.0	11,722.6	41.9	22.9	86.10	-1,156.9	-1,620.5	869.3	809.9	59.44	14.625	
12,030.0	11,777.1	11,780.3	11,726.2	41.9	22.9	86.28	-1,160.7	-1,620.5	869.4	809.9	59.46	14.621	
12,050.0	11,780.5	11,795.1	11,736.1	41.9	22.9	86.78	-1,171.7	-1,620.6	869.5	810.1	59.43	14.630	
12,075.0	11,783.7	11,813.8	11,748.0	42.0	23.0	87.41	-1,186.1	-1,620.6	869.8	810.4	59.41	14.642	
12,100.0	11,785.5	11,832.8	11,759.6	42.0	23.0	88.04	-1,201.2	-1,620.6	870.4	811.0	59.39	14.654	
12,122.0	11,786.0	11,850.0	11,769.6	42.1	23.0	88.59	-1,215.2	-1,620.6	871.0	811.6	59.39	14.666	
12,200.0	11,786.0	11,916.2	11,803.1	42.3	23.2	90.80	-1,272.3	-1,620.7	874.7	815.1	59.57	14.684	
12,223.7	11,786.0	11,938.5	11,812.5	42.4	23.2	91.41	-1,292.4	-1,620.8	876.1	816.4	59.69	14.677	
12,300.0	11,786.0	12,016.6	11,838.0	42.6	23.4	93.07	-1,366.1	-1,620.9	880.0	819.6	60.36	14.579	
12,300.0	11,786.0	12,016.6	11,838.0	42.6	23.4	93.07	-1,366.2	-1,620.9	880.0	819.6	60.36	14.579	
12,342.9	11,786.0	12,063.8	11,847.5	42.8	23.6	93.68	-1,412.4	-1,621.0	881.2	820.3	60.90	14.469	
12,342.9	11,786.0	12,063.8	11,847.5	42.8	23.6	93.68	-1,412.4	-1,621.0	881.2	820.3	60.90	14.469	
12,400.0	11,786.0	12,128.9	11,852.9	43.0	23.8	94.03	-1,477.2	-1,621.1	882.0	820.2	61.78	14.277	
12,401.9	11,786.0	12,131.1	11,853.0	43.0	23.8	94.03	-1,479.4	-1,621.1	882.0	820.2	61.81	14.270	
12,500.0	11,786.0	12,229.9	11,853.0	43.5	24.2	94.03	-1,578.2	-1,621.3	882.9	819.7	63.26	13.958	
12,502.3	11,786.0	12,232.2	11,853.0	43.5	24.2	94.03	-1,580.5	-1,621.3	883.0	819.7	63.29	13.950	
12,600.0	11,786.0	12,332.6	11,854.4	44.0	24.7	94.12	-1,680.9	-1,621.1	883.6	818.7	64.88	13.619	
12,603.1	11,786.0	12,335.7	11,854.5	44.0	24.7	94.12	-1,684.0	-1,621.1	883.6	818.7	64.93	13.609	
12,700.0	11,786.0	12,432.6	11,856.5	44.7	25.3	94.25	-1,780.9	-1,620.8	884.2	817.7	66.54	13.287	
12,703.1	11,786.0	12,435.8	11,856.5	44.7	25.3	94.25	-1,784.0	-1,620.8	884.2	817.6	66.60	13.277	
12,800.0	11,786.0	12,532.6	11,858.5	45.4	25.9	94.38	-1,880.8	-1,620.5	884.8	816.5	68.31	12.953	
12,803.2	11,786.0	12,535.8	11,858.6	45.4	25.9	94.38	-1,884.0	-1,620.5	884.8	816.4	68.37	12.942	
12,900.0	11,786.0	12,632.6	11,860.6	46.2	26.6	94.51	-1,980.8	-1,620.3	885.4	815.2	70.17	12.618	
12,903.2	11,786.0	12,635.8	11,860.6	46.3	26.7	94.51	-1,984.0	-1,620.2	885.4	815.2	70.23	12.607	
13,000.0	11,786.0	12,732.5	11,862.6	47.1	27.4	94.64	-2,080.7	-1,620.0	886.0	813.9	72.11	12.287	
13,003.3	11,786.0	12,735.8	11,862.7	47.2	27.5	94.64	-2,084.0	-1,620.0	886.0	813.8	72.18	12.276	
13,100.0	11,786.0	12,832.5	11,864.7	48.1	28.3	94.77	-2,180.7	-1,619.7	886.6	812.5	74.13	11.960	
13,103.3	11,786.0	12,835.9	11,864.7	48.2	28.3	94.77	-2,184.0	-1,619.7	886.6	812.4	74.20	11.949	
13,200.0	11,786.0	12,932.5	11,866.7	49.2	29.2	94.90	-2,280.7	-1,619.4	887.2	811.0	76.22	11.640	
13,203.4	11,786.0	12,935.9	11,866.8	49.2	29.2	94.90	-2,284.0	-1,619.4	887.2	810.9	76.29	11.629	
13,300.0	11,786.0	13,032.5	11,868.8	50.3	30.1	95.03	-2,380.6	-1,619.1	887.8	809.5	78.38	11.328	
13,303.4	11,786.0	13,035.9	11,868.8	50.3	30.2	95.03	-2,384.0	-1,619.1	887.9	809.4	78.45	11.317	
13,400.0	11,786.0	13,132.5	11,870.8	51.5	31.1	95.16	-2,480.6	-1,618.8	888.4	807.9	80.59	11.024	
13,403.5	11,786.0	13,135.9	11,870.9	51.5	31.1	95.16	-2,484.0	-1,618.8	888.5	807.8	80.67	11.013	
13,500.0	11,786.0	13,232.4	11,872.9	52.7	32.1	95.29	-2,580.5	-1,618.5	889.1	806.2	82.86	10.730	
13,503.5	11,786.0	13,235.9	11,872.9	52.7	32.2	95.29	-2,584.0	-1,618.5	889.1	806.2	82.94	10.719	
13,600.0	11,786.0	13,332.4	11,874.9	53.9	33.2	95.42	-2,680.5	-1,618.2	889.7	804.5	85.18	10.445	
13,603.5	11,786.0	13,335.9	11,875.0	54.0	33.2	95.42	-2,684.0	-1,618.2	889.7	804.5	85.26	10.435	
13,700.0	11,786.0	13,432.4	11,877.0	55.2	34.3	95.54	-2,780.4	-1,618.0	890.3	802.8	87.54	10.170	
13,703.6	11,786.0	13,436.0	11,877.1	55.3	34.3	95.55	-2,784.0	-1,617.9	890.4	802.7	87.63	10.160	
13,800.0	11,786.0	13,532.4	11,879.0	56.6	35.4	95.67	-2,880.4	-1,617.7	891.0	801.0	89.95	9.905	
13,803.6	11,786.0	13,536.0	11,879.1	56.6	35.4	95.68	-2,884.0	-1,617.7	891.0	801.0	90.04	9.896	
13,900.0	11,786.0	13,632.3	11,881.1	57.9	36.5	95.80	-2,980.4	-1,617.4	891.6	799.2	92.39	9.650	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad B - Margarita Federal Com 13 23H - AD - PLAN#3 - 179.58													Offset Site Error:	0.0 usft
Survey Program:	0-MWD+HRGM		Offset	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Rule Assigned:		Distance		Offset Well Error:	0.0 usft
Reference	Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Reference	Offset		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
13,903.6	11,786.0	13,636.0	11,881.2	57.9	36.6	95.81	-2,984.0	-1,617.4	891.6	799.2	92.48	9.641		
14,000.0	11,786.0	13,732.3	11,883.1	59.3	37.7	95.93	-3,080.3	-1,617.1	892.3	797.4	94.87	9.405		
14,003.7	11,786.0	13,736.0	11,883.2	59.3	37.7	95.93	-3,084.0	-1,617.1	892.3	797.3	94.96	9.396		
14,100.0	11,786.0	13,832.3	11,885.2	60.7	38.8	96.06	-3,180.3	-1,616.8	892.9	795.5	97.38	9.170		
14,103.7	11,786.0	13,836.0	11,885.3	60.7	38.9	96.06	-3,184.0	-1,616.8	892.9	795.5	97.47	9.161		
14,200.0	11,786.0	13,932.3	11,887.2	62.1	40.0	96.19	-3,280.2	-1,616.5	893.6	793.7	99.91	8.943		
14,203.7	11,786.0	13,936.0	11,887.3	62.1	40.1	96.19	-3,283.9	-1,616.5	893.6	793.6	100.01	8.935		
14,300.0	11,786.0	14,032.3	11,889.3	63.5	41.3	96.31	-3,380.2	-1,616.2	894.2	791.8	102.48	8.726		
14,303.7	11,786.0	14,036.0	11,889.4	63.5	41.3	96.32	-3,383.9	-1,616.2	894.3	791.7	102.57	8.718		
14,400.0	11,786.0	14,132.2	11,891.4	64.9	42.5	96.44	-3,480.1	-1,615.9	894.9	789.8	105.07	8.517		
14,403.8	11,786.0	14,136.0	11,891.4	65.0	42.5	96.45	-3,483.9	-1,615.9	894.9	789.8	105.16	8.510		
14,500.0	11,786.0	14,232.2	11,893.4	66.4	43.7	96.57	-3,580.1	-1,615.6	895.6	787.9	107.67	8.317		
14,503.7	11,786.0	14,235.9	11,893.5	66.4	43.8	96.57	-3,583.8	-1,615.6	895.6	787.8	107.77	8.310		
14,600.0	11,786.0	14,331.6	11,896.3	67.8	45.0	96.75	-3,679.4	-1,615.3	896.3	786.0	110.27	8.128		
14,603.3	11,786.0	14,334.9	11,896.5	67.9	45.0	96.76	-3,682.8	-1,615.3	896.3	785.9	110.36	8.122		
14,700.0	11,786.0	14,430.5	11,902.4	69.3	46.2	97.14	-3,778.1	-1,614.6	897.1	784.3	112.79	7.954		
14,703.0	11,786.0	14,433.5	11,902.7	69.4	46.2	97.15	-3,781.1	-1,614.6	897.1	784.2	112.86	7.949		
14,800.0	11,786.0	14,530.1	11,910.7	70.8	47.5	97.66	-3,877.3	-1,613.8	898.0	782.8	115.26	7.791		
14,803.0	11,786.0	14,533.1	11,910.9	70.9	47.5	97.68	-3,880.4	-1,613.7	898.0	782.7	115.33	7.787		
14,900.0	11,786.0	14,629.7	11,918.9	72.3	48.7	98.18	-3,976.7	-1,612.9	899.0	781.3	117.74	7.636		
14,903.0	11,786.0	14,632.8	11,919.1	72.3	48.8	98.20	-3,979.7	-1,612.9	899.1	781.2	117.81	7.631		
15,000.0	11,786.0	14,729.4	11,927.1	73.8	50.0	98.70	-4,076.0	-1,612.1	900.1	779.9	120.22	7.487		
15,003.1	11,786.0	14,732.4	11,927.4	73.8	50.1	98.72	-4,079.0	-1,612.0	900.1	779.8	120.30	7.483		
15,100.0	11,786.0	14,829.0	11,935.4	75.3	51.3	99.22	-4,175.3	-1,611.2	901.3	778.6	122.70	7.345		
15,103.1	11,786.0	14,832.1	11,935.6	75.4	51.3	99.24	-4,178.3	-1,611.2	901.3	778.5	122.78	7.341		
15,200.0	11,786.0	14,928.7	11,943.6	76.8	52.6	99.74	-4,274.6	-1,610.4	902.5	777.3	125.19	7.209		
15,203.1	11,786.0	14,931.8	11,943.9	76.9	52.6	99.75	-4,277.7	-1,610.3	902.5	777.3	125.27	7.205		
15,300.0	11,786.0	15,028.3	11,951.8	78.3	53.9	100.25	-4,373.9	-1,609.5	903.8	776.1	127.68	7.079		
15,303.1	11,786.0	15,031.4	11,952.1	78.4	54.0	100.27	-4,377.0	-1,609.5	903.9	776.1	127.76	7.075		
15,400.0	11,786.0	15,128.0	11,960.1	79.9	55.2	100.77	-4,473.2	-1,608.7	905.2	775.0	130.16	6.954		
15,403.1	11,786.0	15,131.1	11,960.3	79.9	55.3	100.78	-4,476.3	-1,608.6	905.2	775.0	130.24	6.951		
15,500.0	11,786.0	15,227.7	11,968.3	81.4	56.5	101.28	-4,572.5	-1,607.8	906.7	774.0	132.65	6.835		
15,503.1	11,786.0	15,230.8	11,968.6	81.5	56.6	101.30	-4,575.6	-1,607.8	906.7	774.0	132.72	6.831		
15,600.0	11,786.0	15,327.3	11,976.6	82.9	57.9	101.79	-4,671.9	-1,606.9	908.2	773.1	135.13	6.721		
15,603.1	11,786.0	15,330.4	11,976.8	83.0	57.9	101.81	-4,675.0	-1,606.9	908.2	773.0	135.20	6.717		
15,700.0	11,786.0	15,427.0	11,984.8	84.5	59.2	102.30	-4,771.2	-1,606.1	909.8	772.2	137.60	6.612		
15,703.1	11,786.0	15,430.1	11,985.1	84.5	59.2	102.32	-4,774.3	-1,606.1	909.8	772.2	137.68	6.608		
15,800.0	11,786.0	15,526.6	11,993.0	86.0	60.5	102.81	-4,870.5	-1,605.2	911.5	771.4	140.07	6.507		
15,803.1	11,786.0	15,529.8	11,993.3	86.1	60.6	102.83	-4,873.6	-1,605.2	911.5	771.4	140.15	6.504		
15,900.0	11,786.0	15,626.3	12,001.3	87.6	61.9	103.32	-4,969.8	-1,604.4	913.2	770.7	142.54	6.407		
15,903.2	11,786.0	15,629.4	12,001.5	87.6	61.9	103.33	-4,972.9	-1,604.4	913.3	770.6	142.62	6.404		
16,000.0	11,786.0	15,725.9	12,009.5	89.1	63.2	103.82	-5,069.1	-1,603.5	915.0	770.0	145.00	6.311		
16,003.2	11,786.0	15,729.1	12,009.8	89.2	63.3	103.84	-5,072.2	-1,603.5	915.1	770.0	145.07	6.308		
16,100.0	11,786.0	15,825.6	12,017.7	90.7	64.6	104.32	-5,168.4	-1,602.7	916.9	769.5	147.45	6.219		
16,103.2	11,786.0	15,828.8	12,018.0	90.8	64.6	104.34	-5,171.6	-1,602.7	917.0	769.5	147.52	6.216		
16,200.0	11,786.0	15,925.3	12,026.0	92.3	65.9	104.82	-5,267.7	-1,601.8	918.9	769.0	149.89	6.130		
16,203.2	11,786.0	15,928.4	12,026.2	92.3	66.0	104.84	-5,270.9	-1,601.8	918.9	769.0	149.97	6.128		
16,300.0	11,786.0	16,024.9	12,034.2	93.8	67.3	105.32	-5,367.0	-1,601.0	920.9	768.6	152.32	6.046		
16,303.2	11,786.0	16,028.1	12,034.5	93.9	67.3	105.33	-5,370.2	-1,600.9	921.0	768.6	152.40	6.043		
16,400.0	11,786.0	16,124.6	12,042.5	95.4	68.6	105.81	-5,466.4	-1,600.1	923.0	768.3	154.75	5.965		
16,403.2	11,786.0	16,127.8	12,042.7	95.5	68.7	105.83	-5,469.5	-1,600.1	923.1	768.2	154.82	5.962		
16,500.0	11,786.0	16,224.2	12,050.7	97.0	70.0	106.31	-5,565.7	-1,599.3	925.2	768.0	157.16	5.887		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad B - Margarita Federal Com 13 23H - AD - PLAN#3 - 179.58													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HRGM													Offset Well Error:	0.0 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre		Rule Assigned:		Distance	Between	Minimum	Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Ellipses (usft)	Separation (usft)	Factor		
16,503.2	11,786.0	16,227.4	12,051.0	97.0	70.0	106.32	-5,568.8	-1,599.2	925.2	768.0	157.24	5.884		
16,600.0	11,786.0	16,323.9	12,058.9	98.6	71.4	106.80	-5,665.0	-1,598.4	927.4	767.8	159.56	5.812		
16,603.2	11,786.0	16,327.1	12,059.2	98.6	71.4	106.81	-5,668.2	-1,598.4	927.5	767.8	159.64	5.810		
16,700.0	11,786.0	16,423.6	12,067.2	100.1	72.7	107.29	-5,764.3	-1,597.6	929.7	767.8	161.96	5.740		
16,703.2	11,786.0	16,426.7	12,067.4	100.2	72.8	107.30	-5,767.5	-1,597.5	929.8	767.7	162.03	5.738		
16,800.0	11,786.0	16,523.2	12,075.4	101.7	74.1	107.77	-5,863.6	-1,596.7	932.1	767.7	164.34	5.672		
16,803.2	11,786.0	16,526.4	12,075.7	101.8	74.1	107.79	-5,866.8	-1,596.7	932.2	767.7	164.41	5.670		
16,900.0	11,786.0	16,622.9	12,083.6	103.3	75.5	108.26	-5,962.9	-1,595.9	934.5	767.8	166.71	5.606		
16,903.2	11,786.0	16,626.1	12,083.9	103.3	75.5	108.27	-5,966.1	-1,595.8	934.6	767.8	166.78	5.604		
17,000.0	11,786.0	16,722.5	12,091.9	104.9	76.8	108.74	-6,062.2	-1,595.0	937.0	768.0	169.07	5.542		
17,003.2	11,786.0	16,725.7	12,092.1	104.9	76.9	108.75	-6,065.4	-1,595.0	937.1	768.0	169.14	5.540		
17,100.0	11,786.0	16,825.2	12,100.2	106.5	78.3	109.22	-6,164.6	-1,594.1	939.6	768.1	171.43	5.481		
17,103.7	11,786.0	16,829.4	12,100.5	106.5	78.3	109.24	-6,168.8	-1,594.1	939.6	768.1	171.52	5.478		
17,200.0	11,786.0	16,937.2	12,106.2	108.1	79.8	109.57	-6,276.4	-1,593.2	941.2	767.2	173.97	5.410		
17,200.0	11,786.0	16,937.2	12,106.2	108.1	79.8	109.57	-6,276.4	-1,593.2	941.2	767.2	173.97	5.410		
17,300.0	11,786.0	17,044.2	12,108.1	109.6	81.3	109.68	-6,383.3	-1,592.3	941.7	765.0	176.70	5.329		
17,300.3	11,786.0	17,044.5	12,108.1	109.6	81.3	109.68	-6,383.7	-1,592.3	941.7	765.0	176.71	5.329		
17,400.0	11,786.0	17,144.2	12,109.2	111.2	82.7	109.75	-6,483.3	-1,591.4	942.0	762.5	179.47	5.249		
17,400.3	11,786.0	17,144.5	12,109.2	111.2	82.7	109.75	-6,483.6	-1,591.4	942.0	762.5	179.47	5.249		
17,500.0	11,786.0	17,244.2	12,110.4	112.8	84.1	109.81	-6,583.3	-1,590.6	942.3	760.0	182.23	5.171		
17,500.3	11,786.0	17,244.5	12,110.4	112.8	84.1	109.81	-6,583.6	-1,590.6	942.3	760.0	182.24	5.171		
17,600.0	11,786.0	17,344.2	12,111.5	114.4	85.5	109.88	-6,683.3	-1,589.8	942.6	757.6	184.99	5.095		
17,600.3	11,786.0	17,344.5	12,111.5	114.4	85.5	109.88	-6,683.6	-1,589.8	942.6	757.6	185.00	5.095		
17,700.0	11,786.0	17,444.1	12,112.7	116.0	86.9	109.95	-6,783.3	-1,588.9	942.8	755.1	187.76	5.022		
17,700.3	11,786.0	17,444.5	12,112.7	116.0	86.9	109.95	-6,783.6	-1,588.9	942.8	755.1	187.77	5.021		
17,800.0	11,786.0	17,544.1	12,113.8	117.6	88.3	110.02	-6,883.3	-1,588.1	943.1	752.6	190.53	4.950		
17,800.3	11,786.0	17,544.5	12,113.8	117.6	88.3	110.02	-6,883.6	-1,588.1	943.1	752.6	190.54	4.950		
17,900.0	11,786.0	17,644.1	12,114.9	119.2	89.7	110.08	-6,983.2	-1,587.3	943.4	750.1	193.30	4.881		
17,900.3	11,786.0	17,644.5	12,114.9	119.2	89.7	110.08	-6,983.6	-1,587.3	943.4	750.1	193.31	4.880		
18,000.0	11,786.0	17,744.1	12,116.1	120.8	91.1	110.15	-7,083.2	-1,586.4	943.7	747.6	196.07	4.813		
18,000.3	11,786.0	17,744.4	12,116.1	120.8	91.1	110.15	-7,083.5	-1,586.4	943.7	747.6	196.08	4.813		
18,100.0	11,786.0	17,844.1	12,117.2	122.4	92.5	110.22	-7,183.2	-1,585.6	944.0	745.2	198.84	4.748		
18,100.3	11,786.0	17,844.4	12,117.2	122.4	92.5	110.22	-7,183.5	-1,585.6	944.0	745.2	198.85	4.747		
18,200.0	11,786.0	17,944.1	12,118.3	124.0	93.9	110.28	-7,283.2	-1,584.8	944.3	742.7	201.62	4.684		
18,200.3	11,786.0	17,944.4	12,118.3	124.0	93.9	110.28	-7,283.5	-1,584.8	944.3	742.7	201.62	4.683		
18,300.0	11,786.0	18,044.1	12,119.5	125.6	95.3	110.35	-7,383.2	-1,583.9	944.6	740.2	204.39	4.622		
18,300.3	11,786.0	18,044.4	12,119.5	125.6	95.3	110.35	-7,383.5	-1,583.9	944.6	740.2	204.40	4.621		
18,400.0	11,786.0	18,144.1	12,120.6	127.2	96.7	110.42	-7,483.2	-1,583.1	944.9	737.7	207.17	4.561		
18,400.3	11,786.0	18,144.4	12,120.6	127.3	96.7	110.42	-7,483.5	-1,583.1	944.9	737.7	207.17	4.561		
18,500.0	11,786.0	18,244.1	12,121.8	128.9	98.1	110.48	-7,583.1	-1,582.3	945.2	735.2	209.94	4.502		
18,500.3	11,786.0	18,244.4	12,121.8	128.9	98.1	110.48	-7,583.5	-1,582.3	945.2	735.2	209.95	4.502		
18,600.0	11,786.0	18,344.1	12,122.9	130.5	99.5	110.55	-7,683.1	-1,581.4	945.5	732.8	212.72	4.445		
18,600.3	11,786.0	18,344.4	12,122.9	130.5	99.5	110.55	-7,683.4	-1,581.4	945.5	732.8	212.73	4.445		
18,700.0	11,786.0	18,444.1	12,124.0	132.1	100.9	110.62	-7,783.1	-1,580.6	945.8	730.3	215.50	4.389		
18,700.3	11,786.0	18,444.4	12,124.0	132.1	100.9	110.62	-7,783.4	-1,580.6	945.8	730.3	215.50	4.389		
18,800.0	11,786.0	18,544.1	12,125.2	133.7	102.3	110.68	-7,883.1	-1,579.8	946.1	727.8	218.27	4.334		
18,800.3	11,786.0	18,544.4	12,125.2	133.7	102.3	110.68	-7,883.4	-1,579.8	946.1	727.8	218.28	4.334		
18,900.0	11,786.0	18,644.1	12,126.3	135.3	103.7	110.75	-7,983.1	-1,578.9	946.4	725.3	221.06	4.281		
18,900.3	11,786.0	18,644.4	12,126.3	135.3	103.7	110.75	-7,983.4	-1,578.9	946.4	725.3	221.06	4.281		
19,000.0	11,786.0	18,744.1	12,127.4	136.9	105.1	110.82	-8,083.1	-1,578.1	946.7	722.9	223.83	4.230		
19,000.3	11,786.0	18,744.4	12,127.4	136.9	105.1	110.82	-8,083.4	-1,578.1	946.7	722.9	223.84	4.229		
19,100.0	11,786.0	18,844.1	12,128.6	138.5	106.6	110.88	-8,183.0	-1,577.3	947.0	720.4	226.61	4.179		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad B - Margarita Federal Com 13 23H - AD - PLAN#3 - 179.58													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HRGM													Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		Minimum Separation (usft)	Separation Factor	Warning	
							+N/-S (usft)	+E/-W (usft)						
19,100.3	11,786.0	18,844.4	12,128.6	138.5	106.6	110.88	-8,183.4	-1,577.3	947.0	720.4	226.62	4.179		
19,200.0	11,786.0	18,944.1	12,129.7	140.2	108.0	110.95	-8,283.0	-1,576.4	947.3	717.9	229.39	4.130		
19,200.3	11,786.0	18,944.4	12,129.7	140.2	108.0	110.95	-8,283.3	-1,576.4	947.3	717.9	229.40	4.130		
19,300.0	11,786.0	19,044.0	12,130.8	141.8	109.4	111.02	-8,383.0	-1,575.6	947.6	715.4	232.16	4.082		
19,300.3	11,786.0	19,044.4	12,130.9	141.8	109.4	111.02	-8,383.3	-1,575.6	947.6	715.4	232.17	4.082		
19,400.0	11,786.0	19,144.0	12,132.0	143.4	110.8	111.08	-8,483.0	-1,574.8	947.9	713.0	234.94	4.035		
19,400.3	11,786.0	19,144.4	12,132.0	143.4	110.8	111.08	-8,483.3	-1,574.8	947.9	713.0	234.95	4.035		
19,500.0	11,786.0	19,244.0	12,133.1	145.0	112.2	111.15	-8,583.0	-1,573.9	948.2	710.5	237.72	3.989		
19,500.3	11,786.0	19,244.3	12,133.1	145.0	112.2	111.15	-8,583.3	-1,573.9	948.2	710.5	237.73	3.989		
19,600.0	11,786.0	19,344.0	12,134.3	146.6	113.6	111.22	-8,683.0	-1,573.1	948.6	708.1	240.50	3.944		
19,600.3	11,786.0	19,344.3	12,134.3	146.6	113.6	111.22	-8,683.3	-1,573.1	948.6	708.0	240.51	3.944		
19,700.0	11,786.0	19,444.0	12,135.4	148.2	115.0	111.28	-8,783.0	-1,572.3	948.9	705.6	243.28	3.900		
19,700.3	11,786.0	19,444.3	12,135.4	148.2	115.0	111.28	-8,783.3	-1,572.3	948.9	705.6	243.29	3.900		
19,800.0	11,786.0	19,544.0	12,136.5	149.9	116.5	111.35	-8,882.9	-1,571.4	949.2	703.1	246.06	3.857		
19,800.3	11,786.0	19,544.3	12,136.5	149.9	116.5	111.35	-8,883.2	-1,571.4	949.2	703.1	246.06	3.857		
19,900.0	11,786.0	19,644.0	12,137.7	151.5	117.9	111.42	-8,982.9	-1,570.6	949.5	700.7	248.83	3.816		
19,900.3	11,786.0	19,644.3	12,137.7	151.5	117.9	111.42	-8,983.2	-1,570.6	949.5	700.7	248.84	3.816		
20,000.0	11,786.0	19,744.0	12,138.8	153.1	119.3	111.48	-9,082.9	-1,569.8	949.8	698.2	251.61	3.775		
20,000.3	11,786.0	19,744.3	12,138.8	153.1	119.3	111.48	-9,083.2	-1,569.8	949.8	698.2	251.61	3.775		
20,100.0	11,786.0	19,844.0	12,139.9	154.7	120.7	111.55	-9,182.9	-1,568.9	950.1	695.7	254.39	3.735		
20,100.3	11,786.0	19,844.3	12,140.0	154.7	120.7	111.55	-9,183.2	-1,568.9	950.1	695.7	254.39	3.735		
20,200.0	11,786.0	19,944.0	12,141.1	156.4	122.1	111.61	-9,282.9	-1,568.1	950.5	693.3	257.16	3.696		
20,200.3	11,786.0	19,944.3	12,141.1	156.4	122.1	111.61	-9,283.2	-1,568.1	950.5	693.3	257.17	3.696		
20,300.0	11,786.0	20,044.0	12,142.2	158.0	123.6	111.68	-9,382.9	-1,567.3	950.8	690.8	259.93	3.658		
20,300.3	11,786.0	20,044.3	12,142.2	158.0	123.6	111.68	-9,383.2	-1,567.3	950.8	690.8	259.94	3.658		
20,400.0	11,786.0	20,144.0	12,143.4	159.6	125.0	111.75	-9,482.8	-1,566.4	951.1	688.4	262.70	3.620		
20,400.3	11,786.0	20,144.3	12,143.4	159.6	125.0	111.75	-9,483.1	-1,566.4	951.1	688.4	262.71	3.620		
20,500.0	11,786.0	20,244.0	12,144.5	161.2	126.4	111.81	-9,582.8	-1,565.6	951.4	685.9	265.48	3.584		
20,500.3	11,786.0	20,244.3	12,144.5	161.2	126.4	111.81	-9,583.1	-1,565.6	951.4	685.9	265.49	3.584		
20,600.0	11,786.0	20,344.0	12,145.6	162.9	127.8	111.88	-9,682.8	-1,564.8	951.7	683.5	268.25	3.548		
20,600.3	11,786.0	20,344.3	12,145.6	162.9	127.8	111.88	-9,683.1	-1,564.8	951.7	683.5	268.26	3.548		
20,700.0	11,786.0	20,444.0	12,146.8	164.5	129.3	111.94	-9,782.8	-1,563.9	952.1	681.0	271.02	3.513		
20,700.3	11,786.0	20,444.3	12,146.8	164.5	129.3	111.94	-9,783.1	-1,563.9	952.1	681.0	271.03	3.513		
20,800.0	11,786.0	20,543.9	12,147.9	166.1	130.7	112.01	-9,882.8	-1,563.1	952.4	678.6	273.79	3.479		
20,800.3	11,786.0	20,544.3	12,147.9	166.1	130.7	112.01	-9,883.1	-1,563.1	952.4	678.6	273.80	3.478		
20,900.0	11,786.0	20,643.9	12,149.0	167.7	132.1	112.08	-9,982.8	-1,562.3	952.7	676.2	276.56	3.445		
20,900.3	11,786.0	20,644.3	12,149.0	167.7	132.1	112.08	-9,983.1	-1,562.3	952.7	676.2	276.57	3.445		
21,000.0	11,786.0	20,743.9	12,150.2	169.4	133.5	112.14	-10,082.7	-1,561.4	953.1	673.7	279.33	3.412		
21,000.3	11,786.0	20,744.2	12,150.2	169.4	133.5	112.14	-10,083.0	-1,561.4	953.1	673.7	279.34	3.412		
21,100.0	11,786.0	20,843.9	12,151.3	171.0	134.9	112.21	-10,182.7	-1,560.6	953.4	671.3	282.09	3.380		
21,100.3	11,786.0	20,844.2	12,151.3	171.0	135.0	112.21	-10,183.0	-1,560.6	953.4	671.3	282.10	3.380		
21,200.0	11,786.0	20,943.9	12,152.5	172.6	136.4	112.27	-10,282.7	-1,559.8	953.7	668.9	284.86	3.348		
21,200.3	11,786.0	20,944.2	12,152.5	172.6	136.4	112.27	-10,283.0	-1,559.8	953.7	668.8	284.87	3.348		
21,300.0	11,786.0	21,043.9	12,153.6	174.3	137.8	112.34	-10,382.7	-1,558.9	954.1	666.4	287.62	3.317		
21,300.3	11,786.0	21,044.2	12,153.6	174.3	137.8	112.34	-10,383.0	-1,558.9	954.1	666.4	287.63	3.317		
21,400.0	11,786.0	21,143.9	12,154.7	175.9	139.2	112.40	-10,482.7	-1,558.1	954.4	664.0	290.39	3.287		
21,400.3	11,786.0	21,144.2	12,154.7	175.9	139.2	112.40	-10,483.0	-1,558.1	954.4	664.0	290.40	3.286		
21,500.0	11,786.0	21,243.9	12,155.9	177.5	140.6	112.47	-10,582.7	-1,557.3	954.7	661.6	293.15	3.257		
21,500.3	11,786.0	21,244.2	12,155.9	177.5	140.7	112.47	-10,583.0	-1,557.3	954.7	661.6	293.16	3.257		
21,600.0	11,786.0	21,343.9	12,157.0	179.1	142.1	112.53	-10,682.6	-1,556.4	955.1	659.1	295.91	3.228		
21,600.3	11,786.0	21,344.2	12,157.0	179.2	142.1	112.53	-10,682.9	-1,556.4	955.1	659.1	295.92	3.227		
21,700.0	11,786.0	21,443.9	12,158.1	180.8	143.5	112.60	-10,782.6	-1,555.6	955.4	656.7	298.67	3.199		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Offset Design: Margarita Federal Com - Pad B - Margarita Federal Com 13 23H - AD - PLAN#3 - 179.58													Offset Site Error:	0.0 usft
Survey Program: 0-MWD+HRGM		Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned: Distance			Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
21,700.3	11,786.0	21,444.2	12,158.1	180.8	143.5	112.60	-10,782.9	-1,555.6	955.4	656.7	298.68	3.199		
21,800.0	11,786.0	21,543.9	12,159.3	182.4	144.9	112.67	-10,882.6	-1,554.8	955.7	654.3	301.43	3.171		
21,800.3	11,786.0	21,544.2	12,159.3	182.4	144.9	112.67	-10,882.9	-1,554.8	955.7	654.3	301.44	3.171		
21,900.0	11,786.0	21,643.9	12,160.4	184.0	146.4	112.73	-10,982.6	-1,553.9	956.1	651.9	304.19	3.143		
21,900.3	11,786.0	21,644.2	12,160.4	184.0	146.4	112.73	-10,982.9	-1,553.9	956.1	651.9	304.20	3.143		
22,000.0	11,786.0	21,743.9	12,161.6	185.7	147.8	112.80	-11,082.6	-1,553.1	956.4	649.5	306.95	3.116		
22,000.3	11,786.0	21,744.2	12,161.6	185.7	147.8	112.80	-11,082.9	-1,553.1	956.4	649.5	306.95	3.116		
22,100.0	11,786.0	21,843.9	12,162.7	187.3	149.2	112.86	-11,182.6	-1,552.3	956.8	647.1	309.70	3.089		
22,100.3	11,786.0	21,844.2	12,162.7	187.3	149.2	112.86	-11,182.9	-1,552.3	956.8	647.1	309.71	3.089		
22,200.0	11,786.0	21,943.9	12,163.8	188.9	150.6	112.93	-11,282.5	-1,551.4	957.1	644.7	312.45	3.063		
22,200.3	11,786.0	21,944.2	12,163.8	188.9	150.6	112.93	-11,282.9	-1,551.4	957.1	644.6	312.46	3.063		
22,300.0	11,786.0	22,043.8	12,165.0	190.6	152.1	112.99	-11,382.5	-1,550.6	957.5	642.2	315.21	3.038		
22,300.3	11,786.0	22,044.2	12,165.0	190.6	152.1	112.99	-11,382.8	-1,550.6	957.5	642.2	315.21	3.037		
22,400.0	11,786.0	22,143.8	12,166.1	192.2	153.5	113.06	-11,482.5	-1,549.8	957.8	639.8	317.96	3.012		
22,400.3	11,786.0	22,144.2	12,166.1	192.2	153.5	113.06	-11,482.8	-1,549.8	957.8	639.8	317.96	3.012		
22,500.0	11,786.0	22,243.8	12,167.2	193.8	154.9	113.12	-11,582.5	-1,548.9	958.1	637.4	320.71	2.988		
22,500.3	11,786.0	22,244.1	12,167.2	193.8	154.9	113.12	-11,582.8	-1,548.9	958.1	637.4	320.71	2.988		
22,600.0	11,786.0	22,343.8	12,168.4	195.5	156.4	113.19	-11,682.5	-1,548.1	958.5	635.0	323.45	2.963		
22,600.3	11,786.0	22,344.1	12,168.4	195.5	156.4	113.19	-11,682.8	-1,548.1	958.5	635.0	323.46	2.963		
22,700.0	11,786.0	22,443.8	12,169.5	197.1	157.8	113.25	-11,782.5	-1,547.3	958.8	632.6	326.20	2.939		
22,700.3	11,786.0	22,444.1	12,169.5	197.1	157.8	113.25	-11,782.8	-1,547.3	958.9	632.6	326.21	2.939		
22,800.0	11,786.0	22,543.8	12,170.6	198.8	159.2	113.32	-11,882.4	-1,546.4	959.2	630.3	328.94	2.916		
22,800.3	11,786.0	22,544.1	12,170.7	198.8	159.2	113.32	-11,882.8	-1,546.4	959.2	630.2	328.95	2.916		
22,900.0	11,786.0	22,643.8	12,171.8	200.4	160.7	113.38	-11,982.4	-1,545.6	959.6	627.9	331.69	2.893		
22,900.3	11,786.0	22,644.1	12,171.8	200.4	160.7	113.38	-11,982.7	-1,545.6	959.6	627.9	331.70	2.893		
23,000.0	11,786.0	22,743.8	12,172.9	202.0	162.1	113.45	-12,082.4	-1,544.8	959.9	625.5	334.43	2.870		
23,000.3	11,786.0	22,744.1	12,172.9	202.0	162.1	113.45	-12,082.7	-1,544.8	959.9	625.5	334.44	2.870		
23,100.0	11,786.0	22,843.8	12,174.1	203.7	163.5	113.51	-12,182.4	-1,543.9	960.3	623.1	337.17	2.848		
23,100.3	11,786.0	22,844.1	12,174.1	203.7	163.5	113.51	-12,182.7	-1,543.9	960.3	623.1	337.18	2.848		
23,200.0	11,786.0	22,943.8	12,175.2	205.3	164.9	113.58	-12,282.4	-1,543.1	960.6	620.7	339.91	2.826		
23,200.3	11,786.0	22,944.1	12,175.2	205.3	165.0	113.58	-12,282.7	-1,543.1	960.6	620.7	339.92	2.826		
23,300.0	11,786.0	23,043.8	12,176.3	206.9	166.4	113.64	-12,382.4	-1,542.3	961.0	618.3	342.64	2.805		
23,300.3	11,786.0	23,044.1	12,176.3	206.9	166.4	113.64	-12,382.7	-1,542.3	961.0	618.3	342.65	2.805		
23,400.0	11,786.0	23,143.8	12,177.5	208.6	167.8	113.70	-12,482.3	-1,541.4	961.3	616.0	345.38	2.783		
23,400.3	11,786.0	23,144.1	12,177.5	208.6	167.8	113.70	-12,482.7	-1,541.4	961.3	616.0	345.39	2.783		
23,500.0	11,786.0	23,243.8	12,178.6	210.2	169.2	113.77	-12,582.3	-1,540.6	961.7	613.6	348.11	2.763		
23,500.3	11,786.0	23,244.1	12,178.6	210.2	169.2	113.77	-12,582.6	-1,540.6	961.7	613.6	348.12	2.763		
23,600.0	11,786.0	23,343.8	12,179.7	211.8	170.7	113.83	-12,682.3	-1,539.8	962.1	611.2	350.84	2.742		
23,600.1	11,786.0	23,343.8	12,179.7	211.8	170.7	113.83	-12,682.4	-1,539.8	962.1	611.2	350.85	2.742		
23,616.4	11,786.0	23,360.2	12,179.9	212.1	170.9	113.84	-12,698.7	-1,539.6	962.1	610.8	351.29	2.739 ES, SF		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

6/22/2022 11:16:04AM

Page 56

COMPASS 5000.16 Build 100



American Resource Development LLC

Anticollision Report

Company:	Ameredev Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 3943.5usft (Original Well EleCoordinates are relative to: Margarita Federal Com 20H

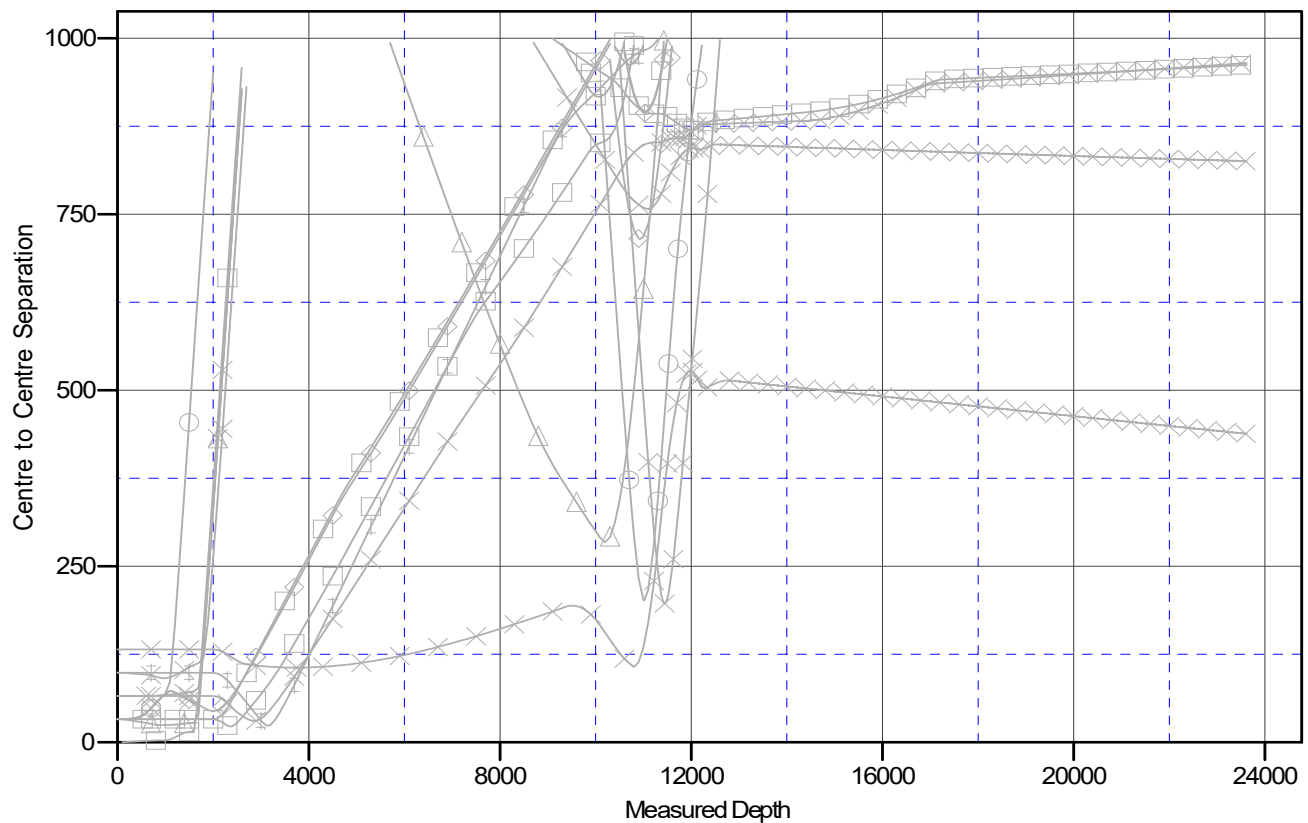
Offset Depths are relative to Offset Datum

Coordinate System is US State Plane 1983, New Mexico Eastern Zone

Central Meridian is -104.33333334

Grid Convergence at Surface is: 0.38°

Ladder Plot



LEGEND

- Bg BudeFed Com 502H.Bg BudeFed Com 502H.Bg BudeFed Com 502H V0 - Bg Stag Fed Com 503H.Bg Stag Fed Com 503H.Bg Stag Fed Com 503H V0 - Bg Stag Fed Com 703H.Bg Stag Fed Com 703H.Bg Stag Fed Com 703H V0 - MargaritaFederalCom 12H.MargaritaFederalCom 1312H.M12H V0 - MargaritaFederalCom 12H.MargaritaFederalCom 1312H.Plen77 - 17950 V0 - MargaritaFederalCom 16H.MargaritaFederalCom 1316H.PLAN77 - 17931 V0 - MargaritaFederalCom 20H.MargaritaFederalCom 1320H.M20H V0	- MargaritaFederalCom 24H.MargaritaFederalCom 1324H.M24H V0 - MargaritaFederalCom 24H.MargaritaFederalCom 1324H.PLAN77 - 17941 V0 - MargaritaFederalCom 7H.MargaritaFederalCom 7H.M7H V0 - MargaritaFederalCom 7H.MargaritaFederalCom 7H.PLAN77 - 17958 V0 - MargaritaFederalCom 8H.MargaritaFederalCom 8H.Baseline.Plen75 - 17972 V0 - MargaritaFederalCom 8H.MargaritaFederalCom 8H.MargaritaFederalCom 8H V0 - MargaritaFederalCom 8H.MargaritaFederalCom 8H.Plen77 - 17953 V0	- MargaritaFederalCom 8H.MargaritaFederalCom 8H.STD1 STD1 V0 - MargaritaFederalCom 1305H.05H.PLAN73 - 17955 V0 - MargaritaFederalCom 1305H.05H.PLAN73 - 17955 V0 - MargaritaFederalCom 1311H.11H.PLAN73 - 17979 V0 - MargaritaFederalCom 1315H.15H.PLAN73 - 17958 V0 - MargaritaFederalCom 1323H.13H.PLAN73 - 17958 V0
--	---	---

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



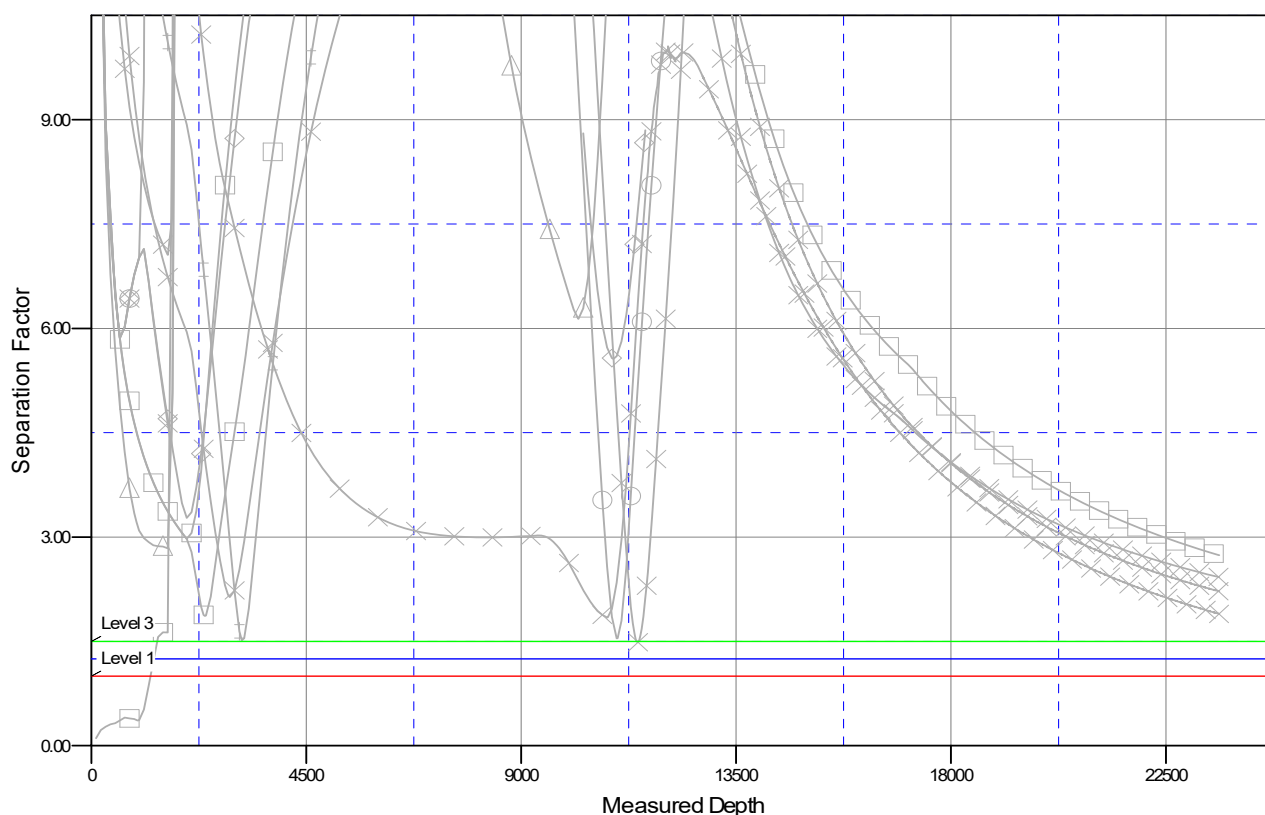
American Resource Development LLC

Anticollision Report

Company:	Ameredeve Operating	Local Co-ordinate Reference:	Well Margarita Federal Com 20H
Project:	Hat Mesa	TVD Reference:	WELL @ 3943.5usft (Original Well Elev)
Reference Site:	Margarita Federal Com - Pad A	MD Reference:	WELL @ 3943.5usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Margarita Federal Com 20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Margarita Federal Com 13 20H	Database:	AUS-COMPASS - EDM_15 - 32bit
Reference Design:	Prelim - 179.57	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 3943.5usft (Original Well EleCoordinates are relative to: Margarita Federal Com 20H
 Offset Depths are relative to Offset Datum
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone
 Central Meridian is -104.33333334
 Grid Convergence at Surface is: 0.38°

Separation Factor Plot



LEGEND

BgBudeFed Com 502H.BgBudeFed Com 502H.BgBudeFed Com 502H V0	MargaritaFederalCom24H.MargaritaFederalCom1324H.M24H V0	MargaritaFederalCom8H.ST01ST01 V0
BgBudeFed Com 503H.BgBudeFed Com 503H.BgBudeFed Com 503H V0	MargaritaFederalCom24H.MargaritaFederalCom1324H.FLAW7 - 17941 V0	MargaritaFederalCom1309H.08H.FLAW3 - 17955 V0
BgBudeFed Com 703H.BgBudeFed Com 703H.BgBudeFed Com 703H V0	MargaritaFederalCom7H.MargaritaFederalCom7H.MTH V0	MargaritaFederalCom1309H.08H.FLAW3 - 17955 V0
MargaritaFederalCom12H.MargaritaFederalCom1312H.M12H V0	MargaritaFederalCom7H.MargaritaFederalCom7H.FLAW9 - 17958 V0	MargaritaFederalCom1311H.11H.FLAW3 - 17979 V0
MargaritaFederalCom12H.MargaritaFederalCom1312H.FLAW7 - 17960 V0	MargaritaFederalCom8H.MargaritaFederalCom8H.BashePent45 - 17972 V0	MargaritaFederalCom1315H.15H.FLAW3 - 17958 V0
MargaritaFederalCom16H.MargaritaFederalCom1316H.FLAW7 - 17931 V0	MargaritaFederalCom8H.MargaritaFederalCom8H.MargaritaFederalCom8H V0	MargaritaFederalCom1323H.13H.FLAW3 - 17958 V0
MargaritaFederalCom20H.MargaritaFederalCom1320H.M20H V0	MargaritaFederalCom8H.ST01ST01 Fent7 - 17953 V0	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

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

CONDITIONS

Action 123344

CONDITIONS

Operator: ADVANCE ENERGY PARTNERS HAT MESA, LLC 11490 Westheimer Rd., Ste 950 Houston, TX 77077	OGRID: 372417
	Action Number: 123344
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
pkautz	NOTE POOL CHANGE FROM WHAT WAS SUBMITTED	7/14/2022