



Company: SEM Operating
Lease/Well: University 9C/0101WC



Rig Name: Open Hole
State/County: Texas/Reagan
VS-Azi: 0.00 Degrees
Latitude: 31.29056, Longitude: -101.66635
Grid North = True North +0.69 degs (NAD 27)
Grid Correction Applied = +0.69 degs

Depth Reference : RKB= GL

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: hagyar.ut
Minimum Curvature Method
Report Date/Time: 7/23/2018 / 13:59

VES Survey International
Fort Worth, Texas
817-741-3610
Surveyor: Eric Warner
University 9C 0101WC / API 42-383-40309

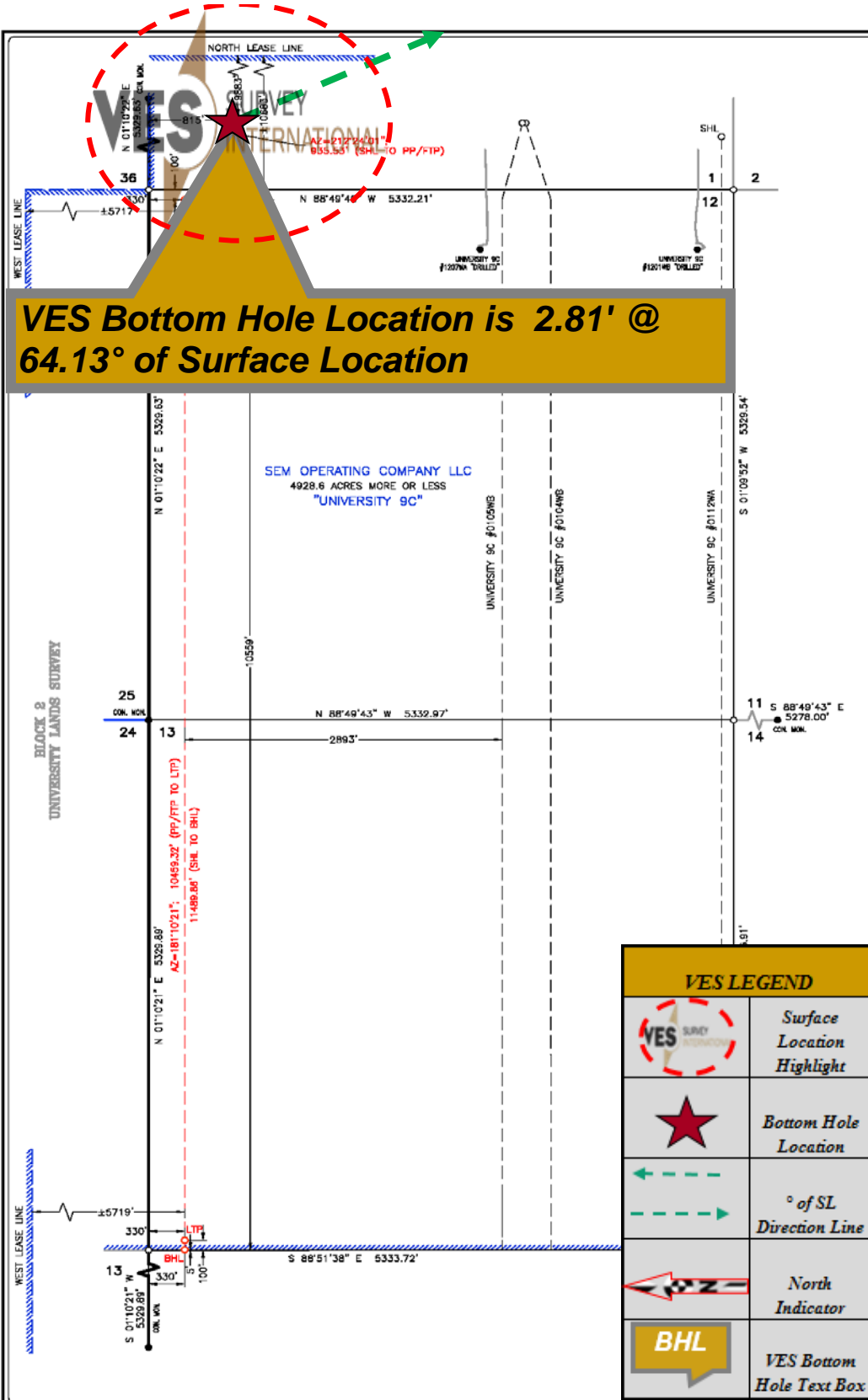
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
50.00	0.66	79.47	50.00	0.05	0.28	0.05	0.29	79.47	1.31
100.00	0.24	73.77	100.00	0.13	0.67	0.13	0.68	78.58	0.83
150.00	0.31	23.80	150.00	0.29	0.82	0.29	0.87	70.73	0.48
200.00	0.36	48.43	200.00	0.52	0.99	0.52	1.12	62.60	0.31
250.00	0.39	43.45	249.99	0.74	1.23	0.74	1.44	58.82	0.08
300.00	0.42	58.51	299.99	0.96	1.50	0.96	1.78	57.34	0.22
350.00	0.53	74.89	349.99	1.12	1.88	1.12	2.19	59.27	0.35
418.00	0.59	85.52	417.99	1.23	2.53	1.23	2.81	64.13	0.17



I Eric Warner certify that I am employed by VES Survey International. That I did on the day(s) of 07/17/18 through 07/17/18 conduct or supervise the taking of a Rate Gyro survey from a depth of 0.00 feet to a depth of -418.00 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Vaughn Energy Services, that I am authorized and qualified to make this report; that this survey was conducted at the request of SEM Operating for the University 9C Well # 0101WC API # 42-383-40309 in Reagan County / Parish Texas; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by VES Survey International.

A handwritten signature in blue ink, appearing to read "Eric Warner", is written over a horizontal line.

Eric Warner
Service Technician
VES Survey International



SPECIAL NOTES:

Original Document Size: 11"x17"
All Coordinates are in NAD 27
TX-C Zone unless otherwise noted.

Surface Hole Location:
700' FSL & 815' FWL (SEC. 1)
9883' FNLL & 815' FWLL (SEC. 1)
SHL Ground Elevation: 2629'
NAD 27 TX-C ZONE:
X = 1583638 Y = 593084
LAT.: N 31°17'26.03" LONG.: W 101°39'58.86"
LAT.: N 31.2905625 LONG.: W 101.6663509
NAD 83 TX-C ZONE:
X = 1880106 Y = 10435660
LAT.: N 31°17'26.56" LONG.: W 101°40'00.30"
LAT.: N 31.2907122 LONG.: W 101.6667501
Penetration Point/First Take Point:
100' FNLL & 330' FWL (SEC. 12)
10683' FNLL & 5717' FWLL (SEC. 12)
NAD 27 TX-C ZONE:
X = 1583137 Y = 582294
LAT.: N 31°17'18.15" LONG.: W 101°40'04.53"
LAT.: N 31.2883744 LONG.: W 101.6679253
NAD 83 TX-C ZONE:
X = 1879605 Y = 10434870
LAT.: N 31°17'18.69" LONG.: W 101°40'05.97"
LAT.: N 31.2885242 LONG.: W 101.6683245
Last Take Point Location:
100' FSL & 330' FWL (SEC. 13)
100' FSL & 5719' FWLL (SEC. 13)
NAD 27 TX-C ZONE:
X = 1582923 Y = 581838
LAT.: N 31°15'34.62" LONG.: W 101°40'05.56"
LAT.: N 31.2596180 LONG.: W 101.6682088
NAD 83 TX-C ZONE:
X = 1879391 Y = 10424413
LAT.: N 31°15'35.17" LONG.: W 101°40'06.99"
LAT.: N 31.2597687 LONG.: W 101.6686080
Bottom Hole Location:
5' FSL & 330' FWL (SEC. 13)
5' FSL & 5719' FWLL (SEC. 13)
NAD 27 TX-C ZONE:
X = 1582921 Y = 581741
LAT.: N 31°15'33.68" LONG.: W 101°40'05.56"
LAT.: N 31.2593568 LONG.: W 101.6682113
NAD 83 TX-C ZONE:
X = 1879389 Y = 10424318
LAT.: N 31°15'34.23" LONG.: W 101°40'07.00"
LAT.: N 31.2595075 LONG.: W 101.6686106

LEGEND

- Section Line
- Block Line
- Abstract Line
- Tract Line
- Lease Road
- County Road
- Unit/Lease Boundary
- Found Monument
- Set 1/2" Rebar w/cap
- Calculated Corner

Scale: 1"=1000' Surveyed: 06/04/18

COGO: 519-89429

Revision: () / /

Drawn By: MR; 06/08/2018

ORIGINAL DOC. SIZE: 11"x17"

CERTIFICATION:
This well location shown on this permit plat was surveyed on the ground under my direct supervision. This plat is for Texas Railroad Commission permit purpose only and should not be considered a boundary survey.

William J. Keating
Texas Reg. No. 5041

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
2003 NORTH BIG SPRING • MIDLAND, TEXAS 79706
TELEPHONE: (432) 862-1965 OR (800) 767-1983 • FAX: (432) 862-1743
WWW.TOPOGRAPHIC.COM
Texas FIRM Registration NO. 10042500
FILE NAME: LO_UNIVERSITY_9C_0101_WC

STATE OF TEXAS
REGISTERED
WILLIAM J. KEATING
5041
PROFESSIONAL
LAND SURVEYOR

SEM OPERATING COMPANY, LLC

LEASE NAME & WELL NO.:
UNIVERSITY 9C #0101WC
TOPOGRAPHY & VEGETATION:
NATURAL MESQUITE PASTURE
NEAREST TOWN IN COUNTY:
±14.00 MILES NORTHWEST OF BIG LAKE, TEXAS
LOCATION DESCRIPTION:
SHL: SECTION 1, BLOCK 9, UNIVERSITY LANDS SURVEY
PP/FTP: SECTION 12, BLOCK 9, UNIVERSITY LANDS SURVEY
LTP/BHL: SECTION 13, BLOCK 9, UNIVERSITY LANDS SURVEY
REAGAN COUNTY, TEXAS

383-40309

VES Bottom Hole Location is 2.81' @ 64.13° of Surface Location

MD / FT	418.00		417.99	TVD / FT
North / FT	South / FT		East / FT	West / FT
1.23			2.53	

VES SURVEY INTERNATIONAL

841279

SEM Operating Co., LLC

Reagan County, TX (NAD27 TC)

University 9C

University 9C #0101WC

API: 42-383-40309

OH

Design: Final Surveys

Standard Survey Report

16 July, 2018

Windows User

Survey Report

Company:	SEM Operating Co., LLC	Local Co-ordinate Reference:	Well University 9C #0101WC
Project:	Reagan County, TX (NAD27 TC)	TVD Reference:	KB @ 2634.00usft (Integrity 4)
Site:	University 9C	MD Reference:	KB @ 2634.00usft (Integrity 4)
Well:	University 9C #0101WC	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys	Database:	EDM 5000.14 Single User Db

Project	Reagan County, TX (NAD27 TC)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Texas Central 4203		

Site	University 9C		
Site Position:		Northing:	593,084.00 usft
From:	Map	Easting:	1,583,638.00 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	31° 17' 26.030 N
		Longitude:	101° 39' 58.862 W
		Grid Convergence:	-0.69 °

Well	University 9C #0101WC		
Well Position	+N/-S	0.00 usft	Northing: 593,084.00 usft
	+E/-W	0.00 usft	Easting: 1,583,638.00 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	31° 17' 26.030 N
		Longitude:	101° 39' 58.862 W
		Ground Level:	2,629.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	07/12/18	5.86
			Dip Angle (°)
			59.47
			Field Strength (nT)
			47,463.18963665

Design	Final Surveys		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°)
			58.82

Survey Program	Date	07/16/18		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
25.00	518.00	40' Corrected Bit-Sensor (OH)	MWD	MWD - Standard

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.00	0.20	33.10	25.00	0.04	0.02	0.04	0.80	0.80	0.00
25' MD First MWD Survey									
137.00	0.10	304.55	137.00	0.26	0.05	0.18	0.20	-0.09	-79.06
223.00	0.20	271.40	223.00	0.30	-0.16	0.02	0.15	0.12	-38.55
309.00	0.30	158.70	309.00	0.10	-0.23	-0.15	0.49	0.12	-131.05
429.00	0.30	44.16	429.00	0.03	0.10	0.10	0.42	0.00	-95.45
518.00	0.40	64.37	518.00	0.33	0.55	0.64	0.18	0.11	22.71
518' MD Last MWD Survey									

Windows User

Survey Report

Company:	SEM Operating Co., LLC	Local Co-ordinate Reference:	Well University 9C #0101WC
Project:	Reagan County, TX (NAD27 TC)	TVD Reference:	KB @ 2634.00usft (Integrity 4)
Site:	University 9C	MD Reference:	KB @ 2634.00usft (Integrity 4)
Well:	University 9C #0101WC	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys	Database:	EDM 5000.14 Single User Db

Design Annotations

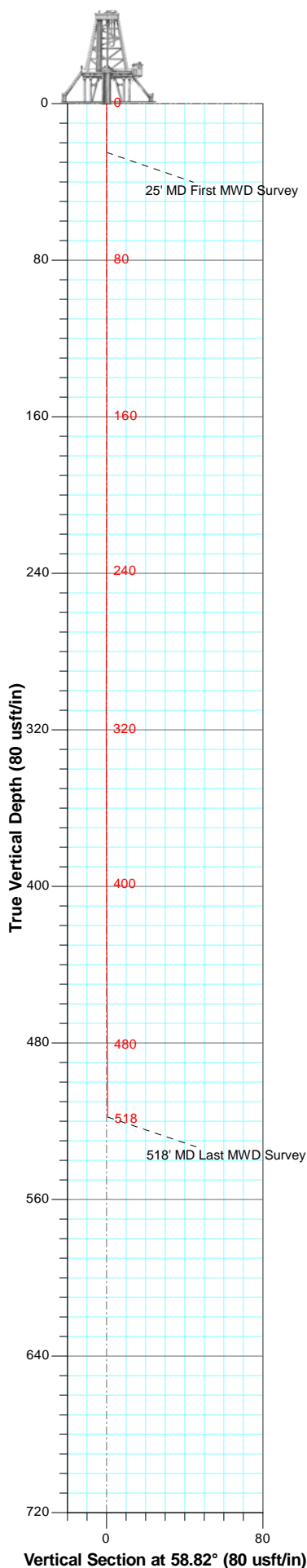
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
25.00	25.00	0.04	0.02	25' MD First MWD Survey
518.00	518.00	0.33	0.55	518' MD Last MWD Survey

Checked By: _____ Approved By: _____ Date: _____


SEM Operating Co., LLC

Project: Reagan County, TX (NAD27 TC)
 Site: University 9C
 Well: University 9C #0101WC
 Wellbore: OH
 Design: Final Surveys
 Rig: Integrity 4

INTEGRITY SERVICES



WELL DETAILS						
Depth Reference: KB @ 2634.00usft (Integrity 4)						
Ground Elevation: 2629.00						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	593084.00	1583638.00	31° 17' 26.030 N	101° 39' 58.862 W	



Azimuths to Grid North

True North: 0.69°

Magnetic North: 6.55°

Magnetic Field

Strength: 47463.2snT

Dip Angle: 59.47°

Date: 07/12/2018

Model: IGRF2015

Map System: US State Plane 1927 (Exact solution)

Datum: NAD 1927 (NADCON CONUS)

Ellipsoid: Clarke 1866

Zone Name: Texas Central 4203

Local Origin: Well University 9C #0101WC, Grid North

Latitude: 31° 17' 26.030 N

Longitude: 101° 39' 58.862 W

Grid East: 1583638.00

Grid North: 593084.00

Scale Factor: 1.000

Geomagnetic Model: IGRF2015

Sample Date: 12-Jul-18

Magnetic Declination: 5.86°

Dip Angle from Horizontal: 59.47°


Magnetic Field Strength: 47463.18963665nT

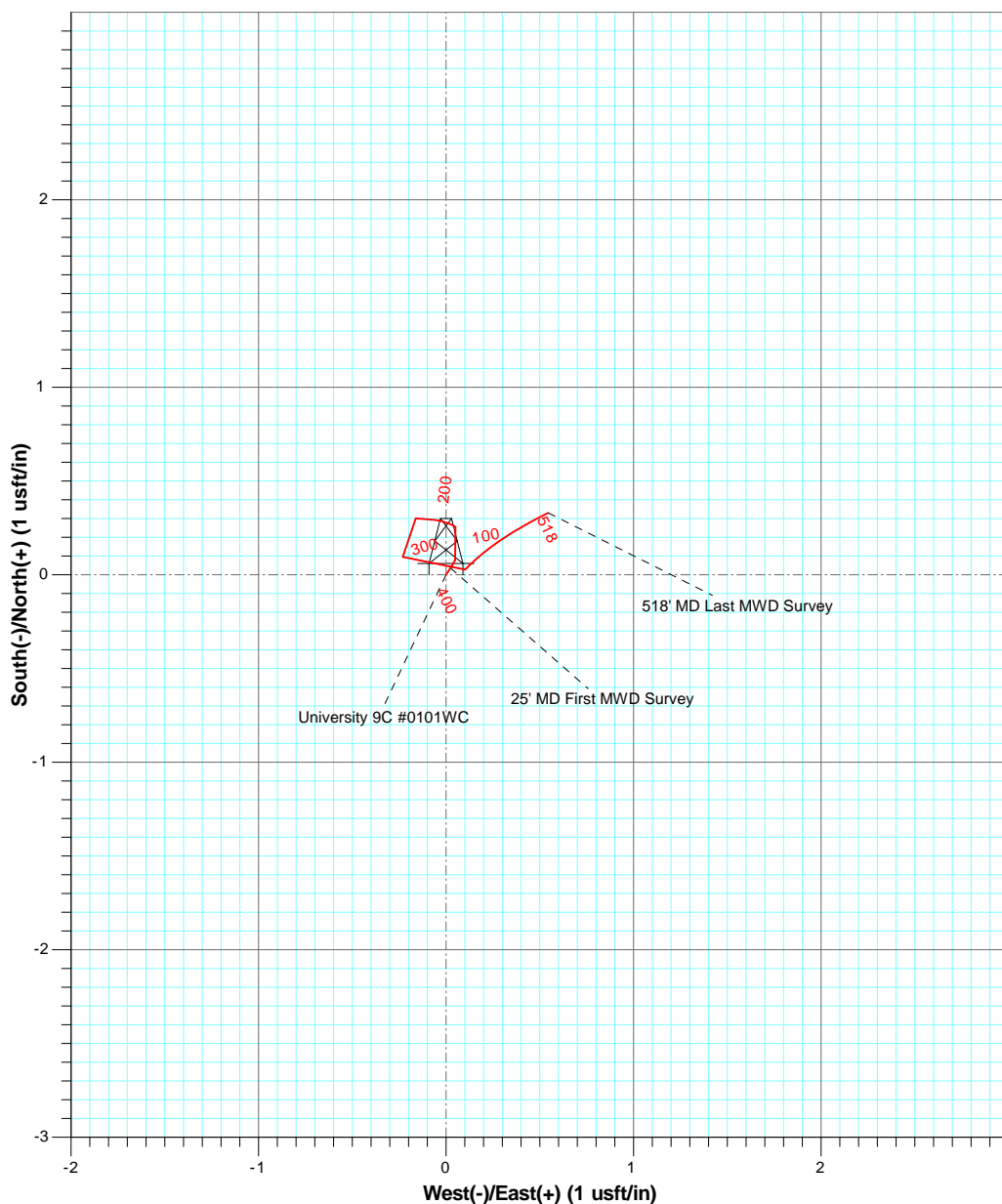
To convert a Magnetic Direction to a Grid Direction, Add 6.55°

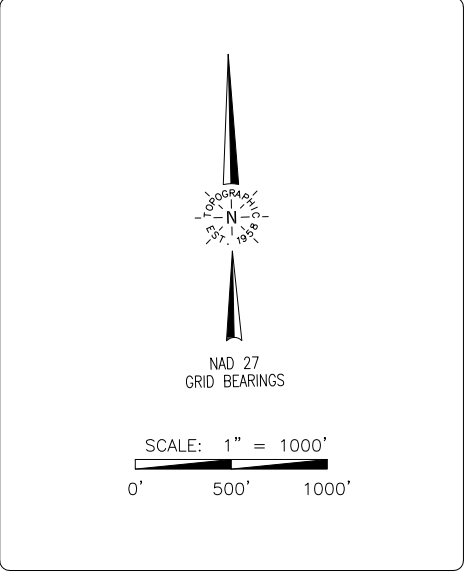
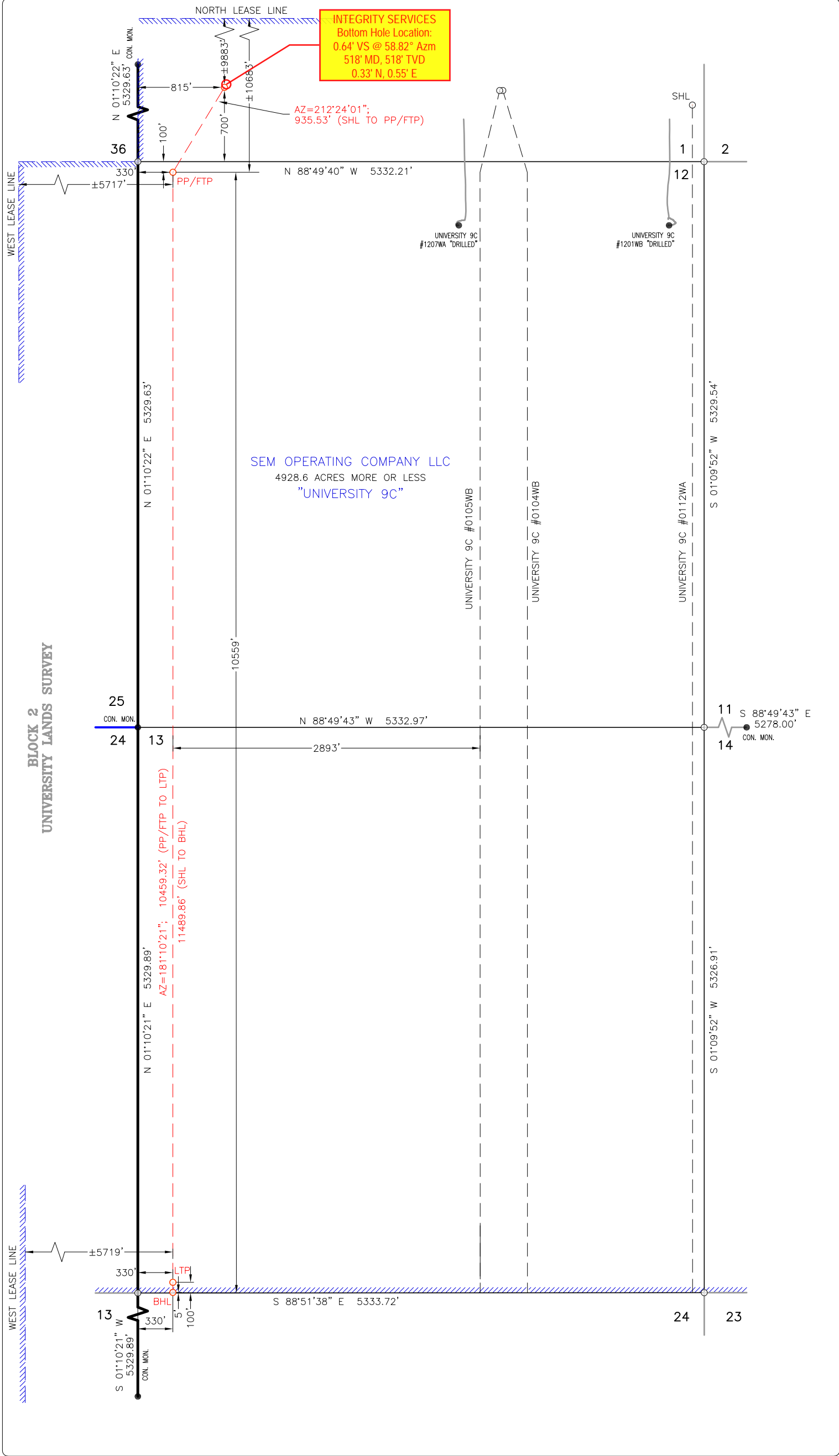
To convert a Magnetic Direction to a True Direction, Add 5.86° East

To convert a True Direction to a Grid Direction, Add 0.69°

LEGEND

 Final Surveys





SPECIAL NOTES:

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LEGEND		Section Line
		Block Line
		Abstract Line
		Tract Line
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		County Road
		Unit/Lease Boundary
		Found Monument
		Set 1/2" Rebar w/cap
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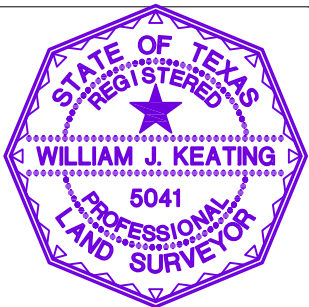
Scale: 1"=1000'	Surveyed: 06/04/18
COGO: 519-89429	
Revision: ()	/ /
Drawn By: MR;	06/08/2018
ORIGINAL DOC. SIZE: 11"x17"	

CERTIFICATION:

This well location shown on this permit plat was surveyed on the ground under my direct supervision. This plat is for Texas Railroad Commission permit purpose only and should not be considered a boundary survey.

William J. Keating

Texas Reg. No. 5041



TOPOGRAPHIC
LOYALTY INNOVATION LEGACY

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WWW.TOPOGRAPHIC.COM

Texas FIRM Registration NO. 10042500

FILE NAME: LO_UNIVERSITY_9C_0101_WC

SEM OPERATING COMPANY, LLC

LEASE NAME & WELL NO.:
UNIVERSITY 9C #0101WC

TOPOGRAPHY & VEGETATION:
NATURAL MESQUITE PASTURE

NEAREST TOWN IN COUNTY:
±14.00 MILES NORTHWEST OF BIG LAKE, TEXAS

LOCATION DESCRIPTION:
SHL: SECTION 1, BLOCK 9, UNIVERSITY LANDS SURVEY
PP/FTP: SECTION 12, BLOCK 9, UNIVERSITY LANDS SURVEY
LTP/BHL: SECTION 13, BLOCK 9, UNIVERSITY LANDS SURVEY
REAGAN COUNTY, TEXAS



Survey Certification Letter

August 3, 2018

State of Texas
County of Reagan

I, Chris Harris, certify that; I am employed by **Integrity Services, LLC**; that I did on the day(s) of 7/13/2018 through 7/14/2018 conducted and / or supervised the MWD survey(s) taken from the depth of 25 feet to depth of 518 feet; that the data is true, correct, complete and within the specifications and limitations of the survey tool provided by **Integrity Services, LLC**; that I am authorized and qualified to make this survey report; that was requested by SEM Operating Company, LLC for the surveys performed on the University 9C #0101WC well, API No. 42-383-40309. In Reagan County, Texas; and that I have reviewed this report and find that it conforms to the principles and procedures set forth by **Integrity Services, LLC**.

Chris Harris

Chris Harris
Performance Supervisor
P.O. Box 5989 | Midland, TX 79704
Office: 432-682-0703
chris@integrity-serv.com