

30-025 40153

COG OPERATING

Maljamar
Lea County, NM
MC Federal #58
VH - Job #32K0811762

HOBBS OCD

NOV 21 2011

RECEIVED

Survey: Actual

SDI Standard Survey Report

This survey is correct to the best of my knowledge and is supported by actual field data.

Richard

Notarized this date 27th of September, 2011.

Carrie Reed

Notary Signature
County of Midland
State of Texas



DEC 08 2011

Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well MC Federal #58
Project:	Maljamar	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Lea County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	MC Federal #58	North Reference:	True
Wellbore:	VH - Job #32K0811762	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0811762	Database:	EDM-Regulatory

Project	Maljamar		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Lea County, NM				
Site Position:		Northing:	663,893 65 usft	Latitude:	32° 49' 26 346 N
From:	Lat/Long	Easting:	664,520 98 usft	Longitude:	103° 47' 51 972 W
Position Uncertainty:	0 0 usft	Slot Radius:	0"	Grid Convergence:	0 29 °

Well	MC Federal #58, Vertical					
Well Position	+N/-S	0 0 usft	Northing:	664,146 69 usft	Latitude:	32° 49' 28 268 N
	+E/-W	0 0 usft	Easting:	675,734 45 usft	Longitude:	103° 45' 40 550 W
Position Uncertainty		0 0 usft	Wellhead Elevation:	usft	Ground Level:	0 0 usft

Wellbore	VH - Job #32K0811762				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/11/2011	7 70	60 71	48,968

Design	VH - Job #32K0811762			
Audit Notes:				
Version:	1 0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 0	0 0	0 0	217 34

Survey Program		Date	10/9/2011		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100 0	728 0	Actual (VH - Job #32K0811762)	Keeper	Keeper Gyro	

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
0 0	0 00	0 00	0 0	0 0	0 0	0 00	0 0	
100 0	0 24	332 83	100 0	0 2	-0 1	332 83	0 2	
125 0	0 24	329 01	125 0	0 3	-0 1	332 19	0 3	
150 0	0 21	333 46	150 0	0 4	-0 2	331 93	0 4	
175 0	0 28	331 36	175 0	0 5	-0 2	332 00	0 5	
200 0	0 35	334 12	200 0	0 6	-0 3	332 19	0 7	
225 0	0 32	329 47	225 0	0 7	-0 4	332 13	0 8	
250 0	0 23	321 49	250 0	0 8	-0 4	331 36	0 9	
275 0	0 07	296 44	275 0	0 9	-0 5	330 35	1 0	
300 0	0 15	227 85	300 0	0 8	-0 5	328 00	1 0	
325 0	0 35	182 14	325 0	0 7	-0 6	323 34	0 9	
350 0	0 54	180 48	350 0	0 5	-0 6	314 57	0 8	

Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well MC Federal #58
Project:	Maljamar	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Lea County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	MC Federal #58	North Reference:	True
Wellbore:	VH - Job #32K0811762	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0811762	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
375 0	0 69	186 07	375 0	0 3	-0 6	296 05	0 6
400 0	0 92	185 35	400 0	-0 1	-0 6	263 45	0 6
425 0	1 37	193 73	425 0	-0 6	-0 7	231 22	0 9
450 0	2 04	196 22	450 0	-1 3	-0 9	214 93	1 6
475 0	2 59	201 52	475 0	-2 2	-1 2	208 75	2 5
500 0	3 43	206 08	499 9	-3 4	-1 8	207 17	3 9
525 0	4 76	211 05	524 9	-5 0	-2 6	207 74	5 6
550 0	6 04	214 15	549 7	-7 0	-3 9	209 23	8 0
575 0	7 34	216 30	574 6	-9 3	-5 6	210 86	10 9
600 0	8 67	217 38	599 3	-12 1	-7 7	212 32	14 3
625 0	10 26	218 43	624 0	-15 4	-10 2	213 57	18 4
650 0	11 95	219 12	648 5	-19 1	-13 2	214 65	23 2
675 0	13 24	220 26	672 9	-23 3	-16 7	215 61	28 7
700 0	14 45	220 92	697 2	-27 9	-20 6	216 47	34 6
725 0	15 04	222 00	721 4	-32 6	-24 8	217 25	41 0
728 0	15 03	222 46	724 3	-33 2	-25 3	217 34	41 8



Scientific Drilling
Directional Drilling Operations

Project: Maljamar
Lea County, NM
Well: MC Federal #58
Wellbore: VH - Job #32K0811762
Design: VH - Job #32K0811762

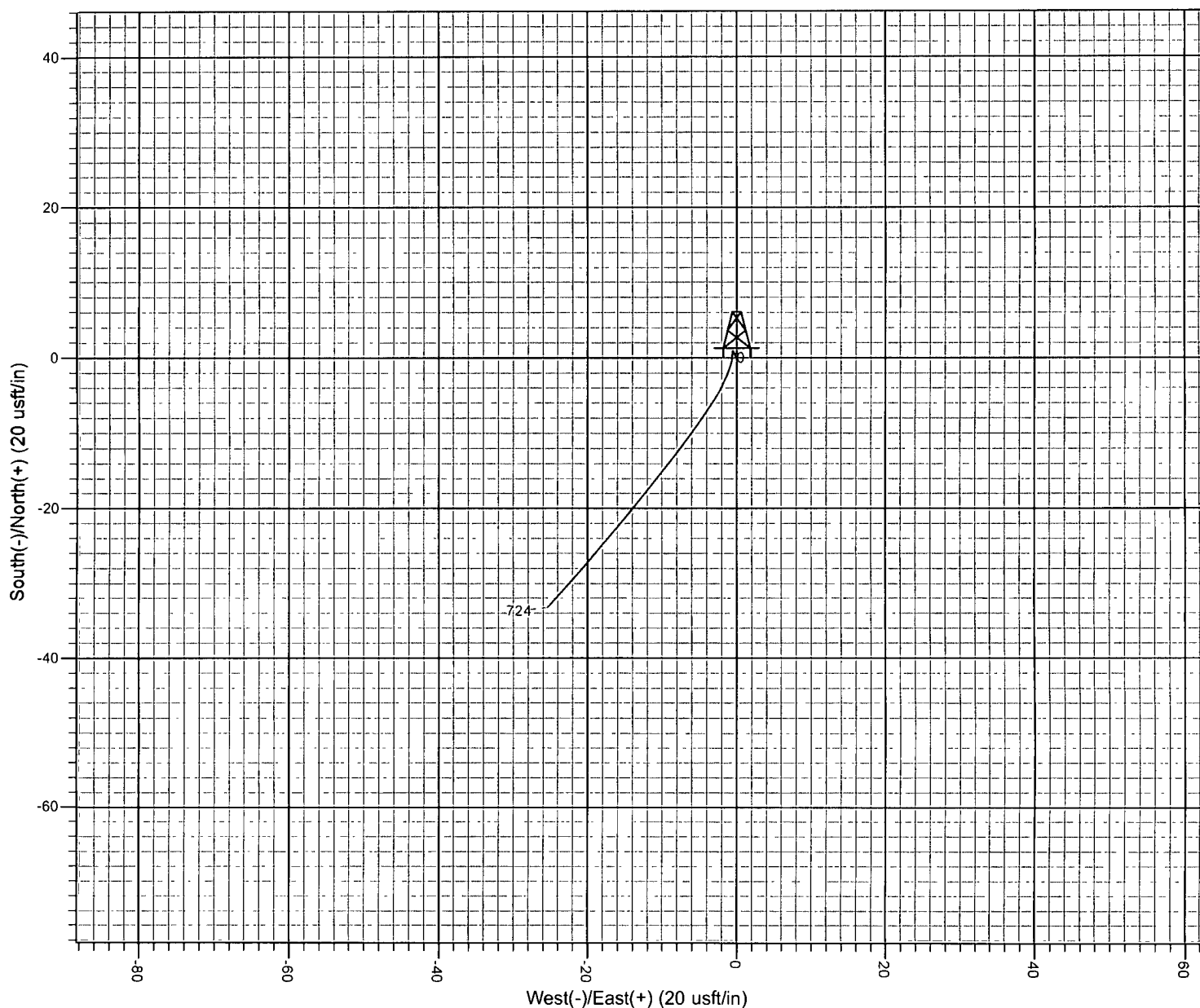


Azimuths to True North
Magnetic North 7.70°

Magnetic Field
Strength 48967.8snT
Dip Angle 60.71°
Date 8/11/2011
Model IGRF2010

WELL DETAILS: MC Federal #58
WELL @ 0.0usft (Original Well Elev)
Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	664146.69	675734.45	32° 49' 28.268 N	103° 45' 40.550 W	



PROJECT DETAILS: Maljamar
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

SITE DETAILS: Lea County, NM
Site Centre Latitude: 32° 49' 26.346 N
Longitude: 103° 47' 51.972 W
Positional Uncertainty: 0.0
Convergence: 0.29
Local North: True