

HOBBS OCD

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

F/S

APR 16 2019

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM108973
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: ☐ Hydraulic Fracturing ☒ Single Zone ☐ Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator COG OPERATING LLC (229137)		8. Lease Name and Well No. HARRIER FEDERAL COM 304H (725390)
3a. Address 600 West Illinois Ave Midland TX 79701	3b. Phone No. (include area code) (432)683-7443	9. API Well No. 30-04-45885 (97838)
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface SWSW / 330 FSL / 780 FWL / LAT 32.065914 / LONG -103.651727 At proposed prod. zone NWNW / 640 FNL / 840 FWL / LAT 32.092491 / LONG -103.651534		10. Field and Pool, or Exploratory JENNINGS / UPPER BONE SPRING SH
11. Sec., T. R. M. or Blk. and Survey or Area SEC 2 / T26S / R32E / NMP		
14. Distance in miles and direction from nearest town or post office* 24 miles		12. County or Parish LEA
13. State NM		
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 330 feet	16. No of acres in lease 640	17. Spacing Unit dedicated to this well 320
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 747 feet	19. Proposed Depth 9477 feet / 19615 feet	20. BLM/BIA Bond No. in file FED: NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3247 feet	22. Approximate date work will start* 05/01/2019	23. Estimated duration 30 days
24. Attachments		

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be requested by the BLM. |

25. Signature (Electronic Submission)	Name (Printed/Typed) Mayte Reyes / Ph: (575)748-6945	Date 01/17/2019
Title Regulatory Analyst		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-5959	Date 04/05/2019
Title Assistant Field Manager Lands & Minerals		
Office CARLSBAD		

Application approval 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.

Conditions of approval, if any, are attached.

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.

OCP Rec 04/16/19

KZ 04/15/19

APPROVED WITH CONDITIONS

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws 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, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: 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 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., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

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

The BLM connects this information to an evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. 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 Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

Additional Operator Remarks

Location of Well

1. SHL: SWSW / 330 FSL / 780 FWL / TWSP: 26S / RANGE: 32E / SECTION: 2 / LAT: 32.065914 / LONG: -103.651727 (TVD: 0 feet, MD: 0 feet)
PPP: SWSW / 0 FSL / 840 FWL / TWSP: 25S / RANGE: 32E / SECTION: 35 / LAT: 32.07971 / LONG: -103.651529 (TVD: 9425 feet, MD: 14600 feet)
PPP: SWSW / 100 FSL / 840 FWL / TWSP: 26S / RANGE: 32E / SECTION: 2 / LAT: 32.065282 / LONG: -103.65153 (TVD: 9453 feet, MD: 9650 feet)
BHL: NWNW / 640 FNL / 840 FWL / TWSP: 25S / RANGE: 32E / SECTION: 35 / LAT: 32.092491 / LONG: -103.651534 (TVD: 9477 feet, MD: 19615 feet)

BLM Point of Contact

Name: Tanja Baca
Title: Admin Support Assistant
Phone: 5752345940
Email: tabaca@blm.gov

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Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

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U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

APD Print Report

04/08/2019

APD ID: 10400037619

Submission Date: 01/17/2019

Operator Name: COG OPERATING LLC

Federal/Indian APD: FED

Well Name: HARRIER FEDERAL COM

Well Number: 304H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Application

Section 1 - General

APD ID: 10400037619

Tie to previous NOS?

Submission Date: 01/17/2019

BLM Office: CARLSBAD

User: Mayte Reyes

Title: Regulatory Analyst

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM108973

Lease Acres: 640

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO

APD Operator: COG OPERATING LLC

Operator letter of designation:

Operator Info

Operator Organization Name: COG OPERATING LLC

Operator Address: 600 West Illinois Ave

Zip: 79701

Operator PO Box:

Operator City: Midland

State: TX

Operator Phone: (432)683-7443

Operator Internet Address: RODOM@CONCHO.COM

Section 2 - Well Information

Well in Master Development Plan? NO

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: JENNINGS

Pool Name: UPPER BONE
SPRING SHALE

Is the proposed well in an area containing other mineral resources? USEABLE WATER

Describe other minerals:

Is the proposed well in a Helium production area? N

Use Existing Well Pad? NO

New surface disturbance?

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name:
HARRIER FEDERAL COM

Number: 305H, 102H AND
304H

Well Class: HORIZONTAL

Number of Legs:

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 24 Miles

Distance to nearest well: 747 FT

Distance to lease line: 330 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: COG_Harrier_304H_C102_20190311081849.pdf

Well work start Date: 05/01/2019

Duration: 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number:

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	330	FSL	780	FWL	26S	32E	2	Aliquot SWS W	32.06591 4	- 103.6517 27	LEA	NEW MEXI CO	NEW MEXI CO	S	STATE	324 7	0	0
KOP Leg #1	330	FSL	780	FWL	26S	32E	2	Aliquot SWS W	32.06591 4	- 103.6517 27	LEA	NEW MEXI CO	NEW MEXI CO	S	STATE	324 7	0	0

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
PPP Leg #1	100	FSL	840	FWL	26S	32E	2	Aliquot SWS W	32.06528 2	- 103.6515 3	LEA	NEW MEXI CO	NEW MEXI CO	S	STATE	- 620 6	965 0	945 3
PPP Leg #1	0	FSL	840	FWL	25S	32E	35	Aliquot SWS W	32.07971	- 103.6515 29	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 108973	- 617 8	146 00	942 5
EXIT Leg #1	640	FNL	840	FWL	25S	32E	35	Aliquot NWN W	32.09249 1	- 103.6515 34	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 108973	- 660 7	194 00	985 4
BHL Leg #1	640	FNL	840	FWL	25S	32E	35	Aliquot NWN W	32.09249 1	- 103.6515 34	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 108973	- 623 0	196 15	947 7

Drilling Plan

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	UNKNOWN	3247	0	0		NONE	No
2	RUSTLER	2532	716	716		NONE	No
3	TOP SALT	2168	1080	1080		NONE	No
4	BASE OF SALT	-1100	4348	4348		NONE	No
5	LAMAR	-1316	4564	4564		NONE	No
6	BELL CANYON	-1354	4602	4602		NONE	No
7	CHERRY CANYON	-2363	5611	5611		NATURAL GAS,OIL	No
8	BRUSHY CANYON	-3956	7204	7204		NATURAL GAS,OIL	No
9	BONE SPRING LIME	-5522	8770	8770		NATURAL GAS,OIL	No
10	---	-5835	9083	9083		NATURAL GAS,OIL	No

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
11	—	-6148	9396	9396		NATURAL GAS,OIL	Yes
12	BONE SPRING 1ST	-6471	9719	9719		NATURAL GAS,OIL	No

Section 2 - Blowout Prevention

Pressure Rating (PSI): 2M

Rating Depth: 4575

Equipment: Annular. The BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold.

Requesting Variance? NO

Variance request: A variance is requested for the use of a flexible choke line from the BOP to choke manifold. See attached for specs and hydrostatic test chart.

Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all of the components installed will be functional and tested.

Choke Diagram Attachment:

COG_Harrier_304H_2M_Choke_20190103110627.pdf

BOP Diagram Attachment:

COG_Harrier_304H_2M_BOP_20190103110635.pdf

COG_Harrier_304H_Flex_Hose_20190103110657.pdf

Pressure Rating (PSI): 3M

Rating Depth: 9477

Equipment: Annular. The BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold.

Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to choke manifold. See attached for specs and hydrostatic test chart.

Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all of the components installed will be functional and tested.

Choke Diagram Attachment:

COG_Harrier_304H_3M_Choke_20190103110729.pdf

BOP Diagram Attachment:

COG_Harrier_304H_3M_BOP_20190103110736.pdf

COG_Harrier_304H_Flex_Hose_20190103110822.pdf

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	745	0	745	-9530	-10415	745	J-55	54.5	STC	3.31	1.37	DRY	12.66	DRY	12.66
2	INTERMEDIATE	12.25	9.625	NEW	API	Y	0	4575	0	4575	-9530	-21730	4575	L-80	40	LTC	1.29	1.58	DRY	5.73	DRY	5.73
3	PRODUCTION	8.75	5.5	NEW	API	N	0	19615	0	19615	-9530	-32300	19615	P-110	17	LTC	1.63	2.93	DRY	2.76	DRY	2.76

Casing Attachments

Casing ID: 1 String Type: SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Harrier_304H_Casing_Prog_20190103110951.pdf

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Casing Attachments

Casing ID: 2 String Type: INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Harrier_304H_Casing_Prog_20190103111113.pdf

Casing Design Assumptions and Worksheet(s):

COG_Harrier_304H_Casing_Prog_20190103110928.pdf

Casing ID: 3 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Harrier_304H_Casing_Prog_20190103110936.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	745	260	1.75	13.5	455	50	Class C	4% Gel + 1 % CaCl2
SURFACE	Tail		0	745	250	1.34	14.8	335	50	Class C	2% CaCl2
INTERMEDIATE	Lead		0	4575	870	2	12.7	1740	50	35:65:6 C Blend	No Additives
INTERMEDIATE	Tail		0	4575	250	1.34	14.8	335	50	Class C	2% CaCl

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		0	1961 5	680	2.5	11.9	1700	25	Lead: 50:50:10 H Blend	No additives
PRODUCTION	Tail		0	1961 5	2710	1.24	14.4	3360	25	Tail: 50:50:2 Class H Blend	No additives

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
745	4575	OTHER : Saturated Brine	10	10.1							Saturated Brine
4575	1961 5	OTHER : CUT BRINE	8.6	9.3							Cut Brine
0	745	OTHER : Fresh water gel	8.6	8.8							Fresh water gel

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

None planned

List of open and cased hole logs run in the well:

CNL,GR

Coring operation description for the well:

None planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4585

Anticipated Surface Pressure: 2417.12

Anticipated Bottom Hole Temperature(F): 155

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geohazards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

COG_Harrier_304H_H2S_Schem_20190103111538.pdf

COG_Harrier_304H_H2S_SUP_20190103111544.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

COG_Harrier_304H_AC_Rprt_20190103111621.pdf

COG_Harrier_304H_Direct_Plan_20190103111629.pdf

Other proposed operations facets description:

GCP Attached.

Other proposed operations facets attachment:

COG_Harrier_304H_Drill_Prog_20190103111600.pdf

COG_Harrier_304H_GCP_20190103111608.pdf

Other Variance attachment:

SUPO

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

COG_Harrier_304H_Existing_Rd._20190103111644.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

COG_Harrier_304H_Maps_Plats_20190103111937.pdf

New road type: RESOURCE

Length: 90.4 Feet

Width (ft.): 30

Max slope (%): 33

Max grade (%): 1

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 14

New road access erosion control: Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

Access surfacing type: OTHER

Access topsoil source: ONSITE

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Access surfacing type description: Caliche

Access onsite topsoil source depth: 6

Offsite topsoil source description:

Onsite topsoil removal process: Blading

Access other construction information: No turnouts are planned. Re-routing access road around proposed well location.

Access miscellaneous information:

Number of access turnouts:

Access turnout map:

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: None necessary

Road Drainage Control Structures (DCS) description: None needed.

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Additional Attachment(s):

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

COG_Harrier_304H_1Mile_Data_20190103111956.pdf

Existing Wells description:

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? DEFER

Estimated Production Facilities description: A Central Tank Battery and facilities will be permitted and constructed at a later date, once the well is completed. The battery and facilities will be installed according to API specifications.

Section 5 - Location and Types of Water Supply

Water Source Table

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Water source use type: ICE PAD CONSTRUCTION &
MAINTENANCE, STIMULATION, SURFACE CASING
Describe type: Fresh Water.

Water source type: OTHER

Source latitude:

Source longitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Source land ownership: PRIVATE

Water source transport method: PIPELINE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 450000

Source volume (acre-feet): 58.001892

Source volume (gal): 18900000

Water source use type: INTERMEDIATE/PRODUCTION CASING

Water source type: OTHER

Describe type: Brine Water

Source latitude:

Source longitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Source land ownership: COMMERCIAL

Water source transport method: TRUCKING

Source transportation land ownership: COMMERCIAL

Water source volume (barrels): 30000

Source volume (acre-feet): 3.866793

Source volume (gal): 1260000

Water source and transportation map:

COG_Harrier_304H_Brine_H2O_20190103112019.pdf

COG_Harrier_304H_Fresh_H2O_20190115072355.pdf

Water source comments: Fresh water will be obtained from Airacuda Frac Pond located in Section 31. T25S, R33E. Brine water will be obtained from the Malaga I Brine station in Section 2. T21S. R25E

New water well? NO

New Water Well Info

Well latitude:

Well Longitude:

Well datum:

Well target aquifer:

Est. depth to top of aquifer(ft):

Est thickness of aquifer:

Aquifer comments:

Aquifer documentation:

Well depth (ft):

Well casing type:

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Well casing outside diameter (in.):

Well casing inside diameter (in.):

New water well casing?

Used casing source:

Drilling method:

Drill material:

Grout material:

Grout depth:

Casing length (ft.):

Casing top depth (ft.):

Well Production type:

Completion Method:

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Construction Materials description: Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be obtained from Oliver Kiehne Ranch and Cattle Co., caliche pit located in Section 4, T26S, R32E. P O Box 135, Orla, TX 79770. Phone (432) 448-6337.

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: SEWAGE

Waste content description: Human waste and gray water

Amount of waste: 1000 gallons

Waste disposal frequency : One Time Only

Safe containment description: Waste will be properly contained and disposed of properly at a state approved disposal facility.

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** PRIVATE

Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Waste type: DRILLING

Waste content description: Drilling fluids and produced oil land water while drilling and completion operations

Amount of waste: 6000 barrels

Waste disposal frequency : One Time Only

Safe containment description: All drilling waste will be stored safely and disposed of properly

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Waste type: GARBAGE

Waste content description: Garbage and trash produced during drilling and completion operations.

Amount of waste: 500 pounds

Waste disposal frequency : One Time Only

Safe containment description: Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: Trucked to an approved disposal facility.

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.)

Reserve pit width (ft.)

Reserve pit depth (ft.)

Reserve pit volume (cu. yd.)

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location Roll off cutting containers on tracks

Cuttings area length (ft.)

Cuttings area width (ft.)

Cuttings area depth (ft.)

Cuttings area volume (cu. yd.)

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

COG_Harrier_304H_Layout_20190103112055.pdf

Comments: A Central Tank Battery and facilities will be permitted and constructed at a later date, once the well is completed. The battery and facilities will be installed according to API specifications.

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name: HARRIER FEDERAL COM

Multiple Well Pad Number: 305H, 102H AND 304H

Recontouring attachment:

Drainage/Erosion control construction: Immediately following construction approximately 400' of straw waddles will be placed on the north side of the location to reduce sediment impacts to fragile/sensitive soils.

Drainage/Erosion control reclamation: North 50', Northwest 50'

Well pad proposed disturbance
(acres): 3.67

Road proposed disturbance (acres):
0.15

Powerline proposed disturbance
(acres): 0

Pipeline proposed disturbance
(acres): 0

Other proposed disturbance (acres): 0

Total proposed disturbance: 3.82

Well pad interim reclamation (acres):
0.15

Road interim reclamation (acres): 0

Powerline interim reclamation (acres):
0

Pipeline interim reclamation (acres): 0

Other interim reclamation (acres): 0

Total interim reclamation: 0.15

Well pad long term disturbance
(acres): 2.35

Road long term disturbance (acres):
0.15

Powerline long term disturbance
(acres): 0

Pipeline long term disturbance
(acres): 0

Other long term disturbance (acres): 0

Total long term disturbance: 2.5

Disturbance Comments:

Reconstruction method: If needed, portions of the pad not needed for production operations will be re-contoured to its original state as much as possible. The caliche that is removed will be reused. The stockpiled topsoil will be spread out over reclaimed area and reseeded with BLM approved seed mixture.

Topsoil redistribution: North 50', Northwest 50'

Soil treatment: None

Existing Vegetation at the well pad: Shinnery Oak/Mesquite grassland

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Shinnery Oak/Mesquite grassland

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: Shinnery Oak/Mesquite grassland

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: N/A

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type:

Seed source:

Seed name:

Source name:

Source address:

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre:

Proposed seeding season:

Seed Summary

Total pounds/Acre:

Seed Type

Pounds/Acre

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: Gerald

Last Name: Herrera

Phone: (432)260-7399

Email: gherrera@concho.com

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: N/A

Weed treatment plan attachment:

Monitoring plan description: N/A

Monitoring plan attachment:

Success standards: N/A

Pit closure description: N/A

Pit closure attachment:

COG_Harrier_304H_Closed_Loop_20190103112126.pdf

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: STATE GOVERNMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office: STATE OF NEW MEXICO

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Section 12 - Other Information

Right of Way needed? NO

Use APD as ROW?

ROW Type(s):

ROW Applications

SUPO Additional Information: Surface Use & Operating Plan.

Use a previously conducted onsite? YES

Previous Onsite information: Onsite completed on 4/26/2018 by Rand French (COG); Gerald Herrera (COG) and Jeff Robertson (BLM).

Other SUPO Attachment

COG_Harrier_304H_C012_20190103112217.pdf

COG_Harrier_304H_Closed_Loop_20190103112227.pdf

COG_Harrier_304H_1Mile_Data_20190103112235.pdf

COG_Harrier_304H_Brine_H2O_20190103112246.pdf

COG_Harrier_304H_Existing_Rd_20190103112307.pdf

COG_Harrier_304H_Layout_20190103112321.pdf

COG_Harrier_304H_Maps_Plats_20190103112332.pdf

COG_Harrier_304H_Fresh_H2O_20190115072511.pdf

COG_Harrier_304H_Reclamation_20190115072517.pdf

COG_Harrier_304H_Certification_20190115072550.pdf

COG_Harrier_304H_SUP_20190117094428.pdf

PWD

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Injection well name:

Assigned injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

Bond Info

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000215

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

Operator Certification

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: Mayte Reyes

Signed on: 12/27/2018

Title: Regulatory Analyst

Street Address: 2208 W Main Street

City: Artesia

State: NM

Zip: 88210

Phone: (575)748-6945

Email address: Mreyes1@concho.com

Operator Name: COG OPERATING LLC

Well Name: HARRIER FEDERAL COM

Well Number: 304H

Field Representative

Representative Name: Gerald Herrera

Street Address: 2208 West Main Street

City: Artesia

State: NM

Zip: 88210

Phone: (575)748-6940

Email address: gherrera@concho.com

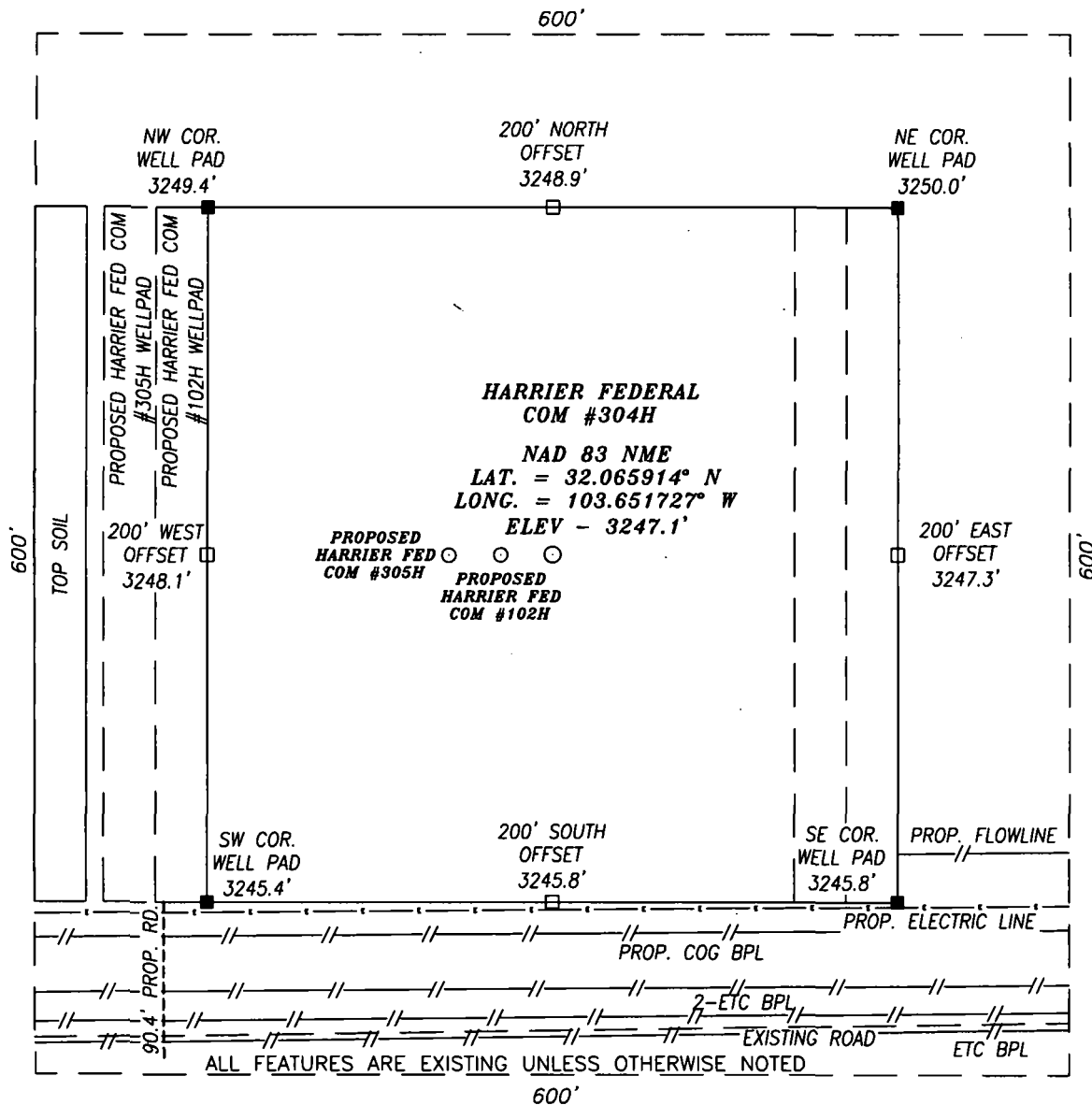
Payment Info

Payment

APD Fee Payment Method: PAY.GOV

pay.gov Tracking ID: 26EPP5SF

SECTION 2, TOWNSHIP 26 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY NEW MEXICO



DIRECTIONS TO LOCATION

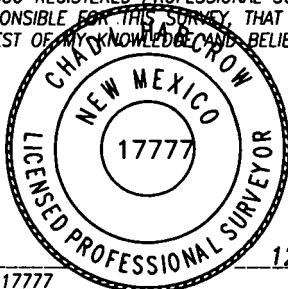
FROM THE INTERSECTION OF ST. HWY. 128 AND ORLA RD. (CR.1)
GO SOUTH ON ORLA RD. (CR.1) FOR APPROX. 10.4 MILES; THEN
TURN LEFT (EAST) ON PIPELINE RD. AND GO APPROX. 1.3 MILES
TO THE PROPOSED RD.; THE PROPOSED WELL IS APPROX. 370 FEET
NORTHEASTERLY.

HARCROW SURVEYING, LLC
2314 W. MAIN ST, ARTESIA, N.M. 88210
PH: (575) 746-2158
c.harcrow@harcrowsurveying.com



CERTIFICATION

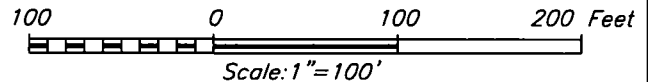
I, CHAD HARCROW, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY
THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS
TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.



Chad Harcrow

CHAD HARCROW N.M.P.S. NO. 17777

12/17/18
DATE

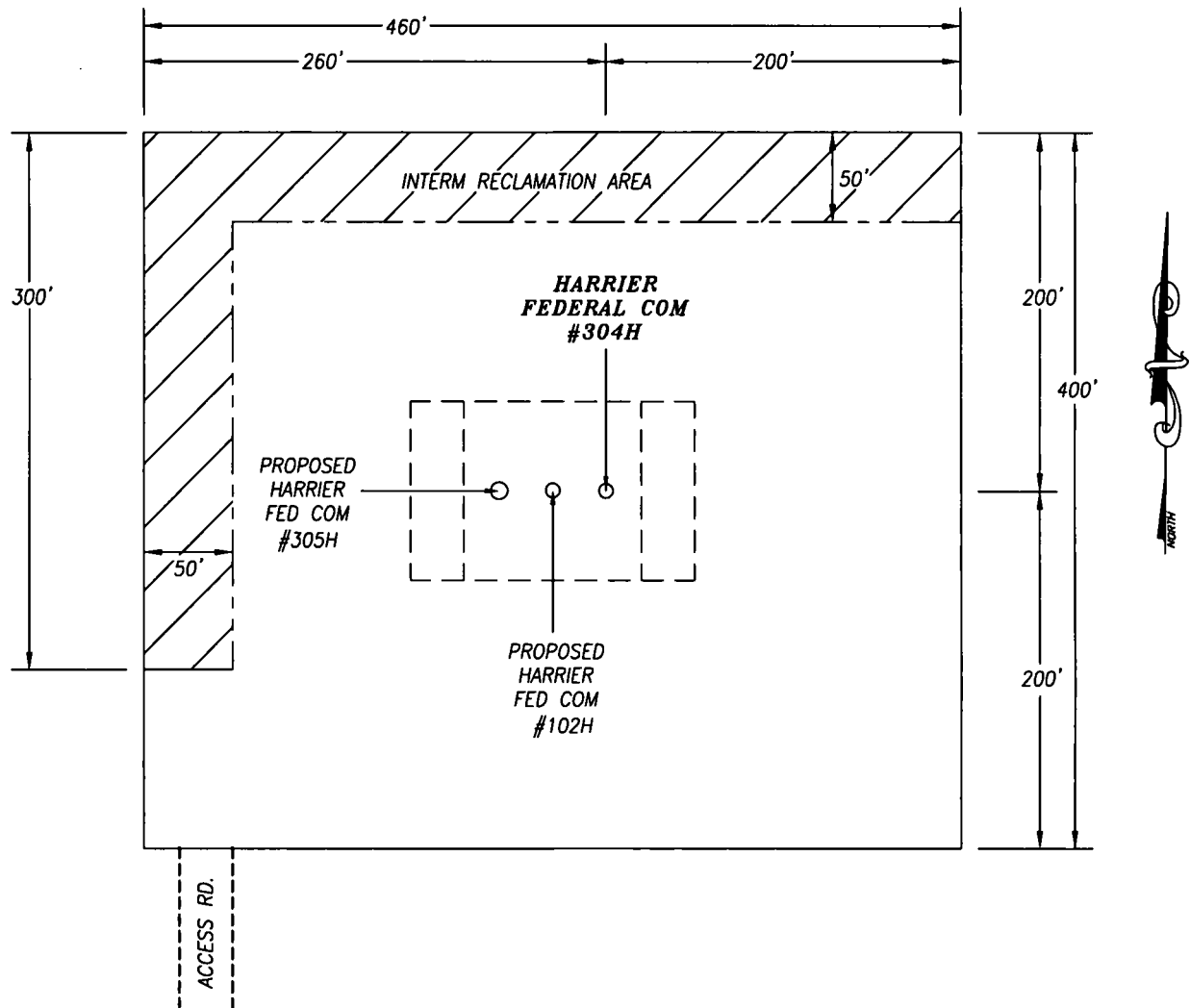


COG OPERATING, LLC

HARRIER FEDERAL COM #304H
LOCATED 330 FEET FROM THE SOUTH LINE
AND 780 FEET FROM THE WEST LINE OF SECTION 2,
TOWNSHIP 26 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO

SURVEY DATE: DECEMBER 12, 2018	600
DRAFTING DATE: DECEMBER 14, 2018	PAGE: 1 OF 1
APPROVED BY: CH	DRAWN BY: AM
FILE: 18-1704	

RECLAMATION AND FACILITY DIAGRAM – PRODUCTION FACILITIES DIAGRAM
COG OPERATING, LLC
SECTION 2, TOWNSHIP 26 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.



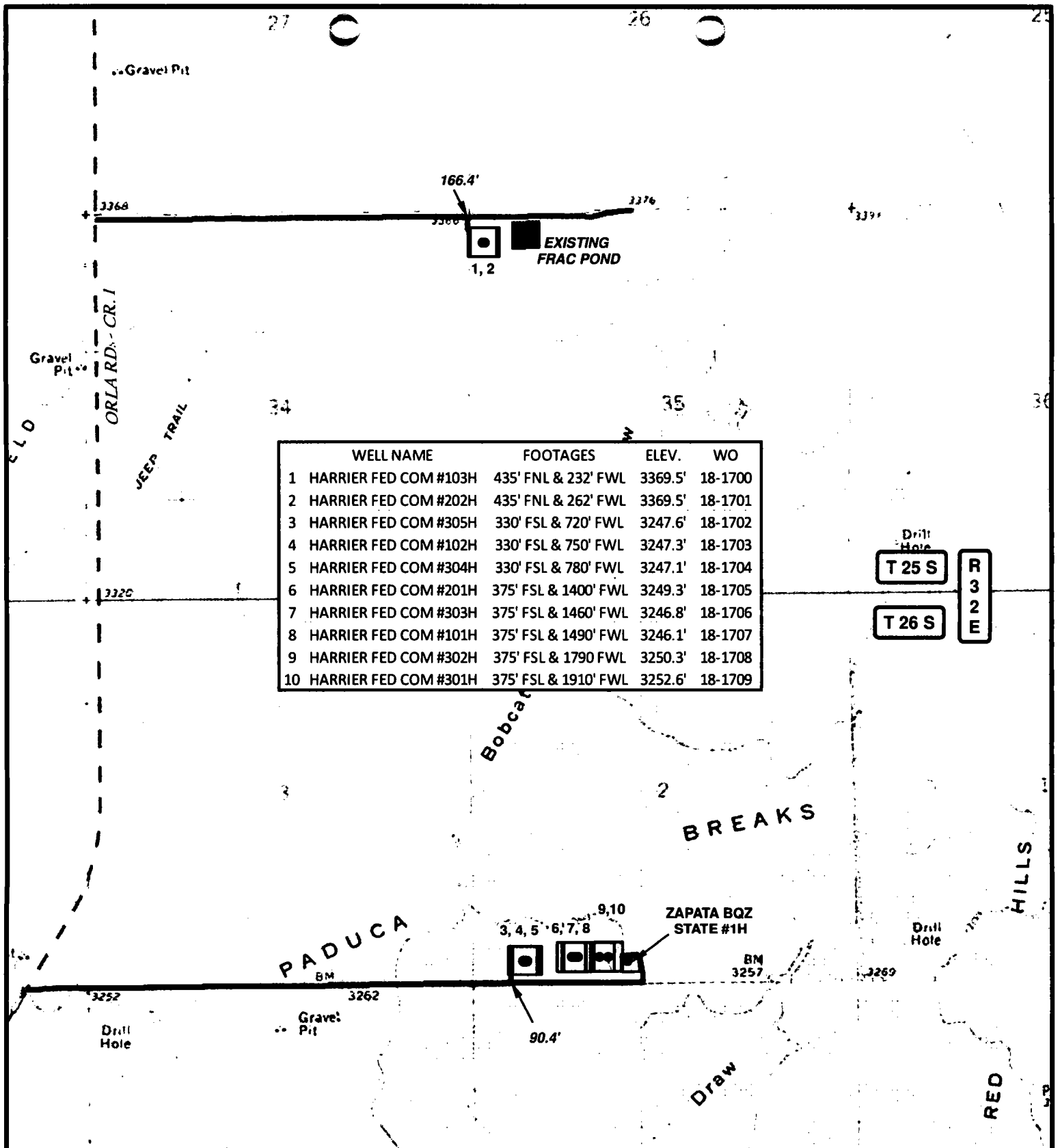
LEASE NAME WELL & WELL NUMBER: HARRIER FEDERAL COM #304H
LATITUDE: 32.065914° N
LONGITUDE: 103.651727° W

HARCROW SURVEYING, LLC
 2314 W. MAIN ST, ARTESIA, N.M. 88210
 PH: (575) 746-2158
 c.harcrow@harcrowsurveying.com



100 0 100 200 Feet
 Scale: 1"=100'

COG OPERATING, LLC	
SURVEY DATE: DECEMBER 12, 2018	RECLAMATION
REV. DRAFTING DATE: JAN 14, 2019	PAGE: 1 OF 1
APPROVED BY: CH	DRAWN BY: VD
FILE: 18-1704	



LEGEND

- WELL
- WELLPAD
- FRAC POND
- EXISTING ROAD
- PROPOSED ROAD

HARRIER FEDERAL COM WELLS

SECTIONS: 35 & 2 TOWNSHIP: 25 & 26 S. RANGE: 32 E.
 STATE: NEW MEXICO COUNTY: LEA SURVEY: N.M.P.M.
 W.O. # 18-1700-1709 LEASE: HARRIER FED



1 IN = 1,750 FT

LOCATION MAP

TOPO

12/20/2018

A.M.

CONCHO

COG OPERATING, LLC



HARCROW SURVEYING, LLC.
 2314 W. MAIN ST, ARTESIA, NM 88210
 PH: (575) 746-2158 FAX: (575) 746-2158
 TEXAS FIRM NO. 10194089
 c.harcrow@harcrowsurveying.com

28 27 26 25

166.4'

EXISTING
FRAC POND

1,2

ORLAND - CR-1

33 34 35 36

	WELL NAME	FOOTAGES	ELEV.	WO
1	HARRIER FED COM #103H	435' FNL & 232' FWL	3369.5'	18-1700
2	HARRIER FED COM #202H	435' FNL & 262' FWL	3369.5'	18-1701
3	HARRIER FED COM #305H	330' FSL & 720' FWL	3247.6'	18-1702
4	HARRIER FED COM #102H	330' FSL & 750' FWL	3247.3'	18-1703
5	HARRIER FED COM #304H	330' FSL & 780' FWL	3247.1'	18-1704
6	HARRIER FED COM #201H	375' FSL & 1400' FWL	3249.3'	18-1705
7	HARRIER FED COM #303H	375' FSL & 1460' FWL	3246.8'	18-1706
8	HARRIER FED COM #101H	375' FSL & 1490' FWL	3246.1'	18-1707
9	HARRIER FED COM #302H	375' FSL & 1790' FWL	3250.3'	18-1708
10	HARRIER FED COM #301H	375' FSL & 1910' FWL	3252.6'	18-1709

T 25 S

R
3
2
E

T 26 S

04 03 02 01

3,4,5 6,7,8 9,10
ZAPATA BQZ
STATE #1H

90.4'

LEGEND

- WELL
- WELLPAD
- FRAC POND
- EXISTING ROAD
- PROPOSED ROAD

HARRIER FEDERAL COM WELLS

SECTIONS: 35 & 2 TOWNSHIP: 25 & 26 S. RANGE: 32 E.
STATE: NEW MEXICO COUNTY: LEA SURVEY: N.M.P.M.
W.O. # 18-1700-1709 LEASE: HARRIER FED

0 2,500 FEET

0 0.1 0.2 0.4 Miles

1 IN = 1,750 FT

LOCATION MAP

IMAGERY

12/20/2018

A.M.

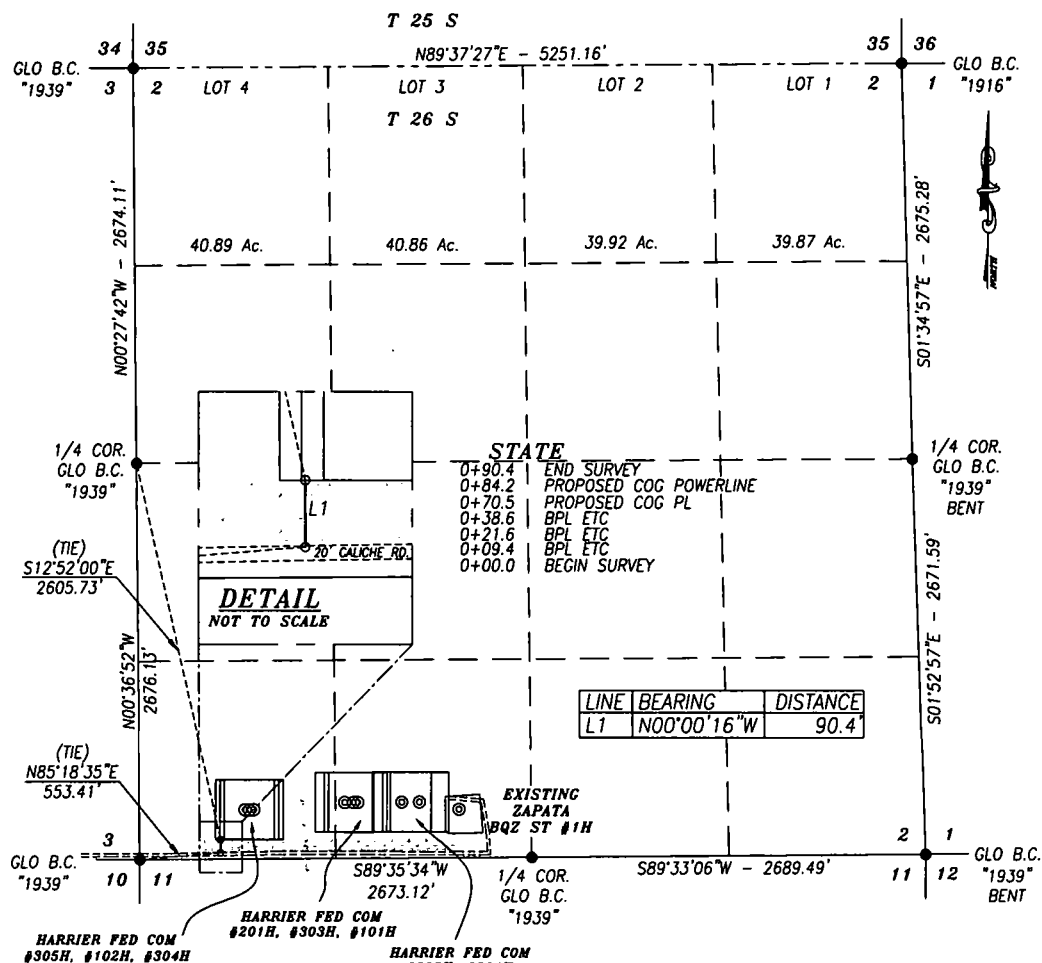
CONCHO

COG OPERATING, LLC



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PH: (575) 746-2158 FAX: (575) 746-2158
TEXAS FIRM NO. 10194089
c.harcrow@harcrowsurveying.com

ACCESS ROAD PLAT
COG OPERATING, LLC
 A PROPOSED ACCESS ROAD FROM EXISTING ROAD TO THE
 HARRIER FED COM #305H, #102H, #304H IN
SECTION 2, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M.,
 LEA COUNTY, NEW MEXICO.



DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE CROSSING STATE LAND IN SECTION 2, TOWNSHIP 25 SOUTH, RANGE 32 EAST, LEA COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY.

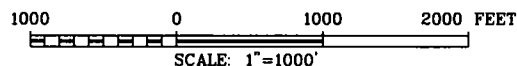
BEGINNING AT A POINT IN THE SW/4 SW/4 OF SAID SECTION, WHICH LIES N85°18'35"E 553.41 FEET FROM THE SOUTHWEST CORNER; THEN N00°00'16"W 90.4 FEET, TO A POINT IN THE SW/4 SW/4 LINE OF SAID SECTION, WHICH LIES S12°52'00"E 2605.73 FEET FROM WEST QUARTER CORNER.

SAID STRIP OF LAND BEING 90.4 FEET OR 5.48 RODS IN LENGTH, CONTAINING 0.004 ACRES MORE OR LESS AND BEING ENTIRELY LOCATED IN THE SW/4 SW/4.

BASIS OF BEARING:
 BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

CERTIFICATION
 I, CHAD HARCROW, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

HARCROW SURVEYING, LLC
 2314 W. MAIN ST. ARTESIA, N.M. 88210
 PH: (575) 746-2158 FAX: (575) 746-2158
 Texas Firm No. 10194089
 c.harcrow@harcrowsurveying.com

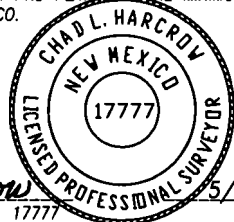


COG OPERATING, LLC

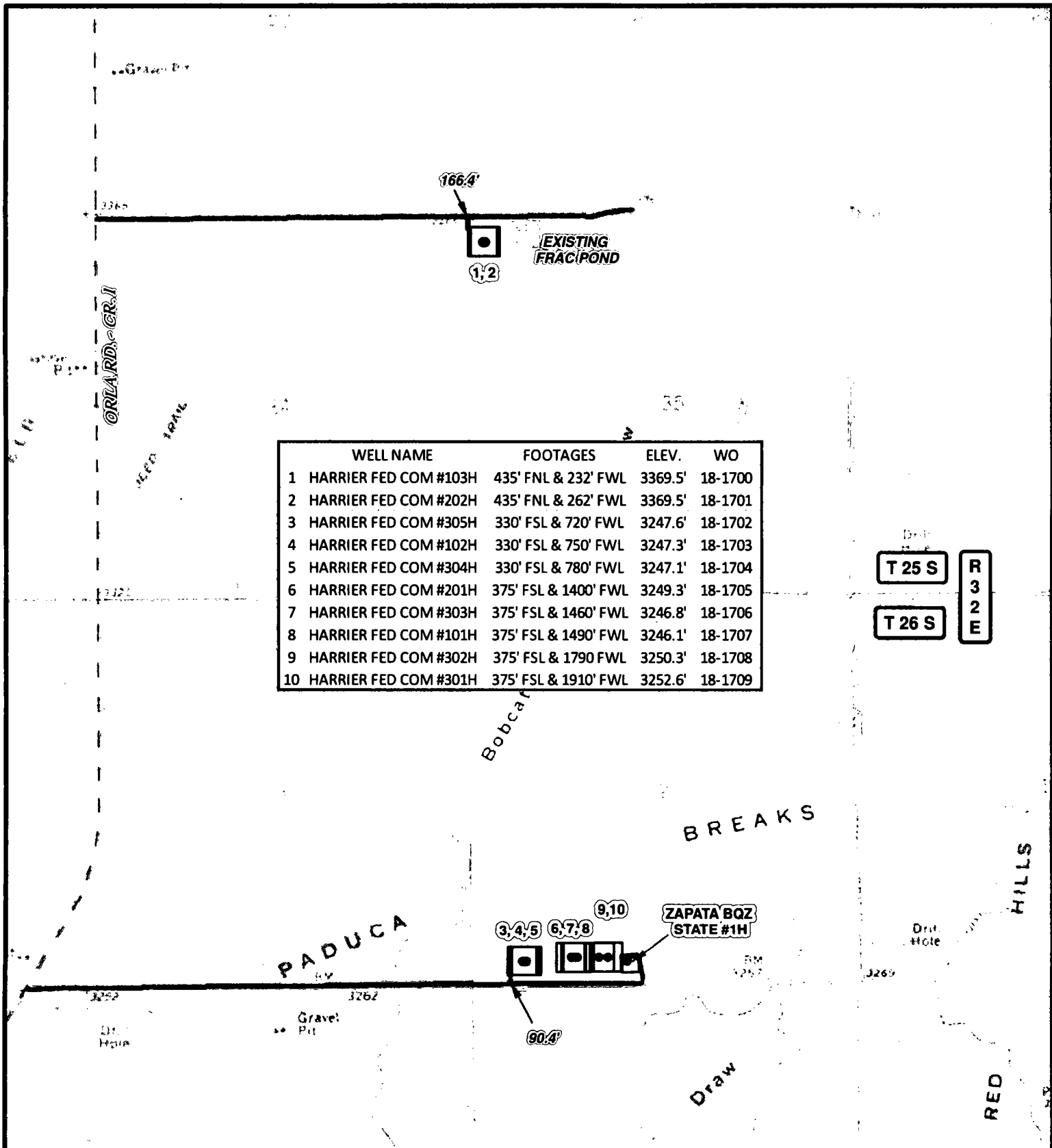
SURVEY OF A PROPOSED ACCESS ROAD LOCATED IN SECTION 2, TOWNSHIP 25 SOUTH, RANGE 32 EAST, NMPM, LEA COUNTY, NEW MEXICO

SURVEY DATE: MAY 14, 2018	ACCESS ROAD
DRAFTING DATE: MAY 24, 2018	PAGE 1 OF 1
APPROVED BY: CH	DRAWN BY: VD
FILE: 18-501	

Chad Harcrow
 CHAD HARCROW N.M.P.S. NO. 17777



5/29/18
 DATE



	WELL NAME	FOOTAGES	ELEV.	WO
1	HARRIER FED COM #103H	435' FNL & 232' FWL	3369.5'	18-1700
2	HARRIER FED COM #202H	435' FNL & 262' FWL	3369.5'	18-1701
3	HARRIER FED COM #305H	330' FSL & 720' FWL	3247.6'	18-1702
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5	HARRIER FED COM #304H	330' FSL & 780' FWL	3247.1'	18-1704
6	HARRIER FED COM #201H	375' FSL & 1400' FWL	3249.3'	18-1705
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9	HARRIER FED COM #302H	375' FSL & 1790' FWL	3250.3'	18-1708
10	HARRIER FED COM #301H	375' FSL & 1910' FWL	3252.6'	18-1709

T 25 S R 32 E
T 26 S

LEGEND

- WELL
- WELLPAD
- FRAC POND
- EXISTING ROAD
- PROPOSED ROAD
- PRIVATE
- STATE OF NM
- US BLM

HARRIER FEDERAL COM WELLS

SECTIONS: 35 & 2 TOWNSHIP: 25 & 26 S. RANGE: 32 E.
STATE: NEW MEXICO COUNTY: LEA SURVEY: N.M.P.M
W.O. # 18-1700-1709 LEASE: HARRIER FED

0 2,500 FEET

0 0.1 0.2 0.4 Miles

1 IN = 1,750 FT

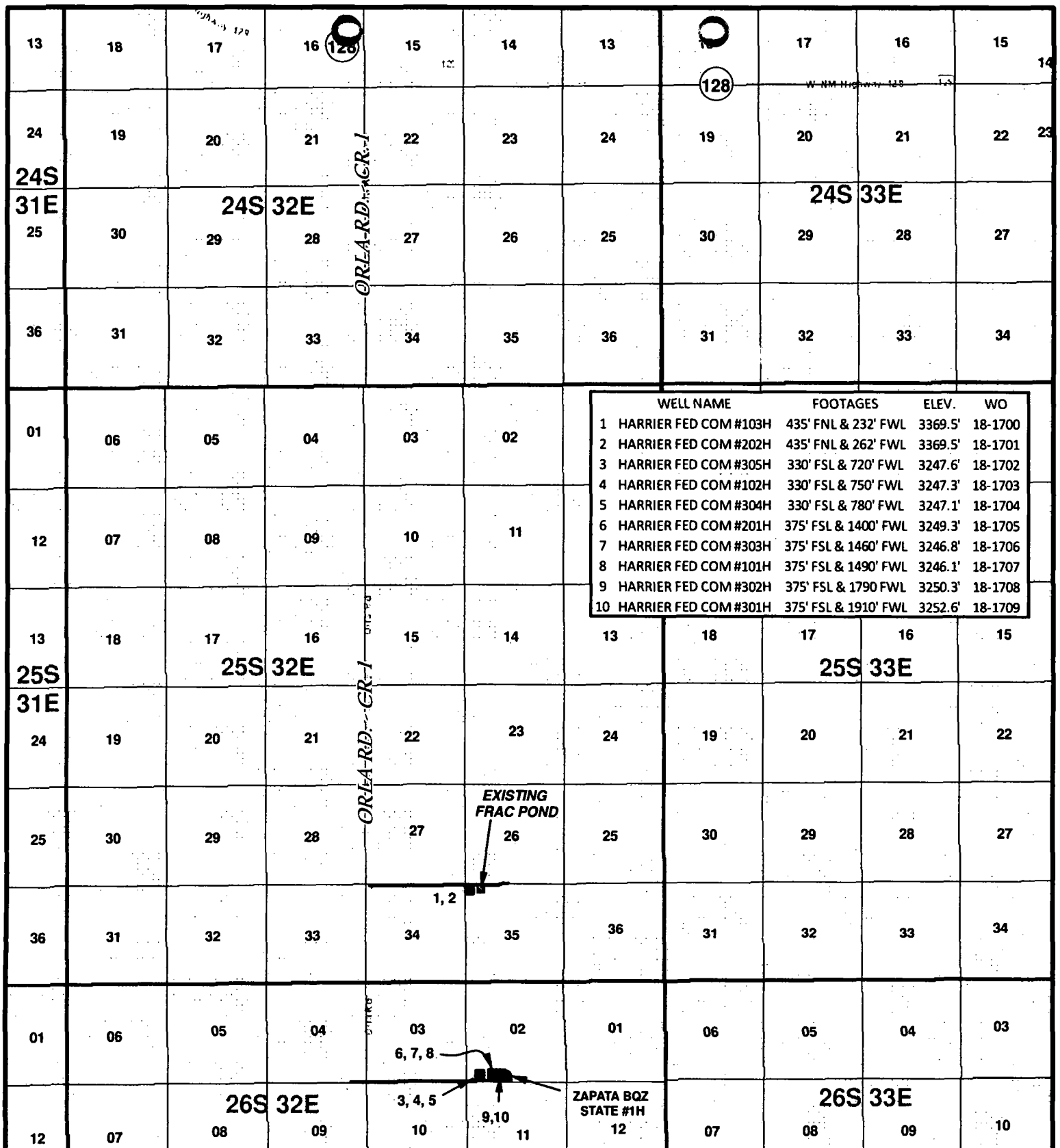
LOCATION MAP LAND STATUS 12/20/2018 A.M.

CONCHO

COG OPERATING, LLC



HARCROW SURVEYING, LLC.
2314 W. MAIN ST, ARTESIA, NM 88210
PH: (575) 746-2158 FAX: (575) 746-2158
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c.harcrow@harcrowsurveying.com



LEGEND

- WELL
- WELLPAD
- FRAC POND
- EXISTING ROAD
- PROPOSED ROAD

HARRIER FEDERAL COM WELLS

SECTIONS: 35 & 2 TOWNSHIP: 25 & 26 S. RANGE: 32 E.
 STATE: NEW MEXICO COUNTY: LEA SURVEY: N.M.P.M.
 W.O. # 18-1700-1709 LEASE: HARRIER FED

0 2,500 5,000 7,500 10,000 12,500 15,000 17,500 FEET

0 0.475 0.95 1.9 Miles

1 IN = 6,750 FT

LOCATION MAP

VICINITY MAP

12/20/2018

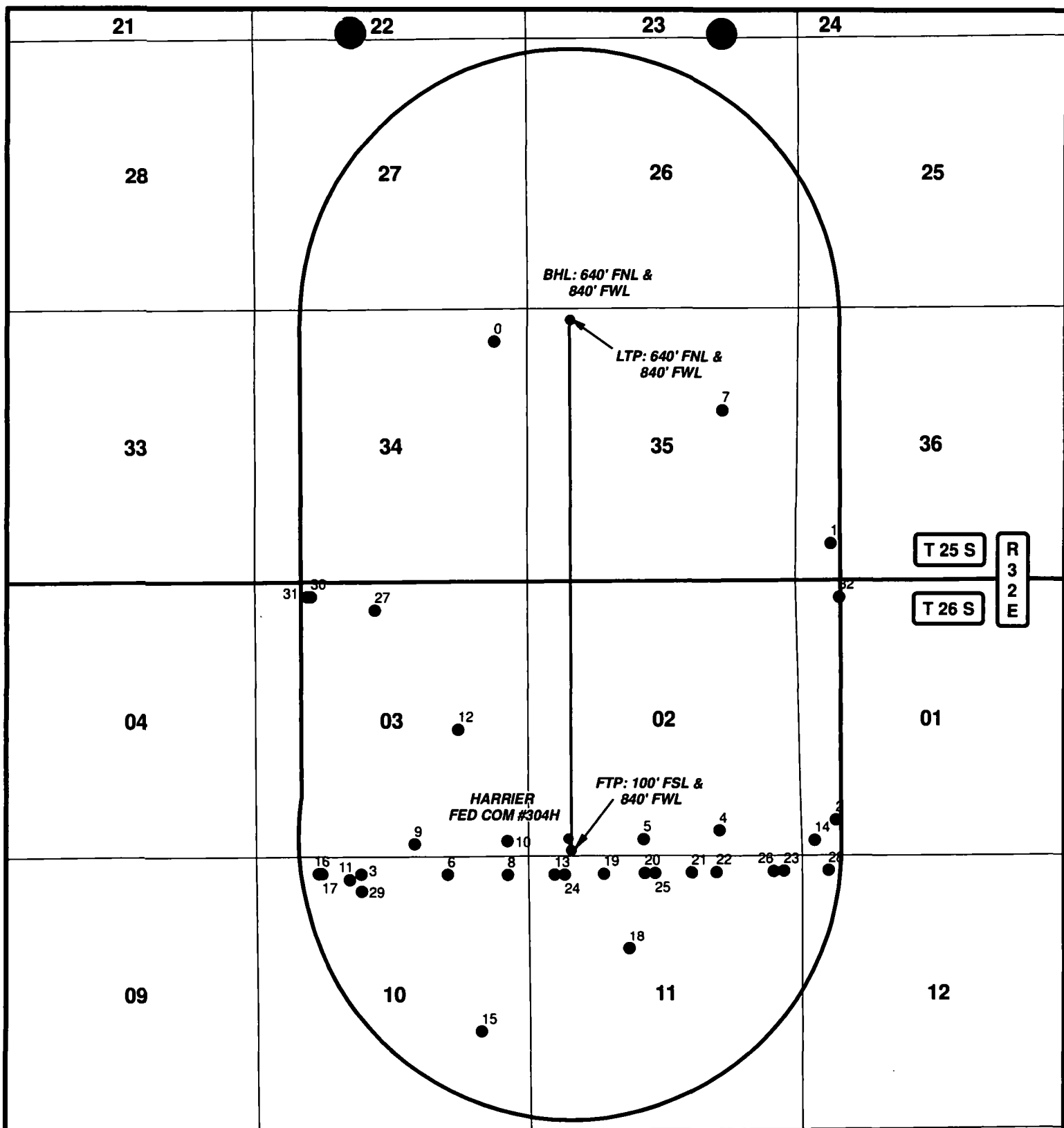
A.M.

CONCHO

COG OPERATING, LLC



HARCROW SURVEYING, LLC.
 2314 W. MAIN ST, ARTESIA, NM 88210
 PH: (575) 746-2158 FAX: (575) 746-2158
 TEXAS FIRM NO. 10194089
 c.harcrow@harcrowsurveying.com



DATA FOR "WELLS WITHIN 1 MI." IS TAKEN FROM THE NEW MEXICO EMNRD WEBSITE. THE DATA HAS BEEN UPDATED THROUGH SEPTEMBER 16, 2018.

LEGEND

- WELL
- BOTTOMHOLE
- WELLS WITHIN 1 MI.
- 1 MI. BUFFER

HARRIER FEDERAL COM #304H

SEC: 2 TWP: 26 S. RGE: 32 E. ELEVATION: 3247.1'
 STATE: NEW MEXICO COUNTY: LEA 330' FSL & 780' FWL
 W.O. # 18-1704 LEASE: HARRIER FED COM SURVEY: N.M.P.M

0 2,500 5,000 FEET

0 0.175 0.35 0.7 Miles

1 IN = 2,500 FT

1 MILE MAP

12/15/2018

V.D.



COG OPERATING, LLC



HARCROW SURVEYING, LLC.
 2314 W. MAIN ST, ARTESIA, NM 88210
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HARRIER FEDERAL COM #304H 1 MILE MAP

FID	API	OPERATOR	RANGE	SECTION	TOWNSHIP	WELL_NAME	COMPL_STAT	EW_CD	FTG_EW	FTG_NS	LATITUDE	LONGITUDE	NS_CD
0	3002508245	W K BYROM	32E	34	25.0S	SUNSHINE ROYALTY FED 001	Plugged	E	660	660	32.092455	-103.656324	N
1	3002508248	FULLERTON OIL CO	32E	36	25.0S	BRADLEY STATE 001	Plugged	W	660	660	32.081655	-103.635074	S
2	3002521861	ROBERT L WOOD	32E	1	26.0S	RICHARDSON FEDERAL 001	Plugged	W	660	660	32.066905	-103.634804	S
3	3002539911	MEWBOURNE OIL CO	32E	10	26.0S	RED HILLS WEST UNIT 002H	New (Not drilled or compl)	W	1980	330	32.064044	-103.664856	N
4	3002539947	EOG Y RESOURCES, INC.	32E	2	26.0S	QUIJOTE BQJ STATE COM 001H	New (Not drilled or compl)	E	1650	480	32.066338	-103.64219	S
5	3002540001	EOG Y RESOURCES, INC.	32E	2	26.0S	ZAPATA BQZ STATE COM 001H	New (Not drilled or compl)	W	2180	330	32.065869	-103.646979	S
6	3002540423	COG PRODUCTION, LLC	32E	10	26.0S	BUFFLEHEAD 10 FEDERAL 001H	New (Not drilled or compl)	E	1650	330	32.064007	-103.659394	N
7	3002540572	COG OPERATING LLC	32E	35	25.0S	HARRIER 35 FEDERAL COM 001H	New (Not drilled or compl)	E	1500	1980	32.088756	-103.641915	N
8	3002540594	COG PRODUCTION, LLC	32E	10	26.0S	BUFFLEHEAD 10 FEDERAL 002H	New (Not drilled or compl)	E	480	330	32.063981	-103.655599	N
9	3002540684	COG PRODUCTION, LLC	32E	3	26.0S	PINTAIL 3 FEDERAL 001H	New (Not drilled or compl)	E	2290	260	32.065643	-103.661478	S
10	3002540685	COG PRODUCTION, LLC	32E	3	26.0S	PINTAIL 3 FEDERAL 002H	New (Not drilled or compl)	E	480	330	32.065795	-103.655608	S
11	3002540687	MEWBOURNE OIL CO	32E	10	26.0S	RED HILLS WEST UNIT 004H	New (Not drilled or compl)	W	1755	440	32.063747	-103.665588	N
12	3002541208	COG OPERATING LLC	32E	3	26.0S	PINTAIL 3 FEDERAL SWD 001	New (Not drilled or compl)	E	1400	2500	32.071782	-103.65869	S
13	3002541289	BTA OIL PRODUCERS, LLC	32E	11	26.0S	MESA 8105 JV-P 002H	New (Not drilled or compl)	W	430	330	32.063986	-103.652648	N
14	3002541290	BTA OIL PRODUCERS, LLC	32E	1	26.0S	MESA 8105 JV-P 003H	New (Not drilled or compl)	W	205	265	32.065819	-103.636155	S
15	3002541325	COG OPERATING LLC	32E	10	26.0S	BUFFLEHEAD 10 FEDERAL SWD 001C	New (Not drilled or compl)	E	990	1981	32.055559	-103.657301	S
16	3002541849	MEWBOURNE OIL CO	32E	10	26.0S	RED HILLS WEST UNIT 007H	New (Not drilled or compl)	W	1150	330	32.064063	-103.667548	N
17	3002542438	MEWBOURNE OIL CO	32E	10	26.0S	RED HILLS WEST UNIT 010C	New (Not drilled or compl)	W	1215	331	32.064058	-103.667338	N
18	3002542841	BTA OIL PRODUCERS, LLC	32E	11	26.0S	MESA SWD 8105 JV-P 001	New (Not drilled or compl)	W	1900	1800	32.060002	-103.647902	N
19	3002542842	BTA OIL PRODUCERS, LLC	32E	11	26.0S	MESA 8105 JV-P 004H	New (Not drilled or compl)	W	1399	330	32.064024	-103.649504	N
20	3002542843	BTA OIL PRODUCERS, LLC	32E	11	26.0S	MESA 8105 JV-P 005H	New (Not drilled or compl)	W	2198	330	32.064055	-103.646913	N
21	3002542844	BTA OIL PRODUCERS, LLC	32E	11	26.0S	MESA 8105 JV-P 006H	New (Not drilled or compl)	E	2198	330	32.064091	-103.643941	N
22	3002542845	BTA OIL PRODUCERS, LLC	32E	11	26.0S	MESA 8105 JV-P 007H	New (Not drilled or compl)	E	1720	330	32.064109	-103.642391	N
23	3002542846	BTA OIL PRODUCERS, LLC	32E	11	26.0S	MESA 8105 JV-P 008H	New (Not drilled or compl)	E	400	330	32.06416	-103.638108	N
24	3002542855	BTA OIL PRODUCERS, LLC	32E	11	26.0S	MESA 8105 JV-P 020H	New (Not drilled or compl)	W	630	330	32.063994	-103.651999	N
25	3002542856	BTA OIL PRODUCERS, LLC	32E	11	26.0S	MESA 8105 JV-P 021H	New (Not drilled or compl)	W	2398	330	32.064063	-103.646264	N
26	3002542857	BTA OIL PRODUCERS, LLC	32E	11	26.0S	MESA 8105 JV-P 022H	New (Not drilled or compl)	E	600	330	32.064153	-103.638757	N
27	3002542909	MEWBOURNE OIL CO	32E	3	26.0S	RED HILLS WEST UNIT 016H	New (Not drilled or compl)	W	2310	550	32.078156	-103.663936	N
28	3002543079	BTA OIL PRODUCERS, LLC	32E	12	26.0S	MESA 8105 JV-P 009H	New (Not drilled or compl)	W	470	330	32.064194	-103.635286	N
29	3002543306	MEWBOURNE OIL CO	32E	10	26.0S	RED HILLS WEST UNIT 015H	New (Not drilled or compl)	W	1985	665	32.063123	-103.664846	N
30	3002543362	MEWBOURNE OIL CO	32E	3	26.0S	JENNINGS 34 W1MD FEDERAL COM 001H	New (Not drilled or compl)	W	1070	300	32.078857	-103.667968	N
31	3002543374	MEWBOURNE OIL CO	32E	3	26.0S	JENNINGS 34 A3MD FEDERAL COM 002H	New (Not drilled or compl)	W	990	300	32.078858	-103.668227	N
32	3002543723	BTA OIL PRODUCERS, LLC	32E	1	26.0S	MESA 8105 JV-P 029H	New (Not drilled or compl)	W	810	330	32.078792	-103.634554	N

COG Production, LLC - Harrier Federal Com #304H

1. Geologic Formations

TVD of target	9,477' EOL	Pilot hole depth	NA
MD at TD:	19,615'	Deepest expected fresh water:	405'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	716	Water	
Top of Salt	1080	Salt	
Base of Salt	4348	Salt	
Lamar	4564	Salt Water	
Bell Canyon	4602	Salt Water	
Cherry Canyon	5611	Oil/Gas	
Brushy Canyon	7204	Oil/Gas	
Bone Spring Lime	8770	Oil/Gas	
M. Avalon Shale	9083	Oil/Gas	
L. Avalon Shale	9396	Oil/Gas	
Basal Avalon	X	Not Penetrated	
1st Bone Spring Sand	9719	Not Penetrated	
2nd Bone Spring Sand	X	Not Penetrated	
3rd Bone Spring Sand	X	Not Penetrated	

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	745	13.375"	54.5	J55	STC	3.31	1.37	12.66
12.25"	0	4000	9.625"	40	J55	LTC	1.22	1.09	3.25
12.25"	4000	4575	9.625"	40	L80	LTC	1.29	1.58	5.73
8.75"	0	19,615	5.5"	17	P110	LTC	1.63	2.93	2.76
BLM Minimum Safety Factor							1.125	1	1.6 Dry 1.8 Wet

Intermediate casing will be kept at least 1/3 full while running casing to mitigate collapse. Intermediate burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface.

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

COG Production, LLC - Harrier Federal Com #304H

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary?	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	260	13.5	1.75	9	12	Lead: Class C + 4% Gel + 1% CaCl ₂
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl ₂
Inter.	870	12.7	2.0	9.6	16	Lead: 35:65:6 C Blend
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl
5.5 Prod	680	11.9	2.5	19	72	Lead: 50:50:10 H Blend
	2710	14.4	1.24	5.7	19	Tail: 50:50:2 Class H Blend

Volumes Subject to Observed Hole Conditions and/or Fluid Caliper Results

Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
Surface	0'	50%
1 st Intermediate	0'	50%
Production	4,075'	25% OH in Lateral (KOP to EOL) – 40% OH in Vertical

COG Production, LLC - Harrier Federal Com #304H

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	x	Tested to:
12-1/4"	13-5/8"	2M	Annular	x	2000 psi
			Blind Ram		2M
			Pipe Ram		
			Double Ram		
			Other*		
8-3/4"	13-5/8"	3M	Annular	x	50% testing pressure
			Blind Ram	x	3M
			Pipe Ram	x	
			Double Ram		
			Other*		

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

X	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
N	Are anchors required by manufacturer?
N	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. Shoe	FW Gel	8.6 - 8.8	28-34	N/C
Surf csg	9-5/8" Int shoe	Saturated Brine	10 - 10.1	28-34	N/C
9-5/8" Int shoe	Lateral TD	Cut Brine	8.6 - 9.3	28-34	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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6. Logging and Testing Procedures

Logging, Coring and Testing.

Y	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
Y	No Logs are planned based on well control or offset log information.
N	Drill stem test? If yes, explain.
N	Coring? If yes, explain.

Additional logs planned		Interval
N	Resistivity	Pilot Hole TD to ICP
N	Density	Pilot Hole TD to ICP
Y	CBL	Production casing (If cement not circulated to surface)
Y	Mud log	Intermediate shoe to TD
N	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4585 psi at 9477' TVD
Abnormal Temperature	NO 155 Deg. F.

No abnormal pressure or temperature conditions are anticipated. Sufficient mud materials to maintain mud properties and weight increase requirements will be kept on location at all times.

Sufficient supplies of Paper/LCM for periodic sweeps to control seepage and losses will be maintained on location.

Hydrogen Sulfide (H₂S) monitors will be installed prior to drilling out the surface shoe. If H₂S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.

N H₂S is present

Y H₂S Plan attached

8. Other Facets of Operation

Y	Is it a walking operation?
N	Is casing pre-set?

x	H ₂ S Plan.
x	BOP & Choke Schematics.
x	Directional Plan



CONCHO

Concho Resources, Inc.

**Lea County, NM (NAD 27 NME)
(Harrier Federal) Sec-2_T-26-S_R-32-E
Harrier Federal Com #304H**

OWB

Plan: Plan #1

Standard Planning Report

24 December, 2018

INTREPID



Intrepid Planning Report



Database: EDM 5000.15 Single User Db
Company: Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Site: (Harrier Federal) Sec-2_T-26-S_R-32-E
Well: Harrier Federal Com #304H
Wellbore: OWB
Design: Plan #1

Local Co-ordinate Reference: Well Harrier Federal Com #304H
TVD Reference: KB @ 3272.1usft (Latshaw 44)
MD Reference: KB @ 3272.1usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	Lea County, NM (NAD 27 NME)		
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 (Harrier Federal) Sec-2_T-26-S_R-32-E

Site Position:	Northing:	388,326.40 usft	Latitude:	32° 3' 56.841 N	
From: Map	Easting:	711,291.50 usft	Longitude:	103° 39' 4.521 W	
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.36 °

Well Harrier Federal Com #304H

Well Position	+N/-S	0.0 usft	Northing:	388,326.40 usft	Latitude:	32° 3' 56.841 N
	+E/-W	0.0 usft	Easting:	711,291.50 usft	Longitude:	103° 39' 4.521 W
Position Uncertainty	0.0 usft	Wellhead Elevation:		Ground Level:	3,247.1 usft	

Wellbore OWB

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/21/18	6.82	59.88	47,681.85363977

Design Plan #1

Audit Notes:

Version:	Phase:	PLAN	Tie On Depth:	0.0
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Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	359.99

Plan Survey Tool Program Date 12/24/18

Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	8,868.1 Plan #1 (OWB)	Standard Keeper 104	
			Standard Wireline Keeper v	
2	8,868.1	19,614.1 Plan #1 (OWB)	MWD+IFR1+MS	
			MWD + IFR1 + Multi-Station	

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	
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,232.8	4.66	169.81	5,232.6	-9.3	1.7	2.00	2.00	72.93	169.81	
8,870.6	4.66	169.81	8,858.3	-300.0	53.9	0.00	0.00	0.00	0.00	
9,822.6	90.61	359.65	9,477.0	277.3	59.1	10.00	9.03	-17.87	-170.13	
19,614.4	90.61	359.65	9,372.0	10,068.4	-1.1	0.00	0.00	0.00	0.00	PBHL (Harrier Fede



Intrepid
Planning Report



Database: EDM 5000.15 Single User Db
Company: Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Site: (Harrier Federal) Sec-2_T-26-S_R-32-E
Well: Harrier Federal Com #304H
Wellbore: OWB
Design: Plan #1

Local Co-ordinate Reference: Well Harrier Federal Com #304H
TVD Reference: KB @ 3272.1usft (Latshaw 44)
MD Reference: KB @ 3272.1usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned 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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
NUDGE - DLS 2.00 TFO 169.81									
5,100.0	2.00	169.81	5,100.0	-1.7	0.3	-1.7	2.00	2.00	0.00
5,200.0	4.00	169.81	5,199.8	-6.9	1.2	-6.9	2.00	2.00	0.00



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Well: Harrier Federal Com #304H
Wellbore: OWB
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North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned 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)
5,232.8	4.66	169.81	5,232.6	-9.3	1.7	-9.3	2.00	2.00	0.00
HOLD - 3637.7 at 5232.8 MD									
5,300.0	4.66	169.81	5,299.5	-14.7	2.6	-14.7	0.00	0.00	0.00
5,400.0	4.66	169.81	5,399.2	-22.7	4.1	-22.7	0.00	0.00	0.00
5,500.0	4.66	169.81	5,498.9	-30.7	5.5	-30.7	0.00	0.00	0.00
5,600.0	4.66	169.81	5,598.5	-38.6	6.9	-38.6	0.00	0.00	0.00
5,700.0	4.66	169.81	5,698.2	-46.6	8.4	-46.6	0.00	0.00	0.00
5,800.0	4.66	169.81	5,797.9	-54.6	9.8	-54.6	0.00	0.00	0.00
5,900.0	4.66	169.81	5,897.5	-62.6	11.3	-62.6	0.00	0.00	0.00
6,000.0	4.66	169.81	5,997.2	-70.6	12.7	-70.6	0.00	0.00	0.00
6,100.0	4.66	169.81	6,096.9	-78.6	14.1	-78.6	0.00	0.00	0.00
6,200.0	4.66	169.81	6,196.6	-86.6	15.6	-86.6	0.00	0.00	0.00
6,300.0	4.66	169.81	6,296.2	-94.6	17.0	-94.6	0.00	0.00	0.00
6,400.0	4.66	169.81	6,395.9	-102.6	18.4	-102.6	0.00	0.00	0.00
6,500.0	4.66	169.81	6,495.6	-110.6	19.9	-110.6	0.00	0.00	0.00
6,600.0	4.66	169.81	6,595.2	-118.6	21.3	-118.6	0.00	0.00	0.00
6,700.0	4.66	169.81	6,694.9	-126.5	22.7	-126.6	0.00	0.00	0.00
6,800.0	4.66	169.81	6,794.6	-134.5	24.2	-134.5	0.00	0.00	0.00
6,900.0	4.66	169.81	6,894.2	-142.5	25.6	-142.5	0.00	0.00	0.00
7,000.0	4.66	169.81	6,993.9	-150.5	27.0	-150.5	0.00	0.00	0.00
7,100.0	4.66	169.81	7,093.6	-158.5	28.5	-158.5	0.00	0.00	0.00
7,200.0	4.66	169.81	7,193.2	-166.5	29.9	-166.5	0.00	0.00	0.00
7,300.0	4.66	169.81	7,292.9	-174.5	31.4	-174.5	0.00	0.00	0.00
7,400.0	4.66	169.81	7,392.6	-182.5	32.8	-182.5	0.00	0.00	0.00
7,500.0	4.66	169.81	7,492.3	-190.5	34.2	-190.5	0.00	0.00	0.00
7,600.0	4.66	169.81	7,591.9	-198.5	35.7	-198.5	0.00	0.00	0.00
7,700.0	4.66	169.81	7,691.6	-206.5	37.1	-206.5	0.00	0.00	0.00
7,800.0	4.66	169.81	7,791.3	-214.5	38.5	-214.5	0.00	0.00	0.00
7,900.0	4.66	169.81	7,890.9	-222.4	40.0	-222.4	0.00	0.00	0.00
8,000.0	4.66	169.81	7,990.6	-230.4	41.4	-230.4	0.00	0.00	0.00
8,100.0	4.66	169.81	8,090.3	-238.4	42.8	-238.4	0.00	0.00	0.00
8,200.0	4.66	169.81	8,189.9	-246.4	44.3	-246.4	0.00	0.00	0.00
8,300.0	4.66	169.81	8,289.6	-254.4	45.7	-254.4	0.00	0.00	0.00
8,400.0	4.66	169.81	8,389.3	-262.4	47.1	-262.4	0.00	0.00	0.00
8,500.0	4.66	169.81	8,489.0	-270.4	48.6	-270.4	0.00	0.00	0.00
8,600.0	4.66	169.81	8,588.6	-278.4	50.0	-278.4	0.00	0.00	0.00
8,700.0	4.66	169.81	8,688.3	-286.4	51.5	-286.4	0.00	0.00	0.00
8,800.0	4.66	169.81	8,788.0	-294.4	52.9	-294.4	0.00	0.00	0.00
8,870.6	4.66	169.81	8,858.3	-300.0	53.9	-300.0	0.00	0.00	0.00
KOP - DLS 10.00 TFO -170.13									
8,900.0	1.83	153.79	8,887.7	-301.6	54.3	-301.6	10.00	-9.61	-54.44
8,950.0	3.45	13.02	8,937.7	-300.8	55.0	-300.9	10.00	3.24	-281.55
9,000.0	8.39	5.07	8,987.4	-295.7	55.7	-295.8	10.00	9.89	-15.89
9,050.0	13.38	3.01	9,036.5	-286.3	56.3	-286.3	10.00	9.97	-4.12
9,100.0	18.37	2.06	9,084.5	-272.7	56.9	-272.7	10.00	9.99	-1.91
9,150.0	23.37	1.50	9,131.2	-254.9	57.4	-254.9	10.00	9.99	-1.11
9,200.0	28.37	1.13	9,176.2	-233.1	57.9	-233.1	10.00	9.99	-0.74
9,250.0	33.36	0.87	9,219.1	-207.4	58.4	-207.4	10.00	10.00	-0.53
9,300.0	38.36	0.66	9,259.6	-178.1	58.8	-178.2	10.00	10.00	-0.41
9,350.0	43.36	0.50	9,297.4	-145.4	59.1	-145.5	10.00	10.00	-0.33
9,400.0	48.36	0.37	9,332.2	-109.6	59.4	-109.6	10.00	10.00	-0.27
9,450.0	53.36	0.25	9,363.8	-70.8	59.6	-70.8	10.00	10.00	-0.23
9,500.0	58.36	0.15	9,391.9	-29.4	59.7	-29.4	10.00	10.00	-0.20
9,550.0	63.36	0.06	9,416.2	14.2	59.8	14.2	10.00	10.00	-0.18



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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)
9,600.0	68.36	359.97	9,436.6	59.8	59.8	59.8	10.00	10.00	-0.17
9,650.0	73.36	359.90	9,453.0	107.0	59.7	107.0	10.00	10.00	-0.16
9,700.0	78.36	359.82	9,465.2	155.5	59.6	155.5	10.00	10.00	-0.15
9,750.0	83.36	359.75	9,473.2	204.9	59.4	204.9	10.00	10.00	-0.14
9,800.0	88.36	359.68	9,476.8	254.7	59.2	254.7	10.00	10.00	-0.14
9,822.6	90.61	359.65	9,477.0	277.3	59.1	277.3	10.00	10.00	-0.14
EOC - 9791.8 hold at 9822.6 MD									
9,900.0	90.61	359.65	9,476.2	354.7	58.6	354.7	0.00	0.00	0.00
10,000.0	90.61	359.65	9,475.1	454.7	58.0	454.7	0.00	0.00	0.00
10,100.0	90.61	359.65	9,474.0	554.7	57.4	554.7	0.00	0.00	0.00
10,200.0	90.61	359.65	9,473.0	654.7	56.7	654.7	0.00	0.00	0.00
10,300.0	90.61	359.65	9,471.9	754.7	56.1	754.7	0.00	0.00	0.00
10,400.0	90.61	359.65	9,470.8	854.7	55.5	854.7	0.00	0.00	0.00
10,500.0	90.61	359.65	9,469.7	954.7	54.9	954.7	0.00	0.00	0.00
10,600.0	90.61	359.65	9,468.7	1,054.7	54.3	1,054.6	0.00	0.00	0.00
10,700.0	90.61	359.65	9,467.6	1,154.6	53.7	1,154.6	0.00	0.00	0.00
10,800.0	90.61	359.65	9,466.5	1,254.6	53.0	1,254.6	0.00	0.00	0.00
10,900.0	90.61	359.65	9,465.4	1,354.6	52.4	1,354.6	0.00	0.00	0.00
11,000.0	90.61	359.65	9,464.4	1,454.6	51.8	1,454.6	0.00	0.00	0.00
11,100.0	90.61	359.65	9,463.3	1,554.6	51.2	1,554.6	0.00	0.00	0.00
11,200.0	90.61	359.65	9,462.2	1,654.6	50.6	1,654.6	0.00	0.00	0.00
11,300.0	90.61	359.65	9,461.2	1,754.6	50.0	1,754.6	0.00	0.00	0.00
11,400.0	90.61	359.65	9,460.1	1,854.6	49.4	1,854.6	0.00	0.00	0.00
11,500.0	90.61	359.65	9,459.0	1,954.6	48.7	1,954.6	0.00	0.00	0.00
11,600.0	90.61	359.65	9,457.9	2,054.6	48.1	2,054.6	0.00	0.00	0.00
11,700.0	90.61	359.65	9,456.9	2,154.6	47.5	2,154.6	0.00	0.00	0.00
11,800.0	90.61	359.65	9,455.8	2,254.6	46.9	2,254.6	0.00	0.00	0.00
11,900.0	90.61	359.65	9,454.7	2,354.6	46.3	2,354.6	0.00	0.00	0.00
12,000.0	90.61	359.65	9,453.6	2,454.5	45.7	2,454.5	0.00	0.00	0.00
12,100.0	90.61	359.65	9,452.6	2,554.5	45.1	2,554.5	0.00	0.00	0.00
12,200.0	90.61	359.65	9,451.5	2,654.5	44.4	2,654.5	0.00	0.00	0.00
12,300.0	90.61	359.65	9,450.4	2,754.5	43.8	2,754.5	0.00	0.00	0.00
12,400.0	90.61	359.65	9,449.4	2,854.5	43.2	2,854.5	0.00	0.00	0.00
12,500.0	90.61	359.65	9,448.3	2,954.5	42.6	2,954.5	0.00	0.00	0.00
12,600.0	90.61	359.65	9,447.2	3,054.5	42.0	3,054.5	0.00	0.00	0.00
12,700.0	90.61	359.65	9,446.1	3,154.5	41.4	3,154.5	0.00	0.00	0.00
12,800.0	90.61	359.65	9,445.1	3,254.5	40.8	3,254.5	0.00	0.00	0.00
12,900.0	90.61	359.65	9,444.0	3,354.5	40.1	3,354.5	0.00	0.00	0.00
13,000.0	90.61	359.65	9,442.9	3,454.5	39.5	3,454.5	0.00	0.00	0.00
13,100.0	90.61	359.65	9,441.9	3,554.5	38.9	3,554.5	0.00	0.00	0.00
13,200.0	90.61	359.65	9,440.8	3,654.5	38.3	3,654.5	0.00	0.00	0.00
13,300.0	90.61	359.65	9,439.7	3,754.4	37.7	3,754.4	0.00	0.00	0.00
13,400.0	90.61	359.65	9,438.6	3,854.4	37.1	3,854.4	0.00	0.00	0.00
13,500.0	90.61	359.65	9,437.6	3,954.4	36.5	3,954.4	0.00	0.00	0.00
13,600.0	90.61	359.65	9,436.5	4,054.4	35.8	4,054.4	0.00	0.00	0.00
13,700.0	90.61	359.65	9,435.4	4,154.4	35.2	4,154.4	0.00	0.00	0.00
13,800.0	90.61	359.65	9,434.3	4,254.4	34.6	4,254.4	0.00	0.00	0.00
13,900.0	90.61	359.65	9,433.3	4,354.4	34.0	4,354.4	0.00	0.00	0.00
14,000.0	90.61	359.65	9,432.2	4,454.4	33.4	4,454.4	0.00	0.00	0.00
14,100.0	90.61	359.65	9,431.1	4,554.4	32.8	4,554.4	0.00	0.00	0.00
14,200.0	90.61	359.65	9,430.1	4,654.4	32.2	4,654.4	0.00	0.00	0.00
14,300.0	90.61	359.65	9,429.0	4,754.4	31.5	4,754.4	0.00	0.00	0.00
14,400.0	90.61	359.65	9,427.9	4,854.4	30.9	4,854.4	0.00	0.00	0.00



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14,500.0	90.61	359.65	9,426.8	4,954.4	30.3	4,954.4	0.00	0.00	0.00
14,600.0	90.61	359.65	9,425.8	5,054.3	29.7	5,054.3	0.00	0.00	0.00
14,700.0	90.61	359.65	9,424.7	5,154.3	29.1	5,154.3	0.00	0.00	0.00
14,800.0	90.61	359.65	9,423.6	5,254.3	28.5	5,254.3	0.00	0.00	0.00
14,900.0	90.61	359.65	9,422.6	5,354.3	27.9	5,354.3	0.00	0.00	0.00
15,000.0	90.61	359.65	9,421.5	5,454.3	27.2	5,454.3	0.00	0.00	0.00
15,100.0	90.61	359.65	9,420.4	5,554.3	26.6	5,554.3	0.00	0.00	0.00
15,200.0	90.61	359.65	9,419.3	5,654.3	26.0	5,654.3	0.00	0.00	0.00
15,300.0	90.61	359.65	9,418.3	5,754.3	25.4	5,754.3	0.00	0.00	0.00
15,400.0	90.61	359.65	9,417.2	5,854.3	24.8	5,854.3	0.00	0.00	0.00
15,500.0	90.61	359.65	9,416.1	5,954.3	24.2	5,954.3	0.00	0.00	0.00
15,600.0	90.61	359.65	9,415.0	6,054.3	23.6	6,054.3	0.00	0.00	0.00
15,700.0	90.61	359.65	9,414.0	6,154.3	22.9	6,154.3	0.00	0.00	0.00
15,800.0	90.61	359.65	9,412.9	6,254.3	22.3	6,254.3	0.00	0.00	0.00
15,900.0	90.61	359.65	9,411.8	6,354.3	21.7	6,354.2	0.00	0.00	0.00
16,000.0	90.61	359.65	9,410.8	6,454.2	21.1	6,454.2	0.00	0.00	0.00
16,100.0	90.61	359.65	9,409.7	6,554.2	20.5	6,554.2	0.00	0.00	0.00
16,200.0	90.61	359.65	9,408.6	6,654.2	19.9	6,654.2	0.00	0.00	0.00
16,300.0	90.61	359.65	9,407.5	6,754.2	19.3	6,754.2	0.00	0.00	0.00
16,400.0	90.61	359.65	9,406.5	6,854.2	18.6	6,854.2	0.00	0.00	0.00
16,500.0	90.61	359.65	9,405.4	6,954.2	18.0	6,954.2	0.00	0.00	0.00
16,600.0	90.61	359.65	9,404.3	7,054.2	17.4	7,054.2	0.00	0.00	0.00
16,700.0	90.61	359.65	9,403.3	7,154.2	16.8	7,154.2	0.00	0.00	0.00
16,800.0	90.61	359.65	9,402.2	7,254.2	16.2	7,254.2	0.00	0.00	0.00
16,900.0	90.61	359.65	9,401.1	7,354.2	15.6	7,354.2	0.00	0.00	0.00
17,000.0	90.61	359.65	9,400.0	7,454.2	15.0	7,454.2	0.00	0.00	0.00
17,100.0	90.61	359.65	9,399.0	7,554.2	14.3	7,554.2	0.00	0.00	0.00
17,200.0	90.61	359.65	9,397.9	7,654.2	13.7	7,654.1	0.00	0.00	0.00
17,300.0	90.61	359.65	9,396.8	7,754.1	13.1	7,754.1	0.00	0.00	0.00
17,400.0	90.61	359.65	9,395.7	7,854.1	12.5	7,854.1	0.00	0.00	0.00
17,500.0	90.61	359.65	9,394.7	7,954.1	11.9	7,954.1	0.00	0.00	0.00
17,600.0	90.61	359.65	9,393.6	8,054.1	11.3	8,054.1	0.00	0.00	0.00
17,700.0	90.61	359.65	9,392.5	8,154.1	10.7	8,154.1	0.00	0.00	0.00
17,800.0	90.61	359.65	9,391.5	8,254.1	10.0	8,254.1	0.00	0.00	0.00
17,900.0	90.61	359.65	9,390.4	8,354.1	9.4	8,354.1	0.00	0.00	0.00
18,000.0	90.61	359.65	9,389.3	8,454.1	8.8	8,454.1	0.00	0.00	0.00
18,100.0	90.61	359.65	9,388.2	8,554.1	8.2	8,554.1	0.00	0.00	0.00
18,200.0	90.61	359.65	9,387.2	8,654.1	7.6	8,654.1	0.00	0.00	0.00
18,300.0	90.61	359.65	9,386.1	8,754.1	7.0	8,754.1	0.00	0.00	0.00
18,400.0	90.61	359.65	9,385.0	8,854.1	6.4	8,854.1	0.00	0.00	0.00
18,500.0	90.61	359.65	9,384.0	8,954.1	5.7	8,954.1	0.00	0.00	0.00
18,600.0	90.61	359.65	9,382.9	9,054.0	5.1	9,054.0	0.00	0.00	0.00
18,700.0	90.61	359.65	9,381.8	9,154.0	4.5	9,154.0	0.00	0.00	0.00
18,800.0	90.61	359.65	9,380.7	9,254.0	3.9	9,254.0	0.00	0.00	0.00
18,900.0	90.61	359.65	9,379.7	9,354.0	3.3	9,354.0	0.00	0.00	0.00
19,000.0	90.61	359.65	9,378.6	9,454.0	2.7	9,454.0	0.00	0.00	0.00
19,100.0	90.61	359.65	9,377.5	9,554.0	2.1	9,554.0	0.00	0.00	0.00
19,200.0	90.61	359.65	9,376.4	9,654.0	1.4	9,654.0	0.00	0.00	0.00
19,300.0	90.61	359.65	9,375.4	9,754.0	0.8	9,754.0	0.00	0.00	0.00
19,400.0	90.61	359.65	9,374.3	9,854.0	0.2	9,854.0	0.00	0.00	0.00
19,500.0	90.61	359.65	9,373.2	9,954.0	-0.4	9,954.0	0.00	0.00	0.00
19,600.0	90.61	359.65	9,372.2	10,054.0	-1.0	10,054.0	0.00	0.00	0.00
19,614.4	90.61	359.65	9,372.0	10,068.4	-1.1	10,068.4	0.00	0.00	0.00

TD at 19614.4



Intrepid Planning Report



Database: EDM 5000.15 Single User Db
Company: Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Site: (Harrier Federal) Sec-2_T-26-S_R-32-E
Well: Harrier Federal Com #304H
Wellbore: OWB
Design: Plan #1

Local Co-ordinate Reference: Well Harrier Federal Com #304H
TVD Reference: KB @ 3272.1usft (Latshaw 44)
MD Reference: KB @ 3272.1usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned 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)
-----------------------------	--------------------	----------------	-----------------------------	-----------------	-----------------	-------------------------------	-------------------------------	------------------------------	-----------------------------

Design Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL (Harrier Federal) - plan hits target center - Rectangle (sides W60.0 H10,299.0 D20.0)	-0.61	359.65	9,372.0	10,068.4	-1.1	398,394.80	711,290.40	32° 5' 36.477 N	103° 39' 3.794 W
FTP (Harrier Federal) - plan misses target center by 188.1usft at 9400.0usft MD (9332.2 TVD, -109.6 N, 59.4 E) - Point	0.00	0.00	9,477.0	-229.6	62.3	388,096.80	711,353.80	32° 3' 54.565 N	103° 39' 3.814 W

Formations

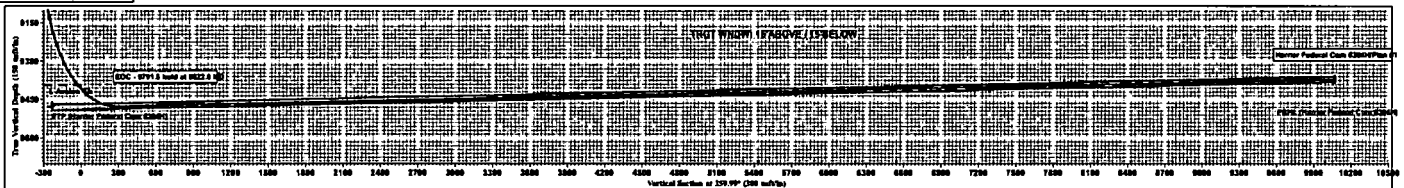
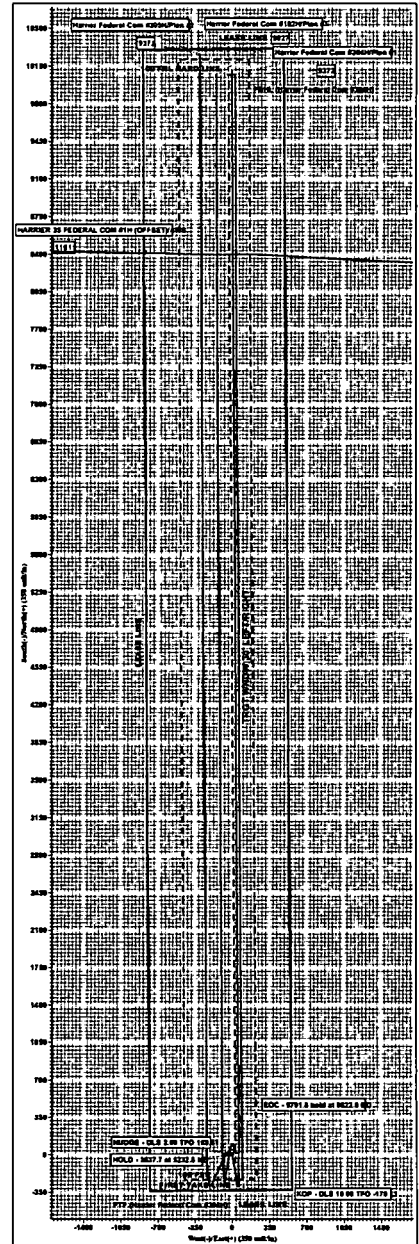
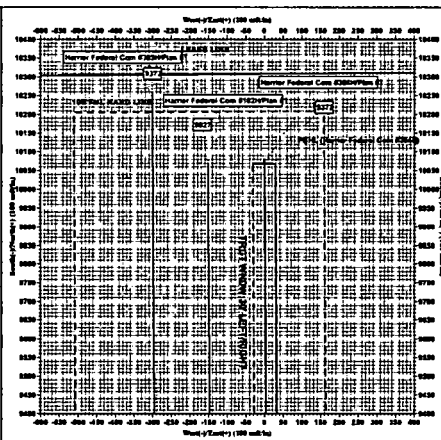
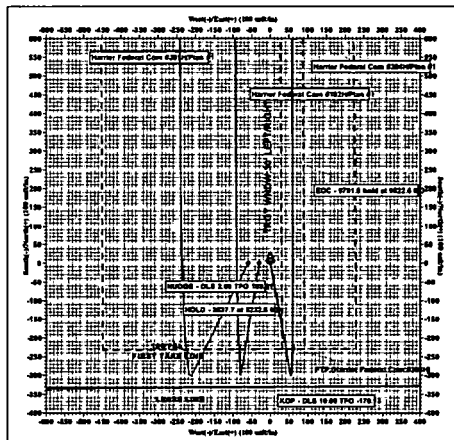
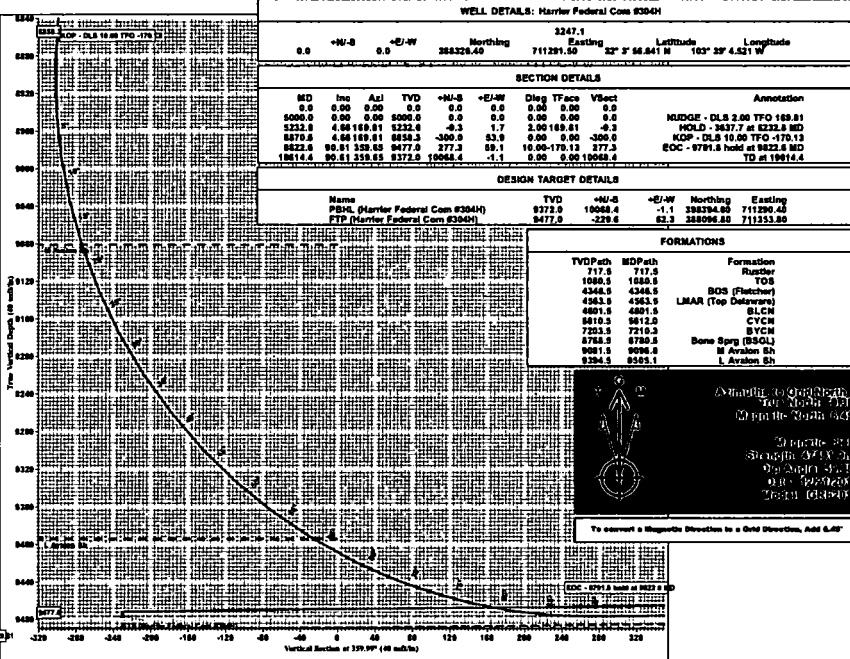
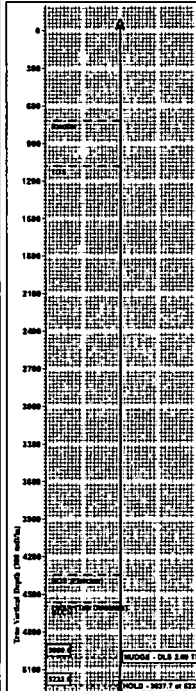
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
717.5	717.5	Rustler			
1,080.5	1,080.5	TOS			
4,346.5	4,346.5	BOS (Fletcher)			
4,563.5	4,563.5	LMAR (Top Delaware)			
4,601.5	4,601.5	BLCN			
5,612.0	5,610.5	CYCN			
7,210.3	7,203.5	BYCN			
8,780.5	8,768.5	Bone Sprg (BSGL)			
9,096.8	9,081.5	M Avalon Sh			
9,505.1	9,394.5	L Avalon Sh			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
5,000.0	5,000.0	0.0	0.0	NUDGE - DLS 2.00 TFO 169.81
5,232.8	5,232.6	-9.3	1.7	HOLD - 3637.7 at 5232.8 MD
8,870.6	8,858.3	-300.0	53.9	KOP - DLS 10.00 TFO -170.13
9,822.6	9,477.0	277.3	59.1	EOC - 9791.8 hold at 9822.6 MD
19,614.4	9,372.0	10,068.4	-1.1	TD at 19614.4



Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Site: (Harrier Federal) Sec-2, T-26-S, R-32-E
Well: Harrier Federal Com #304H
Wellbore: OWB
Design: Plan #1
Lat: 32° 3' 58.841 N
Long: 103° 39' 4.521 W
Pad GL: 3247.1
KB: KB @ 3272.1ush (Latahaw 44)





Intrepid Anticollision Report



Company: Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Reference Site: (Harrier Federal) Sec-2_T-26-S_R-32-E
Site Error: 0.0 usft
Reference Well: Harrier Federal Com #304H
Well Error: 0.0 usft
Reference Wellbore: OWB
Reference Design: Plan #1

Local Co-ordinate Reference: Well Harrier Federal Com #304H
TVD Reference: KB @ 3272.1usft (Latshaw 44)
MD Reference: KB @ 3272.1usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.15 Single User Db
Offset TVD Reference: Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,500.0 usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program Date 12/24/18

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	8,868.1	Plan #1 (OWB)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
8,868.1	19,614.1	Plan #1 (OWB)	MWD+IFR1+MS	MWD + IFR1 + Multi-Station Correction

Summary

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offet Well - Wellbore - Design						
(Harrier Federal) Sec-2_T-26-S_R-32-E						
HARRIER 35 FEDERAL COM #1H (OFFSET) - OWB - A						Out of range
Harrier Federal Com #102H - OWB - Plan #1	5,000.0	5,000.0	30.0	23.1	4.351	CC, ES
Harrier Federal Com #102H - OWB - Plan #1	19,614.4	19,211.5	376.2	212.9	2.304	SF
Harrier Federal Com #305H - OWB - Plan #1	4,916.5	4,917.0	60.1	53.3	8.867	CC
Harrier Federal Com #305H - OWB - Plan #1	5,000.0	5,000.5	60.1	53.2	8.717	ES
Harrier Federal Com #305H - OWB - Plan #1	19,614.4	19,617.4	299.0	139.7	1.877	SF

Offset Design:(Harrier Federal) Sec-2_T-26-S_R-32-E - Harrier Federal Com #102H - OWB - Plan #1

Survey Program: 0-Standard Keeper 104, 8467-MWD+IFR1+MS								Rule Assigned:				Offset Well Error:		0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		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)				
0.0	0.0	0.0	0.0	0.0	0.0	-90.38	-0.2	-30.0	30.0					
100.0	100.0	100.0	100.0	0.0	0.0	-90.38	-0.2	-30.0	30.0	29.9	0.05	572.937		
200.0	200.0	200.0	200.0	0.2	0.2	-90.38	-0.2	-30.0	30.0	29.8	0.19	156.256		
300.0	300.0	300.0	300.0	0.3	0.3	-90.38	-0.2	-30.0	30.0	29.7	0.33	90.464		
400.0	400.0	400.0	400.0	0.4	0.4	-90.38	-0.2	-30.0	30.0	29.5	0.47	63.660		
500.0	500.0	500.0	500.0	0.6	0.6	-90.38	-0.2	-30.0	30.0	29.4	0.61	49.109		
600.0	600.0	600.0	600.0	0.7	0.7	-90.38	-0.2	-30.0	30.0	29.3	0.75	39.972		
700.0	700.0	700.0	700.0	0.8	0.8	-90.38	-0.2	-30.0	30.0	29.1	0.89	33.702		
800.0	800.0	800.0	800.0	1.0	1.0	-90.38	-0.2	-30.0	30.0	29.0	1.03	29.132		
900.0	900.0	900.0	900.0	1.1	1.1	-90.38	-0.2	-30.0	30.0	28.8	1.17	25.654		
1,000.0	1,000.0	1,000.0	1,000.0	1.2	1.2	-90.38	-0.2	-30.0	30.0	28.7	1.31	22.918		
1,100.0	1,100.0	1,100.0	1,100.0	1.4	1.4	-90.38	-0.2	-30.0	30.0	28.6	1.45	20.709		
1,200.0	1,200.0	1,200.0	1,200.0	1.5	1.5	-90.38	-0.2	-30.0	30.0	28.4	1.59	18.888		
1,300.0	1,300.0	1,300.0	1,300.0	1.6	1.6	-90.38	-0.2	-30.0	30.0	28.3	1.73	17.362		
1,400.0	1,400.0	1,400.0	1,400.0	1.8	1.8	-90.38	-0.2	-30.0	30.0	28.1	1.87	16.064		
1,500.0	1,500.0	1,500.0	1,500.0	1.9	1.9	-90.38	-0.2	-30.0	30.0	28.0	2.01	14.946		
1,600.0	1,600.0	1,600.0	1,600.0	2.0	2.0	-90.38	-0.2	-30.0	30.0	27.9	2.15	13.974		
1,700.0	1,700.0	1,700.0	1,700.0	2.2	2.2	-90.38	-0.2	-30.0	30.0	27.7	2.29	13.121		
1,800.0	1,800.0	1,800.0	1,800.0	2.3	2.3	-90.38	-0.2	-30.0	30.0	27.6	2.43	12.366		
1,900.0	1,900.0	1,900.0	1,900.0	2.4	2.4	-90.38	-0.2	-30.0	30.0	27.4	2.57	11.693		

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



Intrepid

Anticollision Report



Company: Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Reference Site: (Harrier Federal) Sec-2_T-26-S_R-32-E
Site Error: 0.0 usft
Reference Well: Harrier Federal Com #304H
Well Error: 0.0 usft
Reference Wellbore: OWB
Reference Design: Plan #1

Local Co-ordinate Reference: Well Harrier Federal Com #304H
TVD Reference: KB @ 3272.1usft (Latshaw 44)
MD Reference: KB @ 3272.1usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.15 Single User Db
Offset TVD Reference: Offset Datum

Offset Design:(Harrier Federal) Sec-2_T-26-S_R-32-E - Harrier Federal Com #102H - OWB - Plan #1

Offset Site Error: 0.0 usft
Offset Well Error: 0.0 usft

Survey Program: 0-Standard Keeper 104, 8467-MWD+IFR1+MS												Rule Assigned:		Warning	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor			
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)					
2,000.0	2,000.0	2,000.0	2,000.0	2.6	2.6	-90.38	-0.2	-30.0	30.0	27.3	2.71	11.089			
2,100.0	2,100.0	2,100.0	2,100.0	2.7	2.7	-90.38	-0.2	-30.0	30.0	27.2	2.85	10.545			
2,200.0	2,200.0	2,200.0	2,200.0	2.8	2.8	-90.38	-0.2	-30.0	30.0	27.0	2.98	10.052			
2,300.0	2,300.0	2,300.0	2,300.0	2.9	2.9	-90.38	-0.2	-30.0	30.0	26.9	3.12	9.602			
2,400.0	2,400.0	2,400.0	2,400.0	3.1	3.1	-90.38	-0.2	-30.0	30.0	26.7	3.26	9.192			
2,500.0	2,500.0	2,500.0	2,500.0	3.2	3.2	-90.38	-0.2	-30.0	30.0	26.6	3.40	8.814			
2,600.0	2,600.0	2,600.0	2,600.0	3.3	3.3	-90.38	-0.2	-30.0	30.0	26.5	3.54	8.467			
2,700.0	2,700.0	2,700.0	2,700.0	3.5	3.5	-90.38	-0.2	-30.0	30.0	26.3	3.68	8.146			
2,800.0	2,800.0	2,800.0	2,800.0	3.6	3.6	-90.38	-0.2	-30.0	30.0	26.2	3.82	7.848			
2,900.0	2,900.0	2,900.0	2,900.0	3.7	3.7	-90.38	-0.2	-30.0	30.0	26.0	3.96	7.572			
3,000.0	3,000.0	3,000.0	3,000.0	3.9	3.9	-90.38	-0.2	-30.0	30.0	25.9	4.10	7.314			
3,100.0	3,100.0	3,100.0	3,100.0	4.0	4.0	-90.38	-0.2	-30.0	30.0	25.8	4.24	7.073			
3,200.0	3,200.0	3,200.0	3,200.0	4.1	4.1	-90.38	-0.2	-30.0	30.0	25.6	4.38	6.848			
3,300.0	3,300.0	3,300.0	3,300.0	4.3	4.3	-90.38	-0.2	-30.0	30.0	25.5	4.52	6.636			
3,400.0	3,400.0	3,400.0	3,400.0	4.4	4.4	-90.38	-0.2	-30.0	30.0	25.3	4.66	6.438			
3,500.0	3,500.0	3,500.0	3,500.0	4.5	4.5	-90.38	-0.2	-30.0	30.0	25.2	4.80	6.250			
3,600.0	3,600.0	3,600.0	3,600.0	4.7	4.7	-90.38	-0.2	-30.0	30.0	25.1	4.94	6.074			
3,700.0	3,700.0	3,700.0	3,700.0	4.8	4.8	-90.38	-0.2	-30.0	30.0	24.9	5.08	5.907			
3,800.0	3,800.0	3,800.0	3,800.0	4.9	4.9	-90.38	-0.2	-30.0	30.0	24.8	5.22	5.749			
3,900.0	3,900.0	3,900.0	3,900.0	5.1	5.1	-90.38	-0.2	-30.0	30.0	24.6	5.36	5.599			
4,000.0	4,000.0	4,000.0	4,000.0	5.2	5.2	-90.38	-0.2	-30.0	30.0	24.5	5.50	5.457			
4,100.0	4,100.0	4,100.0	4,100.0	5.3	5.3	-90.38	-0.2	-30.0	30.0	24.4	5.64	5.321			
4,200.0	4,200.0	4,200.0	4,200.0	5.5	5.5	-90.38	-0.2	-30.0	30.0	24.2	5.78	5.193			
4,300.0	4,300.0	4,300.0	4,300.0	5.6	5.6	-90.38	-0.2	-30.0	30.0	24.1	5.92	5.070			
4,400.0	4,400.0	4,400.0	4,400.0	5.7	5.7	-90.38	-0.2	-30.0	30.0	23.9	6.06	4.953			
4,500.0	4,500.0	4,500.0	4,500.0	5.9	5.9	-90.38	-0.2	-30.0	30.0	23.8	6.20	4.842			
4,600.0	4,600.0	4,600.0	4,600.0	6.0	6.0	-90.38	-0.2	-30.0	30.0	23.7	6.34	4.735			
4,700.0	4,700.0	4,700.0	4,700.0	6.1	6.1	-90.38	-0.2	-30.0	30.0	23.5	6.48	4.633			
4,800.0	4,800.0	4,800.0	4,800.0	6.2	6.2	-90.38	-0.2	-30.0	30.0	23.4	6.62	4.535			
4,900.0	4,900.0	4,900.0	4,900.0	6.4	6.4	-90.38	-0.2	-30.0	30.0	23.2	6.75	4.441			
5,000.0	5,000.0	5,000.0	5,000.0	6.5	6.5	-90.38	-0.2	-30.0	30.0	23.1	6.89	4.351 CC, ES			
5,100.0	5,100.0	5,099.8	5,099.8	6.5	6.5	99.80	-1.9	-30.3	30.6	23.6	7.03	4.349			
5,200.0	5,199.8	5,199.6	5,199.5	6.5	6.5	99.78	-7.1	-31.1	32.4	25.2	7.17	4.510			
5,232.8	5,232.6	5,232.4	5,232.1	6.5	6.5	99.77	-9.5	-31.5	33.2	26.0	7.22	4.597			
5,300.0	5,299.5	5,299.5	5,298.9	6.4	6.4	98.96	-15.4	-32.5	35.1	27.8	7.32	4.800			
5,400.0	5,399.2	5,399.4	5,398.5	6.4	6.4	97.63	-24.3	-33.9	38.1	30.6	7.47	5.094			
5,500.0	5,498.9	5,499.4	5,498.0	6.4	6.4	96.48	-33.2	-35.4	41.0	33.4	7.63	5.375			
5,600.0	5,598.5	5,599.3	5,597.6	6.3	6.3	95.50	-42.1	-36.9	44.0	36.2	7.79	5.646			
5,700.0	5,698.2	5,699.3	5,697.1	6.3	6.3	94.63	-51.1	-38.3	46.9	39.0	7.94	5.908			
5,800.0	5,797.9	5,799.2	5,796.7	6.2	6.2	93.87	-60.0	-39.8	49.9	41.8	8.10	6.161			
5,900.0	5,897.5	5,899.2	5,896.2	6.2	6.2	93.20	-68.9	-41.3	52.9	44.6	8.26	6.406			
6,000.0	5,997.2	5,999.1	5,995.7	6.2	6.2	92.59	-77.9	-42.7	55.9	47.5	8.41	6.643			
6,100.0	6,096.9	6,099.1	6,095.3	6.2	6.2	92.05	-86.8	-44.2	58.9	50.3	8.57	6.874			
6,200.0	6,196.6	6,199.0	6,194.8	6.1	6.1	91.56	-95.7	-45.6	61.9	53.2	8.72	7.097			
6,300.0	6,296.2	6,299.0	6,294.4	6.1	6.1	91.12	-104.7	-47.1	64.9	56.0	8.88	7.313			
6,400.0	6,395.9	6,399.0	6,393.9	6.1	6.1	90.71	-113.6	-48.6	67.9	58.9	9.03	7.522			
6,500.0	6,495.6	6,498.9	6,493.5	6.1	6.1	90.34	-122.5	-50.0	70.9	61.8	9.18	7.725			
6,600.0	6,595.2	6,598.9	6,593.0	6.1	6.1	90.00	-131.4	-51.5	74.0	64.6	9.34	7.922			
6,700.0	6,694.9	6,698.8	6,692.5	6.0	6.0	89.69	-140.4	-52.9	77.0	67.5	9.49	8.112			
6,800.0	6,794.6	6,798.8	6,792.1	6.0	6.0	89.40	-149.3	-54.4	80.0	70.4	9.64	8.296			
6,900.0	6,894.2	6,898.7	6,891.6	6.0	6.0	89.13	-158.2	-55.9	83.0	73.2	9.80	8.475			
7,000.0	6,993.9	6,998.7	6,991.2	6.0	6.0	88.88	-167.2	-57.3	86.0	76.1	9.95	8.647			

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



Intrepid Anticollision Report



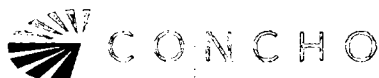
Company: Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Reference Site: (Harrier Federal) Sec-2_T-26-S_R-32-E
Site Error: 0.0 usft
Reference Well: Harrier Federal Com #304H
Well Error: 0.0 usft
Reference Wellbore: OWB
Reference Design: Plan #1

Local Co-ordinate Reference: Well Harrier Federal Com #304H
TVD Reference: KB @ 3272.1usft (Latshaw 44)
MD Reference: KB @ 3272.1usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.15 Single User Db
Offset TVD Reference: Offset Datum

Offset Design:(Harrier Federal) Sec-2_T-26-S_R-32-E - Harrier Federal Com #102H - OWB - Plan #1

Survey Program: 0-Standard Keeper 104, 8467-MWD+HFR1+MS							Rule Assigned:				Offset Well Error:		0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		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)			
7,100.0	7,093.6	7,098.6	7,090.7	6.0	6.0	88.65	-176.1	-58.8	89.1	79.0	10.11	8.814	
7,200.0	7,193.2	7,198.6	7,190.3	6.0	6.0	88.43	-185.0	-60.3	92.1	81.8	10.26	8.975	
7,300.0	7,292.9	7,298.5	7,289.8	6.0	6.0	88.23	-194.0	-61.7	95.1	84.7	10.42	9.131	
7,400.0	7,392.6	7,398.5	7,389.4	6.0	6.0	88.04	-202.9	-63.2	98.2	87.6	10.58	9.282	
7,500.0	7,492.3	7,498.4	7,488.9	6.1	6.1	87.86	-211.8	-64.6	101.2	90.5	10.73	9.427	
7,600.0	7,591.9	7,598.4	7,588.4	6.1	6.1	87.69	-220.7	-66.1	104.2	93.3	10.89	9.567	
7,700.0	7,691.6	7,698.3	7,688.0	6.1	6.1	87.53	-229.7	-67.6	107.3	96.2	11.05	9.703	
7,800.0	7,791.3	7,798.3	7,787.5	6.1	6.1	87.38	-238.6	-69.0	110.3	99.1	11.22	9.834	
7,900.0	7,890.9	7,898.3	7,887.1	6.1	6.1	87.24	-247.5	-70.5	113.3	102.0	11.38	9.960	
8,000.0	7,990.6	7,998.2	7,986.6	6.2	6.2	87.10	-256.5	-72.0	116.4	104.8	11.54	10.081	
8,100.0	8,090.3	8,098.2	8,086.2	6.2	6.2	86.97	-265.4	-73.4	119.4	107.7	11.71	10.198	
8,200.0	8,189.9	8,198.1	8,185.7	6.2	6.2	86.85	-274.3	-74.9	122.4	110.6	11.88	10.311	
8,300.0	8,289.6	8,298.1	8,285.2	6.3	6.3	86.74	-283.3	-76.3	125.5	113.4	12.04	10.420	
8,400.0	8,389.3	8,398.0	8,384.8	6.3	6.3	86.63	-292.2	-77.8	128.5	116.3	12.21	10.524	
8,500.0	8,489.0	8,499.7	8,486.1	6.4	6.4	86.93	-300.3	-79.3	131.4	119.0	12.33	10.658	
8,600.0	8,588.6	8,602.8	8,588.9	6.4	6.5	93.25	-294.3	-80.9	131.9	119.4	12.43	10.608	
8,700.0	8,688.3	8,698.0	8,681.5	6.5	6.5	105.84	-272.5	-82.4	134.8	122.2	12.63	10.669	
8,800.0	8,788.0	8,781.8	8,758.9	6.5	6.6	120.69	-240.8	-83.8	149.7	135.6	14.03	10.664	
8,870.6	8,858.3	8,833.3	8,804.0	6.6	6.7	130.17	-215.9	-84.7	171.0	154.6	16.36	10.451	
8,900.0	8,887.7	8,850.0	8,818.1	6.6	6.7	150.03	-206.9	-84.9	182.2	164.6	17.64	10.329	
8,950.0	8,937.7	8,887.0	8,848.3	6.6	6.7	-62.22	-185.7	-85.5	202.5	183.5	19.00	10.656	
9,000.0	8,987.4	8,919.9	8,874.1	6.6	6.8	-48.98	-165.2	-86.0	223.5	203.0	20.53	10.889	
9,050.0	9,036.5	8,950.0	8,896.5	6.6	6.8	-42.76	-145.2	-86.5	244.8	222.7	22.08	11.084	
9,100.0	9,084.5	8,984.2	8,920.7	6.7	6.9	-38.07	-121.0	-87.0	265.6	242.4	23.23	11.436	
9,150.0	9,131.2	9,015.8	8,941.7	6.7	6.9	-34.58	-97.5	-87.5	285.8	261.4	24.41	11.709	
9,200.0	9,176.2	9,050.0	8,963.0	6.8	7.0	-31.68	-70.7	-88.0	305.1	279.8	25.36	12.034	
9,250.0	9,219.1	9,077.8	8,979.1	6.8	7.0	-29.53	-48.0	-88.4	323.3	296.8	26.49	12.208	
9,300.0	9,259.6	9,100.0	8,991.2	6.9	7.1	-27.88	-29.4	-88.6	340.5	312.8	27.68	12.303	
9,350.0	9,297.4	9,138.8	9,010.5	7.0	7.1	-26.12	4.3	-89.1	356.0	327.8	28.22	12.617	
9,400.0	9,332.2	9,169.0	9,023.9	7.0	7.2	-24.85	31.4	-89.5	370.3	341.3	28.96	12.785	
9,450.0	9,363.8	9,200.0	9,036.2	7.1	7.2	-23.78	59.8	-89.9	383.1	353.5	29.61	12.936	
9,500.0	9,391.9	9,229.0	9,046.2	7.2	7.3	-22.93	87.0	-90.2	394.3	364.1	30.23	13.046	
9,550.0	9,416.2	9,250.0	9,052.6	7.3	7.3	-22.30	107.0	-90.4	404.1	373.3	30.86	13.095	
9,600.0	9,436.6	9,288.5	9,062.5	7.4	7.4	-21.67	144.2	-90.8	412.0	380.8	31.19	13.210	
9,650.0	9,453.0	9,318.2	9,068.4	7.5	7.5	-21.25	173.2	-91.1	418.4	386.8	31.56	13.256	
9,700.0	9,465.2	9,350.0	9,073.0	7.7	7.6	-20.93	204.7	-91.3	423.1	391.3	31.86	13.283	
9,750.0	9,473.2	9,377.3	9,075.6	7.8	7.7	-20.75	231.9	-91.5	426.1	394.1	32.09	13.278	
9,800.0	9,476.8	9,406.8	9,076.9	8.0	7.8	-20.67	261.4	-91.7	427.5	395.2	32.25	13.255	
9,822.6	9,477.0	9,420.7	9,077.0	8.1	7.9	-20.67	275.2	-91.8	427.5	395.2	32.30	13.236	
9,900.0	9,476.2	9,497.2	9,076.6	8.4	8.2	-20.69	351.8	-92.3	427.1	394.5	32.59	13.107	
10,000.0	9,475.1	9,597.2	9,076.1	8.9	8.7	-20.71	451.7	-92.9	426.6	393.5	33.02	12.917	
10,100.0	9,474.0	9,697.2	9,075.6	9.4	9.2	-20.74	551.7	-93.5	426.0	392.5	33.53	12.706	
10,200.0	9,473.0	9,797.2	9,075.1	9.9	9.7	-20.76	651.7	-94.1	425.5	391.4	34.10	12.478	
10,300.0	9,471.9	9,897.2	9,074.6	10.5	10.3	-20.79	751.7	-94.7	425.0	390.2	34.73	12.236	
10,400.0	9,470.8	9,997.2	9,074.1	11.1	10.9	-20.82	851.7	-95.3	424.4	389.0	35.42	11.983	
10,500.0	9,469.7	10,097.2	9,073.6	11.7	11.5	-20.84	951.7	-95.9	423.9	387.8	36.17	11.722	
10,600.0	9,468.7	10,197.2	9,073.0	12.4	12.2	-20.87	1,051.7	-96.5	423.4	386.4	36.96	11.455	
10,700.0	9,467.6	10,297.2	9,072.5	13.0	12.8	-20.89	1,151.7	-97.1	422.9	385.1	37.80	11.186	
10,800.0	9,466.5	10,397.2	9,072.0	13.7	13.5	-20.92	1,251.7	-97.7	422.3	383.6	38.69	10.916	
10,900.0	9,465.4	10,497.2	9,071.5	14.3	14.2	-20.95	1,351.7	-98.3	421.8	382.2	39.62	10.646	
11,000.0	9,464.4	10,597.2	9,071.0	15.0	14.8	-20.97	1,451.7	-98.9	421.3	380.7	40.59	10.379	
11,100.0	9,463.3	10,697.2	9,070.5	15.7	15.5	-21.00	1,551.7	-99.6	420.8	379.2	41.59	10.116	

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



Intrepid

Anticollision Report



Company: Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Reference Site: (Harrier Federal) Sec-2_T-26-S_R-32-E
Site Error: 0.0 usft
Reference Well: Harrier Federal Com #304H
Well Error: 0.0 usft
Reference Wellbore: OWB
Reference Design: Plan #1

Local Co-ordinate Reference: Well Harrier Federal Com #304H
TVD Reference: KB @ 3272.1usft (Latshaw 44)
MD Reference: KB @ 3272.1usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.15 Single User Db
Offset TVD Reference: Offset Datum

Offset Design:(Harrier Federal) Sec-2_T-26-S_R-32-E - Harrier Federal Com #102H - OWB - Plan #1

Survey Program: 0-Standard Keeper 104, 8467-MWD+IFR1+MS										Rule Assigned:		Offset Site Error: 0.0 usft	
Reference										Offset Well Error: 0.0 usft		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference Offset (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Minimum Separation (usft)	Separation Factor		
11,200.0	9,462.2	10,797.2	9,070.0	16.4	16.2	-21.02	1,651.7	-100.2	420.2	377.8	42.63	9.857	
11,300.0	9,461.2	10,897.2	9,069.5	17.1	16.9	-21.05	1,751.7	-100.8	419.7	376.0	43.70	9.604	
11,400.0	9,460.1	10,997.2	9,069.0	17.8	17.6	-21.08	1,851.7	-101.4	419.2	374.4	44.80	9.356	
11,500.0	9,459.0	11,097.2	9,068.5	18.5	18.4	-21.10	1,951.7	-102.0	418.6	372.7	45.93	9.116	
11,600.0	9,457.9	11,197.2	9,067.9	19.2	19.1	-21.13	2,051.7	-102.6	418.1	371.0	47.08	8.882	
11,700.0	9,456.9	11,297.2	9,067.4	19.9	19.8	-21.16	2,151.7	-103.2	417.6	369.3	48.25	8.655	
11,800.0	9,455.8	11,397.1	9,066.9	20.6	20.5	-21.18	2,251.7	-103.8	417.1	367.6	49.45	8.435	
11,900.0	9,454.7	11,497.1	9,066.4	21.4	21.2	-21.21	2,351.7	-104.4	416.5	365.9	50.66	8.222	
12,000.0	9,453.6	11,597.1	9,065.9	22.1	22.0	-21.24	2,451.7	-105.0	416.0	364.1	51.90	8.016	
12,100.0	9,452.6	11,697.1	9,065.4	22.8	22.7	-21.26	2,551.7	-105.6	415.5	362.3	53.15	7.818	
12,200.0	9,451.5	11,797.1	9,064.9	23.6	23.4	-21.29	2,651.6	-106.2	415.0	360.5	54.41	7.626	
12,300.0	9,450.4	11,897.1	9,064.4	24.3	24.2	-21.32	2,751.6	-106.8	414.4	358.7	55.70	7.441	
12,400.0	9,449.4	11,997.1	9,063.9	25.0	24.9	-21.35	2,851.6	-107.4	413.9	356.9	56.99	7.262	
12,500.0	9,448.3	12,097.1	9,063.3	25.8	25.7	-21.37	2,951.6	-108.0	413.4	355.1	58.30	7.090	
12,600.0	9,447.2	12,197.1	9,062.8	26.5	26.4	-21.40	3,051.6	-108.6	412.9	353.2	59.62	6.924	
12,700.0	9,446.1	12,297.1	9,062.3	27.2	27.1	-21.43	3,151.6	-109.2	412.3	351.4	60.96	6.764	
12,800.0	9,445.1	12,397.1	9,061.8	28.0	27.9	-21.45	3,251.6	-109.8	411.8	349.5	62.30	6.610	
12,900.0	9,444.0	12,497.1	9,061.3	28.7	28.6	-21.48	3,351.6	-110.4	411.3	347.6	63.65	6.461	
13,000.0	9,442.9	12,597.1	9,060.8	29.5	29.4	-21.51	3,451.6	-111.1	410.7	345.7	65.02	6.318	
13,100.0	9,441.9	12,697.1	9,060.3	30.2	30.1	-21.54	3,551.6	-111.7	410.2	343.8	66.39	6.179	
13,200.0	9,440.8	12,797.1	9,059.8	31.0	30.9	-21.56	3,651.6	-112.3	409.7	341.9	67.77	6.045	
13,300.0	9,439.7	12,897.1	9,059.3	31.7	31.6	-21.59	3,751.6	-112.9	409.2	340.0	69.16	5.917	
13,400.0	9,438.6	12,997.1	9,058.7	32.5	32.4	-21.62	3,851.6	-113.5	408.6	338.1	70.55	5.792	
13,500.0	9,437.6	13,097.1	9,058.2	33.2	33.1	-21.65	3,951.6	-114.1	408.1	336.2	71.95	5.672	
13,600.0	9,436.5	13,197.1	9,057.7	34.0	33.9	-21.68	4,051.6	-114.7	407.6	334.2	73.36	5.556	
13,700.0	9,435.4	13,297.1	9,057.2	34.7	34.6	-21.70	4,151.6	-115.3	407.1	332.3	74.78	5.444	
13,800.0	9,434.3	13,397.1	9,056.7	35.5	35.4	-21.73	4,251.6	-115.9	406.5	330.3	76.20	5.335	
13,900.0	9,433.3	13,497.1	9,056.2	36.2	36.1	-21.76	4,351.6	-116.5	406.0	328.4	77.62	5.231	
14,000.0	9,432.2	13,597.1	9,055.7	37.0	36.9	-21.79	4,451.6	-117.1	405.5	326.4	79.05	5.129	
14,100.0	9,431.1	13,697.1	9,055.2	37.7	37.6	-21.82	4,551.6	-117.7	405.0	324.5	80.49	5.031	
14,200.0	9,430.1	13,797.1	9,054.7	38.5	38.4	-21.85	4,651.6	-118.3	404.4	322.5	81.93	4.936	
14,300.0	9,429.0	13,897.1	9,054.2	39.2	39.1	-21.87	4,751.5	-118.9	403.9	320.5	83.38	4.845	
14,400.0	9,427.9	13,997.1	9,053.6	40.0	39.9	-21.90	4,851.5	-119.5	403.4	318.6	84.82	4.756	
14,500.0	9,426.8	14,097.1	9,053.1	40.7	40.6	-21.93	4,951.5	-120.1	402.9	316.6	86.28	4.669	
14,600.0	9,425.8	14,197.1	9,052.6	41.5	41.4	-21.96	5,051.5	-120.7	402.3	314.6	87.73	4.586	
14,700.0	9,424.7	14,297.1	9,052.1	42.2	42.2	-21.99	5,151.5	-121.3	401.8	312.6	89.19	4.505	
14,800.0	9,423.6	14,397.1	9,051.6	43.0	42.9	-22.02	5,251.5	-121.9	401.3	310.6	90.66	4.427	
14,900.0	9,422.6	14,497.1	9,051.1	43.8	43.7	-22.05	5,351.5	-122.6	400.8	308.7	92.12	4.350	
15,000.0	9,421.5	14,597.1	9,050.6	44.5	44.4	-22.07	5,451.5	-123.2	400.3	306.7	93.59	4.276	
15,100.0	9,420.4	14,697.1	9,050.1	45.3	45.2	-22.10	5,551.5	-123.8	399.7	304.7	95.07	4.205	
15,200.0	9,419.3	14,797.1	9,049.6	46.0	45.9	-22.13	5,651.5	-124.4	399.2	302.7	96.54	4.135	
15,300.0	9,418.3	14,897.1	9,049.0	46.8	46.7	-22.16	5,751.5	-125.0	398.7	300.7	98.02	4.067	
15,400.0	9,417.2	14,997.1	9,048.5	47.5	47.5	-22.19	5,851.5	-125.6	398.2	298.7	99.50	4.001	
15,500.0	9,416.1	15,097.1	9,048.0	48.3	48.2	-22.22	5,951.5	-126.2	397.6	296.6	100.99	3.938	
15,600.0	9,415.0	15,197.1	9,047.5	49.1	49.0	-22.25	6,051.5	-126.8	397.1	294.6	102.47	3.875	
15,700.0	9,414.0	15,297.1	9,047.0	49.8	49.7	-22.28	6,151.5	-127.4	396.6	292.6	103.96	3.815	
15,800.0	9,412.9	15,397.1	9,046.5	50.6	50.5	-22.31	6,251.5	-128.0	396.1	290.6	105.45	3.756	
15,900.0	9,411.8	15,497.1	9,046.0	51.3	51.3	-22.34	6,351.5	-128.6	395.5	288.6	106.94	3.699	
16,000.0	9,410.8	15,597.1	9,045.5	52.1	52.0	-22.37	6,451.5	-129.2	395.0	286.6	108.43	3.643	
16,100.0	9,409.7	15,697.1	9,045.0	52.8	52.8	-22.40	6,551.5	-129.8	394.5	284.6	109.93	3.589	
16,200.0	9,408.6	15,797.1	9,044.4	53.6	53.5	-22.43	6,651.5	-130.4	394.0	282.5	111.43	3.536	
16,300.0	9,407.5	15,897.1	9,043.9	54.4	54.3	-22.46	6,751.5	-131.0	393.5	280.5	112.93	3.484	

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



Intrepid Anticollision Report



Company: Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Reference Site: (Harrier Federal) Sec-2_T-26-S_R-32-E
Site Error: 0.0 usft
Reference Well: Harrier Federal Com #304H
Well Error: 0.0 usft
Reference Wellbore: OWB
Reference Design: Plan #1

Local Co-ordinate Reference: Well Harrier Federal Com #304H
TVD Reference: KB @ 3272.1usft (Latshaw 44)
MD Reference: KB @ 3272.1usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.15 Single User Db
Offset TVD Reference: Offset Datum

Offset Design:(Harrier Federal) Sec-2_T-26-S_R-32-E - Harrier Federal Com #102H - OWB - Plan #1

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Survey Program: 0-Standard Keeper 104, 8467-MWD+IFR1+MS										Rule Assigned:				Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		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)					
16,400.0	9,406.5	15,997.1	9,043.4	55.1	55.1	-22.49	6,851.4	-131.6	392.9	278.5	114.43	3.434			
16,500.0	9,405.4	16,097.1	9,042.9	55.9	55.8	-22.52	6,951.4	-132.2	392.4	276.5	115.93	3.385			
16,600.0	9,404.3	16,197.1	9,042.4	56.6	56.6	-22.55	7,051.4	-132.8	391.9	274.4	117.43	3.337			
16,700.0	9,403.3	16,297.1	9,041.9	57.4	57.3	-22.58	7,151.4	-133.4	391.4	272.4	118.94	3.290			
16,800.0	9,402.2	16,397.1	9,041.4	58.2	58.1	-22.61	7,251.4	-134.1	390.8	270.4	120.45	3.245			
16,900.0	9,401.1	16,497.1	9,040.9	58.9	58.9	-22.64	7,351.4	-134.7	390.3	268.4	121.96	3.200			
17,000.0	9,400.0	16,597.1	9,040.4	59.7	59.6	-22.67	7,451.4	-135.3	389.8	266.3	123.47	3.157			
17,100.0	9,399.0	16,697.1	9,039.9	60.5	60.4	-22.70	7,551.4	-135.9	389.3	264.3	124.98	3.115			
17,200.0	9,397.9	16,797.1	9,039.3	61.2	61.1	-22.73	7,651.4	-136.5	388.8	262.3	126.49	3.073			
17,300.0	9,396.8	16,897.1	9,038.8	62.0	61.9	-22.76	7,751.4	-137.1	388.2	260.2	128.00	3.033			
17,400.0	9,395.7	16,997.1	9,038.3	62.7	62.7	-22.79	7,851.4	-137.7	387.7	258.2	129.52	2.994			
17,500.0	9,394.7	17,097.1	9,037.8	63.5	63.4	-22.82	7,951.4	-138.3	387.2	256.2	131.03	2.955			
17,600.0	9,393.6	17,197.1	9,037.3	64.3	64.2	-22.86	8,051.4	-138.9	386.7	254.1	132.55	2.917			
17,700.0	9,392.5	17,297.1	9,036.8	65.0	64.9	-22.89	8,151.4	-139.5	386.1	252.1	134.06	2.880			
17,800.0	9,391.5	17,397.1	9,036.3	65.8	65.7	-22.92	8,251.4	-140.1	385.6	250.0	135.58	2.844			
17,900.0	9,390.4	17,497.1	9,035.8	66.5	66.5	-22.95	8,351.4	-140.7	385.1	248.0	137.10	2.809			
18,000.0	9,389.3	17,597.1	9,035.3	67.3	67.2	-22.98	8,451.4	-141.3	384.6	246.0	138.62	2.774			
18,100.0	9,388.2	17,697.1	9,034.7	68.1	68.0	-23.01	8,551.4	-141.9	384.1	243.9	140.14	2.740			
18,200.0	9,387.2	17,797.0	9,034.2	68.8	68.8	-23.04	8,651.4	-142.5	383.5	241.9	141.67	2.707			
18,300.0	9,386.1	17,897.0	9,033.7	69.6	69.5	-23.08	8,751.4	-143.1	383.0	239.8	143.19	2.675			
18,400.0	9,385.0	17,997.0	9,033.2	70.4	70.3	-23.11	8,851.4	-143.7	382.5	237.8	144.71	2.643			
18,500.0	9,384.0	18,097.0	9,032.7	71.1	71.0	-23.14	8,951.3	-144.3	382.0	235.7	146.24	2.612			
18,600.0	9,382.9	18,197.0	9,032.2	71.9	71.8	-23.17	9,051.3	-144.9	381.5	233.7	147.76	2.582			
18,700.0	9,381.8	18,297.0	9,031.7	72.6	72.6	-23.20	9,151.3	-145.6	380.9	231.7	149.29	2.552			
18,800.0	9,380.7	18,397.0	9,031.2	73.4	73.3	-23.24	9,251.3	-146.2	380.4	229.6	150.81	2.522			
18,900.0	9,379.7	18,497.0	9,030.7	74.2	74.1	-23.27	9,351.3	-146.8	379.9	227.6	152.34	2.494			
19,000.0	9,378.6	18,597.0	9,030.1	74.9	74.9	-23.30	9,451.3	-147.4	379.4	225.5	153.87	2.466			
19,100.0	9,377.5	18,697.0	9,029.6	75.7	75.6	-23.33	9,551.3	-148.0	378.9	223.5	155.40	2.438			
19,200.0	9,376.4	18,797.0	9,029.1	76.4	76.4	-23.36	9,651.3	-148.6	378.3	221.4	156.93	2.411			
19,300.0	9,375.4	18,897.0	9,028.6	77.2	77.1	-23.40	9,751.3	-149.2	377.8	219.4	158.46	2.384			
19,400.0	9,374.3	18,997.0	9,028.1	78.0	77.9	-23.43	9,851.3	-149.8	377.3	217.3	159.99	2.358			
19,500.0	9,373.2	19,097.0	9,027.6	78.7	78.7	-23.46	9,951.3	-150.4	376.8	215.3	161.52	2.333			
19,600.0	9,372.2	19,197.0	9,027.1	79.5	79.4	-23.49	10,051.3	-151.0	376.3	213.2	163.05	2.308			
19,614.4	9,372.0	19,211.5	9,027.0	79.6	79.5	-23.50	10,065.7	-151.1	376.2	212.9	163.27	2.304 SF			

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



Intrepid Anticollision Report



Company: Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Reference Site: (Harrier Federal) Sec-2_T-26-S_R-32-E
Site Error: 0.0 usft
Reference Well: Harrier Federal Com #304H
Well Error: 0.0 usft
Reference Wellbore: OWB
Reference Design: Plan #1

Local Co-ordinate Reference: Well Harrier Federal Com #304H
TVD Reference: KB @ 3272.1usft (Latshaw 44)
MD Reference: KB @ 3272.1usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.15 Single User Db
Offset TVD Reference: Offset Datum

Offset Design:(Harrier Federal) Sec-2_T-26-S_R-32-E - Harrier Federal Com #305H - OWB - Plan #1

Offset Site Error: 0.0 usft
Offset Well Error: 0.0 usft

Survey Program: 0-Standard Keeper 104, 8874-MWD+IFR1+MS							Rule Assigned:				Offset Well Error:		0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		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)			
0.0	0.0	0.5	0.5	0.0	0.0	-90.38	-0.4	-60.1	60.1				
100.0	100.0	100.5	100.5	0.0	0.1	-90.38	-0.4	-60.1	60.1	60.0	0.05	1,140.183	
200.0	200.0	200.5	200.5	0.2	0.2	-90.38	-0.4	-60.1	60.1	59.9	0.19	312.464	
300.0	300.0	300.5	300.5	0.3	0.3	-90.38	-0.4	-60.1	60.1	59.8	0.33	181.039	
400.0	400.0	400.5	400.5	0.4	0.4	-90.38	-0.4	-60.1	60.1	59.6	0.47	127.437	
500.0	500.0	500.5	500.5	0.6	0.6	-90.38	-0.4	-60.1	60.1	59.5	0.61	98.325	
600.0	600.0	600.5	600.5	0.7	0.7	-90.38	-0.4	-60.1	60.1	59.4	0.75	80.041	
700.0	700.0	700.5	700.5	0.8	0.8	-90.38	-0.4	-60.1	60.1	59.2	0.89	67.490	
800.0	800.0	800.5	800.5	1.0	1.0	-90.38	-0.4	-60.1	60.1	59.1	1.03	58.342	
900.0	900.0	900.5	900.5	1.1	1.1	-90.38	-0.4	-60.1	60.1	58.9	1.17	51.378	
1,000.0	1,000.0	1,000.5	1,000.5	1.2	1.2	-90.38	-0.4	-60.1	60.1	58.8	1.31	45.899	
1,100.0	1,100.0	1,100.5	1,100.5	1.4	1.4	-90.38	-0.4	-60.1	60.1	58.7	1.45	41.476	
1,200.0	1,200.0	1,200.5	1,200.5	1.5	1.5	-90.38	-0.4	-60.1	60.1	58.5	1.59	37.831	
1,300.0	1,300.0	1,300.5	1,300.5	1.6	1.6	-90.38	-0.4	-60.1	60.1	58.4	1.73	34.774	
1,400.0	1,400.0	1,400.5	1,400.5	1.8	1.8	-90.38	-0.4	-60.1	60.1	58.2	1.87	32.175	
1,500.0	1,500.0	1,500.5	1,500.5	1.9	1.9	-90.38	-0.4	-60.1	60.1	58.1	2.01	29.937	
1,600.0	1,600.0	1,600.5	1,600.5	2.0	2.0	-90.38	-0.4	-60.1	60.1	58.0	2.15	27.990	
1,700.0	1,700.0	1,700.5	1,700.5	2.2	2.2	-90.38	-0.4	-60.1	60.1	57.8	2.29	26.281	
1,800.0	1,800.0	1,800.5	1,800.5	2.3	2.3	-90.38	-0.4	-60.1	60.1	57.7	2.43	24.769	
1,900.0	1,900.0	1,900.5	1,900.5	2.4	2.4	-90.38	-0.4	-60.1	60.1	57.5	2.57	23.421	
2,000.0	2,000.0	2,000.5	2,000.5	2.6	2.6	-90.38	-0.4	-60.1	60.1	57.4	2.71	22.212	
2,100.0	2,100.0	2,100.5	2,100.5	2.7	2.7	-90.38	-0.4	-60.1	60.1	57.3	2.85	21.122	
2,200.0	2,200.0	2,200.5	2,200.5	2.8	2.8	-90.38	-0.4	-60.1	60.1	57.1	2.99	20.134	
2,300.0	2,300.0	2,300.5	2,300.5	2.9	3.0	-90.38	-0.4	-60.1	60.1	57.0	3.12	19.234	
2,400.0	2,400.0	2,400.5	2,400.5	3.1	3.1	-90.38	-0.4	-60.1	60.1	56.8	3.26	18.412	
2,500.0	2,500.0	2,500.5	2,500.5	3.2	3.2	-90.38	-0.4	-60.1	60.1	56.7	3.40	17.656	
2,600.0	2,600.0	2,600.5	2,600.5	3.3	3.3	-90.38	-0.4	-60.1	60.1	56.6	3.54	16.961	
2,700.0	2,700.0	2,700.5	2,700.5	3.5	3.5	-90.38	-0.4	-60.1	60.1	56.4	3.68	16.318	
2,800.0	2,800.0	2,800.5	2,800.5	3.6	3.6	-90.38	-0.4	-60.1	60.1	56.3	3.82	15.722	
2,900.0	2,900.0	2,900.5	2,900.5	3.7	3.7	-90.38	-0.4	-60.1	60.1	56.1	3.96	15.168	
3,000.0	3,000.0	3,000.5	3,000.5	3.9	3.9	-90.38	-0.4	-60.1	60.1	56.0	4.10	14.651	
3,100.0	3,100.0	3,100.5	3,100.5	4.0	4.0	-90.38	-0.4	-60.1	60.1	55.9	4.24	14.169	
3,200.0	3,200.0	3,200.5	3,200.5	4.1	4.1	-90.38	-0.4	-60.1	60.1	55.7	4.38	13.717	
3,300.0	3,300.0	3,300.5	3,300.5	4.3	4.3	-90.38	-0.4	-60.1	60.1	55.6	4.52	13.294	
3,400.0	3,400.0	3,400.5	3,400.5	4.4	4.4	-90.38	-0.4	-60.1	60.1	55.4	4.66	12.896	
3,500.0	3,500.0	3,500.5	3,500.5	4.5	4.5	-90.38	-0.4	-60.1	60.1	55.3	4.80	12.520	
3,600.0	3,600.0	3,600.5	3,600.5	4.7	4.7	-90.38	-0.4	-60.1	60.1	55.2	4.94	12.166	
3,700.0	3,700.0	3,700.5	3,700.5	4.8	4.8	-90.38	-0.4	-60.1	60.1	55.0	5.08	11.832	
3,800.0	3,800.0	3,800.5	3,800.5	4.9	4.9	-90.38	-0.4	-60.1	60.1	54.9	5.22	11.515	
3,900.0	3,900.0	3,900.5	3,900.5	5.1	5.1	-90.38	-0.4	-60.1	60.1	54.7	5.36	11.215	
4,000.0	4,000.0	4,000.5	4,000.5	5.2	5.2	-90.38	-0.4	-60.1	60.1	54.6	5.50	10.931	
4,100.0	4,100.0	4,100.5	4,100.5	5.3	5.3	-90.38	-0.4	-60.1	60.1	54.5	5.64	10.660	
4,200.0	4,200.0	4,200.5	4,200.5	5.5	5.5	-90.38	-0.4	-60.1	60.1	54.3	5.78	10.402	
4,300.0	4,300.0	4,300.5	4,300.5	5.6	5.6	-90.38	-0.4	-60.1	60.1	54.2	5.92	10.157	
4,400.0	4,400.0	4,400.5	4,400.5	5.7	5.7	-90.38	-0.4	-60.1	60.1	54.0	6.06	9.923	
4,500.0	4,500.0	4,500.5	4,500.5	5.9	5.9	-90.38	-0.4	-60.1	60.1	53.9	6.20	9.699	
4,600.0	4,600.0	4,600.5	4,600.5	6.0	6.0	-90.38	-0.4	-60.1	60.1	53.8	6.34	9.485	
4,700.0	4,700.0	4,700.5	4,700.5	6.1	6.1	-90.38	-0.4	-60.1	60.1	53.6	6.48	9.281	
4,800.0	4,800.0	4,800.5	4,800.5	6.2	6.2	-90.38	-0.4	-60.1	60.1	53.5	6.62	9.085	
4,900.0	4,900.0	4,900.5	4,900.5	6.4	6.4	-90.38	-0.4	-60.1	60.1	53.3	6.76	8.897	
4,916.5	4,916.5	4,917.0	4,917.0	6.4	6.4	-90.38	-0.4	-60.1	60.1	53.3	6.78	8.867 CC	
5,000.0	5,000.0	5,000.5	5,000.5	6.5	6.5	-90.38	-0.4	-60.1	60.1	53.2	6.89	8.717 ES	

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



Intrepid Anticollision Report



Company: Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Reference Site: (Harrier Federal) Sec-2_T-26-S_R-32-E
Site Error: 0.0 usft
Reference Well: Harrier Federal Com #304H
Well Error: 0.0 usft
Reference Wellbore: OWB
Reference Design: Plan #1

Local Co-ordinate Reference: Well Harrier Federal Com #304H
TVD Reference: KB @ 3272.1usft (Latshaw 44)
MD Reference: KB @ 3272.1usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.15 Single User Db
Offset TVD Reference: Offset Datum

Offset Design:(Harrier Federal) Sec-2_T-26-S_R-32-E - Harrier Federal Com #305H - OWB - Plan #1

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Survey Program: 0-Standard Keeper 104, 8874-MWD+IFR1+MS						Rule Assigned:				Offset Well Error:		0.0 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		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)			
5,100.0	5,100.0	5,100.0	5,100.0	6.5	6.6	99.94	-2.0	-60.9	61.2	54.2	7.03	8.699	
5,200.0	5,199.8	5,198.5	5,198.3	6.5	6.5	100.33	-6.5	-63.2	64.5	57.3	7.18	8.973	
5,232.8	5,232.6	5,231.0	5,230.7	6.5	6.5	100.50	-8.7	-64.3	66.0	58.8	7.23	9.124	
5,300.0	5,299.5	5,297.8	5,297.3	6.4	6.5	100.56	-14.0	-66.9	69.6	62.3	7.33	9.495	
5,400.0	5,399.2	5,397.6	5,396.7	6.4	6.4	100.52	-22.0	-70.9	75.1	67.6	7.48	10.044	
5,500.0	5,498.9	5,497.5	5,496.2	6.4	6.4	100.47	-29.9	-75.0	80.5	72.9	7.62	10.571	
5,600.0	5,598.5	5,597.3	5,595.6	6.3	6.4	100.44	-37.9	-79.0	86.0	78.2	7.76	11.077	
5,700.0	5,698.2	5,697.2	5,695.1	6.3	6.3	100.41	-45.9	-83.0	91.5	83.6	7.91	11.563	
5,800.0	5,797.9	5,797.0	5,794.5	6.2	6.3	100.38	-53.9	-87.0	96.9	88.9	8.06	12.028	
5,900.0	5,897.5	5,896.9	5,894.0	6.2	6.3	100.36	-61.9	-91.1	102.4	94.2	8.21	12.475	
6,000.0	5,997.2	5,996.7	5,993.4	6.2	6.3	100.33	-69.9	-95.1	107.9	99.5	8.36	12.904	
6,100.0	6,096.9	6,096.6	6,092.9	6.2	6.3	100.31	-77.9	-99.1	113.3	104.8	8.51	13.316	
6,200.0	6,196.6	6,196.4	6,192.3	6.1	6.2	100.29	-85.9	-103.1	118.8	110.1	8.66	13.712	
6,300.0	6,296.2	6,296.3	6,291.7	6.1	6.2	100.28	-93.9	-107.2	124.3	115.4	8.82	14.092	
6,400.0	6,395.9	6,396.1	6,391.2	6.1	6.2	100.26	-101.9	-111.2	129.7	120.8	8.97	14.456	
6,500.0	6,495.6	6,496.0	6,490.6	6.1	6.2	100.25	-109.9	-115.2	135.2	126.1	9.13	14.806	
6,600.0	6,595.2	6,595.8	6,590.1	6.1	6.2	100.24	-117.9	-119.2	140.7	131.4	9.29	15.142	
6,700.0	6,694.9	6,695.7	6,689.5	6.0	6.2	100.22	-125.9	-123.3	146.1	136.7	9.45	15.465	
6,800.0	6,794.6	6,795.5	6,789.0	6.0	6.2	100.21	-133.9	-127.3	151.6	142.0	9.61	15.775	
6,900.0	6,894.2	6,895.4	6,888.4	6.0	6.2	100.20	-141.9	-131.3	157.1	147.3	9.77	16.073	
7,000.0	6,993.9	6,995.2	6,987.9	6.0	6.2	100.19	-149.9	-135.3	162.5	152.6	9.93	16.359	
7,100.0	7,093.6	7,095.1	7,087.3	6.0	6.2	100.18	-157.9	-139.4	168.0	157.9	10.10	16.634	
7,200.0	7,193.2	7,194.9	7,186.8	6.0	6.2	100.18	-165.9	-143.4	173.4	163.2	10.26	16.898	
7,300.0	7,292.9	7,294.8	7,286.2	6.0	6.3	100.17	-173.9	-147.4	178.9	168.5	10.43	17.151	
7,400.0	7,392.6	7,394.6	7,385.7	6.0	6.3	100.16	-181.9	-151.4	184.4	173.8	10.60	17.394	
7,500.0	7,492.3	7,494.5	7,485.1	6.1	6.3	100.15	-189.9	-155.5	189.8	179.1	10.77	17.628	
7,600.0	7,591.9	7,594.3	7,584.6	6.1	6.3	100.15	-197.9	-159.5	195.3	184.4	10.94	17.853	
7,700.0	7,691.6	7,694.2	7,684.0	6.1	6.4	100.14	-205.9	-163.5	200.8	189.7	11.11	18.068	
7,800.0	7,791.3	7,794.0	7,783.5	6.1	6.4	100.13	-213.9	-167.5	206.2	195.0	11.28	18.275	
7,900.0	7,890.9	7,893.9	7,882.9	6.1	6.5	100.13	-221.8	-171.6	211.7	200.2	11.46	18.474	
8,000.0	7,990.6	7,993.7	7,982.4	6.2	6.5	100.12	-229.8	-175.6	217.2	205.5	11.63	18.665	
8,100.0	8,090.3	8,093.6	8,081.8	6.2	6.5	100.12	-237.8	-179.6	222.6	210.8	11.81	18.848	
8,200.0	8,189.9	8,193.4	8,181.3	6.2	6.6	100.11	-245.8	-183.6	228.1	216.1	11.99	19.024	
8,300.0	8,289.6	8,293.3	8,280.7	6.3	6.6	100.11	-253.8	-187.7	233.6	221.4	12.17	19.193	
8,400.0	8,389.3	8,393.1	8,380.2	6.3	6.7	100.10	-261.8	-191.7	239.0	226.7	12.35	19.355	
8,500.0	8,489.0	8,493.0	8,479.6	6.4	6.8	100.10	-269.8	-195.7	244.5	232.0	12.53	19.511	
8,600.0	8,588.6	8,592.8	8,579.1	6.4	6.8	100.10	-277.8	-199.7	250.0	237.2	12.71	19.660	
8,700.0	8,688.3	8,692.7	8,678.5	6.5	6.9	100.09	-285.8	-203.8	255.4	242.5	12.90	19.803	
8,800.0	8,788.0	8,792.5	8,778.0	6.5	7.0	100.09	-293.8	-207.8	260.9	247.8	13.08	19.941	
8,870.6	8,858.3	8,863.0	8,848.1	6.6	7.0	100.09	-299.5	-210.6	264.7	251.6	13.17	20.102	
8,900.0	8,887.7	8,892.3	8,877.4	6.6	7.0	116.14	-301.5	-211.8	266.3	253.2	13.18	20.209	
8,950.0	8,937.7	8,942.1	8,927.1	6.6	7.0	-103.07	-301.8	-213.8	269.1	255.9	13.19	20.393	
9,000.0	8,987.4	8,992.0	8,976.8	6.6	7.0	-95.11	-297.8	-215.9	271.8	258.6	13.22	20.565	
9,050.0	9,036.5	9,042.0	9,026.0	6.6	7.1	-93.04	-289.5	-218.0	274.5	261.3	13.25	20.720	
9,100.0	9,084.5	9,092.1	9,074.4	6.7	7.1	-92.07	-276.8	-220.0	277.2	263.9	13.29	20.854	
9,150.0	9,131.2	9,142.3	9,121.6	6.7	7.1	-91.51	-259.9	-222.1	279.8	266.4	13.34	20.964	
9,200.0	9,176.2	9,192.6	9,167.2	6.8	7.2	-91.14	-239.0	-224.1	282.2	268.8	13.41	21.042	
9,250.0	9,219.1	9,242.9	9,210.9	6.8	7.2	-90.87	-214.0	-226.1	284.6	271.1	13.50	21.085	
9,300.0	9,259.6	9,293.4	9,252.4	6.9	7.3	-90.67	-185.3	-227.9	286.9	273.3	13.61	21.087	
9,350.0	9,297.4	9,344.0	9,291.2	7.0	7.3	-90.52	-152.9	-229.7	289.0	275.3	13.74	21.042	
9,400.0	9,332.2	9,394.6	9,327.0	7.0	7.4	-90.40	-117.2	-231.4	291.0	277.1	13.89	20.947	
9,450.0	9,363.8	9,445.4	9,359.6	7.1	7.5	-90.30	-78.4	-233.0	292.7	278.7	14.07	20.799	

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



Intrepid Anticollision Report



Company: Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Reference Site: (Harrier Federal) Sec-2_T-26-S_R-32-E
Site Error: 0.0 usft
Reference Well: Harrier Federal Com #304H
Well Error: 0.0 usft
Reference Wellbore: OWB
Reference Design: Plan #1

Local Co-ordinate Reference: Well Harrier Federal Com #304H
TVD Reference: KB @ 3272.1usft (Latshaw 44)
MD Reference: KB @ 3272.1usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.15 Single User Db
Offset TVD Reference: Offset Datum

Offset Design:(Harrier Federal) Sec-2_T-26-S_R-32-E - Harrier Federal Com #305H - OWB - Plan #1

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Survey Program: 0-Standard Keeper 104, 8874-MWD+IFR1+MS												Rule Assigned:			
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	(usft)	(usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
9,500.0	9,391.9	9,496.2	9,388.7	7.2	7.6	-90.23	-36.7	-234.5	294.3	280.0	14.29	20.599			
9,550.0	9,416.2	9,547.1	9,414.1	7.3	7.7	-90.17	7.4	-235.8	295.7	281.2	14.53	20.346			
9,600.0	9,436.6	9,598.1	9,435.4	7.4	7.8	-90.13	53.6	-237.0	296.9	282.1	14.81	20.046			
9,650.0	9,453.0	9,649.1	9,452.6	7.5	7.9	-90.10	101.6	-238.0	297.8	282.7	15.12	19.701			
9,700.0	9,465.2	9,700.2	9,465.5	7.7	8.0	-90.09	151.0	-238.9	298.5	283.1	15.45	19.319			
9,750.0	9,473.2	9,751.3	9,473.9	7.8	8.2	-90.09	201.4	-239.6	299.0	283.2	15.82	18.905			
9,800.0	9,476.8	9,802.4	9,477.8	8.0	8.3	-90.10	252.4	-240.0	299.2	283.0	16.20	18.470			
9,822.6	9,477.0	9,825.5	9,478.0	8.1	8.4	-90.11	275.5	-240.2	299.3	282.9	16.38	18.268			
9,900.0	9,476.2	9,902.9	9,477.2	8.4	8.7	-90.11	352.9	-240.7	299.3	282.2	17.04	17.565			
10,000.0	9,475.1	10,002.9	9,476.2	8.9	9.1	-90.11	452.9	-241.3	299.3	281.3	17.97	16.655			
10,100.0	9,474.0	10,102.9	9,475.1	9.4	9.6	-90.12	552.9	-241.9	299.3	280.3	18.98	15.769			
10,200.0	9,473.0	10,202.9	9,474.1	9.9	10.1	-90.12	652.9	-242.5	299.3	279.2	20.05	14.924			
10,300.0	9,471.9	10,302.9	9,473.0	10.5	10.7	-90.12	752.9	-243.1	299.3	278.1	21.18	14.126			
10,400.0	9,470.8	10,402.9	9,472.0	11.1	11.3	-90.13	852.8	-243.7	299.3	276.9	22.36	13.381			
10,500.0	9,469.7	10,502.9	9,470.9	11.7	11.9	-90.13	952.8	-244.3	299.2	275.7	23.58	12.689			
10,600.0	9,468.7	10,602.9	9,469.9	12.4	12.5	-90.13	1,052.8	-245.0	299.2	274.4	24.84	12.048			
10,700.0	9,467.6	10,702.9	9,468.8	13.0	13.1	-90.14	1,152.8	-245.6	299.2	273.1	26.12	11.456			
10,800.0	9,466.5	10,802.9	9,467.8	13.7	13.8	-90.14	1,252.8	-246.2	299.2	271.8	27.43	10.909			
10,900.0	9,465.4	10,902.9	9,466.7	14.3	14.4	-90.15	1,352.8	-246.8	299.2	270.5	28.76	10.404			
11,000.0	9,464.4	11,002.9	9,465.7	15.0	15.1	-90.15	1,452.8	-247.4	299.2	269.1	30.11	9.938			
11,100.0	9,463.3	11,102.9	9,464.6	15.7	15.8	-90.15	1,552.8	-248.0	299.2	267.7	31.48	9.506			
11,200.0	9,462.2	11,202.9	9,463.6	16.4	16.5	-90.16	1,652.8	-248.6	299.2	266.4	32.86	9.106			
11,300.0	9,461.2	11,302.9	9,462.5	17.1	17.2	-90.16	1,752.8	-249.2	299.2	265.0	34.25	8.736			
11,400.0	9,460.1	11,402.9	9,461.4	17.8	17.9	-90.17	1,852.8	-249.8	299.2	263.6	35.66	8.391			
11,500.0	9,459.0	11,502.9	9,460.4	18.5	18.6	-90.17	1,952.8	-250.5	299.2	262.1	37.07	8.071			
11,600.0	9,457.9	11,602.9	9,459.3	19.2	19.3	-90.17	2,052.8	-251.1	299.2	260.7	38.50	7.772			
11,700.0	9,456.9	11,702.9	9,458.3	19.9	20.0	-90.18	2,152.8	-251.7	299.2	259.3	39.93	7.493			
11,800.0	9,455.8	11,802.9	9,457.2	20.6	20.7	-90.18	2,252.7	-252.3	299.2	257.8	41.37	7.232			
11,900.0	9,454.7	11,902.9	9,456.2	21.4	21.4	-90.18	2,352.7	-252.9	299.2	256.4	42.82	6.988			
12,000.0	9,453.6	12,002.9	9,455.1	22.1	22.2	-90.19	2,452.7	-253.5	299.2	254.9	44.27	6.759			
12,100.0	9,452.6	12,102.9	9,454.1	22.8	22.9	-90.19	2,552.7	-254.1	299.2	253.5	45.72	6.544			
12,200.0	9,451.5	12,202.9	9,453.0	23.6	23.6	-90.20	2,652.7	-254.7	299.2	252.0	47.18	6.341			
12,300.0	9,450.4	12,302.9	9,452.0	24.3	24.4	-90.20	2,752.7	-255.3	299.2	250.5	48.65	6.150			
12,400.0	9,449.4	12,402.9	9,450.9	25.0	25.1	-90.20	2,852.7	-256.0	299.2	249.1	50.12	5.969			
12,500.0	9,448.3	12,502.9	9,449.9	25.8	25.8	-90.21	2,952.7	-256.6	299.2	247.6	51.59	5.799			
12,600.0	9,447.2	12,602.9	9,448.8	26.5	26.6	-90.21	3,052.7	-257.2	299.2	246.1	53.07	5.637			
12,700.0	9,446.1	12,702.9	9,447.8	27.2	27.3	-90.21	3,152.7	-257.8	299.2	244.6	54.55	5.485			
12,800.0	9,445.1	12,802.9	9,446.7	28.0	28.0	-90.22	3,252.7	-258.4	299.2	243.1	56.03	5.339			
12,900.0	9,444.0	12,902.9	9,445.7	28.7	28.8	-90.22	3,352.7	-259.0	299.2	241.7	57.52	5.201			
13,000.0	9,442.9	13,002.9	9,444.6	29.5	29.5	-90.23	3,452.7	-259.6	299.2	240.2	59.00	5.070			
13,100.0	9,441.9	13,102.9	9,443.6	30.2	30.3	-90.23	3,552.6	-260.2	299.2	238.7	60.49	4.945			
13,200.0	9,440.8	13,202.9	9,442.5	31.0	31.0	-90.23	3,652.6	-260.8	299.2	237.2	61.98	4.826			
13,300.0	9,439.7	13,302.9	9,441.5	31.7	31.8	-90.24	3,752.6	-261.5	299.2	235.7	63.48	4.713			
13,400.0	9,438.6	13,402.9	9,440.4	32.5	32.5	-90.24	3,852.6	-262.1	299.2	234.2	64.97	4.604			
13,500.0	9,437.6	13,502.9	9,439.3	33.2	33.3	-90.25	3,952.6	-262.7	299.1	232.7	66.47	4.501			
13,600.0	9,436.5	13,602.9	9,438.3	34.0	34.0	-90.25	4,052.6	-263.3	299.1	231.2	67.97	4.401			
13,700.0	9,435.4	13,702.9	9,437.2	34.7	34.8	-90.25	4,152.6	-263.9	299.1	229.7	69.47	4.306			
13,800.0	9,434.3	13,802.9	9,436.2	35.5	35.5	-90.26	4,252.6	-264.5	299.1	228.2	70.97	4.215			
13,900.0	9,433.3	13,902.9	9,435.1	36.2	36.3	-90.26	4,352.6	-265.1	299.1	226.7	72.47	4.128			
14,000.0	9,432.2	14,002.9	9,434.1	37.0	37.0	-90.26	4,452.6	-265.7	299.1	225.2	73.98	4.044			
14,100.0	9,431.1	14,102.9	9,433.0	37.7	37.8	-90.27	4,552.6	-266.3	299.1	223.7	75.48	3.963			
14,200.0	9,430.1	14,202.9	9,432.0	38.5	38.5	-90.27	4,652.6	-267.0	299.1	222.1	76.99	3.885			

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



Intrepid Anticollision Report



Company: Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Reference Site: (Harrier Federal) Sec-2_T-26-S_R-32-E
Site Error: 0.0 usft
Reference Well: Harrier Federal Com #304H
Well Error: 0.0 usft
Reference Wellbore OWB
Reference Design: Plan #1

Local Co-ordinate Reference: Well Harrier Federal Com #304H
TVD Reference: KB @ 3272.1usft (Latshaw 44)
MD Reference: KB @ 3272.1usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.15 Single User Db
Offset TVD Reference: Offset Datum

Offset Design:(Harrier Federal) Sec-2_T-26-S_R-32-E - Harrier Federal Com #305H - OWB - Plan #1

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Survey Program: 0-Standard Keeper 104, 8874-MWD+IFR1+MS												Rule Assigned:			
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		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)					
14,300.0	9,429.0	14,302.9	9,430.9	39.2	39.3	-90.28	4,752.6	-267.6	299.1	220.6	78.49	3.811			
14,400.0	9,427.9	14,402.9	9,429.9	40.0	40.0	-90.28	4,852.6	-268.2	299.1	219.1	80.00	3.739			
14,500.0	9,426.8	14,502.9	9,428.8	40.7	40.8	-90.28	4,952.5	-268.8	299.1	217.6	81.51	3.670			
14,600.0	9,425.8	14,602.9	9,427.8	41.5	41.5	-90.29	5,052.5	-269.4	299.1	216.1	83.02	3.603			
14,700.0	9,424.7	14,702.9	9,426.7	42.2	42.3	-90.29	5,152.5	-270.0	299.1	214.6	84.53	3.539			
14,800.0	9,423.6	14,802.9	9,425.7	43.0	43.0	-90.29	5,252.5	-270.6	299.1	213.1	86.04	3.476			
14,900.0	9,422.6	14,902.9	9,424.6	43.8	43.8	-90.30	5,352.5	-271.2	299.1	211.6	87.55	3.416			
15,000.0	9,421.5	15,002.9	9,423.6	44.5	44.6	-90.30	5,452.5	-271.8	299.1	210.0	89.06	3.358			
15,100.0	9,420.4	15,102.9	9,422.5	45.3	45.3	-90.31	5,552.5	-272.5	299.1	208.5	90.58	3.302			
15,200.0	9,419.3	15,202.9	9,421.5	46.0	46.1	-90.31	5,652.5	-273.1	299.1	207.0	92.09	3.248			
15,300.0	9,418.3	15,302.9	9,420.4	46.8	46.8	-90.31	5,752.5	-273.7	299.1	205.5	93.60	3.195			
15,400.0	9,417.2	15,402.9	9,419.4	47.5	47.6	-90.32	5,852.5	-274.3	299.1	204.0	95.12	3.144			
15,500.0	9,416.1	15,502.9	9,418.3	48.3	48.3	-90.32	5,952.5	-274.9	299.1	202.5	96.63	3.095			
15,600.0	9,415.0	15,602.9	9,417.2	49.1	49.1	-90.33	6,052.5	-275.5	299.1	200.9	98.15	3.047			
15,700.0	9,414.0	15,702.9	9,416.2	49.8	49.9	-90.33	6,152.5	-276.1	299.1	199.4	99.67	3.001			
15,800.0	9,412.9	15,802.9	9,415.1	50.6	50.6	-90.33	6,252.4	-276.7	299.1	197.9	101.18	2.956			
15,900.0	9,411.8	15,902.9	9,414.1	51.3	51.4	-90.34	6,352.4	-277.3	299.1	196.4	102.70	2.912			
16,000.0	9,410.8	16,002.9	9,413.0	52.1	52.1	-90.34	6,452.4	-278.0	299.1	194.9	104.22	2.870			
16,100.0	9,409.7	16,102.9	9,412.0	52.8	52.9	-90.34	6,552.4	-278.6	299.1	193.3	105.74	2.828			
16,200.0	9,408.6	16,202.9	9,410.9	53.6	53.6	-90.35	6,652.4	-279.2	299.1	191.8	107.25	2.788			
16,300.0	9,407.5	16,302.9	9,409.9	54.4	54.4	-90.35	6,752.4	-279.8	299.1	190.3	108.77	2.749			
16,400.0	9,406.5	16,402.9	9,408.8	55.1	55.2	-90.36	6,852.4	-280.4	299.1	188.8	110.29	2.711			
16,500.0	9,405.4	16,502.9	9,407.8	55.9	55.9	-90.36	6,952.4	-281.0	299.1	187.2	111.81	2.675			
16,600.0	9,404.3	16,602.9	9,406.7	56.6	56.7	-90.36	7,052.4	-281.6	299.1	185.7	113.33	2.639			
16,700.0	9,403.3	16,702.9	9,405.7	57.4	57.4	-90.37	7,152.4	-282.2	299.0	184.2	114.85	2.604			
16,800.0	9,402.2	16,802.9	9,404.6	58.2	58.2	-90.37	7,252.4	-282.8	299.0	182.7	116.37	2.570			
16,900.0	9,401.1	16,902.9	9,403.6	58.9	59.0	-90.38	7,352.4	-283.5	299.0	181.1	117.89	2.537			
17,000.0	9,400.0	17,002.9	9,402.5	59.7	59.7	-90.38	7,452.4	-284.1	299.0	179.6	119.41	2.504			
17,100.0	9,399.0	17,102.9	9,401.5	60.5	60.5	-90.38	7,552.4	-284.7	299.0	178.1	120.93	2.473			
17,200.0	9,397.9	17,202.9	9,400.4	61.2	61.2	-90.39	7,652.3	-285.3	299.0	176.6	122.46	2.442			
17,300.0	9,396.8	17,302.9	9,399.4	62.0	62.0	-90.39	7,752.3	-285.9	299.0	175.1	123.98	2.412			
17,400.0	9,395.7	17,402.9	9,398.3	62.7	62.8	-90.39	7,852.3	-286.5	299.0	173.5	125.50	2.383			
17,500.0	9,394.7	17,502.9	9,397.3	63.5	63.5	-90.40	7,952.3	-287.1	299.0	172.0	127.02	2.354			
17,600.0	9,393.6	17,602.9	9,396.2	64.3	64.3	-90.40	8,052.3	-287.7	299.0	170.5	128.54	2.326			
17,700.0	9,392.5	17,702.9	9,395.1	65.0	65.0	-90.41	8,152.3	-288.3	299.0	168.9	130.07	2.299			
17,800.0	9,391.5	17,802.9	9,394.1	65.8	65.8	-90.41	8,252.3	-288.9	299.0	167.4	131.59	2.272			
17,900.0	9,390.4	17,902.9	9,393.0	66.5	66.6	-90.41	8,352.3	-289.6	299.0	165.9	133.11	2.246			
18,000.0	9,389.3	18,002.9	9,392.0	67.3	67.3	-90.42	8,452.3	-290.2	299.0	164.4	134.64	2.221			
18,100.0	9,388.2	18,102.9	9,390.9	68.1	68.1	-90.42	8,552.3	-290.8	299.0	162.8	136.16	2.196			
18,200.0	9,387.2	18,202.9	9,389.9	68.8	68.9	-90.42	8,652.3	-291.4	299.0	161.3	137.68	2.172			
18,300.0	9,386.1	18,302.9	9,388.8	69.6	69.6	-90.43	8,752.3	-292.0	299.0	159.8	139.21	2.148			
18,400.0	9,385.0	18,402.9	9,387.8	70.4	70.4	-90.43	8,852.3	-292.6	299.0	158.3	140.73	2.125			
18,500.0	9,384.0	18,502.9	9,386.7	71.1	71.1	-90.44	8,952.2	-293.2	299.0	156.7	142.25	2.102			
18,600.0	9,382.9	18,602.9	9,385.7	71.9	71.9	-90.44	9,052.2	-293.8	299.0	155.2	143.78	2.079			
18,700.0	9,381.8	18,702.9	9,384.6	72.6	72.7	-90.44	9,152.2	-294.5	299.0	153.7	145.30	2.058			
18,800.0	9,380.7	18,802.9	9,383.6	73.4	73.4	-90.45	9,252.2	-295.1	299.0	152.2	146.83	2.036			
18,900.0	9,379.7	18,902.9	9,382.5	74.2	74.2	-90.45	9,352.2	-295.7	299.0	150.6	148.35	2.015			
19,000.0	9,378.6	19,002.9	9,381.5	74.9	74.9	-90.46	9,452.2	-296.3	299.0	149.1	149.88	1.995			
19,100.0	9,377.5	19,102.9	9,380.4	75.7	75.7	-90.46	9,552.2	-296.9	299.0	147.6	151.40	1.975			
19,200.0	9,376.4	19,202.9	9,379.4	76.4	76.5	-90.46	9,652.2	-297.5	299.0	146.0	152.93	1.955			
19,300.0	9,375.4	19,302.9	9,378.3	77.2	77.2	-90.47	9,752.2	-298.1	299.0	144.5	154.45	1.936			
19,400.0	9,374.3	19,402.9	9,377.3	78.0	78.0	-90.47	9,852.2	-298.7	299.0	143.0	155.98	1.917			

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



Intrepid
Anticollision Report



Company: Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Reference Site: (Harrier Federal) Sec-2_T-26-S_R-32-E
Site Error: 0.0 usft
Reference Well: Harrier Federal Com #304H
Well Error: 0.0 usft
Reference Wellbore: OWB
Reference Design: Plan #1

Local Co-ordinate Reference: Well Harrier Federal Com #304H
TVD Reference: KB @ 3272.1usft (Latshaw 44)
MD Reference: KB @ 3272.1usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.15 Single User Db
Offset TVD Reference: Offset Datum

Offset Design:(Harrier Federal) Sec-2_T-26-S_R-32-E - Harrier Federal Com #305H - OWB - Plan #1

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Survey Program: 0-Standard Keeper 104, 8874-MWD+IFR1+MS

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)			
19,500.0	9,373.2	19,502.9	9,376.2	78.7	78.8	-90.47	9,952.2	-299.3	299.0	141.5	157.50	1.898	
19,600.0	9,372.2	19,602.9	9,375.1	79.5	79.5	-90.48	10,052.2	-300.0	299.0	139.9	159.03	1.880	
19,614.4	9,372.0	19,617.4	9,375.0	79.6	79.6	-90.48	10,066.6	-300.0	299.0	139.7	159.25	1.877 SF	



Intrepid Anticollision Report



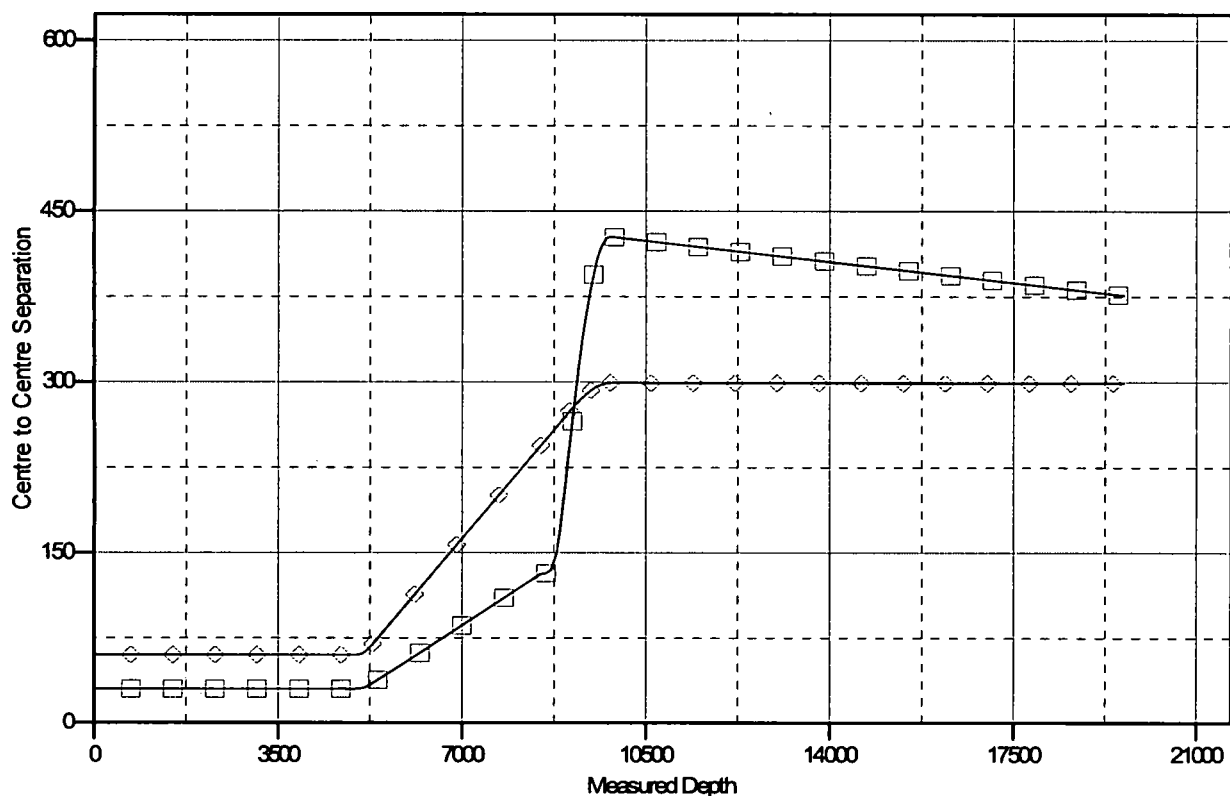
Company: Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Reference Site: (Harrier Federal) Sec-2_T-26-S_R-32-E
Site Error: 0.0 usft
Reference Well: Harrier Federal Com #304H
Well Error: 0.0 usft
Reference Wellbore: OWB
Reference Design: Plan #1

Local Co-ordinate Reference: Well Harrier Federal Com #304H
TVD Reference: KB @ 3272.1usft (Latshaw 44)
MD Reference: KB @ 3272.1usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.15 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 3272.1usft (Latshaw 44)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Harrier Federal Com #304H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30°
Grid Convergence at Surface is: 0.36°

Ladder Plot



LEGEND

—■— Harrier Federal Com #102H, OWB, Plan #1 V0 —◆— Harrier Federal Com #304H, OWB, Plan #1 V0



Intrepid Anticollision Report



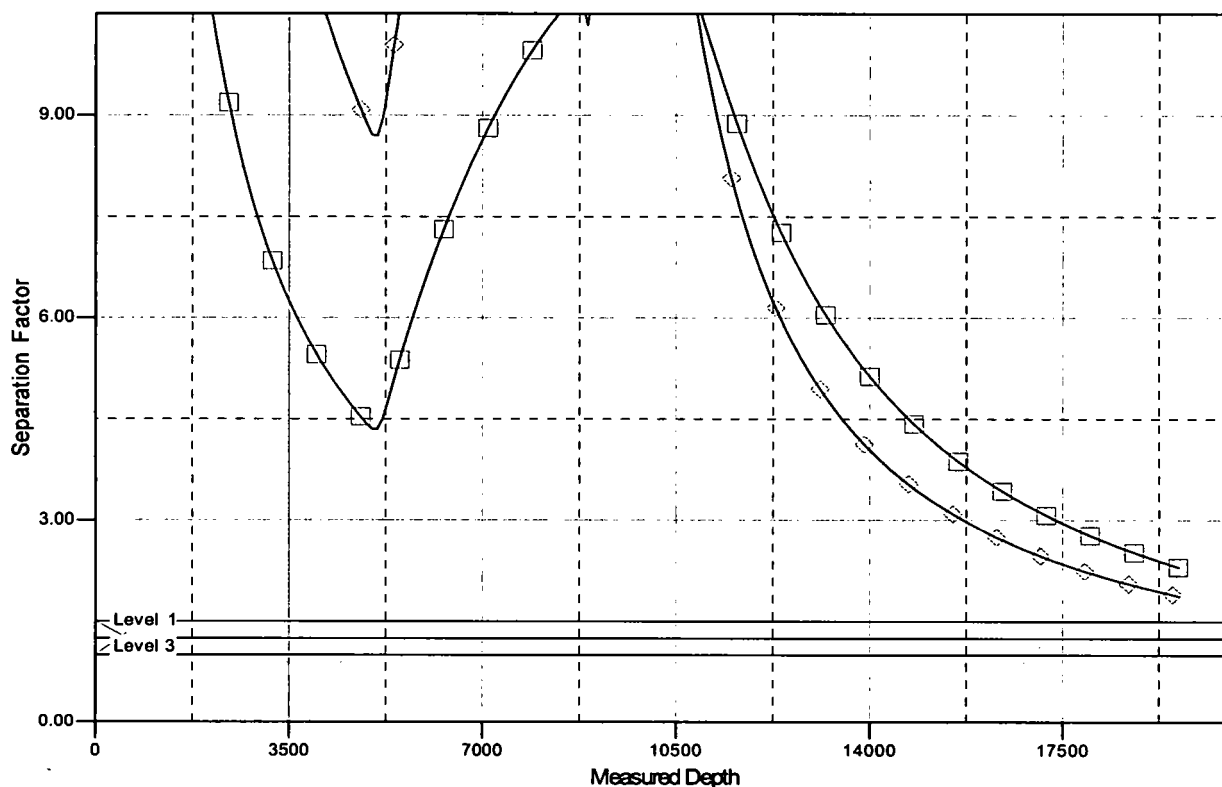
Company: Concho Resources, Inc.
Project: Lea County, NM (NAD 27 NME)
Reference Site: (Harrier Federal) Sec-2_T-26-S-R-32-E
Site Error: 0.0 usft
Reference Well: Harrier Federal Com #304H
Well Error: 0.0.usft
Reference Wellbore: OWB
Reference Design: Plan #1

Local Co-ordinate Reference: Well Harrier Federal Com #304H
TVD Reference: KB @ 3272.1usft (Latshaw 44)
MD Reference: KB @ 3272.1usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.15 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 3272.1usft (Latshaw 44)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Harrier Federal Com #304H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30°
Grid Convergence at Surface is: 0.36°

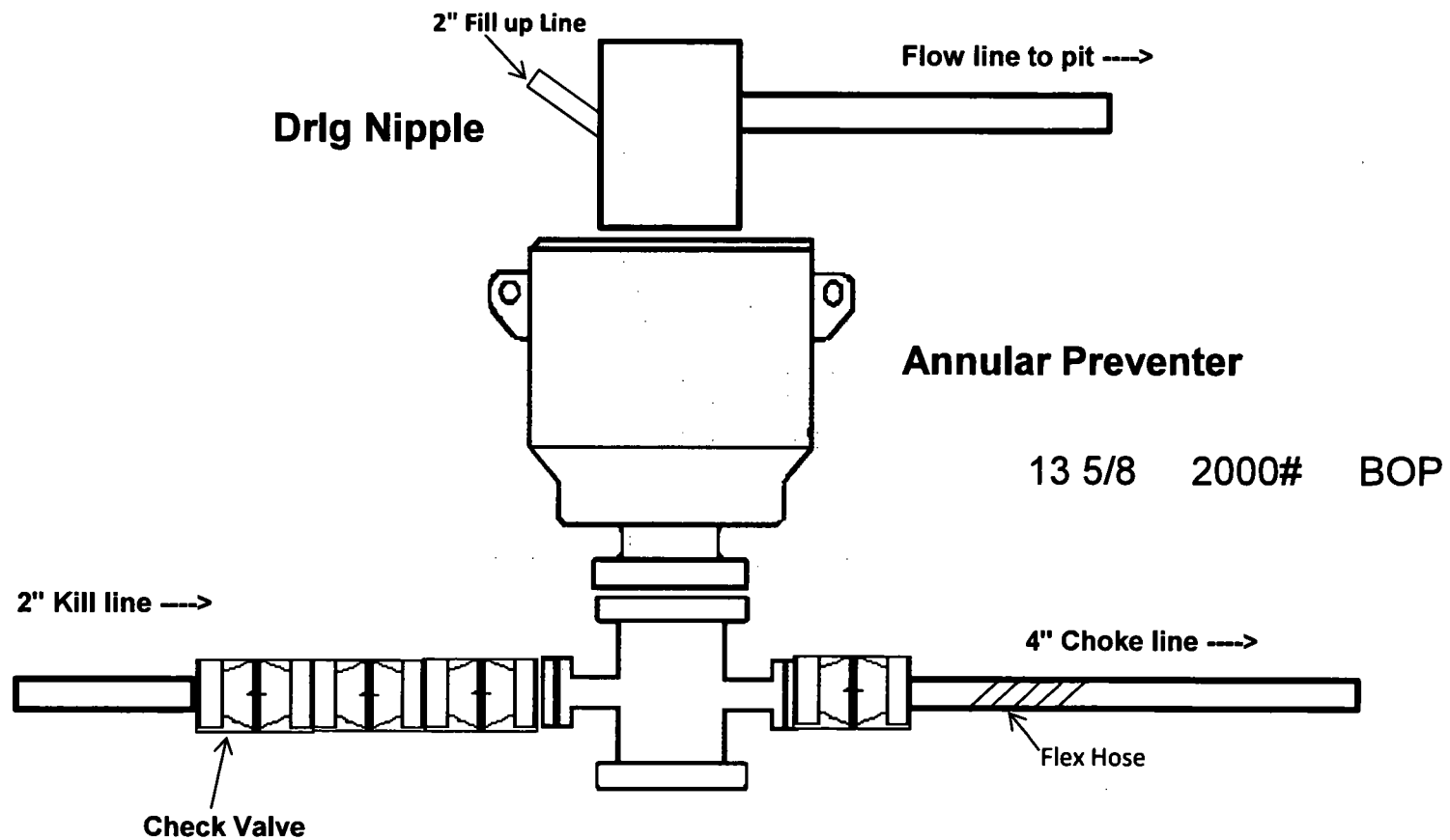
Separation Factor Plot



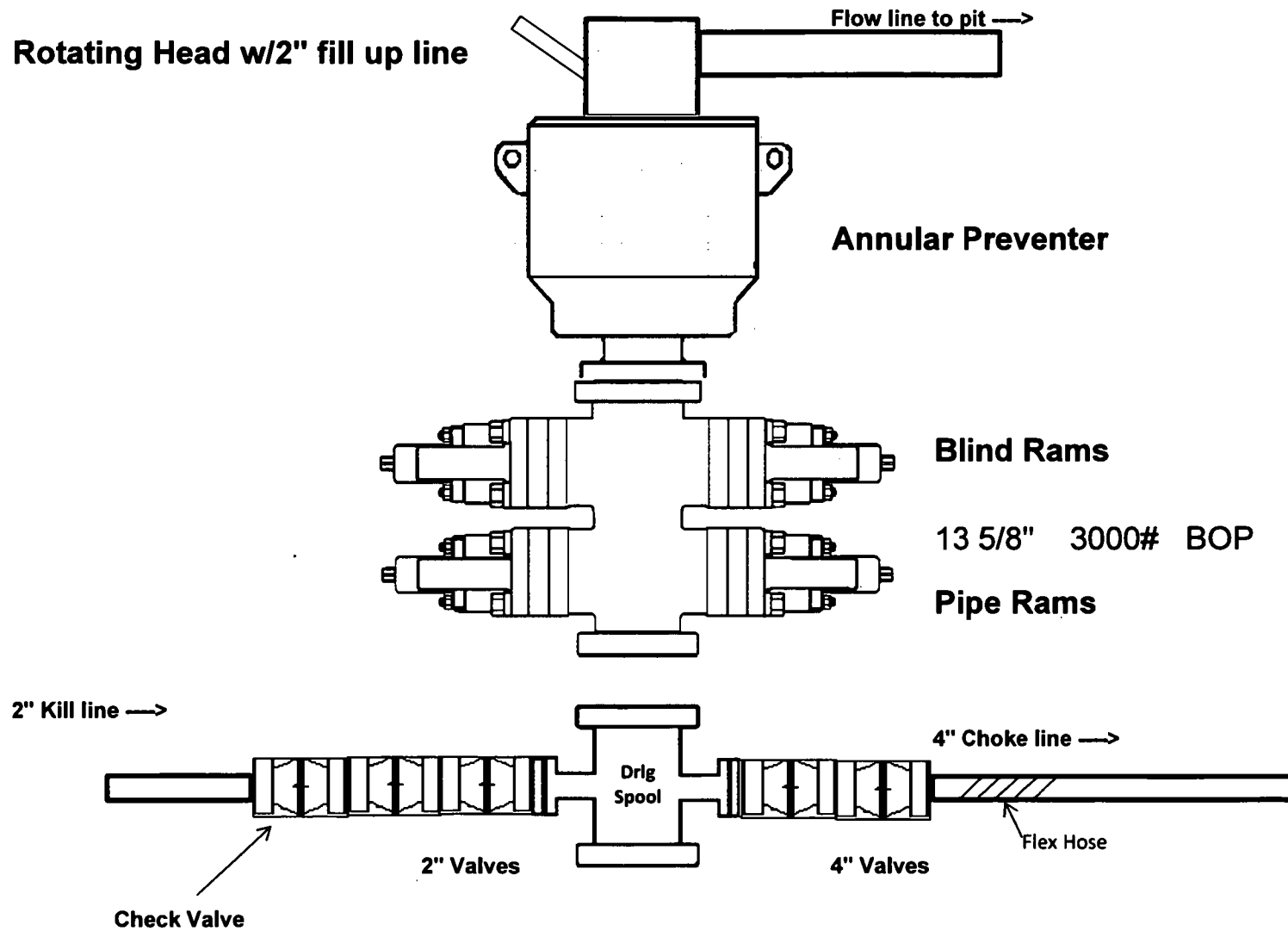
LEGEND

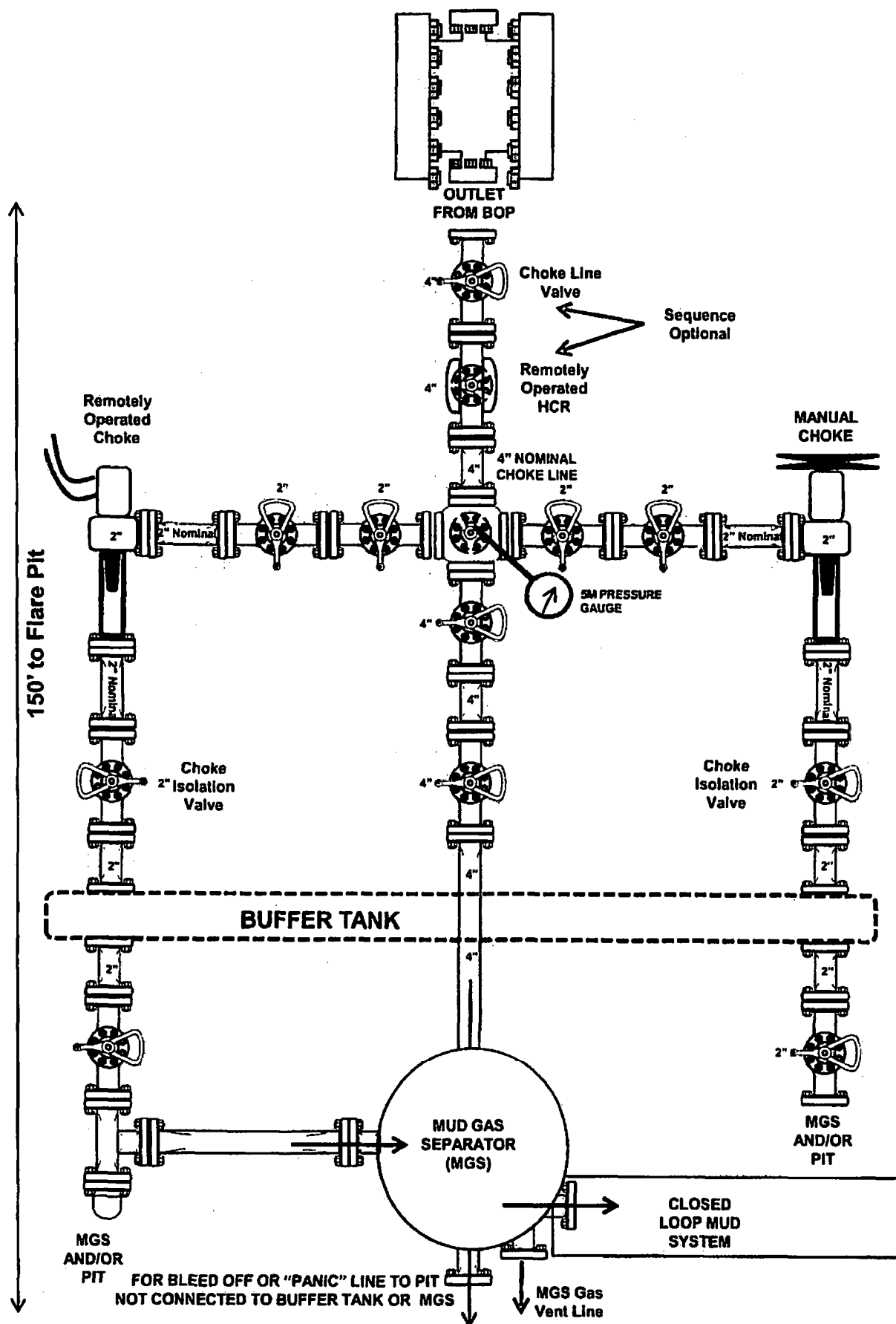
Harrier Federal Com #102H, OWB, P1 an #1 V0 Harrier Federal Com #304H, OWB, P1 an #1 V0

2,000 psi BOP Schematic

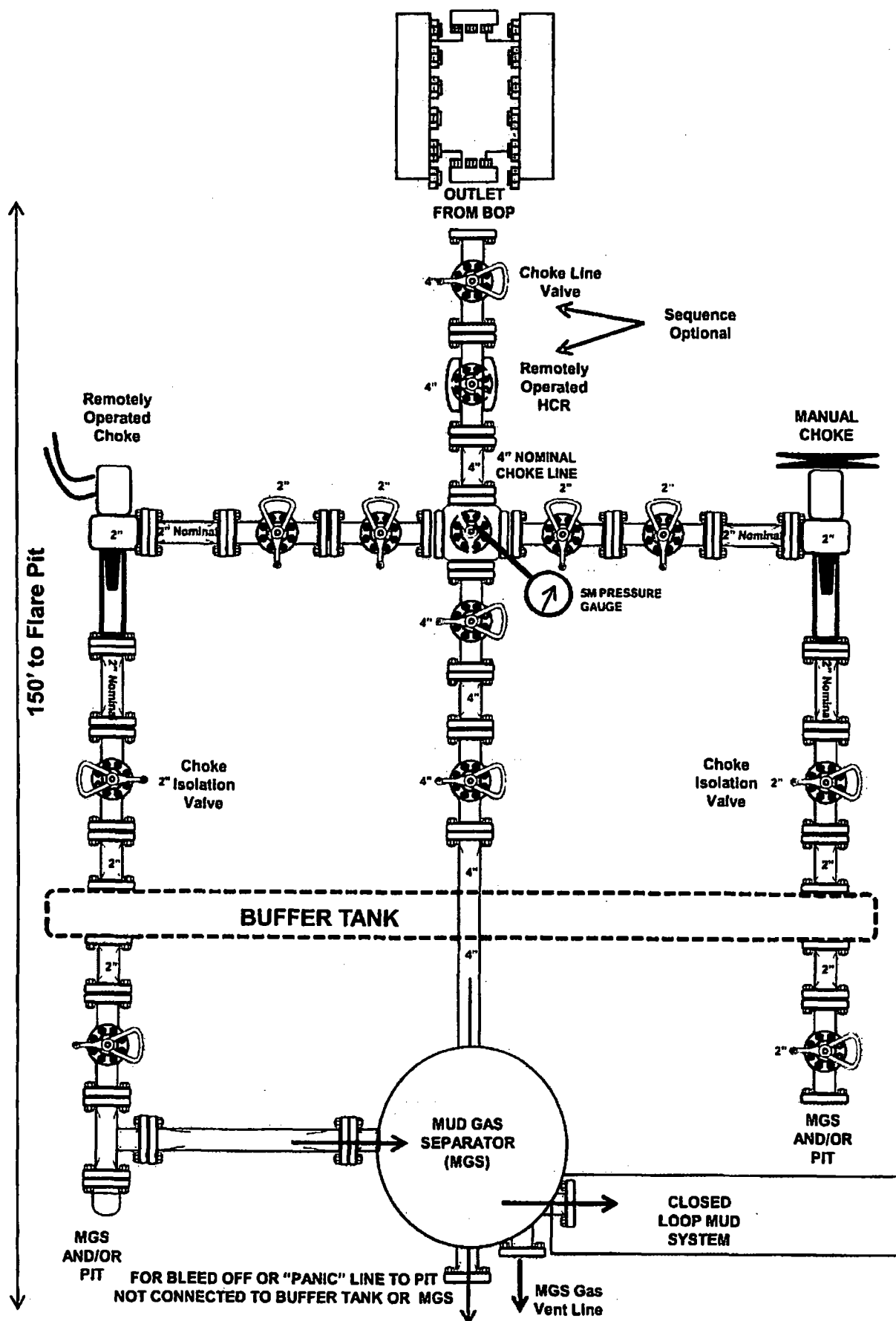


3,000 psi BOP Schematic





3M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)





Midwest Hose
& Specialty, Inc.

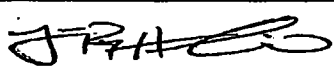
Internal Hydrostatic Test Certificate

General Information		Hose Specifications	
Customer	LATSHAW DRILLING	Hose Assembly Type	Choke & Kill
MWH Sales Representative	ABYGAIL LOGAN	Certification	API 7K/FSL LEVEL2
Date Assembled	3/16/2018	Hose Grade	MUD
Location Assembled	OKC	Hose Working Pressure	N/A
Sales Order #	368223	Hose Lot # and Date Code	N/A
Customer Purchase Order #	412528	Hose I.D. (Inches)	3.35"
Assembly Serial # (Pick Ticket #)	454857	Hose O.D. (Inches)	5.77"
Hose Assembly Length	58'	Aarmor (yes/no)	YES
Fittings			
End A		End B	
Stem (Part and Revision #)	R3.5X64-WB	Stem (Part and Revision #)	R3.5X64-WB
Stem (Heat #)	1770131	Stem (Heat #)	1770131
Ferrule (Part and Revision #)	RF3.5X5330	Ferrule (Part and Revision #)	RF3.5X5330
Ferrule (Heat #)	60860852	Ferrule (Heat #)	60860852
Connection - Flange Hammer Union Part	4-1/16 10K	Connection (Part #)	4-1/16 10K
Connection (Heat #)		Connection (Heat #)	
Nut (Part #)		Nut (Part #)	
Nut (Heat #)		Nut (Heat #)	
Dies Used	N/A	Dies Used	5.75"
Hydrostatic Test Requirements			
Test Pressure (psi)	10,000	Hose assembly was tested with ambient water temperature.	
Test Pressure Hold Time (minutes)	16		
Date Tested	Tested By	Approved By	
3/16/2018			



Midwest Hose
& Specialty, Inc.

Certificate of Conformity

Customer: LATSHAW DRILLING	Customer P.O.# 412528
Sales Order # 368223	Date Assembled: 3/16/2018
Specifications	
Hose Assembly Type: Choke & Kill	Rig # N/A
Assembly Serial # 454857	Hose Lot # and Date Code N/A
Hose Working Pressure (psi) N/A	Test Pressure (psi) 10000
Hose Assembly Description:	CK56-SS-5K-6410K-6410K-58.00' FT-TVM
We hereby certify that the above material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards.	
Supplier: Midwest Hose & Specialty, Inc. 3312 S I-35 Service Rd Oklahoma City, OK 73129	
Comments:	
Approved By	Date
	3/19/2018



Midwest Hose
& Specialty, Inc.

Internal Hydrostatic Test Graph

March 16, 2018

Customer: Latshaw

Pick Ticket #: 454857

Hose Specifications

Hose Type

C&K

I.D.

3.5"

Length

58'

O.D.

5.22"

Working Pressure

10000 PSI

Burst Pressure

Standard Safety Multiplier Applies

Verification

Type of Fitting

4 1/16 10K

Die Size

5.75"

Hose Serial

43175

Coupling Method

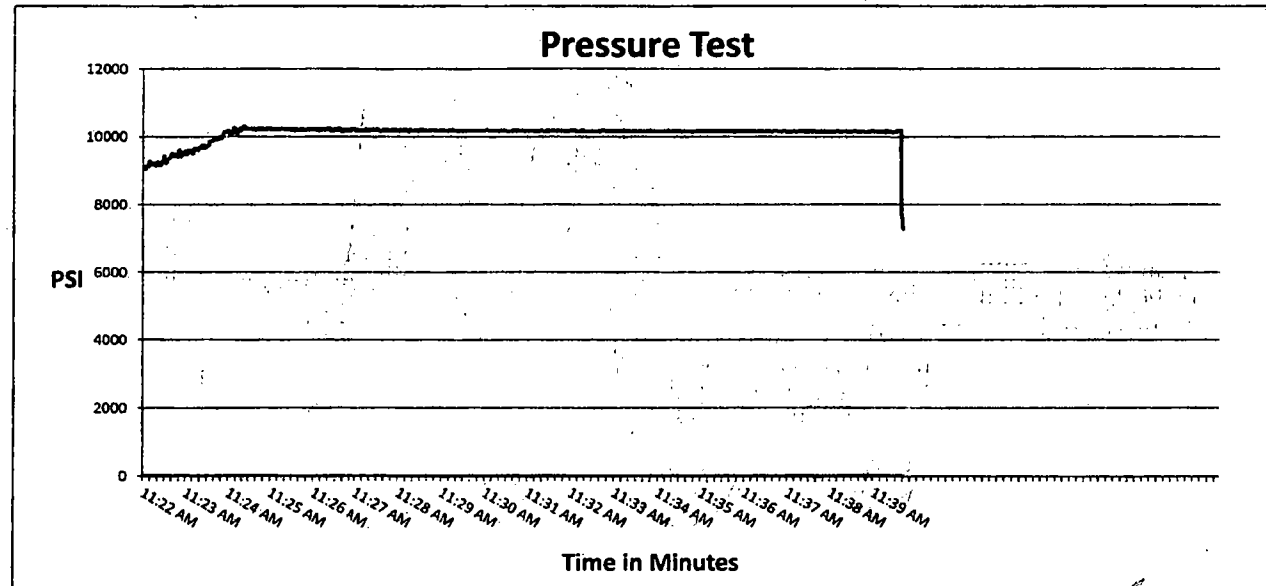
Swage

Final O.D.

5.77"

Hose Assembly Serial

454857



Test Pressure

10000 PSI

Time Held at Test Pressure

16 Minutes

Actual Burst Pressure

Peak Pressure

10400 PSI

Comments: Hose assembly pressure tested with water at ambient temperature.

Tested By: Zach Tillman

Approved By: James Hawkins

of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.

- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

MHH 03212019

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

☒ Chaves and Roosevelt Counties

Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.

During office hours call (575) 627-0272.

After office hours call (575)

☒ Eddy County

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,

(575) 361-2822

☒ Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)

393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.
 - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
 - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the

plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
- c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.