Form 3160-3 (June 2015)

DEC 0 9 2019

UNITED STATES DEPARTMENT OF THE INTERIOR PURE ALL OF LAND MANAGEMENT APPESIAO.C.D.

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

5.	Lease Serial No.
18	ANIBAO 4 0 0 2 0

DUKEAU OF LAND MAN	NACEMEN	A La s marches reas	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	I MINIMINIO 10030			
APPLICATION FOR PERMIT TO I	DRILL OF	RREENTER		6. If Indian, Allotee	or Tribe	Name	_
	REENTER Other			7. If Unit or CA Ag	reement, l	Name and No.	- [^]
				8. Lease Name and	Well No.		
1c. Type of Completion: Hydraulic Fracturing	Single Zone	Multiple Zone		GOONCH FED C	OM 04		
				212H 3260	5/7		
2. Name of Operator NOVO OIL AND GAS NORTHERN DELAWARE LLC				9. API Well No. 30 - 0	15-4	6518	
sa. Address 1001 West Wilshire Boulevard Suite 206 Oklahoma City (1	: No. (include area coa -0414	le)	10. Field and Pool, BILBREY BASIN	BONE SI	PRING, SOUT	
4. Location of Well (Report location clearly and in accordance	with any Sta	tte requirements.*)		11. Sec., T. K. M. o	r Blk. and	Stiffer or Mica	FMF
At surface SWSW / 1120 FSL / 1180 FWL / LAT 32.3	302162 / L0	ONG -104.0971385		SEC 4 / T23S / R2	28E / NM	Р 🤌	9822
At proposed prod. zone LOT 3 / 130 FNL / 1518 FWL /	LAT 32.341	5655 / LONG -104.0	95567				
14. Distance in miles and direction from nearest town or post of 3 miles	ffice*			12. County or Paris	sh	13. State NM	-
15. Distance from proposed* 1060 feet	16. No of	acres in lease	17. Spaci	ng Unit dedicated to	this well		
property or lease line, ft. (Also to nearest drig, unit line, if any)	280.21		320				
8. Distance from proposed location*	19. Propo	osed Depth	20. BLM	BLA Bond No. in file	:		_
to nearest well, drilling, completed, applied for, on this lease, ft.		t / 14541 feet	1 B001536 _,			_	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3015 feet	22. Appro 11/01/20	oximate date work will 19	start*	23. Estimated dura 90 days	tion		
	24. Att	achments		•			
The following, completed in accordance with the requirements (as applicable)	of Onshore C	Dil and Gas Order No.	1, and the l	Hydraulic Fracturing	rule per 43	3 CFR 3162.3-3	
 Well plat certified by a registered surveyor. A Drilling Plan. A Surface Use Plan (if the location is on National Forest Syst SUPO must be filed with the appropriate Forest Service Office 		Item 20 above). 5. Operator certification	cation.	ns unless covered by a	J	`	e
	——————————————————————————————————————	BLM.			T		=
25. Signature (Electronic Submission)		me <i>(Printed/Typed)</i> an Wood / Ph: (505)4	66-8120		Date 08/02/2	2019	
Title President							
Approved by (Signature)	Nar	me (Printed/Typed)			Date		_
(Electronic Submission)		istopher Walls / Ph:	(575)234-2	2234	11/20/2	2019	
Title	Off	ice	· · · · · · · · · · · · · · · · · · ·				
Petroleum Engineer	I	RLSBAD					_
Application approval does not warrant or certify that the application to conduct operations thereon. Conditions of approval, if any, are attached.	ant holds leg	al or equitable title to t	hose rights	in the subject lease v	vhich wou	ld entitle the	
Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, of the United States any false, fictitious or fraudulent statements					any depar	tment or agency	= y
				¥.			
	7.11						

Approval Date: 11/20/2019

*(Instructions on page 2)

Rep 12-20-19

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 1: 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 wen, 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 directionany 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 wen 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 win 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 conects this information to anow 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 Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

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.

(Form 3160-3, page 4)

Approval Date: 11/20/2019

Additional Operator Remarks

Location of Well

1. SHL: SWSW / 1120 FSL / 1180 FWL / TWSP: 23S / RANGE: 28E / SECTION: 4 / LAT: 32.3302162 / LONG: -104.0971385 (TVD: 0 feet, MD: 0 feet)

PPP: SESW / 184 FSL / 1455 FWL / TWSP: 23S / RANGE: 28E / SECTION: 4 / LAT: 32.3278669 / LONG: -104.0959151 (TVD: 9359 feet, MD: 9519 feet)

BHL: LOT 3 / 130 FNL / 1518 FWL / TWSP: 23S / RANGE: 28E / SECTION: 4 / LAT: 32.3415655 / LONG: -104.095567 (TVD: 9539 feet, MD: 14541 feet)

BLM Point of Contact

Name:	
Title:	

Phone:

Email:

(Form 3160-3, page 3)

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME: NOVO OIL AND GAS
LEASE NO.: NMNM018038
LOCATION: Section 4, T.23 S., R.28 E., NMPM
COUNTY: Eddy County, New Mexico

WELL NAME & NO.: Goonch FED COM 04 212H
SURFACE HOLE FOOTAGE: 1120'/S & 1180'/W
BOTTOM HOLE FOOTAGE 130'/N & 1518'/W



H2S	• Yes	ONo	
Potash	⊙ None	© Secretary	OR-111-P
Cave/Karst Potential	CLow	• Medium	O High
Cave/Karst Potential	C Critical		
Variance	© None	© Flex Hose	O Other
Wellhead	C Conventional	Multibowl	C Both
Other	☐4 String Area	Capitan Reef	L WIPP
Other	Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☑ COM	☐ Unit

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **North East Loving** formation. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING

- 1. The 13-3/8 inch surface casing shall be set at approximately 214 feet (a minimum of 70 feet (Eddy County) into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

- b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8** hours or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
- d. If cement falls back, remedial cementing will be done prior to drilling out that string.
- 2. The 9 5/8 inch intermediate casing shall be set at approximately 6,500 feet. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is:
 - Cement to surface. If cement does not circulate see B.1.a, c-d above.
 Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.
 - ❖ In Medium Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
- 3. The minimum required fill of cement behind the 5-1/2 inch production casing is:
 - Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification. Excess cement calculates to negative 11%, additional cement will be required.

C. PRESSURE CONTROL

- 1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'
- 2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.
 - 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. 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.

e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees 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.

JJP10162019

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)
 - Eddy County
 Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822
- 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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.
- 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 <u>8 hours</u>. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

- 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: The flex line must meet the requirements of API 16C. 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.

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- 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, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).
 - 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).

Page 6 of 7

- 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.



Email address:

Operator Certification Data Report

11/21/2019

Operator Certification

BUREAU OF LAND MANAGEMENT

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: Brian Wood		Signed on: 08/02/2019
Title: President		
Street Address:		
City:	State:	Zip:
Phone: (505)466-8120		
Email address: afmss@permitsw	rest.com	
Field Representative	e	
Representative Name:		
Street Address:		
City:	State:	Zip:
Phone:		•



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

Application Data Report

APD ID: 10400045313 Submission Date: 08/02/2019

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

reflects the most

Well Name: GOONCH FED COM 04

recent changes.

Highlighted data

Well Type: CONVENTIONAL GAS WELL

Well Number: 212H **Show Final Text**

Section 1 - General

APD ID: 10400045313 Tie to previous NOS? N Submission Date: 08/02/2019

BLM Office: CARLSBAD User: Brian Wood Title: President

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

Well Work Type: Drill

Lease number: NMNM018038 Lease Acres: 280.21

Surface access agreement in place? Allotted? Reservation:

Agreement in place? NO Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? N

Permitting Agent? YES APD Operator: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Operator letter of designation:

Operator Info

Operator Organization Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Operator Address: 1001 West Wilshire Boulevard Suite 206

Operator PO Box:

Operator City: Oklahoma City State: OK

Operator Phone: (405)404-0414

Operator Internet Address:

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:

Well Name: GOONCH FED COM 04 Well Number: 212H Well API Number:

Field/Pool or Exploratory? Field and Pool Field Name: BILBREY BASIN Pool Name:

BONE SPRING, SOUTH

Zip: 73116

mineral recourage? HISFARI F WATER MATHRAL CAS

Well Name: GOONCH FED COM 04

Well Number: 212H

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

Is the proposed well in a Helium production area? N Use Existing Well Pad? N

New surface disturbance?

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name:

Number: 131H (Pad G)

Well Class: HORIZONTAL

Goonch Fed Com Number of Legs: 1

Well Work Type: Drill

Well Type: CONVENTIONAL GAS WELL

Describe Well Type:

Well sub-Type: INFILL

Distance to town: 3 Miles

Describe sub-type:

Distance to nearest well: 20 FT

Distance to lease line: 1060 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: Goonch_04_212H_Plat_GasCap_Plan_20190802164422.pdf

Well work start Date: 11/01/2019

Duration: 90 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 Vertical Datum: NAVD88

Survey number: 12797 Reference Datum: GROUND LEVEL

Wellbore	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	Will this well produce
SHL Leg #1	112 0	FSL	118 0	FWL	238	28E	4	Aliquot SWS W	32.33021 62	- 104.0971 385	EDD Y	NEW MEXI CO	' ' - ' '	F	FEE	301 5	0	0	Υ
KOP Leg #1	10	FSL	145 5	FWL	23S	28E	4	Aliquot SESW	32.32739 6	- 104.0959 249	EDD Y	NEW MEXI CO	NEW MEXI CO	F	FEE	- 598 1	910 7	899 6	Υ
PPP Leg	184	FSL	145 5	FWL	23S	28E	4	Aliquot SESW	32.32786 69	- 104.0959	EDD Y	NEW MEXI		F	FEE	- 634	951 9	935 9	Υ

Well Name: GOONCH FED COM 04

Well Number: 212H

Wellbore	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	DVT	Will this well produce
EXIT Leg #1	130	FNL	151 8	FWL	23S	28E	4	Lot 3	32.34156 55	- 104.0955 67	EDD Y	NEW MEXI CO	NEW MEXI CO		NMNM 018038	- 652 4	į	953 9	Y
BHL Leg #1	130	FNL	151 8	FWL	23S	28E	4	Lot 3	32.34156 55	- 104.0955 67	EDD Y	NEW MEXI CO			NMNM 018038	- 652 4	145 41	953 9	Y



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

Drilling Plan Data Report

11/21/2019

APD ID: 10400045313 **Submission Date:** 08/02/2019

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: GOONCH FED COM 04 Well Number: 212H

Well Type: CONVENTIONAL GAS WELL Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	新には、12日本日本日本日本日本日本日本日本日本日本日本日本日本日本日本日本日本日本日本			Producing
1	QUATERNARY	3415	<u>i ⊢ Depth</u> 0	Depth 0	Lithologies OTHER None	Mineral Resources USEABLE WATER	N N
2	RUSTLER	3315	100	100 =	ANHYDRITE	NONE	N
3	CASTILE	2445	970	970	GYPSUM	NONE	N :
4	LAMAR	942	2473	2476	LIMESTONE	NONE	N
5	BELL CANYON	876	2539	2542	SANDSTONE	NATURAL GAS OIL	N
6	CHERRY CANYON	-199	3614	3641	SANDSTONE	NATURAL GAS OIL	N F
7	BRUSHY CANYON	-1212	4627	4677	SANDSTONE	OIL	N
8	BONE SPRING	-2655	6070	6152	LIMESTONE	OIL	N .
9	AVALON SAND	-3163	6578	6672	OTHER Shale	NATURAL GAS,OIL	N)
10	BONE SPRING 1ST.	-3622	7037	7142	SANDSTONE 18	NATURAL GAS,OIL	N.
11	BONE SPRING 2ND	-3835	7250	7358	OTHER : Carbonate	NATURAL GAS,OIL	N.
12	BONE SPRING 2ND	-4370	7785	7886	SANDSTONE	NATURAL GAS OIL	N
. 13	BONE SPRING 3RD	-4667	8082	8193	OTHER Carbonate	natural gas,oil	N.
14	BONE SPRING 3RD	-5601	9016	9137	SANDSTONE	NATURAL GAS,OIL	N .
15	WOLFCAMP	-5944	9359	9519		NATURAL GAS OIL	N
16	WOLFCAMP		9519			NATURAL GAS OIL	Y

Well Name: GOONCH FED COM 04 Well Number: 212H

Pressure Rating (PSI): 5M

Rating Depth: 12000

Equipment: A 13.625 5,000-psi BOP system will be installed on a multi-bowl (speed head) wellhead with a 13.625 flanged casing spool. Top flange of casing spool will be set in a cellar below ground level. BOP system will consist of a single pipe ram on the bottom, mud cross, double pipe ram with blind rams on bottom and pipe rams on top, and annular preventer. Blowout preventer will be installed on top of the 13.375 surface casing and will remain installed to TD of the well.

Requesting Variance? NO

Variance request:

Testing Procedure: BOP system will be isolated with a test plug and tested by an independent tester to 250-psi low and 5000-psi high for 10 minutes. Variance is requested to use a co-flex hose between the BOP system and choke manifold. A typical co-flex pressure test certificate is attached. An equipment specific co-flex pressure test certificate will be on site when testing the BOP. All casing strings will be tested in accordance with Onshore Order 2 III.B.1.h.

Choke Diagram Attachment:

Goonch_04_212H_Choke_Revised_20190930115931.pdf

BOP Diagram Attachment:

Goonch_04_212H_BOP_20190802164320.pdf

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	594	0	594	3015	2421	594	J-55	54.5	BUTT	1.12 5	1.12 5	DRY	1.6	DRY	1.6
2	INTERMED IATE	12.2 5	9.625	NEW	API	N	0	8900	0	8789	3015	-5774	8900	HCL -80	43.5	BUTT	_	1.12 5	DRY	1.6	DRY	1.6
3	PRODUCTI ON	8.5	5.5	NEW	API	N	0	14541	0	9539	3015	-6524	14541	P- 110		OTHER - TMK DQX	_	1.12 5	DRY	1.6	DRY	1.6

Casing Attachments

Vell Name: GOONCH FED CON	04	Well Number: 212H		
Casing Attachments				•
Casing ID: 1 St	ing Type:SURFACE			
Spec Document:			•	
Tapered String Spec:				
Casing Design Assumption	and Worksheet(s):			
Goonch_04_212H_Cas	ng_Design_Assumptions	_20190802164335.pdf		
Casing ID: 2 St	ing Type:INTERMEDIA	ΓΕ		
Spec Document:				
Tapered String Spec:			,	
Casing Design Assumption	and Worksheet(s):			
Goonch_04_212H_Cas	ng_Design_Assumptions	s_20190802164350.pdf		
Casing ID: 3 St Inspection Document:	ing Type:PRODUCTION	N		
Spec Document:				
Tapered String Spec:				
Casing Design Assumption	and Worksheet(s):			
	ing_Design_Assumptions ec_20190930120122.pdf			
·				······································

Coation 4 Company

Well Name: GOONCH FED COM 04 Well Number: 212H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	0	0	0	0	0	0	None	None
SURFACE	Tail		0	594	509	13.8	1.62	824	100	Class C	gel + accelerator + LCM
PRODUCTION	Lead		. O.8	0	0	0	0	0.0	0	None	None
PRODUCTION	Tail		8400	1454 1	893	13	1.89	1687		Class H	fluid loss + retarder + LCM
INTERMEDIATE	Lead	4000	0	4000	542	2.27	11.9	1235	20	Class C or H	fluid loss + retarder + LCM
INTERMEDIATE	Tail		4000	8900	200	14.8	1.34	268	20	Class C or H	fluid loss + retarder + LCM
INTERMEDIATE	Lead	4000	0	4000	690	2.27	11.9	1573	20	Class C or H	fluid loss + retarder + LCM
INTERMEDIATE	Tail		4000	8900	200	14.8	1.34	268,	20	Class C or H;	fluid loss + retarder + LCM

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: All necessary mud products (barite, bentonite, LCM) to control weight and fluid loss will be on site at all times.

Describe the mud monitoring system utilized: An electronic PVT mud system will monitor flow rate, pump pressure, stroke rate, and volume.

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)	ЬН	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
1 0	594	OTHER : Fresh	8.3	.8.3		ĺ					

Well Name: GOONCH FED COM 04 Well Number: 212H

ω Top Depth	ω Bottom Depth	ed Ac Mrd THER: Brine Diesel Emulsion	∞ Min Weight (lbs/gal)	က ကax Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	Н	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
8900	1454 1	OIL-BASED MUD	8.8	12.5							`

Section 6 - Test, Logging, Coring

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

A 2-person mud logging program will be used from 3000 to TD.

GR log will be acquired by MWD tools from the intermediate casing to TD.

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

GAMMA RAY LOG,

Coring operation description for the well:

No core or drill stem test is planned.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 5084

Anticipated Surface Pressure: 2985

Anticipated Bottom Hole Temperature(F): 165

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Goonch 04 212H H2S Plan 20190802164301.pdf

Well Name: GOONCH FED COM 04 Well Number: 212H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Goonch_04_212H_Horizontal_Drill_Plan_20190802164151.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Goonch_04_212H_Speedhead_Specs_20190802164226.pdf Goonch_04_212H_Anti_Collision_Report_20190802164240.pdf Goonch_04_212H_Drill_Plan_Revised_20190930120002.pdf Goonch_04_212H_CoFlex Certs Revised_20190930120025.pdf

Other Variance attachment:

Goonch_04_212H_Casing_Variance_Request_20190802164159.pdf Goonch_04_212H_Alternative_Casing_Spec_Request_20190930120037.pdf



NOVO OIL & GAS, LLC

1001 West Wilshire Boulevard, Suite 206 Oklahoma City, Oklahoma 73116 Date

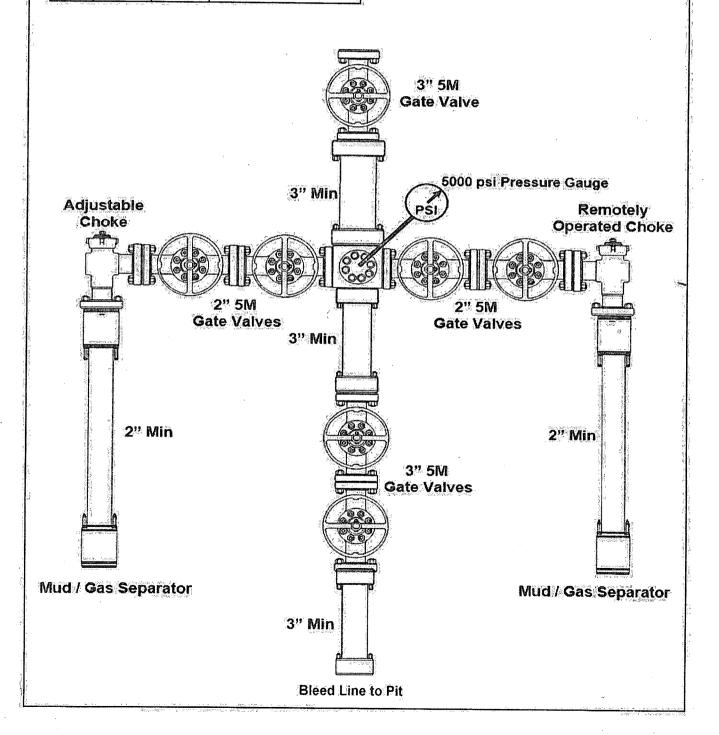
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1 of 1

5M CHOKE MANIFOLD SCHEMATIC

ITEM	SIZE		DESCRIPTION
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NOVO OIL & GAS, LLC

1001 West Wilshire Boulevard, Suite 206 Oklahoma City, Oklahoma 73116 Date

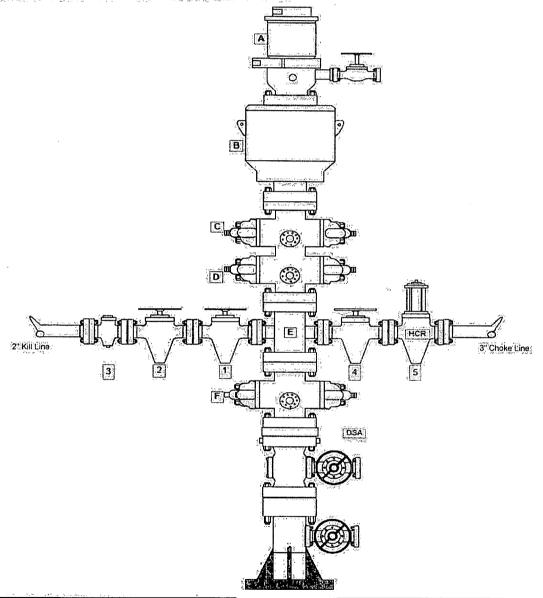
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Page No.

1 of 1

5M BLOWOUT PREVENTER SCHEMATIC

ITEM	SIZE	PRESSURE	DESCRIPTION
.A .	13:5/8"	1,500 psi	Rotating Head + Valve
В	13-5/8"	5,000 psi	Annular Preventer
C	13-5/8"	5,000 pši	Pipe Rams
D	13,5/8"	5,000 psi	(Blind Rams)
Ě	13-5/8"	5,000 psi	Mud Cross
F	13-5/8"	5,000 psi	Pipe Rams



1		the contract of the contract o	KILL LINE	enter our enter the second of
1	ITEM	SIZE	PRESSURE	DESCRIPTION
	1 1	<u> </u>	5,000 psi	Gate Valve
ľ	2	2".	5,000 psi	Gate Valve
Γ	3.	2"	5,000 psi	Check Valve
Ī	and the server	general relatives and the second	Same a see that a see that	ye v - marra wa warani w
Γ			•	

		CHOKE LINE:						
ITEM	SIZE	PRESSURE	DESCRIPTION					
4.	/3"	5,000 psi	Gate Valve					
5	3 "	5,000 psi	HCR Valve					
A Comment	Marie Marie Anna Carlos	in which special control of the state of the	a a seeda ee					
(1)		A. F. Green, "Transport						

Goonch Fed Com 04 212H 3-string Casing Design Assumptions

Surface Casing

Collapse:

 $DF_C = 1.125$

- Full internal Evacuation: Collapse force is equal to mud gradient (0.433 psi/ft) in which the casing will be run and internal evacuation of casing.
- b. Cementing: Collapse force is equal net force of the planned cement slurry gradient (0.718 psi/ft) in which the casing will be run and internal force equivalent to fresh water displacement gradient (0.433 psi/ft).

Burst: $DF_B = 1.125$

Casing Pressure Test: According to BLM Onshore Order No. 2 with 0.22 psi/ft or 1500 psi, whichever is greater but not to exceed 70% of the minimum internal yield.

Tensile: $DF_T = 1.60$.

a. Overpull: A tensile force of 100,000 lbs over string weight with a buoyancy factor of 0.8727 in water (8.33 ppg).

Intermediate Casing

Collapse: $DF_c = 1.125$

- a. Full Internal Evacuation: Collapse force is equal to mud gradient (0.531 psi/ft) in which the casing will be run and internal evacuation of casing.
- b. Cementing Collapse force is equal net force of the planned cement slurry gradient (0.626 psi/ft) in which the casing will be run and internal force equivalent to the displacement of fluid gradient.

Burst: DFB = 1.125

- a. Casing Pressure Test: According to BLM Onshore Order No. 2 with 0.22 psi/ft or 1500 psi, whichever is greater but to exceed 70% of the minimum internal yield.
- b. Gas Kick: Internal burst load of a 50 bbl gas kick at the casing with drill pipe in the hole. External force will be 10.2 ppg brine water gradient (0.531 psi/ft) and internal force will be with 10.0 ppg brine water gradient (0.521 psi/ft) with gas kick.

 $DF_T = 1.60$ Tensile:

> Overpull: A tensile force of 100,000 lbs over string weight with a buoyancy factor of 0.8441 in brine water (10.2 ppg).

Production Casing

Collapse:

 $DF_c = 1.125$

- Full Internal Evacuation: Collapse force is equal to mud gradient (0.531 psi/ft) in which the casing will be run and internal evacuation of casing.
- Gementing: Collapse force is equal net force of the planned cement slurry gradient (0.688 psi/ft) in which the casing will be run and internal force equivalent to fresh. water displacement gradient (0.433 psi/ft).

Burst: $DF_8 = 1.125$

Pressure Test: Pressure test will be to 80% of Internal Yield Pressure of casing intended for fracture stimulation.

Tensile: $DF_T = 1.60$

Overpull: A tensile force of 100,000 lbs over string weight with a buoyancy factor of 0.8472 in oil-based mud (10.0 ppg).

Goonch Fed Com 04 212H 3-string Casing Design Assumptions

Surface Casing

Collapse:

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- Full internal Evacuation: Collapse force is equal to mud gradient (0.433 psi/ft) in which the casing will be run and internal evacuation of casing.
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Goonch Fed Com 04 212H 3-string Casing Design Assumptions

Surface Casing

Collapse:

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Burst: $DF_B = 1.125$

Pressure Test: Pressure test will be to 80% of Internal Yield Pressure of casing intended for fracture stimulation.

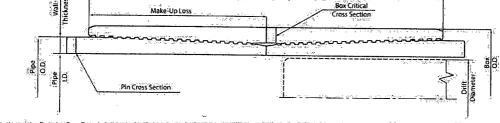
Tensile: $DF_T = 1.60$

a. Overpull A tensile force of 100,000 lbs over string weight with a buoyancy factor of 0.8472 in oil-based mud (10.0 ppg).

TECHNICAL DATA SHEET TMK UP TMK UP™ DQX 5.5 X 20 P110

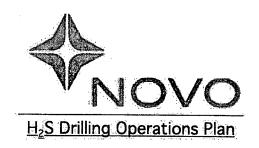
19.81 20.00 4,778 4.653 5.828 641 12.640 13,110 110.000 125.000

5,500 0,361 P110 Regular P130	PE Weight, (lbs/ft) Nominal Weight, (lbs/ft) Nominal ID, (inch)
P110 Regular	Nominal ID, (inch)
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P110	Drift Diameter, (inch)
	Nominal Pipe Body Area, (sq inch)
Standard	Yield Strength in Tension (klbs)
and the state of t	Min: Internal Yield Pressure, (ρεί)
2.200	Collapse Pressure, (psi)
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NOTE: The content of this, Technical Data Sheet Is for general information only and blees has gistrance performance or imply from some production of the content of the con

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- a. All personnel will be trained in H₂S working conditions as required by Onshore Order 6 before drilling out of the surface casing.
- b. Two briefing areas will be established. Each will be at least 150' from the wellhead, perpendicular from one another, and easily entered and exited. See H₂S page 5 for more details.
- c. H₂S Safety Equipment/Systems:
 - i. Well Control Equipment
 - = Flare line will be ≥150' from the wellhead and ignited by a pilot light...
 - Beware of SO₂ created by flaring.
 - Choke manifold will include a remotely operated choke.
 - Mud gas separator
 - ii. Protective Equipment for Essential Personnel
 - Every person on site will be required to wear a personal H₂S and SO₂: monitor at all times while on site. Monitors will not be worn on hard hats. Monitors will be worn on the front of the chest.
 - One self-contained breathing apparatus (SCBA) 30-minute rescue pack will be at each briefing area. Two 30-minute SCBA packs will be stored in the safety trailer.
 - Four work/escape packs will be on the rig floor. Each pack will have a long enough hose to allow unimpaired work activity.
 - Four emergency escape packs will be in the doghouse for emergency evacuation.
 - Hand signals will be used when wearing protective breathing apparatus.
 - Stokes litter or stretcher
 - Two full OSHA compliant body harnesses
 - A 100-foot long x 5/8" OSHA compliant rope
 - One 20-pound ABC fire extinguisher

iii. H₂S Detection & Monitoring Equipment

- Every person on site will be required to wear a personal H₂S and SO₂ monitor at all times while on site. Monitors will not be worn on hard hats. Monitors will be worn on the front of the chest.
- A stationary detector with three sensors will be in the doghouse.
- Sensors will be installed on the rig floor, bell nipple, and at the end of the flow line or where drilling fluids are discharged.
- Visual alarm will be triggered at 10 ppm.
- Audible alarm will be triggered at 10 ppm.
- Calibration will occur at least every 30 days. Gas sample tubes will be kept in the safety trailer.

iv. Visual Warning System

- Color-coded H₂S condition sign will be set at the entrance to the pad.
- Color-coded condition flag will be installed to indicate current H₂S conditions.
- Two wind socks will be installed that will be visible from all sides.

v. Mud Program

- A water based mud with a pH of ≥10 will be maintained to control corrosion, H₂S gas returns to the surface, and minimize sulfide stress cracking and embrittlement.
- Drilling mud containing $H_2\bar{S}$ gas will be degassed at an optimum location for the rig configuration.
- This gas will be piped into the flare system.
- = Enough mud additives will be on location to scavenge and/or neutralize H₂S where formation pressures are unknown.

vi. Metallurgy

- All equipment that has the potential to be exposed to H₂S will be suitable for H₂S service.
- Equipment that will meet these metallurgical standards include the drill string, casing, wellhead, BOP assembly, casing head and spool, rotating head, kill lines, choke, choke manifold and lines, valves, mud-gas separators, DST tools, test units, tubing, flanges, and other related equipment (elastomer packings and seals).

vii. Communication from well site

- Cell phones and/or two-way radios will be used to communicate from the well site.

d. A remote-controlled choke, mud-gas separator, and a rotating head will be installed before drilling or testing any formation expected to contain $\rm H_2S$.

Company Personnel to be Notified

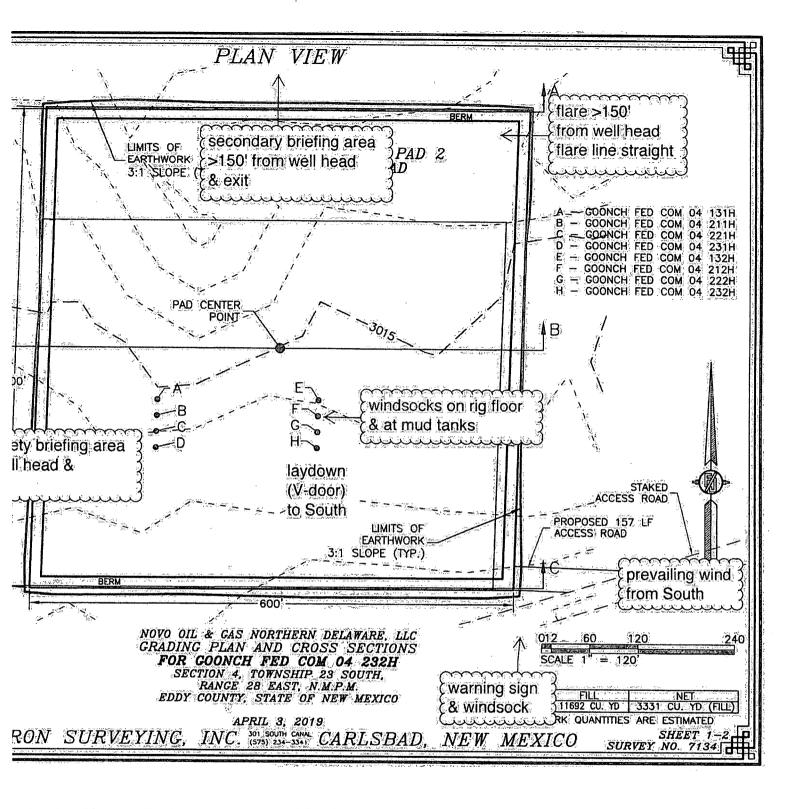
Kurt Shipley, Vice-President - Operations	Office: (405) 609-1596
Local & County Agencies	
Loving Fire Department	911 or (575) 745-3600
Eddy County Sheriff (Carlsbad)	911 (575) 887-7551
Eddy County Emergency Management (Carlsbad)	(575) 887-9511
Carlsbad Medical Center Hospital	(575) 887-4100
Eddy County South Road Department (Carlsbad)	(575) 885-4835
State Agencies	
NM State Police (Carlsbad)	(575) 885-3138
NM Oil Conservation (Artesia)	(575) 748-1283
NM Oil Conservation (Santa Fe)	(505) 476-3440
NM Dept. of Transportation (Roswell)	(575) 637-7201
Federal Agencies	
BLM Carlsbad Field Office	(575) 234-5972
National Response Center	(800) 424-8802
US EPA Region 6 (Dallas)	(800) 887-6063

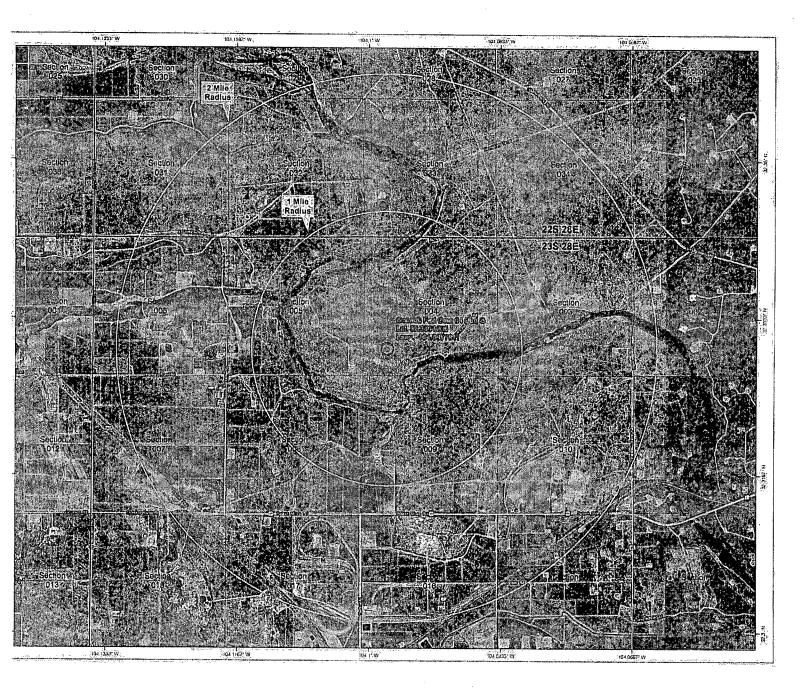
(214) 665-6444

Residents within 3/4 mile

none

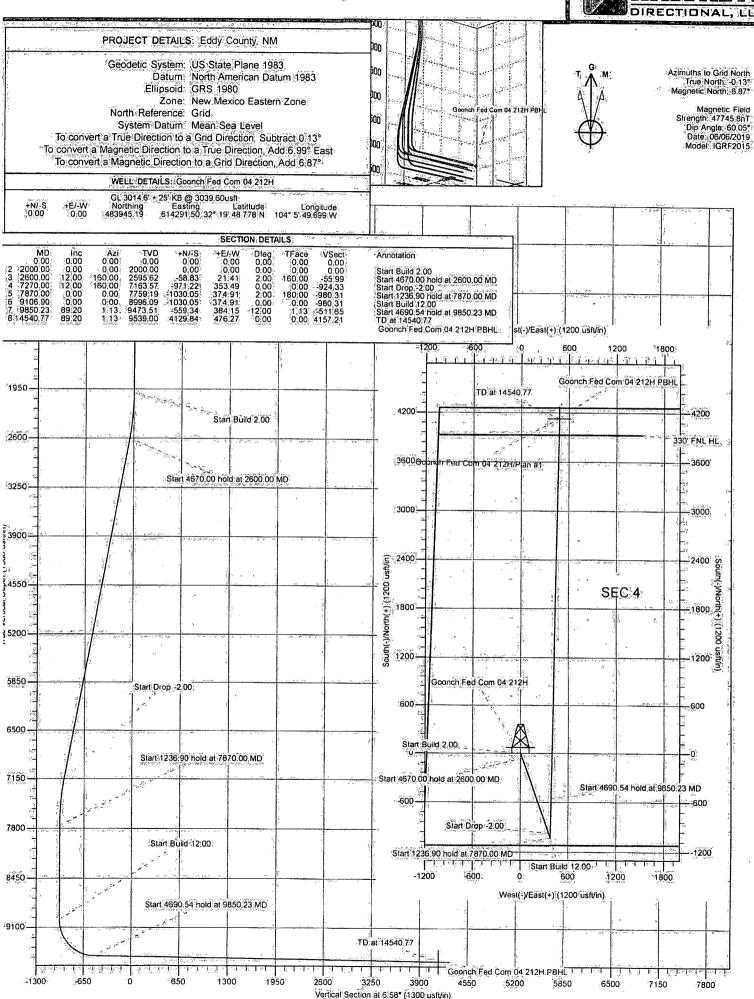
Air Evacuation	
Med Flight Air Ambulance (Albuquerque)	(800) 842-4431
Lifeguard (Albuquerque)	(888) 866-7256
•	
Veterinarians	*
Desert Willow Veterinary Services (Carlsbad)	(575) 885-3399
Animal Care Center (Carlsbad)	(575) 885-5352





Novo Oil & Gas, LLC





Hawkeye Directional

Planning Report:



Database: Company: Project:

HED_Compass_DSN Novo Oil & Gas, LLC Eddy County, NM SEC 4 - T23S - R28E Goonch Fed Com 04 212H

Well: Wellbore: Design: Plan #1 Local Co-ordinate Reference:

TVD Reference: 🐫 MD Reference: North Reference:

Survey Calculation Method:

Well Goonch Fed Com 04:212H

GL 3014 6' + 25' KB @ 3039 60usft GL 3014.6' + 25' KB @ 3039.60usft

Minimum Curvature

Project |

Eddy County, NM

Map System: Geo Datum:

US State Plane 1983 North American Datum 1983

System Datum:

Mean Sea Level

Map Zone:

New Mexico Eastern Zone

SEC 4 - T23S - R28E Site

Site Position: From:

Мар

Easting:

483,964.87 usft 614,092.09 usft

Longitude:

32° 19' 48:977.N 104° 5' 52.023 W

Position Uncertainty:

Slot Radius:

13.200 in

Grid Convergence:

0.13

Well Goonch Fed Com 04 212H

Well Position

Magnetics ...

+N/-S +E/-W -19.68 usft 199:41 usft

0.00 usft

Northing: Easting:

483,945.19 üsft

Latitude: Longitude: 32° 19' 48 778 N

Position Uncertainty

0.00 usft

Wellhead Elevation:

614,291.50 usft **Ground Level:** 104° 5' 49 699 W 3,014.60 usft

Wellbore OH

Model Name

, Sample Date

Declination Dip Angle

Field Strength (nTj)

IGRF2015

06/06/19

6.99

60.05

47,745.75277869

Design Audit Notes:

Version:

Phase:

PLAN

Tie On Depth:

0.00

Vertical Section: Depth From (TVD) +N/-S +E/-W Direction (usft) (usft) (usft) (°) 0.00 0.00 0.00 6:58

Plan Survey Tool Program -- Date: 06/09/19

Depth From Depth To (usft) (usft) Survey (Wellbore)

Tool Name

14,540.77 Plan #1 (OH)

OWSG MWD - Standard

lan Sections			A STATE TO STATE OF THE PARTY.				HILLIAN THE STATE OF THE STATE	THE RESIDENCE CHARACTER		and the second second second
Measured Depth	Inclination	Azimuth	Vertical Depth		+E/-W	Dogleg Rate	Build Rate	r Turn = ≒ Rate		
(usft),	(9)	(9)	(usft)	(usft)	(usft)	(°/100ft)	(°/100ft)	(°/100ft)	(°)	Target
0.00	0.00	0.00	0.00	0.00	0:00	0:00	0.00	0:00	0.00	TO THE PROPERTY OF THE PARTY OF
2,000.00	0:00	0.00	2,000.00	0.00	0.00	0.00	0.00	0:00 ;	0.00	
2,600.00	12.00	160.00	2,595.62	-58.83	21.41	2.00	2.00	0.00	160/00	
7,270.00	12:00	160.00	7,163.57	-971.22	353.49	0.00	0.00	0.00	0.00	
7,870.00	0.00	0.00	7,759.19	-1,030.05	374.91	2.00	-2.00	0.00	180.00	
9,106.90	0.00	(0:00)	8,996.09	1,030.05	374.91	0.00	0.00	0.00	0.00	
9,850.23	89.20	1.13	9,473.51	-559.34	384.15	12.00	12.00	0:00	1.13	
14,540.77	₹89.20	1_13	9,539.00	4,129.84	476.27	0.00	:00.00	0.00		Goonch Fed Com 04

Hawkeye Directional

Planning Report



Database: Database: Company: Project: Site: Well:

HED_Compass_DSN Novo Oil & Gas, LLC Eddy County, NM SEC 4 - T23S - R28E Goonch Fed Com 04 212H

Local Co-ordinate Reference: TVD Reference: MD Reference:
North Reference:
Survey Calculation Method:

Well Goonch Fed Com 04,212H GL 3014.6' + 25' KB @ 3039 60usft GL 3014.6' + 25' KB @ 3039 60usft Grid Minimum Curvature

Well: G Wellbore: O Design: P	Survey	Survey Calculation Method: /// Minimum Curvature							
		COLUMN CONTRACTOR	**************************************				Market Commission of the Commi		
Planned Survey									
				Titrii H					
Measured Depth		a. 1 may 17	Vertical			Vertical :	Dogleg	Build	Turn 🛒 🗀
THE RESERVE OF THE PARTY OF THE	clination (°)	Azimuth	Depth (usft)	+N/-S - (usft)	+EJ-W	Section	Rate	Rate	Rate
				(usit)	(usft)	(usft)	(°/100ft)	(°/100ft)	(f/100ft)
0.00	0.00	0.00	(0:00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0:00 0:00	0:00 0:00	100.00 200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0,00	0:00	300.00	0.00	0.00 0.00	0.00 0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0:00	0.00	0.00 0.00	0.00
500.00	0:00	0.00	500.00	0.00	0.00	0.00	(0.00)	0.00	40.21.
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0:00	0:00 0:00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	(0:00°	0:00
800.00	0.00	0.00	800.00	0.00	0.00	0.00;	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0:00	0.00	0.00	0.00	0.00
1,000:00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	:0.00i	0.00
1,100.00	0.00 0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,200.00 1,300.00	0.00 0.00	0.00	0:00:	0.00	0.00	0.00
1,400.00	0.00	(0,00	1,400.00	0.00	0.00 0.00	0.00 0.00	0.00° 0.00	0.00	0.00
1,500,00	0,00	0.00	1,500:00	0.00	0.00				0:00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0:00 0:00	0.00 0.00	0.00 0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0:00	0.00	1 <u>;</u> 800.00	0.00	0.00	0.00	0.00	0.00	0.00
*1,900,00	0.00	0:00	1,900.00	0.00	0.00	0.00	0.00	0.00	±0.00.
2,000.00	0.00	0.00	2,000.00	0:00	0.00	0.00	0.00	0.00	₹Ö,ÖÖ
Start Build 2.00	the same .	eta descripció				Late Mr	housely of page	ter a maje trata. To	
2,100,00	2.00	160.00	2,099.98	-1.64	0.60	-1.56	2.00	2.00	- 0.00
2,200.00	4.00 6.00	*160.00 *160.00	2,199.84	-6.56	2.39	-6.24	2.00	2.00	0.00
2,400.00	8,00	160:00	2,299,45 2,398,70	-14.75 -26.20	5.37 9.54	-14.04 -24.93	2.00 2.00	2.00	0.00:
2,500.00	10.00	160:00	en side recordinationales	Separation of the second				2.00	(0:00)
2,600,00	12:00	160:00	2,497.47 2,595.62	-40.90 -58.83	14.89 21.41	-38 92 -55 99	2.00 2.00	2.00 2.00	0.00
Start 4670.00 hol			2,000.02		400 months	-30.33	2.00	; ¿ ;Q U ;	0.00
2,700.00	12.00	160,00	2,693:44	·-78:36	28.52	-74:58	0.00	0.00	10.00
2,800.00	12:00	\$160.00	2,791:25	-97.90	35.63	-93:17	0.00	0.00	0.00
2,900.00	12.00	160,00	2.889.07	-117.44	42.74	-111.77	0.00	0:00	0.00
3,000.00	12:00	160.00	2,986.88	-136.98	49.86	-130:36	0.00	0.00	0.00
3,100,00	12:00	160.00	3,084.70	-156.51	56.97	-148.96	0.00	0.00	.0.00
3,200.00	12:00 12:00	160.00 160.00	3,182.51 3,280.33	-176.05 -195.59	64.08 71.19	-167/55 -186/14	0.00	0.00	0.00
3,400,00	12:00	160.00	3,378.14	-215.13	78.30	-204:74	0.00 0.00	0:00 0:00	0.00
3,500.00	12.00	160.00	3,475.96	-234.66	85.41	-223 33	0.00		
3,600.00	12.00	160.00	3,573.77	-254.20	92.52	-223.33 -241.93	0.00	0.00	0:00
3,700.00	12.00	160.00	3,671.59	-273.74	99.63	260:52	0.00	0.00	0.00
3,800.00	12,00	160.00	3,769.40	-293.27	106.74	-279.11	0.00	0.00	0.00
3,900.00	12.00	160.00	3,867,22	-312.81	113:85	-297.71	0.00	0.00	0.00
4,000.00	12.00	160.00	3,965.03	-332.35	120.97	-316.30	0.00	0.00	0.00
4,100.00 4,200.00	12.00	160.00	4,062.84	-351.89	128/08	-334.90	0.00	0.00	0.00
4,200.00	12.00 12.00	160.00: 160:00:	4,160.66 4,258.47	-371:42 -390:96	135:19 142:30	-353.49 -372.08	0.00 0.00	0.00	0.00
4,400.00	12:00	160.00	4,356.29	-410.50	149.41	-372.08 -390.68	0.00	0.00 0.00	0:00 0:00
4,500.00	12.00	160.00	4,454.10	-430.04		2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			1
4,600.00	12.00	160.00	4,454.10 4,551.92	-430.04 -449.57	156.52 163.63	-409.27 -427.87	0.00	0.00 0.00	0.00 0.00
4,700.00	12.00	160:00	4,649.73	-469 11	170.74	-446.46	0.00	0.00	0:00
4,800.00	12.00	160:00	4,747,55	-488.65	177.85	-465.05	0.00	0.00	0.00
4,900.00	12:00	160.00	4,845.36	-508:19	184.96	-483.65	0:00	0.00	0.00
5,000.00	12:00	160.00	4,943.18	<-527:72	192.08	-502.24	0.00	0.00	0.00

Hawkeye Directional

Planning Reports



Database: Company: Project: Site: Well: Wellbore:

Design:

HED_Compass_DSN Novo Oil & Gas, LLC Eddy County, NM SEC 4 - T23S - R28E Goonch Fed Com.04 212H

Plan #1

Local Co-ordinate Reference:

TVD Reference: MD Reference: North Reference: Survey Calculation Method Well Goonch Fed Com 04 212H GL 3014 6 + 25 KB @ 3039 60usft GL 3014 6' + 25' KB @ 3039 60usft Grid

Minimum Curvature

Planned Survey	e marzadece e e lez ente apropa III	PARAMETER STREET	Marie Care Care		a la santantifica		910(SIR10(S-10) III)	132701-02-70000-70	
		4.					A THE RESERVE		
Measured - Measured			Vertical			Vertical	Dogleg	Build	7°Turn
		Azimuth :	Depth	+N/-S	+EI-W	Section	Rate	Rate	Rate
(usft).	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100ft)	(°/100ft)	· · (°/100ft)
5,100,00 5,200.00	12.00	160.00	5,040.99	-547.26	199.19	-520:84	0.00	0.00	0,00
5,300.00	12.00 12.00	160.00 160.00	5,138,81 5,236,62	-566.80 -586.33	206:30 213:41	-539:43	0.00	:0:00	0:00
5,400.00	12.00	160.00	5,334.44	-605.87	220.52	.£558.02 576.62	0;00 0;00	.0:00 0:00	0.00 0.00
5,500.00	12.00	160.00	5,432.25	-625.41	227.63	-595.21	0.00	0.00	-0.00
5,600.00	12 00	160.00	5,530.07	-644.95	234.74	-613.81	0.00	0:00	0.00
5,700.00	12.00	160:00	5,627.88	-664.48	241.85	-632.40	0.00	0.00	0.00
5,800.00 5,900.00	12.00 12.00	160.00 160.00	5,725.70 5,823.51	-684.02 -703.56	248.96	-650.99	0.00	0 00	0.00
6,000.00	12.00		2.1	201417 182	256.07	-669:59	0.00	0.00	0.00
6,100.00	12:00	160.00 160.00	5,921.33 6,019.14	-723.10 -742.63	263:19 270:30	-688:18 -2706:78	0:00 0:00	0.00	0.00 0.00
6,200.00	12:00	160.00	6,116.95	-762.17	277.41	-725.37	0.00	0.00	0.00
6;300:00	12.00	160:00	6,214.77	-781.71	284:52	-743 96	0.00	0.00	0.00
6,400,00	12.00	160.00	6,312.58	-801:24	291.63	-762:56	0.00	0.00	0.00
6,500.00	12:00	160.00	6,410.40	-820 78	298.74	-781.15	0.00	0.00	0.00
6,600,00 6,700.00	12.00 12.00	160.00 160.00	6,508.21 6,606.03	-840/32 -859:86	305.85	-799.75	0.00	0.00	0 00
6,800.00	12.00	160.00	6,703.84	-879.39	312.96 320.07	-818:34 -836:93	0.00 0.00	0.00 0.00	0.00 0.00
6,900.00	12.00	160.00	6,801.66	-898.93	327:18	-855 53	0.00	0.00	0.00
7,000.00	12:00	160.00	6,899.47	918,47	334.30	-874:12	0.00	0.00	0.00
7,100.00	12.00	160.00	6,997.29	-938.01	341.41	-892.72	0.00	0.00	0.00
7,200 00 7,270.00	12.00 12.00	160,00 160,00	7,095.10 7,163.57	-957:54 071-22	348.52	-911.31	0.00	0.00	0:00
Start Drop -2.00		3,00,00	າຊາເບຼີວູ.ວູ ກູ	-971.22	353.49	-924.33	0.00	000	0:00
7,300,00	11.40	160.00	7,192.95	-976.94	355.58	-929.77	2:00	-2.00	0:00
7,400.00	9.40	160:00	7,291.30	-993.90	361:75	-945.91	2.00	-2.00	0.00
7,500.00	7.40	160.00	7,390.22	-1,007,63	366.75	-958.97	2.00	-2.00	0.00
7,600.00 7,700.00	5.40 3.40	160.00 160.00	7,489.60 7,589.30	-1,018.10 -1,025.31	370:56 373:18	-968.94 076.80	2.00	-2:00	0.00
7,800.00	1.40	160.00	7,689.20	-1,029.24	37,4:61	-975.80 -979.55	§2.00 §2.00	-2.00 -2.00	0,00 0,00
7,870.00	0.00	0.00	7,759:19	-1,030.05	374.91	-980.31	2.00	-2.00	0.00
Start 1236 90 ho	\$4.5/-cm; \$4.1	4179 91	estatanen	ಚಿತ್ರವರ್ಷವರ	MATERIAL STATES	::::::::::::::::::::::::::::::::::::::	,2,00.	-2.00	0:00
7,900.00	0.00	0.00	7,789.20	-1,030.05	374.91	-980.31	0:00	0.00	0;00
8,000.00 -8,100.00	0.00 0.00	.0.00° 0.00°	7,889.20 7,989.20	-1,030.05	374.91	-980:31	(0:00	0.00	0:00
8,200.00	0.00	0.00	8,089.20	-1,030.05 -1,030.05	374.91 374.91	980:31: -980:31	0.00/ 0.00	0.00 0.00	0,00 0.00
8,300,00	0.00	0.00	8 189 20	-1,030.05	374.91	-980.31	(0.00)	0.00	0:00
8,400.00	0.00	0.00	8,289.20	-1,030 <u>.0</u> 5	374.91	-980.31	0.00	(0.00)	0.00
8,500.00	Ø.00	0.00	8,389.20	-1,030.05	374.91	-980.31	0.002	0.00	0.00
8,600.00 8,700.00	∉0.00 €0.00	0:00 0:00	8,489:20 8,589:20	-1(030:05 -1(030:05	374.91 374.91	-980:31 -980:31	0.00 0.00	0.00 0.00	0.00
8,800.00	0.00	0.00	8,689.20	£1,030:05					0.00
8,900.00	0.00	0.00	8,789.20	-1,030:05 -1,030:05	374.91 374.91	-980.31 -980.31	0.00	0.00 0.00	0:00 0:00
(9,000:00	0.00	0:00	8,889.20	1,030.05	374.91	-980.31	0.00	0.00	0.00
9,106.90	0.00	0.00	8,996.09	-1,030.05	374.91	-980.31	0.00	0.00	0.00
Start Build 12.00		2024	0.04540	(Vindo) To	gen wo	222 Sept. Sept.	programme to "	yan esteri	No. Adjoints
(9,125,00)	2.17	1:13	9,014.19	-1,029,70	374.91	-979.97	12,00	12.00	0.00
9,150.00	5.17	1.13	9,039.14	-1,028:10	374.94	-978 38	12,00	12.00	0.00
∘9,17,5,00₃ ⊹9,200,00	8.47 11.17	1/13 1/13	9,063.97 9,088.61	-1,025,20 -1,021,00	375.00 375.08	-975.49 -971.31	12.00 12.00	12.00 12.00	0.00 0.00
9,225,00	14,17	1-13	9,113,00	-1,015.52	375.19	-965:85	12.00	12.00	0.00
9,250.00	17,17	1,13	9,137.06	-1,008:77	375.32	-959.12	12.00	12.00	0.00
(9;275:00	20 17	1.13	9,160.74	-1,000,76	375.48	-951.16	12.00	12.00	(0.00)

Hawkeye Directional

Planning Report



Database: Company: Project: Site: Well: Wellbore:

HED_Compass_DSN Novo Oil & Gas, LLC Eddy County, NM SEC 4 - T23S - R28E Goonch Fed Com 04'212H

Local Co-ordinate Reference:

TVD Reference:

MD Reference:

North Reference:

Survey Calculation Method:

Well Goonch Fed Com 04/212H GL 3014.6/+/25/KB @ 3039/60usft GL 3014.6/+/25/KB @ 3039/60usft Grid

Minimum Curvature

Wellbore: OH
Design: Plan #1

Planned Survey							EDITO DO DE LA COLONIA DE		
		1.57			1.744 - I				.
Measured			Vertical			Vertical	Dogleg	Build	Turn
purit Depth. (usft)	Inclination A	zimuth (°)	Depth (usft)	+N/-S (usft)	(usft)	Section (usft)	(°/100ft)	Rate⊮ °/100ft)	Rate (*/100ft)
9;300:00	23.17	4.43	9,183.97	-991.53	Te A E Billion II.				
9,325.00	26.17 ²	1.13	9,103.97	-99 1.53 -981.10	375.66 375.87	-941.97 -931.58	12.00 12.00	12.00 12.00	0.00 0.00
9,350.00	29.17	1.13	9,228.83	-969.49	376.10	-920.02	12.00	12.00	0.00
9,375.00	32.17	1.13	9,250.33	-956.75	376.35	-907-33	12.00	12.00	0.00
9,400.00	35:17°	1.43	9,271:13	-942.89	376.62	-893.53	12.00	12.00	0.00
9,425,00 9,450.00	38:17* 41.17*	1,13 1,13	9,291.18 9,310.42	-927.96 -912.01	376.91 377.23	-878.67 -862.79	12.00 12.00	12 00 12 00	0.00 0.00
9,475.00	44.17	1,13	9,328.80	-895.07	377.56	-845.92	12.00	12:00	0:00
9,500.00	47:17	1.13	9,346.27	-877.19	377.91	-828:12	12.00	12.00	0:00;
9,525.00	50:17	1.13	9,362.77	-858.42	378.28	-809.43	12.00	12.00	0,00
9.550.00 9.575.00	53.17 56.17	1.13 1.13	9,378.28 9,392.73	-838.82 -818.42	378.66	-789.91 -700.04	12:00	12.00	0.00
9,600,00	59.17	1.13	9:406:10	-797.31	379.06 379.48	-769:61 -748:58	12.00 12.00	12:00 12:00	0:00 0:00
9,625.00	62 17	1.13	9,418.34	-775.52	379.91	-726.89	12:00	12:00	0.00
9,650.00	65.17	1.13	9,429.43	-753.12	380.35	-704.58	12.00	12.00	0.00
9,675.00	√68-17	1.13	9;439:33	-730.17	380.80	-681.73	12:00	12:00	0.00
9,700,00 9,725,00	71.17 74:17	1,13 1,13	9,448.01 9,455.45	-706:73 -682:87	381.26 381.73	-658 40 -634 65	12.00 12.00	12:00 12:00	0.00 0.00
9,750.00	*77/17	1.13	9,461.64	-658.66	382.20	-610.54	12.00	12.00	0.00
9,775.00	80 17	1.13	9,466.55	-634.15	382.68	-586:14	12,00	12:00	0.00
9,800.00	83.17	1.13	9,470.17	-609.42	383)17	-561.51	12.00	12.00	0.00
9,825.00	∜86∄7 ∛89∮20	1.13	9/472/49	-584:54	383.66	-536.74	12:00	12.00	0.00
9,850.23 Start 4690.54 i	09:20 nold at 9850.23 MC	1.13	9,473.51	-559:34	384:15	-511,65	12.00	12.00	0.00
9,900.00	89:20	1.13	9,474.20	-509,58	385.13	-462.11	0.00	0.00	0.00
10,000:00	89.20	1.13	9,475.60	409.61	387:09	-362:57	(0.00	0.00	0:00
10,100.00	89 20	°1,13	9,477.00	-309.64	389.06	-263:03	(0)(0)	0.00	0.00
10,200.00	89:20 89:20	1.13 1.13	9,478.39 9,479.79	-209.67° -109.70	391.02 392.99	-163.49 -63.95	0:00 0:00	0.00	0.00
10,400.00	89:20	1.13	9,481.19	-9.73	394.95	35,58	0.00	0.00 0.00	0.00 0.00
10,500.00	89.20	1.13	9.482.58	90.24	396.91	135 12	0.00	0.00	0.00
10,600.00	89.20	1.13	9,483,98	190.21	398.88	234.66	0.00	0.00	0.00
10,700.00	89.20	1.13	9,485.37	290 18	400.84	334:20	0.00	0.00	0.00
10,800.00 10,900.00	89.20 89.20	1.13 1.13	9,486.77 9,488.17	390.16 490.13	402.81 404.77	433.73 533.27	0.00 0.00	0.00	0(00 0:00
11,000,00	89.20	1:13	9,489.56	590.10	406.73	632.81	0.00	0.00	0.00
11,100.00	89.20	1.13	9,490.96	690.07	408.70	732.35	0.00	0.00	0:00
11,200.00	89.20	1.13	9,492.36	790.04	410.66	831.89	0.00	0,00	0.00
11,300.00 11,400.00	89.20 89.20	1,13 1,13	9,493.75 9,495.15	890.01 989.98	412.62 414.59	931.42 1,030.96	0.00	0:00 0:00	0:00 0:00
11,500.00	89.20	1:13	9,496:54	1,089.95	416.55	1,130.50	0.00		**
11,600.00	89.20 89.20	1113	9,496.54 9,497.94	1,189,92	418.52	1,130,50	(0,00;	0:00: 0:00:	0:00 0:00
11,700.00	89.20	1.13	9,499.34	1,289.89	420.48	1 329 57	(0)(00)	0.00	0.00
*11 ₃ 800:00 ₃	(89:20)	*1313 4643	9,500.73	1,389,87	422.44	1,429.11	0.00	0.00	0.00
*1.17900:00:	189)20	′1 <u>%</u> 13	9,502.13	1,489,84	424.41	1,528.65	0.00	0.00	0.00
12,000,00 12,100,00	89.20 89.20	1.13 1.13	9,503.53 9,504.92	1,589.81 1,689.78	426.37 428.34	1,628.19 1,727.72	0.00	0.00	0.00 0.00
12,200.00	89:20	1:13	9,506.32	1,789.75	430.30	1,827.26	0.00	0.00	0.00
12,300.00	89.20	1:13	9,507.71	1,889:72	432.26	1,926.80	0.00	0.00	0.00
12,400.00	89.20	1.13	9,509.11	1,989 69	434.23	2,026.34	0.00	0.00	0.00
12,500.00	89:20	1:13	9,510.51	2,089.66	436.19	2,125.88	0.00	0.00	0.00
12,600,00 12,700,00	89.20 89.20	1,13 1,13	9,511,90 9,513,30	2,189.63 2,289.60	438 16 440 12	2,225,41 2,324,95	0.00 0.00	0.00 0.00	0.00 0.00
12,800.00	89.20	1.13	9,514.70	2,389.58	442.08	2,424.49	0.00	0.00	0.00
									5. 2 · 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2.

Hawkeye Directional

Planning Report



Database:
Company:
Project:
Site: 4:
Well:
Wellbore:

HED_Compass_DSN Novo Oil & Gas_LLC Eddy.County, NM SEC 4 - T23S - R28E Goonch Fed Com 04:212H Local Co-ordinate Reference
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well Goonch Fed Com 04,212H GL 3014 6 + 25 KB @ 3039;60usft GL 3014 6 + 25 KB @ 3039;60usft Grid

Minimum Curvature

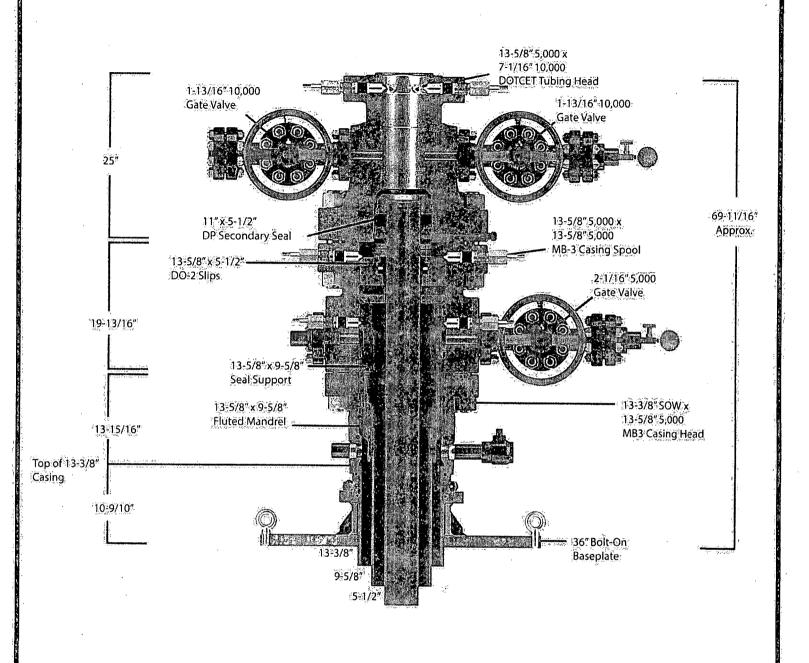
Design: Plan #1

ОН

lanned Survey								i ya safata da	
i Measured			Vertical			Vertical	Carlos de la Carlos	B	
Depth	Inclination :	*Azimuth	Depth	+N/-S	+EI:W	Section	Dogleg Rate	Bulld: Rate	Turn
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100ft)	(°/100ft)	(°/100ft)
12,900.00	89.20	1/13	9,516.09	2,489.55	444.05	2,524.03	0.00	0.00	0.00
13,000.00	89.20	1.13 1.13	9,517.49	2,589.52	446.01	2,623.56	0.00	0:00	0.00
13,100.00	89.20	1,13	9,518.88	2,689.49	447.97	2,723.10	0.00	0:00	0.00
13,200.00	89 20	1.13	9,520.28	2,789.46	449.94	2,822.64	0:00	0.00	(0,00)
13,300.00	89:20	1.13	9,521.68	2,889.43	451.90	2,922.18	0:00	0.00	0.00
13,400.00	89,20	113	9,523.07	2,989.40	453.87	3,021.72	0.00	0.00	Ŏ.OO
13,500,00	89.20	1.13	9,524.47	3,089.37	455:83	3,121.25	0.00	0.00	0,00
13,600.00	89.20	1,13	9,525.87	3,189.34	457.79	3,220.79	000	0.00	
13,700:00	89:20	1:13	9,527-26	3,289.31	459.76	3,320.33	0.00		0.00
13,800.00	89:20	1.13	9,528.66	3,389.28	461.72	3,419.87	0.00	0.00 0.00	0.00 0.00 0.00
13,900,00	89.20	1/13	9,530.05	3,489.26	463.69	3,519.40	0.00 0.00 0.00	0.00	0.00
14,000:00	89:20	1./13	9,531,45	3,589.23	465.65	3,618,94		0.00	0.00
14,100:00	89:20	1.13	9,532.85	3,689.20	467.61	3,718.48	0.00 0.00 0.00 0.00		0.00 0.00
14,200.00	89.20	1.13	9,534,24	3,789.17	469.58	3,818.02	0,00	0.00	0.00
14,300.00	89.20	1.13	9,535.64	3,889.14	471.54	3,917.55	0.00	0.00	0.00
14,400.00	89:20	1-13 1-13 1-13	9,537.03	3,989.11	473.51	4,017.09	0.00	0.00	0.00
14,500.00	89.20	1.13	9,538.43	4,089.08	475.47	4,116.63	0.00	0.00	0.00
14,540.77	89.20	1,13	9,539.00	4,129.84	476.27	4,157.21	0.00	0.00	0.00
TD at 14540.7	7.7	*****			\$ 11 mg \$ 1 mg 1 mg 1	of the second of the	-st hermalited if	****	********

Design Targets Target Name		Tipe 70							
: hit/miss target Dir	Angle D (°)	ip Dir. ≥ (°) [a]	TVD (usft)	+N/-S (usft):	+E/-W (üsft) ≇ad‡	Northing (usft)	Easting (usft)	Latitude 44	Longitude
Goonch Fed Com 04 21; - plan hits target center - Point;	0.00	0.00	9,539.00	4,129,84	476 27	488,075.03	614,767.77	32° 20° 29 636 N	°104°°5∀44\041 W

Plan Annotations			acamie i I maior de la propieta de la composição de la composição de la composição de la composição de la comp	
Measured	Vertical	Local Coord		
Depth	Depth	+N/-S	+E/-W	And the second s
(usft)	⊥ (usft) 👢 🛬	(usft)	Mary 10 Million of the control of the Control	Comment
2,000.00	2,000,00	0.00	0.00 21.41	Start Build 2:00
2,600.00	2,595.62	-58.83	21.41	Start 4670 00 hold at 2600 00 MD
7,270.00	7,163.57	-971.22	353.49	Start Drop 2.00
7,870.00	7,759.19	-1,030.05	374.91	Start 1236,90 hold at 7870,00 MD
9,106.90	8,996.09	-1,030:05	374.91	Start Build:12:00
9,850.23	9,473.51	-559 34	384:15	Start 4690 54 hold at 9850 23 MD
14,540177	9,539.00	4,129.84	476.27	TD at 14540.77



Downing Wellhead Equipment Quotation Oklahoma City, Oklahoma - USA Reference Data: Proprietary and Confidential TITLE: The information contained in this drawing is the sole property of Downing Wellhead Equipment, any reproduction in part or in whole without the written permission of Downing Wellhead Equipment is NOVO OIL & GAS, MB-3 SYSTEM, NOVO 13-3/8" x 9-5/8" x 5-1/2" DWG. NO.: DRAWN SIZE REV.? CHECKED prohibited. APPROVED Weight:

i, LLC

isk Report



Hawkeye Directional Anticollision Risk Report



Programme and the control of the Con	Local Co-ordinate Roterence: Well Goonch Fed Com 04 212H
Project: Eddy County, NM	TVD Reference: GL 3014.5 + 25 K8 @ 3039 60ush
Reference Bita: SEC 4 - T235 - R28E	MD Reterance: GL 3014.6 + 25 KB @ 3039 60ush
Site Error: 0.00	North Reference: Grid
Reference Well: Goonch Fed Com 04 212H	Survey Calculation Method: Minimum Curvature
Well Error: 0.00	Quiput errors are at : 2.00 sigma
Reference Wellbore 24 OH	Database: HED_Compass_DSN
Reference Design: Plan #1	Offset TVD Reference: Offset Datum

restriction and the state of	Plan #1	and the second section of the second section of the second	and the second s
Filter type:	NO GLOBAL FILTER: Using user defined	selection & filtering criteria	
Interpolation Method:	Stations Interval 100,00usft	Error Model:	ISCWSA.
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum ellipse separation of 1,000,000s	t Error Surface:	Pedal Curve
Warning Levels Evaluate	ed at: 2.00 Sigma	Casing Method:	Not applied

Vertical Depth for Analysis:	usft (Below T	VO Reference Datum)		585-5-7	
Minimum Separation:	üslt.		 		
Survey Tool Program	08/09/19			117577.1238.045	į.

Survey Tool Program From (usit)	Date, 06/09/19 To uaft) Survey (Wellbere)	g Tool Name	Description	ij
0.00	14,540,77, Plan #1 (OH)	MWO	OWSG MWD - Standard	Service .

	Reference	Offset			
Company of the Compan	Measured	Personal Committee of the Paris	Distan Between	Ge Between	or captible a fall.
Sho Name		也於些知识的社會的人學的學科		AND ARCONDINGS & SEA	Separation
Office Well Wellborg - Design	(neu)	(ush)	(uaff)		Factor Warning
SEC 4 - T23S - R28E		and annual	and the second	distribution of the	Manager and the Control of the Contr
Goonch Fed Com 04 131H OH - Plan #1	2,000.00	1,999,40	200.38	186 49	14.428 CC, ES
Goonch Fed Com 04 131H OH - Plan #1	14,540,77	14 453.07	1,202.61	1,040,49	7,418 SF
Goonch Fed Com 04 132H - OH - Plan #1	2,258.33	2.259.97	19.58		1,257 Level 3 ; CC
Goonch Fed Com 04 132H - OH - Plan #1/	2,300,00	2,301,90		4 00 3.80	1.240 Level 2 , ES SF
Goonch Fed Com 04 211H - OH - Plan #1	2,000,00	1,999,70	19.62 200.07	186,18 631,43	14,404 CC ES
Goonch Fed Com 04 211H - OH - Plan #1	14,540,77	14.543.51	794.54	631.43	4.871 SF
Goonch Fed Com 04 221H - OH - Plan #1	2,000.00	1,998,90	201.79	187.90	14.531 CC ES
Goonch Fed Com 04 221H - OH - Plan #1	14,540,77	14,781,66	1 196 91	1,034,11	7.352 SF
Goonch Fed Com 04 222H - OH - Plan #1-	2,000,00	1,999,20	20.00		1,440 Level 3 , CC
Goonen Fed Com 04 222H - OH - Plan #1	2,200,00	2,197,80	20.52	6,11 5,33 191,56	1.351 Level 3 , ES, SF
Goonch Fed Com 04 231H - OH - Plan #1	2,000,00	1,999,00	205.45	191.56	14,794 CC. ES
Goonch Fed Com 04 231H - OH - Plan #1	14,540.77	15,354,95	1 378 24	1,227,37	9.245 SF
Goonch Fed Com 04 232H - OH - Plan #1	2,000.00	1,999.00	40.01	26,12	2.881 CC
Goonch Fed Com 04 232H - OH - Plan #1	2,300.00	2,294.87	40.91	25,11	2.590 ES
Goonch Fed Com 04 232H - OH - Plan #1	2,400.00	2,393,44	41.91	25,50	2.554 SF

tset Des	Of Administration	SEC 4	1235 - R26	IE - Gaon	ch Fed Co	om 04 1311	I - OH - Plar	1#1:			Ĭ.	Other Sta Error: 0.0
vey Prodic		0. 11. 11.		arver 4		150		75 4 2	All the Control			Offices Well Error: 0 O
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matri 🦂	(MIN)	(men)	(urst)	Classic Ba	inem pre	Tusti .	P (wm)	Tuent &	(mitt) of 3	Fact	OI .	型群性 。 不知此
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300 00	300.00	200 (0)	199.40 299.40	0 49 0 85	0.65	200 29	200 38	199 40	1 70 117 529	a.	<1 m 1E+9	
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500 00	500 00	499 40	495.40	1 21	1.57	200.38	200.38	197 24	3 13 63 227	0	<1 m (E+9	
2.0			44		1.07							
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700 00	700 00	509 40	699 40	/229	2.28	200 36	200 38	195 01	4 57 43 662	0	* 1 m (E+9	
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CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

06/09/19 9:31,03PM

Pege 2

e Directional ion Risk Report



ocal Co-ordinate Reference. VD Reference: D Reference: D Reference: Orth Reference: urvey Calculation Method; utput errors are at alabase; atabase: ffaet TVD Reference: 2 1 Well Geonch Fed Com 04 212H
QC 3014.6° - 25 KB @ 3039.60ush
QC 3014.6° - 25 KB @ 3039.60ush
GGd
Minimum Curvature
1,00 sigma
HED_Compass_DSN
Offset Datum

1918年	184 08 102 88 102 88 102 88 102 88 102 88 102 88 102 88 102 88 102 88 102 88 108 108 108 108 108 108 108 108 108	Hammon (February) February (February) F		STATESTICAL STATES	Charther Cor. 2000
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16:	612 97	35 02 18 503	Sec.	- 1 in 1E+0	
7	630 77 646 67	35 02 18 503 35 00 18 568	0.0		
16:	648 67	36 79 18 630	b	< 1 in 1849	
14	DUG 37	37 67 18 688	to.		
12:	694-164	37 67 18 666 38 56 18 741	0	<.1 in 16+0 <.1 in 16+9	
	701.35	39 461 16 701	o.	▼ 1 in 16+9	
6	718.75	40 35 18 635	0	* 1 m 16 - 0	•
		41 24 16 667	0	4.1 in 1E+9	
16	755 32 773 31 790 89	42 14 16 973	b	4 1 in 16+9	
5	773 31	43.04) 16.652	0	• 1 in 16+9 • 1 in 15+9	
13	700 89 808 68	42 14 16 973 43 04 16 942 43 04 18 999 44 84 19 934	0	• 1 m 15 • 9 • 1 m 16 • 9	
6	625 46	45 75 19 066	0	e 1 m 16-9	
			à		
9	844 24 862 02	45 65 19 007	0	• 1 m 16•9 • 1 m 16•9	
10	879 8D	45 65 10 007 47 56 19 126 48 46 15 154 49 37 19 180 50 28 19 205	D	4 1 at 16 40	
id 0	679 85 697 57 915 35	49 37 19 180	200	0 1 to 16+9	
o ?	915 35	50 28 19 205	0,	4.1 m 1E-9	
10	033 127	51.19 19 226	.03	*1 m 1E+0	
0 6	933 12 950 90	50 10 19 251	0	c 1 x1 16+0	
18 .	088 67	52 10 19 251 53 01 19 272 53 93 19 203	D	4.1 in 1E+0	
7	900 44	53 93 19 293	U	4-1 in:12+8	
15	004 21	34 84 19 317	0)	e.1 m 1E+9	
	021 89	55.75 19 330 56 67 19 348	0.5 0.5	* 1 in 16-9	
	035 76	256 67 19 348 paration factor, E	0	< 1 in 1E+9	

Hawkeye Directional Anticollision Risk Report



Novo Oll & Gas, LLC
Eddy County, NM
SEC 4 - 1235 - R28E
0.00
Georich Fed Com 04 212H
0.00
OH
Plan #1

Local Co-ordinate Reference:
TVO Reterence:
MD Returence:
North Reference:
Survey Cateulation Hemod:
Output errors are at
Database:
Offset TVO Reference:

Well Goonch Fed Com 04 212H GC 3014 5 + 25 KB @ 3039 60ush GC 3014 5 + 25 KB @ 3039 60ush Gdd Moimum Curvature

2.00 sigma HED Compass DSN:

lset De	olgn	SEC 4	- T235 - R2	8E - Goon	h Fed C	om 04 131	H - OH - Plo	n#1				A BERTON PROTECTION AND CHARGE OF THE PRO-	DD)
	em: Sur	79 94	37.0		.a	3.45	Deta	**				Offset Well Error: 0	
					Offset	Detwoon,	Wall Wall	Between :	Minimum Separat Separation Factor (UNIV)	on Ru	att Protectibly	Yurning)	
veru .	(usti)	man)	Depth (ust()	(usfi)	(usR)	(USF)	(SR)	(val)	(unit) and Sala		alion , (ci Collision)	6. 2.	
7,200 00	7,093 10	7 093 52 7 152 29		29 94	29 40	1,115 11	1 115 11.	1 057 52	57 58 19 365	0	• 1 en 16 • 9		
7,270 00	7,163.57,	7,157 29		30 21	20.79	1,126.10	1.128.19	1 099 65	58 23 19 376	0."	4 1 m 1E+0		
7 400 00	7,192.95	7,191.77	7,047 68 -7,183 33	30 88	29 93 30 41	1,132 73	1,133,73	1,075.23	58 50 19 360 (159 40 19 382	0	* 1 in 16-9		
7,500 aa	7,360 22	7,388 76	7,279 74	31 31	30 69	1 167,16	1,187.16	1,106 69	60 27, 19 365	0	51 m 16-9		
7,600.00	7,469 60	7,487,33	7.376.16	31.70	31 36	1,181 62	1,187,16: 1,181,82	1,120.51	61,11 19 335	0	<1 m 16-9		
700 00	7,589 30	7,585 80	7,472,47	32 07	31 84	1,194 65	1,194 651	-1,132,72	461.93 (16 to) 1	.0	\$ 1 in 1849		
7,800 00	7,669.20	7,684 04	7,566 57	32 46	32.32	1,206 30	1,705 30	1,143.59	62 71 19 236	o.	4 1 m 16+9		
7,870 00	7,759 19	7,752 61	7,535 63	32 61	32 65 32 70	1,213 69	1,213,63		63 23 19 194	0	- 1 m 12:9		
00 000,0	7,659 20	7,870 77	7,760 02	32.98	33 77	1,227 09	1,227 09	1,153,30	64 17 19 124	0.	1 m 1E-9		
100 00	7 989 20	7,965 50	7,863.49	33.26	33.78	1,737,61	1,237,61	111.00	64 95 19 056	100	150000000000000000000000000000000000000		
200 00	4 089 20	8,112.78	7 985 79	33.54	34.35	1,245 58	1.245 65	1 180 81	65 D7 16 937	0	* 1 in 16+9 < 1 in 16+9		
8,300 00	6 169 20	9,241.76		73 93	34 66	1,253 56	1,255.56 1,256.11	1,186 84	65 87 16 927 86 72 18 787	0	• Im IE-9		
1.400 00 1.500 00	8,269.20 6,369.20	8,503.10	8,246.52	34 11	35 37.; 35 61	1,258 11	1,256 11	1,190,59	67 53 18 632	D	4.1 in 12:9		
	.2	8,814.76	Appellation of	4.74.4		Beach	7321.6	610.	68 26 16 402	D.	- 1 in 16+8		
5 500 DO	8,469.20 8,569.20	8,714 26	8 482 60 8 588 60	34 68 34 97	36 12 36 40	1,200 39	1,260 39	1,191.52 1,180.94	69 67 16 200	ő.	< 1 in 1E-9		
100 00	8 669 20	8.814 29	6.688.60	35 26	35.68	1,260.39		1 190 30	69 45 18 148 70 03 17 507	0	<-1 m 1E+9		
900 00	8 789 20	6 91 4 25	6,769 60	35 55	38.58	1,260.30	1,250 30	1,189.77	70 02 17.849	o	* 1 in 1E+5		
000 00	8,889 20	9,015,10	8,880 43	15 65	37.24	1,200 36	1,200 36	1,149.18	171.20 17.703	0.	1 m 1E+9		
105 90	8 996 09	9,124 28	6,997 13	35 16	37 46	1,260.20	-1.260.20	1,188 43	21,77, 17 560	ò	4.1 m 1E-8		
9,125 OC	9,014,19	9 141 69	9,014 03	36 25 36 25	37 49	1,260 18	1,260 18	1 188 33	71 85 - 17 540	ď	< 1 m 1E+8		
15952	9,048 61	0.175 00	0.043.27	36.70	37.51	1,260 16	1 200 16	1,168 22 1,168 19	71 99 17 516 71 99 17 507	0	< 1 in 16+9 < 1 in 16+9		
175.00	0 083 07	9,159.67	9 055 85	38 34	37.52	1,260,17	1,260 17	1,186,14	72 03 17 495	o.	4 1 et 10-0		
200 00	9 058 61	9 213 12	B 080 19	35 30	37.53	1,360 16	1 260 18	1,165.06	72,10 17,476	o	< 1 m 1E+0		
225 00	9 113 00	9,238.29	9,100 78	36 43	37,53	1,200 21.	1.260 21	1 185 06	72 16 17 465	ia:	4 1 an 18 49		
250 00	9,137,08	9 259 20 6 251 85	9,120.60 9,139.65	36 47 36 59	37.52 37.52	1,260,25	1,200,70	1,100,00	72 20 17 455	0	ç1 m 1E∙9		
300 00	B 183 97	6,304 27	9,157,91	36 52	37.51	1,250 30	1,200.38	1,188.07	72 23 17 440 72 24 17 446	0	4 1 m 1E+3 4 1 m 1E+3		
325 00	9,206 69	19.326 47	9,175 36	36.54	37.50	3,250 42				D."			
350 00	9 225 83	9 348 46	9 192 GO	30 55	37,47	1,200 40	1,760 42	1,188 18	72 24 17 447 72 23 17 450	o.	< 1 en 12-0		
375 00	9 250 33	9,370,25	9 207 62	36 55	37 45	1,250 56	1 260 56	1 186 25	72.21 7.17.456	0	4.1 m 1E+9		
400 00	9.271.13 9.201.18	9 413 26	0,222 01 0 236 98	36 55	37 42	1,290 63	1 260 63	1,186.45 1,186.58	77.18 17,465	0	7 € 1 € 1E-0		
	. 1 .4 19,500	William Cont. Inc.	And the same of the same	36 54	37 13	1,200 70			72,14 17,478	D	, € 1 m 12+ 9		
475 OB	9,310 42 9,325 80	9,434,54 9,455,65	9,250 3D 9,262 79	36 52	37.35	1,750 76	1,260 76	1,168 67	72 09 17 459	0	4 1 m 1E-9		
900 00	9,343.27	9,475.00	9,273 57	36 51 36 49	37 27	1,250 82	1,250 62	1,166 79 1,166 90	72 03 ; 17 504	0	** 1 m 1E-9		
1,525 00	9.362,77	9,497.45	9,765 24	30 45	17.23	1,260.91	1,260 91	1 189 02	71 69 17,539	· 6	€.1 m 18+0		
550 00	9,378.28	9 518 18	9.205.20	36.42	17.18	1,260 93	1 200 93	1,189 12	71 81-17 559	0	< 1 m 1E-9		
375 00	9 392 73	9,539 75	9 304 31	36 39	37,13	1 260 94	1,260,94	1,189-21	71.73 :57.579	in	4.1 VI.1E-6		
600 00 626 00	9 406 10	9,559 23	9.320.00	36 34 30 30	37.08	1,280 94	1,260 94	1.159 30	71 64 . 17 601	0	< 1 m 1€+8		
650 00	9 429 43	9,579 62	9,326.60	36 26	37 to 3	1,200 92	1,260 97	1,169-36 1,169-41	71.55 (17.622	D.	4 1 m 1E+9 4 1 m 1E+9		
675 00	G 438 33	8,620.12	9,332,31	36.21	35 92	1,260 81	1,250 81	1 129 44	71 37 17 567	ō	< 1 m 16+9		
700.00	9 448 01	9 640 28	9.337.20	36 16	36 87	1,260 72	1,260 72	1,189 454	71 27 717 649	10	24 1 in 15+9		
725 00	9 455 45	0,660 33	9 311 25	29 11	36 81	1,200 61	1,260 61	1.189 44	71.18: 17.711	0	e 1 m 1E+9		
750 00 775 D0	9,461 64 6,468 55	9,580 34	9 344 47 9 348 82	36 06 36 01	36.76	1,280 45	1,280 48	1,125 39	71 09 17 752		ie 1 m 1Eru		
600 00	9,470 17	9 720 21	9,349,39	35 56	36 65	1,200 32	1,250 32	1,189 33	70 90 17 752 76 90 17 772	o o	4 1 of 16-9		
825 DO	9,472 49	6 740 09	9,349 11	245 35 91	36 59	1,259 93	1 259 93	1.189.11	70.62 17.791	0	400		
850 23	9 475 51	9,763 44	9,349 17	35 66	36 53	1,259 83	1,259 67	1 185 64	70 73 17 509	ို	4.1 in 18+9		
500 002	9 474 20	0.610.20	B 349 18	35.76	383 493	1,259 04	1,253 04	1,188.46	70 59 17 837	o	*1 n 1E+9		
100 00	9,475.60	0,013 18	9,349 19	35 62	30 16	1,257,78	1,257,78	1,187 36	70 40 17 885	0	4.1 et 1E+9		
	3	10,013 18	0.349.21	-25.56	36 01	1,250 52	1,250.57	1,156 15	70 37 - 17.855		< 1 m 1E-9		
200 00	9 478 30	10,113 14	9 349 23	35 56	35 53	1,255.27	1,255 27	1,184 77	70 50 . 17 806	0	- 1 m.1E-9		
400 00	9,479 /8	10,213,12	9,349.25 9,340.26	35 65 35 82	35 84 35 83	1,254 02	1 254 02 1 252 76	1,183 24	70 77-17 719 71 20 - 17 595	0	4 1m 16-5		
Bob do	9,482,58	10,413.08	9,149 28	36 06	36 02	1,251 51	1,251 51	1,119.74	71 77 17 437	.0	4 1 m 1E+9		
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	9 485 37	10 013 05	9,349.32	36 88	36 67	1,249 02	1,749 02	1,175.67	73 35 . 17 023	ó	• 1 m 1€•9		
800 00	9,486 77	10,713 03	9 349 33	× 37 36	37-16	1,247 77	1,247.77	1 173 43	74 34 16 785	Ó	# 1 m 16+0		

06/09/19 9:31:03PM

re Directional ion Risk Report



ocal Co-ordinate Reference;
VD Reterence;
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urby Calculation Motrod,
utput crots are at
utabase;
ifficial TVO Reference;

Well Goonch Fed Com 04 212H Well Gooneh Fed Com 04 212H
GL 3014.6" + 25 KB @ 3039.60ush
GL 3014.6" + 25 KB @ 3039.60ush
Grid
Mnimum Curvature
2.00 sigma
HED_Compass_DSN
Offset Datum

Description Proceedings Description	Phet West Breen : 0.00 unit
Debut	25.00.2013
Cupy Separation Petter Separation Color Co	Membro 2
Cupy Separation Petter Separation Color Co	Werning
13	
120	
100 100	
102 1,103 27 200 19624 0	
198 1,190 4,13 1926 6	
185 1,197.44 0,000 149/8 0,	
112 1.1944	
122 1.19494 86 80.44 655 0	
19	
160 1,140 20 20 1,150 0	
1.02 1.04 10.00 10.007 10 11 10.00 10.007 10 10 10.007 10 10 10 10 10 10 10	
120 14173 02-6 13-66 0	
193 1,100,35 94M 11000 0 1 110,100 0 1 110,100 0 1 110,100 0 1 110,100 0 1 110,100 0 1 110,100 0 1 110,100 0 1 110,100 0 1 110,100 0 1 110,100 0 1 110,100 0 1 110,100 0 1 110,100 0 0 110,100 0 0 110,100 0 0 0 110,100 0 0 0 0 0 0 0 0 0	
1,77 1,34 0 0 0 0 0 0 0 0 0	
1/2 1/2	
197 1,177.88 101.60 12.17 10 11.16 10 11.17	
117 1.1248 (10.34.11427) 0 (41.614) 199 1.1246 (10.36.11.34) 0 (1.614) 199 1.1246 (10.36.11.34) 0 (1.614) 100 1.1697 (10.77.17.77.) 0 (1.614) 101 1.1057 (10.77.17.77.) 0 (1.614) 102 1.1058 (10.77.17.77.) 0 (1.614) 103 1.1058 (10.77.17.77.) 0 (1.614) 104 1.1058 (10.77.17.77.) 0 (1.614)	
1971 1,120 60 116 116 10 116 10 116 10 170 116 10 170 116 10 170 116 10 170 116 10 170 116 10 170 116 10 170 170 170 170 170 170 170 170 170	
1971 1/10-00 100-20 1/10-00 0	
170 (116.97 108.73 11.273 0 V16.1E-9 1.102 1.102 50 117.2 11.02 0 C 16.1E-9 1.102 1.102 50 117.2 10.25 0 C 16.1E-9 1.03 1.102 1.102 50 117.2 10.25 0 C 16.1E-9 1.03 1.106.71 118.37 10.502 0 C 16.1E-9	
140 1,103 25 (11/24 11 008) 0 (1 in 16-8 128 1,109 50 113 78 10 751 / 0 (1 in 16-9 108 1,106 71) 18 37 10 502 (0 (1 in 16-9 108 1,106 71) 18 37 10 502 (0 (1 in 16-9 108 1) 10 (1 in 16-9 108 1)	
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After a particular to the control of	
188 1,101 90 118 98 10 261 B c 1 in 15+8	
56 1,096 05 121 63 10 028 0 4 t m 1E-9	
(48) 1,054 18: 124 30 9 800 0 4 1 in 1E+9	
28 1,090 29 127,00 9565 10 1E+9	
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(10) 1,002 43 132 47 9 171 0 4 1 M 1E+9	
1.71 1.078 47 135 24 8 875 B 4 1 1/1 16 49	
(52 1.074 49 138 02 8 769 0 1 1 18-9 1	
33 1,070 50 140 83 8 801 0 c 1 in 15+0	
115 1,000 49 143 65 8 424 Q 41 9 1E+9	
197 1,062 48 146 50 8 252 0 0 1 n 1E-9	
75 1,058 43 149 36 8 060 0 « 1 in 16+9	
(61- 1,054 38 152 23 7,928 Q 4 1 tr 15-9	
43 1,050 31, 155,12,7,771 0 +1 m 16+9	
128 1,046.24 158.02 7.821 0 • 1 in 1E-9	
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161 1.0-0 49, 162 12 7 418 (0 41 m 1E-9, SF	
2.2 1989	

vint, SF - min separation fector, ES - min ellipse separation COMPASS 5000 15 Bulld 91 06/09/19 9:31:03PM

Hawkeye Directional Anticollision Risk Report



Company. Novo Oli 8 Gas; LLC Project: Edy County, NM Reterence Site: Site 64: 1235 - R28E. Site Error: 0.00 Reterence Well: Geonch Fod Com 04 212H. Well Error: Oli Company Co

Local Co-ordinate Reference
TYO Reterence
MD Reference
North Reference
Survey Caccuston Method:
Output errors are of
Database
Offset TYO Reference

Well Goonch Fed Com 04 212H GL 3014 6 + 25 KB @ 3039 60ush GL 3014 6 + 25 KB @ 3039 60ush Gnd Minimum Curvature 2.00 eigma HED_Compass DSN Offset Datum

ffset Do	sign	SEC 4	- T239 - R	28E - Goon	n Fed C	om 04 13	2H - OH - Pla	n #1	6°22 - 100, 2			Offset Size Error	nin s
ervey Prog	rram: D.M	NO /	, illusti				S Phillips		Mindrawn of Departures September 1 Fector (USFI)		7.5	Office Well Error:	湖南湖湖海鄉
C. Please	HENCE TO THE PERSON NAMED IN COLUMN	on on	en market	Serri Major	uh 💖		Date	nce .	was are	2.7			
Depth 🖖	Versical Depth	Depth	Copp)	Diam's	11.4	Cantres	2 Distance	Elimes	Securition . Copera	an Som	and Probability	Warrung	n e ind
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200 00	300 00	199 90 293 50		0.49	D 45	20 02	20 02	18 03	0 89 20 316	30	4.1 m 1E+D		
400 00	400 00	399 90		0 65 1 21.	0 85	20 02	20 02 20 02	16 32	1.70 - 11.760 : 2.42 8.275	0	1 in 1E+5		
500 00	500 00	499 90		1 57	1.57	20 02	20 02	15 68	3 14 6 383	0	61 m 1E-0		
600.00	500 00	599.90	599 90	1.93	1 83	20 02	20 02	16.17	3 85 5 196	G,	* 1 m 1E+9		
700 00	700 00	629.00	699 90	2.29	2.26	20 02	20 02	15 45	4 57 4 361	0.	4 1 m 16+9		
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1,190.00									6,72, 2,979		*,1 m,1E+0		
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1,400 00	1,400.00	\$,399 (7)	1,399,90	4 79	4 79	20 02	20 02	10 43	9 59 2 0ha	0	* 1 x 1E-9		
1,500 00	1,500 00	1,499 00		5.15	5.15		20 52	971	10 31. 1 943	0.	• 1 m 3B+9		•
1,600.00	1,600 00	1,599 90		65.51	3 51	20.02	20 02	9 00	11 02 1 816	0	<1 m 1E+9		
1,700 00	1,700 00	1,699 90	1,689,50	5 57 6 23	5 87 6 23	20 02 20 03	20 02	5 28	11 74 1.700	0	5.1 in 1E-0		
1,900 00	1,900,00	1,299 90	1,009,90	0.59	6 50	20 02	20 02	7.56 8.85	12 46 1 507 13 17 1 520	10/	4 1 m 16+0 4 1 m 16+9		
2,000 00	2,000,00	1,999 90	1,099 00	6.95	6.95	20 02	29 02	613	13 83 1 441	0	e i in i E-B	Level 3	
2,100 00	2 099 98	2,100 (0	2 100 58	7.22	7.29	19 60	39 90	5.33	14 57 1 386	(0)	< 1 m (C+0	Level 3	
2 200 00	2,150 84	2.201 27	2,201,11	7.61	7 62	19 64	1964	4 44	15 30 1 292	.0	61 m 1E-9	Level 3	
2,258 53	2,257.56	2,259 97	2,256 62	7 80	7.61	19 50	19 56	4 00	15 56 1 257	0	4 1 m 1E+9	Level 3 GC	
2,400 00	2,398.70	2,301 50	2,301,34 2,401,12	7,94 8 26	7 84 6 70	19 62 20 45	19 52	3 60 4 00	15 82 -1 240	0	<1 m 1E-9	Level 2 ES SP	
The same	2.00.000	71,285	44.5	-90,000	18.3	100,000	100	40.00	16 45 1 243	o.	4 1 m 1E+8	Level 2	
2,500,00	2,497.47	2,503 ti9 2,603 20	2,500 31 2,506,75	8 82 8 98	5 62 8 58	22.79	22.79	5 05	17.11 (1.332)	0	5.1 m 1E+8	Level 3	
2,700 00	2 603 44	2,702.91	2 896 29	9 3 5	9.35	32 62	32.62	6 23 14 23	17.82 1.518 18.58 1.766	0	<1 m 1€+9 4.1 m 1€+0	**	
2,800 00	2,791 25	2,802 63	2,793 62	9 73	9.73	39 21	39 21	19 84	19 36 2 025	o.	4 1 m 1E+9		
5 800 00	2,089 07	2,902,34	2,86136	10 12	10.11	45.95	45 95	25 81	20,15 (2.25)	0	* 1 m 1E-9		
3 000 00	2,593 88	3 002 05	2 005 89	10 52	10 61	52 93	5293	31.98	20 95 . 2 537.	:0.	≤1 m 1€+8		
3 100 00	3 084 70	3,101,76	3,006 42	10 93	10.91	6D 04	60 04	38 26	21 78 2 760	0	- 1 #1 1E+D		
3 300 10	3,250,33	3 201 46	3 163 56	11.76	11 13	67 26 74 50	67.26 74.50	44 68 : 51 13	22 56 2 979	0	* 1 m 1E-9		
3,400.00	3,376.14	3 400 90	3.379.02	12.15	12.17	61 89	81.85	57 63	24 26 3 375	d	4 1 in 1E+9 4 1 in 1E+9		
3,500 00	3 475 96	3 500 62	3,476.56	12.62	12 59	89 27	E9 27	64.15	25 12 13 554	A.	2012 200		
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re Directional ion Risk Report



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Well Goonch Fed Com D4 212H GL 3014 6° - 25° KB Ø 3039 60ush GL 3014 6° - 25° KB Ø 3039 60ush Ghid Minimum Curvatura ∶ 2.00 sigma HED_Compass_DSN Offset Datum

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Hawkeye Directional Anticollision Risk Report



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General Well Error: 7 Plan #1

Novo Oil & Gas, LLC Eddy County, NM SEC 4 - T23S - R28E 0.00

Local Co-drighale Ruterence (TVD Reference (MD Reference (

Well Goonch Fed Com 04 212H

GL 3014.6 + 25 KB @ 3039 60ush
GL 3014.6 + 25 KB @ 3039 60ush
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Offset Datum

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COMPASS 5000 15 Build 91

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

e Directional ion Risk Report



Well Goonch Fed Com 04 212H GL 3014.6' + 25' KB @ 3039.60ush GL 3014.6' + 25' KB @ 3039.60ush

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Hawkeye Directional Anticollision Risk Report

Novo Oil & Gas, LLC.' Eddy County NM SEC 4 - T23S - R28E 0.00 0:00 Goonch Fed Com 04 212H 0:00 OH Plan #1

Cocal Co-ordinate Reference
T/O Reference
I/O Reference

Well Goonch Fed Com 04 212H
GL 3014.6; + 25 KB @ 3039 60ush
GL 3014.6; + 25 KB @ 3039 60ush
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Glimmum Curvature
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7,300.00	7,192 95	7,260 40	7,154.75	30 42	30 15	822 93	622.93	763 14	59 78 13 78B	ďa:	€1,6 1E+9	
7,400 00	7,791 30	7 345 63	7,261 64	30 66	35 61	832 75	830.75 840.44	772 03	150 71 13 716	0	< 1 m 1€+6	
7,500 00 7,600 00	7,390 22	7,477,01 7,565,47	7,369 60 7,477.76	31.70 31.70	31.04	840 44 845 59	840 44	778 86	61 56 13 649 62 37 13 564	(0)	< 1 o 1E-9	
7,700.00	7,589 30	7,593,00	7,565.15	32.07	31.78	649.39	0-19 36	783 61 786 29	63 10 13 461	0	* 1 en 1E+9 * 1 en 1E+9	
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7 870 00	7,759 18	7,000 64	7 758 80	32.61	32.27	651.15	850 88	787,13 787,01	63 73 13 351	(n)	4 1 m 1E-9	
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8 400 OC	8 289 20	8,396 64	6,258 20	34 17	33.78	851,15 651,15	851,15	784 56 783 58	66 59 12 782 67 17 12 673	o O	< 1 in 1E+6 < 1 in 1E+6	
8 500 00	8,349 20	8 400 50	6 385 90	34.40	34 97	851.15	867.15	7E3 40	67.75 12.564	ď	0.1 m 1E+0	
9 000 00	8,489 20	8,596 64	8,488.9C	3469	34 36	851-15	851.15	782 62	68 33 5 12 457		e 1 et 18 i 8	
8 700 CD	8,589.70	5,696,64	8,588 90	34 97	34 65	651,15	1651:15	782 233	168 91 112 351	0	661 61569	
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		9,752,16	9,465,40	35 11	35,77	646 83	840 83	775 55	71 20 11 661	ġ	< 1 m 1E-9	
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/e Directional



ocal Co-ordinate Reference, vol. 8th remove.

10 Reference: //ig particle of the Reference in the remove in the re

Well Goonch Fed Com 04 212H
Gi. 3014.51+ 25 KB @ 3039.60ush:
Gi. 3014.51+ 25 KB @ 3039.60ush:
Gird
Minimum Curvature,
2.00 sigma
HED_Compass_DSN
Offset Datum

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	(bett)	(left)			
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int, SF - min separation factor, ES - min ellipse separation

COMPASS 5000.15 Build 91

Hawkeye Directional Anticollision Risk Report



Company

New Oil & Ges. LLC
Edy County NM
Reference Site: # 5
Site Error: # 5

Local Co-ordinate Reference:
IVD Reference:

Well Goonch Fed Com 64 212H: GL 3014.6: + 25: KB @ 3039 60ush GL 3014.6: • 25: KB @ 3039 60ush Grid: Minimum Curvature 2.00 sigma HED_Compass_DSN Offset Datum

Mset De	sion 🐣	SEC 4	- T238 - R	BE - Goon	ch Fed C	om 04 2211	1 OH - Pla	n #1				Office San Errer	7000
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270000	2,063 44	2,665 21	2,659 40	9 33	6 88 9 23	255 21 1 273 64	255.23 273.54	237,45 255,11	17,73 14 392	8	4 1 m 16+9		
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	4 454 10	4,433.51	4 359 06	17,11	15 53	607,63	607 S8	574 77	33 21 16 308	ő	4 1 in (E+9		
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Page 12

e Directional ion Risk Report



ocal Co-ordinate Reference
O Robrerose.
D Robrerose:
Ordin Reference:

Well Goonch Fed Com 04 212H GL 3014.6° - 25' KB @ 3039 60ush GL 3014.6° - 25' KB @ 3039.60ush Grid Minimum Curvature:

2,00 sigma
HED_Compass_DSN
Offset Datum

		LC(MARKETER)		
- Plan #1				Office Site Error: Q GO ust
1000	Market 1	र्ज प्रयासका		Offices Well Error: 0.00 ush
Distatica	FOREST ME	4.60		Gires Well Error.
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is Ellipses	Baltsration Pactor	Coperati	an 🖟 at Gottiston	[107] 中国 107] [10]
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11: 083 23	53 88 19 249	· D	1 in 1E-0	
176 1,000 99	54 78 19 269	0.0	4 in 12-8	i
(45) 1,018.74	55.71 19.288	ÓD.	< 1 m 16+9	
79 1 034 25	56 57 19 306	0	1 in 16+0	
1069 FB	57,54,19,329 58,18,19,335	0	< 1 in 10:19)	
2.0				
40 1,071.05 94 1,065 GU	58 45 19 339 59 35 16 743	0	< 1 m 15 +9" 4 1 m 15 +9"	
		0	4 1 in 1E+9	
62 1,117.78		.0	< 1 m 1E-9	
22 1,130 35	61 87, 19 271	0	1 in 16+9	ŀ
135 1 141 70	62 64 19 225 63 16 19 192	2 0 (4.1 in 1E+B	
112 1,148 56	63 18 19 192	0 5	4 1 m 1E+9	
35 1 151 98 27 1 162 19		67	< 1 in 1E+9 < 1 in 1E+8	
39 1,172.55	64 84 . 19 033	0	< 1 in 16+6	
09 1,151 32		196	77. N. 424	i i
44 1 187 80	66 64 18 823	O O	≤ 1 in 1E+9 ≤ 1 in 1E+9	ļ
	67 45 18 670	0	<.1 m 16+9	
.58 1,193.38	68 19 15 500	(0)	c 1 m 16+9	
	. 98 60 18 336 .	< p	4 1 97 1E-0	
75 (182 37 75 1,191.78	69 38 18 185	.0	<1 in 18+0	
1,101.70	09 40 315 034	. 0	* 1 m 16+B	
.75 1,190 61	70 53 17 689 71:14 17 737	0 0	< 1 in 16+8	-1
753 ,11,180 08	71 77 17.502	0	41 in 1648	1
78 1,189 89	71.87 17.556	0	2141626	
62 1 168 813	7201717524	ns.	< 1 in 16+0 < 1 in 16+9	
£3: 1,150 60	72 13 17 495	0	< 1 in 18+9	f
10 1,150 80 10 1,150 88 35 1,150 00	72 01 17 524 72 13 17 495 72 25 17 469 72 25 17 447	o.	¥.1 e1.1E+9	
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69 1,150.24 14 1,190.60		Q.	4.1 m 12.9	
71 1.191.117	. 73 61 17 JDS	0 0	4 1 m 1E/9	i
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06 1,154.24	-72 60 17.404	(q	4-1-an 1E+0	
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80 1,194.11 82 1,197.07	72 79 17 432 72 75 17 455	0	<140 1E+9 • 140 1E+9	1
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70 1 195 02 03 1 196 93	72 60 17 492 72 60 17 514	0	<1m1E+0	
28 1,153.79	72 49 17 551	ő	4.1 m 1F+0	İ
94 +1,200 58	72 38 317 597	, o	< 1 in 1E-9	F
47 (1,20) 26	72 21 17 035	, o	< 1 in 1E+B	Į.
67 1,201.61	72 00 17 678	:0	e i in iE i	1
11 -1,202.21 17 1,202.44	71 90 117,721 71 74 17,762	0	* 1 in 1E+6	1
D6 1,202,47	71,59 17 798	ă	4.1 m 12-9	1
75 1,202 31	71 45 17 828	o	4.1 in 18.0	
26 .1,201.93		٥	1 in IE-9	:
59 1,201.36	71 33 -17 851 71 23 -17 868	Ö	* 1 m 15+6	1
75 1,200 60	71,15,17,873	Ö	- 1 in 15+6 - 1 in 15+9	4
03 1 199 94 61 1,189 49	71 00 17 879 71 02 17 860	0	4 1 m 1E • 9	1
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	eperation factor, E			
13		× 1000.991	aichei briott	COMPACE FOR A FIRST OF
				COMPASS 5000.15 Build 91

Hawkeye Directional Anticollision Risk Report



Company, Novo Cl Project : Eddy Co Reference Site: SEC 4: Site Error; 0.00 February Well: Goonch Well Error: 0.06 Reference Wellbore Reference Wellbore Reference Wellbore Novo Oil & Gas, LLC Eddy County, NM SEC 4 - T23S - R28E 0.00 Goonch Fed Com 04 212H 0.00

TOTAL	aun. III D-M	Water Carl	1,000	-7 60 Day	Contract of the	2011 04 22 1	H · OH · PI	on en	THE STATE OF THE S	Macana and	ور جانز مهرو		Offset Alla Error: 9 0
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a sured	Vertical II	Messured .	Vertical	Raturenca 🗡	Office	Dermen	West Wall	Between	Mittermann	Separatic	Risa	ed Proceedity	
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700 on	9 485 37	10 \$63 04	9.679.34	36 58	4	- 32.00							
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1,000,00	9.489 56	11,282,98	9,679 39	38.57	38 92	1,253.67		1,177,63		16 485	0	41 in tE-0	
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and the	417 01 44			39 27	47 27	1 226 48	1,250 43	1,171 60	78 68	15 693	0	e 1 in 1649	
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1,300 00	9 495 54	11,782 69	8 879 43	42 60	43 60	1,244 10	1 244 10	1,156.63	85.23	14 598	0	* 1 m (E+9	
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2,000 00	9,502 13	12,182 61	9 679 55	46.62	47 60	1,797,74	1,237,74	1,144.56	93 16	13 266	0	+ 4 3 m; 1E+9	
2,100,00	9,503.53	12 282 79	5,679 56	47.72	40 68	1,239 15	1,235 15	1,140 82	. 95 33	12 937	D	4.3-#1 1E+9	•
2,100,00	9,504 92	12,352 77	9,679 58	49 94	49 60	1,234 67	1,234,57	1,137.01		12.600	0	3 v. Lin 16 19	
2,200 00	9 500 12	12,452.75	9 679 60	50 00	50.94	1,232 58	1,232.98	1.133.14	1000	12 350	io .	- 4.1 in 15.40	
2 300 00	9.507.71	12,562.73	9,679.52	51.18	52 11	1,731.40	1 233 40	1,129 22	107.12	12 057	o o	4.1 at 1E+6	
400 00	9,509.11	12.662.71	9 079 63	52.39	53.31	1,229 61	1,229 81	1,125.25			Ö	4 t at 1E+9	
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2,700:00 2,600:00	9,513.30		9 079 59	56 14	57 07	1,225 07	1 225 07	1,113.08	112 01	10 937	.0	€ 1 m 1E+9	
	9,814.70	13,082 64	9 679 70	57,43	59.20	1,223 49	1,223 49	1,106 62	114 57	10 679	.0	€1 m 1E-8	
900 00	9,516.09	13 192 62	9 679 72	54.74	59 59	1,221.91	1,721.91	1,104 75		10 429	0	c.t m IE+9	
3 100 00	9 517 49	13,282,60	9 679 74	60 07	60 91	1,220.34	1,230 34	1,100 54			a	4 tim 16-9	
, italian	9.518.88	13,352,54	9,679 76	61 41	CZ 24	1,216.76	1,216,76	1,000 30	122 46	9 952	0	41 m 1E+9	
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500 00	9 524 47	13,782 50	9,679 83	66 51	67.69	1,212 47	3,212,47	1,079 07	133 40		ě	1 m 1E-9	
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600 60			0,670 60	71.10	1190	1,207,77	1,207,77	1.055 91	141.65	6 514	O	1 m 1E-9	
	9 530 05		0 675 90	72 59	72 32	1 206 20	1,205 20	1,061,49	144 71		3	* 1 ca 1E+9	
00 00	9 531 45	14,252 40	9 679 51	74 04	74 75	1,204 64	1,204 64	1,057 05	147.50		Ô	4 1 et 1E+0	
100 00	9 532 85	14,382,38	9 679 93	75 40	76.19	1,203.07	1,203.07	1,052.58	150 46	7,995	D	4.1 in 16.9	
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ď	19	A	10000	47.5	12 03	s, raru cos	1,200,00	1 1134 213	162 49	J. 963	Ö	= 1 in 1E+0	
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CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation Page 14

e Directional ion Risk Report



coal Co-ordinate Raterence; Co Destruction of Communication of Communicati

Well Goonch Fed Com 04 212H GL 3014.6 + 25 KB @ 3039.60ush GL 3014.6 + 25 KB @ 3039.60ush Gld Grid Minimum Curvature

2.00 sigma

HED_Compass_DSN

Offset Datum

		the second second	n.ye	70.000 07.00 h	
Pla	1#1	201 HELD 11 - 12 - 12			Office Sas Spron 000 057
1000	100	BOOK HIS TON	15.4	30.00	Officel Well Error 000 uch
Distan	ce .				The second secon
B 2		Minimum 7 Beparation	1	Hisked Protestallity	Warning
3 5	Elitores (SAP)	Separation Pacine		peration of Gottision	
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102			0	4.1 m.16.9	
00	19.73 19.02	0.27 .7# 697 0.98 20.360	0	- 1 in 1E-9	
100:	18 30	1.70 11.767		< 1 in 16-5 < 1 in 16+9	
DU	17.69	2.42.6.276	0		
1.00	18 67.	3.13 6 323	20	91 m 1E.9	
100	16 15	3 85 8 194 457 4 379	0	*.1 in 1549	
100	10 43	4.57 4.379	0	4 1 m 16+9	
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100	13 28	6.72 2 977	0	* 1 m 1E-9	
00	12.57	17 44 5 860	100	200	
00	17.65	7,44 2,650 8 15 2,454	0	€ 1 en 1E+9 € 1 en 1E+9	
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	9,70		(0	<1 m 1E+0.	
OL,	5 98	11.02 1.815 11.74 1.704 12.45 1.500	0	+ 1 m 1€+9 ·	
100	8.27 7.55	19.45 1.604	10	* 1 m 1E+8 < 1 m 12+9	
00	6.63	13 17 1 519	0	<1 m 1E-9	
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62	5 33	15.19 (1.75)	n.	< 1 m 18+9	Level 3, ES, SF
53	5 73 7 04		0.	<.1 m 1E+9	Caran 3
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23	13 45	17.75 1.750	0	<.1 m 1 E+9 ≤ 1 m 1 E+9	
Cont.	23 64	18 5] 1 994 18 28 2 227 20 07 2 451 20 87 2 963	D	<1 in 1E+0	
10.	23 65 23 12	7D 07, 2 451	0	< 1 in 16+0	
50	34.71	20 87 2 063	0.	<1 in 1E-9	
07	43.35	21.69 2.862	.6	4.1 m 1E-9	
64	46 12	22.52:3 048:	0	<1 in 16-9	
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go.	83 54	25 00: 3 136	0	< 1 in 12-9	
:31.	09 38	25.93 3 678	0	s i in die is	ì
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-13	118 41	33.07 4.520	D.	1 in 1E-9	
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92 73	134 09 136 08 ²	35 83 4 742	ā	€ 1.00 1 E +B	. "
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80 L	163 45	41 47 35 092	0	* 1 m 1E+9	`1
70 53	175 35	/42 35 5 141 /43 25 5 187	0	4 1 in 1E+8 4 7 in 1E+0	4
34	187 144	Ye have a resid	- 1		1
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0.4	190 92	46:17:5313	0	. 1 m 18+0	1
BB	204 a2	47 06 5 352 48 01 5 389	0	≪ 1 m 16+9	
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56 40	216 60	48 06 5 424 49 91 5 458	,o	< 1 in 16-9	4
40	222 40	49 91 8 458	0	~< 1 in 1E+9	

Int SF min separation factor, ES min ellipse separation

COMPASS 5000 15 Build 91

Hawkeye Directional Anticollision Risk Report



Novo Oil & Gas, LLC Eddy County, NM SEC 4 - T235 - R28E 0.00

Site Error. 0.00
Reference Vel: Goonoh Fed Com 04 212H
Well Error: 0.00
Reference Wellbore a OH
Reference Design. Plan #1

Liosa Co-ordinate Refurence:
TVD Retirence:
MD Reterence:
North Retirence:
Survey Calculation Manage:
Couput errors are at
Dotupate:
Couput Retirence:
Couput Retirence:

Well Goonch Fed Com 04 212H:
GL:3014.6* + 25 KB @ 3039.60ush
GL:3014.6* + 25 KB @ 3039.60ush
Gnid:
Minimum Curvature 2.00 sigma
HED_Compass_DSN-Offset Datum,

i delen		on on	el	Serre leajor	ALB	Anne J	Dista	nce 5		¥ 10	4.4	Offset Well Error: 000
etured (Measured	Verikal	Reference		Bateres:	Wall-Wall	Batevan	Minerara Repaire	ga Rh	Led Probability	Bankey
MININ MARI	Oupth (put)	Depth	Depth (ust)	(ush)	(vin)	Carates	Obtates	Clipses !	legaration Factor (MIT)	Depu	irstion of Golliskin	Barning at
CE CO	and the second	-			Section of the	(usu)	Jene Market at	(treft)	(Mari)		clas	7 P. C. C.
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600 00	6 508 21	8 584 94	6,493,48	27.04	20.91	299 78	299 78	246 06	03 72 5 561	0	4.1 m 16+9	
700 00	6,000,03	6,584.70	6,59106	27:53	27.39	308 62	306 62		54 67 5 608	0	< 1 in 16+3	
9 000 CC	8,703 84	G.784 40	6,686 65	20 01	37 87	313 47	313 47	257 64	55 03 - 5 635	0.0	4 1 m 16 · 9	
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00 000	6,869 47.	5,984 73 7,087 DI		28 97	26 63	327 13	327.13	269 56	67 55 5 665	0	• 1 in 1E-9	
,300 00	7,095 10	7,087,01	6,985.17 7,086.11	29 45 29 94	29 30 29 74	333 36 336 66	333 38 . 338 96	274 67	58 51 5 696	.0	4.5 m 1E-0	
71000	7,183 57	7,260.16	7,156,70	30 27	30 02	347 58	342 58	279 52 282 51	56 44 5 702 60 67 5 703	0	< 1 in 1E+9 < 1 in 1E+9	
300 00	7,192.95	7,290 56	7,187,02	30.43								
400.00	7,291,30	7,39171	7,187 02	30 68	30 14	344 DH 348 45	344 08 343 45	263 72	60 34 5 707	a,	< 1 in 1E-9	
,500 002	7,390 02	7,492 50	7,388 54	31 31	30 85 .	362 01	357 01	200 17	61.10;5 fise 1	0	* 1 m 1C+S * 1 m 1E+S	
600 00	7,480 60	7,502 72	7,485 80	31 70	31.14	354.76	354 75	292 20	67.58 5 071	ū	4 1 m 18+9	
7,700 00	7,559 30	7.002.42	7,566 50	32 07	31.42	355 78	356 Fe	253 02	63 17 5 648	0	< 1 m 1E+9	
00 cos, 5	7,059,20	7,792,02	7,688.46	32,40	31:70	357.96	357 96	€194 197	63 78 5 814	0	1 in 16-9	
470 00	7,750 19	7,862.31	7,758 33	32 61	31 50	358 20	388 20	294 93	64 17 . 6 662	ō	<16.16.9	
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	Service Control	Action Control	Set a pro-		20.000 3	356 20	358 70	292.73	65 47 5 471	.0	-,1 in 16-9	
200 00	8 189 20	8 192 32	6 040 40	33 54	32 65	355 20	358.20	292.16	68 05 - 5 423	٥	4 1 m 1E+0	
400 00	8 289 20	8,292 32 8,362 37	8,185 40 8 366 40	33.82	33 13 -	358.20	158 20	291 50	60 02 5 377	, c	1 m 1E+9	
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475 00	9 328 60	9,494 41	9,382 67	36 51	39 43	375 68	378 68	306 63	72 05 5 250	ä	*.1 m 1E+9	
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525 00	9 362 77	9,560 16	9,430 25	36 45	36 44	383 63	383 83	312 40	71 43 5 373	ä	1 m 1E-1	
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re Directional ion Risk Report



Well Geench Fed Com 04 212H
Vo Reference
Vo Reference
Vo Reference
GL 3014.6" + 25 KB @ 3039.60ush
GL 3014.6" + 25 KB @ 3039.60ush
Grid
Urvey Calculation Metrice:
Uruturer or are at 11.
2.00 sigma:
HED Compass_DSN
Text Datum

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37.	336 60	70 46 5 585	0	₹1 m 1E+9		
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70:						

Int. SF.; min separation factor, ES.; min ellipse separation

COMPASS 5000 15 Build 91

Hawkeye Directional Anticollision Risk Report



Novo Oil & Gas, LLC Eddy County, NM SEC 4 - 1235 - R28E 0.00 nce Well: Gooneri Fed Com 04 212H-rrer: 0.00 nce Wellbore OH nce Design Plan #1 Local Co-ordinate Reterence:
I/VO Reference:
I/VO Reference:
MO Reference:
North Reference:
Survey Calculation Method:
Quiput errors are al.
Database
Offset I/VO Reference:

Well Goonch Fed Com 04 212H; GL 3014.6" + 25 KB @ 3039 60ush GL 3014.6" + 25 KB @ 3039 60ush Grid | Minimum Curvature 2.00 sigma.
HED_Compass_DSN.
Offset Datum.

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00 00	2,595 82	2,565.53	2,581 87	: 6 98	8 87	257,31	257.31	239 61	17,70 14 535		- 1 m 1E+9	
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06/09/19 9:31:03PM

rgent point, SE min separation factor, ES min ellipse separation.

Pose 18 COMPASS 5000 15 Build 81

ye Directional sion Risk Report



Ocal Co-ordinate Reference.

VMell Goonch Fad Com 04 212H

VD Reference:
GL 3014 8 * 25 KB @ 3039 60ush
ID Reference:
GL 3014 8 * 25 KB @ 3039 60ush
Gold
Lirvey Calculation Method:
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60	1,191.76	71.84 17.580	Ço:	.,		1
65	1.101-70	71.98 17.567	0	< 1 in 16+9 < 1 in 1€+8		1
84	1,191 74	72 10 17 578 72 23 17 504	1 D:	4.1 tri 1E+8		1
08	1,191 07	72,22 17,504	= 3 :	<1:e) 1E+8		ŀ
42	1.192 10	(2.37/17.483	D.	5 4 m) 1E+9		1
87	1,192.45	72 40 17 466 72 50 17 454 -72 57 17 447	0	4 1 m 1E+9		1.
18	1,192 95 1,193 60	272 672 17 414	0	1 in 1E-9		ı
Co.	1,194 45		0	c t in 16:0		1
19	1,165 50	72.68 17.448	0	*) in 16-6		1
52	11,106 80.1	72.72 17.467 72.75 17.473 77.78 17.496	្ត	จำ ตัวกัสจัย		
12	1,198.37	72 75 17, 473	.05	< 1 in 1E+9		1
B1.	1 200 24	72 78 17 495	0	• 1 in 16•0		45
77	1,205 01	72 77 c 17 524 72 76 17 581	o.	. 4.1 at 1E+9 • 1 at 1E+9		1
15	1,207,967	517/6/1410/AZTS				1
05	1,711,33	72 72 17 656	0	*1 m 16+9 *1 m 16+9		
82.	1,215 15 1,219 42	72 68 17,720	.0	4 1 et 1E-R		
යා	1,219 42	72 63 17 700	.0	≤ tan 1E+0		
76	1,224 19	72 74 17,506 72 72 17,556 72 66 17,720 72 63 11,790 72 57 17,889	0	1 in 1E-D		
95	1,229 45	72 50 8 17, 958	10	(4)1 m 1€49		4
65 - 88	1,735.23	72 42 18 058 72 34 .18 103	0	< 1 in 16+0		l
58	1,245 34	72 24 18 279	Ö	g= 1 at 18+9		1
61 58	1,250 67	72 14 18 405	ò	< 1 m 1E-0		
95	1 783 51	72 04 18 540	70	** 1 th 15+9		1
78		71 92 18 683	Ö	≤ 1 kn 16+9 ≤ 1 kn 16+0		- 1
48	1,211 86 1,260 66 1,269 96	71 80 18 836 71 88 18 996	0	. 1.m 1E-0		- 1
31	1,293 76	71 55 10 105	0	* 1 an 16-9 * 1 an 16-9		
55	1 320 24	71 30 19 516	0			1
99	1,329 64	פום עו יטען די	9	c 1 in 1B+9		1

COMPASS 5000.15 Build 91

Hawkeye Directional Anticollision Risk Report



Novo Oil & Gas, LLC Eddy County, NM SEC 4'- T23S - R28E 0.00 Goonch Fed Com 04 212H 0.00

Local Co-ordinate Roference:
ITVD Roferenca:
IMD Reference:
North Reference:
Survey Calculation Method:
Output errors are at }
Database:
Other TVD Reference:

Well Geonch Fed Com 04 212H
GL 3014.6 + 25 KB @ 3038 Boush
GL 3014.6 + 25 KB @ 3038 Boush
GL 3014.6 + 25 KB @ 3038 Boush
Glid
Minimum Curvature
; 200 sigma
HED Compass DSN
Offiset Datum

Offset De	rsign	SEC 4	- T235 - R	28E Goon	ch Fed C	Com 04 23	H-OH-P	an #1	elat Minimum Besera Memorium			Officer Say Error: 2 8 00 use
Survey Prog	rem 2 0 M	YO .		Y	S. VAF	A STATE OF THE STA	777	M2000	L AT ANGELESS.	MANA A	474 14 14 14 14 14 14 14 14 14 14 14 14 14	Orient Veet Error: 0.00 ust
The last	lence	M On	el St.	Bests Major (LLL AND	Print I	Obst	STEE IS	7 × 3 × 3 × 3	200	Yalla.	Carrent Well Emory
Hetamod	Vertical	Messired	Vertical i	Reference .	Offices	Getrers.	Wall trait	Остопал	Minimum Somern	leten de Bie	A STATE OF THE STA	のでは、10mmである。
Depth	Orpun .	Depth	Oypuh	1.2	中个由量	Centres	Datinte	Elignet	Separation Facia	Seta	Led Probstratty	Warning
(val)	(usft)	(usit)	er (mett)	(well)	(HERL)	livs(t)	(les (l)	(paft)	Separation Factor (usf)	1 HQH	ctor	Varning
	9,477.00		10,231 23		36 66	1.4G0 94	1,460 64	1,395 34	95 60 / 22 270 .	0	< 1 yr 18+9	Both Read Street
	9,476.39		10,231.25		38 60	1,459 02	1,459 02		65 82 22 168	10	€1 of 15.9	
10 300 00			10,231 27		36 60	1,457.09	1,457 09		A8 16 22 023	o.	1 m 1E-9	
10,400 00			10,231 26		38 69	1,455.17	1,455 17	1,356 53	66 63 21 838	ė O.	41 m 1E-9	
10,500.00			10,231 30		33 80	1,453.24	1,453 24			O.	4.1 m 12.5	
	3,403.90	71,450 20	10,231,32	36 43	39 18	1(-51 32	1,451 32,	1,353 37.	67.95 21 358	.0	4 1 m 16+6	
10,700.00	9,485 37		10,231,34	38 83	39.50	1,449 39	1,449 39.	1,380 61	68 75 21 070	*0.4	5 1 in 1E+0	
0,800 00	5 486 77	11,656 18	10 231 35	37.34	40 05	1 447 47	1,447 47			o.	* 1 m (E-0	
10,900.00	9 465 17	11,756 14	10,231.37	37.94	40 69	1,445.55	1,445 55	1,374 74	70 80 20 416	o.	4.1 to 1E+9	
11,000.00	9,469 55		10,231 38	3e 57	41 29	1,443 62	1,443 62		11.97 20.069	C	- 1 et 16 to	
	3		19 231 41	30 27	41.57	1,441,70	1 411 70	1,386 47	73 24 19 686	.0	< 1 m 1⊞ €	
11,200 00	9 492 36	12,056 09	10,231.42	40 03	4374	1 439 75	1,439 78	1,365 18		÷a.	4 1 m (E+2	
11,300 00	9 493 75		10,231 44 ;		43 50	1,437.80	1,437.86			0	< 1 m 1E-9	
11, 100 00	9,495 15	12,256.05	10 :31 45	41 69	44 34	1,435 93	11,435 93	1,358 35	77,58 : 18 508	0	1 a) 16-9	
11,500,00	9 456 34		10 231 48	42 60°	45 22	1,434 91	1,434 01	1.354 61	79 20, 18 106	o.	€ 1 to 1E+9	
11,600 00	9 497 94	15 ebe til	10,231.49	43.54	46 14	1,432 09	1,432 09	1,351 19		.0	. 1 in 16 · 8	
11,700 00	9 490 34		10.231 51	44 53	47,10	1,400 19	1.430.16	1,347,51	82 66 17 303	10	51m1E+9	
11,800,00	9,500.73		10 231 53	45 56	48 10	1,428.24	1,428 24	134376	84 48 16 805	o.	e,1 in 1E+9	
11,900,00	9 502 13	12,785 99	10 231 55	46 02	43 13	1,426 32	1,426 32	1,339.94	85 36 - 16 513	0	4 1 m 15+9	
12,000 00	9,502 53	12,855 93	10,231 56	41,72	50 19	1,424.40	1,424 40	1 336 07	56 33 18 127	0	4.1 m 18-9	
12,100,00	9.504.92	15,500 81	10,231 58	48 84	51 76	1,422,45		1,532.15		o.	€1 in 1E+#	
12 200 00	9 506 32		10 231 60	SO 00	52.40	1,420.50	1.420 56	1,228 17	97.39 t5 376	Ġ	. 587 (1925 41 m 1649	
12,300.00	9 507,71	13,155 87	10,231,62	51 18	53 55	1 416 53	1 418 63	1.324 14	94 49 15 013	-6	*1 m 1E-9	
12,400,00	9,509 11		10,731 63	92 36	54.72	1,416 71	1,416 71	1,326 07	95 64 14 660	0	4 1 to 1E+6	
12,500.00	R 510 51	13,355 63		53 62	55 62	1,414 79		1 315 95		ü	1 in 15-9	
12,000,00	9511 80	£3,430,81	10 231 57	54 67	57,13	1,412.87	-1,412.87	3,31(8)	101 001:13 980	70 f	< 1 m 1E+9	
12,700 00	0,613.30	13,555.79	10,23169	56 14	58 27	1,410 95	1,410.65	1 307 62	103 33 . 13 655	o)	* 1 m 1E+9	
12 800 00	9 514 70	11 635 77	10 231 70	67, 43	59 63	3 409 (C)	1,409 03	1,300 40	105.63 13.339	0	< Ter (E+9	
12,900 00		13,755.75		58 74	60 90	1,407 11	1,407.11			0	4.1 m.1E+3	
13,000 00	9,517,40 9,516,58	13 855 73		60 07	62 20	1,405 10		1 294 85		Ю.	4.1 en 1E-0	
100	1.44 (1.944)	2 65 6 10	10,231,76	61 41	63 50	1,403 27	1,403.27	1,290 54	11273 12 448	0	€ 1 m 16-9	
13 200 00	8,520 28	14 055 70	10,231 77.	62,76	64 63	1,401 35	1,401 35	1,285.20	115 15 12 170	έć.	4 1 m 1E-9	
13 300 00	9,521,68	14,155 68	10,231.75	64 13	66 17	1,399-45		1,281,63		٥,	4 1 in 1E+9	
13,400 00		14,255 68		55 51	67 62 :	1,307 51		1,277,44		ē	< 1 pt 16+8	
13 600 00	9,525 87	14,355 64 14,455 67	10 231 83	68.01 68.31	68 58	1,355 50		1,270 03		0	4 1 m 1E-8	
	The same	130000	10 521 64	96 31	70 20	1,393.67	1,393 67	1,268.60	125 07 .11:143	(6	- 1 et 1€-1	
13 700 00	9,527,78	14,555 GJ	10,231 86	59 73	71.64	1,331.75	(1,291,75	1,264 14 3	127.00 10 907	ē	. 4 1 m 1E-9	
13,800,00	9 523 65	14 653 50		71 18	73.04	1,369 83	1,369 63	1,259 67	130 16 10 676	0	4 1 m 1E+9	
	9 530 05	14,755 56	10,231 90	72 59	14 45	1,287.01	1,367,91	1,255 18	132 73 10 457	0	• 1 in 1≧•8	
		14,855 52		74 04 75.49	75.87 77.29	1 345 69	1,385 59	1,250 88	135 32 10 243	0	* 1 m 16+8	
a different sections	Same	A 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		2.20	-2477%	1.364 U/	1,384 07	1,248 15	137.82 10 035	0	⊀ tim tE+9	
14 200 00			10 231 95	76.95	78 73	1,382,15	1,362,15	1,241.62		.0	≠ 1 m 1E+9	
	9 535 64		10,23197	76 42	80 17	1,380 24	1.360 24	3 237 07		Ü	5 1 m 1E-9	
14 400 00	9,537,03	15,255 48	10,237,98	79 69	61 62	1,376.32	11,378 32	1,232,50	149 82 , 9 492	ò	< 1 in 18 0	
	R 530 79		10 232 50	61 37	63 07 63 07	1.375 40	1,376 40	1,227.93	145 47 9 271	8	: 4.1 in 1E+9	
			Colored V	5050	48.7	944.77	400	1.227 42	148 73 8 252	C	* 1 m 16+8	
	9,539 00	15 354 95	10 232 60	81.96	83 07	1 376 241	1 376 24	:1,227.37	145 57 . 9 245	o.	24.1 in 1849	. SF

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation Page 20

06/09/19 9:31:03PM

/e Directional ion Risk Report



ocal Co-ordinate Reference: VO Reterence: 1D Reterence: ID Reterence: Iorin Reference: urvey Calculation Method: turput circle are of etabase: Iffset TVD Reference:

Well Goonch Fed Com 04 212H Well Geonch Fed Com 04 212H
GL 3014.6+25 KB @ 3039 80ush
GL 3014.6+25 KB @ 3039 80ush
Grid
Milimum Curvature
2,00 sigma
HED_Compass_DSN
Offset Datum

Plan	1#1	A A CONTRACTOR OF THE		stanen auror	CONTRACT SAME EFFORT: 0 00 USA
talan				100	Officet Well Error: 0.00 usf
		Miranaut Segura	lton Rrs	hed Probability	Officer Well Error 0.00 ush
	Ellejise's ;	Beparalian Parl		ration and Coffesion	
20	(usft)	(usn)	Pa Pa	iter .	
2			٥	< 1 in 1E+8	
•	39 74	0 27 140 573 0 68 40 737	. 6	< 1 in 16 • 0	
î'	an na 36 31	0 68 40 737 11 70 23 548	o` u	1 in 1E+8 1 in 1E+8	
	37 60	2 42 10 551	ä	** 1 in 16+9 * 1 in 16+9	
	30 Bt	313 12771	0.	* 1 in 1E+9	
	38 16	3 85 19 393	0		
	35 45		ě,	c 1 an 1⊞+0 ; • 1 an 1⊞+9	
í,	34 73	5.28 7.572	Ö.	4:1 et 1F-Q*	
Ċ	3461	200 8000	ů.	* 1 km 1E+9 : * 1 km 1E+9	
	33 29	6 72 5 956	0	* 1 in 1E+9	
1	32 58	7.43 5.382	Ö	* 1 in 16+9	
	31 60	8 15 4 908 8 87 4 512	o,	4 1 Mt 1E-0	
	30 43	959.4174	0		
i	29 71	10 30 3 694	ó	<1 in 1E+9	
ċ	28 69	11.02 3.631	45		
	28 28	11.74 3.400	D.	<1 m 1€+9 <1 m 1€+9	
	27.56	12 45 3 213	- o	4.1 m 1E49	
ŗ	29 84	11.74 3 400 12.45 1 213 13.17 3 036 13.69 2 881	0	<1 m 16-9	
	35 12	13 49 : 2 881	0.	< 1 st 1E+9 :	çç
	25 51 25 16	14 55 2 753 15 18 2 657 15 80 2 590	0	* 1 m 1E-9 * 1 m 16-9	
i.	25,16	15 18 2 657	Ģ ⊄ .	* 1 m 16.9:	
	25 11. 25 50	15 80 12 590	7.0	4 1 m (E/9) ⊂1 m (E/9)	ES SF
	28 49	16.41 2.554 17.02 2.556	00) 0	*1n:8-9	\$ F .
		17 65 2 568	0		
	36 20 30 75	19 37 7 574	0	< 1 m 16+9 < 1 m 16+0	
١.	233 64	18 37 2 674 18 12 2 759 19 80 2 549	0 0 0	d f my think	
7	20.70	19 90 2 549	(0)	*1 in 1E+D	
	40.15	20 69 -2 941	0	4 1 m 16+8	
	43 69	21 50 3 032 22 32 3 122 23 10 3 209	Κ 0 ,	4 1 in 12+0"	
ji j	17,36	22 32' 3 122	3.0	* 1 m 1E+8	
1	51,15	23 16 3 209 24 81 3 202	. 0: ₹6:	< 1 an 16-9	
	ы 97	24 67 3 372	o	e in id-b	
ra V	4 /11 - 6 1				
	62 98 67.05	25.73 3.447 29.61 3.520	o.	* 1 in 16+9	
	771.15	97.40 3.640	0	V 1 vn 1E+D	
3	75 30	28 38 3 953 29 28 3 714	30.1	< 1 m 1E-9	
	79 47	29 28 3 714	30)	4 1 en 16+9	
e.	83 67 87,00	30 18 3 772 31 09 3 827 32 00 3 879	-0,	< 1 in 1E+9	
i	87,00	31 09 3 827	-0-	4 Sant Shall	
ŕ	92 14' 96 41	32 92 3 929	D	1 in 1E-0	
Š	100 69	33 84 3 978	0	< 1 in 16+9	
	1907.105.00		153		
,	104 98 109 29	34 76 4 020	(D)	4:1 in 1E+9	
	113 60	35 85 4 562 38 62 4 103	.0	<.1 in 16+9 < 1 in 16+9	
;	117.50	37 55 4 141	0.	* 1 m 1E+9	
į.	122.26	38 45 4 177	(0)	4 1 m 1E+9	
2	120 00	2.39(42.14.212)	(0)	e jan i Eye	
}	130 05	40 36 4 245 41 30 4 276	0	< 1 m 1E-9	
÷	135.31	41 30 4 278	0	< 1 kg 1E+9	
	139 67	42 24 4 305 43 19 4 335	0	< 1 in 1€+9 4 1 in 16+9	
	W21 705	400		1.0	
j	148 41 102 78	44 13 4 363	0	< 1 m 1E+8	
á	157.18	44 13 4 363 45 00 4 369 46 03 4 414	10	<1 or 1E-9	
0	421.33	46 93 4 438	0.0	< 1 m 1E+0	
	165 93	47 00 4 492	0	€ 1 in 15+9	
	170 32	48 69 4 484	0	1 in 16+0	
۶.	174 71	49 64 4 505	0	4 1 m 12+9	

COMPASS 5000 15 Build 91

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Hawkeye Directional Anticollision Risk Report



Novo Oil & Gas, LLC, Eddy County, IM SEC 4: T23S - R28E 0.00 Georich Fed Com 04 212H: 0.00

Local Co-ordinate Reference:

TVD Reterence:

MD Reterence:

North Reterence:

Survey Calculation Method:

Output errors are at

Database:

Others IVD Reterence:

Well Geonch Fed Com 04 212H GL 3014.6 + 25' KB @ 3039 Goust GL 3014.6 + 25' KB @ 3039 Goust Grid Grid Minimum Curvature; 2.00 sigma HED_Compass_DSN; Offset Delum

Refere	The state of the s				日本の日本日本の日本	的话的是对于一起	100 Sept. 124	Marie Con Tark	LESS CONTRACTOR	* 10 T	to the second of the King	The second second
		Offse	nas (2.1)	Serie Major s Reference	la is	Saleres	Gerta	nce				Garat Veal Error 0
antid (Centient	Membered	Vertical	Reference	Offset			thetween .	Minimum Separati Separation Factor	m Ru	and Probability	
esti)	(urefu)	Depth (us#)	Vertical Depth (usft)	(WARL)	(vsta	Gentlies (UST)	Orstania Double	Eligners	Beparation Fector (usf)	Sept	ration of Colleion	
	6.214 77	6,284 87	E thous	25 61		Mary - Allen See Links		diametri. A			er i i i	
400 00	6312.58	8 354.77	6 '97 64	25 G5	25 46 25 96	729 80 205 29	329 90 335 26	179 11		.0	< 1 in 18+9	
500 00	6 410 40	6,484 58	8,3293.31	26 56	26 44	740 62	240 62	107.91		O.	< 1 in 1E+9	
600 00	6,508 21	6 584 43	6,492 98	27 04	26 92	245 98	245.98	192 31	753 67 (4 583	ō.	4 1 to 1E-9	
700.00 800.00	6 606 03	6,784 13		27 53	27 40	251 34	261,34	196 71		0	1 in 1E+5	
				25 (11	27 68	256.70	258.70	201;12	55 59 4 618	ō	e i m iE+S-	
900 00	5 801 65	6 853 99		25 49	28 36	262 07	262 07	705 53	56 55 4 636	٠.	4.1 m.1E-9	
100 00	6 899 47 6 897 20	6 984 06 7 086 43	6.683.69	29 97	28 84	267 44	267 44	209 93	57 51 4 850	0	×:1 an 16+9	
200.00	7.095 10	7,188.57	5 084 44 ** 7 085 36	29 45 29 94	29 31 39 75	272.26	272.76	213.77	58 49 4 655	U	4 1 m 16+9	
270 00	7,163 57	7,259 79		30 27	30.04	27 6 26 27 6 59	276 26 276 66	716 80 216 50	59 46 4 648 60 12 4 635	0	1 m 1E+9	
						4 10 10 1		1 80 100	No. 4 to 1 4 4	12.	47256	
300 00 400 00	7,192 65	7,290.23	7,186 35 7,287 29	30 42 30 88	30 16	279 65 262 52	279 85 282 52	219 25 221 25	-60 40 4 630°	0	* 1 m 1E+9 -	
500.00	7,190 32	7,492 49	7,368.14	31.31	30 88	262 52	287 52	221 25	61 27, 4 611	0	< 1 m tE+9	
,600 OD	7,459 60	7,592 66	7,486 60	21.76	31,10	266 6C	286 SC	223 85		F G	< 1 m tE-D	
700 an	7,589 30	7 692 65		32 07	31 47	267 95	287.95	224 50		.0	in iE.9	
600 00	7,660 20	7,792 56	7,688 20	32.40	31.75	286 77	288 77	224 50	63 97: 4 514	(a)	1 in 16:0	
670 00	7,759 10	7,602.55	7,756 19	32 61	31 94	288 94	288 94	224 57	64 38 , 4 466	.0	< 1 in 18+9	
900 00	7,769 20	7.892.85	7,788 20	32 70	32 03	296 \$4	288 94	224 40	64 55 - 4 477	.0	4 1 m 1E+9	
000 00	7,869 20	7,997 55	7,869 20	32 98	32 31	298 34	288 94	273 83	65 11: 4 430	ø.	41 m te-B	
100 00	7,989 20	6,032 55	7,968.70	33.26	37, 90	288.94	259 84	223 27	CS 69 4 359	,0 (4,1 m 16+9	
200 00	8,089 20	8 192 55	8.069 20	13 54	32 68	758 54	288 04	222.63	66 25 4 397	0	1 n 16-9	•
300 00	6,180 20	8,292,55	8,158 20	33 62	33.15	286 54	288 94	727 12	56 82 4 324	Ø,	* 1 m 1E+9	
400 00 500 00	8,799.20 5.389.20	8,392 55	8,288,20 8,383,20	34.11	33 47	284 94	285.94	1221,547	67 40 4 287	0	4 t in 18-9	
500 00	8,480 20	6,552,55	8 383 20 8 488 20	34 40	33 76 ;	266.94 766 64	285 94	270 97		0	1 4 16-9	
5.74	100	250 CH20	0.10.20.20m	34 68	4415.50	19911	288 94	250 35	68 56 4 214	:0-	* 1 m 16+9	
700 0B 800 00	8 580 20	6 692 55	0,586 20	34.57	34 35	265 94	758 94	215 80	69 15 4 179	Ů.	-1 m 1E+0	
900 00	0,685 20 5,769 20	8 792 55 8 892 55	5,685 20 5,788 20	35 26 35 55	34 64	288 94 288 94	268 94 268 94	219 21		0	< 1 m (E+F	
D00 DX	8 883 20	8,092 55	8.889 20	35 85	35 74	288 94 198 94	268 94	218 62 218 63	70 32 4 109 70 91 4 075	0-	* 1 in 1E+9 * 1 in 1E+9	
108 90	8 996 09	0 009 45	89508	30 16	35 55	785 94	268 94	217 40		0	e i m i£+0	
126 00	901419	1000	2003 7030	-02	3.00	2.24 %		629123				
150.00	3 023 17	9,117,55	9,013,19	35 21 35 38	35 61 35 66	289 00 286 26	289 GQ -	217.34	71.65 (#033): 71.50 (#029)	0	1 n 1E-0	
175 00	0 063 07	9 167 32		35 34	35 76	269.76	289,78	217.46	71.59 4.029	0	+ tin 1E+9 + tin 1E+9	
200 00	9 088 (1)	9 191 85	9.087 91	36 39	35 83	290 b4	290 54 2	210.46	:7205 4031	a.	* 1 at 1E+9	
225 00	8,113,00	9,216 35	9,11260	36 43	35.91	201 03	291 63	219 43	72 215 4 039	b.	• 1 m 1E+9	
250 00	9,137.06	9 240 42	9.136.00	36.47	35 98	293 12	293 12	220 80	72:32:4053	-0:	<1 at 16-9	
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CC Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Paga 22

e Directional sion Risk Report



ocal Co-ordinate Reference: VD Reference: ID Reference: orth Reference: orth Reference: orth Selection Method: lutput errors are al (1) database: fifted VD Reference:

Well Goonch Fed Com 04 212H GL 3014/6" + 25 KB @ 3039 60ush GL 3014/6" + 25 KB @ 3039 60ush Grid Minimum Curvature

2.00 sigma HED_Compass_DSN Offset Datum

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Hawkeye Directional Anticollision Risk Report



Company, Food Commy, IMM Reference Site From: SEC 4 - 1238 - R286 Site From: SC 4 - 1238 - R286 Reference Design:

Novo Oil & Gas; LLC

Goonch Fed Com 04 212H 0.00

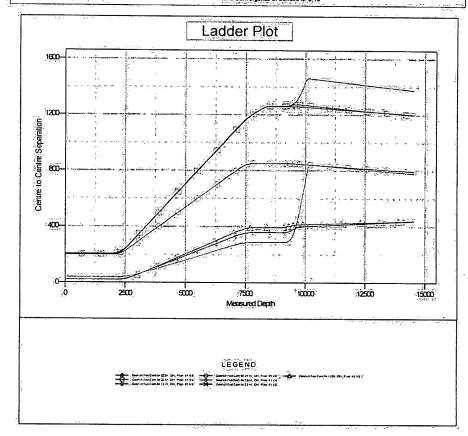
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Well Goonch Fed Com 04 212H GL 3014.6 + 25 KB @ 3039 80ush GL 3014.6 + 25 KB @ 3039 50ush Gnid Minimum Curvature

2.00 sigma HED_Compesa_DSN Offset Datum

Reference Depths are relative to GL 3014.6" + 25 KB @ 3039.60ush Offset Depths are relative to Offset Datum Central Meridian is 104* 20* 0,000 W.*

Coordinates are relative to: Goonch Fed Com 04 212H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone Grid Convergence at Surface is: 0.13*



int, SF - min separation factor, ES - min clipse separation

COMPASS 5000 15 Build 91

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

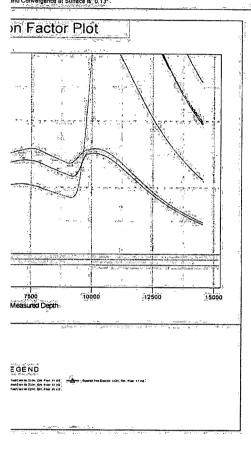
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Well Goonch Fed Com 04 212H
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Gis 3014 0° 25 KB @ 3039 50ush
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Minimum Curvature
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HED_Compass_DSN
Offset Datum

coordinates are relative to Goonch Fed Com D4 212H coordinate System is US State Plane (1983) New Mexico Eastern Zone and Convergence at Surface is 0,131*.



nt SF - min separation factor, ES - min ellipse separation

DRILL PLAN PAGE 1

fee/fee/Fed

Drilling Program

1. ESTIMATED TOPS

Formation Name	TVD KB	MD	Bearing
Quaternary	0′.	0'	water
Rustler anhydrite (surface csg @ 594' MD)	100"	100′	N/A
Castile gypsum	9.70'	970'	N/A
Lamar limestone	2473'	2476'	N/A
Bell Canyon sandstone	2539'	2542′	hydrocarbons
Cherry Canyon sandstone	3614'	3641'	hydrocarbons
Brushy Canyon sandstone	4627'	4677′	hydrocarbons
Bone Spring limestone	6070'	6152′	hydrocarbons
Avalon shale	6578'	6672'	hydrocarbons
1 st Bone Spring sandstone	7037	7142′	hydrocarbons
2 nd Bone Spring carbonate	7250'	7358′	hydrocarbons
2nd Bone Spring sandstone	7785′	7886 ⁷	hydrocarbons
3d Bone Spring carbonate (inter. csg @ 8900' MD)	8082′	8193"	hydrocarbons
(KOP)	8996'	9107"	hydrocarbons)
3 rd Bone Spring sandstone	9016	9137′	hydrocarbons
Wolfcamp XY carbonate	9359'	9519′	hydrocarbons
Wolfcamp A carbonate (pro. csg @:145412 MD)	9519'	13150′	hydrocarbons
TD A CONTROL OF THE PARTY OF TH	9539	14541'	hydrocarbons

2. NOTABLE ZONES

Wolfcamp A carbonate is the goal. All perforations will be ≥ 330 ' from the dedication perimeter. Closest water well (C 00800) is 0.87 mile southeast. Water bearing strata were found from 50' to 155' in the 200' deep well.



DRILL PLAN PAGE 2

fee/fee/Fed

3. PRESSURE CONTROL

A 13.625" 5,000-psi BOP system will be installed on a multi-bowl (speed head) wellhead with a 13.625" flanged casing spool. Top flange of casing spool will be set in a cellar below ground level. BOP system will consist of a single pipe ram on the bottom, mud cross, double pipe ram with blind rams on bottom and pipe rams on top, and annular preventer. Blowout preventer will be installed on top of the 13.375" surface casing and will remain installed to TD of the well. Wellhead, blowout preventer, and choke manifold diagram are included.

BOP system will be isolated with a test plug and tested by an independent tester to 250-psi low and 5000-psi high for 10 minutes. Variance is requested to use a co-flex hose between the BOP system and choke manifold. A typical co-flex pressure test certificate is attached. An equipment specific co-flex pressure test certificate will be on site when testing the BOP.

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

4. CASING & CEMENT

Variance is requested for an option to use a surface rig to drill the surface hole, set the surface casing, and cement the surface casing. If the schedule between rigs would preclude presetting the surface casing, then the primary rig will MIRU and drill all of the well.

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



DRILL PLAN PAGE 3

fee/fee/Fed

Hole O. D.	Set MD	Set TVD	Casing OD	Weight (lb/ft)	Grade	Joint	Collapse	Burst	Tension
17.5"	0' - 594!	0' - 594'	13.375" surface	54.5	J÷55.	ВŢĆ	1.125	1.125	1.60
12.25"	'0' - 8900'	0'- 8789'	9.625" intermed	43.5	HCL- 80	втс	1.125	1.125	1,60
8.5″	0'- 14541'	0′ – 9539′	5,5" product.	20	P-110	TMK DQX	1.125	1125	1.60

Alternate Production Casing:

Hole O. D.	Set MD	Set TVD	Casing OD	Weight (lb/ft)	Grade	Joint	Collapse	Burst	Tension _i
8.5"	0' - 14541'	:0" - 9539"	5.5" product.	20	P-110	GBCD	1.125	1.125	1.60
8.5″	0' = 14541'	0′ - 9539′	:5.5″ product.	20	P-1110 HC	<u>Ĉ</u> Ĉ	1.125	1.125	1.60

Alternate weights and grades could be substituted to meet maximum stimulation pressures;



fee/fee/Fed

Name	Type	Sacks	Yield	Gu. Ft.	Weight	Blend	
Surface	Tail	509	1.62	824	13.8	Class C + gel + accelerator + LCM	
TOC = GL		1	00% Exce	SS	Cent	ralizers on every jt to GL	
Intermediate Stage	Lead	690	2.28	1573	11.9	Class C or H+ fluid loss + retarder + LCM	
*1	Tail	200	1.34	268	14.8	Class C or H +/ fluid loss + retarder + LCM	
Intermediate Stage	Lead	542	2.28	1235	11.9	Class Cor H + fluid loss + retarder + LCM	
* 2	Tail,	200	1.34	268	14.8	Class Cor H + fluid loss + retarder + LCM	
TOC≔GL		2	0% Exces	<u>S</u> .	Centralizers on bottom 3 jts and then 1 centralizer every 4th jt to GL		
Production	Tail'	893	1.89	1687	13.0	Class H +fluid loss + retarder + LCM	
*Stage tool set a	5. 2. 2. 2.		0% Exces	ş'	- '0 ' '0' ''	None planned	

^{*}Stage tool set at ≈4000'.

5. MUD PROGRAM

An electronic PVT mud system will monitor flow rate, pump pressure, stroke rate, and volume. All necessary mud products (barite, bentonite, LCM) to control weight and fluid loss will be on site at all times. Mud program may change due to hole conditions. A closed loop system will be used.

Type	Interval (MD)	lb/gal	Viscosity	Fluid Loss
fresh water spud	0' - 594'	8.3	30 - 60	NC
brine diesel emulsion	594' - 8900'	8.8 - 9.2	35 - 45	, NC
OBM	8900' - 14541	8.8 - 12.5	35 = 65	.4 = 6



DRILL PLAN PAGE 5

fee/fee/Fed

6. CORES, TESTS, & LOGS

No core or drill stem test is planned.

A 2-person mud logging program will be used from ≈3000' to TD.

GR log will be acquired by MWD tools from the intermediate casing to TD.

7. DOWN HOLE CONDITIONS

No abnormal pressure or temperature is expected. Maximum expected bottom hole pressure is ≈ 5084 psi. Expected bottom hole temperature is ≈ 1.65 ° F.

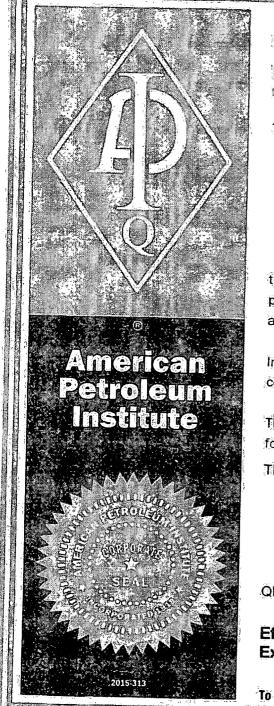
An H2S plan is attached.

8. OTHER INFORMATION

Anticipated spud date is upon approval. It is expected it will take ≈3 months to drill and complete the well.

Novo owns fee leases in the S2 Section 4. Novo has NMOCD approval to be the operator in the W2 Section 4 via NMOCD Case 20184 and R=20578.





Certificate of Authority to use the Official API Monogram License Number: 16C-0383

The American Petroleum Institute hereby grants to

COPPER STATE RUBBER, INC. 750 S. 59th Avenue Phoenix, AZ

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1° and API-16C and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: 16C-0383

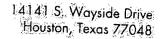
The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Flexible Choke and Kill Lines at FSL 0, FSL 1, FSL 2, FSL 3

QMS Exclusions: No Exclusions Identified as Applicable

Effective Date: MARCH 28, 2017 Expiration Date: APRIL 21, 2019

To verify the authenticity of this license, go to www.apl.org/compositelist.





Phone 713-644-1491 Fax 713-644-9830 www.copperstaterubber.com sales@copperstaterubber.com

February 23, 2018

Independence Contracting Drilling 11601 N. Galayda St. Houston, Texas 77086

Subject:

Purchase Order No.: PO00116446

Date: February 23, 2018

Specialties Company File No.: CSR / SPECO-81069

Equipment:

Copper State Rubber Choke/Kill Hose Assembly, 10KSI MAWP X 15KSI

T/P, API 16C FSL3, Fire Resistant Cover, Complete 4-1/16" 10KSI MAWP Flange With BX155 SS Lined Ring Groove Each End. H2S

Suited.

1EA: 3" ID X 75Ft. S/N-33851

CERTIFICATE OF COMPLIANCE

This is to certify the above referenced equipment meets or exceeds the following requirements and were manufactured from same material specification and manufacturing methods as prototype assemblies for referenced specifications.

- I. COMPLETE HOSE ASSEMBLY
 - API Certificate of Accreditation for Spec: Q1 (Quality Programs) and Spec.: 16C
 - 1. Copper State Rubber, Inc. Certificate No.: 16C-0383
 - CSR Specification No.: 090-1915C B.
- PHYSICAL/CHEMICAL PROPERTIES OF METAL COMPONENTS 11. A.
 - API Spec. 6A, latest edition
 - API Spec. 16A, latest edition B.
 - NACE Standard MR0175, latest edition C.
- WELDMENTS/NDE REQUIREMENTS III.
 - Section IX, ASME Boiler & Pressure Code, 1986 Ed.,
 - B. CSR/Specialties Company WPS/PQR Nos.: 911171-1, and 911171-2, Rev. 05 dated June 2005

III. WELDMENTS/NDE REQUIREMENTS (continued) C. API Spec. 6A, latest edition D. API Spec. 16A, latest edition

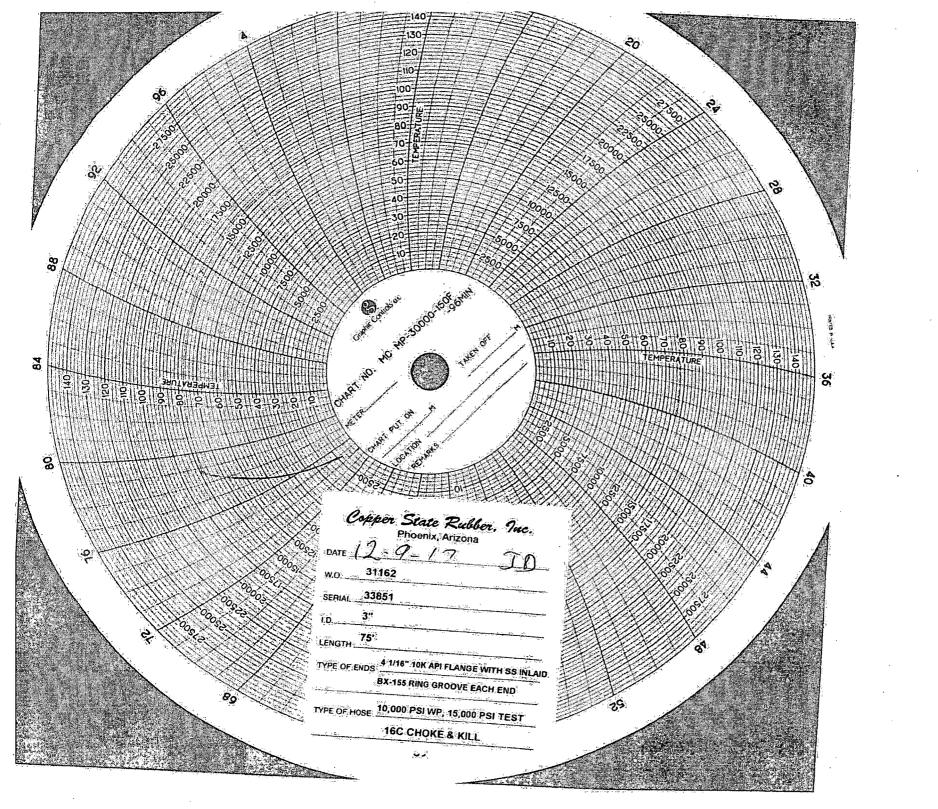
Sincerely,

Joe Leeper, Technical Department



Visual Inspection / Hydrostatic Test Report Manufacturer Copper State Rubber Inc. Hose Type Choke and KIII Pressure Rating 10,000 PSI MAWP X 15,000 PSI T/P Spec Number 090-1915C-48 FSL Rating FSL 3 Serial Number 33851 Size ID 3" Length 75' Date December 9, 2017 Shop Order Number 31162 Connections Description: 4 1/16" 10K API FLANGE WITH SS INLAID BX-155 RING GROOVE EACH END Traceability of Terminating Connectors Insert Male Nut Female Flanges Hubs Other ... Connector 1 14C1 V4760 CSR-H1263 Connector 2 14C1 V4760 CSR-H1265 Comments Calibrated Devices Pressure Recorder 07459 Calibration Date 1/23/2017 Pressure Gauge 111291-2 Calibration Date 1/23/2017 *This report signifies that the product has been visually inspected for defects in the interior tube, recess, gasket, cover and branding and all have been found to be conforming. Comments Hydrostatic Testing Requirements Length after test 60 Min @ 15,000 psi (-0/+500 psi) 75' ÖAL Phil Spider Witness By: Supervisor

> INDEPENDENCE CONTRACT DRILLING P.O. NO.: PO00116446 DATE: FEBRUARY 23, 2018 FILE NO.: CSR 7 SPECO-81069



Novo Oil & Gas Northern Delaware Goonch Fed Com 04 Casing Variance Request

A variance is requested for an option to use a surface rig to drill the surface hole, set the surface casing, and cement the surface casing. If the schedule between rigs would preclude presetting the surface casing, then the primary rig will MIRU and drill all of the well.

Gnooch Fed Com 04 212H Alternative Casing Spec Request

Novo Oil & Gas Northern Delaware, LLC respectfully requests flexibility in the production casing spec in the event that drilling conditions and/or equipment availability determines the need for an alternate casing. The alternate casing specs are specified in the attached drill plan. The alternate casing spec sheets are attached.

Rev. 1 (08/25/2015)

		I E K I G H I C C	'N NEC T
Committee of the second of the second	METERS OF THE SECOND SE		Alexander Representation for E. S.
		town party of the	when the it don't dealer up not be an

Casing:

5.5 OD, 20 ppf

Casing Grade: P-110

Connection:

I O N S TM

GB CD Butt 6.300

Coupling Grade:

API P-110

A CONTRACTOR OF THE STATE OF TH	PIPE BODY GEOM	ETRY	
Nominal OD (in.)	5 1/2 Wall Thickness (in.)	0.361 Drift Diameter (in)	4.653
Nominal Weight (ppf)	20:00 Nominal ID (in.)	4.778 API Alternate Drift Di	1912 (Arrente) in Section 1912
Plain End Weight (ppf)	19:83 Plain End Area (in.3)	5.828	The state of the s

Material Specification	P-110	Min. Yield Str. (psl)	DRIMANCE: 110,000 Min. Ultimate Str. (psi) 125,000
Collapse	to enter the plant of the last	Tension	Pressure
API (psi)	A house a many it can be proprietely freely before in	Pl. End Yield Str. (kips)	641 Min. Int. Yield Press. (psi) 12,640
High Collapse (psi)	N/A	Torque	Bending
	2,42	Yield Torque (ft-lbs)	74,420 . Build Rate to Yield (°/100 ft) 91.7
N 1 C 1917 1. Codes to the code of the cod		The second of the same and the second of the	The second of th

	* GB CD Butt 6.300 (OUPLING GEOMETRY
Coupling OD (in.)	6.300 Makeup Loss (in.)	4,2500
go argaine came of free frequencies interes of the minimum interest interest and in the French of the	the same of the sa	the second contribution to the second contribution of the second contributi
Coupling Length (in.)	8.500 Critical Cross-Sect. (in	8.527

Material Specification	API P-110	Min. Yield Str. (psi)		/EFFICIENCIES Min Ultimate Str. (psi)	125,000
Tension		Efficiency	ensemble and the second	Bending	in and the species of
Thread Str. (kips)	667	Internal Pressure (%)	100%	Build Rate to Yield (°/100 ft)	80.0
Min. Tension Yield (kips)	891	External Pressure (%)	100%	Yield Torque	and a state of
Min. Tension Ult. (kips)	1,013	Tension (%)	100%	Yield Torque (ft-lbs)	31.180
Joint Str. (kips)	667	Compression (%)	100%	m constitutivitati parti de un de la	
er av striker i		Ratio of Areas (Cplg/Pipe)	1.46		

MAKEUPTO	DRQUE
Min. MU Tq. (ft-lbs) 10,000 Max: MU Tq. (ft-lbs)	20,000 Running Tq. (ft-lbs) See GBT RP
	Max: Operating Tq. (ft-lbs)* 29,620
Units: USCustomace (Ibm. In. PECIM)	to the contract of the contrac

Units: US Customary (lbm, in., *F, lbf)

See attached: Notes for GB Connection Performance Properties.

GBT Running Procedure (GBT RP): www.gbtubulars.com/pdf/RP-GB-DWC-Connections.pdf Blanking Dimensions: www.gbtubulars.com/pdf/GB-DWC-Blanking-Dimensions.pdf

Connection yield torque rating based on physical testing or extrapolation therefrom

¹ kip = 1,000 lbs

^{*} See Running Procedure for description and limitations.



U. S. Steel Tubular Products

5.500" 20.00lbs/ft (0.361" Wall) P110 HC USS-CDC®

MECHANICAL PROPERTIES	Pipe	USS:CDC [®]	
Minimum Yield Strength:	110,000		psi .
Maximum Yield Strength	140,000	<u>्र</u> 25	pŝi
Minimum Tensile Strength	125,000		psi
DIMENSIONS	Pipe	USS-CDC [®]	
Outside Diameter	5.500	6.050	in.
Wall Thickness	0.361		∄ã ,.
Inside Diameter	4.778	4.778	
Standard Drift	4.653	4 653	ina
Alternate Drift	ಾರ.	 .	in.
Coupling Length	**************************************	9.250	
Nominal Linear Weight, T&C	20.00	ಎ	lbs/ft
Plain End Weight	19.83	%_ = :	lbs/ft:
SECTION ÁREA	Pipe	USS-CDC [®]	
Critical Area	5:828	5.828	sq. in.
Joint Efficiency	· 2	100.0	%
PERFORMANCE	Pipe	USS-CDC [®]	
Minimum Collapse Pressure	12,200	12,200	psi
External Pressure Leak Resistance		9,760	psi
Minimum Internal Yield Pressure	12,640	12,370	psi
Minimum Pipe Body Yield Strength	641,000		Ibs
Joint Strength		688,000	lbs
Compression Rating	. 4	413,000	lős:
Reference Length	1. <u>1.5.5.</u>	22,933	. <u>E</u>
Maximum Uniaxial Bend Rating	A Section 19	59.1	deg/ii00:ft
MAKE-UP DATA	Pipe	USS:CDC [®]	
Make-Üp Loss:	. 174 W	4 63	in.
Minimum Make-Up Torque	· Party	10,500	ft-lbs
Maximum Make-Up Torque	1-1-	13,000	ftilbs
Connection Yield Torque	V-4,	16,100	ftilbs

^{1,} Other than proprietary collapse and connection values; performance properties have been calculated using standard equations defined by API 5C3 and do not incorporate any additional design or safety factors. Calculations assume nominal pipe QD nominal wall thickness and Specified Minimum Yield Strength (SMYS).

Legal Notice

USS - CDC (Casing Drilling Connection) is a trademark of U.S. Steel Corporation? This product is a modified API Buttress threaded and coupled connection designed for drilling with casing applications. All material contained in this publication is for general information only. This material should not therefore be used or relied upon for any specific application without independent competent professional examination and verification of accuracy, suitability and applicability. Anyone making use of this material does so at their own risk and assumes any and all liability resulting from such use U.S. Steel disclaims any and all expressed or implied warranties of fitness for any general or perfection.

^{2.} Unlaxial bending rating shown is structural only, and equal to compression efficiency.

Torques have been calculated assuming a thread compound friction factor of 1:0 and are recommended only. Field make up torques may require adjustment based on actual field conditions (e.g. make up speed temperature, thread compound etc.).

^{.4.} Reference length is calculated by joint strength divided by nominal threaded and coupled weight with 1.5 safety factor.

^{15.} Conhection external pressure leak resistance has been verified to 30% API pipe body collapse pressure following the guidelines of API, 5C5 Call III.



SUPO Data R

APD ID: 10400045313

Submission Date: 08/02/2019

Highlighted data reflects the most

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

recent changes

Well Name: GOONCH FED COM 04

BUREAU OF LAND MANAGEMENT

Well Number: 212H

Show Final Text

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

Section 1 - Existing Roads

Will existing roads be used? NO

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? NO

Section 3 - Location of Existing Wells

Existing Wells Map? NO

Attach Well map:

Existing Wells description: Fee Fee Fed - SUPO not required

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

Submit or defer a Proposed Production Facilities plan? DEFER

Estimated Production Facilities description: Fee Fee Fed - SUPO not required

Well Name: GOONCH FED COM 04 Well Number: 212H

Section 5 - Location and Types of Water Supply

Water Source Table

Water source type: OTHER

Describe type: Fee Fee Fed - SUPO not required

Water source use type:

OTHER

Describe use type: Fee Fee Fed - SUPO not required

Source latitude:

Source longitude:

Source datum:

Water source permit type:

OTHER

Water source transport method:

TRUCKING

Source land ownership: OTHER

Describe land ownership: Fee Fee Fed - SUPO not re

Source transportation land ownership: OTHER

Describe transportation land ownership: Fee Fee Fe

Water source volume (barrels): 1

Source volume (acre-feet): 0.00012889

Source volume (gal): 42

Water source and transportation map:

Gnooch_Fed_Com_04_Fee_Fee_Fed_20190802164800.pdf

Water source comments:

New water well? N

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:

Well casing outside diameter (in.):

Well casing inside diameter (in.):

New water well casing?

Used casing source:

Drilling method:

Drill material:

Well Name: GOONCH FED COM 04 Well Number: 212H

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

Using any construction materials: NO

Construction Materials description:

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Fee Fee Fed - SUPO not required

Amount of waste: 0

barrels

Waste disposal frequency: Daily

Safe containment description: Fee Fee Fed - SUPO not required

Safe containment attachment:

Waste disposal type: OTHER

Disposal location ownership: OTHER

Disposal type description: Fee Fee Fed - SUPO not required

Disposal location description: Fee Fee Fed - SUPO not required

Reserve Pit

Reserve Pit being used? N

Temporary disposal of produced water into reserve pit? NO

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

Well Name: GOONCH FED COM 04 Well Number: 212H

Are you storing cuttings on location?

Description of cuttings location

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

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: N

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Goonch 04 212H Well Site Layout Revised 20190930120141.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: No New Surface Disturbance Multiple Well Pad Name: Goonch Fed Com

Multiple Well Pad Number: 131H (Pad G)

Recontouring attachment:

Drainage/Erosion control construction: Fee Fee Fed - SUPO not required Drainage/Erosion control reclamation: Fee Fee Fed - SUPO not required

Well pad proposed disturbance (acres):

Road proposed disturbance (acres):

Powerline proposed disturbance (acres):

Pipeline proposed disturbance

Other proposed disturbance (acres):

Well pad interim reclamation (acres): 0 Well pad long term disturbance

Road interim reclamation (acres): 0

(acres): 0

Road long term disturbance (acres): 0

Powerline interim reclamation (acres):

Other interim reclamation (acres): 0

(acres): 0 Pipeline interim reclamation (acres): 0

Pipeline long term disturbance

Powerline long term disturbance

Other long term disturbance (acres): 0

Total interim reclamation: 0

Well Name: GOONCH FED COM 04 Well Number: 212H

Disturbance Comments:

Reconstruction method: Fee Fee Fed - SUPO not required

Topsoil redistribution: Fee Fee Fed - SUPO not required

Soil treatment: Fee Fee Fed - SUPO not required

Existing Vegetation at the well pad: Fee Fee Fed - SUPO not required

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Fee Fee Fed - SUPO not required

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: Fee Fee Fed - SUPO not required

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: Fee Fee Fed - SUPO not required

Existing Vegetation Community at other disturbances attachment:

Non native seed used? N

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? N

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation?

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:

Well Name: GOONCH FED COM 04 Well Number: 212H

Seed use location:

PLS pounds per acre:

Proposed seeding season:

Seed Summary
Seed Type Pounds/Acre

Total pounds/Acre:

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name:

Last Name:

Phone:

Email:

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? N

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: Fee Fee Fed - SUPO not required

Weed treatment plan attachment:

Monitoring plan description: Fee Fee Fed - SUPO not required

Monitoring plan attachment:

Success standards: Fee Fee Fed - SUPO not required

Pit closure description: No pit

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: OTHER

Other surface owner description: Fee Fee Fed - SUPO not required

BIA Local Office:

BOR Local Office:

COE Local Office:

Operator Name: NOVO OIL AND GAS NORTHE	ERN DELAWARE LLC
Well Name: GOONCH FED COM 04	Well Number: 212H
NPS Local Office:	
State Local Office:	
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? N	Use APD as ROW?
ROW Type(s):	
ROW Applications	
17044 Applications	
•	
SUPO Additional Information:	
Use a previously conducted onsite? N	
Previous Onsite information:	

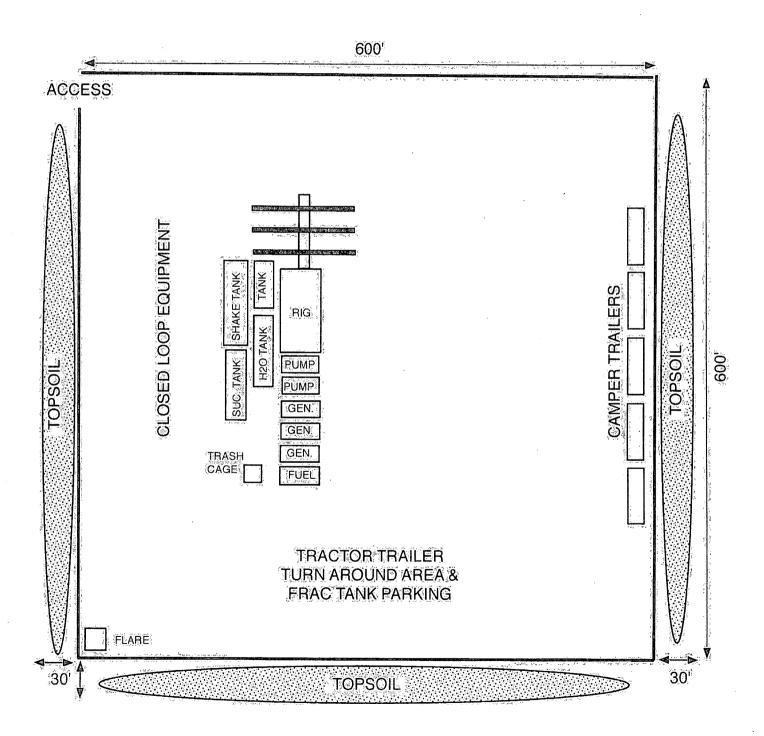
Other SUPO Attachment

Novo Oil & Gas Northern Delaware LLC Gnooch Fed Com 04

Fee Fee Fed – SUPO not required

Novo's Goonch Fed Com 04 212H rig diagram









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

PWD Data Report

11/21/2019

APD ID: 10400045313

Submission Date: 08/02/2019

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: GOONCH FED COM 04

Well Number: 212H

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

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? N

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:

Decribe 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:

Well Name: GOONCH FED COM 04 Well Number: 212H

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?

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? N

Produced Water Disposal (PWD) Location:

PWD disturbance (acres):

PWD surface owner:

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe 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?

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC Well Name: GOONCH FED COM 04 Well Number: 212H Is the reclamation bond a rider under the BLM bond? Unlined pit bond number: Unlined pit bond amount: Additional bond information attachment: Section 4 - Injection Would you like to utilize Injection PWD options? N 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? N **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? N

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Well Name: GOONCH FED COM 04 Well N

Well Number: 212H

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:



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

Bond Info Data Report

11/21/2019

APD ID: 10400045313

Submission Date: 08/02/2019

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: GOONCH FED COM 04

Well Number: 212H

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB001536

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:



Application for Permit to Drill

⊎:S: Department of the Interior Bureau of Land Management

APD Package Report

Date Printed: 11/21/2019 07:17 AM

APD ID: 10400045287

Well Status: AAPD

APD Received Date: 08/02/2019 01:28 PM

Well Name: GOONCH FED COM 04

Operator: NOVO OIL AND GAS NORTHERN I Well Number: 132H

Phone: (505) 466-4604 • Fax (505) 466-4602 • Email: LabelandScan@gmail.com 7 Avenida Vista Grande, Suite B7 • Santa Fe, NM 87508-9207

APD Package Report Contents

- Form 3160-3

- Operator Certification Report

- Application Report

- Application Attachments

-- Well Plat: 1 file(s)

- Drilling Plan Report

- Drilling Plan Attachments

-- Blowout Prevention Chok

-- Blowout Prevention BOP

-- Casing Design Assumption

-- Hydrogen sulfide drilling operations plan: 1 file(s)

-- Proposed horizontal/directional/multi-lateral plan submission: 1 file(s)

-- Other Facets: 4 file(s)

-- Other Variances: 2 file(s)

- SUPO Report

- SUPO Attachments

-- Water source and transportation map: 1 file(s)

-- Well Site Layout Diagram: 1 file(s)

-- Recontouring attachment: 1 file(s)

- PWD Report

- PWD Attachments

-- None

- Bond Report

- Bond Attachments

-- None