

SMITH + MALEK
ATTORNEYS

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Admitted in Idaho

February 24, 2020

Via Email & Hand Delivery

Mick Thomas, Administrator
Oil and Gas
Idaho Department of Lands
c/o Kourtney Romine
300 N. 6th Street, Suite 103
Boise, ID 83702

Re: Application of Snake River Oil and Gas, LLC for spacing order consisting of the E ½ of the SE ¼ of Section 9, SW ¼ of Section 10, N ½ of the N ½ of the NW ¼ of Section 15, and the N ½ of the NE ¼ of the NE ¼ of Section 16, N Township 8 North, Range 5 West, Boise Meridian, Payette County, Idaho

IOGCC Docket No: CC-2020-OGR-01-01-001

Dear Administrator Thomas:

Pursuant to Idaho Code §47-318 and §47-328, Snake River Oil and Gas, LLC (“Applicant”), hereby applies for a spacing order consisting of the E ½ of the SE ¼ of Section 9, SW ¼ of Section 10, N ½ of the N ½ of the NW ¼ of Section 15, and the N ½ of the NE ¼ of the NE ¼ of Section 16, Township 8 North, Range 5 West, Boise Meridian, Payette County, in which the existing Fallon #1-10 well is located.

1. Size, shape and location of unit (Idaho Code § 47-318 (1), (2), (3)):
Applicant requests a spacing order establishing a 300 acre spacing unit consisting of the E ½ of the SE ¼ of Section 9, SW ¼ of Section 10, N ½ of the N ½ of the NW ¼ of Section 15, and the N ½ of the NE ¼ of the NE ¼ of Section 16, Township 8 North, Range 5 West, Boise Meridian, Payette County, in which the existing Fallon #1-10 well is located, which is intermediate to the 160 acre and 640 acre default drilling unit configurations for vertical gas wells set forth in Idaho Code §47-317(3)(b). The configuration is depicted on the plat included as Exhibit 4 to the Declaration of James L. Allen, filed concurrently herewith, based on the information available to Applicant following drilling, completion and testing of the well, the requested unit will result in

February 24, 2020

Application of Snake River Oil and Gas, LLC

2 of 4

the efficient and economical development of the pool, and is not smaller than the maximum area that can be efficiently and economically drained by one well. The rectangular shape of the unit is described by reference to the public land survey system, best matches the expected drainage area and ensures that all mineral interest owners likely to be affected will receive their equitable share of the production of the well, and that no mineral interest owners potentially affected will be omitted from the unit. As no other wells have been drilled to the sand targeted by the Fallon #1-10 well, and it has not been developed to an extent that allows conclusions to be drawn regarding consistency of drainage across the entire sand, it would be impracticable or unreasonable to establish spacing units for the remainder of the sand.

2. Proposed unit is not smaller than the maximum area that can be efficiently and economically drained by one (1) well (Idaho Code § 47-318(2)): The Declaration of James L. Allen, setting forth facts supporting the conclusion that the proposed unit is not smaller than the maximum area that can be efficiently and economically drained by one well, is filed herewith.

3. No more than one well and location of well (Idaho Code § 47-318(4)): Pursuant to Idaho Code § 47-318(4), Applicant requests that the order establishing the spacing unit direct that no more than one (1) well shall be drilled to and produced from the common source of supply for the unit, being the Fallon #1-10 well. Applicant requests that the order establishing the spacing unit approve the Fallon #1-10 well in its existing location. The well is more than 660' from any boundary line of the proposed unit, in conformity with Idaho Code § 47-317(3)(b). As set forth in Permit to Drill #11-075-20032, the bottom hole for the Fallon #1-10 well is 1134' from the west line of the SW ¼ of Section 10, 1033' from the south line of the SW ¼ of Section 10, 1596' from the north line of the SW ¼ of Section 10, and 1526' from the east line of the SW ¼ of Section 10. Thus, the well is at least 1500' from the nearest boundary of the proposed unit.

Pursuant to an existing drilling permit (Permit to Drill #11-075-20032), Applicant drilled the Fallon #1-10 well in the SW ¼ of Section 10, Township 8 North, Range 5 West, Payette County. The well was drilled to explore for natural gas and hydrocarbon liquids. The well has been tested and is prospective for natural gas and condensate. A gathering pipeline and processing facilities have been constructed to the east of the well location. Right of way has been acquired for a gathering pipeline to service the Fallon #1-10 well and the nearby Barlow #1-14 well. Construction of the pipelined has commenced and is ongoing.

4. Notice (Idaho Code §§ 47-317, 47-318, 47-328): Idaho Code § 47-318 does not provide for either application content or notice regarding an application to establish a spacing unit. Idaho Code § 47-328(3) provides: "Except as provided in section 47-316(1)(a), Idaho Code, and subsection (2) of this section, any request for an order related to oil and gas activities within the commission's jurisdiction, other than a civil penalty proceeding pursuant to

February 24, 2020

Application of Snake River Oil and Gas, LLC

3 of 4

section 47-329, Idaho Code, or other enforcement action by the department of lands or the commission, shall be made by application to the department of lands and processed as provided in this section.” However, § 328 does not specifically address notice regarding applications for well spacing orders. Idaho Code § 47-328(3)(b) provides for notice requirements in the case of “applications involving an order regarding unit operations or integration of a drilling unit.” The reference to “unit operations” clearly refers to an application pursuant to Idaho Code § 47-321 (entitled “Unit Operations”) for an order allowing “unit operation of an entire pool or portion thereof, to increase ultimate recovery of oil and gas from that pool or portion thereof,” including potentially across multiple spacing units. Similar to an integration order, an order for unit operations under § 321 addresses operations within the defined unit area, including allocation of production within the unit, designation of an operator, and allocation of the risk and expenses of operation. This is distinct from drilling and spacing unit applications, which address unit configuration in relation to economic and efficient drainage area, not operations and allocation of production. Thus, §328(3)(b) does not apply to this application.¹¹

If this application were treated as one for a drilling location pursuant to Idaho Code § 47-317, notice would be required as follows: “In addition to any other notice required by statute or rule, the operator shall provide notice of the proposed drilling unit by certified mail to all uncommitted owners within the proposed drilling unit.” Idaho Code § 47-317(3)(d). Applicant finds no other reference to additional notice requirements related to drilling or spacing unit applications within Idaho Code Title 47, Chapter 3. Applicant finds no provision of IDAPA 04.11.01 requiring it to provide notice to additional persons; IDAPA 04.11.01.158 provides for “interested persons” to request notice after a proceeding is commenced, and for the agency to serve notice on such persons.

Because of the lack of clarity in the statute, and in an exercise of caution in light of the proceedings related to similar applications of the prior operator related to the Fallon #1-10 well, Applicant will provide notice of this application: (a) by certified mail to all mineral interest owners in the proposed spacing unit area; and (b) by regular mail to all mineral interest owners in the remainder of the area covered by the original application by the prior operator, AM Idaho, LLC, i.e, the SE ¼ of Section 9, SW ¼ of Section 10, the NW ¼ of Section 15, the NW ¼ of Section 16. While Idaho Code §§ 47-317, 47-318, and 47-328 provide no instruction as to the timing of notice for any application *not* subject to § 328(3)(b), again in an exercise of caution, Applicant will make such mailings within seven (7) days of the date of the filing of this application.

Applicant requests that the resulting Order of the Administrator be made applicable to any successor or assignee of all parties subject to the Order.

February 24, 2020
Application of Snake River Oil and Gas, LLC
4 of 4

Sincerely,

SMITH+MALEK, PLLC



MICHAEL R. CHRISTIAN

[1] In addition, because an application for spacing potentially could cover an entire field, certified or regular mailing to every mineral interest owner over a several square mile area would be impractical and possibly prohibitively expensive.

**BEFORE THE OIL AND GAS CONSERVATION COMMISSION
STATE OF IDAHO**

**In the Matter of Application of Snake River Oil)
and Gas, LLC, for an order establishing a)
spacing unit for Fallon #1-10 well consisting of)
the E ½ of the SE ¼ of Section 9, SW ¼ of)
Section 10, N ½ of the N ½ of the NW ¼ of)
Section 15, and the N ½ of the NE ¼ of the NE)
¼ of Section 16, Township 8 North, Range 5)
West, Boise Meridian, Payette County, Idaho)
)
**SNAKE RIVER OIL AND GAS, LLC,)
Applicant.)
)****

Docket No. CC-2020-OGR-01-001

DECLARATION OF JAMES L. ALLEN

STATE OF TEXAS)
) ss
County of Harris)

James L. Allen declares:

1. I am a geophysicist consulting for the Applicant, Snake River Oil and Gas, LLC. I received a B.S. from Baker University and a Ph.D. from the University of Wyoming, both in physics, and have worked as a geophysicist internationally and domestically for 46 years, having started my career at Exxon, then going on my own in 1980. I have been exploring for oil and gas in Idaho since 2010, having been one of five (myself and four geologists: Spencer Wood, Stephen Getz, Jeff Allen, and David Hawk) who evaluated the hydrocarbon potential for Snake River and the partners in J.L. Allen Exploration Ventures. I am considered an expert in seismic hydrocarbon

indicators, having co-authored a book on that subject and having been an editor for one journal and a reviewer on the topic for an American and a European journal. I am also considered an expert in 3D seismic, having co-edited a book on that subject. During my career, my tasks have included managing exploration programs, designing and managing 2D and 3D seismic surveys, interpreting geophysical and geological data, identifying potential hydrocarbon traps, and selecting drilling locations. I was one of two persons who mapped the Idaho 2D and 3D seismic data and identified drilling targets, the other being David Smith.

2. I reviewed and interpreted these seismic data from a project which covered several sections in Township 8 North, Range 5 West, including the SW $\frac{1}{4}$ of Section 10, ("the subject spacing unit"). The sediments are often complexly faulted. There are also numerous basalt flows, dikes and sills present in the subsurface. These conditions complicate geologic interpretations from geophysical data.

3. The prospect targeted by the Fallon #1-10 well was a presumed combination structural/stratigraphic trap defined by 3-D seismic data. The top of the prospective section was expected to be approximately 3300' TVD. The pre-drill targets were a minor objective Sand A expected at 3300' TVD and a primary objective Sand B at 3374' TVD.

4. The target reservoir sections were fluvial and lacustrine sands within the Poison Creek and Chalk Hills formations of the Idaho Group.

5. Previously drilled, local well control suggested significant variability of the presence, thickness, porosity and permeability of sands in the target section. Bridge Energy drilled the May #1-13 well (2.6 miles east of the proposed target) to 6512' and plugged and abandoned it as a dry hole in 2010. It encountered a 40' sand at 3650' with average porosity of 15-20%. From

3700' to 4960', the well encountered various thin sands in an interval dominated by tuffaceous gray shales and siltstones (85%). The sands vary in porosity, but average 20-24%. The well encountered basalt from 4960' to 5200'; below that, other sands were encountered with porosities of 18–24%. All of these sands were wet with none tested, and the May #1-13 well was plugged and abandoned.

6. 1.25 miles WSW of the prospect, Ore-Ida Foods drilled a geothermal test to 10,024' in 1979. The correlative objective section in that well is dominated by gray claystone and siltstone, with minor subordinate amounts of sandstone.

7. In February of 2018, AM Idaho, LLC directionally drilled the Fallon #1-10 test well to 5432' MD (4995' TVD), ran open hole logs on drill pipe, and set and cemented production casing. The proposed directional well plan is attached as Exhibit 1 to this declaration. The "as-drilled" directional vertical section and plan view plots are attached as Exhibits 2a and 2b to this declaration.

8. The petrophysical logs acquired for the Fallon #1-10 well included Spectral Gamma Ray, Induction, Neutron/Density Porosity and Dipole Sonic logs.

9. The primary objective Sand B was encountered with approximately 92' of gross gas pay from 3772'-3880' MD (3453'-3545' TVD), with 70' of net pay. Sand A objective was found from 3658'-3670' MD (3355'-3367' TVD) with 10' of possible gas pay. An annotated log is attached to this declaration as Exhibit 3.

10. In March of 2018, the primary objective sand was perforated from 3815'-3835' MD, and the well tested at 3.8 MMcf/d, 119 Bcpd and 6 Bwpd with 1290# ftp on a 28/64" choke. I understand that the previous operator later filed an amended well completion report reflecting

3.3 MMcfgd, 41 Bcpd and 0 Bwpd with 1290# fip on a 28/64" choke. I am not personally aware why this amended reporting was undertaken, but the difference does not impact my analysis. The well is currently shut-in waiting on pipeline construction and hook up.

11. The Fallon #1-10 well tested and confirmed a presumed combination structural/stratigraphic trap defined by seismic data that is now a known gas condensate reservoir.

12. Both of the objective sands were encountered 55' to 80' structurally low to pre-drill expectations: top of Sand A at 3355' TVD versus 3300' TVD expected; and top of Sand B at 3453' TVD versus expected 3374'TVD. This is most probably due to local seismic velocity gradients, and not unexpected, especially so in frontier exploration such as in Idaho.

13. As the top of the objective Sand B reservoir was expected to be encountered at approximately 3374' TVD but was encountered 80' feet structurally lower at 3453' TVD, it was appropriate to reconsider unit size and configuration.

14. In connection with a previous application regarding the Fallon #1-10 well, David Smith submitted a net pay isopach map, based on structure maps of the top of Sand B and the base of the gas pay in Sand B using logs and seismic data. I reviewed the same information and agree with Mr. Smith's interpretation. A net pay isopach map based on that interpretation is attached as Exhibit 4. I am currently preparing interpreted seismic cross sections to confirm the extent of the Sand B pay and will supplement this declaration with those cross sections shortly.

15. Experience producing the wells in this area is that the gas sands sometimes produce with a water drive. In this case, after some period of time of gas production, the well is expected to produce increasing volumes of water until it loads up and dies or reaches an economic limit.

The economic limit occurs when the daily cost of disposing of the produced fresh water exceeds the value of the hydrocarbons produced daily.

16. My view that the Fallon #1-10 well will produce with a water drive is supported by the following:

a. In his presentation to the Idaho Oil and Gas Conservation Commission on February 5, 2020, Mark Barton of the Idaho Geologic Survey identified the Kauffman #1-34 well's reservoir sand as subject to a strong water drive. He identified the ML Investments #2-10 LT as a partial water drive. He identified other wells with significantly smaller reservoirs as subject to depletion drive. This makes sense, as a larger tank provides a larger volume of water to support the gas trapped.

b. The Kaufman #1-34 well's reservoir sand, described as strong water drive in Mark Barton's presentation, is at least 300' thick (3820'-4120') but possibly 385' thick (3820'-4205') if a 10' shale break is discounted. The reservoir area is limited by faults and synclines but the thickness provides for a reservoir tank of 180,000 ac-ft. or more.

c. The ML Investments # 2-10 LT's reservoir sand, described as partial water drive in Mark Barton's presentation, is 104' thick (4288'-4392') at the well bore. Interestingly, the ML Investment's #1-11 sand, described as a depletion drive, is in the same reservoir. It is 156' thick (4130'-4286'). Using an average thickness of 130' provides a total reservoir volume of 65,000 ac-ft. The difference in reservoir performance between the two may be explained by faulting within the reservoir.

d. The B Sand in the Fallon #1-10 is 164' thick at the well bore (3772'-3936') and thickens to 180' according to seismic data. The sand pinches out to the northeast and southeast, as

can easily be mapped on seismic data. The southwest edge is cutoff by faulting, while a syncline limits the northwestern side. Using an average thickness of 90' would provide a reservoir volume of 126,000 ac-ft., twice that of the partial water drive of the ML Investments #2-10 and nearer the volume of the Kauffman #1-34.

e. Consequently, I expect the Fallon #1-10 Sand B reservoir to produce with a water drive. As a result, the mapping of the Sand B isopach in the Unit application is correct, as the productive area is limited by the depth of the uppermost perforations in a water drive reservoir.

17. When the economic limit is reached in the current set of perforations, the well would be plugged back and reperfdrated near the top of the sand, (3772' MD, 3453' TVD, -1289' Subsea), which would be the structural top of the ultimate producible drainage area in a water drive reservoir.

18. Post drill mapping with the new well information and the 3-D seismic data locates the ultimately producible reservoir dominantly in the SW $\frac{1}{4}$ of Section 10, with minor presence in the SE $\frac{1}{4}$ of Section 9, the NE $\frac{1}{4}$ of Section 16 and the NW $\frac{1}{4}$ of Section 15. Based on the foregoing discussion, I conclude that a 300 acre unit encompassing E $\frac{1}{2}$ of the SE $\frac{1}{4}$ of Section 9, SW $\frac{1}{4}$ of Section 10, N $\frac{1}{2}$ of the N $\frac{1}{2}$ of the NW $\frac{1}{4}$ of Section 15, and the N $\frac{1}{2}$ of the NE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 16 is the best fit to cover the lands underlaid by the gas pool, and that the proposed 300 acre unit is not smaller than the maximum area that could be effectively and economically drained by one well.

19. The Fallon #1-10 well is located near the center of the proposed unit. Based on my interpretation of 3-D seismic data, I conclude that the target sand's down dip productive limit is likely contained within the proposed unit area. Results from testing of the well show that it

produces a combination of natural gas and gas condensate, making a gas unit as described above appropriate.

20. I declare under penalty of perjury under the laws of the State of Idaho that the foregoing is true and correct to the best of my knowledge.

Dated this 24th day of February, 2020.


James L. Allen

Project: Payette County, ID W'27
 Area: 10-8N-5W
 Site: Fallon 1-10
 Well: #1-10
 Wellbore: #1-10 OH
 Design: Plan #1



CASING DETAILS

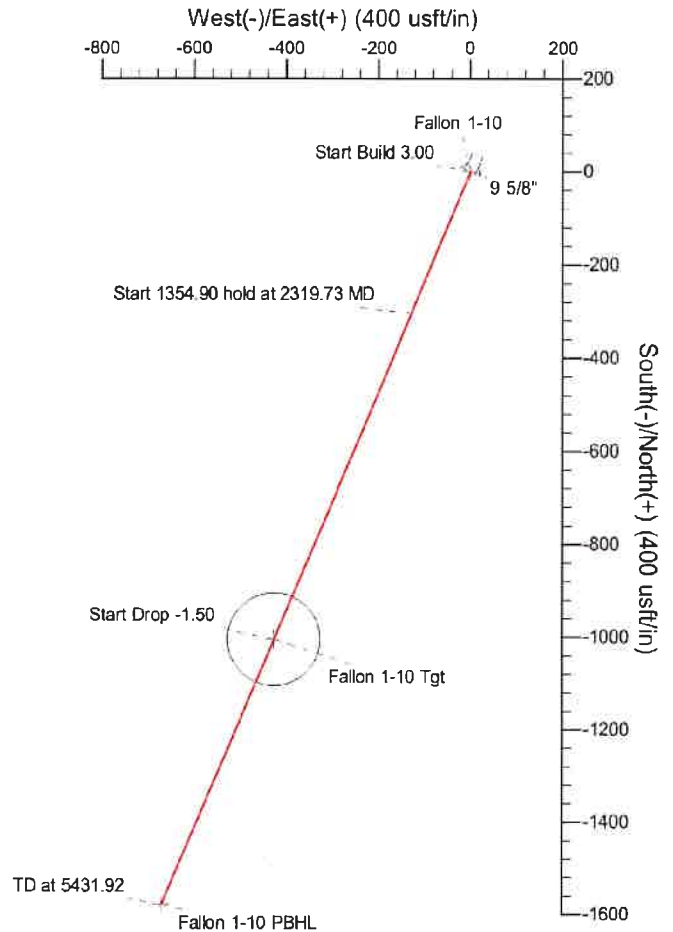
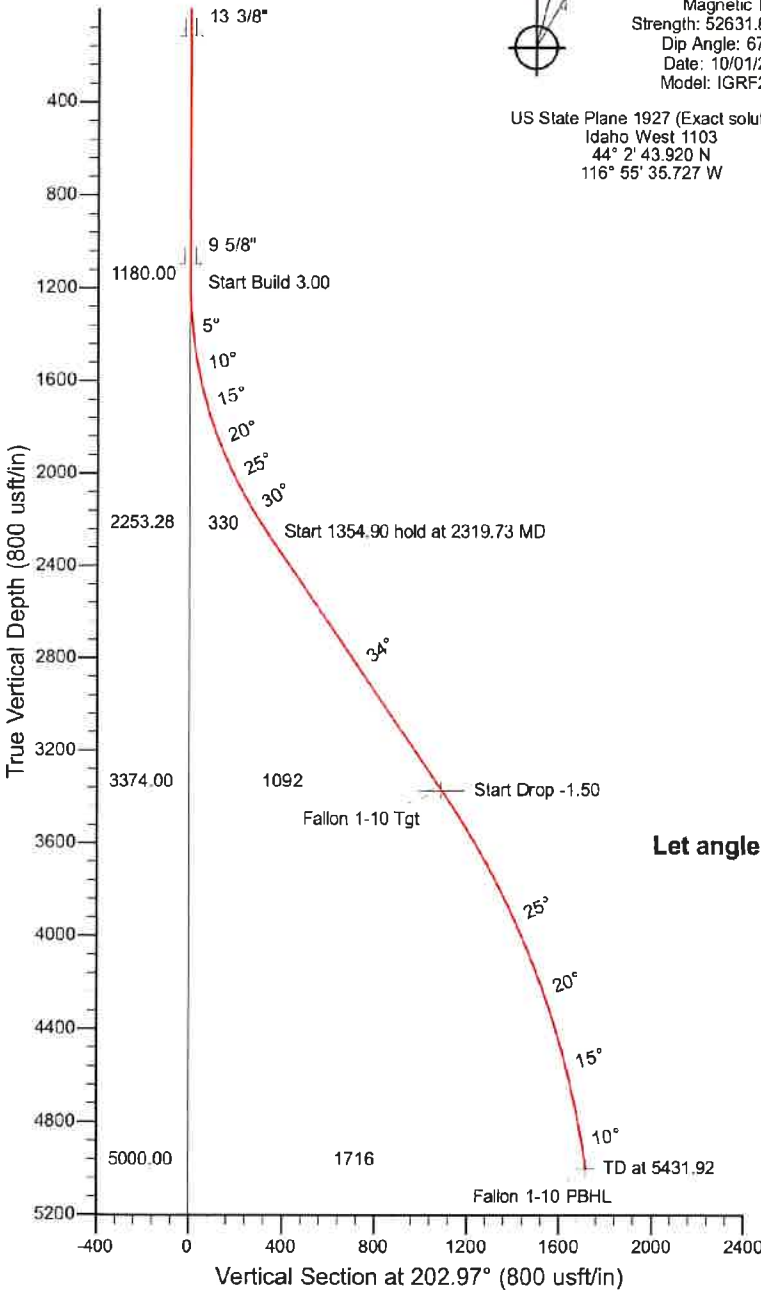
TVD	MD	Size
120.00	120.00	13-3/8
1100.00	1100.00	9-5/8



Azimuths to Grid North
 True North: 0.82°
 Magnetic North: 14.51°

Magnetic Field
 Strength: 52631.8snT
 Dip Angle: 67.47°
 Date: 10/01/2017
 Model: IGRF2015

US State Plane 1927 (Exact solution)
 Idaho West 1103
 44° 2' 43.920 N
 116° 55' 35.727 W



Digital lease data unavailable at time of print

Let angle fade to vertical after target

EXHIBIT 1
Original Directional Plan

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Sh
Fallon 1-10	0.00	0.00	0.00	920.869160106	116° 55' 35.727 W	44° 2' 43.920 N	116° 55' 35.727 W	Point
Fallon 1-10 Tgt	3374.00	-1004.96	-425.98	0.00	86772.928	116° 55' 41.362 W	116° 55' 41.362 W	Circle
Fallon 1-10 PBHL	5000.00	-1579.99	-669.7366.24	86772.928	116° 55' 44.586 W	116° 55' 44.586 W	116° 55' 44.586 W	Point

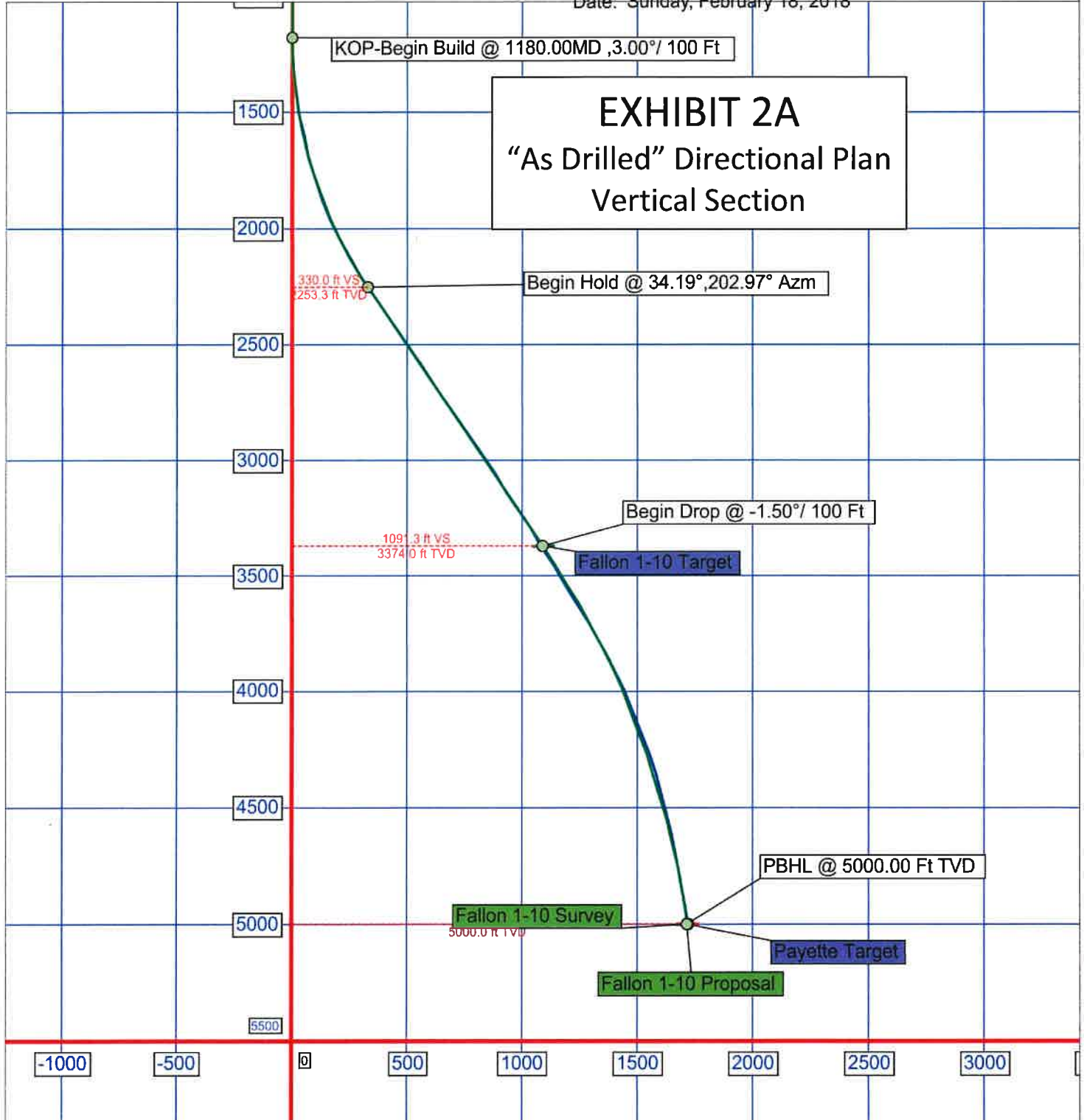
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1180.00	0.00	0.00	1180.00	0.00	0.00	0.00	0.00	0.00	
3	2319.73	34.19	202.97	2253.28	-303.92	30.4128.83	3.00	202.97	3	
4	3674.64	34.19	202.97	3374.00	-1004.96	91.825.99	0.00	202.97	10	Fallon 1-10 Tgt
5	5431.92	7.83	202.97	5000.00	-1579.99	71669.73	0.00	202.97	1	Fallon 1-10 PBHL

Job Number: 201708-JMP-PGD-01
 Company: Paul Graham Drilling / Alta masa
 Lease/Well: Fallon 1-10
 Location: Idaho
 Rig Name: Paul Graham Drilling
 State/County: Idaho/ Payette
 Country: USA
 API Number: ?

Elevation (To MSL): 0.00 ft
 RKB: 0.00 ft
 Projection System: US State Plane 1927 (Exact solution)
 Projection Group: Idaho West 1103
 Projection Datum: CLARKE 1866
 Magnetic Declination: 13.67
 Grid Convergence: -0.81810 W
 Date: Sunday, February 18, 2018

True Vertical Depth



Vertical Section (500 Ft/Div) VSP: 202.00°



Job Number: 201708-JMP-PGD-01
Company: Paul Graham Drilling / Alta masa
Lease/Well: Fallon 1-10
Location: Idaho
Rig Name: Paul Graham Drilling
State/County: Idaho/ Payette
Country: USA
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Elevation (To MSL): 0.00 ft
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Projection System: US State Plane 1927 (Exact solution)
Projection Group: Idaho West 1103
Projection Datum: CLARKE 1866
Magnetic Declination: 13.67
Grid Convergence: -0.81810 W
Date: Sunday, February 18, 2018

South - North

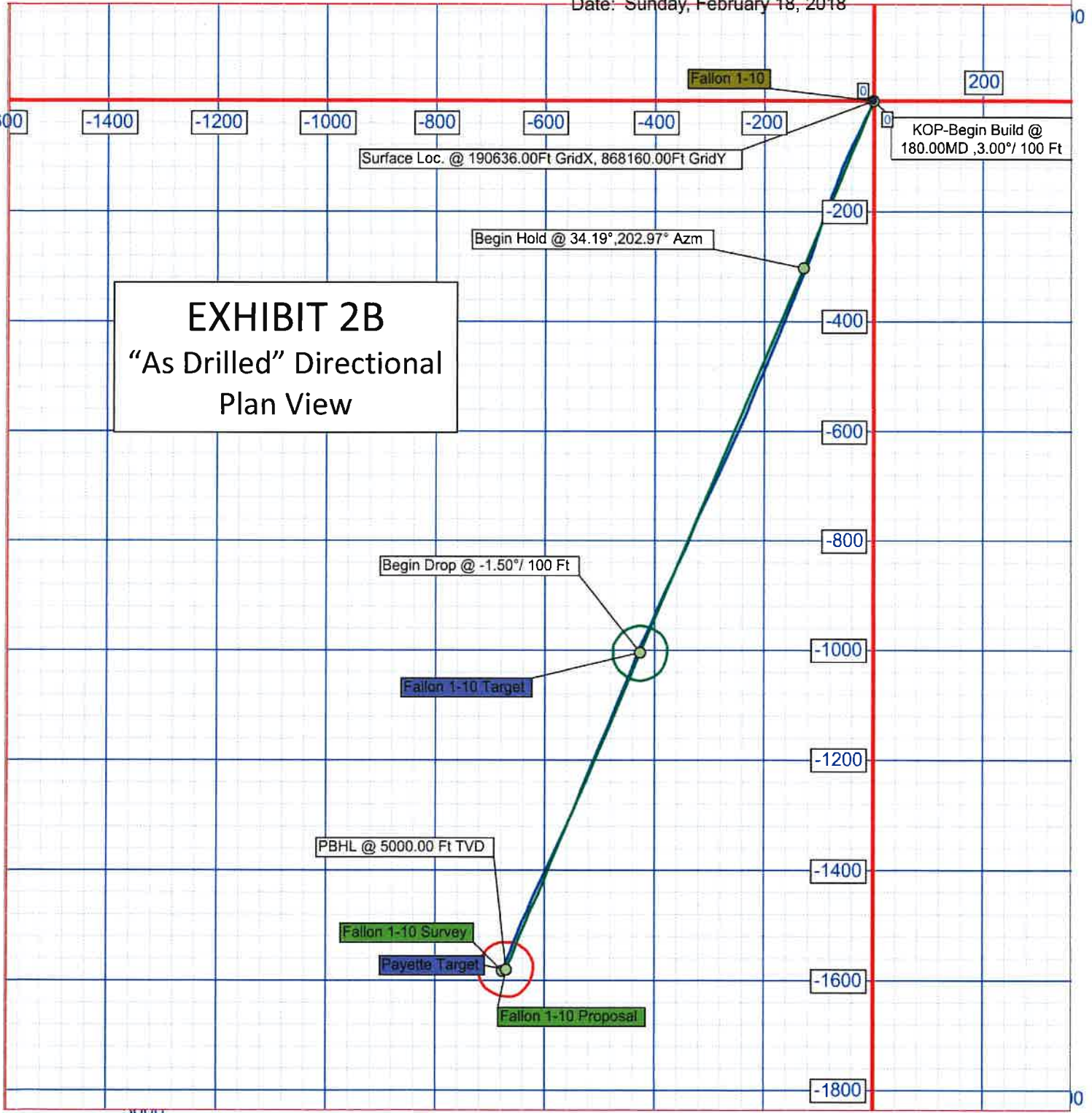


EXHIBIT 2B "As Drilled" Directional Plan View

West - East



Snake River Oil & Gas
 Fallon 1-10
 Wildcat Field
 8N-5W Sec 10
 KB 2167'

Sand 'A'
 3658' MD
 3355' TVD
 -1191 SS

Sand 'B'
 3772' MD
 3453' TVD
 -1289 SS

Completion

Perf. 3815'-35'
 IP: 119 BCPD
 3.8 MMCFGD
 6 BHPD
 1290# FTP 24/64" CK
 3/11/2018

Probable Gas/Water Contact
 3880' MD
 3545' TVD
 -1381 SS

Sand 'B' Base

EXHIBIT 3
 Quad Combo Log

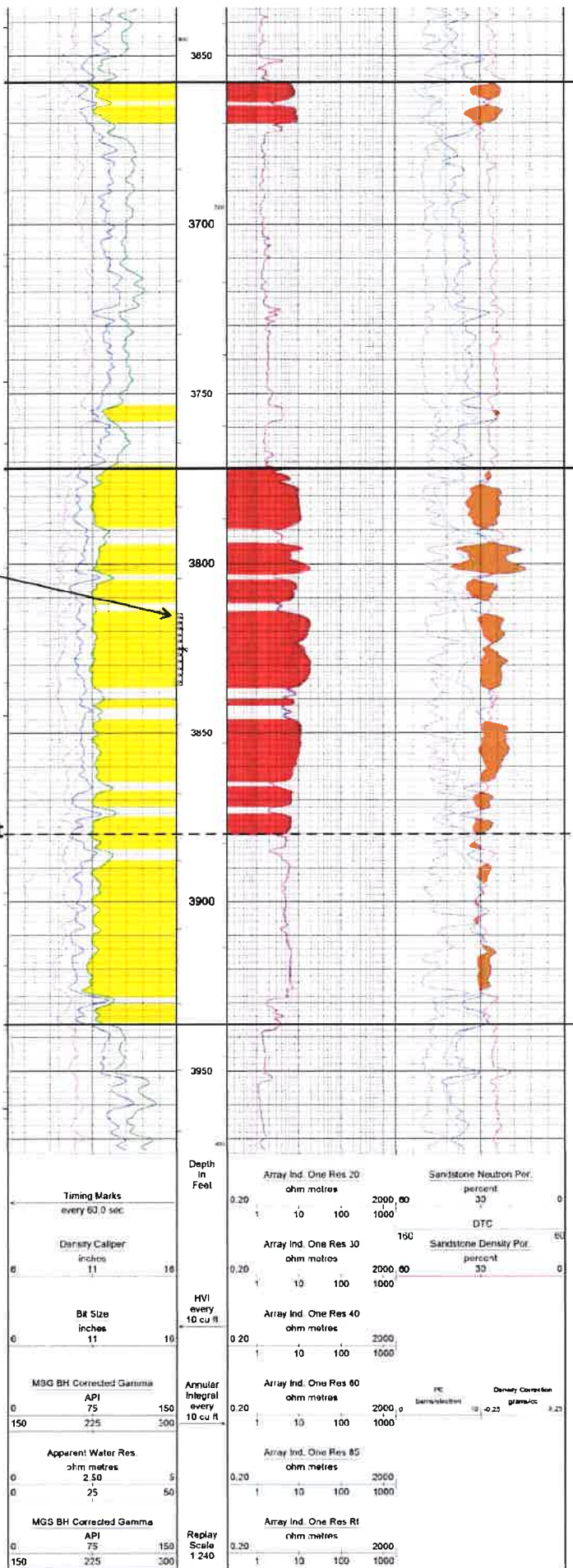
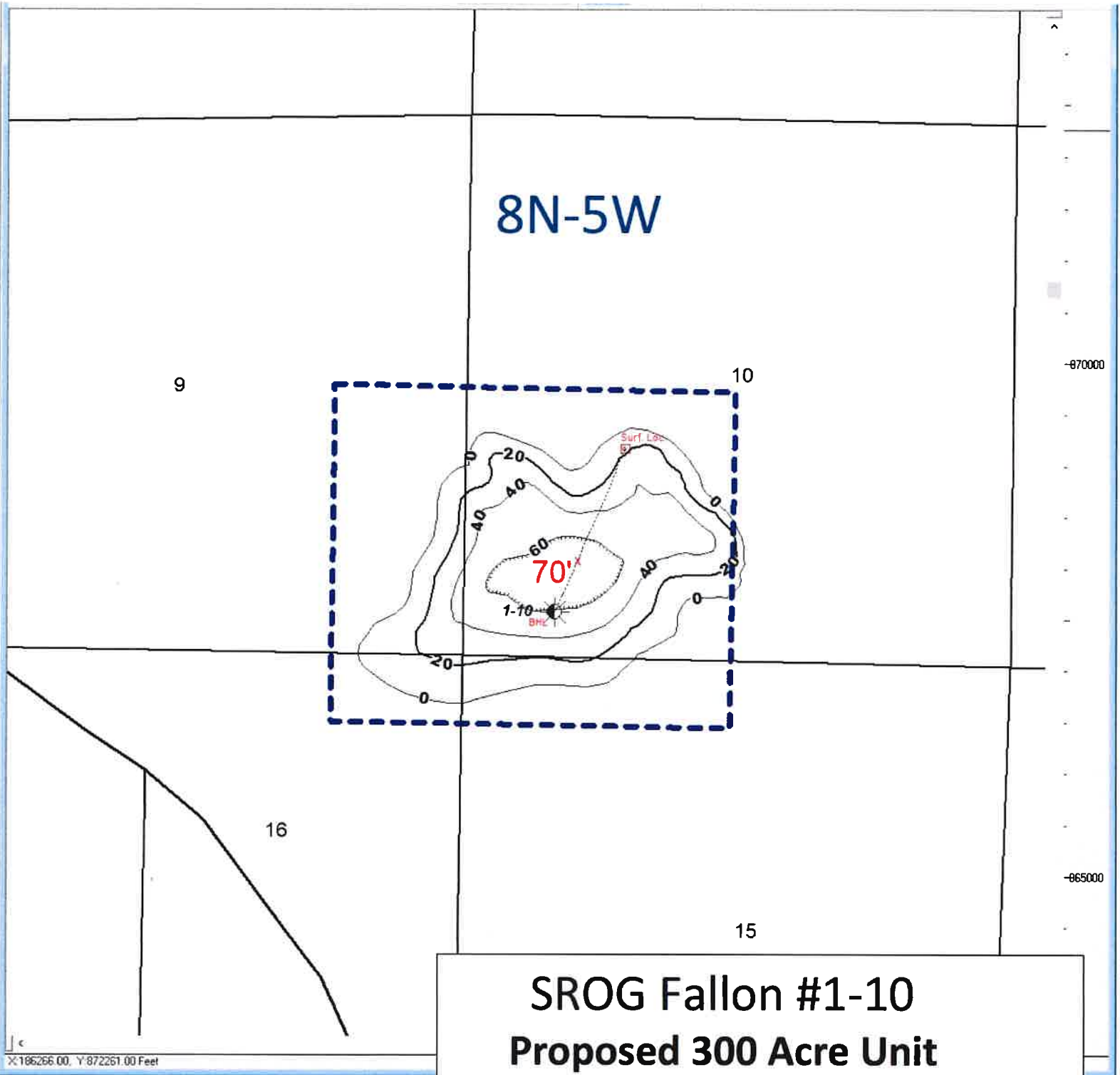


EXHIBIT 4

Unit Plat & Net Pay Isopach Map



SROG Fallon #1-10

Proposed 300 Acre Unit

Net Pay Isopach: Sand B

E/2 SE/4 of Section 9, SW/4 of Section 10, N/2 N/2 NW/4 of Section 15 & N/2 NE/4 NE/4 of Section 16 T8N-R5W

Contour Interval = 20'

Feb. 2020

Scale 1":1000'

