

Mineral Resources



June 25, 2020

Mr. Craig Poskus EOG Resources, Inc. 1111 Bagby Street Sky Lobby 2 Houston, TX 77002

> RE: Parshall #58-1608H SESW Sec. 16, T.152N., R.90W. Mountrail County, North Dakota Parshall Field Well File No. 28525 STRIPPER WELL DETERMINATION

Dear Mr. Poskus:

EOG Resources, Inc. (EOG) filed with the North Dakota Industrial Commission – Oil and Gas Division (Commission) on January 15, 2020 an application for a Stripper Well Determination for the above captioned well.

Information contained in the application indicates that the above mentioned well is a stripper well pursuant to statute and rule, and EOG has elected to designate said well as a stripper well. The well produced from a well depth greater than 10000 feet and was completed after June 30, 2013. During the qualifying period, October 1, 2018 through September 30, 2019, the well produced at a maximum efficient rate or was not capable of exceeding the production threshold. The average daily production from the well was 33.9 barrels of oil per day during this period.

It is therefore determined that the above captioned well qualifies as a "Stripper Well" pursuant to Section 57-51.1-01 of the North Dakota Century Code. This determination is applicable only to the Bakken Pool in and under said well.

The Commission shall have continuing jurisdiction, and shall have the authority to review the matter, and to amend or rescind the determination if such action is supported by additional or newly discovered information. If you have any questions, do not hesitate to contact me.

Sincerely,

David J. McCusker

Petroleum Engineer

Cc: ND Tax Department

PLEASE READ INS	AUTHORIZATION TO PURCHASE AND INDUSTRIAL COMMISSION OF NORTH DAKOTA OIL AND GAS DIVISION 600 EAST BOULEVARD DEPT 405 BISMARCK, ND 58505-0840 SFN 5698 (03-2000) TRUCTIONS BEFORE FILLING OUT FORM. HE ORIGINAL.	TRANSPOI	ND OIL	SEP 1 1	2019	E - F	FORM 8 Well File No. 28525	
Well Name and Num PARSHALL 58	ber -1608H	Qtr-Qtr SESW	Section 16	Township 152 N	Range 90	w	County Mountrail	
Operator EOG Resource	es, Inc.	Telephone (303) 26	Number 52-9973	Field Parshall	1			
Address 600 17th Steet,	Suite 1000N	City Denver			State CO		Zip Code 80202	
Name of First Purcha	aser es Marketing, LLC.	Telephone (713) 65	% Purchase 100	ed I	Date Jar	Effective nuary 1, 2015		
Principal Place of Bu 1111 Bagby Sk	isiness xy Lobby 2	City Housto	n		State TX		Zip Code 77002	
Field Address		City			State	5	Zip Code	
Name of Transporter Bridger Pipelir	ame of Transporter Bridger Pipeline, LLC		Telephone Number % Transp (307) 237-9301 10			Date May	Effective y 11, 2015	
Address 455 N. Poplar,	City Casper	2		State WY		Zip Code 82602		
The above named pr above until further no	oducer authorizes the above named purchaser to purchase th tice. The oil will be transported by the above named transport	e percentage of er.	oil stated a	bove which is	s produc	ced fro	om the lease designated	

Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other Transporters Transporting From This Lease	% Transported	Date Effective
Other Transporters Transporting From This Lease	% Transported	Date Effective
Comments		

I hereby swear or affirm that all transporters of Bakke	n Petrole	um Syster	n oil listed above implement	or adhere to a	tariff specification as
stringent as the Commission's VPCR ₄ requirement.	\checkmark	13.7	VPCR ₄ Tariff Specification	Bridger	Tariff Authority

I hereby swear or affirm that the information p	provided is true, complete and correct as determ	ined from all a	vailable records.	Date September 9, 2019		
Signature	Printed Name Cally Wescoat		Title Regulatory Administrator			
Above Signature Witnessed By	2					
Witness Signature	Witness Printed Name		Witness Title Sr. Regulatory	Administrator		
0			FOR STATE USE	ONLY		
	Date Agreese	1 9 2019		38315		
	Ву		meliss	sa flerz		
	Title		Oil & Gas P	roduction Analyst		

PLEASE READ INST	SUNDR INDUSTRIA OIL AND G 600 EAST B BISMARCK SFN 5749 (0)	Y NOTICES A AL COMMISSION O AS DIVISION BOULEVARD DEP C, ND 58505-0840 9-2006) BEFORE FILLING (ND RE F NORTH T 405 OUT FOR	EPORTS H DAKOTA	ON 1	WELL R IA Oil 8	s - For leceive R 2 4 2 L Gas I	m 4 ed 016 Divis	ion		Well	File No. 28525	
 Notice of Inten Report of Work Notice of Inten for a Tax Exer 	t Cone t to Begin a \ ption Pursua	Approximate Start Date Work Compl February 15, 2 Workover Project that and to NDCC Section Approximate Start	Date eted 2015 at may Qu 57-51.1 Date	ualify -03.]	D R R C C P S S T	rilling Progr edrilling or i asing or Lin ug Well upplementa emporarily /	nosis Repair Ier Il History Abandor Oil All	ocatio	C C C C D D D D D D	Spill Rep Shooting Acidizing Fracture Change Reclama er Insta	port Treatment Production Meth Ition	nod
Parshall 58-160 Footages 420 F S Field Parshall Name of Contractor(s Address	≥ 8H ⊥ 16	00 F W L S Pool Bakker	-Qtr ESW	Section 16	Town 15 Co M	iship 52 N bunty countra	Range 90	w	Oil Water Gas	Befor	e Bbls Bbls MCF	After Oil Water Gas Zip Code	Bbls Bbls MCF
The referenced Meter Serial No Meter Make: Mi Meter Model Nu	well was :1443052 cro Motio imber: F2	connected to a 2 in 00S418CWBAI	an oil a	DETA	ILS C mete	DF WOI	RK ebruary f	15, 201	15.				
Company EOG Resource	s, Inc.					Telepho (303)	ne Number 2 62-997 3			F	DR STATI	E USE ONLY	d

600 17th Street, Suite 1000N							
City	State	Zip Code					
Denver	CO	80202					
Signature allel Usan	Printed Name Cally Wescoat						
Title	Date						
Sr. Regulatory Assistant	March 22, 2016						
Email Address							
Cally_Wescoat@eogresources.com							

FOR STATE USE ONLY							
Received	Approved						
Date 3-29-	16						
By David	Tabas						
Title	MENDARCE						

PLEASE READ IN PLEASE SUBMIT	WELL COMPLETION OR RECOMPLETION R INDUSTRIAL COMMISSION OF NORTH DAKOTA OIL AND GAS DIVISION 600 EAST BOULEVARD DEPT 405 BISMARCK, ND 58505-0840 SFN 2468 (04-2010) READ INSTRUCTIONS BEFORE FILLING OUT FORM. SUBMIT THE ORIGINAL AND ONE COPY.						ORM 6 Received ISE Dolfo Cas Divis	Well File No. 28525		
Designate Type of	Comple	etion								
	님	EOR Well		tion	Deepened	Well L Ad	dded Horizontal Le	g L Extended Horizontal Leg		
		SVVD VVell	U vvater Sup		Other:	Concine Linit F	Description			
Parshall 58-16	08H					Sections 8	, 16 & 17 T152	N R90W		
Operator EOG Resourc	es, Ind).		Telephone Nu (303) 262-9	umber 9973	Field Parshall				
Address 600 17th Stree	t, Sui	te 1000N				Pool Bakken				
City Denver			State CO	Zip Code 80202		Permit Type				
				LOCAT	TION OF W	/ELL				
At Surface 420 F	S L	1600	F WL	Qtr-Qtr SESW	Section 16	Township 152 N	Range 90 W	County Mountrail		
Spud Date July 20, 20	14	Date TD Read October	hed 19, 2014	Drilling Contra H&P #454	actor and Rig	Number	KB Elevation (Ft) 1983	Graded Elevation (Ft) 1957		
Type of Electric ar CBL/GR: MWD	d Other	Logs Run (See Ins	structions)							

CASING & TUBULARS RECORD (Report all strings set in well)

	Str	ing	Top Set	Depth Set	Hole Size	Weight	Anchor Set	Packer Set	Sacks	Top of
Well Bore	Туре	Size (Inch)	(MD Ft)	(MD Ft)	(Inch)	(Lbs/Ft)	(MD Ft)	(MD Ft)	Cement	Cement
Surface Hole	Surface	9-5/8	0	1985	13.5	36			680	0
Vertical Hole	Intermediate	7-0	0	9557	8.75	26, 32		P 2.52	920	2036
Lateral1	Production	4-1/2	8859	18294	6.0	11.6		8881	830	8859
			-					·		

PERFORATION & OPEN HOLE INTERVALS

Well Bore	Well Bore TD Drillers Depth (MD Ft)	Completion Type	Open Hole Interva Top	e/Perforated II (MD,Ft) Bottom	Kick-off Point (MD Ft)	Top of Casing Window (MD Ft)	Date Perf'd or Drilled	Date Isolated	Isolation Method	Sacks Cement
Lateral1	18298	Perforations	9582	18260	8837		11/01/2014			
		2								
				121	-					
	1000									
			1							
	1 mar	A CONTRACTOR OF A						1	1	1.

PRODUCTION

Current Producing Perforated from	Nam	Name of Zone (If Different from Pool Name)									
Date Well Comple Feb	eted (SEE INST oruary 4, 201	RUCTIONS) 5	Producing Method Flowing	Pumping-Si	ize & Type o	f Pump	0		Well Status (P Producing	rod	lucing or Shut-In)
Date of Test 02/07/2015	Hours Tested 24	Choke Size 64 /64	Production for Test	Oil (Bbls) 1227	Gas (MCF) 107	Wate 2	r (Bbls) 855	Oil G	ravity-API (Corr 43.1 °	.)	Disposition of Gas Sold
Flowing Tubing P 36	ressure (PSI) 0	Flowing Casing	9 Pressure (PSI) 650	Calculated 24-Hour Rat	e Oil (Bbls	s) 27	Gas (MCF) 107		Water (Bbls) 2855	G	as-Oil Ratio 87

1	
Page 2	
SFN 246	68 (04-2010)

GEOLOGIC	AL MARKE	RS		PLUG BACK INFORMATION							
Formation	MD (Ft)	TVD (Ft)	Well Bore	Type of Plug	Top (Ft)	Bottom (Ft)	Sacks Cement				
Pierre Shale		1694									
Greenhorn		3950									
Dakota Sandstone		4650									
Base Dakota		4936									
Piper Lime		5747									
Piper Dunham Salt		5981									
Spearfish		6061									
Opeche		6406									
Minnelusa		6480									
Tyler		6767									
Kibbey		7100									
Kibbey Lime		7211									
Charles		7394									
Base Last Salt		7777									
Mission Canyon		7925									
Lodgepole		8530									
Lower WW		8825									
Upper Virden		8905									
Lower Virden		8990									
1st Shale		9107									

Top (Ft)

Bottom (Ft)

CORES CUT

Formation

Top (Ft)

Bottom (Ft)

Formation

9224 9243

9265

9272

9285

9302

Drill Stem Test

Upper Bakken Shale

2nd Shale

3rd Shale

Scallion

False Bakken

Middle Bakken

Dilli Otelli Te	31							
Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recover	y							
Sample Chamber	Recovery							
Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recover	у	•	1				3	
Sample Chamber	Recovery							
Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recover	у	I			·	_•		
Sample Chamber	Recovery							
Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recover	у			L				
Sample Chamber	Recovery							
Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recover	у	I		<u> </u>				
Sample Chamber	Recovery			<u> </u>				

Well Specific Stimulations

0

Date Stimulated 11/01/2014	Stimulated Fo Bakken	rmation		Top (Ft) 9582	Bottom (Ft) 18260	Stimulation Stages 43	Volume 6855155	Volume Units Gallons
Type Treatment Sand Frac		Acid %	Lbs Prop 908	opant N 0590	Aaximum Trea	tment Pressure (PSI) 8342	Maximum Treatme	nt Rate (BBLS/Min) 59.4
Details Treated fracture v	with 6,855,155 g	allons of water;	6,920,812 II	os of 100 n	nesh and 2,15	9,778 lbs of 40/70 san	d.	
ate Stimulated	Stimulated Fo	rmation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
ype Treatment	1	Acid %	Lbs Prop	opant N	Aaximum Trea	tment Pressure (PSI)	Maximum Treatme	nt Rate (BBLS/Min)
ate Stimulated	Stimulated Fo	rmation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
ype Treatment		Acid %	Lbs Prop	opant N	Aaximum Trea	tment Pressure (PSI)	Maximum Treatme	nt Rate (BBLS/Min)
Date Stimulated	Stimulated Fo	rmation	-	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
ype Treatment		Acid %	Lbs Prop	opant N	Maximum Trea	I atment Pressure (PSI)	Maximum Treatme	nt Rate (BBLS/Min)
Details								N
	A P Share and a state of the st	rmation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
ate Stimulated	Stimulated Fo		_				and the second se	A Contraction of the second
Date Stimulated	Stimulated Fo	Acid %	Lbs Prop	opant N	Aaximum Trea	atment Pressure (PSI)	Maximum Treatme	nt Rate (BBLS/Min)

REVISED: Well specific stimulation section			
Drilled well to 15,143' MD, MWD failed. Placed REVISED: Production, Perforation and Well S Attachments emailed to digitallogs@nd.gov; attached and emailed to certsurvey@nd.gov.	d a whipstock at 11,408' MD to sidetra specific Stimulations. CBL, Mudlogs: Horizontal and Vertic	ack the well. al in (las) and (Tif) formating	, geological report; Certified survey
I hereby swear or affirm that the information	Email Address	No source of the	Date
determined from all available records.	cally_wescoat@eogresou	rces.com	0-2-10
Signature	Printed Name	Title	
a Clashe Desal	Cally Wescoat	Sr. Regulat	tory Assistant

SUND INDUSTR OIL AND 600 EAST BISMARC SFN 5749 PLEASE READ INSTRUCTION PLEASE SUBMIT THE ORIGIN	RY NOTICES RIAL COMMISSION GAS DIVISION T BOULEVARD DE CK, ND 58505-084((09-2006) IS BEFORE FILLING	AND REP OF NORTH D EPT 405	ORTS C	ON WEL	LS - FORM	AN 237	Well	File No. 2852	5
PLEASE SUBMIT THE ORIGIN	AL AND ONE COP	Y.	1		Drilling Prognosis	61.81.11.91		port	
					Redrilling or Repa	, air		3	
☑ Report of Work Done	Date Work Com	pleted			Casing or Liner			2	
	February 7,	2015			Plug Well		☐ Fracture	Treatment	
Notice of Intent to Begin a	a Workover Proiect 1	hat mav Quali	fv		Supplemental His	story	Change	Production M	lethod
for a Tax Exemption Purs	uant to NDCC Sect	on 57-51.1-03			Temporarily Aban	idon	Reclama	ation	
	Approximate Sta	art Date			Other Oil	Allocation	Meter Insta	all	
	1								
Well Name and Number						1	24-HOUR PRO		ATE
Parshall 58-1608H	0	tr-Otr Se	ction IT	ownship	Range	Oil	Before	Af	ter Bbls
420 F S L 1	600 F W L	SESW	16	152 N	90 W	Water	Bbls	Water	Bbls
Field	Pool			County	- 9	Gas	MCF	Gas	MC
Address				City		Sta	ate	Zip Co	ode
			DETAIL	S OF WC	RK				
Meter Serial No: 144305 Meter Make: Micro Moti Meter Model Number: F	22 on 200S418CWBA	EZZZZ							
Company EOG Resources, Inc. Address	00N			Telepho (303)	one Number 262-9973	[7] Re	FOR STATE		ved
City Denver		Printed Name	State CO	Zip Coc 80202		Date Bv	1-8-16	-1	
Title Sr. Regulatory Assistant	escal	Cally West Date January	scoat 4, 2016			Title	avid -	Jahos	
Email Address									

at AT SIL	SUNDR	AL COMMISSION	AND RE	EPORTS H DAKOTA	ON WE	ELLS	6 - FORM	189	TOTTO	、		T
aller .	OIL AND G	BAS DIVISION	DT 405				(m			Well F	ile No. 28525	.
TH OF NORTH DIS	BISMARCH	K, ND 58505-0840	FT 400				E.	JUL	2015	1516	20020	<u> </u>
	SFN 5749 (0	9-2006)					EX	LCE	YED	T		
PLEASE READ INS	TRUCTIONS HE ORIGINA	BEFORE FILLING	OUT FOR	RM.			A REAL	DIVISI	GAS ON	1		
Notice of Inter	nt	Approximate Sta	rt Date				illing Prognosi	s	E	Spill Rep	ort	
	k Dana	Data Werk Com	alatad					ran -				
Keport of Wor	k Done	July 3, 2015	Dieleu								Transformation	
_		-					ug Well		L	Fracture	Ireatment	
Notice of Inter	nt to Begin a	Workover Project t ant to NDCC Section	hat may Q on 57-51.1	ualify -03		_ Su	ipplemental Hi	story	ł	Change	Production M	ethod
		Approximate Sta	rt Date		1 [Te	emporarily Aba	ndon	[Reclama	tion	
] [[0	her					
						_		-				
Parshall 58-160	8H								Be	fore	Af	ter
Footages		G	tr-Qtr	Section	Township)	Range	O	1	Bbls	Oil	Bbls
420 F S	L 16		SESW	16	152	N	90 W	W	ater	Bbls	Water	Bbls
Parshall		Bakke	en		Mou	y ntra	il	6	as	MCF	Gas	MCF
Address				DETA		WOF	8K		State		Zip Co	ode
The referenced 2015. ESP ASSEMBL BAKER FLEX E 2-7/8" 6.5# L-80 2-7/8" CUP TYF 261 JTS 2-7/8" 2-7/8" 6.5# L-80 LANDED @ 875 The referenced	I well cha .Y: ER ESP A D EUE 8RI PE SEAT I 6.5# L-80 D EUE 8RI 59.22'	nged producti SSEMBLY D TBG NIPPLE EUE 8RD PRO D TBG SUB	on meth DD TBG	nods from 8, 2015.	I flowing	g to	pump with	the in	stallati	on of an I	ESP on Ju	ly 3,
Company EOG Resource Address 600 17th Street,	es, Inc. Suite 10	00N			Tel (30	ephor 03) 2	ne Number 62-2866		Recei	FOR STATE		ved
City				State	Zip	Code		Da	ite	7.11	001	E
Signature	luc	Jace	Printed N Ally Ga	lame ale	80	202		Ву		20	n	2
Title Regulatory Cler Email Address	rk		Date July 8	, 2015				Tit	le JA	RED	THUN	VE
Ally_Gale@eog	resource	s.com						L	En	gineerii	ng Tech	nician

COBAT SEAL					ON WELL	.S - FORM 4				FR
	OIL AND G	AS DIVISION BOULEVARD DI	EPT 405	IDAROTA		3456	18910	Well	ile No. 28525	5
NORTH DE	BISMARCK SFN 5749 (09	, ND 58505-084	0			E MA	Y 2015	1		
PLEASE READ INS PLEASE SUBMIT TI	TRUCTIONS HE ORIGINAI	BEFORE FILLIN	G OUT FOR Y.	RM.		REC.	EIVED ST			
Notice of Inter	nt	Approximate St	art Date			Drilling Prognosis	12212 B	Spill Rep	port	
		June 15, 20	15		1 0	Redrilling or Repair	r C] Shooting	1	
Report of Wor	k Done	Date Work Con	npleted		1 5	asing or Liner		Acidizing	1	
					1 0,	Plug Well		Fracture	Treatment	
Notice of Inter	nt to Begin a V	Norkover Project	that may Q	ualify		Supplemental Hist	ory E	Change	Production M	lethod
for a Tax Exer	mption Pursua	Approximate St	art Date	-03.	ים ר	Temporarily Aban	don 🛛	Reclama	ation	
] 🛛	Other Pres	sure Monito	ring and	Remedia	Work
							1		DUCTION D	ATE
Parshall 58-160)8H						Bef	ore	Af	ter
Footages		-	Qtr-Qtr	Section	Township	Range	Oil	Bbls	Oil	Bbls
Field	L 10	Pool	2E2M	10	County	90 00	Gas	MCF	Gas	MCF
Parshall		Bakk	en		Mountr	ail				
Address	(3)				City		State		Zip C	ode
				DETA	ILS OF WO	RK				
EOG will re-co operations. Th acre. Grass Species 1. Western Wh 2. Green Needl 3. Slender Whe 4. Side Oats Gr The location w activities will b Surface Owner	ntour, rip e following s / % of sec eatgrass 2 eatgrass 2 rama 10.0 ill be mon be conduct r: James a	subsoil, spre g native gras ed mix 41.35 20.46 25.88 50 itored in sub ted if the mot	sequent nitoring i	vil, and re e will be o years for ndicates 58 34th St	seed the p drill seeded grass gro issues wit t. NW, Pars	ortions of the d with an app wth and the p h either of the shall, ND 5877	e location no roximate app presence of v ese. 70	t needed blication veeds. F	for ongoi rate of 15 urther rec	ng Ibs per Iamation
Company EOG Resource	es, Inc.				Teleph (303)	one Number 262-9973		FOR STAT		,
600 17th St, Su	ite 1000N						Receiv	ved	Appro	wed
City Denver	0			State	Zip Co 8020	de 2	Date	-12-15		1
Signature alles	Uli	Scarl	Printed N Cally V	lame Vescoat			Ву	Wa	ha	C
Title Sr. Regulatory	Assistant		May 7,	2015			Title	1	1	

Email Address	
cally_wescoat@eogresources.co	m

						X
	AUTHORIZATION TO PURCHASE AND INDUSTRIAL COMMISSION OF NORTH DAKOTA OIL AND GAS DIVISION 600 EAST BOULEVARD DEPT 405 BISMARCK, ND 58505-0840 SFN 5698 (03-2000)	TRANSPORT OIL		EASE	Ę-F	Well File No. 28525 NDIC CTB No. 228315
PLEASE READ INS PLEASE SUBMIT T	TRUCTIONS BEFORE FILLING OUT FORM. HE ORIGINAL AND FOUR COPIES	ND ND	OIL & GAS	EEU.		
Well Name and Num Parshall 58-16	iber D8H	Qtr-Qtr SESW	Township	Bange 90	w	County MOUNTRAIL
Operator EOG Resource	es, Inc.	Telephone Number (303) 262-9973	Field PARSH/	ALL		
Address 600 17th Stree	t, Suite 1000N	City Denver				Zip Code 80202
Name of First Purcha	aser es Marketing, LLC.	Telephone Number (713) 651-7000	% Purchase	ed	Date Jar	Effective nuary 1, 2015
Principal Place of Business 1111 Bagby Sky Lobby 2		City Houston		State TX		Zip Code 77002
Field Address		City		State		Zip Code
Name of Transporter Bridger Pipelir	ne, LLC	Telephone Number (307) 237-9301	% Transpor 100	ted	Date Ma	Effective y 11, 2015
Address 455 N. Poplar.	P.O. Drawer 2360	City Casper		State WY		Zip Code 82602

The above named producer authorizes the above named purchaser to purchase the percentage of oil stated above which is produced from the lease designated above until further notice. The oil will be transported by the above named transporter.

Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective	
Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective	
Other Transporters Transporting From This Lease	% Transported	Date Effective	
Other Transporters Transporting From This Lease	% Transported	Date Effective	
Comments			

I hereby swear or affirm that the information provid	ded is true, complete and correct as determi	ned from all available records.	Date May 12, 2015
Signature all was cool	Printed Name Cally Wescoat	Title Sr. Regulatory	Assistant
Above Signature Witnessed By Witness Signature	Witness Printed Name Christina Kemink	Witness Title Regulatory Cle	rk
		FOR STATE USE	ONLY

	FOR STATE USE ONET	
Date Approved	MAY 18 2015	
Ву	Enie Polerson	
Title	Oil & Gas Production Analyst	

A LEAST AND A LEAS	AUTHORIZATION TO PURCHASE AND INDUSTRIAL COMMISSION OF NORTH DAKOTA OIL AND GAS DIVISION 600 EAST BOULEVARD DEPT 405 BISMARCK, ND 58505-0840 SFN 5698 (03-2000)	FEB	2015 MED MSD	FROM L	EAS	E-F	FORM 8	
PLEASE READ INS	TRUCTIONS BEFORE FILLING OUT FORM	6282129	2020266	<i>y</i>				
Well Name and Num Parshall 58-160	HE ORIGINAL AND FOUR COPIES.	Qtr-Qtr SESW	Section 16	Township 152 N	Range 90	e) w	County Mountrail	
Operator EOG Resource	s, Inc.	Telephone Number Field (303) 262-9973 Parshall						
Address 600 17th Street, Suite 1000N		City Denver		State CO		Zip Code 80202		
Name of First Purcha	ser s Marketing, Inc	Telephone (713) 65	Number 1-7000	% Purchase	ed	Date Fel	Effective bruary 10, 2015	
Principal Place of Bu 1111 Bagby Sk	siness y Lobby 2	City Houston					Zip Code 77002	
Field Address		City			State	State Zip Code		
Name of Transporter Red Star, LLC		Telephone Number % Trai (701) 627-4500		% Transpor 100	Transported Dat 100 Fe		Effective Druary 10, 2015	
Address		City St Newtown			State ND		Zip Code 58763	
The above named pro above until further no	oducer authorizes the above named purchaser to purchase th tice. The oil will be transported by the above named transpor	ne percentage of otter.	oil stated a	above which is	s produ	uced fr	rom the lease designated	

Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other Transporters Transporting From This Lease Aarmac Transport	% Transported	Date Effective February 10, 2015
Other Transporters Transporting From This Lease	% Transported	Date Effective February 10, 2015
Comments		

REVISED: Red Star will continue to be the main transporter for the Parshall 16 SESW 1 pad. In the event that additional transportation is needed Aarmac and Iowa Tanklines will be the back up transporters

I hereby swear or affirm that the information pro	Date February 10, 2015		
Signature All Descar	Printed Name Cally Wescoat	Title Sr. Regulatory	Assistant
Above Signature Witnessed By Witness Signature	Witness Printed Name	Witness Title Regulatory Cle	rk

	FOR STATE USE ONLY	
Date Approved	FEB 7-8 2015	
Ву	Evie follerson	
Title	Oil & Gas Production Analyst	

PLEASE READ INS	AUTHORIZATION TO PURC INDUSTRIAL COMMISSION OF NORT OIL AND GAS DIVISION 600 EAST BOULEVARD DEPT 405 BISMARCK, ND 58505-0840 SFN 5698 (03-2000) TRUCTIONS BEFORE FILLING OUT FO HE ORIGINAL AND FOUR COPIES		ANSPOR	RT OIL	FROM L	EASI	E - F	Well File No. 28525 NDIC CTB No. 228315
Well Name and Num Parshall 58-160	ber D8H	DIVISION	Otr-Or	Section 15	Township 152 N	Range 90	w	County Mountrail
Operator EOG Resource	s, Inc.	Caller -	Telephone (303) 26	Number 52-9973	Field Parshall			
Address 600 17th Street	t, Suite 1000N		City Denver			State CO		Zip Code 80202
Name of First Purcha	aser Ps Marketing, Inc		Telephone (713) 65	Number 1-7000	% Purchase 100	d	Date No	Effective vember 20, 2014
Principal Place of Bu 1111 Bagby Sk	siness xy Lobby 2		City Houston TX					Zip Code 77002
Field Address			City			State		Zip Code
Name of Transporter	ervices		Telephone (701) 50	Number 9-6537	% Transpor 100	ted	Date Nov	Effective /ember 20, 2014
Address 2100 20th Ave	SE		City Minot			State ND		Zip Code 58701
The above named pro above until further no	oducer authorizes the above named purcha tice. The oil will be transported by the abo	aser to purchase the pe ve named transporter.	rcentage of	oil stated a	bove which i	s produ	ced fr	om the lease designated

Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other Transporters Transporting From This Lease	% Transported	Date Effective
Other Transporters Transporting From This Lease	% Transported	Date Effective
Comments		

I hereby swear or affirm that the information provided	is true, complete and correct as determined	from all available records.	Date November 20, 2014
Signature ALL DUSCOOL	Printed Name Cally Wescoat	Title Sr. Regulatory	Assistant
Above Signature Witnessed By Witness Signature	Witness Printed Name	Witness Title	
Christic femi	Christina Kemink	Regulatory Cle	erk
	Date Approved	FOR STATE USE	ONLY
	By	<u>+EB 0 4 20</u>	15
	Title	Carrie 1700	Erson
	Title	Oil & Gas Produ	ction Analyst

OIL AND GOO EAS BISMAF SFN 574	REPORT NOTICES AND REPORT RIAL COMMISSION OF NORTH DAK D GAS DIVISION ST BOULEVARD DEPT 405 RCK, ND 58505-0840 9 (09-2006)	RTS ON	WELLS - FORM A OCT REC ND 0	237 2014 EIVED	Well	File No. 28	9525	
LEASE READ INSTRUCTIO	NS BEFORE FILLING OUT FORM.		Stand B	ISION .	J.			
Notice of Intent	Approximate Start Date					port		-
			Redrilling or Repair	r		a		
Report of Work Done	Date Work Completed		Casing or Liner			a		
	September 26, 2014				E Fracture	e Treatme	ent	
Notice of Intent to Begin	a Workover Project that may Qualify		Supplemental Histo			Productio	on Method	
for a Tax Exemption Pu	rsuant to NDCC Section 57-51.1-03.	_		lon		ation	on mounou	
	Approximate Start Date		D Other Spue	d		ation		
								-
ell Name and Number		-			24-HOUR PRO	DUCTIO	N RATE	
arshall 58-1608H		-		01	Before	01	After	21.1.
420 FS	1600 FW L SESW 1	6 1	52 N 90 W	Water	Bbls	Water		Bbls
eld	Pool	c	ounty	Gas	MCF	Gas		MCF
arshall	Bakken	N	lountrail					
			,					
	D	ETAILS	DF WORK					
1&P FLEX #454 move Per sundry dated July A Craig's rig set surfa	D d onto location to complete 20, 2014. ce casing on the referenced	DETAILS (drilling an well on 7	DF WORK and spud the well on 121/2014.	9/26/14				
H&P FLEX #454 move Per sundry dated July A Craig's rig set surfa Sompany EOG Resources, Inc.	d onto location to complete 20, 2014. ce casing on the referenced	DETAILS (drilling an well on 7	DF WORK nd spud the well on 121/2014. WWW	9/26/14	FOR STA		NLY	
A Craig's rig set surfa ompany OG Resources, Inc. ddress 00 17th Street, Suite	D d onto location to complete 20, 2014. ce casing on the referenced	DETAILS (drilling and well on 7	DF WORK nd spud the well on 121/2014. December (303) 262-9973	9/26/14	FOR STA		NLY	
ABP FLEX #454 move Ver sundry dated July Craig's rig set surfa	d onto location to complete 20, 2014. ce casing on the referenced 1000N	DETAILS (drilling an well on 7	DF WORK nd spud the well on 121/2014. Docum Telephone Number (303) 262-9973 Zip Code 80202	9/26/14 Date	FOR STA		DNLY Approved	
A Craig's rig set surfa Craig's rig set surfa ompany OG Resources, Inc. ddress 00 17th Street, Suite ity enver ispature	d onto location to complete 20, 2014. ce casing on the referenced 1000N Printed Name Cally West	DETAILS (drilling and well on 7	DF WORK nd spud the well on 121/2014. Daw Telephone Number (303) 262-9973 Zip Code 80202	9/26/14 Date By	FOR STA		NLY Approved	

Email Address Cally_Wescoat@eogresources.com

Date	2/2	3/1	5.	
Ву	leel	4	11-	-
Title	M	Su	1	

4



742 W. White Ave Grand Junction, Colorado 81501

> 970.257.1911 (office) 970.257.1947(fax) www.msenergyservices.com

August 1, 2014

North Dakota Industrial Commission Oil & Gas Division 600 North Boulevard Ave Department 405 Bismarck, North Dakota 58505

RE: EOG Resources, Inc. Parshall 58-1608H Mountrail County, ND Rig: H&P #524

Dear North Dakota Industrial Commission:

Please find enclosed the original certified Rate Gyro Surveys run from Surface to a depth of 1,947' M.D. on the above mentioned well.

If I can be of any further assistance, please do not hesitate to call me at 936-442-2567.

Sincerely,

Crystal Verino MS Survey



3335 Pollok Drive Conroe, Texas 77303

936.442.2500 (office) 936.442.2599 (fax) www.msenergyservices.com

Surveyor Certification Form

Survey Company: MS ENERGY SERVICES Surveyors Name: DUSTIN FOWLER Survey Job Type: RATE GYRO Customer: EOG RESOURCES Well: PARSHALL 58-1608H API: 33-061-03135 Surveyed from: SURFACE TO A DEPTH OF 1947' MD Survey Run Date: 7-31-14 Surface Location: MOUNTRAIL COUNTY, ND

I certify that the data is true, correct, and complete and within the limitations of the tool set forth by MS Energy Services; that I am authorized and qualified to make this report; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by MS Energy Services.

Dustin Fowler

Digitally signed by Dustin Fowler DN: cn=Dustin Fowler, o=MS Energy Services, ou=MS Survey, email=dfowler@msenergyservices.com, c=US Date: 2013.01.02 15:27:29 -06'00'



Job Number: SVGJ-140934 Company: EOG Resources, Inc. Lease/Well: Parshall 58-1608H Location: Mountrail County, ND Rig Name: H&P #524 RKB: 30' G.L. or M.S.L.: GL State/Country: North Dakota/USA Declination: 7.26° Grid: East To True North File name: S:\2014SU~1\EOG\GJ\PARSHALL\58\1608H.SVY Date/Time: 01-Aug-14 / 12:18 Curve Name: Surface - 1947' M.D. (Rate Gyro)

MS SURVEY

WINSERVE SURVEY CALCULATIONS Minimum Curvature Method Vertical Section Plane .00 Vertical Section Referenced to Wellhead Rectangular Coordinates Referenced to Wellhead

Measured	Incl	Drift	True			Vertical	CLO	SURE	Dogleg
Depth FT	epth Angle Direction Vertical N-S E FT Deg Deg Depth FT	E-W FT	Section FT	Distance FT	Direction Deg	Severity Deg/100			
.00	.00	.00	.00	.00	.00	.00	00	00	00
100.00	.88	13.37	100.00	.75	.18	.75	.77	13 37	.00
200.00	.82	2.34	199.99	2.21	.38	2 21	2 24	9.87	.00
300.00	.45	33.67	299.98	3.25	63	3 25	3 31	10.00	.17
400.00	.58	58.07	399.98	3.85	1.28	3.85	4.05	18.39	.25
500.00	.37	70.46	499.97	4.22	2.01	4 22	4 68	25.49	22
600.00	.08	67.18	599.97	4.36	2.38	4.36	4 96	28.66	.20
700.00	.13	262.24	699.97	4.37	2.33	4 37	4.95	28.00	.29
800.00	.25	88.84	799.97	4.36	2 44	4 36	4.00	20.11	.21
900.00	.23	308.80	899.97	4.49	2.50	4.49	5.14	29.13	.38

Measured	Incl	Drift	True			Vertical	CLC	SURE	Dogleg
Depth FT	Angle Deg	Direction Deg	Vertical Depth	N-S FT	E-W FT	Section FT	Distance FT	Direction Deg	Severity Deg/100
1000.00	.46	192.79	999.97	4.22	2.26	4.22	4 79	28 11	60
1100.00	.49	118.11	1099.97	3.63	2.54	3.63	4 43	35.03	.00
1200.00	.36	56.38	1199.96	3.60	3.18	3.60	4 81	41 47	.50
1300.00	.05	334.04	1299.96	3.81	3.42	3.81	5.13	41 92	36
1400.00	.36	110.21	1399.96	3.74	3.70	3.74	5.26	44.66	.40
1500.00	.38	3.26	1499.96	3.97	4.01	3.97	5.64	45 33	50
1600.00	.42	269.46	1599.96	4.30	3.67	4.30	5.65	40.48	58
1700.00	.26	180.98	1699.96	4.06	3.30	4.06	5 23	39.04	.50
1800.00	.28	300.21	1799.96	3.96	3.08	3.96	5.02	37.88	.45
1900.00	.56	253.86	1899.96	3.95	2.40	3.95	4.62	31.30	.42
Last Survey	Depth Record	led							
1947.00	.64	234.72	1946.95	3.73	1.97	3.73	4.22	27.77	.46



Survey Certification

7327 West Barton Road Casper, WY 82604 (307)-472-6621 Fax (307) 472-5439

Operator	EOG Resources Inc,	
Well Name & No.	Parshall 58-1608H OH	
County & State	Mountrai County, ND	
SDI Job No.	410814HEFK186361	
Rig	H&P 278	
Survey Date	12-Oct-2014	

 I,
 Seth M. Burstad
 , having personal knowledge of all the facts, hereby

 certify that the attached directional survey run from a measured depth of
 2047
 feet to a

 measured depth of
 15124
 feet is true and correct as determined from all available records.

Signature

16-Oct-2014 Date

Seth M. Burstad Rockies Region Well Planner Scientific Drilling - Rocky Mountain District



EOG Resources Inc.

Parshall NAD 27 Parshall Parshall 58-1608H

Original Drilling

Design: Original Drilling

Standard Survey Report

16 October, 2014



www.scientificdrilling.com



Survey Report



Company: Project: Site: Well: Wellbore: Design:	EOG Resources Inc. Parshall NAD 27 Parshall Parshall 58-1608H Original Drilling Original Drilling			Local Co-ordin TVD Reference MD Reference: North Reference Survey Calcula Database:	ate Reference : e: tion Method:	e:	Well Parshall 56 GL 1957' & KB GL 1957' & KB True Minimum Curva Casper District	3-1608H 26' @ 1983.00ft 26' @ 1983.00ft ture	
Project	Parshall NAD 2	7,							
Map System: Geo Datum: Map Zone:	US State Plane 1 NAD 1927 (NAD0 North Dakota Nor	927 (Exact so CON CONUS) th 3301	plution))	System Datu	n:		Mean Sea Lev	el	
Site	Parshall								
Site Position: From: Position Uncertain	Lat/Long	0.00 ft	Northing: Easting: Slot Radius:	360,61 1,596,40 13	9.48 usft 1.21 usft .200 in (Latitude: Longitude Grid Conv	e: vergence:		47° 58' 36.472 N 102° 8' 52.445 W -1.23 °
Well	Parshall 58-1608	3H. 420' FSL	1600' FWL Sec 16	T152N R90W					
Well Position Position Uncertain	+N/-S +E/-W nty	0.00 ft 0.00 ft 0.00 ft	Northing: Easting: Wellhead Eleva	1 ation:	361,738.40 u ,581,709.44 u 0.00 t	usft usft ft	Latitude: Longitude: Ground Level:		47° 58' 44.353 N 102° 12' 28.692 W 1,957.00 ft
Wellbore	Original Drilling								
Magnetics	Model Nam	e 12014	Sample Date 8/7/2014	Declinatio (°)	on 7 50	D	Dip Angle (°) 73.06	Field St (n ⁻	rength () 56.368
		12014	0///2014		7.00		70.00		00,000
Design	Original Drilling								
Audit Notes:									
Version:	1.0		Phase:	ACTUAL	Tie (On Depth	:		0.00
Vertical Section:		Depth F	rom (TVD) (ft) 0.00	+N/-S (ft) 0.00	+E/- (ft	-W t) 0.00		Direction (°) 27.7	7

Survey Program	Date 10/16/2014		
From (ft)	To (ft) Survey (Wellbore)	Tool Name	Description
100.00 2,047.00 9,603.00	1,947.00 Survey #1 - Surface (Original Drilling) 9,500.00 Survey #2 - Vertical/Curve (Original Drilling 15,124.00 Survey #3 - Lateral (Original Drilling)	NS-GYRO-MS MWD SDI MWD+IFR1+MSA (Sperry)	North sensing gyrocompassing m/s MWD - Standard ver 1.0.1 Fixed:v2:Rockies, crustal dec + 3-axis correction

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,947.00	0.64	234.72	1,946.95	3.73	1.97	4.22	0.46	0.17	-40.72
2,047.00	1.10	265.29	2,046.94	3.33	0.55	3.21	0.64	0.46	30.57
1st SDI MWD) Survey								
2,111.00	1.14	279.45	2,110.93	3.39	-0.69	2.68	0.44	0.06	22.13
2,206.00	1.05	313.34	2,205.91	4.14	-2.25	2.61	0.68	-0.09	35.67
2,301.00	1.38	2.44	2,300.89	5.88	-2.84	3.88	1.11	0.35	51.68
2,396.00	1.93	13.39	2,395.85	8.58	-2.42	6.46	0.67	0.58	11.53
2,491.00	2.52	21.14	2,490.78	12.08	-1.29	10.09	0.70	0.62	8.16
2,585.00	1.75	359.93	2,584.72	15.44	-0.55	13.41	1.16	-0.82	-22.56



Survey Report



Company:	EOG Resources Inc.	Local Co-ordinate Reference:	Well Parshall 58-1608H
Project:	Parshall NAD 27	TVD Reference:	GL 1957' & KB 26' @ 1983.00ft
Site:	Parshall	MD Reference:	GL 1957' & KB 26' @ 1983.00ft
Well:	Parshall 58-1608H	North Reference:	True
Wellbore:	Original Drilling	Survey Calculation Method:	Minimum Curvature
Design:	Original Drilling	Database:	Casper District

Measured			Vertical			Vertical	Dogleg	Build	Turn	
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Section	Rate	Rate	Rate	
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)	
2,680.00	0.81	282.98	2,679.70	17.05	-1.21	14.52	1.85	-0.99	-81.00	
2,775.00	1.21	180.30	2,774.69	16.19	-1.87	13.46	1.68	0.42	-108.08	
2,871.00	1.92	169.30	2,870.65	13.60	-1.57	11.30	0.80	0.74	-11.46	
2,966.00	1.88	168.24	2,965.60	10.51	-0.96	8.85	0.06	-0.04	-1.12	
3,061.00	1.92	165.22	3,060.55	7.45	-0.24	6.48	0.11	0.04	-3.18	
3,156.00	1.89	162.27	3,155.50	4.42	0.65	4.21	0.11	-0.03	-3.11	
3,250.00	1.85	172.81	3,249.45	1.43	1.31	1.88	0.37	-0.04	11.21	
3,345.00	1.68	171.62	3,344.40	-1.47	1.70	-0.50	0.18	-0.18	-1.25	
3,439.00	1.64	175.17	3,438.36	-4.17	2.02	-2.75	0.12	-0.04	3.78	
3,534.00	1.15	173.66	3,533.33	-6.47	2.24	-4.68	0.52	-0.52	-1.59	
3,629.00	0.98	176.84	3,628.32	-8.23	2.39	-6.17	0.19	-0.18	3.35	
3,724.00	0.57	170.74	3,723.31	-9.51	2.51	-7.24	0.44	-0.43	-6.42	
3,818.00	0.46	190.63	3,817.30	-10.34	2.51	-7.98	0.22	-0.12	21.16	
3,913.00	0.03	287.87	3,912.30	-10.71	2.42	-8.35	0.49	-0.45	102.36	
4,008.00	0.67	45.31	4,007.30	-10.31	2.79	-7.82	0.72	0.67	123.62	
4,103.00	0.74	68.47	4,102.29	-9.69	3.76	-6.83	0.31	0.07	24.38	
4,198.00	0.97	66.06	4,197.28	-9.14	5.06	-5.73	0.24	0.24	-2.54	
4,293.00	0.42	89.21	4,292.28	-8.81	6.15	-4.93	0.64	-0.58	24.37	
4,388.00	0.92	101.59	4,387.27	-8.96	7.24	-4.55	0.54	0.53	13.03	
4,483.00	1.58	98.43	4,482.25	-9.30	9.28	-3.91	0.70	0.69	-3.33	
4,578.00	1.71	97.53	4,577.21	-9.68	11.98	-2.98	0.14	0.14	-0.95	
4,673.00	0.92	92.37	4,672.18	-9.90	14.15	-2.17	0.84	-0.83	-5.43	
4,767.00	0.50	79.19	4,766.17	-9.85	15.31	-1.59	0.48	-0.45	-14.02	
4,862.00	0.27	21.03	4,861.17	-9.57	15.80	-1.11	0.45	-0.24	-61.22	
4,957.00	0.85	49.98	4,956.17	-8.90	16.42	-0.23	0.66	0.61	30.47	
5,051.00	1.08	23.95	5,050.15	-7.65	17.31	1.30	0.52	0.24	-27.69	
5,146.00	1.12	22.40	5,145.14	-5.97	18.03	3.12	0.05	0.04	-1.63	
5,240.00	1.07	51.67	5,239.12	-4.58	19.07	4.83	0.59	-0.05	31.14	
5,335.00	1.49	79.40	5,334.10	-3.80	20.97	6.41	0.78	0.44	29.19	
5,429.00	0.33	86.33	5,428.08	-3.56	22.45	7.31	1.24	-1.23	7.37	
5,524.00	0.11	332.50	5,523.08	-3.46	22.68	7.51	0.41	-0.23	-119.82	
5,619.00	0.17	92.67	5,618.08	-3.38	22.78	7.62	0.26	0.06	126.49	
5,714.00	0.34	75.08	5,713.08	-3.32	23.19	7.87	0.19	0.18	-18.52	
5,808.00	0.32	95.49	5,807.08	-3.27	23.72	8.16	0.13	-0.02	21.71	
5,903.00	0.20	79.71	5,902.08	-3.27	24.15	8.36	0.15	-0.13	-16.61	
5,997.00	0.46	100.26	5,996.08	-3.31	24.68	8.57	0.30	0.28	21.86	
6,092.00	0.38	146.33	6,091.08	-3.64	25.23	8.54	0.35	-0.08	48.49	
6,187.00	0.51	179.07	6,186.07	-4.32	25.41	8.02	0.29	0.14	34.46	
6,281.00	1.18	184.28	6,280.06	-5.70	25.35	6.76	0.72	0.71	5.54	
6,376.00	1.72	184.43	6,375.03	-8.10	25.16	4.56	0.57	0.57	0.16	
6,471.00	1.99	175.37	6,469.98	-11.17	25.19	1.85	0.42	0.28	-9.54	
6,566.00	2.11	178.50	6,564.92	-14.56	25.36	-1.06	0.17	0.13	3.29	
6,660.00	2 18	173 06	6.658 86	-18 06	25.63	-4 04	0 23	0 07	-5 79	
 2,200.00	25		-,		_0.00		0.20	0.0.	00	



Survey Report



Company:	EOG Resources Inc.	Local Co-ordinate Reference:	Well Parshall 58-1608H
Project:	Parshall NAD 27	TVD Reference:	GL 1957' & KB 26' @ 1983.00ft
Site:	Parshall	MD Reference:	GL 1957' & KB 26' @ 1983.00ft
Well:	Parshall 58-1608H	North Reference:	True
Wellbore:	Original Drilling	Survey Calculation Method:	Minimum Curvature
Design:	Original Drilling	Database:	Casper District

Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate	
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)	
6,755.00	2.23	189.61	6,753.79	-21.68	25.54	-7.28	0.67	0.05	17.42	
6,850.00	0.36	214.90	6,848.76	-23.75	25.06	-9.34	2.01	-1.97	26.62	
6,945.00	0.11	343.14	6,943.76	-23.90	24.86	-9.57	0.46	-0.26	134.99	
7,038.00	0.20	302.96	7,036.76	-23.73	24.70	-9.49	0.15	0.10	-43.20	
7,133.00	0.14	183.07	7,131.76	-23.76	24.55	-9.58	0.31	-0.06	-126.20	
7,228.00	0.47	335.62	7,226.76	-23.52	24.38	-9.45	0.63	0.35	160.58	
7,323.00	1.00	331.28	7,321.75	-22.44	23.83	-8.75	0.56	0.56	-4.57	
7,418.00	0.49	358.35	7,416.74	-21.30	23.42	-7.94	0.64	-0.54	28.49	
7,512.00	0.54	353.09	7,510.74	-20.46	23.35	-7.22	0.07	0.05	-5.60	
7,607.00	0.88	32.01	7,605.73	-19.40	23.68	-6.13	0.60	0.36	40.97	
7,702.00	1.07	14.94	7,700.72	-17.92	24.30	-4.54	0.36	0.20	-17.97	
7,797.00	0.67	37.45	7,795.71	-16.62	24.87	-3.12	0.55	-0.42	23.69	
7,892.00	0.70	7.64	7,890.70	-15.61	25.28	-2.03	0.37	0.03	-31.38	
7,987.00	0.81	13.24	7,985.69	-14.38	25.51	-0.84	0.14	0.12	5.89	
8,082.00	0.59	34.12	8,080.68	-13.32	25.94	0.30	0.35	-0.23	21.98	
8,176.00	0.44	1.38	8,174.68	-12.56	26.22	1.10	0.34	-0.16	-34.83	
8,271.00	0.92	353.22	8,269.67	-11.44	26.14	2.06	0.51	0.51	-8.59	
8,366.00	0.82	351.99	8,364.66	-10.01	25.95	3.24	0.11	-0.11	-1.29	
8,461.00	0.85	358.42	8,459.65	-8.63	25.84	4.40	0.10	0.03	6.77	
8,556.00	0.64	346.65	8,554.64	-7.41	25.70	5.42	0.27	-0.22	-12.39	
8,650.00	0.66	9.22	8,648.64	-6.36	25.66	6.33	0.27	0.02	24.01	
8,743.00	0.66	21.67	8,741.63	-5.34	25.95	7.37	0.15	0.00	13.39	
8,806.00	0.71	6.37	8,804.63	-4.61	26.12	8.09	0.30	0.08	-24.29	
8,838.00	0.71	17.76	8,836.62	-4.23	26.21	8.47	0.44	0.00	35.59	
8,869.00	0.40	302.20	8,867.62	-3.99	26.17	8.67	2.33	-1.00	-243.74	
8,901.00	4.97	272.98	8,899.58	-3.85	24.69	8.10	14.45	14.28	-91.31	
8,932.00	11.05	275.19	8,930.26	-3.51	20.39	6.39	19.63	19.61	7.13	
8,964.00	18.06	281.27	8,961.22	-2.27	12.46	3.80	22.39	21.91	19.00	
8,996.00	24.07	286.28	8,991.07	0.54	1.32	1.09	19.59	18.78	15.66	
9,027.00	26.77	285.77	9,019.07	4.21	-11.47	-1.62	8.74	8.71	-1.65	
9,059.00	29.53	285.04	9,047.28	8.21	-26.02	-4.86	8.69	8.63	-2.28	
9,090.00	32.83	285.05	9,073.80	12.38	-41.52	-8.39	10.65	10.65	0.03	
9,122.00	35.67	285.77	9,100.24	17.17	-58.88	-12.24	8.96	8.88	2.25	
9,153.00	38.72	285.82	9,124.94	22.27	-76.91	-16.13	9.84	9.84	0.16	
9,185.00	42.19	284.64	9,149.28	27.71	-96.94	-20.65	11.10	10.84	-3.69	
9,216.00	45.85	283.76	9,171.57	32.99	-117.82	-25.71	11.97	11.81	-2.84	
9,248.00	51.32	283.63	9,192.73	38.67	-141.13	-31.54	17.10	17.09	-0.41	
9,280.00	56.21	284.21	9,211.64	44.88	-166.17	-37.71	15.35	15.28	1.81	
9,311.00	59.10	284.50	9,228.22	51.37	-191.54	-43.79	9.36	9.32	0.94	
9,343.00	61.33	285.18	9,244.12	58.49	-218.39	-50.00	7.21	6.97	2.13	
9,374.00	64.32	286.22	9,258.28	65.95	-244.93	-55.76	10.10	9.65	3.35	
9,406.00	68.25	287.08	9,271.14	74.35	-272.99	-61.41	12.53	12.28	2.69	
9.437.00	72.00	287.31	9,281.68	82.97	-300.84	-66.76	12.12	12.10	0.74	
9,469.00	74.46	287.34	9,290.91	92.09	-330.09	-72.31	7.69	7.69	0.09	



Survey Report



Company:	EOG Resources Inc.	Local Co-ordinate Reference:	Well Parshall 58-1608H
Project:	Parshall NAD 27	TVD Reference:	GL 1957' & KB 26' @ 1983.00ft
Site:	Parshall	MD Reference:	GL 1957' & KB 26' @ 1983.00ft
Well:	Parshall 58-1608H	North Reference:	True
Wellbore:	Original Drilling	Survey Calculation Method:	Minimum Curvature
Design:	Original Drilling	Database:	Casper District

Measured			Vertical			Vertical	Dogleg	Build	Turn	
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Section	Rate	Rate	Rate	
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)	
9,500.00	76.50	287.38	9,298.68	101.04	-358.73	-77.74	6.58	6.58	0.13	
9,603.00	82.93	283.69	9,317.07	128.14	-456.31	-99.23	7.17	6.24	-3.58	
First Survey	in 6" Hole									
9,636.00	84.28	284.77	9,320.75	136.20	-488.10	-106.91	5.23	4.09	3.27	
9,667.00	85.39	282.36	9,323.54	143.44	-518.11	-114.49	8.53	3.58	-7.77	
9,697.00	86.30	280.18	9,325.71	149.28	-547.45	-122.99	7.86	3.03	-7.27	
9,728.00	86.98	279.58	9,327.53	154.59	-577.94	-132.49	2.92	2.19	-1.94	
9,758.00	86.54	277.49	9,329.22	159.04	-607.56	-142.36	7.11	-1.47	-6.97	
9,789.00	85.96	277.61	9,331.25	163.10	-638.22	-153.05	1.91	-1.87	0.39	
9,820.00	87.11	277.40	9,333.13	167.15	-668.90	-163.77	3.77	3.71	-0.68	
9,851.00	89.03	278.31	9,334.17	171.38	-699.59	-174.32	6.85	6.19	2.94	
0 882 00	01 18	277 52	0 33/ 11	175.65	-730 29	-184 85	7 30	6.94	-2.55	
9,002.00	91.10	276.30	9,334.11	179.05	-760.07	-104.00	1.59	0.94	-2.55	
9,912.00	91.50	276.06	9,000.44	185.03	-821.67	-218 33	1.83	1 79	-4.07	
10 005 00	91 24	275.00	9 330 34	189.03	-852 50	-229.94	4 49	-4.03	-1 97	
10,000.00	89.63	276.40	9,330,11	191 75	-882.37	-241 46	5.64	-5.37	-1 73	
10,000.00	00.00	211.00	0,000.11	101110	002.01	211.10	0.01	0.01		
10,097.00	89.06	276.20	9,330.82	197.76	-944.07	-264.89	2.25	-0.92	2.05	
10,189.00	86.13	274.71	9,334.68	206.50	-1,035.56	-299.79	3.57	-3.18	-1.62	
10,220.00	85.36	274.77	9,336.98	209.05	-1,066.37	-311.88	2.49	-2.48	0.19	
10,251.00	84.92	273.77	9,339.61	211.35	-1,097.17	-324.20	3.51	-1.42	-3.23	
10,282.00	85.26	273.56	9,342.26	213.33	-1,128.00	-336.82	1.29	1.10	-0.68	
10,313.00	87.45	274.72	9,344.23	215.56	-1,158.85	-349.22	7.99	7.06	3.74	
10,344.00	89.26	275.41	9,345.12	218.30	-1,189.72	-361.18	6.25	5.84	2.23	
10,375.00	89.36	275.25	9,345.49	221.18	-1,220.58	-373.01	0.61	0.32	-0.52	
10,406.00	89.97	275.77	9,345.68	224.15	-1,251.44	-384.75	2.59	1.97	1.68	
10,436.00	89.90	276.37	9,345.71	227.32	-1,281.27	-395.84	2.01	-0.23	2.00	
10 467 00	00.02	276 54	0 245 72	220.91	1 212 07	407 11	0.60	0.42	0.55	
10,407.00	90.03	270.34	9,345.75	230.01	-1,312.07	-407.11	0.09	0.42	0.55	
10,498.00	88.90	270.04	9,345.75	234.42	-1,342.00	-410.20	10.17	-0.42	0.97	
10,529.00	89.09	281 12	9,346.57	244.56	-1,070.00	-420.07	4.08	-2.34	4.06	
10,500.00	89.63	282.85	9,346,91	251.00	-1,404.00	-446 21	5.85	1 74	5 58	
10,001.00	00.00	202.00	0,040.01	201.00	1,404.02	440.21	0.00	1.74	0.00	
10,622.00	89.83	283.46	9,347.06	258.06	-1,464.51	-454.03	2.07	0.65	1.97	
10,653.00	90.13	283.37	9,347.07	265.25	-1,494.66	-461.72	1.01	0.97	-0.29	
10,683.00	90.34	285.55	9,346.95	272.74	-1,523.71	-468.62	7.30	0.70	7.27	
10,713.00	89.93	286.40	9,346.88	281.00	-1,552.55	-474.76	3.15	-1.37	2.83	
10,744.00	89.63	284.95	9,347.00	289.37	-1,582.40	-481.25	4.78	-0.97	-4.68	
10,775.00	89.50	286.55	9,347.23	297.78	-1,612.23	-487.71	5.18	-0.42	5.16	
10,806.00	89.16	287.65	9,347.59	306.90	-1,641.86	-493.45	3.71	-1.10	3.55	
10,837.00	90.07	288.63	9,347.80	316.55	-1,671.32	-498.63	4.31	2.94	3.16	
10,867.00	90.97	289.30	9,347.53	326.30	-1,699.69	-503.22	3.74	3.00	2.23	
10,898.00	91.31	289.99	9,346.91	336.72	-1,728.88	-507.60	2.48	1.10	2.23	
10 000 00		000 / 0		o /=						
10,929.00	91.01	290.12	9,346.29	347.35	-1,757.99	-511.77	1.05	-0.97	0.42	
10,959.00	89.13	291.89	9,346.25	358.10	-1,786.00	-515.30	8.61	-6.27	5.90	



Survey Report



Company:	EOG Resources Inc.	Local Co-ordinate Reference:	Well Parshall 58-1608H
Project:	Parshall NAD 27	TVD Reference:	GL 1957' & KB 26' @ 1983.00ft
Site:	Parshall	MD Reference:	GL 1957' & KB 26' @ 1983.00ft
Well:	Parshall 58-1608H	North Reference:	True
Wellbore:	Original Drilling	Survey Calculation Method:	Minimum Curvature
Design:	Original Drilling	Database:	Casper District

Measured			Vertical			Vertical	Dogleg	Build	Turn
Depth (ft)	Inclination (°)	Azimuth (°)	Depth (ft)	+N/-S (ft)	+E/-W (ft)	Section (ft)	Rate (°/100ft)	Rate (°/100ft)	Rate (°/100ft)
10,990.00	88.76	293.29	9,346.82	370.01	-1,814.61	-518.10	4.67	-1.19	4.52
11,021.00	89.03	291.90	9,347.42	381.91	-1,843.23	-520.89	4.57	0.87	-4.48
11,052.00	88.99	292.37	9,347.95	393.59	-1,871.94	-523.94	1.52	-0.13	1.52
11,082.00	88.62	293.07	9,348.58	405.18	-1,899.60	-526.58	2.64	-1.23	2.33
11,113.00	88.52	295.20	9,349.35	417.85	-1,927.88	-528.54	6.88	-0.32	6.87
11,144.00	88.28	295.04	9,350.22	431.00	-1,955.94	-529.98	0.93	-0.77	-0.52
11,175.00	88.89	295.31	9,350.98	444.19	-1,983.99	-531.38	2.15	1.97	0.87
11,206.00	89.43	295.28	9,351.44	457.43	-2,012.01	-532.72	1.74	1.74	-0.10
11,237.00	89.56	296.69	9,351.71	471.01	-2,039.88	-533.69	4.57	0.42	4.55
11,268.00	88.79	296.79	9,352.16	484.96	-2,067.56	-534.24	2.50	-2.48	0.32
11,299.00	88.83	298.08	9,352.80	499.24	-2,095.06	-534.42	4.16	0.13	4.16
11,330.00	88.52	299.19	9,353.52	514.09	-2,122.27	-533.96	3.72	-1.00	3.58
11,361.00	88.49	299.39	9,354.33	529.25	-2,149.29	-533.13	0.65	-0.10	0.65
11,392.00	88.83	301.60	9,355.05	544.98	-2,176.00	-531.66	7.21	1.10	7.13
11,422.00	89.76	301.77	9,355.42	560.73	-2,201.52	-529.61	3.15	3.10	0.57
11,453.00	90.87	303.65	9,355.25	577.48	-2,227.60	-526.95	7.04	3.58	6.06
11,484.00	91.68	303.47	9,354.56	594.62	-2,253.43	-523.82	2.68	2.61	-0.58
11,515.00	91.24	302.56	9,353.77	611.50	-2,279.42	-520.99	3.26	-1.42	-2.94
11,546.00	90.10	304.29	9,353.41	628.57	-2,305.28	-517.93	6.68	-3.68	5.58
11,577.00	89.13	304.80	9,353.62	646.15	-2,330.82	-514.28	3.54	-3.13	1.65
11,607.00	88.79	306.57	9,354.16	663.65	-2,355.18	-510.15	6.01	-1.13	5.90
11,638.00	89.66	307.48	9,354.58	682.31	-2,379.93	-505.16	4.06	2.81	2.94
11,669.00	89.90	310.32	9,354.70	701.78	-2,404.05	-499.18	9.19	0.77	9.16
11,700.00	90.27	309.99	9,354.65	721.77	-2,427.74	-492.53	1.60	1.19	-1.06
11,730.00	90.67	311.93	9,354.41	741.43	-2,450.40	-485.68	6.60	1.33	6.47
11,761.00	90.50	313.07	9,354.09	762.38	-2,473.25	-477.80	3.72	-0.55	3.68
11,792.00	90.37	313.72	9,353.86	783.67	-2,495.78	-469.45	2.14	-0.42	2.10
11,823.00	89.80	315.84	9,353.81	805.51	-2,517.78	-460.39	7.08	-1.84	6.84
11,854.00	89.66	317.15	9,353.96	827.99	-2,539.12	-450.44	4.25	-0.45	4.23
11,885.00	89.56	319.10	9,354.17	851.07	-2,559.81	-439.65	6.30	-0.32	6.29
11,916.00	89.90	320.28	9,354.31	874.71	-2,579.86	-428.08	3.96	1.10	3.81
11,946.00	90.07	320.29	9,354.32	897.79	-2,599.03	-416.59	0.57	0.57	0.03
12,008.00	90.47	319.76	9,354.03	945.30	-2,638.86	-393.11	1.07	0.65	-0.85
12,039.00	91.01	319.90	9,353.63	968.99	-2,658.86	-381.47	1.80	1.74	0.45
12,130.00	91.65	320.62	9,351.52	1,038.94	-2,717.02	-346.67	1.06	0.70	0.79
12,223.00	89.80	319.09	9,350.34	1,110.02	-2,776.97	-311.71	2.58	-1.99	-1.65
12,317.00	89.50	319.15	9,350.91	1,181.09	-2,838.49	-277.49	0.33	-0.32	0.06
12,412.00	90.34	319.25	9,351.05	1,253.00	-2,900.56	-242.79	0.89	0.88	0.11
12,507.00	90.40	321.57	9,350.43	1,326.21	-2,961.10	-206.22	2.44	0.06	2.44
12,601.00	89.66	321.08	9,350.38	1,399.59	-3,019.84	-168.66	0.94	-0.79	-0.52
12,696.00	90.30	322.23	9,350.42	1,474.10	-3,078.78	-130.19	1.39	0.67	1.21
12,759.00	90.40	322.11	9,350.03	1,523.86	-3,117.42	-104.17	0.25	0.16	-0.19
12,791.00	88.99	322.65	9,350.20	1,549.20	-3,136.95	-90.84	4.72	-4.41	1.69



Survey Report



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Project:	Parshall NAD 27	TVD Reference:	GL 1957' & KB 26' @ 1983.00ft
Site:	Parshall	MD Reference:	GL 1957' & KB 26' @ 1983.00ft
Well:	Parshall 58-1608H	North Reference:	True
Wellbore:	Original Drilling	Survey Calculation Method:	Minimum Curvature
Design:	Original Drilling	Database:	Casper District

Weasureu			Vertical			Vertical	Dogleg	Build	Turn
Depth (ft)	Inclination (°)	Azimuth (°)	Depth (ft)	+N/-S (ft)	+E/-W (ft)	Section (ft)	Rate (°/100ft)	Rate (°/100ft)	Rate (°/100ft)
12,885.00	90.00	325.19	9,351.03	1,625.16	-3,192.30	-49.42	2.91	1.07	2.70
12,949.00	91.08	323.09	9,350.43	1,677.02	-3,229.79	-21.00	3.69	1.69	-3.28
12,979.00	91.41	325.11	9,349.78	1,701.32	-3,247.37	-7.70	6.82	1.10	6.73
13,011.00	89.97	324.13	9,349.39	1,727.41	-3,265.90	6.75	5.44	-4.50	-3.06
13,074.00	89.13	324.90	9,349.89	1,778.70	-3,302.47	35.10	1.81	-1.33	1.22
13,106.00	88.96	324.46	9,350.42	1,804.81	-3,320.97	49.58	1.47	-0.53	-1.38
13,169.00	88.29	324.61	9,351.93	1,856.11	-3,357.51	77.95	1.09	-1.06	0.24
13,200.00	89.70	324.37	9,352.47	1,881.34	-3,375.51	91.88	4.61	4.55	-0.77
13,231.00	90.00	324.47	9,352.56	1,906.55	-3,393.55	105.79	1.02	0.97	0.32
13,263.00	89.97	324.68	9,352.56	1,932.62	-3,412.10	120.22	0.66	-0.09	0.66
13,295.00	90.64	325.76	9,352.39	1,958.91	-3,430.35	134.97	3.97	2.09	3.38
13,336.00	89.63	324.73	9,352.30	1,992.59	-3,453.72	153.88	3.52	-2.46	-2.51
13,358.00	88.92	325.05	9,352.58	2,010.59	-3,466.37	163.91	3.54	-3.23	1.45
13,452.00	86.47	325.84	9,356.36	2,087.93	-3,519.64	207.53	2.74	-2.61	0.84
13,515.00	86.27	325.66	9,360.34	2,139.90	-3,555.03	237.03	0.43	-0.32	-0.29
13,548.00	87.22	327.06	9,362.22	2,167.33	-3,573.28	252.79	5.12	2.88	4.24
13,611.00	87.95	326.42	9,364.87	2,219.97	-3,607.80	283.28	1.54	1.16	-1.02
13,642.00	88.86	325.36	9,365.74	2,245.62	-3,625.18	297.88	4.51	2.94	-3.42
13,737.00	90.67	326.34	9,366.13	2,324.24	-3,678.50	342.60	2.17	1.91	1.03
13,831.00	90.50	326.94	9,365.17	2,402.74	-3,730.19	387.98	0.66	-0.18	0.64
13,926.00	90.37	325.61	9,364.44	2,481.75	-3,782.93	433.31	1.41	-0.14	-1.40
14,021.00	90.50	325.25	9,363.72	2,559.98	-3,836.83	477.41	0.40	0.14	-0.38
14,115.00	88.62	325.82	9,364.44	2,637.47	-3,890.03	521.20	2.09	-2.00	0.61
14,178.00	88.02	326.39	9,366.29	2,689.74	-3,925.14	551.08	1.31	-0.95	0.90
14,209.00	88.59	325.19	9,367.21	2,715.37	-3,942.56	565.64	4.28	1.84	-3.87
14,241.00	89.06	325.88	9,367.87	2,741.74	-3,960.67	580.54	2.61	1.47	2.16
14,272.00	89.87	324.50	9,368.15	2,767.19	-3,978.36	594.82	5.16	2.61	-4.45
14,304.00	90.74	325.29	9,367.98	2,793.37	-3,996.77	609.41	3.67	2.72	2.47
14,398.00	91.75	325.77	9,365.94	2,870.85	-4,049.95	653.18	1.19	1.07	0.51
14,494.00	90.77	325.59	9,363.83	2,950.11	-4,104.07	698.10	1.04	-1.02	-0.19
14,588.00	90.34	326.20	9,362.92	3,027.94	-4,156.77	742.41	0.79	-0.46	0.65
14,683.00	87.41	324.33	9,364.79	3,105.99	-4,210.88	786.25	3.66	-3.08	-1.97
14,778.00	88.89	325.15	9,367.85	3,183.52	-4,265.69	829.31	1.78	1.56	0.86
14,809.00	89.19	326.14	9,368.37	3,209.10	-4,283.18	843.80	3.34	0.97	3.19
14,872.00	89.16	327.65	9,369.28	3,261.87	-4,317.59	874.46	2.40	-0.05	2.40
14,897.00	89.73	327.17	9,369.52	3,282.93	-4,331.05	886.82	2.98	2.28	-1.92
14,967.00	89.83	328.42	9,369.79	3,342.16	-4,368.36	921.85	1.79	0.14	1.79
15,062.00	88.76	326.42	9,370.96	3,422.20	-4,419.51	968.84	2.39	-1.13	-2.11
Last SDI MW	D Survey	326 42	9 372 30	3 473 84	-4 453 79	998 56	0.00	0.00	0.00
15 124 00	XX /n								



Survey Report



Company:	EOG Resources Inc.	Local Co-ordinate Reference:	Well Parshall 58-1608H
Project:	Parshall NAD 27	TVD Reference:	GL 1957' & KB 26' @ 1983.00ft
Site:	Parshall	MD Reference:	GL 1957' & KB 26' @ 1983.00ft
Well:	Parshall 58-1608H	North Reference:	True
Wellbore:	Original Drilling	Survey Calculation Method:	Minimum Curvature
Design:	Original Drilling	Database:	Casper District

Design Annotations

Measured	Vertical	Local Coo	rdinates	
Depth (ft)	Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
100.00	100.00	0.75	0.18	1st ThirdParty Gyro Survey
2,047.00	2,046.94	3.33	0.55	1st SDI MWD Survey
9,603.00	9,317.07	128.14	-456.31	First Survey in 6" Hole
15,062.00	9,370.96	3,422.20	-4,419.51	Last SDI MWD Survey
15,124.00	9,372.30	3,473.84	-4,453.79	Projection to TD

Checked By:	Approved By:	Date:	
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Survey Certification

7327 West Barton Road Casper, WY 82604 (307)-472-6621 Fax (307) 472-5439

Operator	EOG Resources Inc,	
Well Name & No.	Parshall 58-1608H ST1	
County & State	Mountrai County, ND	
SDI Job No.	410814HEFK186361	
Rig	H&P 278	
Survey Date	12-Oct-2014	

Seth M. Burstad , having personal knowledge of all the facts, hereby ١, certify that the attached directional survey run from a measured depth of 11392 feet to a measured depth of 18298 feet is true and correct as determined from all available records.

Signature

16-Oct-2014 Date

Seth M. Burstad Rockies Region Well Planner Scientific Drilling - Rocky Mountain District



EOG Resources Inc.

Parshall NAD 27 Parshall Parshall 58-1608H

ST 1

Design: ST1

Standard Survey Report

16 October, 2014



www.scientificdrilling.com



Survey Report



Company: Project: Site: Well: Wellbore: Design:	EOG Resources Inc. Parshall NAD 27 Parshall Parshall 58-1608H ST 1 ST1			Local Co-ordi TVD Reference MD Reference North Referen Survey Calcul Database:	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method: Database:			8-1608H 26' @ 1983.00ft 26' @ 1983.00ft ture	
Project	Parshall NAD	27,							
Map System: Geo Datum: Map Zone:	US State Plane NAD 1927 (NA North Dakota N	e 1927 (Exact s DCON CONUS North 3301	olution))	System Date	ım:		Mean Sea Leve	1	
Site	Parshall								
Site Position: From: Position Uncertain	Lat/Long	0.00 ft	Northing: Easting: Slot Radius:	360,6 1,596,4 1	19.48 usft 01.21 usft 3.200 in	Latitude: Longitud Grid Con	e: vergence:		47° 58' 36.472 N 102° 8' 52.445 W -1.23 °
Well	Parshall 58-16	608H, 420' FSL	1600' FWL Sec 16	6 T152N R90W					
Well Position Position Uncertain	+N/-S +E/-W nty	0.00 ft 0.00 ft 0.00 ft	Northing: Easting: Wellhead Elev	vation:	361,738.40 1,581,709.44 0.00) usft usft) ft	Latitude: Longitude: Ground Level:		47° 58' 44.353 N 102° 12' 28.692 W 1,957.00 ft
Wellbore	ST 1								
Magnetics	Model Na	ame GM2014	Sample Date	Declinat (°)	ion 7.48	[Dip Angle (°) 73.05	Field St (n	rrength T)
			10/3/2014		1.40		75.05		50,044
Design	ST1								
Audit Notes:									
Version:	1.0		Phase:	ACTUAL	Tie	e On Depth	1:		11,392.00
Vertical Section:		Depth F	rom (TVD) (ft) 0.00	+N/-S (ft) 0.00	+E (E/-W (ft) 0.00		Direction (°) 313.:	27

Survey Program	Date 10/16/2014		
From (ft)	To (ft) Survey (Wellbore)	Tool Name	Description
100.00 2,047.00 9,603.00 11,453.00	1,947.00 Survey #1 - Surface (Original Drilling) 9,500.00 Survey #2 - Vertical/Curve (Original Drilling 11,392.00 Survey #3 - Lateral (Original Drilling) 18,298.00 Survey #1 - Lateral (ST 1)	NS-GYRO-MS MWD SDI MWD+IFR1+MSA (Sperry) MWD+IFR1+MSA (Sperry)	North sensing gyrocompassing m/s MWD - Standard ver 1.0.1 Fixed:v2:Rockies, crustal dec + 3-axis correction Fixed:v2:Rockies, crustal dec + 3-axis correction

	Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
	11,392.00	88.83	301.60	9,355.05	544.98	-2,176.00	1,957.97	7.21	1.10	7.13
	TIP									
	11,453.00	89.87	301.41	9,355.74	576.85	-2,228.00	2,017.69	1.73	1.70	-0.31
	11,484.00	89.46	300.54	9,355.93	592.80	-2,254.58	2,047.98	3.10	-1.32	-2.81
	11,576.00	89.63	300.92	9,356.66	639.81	-2,333.66	2,137.78	0.45	0.18	0.41
	11,668.00	88.79	300.41	9,357.92	686.73	-2,412.78	2,227.55	1.07	-0.91	-0.55
1	11,761.00	88.73	298.76	9,359.94	732.63	-2,493.64	2,317.89	1.77	-0.06	-1.77
1	11,854.00	89.60	297.95	9,361.29	776.80	-2,575.47	2,407.74	1.28	0.94	-0.87



Survey Report



Company:	EOG Resources Inc.	Local Co-ordinate Reference:	Well Parshall 58-1608H
Project:	Parshall NAD 27	TVD Reference:	GL 1957' & KB 26' @ 1983.00ft
Site:	Parshall	MD Reference:	GL 1957' & KB 26' @ 1983.00ft
Well:	Parshall 58-1608H	North Reference:	True
Wellbore:	ST 1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	Casper District

Measured			Vertical			Vertical	Dogleg	Build	Turn
Depth (ft)	Inclination (°)	Azimuth (°)	Depth (ft)	+N/-S (ft)	+E/-W (ft)	Section (ft)	Rate (°/100ft)	Rate (°/100ft)	Rate (°/100ft)
11,916.00	90.03	298.89	9,361.49	806.30	-2,630.00	2,467.67	1.67	0.69	1.52
11,946.00	89.77	298.72	9,361.55	820.76	-2,656.28	2,496.72	1.04	-0.87	-0.57
11,977.00	89.63	299.89	9,361.71	835.93	-2,683.32	2,526.80	3.80	-0.45	3.77
12,008.00	89.63	300.08	9,361.91	851.43	-2,710.17	2,556.97	0.61	0.00	0.61
12,039.00	89.46	300.23	9,362.15	867.00	-2,736.97	2,587.16	0.73	-0.55	0.48
12,069.00	90.44	301.28	9,362.18	882.34	-2,762.75	2,616.45	4.79	3.27	3.50
12,099.00	90.77	301.19	9,361.86	897.89	-2,788.40	2,645.79	1.14	1.10	-0.30
12,130.00	90.44	302.75	9,361.54	914.31	-2,814.70	2,676.19	5.14	-1.06	5.03
12,161.00	90.07	303.67	9,361.40	931.28	-2,840.63	2,706.71	3.20	-1.19	2.97
12,192.00	88.99	304.27	9,361.65	948.60	-2,866.34	2,737.30	3.99	-3.48	1.94
12,223.00	89.09	304.62	9,362.17	966.14	-2,891.90	2,767.93	1.17	0.32	1.13
12,254.00	89.73	306.06	9,362.49	984.07	-2,917.19	2,798.63	5.08	2.06	4.65
12,286.00	89.60	307.02	9,362.68	1,003.12	-2,942.90	2,830.41	3.03	-0.41	3.00
12,317.00	89.97	307.47	9,362.79	1,021.88	-2,967.57	2,861.24	1.88	1.19	1.45
12,348.00	90.37	308.90	9,362.70	1,041.04	-2,991.94	2,892.11	4.79	1.29	4.61
12,380.00	90.80	309.88	9,362.38	1,061.35	-3,016.67	2,924.04	3.34	1.34	3.06
12,412.00	90.97	311.05	9,361.88	1,082.11	-3,041.01	2,955.99	3.69	0.53	3.66
12,443.00	90.77	312.26	9,361.41	1,102.71	-3,064.17	2,986.98	3.96	-0.65	3.90
12,475.00	91.14	312.96	9,360.88	1,124.38	-3,087.72	3,018.97	2.47	1.16	2.19
12,507.00	90.81	313.82	9,360.33	1,146.36	-3,110.97	3,050.97	2.88	-1.03	2.69
12,538.00	90.50	314.97	9,359.98	1,168.04	-3,133.12	3,081.96	3.84	-1.00	3.71
12,570.00	90.13	315.63	9,359.80	1,190.79	-3,155.62	3,113.94	2.36	-1.16	2.06
12,601.00	89.50	316.10	9,359.90	1,213.03	-3,177.21	3,144.90	2.54	-2.03	1.52
12,633.00	89.70	317.28	9,360.13	1,236.32	-3,199.16	3,176.85	3.74	0.63	3.69
12,664.00	90.30	318.53	9,360.13	1,259.32	-3,219.94	3,207.74	4.47	1.94	4.03
12,696.00	89.70	319.91	9,360.13	1,283.55	-3,240.84	3,239.57	4.70	-1.88	4.31
12,728.00	89.60	320.35	9,360.32	1,308.11	-3,261.36	3,271.34	1.41	-0.31	1.38
12,759.00	89.77	321.10	9,360.49	1,332.11	-3,280.98	3,302.08	2.48	0.55	2.42
12,791.00	90.03	323.15	9,360.55	1,357.37	-3,300.62	3,333.70	6.46	0.81	6.41
12,822.00	90.13	324.18	9,360.50	1,382.34	-3,318.99	3,364.19	3.34	0.32	3.32
12,853.00	90.07	324.78	9,360.45	1,407.57	-3,337.00	3,394.59	1.95	-0.19	1.94
12,885.00	90.23	324.89	9,360.37	1,433.73	-3,355.43	3,425.94	0.61	0.50	0.34
12,958.00	88.89	323.73	9,360.93	1,493.01	-3,398.02	3,497.59	2.43	-1.84	-1.59
12,979.00	88.56	323.36	9,361.39	1,509.90	-3,410.49	3,518.25	2.36	-1.57	-1.76
13,074.00	89.00	324.53	9,363.42	1,586.68	-3,466.39	3,611.58	1.32	0.46	1.23
13,105.00	89.46	324.76	9,363.83	1,611.97	-3,484.33	3,641.97	1.66	1.48	0.74
13,168.00	89.36	325.94	9,364.48	1,663.79	-3,520.14	3,703.57	1.88	-0.16	1.87
13,200.00	90.23	326.74	9,364.60	1,690.42	-3,537.88	3,734.74	3.69	2.72	2.50
13,263.00	90.10	325.71	9,364.42	1,742.79	-3,572.90	3,796.13	1.65	-0.21	-1.63
13,357.00	89.93	326.74	9,364.39	1,820.92	-3,625.16	3,887.74	1.11	-0.18	1.10
13,452.00	89.60	324.61	9,364.78	1,899.37	-3,678.73	3,980.51	2.27	-0.35	-2.24
13,547.00	88.80	324.93	9,366.11	1,976.97	-3,733.52	4,073.60	0.91	-0.84	0.34
13,642.00	88.89	325.81	9,368.02	2,055.12	-3,787.50	4,166.47	0.93	0.09	0.93



Survey Report



Company:	EOG Resources Inc.	Local Co-ordinate Reference:	Well Parshall 58-1608H
Project:	Parshall NAD 27	TVD Reference:	GL 1957' & KB 26' @ 1983.00ft
Site:	Parshall	MD Reference:	GL 1957' & KB 26' @ 1983.00ft
Well:	Parshall 58-1608H	North Reference:	True
Wellbore:	ST 1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	Casper District

Measured			Vertical			Vertical	Dogleg	Build	Turn
Depth (ft)	Inclination (°)	Azimuth (°)	Depth (ft)	+N/-S (ft)	+E/-W (ft)	Section (ft)	Rate (°/100ft)	Rate (°/100ft)	Rate (°/100ft)
13,705.00	90.47	325.74	9,368.37	2,107.21	-3,822.93	4,227.97	2.51	2.51	-0.11
13,737.00	90.57	325.29	9,368.08	2,133.58	-3,841.05	4,259.24	1.44	0.31	-1.41
13,831.00	89.40	324.39	9,368.11	2,210.43	-3,895.18	4,351.33	1.57	-1.24	-0.96
13,926.00	91.34	327.39	9,367.49	2,289.07	-3,948.44	4,444.01	3.76	2.04	3.16
14,020.00	91.54	327.49	9,365.13	2,368.27	-3,999.01	4,535.12	0.24	0.21	0.11
14,115.00	91.55	327.65	9,362.57	2,448.43	-4,049.94	4,627.15	0.17	0.01	0.17
14,209.00	88.69	326.36	9,362.37	2,527.26	-4,101.12	4,718.45	3.34	-3.04	-1.37
14,304.00	88.39	324.27	9,364.79	2,605.35	-4,155.16	4,811.32	2.22	-0.32	-2.20
14,335.00	88.66	324.66	9,365.59	2,630.56	-4,173.17	4,841.72	1.53	0.87	1.26
14,398.00	88.56	324.38	9,367.12	2,681.85	-4,209.73	4,903.49	0.47	-0.16	-0.44
14,493.00	89.03	325.70	9,369.12	2,759.69	-4,264.15	4,996.47	1.47	0.49	1.39
14,588.00	87.38	325.64	9,372.09	2,838.10	-4,317.70	5,089.21	1.74	-1.74	-0.06
14,651.00	86.37	325.08	9,375.53	2,889.85	-4,353.46	5,150.72	1.83	-1.60	-0.89
14,683.00	86.85	325.84	9,377.42	2,916.17	-4,371.57	5,181.94	2.81	1.50	2.38
14,778.00	86.70	326.82	9,382.77	2,995.10	-4,424.15	5,274.33	1.04	-0.16	1.03
14.872.00	88.76	329.45	9.386.49	3.074.86	-4.473.73	5.365.10	3.55	2.19	2.80
14,967,00	89.97	328.93	9.387.54	3,156,45	-4.522.38	5,456,45	1.39	1.27	-0.55
15.062.00	90.44	328.80	9.387.20	3.237.76	-4.571.50	5.547.95	0.51	0.49	-0.14
15,156.00	91.07	328.86	9.385.96	3.318.19	-4.620.15	5.638.50	0.67	0.67	0.06
15,251.00	89.93	329.54	9,385.13	3,399.78	-4,668.79	5,729.84	1.40	-1.20	0.72
15,346.00	90.07	329.88	9,385.13	3,481.81	-4,716.71	5,820.96	0.39	0.15	0.36
15,441.00	88.36	328.40	9,386.44	3,563.35	-4,765.43	5,912.32	2.38	-1.80	-1.56
15,536.00	89.63	328.25	9,388.10	3,644.19	-4,815.31	6,004.05	1.35	1.34	-0.16
15,630.00	88.99	328.43	9,389.23	3,724.19	-4,864.64	6,094.81	0.71	-0.68	0.19
15,724.00	88.19	329.84	9,391.55	3,804.85	-4,912.85	6,185.20	1.72	-0.85	1.50
15,819.00	90.54	330.18	9,392.60	3,887.12	-4,960.33	6,276.16	2.50	2.47	0.36
15,914.00	89.56	328.83	9,392.52	3,968.98	-5,008.54	6,367.37	1.76	-1.03	-1.42
16,009.00	89.93	328.10	9,392.94	4,049.95	-5,058.22	6,459.04	0.86	0.39	-0.77
16,103.00	90.64	328.38	9,392.47	4,129.87	-5,107.70	6,549.85	0.81	0.76	0.30
16,198.00	88.86	327.40	9,392.89	4,210.33	-5,158.19	6,641.77	2.14	-1.87	-1.03
16,293.00	89.43	327.09	9,394.30	4,290.22	-5,209.59	6,733.94	0.68	0.60	-0.33
16,388.00	90.23	328.28	9,394.59	4,370.50	-5,260.37	6,825.95	1.51	0.84	1.25
16,482.00	89.02	327.73	9,395.20	4,450.22	-5,310.17	6,916.85	1.41	-1.29	-0.59
16,577.00	90.87	329.91	9,395.29	4,531.49	-5,359.35	7,008.37	3.01	1.95	2.29
16,672.00	89.87	330.17	9,394.68	4,613.79	-5,406.79	7,099.32	1.09	-1.05	0.27
16,767.00	90.54	329.93	9,394.34	4,696.10	-5,454.22	7,190.28	0.75	0.71	-0.25
16,862.00	90.57	330.12	9,393.42	4,778.39	-5,501.68	7,281.24	0.20	0.03	0.20
16,957.00	90.60	329.66	9,392.45	4,860.57	-5,549.34	7,372.27	0.49	0.03	-0.48
17,051.00	90.47	328.41	9,391.57	4,941.17	-5,597.70	7,462.72	1.34	-0.14	-1.33
17,146.00	87.89	328.83	9,392.93	5,022.26	-5,647.16	7,554.32	2.75	-2.72	0.44
17,240.00	86.52	327.59	9,397.52	5,102.06	-5,696.61	7,645.03	1.96	-1.46	-1.32
17,272.00	87.85	327.03	9,399.09	5,128.95	-5,713.88	7,676.03	4.51	4.16	-1.75
17,335.00	87.88	325.72	9,401.43	5,181.37	-5,748.74	7,737.35	2.08	0.05	-2.08
17,429.00	87.72	323.31	9,405.04	5,257.85	-5,803.26	7,829.47	2.57	-0.17	-2.56



Survey Report



Company:	EOG Resources Inc.	Local Co-ordinate Reference:	Well Parshall 58-1608H
Project:	Parshall NAD 27	TVD Reference:	GL 1957' & KB 26' @ 1983.00ft
Site:	Parshall	MD Reference:	GL 1957' & KB 26' @ 1983.00ft
Well:	Parshall 58-1608H	North Reference:	True
Wellbore:	ST 1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	Casper District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
17,461.00	88.23	323.76	9,406.17	5,283.57	-5,822.27	7,860.94	2.12	1.59	1.41
17,524.00	89.06	323.06	9,407.66	5,334.14	-5,859.81	7,922.93	1.72	1.32	-1.11
17,618.00	90.64	323.83	9,407.91	5,409.65	-5,915.79	8,015.45	1.87	1.68	0.82
17,713.00	90.13	323.59	9,407.27	5,486.22	-5,972.02	8,108.88	0.59	-0.54	-0.25
17,807.00	90.17	322.10	9,407.02	5,561.13	-6,028.79	8,201.56	1.59	0.04	-1.59
17,902.00	89.30	322.16	9,407.46	5,636.13	-6,087.11	8,295.43	0.92	-0.92	0.06
17,997.00	89.53	323.32	9,408.43	5,711.73	-6,144.62	8,389.13	1.24	0.24	1.22
18,091.00	91.85	323.43	9,407.30	5,787.16	-6,200.69	8,481.65	2.47	2.47	0.12
18,186.00	91.98	322.75	9,404.13	5,863.08	-6,257.71	8,575.21	0.73	0.14	-0.72
18,235.00	92.08	323.83	9,402.39	5,902.33	-6,286.98	8,623.43	2.21	0.20	2.20
Last SDI MW	D Survey								
18,298.00	92.08	323.83	9,400.11	5,953.16	-6,324.14	8,685.32	0.00	0.00	0.00
Projection to	TD								

Design Annotatio	ons				
N	leasured	Vertical	Local Coo	ordinates	
	Depth (ft)	Depth (ft)	+N/-S	+E/-W	C
	(14)	(11)	(π)	(π)	Comment
	11,392.00	9,355.05	544.98	-2,176.00	TIP
	18,235.00	9,402.39	5,902.33	-6,286.98	Last SDI MWD Survey
	18,298.00	9,400.11	5,953.16	-6,324.14	Projection to TD

Checked By:

Approved By:

Date:

WE INDU OIL 600 BISM SFN	LL COMPLET JSTRIAL COMMISS AND GAS DIVISION EAST BOULEVARD MARCK, ND 58505- 2468 (04-2010)	ION OF NOR DEPT 405 0840	ECOMPLE TH DAKOTA	TION RE	PORT - FOR	2015 2015	Well File No. 28525
PLEASE READ INSTRUC PLEASE SUBMIT THE OF	TIONS BEFORE FI	LING OUT FO	ORM.		DIVIS	A GAS 30	
Designate Type of Comple	tion EOR Well [SWD Well [Recomplet	ion 🛛 ply Well 🗍	Deepened V Other:	Vell Add	ed Horizontal Leg	Extended Horizontal Leg
Well Name and Number Parshall 58-1608H					Spacing Unit De Sections 8,	scription 16 & 17 T152	N R90W
Operator EOG Resources, Inc.			Telephone Nur (303) 262-9	mber 973	Field Parshall		
Address 600 17th Street, Sui	te 1000N				Pool Bakken		
City Denver		State CO	Zip Code 80202		Permit Type	Deve	lopment 🔲 Extension
			LOCAT	ION OF W	ELL		
At Surface 420 F S L	1600	F WL	Qtr-Qtr SESW	Section 16	Township 152 N	Range 90 W	County Mountrail
Spud Date July 20, 2014	Date TD Read October 1	ned 9, 2014	Drilling Contra H&P #454	ctor and Rig	Number	KB Elevation (Ft) 1983	Graded Elevation (Ft) 1957

Type of Electric and Other Logs Run (See Instructions) CBL/GR; MWD/GR

CASING & TUBULARS RECORD (Report all strings set in well)

Well Bore	Str	ing Size (Inch)	Top Set	Depth Set	Hole Size	Weight	Anchor Set	Packer Set	Sacks Cement	Top of Cement
Surface Hole	Surface	9-5/8	0	1970	13.5	36	(((()) + ())	((())))	680	0
Vertical Hole	Intermediate	7-0	0	9557	8.75	26, 32			920	4037
Lateral1	Production	4-1/2	8859	18294	6.0	11.6			830	8859

PERFORATION & OPEN HOLE INTERVALS

			Eld Old		ENTIOLE		LU			
Well Bore	Well Bore TD Drillers Depth (MD Ft)	Completion Type	Open Hol Interva Top	e/Perforated al (MD,Ft) Bottom	Kick-off Point (MD Ft)	Top of Casing Window (MD Ft)	Date Perf'd or Drilled	Date Isolated	Isolation Method	Sacks Cement
Lateral1	18298	Perforations	9582	18260	8837		12/21/2014			

PRODUCTION

Current Producing Perforated from	g Open Hole or om 9,582' M	Perforated Inter D to 18,260'	val(s), This Completio	n, Top and Bot	ttom, (MD Ft)		Name	e of Zone (If Diff	ferent	from Pool Name)
Date Well Comple Feb	eted (SEE INST ruary 4, 201	RUCTIONS) 5	Producing Method Flowing	Pumping-Si	ize & Type o	fPump)		Well Status (Pr Producing	roduci	ing or Shut-In)
Date of Test 02/07/2015	Hours Tested 24	Choke Size 64 /64	Production for Test	Oil (Bbls) 1227	Gas (MCF) 107	Wate 2	r (Bbls) 855	Oil G	ravity-API (Corr 43.1 °	.) D	isposition of Gas
Flowing Tubing P 36	ressure (PSI) 0	PSI) Flowing Casing Pressure (PSI) 650		Calculated 24-Hour Rat	Oil (Bbls) te 1227		Gas (MC 107	CF) Water (Bbls) (7 2855		Gas-	-Oil Ratio 87

GEOLOGI	CAL MARKE	RS			PLUG BAC	K INFORM	ATION	
Formation	MD (Ft)	TVD (Ft)	Well Bo	ore	Type of Plug	Top (Ft) Bottom	(Ft) Sacks Cement
Pierre Shale		1694						
Greenhorn		3950						
Dakota Sandstone		4650	-					
Base Dakota		4936						
Piper Lime		5747						
Piper Dunham Salt		5981						
Spearfish		6061						
Opeche		6406						
Minnelusa		6480						
Tyler		6767						
Kibbey		7100						
Kibbey Lime		7211						
Charles		7394						
Base Last Salt		7777						
Mission Canyon		7925						
Lodgepole		8530						
Lower WW		8825						
Upper Virden		8905						
Lower Virden		8990						
1st Shale .		9107						
2nd Shale		9224						
3rd Shale		9243						
False Bakken		9265						
Scallion		9272			COR	ES CUT		
Upper Bakken Shale		9285	Top (Ft)	Bottom (Ft) Formation	Top (Ft)	Bottom (Ft)	Formation
Middle Bakken		9302						

Drill Stem Test

Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recov	very							L
Sample Chamb	er Recovery							
Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recov	very					1		A
Sample Chamb	er Recovery							
Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recov	very				L	1		L
Sample Chamb	er Recovery						an an an an an an a	
Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recov	уегу					1		L
Sample Chambo	er Recovery							
Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recov	very					1		L
Sample Chambo	er Recovery							

-

SFN 2468 (04-2010)

Well Specific Stimulations

Date Stimulated	Stimulated Fo Bakken	rmation		Top (Ft 9582) Bottom (Ft) 18260	Stimulation Stages 43	Volume 6828452	Volume Units Gallons
Type Treatment Sand Frac		Acid % 7.5	Lbs Prop 908	opant 10590	Maximum Trea	atment Pressure (PSI) 8342	Maximum Treatme	nt Rate (BBLS/Min) 59.4
Details Treated fracture	vith 6,828,452 g	alions of xI gel,	7.5% HCI a	nd freshw	ater; 6,920,81:	2 lbs of 100 mesh and	2,159,778 lbs of 40/7	70 sand.
Date Stimulated	Stimulated Fo	rmation		Top (Ft) Bottom (Ft)	Stimulation Stages	Volume	Volume Units
Type Treatment		Acid %	Lbs Pro	ppant	Maximum Trea	atment Pressure (PSI)	Maximum Treatme	ent Rate (BBLS/Min)
Details								
Date Stimulated	Stimulated Fo	rmation		Top (F	t) Bottom (Ft) Stimulation Stages	Volume	Volume Units
Type Treatment		Acid %	Lbs Pro	ppant	Maximum Tre	atment Pressure (PSI)	Maximum Treatme	ent Rate (BBLS/Min)
Date Stimulated	Stimulated Fo	ormation		Top (F	t) Bottom (Ft) Stimulation Stages	Volume	Volume Units
Type Treatment		Acid %	Lbs Pro	ppant	Maximum Tre	atment Pressure (PSI)	Maximum Treatme	ent Rate (BBLS/Min)
Details		L					-	
Date Stimulated	Stimulated Fo	ormation		Top (F	t) Bottom (Ft) Stimulation Stages	Volume	Volume Units
Type Treatment	-	Acid %	Lbs Pro	ppant	Maximum Tre	atment Pressure (PSI)	Maximum Treatmo	ent Rate (BBLS/Min)
Details								

ADDITIONAL INFORMATION AND/OR LIST OF ATTACHMENTS

Drilled well to 15,143' MD, MWD failed. Placed a whipstock at 11,408' MD to sidetrack the well.

REVISED: Production, Perforation and Well Specific Stimulations.

Attachments emailed to digitallogs@nd.gov; CBL, Mudlogs: Horizontal and Vertical in (las) and (Tif) formating, geological report; Certified survey attached and emailed to certsurvey@nd.gov.

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.	Email Address cally_wescoat@eogresou	irces.com	Date 02/09/2015
Signature alles Discoo	Printed Name Cally Wescoat	Title Sr. Regulate	bry Assistant

								115151	1876		
	WELL CO	MPLETIO		ECO	MPLET	ION RE	PORT - FC	DRM 6			
	INDUSTRIAL OIL AND GA: 600 EAST BO BISMARCK, SFN 2468 (04-2	COMMISSION S DIVISION DULEVARD DE ND 58505-0840 2010)	OF NOR	TH DAK	COTA			RECEI	VED SAS	File No. 28525	
PLEASE READ	INSTRUCTIONS E	EFORE FILLIN	G OUT FO	ORM.				Ser. 1			
PLEASE SUBMI	T THE ORIGINAL	AND ONE COP	Υ.								
Designate Type Dil Well Gas Well	of Completion	Vell F	Recomplet Vater Sup	tion ply Wel)eepened V)ther:	Vell 🗆 A	dded Horizontal L	eg 🛛 Ex	dended Horiz	contal Leg
Well Name and N Parshall 58-1	Number 1608H						Spacing Unit I Sections 8	Description , 16 & 17 T15	2N R90W		
Operator EOG Resour	ces, Inc.	Telephone Number (303) 262-9973			Field parshall						
Address 600 17th Stre	eet, Suite 1000	N					Pool Bakken				
City Denver		Stat CO	e	Zip Co 80202	de 2		Permit Type Wildcat	De	velopment	Exten	sion
				L	OCATIC	N OF W	ELL				
At Surface 420	FSL	1600 F	WL	Qtr-Qtr SE	sw s	Section 16	Township 152 N	Range 90 W	County Mountrai	il	
Spud Date July 20, 2	2014 Date	e TD Reached Ictober 19, 2	014	Drilling H&P	Contracto #454	or and Rig N	lumber	KB Elevation (F 1983	t) Graded Ele	vation (Ft) 1957	
Type of Electric a CBL/GR; MW	and Other Logs Ru D/GR	in (See Instructi	ons)								
		CASING	& TUBL	JLARS	RECO	RD (Rep	ort all strin	gs set in well)		
Well Bore	S Type	tring Size (Inch)) Top	p Set Depth Set Hole S ID Ft) (MD Ft) (Inch			weight (Lbs/Ft)	Anchor Set (MD Ft)	Packer Set (MD Ft)	Sacks Cement	Top of Cement
Surface Hole	Surface	9-5/8	(0	1970	13.5	36			680	0
Vertical Hole	Intermediate	7-0	(0	9557	8.75	26, 32			920	4037

Surface Hole	Surface	9-5/8	0	1970	13.5	36	680	0	į
Vertical Hole	Intermediate	7-0	0	9557	8.75	26, 32	920	4037	
Lateral1	Production	4-1/2	8859	18294	6.0	11.6	830	8837	
			-				 	-	1
			-		-				1
						in the second second			

PERFORATION & OPEN HOLE INTERVALS

Well Bore	Well Bore TD Drillers Depth (MD Ft)	Completion Type	Open Hole Interva Top	e/Perforated I (MD,Ft) Bottom	Kick-off Point (MD Ft)	Top of Casing Window (MD Ft)	Date Perf'd or Drilled	Date Isolated	Isolation Method	Sacks Cement
Lateral1	18298	Perforations			8837					
	-									
			-							
			-							-

PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft)								Name of Zone (If Different from Pool Name)			
Date Well Completed (SEE INSTRUCTIONS)			Producing Method Pumping-Size & Typ			fPump	Well Status (Producing or Shut-In)				
Date of Test	Hours Tested	Choke Size /64	Production for Test	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Oil G	ravity-API (Con	r.)	Disposition of Gas	
Flowing Tubing Pressure (PSI) Flowing Casin		g Pressure (PSI)	Calculated 24-Hour Rate	Oil (Bbls) Gas (MC	CF)	Water (Bbls)	Ga	as-Oil Ratio		
Page 2, SFN 2468*(04-2010)

GEOLOGICAL MARKERS PLUG BACK INFORMATION TVD (Ft) Formation MD (Ft) Well Bore Type of Plug Top (Ft) Bottom (Ft) Sacks Cement 1694 **Pierre Shale** 3950 Greenhorn 4650 **Dakota Sandstone** 4936 **Base Dakota** 5747 **Piper Lime** Piper Dunham Salt 5981 Spearfish 6061 Opeche 6406 Minnelusa 6480 6767 Tyler 7100 Kibbey **Kibbey Lime** 7211 Charles 7394 **Base Last Salt** 7777 **Mission Canyon** 7925 Lodgepole 8530 Lower WW 8825 8905 **Upper Virden** Lower Virden 8990 **1st Shale** 9107 9224 2nd Shale 9243 **3rd Shale** 9265 **False Bakken** CORES CUT Scallion 9272 Upper Bakken Shale 9285 Top (Ft) Bottom (Ft) Formation Top (Ft) Bottom (Ft) Formation Middle Bakken 9302

Drill Stem Test

Test Date	Formation	Top (Ft)	Bottom (Ft) BH Temp (°	F) CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recov	ery			-			
Sample Chamb	er Recovery						
Test Date	Formation	Top (Ft)	Bottom (Ft) BH Temp (°	F) CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recov	ery			1	_		1
Sample Chambo	er Recovery						
Test Date	Formation	Top (Ft)	Bottom (Ft) BH Temp (°	F) CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recov	ery			_	-	1	
Sample Chamb	er Recovery						
Test Date	Formation	Top (Ft)	Bottom (Ft) BH Temp (°	F) CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recov	ery					1	
Sample Chambo	er Recovery						
Test Date	Formation	Top (Ft)	Bottom (Ft) BH Temp (°	F) CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
Drill Pipe Recov	ery					1	
Sample Chambe	er Recovery						
				2			and the state

Well Specific Stimulations

Date Stimulated	timulated Stimulated Formation			Top (Ft) Bottom (F) Stimulation Stages	Volume	Volume Units		
Type Treatment		Acid %	Lbs Prop	Lbs Proppant Ma		atment Pressure (PSI)	Maximum Treatr	ment Rate (BBLS/Min)		
Details			1		1					
ate Stimulated	Stimulated For	rmation		Top (Ft) Bottom (F) Stimulation Stages	Volume	Volume Units		
ype Treatment	eatment Acid % L		Lbs Prop	opant	Maximum Tre	atment Pressure (PSI)	Maximum Treat	ment Rate (BBLS/Min)		
etans										
ate Stimulated	ated Stimulated Formation			Top (Ft) Bottom (F) Stimulation Stages	Volume	Volume Units		
/pe Treatment	pe Treatment Acid %		Lbs Prop	opant	Maximum Tre	atment Pressure (PSI)	Maximum Treat	ment Rate (BBLS/Min)		
Date Stimulated	Stimulated Fo	rmation		Тор (Ft) Bottom (F) Stimulation Stages	Volume	Volume Units		
ype Treatment	1	Acid %	Lbs Pro	opant	Maximum Tre	atment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)			
letails										
Date Stimulated	Stimulated Fo	rmation		Top (Ft) Bottom (F	t) Stimulation Stages	Volume	Volume Units		
ype Treatment		Acid %	Lbs Pro	opant	Maximum Tr	eatment Pressure (PSI)	Maximum Treat	ment Rate (BBLS/Min)		
Details										

ADDITIONAL INFORMATION AND/OR LIST OF ATTACHMENTS

CBL, Mudlogs: Horizontal and Vertic	al in (las) and (Tif) formatin	g, geological report; Certified surv
Email Address		Date
cally_wescoat@eogresou	rces.com	12/15/2014
Printed Name Cally Wescoat	Title Sr. Regul	atory Assistant
	CBL, Mudlogs: Horizontal and Vertic Email Address cally_wescoat@eogresou Printed Name Cally Wescoat	CBL, Mudlogs: Horizontal and Vertical in (las) and (Tif) formatin Email Address cally_wescoat@eogresources.com Printed Name Cally Wescoat

PLEASE READ INS	SUNDR INDUSTRIA OIL AND G 600 EAST I BISMARCK SFN 5749 (0)	Y NOTIO AL COMMIS AS DIVISIC BOULEVAR (, ND 5850 9-2006) BEFORE F	CES AND R SSION OF NOR DN RD DEPT 405 15-0840	REPORTS TH DAKOTA DRM.	S ON WE	LLS -	FORM 4	3031-1 ↓ 2015 EIVED L & GAS ISION	6365678910II	Well	File No. 2852 :	5
PLEASE SUBMIT T	HE ORIGINA		E COPY.			D-111-	18/11	9151 61		Spill Bo	oort	
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	rk Done	Januar	v 29, 2015							Fracture	Trootmont	
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for a Tax Exe	nt to Begin a \ mption Pursua	Norkover P ant to NDC	roject that may (C Section 57-51.	Quality .1-03.		Supp	iemental Hist	ory		Change		Nethou
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		L	_	_		Other	FIIS	I Gas S	ales			
Vell Name and Num	her							1	24-H	OUR PRO		ATE
Parshall 58-160	08H					-			Befor	e	A	fter
Footages	16	00 E W	Qtr-Qtr	Section	Township	Ra	ange an W	Oil	r	Bbls	Oil	Bbls
Field	L 10	F	Pool	1 10	County	-	30 11	Gas		MCF	Gas	MCF
Parshall		E	Bakken		Moun	trail						
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Company EOG Resource Address 500 17th Street	s, Inc. , Suite 100	00N			Tele (30	phone N 3) 262	Number -9973		F	DR STAT	E USE ONLY	/ oved
City				State		Code		Date	2.	-2 -2	015	
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Sr. Regulatory	Assistant		Date Janua	ary 29, 20 [°]	15			Title	PETRO) FUM	FNGINE	а П

15	Hall Address
C	ally_Wescoat@eogresources.com

PLEASE READ INS PLEASE SUBMIT TI	INDUSTRIA OIL AND G 600 EAST I BISMARCK SFN 5749 (0) TRUCTIONS HE ORIGINA It k Done tt to Begin a N nption Pursua	AL COMMISS AS DIVISION BOULEVARD (, ND 58505- 9-2006) BEFORE FIL L AND ONE (Approximat Date Work February Workover Pro ant to NDCC	ION OF NORTH DEPT 405 0840 LING OUT FOR COPY. e Start Date Completed 7 4, 2015 ject that may Qu Section 57-51.1- e Start Date	I DAKOTA			FEB 20 FEB 20 FEB 20 FEC EI ND OIL & DIVISH IND OIL & DIVISH I)15 VED Son sis epair r Histor pando onfic	A 15161718/9202	II II II II II II II II II II II II II	Spill Rep Shooting Acidizing Fracture Change Reclama	File No. 28 Port Treatme Producti tion est	3525 ent on Method	
								,						
Well Name and Num Parshall 58-160	ber 8 H									24-HO Befor	OUR PRO		After	
Footages			Qtr-Qtr	Section	Town	ship	Range		Oil		Bbls	Oil		Bbls
420 F S	L 16	00 FW	L SESW	16	15	52 N	90 W	/	Wate	r	Bbis	Water		Bbis
Field		Po	ol		Co	ounty			Gas		MCF	Gas		MCF
EOG Resource confidential for Date of first pro	s, Inc req r six (6) m oduction I	uests that onths. February 4	all informat	DETAII ion furnis	LS C	DF WO	RK Director r	egai	rding	the ref	erenceo	l well	be kept	
OFF Co.	NFIDE	NTIA	2 8/0	4/15.										

EOG Resources, Inc.

Parshall 58-1608H

Section 16 - T152N - R90W

Mountrail County, North Dakota

Prepared By:	Joshua Wold Dobrovolny Geological Consulting 2504 Belmont Road Grand Forks, ND 58201
For:	EOG Resources Suite 1100N 600 17th Street Denver, CO 80202
	Well Data
Operator:	EOG Resources, Inc.
Well Name:	Parshall 58-1608H
API #	33-061-03155
Surface Location:	Sect. 16, T152N, R90W 420' FSL, 1600' FWL Mountrail County, North Dakota
Elevation:	Kelly Bushing: 1983' Ground: 1957'
Target Zone:	Middle Bakken Dolomite
Spud Date:	September 26, 2014

Cease Drilling:	October 12, 2014
Total Depth:	18298' MD 9400.10' TVD
Contractor:	H & P Drilling Rig # 454
Company Representative:	Gregg Stamper & Larry Keith / John Duncan
Company Engineer:	Jim Binegar
Company Geologist:	Liam Kaltenback, Tony Rios, & Bob Masitti
Mud Company:	Mi SWACO
Mud Type:	Fresh Water to 2012' MD Invert from 2012' MD to 9559' MD Fresh Water from 9559' MD to 18298' MD

Well Data

Directional Company:	Scientific Drilling
MWD Company:	Scientific Drilling
Mudlogging Company:	Dobrovolny Geological Consulting
Mudlogging Services:	Dobrovolny Geological Consulting
Wellsite Gas Monitoring:	PASON Systems
Wellsite Geologist:	Joshua Wold
Sample Intervals:	Pre-Charles Vertical:30'Vertical and Curve:30'Lateral:50-100'
Well status:	TD'd at 18298' MD on October 12, 2014 @ 1824 HRS

Geologic Summary

The PARSHALL 58-1608H was drilled as a vertical and horizontal wellbore, targeting the Middle Member of the Bakken Formation. The surface location of the well is in Section 16, T152N, R90W, of Mountrail County, North Dakota. The vertical whole location was four-hundred, twenty feet (420') from the south section line, and sixteen hundred feet (1600') from the west section line.

Fresh water was used to drill from the surface to 2012' measured depth in the vertical hole. Invert mud was used to drill from 2012' measured depth until we set casing at 9559' MD. Fresh water was used to drill the horizontal hole from 9559' MD until TD at 18298' MD.

Well site geological supervision began September 28, 2014. Logging began above the Charles formation at a measured depth of 7680'. Joshua Wold & Brad Hill logged vertical and horizontal hole. Thirty foot-lagged samples were caught during the curve portion of the well, increasing to one-hundred foot lagged samples during the horizontal portion of the well. The Parshall 151-1608H, Parshall 75-2127H and the Hovda 1-08H were used as correlates in steering the curve.

The 3rd Shale Marker and False Bakken member of the Lodgepole formation appear to be relatively reliable markers for isopach thickness to target. The Upper Bakken shale came in at 9285.14' true vertical depth. The Middle Bakken dolomite came in at 9302.61' true vertical depth.

The Parshall 58-1608H lateral was drilled until we reached 15143' MD. At this point, a correction to our well plan was made, and it was decided to pull back to a depth of 11392' MD. Once we completed our sidetrack, the Parshall 58-1608H lateral was drilled without further incident.

The PARSHALL 58-1608H reached a total measured depth of 18298' (feet) on October 12, 2014, 16 days after spud.

Formation Tops Logged by Onsite Loggers

KB – 1983.0' ft.

** (PLEASE NOTE TVD DEPTHS HAVE BEEN ROUNDED TO THE NEAREST WHOLE NUMBER) **

Formation	Log Top (TVD)	Subsea
Base of Last Salt	7754 '	-5771
Mission Canyon	7925 '	-5942
Lodgepole	8529 '	-6547
3rd Shale Marker	9243 '	-7260
False Bakken	9265 '	-7282
Scallion	9272 '	-7289
Upper Shale	9285 '	-7302
Middle Bakken	9303 '	-7320

Sample Descriptions

Straight Hole and Horizontal Hole

Begin Logging [7680' MD, 7678.72 TVD, -30.03 VS, (-5696') SS]

7680-7710 Limestone: light-medium brown, tan, cryptocrystalline, subangular-subrounded medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, tracely anhydritic

7710-7740 Salt: clear-white, hard, very firm, crystalline. Scattered black and red shale from uphole. Trace Limestone: light brown, some medium brown-trace tan, cryptocrystalline, subangular-subrounded fine-medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous

7740-7770 Limestone: light-medium brown, some tan, cryptocrystalline, subangular-subrounded fine-medium grained, slightly-moderately firm, some very firm, slightly argillaceous, slightly calcareous, slightly anhydritic

7770-7800 Limestone: light brown, some scattered medium brown, tan, cryptocrystalline, subangular-subrounded fine-medium grained, slightly-moderately firm, some very firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, slightly anhydritic

7800-7830 Limestone: light-medium brown, tan, cryptocrystalline, subangular-subrounded medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, tracely anhydritic

7830-7860 Limestone: light brown, some scattered medium brown-tan, cryptocrystalline, subangular to subrounded medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, tracely anhydritic

7860-7890 Limestone: light-medium brown, tan, cryptocrystalline, subangular-subrounded medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, tracely anhydritic

7890-7920 Limestone: light-medium brown, tan, cryptocrystalline, subangular-subrounded medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, tracely anhydritic

7920-7950 Limestone: light brown, some scattered medium brown-tan, cryptocrystalline, subangular to subrounded medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, tracely anhydritic

7950-7980 Limestone: light-medium brown, some scattered tan, cryptocrystalline, subangular to subrounded medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, tracely anhydritic

7980-8010 Limestone: light-medium brown, some scattered tan, white-cream anhydrite banding, cryptocrystalline, subangular to subrounded, fine-medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, moderately-very anhydritic

8010-8040 Limestone: light-medium brown, some scattered tan, abundant cream anhydrite banding, cryptocrystalline, subangular to subrounded, fine-medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, moderately anhydritic

8040-8070 Limestone: light-medium brown, some scattered tan, some cream anhydrite banding, cryptocrystalline, subangular to subrounded, fine-medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, moderately anhydritic

8070-8100 Limestone: light-medium brown, some scattered tan, some trace cream anhydrite banding, cryptocrystalline, subangular to subrounded, fine-medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, slightly-moderately anhydritic

8100-8130 Limestone: light brown, medium brown, some scattered tan, some trace cream anhydrite banding, cryptocrystalline, subangular to subrounded, fine-medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, slightly anhydritic

8130-8160 Limestone: light and medium brown, some scattered tan, some trace cream anhydrite banding, cryptocrystalline, subangular to subrounded, fine-medium grained, moderately firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, slightly anhydritic

8160-8190 Limestone: light and medium brown, some scattered tan, trace cream anhydrite banding, cryptocrystalline, subangular to subrounded, fine-medium grained, moderately firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, tracely anhydritic

8190-8220 Limestone: light-medium brown, medium gray, some scattered tan, cryptocrystalline, subangular to subrounded, fine-medium grained, moderately firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, tracely anhydritic

8220-8250 Limestone: light-medium brown, medium-dark gray, some scattered tan, cryptocrystalline, subangular to subrounded, fine-medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, tracely anhydritic

8250-8280 Limestone: light-medium brown, medium-dark gray, some scattered tan, cryptocrystalline, subangular-subrounded, fine-medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, very tracely anhydritic

8280-8310 Limestone: medium brown, medium-dark gray, some scattered tan, cryptocrystalline, subangular to subrounded, fine-medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, very tracely anhydritic

8310-8340 Limestone: light-medium brown, tan, light and medium gray, some white-cream anhydritic banding, cryptocrystalline, slightly firm-firm, subangular-subrounded, fine-medium grained, slightly-moderately argillaceous, slightly-moderately calcareous, slightly carbonaceous, slightly anhydritic

8340-8370 Limestone: light brown, medium brown, tan, light and medium gray, some whitecream anhydritic banding, cryptocrystalline, slightly firm-firm, subangular-subrounded, finemedium grained, slightly-moderately argillaceous, slightly-moderately calcareous, slightly carbonaceous, slightly anhydritic

8370-8400 Limestone: light brown, medium brown, tan, light-medium gray, some white-cream anhydritic banding, cryptocrystalline, slightly firm-firm, subangular-subrounded, fine to medium

grained, slightly-moderately argillaceous, slightly-moderately calcareous, slightly carbonaceous, slightly anhydritic

8400-8430 Limestone: light brown, medium brown, tan, light and medium gray, some trace white-cream anhydritic banding, cryptocrystalline, moderately firm to firm, subangular to subrounded, fine-medium grained, slightly-moderately argillaceous, slightly-moderately calcareous, slightly carbonaceous, slightly anhydritic

8430-8460 Limestone: light brown, medium brown, tan, light and medium gray, some trace white-cream anhydritic banding, cryptocrystalline, moderately firm-firm, subangular to subrounded, fine-medium grained, slightly-moderately argillaceous, slightly-moderately calcareous, slightly carbonaceous, slightly anhydritic

8460-8490 Limestone: light brown, medium brown, tan, scattered light and medium gray, cryptocrystalline, subangular to subrounded, fine to medium grained, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly chalky, earthy

8490-8520 Limestone: light-medium brown, tan, scattered light and medium gray, cryptocrystalline, subangular to subrounded, fine to medium grained, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly chalky, earthy

8520-8550 Limestone: light-medium brown, some tan, scattered light-medium graybrown, cryptocrystalline, subangular to subrounded, fine to medium grained, slightly firm to firm, slightly argillaceous, slightly to moderately calcareous, slightly chalky, earthy

8550-8580 Limestone: medium brown, some tan, scattered light-medium graybrown, cryptocrystalline, subangular to subrounded, fine to medium grained, slightly firm to firm, slightly argillaceous, slightly to moderately calcareous, slightly chalky, earthy

8580-8610 Limestone: medium brown, some light brown and tan, trace scattered light-medium graybrown, cryptocrystalline, subangular to subrounded, medium grained, slightly firm to firm, slightly argillaceous, slightly to moderately calcareous, slightly chalky, earthy

8610-8640 Limestone: medium brown, light brown and tan, some light-medium graybrown, cryptocrystalline, subangular to subrounded, medium grained, slightly firm-firm, slightly argillaceous, slightly to moderately calcareous, slightly chalky, earthy

8640-8670 Limestone: medium brown, light brown and tan, some light-medium graybrown, cryptocrystalline, subangular to subrounded, medium grained, slightly firm-firm, slightly argillaceous, slightly to moderately calcareous, slightly chalky, earthy

8670-8700 Limestone: light-medium brown, some tan, some light graybrown, cryptocrystalline, subangular-subrounded, medium grained, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly chalky, earthy

8700-8730 Limestone: medium brown, some light brown and tan, trace scattered light-medium graybrown, cryptocrystalline, subangular to subrounded, medium grained, slightly firm to firm, slightly argillaceous, slightly to moderately calcareous, slightly chalky, earthy

8730-8760 Limestone: light-medium brown, tan, scattered light and medium gray, cryptocrystalline, subangular to subrounded, fine to medium grained, slightly firm-firm, slightly

argillaceous, slightly-moderately calcareous, slightly chalky, earthy

8760-8790 Limestone: light-medium brown, tan, scattered light-medium graybrown, cryptocrystalline, subangular to subrounded, fine to medium grained, slightly firm to firm, slightly argillaceous, slightly to moderately calcareous, slightly chalky, earthy

8790-8820 Limestone: light-medium brown, tan, scattered light-medium graybrown, cryptocrystalline, subangular to subrounded, fine to medium grained, slightly firm to firm, slightly argillaceous, slightly to moderately calcareous, slightly chalky, earthy

8820-8850 Limestone: light brown, medium brown, tan, scattered light-medium graybrown, cryptocrystalline, subangular to subrounded, fine to medium grained, slightly firm to firm, slightly argillaceous, slightly to moderately calcareous, slightly chalky, earthy

8850-8880 Limestone: light brown, medium brown, tan, scattered medium graybrown, cryptocrystalline, subangular to subrounded, fine to medium grained, slightly firm to firm, slightly argillaceous, slightly calcareous, slightly chalky, earthy

8880-8910 Limestone: medium brown, tan, scattered medium graybrown, cryptocrystalline, subangular to subrounded, fine to medium grained, slightly firm to firm, slightly argillaceous, slightly calcareous, slightly chalky, earthy

8910-8940 Limestone: medium brown, tan, some scattered medium graybrown, cryptocrystalline, subangular to subrounded, fine to medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly chalky, earthy

8940-8970 Limestone: medium brown, gray-tan, some scattered medium graybrown, cryptocrystalline, subangular to subrounded, fine to medium grained, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly chalky, earthy

8970-9000 Limestone: medium brown, dark brown, some gray tan, trace light gray, very fine crystalline, subangular to subrounded, medium grained, slightly firm, slightly-moderately argillaceous, slightly calcareous, slightly carbonaceous, chalky, silty, earthy

9000-9030 Limestone: medium-dark brown, some gray tan, trace light gray, very fine crystalline, subangular to subrounded, medium grained, slightly firm, slightly-moderately argillaceous, slightly calcareous, slightly carbonaceous, chalky, silty, earthy

9030-9060 Limestone: medium-dark brown, gray tan, trace light gray, very fine crystalline, subangular to subrounded, medium grained, slightly firm, moderately argillaceous, slightly calcareous, slightly carbonaceous, slightly chalky, silty, earthy

9060-9090 Limestone: medium-dark brown, some grayish tan, trace light gray, very fine crystalline, subangular to subrounded, medium grained, slightly firm, moderately argillaceous, slightly calcareous, slightly carbonaceous, slightly chalky, silty, earthy

9090-9120 Limestone: medium-dark brown, some grayish tan, trace light gray, very fine crystalline, subangular to subrounded, medium grained, slightly firm, moderately argillaceous, slightly calcareous, slightly carbonaceous, slightly chalky, silty, earthy

9120-9150 Limestone: medium brown, some dark brown, some grayish tan, trace light gray, very fine crystalline, subangular-subrounded, medium grained, slightly firm, moderately argillaceous, slightly calcareous, slightly carbonaceous, slightly chalky, silty, earthy

9150-9180 Limestone: light gray, some scattered trace medium gray, medium brown, some darker brown, trace light grayish brown-gray tan, slightly firm-firm, cryptocrystalline, subangular-subrounded, medium grained, slightly-moderately argillaceous, moderately calcareous, slightly carbonaceous, slightly chalky, slightly silty, earthy

9180-9210 Limestone: light-medium gray, some light-medium brown, some darker brown, some graybrown, slightly firm-firm, cryptocrystalline, subangular-subrounded, medium grained, slightly-moderately argillaceous, moderately calcareous, slightly carbonaceous, slightly chalky, slightly silty, earthy

9210-9240 Limestone: light-medium gray, some light-medium brown, some darker brown, some graybrown, slightly firm-firm, cryptocrystalline, subangular-subrounded, medium grained, slightly-moderately argillaceous, moderately calcareous, slightly carbonaceous, slightly chalky, slightly slity, earthy

9240-9270 Limestone: light gray, some medium gray, trace light brown-graybrown, slightly firmfirm, cryptocrystalline, subangular to subrounded, medium grained, slightly-moderately argillaceous, slightly calcareous, slightly carbonaceous, slightly chalky, silty, earthy

9270-9300 Limestone: graybrown to light gray, some trace medium gray, trace light brown, slightly firm-firm, cryptocrystalline, subangular-subrounded, medium grained, slightly-moderately argillaceous, slightly calcareous, slightly carbonaceous, slightly chalky, silty, earthy

9300-9330 Limestone: light gray, some medium gray, trace light brown-graybrown, slightly firmfirm, cryptocrystalline, subangular to subrounded, medium grained, slightly argillaceous, slightly calcareous, slightly carbonaceous, slightly chalky, silty, earthy

9330-9360 Limestone: medium-dark gray, some light gray, some graybrown, trace light brown, slightly firm-firm, cryptocrystalline, subangular to subrounded, medium grained, slightly argillaceous, slightly calcareous, slightly carbonaceous, slightly chalky, silty, earthy

9360-9390 Limestone: light gray, some graybrown, trace light brown, slightly firm-firm, cryptocrystalline, subangular to subrounded, medium grained, slightly argillaceous, slightly calcareous, slightly carbonaceous, slightly chalky, silty, earthy

9390-9420 Limestone: medium-dark gray, some light gray, some graybrown, trace light brown, slightly firm-firm, cryptocrystalline, subangular to subrounded, medium grained, slightly-moderately argillaceous, slightly calcareous, slightly carbonaceous, slightly chalky, silty, earthy

9420-9450 Limestone: graybrown, some scattered light gray, some light brown, slightly firmfirm, cryptocrystalline, subangular-subrounded, medium grained, slightly argillaceous, slightly calcareous, slightly carbonaceous, chalky, silty, earthy. Very trace Shale: black, hard, cryptocrystalline, sooty, waxy, very tracely pyritic

9450-9480 Shale: black, hard, cryptocrystalline, sooty, waxy, very tracely pyritic

9480-9510 Shale: black, hard, cryptocrystalline, sooty, waxy, very tracely pyritic

9510-9540 Dolomite: medium-dark gray, some graybrown, very fine crystalline, slightly firmfirm, moderately argillaceous, slightly calcareous, slightly carbonaceous, very fine grained, trace scattered bright yellow-green flourescence, light-medium gray spotty oil stain, fast, bright bluewhite cut. Shale: black, hard, cryptocrystalline, sooty, waxy, very tracely pyritic

9540-9559 (bottoms up) Dolomite: medium-dark gray, some graybrown, very fine crystalline, slightly firm-firm, moderately argillaceous, slightly-moderately calcareous, slightly carbonaceous, very fine grained, trace scattered bright yellow-green flourescence, light-medium gray spotty oil stain, fast, bright blue-white cut. Some trace Shale: black, firm-very firm, some hard, cryptocrystalline, sooty, waxy, very tracely pyritic

9559-9570 Dolomite: medium-dark gray, some graybrown, very fine crystalline, slightly firmfirm, moderately argillaceous, slightly calcareous, slightly carbonaceous, very fine grained, trace scattered bright yellow-green flourescence, light-medium gray spotty oil stain, fast, bright bluewhite cut

9570-9600 Dolomite: medium gray, some dark gray, trace graybrown, very fine crystalline, slightly firm-firm, moderately-very argillaceous, slightly calcareous, slightly carbonaceous, very fine grained, trace scattered bright yellow-green flourescence, light-medium gray spotty oil stain, fast, bright blue-white cut

9600-9700 Dolomite: light gray, medium gray, some white-cream and tan, trace graybrown, very fine crystalline, slightly firm-firm, moderately-very argillaceous, slightly calcareous, slightly carbonaceous, fine-very fine grained, trace scattered bright yellow-green flourescence, light-medium gray spotty oil stain, fast, bright blue-white cut

9700-9800 Dolomite: light-medium graybrown, some white-cream and tan, scattered medium gray, very fine crystalline, moderately firm-firm, moderately argillaceous, slightly calcareous, slightly carbonaceous, fine-very fine grained, trace scattered bright yellow-green flourescence, light-medium gray spotty oil stain, fast, bright blue-white cut

9800-9900 Dolomite: light graybrown, medium graybrown, some white-cream and tan, scattered medium gray, very fine crystalline, moderately firm-firm, moderately argillaceous, slightly calcareous, slightly carbonaceous, fine-very fine grained, trace scattered bright yellow-green flourescence, light-medium gray spotty oil stain, fast, bright blue-white cut

9900-10000 Dolomite: light graybrown, medium graybrown, some brownish tan, scattered medium gray, very fine crystalline, moderately firm-firm, slightly-moderately argillaceous, slightly calcareous, slightly-moderately carbonaceous, fine-very fine grained, trace scattered bright yellow-green flourescence, light-medium gray spotty oil stain, fast, bright blue-white cut

10000-10100 Dolomite: light graybrown, medium graybrown, some brownish tan, trace scattered medium gray, very fine crystalline, moderately firm-firm, slightly argillaceous, slightlymoderately calcareous, moderately carbonaceous, fine-very fine grained, abundant scattered bright yellow-green flourescence, light-medium gray spotty oil stain, fast, bright blue-white cut

10100-10200 Dolomite: light-medium graybrown, some brownish tan, trace scattered medium gray, very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, moderately carbonaceous, fine-very fine grained, abundant scattered bright yellow-green flourescence, light-medium gray spotty oil stain, fast, bright blue-white cut

10200-10300 Dolomite: medium graybrown, brownish tan, some trace scattered medium gray, very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, moderately carbonaceous, fine-very fine grained, abundant scattered bright yellow-green flourescence, light-medium gray spotty oil stain, fast, bright blue-white cut

10300-10400 Dolomite: graybrown, some light brown to brownish tan, some trace scattered light gray, very fine crystalline, slightly firm, some moderately firm, slightly argillaceous, moderately calcareous, moderately carbonaceous, fine-very fine grained, scattered bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

10400-10500 Dolomite: graybrown-light gray, some light brown-brownish tan, scattered medium gray, very fine crystalline, slightly firm, some moderately firm, slightly argillaceous, moderately calcareous, moderately carbonaceous, fine-very fine grained, scattered bright yellow-green flourescence, graybrown-light gray spotty oil stain, fast, bright blue-white cut

10500-10600 Dolomite: graybrown to light gray, some light brown-brownish tan, scattered medium gray, very fine crystalline, slightly firm, some moderately firm, slightly argillaceous, moderately calcareous, moderately carbonaceous, fine-very fine grained, scattered bright yellow-green flourescence, graybrown-light gray spotty oil stain, fast, bright blue-white cut

10600-10700 Dolomite: graybrown-light gray, some light brown-brownish tan, scattered medium gray, very fine crystalline, slightly firm, some moderately firm, slightly argillaceous, moderately calcareous, moderately carbonaceous, fine-very fine grained, scattered bright yellow-green flourescence, graybrown-light gray spotty oil stain, fast, bright blue-white cut

10700-10800 Dolomite: graybrown-light gray, light brown-brownish tan, scattered medium gray, very fine crystalline, slightly firm, some moderately firm, slightly argillaceous, moderately calcareous, moderately carbonaceous, fine-very fine grained, scattered bright yellow-green flourescence, graybrown-light gray spotty oil stain, fast, bright blue-white cut

10800-10900 Dolomite: graybrown-light gray, light brown, scattered tan, very fine crystalline, slightly firm, some moderately firm, slightly argillaceous, slightly-moderately calcareous, moderately carbonaceous, fine-very fine grained, scattered bright yellow-green flourescence, graybrown-light gray spotty oil stain, fast, bright blue-white cut

10900-11000 Dolomite: graybrown-light gray, light brown, scattered brownish tan-light grayish tan, very fine crystalline, slightly-moderately firm, slightly argillaceous, slightly-moderately calcareous, moderately carbonaceous, fine-very fine grained, bright yellow-green flourescence, graybrown-light gray spotty oil stain, fast, bright blue-white cut

11000-11100 Dolomite: graybrown-light gray, light brown, scattered brownish tan-light grayish tan, fine-very fine crystalline, slightly-moderately firm, slightly argillaceous, slightly-moderately calcareous, slightly to moderately carbonaceous, fine-very fine grained, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

11100-11200 Dolomite: graybrown, light gray, some light-medium brown, scattered brownish tan-light grayish tan, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly to moderately carbonaceous, fine-very fine grained, moderately silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

11200-11300 Dolomite: medium brown, light gray, some light-medium graybrown, scattered brownish tan-light grayish tan, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly to moderately carbonaceous, fine-very fine grained, moderately silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

11300-11400 Dolomite: medium brown, light gray, some light-medium graybrown, scattered brownish tan-light grayish tan, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly to moderately carbonaceous, fine-very fine grained, moderately silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

11400-11500 Dolomite: medium brown, light gray, some medium graybrown, scattered brownish tan, fine to very fine crystalline, slightly firm-firm, slightly argillaceous, slightlymoderately calcareous, slightly to moderately carbonaceous, fine-very fine grained, moderately silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

11500-11600 Dolomite: medium brown-medium gray, some medium graybrown, scattered brownish tan, fine to very fine crystalline, slightly firm-moderately firm, slightly argillaceous, slightly-moderately calcareous, slightly to moderately carbonaceous, fine-very fine grained, moderately silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

11600-11700 Dolomite: light-medium brown, medium gray, some medium graybrown, scattered brownish tan, fine to very fine crystalline, slightly-moderately firm, slightly argillaceous, slightly-moderately calcareous, slightly to moderately carbonaceous, fine-very fine grained, moderately-very silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

11700-11800 Dolomite: light-medium brownish gray, light-medium gray, some medium graybrown, scattered brownish tan, fine crystalline, slightly firm-moderately firm, slightly-moderately argillaceous, moderately calcareous, moderately carbonaceous, fine grained, very silty, bright yellow-green flourescence, light grayish brown spotty oil stain, fast, bright blue-white cut

11800-11900 Dolomite: medium brownish gray, light-medium gray, some medium graybrown, scattered brownish tan, fine crystalline, slightly firm-moderately firm, slightly-moderately argillaceous, moderately calcareous, moderately carbonaceous, fine grained, very silty, bright yellow-green flourescence, light grayish brown spotty oil stain, fast, bright blue-white cut

11900-12000 Dolomite: medium brownish gray, light and medium gray, some light-medium graybrown, scattered brownish tan, fine crystalline, slightly firm-moderately firm, slightly-moderately argillaceous, moderately calcareous, moderately carbonaceous, fine grained, very silty, bright yellow-green flourescence, light grayish brown spotty oil stain, fast, bright blue-white cut

12000-12100 Dolomite: light-medium brownish gray, medium gray, some light-medium graybrown, scattered brownish tan, fine crystalline, slightly firm-moderately firm, slightly-moderately argillaceous, moderately calcareous, moderately carbonaceous, fine grained, very silty, bright yellow-green flourescence, light grayish brown spotty oil stain, fast, bright blue-white cut

12100-12200 Dolomite: light gray, some graybrown, some tracely scattered medium gray, scattered brownish tan, fine crystalline, slightly firm-moderately firm, slightly-moderately argillaceous, slightly-moderately calcareous, moderately carbonaceous, fine grained, moderately-very silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white cut

12200-12300 Dolomite: light gray-graybrown, some medium gray, scattered brownish tan, finevery fine crystalline, slightly firm-moderately firm, slightly-moderately argillaceous, slightlymoderately calcareous, moderately carbonaceous, fine grained, moderately-very silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white cut

12300-12400 Dolomite: graybrown-light gray, some scattered medium gray to trace brownish tan, fine-very fine crystalline, slightly firm-moderately firm, slightly argillaceous, slightly-moderately calcareous, moderately carbonaceous, fine grained, moderately-very silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white cut

12400-12500 Dolomite: graybrown-light gray, some scattered medium gray to trace brownish tan, fine-very fine crystalline, slightly firm-moderately firm, slightly argillaceous, slightlymoderately calcareous, moderately carbonaceous, fine grained, moderately-very silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white cut

12500-12600 Dolomite: graybrown, some scattered light-medium gray, trace brownish tan, finevery fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, moderately carbonaceous, fine grained, moderately-very silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white cut

12600-12700 Dolomite: graybrown, some scattered light-medium gray, trace brownish tan, finevery fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, moderately carbonaceous, fine grained, moderately-very silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white cut

12700-12800 Dolomite: medium graybrown, some scattered light-medium gray, trace brownish tan, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, moderately carbonaceous, fine grained, moderately-very silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white cut

12800-12900 Dolomite: medium graybrown, some light-medium gray, trace brownish tan, scattered white-cream, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, moderately carbonaceous, fine grained, moderately-very silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white cut

12900-13000 Dolomite: light graybrown, medium graybrown, some light-medium gray, trace brownish tan, scattered white-cream, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, moderately carbonaceous, fine grained, moderatelyvery silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright bluewhite cut

13000-13100 Dolomite: light-medium graybrown, some light-medium gray, trace brown-tan, scattered white-cream, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, moderately carbonaceous, fine grained, moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white cut

13100-13200 Dolomite: light-medium graybrown, some light-medium gray, trace brown-tan, scattered white-cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately carbonaceous, fine grained, moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white cut

13200-13300 Dolomite: light brownish gray, medium graybrown, some light-medium gray, trace brown-tan, scattered white-cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly-moderately carbonaceous, fine grained, moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white cut

13300-13400 Dolomite: light brownish gray, medium graybrown, some light-medium gray, trace brown-tan, trace scattered white-cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly-moderately carbonaceous, fine grained, moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white cut

13400-13500 Dolomite: light to medium brownish gray, light to medium graybrown, some lightmedium gray, trace brown-tan, trace scattered white-cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly-moderately carbonaceous, fine grained, moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white cut

13500-13600 Dolomite: light to medium brownish gray, light to medium graybrown, some lightmedium gray, trace brown-tan, trace scattered white-cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly-moderately carbonaceous, fine grained, moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white cut

13600-13700 Dolomite: light-medium gray, some graybrown, trace brown-tan, trace scattered white-cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly-moderately carbonaceous, fine grained, moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white streaming cut

13700-13800 Dolomite: light gray-graybrown, some medium gray, trace brown-tan, trace scattered white-cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately carbonaceous, fine grained, moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white cut

13800-13900 Dolomite: light-medium graybrown, some light gray, trace brown-tan, trace scattered white-cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly-moderately carbonaceous, fine grained, moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white streaming cut

13900-14000 Dolomite: graybrown-light gray, trace brown-tan, trace scattered white-cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly-moderately carbonaceous, fine grained, moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white streaming cut

14000-14100 Dolomite: medium gray, some trace dark gray, scattered light gray to graybrown, fine-very fine crystalline, moderately firm-firm, moderately-very argillaceous, slightly-

moderately calcareous, slightly-moderately carbonaceous, fine grained, moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white streaming cut

14100-14200 Dolomite: medium gray, light graybrown, tan, scattered white-cream, trace dark gray, very fine crystalline, moderately firm-firm, slightly-moderately argillaceous, moderately calcareous, slightly carbonaceous, fine-very fine grained, scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

14200-14300 Dolomite: light-medium gray, light graybrown, tan, scattered white-cream, trace dark-very dark gray, very fine crystalline, moderately firm-firm, slightly-moderately argillaceous, moderately calcareous, slightly carbonaceous, fine-very fine grained, scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

14300-14400 Dolomite: light-medium gray, light graybrown, tan, scattered cream, trace darkvery dark gray, very fine crystalline, moderately firm-firm, slightly-moderately argillaceous, moderately calcareous, slightly carbonaceous, fine-very fine grained, scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

14400-14500 Dolomite: light-medium gray, light graybrown, tan, scattered cream, trace darkvery dark gray, very fine crystalline, slightly-moderately firm, slightly-moderately argillaceous, moderately calcareous, slightly carbonaceous, fine-very fine grained, trace scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light grayish brown spotty oil stain, fast, bright blue-white cut

14500-14600 Dolomite: light-medium gray, light graybrown, tan, scattered cream, trace darkvery dark gray, very fine crystalline, slightly-moderately firm, slightly-moderately argillaceous, moderately calcareous, slightly carbonaceous, fine-very fine grained, trace scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light grayish brown spotty oil stain, fast, bright blue-white cut

14600-14700 Dolomite: light-medium gray, medium graybrown, brownish tan, scattered cream, trace dark-very dark gray, fine-very fine crystalline, slightly-moderately firm, slightly-moderately argillaceous, moderately calcareous, slightly-moderately carbonaceous, fine-very fine grained, scattered pyrite nodes, slightly slity, bright yellow-green flourescence, light grayish brown spotty oil stain, fast, bright blue-white cut

14700-14800 Dolomite: light-medium graybrown, light gray, trace brownish tan, trace scattered white-cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly-moderately carbonaceous, fine grained, moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white streaming cut

14800-14900 Dolomite: light graybrown, medium graybrown, light gray, trace brownish tan, trace scattered white-cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly-moderately carbonaceous, fine grained, moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white streaming cut

14900-15000 Dolomite: medium graybrown, light gray, some light-medium brown, scattered brownish tan to light grayish tan, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly to moderately carbonaceous, fine-very fine

grained, moderately silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

15000-15100 Dolomite: medium graybrown, light gray, some medium brown, scattered brownish tan, trace dark gray, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly to moderately carbonaceous, fine-very fine grained, moderately silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

15100-15200 Dolomite: medium graybrown, light gray, some medium brown, scattered brownish tan, trace dark gray, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, moderately-very silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

15200-15300 Dolomite: light-medium graybrown, light gray, some medium brown, scattered brownish tan, trace dark gray, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, moderately-very silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

15300-15400 Dolomite: light-medium graybrown, light-medium gray, some medium brownbrownish tan, trace scattered darker gray, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, fine-very fine grained, very silty, bright yellow-green flourescence, light grayish brown spotty oil stain, fast, bright blue-white cut

15400-15500 Dolomite: graybrown, light-medium gray, some medium brown-brownish tan, trace scattered darker gray, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, fine-very fine grained, very silty, bright yellow-green flourescence, light grayish brown spotty oil stain, fast, bright blue-white streaming cut

15500-15600 Dolomite: light-medium graybrown, light-medium gray, some medium brownbrownish tan, trace scattered darker gray, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, fine-very fine grained, very silty, bright yellow-green flourescence, light grayish brown spotty oil stain, fast, bright blue-white cut

15600-15700 Dolomite: graybrown, light gray, trace medium gray, medium brown-brownish tan, trace scattered darker gray, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, fine-very fine grained, very silty, bright yellow-green flourescence, light grayish brown spotty oil stain, fast, bright blue-white streaming cut

15700-15800 Dolomite: graybrown, light gray, trace medium gray, medium brown-brownish tan, trace scattered darker gray, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, fine-very fine grained, slightly-moderately silty, bright yellow-green flourescence, light grayish brown spotty oil stain, fast, bright blue-white streaming cut

15800-15900 Dolomite: graybrown-light gray, some trace scattered medium gray, trace lightmedium brown, some brownish tan, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, slightly silty, bright yellow-green flourescence, graybrown spotty oil stain, fast, bright blue-white streaming cut 15900-16000 Dolomite: graybrown-light gray, some trace scattered medium gray, trace lightmedium brown, some brownish tan, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, slightly silty, bright yellow-green flourescence, graybrown spotty oil stain, fast, bright blue-white streaming cut

16000-16100 Dolomite: graybrown-light gray, some trace scattered medium gray, trace lightmedium brown, some brownish tan, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, slightly silty, bright yellow-green flourescence, graybrown spotty oil stain, fast, bright blue-white streaming cut

16100-16200 Dolomite: graybrown-light gray, some medium gray, trace light-medium brown, trace brownish tan, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, slightly silty, bright yellow-green flourescence, graybrown spotty oil stain, fast, bright blue-white streaming cut

16200-16300 Dolomite: graybrown, light gray, medium gray, some light-medium brown, trace brownish tan, fine-very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, slightly silty, bright yellow-green flourescence, graybrown spotty oil stain, fast, bright blue-white streaming cut

16300-16400 Dolomite: graybrown to light gray, medium gray, some light-medium brown, trace brownish tan, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, slightly-moderately silty, bright yellow-green flourescence, graybrown spotty oil stain, fast, bright blue-white streaming cut

16400-16500 Dolomite: graybrown, light-medium gray, some light-medium brown, trace brownish tan, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightlymoderately calcareous, slightly carbonaceous, fine-very fine grained, slightly-moderately silty, bright yellow-green flourescence, graybrown spotty oil stain, fast, bright blue-white streaming cut

16500-16600 Dolomite: light-medium graybrown, some light gray, trace brown-tan, trace scattered white-cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly-moderately carbonaceous, fine grained, moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white streaming cut

16600-16700 Dolomite: light graybrown, medium graybrown, some light gray, trace brown-tan, trace scattered white-cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly-moderately carbonaceous, fine grained, moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white streaming cut

16700-16800 Dolomite: light graybrown, medium graybrown, some light gray, trace tan, scattered white-cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly-moderately carbonaceous, fine grained, slightly-moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white streaming cut

16800-16900 Dolomite: light graybrown, medium graybrown, some light gray, trace tan, scattered cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-

moderately calcareous, slightly-moderately carbonaceous, fine grained, slightly-moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white streaming cut

16900-17000 Dolomite: light-medium graybrown, some light gray, trace tan, scattered cream, fine-very fine crystalline, moderately firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly-moderately carbonaceous, fine-very fine grained, slightly-moderately silty, bright yellow-green flourescence, light graybrown spotty oil stain, fast, bright blue-white streaming cut

17000-17100 Dolomite: medium gray-light graybrown, tan, some scattered white-cream, trace dark gray, very fine crystalline, moderately firm-firm, slightly-moderately argillaceous, moderately calcareous, slightly carbonaceous, fine-very fine grained, scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

17100-17200 Dolomite: medium gray-graybrown, tan, some scattered white-cream, trace dark gray, very fine crystalline, moderately firm-firm, slightly-moderately argillaceous, moderately calcareous, slightly carbonaceous, fine-very fine grained, scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

17200-17300 Dolomite: light gray to graybrown, some tan to grayish tan, scattered white-cream, trace dark gray, very fine crystalline, slightly firm-firm, moderately argillaceous, moderately calcareous, slightly carbonaceous, fine-very fine grained, scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

17300-17400 Dolomite: graybrown-light gray, some tan-grayish tan, scattered white-cream, very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

17400-17500 Dolomite: graybrown, scattered light gray, some gray tan, some trace medium gray specs, very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

17500-17600 Dolomite: graybrown-light gray, gray tan, trace medium gray, very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

17600-17700 Dolomite: graybrown-light gray, gray tan, trace medium gray, very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white streaming cut

17700-17800 Dolomite: graybrown-light gray, gray tan, trace medium gray, very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white cut

17800-17900 Dolomite: graybrown-light gray, gray tan, trace medium gray, very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white streaming cut

17900-18000 Dolomite: graybrown-light gray, gray tan, trace medium gray, very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white streaming cut

18000-18100 Dolomite: graybrown, some scattered light-medium gray, very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, scattered pyrite nodes, slightly silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white streaming cut

18100-18200 Dolomite: graybrown, some scattered light-medium gray, very fine crystalline, slightly firm-firm, slightly argillaceous, slightly-moderately calcareous, slightly carbonaceous, fine-very fine grained, intermittently scattered pyrite nodes, tracely silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white streaming cut

18200-18298 (bottoms up) Dolomite: graybrown, scattered light gray, very fine crystalline, slightly firm-firm, slightly argillaceous, slightly calcareous, slightly carbonaceous, fine-very fine grained, intermittently scattered pyrite nodes, tracely silty, bright yellow-green flourescence, light gray spotty oil stain, fast, bright blue-white streaming cut

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Oil and Gas Division

Lynn D. Helms - Director Bruce E. Hicks - Assistant Director **Department of Mineral Resources** Lynn D. Helms - Director **North Dakota Industrial Commission** www.dmr.nd.gov/oilgas

Date: 6/9/2014

SHEILA SINGER EOG RESOURCES, INC. 600 17TH ST., SUITE 1000 N DENVER, CO 80202 USA

RE: CORES AND SAMPLES

Well Name:PARSHALL 58-1608HWell File No.: 28525Location:SESW 16-152-90County: MOUNTRAILPermit Type:Development - HORIZONTALField:PARSHALLTarget Horizon: BAKKEN

Dear SHEILA SINGER:

North Dakota Century Code Section 38-08-04 provides for the preservation of cores and samples and their shipment to the State Geologist when requested. The following is required on the above referenced well:

- 1) All cores, core chips and samples must be submitted to the State Geologist as provided for under North Dakota Century Code: Section 38-08-04 and North Dakota Administrative Code: Section 43-02-03-38.1.
- 2) <u>Samples</u>: The Operator is to begin collecting sample drill cuttings no lower than the:

Base of the Last Charles Salt

- Sample cuttings shall be collected at:
 - o 30' maximum intervals through all vertical and build sections.
 - o 100' maximum intervals through any horizontal sections.
- Samples must be washed, dried, placed in standard sample envelopes (3" x 4.5"), packed in the correct order into standard sample boxes (3.5" x 5.25" x 15.25").
- Samples boxes are to be carefully identified with a label that indicates the operator, well name, well file number, American Petroleum Institute (API) number, location and depth of samples; and forwarded in to the state core and sample library within 30 days of the completion of drilling operations.
- 3) <u>Cores:</u> Any cores cut shall be preserved in correct order, boxed in standard core boxes (4.5", 4.5", 35.75"), and the entire core forwarded to the state core and samples library within 180 days of completion of drilling operations. Any extension of time must have approval on a Form 4 Sundry Notice.

All cores, core chips, and samples must be shipped, prepaid, to the state core and samples library at the following address:

ND Geological Survey Core Library 2835 Campus Road, Stop 8156 Grand Forks, ND 58202

North Dakota Century Code Section 38-08-16 allows for a civil penalty for any violation of Chapter 38 08 not to exceed \$12,500 for each offense, and each day's violation is a separate offense.

Sincerely

Stephen Fried

Stephen Fried Geologist

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Commingled Production Allocation Method for "Continuous Measurement" Locations

EOG Resources, Inc. is requesting approval to commingle production from the following wells:

Parshall Section 16 SESW

Parshall 38-1608H (Well File #28317), Surface loc. Sec 16, T152N, R90W, 5th P.M. Mountrail Co. Parshall 39-1608H (Well File # 28315), Surface loc. Sec 16, T152N, R90W, 5th P.M. Mountrail Co. Parshall 147-1608H (Well File # 28316), Surface loc. Sec 16, T152N, R90W, 5th P.M. Mountrail Co. Parshall 58-1608H (Well File #28525), Surface loc. Sec 16, T152N, R90W, 5th P.M. Mountrail Co. Parshall 59-1608H (Well File #28521), Surface loc. Sec 16, T152N, R90W, 5th P.M. Mountrail Co. Parshall 59-1608H (Well File #28521), Surface loc. Sec 16, T152N, R90W, 5th P.M. Mountrail Co. Parshall 151-1608H (Well File #28524), Surface loc. Sec 16, T152N, R90W, 5th P.M. Mountrail Co.

The above wells will use <u>"Continuous Measurement"</u> and as a group have common ownership. Continuous measurement for above wells will be located at the <u>"Parshall Section 16 SESW</u>" central production facility to be constructed on the same pad of where the wellheads are located.

Each well will flow into a single separator/treater located at the Central Facility where oil, water, and gas will be separated and continuous measurement used on each well as follows:

- Per well continuous measurement oil volumes will be used to allocate actual stock tank oil volumes delivered through central facility commingled "oil sales" LACT back to individual well(s). Oil device will be Coriolis meter using Electronic Flow Measurement (EFM) and appropriate industry and manufacturer standards. Each well will have a tank that can be isolated and used as a test tank for the proving of its Coriolis meter.
- 2) Per well continuous measurement of gas volumes will be used to allocate actual standard condition gas volumes delivered through central facility "gas sales" meters back to individual well(s). Gas measurement device will be either orifice plate or wedge meters using EFM and appropriate industry and manufacturer standards.
- 3) Per well continuous measurement water volumes will be used to allocate actual water volumes transported out of central facility back to individual well(s). Water device will be Vortex Shedding, Electro-Magnetic, or Turbine using EFM and appropriate industry and manufacturer standards.

Please reference, 1) A map showing the location of the central facility and the location of each well, 2) The Facilities Commingling Diagram, 3) A list of the manufacturer, size and type of meters to be used, and 4) the Commingled Production Allocation Method to be used to determine individual well production.



Brocess Flow Diagram



Seog resources

Meters Manufacturer, Size and Type

Oil 2" Corilis Meters, Micromotion Series F for allocation

Water 2" Vortex Shedding, Emerson for allocation

Gas 2" & 3" Orifice Plate meter tubes, commodity item (no particular manufacturer) using Fisher ROC Electronic Flow Measurement (EFM) computer and AGA 3

Commingled Production Allocation Method for "Continuous Measurement" Locations

EOG Resources shall use the following procedures for allocating production for the associated <u>continuous</u> <u>measurement</u> wells commingled at the "Parshall Section 16 SESW" Pad:

General:

eog resources

a) Monthly downtime shall be monitored for all commingled wells to determine the total number of producing hours for each well (NDIC).

Oil Continuous Measurement: Individual Well "Allocated Monthly Well OIL SALES":

- a) Volumes of oil shall be metered at dedicated single well oil production tanks (at central facility) using Beginning and Closing tank levels, transfer pumps, Coriolis meters and Electronic Flow Measurement (EFM).
- b) The total oil volume leaving/shipping out of the central production facility shall be metered by a LACT unit prior to trucking oil or entry into an oil gathering pipeline system.
 - o LACT metered oil volumes for the month are termed "Actual Monthly Oil Sales".
- c) Determine a theoretical monthly oil production volume for each continuously measured well base on proration as follows:
 - <u>"Theoretical Monthly Oil Production</u>" (post ops review) = Total oil volume continuously measured for month with Volume corrected as necessary by responsible operations/metering personnel for known upsets/malfunctioning of equipment or measurement devices that impact accuracy of well oil volumes.
- d) Sum all the individual well "<u>Theoretical Monthly Oil Production</u>" volumes to determine the "<u>Total</u> <u>Theoretical Monthly Oil Production</u>" for the central production facility.
- e) Calculate a <u>sales factor</u> by dividing the total "<u>Actual Monthly Oil Sales</u>" by the "<u>Total Theoretical Monthly Oil Production</u>" volumes for the central production facility corrected as necessary for any time well was producing but measurement was not operational.
- f) Determine "<u>Allocated Monthly Oil Production</u>" for each well by multiplying the respective individual well "<u>Theoretical Monthly Oil Production</u>" volume by the <u>sales factor</u> calculated in step (e) above.
- g) LACT meter used in the measurement will be proved according to the section below entitled <u>"Current EOG Oil Sales LACT Proving"</u>.
- h) Well oil allocation meters will be proved on a quarterly basis using either a positive displacement prover loop or from a test tank.
- i) Volumes will be reported to appropriate agencies through routine oil production reports filed monthly.

Current EOG Oil Sales LACT Proving:

The time between LACT proving depends on the amount of oil sold through the LACT. It is the same for pipeline LACTs and truck LACTs as follows:

- a) LACT ships 2,000 bbls or more in a month: LACT proved every month.
- b) LACT ships less than 2,000 bbls in a month: LACT is proved every quarter.
- c) In addition, to establish a comparative meter factor for a new LACT, the initial proving is followed by a second proving a month later, regardless of how much oil is shipped through the LACT for that month.

Gas Continuous Measurement: Individual Well "Monthly Well GAS PRODUCTION":

a) Volumes of gas shall be metered at a dedicated single well separator/treater (at central facility) using either orifice plate or v-cone and Electronic Flow Measurement (EFM).

Gas Continuous Measurement: Individual Well "<u>Allocated Monthly Well GAS SALES</u>" (If Gas Sales Are Active):

- a) Volumes of gas shall be metered at a dedicated single well separator/treater (at central facility) using either orifice plate or v-cone and Electronic Flow Measurement (EFM).
- b) The total gas volume leaving/shipping out of the central production facility shall be metered by custody transfer "gas sales" meter prior to delivery into a gas gathering pipeline system.
 - o Gas Sales metered volumes for the month are termed "Actual Monthly Gas Sales".
- c) Determine a theoretical monthly gas production volume for each continuously measured well as follows:
 - <u>"Theoretical Monthly Gas Production</u>" (post ops review) = Total gas volume continuously measured for month with Volume corrected as necessary by responsible operations/metering personnel for known upsets/malfunctioning of equipment or measurement devices that impact accuracy of well oil volumes.
- d) Sum all the individual well "<u>Theoretical Monthly Gas Production</u>" volumes to determine the "<u>Total</u> <u>Theoretical Monthly Gas Production</u>" for the central production facility.
- e) Calculate a <u>sales factor</u> by dividing the total "<u>Actual Monthly Gas Sales</u>" by the "<u>Total Theoretical Monthly Gas Production</u>" volumes for the central production facility corrected as necessary for any time well was producing but measurement was not operational.
- f) Determine "<u>Allocated Monthly Gas Sales</u>" for each well by multiplying the respective individual well "<u>Theoretical Monthly Gas Production</u>" volume by the <u>sales factor</u> calculated in step (e) above.
- g) Gas Sales meter used in the measurement will be calibrated and maintained according to gas gathering contracts with commercial gathering entities and/or industry standard practices if performed by EOG Resources directly.
- h) Well gas allocation meters will be checked and calibrated on a standard timespan reflective of gas volume magnitude (large volumes quarterly, lower volumes every 6 months.
- i) Volumes will be reported to appropriate agencies through routine gas production reports filed monthly.

Associated Oil Tank Gas (aka, Vapors) Recovered And Sold With Separator Gas:

IF central facility separator gas is 1) active on gas sales system and 2) vapor recovery is required for emissions compliance and/or vapor recovery otherwise economic then a Vapor Recovery Unit (VRU) will be installed to recover tank gas prior to entry into atmospheric tanks.

a) Commingled gas from the discharge of Vapor Recovery Unit (VRU) compressors will be measured and allocated back to the individual wells based upon each well prorata share of continuously measured oil volumes from the Coriolis meters and not producing wellstream GOR. This reflects that for similar crude oils gas volumes in solution within "saturated separator barrels" leaving treaters is primarily a function of separation "flash" conditions and not producing GOR from the well. The coriolis meters at the treaters will be measuring "saturated" separator barrels containing the soon to be liberated tank gas vapor still in solution before finally flashing at tank conditions.

Continuous Measurement: Individual Well "Monthly Well WATER PRODUCTION":

<u>Produced Water:</u> A continuously measured well water meter volume shall be used for individual well produced water volume.

AFFIDAVIT OF FACTUAL INFORMATION

Kenneth T. Stillman, of lawful age, being first duly sworn, deposes and says:

- 1. That he is a Division Land Advisor for EOG Resources, Inc., located at 600 17th Street, Suite 1000N, Denver, CO 80202, a corporation duly organized under the State of Delaware, and is fully authorized to make and sign this Affidavit on behalf of said corporation; and
- 2. That EOG Resources, Inc. is the operator of the proposed wells described in "Exhibit A" attached hereto and made a part hereof; and
- 3. That the wells described in "Exhibit A" are producing into a common storage facility and have common ownership, including the common ownership of the working interest, the common ownership of the royalty ownership, and the common ownership of any overriding royalty owners; and
- 4. That the production from each well can be accurately determined and will be allocated by a three phase test treater, portrayed on "Exhibit B" attached hereto and made a part hereof; and
- That EOG Resources, Inc. hereby requests approval of the commingling system described herein. 5.

Further Affiant sayeth not.

In testimony whereof, the undersigned, Kenneth T. Stillman, has executed this instrument this 6th day of June, 2014, as Division Land Advisor for EOG Resources, Inc.

EOG RESOURCES, INC.

Stillman, Division Land A

ACKNOWLEDGEMENT

STATE OF COLORADO COUNTY OF DENVER

) ss.

The foregoing instrument was acknowledged before me this 6th day of June, 2014 by Kenneth T. Stillman, Division Land Advisor, on behalf of EOG Resources, Inc.

Witness my hand and official seal.

EXHIBIT A

Attached to and made a part of the Affidavit of Factual Information submitted the 6th day of June, 2014.

Well Names and Description

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1.	Well Names:	Parshall 38-1608H / NDIC File No. 28317
		Parshall 39-1608H / NDIC File No. 28315
		Parshall 58-1608H / NDIC File No. 28525
		Parshall 59-1608H / NDIC File No. 28521
		Parshall 147-1608H / NDIC File No. 28316
		Parshall 151-1608H / NDIC File No. 28524
2.	Operator:	EOG Resources, Inc.
3.	Location:	Section 16, T152N, R90W
		Mountrail County, North Dakota
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- 4. Type of Wells:Horizontal Oil Bakken Pool
- 5. Spacing Unit: T152N, R90W, Mountrail County, North Dakota

Section 8, 16, 17: All Containing 1920 acres, m/l

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NOTIFY NOIC INSPECTO	r BOB GARBE	AT 701-720-	3262 WITH SPA	ID +TD INFO			
Company EOG Resources, Inc.		Telephone Number (303) 262-9894	FOR STATE USE ONLY				
Address 600 17th Street, Suite 1000N			Received	Approved			
City Denver / /	State CO	Zip Code 80202	Date 6/04/	114			
Signature Bub ard April	ıld	By alier 1	D. Wahler				
Regulatory Specialist February 24, 2014			Title	ering Technician			
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Title Engineering Technician					


Oil and Gas Division

Lynn D. Helms - Director Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.oilgas.nd.gov

June 3, 2014

Tex Hall, Chairman Three Affiliated Tribes 404 Frontage Road New Town, ND 58763

RE: WELL PERMITTED ON FORT BERTHOLD RESERVATION PARSHALL 58-1608H SESW Section 16-152N-90W Mountrail County NDIC File No. 28525

Chairman Hall:

Please be advised that EOG RESOURCES, INC. was issued the above captioned permit on June 3, 2014 and will remain in effect for a period of one year. In addition, it was permitted with a 1920 acre spacing unit in Sections 8, 16 & 17 T152N R90W via Commission Order 23511.

Should you have any questions, feel free to contact me.

Sincerely,

Todd L. Holweger Mineral Resources Permit Manager

cc: Tax Commissioner Field Inspector



Oil and Gas Division

Lynn D, Helms - Director Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.oilgas.nd.gov

June 3, 2014

Barbara Griswold Regulatory Specialist EOG RESOURCES, INC. 600 17th Street, Suite 1000N Denver, CO 80202

> RE: HORIZONTAL WELL PARSHALL 58-1608H SESW Section 16-152N-90W Mountrail County Well File # 28525

Dear Barbara:

Pursuant to Commission Order No. 23511, approval to drill the above captioned well is hereby given. The approval is granted on the condition that all portions of the well bore not isolated by cement, be no closer than 500 feet to the boundary of the spacing unit the lateral is most nearly parallel to and 200 feet to the boundary of the spacing unit the lateral is most nearly perpendicular to within the 1920 acre spacing unit consisting of Sections 8, 16 & 17 T152N R90W. Based on the proposed directional plan the setbacks are: 200' from the north and east, and 500' from the south and west boundary. Tool error is not required pursuant to order.

PERMIT STIPULATIONS: Effective June 1, 2014, a covered leak-proof container (with placard) for filter sock disposal must be maintained on the well site beginning when the well is spud, and must remain on-site during clean-out, completion, and flow-back whenever filtration operations are conducted. Due to drainage adjacent to the well site, a dike is required surrounding the entire location. All distances on the Production Layout Plat must comply with NDAC 43-02-03-28 (SAFETY REGULATION). EOG RESOURCES, INC. must take into consideration NDAC 43-02-03-28 (Safety Regulation) when contemplating simultaneous operations on the above captioned location. Pursuant to NDAC 43-02-03-28 (Safety Regulation) "No boiler, portable electric lighting generator, or treater shall be placed nearer than 150 feet to any producing well or oil tank." EOG RESOURCES INC must contact NDIC Field Inspector Robert Garbe at 701-720-3262 prior to location construction.

Drilling pit

NDAC 43-02-03-19.4 states that "a pit may be utilized to bury drill cuttings and solids generated during well drilling and completion operations, providing the pit can be constructed, used and reclaimed in a manner that will prevent pollution of the land surface and freshwaters. <u>Reserve and circulation of mud system through earthen pits are prohibited</u>. All pits shall be inspected by an authorized representative of the director prior to lining and use. Drill cuttings and solids must be stabilized in a manner approved by the director prior to placement in a cuttings pit."

Form 1 Changes & Hard Lines

Any changes, shortening of casing point or lengthening at Total Depth must have prior approval by the NDIC. The proposed directional plan is at a legal location. The minimum legal coordinate from the well head at casing point is: 80'N. Also, based on the azimuth of the proposed lateral the maximum legal coordinate from the well head is: 6382'W.

Location Construction Commencement (Three Day Waiting Period)

Operators shall not commence operations on a drill site until the 3rd business day following publication of the approved drilling permit on the NDIC - OGD Daily Activity Report. If circumstances require operations to commence before the 3rd business day following publication on the Daily Activity Report, the waiting period may be waived by the Director. Application for a waiver must be by sworn affidavit providing the information necessary to evaluate the extenuating circumstances, the factors of NDAC 43-02-03-16.2 (1), (a)-(f), and any other information that would allow the Director to conclude that in the event another owner seeks revocation of the drilling permit, the applicant should retain the permit.

Permit Fee & Notification

Payment was received in the amount of \$100 via credit card .The permit fee has been received. It is requested that notification be given immediately upon the spudding of the well. This information should be relayed to the Oil & Gas Division, Bismarck, via telephone. The following information must be included: Well name, legal location, permit number, drilling contractor, company representative, date and time of spudding. Office hours are 8:00 a.m. to 12:00 p.m. and 1:00 p.m. to 5:00 p.m. Central Time. Our telephone number is (701) 328-8020, leave a message if after hours or on the weekend.

Barbara Griswold June 3, 2014 Page 2

Survey Requirements for Horizontal, Horizontal Re-entry, and Directional Wells

NDAC Section 43-02-03-25 (Deviation Tests and Directional Surveys) states in part (that) the survey contractor shall file a certified copy of all surveys with the director free of charge within thirty days of completion. Surveys must be submitted as one electronic copy, or in a form approved by the director. However, the director may require the directional survey to be filed immediately after completion if the survey is needed to conduct the operation of the director's office in a timely manner. Certified surveys must be submitted via email in one adobe document, with a certification cover page to certsurvey@nd.gov.

Survey points shall be of such frequency to accurately determine the entire location of the well bore.

Specifically, the Horizontal and Directional well survey frequency is 100 feet in the vertical, 30 feet in the curve (or when sliding) and 90 feet in the lateral.

Surface casing cement

Tail cement utilized on surface casing must have a minimum compressive strength of 500 psi within 12 hours, and tail cement utilized on production casing must have a minimum compressive strength of 500 psi before drilling the plug or initiating tests.

Logs

NDAC Section 43-02-03-31 requires the running of (1) a suite of open hole logs from which formation tops and porosity zones can be determined, (2) a Gamma Ray Log run from total depth to ground level elevation of the well bore, and (3) a log from which the presence and quality of cement can be determined (Standard CBL or Ultrasonic cement evaluation log) in every well in which production or intermediate casing has been set, this log must be run prior to completing the well. All logs run must be submitted free of charge, as one digital TIFF (tagged image file format) copy and one digital LAS (log ASCII) formatted copy. Digital logs may be submitted on a standard CD, DVD, or attached to an email sent to <u>digitallogs@nd.gov</u> Thank you for your cooperation.

Sincerely,

Alice Webber Engineering Tech

APPLICATION FOR PERMIT TO DRILL HORIZONTAL WELL - FORM 1H



INDUSTRIAL COMMISSION OF NORTH DAKOTA OIL AND GAS DIVISION 600 EAST BOULEVARD DEPT 405 BISMARCK, ND 58505-0840 SFN 54269 (08-2005)

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL A	AND ONE COPY.						
Type of Work	Type of Well		Approximate D	Date V	Confidential Status		
New Location	Oil & Gas		6 /	1 /	2014		No
Operator						Telephone	e Number
EOG RESOURCES, INC.				303-262-9894			
Address		City				State	Zip Code
600 17th Street, Suite 1000N			ver CO 80202			80202	
			This well	is not loca	ted within five hundred		

permanently occupied dwelling within 1,320 feet.

This well is not located within five hundred feet of an occupied dwelling.

WELL INFORMATION (If more than one lateral proposed, enter data for additional laterals on page 2)

Well Name PARSHALL	'ell Name Well Number ARSHALL 58-1608H															
Surface Footages 420 F S	b L		1600	FW	L	Qtr-Qti SE	SW	Section 16	6	Township 152 N	Range 90 V	v	County Mountrail			
Longstring Casing Point Footages 500 F S L 1155 F W L				L	Qtr-Qti SW	SW	Section 16	6	Township 152 N	Range 90 V	v	County Mountrail				
Longstring Casing Po 80 N Fro	oint Coord om WH	linates Fro 44	om Wel 5 W F	l Head From WI	-1	Azimut 28	h 30.2 °	Longstri 95	ing Tota 52 Fe	al Depth et MD	9304 Feet	TVE)			
Bottom Hole Footage 1193 F	s From N L	earest Se	ection Li 554	ine F W	L	Qtr-Qti SW	SW	Section 8	1	Township 152 N	Range 90 V	v	County Mountrail			
Bottom Hole Coordina 6077 N Fro	ates From om WH	n Well Hea 632	ad 9 W F	From WI	+	KOP L 882	ateral 1 7 Fe	eet MD	Azimu 3	uth Lateral 1 24.7 °	Estimated 18313	Tota S Fe	I Depth Lateral 1 et MD 9316 Feet TVD			
Latitude of Well Head 47 ° 58 '	Latitude of Well Head Longitude of Well Head NAD Reference Description of (Subject to NDIC Approval) 47 ° 58 ' 44.40 " -102 ° 12 ' 30.31 " NAD83 Spacing Unit: Sections 8, 16 & 17 T152N R90W									ect to NDIC Approval) ns 8, 16 & 17 T152N R90W						
Ground ElevationAcres in Spacing/Drilling UnitSpacing/Drilling Unit Setback RequirementIndustrial Commission Or 1957 Feet Above S.L. 1920500 Feet N/S 200 Feet E/W 23511							Industrial Commission Order 23511									
North Line of Spacing	/Drilling l 10561	Jnit Feet	South I	Line of S	Spac	cing/Dri 105	illing Un 5 60 Fe	it E	ast Line	e of Spacing/Dr 1(rilling Unit)717 Feet	ng Unit West Line of Spacing/Drilling Unit 17 Feet 10724 Feet Disrue Shale Tee				
Objective Horizons Bakken													10724 Feet Pierre Shale Top 1682			
Proposed Surface Casing	Size 9 -	5/8 "	Weight 36	Lb./Ft.	De 18	pth 50 I	⊂eet 6	ement Vo 6 43 S	olume acks	NOTE: Surface of and surface of a	ce hole mus	t be	drilled with fresh water cemented back to surface.			
Proposed Longstring Casing	Size 7 -	0 "	Weight 26,	:(s) 32 L	b./F	t. 9	gstring 552 Fe	Total Dep eet MD	oth 93	04 Feet TVD	Cement Vo 662 S	olum acks	e Cement Top Top Dakota Sand 4200 Feet 4694 Feet			
Base Last Charles Sa 774	alt (If Appl I 3 Feet	licable)	NOTE:	Interm	edia	ate or I	ongstri	ng casin	ig strin	g must be cen	nented abo	ve th	e top Dakota Group Sand.			
Proposed Logs CBL/GR in 7" ca	Proposed Logs CBL/GR in 7" casing: MWD/GR from KOP to TD															
Drilling Mud Type (Ve Invert	Drilling Mud Type (Vertical Hole - Below Surface Casing) Drilling Mud Type (Lateral) Other - See Comments															
Survey Type in Vertic	al Portior	n of Well ery 100 F	eet	Survey F	req	uency:	Build S 30	Section Feet	Surve	ey Frequency:	Lateral 90 Feet		Survey Contractor Scientific Drilling			

NOTE: A Gamma Ray log must be run to ground surface and a CBL must be run on intermediate or longstring casing string if set.

Surveys are required at least every 30 feet in the build section and every 90 feet in the lateral section of a horizontal well. Measurement inaccuracies are not considered when determining compliance with the spacing/drilling unit boundary setback requirement except in the following scenarios: 1) When the angle between the well bore and the respective boundary is 10 degrees or less; or 2) If Industry standard methods and equipment are not utilized. Consult the applicable field order for exceptions.

If measurement inaccuracies are required to be considered, a 2° MWD measurement inaccuracy will be applied to the horizontal portion of the well bore. This measurement inaccuracy is applied to the well bore from KOP to TD.

REQUIRED ATTACHMENTS: Certified surveyor's plat, horizontal section plat, estimated geological tops, proposed mud/cementing plan, directional plot/plan, \$100 fee. See Page 2 for Comments section and signature block.

Pool

BAKKEN

COMMENTS, ADDITIONAL INFORMATION, AND/OR LIST OF ATTACHMENTS

Permit Type

DEVELOPMENT

Drilling Mud Type {Lateral}: Brine. Longstring casing is a mixed string of 7" 26 lb/ft HCP-110 from LTC from surface to 200' above Dunham Salt and then 7" 32 lb/ft HCP-110 LTC from there to TD. This well will have a frac string. No pits will be used. Waste will be hauled to an approved disposal facility. Attachments emailed.

Lateral 2										
KOP Lateral 2	Azimuth Latera	l 2 Estima	ated Tot	tal Depth Late	ral 2	K	KOP Coordinates From Well Head			
Feet MD	0		F	Feet MD		Feet TVD		From	NH	From WH
Formation Entry Point (Coordinates From	n Well Head	В	Bottom Hole C	oordinates F	rom Well Head				
Fron	n WH	From V	NΗ		From W	H	From WH			
KOP Footages From N	earest Section Li	ne	G	Qtr-Qtr	Section	Township	Range	Co	unty	
F	L	F	L			N	W	'		
Bottom Hole Footages	From Nearest Se	ection Line	G	Qtr-Qtr	Section	Township	Range	Co	unty	
F	L	F	L			N	W			
Lateral 3	T				1.0					
KOP Lateral 3	Azimuth Latera	3 Estima	ated Io	tal Depth Late	eral 3	K	OP Coordinates	From V	Vell Head	
Feet MD			F	-eet MD		Feet TVD		From	NH	From WH
Formation Entry Point (Coordinates From	n Well Head	I ^B	Bottom Hole Coordinates From Well Head						
Fron	1 WH	From V	NH	21.01	From W		From WH			
KOP Footages From N	earest Section Li	ne		Qtr-Qtr	Section	Township	Range	, Co	unty	
		F	L	21.01		N	V			
Bottom Hole Footages	From Nearest Se	ection Line		Qtr-Qtr	Section	Township	Range	, Co	unty	
F	L	F	L			N	vv			
Lateral 4		L4 Ectimo	tod To	tal Dopth Lata	vrol 4				Vall Llaad	
KOP Lateral 4					i di 4		JP Coordinates	From V	vell Head	
Feet MD	Deservice stars From				e e relier et e e . E			From	/VH	From VVH
Formation Entry Point	Joordinates From	1 VVell Head	,,,, ^B	Bottom Hole C	oordinates F	rom vveli Head				
From		From V	/VH	24m 04m	From W	H	From VVH			
KOP Footages From N	earest Section Li	ne r	.	Jtr-Qtr	Section	i ownsnip	Range		unty	
F Dottom Hole Fostages				<u>)</u>	Continn	Township	Danga	Co	un tra	
Bottom Hole Footages	From Nearest Se		. [Jtr-Qtr	Section	Township	Range		unty	
F	L	F	L			IN	vv			
	A zimuth Latara	LE Estima	ated Tot	tal Denth Late	ral 5		OR Coordinator	Erom \	Noll Hood	
Foot MD							KOP Coordinates From Well Head			
Feet MD	Coordinates From				oordinataa E			FIOIII		
Formation Entry Form		From \	лц ^С		Erom W					
FIUI	oprost Spotion Li			⊃tr ⊖tr	Soction	Township			untv	
E		E		211-0211	Section	N	Kange	, 00	unty	
Rottom Holo Footagoo	Erom Noarost Sc			⊃tr ⊖tr	Section	Township	Pango	Co	untv	
				211-0211	Section	N	Kange	, 00	unty	
F	L	L.	L						•	
I hereby swear or affirm	the information	provided is tri	ue con	molete and cor	rect as dete	rmined from all	available record	s	Date	
			40, 001					0.	2	/ 25 / 2014
		I	Printed	Name			Title			
ePe	Barba	ara Griswo	ld		Regulatory	Spe	cialist			
							<u> </u>	-		
	FOR STAT	E USE ONL	Y				FOR	STATE	USE ONLY	
Permit and File Numbe 28525	r	API Number	061	- 03135		Date Appro	ved	6	/ 3 / 201	4
Field		UU -		00100		Bv		<u> </u>	, , , 201	
PARSHALL			Alice Webber							

	Alice Webber
	Title
	Engineering Tech

Engineering Tech



Oil and Gas Division

Lynn D. Helms - Director Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.oilgas.nd.gov

April 9, 2014

RE: Filter Socks and Other Filter Media Leakproof Container Required Oil and Gas Wells

Dear Operator,

North Dakota Administrative Code Section 43-02-03-19.2 states in part that all waste material associated with exploration or production of oil and gas must be properly disposed of in an authorized facility in accord with all applicable local, state, and federal laws and regulations.

Filtration systems are commonly used during oil and gas operations in North Dakota. The Commission is very concerned about the proper disposal of used filters (including filter socks) used by the oil and gas industry.

Effective June 1, 2014, a container must be maintained on each well drilled in North Dakota beginning when the well is spud and must remain on-site during clean-out, completion, and flow-back whenever filtration operations are conducted. The on-site container must be used to store filters until they can be properly disposed of in an authorized facility. Such containers must be:

- leakproof to prevent any fluids from escaping the container
- covered to prevent precipitation from entering the container
- placard to indicate only filters are to be placed in the container

If the operator will not utilize a filtration system, a waiver to the container requirement will be considered, but only upon the operator submitting a Sundry Notice (Form 4) justifying their request.

As previously stated in our March 13, 2014 letter, North Dakota Administrative Code Section 33-20-02.1-01 states in part that every person who transports solid waste (which includes oil and gas exploration and production wastes) is required to have a valid permit issued by the North Dakota Department of Health, Division of Waste Management. Please contact the Division of Waste Management at (701) 328-5166 with any questions on the solid waste program. Note oil and gas exploration and production wastes include produced water, drilling mud, invert mud, tank bottom sediment, pipe scale, filters, and fly ash.

Thank you for your cooperation.

Sincerely,

Bruce E. Hicks

Assistant Director



Jan 22, 2014 - 2:55pm - J:\oilfield\EOG\7713187 Parshall 58-1608H\cadd\7713187BAS01.dwg

Well Name:	Parshall 58-1608H	11/26/2013
	Seog	resources
Ground Elevation	1957	
KB Stoneham 17	26.0	
RKB Elevation	1983	

Name	Vertical Subsea	TVD-RKB
Pierre Shale	301	1682
Greenhorn	-1963	3946
Dakota Sand	-2711	4694
Base Dakota	-3035	5018
Piper Lime	-3731	5714
Dunham Salt	-3856	5839
Spearfish	-4020	6003
Minnelusa	-4525	6508
Kibbey Lime	-5161	7144
Charles	-5395	7378
Base Last Salt	-5760	7743
Mission Canyon	-5943	7926
Lodgepole	-6540	8523
3rd Shale Marker	-7262	9245
False Bakken	-7282	9265
Scallion	-7288	9271
Upper Bakken Shale	-7300	9283
Middle Bakken Target	-7318	9301
Lower Bakken Shale (estimated)	-7354	9337
Three Forks (estimated)	-7385	9368
i i		

ATTACHMENT "A"

COMMENTS, ADDITIONAL INFORMATION, AND/OR LIST OF ATTACHMENTS

Parshall 58-1608H								
Surface casing cement:								
Lead -	373	sx:	11.80 ppg;	2.66 cf/sx				
Tail -	270	sx;	14.80 ppg;	1.34 cf/sx				
Long string cement:								
Lead -	110	sx;	11.80 ppg;	2.56 cf/sx				
Tail -	552	sx;	14.00 ppg;	1.40 cf/sx				
Production liner cement:								
Tail -	527	sx;	13.50 ppg;	1.77 cf/sx				
Surface hole mud:								
8.5 - 9.2 p	pg fre	shwa	ter-based mu	d				
Intermediate hole mud:								
9.4 - 10.7	ppg ir	nvert	oil-based mu	d				
Production hole mud:								
8.3 - 10.0	ppg b	rine						
** Plan to	switc	h to (OBM with we	eight over 10.0 ppg in the event				
higher that	n exp	ected	pressures are	encountered				

Production Liner:

The 4-1/2" production liner is 11.6 lb/ft, Grade HCP-110 with LT&C connections. The liner is run to within 10' of total depth of the lateral and the liner hanger is set at the Kick Off Point of the lateral. The liner will be cemented from TD to the liner hanger and completed using plug & perf techniques with intervals of approximately 200' - 250'.

Per Fish & Wildlife:

The proposed Parshall 58-1608H is not located within a Fish & Wildlife easement.

Pursuant to revised rule 43-02-03-16 an address was requested and designated for the subject well: 7651 39th Street NW, Parshall, ND 58770

AFFIDAVIT IN RE APPLICATIONS FOR PERMIT TO DRILL PARSHALL 38-1608H, PARSHALL 39-1608H, PARSHALL 147-1608H, PARSHALL 58-1608H, PARSHALL 59-1608H AND PARSHALL 151-1608H WELLS

STATE OF Colorado))§

COUNTY OF Denver)

David Campbell, of lawful age, being duly sworn, on his oath says that he the Denver Division Completions Manager at EOG Resources, Inc., (EOG) 600 17th Street, Suite 1000N, Denver, Colorado 80202 and duly authorized to make this Affidavit in its behalf.

WHEREAS, EOG has applied to the NDIC for permits to drill the Parshall 38-1608H, Parshall 39-1608H, Parshall 147-1608H, Parshall 58-1608H, Parshall 59-1608H and Parshall 151-1608H wells (subject wells).

WHEREAS, the United States Environmental Protection Agency identifies diesel fuel as any compound identified with the following Chemical Abstract Service Registry Numbers (CASRN) 68334-30-5 (Primary Name: Fuels, diesel), 68476-34-6 (Primary Name: Fuels, diesel, No. 2), 68476-30-2 (Primary Name: Fuel oil No. 2), 68476-31-3 (Primary Name: Fuel oil, No. 4), and, 8008-20-6 (Primary Name: Kerosene); and,

WHEREAS, EOG utilizes hydraulic fracturing techniques to complete drilled oil and gas wells.

NOW THEREFORE, I hereby affirm that EOG does not utilize diesel fuel, as defined, in fluids used for underground hydraulic fracturing; no diesel fuel will be used in hydraulic fracturing of the subject wells.

EOG RESOURCES, INC.

David Campbell, Division Completions Manager

ACKNOWLEDGEMENT

The foregoing instrument was acknowledged before me this <u>7th day of March, 2014</u> by <u>David Campbell</u>, as <u>Division Completions Manager</u> on behalf of EOG Resources, Inc.

Witness my hand and official seal.

I. Worser Notary Public

My Commission Expires:

1	JACQUELINE I WARNER
L	NOTARY PUBLIC
L	STATE OF COLOBADO
L	NOTARY ID 20064006450
L	MY COMMISSION EXPIRES ODIOLOGIS



				IARGET D					
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	
58-1608H PBH	9316.0	6076.8	-6329.4	367954.14	1575516.38	47°59' 44.316 N	102°14' 1.754 W	Point	

Denver Division- North Dakota

Williston Basin - Parshall Field Parshall 58-1608H (New SHL)

Wellbore #1

Plan: APD Directional Plan

Standard Planning Report

07 February, 2014

Planning Report

Database: Company: Project: Site: Well: Wellbore: Design:	edm Denve Willist Parsh 58-16 Wellb APD I	er Division- Nor on Basin - Par all 08H (New SHL ore #1 Directional Plar	th Dakota shall Field)		Local Co- TVD Refer MD Refer North Ref Survey Ca	ordinate Refer rence: ence: erence: alculation Met	rence: hod:	e: Well 58-1608H (New SHL) WELL @ 1983.0usft (Original Well Elev) WELL @ 1983.0usft (Original Well Elev) True Minimum Curvature			
Project	Willisto	on Basin - Pars	hall Field, Mou	Intrail County							
Map System: Geo Datum: Map Zone:	US State NAD 192 North Da	e Plane 1927 (I 27 (NADCON C akota North 330	Exact solution) CONUS) 01		System Da	System Datum: Mean Sea Level					
Site	Parsha	all									
Site Position: From: Position Uncerta	Lat/ i nty:	/Long 0.0 u	North Eastir sft Slot R	ing: ng: tadius:	378 1,588	378,031.81 usft Latitude: 48° 1' 26.570 1,588,402.53 usft Longitude: 102° 10' 55.570 13-3/16" Grid Convergence: -1.25 °				48° 1' 26.570 N 102° 10' 55.570 W -1.25 °	
Well	58-160	8H (New SHL)									
Well Position	+N/-S +E/-W	+N/-S -16,435.7 usft Northing: +E/-W -6,335.5 usft Easting:				361,738.42 usft Latitude: 47° 1,581,709.48 usft Longitude: 102°					
Position Uncerta	inty	C	0.0 usft W	ellhead Eleva	ation:		usft Gro	ound Level:		1,957.0 usft	
Wellbore	Wellbo	ore #1									
Magnetics	Mo	odel Name	Sampl	e Date	Declina (°)	ition	Dip A ('	Angle ')	Field : (Strength nT)	
		IGRF200510		11/26/2013		7.22 73.10			56,567		
Design	APD D	irectional Plan									
Audit Notes:	7										
Version:			Phas	e:	PROTOTYPE	Tie	On Depth:		0.0		
Vertical Section:		[Depth From (T	VD)	+N/-S	+E	E/-W	Di	rection		
			0.0		0.0	(u ().0	3	313.83		
Plan Sections											
Measured Depth I (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00		
8.827.2	0.00	0.00	0.0 8.827.2	0.0	0.0	0.00	0.00	0.00	0.00		
9,552.2	87.00	280.20	9,304.0	80.1	-445.3	12.00	12.00	0.00	280.20		
9,732.2	87.00	280.20	9,313.4	112.0	-622.2	0.00	0.00	0.00	0.00		
9,832.2	90.00	280.20	9,316.0	129.7	-720.6	3.00	3.00	0.00	0.00		
10,672.2	90.00	280.20	9,316.0	278.4	-1,547.3	0.00	0.00	0.00	0.00		
12,154.1 18,312.6	90.00 90.00	324.66 324.66	9,316.0 9,316.0	1,053.3 6,076.8	-2,767.0 -6,329.4	3.00 0.00	0.00 0.00	3.00 0.00	90.00 0.00	58-1608H PBH 58-1608H PBH	

Planning Report

ell Elev)
ell Elev)
e

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1 500 0	0.00	0.00	1 500 0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,002.U	0.00	0.00	1,002.0	0.0	0.0	0.0	0.00	0.00	0.00
Pierre Shale	0.00	0.00	1 700 0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,850.0	0.00	0.00	1,850.0	0.0	0.0	0.0	0.00	0.00	0.00
9-5/8" Surfa	се								
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2 200 0	0.00	0.00	2 200 0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3.300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3.400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3.500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3.600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2 000 0	0.00	0.00	2 000 0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
0,040.0	0.00	0.00	5,540.0	0.0	0.0	0.0	0.00	0.00	0.00
Greennorn	0.00	0.00	4 000 0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
L									

Planning Report

Database:	edm	Local Co-ordinate Reference:	Well 58-1608H (New SHL)
Company:	Denver Division- North Dakota	TVD Reference:	WELL @ 1983.0usft (Original Well Elev)
Project:	Williston Basin - Parshall Field	MD Reference:	WELL @ 1983.0usft (Original Well Elev)
Site:	Parshall	North Reference:	True
Well:	58-1608H (New SHL)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	APD Directional Plan		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,694.0	0.00	0.00	4,694.0	0.0	0.0	0.0	0.00	0.00	0.00
Dakota Sand 4,700.0 4,800.0 4,900.0 5,000.0	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	4,700.0 4,800.0 4,900.0 5,000.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00
5,018.0	0.00	0.00	5,018.0	0.0	0.0	0.0	0.00	0.00	0.00
Base Dakota 5,100.0 5,200.0 5,300.0 5,400.0 5,500.0 5,600.0 5,700.0 5,714.0 Piper Lime 5,800.0 5,839.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	5,100.0 5,200.0 5,300.0 5,400.0 5,500.0 5,600.0 5,700.0 5,714.0 5,800.0 5,839.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
5,900.0 6,000.0 6,003.0	0.00 0.00 0.00	0.00 0.00 0.00	5,900.0 6,000.0 6,003.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00
6,100.0 6,200.0 6,300.0 6,400.0 6,500.0 6,500.0	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	6,100.0 6,200.0 6,300.0 6,400.0 6,500.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00
Minnelusa	0.00	0.00	0,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0 6,700.0 6,800.0 6,900.0 7,000.0	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	6,600.0 6,700.0 6,800.0 6,900.0 7,000.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00
7,100.0 7 144 0	0.00	0.00	7,100.0 7 144 0	0.0	0.0 0.0	0.0 0.0	0.00	0.00	0.00
Kibbey Lime 7,200.0 7,300.0 7,378.0	0.00 0.00 0.00	0.00 0.00 0.00	7,200.0 7,300.0 7,378.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00
Charles									
7,400.0 7,500.0 7,600.0 7,700.0 7,743.0	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	7,400.0 7,500.0 7,600.0 7,700.0 7,743.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00
Base Last Sa 7,800.0 7,900.0 7,926.0 Mission Can	alt 0.00 0.00 0.00 yon	0.00 0.00 0.00	7,800.0 7,900.0 7,926.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00

Planning Report

Database:	edm	Local Co-ordinate Reference:	Well 58-1608H (New SHL)
Company:	Denver Division- North Dakota	TVD Reference:	WELL @ 1983.0usft (Original Well Elev)
Project:	Williston Basin - Parshall Field	MD Reference:	WELL @ 1983.0usft (Original Well Elev)
Site:	Parshall	North Reference:	True
Well:	58-1608H (New SHL)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	APD Directional Plan		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8.200.0	0.00	0.00	8.200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
8,523.0	0.00	0.00	8,523.0	0.0	0.0	0.0	0.00	0.00	0.00
Lodgepole									
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00
8.800.0	0.00	0.00	8.800.0	0.0	0.0	0.0	0.00	0.00	0.00
8 827 2	0.00	0.00	8 827 2	0.0	0.0	0.0	0.00	0.00	0.00
8.900.0	8.74	280.20	8.899.7	1.0	-5.5	4.6	12.00	12.00	0.00
0,000.0		200.20	0,00011		0.0			12.00	0.00
9,000.0	20.74	280.20	8,996.3	5.5	-30.4	25.8	12.00	12.00	0.00
9,100.0	32.74	280.20	9,085.4	13.4	-74.6	63.1	12.00	12.00	0.00
9,200.0	44.74	280.20	9,163.3	24.5	-136.1	115.1	12.00	12.00	0.00
9,300.0	56.74	280.20	9,226.4	38.2	-212.2	179.5	12.00	12.00	0.00
9,335.9	61.05	280.20	9,245.0	43.6	-242.5	205.1	12.00	12.00	0.00
3rd Shale Ma	arker								
9,381.2	66.48	280.20	9,265.0	50.8	-282.4	238.9	12.00	12.00	0.00
False Bakke	n								
9,396.8	68.36	280.20	9,271.0	53.4	-296.6	250.9	12.00	12.00	0.00
Scallion									
9,400.0	68.74	280.20	9.272.2	53.9	-299.5	253.4	12.00	12.00	0.00
9.432.8	72.67	280.20	9,283.0	59.4	-330.0	279.1	12.00	12.00	0.00
Upper Bakke	n Shale		-,						
9,500.0	80.74	280.20	9,298.4	70.9	-394.3	333.5	12.00	12.00	0.00
9 518 0	82 90	280 20	9 301 0	74 1	-411 8	348.4	12 00	12 00	0.00
Middle Bakk	on		-,						
9 552 2	87.00	280.20	9 304 0	80.1	-445 3	376.7	12.00	12.00	0.00
7" Cog Pt (07.00		7" Intermedia	00.1	440.0	010.1	12.00	12.00	0.00
7 CSg Pt :	9552 WID/ 9304	1 VD - 67 deg ind	- 7 Intermedia	110	402.2	416 E	0.00	0.00	0.00
9,600.0	07.00	200.20	9,300.5	00.0	-492.3	410.0	0.00	0.00	0.00
9,085.8	87.00	200.20	9,311.0	103.7	-570.0	487.8	0.00	0.00	0.00
Gamma Ray	Marker	000.00	0.011.7	400.0	500.0	400.0	0.00	0.00	0.00
9,700.0	87.00	280.20	9,311.7	106.3	-590.6	499.6	0.00	0.00	0.00
9,732.2	87.00	280.20	9,313.4	112.0	-622.2	526.4	0.00	0.00	0.00
9,800.0	89.03	280.20	9,315.8	124.0	-688.9	582.8	3.00	3.00	0.00
9,832.2	90.00	280.20	9,316.0	129.7	-720.6	609.6	3.00	3.00	0.00
9,900.0	90.00	280.20	9,316.0	141.7	-787.3	666.1	0.00	0.00	0.00
10,000.0	90.00	280.20	9,316.0	159.4	-885.8	749.3	0.00	0.00	0.00
10 100 0	90 00	280.20	9,316.0	177 1	-984 2	832.6	0.00	0.00	0.00
10,100.0	90.00 00.00	200.20	0 216 0	10/ 9	-304.2 _1 092 6	015.0	0.00	0.00	0.00
10,200.0	00.00 00.00	200.20	0.316.0	212 5	-1,002.0	000 1	0.00	0.00	0.00
10,300.0	00.00 00 00	280.20	9,310.0	212.0	-1 270 /	1 082 /	0.00	0.00	0.00
10,400.0	00.00 00 00	280.20	9,310.0	230.2	-1,2/3.4	1 165 6	0.00	0.00	0.00
10,000.0	50.00	200.20	5,510.0	277.0	1,011.0	1,100.0	0.00	0.00	0.00
10,600.0	90.00	280.20	9,316.0	265.6	-1,476.3	1,248.9	0.00	0.00	0.00
10,672.2	90.00	280.20	9,316.0	278.4	-1,547.3	1,309.0	0.00	0.00	0.00
10,700.0	90.00	281.03	9,316.0	283.5	-1,574.7	1,332.3	3.00	0.00	3.00
10,800.0	90.00	284.03	9,316.0	305.2	-1,672.3	1,417.7	3.00	0.00	3.00
10,900.0	90.00	287.03	9,316.0	332.0	-1,768.6	1,505.7	3.00	0.00	3.00
11,000.0	90.00	290.03	9,316.0	363.8	-1,863.4	1,596.1	3.00	0.00	3.00
	00.00	203.03	0 316 0	400 F	1 056 /	1 688 6	3.00	0.00	3.00
11,100.0	90.00	200.00	3,510.0	400.5	-1,950.4	1,000.0	5.00	0.00	0.00

Planning Report

Database:	edm	Local Co-ordinate Reference:	Well 58-1608H (New SHL)
Company:	Denver Division- North Dakota	TVD Reference:	WELL @ 1983.0usft (Original Well Elev)
Project:	Williston Basin - Parshall Field	MD Reference:	WELL @ 1983.0usft (Original Well Elev)
Site:	Parshall	North Reference:	True
Well:	58-1608H (New SHL)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	APD Directional Plan		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11 300 0	90.00	200 03	9 316 0	188 2	-2 136 0	1 870 0	3 00	0.00	3.00
11,400 0	90.00	302.03	9,316.0	539.0	-2,222.2	1,976.3	3.00	0.00	3.00
11,700.0	00.00	005.00	0,010.0	504.0	_,	0,074.7	0.00	0.00	0.00
11,500.0	90.00	305.03	9,316.0	594.3	-2,305.5	2,074.7	3.00	0.00	3.00
11,600.0	90.00	308.03	9,316.0	653.8	-2,385.8	2,173.8	3.00	0.00	3.00
11,700.0	90.00	311.03	9,316.0	717.4	-2,403.0	2,273.5	3.00	0.00	3.00
11,000.0	90.00	314.03	9,310.0	700.U 856.4	-2,530.0	2,373.5	3.00	0.00	3.00
11,500.0	90.00	517.05	9,510.0	050.4	-2,000.7	2,475.5	5.00	0.00	5.00
12,000.0	90.00	320.03	9,316.0	931.3	-2,672.9	2,573.1	3.00	0.00	3.00
12,100.0	90.00	323.03	9,316.0	1,009.6	-2,735.1	2,672.2	3.00	0.00	3.00
12,154.1	90.00	324.66	9,316.0	1,053.3	-2,767.0	2,725.5	3.00	0.00	3.00
12,200.0	90.00	324.66	9,316.0	1,090.7	-2,793.6	2,770.6	0.00	0.00	0.00
12,300.0	90.00	524.00	9,510.0	1,172.3	-2,031.4	2,000.0	0.00	0.00	0.00
12,400.0	90.00	324.66	9,316.0	1,253.9	-2,909.3	2,967.0	0.00	0.00	0.00
12,500.0	90.00	324.66	9,316.0	1,335.4	-2,967.1	3,065.2	0.00	0.00	0.00
12,600.0	90.00	324.66	9,316.0	1,417.0	-3,024.9	3,163.4	0.00	0.00	0.00
12,700.0	90.00	324.66	9,316.0	1,498.6	-3,082.8	3,261.7	0.00	0.00	0.00
12,800.0	90.00	324.66	9,316.0	1,580.2	-3,140.6	3,359.9	0.00	0.00	0.00
12,900.0	90.00	324.66	9,316.0	1,661.7	-3,198.5	3,458.1	0.00	0.00	0.00
13,000.0	90.00	324.66	9,316.0	1,743.3	-3,256.3	3,556.3	0.00	0.00	0.00
13,100.0	90.00	324.66	9,316.0	1,824.9	-3,314.2	3,654.5	0.00	0.00	0.00
13,200.0	90.00	324.66	9,316.0	1,906.4	-3,372.0	3,752.8	0.00	0.00	0.00
13,300.0	90.00	324.66	9,316.0	1,988.0	-3,429.9	3,851.0	0.00	0.00	0.00
13,400.0	90.00	324.66	9,316.0	2,069.6	-3,487.7	3,949.2	0.00	0.00	0.00
13,500.0	90.00	324.66	9,316.0	2,151.2	-3,545.6	4,047.4	0.00	0.00	0.00
13,600.0	90.00	324.66	9,316.0	2,232.7	-3,603.4	4,145.6	0.00	0.00	0.00
13,700.0	90.00	324.66	9,316.0	2,314.3	-3,661.3	4,243.9	0.00	0.00	0.00
13,800.0	90.00	324.66	9,316.0	2,395.9	-3,719.1	4,342.1	0.00	0.00	0.00
13,900.0	90.00	324.66	9,316.0	2,477.4	-3,776.9	4,440.3	0.00	0.00	0.00
14,000.0	90.00	324.66	9,316.0	2,559.0	-3,834.8	4,538.5	0.00	0.00	0.00
14,100.0	90.00	324.66	9,316.0	2,640.6	-3,892.6	4,636.7	0.00	0.00	0.00
14,200.0	90.00	324.66	9,316.0	2,722.2	-3,950.5	4,735.0	0.00	0.00	0.00
14,300.0	90.00	324.66	9,316.0	2,803.7	-4,008.3	4,833.2	0.00	0.00	0.00
14,400.0	90.00	324.66	9,316.0	2,885.3	-4,066.2	4,931.4	0.00	0.00	0.00
14,500.0	90.00	324.66	9,316.0	2,966.9	-4,124.0	5,029.6	0.00	0.00	0.00
14,600.0	90.00	324.66	9,316.0	3,048.4	-4,181.9	5,127.9	0.00	0.00	0.00
14,700.0	90.00	324.66	9,316.0	3,130.0	-4,239.7	5,226.1	0.00	0.00	0.00
14,800.0	90.00	324.66	9,316.0	3,211.6	-4,297.6	5,324.3	0.00	0.00	0.00
14,900.0	90.00	324.66	9,316.0	3,293.1	-4,355.4	5,422.5	0.00	0.00	0.00
15,000.0	90.00	324.66	9,316.0	3,374.7	-4,413.2	5,520.7	0.00	0.00	0.00
15,100.0	90.00	324.66	9,316.0	3,456.3	-4,471.1	5,619.0	0.00	0.00	0.00
15,200.0	90.00	324.66	9,316.0	3,537.9	-4,528.9	5,717.2	0.00	0.00	0.00
15,300.0	90.00	324.66	9,316.0	3,619.4	-4,586.8	5,815.4	0.00	0.00	0.00
15,400.0	90.00	324.66	9,316.0	3,701.0	-4,644.6	5,913.6	0.00	0.00	0.00
15,500.0	90.00	324.66	9,316.0	3,782.6	-4,702.5	6,011.8	0.00	0.00	0.00
15,600.0	90.00	324.66	9,316.0	3,864.1	-4,760.3	6,110.1	0.00	0.00	0.00
15,700.0	90.00	324.66	9,316.0	3,945.7	-4,818.2	6,208.3	0.00	0.00	0.00
15,800.0	90.00	324.66	9,316.0	4,027.3	-4,876.0	6,306.5	0.00	0.00	0.00
15,900.0	90.00	324.66	9,316.0	4,108.9	-4,933.9	6,404.7	0.00	0.00	0.00
16,000.0	90.00	324.66	9,316.0	4,190.4	-4,991.7	6,502.9	0.00	0.00	0.00
16,100.0	90.00	324.66	9,316.0	4,272.0	-5,049.6	6,601.2	0.00	0.00	0.00
16,200.0	90.00	324.66	9,316.0	4,353.6	-5,107.4	6,699.4	0.00	0.00	0.00
16,300.0	90.00	324.66	9,316.0	4,435.1	-5,165.2	6,797.6	0.00	0.00	0.00
16.400.0	90.00	324.66	9,316.0	4,516.7	-5,223.1	6,895.8	0.00	0.00	0.00
16,500.0	90.00	324.66	9,316.0	4,598.3	-5,280.9	6,994.0	0.00	0.00	0.00
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Planning Report

Database:	edm	Local Co-ordinate Reference:	Well 58-1608H (New SHL)
Company:	Denver Division- North Dakota	TVD Reference:	WELL @ 1983.0usft (Original Well Elev)
Project:	Williston Basin - Parshall Field	MD Reference:	WELL @ 1983.0usft (Original Well Elev)
Site:	Parshall	North Reference:	True
Well:	58-1608H (New SHL)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	APD Directional Plan		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,600.0	90.00	324.66	9,316.0	4,679.9	-5,338.8	7,092.3	0.00	0.00	0.00
16,700.0	90.00	324.66	9,316.0	4,761.4	-5,396.6	7,190.5	0.00	0.00	0.00
16,800.0	90.00	324.66	9,316.0	4,843.0	-5,454.5	7,288.7	0.00	0.00	0.00
16,900.0	90.00	324.66	9,316.0	4,924.6	-5,512.3	7,386.9	0.00	0.00	0.00
17,000.0	90.00	324.66	9,316.0	5,006.1	-5,570.2	7,485.2	0.00	0.00	0.00
17,100.0	90.00	324.66	9,316.0	5,087.7	-5,628.0	7,583.4	0.00	0.00	0.00
17,200.0	90.00	324.66	9,316.0	5,169.3	-5,685.9	7,681.6	0.00	0.00	0.00
17,300.0	90.00	324.66	9,316.0	5,250.9	-5,743.7	7,779.8	0.00	0.00	0.00
17,400.0	90.00	324.66	9,316.0	5,332.4	-5,801.6	7,878.0	0.00	0.00	0.00
17,500.0	90.00	324.66	9,316.0	5,414.0	-5,859.4	7,976.3	0.00	0.00	0.00
17,600.0	90.00	324.66	9,316.0	5,495.6	-5,917.2	8,074.5	0.00	0.00	0.00
17,700.0	90.00	324.66	9,316.0	5,577.1	-5,975.1	8,172.7	0.00	0.00	0.00
17,800.0	90.00	324.66	9,316.0	5,658.7	-6,032.9	8,270.9	0.00	0.00	0.00
17,900.0	90.00	324.66	9,316.0	5,740.3	-6,090.8	8,369.1	0.00	0.00	0.00
18,000.0	90.00	324.66	9,316.0	5,821.8	-6,148.6	8,467.4	0.00	0.00	0.00
18,100.0	90.00	324.66	9,316.0	5,903.4	-6,206.5	8,565.6	0.00	0.00	0.00
18,200.0	90.00	324.66	9,316.0	5,985.0	-6,264.3	8,663.8	0.00	0.00	0.00
18,300.0	90.00	324.66	9,316.0	6,066.6	-6,322.2	8,762.0	0.00	0.00	0.00
18,312.6	90.00	324.66	9,316.0	6,076.8	-6,329.4	8,774.4	0.00	0.00	0.00
TD at 1831	3' MD/ 9316' TVD	- 58-1608H PBH	1						

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
58-1608H PBH - plan hits target cen - Point	0.00 ter	0.00	9,316.0	6,076.8	-6,329.4	367,954.14	1,575,516.38	47° 59' 44.316 N	102° 14' 1.754 W

Casing Points							
	Measured Depth (usft)	Vertical Depth (usft)		Name	Casing Diameter (")	Hole Diameter (")	
	9,552.2 1,850.0	9,304.0 1,850.0	7" Intermediate 9-5/8" Surface		7 9-5/8	8-3/4 13-1/2	

Planning Report

Database:	edm	Local Co-ordinate Reference:	Well 58-1608H (New SHL)
Company:	Denver Division- North Dakota	TVD Reference:	WELL @ 1983.0usft (Original Well Elev)
Project:	Williston Basin - Parshall Field	MD Reference:	WELL @ 1983.0usft (Original Well Elev)
Site:	Parshall	North Reference:	True
Well:	58-1608H (New SHL)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	APD Directional Plan		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,682.0	1,682.0	Pierre Shale			
3,946.0	3,946.0	Greenhorn			
4,694.0	4,694.0	Dakota Sand			
5,018.0	5,018.0	Base Dakota			
5,714.0	5,714.0	Piper Lime			
5,839.0	5,839.0	Dunham Salt			
6,003.0	6,003.0	Spearfish			
6,508.0	6,508.0	Minnelusa			
7,144.0	7,144.0	Kibbey Lime			
7,378.0	7,378.0	Charles			
7,743.0	7,743.0	Base Last Salt			
7,926.0	7,926.0	Mission Canyon		0.00	
8,523.0	8,523.0	Lodgepole			
9,335.9	9,245.0	3rd Shale Marker			
9,381.2	9,265.0	False Bakken			
9,396.8	9,271.0	Scallion			
9,432.8	9,283.0	Upper Bakken Shale			
9,518.0	9,301.0	Middle Bakken			
9,685.8	9,311.0	Gamma Ray Marker			

Measured	Vertical	Local Coord	dinates	
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	Comment
9,552.2 18,312.6	9,304.0 9,316.0	80.1 6,076.8	-445.3 -6,329.4	7" Csg Pt 9552' MD/ 9304' TVD - 87 deg inc TD at 18313' MD/ 9316' TVD



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Parshall 5 Parshall 39 Se Pa Pa Pa Pa Pa Pa Pa	E 9-1608H, 1 9-1608H, 1 ection 16, Mountr arshall 59-16 shall 151-16 arshall 58-16 arshall 39-16 shall 147-16 arshall 38-16 Wel	OG Resor Parshall 15 Parshall 147 T. 152 N. T. 152 N. T. 152 N. Coll Count Sold Well Sit Sold Well Sit Sold Well Sit Sold Well Sit Sold Well Sit Sold Well Sit	urces, Inc 51-1608H, 7-1608H & , R. 90 W y, North I e Elevation e Elevation e Elevation e Elevation e Elevation e Elevation n 1957.1' I	2. Parshall 58 & Parshall 3 V., 5th P.M Dakota 1958.6' MSL 1957.5' MSL 1956.7' MSL 1959.5' MSL 1959.5' MSL 1959.0' MSL MSL	-1608H 8-1608H 1.		
Exca	vation			28,960 C.Y.			
Emba Plus	ankment Shrinkage (-	+ 30%)	30%)		14,415 C.Y. 4,325 C.Y. 18,740 C Y		
Stoc	kpile Top So	il (6")		9,030 C.Y.			
Road Stoc	l Embankme kpile from P	nt & ad		1,190 C.Y.			
Distu Distu Distu Total	rbed Area Fro rbed Area Fro rbed Area Fro Disturbed Ar	m Pad m Stockpiles m Road		11.19 Acres 0.64 Acres 0.76 Acres 12 59 Acres			
	E: cut end slope	es are designe	ed at 1:1 slop 1 at 1 1/2:1	pes & slopes			
Parshall Well Sit	58-1608H e Location	Parshall ' Well Sit	151-1608H e Location	Parshall 59-1608H Well Site Location			
420)' FSL)' FWL	470 1600	' FSL ' FWL	520' FSL 1600' FWL			
Parshall Well Sit	39-1608H e Location	Parshall 147-1608H Well Site Location		Parshall 38-1608H Well Site Location			
400 2000 Confidentiality Notice: The information contained on thi not the intended recipients, you)' FSL)' FWL s plat is legally privileged and c are hereby notified that any use	400 2050 onfidential information intended o a, dissemination, distribution or co	400' FSL 2050' FWL		400' FSL 2100' FWL		
prohibited. Drawn By J.B./C.W./A.R.	Burveyed By B. Sherlock	Approved By G. Orvik	Scale None	Date 11/12/2013	KL]		
Field Book Minot OW#43/45	Aaterial Quantities	Revised 01/13/2014	Project No. 7713152 - 154 7713187 - 189	Drawing No. -	WY.		

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Leg	end				
wells		0	DRL, AI	0	LOC, GASE
STATUS, WELL_TYPE		0	DRL, GASC	0	LOC, OG
*	A, AGD	0	DRL, GASD	0	LOC, SWD
ø	A, Al	0	DRL, OG	0	LOC, WI
-¢+	A, CBM	0	DRL, SWD	+	PA, DF
×	A, DF	0	DRL, WI	+	PA, GASC
*	A, DFP	¢	DRY, GASC	+	PA, GASD
*	A, GASC	¢	DRY, GASD	+	PA, GS
☆	A, GASD	ф	DRY, OG	+	PA, OG
*	A, GASN	¢	DRY, ST	+	PA, SWD
	A, OG	莽	EXP, GASD	+	PA, WI
A	A, SWD		EXP, OG	+	PA, WS
ø	A, WI	☆	EXP, SWD	-0-	PNC, GASI
*	A, WS	*	EXP, WS	-0-	PNC, OG
Ď	A,AI	d.	IA, AI	-0-	PNC, SWD
,d	AB, AI	*	IA, CBM	X	TA, AI
×	AB, DF	ž	IA, DF	X	TA, GASC
ø	AB, DFP	*	IA, DFP	X	TA, GASD
*	AB, GASC	4	IA, GASC	x	TA, OG
*	AB, GASD	弥	IA, GASD	×	TA, SWD
ď	AB, GI		IA, OG	X	TA, WI
•	AB, OG	۵	IA, SWD	×	TA, WS
۵	AB, SWD	ø	IA, WI	×	TAO, GI
*	AB, WI	×	IA, WS	×	TAO, OG
×	AB, WS	,d'	IA,AI	X	TAO, WI
	Confidential, Confidential	0	LOC, GASC		

A = Active, AB = Abandoned, DRL = Dnlling, Dry = Dry, EXP = Expired, IA = Inactive, LOC = Location, PA = Producer Abandoned, PNC = Permit Now Cancelled TA = Temporarily Abandoned, TAO = Temporarily Abandoned Observation.

AGD = Acid Gas Disposal, A1 = Air Injection, DF = Dump Flood, DFP = Dump Flood Producing, GASN = Nitrogen Gas Well, GASC = Gas Condensate, GASD = Gas Dry, GI = Gas Injection, GS = Gas Storage, OG = Oil or Gas Well, SWD = Salt Water Disposal, WI = Water Injection, WS = Water Supply, ST = Strat Test







EOG Resources, Inc. Parshall 59-1608H 520' FSL & 1600' FWL Parshall 151-1608H 470' FSL & 1600' FWL Parshall 58-1608H 420' FSL & 1600' FWL Parshall 39-1608H 400' FSL & 2000' FWL Parshall 147-1608H 400' FSL & 2050' FWL Parshall 38-1608H 400' FSL & 2100' FWL SE1/4SW1/4, Section 16 T.152N., R.90W., 5th P.M. Mountrail County, North Dakota



PHOTO: VIEW AT NORTHWEST CORNER CAMERA ANGLE: TO CENTER



PHOTO: VIEW AT NORTHEAST CORNER CAMERA ANGLE: TO CENTER



PHOTO: VIEW AT SOUTHWEST CORNER CAMERA ANGLE: TO CENTER



PHOTO: VIEW AT SOUTHEAST CORNER CAMERA ANGLE: TO CENTER

Confidentiality Notice: The information contained on this plat is legally privileged and confidential information intended only for the use of recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.

Location Photos Exhibit A

Date:09/16/2013Taken By:B. SherlockDrawn By:J.B./C.W./A.R.

Revised 01/13/2014

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Thanks Taylor, Yes, I've submitted APDs to the BLM for all three wells.

Barbara Griswold Regulatory Specialist EOG Resources, Inc. 303-262-9894 (office) 720-934-1587 (mobile) barbara_griswold@eogresources.com

From: "Roth, Taylor J." <<u>tiroth@nd.gov</u>> To: "<u>Barbara_Griswold@eogresources.com</u>" <<u>Barbara_Griswold@eogresources.com</u>", Date: 06/02/2014 12:54 PM Subject: RE: Parshall 151-1608H, 58-1608H, 59-1608H

Hey Barb,

Per our phone conversation I am double checking to make sure that EOG is aware that this pad contains wells in which some of the laterals penetrate federal minerals. Is EOG in the process of obtaining the appropriate federal permits?

Thank you very much,

Taylor J. Roth

Survey & Permitting Technician NDIC, Dept. Mineral Resources Oil and Gas Division 701-328-1720 (direct) tjroth@nd.gov



From:	Barbara Griswold@eogresources.com
То:	Webber, Alice D.
Subject:	Re: Parshall 58-1608H, 59-1608H & 151-1608H
Date:	Tuesday, June 03, 2014 11:01:22 AM

Hi Alice,

We will use one or both of these facilities.

Sawyer Disposal Services LLC 12400 247th Ave SE Sawyer ND 58781 (Sawyer County) 701.624.5622

Prairie Disposal LLC 102-C10 52nd St NW 800.490.2106 Tioga ND 58852 (Williams County) 701.664.3383

Thanks

Barbara Griswold Regulatory Specialist EOG Resources, Inc. 303-262-9894 (office) 720-934-1587 (mobile) barbara_griswold@eogresources.com

 From:
 "Webber, Alice D." <adwebber@nd.gov>

 To:
 "barbara_griswold@eogresources.com" <barbara_griswold@eogresources.com>,

 Date:
 06/03/2014 08:52 AM

 Subject:
 Parshall 58-1608H, 59-1608H & 151-1608H

Good morning Barbara,

What facility are the cuttings being hauled to from these 3 wells.

Thanks, Alice

Alice D. Webber Engineering Technician IV North Dakota Industrial Commission Department of Mineral Resources Oil and Gas Division 600 E. Boulevard Avenue Dept 405 Bismarck, ND 58501