OCF DSCF DS Form 10 APD

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WYOMING OIL & GAS CONSERVATION COMMISSION

ZD

Form 3160-4
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: July 31, 2010

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5. Lease Serial No.
WYW60401A

1a. Type of Well ☒ Oil Well ☐ Gas Well ☐ Dry ☐ Other
b. Type of Completion ☒ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr.
Other

6. If Indian, Allottee or Tribe Name

7. Unit or CA Agreement Name and No.

2. Name of Operator
ANSCHUTZ OIL COMPANY LLC
Contact: FRANCES E MACDONALD
E-Mail: frances.macdonald@aec-denver.com

8. Lease Name and Well No.
SAM FED 3571-18-19-13TH

3. Address
555 17TH STREET, SUITE 2400
DENVER, CO 80202

3a. Phone No. (include area code)
Ph: 303-299-1396

9. API Well No.
49-009-31384-00-S1

4. Location of Well (Report location clearly and in accordance with Federal requirements)*
Sec 18 T35N R71W Mer 6PM
At surface NENW 506FNL 1742FWL 43.011995 N Lat, 105.429956 W Lon
Sec 18 T35N R71W Mer 6PM
At top prod interval reported below NENW 1075FNL 1308FWL 43.010427 N Lat, 105.43157846 W Lon
Sec 30 T35N R71W Mer 6PM
At total depth NENW 14FNL 1278FWL 42.98405502 N Lat, 105.43163289W Lon

10. Field and Pool, or Exploratory
WILDCAT

11. Sec., T., R., M., or Block and Survey or Area
Sec 18 T35N R71W Mer 6PM

12. County or Parish
CONVERSE

13. State
WY

14. Date Spudded
09/25/2019

15. Date T.D. Reached
11/20/2019

16. Date Completed
☐ D & A ☒ Ready to Prod.
01/07/2020

17. Elevations (DF, KB, RT, GL)*
5256 KB

18. Total Depth: MD 22115 TVD 12109

19. Plug Back T.D.: MD 21,934 TVD 12,107

20. Depth Bridge Plug Set: MD TVD

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)
MWD GR

22. Was well cored? ☒ No ☐ Yes (Submit analysis)
Was DST run? ☒ No ☐ Yes (Submit analysis)
Directional Survey? ☐ No ☒ Yes (Submit analysis)

23. Casing and Liner Record *(Report all strings set in well)*

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sks. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
13.500	10.750 J55	40.5	0	2030		685	270	0	90 X
9.875	7.625 HCP 110	29.7	0	X 10760		700	262	4126	0
6.750	5.500 HCP110	20.0	0	X 11408		903	301	9630	0
	4.5 HCP110		11445	22108					

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)

25. Producing Intervals / 26. Perforation Record

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) TURNER	21840	12499	21840 TO 12499	0.360	888	OPEN
B)						
C)						
D)						

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material
21840 TO 12499	FRACTURE 58,095 BBL SLICKWATER,870 BBL HCL, 62,406 HVFR BBL PSI MIN 471 MAX 9337
21840 TO 12499	FRACTURE CONT'D , FRAC STAGES 38, 8,424,020 # 40/70 MESH

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
02/10/2020	02/18/2020	24	→	1158.0	1238.0	649.0	38.6		FLOWS FROM WELL

Choke Size	Tbg. Press Flwg SI	Csg Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status
20	2300	0.0	→	1158	1238	649	1069	POW

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Produc
			→						

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status
			→					

Missing as of 6/15/21:
Csg strings do not match attached WBD

(See Instructions and spaces for additional data on reverse side)

ELECTRONIC SUBMISSION #509454 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED **

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr API	Gas Gravity	Production Method
			→						

Choke Size	Tbg. Press. Flwg. SI	Csg Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status
			→					

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						

Choke Size	Tbg. Press. Flwg. SI	Csg Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status
			→					

29. Disposition of Gas *(Sold, used for fuel, vented, etc.)*
CAPTURED

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth
FOX HILLS	6637	6759	POSSIBLE WATER	LANCE	3559
TECKLA	7387	8221	POSSIBLE OIL, GAS	FOX HILLS	6637
TEAPOT	8221	8656	POSSIBLE OIL, GAS	LEWIS	6759
PARKMAN	8656	9253	POSSIBLE OIL, GAS	TECKLA	7387
NIOBRARA	11450	12059	POSSIBLE OIL, GAS	TEAPOT	8221
				PARKMAN	8656
				TURNER	12343

32. Additional remarks (include plugging procedure):
Attachments
1)Directional Survey
2)Post Job Chemicals
3)Shot Sheet- Perf Details
4)Gamma Ray Log

Flowback #s-
oil= 0

33. Circle enclosed attachments:

1. Electrical/Mechanical Logs (1 full set req'd.)
2. Geologic Report
3. DST Report
4. Directional Survey
5. Sundry Notice for plugging and cement verification
6. Core Analysis
7 Other:

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions):

Electronic Submission #509454 Verified by the BLM Well Information System.
For ANSCHUTZ OIL COMPANY LLC, sent to the Casper
Committed to AFMSS for processing by KENT SNETHEN on 04/02/2020 (20KS0634SE)

Name *(please print)* FRANCES E MACDONALD Title REGULATORY SPECIALIST

Signature (Electronic Submission) Date 04/02/2020

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fradulent statements or representations as to any matter within its jurisdiction.

**** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ****

Additional data for transaction #509454 that would not fit on the form

32. Additional remarks, continued

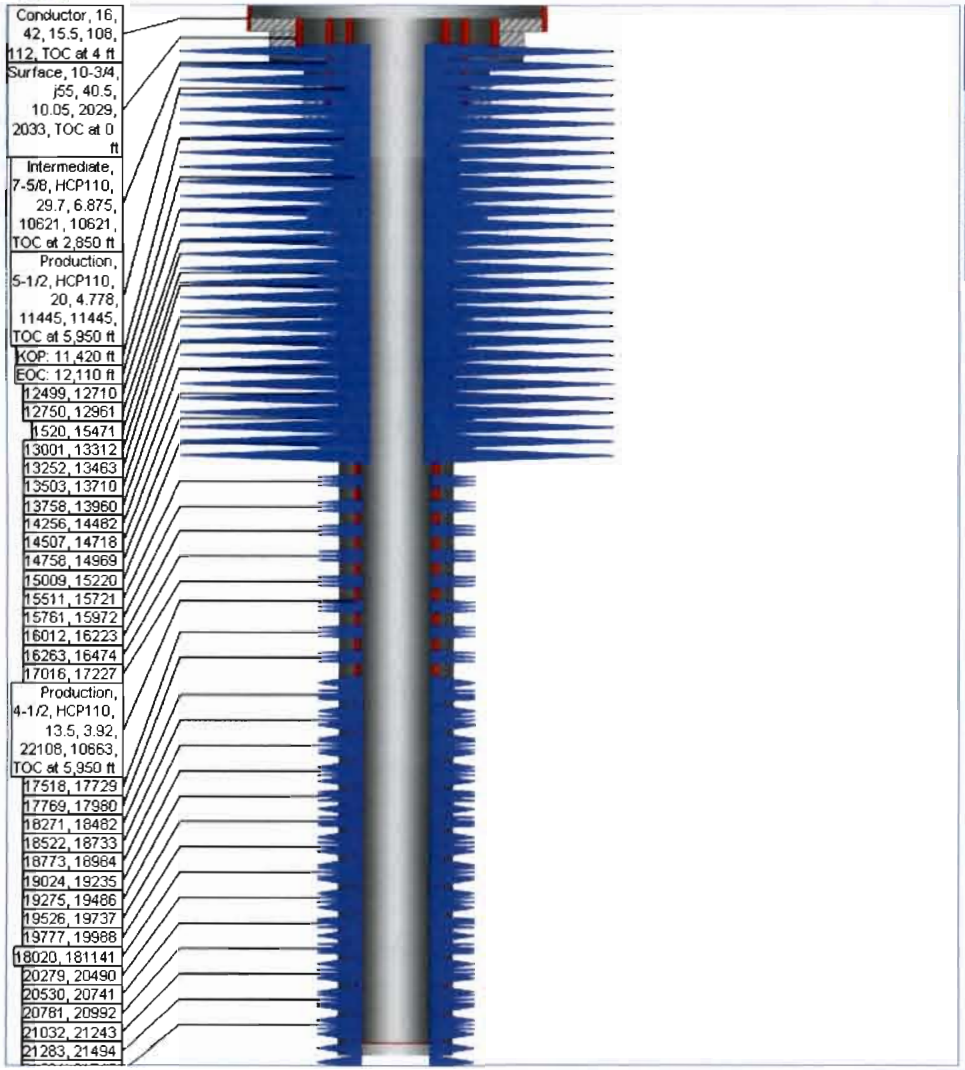
Water=0
Gas=0

Hauled to North Bill, Richley and Owl
Hauled by IGO, TCRI, J7

Revisions to Operator-Submitted EC Data for Well Completion #509454

	Operator Submitted	BLM Revised (AFMSS)
Lease:	WYW60401A	WYW60401A
Agreement:		
Operator:	ANSCHUTZ OIL COMPANY 555 17TH STREET SUITE 2400 DENVER, CO 80203 Ph: 303-299-1396	ANSCHUTZ OIL COMPANY LLC 555 17TH STREET, SUITE 2400 DENVER, CO 80202 Ph: 3032991510
Admin Contact:	FRANCES E MACDONALD REGULATORY SPECIALIST E-Mail: frances.macdonald@aec-denver.com Cell: 720-273-2329 Ph: 303-299-1396	FRANCES E MACDONALD REGULATORY SPECIALIST E-Mail: frances.macdonald@aec-denver.com Cell: 720-273-2329 Ph: 303-299-1396
Tech Contact:	FRANCES E MACDONALD REGULATORY SPECIALIST E-Mail: frances.macdonald@aec-denver.com Cell: 720-273-2329 Ph: 303-299-1396	FRANCES E MACDONALD REGULATORY SPECIALIST E-Mail: frances.macdonald@aec-denver.com Cell: 720-273-2329 Ph: 303-299-1396
Well Name: Number:	SAM FED 3571-18-19-13TH	SAM FED 3571-18-19-13TH
Location: State: County: S/T/R: Surf Loc:	 WY CONVERSE Sec 18 T35N R71W Mer 6PM NENW 506FNL 1742FWL 43.011995 N Lat, 105.429956 W Lon	 WY CONVERSE Sec 18 T35N R71W Mer 6PM NENW 506FNL 1742FWL 43.011995 N Lat, 105.429956 W Lon
Field/Pool:	SCOTT FIELD	WILDCAT
Logs Run:	MWD, GR	MWD GR
Producing Intervals - Formations:	TURNER	TURNER
Porous Zones:	FOX HILLS TECKLA TEAPOT PARKMAN SUSSEX SS SHANNON SS NIOBRARA	FOX HILLS TECKLA TEAPOT PARKMAN NIOBRARA
Markers:	LANCE FOX HILLS LEWIS SH TECKLA TEAPOT PARKMAN STEELE SH TURNER	LANCE FOX HILLS LEWIS TECKLA TEAPOT PARKMAN TURNER

Wellbore Diagram



Well Name:	Sam Fed 3571-18-19-13TH
Job Name:	Initial Completion
Report Date:	2/3/2020

Casing Sum

Description	OD	ID	Grade	Bottom MD	Length	Cum L
Conductor	16	15.5		108.00	112.00	112.00
Surface	10-3/4	10.05	J55	2,029.00	2,033.00	2,033.00
Intermediate	7-5/8	6.875	HCP110	10,621.00	10,621.00	10,621.00
Production	5-1/2	4.778	HCP110	11,445.00	11,445.00	11,445.00
Production	4-1/2	3.92	HCP110	22,108.00	10,663.00	22,108.00

Client:	**Anschutz Oil Company LLC**
Disclosure Type:	**Post-Job**
Well:	**Sam Fed 3571-18-19-13 TH**
Basin/Field:	**Powder River Basin**
State:	**Wyoming**
County:	**Converse**
Well Completed:	**YES**
Date Prepared:	**1/21/2020**

ELEMENT

Fluid Name	Volume (gal)	Additive	Additive Description	Concentration	Volume
Acid, Crosslink, and Slickwater	5,088,804	ELEHV-3	Friction Reducer	1.43 gal / 1000 gal	7261 gal
		ELECCL-10	Clay Control	0.97 gal / 1000 gal	4914 gal
		Biosuite GQ123x (Winterized)	Bactericide/Biocide	0.49 gal / 1000 gal	2487 gal
		ELEScale-2	Scale Inhibitor	0.49 gal / 1000 gal	2476 gal
		ELEBR-6W	Breaker	0.42 gal / 1000 gal	2152 gal
		ELENE-4	Non-Emulsifier	0.98 gal / 1000 gal	5009 gal
		ACI-102HT Acid Corrosion Inhibitor	Corrosion inhibitor	0.01 gal / 1000 gal	74 gal
		HCl-7.5	Solvent	7.27 gal / 1000 gal	37000 gal
		40/70 Mesh	Proppant	Varied Concentrations	8424020 lb

Client:	**Anschutz Oil Company LLC**
Disclosure Type:	**Post-Job**
Well:	**Sam Fed 3571-18-19-13 TH**
Basin/Field:	**Powder River Basin**
State:	**Wyoming**
County:	**Converse**
Well Completed:	**YES**
Date Prepared:	**1/21/2020**

ELEMENT technical services

CAS Number	Chemical Name	Mass Fraction
7732-18-5	Water	82.57589%
14808-60-7	Crystalline Silica (Quartz)	16.39045%
64742-55-8	Hydrotreated light paraffinic distillate	0.07405%
7647-01-0	Hydrochloric Acid	0.04670%
7732-18-5	Water	0.03658%
67-56-1	Methanol	0.03658%
7732-18-5	Water	0.03265%
7786-30-3	Magnesium chloride	0.01866%
107-21-1	Ethylene Glycol	0.01527%
67-56-1	Methanol	0.01166%
Proprietary	CM8400-5X	0.00933%
111-30-8	Glutaraldehyde	0.00642%
7447-40-7	Potassium Chloride	0.00466%
75-91-2	Tert-Butyl hydroperoxide	0.00382%
68424-85-1	Alkyl dimethyl benzyl ammonium chloride (C12-16)	0.00214%
9041-33-2	Polyalkylene Oxide	0.00146%
15827-60-8	Organophosphonate	0.00058%
107-21-1	Ethylene glycol	0.00052%
107-21-1	Ethylene Glycol	0.00039%
68-12-2	N,N-Dimethylformamide	0.00020%
15619-48-4	1-(Benzyl)quinolinium chloride	0.00013%
127087-87-0	Nonylphenol ethoxylated	0.00007%
104-55-2	Cinnamaldehyde	0.00007%
68603-15-6	Alcohols, C6-12	0.00007%
111-76-2	Ethanol, 2-Butoxy-	0.00007%
78-40-0	Triethyl phosphate	0.00007%
	Total	99%

ELEMENT
technical services

Zone Summary

Zone #	Start Frac Time	End Frac Time	Clean Frac Volume	Slurry Frac Volume	Pump Down Volume	Total Clean Volume	Total Slurry Volume	% Complete Clean Fluid Used	% Complete Proppant Weight	40/70 Mesh Total	Total Proppant	Average Pressure	Max Pressure	Average Rate	Max Rate	Average Backside Pressure	Max Backside Pressure	Average Surface Casing Pressure	Max Surface Casing Pressure	Breakdown Pressure	Breakdown Rate	ISIP	Frac Gradient	Max FR Conc	Max Prop Conc
1	1/7/2020 15:33	1/7/2020 16:28	2245	2403		2245	2403	78%	97%	69960	69960	5901	6699	59.8	60.6	1229	1370	18	19	7955	30.0	3290	0.70	1.50	3.50
2	1/8/2020 6:35	1/8/2020 7:50	3783	4053	399	4182	4452	87%	96%	216190	216190	6592	9134	58.4	71.8	1868	2143	14	17	9084	39.1	3678	0.74	3.00	3.50
3	1/8/2020 23:53	1/9/2020 1:14	4933	5171	403	5336	5574	112%	96%	216795	216795	7479	9118	45.0	61.0	1658	1962	0		8252	35.0	3912	0.76	3.00	3.50
4	1/9/2020 5:31	1/9/2020 6:42	4076	4321	310	4386	4631	92%	101%	228645	228645	7511	9126	63.9	71.9	1263	1533	3	6	9118	44.3	3975	0.76	3.00	3.50
5	1/9/2020 9:58	1/9/2020 11:05	3248	3533	298	3545	3831	89%	103%	233580	233580	7382	9200	53.5	72.7	1424	1660	0	2	6483	24.7	4122	0.77	3.00	3.50
6	1/9/2020 15:22	1/9/2020 16:23	3021	3299	304	3325	3603	84%	100%	225840	225840	7360	9131	55.9	73.0	1499	1704	0		3129	9.8	3753	0.74	3.50	4.00
7	1/9/2020 19:44	1/9/2020 20:43	2947	3205	255	3202	3460	83%	100%	227000	227000	7541	9140	63.0	73.3	1398	1669	4	6	6619	30.3	4005	0.76	3.50	4.00
8	1/10/2020 0:04	1/10/2020 1:01	3001	3248	252	3253	3500	89%	97%	219800	219800	7677	9165	65.0	73.4	1487	1722	2	5	6839	29.7	3669	0.74	3.25	4.00
9	1/10/2020 3:52	1/10/2020 4:53	3181	3405	255	3436	3660	95%	96%	217920	217920	6920	9082	61.1	72.1	1473	1539	0	2	8910	43.8	3667	0.74	3.25	4.00
10	1/10/2020 9:42	1/10/2020 10:44	2849	3128	252	3100	3379	82%	100%	224760	224760	6887	9118	60.9	72.1	1511	1810	0	5	3800	6.2	3740	0.74	3.25	4.00
11	1/10/2020 14:22	1/10/2020 15:17	2828	3103	259	3087	3362	83%	99%	223750	223750	6675	9244	58.8	72.0	1468	1752	8	14	3532	6.4	3625	0.73	3.25	4.00
12	1/10/2020 18:34	1/10/2020 19:30	2847	3102	239	3086	3341	87%	105%	237630	237630	7093	9079	65.2	72.4	1294	1508	0		3606	10.0	3658	0.74	3.00	4.00
13	1/10/2020 22:01	1/10/2020 22:54	2582	2986	218	2800	3204	86%	94%	212410	212410	6942	9224	65.9	72.8	1166	1421	0		3519	12.3	3628	0.73	3.25	4.00
14	1/11/2020 16:37	1/11/2020 17:31	2784	3046	203	2987	3249	85%	100%	225800	225800	6275	8929	56.2	70.0	1612	2145	9	11	3079	6.2	3780	0.75	3.25	4.00
15	1/11/2020 20:28	1/11/2020 21:26	2711	2936	194	2905	3130	83%	96%	217360	217360	7795	9234	65.2	72.0	1311	1378	0		2969	7.8	3402	0.71	3.00	4.00
16	1/12/2020 1:27	1/12/2020 2:21	2706	2941	184	2890	3125	83%	99%	222370	222370	6822	9258	65.8	72.2	1359	1601	0	15	3089	6.0	3673	0.74	3.00	4.00
17	1/12/2020 5:32	1/12/2020 6:33	2728	2968	167	2895	3135	84%	95%	214840	214840	6370	9053	64.5	72.4	1446	1613	13	15	3539	10.0	3710	0.74	3.00	4.00
18	1/12/2020 9:03	1/12/2020 9:58	2818	3062	205	3023	3267	88%	102%	228710	228710	6385	9043	62.6	69.8	1463	1675	31	34	3210	6.5	3556	0.73	3.25	4.00
19	1/12/2020 13:43	1/12/2020 15:48	4071	4317	170	4242	4488	126%	101%	226940	226940	6190	9265	62.0	69.4	1550	1820	12	16	3195	6.7	3745	0.74	3.25	4.00
20	1/12/2020 21:14	1/12/2020 22:08	2737	2980	170	2907	3150	87%	100%	226520	226520	6390	9326	63.4	72.3	1485	1804	12	15	4709	25.3	3719	0.74	3.00	4.00
21	1/13/2020 0:11	1/13/2020 1:00	2740	2983	142	2882	3125	87%	101%	228730	228730	6514	9337	66.2	72.7	1430	1677	9	11	2961	10.0	3647	0.73	3.00	4.00
22	1/13/2020 8:02	1/13/2020 9:03	2961	3221	153	3114	3374	89%	100%	224050	224050	6192	9139	62.5	72.0	1607	2032	28	32	2797	8.2	3662	0.74	2.75	4.00
23	1/13/2020 21:25	1/13/2020 22:43	2963	3198	121	3084	3319	89%	105%	236160	236160	6284	9144	65.4	71.5	1999	2019	0		4771	26.0	3767	0.74	2.75	4.00
24	1/14/2020 3:05	1/14/2020 4:01	2880	3116	128	3008	3244	87%	98%	220130	220130	6294	9025	66.5	71.6	887	1136	3	6	3058	6.8	3709	0.74	2.50	4.00
25	1/14/2020 6:08	1/14/2020 7:08	3105	3327	120	3225	3447	94%	100%	224650	224650	6436	9146	65.3	70.6	1129	1210	23	25	3005	7.0	3730	0.74	2.50	4.00
26	1/14/2020 9:39	1/14/2020 10:37	2957	3204	129	3086	3333	93%	102%	229960	229960	6276	9082	65.5	71.6	1477	1540	5	9	3227	7.0	3760	0.74	2.50	4.00
27	1/14/2020 15:18	1/14/2020 16:28	3004	3260	113	3117	3373	95%	102%	231430	231430	6319	9034	66.1	71.6	1306	1374	0		3054	7.0	3744	0.74	2.50	4.00
28	1/14/2020 20:45	1/14/2020 21:56	3123	3354	100	3223	3454	98%	103%	232500	232500	6560	9243	67.2	71.4	1138	1356	27	30	3238	7.0	3839	0.75	2.50	4.00
29	1/15/2020 2:51	1/15/2020 4:01	3061	3297	90	3151	3387	97%	101%	228110	228110	6423	9294	68.2	71.7	1189	1495	2	6	2951	7.0	4077	0.77	2.50	4.00
30	1/15/2020 6:59	1/15/2020 7:57	2995	3237	88	3083	3325	95%	102%	230880	230880	6235	9218	67.0	71.4	1276	1444	0	6	2982	7.0	3754	0.74	2.50	4.00
31	1/15/2020 11:55	1/15/2020 12:51	3007	3275	87	3094	3362	96%	102%	230080	230080	6246	9088	66.5	70.2	1172	1300	30	32	3015	7.0	3675	0.74	2.50	4.00
32	1/15/2020 14:51	1/15/2020 15:47	2968	3229	73	3040	3301	95%	99%	224170	224170	5669	9082	67.3	70.5	1145	1382	29	32	3032	6.5	4076	0.77	2.00	4.00
33	1/15/2020 19:13	1/15/2020 22:28	3041	3320	63	3104	3383	98%	103%	233190	233190	5860	9145	67.6	71.9	1410	1484	2	6	2797	6.5	3998	0.76	2.50	4.00
34	1/16/2020 0:30	1/16/2020 1:33	2999	3278	45	3043	3323	96%	102%	229880	229880	6026	8850	67.4	71.6	1220	1405	24	27	3408	6.5	3927	0.76	2.50	4.00
35	1/16/2020 5:36	1/16/2020 6:34	2932	3203	49	2981	3252	95%	99%	224120	224120	5840	9069	66.7	71.6	1215	1407	25	30	3011	5.2	4075	0.77	2.50	4.00
36	1/16/2020 9:23	1/16/2020 10:21	2973	3257	41	3014	3298	97%	101%	228090	228090	5996	9167	67.2	71.2	1190	1342	30	32	3523	3.1	4070	0.77	2.50	4.00
37	1/16/2020 12:27	1/16/2020 13:23	2983	3295	47	3030	3342	98%	102%	229320	229320	5822	9124	69.3	71.0	1176	1392	24	25	3079	6.5	4115	0.77	2.50	4.00
38	1/16/2020 15:19	1/16/2020 16:10	2889	3194	35	2924	3229	95%	98%	221750	221750	5888	8726	68.9	71.0	1182	1358	24	27	3592	3.1	4020	0.76	2.50	4.00
Minimum			2245	2403	35	2245	2403	78%	94%	69960	69960	5669	6699	45.0	60.6	887	1136	0	2	2797	3.1	3290	0.70	1.50	3.50
Maximum			4933	5171	403	5336	5574	126%	105%	237630	237630	7795	9337	69.3	73.4	1999	2145	31	34	9118	44.3	4122	0.77	3.50	4.00
Average			3044	3301	172	3211	3469	91%	100%	221685	221685	6554	9065	63.6	71.1	1371.4	1583.7	11	17	4267	13.9	3788	0.75	2.82	3.93
Total			115672	125453	6360	122032	131813			8424020	8424020														

SAM FED 3571-18-19-13 TH						
Stage	**Perfs (MD)**	**Density**	**Phasing**	**Diameter**	**Charges**	**Shots**
1	21,840 21,785	NA	NA	13.60 in^2	GEO QS Toe Subs	NA
PLUG	21,760			EVOLV		
2	21,745	3	120	0.36"	EEH	24
	21,715	3	120	0.36"	EEH	
	21,685	3	120	0.36"	EEH	
	21,655	3	120	0.36"	EEH	
	21,624	3	120	0.36"	EEH	
	21,594	3	120	0.36"	EEH	
	21,564	3	120	0.36"	EEH	
	21,534	3	120	0.36"	EEH	
PLUG	21,509			EVOLV		
3	21,494	3	120	0.36"	EEH	24
	21,464	3	120	0.36"	EEH	
	21,434	3	120	0.36"	EEH	
	21,404	3	120	0.36"	EEH	
	21,373	3	120	0.36"	EEH	
	21,343	3	120	0.36"	EEH	
	21,313	3	120	0.36"	EEH	
	21,283	3	120	0.36"	EEH	
PLUG	21,258			EVOLV		
4	21,243	3	120	0.36"	EEH	24
	21,213	3	120	0.36"	EEH	
	21,183	3	120	0.36"	EEH	
	21,153	3	120	0.36"	EEH	
	21,122	3	120	0.36"	EEH	
	21,092	3	120	0.36"	EEH	
	21,062	3	120	0.36"	EEH	
	21,032	3	120	0.36"	EEH	
PLUG	21,007			EVOLV		
5	20,992	3	120	0.36"	EEH	24
	20,962	3	120	0.36"	EEH	
	20,932	3	120	0.36"	EEH	
	20,902	3	120	0.36"	EEH	
	20,872	3	120	0.36"	EEH	
	20,841	3	120	0.36"	EEH	
	20,811	3	120	0.36"	EEH	
	20,781	3	120	0.36"	EEH	
PLUG	20,756			EVOLV		
6	20,741	3	120	0.36"	EEH	24
	20,711	3	120	0.36"	EEH	
	20,681	3	120	0.36"	EEH	
	20,651	3	120	0.36"	EEH	
	20,621	3	120	0.36"	EEH	
	20,590	3	120	0.36"	EEH	
	20,560	3	120	0.36"	EEH	
	20,530	3	120	0.36"	EEH	
PLUG	20,505			EVOLV		
7	20,490	3	120	0.36"	EEH	24
	20,460	3	120	0.36"	EEH	
	20,430	3	120	0.36"	EEH	
	20,400	3	120	0.36"	EEH	

	20,370	3	120	0.36"	EEH	
	20,339	3	120	0.36"	EEH	
	20,309	3	120	0.36"	EEH	
	20,279	3	120	0.36"	EEH	
PLUG	20,254	EVOLV				
8	20,239	3	120	0.36"	EEH	24
	20,209	3	120	0.36"	EEH	
	20,179	3	120	0.36"	EEH	
	20,149	3	120	0.36"	EEH	
	20,119	3	120	0.36"	EEH	
	20,088	3	120	0.36"	EEH	
	20,058	3	120	0.36"	EEH	
	20,028	3	120	0.36"	EEH	
PLUG	20,003	EVOLV				
9	19,988	3	120	0.36"	EEH	24
	19,958	3	120	0.36"	EEH	
	19,928	3	120	0.36"	EEH	
	19,898	3	120	0.36"	EEH	
	19,868	3	120	0.36"	EEH	
	19,837	3	120	0.36"	EEH	
	19,807	3	120	0.36"	EEH	
	19,777	3	120	0.36"	EEH	
PLUG	19,752	EVOLV				
10	19,737	3	120	0.36"	EEH	24
	19,707	3	120	0.36"	EEH	
	19,677	3	120	0.36"	EEH	
	19,647	3	120	0.36"	EEH	
	19,617	3	120	0.36"	EEH	
	19,586	3	120	0.36"	EEH	
	19,556	3	120	0.36"	EEH	
	19,526	3	120	0.36"	EEH	
PLUG	19,501	EVOLV				
11	19,486	3	120	0.36"	EEH	24
	19,456	3	120	0.36"	EEH	
	19,426	3	120	0.36"	EEH	
	19,396	3	120	0.36"	EEH	
	19,366	3	120	0.36"	EEH	
	19,335	3	120	0.36"	EEH	
	19,305	3	120	0.36"	EEH	
	19,275	3	120	0.36"	EEH	
PLUG	19,250	EVOLV				
12	19,235	3	120	0.36"	EEH	24
	19,205	3	120	0.36"	EEH	
	19,175	3	120	0.36"	EEH	
	19,145	3	120	0.36"	EEH	
	19,115	3	120	0.36"	EEH	
	19,085	3	120	0.36"	EEH	
	19,054	3	120	0.36"	EEH	
	19,024	3	120	0.36"	EEH	
PLUG	18,999	EVOLV				
13	18,984	3	120	0.36"	EEH	24
	18,954	3	120	0.36"	EEH	
	18,924	3	120	0.36"	EEH	
	18,894	3	120	0.36"	EEH	
	18,864	3	120	0.36"	EEH	
	18,834	3	120	0.36"	EEH	

	18,803	3	120	0.36"	EEH	
	18,773	3	120	0.36"	EEH	
PLUG	18,748			EVOLV		
14	18,733	3	120	0.36"	EEH	24
	18,703	3	120	0.36"	EEH	
	18,673	3	120	0.36"	EEH	
	18,643	3	120	0.36"	EEH	
	18,613	3	120	0.36"	EEH	
	18,583	3	120	0.36"	EEH	
	18,552	3	120	0.36"	EEH	
	18,522	3	120	0.36"	EEH	
PLUG	18,497			EVOLV		
15	18,482	3	120	0.36"	EEH	24
	18,452	3	120	0.36"	EEH	
	18,422	3	120	0.36"	EEH	
	18,392	3	120	0.36"	EEH	
	18,362	3	120	0.36"	EEH	
	18,332	3	120	0.36"	EEH	
	18,301	3	120	0.36"	EEH	
	18,271	3	120	0.36"	EEH	
PLUG	18,246			EVOLV		
16	18,231	3	120	0.36"	EEH	24
	18,201	3	120	0.36"	EEH	
	18,171	3	120	0.36"	EEH	
	18,141	3	120	0.36"	EEH	
	18,111	3	120	0.36"	EEH	
	18,081	3	120	0.36"	EEH	
	18,050	3	120	0.36"	EEH	
	18,020	3	120	0.36"	EEH	
PLUG	17,995			EVOLV		
17	17,980	3	120	0.36"	EEH	24
	17,950	3	120	0.36"	EEH	
	17,920	3	120	0.36"	EEH	
	17,890	3	120	0.36"	EEH	
	17,860	3	120	0.36"	EEH	
	17,830	3	120	0.36"	EEH	
	17,799	3	120	0.36"	EEH	
	17,769	3	120	0.36"	EEH	
PLUG	17,744			EVOLV		
18	17,729	3	120	0.36"	EEH	24
	17,699	3	120	0.36"	EEH	
	17,669	3	120	0.36"	EEH	
	17,639	3	120	0.36"	EEH	
	17,609	3	120	0.36"	EEH	
	17,579	3	120	0.36"	EEH	
	17,548	3	120	0.36"	EEH	
	17,518	3	120	0.36"	EEH	
PLUG	17,493			EVOLV		
19	17,478	3	120	0.36"	EEH	24
	17,448	3	120	0.36"	EEH	
	17,418	3	120	0.36"	EEH	
	17,388	3	120	0.36"	EEH	
	17,358	3	120	0.36"	EEH	
	17,328	3	120	0.36"	EEH	
	17,298	3	120	0.36"	EEH	
	17,267	3	120	0.36"	EEH	
PLUG	17,242			EVOLV		

20	17,227	3	120	0.36"	EEH	24
	17,197	3	120	0.36"	EEH	
	17,167	3	120	0.36"	EEH	
	17,137	3	120	0.36"	EEH	
	17,107	3	120	0.36"	EEH	
	17,077	3	120	0.36"	EEH	
	17,047	3	120	0.36"	EEH	
	17,016	3	120	0.36"	EEH	
PLUG	16,991	EVOLV				
21	16,976	3	120	0.36"	EEH	24
	16,946	3	120	0.36"	EEH	
	16,916	3	120	0.36"	EEH	
	16,886	3	120	0.36"	EEH	
	16,856	3	120	0.36"	EEH	
	16,826	3	120	0.36"	EEH	
	16,796	3	120	0.36"	EEH	
	16,765	3	120	0.36"	EEH	
PLUG	16,740	EVOLV				
22	16,725	3	120	0.36"	EEH	24
	16,695	3	120	0.36"	EEH	
	16,665	3	120	0.36"	EEH	
	16,635	3	120	0.36"	EEH	
	16,605	3	120	0.36"	EEH	
	16,575	3	120	0.36"	EEH	
	16,545	3	120	0.36"	EEH	
	16,514	3	120	0.36"	EEH	
PLUG	16,489	EVOLV				
23	16,474	3	120	0.36"	EEH	24
	16,444	3	120	0.36"	EEH	
	16,414	3	120	0.36"	EEH	
	16,384	3	120	0.36"	EEH	
	16,354	3	120	0.36"	EEH	
	16,324	3	120	0.36"	EEH	
	16,294	3	120	0.36"	EEH	
	16,263	3	120	0.36"	EEH	
PLUG	16,238	EVOLV				
24	16,223	3	120	0.36"	EEH	24
	16,193	3	120	0.36"	EEH	
	16,163	3	120	0.36"	EEH	
	16,133	3	120	0.36"	EEH	
	16,103	3	120	0.36"	EEH	
	16,073	3	120	0.36"	EEH	
	16,043	3	120	0.36"	EEH	
	16,012	3	120	0.36"	EEH	
PLUG	15,987	EVOLV				
25	15,972	3	120	0.36"	EEH	24
	15,942	3	120	0.36"	EEH	
	15,912	3	120	0.36"	EEH	
	15,882	3	120	0.36"	EEH	
	15,852	3	120	0.36"	EEH	
	15,822	3	120	0.36"	EEH	
	15,792	3	120	0.36"	EEH	
	15,761	3	120	0.36"	EEH	
PLUG	15,736	EVOLV				
	15,721	3	120	0.36"	EEH	
	15,691	3	120	0.36"	EEH	
	15,661	3	120	0.36"	EEH	

26	15,631	3	120	0.36"	EEH	24
	15,601	3	120	0.36"	EEH	
	15,571	3	120	0.36"	EEH	
	15,541	3	120	0.36"	EEH	
	15,511	3	120	0.36"	EEH	
PLUG	15,486	EVOLV				
27	15,471	3	120	0.36"	EEH	24
	15,440	3	120	0.36"	EEH	
	15,410	3	120	0.36"	EEH	
	15,380	3	120	0.36"	EEH	
	15,350	3	120	0.36"	EEH	
	15,320	3	120	0.36"	EEH	
	15,290	3	120	0.36"	EEH	
	15,260	3	120	0.36"	EEH	
PLUG	15,235	EVOLV				
28	15,220	3	120	0.36"	EEH	24
	15,189	3	120	0.36"	EEH	
	15,159	3	120	0.36"	EEH	
	15,129	3	120	0.36"	EEH	
	15,099	3	120	0.36"	EEH	
	15,069	3	120	0.36"	EEH	
	15,039	3	120	0.36"	EEH	
	15,009	3	120	0.36"	EEH	
PLUG	14,984	EVOLV				
29	14,969	3	120	0.36"	EEH	24
	14,938	3	120	0.36"	EEH	
	14,908	3	120	0.36"	EEH	
	14,878	3	120	0.36"	EEH	
	14,848	3	120	0.36"	EEH	
	14,818	3	120	0.36"	EEH	
	14,788	3	120	0.36"	EEH	
	14,758	3	120	0.36"	EEH	
PLUG	14,733	EVOLV				
30	14,718	3	120	0.36"	EEH	24
	14,687	3	120	0.36"	EEH	
	14,657	3	120	0.36"	EEH	
	14,627	3	120	0.36"	EEH	
	14,597	3	120	0.36"	EEH	
	14,567	3	120	0.36"	EEH	
	14,537	3	120	0.36"	EEH	
	14,507	3	120	0.36"	EEH	
PLUG	14,482	EVOLV				
31	14,467	3	120	0.36"	EEH	24
	14,436	3	120	0.36"	EEH	
	14,406	3	120	0.36"	EEH	
	14,376	3	120	0.36"	EEH	
	14,346	3	120	0.36"	EEH	
	14,316	3	120	0.36"	EEH	
	14,286	3	120	0.36"	EEH	
	14,256	3	120	0.36"	EEH	
PLUG	14,231	EVOLV				
32	14,216	3	120	0.36"	EEH	24
	14,185	3	120	0.36"	EEH	
	14,155	3	120	0.36"	EEH	
	14,125	3	120	0.36"	EEH	
	14,095	3	120	0.36"	EEH	
	14,065	3	120	0.36"	EEH	

	14,035	3	120	0.36"	EEH	
	14,005	3	120	0.36"	EEH	
PLUG	13,980	EVOLV				
33	13,965	3	120	0.36"	EEH	24
	13,934	3	120	0.36"	EEH	
	13,904	3	120	0.36"	EEH	
	13,874	3	120	0.36"	EEH	
	13,844	3	120	0.36"	EEH	
	13,814	3	120	0.36"	EEH	
	13,784	3	120	0.36"	EEH	
	13,754	3	120	0.36"	EEH	
PLUG	13,729	EVOLV				
34	13,714	3	120	0.36"	EEH	24
	13,684	3	120	0.36"	EEH	
	13,653	3	120	0.36"	EEH	
	13,623	3	120	0.36"	EEH	
	13,593	3	120	0.36"	EEH	
	13,563	3	120	0.36"	EEH	
	13,533	3	120	0.36"	EEH	
	13,503	3	120	0.36"	EEH	
PLUG	13,478	EVOLV				
35	13,463	3	120	0.36"	EEH	24
	13,433	3	120	0.36"	EEH	
	13,402	3	120	0.36"	EEH	
	13,372	3	120	0.36"	EEH	
	13,342	3	120	0.36"	EEH	
	13,312	3	120	0.36"	EEH	
	13,282	3	120	0.36"	EEH	
	13,252	3	120	0.36"	EEH	
PLUG	13,227	EVOLV				
36	13,212	3	120	0.36"	EEH	24
	13,182	3	120	0.36"	EEH	
	13,151	3	120	0.36"	EEH	
	13,121	3	120	0.36"	EEH	
	13,091	3	120	0.36"	EEH	
	13,061	3	120	0.36"	EEH	
	13,031	3	120	0.36"	EEH	
	13,001	3	120	0.36"	EEH	
PLUG	12,976	EVOLV				
37	12,961	3	120	0.36"	EEH	24
	12,931	3	120	0.36"	EEH	
	12,900	3	120	0.36"	EEH	
	12,870	3	120	0.36"	EEH	
	12,840	3	120	0.36"	EEH	
	12,810	3	120	0.36"	EEH	
	12,780	3	120	0.36"	EEH	
	12,750	3	120	0.36"	EEH	
PLUG	12,725	EVOLV				
38	12,710	3	120	0.36"	EEH	24
	12,680	3	120	0.36"	EEH	
	12,649	3	120	0.36"	EEH	
	12,619	3	120	0.36"	EEH	
	12,589	3	120	0.36"	EEH	
	12,559	3	120	0.36"	EEH	
	12,529	3	120	0.36"	EEH	
	12,499	3	120	0.36"	EEH	
LP	12,499	Last Perforation				