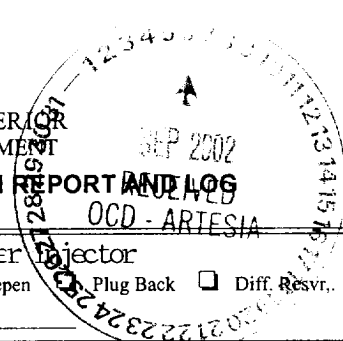


UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

WELL COMPLETION OR RECOMPLETION REPORT AND LOG



Oil Cons.
N.M. Env. Dist. 2
1301 W. Grand Avenue
Alameda, NM 88210

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

2. Name of Operator
ST Mary Land & Exploration / %Nance Petroleum Corp

3. Address P O Box 7168 Billings, MT 59103 3a. Phone No. (include area code) 406-245-6248

4. Location of Well (Report location clearly and in accordance with Federal requirements)*

At surface 1240 FNL 300 FEL Sec 24

At top prod. interval reported below same

At total depth 5550'

14. Date Spudded 10/30/00 15. Date T.D. Reached 11/16/00 16. Date Completed 1/18/01
☐ D & A ☒ Ready to Prod.

18. Total Depth: MD 5550 TVD 19. Plug Back T.D.: MD 5494 TVD 20. Depth Bridge Plug Set: MD TVD

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

LDCN/GR, ALMCFL/GR, CBL/GR/CCL

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

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
12-1/4	8-5/8 J55	24	Surface	882	N/A	540 sx PP	129	Surface	0
7-7/8	5-1/2	15.5	Surface	5550	N/A	1240 sx T&SH	357	40'	0

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
2-3/8	5163	Loc Set 5167						

25. Producing Intervals

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) Delaware			5320-5240'	.35"	60	Open
B)						
C)						
D)						

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

Depth Interval	Amount and Type of Material
5230-5240	1500g 7-1/2% HCl
	FRAC w/11241g XL gel w/34000#
	20/40 sand

ACCEPTED FOR RECORD
SEP - 5 2002
ALEXIS C. SWOBODA
PETROLEUM ENGINEER

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
1/19/01			→						
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas : Oil Ratio	Well Status	
			→					Injecting 550 BWP @psi	

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

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

INJ.

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.)

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
Queen Sand	3753		O, W, G		
Grayburg	4102		O, W, G		
Grayburg Sands	4262		O, W, G		
San Andres	4332		O, W, G		
Delaware	4580		O, W, G		
Brushy Cyn. Pay	5028		Cored 5000-5300'		

32. Additional remarks (include plugging procedure):

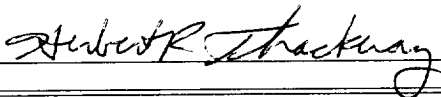
Submitting form 3160-4 per request from Alexis Swoboda. NMOCD form C-105 was submitted to OCD 1/26/01 but duplicates and logs were apparently never forwarded to BLM.

33. Circle enclosed attachments:

- ☒ 1. Electrical/Mechanical Logs (1 full set req'd.)
 ☐ 2. Geologic Report
 ☐ 3. DST Report
 ☒ 4. Directional Survey
☐ 5. Summary 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)*

Name (please print) Herbert R. Thackeray Title Operations Engineer

Signature  Date 8/20/02

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

From W-12
(1-1-71)

INCLINATION REPORT		
(One Copy Must Be Filed With Each Completion Report)		
1. FIELD NAME <u>Shugart Delaware East</u>	2. LEASE NAME <u>ESDU</u>	8. Well Number 20
3. OPERATOR NANCE PETROLEUM		10. County <u>Eddy NM</u>
4. ADDRESS P. O. BOX 7168		
5. LOCATION (Section, Block, and Survey) <u>Sec. 24 T18S R31E</u>		
BILLINGS, MT. 59103		

RECORD OF INCLINATION

*11. Measured Depth (feet)	12. Course Length (Hundreds of feet)	*13. Angle of Inclination (Degrees)	14. Displacement per Hundred Feet (Sine of Angle x 100)	15. Course Displacement (feet)	16. Accumulative Displacement (feet)
291	2.91	0.75	1.31	3.81	3.81
558	2.67	0.25	0.44	1.17	4.99
920	3.62	0.75	1.31	4.74	9.73
1,261	3.41	0.75	1.31	4.47	14.20
1,701	4.40	0.75	1.31	5.76	19.96
2,139	4.38	1.75	3.05	13.36	33.32
2,232	0.93	1.25	2.18	2.03	35.35
2,391	1.59	1.25	2.18	3.47	38.81
2,548	1.57	1.00	1.75	2.75	41.56
2,830	2.82	0.75	1.31	3.69	45.25
3,140	3.10	0.50	0.87	2.70	47.95
3,579	4.39	0.75	1.31	5.75	53.70
4,012	4.33	1.00	1.75	7.58	61.28
4,443	4.31	0.75	1.31	5.65	66.93
4,915	4.72	1.00	1.75	8.26	75.19
5,306	3.91	1.25	2.18	8.52	83.71
5,550	2.44	0.50	0.87	2.12	85.83

If additional space is needed, use the reverse side of this form.

17. Is any information shown on reverse side of this form? ☐ Yes ☒ No
18. Accumulative total displacement of well bore at total depth of _____ feet = _____ feet
- *19. Inclination measurements were made in: ☐ Logging ☐ Casing ☐ Open Hole ☒ Drill Pipe
20. Distance from surface location of well to the nearest lease line. _____ feet
21. Minimum distance to lease line as prescribed by field rules. _____ feet
22. Was the subject well at any time intentionally deviated from the vertical in any manner whatsoever?
(If the answer to the above question is "yes", attach written explanation of the circumstances.) _____

INCLINATION DATA CERTIFICATION

I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have personal knowledge of the inclination data and facts placed on both sides of this form and that such data and facts are true, correct, and complete to the best of my knowledge. This certification covers all data as indicated by asterisks (*) by the item numbers on this form.

Signature of Authorized Representative
Henry McElroy

Name of Person and Title (type or print)

Big Dog Drilling

Name of Company

(915) 570-7355

Area Code

OPERATOR CERTIFICATION

I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have personal knowledge of all information presented in this report, and that all data presented on both sides of this form are true, correct, and complete to the best of my knowledge. This certification covers all data and information presented herein except inclination data as indicated by asterisks (*) by the item numbers on this form.

Signature of Authorized Representative

Herb Thackeray

Name of Person and Title (type or print)

Herb Thackeray Operations Engineer

Operator

Telephone: 406

245-6248

Area Code

Conventional Core Analysis Report

Company : St. Mary Land & Exploration Co. **Field:** East Shugart Delaware Unit
File No. : 00766 **Formation:** Delaware
Well : ESDU No.20 **County :** Eddy County, New Mexico
Location : 1240' FNL & 300' FWL, Sec. 24, T18S, R31E

Sample Number	Depth ft	Air Permeability mD	Porosity %	Grain Density g/cc	Sw %	So %	Fluorescence %	Description	Sample Description
1	5,000.0	0.030	4.5	2.72	63.8	14.9	60	yel	Ss: gy,vf gr,sbang-sbrd,dolic,sl anhy,sh wisps
2	5,001.0	0.060	5.5	2.71	58.7	18.6	75	yel	Ss: gy,vf gr,sbang-sbrd,dolic,sl anhy,sh wisps
3	5,002.0	0.017	4.7	2.73	76.9	4.8	20	yel	Ss: gy,vf gr,sbang-sbrd,dolic,sl anhy,sh wisps
4	5,003.0	0.026	4.3	2.72	74.3	7.8	35	yel	Ss: gy,vf gr,sbang-sbrd,dolic,sl anhy,sh wisps
5	5,004.0	0.049	4.6	2.72	63.3	16.1	60	yel	Ss: gy,vf gr,sbang-sbrd,dolic,sl anhy,sh wisps
6	5,005.0	0.053	6.0	2.70	59.9	19.2	70	yel	Ss: gy,vf gr,sbang-sbrd,dolic,sl anhy,sh wisps
7	5,006.0	0.041	4.4	2.71	66.4	16.1	70	yel	Ss: gy,vf gr,sbang-sbrd,dolic,sl anhy,sh wisps
8	5,007.0	0.044	4.6	2.72	60.4	19.6	75	yel	Ss: gy,vf gr,sbang-sbrd,dolic,sl anhy,sh wisps
9	5,008.0	0.062	6.0	2.70	52.5	24.8	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sl anhy,sh wisps
10	5,009.0	0.139	7.5	2.69	48.3	21.5	100	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sl anhy
11	5,010.0	0.129	6.2	2.69	54.0	25.5	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sl anhy,sh wisps
12	5,011.0	0.073	6.2	2.70	53.7	22.0	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sl anhy,sh wisps
13	5,012.0	0.220	8.4	2.68	52.5	20.8	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sl anhy,sh wisps
14	5,013.0	0.164	6.9	2.69	49.8	22.3	100	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sl anhy,sh wisps
15	5,014.0	0.086	7.4	2.69	48.6	25.9	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sl anhy,sh wisps
16	5,015.0	0.026	2.2	2.74	92.9	0.0	0		Ss: gy,vf gr,sbang-sbrd,dolic,sl anhy,sh wisps
17	5,016.0	0.026	2.2	2.74	83.2	0.0	0		Ss: gy,vf gr,sbang-sbrd,dolic,sl anhy,sh wisps
18	5,017.0	0.027	2.0	2.74	93.3	0.0	0		Ss: gy,vf gr,sbang-sbrd,dolic,sl anhy
19	5,018.0	0.015	2.4	2.75	73.4	0.0	0		Ss: gy,vf gr,sbang-sbrd,dolic,sl anhy

Conventional Core Analysis Report

Company : St. Mary Land & Exploration Co. **Field:** East Shugart Delaware Unit
File No. : 00766 **Formation:** Delaware
Well : ESDU No.20 **County :** Eddy County, New Mexico
Location : 1240' FNL & 300' FWL, Sec. 24, T18S, R31E

Sample Number	Depth ft	Air Permeability mD	Porosity %	Grain Density g/cc	Sw %	So %	Fluorescence %	Description	Sample Description
20	5,019.0	0.177	6.6	2.70	43.4	21.4	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc,sl anhy,sh wisps
21	5,020.0	0.040	2.8	2.73	83.9	0.0	0		Ss: gy,vf gr,sbang-sbrd,dolc,sl anhy
22	5,021.0	0.136	7.9	2.69	48.3	21.2	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc,sl anhy
23	5,022.0	0.187	5.0	2.70	56.6	15.7	70	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc,sl anhy,arg
24	5,023.0	0.030	2.7	2.73	78.2	4.2	10	yel	Ss: gy,vf gr,sbang-sbrd,dolc,sl anhy,arg
25	5,024.0	0.501	9.5	2.67	47.1	20.9	95	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc,sl anhy,sh wisps
26	5,025.0	0.354	6.1	2.69	55.4	18.0	75	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc,sl anhy
27	5,026.0	0.291	5.8	2.70	54.4	17.3	80	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc,sl anhy
28	5,027.0	0.162	5.0	2.71	58.0	12.5	60	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc,sl anhy
29	5,028.0	0.087	3.8	2.73	61.3	8.4	45	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc,sl anhy
30	5,029.0	0.060	3.7	2.72	62.5	8.0	30	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc,sl anhy
31	5,030.0	0.065	4.4	2.72	61.5	7.7	40	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc,sl anhy
32	5,031.0	0.017	6.1	2.67	79.5	0.0	0		Ss: gy,vf gr,sbang-sbrd,sl dolc
33	5,032.0	0.008	8.6	2.70	39.1	22.5	100	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc
34	5,033.0	0.171	8.9	2.69	43.0	20.6	100	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc,sh lam
35	5,034.0	0.188	9.3	2.69	40.9	19.2	100	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc
36	5,035.0	0.109	9.2	2.69	37.0	22.8	100	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc
37	5,036.0	0.173	9.2	2.68	38.8	18.8	100	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc
38	5,037.0	0.285	10.3	2.67	47.4	19.6	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dolc,sh wisps

Conventional Core Analysis Report

Company : St. Mary Land & Exploration Co. **Field:** East Shugart Delaware Unit
File No. : 00766 **Formation:** Delaware
Well : ESDU No.20 **County :** Eddy County, New Mexic
Location : 1240' FNL & 300' FWL, Sec. 24, T18S, R31E

Sample Number	Depth	Air Permeability	Porosity	Grain Density	Sw	So	Fluorescence	Sample Description
	ft	mD	%	g/cc	%	%	%	Description
39	5,038.0	0.475	10.5	2.66	50.7	19.5	95	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
40	5,039.0	0.459	11.0	2.68	48.5	18.1	95	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
41	5,040.0	0.278	9.2	2.69	48.4	20.5	90	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
42	5,041.0	0.265	9.6	2.68	46.8	18.5	100	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
43	5,042.0	0.222	9.7	2.68	49.8	18.7	100	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
44	5,043.0	0.134	9.6	2.68	48.9	17.4	95	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
45	5,044.0	0.411	10.4	2.67	53.5	16.0	95	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
46	5,045.0	0.178	10.6	2.68	46.0	18.9	95	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
47	5,046.0	0.177	10.0	2.67	51.5	19.4	95	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
48	5,047.0	0.302	10.9	2.68	47.2	18.8	100	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
49	5,048.0	0.202	10.3	2.66	49.2	18.5	100	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
50	5,049.0	0.208	10.3	2.67	47.7	19.9	100	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
51	5,050.0	0.315	11.1	2.66	48.1	20.1	100	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
52	5,051.0	0.080	10.7	2.67	47.5	21.9	95	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
53	5,052.0	0.184	10.3	2.66	43.6	23.9	90	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
54	5,053.0	0.014	6.6	2.67	79.3	0.0	0	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
55	5,054.0	0.047	8.4	2.68	68.2	6.0	15	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
56	5,055.0	0.293	7.0	2.68	77.1	11.2	75	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
57	5,056.0	0.013	4.9	2.72	83.8	0.0	0	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps

Conventional Core Analysis Report

Company : St. Mary Land & Exploration Co. **Field:** East Shugart Delaware Unit
File No. : 00766 **Formation:** Delaware
Well : ESDU No.20 **County :** Eddy County, New Mexico
Location : 1240' FNL & 300' FWL, Sec. 24, T18S, R31E

Sample Number	Depth ft	Air Permeability mD	Porosity %	Grain Density g/cc	Sw %	So %	Fluorescence %	Description	Sample Description
58	5,057.0	0.043	7.0	2.70	60.3	12.2	60	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
59	5,058.0	0.118	9.0	2.68	51.9	19.1	80	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
60	5,059.0	0.748	9.3	2.68	50.1	19.7	95	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
61	5,060.0	0.114	9.2	2.66	60.0	18.4	80	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
62	5,061.0	0.125	9.7	2.66	60.0	19.6	80	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
63	5,062.0	0.181	10.2	2.66	61.9	15.3	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
64	5,063.0	0.037	9.1	2.68	83.0	0.0	0		Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
65	5,064.0	0.040	6.2	2.69	68.1	11.5	50	dl yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
66	5,065.0	0.065	5.3	2.70	58.5	17.8	75	dl yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
67	5,066.0	0.038	4.9	2.71	60.3	17.7	60	dl yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
68	5,067.0	0.095	7.3	2.68	60.5	15.8	75	dl yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
69	5,068.0	0.040	5.3	2.71	77.6	5.0	15	dl yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
70	5,069.0	0.030	4.2	2.71	75.1	8.7	25	dl yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps, tr anhy
71	5,070.0	0.061	5.1	2.72	70.0	11.4	45	dl yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps, tr anhy
72	5,071.0	0.206	9.3	2.67	60.8	14.3	80	dl yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
73	5,072.0	0.228	8.7	2.68	50.7	17.1	100	dl yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
74	5,073.0	0.077	6.3	2.70	60.3	14.5	85	dl yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
75	5,074.0	0.236	8.4	2.68	55.4	13.8	95	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
76	5,075.0	0.089	6.0	2.69	59.8	10.5	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps

Conventional Core Analysis Report

Company : St. Mary Land & Exploration Co. **Field:** East Shugart Delaware Unit
File No. : 00766 **Formation:** Delaware
Well : ESDU No.20 **County :** Eddy County, New Mexic
Location : 1240' FNL & 300' FWL, Sec. 24, T18S, R31E

Sample Number	Depth ft	Air Permeability mD	Porosity %	Grain Density g/cc	Sw %	So %	Fluorescence %	Description	Sample Description
77	5,076.0	0.264	8.9	2.68	54.7	14.3	95	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic
78	5,077.0	0.090	6.8	2.69	54.5	21.6	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
79	5,078.0	0.161	7.0	2.69	56.9	18.2	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
80	5,079.0	0.026	5.9	2.71	69.1	9.9	25	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
81	5,080.0	0.084	6.3	2.70	56.8	16.0	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
82	5,081.0	0.124	7.0	2.70	52.9	19.3	95	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
83	5,082.0	0.950	7.9	2.68	53.1	17.4	75	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
84	5,083.0	0.055	6.4	2.71	51.9	19.0	85	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps
85	5,084.0	0.012	2.0	2.73	92.3	0.0	0		Ss: gy,vf gr,sbang-sbrd,sl dolic,sh lam,sl anhy
86	5,085.0	0.013	2.5	2.72	88.3	0.0	0		Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps,sl anhy
87	5,086.0	0.149	4.5	2.73	69.2	6.1	25	dl yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,arg,sl anhy
88	5,087.0	0.039	4.9	2.72	52.2	21.1	90	dl yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps,sl anhy
89	5,088.0	0.013	1.5	2.72	90.0	0.0	0		Ss: gy,vf gr,sbang-sbrd,sl dolic,sh lam,sl anhy
90	5,089.0	0.017	3.4	2.73	62.0	15.2	40	dl yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps,sl anhy
91	5,090.0	0.027	3.0	2.73	75.9	3.9	15	dl yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps,sl anhy
92	5,091.0	0.017	3.7	2.73	76.8	0.0	0		Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps,sl anhy
93	5,092.0	0.035	4.5	2.72	67.1	6.2	30	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps,sl anhy
94	5,093.0	0.027	3.8	2.72	72.6	5.9	20	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps,sl anhy
95	5,094.0	0.043	3.9	2.72	67.8	11.4	50	yel	Ss: gy,vf gr,sbang-sbrd,sl dolic,sh wisps,sl anhy

Conventional Core Analysis Report

Company : St. Mary Land & Exploration Co. **Field:** East Shugart Delaware Unit
File No. : 00766 **Formation:** Delaware
Well : ESDU No.20 **County :** Eddy County, New Mexic
Location : 1240' FNL & 300' FWL, Sec. 24, T18S, R31E

Sample Number	Depth ft	Air Permeability mD	Porosity %	Grain Density g/cc	Sw %	So %	Fluorescence %	Description	Sample Description
96	5,095.0	0.035	4.4	2.71	68.3	8.9	40	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
97	5,096.0	0.214	7.0	2.70	54.3	17.7	85	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
98	5,097.0	0.091	5.7	2.70	60.9	16.5	70	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
99	5,098.0	0.111	6.0	2.70	59.2	15.9	80	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
100	5,099.0	0.219	7.2	2.69	53.0	19.0	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
101	5,100.0	0.227	7.2	2.69	53.2	18.4	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
102	5,101.0	0.292	7.9	2.68	53.5	19.1	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
103	5,102.0	0.148	8.4	2.67	53.6	20.2	90	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
104	5,103.0	0.023	3.5	2.73	75.9	4.9	10	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
105	5,104.0	0.040	5.0	2.71	60.0	17.5	80	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
106	5,105.0	0.148	9.1	2.67	48.5	21.1	95	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
107	5,106.0	0.026	6.6	2.69	80.5	2.4	10	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh lams
108	5,107.0	0.069	8.6	2.67	53.6	15.6	70	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
109	5,108.0	0.056	9.8	2.66	79.5	0.0	0		Ss: gy,vf gr,sbang-sbrd,sl dollic,sh lams,v arg
110	5,109.0	0.010	8.8	2.66	80.1	0.0	0		Ss: gy,vf gr,sbang-sbrd,sl dollic,sh lams,v arg
111	5,110.0	0.037	5.0	2.74	73.2	3.5	20	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps,sl anhy
112	5,111.0	0.041	6.5	2.70	81.5	0.0	0		Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
113	5,112.0	0.070	7.8	2.68	71.4	6.2	25	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
114	5,113.0	0.049	5.9	2.70	64.4	10.6	60	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps

Conventional Core Analysis Report

Company :	St. Mary Land & Exploration Co.	Field:	East Shugart Delaware Unit
File No. :	00766	Formation:	Delaware
Well :	ESDU No.20	County :	Eddy County, New Mexico
Location :	1240' FNL & 300' FWL, Sec. 24, T18S, R31E		

Sample Number	Depth ft	Air Permeability mD	Porosity %	Grain Density g/cc	Sw %	So %	Fluorescence %	Description	Sample Description
115	5,114.0	0.048	6.4	2.69	55.7	16.6	80	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
116	5,115.0	0.048	6.4	2.69	55.7	16.8	75	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
117	5,116.0	0.051	7.2	2.69	69.6	6.8	25	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
118	5,117.0	0.014	3.3	2.71	93.1	0.0	0		Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
119	5,118.0	0.042	7.1	2.69	77.5	3.0	10	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
120	5,119.0	0.071	8.1	2.67	54.6	15.9	75	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
121	5,120.0	0.095	6.9	2.69	51.3	19.4	85	yel	Ss: gy,vf gr,sbang-sbrd,sl dollic,sh wisps
122	5,121.0	0.126	9.1	2.68	53.8	6.8	85	dk yel	Ss: gy-It brn,vf gr,sbang-sbrd,sl dollic,sh wisps
123	5,122.0	0.103	7.6	2.70	62.7	3.5	80	dk yel	Ss: gy-It brn,vf gr,sbang-sbrd,sl dollic,sh wisps
124	5,123.0	0.286	9.9	2.67	60.3	7.0	95	dk yel	Ss: gy-It brn,vf gr,sbang-sbrd,sl dollic,sh wisps
125	5,124.0	0.089	8.0	2.67	67.8	8.3	80	dk yel	Ss: gy-It brn,vf gr,sbang-sbrd,sl dollic,sh wisps
126	5,125.0	0.547	11.3	2.66	60.6	9.5	95	dk yel	Ss: gy-It brn,vf gr,sbang-sbrd,sl dollic,sh wisps
127	5,126.0	0.097	8.4	2.70	57.9	13.6	90	dk yel	Ss: gy-It brn,vf gr,sbang-sbrd,sl dollic,sh wisps
128	5,127.0	0.063	10.1	2.65	70.0	7.2	25	yel	Ss: gy-It brn,vf gr,sbang-sbrd,sl dollic,v arg
129	5,128.0	0.400	9.9	2.67	53.4	12.6	90	yel	Ss: gy-It brn,vf gr,sbang-sbrd,sl dollic,sh wisps
130	5,129.0	0.416	9.7	2.67	69.5	3.9	95	dl yel	Ss: gy-It brn,vf gr,sbang-sbrd,sl dollic,sh wisps
131	5,130.0	0.392	9.8	2.66	63.6	5.7	90	diyel-yel	Ss: It brn,vf gr,sbang-sbrd,sl dollic,sh wisps
132	5,131.0	0.184	8.4	2.68	60.5	11.7	90	yel	Ss: It brn,vf gr,sbang-sbrd,sl dollic,sh wisps
133	5,132.0	0.459	10.8	2.66	61.0	9.9	100	yel	Ss: It brn,vf gr,sbang-sbrd,sl dollic,sh wisps

Conventional Core Analysis Report

Company : St. Mary Land & Exploration Co. **Field:** East Shugart Delaware Unit
File No. : 00766 **Formation:** Delaware
Well : ESDU No.20 **County :** Eddy County, New Mexic
Location : 1240' FNL & 300' FWL, Sec. 24, T18S, R31E

Sample Number	Depth ft	Air Permeability mD	Porosity %	Grain Density g/cc	Sw %	So %	Fluorescence %	Description	Sample Description
134	5,133.0	0.226	8.4	2.67	63.5	11.5	90	yel	Ss: lt bm, v'f gr, sbang-sbrd, sl dollic, sh wisps
135	5,134.0	0.238	9.2	2.65	61.6	15.0	80	yel	Ss: lt bm, v'f gr, sbang-sbrd, sl dollic, v arg
136	5,135.0	0.772	9.1	2.67	53.4	17.7	100	yel	Ss: lt bm, v'f gr, sbang-sbrd, sl dollic, sh wisps
137	5,136.0	0.662	12.2	2.64	60.0	12.3	95	yel	Ss: lt bm, v'f gr, sbang-sbrd, sl dollic, sh wisps
138	5,137.0	0.283	10.4	2.65	60.4	12.7	95	yel	Ss: lt bm, v'f gr, sbang-sbrd, sl dollic, sh wisps
139	5,138.0	0.166	9.9	2.66	64.0	14.2	90	yel	Ss: lt bm, v'f gr, sbang-sbrd, sl dollic, sh wisps
140	5,139.0	2.63	11.9	2.65	64.3	12.3	100	dl yel	Ss: lt bm, v'f gr, sbang-sbrd, sl dollic, sh wisps
141	5,140.0	0.924	11.1	2.64	57.1	11.8	100	yel	Ss: lt bm, v'f gr, sbang-sbrd
142	5,141.0	1.24	11.9	2.64	54.0	15.3	100	yel	Ss: lt bm, v'f gr, sbang-sbrd, sh wisps
143	5,142.0	2.62	12.8	2.65	61.7	10.9	100	dl yel	Ss: lt bm, v'f gr, sbang-sbrd
144	5,143.0	2.20	12.4	2.64	64.7	10.6	100	dl yel	Ss: lt bm, v'f gr, sbang-sbrd
145	5,144.0	2.65	12.7	2.65	52.7	15.9	100	yel	Ss: lt bm, v'f gr, sbang-sbrd
146	5,145.0	0.617	9.6	2.66	56.1	18.9	90	yel	Ss: lt bm, v'f gr, sbang-sbrd, sl arg
147	5,146.0	2.53	13.0	2.65	64.7	9.4	100	dl yel	Ss: lt bm, v'f gr, sbang-sbrd, sl arg
148	5,147.0	2.25	12.2	2.64	63.4	8.1	100	dl yel	Ss: lt bm, v'f gr, sbang-sbrd, sl arg
149	5,148.0	2.59	13.0	2.64	57.8	11.8	100	dl yel	Ss: lt bm, v'f gr, sbang-sbrd, sl arg
150	5,149.0	3.05	12.3	2.63	50.9	18.8	100	yel	Ss: lt bm, v'f gr, sbang-sbrd, sl arg
151	5,150.0	2.84	13.0	2.64	64.7	9.5	100	dl yel	Ss: lt bm, v'f gr, sbang-sbrd, sl arg
152	5,151.0	3.33	13.5	2.64	69.8	8.9	100	dl yel	Ss: lt bm, v'f gr, sbang-sbrd, sl arg

Conventional Core Analysis Report

Company : St. Mary Land & Exploration Co. **Field:** East Shugart Delaware Unit
File No. : 00766 **Formation:** Delaware
Well : ESDU No.20 **County :** Eddy County, New Mexico
Location : 1240' FNL & 300' FWL, Sec. 24, T18S, R31E

Sample Number	Depth	Air Permeability	Porosity	Grain Density	Sw	So	Fluorescence	Sample Description
	ft	mD	%	g/cc	%	%	%	Description
153	5,152.0	4.17	13.6	2.64	66.9	8.8	100	Ss: lt bm, v/ gr, sbang-sbrd, sl arg
154	5,153.0	2.24	11.6	2.65	61.3	11.6	100	Ss: lt bm, v/ gr, sbang-sbrd, sl arg
155	5,154.0	3.29	12.9	2.64	54.9	16.2	100	Ss: lt bm, v/ gr, sbang-sbrd, sl arg
156	5,155.0	2.96	13.4	2.65	57.7	11.4	100	Ss: lt bm, v/ gr, sbang-sbrd, sl arg
157	5,156.0	3.13	13.5	2.64	61.8	12.9	100	Ss: lt bm, v/ gr, sbang-sbrd, sl arg
158	5,157.0	4.67	13.9	2.64	67.2	13.3	100	Ss: lt bm, v/ gr, sbang-sbrd, sl arg
159	5,158.0	0.337	8.8	2.68	58.2	18.6	90	Ss: lt bm, v/ gr, sbang-sbrd, sl dollic, arg
160	5,159.0	0.600	10.0	2.66	63.2	15.7	90	Ss: lt bm, v/ gr, sbang-sbrd, sl dollic, arg
161	5,160.0	3.79	13.3	2.64	62.8	10.1	100	Ss: lt bm, v/ gr, sbang-sbrd, sl arg
162	5,161.0	2.02	11.7	2.64	55.2	17.8	100	Ss: lt bm, v/ gr, sbang-sbrd, sl arg
163	5,162.0	2.55	13.0	2.64	54.3	19.7	100	Ss: lt bm, v/ gr, sbang-sbrd, sl arg
164	5,163.0	1.42	10.0	2.66	53.8	22.9	100	Ss: lt bm, v/ gr, sbang-sbrd, sl arg
165	5,164.0	0.985	10.7	2.64	60.5	15.5	100	Ss: lt bm, v/ gr, sbang-sbrd, sl arg
166	5,165.0	1.83	12.4	2.63	57.5	17.5	100	Ss: lt bm, v/ gr, sbang-sbrd, sl arg
167	5,166.0	0.419	11.0	2.63	64.8	11.0	100	Ss: lt bm, v/ gr, sbang-sbrd, sl arg
168	5,167.0	0.222	10.8	2.64	75.1	11.4	70	Ss: lt bm, v/ gr, sbang-sbrd, arg, lt anhy
169	5,168.0	2.84	12.9	2.64	62.7	13.9	100	Ss: lt bm, v/ gr, sbang-sbrd, sl arg
170	5,169.0	1.49	12.0	2.64	58.0	18.3	95	Ss: lt bm, v/ gr, sbang-sbrd, sl arg
171	5,170.0	0.896	11.0	2.65	62.4	15.0	100	Ss: lt bm, v/ gr, sbang-sbrd, sl arg

Conventional Core Analysis Report

Company : St. Mary Land & Exploration Co. **Field:** East Shugart Delaware Unit
File No. : 00766 **Formation:** Delaware
Well : ESDU No.20 **County :** Eddy County, New Mexic
Location : 1240' FNL & 300' FWL, Sec. 24, T18S, R31E

Sample Number	Depth	Air Permeability	Porosity	Grain Density	Sw	So	Fluorescence	Sample Description
	ft	mD	%	g/cc	%	%	%	Description
172	5,171.0	1.35	12.9	2.63	63.0	10.1	100	yel
								Ss: lt brn, vf gr, sbang-sbrd, arg
173	5,172.0	0.643	9.7	2.66	62.6	15.6	100	dl yel-yel
								Ss: lt brn, vf gr, sbang-sbrd, arg
174	5,173.0	0.216	11.6	2.63	70.4	12.4	60	yel
								Ss: lt brn, vf gr, sbang-sbrd, arg
175	5,174.0	0.099	9.7	2.66	92.0	2.4	5	yel
								Ss: lt brn, vf gr, sbang-sbrd, arg
176	5,175.0	1.06	13.0	2.63	64.4	12.2	100	dl yel-yel
								Ss: lt brn, vf gr, sbang-sbrd, arg
177	5,176.0	0.582	11.6	2.65	55.6	17.2	100	yel
								Ss: lt brn, vf gr, sbang-sbrd, sl arg
178	5,177.0	0.820	12.1	2.64	60.6	15.0	90	yel
								Ss: lt brn, vf gr, sbang-sbrd, arg
179	5,178.0	1.85	12.8	2.64	60.3	14.9	95	dl yel
								Ss: lt brn, vf gr, sbang-sbrd, arg
180	5,179.0	0.849	10.2	2.66	59.4	17.7	90	dl yel
								Ss: lt brn, vf gr, sbang-sbrd, arg
181	5,180.0	1.84	12.7	2.64	57.5	17.6	95	dl yel
								Ss: lt brn, vf gr, sbang-sbrd, arg
182	5,181.0	1.40	11.1	2.66	62.9	15.1	95	dl yel
								Ss: gy, vf gr, sbang-sbrd, sh wisps
183	5,182.0	1.80	11.9	2.65	52.9	14.7	95	dl yel
								Ss: gy, vf gr, sbang-sbrd, sl arg
184	5,183.0	2.09	12.3	2.63	55.3	14.7	100	dl yel
								Ss: gy, vf gr, sbang-sbrd, sl arg
185	5,184.0	2.00	12.3	2.65	50.0	14.6	100	dl yel
								Ss: gy, vf gr, sbang-sbrd
186	5,185.0	2.43	12.5	2.64	54.7	12.5	100	dl yel
								Ss: gy, vf gr, sbang-sbrd
187	5,186.0	3.43	13.7	2.65	55.0	11.7	100	dl yel
								Ss: gy, vf gr, sbang-sbrd
188	5,187.0	3.14	13.2	2.63	54.2	12.4	100	dl yel
								Ss: gy, vf gr, sbang-sbrd
189	5,188.0	3.13	14.0	2.65	50.8	14.1	100	dl yel
								Ss: gy, vf gr, sbang-sbrd
190	5,189.0	3.24	13.2	2.64	53.2	14.8	100	dl yel
								Ss: lt brn, gy, vf gr, sbang-sbrd, sh wisps

Conventional Core Analysis Report

Company : St. Mary Land & Exploration Co. **Field:** East Shugart Delaware Unit
File No. : 00766 **Formation:** Delaware
Well : ESDU No.20 **County :** Eddy County, New Mexic
Location : 1240' FNL & 300' FWL, Sec. 24, T18S, R31E

Sample Number	Depth ft	Air Permeability mD	Porosity %	Grain Density g/cc	Sw %	So %	Fluorescence %	Description	Sample Description
191	5,190.0	3.17	13.9	2.65	48.6	14.8	100	dl yel	Ss:lt brn,yf gr,sbang-sbrd,sh wisps
192	5,191.0	3.71	13.3	2.64	53.9	11.5	100	dl yel	Ss:lt brn,yf gr,sbang-sbrd,sh wisps
193	5,192.0	3.55	14.2	2.65	53.1	11.5	100	dl yel	Ss:lt brn,yf gr,sbang-sbrd,sh wisps
194	5,193.0	2.12	10.8	2.66	57.5	14.1	100	dl yel	Ss:lt brn,yf gr,sbang-sbrd,sh wisps
195	5,194.0	5.49	14.8	2.64	51.1	12.0	100	dl yel	Ss:lt brn,yf gr,sbang-sbrd,sh wisps
196	5,195.0	3.44	13.7	2.64	54.9	12.8	100	dl yel	Ss:lt brn,yf gr,sbang-sbrd,sh wisps
197	5,196.0	2.46	12.8	2.66	55.0	14.3	100	dl yel	Ss:lt brn,yf gr,sbang-sbrd,sh wisps
198	5,197.0	2.60	12.8	2.64	58.6	12.3	85	dl yel	Ss:lt brn,yf gr,sbang-sbrd,sh wisps
199	5,198.0	2.23	13.7	2.65	57.8	11.2	100	dl yel	Ss:lt brn,yf gr,sbang-sbrd,sh wisps
200	5,199.0	1.60	12.3	2.62	67.2	11.8	80	dl yel	Ss:lt brn,yf gr,sbang-sbrd,sh lam
201	5,200.0	3.10	12.4	2.68	54.7	12.4	95	dl yel	Ss:lt brn,yf gr,sbang-sbrd,sh wisps
202	5,201.0	2.90	14.3	2.63	56.1	14.0	100	dl yel	Ss:lt brn,yf gr,sbang-sbrd,sh wisps
203	5,202.0	5.95	15.8	2.66	52.5	15.5	100	dl yel	Ss:lt brn,yf gr,sbang-sbrd,sh wisps
204	5,203.0	2.25	11.9	2.64	73.6	0.0	0		Ss:lt brn,yf gr,sbang-sbrd,sh wisps
205	5,204.0	0.121	10.9	2.69	83.5	0.0	0		Ss: gy,yf gr,sbang-sbrd,sh lam
206	5,205.0	0.243	10.9	2.65	70.7	15.5	70	dl yel	Ss: gy,yf gr,sbang-sbrd,sh lam
207	5,206.0	3.02	12.9	2.68	48.3	19.7	95	dl yel	Ss: gy,yf gr,sbang-sbrd,sh wisps
208	5,207.0	1.54	12.7	2.63	61.4	17.4	95	dl yel	Ss: gy,yf gr,sbang-sbrd,sh wisps
209	5,208.0	1.95	13.7	2.66	60.4	13.0	95	dl yel	Ss: gy,yf gr,sbang-sbrd,sh wisps

Conventional Core Analysis Report

Company : File No. : Well : Location :	St. Mary Land & Exploration Co. 00766 ESDU No.20 1240' FNL & 300' FWL,Sec. 24,T18S,R31E	Field: Formation: County :	East Shugart Delaware Unit Delaware Eddy County, New Mexic
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Sample Number	Depth ft	Air Permeability mD	Porosity %	Grain Density g/cc	Sw %	So %	Fluorescence %	Description	Sample Description
210	5,209.0	4.66	14.0	2.62	58.8	12.3	100	dl yel	Ss: gy,vf gr,sbang-sbrd,sh wisps
211	5,210.0	3.26	14.3	2.65	52.6	16.6	100	dl yel	Ss: gy,vf gr,sbang-sbrd,sh wisps
212	5,211.0	4.06	14.4	2.63	63.0	11.6	100	dl yel	Ss: gy,vf gr,sbang-sbrd,arg
213	5,212.0	3.17	15.0	2.68	53.0	12.8	100	dl yel	Ss: gy,vf gr,sbang-sbrd,arg
214	5,213.0	1.83	11.9	2.65	64.3	13.3	95	dl yel	Ss: gy,vf gr,sbang-sbrd,arg
215	5,214.0	3.16	13.8	2.69	59.8	11.5	95	dl yel	Ss: gy,vf gr,sbang-sbrd,arg
216	5,215.0	2.63	13.1	2.64	67.4	11.9	95	dl yel	Ss: gy,vf gr,sbang-sbrd,arg
217	5,216.0	0.875	12.4	2.64	69.7	12.6	100	dl yel-yel	Ss: gy,vf gr,sbang-sbrd,arg
218	5,217.0	1.25	13.0	2.64	69.5	11.4	80	dl yel-yel	Ss: gy,vf gr,sbang-sbrd,sh wisps
219	5,218.0	1.16	13.3	2.64	67.6	9.5	90	dl yel	Ss: gy,vf gr,sbang-sbrd,arg
220	5,219.0	1.25	13.9	2.63	65.7	9.7	90	dl yel	Ss: gy,vf gr,sbang-sbrd,arg
221	5,220.0	11.2	14.0	2.63	68.4	8.7	80	dl yel	Ss: gy,vf gr,sbang-sbrd,arg
222	5,221.0	2.93	15.5	2.62	65.0	10.2	100	dl yel	Ss: gy,vf gr,sbang-sbrd,arg
223	5,222.0	2.71	15.1	2.64	62.9	10.6	100	yel	Ss: gy,vf gr,sbang-sbrd,arg
224	5,223.0	1.69	12.8	2.65	73.7	10.1	80	dl yel	Ss: gy,vf gr,sbang-sbrd,arg
225	5,224.0	1.15	14.3	2.65	72.8	9.4	50	yel	Ss: gy,vf gr,sbang-sbrd,arg
226	5,225.0	0.691	14.4	2.63	77.9	0.0	0		Ss: gy,vf gr,sbang-sbrd,arg
227	5,226.0	0.109	12.4	2.64	90.4	0.0	0		Ss: gy,vf gr,sbang-sbrd,sh lam
228	5,227.0	0.084	8.8	2.65	86.6	0.0	0		Ss: gy,vf gr,sbang-sbrd,arg

Conventional Core Analysis Report

Company : St. Mary Land & Exploration Co. **Field:** East Shugart Delaware Unit
File No. : 00766 **Formation:** Delaware
Well : ESDU No.20 **County :** Eddy County, New Mexic
Location : 1240' FNL & 300' FWL,Sec. 24,T18S,R31E

Sample Number	Depth	Air Permeability	Porosity	Grain Density	Sw	So	Fluorescence	Sample Description
	ft	mD	%	g/cc	%	%	%	Description
229	5,228.0	0.118	10.0	2.64	81.3	4.5	25	yei
								Ss: gy,vf,gr,sbang-sbrd,arg
230	5,229.0	0.384	11.9	2.63	64.4	14.3	80	di,yei
								Ss: gy,vf,gr,sbang-sbrd,arg
231	5,230.0	0.219	10.4	2.64	68.4	11.3	70	di,yei-yei
								Ss: gy,vf,gr,sbang-sbrd,sh lam
232	5,231.0	0.972	11.3	2.63	57.0	17.2	85	di,yei
								Ss: gy,vf,gr,sbang-sbrd,arg
233	5,232.0	0.059	10.9	2.64	57.8	17.0	85	di,yei
								Ss: gy,vf,gr,sbang-sbrd,arg
234	5,233.0	2.33	13.8	2.64	47.0	20.7	100	di,yei
								Ss: gy,vf,gr,sbang-sbrd,arg
235	5,234.0	0.085	5.2	2.72	63.4	17.6	75	di,yei
								Ss: gy,vf,gr,sbang-sbrd,arg,anhy
236	5,235.0	3.29	12.8	2.64	62.8	13.5	90	di,yei
								Ss: gy,vf,gr,sbang-sbrd,arg
237	5,236.0	0.715	10.4	2.65	58.6	13.0	95	di,yei
								Ss: gy,vf,gr,sbang-sbrd,arg
238	5,237.0	0.689	10.3	2.65	55.9	17.2	95	di,yei
								Ss: gy,vf,gr,sbang-sbrd,arg
239	5,238.0	0.856	10.5	2.65	50.5	19.4	100	di,yei
								Ss: gy,vf,gr,sbang-sbrd,arg
240	5,239.0	0.417	10.2	2.66	55.7	14.9	95	di,yei
								Ss: gy,vf,gr,sbang-sbrd,arg
241	5,240.0	0.830	10.7	2.64	46.3	20.7	100	di,yei
								Ss: gy,vf,gr,sbang-sbrd,arg
242	5,241.0	0.859	10.9	2.67	49.4	16.1	100	di,yei
								Ss: gy,vf,gr,sbang-sbrd,arg
243	5,242.0	1.25	11.6	2.65	48.2	17.1	100	yei
								Ss: gy,vf,gr,sbang-sbrd,arg
244	5,243.0	1.08	11.1	2.65	52.7	14.3	100	yei
								Ss: gy,vf,gr,sbang-sbrd,arg
245	5,244.0	1.01	11.3	2.64	55.7	12.6	100	yei
								Ss: gy,vf,gr,sbang-sbrd,arg
246	5,245.0	2.06	12.7	2.64	51.8	14.5	100	yei
								Ss: gy,vf,gr,sbang-sbrd,arg
247	5,246.0	1.73	12.7	2.64	50.9	16.7	100	yei
								Ss: gy,vf,gr,sbang-sbrd,arg

Conventional Core Analysis Report

Company : St. Mary Land & Exploration Co. **Field:** East Shugart Delaware Unit
File No. : 00766 **Formation:** Delaware
Well : ESDU No.20 **County :** Eddy County, New Mexico
Location : 1240' FNL & 300' FWL, Sec. 24, T18S, R31E

Sample Number	Depth ft	Air Permeability mD	Porosity %	Grain Density g/cc	Sw %	So %	Fluorescence %	Description	Sample Description
248	5,247.0	1.61	12.5	2.63	53.4	16.2	100	yel	Ss: gy, mf gr, sbang-sbrd, arg
249	5,248.0	1.34	12.5	2.63	53.0	16.5	100	yel	Ss: gy, mf gr, sbang-sbrd, arg
250	5,249.0	0.657	11.5	2.64	54.5	15.6	100	yel	Ss: gy, mf gr, sbang-sbrd, arg
251	5,250.0	1.83	12.3	2.64	43.6	18.8	100	yel	Ss: gy, mf gr, sbang-sbrd, arg
252	5,251.0	0.622	11.5	2.64	53.8	17.4	100	yel	Ss: gy, mf gr, sbang-sbrd, arg
253	5,252.0	0.725	11.5	2.65	52.5	13.9	100	yel	Ss: gy, mf gr, sbang-sbrd, arg
254	5,253.0	0.312	10.9	2.65	59.3	11.4	85	yel	Ss: gy, mf gr, sbang-sbrd, arg
255	5,254.0	0.574	11.5	2.64	53.8	16.4	95	yel	Ss: gy, mf gr, sbang-sbrd, arg
256	5,255.0	0.274	11.2	2.67	55.1	15.1	95	yel	Ss: gy, mf gr, sbang-sbrd, arg
257	5,256.0	0.391	10.9	2.65	56.4	15.0	90	yel	Ss: gy, mf gr, sbang-sbrd, arg
258	5,257.0	0.786	11.0	2.65	54.8	11.6	95	yel	Ss: gy, mf gr, sbang-sbrd, arg
259	5,258.0	1.36	11.7	2.64	48.3	16.2	95	yel	Ss: gy, mf gr, sbang-sbrd, arg
260	5,259.0	1.07	11.4	2.64	46.9	19.3	100	yel	Ss: gy, mf gr, sbang-sbrd, arg
261	5,260.0	2.29	13.7	2.64	43.9	17.9	100	yel	Ss: gy, mf gr, sbang-sbrd, arg
262	5,261.0	1.56	12.7	2.63	48.7	19.5	100	yel	Ss: gy, mf gr, sbang-sbrd, arg
263	5,262.0	6.46	14.3	2.64	45.9	11.8	100	yel	Ss: gy, mf gr, sbang-sbrd, arg
264	5,263.0	5.63	14.1	2.61	42.4	22.9	100	yel	Ss: gy, mf gr, sbang-sbrd, arg
265	5,264.0	5.68	13.9	2.62	44.6	19.0	100	yel	Ss: gy, mf gr, sbang-sbrd, arg
266	5,265.0	3.79	13.2	2.63	46.4	19.0	100	yel	Ss: gy, mf gr, sbang-sbrd, arg

Conventional Core Analysis Report

Company : St. Mary Land & Exploration Co. **Field:** East Shugart Delaware Unit
File No. : 00766 **Formation:** Delaware
Well : ESDU No.20 **County :** Eddy County, New Mexic
Location : 1240' FNL & 300' FWL, Sec. 24, T18S, R31E

Sample Number	Depth	Air Permeability	Porosity	Grain Density	Sw	So	Fluorescence	Sample Description
	ft	mD	%	g/cc	%	%	%	Description
267	5,266.0	2.18	12.6	2.63	52.7	14.4	90	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
268	5,267.0	2.08	12.9	2.63	49.3	16.8	95	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
269	5,268.0	2.31	13.1	2.64	48.9	16.2	100	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
270	5,269.0	1.55	12.6	2.64	45.6	20.1	100	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
271	5,270.0	2.65	13.8	2.63	51.6	14.7	100	dl yei
								Ss: gy, v'l gr, sbang-sbrd, arg
272	5,271.0	1.81	12.3	2.64	49.6	18.0	100	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
273	5,272.0	0.739	10.9	2.65	57.1	14.5	90	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
274	5,273.0	0.847	12.4	2.65	53.5	15.1	90	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
275	5,274.0	0.705	12.0	2.64	60.2	11.0	95	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
276	5,275.0	0.073	10.5	2.67	71.4	16.9	100	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
277	5,276.0	0.011	8.6	2.68	76.3	17.9	100	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
278	5,277.0	0.012	7.0	2.68	83.9	14.2	100	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
279	5,278.0	0.053	9.8	2.69	70.8	22.4	100	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
280	5,279.0	0.111	10.6	2.66	60.2	11.0	75	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
281	5,280.0	0.065	9.3	2.68	75.1	3.9	15	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
282	5,281.0	0.081	9.7	2.67	71.8	6.5	30	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
283	5,282.0	0.386	11.6	2.66	48.9	16.0	95	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
284	5,283.0	0.305	11.3	2.64	57.8	16.2	90	yei
								Ss: gy, v'l gr, sbang-sbrd, arg
285	5,284.0	0.323	10.2	2.65	60.8	11.8	85	yei
								Ss: gy, v'l gr, sbang-sbrd, v arg

Conventional Core Analysis Report

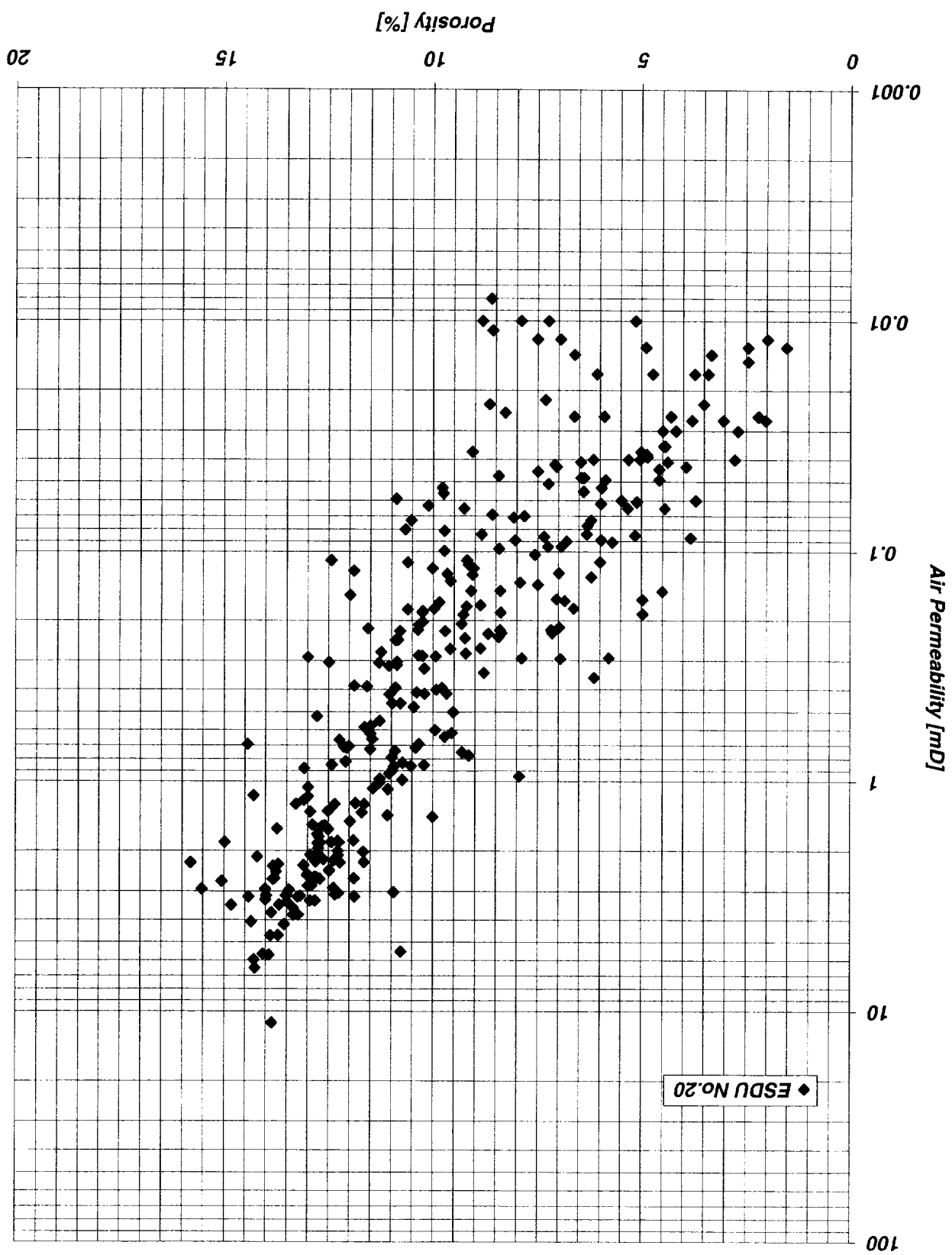
Company : St. Mary Land & Exploration Co. **Field:** East Shugart Delaware Unit
File No. : 00766 **Formation:** Delaware
Well : ESDU No.20 **County :** Eddy County, New Mexico
Location : 1240' FNL & 300' FWL, Sec. 24, T18S, R31E

Sample Number	Depth ft	Air Permeability mD	Porosity %	Grain Density g/cc	Sw %	So %	Fluorescence %	Description	Sample Description
286	5,285.0	0.242	10.8	2.63	69.9	8.4	60	yel	Ss: gy, v'l gr, sbang-sbrd, v arg, sh lam
287	5,286.0	0.154	12.0	2.63	58.4	9.8	80	yel	Ss: gy, v'l gr, sbang-sbrd, v arg, sh lam
288	5,287.0	0.708	12.1	2.63	60.7	13.4	90	yel	Ss: gy, v'l gr, sbang-sbrd, v arg
289	5,288.0	0.716	12.1	2.64	58.3	15.6	90	yel	Ss: gy, v'l gr, sbang-sbrd, v arg, sh lam
290	5,289.0	1.20	13.1	2.64	61.9	8.2	80	yel	Ss: gy, v'l gr, sbang-sbrd, v arg, sh lam
291	5,290.0	0.025	8.3	2.65	86.6	0.0	0		Ss: gy, v'l gr, sbang-sbrd, v arg, sh lam
292	5,291.0	<0.01	7.9	2.66	90.5	0.0	0		Ss: gy, v'l gr, sbang-sbrd, v arg
293	5,292.0	0.023	8.7	2.68	89.6	0.0	0		Ss: gy, v'l gr, sbang-sbrd, v arg
294	5,293.0	<0.01	7.2	2.67	94.2	0.0	0		Ss: gy, v'l gr, sbang-sbrd, v arg
295	5,294.0	<0.01	5.1	2.66	85.0	0.0	0		Ss: gy, v'l gr, sbang-sbrd, v arg
296	5,295.0	0.012	7.5	2.66	98.2	0.0	0		Ss: gy, v'l gr, sbang-sbrd, v arg
297	5,296.0	0.022	7.3	2.62	87.9	0.0	0		Ss: gy, v'l gr, sbang-sbrd, v arg
298	5,297.0	0.045	7.5	2.60	77.5	0.0	0		Ss: gy, v'l gr, sbang-sbrd, v arg
299	5,298.0	0.288	13.0	2.63	56.5	16.8	80	yel	Ss: gy, v'l gr, sbang-sbrd, arg
300	5,299.0	0.303	12.5	2.64	54.5	19.0	90	yel	Ss: gy, v'l gr, sbang-sbrd, arg
301	5,300.0	0.522	12.8	2.64	48.1	18.4	90	yel	Ss: gy, v'l gr, sbang-sbrd, arg

Core Description Abbreviations

ang	angular	grn	green	sbang	subangular
anh	anhydrite	grst	grainstone	sc	surface contaminat
ark	arkosic	gry	gray	sh	shale
arg	argillaceous	gyp	gypsum	strgr	stringer
bl	blue	lv/frac	horizontally fractured	sbrnd	subround
bldgg	bleeding gas	hal	halite	scat	scattered
bldgo	bleeding oil	incl	inclusion	sd(y)	sand(y)
blk	black	intrgr	intergranular	sh	shale
blky	blocky	intrxn	intercrystalline	shy	shaley
brn	brown	ip	in part	sil	siliceous
brt	bright	lam	lamina(-ated)	sl	slight(y)
bf	buff	ls	limestone	sily	silty
calc	calcareous	lt	light	sm	some
carb	carbonaceous	md	medium	sml	small
cem	cement	mf	mineral fluorescence	sp	spotty
cg	coarse grain	mg	medium grain	ss	sandstone
cgl	conglomerate	micr	micritic	silst	siltstone
chky	chalky	mod	moderate	srt	sorted
chry	cherty	mott	mottled	stks	streaks
com	common	mdst	mudstone	styl	styoilite
conch	conchoidal	n/a	not available	suc	sucrosic
cnsl	consolidated	n/r	not recovered	tbfa	too broken for anal
crm	cream	nod	nodules	tn	tan
cslt	coarse siltstone	nvp	no visible porosity	tr	trace
dk	dark	o	oil	v	very
dns	dense	ool	oolitic	vis	visible
dol	dolomite	omg	orange	vfrac	vertically fractured
dolic	dolomitic	peld	peloid	vfg	very fine grain
dru	drusy	pisol	pisolitic	vug	vug(gy)
dul	dull	pk	pink	w/	with
fg	fine grain	pkst	packstone	wht	white
fiss	fissile	por	porosity	wk(-ly)	weak(-ly)
foss	fossiliferous	poss	possible	wkst	wackestone
frac	fractured	ppp	pinpoint porosity	wl	well
fri	friable	pr(-ly)	poor(-ly)	xln	crystalline
gil	gilsonite	ptg	parting	xfg	extremely fine grai
glauc	glauconite	pyr	pyrite	xl	crystal
		md	round	yl	yellow

Permeability versus Porosity



Reservoir Quality Index versus Normalized Porosity

