

S.brero MS State #1
 1650' FSL & 1650' FEL
 Sec. 22, T.14S., R. 33E., N.M.P.M.
 Lea County, N.M.

SEAMAN CISCO (11,148'-11,158' & 11,207'-11,225') State Lease - LG3819

<u>Depth</u>	<u>ϕ</u>	<u>Sw</u>
11,148-49	7.0%	23%
49-50	7.0	22
50-51	5.0	31
51-52	5.5	26
52-53	6.5	25
53-54	7.0	24
54-55	7.0	22
55-56	6.5	24
56-57	6.0	28
57-58	5.5	32
	<u>63.0</u>	<u>257</u>
11,207-08	2.0%	28%
11,213-14	1.0%	90%
14-15	2.0	54
15-16	2.5	34
16-17	1.0	72
17-18	1.0	75
11,223-24	6.0%	5%
24-25	6.0%	7
25-26	2.5%	18
	<u>24</u>	<u>383</u>

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$$\phi_{Avg} = \frac{63 + 24}{19} = 4.6\%$$

$$Sw_{Avg} = \frac{257 + 383}{19} = 34\%$$

$$h = 19'$$

KEMNITZ WOLFCAMP (10,772'-10,788' & 10,792'-10,794')

<u>Depth</u>	<u>ϕ</u>	<u>Sw</u>
10772'-73'	5.0 %	26 %
73-74	6.0 %	28
74-75	9.5	23
75-76	10.5	22
76-77	9.0	26
77-78	7.5	29
78-79	6.5	26
79-80	5.0	28
80-81	3.5	31
81-82	3.0	24
82-83	3.0	22
83-84	3.0	22
84-85	2.0	34
85-86	3.5	24
86-87	3.0	30
87-88	2.5	37
92-93	2.5	25
93-94	<u>2.5</u>	<u>29</u>
	87.5	486

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$$\phi_{AVG} = \frac{87.5}{18} = 4.9\%$$

$$S_{W_{AVG}} = \frac{486}{18} = 27\%$$

$$n = 18'$$

Rental Flow Equation

$$q = \frac{7.08 kh (P_e - P_w)}{\mu B_o \ln (r_e/r_w)} \quad (\text{Craft \& Hawkins})$$

For Seaman Cisco

$$\begin{aligned} P_e &= 3700 \text{ psi} \\ P_w &= 500 \text{ psi} \\ \mu &= 0.3 \text{ cp} \\ B_o &= 2.2 \text{ bbl/STB} \\ r_e &= 300 \text{ ft} \\ r_w &= 2.45 \text{ in} \\ h &= 12 \text{ ft} \end{aligned}$$

$$q = \frac{7.08 k (12) (3700 - 500)}{(0.3)(2.2) \ln \left(\frac{300 \times 12}{2.45} \right)}$$

$$q = 89,436 \text{ k}$$

$$@ q = 72 \text{ BOPD (initial testing),}$$

$$k = 72 \div 89,436$$

$$k = .81 \text{ md}$$

For Kemnitz Wolfcamp

$$\begin{aligned} P_e &= 2974 \text{ psi} \\ P_w &= 300 \text{ psi} \\ \mu &= 0.9 \text{ cp} \\ B_o &= 1.2 \text{ bbl/STB} \\ r_e &= 300 \text{ ft} \\ r_w &= 2.45 \text{ in} \\ h &= 18 \text{ ft} \end{aligned}$$

$$q = \frac{7.08 k (18) (2974 - 300)}{(0.9)(1.2) \ln \left(\frac{300 \times 12}{2.45} \right)}$$

$$q = 43,267 \text{ k}$$

$$@ q = 42 \text{ BOPD (initial testing),}$$

$$k = 42 \div 43,267$$

$$k = .97 \text{ md}$$

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Recovery Factors

$$R.F. = .11403 + .2719 \log k + .25569 S_w - .1355 \log \mu$$

$$- 1.5380 \phi - .00035 h \quad (\text{Craze \& Buckley})$$

For Seager Cisco

$$R.F. = .11403 + .2719 \log(.81) + .25569 (.34) - .1355 \log(.03)$$

$$- 1.5380 (.046) - .00035 (19)$$

$$R.F. = 17\%$$

For Kemnitz Wolfcamp

$$R.F. = .11403 + .2719 \log(.97) + .25569 (.27) - .1355 \log(.09)$$

$$- 1.5380 (.049) - .00035 (18)$$

$$R.F. = 10.5\%$$

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RESERVES

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$$\frac{\text{Reserves}}{\text{Seaman Cisco}} = 7758 \text{ Ah } \phi \left[\frac{1 - 5w}{B_{oi}} \right] \text{ R.F.}$$

$$= 7758 (40) (19) (.046) \left[\frac{1 - .34}{2.2} \right] (.17)$$

$$= \underline{\underline{13,832 \text{ STBO}}}$$

$$\frac{\text{Gas Reserves}}{\text{Seaman Cisco}} = 13,832 \times 1708 = \underline{\underline{23,625 \text{ MCF}}}$$

$$\frac{\text{Reserves}}{\text{Kennitz Wolfcamp}} = 7758 (80) (18) (.049) \left[\frac{1 - .27}{1.2} \right] (.105)$$

$$= \underline{\underline{34,946 \text{ STBO}}}$$

$$\frac{\text{Gas Reserves}}{\text{Kennitz Wolfcamp}} = 34,946 \times 391 = \underline{\underline{13,664 \text{ MCF}}}$$

SUMMARY

Oil Reserves

Kennitz Wolfcamp	34,946 STBO	72%
Seaman Cisco	13,832 STBO	28%
Total	48,778 STBO	100%

Gas Reserves

Kennitz Wolfcamp	13,664 MCF	37%
Seaman Cisco	23,625 MCF	63%
	37,289 MCF	100%