

Re: Cases 144477 and 78 Chesapeake's Chambers Strawn Unit and Waterflood

Hello Will,

We have reviewed the concern you have for the exclusion of the nearby Chambers 2 well from the Chambers Strawn unit and your concern with the possible inclusion of portions of the Atoka into the Unitized Formation. A review of our thoughts on the exclusion of the Chambers 2 is presented below; we continue to believe that separation of the Chambers 2 is the best approach in unitizing this mound.

We considered the possibility of placing the Chambers 2 well into the Chambers Unit but concluded that the Chambers 2 was in a separate mound and did not have effective pressure communication with our proposed mound. Two items lead to this conclusion: seismic interpretation and well performance.

Chesapeake has extensive three-dimensional (3D) seismic in this area and has utilized 3D interpretation since the mid-90s to guide drilling. During this period Chesapeake has been the most active driller in the mound area and, to my knowledge, has drilled no well that has not hit its intended mound. We, therefore, have high confidence in the 3D interpretations. The 3D seismic interpretation, augmented with well data, for the Chambers mound was presented at the hearing, in the proposed Chambers Strawn Unit's feasibility study as attachment 9, and is attached here for your convenience. The Strawn mound containing the Chambers 2 well was not presented in our exhibits. However, I have attached a phi-h isopach map derived from the seismic interpretation and well data. It shows a 40ft thick reservoir of about 70 acres containing two wells, the Chambers 1 and Chambers 2. The interpretation shows that each of the two mound have steeply dipping sides that approach or reach zero thickness resulting in two separate mounds.

Well performance supports the concept of separate mounds. The first well drilled in this area was the Chambers 1, which came on March 1974 with virgin pressure and a first month rate of 506 BOD and 868 McfD. This well's estimated ultimate recovery (EUR) is 443,908 BO and 1,104,130 Mcf; it has been a very strong well. The second well, the Chambers 7-1, was drilled 22 years later. It also came on with virgin pressure; it had a first month rate of 415 BOD and 733 McfD. This well's EUR is 529,950 BO and 1,853,355 Mcf, also a very strong well. The behavior of these wells indicates that they are in separate mounds with no pressure communication. The proposed Chambers Strawn Unit mound had the Alston 8-1 drilled in the next seven months and the Runnels 8-1 drilled 10 months later. Each well came on with lower pressure and lower rate and smaller EURs, as detailed in the "Well, Reservoir Data" attachment 5 to the Feasibility Study, and attached here for convenience. These wells indicate the continuous nature that exists within the mound and leads to the belief that these three wells are pressure communicated within the same mound. The Chambers 2 was the last well drilled in this area. The Chambers 2 started production September 2003 with initial monthly production averaging 75 BOD and 95 McfD with an EUR of 51,460 BO and 58,949. This is the weakest well in the area; it had clearly suffered pressure depletion and is

only 1436 ft. from the Chambers 1. We believe that well and mound performance add to the credibility of the concept of two separate mounds.

Chesapeake has extensive geophysical modeling in the Strawn mounds; we believe the model has been validated by many successful wells and we have high confidence in these interpretations. We believe the interpretation of two separate mounds is the best explanation of all the seismic, wellbore and performance data available and this interpretation is most likely to protect correlative rights of working and mineral owners.

We agree with your concern with the descriptive language of the Unitized Formation. The Atoka is not the focus of this secondary recovery unit and to insure that none of the Atoka is included in the description of the Unitized formation we propose the following:

**"Unitized Formation"** is defined as that stratigraphic interval occurring between a point of 100 feet above the Strawn Carbonate formation and the base of the Strawn Carbonate formation, said Strawn Carbonate interval occurring in the following Chesapeake Operating, Inc wells: between 11442 feet and 11738 feet (-7490 feet to -7786 feet subsea) in the., Runnels "8" well No. 1 (API No. 30-025-34264) located 780 feet from the South line and 1510 feet from the West line of Section 8, Township 16 South, Range 36 East, the Alston "8" No. 1 (API No. 30-025-33876) between 11,422 feet and 11,706 feet (-7,463 feet and 7,747 feet subsea) located 2,281feet from the South line and 531feet from the west line of Section 8, Township 16 South, Range 36 East, and the Chambers "7" No. 1 well (API No. 30-025-33623) between 11,376 feet and 11,660 feet (-7459 feet and -7,743 feet subsea) located 1,700 feet from the North line and 900 feet from the east line in Section 7, Township 16 South, Range 36 East N.M.P.M., Lea County, New Mexico as recorded on the sonic log of said well dated March 3, 1998.

Will, we hope the suggested language of the Unitized formation clarifies and constrains the Unitized formation to the Strawn formation and that the discussion and additional map adds to your understanding of our thoughts on separating the Chambers 2 from the proposed Chambers Strawn Unit. Please let us know if there are additional concerns.

Sincerely,

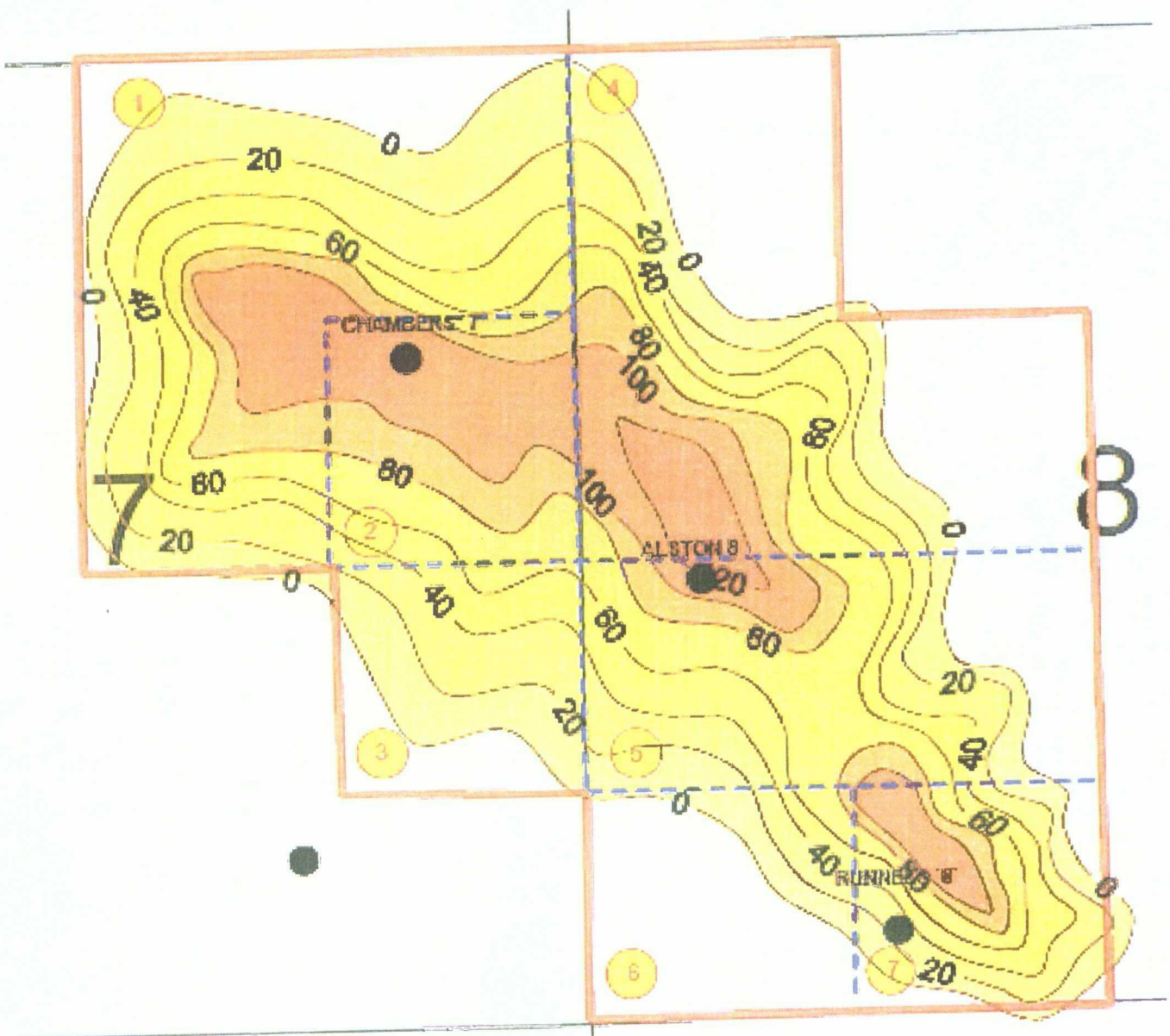


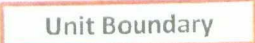


Chima Nzewunwah  
Geologist  
Chesapeake Operating, Inc



Everett Bradley  
Sen. Reservoir Engineer  
Chesapeake Operating, Inc.

# Proposed Chambers Strawn Unit



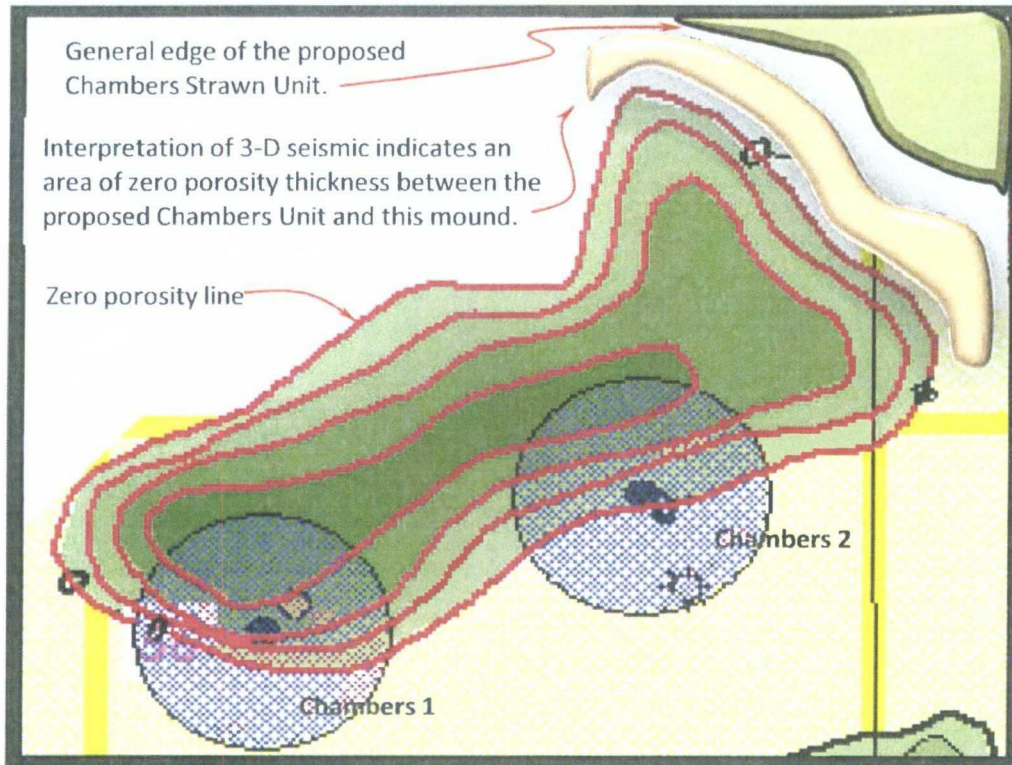
LEGEND	
	Unit Boundary
	Tract Boundary
	Tract Number

	Chambers Strawn Unit
	$\phi h$ Isopach Map
	18 Jan, 10; C. Nzewunwah



# Proposed Chambers Strawn Unit

**Isopach Map of Mound Containing Chambers 1 and Chambers 2**  
 This mound is just southwest of the Proposed Chambers Strawn Unit  
 Map is based upon interpretation of 3-D Seismic data and Well Log data



**Chambers 1** Chk Operates  
 First Production Mar 1994  
 17 year life remaining.

Rates	
1st Mnth	Present
506 BOD	6 BOD
868 Mcf	20 Mcf
651 BOE	9 BOE

17,296 BO &	55567 M	26,557	BOE Reserve
426,618 BO &	1048527 M	601,373	BOE Cumulative
443,914 BO &	1104094 M	627,930	BOE Est. Ult. Rec.

**Chambers 2** Chk Operates  
 3 year life remaining.

75 BOD	11BOD
95 Mcf	22 Mcf
91 BOE	15 BOE

3,631 BO &	7,041 M	4,805	BOE Res
37,332 BO &	49,126 M	37,332	BOE Cum
40,963 BO &	56,167 M	40,963	BOE eur

# Proposed Chambers Strawn Unit

## Well, Reservoir Data

	Chambers 7 No. 1	Alston 8 No. 1	Runnels 8 No. 1	Averages
1st Prod	Nov-96	May-97	Mar-98	
API	3002533623	3002533876	3002534264	258,846 BO
EUR Oil	529,950 BO	157,324 BO	89,265 BO	975,590 Mcf
EUR Gas	1,853,355 Mcf	541,504 Mcf	531,910 Mcf	1.33 Mcf/Bo
Initial GOR	1.1 Mcf/Bbl	1.7 Mcf/Bbl	1.2 Mcf/Bbl	11,392' top
Perfs	11,392' - 11,480'	11,444' - 11,464'	11,458'-60' 11,476'-94'	11,494' bottom
DST Interval	11,392'-404'	11,438' - 11,483'	No DST	DST data 3 wells
Oil Gravity	43.20 °API	44.70 °API		43.95 °API
BHP	4,224 Psi @ 11,376'	3,474 Psi @ 11,416'		7.18 md
Perm.	7.97 md*	6.39 md		
$h_i$ ( $\phi \geq 6\%$ ) (ft)	100	110	42	0.087 Avg. $\phi$ **
$h_i$ above O/W Contact	85	68	22	0.270 Avg. $S_w$ **
$\phi$ (frac.) above O/W	0.0865	0.0765	0.0988	0.730 Avg. $S_o$ **
$S_w$ (frac.) in net pay	0.265	0.215	0.331	1.455 Avg. $\beta_{oi}$
$S_o$ (frac.) in net pay	0.735	0.785	0.669	
$\beta_{oi}$ (bbl/bbl)	1.4512	1.4587		

\*Chambers 7 No. 1 had pressure transient test in August 23, 2001 with all pay perforated which showed permeability of 7.97 md.

\*\*Saturations in this table are the geometric mean from net pay log values. Average saturations in the reservoir, determined from the hydrocarbon pore volume map, are 34% water and 66% oil.