NMOGA

EXHIBIT E

Discussion Outline

- Modern horizontal well development/reservoirs are different than when depth bracket allowable and gas-oil ratio rules were promulgated. These restrictions currently promote waste.
- No negative effects seen from unrestricted production.
- Operators are producing above allowables for a material amount of time.
- Industry-wide completion evolution is significantly improving recovery factors.
- The rules need to allow for differing operational philosophies.



Reservoir Characteristics of Conventional Reservoirs

- High permeability, continuous reservoirs drained large areas with minimal stimulation
- Reservoir pressure was supported by one or more drive mechanisms
- Allowables helped mitigate potential waste and correlative rights issues associated with withdrawal rates

Conventional Drive Mechanisms

- Solution Gas Drive
- Water Drive
- Gas-Cap Expansion Drive
- Gravity Drainage Drive
- Rock and Fluid Expansion





New Reservoirs, New Rules

- Unconventional reservoirs are low permeability, heterogeneous, and discontinuous.
- It is difficult to affect large areas through the rock matrix due to the low permeability and discontinuity of the reservoir.
- The current rules promote waste in unconventional reservoirs by reducing the economic incentive to develop.
- In the future, conventional reservoir discovery/development will be the exception.

- Unconventional reservoirs have very small drainage areas relative to their fracture face
- Need to maximize surface area/exposure to the reservoir to prevent waste

Unconventional Reservoir







Aerial View



High Production Rates from Horizontal Wells Are Not A Concern







Time Value of Money

Curtailing early production hurts project economics and diminishes economic incentive to develop



Economic Effect of Curtailment



ОΝСНО

Impact of Optimized Full-Scale Development





ONC

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Impact of Optimized Full-Scale Development





ONCHO [1] Production normalized to 4,400' TL

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Wolfcamp A



CONCHO [1] Product on normalized to 4,400' TL

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Effect of Bubble Point Pressure on Well Performance



• Wolfcamp A $(P_i > > P_b)$

 Initial reservoir pressure is well above bubble point creating a flat GOR profile

• Avalon Shale $(P_i \ge P_b)$

 Initial reservoir pressure is slightly greater than bubble point pressure creating an immediately increasing GOR profile





[1] Production normalized to 4,400' TL NOTE: Orrtanna 20 Federal 701H and Orrtanna 20 Federal 702H (Wolfcamp A); Mesa B 8115 JV P Com 002H and Mesa B 8115 JV P Com 004H (Avalon Shale)

Consensus Among the Industry





Consensus Among the Industry



Impact of Completion Intensity on Well Productivity





[1] Production normalized to 4,400' TL

Incremental Recovery or Acceleration?





Avalon Shale







Well Name	Month Completed	Treated Lateral Length (ft)	Proppant/Ft (Ibs/ft)	Fluid/Ft (gals/ft)	Cluster Spacing (ft)	Norm. 12 Month Cumulative Oil (MBO)
Patron 23 Federal 1H	08/2012	3,685	1,040	1,090	100	35
Patron 23 Federal 2H	03/2015	4,058	1,580	1,650	50	67

- Larger completion resulted in 90% increase in cumulative recovery over the first year
- Results in improved economics and recovery factors



Optimum Development of Large Resources



Red Hills Avalon Type Log

Avalon Shale Example:

- The Avalon Shale can have 1,000 ft. of hydrocarbon bearing and economic pay.
- There is no single right answer to economic development of this resource.
- Operators have differing economic criteria and conditions.
- Rules need to allow for differing operational philosophy.



Stacked Development



СОИСНО



