SUGGESTED CHANGES TO THE 1989 AAPL FORM OPERATING AGREEMENT TO ADDRESS HORIZONTAL DEVELOPMENT

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I. **Background.**

The concept of drilling a horizontal well has been around the oil patch for longer than might be suspected. According to some reports, the first true horizontal well was drilled near Texon, Texas in 1929. However, it was not until the 1980’s that the technology behind horizontal drilling really began to develop. At first, domestic horizontal drilling was primarily limited to the oil fields producing from the Austin Chalk Formation in south central Texas. This limestone oil-bearing formation is highly permeable and contains extensive naturally-occurring vertical fractures that facilitate the flow of oil into the wellbore. A conventional vertical well would at best intersect one of these vertical fractures. Operators soon realized that drilling a horizontal well would ensure that multiple fractures would be intersected, resulting in an exponential increase in oil production. By the early 1990’s, operators drilling to the Austin Chalk Formation began to experience initial production rates of over a 1,000 barrels a day from horizontal wells.

**Snapshot of Horizontal Drilling for the Year 1990**
- More than 1,000 horizontal wells were drilled to date
- Roughly 850 were drilled in the Austin Chalk Formation
- Less than 1% of all domestic gas wells were horizontal wells
- 6.2% of all domestic oil wells were horizontal wells

As multi-stage hydraulic fracturing technology improved, horizontal drilling began to rapidly proliferate. Hydraulic fracturing enabled operators to artificially create fractures in the reservoir rock or enhance naturally occurring fractures. This technology led to an expansion of horizontal drilling techniques beyond naturally fractured formations like the Austin Chalk, into shale and other tight oil formations such as the Bakken Formation in North Dakota, the Eagleford Formation in South Texas, and more recently, the Niobrara Formation in Colorado and Wyoming. Hydraulic fracturing also enabled operators to apply horizontal drilling techniques to gas wells, causing a massive expansion of horizontal drilling into the Barnett Shale Formation in North Texas, the Haynesville Shale Formation in Texas and Louisiana, the Marcellus Shale Formation in the Northeastern states, and other prolific gas plays.

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1 This paper is an update and revision of a paper by the author titled *Horizontal Drafting: Why Your Form JOA May Not Be Adequate For Your Company’s Horizontal Drilling Program*, published in the Rocky Mountain Mineral Law Foundation Journal, Vol. 48, No. 1 (Spring, 2011), 51.
3 *Id.* at 13 (by the end of 1990, 85% of all domestic horizontal wells had been drilled to the Austin Chalk formation).
4 *Id.*
5 *Id.* at 8.
The first table below shows the number of horizontal drilling permits approved in Texas from 2000 through 2011 compared to the total number of permits approved during such years. The second table shows the number of horizontal drilling permits approved in the Barnett shale from 2000 through 2011.\(^7\)

<table>
<thead>
<tr>
<th>Year</th>
<th>Texas Horizontal</th>
<th>Total</th>
<th>Pct.</th>
<th>Barnett Shale Horizontal</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>535</td>
<td>13,899</td>
<td>3.85%</td>
<td>2000</td>
</tr>
<tr>
<td>2001</td>
<td>644</td>
<td>14,410</td>
<td>4.47%</td>
<td>2001</td>
</tr>
<tr>
<td>2002</td>
<td>498</td>
<td>11,434</td>
<td>4.36%</td>
<td>2002</td>
</tr>
<tr>
<td>2003</td>
<td>908</td>
<td>14,654</td>
<td>6.20%</td>
<td>2003</td>
</tr>
<tr>
<td>2004</td>
<td>1,505</td>
<td>16,912</td>
<td>8.90%</td>
<td>2004</td>
</tr>
<tr>
<td>2005</td>
<td>2,602</td>
<td>19,548</td>
<td>13.31%</td>
<td>2005</td>
</tr>
<tr>
<td>2006</td>
<td>3,762</td>
<td>22,328</td>
<td>16.85%</td>
<td>2006</td>
</tr>
<tr>
<td>2007</td>
<td>5,871</td>
<td>23,917</td>
<td>24.55%</td>
<td>2007</td>
</tr>
<tr>
<td>2008</td>
<td>7,740</td>
<td>28,847</td>
<td>26.83%</td>
<td>2008</td>
</tr>
<tr>
<td>2009</td>
<td>4,730</td>
<td>15,989</td>
<td>29.58%</td>
<td>2009</td>
</tr>
<tr>
<td>2010</td>
<td>7,150</td>
<td>22,511</td>
<td>31.76%</td>
<td>2010</td>
</tr>
<tr>
<td>2011</td>
<td>10,333</td>
<td>28,291</td>
<td>36.52%</td>
<td>2011</td>
</tr>
</tbody>
</table>

This table shows the number of horizontal drilling permits approved in Colorado from 2009 through 2011 compared to the total number of permits approved during such years.\(^8\)

<table>
<thead>
<tr>
<th>Year</th>
<th>Colorado Horizontal</th>
<th>Total</th>
<th>Pct.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>147</td>
<td>5,159</td>
<td>2.85%</td>
</tr>
<tr>
<td>2010</td>
<td>333</td>
<td>5,996</td>
<td>5.55%</td>
</tr>
<tr>
<td>2011</td>
<td>896</td>
<td>4,936</td>
<td>18.15%</td>
</tr>
<tr>
<td>2012</td>
<td>268</td>
<td>988</td>
<td>27.13%(^9)</td>
</tr>
</tbody>
</table>

**A. Disadvantages of Horizontal Drilling.**

1. **Increased Drilling Costs.** The average cost to drill and complete a horizontal well can be as much as 1.5 to 3 times as much as a conventional vertical well.\(^10\) This is largely due to the increased total measured depth of a horizontal wellbore, which includes the total vertical depth of the wellbore plus the length of the horizontal wellbore segment. Since the objective formation is the same, a horizontal well will typically have the same vertical depth as a conventional vertical well, but the horizontal segment may extend an additional 8,000 feet or

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\(^7\) Data obtained from the Texas Railroad Commission online W-1 database.

\(^8\) Colo. Oil and Gas Conservation Comm’n Staff Report (Newsletter) (Apr. 16, 2012), 22

\(^9\) Data through April 6, 2012.

more. Furthermore, each additional foot drilled at the deepest depths typically costs many times more than each foot drilled at the shallowest depths. The advent of multistage hydraulic fracturing and other completion techniques have also dramatically increased the cost of a horizontal well. An alternative method of drilling a horizontal well is to reenter and convert an existing vertical well into a horizontal well, which can cost on average 0.4 to 1.3 times the cost to drill a conventional vertical well. Horizontal drilling and multistage fracturing also require sophisticated drilling rigs and equipment which are costly and may be subject to limited availability, as well as substantial amounts of water, sand and ceramic proppant. The need for these additional materials increases the cost of horizontal wells, and in areas where water is scarce, can create other difficulties.

B. **Advantages of Horizontal Drilling.**

1. **Greater Exposure to Reservoir.** Most oil and gas reservoirs are much more extensive in their horizontal dimension than in their vertical (thickness) dimension. For example, a reservoir may only be a few dozen feet thick, but could extend horizontally for thousands of feet. By drilling horizontally, the wellbore extends through the reservoir on a parallel plane, rather than a perpendicular plane, thereby exposing the wellbore to significantly more reservoir rock than with a conventional vertical wellbore. The longer the horizontal segment of the wellbore, the more reservoir exposure.

2. **Higher Production Rates.** Because of the greater exposure to the reservoir for horizontal wells, production rates and reserves are achieved at 2.5 to 7 times the rate of vertical wells. A higher production rate translates into a higher rate of return and results in payout status for a horizontal well being reached sooner.

3. **Greater Recovery in Certain Reservoir Types.** In addition to small pay-zone thickness, certain reservoir properties such as low permeability, natural fractures, and coning of water or gas limit the recovery that can be achieved with a conventional vertical well. By drilling horizontally through the reservoir, these limitations can be minimized, or in the case of natural fracturing, can even be exploited. In the Bakken Formation in North Dakota, the increase in technically recoverable reserves due to horizontal drilling has been dramatic. In 2005, the North Dakota Department of Mineral Resources estimated that 14 million barrels of oil were technically recoverable from the Bakken Formation. By 2008, after significant technological advancements in horizontal drilling, that figure increased to 2.09 billion barrels. It is expected that after accounting for further technological advancements from 2008 to date, particularly multistage hydraulic fracturing, that figure will increase much higher.

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11 Drilling Sideways, supra n. 2 at 10.
12 Joshi, supra n. 10 at 2.
13 It is estimated that each Bakken well requires 2 to 4 million gallons of water and 3 to 5 million pounds of sand and ceramic proppant.
14 Drilling Sideways, supra n. 2 at 1.
16 Drilling Sideways, supra n. 2 at 5.
17 Joshi, supra n. 10 at 3.
18 Nordeng, supra n. 6 at 9.
19 Ed Murphy, The Oil Potential of the Bakken Source System, N.D. Dept. of Mineral Resources (Newsletter) (June 2010), 11. The 2.09 billion barrel estimate is based upon a 1.4% rate of recovery of the estimated 149 billion barrels
4. **Less Wells Required to Drain Reservoir.** Because of the greater exposure to the reservoir for horizontal wells, less wells are required to effectively drain the reservoir.\(^{20}\) This is particularly true where multi-lateral wells are drilled containing multiple horizontal segments. The aggregate surface footprint can be significantly reduced by use of horizontal wells, which is particularly important in urban areas such as the Barnett Shale or environmentally sensitive areas.\(^ {21}\) For example, it is estimated that to effectively drain a 640-acre section in the Barnett Shale using conventional vertical wells would take 4 times the number of wells and up to 10 times the surface disturbance than if horizontal wells were used.\(^ {22}\)

5. **Avoid Long Term Production Problems.** Over time the wellbore and well equipment begin to deteriorate or wear out. Because production is obtained at a much higher rate, the reservoir is drained sooner.\(^ {23}\) This may enable the operator to avoid reworking the well or replacing production equipment which can be costly and inefficient.

In sum, horizontal wells make sense economically. Although a horizontal well can cost as much as three times or more to drill and complete as a vertical well, the higher production rates and reserves, greater recovery and the reduced number of wells required to drain the reservoir more than offset this additional cost.\(^ {24}\)

II. **Modifying the JOA Form for Horizontal Drilling.**

Unfortunately, the AAPL 1989 Form Joint Operating Agreement (the “1989 Form JOA”) does not address horizontal drilling, nor does any prior version.\(^ {25}\) As a result, there are a number of modifications to a standard joint operating agreement that should be considered when a horizontal well is contemplated. The balance of this paper will discuss the various modifications that should be considered and set forth sample provisions. This paper will focus exclusively on the 1989 Form JOA. It should be noted that there are a number of modifications to the 1989 Form JOA that should be considered when negotiating the terms of an operating agreement (e.g. deletion of preferential rights),\(^ {26}\) however this paper is limited solely to those modifications that

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\(^{20}\) Helms, *supra* n. 15 at 3.
\(^{21}\) *Drilling Sideways, supra* n. 2 at 4.
\(^{23}\) *Drilling Sideways, supra* n. 2 at 15 (A 1989 study of 91 horizontal wells found that 3/4ths of the reserves were recovered in the first 3 years).
\(^{25}\) By contrast, in 2007 the Canadian Association of Petroleum Landmen updated its form CAPL Operating Procedure, the Canadian counterpart to the AAPL Form Joint Operating Agreement, in part to include definitions and other provisions addressing horizontal drilling. I have been informed that the AAPL Forms Committee is currently drafting revisions to the 1989 Form JOA to address horizontal drilling, which may be released as early as 2013.
pertain to horizontal drilling. Attached hereto as Exhibit “A” is a markup of the 1989 Form JOA containing many of the modifications discussed herein.

A. Article I – Definitions.

There are a number of unique terms associated with horizontal drilling that the parties should consider formally defining in Article I. These include “horizontal well” “lateral” and “total measured depth.” In addition, many existing defined terms such as “completion” “deepen” “drillsite” “plug back” “recompletion” and “sidetrack” take on a new meaning in the context of a horizontal well. Article I should be amended to add alternate definitions or clarifying language for these existing terms to avoid any ambiguity or unintended interpretations in the horizontal context.

The parties should consider amending Article I to add definitions of the following new terms:

1. **Horizontal Well**. A formal definition of a horizontal well can vary greatly. In jurisdictions such as Texas, North Dakota or Wyoming where a statutory or regulatory definition exists, a horizontal well can be defined simply by reference to this statutory or regulatory definition.

   “Horizontal Well” means a well with a horizontal displacement of the well bore drilled at an angle of at least eighty degrees within the productive formation of at least three hundred feet. N.D. Century Code §57-51.1-01(4).

   Horizontal well shall mean a wellbore drilled laterally at an angle of at least eighty degrees (80º) to the vertical and with a horizontal projection exceeding one hundred feet (100′) measured from the initial point of penetration into the productive formation through the terminus of the lateral in the same common source of hydrocarbon supply. Wyo. Oil & Gas Conservation Comm’n Rules, Ch. 1 §2(y).

   Horizontal Drainhole Well – Any well that is developed with one or more horizontal drainholes having a horizontal drainhole displacement of at least 100 feet. Tex. Admin. Code §3.86(a)(4).

   The term “Horizontal Well” shall have the same meaning as “Horizontal Drainhole Well” defined in Railroad Commission of Texas Rule 86.

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27 In addition to defining “horizontal drainhole well”, Tex. Admin. Code §3.86, also known as Railroad Commission of Texas Rule 86, contains a number of additional defined terms pertaining to horizontal wells. If the operating agreement covers lands in Texas, deference should be given to these definitions.
In the absence of a statutory or regulatory definition, the definition of a horizontal well can vary from a simple, non-technical definition to a more complex and technical definition.\textsuperscript{28} Care should be exercised in drafting a definition to distinguish a horizontal well from a more common directional well. In a directional well, the wellbore deviates from a vertical orientation in order to reach a bottom-hole location some distance from the surface location. However, the completion interval of a directional well does not extend horizontally through the objective formation, but rather penetrates the formation and is completed much the same way as a conventional vertical well.

The term “Horizontal Well” shall mean a well containing a single Lateral which is drilled, Completed or Recompleted in a manner in which the Lateral (1) extends at least one hundred (100’) feet in the objective formation and (2) exceeds the vertical component of the completion interval in the objective formation.

2. **Lateral.** The term “Lateral” refers to the horizontal segment of the wellbore, or more precisely that portion of the wellbore from the point at which the wellbore deviates from a vertical orientation, or “kick off point” to the terminus of the wellbore.

The term “Lateral” shall mean that portion of a wellbore that deviates from approximate vertical orientation to approximate horizontal orientation and all wellbore beyond such deviation to Total Measured Depth.

3. **Total Measured Depth.** The term “Total Measured Depth” includes the vertical depth of the wellbore from the surface to the point at which the wellbore is deviated, or the “kick-off” point, combined with the length of the lateral segment of the wellbore. In the case of a multi-lateral well, each lateral, along with the common vertical wellbore, should be treated as a separate wellbore and have a corresponding Total Measured Depth, unless production from each lateral is commingled in the common vertical wellbore.

The term “Total Measured Depth”, when used in connection with a Multi-lateral or Horizontal Well, shall mean the distance from the surface of the ground to the terminus of the wellbore, as measured along the wellbore. Each Lateral taken together with the common vertical wellbore shall be considered a single wellbore and shall have a corresponding Total Measured Depth. Notwithstanding the foregoing, in the case of a Multi-Lateral Well, if the production from each Lateral is to be commingled in the common vertical wellbore then all the Laterals and the vertical wellbore shall be considered collectively as one wellbore. When the proposed operation(s) is the drilling of, or operation on, a Horizontal or Multi-Lateral Well, the terms “depth” or “total depth” wherever used in the Agreement shall be deemed to read “Total Measured Depth” insofar as it applies to such well.

4. **Multi-lateral Well.** Due to increases in technology it is possible to drill multiple laterals from the same wellbore radiating in different directions or targeting formations at different depths. These laterals may be completed in the same formation or in multiple formations.

The term “Multi-lateral Well” shall mean a well which contains more than one Lateral which is drilled, Completed or Recompleted in a manner in which the horizontal component of the completion interval of each Lateral (1) extends at least one hundred (100’) feet in the objective formation and (2) exceeds the vertical component of the completion interval in the objective formation.

5. **Vertical Well.** The parties may also wish to define “Vertical Well”.

The term “Vertical Well” shall be shall mean a well drilled, Completed or Recompleted other than a Horizontal or Multi-lateral Well.

The parties should consider amending Article I to add alternate definitions or clarifying language for the following existing defined terms:

1. **AFE.** As discussed in greater detail below, completion operations are typically included in the original well proposal for a horizontal well, setting up a single election for all operations to drill and complete the horizontal well.\(^{29}\) Depending upon the completion techniques of the proposed horizontal well, and in particular, the number of frac stages contemplated, the costs to complete a horizontal well may comprise as much as 70% of the total well costs. For a multi-lateral well, the drilling and completion of all laterals is similarly considered to be a single operation covered by a single AFE. As a result, the AFE for a horizontal or multi-lateral well should clearly indicate that the proposed well is a horizontal or multi-lateral well and that the costs of all drilling and completion operations (for all laterals, in the case of a multi-lateral well) are included in the AFE. **Add the following to the end of Article I.A.:**

An AFE for a Horizontal or Multi-lateral Well shall clearly stipulate that the well being proposed is a Horizontal or Multi-lateral Well and shall include all Completion operations for the proposed Horizontal or Multi-lateral Well.

2. **Completion/Complete.** In the 1989 Form JOA, “Completion” or “Complete” is defined as “a single operation”. Given the advances in completion techniques, including multi-stage hydraulic fracturing, defining completion as a single operation is inaccurate.\(^{30}\) It is not uncommon for a horizontal well to have 20 or more frac stages, with a frac plug inserted between each frac interval and additional perforating conducted at each frac stage. In addition, the


existing definition of Completion contemplates that a vertical well may be completed in multiple zones. However, in the context of a horizontal or multi-lateral well, the entire lateral segment is typically located in a single zone, therefore, each lateral will be completed only in the zone in which the lateral is drilled. **Add the following to the end of Article I.B.:**

> When used in connection with a Horizontal or Multi-lateral Well, the term “Completion” or “Complete” shall mean a series of operations within the Lateral(s) intended to complete a well as a producer of Oil and Gas, including, but not limited to, the setting of production casing, perforating, hydraulic fracturing, well stimulation and production testing.

3. **Deepen.** In the vertical context, deepen means to drill below the current or proposed depth, whereas in the horizontal context, deepen means to extend the length of the lateral segment of the wellbore. **Add the following to the end of Article I.D.:**

> When used in connection with a Multi-lateral or Horizontal Well, the term “Deepen” shall mean an operation whereby a Lateral is drilled to a horizontal distance greater than the distance set out in the well proposal approved by the Consenting Parties, or to a horizontal distance greater than the horizontal distance to which the Lateral was previously drilled.

However as discussed below, this revision creates difficulties with respect to the non-consent penalties under Article IV in the event any party elects to go non-consent on a proposal to deepen a horizontal well.

4. **Drillsite.** In the vertical context, drillsite is the oil and gas lease on which the proposed well is to be located. For horizontal wells, each separate tract penetrated by the vertical and horizontal completion interval of the wellbore is considered a drillsite tract for purposes of allocating production. **Add the following to the end of Article I.F.:**

> The term “Drillsite” when used in connection with a Horizontal or Multi-lateral Well shall mean the surface location and the Oil and Gas Leases or Oil and Gas Interests within the spacing unit on which the wellbores, including all Laterals, are located.

5. **Plug-back.** In the vertical context, plug-back means to abandon a deeper formation and attempt to complete the well in a shallower formation. In the horizontal context, since the entire lateral segment is typically located in a single formation, a plug-back would entail abandoning the entire lateral and completing the wellbore in a shallower formation. **Add the following at the end of Article I.N.:**

> The term “Plug-back” when used in connection with a Horizontal or a Multi-lateral Well shall mean an operation to test or Complete the well at a stratigraphically shallower Zone in which an operation has been or is

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being Completed and which is not within an existing Lateral. Any operation to reduce the length of any Lateral shall not be considered a Plug-back.

6. Recompletion/Recomplete. In the vertical context, recompletion means to abandon a completion in one zone and attempt to complete the well in a different zone. In the horizontal context, any recompletion operations, such as additional fracturing operations, are likely to be conducted within the existing lateral. Add the following at the end of Article I.N.:

The term “Recompletion” or “Recomplete” when used in connection with a Horizontal or a Multi-lateral Well shall mean Completion operations within an existing Lateral that are conducted after the original Completion operations in the Horizontal or a Multi-lateral Well are conducted.

7. Sidetrack. Unless modified, the term “Sidetrack”, defined as “the directional control and intentional deviation of a well from vertical so as to change the bottom hole location” could be interpreted to encompass any horizontal drilling operations. This term should be modified in connection with a horizontal well to make clear that the intentional deviation of the wellbore shall not be considered a sidetrack unless it changes the radial direction or objective formation of the lateral(s) as initially proposed in the AFE. Add the following at the end of Article I.Q.:

When used in connection with a Horizontal or Multi-lateral Well, the term “Sidetrack” shall mean the directional control and intentional deviation of a well outside the existing Lateral(s) so as to change the Zone or the radial direction of a Lateral as originally proposed. Drilling operations which are intended recover penetration of the target interval which are conducted in a Horizontal or Multi-lateral well shall be considered as included in the original proposed drilling operations.

The parties may wish to add definitions of other terms or make further modifications to existing defined terms as is necessary. Once defined, the parties should be sure to use these defined terms throughout the operating agreement, particularly in Article XVI, to avoid ambiguity.

B. Article IV.A – Title Examination

As noted above, each separate tract penetrated by the vertical or horizontal segment of the completion interval is considered a drillsite tract for purposes of allocating production. Thus, a drilling title opinion should cover all tracts penetrated by the wellbore of a horizontal well. The title opinion should also cover the surface location, which may or may not be within the boundaries of the spacing unit. If the definition of “Drillsite” is amended as suggested above, then no amendment to Article IV.A. is necessary. Otherwise, insert the following in line 53 right after “Drillsite”:

32 Gibson, supra n. 30 at 26.
33 Roach, supra n. 29 at §5.03[6].
“or in the case of a Horizontal or Multi-lateral Well, the surface location and all the Oil and Gas Leases or Oil and Gas Interests within the spacing unit on which the wellbores, including all Laterals, are located,”

One troubling issue that has taken on a new twist in the context of horizontal drilling is the presence of unleased tracts in the unit. In the vertical context, an operator would be prevented by the rule of trespass from drilling a well on a drillsite tract that is 100% unleased.\textsuperscript{34} Since every tract penetrated by the wellbore of a horizontal well is a drillsite tract, the rule of trespass would prevent an operator from drilling a horizontal well through a tract that is 100% unleased, or where 100% of the working interest in the tract is non-consenting. The question arises however, whether a force pooling order is sufficient to overcome the rule of trespass, permitting an operator to drill a horizontal well that penetrates a tract that is 100% unleased or 100% non-consenting. \textit{Continental Resources, Inc. v. Farrar Oil Co.}\textsuperscript{35} is the only reported decision the author is aware of where this issue has been addressed.\textsuperscript{36}

In \textit{Farrar}, Continental proposed to drill a horizontal well through tracts in which Farrar owned 100% of the working interest. Farrar refused to participate in the well and took the position that any penetration of his tracts by the horizontal wellbore would be subsurface trespass. In response, Continental obtained a force pooling order covering the entire section. The North Dakota Supreme Court held that the North Dakota Industrial Commission’s police power, exercised by the issuance of the force pooling order, trumped Farrar’s subsurface trespass claim.\textsuperscript{37} At least one commentator has argued that the holding of \textit{Farrar} should extend to all producing states with force pooling regulatory schemes.\textsuperscript{38} Yet, until this issue is addressed in other jurisdictions, caution is advised when unleased tracts are encountered when examining title for a horizontal well outside of North Dakota. It should be noted however, that the title examiner is not always aware of the proposed path of the horizontal well, or whether certain tracts are 100% non-consenting.

Where horizontal development occurs in plays where there is current production from vertical wells, there may be existing pooling agreements in place that are not limited to production from a particular well. Due to the shape and size of the spacing unit for a horizontal well, it is possible that a prior pooling agreement may cover lands both inside and outside of the spacing unit. This may result in the allocation of a portion of production from the horizontal well to all of the owners in lands covered by the pooling agreement, including those lands outside of the horizontal spacing unit. Under Texas law, the doctrine of Confusion of Goods

\textsuperscript{34} See Steven W. Ellis, \textit{Pooling and Unitization: Issues Arising From Unpooled or Unleased Interests}, State Bar of Texas, 20\textsuperscript{th} Ann. Advanced Oil, Gas and Energy L. Inst., ch. 18 (2002) for a discussion on unleased interests in both drillsite and non-drillsite tracts in the vertical context.

\textsuperscript{35} 559 N.W.2d 841 (N.D. 1997)

\textsuperscript{36} Related issues arising in Texas are violations of Rule 37 due to partially unleased tracts within a horizontal unit, and leased but unpoled interests in the horizontal unit. See Joe T. Sanders II, \textit{Legal Issues Arising From Horizontal Drilling}, 29\textsuperscript{th} Ann. Advanced Oil, Gas and Energy L. Inst., ch. 10 (2011), Whitworth, supra n. 31, and Bruce M. Kramer, \textit{Pooling for Horizontal Wells: Can They Teach An Old Dog New Tricks}, Rocky Mtn. Min. L. Inst., ch. 8A (Dec. 2010) for a detailed discussion of these issues.

\textsuperscript{37} 559 N.W.2d at 846 (in conclusion, the court stated “[t]o hold otherwise would frustrate the purposes of the North Dakota Resources Act and would make an Industrial Commission’s forced pooling order ineffectual.”).

\textsuperscript{38} Kramer, supra n. 36 at 18 (arguing that “the adoption of state conservation legislation effectively changes the common law rule of trespass”).
may apply, requiring proof with reasonable certainty of the volume of production attributable to the lands covered by each pooling agreement, or payment to the owners in each pooling agreement as if all production came from the lands covered by their pooling agreement. One solution is to amend the prior pooling agreements to limit each to production from the corresponding vertical well. Another solution is to enter into a production sharing agreement with all the owners in the lands covered by the various pooling agreements, whereby each party agrees to a specified allocation of production from the horizontal well.

C. **Article V.D – Rights and Duties of Operator**

The 1989 Form JOA added an entire set of provisions to Article V designed to protect non-operating parties. Among other items, these provisions (1) grant the non-operating parties access to the drillsite and other areas of operation, (2) grant the non-operating parties access to review the operator’s books and records, (3) upon the request, require the operator to furnish the non-operating parties with daily drilling reports, completion reports, well logs, and other reports filed with state or other governmental agencies, and (4) require the operator to test all zones encountered which may reasonably be expected to be productive in paying quantities based upon examination of the well logs or other well or test data.

These provisions have been considered by some as too non-operator friendly, but they may be particularly problematic in connection with horizontal drilling. The technology involved in the drilling, fracture stimulation and completion of a horizontal well is rapidly changing. Operators who are active in horizontal drilling often consider daily drilling reports, well logs, completion reports and other information to be proprietary. The operator may also be subject to confidentiality restrictions in drilling contracts or service agreements with third parties. Due to the extremely competitive nature of many of the current horizontal plays, the operator may also wish to keep completion reports, initial production rates and other well information confidential so that competitors do not snatch up adjoining acreage. On the other hand, non-operators who have consented to a particular operation will typically insist on the right to receive all information obtained in connection with such operation.

As drafted, the 1989 JOA Form grants each “Non-Operator” the right to receive daily drilling reports, completion reports, well logs or other well information, regardless of whether they consented to the operation to which such information pertains. This is unfair to the consenting parties who bear all the risk of drilling the initial well, which if successful, proves up the acreage. Once the information from the initial well is known, the risk to participate in...
subsequent wells is substantially reduced. By contrast, under the 1989 Form JOA, access to title opinions is limited to consenting parties only.\textsuperscript{47} The operator should similarly limit the right to receive well information to the non-operating parties who consented to the horizontal drilling operations. Insert “participating” immediately before each instance of “Non-Operator” in Articles V.D.5, V.D.6 and V.D.7.

Or add the following at the end of Article V.D.7:

Notwithstanding anything in this Agreement to the contrary, the rights of a Non-Operator as set forth in Articles V.D.5, V.D.6 and V.D.7 shall only apply in favor of those Non-Operator parties who are Consenting Parties with respect to a proposed operation, until such time as the Consenting Parties are no longer entitled to the Non-Consenting Party's share of production, or the proceeds therefrom, attributable to the proposed operation in which the Non-Consenting Parties did not participate.

The non-consenting parties are entitled to the well information at some point – certainly by the time payout of the non-consent penalties is reached.\textsuperscript{48} However, the operator is justified in withholding well information from non-consenting parties for a period of time, if for no other reason than to discourage a “wait-and-see” approach where a party goes non-consent on the initial well, but then obtains the well information from the initial well in time to make an election on subsequent wells.\textsuperscript{49}

To the extent well information is furnished by the operator to a non-operator, the operator should consider adding a provision that requires the non-operating party to treat such information as confidential. Add the following at the end of Article V.D.7:

Any information furnished to or obtained by a Non-Operator pursuant to Articles V.D.5, V.D.6 and V.D.7 shall be maintained as confidential by the Non-Operator and shall not be disclosed by the Non-Operator without the prior written consent of Operator.

If more comprehensive restrictions on disclosure are desired, the operator should consider adding the following to Article XVI – Other Provisions:

It is recognized that certain horizontal drilling techniques, processes and equipment which may be utilized by Operator, or which may be utilized by third parties with whom Operator contract on a proprietary and confidential basis, as well as all data and information collected from the use of the techniques, processes, and equipment, or arising at a future date from same, either because of agreements or techniques developed by Operator, or agreements entered into after the execution of this Agreement, are confidential and proprietary to Operator. Accordingly, it

\textsuperscript{47} Art. IV.A.
\textsuperscript{48} Roach, supra n. 29 at §5.03[4]; Curry, supra n. 26 at 8.
\textsuperscript{49} Curry, supra n. 46 at 8.
is agreed that notwithstanding anything contained in this Agreement to the contrary, any process, information, equipment, or data that is, or may become, of a proprietary and confidential nature to Operator, either through contract or by its own endeavors regarding the exploration for or the drilling of a Horizontal or Multi-lateral Well, shall be and remain the sole property and information of Operator (and where appropriate, the party with whom it has contracted for the proprietary and confidential process, information, equipment, or data); and the process, information, equipment, or data shall not be divulged to the other parties until the time as the contract or proprietary right shall expire or until Operator shall deem the information to be public knowledge (either under the terms of an existing agreement or by its own pronouncement). In addition, at any time or times as any proprietary and confidential processes, techniques, or equipment are being utilized, Operator may restrict the parties’ access to the Contract Area.\(^50\)

D. Article VI.A – Initial Well.

When it is intended that the Initial Well is to be drilled as a horizontal well, the description of the Initial Well, in particular the proposed length of the horizontal segment of the wellbore, should be carefully drafted.\(^51\) The deeper the wellbore and the longer the lateral, the more expensive it is to drill, as each additional foot drilled at the deepest depths typically costs several times more than each foot drilled at the shallowest depths.\(^52\) It can also be difficult to predict how long a horizontal segment can be drilled, and the risk of encountering impenetrable rock or other problems increase as the drilling gets deeper. Due to these increased cost and operational risk factors, an operator may be reluctant to commit to drill to a specified horizontal length. On the other hand, a party may be obligated by a farmout to drill to a specific horizontal length in order to earn under such agreement, or to cross a lease line in order to perpetuate certain leases.\(^53\) In this case, the party would want the proposed horizontal length to be specifically defined to provide needed certainty. Where the operator wants to retain flexibility with regard to how long the horizontal segment must be drilled, consider inserting the following provisions in Article VI.A:

- a Horizontal Well with a single Lateral to a vertical depth of ____ feet or
- a depth sufficient to penetrate the ______ formation, whichever is the lesser, and to a targeted horizontal distance sufficient in Operator’s opinion to test the ______ formation.\(^54\)

Where the operator wants to retain maximum flexibility with regard to how long the horizontal segment must be drilled, consider also inserting the following provision in Article VI.A:

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\(^50\) Derman, supra n. 26 at 182.
\(^51\) Id. at 45.
\(^52\) Matthews and Kulander, supra n. 26 at 47.
\(^53\) Id.; see also Derman, supra n. 26 at 45.
\(^54\) Derman, supra n. 26 at 45.
Operator shall have the right to cease drilling a Horizontal or Multi-lateral Well at any time, for any reason, and such Horizontal or Multi-lateral Well shall be deemed to have reached its objective depth so long as Operator has drilled such Horizontal or Multi-lateral Well to the objective formation(s) and has drilled horizontally in the objective formation(s) for a distance which is at least equal to fifty percent (50%) of the length of the Lateral(s) proposed for the operation.

Note that pursuant to the last paragraph of Article VI.B.2(b), if the well does not reach the deepest objective formation, any non-consenting party who voted for an alternative proposal to drill to a shallower zone can elect to participate in the completion by paying its proportionate share of the drilling costs to that depth.\(^{55}\) However, the suggested modification above would not trigger this provision since the operator would be required to reach the objective formation and drill in the objective formation for at least 50% of the proposed length of the lateral.

Where a party wants to specify how long the horizontal segment must be drilled, consider inserting the following provision in Article VI.A:

- a Horizontal Well with a single Lateral to a vertical depth sufficient to penetrate the ________ formation, and then horizontally to a Total Measured Depth of ______ feet.\(^{56}\)

or

- a Horizontal Well with a single Lateral to test the ________ formation, to be drilled from a surface location in the ___[insert legal description of surface location]__ to be drilled to a proposed vertical depth of approximately ______ feet and then drill a Lateral horizontally with a length of ________ to a target terminus of ___[insert legal description of terminus location]__ at approximately ______ feet Total Measured Depth.

As noted elsewhere in this paper, there is typically no casing point election for a horizontal well. Rather, the parties generally prefer an upfront election covering all drilling and completion operations for a horizontal well. For clarification, strike “…Article VI.C.1 as to participation in Completion operations and…” from the last sentence of Article VI.A.

E. **Article VI.B.2(b) – Non-Consent Penalties.**

In order to encourage all parties to participate in subsequently proposed operations, Article VI.B.2(b) provides for non-consent penalties. The non-consent penalty in Article VI.B.2(b)(i) covers the non-consenting party’s share of the cost of new surface equipment and operation of the well. These costs are avoidable in the event of a dry-hole or other problems and thus entail little or no risk-taking by the consenting parties. Based on the premise that the non-consent penalty should compensate the consenting parties for their assumption of risk, this non-

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56 *Id.*
The non-consent penalty in Article VI.B.2(b)(ii) covers the non-consenting party’s share of the costs of drilling, testing, and completing, and thus directly correlates with the assumption of risk by the consenting parties. Therefore, this non-consent penalty should typically be much higher than 100%. This is particularly true with respect to the initial well, which once drilled, proves up the acreage. A non-consenting party should be penalized for taking a “wait and see” approach and electing not to participate in the initial well.

In the vertical context, the non-consent penalty in Article VI.B.2(b)(ii) can be as high as 300% or more, depending upon the unique characteristics of the deal and the bargaining position of the parties. Due to the increased cost and drilling risk associated with horizontal drilling, this non-consent penalty should be increased accordingly. The author has reviewed proposed joint operating agreements for horizontal wells where the penalty in Article VI.B.2(b)(ii) was as high as 500%. On the other hand, most horizontal wells are being drilled in proven plays where the dry hole risk is low, even though the drilling or operational risk of impenetrable substances or unidentified faults may be increased. Thus, an argument could be made that the increased drilling risk is offset by the reduced dry hole risk, and as a result, the non-consent penalty for a horizontal well should be the same as a vertical well. The non-consent penalty for reworking, recompletion or plugging back in Article VI.B.2(c) typically mirrors the penalty in Article VI.B.2(b)(ii), even though the assumption of risk rationale is not as strong for reworking, recompletion or plugging back as it is for initial drilling or completion operations. Insert a percentage ranging from 100% to 200% in the blank in Article VI.B.2(b)(i). Insert a percentage of 300% or more in the blanks in Article VI.B.2(b)(i) and Article VI.B.2(c).

Where mineral interests are highly fractionalized, operators may have a difficult time getting all the working interest owners (and any unleased mineral owners who refuse to execute a lease), to execute a joint operating agreement. Oftentimes these owners have small interests and are reluctant to pay AFE costs upfront, therefore they may be particularly inclined to take a “wait and see” approach on the initial well. In states with force pooling statutes, the penalty for being force-pooled is typically not as harsh as the non-consent penalty under a joint operating agreement. For example, in North Dakota the non-consent penalty imposed under the force-pooling statute is 200% of the drilling and completion costs, while in Colorado it is 100% of the surface equipment and operating costs and 200% of the drilling, completion and other costs. As a result, parties who are inclined to go non-consent may refuse to execute the joint operating agreement, concluding that they are better off with the non-consent penalties proscribed by the force-pooling statute, rather than the higher non-consent penalties of the proposed joint operating agreement. While this may be true, it is important to note that working interest owners who are force-pooled are not entitled to any of the benefits of the joint operating agreement, including the right to receive well information or title opinions.

57 Id. at 51.
58 Hamilton v. Texas Oil & Gas Corp., 648 S.W.2d (Tex. Civ. App. 1982 – El Paso, writ ref’d n.r.e.) (hold that non-consent penalties ranging from 200% to 500% are standard in the industry).
59 Gibson, supra n. 30 at 32.
60 N.D. CENT. CODE § 38-08-08(3)(a) (2011).
1. **Relinquishment in Lieu of Non-Consent Penalties.**

Parties to an operating agreement may prefer a heightened risk penalty for failure to participate in the initial well. Rather than a non-consent penalty, the parties may choose to insert a relinquishment provision whereby if a party elects to go non-consent, they forfeit their interest in the drilling unit and perhaps adjacent lands within the contract area.\(^{62}\) This “in or out” provision will almost entirely eliminate a party’s ability to take a “wait and see” approach on the initial well, and provides all the parties to the joint operating agreement with more certainty in advance. Where the parties want to impose relinquishment provisions in lieu of the standard non-consent penalties in Article VI.B.2(b), consider striking Article VI.B.2(b) and adding the following to Article XVI:

In the event any party to this Agreement elects not to participate in a Horizontal or Multi-lateral Well which is proposed pursuant to Article VI.B., the Non-Consenting Party shall, on commencement of operations for the Horizontal and Multi-lateral Well, relinquish to the Consenting Parties one hundred percent (100%) of the Non-Consenting Party’s right, title, and interest in and to that portion of the Contract Area included within the Drilling Unit for the Horizontal and Multi-lateral Well and one hundred percent (100%) of the Non-Consenting Party’s right, title, and interest in and to that portion of the Contract Area included within two adjacent Drilling Units to be selected by the Consenting Parties within thirty (30) days from rig release of the well.\(^{63}\)

It is possible that all parties may participate in the initial well, but one or more parties may elect not to participate in a subsequent or “infill” well in the spacing unit of the initial well. To clarify how the relinquishment provision applies to infill wells, consider adding the following to the relinquishment provision in Article XVI:

In the event any party to this Agreement elects not to participate in any subsequent well proposed pursuant to Article VI.B. in the Drilling Unit of the Initial Well, the Non-Consenting Party shall, on commencement of operations for such subsequent well, relinquish to the Consenting Parties one hundred percent (100%) of the Non-Consenting Party’s right, title, and interest in and to that portion of the Contract Area included within the Drilling Unit for the Initial Well, save and except all right, title and interest in and to the wellbore of the Initial Well.

2. **Farmout in Lieu of Non-Consent Penalties.**

Where the parties prefer an alternate risk penalty that is not as harsh as a relinquishment provision, the parties may wish to insert a required farmout provision.\(^{64}\) Under a farmout provision, the non-consenting party is required to farmout their interest in the drilling unit, and

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\(^{62}\) Derman, *supra* n. 26 at 143.

\(^{63}\) *Id.* at 144-145.

\(^{64}\) *Id.* at 149-150.
perhaps adjacent lands within the contract area, reserving a specified back-in working interest upon payout. Where the parties want to impose farmout provisions in lieu of the standard non-consent penalties in Article VI.B.2(b), consider striking Article VI.B.2(b) and adding the following to Article XVI:

Should any party elect not to participate in any Horizontal or Multi-lateral Well proposed under the terms of this Agreement, such Non-Consenting Party agrees to farmout to the Consenting Parties all of its interest in the Oil and Gas Interests described below, under the Farmout Agreement attached hereto as Exhibit “______”. The Farmout shall be effective on commencement of drilling operations and shall cover the Drilling Unit on which the proposed Horizontal or Multi-lateral Well is located, as well as all Drilling Units which are direct or diagonal offsets to it. The Farmout will be on a drill-to-earn basis such that the Consenting Parties shall earn an assignment of the Non-Consenting Party’s interest in the farmed out acreage on a well-by-well basis, from the surface of the ground down to the base of the objective formation drilled, and covering in each instance the Drilling Unit on which the well is located. If the well drilled by the Consenting Parties is completed as a producer, the Non-Consenting Party shall reserve in such assignment the right to a reassignment of a _____ percent (_____%) working interest, proportionately reduced to the interest originally assigned, at payout. Payout shall be calculated on a well-by-well basis. In the event a proposed Horizontal or Multi-lateral Well is not timely commenced or is not drilled as proposed, the effect shall be as if the proposal had not been made and the Farmout shall have no further force and effect.65

F. Article VI.B – Subsequent Operations.

Perhaps the most complicated portion of the 1989 Form JOA is the provisions set forth in Article VI.B.1 through 6 governing subsequent operations. These provisions address three basic issues (1) whether the operation is a subsequent operation requiring a new election, or is deemed to be part of a prior operation and governed by the prior election; (2) if there is a new election, which parties get to elect: all parties, including those who previously went non-consent, or only those parties who consented to the prior operation; and (3) if a party elects to go non-consent, how are the non-consent penalties applied? Due to the range of potential subsequent operations and the possibility of one or more non-consenting parties, the framework governing subsequent operations is very complex. Unfortunately, the framework governing subsequent operations in the vertical context does not apply particularly well in the horizontal context.

1. Article VI.B.2(c) – Plugging Back.

In the vertical context, an election not to participate in the drilling of a well is deemed to be an election not to participate any reworking or plugging back operations in such well.66 By

65 Id.
66 Reeves, supra n. 55 at 13.
contrast, a party who elected not to participate in the drilling of a well receives a new election to participate in any deepening or sidetracking operations in such well. The rationale appears to be that any subsequent operations which require additional drilling are subject to a new election open to all parties, even those who previously elected to go non-consent. Unlike in the vertical context, the proposed modification of the term plug back clarifies that operations to plug back a horizontal well involve additional drilling of a new lateral in a shallower formation. Thus all parties, including those who previously elected not to participate in the drilling of the well, should receive an election whether to participate in any plug back operations in a horizontal well. Strike the words “Plugging Back” in each instance in Article VI.B.2(c).

2. **Article VI.B.4 – Deepening.**

As noted above, in the vertical context all parties to the operating agreement, including those who originally went non-consent, can elect whether to participate in a deepening operation. If a non-consenting party elects to participate in the deepening of the vertical well, they must reimburse all consenting parties for the non-consenting party’s share of the costs to drill and complete the well. The proposed modification of the term deepening clarifies that for a horizontal well, deepening shall mean the extension of an existing lateral within the objective formation, or in the case of a multi-lateral well, the extension of any originally proposed lateral within the objective formation. Although deepening of a horizontal well requires additional drilling, the deepening operation is akin to recompleting a vertical well, since it is simply extending the completion interval within the original objective formation. Accordingly, the election to participate in an operation to deepen a horizontal well should only be open to parties who elected to participate in the drilling of the well. Insert the following at the end of Article VI.B.4:

This Article VI.B.4 shall not apply to Deepening operations within an existing Lateral of a Horizontal or Multi-lateral Well.

It should be noted that at some point all parties, even those who elected not to participate in drilling the well, should be able to elect whether to participate in a deepening operation. For example, if there is a proposal to extend a vintage horizontal well from a 200 foot lateral to a 6,000 foot lateral, arguably any parties who previously went non-consent should have a right to participate in this operation. Furthermore, if the parties propose to convert an existing vertical well into a horizontal well, all parties, including those who previously elected to go non-consent should have a right to participate.

3. **Article VI.B.5 – Sidetracking.**

As noted above, in the vertical context all parties to the operating agreement, including those who originally went non-consent, can elect whether to participate in a sidetracking

68 *Roach, supra n. 29 at §5.03[6].
69 *Id.*
70 *Derman, supra n. 26 at 55.*
operation. Unless modified, the definition of sidetracking as “the intentional deviation of a well from vertical” could encompass every horizontal well. The modified definition of sidetrack for the horizontal context clarifies that operations within an existing or proposed lateral, or outside of such lateral(s) but which are intended to recover penetration of the objective formation, shall not be considered a sidetrack. As a result, such operations should be deemed to be part of the original proposed operations and non-consenting parties should not get a new election to participate. Insert the following at the end of Article VI.B.5:

This Article VI.B.5. “Sidetracking” shall not apply to operations in an existing Lateral of a Horizontal or Multi-lateral Well. Drilling operations which are intended to recover penetration of the objective formation(s) which are conducted in a Horizontal or Multi-lateral Well shall be considered as included in the original proposed drilling operations.

If the parties wish to conduct true sidetracking operations in a horizontal well, which would involve “kicking out” of an existing lateral and horizontally drilling a new lateral to a different formation, the provisions of Article VI.B.5 would apply. Such sidetrack operations would require substantial new drilling, and thus all parties, including those who previously elected not to participate in the drilling of the well, should receive an election whether to participate in any plug back operations in a horizontal well.

4. Applying the Non-Consent Penalty.

Where a non-consenting party elects to participate in subsequent operations, or conversely a consenting party elects not to participate in a subsequent operation, difficulties arise in applying the non-consent penalty to operations in a horizontal or multi-lateral well. For example, should a non-consenting party as to the initial well be able to participate in a subsequent lateral using the same vertical portion of the wellbore? As noted above, if a non-consenting party elects to participate in the deepening or sidetracking of the vertical well, they must reimburse all consenting parties for the non-consenting party’s share of the costs to drill and complete the well. Similarly, perhaps a condition to a non-consenting party’s participation in the subsequent lateral should be reimbursement of its share of all costs to drill and case the vertical portion of the wellbore. How should the non-consent penalty be applied to a party who consented to the initial horizontal well, but elects not to participate in the deepening, reworking or recompletion of the horizontal lateral? Application of the non-consent penalty in these scenarios would appear to require separate measuring and an allocation of production attributable to the extended portion of the lateral, or to the reworking or refract operations. Since allocation of production in this manner would be impractical, perhaps a better solution is to apply the traditional non-consent penalty to all production from the horizontal well. Or the parties may wish to impose as a non-consent penalty forfeiture of all leasehold interests in the well or spacing

71 Id.; Reeves, supra n. 55 at 4-18; Pharo and Rogers, supra n. 67.
72 Roach, supra n. 29 at §5.03[6]
73 Id.
74 Gibson, supra n. 30 at 24.
75 Id. at 25-26.
76 Id. at 33.
unit, rather than the traditional non-consent penalty. Yet another approach may be to require a supermajority vote for any subsequent operations, which if met, is binding upon all parties.\(^77\)

G. **Article VI.B.7 - Conformity to Spacing Pattern.**

Article VI.B.7 prohibits well proposals that do not conform to the existing spacing pattern. However, this provision is silent as to any approved spacing exceptions. This may be particularly important in areas where the existing spacing has not been adapted to fit horizontal wells.\(^78\) Consider inserting the phrase “or an approved exception thereto” immediately after “well spacing pattern” in the last line of Article VI.B.7.

H. **Article VI.C.1. – Casing Point Election.**

Article VI.C.1. contains two options regarding whether completion costs are to be included in the initial AFE for a proposed well. In essence, Option No. 1 provides that the initial well proposal shall include all costs to drill, test and complete the well, while Option No. 2 provides that the initial well proposal shall include only the costs to drill and test the well. Under Option No. 2, after the well has been drilled and tested, each party can elect whether to participate in the completion of the well, known as the “casing-point election.” It is generally recommended that Option No. 2 be selected for vertical wells.\(^79\) However, as noted above, all completion costs are generally included in the initial AFE for a horizontal well. Depending upon the drilling and completion techniques of the horizontal well, there may be no identifiable point for a so-called casing point election to be made.\(^80\) For example, where the well design contemplates an openhole horizontal completion with only the insertion of a slotted liner and no hydraulic fracturing, the drilling of the horizontal lateral is essentially both a drilling and completion operation.\(^81\) Even where it is contemplated that a horizontal well will be cased, perforated and hydraulically fractured after the entire lateral is drilled to total depth, the parties generally prefer to have a single election upfront covering all drilling and completion operations for a horizontal well, rather than have a separate election for completion operations once total depth in the lateral is reached. Similarly, for a multi-lateral well the drilling and completion of all laterals is generally considered to be a single operation for which only a single election to participate is permitted. As noted above, the modified definition of AFE clarifies that for a horizontal or multi-lateral well the AFE shall include all costs to drill, test and complete the well. One suggestion is to require that Option No. 1 (no casing point election) be selected for horizontal wells and Option No. 2 (casing point election) be selected for Vertical Wells. To clarify that there is no casing-point election for a horizontal well, strike the phrase “the well” in the first line of Option No. 1 and add the phrase “a Horizontal or Multi-lateral Well….”. Also, consider adding the following at the end of Option No. 1:

\(^77\) *Id.* at 25-26.
\(^78\) *See e.g.*, Morrison, *supra* n. 24; Moore, *supra* n. 28; Kramer, *supra* n. 36 at 22.
\(^79\) Roach, *supra* n. 29 at §5.03[6];
\(^80\) Gibson, *supra* n. 30 at 24.
\(^81\) Derman, *supra* n. 26 at 59; Michel E. Curry, *The Perfect Operating Agreement: Considerations in Drafting Changes to the Model Form JOA*, State Bar of Texas, 26th Ann. Oil, Gas & Min. L. Inst. ch. 17 (2008), at 7.
For any Horizontal or Multi-lateral Well subject to this Agreement, Completion operations shall be included in the proposed drilling operations for such well.

In addition, strike the phrase “the well” in the first line of Option No. 2 and add the phrase “a Vertical Well.” Where both vertical and horizontal wells are possible under the same operating agreement and the parties wish to have a casing point election for vertical wells, both Option No. 1 and Option No. 2 should be selected. In order to remove any ambiguity, consider adding the following to the end of Article VI.C.1.:

Notwithstanding anything herein to the contrary, Option 1 shall apply to any Horizontal or Multi-lateral Well and Option 2 shall apply to any Vertical Well.

However, this approach forecloses the possibility of opting to eliminate the casing point election for vertical wells. Where both vertical and horizontal wells are possible under the same operating agreement and the parties wish to eliminate the casing point election for both vertical and horizontal wells, simply select Option No. 1.

I. Article VI.E – Abandonment of Wells.

One change from the 1982 From JOA to the 1989 Form JOA was to add a requirement that any party who elects to takeover a well must provide proof of financial capability to assume the plugging and abandonment costs of the well. This change provides some protection, but given the Texas Supreme Court decision in Seagull Energy E&P, Inc. v. Eland Energy, Inc., parties should consider whether additional protection is needed. In Seagull, the court held that in the absence of an express release of plugging and abandonment liability, an assignor remains on the hook for such liability in the event the assignee or their successor fails to plug and abandon the well. Due to the increased costs to plug and abandon a horizontal well, perhaps Article VI.E. should be tightened up to require that the party electing to take over the well own a minimum working interest percentage in the well, such as 10 or 15%.  


It is not unusual for parties to an operating agreement to modify the procedure for resolving conflicting proposals in Article VI.B.6 by adding a provision to Article XVI which sets forth the priority of operations which shall govern in the event of conflicting proposals. In the case of a horizontal well, the desired priority of operations will likely differ from the desired priority for a conventional vertical well. As a general rule, operations that will be foreclosed if they are not conducted prior to other operations should take precedence. For example, after the target formation is reached, proposals to conduct logging or testing should take priority over

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82 Gibson, supra n. 30 at 24.
83 Derman, supra n. 26 at 63.
84 207 S.W.3d 342 (Tex. 2006).
85 Gibson, supra n. 30 at 33.
86 Matthews and Kulander, supra n. 26 at 47.
other operations such as deepening, sidetracking or plugging back which all hinder or eliminate the opportunity to conduct downhole testing. Where the parties want to designate a priority of operations for a horizontal well, consider adding the following to Article XVI:

Notwithstanding Article VI.B.6 or anything else in this Agreement to the contrary, it is agreed that where a Horizontal or Multi-lateral Well subject to this Agreement has been drilled to the objective formation and the Consenting Parties cannot agree upon the sequence and timing of further operations regarding such Horizontal or Multi-lateral Well, the following elections shall control in the order of priority enumerated hereafter:

1. An election to do additional logging, coring, or testing;
2. An election to attempt to Complete all proposed Laterals;
3. An election to Deepen a Lateral;
4. An election to Sidetrack and drill an additional Lateral in the same formation;
5. An election to Sidetrack and drill an additional Lateral in a different formation;
6. An election to Plug Back the well to a formation or Zone above the formation in which a Lateral was drilled; if there is more than one proposal to Plug Back, the proposal to Plug Back to the next deepest prospective Zone or formation shall have priority over a proposal to plug back to a shallower prospective Zone or formation; and
7. An election to plug and abandon said well as provided for in Article VI.E.

It is provided however, that if, at the time the Consenting Parties are considering any of the above elections, the hole is in such a condition that a reasonably prudent Operator would not conduct the operations contemplated by the particular election involved for fear of placing the hole in jeopardy or losing the hole prior to Completing the Horizontal or Multi-lateral Well in the objective formation, such election shall be eliminated from priorities hereinabove set forth.

K. Article XVI – Limit on Number of Well Proposals.

There is no limit in Article VI to the number of wells a party can propose under the operating agreement or on the timing of a well proposal. This creates a risk that a party with deep pockets may propose multiple wells simultaneously in order to force a party with less capital to go non-consent. While this risk exists in the vertical context, it is more pronounced

87 Derman, supra n. 26 at 47.
88 Matthews and Kulander, supra n. 26 at 45.
in the horizontal context since the cost of a horizontal well is typically much higher than a vertical well. Where the parties want to impose limitations on the number or timing of well proposals, consider adding the following to Article XVI:

It is specifically provided that no notice shall be given under Article VI hereof which proposes the drilling of more than one well. Further, no notice shall be given under Article VI hereof by any party to this Agreement which proposes the drilling of a well so long as (1) a prior notice has been given which remains in force and effect and the period of time during which the well proposed by such notice may be commenced has not expired, or (2) a well is then being drilled under the terms of this Agreement. This paragraph shall not apply when a well to which notice is directed is required under the terms of a lease or contract or required to maintain a lease or portion thereof in force. 89

L. Article XVI – AFE Cost Overruns.

It is common for parties to insert a provision in Article XVI providing that in the event the AFE is exceeded by a specified percentage, the parties can elect whether to continue the proposed operation or to pursue an alternate operation. 90 In drafting an operating agreement for a horizontal well, the parties should consider the impacts of this type of provision in the horizontal context. For example, if due to mechanical difficulties the AFE is exceed by 125%, but only half of the drilling or completion operations in the lateral section have been conducted, is an opportunity to elect out at that point or propose an alternate operation desirable? Further, if certain parties elect out but the horizontal well is completed, how would you apply the non-consent penalty and allocate production among the operations that were conducted prior to the AFE overrun and those conducted after. 91 At a minimum, the parties should review (i) the specified percentage triggering the new consent election to confirm that such percentage is applicable in light of the increased costs and mechanical risks in the horizontal context, and (ii) whether the appropriate non-consent penalty should be forfeiture of all leasehold interests in the well or spacing unit, rather than the traditional non-consent penalty.

M. Article XVI – Overlapping JOAs

In some horizontal plays, extensive exploration and development has already occurred and a substantial number of vertical wells are currently producing. In some cases, additional vertical wells are being drilled alongside horizontal wells. For example, in the heart of the Wattenberg Field of northern Colorado, virtually every section contains a number of existing vertical wells, with spacing units ranging from 40 acres to 320 acres. Each vertical spacing unit may have differing leasehold ownership and be governed by a different operating agreement. The drilling of a horizontal well diagonally across the entire section inevitably creates conflicts with the existing operating agreements, which likely do not contain horizontal drilling provisions. One solution is to amend the prior operating agreements to include horizontal

89 Derman, supra n. 26 at 157.
90 Id. at 183; Gibson supra n. 30 at 34.
91 Gibson supra n. 30 at 34.
provisions. Yet, depending upon the number and vintage of the prior operating agreements, and the number of parties to such prior operating agreements, this may be difficult. A better solution is for all the parties to the prior operating agreements to enter into a new horizontal-focused operating agreement covering the spacing unit of the horizontal well. However, simply overlaying the new horizontal operating agreement over the prior operating agreements creates an ambiguity as to which operating agreement controls. For example, the Contract Area of the new horizontal operating agreement will include part or all of the Contract Areas of the prior operating agreements. Thus, a horizontal well proposal would conceivably trigger an election under the horizontal operating agreement, as well as each prior operating agreement. Where a new operating agreement is executed, but there are prior operating agreements covering the spacing unit of the horizontal well, consider clarifying that the new operating agreement controls as to horizontal operations by adding the following to Article XVI:

In the event any parties to this Agreement are subject to one or more prior operating agreements covering part or all of the Contract Area of this Agreement, this Agreement shall supersede such prior operating agreements and shall control, insofar and only insofar, as to all operations in the Contract Area of this Agreement to drill a Horizontal or Multi-lateral Well, or to convert an existing Vertical Well into a Horizontal or Multi-lateral Well, and as to all operations within a Horizontal or Multi-lateral Well in the Contract Area of this Agreement.

N. Exhibit D - Insurance.

Because of the increased costs and mechanical risks associated with horizontal drilling and multistage hydraulic fracturing, parties should consider appropriate insurance coverage amounts when completing Exhibit D to the operating agreement. The growing length of the laterals and the increasing number of frac stages is causing some concern, due to the added stress on the casing and the increased risk of losing the well. In addition, horizontal drilling and multistage hydraulic fracturing requires the use of specialized or technologically advanced tools that can be unusually expensive. It is common for drilling or master service contracts to provide that the operator assumes liability for any tools or equipment lost or damaged in-hole. This liability could include the cost to repair or replace damaged or destroyed tools. Due to the increased risk of horizontal drilling and the expensive nature of the specialized tools involved, parties to a joint operating agreement should consider with their insurance providers the following:

1. The cost of the tools to be used in the proposed horizontal drilling operations;

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93 Gibson, supra n. 30 at 35.
2. Whether insurance coverage should be obtained for such tools (may be difficult to obtain due to unavailability and cost); and

3. Whether the operator should pay the drilling or service company an upfront fee, if offered, that provides for quasi-insurance coverage for any tools or equipment that are damaged or lost in-hole.

**Conclusion**

The oil and gas industry is dynamic and continually evolving. Advancements in technology such as multi-stage fracturing and horizontal drilling are re-invigorating and in many ways, reinventing the industry. As the industry continues to evolve, so too must the contracts by which the industry operates.
EXHIBIT A
Attached to paper by Lamont C. Larsen entitled Suggested Changes to the 1989 AAPL Form Operating Agreement to Address Horizontal Development, presented at 3rd Law of Shale Plays Conference, Fort Worth, Texas, June 6-7, 2012. Permission to distribute this form obtained by the author from the American Association for Petroleum Landmen.

FORM 610 - 1989
MODEL FORM OPERATING AGREEMENT

OPERATING AGREEMENT
DATED

OPERATOR:___________________________________________________

CONTRACT AREA:______________________________________________

____________________________________________________________

____________________________________________________________

____________________________________________________________

COUNTY OR PARISH OF ____________STATE OF_____________________

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FORT WORTH, TEXAS, 76137, APPROVED FORM.
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OPERATING AGREEMENT

THIS AGREEMENT, entered into by and between ___________ hereinafter designated and referred to as "Operator," and the signatory party or parties other than Operator, sometimes hereinafter referred to individually as "Non-Operator," and collectively as "Non-Operators.,"

WITNESSETH:

WHEREAS, the parties to this agreement are owners of Oil and Gas Leases and/or Oil and Gas Interests in the land identified in Exhibit "A," and the parties hereto have reached an agreement to explore and develop these Leases and Oil and Gas Interests for the production of Oil and Gas to the extent and as hereinafter provided.

NOW, THEREFORE, it is agreed as follows:

ARTICLE I. DEFINITIONS

As used in this agreement, the following words and terms shall have the meanings here ascribed to them:

A. The term "AFE" shall mean an Authority for Expenditure prepared by a party to this agreement for the purpose of estimating the costs to be incurred in conducting an operation hereunder. An AFE for a Horizontal or Multi-lateral Well shall clearly stipulate that the well being proposed is a Horizontal or Multi-lateral Well and shall include all Completion operations for the proposed Horizontal or Multi-lateral Well.

B. The term "Completion" or "Complete" shall mean a single operation intended to complete a well as a producer of Oil and Gas in one or more Zones, including, but not limited to, the setting of production casing, perforating, well stimulation and production testing conducted in such operation. When used in connection with a Horizontal or Multi-lateral Well, the term "Completion" or "Complete" shall mean a series of operations within the Laterals intended to complete a well as a producer of Oil and Gas, including, but not limited to, the setting of production casing, perforating, hydraulic fracturing, well stimulation and production testing.

C. The term "Contract Area" shall mean all the lands, Oil and Gas Leases and/or Oil and Gas Interests intended to be developed and operated for Oil and Gas purposes under this agreement. Such lands, Oil and Gas Leases and Oil and Gas Interests are described in Exhibit "A."

D. The term "Deepen" shall mean a single operation whereby a well is drilled to an objective Zone below the deepest Zone in which the well was previously drilled, or below the Deepest Zone proposed in the associated AFE, whichever is the lesser. When used in connection with a Multi-lateral or Horizontal Well, the term "Deepen" shall mean an operation whereby a Lateral is drilled to a Horizontal distance greater than the distance as measured parallel to the wellbore as approved by the Consenting Parties, or to a horizontal distance greater than the horizontal distance to which the Lateral was previously drilled.

E. The terms "Drilling Party" and "Consenting Party" shall mean a party who agrees to join in and pay its share of the cost of any operation conducted under the provisions of this agreement.

F. The term "Drilling Unit" shall mean the area fixed for the drilling of one well by order or rule of any state or federal body having authority. If a Drilling Unit is not fixed by any such rule or order, a Drilling Unit shall be the drilling unit as established by the pattern of drilling in the Contract Area unless expressly fixed by express agreement of the Drilling Parties.

G. The term "Drillsite" shall mean the Oil and Gas Lease or Oil and Gas Interest on which a proposed well is to be located. The term "Drillsite" when used in connection with a Horizontal or Multi-lateral Well shall mean the surface location and the Oil and Gas Leases or Oil and Gas Interests within the spacing unit on which the wellbore including all Laterals is located.

H. The term "Initial Well" shall mean the well required to be drilled by the parties hereto as provided in Article VI.A.

I. The term "Non-Consent Well" shall mean a well in which less than all parties have conducted an operation as provided in Article VI.B.2.

J. The terms "Non-Drilling Party" and "Non-Consenting Party" shall mean a party who elects not to participate in a proposed operation.

K. The term "Oil and Gas" shall mean oil, gas, casinghead gas, gas condensate, and/or all other liquid or gaseous hydrocarbons and other marketable substances produced therewith, unless an intent to limit the inclusiveness of this term is specifically stated.

L. The term "Oil and Gas Interests" or "Interests" shall mean unleased fee and mineral interests in Oil and Gas tracts of land lying within the Contract Area which are owned by parties to this agreement.

M. The terms "Oil and Gas Lease," "Lease" and "Leasehold" shall mean the oil and gas leases and/or interests therein covering tracts of land lying within the Contract Area which are owned by the parties to this agreement.

N. The term "Plug Back" shall mean a single operation whereby a deeper Zone is abandoned in order to attempt a Completion in a shallower Zone. When used in connection with a Horizontal or Multi-lateral Well, the term "Plug Back" shall mean an operation to test or Complete the well in a stratigraphically shallower geological horizon in which the operation has been or is being Completed and which is not contained in a Lateral.

O. The term "Recompletion" or "Recomplete" shall mean an operation whereby a Completion in one Zone is abandoned in order to attempt a Completion in a different Zone within the existing wellbore. The term "Recompletion" or "Recomplete" when used in connection with a Horizontal or Multi-lateral Well shall mean Completion operations within an existing Lateral that are conducted after the initial completion operations for the proposed Horizontal or Multi-lateral Well are conducted.

P. The term "Rest work" shall mean an operation conducted in the wellbore of a well after it is Completed, restore, or improve production in a Zone which is currently open to production in the wellbore. Such operations include, but are not limited to, well stimulation operations but exclude any routine repair or maintenance work or drilling, Sidelining, Deepening, Completing, Re-completing, or Plugging Back of a well.

Q. The term "Sideline" shall mean the directional control and intentional deviation of a well from vertical so as to change the bottom hole location unless done to reduce or overcome other mechanical difficulties. When used in connection with a Horizontal or Multi-lateral Well, the term "Sideline" shall mean the directional control and intentional deviation of a well outside the existing Laterals as so as to change the Zone or the radial direction of a Lateral as originally proposed. Drilling operations which are recompleted to recover penetration of the upper interval which are conducted in a Horizontal or Multi-lateral Well shall be considered as included in the original proposed drilling operations.

R. The term "Zone" shall mean a stratum of earth containing or thought to contain a common accumulation of Oil and Gas separately producible from any other common accumulation of Oil and Gas.

S. The term "Lateral" shall mean that portion of a wellbore that deviates from approximate vertical orientation to approximate horizontal orientation and all wellbores beyond such deviation to Total Measured Depth.

T. The term "Horizontal Well" shall mean a well containing a single Lateral which is drilled. Completed or Recompleted in a manner in which the horizontal component of the completion interval (1) extends at least one hundred (100') feet in the objective formation and (2) exceeds the vertical component of the completion interval in the objective formation.

U. The term "Lateral Well" shall mean a well which contains more than one Lateral which is drilled. Completed or Recompleted in a manner in which the horizontal component of the completion interval of each Lateral (1) extends at least one hundred (100') feet in the objective formation and (2) extends the vertical component of the completion interval in the objective formation.

V. The term used in connection with a Multi-lateral or Horizontal Well shall mean the distance from the surface of the ground to the terminus of the wellbore, as measured along the wellbore. Each Lateral taken together with the common vertical wellbore shall be considered a single wellbore and shall have a corresponding Total Measured Depth. Notwithstanding the foregoing, the case of a Multi-lateral Well and the production from each Lateral shall be computed to the common vertical wellbore. Then the Lateral vertical wellbore shall be considered the whole wellbore. When the proposed operations' drilling of an additional Lateral or Multi-lateral Well, the term "depth" or "total depth" wherever used in the Agreement shall be deemed to read "Total Measured Depth" as so applied to such well.

LW. The term "Vertical Well" shall mean a well drilled, Completed or Recompleted other than a Horizontal or Multi-lateral Well. Unless the context otherwise clearly indicates, words used in the singular include the plural, the word "person" includes natural and artificial persons, the plural includes the singular, and any gender includes the masculine, feminine, and neuter.

ARTICLE II. EXHIBITS

The following exhibits, as indicated below and attached hereto, are incorporated in and made a part hereof:

A. Exhibit "A," shall include the following information:

(1) Description of lands subject to this agreement,

(2) Restrictions, if any, as to depths, formations, or substances,

(3) Parties to agreement with addresses and telephone numbers for notice purposes,

(4) Percentages or fractional interests of parties to this agreement,

(5) Oil and Gas Leases and/or Oil and Gas Interests subject to this agreement,

-2-
(6) Burdens on production.

B. If any party owns an Oil and Gas Interest in the Contract Area, that Interest shall be treated for all purposes of this agreement and during the term hereof as if it were covered by the form of Oil and Gas Lease attached hereto as Exhibit "B," and the owner thereof shall be deemed to own both royalty interest in such lease and the interest of the lessee thereunder.

C. If any party has contributed to this agreement jointly owned Leases, the parties' undivided interests in said Leaseholds shall be deemed separate leasing and/or interests for the purposes of this agreement.

ARTICLE III.

INTERESTS OF PARTIES

A. Oil and Gas Interests:

If any party owns an Oil and Gas Interest in the Contract Area, that Interest shall be treated for all purposes of this agreement and during the term hereof as if it were covered by the form of Oil and Gas Lease attached hereto as Exhibit "B," and the owner thereof shall be deemed to own both royalty interest in such lease and the interest of the lessee thereunder.

B. Interests of Parties in Costs and Production:

Unless changed by other provisions, all costs and liabilities incurred in operations under this agreement shall be borne and paid, and all equipment and materials acquired in operations on the Contract Area are to be owned by the parties as their interests are set forth in Exhibit "A." In the same manner, the parties shall also own all production of Oil and Gas from the Contract Area subject, however, to the payment of royalties and other burdens on production as described hereafter.

C. Subsequently Created Interests:

If any party has contributed hereto a Lease or Interest that is burdened with an assignment of production given as security for the payment of money or, if, after the date of execution of this agreement, any party creates an overriding royalty, production payment, net profits interest, assignment of production or other burden payable out of production attributable to its working interest hereunder, such burden shall be deemed a "Subsequently Created Interest." Further, if any party has contributed hereto a Lease or Interest burdened with an overriding royalty, production payment, net profits interest, or other burden payable out of production attributable to its working interest hereunder, such burden is not shown on Exhibit "A;" such burden also shall be deemed a Subsequently Created Interest to the extent such burden causes the burdens on such party's Lease or Interest to exceed the amount stipulated in Article III.B. above.

The parties whose interest is burdened with the Subsequently Created Interest (the "Burdened Party") shall assume and bear, pay and discharge the Subsequently Created Interest and shall indemnify, defend and hold harmless the other parties from and against any liability therefor. Further, if the Burdened Party fails to pay, when due, its share of expenses chargeable hereunder, all provisions of Article VII.B. shall be enforceable against the Subsequently Created Interest in the same manner as they are enforceable against the working interest of the Burdened Party. In the event that the party required under this agreement to assign or relinquish to any other party, or parties, all or a portion of its working interest and/or the production attributable thereto, said other party, or parties, shall receive said assignment and/or production free and clear of said Subsequently Created Interest, and the Burdened Party shall indemnify, defend and hold harmless said other party, or parties, from any and all claims and demands for payment asserted by owners of the Subsequently Created Interest.

ARTICLE IV.

TITLES

A. Title Examination:

Title examination shall be made on the Drillsite of any proposed well prior to commencement of drilling operations and, if a majority in interest of the Drilling Parties so request or Operator so elects, title examination shall be made on the entire Drilling Unit, or maximum anticipated Drilling Unit, of the Contract Area. The opinion will include, but not be limited to, the ownership of the working interest, production payments, net profits interest, assignment of production or any other burden payable out of production attributable to its working interest hereunder, such burden shall be deemed a "Subsequently Created Interest." Further, if any party has contributed hereto a Lease or Interest burdened with an overriding royalty, production payment, net profits interest, or other burden payable out of production attributable to its working interest hereunder, such burden is not shown on Exhibit "A;" such burden also shall be deemed a Subsequently Created Interest to the extent such burden causes the burdens on such party's Lease or Interest to exceed the amount stipulated in Article III.B. above.

The parties whose interest is burdened with the Subsequently Created Interest (the "Burdened Party") shall assume and bear, pay and discharge the Subsequently Created Interest and shall indemnify, defend and hold harmless the other parties from and against any liability therefor. Further, if the Burdened Party fails to pay, when due, its share of expenses chargeable hereunder, all provisions of Article VII.B. shall be enforceable against the Subsequently Created Interest in the same manner as they are enforceable against the working interest of the Burdened Party. In the event that the party required under this agreement to assign or relinquish to any other party, or parties, all or a portion of its working interest and/or the production attributable thereto, said other party, or parties, shall receive said assignment and/or production free and clear of said Subsequently Created Interest, and the Burdened Party shall indemnify, defend and hold harmless said other party, or parties, from any and all claims and demands for payment asserted by owners of the Subsequently Created Interest.

B. Loss or Failure of Title:

1. Failure of Title: Should any Oil and Gas Interest or Oil and Gas Lease be lost through failure of title, which results in a reduction of interest from that shown on Exhibit "A," the party credited with contributing the affected Lease or Interest (including, if applicable, a successor in interest to such party) shall have ninety (90) days from final determination of title failure to acquire a new lease or other instrument curing the entirety of the title failure, which acquisition will not be subject to Article VIII.B., and failing to do so, this agreement, nevertheless, shall continue in force as to all remaining Oil and Gas Leases and Interests as to such party.

(a) The party credited with contributing the Oil and Gas Lease or Interest affected by the title failure (including, if applicable, a successor in interest to such party) shall bear alone the entire loss and it shall not be entitled to recover from Operator or the other parties any development or operating costs or operating costs which it may have previously paid or incurred, but there shall be no additional liability on its part to the other parties hereto by reason of such title failure;

(b) There shall be no retroactive adjustment of expenses incurred or revenues received from the operation of the Lease or Interest which has failed, but the interests of the parties contained on Exhibit "A" shall be revised on an acreage basis, as of the time it is determined finally that title failure has occurred, so that the interest of the party whose Lease or Interest is affected by the title failure will thereafter be reduced in the Contract Area by the amount of the Lease or Interest failed;

(c) If the proportionate interest of any other parties herein in any producing well previously drilled on the Contract Area is increased by reason of the title failure, the party who bore the costs incurred in connection with such well attributable to the Lease or Interest
which has failed shall receive the proceeds attributable to the increase in such interest (less costs and burdens attributable thereto) until it has been reimbursed for unrecovered costs paid by it in connection with such well attributable to such failed Lease or Interest;

(d) Should an agreement, which is determined to be the owner of a Lease or Interest which has failed, pay in any manner any part of the cost of operation, development, or equipment, such amount shall be paid to the party or parties who bore the costs which are so refunded;

(e) Any liability to account to a person not a party to this agreement for prior production of Oil and Gas which arises by reason of title failure shall be borne severally by each party (including a predecessor to a current party) who received production for which such accounting is required based on the amount of such production received, and each such party shall severally indemnify, defend and hold harmless all other parties hereto for any such liability to account;

(f) No charge shall be made to the joint account for legal expenses, fees or salaries in connection with the defense of the Lease or Interest claimed to have failed, but if the party contributing such Lease or Interest hereto elects to defend its title it shall bear all expenses in connection therewith, and

(g) If any party is given credit on Exhibit "A" to a Lease or Interest which is limited solely to ownership of an interest in the wellbore of any well or wells and the production therefrom, such party’s absence of interest in the remainder of the Contract Area shall be considered a Failure of Title to such remaining Contract Area unless that absence of interest is reflected on Exhibit "A".

2. Loss by Non-Payment of Amount Due. If, through mistake or oversight, any rental, shut-in well payment, shut-in rental, minimum royalty or royalty payment, or other payment necessary to maintain all or a portion of an Oil and Gas Lease or Interest is not paid as and when due, or if a Reserve Account is not paid, there shall be no monetary liability against the party who failed to make such payment. Unless the party who failed to make the required payment secures a new Lease or Interest covering the same interest within ninety (90) days from the discovery of the failure to make proper payment, which acquisition will not be subject to Article VIII B, the interests of the parties reflected on Exhibit "A" shall be revised on an acreage basis, effective as of the date of termination of the Lease or Interest involved, and the party who failed to make proper payment will no longer be credited with an interest in the Contract Area on account of ownership of the Lease or Interest which has terminated. If the party who failed to make the required payment shall not have been fully reimbursed, at the time of the loss, from the proceeds of the sale of Oil and Gas attributable to the lost Lease or Interest, calculated on an acreage basis, for the development and opening up of the joint account stated in connection with such Lease or Interest, it shall be reimbursed for unrecovered costs and burdens attributable thereto (but not for the share of the cost of any dry hole previously drilled or wells previously abandoned) from so much of the following as is necessary to effect reimbursement.

(a) Proceeds of Oil and Gas produced prior to termination of the Lease or Interest, less operating expenses and lease burdens chargeable hereunder to the person who failed to make payment, previously accrued to the credit of the lost Lease or Interest, on an acreage basis, up to the amount of unrecovered costs;

(b) Proceeds of Oil and Gas, less operating expenses and lease burdens chargeable hereunder to the person who failed to make payment, up to the amount of unrecovered costs attributable to that portion of Oil and Gas therefrom produced and marketed (excluding production from any wells thereafter drilled) which, in the absence of such Lease or Interest termination, would be attributable to the lost Lease or Interest on an acreage basis, and which as a result of such Lease or Interest termination is credited to other parties as provided in paragraph (a) above. The proceeds of Oil and Gas to be contributed by the other parties in proportion to their respective interests reflected on Exhibit "A", and

(c) Any monies, up to the amount of unrecovered costs, that may be paid by any party which is, or becomes, the owner of the Lease or Interest in the Contract Area or becoming a party to this agreement.

3. Other Losses. All losses of Leases or Interests committed to this agreement, other than those set forth in Articles IV.B.1. and IV.B.2. above, shall be joint losses and shall be borne by all parties in proportion to their interests shown on Exhibit "A." This shall include but not be limited to the loss caused by the expiration or loss of Lease or Interest through failure to be performed in accordance with the terms of this agreement (other than performance which requires only the payment of money), and the loss of any Lease by expiration at the end of its primary term if it is not renewed or extended. There shall be no readjustment of interests in the remaining portion of the Contract Area on account of any joint loss.

Curing Title. In the event under Article IV.B.1. or a loss of a Lease under Article IV.B.2. above, any Lease or Interest acquired by any party hereto (other than the party whose interest has failed or was lost) during the ninety (90) day period provided by Article IV.B.1. and Article IV.B.2. above covering all or a portion of the interest that has failed or was lost shall be offered at cost to the party whose interest has failed or was lost, and the provisions of Article VIII B. shall not apply to such acquisition.

ARTICLE V. OPERATOR

A. Designation and Responsibilities of Operator:

(1) shall be the Operator of the Contract Area, and shall conduct and direct and have full control of all operations on the Contract Area as permitted and required by, and within the limits of this agreement. In its performance of services hereunder for the Non-Operators, Operator shall be an independent contractor not subject to the control or direction of the Non-Operators except as to the type of operations to be undertaken in accordance with the election procedures contained in this agreement. Operator shall not be deemed, or held itself out as, the agent of the Non-Operators with authority to bind them to any obligation or liability assumed or incurred by Operator as to any third party. Operator shall conduct its activities under this agreement as a reasonable prudent operator, in a good and workmanlike manner, with due diligence and dispatch, in accordance with applicable laws and regulations, but in no event shall it have any liability as Operator to the other parties for losses sustained or liabilities incurred except as may result from gross negligence or willful misconduct.

B. Resignation or Removal of Operator and Selection of Successor:

1. Resignation or Removal of Operator: Operator may resign at any time by giving written notice thereof to Non-Operators. If Operator terminates its legal existence, no longer owns an interest hereunder in the Contract Area, or is no longer capable of serving as Operator, Operator shall be deemed to have resigned without any action by Non-Operators, except the selection of a successor. Operator may be removed only for good cause by the affirmative vote of Non-Operators owning a majority interest based on ownership as shown on Exhibit "A." remaining after excluding the vote interest of Operator; such vote shall not be deemed effective unless a written notice has been delivered to the Operator by a Non-Operator detailing the alleged default and Operator has failed to cure such default within thirty (30) days from its receipt of the notice or, if the default concerns an operation then being conducted, within forty-eight (48) hours of its receipt of the notice. For purposes hereof, "good cause" means not only gross negligence or willful misconduct but also the material breach of or inability to meet the standards of operation contained in Article V.A. or material failure or inability to perform its obligations under this agreement.

Subject to Article VIII.D.1., such resignation or removal shall not become effective until 7:00 o'clock A.M. on the first day of the calendar month following the expiration of ninety (90) days after the giving of notice of resignation by Operator or action by the Non-Operators to remove Operator, unless a successor Operator has been selected and assumed the duties of Operator at an earlier date. Operator, after effective date of resignation or removal, shall be bound by the terms hereof as a Non-Operator. A change of a corporate name or structure of Operator or transfer of Operator's interest to any single subsidiary, parent or successor corporation shall not be the basis for removal of Operator. In the event of a change of a corporate name or structure, Operator shall remain the Operator of the Contract Area, and shall conduct and direct and have full control of all operations on the Contract Area as permitted and required by, and within the limits of this agreement. In its performance of services hereunder for the Non-Operators, Operator shall be an independent contractor not subject to the control or direction of the Non-Operators except as to the type of operations to be undertaken in accordance with the election procedures contained in this agreement. Operator shall not be deemed, or held itself out as, the agent of the Non-Operators with authority to bind them to any obligation or liability assumed or incurred by Operator as to any third party. Operator shall conduct its activities under this agreement as a reasonable prudent operator, in a good and workmanlike manner, with due diligence and dispatch, in accordance with applicable laws and regulation, but in no event shall it have any liability as Operator to the other parties for losses sustained or liabilities incurred except as may result from gross negligence or willful misconduct.

2. Selection of Successor Operator: Upon the resignation or removal of Operator under any provision of this agreement, a successor Operator shall be selected by the parties. The successor Operator shall be selected from the parties owning an interest in the Contract Area at the time such successor Operator was selected. The successor Operator shall be selected by the affirmative vote of two (2) or more parties owning a majority interest based on ownership as shown on Exhibit "A" remaining after excluding the vote interest of the Operator that was removed or resigned. If a successor Operator is selected, it shall deliver to the successor Operator all records and data relating to such operation and to the extent such records and data are not already in the possession of the successor Operator, all costs of obtaining or copying the former Operator's records and data shall be charged to the joint account.

C. Employees and Contractors:
The number of employees or contractors used by Operator in conducting operations hereunder, their selection, and the hours of labor and the compensation for services performed shall be determined by Operator, and all such employees or contractors shall be the employees or contractors of Operator.

D. Rights and Duties of Operator:  

Competitive Rates and Use of Affiliates: All wells drilled on the Contract Area shall be drilled on a competitive contract basis at the usual rates prevailing in the area. If Operator should desire to perform work, may employ its own tools and equipment in the drilling of such wells, but its rates therefor shall not exceed the prevailing rates in the area and the rate of such charges shall be agreed upon by the parties in writing before drilling operations are commenced, and such work shall be performed by Operator under the same terms and conditions as are customary and usual in the area in contracts of independent contractors who are doing work of a similar nature. All work performed or materials supplied by affiliates or related parties of Operator shall be charged at the prevailing rates, as determined by written agreement, and in accordance with customs and standards prevailing in the industry.

Discharge of Joint Account Obligations: Except as herein otherwise specifically provided, Operator shall promptly pay and discharge expenses incurred in the development and operation of the Contract Area pursuant to this agreement and shall charge each of the parties hereto with their respective proportionate shares upon the expense basis provided in Exhibit "C." Operator shall keep an accurate record of the joint account hereunder, showing expenses incurred and charges and credits made and received.

3. Protection from Liens: Operator shall pay, or cause to be paid, as and when due and payable, all accounts of contractors and suppliers and wages and salaries for services rendered or performed, and for materials supplied on, or in respect of the Contract Area or any operations for the joint account thereof, and shall keep the Contract Area free from liens and encumbrances resulting therefrom except for those resulting from bona fide dispute as to services rendered or materials supplied.

4. Custody of Funds: Operator shall hold for the account of the Non-Operators any funds of the Non-Operators advanced or paid to the Operator, either for the conduct of operations hereunder or as a result of the sale of production from the Contract Area, and such funds shall remain the funds of the Non-Operators on whose account they are advanced or paid until used for their intended purpose or otherwise delivered to the Non-Operators or applied toward the payment of debts as provided in Article VII.B. Nothing in this paragraph shall be construed to establish a fiduciary relationship between Operator and Non-Operators for any purpose other than to account for Non-Operator funds as herein specifically provided. Nothing in this paragraph shall require the maintenance by Operator of separate accounts for the funds of Non-Operators unless the parties otherwise specifically agree.

5. Access to Contract Area and Records:
   - Operator shall, except as otherwise provided herein, permit each Non-Operator or its duly authorized representative, at the Non-Operator’s sole risk and cost, full and free access at all reasonable times to all operations of every kind and character being conducted for the joint account on the Contract Area and to the records of operations conducted thereon or production therefrom, including Operator’s books and records relating thereto. Such access rights shall not be exercised in a manner interfering with Operator's conduct of an operation hereunder and shall not obligate Operator to furnish any geologic or geophysical data of an interpretive nature unless the cost of preparation of such interpretive data was charged to the joint account. Operator will furnish to each Non-Operator upon request copies of any and all reports and information obtained by Operator in connection with production and related items, including, without limitation, meter and chart reports, production reports, monthly gauge reports, but excluding geophysical or interpretive data, to the extent not applicable to the production of the Non-Operator seeking the information. Any audit of Operator’s records relating to amounts expended and the appropriateness of such expenditures shall be conducted in accordance with the audit protocol specified in Exhibit "C." Operator will file, and upon written request promptly furnish copies to each requesting Non-Operator not in default of its payment obligations, all operational notices, reports, or applications required to be filed by local, State, Federal or Indian agencies or authorities having jurisdiction over operations hereunder. Each Non-Operator shall provide to Operator on a timely basis all information necessary to Operator to make such filings.

7. Drilling and Testing Operations: The following provisions shall apply to each well drilled hereunder, including but not limited to the Initial Well:
   - (a) Operator will promptly advise Non-Operators of the date on which the well is spudded, or the date on which drilling operations are commenced.
   - (b) Operator will send to Non-Operators such reports, test results and notices regarding the progress of operations on the well as the Non-Operators shall reasonably request, including, but not limited to, daily drilling reports, completion reports, and well logs.
   - (c) Operator shall adequately test all Zones encountered which may reasonably be expected to be capable of producing Oil and Gas in paying quantities as a result of examination of the electric log or any other logs or cores or tests conducted hereunder.

Any information furnished to or obtained by Operator pursuant to Articles V.D., V.D.5, V.D.6 and V.D.7 shall be maintained as confidential by the Non-Operator and shall not be disclosed by the Non-Operator without the prior written consent of Operator. Notwithstanding anything in this Agreement to the contrary, the rights of a Non-Operator as set forth in Articles V.D., V.D.5, V.D.6 and V.D.7 shall apply only in favor of those Non-Operators who participate in the particular operation, unless the Joint Accountee or the Non-Consenting Party, as the case may be, consents in writing to the disclosure of such information to other Non-Operators or joint accountees.

8. Cost Estimates: Upon request of any Consenting Party, Operator shall furnish estimates of current and cumulative costs incurred for the joint account at reasonable intervals during the conduct of any operation pursuant to this agreement. Operator shall not be held liable for errors in such estimates so long as the estimates are made in good faith and reasonable.
to drill, Rework, Sidetrack, Deepen, Recomplete or Plug Back such a well shall give written notice of the proposed operation to the parties who have not otherwise relinquished their interest in such objective Zone under this agreement and to all other parties in the case of a proposal for Sidetracking or Deepening, the location, proposed depth, objective Zone and the estimated cost of the operation. The parties to whom such a notice is delivered shall have thirty (30) days after receipt of the notice within which to notify the party proposing to do the work whether they elect to participate in the cost of the proposed operation. If a drilling rig is on location, notice of a proposal to Rerun, Sidetrack, Deepen, Recomplete, Plug Back or Deepen may be given by telephone and the response period shall be limited to forty-eight (48) hours, exclusive of Saturday, Sunday and legal holidays. Failure of a party to whom such notice is delivered to reply within the period above fixed shall constitute an election by that party not to participate in the cost of the proposed operation. Any proposal by a party to conduct an operation conflicting with the operation initially proposed shall be delivered to all parties within the time and in the manner provided in Article VI.B.6.

If all parties to whom such notice is delivered elect to participate in such a proposed operation, the parties shall be contractually committed to participate therein provided such operations are commenced within the time period hereinafter set forth, and Operator shall, no later than ninety (90) days after the expiration of the notice period of thirty (30) days (or as promptly as practicable after the expiration of the forty-eight (48) hour period when a drilling rig is on location, as the case may be), actually commence the proposed operation and thereafter complete it with due diligence at the risk and expense of the parties participating therein; provided, however, said commencement date may be extended upon written request of a party or parties for up to thirty (30) additional days if, for a party's or parties' opinion of Operator, such additional time is reasonably necessary to obtain permits from governmental authorities, surface rights (including rights-of-way) or appropriate drilling equipment, or to complete title examination or curative matter required for title approval or acceptance. If the actual operation has not been commenced within this extension thereof as specifically permitted herein or under any force majeure provisions of Article X) and if any party hereto still desires to conduct said operation, written notice proposing same must be resubmitted to the other parties in accordance herewith as if no prior proposal had been made. Those parties that did not participate in the drilling of a well for which a proposal to do so was submitted are hereby given notice that if such party desires to be entitled to share therewith the benefits of the drilling, Reworking, Sidetracking or Deepening operations, it shall reimburse the Drilling Parties in accordance with Article VI.B.4. in the event of a Deepening operation and in accordance with Article VI.B.5. in the event of a Sidetracking operation.

2. Less Than All Parties:
(a) Determination of Participation. If any party to whom such notice is delivered as provided in Article VI.B.1. or VI.C.1. (Option No. 2) elects not to participate in the proposed operation, then, in order to be entitled to the benefits of this Article, the party or parties giving the notice of the same at the location of the operation shall, no later than ninety (90) days after the expiration of the notice period of thirty (30) days (or as promptly as practicable after the expiration of the forty-eight (48) hour period when a drilling rig is on location, as the case may be), actually commence the proposed operation and complete it with due diligence. Operator shall perform all work for the account of the drilling rig or other equipment on location, and, if no Non-Consenting Party is a Non-Consenting Party, the Consenting Parties shall either: (i) request Operator to perform the work required by such proposed operation for the account of the Consenting Parties or (ii) designate one of the Consenting Parties as Operator to perform such work. The rights and duties granted to and imposed upon the party designated as Operator hereunder shall be granted to and imposed upon the party designated as Operator hereunder in which the original Operator is a Non-Consenting Party. Consenting Parties, when conducting operations on the Contract Area pursuant to this Article VI.B.2., shall comply with all terms and conditions of this agreement.

If less than all parties approve any proposed operation, the proposing party, immediately after the expiration of the applicable notice period, shall advise all Parties of the total interest of the parties approving such operation and its recommendation as to whether the Consenting Parties should proceed with the operation as proposed. Each Consenting Party, within forty-eight (48) hours (exclusive of Saturday, Sunday and legal holidays) after receiving a notice of the party proposing its party's desire to do so, shall advise the proposing party's interest therein as shown on Exhibit "A" or (c) carry only its proportionate part (determined by dividing such party's interest in the Contract Area by the interests of all Non-Consenting Parties in the Contract Area of Non-Consenting Parties. or (ii) carry its proportionate part (determined as provided in (ii)) of Non-Consenting Parties' proportionate part together with all or a portion of its proportionate part of any Non-Consenting Party's interests that any Non-Consenting Party did not elect to take. Any interest of Non-Consenting Parties that is not carried by a Consenting Party shall be deemed to be carried by the party proposing the operation if such party does not withdraw its proposal. Failure to advise the proposing party within the time required shall be deemed an election under (i). In the event a drilling rig is on location, notice may be given by telephone, and the time permitted for such a response shall not exceed fourteen (14) days. If the proposing party, at its election, may withdraw such proposal if there is less than 100% participation and shall notify all parties of such decision within ten (10) days, or within twenty-four (24) hours if a drilling rig is on location, following expiration of the applicable response period. If 100% subscription to the proposed operation is not obtained, the proposing party shall immediately notify the Consenting Parties that the proposed operation will not be carried out, and the operation and the party serving shall commence such operation within the period provided in Article VI.B.1., subject to the same extension right as provided therein.

(b) Reimbursement of Interest for Non-Participation. The entire cost and risk of conducting such operations shall be borne by the Consenting Parties in the proportions they have elected to bear same under the terms of the preceding paragraph. Consenting Parties shall keep the leasehold estates involved in such operations free and clear of all liens and encumbrances of every kind created by or arising from the operations of the Consenting Parties. If an such operation results in a dry hole, then subject to Articles VI.B.3. and VI.E.3., the Consenting Parties shall plug and abandon the well and restore the surface location at their sole cost, risk and expense; provided, however, that those Non-Consenting Parties that participated in the drilling, Deepening or Sidetracking of the well shall remain liable for, and shall pay, their proportionate share of the cost of plugging and abandoning the well and restoring the surface location insofar as only those costs were not increased by the subsequent operations of the Consenting Parties. If any well drilled, Reworked, Sidetracked, Deepened, Recompleted or Plugged Back under the agreements in results in a well capable of producing Oil and/or Gas in paying quantities, the Consenting Parties shall Complete and equip the well and shall then be turned over to Operator (if the Operator did not conduct the operation) and shall be operated by it at the expense and for the account of the Consenting Parties. Upon commencement of operations for the drilling, Reworking, Sidetracking, Reconstructing, Deepening or Plugging Back of any such well by Consenting Parties in accordance with the provisions of this Article VI.B.5., each such Non-Consenting Party shall have, in addition to its interest, the right to participate in such operations on the same basis as if such well had been developed, finished, completed, equipped and turned over to it by such party conducting the operation.

No party or parties of the Consenting Parties shall enter into any operation conflicting with the operation initially proposed shall be delivered to all parties with any within the time and in the manner provided in Article VI.B.4. If any such Non-Consenting Party does not elect to participate in the first Completion proposed for such well, the relinquishment provisions of this Article VI.B.3. shall apply to such party's interest.

(c) Reworking, Reconstructing or Plugging Back. An election not to participate in the drilling, Sidetracking or Deepening of a Non-Consenting Party's interest in the production obtained from the operation in which such Non-Consenting Party did not elect to participate. Such relinquishment shall be effective until the proceeds of the sale of such share, calculated at the well, or market value thereof if such share is not sold (after deducting applicable ad valorem, production, severance, and excise taxes, royalty, overriding royalty and other interests not excepted by Article III.C. not payable out of or measured by the production from such well accruing with respect to such interest until it reverts), shall equal the total of the following:

(i) 20% of each Non-Consenting Party's share of the cost of any newly acquired equipment beyond the wellhead connection of such well, including but not limited to stock tanks, separators, treaters, pumping equipment and piping, plus 100% of each Non-Consenting Party's share of the cost of operation of the well commencing with first production and continuing until each such Non-Consenting Party's relinquished interest shall revert to it under other provisions of this Article, it being agreed that each Non-Consenting Party's share of such costs and equipme will be that interest which would have been chargeable to such Non-Consenting Party had it participated in the well from the beginning of the operations; and

(ii) 40% % of (a) that portion of the costs and expenses of drilling, Reworking, Sidetracking, Deepening, Plugging Back, testing, Completing, and Rerecording, after deducting any cash contributions received under Article VIII.C., and of (b) that portion of the cost of newly acquired equipment in the well (to an and including the wellhead connections), which would have been chargeable to such Non-Consenting Party had it participated in the well from the beginning.

Notwithstanding anything to the contrary in this Article VI.B., if the well does not reach the deepest objective Zone described in the notice proposing the well for reasons other than the encountering of granite or practically impenetrable substance or other condition in the hole rendering further operations impracticable, Operator shall give notice thereof to each Non-Consenting Party who submitted or voted for an alternative proposal under Article VI.B.4. to drill the well to a shallower Zone than the deepest objective Zone proposed in the notice under which the well was drilled, and have the option to participate in the initial production and completion of the well by paying its share of the cost of drilling the well to its actual depth, calculated in the manner provided in Article VI.B.4 (a). If any such Non-Consenting Party does not elect to participate in the first Completion proposed for such well, the relinquishment provisions of this Article VI.B.3. shall apply to such party's interest.
conducted at any time prior to full recovery by the Consenting Parties of the Non-Consenting Party's rework cost amount. Any such Reworking, Reworking or Plugging Back operation conducted during the rework period shall be deemed part of the cost of operation of said well and there shall be added to the costs of the Reworking of the Reworking or Plugging Back operation which would have been chargeable to such Non-Consenting Party had it participated therein. If such a Reworking, Reworking or Plugging Back operation is proposed during such rework period, the provisions of this Article VI.B shall be applicable as between said Consenting Parties in said well.

(d) Reclamation Matters. During the period of time Consenting Parties are entitled to receive Non-Consenting Party's share of production, or the proceeds therefrom, Consenting Parties shall be responsible for the payment of all ad valorem, production, severance, excise, gathering and other taxes, and all royalty, overriding royalty and other burdens applicable to Non-Consenting Party's share of production not excepted by Article H.C.

In the case of any Reworking, Sidetracking, Plugging Back, Reworking or Deepening operation, the Consenting Parties shall be permitted to use, free of cost, all casing, tubing and other equipment in the well, but the ownership of all such equipment shall remain unchanged; and upon abandonment of such Reworking, Plugging Back, Reworking or Deepening, the Consenting Parties shall account for all such equipment to the owners thereof, with each party receiving its proportionate part in kind or in value, less cost of salvage.

Within ninety (90) days after the completion of any operation under this Article, the party conducting the operations for the Consenting Parties shall furnish each Non-Consenting Party with an inventory of the equipment in and connected to the well, the cost of the drilling, Sidetracking, Plugging Back, testing, Completing, Reworking, and equipping the well for production; or, at its option, the operating party, in lieu of an itemized statement of such costs, may submit a detailed statement of monthly billings. Each month thereafter, during the time the Consenting Parties are being reimbursed as provided above, the party conducting the operations for the Consenting Parties shall furnish the Non-Consenting Parties with an itemized statement of all costs and liabilities incurred in the operation of the well, together with a statement of the quantity of Oil and Gas produced from it and the amount of proceeds realized from the sale of the well's working interest production during the preceding month. In determining the quantity of Oil and Gas produced during any month, Consenting Parties shall use industry accepted methods such as but not limited to metering or periodic well tests. Any amount realized from the sale or other disposition of equipment newly acquired with any such operation which would have been owned by a Non-Consenting Party had it participated therein shall be credited against the total unreturned costs of the work done and of the equipment purchased in determining when the interest of such Non-Consenting Party shall revert to it as above provided, and if there is a credit balance, it shall be paid to such Non-Consenting Party.

If and when the Consenting Parties recover from a Non-Consenting Party's relinquished interest the amounts provided for above, the relinquished interests of such Non-Consenting Party shall automatically revert to it as of 7:00 a.m. on the day following the day on which such rework occurs and, from and after such reversion, such Non-Consenting Party shall own the same interest in such well, the material and equipment in or pertaining thereto, as such Non-Consenting Party would have been entitled to had it participated in the drilling, Sidetracking, Reworking, Deepening, Reworking, Plugging Back or Completing operation in such a well (including the period required under Article VI.B.6. to resolve competing proposals) shall be charged and borne as part of the drilling or rework operation just completed. Stand-by costs subsequent to all parties responding, or expiration of the response period, and prior to agreement as to the participating interests of all Consenting Parties pursuant to the terms of the second grammatical paragraph of Article VI.B.2 (a), shall be charged to and borne as part of the proposed operation, but if the proposal is subsequently withdrawn because of insufficient participation, such stand-by costs shall be allocated between the Consenting Parties in the proportion each Consenting Party's interest as shown on Exhibit "A" bears to the total interest as shown on Exhibit "A" of all Consenting Parties.

In the event that notice for a Sidetracking operation is given while the drilling rig to be utilized is on location, any party may request and receive up to five (5) additional days after expiration of the forty-eight hour response period specified in Article VI.B.1. within which to respond by paying all stand-by costs incurred during such extended response period. Operating party shall pay all estimated stand-by time in advance as a condition to extending the response period. If more than one party elects to take such additional time to respond to the notice, standby costs shall be allocated between the parties taking additional time to respond or a day-to-day basis in the proportion as shown on Exhibit "A" of all the electing parties.

4. Deepening: If less than all the parties elect to participate in a drilling, Sidetracking, or Deepening operation proposed pursuant to Article VI.B.1., the interest relinquished by the Non-Consenting Parties to the Consenting Parties under Article VI.B.2. shall relate only and be limited to the lesser of (a) the total depth actually drilled or (b) the Objective Depth or Zone of which the parties were given notice under Article VI.B.1. ("Initial Objective"). Such well shall not be Deepened beyond the Initial Objective without first complying with this Article to afford the Non-Consenting Parties the opportunity to participate in the Deepening operation.

In the event any Consenting Party desires to drill or Deepen a Non-Consenting Well to a depth below the Initial Objective, such party shall give notice thereof, complying with the requirements of Article VI.B.1. to all parties (including Non-Consenting Parties). Thereupon, Articles VI.B.1. and 2. shall apply and all parties receiving such notice shall have the right to participate or not participate in the Deepening of such well pursuant to said Articles VI.B.1. and 2. If a Deepening operation is approved pursuant to such provisions and if any Non-Consenting Party elects to participate in the Deepening operation, such Non-Consenting Party shall pay or make reimbursement (as the case may be) of the following costs and expenses:

(a) If the proposal to Deepen is made prior to the Completion of such well as a well capable of producing in paying quantities, such Non-Consenting Party shall pay (or reimburse Consenting Parties for, as the case may be) its proportionate share of all costs of drilling, Completing, and equipping said well from the surface to the Initial Objective, calculated in the manner provided in paragraph (a) above, less those costs recovered by the Consenting Parties from the sale of production from the well. The Non-Consenting Party shall also pay its proportionate share of all costs of re-entering said well. The Non-Consenting Parties' proportionate share (based on the percentage of such well Non-Consenting Party would have owned if it had previously participated in such Non-Consent Well) of the costs of salvable materials and equipment remaining in the hole and salvable surface equipment used in connection with such well shall be determined in accordance with Exhibit "C". If the Consenting Parties have recovered the cost of drilling, Completing, and equipping the well at the time such Deepening operation is conducted, the Remaining Consenting Party may participate in the Deepening of the well with no payment for costs incurred prior to re-entering the well for Deepening.

The foregoing shall not imply a right of any Consenting Party to propose any Deepening for a Non-Consent Well prior to the drilling of such well to its Initial Objective without the consent of the other Consenting Parties as provided in Article VI.F.

This Article VI.B.4. shall not apply to operations on an existing lateral of a Horizontal or Multi-Lateral Well.

Sidetracking: Any party having the right to participate in a proposed Sidetracking operation that does not own an interest in the affected wellbore at the time of the notice shall, upon electing to participate, tender to the wellbore owner its proportionate share (equal to its interest in the Sidetracking operation) of the value of that portion of the existing wellbore to be utilized as follows:

(a) If the proposal is for Sidetracking an existing dry hole, reimbursement shall be on the basis of the actual costs incurred in the initial drilling of the well down to the depth at which the Sidetracking operation is initiated and upon abandonment, the Consenting Parties shall be entitled to reimbursement for all such party's proportionate share of all costs of the Sidetracking operation is initiated shall be determined as included in the original proposed drilling operations.
6. Order of Preference of Operations. Except as otherwise specifically provided in this agreement, if any party desires to propose the conduct of an operation that conflicts with a proposal that has been made by a party under this Article VI, such party shall have fifteen (15) days from delivery of the proposal to drill a well or to perform an operation on a well where no drilling rig is on location, or twenty-four (24) hours, exclusive of Saturday, Sunday and legal holidays, from delivery of the initial proposal, if a drilling rig is on location for the well on which such operation is to be conducted, to deliver to all parties entitled to participate in the proposed operation such party's alternative proposal or to consent to participation in the proposed operation. Each party receiving such proposals shall elect by delivery of notice to Operator within five (5) days after expiration of the proposal period, or within twenty-four (24) hours (exclusive of Saturday, Sunday and legal holidays) if a drilling rig is on location for the well that is the subject of the proposals, to participate in one of the competing proposals. Any party not electing within the time required shall be deemed not to have elected to participate in the prevailing proposal.

The proposals shall conform to the then-existing well spacing pattern or an approved spacing pattern for such Zone.

7. Conformity to Spatial Pattern. Notwithstanding the provisions of this Article VI.B.2., it is agreed that no wells shall be proposed to be drilled to or Completed in or produced from a Zone from which a well located elsewhere on the Contract Area is producing, unless such well conforms to the then-existing well spacing pattern or an approved spacing pattern for such Zone.

8. Paying Wells. No party shall conduct any Reworking, Deepening, Plugging Back, Completion, Recompletion, or Sidetracking operation under this agreement with respect to any well then capable of producing in paying quantities except with the consent of all parties that have not relinquished interests in the well at the time such operation is conducted.

C. Completion of Wells; Reworking and Plugging Back:

1. Completion. Without the consent of all parties, no well shall be drilled, Deepened, or Plugged Back, except as approved by all parties.

D. Other Operations:

Operator shall not undertake any single project reasonably estimated to require an expenditure in excess of $______ (such expenditure to include any applicable State or Federal taxes) except in connection with the drilling, Sidetracking, Reworking, Deepening, or Plugging Back of a well that has been previously authorized by or pursuant to this agreement, provided, however, that in the case of an explosion, fire, flood, or other sudden emergency, whether of the same or different nature, Operator may take such steps and incur such expenses as its opinion are required to deal with the emergency to safeguard life and property but Operator, as promptly as possible, shall report the emergency to the other parties. If Operator prepares an AFE for its own use, Operator shall furnish any Non-Operator requesting same an information copy thereof for any single project costing in excess of $_______. Any party which has not relinquished its interest in a well shall have the right to propose that Operator perform repair work or undertake the installation of artificial lift equipment or any ancillary production facilities such as water disposal wells or to conduct additional work with respect to any well drilled hereunder or other similar project (but not including the installation of gathering lines or other transportation or marketing facilities, the installation of which shall be governed by separate agreement between the parties) reasonably estimated to require an expenditure in excess of the amount set forth above in this Article VLD (except in connection with an operation required to be proposed under Articles VI.B.1. or VI.C.1. Option No. 2, which shall be governed exclusively by those Articles). Operator shall deliver such proposal to all parties entitled to participate therein. If within thirty (30) days thereof Operator secures the written consent of any party or parties owning at least ___% of the interests of the parties entitled to participate in such operation, each party having the right to participate in such project shall be bound by the terms of such proposal and shall be obligated to pay its proportionate share of the costs of the proposed project as if it had consented to such project pursuant to the terms of the proposal.

E. Abandonment of Wells:

1. Abandonment of Dry Holes. Except for any well drilled or Deepened pursuant to Article VI.B.2., any well which has been Drilled or Deepened under the terms of this agreement and is proposed to be completed as a dry hole shall not be plugged and abandoned without the consent of all parties. Should Operator, after diligent effort, be unable to contact any party, or should any party fail to reply within forty-eight (48) hours (exclusive of Saturday, Sunday and legal holidays) after delivery of notice of the proposal to plug and abandon such well, such party shall be deemed to have consented to the proposed abandonment. All such wells shall be plugged and abandoned in accordance with applicable regulations and the cost, risk and expense of the parties who participated in the cost of drilling or Deepening such well. Any party who objects to plugging and abandoning Operator within forty-eight (48) hours (exclusive of Saturday, Sunday and legal holidays) after delivery of notice of the proposed plugging shall take over the well as of the end of such forty-eight (48) hour notice period and conduct further operations in search of Oil or Gas subject to the provisions of Article VI.B.; failure of such party to provide proof reasonably satisfactory to Operator of its financial capability to conduct such operations or to take over the well within such forty-eight (48) hour period shall constitute an election by that party not to participate in the prevailing proposal.

2. Completing, Recompleting, or Plugging Back. No well shall, be Reworked, Recompleted or Plugged Back except as an Rework, Recompletion, or Plugging Back pursuant to the provisions of Article VI.B.2. of this agreement. Consent to the Reworking, Recompleting or Plugging Back of a well shall include all necessary expenditures in conducting such operations and Completing and equipping of said well, including necessary tankage and/or surface facilities.

3. Other Operations. Operator shall undertake any single project reasonably estimated to require an expenditure in excess of $______ (such expenditure to include any applicable State or Federal taxes) except in connection with the drilling, Sidetracking, Reworking, Deepening, Completing, Recompleting, or Plugging Back of a well that has been previously authorized by or pursuant to this agreement, provided, however, that, in the case of explosion, fire, flood, or other sudden emergency, whether of the same or different nature, Operator may take such steps and incur such expenses as its opinion are required to deal with the emergency to safeguard life and property but Operator, as promptly as possible, shall report the emergency to the other parties. If Operator prepares an AFE for its own use, Operator shall furnish any Non-Operator requesting same an information copy thereof for any single project costing in excess of $_______. Any party which has not relinquished its interest in a well shall have the right to propose that Operator perform repair work or undertake the installation of artificial lift equipment or any ancillary production facilities such as water disposal wells or to conduct additional work with respect to any well drilled hereunder or other similar project (but not including the installation of gathering lines or other transportation or marketing facilities, the installation of which shall be governed by separate agreement between the parties) reasonably estimated to require an expenditure in excess of the amount set forth above in this Article VLD (except in connection with an operation required to be proposed under Articles VI.B.1. or VI.C.1. Option No. 2, which shall be governed exclusively by those Articles). Operator shall deliver such proposal to all parties entitled to participate therein. If within thirty (30) days thereof Operator secures the written consent of any party or parties owning at least ___% of the interests of the parties entitled to participate in such operation, each party having the right to participate in such project shall be bound by the terms of such proposal and shall be obligated to pay its proportionate share of the costs of the proposed project as if it had consented to such project pursuant to the terms of the proposal.
2. Abandonment of Wells That Have Produced:

Except for any well in which a Non-Consent operation has been conducted hereunder for which the Consenting Parties have not been fully reimbursed as herein provided, any well which has been completed as a producer shall not be plugged and abandoned without the consent of all parties. If any parties consent to such abandonment, the well shall be plugged and abandoned in accordance with applicable regulations and at the cost, risk, and expense of all the parties hereto. Failure of a party to reply within sixty (60) days of delivery of notice of proposed abandonment shall be deemed an election to consent to the proposal. If, within sixty (60) days after delivery of notice of proposed abandonment of any well, all parties do not agree to the abandonment of such well, those wishing to continue its operation from the Zone then open to production shall be obligated to take over the well as of the expiration of the applicable notice period and shall indemnify Operator (if Operator is an abandoning party) and the other abandoning parties against liability for any further operations on the well conducted by such parties. Failure of such party or parties to provide proof reasonably satisfactory to Operator of their financial capability to conduct such operations or to take over the well as of the expiration of the applicable notice period shall entitle Operator to retain or take possession of such well and plug and abandon the well.

Parties taking over a well as provided herein shall tender to each of the other parties its proportionate share of the value of the well's saleable material and equipment, in accordance with the provisions of Exhibit "C," less the estimated cost of salvaging and the estimated cost of plugging and abandoning and restoring the surface; provided, however, that in the event the estimated plugging and abandoning and surface restoration costs and the estimated cost of salvaging are higher than the value of the well's saleable material and equipment, each of the abandoning parties shall tender to the parties continuing operations their proportionate share of the excess cost. Each abandoning party shall assign to the non-abandoning parties, without warranty, express or implied, as to title or as to quantity, or fitness for use of the equipment and material, all of its interest in the wellbore of the well and related equipment, together with its interest in the Leasehold insofar and only insofar as such Leasehold covers the right to obtain production. If the interest of the abandoning party is or includes an Oil and Gas Interest, such party shall execute and deliver to the non-abandoning party or parties an oil and gas lease, limited to the wellbore and the Zone then open to production, for a term of one (1) year and so long thereafter as Oil and/or Gas is produced from the Zone covered thereby, such lease to be in the form attached as Exhibit "B." The lease shall be on the leasehold from the Drilling Unit upon which the well is located. The payments by, and the assignments or leases to, the assignees shall be in a ratio based upon the relationship of their respective percentage of participation in the Contract Area to the aggregate of the percentages of participation in the Contract Area of all assignees. Thereafter, abandoning parties shall have no further responsibility, liability, or interest in the operation of or production from the well in the Zone then open other than the royalties retained in any lease made under the terms of this Article. Upon request, Operator shall continue to operate the assigned well for the account of the non-abandoning parties at the rates and charges contemplated by this agreement, plus any additional cost and charges which may arise as the result of the separate ownership of the assigned well. Upon proposed abandonment of the producing Zone assigned or leased, the assignor or lessor shall then have the option to repurchase its prior interest in the well (using the same value formula and participate in further operations therein subject to the provisions herein).

3. Abandonment of Non-Consent Operations:

The provisions of Article VII.E.1. or VII.E.2. above shall be applicable as between Consenting Parties in the event of the proposed abandonment of any well excepted from said Articles; provided, however, no well shall be permanently plugged and abandoned unless and until all parties have been notified in writing of the intention to abandon such well, and a reasonable period of time shall have been allowed for the parties to consider the consequences of such abandonment and if agreed, to make such arrangements for the proper abandonment of such well as would not be inconsistent with the minimum needs of the industry under the particular circumstances, but in no event for a period in excess of one (1) year.

F. Termination of Operations:

Upon the commencement of an operation for the drilling, Reworking, Sidetracking, Plugging Back, Deepening, testing, Completion or plugging of a well, including but not limited to the Initial Well, such operation shall be terminated without the written consent of all parties having an interest in such well. Any party may terminate an operation for the drilling of an additional well for the purpose of drilling additional wells solely for its own use or marketing purposes and production unavoidably lost. Any extra expenditure incurred in the taking in kind or separate disposition by any party of its proportionate share of the production shall be borne by such party. Any party taking its share of production in kind shall be required to pay for only its proportionate share of such party's surface facilities which it uses.

Each party shall take in kind or separately dispose of its proportionate share of all Oil and Gas produced from the Contract Area, exclusive of production which may be used in development and producing operations and in preparing and treating Oil and Gas for marketing purposes and production unavoidably lost. Any extra expenditure incurred in the taking in kind or separate disposition by any party of its proportionate share of the production shall be borne by such party. Any party taking its share of production in kind shall be required to pay for only its proportionate share of such party's surface facilities which it uses. Each party shall take in kind or separately dispose of its proportionate share of the Oil produced from the Contract Area, Operator shall have the right, subject to the revocation at will by the party owning it, but not the obligation, to purchase such Oil or sell it to others at any time and from time to time, for the account of the non-taking party. Any such purchase or sale by Operator may be terminated by Operator upon at least ten (10) days written notice to the owner of said production and shall be subject always to the right of the owner of the production upon at least ten (10) days written notice to the party of the relinquishment of the party's interest in the production of Oil. Any purchase or sale of any other party's share of Oil shall be only for such reasonable periods of time as are consistent with the minimum needs of the industry under the particular circumstances, but in no event for a period in excess of one (1) year.

Any such sale by Operator shall be in a manner commercially reasonable under the circumstances but Operator shall have no duty to share any existing market or to obtain a price equal to that received under any existing market. The sale or delivery by Operator of a non-taking party's share of Oil under the terms of any existing contract of Operator shall not give the non-taking party any interest in or make the non-taking party a party to said contract. Any purchase shall be made by Operator without giving the non-taking party at least ten (10) days written notice of such intended purchase and the price to be paid or the pricing basis to be used.

All parties shall give timely written notice to Operator of their Gas marketing arrangements for the following month, excepting price, and shall notify Operator immediately in the event of a change in such arrangements. Operator shall maintain records of all marketing arrangements, and of volumes actually sold or transported, which records shall be made available to Non-Operators upon reasonable request.

In the event one or more parties' separate disposition of its share of the Gas causes split-stream deliveries to separate pipelines and/or deliveries which on a day-to-day basis for any reason are not exactly equal to a party's respective proportionate share of total delivered sales to be allocated to it, the balancing or accounting between the parties shall be in accordance with any Gas balancing agreement between the parties hereto, whether such an agreement is attached as Exhibit "E" or other separate agreement. Operator shall give notice to all parties of the first sales of Gas from any well under this agreement.

Option No. 2: No Gas Balancing Agreement:

Each party shall take in kind or separately dispose of its proportionate share of all Oil and Gas produced from the Contract Area, exclusive of production which may be used in development and producing operations and in preparing and treating Oil and Gas for marketing purposes and production unavoidably lost. Any extra expenditure incurred in the taking in kind or separate disposition by any party of its proportionate share of the production shall be borne by such party. Any party taking its share of production in kind shall be required to pay for only its proportionate share of such party's surface facilities which it uses. Each party shall take in kind or separately dispose of its proportionate share of all Oil and Gas produced from the Contract Area, exclusive of production which may be used in development and producing operations and in preparing and treating Oil and Gas for marketing purposes and production unavoidably lost. Any extra expenditure incurred in the taking in kind or separate disposition by any party of its proportionate share of the production shall be borne by such party. Any party taking its share of production in kind shall be required to pay for only its proportionate share of such party's surface facilities which it uses.

Each party shall execute such division orders and contracts as may be necessary for the sale of its interest in production from the Contract Area, and, except as provided in Article VII.B., shall be entitled to receive payment directly from the purchaser thereof for its share of production. If any party fails to make the arrangements necessary to take in kind or separately dispose of its proportionate share of the Oil produced from the Contract Area, Operator shall have the right, subject to the revocation at will by the party owning it, but not the obligation, to purchase such Oil or sell it to others at any time and from time to time, for the account of the non-taking party. Any such purchase or sale by Operator may be terminated by Operator upon at least ten (10) days written notice to the owner of said production and the price to be paid or the pricing basis to be used.

All parties shall give timely written notice to Operator of their Gas marketing arrangements for the following month, excepting price, and shall notify Operator immediately in the event of a change in such arrangements. Operator shall maintain records of all marketing arrangements, and of volumes actually sold or transported, which records shall be made available to Non-Operators upon reasonable request.

In the event one or more parties' separate disposition of its share of the Gas causes split-stream deliveries to separate pipelines and/or deliveries which on a day-to-day basis for any reason are not exactly equal to a party's respective proportionate share of total delivered sales to be allocated to it, the balancing or accounting between the parties shall be in accordance with any Gas balancing agreement between the parties hereto, whether such an agreement is attached as Exhibit "E" or other separate agreement. Operator shall give notice to all parties of the first sales of Gas from any well under this agreement.
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EXPENDITURES AND LIABILITY OF PARTIES

A. Liability of Parties:

The liability of the parties shall be several, not joint or collective. Each party shall be responsible only for its obligations, and shall be liable only for its proportionate share of the costs of developing and operating the Contract Area. Accordingly, the liens granted among the parties in Article VII.B. are given to secure only the debts of each severally, and no party shall have any liability to third parties hereunder to satisfy the default of any other party in the payment of any expense or obligation hereunder. It is not the intention of the parties to create, nor shall they be deemed as creating, a partnership, joint venture, agency relationship or association, or to render the parties liable as partners, co-venturers, or principals. In their relations with each other under this agreement, the parties shall not be considered fiduciaries or to have established a confidential relationship but rather shall be free to act on an arm’s-length basis in accordance with their own respective self-interest, subject, however, to the obligation of the parties to act in good faith in their dealings with each other with respect to activities hereafter.

B. Liens and Security Interests:

Each party grants to the other parties hereto a lien upon any interest it now owns or hereafter acquires in Oil and Gas Leases and Oil and Gas Interests in the Contract Area, and a security interest and/or purchase money security interest in any interest it now owns or hereafter acquires in the personal property and fixtures on or used or obtained for use in connection therewith, to secure performance of all of its obligations under this agreement, including but not limited to payment of all sums paid by such party hereunder, the assignment or relinquishment of interest in Oil and Gas Leases as required hereunder, and the proper performance of operations hereunder. Such lien and security interest granted by each party shall include such party’s leasehold interests, working interests, operating rights, and all other rights, titles, and interests in and to the Contract Area now owned or hereafter acquired by such party, in lands pooled or unitized with the Contract Area or in which the Contract Area is situated in order to secure the payment to Operator of any sum due hereunder for services performed or materials furnished, and in no event for a period in excess of one (1) year.

Any such sale by Operator shall be in a manner commercially reasonable under the circumstances, but Operator shall have no duty to sell any existing market or transportation arrangement or to obtain a price or transportation fee equal to that received under any existing market or transportation arrangement. The sale or delivery by Operator of a non-taking party’s share of production under the terms of any existing contract of Operator shall not give the non-taking party any interest in or make the non-taking party a party to said contract. No purchase of Oil and Gas and no sale of Gas shall be made by Operator without first giving the non-taking party ten (10) days written notice of such intended purchase or sale and the price to be paid or the pricing basis to be used. Operator shall give notice to all parties of the first sale of Gas from any well under this agreement.

All parties shall give timely written notice to Operator of their Gas marketing arrangements for the following month, excluding price, and shall notify Operator immediately in the event of a change in such arrangements. Operator shall maintain records of all marketing arrangements, and of volumes actually sold or transported, which records shall be made available to Non-Operators upon reasonable request.
and election requested by a non-defaulting Non-Operator, and when the Operator is the party in default, the applicable notices and elections can
be delivered by any Non-Operator. Election of any one or more of the following remedies shall not preclude the subsequent use of any other
remedy specified below or otherwise available to a non-defaulting party.

Suspension of Rights: Any party may deliver to the party in default a Notice of Default, which shall specify the default, specify
the action to be taken to cure the default, and specify that failure to take such action will result in the exercise of one or more of the remedies
provided in this Article. If the default is not cured within thirty (30) days of the delivery of such Notice of Default, all of the rights of the
defaulting party granted by this agreement may upon notice be suspended until the default is cured, without prejudice to the right of the non-
defaulting party or parties to continue to enforce the obligations of the defaulting party previously accrued or thereafter accruing under this
agreement. If Operator is the party in default, the Non-Operators shall have in addition the right, by vote of Non-Operators owning a majority in
interest in the Contract Area, to appoint a new Operator effective immediately. The rights of a defaulting party that may be suspended hereunder at the election of the non-defaulting parties shall include, without limitation, the right to receive information as to any operation conducted hereunder during the period of such default, the right to elect to participate in an operation proposed under Article VI.B. of this agreement, the right to participate in an operation conducted for the accounts of the parties if the party has previously elected to participate in such operation, and the right to receive of production from any well subject to this Agreement.

Suit for Damages: Non-defaulting parties or Operator for the benefit of non-defaulting parties may sue (at joint account expense)
to collect the amount of any default, plus interest accruing on the amount of the default from the date of collection of the rate specified in Exhibit "C" attached hereto. Nothing herein shall prevent any party from suing any defaulting party to collect consequential damages accruing to such party as a result of the default.

Deemed Non-Consent: The non-defaulting party may deliver a written Notice of Non-Consent Election to the defaulting party at any
cost of any such protest assessment shall have been finally determined, Operator shall pay the tax for the joint account, together with any interest and
costs and taxes imposed in the manner provided in Exhibit "C." If Operator considers any tax assessment improper, Operator may, at its discretion, protest within the time and manner prescribed by law, and prosecute the protest to a final determination, unless all parties agree to abandon the protest prior to final determination. During the
deposition of administrative or judicial proceedings, Operator may elect to pay, under protest, all taxes and any interest and penalty. When
any such protested assessment shall have been finally determined, Operator shall pay the tax for the joint account, together with any interest and
penalty accrued, and the total cost shall then be assessed against the parties, and be paid by them, as provided in Exhibit "C." Each party shall pay or cause to be paid all production, severance, excise, gathering and other taxes imposed upon or with respect to the
operation or handling of a party's share of Oil and Gas produced under the terms of this agreement.

ARTICLE VIII.
ACQUISITION, MAINTENANCE OR TRANSFER OF INTEREST

A. Surrender of Leases:

1. The Leases covered by this agreement, insofar as they embrace acreage in the Contract Area, shall not be surrendered in whole or in part
unless all parties consent thereto.

However, should any party desire to surrender its interest in any Lease or in any portion thereof, such party shall give written notice of
the proposed surrender to all parties, and the parties to whom such notice is delivered shall have thirty (30) days after delivery of the notice within
which to notify the party proposing the surrender whether they elect to contest thereto. Failure of a party to whom such notice is delivered to
reply within thirty (30) days of such notice shall be deemed a consent to such surrender. The surrender of the Leases described in a notice to the
parties not consenting to surrenders shall be made at a time and place to be agreed upon by such parties; provided, however, that the
surrendering party shall deliver a Notice of Default, which shall specify the default, specify the action to be taken to cure the default, and
specify that failure to take such action will result in the exercise of one or more of the remedies provided in this Article. If the default is not cured within thirty (30) days of the delivery of such Notice of Default, all of the rights of the
defaulting party granted by this agreement may upon notice be suspended until the default is cured, without prejudice to the right of the non-
defaulting party or parties to continue to enforce the obligations of the defaulting party previously accrued or thereafter accruing under this
agreement. If Operator is the party in default, the Non-Operators shall have in addition the right, by vote of Non-Operators owning a majority in
interest in the Contract Area, to appoint a new Operator effective immediately. The rights of a defaulting party that may be suspended hereunder at the election of the non-defaulting parties shall include, without limitation, the right to receive information as to any operation conducted hereunder during the period of such default, the right to elect to participate in an operation proposed under Article VI.B. of this agreement, the right to participate in an operation conducted for the accounts of the parties if the party has previously elected to participate in such operation, and the right to receive of production from any well subject to this Agreement.

Suit for Damages: Non-defaulting parties or Operator for the benefit of non-defaulting parties may sue (at joint account expense)
to collect the amount of any default, plus interest accruing on the amount of the default from the date of collection of the rate specified in Exhibit "C" attached hereto. Nothing herein shall prevent any party from suing any defaulting party to collect consequential damages accruing to such party as a result of the default.

Deemed Non-Consent: The non-defaulting party may deliver a written Notice of Non-Consent Election to the defaulting party at any
cost of any such protest assessment shall have been finally determined, Operator shall pay the tax for the joint account, together with any interest and
costs and taxes imposed in the manner provided in Exhibit "C." If Operator considers any tax assessment improper, Operator may, at its discretion, protest within the time and manner prescribed by law, and prosecute the protest to a final determination, unless all parties agree to abandon the protest prior to final determination. During the
deposition of administrative or judicial proceedings, Operator may elect to pay, under protest, all taxes and any interest and penalty. When
any such protested assessment shall have been finally determined, Operator shall pay the tax for the joint account, together with any interest and
penalty accrued, and the total cost shall then be assessed against the parties, and be paid by them, as provided in Exhibit "C." Each party shall pay or cause to be paid all production, severance, excise, gathering and other taxes imposed upon or with respect to the
operation or handling of a party's share of Oil and Gas produced under the terms of this agreement.
proportions that the interest of each bears to the total interest of all such parties. If the interest of the parties to whom the assignment is to be made varies according to depth, then the interest assigned shall similarly reflect such variances.

Any assignment, lease or surrender made under this provision shall not reduce or change the assignor’s, lessor’s or surrendering party’s interest as it was immediately before the assignment, lease or surrender in the balance of the Contract Area, and the acreage assigned, leased or surrendered, and subsequent operations thereon, shall not thereafter be subject to the terms and provisions of this agreement but shall be deemed subject to a separate Operating Agreement in the form of this agreement.

B. Renewal or Extension of Leases:

If any party secures a renewal or replacement of an Oil and Gas Lease or Interest subject to this agreement, then all other parties shall be notified promptly upon such acquisition or, in the case of a replacement Lease taken before expiration of an existing Lease, promptly upon expiration of the expiration date of the Lease. The parties notified shall have the right for a period of thirty (30) days following delivery of such notice in which to elect to participate in the ownership of the renewal or replacement Lease, insofar as such Lease affects lands within the Contract Area, by paying to the party who acquired their proportionate shares of the acquisition cost allocated at such point of such Lease within the Contract Area, which shall be in proportion to the time the parties have participated in the operations related to the Contract Area, or the aggregate of the percentages of participation in the Contract Area of all parties participating in the purchase of such renewal or replacement Lease. The acquisition of a renewal or replacement Lease by any or all of the parties hereto shall not cause a readjustment of the interests of the parties stated in Exhibit "A," but any renewal or replacement Lease which is less than all renewal or replacement Leases shall not be subject to this agreement but shall be deemed subject to a separate Operating Agreement in the form of this agreement.

If the interests of the parties in the Contract Area vary according to depth, then their right to participate proportionately in renewal or replacement Leases and their right to receive an assignment of interests shall also reflect such variation.

The provisions of this Article shall apply to renewal or replacement Leases whether they are for the entire interest covered by the expiring Lease or cover only a portion of its area or an interest therein. Any renewal or replacement Lease taken before the expiration of its predecessor Lease or in the same area but becoming effective within six (6) months after the expiration of the Lease shall not be subject to the provisions of this Article.

The provisions in this Article shall also be applicable to extensions of Oil and Gas Leases.

C. Acreage or Cash Contributions:

While this agreement is in force, if any party contracts for a contribution of cash towards the drilling of a well or any other operation on the Contract Area, such contribution shall be paid to the party who conducted the drilling or other operation and shall be applied by it against the cost of such drilling or other operation. If the contribution be in the form of acreage, the party to whom the contribution is made shall promptly tender an assignment of the acreage, without warranty of title, to the Drilling Parties in the proportion said Drilling Parties shared the cost of drilling the well. Such acreage shall become a separate Contract Area and, to the extent possible, be governed by provisions identical to this agreement. Each party shall promptly notify all other parties of any acreage or cash contributions it may obtain in support of any well or any other operation on the Contract Area. The above provisions shall also be applicable to options to pay cash outside the Contract Area which are in support of a well drilled inside the Contract Area.

If any party contracts for any consideration relating to disposition of such party's share of substances produced hereunder, such consideration shall not be deemed a contribution as contemplated in this Article VIII.C.

D. Assignment; Maintenance of Uniform Interest:

For the purpose of maintaining uniformity of ownership in the Contract Area in the Oil and Gas Leases, Oil and Gas Interests, wells, equipment and production covered by this agreement no party shall sell, encumber, transfer or make other disposition of its interest in the Oil and Gas Leases and Oil and Gas Interests embraced within the Contract Area or in wells, equipment and production unless such disposition covers either:

1. the entire interest of the party in all Oil and Gas Leases, Oil and Gas Interests, wells, equipment and production; or
2. an equal undivided percent of the party’s present interest in all Oil and Gas Leases, Oil and Gas Interests, wells, equipment and production in the Contract Area.

Every sale, encumbrance, transfer or other disposition made by any party shall be expressly subject to this agreement and shall be made without prejudice to the transferee of an ownership interest in any Oil and Gas Lease or Interest shall be deemed to a party thereof as to the interest conveyed from and after the effective date of the transfer or ownership; provided, however, that the other parties shall not be required to recognize any such sale, encumbrance, transfer or other disposition for any purpose hereunder until thirty (30) days after they have received a copy of the instrument of conveyance or assignment evidencing the transfer or transfer. No assignment or other disposition of interest by a party shall relieve such party of obligations previously incurred by such party hereunder with respect to the interest transferred, including without limitation the obligation of a party to pay all costs attributable to an operation conducted hereunder in which such party has agreed to participate prior to making such assignment and the lien and security interest granted by Article VII.B. shall continue to burden the interest transferred to secure payment of any such obligations.

If, at any time the interest of any party is divided among and owned by four or more co-owners, Operator, at its discretion, may require such co-owners to appoint a single transferee or agent with full authority to receive notices, approve expenditures, receive billings for and approve, and pay such party’s share of the joint expenses, and to deal generally with, and with power to bind, the co-owners of such party’s interest within the scope of the operations embraced in this agreement; however, all such co-owners shall have the right to enter into and execute all contracts or agreements for the disposition of their respective shares of the Oil and Gas produced from the Contract Area and they shall have the right to receive, separately, payment of the sales proceeds thereof.

E. Waiver of Rights to Partition:

If permitted by the laws of the state or states in which the property covered hereby is located, each party hereto owning an undivided interest in the Contract Area waive any and all rights it may have to partition and have set aside to it in severalty its undivided interest therein.

F. Preferential Right to Purchase:

If, permitted by the laws of the state or states in which the property covered hereby is located, each party hereto owning an undivided interest in the Contract Area waive any and all rights it may have to partition and have set aside to it in severalty its undivided interest therein.

ARTICLE IX.

INTERNAL REVENUE CODE ELECTION

If, for federal income tax purposes, this agreement and the operations hereunder are regarded as a partnership, and if the parties have not otherwise agreed to form a tax partnership pursuant to Exhibit "G" or other agreement between them, each party hereby elected to be excluded from the application of Subchapter "K," Chapter 1, Subtitle "A," of the Internal Revenue Code of 1986, as amended ("Code"), as permitted and authorized by Section 761 of the Code and the regulations promulgated thereunder. Operator is authorized and directed to execute on behalf of each party hereby affected such evidence of this election as may be required by the Secretary of the Treasury of the United States or the Federal Internal Revenue Service, including specifically, but not by way of limitation, all of the returns, statements, and the data required by Treasury Regulations § 1.761. Should there be any requirement that each party hereby affected give further evidence of this election, each such party shall execute such documents and furnish such other evidence as may be required by the Federal Internal Revenue Service or as may be necessary to evidence this election. No such requirement shall be deemed a restriction on the election made hereby. If any present or future income tax laws of the state or states in which the Contract Area is located or any future income tax laws of the United States contain provisions similar to those in Subchapter "K," Chapter 1, Subtitle "A," of the Code, under which an election similar to that provided by Section 761 of the Code is permitted, each party hereby affected shall make such election as may be permitted or required by such laws. In making the foregoing election, each party hereby that the income derived by such party from operations hereunder can be adequately determined without the computation of partnership taxable income.
ARTICLE X. CLAIMS AND LAWSUITS

Operator may settle any single uninsured third party damage claim or suit arising from operations hereunder if the expenditure does not exceed $______ Dollars ($______) and if the payment is in complete settlement of such claim or suit. If the amount required for settlement exceeds the above amount, the parties hereto shall assume and take over the further handling of the claim or suit, unless such authority is delegated to Operator. All costs and expenses of handling, settling, or otherwise disposing such claim or suit shall be at the joint expense of the parties participating in the operation from which the claim or suit arises. If a claim is made against any party or if any party is sued on account of any matter arising from operations hereunder over which such individual has no control because of the rights given Operator by this agreement, such party shall immediately notify all other parties, and the claim or suit shall be treated as any other claim or suit involving operations hereunder.

ARTICLE XI. FORCE MAJEURE

If any party is rendered unable, wholly or in part, by force of circumstances to carry out its obligations under this agreement, other than the obligation to indemnify or make money payments or furnish security, that party shall give to all other parties prompt written notice of the force majeure with reasonably full particulars concerning it; thenceforth, the obligations of the party giving the notice, so far as they are affected by the force majeure, shall be suspended during, but no longer than, the continuance of the force majeure. The term "force majeure" as here employed, shall mean an act of God, strike, lockout, or other industrial disturbance, act of the public enemy, war, blockade, public riot, lightning, fire, storm, flood or other act of nature, explosion, governmental action, governmental delay, restraint or inaction, unavailability of equipment, and any other cause, whether of the kind specifically enumerated above or otherwise, which is not reasonably within the control of the party claiming suspension.

The affected party shall use all reasonable diligence to remove the force majeure situation as quickly as practicable. The requirement that any force majeure shall be remedied with all reasonable dispatch shall not require the settlement of strikes, lockouts, or other labor difficulty by the party involved, contrary to its wishes; how all such difficulties shall be handled shall be entirely within the discretion of the party concerned.

ARTICLE XII. NOTICES

All notices authorized or required between the parties by any of the provisions of this agreement, unless otherwise specifically provided, shall be in writing and delivered in person or by United States mail, courier service, telegram, telex, telecopier or any other form of facsimile, postage or charges prepaid, and addressed to such parties at the addresses listed on Exhibit "A." All telephone or oral notices permitted by this agreement shall be confirmed immediately thereafter by written notice. The originating notice given under any provision hereof shall be deemed delivered on the date such notice is received by the party to whom such notice is directed, and the time for such party to deliver any notice in response thereto shall run from the date the originating notice is received. "Receipt" for purposes of this agreement with respect to written notice delivered hereunder shall be actual delivery of the notice to the address of the party to be notified specified in accordance with this agreement, or to the telecopy, facsimile or the United States mail office of such party. The second or any responsive notice shall be deemed delivered on the date it is delivered in the United States mail or at the office of the courier or telegraph service, or upon transmission by telex, telexcopy or facsimile, or when personally delivered to the party to be notified, provided, that when response is required within 24 or 48 hours, such response shall be given orally or by telephone, telex, telexcopy or other facsimile method upon which the parties have the right to change its address at any time, and from time to time, by giving written notice thereof to all other parties. If a party is not available to receive notice orally or by telephone when a party attempts to deliver a notice required to be delivered within 24 or 48 hours, the notice may be delivered in writing by any other method specified herein and shall be deemed delivered in the same manner provided above for any responsive notice.

ARTICLE XIII. TERM OF AGREEMENT

This agreement shall remain in full force and effect as to the Oil and Gas Leases and/or Oil and Gas Interests subject hereto for the period of time selected below, provided, however, no party hereto shall ever be construed as having any right, title or interest in or to any Lease or Oil and Gas Interest contributed by any other party beyond the term of this agreement.

Option No. 1: So long as any of the Oil and Gas Leases subject to this agreement remain or are continued in force as to any part of the Contract Area, whether by production, extension, renewal or otherwise.

Option No. 2: So long as the event described in Article VI.A., or any subsequent well drilled under any provision of this agreement, results in the Completion of a well as a well capable of producing Oil and/or Gas in paying quantities, this agreement shall continue in force so long as such well is capable of production, and for an additional period of ________ days thereafter; provided, however, if, prior to the expiration of such additional period, one or more of the other parties hereto are engaged in drilling, Reworking, Deepening, Sidetracking, Plugging Back, testing or attempting to Complete or Reconfigure a well or wells hereunder, this agreement shall continue in force until such operations have been completed and if production results therefrom, this agreement shall continue in force as provided herein. In the event the well described in Article VI.A., or any subsequent well drilled hereunder, results in a dry hole, and no other well is capable of producing Oil and/or Gas from the Contract Area, this agreement shall terminate unless drilling, Deepening, Sidetracking, Reconfiguring, Plugging Back or Reworking operations are commenced within days from the date of abandonment of said well. "Abandonment" for such purposes shall mean either (i) a decision by all parties not to conduct any further operations on the well or (ii) the elapse of 180 days from the conduct of any operations on the well, whichever first occurs.

The termination of this agreement shall not relieve any party hereto from any expense, liability or other obligation or any remedy therefor which has accrued or attached prior to the date of such termination.

Upon the termination of this agreement and the satisfaction of all obligations hereunder, in the event a memorandum of this Operating Agreement has been filed of record, Operator is authorized to file of record in all necessary recording offices a notice of termination, and each party hereto agrees to execute such a notice of termination as to Operator's interest, upon request of Operator, if Operator has satisfied all its financial obligations.

ARTICLE XIV. COMPLIANCE WITH LAWS AND REGULATIONS

A. Laws, Regulations and Orders:

This agreement shall be subject to the applicable laws of the state in which the Contract Area is located, to the valid rules, regulations, and orders of any duly constituted regulatory body of said state; and to all other applicable federal, state, and local laws, ordinances, rules, regulations and orders.

B. Governing Law:

This agreement and all matters pertaining hereto, including but not limited to matters of performance, non-performance, breach, remedies, procedures, rights, duties, and interpretation or construction, shall be governed and determined by the law of the state in which the Contract Area is located. If the Contract Area is in two or more states, the law of the state in which shall govern.

C. Regulatory Agencies:

Nothing herein contained shall grant, or be construed to grant, Operator the right or authority to waive or release any rights, privileges, or obligations which Non-Operators may have under federal or state laws or under rules, regulations or orders promulgated under such laws in reference to oil, gas and mineral operations, including the location, operation, or production of wells, on tracts offsetting or adjacent to the Contract Area.

With respect to the operations hereunder, Non-Operators agree to release Operator from any and all losses, damages, injuries, claims and causes of action arising out of, incident to or resulting directly or indirectly from Operator's interpretation or application of rules, rulings, regulations or orders of the Electric Regulatory Commission of or successor agencies to the extent such interpretation or application was made in good faith and does not constitute gross negligence. Each Non-Operator further agrees to reimburse Operator for such Non-Operator's share of production or any refund, fine, levy or other governmental sanction that Operator may be required to pay as a result of such an incorrect interpretation or application, together with interest and penalties thereon owing by Operator as a result of such incorrect interpretation or application.
A. Execution:
This agreement shall be binding upon each Non-Operator when this agreement or a counterpart thereof has been executed by such Non-Operator and Operator notwithstanding that this agreement is not then or thereafter executed by all of the parties to which it is tendered or which are listed on Exhibit "A" as owning an interest in the Contract Area or which own, in fact, an interest in the Contract Area. Operator may, however, by written notice to all Non-Operators who have become bound by this agreement as aforesaid, given at any time prior to the actual spud date of the Initial Well but in no event later than five days prior to the date specified in Article VI.A. for commencement of the Initial Well, terminate this agreement if Operator in its sole discretion determines that there is insufficient participation to justify commencement of drilling operations. In the event of such a termination by Operator, all further obligations of the parties hereunder shall cease as of such termination. In the event any Non-Operator has advanced or prepaid any share of drilling or other costs hereunder, all sums so advanced shall be returned to such Non-Operator without interest. In the event Operator proceeds with drilling operations for the Initial Well without the execution hereof by all persons listed on Exhibit "A" as having a current working interest in such well, Operator shall indemnify Non-Operators with respect to all costs incurred for the Initial Well which would have been charged to such person under this agreement if such person had executed the same and Operator shall receive all revenues which would have been received by such person under this agreement if such person had executed the same.

B. Counterparts:
This agreement may be executed in any number of counterparts, each of which shall be considered an original for all purposes.

D. Severability:
For the purposes of assuming or rejecting this agreement as an executory contract pursuant to federal bankruptcy laws, this agreement shall not be severable, but rather must be assumed or rejected in its entirety, and the failure of any party to this agreement to comply with all of its financial obligations provided herein shall be a material default.

ARTICLE XVI.
OTHER PROVISIONS

A. Conflict of Terms:
Notwithstanding anything in this Agreement to the contrary, in the event of any conflict between the provisions of Article I through Article XV of this Agreement and the provisions of this Article XVI, the provisions of this Article XVI shall control.

B. Priority of Operations – Horizontal Wells:
Notwithstanding Article VI.B.6 or anything else in this Agreement to the contrary, it is agreed that where a Horizontal or Multi-lateral Well subject to this Agreement has been drilled to the objective formation and the Consenting Parties cannot agree upon the sequence and timing of further operations regarding such Horizontal or Multi-lateral Well, the following elections shall control in the order of priority enumerated hereafter.

1. An election to do additional logging, coring, or testing;
2. An election to attempt to Complete all proposed Laterals;
3. An election to attempt to Deepen a Lateral;
4. An election to Sideload and drill an additional Lateral in the same formation;
5. An election to Sideload and drill an additional Lateral in a different formation;
6. An election to Plug Back the well to a formation or Zone above the formation in which a Lateral was drilled; if there is more than one proposal to Plug Back, the proposal to Plug Back to the next deepest prospective Zone or formation shall have priority over a proposal to plug back to a shallower prospective Zone or formation; and
7. An election to plug and abandon said well as provided for in Article VII.

C. Relinquishment For Non-Consent to Horizontal Drilling:
In the event any party to this Agreement elects not to participate in a Horizontal or Multi-lateral Well which is proposed pursuant to Article VI.A., the non-Consenting Party shall, on commencement of operations for the Horizontal or Multi-lateral Well, relinquish to the Consenting Parties one hundred percent (100%) of the Non-Consenting Party’s right, title, and interest in and to that portion of the Contract Area included within the Drilling Unit for the Horizontal or Multi-lateral Well and one hundred percent (100%) of the Non-Consenting Party’s right, title, and interest in and to the portion of the Contract Area included within the Drilling Unit to be selected by the Consenting Parties within thirty (30) days exclusive of Saturdays, Sundays and legal holidays from the release of the Horizontal or Multi-lateral Well.

D. Overlapping JOAs:
In the event any parties to this Agreement are subject to one or more prior operating agreements covering part or all of the Contract Area of this Agreement, this Agreement shall supplant such prior operating agreements and shall control until and only until all operations on the Contract Area of this Agreement to drill a Horizontal or Multi-lateral Well or to convert an existing Vertical Well into a Horizontal or Multi-lateral Well and as to all operations within a Horizontal or Multi-lateral Well in the Contract Area of this Agreement.
IN WITNESS WHEREOF, this agreement shall be effective as of the ________________ day of _________________.

ATTEST OR WITNESS: OPERATOR

______________________________________________
By: __________________________________________
Type or print name
Title: _________________________________________
Date: ________________
Tax ID or S.S. No. ________________________________

NON-OPERATORS

______________________________________________
By: __________________________________________
Type or print name
Title: _________________________________________
Date: ________________
Tax ID or S.S. No. ________________________________

______________________________________________
By: __________________________________________
Type or print name
Title: _________________________________________
Date: ________________
Tax ID or S.S. No. ________________________________

______________________________________________
By: __________________________________________
Type or print name
Title: _________________________________________
Date: ________________
Tax ID or S.S. No. ________________________________
ACKNOWLEDGMENTS

Note: The following forms of acknowledgment are the short forms approved by the Uniform Law on Notarial Acts. The validity and effect of these forms in any state will depend upon the statutes of that state.

Individual acknowledgment:

State of _______________ ) ) ss.
County of ______________ )

This instrument was acknowledged before me on ____________________________________________

(Seal, if any)

Title (and Rank) __________________________________
My commission expires: ____________________________

Acknowledgment in representative capacity:

State of _______________ ) ) ss.
County of ______________ )

This instrument was acknowledged before me on ____________________________________________

(Seal, if any)

Title (and Rank) __________________________________
My commission expires: ____________________________