Oil and Gas Agreements

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Oil and Gas Tidbits

1 barrel of oil = 42 gallons

1 barrel of oil makes 19.3 gallons of gasoline

1 mcf of gas = 1000 cubic feet

The first successful domestic gas well was drilled in Fredonia, NY (27 feet deep) in 1821, 38 years before the first oil well was drilled.
General Topics

- Why We Need Oil and Gas Agreements
- Types of Oil and Gas Agreements:
  - Exploratory Unit Agreements
  - Enhanced Recovery Unit Agreements
  - Communitization Agreements (CAs)
  - Gas Storage Agreements
  - Indian Mineral Development Act Agreements (IMDA)
AGREEMENTS

Why do we need them?
RULE OF CAPTURE
RULE OF CAPTURE

• Was the law of the land in the early days of oil and gas development

• Created by the Pennsylvania Supreme Court in 1889

• Created out of necessity and ignorance

• Ownership of oil and gas was analogized to ownership of groundwater and more importantly, wild animals
RULE OF CAPTURE

This Rule Essentially Said:

Whatever oil and gas that I can produce from my well is mine and it doesn’t matter where it comes from.
RULE OF CAPTURE

RESULT:

- A race for possession by competitive operators
- Dense drilling along property lines
- Rapid depletion of reservoir pressure
- Loss of ultimate recovery
- Environmental disaster
Oil and Gas Mapping Symbology

- **Fee**
  - Gas Well
- **State**
  - Oil Well
- **Federal**
  - Plugged and Abandoned
RULE OF CAPTURE

WAR OF THE WELLS

2
FEE

1
FEDERAL
Early 1930s:

- Courts finally understood that they were dealing with multiple owners of a common oil and gas pool and that the “Rule of Capture” had limits.

- “Correlative Rights Doctrine” adopted in many states
Correlative Rights Doctrine

Key Elements:

- Deals with an *opportunity* to receive a fair and equitable share of the source of supply, not a guarantee to receive that fair and equitable share.

- An explicit part of most state conservation regulations in the form of pooling, unitization, spacing, or proration.
Unit Agreement
Concepts and Benefits

Acid Well Treating Truck - 1933
Unit Agreement Concept

Key Elements:

• One way to apply the Correlative Rights Doctrine

• Operation of multiple leases as a single lease under a single operator.
Benefits of Unit Agreements

- Environmental Benefits
- Oil and Gas Reservoir Benefits
- Lease Benefits
- Logical, Controlled Development
Environmental Benefits:

- Fewer Well Pads
- Fewer Roads
- Less Surface Disturbance
Oil and Gas Reservoir
Benefits of Unitization

- Drill wells **ONLY** where needed
- No regard for lease-lines
- Reduce waste - higher ultimate recovery
Lease Benefits of Unitization

- Leases can be extended for a short time without actual production on the lease
- Leases can be developed in a logical sequence
- Leases get 2 year extension upon unit termination or contraction
What is BLM’s Responsibility?

- BLM is responsible for administering federal unit agreements. This includes:
  - Unit Approval
  - Monitoring
  - Unit Termination
Unitization and NEPA

- Purely administrative action
- Existing lease rights and stipulations are unchanged
- No leases or APDs issued
- All subsequent actions subject to NEPA
- Unit approvals are subject to NEPA but Categorically Excluded from further analysis
API or State Units

- Little or no Federal acreage or Federal participation (<15%)
- BLM has no jurisdictional or administrative responsibilities for these unit agreements
API Unit Agreements by State

<table>
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<tr>
<th>States</th>
<th>Unit Agreements</th>
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<tbody>
<tr>
<td>AZ</td>
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Unit Agreement Approval Process
Approval Process

1. Area and depth Meeting
2. Designation
3. Final Approval
Approval Process

Agreements containing Indian Lands

1. Designation

2. BIA gives Final Approval
   BLM provides recommendation to BIA
Designation

Application includes:

- Unit area geology
- Unit target formation
- Unitized formations
- Unit boundary
- Obligation well location
- Changes from the standard form
- Unit operator
Final Approval

Applicant must show:

• All parties within unit area have been invited to join the unit, and

• 85% of acreage within the unit area is committed to the unit agreement (effective unit control)

  • Non-committed acreage does not receive any benefits of the unit
Let's form an Exploratory Unit Agreement

We will call the unit:

Boxelder Creek
Designation Criteria

Boxelder Creek Unit

- Target formation is the Almond
- Standard exploratory agreement form will be used
- Acme Oil will operate the unit
- All formations are unitized
Boxelder Creek Unit - Designation Criteria

Boxelder Creek Unit No. 1 (obligation well location)

Almond Fm. Isopach

Boxelder Creek Unit Boundary

0 ft.
30 ft.
20 ft. 10 ft.
0 ft.

FEDERAL
FEE
STATE
FEE
FEE
FEDERAL
FEDERAL
FEDERAL

(Almond Fm. Isopach)

Boxelder Creek Unit Boundary
Drilling to Discovery

Goal:

Drill a well that is determined to be a “Unit Paying Well”
Drilling to Discovery

3 Possible Well Outcomes:

1. Dry hole
2. Non-paying unit well
3. Unit paying well
Drilling to Discovery

1. Dry Hole

Implications:

- Unit operator required to drill another well within 6 months of completion of dry hole
- Leases are not HBP (Held by Production) - as a result, leases stand on their own
2. Non-Paying Unit Well

Implications:

- All leases committed to the unit agreement are now HBP
  - Result of a Yates, Co. IBLA case - 1983
  - Operator often requests verification of a “Yates” well to ensure extension of all their unit leases.
Drilling to Discovery

3. Unit Paying Well

Implications:

- All leases committed to the unit agreement are now HBP.
- Further drilling requirements are now handled under the “Plan of Development” (Wells are not required to be drilled 6 mos. after previous well was completed).
- Unit participating area will be formed.
Boxelder Creek Unit

Unit Obligation Well

Boxelder Creek Unit No. 1

FEDERAL  FEE  STATE

FEDERAL  FEE  FEE

STATE  FEDERAL  FEDERAL
Is it a Paying Well?
Drilling to Discovery

Boxelder Creek Unit

- Boxelder Creek Unit No. 1 well was completed and showed an initial potential of 2,000 mcf/day.
- After some production history, the operator sent a “Unit Paying Well Determination” application to the CSO.
- CSO determined that the Boxelder Creek Unit No. 1 well was a “Unit Paying Well”.
Exploratory Unit Agreement

Participation After Discovery
Participating Area (PA)

**Definition:**

- The area that is “reasonably proven productive” by a well that produces in “unit paying” quantities.

- The area that shares in:
  - Financial benefits of PA production, and
  - Costs of the PA well(s)
Participation After Discovery

“Reasonably proven productive”

How do we define this in order to come up with the PA boundary?

♦ Circle-tangent method unless additional info available
  ♦ Simple
  ♦ Equitable
  ♦ Well accepted by industry
Boxelder Creek Unit

- FEDERAL
- FEE
- STATE

640 acre circle

40 acre subdivisions cut 50% or more by the circle
Boxelder Creek Unit

Initial Almond Formation PA “A”
effective May 1, 2000
Production Allocation EXAMPLE:

If PA well No. 1 produces 10,000 mcf gas during May, 2000, then

64.3% of gas, or 6,430 mcf attributed to Fee lease(s), and
35.7% of gas, or 3,570 mcf attributed to the Federal lease(s)

Federal royalty owed = 12 1/2% of gas attributed to the Federal acreage = 12 1/2% * 3,570 mcf = 446 mcf
Exploratory Unit Agreement

Plan of Development Phase
Plan of Development Phase

- Unit operator has 5 yrs from effective date of initial PA to develop area outside existing PA

Boxelder Creek Unit

Plan of Development Area
Plan of Development Phase

Year No. 1

- Well #2 drilled
- Positive PWD
- PA revised
Boxelder Creek Unit

1st Revision Almond Formation PA “A”
effective June 1, 2001
1st Revision Almond Formation PA “A”

1,400 Total Acres:
- 880 Fee acres - 62.9%
- 520 Federal acres - 37.1%

Production Allocation EXAMPLE:

If PA well No. 1 & 2 together produce 30,000 mcf gas during May, 2000, then:

- 62.9% of gas, or 18,870 mcf attributed to Fee lease(s), and
- 37.1% of gas, or 11,130 mcf attributed to the Fed. lease(s)

Federal royalty owed = 12 1/2% of gas attributed to the Federal acreage = 12 1/2% * 11,130 mcf = 1,391 mcf
Boxelder Creek Unit

Plan of Development Phase

Years 2, 3, 4 and 5
- 4 dry holes
May 1, 2005

- Unit boundary contracts to PA boundary
  (5 yrs after effective date of initial PA)

- Unit continues in effect until last well in PA is plugged
Horizontal Wells in Exploratory Units
• Conventional Plays – Horizontal wells are drilled to maximize contact with the productive horizon or fracture system or to follow geologic structures (e.g., anticlinal axis).
• Unconventional Plays – Currently, many horizontal wells are drilled in unconventional plays known as “Resource Plays”…
We use the term **Resource Play** to describe accumulations of hydrocarbons known to exist over a large areal extent and/or thick vertical section. These accumulations may be self sourcing, may be developed with horizontal well completions, and are driven by development efficiencies rather than geologic risk.
Pursuant to unit plan regulations 43 CFR 3180, the land requested, as outlined on your plat marked "Exhibit 'A', Northwest Poison Spider Unit", is hereby designated as a logical unit area. The unit agreement submitted for the area designation should provide for the drilling of one (1) test well (Initial Drilling Obligation). The test well, located in the SW/4 NW/4, Section 32, T. 34 N., R. 84 W., is to be drilled to a depth of 16,000 feet or 200 feet below the top of the Carlile Formation. The top of the Carlile Formation occurs at 14,810 feet measured depth as shown on the electric and mud logs in the Davis Oil Company Whitting #1 well located in the SW/4 SE/4, Section 2, T. 33 N., R. 84 W. The obligation well is to be drilled at the location specified or another location approved by the authorized officer.
Pursuant to unit plan regulations 43 CFR 3180, the land requested, as outlined on your plat marked "Exhibit 'A', West Orpha (Deep) Unit", is hereby designated as a logical unit area. The unit agreement submitted for the area designation should provide for the drilling of one (1) test well (Initial Drilling Obligation). The test well, with a surface location in the NE/4 NW/4, Section 14, T. 33 N., R. 73 W., is to include a horizontal lateral drilled in the Middle Bench of the Niobrara Shale of not less than 1,500 feet in length. The top of the Middle Bench of the Niobrara Shale occurs at 10,590 feet measured depth as shown on the resistivity log in the Oil Field Salvage #1 Catherine well located in the SE/4 NW/4, Section 21, T. 33 N., R. 72 W. The obligation well is to be drilled at the location specified or another location approved by the authorized officer.
Participating Area (PA)

Definition:

✓ The area that is “reasonably proven productive” by a well that produces in “unit paying” quantities.

✓ The area that shares in:

✓ - Financial benefits of PA production, and

✓ - Costs of the PA well(s)
Participation After Discovery

“Reasonably proven productive”

How do we define this in order to come up with the PA boundary?

♦ Circle-tangent method unless additional info available
  ♦ Simple
  ♦ Equitable
  ♦ Well accepted by industry
Boxelder Creek Unit

10 acre subdivisions cut by the circles/tangents

40 acre circles
Boxelder Creek Unit

Initial Niobrara Formation PA “A” effective May 1, 2010
Initial Niobrara Formation PA “A”

380 Total Acres:
130 Fee acres - 34.2%
20 State acres - 5.3%
230 Federal acres - 60.5%
100.0%

Production Allocation EXAMPLE:

If PA well No. 1 produces 10,000 bbls oil during May, 2010, then

- 34.2% of oil, or 3,420 bbls attributed to Fee lease(s),
- 5.3% of oil, or 530 bbls attributed to the State Lease, and
- 60.5% of oil, or 6,050 bbls attributed to the Federal lease(s)

Federal royalty owed = 12 1/2% of oil attributed to the Federal acreage = 12 1/2% * 6,050 bbls = 756 bbls
Enhanced Recovery Unit Agreements

Cement job in the Salt Creek Field, WY  November 1, 1930
Enhanced Recovery
Unit Agreements

How do these agreements differ from Exploratory Unit Agreements?

- Field has been geologically defined
- Formation Specific
- Entire unit participates from effective date
Enhanced Recovery
Unit Agreements

How do these agreements differ from Exploratory Unit Agreements?

- Involves enhanced recovery method (e.g., waterflood)
- Participation based on formula
- Can force unitize by State Statute
0 Ft. isopach - Reservoir Boundary
Oil and Gas Agreements

Thanks to:

J. David Chase
Wyoming State Office
Reservoir Management Group

Questions?