STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

APPLICATION OF THE NEW MEXICO OIL CONSERVATION DIVISION TO AMEND RULES OF THE COMMISSION CONCERNING THE DRILLING, SPACING, AND OPERATION OF HORIZONTAL WELLS AND RELATED MATTERS BY AMENDING VARIOUS SECTIONS OF RULES 19.15.2, 19.15.4, 19.15.14, 19.15.15, AND 19.15.16 NMAC; STATEWIDE.

CASE NO. 15957

NEW MEXICO OIL CONSERVATION COMMISSION HEARING
APRIL 17, 2018
9:00 A.M.

NMOGA EXHIBITS

NEW MEXICO OIL AND GAS ASSOCIATION

NMOGA

EXHIBIT A

Witness Qualification – Rick Foppiano

- Currently consulting for Occidental
- Registered Professional Engineer
- 37 years oil and gas related experience:
  - Production/drilling engineering
  - 20+ years regulatory in various states
- Former Director of Regulatory Affairs at OXY
- Former Chairman of NMOGA RPC
- Involved in recent changes to TX horizontal rules
- Member, NM Horizontal Well Rule Committee
- Testified many times before OCD and OCC

Organization of the presentation

1. **Recommended changes to 19.15.2**
   Exhibit A of NMOCD Application
2. **Discussion and recommended changes to 19.15.4**
   Exhibit B of NMOCD Application
3. **Recommended changes to 19.15.15**
   Exhibit D of NMOCD Application
4. **Discussion and recommended changes 19.15.16**
   Exhibit E of NMOCD Application

19.15.2 DEFINITIONS

RE: EXHIBIT A OF NMOCD APPLICATION

NMOGA-proposed changes to 19.15.2.7

In A.8(a), add "or federal" after "division-approved" to clarify that this definition applies to federally-approved units as well as division-approved units.

19.15.4 ADJUDICATORY PROCEEDINGS

RE: EXHIBIT B OF NMOCD APPLICATION

NMOGA-proposed changes to 19.15.4.12

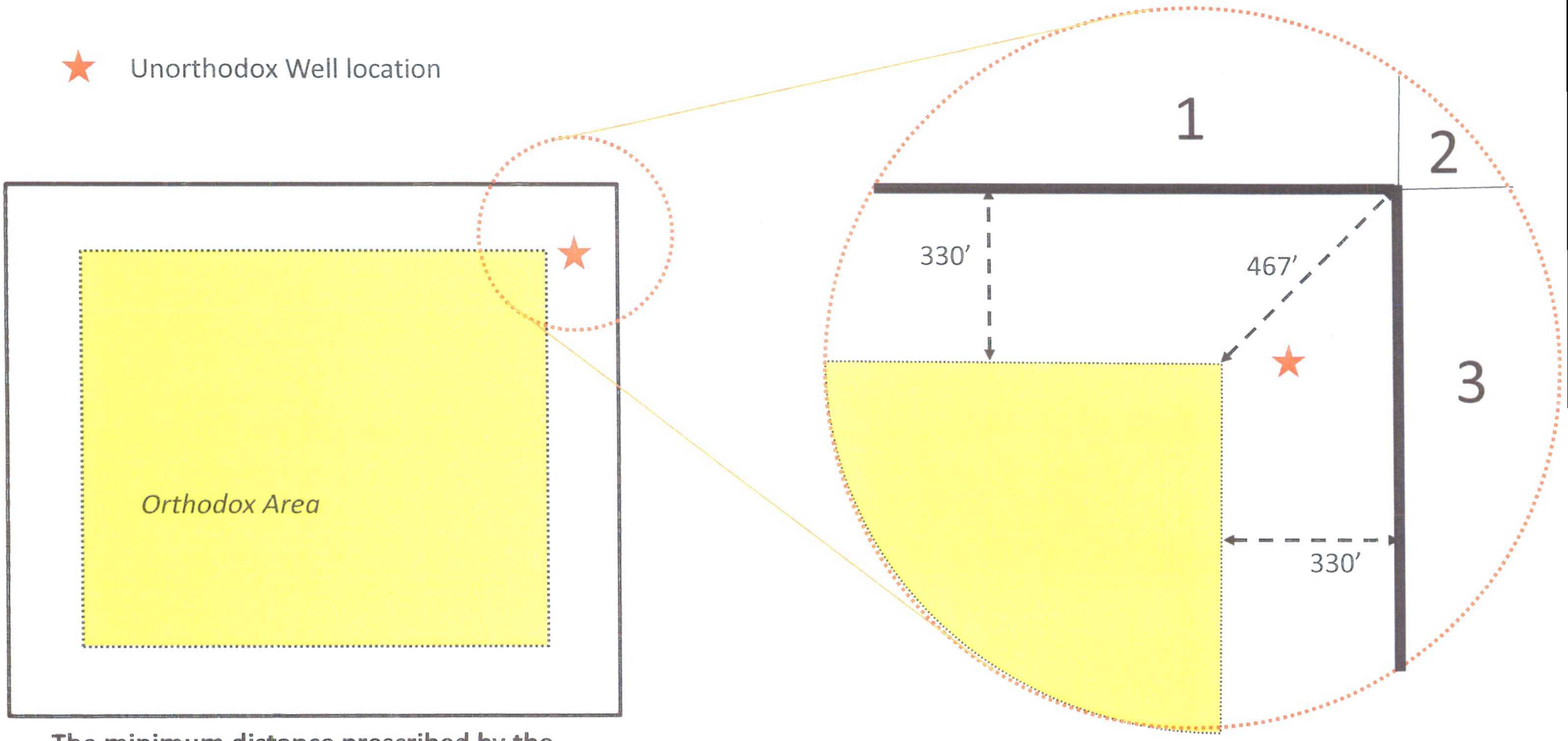
In A.(1)(a), replace "an" with "each" in the first sentence to clarify that notice must go to ***each*** *owner. Also, at the end of this subsection add the following sentence "An applicant seeking compulsory pooling of a standard horizontal spacing unit need not give notice to affected persons in adjoining spacing units or tracts unless the division specifically so directs." This confirms notice to offsetting tracts is not required when pooling what will now be standard HZ well spacing unit.*

In A.(1)(b), delete ", the proposed unit is not larger in size than provided in 19.15.15 NMAC or applicable special pool orders," to avoid any conflicts with the proposed horizontal rules, and ensure the affidavit process can be used for force pooling horizontal spacing units.

19.15.4.12
A.(2)(a) Unorthodox well locations

- Clarifies notice requirements when:
  - the unorthodox well location is for a horizontal well
  - the area of notice involves "diagonal" encroachment
  - no offsetting spacing unit exists in the area being encroached upon

★ Unorthodox Well location



The minimum distance prescribed by the applicable rule or order = 330 feet

NMOGA-proposed changes to 19.15.4.12

In A.(2)(a), add "in the same pool or formation" after the phrase "each adjoining spacing unit" in line 5 and after "affected persons" in line 9. Without this clarification, it is unclear if "affected persons" are those with interests in the well, irrespective of where the well is completed, or those with interests in the same correlative zone where the unorthodox well will be completed. This change clarifies affected persons for notice purposes. Also, in line 7 delete "pools" and add "or formation" after the phrase "in the same pool or." This clarifies the applicability of this provision when a defined pool does not exist and is consistent with how this is described in similar situations throughout the rules.

In A.(2)(b), add "19.15.15.10.B or" before "special pool orders provide" to reference a statewide rule that requires a permitted infill well in a standard 320-acre gas unit to be in the undrilled quarter section.

In A.(2) (b), add "in the same pool or formation" after the phrase "in all spacing units or tracts" for the same reasons mentioned above for changes recommended to A.(2)(a).

In A.(3), add the following ending sentence: "This requirement shall not apply to applications for non-standard horizontal spacing units pursuant to Paragraph (6) of Subsection A of 19.15.16.15 NMAC." This modification confirms that the notice requirements for non-standard horizontal spacing units are governed by the referenced provision in the proposed horizontal well rules.

19.15.15 WELL SPACING, LOCATION AND DENSITY

RE: EXHIBIT D OF NMOCD APPLICATION FILED 1/3/2018

NMOGA-proposed changes to 19.15.15

11.A. Well tests and classification. *Change "10 days" to "45 days" to conform this language to the recently-adopted changes to the rule governing filing deadlines for completion reports.*

19.15.16 DRILLING AND PRODUCTION

RE: EXHIBIT E OF NMOCD APPLICATION FILED 1/3/2018

Overview of Horizontal Rule Presentation

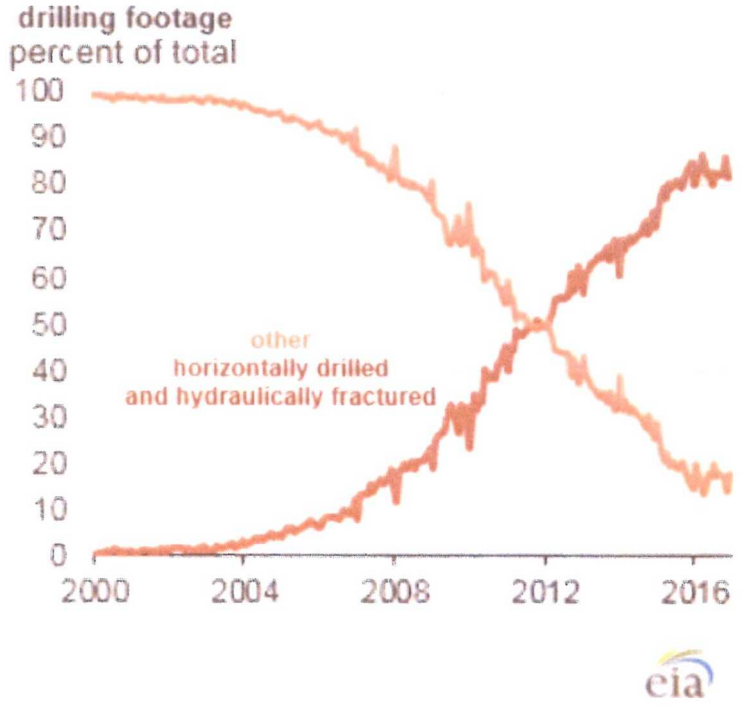
1. Background
2. Reasons for Change
3. Definitions
4. Vertical, Deviated & Directional Wells
5. Spacing for Horizontal Wells
6. Setbacks for Horizontal Wells
7. Allowables for Horizontal Wells
8. Other Matters related to Horizontal Wells

BACKGROUND

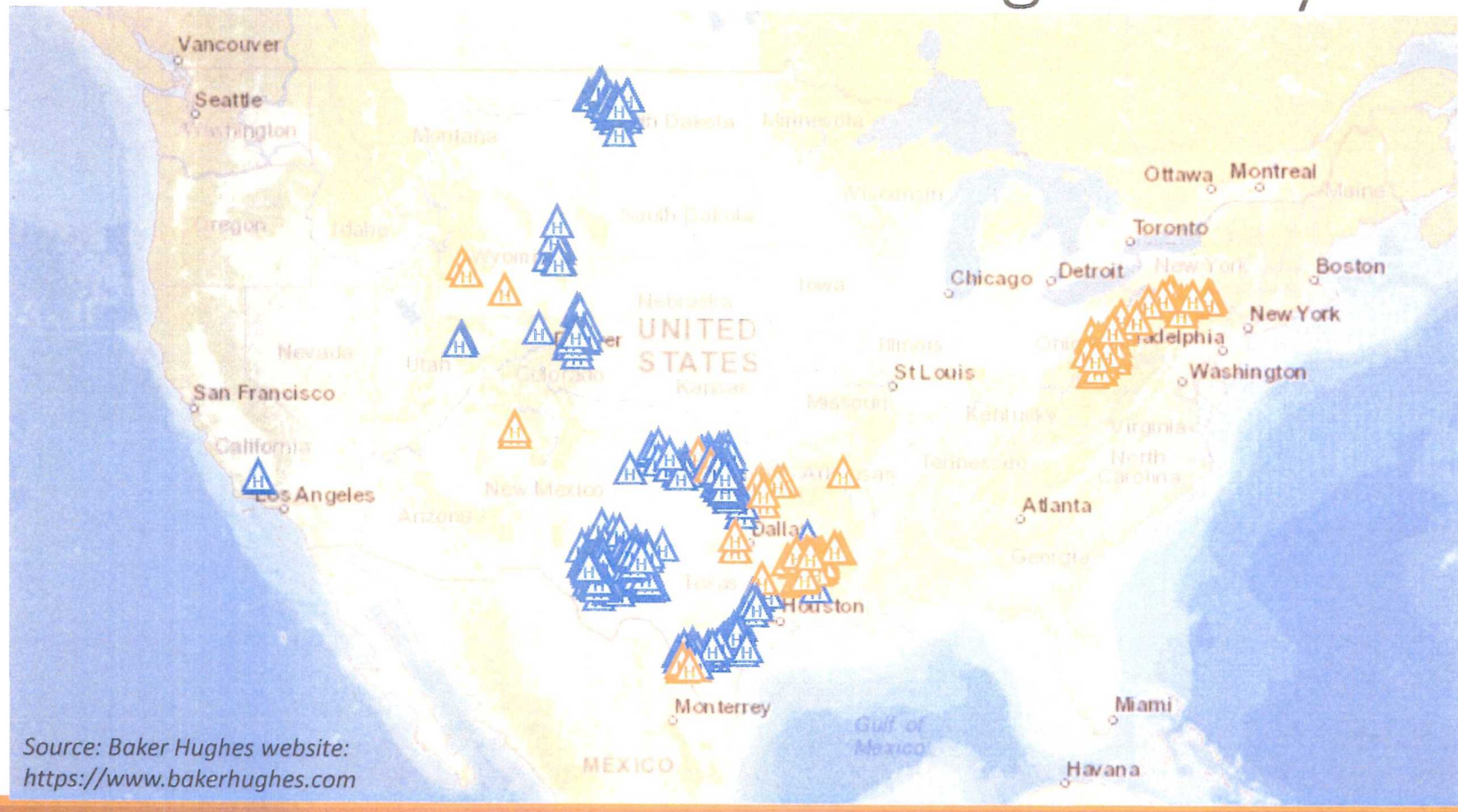
Horizontal Rules – Why it is important to get it right

Hydraulically fractured horizontal wells have accounted for most of all new wells drilled and completed since late 2014.

In 2016, hydraulically fractured horizontal wells accounted for 83% of the total linear footage drilled.



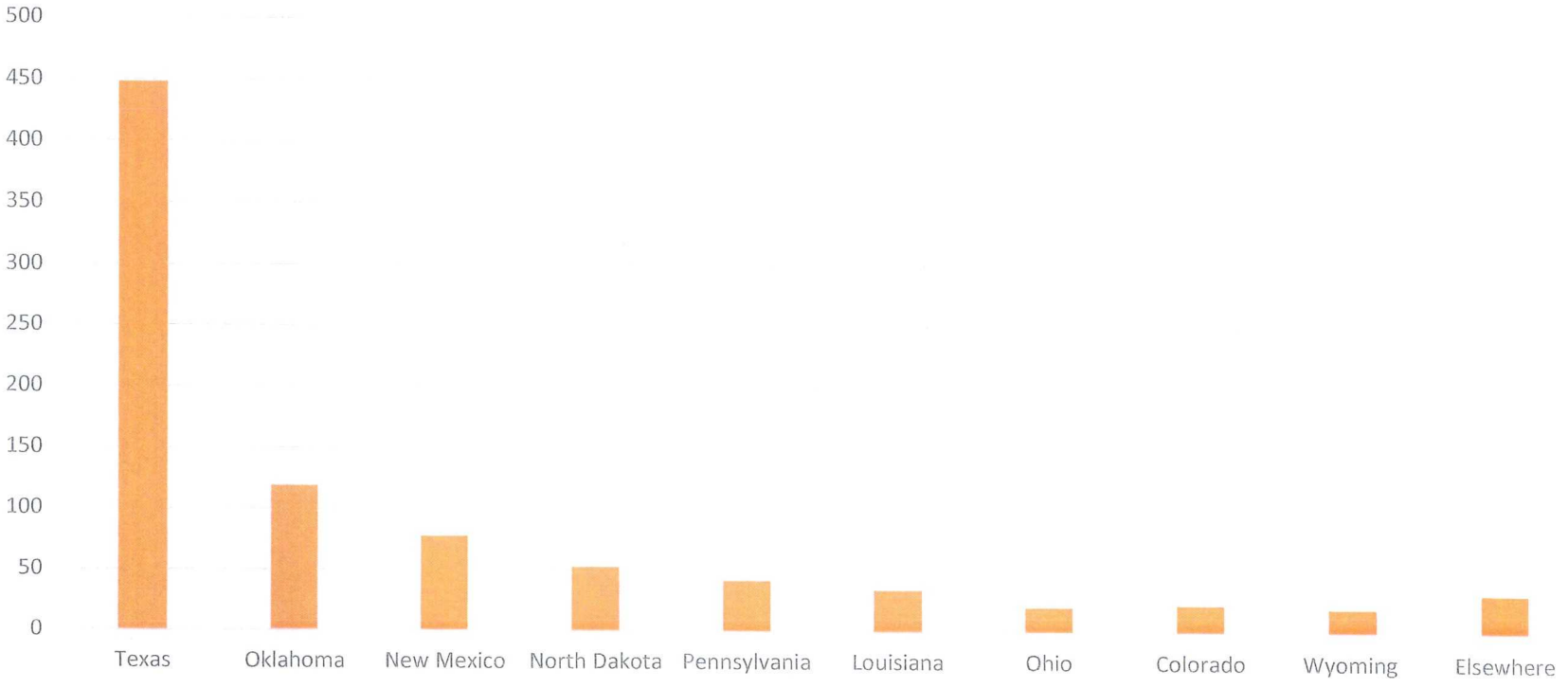
Current US Horizontal Drilling Activity



Source: Baker Hughes website: https://www.bakerhughes.com

Out of 993 total rigs running on 3/30/2018, 870 (88%) are drilling HZ oil and gas wells

Where are horizontal wells being drilled?



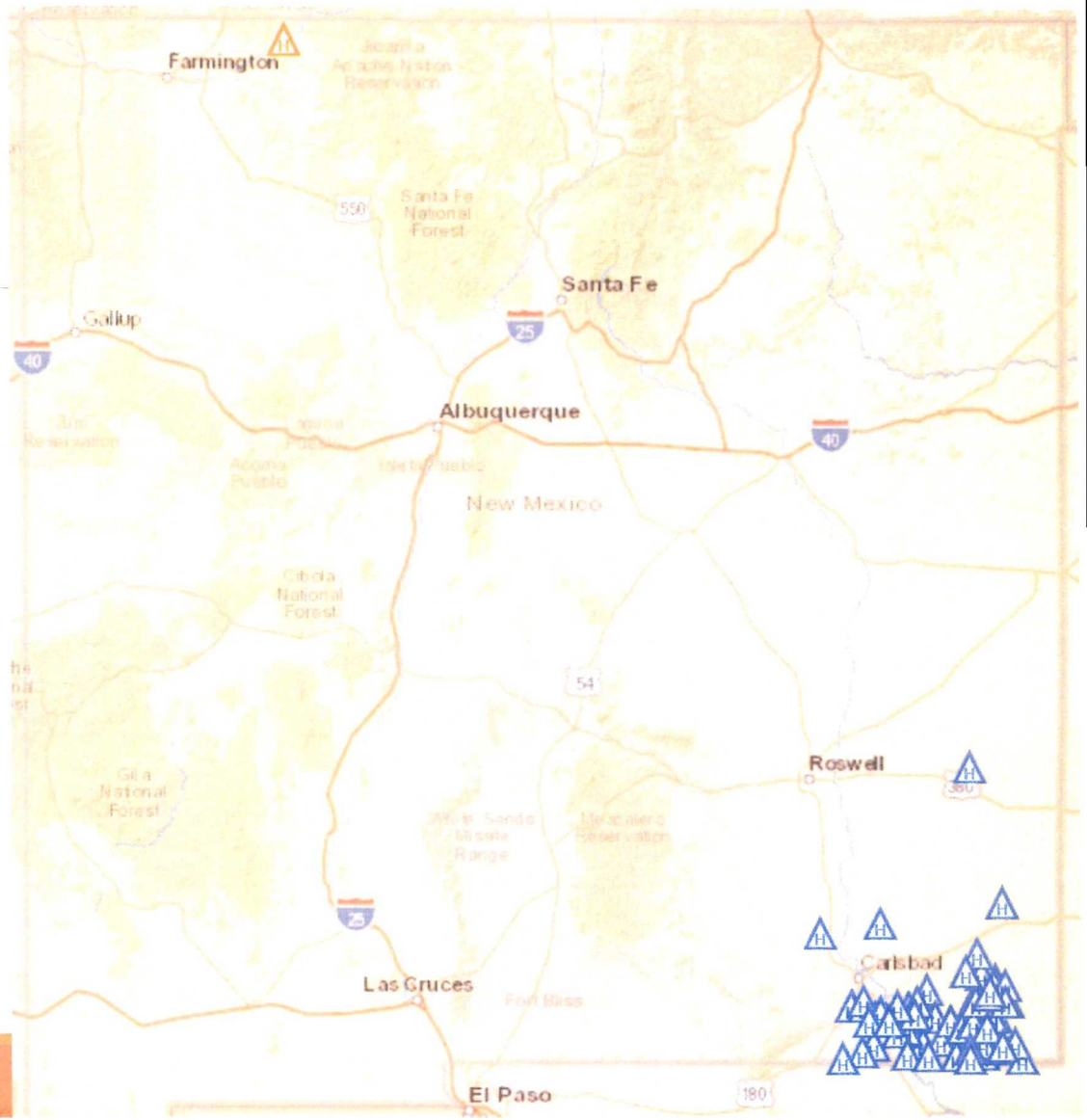
Source: Baker Hughes website: https://www.bakerhughes.com

NM Activity

78 rigs currently drilling horizontal wells:

- **1 drilling for gas**
- **77 drilling for oil**

Almost all horizontal wells are being drilled in the Permian Basin

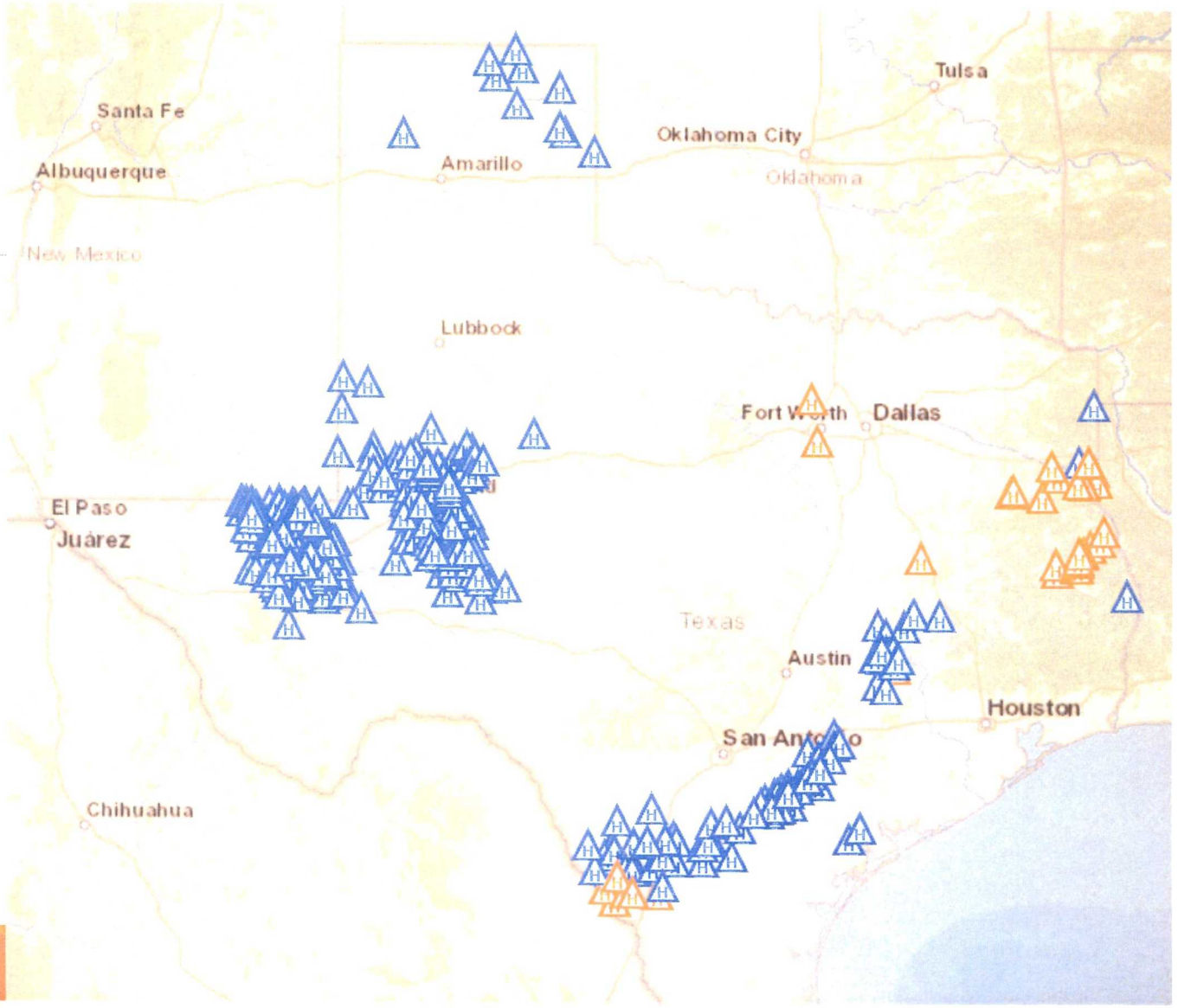


Source: Baker Hughes website: https://www.bakerhughes.com

Texas Activity

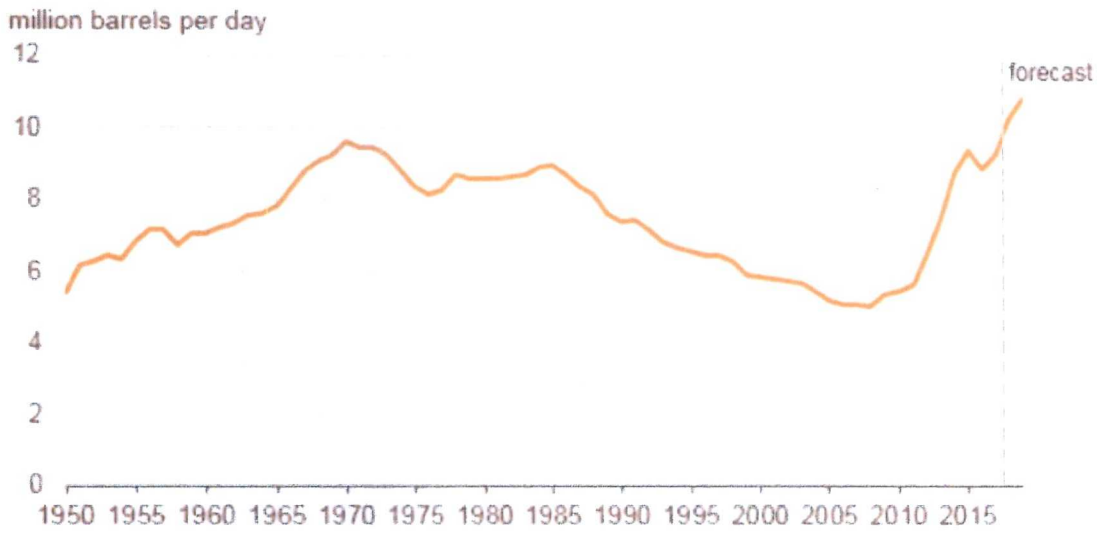
Texas HZ rig count is 448:

- **317 (71%) are drilling in the Permian Basin, all for oil**
- **Texas revised their HZ regulations in early 2016**



Source: Baker Hughes website: https://www.bakerhughes.com

US Crude Oil Production



EIA expects total U.S. crude oil production to average 10.3 million barrels per day (b/d) in 2018, up 10% from 2017.

If achieved, this would be the highest annual average U.S. oil production on record, surpassing the previous record of 9.6 million b/d set in 1970.

In 2019, EIA expects crude oil production to continue to increase, reaching an average of 10.8 million b/d.

Increased production from the Permian region in Texas and New Mexico accounts for most of the projected increase in the U.S. total.

Source: U.S. Energy Information Administration, *Monthly Energy Review* and *Short-Term Energy Outlook*

Some Additional Conclusions

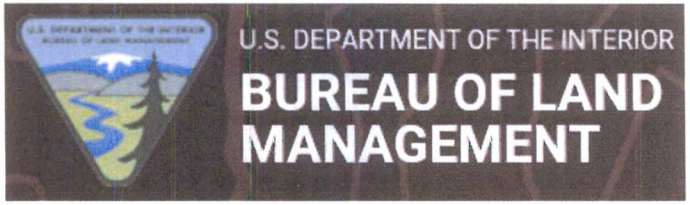
Drilling horizontal oil wells is the trend in the US

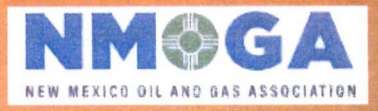
Of the 993 rigs currently running in the US, 394 (40%) drilling horizontal oil wells in the Permian Basin

Evolution of NM Horizontal Rules

- NMOCD appointed a Work Group in 1996, New Rule adopted 1997
- Changes made again in 2008 and 2012
- NMOCD created the Horizontal Well Rule Committee in 2016 to update the horizontal rules

Who worked on this?





Synergy Operating LLC

BURNETT OIL CO., INC.

REASONS FOR CHANGE

Why Change?

- Cleanup and streamline existing rules
- Facilitate diagonal horizontal drilling projects
- Resolve "developed" versus "penetrated" issue
- Reduce setbacks applicable to toe and heel
- Eliminate unnecessary allowable constraints for horizontal wells
- Increase flexibility to allow for longer laterals
- Allow more time to perform initial potential testing and file completion reports, but still move oil

Cleanup - General

Put all requirements for horizontal rules in 19.15.16.15 "Horizontal Wells"

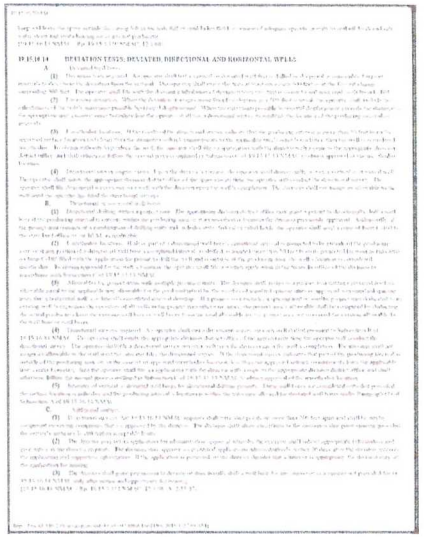
- Delete rules applicable only to horizontal wells from 19.15.16.14 Deviation Tests; Deviated, Directional and Horizontal Wells, make this section applicable only to vertical, directional and deviated drilling projects
- Move requirements and descriptions of standard and non-standard project areas to the Horizontal Rules, remove this language from the Definitions

Eliminate redundant and confusing language so requirements are clearly described, use defined terms and stated once

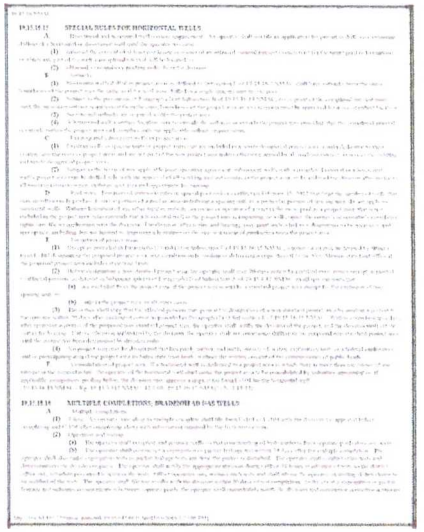
- Delete requirements that create confusion about applicability of 50' tolerance

NM Horizontal Rules are currently in 3 places

19.15.16.7
DEFINITIONS

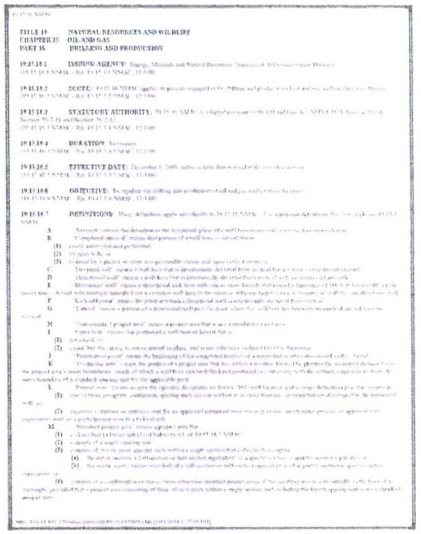


19.15.16.14
DEVIATION TESTS; DEVIATED, DIRECTIONAL AND HORIZONTAL WELLS

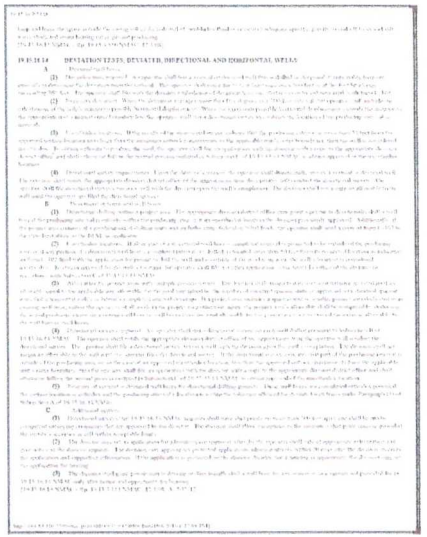


19.15.16.15
SPECIAL RULES FOR HORIZONTAL WELLS

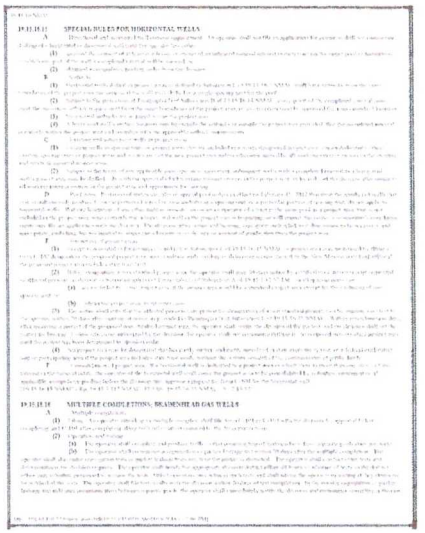
Proposed New Rules are Better Organized…



19.15.16.7
DEFINITIONS



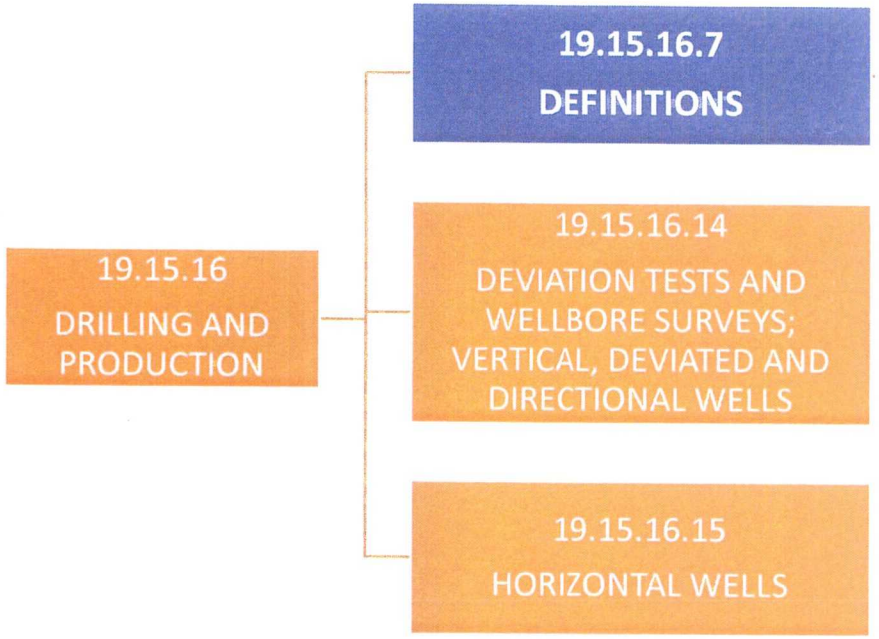
19.15.16.14
DEVIATION TESTS AND WELLBORE SURVEYS: VERTICAL, DEVIATED AND DIRECTIONAL WELLS



19.15.16.15
HORIZONTAL WELLS

DEFINITIONS

19.15.16.7 NMAC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DEVIATION TESTS AND WELLBORE SURVEYS; VERTICAL, DEVIATED AND DIRECTIONAL WELLS
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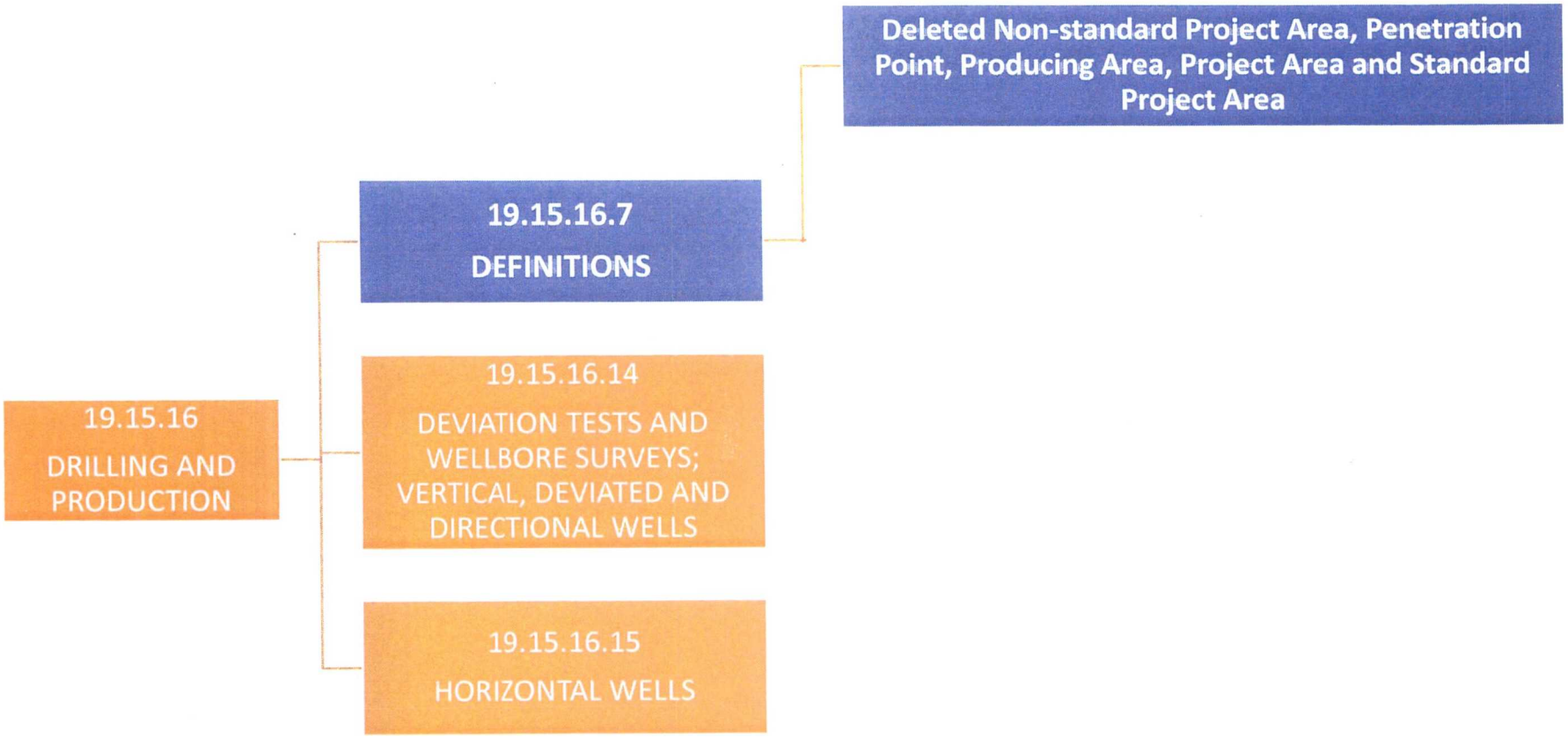
Deleted Non-standard Project Area, Penetration Point, Producing Area, Project Area and Standard Project Area
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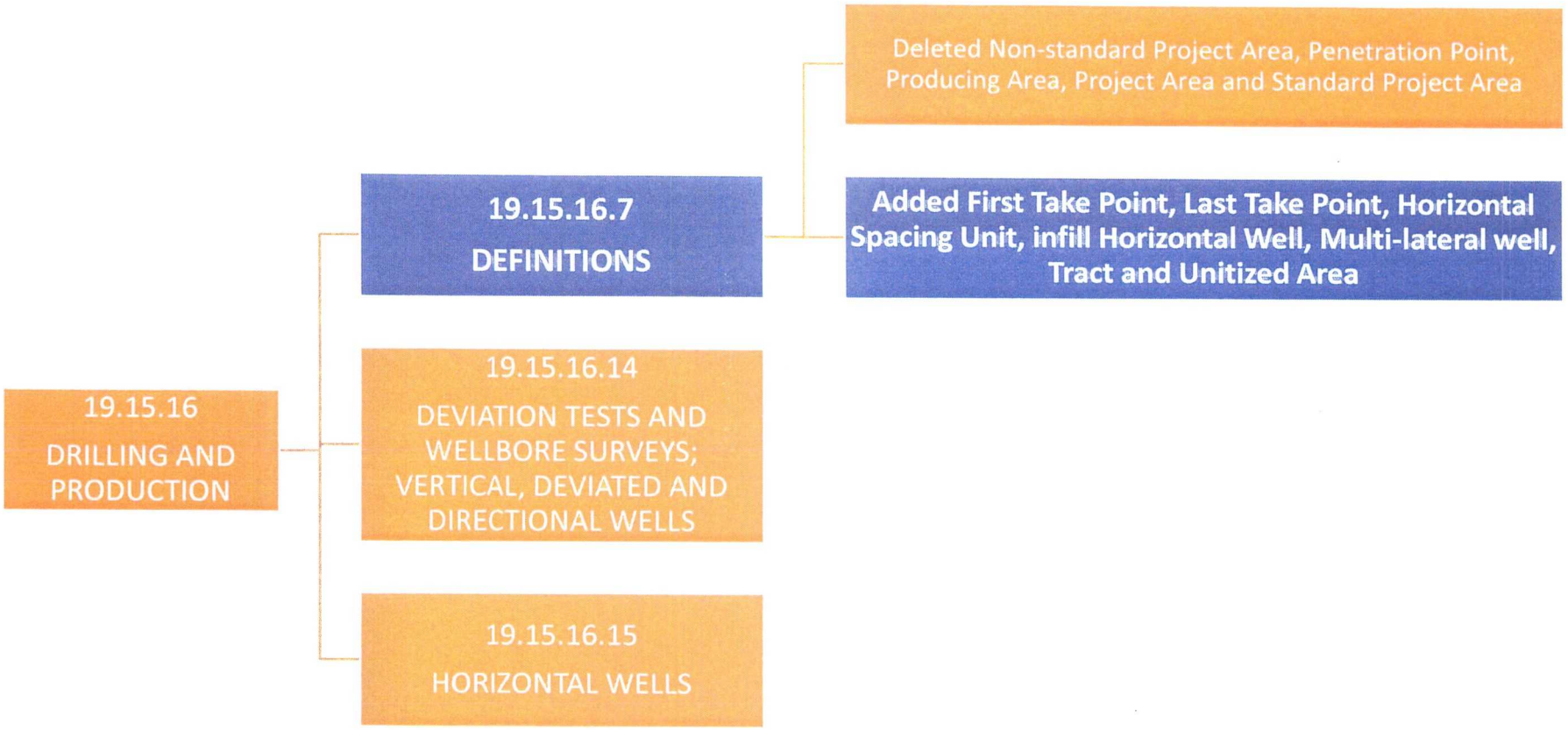
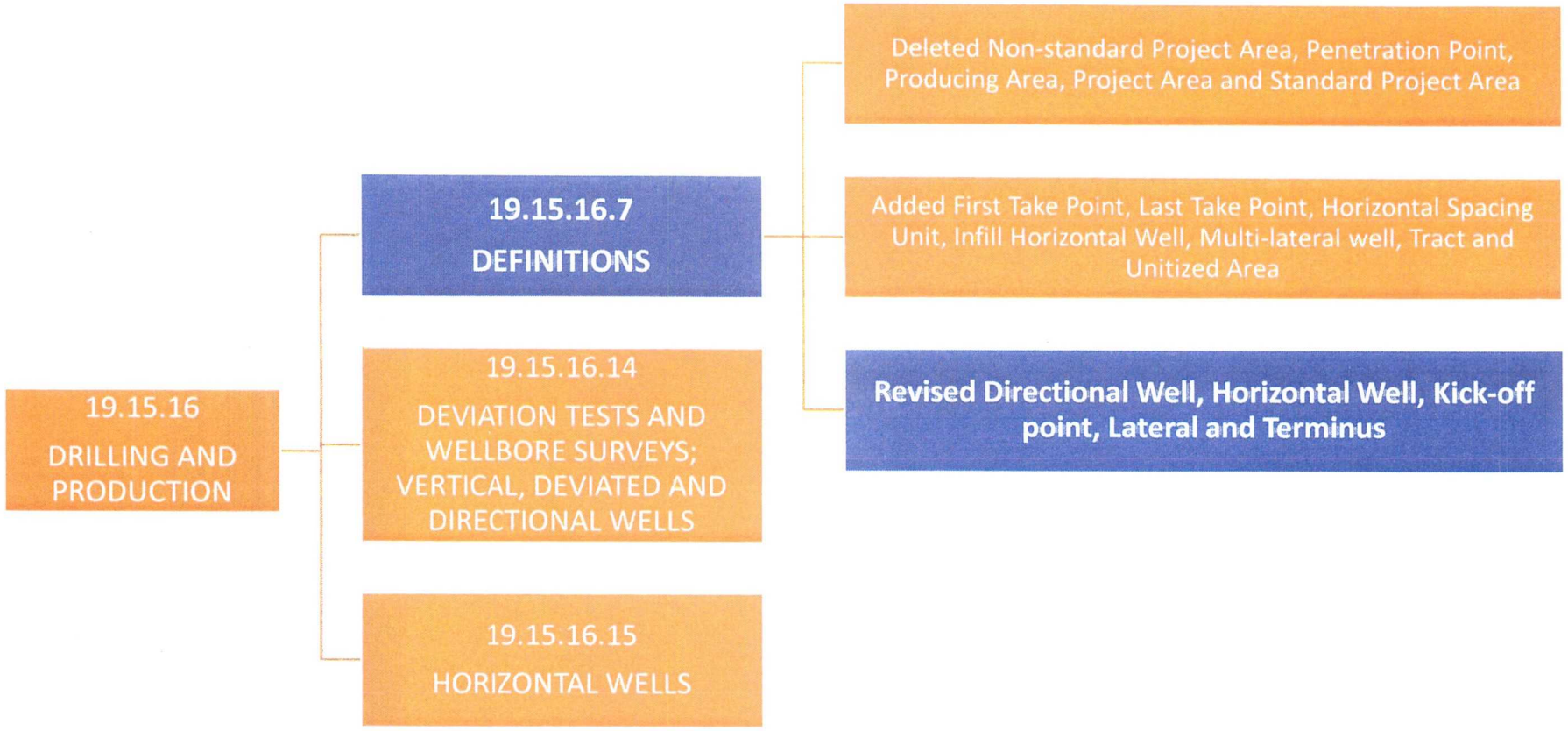

19.15.16
DRILLING AND PRODUCTION
19.15.16.7
DEFINITIONS
Deleted Non-standard Project Area, Penetration Point, Producing Area, Project Area and Standard Project Area
Added First Take Point, Last Take Point, Horizontal Spacing Unit, infill Horizontal Well, Multi-lateral well, Tract and Unitized Area
19.15.16.14
DEVIATION TESTS AND WELLBORE SURVEYS; VERTICAL, DEVIATED AND DIRECTIONAL WELLS
19.15.16.15
HORIZONTAL WELLS

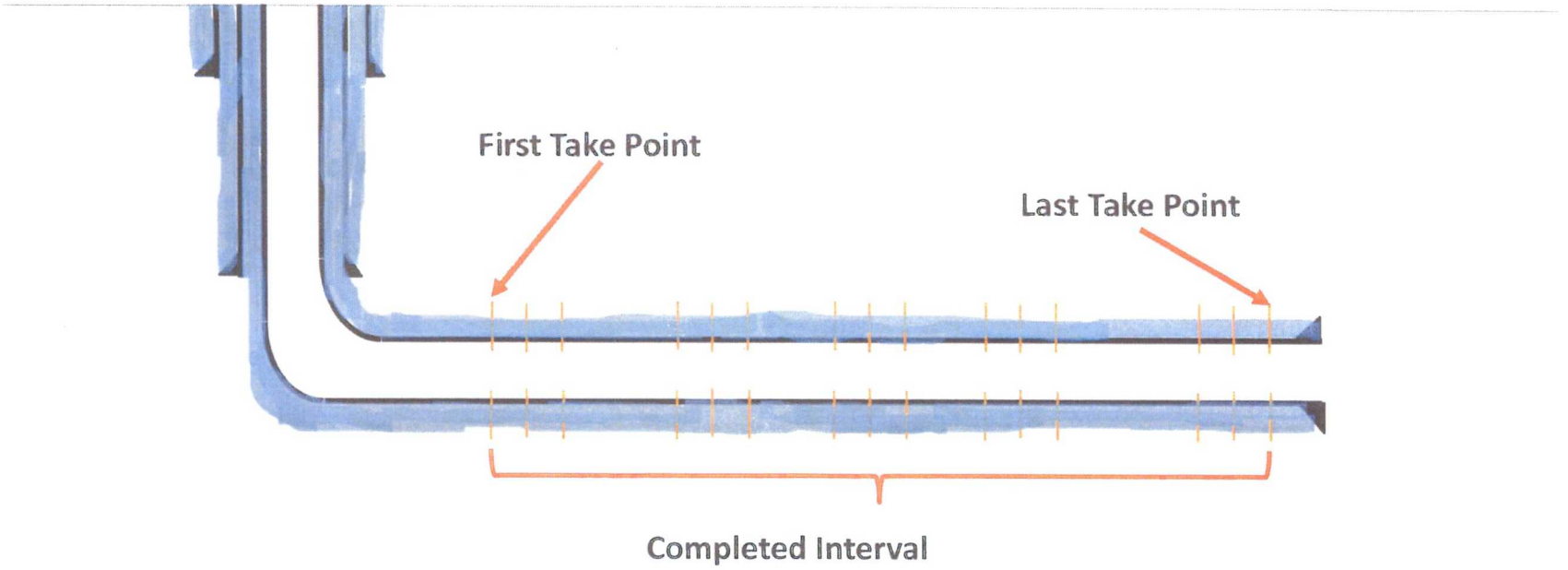

19.15.16
DRILLING AND PRODUCTION
19.15.16.7
DEFINITIONS
19.15.16.14
DEVIATION TESTS AND WELLBORE SURVEYS; VERTICAL, DEVIATED AND DIRECTIONAL WELLS
19.15.16.15
HORIZONTAL WELLS
Deleted Non-standard Project Area, Penetration Point, Producing Area, Project Area and Standard Project Area
Added First Take Point, Last Take Point, Horizontal Spacing Unit, Infill Horizontal Well, Multi-lateral well, Tract and Unitized Area
Revised Directional Well, Horizontal Well, Kick-off point, Lateral and Terminus

Completed Interval, First & Last Take Point

- B. "Completed interval" means that portion of a well bore or lateral that is:
  - (1) cased, cemented and perforated;
  - (2) an open hole; or
  - (3) isolated by a packer or other non-permeable means and open to the formation.
- E. "First Take Point" means the shallowest measured depth of the well bore where the completed interval starts.
- J. "Last Take Point" means the deepest measured depth of the well bore where the completed interval ends.

Completed Interval, First & Last Take Point

Cased, cemented and perforated situation



I. Kick-off Point

Existing language:

- "Kick-off point" means the point at which a directional well is intentionally deviated from vertical.

OCD-Proposed Language:

- "Kick-off point" means the point at which a directional **or horizontal** well is intentionally deviated from vertical**, or, in the case of a multi-lateral well, a separate lateral is intentionally diverted from the vertical portion of the well bore**.

NMOGA-Proposed Language:

- "Kick-off point" means the point at which a directional **or horizontal** well is intentionally deviated from vertical.

Discussion: A kick-off point is a point in the well bore (which is clearly described by the first part of this definition), NOT a lateral section of the well bore (as suggested by the OCD-proposed language). It is well understood that a multi-lateral well will have multiple kick-off points. NMOGA's recommended changes also conform this definition to the same term as defined in the Schlumberger Oilfield Glossary (kickoff is "the point at which a vertical well is intentionally deviated"). Also, replacing "deviated" with "diverted" is unnecessary, confusing, and not consistent with industry use of these terms.

K. Lateral

Existing language:

- G. "Lateral" means a portion of a directional well past the point where the well bore has been intentionally departed from the vertical.

OCD-Proposed Language:

- K. "Lateral" means ~~a~~ **the** portion of a directional **or horizontal** well past the point where the well bore has been intentionally ~~deviated~~ **diverted** from the vertical, **or, in the case of a multi-lateral well, the point at which a particular lateral has been intentionally diverted from the vertical portion of the well bore**.

NMOGA-Proposed Language:

- K. "Lateral" means a portion of a directional **or horizontal** well past the point where the well bore has been intentionally ~~departed~~ **deviated** from the vertical.

Discussion: The OCD's proposed new language "or, in the case of a multi-lateral well, the point at which a particular lateral has been intentionally diverted from the vertical portion of the well bore" should be deleted. A horizontal well's lateral section is a portion of the well bore, NOT a point in the well bore. Deletion of this language still allows this term to be applied to multi-lateral wells. Also, the proposed replacement of "deviated" or "departed" (whichever is correct) with "diverted" should not be done for the same reasons discussed previously for Kick-off Point.

P. Unitized Area

"Unitized Area" means any area where ownership of production from the relevant pool or formation is consolidated pursuant to an agreement, whether voluntary and filed in the county land records, or approved by federal or state authority, including but not limited to:

- **a statutory unit,**
- **an approved enhanced recovery unit,**
- **a participating area in a federal exploratory unit,**
- **a federal unit which does not provide for participating areas,**
- **a state exploratory unit, or**
- **a communitized area if all interests in the communitized area are consolidated.**

Discussion: Previous rules allowed for a "project area" to be the entire voluntary or statutory unit for an approved enhanced recovery or pressure maintenance project, an approved state exploratory unit, or a participating area in a federal unit.

H. Infill Horizontal Well

- An "Infill Horizontal Well" was defined to allow additional wells to be drilled in the same spacing unit under force pooling orders without having to force-pool again
- Since infill wells can be drilled under Joint Operating Agreements, the operator must identify such wells on their drilling permit
- Infill Horizontal wells are exceptions to the "every well has its own spacing unit" concept
- Explained in more detail later on

Definitions: Well Types

Existing Language:

- C. "Deviated well" means a well bore that is intentionally deviated from vertical but not with an intentional azimuth.

- D. "Directional well" means a well bore that is intentionally deviated from vertical with an intentional azimuth.

- E. "Horizontal well" means a directional well bore with one or more laterals that extend a minimum of 100 feet horizontally in the target zone. A well with multiple laterals from a common well bore in the same or different target zones or formations shall be considered one well.

- O. "Vertical well" means a well that does not have an intentional departure or course deviation from the vertical.

Proposed Language:

- C. "Deviated well" - *no change*

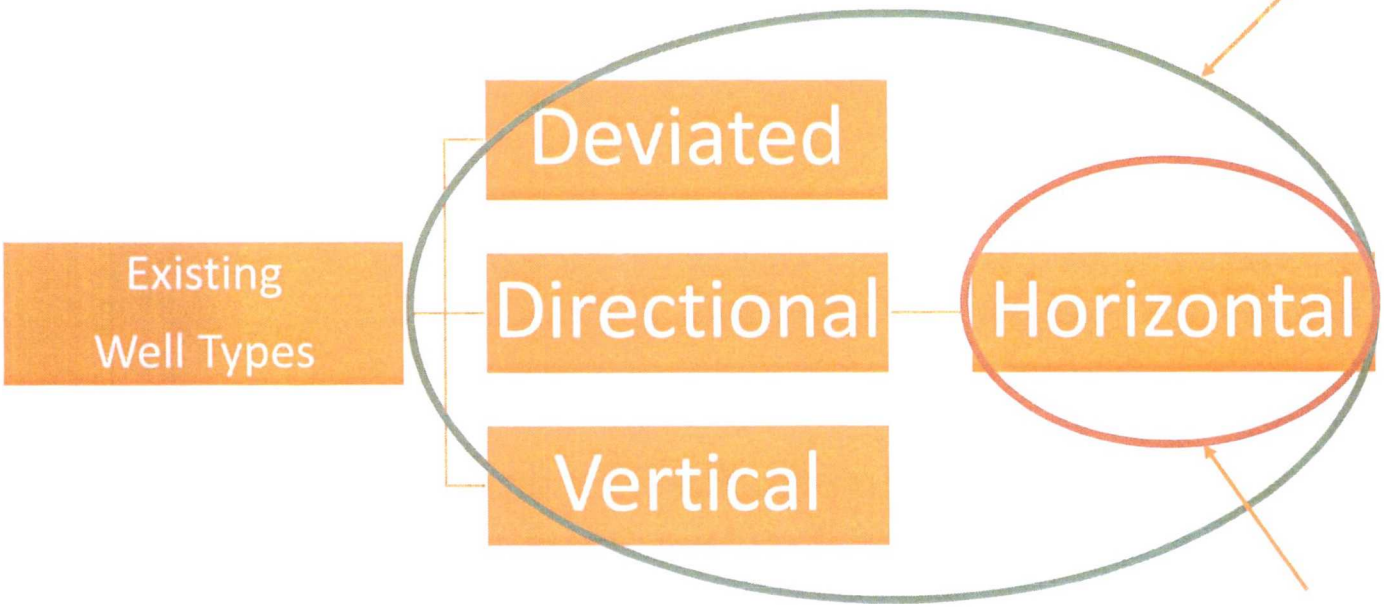
- D. "Directional well" means a well bore that is intentionally deviated from vertical with an intentional azimuth **but is not a horizontal well**.

- [~~E.~~] G. "Horizontal well" means a ~~directional~~ well bore with one or more laterals that extend a minimum of 100 feet ~~horizontally~~ **laterally** in the target zone. A well with multiple laterals from a common well bore in the same or different target zones or formations shall be considered one well.

- [~~O.~~] Q. "Vertical well" - no change

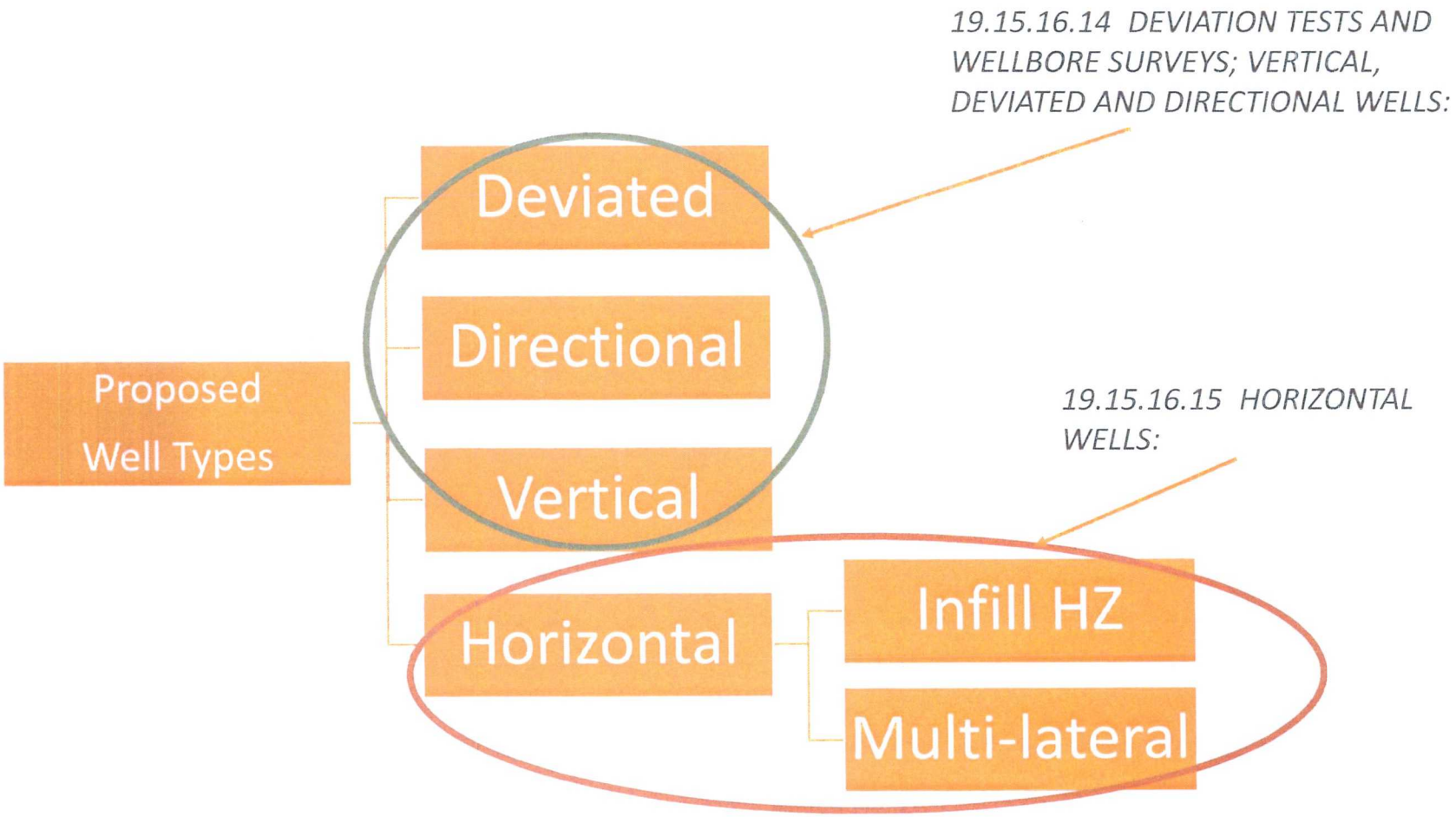
Existing rules affect multiple well types

19.15.16.14 DEVIATION TESTS; DEVIATED, DIRECTIONAL AND HORIZONTAL WELLS:

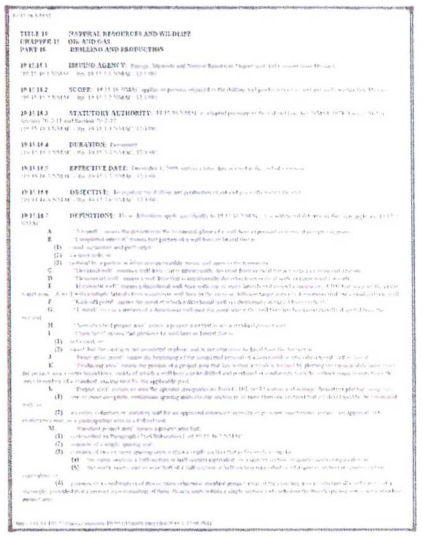


19.15.16.15 SPECIAL RULES FOR HORIZONTAL WELLS:

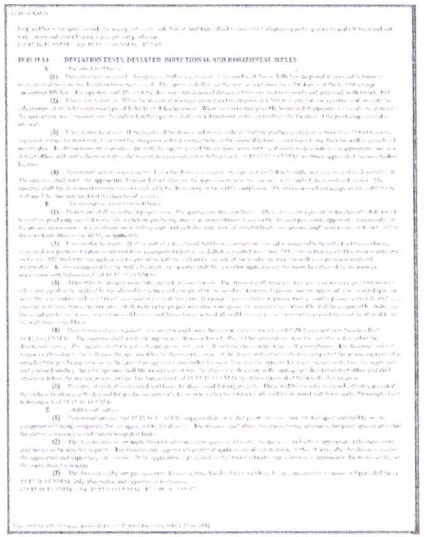
Proposed rules improve clarity…



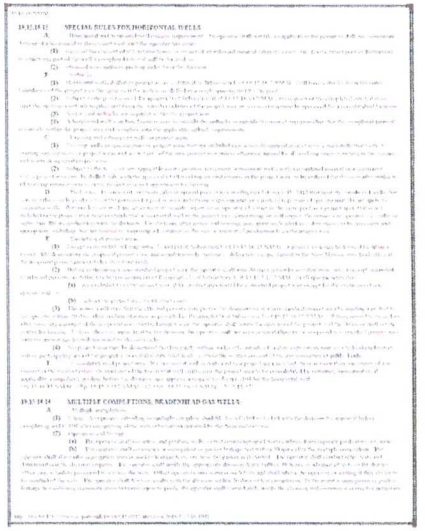
Proposed rules are better organized…



19.15.16.7
DEFINITIONS



19.15.16.14
DEVIATION TESTS AND WELLBORE SURVEYS: VERTICAL, DEVIATED AND DIRECTIONAL WELLS



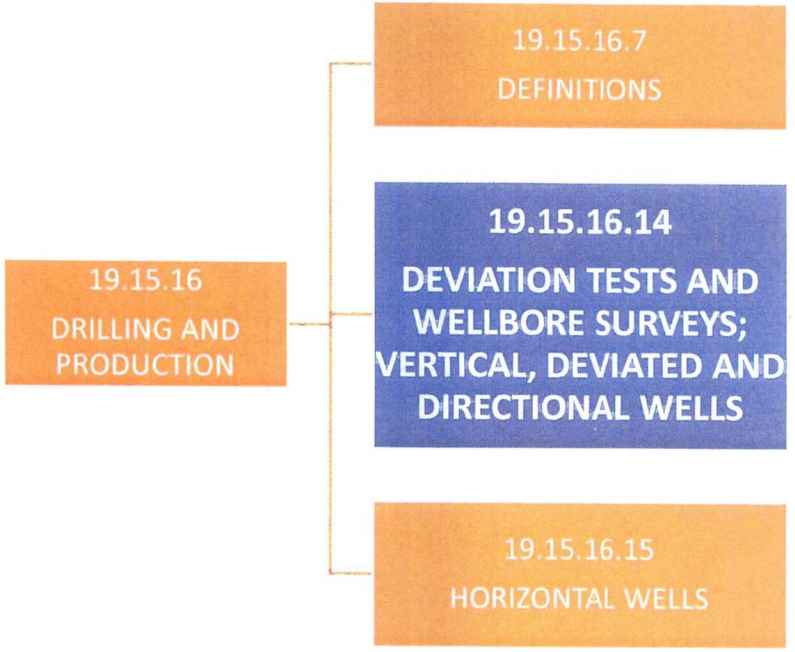
19.15.16.15
HORIZONTAL WELLS

VERTICAL, DEVIATED & DIRECTIONAL WELLS

19.15.16.14 NMAC

Why did we mess with this?

- Even though the OCD proposes to repeal and replace this entire section, very little is substantively changed from existing rules
- Because terms like "project area" and "producing area" were deleted, the language must be updated
- Since these rules will only address vertical, deviated and directional wells, rules referencing specific requirements for horizontal wells were removed and the title was changed
- Needed to remove conflicting language and clarify the applicability of the 50' tolerance


19.15.16.7
DEFINITIONS
19.15.16
DRILLING AND PRODUCTION
19.15.16.14
DEVIATION TESTS AND WELLBORE SURVEYS; VERTICAL, DEVIATED AND DIRECTIONAL WELLS
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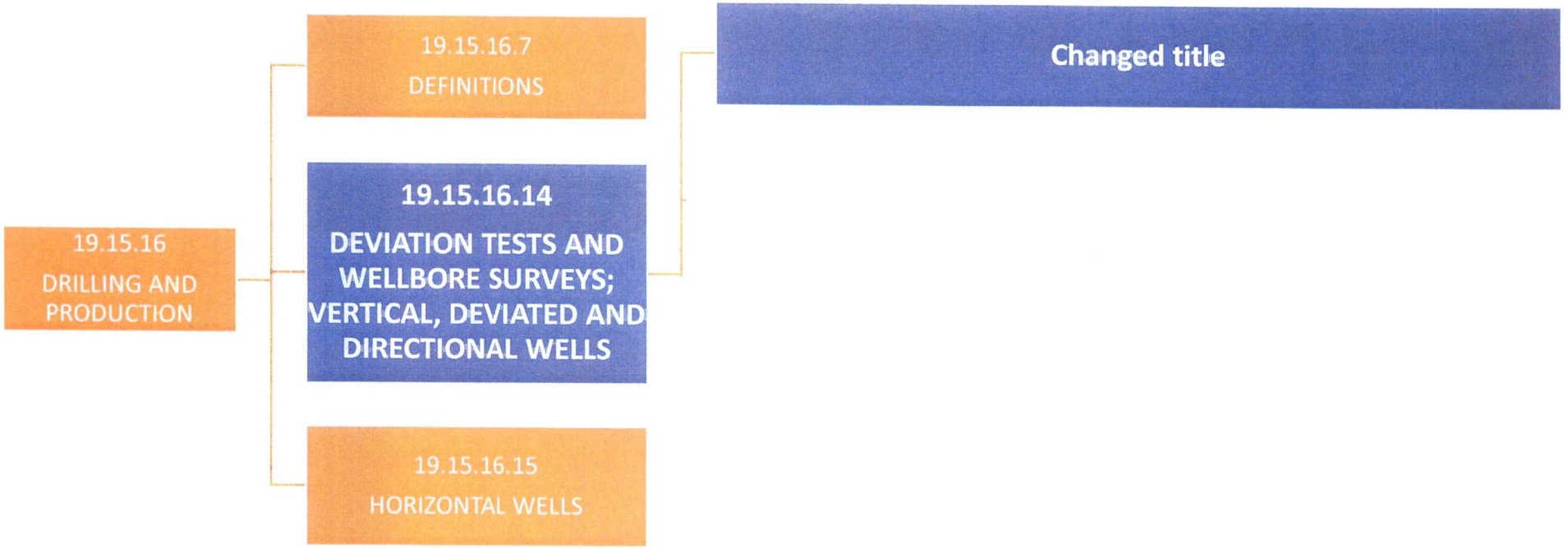
HORIZONTAL WELLS


19.15.16
DRILLING AND PRODUCTION
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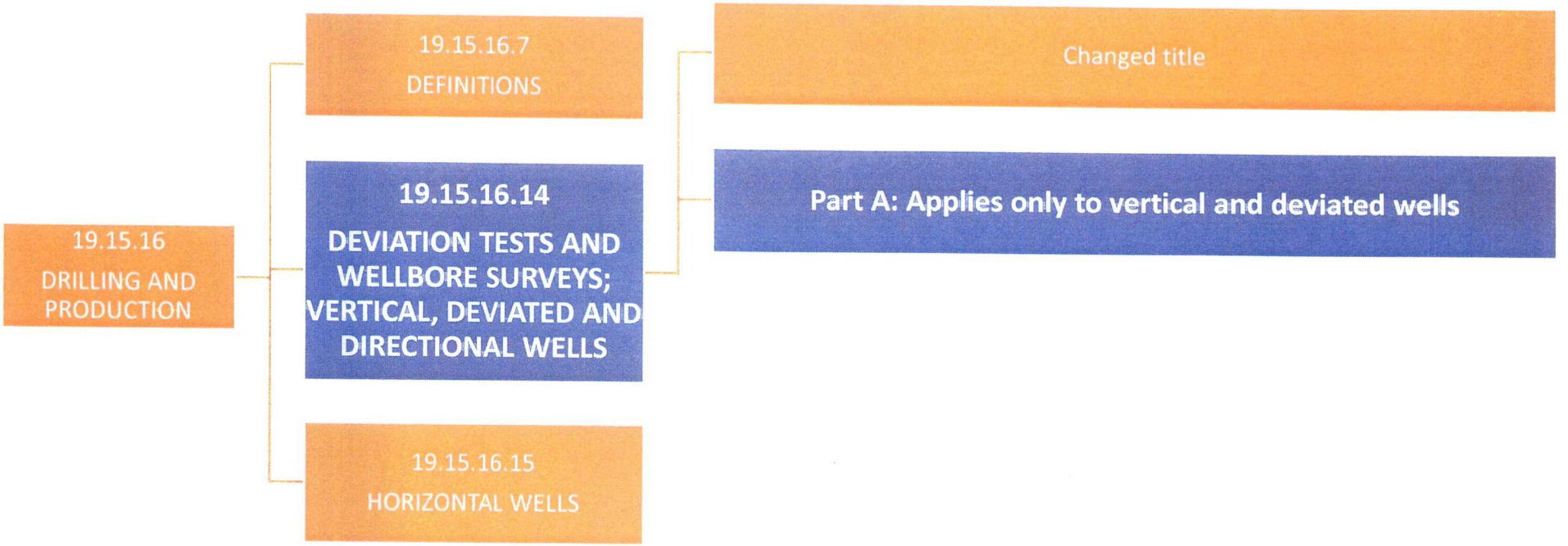
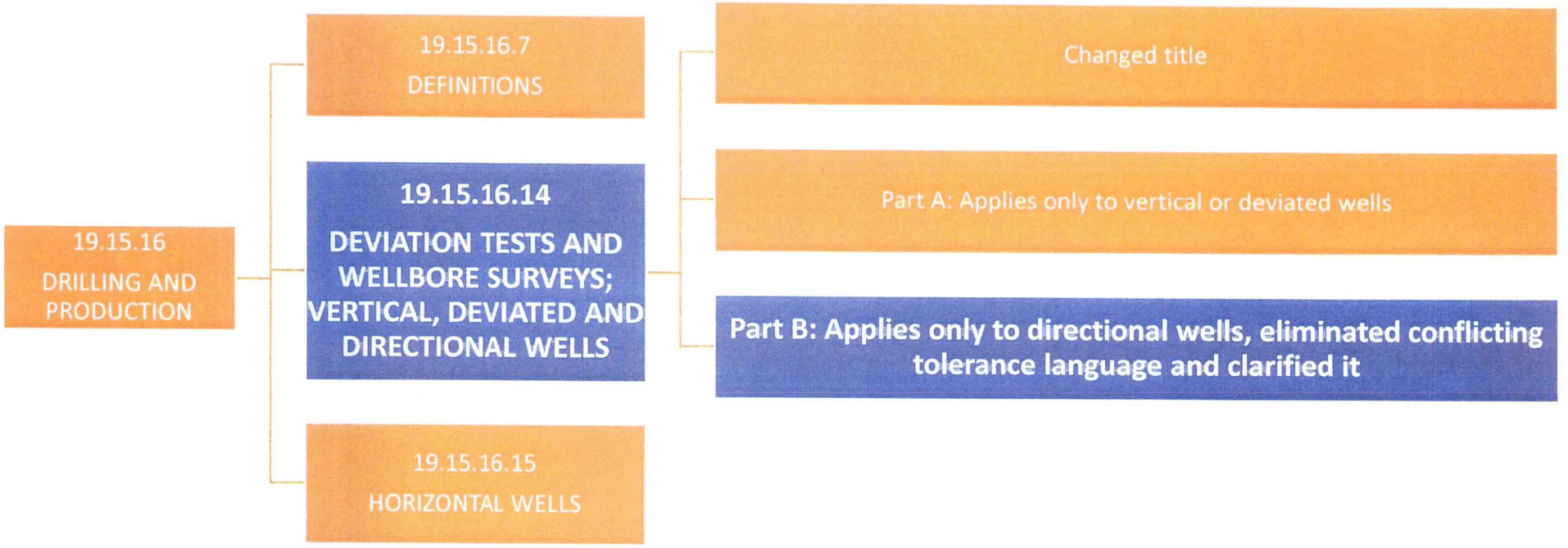
DEVIATION TESTS AND WELLBORE SURVEYS; VERTICAL, DEVIATED AND DIRECTIONAL WELLS
19.15.16.15
HORIZONTAL WELLS
Changed title


19.15.16
DRILLING AND PRODUCTION
19.15.16.7
DEFINITIONS
19.15.16.14
DEVIATION TESTS AND WELLBORE SURVEYS; VERTICAL, DEVIATED AND DIRECTIONAL WELLS
19.15.16.15
HORIZONTAL WELLS
Changed title
Part A: Applies only to vertical and deviated wells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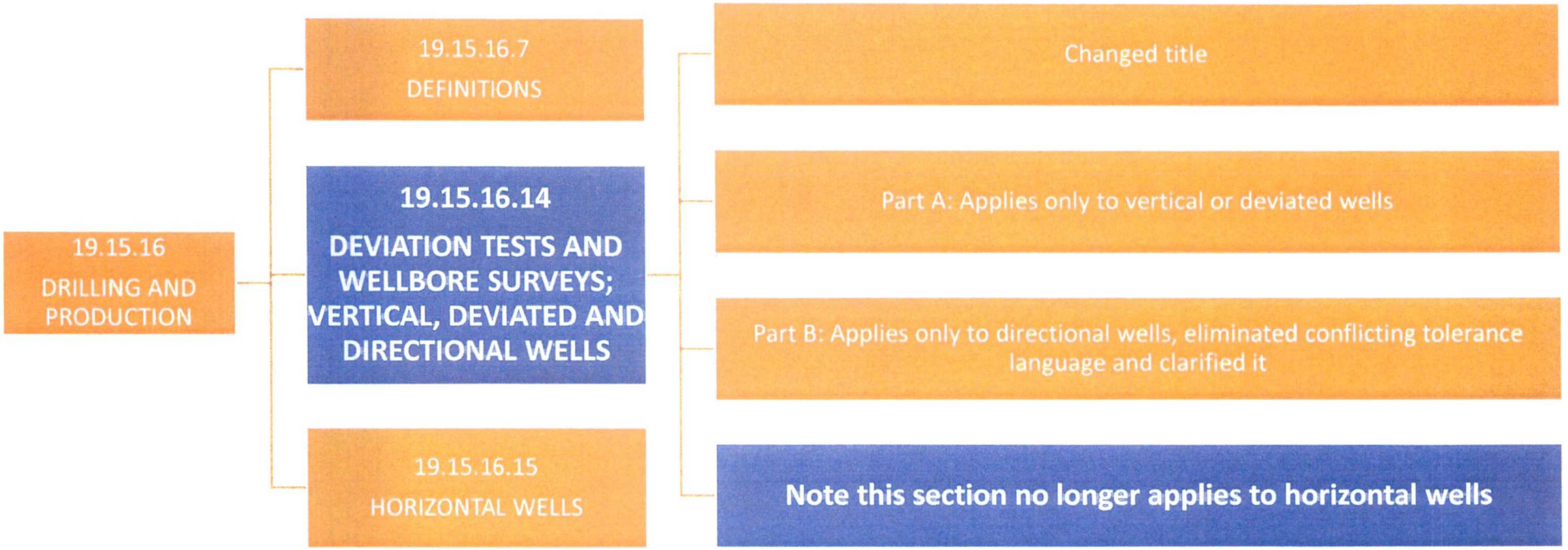
HORIZONTAL WELLS
Changed title
Part A: Applies only to vertical or deviated wells
Part B: Applies only to directional wells, eliminated conflicting tolerance language and clarified it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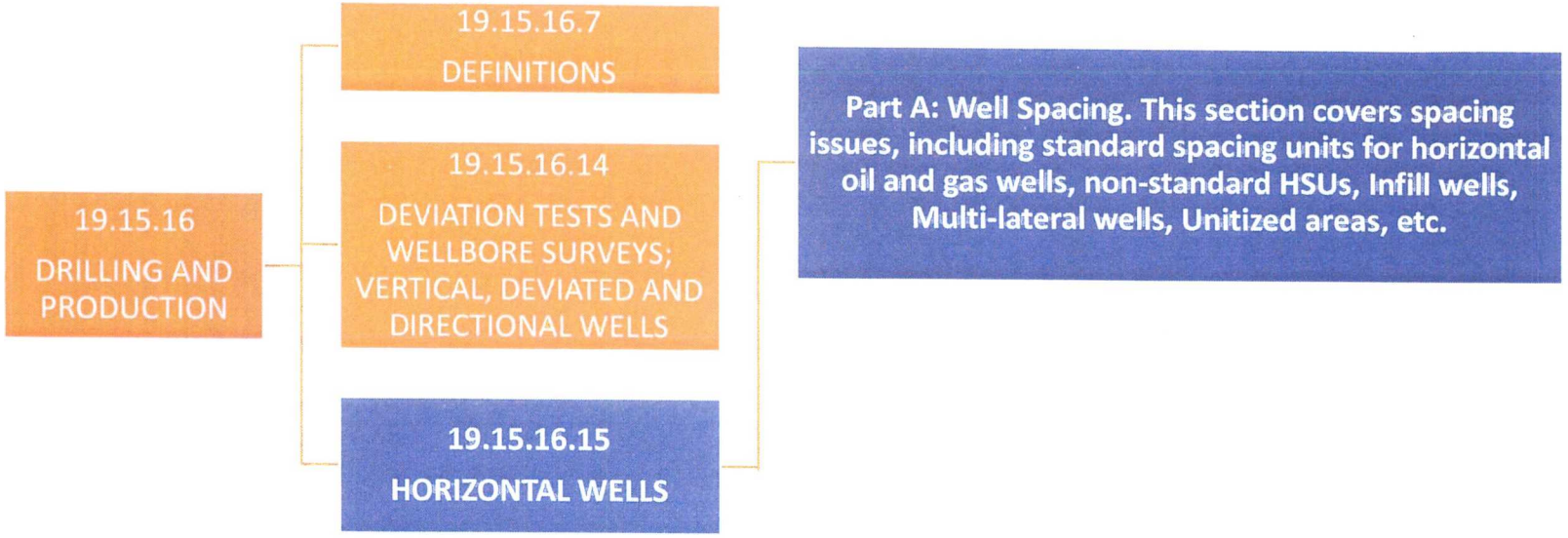
19.15.16.15
HORIZONTAL WELLS
Changed title
Part A: Applies only to vertical or deviated wells
Part B: Applies only to directional wells, eliminated conflicting tolerance language and clarified it
Note this section no longer applies to horizontal wells

SPACING FOR HORIZONTAL WELLS

PART A OF 19.15.16.15 NMAC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DEVIATION TESTS AND WELLBORE SURVEYS; VERTICAL, DEVIATED AND DIRECTIONAL WELLS
19.15.16.15
HORIZONTAL WELLS
Part A: Well Spacing. This section covers spacing issues, including standard spacing units for horizontal oil and gas wells, non-standard HSUs, Infill wells, Multi-lateral wells, Unitized areas, etc.

Basic Concepts for Horizontal Spacing Units

- Every horizontal well will have its own spacing unit. Exceptions have been created for infill horizontal wells and certain multi-laterals
- Horizontal Spacing Units ("HSUs") can overlap other horizontal spacing units or vertical well spacing units
- There are still NO density restrictions for horizontal wells
- Criteria for *Standard* Horizontal Spacing Units ("HSU") are defined for:
  - The Tracts that make up a standard HSU
  - The resulting size and shape of the standard HSU
- If it doesn't meet the criteria for a standard HSU, it is non-standard

A.(1)-(4) Standard HSU Defined – Tract Criteria

- **Comprised of one or more contiguous tracts of a certain size:**
  - 40-acre for oil, 160-acre for gas, or
  - At the operator's option, sizes and configuration required by the applicable pool rules. If the well's completed interval spans two pools with different spacing requirements, the maximum tract size must be used
- **Tracts included in the HSU must be:**
  - Penetrated by the well's completed interval or
  - At the operator's option, within 330 feet perpendicular to the well's completed interval ("proximity" tracts)
- **40-acre/160-acre tracts must be substantially in the form of a square or rectangle, a legal subdivision of the US public land surveys, and a quarter-quarter section or equivalent (for 40-acre tracts) or a quarter section or equivalent (for 160-acre tracts)**

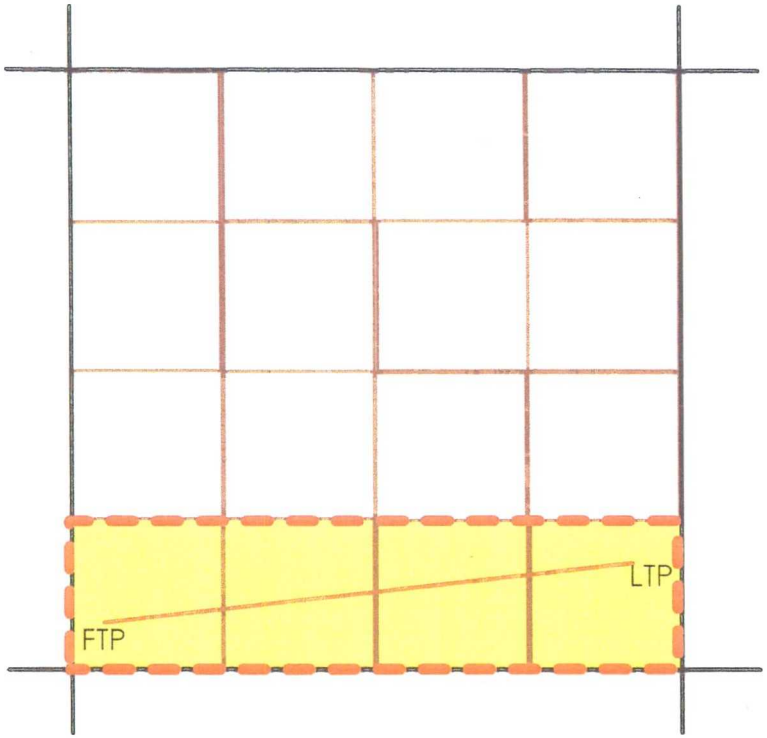
A.(1)-(4) Standard HSU Defined – Size & Shape

- **The resulting HSU:**
  - Must contain at least the minimum acreage required by applicable pool rules
  - Have all tracts oriented in the same direction, if constructed using 80 or 320-acre tracts,
  - Cannot "strand" the fourth 40-acre tract
  - Must be rectangular after inclusion of the "proximity" tracts, if the shape was rectangular based on the penetrated tracts
- **If it is not a standard HSU, then it must be approved as a non-standard HSU**

Standard Spacing Unit Example

Outline of HSU

Penetrated Tracts

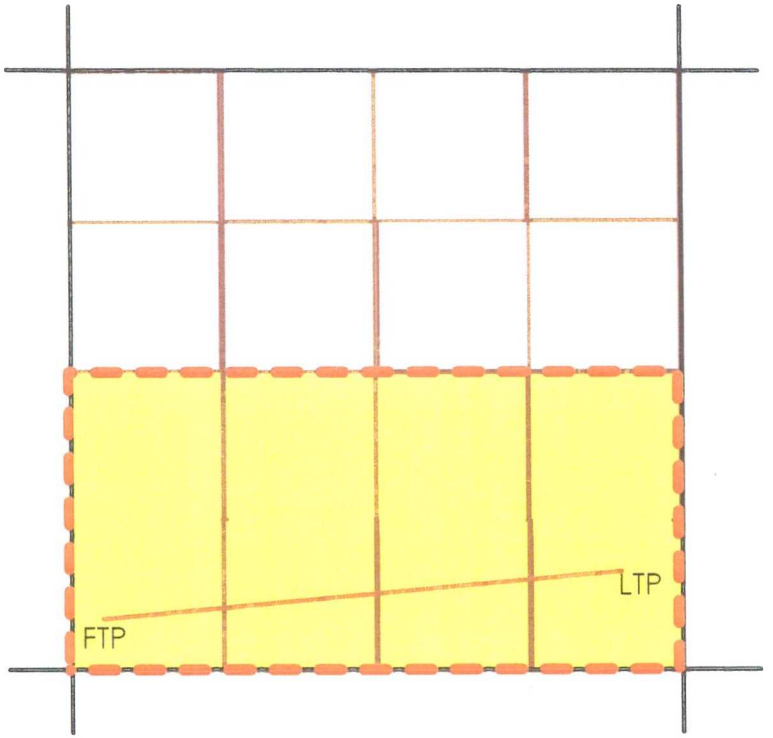


- Target oil pool is under statewide rules
- Tract size = 40 acres
- Completed interval penetrates four 40-acre tracts
- Standard HSU = 160 acres

Standard Spacing Unit Example

Outline of HSU

Penetrated Tracts

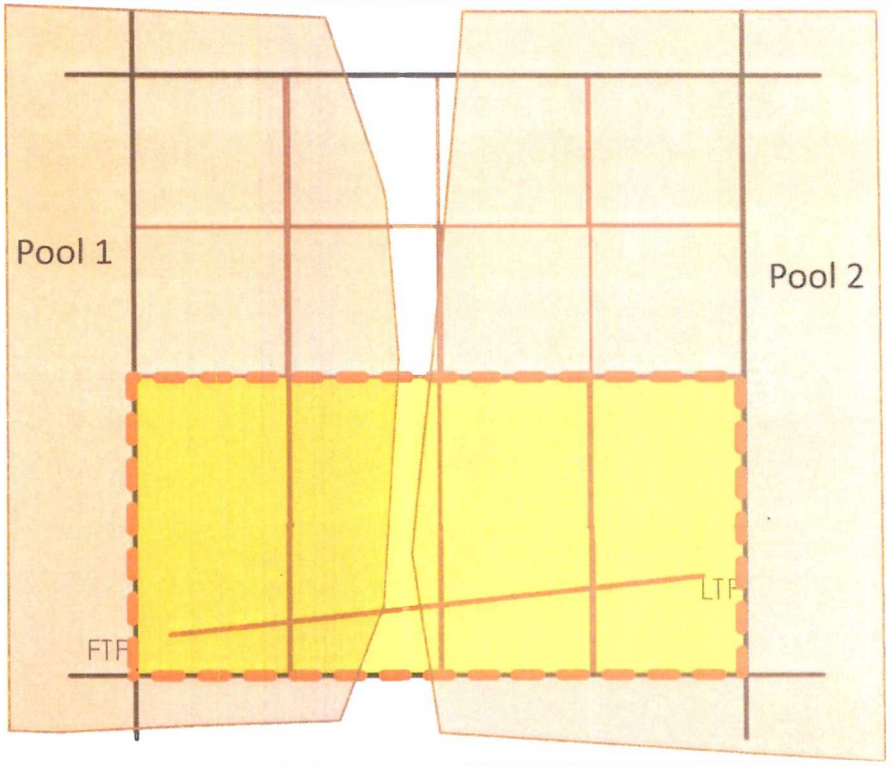


- Target oil pool is under special pool rules with 80-acre spacing
- Operator elects to construct standard HSU using pool rules
- Completed interval penetrates four 80-acre tracts
- All 80-acre tracts are oriented in the same direction
- Standard HSU = 320 acres

Standard Spacing Unit Example

Outline of HSU

Penetrated Tracts

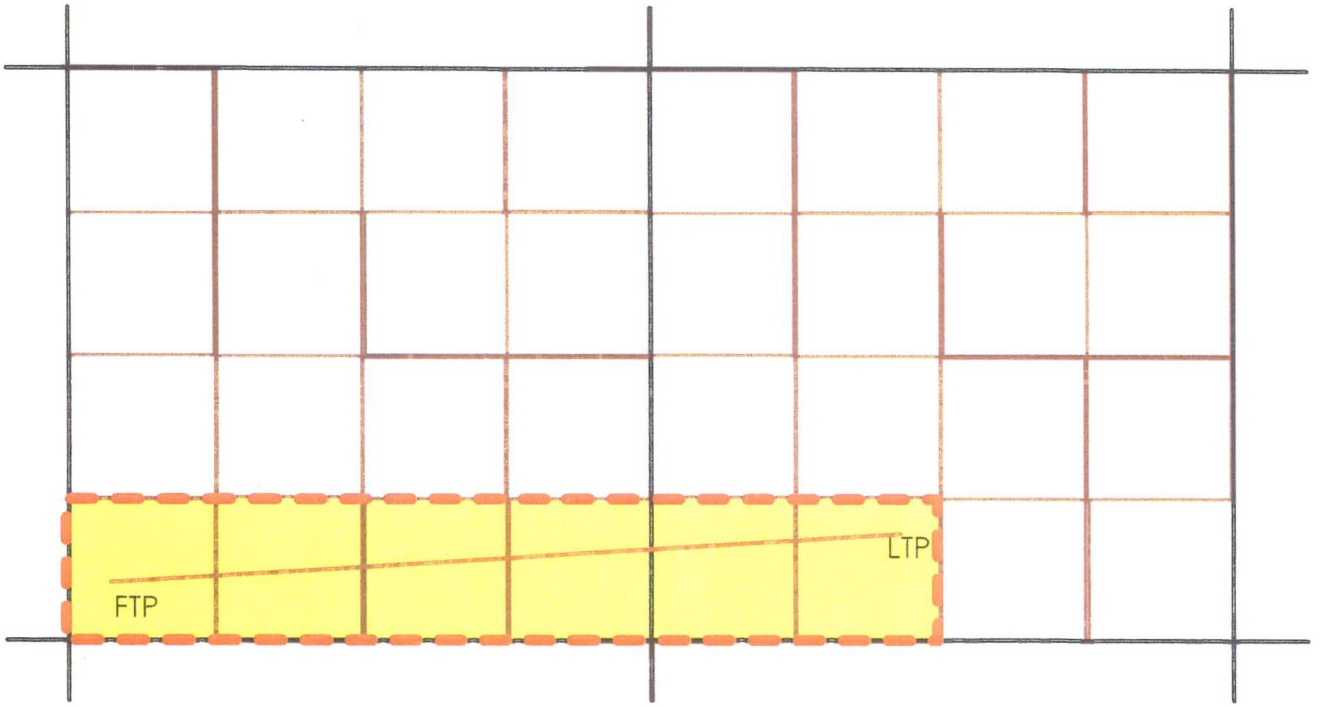


- **Completed interval is located within the boundary of two pools in the same formation**
- **Pool 1 is an oil pool under statewide rules, 40-acre spacing**
- **Pool 2 is an oil pool under special pool rules with 80-acre spacing**
- **Because operator elects to construct standard HSU using pool rules, maximum tract size of 80 acres is required**
- **All 80-acre tracts are oriented in the same direction**
- **Standard HSU = 320 acres**
- ***Note this is NOT a downhole commingle situation per the proposed language in D.(2)(a)***

Standard Spacing Unit Example

Outline of HSU

Penetrated Tracts

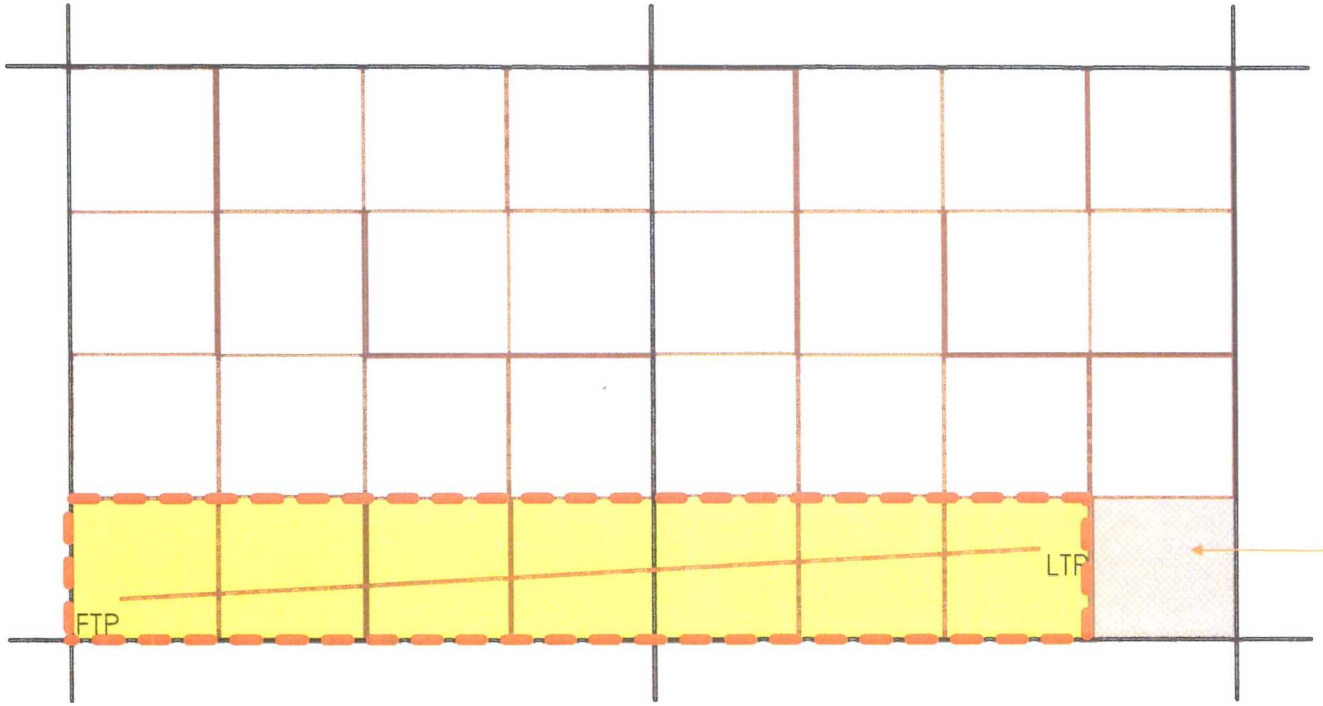


- Target oil pool is under statewide rules
- Tract size = 40 acres
- Completed interval penetrates six 40-acre tracts
- Standard HSU = 240 acres

Non-Standard Spacing Unit Example

Outline of HSU

Penetrated Tracts

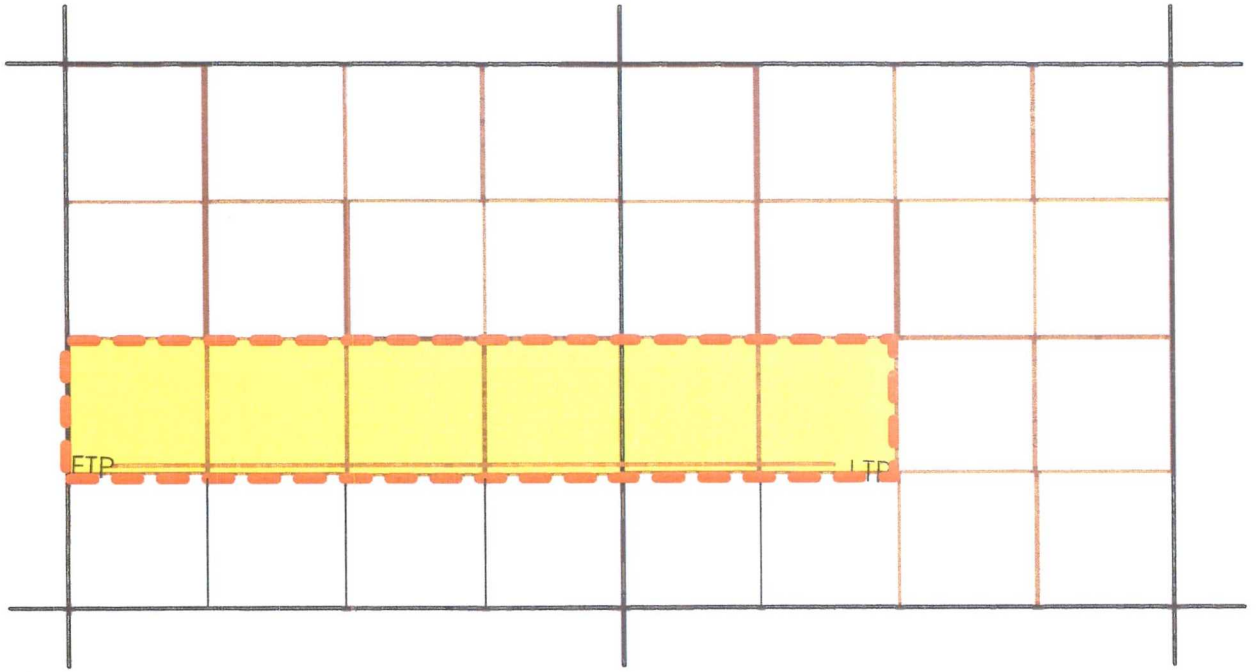


- Target oil pool is under statewide rules
- Tract size = 40 acres
- Completed interval penetrates seven 40-acre tracts
- The proposed HSU is rectangular and includes three 40-acre tracts in the same section
- Because the fourth 40-acre tract is NOT dedicated to a HSU for an existing or permitted horizontal well in the same pool, this is a non-standard HSU
- Non-Standard HSU = 280 acres

Standard Spacing Unit Example

Outline of HSU

Penetrated Tracts



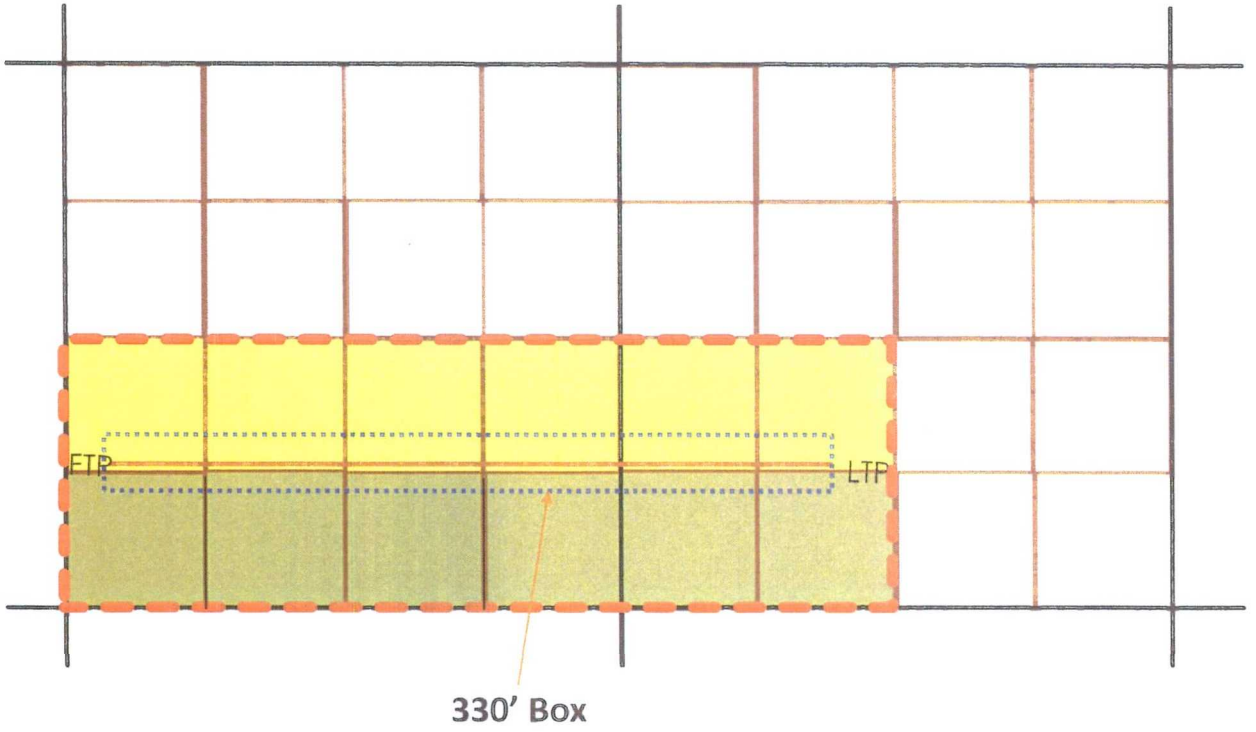
- Target oil pool is under statewide rules
- Tract size = 40 acres
- Completed interval penetrates six 40-acre tracts, 75' from the offsetting tracts
- Since completed interval is located at an unorthodox location, notice, opportunity for protest and NMOCD approval is required
- Standard HSU = 480 acres

Standard Spacing Unit Example

Outline of HSU

Penetrated Tracts

Proximity Tracts

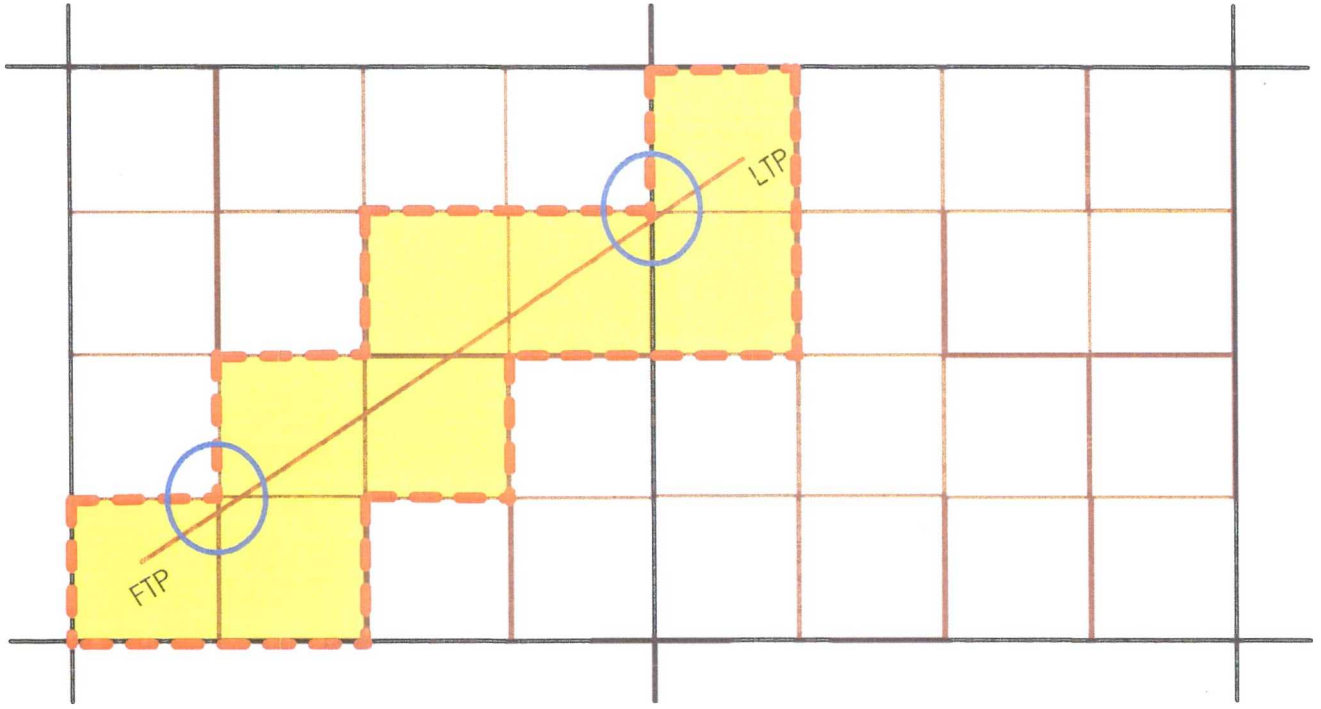


- Target oil pool is under statewide rules
- Tract size = 40 acres
- Completed interval penetrates six 40-acre tracts, 75' from the offsetting tracts
- An additional six 40-acre tracts are within 330' of the completed interval ("proximity" tracts)
- Operator elects to include proximity tracts
- Standard HSU = 480 acres

Standard Spacing Unit Example

Outline of HSU

Penetrated Tracts



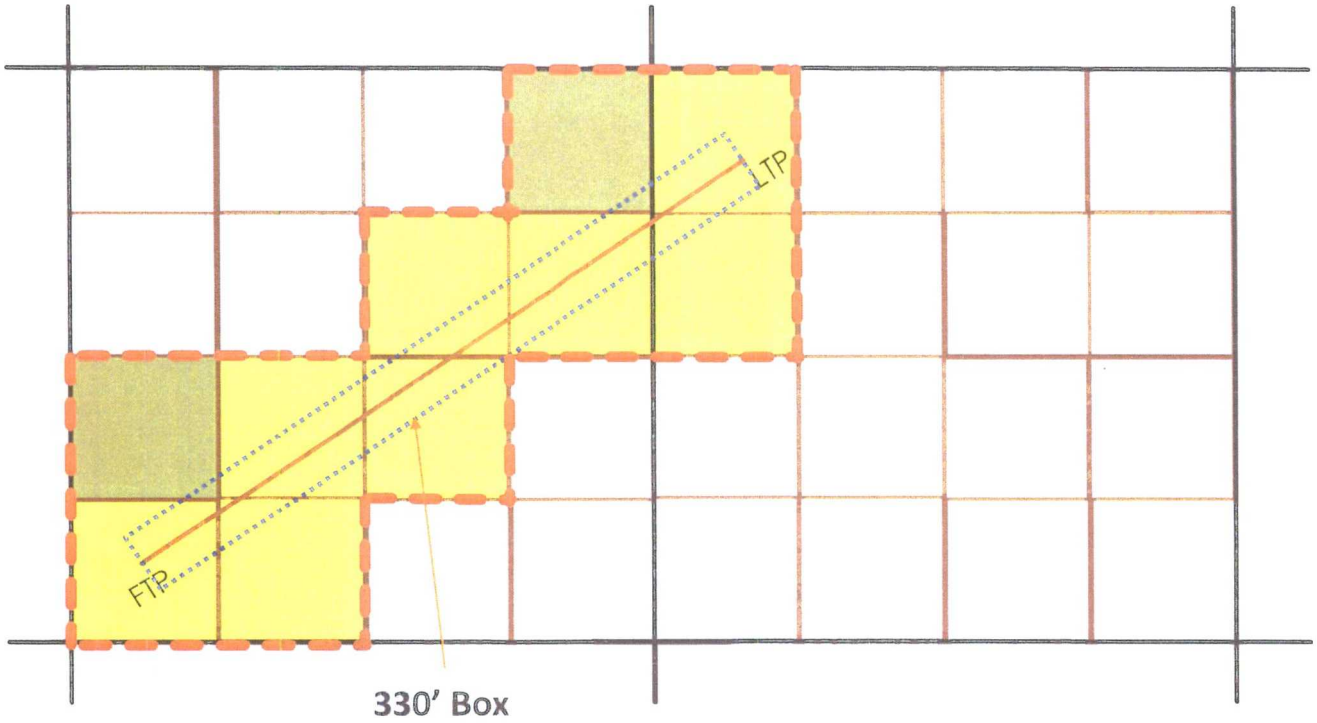
- Target oil pool is under statewide rules
- Tract size = 40 acres
- Completed interval penetrates eight 40-acre tracts that DO NOT form a rectangle
- Since completed interval is located at an unorthodox location, notice, opportunity for protest and NMOCD approval is required
- Standard HSU = 400 acres

Standard Spacing Unit Example

Outline of HSU

Penetrated Tracts

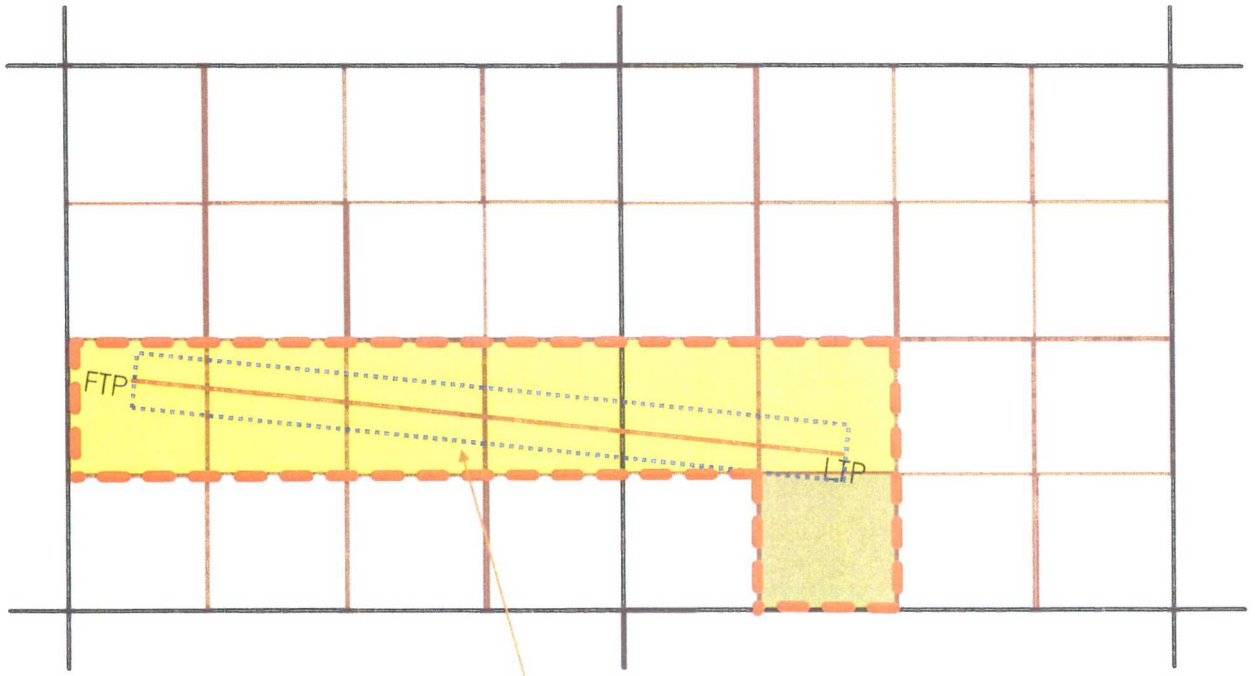
Proximity Tracts



- Target oil pool is under statewide rules
- Tract size = 40 acres
- Completed interval penetrates eight 40-acre tracts that DO NOT form a rectangle
- Two additional 40-acre tracts are located within 330' of the completed interval
- Operator elects to include proximity tracts
- Standard HSU = 400 acres

Non-Standard Spacing Unit Example

Outline of HSU Penetrated Tracts Proximity Tracts



330' Box

- Target oil pool is under statewide rules
- Tract size = 40 acres
- Completed interval penetrates six 40-acre tracts
- An additional 40-acre tract is within 330' of the completed interval
- Since the perimeter of the area that includes all of the tracts that the proposed horizontal oil well penetrates defines a rectangle, then additional tracts cannot be brought in that would result in a non-rectangular horizontal spacing unit.
- Non-Standard HSU = 320 acres

A.(5) Consent Requirements

- **An operator can't file an APD or start drilling until:**
  - **At least one lessee or owner of each tract has consented to the drilling or,**
  - **The parties in the HSU have been compulsory pooled**
- **This is the same as the existing requirement described in the "Directional and horizontal well consent requirement" in Part A of 19.15.16.15 NMAC**
- **NMOGA-Proposed Change:**
  - **In (5)(a), replace "owner" with "unleased mineral interest owner".**
  - *Discussion: The term "owner" is defined broadly in the Division rules and that definitional use here creates an ambiguity that could lead to an overly broad application of this requirement.*

A.(6) Non-Standard HSUs

- Application requirements, notice requirements and approval process are all the same as for other non-standard spacing units that are covered by subsection B of 19.15.15.11 NMAC
- If unprotested, it can be administratively approved after application, notice and opportunity for hearing
- This section also describes the tracts whose "affected persons" are entitled to notice:
  - Tracts that are excluded from the spacing unit if the spacing unit would be a standard spacing unit except for the exclusion of such tracts, or
  - Tracts that adjoin the non-standard spacing unit
- No substantive change from the current rules

A.(7) State, federal or tribal lands

- **Not much change from existing requirements, except to include copy to the BLM if HSU includes federal lands**

A.(8) Every HZ well has its own HSU

- **This new language states the basic concept that each horizontal well must have its own spacing unit, either standard or non-standard, as defined by the well's completed interval and the requirements in Part A of this rule, except for:**
  - **Infill horizontal wells**
  - **Certain multi-lateral wells**

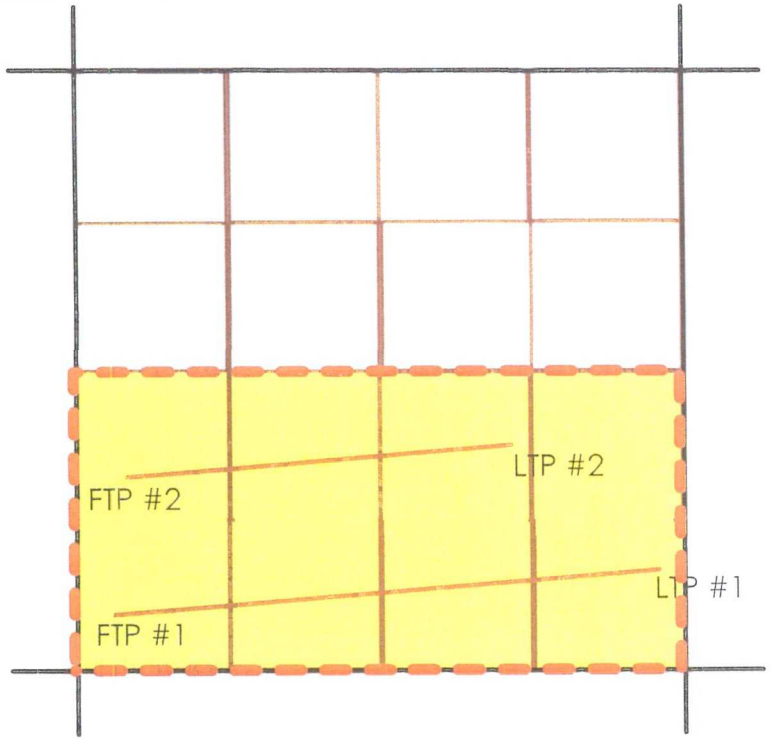
A.(8) Spacing Units for Infill Horizontal Wells

- An infill horizontal well is designated as such on Form C-102
- It can be dedicated to an existing standard or non-standard HSU if the completed interval of the infill well is entirely within the boundary of the existing HSU
- Why bother?
  - Infill wells can be drilled under existing pooling orders and joint operating agreements (JOA)
  - Infill wells will have the same interest as the existing well and can therefore be produced to a common battery without the need for commingling authority

A.(8) Infill Horizontal Well Spacing Unit Example

Outline of HSU

Penetrated Tracts



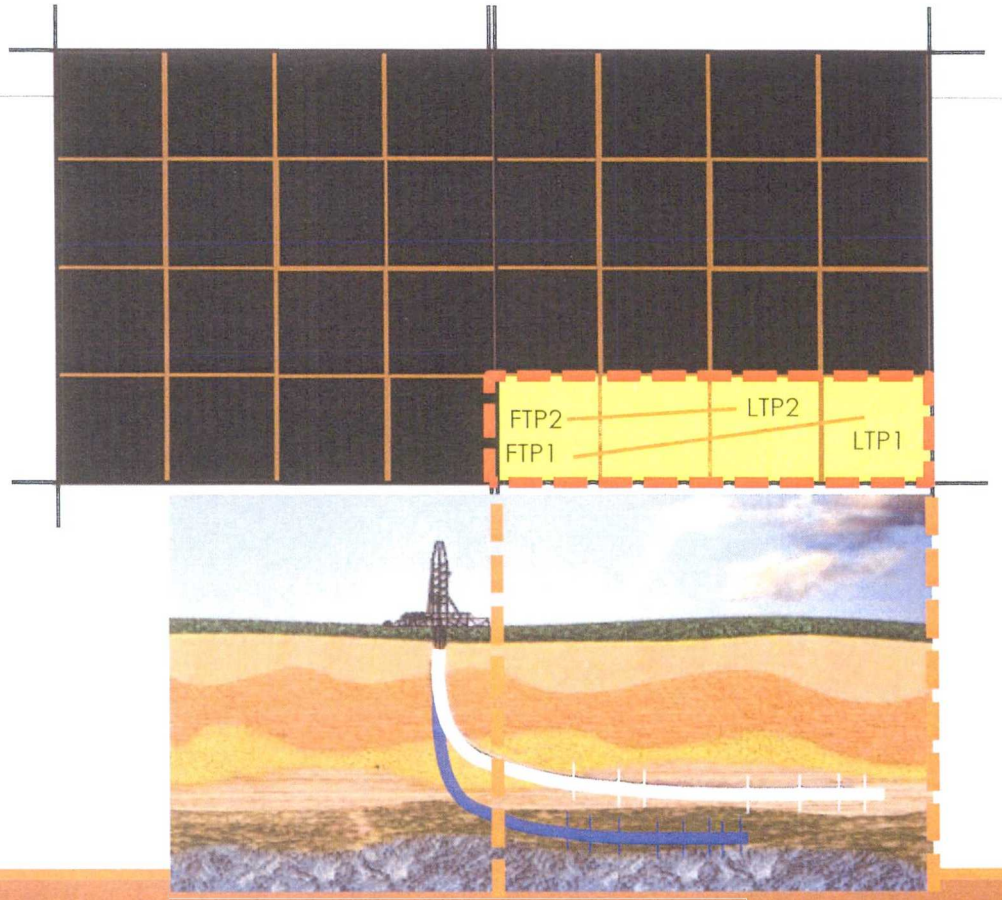
- Target oil pool is under special pool rules with 80-acre spacing
- Operator elects to construct standard HSU using pool rules
- Completed interval for well #1 penetrates four 80-acre tracts
- Infill Horizontal Well (#2) has a completed interval entirely within the HSU for Well #1 and is designated by the operator as an Infill Horizontal Well
- Both wells share the same standard HSU of 320 acres

A.(8) NMOGA Recommendations

After the phrase "and multi-lateral horizontal wells" add the clause "described in Subparagraph (a) of Paragraph (9) of Subsection A of 19.15.16.15 NMAC" to reflect that only certain multi-lateral wells may be dedicated to the same horizontal spacing unit per the referenced provision.

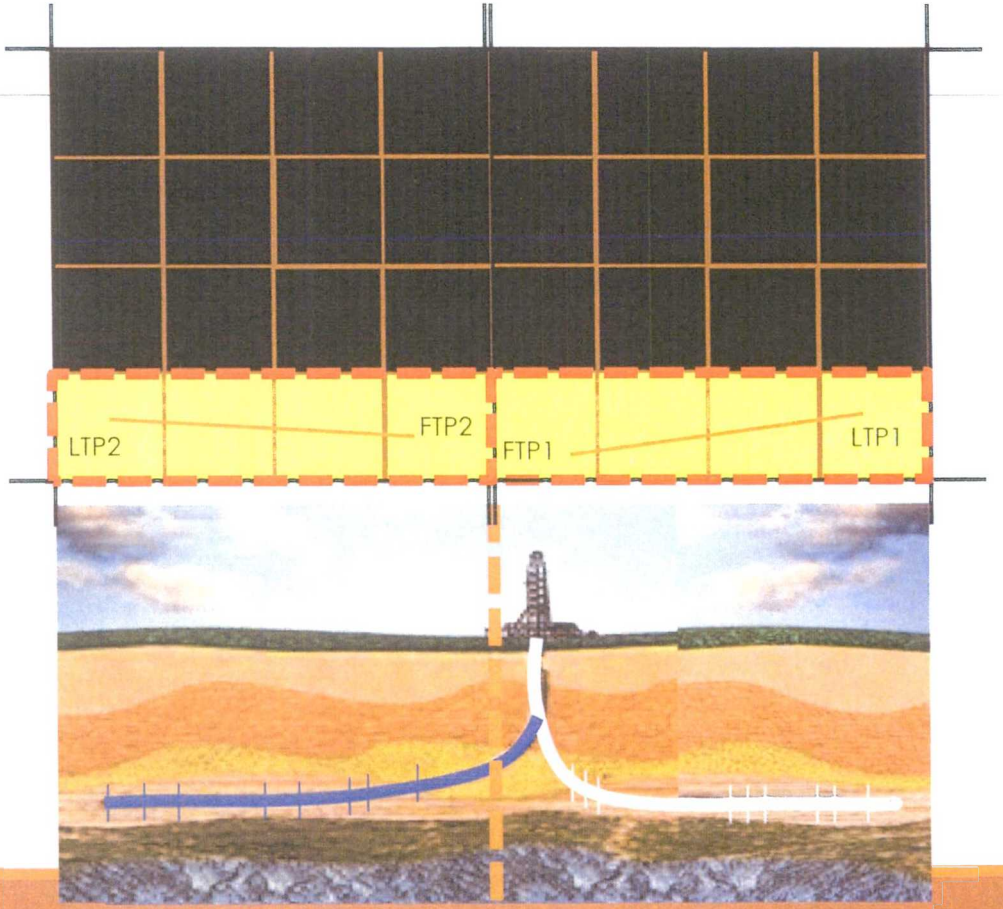
A.9(a) - Spacing for Multi-lateral Wells

- Lateral #1 is drilled on a standard HSU of 160 acres
- Lateral #2 is drilled with a completed interval in the same pool and located entirely within the boundary of the HSU for #1
- Per A.9(a), both laterals share the same HSU



A.9(b) Spacing for Multi-lateral Wells

- Laterals are completed in same pool
- BUT, the completed interval for lateral (2) develops tracts that were not included in the original HSU for lateral (1)
- Lateral (2) must have a separate HSU from lateral (1)



A.(9) NMOGA Recommendations

In (a), replace "an existing horizontal spacing unit" with "a horizontal spacing unit for the longer lateral" to confirm that the horizontal spacing unit for both laterals will be based on the longer lateral, and can be either standard or non-standard. This addresses a concern that "an existing horizontal spacing unit" does not exist until a lateral is drilled and completed in the spacing unit.

A.(10) Spacing Units for Unitized Areas

- The OCD requires the designation of spacing units for wells drilled inside of unitized areas such as EOR projects
- To avoid unreasonable restrictions on the location of a horizontal well's completed interval in this situation, certain exceptions are necessary to the following requirements:
  - The rectangular shape requirements for standard HSUs for horizontal oil or gas wells
  - The "stranded" tract prohibition for standard HSUs for horizontal oil wells

A.(10) Spacing Units for Unitized Areas

- **In addition to applying to horizontal wells within defined unitized areas, this also applies when drilling in "a single lease or tract with uniform ownership as to all oil and gas mineral interests in the objective formation"**
- **This was necessary because:**
  - Unitized area definition does not include the "single lease"
  - The committee concluded that single leases have the same characteristics as unitized areas (common ownership throughout) and should therefore enjoy the same treatment

A.(10) NMOGA Recommendations

- *In subparagraph (a), replace "a single lease or tract" with "an area" to broaden the circumstances of uniform ownership that qualify for this provision. As written, the language is too limiting and doesn't recognize other circumstances that have the same characteristics as a single lease or unitized area.*
- *In subparagraph (a), the phrase "all oil and gas mineral interests" should be replaced with "the mineral estate" before "in the objective formation" since "mineral estate" is a defined term that includes royalty and overriding royalty interests.*
- *In subparagraph (a), the reference "Paragraph (2)" should be corrected to "Paragraph (3)".*
- *Subparagraph (b) should be deleted in its entirety. This is a purely federal matter that is subject to change by the BLM at any time and therefore should not be codified in state rules.*

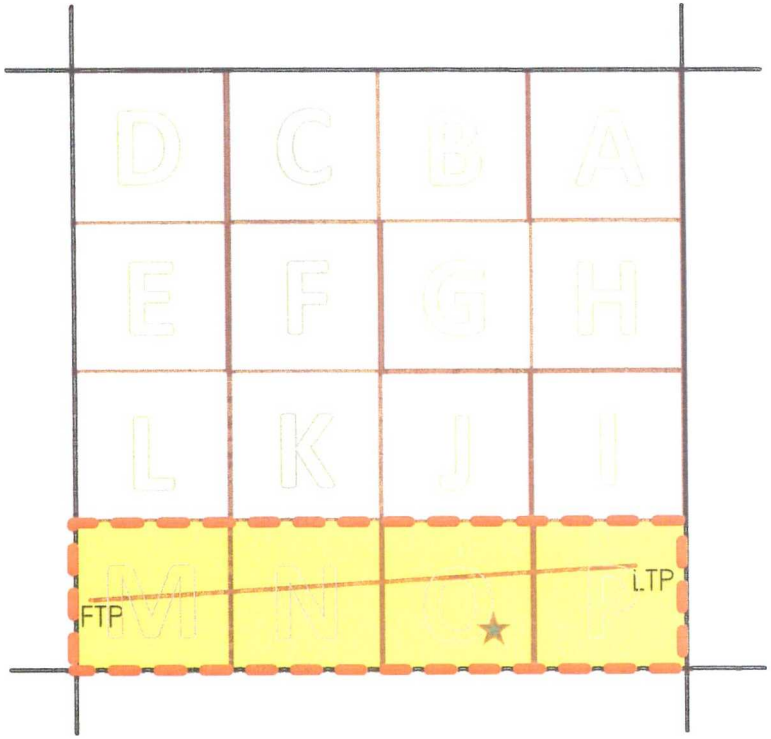
A.(11) Existing and subsequent wells in HSUs

- **This provision kicks in when there are existing wells in the same pool and located within the boundaries of a proposed HSU**
- **By requiring notice, this is designed to protect owners in existing wells from any adverse impacts associated with a horizontal well in close proximity to their well**
- **These existing owners will be offered the opportunity to participate in the proposed horizontal well** *(note that A.(12) of 19.15.16.15 already requires voluntary or compulsory pooling of separately-owned interests in the proposed HSU before producing the horizontal well)*

(11)(b)(i) Example

Outline of HSU

Penetrated Tracts

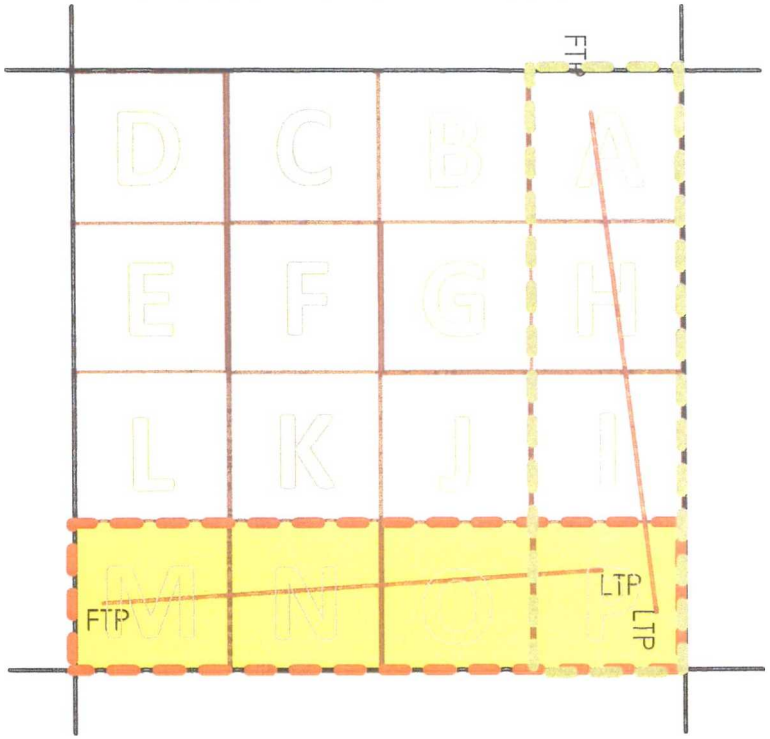


- Target oil pool is a Bone Spring pool under statewide rules, and it includes the 1st, 2nd and 3rd Bone Spring sections
- Tract size = 40 acres, and the completed interval penetrates four 40-acre tracts
- Standard HSU = 160 acres
- An existing well is located on tract O, and is completed in the 1st Bone Spring
- The HZ well is proposed to be completed in the 3rd Bone Spring
- So the HZ well is a "subsequent well" with a completed interval "partially in an existing well's spacing unit"
- If the existing well is operated by a different operator, Subsection B of 19.15.15.12 (SPECIAL RULES FOR MULTIPLE OPERATORS WITHIN A SPACING UNIT) already requires notice to, and opportunity for protest by, the other operator
- (11)(b)(i) additionally requires notice to and opportunity for protest by, working interest owners in tracts M, N, O and P

(11)(b)(i) Example

Outline of HSU

Penetrated Tracts

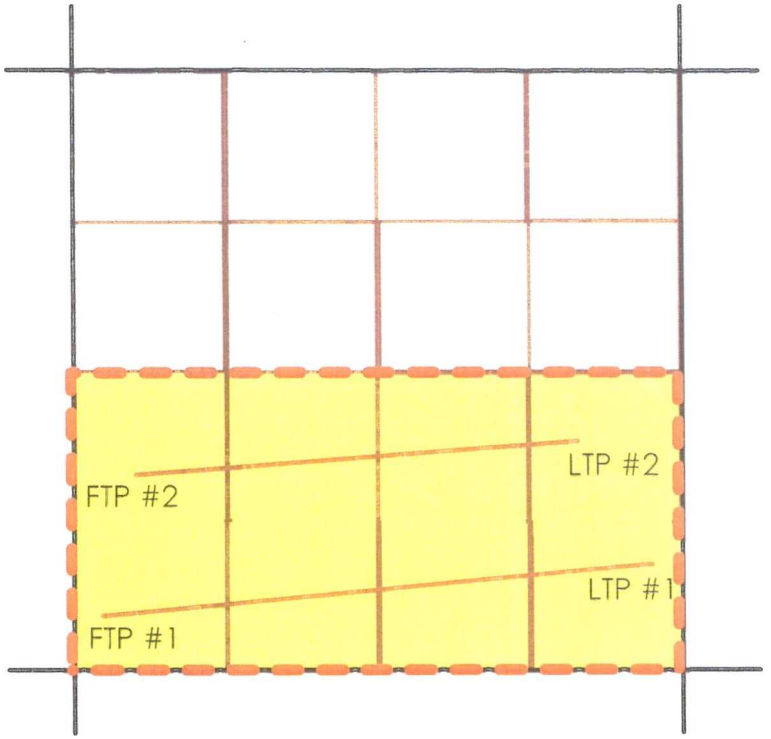


- Target oil pool is a Bone Spring pool under statewide rules, and it includes the 1st, 2nd and 3rd Bone Spring sections
- Tract size = 40 acres, and the completed interval penetrates four 40-acre tracts
- Standard HSU = 160 acres
- An existing HZ well is located on tracts A, H, I and P and is completed in the 1st Bone Spring
- The proposed HZ well will be completed in the 3rd Bone Spring
- So the proposed HZ well is a "subsequent well" with a completed interval "partially in an existing well's spacing unit"
- If the existing HZ well is operated by a different operator, Subsection B of 19.15.15.12 (SPECIAL RULES FOR MULTIPLE OPERATORS WITHIN A SPACING UNIT) already requires notice to, and opportunity for protest by, the other operator
- (11)(b)(i) additionally requires notice to and opportunity for protest by, working interest owners in tracts M, N, O and P as well as tracts A, H and I.

(11)(b)(ii) Example

Outline of HSU

Penetrated Tracts



- Target oil pool is under special pool rules with 80-acre spacing
- Operator elects to construct standard HSU using pool rules
- Completed interval for well #1 penetrates four 80-acre tracts making a standard HSU of 320 acres
- A second well (#2) is NOT an Infill Horizontal Well but has a completed interval in the same pool as well #1 and is "located wholly within an existing well's" HSU
- The HSU for well #2 exactly overlaps the HSU for well #1
- (11)(b)(ii) requires notice to and opportunity for protest by, the operator and working interest owners in both spacing units

A.(11) NMOGA-proposed changes

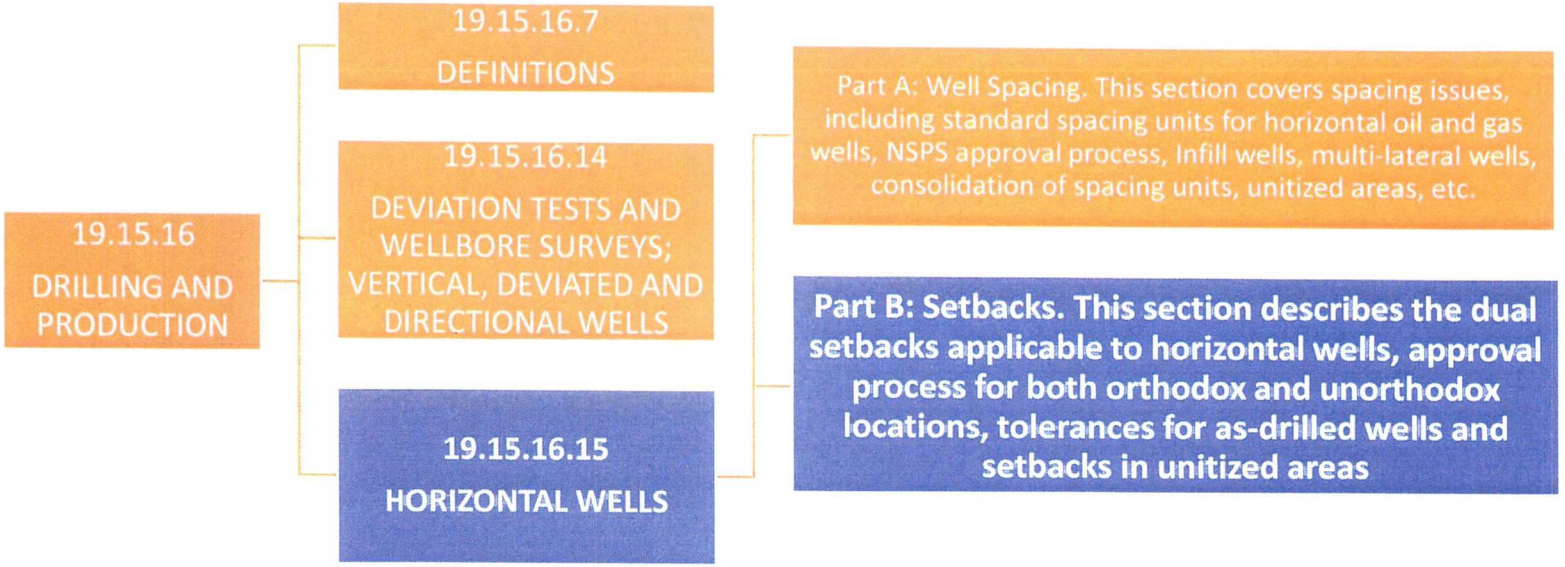
- *In (b)(i), the first phrase "any subsequent well, horizontal or otherwise" should be replaced with "a horizontal well" to confirm that these provisions only apply to horizontal wells.*
- *In (b)(i) and (ii), the phrase "pursuant to a division order" should be deleted as unnecessary. The notice process referenced at the end of A.(11) requires an operator to provide waivers or a statement that notice has been provided. Confirmation of this process can be easily accomplished by noting compliance on the filed application to drill and does not require the additional step of the issuance of a division order.*
- *In (b)(i) and (ii), the phrase "of record or known to the applicant" should be added after "all operators and working interest owners". This clarifies that an operator is only required to ascertain the identity of parties entitled to notice from the courthouse records and their own internal documents. An operator cannot be expected to have knowledge of private transactions of interests that are not in the public record.*

A.(11) NMOGA-proposed changes

- *In (b)(ii), the first phrase "a horizontal well" should be replaced with "any subsequent well, horizontal or otherwise" to reflect the fact that this provision applies to any subsequent well drilled in an existing horizontal spacing unit. This is consistent with the current rules governing this situation.*
- *In (b)(ii), the phrase "and in the same pool or formation" should be inserted after "existing well's horizontal spacing unit" to clarify when this provision applies. This clarification is already present in (i), and to be consistent it should be repeated in (ii).*
- *Subparagraph (e) should be changed to remove the phrase "to non-consenting owners". It is redundant and confusing since non-consenting interest owners are already included as "working interest owners" in the group entitled to notice under the provisions in (b)(i) and (ii). Removing this phrase also conforms with the notice requirements and process described in the referenced Subsection B of 19.15.15.12 NMAC.*

SETBACKS FOR HORIZONTAL WELLS

PART B OF 19.15.16.15 NMAC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HORIZONTAL WELLS
Part A: Well Spacing. This section covers spacing issues, including standard spacing units for horizontal oil and gas wells, NSPS approval process, Infill wells, multi-lateral wells, consolidation of spacing units, unitized areas, etc.
Part B: Setbacks. This section describes the dual setbacks applicable to horizontal wells, approval process for both orthodox and unorthodox locations, tolerances for as-drilled wells and setbacks in unitized areas

B.(1)-(4) Setbacks

- **Setbacks from the boundary of the HSU are defined in relation to the well's completed interval (projected and as-drilled)**
- **Dual setback rules, just like Texas and some other states:**
  - **Horizontal Oil Wells:**
    - **330 feet, measured in the horizontal plane and perpendicular to the completed interval**
    - **100 feet from the First or Last Take Point, measured in the horizontal plane**
  - **Horizontal Gas Wells:**
    - **660 feet, measured in the horizontal plane and perpendicular to the completed interval**
    - **330 feet from the First and Last Take Point, measured in the horizontal plane**
- **No internal setbacks**

B.(3) Surface location

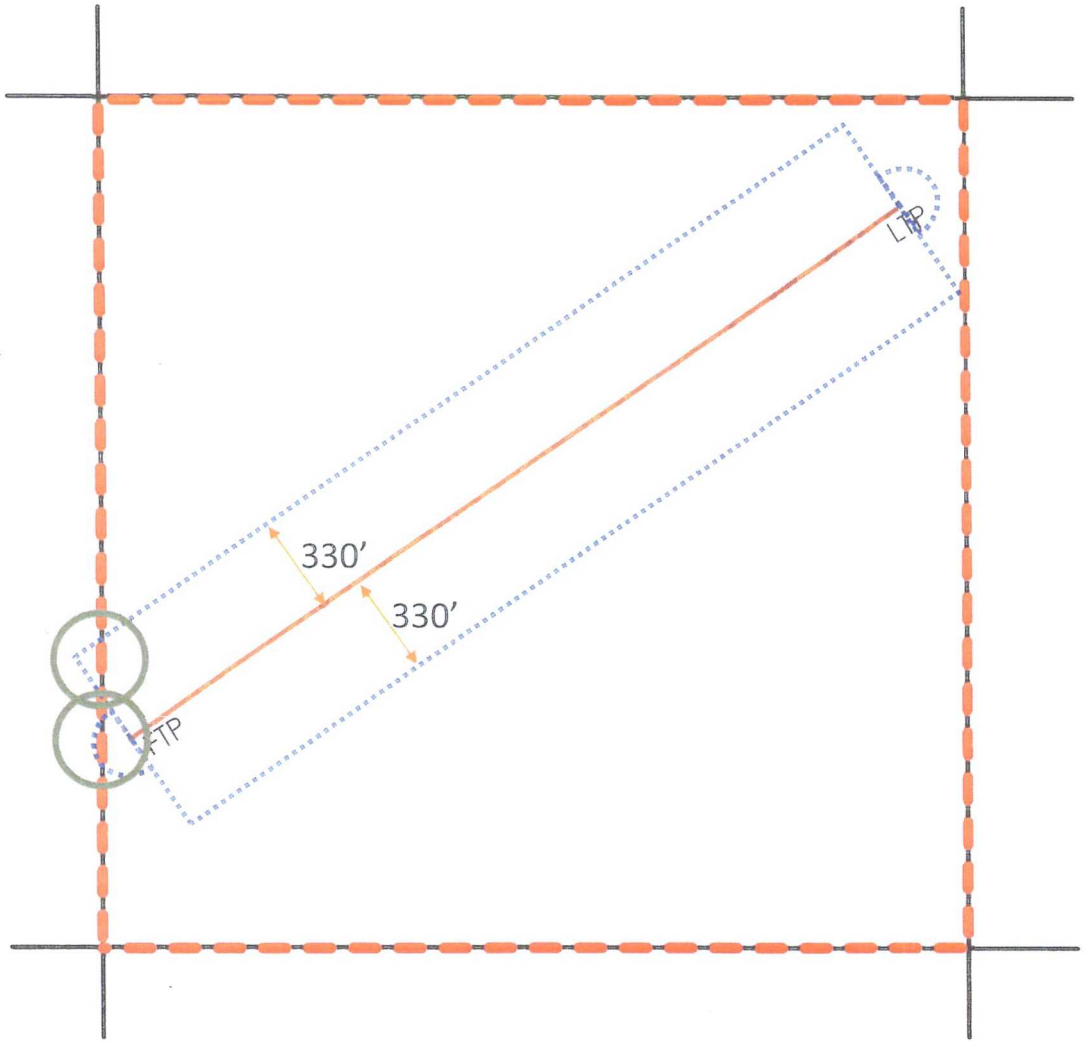
- **There are no rules governing surface locations:**
  - **They can be outside the setbacks**
  - **They can be outside the spacing unit (off-lease)**
  - **This is a legal issue between the operator and other parties**
- **NMOGA-proposed change:**
  - *The proposed language does not clearly relate that a horizontal well's surface location may be anywhere in relation to the setback distance, not just "farther from." NMOGA proposes to replace the phrase "farther from the horizontal spacing unit boundaries than the applicable minimum setback" with "located anywhere inside" before the phrase "or outside" to clarify this point.*

B.(5) Unorthodox Locations

- (a) When any part of the well's completed interval is PROJECTED to be too close to the outer boundary of the HSU
- (b) When the directional survey shows the AS-DRILLED location of the FTP or LTP is too close to the outer boundary of the HSU
- (c) When the directional survey shows the AS-DRILLED location of the well's completed interval exceeds the allowed tolerance

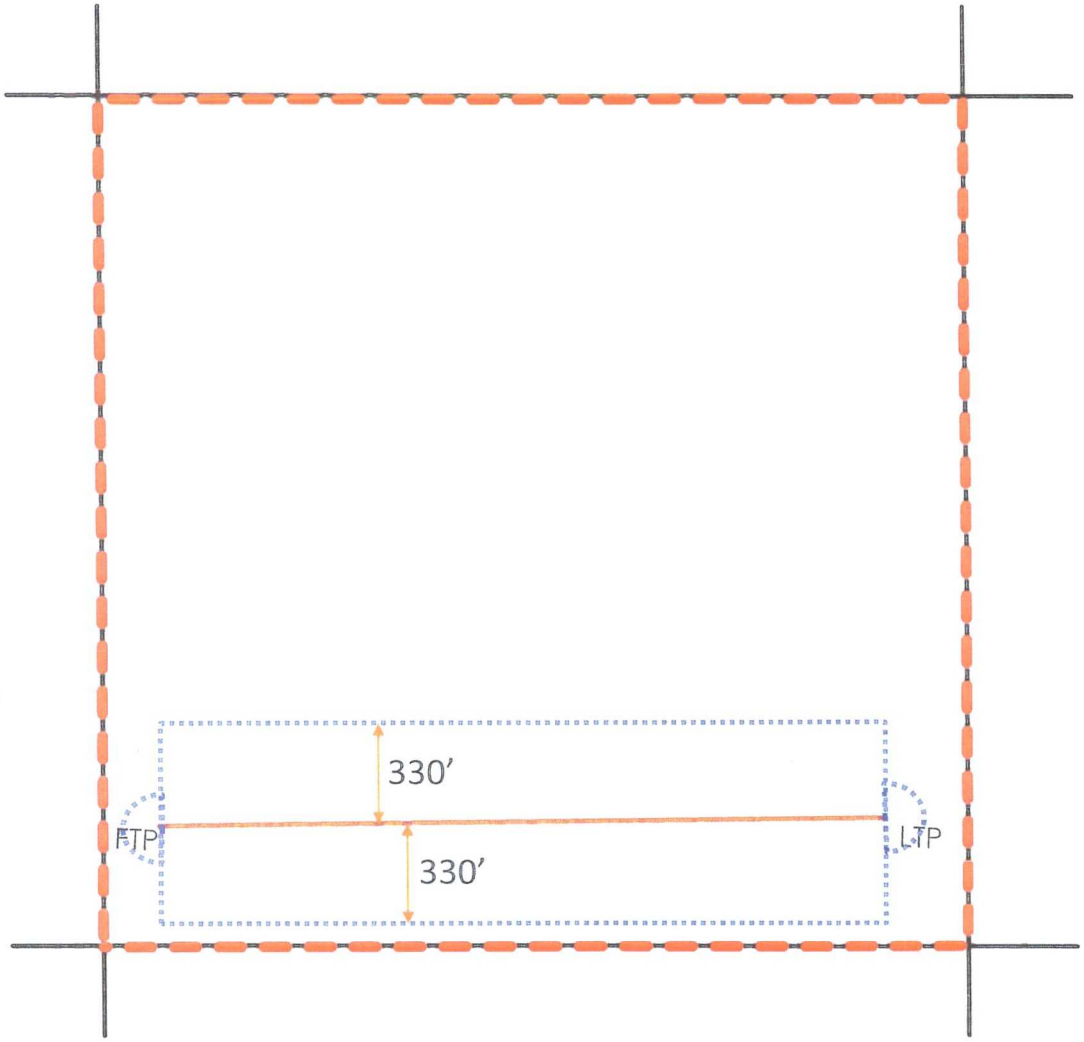
Is my Completed interval projected to be unorthodox?

1. **Draw a box with long sides 330' from completed interval, short sides through FTP and LTP**
2. **Draw a 100' circle around FTP and LTP**
3. **If any spacing unit boundary falls inside of the area described in 1 or 2 above, the location is unorthodox. (Touching is OK)**
4. **This is an unorthodox location**



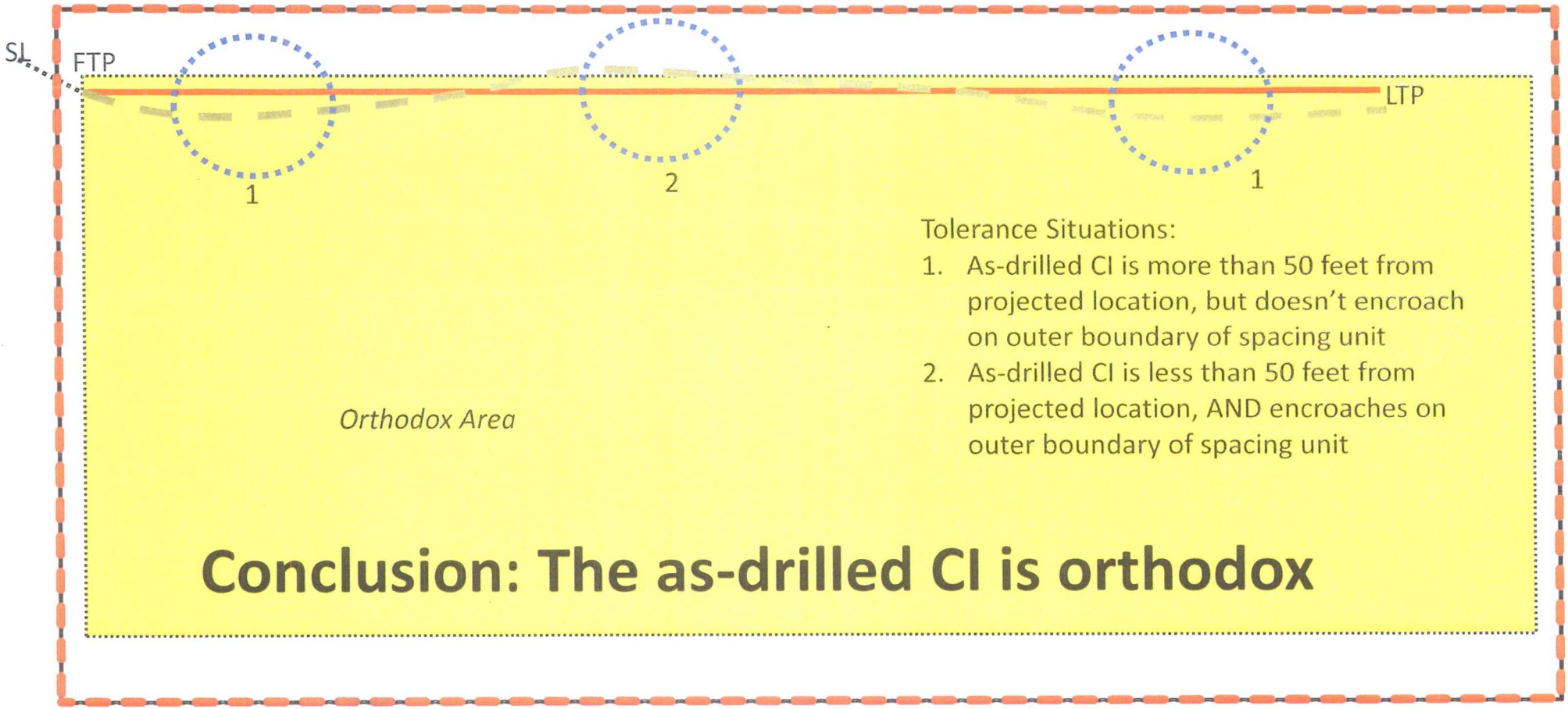
Is my Completed interval projected to be unorthodox?

1. **Draw a box with long sides 330' from completed interval, short sides through FTP and LTP**
2. **Draw a 100' circle around FTP and LTP**
3. **Since no spacing unit boundary falls inside of the area described in 1 or 2 above, this location is orthodox.**



B.(5)(b) & (c) Tolerance for As–Drilled Horizontal Wells

- Current rules provide that an as-drilled horizontal well is unorthodox if the completed interval is more than 50 feet from its projected path AND located closer to the outer boundary than allowed by applicable rules
- Language was also added to clarify how the tolerance works for approved unorthodox locations
- The proposed rules only allow for tolerance in the 330'/660' direction, NOT for the setback applicable to FTP and LTP



SL = Surface Location Projected Location of CI As-drilled Location of CI FTP = First Take Point LTP = Last Take Point

B.(6) District Office approval for wells drilled within tolerance

- **This paragraph states that the District Office can approve an operator's C-102 for an as-drilled location that is 50 feet or less from the projected location**
- **NMOGA-proposed change:**
  - *The first sentence should be deleted because it creates an ambiguity as to the ability of the district office to approve as-drilled completed intervals located more than 50' from the projected location but not encroaching on the outer boundary of the spacing unit. This circumstance would not be considered unorthodox, yet the first sentence of this paragraph could be construed as preventing district office approval. Deletion of this sentence will avoid any such confusion and confirm district offices can approve as-drilled locations that are not unorthodox as defined in preceding subparagraph (5).*

B.(6) Tolerance for previously-approved unorthodox locations

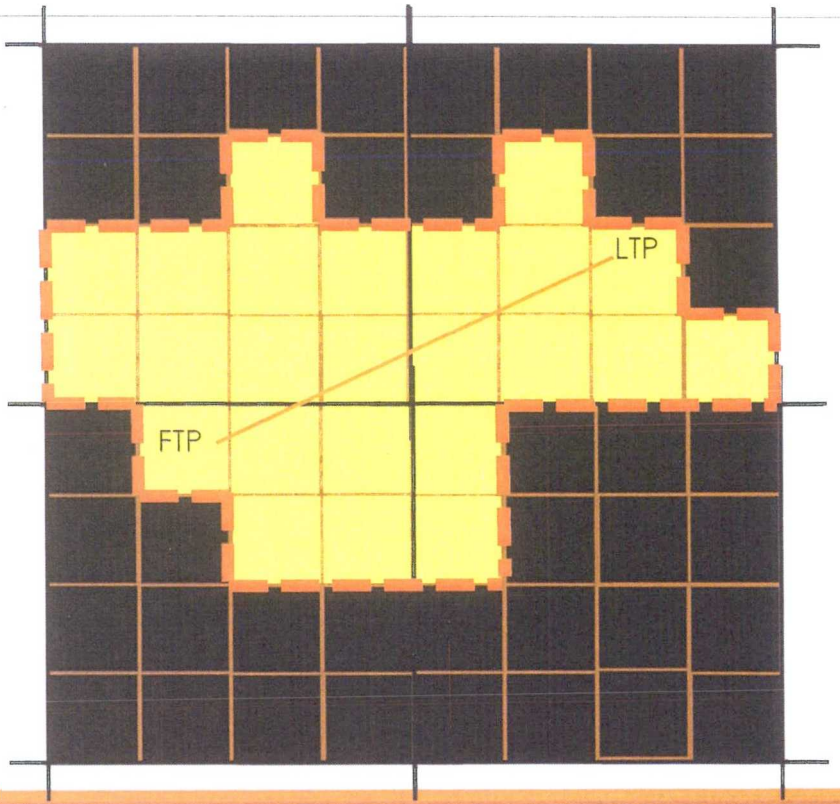
- The well is in violation of it's NSL order if the as-drilled completed interval is closer than the lesser of:
  - 50 feet or
  - 25% of the previously-authorized distance
- For example, if the well is approved for an unorthodox location 100 feet from the spacing unit boundary, the as-drilled completed interval can't be any closer than 75 feet:
  - Tolerance is the lesser of 50 feet or 25% of 100 feet (25 feet)
- NSL order approving location could provide for a different tolerance if needed

B.(7) Unitized Areas

- **Drilling in Unitized Areas or on a single lease/tract with uniform ownership:**
  - **Setbacks apply to the outer boundary of the Unitized Area or area of uniform ownership, NOT the well's spacing unit**
  - **If any tract exists that contains uncommitted interests, the setbacks also apply to the boundary of such tract**
- **NMOGA-proposed changes:**
  - *Replace "a single lease or tract" with "an area" to broaden the circumstances of uniform ownership that qualify for this provision. As written, the language is too limiting and doesn't recognize other circumstances that have the same characteristics as a single lease or Unitized Area. Adopting this change is consistent with similar recommendations for spacing in Unitized Areas in described in 19.15.16.15.A.(10)(a).*
  - *Replace the phrase "all oil and gas mineral interests" with "the mineral estate" before "in the objective formation" since "mineral estate" is a defined term that includes royalty and overriding royalty interests.*

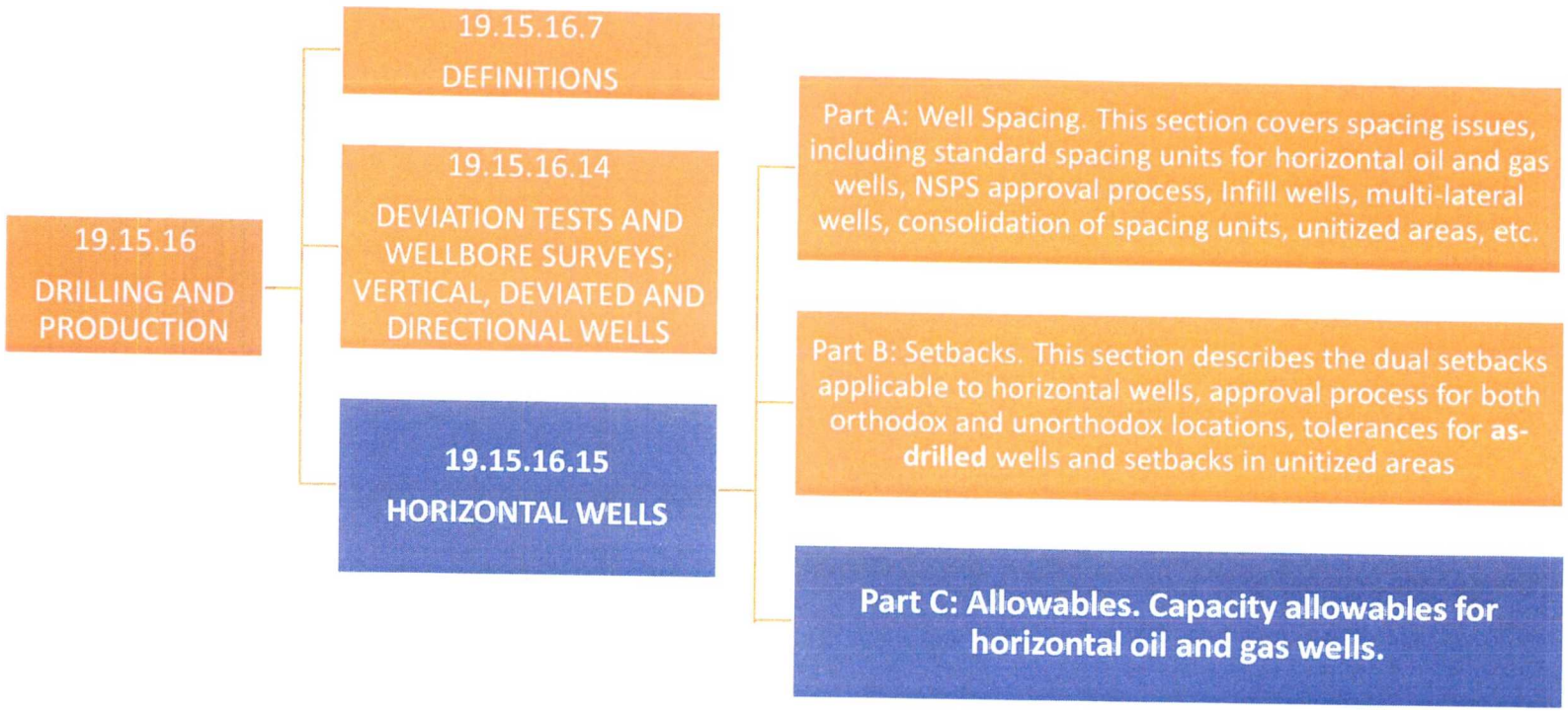
B.(7) Unitized Areas

1. Standard Spacing unit provisions still apply, except for rectangular requirement
2. Setback requirements still apply, but only to the outer boundaries of the unitized area or of any uncommitted tract or partially committed tract, NOT the outer boundaries of the spacing unit.



ALLOWABLES FOR HORIZONTAL WELLS

PART C OF 19.15.16.15 NMAC

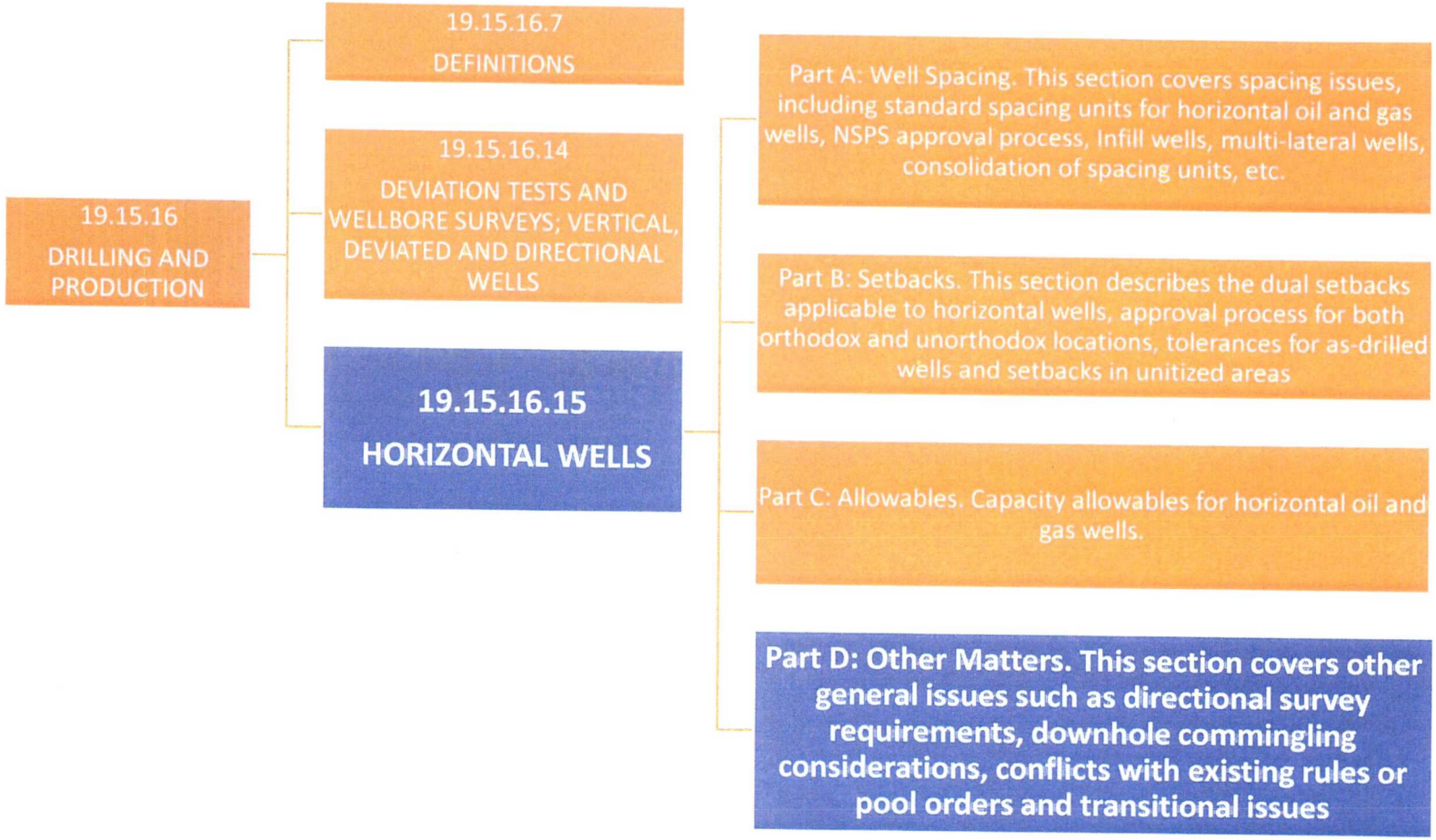

19.15.16
DRILLING AND PRODUCTION
19.15.16.7
DEFINITIONS
19.15.16.14
DEVIATION TESTS AND WELLBORE SURVEYS; VERTICAL, DEVIATED AND DIRECTIONAL WELLS
19.15.16.15
HORIZONTAL WELLS
Part A: Well Spacing. This section covers spacing issues, including standard spacing units for horizontal oil and gas wells, NSPS approval process, Infill wells, multi-lateral wells, consolidation of spacing units, unitized areas, etc.
Part B: Setbacks. This section describes the dual setbacks applicable to horizontal wells, approval process for both orthodox and unorthodox locations, tolerances for as-drilled wells and setbacks in unitized areas
Part C: Allowables. Capacity allowables for horizontal oil and gas wells.

Allowables

- **Currently, allowables for horizontal wells are based on the allowable for a standard spacing unit for a vertical well in the same pool**
- **If your approved project area consists of multiple vertical well spacing units, then you get a multiple allowable**
- **Proposed rules provide for capacity allowables for horizontal oil or gas wells**
- **If there any top allowable wells in the same pool as the horizontal well, they get a capacity allowable too**
- **GOR limits will not apply to horizontal wells**
- **NMOGA-proposed change:**
  - *Remove the term "productive capacity" and insert "the amount of oil that each well can produce" after "an allowable equal to". Productive capacity is not a defined term, and this change makes the wording in the second sentence consistent with the first sentence.*

OTHER MATTERS RELATED TO HORIZONTAL WELLS

PART D OF 19.15.16.15 NMAC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Part C: Allowables. Capacity allowables for horizontal oil and gas wells.
Part D: Other Matters. This section covers other general issues such as directional survey requirements, downhole commingling considerations, conflicts with existing rules or pool orders and transitional issues

D.(1) Directional Surveys

- **Directional survey requirements:**
  - **NO substantive changes from existing requirements**
  - **OCD may specify the format for filing of directional surveys**
  - **Survey companies don't have to be formally approved by OCD anymore**

D.(2) Downhole Commingling

- **Downhole Commingling Issues:**
  - A horizontal wellbore that goes from one pool to another pool in the same formation should not trigger downhole commingling requirements
  - A multi-lateral well with laterals in the same pool and dedicated to the same HSU do not need DHC authority
  - Multi-lateral horizontal wells, if not dedicated to the same HSU, may need DHC authority unless production from each lateral is segregated

D.(3) Conflicts with existing rules or pool orders

- **Except for the Purple Sage - Wolfcamp Gas Pool, any provisions in existing statewide or pool rules in effect on 2/1/2017 do not apply to horizontal wells**
- **Any special pool rules or amendments to special pool rules adopted after these rules become effective prevail over these rules.**
- **NMOGA-proposed change:**
  - *Insert the following existing language: "Provisions of statewide rules or special pool orders in effect on February 15, 2012 that limit the number of wells that may simultaneously produce from the portion of a pool or area underlying a spacing unit, or a particular portion of a spacing unit do not apply to horizontal wells." This language exists in the current rules and is necessary to confirm that existing density restrictions do not apply to horizontal wells.*

Transitional Issues

- For wells already drilled, commenced or permitted before these rules are adopted:
  - Previously-approved standard or non-standard Project Areas are now converted to standard or non-standard spacing units
  - If the previously-approved Project Area does not conform to the criteria for a standard HSU, it is approved as a non-standard HSU