



Statewide Rule 10 : Downhole Commingling

Darren Tjepkema

Class Synopsis



SWR 10

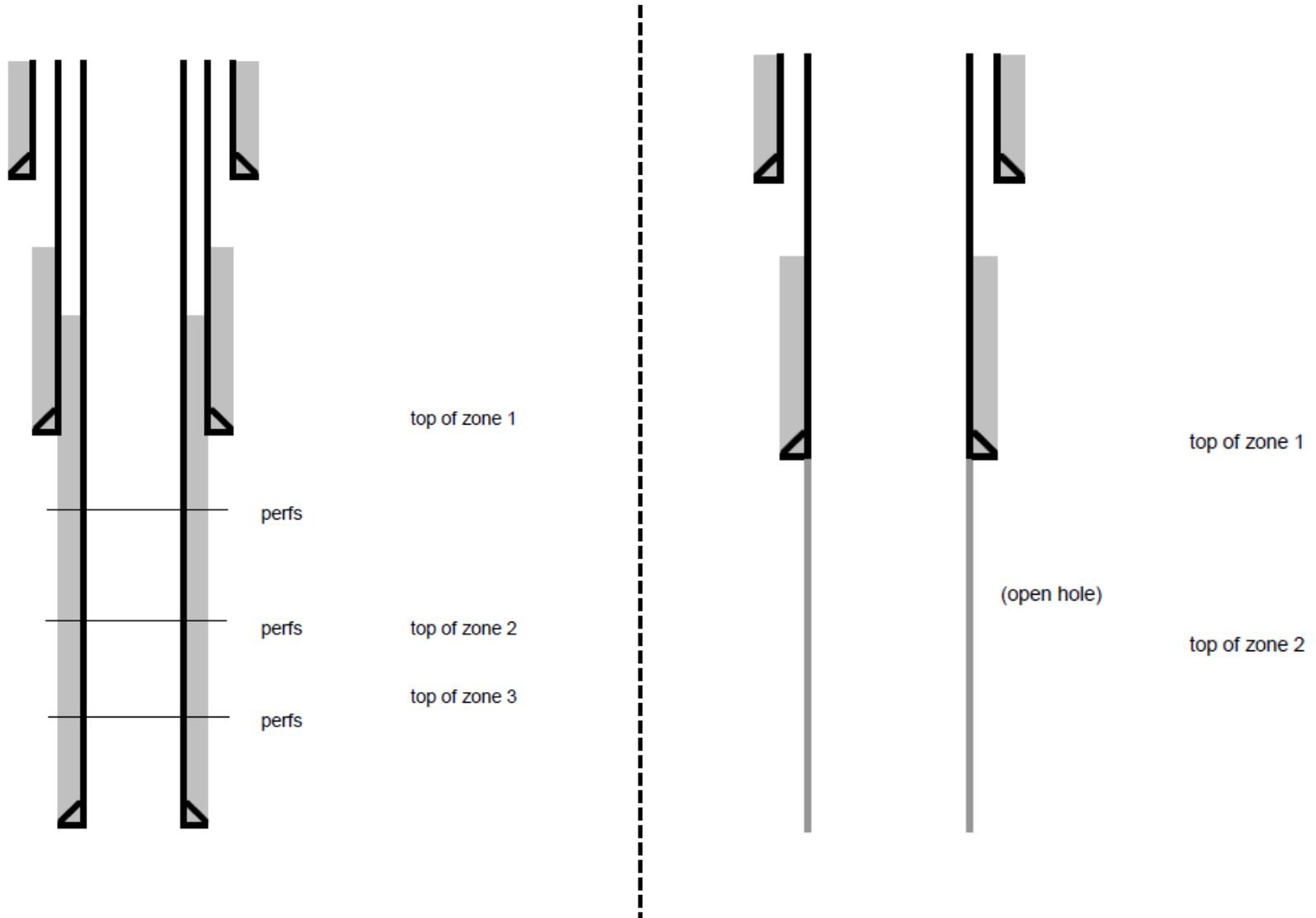
- Rule
- Exception
- Application
- Online Completions
- Frac Port Completions

Down-Hole Commingling



- Applicable Statewide Rules:
 - Rule 3.10
 - This rule prevents down-hole commingling.
 - The subject of this discussion is the administrative exception to this rule.

What is Down-hole Commingling?



Down-Hole Commingling



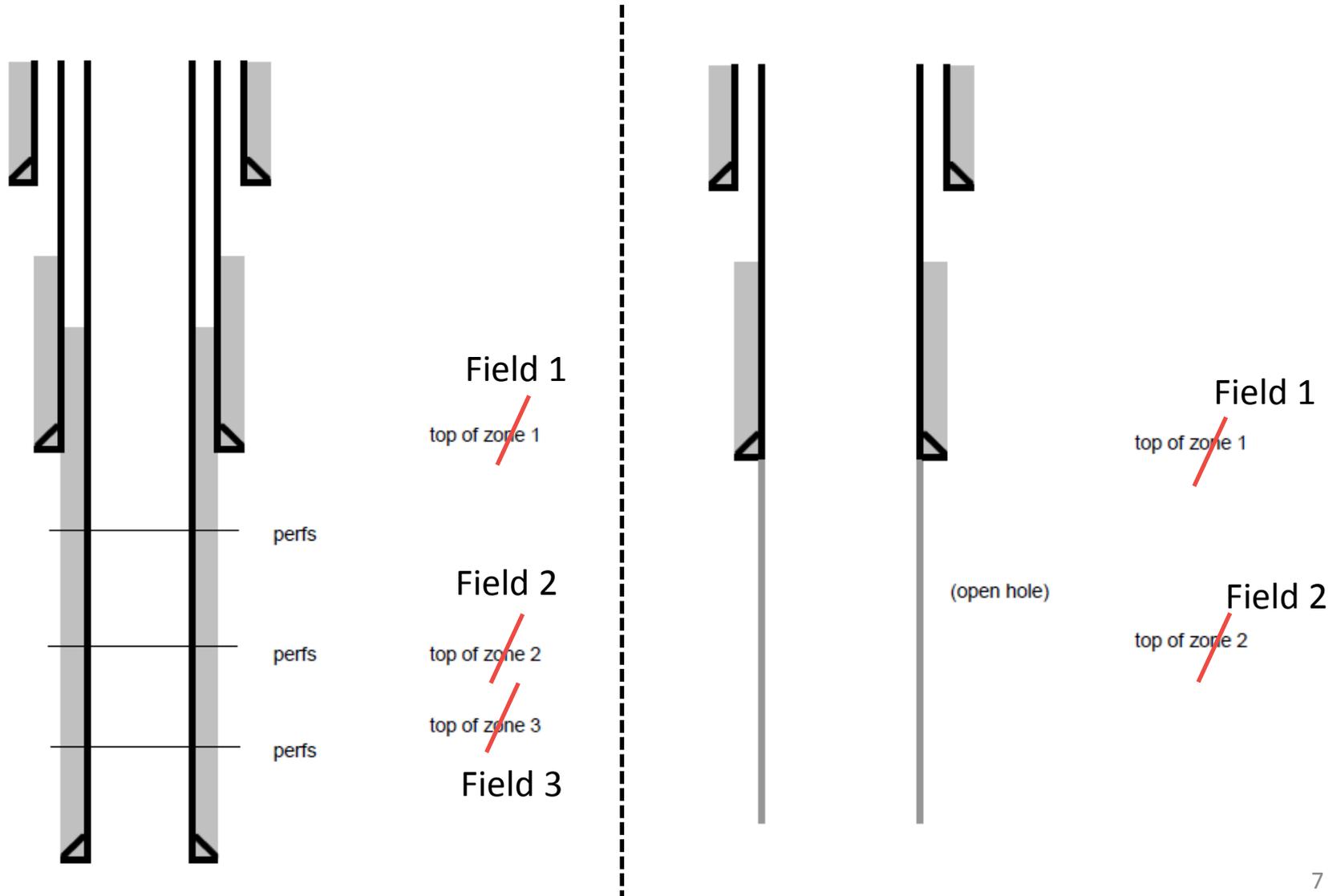
- Purpose of the Exception
 - A permit to allow two or more RRC fields to be produced commingled in the same production string

Down-Hole Commingling



- Purpose of the Exception (cont'd)
 - Fields vs. Zones

Down-Hole Commingling

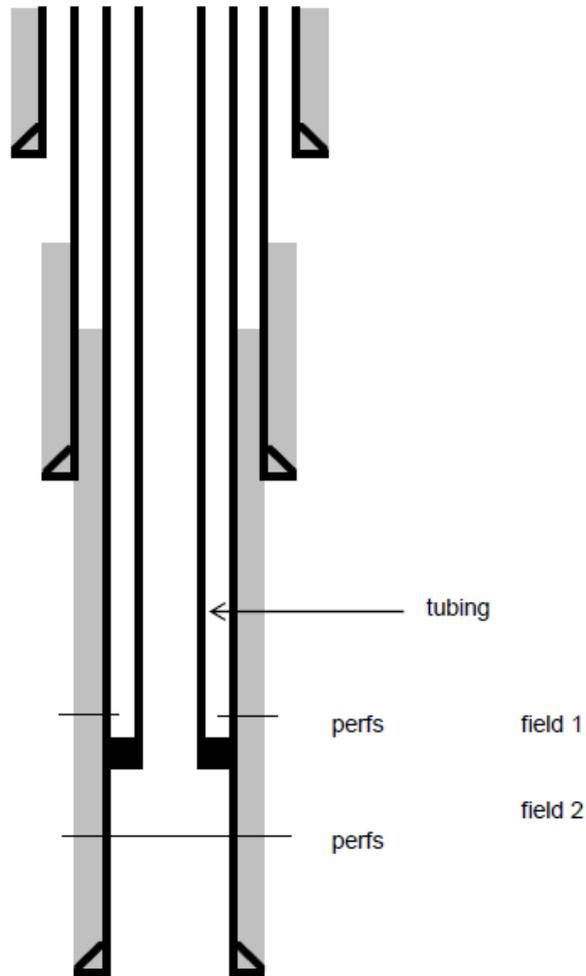


Down-Hole Commingling

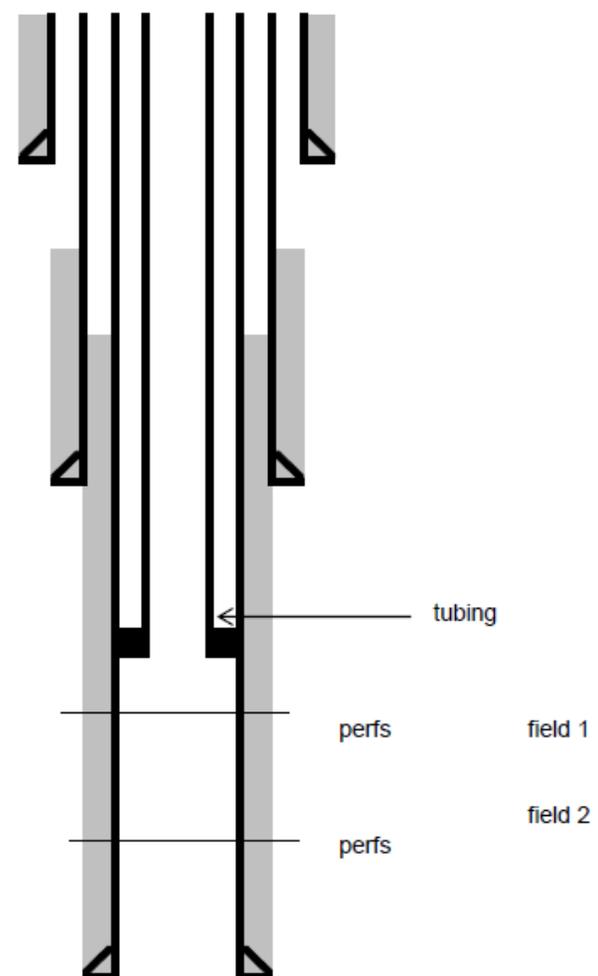


- Down-hole commingle vs. multiple completion
 - Both involve completing two or more RRC fields
 - In a down-hole commingled completion, all completion intervals are producing into the same production string

Down-Hole Commingling



Multiple Completion



Down-hole Commingled Completion

Down-Hole Commingling



Application procedures

- Fill out the 19-question datasheet:

<http://www.rrc.texas.gov/media/2745/rule10w.doc>

Serve notice to affected offsets.

- \$375 application fee as of May 2012.
- One well per application.

Down-Hole Commingling



Filling out the datasheet...

Down-Hole Commingling



- Application header information (ITEMS NOS. 1, 2, 3)
 - Well identification information
 - Field identification information
 - See O&G proration schedule
 - The Hydrogen Sulfide (H₂S) listing
([http://www.rrc.texas.gov /oil-gas/research-and-statistics/field-data/h2s/](http://www.rrc.texas.gov/oil-gas/research-and-statistics/field-data/h2s/))

Down-Hole Commingling



- Notice Requirements (ITEM NO. 4)
 - One of three notice categories will apply:
 - Initial
 - Non-initial
 - Blanket order
 - How to determine category:
 - Statewide Rule 10 exception database.
 - Central Records (512-463-6882)

Down-Hole Commingling



- Notice Requirements (ITEM NO. 4) (cont'd)
 - Initial
 - All operators in each field are considered affected
 - Non-Initial
 - All offset operators in the field are considered affected.
 - Blanket order
 - No notice required
 - Fill out only items 1-4 and 8 on the application

Down-Hole Commingling



- Application Requirements
 - Determine the correct notice category (ITEM NO. 4)
 - Drilling permit and schedule history (ITEM NOS. 5, 6, 7)
 - Is the well permitted in each field? (yes/no)
 - Not currently permitted in one of the fields → Need New Permit
 - Is the well currently on schedule in each field? (yes/no)
 - Not on schedule in one of the fields → Need New Permit
 - Need new/amended drilling permit? (yes/no)
 - The existing drilling permit has been closed → Need New Permit

Down-Hole Commingling



- Application Requirements (cont'd)
 - Pressure information (ITEM NOS. 9 and 13)
 - Shut-in pressure
 - Flowing pressure
 - Capable of flowing without artificial lift?
 - For wells in low-pressure zones / well-developed areas, it is reasonable for estimates to be provided

Down-Hole Commingling

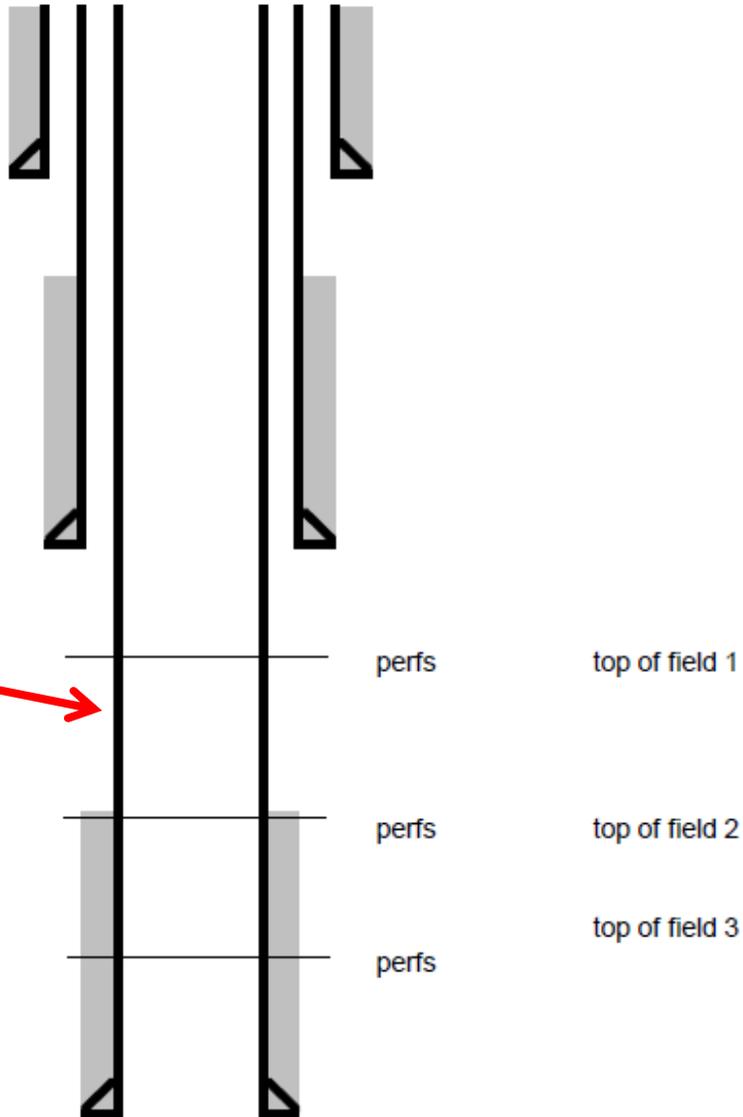


- Application Requirements (cont'd)
 - Wellbore diagram (ITEM NO. 11)
 - Tops of cement must be adequate. Comply with Statewide Rule 13
 - Perfs for each field must be clearly indicated.
 - Service list (ITEM NO. 12)
 - The applicant certifies that notice has been served to each affected operator. Notice period is 14 days.

Down-Hole Commingling



Inadequate top of cement for production casing



Down-Hole Commingling



- Application Requirements (cont'd)
 - Production information (ITEM NOS. 10 and 17)
 - Producing capabilities of each zone
 - Economic limit and ultimate recovery without commingling
 - Economic limit and ultimate recovery with commingling
 - Ultimate recovery for each zone=higher with commingling than without

Down-Hole Commingling



- Application Requirements (cont'd)
 - Evidence of fluid compatibility (ITEM NO. 16)
 - Operators are responsible for:
 - Produce in a practicable manner
 - Accounting for scale build up and treatment

Down-Hole Commingling



- Application Requirements (cont'd)
 - Zone ownership (ITEM NO. 8)
 - Interests between all commingled intervals must be identical
 - If not → application to be set for hearing
 - Reporting field selection (ITEM NO. 19)
 - Operator request is accommodated if possible
 - Gas wells: Field with most restrictive gas allowable unless they are all 100% AOF (Absolute Open Flow)
 - Oil wells: Field with lowest bbl per day allowable
 - Horizontal/vertical commingled completions: Field that has the horizontal drainhole in it

Down-Hole Commingling



- Application Requirements (cont'd)
 - Why not multiple completion? (ITEM NO. 14)
 - Mechanically impractical?
 - Economically impractical?
 - Plan if application not approved? (ITEM NO. 18)
 - Examples include: well will not be economical to drill at all; complete one zone and leave the other(s) unrecovered; complete one zone at a time; etc.

Down-Hole Commingling



- Application Requirements (cont'd)
 - Crossflow and migration (ITEM NO. 15)
 - The well must comply with SWR 3.7.
 - A down-hole commingling exception should not be proposed as a resolution to a violation of cementing and isolation requirements.

Down-Hole Commingling



- Completion Requirements (cont'd)
 - SWR10 Exception should be approved before the completions are filed.
 - A well is considered non-compliant if the application has not been approved by the Railroad Commission Engineering Department.
 - The operator should reference SWR 10 approval in the remarks section of the completion.

Down-Hole Commingling



- Completion Requirements (cont'd)
 - complete at a later date
 - “leave permit open for future SWR 10”
 - Must report perforations, formation tops, and completion intervals for each field completed.
 - The SWR 10 approval letter must be attached and the fields must match the drilling permit.
 - Approved fields should be valid, i.e. not consolidated .

Down-Hole Commingling



- Completion Requirements – OIL WELLS
 - File one W-2 for the reporting field only.
 - Must have an approved Drilling Permit.
 - Existing lease # should be listed in the work over section of the Packet Data.
 - For oil wells in oil only fields, only 1 lease number will be carried on schedule at a time.

Down-Hole Commingling



- Completion Reports - GAS WELLS
 - File a G-1 for each field.
 - “Initial Potential” for the reporting field
 - “Well Record Only” for each non-reporting field.
 - The reporting field cannot be a 100% AOF field unless all of the fields are 100% AOF.
 - A combined G-10 test for all producing intervals is required.
 - All production should be reported to the reporting ID #. Additional non-reporting zones are carried on schedule with a SWR 10 code that are not eligible for an allowable.

Frac Port Completions



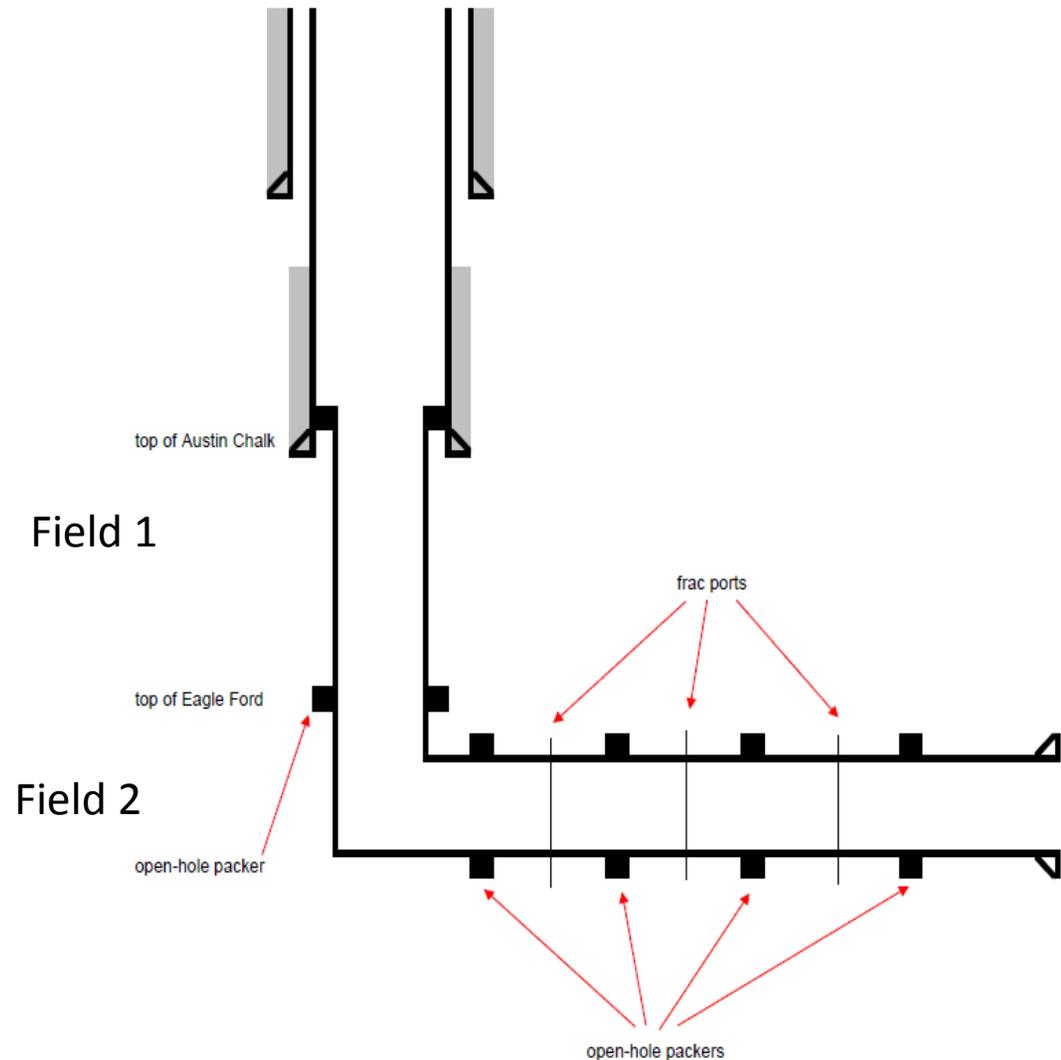
What questions does this raise with regard to down-hole commingling?

- The technology allows multi-stage fracture stimulation without cementing the production liner
- Uses open-hole packers for interval confinement
- Statewide Rule 13 **does not** recognize open-hole packers for vertical confinement

Frac Port Completions



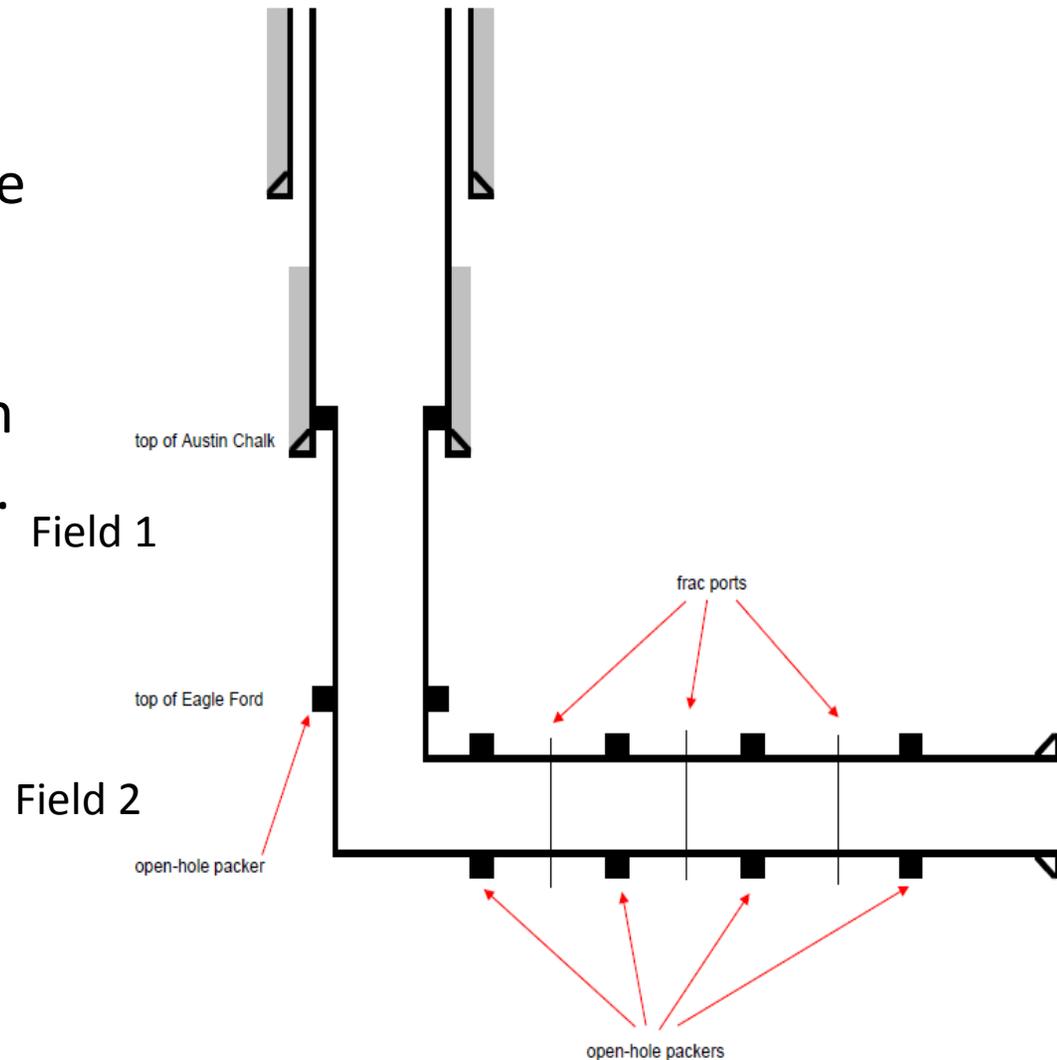
- Example: a horizontal well with an open-hole packer completion system
- “Field 1” is exposed to uncemented pipe. SWR 13 violation.
- Is the exposed formation really “down-hole commingled”?



Frac Port Completions



- Field 1 is not considered down-hole commingled. Field 1 does not have a completion interval in the production string.
- A Statewide Rule 10 exception **cannot** resolve this issue.



Frac Port Completions



- Completion Requirements
 - Producing interval section includes “range” you are producing out of.
 - The range is still evaluated like the perforations for proper field designation and audited for SWR 10 compliance.
 - List in remarks that you are using a frac port, open hole packer etc. system.

CONTACT US



For Technical Questions related to the SWR 10 Exception to Down-hole Commingle contact the Engineering Unit : 512.463.1126

For Questions related to Completion filings for SWR 10/Down-hole commingled wells contact the Proration Unit : 512.463.6975