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**Re: Ursa - Yater 41D-18-07-95 bradenhead pressure**

1 message

**Jay Krabacher** <jay.krabacher@state.co.us>

Wed, Aug 26, 2015 at 3:35 PM

To: Hans Wychgram &lt;hwychgram@ursaresources.com&gt;

Cc: "Andrews, David" &lt;David.Andrews@state.co.us&gt;, Pake Younger &lt;pyounger@ursaresources.com&gt;, Matt Honeycutt &lt;mhoneycutt@ursaresources.com&gt;, Craig Burger - DNR &lt;craig.burger@state.co.us&gt;

Hans (and other Ursa personnel):

When I replied to your initial email re: the bradenhead pressure on this well, I made what is an almost-automatic response for wells in the Bradenhead-Test-Area (almost the same as the Mamm Creek NTO area). It was pointed out to me that since this well is not in that NTO area, COGCC has a somewhat more-lenient response to bradenhead-pressure issues not in that NTO.

Presuming that the surface casing depth (TMD) is 1892' – and from the deviated-drilling plan (attached to the APD) the TVD is 1700'. Assuming a water-filled annulus (0.433 psi/ft gradient) plus a 0.25 psi/ft surface pressure threshold, a total pressure gradient at the shoe of 0.683 psi/ft is COGCC's typical remediation threshold for locations outside of the established Bradenhead Test area. This is an on-going, voluntary agreement with a few other operators in the basin. Therefore, the well-specific mitigation/remediation threshold for this well would be  $1700 * 0.25 = 425$  psi surface pressure (or  $1700 * 0.683 = 1161$  psi pressure gradient at the shoe (with a water-filled annulus). If annular fluid data is available, then a gas gradient could be used above the fluid level rather than a water gradient for the entire annulus (option utilized by another operator in the area). Obviously, that would result in a higher mitigation/remediation threshold.

Also, the surface-casing depths noted above are from the APD -- Ursa may have slightly different actual depths. If so, the psi numbers will change (slightly).

With this analysis in mind, Ursa has two options:

1. Leave the bradenhead valve shut-in, so long as the pressure doesn't exceed 425 psi; no further action or reporting required.
2. Voluntarily mitigate the pressure build-up through monitored venting (requires Sundry Notice approval for the period in which venting is performed).

As you probably would concur, we are not in favor of conducting cement remediation on this well unless the bradenhead pressure exceeds the 425 psi threshold.

With regard to any upcoming stimulation on this well, please proceed as follows:

1. Keep the bradenhead blown down to (if necessary) the appropriate mitigation pressure.
2. Shut the bradenhead in prior to the stimulation job.
3. Monitor the bradenhead pressure during stimulation, as required by Rule 341.
4. If the pressure increases from the starting shut-in pressure by 200 psi or more, or if the pressure reaches the mitigation threshold, notify us as soon as practicable.

Let me know if you have additional questions, comments, or concerns.

Thanks!

Jay Krabacher

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On Wed, Aug 19, 2015 at 2:02 PM, Jay Krabacher <jay.krabacher@state.co.us> wrote:

Hans:

Thanks for the info. I presume that the surface casing is at about 1892' ?

Yes, your plan is acceptable. Continue to bleed off when the BHP reaches 150 psi. What will be more interesting is when Ursa completes/fracs this well. You are probably aware of COGCC Rule 341, "Bradenhead Monitoring During Well Stimulation Operations." Ursa may have to pay special attention to this rule at that time.

Regards,

Jay Krabacher

On Wed, Aug 19, 2015 at 1:14 PM, Hans Wychgram <hwychgram@ursaresources.com> wrote:

Jay,

I got an out of office reply from David. Wanted to be sure you saw the message below as well.

Thanks,

Hans Wychgram

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**From:** Hans Wychgram

**Sent:** Wednesday, August 19, 2015 1:12 PM

**To:** David Andrews (David.Andrews@state.co.us) <David.Andrews@state.co.us>

**Cc:** Matt Honeycutt (MHoneycutt@ursaresources.com) <MHoneycutt@ursaresources.com>; Pake Younger <PYounger@ursaresources.com>

**Subject:** Ursa - Yater 41D-18-07-95 bradenhead pressure

David,

We have observed bradenhead pressure in excess of 150 psi on our recent Yater 41D-18-07-95. This well is drilled on our Yater pad near Battlement Mesa.

The well was drilled to TD on 8/5/15, and the cement job was pumped on 8/6/15. The cement job on the 4-1/2" production string went as planned. We had full returns throughout the job, and received 30 bbls of spacer back to surface, which would indicate that the top of cement is well into the surface casing.

We first observed bradenhead pressure 6 days after the cement job. It has now risen above 150 psi.

We propose to continue monitoring the pressure, and bleed off as necessary to stay below 150 psi. Please let me know if this plan is acceptable.

Here's the info for the well:

Operator: Ursa Operating Company  
Well: Yater 41D-18-07-95  
API #: 05045228280000  
Pad: Yater

Thanks,

Hans Wychgram

Drilling Manager

Ursa Operating Company

720-508-8356

—  
Jay Krabacher

N W Area Engineer



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Jay Krabacher

N W Area Engineer



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