

## Scott Ghan

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**From:** Katz - DNR, Aaron <aaron.katz@state.co.us>  
**Sent:** Tuesday, March 15, 2022 5:01 PM  
**To:** Jon McDonald  
**Cc:** Kussum Kanguru  
**Subject:** Re: GV 22-29

Jon, Thank you for the update and details on the build rate. Please submit a sundry requesting the 120 psi threshold and plan to tie it into the sales line. Please include the sales line pressure chart with the sundry. Thank you.

Regards,

Aaron Katz

West Area Engineer



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On Tue, Mar 15, 2022 at 7:42 AM Jon McDonald <[JMcDonald@terraep.com](mailto:JMcDonald@terraep.com)> wrote:

Aaron, following up on this BH.

We did the initial blowdown from 17 7/22/2021 and BH pressure was at 164# and bled down to 0# with no flow. You requested that we do a few blowdown build up tests to see how quickly it builds back to the requested 120# threshold increase.

First BU test from 7/22/2021 to 11/10/2021 to build to 120#.

We blew dead and started the second BU test on 12/16/2021 and the pressure is only 85# as of 3/14/2022.

Originally I thought this was going to build quicker but it does seem that every time it is blown dead there is a slower build rate every time. Since the build ups are taking so much longer than anticipated do you want us to wait till it again builds to 120 and perform the 3<sup>rd</sup> blowdown & build up test you requested or go ahead and submit for the threshold increase now?

My recommendation is we submit now for the planned threshold increase and tie in. We will keep it SI but if it does continue to slowly build to above 120# we will then open it up to sales line which will then keep it below the threshold. It might not even build above 120# to which we will just keep it SI.

Thanks,  
Jon

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**From:** Katz - DNR, Aaron <[aaron.katz@state.co.us](mailto:aaron.katz@state.co.us)>  
**Sent:** Thursday, September 30, 2021 9:54 AM  
**To:** Jon McDonald <[JMcDonald@terraep.com](mailto:JMcDonald@terraep.com)>  
**Cc:** Kussum Kanguru <[craig.burger@state.co.us](mailto:craig.burger@state.co.us)>  
**Subject:** Re: GV 22-29

Good Morning Jon, Craig and I spoke about adjusting the threshold on this well and would like Terra to gather some further information.

How does the pressure rebound once it is bled off? How long does it take to build back up to 120 psi? Please Blow it down and let it build up 120 psi a few times to get an average build rate.

Please collect a sample of the BH gas and get an isotopic analysis?

Do you have a CBL for this well or any other logs? Please send those over to Craig and I.

Thank you for the help Jon.

Regards,

Aaron Katz

West Area Engineer



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On Thu, Sep 23, 2021 at 7:16 PM Jon McDonald <[JMcDonald@terraep.com](mailto:JMcDonald@terraep.com)> wrote:

10-4; Let me know if there is any additional information you'd like me to dig into. Have a great weekend.

Jon

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**From:** Katz - DNR, Aaron <[aaron.katz@state.co.us](mailto:aaron.katz@state.co.us)>  
**Sent:** Thursday, September 23, 2021 6:15 PM  
**To:** Jon McDonald <[JMcDonald@terraep.com](mailto:JMcDonald@terraep.com)>  
**Cc:** Kussum Kanguru <[craig.burger@state.co.us](mailto:craig.burger@state.co.us)>  
**Subject:** Re: GV 22-29

Thanks for the information. I will discuss this further with Craig next Monday and get back to you.

Regards,

Aaron Katz

West Area Engineer



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On Thu, Sep 23, 2021 at 4:57 PM Jon McDonald <[JMcDonald@terraep.com](mailto:JMcDonald@terraep.com)> wrote:

Aaron,

If you look at the csg pressure during this blowdown test on the form 17 that was submitted 7/21 as BH was bled down to 0psi the csg pressure did not change at all.

Typically if we have a suspected csg failure, leak, collar leak or wellhead leak then this csg pressure would fall with the bradenhead or even equalize with it all the way down depending how bad the leak is.

Also flow bled off to no flow on bradenhead. This also is a good indication that we don't have a leak. If we were leaking at all thru the csg then it would like not blow dead. On wells that we find have a csg leak they never blow dead.

## BRADENHEAD TEST

With gauges monitoring production, intermediate casing and tubing pressures, open surface casing (Bradenhead) valve (i monitor only the production casing and tubing pressures.) Record pressures at five minute intervals.

Describe character of flow in "Bradenhead Flow" column: O = No Flow; C = Continuous; D = Down to 0; S = Surge; W = V Describe fluid type in "Bradenhead Fluid" column: H = Water H<sub>2</sub>O; M = Mud; G = Gas; V = Vapor; L = Liquid Hydrocarbon G = Water & Gas; H & V = Water & Vapor; M & G = Mud & Gas; M & V = Mud & Vapor; G & V = Gas & Vapor; H & L = W & L = Mud & Liquid Hydrocarbon; G & L = Gas & Liquid Hydrocarbon; V & L = Vapor & Liquid Hydrocarbon; N = None

Buried valve? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Confirmed open? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Elapsed Time (Min:Sec)	Fm: Tubing	Fm: Tubing:	Prod Csg PSIG	Intermedia Csg PSIG
	00:00	<input type="checkbox"/> 148	<input type="checkbox"/>	<input type="checkbox"/> 155	
BRADENHEAD SAMPLE TAKEN? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Gas <input type="checkbox"/> Liquid	05:00	<input type="checkbox"/> 148	<input type="checkbox"/>	<input type="checkbox"/> 155	
Character of Bradenhead fluid: <input type="checkbox"/> Clear <input type="checkbox"/> Fresh <input type="checkbox"/> Sulfur <input type="checkbox"/> Salty <input type="checkbox"/> Black Other:(describe) <hr/>	10:00	<input type="checkbox"/> 147	<input type="checkbox"/>	<input type="checkbox"/> 155	
	15:00	<input type="checkbox"/> 148	<input type="checkbox"/>	<input type="checkbox"/> 155	
	20:00	<input type="checkbox"/> 148	<input type="checkbox"/>	<input type="checkbox"/> 155	
	25:00	<input type="checkbox"/> 148	<input type="checkbox"/>	<input type="checkbox"/> 155	
	30:00	<input type="checkbox"/> 148	<input type="checkbox"/>	<input type="checkbox"/> 155	
Instantaneous Bradenhead PSIG at end of					

Also see long term csg, tbg, and line pressure on this well. You can see that this well has basically sat flat for years. These vintage old wells basically just at end of life and reservoir pressure is virtually depleted and it just follows line pressure. but this does show that this well's csg pressure has basically been this low for years and doesn't seem to be close to BH due to any csg integrity issues that I can see.

I could try to dig up the historical BH pressure but unfortunately this well does not have trending as back then we didn't typically put transducers on the BH.



Thanks,  
jon

**From:** Katz - DNR, Aaron <[aaron.katz@state.co.us](mailto:aaron.katz@state.co.us)>  
**Sent:** Thursday, September 23, 2021 5:11 PM  
**To:** Jon McDonald <[JMcDonald@terraep.com](mailto:JMcDonald@terraep.com)>  
**Cc:** Kussum Kanguru <[craig.burger@state.co.us](mailto:craig.burger@state.co.us)>  
**Subject:** Re: GV 22-29

Good afternoon Jon,

I reviewed this with Craig and we would like Terra to do some follow up diagnostic testing before approving the plan you outlined. On the BH test from 7/21/21 the production casing and BH annulus pressure are pretty close to being equal. This could be indicative of a casing or wellhead leak. Please look into determining the source of the BH pressure and let us know what you find. While you are diagnosing this well please maintain the BH pressure below the threshold as necessary.

Thank you for the help working on this well.

Aaron Katz

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On Thu, Sep 23, 2021 at 2:24 PM Jon McDonald <[JMcDonald@terraep.com](mailto:JMcDonald@terraep.com)> wrote:

Aaron, we got the echometer done on this GV 22-29 well we discussed this morning. We determined the annular fluid level to be appx 94' from surface.

This would equate to 312# at the shoe accounting from the observed 220# Psurf +hydrostatic. This is a 1.02psi/ft gradient equivalent with the 307' Csg Surf.

94	ft	Fluid level
92	psi	hydrostatic
312	psi	equiv pressure at shoe
1.02	psi/ft	equiv gradient

This is above the old guidelines of 0.683psi/ft and new 0.3\*TVD guidelines which = 92#.

I put the 2 year LP chart for this pad below and the highest its been for the past 2 years is 118#

If we tied this wells bradenhead into LP and requested 120psi as the new BH threshold this would give us the following pressure at the shoe:

118	psi	LP
94	ft	Fluid level
92	psi	hydrostatic
210	psi	equiv pressure at shoe
0.68	psi/ft	equiv gradient

If this is an agreeable plan I will submit the form 4 for tie in and request to increase the BH threshold from 92psi to 120psi.

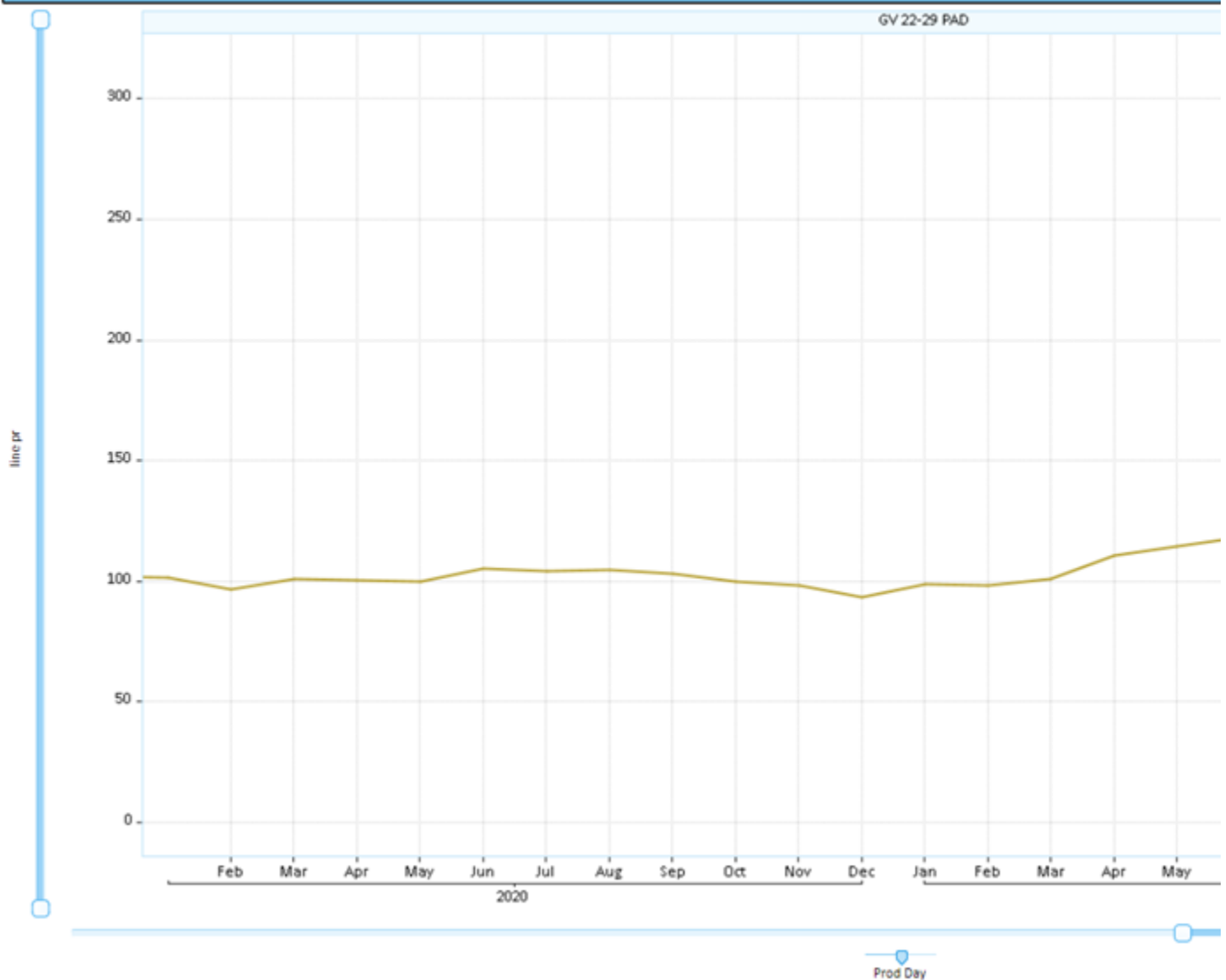
Thanks,

Jon

API #	Production Field	Pad	Well	Need to Report	Last Form 17 Submittal Date	Current Pressure Threshold	Confirmed BH pressure 9-23-2021 after blowdown and day of echomter	Current Sundry Type
05-045-06622	GRAND VALLEY	GV 22-29 PAD	GV 22-29	Yes	7/21/2021	92	220	increase/tie



AVERAGE LINE PRESSURES BY WELL, SPLIT BY PAD



**From:** Jon McDonald  
**Sent:** Wednesday, September 22, 2021 10:33 AM  
**To:** Katz - DNR, Aaron <[aaron.katz@state.co.us](mailto:aaron.katz@state.co.us)>  
**Subject:** GV 22-29

Aaron,

This well is one that thru our bradenhead monitoring was determined to be above the threshold. We performed a blowdown test and did a form 17. Pressure has built back over the threshold. Wanted to discuss this with you we were looking at doing a threshold increase request but this one is quite a bit over the threshold compared to others.

Please give my cell a call when you got a minute to discuss.

I am having an echometer shot done on it this week to see if we have a very low fluid level or if its near surface. My guess is fluid level is near surface on this one based on the blowtest test we did.

API #	Production Field	Pumper Route	Pad	Well	Need to Report	Last Form 17 Submittal Date	Meters in CygNe
05-045-06622	GRAND VALLEY	P GRAND VALLEY RTE 2	GV 22-29 PAD	GV 22-29	Yes	7/21/2021	No

Jon McDonald

Production Engineer

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