

State of Wyoming Mail - Proposed R&amp;D License application submittal, 30 April, 2012

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To: "Brian Andersen, P.G. #3608" <brian.andersen@lincenergy.com>  
 Co: "Chris Lidstone (cdl@limestone.com)" <cdl@limestone.com>, "Mark Taylor (mark.taylor@wyo.gov)" <mark.taylor@wyo.gov>, "Kara Hamar" <Kara.Hamar@lincenergy.com>, "Brian Deurloo" <brian.deurloo@lincenergy.com>, "David L. Smith" <dl.smith@lincenergy.com>, "Mark Rogaczewski" <mark.rogaczewski@wyo.gov>

Brian,

Thank you for the details on the changes in the engineering/design controls. I am working with Mark Rogaczewski to identify the needed LQD participants for the meeting. It would be helpful if you can please provide the list of items to be discussed at the meeting. This list will also help LQD staff to address those specific items during the meeting if possible.

Thanks and looking forward to meeting you.

Muthu

Muthu Kuchanur, Ph.D., P.E.

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Email: muthu.kuchanur@wyo.gov

On Thu, Apr 12, 2012 at 2:31 PM, Mark Rogaczewski <mark.rogaczewski@wyo.gov> wrote:

Brian,

Thanks for the update. I will work with Muthu to arrange LQD attendance.

Mark

On Thu, Apr 12, 2012 at 2:02 PM, Brian Andersen, P.G. #3608 <brian.andersen@lincenergy.com> wrote:

Hi Muthu,

As I had alluded to in the previous (16 Feb) e-mail, Linc has taken a novel approach for our UCG demonstration project. Although the proposed approach is unique, Linc's second submittal will follow the standard LQD format, with limited revisions to take into account the differences between UCG and other in-situ mining operations such as trona or uranium. The following engineering and administrative controls will be included in our design.

1. The Aquifer Exemption criteria includes mechanisms to exempt both the target and overlying groundwater, which we intend to do
2. CBM activities have dewatered the Wyodak and other aquifers in the area... Currently the following hydrostatic pressures are present
  - o The Wyodak (WD) is at 12 bar and the overlying aquifer (WDOB) is at 13 bar; however, the underlying aquifer (WDUB) is at 23 bar (i.e. the groundwater elevation of the Wyodak is 85 feet below the WDOB and 360 feet below the WDUB).
  - o Although modeling results indicates this is a favorable condition, Linc proposes to include contingencies for pumping the WDUB in order to decrease the hydrostatic head, and specifically to reduce the pressure differentials between aquifers. Groundwater pumped from the WDUB is proposed to be put to beneficial use, either by direct discharge to surface impoundments as surface water, or for recharging the depleted WD and WDOB aquifers.
3. Gasifier operation will seek to limit cavity growth to within the lower half of the Wyodak coal. As a result, four (4) to five (5) cavities will be sequentially gasified over the 90-day period, with a new cavity being ignited at approximately 18 to 20-day intervals

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4. Groundwater monitoring will be modified during operations to prevent gaseous excursions in the area of fugacity, due to pressure differentials between the gasifier and atmospheric pressures

Linc feels an understanding of these operational features will be critical, as we anticipate similar conditions (dewatering as a result of CBM activities) will be encountered throughout the PRB, and future commercial UCG operations in the PRB will very likely require aspects of these engineering and administrative controls.

Linc does intend on submitting the remaining (primarily technical) sections of our R&D License application on 30 April, 2012

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From: Muthu Kuchanur [mailto:muthu.kuchanur@wyo.gov]

Sent: Thursday, April 12, 2012 11:14 AM

To: Brian Andersen, P.G. #3608

Cc: Mark Rogaczewski (mark.rogaczewski@wyo.gov); Chris Lidstone (cdl@lidstone.com); Mark Taylor (mark.taylor@wyo.gov); Kara Hamar; Brian Deurloo

Subject: Re: Proposed R&D License application submittal, 30 April, 2012

Brian,

Thanks for the update. Please find below an email from you on February 16, 2012 where you mentioned about some plans to revise the proposed approach in some parts of the application.

I checked with Mark Rogaczewski and he has not received a confirmation on the sections of the application to be changed or if these changes that you mentioned will be included in the proposed application submittal on April 30, 2012. It would be helpful to get the following details from you before I can set up the LQD and Lidstone attendees for a meeting

- Please let me know whether the submittal includes any changes that you were planning as mentioned in your Feb 16, 2012 email. If there are any changes from the previously agreed upon approach by LQD please let me know the sections that are changed with specific details on the changes.
- Also, please send me a list of items to be discussed at the meeting that will help me to finalize the list of needed LQD and Lidstone participants and to discuss their availability on April 30, 2012.

Please feel free to let me know if you need any details

Thanks

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