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RICHARD PERRY
 Administrator

Wednesday, November 6, 2019

10:00 A.M.

MINUTES

ATTENDANCE

NDOM Staff	Public
Rich Perry	Andrew Tiedeman, Navy Geothermal Program
Mike Visher	Mark Hanneman, Ormat
Greg Ott	Josh Lindquist, Ormat
Courtney Brailo	Andrew Kowler, NDEP
Lowell Price	Daniel Pierrott, WSPA
Sherrie Nuckolls	Bruce MacKay, Bruce MacKay Pump & Well
	Chris Shedeger, Bruce MacKay Pump & Well

COMMENTS BY THE GENERAL PUBLIC

Pursuant to N.R.S. 241, this time is devoted to comments by the public, if any, and discussion of those comments. No action may be taken upon a matter raised under this item on the agenda until the matter itself has been specifically included on a successive agenda and identified as an item for possible action. All public comments will be limited to 5 minutes for each person.

Rich Perry: Opened the workshop at 10:00 A.M. He thanked everyone for coming and mentioned this is the third workshop to gather public comment on the NAC 534A changes that we are proposing. Rich asked for public comment – none.

Rich Perry: Went through the background, history and proposed changes of the regulations from the last workshop held on September 25, 2019 using the LCB File No. R032-19 Nov. 4, 2019 Agency Draft of Revised Proposed Regulation and the color coded CB version NAC 534A revision 25Sept2019.docx.

NAC 534A Section 2 on page 4

Rich Perry: Due to comments received at the last workshop, the definition of cement was removed and added to page 22 in Section 32 subsection 3.

NAC 534A Section 7 on page 5

Rich Perry: Subsection 4, originally stated “plug” the well. It was brought to our attention that sometimes it’s hard to plug a well within 45 days so wording was changed to “respond in writing with a plan for plugging” a well.

NAC 534A Section 24 subsection 3e on page 17

Rich Perry: Added the word “differential” pressure for clarification as submitted via comment by Bill Rickert.

NAC 534A Section 26 on page 19

Rich Perry: Subsection 1(a) “Maintained below 125°F” was removed as it was found to be impractical following comments received. Once the temperature reaches 125°F there is a requirement to cool mud for safety reasons.

Bruce MacKay: These are good for the industrial, commercial, and domestic, all three categories?

Rich Perry: Yes.

NAC 534A Section 28 on page 20

Rich Perry: Subsection 1(4), language was added, as recommended by the BLM, to include cases where there are lots or tracts.

NAC 534A Section 32 on page 22

Rich Perry: Subsection 3, the definition of “cement” was moved from Section 2 to be consistent with cement that is used for surface plugging.

Rich Perry: That’s all for changes resulting from recent comments and comments from the last workshop and now we can talk about comments from this workshop.

Mike Visser: One of the things that is new to the regulations is Section 9 on page 6, this is not a recent change, it’s a change we adopted early on in the process, it provides a review mechanism for circumstances that don’t normally come up; oddball cases, unique situations, unique geological environments that don’t typically meet regulations. It’s not to be used for fees; this is the means to address those and is used for the proponent that has a reason why they’re looking for something a little different. Division of Minerals is asking to demonstrate why that exception is needed and the Administrator can review that.

Rich Perry: Page 16, Section 24 relates to surface casing, the red strikeout is in the existing chapter and the blue is the proposed language “Be cemented to a depth that is at least 10 percent of the proposed total depth of the well, with a minimum of 200 feet and a maximum of 1,500 feet of casing.” This is to ensure there is an adequate cement seal on the casing at the surface in the event that something happens and there’s a loss of control. We wanted it to be enough to ensure that the steam doesn’t come up the annular area so there isn’t a blowout; that number is one that we discussed at length with the BLM.

Lowell Price: Recent drilling applications at the San Emidio field first proposed 100 feet for surface casing then it went to 200 feet and on an additional well it’s back to 50 feet. We have concerns on surface integrity of the fluids. We don’t want those fluids surfacing. The operator can come forward with the reasoning behind it, some assurances, and ask for that exception.

Mark Hanneman: At San Emidio you have boiling water at 50 feet, so it doesn’t really matter whether you’re injecting below surface casing asset at 100 feet, 200 feet or 50 feet.

Lowell Price: I think the question is how much pressure you’d be applying to the injection well.

Rich Perry: After much discussion we went with this language we wanted a pretty strong standard for all of the other geothermal fields knowing full well there’s going to be some exceptions that we can handle in Section 9 but we wanted to ensure that everywhere else in the state has at least a couple hundred feet of casing or 10% on the well.

Josh Nordquist: I agree that today we only know of a very few areas where less than 200 feet applies, but we don’t know what it’s like in the future, it’s still to be determined.

Lowell Price: That can still be brought forward on a case by case basis.

Chris Shedeger: Does this apply to domestic wells too?

Lowell Price: No, this is for commercial and industrial wells.

Rich Perry: Does that sound alright to you, Josh?

Josh Nordquist: Yes, I understand the process that if we’ve got the waiver clause. The real value of having a minimum or maximum in that essence becomes a question in my mind, unless there’s something that says 200 feet solves the problem that we’re trying to solve or is it 100 feet or 125 feet, I understand the concern, I guess it’s an arbitrary number.

Lowell Price: Which it is, 200 feet gives enough depth to work with on possible surface issues.

Mark Hanneman: What about TG wells where you get 1,000 footers where you'd only have 100 feet of cement in casing?

Lowell Price: No, TG wells you can still put 40 foot of conductor in the hole and then drill your 500 or 1,000 hole. This would be a commercial or production and injection or observation well; TG is under a different category.

Rich Perry: That's in NAC 534A.260, requirements for casing on page 12 of the combined revision. Where is that referred to, that it's only for commercial and industrial wells?

Courtney Brailo: NAC 534A.180 Applicability on page 6 of 28 (of the combined reg version) calls out domestic wells so it would have to be listed on page 6 to apply to geothermal domestic wells.

Josh Nordquist: Would it make sense to add something to the effect, "unless otherwise accepted by the Division, that this requirement applies"? My biggest concern is for a developer reading regulations that it could drive decisions early on in this process without options to discuss. Does that make sense?

Courtney Brailo: I think that's something we could put it, but then it'd taken out by LCB, because we already have Section 9.

Greg Ott: Typically LCB will take that language out because of the argument they will make is if you put it in here why didn't you put it in every other section. They will probably take it out but you could try.

Josh Nordquist: I understand that logic as well.

Lowell Price: Also, up until the 15th of November more comments can be submitted to us, if anyone has any reasoning behind not liking these changes submit those comments and submit it with the part of information as to why.

Rich Perry: Any other comments, suggestions or questions about understanding the chapter?

Bruce MacKay: The 125°F, I can see that being somewhat impractical where there's not enough room to put that kind of machinery and cooling systems, therefore it takes away a person's ability to use geothermal energy to heat their house. A lot are on a third of an acre, all this stuff is going to take up a third of an acre along the house.

Rich Perry: You're talking about the 125°F with respect to a mud cooler on a domestic geothermal well, which basically your rigs are water well rigs, right?

Bruce MacKay: Right, this is mud or air. I just see it as a deterrent for anyone in town; you can't even follow these rules though so our business is pretty much shut down.

Rich Perry: Have you monitored; in the wells that you drill do you regularly see 125°F in the wells that you drill?

Bruce MacKay: Yes.

Rich Perry: Courtney, where is the section where we define the temperature of a geothermal fluid?

Courtney Brailo: Page 4, Section 4.

Rich Perry: The other thing that was added was a definition of "natural heat of the earth" which means energy obtained from any medium used to transfer heat, the temperature of which is greater than 85 degrees Fahrenheit at the surface". We used a realistic number that's warm water, 85°F warm water, it's not boiling, and not even close to boiling, but realistically someone could take that heat and heat a house with it.

Bruce MacKay: There's heat pumps that you can use any temperature, that's where the word geothermal gets really confusing because the public thinks I have geothermal if I have 70°F water and I'm heating my house with it. Do we fall within NDOM's guidelines?

Rich Perry: That's a purely Nevada thing, California defines it differently, we did look at other states and this was Idaho's number. We wanted to come up with something realistic that we could draw a line to say this is geothermal water and this is not geothermal water.

Rich Perry: Let's go back to your mud cooling question at 125°F.

Bruce MacKay: It doesn't really say that its adequate and that it's working, we have to have an adequate and working cooling system. If we use our mud shaker and cooling it off or adding cold water continuously and keeping it below boiling, that I guess is under this term we're okay doing that.

Mike Visher: The other thing is we're making sure you're recording the information which means you're monitoring it. The regulations don't prescribe a certain amount of fluid because that would be difficult, you don't know exactly what that's going to be with all of the circumstances but by putting something in there to

cool the fluid and recording the fluid temperature, you're monitoring it. From a safety perspective that's all we're looking at.

Bruce MacKay: With the same criteria that we're talking about, where and when do we have to use a BOP?

Lowell Price: 200+°F I believe.

Mike Visher: Anytime you expect to anticipate 200°F.

Bruce MacKay: So that 200 still is in the regulations?

Lowell Price: Yes, we left that.

Rich Perry: So that section on the mud cooling, 534A.280 on page 6 is included as applying to geothermal and domestic wells.

Mike Visher: And again, it's a safety thing, why would a domestic setting be any different than an industrial setting. We wanted it to be consistent across the board. If there are extenuating circumstances then submit a request for an exception but include why it should be different for you here for this particular location and then that's evaluated on a case by case basis.

Bruce MacKay: Makes sense.

Mike Visher: One of the things we did do in the regulations is we adopted a number of Conditions of Approval that were just boiler plate that were added all the time, and if you're going to use it all the time, then it really should be in the regulations. One of things we added was some concerns from Underground Injection Control (UIC) that Russ Land had had on the construction of the cellar about fluid retention in the cellar and how that has to be managed, it's something we've added to our Condition of Approval (COA)'s and has been in there a couple of years now and it's become standard so now it's in the regulations and part of that is to facilitate the process by which a proponent is going to drill a well and they're considering using a well as an injection well. Normally Lowell makes sure they understand if they intend to use it as an injection well there's a different set of rules you have to adhere to if it's going to be considered for an injection well, know that upfront as you construct to drill it so you don't box yourself out of being able to use that as an injection well. Lowell does a really good job explaining that to the proponent and what we're trying to do is make sure they understand that some of the things are just commonplace we've added to the regulations.

Bruce MacKay: If we're drilling domestic water well and all of a sudden we start to get warm water above 85°F but we're drilling domestic water well, do we need a geothermal permit at that point? Their use may be domestic water only and they're going to cool it and the next guy that buys that property says wow that's nice heat, I'm going use it to heat my house.

Rich Perry: That's a really good question because I don't know that's it's addressed here but we can interpret through this. If it is a domestic water well and that's how it is permitted and they're entitled to two acre feet of consumptive use, there's two ways to go about it, one is it's a domestic water well, even if it's 85°F, if they're using it for domestic water why would they need a geothermal permit, but if they decide to use the hot water and recirculate it and collect the heat then the answer to that is it does need a geothermal permit.

Rich Perry: Are there any other questions we can answer?

Andrew Tiedeman: What is the requirement for plug and abandonment of temperature gradient holes, before was it 10 feet?

Lowell Price: No, It's always been a 50 feet cement plug and essentially for downhole we would prefer you use bentonite chips but you can put your cuttings back down the hole and so forth.

Rich Perry: As long as it is above the static ground water level.

Andrew Tiedeman: I guess the cement plug part; you've got bentonite chips all the way up plugging it but as far as the last 10 foot section, is it 50 foot?

Lowell Price: Yes, I think it's always been 50 foot; BLM is 50 foot as well.

Andrew Tiedeman: And they're staying at that, for some reason I thought it was deeper.

Lowell Price: No.

Courtney Brailo: We did make some changes in identifying if you encounter water or no water for the bentonite chips. On page 18 of the full regulations.

Lowell Price: You need to isolate that.

Courtney Brailo: But then it's 50 feet of cement for either.

Rich Perry: 534A.480

Lowell Price: explained the definition of a temperature gradient well.

Rich Price: It's not ever going to be a production well; it's a more narrow diameter well that's drilled to determine how fast is the temperature of the earth is rising.

Lowell Price: You can't conduct any production or flow tests or injection tests.

Rich Perry: It's kind of the equivalent of an exploration borehole in mineral exploration.

Rich Perry: Anything else we want to take about?

Rich Perry: Thanked everyone for their comments. The Adoption Hearing for NAC 534A will be November 21, 2019 at 1:00 PM at the Legislative Building, Room 3138, 401 South Carson St., Carson City, NV 89701.

COMMENTS BY THE GENERAL PUBLIC – None

The workshop adjourned at 11:48 A.M.