



STATE OF NEVADA
COMMISSION ON MINERAL RESOURCES
DIVISION OF MINERALS
400 W. King Street, Suite 106
Carson City, Nevada 89703
(775) 684-7040 • Fax (775) 684-7052
<http://minerals.nv.gov/>

JOE LOMBARDO
Governor

Las Vegas Office:
375 E. Warm Springs Rd. #205, Las Vegas, NV 89119
Phone: (702) 486-4343; Fax: (702) 486-4345



ROBERT GHIGLIERI
Administrator

Tuesday, August 26, 2025

1:00 P.M.

MINUTES

Commission	Staff	Public
Josh Nordquist	Robert Ghiglieri	Leo Giangiacomo, Consultant (phone)
	Rebecca Tims	Wesley Adams, Zanskar Geothermal & Minerals, Inc (phone)
	Dustin Holcomb	Bill Ehne, Consulting Geologist
	Nicole Ting	Ann Garth, Clean Air Task Force
		Terra Rogers, Clean Air Task Force
		Vanessa Robertson, Geothermal Rising
		Brandon Law, Fervo Energy
		Caity Smith, XGS Energy
		Sheldon Bide, Fervo Energy
		Erica Freese, Ormat

COMMENTS BY THE GENERAL PUBLIC

There were no comments.

I. Intent

The Division of Minerals held a public workshop to update regulations on NACs 513, 519A, 522, and 534A. Administrator Ghiglieri provided an overview of the workshop process and intent. He then presented on the proposed changes to each regulation and concluded by explaining the next steps in the regulatory change process.

II. NAC 513

There were no public comments on NAC 513.

III. NAC 519A

There were no public comments on NAC 519A.

IV. NAC 522

A **Leo Giangiacomo** of the public made a comment regarding the release of natural gas. He stated if he releases one molecule of natural gas in the process of drilling a completion that he is in violation of regulations and feels that this is impractical. He stated there should be a minimal volume in which this kicks in at rather than any volume. **Wesley Adams** questioned the submittal of core and asked how much of the rock core needs to be slabbed and sent to the Division of

Minerals. **Administrator Ghiglieri** stated the core change is under NAC 522.15 which says a minimum of two 15 millimeter sets of cuttings per sample, interval must be cleaned, dried and placed in the sample envelopes, and the cuttings and core split to the Bureau of Mines and Geology, not to the Division of Minerals. Instead of as soon as possible or as soon as drilling of the well is complete, we now have within 90 days after the drilling of the well is complete. The change of the requirements of the drilling has not changed, the time frame for those requirements to the Bureau of Mines and Geology is what is being changed. **Bill Ehne** had a comment on the hydraulic fracking section that isn't addressed in these modifications. He thinks the process needs to be modified. It needs to be simpler for an operator to perforate a zone and stimulate the zone without going through the full hydraulic fracturing process that is outlined in the NRS. Maybe the volumes need to be changed. Leo gave him some language that he thought was good which was, the definition of hydraulic fracturing is the process of fracturing fluids into a specific rock strata at pressures exceeding the mechanical strength of the rock and at a rate high enough to spread the fracture and prop it open sufficient distance from the wellbore to enhance the permeability of the rock sufficient to the well and the well will produce economic quantities. The existing language says the process of pumping fluid in to or under the surface of the ground to create fracture in the rock to facilitate the production or recovery of oil and gas. That's onerous that you can't pump fluid into the formation to anticipate, the simple process is if you perforate a zone and you don't have any in-flow from the zone, you're perforating you have to clean those perforations out. To do that, you must pump something back into the formation, possibly something like dilute hydrochloric acid to clean up the cement. Sometimes it takes effort. I suggest there be some language in this that allows simple stimulation to a zone that is being tested for oil and gas. If you don't it is detrimental to the state. If an operator drills a well and they want to stimulate a specific zone that they hadn't anticipated before, it turns out that's no good but look we've got this really good-looking zone above, but we have not gone through the whole process of review and the review area. We just want to see if we can get something out of it. **Leo Gingiacomo** wants to back up some comments from Bill Ene. He does feel that the definition the legislation is such that you cannot build good regulations based on that definition. It is critical to work with the legislators to get that definition changed into something that is more workable and from that point we can build better regulations regarding the hydraulic fracturing process.

V. NAC 534A

Ann Garth is curious about the definition on recovery of fluids and wants to make sure the definition doesn't exclude projects that are happening in dry rock conditions where they are doing stimulation in order to recover more heat, but the fluids are not preexisting in the sub surface but are rather being introduced. **Tara Rogers** wants us to consider unique technologies that extract heat that do not require stimulation. The suggestion or consideration she would bring to this body is consideration for the definition of next generation where it can embody various techniques including hybrids of stimulated and non-stimulated heat extraction techniques not requiring hydrothermal bodies. **Vanessa Robertson** wants to lean on what Tara said in recommending a whole other definition regarding next generation geothermal that addresses existing new generation technologies as closed loop, AGS, but a variety of technologies that are yet to be discovered or not in one bucket or another, and being able to open up the opportunities for operators and developers to take advantage of geothermal in Nevada. **Tara Rogers** from Clean Air Task Force, which is a global nonprofit focused on decarbonizing the energy sector. She states that they have focused on geothermal as a technology solution is because the believe it to be truly transformative at a scale that is hard to imagine today. Nevada is uniquely positioned to lead this industry both in technology and its people and labor. She is not going to comment specifically on the fees suggested, but rather to elevate how important it is that our online resources are adequate for those entering the sector to understand how to access it. The recommendation is to ensure that the fees are adequate to make this regulatory structure accessible and easy to manage. She expects this sector to grow quickly and Nevada to lead. **Dustin Holcomb** wanted to clarify that none of the fees that are being proposed will apply to applications that have been submitted now or until these regulations come into effect. **Administrator Ghiglieri** confirmed that these fee changes will not go into effect until after being codified by the legislature. We are looking at 6 months, at that point we will ensure that every operator and every application is aware when that change will take place on any fee changes as well as regulatory changes. **Josh Nordquist** wants to propose that on NAC 534.216(1) he is suggesting us to consider a longer timeline than thirty days before we assess the 5% percent fee to allow business processes today that seem to take sixty to ninety days to process before we bring in penalties. **Brandon Law** with Fervo said he understands the State's need to cover expenses for plugging abandoned orphaned wells. He wants to point out that the bond for operating across the state for Oil and Gas is \$50,000, this is six times that. The bond for a project area in Utah is \$50,000; this is six times that. The bond for a project area in California is \$100,000; this is three

times that. **Josh Nordquist** commented on 534A.250(3) saying he assumes the thought process for increasing the bond to three times the individual geothermal setup for wells is that the assumption that the depths will deeper and add significantly to the cost, is that right? **Administrator Ghiglieri** Yes. **Josh Nordquist** under 534A.465 under 4C the process of being made whole, I think it's understood, but do we need to define how that would work? Does it need to be defined whether the Division would send an invoice to the operator, or maybe related to that, is there a precedence on a similar process that other agencies take where we can repeat here to understand how that would work. **Caity Smith** with XGS Energy reiterates the comments that Vanessa and Tara stated earlier regarding all types of next generation geothermal activities. Only defining EGS or stimulation is going to result in this body having to turn around and do new regulations in the very near future and highly recommend including all next generation technologies during this effort. **Josh Nordquist** under subsection 5 in NAC 534A.540, section A should be "requesting to stimulate a previously drilled well". Under B, major modification to a "stimulation" permit not "simulation". Under C, restimulate a previously stimulated well, I would suggest adding "not previously permitted". I am just thinking through the process of whether an operator has a permit, they have a time in which they could produce a number of stimulations in there and this of course assumes that that permit is expired or completed. **Bill Ehne** I think that the streamline method for getting information and logs and data from these wells is critical to the state. Some logs are difficult to get digitally. More importantly, he would like to address something that hasn't been addressed and that would be 534A.031, which has to do with the confidentiality of logs that are turned in for geothermal wells. Currently it's five years. I think that's onerous for a lot of companies and what it leads to is if a company doesn't submit those logs, after 5 years someone goes through the files and looks through the logs and finds that they didn't turn in anything, and then the company has disappeared and you are unable to get the logs. I have been in Nevada working with these regulations since 1985. I recall the 5-year confidentiality period being lobbied for and approved but it should be in line with the oil and gas regulations, which are 6 months. That way it allows people to come in and look at the logs and see that they weren't turned in and have them turned in. The language should include that if all the information hasn't been turned in, they don't get any permits. Something that encourages the operator to turn in the data. When the file goes public, it's missing critical data and that data is really important for exploration activities in Nevada. The other thing the language should include is that the operator can ask for a 6-month extension maybe as many times as they want but if they haven't turned in all the information on that well, they don't get the extension. **Vanessa Roberts** states that to be consistent with other timelines she is suggesting 60-90 days as opposed to the 30-day timeline for operators to gather all the appropriate paperwork to submit. **Josh Nordquist** noticed in the definitions they are very similar to NAC 522 but noting that the sampling area and the area of review are essentially the same definition, maybe there is a way to simplify that a bit. He is also looking at section 3 in the stimulation-based sampling and monitoring exceptions, we should be watching and thinking about what the timeline looks like for operators and developers to work through the sampling process and baseline process to have a clear idea of what that time period looks like to not be burdensome. **Administrator Ghiglieri** asked if he is talking about induced seismicity baseline monitoring forecasts and risk-based monitoring plan, correct? **Josh Nordquist** Correct. I'll go back it was on the exceptions section not the plan section, I missed that part. Subsection 3 under there, the general comment is making sure we are looking at the overall timeline that the operators will be working through to set base lines and permit and to the point of execution or drilling. Under the exceptions section, subsection 8, noting that this section is also similar to NAC 522. Noting in 8b, which is the same language as 522, but maybe to consider how that can be better defined. There may not be enough history to understand where the water quality is trending and subsequent samples. Under the "plan" section, subsection 2, 1, five years of regional seismic events, I am wondering if we should define this as the publicly available data that is the assumed intent, it's available through USGS or other sources. In subsection 2, it talks about two miles of the area of review, and this is a comment that was used elsewhere, within two miles of the area of review, the area of review is defined as a one-mile radius perimeter around the track of the well. Is this intent to be a two-mile radius, or for clarity, one mile plus two miles? **Administrator Ghiglieri** One mile plus two miles. The reason we went with two miles, we were referencing back to a few other recommendations seeing that in other areas there is induced seismicity that can be triggered up to ten miles away, however, Nevada is a seismically active state. Understanding that this is close proximity, we wanted to make sure we are keeping it realistic, what is a potential of the project, so that two mile buffer was what we decided as a good intermediate so it would be the one mile area of review plus a two mile buffer, so a three mile area or six mile span across if you're on a horizontal well in the cross section. Showing there is potential to keep it specific to that area and not be pulling in regional seismic events that are constantly happening. I think having at least 5 years of regional seismic events that way will be helpful, so we have a better understanding of what the potential impacts of that stimulation is to the

surrounding areas but not to go so far out that we are potentially capturing events that were just naturally seismic events in the region because, it is the state of Nevada. **Josh Nordquist** suggests either defining it as a 3 mile radius from the well as defined either by the area of review or say area of review plus two miles. **Sheldon Bide** said the stimulation baseline sampling and monitoring section, in terms of the water samples from the available waters, it's six to twelve months out and then three to four years out, and that seems to be based on the concept of a single stimulation. In EGS applications we might have multiple stimulations of multiple wells from the same well pad perhaps over a year or two years and so I wouldn't want to see a cascading series of samples. I think one way to resolve that would be add a section where an administrator can approve a plan proposed by the applicant that would meet those needs. So, we wouldn't have fifty monitoring events when four monitoring events could meet the intent of the statute. **Erica Freeze** echoed some of what Josh mentioned. Not so much in the water component, but under the induced seismicity just to consider that installation of that infrastructure can have impacts to the timeline due to the amount of federal land that we have. I know BLM has methods for working through that that shouldn't be cumbersome, but it does add to the timeline. Also under that section, induced seismicity baseline monitoring, 1c, I would suggest a definition of region or regional. I am not a seismic person but if that's well known that's great but if not, I think it could be fairly subjective as to how far out that goes. Under section 3 where it's talking about the different light colors, it talks about two miles of the project area. I think your intent was two miles of the area of review, so just making sure that the language is consistent. **Josh Nordquist** asked if the light system is not currently in NAC 522? **Administrator Ghiglieri** No it is not. **Josh Nordquist** where did it come from? **Administrator Ghiglieri** the red-light system was what we found from doing research on enhanced geothermal. It was recommended under the DOE recommendations for induced seismicity plans. The concept behind a traffic light system is that we are not setting individual parameters per regulations right now, what we have proposed in there is an example. We state there that it will be determined on a project-by-project basis based on regional and background history. Not a whole statewide system. **Erica Freeze** under number 4, the Division must be notified within 24 hours, and sections "a" and "b" about other notifications, I can see those being kind of onerous depending on how many landowners or permittees, trying to contact all of those people within 24 hours, but if that is the expectation or the intent, I understand. **Administrator Ghiglieri** those are what we are trying to come up with and what would be realistic in the geothermal and the new geothermal technologies. This is a conversation we would like to have with everybody here of the ten-mile radius. We are looking at that in a traditional geothermal setting where most geothermal plants are not generally next to a population, however, there are multiple geothermal plants, like Steamboat, where a ten-mile radius of steamboat could be potentially 100,000 people for notification. With that, we would like to remind that there is an opportunity for additional comments or feedback for suggested changes to this or examples or good practice from other states or other regulations that we have seen on that radius. **Leo Giangiacomo** was just curious if there's any consideration of temperature when testing those casings **Administrator Ghiglieri** said currently there is no requirement for temperature but that is something we will look at with the concept for some of these new geothermal technologies getting super-hot and ability for the casing to handle those temperatures. **Tara Rogers** said in their own research, we have found that cyclics in the thermal cycling of casing can also be significantly destructive to its ability to maintain its integrity and structure so consideration for thermal cycling in addition to temperature. **Josh Nordquist** there is page on the NDOM website about the chemicals that are approved by the Division and I assume that's consistent with the frackfocus.org database or is that two separate databases? **Administrator Ghiglieri** there are two separate databases. There is a dataset that we use, and we reference back to the frack focus, and we have a running list of what has been used and what has been approved in the state of Nevada. If there is a proposed additive to a stimulations process and we don't have it on our list, you can provide it to us and we'll do cross reference and then go through the process of reviewing and approving. **Josh Nordquist** said this is in NAC 522 under oil and gas, is that process working and does it relate to any other agencies that may be connected to these chemicals that operators are using? **Administrator Ghiglieri** currently for the 522, there hasn't been a proposed stimulation in quite a few years. The process was before I was the administrator and did work through that; it was acceptable at that point in time for the operator that was stimulating the state of Nevada for oil and gas. With relationship to other agencies in that process, we have an MOU with them that we have been slowly working on updating but getting that process to where that list is recognized by them, is the intent of this code change. **Erica Freeze** a follow up question on that Rob, if there is an MOU with the other agency which I am going to assume is NDEP, is there a separate permit or approval that has to come from them as well? **Administrator Ghiglieri** said, for this, the intent of this regulation is to where this would be for stimulation activities, this would be the approval process, and there would not be another permit through the Division of Environmental Protection. Again, this is the workshop process on that and we need

to obviously quadruple verify that process, but that is the intent of these regulations, to where they would stay for stimulation activities within the Division of Minerals. Once stimulation has occurred, and the operators are looking to do their general geothermal operations and inject and produce fluids, at that time the injection will be handled by UIC's program at NDEP. **Bill Ehne** said he thinks one of the reasons that you haven't seen a lot of permits for oil and gas, is because they are onerous and I think maybe dividing up and making it a little more simple to do a test well. I see these regulations being adequate for production scale things but maybe there should be a modification or some exceptions for tests wells or exploratory wells because you really don't know what you're going to do until you've got that first well in the system.

COMMENTS BY THE GENERAL PUBLIC

There were no comments.

ADJOURNMENT

The meeting adjourned at 2:38 PM.

DRAFT