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Appropriations Committee
February 27, 2013

[AGENCY 57]

The Committee on Appropriations met at 1:30 p.m. on Wednesday, February 27, 2013, in Room 1003 of the State Capitol, Lincoln, Nebraska, for the purpose of conducting a public hearing on agency budgets. Senators present: Heath Mello, Chairperson; John Harms, Vice Chairperson; Kate Bolz; Danielle Conrad; Bill Kintner; Tyson Larson; Jeremy Nordquist; and John Wightman. Senators absent: John Nelson.

SENATOR MELLO: Good afternoon and welcome to the Appropriations Committee. My name is Heath Mello. I'm from south Omaha, representing the 5th Legislative District, and I'm Chair of the Appropriations Committee. I'd like to start today off by having our members do self-introductions, starting with Senator Kintner.

SENATOR KINTNER: I swallowed just in time.

SENATOR MELLO: Sorry. (Laugh)

SENATOR KINTNER: Okay. I'm Bill Kintner from Legislative District 2, which is south Sarpy, Cass County, and just a little bit of Nebraska City.

SENATOR MELLO: Sitting next to Senator Kintner is Senator Jeremy Nordquist from District 7 in south Omaha and downtown Omaha. Sitting next to Senator Nordquist is Senator John Nelson, representing District 6, which represents central Omaha.

SENATOR HARMS: John Harms, 48th District, Scottsbluff.

SENATOR MELLO: Sitting to right is Senator John Wightman from District 36, represents parts of Custer County, as well as Dawson County. Sitting next to Senator Wightman is Senator Danielle Conrad from north Lincoln's 46th District. Sitting next to her...

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SENATOR BOLZ: I'm Senator Kate Bolz. I'm proud to represent District 29 in south Lincoln.

SENATOR LARSON: Senator Tyson Larson, representing District 40, O'Neill.

SENATOR MELLO: Assisting our committee today is Anthony Circo, our committee clerk, and Jacob Fricke, who is senior at Nebraska Wesleyan and is our committee page. Sitting to my left is our fiscal analyst, Scott Danigole. We have fiscal analysts who will be joining us throughout the day. In the corner of the room you'll see some yellow forms. If you're planning on testifying today, please fill out those forms in their entirety. It helps us keep an accurate record of the hearing. When you come up to testify, please give Jacob the yellow sheet. When you sit down, please tell us who you are and spell your first and last names for the record. If you have any paper handouts, please give them to Jacob before you begin. We ask that you have 11 copies. If you need more copies, we will make more of them for you. At this time, I would ask all of us, Senators included, to take a look at our cell phones and make sure they are on silent or vibrate mode. And with that, at this time we'll begin with hearing Agency 57, the Nebraska Oil and Gas Conservation Commission.

WILLIAM SYDOW: (Exhibit 1) For the record, my name is Bill Sydow. Actually, I'm William if I'm in trouble, but B-i-l-l and then S-y-d-ow. I live in Sidney, Nebraska. I serve as the director of our Nebraska Oil and Gas Conservation Commission. And so for the appropriation, I'm here supporting it because we all need some money to spend. What I'd like to do is just review some of our more significant accomplishments over the last couple years for you, and I have been advised by Mr. Danigole that I needed to be prepared to talk about how we set our mill levy to generate revenue to support our agency, as well as a fairly brief summary having to do with hydraulic fracture stimulations. So just first off, in the last two years your committee gave us appropriation for a new position in our agency, that of deputy director. We filled that position in 2011.

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Mr. Stan Belieu, who has worked for our commission for 20 years, accepted that position as a deputy. Prior to that, he was our petroleum engineer for around 20 years. We filled his position last year, in August of 2012, a nice young man. His name is Josh Dack, who grew up in Paxton, Nebraska; graduated from the University of Nebraska in Lincoln with a degree in civil engineering and as part of his coursework he had classes in geology and ground water. And he's proven to be a real valuable asset for us and we're glad to have him. We have continued to make I think very significant strides in upgrading our on-line data. On one of the handouts, in the first part that's stapled, with a gap, but our Web site continues to be used heavily by people. When we first put it out, that was 2005, we had under 10,000 hits per month. That might have been mostly us trying it out. As we got into 2011 and '12, you can see that there were months with over half a million Web site hits for data on our Web site, and so we're very...we're proud of it. And that Web site gets...the information will get upgraded. We finished scanning our historic well files, so you have now access to over 21,000 wells and information forms, well logs, information that we've had in our files and very pertinent information is available, and we continue to add to those data every day with new scans or updated information. The drilling activity in our state has continued on an acceptable pace. So the second page that we have just to review today is a history since 1951. Our agency was actually started in 1959, but that's a history of the wells drilled, in red, versus the oil price, average per year, in green. And so there's a correlation. Sometimes it's strong; sometimes it's weak. But if the price is up, the activity is up; if the price is down, of course activity falls off. And so last year we permitted 147 new wells. We actually drilled...started to drill about 106. So our activity levels are...we're seeing activity in all three provinces in the state of Nebraska--Denver-Julesburg Basin out...Senator Harms's district in Scotts Bluff County and south; Red Willow County in the southwest, Hitchcock, Dundy, so that would be Senator Mark Christensen's; and then we have production in District 1 in Richardson County. That's our oldest production. The next curve there is...depicts our decline curve for the most part. Green is monthly oil rate and the red is monthly gas production. So in the past two years, we have produced around 2.5 million barrels of oil. We actually produced about 8,000 barrels more oil in 2012 than

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we did in 2011, so that's fairly significant. We had 12 discoveries last year and that was versus 5 in 2011, so that's new fields to be discovered. And our bonded operators, we require a bond, has increased to about 158 companies. So we continue to add to the companies. Activity in Nebraska, exploratory activity, at least in the southwest Nebraska and the Denver Basin, now is being driven by three-dimensional seismic more and more. That has led to several, well, significant discoveries. Of the 12 discoveries last year, 10 were on 3-D seismic prospects. The other two were just what I would call well control. Two companies from Wichita, Berexco and Murfin Drilling, found a field actually in 2010, and that was a 3-D prospect. There were two fields there. Now it's grown together as one. It's got 27 wells in it, made over 1,000 barrels a day and probably still produces around 800 barrels a day, so that's pretty significant for us because we only produce about 6,500 to 6,800 barrels a day. So one-sixth of our production is brand new. We've seen a lot of leasing activity for oil and gas, and our office doesn't have the benefit of any money from that. We just get to answer a lot of telephone calls. And we have...I would say that we've seen leases taken in Nebraska, probably well over half a million acres of leases that are taken from the landowners in the last several years with new companies. Chama Oil and Minerals, Cholla Production Company, Credo Production (sic), Fidelity Exploration and Production, and then a private company from Houston called Fairways have all taken acreage in the last several years. We've seen renewed interest in the deeper horizons in the Denver Julesburg Basin and that exploratory activity has been kicked off with two companies. Chama Oil and Minerals has drilled five wells at this point in Cheyenne County and Banner County, and a company, Fidelity, which is actually owned by Montana-Dakota Utilities in Bismarck, has drilled two wildcats in fairly deep, north of Scottsbluff, Senator Harms's, in between Mitchell and Harrison. Those wells have to drill beneath salt sections. They're pretty expensive. They're costing between, I'm going to say, \$3 million and \$8 million to drill the wells. Three have been horizontal so far in the Pennsylvanian rocks, and right now Fidelity is actually drilling a horizontal out from a vertical well that they drilled last year. So those wells are...we have confidentiality that can be requested, that's approved by statute, so those well are confidential as far as really want's going on. We're in the

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process of significant rules changes to...within our agency. We formed a working committee and a legal committee and technical committee last March, in March 2012. We went completely through our rules and regulations. We developed...we have to submit the application for that so we have had two public hearings. We had the last one at the end of September and so now we're really in the process of going through the review for the Governor and Executive Board of the Legislature for that. We have several new rules for hydraulic fracturing that will be in there on reporting. And we intended to use FracFocus, which we would have an opportunity to see a little bit more of. So that will be for more transparency. Doesn't gain us any more engineering or geological information that I think is of significance, but we do have that in there. We didn't get any push back. It's going to cost companies about \$2,500 extra dollars to pay to the service company to get that data in a form that they can upload to FracFocus, but they're willing to do that. I'll just say that hydraulic fracturing has been performed in Nebraska since probably 1950. It's safe. It's required in certain reservoirs that are low permeability and to aid in just getting commercial production. Our numbers are really small. In 2010, we fracture stimulated 9 wells; 2011, 3; and I'll go out, we don't have all the final numbers in for the confidential wells, but 12 wells fracture stimulated last year our of probably 110 wells that were completed. So that's all I have prepared for that. I'm prepared, Mr. Chairman, to discuss about how we would set our mill levy, as well as something about hydraulic fracturing, and that material is included. And so I'll just cease and answer any questions or take you through, at your leisure, how you would want me to address those issues. [AGENCY 57]

SENATOR MELLO: We appreciate that, Bill. Thank you so much. Are there any questions from the committee? Senator Harms. [AGENCY 57]

SENATOR HARMS: Thank you very much for your testimony, Bill. Where is the largest findings of our oil and where they've drilled? Where are the biggest fields located?
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WILLIAM SYDOW: Okay. Good question. Our largest field is located in Red Willow County at southeast of McCook. It's called the Sleepy Hollow Field. It was found in 1960 by Murfin Drilling on random...just random drilling. Somebody, you know, threw a dart. I don't know how they picked it. But they went out and drilled a well. That field has produced over 50 million barrels. That's our largest field. It still is probably in the top three for daily production. It will still make 300 or 400 barrels a day. Two horizons: one is on what we've called the Basal Sand, some people have called Reagan, but it's an unconsolidated sand and the largest...that's produced about 32 million barrels. And then shallow to that there were zones in what's called the Lansing Kansas City formation that produced another 18 million. So it still makes 300-400 barrels a day. In the Panhandle, the largest field was a field called Sloss and was found by a guy whose name is James P. Sloss, and it's made about 20 million barrels. There's only one well left in the unit and it's right just south of Kimball. In, I'll say, in Scotts Bluff County, we'll get...I'm going to get this, Scotts Bluff County, to me, is underexplored and I personally would like to go explore there sometime in my lifetime. There are some nice fields, not very many big ones, but there are over a million barrels. There's still Cedar Valley, which is south of Gering, that's produced around 2 million barrels; and north of Minatare we have we have two fields that are currently there. Minatare, the way I mapped it up, has produced over 2 million barrels, in north Minatare, 500,000, from four wells. So the economics are really good. But the biggest fields--southwest Nebraska. [AGENCY 57]

SENATOR HARMS: One of the developers, a gentleman by the name of Jack Chain, which you probably have known for a long time, said he believed that the city of Scottsbluff was sitting over a fairly large sum of oil, the city itself. And he said that he had done a lot of drilling up until he got close to the city proper, then he stopped. His views were that he thought they were sitting on some fairly heavy natural gas and actual oil. I don't know. [AGENCY 57]

WILLIAM SYDOW: Well, it could be. Jack Chain, he's older than all of you put together I think at this time,... [AGENCY 57]

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SENATOR HARMS: I know. [AGENCY 57]

WILLIAM SYDOW: ...but he's a petroleum and retired and had an operation in, actually, Scottsbluff. One of the...just as an aside, in 2006, Appropriations Committee allowed us to have an emergency appropriation from our cash fund and we developed a Landsat-based photogeologic geomorphic interpretation that's on our Web site and actually there's a really good prospect, Senator Harms, I think just to the northwest of the national monument. It's a big geomorphic anomaly and maybe there's some deeper potential in there. [AGENCY 57]

SENATOR HARMS: Yeah. Can you explain how fracturing works? I hear that a lot but I guess I don't really understand that. [AGENCY 57]

WILLIAM SYDOW: Okay. Thank you for asking that. On the...kind of the second set of information I handed out is what I prepared for you to take away from this, but hydraulic fracturing is a completion method. You will hear in the news and publications it's a drilling technique. It's not a drilling technique. It's a completion method for the creation of artificial fractures in a reservoir, that that reservoir contain oil, gas, drinking water, or steam, and it's a way to create drainage paths away from the well bore so that whatever you want to produce can easily get into that fracture and then be transmitted to the well bore. The fluids that we use are typically water or foam-based and they are viscosified with some gelling agent. So Mr. Danigole will laugh, but the gelling agents are guar gum, so I brought some. That's from Nutter's Health Foods, Senator Harms, in Scottsbluff. My son picked that up for me. We can use that as a...it's food grade. So that's primarily the thickening material in there. The proppant material is generally, in Nebraska it's sand and I don't know where our sand actually comes from, but in Genoa, Nebraska, up in Senator Dubas' district or right in there west of Columbus, in Genoa, there's a sand and gravel operation that has mined and is providing fracturing sand because in the artificial fracture you keep it open by pumping fluid but you need to put a

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proppant in there so that when you take the pressure off it will close and you trap the sand in that high permeability zone to come through there. We can put various additives in there and I'm prepared to show you one, but one is potassium chloride. So if you know anybody who is taking...has to go low-sodium diet, potassium chloride is what they take. On the second page of that, a very simply hydraulic fracturing fluid is literally drinking water combined with guar to thicken it up to have the ability to carry sand, and so...and it's...most of...98 percent of the components are right there. One of the things I know that's been discussed is the volume of water that's used. Our fractures that we've typically pumped in the Niobrara Chalk were around 35,000 to 40,000 gallons. The Chama one, it's going to be a million gallons. But a center pivot on a 160-acre tract that's being farmed in production agriculture will put out a little more than a million gallons of water a day. Oil and gas would only, if we fractured a well, we're typically...we're only going to do that one time and then it's done. As far as the third page on fracturing fluids, that particular diagram we got from the Groundwater Protection Council, which is the booklet that I've included for you, a primer on hydraulic fracturing. It's very good. This was a component look at a fracturing fluid that was pumped in Arkansas, generally the same though. Primarily, it's about 90, almost 91 percent water, close to I'll say 8-9 percent sand, and only .5 percent was any kind of additives that would have been put in the water to include some of those, well, uses or the purposes of it, so a surfactant, gelling agent, scale inhibitor, which doesn't mean a lot. But if you look at the bottom one of that, I put it into some terms that we can all I think relate to. Fracturing fluid additives are found in our homes underneath our kitchen sinks and in our cupboards, literally. Typically, before you pump, at the beginning of a fracture stimulation, you'll pump some acid. Typically, that's hydrochloric acid. And so I know probably Senator Bolz, I don't know her, but if she probably is responsible for cleaning in her home, LIME-A-WAY, CLR, hydrochloric acid, you're using it and it's going down into our system. We have to have--sometimes we don't use that in Nebraska--a friction reducer. And I'm just going to go clockwise around that chart real briefly. Sometimes friction reducer can be used as simple as mineral oil and mineral oil, I said I was going to do this, it can be used as a laxative, which is effective friction

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reducer. But that can be used in there--food grade. Some there are called acrylamides, but if you've eaten any brown...browned carbohydrates, breads, grilled or roasted vegetables, you're eating acrylamides. It's in there. A surfactant, what surfactant does is help to reduce surface tension of water to help it flow back to the well bore. Actually, rubbing alcohol or methanol, some form of alcohol can be used. Potassium chloride, that additive right there can be used for...to get the potassium and it has to do with the clay structure, if there are clays in your rock, like bentonites, and if you've ever been around it, but bentonites like to take on water and they swell up. And if you swell up a bentonite crystal that's in a pore space, you've just blocked your potability. So it's really used as a protection, protective device in the formation. Guar gum we've talked about. It's raise from guar beans or made from guar beans. It's naturally occurring, food grade. We don't pump scale inhibitors. Typically, we don't ever have that problem, but the inhibitor that would typically be used is called an amine and it would coat the inside of the tubing or casing so that you wouldn't get scale there. Amines are used in the cosmetics industry. I saw on the Internet, you know, for whatever that's worth, but wrinkle reduction, if people are using a material, it will have an amine in it. If we have to adjust pH, typically we'll go higher pH, so water is neutral at 7.2 or 7, right in there. We'll adjust literally a soda ash, Arm and Hammer baking...or washing soda. If we to make the guar gel thicker, we use a borate, and borate is a boron hydroxide. It's found in Borax 20 Mule Team cleansers and it cross-links and makes the gel very thick. We want that gel eventually to break and so we'll use very small amounts of ammonium persulfate, but ammonium persulfate is in ladies, if you know anybody who's not...who's a blond and maybe not a real blond, she's used ammonium persulfate on her hair. For biocides, can say that we typically use bromine biocide, which I used in my swimming pool when I lived in Houston. You could also use Clorox. And so we drink chlorinated water or fluoridate water every day, and at least the chlorine is there to kill bacteria, and so the oil field will use that as well. So that's something about what's...honestly that stuff is in there. Next page on the bottom are Niobrara Chalk stimulations that we've pumped, have been primarily carbon dioxide. The base fluid was water. They were around 35,000-40,000 gallons of water. The carbon dioxide is there, probably helps to recover

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fluid, but it will energize that fluid so it will flow back more easily. We use potassium chloride and guar. We used actually an emulsifier or it could have been a de-emulsifier. That's a patented trade secret. Our rules would actually address the ability of whoever the director of the commission is, if I needed to, I could go find out what's in that. I'd just be pledged to the security of that. And if you drink Coca-Cola, Coco-Cola is a trade secret to this day and it has some pretty nasty stuff in it if you just look at it by itself. And it make take the enamel off the teeth, Mr. Danigole. (Laughter) But that's in there. We've typically used bromine, methanol for a surfactant. We actually made a foam out of those fluids and it's a soap. It's a very high grade like a Tide or Cheer, and the cross-linker was borate. So that's what we've typically pumped and that's what's in it. Surface operations, if you drove by you'd just see a lot of equipment. And so on top of the next page is actually an overflight in a picture of this big fracture job that we just pumped in December, Chama Oil and Minerals, on a well called the Poros/1H. And so we see storage kind of in the left hand of...that's the drill site location actually. That has carbon dioxide. And they're in between stages and so they're venting off and draining up some lines of carbon dioxide. So that's the vapor that you see out of it. The trucks are red because they're color-coded. Companies have color-coded equipment. Red is for Halliburton. What we try to do with the hydraulic fracture stimulation, as I kind of just alluded to before, was we try to extend the well bore. And so there's an idealized drawing of what could be the Niobrara Chalk that lies several thousands of feet below the surface and actually the major trap is called the Pierre Shale that is outcropped around Pierre, South Dakota. That's where the name came from. So we try to create this fracture, idealized by the wings there, and prop it open so that oil and gas or drinking water or steam, whatever we're going for, can get into that fracture and travel, as shown on the next page, as a top-down plan view. And the fracture didn't print off maybe the greatest. It's idealized. But it shows the drainage actually is elliptical, if you fracture stimulate a well, and the oil and gas can get into the fracture and easily go to the well bore. The map on the bottom of that page is actually the shots off our Web site. I put on the black lines in Section 35 there. Those are the two Chama Poros wells. The first one we drilled is on your left-hand side, has the bend in it...actually, that's the

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second well. The first well we drilled has a blue triangle, which on our Web site represents water disposal well. And so Chama drilled that well, ran significant amounts of casing, obtained cores for science, and then we ran casing and completed that as a water disposal well. When we drilled the left-hand well, the Poros/1H, we actually put in a tool string of 2,000 or 3,000 feet of tools, of sensitive listening devices, I'll put it that way, and that's represented by the little triangles in the cross-section just on the upper right-hand there. So while we were fracturing this well, we had listening devices in this well and these listening devices, based upon rock properties that would have been...we obtain a sonic so we have to know how fast noise moves through rocks. When we were fracturing that in various zones, when it broke, those tools could detect that and can triangulate with the 2,000 or 3,000 foot of tool string where it is and where it is up and down, in a vertical sense. And that's plotted on real time, which would be shown by those yellow, blue, or red dots. And actually...so I actually got to sit there and watch that for parts of two days. They wouldn't let me have the real data so this is actually off of a Society of Petroleum Engineer's paper. But I can...I'll tell you that that fracture zone stayed, the fracture stayed in zone. It only grew several hundred feet above and about 60 feet below, and that's what the rock properties would tell us. Fracturing, you've probably heard it's a new technique. Well, I'm going to tell you it's not a new technique. It was invented in 1947, first pumped by a company called Stanolind Oil and Gas. That was Standard Oil of Indiana, which became Amoco. They patented that in 1947 or thereafter. They called it the Hydra-Frac, or the water fracture. The first commercial job was pumped in Duncan...or by Duncan, Oklahoma, in 1949 by a man who's name is Erle Halliburton, who had cementing trucks and he was in the pump business and he pumped the first one. I say there that hundreds of thousands of stimulations, hydraulic fracture stimulations have been pumped in 64 years. A public data source would say that it has surpassed 1.2 million fracture jobs in the United States in the last 64 years. And I'm going to say this: Not only in Nebraska but in every other state there is not one contamination issue that...where it has ever affected groundwater, not one. And I saw a little quote by Aldous Huxley the other day and it says, "Facts do not cease exist because they are ignored." And I think that's what's happening in hydraulic fracturing.

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But the waste stream that comes back is regulated. In the mid-1980s, U.S. EPA looked at the waste streams generated by the oil field. That would include hydraulic fracturing fluids; fluid...spent fluids from acid jobs; drilling muds; produced water; and heavy, heavy oil--tank bottom and things like that. It was studied and, in 1988, U.S. EPA recommended to Congress that there be an exemption given from RCRA, which is the hazardous waste laws of the United States, because they're so benign, these wastes are so benign, and that it would be exempt from federal regulation. It doesn't mean they're exempt from state regulation because they are in every state. And so waste streams like that regulated by the states and we have our own programs. The EPA has put out documents saying what's so-called exempt and what's not. The most recent study that has been completed by EPA was in early 2000s, so I put down June 2004. EPA had an extensive study, about two years, of hydraulic fracturing relating to coal bed methane wells and coal...methane from coal has been exploited now for 20 years, a lot of activity in the Powder River Basin of Wyoming, so our adjoining neighbor state. They looked at hydraulic fracturing in Wyoming, Colorado, New Mexico, and Alabama, and they found no contamination and actually those coal beds can serve as sources of drinking water themselves. Now in our rule making, we put in about three or four rules in sequence, maybe 41 through 43. We would require our operators to report to FracFocus Web site and that is a Web site that's a national database. It's hosted by Groundwater Protection Council, who produced that book that you have a copy of. And in fact, Senator Harms, this one, I just went out and got it. We don't have any reported for Nebraska because it's voluntary. This is from Goshen County, Wyoming, by Chesapeake. And so these companies right now, unless there's a law, have the ability to go and show exactly what the chemical constituents were that were used and the volumes that they were used for just those chemicals, and so it's there so that landowners have the ability to go on-line and search that database to see what was pumped next to them or close to them. So all that said, it's not new. It's 64 years old. The fluids and additives have been studied. It's safe. There's never been a case of groundwater contamination. It's regulated and it's a needed technology, if you will, in the oil field as well as other places. [AGENCY 57]

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SENATOR HARMS: Thank you. [AGENCY 57]

WILLIAM SYDOW: Okay. Thank you for letting me do that. [AGENCY 57]

SENATOR MELLO: Senator Kintner. [AGENCY 57]

SENATOR KINTNER: What's the difference between oil shale and gas shale? Is it found together or are they totally different? [AGENCY 57]

WILLIAM SYDOW: No, they're really...it's the same rock. You may have some immature oil in certain shales, like in western Colorado, in all of those rocks. That is really not oil yet but it's a kerogen material. But the oil...and this is still very foreign to me. I've been in oil and gas for 35 years and I can't believe we're getting any production out of these shales, I can't, but we are. So it depends on how you think about it, but the gas shale, Senator Kintner, could have been just buried at a higher pressure or the organics a little bit different. It made gas from whatever the organics were. Otherwise, if it didn't make gas, it made oil, and if it wasn't buried too deeply and got too hot, it remains as oil. In these pore spaces that are actually nanometers, billionth of a meter, they're tiny, you could hide them on...ten on one hair of your head, but the oil is coming out. And so it's really kind of just depending on what's in that resource. I'll tell you, in Nebraska I don't think we'll ever have a resource play like that. Our...we're too shallow. We're really not gas prone. We won't have much gas production at all and don't...and our reservoir pressures are fairly low, comparatively, so that...I was talking to a young lady this morning who grew up here in Lincoln. Salt Creek, if you...when you drive over it or go by it everyday, is there because the Dakota Formation is emitting saltwater in springs and it creates the Salt Creek. And that water was innate. It was buried with the formation and it's literally being pushed from the front range of the Rockies in Laramie, around west of...well, not Laramie, we got to go to Cheyenne, but to the east side of the Rockies. Our basin is very asymmetric so it plunges steeply, goes through a U-turn, and then

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goes out for about 300 miles. And that water is continually being moved through the Dakota so that it emanates saltwater here in Lincoln. But by doing that, we've lost our reservoir pressure and we are depending upon the hydrostatic head out in Wyoming, literally, for our reservoir pressure. It's a unique basin that I've never been around, underpressured, in my life till I worked here at home in Nebraska. [AGENCY 57]

SENATOR KINTNER: You know, I love oil shale almost as much as I like food, and I know you're the Nebraska Oil and Gas Conservation, but I don't want to conserve any shale. I want to pump every little bit of oil we can get out of it and do it as soon as we can possibly do it. What's the holdup in getting...I know we've got oil shale all over in the west side of the state. What's the holdup in getting the production ramped up? Is it...you know, why aren't we producing more? Why is it taking so long? [AGENCY 57]

WILLIAM SYDOW: Okay. I'll tell you, Senator Kintner, I don't know if we have a true resource play. We have lots of shale, thousands of feet of shale, but I don't know how mature it is. It's called a pure shale and we drill through it. It's a seal for at least the shallower Niobrara, but no one has ever tried to attempt that. One of the drawbacks even in that reservoir is it outcrops and it's very underpressured, and so now you can damage it and you don't have a lot of reservoir pressure to force the oil and gas into the well bore. So we actually, I'll address this, a company, Fairways Exploration and Production, took probably 400,000 acres of leases in Kimball, Banner, Scotts Bluff Counties. That was for the Niobrara. There's been a Niobrara Chalk play, so they call it Niobrara Shale but it's really a chalk, like we used to write on the blackboard with, that has...had seen substantial activity in northwestern Colorado, so a border of the Panhandle, and around Cheyenne. But to be honest, things change at the state line. I hate to say that, but it's like it's a different world once you get into Nebraska. The rocks are there but they look...have different responses on the electric logs. And so Fairways drilled two wells. We cut significant amounts of core. Those are still being analyzed. We fracture stimulated one well and so I...no, I'll say it. We didn't use water. We used gelled propane so that we wouldn't even touch it with water. It would be touched with a

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hydrocarbon that shouldn't damage it. And it's such low permeability, we didn't even really get much rate out of that well at all that would be economic. So it's not to say that somebody doesn't try it. You know, there are lots of rocks that have just been drilled through because people have preconceived ideas that the real juicy stuff is deeper, and that's true with the pure shale. So the first discovery in Colorado was drilled in 1862 at a place called Oil Creek by a guy who worked with Colonel Drake in 1859 in Pennsylvania, and they pounded a cable to a well into the pure shale about 2,500 feet deep and they made a heck of a well. And that field has made around 25 million barrels of oil. But when we got away from cable tools and we started drilling with so-called rotary drilling rigs and using the mud that you have to have, now you suppressed everything that you saw, and especially it would be suppressed because if you never had the idea, you had, I'll just say, blinders on, that something-is-not perspective, you're not going to look for it. And I don't care, that's true in life. You're just not going to look for it. So, you know, maybe somebody could go try a well in Nebraska and there's a prospective area I like a lot that Fairways was on the edge of it. It's in Banner County, which is just south of Senator Harms's Scotts Bluff County. It looks good, but I could never convince anybody to spend the money, and I try. [AGENCY 57]

SENATOR KINTNER: So is that...so that hasn't been leased out yet. [AGENCY 57]

WILLIAM SYDOW: Well,... [AGENCY 57]

SENATOR KINTNER: And nobody is on leases right now or...? [AGENCY 57]

WILLIAM SYDOW: There have been a lot of leases taken in the last three years for different kinds of plays all over. So get it together, then go spend the funds to try their idea. And you know, hopefully their idea works but lots of times they don't. [AGENCY 57]

SENATOR KINTNER: So if you're looking to make money---it's why somebody would

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drill, they're not drilling because they like it, they're drilling to make some money, get a return on investment--they're probably better off going to some other proven reserve or an edge of a proven reserve or somewhere else, somewhere in the Appalachian area where they're going in Ohio and West Virginia, Pennsylvania area where it's much more proven. Is that where you would try to go first, rather than gamble in our state? Is that...? [AGENCY 57]

WILLIAM SYDOW: Well, see, I'm in a little different business, in the regulatory side. I mean I want them to make money but I don't care how much money they lose or make, right? But we want them to make money. So within our regulatory regime and the way I look at it is we are there...and some people have heartburn over this, they'll say...thank you, Jacob...that we're there to promote the development of the state's oil and gas resources, which we are. So we do that, I think, in a number of different ways. I think we've got really good rules and regulations that everybody knows we have to operate under those and we're going to enforce them as evenhandedly as we can. And people in the world like fences. I mean it was like if I can go down the lane, I want to know where I can go, where I can't go. We have put out a lot of data so that people can go to the Internet and get our data and not come to Sidney, and they're probably glad about that, that they don't have to show up there and sit in our offices. But you can provide data at no cost or low cost and you can be very...as timely responsive as you can be, and so you make it a good...an environment that people would like to come and do some things. We don't go and promote. I mean we can't prospect, we can't show ideas. I suppose we could but we don't and that's really not our place. So just to attract people to come. And so like Chama Oil and Minerals, I know some of these people. I don't...this is what I don't know. I don't know who's paying all the money for Chama Oil and Minerals. It's somebody in the shadows, in the wings, and they got a lot of money and they're not afraid to spend it. But I don't know who it is. I figure it's a major...a big public company. And if the play fails then Chama Oil and Minerals did that, and if it's a really big deal then they'll step in and go we did this. So...and there's some of that in raising money in the marketplace. So it's very tough for people with independence to raise

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money to drill straight holes. Everybody wants to drill horizontal wells and it has to be unconventional. So we're conventional. We still are straight holes. And it's like that's not a very, I don't know what, sexy play so we'll go spend our money someplace else.

[AGENCY 57]

SENATOR KINTNER: Just one more. I don't want to monopolize it. So I guess I want to make sure we haven't regulated people out of our state, that's the first thing, that we...that regulations (inaudible) not coming here. I don't think that...it seems you're not saying that. And you basically don't know what we got there. You don't know exactly what the potential is, but there might be a little, there might be a lot. We just don't know at this point. So there's two questions. We don't have such heavy regulation that people avoid our state, which it doesn't appear that we do. And the second is you really don't know what we got here. Is that true? I don't want to put words in your mouth but...

[AGENCY 57]

WILLIAM SYDOW: Okay. I'd say, no, we probably have a pretty good idea of what's not there, and so these rocks that we're drilling in with Chama and Fidelity in the whole Panhandle, and that's...I don't know how many, you know, square miles that is, we only have about 450 wells that ever drilled into those rocks. That's less than two wells per 36 square miles in a township. That's pretty underexplored. In Banner County, this well that Chama drilled, it was only the sixth well ever to be drilled in that county. But you have to drill below the salt and I'll just say, I mean it was a tough well and I'm glad I personally didn't have to be responsible for that, because we had to take three runs to get through the salt section and these...it's just difficult. But I think if there's potential in the Panhandle, it will be in the deeper rocks because they're underexplored to unexplored. Now past that, we have a big feature in Nebraska. It's called the Midcontinent Rift. I don't know if you've ever heard of that but it's underneath Lincoln, it's underneath Omaha. It's several hundred miles along as it goes through Nebraska and all the way across Iowa and up into Wisconsin, Minnesota and Wisconsin. And geologically, people believe it's to be very old but there's hydrocarbons there. But now you have no

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infrastructure, you don't have any data, people haven't drilled a lot of wells, so people are very hesitant about spending money anymore. I mean nobody likes risk, but agriculture and oil and gas, you better be prepared for high risk and you better be prepared to lose all your money, which means you have to have cash flow because you're not going to talk somebody into going and drilling a well in Omaha. It would be tough. [AGENCY 57]

SENATOR KINTNER: Thank you very much. I probably would have found you and asked these questions if you didn't come here. I had no idea but I was wondering those things. So thank you very much for you patient explanation. [AGENCY 57]

WILLIAM SYDOW: And so past that, I mean I don't want to dominate here, but there's the mill levy. How we get there, it's not straightforward, I'll tell you that. What we try to do is...I don't like to keep a lot of cash but I will say this. If you went to a curve, it's black and green, and some of you may remember me from three years ago on the day of the Appropriations Committee hearing. I was the only guy, to my knowledge, that did...that thought taking money from cash-funded agencies was a bad idea, and I'd still like to have my \$59,000 back. But if you look at that curve, when I came in 1995, we had less than \$100,000 in the bank on our cash account. We had to spend the money to buy a vehicle from Team Motors in Scottsbluff. We were committed. We went to a balance of \$42,000 and our operation costs us \$32,000. And so we...I'll tell you, if I had known that, I wouldn't work for the Oil and Gas Commission in 1995 because it was broke, in effect. And so we've built our cash up. I try to keep it...I've tried to maintain it so it's in the \$450,000 to \$500,000 range. That's generally six-months' cash flow. And we're dependent upon my forecasts of what oil production is going to do and what the price is going to do. I can watch some of my costs, but those are pretty fixed, or delay expenditures. And so we just try to match our mill levy to what we think is going to happen, and you can have very dramatic shifts so that in 2008 we had a posted price in the D-J Basin of \$118 a barrel, and in the next month it was \$18 a barrel. And so you can see what...I mean we were going down on our mill levy, down, down, down, trying

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to bleed off cash, and then that happened and then it really went south. And it's like how long is this going to last? It takes about five months from the time you decide to issue the order to change the mill levy, which has to be coordinated with Department of Revenue and all the purchasers and operators, we need to know them. It takes about five months till you can get that first dollar in, whether it's, you know, more or less than you need. So things can happen in those months and they have, if you look through that. So we just try to balance and keep that \$500,000 range. So we've been in a cash...a negative cash flow for about three years--2010. We just got it down. It's going to go under \$500,000 and we issued an order, that's always executed by my commissioners--they have to approve it so I can't willy-nilly to it--to set the mill levy. We went from 2 to 4 mills per \$1, and that is a tax charged on the oil that is sold and severed, and gas, natural gas, from the state of Nebraska or from a lease. So that's where our...most of our cash comes from and it is a volatile situation. Otherwise, you know, our cash actually comes from fees. We don't make any money to...it covers our costs to permit a well to drill or plug a well or public hearing fees. We have in our savings account, so to speak, our cash fund, we get paid on investment income--that used to be pretty good but now it's not so good--on a monthly basis and we charge people for copies or some reproduction. And so that's really where our money comes from. But most of it is from the so-called conservation tax fund that's set by law. Maximum, we can charge between zero and 15 mills. And so the last time that was amended was probably about 1997. And I'll tell you what happened. I got handed off when I came. They said, you go down there to Lincoln and you get this increased to like 5 mills. It's like, okay. And it was 3.5 and it could have been 4. So I came down here and really it was January. Senator Jerry Matzke introduced the bill, and I'm sitting in a hotel room with my calculator--didn't have a computer--calculator doing, by hand, calculations on 13-column tabular spreadsheet paper, and it was still negative even at 5 mills. And so I called, and I had only been there a couple weeks: What am I missing in my cash flow? It's like nothing, it's negative. And it's like, oh great, so now we just asked for a bill to increase our mill levy statutorily and it's not even enough. And Senator Matzke told me it would be enough until two years, so we lived with it and we cut

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everything we could. We delayed expenditures and, literally, I asked my people, I said if you believe that there's a great God in heaven, you better ask Him to increase the oil price and flatten our production or there's going to be big changes and I'm not going to stop it. And that's exactly what happened: price went up, our cash flattened out, and we did a lot of things for ourselves and we lived through it. So anyway, thank you.

[AGENCY 57]

SENATOR MELLO: Any further questions? Senator Wightman. [AGENCY 57]

SENATOR WIGHTMAN: Just a couple of questions, and you may have mentioned some of these. I didn't get in right away. How many counties currently have oil production in the state of Nebraska? [AGENCY 57]

WILLIAM SYDOW: I believe there's 19. [AGENCY 57]

SENATOR WIGHTMAN: Nineteen, and most of it in what, three to five counties or...? [AGENCY 57]

WILLIAM SYDOW: I'll tell you, our biggest county in terms of well count and daily oil production is Hitchcock County, 44th District, but...in Trenton and so that is big, and Kimball County is a big producer for us, primarily from one field. Still makes about 600 barrels a day, called Kleinholz. So our daily production, it's about...can be around 6,800 barrels a day today from about 1,300 producing oil wells. We have 400 injection wells in our water floods, and it's primarily distributed between western Nebraska and southwest Nebraska. And we have about, oh, 100-150 barrels a day in Richardson County.

[AGENCY 57]

SENATOR WIGHTMAN: In what county? [AGENCY 57]

WILLIAM SYDOW: Richardson. [AGENCY 57]

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SENATOR WIGHTMAN: Richardson. [AGENCY 57]

WILLIAM SYDOW: Yeah, around Falls City and Dawson in a field that is called Barada. [AGENCY 57]

SENATOR WIGHTMAN: There are very few in the east half of the state, I'm assuming. Is Richardson County about the only one? [AGENCY 57]

WILLIAM SYDOW: Richardson County is the only one. [AGENCY 57]

SENATOR WIGHTMAN: Is the only one. [AGENCY 57]

WILLIAM SYDOW: Yes. [AGENCY 57]

SENATOR WIGHTMAN: Thank you. [AGENCY 57]

SENATOR MELLO: Any further questions. I have one question, Bill, and it's just if you can provide some follow-up to the fiscal analyst, a copy of your proposed rules and regulations regarding fracturing. Would be great for some of our purposes just to learn a little bit more, would be terrific. [AGENCY 57]

WILLIAM SYDOW: Okay. And so I'll get you hard copies. We actually have that, it's available on our Web site, but I'll get you... [AGENCY 57]

SENATOR MELLO: Okay. All right. Then we can figure it out. We'll follow up with Scott afterwards then if it's available. [AGENCY 57]

WILLIAM SYDOW: It's pretty...it's 13 pages. You might want me to pay for it rather than the Legislature. [AGENCY 57]

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SENATOR MELLO: We can take care of it. That's all right. Thank you though.
[AGENCY 57]

WILLIAM SYDOW: Thank you. [AGENCY 57]

SENATOR MELLO: See no further questions. Is there anyone else here to testify on Agency 57? Seeing none, that will end today's hearing on Agency 57, the Nebraska Oil and Gas Conservation Commission. And that takes us to our next agency, Agency 60, the Nebraska Ethanol Board. [AGENCY 57]