STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ORIGINAL

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

CASE NO. 14421

APPLICATION OF CONOCOPHILLIPS COMPANY FOR AMENDMENT OF DIVISION ORDER NO R-2403, AS AMENDED, TO INCREASE THE AUTHORIZED INJECTION PRESSURE IN ITS MCA UNIT AREA, LEA COUNTY, NEW MEXICO.

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

March 4, 2010
Santa Fe, New Mexico

BEFORE: DAVID BROOKS: Hearing Examiner
WILLIAM JONES: Technical Advisor

This matter came for hearing before the New Mexico Oil Conservation Division, David Brooks, Hearing Examiner, on March 4, 2010, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South St. Francis Drive, Room 102, Santa Fe, New Mexico.

REPORTED BY: Peggy A. Sedillo, NM CCR No. 88
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500 Fourth Street, NW, Suite 105
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I N D E X

E X H I B I T S

A P P E A R A N C E S

FOR THE APPLICANT: WILLIAM F. CARR, ESQ.
Holland and Hart
110 North Guadalupe, Suite 1
Santa Fe, NM 87504

HEARING EXAMINER: We'll call Case No. 14421, the Application of ConocoPhillips Company for an Amendment of Division Order R-2403, as Amended, to Increase the Authorized Injection Pressure in its MCA Unit Area, Lea County, New Mexico. Call for appearances.

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe office of Holland and Hart, LLP. We represent ConocoPhillips Company in this matter. And I have three witnesses.

HEARING EXAMINER: Very good. Would your witnesses please stand and identify themselves?

MR. HAAG: Garrett Haag, Landman.

MR. ANGERMAN: Charles Angerman, Geologist with ConocoPhillips.

MR. BUTKUS: Grant Butkus, Reservoir Engineer.

HEARING EXAMINER: Okay, please swear the in witnesses.

(Note: The witnesses were placed under oath.)

MR. CARR: May it please the Examiner, at this time we call Garrett Haag.

HEARING EXAMINER: Okay. Before you begin your presentation, we have again received an e-mail from Wesley Ingram at the Bureau of Land Management with regard to this case. It does not appear that the Applicant or counsel were copied on this e-mail. It states as follows:

"ConocoPhillips recently performed step-rate tests on MCA injection wells 223, 273, and 301. We have not been provided these tests to evaluate whether 2,150 PSI would be above fracture pressure or not.

"After looking at the construction of several of the injection wells in the area with original injection/production string set at 3,525 to 3,900 feet in the upper part of the Grayburg formation, and nitro-shot, it is possible that the cement integrity around these original casing shoes may be suspect.

"This along with the brine flows encountered at approximately 3,680 to 3,700 feet while trying to cement/complete MCA unit wells Nos. 457, 463, 474 and 483 seem to validate that presumption.

"Recommends: The BLM would like to see radioactive tracer surveys performed on the injection wells in the MCA unit to determine whether or not there is upward movement of injected fluid outside of the zones being injected into at this time.

"Initially, and once every five years,

like the casting/tubing annulus, pressure tests would probably be sufficient to determine if this increased injection pressure is or will cause movement of fluid outside the Grayburg/San Andres zones."

MR. CARR: May it please the Examiner, we notified the BLM of this case. And of course, this is the first time Mr. Ingram has bothered to tell us like he's told other people. I would request a five minute recess.

HEARING EXAMINER: Okay, we'll take a five minute recess.

(Note: A break was taken.)

HEARING EXAMINER: Okay, we'll go back on the record in Case No. 14421.

MR. CARR: May it please the Examiner, may I make a statement?

HEARING EXAMINER: Okay, you may make a statement.

MR. CARR: Mr. Examiner, right before the break, ConocoPhillips had read to it an e-mail from the Bureau of Land Management. This is the first time we have seen that e-mail from Mr. Ingram.

I would like to respond to a couple of things stated in the e-mail. In terms of this particular case,

Mr. Ingram notes step rate tests that were performed on three injection wells and that they haven't been provided with the tests.

We are going to review the step rate tests on each of those wells, and we'll show you why 2,150 pounds is appropriate.

I'll also advise the Division that this pressure limit of 2,150 has already been approved by the Division as to each of the wells.

And the question Mr. Ingram raises about the integrity of the cement job, C-108 applications were filed and approved for each of these wells. They received notice of the cement information. It was presented at that time.

Mr. Ingram is asking for initially and once every five years that the casing and tubing annulus be pressure tested. I understand that to be an MIT test which we do initially and every five years, and of course we would in this case.

We have concern about what they mean by a radioactive tracer survey performed on the wells in the unit. And at the end of the hearing, we will request a two week continuance so we can approach the BLM on that matter.

But I think it's important that the record

reflect that on February 23rd of this year, ConocoPhillips met with the BLM in Carlsbad to review their plan of development for this particular unit, and we met with the staff of the BLM.

This whole matter was reviewed, and Mr. Wesley Ingram, for some reason, did not attend the meeting. And we intend to pursue this with the BLM.

I would appreciate it, if they'd like to know what's going on, if once in a while they would let us know what's going on. I think it's gotten to be absolutely ridiculous that in the cases we have this morning -- This is the second time that Mr. Ingram appears to be, in my opinion, lying behind a log and I think he ought to do his job.

I call Garrett Haag.

HEARING EXAMINER: Well, I am aware that the BLM has a practice of communicating with us in a manner other than formal hearings at which they never appear. I tend to share your frustration with that.

GARRETT HAAG,

the witness herein, after first being duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CARR:

Q. Would you state your name for the record?

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A. Garrett Haag.
Q. Mr. Haag, where do you reside?
A. Katy, Texas.
Q. By whom are you employed?
A. ConocoPhillips Company.
Q. What is your position with ConocoPhillips Company?
A. I am a Permian landman.
Q. Have you testified before the New Mexico Oil Conservation Division before?
A. No, I have not.
Q. Could you review for Examiners Brooks and Jones your educational background?
A. I'm a graduate from the University of Oklahoma with my degree in Energy Management.
Q. And since graduation, for whom have you worked?
A. I've worked for ConocoPhillips since January of 2008.
Q. And you have worked as a landman?
A. Yes, sir.
Q. Are you familiar with the application filed in this case on behalf of ConocoPhillips?
A. Yes, I am.
Q. And are you familiar with the status of the lands in the MCA unit area?

A. Yes, I am.

MR. CARR: We tender Mr. Haag as an expert in Petroleum land matters.

HEARING EXAMINER: He is so qualified.

Q. Mr. Haag, would you briefly summarize what it is that ConocoPhillips seeks with this application?

A. Yes. We seek an amendment to Division Order No. R-2403, as amended, which authorized additional producing injection wells in the Maljamar Cooperative Agreement unit area to establish a maximum surface injection pressure for water in the unit area of 2,150 pounds, provided this pressure can be increased above the limitation following Division witnessed step rate test.

Injection wells will be added to the unit under Division rules. We only seek to have the pressure limit for the water and C02 increased.

Q. Now, in this case, we're really only talking about increasing the pressure for water; is that not right?

A. Correct.

Q. And the reason is, we're not injecting C02 in this unit at this time?

A. That is a question for our engineer.

Q. I'll ask your engineer. Can you just tell us generally, Mr. Haag, why ConocoPhillips is seeking this

order?

A. We're seeking an order for 2,150 PSI to avoid numerous and unnecessary administrative applications, and we currently plan on adding and producing injection wells into the unit.

Q. Let's go to Exhibit No. 1. Would you identify this and review the information on the exhibit for the Examiner?

A. Yes. Exhibit No. 1 is a map of Lea County, New Mexico. It's zoomed in to Section 17 South, 32 East. Wells are identified on this map. They are producing from either the Grayburg and/or the San Andres formation.

There are also units that are displayed on this map. Each of these are producing from the Grayburg and/or San Andres formations. The MCA unit is outlined in -- it's the blue box pattern. Within the blue box pattern of the MCA unit is the MCA unit participating area which is shaded green.

Surrounding the MCA unit, we also have to the north the Maljamar-Grayburg unit which is operated by Forest Oil Corporation. To the northeast outlined in green, we have the Maljamar unit, the Caprock-Maljamar unit operated by Forest Oil Corp. And to the southeast we have the southeast Maljamar-Grayburg-San Andres unit operated by XTO Energy.

Within the MCA participating area shaded in green, we have also identified the injection wells. All wells on this map, if they are circled, are identified as active wells; if they are not circled, their status is inactive.

Q. Mr. Haag, what is the character of the land in the unit area?

A. The land within the participating area is, 7,775.16 acres are federal lands, 288 acres are comprised of state lands. So that would be 96.5 percent federal, 3.47 percent state.

Q. Our Exhibit 2 is a compilation of Division orders and agreements. Would you refer to this exhibit, and then without going into detail on all the various orders, could you provided the examiners with an overview of the history of this particular unit and participating area?

A. Yes. This is an old unit. It was established in Order No. 485, which is dated November 14, 1942. This approved the Maljamar Cooperative Repressuring Agreement.

Please note, this is not a unit agreement, however, it is a cooperative agreement for the use of gas to repressure the reservoir.

And relevant history, Order No. 2403 is dated December 31, 1962. This order adopted Supplement No. 5 to

the Maljamar Cooperative Agreement.

This unitized all liquid hydrocarbons in the Grayburg-San Andres formations underlying the participating area and adopted a plan of operations for the expansion of the pressure maintenance project for gas and water injection.

In this order, Continental Oil Company was also identified as the operator of the participating area.

Order No. R-2403A, which is dated February 9, 1970, established an administrative procedure for adding producing and injection wells to the unit pursuant to Division Rule 701B.

Since then, each time an application for an injection well has been filed and approved, the injection pressure is limited to 775 PSI surface pressure.

Q. When that happens, what is ConocoPhillips required to do?

A. At that point, ConocoPhillips must file a separated application for the increase in injection pressure. There's three examples of this with the Administrative Orders PMX-164-A, which is dated August 11, 2009; PMX-245, dated August 11, 2009; WFX-885, which is dated September 2, 2009.

Q. And those were administrative orders. So Conoco had to come back to the Division to get, after injection

was authorized, simply to increase the pressure limitations?

A. Correct.

Q. This is an unusual unit; is that fair to say?

A. Yes.

Q. If we look at what has been marked as Exhibit No. 1, what we have is a blue dashed line that encompasses an area covered by the Maljamar Cooperative Agreement?

A. Correct.

Q. Within that, this Grayburg-San Andres participating area is shaded in green?

A. Correct.

Q. The original Maljamar Cooperative Agreement does not unitize the land; is that correct?

A. It does not.

Q. And it is when the Division adopted Supplement 5 to the Maljamar Agreement, the Order 2403, that in fact, the oil and gas in the participating unit were unitized?

A. That is correct.

MR. CARR: And all of these are defined, Mr. Examiner, all the boundaries of all of these are set forth in Supplement 4, which is the large document in Exhibit 2.

But if you look at that you can see that it defines the cooperative area, and then later calls it the

unit area, which is in blue. But back in '62, the green was by this supplement unitized and Continental became operator of it.

What we're talking about today in terms of an area for special rules, is the green area, and it is defined on Pages 4 and 5 of Supplement B, and it's just a historical quirk that creates this confusion.

Q. Mr. Haag, what is Exhibit No. 3?

A. Exhibit No. 3 is our affidavit confirming that a notice of this application has been provided in accordance with the rules of the Division.

Q. And it was signed by me as your attorney in fact?

A. That is correct.

Q. Okay. Tell us who you notified.

A. We notified all operators within the participating area and within a one mile buffer zone of it. And in addition to that, we also notified all surface owners.

Q. Okay. So within the green area, ConocoPhillips is the operator?

A. Correct.

Q. And in that area, surface owners were also notified?

A. Yes.

Q. If we go in this blue box that encompasses the MCA Cooperative Agreement area, we notified all the operators in that area?

A. Yes, we have.

Q. And then we went around the outside of the blue dotted area and we notified offset operators around the perimeter of the MCA area?

A. That is correct.

Q. Will ConocoPhillips be calling technical witnesses to review the geological and engineering portions of this application?

A. Yes, we will.

Q. Were Exhibits 1, 2, 3 either prepared by you or have you reviewed them and can you confirm their accuracy?

A. Yes.

MR. CARR: May it please the Examiners, at this time we move the admission of ConocoPhillips Exhibits 1 through 3.

HEARING EXAMINER: Exhibits 1 through 3 will be admitted.

MR. CARR: That concludes my direct of Mr. Haag.

HEARING EXAMINER: Okay. Mr. Jones?

MR. JONES: Nothing.

HEARING EXAMINER: No questions. You may stand

down.

MR. CARR: May it please the Examiner, at this time we call our geological witness, Charlie Angerman.

CHARLES ANGERMAN,

the witness herein, after first being duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CARR:

Q. Would you state your name for the record, please?

A. Charles Angerman.

Q. Where do you reside?

A. In Houston, Texas.

Q. By whom are you employed?

A. ConocoPhillips.

Q. What is your current position with ConocoPhillips?

A. Geologist in the Permian southeast area.

Q. Have you previously testified before the New Mexico Oil Conservation Division?

A. No.

Q. Would you review your educational background for Mr. Brooks and for Mr. Jones?

A. I received a bachelor's degree in Geology from Miami University in Ohio, and I received a master's degree

in Geosciences from Pennsylvania University.

Q. And when did you receive your master's?

A. In May of 2006.

Q. And for whom have you worked since that time?

A. ConocoPhillips.

Q. At all times as a geologist?

A. Yes.

Q. Have you made a geological study of the area that is involved in this case?

A. Yes.

Q. Are you familiar with the application filed on behalf of ConocoPhillips to increase the injection pressures in this reservoir?

A. Yes.

Q. Are you prepared to share the results of your work with the Examiners?

A. Yes.

Q. Let's go to what -- I think we could probably go to the exhibits. It would be helpful if you would describe for the Examiners the Maljamar, Grayburg and the San Andres pools, the formations in this pool.

A. The Grayburg formation consists of very fine grain sandstones of eolian and titleflat and shallow marine origin. These are porous sandstones. And they're interbeded with tight dolomites. And both lithologies

have minor and hydrate.

The San Andres formation is predominantly dolomite of mostly intertitled to subtitle origin, and it contains minor sandstone and hydrate.

Q. Let's go to what has been identified as ConocoPhillips Exhibit No. 4, and I'd ask you to identify this exhibit and then review it for the Examiners.

A. This is a typed log for the MCA unit. It's a log from the B-36 well.

Q. This is the well that's identified in Supplement 5 as defining the formation, is it not?

A. Yes. The top of the unitized interval is marked on this exhibit at a depth of 3,419. The base of the unitized interval is marked on this exhibit at a depth of minus 700 TVD subsea, or 4,700 feet measured depth. So the entire unitized interval is approximately 1,280 feet thick.

The top of the Grayburg formation is marked on this exhibit just below the top of the unitized interval, and the top of the San Andres is marked at approximately 3,800 feet measured depth.

Also marked are the productive zones in the Grayburg and San Andres, and they're referred to as Zone 6 in the Lower Grayburg, Zone 7 in the Upper San Andres, and Zone 9 in the Upper San Andres.

Q. Is ConocoPhillips injecting in each of those intervals?

A. Yes. And there are confining barriers present in the Grayburg and San Andres above the productive zones in the form of tight intervals in Zones 3, 4, and 5 of the Grayburg, and also below the productive zones in the form of tighten intervals in the Lower San Andres, what we at ConocoPhillips refer to as Zone 10.

Q. Let's go to Exhibit 5A, the structure map. Would you identify and review that for the Examiners?

A. This is a structure map on the top of Zone 6 in the Grayburg. So it's the top of the productive intervals. It shows that there is an eastward plunging anticline. This is called the Maljamar arch. The axis of this runs through Sections 19, 20, and 21 in Township 17 South, Range 32 East.

On the north end of the anticline, there are gentle dips to the north, and on the south rim of the anticline, there are gentle dips to the south and southeast. As you move farther to the south towards the basin, those dips get steeper.

There's also a trace on this map that shows the location of a cross-section of six wells running from northwest to southeast across the MCA unit.

Q. All right. Let's go to that cross-section

that's marked as Section 5.

A. This is a structural cross-session. It shows the tops of the Grayburg and San Andres formations and the zones within those formations. And these areas that are shaded with color, highlight the porous reservoir intervals, yellow for Zone 6, blue for Zone 7, and pink or magenta for Zone 9.

There's some local variation, but generally, across the unit, these reservoirs zones are relatively continuous.

Q. We've been actually injecting into these zones, we and other operators, for over 75 years. Does that sound right?

A. Yes.

Q. From your geologic study of this area, what conclusions have you been able to reach?

A. The reservoir interval is well defined and there are no geologic anomalies that suggest that increased pressure limitations in one part of the unit would not be applicable in another part of the unit.

Q. Were ConocoPhillips Exhibits 4, 5A and 5B prepared by you?

A. Yes.

MR. CARR: May it please the Examiners, at this time I would move the admission into evidence of

ConocoPhillips' Exhibits 4, 5A, and 5B.

HEARING EXAMINER: Exhibits 4, 5A and 5B are admitted.

MR. CARR: That concludes my direct of Mr. Angerman.

HEARING EXAMINER: Mr. Jones?

MR. JONES: Okay, as far as this pressure increase that's being proposed, geologically speaking, is there significant cap rock above it to -- all the unit to hold it?

THE WITNESS: Yes. Zones 3, 4, and 5 extend across the unit, and also, Zone 10.

MR. JONES: Okay. That little -- that minus 700 subsea depth on the bottom of the -- what we're calling a unit here, I guess, is -- did you find the bottom of it -- That seems to be similar to what was the vacuum fill bottom of that -- those units, too, for a long time.

And several of us came in recently and actually deepened how -- had gotten permission to inject into -- for C02 purposes, down into the trends. So they called it the transition zone down below.

Do you see anything similar here geologically that -- a vacuum to this area that you could -- could go a little deeper with your secondary recovery?

THE WITNESS: Well, as I understand it -- and I

would need my landman to verify this, the unitized interval is the interval that is correlative to this interval, which in this well, extends down to minus 700 TBDSS, but as you move deeper, it's going to extend to a deeper DTDSS.

MR. JONES: So this it just one well -- this is not the type well -- or it's not a 700 subsea defined for all of -- as a definition? In one well, it would apply to all wells, or is it just -- you're correlating a marker here.

THE WITNESS: My understanding is that it's correlating a marker, which in this well is at minus 700.

MR. JONES: Okay. Is the San Andres your biggest producing interval here? Is it better than the Grayburg?

THE WITNESS: That would be a question for the reservoir engineer.

MR. JONES: Okay, that's fine. The new drilling that's going on out here, geology wise, what kind of logs do you run?

THE WITNESS: We typically go with Schlumberger platform express, or a cased hole log.

MR. JONES: So sometimes you just do case hole logs?

THE WITNESS: Yes.

MR. JONES: What about samples and that kind of stuff, do you inject those, or do you just fill them up with a gas detection unit on your rigs?

THE WITNESS: We don't typically run a gas detection unit or take any samples.

MR. JONES: So it's been done long ago?

THE WITNESS: There's a fair amount of core data from both the Grayburg and the San Andres that we have access to.

MR. JONES: Okay. So you got your own core data library that you can go look at the core data if you want to?

THE WITNESS: I believe most of it is stored at the Texas Bureau of Economic Geology, and then if we need to, we can go access it at their facility.

MR. JONES: Do you have a correlation between your core porosities and your log porosities out here, just kind of legacy data that gets passed on from generation to generation, or would you have to go resurrect that yourself or create that yourself?

THE WITNESS: There have been a fair number of studies done on these formations.

MR. JONES: Okay. So, I know we can ask the reservoir engineer, but this -- I thought there was something like four wells that were C02 injection wells

out here? Are you aware of that or do you know anything about that?

THE WITNESS: The specifics of that would be a question for the reservoir engineer.

MR. JONES: That's fine. Okay. That's all I've got.

HEARING EXAMINER: Okay. What is the nature of the overlying structure that provides the ceiling for this area, the overlying formation?

THE WITNESS: The structure of the overlying formations is similar to the structure that's depicted on this map, but because they're well porosity -- And also, as you move to the north of the unit, the reservoir intervals start to get into different issues that are lower porosity. So there's a combined element of structural and stratigraphic trapping.

HEARING EXAMINER: Okay. That's all I have.

MR. CARR: At this time, Mr. Examiner, we call Grant Butkus, the reservoir engineer.

GRANT BUTKUS,

the witness herein, after first being duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CARR:

Q. Would you state your name for the record?

A. My name is Grant Butkus.
Q. Where do you reside?
A. I currently reside in Houston, Texas.
Q. By whom are you employed?
A. I am employed by ConocoPhillips.
Q. Mr. Butkus, what is your position with ConocoPhillips?
A. My position is a reservoir engineer.
Q. Have you previously testified before the New Mexico Oil Conservation Division?
A. I have not.
Q. Would you review your educational background?
A. I have a bachelor's in Business Administration from Baylor University, and a bachelor's of Science in Petroleum Engineering from the University of Oklahoma.
Q. When did you receive your degree from the University of Oklahoma?
A. In May of 2008.
Q. And since that time, have you been employed by ConocoPhillips?
A. Yes.
Q. Are you familiar with the application filed in this case on behalf of ConocoPhillips?
A. I am.
Q. Are you familiar with your company's plans to

add additional injection wells to this water plug project in the Maljamar Cooperative Agreement unit area?

A. Yes.

Q. Are you prepared to review for the Examiners the engineering aspects of this application?

A. Yes, I am.

MR. CARR: We tender Mr. Butkus as an expert reservoir engineer.

HEARING EXAMINER: He is so qualified.

Q. Mr. Butkus, before we begin, are we injecting C02 out here?

A. We are not injecting C02 for the purpose of tertiary recovery. We had injected C02 previously, but now we -- a portion of the field, the gas that we produce is contaminated with C02, so we reinject that into a well only for purpose of disposal.

Q. Just one well?

A. Just one well currently, yes.

Q. Let's go to what has been marked ConocoPhillips Exhibit No. 6. Would you identify that for the Examiners and review the information on it?

A. So this is an outline of the participating area of the MCA unit, and marked on it are the current injection wells marked in blue surrounded by a blue triangle, and proposed injectors marked with a green dot.

Q. Generally speaking, how are these scattered across the unit area?

A. The current injectors are concentrated in the eastern two-thirds of the unit, and the proposed injectors are concentrated in the southern half in the eastern two-thirds of the unit.

Q. Some of these are very old, are they not?

A. That is correct.

Q. What is the approved surface injection pressure in each of these wells?

A. Currently, the injection wells are approved to 2,150, or they were permitted as injectors before a surface permit was issued.

Q. Now, what are ConocoPhillips' plans that are driving this application, why are we here today, what are you planning to do?

A. As you can see in the area where we are proposing a number of injection wells, we are redeveloping the unit as a ten acre lime drive water flood in the southeastern portion of the unit.

Q. And because of those plans, what does this mean in terms of additional injection authority?

A. We'll be drilling a number of new wells and converting a portion of them to injection to support other producing new drills.

Q. And if this application is approved, you will be able to bring those additional injection wells before the Division with a standard C-108 application; is that right?

A. That is correct.

Q. And then you would not have to come back every single time and get an increase in injection pressure to 2,150?

A. Correct.

Q. What is the current status of the wells which ConocoPhillips plans to add to injection?

A. They are either producing wells that were drilled in the last couple of years, or they are wells that we intend to drill in the future and then convert to injection.

Q. And how many injection wells does ConocoPhillips propose to operate in this unit?

A. Currently, there are 28 wells operating as injectors. At this time, we're proposing to complete another 37, which would give us 65 total wells. And that number could vary based on the results of our current program.

Q. How does ConocoPhillips monitor these wells to ensure wellbore integrity?

A. We do an MIT test every five years, in which we pressure up the backside, the annulus between the tubing

and casing, and hold it for a specified period of time.

We also maintain a pressure gauge on the same annulus between the tubing and the casing which is checked a minimum of once a week by a pumper.

Q. Do you have any automatic shut-in devices on the wells?

A. We don't have individual well automatic shut-in devices, we monitor the pressure at a centralized injection pump, and we can shut in the wells at the injection pump.

Q. What about Bradenhead surveys, do you conduct those on wells?

A. We don't conduct Bradenhead surveys on injection wells, we conduct them on producing wells.

Q. What injection pressure is approved now by the Division when you file an application for an injection well?

A. On a new injection well, we've been permitted to 775 pounds.

Q. Do you know the basis for that 775 pound figure?

A. My understanding is that the basis for that figure is a rule of thumb of two-tenths of a pound per foot to midperforation depth.

Q. Or to the injection interval?

A. Yes.

Q. So what you're doing every time you bring another one of these 30 some injection applications, or application for injection wells to the Division, you get an order, it shows 775 pounds, and then you have to come back and seek an increase in the pressure; is that right?

A. That is correct.

Q. I guess it's obvious, but why is this a problem?

A. It would be easier for us if we could establish a field-wide injection pressure and save both ConocoPhillips and the Division time and effort.

Q. In the 75 years that injection has occurred in this formation, has there ever been a time when you sought 2,150 and it was denied?

A. I don't know.

Q. Is there anything that you have seen from an engineering point of view that would suggest that injection at 2,150 would, in fact, pose a threat to your operations and permit injected fluids to escape from the injection interval?

A. Currently, we've taken measures in the wells that we're injecting water into to confine our injection to the reservoir interval.

Q. Let's go to ConocoPhillips Exhibit 7 concerning fracture gradients. Would you identify and review that for the Examiners?

A. This is a breakdown of the results from fracturing wells that we've recently drilled in the area. Well, by recently, more recent that the original wells in the area.

And so what you're looking at is the perforation depth of each well, the instantaneous shut-in pressure during the fracture, and then the midperforation depth, and using those to calculate a fracture gradient.

It's broken out into three tables. The first table is wells that during that completion job, were only being completed into the Grayburg.

The second table is, during that completion job, wells that were only being completed into the San Andres. And then the third table is completion jobs where they were being fractured together.

And so from those, we've created average fracture gradients for the different formations. And as you can see, the Grayburg 6 has the lowest fracture gradient of 1.07 pounds per square inch per foot for the average depth to the depth of the perforations for the unit.

That would give you about -- and assuming a standing column of fluid, that would give you a minimum surface pressure of just over 2,400 pounds before you initiate a new fracture in the reservoir.

Q. Let's go to Exhibit No. 8. Identify and review that, please.

A. This is a summary of a step rate test that we have recently performed in the MCA unit in preparation for this proposal.

Q. These are the wells, in fact, that Mr. Ingram identified in his e-mail from the BLM?

A. That's correct. The MCA 301, the MCA 273, and the MCA 223. As you can see, I've provided a summary of the actual tabulated results.

And I've also shown in graph form that during the interval -- or during the pressure interval, that we are doing the step rate testing. You are seeing an alteration in the geometry of the wellbore. And so I've done that for each well, the 301, the 273 and the 223.

Then we've taken the instantaneous shut-in pressures, and I've summarized on the final page what the maximum surface pressure that you could go up to without initiating changes in the wellbore for each well. And that ranges from the 2,139 to the 2,464 pounds. And all of this is assuming a full column of fluid in all involved.

Q. What does ConocoPhillips seek in regard to those wells where there is currently approved a 2,150 surface injection pressure, leave those alone?

A. Yes, we would like to maintain operating those in the same fashion. And this is purely to expedite new injection permits that we plan to submit in the future.

Q. In your opinion, is there any potential risk in terms of injecting at these pressures of any fluid getting out of zone or otherwise damaging the formation?

A. No.

Q. Could you identify what has been marked ConocoPhillips Exhibit No. 9?

A. This is the language that we are proposing be -- the amended language to be added to Division Order R-2403. It states that injection wells or the injection systems shall be equipped with a pressure regulator or other acceptable device which will limit wellhead pressure on the injection wells to no more than 2,150 pounds per square inch.

Q. In your opinion, will the approval of the application be in the best interests of conservation and the prevention of waste and the protection of correlative rights?

A. Yes.

Q. Were Exhibits 6 through 9 either prepared by you or have you reviewed them and can you testify as to their accuracy?

A. Yes.

MR. CARR: May it please the Examiners, at this time we move the admission into evidence ConocoPhillips' Exhibits 6 through 9.

HEARING EXAMINER: They're admitted.

MR. CARR: And that completes my direct examination of this witness.

HEARING EXAMINER: Very good. Mr. Jones?

MR. JONES: Where are these wells located, the three wells you ran? And why did you pick those three wells, and why did you only run three? Did you talk to Terry Warnell about it?

HEARING EXAMINER: We need to go one question at a time. First of all, let's get the wells located.

MR. JONES: Okay.

THE WITNESS: Okay. MCA 301 is in the center of Section 28. MCA 223 is the section below it. And MCA 273 is in Section 26.

MR. JONES: Okay. And these were picked because --

THE WITNESS: Because they represent the areas in which we plan for significant development in the near future.

MR. JONES: Okay. Did you and Terry Warnell have any conversations? He's currently the one handling administrative pressure increase applications.

THE WITNESS: I personally have not spoken to Terry.

MR. JONES: Okay, that's fine. Let's see. If you convert all these other wells to this line drawn pattern, you're going to have a lot more injection wells, and you only have so much injection fluid, right? Or do you have a disposal well that you're siphoning off your excess fluid that you --

THE WITNESS: Yeah, we're working that issue and we've identified some sources of water. Currently, we have been -- we've got too much production in the eastern portion of the unit, and so we're having to shut wells in periodically for high water production to allow us to deal with it.

MR. JONES: Okay. So you think you -- Are you going to do this in stages, or are you going to just do them all in one big budget year and then try to have enough water --

THE WITNESS: Well, I would like to do them all in one big budget, but I'm going to be forced to do them in stages. And we're going to move from the Section 27 and 28, and then out into the other sections based on performance.

MR. JONES: Okay, so 27, 28 first, and then work your way through the -- So what kind of gradient does this

2,150 work out from -- From the top of your Grayburg injection valve, you divide 2,150 by your top, what kind of gradient would you have?

THE WITNESS: It works out to be 0.56 pounds.

MR. JONES: Let me see here. Which well is the one taking the C02, and do you ask for a different pressure limit on that one?

THE WITNESS: I believe that we are also operating that well at 2,150.

MR. JONES: Okay. So you want it to have the same limit as the others?

THE WITNESS: Yes.

MR. JONES: Okay. Is that well on the map somewhere here?

THE WITNESS: I believe it is the 331.

MR. JONES: Okay.

MR. JONES: Okay. And so you're not going to ramp up your C02 in the future, or that's somewhat -- that's a decision down the line, I guess.

THE WITNESS: There are -- I mean, it's something that we're looking at. We don't have any concrete plans now to return to recovery of C02.

MR. JONES: Okay. What about these wells out here that you're going to convert, are they the old wells, or are you going to drill new wells?

THE WITNESS: All of the conversions that we have proposed are all new wells.

MR. JONES: They're going to be new wells?

THE WITNESS: Well, they're all -- I'm sorry, they've either been drilled in the last three years, or they're going to be drilled in the future.

MR. JONES: Okay. So these will all be relatively safe wells, new casing and --

THE WITNESS: Yes.

MR. JONES: Pretty new casing, good cement.

THE WITNESS: Yes.

MR. JONES: Okay. And these older wells, you want the increased pressure for them also. How old are those wells?

THE WITNESS: Some of the wells date back to the 1940s. And in the wells that we are injecting water into that are of that age, we've gone back through the barefoot completion and cemented fiberglass liners into them in order to help prevent any problems we might have due to poor completion practices years and years ago.

MR. JONES: Okay. Is this one of the areas that have more frequent Bradenhead surveys done like the Hobbs area, the Eunice area? Is the MCA area, is it done every year on --

THE WITNESS: Yeah, we do a Bradenhead survey on

producing wells once a year, I believe.

MR. JONES: Once a year. And do you have trouble with those surveys?

THE WITNESS: That, I'm not completely sure. I can't speak to the historical aspects of that, but during the time I've been working this unit, we've actually been running quite efficiently.

MR. JONES: Did you talk to Wesley Ingram about the fiberglass enhanced --

THE WITNESS: I've not spoken to him about that, no.

MR. JONES: So you weren't part of that meeting that --

THE WITNESS: I was part of the POD meeting; I did not speak to Wesley, I spoke to other members of the BLM about this issue.

MR. JONES: Okay. I guess my last question is, those three wells you did step rate tests on, you didn't also run any kind of tracer survey to see if while they were injecting at the steps -- at the higher pressure where the water was going, whether it was moving up?

THE WITNESS: We did not.

MR. JONES: Okay. One more question. Do you have an idea about the injection withdrawal ratio out here of the unit, of the fluids?

THE WITNESS: It's been studied in the past, I have not personally studied it in here. But the injection withdrawal ratio varies from pattern to pattern.

MR. JONES: Okay.

THE WITNESS: And it's influenced by a number of other factors.

MR. JONES: Yeah.

THE WITNESS: But we're relatively certain that we're not losing a significant portion of water out of the zone.

MR. JONES: Got you. That was my last question. I'll turn it over to you, David.

HEARING EXAMINER: Okay. I don't have any questions except to Mr. Carr. You said you want to continue the case. When do you want to continue it to?

MR. CARR: I'd like to continue this, if I could -- Well, I guess we better continue it for a month, to April 1st.

HEARING EXAMINER: Okay.

MR. CARR: We do have a hearing on the 18th of March.

HEARING EXAMINER: Yes, we do have a hearing on March 18th. You're going to be here for Agua Sucia?

MR. CARR: No, I'm not, I'm going to be here for Armstrong Energy.

HEARING EXAMINER: Well, you're going to be here for the Agua Sucia case.

MR. CARR: Absolutely. And could we add this to the March 18th docket?

HEARING EXAMINER: I see no reason not to, if that's what you would like to do. Okay, Case No. 14421 will be continued to March 18th for the purpose of supplementing the record. And this docket will stand adjourned.

(Whereupon, the proceedings concluded.)

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. _____ heard by me on _____.

Oil Conservation Division, Examiner

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

REPORTER'S CERTIFICATE

I, PEGGY A. SEDILLO, Certified Court Reporter of the firm Paul Baca Professional Court Reporters do hereby certify that the foregoing transcript is a complete and accurate record of said proceedings as the same were recorded by me or under my supervision.

Dated at Albuquerque, New Mexico this 9th day of March, 2010.

PEGGY A. SEDILLO, CCR NO. 88
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