STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

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

APPLICATION OF ARMSTRONG ENERGY CORPORATION FOR APPROVAL OF A UNIT AGREEMENT, CHAVES COUNTY, NEW MEXICO — CASE NO. 14341

APPLICATION OF ARMSTRONG ENERGY CORPORATION FOR APPROVAL OF A WATERFLOOD PROJECT FOR ITS ROUND TANK QUEEN WATERFLOOD UNIT AREA AND QUALIFICATION OF SAID PROJECT FOR THE RECOVERED OIL TAX RATE PURSUANT TO THE ENHANCED OIL RECOVERY ACT, CHAVES COUNTY, NEW MEXICO — CASE NO. 14342

TRANSCRIPT OF PROCEEDINGS
Hearing
July 23, 2009
8:31 a.m.
1220 South St. Francis Drive, Room 102
Santa Fe, New Mexico 87504

BEFORE: TERRY G. WARNELL, HEARING EXAMINER
RICHARD EZEANYIM, TECHNICAL ADVISOR
BRYAN JAMES, LEGAL ADVISOR

REPORTED BY: CONNIE JURADO, RPR, NM CCR #254
Paul Baca Professional Court Reporters
500 Fourth Street NW, Suite 105
Albuquerque, New Mexico 87102

A P P E A R A N C E S

For the Applicant:

HOLLAND & HART, LLP
Attorneys at Law
Post Office Box 2208
Santa Fe, New Mexico 87504-2208
BY: WILLIAM F. CARR

I N D E X

MR. WARNELL: We will call Case Number 14341, application of Armstrong Energy Corporation for approval of a unit agreement, Chaves County, New Mexico. Call for appearances.

MR. CARR: May it please the Examiner, my name is William F. Carr, Santa Fe law firm of Holland & Hart, LLP. We represent Armstrong Energy Corporation in Case Number 14341. This is a companion case to Case 14342, and we would request that that case also be called at this time, and they be consolidated for the purpose of hearing.

MR. WARNELL: Okay. And we will also call Case Number 14342, application of Armstrong Energy Corporation for approval of a Waterflood Project for its Round Tank Queen Waterflood Unit Area and qualification of said project for the recovered oil tax rate pursuant to the Enhanced Oil Recovery Act, Chaves County, New Mexico.

MR. CARR: Mr. Examiner, I have two witnesses.

MR. WARNELL: All right. Any other appearances?

Will the witnesses please stand, state your name, and be sworn.

MR. STUBBS: Bruce A. Stubbs.

(Note: Mr. Stubbs was duly sworn.)

MR. CARLOZZI: Brian M. Carlozzi.

(Note: Mr. Carlozzi was duly sworn.)

MR. WARNELL: Mr. Carr, you may call your first witness.

MR. CARR: At this time, Mr. Examiner, we call Brian Carlozzi.

BRIAN MICHAEL CARLOZZI

After having been first duly sworn under oath, was questioned and testified as follows:

EXAMINATION

BY MR. CARR:

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

A Yes. Brian Michael Carlozzi.

Q Could you spell your last name?

A Yes. It's C-A-R-L-O-Z-Z-I.

Q And where do you reside?

A Roswell, New Mexico.

Q By whom are you employed?

A Armstrong Energy Corporation.

Q And what is your position with Armstrong Energy Corporation?

A Land manager.

Q Mr. Carlozzi, have you previously testified before the New Mexico Oil Conservation Division?

A No, I have not.

Q Would you review for the Examiners your educational background?

A Yes. I graduated with a bachelor of science from Oklahoma State University in 2002, and subsequent to that, I completed a master's of business administration. After college, I worked for two commercial banks primarily as an analyst and account or commercial account officer in an energy lending department of Bank of Oklahoma, and I have since worked as a landman for Armstrong Energy Corporation since 2005.

Q And Mr. Carlozzi, are you familiar with the applications filed in these consolidated cases on behalf of Armstrong?

A Yes.

Q Are you also familiar with Armstrong's plans for the formation of the unit and Waterflood Project in the Queen formation in Chaves County, New Mexico?

A Yes.

Q Are you familiar with the status of the lands in the area that is the subject of this case?

A Yes.

MR. CARR: We tender Mr. Carlozzi as an expert in petroleum land matters.

MR. WARNELL: Mr. Carlozzi is so qualified as an expert in land matters.

Q (By Mr. Carr) Mr. Carlozzi, would you briefly summarize for the Examiners what it is that Armstrong Energy Corporation seeks in each of these cases?

A Yes. In Case 14341, we seek approval of the Round Tank Queen Waterflood Unit, which consists of 1,922.72 acres of state and federal lands.

Q And what about Case 14342?

A We seek approval of a Waterflood Project for the Round Tank Queen Unit Waterflood Project for injection into the Queen formation. We also seek to qualify this project for the recovered oil tax rate pursuant to the New Mexico Enhanced Oil Recovery Act.

Q Have you prepared exhibits for presentation here today?

A Yes, I have.

Q Would you refer to what has been marked for identification as Armstrong Exhibit Number 1 and identify this for the Examiners?

A Yes. This is the unit agreement. It is based on the state/federal waterflood unit form.

Q And what is Exhibit 2?

A Exhibit 2 is the Exhibit A to this unit agreement, and it lists the -- or shows a map of the different tracts within this unit.

Q What is the character of the land at issue?

A Currently, the status of the acreage is held by production. There is one State of New Mexico lease, which holds 401.6 acres. And there are five federal leases, which consist of 1521.12 acres. There are no fee leases within this unit.

Q Let's go to the ownership breakdown that has been marked as Exhibit Number 3.

A Okay.

Q Could you review this and explain what it shows to the Examiners?

A It shows the ownership of each of the leases and tracts in the unit area and identifies Armstrong Energy Corporation acreage, as well as their related entity, Slash Exploration Limited Partnership, which Armstrong Energy Corporation is the general partner for.

Q What is the percentage of the working interest within the unit area that has been or will be committed to the unit?

A 100 percent.

Q So we have -- if we look at Exhibit 3, Slash and Armstrong are all part of Armstrong's holdings?

A Yes.

Q And we have the Yates entities, and how are they going to be brought in?

A Yates Petroleum Corporation has ratified, which we

will see in a further exhibit, and the other three Yates related entities, HEYCO, Yates Energy, and Jalapeno, we are currently finalizing a conveyance document with them.

Q What is the status of the Chase Oil Corporation acreage?

A We have conveyances from not only Chase Oil, but the other two family members who also have ownership in this particular lease.

Q Would you identify what has been marked as Exhibit Number 4?

A Yes. The preliminary approval letter from the State Land Office.

Q Go back. You're on number --

A Okay.

Q What is Number 4?

A It is the participation or tract participation.

Q Let me hand you what has been marked Exhibit 4, and can you just explain --

A That is the ratification from Yates Petroleum Corporation.

Q All right. Mr. Carlozzi, let's go now to Exhibit Number 5. Would you identify this exhibit?

A Yes. That is the preliminary approval letter from the State Land Office.

Q And has the BLM designated this area as an area

logically suited for development under the unit plan?

A Yes. It is listed as Exhibit 6.

Q When both the BLM and the State Land Office give their final approval to the unit, what percentage of the royalty interest is committed?

A 100 percent.

Q Does Armstrong Energy Corporation request to be a designated operator of the unit?

A Yes, they do.

Q Does the unit agreement provide for periodic filing of plans of development?

A Yes, it does.

Q And will these plans be filed with the Oil Conservation Division at the same time they are filed with the BLM and State Land Office?

A Yes, they will.

Q And how often are they to be filed?

A The initial plan, they will be filed concurrently with the filing of the unit agreement for final approval with the State Land Office, BLM, and OCD, and that will also require us to file subsequent plans prior to the expiration date of the preceding plan.

Q And how soon are you required under the unit agreement to commence secondary recovery operation?

A 18 months.

Q Is Armstrong Exhibit Number 7 an affidavit confirming notice of this hearing has been provided in accordance with the rules of the division?

A Yes, it is.

Q And to whom was notice provided?

A Regarding the Waterflood Project, the owner of the surface of the land on which the well is to be drilled, as well as all leasehold operators within one-half mile of the proposed area.

Q And as to the unit, all the working interest and royalty interest owners are committed?

A Yes.

Q And are those owners identified on pages 26 and 27 of Armstrong Exhibit 11, which we will review later?

A Yes, they are.

Q Were Armstrong Exhibits 1 through 7 either prepared by you or compiled at your direction?

A Yes, they were.

MR. CARR: May it please the Examiners, at this time, we would move the admission into evidence of Armstrong Energy Corporation Exhibit Numbers 1 through 7.

MR. WARNELL: Exhibits 1 through 7 are admitted.

(Exhibits 1 through 7 admitted.)

MR. CARR: That concludes my direct

examination of Mr. Carlozzi.

MR. WARNELL: Thank you, Mr. Carr. Any questions? Richard?

MR. EZEANYIM: I have a few questions for you. Go to Exhibit Number 2.

THE WITNESS: Okay.

MR. EZEANYIM: Clarify for me the land matter. Which one is the federal and which one is the state?

THE WITNESS: The one state lease is L 729.

MR. EZEANYIM: Okay. In color -- I'm color blind. Which one is --

THE WITNESS: I actually don't have the color one here in front of me.

MR. CARR: The color coding, Mr. Examiner, I believe indicates various ownership working interests, not the character of the lease. So could you identify what is the federal tract for Mr. Ezeanyim?

THE WITNESS: Yes. It is Tract 7.

MR. EZEANYIM: Tract 7 is federal?

THE WITNESS: No, it's state. That is Lease L 729.

MR. EZEANYIM: State is L 729?

THE WITNESS: Yes.

MR. EZEANYIM: Under the BLM, federal?

THE WITNESS: All the rest of the tracts.

MR. EZEANYIM: Okay. So the color coded are giving by royalty --

MR. CARR: Or by working interest.

MR. EZEANYIM: -- or by working interest?

THE WITNESS: Yes.

MR. EZEANYIM: And then you say that 100 percent are committed, right?

THE WITNESS: Uh-huh.

MR. EZEANYIM: Okay. No further questions.

THE WITNESS: Okay.

MR. WARNELL: What is the location -- give me kind of a feel for where we're at from a nonlocation I guess it is called now in your area. I'm sure that's on here someplace, but I don't see it right now. We're in Chaves County, right?

THE WITNESS: Yeah. It is the township and range closest to the Eddy County line.

MR. WARNELL: Okay.

MR. CARR: I don't know, Mr. Examiner, if this will help, but we're 13 miles approximately northwest of Loco Hills.

MR. WARNELL: I see it down here. Okay. Thank you. If there are no other questions for this witness, you may call your next witness.

MR. CARR: Thank you, Mr. Examiner. At this time, we call Bruce Stubbs.

BRUCE ALAN STUBBS

After having been first duly sworn under oath, was questioned and testified as follows:

EXAMINATION

BY MR. CARR:

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

A Bruce Alan Stubbs.

Q And where do you reside?

A Roswell, New Mexico.

Q By whom are you employed?

A Armstrong Energy Corporation.

Q What is your position with Armstrong Energy Corporation?

A Vice president of operations and engineering.

Q Mr. Stubbs, you've previously testified before the Oil Conservation Division?

A That's correct.

Q Have you ever testified before Examiners Warnell, Ezeanyim, or Mr. James?

A No, I have not.

Q Would you review for them your educational background?

A I graduated from New Mexico State University in

1972 with a bachelor of science in mechanical engineering.

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

A I worked nine years for Halliburton Services, six years for Read & Stevens, a small independent in Roswell; five years for Hondo Oil and Gas Corporation, and I was a consultant for about 15 years; and then I've worked for Armstrong Energy Corporation now for almost three years.

Q And in all of those positions, have you worked as a petroleum engineer?

A Yes.

Q Are you familiar with the applications filed in these consolidated cases?

A Yes, I am.

Q And are you familiar with Armstrong's plans to form a unit and implement a Waterflood Project in Chaves County, New Mexico?

A Yes.

Q Did you prepare the C-108, the application in this case?

A Yes, I did.

MR. CARR: We tender Mr. Stubbs as an expert witness in petroleum engineering.

MR. WARNELL: Usually, Richard has a question at this time. Mr. Stubbs, when you were a consultant, were you a consulting petroleum engineer?

THE WITNESS: Yes. I am a registered professional petroleum engineer in New Mexico and Texas. Primarily did --

MR. WARNELL: Thank you for sharing that. That is usually Mr. Ezeanyim's question. We took care of that. Mr. Stubbs is so qualified.

Q (By Mr. Carr) Mr. Stubbs, I think initially it would be helpful if you could just identify what horizons are being unitized in the proposed Round Tank Queen Waterflood Unit.

A Just the Queen formation.

Q And that is the only formation that you're going to be conducting the secondary recovery operation --

A That's correct. It's about a 16-foot thick sand package.

Q Let's go to what has been marked Armstrong Exhibit Number 8, your technical study.

A Okay.

Q And I would ask you to, I think, work through this and review for the Examiners the technical basis for this proposal.

A Okay.

MR. EZEANYIM: Which exhibit are you talking about now?

MR. CARR: It is Exhibit 8.

THE WITNESS: The Round Tank Queen Associated Pool --

MR. CARR: Wait just a minute.

MR. EZEANYIM: Go ahead.

Q (By Mr. Carr) Okay. Proceed.

A The Round Tank Queen Associated Pool was established in March of 1970 with the discovery well, the JW State #1 in Unit K of Section 30 of 1529. To date, there has been nine wells that have produced out of the Queen in the Round Tank field. Cumulative production is 26,000 barrels of oil and almost 4.2 BCF of gas.

The map indicates the location of those wells on page 1. Page 2 is -- at the top of the page is a summary of the wells and their production, total depths, and where they were perforated. And you can see, this field was primarily a gas field with a minor amount of oil being produced.

At the bottom of the page is a declined curve or the production in that field since 1970. The gas is a little -- BTU gas. It is 61 percent nitrogen and 39 percent hydrocarbons with a BTU content of about 513 BTUs per cubic foot.

Q Mr. Stubbs, this is a historic production pod; is that correct?

A Yes, that's correct.

Q The projection of which you anticipate to obtain

from the Waterflood Project will be presented later?

A That's correct.

Q All right. Let's go to page 3.

A Page 3, at the top of the page is just a cartoon that shows the location of the gas cap in relation to the wells that are produced out of the gas cap. The bottom of the page is really not too important at this point. On page 4 at the bottom, go through the volumetrics to calculate the area of the gas cap, and it covers about 2,466 acres, so approximately four sections.

On page 5 is another carton showing the approximate location of an oil leg. The Christine Federal #3 has produced about 14,000 barrels of oil out of this oil leg, and it sits in probably the best position for oil production. It is just below the gas cap and just above the water.

The gas cap is at plus 2219, and the oil/water contact is at plus 2211, so there is an 18-foot oil column in this little field, little rim of oil around this field. To date, the Christine Federal #3 has not produced formation water, so the water drive is not active. It doesn't have any energy in it.

Q Well, where is the -- could you point out the Christine Federal #3?

A Christine Federal #3 is located in Section 30,

Unit B. It's the one that has 14,579 barrels of oil.

Q What is on page 6?

A Page 6 is a computer generated structure map of the Queen formation. The Queen sand is about two miles wide. It runs north to south. It dips from west to east at about 75 feet per mile. There is a nice, little nose that is right on the section line between Sections 19 and 30, and that's where the Christine Federal #3 is located. That's where most of the oil productions come from.

Q Page 7.

A It's a little hard to see on this page, but the dark shaded area is the oil column in relation to the -- this is -- what I use this for is a volumetric model, so this identifies the oil column as it goes through the sections.

Q Page 8, would you review that?

A Page 8 is a type log. We're quite fortunate, Mack Energy has drilled a bunch of San Andres wells in the area, so we now have some good modern logs, and this is a typical log. There's a -- in just about every well out there, there's a bottom sand with about six feet of good porosity ranging from 18 to 22 percent, and then there is a top sand with three to four feet of porosity ranging from about 15 to 18 percent.

Q The sand is continuous across the unit area?

A Yes. And that's what I tried to show at the bottom of the page. It's a little small, but the sands are continuous over the unit area.

Q Go ahead. What is shown on page 9 and 10?

A Page 9 shows the oil column as it runs through the unit area, and page 10 is just showing the thickness of the oil column. If you can imagine a trapezoidal shape, the oil column it is about 18 feet thick, and it's about a quarter to half a mile wide.

Q Would you go to page 11 and explain what that shows?

A We -- to come up with unit interests per each tract, really the only two things we had to consider were the acreage being contributed and the original oil in place number for each tract. So that's what I have done here is calculated original oil in place for each tract. There's -- calculates 1.684 million barrels of oil in place in that oil rim.

Q And all the working interest owners have agreed to this tract participation?

A Yes, that's correct.

Q What is page 12?

A I think you've already seen this. This is the tract map showing the different tracts.

Q If we go to now page 13, you talk about basically

1a2fc81a-b74f-4d61-988b-7a4e6077caa2

four development phases. Could you explain those to the commission and what you mean by each of those phases?

A Well, phase I or step I is a pilot project. We're going to drill an injection well east of the Christine #3 and another producing well west of the Christine #3. We're going to core the producing well and take that core and do basic core analysis, but also do some displacement studies and saturation studies on that core to determine the feasibility of the waterflood.

In the meantime while we're evaluating the core, we will start injection into the injection well and use the Christine #3 as our monitor well to see what kind of response we get. Once we have that data, we will do a full field reservoir simulation study. And using that study, we will pick our locations for additional injection wells and producers.

Q When you use the term "phase," you're not talking about distinct, separate, operational phases, are you?

A No, it's just development stages basically.

Q And to go through all of the phases, what sort of a time frame are you anticipating it would take?

A We're talking probably six months for the first step, a year for the second step, and then the third step, so everything should be completed in two years.

Q After you go through the first step or phase, you

will then make your plans for the further development of this unit area?

A That's correct. Using the reservoir simulation model, we will be able to pick our well locations.

Q And does Armstrong request that the order entered in this case provide for administrative procedure whereby you can add additional injection wells to the unit administratively without the necessity of --

A Yes, we request that.

Q Now, if we look at page 14, and we talk about well construction and the area of review. This information actually relates to the C-108 application, does it not?

A That's correct.

Q So why don't we skip that and come back to -- we will get to that.

A Okay.

Q Go to page 16. What is this?

A 16 is a structure map just using subsea depths, and it agrees with our computer generated map. The map on page 17 is an isopach map showing sand thickness. And as you can see, it is fairly uniform. There's a couple of little pods that are ten feet thick, but the majority of the net sands are 68 feet thick. And it is bounded on the east by a porosity pinch-out, and it is also bounded on the west with another porosity pinch-out.

So the sand is about two miles wide. We know it is at least two miles long. There is not much well control to the north or the south, so we're not real sure exactly of the extent north and south. If you look at some of the analogue fields, like the South Lucky Lake and Sulimar, they are two or three times as long as they are wide. So this may extend farther north and south.

On page 18, it's just showing our best guess of well locations at this time. There would be a line of injectors along the down dip side, and a line of producers along the up dip side of the oil column.

Q And this last page is basically your estimate at this time of what full unit development would look like in this pool with the full waterflood implemented?

A That's correct.

Q And these locations will be re-evaluated and possibly adjusted after you get your initial --

A That's correct.

Q Let's go to what has been marked Armstrong Exhibit Number 9. Would you identify that, please?

A That is our C-108 application for injection well in Unit Letter A of Section 30, 15, 29.

Q Does this C-108 contain all information required by Form C-108?

A Yes, it does.

Q And has this application been provided to all effected parties?

A Yes, it has.

Q Is this an expansion of an existing project?

A No, this is a new project.

Q Mr. Stubbs, let's go -- and I tried to number these pages, but they didn't copy very well. Let's go to page 5, I believe, which is the area of review map.

A Okay.

Q Would you refer to this map and review the status of the development in this area for the Examiners?

A Okay. The well we're proposing to drill and make an injector is located in Unit Letter A of Section 30, and that is where the radius starts. You will notice a lot of locations circled on there. That's Mack Energy's San Andres wells that he has been drilling. He has drilled to date probably ten to 12 of those wells. And by the time we finish this meeting, he may have a couple more drilled. He has been pretty active out there drilling San Andres wells.

You've already seen a map showing the Queen wells. There's nine Queen wells in there. Back in the '50s, late '50s, early '60s, he drilled a few San Andres wells and attempted to produce the San Andres, but were not real successful, so there's some old San Andres wells in the area, also. And there is also one deep Devonian test

located in Unit Letter D of Section 30, and Mack Energy has just drilled a Devonian disposal well in Unit Letter K of Section 19.

Q And the circles on this exhibit are the one-half mile area of review?

A That's correct.

Q And then just a circle indicating all tracts, acreage, and wells that would be located within two miles of the proposed injection well?

A That's correct.

Q Let's go to the page -- the following pages, 6 through 8 of Exhibit Number 9, and I would ask you to explain what those show.

A These are the wells within a half mile radius of review, giving location, TDs, spud dates, completion dates, latitude and longitude. On the second page, page 7, is the casing and cementing detail. On page 8 is the perforation and completion detail on each one of the wells.

Q Do these three pages contain all information on wells within the area of review that penetrate the injection zone that is required by Form C-108?

A Yes, it does.

Q Let's look at the next pages, pages 9 through 18.

MR. EZEANYIM: Before you do that, do you have the status of these wells? I am trying to find the

status of both wells in the area of review. Do you have them?

THE WITNESS: What's that? The --

MR. EZEANYIM: The status of the wells in the area of review.

THE WITNESS: Yeah, the third, fourth column, status, they are either P and A, producing, or they are new location.

MR. CARR: On page 6.

THE WITNESS: Page 6.

MR. EZEANYIM: L-O-C meaning what?

THE WITNESS: It's a new location. It hasn't been drilled yet. It's been proposed and permitted.

MR. EZEANYIM: Is that going to be a producer or injector?

THE WITNESS: I'm sorry?

MR. EZEANYIM: Is that going to be a producer or injector?

THE WITNESS: It is one of Mack Energy's. It will be a San Andres producer. San Andres is about 3,100 feet.

MR. EZEANYIM: Thank you.

Q (By Mr. Carr) Mr. Stubbs, let's go to pages 9 through 18. What are these?

A These are diagrams of the wells that we have

identified in the half mile radius.

Q Do these include the plugged and abandoned wells that were on that list you just pointed out to Mr. --

A Yes, this is the plugged and abandoned wells.

Q Do they contain all plugging detail for each of these wells?

A These are all the ones I could find in the records.

Q I would like to direct your attention to the Federal A #1 well.

A That is on page number 12. The copies may be a little light, but the -- this well is -- it's not plugged like I would like it to be plugged.

MR. EZEANYIM: Which one?

THE WITNESS: On page 12, Federal A #1.

MR. CARR: Roman numeral VI-7.

MR. EZEANYIM: Okay. There is no plug in information there.

THE WITNESS: Well, they set a 35 sack plug from 2,100 to 2,000, and open hole up to the casing shoe, and there is a 35 sack plug set across the casing shoe. So there is open hole from just below the casing shoe to 2,000 feet. The Queen zone is about 1,600 feet as I've highlighted there.

Q (By Mr. Carr) How do you recommend this well be

handled?

A Well, if you go back to Exhibit 8 I believe it was on page 14, there is a copy of the log.

Q Just a second. Let's get that out.

MR. WARNELL: Page 8 did you say?

A Page 14, Exhibit 8. This well lies east of the porosity pinch-out, and the log indicates that the porosity is very low. So while I'm concerned, I don't think it is a big problem. This well probably is not conductive of fluids, so I don't think we're going to have a problem with losing water into this wellbore.

Q (By Mr. Carr) Would you recommend that the order entered in this case provide that Armstrong should meet with the OCD's District Office in Artesia to determine if remedial work is required, and if so, what that should be prior to injection?

A I would recommend that, yes.

Q Let's go to pages -- I believe it is pages 3 and 4, but Exhibit 9, the well data sheets for the proposed injection well. And working from pages 3 and 4, would you review for the Examiners how Armstrong proposes to actually complete the injection well?

A The surface hole will be an 11-inch hole, drilled to the Rustler anhydrite at about 150 feet.

MR. EZEANYIM: Which page are you talking

about now?

THE WITNESS: Page 3 in Exhibit 9.

MR. CARR: The C-108, the third page.

THE WITNESS: It's the injection well data sheet.

MR. EZEANYIM: We're going back --

MR. CARR: Yes, we jumped back.

MR. EZEANYIM: The third page?

MR. CARR: Yes, sir.

MR. EZEANYIM: Okay.

THE WITNESS: We will drill an 11-inch hole --

MR. EZEANYIM: This is the injection well?

THE WITNESS: This is the injection well, yes. We will drill an 11-inch hole to approximately 150 feet into the Rustler anhydrite, set 8 5/8" casing and circulate cement on that string, and then drill a 7 7/8" hole to approximately 1,600 feet and set 5 1/2" casing and run enough cement to circulate. Sometimes they don't circulate due to some loss of circulation or washouts in those holes, but we will attempt to circulate it.

And then after we move the rig off, we will move in a completion unit, perforate the interval from approximately 1575 to 1590. Acidize it, clean it up, and frac it with a small 20,000-gallon frac treatment with about

20,000 pounds of sand, and then run a plastic coated packer and internally plastic coated tubing to complete the well.

Q (By Mr. Carr) Will the annulus space be filled with a fluid?

A We will fill the annulus with packer fluid with corrosion inhibitor and then run an MIT test to make sure the casing and packer are holding.

Q Will you pressure test the fluid in the annulus as required through the Federal Underground Injection Control Program?

A Yes, we will.

Q And Mr. Stubbs, we are proposing to inject into the Queen. How thick an interval are we actually talking about? What are the perforations?

A Like I said, the perforations are going to be approximately 1575 to 1590.

Q So our net thickness is --

A 15 or 16 feet.

Q What is the average porosity?

A Average porosity is about 18 percent.

Q And the estimate of the permeability in this area?

A Those sands are very high permeability. Anywhere from 100 to 500 millidarcies.

Q And you've indicated there is San Andres production in the area. Mack Energy is now developing. Are

there any other oil productive zones in the immediate area?

A No, there is not.

Q And what is the source of the water that you're proposing to inject into the subject well?

A We will be using San Andres water from Mack's wells. He has quite a bit of water production now from those wells.

Q And what volumes do you propose to inject?

A A rough estimate now is about 100 barrels per day per injection well.

Q What would be your maximum injection?

A Probably not over 200 barrels a day per well.

Q Will this be a closed system?

A Yes, it will.

Q And you will be injecting under pressure?

A Yes.

Q And what pressure does Armstrong anticipate using?

A Initially, 100 pounds, and probably not exceeding 200 pounds.

Q These pressure limits fall below the 2/10 pounds per foot of depth to the top of the injection interval that the Oil Conservation Division generally uses?

A That's correct, 2/10 of a PSI per foot would be 300 PSI.

Q If you need to go above 300 PSI, will Armstrong

justify the increase in pressure with separate tests witnessed by the division?

A Yes, we would.

Q Are there fresh water zones in the area?

A No, there is not.

Q Could you refer to -- I believe it is pages 23 and 25 of the C-108, and identify the water analyses that are contained on those pages?

A Page 23 is a water analysis from the Queen zone out of the J.W. State #1, and it is typical Queen water for this area. It is fairly high chlorides, 159,000; 9,600 magnesium; 5,900 calcium.

Page 24 is some water analysis we obtained off of Mack Energy's wells and --

Q And this is a San Andres well?

A This is San Andres water. The chlorides are anywhere from 70- to almost 90,000, which is fresher water, if you would, than the Queen water.

Q Do you anticipate any compatibility problems injecting the San Andres water into the Queen?

A There's a slight tendency toward calcium carbonate scale, and we think we can control that with inhibitors.

Q Okay. Have you examined the available geological engineering data available on the Queen formation in this area?

A Yes, I have.

Q And as the result of that examination, have you found any evidence of open faults or other hydrologic connections between the injection zone and any underground source of drinking water?

A No, I have not.

Q Mr. Stubbs, let's now go to what has been marked Armstrong Exhibit 10. Would you identify that, please?

A This is our application in Case 14342 for approval of a Waterflood Project for its Round Tank Queen Waterflood Unit area and qualification of said project for the recovered oil tax rate pursuant to the Enhanced Oil Recovery Act in Chaves County, New Mexico.

Q Let's go to that form, and I have asked you to -- or that letter and identify for the Examiners what you estimate the additional capital costs to be for this project.

A We estimate the capital costs at $4.95 million.

Q And are those the total project expansion costs?

A Yes, at this time, that's our best estimate.

Q How much additional production does Armstrong expect to obtain from this project?

A We hope to obtain at least 20 percent of the original oil in place, which would be 320,000 barrels.

Q What is the estimated value of this additional

production?

A It would be $20,800,000.

Q And what are you basing that on?

A At $65 a barrel.

Q If this project is economically successful, does Armstrong plan to expand the project?

A Yes, that is our intent.

Q If we look at the attachments to your letter application, what is Exhibit A?

A This is -- the shaded area in yellow is the unit outline on the land plat.

Q And Exhibit B?

A This is the type log from the Eskimo State #2 well.

Q And this is the type log that you previously discussed?

A Yes.

Q Exhibit Number C?

A This is the same map we had on Exhibit Number 8 with the location of the Queen wells and the production from the Queen wells.

Q What is Exhibit D?

A D is the historic production history of the well up until mid 2009 and then our projected production from the waterflood.

Q Mr. Armstrong, does -- Mr. Stubbs, does Armstrong request that the unit order in this case be expedited?

A Yes.

Q How soon do you anticipate actually drilling an injection well?

A We're trying to get ready to start drilling about mid October -- or mid August, I mean.

Q So it would be important to have the unit portion of these applications in place by the 1st of August?

A Yes, it would.

Q In your opinion, would approval of this application and the implementation of its proposed waterflood be in the best interest of conservation, prevention of waste, and the protection of correlative rights?

A Yes, it would.

Q Were Armstrong Exhibits 8 through 10 prepared by you or compiled under your direction?

A Yes, they were.

MR. CARR: And may it please the Examiners, at this time, we would move the admission into evidence of Armstrong Energy Corporation Exhibits 8 through 10.

MR. WARNELL: Exhibits 8 through 10 are admitted.

(Exhibits 8 through 10 admitted.)

MR. CARR: Mr. Examiner, I also have prepared a proposed order which addresses the unit part of the case that I will submit also by e-mail. It is, to the best of my ability, the most recent -- conforms with the most recent order entered by the division, and because we have requested that this part of the applications be expedited, we do have a proposed order for you. If I may present them to you at this time?

MR. WARNELL: Yes.

MR. CARR: And that concludes my direct examination of Mr. Stubbs.

MR. WARNELL: Thank you. Mr. Stubbs, that was a lot of material we went over. Unfortunately, I did not write down all of my questions, but I would like to go back to this type log that we just looked at.

THE WITNESS: Okay.

MR. WARNELL: That is a nice, legible log. What is going on with the gamma ray there? Why is that gamma ray so hot?

THE WITNESS: The Queen is typically a radioactive sand.

MR. WARNELL: And do you run just a standard gamma ray or do you run a spectral gamma ray or anything?

THE WITNESS: This is just a standard gamma ray.

MR. WARNELL: How long does it take you to drill a 1,600 foot well?

THE WITNESS: Not long. You wait on cement longer than you spend drilling. Three or four days.

MR. WARNELL: Questions, Richard?

MR. EZEANYIM: Why do you want this order in a hurry?

MR. CARR: We need the order because a unit agreement can only be effective on the first day of the month following approval from the landowners. The Land Office conditioned their approval on the order on the unit from the OCD. So to have the unit part in place -- we're not in a hurry on the rest of it, but to have the unit in place by August 1, the Land Office won't give us that until we get the unit order from you. So that's the only reason for having to push that part of it like that.

MR. EZEANYIM: What is the primary recovery factor in this lease? Do you have an idea? I know we went 5 through 8.

THE WITNESS: Well, this lease is -- this little project is somewhat unique because we have very little primary production. We have only produced to date about 1 1/2 percent of the original oil in place. Most of the Queen fields in the area have about 20 percent primary production. And most of them have about another 20 percent

on secondary, so they recover somewhere around 40 percent of the oil in place.

This is a little different because we haven't produced any -- very little primary production. So our models that we have right now, the simulation we have right now indicates that we will get at least 23 percent of the original oil in place. If we can do a little better job on the waterflood, we may get a higher number than that.

MR. EZEANYIM: I'm not sure that you are starting this very early in the life of the well without allowing this to include primary production.

THE WITNESS: Well, right now there is no bottom hole pressure. The gas cap has been depleted. There is no pressure in the water leg or the oil column. There is very little solution gas in the oil. Like I said before, the gas -- the content -- the nitrogen content of the gas cap is about 60 percent, and so there is very little hydrocarbon gas to be put into solution. Now, the pressure is about 60 BSI, so all the gas is moved out of the oil column. There is no reservoir energy.

MR. EZEANYIM: Good -- okay. I like this project. If you go to the producer well, if you are going to produce water from the San Andres and inject it into the Queen --

THE WITNESS: That's correct.

MR. EZEANYIM: -- what are the compatibility? I know you talked about it. What are the compatibility in the --

THE WITNESS: It appears to be compatible. There is a slight tendency towards scaling. We think we can control that with inhibitors.

MR. EZEANYIM: Are you going to be using a line drive there?

THE WITNESS: It is basically a line drive. It is a little bit -- I think it's going to end up being a little different than a line drive because we're going to move the injectors back away from the oil column a little ways to get the pressure to be more uniform across the oil, oil front.

MR. EZEANYIM: We don't know what the oil price is going to do, you know. I think using the oil price of $65 is kind of already maybe high now.

THE WITNESS: It has been $65 for a couple of days now.

MR. EZEANYIM: You hope to recover an additional 20 percent at least?

THE WITNESS: Yeah, that's what we anticipate.

MR. EZEANYIM: That's good. No further questions.

1a2fc81a-b74f-4d61-988b-7a4e6077caa2

MR. WARNELL: Mr. Stubbs, I have got -- I thought for sure that Mr. Ezeanyim would ask about that Federal A #1 well.

THE WITNESS: Yes, sir.

MR. WARNELL: Looking at your -- this page here right now.

THE WITNESS: Okay.

MR. WARNELL: I think it is C-108 about halfway through.

THE WITNESS: Yeah, page 12. Uh-huh.

MR. WARNELL: Yeah. That well concerns me, too, a bit. You don't suppose that could be a deal breaker, do you?

THE WITNESS: No. I mean, if we get to the point that nobody is happy with it, we will try to re-enter, replug it. But I really -- I don't like the way it is plugged either, but I don't have a lot of heartache over it because the zone is so tight. We just don't have any porosity.

MR. WARNELL: Have you talked with the people at Artesia yet, or do you intend to do that?

THE WITNESS: I intend to do that before we start injection.

MR. WARNELL: No more questions.

MR. CARR: That concludes our presentation in

this case.

MR. WARNELL: Thank you, Mr. Carr. We will take Case Number 14341 and 14342 under advisement. It looks like it's about 9:20. Let's take a ten-minute break, and we will start again at 9:30.

REPORTER'S CERTIFICATE

I, CONNIE JURADO, do hereby certify that I reported the foregoing case in stenographic shorthand and transcribed, or had the same transcribed under my supervision and direction, the foregoing matter and that the same is a true and correct record of the proceedings had at the time and place.

I FURTHER CERTIFY that I am neither employed by nor related to any of the parties or attorneys in this case, and that I have no interest whatsoever in the final disposition of this case in any court.

WITNESS MY HAND this 23rd day of July, 2009.

Connie Jurado, CCR, RPR
New Mexico CCR No. 254
Expires: December 31, 2009