STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO

22 August 1984

EXAMINER HEARING

IN THE MATTER OF:

Application of Cities Service Oil & Gas Corp. for an unorthodox gas well location, Eddy County, New Mexico. CASE 8314

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division:
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I N D E X

ROBERT A. GRIECO

E X H I B I T S

MR. STOGNER: We will now call Case Number 8314.

MR. PEARCE: That case is on the application of Cities Service Oil and Gas Corporation for an unorthodox gas well location, Eddy County, New Mexico.

MR. KELLAHIN: If the Examiner please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant and I have one witness to be sworn.

MR. PEARCE: Are there other appearances in this matter?

(Witness sworn.)

ROBERT A. GRIECO,

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q For the record, would you please state your name?

A My name is Robert Anthony Grieco.

Q Mr. Grieco spells his name G-R-I-E-C-O?

A Yes.

Q Mr. Grieco, where are you employed and in what capacity?

A Cities Service Oil and Gas Corporation, Midland, Texas, an an Exploitation Geologist.

Q Mr. Grieco, have you previously testified before the Division as a geologist?

A No, sir.

Q Would you tell the Examiner when and where you obtained your degree in geology?

A I got my Bachelor's degree from Bowling Green State University in Bowling Green, Ohio, in 1977, in geology, and my Master's degree in geology from Washington State University in Pullman, Washington, in 1981.

Q Subsequent to obtaining your Master's in 1981 have you worked as a petroleum geologist in southeastern New Mexico?

A Yes, sir.

Q And have you prepared a geologic study of the specific facts around this application?

A Yes, sir.

MR. KELLAHIN: We tender Mr. Grieco as an expert petroleum geologist.

MR. STOGNER: He is so qualified.

Q Would you please refer to what we've marked as Exhibit Number One and locate for the Examiner the proposed unorthodox well location?

A Okay. The unorthodox location is in Section 21, T 21 South, R 27 East, 1980 from the north and 660 from the east of the section.

Q This well is -- will be located in the Burton Flats Morrow Gas Pool in Eddy County, New Mexico?

A Yes, sir.

Q And does this exhibit show the wells that have penetrated or produced from the Burton Flats Morrow Gas Pool?

A Yes, sir.

Q And does this exhibit also depict the ownership in the area?

A In the immediate area of the proposed well, yes, sir.

Q All right. In identifying the exhibit and locating Section 21, would you describe for us what the current arrangement is with regards to the spacing units for the East Burton Flats Morrow Gas Pool?

A The proration units currently run east/west.

Q All right, sir. The south half of Section 21 is dedicated to what well?

A To the No. 2 Elizando A.

Q Okay, and the north half of Section 21 is dedicated to what well?

A That is dedicated to the No. 1 Government "AD".

Q What is the status of that well?

A That's plugged and abandoned.

Q All right. Has Cities Service attempted to form a proration unit including the northeast quarter of this section by standing up this 320-acre unit?

A Yes, sir, we did.

Q And what has been the result of that effort?

A That, the Federal government opposed that because of the producing well in the south half of the section.

Q All right, sir. The producing well is this Elizondo A?

A No. 2 Elizondo A.

Q All right, and both of the north half and the south half of this section are Federal leases?

A Yes, sir.

Q All right, and had you been successful in forming a stand up unit on the east half of Section 21, the unorthodox well location would have been a standard location.

A Yes, sir.

Q All right. What other attempts have you made to form a standard location for the well?

A Well, we've examined other locations that would have been standard with an east/west proration unit but none of those were geologically favorable.

Q All right, sir, let's go to the geology and see what the reason is. Let's look at Exhibit Number Two, if you please.

All right, would you identify Exhibit Number Two?

A Exhibit Number Two is a structure map based on the Morrow B zone in the area.

Q Have you been able to map with a reasonable geologic probability the location of the fault as you've depicted it across Section 21?

A Yes, sir, I think --

Q All right, sir.

A -- that's pretty close.

Q And did you prepare the structure map?

A Yes, sir.

Q Would you describe for the Examiner what opinions you reached from the study of the structure map that you prepared?

A Well, based on the study, a standard location for an east/west proration unit, north half of Section 21, a 1980/1980 location would have put our potential well directly on the fault.

Q And you picked the proposed unorthodox location in Section 21 for what reason, then?

A Based on our study of this area, it appears that this fault is acting as a trap for gas in the area and if we would get too close to it we don't feel we

would be getting the reserves that are in the area.

By drilling a well at the proposed unorthodox location, we feel we will be passing reserves that there -- that we would not get in any other way, or could not get in any other way.

Q All right, sir. Let's go to the Isolith, now, which is Exhibit Number Three.

All right, sir, would you identify and describe what this exhibit is?

A Okay, this is an Isolith, or net sand map, of the Morrow B zone.

Q All right, sir, and is this an Isolith that you prepared?

A Yes, sir.

Q And what conclusions or opinions can you draw from an examination of the Isolith?

A Based on the Isolith you can see several channels, particularly one in -- going down, oh, just to the west of the fault and then spilling over going east/west around in Section 33 and 34.

I think based on the Isolith map that the fault, the fault shows up fairly well just based on -- you can see that the sands are being deposited behind the fault so they are thicker behind the fault and then thinned out over, if you go over the fault on the upthrown side.

Q Let me direct your attention to Section 22 to the east of your well location and have you identify

for us the Bass 1 State 22 Well.

A Okay.

Q All right, you've got it?

A Yeah.

Q Describe that well for us. What's its status?

A It's a producing Morrow gas well that has --

Q Does it produce out of the Burton Flats Morrow Gas Pool?

A It does. The most recent production figures I have on it are 4428 MMCF and 560 barrels of condensate, and those were as of, I think, April, the latest production figures that I have.

Q All right, sir, let's go to the cross section, the A-A' cross section, at this point.

Did you prepare the cross section?

A Yes, sir.

Q Would you describe what you've done with this cross section?

A Well, this is what we interpret has happened out in this area.

We believe that the fault which we have mapped out there is a vertical fault of anywhere from 50 to 150 feet displacement, depending on where you are along the fault.

We also believe this fault was active

during deposition of the Morrow, or it was present when the Morrow was being deposited.

And what we have on this cross section, or what we attempt to show on this cross section is, we were representing drape of the sands over the fault, so on the upthrown side of the fault we believe that the sands are draped over the upthrown side and this has produced a trap which we are trying to exploit with this proposed location.

Q Is the Bass well on the cross section the No. 1 State 22 Well?

A Yes, sir.

Q That well, plus it's the same well on the Isolith?

A Yes.

Q Is that well producing from a portion of the Morrow formation --

A Yes, sir.

Q -- that you believe extends over into Section 21 up to this fault line?

A Yes, sir.

Q Do you have a geologic opinion as to whether or not that Bass well will produce the reserves underlying Section 21, the Cities Service acreage, unless Cities Service drills a well to recover its share of the gas from that reservoir?

A I think they will deplete us somewhat but they won't produce the gas sufficiently as a well at the

proposed location would.

Q Does the proposed location allow Cities Service to have the optimum location within Section 21 from which to recover its fair share of the gas in the Burton Flats Morrow Gas Pool?

A Yes, sir.

Q In your opinion will approval of this application be in the best interest of conservation and the protection of correlative rights?

A Oh, yes, sir.

Q And in your opinion will it prevent waste of hydrocarbons?

A Definitely.

Q All right.

MR. KELLAHIN: If the Examiner please, we move the introduction of Cities Exhibits One through Four.

MR. STOGNER: Exhibits One through four will be admitted into evidence.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Grieco.

A Yes, sir.

Q In your studies of this, in particular the fault, and you show it extending down into Section 28, and it comes very close to both the CSC, first of all, who's

the operator in Unit 21 -- I'm sorry, Section 28?

A Cities Service.

Q Did either one of these wells, the No. 1 Elizondo A or the No. 1 Calley A, intercept this fault?

A No, sir, that's what leads me to believe that it's a near vertical fault. To the best of my knowledge there's only been one well that has actually intersected this fault and that's up in T20, R28, up in -- I think it was a well in the Burton Flat Unit, which -- the south half of the Burton Flat Unit is shown up in Sections 2 and 3. A well up there did encounter the fault but we have never drilling in through this fault that we have been able to identify.

Q What kind of displacement was in Townhip -- that was Township 20 South --

A Right.

Q -- Range 28 east, did you say, or 27?

A They were apparently up near where the fault is beginning to disappear so they have very little displacement, only about 50 feet.

Q How far south does this fault extend?

A Not too much farther. I don't have -- I don't think it extends beyond the next township down.

We don't have too much acreage down there so we've never had an opportunity to map it down that far.

Q In Exhibit Number One, the No. 1 Government AB, which is also in the north half of Section 21, you

said that was plugged and abandoned. Do you have the date when it was plugged and abandoned?

A The No. 1 AB, that was September of '82, if I'm not mistaken. We're on a two year extension on that.

Q I'm sorry, what do you mean a two year extension?

A We have a two year extension on that Government lease.

Q Oh, on the lease itself but --

A Yes.

Q -- the well is plugged and abandoned but you still hold the north half then.

A But it was somewhere around September or October, somewhere in there, of '82.

Q Would you please explain again to me why the -- why you weren't able to set up a west half 320 standard proration unit dedication for this well, the proposed 3 Government AD?

A Well, we tried to do that. We proposed that to the Federal Government and they did not want us to do that as long as we had a producing well in the south half of that section.

Q They being the United States Bureau of Land Management, I assume.

A Right.

Q Section 22 to the east of there, is that a State or Federal Government lease?

A I believe that's State.

MR. STOGNER: I have no further questions of Mr. -- I'm sorry.

MR. PEARCE: One question of Mr. Grieco, if I may.

CROSS EXAMINATION

BY MR. PEARCE:

Q What was the separation between the two wells in Section 28 across that fault line? I mean vertically what kind of --

A Displacement?

Q Yes, I'm sorry.

A You mean structurally? The No. 1 Elizondo A, I have the top of the B at -8012 and the 1 Calley A is -7988.

Q Thank you, sir.

MR. PEARCE: That's all I have.

MR. KELLAHIN: I have some additional questions for Mr. Grieco.

MR. STOGNER: Yes, sir, Mr. Kellahin, please.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Grieco, referring to Exhibit Number One, which is the ownership map, would you describe again

for us what is indicated by the hatched border between Sections 21 and 22, identified as the MacGruder Unit? What is that unit?

A Okay, the MacGruder Unit is a unit operated by Cities Service which is three more sections to the south of the map, so it is composed of Section 20, 21, 27, 28 and 29, 32, 33 and 34, in T 21 South, R 27 East.

Q All right. Within the MacGruder working interest unit in Section 21, then, in the south half of that section there is a communitization of the Federal lease and the Barron lease over to the west.

A That's correct.

Q All right, and that is dedicated to the 2 Elizondo A Well.

A That's correct.

Q All right, and the Bureau of Land Management has refused to allow you to terminate that communitizaiton agreement to form a new one which would consist of the east half of Section 21.

A That's correct.

Q Now, in terms of the fault line, Mr. Grieco, would you tell us or describe for us the quality of the wells that you find east of the fault versus those west of the fault?

A East of the fualt we get much greater production, in the range of, immediately adjacent to the fault, sometimes as high as anywhere from 4 to 5-billion

feet of gas, of total reserves.

When you cross the fault, even where you have thicker sands, you will only get sometimes only a billion cubic feet of gas or even less. The quality of the wells in terms of reserves vary markedly across that fault.

Q And as you look at the fault in the north half of Section 21, what is the displacement between the upthrown side of the fault and the downthrown side in terms of feet?

A In 21, I think I've got it mapped at about 100 feet, just about, 100-120 feet. Not a real big fault.

Q In your opinion is that displacement as a result of the fault sufficient enough to preclude the well in the northwest quarter of Section 21 from recovering the Morrow gas reserves underlying the northeast quarter of 21 that are on the east side of that fault line?

A Oh, yes.

Q All right, sir.

MR. KELLAHIN: No further questions.

RECROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Grieco, referring to Exhibits Two and Three both, a standard location in this pool, if I might repeat myself, would be 980 feet from the end line and 660

feet from the nearest side line, is that correct?

A Did you say 980 feet?

Q I'm sorry, 660 feet -- okay, let me start over again.

A standard location -- let me just rephrase it. What would a standard location be in this pool?

A For east/west proration unit?

Q Yes, sir.

A It would either be 1980 from the end, 660 from side, or 1980/1980.

Q In looking here, if this well was put in a standard location in Section 21, 1980 from the east and 1980 from the north line, would that still put you in the -- that would still put you in the east side of the fault?

A Barely. That's assuming, of course, that the fault location is absolutely correct to the foot and I can't really assume that. It would squirrel its way around a little bit.

It would be putting it awfully close. We wouldn't have any room there at all to play.

Q The wells down in Section 28, they are very close to the fault, though, are they not?

A Yes, they are.

Q Could you explain to me a little bit of what would be the benefit of drilling this well in a nonstandard location unit? A nonstandard location as opposed to a standard location at 1980 from the east and north

lines?

A Well, structurally it would be better because we would be at the, what I believe is the crest of that anticlinal structure which I've shown on the cross section.

MR. KELLAHIN: Excuse me, Mr. Grieco, what would be better?

A Drilling a location at -- drilling an unorthodox location because structrually we'd be in a much better position to recover the reserves.

Q I'm still a little bit confused here. Would you try that again?

A Okay. Referring to the cross section A-A', you can see we've mapped, or I've mapped an anticlinal structure there caused by drape over the fault and this location which I have put, the proposed location, would by my reckoning, put us right at the crest of that anticlinal structure.

Now if we would drill over closer to the fault, a standard location would put us either right at the fault or it's very possible that a standard location might even put us on the wrong side of the fault, because you're getting so close to the fault with a standard location that, you know, you're playing a little bit of a dangerous game there with the geology.

Q Was this fault known to exist when you drilled the two wells in Section 28?

A No, it wasn't.

MR. STOGNER: I have no further questions of Mr. Grieco.

Are there any other questions of this witness?

MR. KELLAHIN: Nothing further.

MR. STOGNER: Is there anything else? I'm sorry, if there is no further questions, he may be excused.

Is there anything further in Case Number 8314?

If not, this case will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8314, heard by me on August 22 1984.

Michael E. Stogner, Examiner
Oil Conservation Division

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO

19 September 1984

EXAMINER HEARING

IN THE MATTER OF:

Application of Cities Service Oil & Gas Corp. for an unorthodox gas well location, Eddy County, New Mexico. CASE 8314

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Jeff Taylor
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Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

MR. STOGNER: We'll call next Case Number 8314, which is the application of Cities Service Oil & Gas Corporation for an unorthodox gas well location, Eddy County, New Mexico.

This case was heard on August 22nd, 1984. It was not advertised at that time in the Artesia paper. It had to be readvertised and was for the hearing today.

We will now call for any appearances or additional testimony at this time.

It appears that there is none. The case will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

8314,
Sept. 19, 84.

Michael E. Stogner, Examiner
Oil Conservation Division