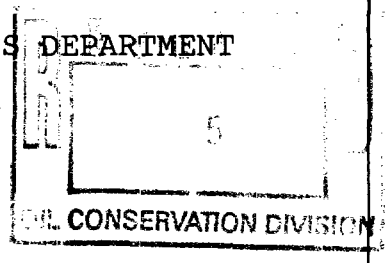
STATE OF NEW MEXICO

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 MARATHON OIL COMPANY FOR AN UNORTHODOX GAS WELL LOCATION, EDDY COUNTY, NEW MEXICO

CASE NO. 11,568

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

July 11th, 1996

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Thursday, July 11th, 1996, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

* * *

I N D E X

July 11th, 1996
Examiner Hearing
CASE NO. 11,568

* * *

E X H I B I T S

Applicant's	Identified	Admitted
Exhibit 1	6	20
Exhibit 2	9	20
Exhibit 3	13	20
Exhibit 4	13	20
Exhibit 5	16	20
Exhibit 6	18	20
Exhibit 7	22	30
Exhibit 8	25	30
Exhibit 9	26	30
Exhibit 10	28	30
Exhibit 11	28	30
Exhibit 12	29	30
Exhibit 13	29	30
Exhibit 14	29	30

* * *

A P P E A R A N C E S

FOR THE APPLICANT:

KELLAHIN & KELLAHIN
117 N. Guadalupe
P.O. Box 2265
Santa Fe, New Mexico 87504-2265
By: W. THOMAS KELLAHIN

* * *

WHEREUPON, the following proceedings were had at 10:27 a.m.:

EXAMINER STOGNER: At this time I'll call Case Number 11,568, which is the Application of Marathon Oil Company for an unorthodox gas well location in Eddy County, New Mexico.

At this time I'll call for appearances.

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm of Kellahin and Kellahin, appearing on behalf of the Applicant, and I have two witnesses to be sworn.

EXAMINER STOGNER: Any other appearances?

Will the witnesses please stand to be sworn at this time?

(Thereupon, the witnesses were sworn.)

EXAMINER STOGNER: Mr. Kellahin?

MR. KELLAHIN: Thank you.

DENISE M. COX,

the witness herein, after having been first duly sworn upon her oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

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

A. My name is Denise Cox. I'm an advanced geologist

for Marathon Oil.

Q. Ms. Cox, on prior occasions have you testified before the Oil Conservation Division as a petroleum geologist?

A. Yes I have.

Q. In fact, you testified before Examiner Stogner a couple of months ago in Marathon's request to terminate gas prorationing in the Indian Basin-Morrow Pool?

A. That's correct.

Q. All right. As part of your study of where to locate in Section 10, the optimum well location for an effort to produce gas out of not only the Morrow formation but the upper Pennsylvanian, have you made a further geologic study of part of the area you testified to a couple months ago?

A. Yes, I have.

MR. KELLAHIN: We tender Ms. Cox as an expert petroleum geologist.

EXAMINER STOGNER: I remember that hearing but --

THE WITNESS: I was --

EXAMINER STOGNER: -- were you here another time?

THE WITNESS: I was married since that hearing.

EXAMINER STOGNER: What did you testify -- Under what name then?

THE WITNESS: My maiden name is Denise Mruk,

M-r-u-k.

EXAMINER STOGNER: I thought something was strange. Well, congratulations.

THE WITNESS: Well, thank you.

EXAMINER STOGNER: So qualified.

Q. (By Mr. Kellahin) All right, let me have you turn to Exhibit 1, and let's talk about the color code. It's got lots of information on it. We're right up on the boundary of several pools, so let's make it clear to all of us exactly where we are.

A. Okay, I'll review this exhibit. Obviously, the yellow is Marathon's acreage and partial acreage. The red dashed outline is the Indian Basin Gas Pool. The green --

Q. The Indian Basin Gas Pool, now, is to the west and south, and would include all of Section 10 at this point?

A. That's correct.

Q. And the Indian Basin Gas Pool deals with the -- what I would call the Cisco, but it's identified as the Upper Pennsylvanian for that gas pool?

A. That's correct.

Q. All right. Okay, what's the next pool?

A. The pool to the east is the South Dagger Draw Associated Pool. It is oil productive, and that does not include the Section 10 location at this time.

Q. Okay. So the boundary of that South Dagger Draw Pool, the western boundary, is contiguous with the western section lines for Sections 2 and 11?

A. That's correct.

Q. All right. And you -- Marathon operates wells in Sections 2 and 11 and the other acreage identified in yellow?

A. That's correct.

Q. Is there a significance to the fact that the yellow area is not completely shaded in?

A. Yes, we are -- Sections 2, 11 and 10, we are partners with Parker and Parsley. We have approximately 90-percent working interest, and Parker and Parsley has 10 percent.

The section -- half-section to the north, the south half of Section 3, we are also partners with Parker and Parsley. There, Marathon has roughly 95-percent working interest and Parker and Parsley a 5-percent.

Q. This acreage is all in Marathon-operated North Indian Basin unit?

A. That is correct.

Q. These are unit operations within the spacing units?

A. That's right.

Q. All right, show me what else you have.

A. On this section, this is the location map, and I've notated it with, as we've said, all the Marathon-operated -- You'll see that at the bottom of each lease it will be -- operator will be to the left, and to the right would be the name of the lease or the unit. For example, in Section 10 it says MOC-NIBU, so it's Marathon-operated North Indian Basin Unit.

Also noted on here is the well of interest, the NIBU Number 30, and also the cross-section A-A', which we'll refer to in just a short while, which runs from the Indian Basin Gas Pool to the South Dagger Draw Associated Pool.

Q. All right, show us the identification codes for the different kinds of wells.

A. And also shown on here is all the productive wells. The South Dagger Draw oil wells are shown by the solid black circle. The Cisco gas-productive wells are the gas symbols, and the gas symbol with a circle around it are our Morrow completions.

So you should see here three Morrow wells, one in Section 2, one in Section 11 and one in Section 12, and predominantly the oil wells in the South Dagger Draw Pool, and predominantly the gas wells -- well, all gas wells in the Indian Basin Gas Pool.

Q. All right. Let's set aside the locator, perhaps

keep it handy as a reference, and have you turn now to Exhibit Number 2. Let's take a moment to unfold that, and then let's talk about it.

A. Exhibit Number 2 is cross-section A-A' that we described on the location map. We're going to look -- the wells -- The four wells to the east are the South Dagger Draw Associated Pool, the one well to the west, the NIBU Number 1, is in the Indian Basin Gas Pool.

I'd point out the color coding on here for your convenience. If we take a look at the North Indian Basin Unit 12 -- that's the third well from the left -- the blue coding is limestone. That would be nonreservoir rock. The purple color is dolomite; that is our reservoir. The brown -- the thin brown layers toward the bottom there are shales. These form -- They compartmentalize our reservoir for us.

And then coded in the middle of each of these logs is the perforated interval. And you'll see that the four wells in the South Dagger Draw Oil Pool are coded green because they are indeed oil-productive.

And the well to the west, the NIBU Number 1, shows two things. The uppermost set of perfs, color-coded red, are gas-productive, and I believe the -- the packer is both gas- and water-productive. These have been isolated because of water production in the gas pool.

This is a structural cross-section. That means we're looking at it so we can look at how the reservoir is today, the oil distribution within the reservoir. That datum, minus 3800, you can see on both the east and west side of the cross-section, that is roughly the highest elevation that we've determined that we can produce oil in the South Dagger Draw Oil Pool. And if you'll look at the four wells, you'll see all our completions are indeed below that minus-3800 level.

Q. Let me interrupt you for a moment.

A. Certainly.

Q. I think that's very helpful. Let's start with the well at location A, which is the gas well in the Indian Basin-Upper Penn Gas Pool, and start with that base reservoir datum point, the minus 3800.

A. Uh-huh.

Q. If in South Dagger Draw that represents the highest oil in the oil pool, what is that relationship when we're in the gas pool?

A. The relationship is that the entire upper Penn reservoir, the purple, the reservoir component, is all above the minus 3800, and you should be 100-percent gas-productive. In fact, we're 100-percent gas- and water-productive above that level in the Indian Basin Gas Pool.

Q. All right. So when we look at this well,

describe for us what's happening at this well location in relation to the gas produced in the gas pool. And I believe there's a water component in that pool?

A. That's right, if I understand your question, the upper set of perfs are gas-productive --

Q. Okay.

A. -- and we've isolated both -- the water production underneath that, within the Cisco --

Q. So when we're looking at the gas pool, we get gas production out of the upper portion of this Cisco?

A. Uh-huh.

Q. But below that, it's water-bearing?

A. That's correct.

Q. Now, help me understand, as we move to the east, into the oil pool, how we ended up with water above the oil.

A. Mr. Kellahin, I wish I could give you a definitive answer to that, and I hope as we continue drilling the updip limit of the South Dagger Draw field, we can answer some of those questions. I cannot answer that.

Q. Is that part of what you're trying to achieve, if the Examiner approves your well location for Well Number 30 in Section 10?

A. Yes, we'll -- We might better visit that question when we look at the maps, because you can see where our

area of no data exists.

But basically if you look at the North Indian Basin Unit Number 12 -- that is the well directly to the east of our proposed NIBU 30 -- and you follow the marker -- there's a marker on there called "Canyon" -- if you follow that marker to the west, you'll see it pinches out -- I'm sorry, it -- as it goes downdip, it rises above our oil location. We are trying to catch the Canyon in the oil zone with this NIBU 30 location. And we hope to prove that indeed there is at least one more location in the -- updip from our South Dagger Draw Oil Pool.

Q. Continue to read, then, the cross-section for me. As we move from left to right, we've now gone through the proposed location.

A. Uh-huh.

Q. You're trying to catch the last of the upstructure oil that is currently being produced in South Dagger Draw out of the North Indian Basin Unit Well 12?

A. That's correct.

Q. Move from the 12 down to the 10, 17 and 1.

A. All right. As we move eastward, we can look at these two markers that Marathon informally designates in the reservoir, the Cisco and the Canyon, and you can see as we go downdip, indeed, those markers climb downstructure.

But the important thing is that as long as we're

below the datum, minus 3800, we're producing oil from those reservoirs. The Number 10, for instance, has perforations both in the Cisco and the Canyon making oil; the Number 17, predominantly in the Canyon, a small interval in the Cisco, making oil; and then the 12 Number 1, the furthest to the east, is all in the Canyon and is making oil.

Q. Okay, let's go now to some of your maps that show how you have distributed the reservoirs. If you'll turn to Exhibit Number 3 --

A. Yes, I think these give a better perspective on why we need to drill the NIBU Number 30.

If you look at Exhibit Number 3, this is a structure map on top of the Cisco carbonate. You can refer back to your cross-section and see that is indeed the upper member of the upper Penn. And the raspberry color is the current productive gas area. And then the white area is areas we're not currently trying to produce the Cisco.

You can contrast that -- If you hold them side by side, the next exhibit, Exhibit Number 4, this is a structure map on the top of the Canyon marker, again, so we're lower in our upper Penn section. But there you can see coded in green is the area we have interpreted to be oil-productive. And importantly, look at the minus-3800 contour, and you can see that is our limit, our interpreted limit of our oil-productive zone.

Based on the structure and the distribution of known productive wells in the Canyon, it is geologically reasonable to extend that South Dagger Draw Pool into Section 10 and also up into Section 3.

To test this, the best location for us to test this right now, given other constraints, is the northeast-northeast corner of Section 10.

And Mr. Kellahin, if you'd like me to discuss why Section 3 -- we've tried it in Section 3 and had a failure, I can go into that.

Q. All right, let's talk about that in relation to the standard setbacks as they currently exist in the Indian Basin-Upper Penn Pool. You're now in Sections 10 and 3. Those are the Indian Basin-Upper Penn Pool, 640 gas spacing, 1650 setbacks, right?

A. That's correct.

Q. All right. In 3, when you drilled the 3-1 up in the northeast quarter of Section 3, that was at a standard 1650 setback, at least?

A. That's right. We tried to test the updip limits using an orthodox location in the Comanche Fed 3 Number 1. In fact, when we put this well on production, we did get 100-percent gas.

Q. All right, so you missed --

A. Let me clarify that.

Q. Yes.

A. We got a small show of oil and gas.

Q. So you know you've got pretty good control, at least in that section, and you unfortunately are out of the oil column in the Canyon. Is it out of the oil column in the Canyon that is so productive in South Dagger Draw?

A. That is correct. We are too far updip to have caught the productive Canyon zone in the orthodox location for the Comanche 3 Number 1.

Q. So your plan now is to come down to Section 10, 660 out of the northeast corner --

A. Uh-huh.

Q. -- and try to get below the minus-3800 contour line?

A. That is correct.

Q. All right. If you were required to drill at a standard well location, then it really is beyond where you anticipate you would have oil production out of the Canyon?

A. We would, in fact, be undergoing the same exercise we did with the Comanche 3; we'd be too far updip.

Q. All right. Let's look now. If that's your best opportunity at that unorthodox location for oil out of the Canyon, let's see where it fits in terms of the Cisco.

Go back to Exhibit Number 3 and let me see what happens in the Cisco.

A. Right, if we -- Leaving both maps side by side, you can see the downdip limit of the Cisco production is pretty much on the western half of Section 10, and the updip limit of the Canyon oil is on the eastern half of Section 10. And there is a no-man's land in between those two zones where we cannot predict what we're going to get.

So our best geologic risk to take is to drill as close as we can to the known productive interval below minus 3800 feet in the Canyon.

Q. All right. So your lowest known gas limit is minus 3770?

A. That's correct.

Q. And your highest known oil limit is minus 3800?

A. That's right.

Q. Okay. And so you've got a transition area or a no-man's land for which there's substantial risk in picking a location?

A. That's right.

Q. All right. Having looked at the Upper Pennsylvanian, let's turn your attention now to what you have interpreted for the Morrow portion of the well.

If you'll look at Exhibit 5, let's take a moment and identify the color codes and the basic information, and then let me ask you your conclusions.

A. Exhibit 5 should look vaguely familiar. It was

presented in the Case 11,512 for the deprorationing of the Morrow.

Q. All right, this is the May 2nd hearing display. It was Exhibit 5 in that hearing and it's also Exhibit 5 today.

Has this been altered? Has it been changed?

A. No, sir.

Q. All right.

A. I'm sorry, yes, it has. It has been updated to show the location of NIBU 30 with the red dot in Section 10.

Q. And that's the only change?

A. That's the only modification.

Q. Okay, refresh our recollection about what you're seeing here when you look at this display.

A. If you look at the left of Exhibit Number 5, there's a type log for the Morrow. In the South Dagger Draw area, we produce predominantly from the lower Morrow. These are channel sands. The map that you're looking at is a structure map on top of the lower Morrow. No, I take that back, I'm sorry. It's a structure map on top of the Morrow, and it basically shows west-to-east gentle structural dip.

Q. Okay.

A. The acreage, again, is outlined as before, yellow

being all of Marathon's acreage, partial interest, with Parker and Parsley and all those leases.

Q. All right, let's turn to Exhibit -- Why are my exhibit numbers out of order?

A. I don't know.

Q. I don't know either. What do you have, 6?

A. One moment. This should be Exhibit 6.

Q. And which one is it?

A. The lower Morrow net sand isopach map, the bean map.

EXAMINER STOGNER: Here's Section 6. You have two identifications.

MR. KELLAHIN: That's what's confusing me. This was Exhibit 8 from the prior hearing; it is now Exhibit 6 for today. All right.

Q. (By Mr. Kellahin) This is the same map, with the change in that you put the NIBU 30 location in its little bean?

A. That's correct.

Q. All right.

A. So what we have here, again, if we look at our type log, it's the lower Morrow net sand map that we're making. And I'll refresh your memory. This is a very difficult map to make because you cannot absolutely correlate each of the channel sands in the lower Morrow.

So what you do is, you count up the total sand within the interval and you map out a distribution of the sand using your geologic model, and that's what this represents.

And as you'll recall, we found that there was a very limited distribution to each of these sand channels, and that by drilling at a closer density than had previously been thought, we had very high success ratio.

Q. The plan for NIBU 30 is to drill the upper Penn -- to drill the Morrow in combination with the upper Penn test?

A. That's correct. Mr. Folse will testify as to some of the economics behind that, but basically it is geologically prudent when you're putting a well down in the upper Penn and your Morrow map shows that it's a higher geologic success rate -- or a lower risk to hit one of these sand accumulations, it is prudent for us to take it down all the way to the Morrow.

Q. This composite, if you will, of multiple sand opportunities in the Morrow, in your opinion, is best achieved also at this unorthodox location, which is 660 out of the north and east corner?

A. Yes, it is, based on the distribution of the sands on this lower Morrow net sand map, the northeast corner seems to show the highest accumulation of sands.

As you move away from the northeast, you'll see

we go to a zero line. That would substantially increase our risk at an orthodox location.

MR. KELLAHIN: Mr. Examiner, that concludes my examination of Mrs. Cox.

We move the introduction of her Exhibits 1 through 6.

EXAMINER STOGNER: Exhibits 1 through 6 will be admitted into evidence.

EXAMINER STOGNER: As opposed to asking any questions, I'll take administrative notice of the previous Case 11,512.

MR. KELLAHIN: All right, sir. Thank you.

EXAMINER STOGNER: And with that, you may be excused.

THE WITNESS: Thank you.

MR. KELLAHIN: Our next witness, Mr. Examiner, is Ron Folse. Mr. Folse is a petroleum engineer.

RONALD J. FOLSE,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Folse, would you please state your name and occupation?

A. My name is Ronald Folse. I'm a senior petroleum

engineer with Marathon in Midland, Texas.

Q. On prior occasions, Mr. Folse, have you testified before the Division as a petroleum engineer?

A. Yes, I have.

Q. In fact, you testified at the hearing of the termination of prorationing for the Morrow Gas Pool back on May 2nd of this year?

A. Yes, I did.

Q. As part of your preparation for this morning's hearing, have you made an analysis of the costs with regards to drilling the Number 30 well as a well that will test both the upper Penn and the Dagger Draw -- I mean in the -- the upper Penn formations, as well as the Morrow formations?

A. Yes, I have.

MR. KELLAHIN: We tender Mr. Folse as an expert petroleum engineer.

EXAMINER STOGNER: Mr. Folse is so qualified.

Q. (By Mr. Kellahin) Let me talk to you in general terms, Mr. Folse. Let's describe for the Examiner what the level of activity Marathon has with regards to these Upper Penn wells drilled with this Morrow tag-along, and what success you've had with those type of projects.

A. Marathon, over the last four years, beginning in 1993, has drilled a total in the South Dagger Draw area, in

the upper Penn, a total of 44 wells. Of those 44 wells, eight wells have been drilled through the Morrow. As a result, three of the eight wells were dry in the Morrow. Two of those dry wells were recompleted uphole in the upper Penn.

Of the total of 44 wells, only one well was actually dry or not productive in the upper Penn or the Morrow.

Q. Your company has enjoyed considerable success, then, with exploiting the Morrow as an addition to an upper Penn test?

A. That's correct, yes.

Q. All right. And you would like to continue that success by attempting to duplicate it with the Number 30 well in Section 10?

A. Yes, we do.

Q. Okay. Let's talk about some of the specifics, then. If you'll look at Exhibit 7 with me, describe for us your analysis of the costs of drilling and completing as you've categorized them here.

A. What we've got here in Exhibit 7 is the typical well costs. For example, NIBU 30 or the other wells in South Dagger Draw Pool that we've been drilling recently, for an 8000-foot well the cost to drill and complete, including production facilities, is $731,000. If -- When

we do drill a well through the Morrow and it is productive in the Morrow, the total costs for drill and complete is $920,000. For an incremental cost to drill and then produce the Morrow is $189,000.

Shown here, though, below the hard line, is what it -- an evaluation where we drill a well through the Morrow to test it, and the Morrow is dry. Therefore, we recomplete up into the upper Penn completion. Total cost is $816,000, for an incremental cost just to drill through and evaluate the Morrow of $85,000.

Below the second solid line, we've got Marathon's estimated costs if we were drilling in an area that does not include the upper Penn potential, simply a Morrow test. And if the well is not productive, dryhole costs would be $425,000. the difference being, if we're able to tie the Morrow completion or Morrow test with an upper Penn backup, the $85,000, as opposed to $425,000 dryhole cost, that's 20 percent of that total.

Therefore, Marathon, in the current development over recent years, has tried to include the Morrow potential with the upper Penn drill wells.

Q. You've selectively done that, obviously. There will be upper Penn locations in Dagger Draw --

A. Yes.

Q. -- for which you do not add the Morrow extension,

and so you selectively do that, based upon geologic information and other choices?

A. That's correct, yes, sir.

Q. All right, when you make that choice in Section 10, do you have an opportunity here for postponing drilling the Morrow well until you drill a later upper Penn well in this section?

A. Based on the current geologic and engineering information for development of the upper Penn, to get an oil well -- the NIBU 30, of course, is our optimum location -- if we in fact don't get oil production and it does produce merely gas in the top part of the well, we would most likely not drill another well in Section 10, and therefore would not be able to have the opportunity to deepen it through the Morrow.

Q. All right. So this represents, based upon current information, the only opportunity for further development in Section 10 for any oil potential?

A. That's correct, yes.

Q. And if you don't exercise it here with a Morrow tag along, then you're going to lose your chance for the Morrow?

A. That's correct, yes.

Q. The Morrow reserve in here don't justify a stand-alone Morrow well, do they?

A. They do not.

Q. That's pretty risky?

A. Yes.

Q. All right, let's turn to some production information so the Examiner has that available to him if he desires to understand how these wells are doing in this area.

Let's first of all show him Exhibit 10 and help him understand how to read the codes to find the wells as they're displayed on Exhibit Number 1.

A. Exhibit Number 8.

Q. I'm sorry, 8. You're on Exhibit 8, and I want you to compare it to Exhibit 1 so he knows how to read the well codes.

A. Okay, Exhibit 8 is the production status, current production status of wells in the area. These are Marathon-operated properties.

The first lease is the Bone Flats Federal lease. It's Section 12 on the eastern side of the field.

The next lease is the MOC Federal Lease. That's Section 1, which is 100-percent Marathon working interest.

The North Indian Basin Unit includes 23 wells. Five wells are gas wells in the gas pool; the other remaining wells are recent wells drilled in the South Dagger Draw Oil Pool.

The well in the bottom of the Exhibit 8 is the Comanche Federal, which was recently drilled, early this year, and -- Comanche Federal 3 Number 1 in the north half of Section 3.

Q. That's the one Ms. Cox talked about a while ago in the northeast of 3?

A. Yes, she did.

Q. And the companion well in Section 10, then, the one down in southwest-southwest, is the North Indian Basin Unit Number 1 well?

A. Yes, it is. It's the first well indicated on the list for North Indian Basin Unit.

Q. And it's down at 864 MCF a day?

A. Yes, it is.

Q. All right. Let me have you go through the rest of the displays and summarize for us the information you've provided to the Examiner so that he has references on the production history of the wells in the area, starting with Exhibit 9.

A. Exhibit 9 is a production plot for North Indian Basin Unit Well Number 1. It is the production -- It is the well that commenced production in the middle 1960s. It has been on production for over 30 years. The production plot begins in 1988, however.

It shows that the production -- the gas rate has

been somewhere slightly above 2 million cubic feet a day. Over recent years it has declined and is currently 864 MCF per day, with 69 barrels of water per day.

One thing, it's hard to tell because it's not a color plot, but the water production in 1988-89 was in the neighborhood of 30 to 50 barrels of water per day. Increasing water production occurred until into 1992, was as high as 300 to 400 barrels of water per day.

Remedial work at that time evaluated the excessive water production, and a packer was set to isolate the lower sets of perforations, and the well has been able to maintain gas production, but we've not been able to maintain total water -- or to discontinue water production.

Cumulative production, of course, NIBU 1 is -- let's see, 29 BCF of gas over its life.

Q. Is the production profile from this well typical or characteristic of the gas wells in the top of the Cisco, in the Indian Basin-Upper Penn Gas Pool?

A. Yes, it is. Typically, the wells in this area, in the Upper Penn Gas Pool, when they do commence producing water, this is a flowing gas well, and the water production inhibits the gas production.

Q. Okay. Let's turn to an example, now, of an oil well in South Dagger Draw, and let's look in Section 2 at the northeast offset to your well location, which would be

in the southwest-southwest of 2. It's the Well Number 12.

A. That's correct.

Q. That's Exhibit 10?

A. Yes, it is.

Q. Show us how that well has performed.

A. Okay, North Indian Basin Unit Well Number 12 began production in July of 1995. Based, as you see here, on Exhibit 10, it had produced initially at over 500 barrels of oil per day.

The gas or the GOR was 4400 -- Well, actually the current GOR is 4400, with a current rate of 240 barrels of oil per day.

These wells produce with submersible pumps and produce at a fairly high water volume. The oil cut is approximately 30 percent in this well, over time.

The crude oil has a gravity of 42 degrees, and the gas gravity from these wells in South Dagger Draw is .67. Cumulative production for NIBU 12 is 91,000 barrels of oil in 11 months.

Okay, let's look at the performance of another well that's on Mrs. Cox's cross-section. It's the well in Section 11; it's in location B up there; it's the Well Number 10. Summarize for us its performance.

A. Yes, North Indian Basin Unit Well Number 10 on Exhibit 11 produced -- it has been producing for 14 months.

It has produced close to 180 barrels of oil per day initially, has fluctuated between 100 and 140 barrels per day, with some increased production early this year because of revised submersible pump designs. Its current rate is 31 barrels of oil per day, with 1.3 million cubic feet of gas per day and 175 barrels of water per day.

Right now, operationally, we're looking at the well to see if we can increase the oil production from this well.

Q. All right. And without explaining it, identify for the record Exhibits 12, 13 and 14.

A. Exhibits 12, 13 and 14 are other wells on the prior exhibits we've shown.

North Indian Basin Unit Number 17, in South Dagger Draw Oil Pool.

Exhibit 13 is North Indian Basin Well Unit Well Number 15, which is a Morrow producer in Section 2.

And Exhibit 14 is an exhibit showing North Indian Basin Unit Well Number 21, which is a current Morrow producer in Section 11.

Q. Let me ask you to summarize, Mr. Folse.

From a reservoir engineering aspect, when we look at Exhibit Number 1, the Division and the operators currently, as best they could have determined, have positioned the boundary of the two pools as they come

together in these sections.

But there appears to be an opportunity for what has been the South Dagger Draw Pool to extend further west than its current boundary, and the approval of this well at this location provides an opportunity to explore more precisely the location of that reservoir boundary?

A. Yes, it does.

Q. If that's not done, is there an opportunity for oil that is still upstructure to not be produced by current wells that are in South Dagger Draw in Sections 2 and 11?

A. That is correct, yes.

Q. So there's an opportunity to avoid waste if we approve the unorthodox location and continue to test for and probe for the western boundary of the oil pool?

A. That's correct, yes.

MR. KELLAHIN: That concludes my examination of Mr. Folse.

We move the introduction of his Exhibits 7 through 14.

EXAMINER STOGNER: Exhibits 7 through 14 will be admitted into evidence.

And I have no other questions. You may be excused.

MR. KELLAHIN: All right, sir.

EXAMINER STOGNER: Do you have anything further

in Case Number 11,568, Mr. Kellahin?

MR. KELLAHIN: No, Mr. Examiner.

EXAMINER STOGNER: This case will be taken under advisement.

(Thereupon, these proceedings were concluded at 11:03 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 11568, heard by me on 11 July 1996.

Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

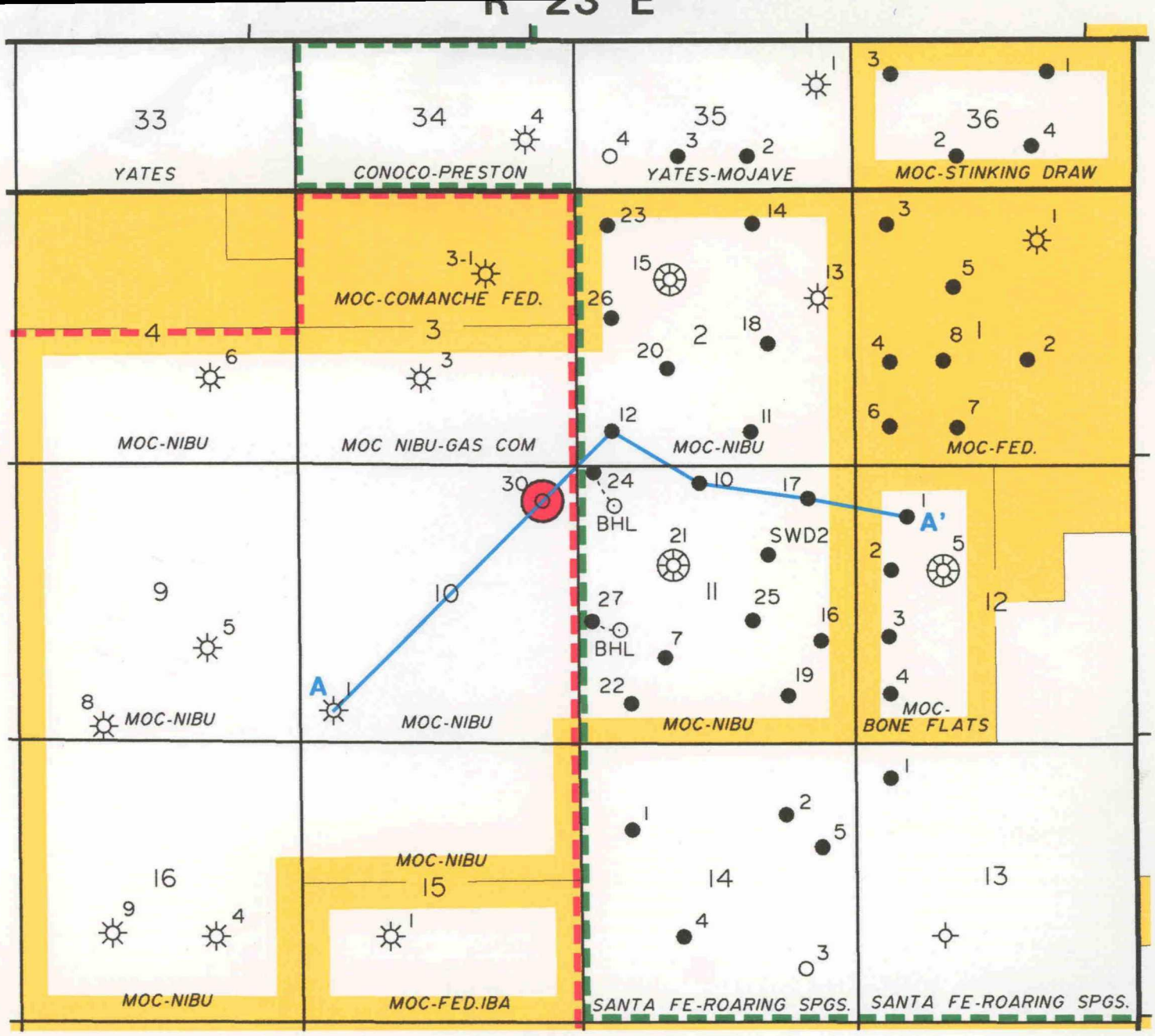
I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL July 14th, 1996.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998



- UPPER PENN. OIL WELL
- UPPER PENN. GAS WELL
- MORROW GAS WELL
- INDIAN BASIN GAS POOL
- SOUTH DAGGER DRAW ASSOCIATED POOL

MARATHON OIL COMPANY
MID-CONTINENT REGION

INDIAN BASIN FIELD AREA

EDDY COUNTY, NEW MEXICO

UPPER PENN. POOL DESIGNATIONS

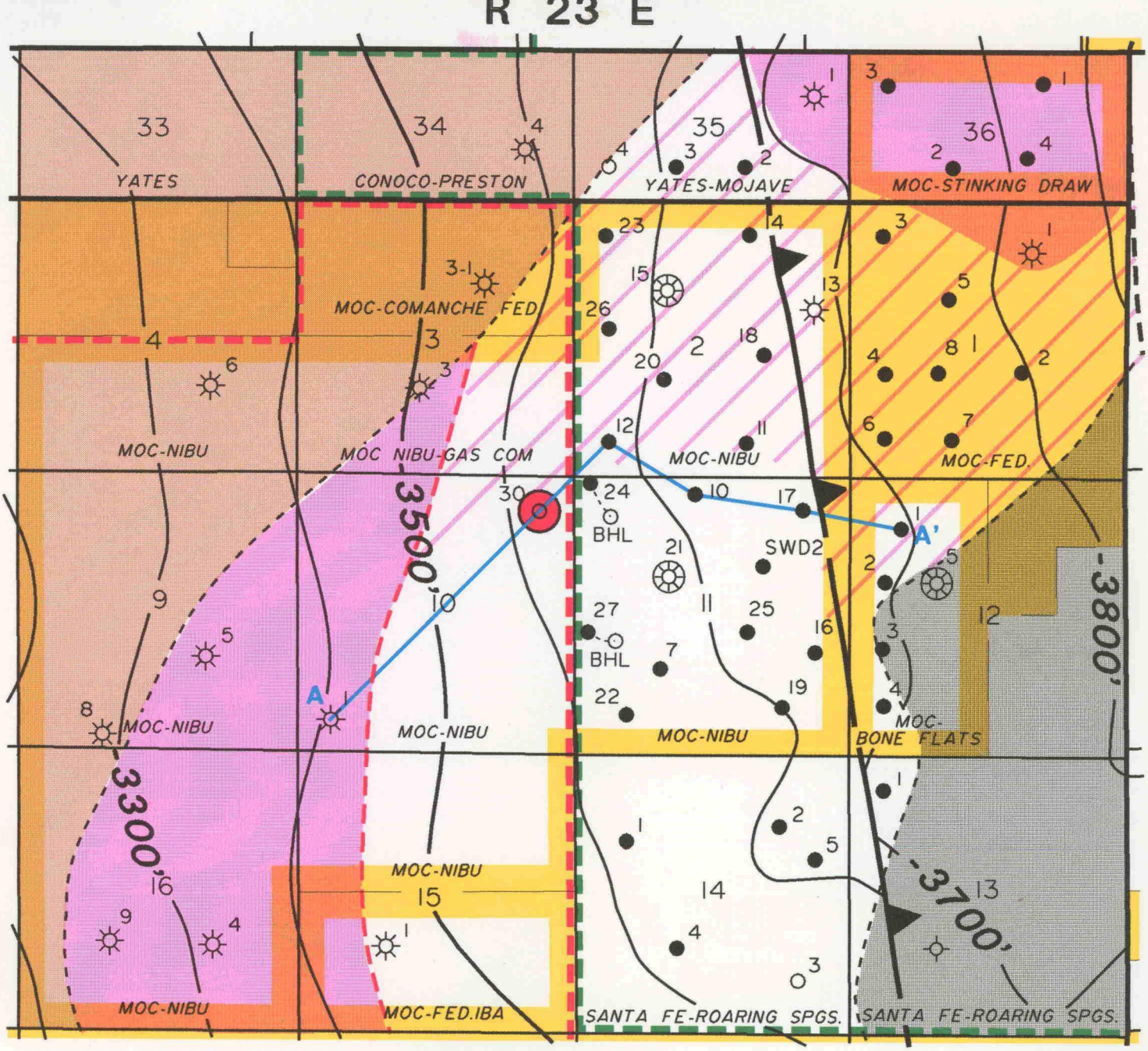
BEFORE THE
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
MARATHON OIL CO. EXHIBIT NO. 1
JULY 11, 1996 CASE NO. 11568

0 1/2 1
MILE

D.COX
7/96

IBFHEAR.AFE EXPL

LARGE FORMAT EXHIBIT HAS BEEN REMOVED AND IS LOCATED IN THE NEXT FILE



NON-RESERVOIR

BASINAL FACIES

UPPER PENN. OIL WELL

UPPER PENN. GAS WELL

MORROW GAS WELL

INDIAN BASIN GAS POOL

SOUTH DAGGER DRAW ASSOCIATED POOL

MARATHON OIL COMPANY
MID-CONTINENT REGION

INDIAN BASIN FIELD AREA

EDDY COUNTY, NEW MEXICO

T/CISCO CARBONATE STRUCTURE

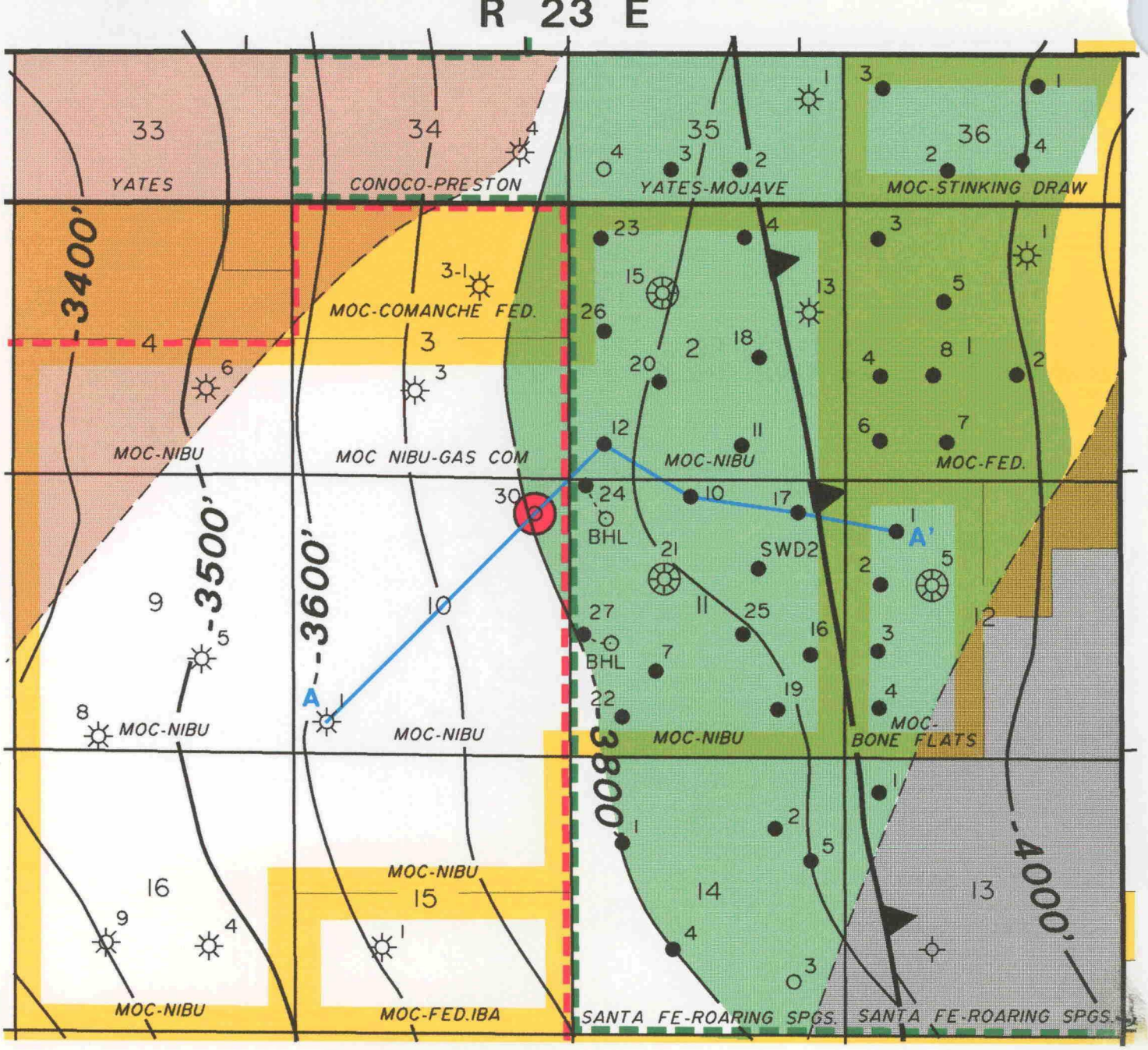
C.I.: 100'

BEFORE THE
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
MARATHON OIL CO. EXHIBIT NO. 3
JULY 11, 1996 CASE NO. 11568

0 1/2 1
MILE

D.COX
7/96

IBFHEARA.AFE EXPL



NON-RESERVOIR

BASINAL FACIES

UPPER PENN. OIL WELL

UPPER PENN. GAS WELL

MORROW GAS WELL

INDIAN BASIN GAS POOL

SOUTH DAGGER DRAW ASSOCIATED POOL

BEFORE THE
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
MARATHON OIL CO. EXHIBIT NO. 4
JULY 11, 1996 CASE NO. 11568

MARATHON OIL COMPANY
MID-CONTINENT REGION

INDIAN BASIN FIELD AREA

EDDY COUNTY, NEW MEXICO

TOP CANYON STRUCTURE

C.I.: 100'

0 1/2 1

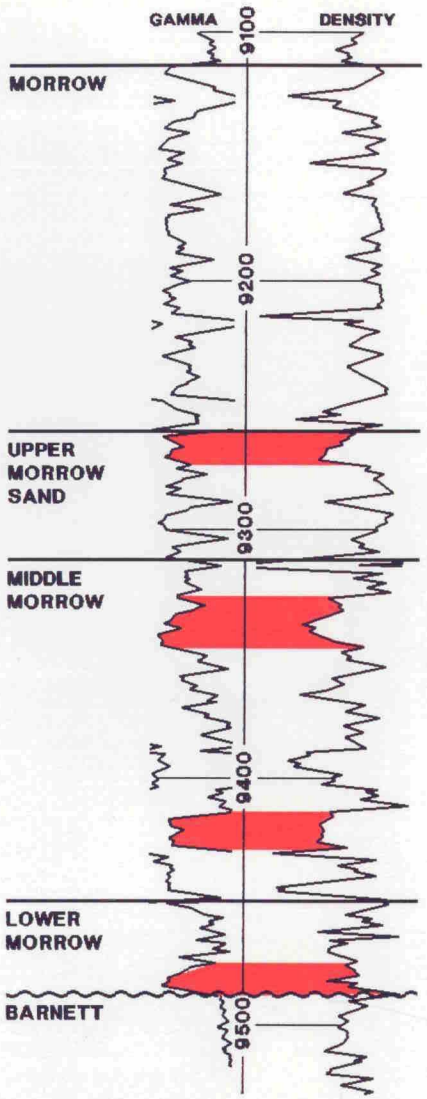
MILE

D.COX

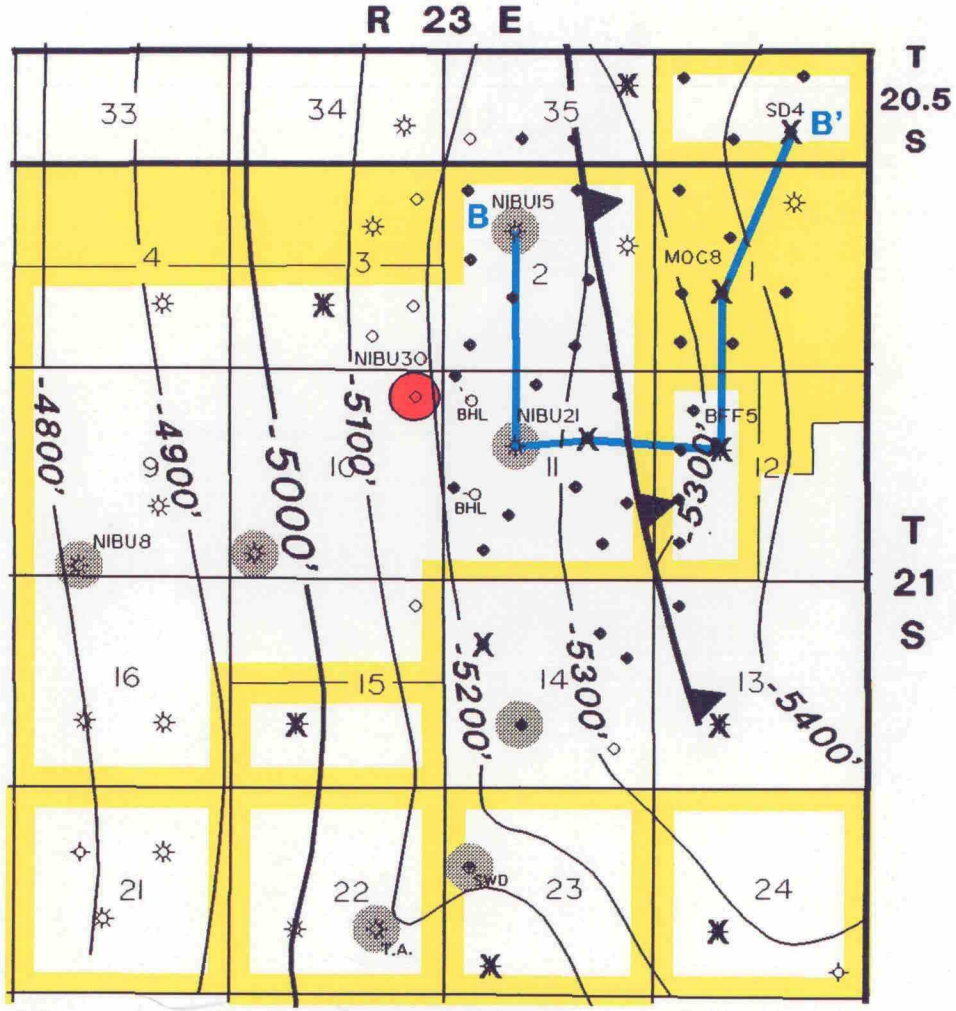
7/96

IBFHEARB.AFE EXPL

TYPE LOG



CEMET3968 BUD EXPL



X MORROW PENETRATION

MORROW PRODUCER

BEFORE THE
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
MARATHON OIL CO. EXHIBIT NO. 5
CASE NO. 11512
MAY 2, 1996

4/96

MARATHON OIL COMPANY
MID-CONTINENT REGION

INDIAN BASIN FIELD AREA

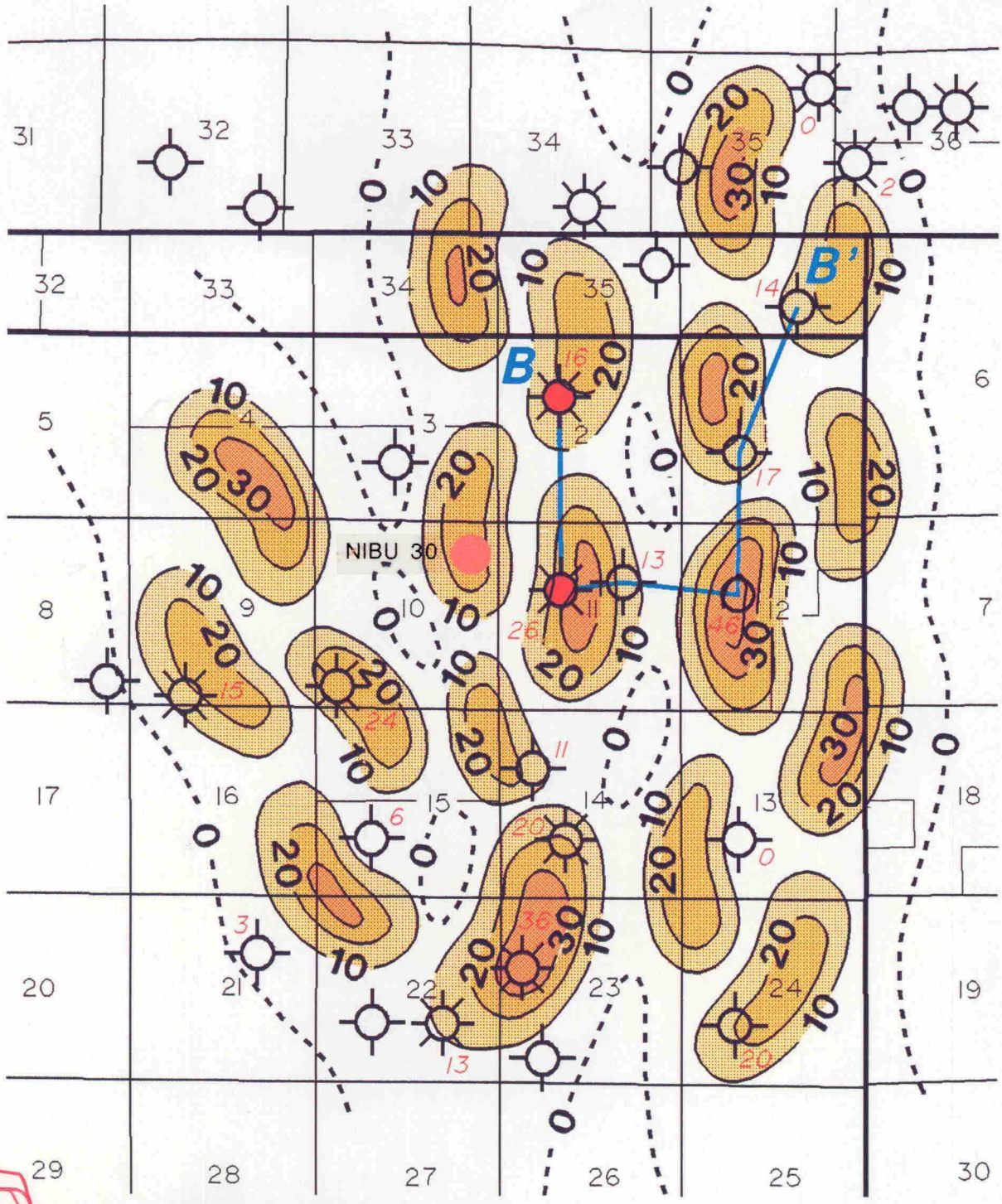
EDDY COUNTY, NEW MEXICO

TOP OF MORROW STRUCTURE MAP

C.I.: 100'

0 1/2 1
MILE

BEFORE THE
OIL CONSERVATION DIVISION
Case No. 11568 Exhibit No. 5
Submitted By:
MARATHON OIL COMPANY
Hearing Date: July 11, 1996



MORROW GAS PRODUCING

MORROW GAS DEPLETED

MORROW PENETRATION (DRY)

MARATHON OIL COMPANY
MID-CONTINENT REGION

INDIAN BASIN AREA

EDDY COUNTY, NEW MEXICO

LOWER MORROW NET SAND ISOPACH

C.I.: 10'

BEFORE THE
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
MARATHON OIL CO. EXHIBIT NO. 8
CASE NO. 11512
MAY 2, 1996

BEFORE THE
OIL CONSERVATION DIVISION
Case No. 11568 Exhibit No. 6
Submitted By:
MARATHON OIL COMPANY
Hearing Date: July 11, 1996

MARATHON WELL COSTS
(DRILL AND COMPLETE)

South Dagger Draw Well **8000' well depth**	**$731,000**
Indian Basin Morrow Well **9600' well depth**	**$920,000**
Incremental Costs - Productive in Morrow	**$189,000**
Morrow Test - Upper Penn Completion	**$816,000**
Incremental Costs - Dry in Morrow	**$85,000**
Morrow Test - Dry Hole	**$425,000**

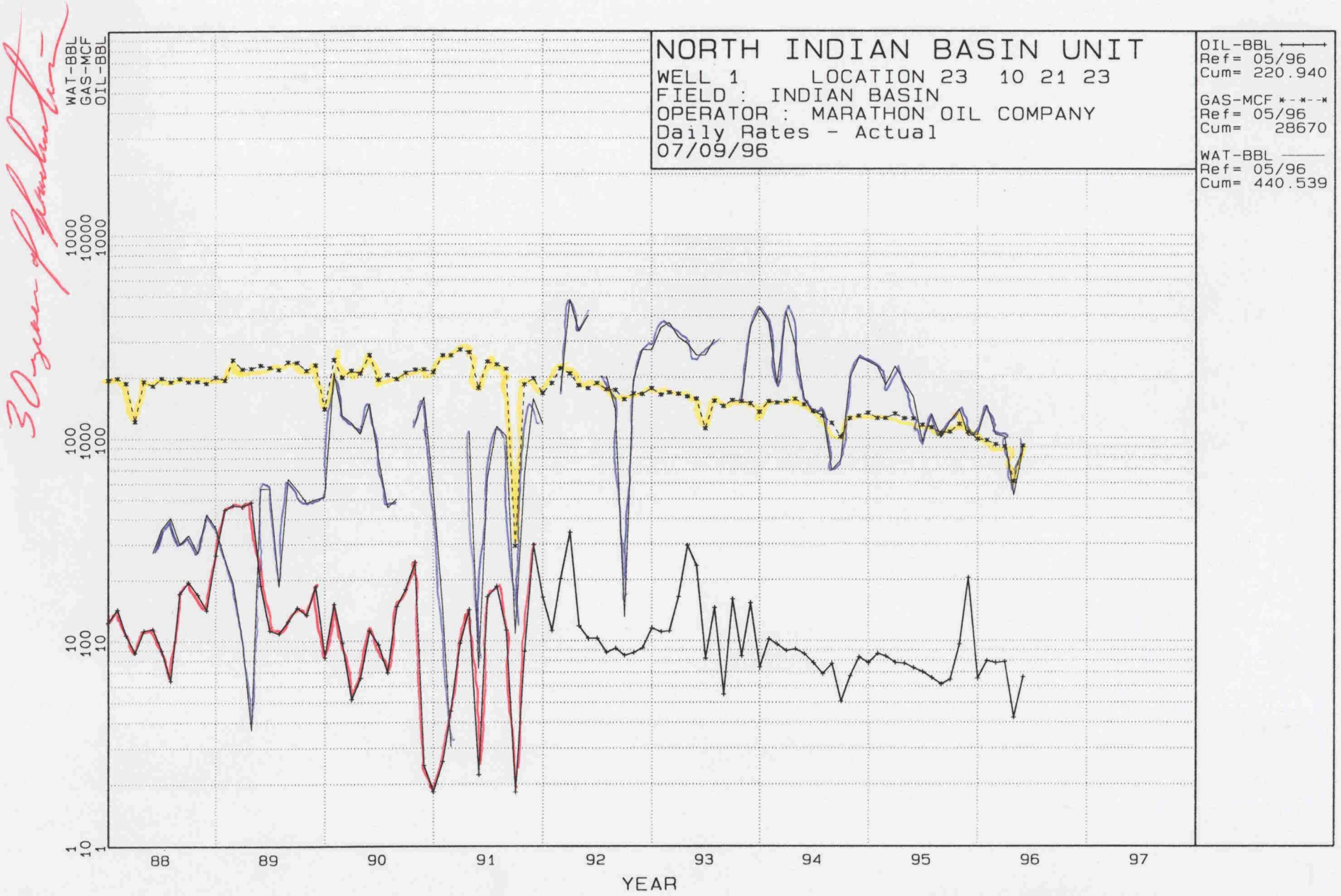
Examiner Hearing Before the
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
Submitted by MARATHON OIL CO. EXHIBIT NO. 7
Hearing Date: July 11, 1996 CASE NO. 11568

PRODUCTION STATUS OF WELLS

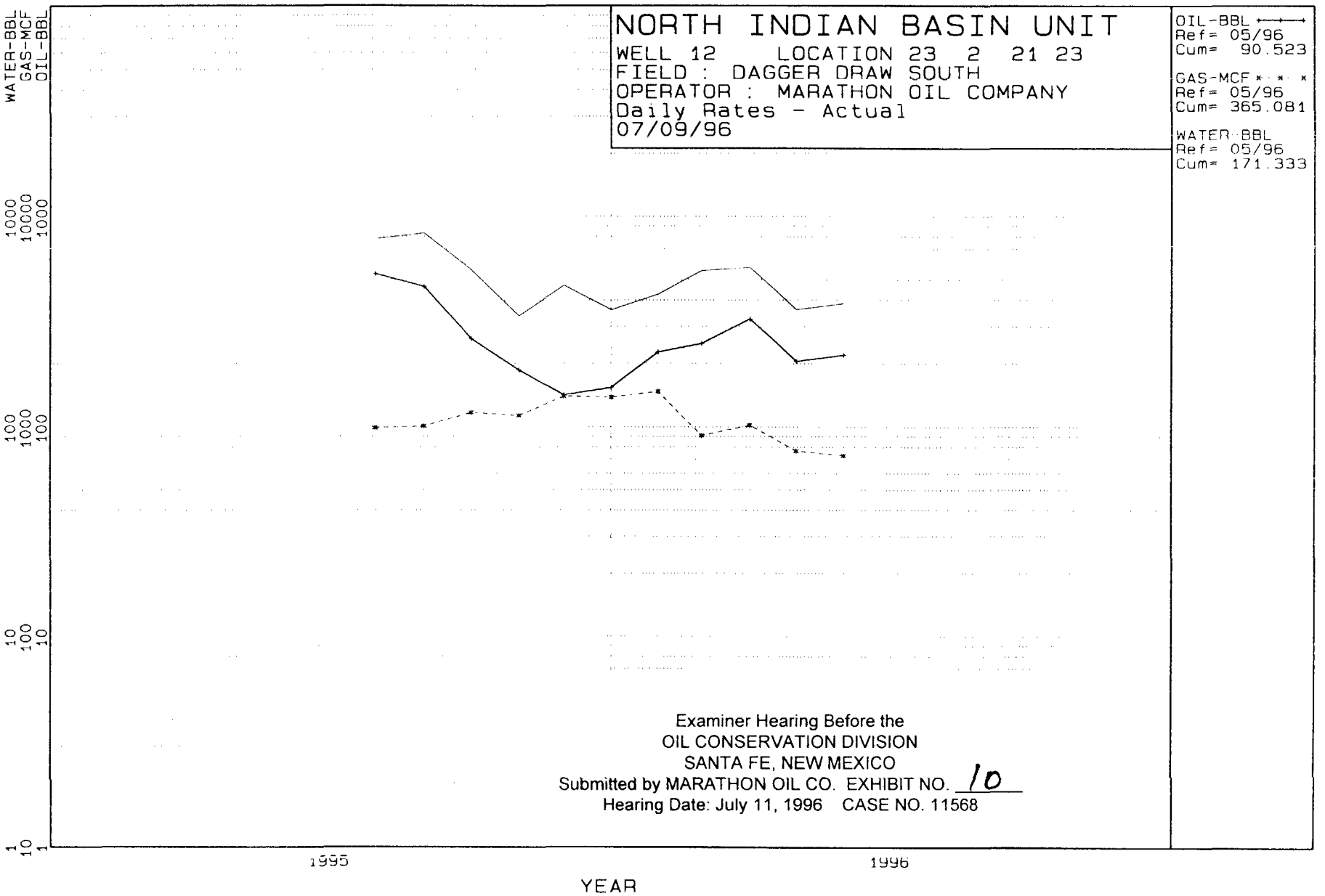
MARATHON OPERATED PROPERTIES

LEASE/WELL NAME	CURRENT RATE OIL/COND BPD	CURRENT RATE GAS MCFD	CURRENT RATE WATER BPD	CUMULATIVE PRODUCED AS OF 5/31/96 OIL/COND MB	CUMULATIVE PRODUCED AS OF 5/31/96 GAS MMCF	CUMULATIVE PRODUCED AS OF 5/31/96 WATER MB
BONE FLATS FEDERAL						
12 NO. 1	156	292	130	122	258	99
12 NO. 2	301	478	319	241	369	236
12 NO. 3	232	414	110	85	156	30
12 NO. 4	527	649	430	131	244	93
12 NO. 5	2	2986	39	NEW COMPLETION		
MOC FEDERAL						
NO. 1	5	4320	1614	5	1454	714
NO. 2	55	114	173	29	46	60
NO. 3	108	5364	702	48	2443	569
NO. 4	141	619	472	49	176	161
NO. 5	4	549	21	87	715	221
NO. 6	85	199	189	8	16	11
NO. 7	308	697	486	187	171	83
NO. 8	57	672	16	19	13	2
NORTH INDIAN BASIN UNIT						
NO. 1	8	864	69	220	28667	469
GAS COM NO. 3	0	0	0	105	12581	523
NO. 4	3	1401	148	234	35907	125
NO. 7	54	1166	227	14	294	207
NO. 8	16	4602	12	43	9574	59
NO. 9	12	3967	2	10	3169	1
NO. 10	31	1278	175	54	410	192
NO. 11	201	2114	1382	103	288	526
NO. 12	240	1064	446	91	365	171
NO. 13	21	4808	120	8	1689	194
NO. 14	70	764	207	33	381	221
NO. 15	0	1542	0	0	907	0
NO. 16	154	185	2	75	132	35
NO. 17	107	169	784	50	151	322
NO. 18	91	5642	706	87	1540	496
NO. 19	80	221	41	41	140	35
NO. 20	153	2505	464	79	921	263
NO. 21	0	6193	0	2	1474	0
NO. 22	83	785	16	10	17	16
NO. 23	399	2859	890	172	585	324
NO. 24	230	713	311	26	88	17
NO. 25	78	429	1112	NEW COMPLETION		
NO. 26	391	2183	1138	115	378	136
COMANCHE FEDERAL 3 NO. 1	0	5070	3502	NEW COMPLETION		

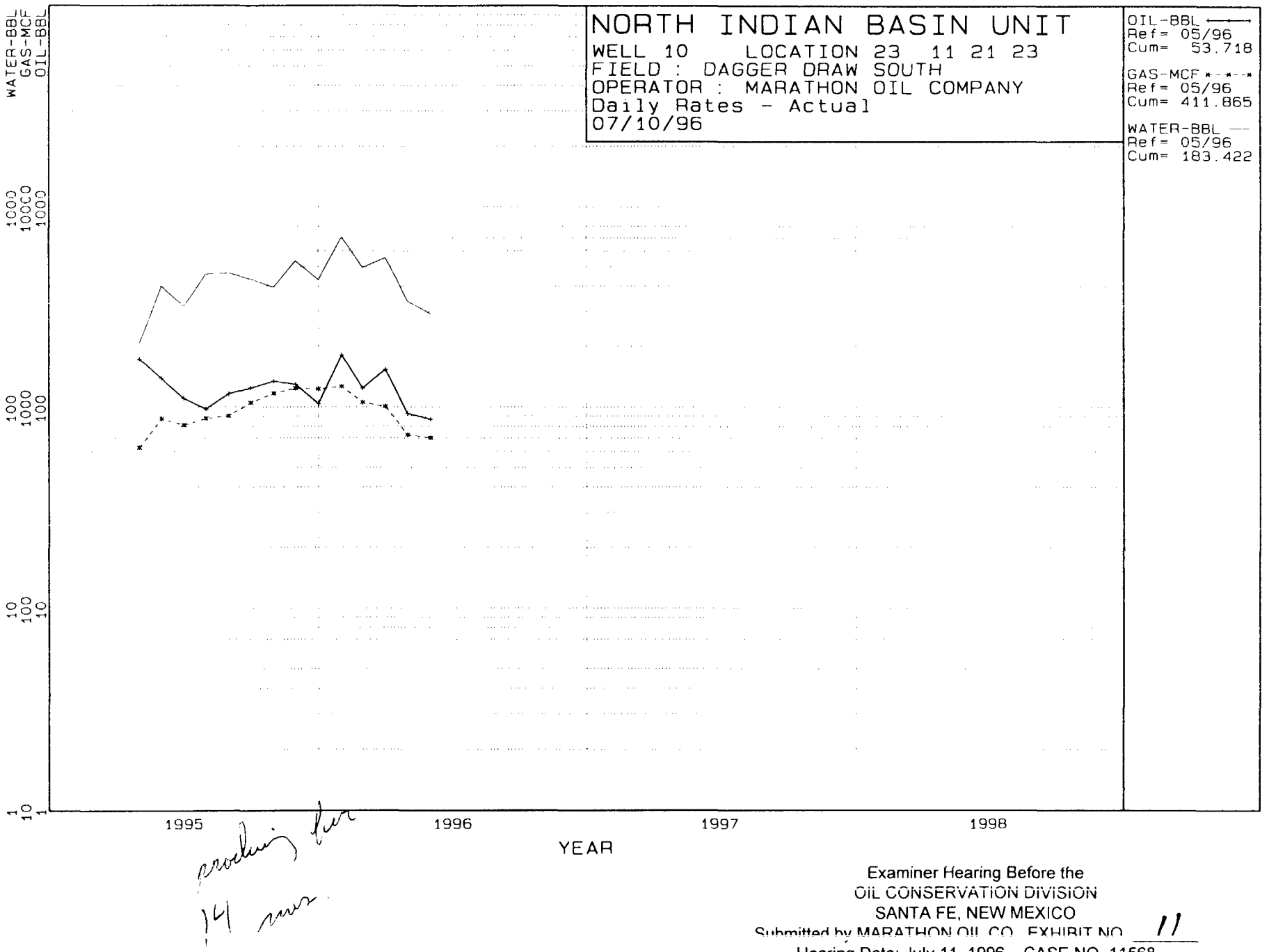
Examiner Hearing Before the
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
Submitted by MARATHON OIL CO. EXHIBIT NO. 8
Hearing Date: July 11, 1996 CASE NO. 11568



Examiner Hearing Before the
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
Submitted by MARATHON OIL CO. EXHIBIT NO. 9
Hearing Date: July 11, 1996 CASE NO. 11568

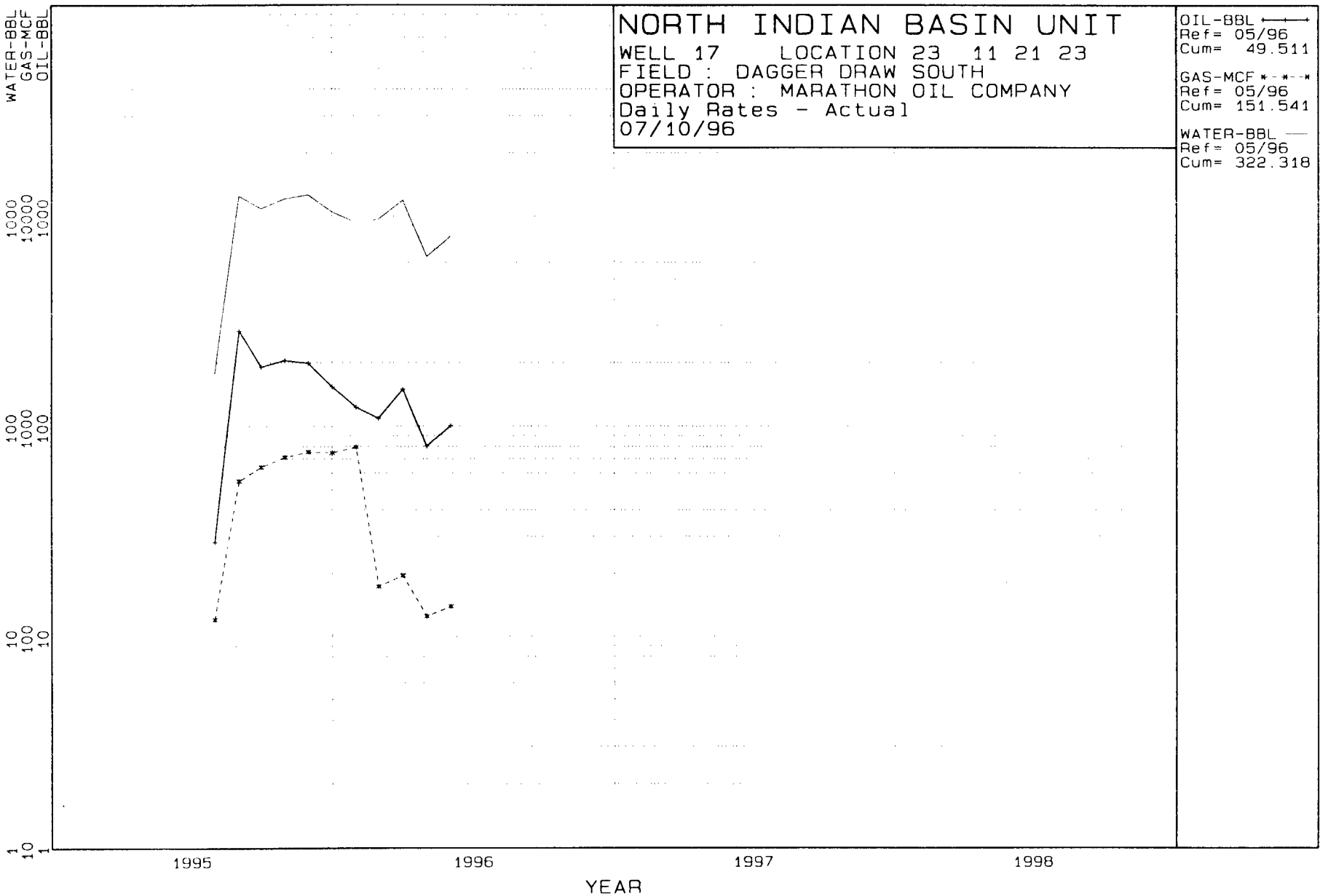


Examiner Hearing Before the
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
Submitted by MARATHON OIL CO. EXHIBIT NO. 10
Hearing Date: July 11, 1996 CASE NO. 11568

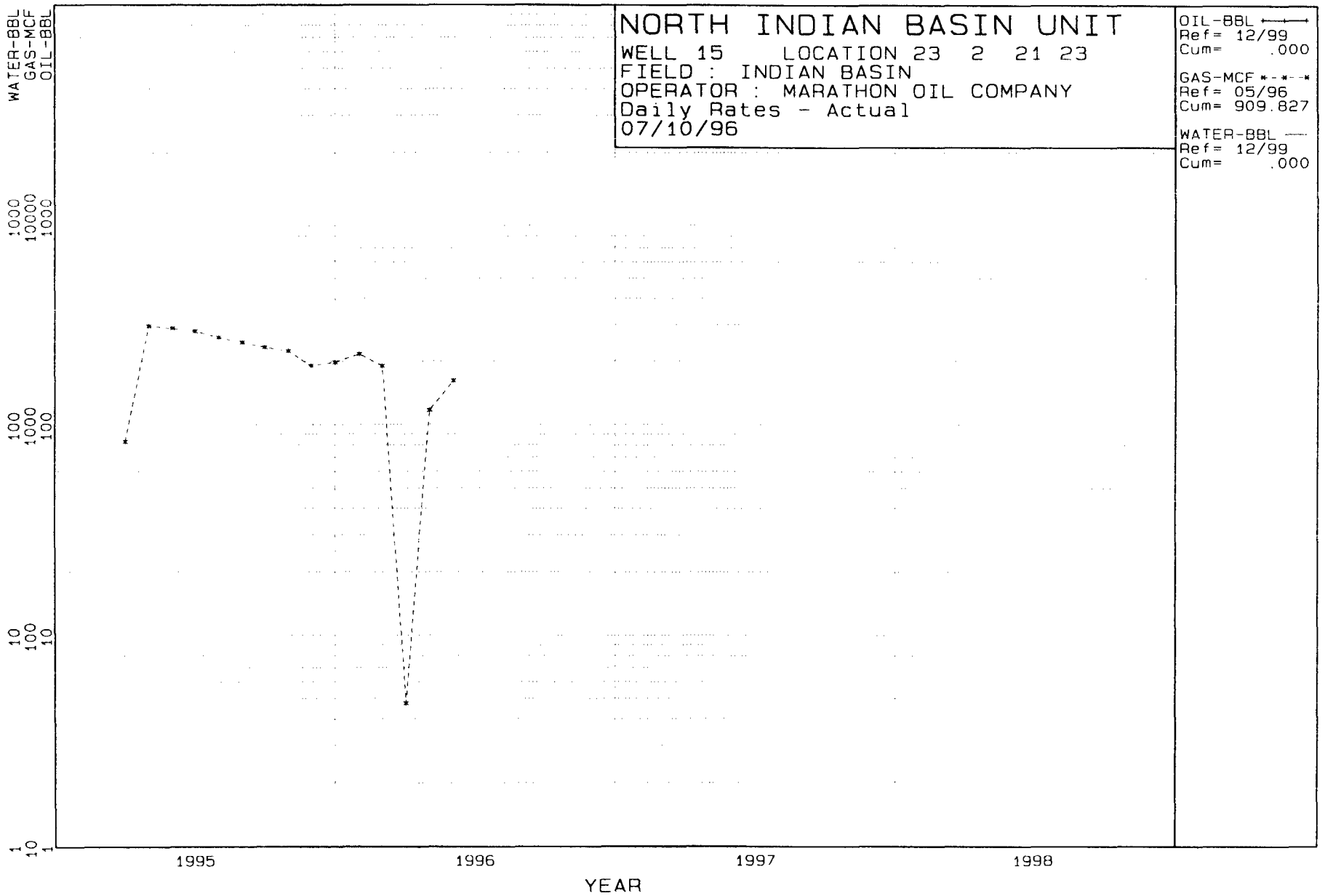


producing for
14 mos

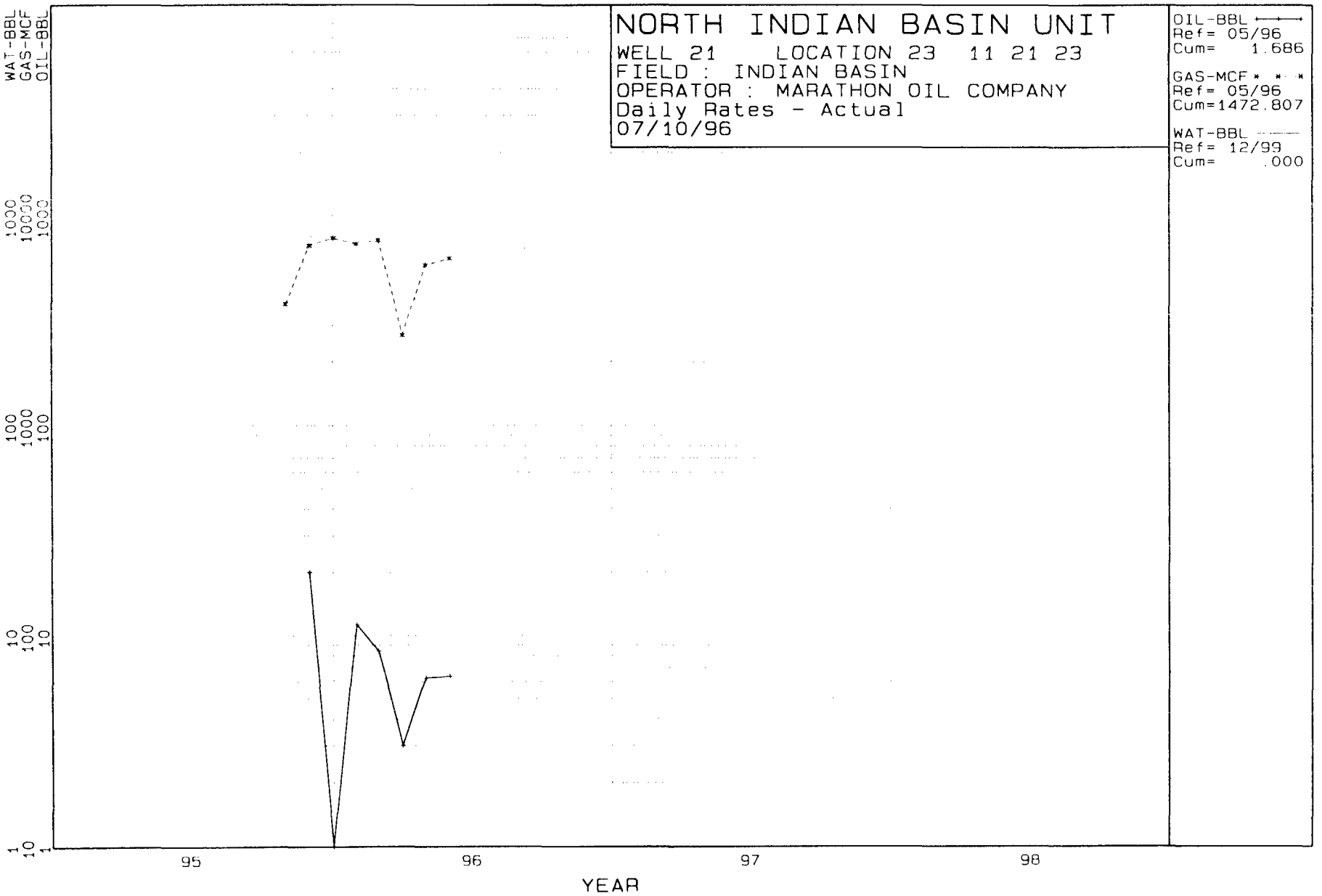
Examiner Hearing Before the
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
Submitted by MARATHON OIL CO. EXHIBIT NO. 11
Hearing Date: July 11, 1996 CASE NO. 11568



Examiner Hearing Before the
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
Submitted by MARATHON OIL CO. EXHIBIT NO. 17
Hearing Date: July 11, 1996 CASE NO. 11568



Examiner Hearing Before the
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
Submitted by MARATHON OIL CO. EXHIBIT NO. 17
Hearing Date: July 11, 1996 CASE NO. 11568



Examiner Hearing Before the
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
Submitted by MARATHON OIL CO. EXHIBIT NO. 14
Hearing Date: July 11, 1996 CASE NO. 11568