### STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

### OIL CONSERVATION DIVISION

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

CASE NO. 11,109

APPLICATION OF ARCO PERMIAN, A UNIT OF ATLANTIC RICHFIELD

## REPORTER'S TRANSCRIPT OF PROCEEDINGS

### EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

September 29th, 1994

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Santa Fe, New Mexico

This matter came on for hearing before the Oil Conservation Division on Thursday, September 29th, 1994, at Morgan Hall, State Land Office Building, 310 Old Santa Fe Trail, Santa Fe, New Mexico, before Deborah O'Bine, RPR, Certified Court Reporter No. 63, for the State of New Mexico.

INDEX September 29th, 1994 Examiner Hearing CASE NO. 11,109 PAGE APPEARANCES 3 **APPLICANT'S WITNESSES:** GARY SMALLWOOD Direct Examination by Mr. Carr 5 Examination by Examiner Catanach 20 **REPORTER'S CERTIFICATE** 28 \* \* \* EXHIBITS Identified Admitted Exhibit 1 8 20 Exhibit 2 10 20 Exhibit 3 10 20 Exhibit 4 11 20 Exhibit 5 11 20 Exhibit 6 12 20 Exhibit 7 13 20 Exhibit 8 14 20 Exhibit 9 14 20 Exhibit 10 15 20 Exhibit 11 16 20 Exhibit 12 19 20 \* \* \*

# APPEARANCES

FOR THE DIVISION:

RAND L. CARROLL Attorney at Law Legal Counsel to the Division State Land Office Building Santa Fe, New Mexico 87504

FOR THE APPLICANT:

CAMPBELL, CARR, BERGE & SHERIDAN, P.A. Suite 1 - 110 N. Guadalupe P.O. Box 2208 Santa Fe, New Mexico 87504-2208 By: WILLIAM F. CARR

\* \* \*

1	EXAMINER CATANACH: At this time we'll call Case
2	11,109.
3	MR. CARROLL: Application of Arco Permian, a unit
4	of Atlantic Richfield, for amendment of the special rules
5	and regulations for the Empire-Abo Pressure Maintenance
6	Project to permit partial gas sales, Eddy County, New
7	Mexico.
8	EXAMINER CATANACH: Are there appearances in this
9	case?
10	MR. CARR: May it please the examiner, My name is
11	William F. Carr with the Santa Fe law firm Campbell, Carr,
12	Berge and Sheridan.
13	We represent Arco Permian in this matter, and I
14	have one witness.
15	EXAMINER CATANACH: Additional appearances?
16	MR. CARR: Mr. Examiner, Mr. Carroll, Ernie
17	Carroll, with the Losee firm in Artesia called and wanted
18	to be certain that the record reflected an appearance by
19	Yates. And I don't know if he's gotten a letter here or
20	not.
21	I've talked to Arco and we have agreed with them
22	that an appearance should be made, and so if there is not
23	one from Mr. Carroll I will also enter an appearance for
24	Yates so they are certain to maintain their position in
25	this hearing.

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1	EXAMINER CATANACH: For the record, Mr. Carr, I
2	do have a letter from Mr. Carroll requesting an entry of
3	appearance in this case.
4	MR. CARR: Good. At this time we'd call Mr.
5	Smallwood.
6	GARY SMALLWOOD,
7	the witness herein, after having been first duly sworn upon
8	his oath, was examined and testified as follows:
9	DIRECT EXAMINATION
10	BY MR. CARR:
11	Q. Would you state your name for the record, please?
12	A. Gary Smallwood.
13	Q. Where do you reside?
14	A. Midland, Texas.
15	Q. By whom are you employed?
16	A. Arco Permian, Inc.
17	Q. And what is your current position with Arco?
18	A. I work as an operations engineer in Eddy County,
19	New Mexico.
20	Q. Mr. Smallwood, have you previously testified
21	before the Oil Conservation Division?
22	A. Yes, I have.
23	Q. At the time of that testimony, were your
24	credentials as a petroleum engineer accepted and made a
25	matter of record?

1	Α.	Yes, they were.
2	Q.	Are you familiar with the Application filed in
3	this case	on behalf of Arco?
4	А.	Yes, I am.
5	Q.	Are you familiar with the Arco-operated Empire-
6	Abo unit a	and the pressure maintenance project therein?
7	А.	Yes, I am.
8	Q.	In fact, you're the engineer with Arco
9	responsib	le for this project, are you not?
10	А.	I am.
11		MR. CARR: Are the witness's qualifications
12	acceptable	e.
13		EXAMINER CATANACH: Yes, they are.
14	Q.	(By Mr. Carr) Could you briefly state what Arco
15	states in	this case?
16	Α.	Arco is requesting authority to begin partial gas
17	sales from	m the Arco Empire-Abo unit and additional
18	authority	to increase gas sales over time without having to
19	return to	the Commission for additional approvals.
20	Q.	You're also proposing amendments to the pressure
21	maintenan	ce project rules which eliminate certain reporting
22	requiremen	nts; is that correct?
23	Α.	Yes, we are.
24	Q.	What you're actually doing there is conforming
25	the rules	to actual practice; is that a fair statement?

1	A. We are.
2	Q. In fact, you have been directed by the Oil
3	Conservation Division or authorized by the Division to
4	terminate filing certain of the reports provided for in the
5	original approvals and just making the rules conform with
6	how you're actually operating the unit?
7	A. That's correct.
8	Q. Would you just initially, just by way of
9	background, tell us when this project was approved?
10	A. This project was approved in June of 1973 with
11	Order No. R-4549.
12	Over the years, as additional acreage was brought
13	into the unit, the order was expanded and amended each time
14	through 1984, amendment to R-4549, Amendment No. F,
15	actually changed the allowable from strict reservoir
16	voidage allowable to the allowable that currently is in
17	effect on the unit today.
18	Q. What does Arco now seek to commence gas sales?
19	A. We've reached a point in the life of the
20	reservoir where it is now more productive and more reserves
21	will be recovered by initiating gas sales, and we have an
22	exhibit later that will illustrate that.
23	Q. Now, Mr. Smallwood, this Application was
24	originally filed back in July of this year?
25	A. Yes.

8
Q. Filing that filing, there were concerns expressed
by both Amoco and Yates Petroleum Corporation; is that
right?
A. Yes, there were.
Q. And the original application was dismissed?
A. It was.
Q. Have you met with representatives of Amoco and
Yates and discussed their concerns?
A. We have met with Amoco and we've discussed it
with Yates on the phone.
Q. The Application before the Examiner today has
been revised from that initially filed in July of this
year?
A. Yes. It's been revised to reflect concerns from
both of those parties.
Q. And is it your understanding at this time that
those concerns are addressed and the rules as now proposed
to the Division?
A. Yes, it is.
Q. Let's go to what has been marked Arco Exhibit
Number 1. Could you identify and review that for Mr.
Catanach?
A. This is a structure map drawn on the top of the
Abo reef and Empire-Abo Pool. The structure map also
contains a great deal of other information that I'll try to

1 briefly outline for you.

2	This was a voluntary pool. And because it was
3	voluntary, some tracts elect to not participate in the Arco
4	Empire-Abo unit. The tracts that did not participate are
5	the ones that are colored in yellow and green on this map.
6	The largest tract is the yellow tract, and that's
7	noted as the Citgo Empire-Abo unit on this particular map,
8	formerly owned and operated by OXY USA. The Citgo Empire-
9	Abo unit is now called the Riverbush unit and is owned and
10	operated by Arco Permian, Inc.
11	The other tracts are individual, one-well
12	producing tracts that are not participating in the Arco
13	Empire-Abo Unit.
14	In addition, this map shows in dark red the
15	original 17 gas injection wells that were used to cycle gas
16	in the Arco Empire-Abo unit.
17	The pink triangles show the new 15 gas injection
18	wells that were recently converted during the last year to
19	gas injection to redistribute and help improve recoveries
20	from the Arco Empire-Abo Unit.
21	The structure map indicates that the highest
22	point of the reservoir is on the western side. The bottom
23	portion of the exhibit shows a west-to-east front elevation
24	that further illustrates that. That would be like a
25	vertical cross-section view of the reef, and you can see

1 that it's highest on the west as it dips gradually to the east and below the original water-oil contact. 2 Q. Okay. Let's move to Exhibit Number 2. Would you 3 identify that, please? 4 Exhibit 2 is a tectonic index map that shows a 5 Α. 6 regional picture in the Empire-Abo field area. You'll note 7 that Artesia is located on there, and Carlsbad and Roswell, 8 to help you reference locations. 9 The northwestern shelf is shown, the Delaware Basin and the Central Basin Platform. And then you see the 10 Abo reef trend that identifies the Abo reef and other Abo 11 12 reefs along this Abo reef trend. All these reefs were formed when the ocean was on 13 the southern side of this trend and the northwestern shelf 14 15 was the land side. It's this land side that is referred to 16 as the back reef side, and on all these reefs that's the 17 north side of the fields. You might also notice that this map was adopted 18 19 from a paper that was published, an industry paper that was 20 published by Mr. LeMay in 1960. Let's go to Exhibit Number 3. Would you identify 21 Q. 22 and review that? Exhibit 3 is a correlation chart of southeastern 23 Α. 24 New Mexico that allows us to relate the Abo reef to other 25 intervals of production in the other parts of the basins.

1	The Empire-Abo field occurs on what's called the
2	margin and it's referred to as the Abo reef there. If you
3	were out in the Delaware basin it would be referred to as
4	the Bone Springs, or if you were on the northwestern shelf
5	it would be referred to as Abo.
6	Q. Let's go now to Exhibit Number 4, and I'd ask you
7	to refer to this exhibit and provide just a very brief
8	geological review of the formation in this area.
9	A. Briefly, the trapping mechanisms in the
10	Empire-Abo field are both structural and stratigraphic.
11	The reef pinches out to the north and it dips below a
12	water-oil contact in the south and east.
13	This picture in Exhibit 4 is a photograph of a
14	core, and it's this photograph that is our most important
15	reservoir description and the most important
16	characteristics that are present out there.
17	The reef contains vugular erratic porosity that
18	is connected by natural vertical fractures, and you can
19	actually see the natural vertical fractures in this core
20	and the vugular porosity.
21	Q. Let's go to Exhibit Number 5 and if you could use
22	this exhibit to review generally the operations conducted
23	in the unit.
24	A. Exhibit 5 is a simplified process flow diagram.
25	It doesn't show any of the equipment, it just shows boxes

	12
1	and it shows a conceptual flow of what the reservoir might
2	be, that is intended to help describe what kind of
3	operations we operate under and produce under in the
4	Empire-Abo field.
5	We produce approximately 60 million cubic feet of
6	gas a day. Black oil is recovered, and currently we
7	produce about 2,000 barrels of black oil a day associated
8	with that 60 million cubic feet of gas.
9	The produced gas is then sent to two gasoline
10	plants, one of which is the Phillips gasoline plant and one
11	of which is the Amoco gasoline plant.
12	Both gasoline plants recover natural gas liquids
13	and sell those natural gas liquids in the form of ethanes,
14	propanes, butanes, and pentanes-plus. They also burn fuel
15	from the gas for the operation of their plant. And then
16	the remainder of the gas is returned to the Empire-Abo Unit
17	gas injection plant for reinjection into the Empire-Abo
18	Unit.
19	Of the 60 million cubic feet a day that is
20	produced, approximately 44 million ends up as being
21	reinjected in the Empire-Abo Unit.
22	Q. Let's go now to Exhibit Number 6. What does this
23	depict?
24	A. Exhibit 6 depicts our interpretation of the
25	initial reservoir conditions in the Empire-Abo Unit and

1 | current conditions.

2 And the illustration on the left that describes the initial conditions indicates that there was originally 3 a very small gas cap and very large oil column. 4 It also 5 indicates that the gas injection wells were perforated near 6 the top of the reef where the gas cap originally was, and 7 that the oil producers were perforated near the base of the 8 reef, allowing the oil to drain down vertically through the reef, through those natural vertical fractures that I 9 10 previously showed, to the producers.

11 Our current conditions consist of a greatly 12 expanded secondary gas cap due to the partial depletion 13 that has occurred all these years, and a very small, thin 14 oil column.

Q. Let's go to Exhibit 7 and review for the Examiner
how this differs from the preceding exhibit.

17 Exhibit 7 is the same on the left side, which Α. refers to the initial conditions, but on the right-hand 18 side we've included a new gas injection well which 19 represents the 15 wells that I showed on the initial 20 21 structure map that we had recently converted to injection. 22 Q. The pink triangles on Exhibit 1? The pink triangles on Exhibit 1. 23 Α. 24 The new injection wells were converted to redistribute gas injection and to the move it closer to the 25

1	oil column to try to improve recovery and sweep efficiency
2	of the natural gas liquids.
3	That project was instituted and started back in
4	the first of this year, and unfortunately we've seen very
5	few, if any, results from that project.
6	Q. Okay. Let's move to Exhibit Number 8. Would you
7	identify and review that, please?
8	A. Exhibit 8 is a historical review of production
9	from the Empire-Abo Unit. The colored triangles show
10	gas-oil ratio, and then the oil production is shown in the
11	open squares.
12	The important part about Exhibit 8 is that the
13	gas-oil ratios have climbed dramatically, and is another
14	one of the reasons why we need to begin to institute
15	partial gas sales.
16	Q. What does Exhibit Number 9 show you?
17	A. Exhibit 9 is a presentation of the 1984 reservoir
18	simulation that was done, and I originally mentioned that
19	in 1984 is when our allowable was changed from a strict
20	reservoir voidage allowable to the type of allowable we're
21	on today. It was based on this 1984 reservoir simulation
22	that indicated that slightly higher gas rates would improve
23	our recovery of hydrocarbons.
24	And this just shows how the reservoir model was
25	matched up until 1984, and then from 1984 forward it shows

1	how the forecast of that model has accurately depicted the
2	results in the field.
3	Q. Let's go now to Exhibit Number 10. Would you
4	identify and review this for Mr. Catanach?
5	A. Exhibit 10 is a calculation of the energy that is
6	being recovered from the Empire-Abo Unit for the various
7	blowdown dates, and blowdown dates are a description of gas
8	sales.
9	So if gas sales had started in 1991, that would
10	be the first point that's indicated on this plot, something
11	between 160,000 trillion BTUs and 170,000 trillion BTUs
12	would have been recovered.
13	With gas sales beginning in 1985 you can see the
14	energy recovery goes up.
15	And then with gas sales not beginning until 2003,
16	energy goes down dramatically.
17	This energy recovery is a conversion of gas
18	converted to BTUs, black oil recovered converted to BTUs,
19	and then NGL liquids that are recovered by the plants and
20	converted to BTUs, and all those products summed up.
21	Q. So basically what this shows is, if you start
22	sales now, in fact, you will maximize the ultimate energy
23	recovery from this reservoir?
24	A. That's correct.
25	Q. Let's go now to what has been marked Arco Exhibit

1	Number 11. Could you identify this, please?
2	A. Number 11 is a set of rules that exist for the
3	Empire-Abo and Empire-Abo Unit as operated by Arco
4	and our proposals to change them to for current usage.
5	Q. And the wording that you propose to delete has
6	been crossed out on this exhibit and new language has been
7	underscored; is that right?
8	A. Yes, it has.
9	MR. CARR: Mr. Catanach, this proposed rule
10	amendment was attached to the Application filed by Arco.
11	It has been changed in one respect.
12	Rule 5 on page 3 has some additional material,
13	the third paragraph from the bottom. As it was originally
14	proposed, it provided that the unit operator would notify
15	working interest owners and gasoline plant operators within
16	30 days or 30 days prior to making these sales. And at
17	the request of Yates Petroleum, that has been amended
18	simply to make the language conform to the provisions of
19	the unit agreement.
20	It now reads, "The unit operator will notify the
21	working interest owners and gasoline plant owners in
22	accordance with the provisions of the Empire Abo Unit
23	Agreement."
24	We've reviewed that change with Amoco, and they
25	also concur in that change.

1	Q. Now, Mr. Smallwood, the amendments that you
2	propose in Rule 3 simply authorize gas sales; is that
3	correct? That's the effect of that change?
4	A. Yes, sir.
5	Q. If we go to the next page and we look at the
6	amendment, the language, the first two provisions that are
7	crossed out, both of those just relate to changes in
8	reporting production and operations to the OCD?
9	A. That's right.
10	Q. And those rule changes are consistent with the
11	way you have been reporting to the Oil Conservation
12	Division in the recent past?
13	A. That's right. They relate to what used to be
14	required An Empire-Abo pressure maintenance project
15	monthly report was required to be sent to the Commission.
16	And back in 1988, the Commission gave us approval to no
17	longer submit that report.
18	Q. The language that is added in the next paragraph
19	in Rule 5, it starts out, "At least 70 percent of the
20	produced gas will be 'available residue gas'"
21	This provision actually sets a minimum volume to
22	be injected in 1994; correct
23	A. That's correct.
24	Q. And then after that time, it provides Arco as
25	unit operator flexibility to sell more gas from the

1	reservoir following notice to the other working interest
2	owners in the pressure maintenance project area?
3	A. That's correct.
4	Q. Now, the last paragraph, the language contained
5	in that paragraph basically is designed to permit sales at
6	times when the plant is down. Is that the intent of that
7	paragraph?
8	A. It provides for sales during the times of plant
9	interruption or gas injection plant interruption owned and
10	operated by the Empire-Abo unit.
11	Q. And in the amendments and the deletion of Rule 6,
12	again, is a change which simply conforms the rules for the
13	project to actual practice concerning the reporting of
14	information to the Division?
15	A. Yes, sir.
16	Q. That's basically a summation of the changes you
17	are proposing here today?
18	A. It is. I might add that we would expect to
19	notify the working interest owners of any changes in gas
20	sales with our annual plan of operations.
21	Q. And then you would have flexibility not to exceed
22	the limits that are set in the annual plan reported, but
23	within the parameters you would be able to adjust the
24	actual volume of sales?
25	A. Yes.

	19
1	Q. Is Exhibit Number 10 an affidavit I guess it's
2	Number 12 an affidavit confirming that notice of this
3	Application has been provided to all the interest owners in
4	this pressure maintenance project?
5	A. Yes, it is.
6	Q. And a list of addresses of each of the
7	individuals to whom notice was provided is attached as
8	Exhibit A to the affidavit?
9	A. Yes, it is.
10	Q. And the last page attached to the affidavit is in
11	fact the letter that was provided to each of these interest
12	owners?
13	A. It is.
14	Q. In your opinion, will approval of this
15	Application and the commencement of sales of gas from the
16	Empire-Abo Unit will these rules provide necessary
17	flexibility to Arco to effectively manage this reservoir?
18	A. Yes, it will.
19	Q. Will these changes otherwise be in the best
20	interest of conservation, the prevention of waste and the
21	protection of correlative rights?
22	A. Yes.
23	Q. Were Exhibits 1 through 12 either prepared by you
24	or at your direction?
25	A. Yes, they were.

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1	MR. CARR: At this time, Mr. Catanach, we move
2	the admission of Arco Exhibits 1 through 12.
3	EXAMINER CATANACH: Exhibits 1 through 12 will be
4	admitted as evidence.
5	MR. CARR: And that concludes my direct
6	examination of Mr. Smallwood.
7	EXAMINATION
8	BY EXAMINER CATANACH:
9	Q. Mr. Smallwood, the data presented on Exhibit
10	Number 10, how was that determined?
11	A. Exhibit 10 is the plot of energy recovery versus
12	blowdown dates
13	Q. Correct.
14	A and that was determined from reservoir
15	simulations that were run, assuming different gas sales
16	dates.
17	Q. Does your simulation tell you at what rate to
18	increase gas sales to achieve
19	A. At the time these were run we investigated
20	several different rates, and the 65 million a day that was
21	requested at that time appeared to be the optimum rate.
22	I believe that a rate of 100 million a day was
23	run in our simulator, and it indicated that less reserves
24	would be recovered.
25	Q. Under the current rules Well, let's see you're

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producing about 60 million a day?
1
          A.
               Yes.
2
               And reinjecting about 44 --
 3
          Q.
               Uh-huh.
 4
          Α.
               -- million.
 5
          Q.
               Are you required to reinject that amount into
 6
7
     the --
 8
               Our actual allowable says that we can produce all
          A.
     the oil and all the liquids associated with the production
9
10
     of 65 million cubic feet a day, contingent upon the
     reinjection of all available residue gas --
11
12
          Q.
               Okay.
               -- and it's that contingency that keeps us from
13
          Α.
     selling any gas at all today.
14
15
          Q.
               Available residue gas is that amount that you're
     required to reinject?
16
               Yeah. Available residue gas, as currently in our
17
          Α.
18
     orders that exist today, is all the gas that is available
```

21

1 determine how much gas to sell? With proper notice and approval through the plan 2 Α. of operation of the working interest owners, after 3 4 12-31-94. 5 We are currently -- This order initially asked for a set amount until 12-31-94, and after that date, we 6 7 propose to have the flexibility to increase gas sales at our own rate. 8 9 0. I missed that. You're requesting for the remainder of 1994 to be allowed to do what? 10 11 For 1994 we're requesting that the available A. 12 residue gas be set at 70 percent of the produced amount, 13 which translates into a volume that will be sold out of the 14 plants. 15 We might go to Exhibit 11, the set of rules, and on page 3 of that exhibit, the third paragraph from the 16 17 bottom, the sentences that are underlined, it says, "At least 70 percent of the produced gas will be 'available 18 19 residue gas' for the remainder of 1994." That means that if one cubic foot is sent to a 20 21 gasoline plant that .7 of a cubic foot has to come back for 22 reinjection, and .3 of a cubic foot is available for 23 shrinkage and fuel and gas sales. Approximately 42 million has to be reinjected for 24 ο. 25 the remainder of 1994. 70 percent of 60 million; is that

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1	what you're saying?
2	A. It would be 70 percent of 65 million.
3	The 60 million in the schematic that I showed you
4	has been an average over the past few years. So it would
5	be .7, multiply 65, so it would be 45 1/2 million.
6	The numbers that are also in the simplified
7	process schematic that I showed you, those are averages
8	from some previous years. Our gas has gotten leaner since
9	those averages were prepared, and there is more gas being
10	reinjected today for every amount that's being produced
11	than what's actually shown in that exhibit, so
12	The sentence that I just read to you out of
13	Exhibit 11 translates into approximately 5 million cubic
14	feet a day in gas sales for 1994.
15	And then the sentence that follows the one I just
16	read says that, "After 1994, the unit operator may elect to
17	increase gas sales by decreasing the percent of produced
18	gas required to be available residue gas."
19	And that means that as gas markets warrant, we
20	may elect to increase gas sales, and we hope to be able to
21	do that without asking for allowable change.
22	Q. So after 1994, if it's going to be up to Arco as
23	to how much gas to sell
24	A. Yes, sir. Arco and their working interest
25	owners.

24

1	Q. Will that be a gradual take?
2	A. Yes. We expect it to be ramped up with time, and
3	it well be dependent on some projects that we have in mind
4	to increase oil production. If they're successful, then
5	the ramp-up will be rather slow.
6	If they're not successful the ramp-up will be
7	rather dramatic, and we'll be on the kind of blowdown
8	schedule that was presented in Exhibit 10 that shows the
9	energy recovery to be optimum for 1995.
10	As clarification, the only thing that keeps us
11	from blowing down completely today is that there are a few
12	things that we still think that we might be able to do to
13	increase oil recovery, that are now small enough to
14	measure, that they can't be identified accurately in a
15	large reservoir simulation, but important enough to be
16	considered before we go to gas sales, total gas sales.
17	Q. So it's really not significant whether you do it
18	fast or slow in terms of recovering more oil?
19	A. No, it is, because the primary mechanism for
20	recovery out here is gravity drainage, and if you do it
21	real fast then you deplete the pressure real quick. And as
22	the pressure goes down, the viscosity of the reservoir
23	fluids goes up. And that increase in reservoir viscosity
24	decreases the rate of drainage through the reservoir.
25	So it really slows down the amount of recovery

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1 that you receive. So you have to consider that too. And we think we have when we looked at -- I 2 3 mentioned earlier, we looked at the 65-million-a-day rate versus the 100-million-a-day rate and found that the 65-4 5 million-a-day was the optimum rate. But what we're talking about in this ramp-up 6 7 period is something that's really not within our accuracy 8 of our models. I mean, it's... 9 Q. How long do you anticipate the blowdown period to last? 10 11 Α. Our models forecast that we will be able to 12 produce at the allowable of 65 million cubic feet a day for 13 two to three years, and that then that we will approach depletion within the following two to three years. 14 So we don't see a life of much over five to ten 15 16 years of the Empire-Abo field after complete blowdown of the units. 17 Q. Now, when you say complete blowdown, that's --18 Total gas sales. 19 Α. Not reinjected? 20 Q. No gas reinjections, that's correct. 21 Α. And that's not going to occur until you say 22 Q. 23 you've tested some of these additional --24 Α. We have two or three more ideas for increasing 25 and improving black oil recovery from the unit that we want

to explore.

1

2	One of them already was the project that I
3	mentioned earlier where we converted 15 wells to gas
4	injection to try to distribute gas injection and improve
5	recoveries, and unfortunately so far that one has been
6	unsuccessful.

But we want to propose a horizontal well, to test
the horizontal well concept. And we have some recompletion
ideas that we want to work on too, before we move into
total gas sales.

Q. Now, Rule 6, you're eliminating -- you're not
currently required to file that report; is that correct?
A. We received approval in December of 1988 to
suspend that report, that's right.

That report was more appropriate, really, for the rules that were written up until they were amended with amendment F in 1984, and after that time, it really didn't apply to the way the order and rules were written, and we got official approval in 1988 to suspend it.

It's just been carried in the order since then,
and we have not operated that way since that time.

22 EXAMINER CATANACH: I think that's all I have of 23 the witness.

24 MR. CARR: We have nothing further, Mr. Catanach.
25 EXAMINER CATANACH: Will you submit an order?

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1	MR. CARR: Yes, we'll submit a proposed order.
2	EXAMINER CATANACH: Is there anything further in
3	this case?
4	MR. CARR: Nothing further.
5	EXAMINER CATANACH: There being nothing further,
6	Case 11,109 will be taken under advisement.
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