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:	)	CASE NO. 12,432
APPLICATION OF AMERADA HESS CORPORATION FOR APPROVAL TO CONVERT THE NMGSAU WELL NOS. 215 AND 503 TO INJECTION IN THE NORTH MONUMENT-GRAYBURG-SAN ANDRES UNIT, LEA COUNTY, NEW MEXICO	)	ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: MARK ASHLEY, Hearing Examiner

October 5th, 2000

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MARK ASHLEY, Hearing Examiner on Thursday, October 5th, 2000, 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

October 5th, 2000
Examiner Hearing
CASE NO. 12,432

* * *

E X H I B I T S

Applicant's	Identified	Admitted
Exhibit 1	7	26
Exhibit 2	9	26
Exhibit 3	9	26
Exhibit 4	9	26
Exhibit 5	10	26
Exhibit 6	10	26
Exhibit 7	11	26
Exhibit 8	11	26
Exhibit 9	11	26
Exhibit 10	13	26
Exhibit 11	19	26
Exhibit 12	19	26
Exhibit 13	23	26
Exhibit 14	23	26
Exhibit 15	24	26
Exhibit 16	25	26
Exhibit 17	25	26
Exhibit 18	25	26
Exhibit 19	25	26

* * *

A P P E A R A N C E S

FOR THE DIVISION:

LYN S. HEBERT
Attorney at Law
Legal Counsel to the Division
2040 South Pacheco
Santa Fe, New Mexico 87505

FOR THE APPLICANT:

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

DENNIS SMITH
General Attorney
Amerada Hess Corporation
Houston, Texas

* * *

WHEREUPON, the following proceedings were had at 9:20 a.m.:

EXAMINER ASHLEY: This hearing will now come back to order, and the Division calls Case 12,432, Application of Amerada Hess Corporation for approval to convert the NMGSAU Well Nos. 215 and 503 to injection in the North Monument-Grayburg-San Andres Unit, Lea County, New Mexico.

Call for appearances.

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe law firm Campbell, Carr, Berge and Sheridan. We represent Amerada Hess Corporation in this matter.

Appearing with me today is Dennis Smith, general attorney for Amerada Hess Corporation in Houston. We have one witness.

EXAMINER ASHLEY: Call for additional appearances.

Will the witness please rise to be sworn in?

(Thereupon, the witness was sworn.)

EXAMINER ASHLEY: Mr. Carr?

MR. CARR: Thank you, Mr. Ashley.

CHAD L. McGEHEE,

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

DIRECT EXAMINATION

BY MR. CARR:

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

A. Yes, it's Chad Lee McGehee, and that is spelled M-c-G-e-h-e-e.

Q. Where do you reside?

A. In Seminole, Texas.

Q. By whom are you employed?

A. Amerada Hess Corporation.

Q. And what is your position with Amerada Hess Corporation?

A. Production engineer.

Q. Mr. McGehee, have you previously testified before the Oil Conservation Division?

A. No, sir.

Q. Could you summarize your educational background for Mr. Ashley?

A. Yes, I have a bachelor of science degree in petroleum engineering from Texas Tech University in May, 1993.

Q. And since graduation in 1993, for whom have you

worked?

A. Yes, I've worked for Anadarko Petroleum Corporation in 1993 and 1994, I've been employed by Amerada Hess since April of 1997, both positions as a production engineer, and my current responsibilities are production engineer for the NMGSAU.

Q. Are you familiar with the Application filed in this case on behalf of Amerada Hess Corporation?

A. Yes, sir.

MR. CARR: Mr. Examiner, we tender Mr. McGehee as an expert witness in petroleum engineering.

EXAMINER ASHLEY: Mr. McGehee is so qualified.

Q. (By Mr. Carr) Mr. McGehee, would you refer to Amerada Hess Exhibit Number 1 in the presentation booklet, the second page in that booklet, and review for Mr. Ashley what it is that Amerada Hess seeks in this Application or in this case?

A. Yes, sir. This is a summary of the intent of the C-108 filed with the OCD on November 22nd of 1999. We seek to amend Division Order Number R-9596, approving injection at NMGSAU. We seek approval to convert wells 215 and 503 to injection, both of them completed within the unitized interval of the Grayburg-San Andres.

These conversions are intended to improve our recovery efficiency and our waterflood by further

developing fivespot patterns within the interior of our unit, as indicated by the inset maps.

Q. Are both these wells currently active producers in the unit area?

A. Yes, sir.

Q. When did Amerada Hess file its Application for authorization to convert these wells to injection?

A. It was filed November 22nd, 1999.

Q. And what response was received to this Application?

A. Our only response was from Doyle Hartman, who listed several criteria to be examined on, which we'll address further in the presentation.

Q. Initially, could you review for us the history of the North Monument-Grayburg-San Andres Unit?

A. Yes. Our unitization plan was approved on May 1st of 1991 by Order Number R-9494. The C-108 water injection plan was approved October 15th of 1991 by Order R-9596. Our unitization became effective on January 31st of 1992.

Q. And we have generally developed this area on an 80-acre fivespot pattern; is that correct?

A. Yes, sir.

Q. Let's go to the second exhibit in the presentation material. Would you identify and just explain

what that's intended to show?

A. Yes. Exhibit 2 is just an orientation map showing our NMGSAU boundary, which is outlined with the blue-dashed line. Our proposed conversions are located in the north central portion of the NMGSAU, and they will be detailed later, their exact locations.

Q. There's a block in Section 18 in the northern portion of the unit that corresponds to the plat on the previous page in the material; is that right?

A. Yes, sir.

Q. Let's go to Exhibits 3 and 4. I'd ask you to review these together and generally give us an overview of Amerada Hess's operations in the North Monument-Grayburg-San Andres Unit area.

A. Okay, I'll summarize the information on Exhibit 3 and then discuss the production plot on Exhibit 4.

Our unitization was effective January 1st of 1992, as previously stated. The original plan was to have 149 producers with 108 injectors on 80-acre fivespot patterns.

If you'll turn to Exhibit 4, I give a graphical representation of our production and injection since unitization. On this plot the oil production is on the left scale, oil and gas and production are on the left scale. On the right hand we have water production and

water injection.

Our current production is approximately 3100 barrels of oil a day, 4.2 million cubic foot of gas a day and 18,000 barrels of water a day. Current injection is 50,000 barrels of water a day.

Q. Let's now go to Exhibits 5 and 6, and I would ask you to review and compare your original plan for the unit with the actual development.

A. Okay. Exhibit 5 is a depiction of our original waterflood plan, which included 62 complete fivespot patterns, which are indicated by the yellow shading on the plat.

If you'll turn to Exhibit 6, we have the same plat on the left, compared to our actual development on the right. If you will notice, we have 31 complete fivespot patterns over approximately 7000 acres, with 75 injectors, compared to the original 108.

Shaded in red at the northern portion of the unit are planned conversions of NMGSAU 215 and 503. And --

Q. Basically, what you're doing is just a continuation of your development plan and actually stepping in toward the interior of the unit area?

A. Yes, just based on the results of our waterflood to date.

Q. Could you identify and review Amerada Hess

Exhibit Number 7?

A. Yes, Exhibit 7 shows our injection development over time. The legend indicates the time of conversion for different stages in our waterflood development. Of interest here is the green shading, which indicates development in 1996 and 1997, and the blue shading, which is the expansion program we had in 1998. Our two planned conversions are identified by the red inverted triangles.

And this just shows that we're continuing to develop patterns within the interior of our unit based on data that we obtain, performance data.

Q. Let's go to Exhibit Number 8. Would you identify and review this?

A. Yes, Exhibit 8 is an area-of-review map. The circles surrounding our two proposed wells identify offset wells and leases within one half mile, which is defined as the area of review.

Q. Let's go to Exhibit Number 9. What is this?

A. Exhibit 9 is the Application for permit to inject, our C-108, filed in November of 1999, and it includes all attachments.

Q. And what well are we addressing with this particular C-108?

A. NMGSAU 215 and 503.

Q. And that is because this is an expansion of a

previously approved waterflood project, correct?

A. Yes, sir.

Q. Let's go to this exhibit, and I direct your attention to pages 8 and 9 in the C-108. Would you identify and review those?

A. Yes, pages 8 and 9 show lease ownership and wells.

MR. CARR: Just a minute. The numbers haven't shown up on all -- 8 and 9, they're the two plats with the area of review shown.

EXAMINER ASHLEY: In Exhibit 9?

MR. CARR: In Exhibit Number 9, the C-108.

THE WITNESS: The numbers are on the bottom of the page.

EXAMINER ASHLEY: Pages 8 and 9?

THE WITNESS: Yes.

EXAMINER ASHLEY: Okay.

Q. (By Mr. Carr) All right, go ahead.

A. Okay. This is just a midland map showing lease ownership and wells within two miles of the proposed injectors, the circles indicating the area of review for each well.

Q. Well, what information did Amerada Hess file with the original application for approval of the waterflood project in August of 1991?

A. We filed that on all wells penetrating injection zone within the area of review as required by Section 6 of the C-108. We filed geologic data on the injection zone and the fresh water, as required by Section 8 of the C-108, and we filed water analysis, as required by Section 11.

Q. Would you identify what has been -- Well, does Exhibit 9, the C-108 --

A. Yes, sir.

Q. -- contain all data required on the new injection wells, as required by Section 6 of Division Form C-108?

A. Yes.

Q. And would you identify what we have marked and included in the exhibit packet as Amerada Hess Exhibit Number 10?

A. Okay. Exhibit 10 is data that supplements the Form C-108 filed in November of 1999. What this is is the table that includes information on wells penetrating the injection interval that were not included in the original C-108.

Q. This information addresses each well within each of the areas of review that has been drilled into the injection interval --

A. Yes, sir.

Q. -- since the original approval in 1991, correct?

A. Yes, sir, it includes all wells within both

wells' area of review.

Q. And if we look at this exhibit, what we have is, we have five wells that have been drilled and completed in the Eumont; is that right?

A. Yes, sir.

Q. And two that are unit wells drilled into the Eunice-Monument?

A. In the North Monument-Grayburg-San Andres Unit, yes, sir.

Q. And the Eumont wells, were those wells -- when you looked at those originally, did they appear to penetrate the injection interval?

A. Yes, the Eumont wells just -- They're completed in the Eumont, but they're drilled down into the top of the Grayburg, not really penetrating through our injection interval but they touch into the Grayburg, and that's why we listed them here.

Q. And you have now provided with Exhibit Number 10 all information required by Form C-108 on any of the wells within the two subject areas of review?

A. Yes, sir, on page 2 of this Exhibit 10, we also included cement casing and top-of-cement calculation detail for each of those wells. And I also included an example, a calculation of the top of cement just below the table on page 2, using one cubic foot per sack cement yield as given

to me by Paul Kautz as an acceptable method of calculating top of cement.

Q. And so the sample calculation is what Amerada Hess used, as based on your conversations with the OCD?

A. Yes, sir.

Q. Are there any plugged and abandoned wells within the areas of review for either of the injection wells which are the subject of this hearing?

A. Yes, there's one plugged and abandoned well, and it was drilled and abandoned in 1960, and it was covered in the original C-108.

Q. Now, into what formations or formation are you planning to inject?

A. Both wells we plan on injecting into the Grayburg formation. NMGSAU Number 215 will be initially completed from approximately 3810 foot to 3917, and NMGSAU 503 will be completed from approximately 3766 to 3864.

Q. Are there any other hydrocarbon-productive zones in the immediate area?

A. Yes, the Eumont formation, which is a gas-productive zone immediately above the Grayburg.

Q. What is the source of the water you propose to inject in the subject wells?

A. Just as covered in the original C-108, we want to inject produced water from the Grayburg-San Andres

interval, as well as San Andres supply water.

Q. And this is exactly what you've been doing in this unit since it was originally approved in 1991?

A. Yes, sir.

Q. And what volumes are you proposing to inject?

A. We estimate that we will inject between 750 and 1000 barrels of water a day.

Q. And that's per well?

A. Yes, per well.

Q. And will the system be open or closed?

A. Closed.

Q. Will you be injecting under pressure or by gravity?

A. Pressure.

Q. And what pressure limitation applies to the North Monument-Grayburg-San Andres Unit?

A. Order R-9596 states that we're approved to a pressure limitation of .2 p.s.i. per foot to the depth of the top of the completion, unless we allow the OCD to witness a step-rate test showing that we can go to higher pressure without fracturing the formation.

Q. Would that pressure limitation and the procedures set forth in that order that allow an increase after a step-rate separate test, would those provisions be satisfactory to Amerada Hess for the two injection wells

which are the subject of this hearing?

A. Yes. The .2 would initially be okay with us. However, we would want to keep in there the statement that we can go to higher pressure if we have a step-rate test showing that we will not hurt the formation.

Q. Mr. McGehee, how does Amerada-Hess monitor the pressure in these injection wells?

A. We've got several ways. On each of our injectors we have pressure gauges. We also have transmitters into a SCADA system that send information into the field office, the central plant and my office in Seminole.

The other thing is, we have pressure-limit controllers on our injection pumps at the central plant, which they're set at approximately 700 pounds, to keep us from exceeding that pressure.

So that really controls the pressure at the wellheads, when our central pressure will not exceed the set pressure at the central plant.

Q. And how often is the pressure on each of these wells actually monitored?

A. The pressure is monitored continuously, however the SCADA system does field scans probably within 15 minutes where it pulls data from each of the wells within the field. But I would say approximately 15 minutes on a scan.

Q. And was the original water analysis of the injection fluid presented to the Division in the original hearing on this waterflood project?

A. Yes.

Q. Is the injection fluid compatible with the natural waters and fluids in the injection zone?

A. Yes.

Q. Are there freshwater zones and/or wells in the areas of review that are the subject of this hearing?

A. Yes, sir.

Q. And were all of those covered in the original hearing?

A. Yes.

Q. And there have been no changes since that time?

A. No changes that I'm aware of.

Q. Mr. McGehee, have you reviewed the available geologic and engineering data on this reservoir?

A. Yes.

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

A. No.

Q. Let's go to the C-108, Exhibit Number 9, and I'd ask you to refer to page 11 and identify what is shown on

that page.

A. Okay. Page 11 just identifies the owners to whom notice of our C-108 was provided. Page 12 is a copy of the legal advertisement published in the *Hobbs News-Sun*.

Q. Was notice also provided to the owner of the surface of the land upon which each of the injection wells were located?

A. Yes.

Q. And are copies of these notice letters attached to this Application?

A. Yes.

Q. And return receipts are also included, are they not?

A. Yes, sir.

Q. Let's go back to the presentation material now, and I would ask you to refer to what is marked Amerada Hess Exhibit Number 11. Would you identify that, please?

A. Yes, Exhibit 11 is the objection letter we received from Doyle Hartman dated November 24th of 1999. It sets forth a number of what he refers to as industry-accepted injection practices and standards.

Q. Let's go to the next page, Exhibit Number 12. The first concern expressed by Mr. Hartman was that Amerada -- he requested that Amerada Hess be required to continue to comply with Order Number R-9596, which approved this

waterflood and provided that Amerada Hess should, quote, take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface from injection, production or plugged and abandoned wells.

What is Amerada Hess's response to that concern?

A. Yes, we have and will continue to comply with that.

Q. The second point raised by Mr. Hartman was that the proposed new North Monument-Grayburg-San Andres Unit injection wells -- that it be shown that they had been properly cemented with adequate volumes of API sulfate-resistant cement and each individual injection well cement job demonstrate satisfactory bonding and pipe characteristics, using state-of-the-art 360-degree bond-pipe evaluation such as Schlumberger's USI-GR-CCL log.

What is Amerada Hess's response to that concern?

A. Yes, the OCD does not require specific logging on our part. However, if we don't have a cement-bond log or temperature survey, we use the approved method by the NMOCD to calculate cement tops.

Q. Mr. Hartman's third concern was that well injection pressures for the proposed injection wells will always be kept at or below the NMOCD's maximum surface injection pressure limit of .2 pound per foot. What is

your response to that?

A. I previously addressed what we would like to have in the Division order, stating that we have the option to increase pressure, based on approved step-rate test by the OCD.

Q. And will Amerada Hess order not only the current limitation but the provisions for increasing pressure if that is required?

A. Yes, sir.

Q. The fourth matter raised by Mr. Hartman was that the primary cement job for the proposed injection wells should not have been compromised by nitroglycerine stimulation or excessive acid treatments. What is Amerada Hess's response to that concern?

A. This is not required by the OCD, however on both of these wells there have been no nitro treatments, nor excessive acid, in my opinion.

Q. And you will be presenting information on each of the wells concerning the extent to which there has been an acid treatment or any kind of a nitroglycerine stimulation; is that correct?

A. Yes, it's included in the well histories, later in the presentation.

Q. Mr. Hartman's fifth concern was that each individual well, as well as the overall project, the

injection to withdrawal ratio be kept at one or less, minimizing the likelihood that out-of-zone non-oil-recovery injection will occur. What is Amerada Hess's response to this concern?

A. Our response is that it's not required by the Division, nor in a waterflood can you pressure up the formation without putting in more water than is created by the production. You've got to have an injection-withdrawal ratio greater than one to pressure up the formation.

Q. In your opinion, is an injection-to-withdrawal ratio of one an industry-accepted injection practice or standard?

A. No, sir.

Q. Mr. Hartman's final concern was that the proposed new injection wells not exhibit injection profiles that indicate a large volume or percentage of injection water is exiting the wellbore at the upper part of the injection interval. What is your response to that?

A. Our approval from the original C-108 is that we're approved to inject anywhere within the unitized formation the Grayburg and San Andres.

Q. Mr. McGehee, are you aware of any out-of-zone water resulting from the operations of Amerada Hess Corporation in the North Grayburg-San Andres Unit?

A. No, sir.

Q. Let's go to Exhibit Number 13 in the presentation material. Would you identify that for Mr. Ashley?

A. Exhibit 13 is a well history for NMGSAU Number 215. Basically, it shows the activity on the well since drilling it in 1936. Of interest here is that there has been no nitro treatment. The acid that's been put on the formation over the entire life is approximately 15,000 gallons.

Q. And when we look at the entire life of this well, it goes back to April of 1936, does it not?

A. Yes, sir.

Q. And is 15,000 gallons of acid during that period of time excessive?

A. Not in my opinion.

Q. Let's go to Exhibit Number 14. Would you review that, please?

A. Exhibit 14 is the current and proposed wellbore schematic for NMGSAU 215. This indicates our cement and cement tops, as well as cement volumes, for each of the wells. If you refer to the diagram on the right, it's the proposed schematic indicating that we will have lined tubing and a packer set approximately 50 foot above our completion interval.

Q. Will the annular space be filled with an inert fluid?

A. Yes, sir.

Q. Will there be a pressure gauge at the surface?

A. Yes.

Q. Will Amerada Hess otherwise comply with the provisions and requirements of federal underground injection?

A. Yes.

Q. Would you identify for Mr. Ashley what is marked Amerada Hess Exhibit 15?

A. Exhibit 15 is just our proposed conversion procedure for NMGSAU Number 215. It indicates that we will go in, we will attempt a small cement plugback within the wellbore, acidize the formation, install the injection equipment and put the well on injection after passing the casing integrity test.

Q. You'll establish the casing integrity --

A. Yes, sir.

Q. -- you'll acidize the well, you're going to then swab it and install this equipment; is that how you plan to go about --

A. Yes, and we will fill the annulus with an inert fluid.

Q. And you will obtain an injection profile once we have a stabilized injection rate; is that correct?

A. Yes, sir.

Q. If we look at the rest of this exhibit, Mr. McGehee, Exhibits 16, 17 and 18, what we have is a well history of a wellbore schematics and the proposed conversion procedure for the Well Number 503; is that correct?

A. Yes, sir.

Q. These exhibits show basically the same information that you've just reviewed for the Well Number 215; is that right?

A. Yes.

Q. Is Exhibit Number 19 an affidavit confirming that notice of this hearing and the Application was provided to each owner by certified mail, as required by the rules of the Oil Conservation Division?

A. Yes.

Q. This actual mailing includes two additional owners in addition to those that a year ago received a copy of the C-108; is that correct?

A. Yes.

Q. At this time, have all owners affected by this Application received notice of the Application as required by Division rules?

A. Yes.

Q. In your opinion, will granting this Application and the conversion of these two wells to injection be in

the best interest of conservation, the prevention of waste and the protection of correlative rights?

A. Yes.

Q. Were Amerada Hess Exhibits 1 through 19 either prepared by you or compiled under your direction and supervision?

A. Yes.

MR. CARR: At this time, Mr. Ashley, we would move the admission into evidence of Amerada Hess Corporation Exhibits 1 through 19.

EXAMINER ASHLEY: Exhibits 1 through 19 will be admitted as evidence.

MR. CARR: And that concludes our direct presentation in this case.

EXAMINATION

BY EXAMINER ASHLEY:

Q. Mr. McGehee, on Exhibit 10, this tabulation of wells penetrating the proposed injection zone --

A. Yes.

Q. -- did I understand that these are all the wells within those two half-mile areas of review, or these are just new wells since 1991?

A. They're new wells that were not in the original C-108.

Q. Okay.

A. And they are within the half-mile area of review for both wells.

Q. Okay. And the one P-and-A'd well is the one that was covered under the original C-108?

A. Yes.

Q. And there haven't been any other P-and-A'd --

A. No.

Q. -- wells in the two AORs? Okay.

On page 11 of Exhibit 9, the C-108 -- it's a list of the surface and leasehold operators within a half mile of the proposed injection well -- is Mr. Hartman a leasehold operator within a half a mile of the proposed injection wells?

A. Yes, he has lease rights --

Q. Within that half-mile?

A. -- within that half mile. He has no production within the half mile.

Q. Okay. And then on Exhibit 17, it shows the wellbore schematics for the Number 503. Under the current schematic it shows that there was a casing leak in 1993?

A. Yes.

Q. And that was squeezed, and then it -- Does that say "passed integrity test"?

A. Excuse me, the casing leak was in 1986.

Q. 1986.

A. Yes.

Q. Okay, I see what you're saying then.

A. And the most recent integrity test was in 1993.

EXAMINER ASHLEY: Okay. I have nothing further. Thank you.

MR. CARR: Thank you, Mr. Ashley, that concludes our presentation in this case.

EXAMINER ASHLEY: There being nothing further in this case, Case 12,342 will be taken under advisement.

(Thereupon, these proceedings were concluded at 9:55 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 12342, heard by me on 10-5-00 19.

Mark Ashley, 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 October 11th, 2000.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 2002