STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

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

AMENDED APPLICATION OF SAPIENT ENERGY CORP FOR AN UNORTHODOX WELL LOCATION AND (i) TWO NON-STANDARD 160-ACRE SPACING UNITS, OR IN THE ALTERNATIVE, (ii) ONE NON-STANDARD 160-ACRE SPACING AND PRORATION UNIT, LEA COUNTY, NEW MEXICO. **CASE NO. 12587**

APPLICATION OF SAPIENT ENERGY CORPORATION FOR SPECIAL POOL RULES, LEA COUNTY, NEW MEXICO. **CASE NO. 12605**

ORDER NO. R-11652-B

PROPOSED ORDER OF THE COMMISSION
OF
CHEVRON U.S.A. PRODUCTION COMPANY AND CONOCO INC.

THIS MATTER has come before the New Mexico Oil Conservation Commission (hereinafter referred to as "the Commission") on the applications of Sapient Energy Corporation (hereinafter referred to as "Sapient"), Chevron U.S.A. Production Company (hereinafter referred to as "Chevron"), and Conoco Inc. (hereinafter referred to as "Conoco") for hearing *de novo*, and the Commission, having conducted an evidentiary hearing on the applications on December 4, 2001, and being fully advised in the premises,

FINDS:

(1) Due public notice has been given, and the Commission has jurisdiction of these causes and their subject matter.

(2) In Case 12587, Sapient seeks retroactive approval of an unorthodox well location for its Bertha J. Barber Well No. 12 (hereinafter referred to as "the Barber Well") which is located at an unorthodox gas well location 330 feet from the North line and 660 feet from the East line of Section 7, Township 20 South, Range 37 East,

NMPM, to be dedicated to a non-standard 160-acre gas spacing and proration unit consisting of either (i) the E/2 E/2 of this section, or in the alternative, (ii) the E/2 NE/4 of Section 7 and the W/2 NW/4 of Section 8 for production form the West Monument-Tubb Gas Pool retroactive to September 9, 1999, the date of first production from the Tubb formation. In addition, should the Division approve a non-standard 160-acre spacing and proration unit comprised of the E/2 E/2 of Section 7, then the applicant seeks the approval of a second non-standard 160-acre spacing and proration unit consisting of the W/2 E/2 of this section.

(3) In Case 12605, Sapient seeks the promulgation of special pool rules for the West Monument-Tubb Gas Pool including provisions for 80-acre spacing units and designated well locations.

(4) Sapient has withdrawn its request for hearing *de novo* except for that portion of its application which seeks Special Pool Rules and the assignment of an 80-acre spacing unit for the Barber Well in the West Monument-Tubb Gas Pool to be made retroactive to the date of first production from the Tubb formation and the affirmance of that portion of Division Order No. R-11652 which approved Sapient's well location. *(See, Sapient's Revised Pre-hearing Statement filed on November 28, 2001, Procedural Matters, at page 11.)*

(5) Each application involves the same factual issues and the cases were consolidated and an evidentiary hearing on the consolidated cases took place on December 4, 2001.

(6) Chevron, the offsetting operator to the north and a working interest owner in the W/2 NE/2 of Section 7, and Conoco, a working interest owner in the W/2 NE/2 of Section 7[1], appeared and presented testimony in opposition to the applications of Sapient for the promulgation of special pool rules for the West Monument-Tubb Gas

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[1] Chevron owns 100% of the working interest in the SE/4 of Section 6, Sapient owns 100% of the working interest in the E/2 E/2 of Section 7. The working interest ownership of the W/2 E/2 of Section 7 is as follows:

Conoco Inc.	**37.41862%**
Phillips Petroleum Company	25.0%
ARCO	18.70931%
Chevron U.S.A. Production Company	**18.70931%**
James Burr	0.06511%
Larry Nermyr	0.06511%
Ruth Sutton	0.03255%

(Testimony of Denny, Chevron-Conoco Exhibit 1)

Pool and the retroactive creation of a non-standard 80-acre spacing and proration unit for the Barber Well effective on the date of first production from the Tubb formation.

BACKGROUND:

(7) The Barber Well was producing as an oil well at a standard oil well location 330 feet from the North line and 660 feet from the East line of Section 7, until August 1999 when it was recompleted by Cross Timbers Oil Company (hereinafter referred to as "Cross Timbers") in the Tubb formation as a gas well. In September 1999, Cross Timbers filed Division form C-102 which showed the well at an unorthodox gas well location on a non-standard spacing unit comprised of the E/2 E/2 of Section 7. No application for approval of this unorthodox gas well location nor the non-standard spacing unit dedicated thereto was made pursuant to Division rules nor was the required notice provided to the offsetting owners who are affected by this well location and the acreage dedicated thereto.

FINDING: **Interest owners in the W/2 NE/4 of Section 7 were not properly notified of the proposed unorthodox well location nor the non-standard gas spacing unit for the Barber Well as required by Oil Conservation Division Rules and were thereby denied an opportunity to object at the time the well was recompleted in the Tubb formation.**

(8) By Order No. R-11304, dated January 6, 2000, the Division created the West Monument-Tubb Gas Pool (effective February 1, 2000), designated the E/2 of Section 7 as the acreage to be included in the new pool and approved the Barber Well as the discovery well for the pool.

OIL CONSERVATION DIVISION RULES:

(9) Oil Conservation Division Rules 12 provides "...it shall be the responsibility of all the owners or operators to obtain information pertaining to the regulation of oil and gas before operations begin."

(10) Falcon Creek Resources, Inc. (hereinafter referred to as "Falcon Creek") acquired the Barber Well from Cross Timbers on April 1, 2000 and Sapient acquired the well from Falcon Creek on July 14, 2000. When it acquired the well from Falcon Creek Sapient made no effort to obtain information pertaining the regulation of oil and gas in

New Mexico before it began operations nor to ascertain if the Barber Well was in compliance with Division rules.[2]. *(Testimony of Travis)*

(11) Division Rule 104.B(2) provides that "if a well drilled as an oil well is completed as a gas well but does not conform to the applicable gas well location rules, the operator must apply for administrative approval for a non-standard location before the well can produce."

(12) Neither Sapient or its predecessors applied for administrative approval for the non-standard gas well location for the Barber Well prior to producing the well. *(Testimony of Travis)*

FINDING: The Barber Well is at an unapproved unorthodox gas well location in violation of the Division Rules.

(13) The West Monument-Tubb Gas Pool is governed by the General Rules and Regulations of the Oil Conservation Division which provide for gas wells to be located on spacing units consisting of 160 surface contiguous acres, substantially in the form of a square, which is a quarter section and a legal subdivision of the U. S. Public Lands Survey, with wells to be located no closer than 660 feet to any outer boundary of such unit and no closer than 10 feet to any quarter-quarter section or subdivision inner boundary.

FINDING: The Barber Well is located on a non-standard spacing unit in the West Monument-Tubb Gas Pool which has not been properly formed under the rules of the Division. The standard spacing unit for the Barber Well is the 160-acre quarter section comprised of the NE/4 of Section 7 and the owners therein are entitled to their respective shares of production from the well both retroactively and prospectively.

(14) Division Rule 104 D(2) provides that "Any well that does not have the required amount of acreage dedicated to it for the pool or formation in which it is

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[2] Sapient alleges that it was unaware of the rules of the Division and the regulatory requirements for the Barber Well when it was acquired from Falcon Creek and it was only after Chevron filed its application to recomplete its Mathews 12 Well that Sapient became aware that the Barber Well was not in compliance with Division rules. *(Testimony of Travis)*

completed may not be produced until a standard spacing unit for the well has been formed and dedicated or until a non-standard spacing unit has been approved."

FINDING: **Sapient failed to obtain administrative approval of a non-standard spacing unit for the Barber Well, is in violation of Division Rule 104 B(2) and has been illegally producing the Barber Well since its recompletion in September 1999.**

FINDING: **The Barber Well must remain shut in until it is in compliance with Division rules and the value received for past production from the well has been reallocated to the owners of the reserves drained by the well.**

CHEVRON'S EFFORTS TO OFFSET THE BARBER WELL:

(15) In late 1999, following the recompletion of the Barber Well in the Tubb formation, Chevron began assessing its offset options and decided to attempt to recomplete its G. C. Mathews Well No. 6 located in the NE/4 SE/4 of Section 6 in the Tubb formation. That recompletion proved unsuccessful in the summer of 2000. *(Testimony of Denny)*

(16) In October 2000, Chevron filed an application pursuant to Division Rule 104 seeking approval of a non-standard gas well location for its G. C. Mathews Well No. 12 ("hereinafter referred to as "the Mathews 12 Well") which it proposed to recomplete in the Tubb formation at an unorthodox gas well location 330 feet from the South line and 990 feet from the East line of Section 6, Township 20 South, Range 37 East, NMPM. This well is a direct offset to the Barber Well and, like the Barber Well is 330 feet from the common boundary between the Chevron and Sapient spacing units. Although Chevron's proposed location was only as close to the common boundary between the Chevron and Sapient spacing units as the Barber Well, Sapient objected to the proposed location. *(Testimony of Travis)*

(17) Because of the Sapient objection, the Chevron application was set for hearing before a Division examiner on January 25, 2001. *(See, Testimony of Travis)*

(18) On January 23, 2001, Sapient withdrew its objection to the Chevron application and Chevron's application was approved administratively by Division Order NSL-3752-A dated January 24, 2001. *(See, Chevron/Conoco Exhibit No. 2.)* Due to the delays in obtaining final Division approval of its application for administrative approval of the unorthodox location for the Mathews 12 Well, Chevron was unable to recomplete the Mathews well until late November 2001. During this time, Sapient continued to

produce the Barber at unrestricted rates thereby gaining an advantage on the offsetting Chevron tract impairing the correlative rights of Chevron and the other interest owners in that acreage. *(Testimony of Travis, Testimony of Denny)*

THE ISSUE BEFORE THE COMMISSION:

(19) The fundamental issue before the Commission in this case is the appropriate spacing for the West Monument-Tubb Gas Pool. *(Sapient Revised Pre-hearing Statement at page 2.)*

(20) Sapient correctly identifies the provisions of the Oil and Gas Act which authorize the Commission to adopt spacing rules based on the area which can be efficiently drained and developed by one well[3]. *(Sapient Revised Pre-hearing Statement at page 4.)* However, instead of focusing on drainage information on this reservoir, Sapient asks the Commission to adopt spacing rules based on analogies to Tubb wells located miles away where reservoir characteristics differ from those of the West Monument-Tubb Gas Pool. *(See, Testimony of Von Rhee)*[4]

(21) Chevron/Conoco support spacing rules which are based on the area which can be effectively drained and developed by one well in the West Monument-Tubb Gas Pool, i.e., 160 acres.

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3 Sapient correctly identifies the Commission's statutory authority to set spacing as follows:

NMSA 1978 Section 70-2-17:

"A. [the Commission] is required, as far as it is practicable to do so, [to] afford to the owner of each property in a pool the opportunity to produce its just and equitable share of the oil or gas, or both, in the pool, being an amount , so far as can be practicably obtained without waste, substantially in the proportion that the quantity of the recoverable oil or gas or both, under such property bears to the total recoverable oil or gas , or both, in the pool...."

B. ...may establish a proration unit for each pool, such being the area that can be efficiently drained and developed by one well...."

NMSA 1978 Section 70-2-12 (10):

[the Commission is empowered " To fix the spacing of wells."

Sapient Pre-hearing Statement at page 2.

4. Contrary to statutory standards, Sapient's engineering witness, Kyle Travis, testified that even if the Commission finds that wells in this gas pool drain 160-acres, the pool should nonetheless be subject to the 80-acre spacing requirements of the neighboring oil pool. *(Testimony of Travis)*

NEW DATA:

(22) Both parties have recently acquired new data on the Tubb reservoir in the West Monument-Tubb Gas Pool. *(Testimony of Travis, Denny and Lowe)*

(23) In October 2001, after Sapient was ordered by the Division to shut in the Barber Well, it took a static pressure test. The incorporation of this new pressure data into its previously submitted drainage calculations dramatically reduced Sapient's estimated drainage area for the Barber Well from 103 acres to 59-acres. *(Testimony of Travis, Sapient Exhibit 21)*

(24) In November 2001, Chevron completed the Mathews 12 Well. New information was obtained from this well including data from a six-day pressure build up test, new log information, and data from ***29*** side wall cores. This information was acquired during the days immediately prior to the December 4, 2001 Commission hearing and was shared with Sapient prior to the hearing. The incorporation of this new data into the drainage calculations of Chevron/Conoco slightly increased the drainage area for the Barber Well from 159 acres to 165 acres. *(Testimony of Lowe, Chevron/Conoco Revised Exhibit 8)*

(25) Both parties adjusted their decline curves for the Barber well based on newly acquired information and both parties adjusted the decline curve for the Barber well to reflect a sharper decline. Each change was favorable to Sapient. (Chevron/Conoco's declines from changed from 16% to 22% to 30 % and Sapient's declines changed during the coarse of the hearings from 20% to 42%). *(See, Testimony of Lowe, Chevron/Conoco Exhibit6 and Revised 6, Testimony of Travis, Sapient Exhibit 19)*

(26) Based on the most current information on this reservoir, each party presented its interpretation of the productive reservoir limits in the West Monument-Tubb Gas Pool and calculated the drainage area for wells in this pool.

(27) The spacing rules for this pool must be based on the number of acres that each Tubb gas well will drain and the drainage area is dictated by the porosity, pressure and drainage information on the reservoir.

POROSITY:

(28) Sapient calculated the porosity for the Barber Well from the PE Log. and, without adjustment to the log data, applied thereto a porosity cut off of 4% for

limestone and 12 % for dolomite. *(Testimony of Von Rhee)* With this process, Sapient calculated a formation porosity of 12.2%. *(Testimony of Von Rhee)*

(29) The PE Log is a lithology indicator and Sapient's use of the PE curve to calculate porosity is not standard practice in the oil and gas industry with inaccurate results. *(Testimony of Denny)*

(30) Side wall core data on the Tubb formation from the Mathews well showed the presence of ankerite and pyrite in the Tubb formation in the West Monument-Tubb Gas Pool. The presence of these minerals render the use of the PE curve useless as a tool to measure formation porosity. *(Testimony of Denny)*

(31) Chevron/Conoco calculated the porosity of the Tubb formation from the cross plot of the neutron and density curves from the Mathews 12 Well. The cross plot was prepared by Schlumberger at the time the well was logged and was not adjusted or altered by Chevron or Conoco. The use of the cross plot curve for determining porosity is a standard oil and gas industry practice. The Chevron/Conoco calculation results in a porosity of 6.6%. *(Testimony of Denny, Chevron/Conoco Exhibit 11)*

(32) The most accurate way to determine lithology and porosity in a reservoir is to look at rock samples from the formation. Chevron, took ***29*** side wall cores at representative intervals within the Tubb formation in the Mathews 12 Well. These cores were analyzed by Core Labs and the core porosities were plotted on the Schlumberger cross plot of the neutron and density curves of the Mathews 12 Well. *(Testimony of Denny, Chevron/Conoco Exhibit 11.)* Both cross plot and core analysis are industry standard methods for calculating reservoir porosity. *(Testimony of Denny, Testimony of Lowe)*

(33) There is a very high correlation between the actual Tubb porosity calculated by Core Labs in the side wall cores and the porosity on the cross plot prepared by Schlumberger. The match between these porosities in the Mathews 12 Well confirms the accuracy of the porosity used by Chevron/Conoco in determining the drainage area for wells in the West Monument-Tubb Gas Pool..

FINDING: **The 6.6% porosity used by Chevron/Conoco to calculate the drainage area for the wells in the West Monument-Tubb Gas Pool was determined with industry accepted practices, has been confirmed with actual rock data from the Tubb formation from side wall cores and accurately represents the porosity of wells in this pool.**

PRESSURE DATA:

INITIAL RESERVOIR PRESSURE:

(34) Sapient determined the initial pressure gradients in the pool by averaging the initial pressures from other deeper wells in the area. No effort was made to adjust or correct this pressure information to correspond to the perforation depth of the Barber Well. *(Testimony of Von Rhee.)* The pressure used by Sapient in its drainage calculations is 2597 psia. *(Testimony of Travis, Testimony of Von Rhee, Sapient Exhibits 14, 18)*

(35) Chevron/Conoco determined the initial reservoir pressure for the Barber Well by selecting nine analogous wells in the area with drill stem test and related information and, after adjusting the data for the mid point drill stem test interval, excluded the two highest gradients (more reflective of a liquid gradient) and the two lowest gradients (representative of depletion) and then averaged the remaining five gradients. Chevron/Conoco obtained an initial pressure of 2462 psia. *(Testimony of Lowe, Chevron/Conoco Exhibit No. 13.)*

(36) Sapient's geological expert witness testified that the method used by Chevron/Conoco was the preferable way to determine initial reservoir pressure gradients. *(Testimony of Von Rhee)*

(37) The methods utilized by Sapient to calculate initial pressure gradients in the reservoir resulted in an initial pressure 129 psia higher than the initial pressure obtained by Chevron/Conoco. *(Compare Chevron/Conoco Exhibit 13 and Sapient Exhibit Nos. 14 and 18).*

(38) Use of the higher initial pressure and using a lower current reservoir pressure by Sapient results in an Estimated Ultimate Recovery for the Barber Well of 1315 MMCF. *(Testimony of Travis, Sapient Exhibit 19)* Use of the admittedly preferable initial pressure and a higher current pressure calculated from a six-day pressure build-up in the Mathews #12 obtained by Chevron/Conoco resulted in an Estimated Ultimate Recovery of 1680 MMCF. (Testimony of Lowe, Chevron/Conoco Exhibit No. 14). Use of the better Initial Reservoir Pressure and current reservoir at the external boundaries by Chevron/Conoco results in a larger Estimated Ultimate Recovery for the well and a substantially larger drainage area than that obtained if the Sapient calculated initial pressure is used.

FINDING: **The methods used by Chevron/Conoco to determine the initial pressure gradients in this pool are more accurate than the methods utilized by Sapient results in a larger Estimated Ultimate Recovery for the Barber Well, and a larger drainage area.**

BOTTOMHOLE PRESSURE:

(39) On October 24, 2001 after the Oil Conservation Division ordered the Barber Well be shut in, Sapient ran a static bottom hole pressure test. This pressure represents a static value in a well which had experienced significant production withdrawal and pressure depletion. At the time the test was run, the pressure in the well was still building, the pressure gauge was set at a depth 130 feet above the mid point of the perforations in the well and, although the well produces fluids, Sapient did not know the fluid level below the gauge and therefore did not have necessary information to accurately calculate a representative reservoir pressure in the structurally deeper Tubb horizon. Sapient obtained a bottom hole pressure for the Barber Well on October 24, 2001 of 1235 psia. *(Testimony of Travis, Sapient Exhibit 17)*

(40) Chevron/Conoco used industry accepted type curve analysis to calculate average pressure for the reservoir from a continuous 6 day shut in pressure build up test on the Mathews 12 Well which has produced no fluids. With this shut in pressure data, Chevron/Conoco used the pressure gradient at calculate the pressure at the mid-point of the perforated interval in the Mathews 12 Well. Chevron/Conoco obtained a bottom hole pressure for the Mathews 12 Well on November 26, 2001, using the industry accepted type curve analysis calculated a reservoir pressure of 1446 psia, which was corrected to a datum depth equivalent of the mid-point perforation (6394 feet) in the Barber No. 12. In addition the last recorded pressure in the Mathews #12 recorded at the same depth as Sapient's static measurement, was 100 psi higher and was still building. (Testimony of Lowe)

FINDING: **The pressures utilized by Chevron/Conoco are more representative of the external absolute pressure in the reservoir.**

DRAINAGE:

(41) Sapient testified to the heterogeneous nature of the Tubb formation in other portions of the reservoir. *(Testimony of VonRhee.)* However, there is no evidence of a heterogeneous reservoir in the area of interest in this case as shown on the comparison of the logs of the Barber Well and Mathews 12 Well which are mirror images of each other and show a homogeneous reservoir. *(Testimony of Denny, Chevron/Conoco Exhibit No. 12)*

(42) Although Sapient estimates that the Barber well will drain only 59 acres, the November 26, 2001 bottomhole pressure obtained by Chevron/Conoco from the Mathews 12 Well which is located ***736*** feet from the Barber Well shows original reservoir pressure has declined from 2462 psia to 1446 psia since the Barber Well first produced. *(Testimony of Lowe, Chevron/Conoco Exhibit 14.)* This data shows pressure depletion has occurred over a large area as a result of drainage from the Barber Well. Based on Sapient's reservoir parameters and the current cumulative production from the Barber #12, the drainage as of September 2001 would only be 676 feet. This is contrary with the observed pressure data in the Mathews #12. *(Testimony of Lowe, See, Chevron/Conoco Exhibit 14)*

(43) Sapient testified that the drainage radius for the Barber well would ultimately be approximately 900 feet. *(Testimony of Travis)* The evidence shows that although the Barber well has drained only 49% of the total recoverable reserves it will ultimately produce, the Mathews well which is located ***736*** feet from the Barber well has already experienced substantial pressure depletion. The current pressure depletion in the Mathews well shows that the Barber well will ultimately have a drainage radius far in excess of the 900 feet Sapient estimates. *(Testimony of Lowe)*

FINDING: Sapient's calculated drainage radius for the Barber Well is not an accurate reflection of its drainage area, is inconsistent with the actual drainage information on the well, is underestimated, and inaccurate.

(44) In support of its request for 80-acre spacing rules for this pool, Sapient presented volumetric calculations for the Barber 12 Well which showed that it should only drain 59 acres. *(Testimony of Travis, Sapient Exhibit No.21)*

(45) Using a porosity of 6.6% (See, Findings 30 through 33) and an initial pressure of 2462 psia, (See, Finding 35), Chevron/Conoco calculated the drainage area for the Barber Well in the following ways:

A. Decline Curve Analysis, with a constant decline of 30%[5], results in an Estimated Ultimate Recovery for the Barber Well of **1.670 BCF**, a drainage radius of 1513 feet, and a drainage area of 165 acres *(Testimony of Lowe, Chevron/Conoco Revised Exhibit No. 8)*;

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[5] Sapient used a decline rate of 43% which was obtained by including in its decline production data for June and July 2001 during which time the well was choked back. This results in a steeped decline and a smaller Estimated Ultimate Recovery for the well.

B. Volumetric Calculations result in an Estimated Ultimate Recovery for the Barber Well of **1.616 BCF**; *(Testimony of Lowe, Chevron/Conoco Exhibit 8)*; and

C. The Material Balance Method of Recovery, honoring the historic performance of the well, results in an Estimated Ultimate Recovery for the Barber Well of **1.679 BCF** and a drainage area of 164-acres *(Testimony of Lowe, Chevron/Conoco Exhibit 14.)*.

(46) The calculations of Chevron/Conoco were based on the most accurate information on this gas reservoir and the resulting almost identical estimates of recoverable reserves confirm the accuracy of Chevron/Conoco's calculated drainage area for the Barber Well. This drainage area already extends onto the Chevron/Conoco federal lease acreage in the W/2 E/2 of Section 7 and the Chevron acreage in the SE/4 of Section 6. *(Testimony of Lowe, Conoco Exhibit 9)*

(47) Pressure depletion from the 808 MMCF of gas produced from the Barber Well through October 2001 *(Sapient Exhibit 13)* extends beyond the Sapient acreage and the impact on the ultimate recovery of oil reserves has already occurred and cannot be reversed. *(Testimony of Lowe)*

FINDING: The best information available on the wells in the West Monument-Tubb Gas Pool shows that each well will drain approximately 160-acres.

FINDING: The Barber Well will drain 160-acres in the Tubb formation and 160-acre spacing and proration units are appropriate for the West Monument-Tubb Pool.

FINDING: Barber Well drains reserves from the Tubb formation from the federal lease in the W/2 NE/4 of Section 7 and has drained and will continue to drain reserves from the SE/4 of Section.

GEOLOGICAL EVIDENCE -- RESERVOIR LIMITS

(48) The parties agree that the fundamental issue in this case is the number of acres that wells in this gas pool will drain. Chevron/Conoco disagree with Sapient that issue evidence on the Monument Tubb Pool suggesting that it is a heterogeneous reservoir with poor reservoir correlation from well to well. Recent log and core data on the West Monument Tubb Gas Pool shows high degree of correlation between the

Barber Well and the Mathews 12 Well. *(Testimony of Denny, Chevron/Conoco Exhibit 12)*

(49) Sapient presented geological evidence which showed:

A. A general northwest-southeast structural trend to the Tubb formation across the area of interest. *(Testimony of Von Rhee, Sapient Exhibit Nos. 22, 23 and 24)*; and

B. Northeast-Southwest trending Tubb porosity perpendicular to the general trend of the formation in the area and located on Sapient acreage in the E/2 of the NE/4 of Section 7. This interpretation assigned approximately 20 feet of 4% porosity to the Mathews 12 Well. *(Sapient Exhibit No. 28; Isopach Map.)* The interpretation was based in part upon a on a mud log from the Conoco Barber Federal Well No. 1 located in the SW/4 of Section 7. *(Testimony of Von Rhee)*

(50) Chevron/Conoco presented geological evidence which showed:

A. Porosity mapped parallel to the general Northwest-Southeast porosity trend of the Tubb formation in this area *(Testimony of Denny, Chevron/Conoco Exhibit No. 5)*;

B. Comparable porosity development in both the Barber Well and Mathews 12 Well *(Testimony of Denny, Chevron/Conoco Exhibit 5)*; and

C. Comparable porosity thickness through out the NE/4 of Section 7 *(Testimony of Denny; Chevron/Conoco Exhibit No. 5)*.

(51) Sapient used the mud log from the Barber Federal Well No. 1 to interpret porosity thickness in this area. The use of mud logs to predict porosity is unreliable. (the Rate of Penetration (ROP) indicated on mud logs is influenced by weight on bit, condition of bit, drift, type of bit and weight of mud, etc.) Using ROP to predict quantitative porosity measurement is not an industry standard is not reliable. *(Testimony of Denny)*

(52) New data from the Mathews 12 Well changed Sapient's interpretation of the porosity thickness at this well location to 32 feet of net porosity instead of the 20 feet it had previously calculated. *(Testimony of Von Rhee, Sapient Exhibit No. 22)*.

When Sapient's porosity isopach map is amended to honor this new data, this gas reservoir extends under the Chevron/Conoco Federal lease covering the W/2 NE/4 of Section 7. *(See, Testimony of Von Rhee)*

(53) The new information from the Mathews 12 Well caused only minor insignificant changes in the isopach maps previously submitted by Chevron/Conoco. *(See, Compare Chevron/Conoco Isopach Map submitted as Exhibit 5 for November 6, 2001 hearing date and Chevron/Conoco Revised Exhibit 5, Testimony of Denny).*

FINDING: **The data now available on the Tubb reservoir under the NE/4 of Section 7 shows that the porosity which is being drained and will continue to be drained by the Barber well is present throughout the statutory standard 160-acre unit comprised of the NE/4 of Section 7.**

WASTE:

(54) Since wells in the West Monument-Tubb Gas Pool drain approximately 160-acres, the adoption of special pool rules which provide for 80-acre spacing would result in the drilling of unnecessary wells thereby causing waste. *(Testimony of Lowe, Chevron/Conoco Exhibit 10)*

FINDING: **Adoption of Special Pool Rules for the West Monument-Tubb Pool which provide for 80-acre spacing would result in reserves being drained from offsetting tracts which can only be recovered by the offset owners drilling of unnecessary wells thereby causing waste.**

CORRELATIVE RIGHTS:

(55) Correlative rights is defined by the Oil and Gas Act as the "opportunity afforded, so far as it is practicable to do so to the owner of each property in a pool the opportunity to produce without waste his just and equitable share of the oil or gas or both, in the pool, being an amount, so far as can be practicably determined and so far as can be practicably obtained without waste, substantially in the proportion that the quantity of the recoverable oil or gas or both under the property bears to the total recoverable oil or gas, or both, in the pool...."

NMSA 1978 Section 70-2-33

(56) The evidence in this case establishes that wells in the West Monument-Tubb Gas Pool drain 160-acres. *(Testimony of Lowe, Chevron Exhibit Nos. 8 and 14)*

(57) Formation of a standard 160-acre spacing and proration unit for the Barber Well comprised of the NE/4 of Section 7 and the allocation of production proceeds to the owners of the minerals in this acreage will result in these owners receiving their just and equitable share of the reserves drained from this spacing unit.

(58) The effects of the drainage from the Barber Well on the W/2 NE/4 of Section 7 cannot be reversed and the formation of a standard spacing unit for the Barber Well and the reallocation of the production to the owners in this standard unit is necessary to protect the correlative rights of all owners in the NE/4 of Section 7.

(59) The retroactive formation an 80-acre spacing unit for the Barber Well would permit Sapient to retain the production proceeds for gas it has illegally produced and which has been drained from offsetting acreage thereby impairing the correlative rights of the mineral owners in theW/2 NE/2 of Section 7.

(60) To now permit Chevron/Conoco to drill an additional well in the W/2 NE/4 of this Section does not protect the rights of Chevron, Conoco and the other owners of the Federal lease covering the W/2 NE/4 of this Section. While Chevron repeatedly asked the Division to shut in the Barber Well, it was allowed to produce. The acreage has now been pressure depleted and the owners in the W/2 can never recover their just and equitable share of the reserves under this acreage.

(61) While Sapient was allowed to produce, neither Chevron nor Conoco could have drilled a well in the NE/4 of Section 7 because the Division only allows one well per spacing unit--and the spacing unit for the well is and has been 160-acres.

(62) The delays Chevron experienced in obtaining Division approval of its unorthodox location in the SE/4 of Section 6 prevented Chevron from recompleting its Mathews 12 Well while the Barber 12 Well has been permitted to produce and continue to drain the reservoir.

FINDING: The reallocation of the value received for production from the Barber Well from September 9, 1999, the date of first Tubb production, is necessary if all owners are to receive their just and fair share of the recoverable reserves from the pool thereby protecting their correlative rights.

FINDING: The application of Sapient Energy Corporation in Case 12587 for an unorthodox well location for its Bertha J. Barber Well No. 12 at a point 330 feet from the North line and 660 feet from the East line of

Section 7, Township 20 South, Range 37 East, N.M.P.M., should be approved.

FINDING: **At the request of Sapient Energy Corporation, its application in Case 12587 for the approval of a non-standard gas spacing and proration unit comprised of the E/2 NE/4 and of Section 7 and the W/2 NW/4 of Section 8, Township 20 South, Range 37 East, NMPM, and for approval of non-standard 160-acre gas spacing and proration units comprised of the E/2 E/2 of Section 7, and the W/2 E/2 of Section 7, Township 20 South, Range 37 East, NMPM Lea County, New Mexico should be dismissed.**

FINDING: **Having failed to meet its burden of proof in this case, the application of Sapient Energy Corporation in Case 12605 for the adoption of Special Pool Rules and Regulations for the West Monument-Tubb Gas Pool including provisions for 80-acre gas well spacing should be denied.**

FINDING: **The Barber 12 Well has been and continues to be produced in violation of Division Rules 104 B(2), 104 C(3) and 104 D(2).**

FINDING: **The Barber Well has illegally produced over 818 MMSCF of gas since September 1999 and drained substantial reserves from offsetting tracts.**

FINDING: **The Barber Well should be shut in and remain shut in until a standard 160-acre gas spacing and proration unit comprised of the NE/4 of Section 7 has been dedicated to the well and the value received for all production from the date of first Tubb production from this well has been reallocated to the interest owners in this spacing and proration unit. Prospectively, all production should be allocated consistent with the findings in this order.**

IT IS THEREFORE ORDERED, AS FOLLOWS:

(1) The application of Sapient Energy Corporation in Case 12605 for the adoption of special pool rules for the West Monument-Tubb Gas Pool including provisions for 80-acre gas spacing and proration units is hereby **denied**.

(2) The application of Sapient Energy Corporation in Case 12587 for an unorthodox gas well location in the West Monument-Tubb Gas Pool for its Bertha J. Barber Well No. 12 located 330 feet from the North line and 660 feet from the east line of Section 7, Township 20 South, Range 37 East, NMPM, Lea County, New Mexico is hereby **approved**.

PROVIDED THAT Sapient Energy Corporation is ordered to shut in the Bertha J. Barber Well No. 12 and that the well shall not be returned to production until a standard gas spacing and proration unit has been dedicated to the well in accordance with Division Rules 104 C(2) and 104 D(2) and the value received for all production from this well from September 9, 1999 has been reallocated to the interest owner in this spacing unit or an agreement reached with all interest owners in this standard spacing unit for the reallocation of this production to the owners thereof.

(3) At the request of Sapient Energy Corporation, its application in Case 12587 for the approval of a non-standard gas spacing and proration unit comprised of the E/2 NE/4 and of Section 7 and the W/2 NW/4 of Section 8, Township 20 South, Range 37 East, NMPM, and for approval of non-standard 160-acre gas spacing and proration units comprised of the E/2 E/2 of Section 7, and the W/2 E/2 of Section 7, Township 20 South, Range 37 East, NMPM Lea County, New Mexico is hereby **dismissed**.

(4) Jurisdiction of these causes is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinafter designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

LORI WROTENBERY, Chair

JAMI BAILEY, Member

ROBERT LEE, Member

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