



EXHIBIT(s)  
FOR  
ORDER NO(s).

527 - 5  
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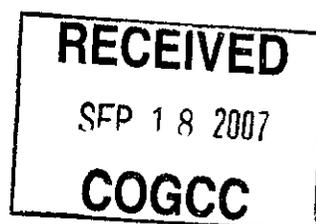
## **Whiting Oil & Gas Corporation**

Setback Application for the Iles & Segó, Mesaverde Group

NENE Section 27, Township 2 South, Range 98 West,  
Rio Blanco County, Colorado

Cause No. 527  
Docket No. 0708-SP-30

October 2007



## Table of Exhibits

### Land

- L1 Map showing WOGC Iles 200' setback application area

### Geology

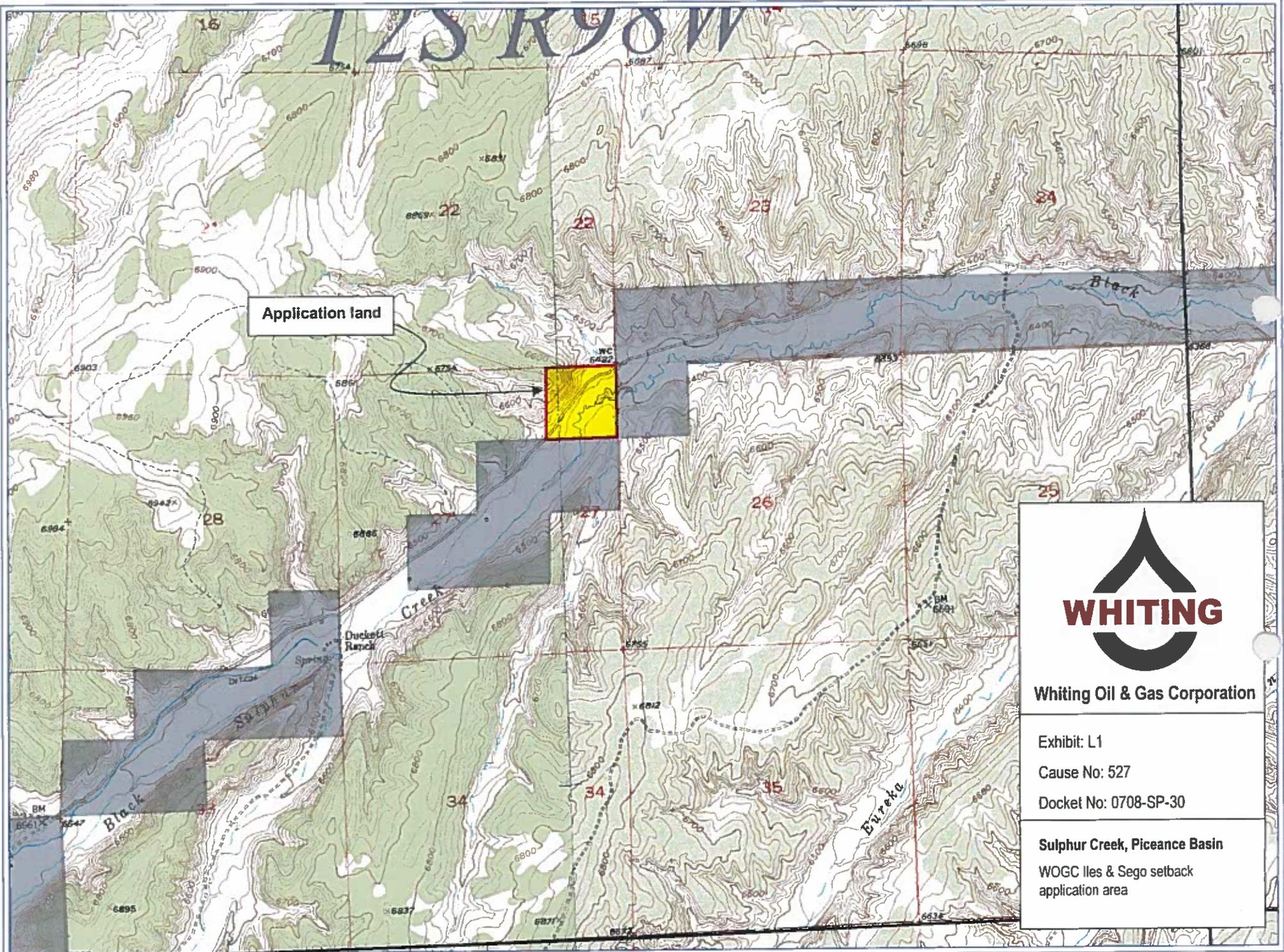
- G1. Basis for 10-acre density in Iles & Segó
- G2 Rollins structure base map indicating wells producing from Iles & Segó
- G3 Diagrammatic regional stratigraphic correlation chart for the Mesaverde Group, Piceance Basin
- G4 Type log and generalized depositional environments for the Mesaverde Group
- G5 Regional stratigraphic cross section of the Mesaverde Group in the northern Piceance Basin

### Engineering

- E1 Historical Iles spacing/density hearings presented before the COGCC
- E2 Volumetric calculation of original gas in place for Iles and Segó
- E3. Single well economic evaluation for Iles and Segó only development
- E4 Single well economic evaluation for Williams Fork test with Iles and Segó added
- E5 Potential drainage pattern with 400' Iles setback
- E6 Potential drainage pattern with 200' Iles setback
- E7 Summary of conclusions and recommendations

### Resumes

- 1 Bill R. Moomey - Landman
- 2 Dalton L. Rasmussen - Geologist
- 3 Tom Smith - Engineer



## **Basis for completing the Iles and Segó at 10-acre density**

- I Two geologic models support 10-acre density
  - a Conforms to the Williams Fork fluvial sand body model – coastal plain fluvial sandstone bodies in the upper Corcoran and Cozzette members are of limited lateral extent and isolated/sealed in mudstone
  - b Conforms to the Iles shoreface sandstone model – increased density in the Iles has been granted on four separate occasions on the basis of this model which demonstrates a heterogeneous, compartmentalized reservoir with low and discontinuous reservoir properties
  
- II Well economics supports 10-acre density
  - a. The amount of gas in place in the Iles/Segó is not sufficient to make an Iles/Segó well economic on its own – it is only economic when produced along with gas from the Williams Fork. A significant amount of gas will be left behind if the Iles and Segó are not drilled and produced along with the Williams Fork



**Whiting Petroleum Corporation**

EXHIBIT G1  
CAUSE NO 527  
DOCKET NO 0708-SP-30



**SUMMARY OF ILES FORMATION**  
SPACING/DENSITY HEARINGS BEFORE THE COGCC

	ORDER NUMBER			
	139-46	139-51	191-10	191-25
APPLICANT	ENCANA	NOBLE ENERGY	BILL BARRETT	ANTERO RESOURCES
DATE OF HEARING	3/22/2005	10/31/2005	4/25/2005	6/5/2006
ORDER SPACING/DENSITY (ACRES)	20	10	10	10
ILES FORMATIONS ANALYZED	COZZETTE / CORCORAN	ROLLINS / COZZETTE / CORCORAN	ROLLINS/ COZZETTE/ CORCORAN	COZZETTE / CORCORAN
FEET PAY		24 - 40		74 - 83
POROSITY %	10			8.5 - 9.1
GAS SATURATION (%)				60 - 70
ILES OGIP/10 ACRES (MMCF)	296	300		332 - 525
ILES EUR (MMCF)	350 **	49	110	113 - 550
DRAINAGE AREA (ACRES)		7.9		4.9 - 14
IP	300		160 MCFD *	

\* BASED ON 28 TESTS

\*\* EUR BASED ON 20 ACRE DEVELOPMENT



Whiting Oil and Gas Corporation

Exhibit E-1

Cause 527

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## Volumetric Calculation of Original Gas-in-Place for Iles and Sego Formations

	Feet of Pay, ft	Porosity, %	Water Saturation, %	Bgi, rcf/scf	OGIP/Ac, MMCF/AC	OGIP/ 10 Acre, MMCF
<b>Rollins</b>	7	10.6	46.0	0.0040	4.3	42.8
<b>Cozzette</b>	23	11.3	43.5	0.0040	16.0	159.7
<b>Corcoran</b>	24	9.6	43.7	0.0040	14.4	144.3
<b>Sego</b>	7	10.4	48.0	0.0040	4.1	41.3
<b>Total/Avg</b>	<b>61</b>	<b>10.5</b>	<b>45.3</b>		<b>38.8</b>	<b>388.1</b>

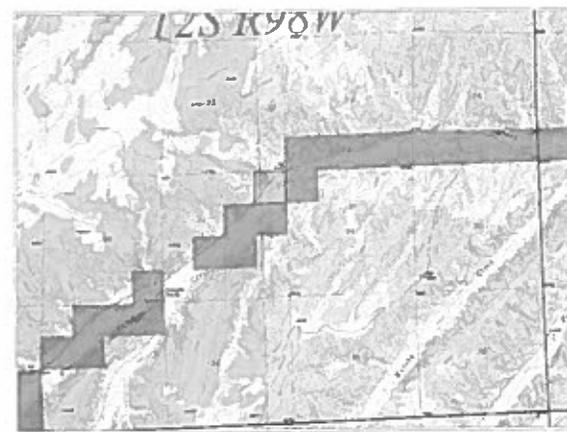
**Assumptions:**

BH Temperature = 220 F

BH Pressure = 4850 psi

### Estimate of Iles Original Gas In Place for Application Lands

1440 Acres x 38.8 MMCF/AC = 56 BCF



**Whiting Oil and Gas Corporation**

Exhibit E-2

Cause 527

Docket No. 0708-SP-30

# Single Well Economic Evaluation for Iles and Segó Only Development

## Assumptions:

Original Gas In Place – Iles and Segó, MMCF (10 Acres)	388
Recovery Factor	70%
Gross Ultimate Recovery - Gas, MMcf	272
First Month Gas Production, Mcfd	350
Royalty Burden	12.5%
Severance and Ad Valorem Taxes	8.0%
Gross Drilling and Completion Costs, \$M (11,000' test, assume 3 completion intervals)	2,500
Monthly Lease Operating Costs, \$m	3.3
Gas Gathering and Treating Expenses, \$/Mcf	0.50
Shrinkage and Fuel	6.0%

## Product Pricing:

Gas Price, \$/MCF (flat NYMEX Price of \$6.79/MMBtu, less \$0.75 differential)	6.15
BTU Content, Btu/scf	1,153

## Economic Summary:

Undiscounted Payout, yrs	Does not pay out
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Whiting Oil and Gas Corporation

Exhibit E-3

Cause 527

Docket No. 0708-SP-30

# Single Well Economic Evaluation

## Incremental Evaluation of Adding Iles and Segó Completions to a Willams Fork Test

### Assumptions:

Original Gas In Place – Iles and Segó, MMCF (10 Acres)	388
Recovery Factor	70%
Gross Ultimate Recovery - Gas, MMcf	272
First Month Gas Production, Mcfd	350
Royalty Burden	12.5%
Severance and Ad Valorem Taxes	8.0%
Incremental Gross Drilling and Completion Costs, \$M (drill an additional 1,400' to Iles, and, assume 3 completion intervals in Iles)	434
Monthly Lease Operating Costs, \$m	3.3
Gas Gathering and Treating Expenses, \$/Mcf	0.50
Shrinkage and Fuel	6.0%

### Product Pricing:

Gas Price, \$/MCF (flat NYMEX Price of \$6.79/MMBtu, less \$0.75 differential)	6.15
BTU Content, Btu/scf	1,153

### Economic Summary:

Undiscounted Payout, yrs	1.9
Undiscounted Return on Investment	1.8 to 1

Exceeds Whiting Oil and Gas Requirements

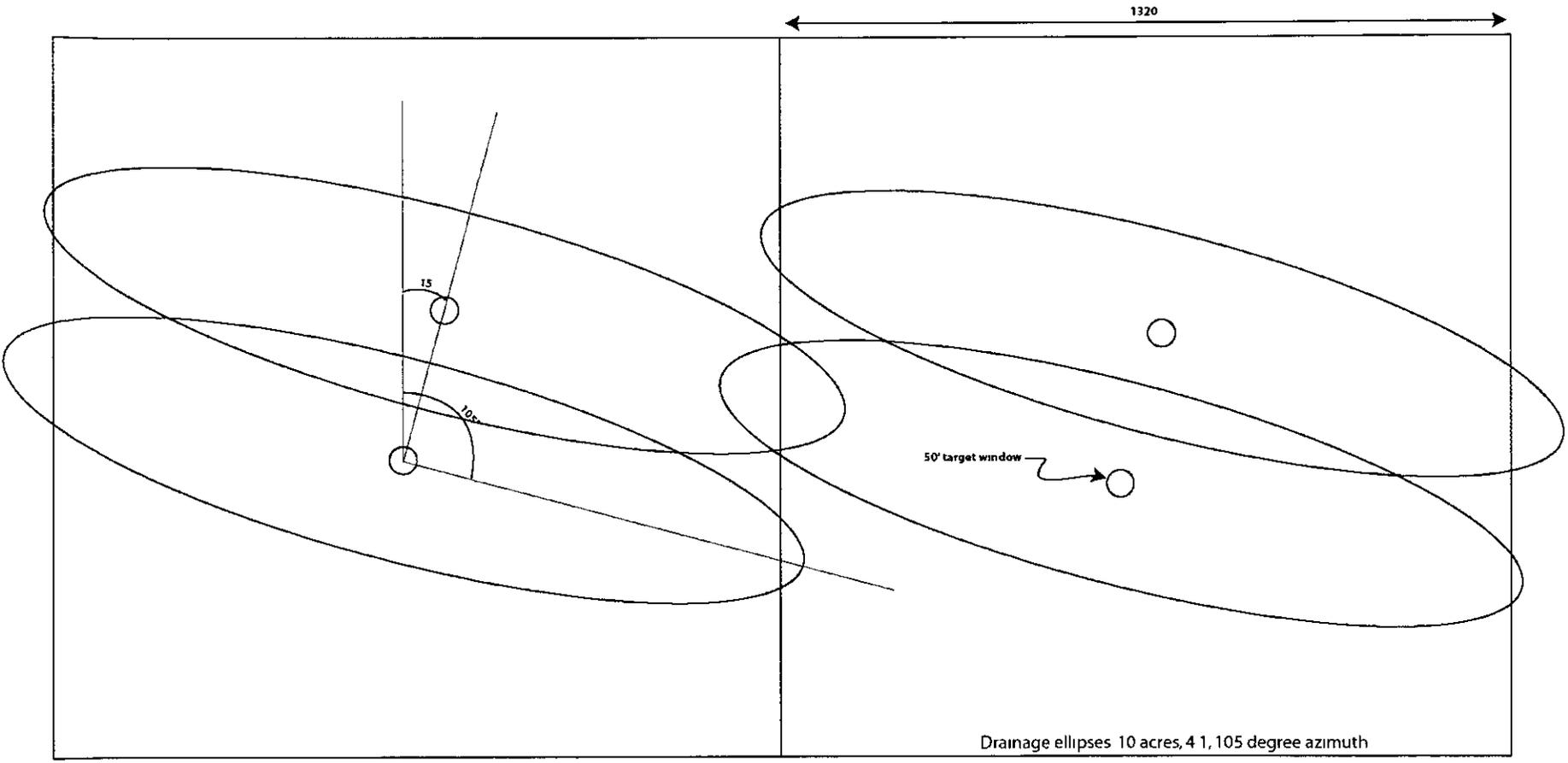


Whiting Oil and Gas Corporation

Exhibit E-4

Cause 527

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Placement of wells in two adjacent 40-acre blocks with 400' lles setback

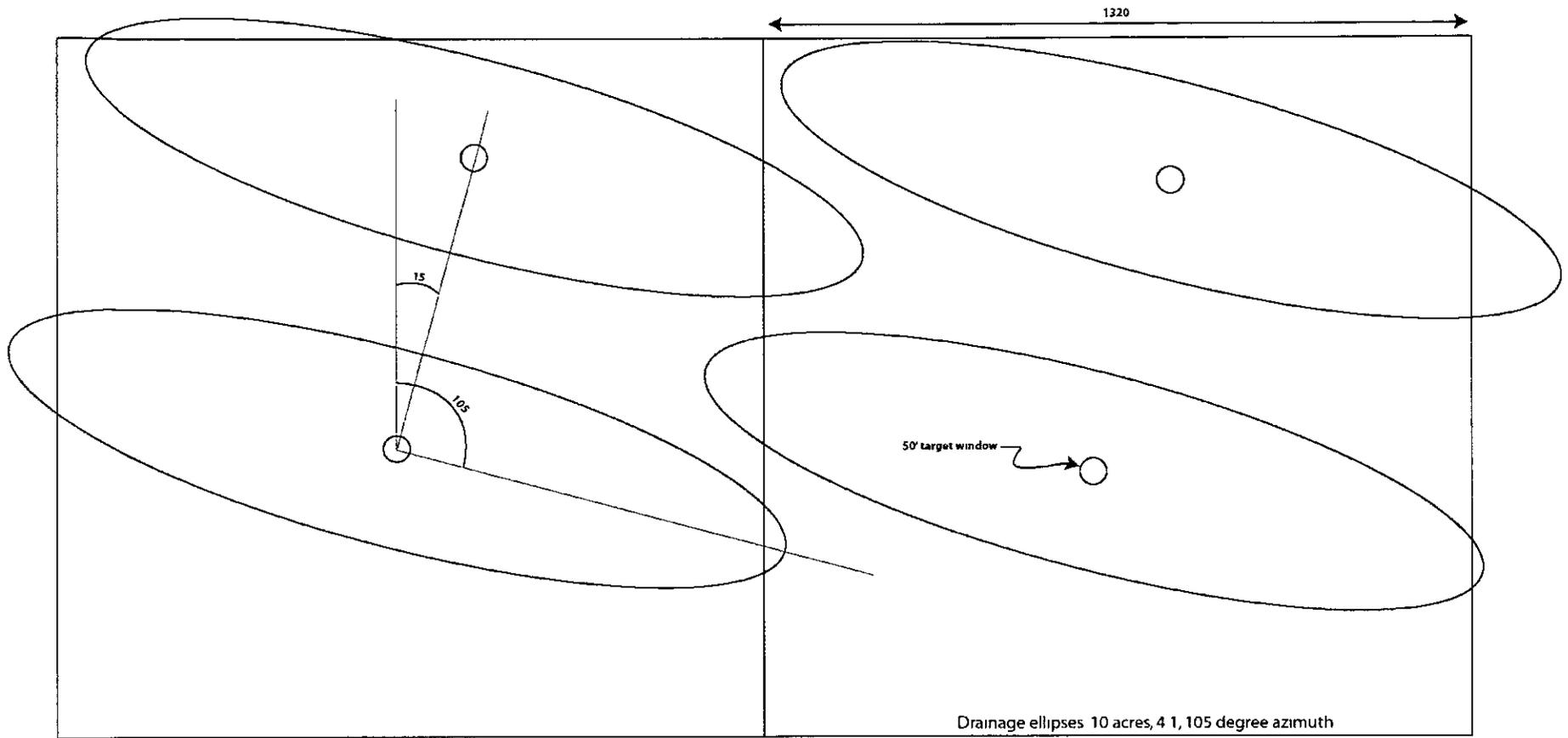


**Whiting Oil and Gas Corporation**

Exhibit E5

Cause 527

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Placement of wells in two adjacent 40-acre blocks with 200' lles setback



**Whiting Oil and Gas Corporation**

Exhibit E-6

Cause 527

Docket No 0708-SP-30

# Summary

- Previous testimony to the COGCC concerning the Iles Formation presented estimated EUR's of 49 to 550 MMCF and drainage areas of 4.9 to 14 acres. The current spacing order governing the application lands restricts the Iles to a 400' setback, whereas the Williams Fork has a 200' setback limit, both allow 10 acre development or 4 wells per 40 acres
- A volumetric calculation of original gas in place in the Iles and Sego Formations on the application lands indicate 388 MMCF/ 10 Acres, and using a 70% recovery factor, an EUR of 272 MMCF per 10 acres
- The application lands contain an estimated original gas in place of 56 BCF in the Iles and Sego formations
- Under the current spacing order governing the application lands, a total of 48 ten acre Iles completions can not be drilled, this effectively strands 13 BCF of gas that is available for production if a ten acre, 200' setback Williams Fork well could be deepened 1400' through the Iles and Sego Formations
- An economic evaluation of drilling and completing a well only in the Iles and Sego formations results in an uneconomic project. Therefore, the Iles and Sego formations are uneconomic to develop as stand alone projects and need to be combined with Williams Fork completions for economic development.
- An evaluation of the incremental costs to drill a well designed to complete the Williams Fork deeper to the Iles and Sego formations and complete result in an acceptable economic investment
- 200' lease boundary setbacks are required in order to develop the Iles and Sego formations in conjunction with the Williams Fork and prevent waste of a proven resource base.



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Exhibit E-7

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