

BEFORE THE OIL AND GAS CONSERVATION COMMISSION  
OF THE STATE OF COLORADO

RECEIVED

FEB 12 2008

COGCC

REQUEST FOR AN ORDER TO ALLOW THREE ADDITIONAL WELLS, FOR A TOTAL OF FOUR WELLS, PER 320 ACRE DRILLING AND SPACING UNITS, IN CERTAIN LANDS LOCATED IN TOWNSHIP 10 NORTH, RANGES 93 AND 94 WEST, 6TH P.M., MOFFAT COUNTY, COLORADO, BIG HOLE FIELD, WITH THE PERMITTED WELL TO BE LOCATED NO CLOSER THAN 600 FEET FROM THE UNIT BOUNDARY

CAUSE NO: 290

ORDER NO:

DOCKET NO: 0802-AW-05

VERIFIED STATEMENT OF  
STEPHEN O. NORRIS  
SENIOR STAFF RESERVOIR ENGINEER

In support of the Verified Application of Cohort Energy Company in Cause No. 290, Docket No. 0802-AW-05, pursuant to Rule 511.b., Cohort Energy Company respectfully submits the written testimony of Stephen O. Norris, Senior Staff Reservoir Engineer of Cohort Energy Company:

I am currently employed as Senior Staff Reservoir Engineer of Cohort Energy Company. I have knowledge of the reservoir characteristics of the Middle Lewis Formation underlying the Application Lands.

I have testified previously as an expert witness in petroleum engineering before the COGCC or before Hearing Officers of the COGCC. Attached is a copy of my resume prepared by me. Also attached are Exhibits E-1 through E-7 which were prepared by me or under my direction and control. I have reviewed the exhibits and to the best of my knowledge and belief, the exhibits are correct and accurate as of this date.

(a) Exhibit E-1 Summary: This exhibit summarizes the information to be presented.

(b) Exhibit E-2 Big Hole log X-section: This exhibit shows the log analysis of the Gov't 15-1 Well, the Federal Land Bank 14-1 Well, and the Gov't 14-2 Well. In particular, it shows the calculated hydrocarbon pore volume/area (ft) which is used in calculating the drainage area.

(c) Exhibit E-3 Gov't 15-1 Production and EUR: This exhibit shows that the Gov't 15-1 Well, which is located in Township 10 North, Range 94 West, 6th P.M., Section 15: SW/4NW/4 has produced .752 Bcf and has an EUR of 1.026 Bcf.

(d) Exhibit E-4 Federal Land Bank 14-1 Production and EUR: This exhibit shows that the Federal Land Bank 14-1 Well, which is located in Township 10 North, Range 94 West, 6th P.M., Section 14: NW/4SW/4 has produced 2.381 Bcf and has an EUR of 3.49 Bcf.

(e) Exhibit E-5 Gov't 14-2 Production and EUR: This exhibit shows that the Gov't 14-2 Well, which is located in Township 10 North, Range 94 West, 6th P.M., Section 14: NE/4SE/4 has produced 1.017 Bcf and has an EUR of 1.428 Bcf.

(f) Exhibit E-6 Drainage Area Calculations: This exhibit shows the drainage area calculations for wells in the Big Hole/Great Divide area.

(g) Exhibit E-7 Drainage Area Histogram: This exhibit shows that the P50 value for drainage area is 80 acres.

In addition the Commission has previously found that the wells have an average drainage are of 45 acres." (Order 290-2, Findings, ¶ 10).

It further determined that "[t]estimony and exhibits presented at he administrative hearing showed the range of drainage areas from 7 to 160 acres in the Big Hole Field." (Order 290-2, Findings, ¶ 11).

Finally, it determined that "up to four (4) additional wells are necessary to recover remaining reserves in the Middle Lewis Formation, that mineral owners' correlative rights will be protected and that waste will be prevented if additional wells are allowed." (Order 290-2, Findings, ¶ 12).

Accordingly, based upon my study of the Application Lands, and the Commission's previous findings, I conclude that the requested Order will maximize economic recovery of the reserves while minimizing waste, and that correlative rights will be protected.

VERIFICATION

Stephen O. Norris, of lawful age, being first duly sworn upon oath, deposes and says that he is the Senior Staff Reservoir Engineer of Cohort Energy Company, and that he has read the foregoing testimony and that the matters therein contained are true to the best of his knowledge, information and belief.

By: Stephen O. Norris  
Stephen O. Norris

STATE OF COLORADO

COUNTY OF Arapahoe

)  
) ss.  
)

Subscribed and sworn to before me this 13th day of February, 2008 by Stephen O. Norris, Senior Staff Reservoir Engineer of Cohort Energy Company.

Witness my hand and official seal.

My commission expires: September 3, 2008

Deborah J. Jones  
Notary Public



---

**Stephen O. Norris, Ph.D., P.E.**

9665 Merimbula St., Littleton, CO 80128

303-589-4314

SNorris80128@aol.com

## Professional Profile

Senior petroleum reservoir engineer specializing in unconventional gas recovery

- Tight Gas Reservoir Characterization
- CBM Reservoir Characterization
- Shale Gas Reservoir Characterization
- Reservoir Simulation
- Pressure Transient Analysis
- Well Log Analysis
- Economic Analysis & Evaluation
- Perforation Inflow Test Analysis
- Monte Carlo Simulation

## Recent Professional Experience

Cohort Energy Company, a Subsidiary of JW Operating Company, Centennial, CO  
7/2006 - Present

### Senior Staff Reservoir Engineer

#### Achievements:

- Implemented reservoir characterization process for tight gas, CBM, and shale gas fields
- Optimized infield drilling for tight gas field
- Serve as company mentor and expert for reservoir simulation and well test analysis

#### Responsibilities:

- Reservoir characterization
- Reservoir engineering
- Supervision of engineering and geologic technician
- Economic analysis
- Reserves

EnCana Oil & Gas USA, Inc., Denver, CO  
1/2002 – 7/2006

### Reservoir Engineer

#### Achievements:

- Implemented log analysis program for tight gas reservoir
- Developed log normalization program
- Performed risk & economic analysis for major pipeline project
- Performed numerical simulation studies for CBM development
- Served as engineering advisor and mentor
- Organized first EnCana Reservoir Characterization and Engineering Forum

#### Responsibilities:

- Reservoir simulation
-

- Well test analysis
- Economic evaluation
- Reserves

Schlumberger Holditch Reservoir Technologies, Lakewood, CO  
8/1998 – 1/2002

**Senior Reservoir Engineer**

Achievements:

- Enhanced and improved production data analysis software
- Established Holditch Office in Denver
- Evaluated productivity of frac designs in Rocky Mountain Area

Responsibilities:

- Moving Domain software development and application
- Reservoir engineering
- Reservoir simulation

Scientific Software Inc., Denver, CO  
7/1997 – 8/1998

**Reservoir Simulation Engineer**

Achievements:

- Completed several on-going reservoir simulation projects
- Provided reservoir engineering consulting

Responsibilities:

- Reservoir simulation
- Reservoir engineering

## Education

Texas A&M University, College Station, TX  
**Ph.D. – Petroleum Engineering**  
5/1990

Louisiana Tech University, Ruston, LA  
**M.S. – Petroleum Engineering**  
5/1986

Louisiana Tech University, Ruston, LA  
**B.S. – Petroleum Engineering**  
11/1984

## Recent Professional Activities & Honors

- Member – SPE Journal of Petroleum Technology Editorial Committee (2006 – present)
-

- Technical Editor – SPE Reservoir Evaluation & Engineering (2007- present)
- Chairman – SPE Forum on Unconventional Gas Recovery (2007)
- Chairman – SPE Young Professionals Workshop (2006)

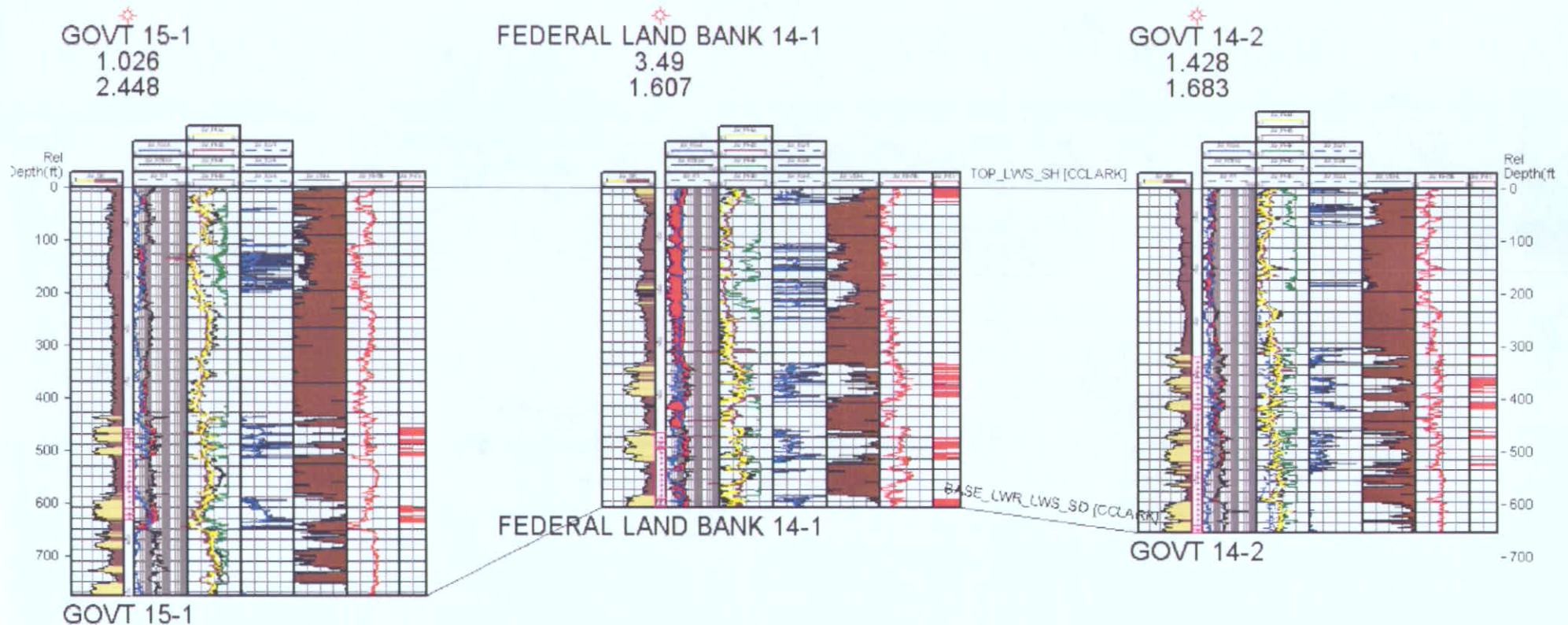
# Exhibit E-1: Summary

- E-2: Big Hole log X-section
- E-3: Gov't 15-1: Production Profile and EUR
- E-4: Federal Land Bank 14-1: Production Profile and EUR
- E-5: Gov't 14-1: Production Profile and EUR
- E-6: Drainage area calculations
- E-7: Drainage area histogram



# Exhibit E-2: Big Hole X-Section

Well Name  
EUR, bcf  
HCPV, ft.

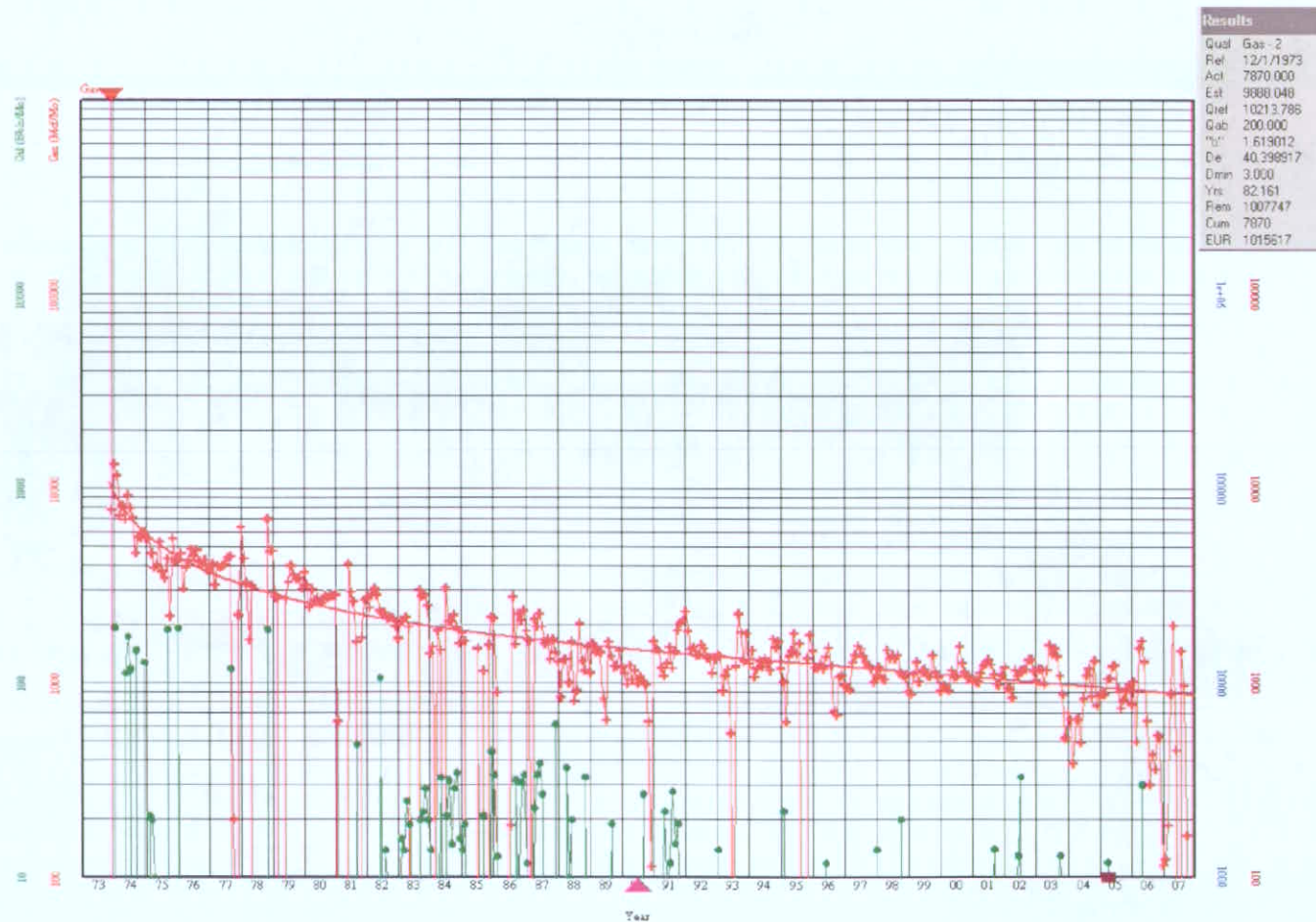


Feb 25, 2008

Cohort Energy CO., Cause No.  
290, Docket No. 0802-AW-05



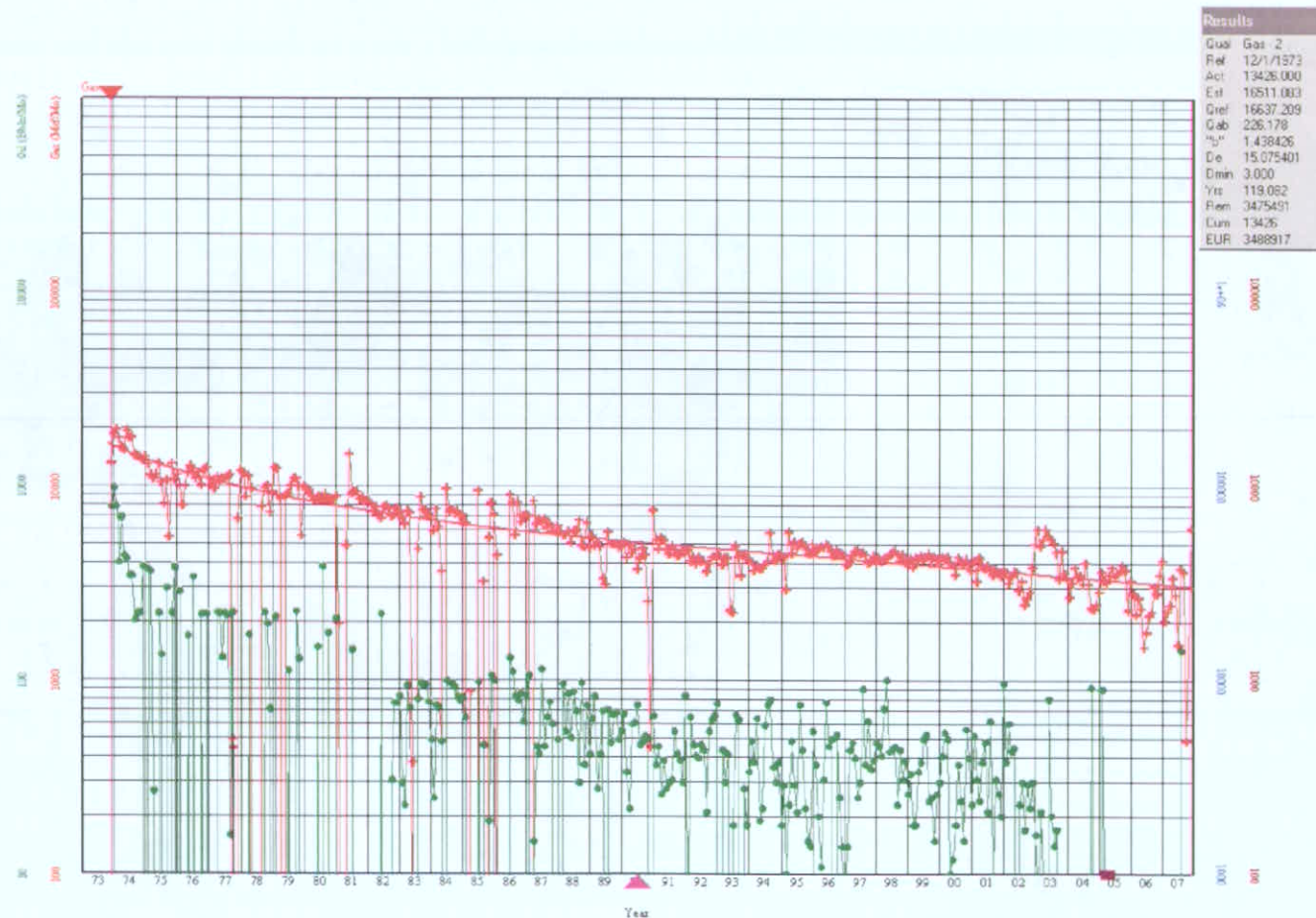
# Exhibit E-3: Govt. 15-1: Production & EUR



Feb 25, 2008

Cohort Energy CO., Cause No.  
290, Docket No. 0802-AW-05

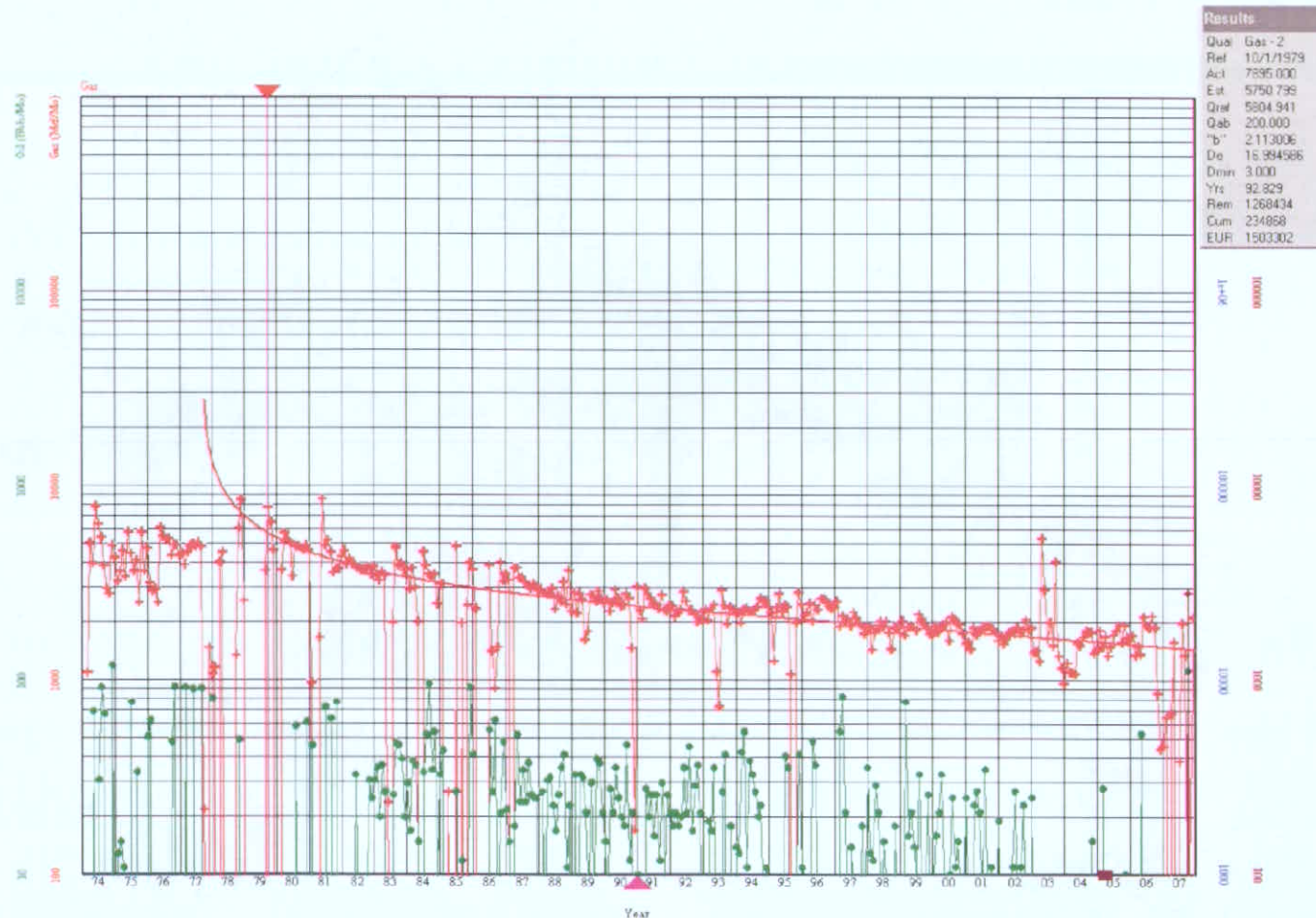
# Exhibit E-4: Federal Land Bank 14-1: Production & EUR



Feb 25, 2008

Cohort Energy CO., Cause No.  
290, Docket No. 0802-AW-05

# Exhibit E-5: Govt. 14-2: Production & EUR



Feb 25, 2008

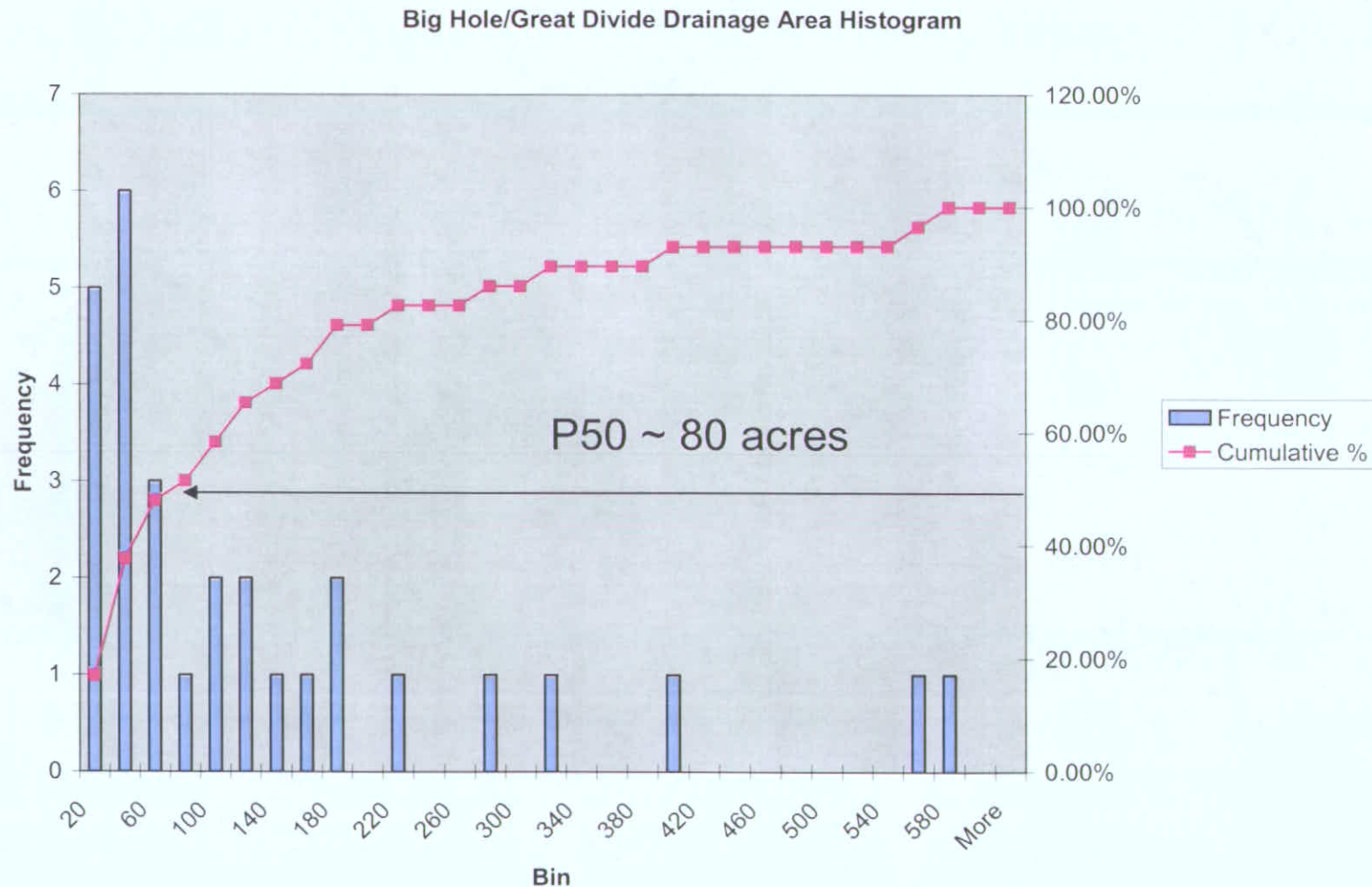
Cohort Energy CO., Cause No.  
290, Docket No. 0802-AW-05



# Exhibit E-6: Drainage Area Calculations

Well Label	EUR, Bcf	HCPV, ft.	Net, ft.	Phi, fr.	Sw, Frc	Area, acres
STERRETT 1	4.404	2.015	45	0.112	0.598	562
ELLIS 44-30	3.666	3.461	69	0.111	0.546	272
FEDERAL LAND BANK 14-1	3.49	1.607	25	0.142	0.548	558
MOFFAT COUNTY 24-29	3.124	5.498	99	0.123	0.549	146
MOFFAT COUNTY 2	1.922	2.946	49.5	0.122	0.514	168
GOVT 14-2	1.428	1.683	24.5	0.142	0.523	218
ANDERSON 1	1.138	2.629	46.5	0.129	0.566	111
MARTIN 1	1.124	1.686	34.5	0.113	0.563	171
COLORADO C 1	1.045	0.684	9	0.182	0.583	393
GOVT 15-1	1.026	2.448	32.5	0.166	0.541	108
ELLIS 13-29	0.997	4.113	79	0.104	0.504	62
FEDERAL 13-1	0.794	4.294	63.5	0.128	0.479	48
FEDERAL LAND BANK 23-1	0.721	1.885	26	0.157	0.533	98
ANDERSON 31-32	0.613	2.778	55.5	0.116	0.563	57
MOFFAT COUNTY 11-1	0.583	3.977	58	0.135	0.493	38
COUNTS 22-30	0.5	2.573	49.5	0.111	0.52	50
STATE 16-2	0.491	0.406	6	0.175	0.605	311
ELBERT AVENUE 1	0.405	1.114	23.5	0.118	0.594	93
UNIT FI B 23-2	0.403	2.783	40.5	0.148	0.529	37
FEDERAL LAND BANK 15-2	0.333	3.078	40	0.159	0.518	28
SCHROEDER 33-32	0.246	0.483	13	0.091	0.591	131
WEAVER 1	0.181	5.418	75.314	0.139	0.477	9
ANDERSON 43-29	0.175	1.775	29.5	0.125	0.517	25
FEDERAL LAND BANK 33-15	0.154	4.857	73.09	0.151	0.554	8
BRUDER 1	0.132	3.542	57.5	0.135	0.537	10
MONAHAN-GOVT 21-1	0.027	0.309	4	0.174	0.558	22
GRUWELL 44-32	0.025	0.231	4	0.151	0.613	28
GREAT DIVIDE FEDERA 43-05	0.003	0.263	5	0.134	0.599	3
FEDERAL 1-23-9	0.002	2.173	28.731	0.137	0.45	0

# Exhibit E-7



Feb 25, 2008

Cohort Energy CO., Cause No.  
290, Docket No. 0802-AW-05