1R - 165

GENERAL CORRESPONDENCE

YEAR(S):

1985

STATE OF NEW MEXICO
ENVIRONMENT

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

85-1184-C

REPORT TO: DAVID G. BOYER
PLEASE PRINT
NEW MEXICO OIL CONSERVATION DIV.
P.O. BOX 2088
SANTA FE, NM 87501
PHONE(S): 827-5812

S.L.D. No.: OR-1184-H,B
DATE REC. : 12/09/85
SLD PRIORITY #: 3

USER CODE: 8|2|2|3|5|

SUBMITTER: DAVID BOYER
SUBMITTER CODE: | | | | |

SAMPLE TYPE: WATER [X], SOIL [ ], OTHER _____
SAMPLE TYPE CODE: | | |

COLLECTED: 12/3/85 (DATE) - 13:35 (TIME) BY JB (INITIALS)
CODE: | | | | | | | | | | | | | | |
Y Y M M D D H H M M I I I

SOURCE: WINDMILL
CODE: | | | | | | | | | | | | | | |
AQUIFER DEPTH

NEAREST CITY: EUNICE (1½ mi SE)
CODE: | | | | | | |

LOCATION: SE NW NE Sec 10 T22S R 37E
CODE: | | | | | | | | | | |
TOWNSHIP RANGE SECTION TRACTS

pH= 7.6 ; Conductivity= 380 umho/cm at 10.5 °C; Chlorine Residual= _____
Dissolved Oxygen= _____ mg/l; Alkalinity= _____; Flow Rate= _____
Sampling Location, Methods and Remarks (i.e. odors, etc.)
PUMPING WINDMILL RATE FROM ME 4-22 Sec

I certify that the statements in this block accurately reflect the results of my field analyses, observations and activities. [signature]
Method of shipment to the Laboratory Hand carried
This form accompanies 2 Septum Vials, ___ Glass Jugs, ___ _____
Containers are marked as follows to indicate preservation:
[ ] NP: No preservation; sample stored at room temperature.
[X] P-Ice Sample stored in an ice bath (not frozen).
[ ] P-$Na_2S_2O_3$; Sample preserved with $Na_2S_2O_3$ to remove chlorine residual.

I (we) certify that this sample was transferred from _____
to _____ at (location) _____ on
___/___/___ - ___:___ (DATE AND TIME) and that the statements in this block are correct.
Evidentiary Seals: Not Sealed [ ] Seals Intact: Yes [ ] No [ ]
Signatures _____ _____

(we) certify that this sample was transferred from _____
to _____ at (location) _____ on
___/___/___ - ___:___ (DATE AND TIME) and that the statements in this block are correct.
Evidentiary Seals: Not Sealed [ ] Seals Intact: Yes [ ] No [ ]
Signatures _____ _____

ANALYSES REQUESTED LAB. No.: ORG- 1184

PLEASE CHECK THE APPROPRIATE BOXES BELOW TO INDICATE THE TYPE OF ANALYTICAL SCREENS REQUIRED. WHENEVER POSSIBLE LIST SPECIFIC COMPOUNDS SUSPECTED OR REQUIRED.

QUALITATIVE	QUANTITATIVE	PURGEABLE SCREENS	QUALITATIVE	QUANTITATIVE	EXTRACTABLE SCREENS
~~X~~	~~X~~	~~ALIPHATIC HYDROCARBON SCREEN~~			ALIPHATIC HYDROCARBONS
X	X	AROMATIC HYDROCARBON SCREEN			CHLORINATED HYDROCARBON PESTICIDES
X	X	HALOGENATED HYDROCARBON SCREEN			CHLOROPHENOXY ACID HERBICIDES
		GAS CHROMATOGRAPH/MASS SPECTROMETER			HYDROCARBON FUEL SCREEN
X	X	HEAD SPACE			ORGANOPHOSPHATE PESTICIDES
					POLYCHLORINATED BIPHENYLS (PCB's)
					POLYNUCLEAR AROMATIC HYDROCARBONS
					TRIAZINE HERBICIDES
		SPECIFIC COMPOUNDS			SPECIFIC COMPOUNDS

REMARKS:

ANALYTICAL RESULTS

COMPOUND	[~~PPB~~]	COMPOUND	[PPB]
HEADSPACE		arom. purg. screen (*)	none detected
METHANE	79 %	halo. purg. screen *	none detected
ETHANE	5 %		
PROPANE	4 %		
BUTANES	0.7%		
PENTANES	0.2%		
		(*) DETECTION LIMIT	3 ugm/l
		* DETECTION LIMIT	1 ugm/l

REMARKS: A trace of one other compound was detected by the aromatic screen that was not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes___ NO X. Seal(s) broken by:_____ date:_____

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements in this block and the analytical data on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 12/6/85 ~~11 Dec 85~~ 16 Dec 85 Analyst's signature: [signature]

I certify that I have reviewed and concur with the analytical results for this sample ~~and~~ with the statements in this block. Reviewers signature: [signature]

NN

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 12 09 85 | LAB NO. WC-5376 | USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235

Collection DATE 12 3 85

Collection TIME 1335

SITE INFORMATION ►

Sample location: WINDMILL 1½ MI SE of EUNICE

Collected by — Person/Agency: BAILEY / OCD

Collection site description: PUMPING WINDMILL. RATE 1000 gal in 22 sec.

SEND FINAL REPORT TO ►

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87501

Attn: David Boyer

SE NW NE Sec 10, T22S R37E

Station/ well code

Owner

SAMPLING CONDITIONS

☐ Bailed ☐ Dipped ☒ Pump ☐ Tap	Water level	Discharge: 1000 gal in 22 sec	Sample type
pH (00400): 7.6	Conductivity (Uncorrected): 380 µmho	Water Temp. (00010): 10.5 °C	Conductivity at 25 °C (00094): µmho

Field comments

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 1

☒ NF: Whole sample (Non-filtered) ☐ F: Filtered in field with 0.45 µmembrane filter ☐ A: 2 ml H_2SO_4/L added

☒ NA: No acid added ☐ Other-*specify:*

ANALYTICAL RESULTS from SAMPLES

NF, NA		Units	Date analyzed
☐ Conductivity (Corrected) 25 °C (00095)		µmho	
☐ Total non-filterable residue (suspended) (00530)		mg/l	
☐ Other:			
☐ Other:			
☐ Other:			

~~F, NA~~ NF, NA		Units	Date analyzed
☒ Calcium (00915)	34.4	mg/l	12-30
☒ Magnesium (00925)	12.2	mg/l	"
☒ Sodium (00930)	211.2	mg/l	"
☒ Potassium (00935)	6.52	mg/l	"
☒ Bicarbonate (00440)	344.4	mg/l	1/6
☒ Chloride (00940)	76.9	mg/l	1/10
☒ Sulfate (00945)	266	mg/l	12/31
☒ Total filterable residue (dissolved) (70300)	765	mg/l	12/23
☒ Other: F	2.7		1/6
☒	0.47		1/10

NF, A-H_2SO_4			
☐ Nitrate-N +, Nitrate-N total (00630)		mg/l	
☐ Ammonia-N total (00610)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Chemical oxygen demand (00340)		mg/l	
☐ Total organic carbon ( )		mg/l	
☐ Other:			
☐ Other:			

F, A-H_2SO_4			
☐ Nitrate-N +, Nitrate-N dissolved (00631)		mg/l	
☐ Ammonia-N dissolved (00608)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Other:			

Analyst	Date Reported	Reviewed by
	1 14 86	CJ

Laboratory remarks

SLD 726 (12/84) *DISTRIBUTION:* **WHITE** — EID, GW&HW Bureau **CANARY** — WS System **PINK** — EID Local Office **GOLDENROD** — SLD

PN

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 12/09/85	LAB NO. HM-2007	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235	
Collection DATE 12/3/85	SITE INFORM-ATION ►	Sample location WINDMILL 1½ MI SE of EUNICE	
Collection TIME 1335		Collection site description PUMPING WINDMILL RATE 1000 ml in 22 Sec	
Collected by — Person/Agency BOYER/BAILEY/OCD			

SEND FINAL REPORT TO ►

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87501

Attn: David Boyer

Station/well code SE NW NE Sec 10, T22S R37E

Owner

SAMPLING CONDITIONS

☐ Bailed ☒ Pump ☐ Dipped ☐ Tap	Water level	Discharge	Sample type
pH (00400) 7.6	Conductivity (Uncorrected) 380 µmho	Water Temp. (00010) 10.5 °C	Conductivity at 25°C (00094) µmho

Field comments

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted 1

☒ NF: Whole sample (Non-filtered) ☐ F: Filtered in field with 0.45 µmembrane filter ☐ A: ~~2 ml H_2SO_4/l added~~ ~~HNO_3~~

☐ NA: No acid added ☒ Other-*specify:* Lab: Add 5ml conc. HNO_3 24 hrs prior to Analysis at least

ANALYTICAL RESULTS from SAMPLES

~~NF, NA~~ NF, A HNO_3	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	µmho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530) (See Special Instruction for Lab)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: ICAP SCAN			☐ Sodium (00930)	mg/l	
☐ Other:			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		

NF, A-H_2SO_4			F, A-H_2SO_4		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ( )	mg/l		☐ Total Kjeldahl-N ( )	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ( )	mg/l				
☐ Other:					
☐ Other:					

Analyst	Date Reported	Reviewed by
	12/18/85	Jim Ashley

Laboratory remarks: 5ml acid added @ SLD.

SLD 726 (12/84) *DISTRIBUTION:* **WHITE** — EID, GW&HW Bureau **CANARY** — WS System **PINK** — EID Local Office **GOLDENROD** — SLD

Lab Number: HM 2007 Sample Code: Windmill

Date Submitted: 12/9/85 Date Analyzed: 12/16/85

By: Boyer/Bailey Reviewed By: Jim Ashley

Date Reported: 12/17/85

Element	ICAP VALUE(MG/L)	AA VALUE(MG/L)
Aluminum	<0.1	
Barium	<0.1	
Berylium	<0.1	
Boron	0.4	
Cadmium	<0.1	
Calcium	29.	
Chromium	<0.1	
Cobalt	<0.1	
Copper	<0.1	
Iron	0.7	
Lead	<0.1	
Magnesium	19.	
Manganese	<0.05	
Molybdenum	<0.1	
Nickel	<0.1	
Silicon	10.	
Silver	<0.1	
Strontium	1.0	
Tin	<0.1	
Vanadium	<0.1	
Zinc	<0.1	
Arsenic		
Selenium		
Mercury		

STATE OF NEW MEXICO
ENVIRONMENT

SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

85-1183-C

REPORT TO: DAVID G. BOYER
PLEASE PRINT
NEW MEXICO OIL CONSERVATION DIV.
P.O. BOX 2088
SANTA FE, NM 87501

PHONE(S): 827-5812

S.L.D. No.: OR-1183-A,B
DATE REC.: 12/09/85
SLD PRIORITY #: 3

USER CODE: 8|2|2|3|5|

SUBMITTER: DAVID BOYER
SUBMITTER CODE: | | | |

SAMPLE TYPE: WATER [X], SOIL [ ], OTHER _____
SAMPLE TYPE CODE: | |

COLLECTED: 12/05/85 - 8:40 BY JR
DATE TIME INITIALS
CODE: 8|5|1|2|0|5|0|8|4|0|4|5|
Y Y M M D D H H M M I I I

SOURCE: WATER WELL
CODE: | | | + | | | + | | | | |
AQUIFER DEPTH

NEAREST CITY: EUNICE
CODE: | | | | | |

LOCATION: SHACK SE of HUGHES WELL
CODE: | | | | | | | | | | |
TOWNSHIP RANGE SECTION TRACTS

pH= 7.7 ; Conductivity= 342 umho/cm at 18 °C; Chlorine Residual= _____
Dissolved Oxygen= _____ mg/l; Alkalinity= _____; Flow Rate= _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

TD 185'
water level 48.4' ft G.L.
csg 6 1/8" ID
6 5/8" OD

Bailed 15 times
Suspended organic matter, iron flakes,
Smelly

I certify that the statements in this block accurately reflect the results of my field analyses, observations and activities. Jamie Bailey

Method of shipment to the Laboratory Hand carried

This form accompanies 2 Septum Vials, ___ Glass Jugs, ___ _____
Containers are marked as follows to indicate preservation:

- [ ] NP: No preservation; sample stored at room temperature.
- [X] P-Ice Sample stored in an ice bath (not frozen).
- [ ] P-$Na_2S_2O_3$; Sample preserved with $Na_2S_2O_3$ to remove chlorine residual.

I (we) certify that this sample was transferred from _____
to _____ at (location) _____ on
___/___/___ - ___:___ and that the statements in this block are correct.
DATE AND TIME
Evidentiary Seals: Not Sealed [ ] Seals Intact: Yes [ ] No [ ]
Signatures _____ _____

(we) certify that this sample was transferred from _____
to _____ at (location) _____ on
___/___/___ - ___:___ and that the statements in this block are correct.
DATE AND TIME
Evidentiary Seals: Not Sealed [ ] Seals Intact: Yes [ ] No [ ]
Signatures _____ _____

ANALYSES REQUESTED

LAB. No.: ORG- 1183

PLEASE CHECK THE APPROPRIATE BOXES BELOW TO INDICATE THE TYPE OF ANALYTICAL SCREENS REQUIRED. WHENEVER POSSIBLE LIST SPECIFIC COMPOUNDS SUSPECTED OR REQUIRED.

QUALITATIVE	QUANTITATIVE	PURGEABLE SCREENS	QUALITATIVE	QUANTITATIVE	EXTRACTABLE SCREENS
~~X~~	~~X~~	~~ALIPHATIC HYDROCARBON SCREEN~~			ALIPHATIC HYDROCARBONS
X	X	AROMATIC HYDROCARBON SCREEN			CHLORINATED HYDROCARBON PESTICIDES
X	X	HALOGENATED HYDROCARBON SCREEN			CHLOROPHENOXY ACID HERBICIDES
		GAS CHROMATOGRAPH/MASS SPECTROMETER			HYDROCARBON FUEL SCREEN
X	X	HEAD SPACE			ORGANOPHOSPHATE PESTICIDES
					POLYCHLORINATED BIPHENYLS (PCB's)
					POLYNUCLEAR AROMATIC HYDROCARBONS
					TRIAZINE HERBICIDES
		SPECIFIC COMPOUNDS			SPECIFIC COMPOUNDS

REMARKS:

ANALYTICAL RESULTS

COMPOUND	[redacted]	COMPOUND	[PPB]
HEADSPACE		arom. purg. screen ⊛	none detected
METHANE	22%	halo. purg. screen *	none detected
ETHANE	1%		
		⊛ DETECTION LIMIT	3 ugm/l
		* DETECTION LIMIT	1 ugm/l

REMARKS: Two other compounds were detected by the aromatic screen that were not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes___ NO X. Seal(s) broken by:_____ date:_____

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements in this block and the analytical data on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 12/14/85 11Dec85 10Dec85 Analyst's signature: C.J. Burney A.M. Tenney

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block. Reviewers signature: K Meyerhen

NM

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 12 09 85	LAB NO. WC-5375	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235	
Collection DATE 12 5 85	SITE INFORMATION ►	Sample location: SHACK WELL SE of HUGHES WELL	
Collection TIME 0840		Collection site description:	
Collected by — Person/Agency: BOYER / BAILEY / OCD			

SEND FINAL REPORT TO ►

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87501

Attn: David Boyer

Station/ well code

Owner

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped ☐ Pump ☐ Tap	Water level: 48.4' fr GL	Discharge	Sample type
pH (00400): 7.7	Conductivity (Uncorrected): 342 µmho	Water Temp. (00010): 18 °C	Conductivity at 25°C (00094): µmho

Field comments: TD 185' BAILED 15 TIMES CSG 6 1/8" ID; 6 5/8" OD
SUSPENDED ORGANIC MATTER, IRON FLAKES

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted

☒ **NF:** Whole sample (Non-filtered) ☐ **F:** Filtered in field with 0.45 µmembrane filter ☐ **A:** 2 ml H_2SO_4/L added

☒ **NA:** No acid added ☐ Other-*specify:*

ANALYTICAL RESULTS from SAMPLES

NF, NA		Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)		µmho	
☐ Total non-filterable residue (suspended) (00530)		mg/l	
☐ Other:			
☐ Other:			
☐ Other:			

NF, A-H_2SO_4			
☐ Nitrate-N +, Nitrate-N total (00630)		mg/l	
☐ Ammonia-N total (00610)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Chemical oxygen demand (00340)		mg/l	
☐ Total organic carbon ( )		mg/l	
☐ Other:			
☐ Other:			

F, NA NF, NA		Units	Date analyzed
☒ Calcium (00915)	25.6	mg/l	12-30
☒ Magnesium (00925)	24.4	mg/l	"
☒ Sodium (00930)	92.5	mg/l	"
☒ Potassium (00935)	9.31	mg/l	"
☒ Bicarbonate (00440)	308.6	mg/l	1/7
☒ Chloride (00940)	37.5	mg/l	1/10
☒ Sulfate (00945)	9.3	mg/l	12/31
☒ Total filterable residue (dissolved) (70300)	355	mg/l	12/23
☒ Other: F	2.07		1/6
☒ B	0.23		1/10

F, A-H_2SO_4			
☐ Nitrate-N +, Nitrate-N dissolved (00631)		mg/l	
☐ Ammonia-N dissolved (00608)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Other:			

Analyst	Date Reported	Reviewed by
	1 14 86	

Laboratory remarks:

SLD 726 (12/84) *DISTRIBUTION:* **WHITE** — EID, GW&HW Bureau **CANARY** — WS System **PINK** — EID Local Office **GOLDENROD** — SLD

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

PN

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 12 09 85 | LAB NO. HM-2006 | USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235

Collection DATE 12 5 85 | Collection TIME 0840

SITE INFORMATION ► Sample location: SHACK WELL SE of HUGHES WELL

Collection site description:

Collected by — Person/Agency: BOYER/BAILEY/OCD

SEND FINAL REPORT TO ►
ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87501
Attn: David Boyer

Station/well code:

Owner:

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped ☐ Pump ☐ Tap	Water level: 48.4' from G.L.	Discharge:	Sample type:
pH (00400): 7.7	Conductivity (Uncorrected): 342 µmho	Water Temp. (00010): 18 °C	Conductivity at 25°C (00094): µmho

Field comments: TD 185' BAILED 15 TIMES CSG 6⅛" ID : 6⅝" OD
SUSPENDED ORGANIC MATTER, IRON FLAKES

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 1

☒ NF: Whole sample (Non-filtered) ☐ F: Filtered in field with 0.45 µmembrane filter ☒ A: ~~2 ml H_2SO_4/L~~ added HNO_3

☐ NA: No acid added ☒ Other-*specify:* Lab: Add 5ml conc HNO_3, 24 hrs prior to analysis at least

ANALYTICAL RESULTS from SAMPLES

~~NF, NA~~ NF, A HNO_3	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	µmho	
☐ Total non-filterable residue (suspended) (00530) (NOTE-See special Instruction Above)	mg/l	
☒ Other: ICAP Scan		
☐ Other:		
☐ Other:		

F, NA	Units	Date analyzed
☐ Calcium (00915)	mg/l	
☐ Magnesium (00925)	mg/l	
☐ Sodium (00930)	mg/l	
☐ Potassium (00935)	mg/l	
☐ Bicarbonate (00440)	mg/l	
☐ Chloride (00940)	mg/l	
☐ Sulfate (00945)	mg/l	
☐ Total filterable residue (dissolved) (70300)	mg/l	
☐ Other:		

NF, A-H_2SO_4

☐ Nitrate-N +, Nitrate-N total (00630)	mg/l	
☐ Ammonia-N total (00610)	mg/l	
☐ Total Kjeldahl-N ( )	mg/l	
☐ Chemical oxygen demand (00340)	mg/l	
☐ Total organic carbon ( )	mg/l	
☐ Other:		
☐ Other:		

F, A-H_2SO_4

☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ( )	mg/l	
☐ Other:		

Analyst | Date Reported: 12 18 85 | Reviewed by: Jim Ashley

Laboratory remarks: 5ml acid added at Lab.

Sample Digested.

SLD 726 (12/84) *DISTRIBUTION:* **WHITE** — EID, GW&HW Bureau **CANARY** — WS System **PINK** — EID Local Office **GOLDENROD** — SLD

Lab Number: HM 2006 Sample Code: Shack Well

Date Submitted: 11/21/85 Date Analyzed: 12/16/85

By: Boyer/Bailey Reviewed By: Jim Ashley

Date Reported: 12/18/85

Element	ICAP VALUE(MG/L)	AA VALUE(MG/L)
Aluminum	<0.1	
Barium	<0.1	
Berylium	<0.1	
Boron	0.2	
Cadmium	<0.1	
Calcium	22.	
Chromium	<0.1	
Cobalt	<0.1	
Copper	<0.1	
Iron	9.3	
Lead	<0.1	
Magnesium	14.	
Manganese	0.35	
Molybdenum	<0.1	
Nickel	<0.1	
Silicon	7.1	
Silver	<0.1	
Strontium	0.9	
Tin	<0.1	
Vanadium	<0.1	
Zinc	<0.1	
Arsenic		
Selenium		
Mercury		

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

50 YEARS
1935 - 1985

TONEY ANAYA
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

December 18, 1985

MEMORANDUM

TO: JEFF TAYLOR, OCD LEGAL STAFF

FROM: DAVID G. BOYER, GEOLOGIST

SUBJECT: DRILLING EXPENSES FOR EUNICE MONITORING WELL

The subject well was drilled and completed December 3-5. Due mainly to safety considerations, expenses were greater than the estimated $2789, but lower than the contract amount of $4500. The final bill is attached. Most of the added expense is covered by the term "completion costs" in Exhibit A of the contract. Below is a breakdown of major cost changes:

A. Cost per well:
The 8 5/8-inch surface casing length was 24 feet (vs estimate for 20 feet). Extra pipe cost $20, extra hole cost $48.

B. Completion Costs:
1. Equipment - A specially fabricated 8" x 24" nipple ($199) was needed while certain other flanges, etc. were not. The $20 charge for an additional day of stripper head rental has been deleted.

2. Cementing of surface casing was done by hand since this completion was early evening and cement delivery would not be until following a.m. (Cement needed to set overnight to allow drilling following day.) Cementing of PVC downhole casing was also done by hand since equipment, water and cement was on site.

3. Safety Considerations - because of the explosion and fire that occurred during previous drilling at the site, several changes approved by OCD were made subsequent to the bid and prior to drilling of this well. A water truck and backhoe were made available to provide water to "kill" the well in event of a gas encounter, and to dig a pit to circulate the water if water drilling became necessary. During the drilling, explosive levels of

gas were encountered at about 112 feet, which was at a shallower depth than anticipated. The extra rig time spent checking for gas at different levels may well have prevented a dangerous gas build-up and explosion.

After review of the bill, I believe the additional charges to be reasonable and necessary, especially with regard to the need for safety of personnel and equipment at the site. I recommend payment of $3737 to Larry's Drilling & Pump Company.

FORM T.: 58-4282 2-85

TEXACO

REPORT OF ANALYSIS

Sample Serial No. 1 Date of Report 12 17 85

Sample of Raw Natural Gas Stream (for informational purposes only)

From _____ Analysis Requested by C.R. Adkison

The sample was secured on 12 17 85, received in the laboratory on 12 17 85 and the analysis was completed by D.M. Green on 12 17 85

COMPONENT	Mol. %	GPM	LV%	Wt. %
Oxygen	.0000			.0000
Nitrogen	2.0139			2.6092
Methane	77.2489			57.3165
Carbon Dioxide	.5471			1.1136
Ethane	10.6675	2.8376		14.8353
Hydrogen Sulfide	.0000	.0000		.0000
Propane	5.4008	1.4787		11.0146
isoButane	.5893	.1917		1.5841
nButane	1.7224	.5400		4.6301
isoPentane	.3882	.1413		1.2954
nPentane	.4894	.1763		1.6331
Hexanes & Heavier	.9326	.3846		3.9681
Total	100.0000	5.7502		100.0000

Calculated Physical Properties

Sp. Gr. (Air = 1.0)	.7444	BTU H_2O Sat. Basis	1235.3369
C_p	.4648	C_p/C_v	1.2474
Mol.Wt.	21.5608	Critical Temp. °R	400.9279
Accentric Factor	.1735	Critical Press.	661.7945
Sp. Gr. (H_2O = 1.0)		Cu. Ft. Gas/Gal. Liq.	

Checked by DMG Approved by _____

Copies to: C.R. Adkison

256309

LARRY'S DRILLING & PUMP CO.
2601 WEST BENDER
HOBBS, NEW MEXICO 88240

Customer's Order No. _____ Date 12-11 1985

Name NEW MEXICO OIL & GAS COMMISSION

Address BOX 2088 (ATT: DAVE BOYER)

SANTA FE N. MEX

SOLD BY	CASH	C.O.D.	CHARGE	ON ACCT.	MDSE. RET'D.	PAID OUT	

QUAN.	DESCRIPTION	PRICE	AMOUNT
1	STRIPPER HEAD RENT		400 00
1	ADD DAY		20 00
1	4" VALVE		175 00
2	4" CLAMP	15.00	30 00
1	8"x24" NIPPLE WITH 4" WELDED COLLAR		199 -
25 FT	4" BLOW LINE	3 PER FT.	75 00
140 FT	5½" 160 PVC CASING	1.60 FT	224 00
2 YD	GRAVEL + DELIVERY	50 YD	100 00
24 FT	8⅝" METAL PIPE CASING	5.00 FT	120 00
100 BBL	WATER	.20	20 00
12 SACK	CEMENT		61 00
	TOTAL SUPPLIES		1424 00

All claims and returned goods MUST be accompanied by this bill.

Rec'd By _____

256310

LARRY'S DRILLING & PUMP SERVICE
2601 WEST BENDER
HOBBS, NEW MEXICO 88240

Customer's Order No. _____ Date 12-11 19 85

Name NEW MEXICO OIL & GAS COMMISSION

Address BOX 2088 ATT (DAVE BOYER)

SANTA FE N.MEX

SOLD BY	CASH	C.O.D.	CHARGE	ON ACCT.	MDSE. RET'D	PAID OUT	

QUAN.	DESCRIPTION	PRICE	AMOUNT
24 FT	12¼ IN. HOLE DRILLED	12.00 FT	288 00
2 HR	LABOR TO CEMENT 8⅝	35.00	70 00
120 FT	DRILL 7⅞" HOLE	8.00	960 00
3 HRS	EXTRA RIG TIME CHECKING		240 00
	FOR GAS AT DIFFERENT LEVELS		
7 HRS	BACKHOE WORK + MOVING	35.00	245 00
3 HRS	WATER TRUCK	35.00	105 00
3 HRS	LABOR TO MIX + CEMENT	35.00	105.00
	5½ IN PVC CASING		
3 HRS	RIG TIME TO RUN CASING	80.00 HR	240 00
1 HR	GRAVEL PACK WELL + BAIL		80 00
	TOTAL LABOR		2333 00

ALL claims and returned goods MUST be accompanied by this bill.

Rec'd By Eddie W Dean

MANLEY GAS TESTING, INC.

GAS ENGINEERING SERVICE

PHONE (915) 367-3024

P. O. DRAWER 193

ODESSA, TEXAS 79760

Invoice To: STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
P. O. BOX 1980
HOBBS, NEW MEXICO 88240

Invoice No.	Date of Invoice	Ticket No.	Order No.
#12053	12-11-85		

4 - GAS ANALYSES @ $45.00 EACH — $180.00
#54760 THRU #54763 INC.

TOTAL — $180.00

THANK YOU!

MANLEY GAS TESTING INC.

120 DOCK . AD - ODESSA, TEXAS-915-36 3024

CHARGE..... 99 - 0 - 0
TEST NUMBER.. 54762

DATE SAMPLED.....
DATE RUN..... 12-10-85

A SAMPLE OF 8512050920
RECEIVED FROM NEW MEXICO OIL CONSERVATION DEPT.
LOCATION HOBBS NEW MEXICO

SAMPLE CONDITIONS PRESSURE 0.0 PSIG TEMPERATURE..... 0.0 F

****

FRACTIONAL ANALYSIS

CALCUATED @14.650 PSIA AND 60F

	MOL%	GPM
HYDROGEN SULFIDE.	0.00	
NITROGEN.....	74.19	
CARBON DIOXIDE...	0.19	
METHANE.....	16.25	
ETHANE.....	2.37	0.630
PROPANE.....	6.51	1.782
ISO-BUTANE.....	0.16	0.052
NOR-BUTANE.....	0.22	0.069
ISO-PENTANE.....	0.04	0.015
NOR-PENTANE.....	0.03	0.011
HEXANES.....	0.03	0.012
HEPTANES + ...	0.01	0.005
TOTAL.....	100.00	2.576

SULPHUR DETERMINATION

GRAINS/100SCF	
HYDROGEN SULFIDE..	0.000
MERCAPTANS.....	0.000
SULFIDES.....	0.000
RESIDUAL SULPHUR..	0.000
TOTAL.....	0.000

LIQUEFIABLE HYDROCARBONS

	GPM	GPM
PROPANE.....	1.782	
BUTANES.....	0.121	
LPG.....		1.903
GASOLINE.....		0.043
SUBTOTAL.....		1.946
ETHANE.....		0.630
TOTAL.....		2.576

****

REID VAPOR PRESSURE
26 LB..... 0.063
12 LB..... 0.043

MIXTURE SPECIFIC GRAVITY
CALCULATED FROM ANALYSIS..... 0.945
DETERMINED BY RANAREX..... 0.000

MIXTURE HEATING VALUE..... DRY..... 386 WET..... 379 BTU

****

DISTRIBUTION

E.SEAY
R.SMITH

SAMPLES COLLECTED BY NEW MEXICO
OIL CONSERVATION PERSONNEL

RUN BY B. BROWDER

APPROVED M. Lanier

MANLEY GAS TESTING INC.

120 DOCK ROAD - ODESSA, TEXAS-915-367 3024

CHARGE..... 99 - 0 - 0
TEST NUMBER.. 54760

DATE SAMPLED.....
DATE RUN..... 12-10-85

A SAMPLE OF 8512041610
RECEIVED FROM NEW MEXICO OIL CONSERVATION DEPT.
LOCATION HOBBS NEW MEXICO

SAMPLE CONDITIONS PRESSURE 0.0 PSIG TEMPERATURE..... 0.0 F

****

FRACTIONAL ANALYSIS
CALCUATED @14.650 PSIA AND 60F

	MOL%	GPM
HYDROGEN SULFIDE.	0.00	
NITROGEN.....	53.66	
CARBON DIOXIDE...	0.29	
METHANE.....	29.12	
ETHANE.....	4.28	1.138
PROPANE.....	11.68	3.197
ISO-BUTANE.....	0.29	0.094
NOR-BUTANE.....	0.41	0.128
ISO-PENTANE.....	0.08	0.029
NOR-PENTANE.....	0.07	0.025
HEXANES.....	0.05	0.020
HEPTANES + ...	0.07	0.032
TOTAL.....	100.00	4.663

SULPHUR DETERMINATION

GRAINS/100SCF	
HYDROGEN SULFIDE..	0.000
MERCAPTANS.....	0.000
SULFIDES.....	0.000
RESIDUAL SULPHUR..	0.000
TOTAL.....	0.000

LIQUEFIABLE HYDROCARBONS

	GPM	GPM
PROPANE.....	3.197	
BUTANES.....	0.222	
LPG.....		3.419
GASOLINE.....		0.106
SUBTOTAL.....		3.525
ETHANE.....		1.138
TOTAL.....		4.663

****

REID VAPOR PRESSURE
26 LB..... 0.162
12 LB..... 0.110

MIXTURE SPECIFIC GRAVITY
CALCULATED FROM ANALYSIS..... 0.929
DETERMINED BY RANAREX..... 0.000

MIXTURE HEATING VALUE..... DRY..... 697 WET..... 685 BTU

****

DISTRIBUTION

E.SEAY
R.SMITH

SAMPLES COLLECTED BY NEW MEXICO
OIL CONSERVATION DEPT.

RUN BY B. BROWDER

APPROVED M. Caswell

MANLEY GAS TESTING INC.

120 DOCK ROAD - ODESSA, TEXAS-915-367-3024

CHARGE..... 99 - 0 - 0
TEST NUMBER.. 54763

DATE SAMPLED.....
DATE RUN..... 12-10-85

A SAMPLE OF 8512041520
RECEIVED FROM NEW MEXICO OIL CONSERVATION DEPT.
LOCATION HOBBS NEW MEXICO

SAMPLE CONDITIONS PRESSURE 0.0 PSIG TEMPERATURE..... 0.0 F

****

FRACTIONAL ANALYSIS

CALCUATED @14.650 PSIA AND 60F

	MOL%	GPM
HYDROGEN SULFIDE.	0.00	
NITROGEN.....	51.38	
CARBON DIOXIDE...	0.26	
METHANE.....	31.96	
ETHANE.....	4.61	1.225
PROPANE.....	10.76	2.945
ISO-BUTANE.....	0.31	0.101
NOR-BUTANE.....	0.44	0.138
ISO-PENTANE.....	0.08	0.029
NOR-PENTANE.....	0.06	0.022
HEXANES.....	0.06	0.025
HEPTANES + ...	0.08	0.037
TOTAL.....	100.00	4.522

SULPHUR DETERMINATION

GRAINS/100SCF	
HYDROGEN SULFIDE..	0.000
MERCAPTANS.....	0.000
SULFIDES.....	0.000
RESIDUAL SULPHUR..	0.000
TOTAL.....	0.000

LIQUEFIABLE HYDROCARBONS

	GPM	GPM
PROPANE.....	2.945	
BUTANES.....	0.239	
LPG.....		3.184
GASOLINE.....		0.113
SUBTOTAL.....		3.297
ETHANE.....		1.225
TOTAL.....		4.522

****

REID VAPOR PRESSURE
26 LB..... 0.174
12 LB..... 0.119

MIXTURE SPECIFIC GRAVITY
CALCULATED FROM ANALYSIS..... 0.913
DETERMINED BY RANAREX..... 0.000

MIXTURE HEATING VALUE..... DRY..... 711 WET..... 698 BTU

****

DISTRIBUTION

E.SEAY
R.SMITH

SAMPLES COLLECTED BY NEW MEXICO
OIL CONSERVATION DEPT.

RUN BY B. BROWDER

APPROVED M. Caswell

MANLEY GAS TESTING INC.

120 DOCK ROAD - ODESSA, TEXAS-915-367-3024

CHARGE..... 99 - 0 - 0
TEST NUMBER.. 54761

DATE SAMPLED.....
DATE RUN..... 12-10-85

A SAMPLE OF 8512041530
RECEIVED FROM NEW MEXICO OIL CONSERVATION DEPT.
LOCATION HOBBS NEW MEXICO

SAMPLE CONDITIONS PRESSURE 0.0 PSIG TEMPERATURE..... 0.0 F

****

FRACTIONAL ANALYSIS
CALCUATED @14.650 PSIA AND 60F

	MOL%	GPM
HYDROGEN SULFIDE.	0.00	
NITROGEN.....	51.87	
CARBON DIOXIDE...	0.29	
METHANE.....	30.85	
ETHANE.....	4.49	1.193
PROPANE.....	11.51	3.150
ISO-BUTANE.....	0.31	0.101
NOR-BUTANE.....	0.44	0.138
ISO-PENTANE.....	0.08	0.029
NOR-PENTANE.....	0.07	0.025
HEXANES.....	0.05	0.020
HEPTANES + ...	0.04	0.018
TOTAL.....	100.00	4.674

SULFHUR DETERMINATION

GRAINS/100SCF	
HYDROGEN SULFIDE..	0.000
MERCAPTANS.....	0.000
SULFIDES.....	0.000
RESIDUAL SULPHUR..	0.000
TOTAL.....	0.000

LIQUEFIABLE HYDROCARBONS

	GPM	GPM
PROPANE.....	3.150	
BUTANES.....	0.239	
LPG.....		3.389
GASOLINE.....		0.092
SUBTOTAL.....		3.481
ETHANE.....		1.193
TOTAL.....		4.674

****

REID VAPOR PRESSURE
26 LB..... 0.138
12 LB..... 0.093

MIXTURE SPECIFIC GRAVITY
CALCULATED FROM ANALYSIS..... 0.920
DETERMINED BY RANAREX..... 0.000

MIXTURE HEATING VALUE..... DRY..... 714 WET..... 701 BTU

****

DISTRIBUTION

E.SEAY
R.SMITH

SAMPLES COLLECTED BY NEW MEXICO
OIL CONSERVATION DEPT.

RUN BY B. BROWDER

APPROVED M. Caswell

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

50 YEARS
1935 - 1985

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

November 7, 1985

Larry's Drilling & Pump Company
2601 West Bender
Hobbs, New Mexico 88240

Attention: Larry Felkins

Dear Mr. Felkins:

Enclosed are six copies of a contract with your firm for drilling of monitor wells. Please sign and date each copy on page ten on the lines under "Contractor". In addition, I have enclosed a Conflict of Interest form which states the amount the state has paid your firm in the last twelve months. If this agrees with your records, please sign it on the appropriate line. Please return all materials to me so that I may finalize it. I will return a fully executed copy to you in a few days.

Our Environmental Bureau will then contact you regarding the work schedule.

Thank you for your cooperation.

Sincerely,

S/

Jeff Taylor
General Counsel

JT/bok

BENHAM NATURAL GAS SERVICE

366-2477 P. O. BOX 6235

ODESSA, TEXAS 79762

October 17, 1985

David Boyer
New Mexico Oil Conservation Div.
P.O. Box 2088
Sante Fe, New Mexico 87501

Dear Mr. Boyer,

This will confirm our telephone conversation of October 16, 1985 in which I quoted you a price of thirty dollars ($30.00) per sample for chromatpgraph analysis of gas samples. Larger volumes would be less per sample. Thank you for calling.

Yours Very Truly,

Farris L Benham

Farris L. Benham

BELL PETROLEUM LABORATORIES

PROVIDES SERVICES FOR . . .

DRILLING
- Core Analysis
- Lithology Studies
- SEM
- XRD

COMPLETION
- Reservoir Fluid Analysis
- Core Analysis
- Formation Water
- Filtration Services

PRODUCTION
- PVT
- DST
- Oil-Gas Evaluation
- Injection Filtration
- Classification

TRANSPORTATION
- Gas Analysis
- Meter Calibration
- Pipeline Product Analysis
- Classification

REFINING
- Field Service Laboratory
- Plant Evaluation
- GC/MS for Contaminants and Catalyst Poisons

LEASE EVALUATION
- Reservoir Fluid Analysis
- Core Analysis
- Oil-Gas Evaluation
- Geo-Chemistry

. . . AND MUCH MORE.

Bell PETROLEUM LABORATORIES

A Division of Bell Petroleum Services, Inc.

2057 Commerce Drive
P. O. Box 2988
Midland, Texas 79702
915-563-2628

3400 W. Yellowstone St.
P. O. Box 2652
Casper, Wyoming 82602
307-266-1616

GAS AND LIQUID ANALYSES

Gas Analyses

400- 1	Natural Gas (C1 - C7+, including BTU, N_2, CO_2 and specific gravity)		$ 45.00
400- 2	Natural Gas (C1 - C10+, including N_2, CO_2 and H_2S)		$175.00
400- 3	Trace Component Analyses less than 10ppm		By Quotation
400- 4	Extended Gas Analyses by Capillary Column		$200.00
400- 5	Extended gas/liquid analyses by GC/MS		By Quotation
400- 6	Sulfur Components Analyses (SO_2, CS_2, H_2S, COS)	each	$ 60.00
400- 7	Mercaptan Analysis		$ 60.00
400- 8	Inert Gases		$ 65.00
400- 9	PCB in Oil		$ 60.00
400-10	O_2 Analysis		$ 20.00
400-11	Gas Contaminant Identification by GC/MS		By Quotation

Other analyses are available upon request.

Liquid Analyses

401- 1	L.P.G. Product		$ 65.00
401- 2	L.N.G. Product		$ 65.00
401- 3	Raw Make Gasoline and Light Condensate (thru C7+)		$ 75.00
401- 4	Raw Make Gasoline and Light Condensate (thru C10+)		$175.00
401- 5	Detailed Capillary Analysis (Gasoline) and (Naphtha)		$200.00
401- 6	Extended Liquid Analysis by GC/MS		By Quotation
401- 7	Liquid Contaminant Identification by GC/MS		By Quotation
401- 8	Sulfur Components	each	$ 75.00
401- 9	Mercaptans	each	$ 75.00
401-10	De-Petanization	sample preparation	$ 60.00
401-11	De-Hexanization	sample preparation	$ 75.00
401-12	Chlorinated Solvent Identification		By Quotation
401-13	Shrinkage Factor, Instant Single Stage Flash		$ 45.00
401-14	Measure gas from Flash found in 401-13		$ 60.00
401-15	Flash Calculations, liquid or gas	each	$ 25.00
401-16	Olefinic Compound Analysis		$120.00
401-17	PNA Analysis by Capillary G.C.		$200.00

Other liquid analyses are available upon request.

SCHEDULE OF SERVICES AND FEES

SOUTHWESTERN LABORATORIES, INC.

ANALYTICAL SERVICES

MIDLAND DIVISION

EFFECTIVE JANUARY 1985

SOUTHWESTERN LABORATORIES, INC.

1703 W. Industrial/P. O. Box 2150

Midland, Texas 79702

(915) 683-3348

SCHEDULE OF SERVICES AND MINIMUM FEES

PETROLEUM PRODUCTS

GAS OR LIQUID ANALYSIS BY GAS CHROMATOGRAPHY	UNIT CHARGE
(*) Gas Fractional Analysis through Pentanes (Hexanes Plus)	$ 50.00
(*a) Liquid Fractional Analysis through Pentanes (Hexanes Plus)	65.00
Capillary Gas Chromatograph Analysis of Atmospheric Liquids through C_{29}, C_{30} Plus	150.00

HYDROGEN SULFIDE ON LABORATORY GAS SAMPLES	
Not recommended due to reactivity of H_2S	No Charge

FIELD DETERMINATIONS	
Hydrogen Sulfide (Tutweiler)	(*b)
Hydrogen Sulfide (ASTM D-2385)	(*b) + 30.00
Hydrogen Sulfide & Mercaptans (ASTM D-2385)	(*b) + 40.00
Carbon Dioxide (Orsat)	(*b)
Total Acid Gas (Orsat)	(*b)

ASTM SPECIFICATIONS FOR FUEL OILS	
Flash Point, Pensky-Martens (ASTM D-93)	25.00
Pour Point (ASTM D-97)	30.00
Water & Sediment (ASTM D-1796)	25.00
Ash (ASTM D-482)	25.00
Distillation (ASTM D-86)	35.00
Viscosity, (SUS ASTM D-88 or cSt ASTM D-445)	25.00
Copper Strip Corrosion (ASTM D-130)	25.00
Total Sulfur (ASTM D-2622)	30.00
All of the above	205.00

(*) Includes Nitrogen, Oxygen, Carbon Dioxide, GPM Calc., BTU Calc. and Specific Gravity Calc.

(*a) Does not include determined Molecular Weight or Determined Specific Gravity

(*b) Location Time of $35.00/hr., plus $0.50¢/mile, plus $35.00/hr. Travel Time

MANLEY GAS TESTING, INC.

GAS ENGINEERING SERVICE

PHONE 337-0955
P. O. DRAWER 193
ODESSA, TEXAS
79760

NEW PRICES EFFECTIVE JULY 1, 1981

GAS & LIQUID ANALYSIS PRICES

Complete Gas Analysis	$40.00
Complete Gas Analysis & Tutweiler Sulphur	$50.00
Liquid Hydrocarbon Analysis (Including CO2)	$60.00
Crude Oil Analysis by Chromatograph	$110.00
Liquid Hydrocarbon Analysis thru C-8+	$100.00
Total Sulphur Breakdown by Austin Titrator	$35.00
Hydrogen Sulphide by Tutweiler or Drager Method	$20.00
Oxygen or CO2 by Chromatograph	$35.00
Extended Liquid Analysis	$120.00

TERMS AND CONDITIONS

(1) Charges for field work are $23.00 per hour and 0.45¢ per mile. Hourly rates commence upon leaving and returning to lab.

(2) No time or mileage charged for securing five (5) or more liquids or ten (10) or more gas samples, within 350 mile round trip.

(3) For mileage after 350 miles, our regular mileage rates will apply.

(4) Special rates quoted for any large volume of gas or liquid samples.

(5) Freight will be paid both ways by customer.

(6) Averaging of an analysis done at customer's request will be billed at full price of a regular analysis.

(7) Manley Gas Testing, Inc. reserves the right to charge one and a half (1½) times regular rates for work requested on weekends or holidays.

MANLEY GAS TESTING, INC.

GAS ENGINEERING SERVICE

PHONE 337-0955

P. O. DRAWER 193

ODESSA, TEXAS

79760

NEW PRICES EFFECTIVE JULY 1, 1981

GAS & LIQUID ANALYSIS PRICES

Complete Gas Analysis	$40.00
Complete Gas Analysis & Tutweiler Sulphur	$50.00
Liquid Hydrocarbon Analysis (Including CO2)	$60.00
Crude Oil Analysis by Chromatograph	$110.00
Liquid Hydrocarbon Analysis thru C-8+	$100.00
Total Sulphur Breakdown by Austin Titrator	$35.00
Hydrogen Sulphide by Tutweiler or Drager Method	$20.00
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STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal | Time 10:30 | Date 10/2/85

Originating Party	Other Parties
Jami Bailey	Jerry Sexton

Subject: Meeting with Warren Eunice plant personnel re drilling Mary Hughes well

Discussion: I asked Jerry to arrange appointment w/ Warren on 10/9/85. He will set it up for 1 PM, but declined invitation to attend. He reiterated that he will not be involved in the situation - that he has only hearsay for evidence that Warren could be responsible, that the conversation with them was short & fruitless, that if we're asking them for $ to drill the well, he doesn't need to be there.
We will be met at the airport at 9:30 AM.

Conclusions or Agreements: Sounds like a phonecall by you to Warren would accomplish as much as a visit.

Distribution: Dave Boyer

Signed: Jami Bailey

MANLEY GAS TESTING INC.

120 DOCK ROAD - ODESSA. TEXAS-915-[illegible]-3024

CHARGE..... 80 - 18
TEST NUMBER.. 52383

DATE SAMPLED..... 10-1-85
DATE RUN..... 10-1-85

A SAMPLE OF WARREN EUNICE COMPOSITE TO P/L 37166-20-520
RECEIVED FROM CHEVRON PIPELINE / WARREN PETROLEUM
LOCATION MIDLAND TX / TULSA OK

TICKET NUMBERS = 03933 TO 37
COMPOSITE DATES = 9-1 TO 10-1-85
BEFORE BACK PRESSURE = 12 IN.'S
AFTER BACK PRESSURE = 11 IN.'S

****

FRACTIONAL ANALYSIS
CALCULATED @ 14.696 PSIA AND 60F

	MOL%	LIQUID%	WEIGHT%
NITROGEN.....	0.00	0.00	0.00
CARBON DIOXIDE.	0.00	0.00	0.00
METHANE.....	2.51	1.48	0.95
ETHANE.....	46.74	43.65	33.22
PROPANE.....	27.95	26.87	29.13
ISO-BUTANE.....	3.51	4.01	4.82
NOR-BUTANE.....	9.59	10.55	13.19
ISO-PENTANE....	2.29	2.93	3.91
NOR-PENTANE....	2.70	3.42	4.60
HEXANES.....	4.71	7.09	10.18
HEPTANES.....	0.00	0.00	0.00
TOTAL.....	100.00	100.00	100.00

MIXTURE CALCULATION

SP. GRAVITY.....		0.4704
VAPOR PRESSURE.		561.076
TOTAL MOL. WT...		42.307
SP.GRAV....	C6+	0.7029
MOL. WT....	C6+	91.495
VAP. PRESS.	C6+	3.815
GAL/LB MOL.	C6+	15.607
CF/GAL.....	C6+	24.337
LB/GAL.....	C6+	5.860

EXTENDED

****

REID VAPOR PRESSURE		REID VAPOR PRESSURE		REID VAPOR PRESSURE	
26 LB.....	0.00	14 LB.....	0.00	12 LB.....	0.00
XCESS C4'S...	0.00	XCESS C4'S...	0.00	XCESS C4'S....	0.00
XCESS C3'S...	0.00	XCESS C3'S...	0.00	XCESS C3'S....	0.00
XCESS C2'S...	0.00	XCESS C2'S...	0.00	XCESS C2'S....	0.00

****

WARREN STANDARD USED = PHILLIP'S BLEND #5

DISTRIBUTION:
KLINE / SUMNER / COCHRAN / WATZL / ALLEN
TERRELL

SUITABLE FOR ACCOUNTING USE
Signed [signature]
Date 10/8/85

RUN BY M. WIESE
* R * -S12 -

APPROVED [signature]

10-7-85

Form 18-4282-1177

Getty Oil Company
Eunice Gasoline Plant Lab
P.O. Box 1137
Eunice, New Mexico 88231

REPORT OF ANALYSIS

Sample Serial No. 0 Date of Report 05 29 85

Sample of Unknown Gas - Water Well (Walker) Sec 10

From _____ Analysis Requested by C.R. Adkison

The sample was secured on 05 29 85, received in the laboratory on 05 29 85 and the analysis was completed by D.M. Green on 05 29 85

COMPONENT	Mol. %	GPM	LV%	Wt. %
Oxygen	.0000			.0000
Nitrogen	58.7685			52.2491
Methane	10.1054			5.1453
Carbon Dioxide	.1762			.2461
Ethane	2.7080	.7203		2.5844
Hydrogen Sulfide	.0000	.0000		.0000
Propane	27.6812	7.5791		38.7408
isoButane	.4026	.1310		.7427
nButane	.1581	.0496		.2916
isoPentane	.0000	.0000		.0000
nPentane	.0000	.0000		.0000
Hexanes & Heavier	.0000	.0000		.0000
Total	100.0000	8.4800		100.0000

Calculated Physical Properties

Sp. Gr. (Air = 1.0)	1.0845	BTU H_2O Sat. Basis	847.2786
C_p	.3222	C_p/C_v	1.2443
Mol.Wt.	31.4115	Critical Temp. °R	373.0402
Accentric Factor	.1532	Critical Press.	551.7825
Sp. Gr. (H_2O = 1.0)		Cu. Ft. Gas/Gal. Liq.	

Checked by DMG Approved by _____

Copies to: C.R. Adkison
file

Walker well has gas bubbleing up and saw fumes. Well had old windmill or other structure - only concrete pad left.

2nd water well @ windmill tower had water moving down casing (trickling heard). Windmill ~100 yrds north, sucker rod disconnected

Warren Eunice plant ½ mile north; unused LPG storage dome at plant.

Form 18-4282-1177

Getty Oil Company
Eunice Gasoline Plant Lab
P.O. Box 1137
Eunice, New Mexico 88231

REPORT OF ANALYSIS

Sample Serial No. 177 Date of Report 06 13 85

Sample of Anadarko -- Hugh Well #9 -- Unit D

From same Analysis Requested by Eddie Seay

The sample was secured on 06 13 85, received in the laboratory on 06 13 85 and the analysis was completed by Donny Green on 06 13 85

COMPONENT	Mol. %	GPM	LV%	Wt. %
Oxygen	.0000			.0000
Nitrogen	46.0676			54.1665
Methane	43.9427			29.5902
Carbon Dioxide	.0000			.0000
Ethane	5.8574	1.5581		7.3929
Hydrogen Sulfide	.0016	.0000		.0023
Propane	2.7313	.7478		5.0554
isoButane	.3040	.0989		.7417
nButane	.6651	.2085		1.6226
isoPentane	.1261	.0459		.3819
nPentane	.1548	.0558		.4688
Hexanes & Heavier	.1496	.0617		.5777
Total	100.0000	2.7767		100.0000

Calculated Physical Properties

Sp. Gr. (Air = 1.0)	.8201	BTU H_2O Sat. Basis	652.6234
C_p	.3548	C_p/C_v	1.3085
Mol.Wt.	23.7534	Critical Temp. °R	317.2783
Accentric Factor	.1610	Critical Press.	586.2604
Sp. Gr. (H_2O = 1.0)		Cu. Ft. Gas/Gal. Liq.	

Checked by DMG Approved by

Copies to: Eddie Seay
file

Form 18-4282-1177

Getty Oil Company
Eunice Gasoline Plant Lab
P.O. Box 1137
Eunice, New Mexico 88231

REPORT OF ANALYSIS

Sample Serial No. 176 Date of Report 06 13 85

Sample of John Hendrix -- Cossatot M#2

From same Analysis Requested by Eddie Seay

The sample was secured on 06 13 85, received in the laboratory on 06 13 85 and the analysis was completed by Donny Green on 06 13 85

COMPONENT	Mol. %	GPM	LV%	Wt. %
Oxygen	.0000			.0000
Nitrogen	92.3127			94.9513
Methane	6.9704			4.1060
Carbon Dioxide	.0359			.0580
Ethane	.4867	.1295		.5374
Hydrogen Sulfide	.0000	.0000		.0000
Propane	.1391	.0381		.2252
isoButane	.0138	.0045		.0295
nButane	.0336	.0105		.0717
isoPentane	.0063	.0023		.0167
nPentane	.0016	.0006		.0042
Hexanes & Heavier	.0000	.0000		.0000
Total	100.0000	.1855		100.0000

Calculated Physical Properties

Sp. Gr. (Air = 1.0)	.9374	BTU H_2O Sat. Basis	82.6221
C_p	.2610	C_p/C_v	1.3898
Mol.Wt.	27.1509	Critical Temp. °R	238.6060
Accentric Factor	.1520	Critical Press.	506.6430
Sp. Gr. (H_2O = 1.0)		Cu. Ft. Gas/Gal. Liq.	

Checked by DMG Approved by

Copies to: Eddie Seay
file

Form 18-4282-1177

Getty Oil Company
Eunice Gasoline Plant Lab
P.O. Box 1137
Eunice, New Mexico 88231

REPORT OF ANALYSIS

Sample Serial No. 0 Date of Report 05 29 85

Sample of Gas Hughes water well

From H_2O Well Analysis Requested by C.R. Adkison

The sample was secured on 05 29 85, received in the laboratory on 05 29 85 and the analysis was completed by D.M. Green on 05 29 85

COMPONENT	Mol. %	GPM	LV%	Wt. %
Oxygen	.0000			.0000
Nitrogen	94.2246			91.5042
Methane	.0000			.0000
Carbon Dioxide	.0644			.0983
Ethane	.7473	.1988		.7790
Hydrogen Sulfide	.0000	.0000		.0000
Propane	4.9010	1.3419		7.4922
isoButane	.0627	.0204		.1263
nButane	.0000	.0000		.0000
isoPentane	.0000	.0000		.0000
nPentane	.0000	.0000		.0000
Hexanes & Heavier	.0000	.0000		.0000
Total	100.0000	1.5611		100.0000

Calculated Physical Properties

Sp. Gr. (Air = 1.0)	.9929	BTU H_2O Sat. Basis	135.7897
C_p	.2601	C_p/C_v^2	1.3618
Mol.Wt.	28.7584	Critical Temp. °R	252.3967
Accentric Factor	.1500	Critical Press.	501.0223
Sp. Gr. (H_2O = 1.0)		Cu. Ft. Gas/Gal. Liq.	

Checked by DMG Approved by

Copies to: C.R. Adkison
file

April 85 - "Blowout" while drilling waterwell
Heard gas bubbling in well, saw funnel
Mid American LPG pipeline to east
~100 yds by RR, 2nd pipeline to
W, 1/4 mile.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal	Time 10 AM	Date 9/26/85
Originating Party	Other Parties	
Jami Bailey	Jerry Sexton	

Subject: Possible Warren plant contamination of Mary Hughes well?

Discussion: No documentation exists on leakage from Warren LPG storage domes. People Jerry talked to say figures check out on amount stored & withdrawn. Domes shut down many years ago & proof that they were responsible does not exist. A new Hughes well may not be usable, & there's no point in drilling her one unless info can be obtained to determine quality of situation in that area.

Conclusions or Agreements: Jerry indicated that he had given his opinion, & it is our responsibility to handle the situation as you see fit.

Distribution: Diane Boyer

Signed: Jami Bailey

LARRY'S DRILLING & PUMP CO.
2601 W. BENDER
HOBBS, NM 88240

TO: New Mexico Oil & Gas Commission

RE: Eunice Monatoring Well

To check gas in water table

one time cost

Stripper head			$400.00
added cost after 5 days	per day	20.00	
4" gate valve			175.00
2 4" flange	@15.00ea.		30.00
2 8" flange	@20.00 ea.		40.00
30ft. 4" blow line	@3.00 pr. ft.		90.00
31/2" stripper rubber			110.00
bolts & gaskets			30.00
140ft. 51/2" PVC			224.00
1 yd. gravel delivered			50.00
rig time to run casing & gravel pack			160.00
			1309.00

cost per well

drill 20' 121/4" hole			240.00
20ft. 85/8 casing	@5.00 perft.		100.00
cement	60,00 yd.		
	40.00 delivery		100.00
drill 120ft. 77/8 hole with air	@8.00 per ft.		960.00
rig time	80.00 per hr		80.00
			1480.00
stand yby rig time	50.00 per hr.		
	one well	TOTAL	2789.00

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal	Time 2:45	Date 9/19/85

Originating Party	Other Parties
Jami Bailey	Jerry Sexton

Subject: Mary Hughes water well

Discussion: Hughes well analysis indicates composition of Nitrogen, Propane, Ethane, CO_2 + some Butane, but no methane. Because methane is an integral part of natural gas, Jerry believes the composition indicates refined gas that leaked from Warren Conoco plant storage caverns, picked up nitrogen from the salt section + migrated to near-surface. His recommendation is to drill a well, measure thickness + composition of gas section, + if possible, complete the upper section as a water well for Hughes. The Warren Conoco plant gas storage domes were removed from service 15 years ago.

Conclusions or Agreements:

Wait on Larry's Drilling Co cost estimates for drilling well

Distribution: file.

Signed: Jami Bailey

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☐ Telephone ☒ Personal | Time 1:00PM | Date 10/9/85

Originating Party	Other Parties *
David Boyer, Eddie Seay / NMOCD	R.O. Lein Weber, Plant Manager, Warren Petroleum, Eunice #)

Subject: Possible Leaks in LPG Storage domes

(* E.E. Jimenez, Plant Supervisor)

Discussion: Two wells - LPG 1, drilled 1951, propane until 1965
LPG 2, drilled 1954, propane until 1970,
#1 had raw liquid product from 1965 to 1976, #2 raw product 1970 to 1976. Had communication between wells (about 500' apart on surface) - brine in one went to other during pressure test. Propane has V.P. ≈ 208 Lbs/in² @ 100°F, pressure must be greater to keep in liquid form. Use 10 lb brine at 1400 ft. After 1976, send raw product to Houston for fractionation and selling to Petrochemical co. Both wells plugged 11/83.

Conclusions or Agreements: Warren agreed to cooperate in our investigation by letting us look at records and doing gas analysis of samples. No request was made by OCD, nor was an offer made by Warren, to provide a water supply for Mary Hughes
(Note - OCD files show repair of casing in LPG #2 in Jan. 1964)

Distribution: Mary Hughes file

Signed: Kelly Boyer

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☐ Telephone ☒ Personal | Time 11 AM | Date October 9, 1985

Originating Party	Other Parties
DAVID BOYER, Eddie Seay > NMOCD	C.R. Adkison, Plants Superintendent Texaco (Getty), Eunice NM

Subject: Analyses of Samples From Mary Hughes & Other water/oil wells

Discussion: Met with Adkison and chemistry lab supervisor to discuss sampling done of water and gas wells at OCD request. Sampling is done with steel canisters and the gas is analyzed on a GC. Methane and ethane are lighter than air; propane, butane and the larger isomers are heavier than air, as is H_2S. Samples may not be representative due to leak around water well annulus when sampling. Texaco will assist if more samples taken by running a cross-check with a commercial lab. but will not sample alone if to be used in litigation or other purpose. Manley Gas Testing of Odessa does work for $35/sample

Conclusions or Agreements:

Distribution: Mary Hughes File

Signed: D J Boyer

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal	Time 11:30	Date 9/6/85

Originating Party	Other Parties
Jami Bailey	C.R. Adkerson - Getty-Texaco Eunice Plant I 394-0566 394-2516

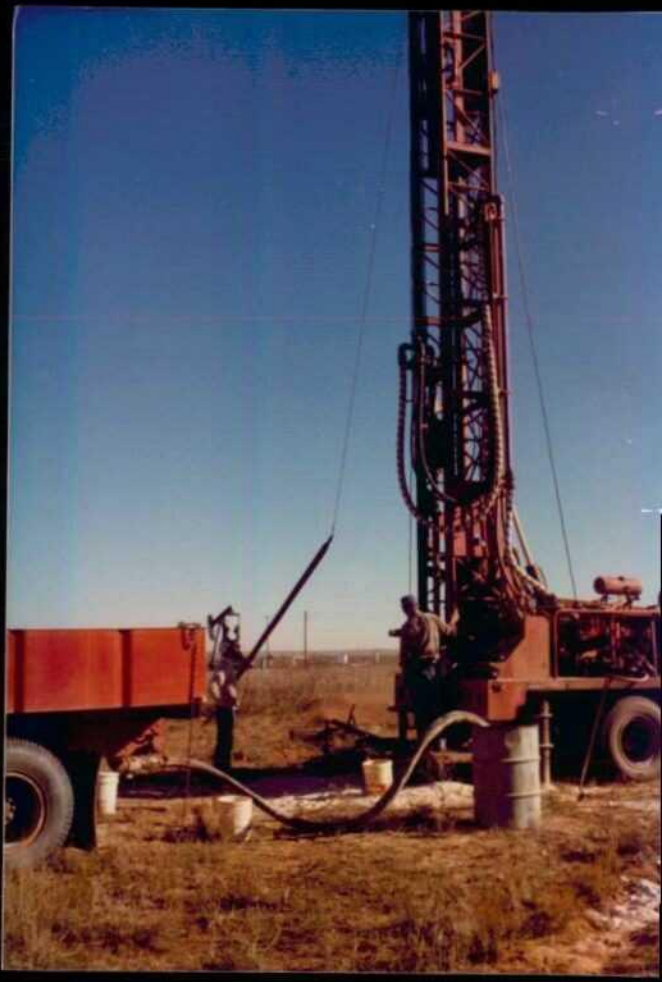
Subject
LPG Has storage caverns in Sec 3 T 22S R 37E

Discussion
All wells located in NE¼ of Sec 3. #1 well injects propane or propane/ethane mix; #2 well-propane; #3 - closed in mid-late '70's due to water breakthrough fr. unknown water flood; #4 - ethane/propane mix. All wells emptied every month, #4 emptied twice/month. Records kept for injection amts + extraction amts. No major leakage found fr. wells or reservoirs. No nitrogen involved in their process; No fracturing everdone to enhance storage capacity.

Conclusions or Agreements
Highly unlikely contaminant source for Mary Hughes well.

Distribution D. Boyer

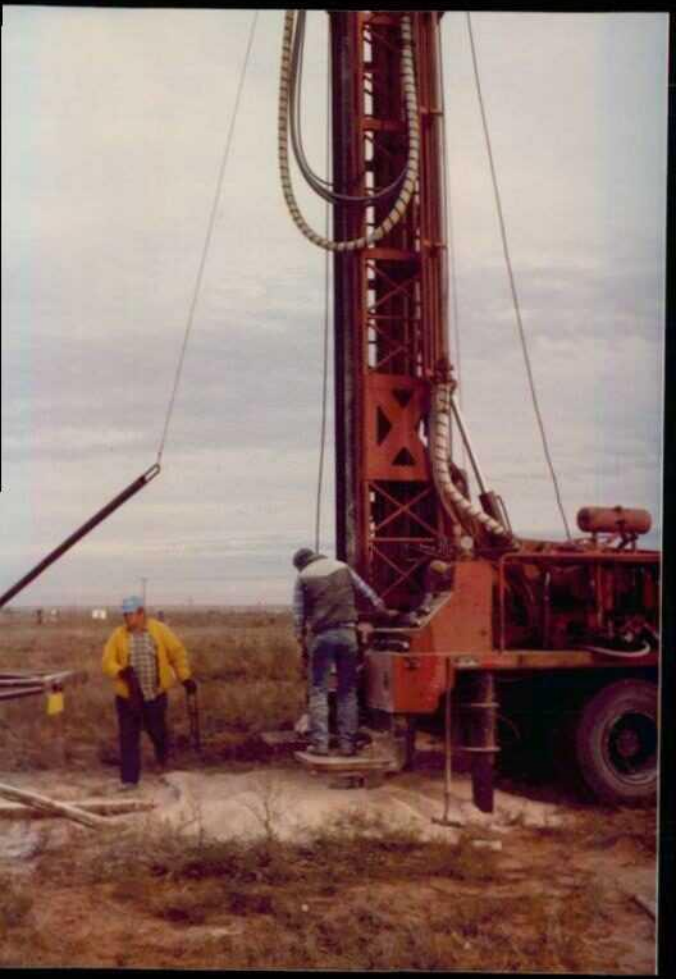
Signed Jami Bailey



Mary Hughes Well

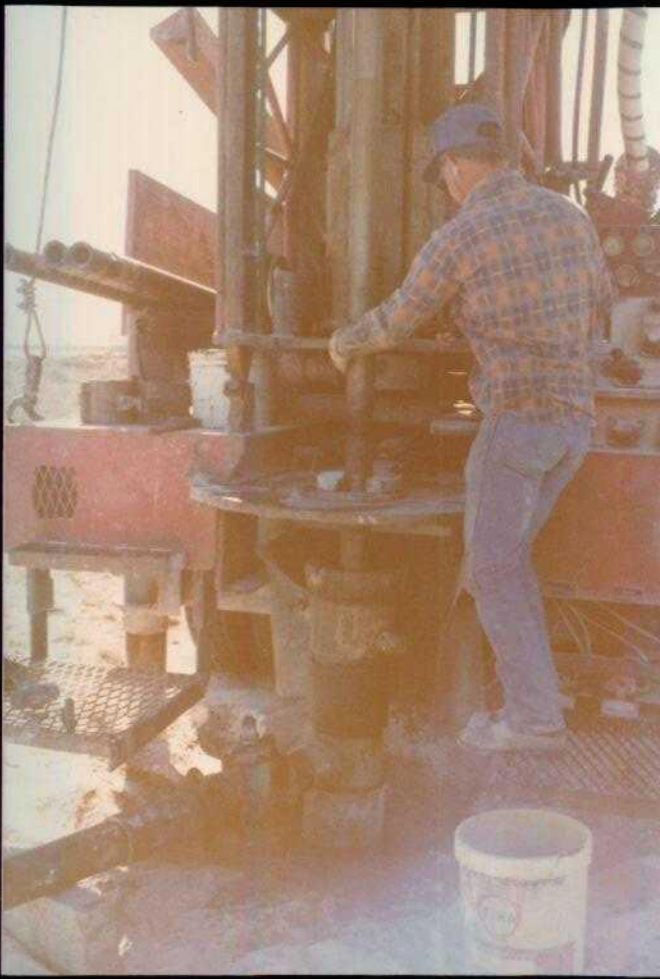
12/3-5/85

Mary Hughes Wall
12/3-5/85



Mary Hughes-Hall
12/3-5/85

Mary Hughes Weed
12/3-5/85



Mary Hughes Wolf
12/3.5/85

Mary Hughes Well
12/3-5/35

Mary Hughes Well
12/3-5/85

Mary Hughes Wolf
12/3-5/85