



1700 Broadway Suite 1450 Denver Colorado 80290  
(303) 860-0509 Fax (303) 830-2546

# REPORT OF SUB-SURFACE DIRECTIONAL SURVEY

RECEIVED  
NOV - 5 1996  
OIL CON. DIV.  
DIST. 3

Phillips Petroleum  
COMPANY

San Juan Unit 32-8 #5  
WELL NAME

N-10-31N-8W

San Juan County, New Mexico  
LOCATION

JOB NUMBER  
410-80548

TYPE OF SURVEY  
MSS

DATE  
October 13, 1996

SURVEYED BY  
Max Lund

OFFICE  
DENVER



1700 Broadway Suite 1450 Denver Colorado 80290  
(303) 860-0509 Fax (303) 830-2546

## SURVEY CERTIFICATION SHEET

Phillips Petroleum

Company

Sec-10-T32N-R8W

Lease 31

410-80548

Job #

San Juan Unit 32-8 #5

Well #

October 13, 1996

Date

San Juan County, New Mexico

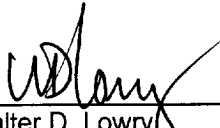
County and State

Surveyed from a depth of 4,003 feet to 4,359 feet MD

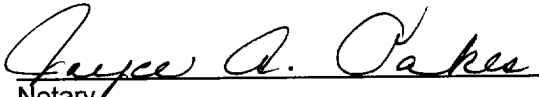
Type of Survey MSS

Directional Supervisor/Surveyor Max Lund

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by Baker Hughes INTEQ. This report represents a true and correct Directional Survey of this well based on the original data obtained at the well site. Wellbore Coordinates are calculated using minimum curvature.

  
\_\_\_\_\_  
Walter D. Lowry  
Sr. Drilling Engineer

This document has been subscribed and affirmed, or sworn to before me in the county of Denver, state of Colorado, this 22nd day of October, 1996.

 My commission expires August 4, 2000  
\_\_\_\_\_  
Notary

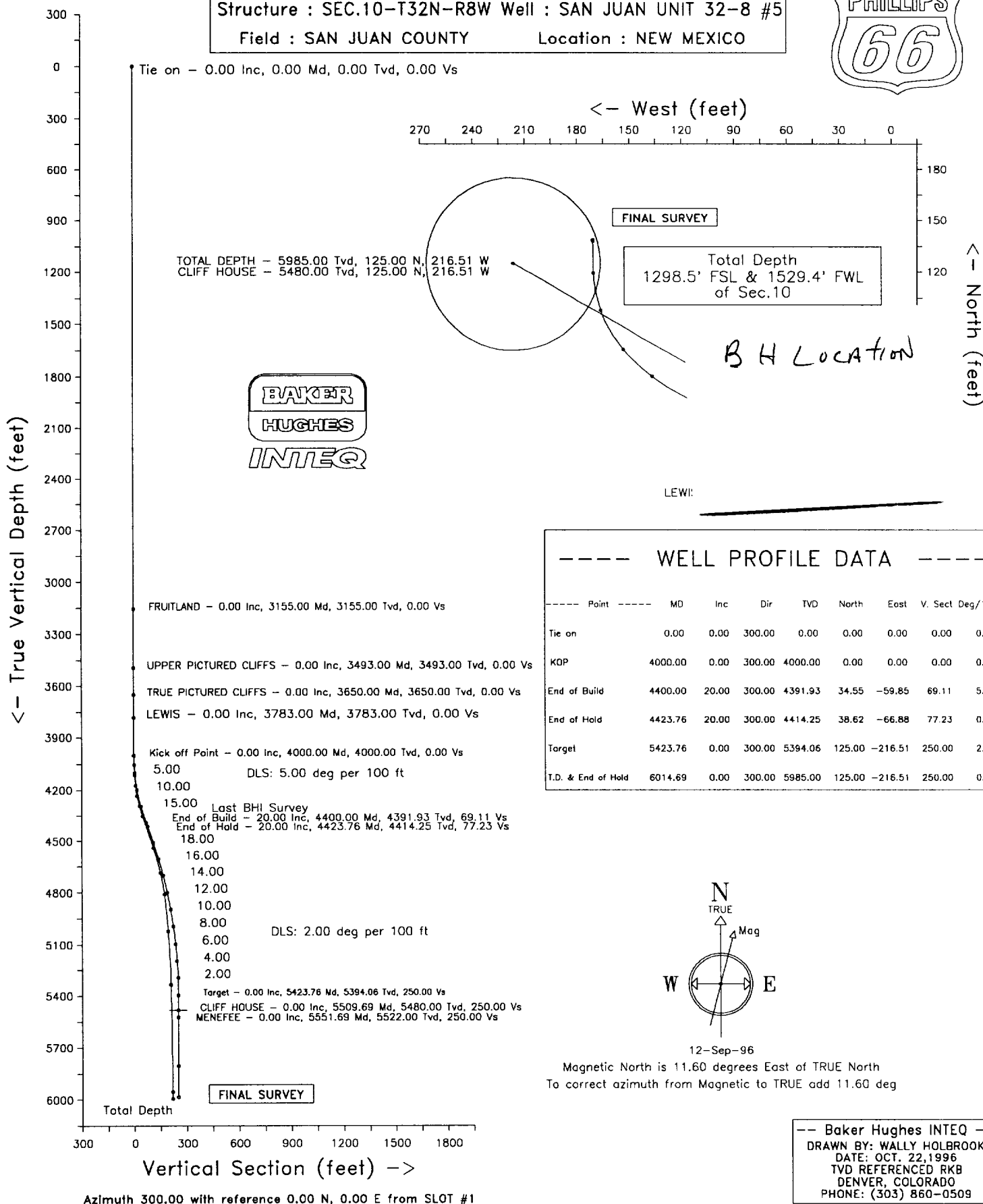
Certification Number: 431  
Certification Date: October 22, 1996

# PHILLIPS PETROLEUM

Structure : SEC.10-T32N-R8W Well : SAN JUAN UNIT 32-8 #5

Field : SAN JUAN COUNTY

Location : NEW MEXICO



PHILLIPS PETROLEUM  
SEC.10-T32N-R8W

SAN JUAN UNIT 32-8 #5  
SLOT #1  
SAN JUAN COUNTY  
NEW MEXICO

S U R V E Y L I S T I N G

by  
Baker Hughes INTEQ

Your ref : Single Shot Survey  
Our ref : svy3753  
License :

Date printed : 22-Oct-96  
Date created : 14-Oct-96  
Last revised : 22-Oct-96

Field is centred on n36 50 0.000,w107 30 0  
Structure is centred on n36 58 22.005,w107 39 54.002

Slot location is n36 58 33.474,w107 39 33.053  
Slot Grid coordinates are N 2174566.023, E 550871.083  
Slot local coordinates are 1160.00 N 1700.00 E

Projection type: mercator - New Mexico West (3003), Spheroid: Clarke - 1866  
Reference North is True North

PHILLIPS PETROLEUM  
SEC.10-T32N-R8W,SAN JUAN UNIT 32-8 #5  
SAN JUAN COUNTY,NEW MEXICO

| Measured<br>Depth | Inclin.<br>Degrees | Azimuth<br>Degrees | True Vert<br>Depth | R E C T A N G U L A R<br>C O O R D I N A T E S | Dogleg<br>Deg/100ft | Vert<br>Sect |
|-------------------|--------------------|--------------------|--------------------|------------------------------------------------|---------------------|--------------|
| 0.00              | 0.00               | 0.00               | 0.00               | 0.00 E                                         | 0.00                | 0.00         |
| 4000.00           | 0.00               | 0.00               | 4000.00            | 0.00 E                                         | 0.00                | 0.00         |
| 4052.00           | 1.21               | 269.30             | 4052.00            | 0.01 S                                         | 2.33                | 0.47         |
| 4114.00           | 3.74               | 305.10             | 4113.94            | 1.15 N                                         | 4.59                | 3.05         |
| 4173.00           | 7.00               | 304.60             | 4172.67            | 4.30 N                                         | 5.53                | 8.55         |
| 4235.00           | 10.50              | 282.60             | 4233.95            | 7.68 N                                         | 7.71                | 17.71        |
| 4297.00           | 14.75              | 286.60             | 4294.44            | 11.17 N                                        | 6.99                | 30.79        |
| 4359.00           | 19.00              | 291.60             | 4353.76            | 17.14 N                                        | 7.24                | 48.46        |
| 4553.00           | 17.50              | 293.60             | 4538.00            | 40.44 N                                        | 0.84                | 108.69       |
| 4708.00           | 12.50              | 307.60             | 4687.72            | 60.03 N                                        | 3.96                | 148.52       |
| 4832.00           | 8.75               | 321.60             | 4809.59            | 75.61 N                                        | 3.65                | 170.60       |
| 5047.00           | 5.25               | 343.60             | 5022.99            | 97.88 N                                        | 2.02                | 192.94       |
| 5359.00           | 2.75               | 359.40             | 5334.22            | 119.06 N                                       | 0.87                | 207.09       |
| 5979.00           | 0.75               | 359.40             | 5953.90            | 137.99 N                                       | 0.32                | 216.72       |
| 6020.00           | 0.75               | 359.40             | 5994.89            | 138.53 N                                       | 0.00                | 217.00       |

Last BHI Survey

Total Depth is  
1298.5' FSL & 1529.4' FWL

All data is in feet unless otherwise stated.  
Coordinates from SLOT #1 and TVD from RKB (6650.00 Ft above mean sea level).  
Bottom hole distance is 219.75 on azimuth 309.08 degrees from wellhead.  
Vertical section is from wellhead on azimuth 300.00 degrees.  
Calculation uses the minimum curvature method.  
Presented by Baker Hughes INTEQ

PHILLIPS PETROLEUM  
 SEC.10-T32N-R8W,SAN JUAN UNIT 32-8 #5  
 SAN JUAN COUNTY,NEW MEXICO

Comments in wellpath

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| MD      | TVD     | Rectangular Coords.    | Comment                   |
|---------|---------|------------------------|---------------------------|
| 4359.00 | 4353.76 | 17.14 N      46.06 W   | Last BHI Survey           |
| 5979.00 | 5953.90 | 137.99 N      170.58 W | Total Depth is            |
| 6020.00 | 5994.89 | 138.53 N      170.59 W | 1298.5' FSL & 1529.4' FWL |

Targets associated with this wellpath

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| Target name         | Geographic Location | T.V.D.  | Rectangular Coordinates | Revised   |
|---------------------|---------------------|---------|-------------------------|-----------|
| CLIFF HOUSE 32-8 #5 |                     | 5480.00 | 125.00N      216.51W    | 16-Aug-96 |