

# Open File Envelope

NUMBER 3996

PPL 18

EROMANGA BASIN AND COOPER BASIN

FLY LAKE 4

TEST REPORTS

Submitted by

Santos Ltd  
1993

**MINES and ENERGY**  
**RESOURCES** SOUTH  
AUSTRALIA



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## ENVELOPE 3996

**TENEMENT:** PPL 18; Eromanga and Cooper Basins

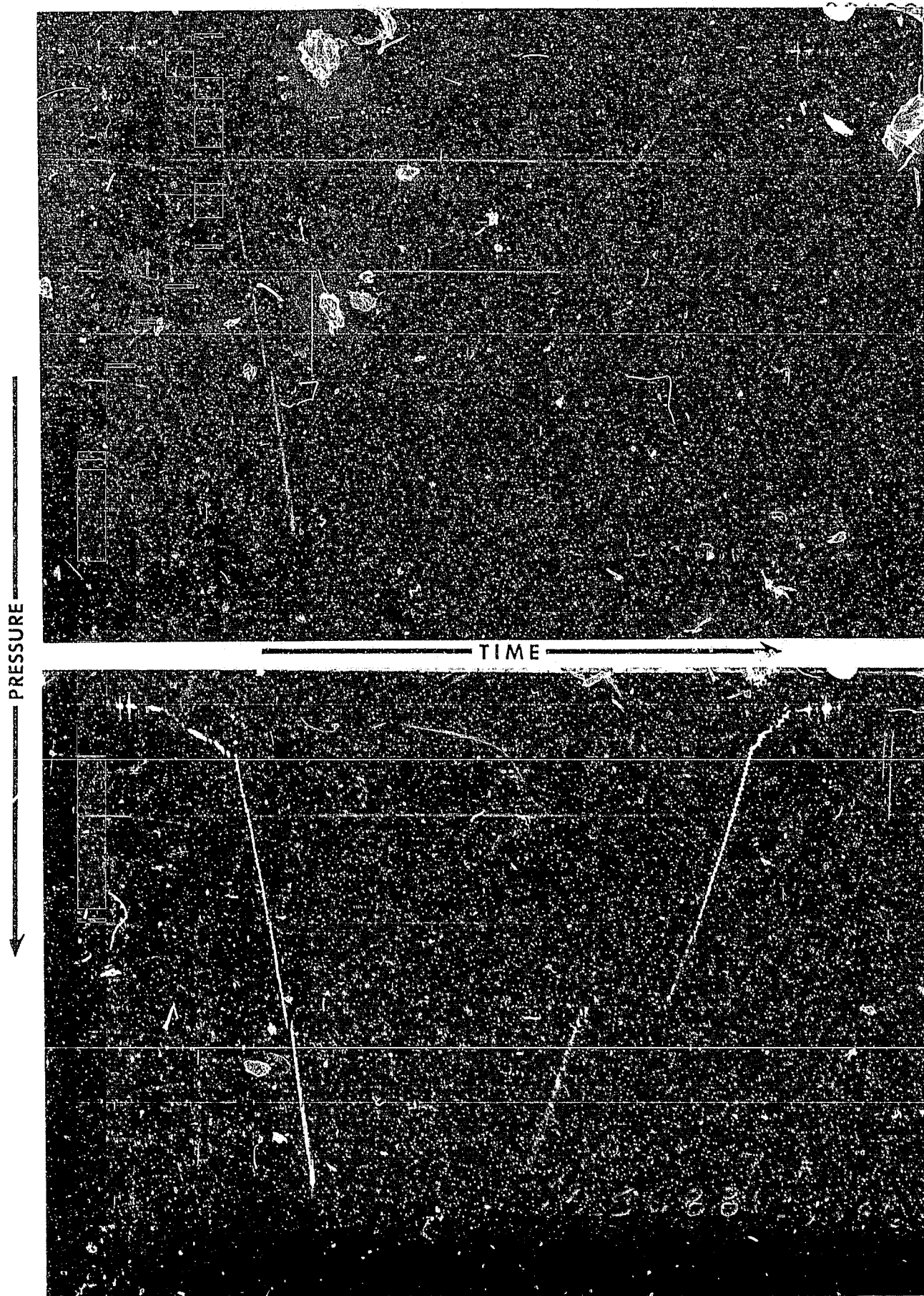
**TENEMENT HOLDER:** Santos Ltd (operator) and Cooper Basin Unit

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Each Horizontal Line Equal to 1000 p.s.i.

Legal Location  
Sec. - Twp. - Rng.

SOUTH AUSTRALIA

FORM 181-R2 - PRINTED IN U.S.A.

**LITTLE'S**

12

000005

|                                                           |       |                    |          |                           |                                        |                   |  |
|-----------------------------------------------------------|-------|--------------------|----------|---------------------------|----------------------------------------|-------------------|--|
| Casing perms. _____                                       |       | Bottom choke _____ |          | Surf. temp. _____ °F      |                                        | Ticket No. 256881 |  |
| Gas gravity _____                                         |       | Oil gravity _____  |          | GOR _____                 |                                        |                   |  |
| Spec. gravity _____                                       |       | Chlorides _____    |          | ppm Res. _____ @ _____ °F |                                        |                   |  |
| INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____ |       |                    |          |                           |                                        |                   |  |
| Date 4-27-81                                              | Choke | Surface            | Gas      | Liquid                    | Remarks                                |                   |  |
| Time a.m. p.m.                                            | Size  | Pressure psi       | Rate MCF | Rate BPD                  |                                        |                   |  |
| 1000                                                      |       |                    |          |                           | Loaded clocks.                         |                   |  |
| 1130                                                      |       |                    |          |                           | Tools made up and run in the hole.     |                   |  |
| 1520                                                      |       |                    |          |                           | Making up the head.                    |                   |  |
| 1555                                                      |       |                    |          |                           | Packer set.                            |                   |  |
| 1557                                                      |       |                    |          |                           | Hydrospring opened with a strong blow. |                   |  |
| 1600                                                      | .5"   | 40                 |          |                           |                                        |                   |  |
| 1601                                                      | "     | 200                |          |                           |                                        |                   |  |
| 1601½                                                     | "     | 350                |          |                           | Gas to the surface.                    |                   |  |
| 1602                                                      | "     | 550                |          |                           |                                        |                   |  |
| 1603                                                      | "     | 700                |          |                           |                                        |                   |  |
| 1605                                                      | "     | 950                |          |                           |                                        |                   |  |
| 1607                                                      | "     | 1200               |          |                           |                                        |                   |  |
| 1608                                                      | "     | 1300               |          |                           |                                        |                   |  |
| 1609                                                      | "     |                    |          |                           | Water to the surface - flare out       |                   |  |
| 1610                                                      | "     | 1480               |          |                           |                                        |                   |  |
| 1612                                                      | "     | 1650               |          |                           |                                        |                   |  |
| 1613                                                      | "     | 1780               |          |                           | Gas to the surface.                    |                   |  |
| 1617                                                      | "     | 1900               |          |                           |                                        |                   |  |
| 1627                                                      | "     | 2000               |          |                           |                                        |                   |  |
| 1632                                                      | "     | 2000               |          |                           |                                        |                   |  |
| 1637                                                      | "     | 2020               |          |                           |                                        |                   |  |
| 1647                                                      | "     | 2025               |          |                           |                                        |                   |  |
| 1657                                                      | "     | 2025               |          |                           |                                        |                   |  |
| 1707                                                      | "     | 2025               |          |                           |                                        |                   |  |
| 1717                                                      |       | 2025               |          |                           |                                        |                   |  |
| SEE PAGE # 2                                              |       |                    |          |                           |                                        |                   |  |

FORM 162-R1--PRINTED IN U.S.A.

PRODUCTION TEST DATA

LITTLE'S

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| Gauge No. 2147    |                     |                        | Depth 8846.04'           |                               |                        | Clock No. 3474      |                        |                           | 24 hour                       |                        | Ticket No. 256881   |                        |                          |                               |                        |
|-------------------|---------------------|------------------------|--------------------------|-------------------------------|------------------------|---------------------|------------------------|---------------------------|-------------------------------|------------------------|---------------------|------------------------|--------------------------|-------------------------------|------------------------|
| First Flow Period |                     |                        | First Closed In Pressure |                               |                        | Second Flow Period  |                        | Second Closed In Pressure |                               |                        | Third Flow Period   |                        | Third Closed In Pressure |                               |                        |
|                   | Time Defl.<br>.000" | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000"      | Log $\frac{t+\theta}{\theta}$ | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000" | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000"       | Log $\frac{t+\theta}{\theta}$ | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000" | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000"      | Log $\frac{t+\theta}{\theta}$ | PSIG<br>Temp.<br>Corr. |
| 0                 | .000                | 2563.4                 | .000                     |                               | 3339.1                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |
| 1                 | .0602               | 3122.6                 | .0302                    |                               | 3800.9                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |
| 2                 | .1203               | 3296.1                 | .0807                    |                               | 3831.2                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |
| 3                 | .1805               | 3323.2                 | .1311                    |                               | 3837.5                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |
| 4                 | .2407               | 3332.8                 | .1815                    |                               | 3847.1                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |
| 5                 | .3008               | 3334.4                 | .2319                    |                               | 3853.5                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |
| 6                 | .3610               | 3339.1                 | .2823                    |                               | 3856.6                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |
| 7                 |                     |                        | .3327                    |                               | 3859.8                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |
| 8                 |                     |                        | .3831                    |                               | 3861.5                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |
| 9                 |                     |                        | .4335                    |                               | 3863.0                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |
| 10                |                     |                        | .4839                    |                               | 3864.6                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |
| 11                |                     |                        | .5344                    |                               | 3867.8                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |
| 12                |                     |                        | .5848                    |                               | 3867.8                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |
| 13                |                     |                        | .6352                    |                               | 3869.4                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |
| 14                |                     |                        | .6856                    |                               | 3871.0                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |
| 15                |                     |                        | .7360                    |                               | 3871.0                 |                     |                        |                           |                               |                        |                     |                        |                          |                               |                        |

| Gauge No. 2146 |                     |                        | Depth 8903'         |                               |                        | Clock No. 7375      |                        |                     | hour 24                       |                        |
|----------------|---------------------|------------------------|---------------------|-------------------------------|------------------------|---------------------|------------------------|---------------------|-------------------------------|------------------------|
|                | Time Defl.<br>.000" | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000" | Log $\frac{t+\theta}{\theta}$ | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000" | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000" | Log $\frac{t+\theta}{\theta}$ | PSIG<br>Temp.<br>Corr. |
| 0              | .000                | 33083.3                | .000                |                               | 3376.6                 |                     |                        |                     |                               |                        |
| 1              | .0595               | 3149.0                 | .0298               |                               | 3798.7                 |                     |                        |                     |                               |                        |
| 2              | .1190               | 3331.7                 | .0793               |                               | 3849.8                 |                     |                        |                     |                               |                        |
| 3              | .1785               | 3357.3                 | .1289               |                               | 3868.9                 |                     |                        |                     |                               |                        |
| 4              | .2380               | 3370.2                 | .1785               |                               | 3876.9                 |                     |                        |                     |                               |                        |
| 5              | .2975               | 3373.4                 | .2281               |                               | 3883.3                 |                     |                        |                     |                               |                        |
| 6              | .3570               | 3375.6                 | .2777               |                               | 3886.5                 |                     |                        |                     |                               |                        |
| 7              |                     |                        | .3273               |                               | 3889.7                 |                     |                        |                     |                               |                        |
| 8              |                     |                        | .3769               |                               | 3891.3                 |                     |                        |                     |                               |                        |
| 9              |                     |                        | .4265               |                               | 3892.9                 |                     |                        |                     |                               |                        |
| 10             |                     |                        | .4761               |                               | 3894.5                 |                     |                        |                     |                               |                        |
| 11             |                     |                        | .5256               |                               | 3894.5                 |                     |                        |                     |                               |                        |
| 12             |                     |                        | .5752               |                               | 3896.1                 |                     |                        |                     |                               |                        |
| 13             |                     |                        | .6248               |                               | 3897.7                 |                     |                        |                     |                               |                        |
| 14             |                     |                        | .6744               |                               | 3897.7                 |                     |                        |                     |                               |                        |
| 15             |                     |                        | .7240               |                               | 3897.7                 |                     |                        |                     |                               |                        |

Reading Interval 18 15 Minutes

REMARKS: \* INTERVAL = 9 MINUTES. 0 = QUESTIONABLE.

TICKET NO.

256881

000008

|                                      | O. D. | I. D. | LENGTH   | DEPTH    |
|--------------------------------------|-------|-------|----------|----------|
| Drill Pipe or Tubing                 | ??    | 3.0"  | 8258.74' |          |
| Drill Collars                        | 6.5"  | 2.75" | 482.16'  |          |
| Reversing Sub                        | 6"    | 3"    | 1.00'    |          |
| Water Cushion Valve                  |       |       |          |          |
| Drill Pipe                           | 6.5"  | 2.75" | 93.57'   |          |
| Drill Collars                        | 6"    | 2.3"  | .68'     |          |
| *Working Sub & Choke Assembly X-OVER | 5.00" | .87"  | 4.87'    |          |
| Dual CIP Valve                       |       |       |          |          |
| Dual CIP Sampler                     | 5.00" | .75"  | 5.02'    | 8845.04' |
| Hydro-Spring Tester                  |       |       |          |          |
| Multiple CIP Sampler                 |       |       |          |          |
| Extension Joint                      |       |       |          |          |
| AP Running Case                      | 5"    | 2.25" | 4.12'    | 8846.04' |
| Hydraulic Jar                        | 5"    | 1.75" | 5.00'    |          |
| VR Safety Joint                      | 5"    | 1"    | 2.78'    |          |
| Pressure Equalizing Crossover        |       |       |          |          |
| Packer Assembly                      |       |       |          |          |
| Distributor                          |       |       |          |          |
| Packer Assembly                      | 7.75" | 1.75" | 6.00'    | 8861.94' |
| Flush Joint Anchor                   |       |       |          |          |
| Pressure Equalizing Tube             |       |       |          |          |
| Blanked-Off B.T. Running Case        |       |       |          |          |
| Drill Collars                        | 5"    | 1.5"  | 4.00'    |          |
| Anchor Pipe Safety Joint             |       |       |          |          |
| Packer Assembly                      |       |       |          |          |
| Distributor                          |       |       |          |          |
| Packer Assembly                      |       |       |          |          |
| Anchor Pipe Safety Joint             |       |       |          |          |
| Side Wall Anchor                     |       |       |          |          |
| Drill Collars                        |       |       |          |          |
| Flush Joint Anchor                   | 5"    | 2.37" | 35.00'   |          |
| Blanked-Off B.T. Running Case        | 5"    | 2.44" | 4.06'    | 8903'    |
| Total Depth                          |       |       |          | 8907'    |

FORM 187-R2 - PRINTED IN U.S.A.

EQUIPMENT DATA

LITTLE'S

12

000009

PRESSURE

TIME

Each Horizontal Line Equal to 1000 p.s.i.

000010

| FLUID SAMPLE DATA                                                                                                                                                                                                              |                     |                        |                   | Date 1-5-81                                   |           | Ticket Number 256882          |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------|-------------------|-----------------------------------------------|-----------|-------------------------------|--|
| Sampler Pressure _____ P.S.I.G. at Surface<br>Recovery: Cu. Ft. Gas _____<br>cc. Oil _____<br>cc. Water _____<br>cc. Mud _____<br>Tot. Liquid cc. _____<br>Gravity _____ ° API @ _____ °F.<br>Gas/Oil Ratio _____ cu. ft./bbl. |                     |                        |                   | Kind of D.S.T. OPEN HOLE                      |           | Halliburton Location ADELAIDE |  |
|                                                                                                                                                                                                                                |                     |                        |                   | Tester I. GOETJENS                            |           | Witness D. FERNANDEZ          |  |
|                                                                                                                                                                                                                                |                     |                        |                   | Drilling Contractor ODE RIG #5                |           | PW-VT                         |  |
| EQUIPMENT & HOLE DATA                                                                                                                                                                                                          |                     |                        |                   |                                               |           |                               |  |
|                                                                                                                                                                                                                                |                     |                        |                   | Formation Tested Patchawarra                  |           |                               |  |
|                                                                                                                                                                                                                                |                     |                        |                   | Elevation 114.55' Ft.                         |           |                               |  |
|                                                                                                                                                                                                                                |                     |                        |                   | Net Productive Interval _____ Ft.             |           |                               |  |
|                                                                                                                                                                                                                                |                     |                        |                   | All Depths Measured From Rotary Kelly Bushing |           |                               |  |
|                                                                                                                                                                                                                                |                     |                        |                   | Total Depth 9157' Ft.                         |           |                               |  |
|                                                                                                                                                                                                                                |                     |                        |                   | Main Hole/Casing Size 8 1/2"                  |           |                               |  |
|                                                                                                                                                                                                                                |                     |                        |                   | Drill Collar Length 544.53' I.D. 2.75"        |           |                               |  |
|                                                                                                                                                                                                                                |                     |                        |                   | Drill Pipe Length 8500.76' I.D. 3.826"        |           |                               |  |
|                                                                                                                                                                                                                                |                     |                        |                   | Packer Depth(s) 9074.38' - 9082.38' Ft.       |           |                               |  |
|                                                                                                                                                                                                                                |                     |                        |                   | Depth Tester Valve 9056.48' Ft.               |           |                               |  |
| Mud Weight 9.4                                                                                                                                                                                                                 |                     | vis 40                 |                   | sec.                                          |           |                               |  |
| TYPE                                                                                                                                                                                                                           | AMOUNT              | Depth Back Pres. Valve | Surface Choke     | Bottom Choke                                  |           |                               |  |
| Cushion                                                                                                                                                                                                                        |                     | Ft.                    | .5"               | .75"                                          |           |                               |  |
| Recovered                                                                                                                                                                                                                      | Feet of             |                        |                   |                                               |           |                               |  |
| Recovered                                                                                                                                                                                                                      | Feet of             |                        |                   |                                               |           |                               |  |
| Recovered                                                                                                                                                                                                                      | Feet of             |                        |                   |                                               |           |                               |  |
| Recovered                                                                                                                                                                                                                      | Feet of             |                        |                   |                                               |           |                               |  |
| Recovered                                                                                                                                                                                                                      | Feet of             |                        |                   |                                               |           |                               |  |
| Remarks -SEE PRODUCTION TEST DATA SHEET-                                                                                                                                                                                       |                     |                        |                   |                                               |           |                               |  |
| * Time recorded and time computed does not agree.                                                                                                                                                                              |                     |                        |                   |                                               |           |                               |  |
| Gas to surface in 14 minutes. No formation fluid recovered.                                                                                                                                                                    |                     |                        |                   |                                               |           |                               |  |
| TEMPERATURE                                                                                                                                                                                                                    | Gauge No. 2147      | Gauge No. 2146         | Gauge No. 2145    | TIME (00:00-24:00 hrs.)                       |           |                               |  |
|                                                                                                                                                                                                                                | Depth: 9057.48' Ft. | Depth: 9153' Ft.       | Depth: _____ Ft.  |                                               |           |                               |  |
|                                                                                                                                                                                                                                | 24 Hour Clock       | 24 Hour Clock          | Hour Clock        | Tool                                          |           |                               |  |
| Est. °F.                                                                                                                                                                                                                       | Blanked Off NO      | Blanked Off YES        | Blanked Off       | Opened 10:47                                  |           |                               |  |
|                                                                                                                                                                                                                                |                     |                        |                   | Opened Bypass 15:17                           |           |                               |  |
| Actual 250 °F.                                                                                                                                                                                                                 | Pressures           |                        | Pressures         |                                               | Pressures |                               |  |
|                                                                                                                                                                                                                                | Field               | Office                 | Field             | Office                                        | Field     | Office                        |  |
| Initial Hydrostatic                                                                                                                                                                                                            | 4353.5              | 4361.4                 | CHART NOT SENT IN |                                               |           |                               |  |
|                                                                                                                                                                                                                                |                     |                        | FOR PROCESSING    |                                               |           |                               |  |
| First Period Flow                                                                                                                                                                                                              | Initial 126.2       | 214.5                  |                   |                                               |           |                               |  |
|                                                                                                                                                                                                                                | Final 126.2         | 127.7                  |                   |                                               |           |                               |  |
|                                                                                                                                                                                                                                | Closed in 3987.3    | 4000.0                 |                   |                                               |           |                               |  |
| Second Period Flow                                                                                                                                                                                                             | Initial             |                        |                   |                                               |           |                               |  |
|                                                                                                                                                                                                                                | Final               |                        |                   |                                               |           |                               |  |
|                                                                                                                                                                                                                                | Closed in           |                        |                   |                                               |           |                               |  |
| Third Period Flow                                                                                                                                                                                                              | Initial             |                        |                   |                                               |           |                               |  |
|                                                                                                                                                                                                                                | Final               |                        |                   |                                               |           |                               |  |
|                                                                                                                                                                                                                                | Closed in           |                        |                   |                                               |           |                               |  |
| Final Hydrostatic                                                                                                                                                                                                              | 4353.5              | 4350.3                 |                   |                                               |           |                               |  |

FORM 181-R7 - PRINTED IN U.S.A.

FORMATION TEST DATA

FLY LAKE

Lease Name

Well No.

Test No.

9082.38' - 9157'

Tested Interval

DELHI SANTOS

Lease Owner/Company Name

Legal Location

Sec. - Twp. - Rng.

Field Area

Cooper Basin

South Australia

State

000011

Casing perms. \_\_\_\_\_ Bottom choke \_\_\_\_\_ Surf. temp. \_\_\_\_\_ °F Ticket No. 256882  
 Gas gravity \_\_\_\_\_ Oil gravity \_\_\_\_\_ GOR \_\_\_\_\_  
 Spec. gravity \_\_\_\_\_ Chlorides \_\_\_\_\_ ppm Res. \_\_\_\_\_ @ \_\_\_\_\_ °F  
 INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED \_\_\_\_\_

| Date<br>Time | a.m.<br>p.m. | Choke<br>Size | Surface<br>Pressure<br>psi | Gas<br>Rate<br>MCF | Liquid<br>Rate<br>BPD | Remarks                                                                                      |
|--------------|--------------|---------------|----------------------------|--------------------|-----------------------|----------------------------------------------------------------------------------------------|
| 0440         |              |               |                            |                    |                       | Loaded clocks.                                                                               |
| 0500         |              |               |                            |                    |                       | Made up tools.                                                                               |
| 0620         |              |               |                            |                    |                       | Ran in hole.                                                                                 |
| 1015         |              |               |                            |                    |                       | Made up head.                                                                                |
| 1047         |              |               |                            |                    |                       | Hydrospring opened-no blow.                                                                  |
| 1049         |              |               |                            |                    |                       | Medium blow.                                                                                 |
| 1051         |              |               |                            |                    |                       | Medium blow increasing.                                                                      |
| 1101         |              |               |                            |                    |                       | Gas to surface at rate too small to<br>measure.                                              |
| 1107         |              |               |                            |                    |                       | Strong blow.                                                                                 |
| 1115         |              | 5"            | 4                          |                    |                       | " "                                                                                          |
| 1117         |              | "             | 4                          |                    |                       | " "                                                                                          |
| 1127         |              | "             | 5                          |                    |                       | " "                                                                                          |
| 1137         |              | "             | 8                          |                    |                       | " "                                                                                          |
| 1139         |              | "             | 10                         |                    |                       | " "                                                                                          |
| 1147         |              | "             | 10                         |                    |                       | " "                                                                                          |
| 1157         |              | "             | 12                         |                    |                       | " "                                                                                          |
| 1202         |              | "             | 15                         |                    |                       | " "                                                                                          |
| 1217         |              | "             | 15                         | 135                |                       | Closed dual cip calve for CIP.                                                               |
| 1517         |              |               |                            |                    |                       | Hydrospring closed and packer<br>pulled free.                                                |
| 1534         |              |               |                            |                    |                       | Broke out 1 stand and 1 single drill<br>pipe then headed up again and reverse<br>circulated. |
| 1630<br>2145 |              |               |                            |                    |                       | Broke out head and started out of hole.<br>Laid tools down.                                  |

FORM 182-R1-PRINTED IN U.S.A.

PRODUCTION TEST DATA

LITTLE'S

12

| Gauge No. 2147    |                     |                          | Depth 9057.48'      |                               | Clock No. 9474         |                     |                           | 24 hour             |                               | Ticket No. 256882      |                     |                          |                     |                               |                        |
|-------------------|---------------------|--------------------------|---------------------|-------------------------------|------------------------|---------------------|---------------------------|---------------------|-------------------------------|------------------------|---------------------|--------------------------|---------------------|-------------------------------|------------------------|
| First Flow Period |                     | First Closed In Pressure |                     |                               | Second Flow Period     |                     | Second Closed In Pressure |                     |                               | Third Flow Period      |                     | Third Closed In Pressure |                     |                               |                        |
|                   | Time Defl.<br>.000" | PSIG<br>Temp.<br>Corr.   | Time Defl.<br>.000" | Log $\frac{t+\theta}{\theta}$ | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000" | PSIG<br>Temp.<br>Corr.    | Time Defl.<br>.000" | Log $\frac{t+\theta}{\theta}$ | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000" | PSIG<br>Temp.<br>Corr.   | Time Defl.<br>.000" | Log $\frac{t+\theta}{\theta}$ | PSIG<br>Temp.<br>Corr. |
| 0                 | .0000               | 214.5                    | .0000               |                               | 127.7                  |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 1                 | .0502               | 127.7                    | .0570*              |                               | 1582.0                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 2                 | .1003               | 127.7                    | .0972               |                               | 2308.5                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 3                 | .1505               | 127.7                    | .1374               |                               | 2882.5                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 4                 | .2007               | 127.7                    | .1776               |                               | 3269.1                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 5                 | .2509               | 127.7                    | .2179               |                               | 3562.1                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 6                 | .3010               | 127.7                    | .2581               |                               | 3708.6                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 7                 |                     |                          | .2983               |                               | 3797.7                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 8                 |                     |                          | .3385               |                               | 3866.2                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 9                 |                     |                          | .3787               |                               | 3909.2                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 10                |                     |                          | .4190               |                               | 3939.5                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 11                |                     |                          | .4592               |                               | 3960.2                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 12                |                     |                          | .4994               |                               | 3974.5                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 13                |                     |                          | .5396               |                               | 3988.8                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 14                |                     |                          | .5798               |                               | 3993.6                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 15                |                     |                          | .6200               |                               | 4099.0                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |

| Gauge No. 2146 |  |  | Depth 9153' |  | Clock No. ??? |  |  | 24 hour |  |
|----------------|--|--|-------------|--|---------------|--|--|---------|--|
| 0              |  |  |             |  |               |  |  |         |  |
| 1              |  |  |             |  |               |  |  |         |  |
| 2              |  |  |             |  |               |  |  |         |  |
| 3              |  |  |             |  |               |  |  |         |  |
| 4              |  |  |             |  |               |  |  |         |  |
| 5              |  |  |             |  |               |  |  |         |  |
| 6              |  |  |             |  |               |  |  |         |  |
| 7              |  |  |             |  |               |  |  |         |  |
| 8              |  |  |             |  |               |  |  |         |  |
| 9              |  |  |             |  |               |  |  |         |  |
| 10             |  |  |             |  |               |  |  |         |  |
| 11             |  |  |             |  |               |  |  |         |  |
| 12             |  |  |             |  |               |  |  |         |  |
| 13             |  |  |             |  |               |  |  |         |  |
| 14             |  |  |             |  |               |  |  |         |  |
| 15             |  |  |             |  |               |  |  |         |  |

CHART NOT SENT IN FOR PROCESSING.....

Reading Interval 15 12

REMARKS: \* = 17 minute interval

SPECIAL PRESSURE DATA

LITTLE'S 96673 75C 8/74

TICKET NO. 256883000013

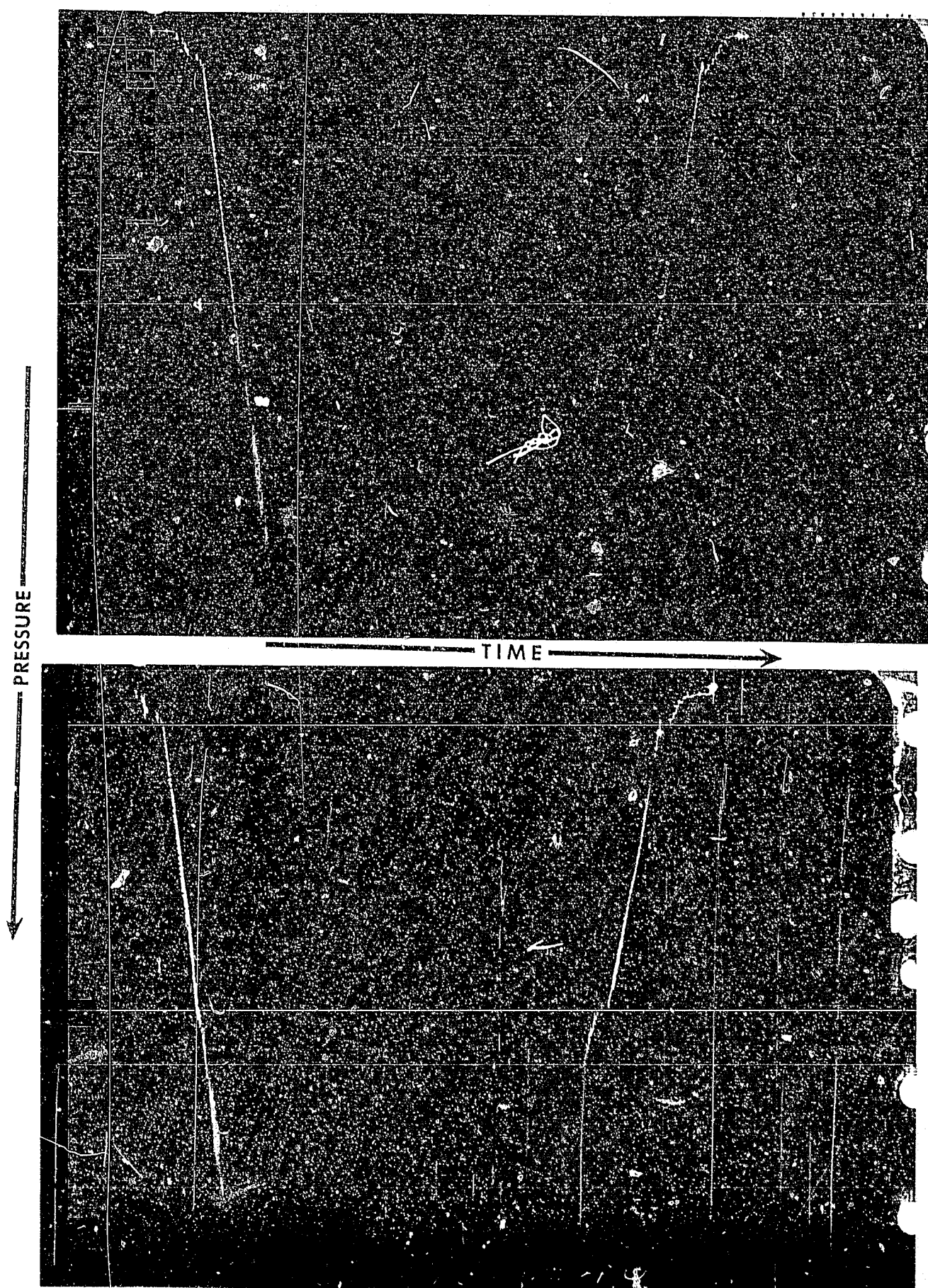
|                                  | O. D.  | I. D.  | LENGTH   | DEPTH    |
|----------------------------------|--------|--------|----------|----------|
| Drill Pipe or Tubing             | 4.5"   | 3.826" | 8500.76' |          |
| Drill Collars                    | 6.5"   | 2.75"  | 483.18'  |          |
| Reversing Sub IMPACT SUB         | 6"     | 3"     | 1.0'     |          |
| Water Cushion Valve              |        |        |          |          |
| Drill Pipe                       |        |        |          |          |
| Drill Collars                    | 6.5"   | 2.75"  | 61.35'   |          |
| Handing Sub & Choke Assembly X/O | 6.125" | 2.8"   | .65'     |          |
| Dual CIP Valve                   | 5"     | .87"   | 4.87'    |          |
| Dual CIP Sampler                 |        |        |          |          |
| Hydro-Spring Tester              | 5"     | .75"   | 5.02'    | 9056.48' |
| Multiple CIP Sampler             |        |        |          |          |
| Extension Joint                  |        |        |          |          |
| AP Running Case                  | 5"     | 2.25"  | 4.12'    | 9057.48' |
| Hydraulic Jar                    | 5"     | 1.75"  | 5.0'     |          |
| VR Safety Joint                  | 5"     | 1"     | 2.78'    |          |
| Pressure Equalizing Crossover    |        |        |          |          |
| Packer Assembly                  | 7.75"  | 1.75"  | 6.0'     | 9074.38' |
| Distributor                      | 5"     | 1.68"  | 2.0'     |          |
| Packer Assembly                  | 7.75"  | 1.75"  | 6.0'     | 9082.38' |
| Flush Joint Anchor               |        |        |          |          |
| Pressure Equalizing Tube         |        |        |          |          |
| Blanked-Off B.T. Running Case    |        |        |          |          |
| Drill Collars                    |        |        |          |          |
| Anchor Pipe Safety Joint         | 5"     | 1.5"   | 4.0'     |          |
| Packer Assembly                  |        |        |          |          |
| Distributor                      |        |        |          |          |
| Packer Assembly                  |        |        |          |          |
| Anchor Pipe Safety Joint X/O     |        |        |          |          |
| Side Wall Anchor                 | 6.25"  | 2.8"   | .68'     |          |
| Drill Collars X/O                | 6.5"   | 2.75"  | 31.20'   |          |
|                                  | 6"     | 2.8"   | .68'     |          |
| Flush Joint Anchor               | 5"     | 2.37"  | 33.0'    |          |
| Blanked-Off B.T. Running Case    | 5"     | 2.44"  | 4.06'    | 9153'    |
| Total Depth                      |        |        |          | 9157'    |

FORM 187-EZ - PRINTED IN U.S.A.

EQUIPMENT DATA

LITTLE'S

12



Legal Location  
Sec. - Twp. - Rng.  
T41N - R13E - S39E

**Lease Name**

**Weil No.**

Test No

9389-9540  
Tested!

Tested Interval

DELHI/SANTOS

**Lease Owner/Company Name**

State SOUTH AUSTRALIA

FORM 151-82 - PRINTED IN U.S.A.

FORMATION TEST DATA

12

000016

Casing perms. \_\_\_\_\_ Bottom choke .75" Surf. temp \_\_\_\_\_ °F Ticket No. 000790  
 Gas gravity \_\_\_\_\_ Oil gravity \_\_\_\_\_ GOR \_\_\_\_\_  
 Spec. gravity \_\_\_\_\_ Chlorides \_\_\_\_\_ ppm Res. \_\_\_\_\_ @ \_\_\_\_\_ °F  
 INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED \_\_\_\_\_

| Date<br>Time | a.m.<br>p.m. | Choke<br>Size | Surface<br>Pressure<br>psi | Gas<br>Rate<br>MCF | Liquid<br>Rate<br>BPD | Remarks                                                                 |
|--------------|--------------|---------------|----------------------------|--------------------|-----------------------|-------------------------------------------------------------------------|
| 03:53        |              |               |                            |                    |                       | Loaded B.T. 1744-24 hr. 16055                                           |
| 03:57        |              |               |                            |                    |                       | Loaded B.T. 1040-24 hr. 9394                                            |
| 04:40        |              |               |                            |                    |                       | Started making up Anchor pipe                                           |
| 05:52        |              |               |                            |                    |                       | Tools made up, went in hole                                             |
| 09:13        |              |               |                            |                    |                       | Tagged bottom                                                           |
| 09:18        |              |               |                            |                    |                       | Head up                                                                 |
| 09:35        |              |               |                            |                    |                       | Packer set                                                              |
| 09:42        |              | .5"           |                            |                    |                       | Opened tool with no bubble                                              |
| 09:44        |              | "             |                            |                    |                       | Closed choke, no bubble                                                 |
| 09:46        |              | "             |                            |                    |                       | Very weak bubble                                                        |
| 09:50        |              | "             |                            |                    |                       | Very weak bubble with very slight increase                              |
| 10:00        |              | "             |                            |                    |                       | "                                                                       |
| 10:12        |              | "             |                            |                    |                       | Moderate blow                                                           |
| 10:13        |              | "             |                            |                    |                       | Opened choke, still moderate blow                                       |
| 10:16        |              | "             |                            |                    |                       | Weak blow, losing pressure.                                             |
| 10:21        |              | "             |                            |                    |                       | Bubble still decreasing.                                                |
| 10:28        |              | "             |                            |                    |                       | Weak blow                                                               |
| 10:33        |              | "             |                            |                    |                       | Slight increase in bubble flow                                          |
| 11:07        |              | "             |                            |                    |                       | Gas to surface and pressure building<br>up to a moderate blow           |
| 11:15        |              | "             |                            |                    |                       | Gradually increasing                                                    |
| 11:18        |              | "             |                            |                    |                       | strong bubble                                                           |
| 12:44        |              |               |                            |                    |                       | Closed tool                                                             |
| 16:44        |              |               |                            |                    |                       | Pulled free, closed tool, took out 2<br>singles for reverse circulation |
| 17:03        |              |               |                            |                    |                       | Dropped bar                                                             |

FORM 182-R1-PRINTED IN U.S.A.

PRODUCTION TEST DATA

LITTLE'S 80672 BM 9/4

12

00790

**INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED.**

FORM 182-R1-PRINTED IN U.S.A.

LITTLE'S 00672 BM 6/7

12.

| Gauge No. 1744    |                     |                          | Depth 9364.71'      |                               |                        | Clock No. 16055     |                           |                     | 24 hour                       |                        | Ticket No. 000790   |                          |                     |                               |                        |
|-------------------|---------------------|--------------------------|---------------------|-------------------------------|------------------------|---------------------|---------------------------|---------------------|-------------------------------|------------------------|---------------------|--------------------------|---------------------|-------------------------------|------------------------|
| First Flow Period |                     | First Closed In Pressure |                     |                               | Second Flow Period     |                     | Second Closed In Pressure |                     |                               | Third Flow Period      |                     | Third Closed In Pressure |                     |                               |                        |
|                   | Time Defl.<br>.000" | PSIG<br>Temp.<br>Corr.   | Time Defl.<br>.000" | Log $\frac{t+\theta}{\theta}$ | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000" | PSIG<br>Temp.<br>Corr.    | Time Defl.<br>.000" | Log $\frac{t+\theta}{\theta}$ | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000" | PSIG<br>Temp.<br>Corr.   | Time Defl.<br>.000" | Log $\frac{t+\theta}{\theta}$ | PSIG<br>Temp.<br>Corr. |
| 0                 | .000                | 269.1                    | .000                |                               | 416.4                  |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 1                 | .0719*              | 318.6                    | .0561               |                               | 830.9                  |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 2                 | .1307               | 331.4                    | .1123               |                               | 3242.8                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 3                 | .1894               | 351.2                    | .1684               |                               | 3761.4                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 4                 | .2482               | 361.1                    | .2246               |                               | 3896.5                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 5                 | .3070               | 364.0                    | .2807               |                               | 3952.5                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 6                 | .3658               | 378.1                    | .3368               |                               | 3978.4                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 7                 | .4246               | 388.0                    | .3930               |                               | 4000.0                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 8                 | .4834               | 396.5                    | .4491               |                               | 4012.9                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 9                 | .5422               | 405.0                    | .5053               |                               | 4023.0                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 10                | .6010               | 416.4                    | .5614               |                               | 4030.2                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 11                |                     |                          | .6175               |                               | 4036.0                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 12                |                     |                          | .6737               |                               | 4038.9                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 13                |                     |                          | .7298               |                               | 4043.2                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 14                |                     |                          | .7860               |                               | 4046.1                 |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |
| 15                |                     |                          |                     |                               |                        |                     |                           |                     |                               |                        |                     |                          |                     |                               |                        |

| Gauge No. 1040 |                     |                        | Depth 9536'         |                               |                        | Clock No. 9394      |                        |                     | hour 24                       |                        |                     |                        |                     |                               |                        |
|----------------|---------------------|------------------------|---------------------|-------------------------------|------------------------|---------------------|------------------------|---------------------|-------------------------------|------------------------|---------------------|------------------------|---------------------|-------------------------------|------------------------|
|                | Time Defl.<br>.000" | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000" | Log $\frac{t+\theta}{\theta}$ | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000" | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000" | Log $\frac{t+\theta}{\theta}$ | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000" | PSIG<br>Temp.<br>Corr. | Time Defl.<br>.000" | Log $\frac{t+\theta}{\theta}$ | PSIG<br>Temp.<br>Corr. |
| 0              | .000                | 363.3                  | .000                |                               | 497.0                  |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |
| 1              | .0716*              | 382.2                  | .0552               |                               | 771.0                  |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |
| 2              | .1302               | 418.6                  | .1104               |                               | 3373.1                 |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |
| 3              | .1888               | 436.0                  | .1656               |                               | 3870.1                 |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |
| 4              | .2474               | 446.2                  | .2208               |                               | 3985.2                 |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |
| 5              | .3060               | 446.2                  | .2761               |                               | 4028.0                 |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |
| 6              | .3646               | 460.7                  | .3313               |                               | 4056.2                 |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |
| 7              | .4233               | 473.8                  | .3865               |                               | 4075.4                 |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |
| 8              | .4818               | 478.2                  | .4417               |                               | 4090.2                 |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |
| 9              | .5404               | 486.9                  | .5969               |                               | 4099.1                 |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |
| 10             | .5990               | 497.0                  | .5521               |                               | 4105.0                 |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |
| 11             |                     |                        | .6073               |                               | 4110.9                 |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |
| 12             |                     |                        | .6625               |                               | 4110.9                 |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |
| 13             |                     |                        | .7177               |                               | 4116.8                 |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |
| 14             |                     |                        | .7730               |                               | 4122.7                 |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |
| 15             |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |                     |                        |                     |                               |                        |

Reading Interval 18 17 Minutes

REMARKS: \*-22 minutes

SPECIAL PRESSURE DATA

TICKET NO.

000790

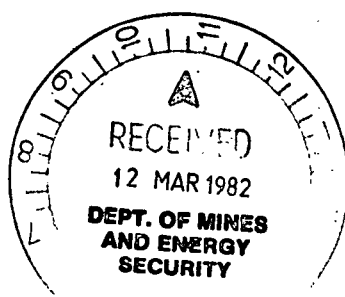
000019

|                               | O. D. | I. D.  | LENGTH                | DEPTH    |
|-------------------------------|-------|--------|-----------------------|----------|
| Drill Pipe or Tubing          |       |        |                       |          |
| Drill Collars                 |       |        |                       |          |
| Reversing Sub                 | 6.00" | 3.00"  | 1.00'                 |          |
| Water Cushion Valve           |       |        |                       |          |
| Drill Pipe                    | 4.50" | 3.826" | 8954'                 |          |
| Drill Collars                 | 6.50" | 2.875" | 398.79'               |          |
| Handling Sub & Choke Assembly | 6.25" | 2.50"  | .65' Change over sub  |          |
| Dual CIP Valve                | 5.00" | 1.62"  | 4.89'                 |          |
| Dual CIP Sampler              |       |        |                       |          |
| Hydro-Spring Tester           | 5.00" | .75"   | 5.00'                 | 9359.7'  |
| Multiple CIP Sampler          |       |        |                       |          |
| Extension Joint               |       |        |                       |          |
| AP Running Case               | 5.00" | 3.06"  | 4.04'                 | 9364.71' |
| Hydraulic Jar                 | 5.00" | 1.75"  | 5.00' Big Johns       |          |
| VR Safety Joint               | 5.00" | 1.00"  | 2.83'                 |          |
| Pressure Equalizing Crossover |       |        |                       |          |
| Packer Assembly               | 7.75" | 1.75"  | 6.02'                 | 9381'    |
| Distributor                   | 5.00" | 1.68"  | 2.00'                 |          |
| Packer Assembly               |       |        |                       |          |
| Flush Joint Anchor            |       |        |                       |          |
| Pressure Equalizing Tube      |       |        |                       |          |
| Blanked-Off B.T. Running Case |       |        |                       |          |
| Drill Collars                 |       |        |                       |          |
| Anchor Pipe Safety Joint      |       |        |                       |          |
| Packer Assembly               | 7.75" | 1.45"  | 6.02'                 | 9389'    |
| Distributor                   |       |        |                       |          |
| Packer Assembly               |       |        |                       |          |
| Anchor Pipe Safety Joint      | 5.00" | 2.25"  | 4.25'                 |          |
| Side Wall Anchor              | 5.75" | 2.25"  | 68' Change over sub   |          |
| Drill Collars                 | 6.50" | 2.875" | 93.16'                |          |
|                               | 6.00" | 2.25"  | .677' Change over sub |          |
| Flush Joint Anchor            | 5.00" | 2.375" | 47.00'                |          |
| Blanked-Off B.T. Running Case | 5.00" | 2.44"  | 4.06'                 | 9536'    |
| Total Depth                   |       |        |                       | 9540'    |

FORM 107-82 - PRINTED IN U.S.A.

## EQUIPMENT DATA

LITTLE 12



PETROLOGY AND DIAGENESIS OF THE  
TIRRAWARRA SANDSTONE IN  
FLY LAKE NO 4 WELL, COOPER BASIN  
BY

KENNETH RICHARD MARTIN MSc., PhD

7 August, 1981

SCANNED



## SUMMARY

Examination of ten samples from Fly Lake #4 indicates that the Tirrawarra Sandstone is a poor quality reservoir in which cementation by quartz overgrowths and authigenic clay formation play a major role in reducing porosity and permeability to low levels.

In most of the samples studied, virtually all primary intergranular porosity has been eliminated, with authigenic clay, chiefly dickite dispersed through all available pore space which had not already been filled by quartz overgrowths. Secondary porosity due to unstable grain dissolution is not well developed and contributes little to the total porosity in most samples. The abundance of clay results in high micro-porosity and consequent low permeability and is also likely to cause severe fines migration problems due to the loosely attached nature of the dickite crystals.

## 1. INTRODUCTION

Fly Lake #4 was drilled in 1981 as a development/appraisal well on a high portion of the Fly Lake structure. An open hole drill stem test of the Tirrawarra Sandstone indicated low permeability. This study was undertaken to establish the cause of the poor test results and in particular to determine if the low permeability was a result of formation damage or a true indication of a tight, poor quality reservoir section in the Tirrawarra Sandstone.

## 2. SAMPLING AND TESTING PROGRAM

Ten core plug samples were selected from depths between 9417' and 9461'. Porosities of the selected samples ranged from 7.7% to 13.2% and permeabilities ranged from 0.12md to 5.0md.

Thin-section analyses were carried out on all samples to determine bulk composition, visible porosity and grain size distribution. In addition, the nature and intensity of diagenetic alteration was qualitatively determined from the thin-section examination.

Qualitative clay mineralogy and carbonate cement type were identified by X-ray diffraction analysis of the separated fine fraction and total clay content was determined by semiquantitative X-ray diffraction analysis of a powdered whole rock sample.

Scanning electron microscopy was used to observe clay mineral morphology and distribution and also pore and grain surface characteristics in six of the ten samples studied.

Photomicrographs from seven of the thin-sections, and the six SEM samples are included in the report to illustrate typical features of the samples.

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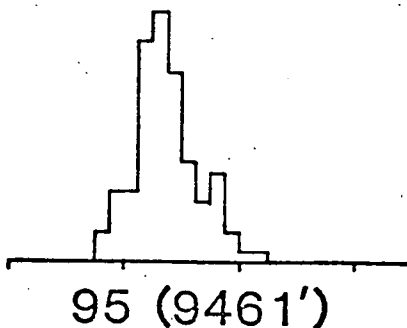
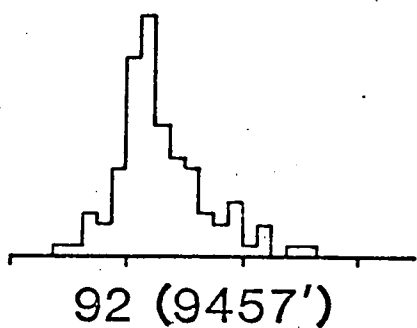
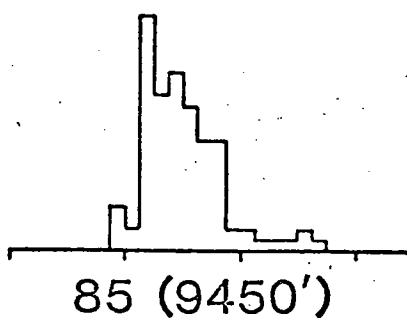
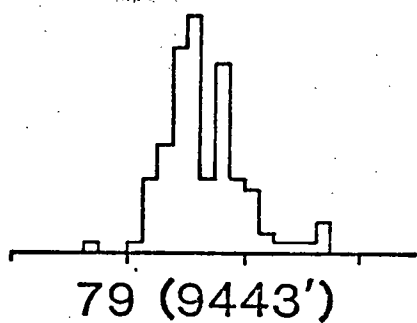
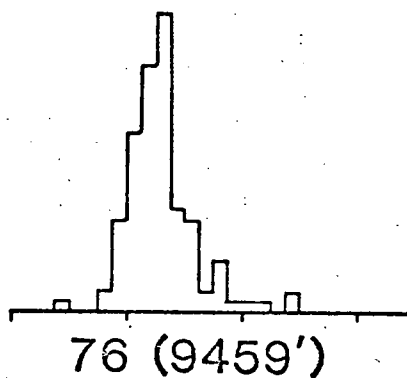
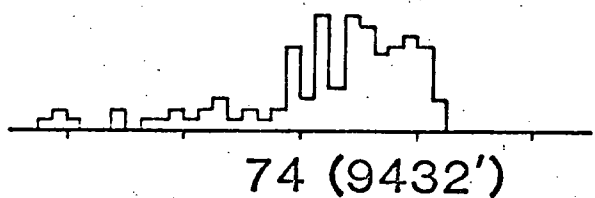
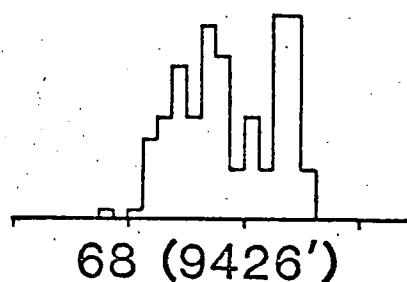
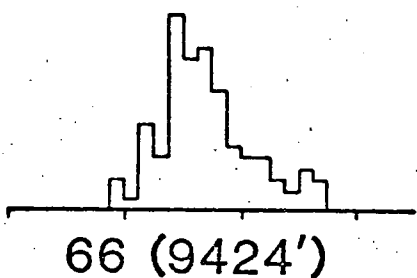
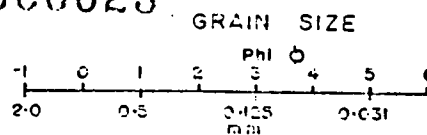
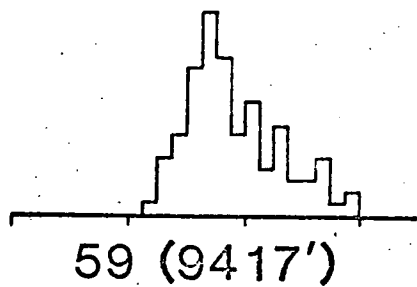
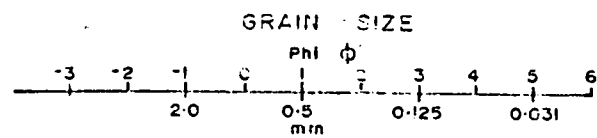


FIG 1 GRAIN SIZE HISTOGRAMS

### 3. RESULTS

The results of the thin-section analyses of rock composition and grain size are listed in Table 1 which also includes the measured porosity and permeability values. The clay mineralogy is separately listed in Table 2.

#### 3.1 Texture.

##### 3.1.1 Grain size and sorting.

Mean grain size ranges from  $1.52\phi$  (medium sand) to  $2.94\phi$  (fine sand). The coarsest sample (74, 9432') is also very poorly sorted ( $\phi$  Standard Deviation = 1.74) and although its mean grain size falls in the medium sand range, the sample contains pebbles in excess of 10mm in length.

The other 9 samples which range in mean grain size from  $1.72\phi$  to  $2.94\phi$  are all moderately sorted with  $\phi$  standard deviation values ranging from 0.56 to 0.82.

Histograms showing grain size distribution are presented in Fig. 1.

##### 3.1.2 Texture, porosity and permeability relationships.

No obvious relationship is evident between grain size and sorting or between these two textural parameters and either porosity or permeability in the 10 samples studied.

#### 3.2 Bulk Composition.

The framework of the sandstones consists mainly of quartz grains with a small contribution from rock fragments, mica and chert. Feldspar is usually absent. Quartz content is approximately 70% in most samples. The one exception is sample 74 (9432') which is a very poorly sorted, pebbly sample, with only 36.4% quartz but also containing 22.4% chert and 20.9% sedimentary rock fragments. In the other 9 samples chert averages only 0.7% and rock fragments average 3.0% with metamorphic rock fragments (av. 2.3%) exceeding sedimentary rock fragments (av. 0.7) in most samples. In sample 74, in addition to the abundant chert and sedimentary rock fragments (mostly fine sandstone and siltstone), a few

## BULK COMPOSITION

## GRAIN SIZE

| SAMPLE<br>FLY LAKE #4 | QZ   | CHERT | FELD | IG<br>R.F. | META.<br>R.F. | SED.<br>R.F. | MICA | CARB | CLAY | VIS.<br>PORE | OTHER         | MEAN<br>$\phi$ | STD<br>DEV $\phi$ | POR % | PERM.<br>md |
|-----------------------|------|-------|------|------------|---------------|--------------|------|------|------|--------------|---------------|----------------|-------------------|-------|-------------|
| 59<br>9417'           | 69.8 | 0.6   | -    | -          | 0.3           | 0.3          | 4.5  | 0.3  | 23.6 | 0.3          | 0.3<br>carbon | 2.94           | 0.81              | 9.7   | 0.48        |
| 62<br>9420'           | 70.1 | 0.6   | 0.3  | -          | 1.2           | 0.3          | 6.2  | 1.5  | 18.9 | 0.9          | -             | 2.83           | 0.72              | 7.7   | 0.30        |
| 66<br>9424'           | 71.1 | 0.3   | -    | -          | 0.6           | 0.6          | 3.2  | 1.1  | 21.2 | 1.4          | 0.6<br>carbon | 2.54           | 0.82              | 10.7  | 1.5         |
| 68<br>9426'           | 72.2 | 0.3   | -    | -          | 1.8           | 1.5          | 2.6  | 2.3  | 19.9 | 0.3          | -             | 2.54           | 0.73              | 8.1   | 0.36        |
| 74<br>9432'           | 36.4 | 22.4  | -    | 0.6        | -             | 20.9         | 1.2  | 0.3  | 16.2 | 1.9          | -             | 1.52           | 1.74              | 13.2  | 5.0         |
| 76<br>9459'           | 73.3 | 0.6   | 0.3  | -          | 1.8           | 1.5          | 2.1  | 5.0  | 15.2 | 0.3          | -             | 1.75           | 0.62              | 12.0  | 1.5         |
| 79<br>9443'           | 71.3 | 0.6   | -    | -          | 2.8           | 0.3          | 0.3  | 1.6  | 23.1 | -            | -             | 2.42           | 0.70              | 11.7  | 0.74        |
| 85<br>9450'           | 68.3 | 0.9   | -    | -          | 3.1           | 0.3          | 3.1  | 1.2  | 22.2 | 0.9          | -             | 2.13           | 0.71              | 10.7  | 0.71        |
| 92<br>9457'           | 60.9 | 2.0   | -    | -          | 6.4           | 0.6          | 1.7  | 2.9  | 24.2 | 0.9          | 0.3<br>opaque | 1.72           | 0.77              | 7.8   | 0.12        |
| 95<br>9461'           | 75.3 | 0.3   | -    | -          | 3.0           | 0.7          | 0.3  | 2.0  | 14.7 | 3.7          | -             | 1.87           | 0.56              | 12.3  | 3.1         |

TABLE 1. THIN-SECTION ANALYSIS OF FLY LAKE #4 SAMPLES

000025

grains (0.6%) of acid volcanic rock were recorded. No igneous rock fragments were observed in any other samples.

The metamorphic rock fragments present in most of the sandstones are usually quartz-muscovite phyllite and schist while the sedimentary fragments are mostly fine sandstone, siltstone and occasionally shale. These metamorphic and sedimentary rock fragments often show varying degrees of deformation due to compaction and may be squeezed between quartz grains and into adjacent pore spaces (e.g. Plate 7, Fig. 1 ).

Mica is present in all samples in amounts up to 6.2% (Av. 2.5%). Most of the biotite is extensively altered and in many cases much of the biotite seems to have altered to illite.

Carbonate is present in all samples in small amounts (Av. 1.8%) and reaches a maximum of 5.0% in sample 76 (9459'). The carbonate type, as verified by X-ray diffraction analysis, is siderite in all cases.

Thin section examination indicates that clay is abundant in all samples and in most samples almost all pore space is clay filled. Consequently visible porosity is low, ranging from 0 to 3.7% and averaging only 1.1%. Clay values indicated by point counting, are high with an average of 19.9%. Included in this figure is a high proportion of microporosity and these results are discussed further in the following section.

### 3.3 Clay Mineralogy.

Qualitative X-ray diffraction analysis indicated the presence of two clay types in the samples, namely illite and dickite. The only other clays detected were in trace amounts only and included a possible mixed layer clay in sample 68 (9426') and a smectite clay in sample 76 (9459'). All other samples contained dickite and illite only.

The dickite is present as typical, well crystallised pseudo-hexagonal plates usually around 15µm in length and is the most abundant clay in the samples. Semiquantitative XRD analysis indicates an average dickite

| SAMPLE      | QUALITATIVE XRD FINE FRACTION    | SEMI-QUANTITATIVE XRD WHOLE ROCK POWDER |         |        |
|-------------|----------------------------------|-----------------------------------------|---------|--------|
|             |                                  | TOTAL CLAY                              | DICKITE | ILLITE |
| 59<br>9417' | Dickite, Illite                  | 3.5                                     | 3.5     | -      |
| 62<br>9420' | Dickite, Illite                  | 8.0                                     | 6.0     | 2.0    |
| 66<br>9424' | Dickite, Illite                  | 8.0                                     | 5.0     | 3.0    |
| 68<br>9426' | Dickite, Illite, Tr. Mixed Layer | 6.5                                     | 3.5     | 3.0    |
| 74<br>9432' | Dickite, Illite                  | -                                       | -       | -*     |
| 76<br>9459' | Dickite, Illite, Tr. Smectite    | 3.0                                     | 3.0     | -      |
| 79<br>9443' | Dickite, Illite                  | 6.0                                     | 6.0     | -      |
| 85<br>9450' | Dickite, Illite                  | 20.0                                    | 16.0    | 4.0    |
| 92<br>9457' | Dickite, Illite                  | 6.5                                     | 4.5     | 2.0    |
| 95<br>9461' | Dickite, Illite                  | 4.0                                     | 2.0     | 2.0    |

\* Because of the coarse grained, pebbly, poorly sorted nature of this sample no bulk XRD was carried out.

TABLE 2: CLAY MINERALOGY - FLY LAKE #4

content of 5.6% whereas illite averages only 1.8%. Dickite fills most of the available pore space in the sandstones as stacks of loosely packed randomly orientated crystals which are the typical occurrence and morphology of authigenic kaolinite group clays.

The illite in these samples shows almost no tendency to swell and therefore appears to be a pure illite species rather than a mixed layer type with a small smectite component. Illite is present as grain coatings and in irregular patches where it has formed from the decomposition of some unstable grains such as mica and metamorphic rock fragments.

In some of the samples a considerable discrepancy exists between the values recorded for total clay in thin section and the total clay values obtained by semiquantitative XRD analysis. As has been noted in other reports point counting clay in thin section actually records both clay and microporosity and consequently these values should always be greater than those obtained by XRD analysis. However, a predictable relationship should exist between the two groups of data. This relationship is as follows:-

$$\begin{array}{rcl} \text{Total clay} & + & \text{visible porosity} \\ \text{(thin section)} & & \text{(thin section)} \end{array} = \begin{array}{rcl} \text{total clay} + \text{porosity} \\ \text{(XRD)} \text{ (measured)} \end{array}$$

This relationship presupposes that the thin-section sample and the bulk XRD sample are similar in composition. In some cases inhomogeneity does exist in the sample with the degree of cementation, porosity and clay content varying. This variation is probably the main cause of discrepancies in the thin-section and XRD results (e.g. samples 59, 9417', 42, 9457') whereas in other cases (e.g. samples 76, 9459', 95, 9461') the relationship holds quite closely.

#### 4. DIAGENETIC PROCESSES

##### 4.1 Cementation.

All the sandstones are cemented by quartz overgrowths to varying degrees dependent mainly on the presence of clay which tends to inhibit quartz overgrowth development. In sections of the sandstones which are clay free, quartz overgrowths completely fill the pore spaces.

Siderite is present in all samples as a cementing mineral although in small amounts. It occurs as small irregular to rhomb-shaped crystals and crystal aggregates. The siderite appears to have been a relatively early cement which filled open, intergranular pores and predates at least some of the quartz overgrowth development which often totally engulfs and surrounds the siderite.

#### 4.2 Authigenic clay formation.

Practically all clay present in the samples is of authigenic origin and it was not possible to separately distinguish any detrital clays. The authigenic dickite and illite result from the decomposition of unstable components such as feldspar, mica and rock fragments. In the case of dickite, alteration of the unstable grains is so complete that it is usually not possible to identify their original composition.

The almost total lack of feldspar in the sandstones suggests that feldspar may have contributed to dickite formation. In some cases biotite can be seen to be altering to dickite although more commonly illite seems to be the result of decomposition of micas and micaceous rock fragments.

The alteration of unstable grains to clay is a major cause of permeability reduction since the authigenic clays tend to become distributed through the pore system rather than remaining only in the site occupied by the original unstable grain. The breakdown of some rock fragments such as shale or phyllite to clay also seems to be facilitated by the deformation of these grains during compaction. Partial destruction of the rock fragments by compaction may allow easier access by pore fluids to the rock fragment minerals and thus hasten the decomposition process.

#### 4.3 Dissolution.

The most obvious evidence of dissolution is the presence of sutured grain contacts and microstylolites in the samples. These are best developed in rocks which are rich in decomposing mica (e.g. Plate 5, Fig. 3). Microstylolite development causes a reduction of both porosity

and permeability and in particular, is likely to seriously affect vertical permeability since the microstylolite seam, if continuous, is a line of tightly interlocking framework grains separated only by thin films of clay.

Some dissolution of siderite cement seems to have occurred in association with quartz overgrowth formation, and has resulted in siderite often occurring as small, remnant, isolated, often corroded crystals many of which are often totally enclosed by quartz overgrowths.

Dissolution is also responsible for the development of minor secondary porosity by removal of unstable grains during their decomposition to form authigenic clay (e.g. Plate 2, Fig. 1). In the samples examined, secondary porosity is poorly developed and does not contribute significantly to the total porosity.

#### 4.4 Sequence of diagenetic events.

Plastic deformation of ductile rock fragments during compaction is the first obvious post-burial change. This is followed by the commencement of decomposition of unstable grains to form clays. This process began at approximately the same time or even a little before quartz overgrowth cementation and both of these processes continued over a relatively long period. At approximately the same time that quartz overgrowths began to form, a period of siderite cementation began with the carbonate partly or wholly filling at least some of the still empty intergranular pores. This phase of carbonate cement formation was short lived and was followed by some dissolution of carbonate and decomposed unstable fragments to form minor secondary porosity. This period of dissolution was accompanied by a continuation of quartz overgrowth formation which filled almost all remaining pore space and often engulfed the siderite. The selective development of microstylolites and sutured grain contacts by dissolution of framework grains in clay and mica-rich zones is the last diagenetic process to have occurred.

The diagenetic history described above does not give any clue as to the possible time of hydrocarbon emplacement. The samples from Fly Lake #4 are extensively modified by the effects of diagenesis and therefore it

seems likely that hydrocarbon emplacement post-dated most or all of the diagenetic changes.

#### 5. POROSITY AND PERMEABILITY IN FLY LAKE #4

The preservation of original grain outlines in some samples (e.g. Plate 6, Fig. 1) indicates that the sandstones were deposited as very porous sands with well rounded and well sorted grains. With the exception of some minor secondary porosity development by grain dissolution, all the previously described diagenetic processes contribute to porosity and permeability reduction.

Quartz overgrowth cementation and authigenic clay formation are the most important porosity/permeability reducing mechanisms in the Fly Lake #4 samples and in most cases it is only the presence of abundant clay in many pore spaces which has prevented complete infilling of pores by quartz overgrowths. Thus primary pores devoid of clay are virtually non-existent in most samples. The one exception is sample 95 (9461') where small primary pores are still present due to incomplete pore filling by quartz overgrowths (Plate 7, Fig. 1). This sample recorded a permeability of 3.1md. Secondary porosity due to grain dissolution is poorly developed in most samples, but was best developed in sample 74 (9432') in which several large secondary pores were visible. This poorly sorted, pebbly sample recorded a permeability of 5.0md, the highest value of the 10 samples.

The majority of samples can be regarded as mainly microporous with few clean primary pores and with little visible porosity in thin section. Although total clay content as determined by XRD is below 10% for almost all samples, most of this clay is loosely packed dickite which fills almost all available pore space. Most of the samples give the impression in thin-section of being relatively rich in clay, due to the dispersed nature of the authigenic clays. The microporous nature of most of the samples is the main cause of low permeability.

#### 6. WELL COMPLETION/STIMULATION PROCEDURES

On the basis of the clay analysis, the Tirrawarra Sandstone in Fly Lake #4 is not obviously water sensitive as the clays present are essentially non-swelling types. However, the core will presumably have been subject to

invasion by KCl fluids during drilling and this may have helped minimise swelling tendencies if the illite clays contained any swelling smectite component. Nevertheless, at worst only limited water sensitivity could be anticipated.

A severe fines migration problem can be anticipated due to the abundance of loosely packed authigenic dickite in most samples. This will result in a rapid decline in flow rate during drill stem testing as clay flakes are dislodged and block pore throats.

Only slight improvements to permeability could be anticipated by dissolution of siderite using HCl and an iron complexing agent to prevent iron precipitation. Successful acid treatment is likely to be hindered by the small amount of siderite present and the possibility of increased fines migration after siderite removal.

Treatment with HF is unlikely to be particularly successful in removing the dickite clay. Any benefit from partial removal of dickite is likely to be offset by increased fines migration. The need to retard reaction rates in any acids used has been stressed in previous reports.

The use of a clay stabilizer may assist in minimising fines migration problems.

## 7. CONCLUSIONS

1) Diagenetic changes in the Tirrawarra Sandstone in Fly Lake #4 have resulted in reduction of porosity and permeability from what may have been originally very porous sands consisting mainly of well rounded and well sorted grains of quartz together with small amounts of rock fragments, mica and possibly also feldspar.

2) The most important porosity/permeability reducing changes to have occurred are cementation by quartz overgrowths and the formation of authigenic clays, mainly dickite and to a lesser extent illite, which have filled almost all available pore space. Other diagenetic changes which have also contributed to porosity/permeability reduction are siderite cement formation and partial grain dissolution to form microstylolites.

3) The effect of diagenesis has been the almost total obliteration of primary porosity, in the majority of samples examined. Secondary porosity, due to dissolution of unstable grains, is not well developed and contributes little to total porosity.

4) As a consequence of diagenetic changes the Tirrawarra Sandstone in Fly Lake #4 constitutes a poor quality reservoir. Most of the sandstones are microporous due to the presence of widely dispersed authigenic clays which occupy almost all pore space not already filled by quartz overgrowths.

5) While the results suggest that the formation is not strongly water sensitive, the probability of a severe migration of fines together with microporosity would make it difficult to achieve significant production from a reservoir of this type.

6) A marginal improvement in permeability may result from acidizing with HCl plus an iron complexing agent to remove the small amount of siderite present. However any benefit may be partly offset by additional fines migration unless clays can be adequately stabilised. A similar result is likely if HF is used for clay removal.

## 8. RECOMMENDATIONS

1) Since formation damage due to adverse drilling/completion practice does not appear to be the cause of the poor test results in Fly Lake #4 no variation to current practice appears necessary. In the absence of any apparent undesirable side effects, the use of a KCl-polymer mud system to minimise adverse clay reactions seems suitable although the lack of signs of water sensitivity in the formation may mean that the use of a KCl-polymer system is unnecessary.

2) In view of the probability of severe fines migration problems, if any stimulation procedure is contemplated, stabilizing of the clays should be a major objective.

## PHOTOMICROGRAPHS - FLY LAKE #4

Plate 1 Sample 59 (9417')

Fig. 1 - Plane polarised

Fig. 2 - Crossed polarisers

Photomicrograph of an originally micaceous sandstone in which much of the mica (M) is decomposing to illite. Partial dissolution of framework grains to form sutured contacts and microstylolites (MS) is widespread. Note the films of illite clay along the sutured grain boundaries and the lack of any visible porosity.

Fig. 3

SEM photomicrograph showing the general features of the rock. Framework grains are mainly quartz (Q) with planar overgrowth faces visible on some grains. Most pore spaces are filled by illite or dickite (D). A few small pores are still present and one example is indicated (P) which is partly filled by inward projecting quartz overgrowth crystals.

Fig. 4

SEM photomicrograph showing a close-up view of a small pore between two irregular grain surfaces. Some euhedral quartz overgrowth crystals (Q) are growing into the pore space and some irregular shaped illite crystals coat the grain surfaces.

Fig. 1

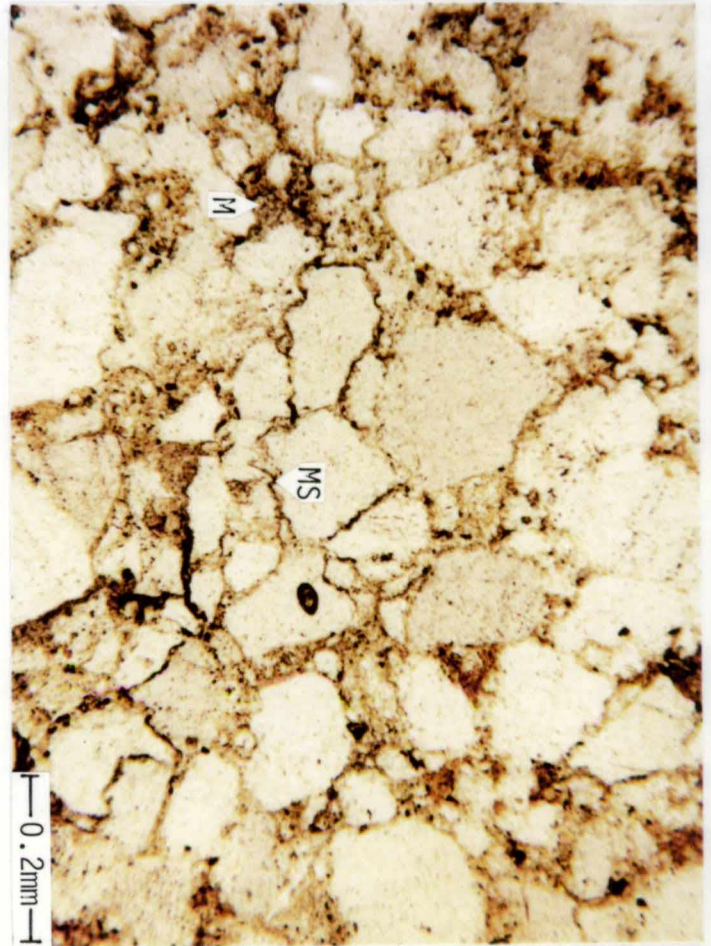


Fig. 2

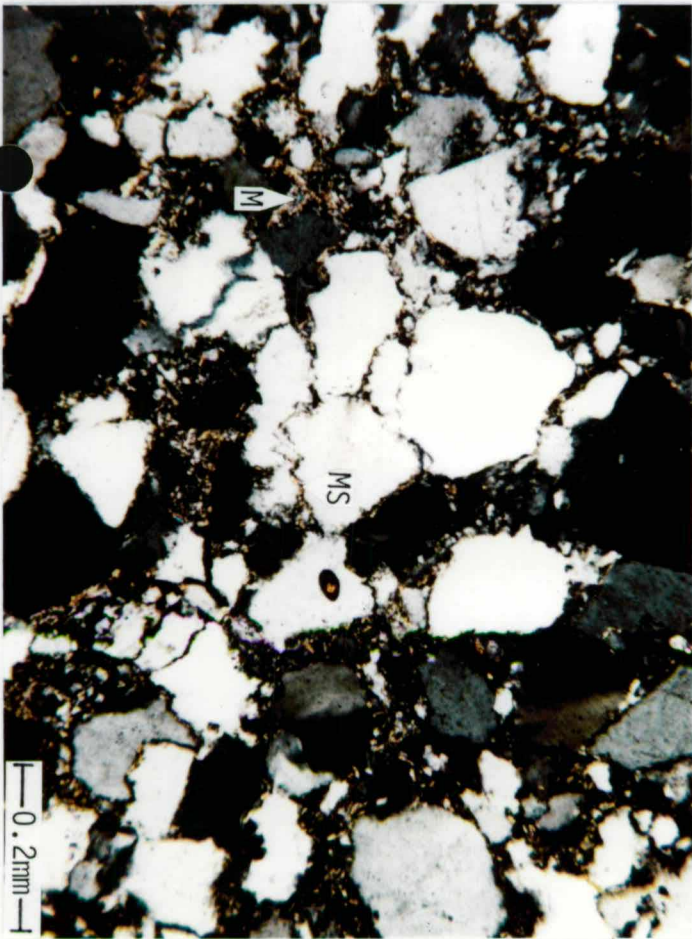


Fig. 3

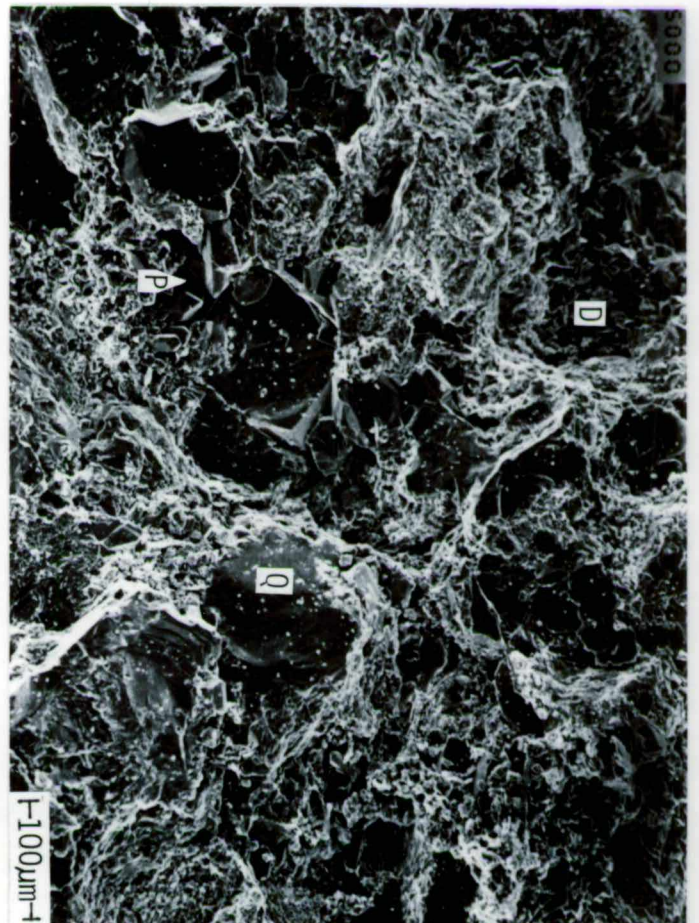


Fig. 4



Fig. 1

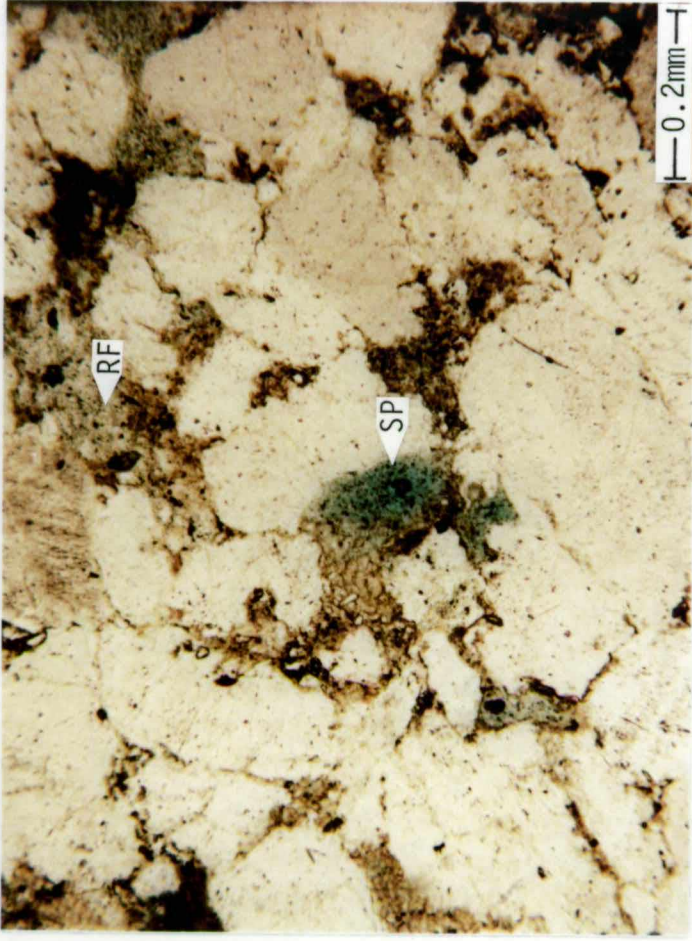


Fig. 2

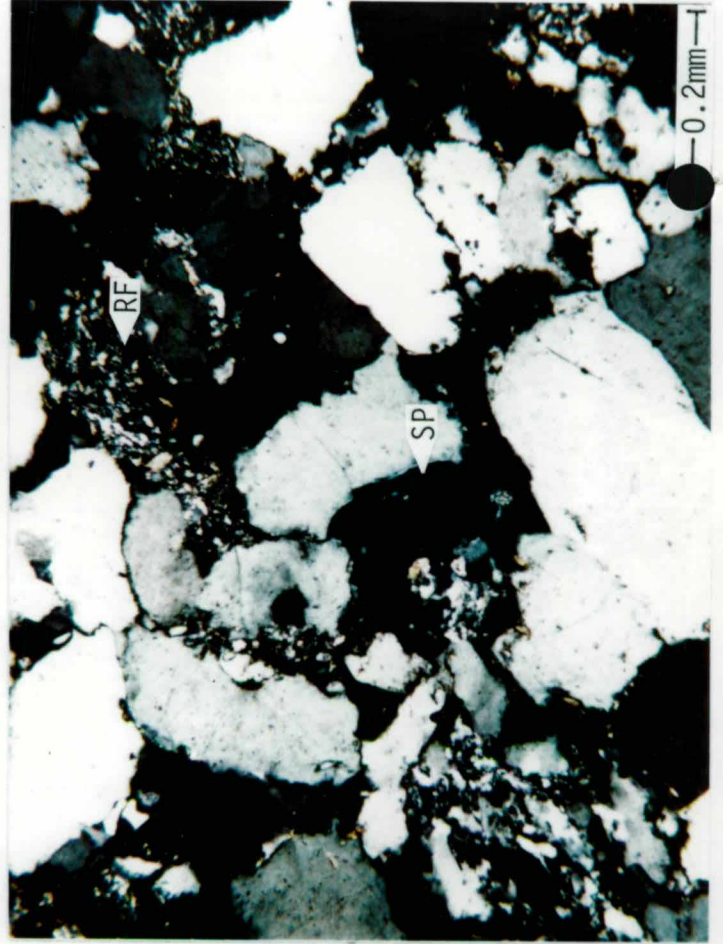


Fig. 3



Fig. 4



## Plate 2    Sample 66 (9424')

Fig. 1 - Plane polarised

Fig. 2 - Crossed polarisers

Photomicrograph showing a small secondary pore (SP) formed by partial dissolution of an unstable grain during its decomposition to dickite clay, which occupies part of the pore space. A highly deformed sedimentary rock fragment (RF) which has been compressed between adjacent quartz grains is also visible. The remainder of the rock consists of quartz grains enlarged by overgrowth and irregularly distributed small clay-filled pores.

Fig. 3

SEM photomicrograph showing a low magnification view of the sample. Quartz framework grains (Q) are visible, many with obvious, planar overgrowth faces. Several small pores are visible including one in the marked rectangle, but interconnection between the pore system is limited.

Fig. 4

Detail of the rectangle marked in Fig. 3 showing a small pore partly filled by authigenic dickite (D), siderite (S) and quartz overgrowths (Q).

## Plate 3

Fig. 1 - Sample 66 (9424')

SEM photomicrograph illustrating typical pore filling authigenic dickite (D) as randomly orientated "books" of platy crystals. Note the microporosity visible between the clay crystals. A small amount of illite (I) is also present as a grain coating.

Fig. 2 - Sample 66 (9424')

SEM photomicrograph of quartz overgrowths (Q) which have almost completely obliterated a pore leaving only a small remnant pore (P) still visible. Note the variation in quartz overgrowth morphology with some crystals forming large planar faces while others grow as a series of smaller prismatic crystals.

Fig. 3 - Sample 68 (9426')

SEM photomicrograph showing quartz framework grains (Q) many with well-developed planar overgrowth faces and abundant authigenic dickite (D) which occupies virtually all available pore space, resulting in considerable microporosity.

Fig. 4 - Sample 68 (9426')

Detail of the rectangle in Fig. 3 showing a pore filled with authigenic dickite (D). Several prismatic quartz overgrowth crystals (Q) can be seen growing into the pore and several small patches of siderite (S) also occupy part of the pore space.

Fig. 1

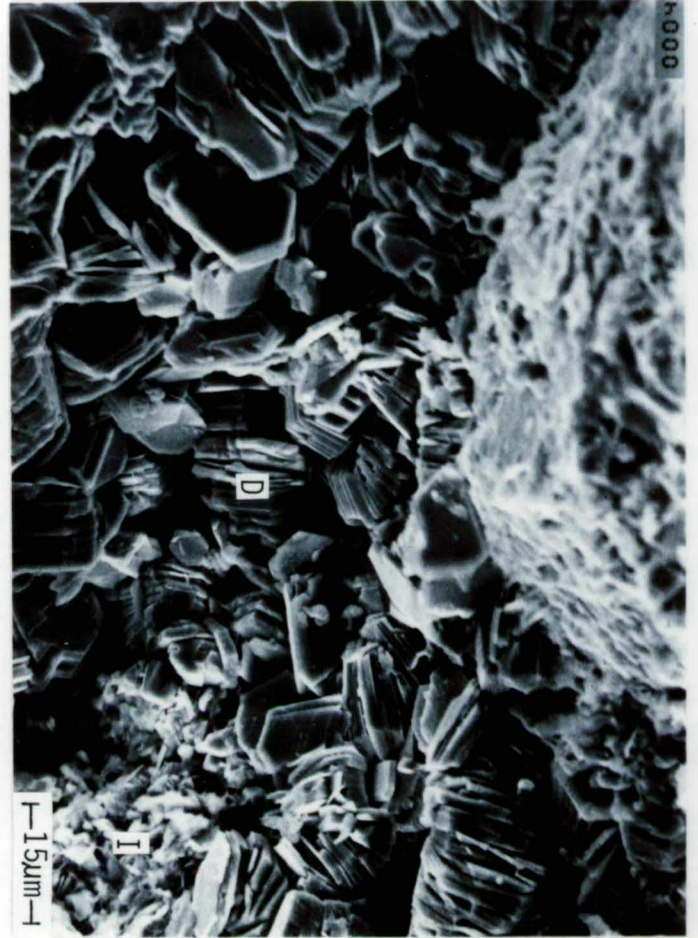


Fig. 2



Fig. 3

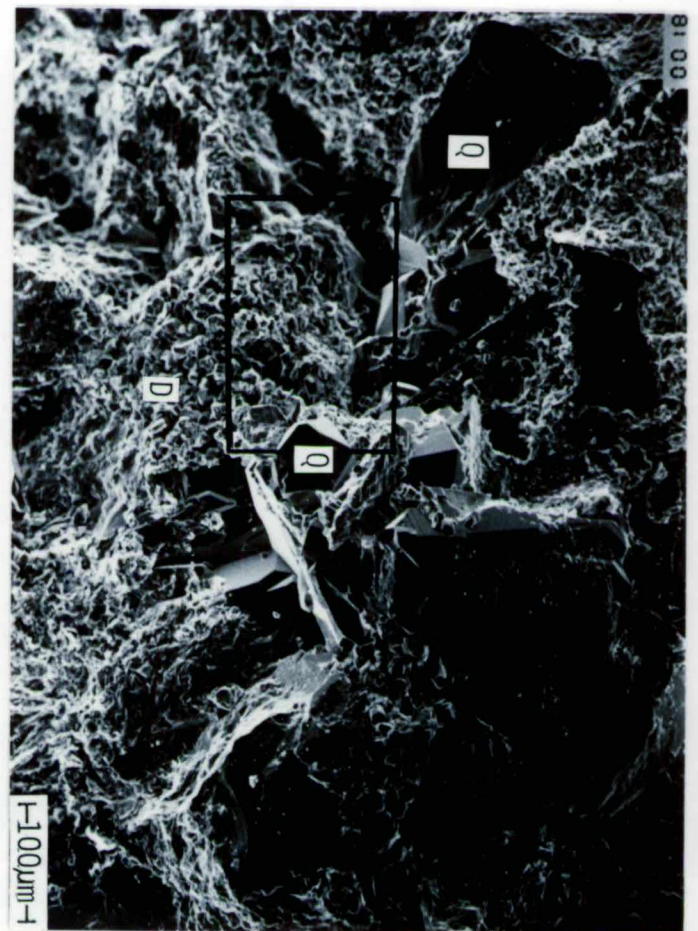


Fig. 4

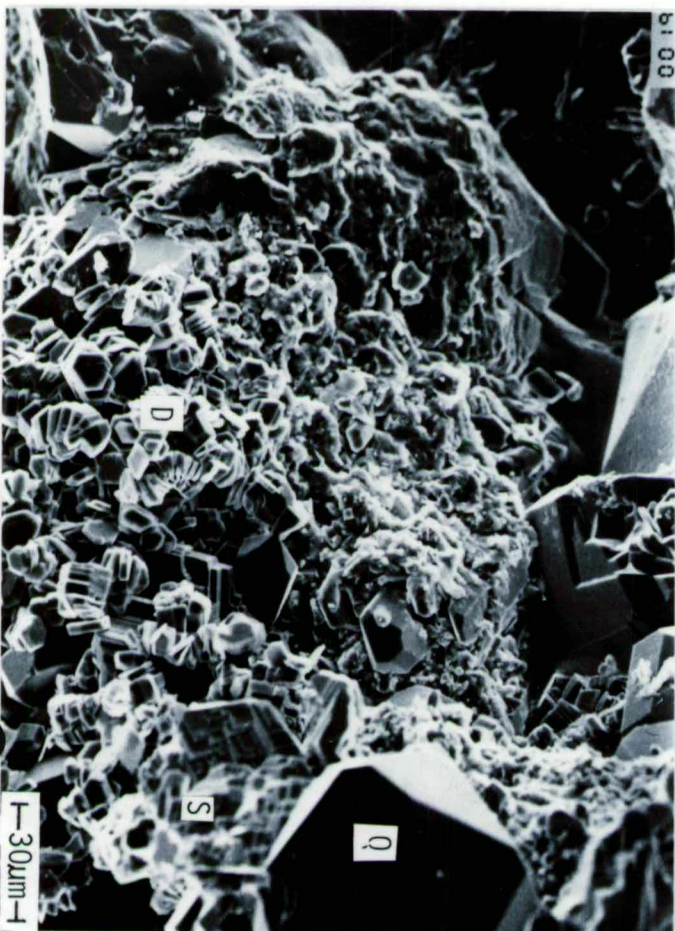


Fig. 1

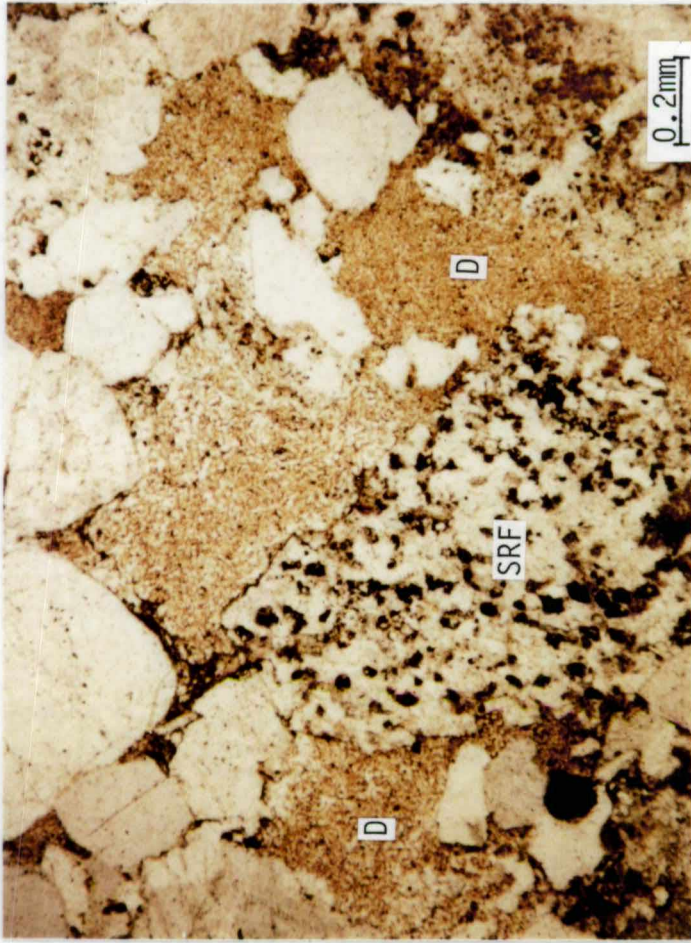


Fig. 2

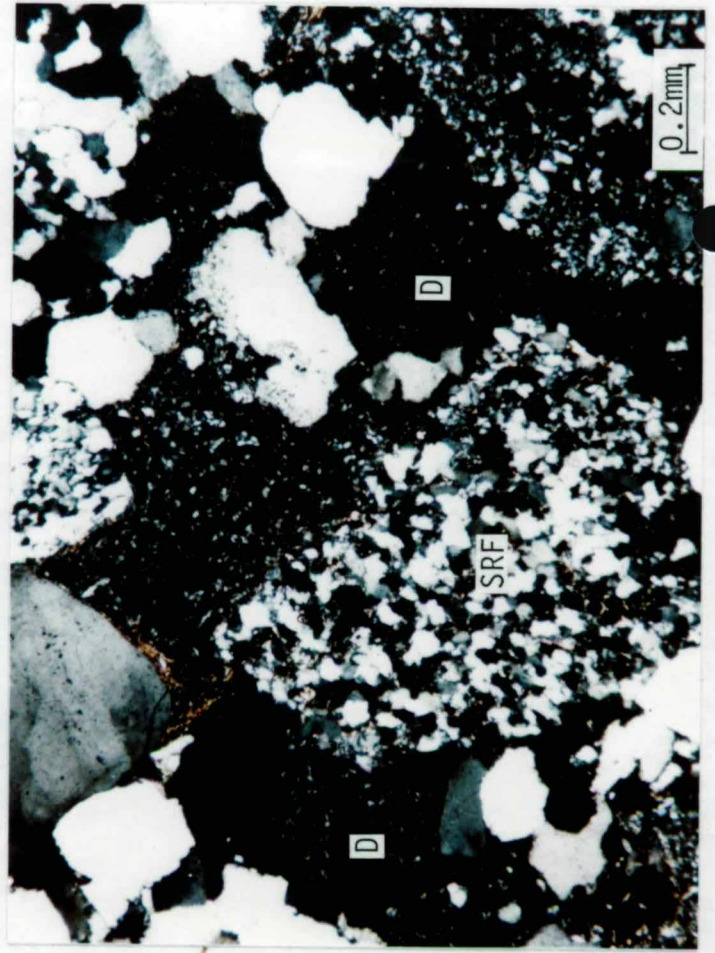


Fig. 3

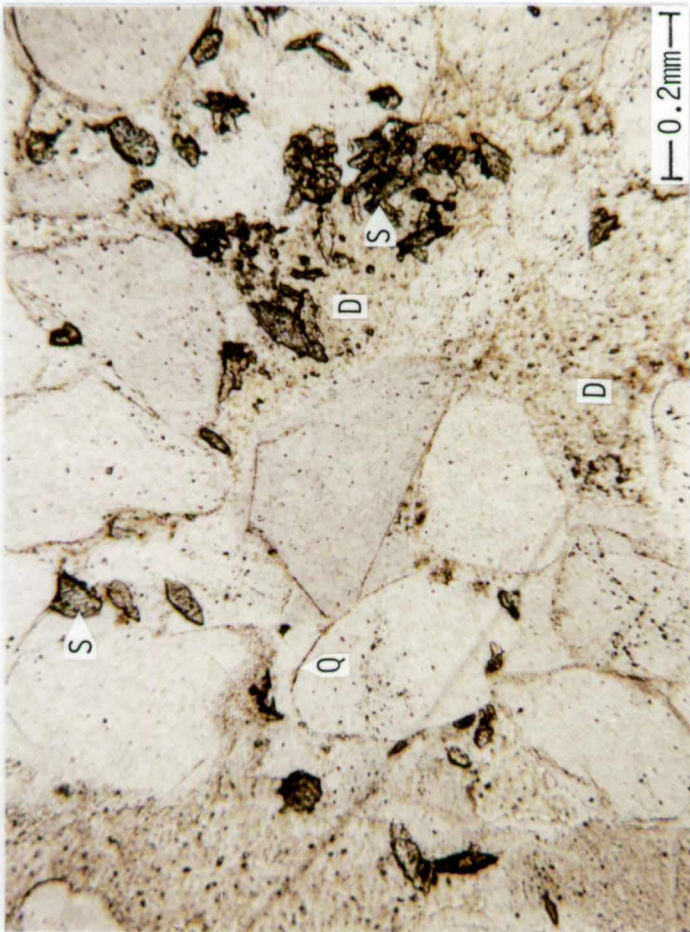
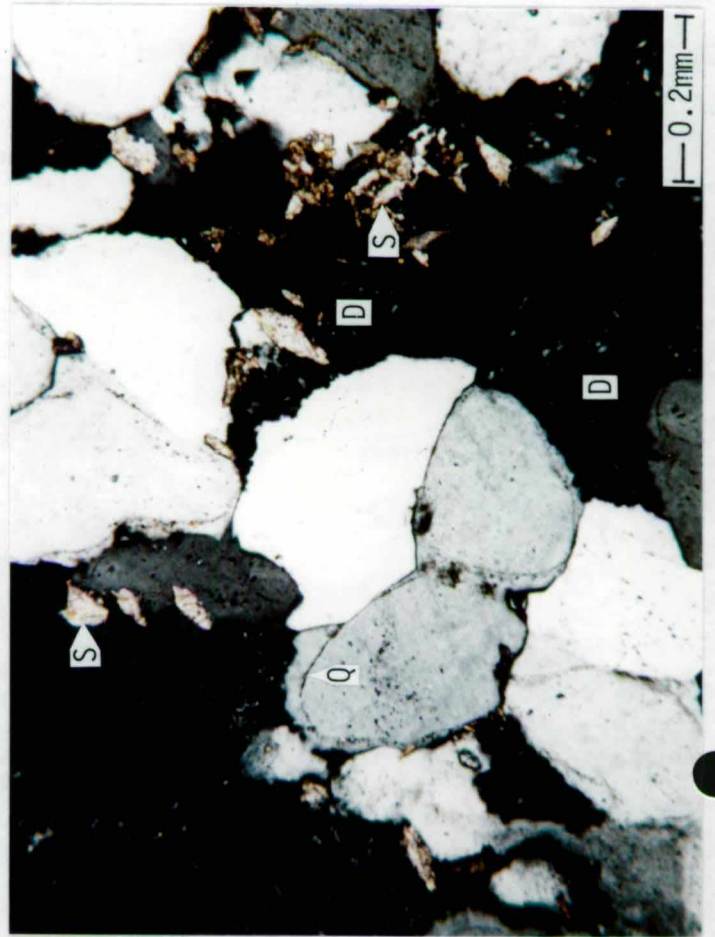


Fig. 4



## Plate 4

Fig. 1 - Plane polarised

Fig. 2 - Crossed polarisers

Photomicrographs of poorly sorted, pebbly sample showing a large sedimentary rock fragment (SRF), together with grains of quartz and chert making up the framework grains. Large patches of authigenic dickite (D) mark the locations of unstable grains which have altered to clays.

Sample 76 (9459')

Fig. 3 - Plane polarised

Fig. 4 - Crossed polarisers

Photomicrographs showing a sandstone in which some sections have been almost totally cemented by quartz overgrowths (Q) in which the outlines of the original grains are clearly preserved. Elsewhere in the rock, large patches of authigenic dickite (D) are evident and small crystals of siderite (S) are also distributed amongst the clay and in some cases crystals of siderite have been completely engulfed by later quartz overgrowths.

## Plate 5

Fig. 1 Sample 76 (9459')

SEM photomicrograph showing quartz framework grains (Q) and widely dispersed crystals of authigenic dickite (D) which infill almost all intergranular pore spaces. Several pore spaces (P) are also visible which are relatively free of clay.

Fig. 2 Sample 76 (9459')

Detail of the rectangle in Fig. 1 showing a pore which is almost totally filled by authigenic dickite (D). In this case the dickite in the centre of the field of view appears to be quite closely packed but in many cases the dickite is usually loosely packed and is readily dislodged. A planar quartz overgrowth face (Q) is also visible.

## Sample 85

Fig. 1 - Plane polarised

Fig. 2 - Crossed polarizers

Photomicrographs showing a well developed system of microstylolite seams (MS) cutting through the sandstone. Note the association of mica (M) with the zone of dissolution. Most of the mica is altered biotite which appears to be breaking down to illite and releasing iron oxide. The remnants of altered mica are visible along the microstylolite seams. A micaceous metamorphic rock fragment (MRF) is also visible.

000043

Fig. 1



Fig. 2



Fig. 3

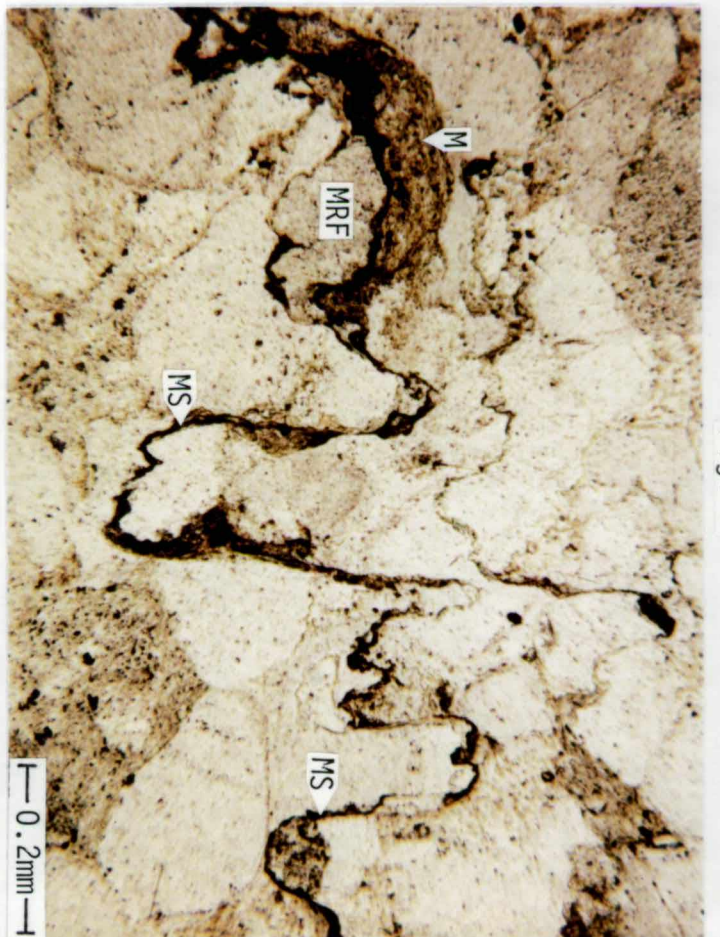


Fig. 4

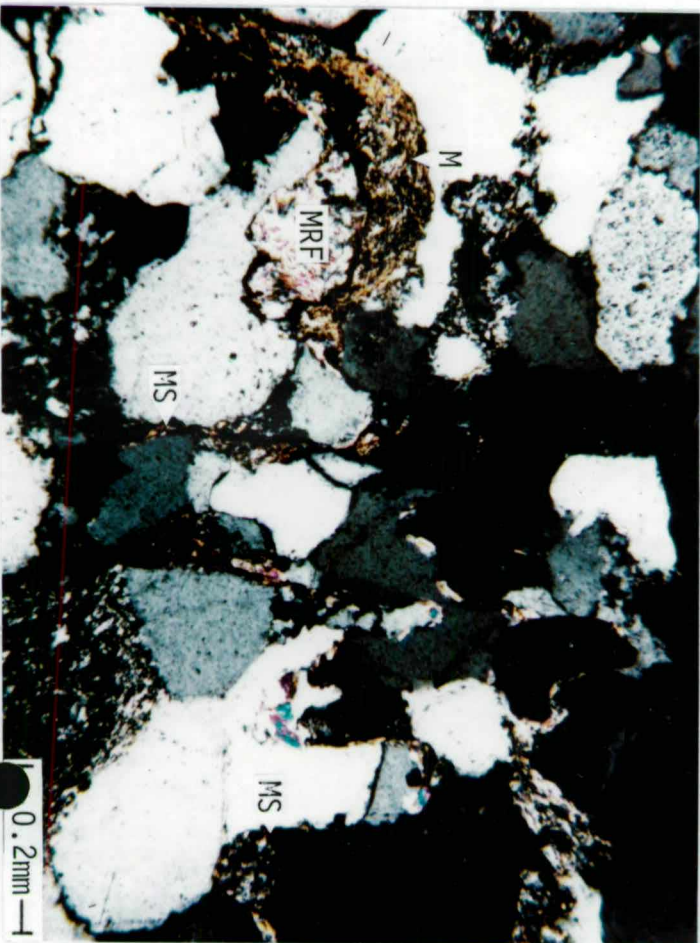


Fig. 1



Fig. 2

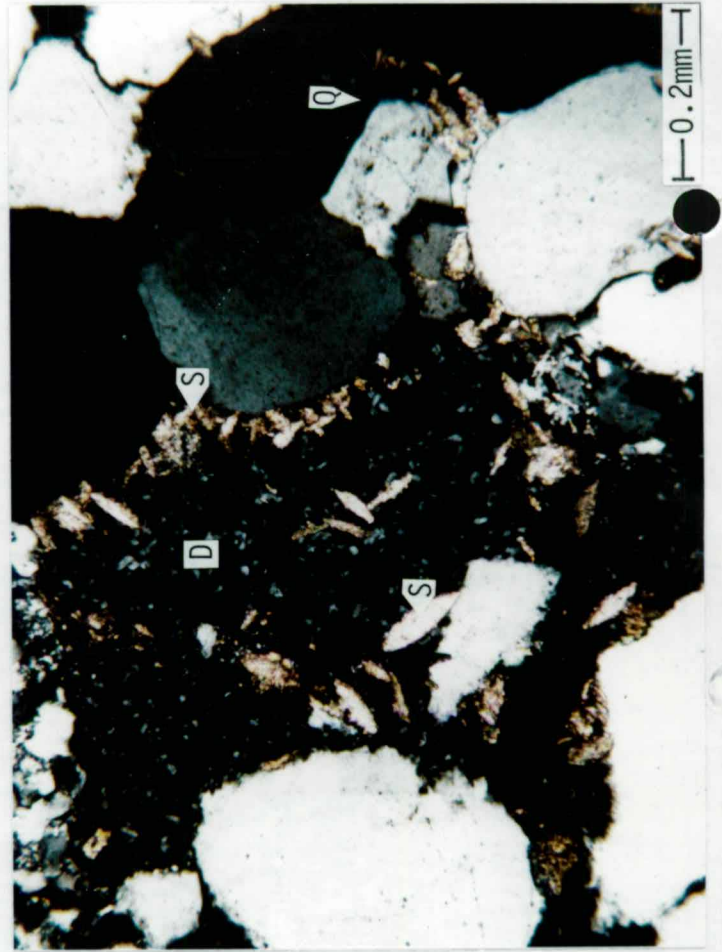


Fig. 3

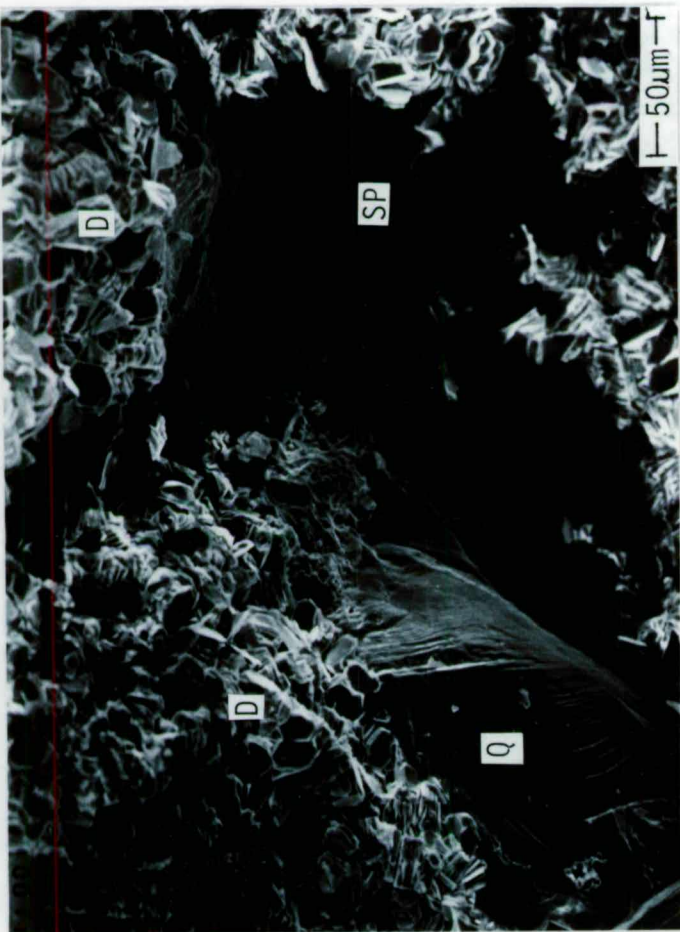


Fig. 4



## Plate 6    Sample 92 (9457')

Fig. 1 - Plane polarised

Fig. 2 - Crossed polarizers

Photomicrographs of a sandstone in which some sections have been cemented by quartz overgrowths (Q) while others are filled by authigenic dickite (D) resulting from the breakdown of unstable grains such as feldspar. Crystals of siderite (S) are distributed through the rock as small irregular to rhomb-shaped grains. Some of the siderite has been enclosed by later quartz overgrowths while the distribution of remnant siderite crystals around and within the large patch of dickite suggests that the siderite may have filled intergranular pore spaces before the boundaries of the unstable grains completely lost their identity.

Fig. 3

SEM photomicrograph of a large secondary pore (SP) which is partly filled with authigenic dickite (D). Quartz grains (Q) bordering the pore are also visible. The loose, dispersed nature of some of the dickite crystals is apparent, making them prone to dislodge and block pore throats during flowing of the well.

Fig. 4

SEM photomicrograph showing pore filling authigenic dickite (D). A large patch of siderite (S) borders one side of the pore. The form of the siderite with obvious rhombic cleavage faces suggests that the siderite has been subject to some secondary dissolution.

## Plate 7    Sample 95 (9461')

Fig. 1 - Plane polarised

Fig. 2 - Crossed polarizers

Photomicrographs showing the only example in which some porosity is retained by the rock. The small primary pores (PP) are bounded by quartz overgrowth faces and are stained by residual hydrocarbons. A quartz grain (Q) with a well preserved original grain outline arrowed, is visible. A micaceous metamorphic rock fragment (MRF) has been partly deformed by compaction. Small crystals of siderite (S) are preserved within quartz overgrowths.

Fig. 3

SEM photomicrograph showing a low magnification view of the rock surface. Several quartz grains (Q) with planar overgrowths are visible and authigenic dickite (D) is also widespread. No obvious primary pores are visible in this photomicrograph.

Fig. 4

Detail of the rectangle marked in Fig. 3 showing the side of a pore bordered by a quartz grain (Q) and filled with authigenic dickite (D).

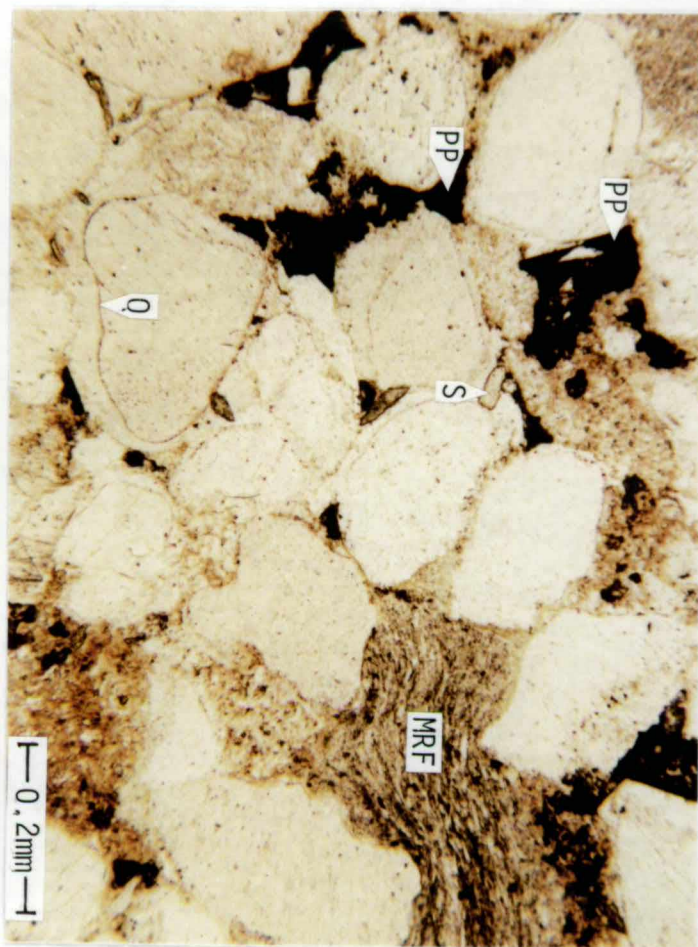


Fig. 1

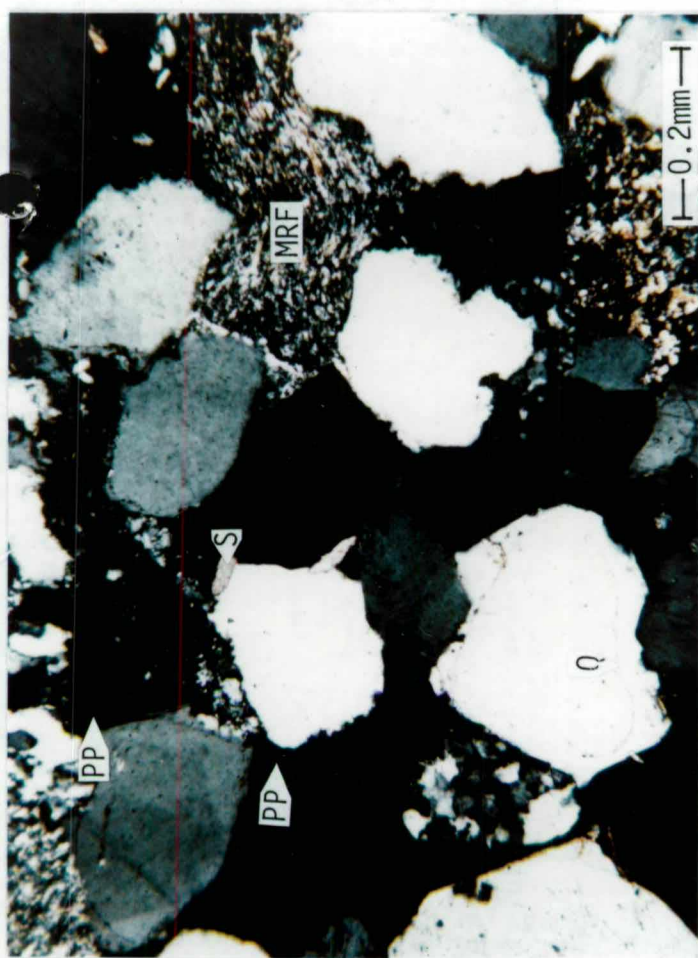


Fig. 2



Fig. 3



Fig. 4

000048

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**Computer**  
**Enterprises Ltd.**

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04/06/82

LOG ANALYSIS REPORT  
FOR

FLY-LAKE-4  
SOUTH AUSTRALIA

Mines & Energy SA

R95/03265



00126350

## Coment Ltd.

## LOG ANALYSIS Parameters

## Sandstone Analysis Program (SANDAN)

Explanation of the parameter names and their values.

A - Formation Factor Coefficient

M - Formation Factor Cementation Exponent

N - Saturation exponent in formation factor equation.

R<sub>w</sub> - Formation water resistivity at formation temperature (TEMP)

TEMP - Formation temperature at Top of analysis interval. This value and R<sub>w</sub> are corrected for depth using the formation temperature gradient (GRAD).

GRAD - The geothermal gradient in degrees/ 100 feet (Imperial) or degrees/ metre (S. I.)

GMAX - The Maximum Gamma Ray. The gamma ray reading at the point where the lithology changes from grain supported to mud supported rock (The shale boundary)

GMIN - The Minimum Gamma Ray. The lowest gamma ray in a clean sand section. May also be projected from cross-plots.

R<sub>sh</sub> - The resistivity of the shales, using the deep resistivity log.

Corr C Q I - Log Correction codes: (1 = used, 2 = not used)

C - Caliper correction. Bore hole effects on the density and gamma-ray logs are corrected.

Q - Gas correction. Corrections applied to the neutron and density logs for gas effects and rough hole effects.

1=Prime log is Neutron

2=Prime log is density

3=No gas corrections.

I - Invasion Corrections applied to the Deep resistivity.

RhoG - Grain Density

RhoS - Shale Density (derived from the cross-plots)

PhiS - Neutron shale porosity (derived from the cross-plots)

PhiC - Neutron clay porosity (usually 24 but may be changed)

## LOG ANALYSIS Parameters

## General Log Analysis program (CARBAN)

Explanation of the parameter names and their values.

A - Formation Factor Coefficient

M - Formation Factor Cementation Exponent

N - Saturation exponent in formation factor equation.

R<sub>w</sub> - Formation water resistivity at formation temperature (TEMP)

TEMP - Formation temperature at Top of analysis interval. This value and R<sub>w</sub> are corrected for depth using the formation temperature gradient (GRAD).

GRAD - The geothermal gradient in degrees per 100 feet (Imperial) or degrees per meter (S. I.).

GMAX - The Maximum Gamma ray. The gamma ray reading at the point where all of the rock is considered to be shale.

GMIN - The Minimum Gamma ray. This value is biased upwards from the 'minimum' to include all 'clean' carbonate rocks. That is all points below this value are considered clean.

R<sub>sh</sub> - The resistivity of the shales, using the deep resistivity log.

Corr C Q I - Log Correction codes: (1 = used, 2 = not used)

C - Caliper correction. Bore hole effects on the density and gamma-ray logs are corrected.

Q - Gas corrections. This allows for correction of gas effect on the neutron and density logs.

I - Invasion correction applied to the Deep resistivity.

PTYP - Porosity type used in the analysis:

1=Acoustic log

2=Neutron log

3=Density log

4=Neutron/density cross-plot

5=Acoustic/neutron cross-plot

6=M\*N Porosity

7=Core porosity

MAT - Matrix value used in single log porosity calculation.

FLD - Fluid value used in single log porosity calculation. (Ptyp 1 to 3)

RhoS - Shale density.

PhiS - Neutron Shale porosity

DTSH - Acoustic transit time of Shale

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page 1

Zone Name = TF-2

Top = 8568.00 Base = 8637.50 Date = 03/06/82

Caliper Cutoff = \*\*\*\*\* Permeability Cutoff = 0.00  
Gross Shale Cutoff = 50.00 Shale Cutoff = 30.00

Porosity\*Sw cutoff = 0.0 Porosity cutoff = 10.0 Saturation cutoff = 50.0

Gross Thickness = 17.50 Sand Thickness = 11.50 Sand > por. Cutoff = 3.00

Average Porosity = 15.89 Average water saturation = 26.07 Net thickness = 1.50

RhoG Min = 0.00 RhoG Max = 0.00

000051

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page 2

Zone Name = TF-1

Top = 8638.00 Base = 8693.50 Date = 03/06/82

Caliper Cutoff = \*\*\*\*\* Permeability Cutoff = 0.00  
Gross Shale Cutoff = 50.00 Shale Cutoff = 30.00

Porosity\*Sw cutoff = 0.0 Porosity cutoff = 10.0 Saturation cutoff = 50.0

Gross Thickness = 45.50 Sand Thickness = 36.50 Sand > por. Cutoff = 6.00

Average Porosity = 0.00 Average water saturation = 0.00 Net thickness = 0.00

RhoG Min = 0.00 RhoG Max = 0.00

000052

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page 3

Zone Name = MURTREE

Top = 8694.00 Base = 8716.50 Date = 03/06/82

Caliper Cutoff = \*\*\*\*\* Permeability Cutoff = 0.00  
Gross Shale Cutoff = 50.00 Shale Cutoff = 30.00

Porosity\*Sw cutoff = 0.0 Porosity cutoff = 10.0 Saturation cutoff = 50.0

Gross Thickness = 0.00 Sand Thickness = 0.00 Sand > por. Cutoff = 0.00

Average Porosity = 0.00 Average water saturation = 0.00 Net thickness = 0.00

RhoG Min = 0.00 RhoG Max = 0.00

000053

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page 4

Zone Name = PF-7

Top = 8717.00 Base = 8849.50 Date = 03/06/82

Caliper Cutoff = \*\*\*\*\* Permeability Cutoff = 0.00  
Gross Shale Cutoff = 50.00 Shale Cutoff = 30.00

Porosity\*Sw cutoff = 0.0 Porosity cutoff = 10.0 Saturation cutoff = 50.0

Gross Thickness = 21.50 Sand Thickness = 6.50 Sand > por. Cutoff = 4.50

Average Porosity = 13.38 Average water saturation = 32.11 Net thickness = 1.00

RhoG Min = 0.00 RhoG Max = 0.00

000054

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page 5

Zone Name = PF-6

Top = 8850.00 Base = 8904.50 Date = 03/06/82

Caliper Cutoff = \*\*\*\*\* Permeability Cutoff = 0.00  
Gross Shale Cutoff = 50.00 Shale Cutoff = 30.00

Porosity\*Sw cutoff = 0.0 Porosity cutoff = 10.0 Saturation cutoff = 50.0

Gross Thickness = 31.50 Sand Thickness = 24.00 Sand > por. Cutoff = 21.50

Average Porosity = 12.82 Average water saturation = 32.13 Net thickness = 21.50

RhoG Min = 0.00 RhoG Max = 0.00

000055

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page 6

Zone Name = PF-5

Top = 8905.00 Base = 8982.50 Date = 03/06/82

Caliper Cutoff = \*\*\*\*\* Permeability Cutoff = 0.00  
Gross Shale Cutoff = 50.00 Shale Cutoff = 30.00

Porosity\*Sw cutoff = 0.0 Porosity cutoff = 10.0 Saturation cutoff = 50.0

Gross Thickness = 54.50 Sand Thickness = 48.50 Sand > por. Cutoff = 33.50

Average Porosity = 12.18 Average water saturation = 48.75 Net thickness = 2.00

RhoG Min = 0.00 RhoG Max = 0.00

000056

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page 7

Zone Name = PF-4

Top = 8983.00 Base = 9075.50 Date = 03/06/82

Caliper Cutoff = \*\*\*\*\* Permeability Cutoff = 0.00  
Gross Shale Cutoff = 50.00 Shale Cutoff = 30.00

Porosity\*Sw cutoff = 0.0 Porosity cutoff = 10.0 Saturation cutoff = 50.0

Gross Thickness = 10.00 Sand Thickness = 10.00 Sand > por. Cutoff = 7.00

Average Porosity = 13.23 Average water saturation = 34.61 Net thickness = 2.00

RhoG Min = 0.00 RhoG Max = 0.00

000057

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page 8

Zone Name = PF-3

Top = 9076.00 Base = 9146.50 Date = 03/06/82

Caliper Cutoff = \*\*\*\*\* Permeability Cutoff = 0.00  
Gross Shale Cutoff = 50.00 Shale Cutoff = 30.00

Porosity\*Sw cutoff = 0.0 Porosity cutoff = 10.0 Saturation cutoff = 50.0

Gross Thickness = 8.50 Sand Thickness = 4.50 Sand > por. Cutoff = 3.50

Average Porosity = 10.41 Average water saturation = 44.77 Net thickness = 2.50

RhoG Min = 0.00 RhoG Max = 0.00

000058

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page 9

Zone Name = PF-2

Top = 9147.00 Base = 9279.50 Date = 03/06/82

Caliper Cutoff = \*\*\*\*\* Permeability Cutoff = 0.00  
Gross Shale Cutoff = 50.00 Shale Cutoff = 30.00

Porosity\*Sw cutoff = 0.0 Porosity cutoff = 10.0 Saturation cutoff = 50.0

Gross Thickness = 7.50 Sand Thickness = 0.00 Sand > por. Cutoff = 0.00

Average Porosity = 0.00 Average water saturation = 0.00 Net thickness = 0.00

RhoG Min = 0.00 RhoG Max = 0.00

000059

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page 10

Zone Name = PF-1

Top = 9280.00 Base = 9408.50 Date = 03/06/82

Caliper Cutoff = \*\*\*\*\* Permeability Cutoff = 0.00  
Gross Shale Cutoff = 50.00 Shale Cutoff = 30.00

Porosity\*Sw cutoff = 0.0 Porosity cutoff = 10.0 Saturation cutoff = 50.0

Gross Thickness = 7.00 Sand Thickness = 4.00 Sand &gt; por. Cutoff = 0.00

Average Porosity = 0.00 Average water saturation = 0.00 Net thickness = 0.00

RhoG Min = 0.00 RhoG Max = 0.00

090000

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page 11

Zone Name = TIRRAWARRA Top = 9409.00 Base = 9475.00 Date = 03/06/82

Caliper Cutoff = \*\*\*\*\* Permeability Cutoff = 0.00  
Gross Shale Cutoff = 50.00 Shale Cutoff = 30.00

Porosity\*Sw cutoff = 0.0 Porosity cutoff = 10.0 Saturation cutoff = 50.0

Gross Thickness = 56.50 Sand Thickness = 48.50 Sand > por. Cutoff = 17.00

Average Porosity = 10.73 Average water saturation = 44.13 Net thickness = 15.50

RhoG Min = 0.00 RhoG Max = 0.00

000061

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page No 1

Porosity cutoff = 10.0 Saturation cutoff = 50.0 Caliper cutoff = bit size +\*\*\*\*\* Shale Cutoff = 30.

| TOP                                | BASE    | A     | M    | N    | RW    | TEMP  | GRAD  |        |       |      |      |       |  |  |  |  |  |  |
|------------------------------------|---------|-------|------|------|-------|-------|-------|--------|-------|------|------|-------|--|--|--|--|--|--|
| 8480.00                            | 8694.00 | 1.00  | 2.00 | 2.00 | 0.200 | 209.0 | 1.520 |        |       |      |      |       |  |  |  |  |  |  |
| GRMAX                              | GRMIN   | RSH   | COR  | C    | G     | I     | PTYP  | RHOS   | PHIS  | DTSH | MAT  | FLD   |  |  |  |  |  |  |
| 168.0                              | 32.0    | 25.0  |      | 2    | 2     | 2     | 1     | -0.000 | 0.000 | 65.0 | 51.0 | 250.0 |  |  |  |  |  |  |
| Porosity derived from Acoustic log |         |       |      |      |       |       |       |        |       |      |      |       |  |  |  |  |  |  |
| TOP                                | BASE    | A     | M    | N    | RW    | TEMP  | GRAD  |        |       |      |      |       |  |  |  |  |  |  |
| 8694.00                            | 9409.00 | 1.00  | 2.00 | 2.00 | 0.140 | 212.0 | 1.520 |        |       |      |      |       |  |  |  |  |  |  |
| GRMAX                              | GRMIN   | RSH   | COR  | C    | G     | I     | PTYP  | RHOS   | PHIS  | DTSH | MAT  | FLD   |  |  |  |  |  |  |
| 140.0                              | 32.0    | 119.0 |      | 2    | 2     | 2     | 1     | -0.000 | 0.000 | 63.0 | 51.0 | 250.0 |  |  |  |  |  |  |
| Porosity derived from Acoustic log |         |       |      |      |       |       |       |        |       |      |      |       |  |  |  |  |  |  |
| TOP                                | BASE    | A     | M    | N    | RW    | TEMP  | GRAD  |        |       |      |      |       |  |  |  |  |  |  |
| 9409.00                            | 9510.00 | 1.00  | 2.00 | 2.00 | 0.140 | 223.0 | 1.520 |        |       |      |      |       |  |  |  |  |  |  |
| GRMAX                              | GRMIN   | RSH   | COR  | C    | G     | I     | PTYP  | RHOS   | PHIS  | DTSH | MAT  | FLD   |  |  |  |  |  |  |
| 128.0                              | 40.0    | 40.0  |      | 2    | 2     | 2     | 1     | -0.000 | 0.000 | 61.0 | 51.0 | 250.0 |  |  |  |  |  |  |
| Porosity derived from Acoustic log |         |       |      |      |       |       |       |        |       |      |      |       |  |  |  |  |  |  |

000062

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page No 2

| DEPTH   | V Shale | Rho G | Perm | Phi2nd | PhiE | Sw    | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|------|--------|------|-------|---------|---------------|--------------|-----------|
| 8480.00 | 94.87   | 51.00 | 0.01 | -0.00  | 0.99 | 60.49 | 59.72   |               |              |           |
| 8480.50 | 95.52   | 51.00 | 0.01 | -0.00  | 1.18 | 56.32 | 66.62   |               |              |           |
| 8481.00 | 93.33   | 51.00 | 0.01 | -0.00  | 1.68 | 53.80 | 90.41   |               |              |           |
| 8481.50 | 90.74   | 51.00 | 0.02 | -0.00  | 2.17 | 51.68 | 112.21  |               |              |           |
| 8482.00 | 87.95   | 51.00 | 0.02 | -0.00  | 2.24 | 53.61 | 120.20  |               |              |           |
| 8482.50 | 85.49   | 51.00 | 0.01 | -0.00  | 2.03 | 57.46 | 116.92  |               |              |           |
| 8483.00 | 84.31   | 51.00 | 0.01 | -0.00  | 1.74 | 61.84 | 107.48  |               |              |           |
| 8483.50 | 83.22   | 51.00 | 0.01 | -0.00  | 1.63 | 64.40 | 104.85  |               |              |           |
| 8484.00 | 82.93   | 51.00 | 0.01 | -0.00  | 1.82 | 63.41 | 115.11  |               |              |           |
| 8484.50 | 82.65   | 51.00 | 0.01 | -0.00  | 1.99 | 62.82 | 125.02  |               |              |           |
| 8485.00 | 83.17   | 51.00 | 0.01 | -0.00  | 2.11 | 61.87 | 130.46  |               |              |           |
| 8485.50 | 84.00   | 51.00 | 0.01 | -0.00  | 2.17 | 60.75 | 131.78  |               |              |           |
| 8486.00 | 84.83   | 51.00 | 0.01 | -0.00  | 2.05 | 61.09 | 125.34  |               |              |           |
| 8486.50 | 85.33   | 51.00 | 0.01 | -0.00  | 1.96 | 61.60 | 120.59  |               |              |           |
| 8487.00 | 85.33   | 51.00 | 0.01 | -0.00  | 1.90 | 62.33 | 118.32  |               |              |           |
| 8487.50 | 82.18   | 51.00 | 0.01 | -0.00  | 1.81 | 66.58 | 120.64  |               |              |           |
| 8488.00 | 80.72   | 51.00 | 0.01 | -0.00  | 1.61 | 70.05 | 112.51  |               |              |           |
| 8488.50 | 79.62   | 51.00 | 0.01 | -0.00  | 1.63 | 70.83 | 115.48  |               |              |           |
| 8489.00 | 79.27   | 51.00 | 0.01 | -0.00  | 1.61 | 71.27 | 114.91  |               |              |           |
| 8489.50 | 84.13   | 51.00 | 0.01 | -0.00  | 1.38 | 68.34 | 94.55   |               |              |           |
| 8490.00 | 88.98   | 51.00 | 0.01 | -0.00  | 1.15 | 65.34 | 75.45   |               |              |           |
| 8490.50 | 92.35   | 51.00 | 0.01 | -0.00  | 1.05 | 62.40 | 65.68   |               |              |           |
| 8491.00 | 91.41   | 51.00 | 0.01 | -0.00  | 1.28 | 61.04 | 78.37   |               |              |           |
| 8491.50 | 85.95   | 51.00 | 0.01 | -0.00  | 1.71 | 63.33 | 107.99  |               |              |           |
| 8492.00 | 81.72   | 51.00 | 0.01 | -0.00  | 1.82 | 67.38 | 122.59  |               |              |           |
| 8492.50 | 80.97   | 51.00 | 0.01 | -0.00  | 1.63 | 71.34 | 116.47  |               |              |           |
| 8493.00 | 85.17   | 51.00 | 0.01 | -0.00  | 1.64 | 68.47 | 112.52  |               |              |           |
| 8493.50 | 90.52   | 51.00 | 0.01 | -0.00  | 1.57 | 67.32 | 105.56  |               |              |           |
| 8494.00 | 91.26   | 51.00 | 0.01 | -0.00  | 1.82 | 65.90 | 119.71  |               |              |           |
| 8494.50 | 91.84   | 51.00 | 0.01 | -0.00  | 1.69 | 69.71 | 118.12  |               |              |           |
| 8495.00 | 86.15   | 51.00 | 0.01 | -0.00  | 2.00 | 76.31 | 152.56  |               |              |           |
| 8495.50 | 77.77   | 51.00 | 0.01 | -0.00  | 2.49 | 75.10 | 187.25  |               |              |           |
| 8496.00 | 70.91   | 51.00 | 0.01 | -0.00  | 2.86 | 74.04 | 211.63  |               |              |           |
| 8496.50 | 64.48   | 51.00 | 0.01 | -0.00  | 3.03 | 76.28 | 231.02  |               |              |           |
| 8497.00 | 57.66   | 51.00 | 0.01 | -0.00  | 3.44 | 79.71 | 274.55  |               |              |           |
| 8497.50 | 50.40   | 51.00 | 0.01 | -0.00  | 4.18 | 85.47 | 357.53  |               |              |           |
| 8498.00 | 46.84   | 51.00 | 0.01 | -0.00  | 4.92 | 87.07 | 428.65  |               |              |           |
| 8498.50 | 43.92   | 51.00 | 0.01 | -0.00  | 5.64 | 89.04 | 501.81  |               |              |           |
| 8499.00 | 43.70   | 51.00 | 0.01 | -0.00  | 6.18 | 89.17 | 551.08  |               |              |           |
| 8499.50 | 42.97   | 51.00 | 0.02 | -0.00  | 6.75 | 88.60 | 597.93  |               |              |           |
| 8500.00 | 41.88   | 51.00 | 0.03 | -0.00  | 7.26 | 89.09 | 646.46  |               |              |           |
| 8500.50 | 39.70   | 51.00 | 0.03 | -0.00  | 7.84 | 88.87 | 696.75  |               |              |           |
| 8501.00 | 36.54   | 51.00 | 0.04 | -0.00  | 8.38 | 89.74 | 751.96  |               |              |           |
| 8501.50 | 33.39   | 51.00 | 0.04 | -0.00  | 8.80 | 90.03 | 791.84  |               |              |           |
| 8502.00 | 30.23   | 51.00 | 0.05 | -0.00  | 9.13 | 91.04 | 831.34  |               |              |           |
| 8502.50 | 27.07   | 51.00 | 0.03 | -0.00  | 9.25 | 96.64 | 894.09  |               |              |           |
| 8503.00 | 28.04   | 51.00 | 0.02 | -0.00  | 9.11 | 97.78 | 891.01  |               |              |           |
| 8503.50 | 29.90   | 51.00 | 0.02 | -0.00  | 8.94 | 97.86 | 875.30  |               |              |           |
| 8504.00 | 31.76   | 51.00 | 0.02 | -0.00  | 8.78 | 97.86 | 858.93  |               |              |           |
| 8504.50 | 33.61   | 51.00 | 0.02 | -0.00  | 8.57 | 98.25 | 841.88  |               |              |           |

000063

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page No 3

| DEPTH   | V Shale | Rho G | Perm | Phi2nd | PhiE | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|------|--------|------|--------|---------|---------------|--------------|-----------|
| 8505.00 | 37.38   | 51.00 | 0.02 | -0.00  | 8.09 | 97.85  | 792.03  |               |              |           |
| 8505.50 | 57.84   | 51.00 | 0.02 | -0.00  | 6.45 | 88.67  | 571.61  |               |              |           |
| 8506.00 | 74.06   | 51.00 | 0.02 | -0.00  | 4.82 | 78.83  | 380.03  |               |              |           |
| 8506.50 | 82.35   | 51.00 | 0.01 | -0.00  | 3.42 | 70.81  | 241.87  |               |              |           |
| 8507.00 | 87.24   | 51.00 | 0.01 | -0.00  | 2.12 | 67.73  | 143.33  |               |              |           |
| 8507.50 | 91.59   | 51.00 | 0.01 | -0.00  | 1.06 | 62.16  | 65.83   |               |              |           |
| 8508.00 | 94.35   | 51.00 | 0.01 | -0.00  | 0.42 | 52.13  | 22.04   |               |              |           |
| 8508.50 | 97.11   | 51.00 | 0.01 | -0.00  | 0.22 | 47.65  | 10.64   |               |              |           |
| 8509.00 | 90.76   | 51.00 | 0.01 | -0.00  | 0.51 | 62.60  | 31.81   |               |              |           |
| 8509.50 | 80.79   | 51.00 | 0.01 | -0.00  | 1.04 | 92.18  | 96.10   |               |              |           |
| 8510.00 | 60.81   | 51.00 | 0.01 | -0.00  | 2.28 | 100.00 | 228.11  |               |              |           |
| 8510.50 | 42.97   | 51.00 | 0.01 | -0.00  | 3.38 | 100.00 | 338.08  |               |              |           |
| 8511.00 | 34.62   | 51.00 | 0.01 | -0.00  | 4.46 | 100.00 | 446.21  |               |              |           |
| 8511.50 | 29.51   | 51.00 | 0.01 | -0.00  | 5.06 | 100.00 | 506.39  |               |              |           |
| 8512.00 | 36.48   | 51.00 | 0.01 | -0.00  | 4.82 | 100.00 | 481.55  |               |              |           |
| 8512.50 | 45.85   | 51.00 | 0.01 | -0.00  | 4.35 | 100.00 | 434.53  |               |              |           |
| 8513.00 | 55.21   | 51.00 | 0.01 | -0.00  | 3.82 | 100.00 | 382.29  |               |              |           |
| 8513.50 | 65.75   | 51.00 | 0.01 | -0.00  | 3.20 | 90.87  | 290.49  |               |              |           |
| 8514.00 | 77.40   | 51.00 | 0.01 | -0.00  | 2.29 | 78.61  | 180.29  |               |              |           |
| 8514.50 | 83.53   | 51.00 | 0.01 | -0.00  | 1.78 | 72.18  | 128.38  |               |              |           |
| 8515.00 | 89.66   | 51.00 | 0.01 | -0.00  | 1.26 | 66.03  | 83.32   |               |              |           |
| 8515.50 | 92.66   | 51.00 | 0.01 | -0.00  | 0.96 | 64.24  | 61.55   |               |              |           |
| 8516.00 | 95.47   | 51.00 | 0.01 | -0.00  | 0.67 | 64.30  | 43.31   |               |              |           |
| 8516.50 | 92.72   | 51.00 | 0.01 | -0.00  | 0.79 | 67.02  | 52.83   |               |              |           |
| 8517.00 | 87.31   | 51.00 | 0.01 | -0.00  | 1.09 | 70.21  | 76.56   |               |              |           |
| 8517.50 | 82.93   | 51.00 | 0.01 | -0.00  | 1.33 | 72.81  | 96.60   |               |              |           |
| 8518.00 | 81.84   | 51.00 | 0.01 | -0.00  | 1.33 | 73.87  | 98.45   |               |              |           |
| 8518.50 | 84.69   | 51.00 | 0.01 | -0.00  | 1.06 | 73.24  | 77.76   |               |              |           |
| 8519.00 | 86.41   | 51.00 | 0.01 | -0.00  | 1.00 | 73.94  | 74.30   |               |              |           |
| 8519.50 | 88.04   | 51.00 | 0.01 | -0.00  | 1.03 | 74.83  | 76.92   |               |              |           |
| 8520.00 | 89.18   | 51.00 | 0.01 | -0.00  | 1.12 | 75.09  | 84.02   |               |              |           |
| 8520.50 | 88.98   | 51.00 | 0.01 | -0.00  | 1.33 | 75.01  | 100.01  |               |              |           |
| 8521.00 | 88.42   | 51.00 | 0.01 | -0.00  | 1.57 | 74.88  | 117.72  |               |              |           |
| 8521.50 | 87.40   | 51.00 | 0.01 | -0.00  | 1.78 | 75.00  | 133.67  |               |              |           |
| 8522.00 | 87.09   | 51.00 | 0.01 | -0.00  | 1.90 | 74.33  | 141.24  |               |              |           |
| 8522.50 | 88.56   | 51.00 | 0.01 | -0.00  | 1.89 | 72.54  | 137.27  |               |              |           |
| 8523.00 | 89.51   | 51.00 | 0.01 | -0.00  | 1.91 | 70.25  | 134.35  |               |              |           |
| 8523.50 | 86.37   | 51.00 | 0.01 | -0.00  | 1.92 | 72.61  | 139.44  |               |              |           |
| 8524.00 | 81.72   | 51.00 | 0.01 | -0.00  | 2.00 | 75.78  | 151.55  |               |              |           |
| 8524.50 | 76.65   | 51.00 | 0.01 | -0.00  | 2.10 | 79.85  | 167.59  |               |              |           |
| 8525.00 | 75.03   | 51.00 | 0.01 | -0.00  | 1.96 | 82.51  | 161.37  |               |              |           |
| 8525.50 | 73.55   | 51.00 | 0.01 | -0.00  | 2.05 | 84.00  | 172.07  |               |              |           |
| 8526.00 | 72.08   | 51.00 | 0.01 | -0.00  | 2.27 | 83.88  | 190.03  |               |              |           |
| 8526.50 | 73.54   | 51.00 | 0.01 | -0.00  | 2.29 | 82.44  | 188.85  |               |              |           |
| 8527.00 | 75.96   | 51.00 | 0.01 | -0.00  | 2.25 | 80.63  | 181.36  |               |              |           |
| 8527.50 | 78.38   | 51.00 | 0.01 | -0.00  | 2.21 | 78.69  | 173.72  |               |              |           |
| 8528.00 | 80.80   | 51.00 | 0.01 | -0.00  | 2.13 | 77.05  | 163.77  |               |              |           |
| 8528.50 | 83.21   | 51.00 | 0.01 | -0.00  | 2.02 | 75.61  | 152.80  |               |              |           |
| 8529.00 | 85.63   | 51.00 | 0.01 | -0.00  | 1.89 | 74.36  | 140.73  |               |              |           |
| 8529.50 | 87.31   | 51.00 | 0.01 | -0.00  | 1.78 | 73.90  | 131.26  |               |              |           |

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Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page No 4

| DEPTH   | V Shale | Rho G | Perm | Phi2nd | PhiE | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|------|--------|------|--------|---------|---------------|--------------|-----------|
| 8530.00 | 84.29   | 51.00 | 0.01 | -0.00  | 1.94 | 76.56  | 148.62  |               |              |           |
| 8530.50 | 79.21   | 51.00 | 0.01 | -0.00  | 2.25 | 79.43  | 178.81  |               |              |           |
| 8531.00 | 74.82   | 51.00 | 0.01 | -0.00  | 2.42 | 82.94  | 200.74  |               |              |           |
| 8531.50 | 71.86   | 51.00 | 0.01 | -0.00  | 2.50 | 85.66  | 214.37  |               |              |           |
| 8532.00 | 68.91   | 51.00 | 0.01 | -0.00  | 2.73 | 86.85  | 237.41  |               |              |           |
| 8532.50 | 72.11   | 51.00 | 0.01 | -0.00  | 2.89 | 81.55  | 235.76  |               |              |           |
| 8533.00 | 75.50   | 51.00 | 0.01 | -0.00  | 3.02 | 76.45  | 230.93  |               |              |           |
| 8533.50 | 92.47   | 51.00 | 0.01 | -0.00  | 2.18 | 61.25  | 133.31  |               |              |           |
| 8534.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 8534.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 8535.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 8535.50 | 94.87   | 51.00 | 0.01 | -0.00  | 1.77 | 62.18  | 110.29  |               |              |           |
| 8536.00 | 91.68   | 51.00 | 0.01 | -0.00  | 1.77 | 71.28  | 126.23  |               |              |           |
| 8536.50 | 91.65   | 51.00 | 0.01 | -0.00  | 1.63 | 74.16  | 121.06  |               |              |           |
| 8537.00 | 92.39   | 51.00 | 0.01 | -0.00  | 1.59 | 73.39  | 116.68  |               |              |           |
| 8537.50 | 92.49   | 51.00 | 0.01 | -0.00  | 1.59 | 73.35  | 116.42  |               |              |           |
| 8538.00 | 72.50   | 51.00 | 0.01 | -0.00  | 2.99 | 84.68  | 253.52  |               |              |           |
| 8538.50 | 63.25   | 51.00 | 0.01 | -0.00  | 3.65 | 88.11  | 321.23  |               |              |           |
| 8539.00 | 65.33   | 51.00 | 0.01 | -0.00  | 3.50 | 86.27  | 301.95  |               |              |           |
| 8539.50 | 68.33   | 51.00 | 0.01 | -0.00  | 3.03 | 86.98  | 263.92  |               |              |           |
| 8540.00 | 71.33   | 51.00 | 0.01 | -0.00  | 2.48 | 88.85  | 220.73  |               |              |           |
| 8540.50 | 73.40   | 51.00 | 0.01 | -0.00  | 2.10 | 89.27  | 187.32  |               |              |           |
| 8541.00 | 64.75   | 51.00 | 0.01 | -0.00  | 2.79 | 90.03  | 250.81  |               |              |           |
| 8541.50 | 62.65   | 51.00 | 0.01 | -0.00  | 3.01 | 90.33  | 272.14  |               |              |           |
| 8542.00 | 68.55   | 51.00 | 0.01 | -0.00  | 2.68 | 87.83  | 235.05  |               |              |           |
| 8542.50 | 77.29   | 51.00 | 0.01 | -0.00  | 2.14 | 83.65  | 179.05  |               |              |           |
| 8543.00 | 87.18   | 51.00 | 0.01 | -0.00  | 1.75 | 74.86  | 131.19  |               |              |           |
| 8543.50 | 94.56   | 51.00 | 0.01 | -0.00  | 1.54 | 63.30  | 97.64   |               |              |           |
| 8544.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 8544.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 8545.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 8545.50 | 96.98   | 51.00 | 0.01 | -0.00  | 1.21 | 60.17  | 72.58   |               |              |           |
| 8546.00 | 94.00   | 51.00 | 0.01 | -0.00  | 1.89 | 58.01  | 109.78  |               |              |           |
| 8546.50 | 91.01   | 51.00 | 0.01 | -0.00  | 1.95 | 63.46  | 123.89  |               |              |           |
| 8547.00 | 90.87   | 51.00 | 0.01 | -0.00  | 1.87 | 66.55  | 124.29  |               |              |           |
| 8547.50 | 91.05   | 51.00 | 0.01 | -0.00  | 1.85 | 68.64  | 127.08  |               |              |           |
| 8548.00 | 97.12   | 51.00 | 0.01 | -0.00  | 1.15 | 66.05  | 75.99   |               |              |           |
| 8548.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 8549.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 8549.50 | 99.65   | 51.00 | 0.01 | -0.00  | 0.14 | 94.77  | 13.36   |               |              |           |
| 8550.00 | 94.86   | 51.00 | 0.01 | -0.00  | 2.05 | 63.70  | 130.84  |               |              |           |
| 8550.50 | 94.20   | 51.00 | 0.01 | -0.00  | 2.32 | 61.98  | 143.71  |               |              |           |
| 8551.00 | 94.01   | 51.00 | 0.01 | -0.00  | 2.40 | 60.86  | 145.88  |               |              |           |
| 8551.50 | 93.81   | 51.00 | 0.01 | -0.00  | 2.48 | 59.77  | 147.97  |               |              |           |
| 8552.00 | 87.18   | 51.00 | 0.01 | -0.00  | 3.12 | 66.02  | 206.21  |               |              |           |
| 8552.50 | 80.77   | 51.00 | 0.01 | -0.00  | 3.15 | 74.05  | 233.38  |               |              |           |
| 8553.00 | 75.42   | 51.00 | 0.01 | -0.00  | 3.30 | 76.86  | 253.37  |               |              |           |
| 8553.50 | 78.05   | 51.00 | 0.01 | -0.00  | 3.11 | 76.97  | 239.76  |               |              |           |
| 8554.00 | 82.03   | 51.00 | 0.01 | -0.00  | 3.18 | 72.65  | 231.04  |               |              |           |
| 8554.50 | 86.01   | 51.00 | 0.02 | -0.00  | 3.64 | 65.84  | 239.93  |               |              |           |

590000

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page No 5

| DEPTH   | V Shale | Rho G | Perm    | Phi2nd | PhiE    | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|---------|--------|---------|--------|---------|---------------|--------------|-----------|
| 8555.00 | 89.89   | 51.00 | 0.04    | -0.00  | 3.90    | 62.15  | 242.26  |               |              |           |
| 8555.50 | 93.48   | 51.00 | 0.01    | -0.00  | 2.61    | 76.29  | 198.99  |               |              |           |
| 8556.00 | 97.06   | 51.00 | 0.01    | -0.00  | 1.17    | 100.00 | 117.47  |               |              |           |
| 8556.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8557.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8557.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8558.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8558.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8559.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8559.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8560.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8560.50 | 98.73   | 51.00 | 0.01    | -0.00  | 0.51    | 58.75  | 29.80   |               |              |           |
| 8561.00 | 95.26   | 51.00 | 0.02    | -0.00  | 1.89    | 47.62  | 89.78   |               |              |           |
| 8561.50 | 76.70   | 51.00 | 0.01    | -0.00  | 3.50    | 69.83  | 244.42  |               |              |           |
| 8562.00 | 52.35   | 51.00 | 0.03    | -0.00  | 5.56    | 77.59  | 431.64  |               |              |           |
| 8562.50 | 53.15   | 51.00 | 0.10    | -0.00  | 6.01    | 68.64  | 412.78  |               |              |           |
| 8563.00 | 63.78   | 51.00 | 0.21    | -0.00  | 5.66    | 58.46  | 330.88  |               |              |           |
| 8563.50 | 78.16   | 51.00 | 0.32    | -0.00  | 4.79    | 48.33  | 231.35  |               |              |           |
| 8564.00 | 90.77   | 51.00 | 0.29    | -0.00  | 3.69    | 40.32  | 148.86  |               |              |           |
| 8564.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8565.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8565.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8566.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8566.50 | 91.60   | 51.00 | 0.03    | -0.00  | 3.36    | 61.79  | 207.53  |               |              |           |
| 8567.00 | 90.90   | 51.00 | 0.05    | -0.00  | 3.64    | 57.77  | 210.32  |               |              |           |
| 8567.50 | 95.72   | 51.00 | 0.01    | -0.00  | 1.71    | 68.78  | 117.86  |               |              |           |
| 8568.00 | 98.82   | 51.00 | 0.01    | -0.00  | 0.47    | 81.83  | 38.59   |               |              |           |
| 8568.50 | 97.33   | 51.00 | 0.01    | -0.00  | 1.07    | 59.58  | 63.53   |               |              |           |
| 8569.00 | 86.67   | 51.00 | 1.77    | -0.00  | 5.33    | 34.32  | 183.00  |               |              |           |
| 8569.50 | 68.27   | 51.00 | 25.82   | -0.00  | 12.69   | 22.14  | 281.03  |               |              |           |
| 8570.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 8570.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 8571.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 8571.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 8572.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 8572.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 8573.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 8573.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 8574.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 8574.50 | 67.14   | 51.00 | 12.83   | -0.00  | 9.04    | 14.19  | 128.24  |               |              |           |
| 8575.00 | 78.21   | 51.00 | 11.96   | -0.00  | 5.70    | 16.78  | 95.70   |               |              |           |
| 8575.50 | 82.45   | 51.00 | 1.01    | -0.00  | 3.12    | 21.58  | 67.40   |               |              |           |
| 8576.00 | 74.26   | 51.00 | 1.15    | -0.00  | 3.62    | 25.37  | 91.88   |               |              |           |
| 8576.50 | 69.44   | 51.00 | 1.57    | -0.00  | 4.26    | 27.77  | 118.43  |               |              |           |
| 8577.00 | 64.62   | 51.00 | 1.99    | -0.00  | 4.91    | 30.21  | 148.26  |               |              |           |
| 8577.50 | 59.80   | 51.00 | 1.62    | -0.00  | 5.03    | 33.23  | 167.16  |               |              |           |
| 8578.00 | 54.99   | 51.00 | 0.87    | -0.00  | 4.68    | 37.22  | 174.22  |               |              |           |
| 8578.50 | 50.17   | 51.00 | 0.46    | -0.00  | 4.38    | 41.56  | 182.03  |               |              |           |
| 8579.00 | 45.89   | 51.00 | 0.41    | -0.00  | 4.51    | 43.61  | 196.54  |               |              |           |
| 8579.50 | 41.65   | 51.00 | 0.37    | -0.00  | 4.63    | 45.80  | 212.06  |               |              |           |

990000

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page No 6

| DEPTH   | V Shale  | Rho G | Perm     | Phi2nd | PhiE     | Sw     | PhiE*Sw  | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|----------|-------|----------|--------|----------|--------|----------|---------------|--------------|-----------|
| 8580.00 | 39.83    | 51.00 | 0.30     | -0.00  | 4.58     | 47.56  | 218.05   |               |              |           |
| 8580.50 | 42.39    | 51.00 | 1.01     | -0.00  | 5.61     | 41.93  | 235.11   |               |              |           |
| 8581.00 | 47.38    | 51.00 | 2.32     | -0.00  | 6.65     | 39.19  | 260.44   |               |              |           |
| 8581.50 | 52.20    | 51.00 | 3.87     | -0.00  | 7.37     | 40.57  | 298.99   |               |              |           |
| 8582.00 | 55.09    | 51.00 | 2.30     | -0.00  | 7.65     | 44.16  | 337.73   |               |              |           |
| 8582.50 | 47.72    | 51.00 | 1.95     | -0.00  | 8.16     | 48.15  | 392.96   |               |              |           |
| 8583.00 | 39.09    | 51.00 | 1.47     | -0.00  | 8.61     | 52.99  | 456.46   |               |              |           |
| 8583.50 | 31.82    | 51.00 | 1.19     | -0.00  | 8.97     | 56.59  | 507.66   |               |              |           |
| 8584.00 | 28.68    | 51.00 | 0.75     | -0.00  | 8.60     | 59.95  | 515.37   |               |              |           |
| 8584.50 | 25.53    | 51.00 | 0.48     | -0.00  | 8.02     | 62.09  | 497.94   |               |              |           |
| 8585.00 | 23.46    | 51.00 | 0.31     | -0.00  | 7.36     | 63.85  | 469.83   |               |              |           |
| 8585.50 | 24.33    | 51.00 | 0.35     | -0.00  | 6.96     | 60.54  | 421.12   |               |              |           |
| 8586.00 | 26.01    | 51.00 | 0.41     | -0.00  | 6.61     | 57.15  | 377.76   |               |              |           |
| 8586.50 | 27.69    | 51.00 | 0.18     | -0.00  | 6.78     | 66.79  | 452.94   |               |              |           |
| 8587.00 | 28.08    | 51.00 | 0.10     | -0.00  | 7.28     | 74.59  | 542.71   |               |              |           |
| 8587.50 | 27.14    | 51.00 | 0.30     | -0.00  | 8.53     | 69.07  | 589.35   |               |              |           |
| 8588.00 | 26.50    | 51.00 | 0.46     | -0.00  | 9.16     | 67.22  | 615.61   |               |              |           |
| 8588.50 | 26.30    | 51.00 | 0.31     | -0.00  | 8.53     | 68.76  | 586.79   |               |              |           |
| 8589.00 | 26.32    | 51.00 | 0.27     | -0.00  | 8.13     | 68.79  | 559.02   |               |              |           |
| 8589.50 | 26.89    | 51.00 | 0.30     | -0.00  | 7.94     | 66.56  | 528.66   |               |              |           |
| 8590.00 | 26.03    | 51.00 | 0.32     | -0.00  | 7.90     | 65.68  | 518.67   |               |              |           |
| 8590.50 | 25.18    | 51.00 | 0.25     | -0.00  | 7.86     | 68.22  | 536.03   |               |              |           |
| 8591.00 | 24.66    | 51.00 | 0.20     | -0.00  | 7.80     | 70.52  | 550.19   |               |              |           |
| 8591.50 | 24.61    | 51.00 | 0.71     | -0.00  | 9.16     | 62.68  | 574.17   |               |              |           |
| 8592.00 | 25.00    | 51.00 | 16.18    | -0.00  | 13.70    | 38.21  | 523.40   | 0.07          | 0.04         | 0.50      |
| 8592.50 | 25.48    | 51.00 | 50.52    | -0.00  | 15.94    | 25.18  | 401.33   | 0.15          | 0.10         | 1.00      |
| 8593.00 | 21.54    | 51.00 | 133.01   | -0.00  | 18.05    | 17.63  | 318.30   | 0.24          | 0.18         | 1.50      |
| 8593.50 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8594.00 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8594.50 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8595.00 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8595.50 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8596.00 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8596.50 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8597.00 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8597.50 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8598.00 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8598.50 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8599.00 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8599.50 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8600.00 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8600.50 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8601.00 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8601.50 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8602.00 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8602.50 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8603.00 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8603.50 | C 00 A L |       | C 00 A L |        | C 00 A L |        | C 00 A L |               |              |           |
| 8604.00 | 64.44    | 51.00 | 21.88    | -0.00  | 9.99     | 6.10   | 60.93    |               |              |           |
| 8604.50 | 100.00   | 51.00 | 0.01     | -0.00  | 0.00     | 100.00 | 0.00     |               |              |           |

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Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm    | Phi2nd | PhiE    | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|---------|--------|---------|--------|---------|---------------|--------------|-----------|
| 8605.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8605.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8606.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8606.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8607.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8607.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8608.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8608.50 | 97.09   | 51.00 | 0.03    | -0.00  | 1.16    | 25.45  | 29.62   |               |              |           |
| 8609.00 | 79.83   | 51.00 | 0.83    | -0.00  | 3.51    | 27.69  | 97.15   |               |              |           |
| 8609.50 | 72.80   | 51.00 | 0.79    | -0.00  | 3.69    | 29.98  | 110.75  |               |              |           |
| 8610.00 | 69.18   | 51.00 | 1.49    | -0.00  | 4.36    | 29.12  | 126.94  |               |              |           |
| 8610.50 | 66.85   | 51.00 | 2.81    | -0.00  | 5.06    | 27.68  | 139.94  |               |              |           |
| 8611.00 | 68.09   | 51.00 | 4.04    | -0.00  | 5.35    | 25.87  | 138.48  |               |              |           |
| 8611.50 | 69.33   | 51.00 | 5.67    | -0.00  | 5.65    | 24.23  | 136.95  |               |              |           |
| 8612.00 | 70.56   | 51.00 | 5.91    | -0.00  | 5.63    | 23.68  | 133.41  |               |              |           |
| 8612.50 | 72.25   | 51.00 | 5.75    | -0.00  | 5.51    | 23.19  | 127.72  |               |              |           |
| 8613.00 | 73.58   | 51.00 | 6.89    | -0.00  | 5.69    | 22.41  | 127.45  |               |              |           |
| 8613.50 | 68.91   | 51.00 | 4.66    | -0.00  | 6.29    | 29.99  | 188.56  |               |              |           |
| 8614.00 | 62.06   | 51.00 | 2.71    | -0.00  | 7.01    | 39.41  | 276.15  |               |              |           |
| 8614.50 | 54.52   | 51.00 | 1.42    | -0.00  | 7.77    | 49.72  | 386.34  |               |              |           |
| 8615.00 | 44.52   | 51.00 | 0.71    | -0.00  | 8.71    | 61.00  | 531.16  |               |              |           |
| 8615.50 | 34.37   | 51.00 | 0.11    | -0.00  | 9.66    | 84.38  | 814.78  |               |              |           |
| 8616.00 | 25.90   | 51.00 | 0.10    | -0.00  | 10.49   | 88.35  | 926.44  |               |              |           |
| 8616.50 | 18.88   | 51.00 | 0.11    | -0.00  | 11.15   | 88.57  | 987.54  |               |              |           |
| 8617.00 | 17.45   | 51.00 | 0.07    | -0.00  | 10.74   | 91.94  | 987.50  |               |              |           |
| 8617.50 | 28.71   | 51.00 | 0.06    | -0.00  | 9.44    | 88.94  | 839.38  |               |              |           |
| 8618.00 | 39.95   | 51.00 | 0.04    | -0.00  | 7.93    | 87.69  | 695.53  |               |              |           |
| 8618.50 | 58.61   | 51.00 | 0.02    | -0.00  | 5.80    | 83.41  | 484.01  |               |              |           |
| 8619.00 | 68.89   | 51.00 | 0.02    | -0.00  | 4.43    | 75.11  | 333.05  |               |              |           |
| 8619.50 | 73.63   | 51.00 | 0.02    | -0.00  | 3.51    | 67.14  | 235.83  |               |              |           |
| 8620.00 | 75.88   | 51.00 | 0.37    | -0.00  | 2.96    | 30.02  | 88.90   |               |              |           |
| 8620.50 | 71.45   | 51.00 | 1.44    | -0.00  | 3.54    | 22.23  | 78.65   |               |              |           |
| 8621.00 | 67.01   | 51.00 | 3.21    | -0.00  | 4.46    | 21.87  | 97.45   |               |              |           |
| 8621.50 | 62.58   | 51.00 | 2.65    | -0.00  | 5.26    | 29.62  | 155.72  |               |              |           |
| 8622.00 | 58.14   | 51.00 | 2.25    | -0.00  | 5.77    | 34.56  | 199.31  |               |              |           |
| 8622.50 | 54.55   | 51.00 | 4.07    | -0.00  | 6.79    | 34.07  | 231.29  |               |              |           |
| 8623.00 | 52.22   | 51.00 | 18.91   | -0.00  | 8.74    | 26.86  | 234.74  |               |              |           |
| 8623.50 | 53.53   | 51.00 | 21.63   | -0.00  | 11.54   | 19.01  | 219.32  |               |              |           |
| 8624.00 | 59.55   | 51.00 | 29.33   | -0.00  | 12.06   | 14.84  | 178.98  |               |              |           |
| 8624.50 | 64.43   | 51.00 | 24.13   | -0.00  | 11.07   | 12.58  | 139.32  |               |              |           |
| 8625.00 | 69.31   | 51.00 | 14.61   | -0.00  | 9.23    | 11.64  | 107.41  |               |              |           |
| 8625.50 | 71.76   | 51.00 | 49.79   | -0.00  | 8.14    | 14.31  | 116.47  |               |              |           |
| 8626.00 | 70.40   | 51.00 | 17.01   | -0.00  | 7.32    | 21.80  | 159.65  |               |              |           |
| 8626.50 | 65.24   | 51.00 | 16.04   | -0.00  | 8.78    | 28.73  | 252.24  |               |              |           |
| 8627.00 | 56.48   | 51.00 | 11.83   | -0.00  | 10.90   | 31.12  | 339.31  |               |              |           |
| 8627.50 | 44.88   | 51.00 | 29.02   | -0.00  | 13.84   | 26.00  | 359.80  |               |              |           |
| 8628.00 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 8628.50 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 8629.00 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 8629.50 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |

890000

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V | Shale | Rho G | Perm  | Phi2nd | PhiE | Sw    | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---|-------|-------|-------|--------|------|-------|---------|---------------|--------------|-----------|
| 8630.00 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8630.50 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8631.00 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8631.50 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8632.00 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8632.50 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8633.00 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8633.50 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8634.00 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8634.50 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8635.00 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8635.50 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8636.00 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8636.50 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8637.00 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8637.50 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8638.00 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8638.50 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8639.00 | C | 0 A L |       | C     | 0 A L  | C    | 0 A L | C       | 0 A L         |              |           |
| 8639.50 |   | 73.59 | 51.00 | 18.40 | -0.00  | 8.62 | 26.65 | 229.63  |               |              |           |
| 8640.00 |   | 78.40 | 51.00 | 7.69  | -0.00  | 7.12 | 29.12 | 207.47  |               |              |           |
| 8640.50 |   | 80.36 | 51.00 | 4.10  | -0.00  | 6.35 | 31.65 | 200.89  |               |              |           |
| 8641.00 |   | 82.15 | 51.00 | 1.91  | -0.00  | 5.58 | 35.11 | 196.02  |               |              |           |
| 8641.50 |   | 77.65 | 51.00 | 0.76  | -0.00  | 5.38 | 43.40 | 233.43  |               |              |           |
| 8642.00 |   | 68.93 | 51.00 | 0.31  | -0.00  | 5.55 | 53.87 | 298.94  |               |              |           |
| 8642.50 |   | 56.95 | 51.00 | 0.28  | -0.00  | 6.43 | 60.23 | 387.20  |               |              |           |
| 8643.00 |   | 48.91 | 51.00 | 0.41  | -0.00  | 7.08 | 59.53 | 421.40  |               |              |           |
| 8643.50 |   | 43.15 | 51.00 | 0.55  | -0.00  | 7.57 | 58.71 | 444.32  |               |              |           |
| 8644.00 |   | 43.83 | 51.00 | 0.49  | -0.00  | 7.54 | 59.68 | 449.89  |               |              |           |
| 8644.50 |   | 44.89 | 51.00 | 0.21  | -0.00  | 7.01 | 66.08 | 463.49  |               |              |           |
| 8645.00 |   | 44.49 | 51.00 | 0.16  | -0.00  | 6.91 | 68.73 | 475.29  |               |              |           |
| 8645.50 |   | 34.66 | 51.00 | 0.18  | -0.00  | 7.57 | 70.62 | 534.79  |               |              |           |
| 8646.00 |   | 30.43 | 51.00 | 0.20  | -0.00  | 7.84 | 70.48 | 552.29  |               |              |           |
| 8646.50 |   | 28.76 | 51.00 | 0.25  | -0.00  | 7.78 | 67.81 | 527.23  |               |              |           |
| 8647.00 |   | 31.53 | 51.00 | 0.29  | -0.00  | 7.38 | 64.51 | 476.11  |               |              |           |
| 8647.50 |   | 32.84 | 51.00 | 0.30  | -0.00  | 7.09 | 62.63 | 443.91  |               |              |           |
| 8648.00 |   | 32.43 | 51.00 | 0.18  | -0.00  | 6.70 | 66.02 | 442.65  |               |              |           |
| 8648.50 |   | 28.70 | 51.00 | 0.05  | -0.00  | 6.01 | 76.01 | 456.56  |               |              |           |
| 8649.00 |   | 24.73 | 51.00 | 0.01  | -0.00  | 5.52 | 87.01 | 479.99  |               |              |           |
| 8649.50 |   | 20.37 | 51.00 | 0.01  | -0.00  | 5.38 | 95.63 | 514.13  |               |              |           |
| 8650.00 |   | 15.74 | 51.00 | 0.03  | -0.00  | 6.48 | 84.12 | 545.05  |               |              |           |
| 8650.50 |   | 15.62 | 51.00 | 0.29  | -0.00  | 7.89 | 66.90 | 528.07  |               |              |           |
| 8651.00 |   | 25.59 | 51.00 | 1.85  | -0.00  | 8.71 | 51.00 | 444.27  |               |              |           |
| 8651.50 |   | 35.63 | 51.00 | 4.77  | -0.00  | 8.77 | 41.34 | 362.64  |               |              |           |
| 8652.00 |   | 46.96 | 51.00 | 8.74  | -0.00  | 8.25 | 32.88 | 271.14  |               |              |           |
| 8652.50 |   | 58.46 | 51.00 | 18.44 | -0.00  | 7.30 | 20.88 | 152.50  |               |              |           |
| 8653.00 |   | 69.29 | 51.00 | 16.48 | -0.00  | 6.33 | 17.07 | 108.07  |               |              |           |
| 8653.50 |   | 67.04 | 51.00 | 12.84 | -0.00  | 6.07 | 18.18 | 110.30  |               |              |           |
| 8654.00 |   | 60.35 | 51.00 | 8.78  | -0.00  | 6.11 | 22.41 | 137.00  |               |              |           |
| 8654.50 |   | 56.47 | 51.00 | 5.66  | -0.00  | 5.96 | 26.12 | 155.79  |               |              |           |

690000

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm | Phi2nd | PhiE  | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|------|--------|-------|--------|---------|---------------|--------------|-----------|
| 8655.00 | 53.37   | 51.00 | 4.30 | -0.00  | 5.80  | 28.01  | 162.45  |               |              |           |
| 8655.50 | 55.28   | 51.00 | 3.83 | -0.00  | 5.35  | 26.40  | 141.14  |               |              |           |
| 8656.00 | 57.31   | 51.00 | 2.77 | -0.00  | 4.89  | 26.61  | 130.03  |               |              |           |
| 8656.50 | 59.33   | 51.00 | 1.35 | -0.00  | 4.93  | 34.40  | 169.54  |               |              |           |
| 8657.00 | 61.36   | 51.00 | 0.62 | -0.00  | 5.43  | 45.85  | 248.72  |               |              |           |
| 8657.50 | 52.83   | 51.00 | 0.13 | -0.00  | 6.66  | 69.33  | 461.99  |               |              |           |
| 8658.00 | 39.13   | 51.00 | 0.03 | -0.00  | 7.92  | 91.99  | 728.83  |               |              |           |
| 8658.50 | 27.57   | 51.00 | 0.02 | -0.00  | 8.81  | 100.00 | 881.25  |               |              |           |
| 8659.00 | 21.82   | 51.00 | 0.02 | -0.00  | 9.11  | 100.00 | 911.44  |               |              |           |
| 8659.50 | 19.20   | 51.00 | 0.02 | -0.00  | 9.20  | 100.00 | 919.55  |               |              |           |
| 8660.00 | 18.07   | 51.00 | 0.02 | -0.00  | 9.18  | 100.00 | 918.01  |               |              |           |
| 8660.50 | 17.69   | 51.00 | 0.02 | -0.00  | 9.32  | 100.00 | 931.74  |               |              |           |
| 8661.00 | 17.11   | 51.00 | 0.02 | -0.00  | 9.47  | 100.00 | 946.91  |               |              |           |
| 8661.50 | 15.23   | 51.00 | 0.02 | -0.00  | 9.71  | 100.00 | 971.16  |               |              |           |
| 8662.00 | 13.36   | 51.00 | 0.03 | -0.00  | 9.92  | 100.00 | 992.30  |               |              |           |
| 8662.50 | 12.27   | 51.00 | 0.03 | -0.00  | 10.06 | 100.00 | 1006.40 |               |              |           |
| 8663.00 | 12.74   | 51.00 | 0.03 | -0.00  | 10.09 | 100.00 | 1009.47 |               |              |           |
| 8663.50 | 13.42   | 51.00 | 0.03 | -0.00  | 10.11 | 100.00 | 1011.15 |               |              |           |
| 8664.00 | 17.48   | 51.00 | 0.03 | -0.00  | 9.89  | 100.00 | 989.03  |               |              |           |
| 8664.50 | 21.54   | 51.00 | 0.04 | -0.00  | 9.67  | 93.48  | 903.84  |               |              |           |
| 8665.00 | 22.28   | 51.00 | 0.02 | -0.00  | 8.58  | 97.01  | 832.67  |               |              |           |
| 8665.50 | 21.21   | 51.00 | 0.01 | -0.00  | 7.52  | 100.00 | 751.90  |               |              |           |
| 8666.00 | 19.50   | 51.00 | 0.01 | -0.00  | 6.49  | 100.00 | 648.66  |               |              |           |
| 8666.50 | 14.99   | 51.00 | 0.01 | -0.00  | 5.90  | 100.00 | 590.43  |               |              |           |
| 8667.00 | 10.82   | 51.00 | 0.01 | -0.00  | 5.88  | 100.00 | 588.00  |               |              |           |
| 8667.50 | 6.94    | 51.00 | 0.03 | -0.00  | 6.85  | 84.75  | 580.16  |               |              |           |
| 8668.00 | 3.24    | 51.00 | 0.04 | -0.00  | 7.72  | 86.77  | 669.92  |               |              |           |
| 8668.50 | 2.36    | 51.00 | 0.02 | -0.00  | 7.64  | 95.80  | 732.05  |               |              |           |
| 8669.00 | 1.49    | 51.00 | 0.01 | -0.00  | 7.60  | 100.00 | 759.67  |               |              |           |
| 8669.50 | 0.61    | 51.00 | 0.01 | -0.00  | 7.57  | 100.00 | 756.75  |               |              |           |
| 8670.00 | 1.86    | 51.00 | 0.01 | -0.00  | 7.39  | 100.00 | 738.91  |               |              |           |
| 8670.50 | 3.91    | 51.00 | 0.01 | -0.00  | 7.22  | 100.00 | 722.35  |               |              |           |
| 8671.00 | 5.96    | 51.00 | 0.01 | -0.00  | 7.24  | 100.00 | 723.90  |               |              |           |
| 8671.50 | 8.01    | 51.00 | 0.01 | -0.00  | 7.30  | 100.00 | 730.16  |               |              |           |
| 8672.00 | 10.07   | 51.00 | 0.01 | -0.00  | 7.43  | 100.00 | 742.91  |               |              |           |
| 8672.50 | 12.12   | 51.00 | 0.01 | -0.00  | 7.50  | 100.00 | 750.12  |               |              |           |
| 8673.00 | 14.17   | 51.00 | 0.02 | -0.00  | 7.33  | 93.62  | 685.81  |               |              |           |
| 8673.50 | 24.75   | 51.00 | 0.03 | -0.00  | 6.55  | 84.31  | 552.15  |               |              |           |
| 8674.00 | 35.13   | 51.00 | 0.03 | -0.00  | 5.60  | 77.44  | 433.65  |               |              |           |
| 8674.50 | 34.06   | 51.00 | 0.04 | -0.00  | 5.58  | 76.56  | 426.99  |               |              |           |
| 8675.00 | 26.64   | 51.00 | 0.04 | -0.00  | 6.28  | 79.86  | 501.68  |               |              |           |
| 8675.50 | 21.87   | 51.00 | 0.03 | -0.00  | 6.74  | 83.41  | 562.07  |               |              |           |
| 8676.00 | 17.11   | 51.00 | 0.04 | -0.00  | 7.34  | 85.48  | 627.27  |               |              |           |
| 8676.50 | 13.76   | 51.00 | 0.08 | -0.00  | 8.37  | 82.31  | 689.11  |               |              |           |
| 8677.00 | 10.48   | 51.00 | 0.08 | -0.00  | 9.40  | 86.12  | 809.62  |               |              |           |
| 8677.50 | 7.78    | 51.00 | 0.07 | -0.00  | 10.11 | 90.85  | 918.65  |               |              |           |
| 8678.00 | 8.97    | 51.00 | 0.05 | -0.00  | 10.25 | 94.11  | 964.31  |               |              |           |
| 8678.50 | 14.11   | 51.00 | 0.03 | -0.00  | 9.69  | 98.61  | 955.90  |               |              |           |
| 8679.00 | 17.36   | 51.00 | 0.04 | -0.00  | 9.02  | 92.21  | 832.06  |               |              |           |
| 8679.50 | 18.93   | 51.00 | 0.04 | -0.00  | 8.42  | 88.64  | 746.66  |               |              |           |

000070

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm | Phi2nd | PhiE  | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|------|--------|-------|--------|---------|---------------|--------------|-----------|
| 8680.00 | 20.50   | 51.00 | 0.05 | -0.00  | 7.88  | 85.53  | 673.93  |               |              |           |
| 8680.50 | 19.26   | 51.00 | 0.06 | -0.00  | 7.70  | 83.07  | 639.24  |               |              |           |
| 8681.00 | 16.66   | 51.00 | 0.05 | -0.00  | 7.54  | 83.90  | 632.82  |               |              |           |
| 8681.50 | 13.69   | 51.00 | 0.04 | -0.00  | 7.36  | 85.59  | 629.83  |               |              |           |
| 8682.00 | 10.62   | 51.00 | 0.01 | -0.00  | 7.03  | 94.23  | 662.24  |               |              |           |
| 8682.50 | 8.00    | 51.00 | 0.01 | -0.00  | 6.94  | 100.00 | 693.76  |               |              |           |
| 8683.00 | 8.63    | 51.00 | 0.01 | -0.00  | 6.93  | 100.00 | 692.54  |               |              |           |
| 8683.50 | 9.26    | 51.00 | 0.01 | -0.00  | 7.11  | 100.00 | 710.61  |               |              |           |
| 8684.00 | 9.89    | 51.00 | 0.01 | -0.00  | 7.46  | 100.00 | 745.92  |               |              |           |
| 8684.50 | 14.42   | 51.00 | 0.03 | -0.00  | 7.96  | 91.67  | 729.83  |               |              |           |
| 8685.00 | 18.95   | 51.00 | 0.08 | -0.00  | 8.46  | 82.93  | 701.91  |               |              |           |
| 8685.50 | 25.18   | 51.00 | 0.17 | -0.00  | 8.70  | 75.76  | 659.01  |               |              |           |
| 8686.00 | 31.86   | 51.00 | 0.26 | -0.00  | 8.90  | 71.98  | 640.45  |               |              |           |
| 8686.50 | 35.12   | 51.00 | 0.21 | -0.00  | 9.20  | 75.31  | 692.54  |               |              |           |
| 8687.00 | 26.40   | 51.00 | 0.09 | -0.00  | 9.98  | 86.91  | 866.99  |               |              |           |
| 8687.50 | 13.83   | 51.00 | 0.03 | -0.00  | 10.69 | 100.00 | 1069.48 |               |              |           |
| 8688.00 | 3.19    | 51.00 | 0.04 | -0.00  | 11.28 | 100.00 | 1127.89 |               |              |           |
| 8688.50 | 0.00    | 51.00 | 0.04 | -0.00  | 11.34 | 100.00 | 1133.72 |               |              |           |
| 8689.00 | 0.00    | 51.00 | 0.04 | -0.00  | 11.17 | 100.00 | 1116.54 |               |              |           |
| 8689.50 | 0.00    | 51.00 | 0.04 | -0.00  | 10.99 | 100.00 | 1099.36 |               |              |           |
| 8690.00 | 0.00    | 51.00 | 0.03 | -0.00  | 10.82 | 100.00 | 1082.18 |               |              |           |
| 8690.50 | 1.84    | 51.00 | 0.03 | -0.00  | 10.17 | 100.00 | 1016.59 |               |              |           |
| 8691.00 | 5.69    | 51.00 | 0.02 | -0.00  | 9.33  | 100.00 | 932.67  |               |              |           |
| 8691.50 | 8.16    | 51.00 | 0.02 | -0.00  | 8.59  | 100.00 | 858.53  |               |              |           |
| 8692.00 | 10.33   | 51.00 | 0.01 | -0.00  | 8.17  | 99.63  | 813.72  |               |              |           |
| 8692.50 | 15.18   | 51.00 | 0.02 | -0.00  | 7.79  | 93.23  | 726.54  |               |              |           |
| 8693.00 | 28.56   | 51.00 | 0.04 | -0.00  | 6.83  | 83.66  | 571.77  |               |              |           |
| 8693.50 | 41.07   | 51.00 | 0.09 | -0.00  | 6.09  | 70.14  | 427.50  |               |              |           |
| 8694.00 | 65.79   | 51.00 | 0.19 | -0.00  | 5.21  | 56.54  | 294.40  |               |              |           |
| 8694.50 | 83.59   | 51.00 | 0.97 | -0.00  | 4.53  | 34.89  | 157.93  |               |              |           |
| 8695.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8695.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8696.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8696.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8697.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8697.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8698.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8698.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8699.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8699.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8700.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8700.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8701.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8701.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8702.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8702.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8703.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8703.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8704.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8704.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |

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Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm    | Phi2nd | PhiE    | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|---------|--------|---------|--------|---------|---------------|--------------|-----------|
| 8705.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8705.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8706.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8706.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8707.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8707.50 | 92.61   | 51.00 | 0.01    | -0.00  | 1.65    | 44.72  | 73.57   |               |              |           |
| 8708.00 | 84.09   | 51.00 | 0.12    | -0.00  | 2.78    | 39.38  | 109.40  |               |              |           |
| 8708.50 | 92.49   | 51.00 | 0.47    | -0.00  | 3.00    | 28.18  | 84.62   |               |              |           |
| 8709.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8709.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8710.00 | 97.33   | 51.00 | 0.01    | -0.00  | 1.07    | 54.89  | 58.65   |               |              |           |
| 8710.50 | 84.69   | 51.00 | 0.49    | -0.00  | 4.07    | 38.20  | 155.44  |               |              |           |
| 8711.00 | 80.49   | 51.00 | 0.47    | -0.00  | 4.28    | 40.39  | 172.87  |               |              |           |
| 8711.50 | 93.00   | 51.00 | 0.17    | -0.00  | 2.80    | 36.28  | 101.58  |               |              |           |
| 8712.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8712.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8713.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8713.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8714.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8714.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8715.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8715.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8716.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8716.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8717.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8717.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8718.00 | 81.64   | 51.00 | 2.28    | -0.00  | 5.90    | 35.21  | 207.65  |               |              |           |
| 8718.50 | 68.09   | 51.00 | 0.82    | -0.00  | 6.32    | 48.30  | 305.39  |               |              |           |
| 8719.00 | 58.45   | 51.00 | 0.30    | -0.00  | 6.54    | 59.96  | 392.24  |               |              |           |
| 8719.50 | 48.83   | 51.00 | 0.11    | -0.00  | 6.76    | 71.22  | 481.38  |               |              |           |
| 8720.00 | 40.97   | 51.00 | 0.04    | -0.00  | 6.87    | 82.64  | 567.74  |               |              |           |
| 8720.50 | 35.48   | 51.00 | 0.04    | -0.00  | 7.18    | 84.16  | 604.30  |               |              |           |
| 8721.00 | 32.43   | 51.00 | 0.04    | -0.00  | 7.39    | 85.04  | 628.32  |               |              |           |
| 8721.50 | 33.99   | 51.00 | 0.03    | -0.00  | 7.21    | 85.97  | 620.05  |               |              |           |
| 8722.00 | 37.89   | 51.00 | 0.05    | -0.00  | 6.89    | 80.14  | 552.52  |               |              |           |
| 8722.50 | 42.06   | 51.00 | 0.09    | -0.00  | 6.66    | 73.08  | 486.49  |               |              |           |
| 8723.00 | 46.23   | 51.00 | 0.18    | -0.00  | 6.47    | 64.62  | 418.02  |               |              |           |
| 8723.50 | 54.51   | 51.00 | 0.30    | -0.00  | 6.03    | 57.06  | 344.26  |               |              |           |
| 8724.00 | 65.02   | 51.00 | 0.47    | -0.00  | 5.49    | 49.25  | 270.31  |               |              |           |
| 8724.50 | 76.91   | 51.00 | 0.60    | -0.00  | 4.91    | 42.72  | 209.91  |               |              |           |
| 8725.00 | 85.10   | 51.00 | 0.86    | -0.00  | 4.56    | 36.38  | 165.98  |               |              |           |
| 8725.50 | 88.45   | 51.00 | 1.21    | -0.00  | 4.50    | 32.37  | 145.73  |               |              |           |
| 8726.00 | 91.24   | 51.00 | 0.44    | -0.00  | 3.51    | 34.23  | 119.99  |               |              |           |
| 8726.50 | 93.94   | 51.00 | 0.09    | -0.00  | 2.42    | 38.43  | 93.16   |               |              |           |
| 8727.00 | 96.60   | 51.00 | 0.01    | -0.00  | 1.36    | 43.01  | 58.43   |               |              |           |
| 8727.50 | 99.13   | 51.00 | 0.01    | -0.00  | 0.35    | 57.69  | 20.17   |               |              |           |
| 8728.00 | 99.25   | 51.00 | 0.01    | -0.00  | 0.30    | 50.94  | 15.20   |               |              |           |
| 8728.50 | 76.77   | 51.00 | 14.31   | -0.00  | 9.29    | 12.96  | 120.46  |               |              |           |
| 8729.00 | C O A L |       | C O A L |        | C O A L |        | C O A L |               |              |           |
| 8729.50 | C O A L |       | C O A L |        | C O A L |        | C O A L |               |              |           |

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Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm    | Phi2nd | PhiE    | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|---------|--------|---------|--------|---------|---------------|--------------|-----------|
|         | C D A L |       | C D A L |        | C D A L |        | C D A L | C D A L       |              |           |
| 8730.00 |         |       |         |        |         |        |         |               |              |           |
| 8730.50 | 24.70   | 51.00 | 31.35   | -0.00  | 14.22   | 26.35  | 374.71  | 0.31          | 0.23         | 2.00      |
| 8731.00 | 26.97   | 51.00 | 12.54   | -0.00  | 12.53   | 38.64  | 484.19  | 0.37          | 0.27         | 2.50      |
| 8731.50 | 30.07   | 51.00 | 6.76    | -0.00  | 11.58   | 47.38  | 548.67  |               |              |           |
| 8732.00 | 35.52   | 51.00 | 5.85    | -0.00  | 10.61   | 45.83  | 486.14  |               |              |           |
| 8732.50 | 43.81   | 51.00 | 7.10    | -0.00  | 9.79    | 41.04  | 401.81  |               |              |           |
| 8733.00 | 53.23   | 51.00 | 12.16   | -0.00  | 9.45    | 34.19  | 323.06  |               |              |           |
| 8733.50 | 63.20   | 51.00 | 21.09   | -0.00  | 9.18    | 27.42  | 251.61  |               |              |           |
| 8734.00 | 71.07   | 51.00 | 10.50   | -0.00  | 9.11    | 21.56  | 196.43  |               |              |           |
| 8734.50 | 78.53   | 51.00 | 10.38   | -0.00  | 8.59    | 17.17  | 147.49  |               |              |           |
| 8735.00 | 85.53   | 51.00 | 11.98   | -0.00  | 5.77    | 17.14  | 98.87   |               |              |           |
| 8735.50 | 89.88   | 51.00 | 2.65    | -0.00  | 4.05    | 20.56  | 83.26   |               |              |           |
| 8736.00 | 88.98   | 51.00 | 3.43    | -0.00  | 4.41    | 20.80  | 91.65   |               |              |           |
| 8736.50 | 88.16   | 51.00 | 1.23    | -0.00  | 3.79    | 26.20  | 99.32   |               |              |           |
| 8737.00 | 88.31   | 51.00 | 0.16    | -0.00  | 2.92    | 38.37  | 112.14  |               |              |           |
| 8737.50 | 88.45   | 51.00 | 0.07    | -0.00  | 3.26    | 50.56  | 165.04  |               |              |           |
| 8738.00 | 88.59   | 51.00 | 0.12    | -0.00  | 3.85    | 50.95  | 196.32  |               |              |           |
| 8738.50 | 30.78   | 51.00 | 0.22    | -0.00  | 7.97    | 70.13  | 558.80  |               |              |           |
| 8739.00 | 23.27   | 51.00 | 0.32    | -0.00  | 7.05    | 70.64  | 639.41  |               |              |           |
| 8739.50 | 18.35   | 51.00 | 0.34    | -0.00  | 9.61    | 72.17  | 693.71  |               |              |           |
| 8740.00 | 15.66   | 51.00 | 0.33    | -0.00  | 10.01   | 73.79  | 738.93  |               |              |           |
| 8740.50 | 13.66   | 51.00 | 0.28    | -0.00  | 10.27   | 76.21  | 782.34  |               |              |           |
| 8741.00 | 11.65   | 51.00 | 0.52    | -0.00  | 10.52   | 70.78  | 744.30  |               |              |           |
| 8741.50 | 9.67    | 51.00 | 0.87    | -0.00  | 10.65   | 65.89  | 702.03  |               |              |           |
| 8742.00 | 11.82   | 51.00 | 1.85    | -0.00  | 10.32   | 56.87  | 586.86  |               |              |           |
| 8742.50 | 24.69   | 51.00 | 3.53    | -0.00  | 9.37    | 46.60  | 436.69  |               |              |           |
| 8743.00 | 38.23   | 51.00 | 6.97    | -0.00  | 8.39    | 35.85  | 300.89  |               |              |           |
| 8743.50 | 51.91   | 51.00 | 14.26   | -0.00  | 8.03    | 26.86  | 215.74  |               |              |           |
| 8744.00 | 61.47   | 51.00 | 28.24   | -0.00  | 8.25    | 20.68  | 170.66  |               |              |           |
| 8744.50 | 70.62   | 51.00 | 13.13   | -0.00  | 9.19    | 14.78  | 135.81  |               |              |           |
| 8745.00 | 79.78   | 51.00 | 10.28   | -0.00  | 8.09    | 12.41  | 100.36  |               |              |           |
| 8745.50 | 88.39   | 51.00 | 5.79    | -0.00  | 4.65    | 17.17  | 79.78   |               |              |           |
| 8746.00 | 94.92   | 51.00 | 0.11    | -0.00  | 2.03    | 29.24  | 59.41   |               |              |           |
| 8746.50 | 94.00   | 51.00 | 0.13    | -0.00  | 2.40    | 33.85  | 81.21   |               |              |           |
| 8747.00 | 90.55   | 51.00 | 0.81    | -0.00  | 3.78    | 30.46  | 115.13  |               |              |           |
| 8747.50 | 91.02   | 51.00 | 0.56    | -0.00  | 3.59    | 32.56  | 116.95  |               |              |           |
| 8748.00 | 97.40   | 51.00 | 0.01    | -0.00  | 1.04    | 55.31  | 57.48   |               |              |           |
| 8748.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8749.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8749.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8750.00 | 94.96   | 51.00 | 0.04    | -0.00  | 2.02    | 39.82  | 80.31   |               |              |           |
| 8750.50 | 83.35   | 51.00 | 0.12    | -0.00  | 3.16    | 44.33  | 139.92  |               |              |           |
| 8751.00 | 83.12   | 51.00 | 0.04    | -0.00  | 2.64    | 49.82  | 131.45  |               |              |           |
| 8751.50 | 86.35   | 51.00 | 0.01    | -0.00  | 2.00    | 54.65  | 109.05  |               |              |           |
| 8752.00 | 94.36   | 51.00 | 0.02    | -0.00  | 1.76    | 41.07  | 72.16   |               |              |           |
| 8752.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8753.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8753.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8754.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8754.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |

000073

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm | Phi2nd | PhiE  | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|------|--------|-------|--------|---------|---------------|--------------|-----------|
| 8755.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8755.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8756.00 | 73.76   | 51.00 | 9.65 | -0.00  | 7.25  | 27.34  | 198.11  |               |              |           |
| 8756.50 | 56.80   | 51.00 | 5.12 | -0.00  | 7.70  | 36.07  | 277.75  |               |              |           |
| 8757.00 | 50.58   | 51.00 | 2.29 | -0.00  | 7.54  | 43.69  | 329.27  |               |              |           |
| 8757.50 | 46.73   | 51.00 | 1.33 | -0.00  | 7.50  | 49.19  | 369.11  |               |              |           |
| 8758.00 | 45.49   | 51.00 | 0.84 | -0.00  | 7.31  | 53.06  | 388.06  |               |              |           |
| 8758.50 | 46.34   | 51.00 | 0.70 | -0.00  | 7.06  | 53.79  | 379.77  |               |              |           |
| 8759.00 | 49.93   | 51.00 | 0.65 | -0.00  | 6.67  | 52.59  | 350.94  |               |              |           |
| 8759.50 | 55.39   | 51.00 | 0.76 | -0.00  | 6.17  | 48.19  | 297.46  |               |              |           |
| 8760.00 | 60.85   | 51.00 | 0.85 | -0.00  | 5.66  | 44.09  | 249.57  |               |              |           |
| 8760.50 | 66.07   | 51.00 | 0.81 | -0.00  | 5.16  | 41.29  | 213.07  |               |              |           |
| 8761.00 | 71.08   | 51.00 | 0.68 | -0.00  | 4.67  | 39.71  | 185.57  |               |              |           |
| 8761.50 | 71.76   | 51.00 | 0.60 | -0.00  | 4.44  | 39.12  | 173.61  |               |              |           |
| 8762.00 | 70.64   | 51.00 | 0.60 | -0.00  | 4.42  | 39.10  | 172.80  |               |              |           |
| 8762.50 | 69.53   | 51.00 | 1.06 | -0.00  | 4.83  | 36.24  | 174.96  |               |              |           |
| 8763.00 | 75.29   | 51.00 | 1.60 | -0.00  | 4.82  | 31.86  | 153.57  |               |              |           |
| 8763.50 | 83.25   | 51.00 | 2.01 | -0.00  | 4.51  | 27.20  | 122.74  |               |              |           |
| 8764.00 | 91.20   | 51.00 | 1.16 | -0.00  | 3.52  | 24.26  | 85.36   |               |              |           |
| 8764.50 | 91.78   | 51.00 | 0.95 | -0.00  | 3.29  | 23.99  | 78.91   |               |              |           |
| 8765.00 | 90.58   | 51.00 | 1.84 | -0.00  | 3.77  | 21.81  | 82.16   |               |              |           |
| 8765.50 | 92.09   | 51.00 | 0.96 | -0.00  | 3.16  | 22.52  | 71.28   |               |              |           |
| 8766.00 | 95.09   | 51.00 | 0.14 | -0.00  | 1.96  | 26.24  | 51.53   |               |              |           |
| 8766.50 | 96.60   | 51.00 | 0.03 | -0.00  | 1.36  | 29.00  | 39.39   |               |              |           |
| 8767.00 | 98.28   | 51.00 | 0.01 | -0.00  | 0.69  | 35.41  | 24.34   |               |              |           |
| 8767.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8768.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8768.50 | 96.54   | 51.00 | 0.01 | -0.00  | 1.38  | 39.53  | 54.73   |               |              |           |
| 8769.00 | 85.37   | 51.00 | 4.53 | -0.00  | 5.68  | 26.75  | 151.92  |               |              |           |
| 8769.50 | 27.19   | 51.00 | 0.33 | -0.00  | 9.86  | 73.35  | 723.42  |               |              |           |
| 8770.00 | 21.31   | 51.00 | 0.60 | -0.00  | 10.90 | 70.46  | 768.06  |               |              |           |
| 8770.50 | 25.55   | 51.00 | 1.08 | -0.00  | 11.34 | 65.77  | 745.77  |               |              |           |
| 8771.00 | 36.67   | 51.00 | 1.86 | -0.00  | 11.20 | 59.63  | 667.83  |               |              |           |
| 8771.50 | 61.13   | 51.00 | 3.85 | -0.00  | 9.97  | 48.03  | 478.91  |               |              |           |
| 8772.00 | 81.17   | 51.00 | 3.22 | -0.00  | 7.53  | 40.14  | 302.40  |               |              |           |
| 8772.50 | 94.99   | 51.00 | 0.01 | -0.00  | 2.00  | 57.19  | 114.61  |               |              |           |
| 8773.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8773.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8774.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8774.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8775.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8775.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8776.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8776.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8777.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8777.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8778.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8778.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8779.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8779.50 | 86.06   | 51.00 | 1.08 | -0.00  | 4.77  | 35.61  | 169.83  |               |              |           |

000074

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm  | Phi2nd | PhiE  | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|-------|--------|-------|--------|---------|---------------|--------------|-----------|
| 8780.00 | 75.79   | 51.00 | 0.43  | -0.00  | 5.15  | 47.90  | 246.58  |               |              |           |
| 8780.50 | 66.65   | 51.00 | 0.20  | -0.00  | 5.46  | 57.93  | 316.41  |               |              |           |
| 8781.00 | 57.51   | 51.00 | 0.12  | -0.00  | 5.79  | 64.89  | 375.98  |               |              |           |
| 8781.50 | 50.01   | 51.00 | 0.09  | -0.00  | 6.03  | 69.81  | 420.82  |               |              |           |
| 8782.00 | 45.09   | 51.00 | 0.06  | -0.00  | 6.11  | 74.06  | 452.21  |               |              |           |
| 8782.50 | 42.90   | 51.00 | 0.07  | -0.00  | 6.33  | 74.66  | 472.58  |               |              |           |
| 8783.00 | 40.71   | 51.00 | 0.08  | -0.00  | 6.66  | 74.18  | 493.68  |               |              |           |
| 8783.50 | 38.46   | 51.00 | 0.10  | -0.00  | 6.98  | 73.80  | 515.40  |               |              |           |
| 8784.00 | 36.62   | 51.00 | 0.13  | -0.00  | 7.36  | 72.87  | 536.11  |               |              |           |
| 8784.50 | 47.53   | 51.00 | 0.14  | -0.00  | 6.97  | 69.70  | 485.51  |               |              |           |
| 8785.00 | 58.57   | 51.00 | 0.16  | -0.00  | 5.92  | 62.89  | 372.30  |               |              |           |
| 8785.50 | 87.58   | 51.00 | 0.04  | -0.00  | 3.15  | 55.65  | 175.30  |               |              |           |
| 8786.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8786.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8787.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8787.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8788.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8788.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8789.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8789.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8790.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8790.50 | 94.40   | 51.00 | 0.11  | -0.00  | 2.24  | 32.77  | 73.42   |               |              |           |
| 8791.00 | 85.09   | 51.00 | 0.47  | -0.00  | 3.50  | 33.34  | 116.55  |               |              |           |
| 8791.50 | 82.82   | 51.00 | 1.13  | -0.00  | 4.10  | 29.91  | 122.75  |               |              |           |
| 8792.00 | 87.45   | 51.00 | 2.26  | -0.00  | 4.30  | 24.26  | 104.26  |               |              |           |
| 8792.50 | 92.56   | 51.00 | 0.57  | -0.00  | 2.98  | 25.82  | 76.89   |               |              |           |
| 8793.00 | 97.52   | 51.00 | 0.01  | -0.00  | 0.99  | 39.93  | 39.67   |               |              |           |
| 8793.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8794.00 | 92.31   | 51.00 | 0.24  | -0.00  | 3.08  | 35.95  | 110.61  |               |              |           |
| 8794.50 | 79.88   | 51.00 | 4.43  | -0.00  | 6.55  | 31.94  | 209.29  |               |              |           |
| 8795.00 | 73.06   | 51.00 | 2.87  | -0.00  | 6.59  | 36.64  | 241.35  |               |              |           |
| 8795.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8796.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8796.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8797.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8797.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8798.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8798.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8799.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8799.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8800.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8800.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8801.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8801.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8802.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8802.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8803.00 | 75.19   | 51.00 | 1.27  | -0.00  | 5.81  | 40.76  | 236.86  |               |              |           |
| 8803.50 | 56.88   | 51.00 | 2.07  | -0.00  | 7.54  | 44.79  | 337.89  |               |              |           |
| 8804.00 | 37.31   | 51.00 | 13.12 | -0.00  | 10.72 | 37.80  | 405.34  |               |              |           |
| 8804.50 | 32.19   | 51.00 | 23.20 | -0.00  | 13.65 | 29.98  | 409.19  |               |              |           |

000075

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm    | Phi2nd | PhiE    | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|---------|--------|---------|--------|---------|---------------|--------------|-----------|
| 8805.00 | 37.84   | 51.00 | 31.66   | -0.00  | 14.27   | 26.37  | 376.16  |               |              |           |
| 8805.50 | 43.49   | 51.00 | 38.94   | -0.00  | 14.58   | 23.64  | 344.74  |               |              |           |
| 8806.00 | 74.46   | 51.00 | 14.00   | -0.00  | 10.22   | 21.47  | 219.32  |               |              |           |
| 8806.50 | 88.79   | 51.00 | 0.66    | -0.00  | 4.48    | 38.55  | 172.82  |               |              |           |
| 8807.00 | 80.75   | 51.00 | 5.91    | -0.00  | 7.70    | 34.58  | 266.26  |               |              |           |
| 8807.50 | 59.31   | 51.00 | 2.48    | -0.00  | 8.62    | 47.55  | 410.02  |               |              |           |
| 8808.00 | 39.76   | 51.00 | 4.98    | -0.00  | 10.20   | 46.13  | 470.38  |               |              |           |
| 8808.50 | 39.39   | 51.00 | 13.08   | -0.00  | 11.95   | 34.61  | 413.70  |               |              |           |
| 8809.00 | 57.72   | 51.00 | 56.70   | -0.00  | 14.91   | 17.65  | 263.09  |               |              |           |
| 8809.50 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 8810.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8810.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8811.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8811.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8812.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8812.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8813.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8813.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8814.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8814.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8815.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8815.50 | 83.41   | 51.00 | 0.95    | -0.00  | 4.13    | 31.95  | 132.06  |               |              |           |
| 8816.00 | 64.76   | 51.00 | 0.27    | -0.00  | 4.31    | 46.62  | 200.81  |               |              |           |
| 8816.50 | 64.77   | 51.00 | 1.43    | -0.00  | 5.42    | 37.12  | 201.03  |               |              |           |
| 8817.00 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 8817.50 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 8818.00 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 8818.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8819.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8819.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8820.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8820.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8821.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8821.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8822.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8822.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8823.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8823.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8824.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8824.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8825.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8825.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8826.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8826.50 | 98.52   | 51.00 | 0.01    | -0.00  | 0.59    | 68.77  | 40.68   |               |              |           |
| 8827.00 | 89.00   | 51.00 | 1.63    | -0.00  | 4.40    | 28.50  | 125.41  |               |              |           |
| 8827.50 | 77.95   | 51.00 | 10.62   | -0.00  | 8.82    | 18.56  | 163.68  |               |              |           |
| 8828.00 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 8828.50 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 8829.00 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 8829.50 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |

000076

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale   | Rho G | Perm      | Phi2nd | PhiE      | Sw     | PhiE*Sw   | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|-----------|-------|-----------|--------|-----------|--------|-----------|---------------|--------------|-----------|
| 8830.00 | C 0 A L   |       | C 0 A L   |        | C 0 A L   |        | C 0 A L   |               |              |           |
| 8830.50 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8831.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8831.50 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8832.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8832.50 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8833.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8833.50 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8834.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8834.50 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 8835.00 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 8835.50 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 8836.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8836.50 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8837.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8837.50 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8838.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8838.50 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8839.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8839.50 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8840.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8840.50 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8841.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8841.50 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 8842.00 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 8842.50 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 8843.00 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 8843.50 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8844.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8844.50 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8845.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8845.50 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8846.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8846.50 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8847.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8847.50 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8848.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8848.50 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8849.00 | C 0 A L L |       | C 0 A L L |        | C 0 A L L |        | C 0 A L L |               |              |           |
| 8849.50 | 78.45     | 51.00 | 15.22     | -0.00  | 8.62      | 3.98   | 34.26     |               |              |           |
| 8850.00 | 90.63     | 51.00 | 8.04      | -0.00  | 3.75      | 6.29   | 23.56     |               |              |           |
| 8850.50 | 98.71     | 51.00 | 0.01      | -0.00  | 0.52      | 34.87  | 18.02     |               |              |           |
| 8851.00 | 93.28     | 51.00 | 0.44      | -0.00  | 2.69      | 25.01  | 67.19     |               |              |           |
| 8851.50 | 87.65     | 51.00 | 1.38      | -0.00  | 3.90      | 26.03  | 101.45    |               |              |           |
| 8852.00 | 83.68     | 51.00 | 0.30      | -0.00  | 3.26      | 35.52  | 115.77    |               |              |           |
| 8852.50 | 80.56     | 51.00 | 0.06      | -0.00  | 2.60      | 44.34  | 115.40    |               |              |           |
| 8853.00 | 77.16     | 51.00 | 0.03      | -0.00  | 2.39      | 50.41  | 120.71    |               |              |           |
| 8853.50 | 73.42     | 51.00 | 0.03      | -0.00  | 2.61      | 51.28  | 133.77    |               |              |           |
| 8854.00 | 71.17     | 51.00 | 0.08      | -0.00  | 3.13      | 47.58  | 148.82    |               |              |           |
| 8854.50 | 70.07     | 51.00 | 0.16      | -0.00  | 3.53      | 45.17  | 159.24    |               |              |           |

000077

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm  | Phi2nd | PhiE  | Sw    | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|-------|--------|-------|-------|---------|---------------|--------------|-----------|
| 8855.00 | 68.95   | 51.00 | 0.29  | -0.00  | 3.92  | 42.61 | 167.22  |               |              |           |
| 8855.50 | 67.83   | 51.00 | 0.50  | -0.00  | 4.32  | 40.22 | 173.91  |               |              |           |
| 8856.00 | 66.70   | 51.00 | 0.60  | -0.00  | 4.37  | 38.66 | 168.89  |               |              |           |
| 8856.50 | 65.02   | 51.00 | 0.49  | -0.00  | 4.16  | 39.04 | 162.37  |               |              |           |
| 8857.00 | 62.88   | 51.00 | 0.91  | -0.00  | 4.53  | 35.60 | 161.23  |               |              |           |
| 8857.50 | 60.75   | 51.00 | 3.25  | -0.00  | 5.57  | 29.52 | 164.41  |               |              |           |
| 8858.00 | 56.32   | 51.00 | 5.21  | -0.00  | 6.58  | 30.38 | 199.77  |               |              |           |
| 8858.50 | 51.67   | 51.00 | 6.84  | -0.00  | 7.60  | 32.58 | 247.49  |               |              |           |
| 8859.00 | 34.49   | 51.00 | 10.85 | -0.00  | 9.37  | 35.09 | 328.84  |               |              |           |
| 8859.50 | 21.97   | 51.00 | 14.86 | -0.00  | 10.87 | 36.97 | 401.76  | 0.43          | 0.30         | 3.00      |
| 8860.00 | 19.44   | 51.00 | 13.22 | -0.00  | 11.30 | 39.55 | 447.02  | 0.48          | 0.34         | 3.50      |
| 8860.50 | 16.92   | 51.00 | 10.97 | -0.00  | 11.66 | 42.59 | 496.72  | 0.54          | 0.37         | 4.00      |
| 8861.00 | 15.55   | 51.00 | 11.98 | -0.00  | 11.95 | 42.51 | 507.98  | 0.60          | 0.40         | 4.50      |
| 8861.50 | 14.28   | 51.00 | 10.57 | -0.00  | 12.05 | 40.51 | 488.16  | 0.66          | 0.44         | 5.00      |
| 8862.00 | 13.02   | 51.00 | 12.03 | -0.00  | 12.10 | 37.50 | 453.74  | 0.72          | 0.48         | 5.50      |
| 8862.50 | 11.96   | 51.00 | 12.56 | -0.00  | 11.96 | 35.64 | 426.14  | 0.78          | 0.52         | 6.00      |
| 8863.00 | 11.80   | 51.00 | 13.05 | -0.00  | 11.83 | 34.01 | 402.44  | 0.84          | 0.55         | 6.50      |
| 8863.50 | 11.63   | 51.00 | 13.54 | -0.00  | 11.81 | 32.93 | 389.06  | 0.90          | 0.59         | 7.00      |
| 8864.00 | 11.21   | 51.00 | 13.87 | -0.00  | 11.79 | 32.20 | 379.73  | 0.96          | 0.63         | 7.50      |
| 8864.50 | 10.27   | 51.00 | 14.13 | -0.00  | 11.77 | 31.60 | 371.92  | 1.02          | 0.67         | 8.00      |
| 8865.00 | 9.34    | 51.00 | 14.16 | -0.00  | 11.75 | 31.42 | 369.20  | 1.08          | 0.71         | 8.50      |
| 8865.50 | 8.40    | 51.00 | 14.02 | -0.00  | 11.81 | 32.01 | 377.99  | 1.14          | 0.75         | 9.00      |
| 8866.00 | 6.99    | 51.00 | 14.29 | -0.00  | 12.07 | 33.04 | 398.97  | 1.20          | 0.80         | 9.50      |
| 8866.50 | 5.46    | 51.00 | 16.61 | -0.00  | 12.64 | 32.41 | 409.69  | 1.26          | 0.84         | 10.00     |
| 8867.00 | 3.92    | 51.00 | 20.55 | -0.00  | 13.20 | 30.40 | 401.46  | 1.33          | 0.88         | 10.50     |
| 8867.50 | 3.25    | 51.00 | 24.99 | -0.00  | 13.72 | 28.68 | 393.40  | 1.39          | 0.93         | 11.00     |
| 8868.00 | 4.27    | 51.00 | 28.87 | -0.00  | 14.14 | 27.67 | 391.18  | 1.46          | 0.98         | 11.50     |
| 8868.50 | 5.11    | 51.00 | 33.08 | -0.00  | 14.56 | 26.96 | 392.59  | 1.54          | 1.04         | 12.00     |
| 8869.00 | 5.84    | 51.00 | 37.52 | -0.00  | 15.02 | 26.61 | 399.61  | 1.61          | 1.09         | 12.50     |
| 8869.50 | 6.58    | 51.00 | 41.69 | -0.00  | 15.47 | 26.71 | 413.34  | 1.69          | 1.15         | 13.00     |
| 8870.00 | 4.86    | 51.00 | 44.45 | -0.00  | 15.91 | 27.49 | 437.43  | 1.77          | 1.21         | 13.50     |
| 8870.50 | 2.74    | 51.00 | 34.15 | -0.00  | 15.31 | 29.91 | 458.01  | 1.85          | 1.26         | 14.00     |
| 8871.00 | 1.19    | 51.00 | 25.86 | -0.00  | 14.59 | 32.24 | 470.60  | 1.92          | 1.31         | 14.50     |
| 8871.50 | 0.81    | 51.00 | 21.32 | -0.00  | 13.80 | 32.61 | 450.04  | 1.99          | 1.36         | 15.00     |
| 8872.00 | 1.52    | 51.00 | 17.59 | -0.00  | 12.93 | 32.59 | 421.40  | 2.05          | 1.40         | 15.50     |
| 8872.50 | 8.92    | 51.00 | 13.41 | -0.00  | 11.66 | 32.29 | 376.45  | 2.11          | 1.44         | 16.00     |
| 8873.00 | 16.32   | 51.00 | 10.07 | -0.00  | 10.34 | 32.13 | 332.28  | 2.16          | 1.47         | 16.50     |
| 8873.50 | 23.72   | 51.00 | 12.46 | -0.00  | 9.01  | 32.28 | 290.97  |               |              |           |
| 8874.00 | 31.12   | 51.00 | 8.31  | -0.00  | 7.91  | 31.94 | 252.52  |               |              |           |
| 8874.50 | 35.54   | 51.00 | 6.91  | -0.00  | 7.25  | 30.86 | 223.77  |               |              |           |
| 8875.00 | 39.62   | 51.00 | 5.11  | -0.00  | 6.62  | 30.82 | 203.99  |               |              |           |
| 8875.50 | 41.66   | 51.00 | 3.70  | -0.00  | 6.11  | 31.38 | 191.68  |               |              |           |
| 8876.00 | 41.30   | 51.00 | 3.07  | -0.00  | 5.90  | 32.13 | 189.66  |               |              |           |
| 8876.50 | 40.94   | 51.00 | 6.19  | -0.00  | 6.70  | 29.24 | 195.93  |               |              |           |
| 8877.00 | 37.31   | 51.00 | 10.55 | -0.00  | 7.53  | 27.73 | 208.68  |               |              |           |
| 8877.50 | 33.44   | 51.00 | 15.30 | -0.00  | 8.30  | 27.28 | 226.47  |               |              |           |
| 8878.00 | 31.72   | 51.00 | 12.54 | -0.00  | 8.21  | 28.96 | 237.63  |               |              |           |
| 8878.50 | 35.65   | 51.00 | 8.42  | -0.00  | 7.66  | 30.71 | 235.27  |               |              |           |
| 8879.00 | 42.21   | 51.00 | 4.59  | -0.00  | 6.83  | 33.04 | 225.81  |               |              |           |
| 8879.50 | 47.77   | 51.00 | 2.71  | -0.00  | 5.93  | 33.58 | 198.99  |               |              |           |

000078

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm    | Phi2nd | PhiE    | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|---------|--------|---------|--------|---------|---------------|--------------|-----------|
| 8880.00 | 52.21   | 51.00 | 1.53    | -0.00  | 5.09    | 34.23  | 174.11  |               |              |           |
| 8880.50 | 56.65   | 51.00 | 1.11    | -0.00  | 4.49    | 33.23  | 149.36  |               |              |           |
| 8881.00 | 60.39   | 51.00 | 1.66    | -0.00  | 4.50    | 29.12  | 131.17  |               |              |           |
| 8881.50 | 63.63   | 51.00 | 3.52    | -0.00  | 4.99    | 24.85  | 123.97  |               |              |           |
| 8882.00 | 66.87   | 51.00 | 6.02    | -0.00  | 5.46    | 22.40  | 122.29  |               |              |           |
| 8882.50 | 55.97   | 51.00 | 7.96    | -0.00  | 6.72    | 26.74  | 179.71  |               |              |           |
| 8883.00 | 41.76   | 51.00 | 11.73   | -0.00  | 8.18    | 29.54  | 241.71  |               |              |           |
| 8883.50 | 30.12   | 51.00 | 12.14   | -0.00  | 9.05    | 32.70  | 295.87  |               |              |           |
| 8884.00 | 25.23   | 51.00 | 10.28   | -0.00  | 9.31    | 35.41  | 329.72  |               |              |           |
| 8884.50 | 27.10   | 51.00 | 8.53    | -0.00  | 9.10    | 36.57  | 332.72  |               |              |           |
| 8885.00 | 27.27   | 51.00 | 6.98    | -0.00  | 8.94    | 38.06  | 340.36  |               |              |           |
| 8885.50 | 24.91   | 51.00 | 7.05    | -0.00  | 9.21    | 38.95  | 358.62  |               |              |           |
| 8886.00 | 16.35   | 51.00 | 12.09   | -0.00  | 10.50   | 37.91  | 398.06  | 2.21          | 1.51         | 17.00     |
| 8886.50 | 12.46   | 51.00 | 13.58   | -0.00  | 12.19   | 34.92  | 425.48  | 2.28          | 1.55         | 17.50     |
| 8887.00 | 8.77    | 51.00 | 19.42   | -0.00  | 13.55   | 33.44  | 452.97  | 2.34          | 1.59         | 18.00     |
| 8887.50 | 5.07    | 51.00 | 24.45   | -0.00  | 14.53   | 33.13  | 481.36  | 2.42          | 1.64         | 18.50     |
| 8888.00 | 4.35    | 51.00 | 27.58   | -0.00  | 14.95   | 32.52  | 486.05  | 2.49          | 1.69         | 19.00     |
| 8888.50 | 6.09    | 51.00 | 25.98   | -0.00  | 14.53   | 31.86  | 463.05  | 2.56          | 1.74         | 19.50     |
| 8889.00 | 7.84    | 51.00 | 24.40   | -0.00  | 14.12   | 31.23  | 440.98  | 2.63          | 1.79         | 20.00     |
| 8889.50 | 9.58    | 51.00 | 22.60   | -0.00  | 13.68   | 30.69  | 419.80  | 2.70          | 1.84         | 20.50     |
| 8890.00 | 10.92   | 51.00 | 20.50   | -0.00  | 13.19   | 30.37  | 400.50  | 2.77          | 1.88         | 21.00     |
| 8890.50 | 12.20   | 51.00 | 17.74   | -0.00  | 12.70   | 31.18  | 396.11  | 2.83          | 1.93         | 21.50     |
| 8891.00 | 11.95   | 51.00 | 15.50   | -0.00  | 12.31   | 32.32  | 397.94  | 2.89          | 1.97         | 22.00     |
| 8891.50 | 8.53    | 51.00 | 11.97   | -0.00  | 11.61   | 34.96  | 405.75  | 2.95          | 2.01         | 22.50     |
| 8892.00 | 6.44    | 51.00 | 10.66   | -0.00  | 11.02   | 34.72  | 382.52  | 3.01          | 2.04         | 23.00     |
| 8892.50 | 8.56    | 51.00 | 16.56   | -0.00  | 11.32   | 24.63  | 278.88  | 3.06          | 2.08         | 23.50     |
| 8893.00 | 11.75   | 51.00 | 35.42   | -0.00  | 13.10   | 17.24  | 225.96  | 3.13          | 2.14         | 24.00     |
| 8893.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L | C 0 A L       |              |           |
| 8894.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L | C 0 A L       |              |           |
| 8894.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L | C 0 A L       |              |           |
| 8895.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L | C 0 A L       |              |           |
| 8895.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L | C 0 A L       |              |           |
| 8896.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L | C 0 A L       |              |           |
| 8896.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L | C 0 A L       |              |           |
| 8897.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L | C 0 A L       |              |           |
| 8897.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L | C 0 A L       |              |           |
| 8898.00 | 92.55   | 51.00 | 0.73    | -0.00  | 2.98    | 23.31  | 69.42   |               |              |           |
| 8898.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8899.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8899.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8900.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8900.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8901.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8901.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8902.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8902.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8903.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8903.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8904.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 8904.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |

62000

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page No 19

| DEPTH   | V Shale | Rho G | Perm | Phi2nd | PhiE  | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|------|--------|-------|--------|---------|---------------|--------------|-----------|
| 8905.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8905.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8906.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8906.50 | 96.79   | 51.00 | 0.01 | -0.00  | 1.29  | 49.98  | 64.27   |               |              |           |
| 8907.00 | 85.71   | 51.00 | 0.02 | -0.00  | 2.65  | 54.68  | 144.72  |               |              |           |
| 8907.50 | 80.56   | 51.00 | 0.01 | -0.00  | 2.35  | 70.85  | 166.43  |               |              |           |
| 8908.00 | 80.31   | 51.00 | 0.01 | -0.00  | 2.27  | 74.36  | 168.71  |               |              |           |
| 8908.50 | 80.23   | 51.00 | 0.01 | -0.00  | 2.41  | 69.19  | 166.55  |               |              |           |
| 8909.00 | 82.90   | 51.00 | 0.01 | -0.00  | 2.37  | 64.00  | 151.63  |               |              |           |
| 8909.50 | 86.18   | 51.00 | 0.01 | -0.00  | 2.29  | 58.28  | 133.68  |               |              |           |
| 8910.00 | 89.47   | 51.00 | 0.02 | -0.00  | 2.17  | 50.93  | 110.56  |               |              |           |
| 8910.50 | 92.75   | 51.00 | 0.02 | -0.00  | 1.95  | 44.26  | 86.31   |               |              |           |
| 8911.00 | 95.47   | 51.00 | 0.04 | -0.00  | 1.80  | 37.17  | 66.79   |               |              |           |
| 8911.50 | 96.88   | 51.00 | 0.01 | -0.00  | 1.25  | 41.91  | 52.25   |               |              |           |
| 8912.00 | 95.87   | 51.00 | 0.03 | -0.00  | 1.65  | 36.73  | 60.61   |               |              |           |
| 8912.50 | 94.86   | 51.00 | 0.07 | -0.00  | 2.03  | 35.08  | 71.16   |               |              |           |
| 8913.00 | 92.52   | 51.00 | 0.07 | -0.00  | 2.46  | 40.38  | 99.15   |               |              |           |
| 8913.50 | 88.91   | 51.00 | 0.08 | -0.00  | 2.97  | 46.60  | 138.33  |               |              |           |
| 8914.00 | 76.38   | 51.00 | 0.08 | -0.00  | 4.01  | 56.62  | 226.92  |               |              |           |
| 8914.50 | 50.80   | 51.00 | 0.16 | -0.00  | 5.83  | 62.57  | 364.83  |               |              |           |
| 8915.00 | 33.13   | 51.00 | 0.28 | -0.00  | 7.17  | 63.85  | 457.79  |               |              |           |
| 8915.50 | 25.68   | 51.00 | 0.26 | -0.00  | 7.45  | 65.83  | 490.40  |               |              |           |
| 8916.00 | 27.64   | 51.00 | 0.20 | -0.00  | 7.16  | 67.15  | 480.91  |               |              |           |
| 8916.50 | 32.26   | 51.00 | 0.23 | -0.00  | 6.71  | 63.73  | 427.80  |               |              |           |
| 8917.00 | 37.08   | 51.00 | 0.37 | -0.00  | 6.67  | 58.35  | 389.00  |               |              |           |
| 8917.50 | 41.89   | 51.00 | 0.95 | -0.00  | 7.15  | 51.06  | 365.25  |               |              |           |
| 8918.00 | 46.42   | 51.00 | 1.95 | -0.00  | 7.58  | 45.55  | 345.24  |               |              |           |
| 8918.50 | 50.02   | 51.00 | 2.24 | -0.00  | 7.53  | 43.90  | 330.35  |               |              |           |
| 8919.00 | 53.62   | 51.00 | 1.18 | -0.00  | 6.72  | 46.61  | 313.36  |               |              |           |
| 8919.50 | 58.05   | 51.00 | 0.63 | -0.00  | 5.87  | 48.37  | 283.95  |               |              |           |
| 8920.00 | 68.18   | 51.00 | 0.30 | -0.00  | 4.67  | 48.29  | 225.69  |               |              |           |
| 8920.50 | 85.66   | 51.00 | 0.17 | -0.00  | 3.18  | 40.73  | 129.68  |               |              |           |
| 8921.00 | 98.30   | 51.00 | 0.01 | -0.00  | 0.68  | 47.69  | 32.33   |               |              |           |
| 8921.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8922.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 8922.50 | 95.26   | 51.00 | 0.06 | -0.00  | 1.90  | 32.85  | 62.27   |               |              |           |
| 8923.00 | 78.65   | 51.00 | 0.08 | -0.00  | 3.09  | 47.58  | 146.98  |               |              |           |
| 8923.50 | 64.50   | 51.00 | 0.10 | -0.00  | 3.93  | 53.24  | 209.06  |               |              |           |
| 8924.00 | 55.84   | 51.00 | 0.11 | -0.00  | 4.41  | 56.41  | 248.55  |               |              |           |
| 8924.50 | 50.75   | 51.00 | 0.12 | -0.00  | 4.68  | 58.03  | 271.55  |               |              |           |
| 8925.00 | 50.93   | 51.00 | 0.33 | -0.00  | 5.29  | 51.50  | 272.53  |               |              |           |
| 8925.50 | 50.93   | 51.00 | 1.24 | -0.00  | 6.35  | 43.31  | 275.03  |               |              |           |
| 8926.00 | 50.81   | 51.00 | 3.27 | -0.00  | 7.52  | 39.89  | 299.96  |               |              |           |
| 8926.50 | 50.69   | 51.00 | 5.60 | -0.00  | 8.78  | 39.70  | 348.62  |               |              |           |
| 8927.00 | 45.31   | 51.00 | 5.94 | -0.00  | 9.83  | 43.03  | 423.07  |               |              |           |
| 8927.50 | 37.70   | 51.00 | 5.30 | -0.00  | 10.74 | 47.29  | 508.08  |               |              |           |
| 8928.00 | 28.22   | 51.00 | 3.61 | -0.00  | 11.25 | 52.93  | 595.73  |               |              |           |
| 8928.50 | 22.65   | 51.00 | 3.56 | -0.00  | 11.53 | 53.93  | 621.83  |               |              |           |
| 8929.00 | 18.05   | 51.00 | 3.80 | -0.00  | 11.75 | 53.89  | 633.13  |               |              |           |
| 8929.50 | 15.77   | 51.00 | 2.75 | -0.00  | 11.83 | 57.50  | 680.02  |               |              |           |

080000

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm | Phi2nd | PhiE  | Sw    | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|------|--------|-------|-------|---------|---------------|--------------|-----------|
| 8930.00 | 13.29   | 51.00 | 2.59 | -0.00  | 11.92 | 58.38 | 695.62  |               |              |           |
| 8930.50 | 11.33   | 51.00 | 3.07 | -0.00  | 12.21 | 57.43 | 701.01  |               |              |           |
| 8931.00 | 9.98    | 51.00 | 3.72 | -0.00  | 12.50 | 56.29 | 703.67  |               |              |           |
| 8931.50 | 10.12   | 51.00 | 4.52 | -0.00  | 12.71 | 54.82 | 696.61  |               |              |           |
| 8932.00 | 10.32   | 51.00 | 5.20 | -0.00  | 12.84 | 53.70 | 689.22  |               |              |           |
| 8932.50 | 10.57   | 51.00 | 5.50 | -0.00  | 12.94 | 53.41 | 691.19  |               |              |           |
| 8933.00 | 10.83   | 51.00 | 5.20 | -0.00  | 12.90 | 53.88 | 695.03  |               |              |           |
| 8933.50 | 11.09   | 51.00 | 5.83 | -0.00  | 13.21 | 53.50 | 706.76  |               |              |           |
| 8934.00 | 10.87   | 51.00 | 5.92 | -0.00  | 13.55 | 54.23 | 734.69  |               |              |           |
| 8934.50 | 9.54    | 51.00 | 6.11 | -0.00  | 13.96 | 54.94 | 766.88  |               |              |           |
| 8935.00 | 8.21    | 51.00 | 6.49 | -0.00  | 14.37 | 55.32 | 794.69  |               |              |           |
| 8935.50 | 6.85    | 51.00 | 7.70 | -0.00  | 14.72 | 54.38 | 800.25  |               |              |           |
| 8936.00 | 5.41    | 51.00 | 8.48 | -0.00  | 14.49 | 52.84 | 765.83  |               |              |           |
| 8936.50 | 3.97    | 51.00 | 9.03 | -0.00  | 14.02 | 51.03 | 715.54  |               |              |           |
| 8937.00 | 3.07    | 51.00 | 8.74 | -0.00  | 13.42 | 49.85 | 669.06  | 3.20          | 2.17         | 24.50     |
| 8937.50 | 6.42    | 51.00 | 7.75 | -0.00  | 12.56 | 48.81 | 613.22  | 3.26          | 2.20         | 25.00     |
| 8938.00 | 10.03   | 51.00 | 6.60 | -0.00  | 11.77 | 48.19 | 566.96  | 3.32          | 2.23         | 25.50     |
| 8938.50 | 15.40   | 51.00 | 5.33 | -0.00  | 10.97 | 47.96 | 525.89  | 3.37          | 2.26         | 26.00     |
| 8939.00 | 19.83   | 51.00 | 3.51 | -0.00  | 10.96 | 52.29 | 573.02  |               |              |           |
| 8939.50 | 21.03   | 51.00 | 4.97 | -0.00  | 12.19 | 52.39 | 638.86  |               |              |           |
| 8940.00 | 16.80   | 51.00 | 4.99 | -0.00  | 13.19 | 55.08 | 726.47  |               |              |           |
| 8940.50 | 11.38   | 51.00 | 5.94 | -0.00  | 14.00 | 55.34 | 774.90  |               |              |           |
| 8941.00 | 7.86    | 51.00 | 5.29 | -0.00  | 13.84 | 56.14 | 776.96  |               |              |           |
| 8941.50 | 11.56   | 51.00 | 4.56 | -0.00  | 13.24 | 56.15 | 743.59  |               |              |           |
| 8942.00 | 16.34   | 51.00 | 3.91 | -0.00  | 12.60 | 56.02 | 705.92  |               |              |           |
| 8942.50 | 19.98   | 51.00 | 3.52 | -0.00  | 12.15 | 55.88 | 679.17  |               |              |           |
| 8943.00 | 23.42   | 51.00 | 2.84 | -0.00  | 11.72 | 56.85 | 666.31  |               |              |           |
| 8943.50 | 25.77   | 51.00 | 2.87 | -0.00  | 11.65 | 56.52 | 658.54  |               |              |           |
| 8944.00 | 25.26   | 51.00 | 4.06 | -0.00  | 12.20 | 54.50 | 664.65  |               |              |           |
| 8944.50 | 19.97   | 51.00 | 2.27 | -0.00  | 12.48 | 61.38 | 766.10  |               |              |           |
| 8945.00 | 14.67   | 51.00 | 1.08 | -0.00  | 12.48 | 69.14 | 863.12  |               |              |           |
| 8945.50 | 9.38    | 51.00 | 0.60 | -0.00  | 12.49 | 75.28 | 940.02  |               |              |           |
| 8946.00 | 4.09    | 51.00 | 0.46 | -0.00  | 12.49 | 78.08 | 975.11  |               |              |           |
| 8946.50 | 6.73    | 51.00 | 0.37 | -0.00  | 11.83 | 78.43 | 928.00  |               |              |           |
| 8947.00 | 9.81    | 51.00 | 0.27 | -0.00  | 11.07 | 79.53 | 880.22  |               |              |           |
| 8947.50 | 12.41   | 51.00 | 0.39 | -0.00  | 11.07 | 75.55 | 836.48  |               |              |           |
| 8948.00 | 15.02   | 51.00 | 0.86 | -0.00  | 11.77 | 69.42 | 817.12  |               |              |           |
| 8948.50 | 17.62   | 51.00 | 1.04 | -0.00  | 12.61 | 69.89 | 881.58  |               |              |           |
| 8949.00 | 5.39    | 51.00 | 0.89 | -0.00  | 13.98 | 75.10 | 1050.05 |               |              |           |
| 8949.50 | 0.00    | 51.00 | 0.57 | -0.00  | 13.99 | 79.72 | 1115.03 |               |              |           |
| 8950.00 | 4.52    | 51.00 | 0.33 | -0.00  | 12.93 | 82.72 | 1069.52 |               |              |           |
| 8950.50 | 11.54   | 51.00 | 0.18 | -0.00  | 11.72 | 85.59 | 1003.35 |               |              |           |
| 8951.00 | 18.07   | 51.00 | 0.12 | -0.00  | 10.60 | 85.92 | 910.48  |               |              |           |
| 8951.50 | 23.26   | 51.00 | 0.12 | -0.00  | 9.68  | 82.98 | 803.26  |               |              |           |
| 8952.00 | 28.44   | 51.00 | 0.09 | -0.00  | 8.79  | 82.30 | 723.56  |               |              |           |
| 8952.50 | 32.84   | 51.00 | 0.27 | -0.00  | 9.10  | 72.54 | 660.39  |               |              |           |
| 8953.00 | 33.43   | 51.00 | 0.38 | -0.00  | 9.44  | 70.23 | 662.70  |               |              |           |
| 8953.50 | 24.98   | 51.00 | 0.42 | -0.00  | 10.31 | 72.27 | 744.81  |               |              |           |
| 8954.00 | 17.42   | 51.00 | 0.20 | -0.00  | 10.73 | 81.43 | 874.04  |               |              |           |
| 8954.50 | 10.94   | 51.00 | 0.14 | -0.00  | 11.34 | 86.86 | 984.63  |               |              |           |

000081

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm | Phi2nd | PhiE  | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|------|--------|-------|--------|---------|---------------|--------------|-----------|
| 8955.00 | 6.20    | 51.00 | 0.22 | -0.00  | 11.92 | 83.98  | 1000.71 |               |              |           |
| 8955.50 | 5.56    | 51.00 | 0.32 | -0.00  | 12.25 | 81.04  | 992.54  |               |              |           |
| 8956.00 | 6.91    | 51.00 | 0.39 | -0.00  | 12.28 | 79.25  | 973.08  |               |              |           |
| 8956.50 | 8.57    | 51.00 | 0.28 | -0.00  | 11.99 | 81.87  | 981.52  |               |              |           |
| 8957.00 | 10.24   | 51.00 | 0.17 | -0.00  | 11.63 | 86.06  | 1001.21 |               |              |           |
| 8957.50 | 11.90   | 51.00 | 0.10 | -0.00  | 11.28 | 90.30  | 1018.54 |               |              |           |
| 8958.00 | 11.97   | 51.00 | 0.07 | -0.00  | 10.95 | 93.48  | 1024.06 |               |              |           |
| 8958.50 | 10.05   | 51.00 | 0.05 | -0.00  | 10.74 | 95.51  | 1025.32 |               |              |           |
| 8959.00 | 8.13    | 51.00 | 0.04 | -0.00  | 10.52 | 96.97  | 1019.71 |               |              |           |
| 8959.50 | 6.21    | 51.00 | 0.03 | -0.00  | 10.30 | 98.48  | 1014.00 |               |              |           |
| 8960.00 | 4.29    | 51.00 | 0.03 | -0.00  | 10.08 | 99.83  | 1006.04 |               |              |           |
| 8960.50 | 2.62    | 51.00 | 0.03 | -0.00  | 10.15 | 97.63  | 991.12  |               |              |           |
| 8961.00 | 2.09    | 51.00 | 0.05 | -0.00  | 10.32 | 94.01  | 970.03  |               |              |           |
| 8961.50 | 1.57    | 51.00 | 0.08 | -0.00  | 10.50 | 90.45  | 949.38  |               |              |           |
| 8962.00 | 1.04    | 51.00 | 0.10 | -0.00  | 10.37 | 87.71  | 909.64  |               |              |           |
| 8962.50 | 0.52    | 51.00 | 0.10 | -0.00  | 10.08 | 86.12  | 868.08  |               |              |           |
| 8963.00 | 1.30    | 51.00 | 0.10 | -0.00  | 9.64  | 85.01  | 819.39  |               |              |           |
| 8963.50 | 3.10    | 51.00 | 0.07 | -0.00  | 8.90  | 85.79  | 763.78  |               |              |           |
| 8964.00 | 4.90    | 51.00 | 0.05 | -0.00  | 8.17  | 86.63  | 707.42  |               |              |           |
| 8964.50 | 13.17   | 51.00 | 0.02 | -0.00  | 7.00  | 88.38  | 618.84  |               |              |           |
| 8965.00 | 27.41   | 51.00 | 0.26 | -0.00  | 5.47  | 55.00  | 300.71  |               |              |           |
| 8965.50 | 45.41   | 51.00 | 0.10 | -0.00  | 3.99  | 54.54  | 217.50  |               |              |           |
| 8966.00 | 53.49   | 51.00 | 0.06 | -0.00  | 3.28  | 53.49  | 175.70  |               |              |           |
| 8966.50 | 60.88   | 51.00 | 0.13 | -0.00  | 3.39  | 45.54  | 154.16  |               |              |           |
| 8967.00 | 68.15   | 51.00 | 0.27 | -0.00  | 3.43  | 38.55  | 132.34  |               |              |           |
| 8967.50 | 73.84   | 51.00 | 0.09 | -0.00  | 3.35  | 49.39  | 165.68  |               |              |           |
| 8968.00 | 59.63   | 51.00 | 0.13 | -0.00  | 4.48  | 55.76  | 249.61  |               |              |           |
| 8968.50 | 43.20   | 51.00 | 0.22 | -0.00  | 5.87  | 59.15  | 347.04  |               |              |           |
| 8969.00 | 29.33   | 51.00 | 0.09 | -0.00  | 7.47  | 77.07  | 575.55  |               |              |           |
| 8969.50 | 20.85   | 51.00 | 0.03 | -0.00  | 8.63  | 95.24  | 821.91  |               |              |           |
| 8970.00 | 15.54   | 51.00 | 0.02 | -0.00  | 9.42  | 100.00 | 942.35  |               |              |           |
| 8970.50 | 10.23   | 51.00 | 0.02 | -0.00  | 9.73  | 100.00 | 973.24  |               |              |           |
| 8971.00 | 4.92    | 51.00 | 0.02 | -0.00  | 9.76  | 100.00 | 976.50  |               |              |           |
| 8971.50 | 4.45    | 51.00 | 0.02 | -0.00  | 9.52  | 100.00 | 952.25  |               |              |           |
| 8972.00 | 5.98    | 51.00 | 0.02 | -0.00  | 9.44  | 100.00 | 944.49  |               |              |           |
| 8972.50 | 7.52    | 51.00 | 0.02 | -0.00  | 9.37  | 100.00 | 936.73  |               |              |           |
| 8973.00 | 8.27    | 51.00 | 0.02 | -0.00  | 9.34  | 100.00 | 933.70  |               |              |           |
| 8973.50 | 5.75    | 51.00 | 0.02 | -0.00  | 9.50  | 100.00 | 950.38  |               |              |           |
| 8974.00 | 4.67    | 51.00 | 0.02 | -0.00  | 9.58  | 100.00 | 958.39  |               |              |           |
| 8974.50 | 4.95    | 51.00 | 0.02 | -0.00  | 9.37  | 100.00 | 936.51  |               |              |           |
| 8975.00 | 4.49    | 51.00 | 0.02 | -0.00  | 9.16  | 100.00 | 916.09  |               |              |           |
| 8975.50 | 4.03    | 51.00 | 0.02 | -0.00  | 8.87  | 100.00 | 886.85  |               |              |           |
| 8976.00 | 3.45    | 51.00 | 0.02 | -0.00  | 8.53  | 100.00 | 852.97  |               |              |           |
| 8976.50 | 2.75    | 51.00 | 0.02 | -0.00  | 8.79  | 100.00 | 879.13  |               |              |           |
| 8977.00 | 2.15    | 51.00 | 0.02 | -0.00  | 9.09  | 100.00 | 909.00  |               |              |           |
| 8977.50 | 3.72    | 51.00 | 0.02 | -0.00  | 9.04  | 100.00 | 903.95  |               |              |           |
| 8978.00 | 5.28    | 51.00 | 0.02 | -0.00  | 8.96  | 100.00 | 895.97  |               |              |           |
| 8978.50 | 9.93    | 51.00 | 0.02 | -0.00  | 8.48  | 100.00 | 847.83  |               |              |           |
| 8979.00 | 15.37   | 51.00 | 0.07 | -0.00  | 9.25  | 86.99  | 804.35  |               |              |           |
| 8979.50 | 23.05   | 51.00 | 0.90 | -0.00  | 10.84 | 66.13  | 716.70  |               |              |           |

000082

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale     | Rho G | Perm        | Phi2nd | PhiE        | Sw          | PhiE*Sw     | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|-------------|-------|-------------|--------|-------------|-------------|-------------|---------------|--------------|-----------|
| 8980.00 |             | 35.81 | 7.79        | -0.00  | 12.05       | 47.30       | 569.95      |               |              |           |
| 8980.50 |             | 56.87 | 22.73       | -0.00  | 13.44       | 29.33       | 394.11      |               |              |           |
| 8981.00 | C 0 A L     |       | C 0 A L     |        | C 0 A L     | C 0 A L     | C 0 A L     | C 0 A L       |              |           |
| 8981.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 8982.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 8982.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 8983.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 8983.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 8984.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 8984.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 8985.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 8985.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 8986.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 8986.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 8987.00 |             | 90.50 | 7.14        | -0.00  | 3.80        | 7.99        | 30.38       |               |              |           |
| 8987.50 |             | 94.62 | 0.82        | -0.00  | 2.15        | 10.72       | 23.05       |               |              |           |
| 8988.00 |             | 96.20 | 0.21        | -0.00  | 1.52        | 12.71       | 19.32       |               |              |           |
| 8988.50 |             | 96.19 | 0.20        | -0.00  | 1.53        | 13.61       | 20.76       |               |              |           |
| 8989.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 8989.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 8990.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 8990.50 |             | 9.80  | 42.72       | -0.00  | 17.50       | 34.79       | 609.05      | 3.46          | 2.32         | 26.50     |
| 8991.00 |             | 6.82  | 10.56       | -0.00  | 14.40       | 50.23       | 723.16      |               |              |           |
| 8991.50 |             | 11.22 | 5.08        | -0.00  | 12.85       | 53.97       | 693.31      |               |              |           |
| 8992.00 |             | 15.08 | 3.25        | -0.00  | 11.61       | 55.12       | 640.07      |               |              |           |
| 8992.50 |             | 18.86 | 2.04        | -0.00  | 10.48       | 56.39       | 590.70      |               |              |           |
| 8993.00 |             | 22.64 | 2.71        | -0.00  | 10.39       | 53.12       | 552.10      |               |              |           |
| 8993.50 |             | 22.77 | 5.22        | -0.00  | 11.02       | 48.35       | 532.78      | 3.51          | 2.35         | 27.00     |
| 8994.00 |             | 20.70 | 6.47        | -0.00  | 11.78       | 48.43       | 570.45      | 3.57          | 2.38         | 27.50     |
| 8994.50 |             | 11.28 | 5.96        | -0.00  | 12.48       | 51.31       | 640.55      |               |              |           |
| 8995.00 |             | 4.24  | 5.81        | -0.00  | 12.83       | 52.54       | 674.30      |               |              |           |
| 8995.50 |             | 1.30  | 4.52        | -0.00  | 12.40       | 53.95       | 668.86      |               |              |           |
| 8996.00 |             | 6.95  | 2.74        | -0.00  | 11.28       | 55.89       | 630.69      |               |              |           |
| 8996.50 |             | 11.92 | 1.43        | -0.00  | 10.13       | 58.92       | 596.86      |               |              |           |
| 8997.00 |             | 16.74 | 0.65        | -0.00  | 9.04        | 63.23       | 571.62      |               |              |           |
| 8997.50 |             | 20.14 | 0.43        | -0.00  | 8.48        | 65.14       | 552.16      |               |              |           |
| 8998.00 |             | 12.63 | 0.53        | -0.00  | 8.79        | 64.32       | 565.57      |               |              |           |
| 8998.50 |             | 6.95  | 0.85        | -0.00  | 9.05        | 60.44       | 546.89      |               |              |           |
| 8999.00 |             | 10.61 | 34.10       | -0.00  | 8.55        | 19.97       | 170.81      |               |              |           |
| 8999.50 |             | 15.81 | 10.77       | -0.00  | 8.67        | 16.64       | 144.25      |               |              |           |
| 9000.00 |             | 23.67 | 43.03       | -0.00  | 12.63       | 9.47        | 119.63      | 3.64          | 2.44         | 28.00     |
| 9000.50 | C 0 A L     |       | C 0 A L     |        | C 0 A L     | C 0 A L     | C 0 A L     | C 0 A L       |              |           |
| 9001.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 9001.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 9002.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 9002.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 9003.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 9003.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 9004.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L | C 0 0 A L L   |              |           |
| 9004.50 | C 0 A L     |       | C 0 A L     |        | C 0 A L     | C 0 A L     | C 0 A L     | C 0 A L       |              |           |

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Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale |   |   |   | Rho G | Perm | Phi2nd | PhiE | Sw | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |   |
|---------|---------|---|---|---|-------|------|--------|------|----|---------|---------------|--------------|-----------|---|
| 9005.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9005.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9006.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9006.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9007.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9007.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9008.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9008.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9009.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9009.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9010.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9010.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9011.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9011.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9012.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9012.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9013.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9013.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9014.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9014.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9015.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9015.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9016.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9016.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9017.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9017.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9018.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9018.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9019.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9019.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9020.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9020.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9021.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9021.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9022.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9022.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9023.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9023.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9024.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9024.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9025.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9025.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9026.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9026.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9027.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9027.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9028.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9028.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9029.00 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |
| 9029.50 | C       | 0 | A | L |       | C    | 0      | A    | L  |         | C             | 0            | A         | L |

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Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V | Shale | Rho G | Perm | Phi2nd | PhiE | Sw | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---|-------|-------|------|--------|------|----|---------|---------------|--------------|-----------|
| 9030.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9030.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9031.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9031.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9032.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9032.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9033.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9033.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9034.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9034.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9035.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9035.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9036.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9036.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9037.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9037.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9038.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9038.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9039.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9039.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9040.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9040.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9041.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9041.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9042.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9042.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9043.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9043.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9044.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9044.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9045.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9045.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9046.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9046.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9047.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9047.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9048.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9048.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9049.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9049.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9050.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9050.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9051.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9051.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9052.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9052.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9053.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9053.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9054.00 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |
| 9054.50 | C | 0     | A     | L    | C      | 0    | A  | L       | C             | 0            | A         |

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Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale     | Rho G | Perm        | Phi2nd | PhiE        | Sw    | PhiE*Sw     | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|-------------|-------|-------------|--------|-------------|-------|-------------|---------------|--------------|-----------|
| 9055.00 | C 0 A L     |       | C 0 A L     |        | C 0 A L     |       | C 0 A L     |               |              |           |
| 9055.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9056.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9056.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9057.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9057.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9058.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9058.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9059.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9059.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9060.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9060.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9061.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9061.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9062.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9062.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9063.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9063.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9064.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9064.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9065.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9065.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9066.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9066.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9067.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9067.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9068.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9068.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9069.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9069.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9070.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9070.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9071.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9071.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9072.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9072.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9073.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9073.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9074.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9074.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9075.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9075.50 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9076.00 | C 0 0 A L L |       | C 0 0 A L L |        | C 0 0 A L L |       | C 0 0 A L L |               |              |           |
| 9076.50 | 94.35       | 51.00 | 0.39        | -0.00  | 2.26        | 20.22 | 45.71       |               |              |           |
| 9077.00 | 99.37       | 51.00 | 0.01        | -0.00  | 0.25        | 54.43 | 13.69       |               |              |           |
| 9077.50 | 94.74       | 51.00 | 0.09        | -0.00  | 2.10        | 33.48 | 70.46       |               |              |           |
| 9078.00 | 86.73       | 51.00 | 2.46        | -0.00  | 5.02        | 28.80 | 144.65      |               |              |           |
| 9078.50 | 80.15       | 51.00 | 0.19        | -0.00  | 4.29        | 49.86 | 213.70      |               |              |           |
| 9079.00 | 73.58       | 51.00 | 0.04        | -0.00  | 3.96        | 62.25 | 246.38      |               |              |           |
| 9079.50 | 75.47       | 51.00 | 0.02        | -0.00  | 3.43        | 67.34 | 231.20      |               |              |           |

980000

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale  | Rho G | Perm    | Phi2nd | PhiE    | Sw       | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|----------|-------|---------|--------|---------|----------|---------|---------------|--------------|-----------|
| 9080.00 | 79.65    | 51.00 | 0.02    | -0.00  | 3.30    | 63.98    | 211.11  |               |              |           |
| 9080.50 | 82.40    | 51.00 | 0.06    | -0.00  | 3.62    | 56.71    | 205.05  |               |              |           |
| 9081.00 | 83.55    | 51.00 | 0.14    | -0.00  | 4.03    | 51.03    | 205.52  |               |              |           |
| 9081.50 | 81.01    | 51.00 | 0.66    | -0.00  | 4.95    | 42.08    | 208.42  |               |              |           |
| 9082.00 | 83.84    | 51.00 | 2.82    | -0.00  | 5.68    | 31.68    | 179.98  |               |              |           |
| 9082.50 | 86.99    | 51.00 | 2.79    | -0.00  | 5.21    | 28.74    | 149.62  |               |              |           |
| 9083.00 | 85.99    | 51.00 | 4.40    | -0.00  | 5.60    | 26.57    | 148.84  |               |              |           |
| 9083.50 | 81.74    | 51.00 | 14.37   | -0.00  | 7.31    | 23.48    | 171.52  |               |              |           |
| 9084.00 | 77.48    | 51.00 | 11.43   | -0.00  | 7.40    | 26.32    | 194.83  |               |              |           |
| 9084.50 | 73.71    | 51.00 | 12.51   | -0.00  | 7.58    | 26.20    | 198.58  |               |              |           |
| 9085.00 | 72.59    | 51.00 | 29.91   | -0.00  | 8.53    | 21.23    | 181.04  |               |              |           |
| 9085.50 | 73.81    | 51.00 | 14.55   | -0.00  | 9.58    | 15.07    | 144.41  |               |              |           |
| 9086.00 | 73.81    | 51.00 | 21.48   | -0.00  | 10.48   | 11.01    | 115.31  |               |              |           |
| 9086.50 | C 0 A L  |       | C 0 A L |        | C 0 A L |          | C 0 A L |               |              |           |
| 9087.00 | C 0 A L  |       | C 0 A L |        | C 0 A L |          | C 0 A L |               |              |           |
| 9087.50 | C 0 A L  |       | C 0 A L |        | C 0 A L |          | C 0 A L |               |              |           |
| 9088.00 | C 0 A L  |       | C 0 A L |        | C 0 A L |          | C 0 A L |               |              |           |
| 9088.50 | C 0 A L  |       | C 0 A L |        | C 0 A L |          | C 0 A L |               |              |           |
| 9089.00 | C 100.00 | 51.00 | C 0.01  | -0.00  | C 0.00  | C 100.00 | C 0.00  |               |              |           |
| 9089.50 | C 0 A L  |       | C 0 A L |        | C 0 A L |          | C 0 A L |               |              |           |
| 9090.00 | C 0 A L  |       | C 0 A L |        | C 0 A L |          | C 0 A L |               |              |           |
| 9090.50 | C 0 A L  |       | C 0 A L |        | C 0 A L |          | C 0 A L |               |              |           |
| 9091.00 | C 0 A L  |       | C 0 A L |        | C 0 A L |          | C 0 A L |               |              |           |
| 9091.50 | C 0 A L  |       | C 0 A L |        | C 0 A L |          | C 0 A L |               |              |           |
| 9092.00 | C 0 A L  |       | C 0 A L |        | C 0 A L |          | C 0 A L |               |              |           |
| 9092.50 | C 0 A L  |       | C 0 A L |        | C 0 A L |          | C 0 A L |               |              |           |
| 9093.00 | 61.58    | 51.00 | 11.24   | -0.00  | 9.39    | 21.63    | 203.01  |               |              |           |
| 9093.50 | 75.73    | 51.00 | 0.60    | -0.00  | 4.39    | 38.78    | 170.33  |               |              |           |
| 9094.00 | 84.57    | 51.00 | 0.01    | -0.00  | 1.77    | 69.55    | 123.11  |               |              |           |
| 9094.50 | 93.41    | 51.00 | 0.01    | -0.00  | 1.21    | 65.09    | 78.97   |               |              |           |
| 9095.00 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9095.50 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9096.00 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9096.50 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9097.00 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9097.50 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9098.00 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9098.50 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9099.00 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9099.50 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9100.00 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9100.50 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9101.00 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9101.50 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9102.00 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9102.50 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9103.00 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9103.50 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9104.00 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |
| 9104.50 | 100.00   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00   | 0.00    |               |              |           |

280000

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm  | Phi2nd | PhiE  | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|-------|--------|-------|--------|---------|---------------|--------------|-----------|
| 9105.00 | 48.80   | 51.00 | 1.77  | -0.00  | 6.51  | 41.27  | 268.62  |               |              |           |
| 9105.50 | 42.60   | 51.00 | 2.82  | -0.00  | 7.39  | 40.85  | 302.06  |               |              |           |
| 9106.00 | 39.48   | 51.00 | 3.35  | -0.00  | 7.90  | 41.37  | 326.73  |               |              |           |
| 9106.50 | 36.37   | 51.00 | 3.77  | -0.00  | 8.38  | 42.19  | 353.38  |               |              |           |
| 9107.00 | 33.75   | 51.00 | 4.08  | -0.00  | 8.81  | 43.13  | 380.10  |               |              |           |
| 9107.50 | 31.23   | 51.00 | 4.43  | -0.00  | 9.27  | 44.02  | 407.96  |               |              |           |
| 9108.00 | 28.70   | 51.00 | 5.31  | -0.00  | 9.83  | 44.21  | 434.71  |               |              |           |
| 9108.50 | 27.15   | 51.00 | 6.43  | -0.00  | 10.34 | 43.95  | 454.48  | 3.69          | 2.46         | 28.50     |
| 9109.00 | 25.91   | 51.00 | 6.07  | -0.00  | 10.23 | 44.17  | 451.74  | 3.74          | 2.49         | 29.00     |
| 9109.50 | 25.37   | 51.00 | 5.44  | -0.00  | 10.01 | 44.57  | 446.16  | 3.79          | 2.52         | 29.50     |
| 9110.00 | 25.42   | 51.00 | 4.91  | -0.00  | 9.97  | 45.52  | 454.08  |               |              |           |
| 9110.50 | 25.47   | 51.00 | 6.60  | -0.00  | 10.64 | 44.68  | 475.42  | 3.84          | 2.55         | 30.00     |
| 9111.00 | 25.52   | 51.00 | 5.99  | -0.00  | 10.85 | 46.37  | 503.00  | 3.90          | 2.58         | 30.50     |
| 9111.50 | 25.56   | 51.00 | 3.66  | -0.00  | 10.54 | 50.51  | 532.44  |               |              |           |
| 9112.00 | 24.39   | 51.00 | 2.89  | -0.00  | 10.01 | 51.17  | 512.14  |               |              |           |
| 9112.50 | 35.35   | 51.00 | 2.55  | -0.00  | 9.44  | 50.41  | 475.90  |               |              |           |
| 9113.00 | 42.42   | 51.00 | 2.53  | -0.00  | 8.96  | 48.67  | 435.92  |               |              |           |
| 9113.50 | 51.86   | 51.00 | 5.70  | -0.00  | 8.88  | 39.92  | 354.64  |               |              |           |
| 9114.00 | 68.35   | 51.00 | 16.93 | -0.00  | 8.88  | 28.57  | 253.64  |               |              |           |
| 9114.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9115.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9115.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9116.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9116.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9117.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9117.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9118.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9118.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9119.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9119.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9120.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9120.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9121.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9121.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9122.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9122.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9123.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9123.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9124.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9124.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9125.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9125.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9126.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9126.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9127.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9127.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9128.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9128.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9129.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9129.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |

880000

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm    | Phi2nd | PhiE    | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|---------|--------|---------|--------|---------|---------------|--------------|-----------|
| 9130.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9130.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9131.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9131.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9132.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9132.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9133.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9133.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9134.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9134.50 | 93.71   | 51.00 | 0.37    | -0.00  | 2.51    | 24.33  | 61.19   |               |              |           |
| 9135.00 | 80.54   | 51.00 | 56.17   | -0.00  | 7.78    | 11.49  | 89.47   |               |              |           |
| 9135.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9136.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9136.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9137.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9137.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9138.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9138.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9139.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9139.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9140.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9140.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9141.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9141.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9142.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9142.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9143.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9143.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9144.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9144.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9145.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9145.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9146.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9146.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9147.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9147.50 | 91.49   | 51.00 | 1.29    | -0.00  | 3.41    | 22.04  | 75.08   |               |              |           |
| 9148.00 | 94.97   | 51.00 | 0.09    | -0.00  | 2.01    | 31.46  | 63.36   |               |              |           |
| 9148.50 | 91.13   | 51.00 | 0.01    | -0.00  | 0.97    | 69.84  | 67.62   |               |              |           |
| 9149.00 | 84.03   | 51.00 | 0.01    | -0.00  | 1.50    | 65.80  | 98.96   |               |              |           |
| 9149.50 | 84.87   | 51.00 | 0.01    | -0.00  | 1.90    | 54.69  | 104.03  |               |              |           |
| 9150.00 | 93.22   | 51.00 | 0.03    | -0.00  | 1.85    | 39.97  | 73.83   |               |              |           |
| 9150.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9151.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9151.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9152.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9152.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9153.00 | 95.42   | 51.00 | 0.03    | -0.00  | 1.83    | 38.26  | 70.13   |               |              |           |
| 9153.50 | 88.71   | 51.00 | 0.62    | -0.00  | 3.72    | 32.70  | 121.53  |               |              |           |
| 9154.00 | 83.75   | 51.00 | 1.25    | -0.00  | 4.62    | 32.91  | 152.00  |               |              |           |
| 9154.50 | 82.24   | 51.00 | 2.75    | -0.00  | 5.20    | 28.87  | 150.15  |               |              |           |

680000

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page No 29

| DEPTH   | V Shale | Rho G | Perm | Phi2nd | PhiE | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|------|--------|------|--------|---------|---------------|--------------|-----------|
| 9155.00 | 86.93   | 51.00 | 4.50 | -0.00  | 5.10 | 23.08  | 117.82  |               |              |           |
| 9155.50 | 92.42   | 51.00 | 0.61 | -0.00  | 3.03 | 25.84  | 78.36   |               |              |           |
| 9156.00 | 97.91   | 51.00 | 0.01 | -0.00  | 0.84 | 37.68  | 31.55   |               |              |           |
| 9156.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9157.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9157.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9158.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9158.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9159.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9159.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9160.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9160.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9161.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9161.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9162.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9162.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9163.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9163.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9164.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9164.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9165.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9165.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9166.00 | 93.58   | 51.00 | 0.05 | -0.00  | 2.19 | 40.08  | 87.74   |               |              |           |
| 9166.50 | 84.08   | 51.00 | 0.01 | -0.00  | 1.94 | 61.28  | 118.68  |               |              |           |
| 9167.00 | 78.61   | 51.00 | 0.01 | -0.00  | 1.98 | 69.03  | 136.53  |               |              |           |
| 9167.50 | 75.79   | 51.00 | 0.01 | -0.00  | 1.86 | 76.89  | 142.96  |               |              |           |
| 9168.00 | 72.98   | 51.00 | 0.01 | -0.00  | 1.80 | 82.54  | 148.69  |               |              |           |
| 9168.50 | 71.81   | 51.00 | 0.01 | -0.00  | 1.79 | 83.69  | 149.53  |               |              |           |
| 9169.00 | 77.55   | 51.00 | 0.01 | -0.00  | 1.36 | 91.45  | 123.94  |               |              |           |
| 9169.50 | 83.28   | 51.00 | 0.01 | -0.00  | 0.96 | 100.00 | 95.98   |               |              |           |
| 9170.00 | 87.82   | 51.00 | 0.01 | -0.00  | 0.75 | 100.00 | 74.90   |               |              |           |
| 9170.50 | 92.03   | 51.00 | 0.01 | -0.00  | 0.85 | 83.15  | 70.70   |               |              |           |
| 9171.00 | 93.96   | 51.00 | 0.01 | -0.00  | 1.09 | 63.12  | 68.71   |               |              |           |
| 9171.50 | 94.68   | 51.00 | 0.01 | -0.00  | 1.64 | 43.89  | 71.83   |               |              |           |
| 9172.00 | 89.64   | 51.00 | 0.07 | -0.00  | 2.54 | 42.64  | 108.39  |               |              |           |
| 9172.50 | 83.15   | 51.00 | 0.06 | -0.00  | 2.92 | 49.45  | 144.48  |               |              |           |
| 9173.00 | 67.76   | 51.00 | 0.04 | -0.00  | 3.48 | 59.69  | 207.91  |               |              |           |
| 9173.50 | 51.84   | 51.00 | 0.04 | -0.00  | 4.08 | 65.55  | 267.23  |               |              |           |
| 9174.00 | 44.27   | 51.00 | 0.03 | -0.00  | 4.27 | 67.44  | 287.79  |               |              |           |
| 9174.50 | 39.05   | 51.00 | 0.03 | -0.00  | 4.34 | 68.40  | 296.92  |               |              |           |
| 9175.00 | 36.40   | 51.00 | 0.12 | -0.00  | 5.07 | 60.27  | 305.43  |               |              |           |
| 9175.50 | 40.66   | 51.00 | 0.38 | -0.00  | 5.62 | 52.09  | 292.52  |               |              |           |
| 9176.00 | 47.14   | 51.00 | 0.47 | -0.00  | 5.48 | 49.09  | 269.19  |               |              |           |
| 9176.50 | 59.32   | 51.00 | 0.22 | -0.00  | 4.38 | 49.25  | 215.57  |               |              |           |
| 9177.00 | 72.16   | 51.00 | 0.08 | -0.00  | 3.23 | 49.62  | 160.34  |               |              |           |
| 9177.50 | 83.46   | 51.00 | 0.05 | -0.00  | 2.48 | 45.87  | 113.70  |               |              |           |
| 9178.00 | 87.80   | 51.00 | 0.11 | -0.00  | 2.53 | 37.63  | 95.23   |               |              |           |
| 9178.50 | 92.14   | 51.00 | 0.77 | -0.00  | 3.14 | 24.60  | 77.32   |               |              |           |
| 9179.00 | 96.48   | 51.00 | 0.03 | -0.00  | 1.41 | 31.90  | 44.87   |               |              |           |
| 9179.50 | 96.37   | 51.00 | 0.03 | -0.00  | 1.45 | 32.74  | 47.52   |               |              |           |

060000

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page No 30

| DEPTH   | V Shale | Rho G | Perm    | Phi2nd | PhiE    | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|---------|--------|---------|--------|---------|---------------|--------------|-----------|
| 9180.00 | 93.26   | 51.00 | 0.36    | -0.00  | 2.70    | 27.30  | 73.61   |               |              |           |
| 9180.50 | 87.37   | 51.00 | 4.72    | -0.00  | 5.05    | 22.22  | 112.25  |               |              |           |
| 9181.00 | 77.78   | 51.00 | 9.62    | -0.00  | 6.60    | 24.15  | 159.48  |               |              |           |
| 9181.50 | 69.13   | 51.00 | 1.45    | -0.00  | 5.33    | 36.37  | 193.86  |               |              |           |
| 9182.00 | 60.82   | 51.00 | 0.46    | -0.00  | 4.94    | 45.76  | 225.87  |               |              |           |
| 9182.50 | 60.34   | 51.00 | 0.11    | -0.00  | 4.18    | 54.45  | 227.72  |               |              |           |
| 9183.00 | 62.98   | 51.00 | 0.03    | -0.00  | 3.40    | 62.42  | 212.23  |               |              |           |
| 9183.50 | 65.61   | 51.00 | 0.01    | -0.00  | 2.93    | 67.53  | 198.13  |               |              |           |
| 9184.00 | 67.19   | 51.00 | 0.01    | -0.00  | 2.55    | 73.02  | 186.10  |               |              |           |
| 9184.50 | 68.23   | 51.00 | 0.01    | -0.00  | 2.23    | 76.22  | 169.88  |               |              |           |
| 9185.00 | 69.27   | 51.00 | 0.01    | -0.00  | 1.91    | 80.18  | 153.08  |               |              |           |
| 9185.50 | 72.08   | 51.00 | 0.01    | -0.00  | 1.53    | 88.28  | 134.74  |               |              |           |
| 9186.00 | 75.39   | 51.00 | 0.01    | -0.00  | 1.62    | 79.66  | 129.29  |               |              |           |
| 9186.50 | 81.23   | 51.00 | 0.01    | -0.00  | 1.62    | 70.63  | 114.69  |               |              |           |
| 9187.00 | 87.07   | 51.00 | 0.01    | -0.00  | 1.51    | 63.75  | 96.46   |               |              |           |
| 9187.50 | 89.66   | 51.00 | 0.01    | -0.00  | 1.24    | 67.03  | 82.92   |               |              |           |
| 9188.00 | 85.26   | 51.00 | 0.01    | -0.00  | 1.27    | 75.28  | 95.31   |               |              |           |
| 9188.50 | 79.99   | 51.00 | 0.01    | -0.00  | 1.40    | 79.17  | 111.18  |               |              |           |
| 9189.00 | 78.48   | 51.00 | 0.01    | -0.00  | 1.65    | 72.23  | 118.83  |               |              |           |
| 9189.50 | 82.22   | 51.00 | 0.01    | -0.00  | 1.82    | 61.10  | 111.03  |               |              |           |
| 9190.00 | 87.96   | 51.00 | 0.05    | -0.00  | 2.30    | 42.77  | 98.24   |               |              |           |
| 9190.50 | 93.74   | 51.00 | 0.26    | -0.00  | 2.50    | 28.04  | 70.20   |               |              |           |
| 9191.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9191.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9192.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9192.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9193.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9193.50 | 96.23   | 51.00 | 0.06    | -0.00  | 1.51    | 26.36  | 39.70   |               |              |           |
| 9194.00 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 9194.50 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 9195.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9195.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9196.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9196.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9197.00 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 9197.50 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 9198.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9198.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9199.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9199.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9200.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9200.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9201.00 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 9201.50 | 87.51   | 51.00 | 13.83   | -0.00  | 4.70    | 8.55   | 40.20   |               |              |           |
| 9202.00 | 85.32   | 51.00 | 0.20    | -0.00  | 2.14    | 25.44  | 54.43   |               |              |           |
| 9202.50 | 83.13   | 51.00 | 0.01    | -0.00  | 1.24    | 45.97  | 57.11   |               |              |           |
| 9203.00 | 86.62   | 51.00 | 0.01    | -0.00  | 0.67    | 68.18  | 45.58   |               |              |           |
| 9203.50 | 91.23   | 51.00 | 0.01    | -0.00  | 0.73    | 73.41  | 53.66   |               |              |           |
| 9204.00 | 95.93   | 51.00 | 0.01    | -0.00  | 0.89    | 62.14  | 55.04   |               |              |           |
| 9204.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |

000091

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page No 31

| DEPTH   | V Shale | Rho G | Perm  | Phi2nd | PhiE | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|-------|--------|------|--------|---------|---------------|--------------|-----------|
| 9205.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9205.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9206.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9206.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9207.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9207.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9208.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9208.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9209.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9209.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9210.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9210.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9211.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9211.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9212.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9212.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9213.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9213.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9214.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9214.50 | 75.05   | 51.00 | 10.89 | -0.00  | 8.44 | 31.40  | 265.02  |               |              |           |
| 9215.00 | 55.68   | 51.00 | 0.75  | -0.00  | 5.99 | 47.33  | 283.54  |               |              |           |
| 9215.50 | 45.27   | 51.00 | 0.68  | -0.00  | 5.62 | 46.13  | 259.16  |               |              |           |
| 9216.00 | 47.11   | 51.00 | 0.51  | -0.00  | 4.81 | 43.63  | 209.92  |               |              |           |
| 9216.50 | 54.67   | 51.00 | 0.22  | -0.00  | 3.73 | 43.68  | 163.11  |               |              |           |
| 9217.00 | 65.22   | 51.00 | 0.05  | -0.00  | 2.51 | 45.55  | 114.51  |               |              |           |
| 9217.50 | 76.59   | 51.00 | 0.01  | -0.00  | 1.66 | 45.90  | 76.40   |               |              |           |
| 9218.00 | 86.85   | 51.00 | 0.06  | -0.00  | 1.88 | 33.33  | 62.63   |               |              |           |
| 9218.50 | 96.48   | 51.00 | 0.05  | -0.00  | 1.41 | 24.55  | 34.55   |               |              |           |
| 9219.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9219.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9220.00 | 89.62   | 51.00 | 0.01  | -0.00  | 1.38 | 51.39  | 70.97   |               |              |           |
| 9220.50 | 80.12   | 51.00 | 0.01  | -0.00  | 1.51 | 65.82  | 99.34   |               |              |           |
| 9221.00 | 75.20   | 51.00 | 0.01  | -0.00  | 1.56 | 73.15  | 113.91  |               |              |           |
| 9221.50 | 74.48   | 51.00 | 0.02  | -0.00  | 2.36 | 53.06  | 125.48  |               |              |           |
| 9222.00 | 82.50   | 51.00 | 0.10  | -0.00  | 2.63 | 39.64  | 104.22  |               |              |           |
| 9222.50 | 94.48   | 51.00 | 0.15  | -0.00  | 2.21 | 29.01  | 64.09   |               |              |           |
| 9223.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9223.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9224.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9224.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9225.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9225.50 | 98.39   | 51.00 | 0.01  | -0.00  | 0.64 | 37.90  | 24.33   |               |              |           |
| 9226.00 | 95.55   | 51.00 | 0.10  | -0.00  | 1.78 | 26.21  | 46.60   |               |              |           |
| 9226.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9227.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9227.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9228.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9228.50 | 61.82   | 51.00 | 12.37 | -0.00  | 9.13 | 16.25  | 148.31  |               |              |           |
| 9229.00 | 45.96   | 51.00 | 12.00 | -0.00  | 9.48 | 20.33  | 192.80  |               |              |           |
| 9229.50 | 59.37   | 51.00 | 10.44 | -0.00  | 8.65 | 17.51  | 151.40  |               |              |           |

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Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm  | Phi2nd | PhiE | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|-------|--------|------|--------|---------|---------------|--------------|-----------|
| 9230.00 | 73.16   | 51.00 | 12.03 | -0.00  | 8.66 | 12.71  | 110.11  |               |              |           |
| 9230.50 | 87.83   | 51.00 | 10.98 | -0.00  | 4.87 | 12.13  | 59.04   |               |              |           |
| 9231.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9231.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9232.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9232.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9233.00 | 97.10   | 51.00 | 0.01  | -0.00  | 1.16 | 35.97  | 41.79   |               |              |           |
| 9233.50 | 90.68   | 51.00 | 1.20  | -0.00  | 3.73 | 25.88  | 96.45   |               |              |           |
| 9234.00 | 79.91   | 51.00 | 3.22  | -0.00  | 5.42 | 28.68  | 155.55  |               |              |           |
| 9234.50 | 69.78   | 51.00 | 1.96  | -0.00  | 5.50 | 34.32  | 188.74  |               |              |           |
| 9235.00 | 64.03   | 51.00 | 1.14  | -0.00  | 5.27 | 38.50  | 202.84  |               |              |           |
| 9235.50 | 76.18   | 51.00 | 0.35  | -0.00  | 3.92 | 40.47  | 158.47  |               |              |           |
| 9236.00 | 93.20   | 51.00 | 0.07  | -0.00  | 2.27 | 38.02  | 86.25   |               |              |           |
| 9236.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9237.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9237.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9238.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9238.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9239.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9239.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9240.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9240.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9241.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9241.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9242.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9242.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9243.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9243.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9244.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9244.50 | 97.39   | 51.00 | 0.01  | -0.00  | 1.05 | 47.50  | 49.65   |               |              |           |
| 9245.00 | 90.69   | 51.00 | 0.01  | -0.00  | 1.51 | 58.95  | 89.15   |               |              |           |
| 9245.50 | 92.44   | 51.00 | 0.01  | -0.00  | 1.71 | 47.96  | 81.90   |               |              |           |
| 9246.00 | 96.99   | 51.00 | 0.01  | -0.00  | 1.20 | 42.05  | 50.59   |               |              |           |
| 9246.50 | 98.78   | 51.00 | 0.01  | -0.00  | 0.49 | 56.09  | 27.31   |               |              |           |
| 9247.00 | 93.96   | 51.00 | 0.08  | -0.00  | 2.07 | 33.74  | 69.83   |               |              |           |
| 9247.50 | 89.19   | 51.00 | 0.10  | -0.00  | 2.41 | 36.74  | 88.57   |               |              |           |
| 9248.00 | 87.45   | 51.00 | 0.12  | -0.00  | 2.51 | 36.49  | 91.65   |               |              |           |
| 9248.50 | 85.72   | 51.00 | 0.12  | -0.00  | 2.57 | 36.79  | 94.38   |               |              |           |
| 9249.00 | 83.99   | 51.00 | 0.12  | -0.00  | 2.62 | 37.36  | 97.91   |               |              |           |
| 9249.50 | 84.01   | 51.00 | 0.12  | -0.00  | 2.58 | 37.18  | 95.88   |               |              |           |
| 9250.00 | 84.52   | 51.00 | 0.11  | -0.00  | 2.51 | 37.07  | 93.01   |               |              |           |
| 9250.50 | 85.03   | 51.00 | 0.10  | -0.00  | 2.44 | 37.19  | 90.69   |               |              |           |
| 9251.00 | 85.54   | 51.00 | 0.10  | -0.00  | 2.41 | 36.78  | 88.79   |               |              |           |
| 9251.50 | 88.17   | 51.00 | 0.09  | -0.00  | 2.25 | 35.49  | 79.99   |               |              |           |
| 9252.00 | 91.57   | 51.00 | 0.04  | -0.00  | 1.79 | 36.72  | 65.90   |               |              |           |
| 9252.50 | 93.67   | 51.00 | 0.02  | -0.00  | 1.52 | 37.17  | 56.38   |               |              |           |
| 9253.00 | 92.21   | 51.00 | 0.02  | -0.00  | 1.54 | 39.70  | 61.29   |               |              |           |
| 9253.50 | 90.58   | 51.00 | 0.02  | -0.00  | 1.58 | 41.13  | 65.02   |               |              |           |
| 9254.00 | 90.72   | 51.00 | 0.05  | -0.00  | 1.91 | 34.83  | 66.36   |               |              |           |
| 9254.50 | 95.41   | 51.00 | 0.09  | -0.00  | 1.84 | 27.81  | 51.08   |               |              |           |

000093

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale   | Rho G | Perm      | Phi2nd | PhiE      | Sw     | PhiE*Sw   | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|-----------|-------|-----------|--------|-----------|--------|-----------|---------------|--------------|-----------|
| 9255.00 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 9255.50 | 99.46     | 51.00 | 0.01      | -0.00  | 0.22      | 63.76  | 13.82     |               |              |           |
| 9256.00 | 93.77     | 51.00 | 0.01      | -0.00  | 1.47      | 46.00  | 67.41     |               |              |           |
| 9256.50 | 84.88     | 51.00 | 0.01      | -0.00  | 1.65      | 61.43  | 101.62    |               |              |           |
| 9257.00 | 72.58     | 51.00 | 0.01      | -0.00  | 2.19      | 65.57  | 143.57    |               |              |           |
| 9257.50 | 58.26     | 51.00 | 0.01      | -0.00  | 2.94      | 64.44  | 189.56    |               |              |           |
| 9258.00 | 51.89     | 51.00 | 0.06      | -0.00  | 3.77      | 56.70  | 213.50    |               |              |           |
| 9258.50 | 46.42     | 51.00 | 0.27      | -0.00  | 4.70      | 49.61  | 233.13    |               |              |           |
| 9259.00 | 40.07     | 51.00 | 0.83      | -0.00  | 5.68      | 44.50  | 252.96    |               |              |           |
| 9259.50 | 34.48     | 51.00 | 2.82      | -0.00  | 6.94      | 38.65  | 268.13    |               |              |           |
| 9260.00 | 32.40     | 51.00 | 12.27     | -0.00  | 8.53      | 30.51  | 260.19    |               |              |           |
| 9260.50 | 34.90     | 51.00 | 12.64     | -0.00  | 10.13     | 23.87  | 241.89    |               |              |           |
| 9261.00 | 38.75     | 51.00 | 23.46     | -0.00  | 11.81     | 18.78  | 221.85    |               |              |           |
| 9261.50 | 42.59     | 51.00 | 66.23     | -0.00  | 14.62     | 12.78  | 186.79    |               |              |           |
| 9262.00 | C 0 A L   |       | C 0 A L   |        | C 0 A L   |        | C 0 A L   |               |              |           |
| 9262.50 | C 0 0 A L |       | C 0 0 A L |        | C 0 0 A L |        | C 0 0 A L |               |              |           |
| 9263.00 | C 0 0 A L |       | C 0 0 A L |        | C 0 0 A L |        | C 0 0 A L |               |              |           |
| 9263.50 | C 0 0 A L |       | C 0 0 A L |        | C 0 0 A L |        | C 0 0 A L |               |              |           |
| 9264.00 | C 0 0 A L |       | C 0 0 A L |        | C 0 0 A L |        | C 0 0 A L |               |              |           |
| 9264.50 | C 0 0 A L |       | C 0 0 A L |        | C 0 0 A L |        | C 0 0 A L |               |              |           |
| 9265.00 | C 0 0 A L |       | C 0 0 A L |        | C 0 0 A L |        | C 0 0 A L |               |              |           |
| 9265.50 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 9266.00 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 9266.50 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 9267.00 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 9267.50 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 9268.00 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 9268.50 | 93.76     | 51.00 | 0.19      | -0.00  | 2.50      | 31.40  | 78.41     |               |              |           |
| 9269.00 | 91.26     | 51.00 | 0.69      | -0.00  | 3.39      | 28.32  | 95.90     |               |              |           |
| 9269.50 | 92.89     | 51.00 | 0.06      | -0.00  | 1.99      | 36.22  | 72.25     |               |              |           |
| 9270.00 | 95.78     | 51.00 | 0.07      | -0.00  | 1.69      | 27.87  | 47.04     |               |              |           |
| 9270.50 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 9271.00 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 9271.50 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 9272.00 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 9272.50 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 9273.00 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 9273.50 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 9274.00 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |
| 9274.50 | 97.71     | 51.00 | 0.01      | -0.00  | 0.91      | 36.60  | 33.48     |               |              |           |
| 9275.00 | 95.68     | 51.00 | 0.01      | -0.00  | 0.98      | 44.34  | 43.39     |               |              |           |
| 9275.50 | 94.53     | 51.00 | 0.01      | -0.00  | 1.02      | 47.60  | 48.57     |               |              |           |
| 9276.00 | 91.92     | 51.00 | 0.01      | -0.00  | 1.26      | 48.45  | 61.06     |               |              |           |
| 9276.50 | 89.31     | 51.00 | 0.01      | -0.00  | 1.54      | 45.46  | 70.19     |               |              |           |
| 9277.00 | 88.11     | 51.00 | 1.26      | -0.00  | 3.43      | 22.47  | 77.04     |               |              |           |
| 9277.50 | 87.23     | 51.00 | 10.75     | -0.00  | 5.11      | 14.03  | 71.66     |               |              |           |
| 9278.00 | C 0 A L   |       | C 0 A L   |        | C 0 A L   |        | C 0 A L   |               |              |           |
| 9278.50 | C 0 A L   |       | C 0 A L   |        | C 0 A L   |        | C 0 A L   |               |              |           |
| 9279.00 | 96.61     | 51.00 | 0.11      | -0.00  | 1.35      | 15.56  | 21.07     |               |              |           |
| 9279.50 | 100.00    | 51.00 | 0.01      | -0.00  | 0.00      | 100.00 | 0.00      |               |              |           |

000094

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm    | Phi2nd | PhiE    | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|---------|--------|---------|--------|---------|---------------|--------------|-----------|
| 9280.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9280.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9281.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9281.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9282.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9282.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9283.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9283.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9284.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9284.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9285.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9285.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9286.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9286.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9287.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9287.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9288.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9288.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9289.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9289.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9290.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9290.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9291.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9291.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9292.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9292.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9293.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9293.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9294.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9294.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9295.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9295.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9296.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9296.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9297.00 | 99.82   | 51.00 | 0.01    | -0.00  | 0.07    | 100.00 | 7.15    |               |              |           |
| 9297.50 | 89.50   | 51.00 | 0.62    | -0.00  | 4.20    | 37.01  | 155.44  |               |              |           |
| 9298.00 | 70.00   | 51.00 | 25.70   | -0.00  | 9.30    | 25.84  | 240.34  |               |              |           |
| 9298.50 | 66.38   | 51.00 | 19.41   | -0.00  | 8.56    | 25.89  | 221.65  |               |              |           |
| 9299.00 | 72.57   | 51.00 | 4.03    | -0.00  | 5.88    | 29.18  | 171.59  |               |              |           |
| 9299.50 | 78.77   | 51.00 | 0.48    | -0.00  | 3.70    | 35.31  | 130.76  |               |              |           |
| 9300.00 | 84.18   | 51.00 | 0.04    | -0.00  | 2.26    | 42.92  | 96.94   |               |              |           |
| 9300.50 | 87.81   | 51.00 | 0.01    | -0.00  | 1.28    | 51.54  | 65.88   |               |              |           |
| 9301.00 | 91.44   | 51.00 | 1.72    | -0.00  | 3.42    | 19.18  | 65.64   |               |              |           |
| 9301.50 | 96.97   | 51.00 | 0.03    | -0.00  | 1.21    | 24.41  | 29.58   |               |              |           |
| 9302.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9302.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9303.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9303.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9304.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9304.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |

000095

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

Page No 35

| DEPTH   | V Shale | Rho G | Perm    | Phi2nd | PhiE    | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|---------|--------|---------|--------|---------|---------------|--------------|-----------|
| 9305.00 | C O A L |       | C O A L |        | C O A L |        | C O A L | C O A L       |              |           |
| 9305.50 | C O A L |       | C O A L |        | C O A L |        | C O A L | C O A L       |              |           |
| 9306.00 | C O A L |       | C O A L |        | C O A L |        | C O A L | C O A L       |              |           |
| 9306.50 | C O A L |       | C O A L |        | C O A L |        | C O A L | C O A L       |              |           |
| 9307.00 | C O A L |       | C O A L |        | C O A L |        | C O A L | C O A L       |              |           |
| 9307.50 | C O A L |       | C O A L |        | C O A L |        | C O A L | C O A L       |              |           |
| 9308.00 | 77.55   | 51.00 | 3.90    | -0.00  | 5.14    | 24.80  | 127.35  |               |              |           |
| 9308.50 | 87.67   | 51.00 | 0.01    | -0.00  | 1.40    | 59.52  | 83.29   |               |              |           |
| 9309.00 | 94.78   | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9309.50 | 93.88   | 51.00 | 0.01    | -0.00  | 0.34    | 82.04  | 28.28   |               |              |           |
| 9310.00 | 94.23   | 51.00 | 0.07    | -0.00  | 1.81    | 30.31  | 54.72   |               |              |           |
| 9310.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9311.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9311.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9312.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9312.50 | 91.71   | 51.00 | 2.30    | -0.00  | 3.31    | 15.05  | 49.90   |               |              |           |
| 9313.00 | 80.78   | 51.00 | 46.08   | -0.00  | 7.69    | 13.13  | 100.96  |               |              |           |
| 9313.50 | 78.12   | 51.00 | 2.22    | -0.00  | 4.46    | 25.77  | 115.05  |               |              |           |
| 9314.00 | 84.21   | 51.00 | 3.16    | -0.00  | 4.53    | 22.59  | 102.23  |               |              |           |
| 9314.50 | 92.50   | 51.00 | 0.79    | -0.00  | 3.00    | 22.75  | 68.30   |               |              |           |
| 9315.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9315.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9316.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9316.50 | 97.09   | 51.00 | 0.01    | -0.00  | 1.17    | 37.19  | 43.35   |               |              |           |
| 9317.00 | 89.32   | 51.00 | 0.01    | -0.00  | 1.75    | 46.23  | 80.82   |               |              |           |
| 9317.50 | 82.27   | 51.00 | 0.01    | -0.00  | 1.77    | 55.08  | 97.46   |               |              |           |
| 9318.00 | 78.85   | 51.00 | 0.01    | -0.00  | 1.96    | 54.48  | 106.51  |               |              |           |
| 9318.50 | 82.76   | 51.00 | 0.01    | -0.00  | 1.84    | 51.77  | 95.06   |               |              |           |
| 9319.00 | 84.69   | 51.00 | 0.01    | -0.00  | 1.84    | 48.91  | 89.84   |               |              |           |
| 9319.50 | 81.54   | 51.00 | 0.03    | -0.00  | 2.15    | 46.98  | 100.89  |               |              |           |
| 9320.00 | 77.98   | 51.00 | 0.05    | -0.00  | 2.48    | 45.60  | 113.24  |               |              |           |
| 9320.50 | 76.52   | 51.00 | 0.05    | -0.00  | 2.59    | 45.44  | 117.87  |               |              |           |
| 9321.00 | 77.34   | 51.00 | 0.05    | -0.00  | 2.48    | 44.53  | 110.35  |               |              |           |
| 9321.50 | 78.17   | 51.00 | 0.40    | -0.00  | 3.21    | 32.11  | 103.17  |               |              |           |
| 9322.00 | 80.97   | 51.00 | 46.26   | -0.00  | 7.61    | 12.74  | 96.94   |               |              |           |
| 9322.50 | 86.45   | 51.00 | 14.70   | -0.00  | 5.42    | 12.85  | 69.63   |               |              |           |
| 9323.00 | 89.74   | 51.00 | 6.58    | -0.00  | 4.10    | 11.53  | 47.30   |               |              |           |
| 9323.50 | C O A L |       | C O A L |        | C O A L |        | C O A L | C O A L       |              |           |
| 9324.00 | C O A L |       | C O A L |        | C O A L |        | C O A L | C O A L       |              |           |
| 9324.50 | C O A L |       | C O A L |        | C O A L |        | C O A L | C O A L       |              |           |
| 9325.00 | C O A L |       | C O A L |        | C O A L |        | C O A L | C O A L       |              |           |
| 9325.50 | 86.78   | 51.00 | 24.89   | -0.00  | 5.29    | 6.49   | 34.30   |               |              |           |
| 9326.00 | 93.91   | 51.00 | 0.56    | -0.00  | 2.43    | 18.99  | 46.23   |               |              |           |
| 9326.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9327.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9327.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9328.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9328.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9329.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9329.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |

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Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm  | Phi2nd | PhiE  | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|-------|--------|-------|--------|---------|---------------|--------------|-----------|
| 9330.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9330.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9331.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9331.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9332.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9332.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9333.00 | 84.63   | 51.00 | 0.01  | -0.00  | 1.08  | 45.61  | 49.29   |               |              |           |
| 9333.50 | 70.96   | 51.00 | 0.01  | -0.00  | 1.45  | 49.04  | 71.27   |               |              |           |
| 9334.00 | 62.58   | 51.00 | 0.01  | -0.00  | 1.66  | 50.38  | 83.53   |               |              |           |
| 9334.50 | 64.67   | 51.00 | 0.05  | -0.00  | 2.15  | 40.73  | 87.52   |               |              |           |
| 9335.00 | 72.81   | 51.00 | 9.17  | -0.00  | 5.41  | 17.71  | 95.81   |               |              |           |
| 9335.50 | 81.12   | 51.00 | 48.80 | -0.00  | 7.37  | 11.07  | 81.62   |               |              |           |
| 9336.00 | 89.43   | 51.00 | 6.32  | -0.00  | 4.23  | 12.99  | 54.93   |               |              |           |
| 9336.50 | 97.74   | 51.00 | 0.02  | -0.00  | 0.90  | 19.79  | 17.87   |               |              |           |
| 9337.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9337.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9338.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9338.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9339.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9339.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9340.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9340.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9341.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9341.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9342.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9342.50 | 97.97   | 51.00 | 0.01  | -0.00  | 0.08  | 100.00 | 7.90    |               |              |           |
| 9343.00 | 57.14   | 51.00 | 0.02  | -0.00  | 2.86  | 61.96  | 177.08  |               |              |           |
| 9343.50 | 51.30   | 51.00 | 0.08  | -0.00  | 3.70  | 53.32  | 197.12  |               |              |           |
| 9344.00 | 57.70   | 51.00 | 0.12  | -0.00  | 3.62  | 49.15  | 177.84  |               |              |           |
| 9344.50 | 64.82   | 51.00 | 0.15  | -0.00  | 3.28  | 43.24  | 141.75  |               |              |           |
| 9345.00 | 68.87   | 51.00 | 0.15  | -0.00  | 3.94  | 39.63  | 116.63  |               |              |           |
| 9345.50 | 72.16   | 51.00 | 0.17  | -0.00  | 2.74  | 35.72  | 97.92   |               |              |           |
| 9346.00 | 75.46   | 51.00 | 0.57  | -0.00  | 3.11  | 27.28  | 84.71   |               |              |           |
| 9346.50 | 81.24   | 51.00 | 2.48  | -0.00  | 3.71  | 18.15  | 67.24   |               |              |           |
| 9347.00 | 89.23   | 51.00 | 5.43  | -0.00  | 3.91  | 11.81  | 46.11   |               |              |           |
| 9347.50 | 96.57   | 51.00 | 0.13  | -0.00  | 1.37  | 14.32  | 19.62   |               |              |           |
| 9348.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9348.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9349.00 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9349.50 | 100.00  | 51.00 | 0.01  | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9350.00 | 91.08   | 51.00 | 3.24  | -0.00  | 3.57  | 14.03  | 50.04   |               |              |           |
| 9350.50 | 82.37   | 51.00 | 45.91 | -0.00  | 7.05  | 10.15  | 71.56   |               |              |           |
| 9351.00 | 83.32   | 51.00 | 36.30 | -0.00  | 6.67  | 10.67  | 71.22   |               |              |           |
| 9351.50 | 87.38   | 51.00 | 11.04 | -0.00  | 5.05  | 13.34  | 67.32   |               |              |           |
| 9352.00 | 89.62   | 51.00 | 3.85  | -0.00  | 4.09  | 17.00  | 69.53   |               |              |           |
| 9352.50 | 86.41   | 51.00 | 2.20  | -0.00  | 3.93  | 21.45  | 84.32   |               |              |           |
| 9353.00 | 81.87   | 51.00 | 35.73 | -0.00  | 7.25  | 13.74  | 99.65   |               |              |           |
| 9353.50 | 76.50   | 51.00 | 15.65 | -0.00  | 9.40  | 11.05  | 103.89  |               |              |           |
| 9354.00 | 71.13   | 51.00 | 31.61 | -0.00  | 11.55 | 9.10   | 105.14  |               |              |           |
| 9354.50 | 68.83   | 51.00 | 43.41 | -0.00  | 12.47 | 8.06   | 100.50  |               |              |           |

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Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm    | Phi2nd | PhiE    | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|---------|--------|---------|--------|---------|---------------|--------------|-----------|
| 9355.00 | 71.11   | 51.00 | 33.14   | -0.00  | 11.56   | 7.92   | 91.53   |               |              |           |
| 9355.50 | 83.68   | 51.00 | 29.37   | -0.00  | 6.53    | 12.11  | 79.06   |               |              |           |
| 9356.00 | 92.97   | 51.00 | 0.89    | -0.00  | 2.81    | 19.26  | 54.18   |               |              |           |
| 9356.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9357.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9357.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9358.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9358.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9359.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9359.50 | 92.57   | 51.00 | 0.09    | -0.00  | 1.94    | 29.74  | 57.58   |               |              |           |
| 9360.00 | 75.82   | 51.00 | 0.07    | -0.00  | 2.43    | 40.73  | 99.16   |               |              |           |
| 9360.50 | 74.71   | 51.00 | 0.06    | -0.00  | 2.42    | 41.62  | 100.85  |               |              |           |
| 9361.00 | 73.91   | 51.00 | 0.11    | -0.00  | 2.67    | 38.93  | 104.06  |               |              |           |
| 9361.50 | 72.64   | 51.00 | 0.20    | -0.00  | 2.95    | 36.41  | 107.46  |               |              |           |
| 9362.00 | 71.34   | 51.00 | 0.37    | -0.00  | 3.23    | 33.27  | 107.53  |               |              |           |
| 9362.50 | 67.14   | 51.00 | 0.55    | -0.00  | 3.69    | 33.67  | 124.12  |               |              |           |
| 9363.00 | 61.44   | 51.00 | 0.73    | -0.00  | 4.22    | 35.41  | 149.56  |               |              |           |
| 9363.50 | 52.71   | 51.00 | 0.93    | -0.00  | 4.71    | 36.76  | 173.29  |               |              |           |
| 9364.00 | 49.85   | 51.00 | 0.80    | -0.00  | 4.74    | 38.50  | 182.45  |               |              |           |
| 9364.50 | 48.21   | 51.00 | 1.15    | -0.00  | 5.03    | 36.72  | 184.58  |               |              |           |
| 9365.00 | 51.48   | 51.00 | 2.20    | -0.00  | 5.25    | 31.53  | 165.63  |               |              |           |
| 9365.50 | 59.93   | 51.00 | 2.90    | -0.00  | 4.93    | 26.48  | 130.58  |               |              |           |
| 9366.00 | 76.92   | 51.00 | 1.95    | -0.00  | 3.81    | 21.59  | 82.19   |               |              |           |
| 9366.50 | 88.30   | 51.00 | 0.63    | -0.00  | 2.64    | 20.67  | 54.59   |               |              |           |
| 9367.00 | 99.06   | 51.00 | 0.01    | -0.00  | 0.37    | 33.01  | 12.38   |               |              |           |
| 9367.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9368.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9368.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9369.00 | 91.75   | 51.00 | 0.01    | -0.00  | 0.91    | 54.72  | 49.86   |               |              |           |
| 9369.50 | 78.65   | 51.00 | 0.01    | -0.00  | 1.85    | 52.50  | 97.07   |               |              |           |
| 9370.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9370.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9371.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9371.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9372.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9372.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9373.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9373.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9374.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9374.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9375.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9375.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9376.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9376.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9377.00 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9377.50 | C 0 A L |       | C 0 A L |        | C 0 A L |        | C 0 A L |               |              |           |
| 9378.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9378.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9379.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9379.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |

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Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm    | Phi2nd | PhiE    | Sw      | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|---------|--------|---------|---------|---------|---------------|--------------|-----------|
| 9380.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00  | 0.00    |               |              |           |
| 9380.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00  | 0.00    |               |              |           |
| 9381.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00  | 0.00    |               |              |           |
| 9381.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00  | 0.00    |               |              |           |
| 9382.00 | C 0 A L |       | C 0 A L |        | C 0 A L | C 0 A L | C 0 A L |               |              |           |
| 9382.50 | C 0 A L |       | C 0 A L |        | C 0 A L | C 0 A L | C 0 A L |               |              |           |
| 9383.00 | C 0 A L |       | C 0 A L |        | C 0 A L | C 0 A L | C 0 A L |               |              |           |
| 9383.50 | 68.93   | 51.00 | 26.22   | -0.00  | 11.27   | 11.88   | 133.91  |               |              |           |
| 9384.00 | 80.61   | 51.00 | 13.34   | -0.00  | 6.15    | 18.24   | 112.12  |               |              |           |
| 9384.50 | 93.01   | 51.00 | 0.71    | -0.00  | 2.79    | 21.33   | 59.61   |               |              |           |
| 9385.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00  | 0.00    |               |              |           |
| 9385.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00  | 0.00    |               |              |           |
| 9386.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00  | 0.00    |               |              |           |
| 9386.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00  | 0.00    |               |              |           |
| 9387.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00  | 0.00    |               |              |           |
| 9387.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00  | 0.00    |               |              |           |
| 9388.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00  | 0.00    |               |              |           |
| 9388.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00  | 0.00    |               |              |           |
| 9389.00 | 97.15   | 51.00 | 0.01    | -0.00  | 0.51    | 40.58   | 20.62   |               |              |           |
| 9389.50 | 95.97   | 51.00 | 0.01    | -0.00  | 0.59    | 42.01   | 24.86   |               |              |           |
| 9390.00 | 94.79   | 51.00 | 0.01    | -0.00  | 0.68    | 46.31   | 31.32   |               |              |           |
| 9390.50 | 92.64   | 51.00 | 0.01    | -0.00  | 0.92    | 47.47   | 43.53   |               |              |           |
| 9391.00 | 78.74   | 51.00 | 0.01    | -0.00  | 1.16    | 64.21   | 74.22   |               |              |           |
| 9391.50 | 69.81   | 51.00 | 0.01    | -0.00  | 1.52    | 63.53   | 96.56   |               |              |           |
| 9392.00 | 69.98   | 51.00 | 0.01    | -0.00  | 1.44    | 63.96   | 91.99   |               |              |           |
| 9392.50 | 71.73   | 51.00 | 0.01    | -0.00  | 1.27    | 64.16   | 81.56   |               |              |           |
| 9393.00 | 73.49   | 51.00 | 0.01    | -0.00  | 1.14    | 65.04   | 74.21   |               |              |           |
| 9393.50 | 75.24   | 51.00 | 0.01    | -0.00  | 1.34    | 60.44   | 80.92   |               |              |           |
| 9394.00 | 73.88   | 51.00 | 0.02    | -0.00  | 2.10    | 49.13   | 103.02  |               |              |           |
| 9394.50 | 72.42   | 51.00 | 0.10    | -0.00  | 2.86    | 42.60   | 121.89  |               |              |           |
| 9395.00 | 66.48   | 51.00 | 0.29    | -0.00  | 3.63    | 39.70   | 144.25  |               |              |           |
| 9395.50 | 57.24   | 51.00 | 0.77    | -0.00  | 4.54    | 37.39   | 169.72  |               |              |           |
| 9396.00 | 41.18   | 51.00 | 1.94    | -0.00  | 5.79    | 36.28   | 210.16  |               |              |           |
| 9396.50 | 25.92   | 51.00 | 2.66    | -0.00  | 7.00    | 39.54   | 276.73  |               |              |           |
| 9397.00 | 15.74   | 51.00 | 2.90    | -0.00  | 7.78    | 42.33   | 329.26  |               |              |           |
| 9397.50 | 9.59    | 51.00 | 2.92    | -0.00  | 8.28    | 44.44   | 367.79  |               |              |           |
| 9398.00 | 5.46    | 51.00 | 2.22    | -0.00  | 8.21    | 47.04   | 386.40  |               |              |           |
| 9398.50 | 6.77    | 51.00 | 1.82    | -0.00  | 7.71    | 46.86   | 361.32  |               |              |           |
| 9399.00 | 12.62   | 51.00 | 1.87    | -0.00  | 7.31    | 44.73   | 326.82  |               |              |           |
| 9399.50 | 18.33   | 51.00 | 2.82    | -0.00  | 7.31    | 40.48   | 296.01  |               |              |           |
| 9400.00 | 24.03   | 51.00 | 4.62    | -0.00  | 7.45    | 35.98   | 267.90  |               |              |           |
| 9400.50 | 30.12   | 51.00 | 7.25    | -0.00  | 7.56    | 31.79   | 240.26  |               |              |           |
| 9401.00 | 39.77   | 51.00 | 5.44    | -0.00  | 6.60    | 30.08   | 198.58  |               |              |           |
| 9401.50 | 49.64   | 51.00 | 1.77    | -0.00  | 5.17    | 33.23   | 171.80  |               |              |           |
| 9402.00 | 66.12   | 51.00 | 0.22    | -0.00  | 3.34    | 39.72   | 132.59  |               |              |           |
| 9402.50 | 85.46   | 51.00 | 0.01    | -0.00  | 1.46    | 49.71   | 72.44   |               |              |           |
| 9403.00 | 95.52   | 51.00 | 0.01    | -0.00  | 0.29    | 70.53   | 20.79   |               |              |           |
| 9403.50 | 98.61   | 51.00 | 0.01    | -0.00  | 0.27    | 60.14   | 16.02   |               |              |           |
| 9404.00 | 96.87   | 51.00 | 0.01    | -0.00  | 0.45    | 56.83   | 25.37   |               |              |           |
| 9404.50 | 87.75   | 51.00 | 0.01    | -0.00  | 1.07    | 53.28   | 57.09   |               |              |           |

660000

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm  | Phi2nd | PhiE | Sw    | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|-------|--------|------|-------|---------|---------------|--------------|-----------|
| 9405.00 | 78.23   | 51.00 | 0.01  | -0.00  | 1.72 | 47.51 | 81.75   |               |              |           |
| 9405.50 | 70.38   | 51.00 | 0.05  | -0.00  | 2.32 | 42.45 | 98.54   |               |              |           |
| 9406.00 | 76.01   | 51.00 | 0.06  | -0.00  | 2.18 | 37.85 | 82.63   |               |              |           |
| 9406.50 | 84.01   | 51.00 | 0.06  | -0.00  | 1.90 | 33.02 | 62.78   |               |              |           |
| 9407.00 | 90.89   | 51.00 | 0.06  | -0.00  | 1.69 | 29.22 | 49.33   |               |              |           |
| 9407.50 | 96.75   | 51.00 | 0.03  | -0.00  | 1.30 | 26.25 | 34.16   |               |              |           |
| 9408.00 | 92.06   | 51.00 | 0.23  | -0.00  | 2.33 | 26.89 | 62.54   |               |              |           |
| 9408.50 | 84.00   | 51.00 | 0.49  | -0.00  | 3.32 | 31.19 | 103.41  |               |              |           |
| 9409.00 | 76.70   | 51.00 | 4.13  | -0.00  | 4.96 | 22.96 | 113.76  |               |              |           |
| 9409.50 | 46.43   | 51.00 | 5.57  | -0.00  | 6.84 | 31.05 | 212.20  |               |              |           |
| 9410.00 | 23.17   | 51.00 | 6.99  | -0.00  | 8.36 | 35.70 | 298.51  |               |              |           |
| 9410.50 | 9.89    | 51.00 | 8.16  | -0.00  | 9.39 | 38.11 | 357.79  |               |              |           |
| 9411.00 | 3.87    | 51.00 | 6.37  | -0.00  | 9.18 | 39.91 | 366.20  |               |              |           |
| 9411.50 | 0.00    | 51.00 | 5.51  | -0.00  | 8.98 | 40.65 | 364.94  |               |              |           |
| 9412.00 | 0.00    | 51.00 | 4.78  | -0.00  | 8.61 | 40.65 | 349.85  |               |              |           |
| 9412.50 | 0.00    | 51.00 | 7.24  | -0.00  | 8.96 | 37.73 | 337.99  |               |              |           |
| 9413.00 | 0.00    | 51.00 | 7.60  | -0.00  | 9.18 | 38.08 | 349.61  |               |              |           |
| 9413.50 | 0.00    | 51.00 | 7.60  | -0.00  | 9.40 | 38.92 | 366.02  |               |              |           |
| 9414.00 | 0.00    | 51.00 | 9.40  | -0.00  | 9.63 | 37.52 | 361.19  |               |              |           |
| 9414.50 | 0.00    | 51.00 | 9.25  | -0.00  | 9.34 | 36.65 | 342.47  |               |              |           |
| 9415.00 | 1.43    | 51.00 | 9.24  | -0.00  | 8.97 | 35.21 | 315.68  |               |              |           |
| 9415.50 | 4.24    | 51.00 | 9.65  | -0.00  | 8.56 | 33.16 | 283.92  |               |              |           |
| 9416.00 | 8.34    | 51.00 | 10.53 | -0.00  | 8.09 | 30.30 | 245.24  |               |              |           |
| 9416.50 | 13.44   | 51.00 | 13.65 | -0.00  | 7.86 | 26.58 | 208.99  |               |              |           |
| 9417.00 | 18.23   | 51.00 | 13.75 | -0.00  | 7.66 | 25.59 | 195.99  |               |              |           |
| 9417.50 | 17.43   | 51.00 | 11.12 | -0.00  | 7.58 | 27.43 | 207.94  |               |              |           |
| 9418.00 | 16.47   | 51.00 | 9.82  | -0.00  | 7.42 | 27.99 | 207.78  |               |              |           |
| 9418.50 | 14.62   | 51.00 | 11.44 | -0.00  | 7.65 | 27.46 | 209.98  |               |              |           |
| 9419.00 | 13.27   | 51.00 | 16.19 | -0.00  | 8.38 | 27.02 | 226.40  |               |              |           |
| 9419.50 | 16.93   | 51.00 | 17.93 | -0.00  | 8.68 | 27.17 | 235.79  |               |              |           |
| 9420.00 | 20.60   | 51.00 | 14.92 | -0.00  | 8.75 | 29.38 | 257.09  |               |              |           |
| 9420.50 | 24.26   | 51.00 | 11.27 | -0.00  | 8.70 | 32.09 | 279.19  |               |              |           |
| 9421.00 | 27.80   | 51.00 | 5.85  | -0.00  | 8.17 | 36.73 | 300.02  |               |              |           |
| 9421.50 | 18.36   | 51.00 | 5.22  | -0.00  | 8.29 | 38.44 | 318.64  |               |              |           |
| 9422.00 | 9.14    | 51.00 | 5.42  | -0.00  | 8.38 | 38.42 | 321.94  |               |              |           |
| 9422.50 | 4.59    | 51.00 | 5.30  | -0.00  | 8.20 | 37.89 | 310.51  |               |              |           |
| 9423.00 | 0.33    | 51.00 | 5.04  | -0.00  | 8.00 | 37.55 | 300.30  |               |              |           |
| 9423.50 | 0.30    | 51.00 | 4.63  | -0.00  | 7.58 | 36.60 | 277.56  |               |              |           |
| 9424.00 | 0.26    | 51.00 | 4.83  | -0.00  | 7.33 | 34.98 | 256.57  |               |              |           |
| 9424.50 | 10.45   | 51.00 | 6.24  | -0.00  | 6.64 | 28.83 | 191.42  |               |              |           |
| 9425.00 | 25.60   | 51.00 | 7.84  | -0.00  | 5.87 | 22.17 | 130.13  |               |              |           |
| 9425.50 | 40.16   | 51.00 | 8.55  | -0.00  | 5.29 | 17.63 | 93.19   |               |              |           |
| 9426.00 | 48.88   | 51.00 | 8.01  | -0.00  | 5.13 | 17.24 | 88.44   |               |              |           |
| 9426.50 | 38.70   | 51.00 | 8.60  | -0.00  | 5.88 | 21.27 | 125.07  |               |              |           |
| 9427.00 | 25.77   | 51.00 | 9.09  | -0.00  | 6.76 | 25.57 | 172.92  |               |              |           |
| 9427.50 | 18.32   | 51.00 | 9.64  | -0.00  | 7.37 | 27.95 | 206.00  |               |              |           |
| 9428.00 | 12.88   | 51.00 | 9.64  | -0.00  | 7.78 | 29.83 | 232.05  |               |              |           |
| 9428.50 | 7.63    | 51.00 | 9.17  | -0.00  | 8.12 | 31.85 | 258.75  |               |              |           |
| 9429.00 | 4.23    | 51.00 | 10.32 | -0.00  | 8.37 | 31.69 | 265.36  |               |              |           |
| 9429.50 | 2.97    | 51.00 | 11.04 | -0.00  | 8.46 | 31.32 | 264.81  |               |              |           |

000100

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm    | Phi2nd | PhiE    | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|---------|--------|---------|--------|---------|---------------|--------------|-----------|
| 9430.00 | 5.11    | 51.00 | 10.74   | -0.00  | 8.24    | 30.70  | 252.98  |               |              |           |
| 9430.50 | 9.53    | 51.00 | 10.42   | -0.00  | 7.91    | 29.59  | 234.05  |               |              |           |
| 9431.00 | 16.02   | 51.00 | 26.56   | -0.00  | 8.91    | 24.01  | 214.03  |               |              |           |
| 9431.50 | 25.84   | 51.00 | 15.10   | -0.00  | 10.15   | 18.72  | 190.13  | 3.95          | 2.62         | 31.00     |
| 9432.00 | 35.66   | 51.00 | 27.47   | -0.00  | 11.68   | 13.75  | 160.55  |               |              |           |
| 9432.50 | 49.21   | 51.00 | 48.71   | -0.00  | 13.07   | 9.64   | 126.07  |               |              |           |
| 9433.00 | 63.73   | 51.00 | 95.71   | -0.00  | 14.51   | 4.42   | 64.09   |               |              |           |
| 9433.50 | C D A L |       | C D A L |        | C D A L |        | C D A L |               |              |           |
| 9434.00 | 98.95   | 51.00 | 0.01    | -0.00  | 0.42    | 2.64   | 1.11    |               |              |           |
| 9434.50 | 97.90   | 51.00 | 0.07    | -0.00  | 0.84    | 3.25   | 2.73    |               |              |           |
| 9435.00 | 96.85   | 51.00 | 0.07    | -0.00  | 1.26    | 17.20  | 21.68   |               |              |           |
| 9435.50 | 97.89   | 51.00 | 0.01    | -0.00  | 0.84    | 20.96  | 17.71   |               |              |           |
| 9436.00 | 99.10   | 51.00 | 0.01    | -0.00  | 0.36    | 17.00  | 6.14    |               |              |           |
| 9436.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9437.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9437.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9438.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9438.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9439.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9439.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9440.00 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9440.50 | 100.00  | 51.00 | 0.01    | -0.00  | 0.00    | 100.00 | 0.00    |               |              |           |
| 9441.00 | 45.71   | 51.00 | 0.94    | -0.00  | 3.69    | 28.07  | 103.54  |               |              |           |
| 9441.50 | 30.91   | 51.00 | 1.45    | -0.00  | 4.75    | 32.40  | 154.05  |               |              |           |
| 9442.00 | 24.47   | 51.00 | 3.49    | -0.00  | 6.38    | 33.49  | 213.54  |               |              |           |
| 9442.50 | 17.92   | 51.00 | 4.55    | -0.00  | 7.91    | 38.24  | 302.53  |               |              |           |
| 9443.00 | 14.88   | 51.00 | 5.76    | -0.00  | 9.02    | 40.37  | 364.29  |               |              |           |
| 9443.50 | 11.84   | 51.00 | 6.62    | -0.00  | 9.86    | 42.00  | 414.10  |               |              |           |
| 9444.00 | 8.58    | 51.00 | 5.64    | -0.00  | 10.21   | 44.88  | 458.12  | 4.00          | 2.65         | 31.50     |
| 9444.50 | 5.24    | 51.00 | 4.12    | -0.00  | 10.38   | 48.73  | 505.67  | 4.05          | 2.68         | 32.00     |
| 9445.00 | 3.25    | 51.00 | 4.53    | -0.00  | 10.43   | 47.91  | 499.91  | 4.10          | 2.70         | 32.50     |
| 9445.50 | 6.37    | 51.00 | 3.79    | -0.00  | 9.75    | 47.42  | 462.42  |               |              |           |
| 9446.00 | 10.21   | 51.00 | 2.56    | -0.00  | 8.82    | 47.99  | 423.04  |               |              |           |
| 9446.50 | 15.13   | 51.00 | 1.62    | -0.00  | 7.83    | 48.64  | 380.67  |               |              |           |
| 9447.00 | 20.05   | 51.00 | 2.19    | -0.00  | 7.67    | 44.78  | 343.53  |               |              |           |
| 9447.50 | 26.65   | 51.00 | 7.51    | -0.00  | 8.80    | 36.74  | 323.50  |               |              |           |
| 9448.00 | 28.22   | 51.00 | 7.78    | -0.00  | 9.39    | 38.63  | 362.87  |               |              |           |
| 9448.50 | 20.20   | 51.00 | 7.85    | -0.00  | 10.46   | 42.30  | 442.55  | 4.16          | 2.73         | 33.00     |
| 9449.00 | 12.52   | 51.00 | 7.80    | -0.00  | 11.52   | 43.33  | 498.95  | 4.21          | 2.77         | 33.50     |
| 9449.50 | 5.76    | 51.00 | 7.34    | -0.00  | 11.49   | 46.26  | 531.61  | 4.27          | 2.80         | 34.00     |
| 9450.00 | 0.00    | 51.00 | 7.04    | -0.00  | 11.40   | 46.42  | 529.24  | 4.33          | 2.83         | 34.50     |
| 9450.50 | 0.00    | 51.00 | 7.45    | -0.00  | 11.17   | 45.11  | 503.73  | 4.38          | 2.86         | 35.00     |
| 9451.00 | 0.00    | 51.00 | 7.82    | -0.00  | 10.94   | 43.87  | 479.77  | 4.44          | 2.89         | 35.50     |
| 9451.50 | 0.00    | 51.00 | 8.04    | -0.00  | 10.70   | 42.83  | 458.38  | 4.49          | 2.92         | 36.00     |
| 9452.00 | 0.88    | 51.00 | 9.30    | -0.00  | 10.60   | 40.99  | 434.58  | 4.54          | 2.95         | 36.50     |
| 9452.50 | 3.49    | 51.00 | 9.64    | -0.00  | 10.64   | 40.75  | 433.64  | 4.60          | 2.98         | 37.00     |
| 9453.00 | 6.11    | 51.00 | 9.87    | -0.00  | 10.71   | 40.72  | 436.20  | 4.65          | 3.01         | 37.50     |
| 9453.50 | 8.73    | 51.00 | 9.83    | -0.00  | 10.78   | 40.99  | 441.84  | 4.71          | 3.05         | 38.00     |
| 9454.00 | 11.34   | 51.00 | 8.00    | -0.00  | 10.55   | 42.39  | 447.32  | 4.76          | 3.08         | 38.50     |
| 9454.50 | 10.77   | 51.00 | 7.79    | -0.00  | 10.48   | 42.44  | 444.92  | 4.81          | 3.11         | 39.00     |

000101

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm | Phi2nd | PhiE  | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|------|--------|-------|--------|---------|---------------|--------------|-----------|
| 9455.00 | 9.37    | 51.00 | 7.40 | -0.00  | 10.40 | 42.70  | 444.13  | 4.86          | 3.14         | 39.50     |
| 9455.50 | 7.97    | 51.00 | 6.55 | -0.00  | 10.30 | 43.64  | 449.66  | 4.91          | 3.16         | 40.00     |
| 9456.00 | 12.23   | 51.00 | 5.55 | -0.00  | 9.95  | 44.14  | 439.05  |               |              |           |
| 9456.50 | 15.63   | 51.00 | 4.67 | -0.00  | 9.73  | 45.17  | 439.46  |               |              |           |
| 9457.00 | 18.77   | 51.00 | 5.89 | -0.00  | 10.07 | 43.93  | 442.21  | 4.96          | 3.19         | 40.50     |
| 9457.50 | 19.58   | 51.00 | 6.14 | -0.00  | 10.18 | 43.88  | 446.54  | 5.02          | 3.22         | 41.00     |
| 9458.00 | 17.35   | 51.00 | 6.25 | -0.00  | 10.41 | 44.48  | 463.05  | 5.07          | 3.25         | 41.50     |
| 9458.50 | 11.86   | 51.00 | 5.70 | -0.00  | 10.59 | 46.05  | 487.76  | 5.12          | 3.28         | 42.00     |
| 9459.00 | 6.16    | 51.00 | 4.91 | -0.00  | 10.67 | 47.86  | 510.62  | 5.17          | 3.31         | 42.50     |
| 9459.50 | 3.74    | 51.00 | 4.73 | -0.00  | 10.82 | 48.74  | 527.45  | 5.23          | 3.33         | 43.00     |
| 9460.00 | 2.28    | 51.00 | 5.28 | -0.00  | 11.13 | 48.58  | 540.60  | 5.28          | 3.36         | 43.50     |
| 9460.50 | 1.42    | 51.00 | 5.87 | -0.00  | 11.41 | 48.33  | 551.33  | 5.34          | 3.39         | 44.00     |
| 9461.00 | 3.63    | 51.00 | 6.52 | -0.00  | 11.53 | 47.61  | 548.97  | 5.40          | 3.42         | 44.50     |
| 9461.50 | 5.84    | 51.00 | 7.87 | -0.00  | 11.48 | 45.50  | 522.40  | 5.46          | 3.45         | 45.00     |
| 9462.00 | 8.05    | 51.00 | 5.89 | -0.00  | 10.69 | 46.04  | 492.11  | 5.51          | 3.48         | 45.50     |
| 9462.50 | 10.26   | 51.00 | 4.21 | -0.00  | 9.90  | 46.84  | 463.56  |               |              |           |
| 9463.00 | 12.47   | 51.00 | 2.36 | -0.00  | 9.11  | 49.97  | 455.02  |               |              |           |
| 9463.50 | 15.28   | 51.00 | 1.10 | -0.00  | 8.32  | 54.75  | 455.54  |               |              |           |
| 9464.00 | 18.30   | 51.00 | 0.53 | -0.00  | 7.65  | 59.45  | 454.66  |               |              |           |
| 9464.50 | 17.96   | 51.00 | 0.46 | -0.00  | 7.13  | 58.39  | 416.38  |               |              |           |
| 9465.00 | 19.67   | 51.00 | 0.29 | -0.00  | 6.46  | 59.79  | 386.18  |               |              |           |
| 9465.50 | 26.40   | 51.00 | 0.49 | -0.00  | 6.40  | 53.97  | 345.34  |               |              |           |
| 9466.00 | 33.65   | 51.00 | 1.09 | -0.00  | 7.10  | 49.36  | 350.32  |               |              |           |
| 9466.50 | 35.71   | 51.00 | 1.42 | -0.00  | 8.04  | 50.96  | 409.78  |               |              |           |
| 9467.00 | 26.15   | 51.00 | 2.03 | -0.00  | 9.55  | 53.22  | 508.29  |               |              |           |
| 9467.50 | 21.37   | 51.00 | 3.84 | -0.00  | 11.00 | 51.46  | 565.94  |               |              |           |
| 9468.00 | 16.59   | 51.00 | 3.42 | -0.00  | 10.95 | 52.54  | 575.41  |               |              |           |
| 9468.50 | 15.27   | 51.00 | 3.33 | -0.00  | 10.73 | 52.10  | 559.22  |               |              |           |
| 9469.00 | 22.71   | 51.00 | 2.92 | -0.00  | 9.93  | 50.79  | 504.56  |               |              |           |
| 9469.50 | 30.15   | 51.00 | 2.00 | -0.00  | 8.93  | 50.99  | 455.22  |               |              |           |
| 9470.00 | 37.27   | 51.00 | 1.85 | -0.00  | 8.61  | 50.60  | 435.88  |               |              |           |
| 9470.50 | 32.21   | 51.00 | 2.10 | -0.00  | 9.25  | 51.74  | 478.63  |               |              |           |
| 9471.00 | 23.24   | 51.00 | 2.06 | -0.00  | 9.94  | 54.45  | 541.06  |               |              |           |
| 9471.50 | 17.95   | 51.00 | 3.77 | -0.00  | 10.44 | 49.86  | 520.51  | 5.56          | 3.51         | 46.00     |
| 9472.00 | 22.63   | 51.00 | 5.14 | -0.00  | 9.73  | 44.19  | 430.10  |               |              |           |
| 9472.50 | 32.39   | 51.00 | 4.98 | -0.00  | 8.60  | 40.21  | 345.96  |               |              |           |
| 9473.00 | 40.41   | 51.00 | 4.09 | -0.00  | 7.56  | 37.77  | 285.61  |               |              |           |
| 9473.50 | 47.27   | 51.00 | 3.00 | -0.00  | 6.61  | 36.32  | 239.96  |               |              |           |
| 9474.00 | 56.74   | 51.00 | 1.89 | -0.00  | 5.52  | 34.87  | 192.53  |               |              |           |
| 9474.50 | 68.67   | 51.00 | 0.67 | -0.00  | 4.30  | 36.98  | 159.15  |               |              |           |
| 9475.00 | 82.68   | 51.00 | 0.17 | -0.00  | 2.94  | 38.14  | 112.14  |               |              |           |
| 9475.50 | 98.35   | 51.00 | 0.01 | -0.00  | 0.66  | 43.07  | 28.48   |               |              |           |
| 9476.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9476.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9477.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9477.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9478.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9478.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9479.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00  | 100.00 | 0.00    |               |              |           |
| 9479.50 | 99.35   | 51.00 | 0.01 | -0.00  | 0.26  | 64.36  | 16.68   |               |              |           |

000102

Well name = FLY LAKE#4

Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm | Phi2nd | PhiE | Sw     | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|------|--------|------|--------|---------|---------------|--------------|-----------|
| 9480.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9480.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9481.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9481.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9482.00 | 98.56   | 51.00 | 0.01 | -0.00  | 0.57 | 56.04  | 32.20   |               |              |           |
| 9482.50 | 92.80   | 51.00 | 0.01 | -0.00  | 1.28 | 57.56  | 73.90   |               |              |           |
| 9483.00 | 87.40   | 51.00 | 0.01 | -0.00  | 1.42 | 64.00  | 91.01   |               |              |           |
| 9483.50 | 82.74   | 51.00 | 0.01 | -0.00  | 1.53 | 68.90  | 105.53  |               |              |           |
| 9484.00 | 77.90   | 51.00 | 0.01 | -0.00  | 1.84 | 70.12  | 129.11  |               |              |           |
| 9484.50 | 72.20   | 51.00 | 0.01 | -0.00  | 2.42 | 68.03  | 164.35  |               |              |           |
| 9485.00 | 69.98   | 51.00 | 0.01 | -0.00  | 2.82 | 66.07  | 186.09  |               |              |           |
| 9485.50 | 76.17   | 51.00 | 0.01 | -0.00  | 2.70 | 63.58  | 171.84  |               |              |           |
| 9486.00 | 81.57   | 51.00 | 0.01 | -0.00  | 2.44 | 63.31  | 154.37  |               |              |           |
| 9486.50 | 86.85   | 51.00 | 0.01 | -0.00  | 2.02 | 64.69  | 130.83  |               |              |           |
| 9487.00 | 92.13   | 51.00 | 0.01 | -0.00  | 1.61 | 64.50  | 103.61  |               |              |           |
| 9487.50 | 97.26   | 51.00 | 0.01 | -0.00  | 1.10 | 59.05  | 64.72   |               |              |           |
| 9488.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9488.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9489.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9489.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9490.00 | 90.83   | 51.00 | 0.01 | -0.00  | 1.31 | 70.97  | 93.24   |               |              |           |
| 9490.50 | 80.61   | 51.00 | 0.01 | -0.00  | 1.97 | 78.31  | 154.01  |               |              |           |
| 9491.00 | 71.82   | 51.00 | 0.01 | -0.00  | 2.88 | 76.09  | 219.40  |               |              |           |
| 9491.50 | 64.57   | 51.00 | 0.02 | -0.00  | 3.94 | 71.06  | 280.03  |               |              |           |
| 9492.00 | 60.44   | 51.00 | 0.04 | -0.00  | 4.52 | 68.32  | 308.79  |               |              |           |
| 9492.50 | 59.37   | 51.00 | 0.06 | -0.00  | 4.81 | 65.81  | 316.46  |               |              |           |
| 9493.00 | 60.17   | 51.00 | 0.08 | -0.00  | 4.88 | 64.09  | 312.71  |               |              |           |
| 9493.50 | 61.19   | 51.00 | 0.07 | -0.00  | 4.77 | 64.04  | 305.35  |               |              |           |
| 9494.00 | 62.21   | 51.00 | 0.07 | -0.00  | 4.66 | 63.90  | 297.62  |               |              |           |
| 9494.50 | 64.83   | 51.00 | 0.05 | -0.00  | 4.35 | 64.15  | 279.07  |               |              |           |
| 9495.00 | 70.82   | 51.00 | 0.04 | -0.00  | 3.85 | 63.38  | 244.08  |               |              |           |
| 9495.50 | 76.81   | 51.00 | 0.03 | -0.00  | 3.35 | 62.43  | 209.28  |               |              |           |
| 9496.00 | 83.96   | 51.00 | 0.02 | -0.00  | 2.80 | 59.93  | 168.04  |               |              |           |
| 9496.50 | 91.28   | 51.00 | 0.02 | -0.00  | 2.32 | 53.50  | 124.13  |               |              |           |
| 9497.00 | 98.60   | 51.00 | 0.01 | -0.00  | 0.56 | 68.74  | 38.47   |               |              |           |
| 9497.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9498.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9498.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9499.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9499.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9500.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9500.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9501.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9501.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9502.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9502.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9503.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9503.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9504.00 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |
| 9504.50 | 100.00  | 51.00 | 0.01 | -0.00  | 0.00 | 100.00 | 0.00    |               |              |           |

000103

Well name = FLY LAKE#4

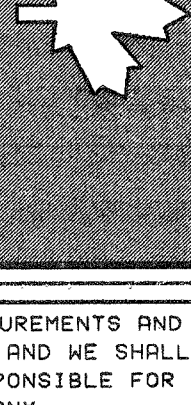
Location = 27-36-30S/139-59-49E

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| DEPTH   | V Shale | Rho G | Perm | Phi2nd | PhiE | Sw    | PhiE*Sw | Cum.<br>Phi*H | Cum.<br>Hc*H | Cum.<br>H |
|---------|---------|-------|------|--------|------|-------|---------|---------------|--------------|-----------|
| 9505.00 | 98.59   | 51.00 | 0.01 | -0.00  | 0.56 | 82.75 | 46.71   |               |              |           |
| 9505.50 | 85.62   | 51.00 | 0.11 | -0.00  | 3.89 | 51.88 | 201.67  |               |              |           |
| 9506.00 | 78.42   | 51.00 | 0.07 | -0.00  | 4.04 | 58.69 | 236.95  |               |              |           |
| 9506.50 | 80.96   | 51.00 | 0.04 | -0.00  | 3.63 | 59.61 | 216.58  |               |              |           |
| 9507.00 | 85.29   | 51.00 | 0.04 | -0.00  | 3.32 | 57.34 | 190.28  |               |              |           |
| 9507.50 | 89.29   | 51.00 | 0.06 | -0.00  | 3.19 | 52.48 | 167.35  |               |              |           |
| 9508.00 | 85.85   | 51.00 | 0.05 | -0.00  | 3.46 | 56.22 | 194.54  |               |              |           |
| 9508.50 | 82.19   | 51.00 | 0.04 | -0.00  | 3.60 | 61.05 | 220.06  |               |              |           |
| 9509.00 | 80.40   | 51.00 | 0.01 | -0.00  | 3.24 | 69.95 | 226.70  |               |              |           |
| 9509.50 | 79.72   | 51.00 | 0.01 | -0.00  | 2.96 | 69.52 | 205.85  |               |              |           |

000104

COMENT LTD  
COMPUTER  
ENTERPRISES



COMPUTERIZED

LOG

INTERPRETATION

FOR

FLY LAKE#4

27-36-30S/139-59-49E

03/06/82

FIRST FOLD HERE  
ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILLFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATIONS MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES.

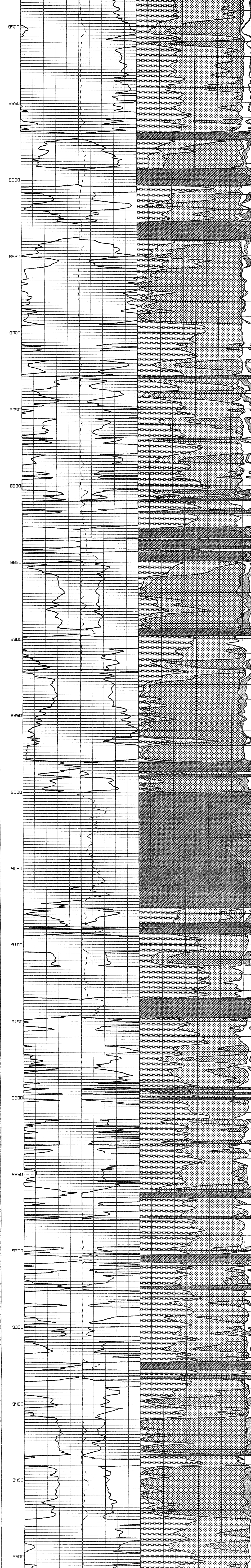
GENERAL LOG ANALYSIS

FACTORS USED IN THIS INTERPRETATION

| TOP     | BASE    | A    | M    | N    | RW    | TEMP  | GRAD | GMAX  | GMIN | RSH   | COR | G | I | PTYP | MAT         | FLD   | RHOS | PHIS  | DTSH |
|---------|---------|------|------|------|-------|-------|------|-------|------|-------|-----|---|---|------|-------------|-------|------|-------|------|
| 8480.00 | 8694.00 | 1.00 | 2.00 | 2.00 | 0.200 | 209.0 | 1.52 | 168.0 | 32.0 | 25.0  | 2   | 2 | 2 | 1    | 51.00250.00 | -0.00 | 0.00 | 65.00 |      |
| 8694.00 | 8409.00 | 1.00 | 2.00 | 2.00 | 0.140 | 212.0 | 1.52 | 140.0 | 32.0 | 119.0 | 2   | 2 | 2 | 1    | 51.00250.00 | -0.00 | 0.00 | 63.00 |      |
| 8409.00 | 9510.00 | 1.00 | 2.00 | 2.00 | 0.140 | 223.0 | 1.52 | 126.0 | 40.0 | 40.0  | 2   | 2 | 2 | 1    | 51.00250.00 | -0.00 | 0.00 | 61.00 |      |

REMARKS  
POROSITY DERIVED FROM ACOUSTIC LOG  
DATA STORED IN AFLY-LAKE-4

| DEPTH | PERMEABILITY | WATER SATURATION | BULK VOLUME ANALYSIS |      |      |    |
|-------|--------------|------------------|----------------------|------|------|----|
|       |              |                  | CLAY                 | SILT | SAND | GR |



COMENT LTD.

FLY LAKE#4  
27-36-30S/139-59-49E

SANTOS LIMITED  
RESERVOIR ENGINEERING DEPARTMENT  
FLY LAKE #4 MODIFIED ISOCHRONAL TEST  
PATCHAWARRA FORMATION  
APRIL-MAY 1985

Report No: RE:054/86  
Author: J.M. Gaffney/P.A. Robinson  
Date: May, 1986.



CONTENTS

1. INTRODUCTION

2. RESULTS

3. DISCUSSION

APPENDIX A - INTERPRETATION, PLOTS AND DATA

APPENDIX B - STATIC GRADIENT SURVEY

APPENDIX C - F.W.S. RECOMBINATION

000107

1. INTRODUCTION

Fly Lake #4 was drilled in May 1981 to evaluate and develop the Patchawarra gas and Tirrawarra oil formations between Fly Lake 2 and Brolga 1. The well was completed with 2-3/8" tubing as a single gas producer from the 87-7 Patchawarra sand with perforations over the following intervals:

| SAND | PERF. INTERVAL<br>(FT KB) | NET PAY<br>(FT) |
|------|---------------------------|-----------------|
| 87-7 | 8858-8874 & 8884-8892     | 27              |

The well was brought on line in October 1983 with an initial maximum deliverability of 6.1 MMCFD against a line pressure of 1,300 psi.

A modified isochronal test was conducted from 27th April to 2nd May, 1985. The purpose of the test was to evaluate well deliverability, reservoir parameters, and to obtain representative fluid samples.

## 2. RESULTS

The following results were obtained using the Horner plot and L.I.T. analysis:

|                              |                                       |
|------------------------------|---------------------------------------|
| Flow Capacity                | 273 md-ft                             |
| Permeability                 | 10.1 md                               |
| Turbulence Coefficient       | 0.68 MMCFD <sup>-1</sup>              |
| True Skin                    | 12.7                                  |
| Reservoir Pressure           | 3087 psia @ Datum 9013' KB. (-8900ft) |
| Stabilized Gas Flow Rate     | 3.52 MMCFD @ 1230 psig                |
| Condensate Production        | 141 BCPD                              |
| Absolute Open Flow Potential | 6.4 MMCFD                             |

000109

### 3. DISCUSSION

The interpretation of the modified isochronal and buildup tests, and the well test data are given in Appendix A.

A static temperature and pressure survey was performed before the isochronal test and the depth vs temperature and pressure plots are given in Appendix B.

Samples of the high pressure gas and liquid were taken for analysis by AMDEL. For various reasons, it was not possible to perform a FWS recombination of the analysed samples. This is discussed in Appendix C.

The average field FWS composition is given also in Appendix C. As a FWS recombination could not be performed, the pseudo pressures and fluid properties used in the interpretation were derived from the GASPAC run of the average field FWS composition.

The reservoir pressure, as determined by extrapolation of the Horner Buildup, is estimated at 3071 psia at the mid point of the perforations. This indicates that approximately 850 psi of depletion had taken place from the 87-7 sand. The well had produced 1.90 BCF of gas at the time of testing.

Fly Lake 4 is the only well in the Fly Lake #2-#4 region of the Fly Lake field producing from this sand. Material balance estimates of the OGIP for the sand therefore are based on data from this well.

If the reservoir is assumed to be a depletion gas reservoir, with the two data points provided by this test and the DST, the material balance equation gives an estimate of the OGIP for the 87-7 sand of 10.2 BCF. The volumetric estimate is currently 5.5 BCF.

This material balance estimate is necessarily preliminary. Another data point is required before any confidence can be attached to an estimate of the OGIP by material balance.

APPENDIX A

INTERPRETATION, BUILDUP PLOTS AND WELL TEST DATA

DATUM DEPTH: 9013'KB (-8900'SS) DEP  
PRESSURE BUILD-UP INFORMATION

|                       |             |                             |                                           |
|-----------------------|-------------|-----------------------------|-------------------------------------------|
| EXTRAPOLATED PRESSURE | $P^* =$     | <u>                    </u> | $\times 10^3$ psia <sup>2</sup>           |
|                       | $=$         | <u>3026</u>                 | psia                                      |
|                       | $\psi^* =$  | <u>568</u>                  | $\times 10^6$ psia <sup>2</sup> /cp       |
| HORNER BUILD-UP SLOPE | $m =$       | <u>                    </u> | $\times 10^3$ psia <sup>2</sup> /cycle    |
|                       | $m(\psi) =$ | <u>15.0</u>                 | $\times 10^6$ psia <sup>2</sup> /cp/cycle |

Porosity  $\phi$  = 0.126      Viscosity  $\mu$  = 0.023 cp  
Compressibility  $C_t$  =  $0.24 \times 10^{-3}$  well radius  $r_w$  = 0.3542 ft.  
Well drainage  $r_e$  = \_\_\_\_\_ thickness  $h$  = 27 ft.  
 $s_w$  = 0.235  
Final flow rate  $q$  = 3.520 MMcfd Temperature  $T$  =  $254 + 460 = 714$  °R  
Sandface press.  $P_{wf}$  = \_\_\_\_\_ psia Press 1 hr  $P_1$  = \_\_\_\_\_ psia  
 $\psi_{wf}$  = 280.1 x  $10^6$  psia<sup>2</sup>/cp       $\psi_1$  = 549 x  $10^6$  psia/cp

$$\Delta\psi = a q + bq^2$$

$$a = \frac{71.6}{2.53} \times 10^6 \text{ psia}^2/\text{cp/MMcfd}$$

$$b = \frac{2.53}{2.53} \times 10^6 \text{ psia}^2/\text{cp/MMcfd}$$
$$kh = \frac{1.632 \times 10^6}{m} \quad qT = \frac{273}{\text{md-ft}}$$
$$k = \frac{kh}{h} = \underline{\underline{10.1}} \text{ md}$$
$$S' = 1.151 \left[ \frac{\psi_1 - \psi_o}{m} - \log \left( \frac{k}{\phi \mu C_t r_w^2} \right) + 3.23 \right] = \underline{\underline{15.1}}$$
$$D = \frac{b \, kh}{1.417 \times 10^6 T} = \frac{0.68}{\text{MMcfd}^{-1}}$$
$$S = S' - Dq = 12.7$$

FLY LAKE #4

MODIFIED ISOCHRONAL 27/4 - 2/5/85

ELEMENT #060322 @ 8484' KB

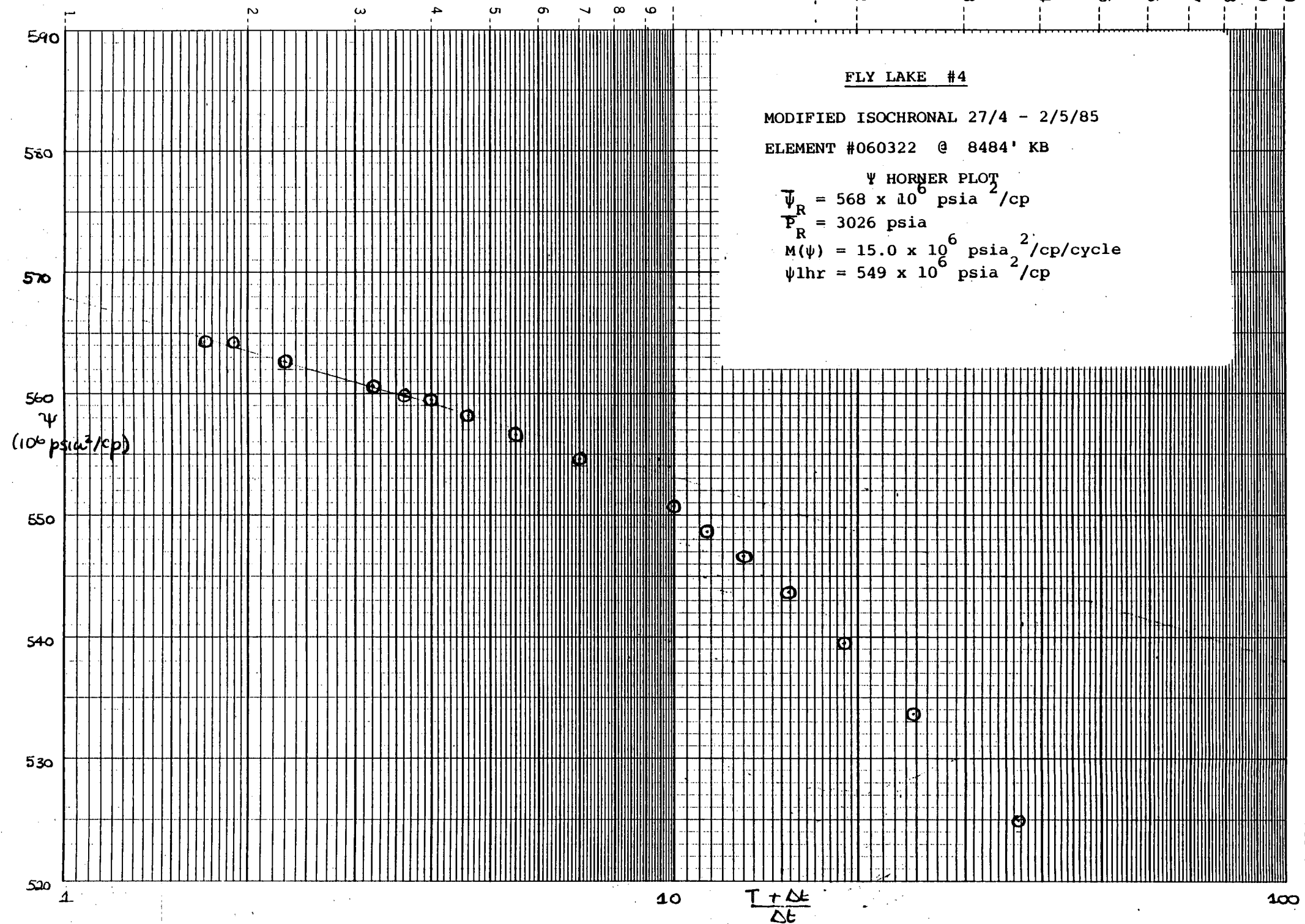
$\Psi$  HORNER PLOT

$$\bar{\Psi}_R = 568 \times 10^6 \text{ psia}^2/\text{cp}$$

$$\bar{P}_R = 3026 \text{ psia}$$

$$M(\Psi) = 15.0 \times 10^6 \text{ psia}^2/\text{cp/cycle}$$

$$\psi_{\text{hr}} = 549 \times 10^6 \text{ psia}^2/\text{cp}$$



000112

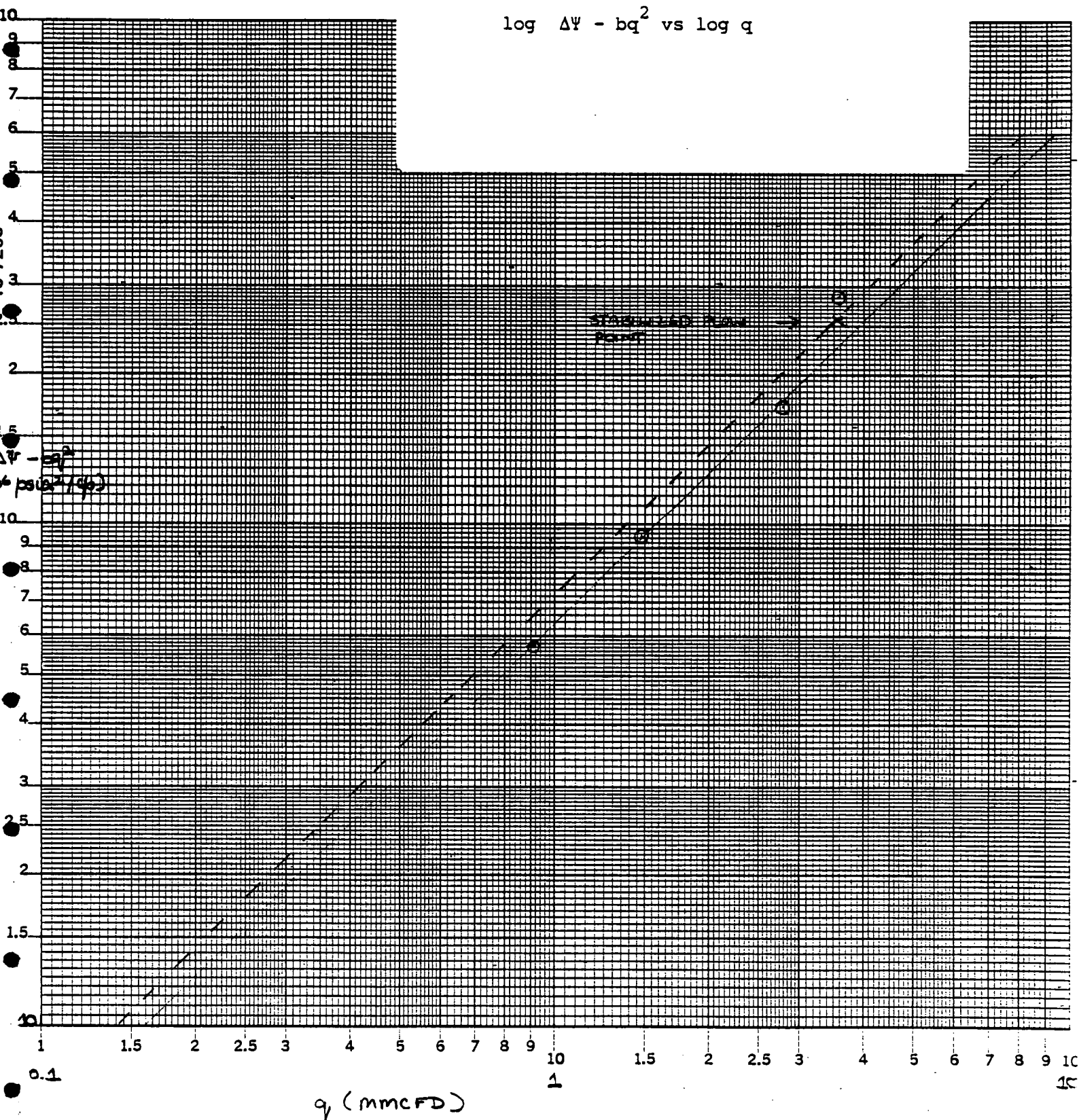
000113

FLY LAKE #4

MODIFIED ISOCHRONAL 27/4 - 2/5/85

BACK PRESSURE PLOT

$\log \Delta \Psi - bq^2$  vs  $\log q$



FLY LAKE #4 PATCHAWARRA FORMATIONMODIFIED ISOCHRONAL TESTBUILDUP DATA

Element #60322 @ 8484' KB

$T = \frac{\text{Cumulative production}}{\text{Last prod. rate before shut in}}$

$$= \frac{2.633 \text{ MMSCF} \times 24}{3.520} = 17.95 \text{ hrs}$$

| SHUT IN TIME<br>(hrs) | PRESSURE<br>(psia) | $\psi$<br>( $10^6 \text{ psia}^2/\text{cp}$ ) | $\frac{T+\Delta t}{\Delta t}$ |
|-----------------------|--------------------|-----------------------------------------------|-------------------------------|
| 0                     | 2029               | 280.1                                         | $\alpha$                      |
| .25                   | 2742               | 480.8                                         | 72.8                          |
| .5                    | 2887               | 525.0                                         | 36.9                          |
| .75                   | 2916               | 533.7                                         | 24.9                          |
| 1                     | 2934               | 539.3                                         | 19.0                          |
| 1.25                  | 2948               | 543.7                                         | 15.4                          |
| 1.5                   | 2956               | 546.3                                         | 13.0                          |
| 1.75                  | 2964               | 548.8                                         | 11.3                          |
| 2                     | 2971               | 550.9                                         | 10.0                          |
| 3                     | 2983               | 554.6                                         | 7.0                           |
| 4                     | 2990               | 556.8                                         | 5.5                           |
| 5                     | 2994               | 558.1                                         | 4.6                           |
| 6                     | 2999               | 559.6                                         | 4.0                           |
| 7                     | 3000               | 559.9                                         | 3.6                           |
| 8                     | 3002               | 560.6                                         | 3.2                           |
| 14                    | 3009               | 562.9                                         | 2.3                           |
| 20                    | 3014               | 564.2                                         | 1.9                           |
| 24                    | 3014               | 564.2                                         | 1.7                           |

WP4700N(7)

JMG/rt

23/5/86

000115

| Time of Observations |      |                         | Observed Pressures |                | REMARKS |                          |
|----------------------|------|-------------------------|--------------------|----------------|---------|--------------------------|
| Date                 | Time | Shut In Time<br>(Hours) | Tubing<br>psig     | Casing<br>psig |         | Temp.<br>°F              |
| 30/4/85              | 1400 | 0                       | 1870               | 1682           |         | 109                      |
|                      | 1415 | 0.25                    | 2000               | 1740           |         |                          |
|                      | 1430 | 0.5                     | 2007               | 1769           |         |                          |
|                      | 1445 | 0.75                    | 2016               | 1798           |         |                          |
|                      | 1500 | 1                       | 2020               | 1798           |         |                          |
|                      | 1530 | 1.5                     | 2023               | 1798           |         |                          |
|                      | 1600 | 2                       | 2025               | 1798           |         | Opened well on 2nd rate. |
|                      |      |                         |                    |                |         |                          |

[illegible]

000116

| Time of Observations |      |                      | Observed Pressures |                |             | REMARKS                  |
|----------------------|------|----------------------|--------------------|----------------|-------------|--------------------------|
| Date                 | Time | Shut In Time (Hours) | Tubing<br>psig     | Casing<br>psig | Temp.<br>°F |                          |
| 80/4/85              | 1800 | 0                    | 1778               | 1624           | 113         |                          |
|                      | 1815 | 0.25                 | 1980               | 1668           |             |                          |
|                      | 1830 | 0.5                  | 1995               | 1740           |             |                          |
|                      | 1845 | 0.75                 | 2005               | 1755           |             |                          |
|                      | 1900 | 1                    | 2008               | 1762           |             |                          |
|                      | 1930 | 1.5                  | 2010               | 1784           |             |                          |
|                      | 2000 | 2                    | 2010               | 1791           |             | Opened well on 3rd rate. |

[illegible]
$$\begin{array}{r} 000117 \\ \hline \end{array}$$



### FINAL STABILIZATION FLOW PERIOD

Orifice Size: 2.125 ins  
Meter Run: 3.826 ins

[illegible]

[illegible]

000120

LUB. in = 2026.1 psig/out = 2033.4 psig

[illegible]

000121

SANTOS LTD.  
WELL TEST SUMMARY  
CALCULATION SHEET

Page 8.

CASE 1: FLOW THROUGH METER RUN

| Run No. | Hw<br>(inches in water) | PF<br>(psig) | Size Orifice<br>Plate (inches) | Ft<br>(°F) |
|---------|-------------------------|--------------|--------------------------------|------------|
| 1       | 116                     | 85           | 1.375                          | 124        |
| 2       | 100                     | 100          | 1.750                          | 132        |
| 3       | 90                      | 205          | 2.000                          | 96         |
| 4       | 35                      | 240          | 2.625                          | 88         |
| 5       | 106                     | 210          | 2.125                          | 80         |

Taken from Fly Lake  
Patchawarra Gaspac:-

Specific Gravity = 1.0535  
TC = 461.3 °R  
PC = 762.9 psia  
CO2 CONTENT = 26.727 mole %

Meter Run = 3.826 ins

FLOW THROUGH METER RUN (Continued)

| Run No. | Q<br>(MMscfd) |
|---------|---------------|
| 1       | 0.914         |
| 2       | 1.497         |
| 3       | 2.759         |
| 4       | 3.537         |
| 5       | 3.520         |

000122

GAS WELL DELIVERABILITY TEST CALCULATIONS  
 (Base Conditions = 14.65 psia and 60°F)

LIT ( $\psi$ ) ANALYSIS

|                          | Duration<br>(hours) | Sandface Pressure<br>(psia) | $\psi$<br>( $\times 10^6$ psia <sup>2</sup> /cp) | $\Delta\psi$<br>( $\times 10^6$ psia <sup>2</sup> /cp) | Flow Rate (q)<br>(MMscfd) | $\Delta\psi/q$ | $q^2$  | $\Delta\psi - bq^2$ |
|--------------------------|---------------------|-----------------------------|--------------------------------------------------|--------------------------------------------------------|---------------------------|----------------|--------|---------------------|
| Initial<br>Shut<br>In    | 75.25               | 3018.8                      | 565.850                                          | -                                                      | -                         | -              | -      |                     |
| Flow 1                   | 2                   | 2825.6                      | 506.142                                          | 59.708                                                 | 0.914                     | 65.326         | 0.835  | 57.595              |
| Shut In                  | 2                   | 3011.2                      | 563.463                                          | -                                                      | -                         | -              | -      | -                   |
| Flow 2                   | 2                   | 2681.4                      | 462.620                                          | 100.843                                                | 1.497                     | 67.363         | 2.241  | 95.173              |
| Shut In                  | 2                   | 3009.6                      | 562.961                                          | -                                                      | -                         | -              | -      |                     |
| Flow 3                   | 2                   | 2359.8                      | 369.492                                          | 193.469                                                | 2.759                     | 70.123         | 7.612  | 174.211             |
| Shut In                  | 2                   | 3005.5                      | 561.673                                          | -                                                      | -                         | -              | -      |                     |
| Flow 4                   | 2                   | 1868.2                      | 241.032                                          | 320.641                                                | 3.537                     | 90.653         | 12.510 | 288.991             |
| Total=                   | -                   | -                           | -                                                | 674.661                                                | 8.707                     | 293.459        | 23.198 |                     |
| Extended<br>Flow         | 13                  | 2028.8                      | 280.757                                          | 287                                                    | 3.520                     | 81.5           | 12.390 | 256                 |
| Extrapolated<br>Pressure |                     | 3026                        | 568                                              |                                                        |                           |                |        |                     |

000123

GAS WELL DELIVERABILITY TEST CALCULATIONSL.I.T. ( $\Psi$ ) ANALYSISDISCARDED POINT 4

$$N = \underline{3} \quad \bar{\Psi}_R = \underline{568} \quad \text{MMpsia}^2/\text{cp}$$

$$a, a_t = \frac{\sum \frac{\Delta \Psi}{q} \sum q^2 - \sum q \sum \Delta \Psi}{N \sum q^2 - \sum q \sum q} = \underline{63.2}$$

$$b = \frac{N \sum \Delta \Psi - \sum q \sum \frac{\Delta \Psi}{q}}{N \sum q^2 - \sum q \sum q} = \underline{2.53}$$

(EXTENDED FLOW)

$$\Delta \Psi = \underline{287} \quad q = \underline{3.520} \quad b = \underline{2.53}$$

$$a = \frac{\Delta \Psi - bq^2}{q} = \underline{72.6}$$

RESULTS

$$\text{TRANSIENT FLOW: } \bar{\Psi}_R - \Psi_{wf} = a_t q + bq^2$$

$$\text{i.e. } \underline{568} - \Psi_{wf} = \underline{63.2} q + \underline{2.53} q^2$$

$$\text{STABILIZED FLOW: } \bar{\Psi}_R - \Psi_{wf} = a q + bq^2$$

$$\text{i.e. } \underline{568} - \Psi_{wf} = \underline{72.6} q + \underline{2.53} q^2$$

DELIVERABILITY:

$$q = \frac{1}{2b} [-a + \sqrt{a^2 + 4b (\bar{\Psi}_R - \Psi_{wf})}]$$

$$\text{FOR } \Psi_{wf} = 0, q = \text{AOF} = \underline{6.4} \quad \text{MMscfd}$$

$$\text{A.O.F.} = \underline{6.4} \quad \text{MMSCFD} \quad n = \underline{\hspace{2cm}}$$

$$\text{Total Volume of Gas Produced During Test} = \underline{2.633} \quad \text{MMSCF}$$

$$\text{Condensate} = \underline{24.32} \quad \text{Bbls}$$

$$\text{Water} = \underline{4.17} \quad \text{Bbls}$$

REMARKS

000124

WELL FLY LAKE 4

TANK:- CAPACITY 356 BBL  
SCALE 1:677.98 = 1 INCH.

SANTOS LTD

## FLUID PRODUCTION SHEET

DATE 3 APRIL/MAY 1985

PAGE No. 1

OPERATOR J. FEDEROFF

| DATE<br>TIME | TOTAL<br>DIP | OIL/CONDENSATE PRODUCTION |                              |                    |                   |                                          | WATER PRODUCTION |                    |                                     |                   |                   | REMARKS   |
|--------------|--------------|---------------------------|------------------------------|--------------------|-------------------|------------------------------------------|------------------|--------------------|-------------------------------------|-------------------|-------------------|-----------|
|              |              | TANK DIP<br>INS           | TANK PROD.<br>BBLs           | FLOWRATE<br>BBLs/D | CUM.PROD.<br>BBLs | OIL<br>CONDENSATE<br>GRAVITY<br>*API60F* | TANK DIP<br>INS  | TANK PROD.<br>BBLs | FLOWRATE<br>BBLs/D                  | CUM.PROD.<br>BBLs | SALINITY<br>PPM   |           |
| 1200         | 2.25         | 0                         |                              |                    |                   |                                          | 2.25             | 0                  |                                     |                   |                   |           |
| 1400         | 2.25         | 0                         | END OF 1 <sup>ST</sup> RATE. |                    |                   |                                          | 2.25             | 0                  |                                     |                   |                   |           |
| 1600         | 2.25         | 0                         |                              |                    |                   |                                          | 2.25             | 0                  |                                     |                   |                   |           |
| 1800         | 2.25         | 0                         | END OF 2 <sup>ND</sup> RATE  |                    |                   |                                          | 2.25             | 0                  |                                     |                   |                   |           |
| 2000         | 2.25         | 0                         |                              |                    |                   |                                          | 2.25             | 0                  |                                     |                   |                   |           |
| 2200         | 2.25         | 0                         | END OF 3 <sup>RD</sup> RATE  |                    |                   |                                          | 2.25             | 0                  |                                     |                   | COND. TOTAL PROD. | 24.32 BBL |
|              |              |                           |                              |                    |                   |                                          |                  |                    |                                     |                   | WATER TOTAL PROD. | 4.17 BBL  |
| 2400         | 2.25         | 0                         |                              |                    |                   |                                          | 2.25             | 0                  |                                     |                   |                   |           |
| 0200         | 2.25         | 0                         | END OF 4 <sup>TH</sup> RATE  |                    |                   |                                          | 2.25             | 0                  |                                     |                   |                   |           |
| 0400         | 2.25         | 0                         |                              |                    |                   |                                          | 2.25             | 0                  | STOCK TANK LIQUIDS TOTAL = 32.2 BBL |                   |                   |           |
| 0600         | 2.25         | 0                         |                              |                    |                   |                                          | 2.25             | 0                  |                                     |                   |                   |           |
| 0800         | 2.25         | 0                         |                              |                    |                   |                                          | 2.25             | 0                  |                                     |                   |                   |           |
| 1000         | 2.25         | 0                         |                              |                    |                   |                                          | 2.25             | 0                  |                                     |                   |                   |           |
| 1200         | 9.75         | 0                         | 8.4                          | 101.44             | 8.4               | 56.4                                     | 2.25             | 4.17               | 50.13                               | 7.9               |                   |           |
| 1400         | 15.75        | 5                         | 10.062                       | 120.74             | 18.46             | 55.8                                     | 4.75             | 0                  | 0                                   | 7.9               |                   |           |
| 1500         | 19.25        | 11                        | 5.86                         | 140.86             | 24.32             | 55.8                                     | 4.75             | 0                  | 0                                   | 7.9               |                   |           |

000125

|                         |  |                                                                                                                                                                                                                        |  |                                                                                                                                                                                                                                          |  |
|-------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| CLIENT <u>SANTAS</u>    |  | <br><small>126 RICHMOND ROAD MARLBOROUGH SA 5033    TELEPHONE 080 354 0468    TELEX AAB7143</small>                                  |  | Date <u>20/4/85</u> Page No. <u>1</u><br>Operator <u>R. KAYSER</u>                                                                                                                                                                       |  |
| WELL <u>FLY LAKE #4</u> |  | Orifice Fitting Type <u>DANIELS</u> Orifice Fitting Size <u>3.826</u><br>Gas Flow Recorder Type <u>FOXBORO</u> Pressure Range <u>0-1500</u><br>Date of Last Calibration <u>20/3/85</u> Differential Range <u>0-200</u> |  | Gas Specific Gravity <u>1.0535</u> Base Conditions = 14.73psi @ 60°F<br>Perforated Interval <u>3058 - 3802</u> <input checked="" type="checkbox"/> Flange Taps <input type="checkbox"/> Pipe Taps<br>Formation Tested <u>PATCHAWARRA</u> |  |

| TIME DATA    |                          | Choke Size<br>64ths<br>Inch  | METER RUN DATA           |                              |             |                         | $\sqrt{Pf \times Hw}$ | C' = $Fu \times Fb \times Fg \times Ftf \times Fpv \times Y2$ |        |       |       |                  |        |           | Flow Rate<br>$Q = C' \times \sqrt{Pf \times Hw}$ |
|--------------|--------------------------|------------------------------|--------------------------|------------------------------|-------------|-------------------------|-----------------------|---------------------------------------------------------------|--------|-------|-------|------------------|--------|-----------|--------------------------------------------------|
| Date<br>Time | Elapsed<br>Time<br>Hours |                              | (Pf)<br>Pres<br>P.S.I.A. | Diff (Hw)<br>Inches<br>Water | Temp.<br>°F | Plate<br>Size<br>Inches |                       | Fu                                                            | Fb     | Fg    | Ftf   | Fpv              | Y2     | C'        |                                                  |
| 1300         |                          | "/64                         | 100                      | 120                          | 96          | 1.375                   | 109.54                | 24                                                            | 386.45 | .9742 | .9671 | 1.020            | 1.0013 | 8924.58   | .978                                             |
| 1400         |                          | "                            | 100                      | 116                          | 124         | 1.375                   | 107.70                | "                                                             | 386.45 | "     | .9436 | 1.017            | 1.0012 | 8681.25   | .935                                             |
| 1700         |                          | 14/64                        | 115                      | 100                          | 132         | 1.750                   | 107.24                | 24                                                            | 637.83 | .9742 | .9372 | 1.018            | 1.0014 | 14247.93  | 1.53                                             |
| 1800         |                          | "                            | 115                      | 100                          | 122         | 1.750                   | 107.24                | 24                                                            | 637.83 | .9742 | .9452 | 1.015            | 1.0014 | 14327.21  | 1.54                                             |
| 2000         |                          | 19/64                        | 217                      | 90                           | 80          | 2.000                   | 139.74                | 24                                                            | 849.41 | .9742 | .9813 | 1.022            | 1.0013 | 19943.14  | 2.79                                             |
| 2200         |                          | 19/64                        | 220                      | 90                           | 86          | 2.000                   | 140.7                 | 24                                                            | 849.41 | .9742 | .9759 | 1.025            | 1.0032 | 19929.36  | 2.80                                             |
| 0200         |                          | 30/64                        | 255                      | 35                           | 88          | 2.625                   | 94.47                 | 24                                                            | 1595.6 | .9742 | .9741 | 1.027            | 1.0040 | 37470.64  | 3.53                                             |
| 0400         |                          | 25/64                        | 255                      | 95                           | 104         | 2.125                   | 155.64                | 24                                                            | 970.95 | .9742 | .9602 | 1.027            | 1.032  | 23102.98  | 3.59                                             |
| 0600         |                          | 25/64                        | 240                      | 98                           | 128         | 2.125                   | 153.36                | 24                                                            | 970.95 | .9742 | .9404 | 1.026            | 1.033  | 22626.43  | 3.46                                             |
| 0800         |                          | "                            | 240                      | 92                           | 84          | 2.125                   | 148.59                | 24                                                            | 970.95 | .9742 | .9777 | 1.026            | 1.033  | 23524.44  | 3.49                                             |
| 1000         |                          | "                            | 240                      | 90                           | 79          | 2.125                   | 146.96                | 24                                                            | 970.95 | .9742 | .9822 | 1.026            | 1.0031 | 23586.12  | 3.46                                             |
| 1200         |                          | "                            | 165                      | 80                           | 75          | 2.125                   | 114.89                | 24                                                            | 970.95 | .9742 | .9859 | 1.019            | 1.0017 | 23184.45  | 2.66                                             |
| 1400         |                          | "                            | 225                      | 106                          | 80          | 2.125                   | 154.43                | 24                                                            | 970.95 | .9742 | .9813 | 1.021            | 1.0013 | 22774.45  | 3.51                                             |
| 1500         |                          | WELL SHUT IN    END OF TEST. |                          |                              |             |                         |                       |                                                               |        |       |       |                  |        |           |                                                  |
|              |                          |                              |                          |                              |             |                         |                       |                                                               |        |       |       | TOTAL GAS FLARED |        | 2.25 MMS. |                                                  |

000127

APPENDIX B  
STATIC PRESSURE GRADIENT SURVEY

000128

PAGE 1

SANTOS LTD  
39 GRENFELL ST  
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

|               |               |                       |                          |                      |
|---------------|---------------|-----------------------|--------------------------|----------------------|
| CO. SANTOS    |               | RUN 01 FIELD FLY LAKE |                          | WELL 04              |
| EFF DEPTH     |               | WELL STAT             |                          | TOOL HUNG            |
| CASING 7"     | -             | CASING PRESS          |                          | ON BOTTOM 29/4 1408  |
| LINER         | -             | TUBING PRESS          |                          | OFF BOTTOM 29/4 1540 |
| DATE          | 850429        | ELEMENT RANGE         | 0 - 5132                 | ZERO POINT           |
| ELEVATION     |               | ZONE                  | PATCHAWARRA              | SHUT-IN              |
| MAX TEMP.     |               | PICK-UP               |                          | ON-PROD              |
| PERF          | 8858' - 8892' | CAL SER NO.           | 59211                    | MPP                  |
| TUBING 2-3/8" | -             |                       |                          | 8875' KB             |
| UNITS         | ENGLISH       | PURPOSE               | STATIC PRESSURE GRADIENT |                      |

SURVEY DATA

| CO. SANTOS |       |        |       | RUN 01 FIELD FLY LAKE |       |        |       | WELL 04 |  |  |  |
|------------|-------|--------|-------|-----------------------|-------|--------|-------|---------|--|--|--|
| TIME       | DEPTH | P/T    | GRAD  | TIME                  | DEPTH | P/T    | GRAD  |         |  |  |  |
| 13:46      | 0     | 2008.7 | 0.000 | 15:06                 | 6000  | 2695.0 | .113  |         |  |  |  |
| 14:18      | 1000  | 2124.0 | .115  | 15:15                 | 7000  | 2807.7 | .113  |         |  |  |  |
| 14:28      | 2000  | 2239.2 | .115  | 15:24                 | 8000  | 2925.6 | .118  |         |  |  |  |
| 14:37      | 3000  | 2351.9 | .113  | 15:32                 | 8700  | 3007.7 | .117  |         |  |  |  |
| 14:46      | 4000  | 2467.1 | .115  | 15:40                 | 8875  | 3030.8 | .132  |         |  |  |  |
| 14:56      | 5000  | 2582.3 | .115  | 0:00                  | 0     | 0.0    | 0.000 |         |  |  |  |

LUB IN DWT = 2025 PSIG / OUT = 2025 PSIG  
LUB IN AMERADA = 2008.7 PSIG / OUT = 2031.8 PSIG

000129

PAGE 1

SANTOS LTD  
39 GRENFELL ST  
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SUB-SURFACE PRESSURE SURVEY

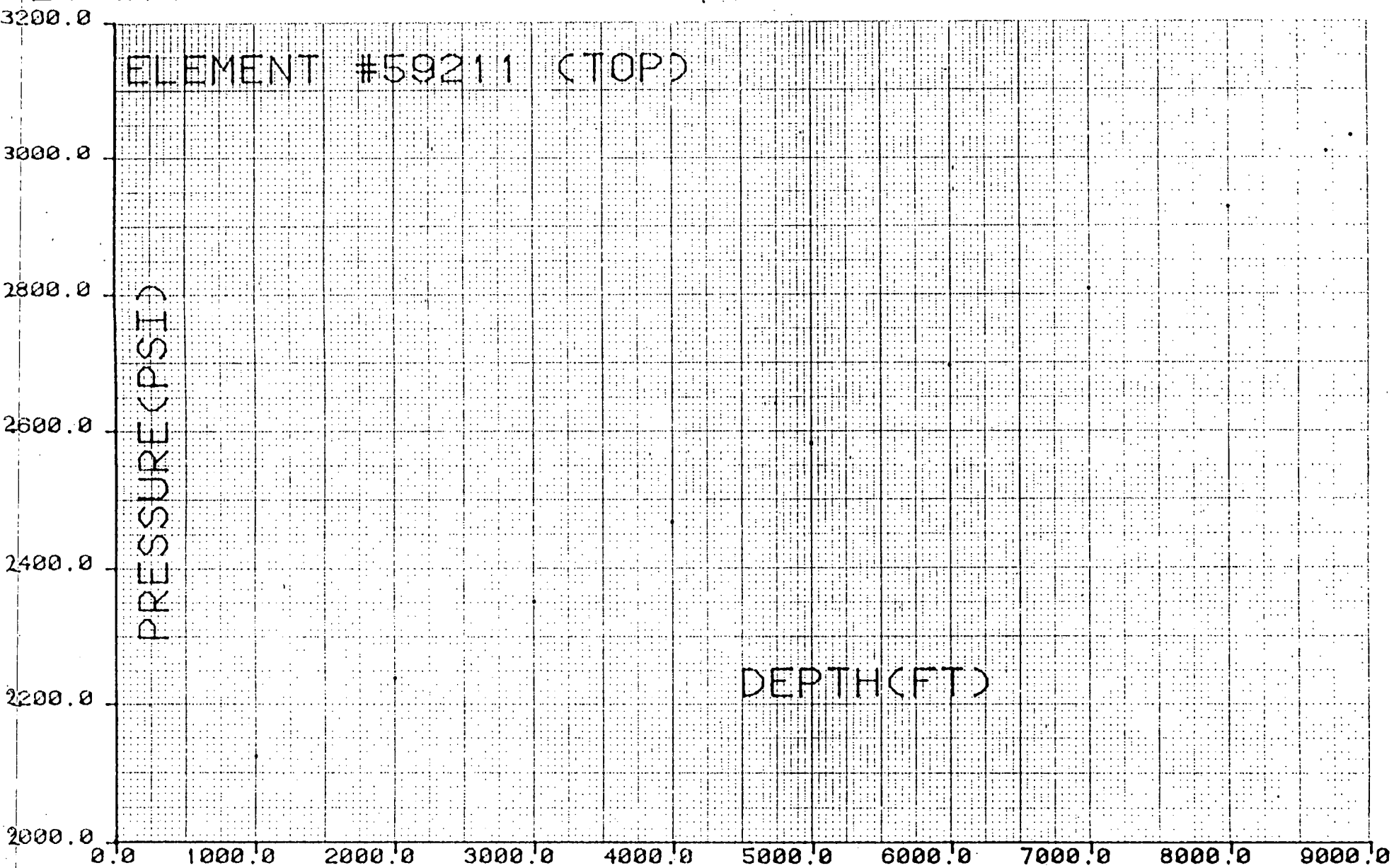
|               |               |                        |                          |                      |
|---------------|---------------|------------------------|--------------------------|----------------------|
| CO. SANTOS    |               | RUN 02 FIELD FLY LAKE  |                          | WELL 04              |
| EFF DEPTH     |               | WELL STAT              |                          | TOOL HUNG            |
| CASING 7"     | -             | CASING PRESS           |                          | ON BOTTOM 29/4 1408  |
| LINER         | -             | TUBING PRESS           |                          | OFF BOTTOM 29/4 1540 |
| DATE          | 850429        | ELEMENT RANGE 0 - 5128 |                          | ZERO POINT           |
| ELEVATION     |               | ZONE                   | PATCHAWARRA              | SHUT-IN              |
| MAX TEMP      |               | PICK-UP                |                          | ON-PROD              |
| PERF          | 8858' - 8892' | CAL SER NO.            | 60322                    | MPP                  |
| TUBING 2-3/8" | -             |                        |                          | 8875' KB             |
| UNITS         | ENGLISH       | PURPOSE                | STATIC PRESSURE GRADIENT |                      |

SURVEY DATA

| CO. SANTOS |       |        |       | RUN 02 FIELD FLY LAKE |       | WELL 04 |       |  |  |
|------------|-------|--------|-------|-----------------------|-------|---------|-------|--|--|
| TIME       | DEPTH | P/T    | GRAD  | TIME                  | DEPTH | P/T     | GRAD  |  |  |
| 13:46      | 0     | 2017.0 | 0.000 | 15:06                 | 6000  | 2701.1  | .116  |  |  |
| 14:18      | 1000  | 2132.1 | .115  | 15:15                 | 7000  | 2814.2  | .113  |  |  |
| 14:28      | 2000  | 2247.3 | .115  | 15:24                 | 8000  | 2932.5  | .116  |  |  |
| 14:37      | 3000  | 2360.0 | .113  | 15:32                 | 8700  | 3014.9  | .116  |  |  |
| 14:46      | 4000  | 2475.3 | .115  | 15:40                 | 8875  | 3035.5  | .118  |  |  |
| 14:56      | 5000  | 2585.6 | .110  | 0:00                  | 0     | 0.0     | 0.000 |  |  |

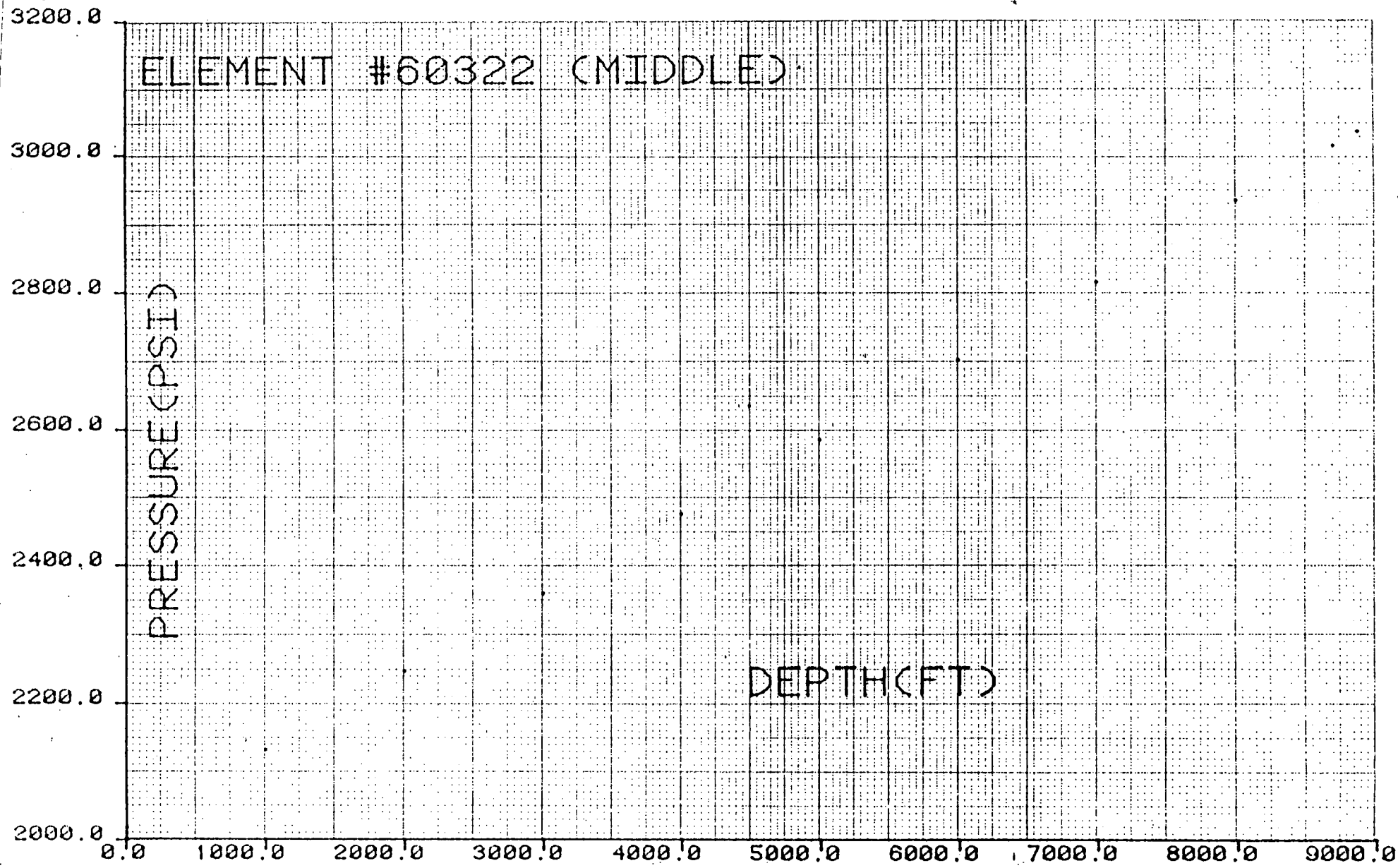
LUB IN DWT = 2025 PSIG / OUT = 2025 PSIG  
LUB IN AMERADA = 2017.0 PSIG / OUT = 2022.1 PSIG

FLY LAKE #4 - STATIC PRESSURE GRADIENT - 29/4/85



000130

# FLY LAKE #4 - STATIC PRESSURE GRADIENT -29/4/85



000131

SANTOS LTD  
39 GRENFELL ST  
ADELAIDE

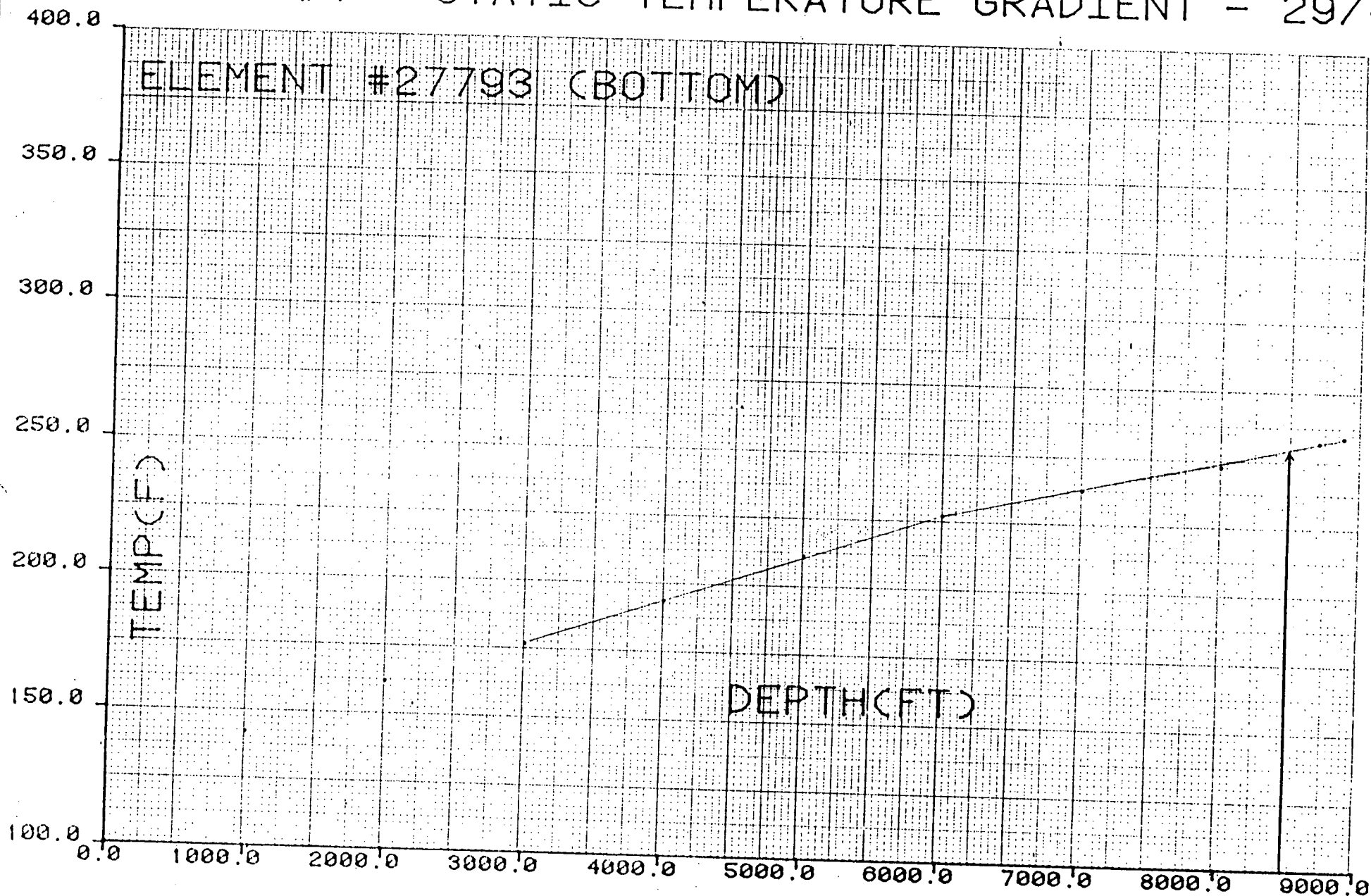
SUB-SURFACE TEMPERATURE SURVEY

|               |               |                       |              |            |           |
|---------------|---------------|-----------------------|--------------|------------|-----------|
| CO. SANTOS    |               | RUN 03 FIELD FLY LAKE |              | WELL 04    |           |
| EFF DEPTH     |               | WELL STAT             |              | TOOL HUNG  |           |
| CASING 7"     | -             | CASING PRESS          |              | ON BOTTOM  | 29/4 1408 |
| LINER         | -             | TUBING PRESS          |              | OFF BOTTOM | 29/4 1540 |
| DATE          | 850429        | ELEMENT RANGE         | 130 - 447    | ZERO POINT |           |
| ELEVATION     |               | ZONE                  | PATCHAWARRA  | SHUT-IN    |           |
| MAX TEMP      |               | PICK-UP               |              | ON-PROD    |           |
| PERF          | 8858' - 8892' | CAL SER NO.           | 27793        | MPP        | 8875' KB  |
| TUBING 2-3/8" | -             |                       |              |            |           |
| UNITS         | ENGLISH       | PURPOSE               | STATIC TEMP. | GRADIENT   |           |

SURVEY DATA

| CO. SANTOS |       |       |       | RUN 03 FIELD FLY LAKE |       |       |      | WELL 04 |  |  |  |
|------------|-------|-------|-------|-----------------------|-------|-------|------|---------|--|--|--|
| TIME       | DEPTH | P/T   | GRAD  | TIME                  | DEPTH | P/T   | GRAD |         |  |  |  |
| 14:14      | 1000  | 141.8 | 0.000 | 15:00                 | 6000  | 226.5 | .016 |         |  |  |  |
| 14:23      | 2000  | 161.4 | .020  | 15:08                 | 7000  | 236.9 | .010 |         |  |  |  |
| 14:31      | 3000  | 176.3 | .015  | 15:18                 | 8000  | 246.7 | .010 |         |  |  |  |
| 14:40      | 4000  | 193.0 | .017  | 15:27                 | 8700  | 256.1 | .013 |         |  |  |  |
| 14:50      | 5000  | 210.9 | .018  | 15:36                 | 8875  | 258.1 | .011 |         |  |  |  |

# FLY LAKE #4 - STATIC TEMPERATURE GRADIENT - 29/4/85



000133

APPENDIX C

FULL WELL STREAM RECOMBINATION

FWS RECOMBINATION

Separator gas and liquid samples taken during the extended flow period of the Isochronal test on Fly Lake #4, were sent to AMDEL for analysis.

The flash gas and low pressure (LP) liquid were mathematically recombined to form the high pressure liquid. To check for internal consistency of the HP gas and HP liquid samples, a plot of  $\log K$  vs  $(T_c)^2$  was made. Inspection of the plot shows that the HP separator gas and HP liquid are not in equilibrium with each other. Inspection of the Fluid Production Sheets (Appendix A) shows that during the final stabilization period the condensate production rate had not stabilized over the 13 hour flow period. Therefore it appears that the samples taken are not representative and a reliable full well stream recombination is not possible. It is recommended that during the next L.E.T. survey conducted on the well the well be resampled.

000136

| Component        | HP Sep. Gas<br>(mol %) | HP Sep. Liquid<br>(mol %) | K Value |
|------------------|------------------------|---------------------------|---------|
| N <sub>2</sub>   | 1.15                   | 0.00                      |         |
| CO <sub>2</sub>  | 30.62                  | 1.50                      |         |
| C <sub>1</sub>   | 49.88                  | 0.50                      | 99.7    |
| C <sub>2</sub>   | 10.55                  | 2.35                      | 4.89    |
| C <sub>3</sub>   | 4.40                   | 4.65                      | 0.946   |
| iC <sub>4</sub>  | 0.66                   | 2.10                      | 0.314   |
| nC <sub>4</sub>  | 1.20                   | 5.60                      | 0.214   |
| iC <sub>4</sub>  | 0.34                   | 4.10                      | 0.083   |
| nC <sub>5</sub>  | 0.37                   | 6.05                      | 0.061   |
| C <sub>6</sub>   | 0.30                   | 11.05                     | 0.027   |
| C <sub>7</sub>   | 0.20                   | 14.47                     | 0.014   |
| C <sub>8</sub> + | 0.33                   | 47.63                     | 0.007   |

WP4700N(11)

PAR/rt

23/5/86

000137

FIELD: FLY LAKE/BROLGA  
FORMATION: PATCHAWARRA (NON ASSOC.)

| <u>COMPONENT</u> | <u>MOLE %</u> |
|------------------|---------------|
| C <sub>1</sub>   | 52.398        |
| C <sub>2</sub>   | 10.052        |
| C <sub>3</sub>   | 4.356         |
| iC <sub>4</sub>  | 0.752         |
| nC <sub>4</sub>  | 1.045         |
| iC <sub>5</sub>  | 0.402         |
| nC <sub>5</sub>  | 0.417         |
| C <sub>6</sub>   | 0.518         |
| C <sub>7</sub>   | 0.565         |
| C <sub>8</sub> + | 1.511         |
| CO <sub>2</sub>  | 26.727        |
| N <sub>2</sub>   | 1.257         |

Source:

Cooper Basin Unit, Technical Data Book, May 15th, 1975.

Recombination FWS average of hp gas, lq liquid, Fly Lake #1U taken June, 1972.

SGK/rb

WP4700N(13)



The Australian  
Mineral Development  
Laboratories

Flemington Street, Frewville,  
South Australia 5063  
Phone Adelaide (08) 79 1662  
Telex AA82520

Please address all  
correspondence to  
P.O. Box 114 Eastwood  
SA 5063  
In reply quote:

amdel

000138

20 June 1985

F 3/520/0  
F 4610/85

Santos Limited  
39 Grenfell Street  
ADELAIDE SA 5000

Attention: Mr A. Wenk

REPORT F 4610/85

YOUR REFERENCE: 000198  
IDENTIFICATION: FLY LAKE NO. 4  
MATERIAL: Gas, condensate, HP condensate  
DATE RECEIVED: 16 May 1985  
WORK REQUIRED: Codes R1.1, R2.1, R2.2, R2.3, R2.5

Investigation and Report by: Andrew Koutrouzas

Chief - Petroleum Services Section: Dr Brian G. Steveson

*Brian Steveson*

for Dr William G. Spencer  
Manager  
Mineral and Materials Sciences Division

cc. Copy of F/Sheet to Accounts Payable Section

cap

Head Office:

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Perth, W.A.

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Telex: Amdel AA94893

Sydney, N.S.W.

Telephone (02) 439 7735  
Telex: Amdel AA20053

Townsville

Queensland 4814  
Telephone (077) 75 1377

000139

## AMDEL GAS ANALYSIS SERVICE

FLY LAKE NO. 4  
PATCHAWARRA FM. 8858-8892 FT.  
210 PSI 106 DEG.F.  
1/5/85

| GAS                | MOL % |
|--------------------|-------|
| OXYGEN PLUS ARGON  | <.01  |
| NITROGEN           | 1.15  |
| CARBON DIOXIDE     | 30.62 |
| METHANE            | 49.88 |
| ETHANE             | 10.55 |
| PROPANE            | 4.40  |
| I-BUTANE           | 0.66  |
| N-BUTANE           | 1.20  |
| I-PENTANE          | 0.34  |
| N-PENTANE          | 0.37  |
| HEXANE             | 0.30  |
| HEPTANES           | 0.20  |
| OCTANES AND HIGHER | 0.33  |

0.53

( 0= LESS THAN 0.01%)

100.00

CALCULATED GAS DENSITY  
(AIR = 1): 1.01

CALORIFIC VALUE (15.6 DEG C, 760 MM HG):

GROSS: 936 BTU/CU.FT ( 34.87 MJ/CU.M)  
NETT: 851 BTU/CU.FT ( 31.71 MJ/CU.M)

AVERAGE MOLECULAR WEIGHT = 29.3 G/MOLE

All results calculated on an air and water free basis

## AMDEL

## LIQUID HYDROCARBON ANALYSIS

FLY LAKE NO.4  
 PATCHAWARRA FM. 8858-8892 FT.  
 EX WATER OUTLET ON SEPARATOR  
 1/5/85

| BOILING POINT<br>RANGE (DEG.C) | CARBON NUMBER            | % BY WEIGHT | MOL % |
|--------------------------------|--------------------------|-------------|-------|
| -88.6                          | ETHANE                   | 0.16        | 0.56  |
| -42.1                          | PROPANE                  | 1.20        | 2.90  |
| -11.7                          | I-BUTANE                 | 0.89        | 1.60  |
| -0.5                           | N-BUTANE                 | 2.70        | 4.95  |
| 27.9                           | I-PENTANE                | 2.80        | 4.10  |
| 36.1                           | N-PENTANE                | 4.25        | 6.25  |
| 36.1-68.9                      | C-6                      | 9.70        | 11.95 |
| 80.0                           | BENZENE                  | 0.30        | 0.41  |
| 68.9-98.3                      | C-7                      | 14.75       | 15.60 |
| 100.9                          | METHYLCYCLOHEXANE        | 8.50        | 9.20  |
| 110.6                          | TOLUENE                  | 2.50        | 2.90  |
| 98.3-125.6                     | C-8                      | 13.10       | 12.15 |
| 136.1-144.4                    | ETHYLBENZ.+ XYLENES      | 3.05        | 3.05  |
| 125.6-150.6                    | C-9                      | 9.70        | 8.00  |
| 150.6-173.9                    | C-10                     | 8.25        | 6.15  |
| 173.9-196.1                    | C-11                     | 5.15        | 3.50  |
| 196.1-215.0                    | C-12                     | 3.05        | 1.90  |
| 215.0-235.0                    | C-13                     | 2.45        | 1.40  |
| 235.0-252.2                    | C-14                     | 1.90        | 1.00  |
| 252.2-270.6                    | C-15                     | 1.55        | 0.77  |
| 270.6-287.8                    | C-16                     | 1.05        | 0.49  |
| 287.8-302.8                    | C-17                     | 0.72        | 0.32  |
| 302.8-317.2                    | C-18                     | 0.65        | 0.27  |
| 317.2-330.0                    | C-19                     | 0.41        | 0.16  |
| 330.0-344.4                    | C-20                     | 0.31        | 0.12  |
| 344.4-357.2                    | C-21                     | 0.25        | 0.09  |
| 357.2-369.4                    | C-22                     | 0.19        | 0.06  |
| 369.4-380.0                    | C-23                     | 0.15        | 0.05  |
| 380.0-391.1                    | C-24                     | 0.11        | 0.03  |
| 391.1-401.7                    | C-25                     | 0.09        | 0.03  |
| 401.7-412.2                    | C-26                     | 0.07        | 0.02  |
| 412.2-422.2                    | C-27                     | 0.05        | 0.01  |
| >422.2                         | C-28 + HIGHER H' CARBONS | 0.00        | 0.00  |

0 = LESS THAN 0.01%

THE ABOVE BOILING POINT RANGES REFER TO THE NORMAL PARAFFIN HYDROCARBON BOILING IN THAT RANGE.

AROMATICS, BRANCHED HYDROCARBONS, NAPHTHENES AND OLEFINS MAY HAVE HIGHER OR LOWER CARBON NUMBERS BUT ARE GROUPED AND REPORTED ACCORDING TO THEIR BOILING POINTS.

Average molecular weight of C-8 plus fraction (calc)= 130 gm/mol

Specific gravity of C-8 plus fraction (calc)= .808 at 15.6 deg.c)

-----  
 !    PHYSICAL PROPERTIES    !  
 -----

FLY LAKE NO.4  
 PATCHAWARRA FM. 8858-8892 FT.  
 EX WATER OUTLET ON SEPARATOR  
 1/5/85  
 -

Kinematic viscosity                    = 0.714 centistokes ( at 37.8 deg.c)

Pour point                            = <-25 (deg.c)

B.S. & W.                            = TRACE %

Specific Gravity (15.6 deg.C)= 0.741

API Gravity                    (15.6 deg.C)= 59.5

-----  
 USBM DISTILLATION  
 -----

| boiling range<br>(deg.c) | vol % | sum % | sp gr<br>(15.6 deg) | corr index |
|--------------------------|-------|-------|---------------------|------------|
| RT-50                    | 1.0   | 1.0   | -----               | ----       |
| 50-100                   | 23.0  | 24.0  | 0.696               | 12.7       |
| 100-150                  | 37.0  | 61.0  | 0.745               | 18.3       |
| 150-200                  | 14.5  | 75.5  | 0.779               | 20.8       |
| 200-250                  | 8.5   | 84.0  | 0.802               | 20.8       |
| 250-300                  | 7.5   | 91.5  | 0.828               | 24.3       |

initial boiling point = 38 deg.c

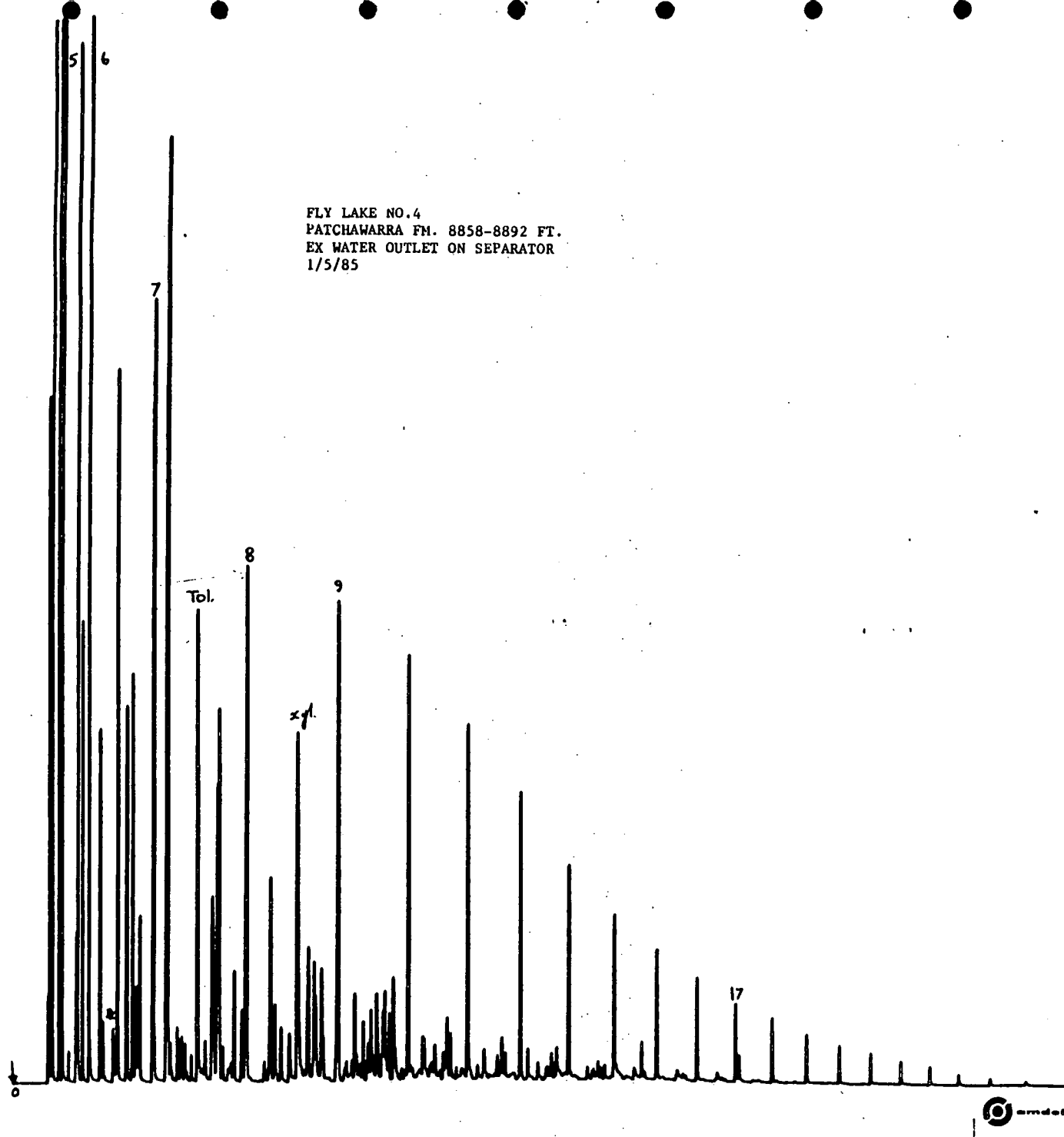
final boiling point = 299 deg.c (started cracking)

weight of distillate = 67.66 gms

weight of residue = 2.3 gms

loss = 3.7 gms

recovery = 95 %



000142

# AMDEL HIGH PRESSURE LIQUID HYDROCARBON ANALYSIS

FLY LAKE NO.4  
PATCHAWARRA FM. 8859-8892 FT.  
210 PSI 106 DEG.F.  
1/5/85

The sample was released to air temperature and pressure by displacement with saturated brine solution to yield a flash gas and a liquid. The volume of each was measured; both fractions were then analysed chromatographically and the results combined mathematically to give an analysis of the sample as received.

The sample yielded 278 millilitres of liquid and 3.6 litres of gas at 13.4 degrees celsius.

## FLASH GAS ANALYSIS

| GAS                        | % MOL VOL   |
|----------------------------|-------------|
| NITROGEN                   | 0.00        |
| CARBON DIOXIDE             | 20.65       |
| METHANE                    | 6.85        |
| ETHANE                     | 26.50       |
| PROPANE                    | 24.85       |
| I-BUTANE                   | 5.30        |
| N-BUTANE                   | 8.70        |
| I-PENTANE                  | 2.50        |
| N-PENTANE                  | 2.50        |
| HEXANES                    | 1.45        |
| HEPTANES                   | 0.55        |
| OCTANES + HIGHER H'CARBONS | 0.24 } 0.79 |

Calculated gas density (rel air = 1) = 1.481

Calorific value (15.6 deg.c, 760 mm Hg)

Gross = 1934 Btu/cu.ft ( 72.05 MJ/cu.m)

Nett = 1778 Btu/cu.ft ( 66.22 MJ/cu.m)

## FLY LAKE NO.4

## LIQUID ANALYSIS

| BOILING POINT<br>RANGE (DEG.C) | CARBON NUMBER           | % BY WEIGHT | MOL % |
|--------------------------------|-------------------------|-------------|-------|
| -88.6                          | ETHANE                  | 0.12        | 0.43  |
| -42.1                          | PROPANE                 | 1.25        | 3.05  |
| -11.7                          | I-BUTANE                | 0.99        | 1.80  |
| -0.5                           | N-BUTANE                | 2.90        | 5.35  |
| 27.9                           | I-PENTANE               | 2.85        | 4.20  |
| 36.1                           | N-PENTANE               | 4.25        | 6.30  |
| 36.1-68.9                      | C-6                     | 9.55        | 11.80 |
| 80.0                           | BENZENE                 | 0.33        | 0.45  |
| 68.9-98.3                      | C-7                     | 14.25       | 15.20 |
| 100.9                          | METHYLCYCLOHEXANE       | 8.20        | 8.90  |
| 110.6                          | TOLUENE                 | 2.45        | 2.85  |
| 98.3-125.6                     | C-8                     | 12.65       | 11.80 |
| 136.1-144.4                    | ETHYLBENZ.+ XYLENES     | 2.95        | 3.00  |
| 125.6-150.6                    | C-9                     | 9.40        | 7.85  |
| 150.6-173.9                    | C-10                    | 8.10        | 6.10  |
| 173.9-196.1                    | C-11                    | 5.10        | 3.50  |
| 196.1-215.0                    | C-12                    | 3.10        | 1.95  |
| 215.0-235.0                    | C-13                    | 2.60        | 1.50  |
| 235.0-252.2                    | C-14                    | 1.95        | 1.05  |
| 252.2-270.6                    | C-15                    | 1.75        | 0.88  |
| 270.6-287.8                    | C-16                    | 1.15        | 0.55  |
| 287.8-302.8                    | C-17                    | 0.87        | 0.38  |
| 302.8-317.2                    | C-18                    | 0.79        | 0.33  |
| 317.2-330.0                    | C-19                    | 0.55        | 0.22  |
| 330.0-344.4                    | C-20                    | 0.44        | 0.16  |
| 344.4-357.2                    | C-21                    | 0.38        | 0.14  |
| 357.2-369.4                    | C-22                    | 0.31        | 0.11  |
| 369.4-380.0                    | C-23                    | 0.26        | 0.09  |
| 380.0-391.1                    | C-24                    | 0.18        | 0.06  |
| 391.1-401.7                    | C-25                    | 0.15        | 0.04  |
| 401.7-412.2                    | C-26                    | 0.08        | 0.02  |
| 412.2-422.2                    | C-27                    | 0.07        | 0.02  |
| >422.2                         | C-28 + HIGHER H'CARBONS | 0.02        | 0.00  |

↓  
C8+

0 = less than 0.01%

THE ABOVE BOILING POINT RANGES REFER TO THE NORMAL PARAFFIN HYDROCARBON BOILING IN THAT RANGE.

AROMATICS, BRANCHED HYDROCARBONS, NAPHTHENES AND OLEFINS MAY HAVE HIGHER OR LOWER CARBON NUMBERS BUT ARE GROUPED AND REPORTED ACCORDING TO THEIR BOILING POINTS.

Specific gravity = .746 (at 13.4 deg.c)

Specific gravity = .744 (at 15.6 deg.c)

API gravity = 58.7 (at 15.6 deg.c)

Specific gravity of C-8 plus fraction (calc.) = .818 at 15.6 deg.c

Ave. molecular weight of C-8 plus fraction (calc.) = 132 g/mole

FLY LAKE NO.4

## CALCULATED COMPOSITION OF TOTAL SAMPLE AS RECEIVED

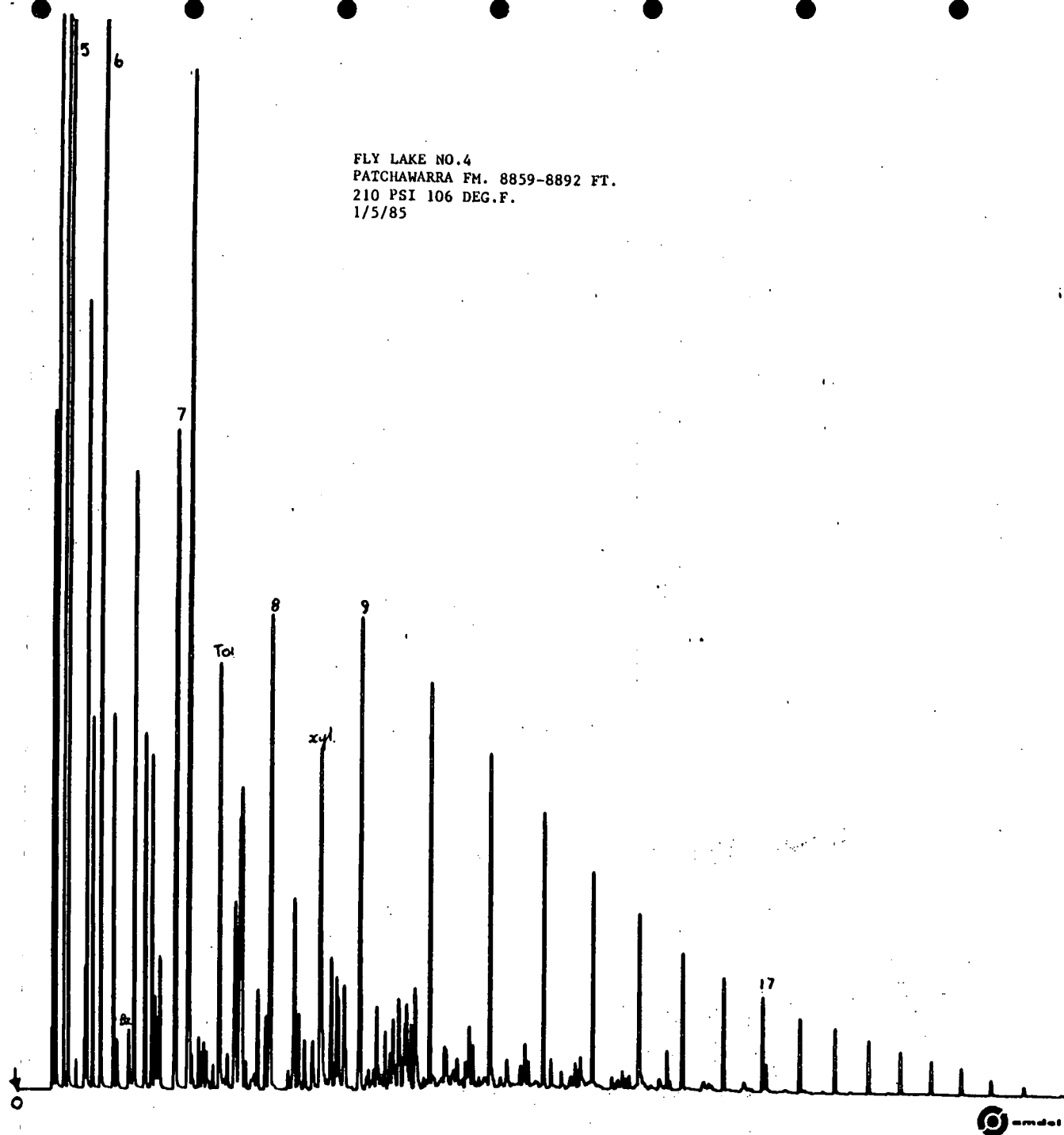
| BOILING POINT<br>RANGE (DEG.C) | CARBON NUMBER            | % BY WEIGHT | MOL %      |
|--------------------------------|--------------------------|-------------|------------|
| -195.8                         | NITROGEN                 | 0.00        | 0.00       |
| -78.5                          | CARBON DIOXIDE           | 0.65        | 1.50       |
| -164                           | METHANE                  | 0.08        | 0.50 - 1.6 |
| -88.6                          | ETHANE                   | 0.69        | 2.35       |
| -42.1                          | PROPANE                  | 2.00        | 4.65       |
| -11.7                          | I-BUTANE                 | 1.20        | 2.10       |
| -0.5                           | N-BUTANE                 | 3.20        | 5.60       |
| 27.9                           | I-PENTANE                | 2.90        | 4.10       |
| 36.1                           | N-PENTANE                | 4.25        | 6.05       |
| 36.1-68.9                      | C-6                      | 9.35        | 11.05      |
| 80.0                           | BENZENE                  | 0.32        | 0.42       |
| 68.9-98.3                      | C-7                      | 13.80       | 14.05      |
| 100.9                          | METHYLCYCLOHEXANE        | 7.95        | 8.25       |
| 110.6                          | TOLUENE                  | 2.40        | 2.65       |
| 98.3-125.6                     | C-8                      | 12.30       | 10.95      |
| 136.1-144.4                    | ETHYLBENZ. + XYLENES     | 2.90        | 2.75       |
| 125.6-150.6                    | C-9                      | 9.15        | 7.25       |
| 150.6-173.9                    | C-10                     | 7.85        | 5.65       |
| 173.9-196.1                    | C-11                     | 4.95        | 3.25       |
| 196.1-215.0                    | C-12                     | 3.00        | 1.80       |
| 215.0-235.0                    | C-13                     | 2.50        | 1.40       |
| 235.0-252.2                    | C-14                     | 1.85        | 0.96       |
| 252.2-270.6                    | C-15                     | 1.70        | 0.82       |
| 270.6-287.8                    | C-16                     | 1.15        | 0.51       |
| 287.8-302.8                    | C-17                     | 0.84        | 0.36       |
| 302.8-317.2                    | C-18                     | 0.77        | 0.31       |
| 317.2-330.0                    | C-19                     | 0.53        | 0.20       |
| 330.0-344.4                    | C-20                     | 0.42        | 0.15       |
| 344.4-357.2                    | C-21                     | 0.36        | 0.13       |
| 357.2-369.4                    | C-22                     | 0.30        | 0.10       |
| 369.4-380.0                    | C-23                     | 0.25        | 0.08       |
| 380.0-391.1                    | C-24                     | 0.18        | 0.05       |
| 391.1-401.7                    | C-25                     | 0.14        | 0.04       |
| 401.7-412.2                    | C-26                     | 0.08        | 0.02       |
| 412.2-422.2                    | C-27                     | 0.06        | 0.02       |
| >422.2                         | C-28 + HIGHER H' CARBONS | 0.02        | 0.00       |

↓  
C<sub>8</sub>+

0 = less than 0.01%

THE ABOVE BOILING POINT RANGES REFER TO THE NORMAL PARAFFIN HYDROCARBON BOILING IN THAT RANGE. AROMATICS, BRANCHED HYDROCARBONS, NAPHTHENES AND OLEFINS MAY HAVE HIGHER OR LOWER CARBON NUMBERS BUT ARE GROUPED AND REPORTED ACCORDING TO THEIR BOILING POINTS.

FLY LAKE NO.4  
PATCHAWARRA FM. 8859-8892 FT.  
210 PSI 106 DEG.F.  
1/5/85



000146

ROLLING BOTTOMHOLE PRESSURE SURVEY GAS CALCULATION SHEET

WELL: Fly Lake # 4 (Patchawarra) Pf = 4100 kPa  
 ORIFICE SIZE: 47.625 mm 1.875 " ✓ T = 63 °C  
 LINE SIZE: 97.180 mm 3.826 " ✓ Diff = 23.5 kPa

Cumulative Production to end of March = 119.887 m<sup>3</sup> x 10<sup>6</sup>

Number of hours online in March = 745

Production in March = 3.359 m<sup>3</sup> x 10<sup>6</sup>

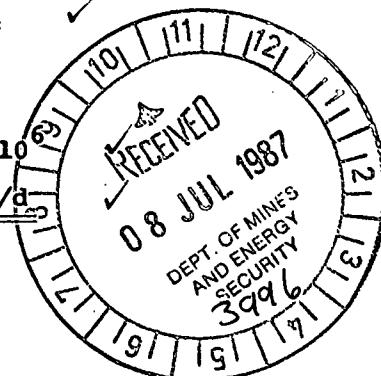
.. Average flow rate in March = (3.359 / 745) x 24 = 0.108 m<sup>3</sup> x 10<sup>6</sup> / d

Number of days online in April before Shut In 2130 hrs 5 / 4 / 87  
 = 4.896

.. Production up to 2130 hrs 5 / 4 / 87 = 0.108 x 4.896 = 0.530 m<sup>3</sup> x 10<sup>6</sup>

Total cumulative production = 119.887 + 0.530  
 = 120.417 m<sup>3</sup> x 10<sup>6</sup>  
 = 4 274.081 mmscf ✓

Flow rate just prior to Shut In = 0.114 m<sup>3</sup> x 10<sup>6</sup> / d  
 = 4.054 mmscf/d



SANTOS LTD  
39 GRENELL ST  
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

|                  |                        |                     |
|------------------|------------------------|---------------------|
| CO. SANTOS       | RUN 01 FIELD FLYLAKE   | WELL 04             |
| EFF DEPTH        | WELL STAT              | TOOL HUNG 9429'     |
| CASING 7"        | CASING PRESS           | ON BOTTOM 1730 5/4  |
| LINER            | TUBING PRESS           | OFF BOTTOM 0930 9/4 |
| DATE 870405      | ELEMENT RANGE 0 - 4017 | ZERO POINT          |
| ELEVATION        | ZONE                   | SHUT-IN 2130 5/4    |
| MAX TEMP         | PICK-UP                | ON-PROD             |
| PERF 8858'-9114' | CAL SER NO. 29322      | MPP 8986'           |
| TUBING 2-3/8"    |                        |                     |
| UNITS ENGLISH    | PURPOSE BUILD-UP       |                     |

SURVEY DATA

| CO. SANTOS |        |       |       | RUN 01 FIELD FLYLAKE |        |        |       | WELL 04 |  |  |  |
|------------|--------|-------|-------|----------------------|--------|--------|-------|---------|--|--|--|
| TIME       | P-T    | DP-DT | DTIME | TIME                 | P-T    | DP-DT  | DTIME |         |  |  |  |
| 21:30      | 1585.8 | 0.0   | 0.0   | 23:11                | 2536.4 | 950.6  | 1.7   |         |  |  |  |
| 21:32      | 1645.3 | 59.5  | .0    | 23:22                | 2544.4 | 958.6  | 1.9   |         |  |  |  |
| 21:34      | 1721.6 | 135.8 | .1    | 23:32                | 2553.0 | 967.2  | 2.0   |         |  |  |  |
| 21:38      | 1831.3 | 245.5 | .1    | 23:43                | 2560.0 | 974.2  | 2.2   |         |  |  |  |
| 21:41      | 1944.1 | 358.2 | .2    | 23:58                | 2570.0 | 984.2  | 2.5   |         |  |  |  |
| 21:45      | 2039.6 | 453.8 | .3    | 0:13                 | 2576.2 | 990.4  | 2.7   |         |  |  |  |
| 21:49      | 2141.2 | 555.4 | .3    | 0:29                 | 2582.7 | 996.9  | 3.0   |         |  |  |  |
| 21:55      | 2270.6 | 684.8 | .4    | 0:46                 | 2591.5 | 1005.7 | 3.3   |         |  |  |  |
| 22:01      | 2353.0 | 767.2 | .5    | 1:16                 | 2601.9 | 1016.1 | 3.8   |         |  |  |  |
| 22:07      | 2406.9 | 821.1 | .6    | 1:53                 | 2611.0 | 1025.2 | 4.4   |         |  |  |  |
| 22:13      | 2442.7 | 856.9 | .7    | 2:31                 | 2622.8 | 1037.0 | 5.0   |         |  |  |  |
| 22:16      | 2455.6 | 869.8 | .8    | 3:10                 | 2631.6 | 1045.8 | 5.7   |         |  |  |  |
| 22:21      | 2470.7 | 884.9 | .9    | 4:56                 | 2638.9 | 1053.1 | 7.4   |         |  |  |  |
| 22:27      | 2481.8 | 896.0 | .9    | 7:08                 | 2645.7 | 1059.9 | 9.6   |         |  |  |  |
| 22:35      | 2493.9 | 908.1 | 1.1   | 12:32                | 2658.7 | 1072.9 | 15.0  |         |  |  |  |
| 22:40      | 2501.7 | 915.9 | 1.2   | 18:53                | 2665.4 | 1079.6 | 21.4  |         |  |  |  |
| 22:47      | 2510.4 | 924.6 | 1.3   | 4:05                 | 2673.4 | 1087.6 | 30.6  |         |  |  |  |
| 22:52      | 2515.8 | 930.0 | 1.4   | 16:50                | 2683.7 | 1097.9 | 43.3  |         |  |  |  |
| 22:57      | 2523.2 | 937.4 | 1.5   | 12:47                | 2694.7 | 1108.9 | 63.3  |         |  |  |  |
| 23:06      | 2529.8 | 944.0 | 1.6   | 9:30                 | 2709.4 | 1123.6 | 84.0  |         |  |  |  |

LUB IN DWT = 600 PSI / OUT = 1820 PSI  
LUB IN AMERADA = 595 PSI / OUT = 1822 PSI

SANTOS LTD  
39 GRENFELL ST  
ADELAIDE

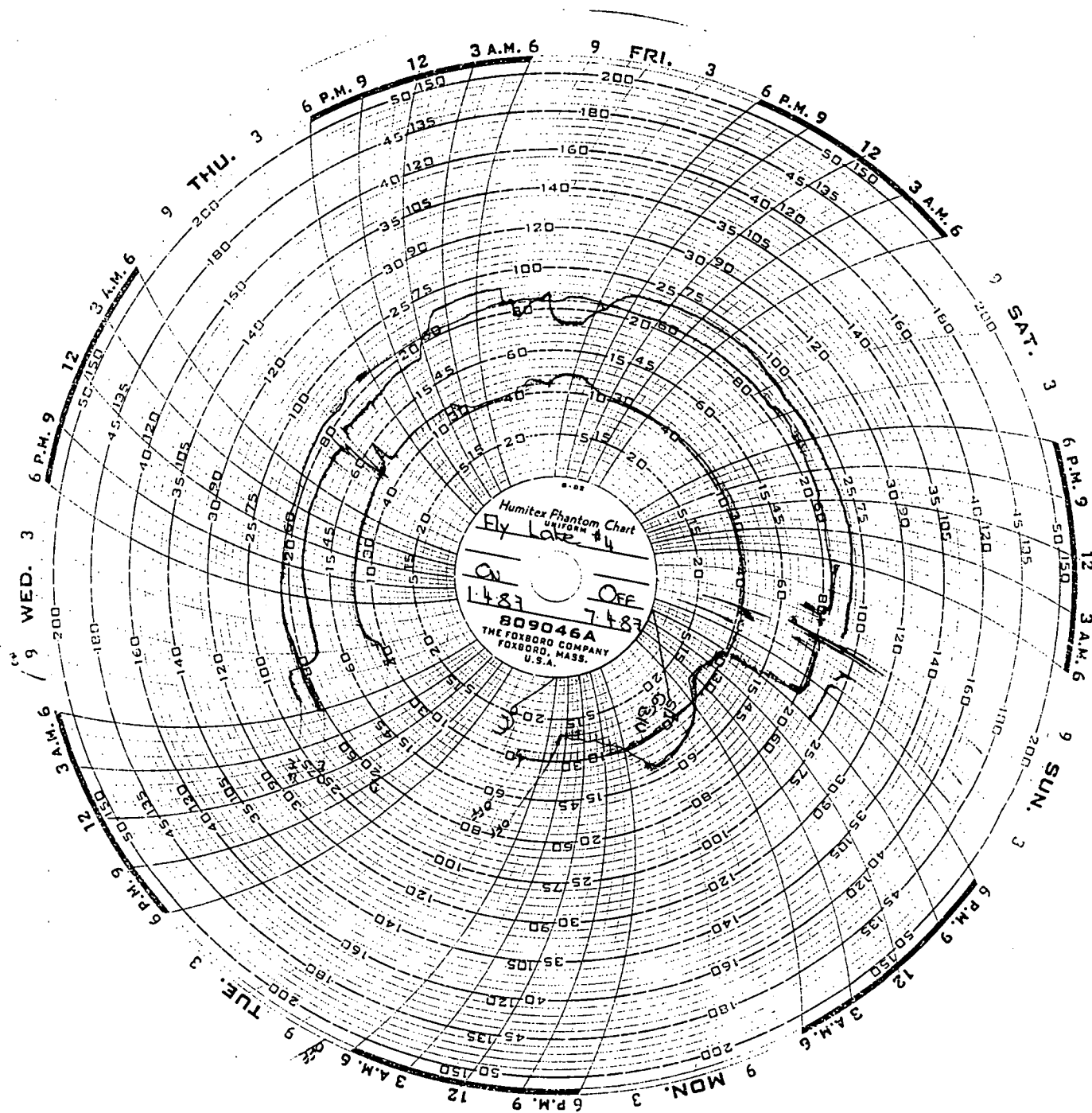
SUB-SURFACE PRESSURE SURVEY

|                  |                        |                     |
|------------------|------------------------|---------------------|
| CO. SANTOS       | RUN 02 FIELD FLYLAKE   | WELL 04             |
| EFF DEPTH        | WELL STAT              | TOOL HUNG 9435'     |
| CASING 7"        | CASING PRESS           | ON BOTTOM 1730 5/4  |
| LINER            | TUBING PRESS           | OFF BOTTOM 0930 9/4 |
| DATE 870405      | ELEMENT RANGE 0 - 4319 | ZERO POINT          |
| ELEVATION        | ZONE                   | SHUT-IN 2130 5/4    |
| MAX TEMP         | PICK-UP                | ON-PROD             |
| PERF 8858'-9114' | CAL SER NO. 22420      | MPP 8986'           |
| TUBING 2-3/8"    |                        |                     |
| UNITS ENGLISH    | PURPOSE BUILD-UP       |                     |

SURVEY DATA

| CO. SANTOS |        |       |       | RUN 02 FIELD FLYLAKE |        |        |       | WELL 04 |     |       |       |
|------------|--------|-------|-------|----------------------|--------|--------|-------|---------|-----|-------|-------|
| TIME       | P-T    | DP-DT | DTIME | TIME                 | P-T    | DP-DT  | DTIME | TIME    | P-T | DP-DT | DTIME |
| 21:30      | 1590.3 | 0.0   | 0.0   | 22:36                | 2556.6 | 966.3  | 1.1   |         |     |       |       |
| 21:31      | 1651.3 | 61.0  | .0    | 22:42                | 2564.6 | 974.2  | 1.2   |         |     |       |       |
| 21:34      | 1742.9 | 152.5 | .1    | 22:49                | 2572.9 | 982.6  | 1.3   |         |     |       |       |
| 21:35      | 1856.0 | 265.7 | .1    | 22:58                | 2581.0 | 990.7  | 1.5   |         |     |       |       |
| 21:38      | 1992.1 | 401.8 | .1    | 23:08                | 2590.0 | 999.7  | 1.6   |         |     |       |       |
| 21:42      | 2143.6 | 553.2 | .2    | 23:20                | 2599.5 | 1009.2 | 1.8   |         |     |       |       |
| 21:49      | 2338.8 | 748.5 | .3    | 23:34                | 2608.9 | 1018.5 | 2.1   |         |     |       |       |
| 21:52      | 2414.1 | 823.8 | .4    | 23:57                | 2618.9 | 1028.5 | 2.5   |         |     |       |       |
| 21:55      | 2439.9 | 849.6 | .4    | 0:31                 | 2637.9 | 1047.5 | 3.0   |         |     |       |       |
| 21:57      | 2459.0 | 868.6 | .4    | 2:22                 | 2650.0 | 1059.7 | 4.9   |         |     |       |       |
| 21:59      | 2473.2 | 882.9 | .5    | 5:39                 | 2663.6 | 1073.3 | 8.1   |         |     |       |       |
| 22:03      | 2485.8 | 895.4 | .6    | 11:16                | 2673.9 | 1083.6 | 13.8  |         |     |       |       |
| 22:06      | 2494.4 | 904.1 | .6    | 18:52                | 2685.3 | 1094.9 | 21.4  |         |     |       |       |
| 22:09      | 2503.5 | 913.1 | .6    | 2:23                 | 2694.1 | 1103.8 | 28.9  |         |     |       |       |
| 22:11      | 2510.8 | 920.5 | .7    | 11:16                | 2704.3 | 1114.0 | 37.8  |         |     |       |       |
| 22:15      | 2518.1 | 927.8 | .8    | 21:02                | 2714.0 | 1123.7 | 47.5  |         |     |       |       |
| 22:18      | 2526.3 | 936.0 | .8    | 6:31                 | 2725.1 | 1134.8 | 57.0  |         |     |       |       |
| 22:23      | 2535.6 | 945.3 | .9    | 21:13                | 2733.6 | 1143.3 | 71.7  |         |     |       |       |
| 22:26      | 2542.7 | 952.3 | .9    | 9:30                 | 2739.3 | 1149.0 | 84.0  |         |     |       |       |
| 22:31      | 2548.7 | 958.3 | 1.0   | 0:00                 | 0.0    | 0.0    | 0.0   |         |     |       |       |

LUB IN DWT = 600 PSI / OUT = 1820 PSI  
LUB IN AMERADA = 586 PSI / OUT = 1811 PSI



Fly Lake #4

0736 hrs 1/4/87 to 0738 hrs 7/4/87

O.P. size = 47.625mm

meter run = 97.180mm

000151

Time Run In Hole 17.05 HRS ON 5.04.87 Time off Bottom 0930 on 9-4-87

### Bomb No. 2 Data

for E# 29322

[illegible]



## WIRELINE REPORT

000152

WELL: FLY LAKE #4

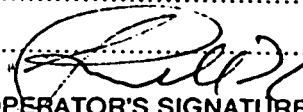
DATE: 5.04.87

PROGRAM: B.H.P. SURVEY

PURPOSE OF WORK: Blind Box Run

## REPORT OF WORK PERFORMED:

5.04.87  
13.30 Shut well in to install swab valve.  
13.59 Rig up w/l mud.  
14.30 Run in hole with 1.75" Blind Box (choke have to be cut to 10%)  
15.10 On bottom at 9441' KB  
15.45 In lubricator and depressurise.  
15.50 Well open to 100% choke size.  
17.05 R.I.H. for B.H.P. survey (choke cut to 10%)  
17.30 ON Bottom at 9116' KB (open well to 100%)

  
OPERATOR'S SIGNATURE

WORK PERFORMED BY: I. KURASIAK OF Expertest

## WELL DATA:

Tubing Size: 2 3/8 FWHP: 600 PSI SIWHP:

Sub Surface S.V./Landing Nipple @ S.S.D. @:

"X" Nipple @ "N"/"XN" Nipple @ other

Min I.D. " @ Packer @

Perforated Interval:

Forward to: Petroleum Engineering — Adelaide  
Production Department — Moomba

000152

WELL: FLY LAKE # 4  
 FORM. PATCHAWARRA BHP survey  
 OPERATOR: I. KURASIAK



SANTOS LTD  
 WELL TEST DATA  
 METRIC SUMMARY SHEET

DATE: 5.04.87  
 PAGE No: 1

| DATE<br><br>TIME | WELLHEAD                                              |               |                 |               |            |            | FLUID PRODUCTION                |                              |                            |                         | GAS PRODUCTION |       |                        |                 |  |
|------------------|-------------------------------------------------------|---------------|-----------------|---------------|------------|------------|---------------------------------|------------------------------|----------------------------|-------------------------|----------------|-------|------------------------|-----------------|--|
|                  | CASING<br>FSI                                         | CASING<br>KPA | TUBING<br>PSI   | TUBING<br>KPA | TEMP<br>°F | TEMP<br>°C | FLOWRATE<br>OIL-COND<br>BBL'S/D | FLOWRATE<br>OIL-COND<br>M3/D | FLOWRATE<br>H2O<br>BBL'S/D | FLOWRATE<br>H2O<br>M3/D | MMSCF/D        | Mm3/D | G.O.R.<br>Cu/FT<br>BBL | G.O.R.<br>M3/M3 |  |
|                  |                                                       |               | 5 of April 1987 |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |  |
| 1330             | Shut well in to install swab valve<br>Rig up w/l unit |               |                 |               |            |            | 1400 HRS                        | Well back                    | on line.                   | 100% choke              | to size.       |       |                        |                 |  |
| 1430             | Run in hole with 1.75" Blind Box (Well flowing)       |               |                 |               |            |            | Cut choke to 10%                |                              |                            |                         |                |       |                        |                 |  |
| 1510             | ON BOTTOM AT 9441' KB.                                |               |                 |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |  |
| 1545             | Arrive on lub.                                        |               |                 |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |  |
| 1550             | Well open to 100% choke size.                         |               |                 |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |  |
| 1605             | Prepare gauges for B.H.P. survey.<br>Pressure up lub. |               |                 |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |  |
| 1705             | Run in hole (choke cut to 10%)                        |               |                 |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |  |
| 1730             | ON BOTTOM AT 9116' KB for 84 HRS Build up.            |               |                 |               |            |            | Well open to 100% choke size.   |                              |                            |                         |                |       |                        |                 |  |
| 1730             | 603                                                   | 4158          | 599             | 4130          | 140        | 60         |                                 |                              |                            |                         |                |       |                        |                 |  |
| 1800             | 602                                                   | 4151          | 599             | 4130          | 140        | 60         |                                 |                              |                            |                         |                |       |                        |                 |  |
| 1830             | 603                                                   | 4158          | 597             | 4116          | 140        | 60         |                                 |                              |                            |                         |                |       |                        |                 |  |
| 1900             | 601                                                   | 4144          | 598             | 4123          | 142        | 61         |                                 |                              |                            |                         |                |       |                        |                 |  |
| 1930             | 601                                                   | 4144          | 597             | 4116          | 142        | 61         |                                 |                              |                            |                         |                |       |                        |                 |  |
| 2000             | 601                                                   | 4144          | 597             | 4116          | 140        | 60         |                                 |                              |                            |                         |                |       |                        |                 |  |

CONVERSION FACTORS:

• BBL'S. x 0.15899 = M<sup>3</sup>

• MMSCF x 28.174 = 10<sup>3</sup> M<sup>3</sup>

• Cu/FT PER BBL x 0.1773 = M<sup>3</sup>/M<sup>3</sup>

• PSI x 6.895 = KPA

• °C x 9 ÷ 5 + 32 = °F

000154

WELL: FLY LAKE#4  
 FORM: Patchawana B.H.P. survey  
 OPERATOR: I. KURASIAK



SANTOS LTD  
 WELL TEST DATA  
 METRIC SUMMARY SHEET

DATE: 5.04.87  
 PAGE No: 2

| DATE<br>TIME | WELLHEAD      |               |                 |               |            |            | FLUID PRODUCTION                |                              |                            |                         | GAS PRODUCTION |       |                        |                 |
|--------------|---------------|---------------|-----------------|---------------|------------|------------|---------------------------------|------------------------------|----------------------------|-------------------------|----------------|-------|------------------------|-----------------|
|              | CASING<br>PSI | CASING<br>KPA | TUBING<br>PSI   | TUBING<br>KPA | TEMP<br>°F | TEMP<br>°C | FLOWRATE<br>OIL-COND<br>BBL'S/D | FLOWRATE<br>OIL-COND<br>M3/D | FLOWRATE<br>H2O<br>BBL'S/D | FLOWRATE<br>H2O<br>M3/D | MMSCF/D        | Mm3/D | G.O.R.<br>Cu/FT<br>BBL | G.O.R.<br>M3/M3 |
|              |               |               | 5 of April 1987 |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2030         | 601           | 4143          | 597             | 4116          | 140        | 60         |                                 |                              |                            |                         |                |       |                        |                 |
| 2100         | 602           | 4151          | 598             | 4123          | 142        | 61         |                                 |                              |                            |                         |                |       |                        |                 |
| 2130         | 603           | 4158          | 601             | 4144          | 142        | 61         | SHUT WELL IN FOR 84 HRS         |                              |                            |                         | BUILD UP       |       |                        |                 |
| 2135         | 870           | 5999          | 1448            | 9984          |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2140         | 1048          | 7233          | 1633            | 11259         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2145         | 1239          | 8543          | 1668            | 11501         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2150         | 1343          | 9260          | 1687            | 11632         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2155         | 1464          | 10094         | 1695            | 11687         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2200         | 1534          | 10577         | 1705            | 11756         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2215         | 1677          | 11563         | 1721            | 11866         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2230         | 1723          | 11880         | 1736            | 11970         |            |            |                                 |                              |                            |                         |                |       |                        |                 |

**CONVERSION FACTORS:**

• BBL'S x 0.15899 = M<sup>3</sup>

• MMSCF x 28.174 = 10<sup>3</sup> M<sup>3</sup>

• Cu/FT PER BBL x 0.1773 = M<sup>3</sup>/M<sup>3</sup>

• PSI x 6.895 = KPA

• °C x 9 ÷ 5 + 32 = °F

09155

WELL: ...FLY LAKE #4.....  
 FORM: PATCHAWARDA B.H.P. Survey  
 OPERATOR: ...I. KURASIAK.....



SANTOS LTD  
 WELL TEST DATA  
 METRIC SUMMARY SHEET

DATE: ...5.04.87.....  
 PAGE No: ...3.....

| DATE<br>TIME | WELLHEAD      |               |               |               |            |            | FLUID PRODUCTION                |                              |                            |                         | GAS PRODUCTION |       |                        |                 |
|--------------|---------------|---------------|---------------|---------------|------------|------------|---------------------------------|------------------------------|----------------------------|-------------------------|----------------|-------|------------------------|-----------------|
|              | CASING<br>PSI | CASING<br>KPA | TUBING<br>PSI | TUBING<br>KPA | TEMP<br>°F | TEMP<br>°C | FLOWRATE<br>OIL-COND<br>BBL'S/D | FLOWRATE<br>OIL-COND<br>M3/D | FLOWRATE<br>H2O<br>BBL'S/D | FLOWRATE<br>H2O<br>M3/D | MMSCF/D        | Mm3/D | G.O.R.<br>Cu/FT<br>BBL | G.O.R.<br>M3/M3 |
|              |               |               | 5 of April    |               | 1987.      |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2245         | 1740          | 11997         | 1745          | 12032         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2300         | 1748          | 12052         | 1752          | 12080         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2315         | 1758          | 12121         | 1759          | 12128         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2330         | 1761          | 12142         | 1764          | 12163         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2345         | 1766          | 12177         | 1767          | 12183         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2400         | 1772          | 12218         | 1774          | 12232         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |               |               | 6 of April    |               | 1987       |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0015         | 1778          | 12259         | 1778          | 12259         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0030         | 1779          | 12266         | 1780          | 12273         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0045         | 1780          | 12273         | 1780          | 12273         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0100         | 1781          | 12280         | 1781          | 12280         |            |            |                                 |                              |                            |                         |                |       |                        |                 |

**CONVERSION FACTORS:**

• BBL'S. x 0.15899 = M<sup>3</sup>

• MMSCF x 28.174 = 10<sup>3</sup> M<sup>3</sup>

• Cu/FT PER BBL x 0.1773 = M<sup>3</sup>/M<sup>3</sup>

• PSI x 6.895 = KPA

• °C x 9 ÷ 5 + 32 = °F

WELL: FLY LAKE #4  
 FORM. PATCHAWARRA B.H.P. survey  
 OPERATOR: I. KURAS



SANTOS LTD  
 WELL TEST DATA  
 METRIC SUMMARY SHEET

DATE: 6.04.87

PAGE No: 4

| DATE<br>TIME | WELLHEAD      |               |               |               |            |            | FLUID PRODUCTION                |                              |                            |                         | GAS PRODUCTION |       |                        |                 |
|--------------|---------------|---------------|---------------|---------------|------------|------------|---------------------------------|------------------------------|----------------------------|-------------------------|----------------|-------|------------------------|-----------------|
|              | CASING<br>PSI | CASING<br>KPA | TUBING<br>PSI | TUBING<br>KPA | TEMP<br>°F | TEMP<br>°C | FLOWRATE<br>OIL-COND<br>BBL'S/D | FLOWRATE<br>OIL-COND<br>M3/D | FLOWRATE<br>H2O<br>BBL'S/D | FLOWRATE<br>H2O<br>M3/D | MMSCF/D        | Mm3/D | G.O.R.<br>CU/FT<br>BBL | G.O.R.<br>M3/M3 |
|              |               |               | 6th April     |               | 1987       |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0115         | 1781          | 12280         | 1781          | 12280         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0130         | 1781          | 12280         | 1782          | 12287         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0530         | 1789          | 12335         | 1787          | 12321         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0930         | 1791          | 12349         | 1791          | 12349         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 1330         | 1793          | 12363         | 1792          | 12356         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 1730         | 1796          | 12383         | 1795          | 12377         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2130         | 1798          | 12397         | 1797          | 12390         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |               |               | 7th April     |               | 1987       |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0130         | 1800          | 12411         | 1799          | 12404         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0530         | 1802          | 12425         | 1801          | 12418         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0930         | 1804          | 12439         | 1803          | 12432         |            |            |                                 |                              |                            |                         |                |       |                        |                 |

**CONVERSION FACTORS:**

• BBL'S. x 0.15899 = M<sup>3</sup>

• MMSCF x 28.174 = 10<sup>3</sup> M<sup>3</sup>

• Cu/FT PER BBL x 0.1773 = M<sup>3</sup>/M<sup>3</sup>

• PSI x 6.895 = KPA

• °C x 9 ÷ 5 + 32 = °F

000157

WELL: FLY LAKE #4  
 FORM. PATCHAWARRA B.H.P. survey  
 OPERATOR: I. KUPAS



**SANTOS LTD**  
**WELL TEST DATA**  
**METRIC SUMMARY SHEET**

DATE: 7.04.87  
 PAGE No: 5

| DATE<br>TIME | WELLHEAD      |                 |               |               |            |            | FLUID PRODUCTION                |                              |                            |                         | GAS PRODUCTION |       |                        |                 |
|--------------|---------------|-----------------|---------------|---------------|------------|------------|---------------------------------|------------------------------|----------------------------|-------------------------|----------------|-------|------------------------|-----------------|
|              | CASING<br>PSI | CASING<br>KPA   | TUBING<br>PSI | TUBING<br>KPA | TEMP<br>°F | TEMP<br>°C | FLOWRATE<br>OIL-COND<br>BBL'S/D | FLOWRATE<br>OIL-COND<br>M3/D | FLOWRATE<br>H2O<br>BBL'S/D | FLOWRATE<br>H2O<br>M3/D | MMSCF/D        | Mm3/D | G.O.R.<br>Cu/FT<br>BBL | G.O.R.<br>M3/M3 |
|              |               | 7 of April 1987 |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 1330         | 1805          | 12445           | 1805          | 12445         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 1730         | 1806          | 12452           | 1805          | 12445         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2130         | 1809          | 12473           | 1807          | 12459         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |               | 8 of April 1987 |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0130         | 1811          | 12487           | 1809          | 12473         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0530         | 1814          | 12507           | 1812          | 12496         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0930         | 1814          | 12507           | 1813          | 12506         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 1330         | 1817          | 12528           | 1815          | 12574         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 1730         | 1817          | 12528           | 1820          | 12617         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 2130         | 1812          | 12493           | 1805          | 12445         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |               | 9 of April.     |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |

**CONVERSION FACTORS:**

• BBL'S. x 0.15899 = M<sup>3</sup>

• MMSCF x 28.174 = 10<sup>3</sup> M<sup>3</sup>

• Cu/FT PER BBL x 0.1773 = M<sup>3</sup>/M<sup>3</sup>

• PSI x 6.895 = KPA

• °C x 9 ÷ 5 + 32 = °F

000158

WELL: FLY LAKE # 4  
 FORM. PATCHAWARDA B.H.P. Survey  
 OPERATOR: I. KURAS



SANTOS LTD  
 WELL TEST DATA  
 METRIC SUMMARY SHEET

DATE: 9. of April 87  
 PAGE No: 6

| DATE<br>TIME | WELLHEAD                              |               |               |               |            |            | FLUID PRODUCTION                |                              |                            |                         | GAS PRODUCTION |       |                        |                 |
|--------------|---------------------------------------|---------------|---------------|---------------|------------|------------|---------------------------------|------------------------------|----------------------------|-------------------------|----------------|-------|------------------------|-----------------|
|              | CASING<br>FSI                         | CASING<br>KPA | TUBING<br>PSI | TUBING<br>KPA | TEMP<br>°F | TEMP<br>°C | FLOWRATE<br>OIL-COND<br>BBL'S/D | FLOWRATE<br>OIL-COND<br>M3/D | FLOWRATE<br>H2O<br>BBL'S/D | FLOWRATE<br>H2O<br>M3/D | MMSCF/D        | Mm3/D | G.O.R.<br>Cu/FT<br>BBL | G.O.R.<br>M3/M3 |
|              | 9 of April. 1987                      |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0130         | 1815                                  | 12574         | 1817          | 12528         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0530         | 1815                                  | 12574         | 1821          | 12535         |            |            |                                 |                              |                            |                         |                |       |                        |                 |
| 0930         | 1814                                  | 12507         | 1820          | 12548         |            |            | OFF BOTTOM                      |                              | END OF B.H.P.              |                         |                |       |                        |                 |
| 1130         | RIG DOWN HAND WELL BACK TO PRODUCTION |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |
|              |                                       |               |               |               |            |            |                                 |                              |                            |                         |                |       |                        |                 |

**CONVERSION FACTORS:**

• BBL'S. x 0.15899 = M<sup>3</sup>

• MMSCF x 28.174 = 10<sup>3</sup> M<sup>3</sup>

• Cu/FT PER BBL x 0.1773 = M<sup>3</sup>/M<sup>3</sup>

• PSI x 6.895 = KPA

• °C x 9 ÷ 5 + 32 = °F

ROLLING BOTTOMHOLE PRESSURE SURVEY GAS CALCULATION SHEET

000159

WELL: Fly Lake # 4

Pf = 4000 kPa

ORIFICE SIZE: 38.000 mm 1.496 "

T = 52 °C

LINE SIZE: 97.180 mm 3.826 " ✓

Diff = 4 kPa

Cumulative Production to end of July = 149.162 m<sup>3</sup> x 10<sup>6</sup> ✓

Number of hours online in July = 727 ✓

Production in July = 0.796 m<sup>3</sup> x 10<sup>6</sup> ✓

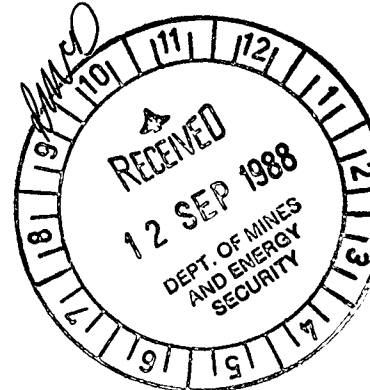
.. Average flow rate in July = (0.796 / 727) x 24 = 0.026 m<sup>3</sup> x 10<sup>6</sup>/d ✓

Number of days online in August before Shut In 1830 hrs 4 / 8 / 88  
= 3.771 days

.. Production up to 1830 hrs 4 / 8 / 88 = 0.026 x 3.771 = 0.098 m<sup>3</sup> x 10<sup>6</sup> ✓

Total cumulative production = 149.162 + 0.098  
= 149.260 m<sup>3</sup> x 10<sup>6</sup>  
= 5297.836 mmscf ✓

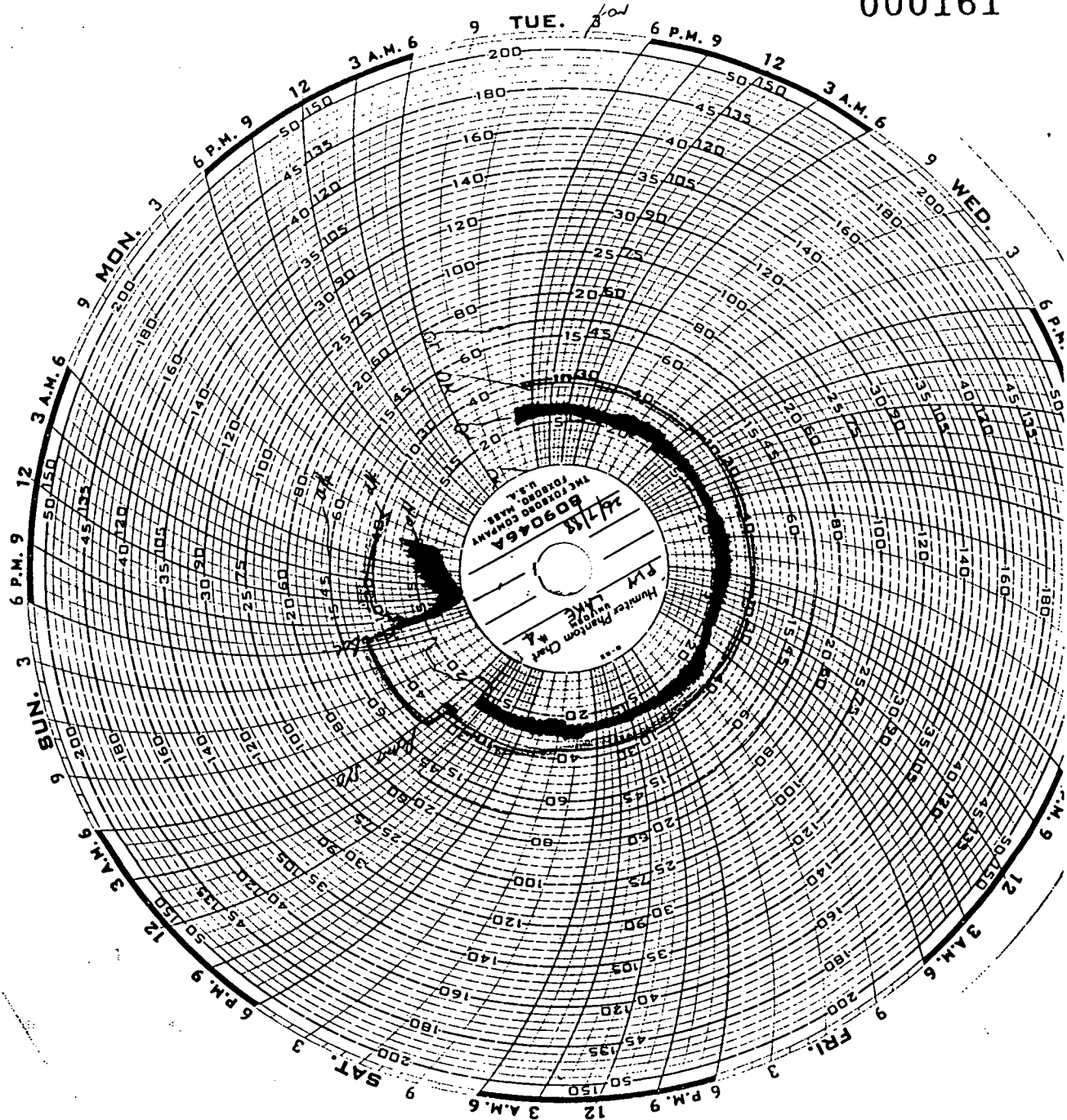
Flow rate just prior to Shut In = 0.030 m<sup>3</sup> x 10<sup>6</sup>  
= 1.055 mmscf/d

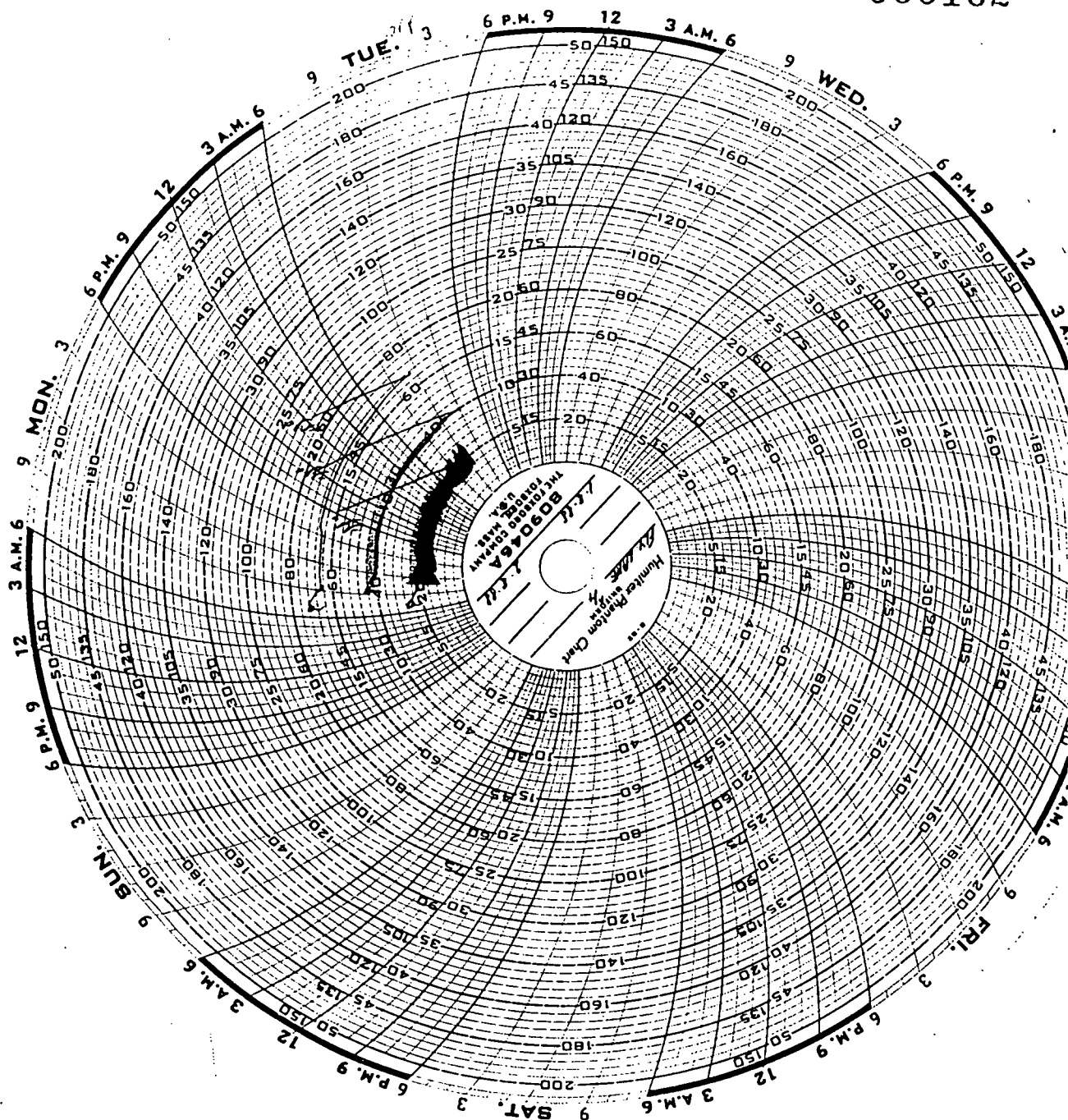


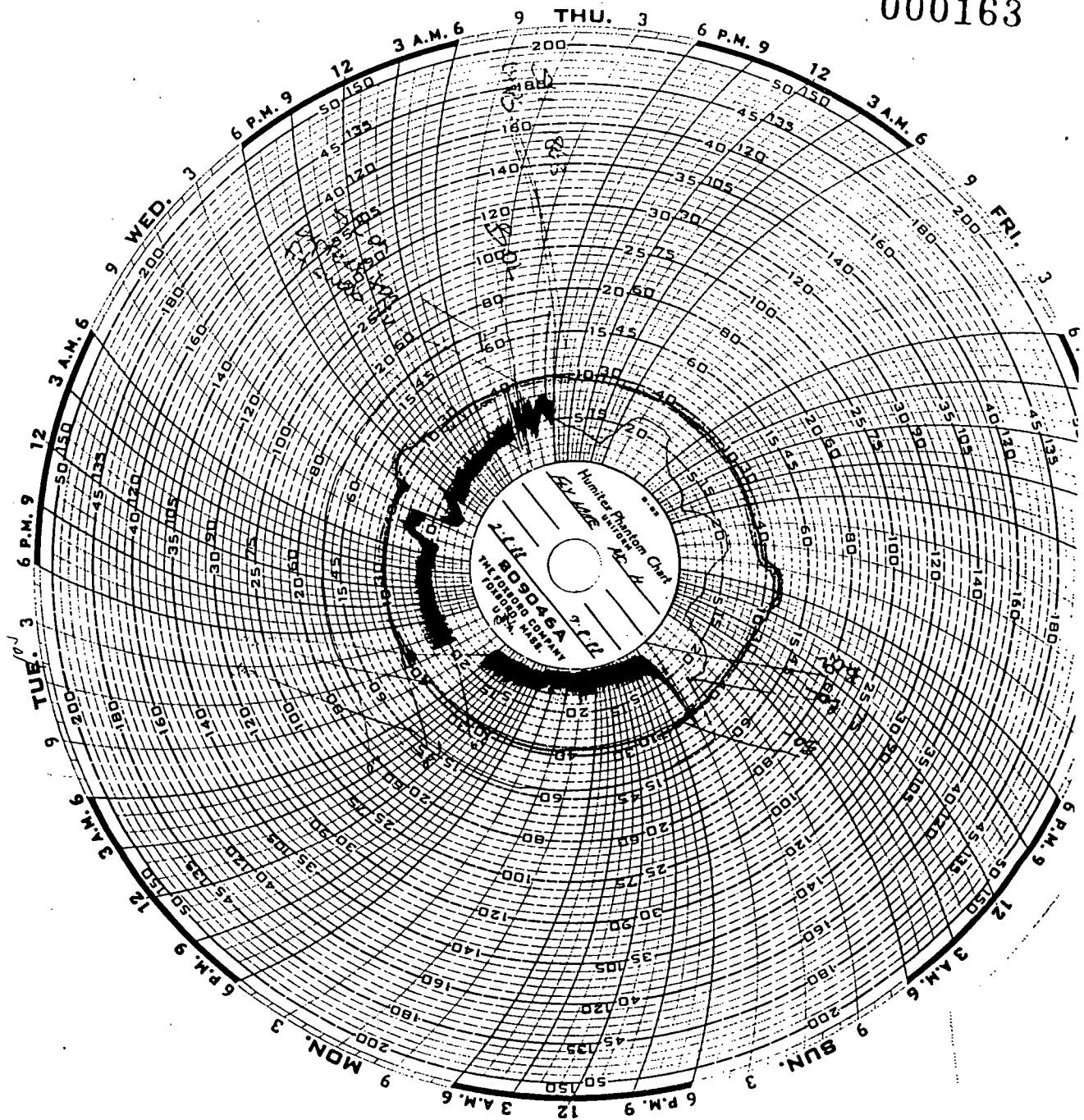
3996

326

11 OCT 1961









## WIRELINE REPORT

000164

WELL: FLY LAKE #4.

DATE: 4-8-88

PROGRAM: BLIND BOX RUN.

PURPOSE OF WORK: TO ENSURE TUBING IS FREE OF ANY OBSTRUCTION.

## REPORT OF WORK PERFORMED:

4<sup>TH</sup> AUGUST 1988

1050 : ARRIVE ON LOCATION, S.W.1 & RIG IN SWAB VALVE.  
1100 : WELL BACK ON LINE & RIG UP WIRELINE EQUIPMENT.  
1220 : R.I.H WITH 1.75" BLIND BOX.  
1237 : TAG P.B.T.D @ 9454' K.B (TUBING IS CLEAR) P.O.O.H.  
1255 : ARRIVE @ SURFACE, RIG OUT TOOLSTRING & PREPARE ELEMENTS.  
1405 : R.I.H WITH 2 PRESSURE ELEMENTS & M.B.H THERMOMETER FOR  
B.H.P. SURVEY.  
1425 : @ HANG DEPTH 8865' K.B, WELL FLOWING 100%.  
1830 : S.W.1 FOR A 60HR BUILD UP.

NOTE: REFER TO WIRELINE REPORT SHEET #2 FOR -  
MORE INFORMATION.

*[Signature]*  
OPERATOR'S SIGNATURE

WORK PERFORMED BY: A. SMITH OF EXPERTEST

## WELL DATA:

Tubing Size: 2 3/8" FWHP: 5000 KPA. SIWHP: -

Sub Surface S.V./Landing Nipple @ - S.S.D. @: -

"X" Nipple @ - "N"/"X" Nipple @ 8786' KB other -

Min I.D. 1.85" @ 8786' KB Packer @ 8770' KB

Perforated Interval: 8892' KB - 9114' KB PATCHAWARRA.

Forward to: Petroleum Engineering - Adelaide  
Production Department - Moomba



# WIRELINE REPORT

000165

WELL: FLY LAKE #4

DATE: 7-8-88

PROGRAM: B.H.P SURVEY & STATIC GRADIENT.

PURPOSE OF WORK: DEFINE BOTTOM HOLE PRESSURES.

## REPORT OF WORK PERFORMED:

7-8-88

0930 : PULL ELEMENTS OUT OF HOLE

0951 : ARRIVE @ LUBRICATOR.

1051 : DEPRESSURE LUBRICATOR, RECOVER CHARTS (GOOD) &  
RELOAD ELEMENTS WITH 3HR CLOCKS FOR STATIC  
GRADIENT.

1139 : R.I.H WITH 2 PRESSURE ELEMENTS & M.B.H THERMOMETER FOR  
STATIC GRADIENT SURVEY.

1400 : GRADIENT SURVEY COMPLETED (CHARTS GOOD), RIG DOWN  
WIRELINE EQUIPMENT & HAND WELL BACK TO —  
— PRODUCTION

OPERATOR'S SIGNATURE

WORK PERFORMED BY: A. SMITH OF EXPERTEST.

## WELL DATA:

Tubing Size: FWHP: SIWHP:

Sub Surface S.V./Landing Nipple @ S.S.D. @:

"X" Nipple @ "N"/"XN" Nipple @ other

Min I.D. @ Packer @

Perforated Interval:

Forward to: Petroleum Engineering — Adelaide  
Production Department — Moomba



**\*\* FLY LAKE #4 \*\***

**STATIC PRESSURE GRADIENT**

TEST DATE: 7-8-88

| DEPTH<br>(FT.) | TOP PRESSURE ELEMENT<br>29388/3000 |                    |                      | BOTTOM PRESSURE ELEMENT<br>29386/2975 |                    |                      |
|----------------|------------------------------------|--------------------|----------------------|---------------------------------------|--------------------|----------------------|
|                | DEFLECTION<br>(INCHES)             | PRESSURE<br>(PSIG) | GRADIENT<br>(PSI/FT) | DEFLECTION<br>(INCHES)                | PRESSURE<br>(PSIG) | GRADIENT<br>(PSI/FT) |
| LUB            | 1.1340                             | 1721.4             | ----                 | 1.1450                                | 1719.2             | ----                 |
| 1000           | 1.1940                             | 1813.2             | 0.0918               | 1.2060                                | 1811.9             | 0.0927               |
| 2000           | 1.2520                             | 1902.0             | 0.0888               | 1.2650                                | 1901.7             | 0.0898               |
| 3000           | 1.3110                             | 1992.4             | 0.0903               | 1.3250                                | 1993.1             | 0.0914               |
| 4000           | 1.3700                             | 2082.7             | 0.0904               | 1.3840                                | 2083.0             | 0.0899               |
| 5000           | 1.4280                             | 2171.5             | 0.0888               | 1.4430                                | 2173.0             | 0.0900               |
| 6000           | 1.4850                             | 2258.8             | 0.0873               | 1.5010                                | 2261.5             | 0.0885               |
| 7000           | 1.5420                             | 2346.1             | 0.0873               | 1.5580                                | 2348.5             | 0.0870               |
| 7500           | 1.5710                             | 2390.5             | 0.0888               | 1.5870                                | 2392.8             | 0.0886               |
| 8000           | 1.5990                             | 2433.3             | 0.0857               | 1.6170                                | 2438.6             | 0.0916               |
| 8500           | 1.6270                             | 2476.2             | 0.0857               | 1.6450                                | 2481.4             | 0.0855               |
| 9003           | 1.6790                             | 2555.7             | 0.1580               | 1.7000                                | 2565.3             | 0.1670               |
| LUB            | 1.1400                             | 1730.6             | ----                 | 1.1490                                | 1725.3             | ----                 |

GENERAL REMARKS:

DWT IN: 1725  
DWT OUT: 1730  
MAX BHT: 255 F

ELEMENT 29388/3000 CALIBRATED 16.3.88  
ELEMENT 29386/2975 CALIBRATED 16.3.88

SANTOS LTD  
39 GRENFELL ST  
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

|                |   |                        |                     |
|----------------|---|------------------------|---------------------|
| CO. SANTOS     |   | RUN 01 FIELD FLY LAKE  | WELL 04             |
| EFF DEPTH      |   | WELL STAT              | TOOL HUNG 8859'     |
| CASING         | - | CASING PRESS           | ON BOTTOM 1425 4/8  |
| LINER          | - | TUBING PRESS           | OFF BOTTOM 0930 7/8 |
| DATE 880807    |   | ELEMENT RANGE 0 - 3046 | ZERO POINT          |
| ELEVATION      |   | ZONE                   | SHUT-IN 1830 4/8    |
| MAX TEMP 118 C |   | PICK-UP                | ON-PROD             |
| PERF           | - | CAL SER NO. 29388      | MPP                 |
| TUBING         | - |                        |                     |
| UNITS ENGLISH  |   | PURPOSE BUILD-UP       |                     |

SURVEY DATA

| CO. SANTOS |        |       |       | RUN 01 FIELD FLY LAKE |        |        |       | WELL 04 |     |       |       |
|------------|--------|-------|-------|-----------------------|--------|--------|-------|---------|-----|-------|-------|
| TIME       | P-T    | DP-DT | DTIME | TIME                  | P-T    | DP-DT  | DTIME | TIME    | P-T | DP-DT | DTIME |
| 18:30      | 1126.5 | 0.0   | 0.0   | 19:32                 | 2128.5 | 1002.0 | 1.0   |         |     |       |       |
| 18:31      | 1168.0 | 41.5  | .0    | 19:39                 | 2156.0 | 1029.5 | 1.1   |         |     |       |       |
| 18:32      | 1213.8 | 87.3  | .0    | 19:49                 | 2176.5 | 1050.0 | 1.3   |         |     |       |       |
| 18:33      | 1245.7 | 119.2 | .1    | 20:05                 | 2198.2 | 1071.7 | 1.6   |         |     |       |       |
| 18:34      | 1300.1 | 173.6 | .1    | 20:22                 | 2217.1 | 1090.6 | 1.9   |         |     |       |       |
| 18:36      | 1357.8 | 231.3 | .1    | 20:45                 | 2236.0 | 1109.6 | 2.2   |         |     |       |       |
| 18:38      | 1429.6 | 303.2 | .1    | 21:02                 | 2252.6 | 1126.2 | 2.5   |         |     |       |       |
| 18:41      | 1514.0 | 387.6 | .2    | 21:33                 | 2276.9 | 1150.4 | 3.0   |         |     |       |       |
| 18:43      | 1574.1 | 447.6 | .2    | 22:23                 | 2304.6 | 1178.1 | 3.9   |         |     |       |       |
| 18:45      | 1634.7 | 508.2 | .3    | 23:43                 | 2330.8 | 1204.3 | 5.2   |         |     |       |       |
| 18:47      | 1694.8 | 568.3 | .3    | 1:53                  | 2356.4 | 1229.9 | 7.4   |         |     |       |       |
| 18:50      | 1760.9 | 634.4 | .3    | 4:41                  | 2376.7 | 1250.2 | 10.2  |         |     |       |       |
| 18:53      | 1823.2 | 696.7 | .4    | 9:19                  | 2390.8 | 1264.3 | 14.8  |         |     |       |       |
| 18:57      | 1876.6 | 750.1 | .4    | 14:57                 | 2395.0 | 1268.5 | 20.5  |         |     |       |       |
| 19:00      | 1917.9 | 791.4 | .5    | 21:35                 | 2416.9 | 1290.4 | 27.1  |         |     |       |       |
| 19:02      | 1949.7 | 823.2 | .5    | 5:34                  | 2438.3 | 1311.9 | 35.1  |         |     |       |       |
| 19:06      | 1990.1 | 863.6 | .6    | 12:49                 | 2450.7 | 1324.2 | 42.3  |         |     |       |       |
| 19:09      | 2016.8 | 890.4 | .6    | 20:47                 | 2470.7 | 1344.3 | 50.3  |         |     |       |       |
| 19:11      | 2036.3 | 909.8 | .7    | 6:57                  | 2491.3 | 1364.8 | 60.5  |         |     |       |       |
| 19:16      | 2058.7 | 932.2 | .8    | 9:30                  | 2494.4 | 1367.9 | 63.0  |         |     |       |       |
| 19:23      | 2093.4 | 966.9 | .9    | 0:00                  | 0.0    | 0.0    | 0.0   |         |     |       |       |

LUB IN DWT = 560 PSI / OUT = 1725 PSI  
LUB IN AMERADA = 551 PSI / OUT = 1730 PSI

SANTOS LTD  
39 GRENFELL ST  
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

|            |         |                       |                     |
|------------|---------|-----------------------|---------------------|
| CO. SANTOS |         | RUN 02 FIELD FLY LAKE | WELL 04             |
| EFF DEPTH  |         | WELL STAT             | TOOL HUNG 8865'     |
| CASING     | -       | CASING PRESS          | ON BOTTOM 1425 4/8  |
| LINER      | -       | TUBING PRESS          | OFF BOTTOM 0930 7/8 |
| DATE       | 880807  | ELEMENT RANGE         | 0 - 3024            |
| ELEVATION  |         | ZONE                  | ZERO POINT          |
| MAX TEMP   | 118 C   | PICK-UP               | SHUT-IN 1830 4/8    |
| PERF       | -       | CAL SER NO.           | 29386               |
| TUBING     | -       |                       | MPP                 |
| UNITS      | ENGLISH | PURPOSE               | BUILD-UP            |

SURVEY DATA

| CO. SANTOS |        |        |       | RUN 02 FIELD FLY LAKE |        |        |       | WELL 04 |     |       |       |
|------------|--------|--------|-------|-----------------------|--------|--------|-------|---------|-----|-------|-------|
| TIME       | P-T    | DP-DT  | DTIME | TIME                  | P-T    | DP-DT  | DTIME | TIME    | P-T | DP-DT | DTIME |
| 18:30      | 1128.4 | 0.0    | 0.0   | 20:43                 | 2238.4 | 1110.1 | 2.2   |         |     |       |       |
| 18:31      | 1188.8 | 60.4   | .0    | 21:05                 | 2260.8 | 1132.4 | 2.6   |         |     |       |       |
| 18:34      | 1273.3 | 144.9  | .1    | 21:33                 | 2283.7 | 1155.4 | 3.0   |         |     |       |       |
| 18:36      | 1385.4 | 257.0  | .1    | 22:20                 | 2311.4 | 1183.0 | 3.8   |         |     |       |       |
| 18:39      | 1496.7 | 368.3  | .2    | 23:29                 | 2335.7 | 1207.3 | 5.0   |         |     |       |       |
| 18:43      | 1596.4 | 468.1  | .2    | 1:22                  | 2359.3 | 1230.9 | 6.9   |         |     |       |       |
| 18:47      | 1704.8 | 576.4  | .3    | 3:37                  | 2378.2 | 1249.8 | 9.1   |         |     |       |       |
| 18:51      | 1788.2 | 659.9  | .3    | 7:30                  | 2397.2 | 1268.8 | 13.0  |         |     |       |       |
| 18:57      | 1874.7 | 746.3  | .4    | 15:20                 | 2407.7 | 1279.3 | 20.8  |         |     |       |       |
| 19:02      | 1943.7 | 815.3  | .5    | 21:57                 | 2430.2 | 1301.9 | 27.5  |         |     |       |       |
| 19:08      | 1997.7 | 869.3  | .6    | 3:20                  | 2443.8 | 1315.4 | 32.8  |         |     |       |       |
| 19:14      | 2042.0 | 913.6  | .7    | 9:14                  | 2457.1 | 1328.7 | 38.7  |         |     |       |       |
| 19:24      | 2097.5 | 969.2  | .9    | 15:27                 | 2469.8 | 1341.4 | 45.0  |         |     |       |       |
| 19:34      | 2134.5 | 1006.1 | 1.1   | 21:59                 | 2483.7 | 1355.3 | 51.5  |         |     |       |       |
| 19:43      | 2164.6 | 1036.2 | 1.2   | 6:25                  | 2501.1 | 1372.7 | 59.9  |         |     |       |       |
| 19:56      | 2189.9 | 1061.5 | 1.4   | 9:30                  | 2507.6 | 1379.2 | 63.0  |         |     |       |       |
| 20:22      | 2221.3 | 1092.9 | 1.9   | 0:00                  | 0.0    | 0.0    | 0.0   |         |     |       |       |

LUB IN DWT = 560 PSI / OUT = 1725 PSI  
LUB IN AMERADA = 546 PSI / OUT = 1724 PSI

## ISO - CHRONAL AND BUILD-UP SURVEY

Well: FLY LAKE #4 Date: 4-8-88 000169

Lubricator Data: ① 551 1730  
② 546 1724

Pressure with D.W.T. IN 3861 KPA (560.996) OUT 11894 KPA (1725 PSIG)

Time Pressured 1305 4-8-88 Time Depressed 1051 7-8-88

Time Run in Hole 1405 —11— Time off Bottom 0930 —11—

## Bomb No. 1 Data

## Bomb No. 2 Data

|                           |              |            |              |            |
|---------------------------|--------------|------------|--------------|------------|
| Element No. and Range     | 29388        | x 3000 PSI | 29386        | x 2975 PSI |
| Recorder No.              | 61001        | x 15 TLS   | 61373        | x 15 TLS   |
| Clock and Lead Screw Data | 1759         | x 72 HR    | 1689         | x 72 HR    |
| Engage Stylus             | Date: 4-8-88 | Time: 1300 | Date: 4-8-88 | Time: 1300 |
| Disengage                 | Date: 7-8-88 | Time: 1100 | Date: 7-8-88 | Time: 1100 |

Remarks: ALSO RAN M.B.H. THERMOMETER = 118°C

## Well-Head Data for Final Build-up

| Date                        | Time | Hours shut-in Time | KPA Wellhead | KPA Casing | °C Wellhead | Remarks                 |
|-----------------------------|------|--------------------|--------------|------------|-------------|-------------------------|
| 4 <sup>TH</sup> AUGUST 1988 |      |                    |              |            |             |                         |
|                             | 1305 |                    |              |            |             | PRESSURE LUBRICATOR.    |
|                             | 1405 |                    | 3861         | 0          | 48          | R.I.H WITH ELEMENTS.    |
|                             | 1425 |                    | 3875         | ↑          | 48          | @ HANG DEPTH 8865' KB   |
|                             | 1430 |                    | 3875         |            | 48          | WELL FLOWING 100%       |
|                             | 1500 |                    | 3964         |            | 49          |                         |
|                             | 1530 |                    | 3999         |            | 49          |                         |
|                             | 1600 |                    | 3827         |            | 48          |                         |
|                             | 1630 |                    | 3806         |            | 48          |                         |
|                             | 1700 |                    | 3792         |            | 48          |                         |
|                             | 1730 |                    | 3785         |            | 48          |                         |
|                             | 1800 |                    | 3792         |            | 48          |                         |
|                             | 1830 |                    | 3772         |            | 48          | S.W.I FOR 60HR BUILDUP. |
|                             | 1835 |                    | 6529         |            | 45          |                         |
|                             | 1840 |                    | 7378         |            | 43          |                         |
|                             | 1845 |                    | 8102         |            | 40          |                         |
|                             | 1900 | .5                 | 9336         |            | 31          |                         |
|                             | 1915 |                    | 9998         |            | 26          |                         |
|                             | 1930 | 1                  | 10342        |            | 22          |                         |
|                             | 1945 |                    | 10480        |            | 20          |                         |
|                             | 2000 |                    | 10584        |            | 19          |                         |
|                             | 2015 |                    | 10618        |            | 18          |                         |
|                             | 2030 |                    | 10652        |            | 17          |                         |

ISO - CHRONAL AND BUILD-UP SURVEY

Well: FLY LAKE #4

Date: 4-8-88 000170

Lubricator Data:

Pressure with D.W.T.

Time Pressured

Time Depressed

Time Run in Hole

Time off Bottom

Bomb No. 1 Data

Bomb No. 2 Data

|                           |       |       |       |       |  |
|---------------------------|-------|-------|-------|-------|--|
| Element No. and Range     |       |       |       |       |  |
| Recorder No.              |       |       |       |       |  |
| Clock and Lead Screw Data |       |       |       |       |  |
| Engage Stylus             | Date: | Time: | Date: | Time: |  |
| Disengage                 | Date: | Time: | Date: | Time: |  |

Remarks: REFER TO OTHER BOMB DATA SHEET #1 FOR ELEMENT, CLOCK -  
& STYLUS DATA.

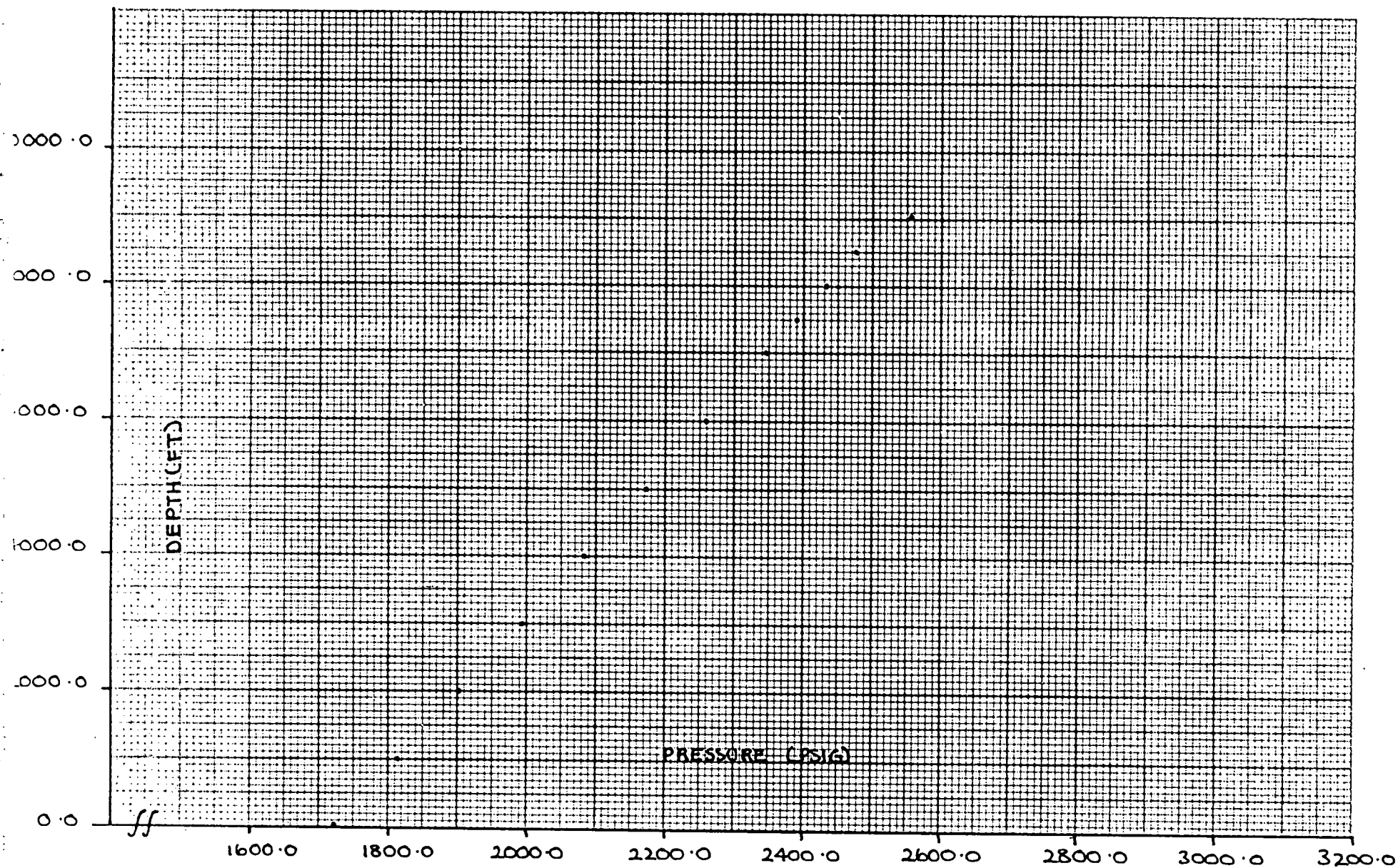
Well-Head Data for Final Build-up

| Date            | Time        | Hours shut-in Time | KPA Wellhead                                | KPA Casing | OC Wellhead | Remarks |
|-----------------|-------------|--------------------|---------------------------------------------|------------|-------------|---------|
| 4 <sup>TH</sup> | AUGUST 1988 |                    |                                             |            |             |         |
|                 | 2045        |                    | 10687                                       | 0          | 16          |         |
|                 | 2100        |                    | 10811                                       |            | 13          |         |
|                 | 2115        |                    | 10859                                       |            | 14          |         |
|                 | 2130        | 3                  | 10984                                       |            | 15          |         |
|                 | 2145        |                    | 11018                                       |            | 15          |         |
|                 | 2200        |                    | 11046                                       |            | 15          |         |
|                 | 2215        |                    | 11080                                       |            | 14          |         |
|                 | 2230        | 4                  | 11101                                       |            | 14          |         |
| 5 <sup>TH</sup> | AUGUST 1988 |                    |                                             |            |             |         |
|                 | 0230        |                    | 11239                                       |            | 11          |         |
|                 | 0630        |                    | 11377                                       | 0          | 8           |         |
|                 | 1030        |                    | IN MOOMBA TO PICK UP ANOTHER WIRELINE UNIT. |            |             |         |
|                 | 1430        |                    | 11411                                       | 0          | 23          |         |
|                 | 1830        | 24                 | 11446                                       |            | 8           |         |
|                 | 2230        |                    | 11459                                       |            | 8           |         |
| 6 <sup>TH</sup> | AUGUST 1988 |                    |                                             |            |             |         |
|                 | 0230        |                    | 11473                                       |            | 8           |         |
|                 | 0630        |                    | 11487                                       |            | 6           |         |
|                 | 1030        |                    | 11515                                       |            | 16          |         |
|                 | 1430        |                    | 11560                                       |            | 19          |         |
|                 | 1830        | 48                 | 11560                                       |            | 13          |         |
|                 | 2230        |                    | 11570                                       | 0          | 10          |         |



FLY LAKE # 4 - STATIC PRESSURE GRADIENT - 7/8/88

ELEMENT # 29388/3000 (TOP)



000172



CLIENT SANTOS

WELL FLY LAKE #4

## STATIC GRADIENT SURVEY

OPERATOR A. SMITH

DATE 7-8-88

| BOMB No. 1 DATA             |      |                               |                 |                           |                    | BOMB No 2 DATA                |                 |                           |                    | DWT IN<br>11894 KPA<br><br>DWT OUT<br>11928 KPA |  |                                 |  |
|-----------------------------|------|-------------------------------|-----------------|---------------------------|--------------------|-------------------------------|-----------------|---------------------------|--------------------|-------------------------------------------------|--|---------------------------------|--|
| ELEMENT No. <u>29388</u>    |      | ELEMENT RANGE <u>3000 PSI</u> |                 | RECORDER No. <u>61001</u> |                    | CLOCK DATA <u>2395 x 3 HR</u> |                 | ENGAGE STYLUS <u>1116</u> |                    | DISENGAGE <u>1349</u>                           |  | PRESSURE LUBRICATOR <u>1124</u> |  |
| ELEMENT No. <u>29386</u>    |      | ELEMENT RANGE <u>2975 PSI</u> |                 | RECORDER No. <u>61373</u> |                    | CLOCK DATA <u>2297 x 3 HR</u> |                 | ENGAGE STYLUS <u>1116</u> |                    | DISENGAGE <u>1349</u>                           |  | BLEED LUBRICATOR <u>1341</u>    |  |
| DATE                        | TIME | DEPTH'                        | DEFLEC-<br>TION | PRESSURE<br>TEMP.         | GRADIENT<br>psi/ft | DEPTH'                        | DEFLEC-<br>TION | PRESSURE<br>TEMP.         | GRADIENT<br>psi/ft | REMARKS                                         |  |                                 |  |
| 7 <sup>TH</sup> AUGUST 1988 |      |                               |                 |                           |                    |                               |                 |                           |                    |                                                 |  |                                 |  |
|                             | 1124 | LUB                           | 1.134           | KPA                       |                    | LUB                           | 1.145           |                           |                    | PRESSURE LUBRICATOR.                            |  |                                 |  |
|                             | 1139 | R.I.H                         |                 |                           |                    | R.I.H                         |                 |                           |                    | RUN IN HOLE.                                    |  |                                 |  |
|                             | 1142 | 1000                          | 1.194           |                           |                    | 1000                          | 1.206           |                           |                    |                                                 |  |                                 |  |
|                             | 1149 | 2000                          | 1.252           |                           |                    | 2000                          | 1.265           |                           |                    |                                                 |  |                                 |  |
|                             | 1156 | 3000                          | 1.311           |                           |                    | 3000                          | 1.325           |                           |                    |                                                 |  |                                 |  |
|                             | 1203 | 4000                          | 1.370           |                           |                    | 4000                          | 1.384           |                           |                    |                                                 |  |                                 |  |
|                             | 1210 | 5000                          | 1.428           |                           |                    | 5000                          | 1.443           |                           |                    |                                                 |  |                                 |  |
|                             | 1217 | 6000                          | 1.485           |                           |                    | 6000                          | 1.501           |                           |                    |                                                 |  |                                 |  |
|                             | 1225 | 7000                          | 1.542           |                           |                    | 7000                          | 1.558           |                           |                    |                                                 |  |                                 |  |
|                             | 1232 | 7500                          | 1.571           |                           |                    | 7500                          | 1.587           |                           |                    |                                                 |  |                                 |  |
|                             | 1238 | 8000                          | 1.599           |                           |                    | 8000                          | 1.617           |                           |                    |                                                 |  |                                 |  |
|                             | 1244 | 8500                          | 1.627           |                           |                    | 8500                          | 1.645           |                           |                    |                                                 |  |                                 |  |
|                             | 1250 | 9003                          | 1.679           | 1769.2                    |                    | 9003                          | 1.700           | 1769.7                    |                    | M.P.P.                                          |  |                                 |  |
|                             | 1305 | P.O.O.H                       |                 |                           |                    | P.O.O.H                       |                 |                           |                    | PULL OUT OF HOLE.                               |  |                                 |  |
|                             | 1326 | LUB                           | 1.140           |                           |                    | LUB                           | 1.149           |                           |                    |                                                 |  |                                 |  |
|                             | 1341 | BLEED                         |                 |                           |                    | BLEED                         |                 |                           |                    | DEPRESSURE LUBRICATOR.                          |  |                                 |  |

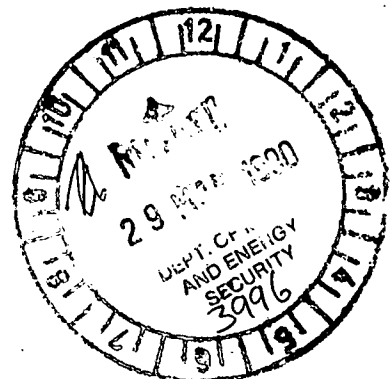
GENERAL REMARKS: M.B.H. TEMPERATURE = 124°C

000173

SANTOS LIMITED  
PETROLEUM DEVELOPMENT DEPARTMENT

FLY LAKE #4 PLT SURVEY  
MAY/JUNE, 1988

Report No:RE:033/89  
Author: D.G. Bennett/B.W. Wray  
Date: October, 1989



1.0 INTRODUCTION

2.0 SUMMARY OF RESULTS

3.0 CONCLUSIONS

4.0 RECOMMENDATIONS

5.0 DISCUSSION

6.0 REMEDIAL ACTION

- FIGURES
1. Cumulative Production versus Rate
  2. Gamma Ray Log Comparison

APPENDICES

1. 'Minsim' Flash Simulation Results
2. PLT Flowing Survey Results and PLQL Interpretation
3. PLT Shut-In Survey Results and PLQL Interpretation

000176

## 1.0 INTRODUCTION

Fly Lake #4 is located in the Fly Lake North East area of Fly Lake/Brolga Field and is currently perforated in several sands in the Patchawarra Formation. When the well was initially put on production in October 1983, it was perforated only in the 87-7 sand and produced at an initial stabilized rate of 4.2 MMSCFD. During November 1986, perforations were added in the 88-6, 89-5 and 90-5 sands and the 87-7 sand was re-perforated.

After the perforations were added, the production rate initially increased significantly from 3.4 to 5.5 MMscf/d but then declined more rapidly than previously, as illustrated in Figure 1. Increased water production was observed in LETs. The WGR increased from 3.2 bbl/MMscf in August 1986 to 7.7 bbl/MMscf in July 1987 and when the PLT was run in June 1988 the WGR was 35 bbl/MMscf. The gas production rate had declined to 1.5 MMSCFD at the time of the PLT survey.

This production logging programme was conducted between 30 May and 1 June 1988, to determine the relative contribution of each sand and, in particular, the contribution of the 87-7 sand to total production.

The other objective of the PLT programme was to determine whether the production decline in this well is due to liquids (condensate and/or water) loading up in the wellbore and if so to identify the likely source of water production.

Production performance from this well has continued to decline since the running of this PLT and at September 1989 the well was producing at an average daily rate of 0.7 MMscf/d. An LET performed in December 1988 indicated a WGR of 49 bbl/MMcf.

000177

2.0 SUMMARY OF RESULTS

Fly Lake #4 was logged under both flowing and shut-in conditions. The stabilized separator rates prior to shut-in were:

gas = 1.5 MMscf/d

water = 53 bbl/d (35 bbl/MMcf)

condensate = 46 bbl/d (31 bbl/MMcf)

The gas production from each sand and contribution to the total flow as determined by the flowing survey are given in the following table.

| <u>Sand</u> | <u>Contribution</u><br>(based on 'Quicklook')<br>(%) | <u>Surface Rate</u><br>(MMscf/d) |
|-------------|------------------------------------------------------|----------------------------------|
| 87-7        | 49.7                                                 | 0.76                             |
| 88-6        | 47.9                                                 | 0.73                             |
| 89-5/90-5   | 2.4                                                  | 0.04                             |
| TOTAL       | 100.0                                                | 1.53 *                           |

\* Stabilized rate prior to test at flowing wellhead pressure of 675 psig.

These results suggest that 49.7% of the production came from the 87-7 sand and 50.3% from the other sands. The contribution to total production from the 89-5 and 90-5 sands was negligible.

Cross flow was observed in the shut-in survey which was run 47 hours after shutting in the well. The amount of cross flow within the wellbore after this shut-in period was not great as the following results indicate.

000178

| <u>Sand</u>                | <u>Downhole Rate</u><br>(Mcf/d) | <u>Equiv. surface rate</u><br>(MMscf/d) |
|----------------------------|---------------------------------|-----------------------------------------|
| 87-7 Upper (8854 - 74' KB) | -1.62                           | -0.24                                   |
| 87-7 Lower (8884 - 92' KB) | +0.40                           | +0.06                                   |
| 88-6                       | +0.28                           | +0.04                                   |
| 89-5                       | +0.24                           | +0.04                                   |
| 90-5                       | <u>+0.70</u>                    | <u>+0.10</u>                            |
|                            | 0.00                            | 0.00                                    |

The cross flow was into the 87-7 (upper) sand, a result which is consistent with this sand being the most depleted.

While water production from individual sands could not be directly identified from the PLT data, changes in the character of the GR log (see Figure 2) provided evidence of significant movement of water. An enhanced response was observed in the GR log over almost all of the interval containing the perforated sands and was greater opposite the perforated intervals of the 88-6, 89-5 and 90-5 sands.

The primary source of water production is likely to be the 88-6 sand which contributes almost half of total gas production. A GWC is mapped in this sand 10 ft below the perforated interval. Because the character change in the GR log was not confined to the perforated intervals, water channelling behind casing is also suspected.

On the basis of these results, it is recommended that an attempt be made to isolate water production from the 88-6 sand by setting a thru-tubing bridge plug at approximately 8910 ft KB. With a plug installed, the estimated 4.3 BCF of remaining reserves in the 87-7 sand should be recoverable with a restored production rate of approximately 2.5 mmscf/d.

000179

3. CONCLUSIONS

1. The PLT on Fly Lake #4 indicated gas flow from each set of perforations with 49.7% from the 87-7 sand, 47.9% from the 88-6 sand and 2.5% from the 89-5/90-5 sands.
2. The rapid decline in production from Fly Lake #4 following the addition of perforations in November 1986 is a result of
  - a) increase in water production
  - b) rapid depletion of 89-5 sand
3. The most likely source of water production is the 88-6 sand based on gamma ray alterations and the proximity of water saturated sands in the original open hole logs.
4. Gamma ray alteration suggests some channelling of water behind casing.
5. Under shut-in conditions the volume of crossflow is minor and flow is from the lower sands into the 87-7 sand.

000180

4. RECOMMENDATIONS

1. A bridge plug should be set above the 88-6 sand to isolate water production now that the production rate from Fly Lake #4 is approaching the minimum rate to lift liquids. A bridge plug will isolate 0.7 BCF of remaining potential reserve but will enable 4.3 BCF of remaining reserves in the 87-7 sand to be recovered efficiently. Production could be restored from a current rate of 0.7 MMscf/d to 2.5 MMscf/d if water production is successfully isolated.
2. Water channelling may result in only partial success in isolating water production. However the running of a bridge plug is a relatively inexpensive solution and should be attempted before any other remedial action is considered.
3. The P/Z estimates of 10.4 BCF should continue to be used for the 87-7 sand OGIP. Cumulative production from the 87-7 sand to date is estimated to be 4.6 BCF compared with the volumetric OGIP (to LKG) of 5.3 BCF.
4. PLT "Quicklook" analyses from wells with water production rates similar to Fly Lake #4 should be analysed using a diphasic gas-water model to give a better match of downhole and surface rates.

000181

5. DISCUSSION5.1 Survey Method

Prior to running the survey, the well was flowed through the separator and a stabilized flow was established. The well was temporarily pinched back to allow the passage of the tool. The original flow rate was then re-established and this flowrate was maintained throughout the flowing survey. The gas rate at the separator which operated at a pressure of 235 psig was measured as 1.53 MMSCF/D. The wellhead flowing tubing pressure was 675 psig and the associated liquid rates were 46 bbl/d of condensate and 53 bbl/d of water. (The liquid rates reported on the PLQL Interpretation log were 44 bbl/d of condensate and 46 bbl/d of water.)

For the flowing survey, six logging passes were first completed. Static point data at the six depths of interest (above and below perforations) were then obtained. The results were checked and four further logging passes were made to clarify the spinner data.

The well was shut in and the tool was positioned at 8840' KB to monitor the pressure build-up. The pressure build-up was observed for two and a half hours and then the logging passes commenced. Six passes were completed before tool failure caused the survey to be interrupted.

Following repair of the tool, the shut-in survey re-commenced 47 hours after the well had been shut-in. (The time of the survey is given as 23 hours after shut-in on the Schlumberger Production log and 47 hours after shut-in on the Schlumberger PLQL and Build-up log.) Eleven passes were made (ten recorded on log) and the static point data were then obtained to complete this survey.

## 5.2 Flash Calculations - 'MINSIM' Simulations

The currently accepted FWS composition for Fly Lake #4 (Patchawarra) was flashed to the downhole conditions experienced during the survey using the 'MINSIM' flash programme to give estimates of the downhole liquid/gas volume ratios. These results are presented in Appendix 1. From these calculations, the presence of condensate at the sandface was estimated to be very small.

The flash simulations showed that the phase behaviour is very sensitive to pressure and temperature changes near the range of pressures and temperatures experienced downhole. For example, at a temperature of 235°F and pressure of 1300 psia all of the fluid was in the gas phase whereas at a temperature of 250°F and pressure of 1350 psia the volume percentage of the liquid phase was calculated at 43%.

The simulations are also sensitive to the  $C_8^+$  characterization and as this characterization may not be entirely satisfactory these results are only tentative.

The FWS composition was flashed to the separator conditions as a consistency check. The GOR given by this calculation was 33,260 scf/bbl which matches the measured separator GOR of 34,780 scf/bbl reasonably well.

## 5.3 Flowing Survey - PLQL Interpretation

The 'Quick look' (PLQL) interpretation by Schlumberger of the spinner data for the flowing survey is summarized in Table A2-1 in Appendix 2. The spinner plots and relevant log sections are also presented in this Appendix.

000183

The spinner data were interpreted using a gas only monophasic model. As the flow regime was diphasic and perhaps even triphasic the assumption of monophasic flow is likely to give absolute downhole rates which over estimate the gas flow. Under diphasic flow the cross-sectional area available to gas flow is reduced.

The downhole rates from the PLQL interpretation were converted to surface conditions using  $1/B_g$  factors calculated for each zone from GASPAC correlations for the FWS composition and the measured temperatures and pressures. This gave a cumulative flowrate of 2.41 MMscf/d (see Table A2-1, Appendix 2). The flow rate measured at the separator, however, was 1.53 MMscf/d which is about 60% of the calculated value. The surface flow rates presented in the summary were calculated by adjusting the interpreted results to match the measured separator gas rate.

The flowing survey results indicated most of the production came from the 87-7 and 88-6 sands with a small contribution from the 90-5 sand. Production from the 87-7 and 88-6 sands was almost equally divided between each sand.

The determined overall flow pattern is reasonably consistent with data from other sources. DSTs over the 87-7 and 90-5 sands flowed 9.5 MMscf/d and 0.14 MMscf/d respectively which supports the low PLT flow rates observed from the 90-5 sand.

Incremental production of approximately 1.6 MMscf/d was reported when additional sands were perforated in Fly Lake #4 with about 75% of the production estimated from the 89-5 sand and 25% from the 88-6 sand. Also, production from the 87-7 sand was estimated at approximately 60% of total production. However the 89-5 sand is mapped with only 0.5 Bcf in this area and the sand might now be significantly depleted following the high initial production rate. The volumetric OGIP for the 88-6 sand is larger with 2.2 Bcf and now contributes 48% of the total gas production.

000184

#### 5.4 Shut-In Surveys - PLQL Interpretations

The 'Quick look' (PLQL) interpretations of the spinner data for the shut-in surveys are summarized in Table A3-1 (47 hours shut in) and Table A3-2 (2.5 hours shut in) in Appendix 3. The spinner plots and relevant log sections are also presented in this Appendix.

The purpose of the shut-in survey was to investigate crossflow. Although the first run which commenced 2.5 hours after the well had been shut in was prematurely terminated because of tool failure, sufficient data were obtained to enable comparisons to be made with the data from the second run which commenced 47 hours after well had been shut in.

As can be seen in Tables A3-1 and A3-2 of Appendix 3, the pattern of flow changed as the shut-in time increased. (See Figure A3-3, Appendix 3) After 2.5 hours shut-in cross flow was observed into the upper and lower 87-7 sand. After 47 hours shut-in flow was observed to come from the lower set of perforations in the 87-7 sand into the upper set. This suggests the two parts of the sand are not in direct communication near the wellbore and the lower part of the sand is at higher pressure. Also observed was a significant reduction in flow from the 88-6 sand. The absolute magnitude of crossflow is difficult to determine from the slight inflections on the spinner trace and the equivalent surface rates based on the 'Quicklook' interpretation are not consistent with the behaviour under flowing conditions.

The change in flow pattern between surveys was associated with the upward movement of a liquid-gas interface probably as a result of liquids on the tubing walls continuing to settle down to the bottom of the wellbore.

5.5 Gamma, Temperature and Gradimanometer Logs - Qualitative Features

As can be seen in Figure 2, an enhanced response in the GR log was observed over most of the interval containing the 87-7, 88-6 and 89-5 sands (8850-9030' KB) and the interval approximately opposite the perforations in the 90-5 sand (9104-9117' KB). The magnitude and extent of the GR anomalies suggests significant water movement.

Although water production from individual sands could not be directly identified from the PLT data, the 88-6 sand is likely to be the most significant source of water production because of the GWC in the sand 10' below the perforated interval. The magnitude of the GR anomaly confirms significant water movement in this sand.

A significant GR anomaly is also evident over the interval 9105-9115' KB which corresponds to the 90-5 sand. The sand has low permeability in this well, however, and is unlikely to be a significant producer of water.

The GR anomaly in the 89-5 sand (8985-9005' KB) while not quite as great as the anomalies previously discussed, nevertheless is a significant alteration in the GR response. It is considered less likely that this sand is producing significant volumes of water because of the spinner response from the PLT and because this sand thins in wells adjacent to Fly Lake #4.

It can also be seen in Figure 2 that the alteration in the response of the GR is the least severe in the 87-7 sand and is possibly a result of water cross flowing into the sand. The 87-7 sand is not yet thought to be producing significant volumes of water.

Water channelling behind casing is also suspected because the GR anomalies are not confined to the perforated intervals. An alteration in the GR response is observed over much of the interval 8860-9030' KB. This interval includes the 87-7, 88-6 and 89-5 sands. Alternatively this GR response may be result of a scale build up inside the casing.

000186

A comparison of the response of the temperature log for the surveys is given in the following table.

| <u>DEPTH</u> | <u>SAND</u> | <u>FLOWING</u> | <u>SHUT-IN</u> | <u>SHUT-IN</u> |
|--------------|-------------|----------------|----------------|----------------|
| ( 'KB)       |             | ( °F)          | (2.5 HOURS)    | (47 HOURS)     |
|              |             | ( °F)          | ( °F)          | ( °F)          |
| 8850         |             | 233            | 238            | 241            |
|              | 87-7        |                |                |                |
| 8930         |             | 232            | 239            | 244            |
|              | 86-6        |                |                |                |
| 8940         |             | 242            | 243            | 247            |
|              | 89-5        |                |                |                |
| 9112         |             | 254            | 257            | 261            |
|              | 90-5        |                |                |                |
| 9126         |             | 268            | 270            | 271            |
| 9150         |             | 274            | 275            | 275            |

Spinner and gradiomanometer data in the flowing survey confirm gas influx at the level of high temperature changes. The temperature drops due to gas expansion are higher where the mass transfer is low (see Figure A2-1, Appendix 2).

As expected, the temperature increases at each depth with the longer shut-in period as the temperature approached the stabilized reservoir temperature (see Figure A3-3, Appendix 3). Also, the pattern of significant shifts in temperature response at the 90-5 and 88-6 sands was still evident after the shut-in of 47 hours. A temperature equilibrium clearly had not been achieved.

000187

In the flowing survey, the density varied between approximately 1.0 gm/cc (water) below the perforations to approximately 0.28 gm/cc above the perforations. As the gas density at the downhole conditions above the perforations was estimated from a 'MINSIM' simulation as .096 gm/cc the presence of either water or water and condensate is inferred. The liquid hold-up implied by this density reading is at least 20%. The most significant reduction in density (from approximately .80 gm/cc to .45 gm/cc) occurred over the perforated interval which is a major gas producer, viz. the 88-6 sand.

For the shut-in surveys it was suspected that the density readings from the final survey might be lower than the actual values as small amounts of gas were found in the gradiomanometer tool. A comparison of the measured density values above and below the perforations in each survey confirms this suspicion. In both surveys the density values below the perforation should indicate water and the density values above the perforations should indicate gas. In the final shut-in survey, the density below the perforations at 9128' KB is measured as 0.95 gm/cc whereas in the first survey it is measured as 1.0 gm/cc. The density value measured at 8850' KB is 0.11 gm/cc in the final survey. The value from the 'MINSIM' simulation, however, was 0.186 gm/cc.

000188

6.0 REMEDIAL ACTION

The main points determined from this PLT and the production history of Fly Lake #4 are:

- 1) well performance has and is continuing to suffer because of water influx
- 2) the most likely source of water is the 88-6 sand
- 3) at the time of the PLT gas production from the 88-6 and lower sands accounted for 50% of the total gas flow
- 4) under shut-in conditions fluids flow from the 88-6 and lower sands into the 87-7 sand.

The simplest remedial action for Fly Lake #4 is to install a thru-tubing bridge plug. However any remedial action needs to balance the loss of reserves resulting from that action against the potential loss of reserves if no action is taken.

Fly Lake #4 accesses an independent pool of gas with the main pay sands in Fly Lake #4 being wet in Fly Lake #2 or wet/tight in Brolga #1. To maximize recovery, production should continue from all sands in Fly Lake #4 until gas production decreases to a rate where water can no longer be continuously lifted. With Fly Lake #4 currently flowing at 0.7 MMscfd the minimum rate has nearly been reached. Assuming there is no significant improvement in performance following the reduction in line pressure in the Tirrawarra gathering system, now is the appropriate time for the 88-6 sand to be plugged off.

The potential raw gas reserves lost by this action are estimated to be 0.7 BCF compared with 4.3 BCF at risk in the 87-7 sand if no workover action is taken. This is summarised in the following table:

000189

| <u>SAND</u>                 | <u>87-7</u> | <u>88-6</u> | <u>89-5/90-5</u> |
|-----------------------------|-------------|-------------|------------------|
| GIP (BCF)                   | 10.4        | 2.2         | 0.5              |
| Recovery Factor (%)*        | 85          | 60          | 85               |
| Init. recov. raw gas (BCF)  | 8.9         | 1.3         | 0.4              |
| Est. cumulative prodn (BCF) | <u>4.6</u>  | <u>0.8</u>  | <u>0.2</u>       |
| Remaining raw gas (BCF)     | 4.3         | 0.5         | 0.2              |

\* Note: 88-6 sand has a lower recovery because of strong aquifer support.

It should be noted that the current structure map indicates that a well can be drilled updip of Fly Lake 4. Such a well would improve the ultimate gas recovery.

If water production can be successfully isolated with a bridge plug it is estimated that gas production from the 87-7 can be restored to 2.5 MMscf/d based on performance data prior to the additional sands being perforated. There may be some loss in productivity as a result of minor crossflow of water into the basal 87-7 sand.

The main risk with the workover is the possibility of communication behind casing making the bridge plug ineffective. Considering the high cost and risk to production of a cement squeeze job, the thru-tubing bridge plug should be run before any alternative workover is considered.

# FLY LAKE #4

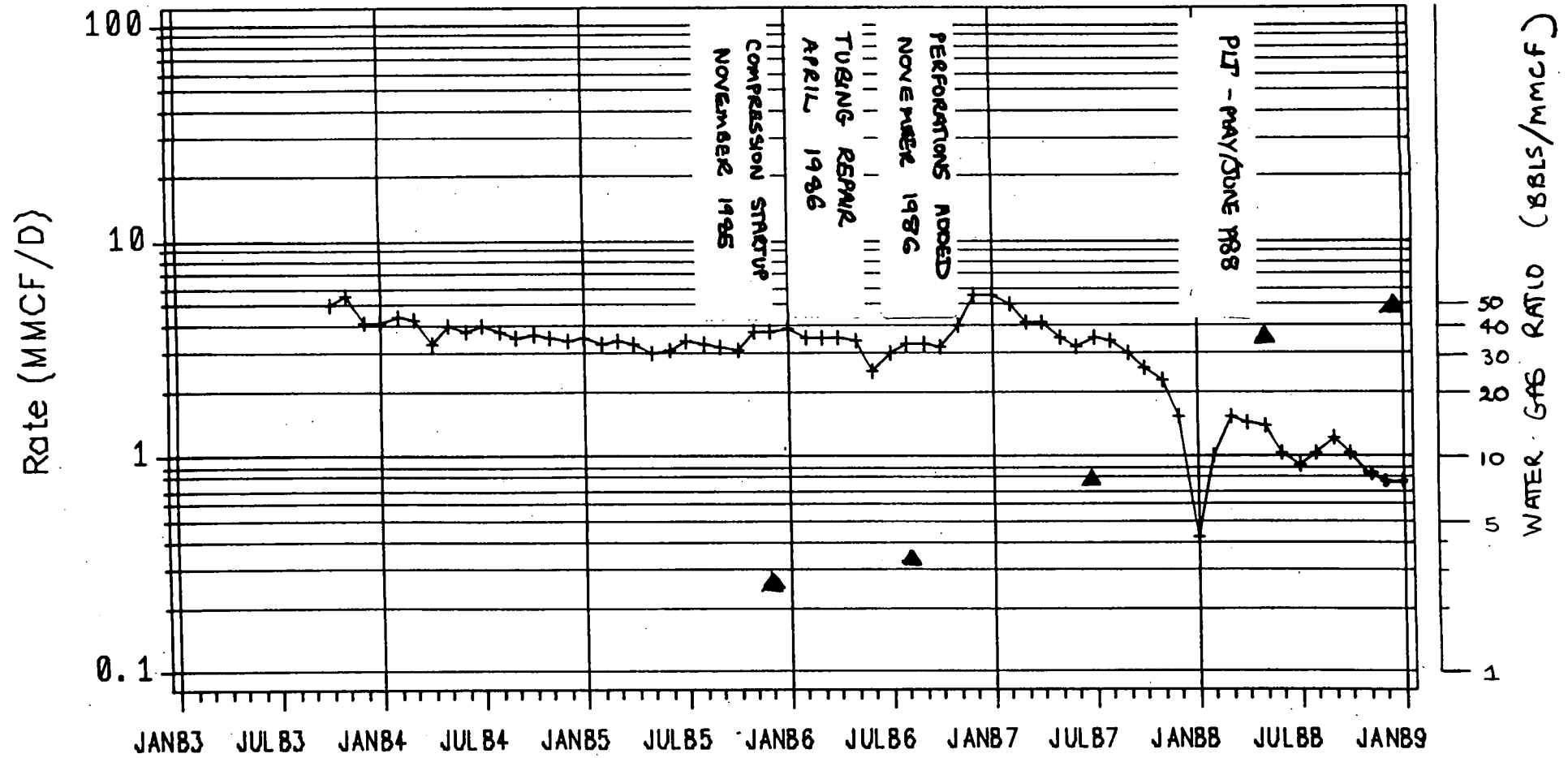
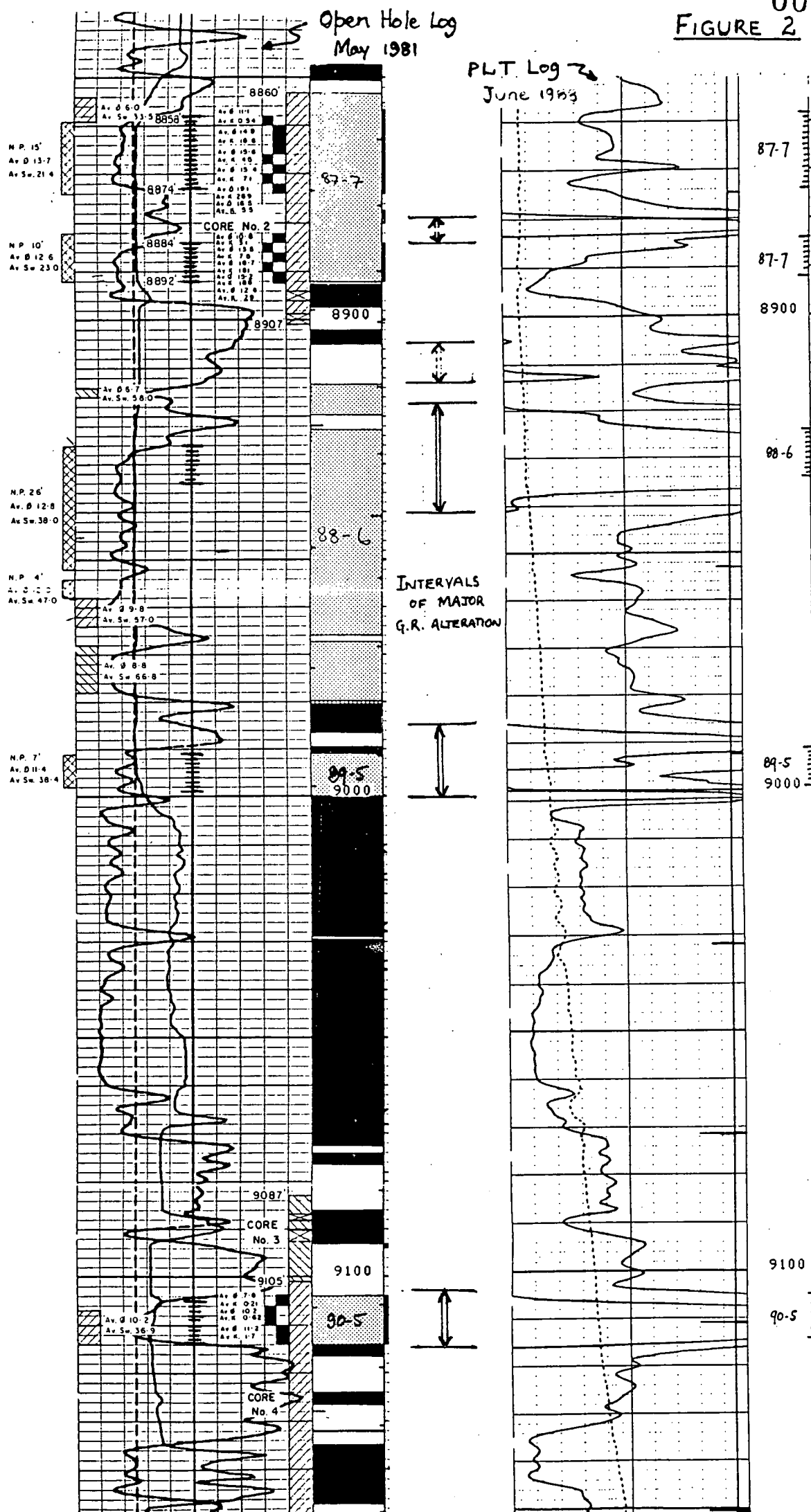


FIGURE 2



000192

A P P E N D I X    1

'Minsim' Flash Simulation Results

000193

TABLE A1-1

FLY LAKE #4 PLT SURVEY MAY/JUNE 1988  
MINSIM FLASH SIMULATION RESULTS

FLOWING SURVEY

|                  |      |      |
|------------------|------|------|
| Temperature (°F) | 235  | 250  |
| Pressure (psia)  | 1300 | 1350 |

---

|                         | <u>Liquid</u> | <u>Gas</u> | <u>Liquid</u> | <u>Gas</u> |
|-------------------------|---------------|------------|---------------|------------|
| Mole (%)                | 0             | 100        | 75.00         | 25.00      |
| Molecular Weight        | 30.215        | 30.208     | 30.212        | 30.207     |
| Density (gm/cc)         | .3854         | .0963      | .3855         | .0968      |
| Gas Specific Gravity    |               | 1.04       |               | 1.04       |
| Volume (%)              |               | 100        | 43.0          | 57.0       |
| Average Density (gm/cc) | .0963         |            | .2209         |            |

SHUT-IN SURVEY

|                  |      |      |      |
|------------------|------|------|------|
| Temperature (°F) | 240  | 255  | 275  |
| Pressure (psia)  | 2450 | 2500 | 2550 |

---

|                         | <u>Liquid</u> | <u>Gas</u> | <u>Liquid</u> | <u>Gas</u> | <u>Liquid</u> | <u>Gas</u> |
|-------------------------|---------------|------------|---------------|------------|---------------|------------|
| Mole (%)                | 0             | 100        | 18.35         | 81.65      | 24.91         | 75.09      |
| Molecular Weight        | 30.234        | 30.208     | 30.212        | 30.202     | 30.209        | 30.202     |
| Density (gm/cc)         | .3856         | .1857      | .3855         | .1819      | .3855         | .1730      |
| Gas Specific Gravity    |               | 1.04       |               | 1.04       |               | 1.04       |
| Volume (%)              | 0             | 100        | 9.6           | 90.4       | 13.0          | 87.0       |
| Average Density (gm/cc) | .186          |            | .201          |            | .201          |            |

000194

A P P E N D I X    2

PLT Flowing Survey Results and PLQL Interpretation

TABLE A2-1

000195

FLY LAKE #4 PLT SURVEY RESULTS MAY/JUNE 1988\*  
WELL FLOWING

| Sand | Perforated<br>Interval<br>( ' KB) | Zone<br>Interval<br>( 'KB) | Flow Rates - Surface Conditions ** |           |                            |
|------|-----------------------------------|----------------------------|------------------------------------|-----------|----------------------------|
|      |                                   |                            | Sand<br>(%)***                     | (MMscf/d) | Cum(Zone)Flow<br>(MMscf/d) |
|      |                                   | 8800-8855                  |                                    |           | 2.41                       |
| 87-7 | 8858-8874                         |                            | 29.0                               | .70       |                            |
|      |                                   | 8875-8880                  |                                    |           | 1.71                       |
| 87-7 | 8884-8892                         |                            | 20.7                               | .50       |                            |
|      |                                   | 8892-8925                  |                                    |           | 1.21                       |
| 88-6 | 8926-8934                         |                            | 47.9                               | 1.16      |                            |
|      |                                   | 8935-8990                  |                                    |           | .06                        |
| 89-5 | 8991-8999                         |                            | (2.4                               | 0.06      |                            |
|      |                                   | 9000-9105                  | (                                  |           | *                          |
| 90-5 | 9105-9114                         |                            | ( *                                | *         |                            |
|      |                                   | 9115-9200                  |                                    |           | 0.00                       |

\* From 'Quicklook' interpretation by Schlumberger (See Table 2). Their interpretation of a small flow into the 89-5 sand not considered likely because of evidence from gradio and temperature logs. The flow measured in zone immediately above perforated interval in 89-5 sand re-interpreted as flow from 89-5 and 90-5 sands.

\*\* Interpreted downhole flowrates converted to surface conditions with relevant 1/Bg factor from fluid properties (GASPAC correlations). The flowrate measured at separator was 1.53 MMscf/d at FTP of 675 psig.

\*\*\* Relative to the total flow from sands of 2.41 MMscf/d

PLWL INTERPRETATION  
FLOWING SURVEY

FIGURE A2-1

000196

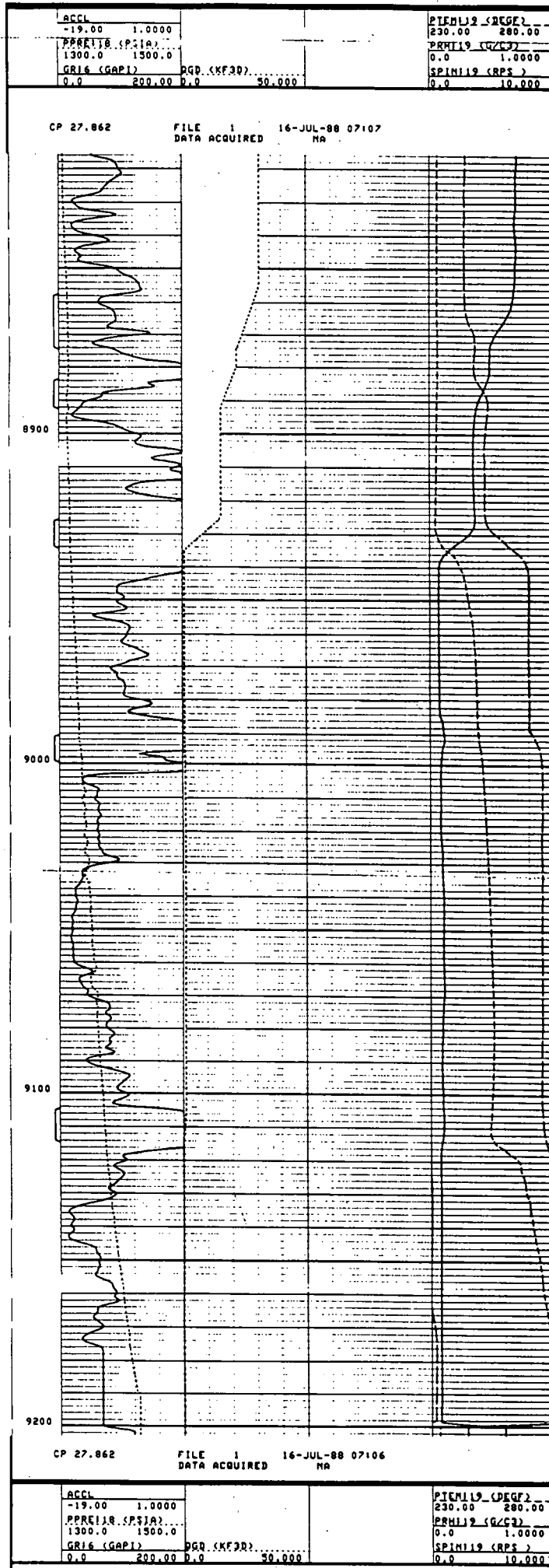
87-7

87-7

88-6

89-5

90-5

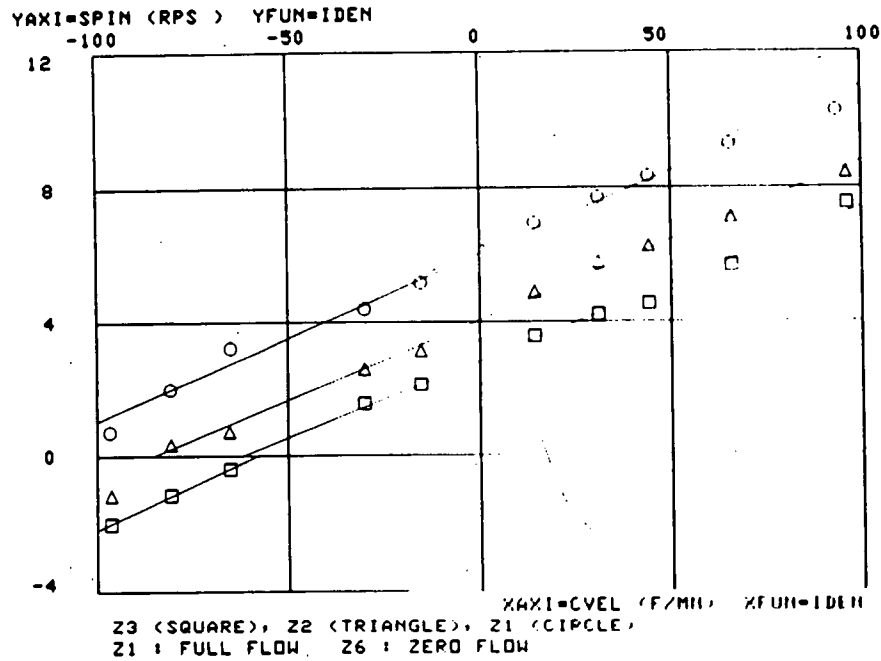


# SPINNER PLOTS \*

FIGURE A2-2

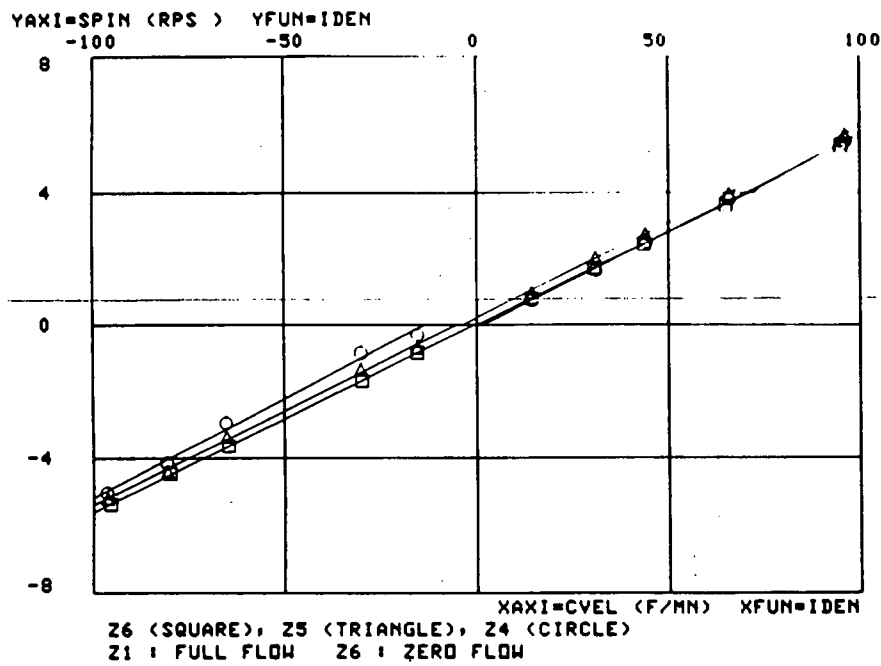
## FLOWING SURVEY

000197



CP 27.862

FILE 33 16-JUL-88 03:50  
DATA ACQUIRED 30-MAY-88 19:50



\* See Figure A2-3 for interpretation listing

000198

## PRODUCTION LOGGING QUICKLOOK INTERPRETATION LISTING

## LOG DATA

| Z1 | Z2 | Z3 | Z4 | Z5 | Z6 |
|----|----|----|----|----|----|
|----|----|----|----|----|----|

TOP OF ZONE DEPTH (F )

|        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|
| 8800.0 | 8875.0 | 8892.0 | 8935.0 | 9000.0 | 9115.0 |
|--------|--------|--------|--------|--------|--------|

BOTTOM OF ZONE DEPTH (F )

|        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|
| 8855.0 | 8880.0 | 8925.0 | 8990.0 | 9105.0 | 9200.0 |
|--------|--------|--------|--------|--------|--------|

DIAMETER OF INTERPRETATION AREA (IN )

|       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 6.276 | 6.276 | 6.276 | 6.276 | 6.276 | 6.276 |
|-------|-------|-------|-------|-------|-------|

DEVIATION (DEG )

|     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
|-----|-----|-----|-----|-----|-----|

TEMPERATURE (DEGF)

|       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 233.0 | 233.3 | 232.7 | 247.0 | 253.9 | 271.7 |
|-------|-------|-------|-------|-------|-------|

PRESSURE (PSIA)

|       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 1309. | 1315. | 1315. | 1325. | 1350. | 1389. |
|-------|-------|-------|-------|-------|-------|

FLUID DENSITY (G/C3)

|      |      |      |      |      |       |
|------|------|------|------|------|-------|
| .282 | .364 | .449 | .803 | .903 | 1.001 |
|------|------|------|------|------|-------|

| Z1 | Z2 | Z3 | Z4 | Z5 | Z6 |
|----|----|----|----|----|----|
|----|----|----|----|----|----|

## DOWNHOLE FLUID PROPERTIES

GAS DENSITY (G/C3)

|      |      |      |      |      |      |
|------|------|------|------|------|------|
| .100 | .100 | .100 | .100 | .100 | .100 |
|------|------|------|------|------|------|

| Z1 | Z2 | Z3 | Z4 | Z5 | Z6 |
|----|----|----|----|----|----|
|----|----|----|----|----|----|

## INTERPRETATION RESULTS AT DOWNHOLE CONDITIONS

TOTAL FLOW VELOCITY (F/MN)

|       |      |      |     |     |    |             |
|-------|------|------|-----|-----|----|-------------|
| 100.6 | 71.1 | 50.4 | 2.4 | 3.4 | .0 | SEE REMARKS |
|-------|------|------|-----|-----|----|-------------|

TOTAL CUMULATIVE FLOWRATE (BB/D)

|        |        |        |       |       |    |             |
|--------|--------|--------|-------|-------|----|-------------|
| 5540.4 | 3915.6 | 2774.7 | 131.8 | 187.1 | .0 | SEE REMARKS |
|--------|--------|--------|-------|-------|----|-------------|

CUMULATIVE FLOWRATE GAS (KF3D)

|        |        |        |      |       |      |             |
|--------|--------|--------|------|-------|------|-------------|
| 31.107 | 21.985 | 15.579 | .740 | 1.050 | .000 | SEE REMARKS |
|--------|--------|--------|------|-------|------|-------------|

| Z1 | Z2 | Z3 | Z4 | Z5 | Z6 |
|----|----|----|----|----|----|
|----|----|----|----|----|----|

INTERPRETATION MODEL = GAS

SUPPLIED DATA :

DOWNHOLE GAS DENSITY : .100 G/C3

DOWNHOLE WATER DENSITY : .990 G/C3

A P P E N D I X    3

PLT Shut-In Survey (47 hours) Results and PLQL Interpretation  
PLT Shut-In Survey (2.5 hours) Results and PLQL Interpretation

000200

TABLE A3-1

FLY LAKE #4 PLT SURVEY RESULTS MAY/JUNE 1988\*  
WELL SHUT IN - 47 HOURS

| Sand | Perforated<br>Interval<br>( 'KB) | Zone<br>Interval<br>( 'KB) | <u>Flow Rates</u>         |                                   |
|------|----------------------------------|----------------------------|---------------------------|-----------------------------------|
|      |                                  |                            | Downhole Rates<br>(Mcf/d) | Standard<br>Conditions<br>(Mcf/d) |
| 87-7 | 8858-8874                        | 8800-8855                  | -1.62 **                  | -239.5                            |
|      |                                  | 8875-8880                  |                           |                                   |
| 87-7 | 8884-8892                        | 8892-8925                  | +0.396                    | +59.1                             |
| 88-6 | 8926-8934                        | 8935-8990                  | +0.285                    | +41.4                             |
| 89-5 | 8991-8999                        | 9000-9105                  | +0.241                    | +35.5                             |
| 90-5 | 9105-9114                        | 9115-9200                  | +0.697                    | +103.5                            |
|      |                                  |                            |                           |                                   |

\* Derived from 'quicklook' interpretation by Schlumberger of the second run of the shut-in survey. The SITP was 1740 psig. 'Quicklook' indicated some flow above top sand which has been ignored.

\*\* All of the flow was into the upper perforations of the 87-7 sand.

Converted to standard conditions using a  $1/B_g = 147.8$  based on average shut-in wellbore pressure and temperature of 2500 psia and 250°F.

000201

TABLE A3-2

FLY LAKE #4 PLT SURVEY RESULTS MAY/JUNE 1988\*  
WELL SHUT IN - 2.5 HOURS

| Sand | Perforated<br>Interval<br>( ' KB) | Zone<br>Interval<br>( 'KB) | <u>Downhole</u><br><u>Rate</u><br>(Mcf/d) | <u>Standard</u><br><u>Conditions</u><br>(Mcf/d) |
|------|-----------------------------------|----------------------------|-------------------------------------------|-------------------------------------------------|
| 87-7 | 8858-8874                         | 8800-8855                  | -0.719 **                                 | 103.4<br>-99.9                                  |
| 87-7 | 8884-8892                         | 8875-8880                  | -0.481 **                                 | -66.9                                           |
| 88-6 | 8926-8934                         | 8892-8925                  | +1.146                                    | +159.3                                          |
| 89-5 | 8991-8999                         | 8935-8990                  | +0.005                                    | +0.7                                            |
| 90-5 | 9105-9114                         | 9000-9105                  | +0.793                                    | +110.0                                          |
|      |                                   | 9115-9200                  |                                           |                                                 |

\* Derived from 'Quicklook' interpretation by Schlumberger of the first run of the shut-in survey. Run was terminated because of tool failure after 6 logging passes. Flow above top sand may be residual wellbore storage.

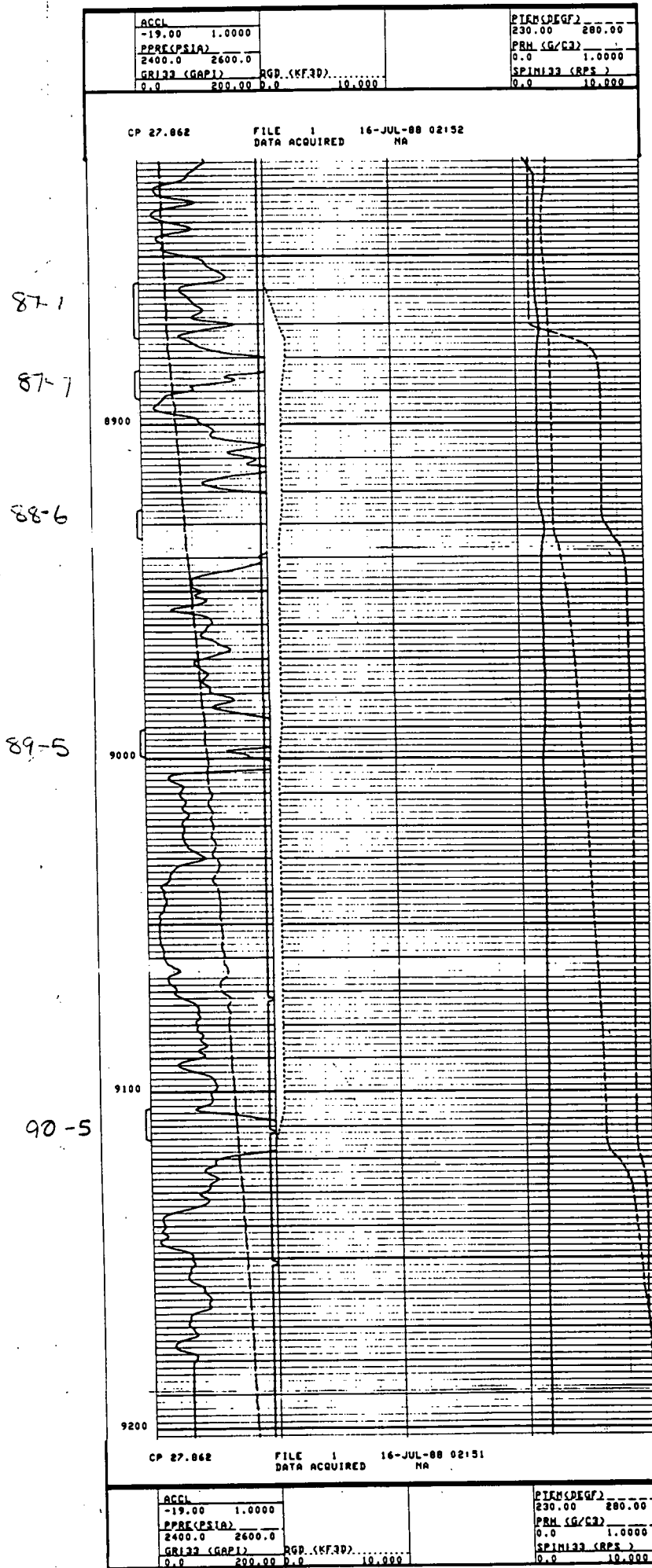
\*\* Flow was into 87-7 sand (both sets of perforations) and wellbore.

Downhole rates converted to standard condition rates using a  
1/Bg = 139 scf/rcf

P2QL INTERPRETATION  
SHUT-IN SURVEY  
( 47 HOURS SHUT-IN )

FIGURE A3-1

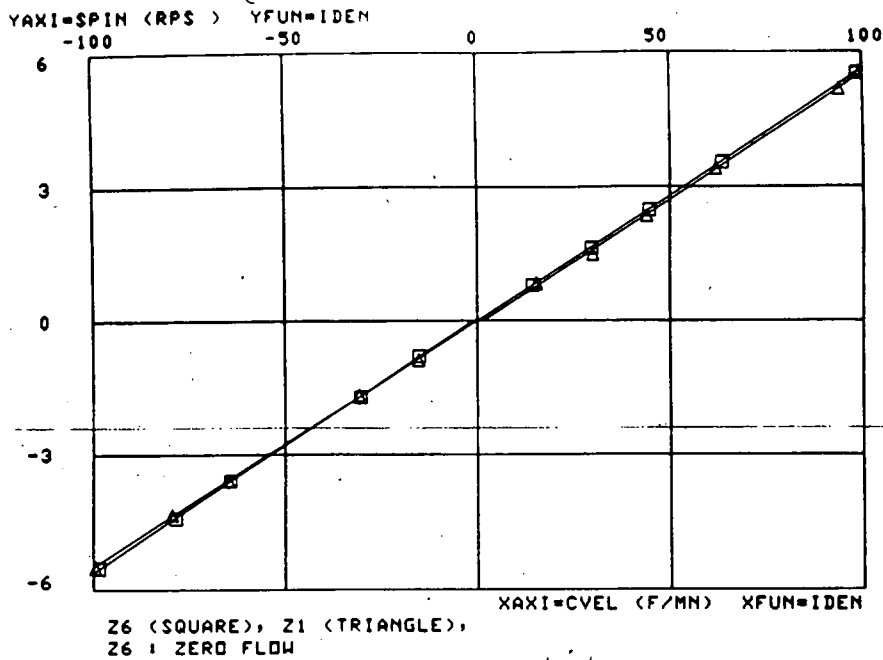
000202



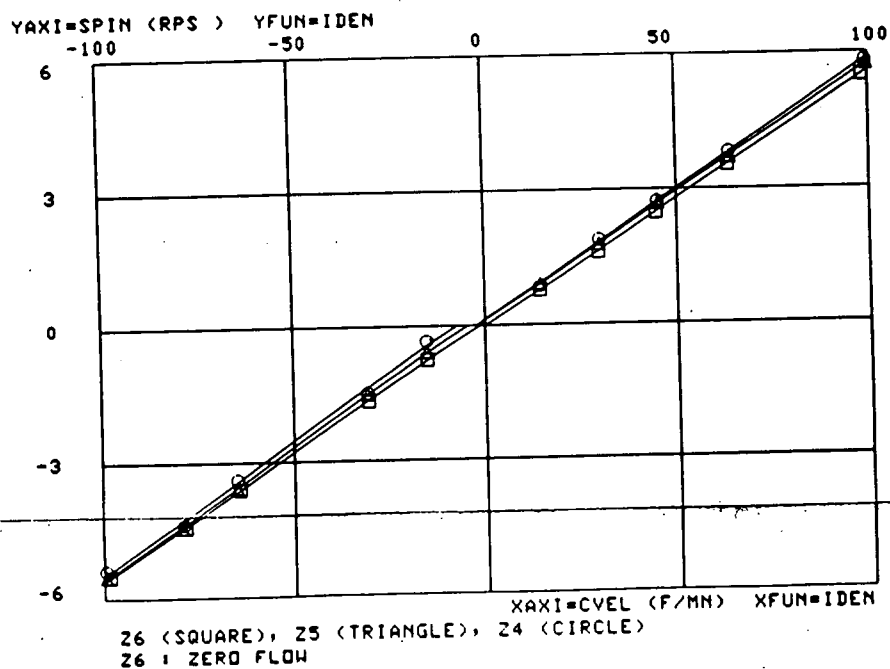
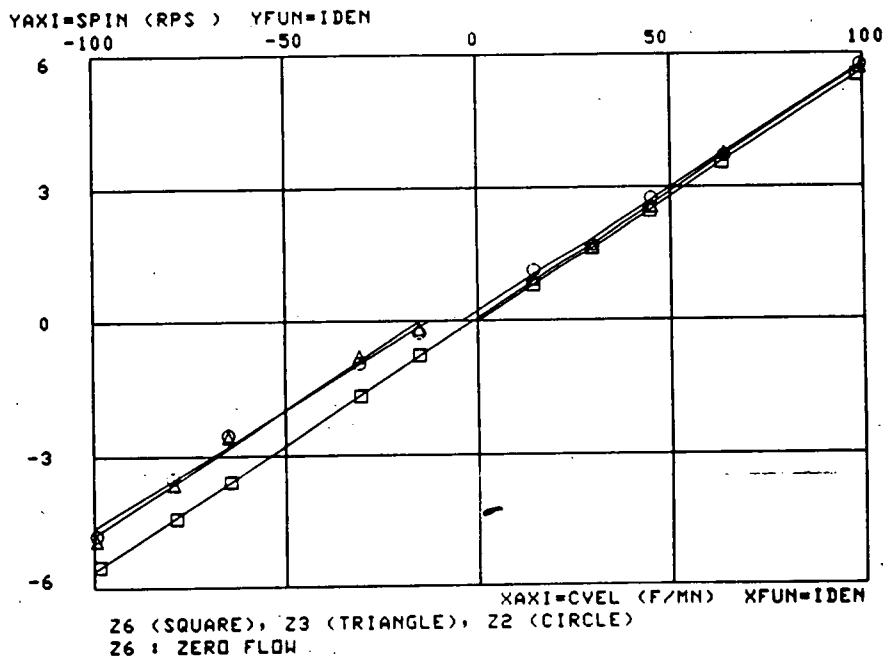
SPINNER PLOTS \*  
 SHUT-IN SURVEY  
 (47 HOURS SHUT-IN)

FIGURE A3-2

000203



\* See Figure A3-4 for interpretation listing

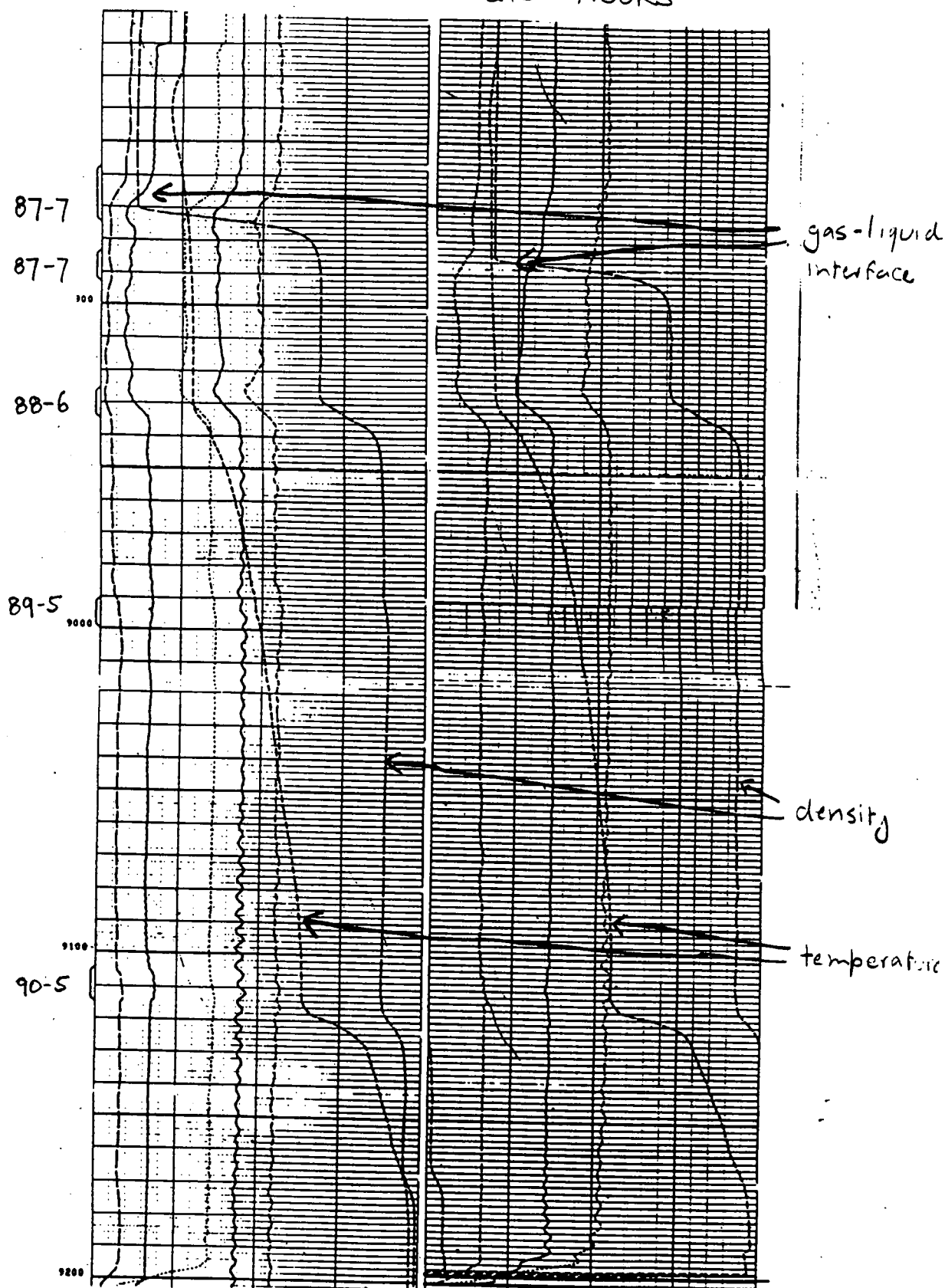


# SHUT-IN SURVEYS - MERGED UP PASSES

47 HOURS

2.5 HOURS

000204



FILE 11 16-JUL-88 09:59  
DATA ACQUIRED

|     |               |        |
|-----|---------------|--------|
| 0.0 | SPIN146 (RPS) | 10.000 |
| 0.0 | SPIN141 (RPS) | 10.000 |
| 0.0 | SPIN139 (RPS) | 10.000 |
| 0.0 | SPIN137 (RPS) | 10.000 |
| 0.0 | SPIN124 (RPS) | 10.000 |
| 0.0 | PM133 (G/C)   | 10.000 |
| 0.0 | PM132 (G/C)   | 10.000 |

0 03-JUN-88 12:16

DATA ACQUIRED  
31-MAY-88 02:44

|     |               |        |
|-----|---------------|--------|
| 0.0 | SPIN185 (RPS) | 10.000 |
| 0.0 | SPIN183 (RPS) | 10.000 |
| 0.0 | SPIN182 (RPS) | 10.000 |
| 0.0 | PM181 (G/C)   | 10.000 |
| 0.0 | PM180 (G/C)   | 10.000 |

## PRODUCTION LOGGING QUICKLOOK INTERPRETATION LISTING

WELL SHUT IN

000205

## LOG DATA

| Z1                                   | Z2     | Z3     | Z4     | Z5     | Z6     |
|--------------------------------------|--------|--------|--------|--------|--------|
| TOP OF ZONE DEPTH (F)                |        |        |        |        |        |
| 8800.0                               | 8875.0 | 8892.0 | 8935.0 | 9000.0 | 9115.0 |
| BOTTOM OF ZONE DEPTH (F)             |        |        |        |        |        |
| 8855.0                               | 8880.0 | 8925.0 | 8990.0 | 9105.0 | 9200.0 |
| DIAMETER OF INTERPRETATION AREA (IN) |        |        |        |        |        |
| 6.276                                | 6.276  | 6.276  | 6.276  | 6.276  | 6.276  |
| DEVIATION (DEG)                      |        |        |        |        |        |
| 0.0                                  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| TEMPERATURE (DEGF)                   |        |        |        |        |        |
| 241.6                                | 243.5  | 244.1  | 250.4  | 258.0  | 273.6  |
| PRESSURE (PSIA)                      |        |        |        |        |        |
| 2437.                                | 2445.  | 2459.  | 2481.  | 2515.  | 2548.  |
| FLUID DENSITY (G/C3)                 |        |        |        |        |        |
| .112                                 | .563   | .676   | .867   | .882   | .949   |
| Z1                                   | Z2     | Z3     | Z4     | Z5     | Z6     |

## DOWNHOLE FLUID PROPERTIES

| GAS DENSITY (G/C3) |      |      |      |      |      |
|--------------------|------|------|------|------|------|
| .190               | .190 | .190 | .190 | .190 | .190 |
| Z1                 | Z2   | Z3   | Z4   | Z5   | Z6   |

## INTERPRETATION RESULTS AT DOWNHOLE CONDITIONS

|                                  |       |       |       |       |      |             |
|----------------------------------|-------|-------|-------|-------|------|-------------|
| TOTAL FLOW VELOCITY (F/MN)       |       |       |       |       |      | SEE REMARKS |
| -1.0                             | 5.2   | 4.0   | 3.0   | 2.3   | .0   |             |
| -----                            |       |       |       |       |      |             |
| TOTAL CUMULATIVE FLOWRATE (BB/D) |       |       |       |       |      | SEE REMARKS |
| -56.0                            | 288.4 | 217.9 | 167.1 | 124.1 | .0   |             |
| -----                            |       |       |       |       |      |             |
| CUMULATIVE FLOWRATE GAS (KF3D)   |       |       |       |       |      | SEE REMARKS |
| -.314                            | 1.619 | 1.223 | .938  | .697  | .000 |             |
| -----                            |       |       |       |       |      |             |
| Z1                               | Z2    | Z3    | Z4    | Z5    | Z6   |             |

INTERPRETATION MODEL = GAS

SUPPLIED DATA :

DOWNHOLE GAS DENSITY : .190 G/C3

DOWNHOLE WATER DENSITY : .990 G/C3

000206

WELL: Fly Lake # 4

Pf = 3000 kPa

ORIFICE SIZE: 24.000 mm 0.945 "

T = 35 °C

LINE SIZE: 97.180 mm 3.826 "

Diff = 4.5 kPa

Cumulative Production to end of May '91 = 167.6 m<sup>3</sup> x 10<sup>6</sup> ✓

Number of hours online in May '91 = 30.8 days ✓

Production in May '91 = 0.4364 m<sup>3</sup> x 10<sup>6</sup> ✓

. . Average flow rate in May '91 =  $(0.4364 / 30.8) \times 24 = 0.014 \text{ m}^3 \times 10^6 / \text{d}$  ✓

Number of days online in June before Shut In 1700 hrs 21 / 6 / 91  
 = 20.708

. . Production up to 1700 hrs 21 / 6 / 91 =  $20.708 \times 0.014 = 0.29 \text{ m}^3 \times 10^6$

Total cumulative production = 0.290 + 167.6  
 = 167.890 m<sup>3</sup> x 10<sup>6</sup>  
 = 5959.085 mmscf ✓

Flow rate just prior to Shut In = 0.011 m<sup>3</sup> x 10<sup>6</sup>  
 = 0.391 mmscf/d ✓

SUB-SURFACE PRESSURE SURVEY

000207

|           |         |                        |                      |
|-----------|---------|------------------------|----------------------|
| CO. .     |         | RUN 02 FIELD FLY LAKE  | WELL 04              |
| EFF DEPTH |         | WELL STAT              | TOOL HUNG 8820'      |
| CASING    | -       | CASING PRESS           | ON BOTTOM 1250 21/6  |
| LINER     | -       | TUBING PRESS           | OFF BOTTOM 0725 26/6 |
| DATE      | 910626  | ELEMENT RANGE 0 - 3123 | ZERO POINT           |
| ELEVATION |         | ZONE                   | SHUT-IN 1700 21/6    |
| MAX TEMP  | 239 F   | PICK-UP                | ON-PROD              |
| PERF      | -       | CAL SER NO. 29387      | MPP                  |
| TUBING    | -       |                        |                      |
| UNITS     | ENGLISH | PURPOSE                | BUILD-UP             |

SURVEY DATA

| CO. . | RUN 02 FIELD FLY LAKE |        |       |       | WELL 04 |        |       |  |
|-------|-----------------------|--------|-------|-------|---------|--------|-------|--|
| TIME  | P-T                   | DP-DT  | DTIME | TIME  | P-T     | DP-DT  | DTIME |  |
| 17:00 | 1376.5                | 1376.5 | .0    | 0:19  | 2344.4  | 2344.4 | 7.3   |  |
| 17:05 | 1413.2                | 1413.2 | .1    | 1:25  | 2353.8  | 2353.8 | 8.4   |  |
| 17:08 | 1483.5                | 1483.5 | .1    | 2:18  | 2360.3  | 2360.3 | 9.3   |  |
| 17:13 | 1565.7                | 1565.7 | .2    | 3:32  | 2374.0  | 2374.0 | 10.5  |  |
| 17:19 | 1648.8                | 1648.8 | .3    | 5:32  | 2388.2  | 2388.2 | 12.5  |  |
| 17:25 | 1711.7                | 1711.7 | .4    | 8:31  | 2411.5  | 2411.5 | 15.5  |  |
| 17:32 | 1776.7                | 1776.7 | .5    | 10:36 | 2418.8  | 2418.8 | 17.6  |  |
| 17:38 | 1832.5                | 1832.5 | .6    | 13:31 | 2427.6  | 2427.6 | 20.5  |  |
| 17:46 | 1874.5                | 1874.5 | .8    | 17:40 | 2435.8  | 2435.8 | 24.7  |  |
| 17:52 | 1904.4                | 1904.4 | .9    | 22:51 | 2459.3  | 2459.3 | 29.8  |  |
| 17:59 | 1941.6                | 1941.6 | 1.0   | 4:20  | 2477.0  | 2477.0 | 35.3  |  |
| 18:06 | 1977.7                | 1977.7 | 1.1   | 10:05 | 2491.8  | 2491.8 | 41.1  |  |
| 18:18 | 2011.9                | 2011.9 | 1.3   | 15:05 | 2503.8  | 2503.8 | 46.1  |  |
| 18:34 | 2048.9                | 2048.9 | 1.6   | 21:47 | 2517.8  | 2517.8 | 52.8  |  |
| 18:48 | 2078.3                | 2078.3 | 1.8   | 6:26  | 2535.6  | 2535.6 | 61.4  |  |
| 19:11 | 2112.8                | 2112.8 | 2.2   | 15:55 | 2549.5  | 2549.5 | 70.9  |  |
| 19:29 | 2133.3                | 2133.3 | 2.5   | 1:22  | 2563.3  | 2563.3 | 80.4  |  |
| 19:57 | 2159.4                | 2159.4 | 2.9   | 12:03 | 2573.6  | 2573.6 | 91.1  |  |
| 20:21 | 2180.3                | 2180.3 | 3.4   | 1:53  | 2586.4  | 2586.4 | 104.9 |  |
| 20:30 | 2200.2                | 2200.2 | 3.5   | 7:25  | 2591.5  | 2591.5 | 110.4 |  |
| 20:45 | 2230.0                | 2230.0 | 3.7   | 12:52 | 1424.7  | 1424.7 | -4.1  |  |
| 21:02 | 2256.1                | 2256.1 | 4.0   | 13:33 | 1399.3  | 1399.3 | -3.4  |  |
| 21:17 | 2284.4                | 2284.4 | 4.3   | 13:59 | 1391.4  | 1391.4 | -3.0  |  |
| 21:33 | 2306.6                | 2306.6 | 4.5   | 14:11 | 1374.9  | 1374.9 | -2.8  |  |
| 21:49 | 2319.9                | 2319.9 | 4.8   | 14:11 | 1388.7  | 1388.7 | -2.8  |  |
| 22:04 | 2322.8                | 2322.8 | 5.1   | 14:14 | 1400.6  | 1400.6 | -2.8  |  |
| 22:29 | 2330.4                | 2330.4 | 5.5   | 14:25 | 1383.0  | 1383.0 | -2.6  |  |
| 23:05 | 2336.3                | 2336.3 | 6.1   | 14:32 | 1375.8  | 1375.8 | -2.5  |  |
| 23:59 | 2340.7                | 2340.7 | 7.0   | 14:32 | 1390.0  | 1390.0 | -2.5  |  |
| 0:08  | 2340.5                | 2340.5 | 7.1   | 14:48 | 1386.7  | 1386.7 | -2.2  |  |

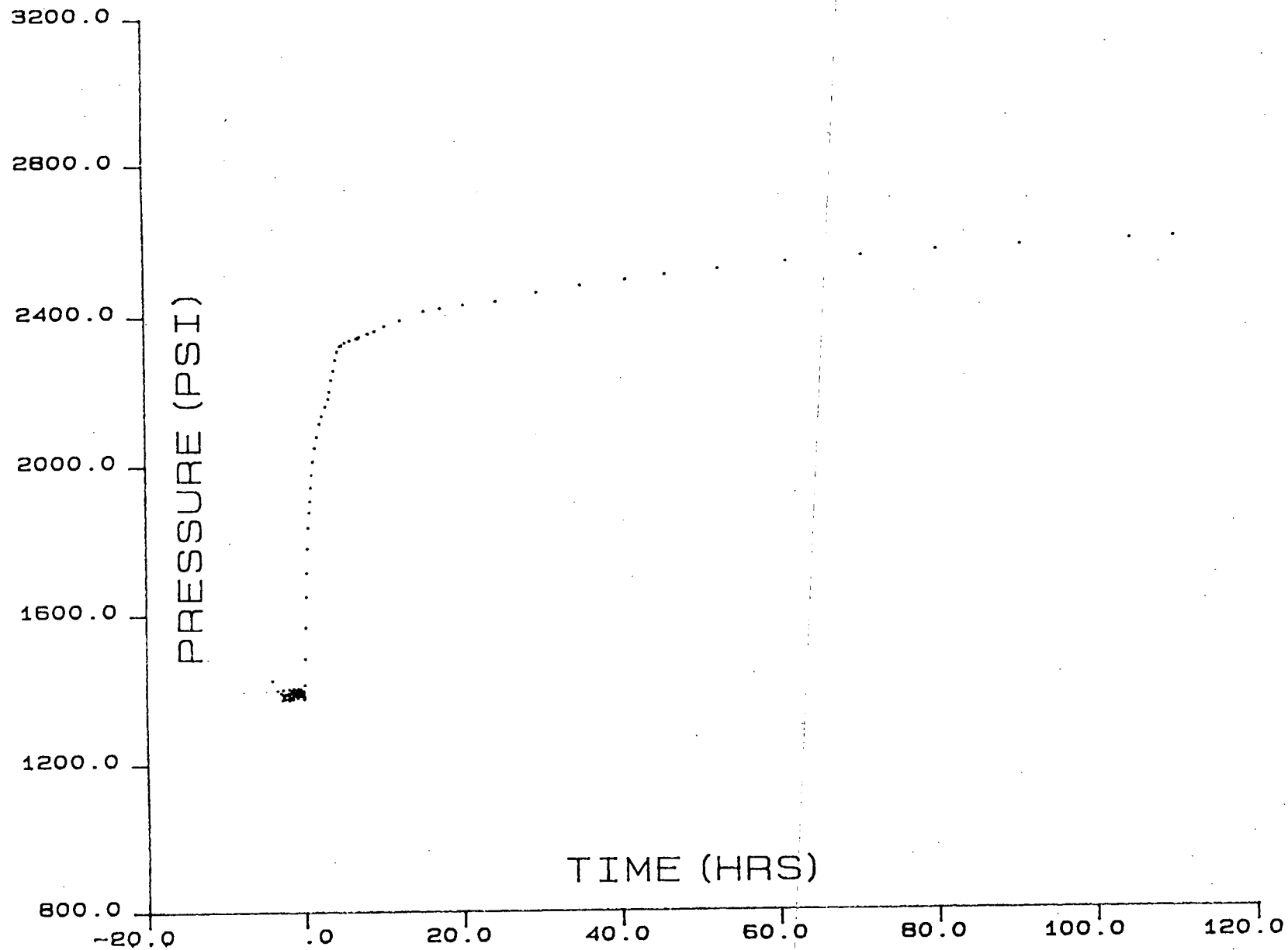
SURVEY DATA

000208

| CO. . |        |        |       | RUN 02 FIELD FLY LAKE |        |        |       | WELL 04 |     |       |       |
|-------|--------|--------|-------|-----------------------|--------|--------|-------|---------|-----|-------|-------|
| TIME  | P-T    | DP-DT  | DTIME | TIME                  | P-T    | DP-DT  | DTIME | TIME    | P-T | DP-DT | DTIME |
| 14:55 | 1377.1 | 1377.1 | -2.1  | 16:02                 | 1400.8 | 1400.8 | -1.0  |         |     |       |       |
| 15:00 | 1392.1 | 1392.1 | -2.0  | 16:05                 | 1395.7 | 1395.7 | -.9   |         |     |       |       |
| 15:02 | 1403.1 | 1403.1 | -2.0  | 16:06                 | 1383.5 | 1383.5 | -.9   |         |     |       |       |
| 15:05 | 1389.4 | 1389.4 | -1.9  | 16:09                 | 1378.6 | 1378.6 | -.9   |         |     |       |       |
| 15:05 | 1374.5 | 1374.5 | -1.9  | 16:10                 | 1387.9 | 1387.9 | -.8   |         |     |       |       |
| 15:11 | 1382.0 | 1382.0 | -1.8  | 16:11                 | 1396.0 | 1396.0 | -.8   |         |     |       |       |
| 15:20 | 1393.0 | 1393.0 | -1.7  | 16:14                 | 1404.3 | 1404.3 | -.8   |         |     |       |       |
| 15:25 | 1399.2 | 1399.2 | -1.6  | 16:19                 | 1389.1 | 1389.1 | -.7   |         |     |       |       |
| 15:25 | 1392.9 | 1392.9 | -1.6  | 16:22                 | 1384.7 | 1384.7 | -.6   |         |     |       |       |
| 15:28 | 1382.6 | 1382.6 | -1.5  | 16:27                 | 1391.6 | 1391.6 | -.6   |         |     |       |       |
| 15:30 | 1376.9 | 1376.9 | -1.5  | 16:30                 | 1397.2 | 1397.2 | -.5   |         |     |       |       |
| 15:33 | 1376.9 | 1376.9 | -1.4  | 16:31                 | 1403.3 | 1403.3 | -.5   |         |     |       |       |
| 15:36 | 1387.4 | 1387.4 | -1.4  | 16:34                 | 1394.0 | 1394.0 | -.4   |         |     |       |       |
| 15:38 | 1397.3 | 1397.3 | -1.4  | 16:39                 | 1384.0 | 1384.0 | -.3   |         |     |       |       |
| 15:39 | 1405.3 | 1405.3 | -1.3  | 16:48                 | 1389.4 | 1389.4 | -.2   |         |     |       |       |
| 15:41 | 1390.7 | 1390.7 | -1.3  | 16:53                 | 1397.4 | 1397.4 | -.1   |         |     |       |       |
| 15:45 | 1389.4 | 1389.4 | -1.2  | 16:55                 | 1391.0 | 1391.0 | -.1   |         |     |       |       |
| 15:48 | 1393.3 | 1393.3 | -1.2  | 16:58                 | 1382.3 | 1382.3 | .0    |         |     |       |       |
| 15:54 | 1385.8 | 1385.8 | -1.1  | 17:00                 | 1378.4 | 1378.4 | .0    |         |     |       |       |
| 15:59 | 1391.1 | 1391.1 | -1.0  | 0:00                  | .0     | .0     | .0    |         |     |       |       |

LUB IN DWT = 390 PSI / OUT = 1752 PSI  
 LUB IN AMERADA = 410 PSI / OUT = 1756 PSI

FLY LAKE #4 FLOW & BUILD-UP JUNE 1991  
ELEMENT #29387 (BOT) @8820'KB



000203

SUB-SURFACE PRESSURE SURVEY

000210

|           |         |                        |                      |
|-----------|---------|------------------------|----------------------|
| CO.       |         | RUN 01 FIELD FLY LAKE  | WELL 04              |
| EFF DEPTH |         | WELL STAT              | TOOL HUNG 8814'      |
| CASING    | -       | CASING PRESS           | ON BOTTOM 1250 21/6  |
| LINER     | -       | TUBING PRESS           | OFF BOTTOM 0725 26/6 |
| DATE      | 910626  | ELEMENT RANGE 0 - 3108 | ZERO POINT           |
| ELEVATION |         | ZONE                   | SHUT-IN 1700 21/6    |
| MAX TEMP  | 239 C   | PICK-UP                | ON-PROD              |
| PERF      | -       | CAL SER NO. 57414      | MPP                  |
| TUBING    | -       |                        |                      |
| UNITS     | ENGLISH | PURPOSE                | BUILD-UP             |

SURVEY DATA

| CO.   | RUN 01 FIELD FLY LAKE |        |       |       | WELL 04 |        |       |  |
|-------|-----------------------|--------|-------|-------|---------|--------|-------|--|
| TIME  | P-T                   | DP-DT  | DTIME | TIME  | P-T     | DP-DT  | DTIME |  |
| 17:00 | 1377.7                | 1377.7 | .0    | 22:21 | 2328.8  | 2328.8 | 5.4   |  |
| 17:04 | 1412.7                | 1412.7 | .1    | 22:54 | 2337.4  | 2337.4 | 5.9   |  |
| 17:06 | 1451.4                | 1451.4 | .1    | 23:45 | 2342.9  | 2342.9 | 6.7   |  |
| 17:08 | 1496.4                | 1496.4 | .1    | 0:23  | 2349.3  | 2349.3 | 7.4   |  |
| 17:11 | 1545.1                | 1545.1 | .2    | 1:21  | 2355.8  | 2355.8 | 8.3   |  |
| 17:14 | 1605.0                | 1605.0 | .2    | 2:57  | 2367.1  | 2367.1 | 10.0  |  |
| 17:20 | 1671.8                | 1671.8 | .3    | 4:29  | 2379.2  | 2379.2 | 11.5  |  |
| 17:28 | 1744.7                | 1744.7 | .5    | 5:56  | 2390.9  | 2390.9 | 12.9  |  |
| 17:34 | 1809.6                | 1809.6 | .6    | 8:08  | 2408.9  | 2408.9 | 15.1  |  |
| 17:45 | 1876.7                | 1876.7 | .7    | 10:45 | 2419.8  | 2419.8 | 17.8  |  |
| 18:03 | 1964.8                | 1964.8 | 1.0   | 14:00 | 2428.5  | 2428.5 | 21.0  |  |
| 18:11 | 1994.0                | 1994.0 | 1.2   | 18:01 | 2434.6  | 2434.6 | 25.0  |  |
| 18:25 | 2032.0                | 2032.0 | 1.4   | 21:51 | 2455.6  | 2455.6 | 28.8  |  |
| 18:41 | 2066.3                | 2066.3 | 1.7   | 3:36  | 2474.2  | 2474.2 | 34.6  |  |
| 19:00 | 2097.2                | 2097.2 | 2.0   | 8:39  | 2486.5  | 2486.5 | 39.6  |  |
| 19:23 | 2125.7                | 2125.7 | 2.4   | 13:44 | 2499.5  | 2499.5 | 44.7  |  |
| 19:51 | 2153.1                | 2153.1 | 2.8   | 20:23 | 2513.1  | 2513.1 | 51.4  |  |
| 20:12 | 2171.1                | 2171.1 | 3.2   | 3:12  | 2524.9  | 2524.9 | 58.2  |  |
| 20:25 | 2181.7                | 2181.7 | 3.4   | 11:17 | 2542.8  | 2542.8 | 66.3  |  |
| 20:39 | 2207.9                | 2207.9 | 3.6   | 19:44 | 2555.2  | 2555.2 | 74.7  |  |
| 20:53 | 2235.5                | 2235.5 | 3.9   | 3:49  | 2564.8  | 2564.8 | 82.8  |  |
| 21:10 | 2266.4                | 2266.4 | 4.2   | 12:55 | 2575.8  | 2575.8 | 91.9  |  |
| 21:32 | 2301.4                | 2301.4 | 4.5   | 21:20 | 2582.0  | 2582.0 | 100.3 |  |
| 21:51 | 2320.6                | 2320.6 | 4.9   | 6:34  | 2590.0  | 2590.0 | 109.6 |  |
| 22:00 | 2324.0                | 2324.0 | 5.0   | 10:29 | 2595.9  | 2595.9 | 113.5 |  |

LUB IN DWT = 390 PSI / OUT = 1752 PSI  
 LUB IN AMERADA = 405 PSI / OUT = 1752 PSI  
 NOTE; CLOCK RAN OUT. & FAST.

000211

**EXPERTEST**

WIRELINE &amp; WELL TESTING SERVICE

PO BOX 354 COWANDILLA 5033

PH. (08) 354 0488 TELEX AAE7163

FAX (08) 43 7408

138 RICHMOND ROAD MARLETON

SOUTH AUSTRALIA 5033

Tested Wednesday, 26th June 1991.

| CLIENT      | LOCATION     | FORMATION   |
|-------------|--------------|-------------|
| Santos Ltd. | Fly Lake # 4 | Patchawarra |

**STATIC PRESSURE GRADIENT REPORT**

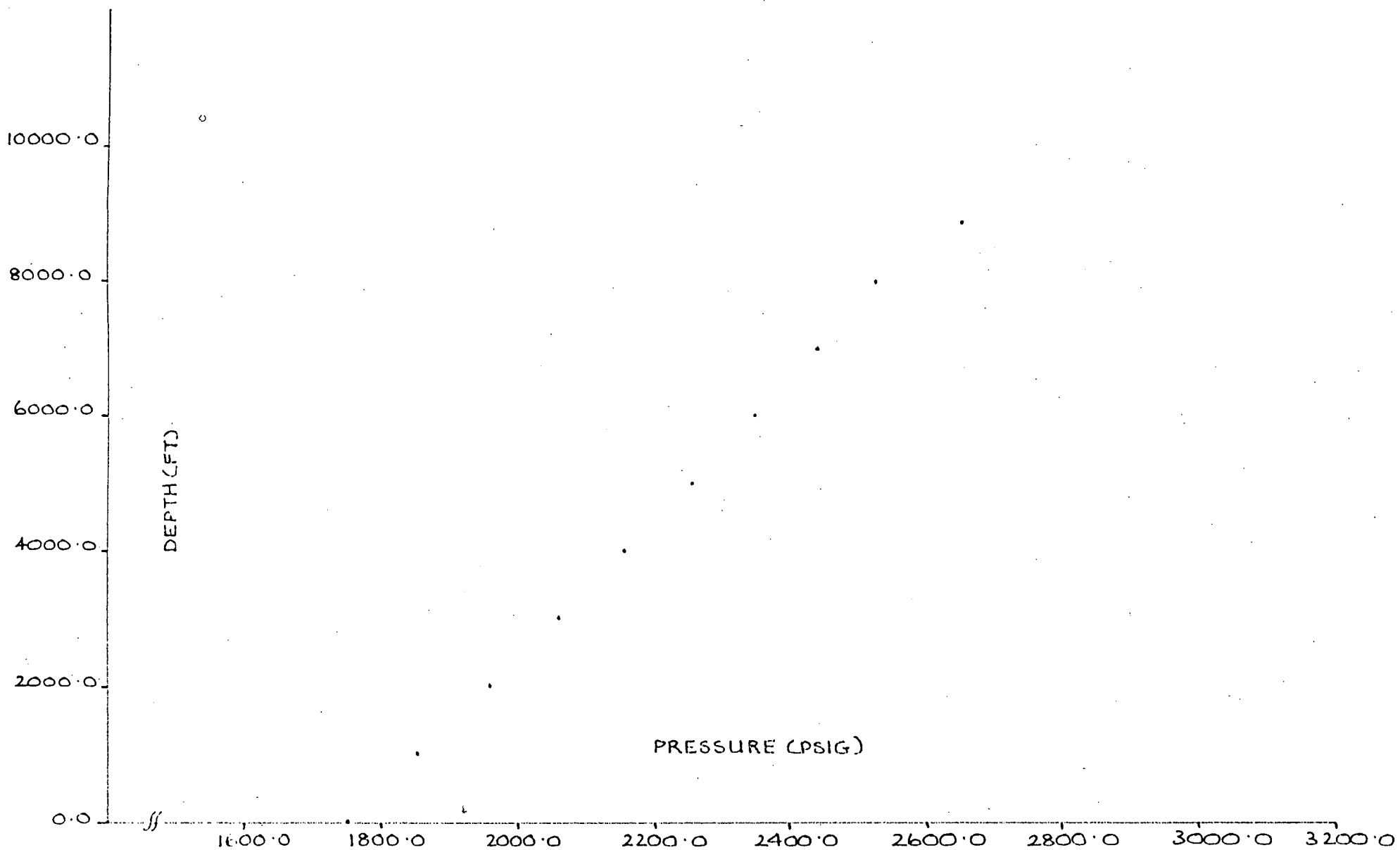
| PRESSURE ELEMENT DATA |            |       |            |
|-----------------------|------------|-------|------------|
| POSITION              | SERIAL NO. | RANGE | CALIBRATED |
| Top                   | 57414      | 3000  | 15/ 4/91   |
| Bottom                | 29387      | 2975  | 15/ 4/91   |

| WELL DATA |           |
|-----------|-----------|
| PARAMETER | VALUE     |
| DWT In    | 1750 PSIG |
| DWT Out   | 1753 PSIG |
| Max BHT   | 264 F     |

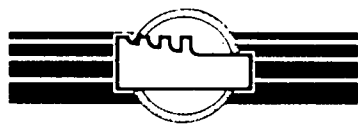
| DEPTH<br>FT KB | TOP ELEMENT          |                  |                    | BOTTOM ELEMENT       |                  |                    |
|----------------|----------------------|------------------|--------------------|----------------------|------------------|--------------------|
|                | DEFLECTION<br>INCHES | PRESSURE<br>PSIG | GRADIENT<br>PSI/FT | DEFLECTION<br>INCHES | PRESSURE<br>PSIG | GRADIENT<br>PSI/FT |
| LUB.           | 1.1290               | 1748.6           | ----               | 1.1280               | 1750.8           | ----               |
| 1000           | 1.1970               | 1854.2           | 0.106              | 1.1940               | 1854.5           | 0.104              |
| 2000           | 1.2630               | 1956.7           | 0.103              | 1.2610               | 1959.9           | 0.105              |
| 3000           | 1.3280               | 2057.6           | 0.101              | 1.3240               | 2059.0           | 0.099              |
| 4000           | 1.3910               | 2155.5           | 0.098              | 1.3860               | 2156.5           | 0.098              |
| 5000           | 1.4520               | 2250.3           | 0.095              | 1.4470               | 2252.4           | 0.096              |
| 6000           | 1.5120               | 2343.7           | 0.093              | 1.5060               | 2345.1           | 0.093              |
| 7000           | 1.5720               | 2437.1           | 0.093              | 1.5650               | 2437.8           | 0.093              |
| 8000           | 1.6310               | 2529.1           | 0.092              | 1.6200               | 2524.2           | 0.086              |
| 8986           | 1.7140               | 2658.9           | 0.132              | 1.6990               | 2648.2           | 0.126              |
| LUB.           | 1.1300               | 1750.2           | ----               | 1.1280               | 1750.8           | ----               |

**GENERAL REMARKS**

FLY LAKE # 4 — STATIC PRESSURE GRADIENT — 26 / 6 / 91  
ELEMENT # 29387 / 2975 (BOT)



000212



CUSTOMER : SANTOS LTD

PERFORATIONS: 8874' - 9114' KB

PAGE: 1 OF 1

WELL NAME: FLY LAKE #4

FORMATION : PATCHAWARRA

DATE: 26-6-91

TEST TYPE : STATIC GRADIENT

OPR : A. HAY

## GAUGE DATA

UPPER  
PRESSURE  
GAUGELOWER  
PRESSURE  
GAUGETEMPERATURE  
GAUGE

## RUN DATA

TIME  
(HOURS)TUBING  
PRESSURE  
(PSI/KPa)ANNULUS  
PRESSURE  
(PSI/KPa)

ELEMENT SERIAL NO.

57414

29387

N/A

DATE

26-6-91

ELEMENT RANGE

PSI

3000

2975

PRESSURE LUBRICATOR

10:34

12066

0

RECORDING SECTION SERIAL NO.

12959

59791

RUN IN HOLE

10:49

12066

0

DATE OF CALIBRATION:

2290°F

15-4-91

15-4-91

ON DEPTH AT

8986 FT/M

11:44

12073

0

CLOCK SERIAL NO.

11838

11850

DATE

26-6-91

CLOCK RANGE

3HR

3HR

PULL OUT OF HOLE

11:54

12073

0

LEAD SCREW TYPE

15 TLS

15 TLS

AT SURFACE

12:21

12087

0

DEPRESSURE LUBRICATOR

12:36

12087

0

ENGAGE STYLUS DATE

26-6-91

TIME

10:28

10:28

MAXIMUM BHT AT 8986 FT/M = 264 °F/18

DISENGAGE STYLUS DATE

26-6-91

TIME

12:44

12:44

N.B. ALL DEPTHS ARE MEASURED FROM K.B.

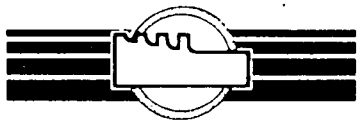
DATE

TIME

REMARKS

000213

EXPERTEST PTY. LTD.



## BHP/BHT GAUGE RUN DATA

CUSTOMER : SANTOS LTD

PERFORATIONS: 8874' - 9114' MB

PAGE: 1 OF 1

WELL NAME: FLY LAKE # 4

FORMATION : PATCHAWARRA

DATE: 21-6-91

TEST TYPE : B.H.P SURVEY

OPR : N HAY

## GAUGE DATA

UPPER  
PRESSURE  
GAUGELOWER  
PRESSURE  
GAUGETEMPERATURE  
GAUGE

## RUN DATA

TIME  
(HOURS)TUBING  
PRESSURE  
(PSI/KPa)ANNULUS  
PRESSURE  
(PSI/KPa)

ELEMENT SERIAL NO.

57414

29387

N/A

DATE

21-6-91

ELEMENT RANGE

P.S.1

3000

2475

PRESSURE LUBRICATOR

0958

390

2689

0

RECORDING SECTION SERIAL NO.

12959

59791

RUN IN HOLE

12:30

2765

0

DATE OF CALIBRATION:

20 270°F

15-4-91

15-4-91

ON DEPTH AT

8820 FT/M'

12:30

2730

0

CLOCK SERIAL NO.

F-15296

F-15682

DATE

26-6-91

CLOCK RANGE

120HR

120HR

PULL OUT OF HOLE

07:25

12073

0

LEAD SCREW TYPE

15 T45

15 T45

AT SURFACE

07:45

12073

0

DEPRESSURE LUBRICATOR

10:15

12080

ENGAGE SYLUS

DATE

21-6-91

TIME

09:46

09:46

MAXIMUM BHT AT 8820 FT/M' = 239 °F

1752

DISENGAGE SYLUS

DATE

26-6-91

TIME

10:21

10:21

N.B. ALL DEPTHS ARE MEASURED FROM K.B.

DATE

TIME

REMARKS

21/6/91

1700

S.W.1.

IN / OUT

RUN

(clock ran out because it ran too fast) → Top 405/1752

01

Bot 410/1756

02

000214

CUSTOMER : SANTOS LTD

PERFORATIONS: 8874'-9114' KB

PAGE: 1 OF 2

WELL NAME: FLY LAKE # 4

FORMATION : PATCHAWARRA

DATE: 21-6-91

TEST TYPE : B.H.P. SURVEY

OPR : N. HAY

DATE/TIME

DESCRIPTION OF EVENTS

21-6-91

08:40

ARRIVE ON LOCATION

08:45

SHUT WELL IN TO RIG UP SWAB VALVE

08:55

WELL BACK ON LINE ON 100% CHARGE

RIG UP WIRELINE UNIT

09:16

R.I.H. WITH 1.75" BLIND BOX

09:30

TAG P.B.T.D. AT 9453' KB

P.O.O.H

09:50

ARRIVE BACK IN LUB

RIG UP 2X3000 P.S.I. PRESSURE ELEMENTS COUPLED TO 120HR CLOCKS

09:58

PRESSURE UP LUB

11:30

DEPRESSURE LUB

12:30

PRESSURE UP LUB AND R.I.H.

12:50

AT HANG DEPTH 8820' KB.

17:00

SHUT WELL IN FOR BUILD-UP

26-6-91

07:25

P.O.O.H.

07:45

ARRIVE BACK IN LUB AND DEPRESSURE LUB

08:45

PRESSURE UP LUB

10:15

DEPRESSURE LUB AND RECOVER CHARTS GOOD CHARTS

REDRESS ELEMENTS WITH CHARTS AND 3HR CLOCK FOR STATIC GRADIENT

10:34

PRESSURE UP LUB

10:44

DEPRESSURE LUB

10:49

PRESSURE UP LUB AND R.I.H

000215

|             |               |               |                  |       |         |    |   |
|-------------|---------------|---------------|------------------|-------|---------|----|---|
| CUSTOMER :  | SANTOS LTD    | PERFORATIONS: | 8874' - 9114' HB | PAGE: | 2       | OF | 2 |
| WELL NAME:  | FLY LAKE #4   | FORMATION :   | PATCHAWARRA      | DATE: | 26-6-91 |    |   |
| TEST TYPE : | B.H.P. SURVEY |               |                  | OPR : | N. HAY  |    |   |

[illegible]

000216



## TEST RESULTS

CUSTOMER : SANTOS LTD

PERFORATIONS: 8874' - 9114' KB

PAGE: 1 OF 3

WELL NAME: FLY LAKE # 4

FORMATION : PATCHAWARRA

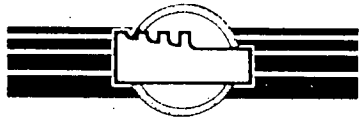
DATE: 21-6-91

TEST TYPE : B. H. P. SURVEY

OPR : N. HAY

| TIME         |                                       | WELLHEAD DATA                   |                                  |                             |               |                                                                 |                 | FLOW RATES                         |                                 |                                   | CUMULATIVE PRODUCTION          |                               |                                 |  |  |
|--------------|---------------------------------------|---------------------------------|----------------------------------|-----------------------------|---------------|-----------------------------------------------------------------|-----------------|------------------------------------|---------------------------------|-----------------------------------|--------------------------------|-------------------------------|---------------------------------|--|--|
| DATE<br>TIME | FLOW OR<br>SHUT IN<br>TIME<br>(HOURS) | TUBING<br>PRESSURE<br>(PSI/KPa) | ANNULUS<br>PRESSURE<br>(PSI/KPa) | WELLHEAD<br>TEMP<br>(°F/°C) | CHOKE<br>SIZE | PRESSURE<br>(PSI/KPa)                                           | TEMP<br>(°F/°C) | GAS<br>MMSCFD<br>m <sup>3</sup> /D | OIL<br>BPD<br>m <sup>3</sup> /D | WATER<br>BPD<br>m <sup>3</sup> /D | GAS<br>MMSCF<br>m <sup>3</sup> | OIL<br>BBLS<br>m <sup>3</sup> | WATER<br>BBLS<br>m <sup>3</sup> |  |  |
| 21-6-91      |                                       |                                 |                                  |                             |               |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 09:55        |                                       | 2689                            | 0                                | 25                          | 100%          | PRESSURE 4P L413                                                |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 12:30        |                                       | 2765                            | 0                                | 30                          | "             | R.I.H WITH 2X3000 PSI PRESSURE ELEMENTS COUPLED TO 120HR CLOGIN |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 12:50        |                                       | 2730                            | 0                                | 28                          | "             | AT HANG DEPTH 8820' KB                                          |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 13:30        |                                       | 2758                            | 0                                | 28                          | "             |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 14:00        |                                       | 2799                            | 0                                | 29                          | "             |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 14:30        |                                       | 2834                            | 0                                | 29                          | "             |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 15:00        |                                       | 2846                            | 0                                | 29                          | "             |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 15:30        |                                       | 2896                            | 0                                | 29                          | "             |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 16:00        |                                       | 2903                            | 0                                | 29                          | "             |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 16:30        |                                       | 2896                            | 0                                | 29                          | "             |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 17:00        | 0                                     | 2889                            | 0                                | 29                          | "             | SHUT WELL IN                                                    |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 17:15        | .25                                   | 4509                            | 0                                | 24                          |               |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 17:30        | .5                                    | 5667                            | 0                                | 21                          |               |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 17:45        | .75                                   | 6571                            | 0                                | 20                          |               |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 18:00        | 1                                     | 7205                            | 0                                | 19                          |               |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 18:15        | 1.25                                  | 7750                            | 0                                | 19                          |               |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 18:30        | 1.5                                   | 8150                            | 0                                | 19                          |               |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 18:45        | 1.75                                  | 8743                            | 0                                | 18                          |               |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 19:00        | 2                                     | 9053                            | 0                                | 18                          |               |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 19:15        | 2.25                                  | 9398                            | 0                                | 17                          |               |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |
| 19:30        | 2.5                                   | 9701                            | 0                                | 17                          |               |                                                                 |                 |                                    |                                 |                                   |                                |                               |                                 |  |  |

000217



## TEST RESULTS

CUSTOMER : SANTOS LTD

PERFORATIONS: 8874' - 9114' 113

PAGE: 2 OF 3

WELL NAME: FLY LAKE #4

FORMATION : PATCHAWARRA

DATE: 21-6-91

TEST TYPE: B. H. P. SURVEY

OPR: N. HAY

| TIME         |                                       | WELLHEAD DATA                   |                                  |                             |               |                       |                 | FLOW RATES                                          |                                 |                                   | CUMULATIVE PRODUCTION                           |                               |                                 |  |  |
|--------------|---------------------------------------|---------------------------------|----------------------------------|-----------------------------|---------------|-----------------------|-----------------|-----------------------------------------------------|---------------------------------|-----------------------------------|-------------------------------------------------|-------------------------------|---------------------------------|--|--|
| DATE<br>TIME | FLOW OR<br>SHUT IN<br>TIME<br>(HOURS) | TUBING<br>PRESSURE<br>(PSI/KPa) | ANNULUS<br>PRESSURE<br>(PSI/KPa) | WELLHEAD<br>TEMP<br>(°F/°C) | CHOKE<br>SIZE | PRESSURE<br>(PSI/KPa) | TEMP<br>(°F/°C) | GAS<br>MMSCFD<br>m <sup>3</sup> /10 <sup>3</sup> /D | OIL<br>BPD<br>m <sup>3</sup> /D | WATER<br>BPD<br>m <sup>3</sup> /D | GAS<br>MMSCF<br>m <sup>3</sup> /10 <sup>3</sup> | OIL<br>BBLS<br>m <sup>3</sup> | WATER<br>BBLS<br>m <sup>3</sup> |  |  |
| 21-6-91      |                                       |                                 |                                  |                             |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 19:45        | 2.75                                  | 9984                            | 0                                | 17                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 20:00        | 3                                     | 10246                           | 0                                | 17                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 20:15        | 3.25                                  | 10528                           | 0                                | 17                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 20:30        | 3.5                                   | 10811                           | 0                                | 17                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 20:45        | 3.75                                  | 11087                           | 0                                | 16                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 21:00        | 4                                     | 11287                           | 0                                | 16                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 22-6-91      |                                       |                                 |                                  |                             |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 01:00        | 8                                     | 11301                           | 0                                | 11                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 05:00        | 12                                    | 11321                           | 0                                | 10                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 09:00        | 16                                    | 11432                           | 0                                | 19                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 13:00        | 20                                    | 11466                           | 0                                | 21                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 17:00        | 24                                    | 11549                           | 0                                | 18                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 21:00        | 28                                    | 11590                           | 0                                | 12                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 23-6-91      |                                       |                                 |                                  |                             |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 01:00        | 32                                    | 11625                           | 0                                | 17                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 05:00        | 36                                    | 11652                           | 0                                | 17                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 09:00        | 40                                    | 11666                           | 0                                | 18                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 13:00        | 44                                    | 11666                           | 0                                | 22                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 17:00        | 48                                    | 11673                           | 0                                | 24                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 21:00        | 52                                    | 11673                           | 0                                | 12                          |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |
| 24-6-91      |                                       |                                 |                                  |                             |               |                       |                 |                                                     |                                 |                                   |                                                 |                               |                                 |  |  |

000218

## TEST RESULTS

CUSTOMER : SANTOS LTD

PERFORATIONS: 8874' - 9114' M13

PAGE: 3 OF 3

WELL NAME: FLY LANE #4

FORMATION : PATSHAWARRA

DATE: 24-6-91

TEST TYPE : B.H.P. SURVEY

OPR : N. HAY

000213

SANTOS Ltd.

000220

MOOMBA LABORATORY - WATER ANALYSIS REPORT

REGISTRATION NUMBER : WD 370

SAMPLE NAME : FLY LAKE #4 1000HRS

SAMPLE POINT : SEP DUMP LINE

DATE SAMPLED : 14.9.91

DATE ANALYSED : 3.11.91

| CHEMICAL COMPOSITION | mg/L   | me/L   |
|----------------------|--------|--------|
| CATIONS              |        |        |
| SODIUM [Na]          | 4850.0 | 210.96 |
| POTASSIUM [K]        | 93.0   | 2.38   |
| MAGNESIUM [Mg]       | 40.0   | 3.29   |
| CALCIUM [Ca]         | 122.0  | 6.09   |
| ANIONS               |        |        |
| BICARBONATE [HCO3]   | 1987.4 | 32.57  |
| CHLORIDE [Cl]        | 6866.0 | 193.68 |
| SULPHATE [SO4]       | 3.0    | .06    |

PHYSICAL REACTION

|                                  |       |
|----------------------------------|-------|
| PH                               | 7.1   |
| CONDUCTIVITY (micro S/cm)        | 21500 |
| TEMPERATURE (C)                  | 25    |
| CONDUCTIVITY (micro S/cm @ 25 C) | 22000 |
| RESISTIVITY (ohm.m @ 25 C)       | .47   |

DERIVED DATA

|                                   |       |
|-----------------------------------|-------|
| TOTAL DISSOLVED SOLIDS            | mg/L  |
| A. BASED ON CONDUCTIVITY          | 13700 |
| B. CALCULATED (HCO3=CO3)          | 12951 |
| TOTAL HARDNESS (as CaCO3)         | 469   |
| CARBONATE HARDNESS (as CaCO3)     | 469   |
| NON-CARBONATE HARDNESS (as CaCO3) | 0     |
| TOTAL ALKALINITY (as CaCO3)       | 1630  |

TOTALS AND BALANCE

|                       |        |
|-----------------------|--------|
| CATIONS               | me/L   |
| ANIONS                | 222.72 |
| DIFFERENCE            | 226.31 |
| SUM                   | 3.59   |
| DIFF*100/SUM          | 449.83 |
| SODIUM / TOTAL CATION | .80    |
|                       | 94.70  |

The reported conductivity and resistivity are based on the sample as received.

ANALYST : DS

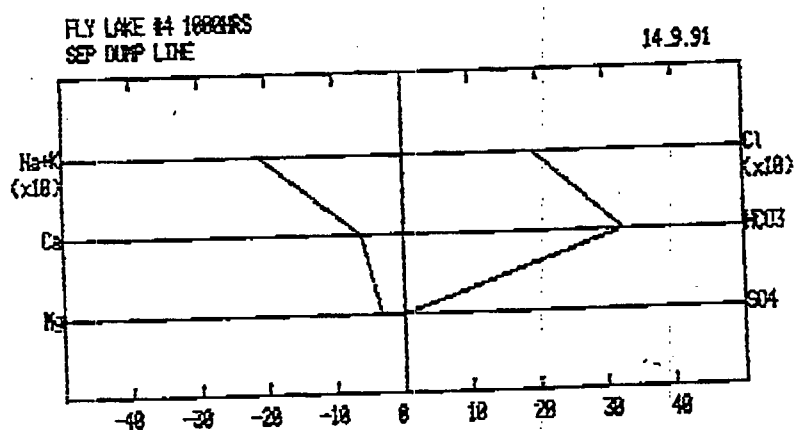
000221

SANTOS Ltd.

MOOMBA LABORATORY - WATER ANALYSIS REPORT

REGISTRATION NUMBER : WD 370

STIFF DIAGRAM



SIGNATORY : \_\_\_\_\_

DATE : \_\_\_\_\_

000222

SANTOS Ltd.

## MOOMBA LABORATORY - WATER ANALYSIS REPORT

REGISTRATION NUMBER : WD 371

SAMPLE NAME : FLY LAKE #4 2200HRS

SAMPLE POINT : SEP DUMP LINE

DATE SAMPLED : 14.9.91

DATE ANALYSED : 3.11.91

## CHEMICAL COMPOSITION

|             |                     | mg/L   | me/L   |
|-------------|---------------------|--------|--------|
| CATIONS     |                     |        |        |
| SODIUM      | [Na]                | 4770.0 | 207.48 |
| POTASSIUM   | [K]                 | 86.0   | 2.20   |
| MAGNESIUM   | [Mg]                | 40.0   | 3.29   |
| CALCIUM     | [Ca]                | 98.0   | 4.89   |
| ANIONS      |                     |        |        |
| BICARBONATE | [HCO <sub>3</sub> ] | 2016.7 | 33.05  |
| CHLORIDE    | [Cl]                | 6901.0 | 194.67 |
| SULPHATE    | [SO <sub>4</sub> ]  | 2.0    | .04    |

## PHYSICAL REACTION

|                                  |       |
|----------------------------------|-------|
| pH                               | 6.9   |
| CONDUCTIVITY (micro S/cm)        | 21600 |
| TEMPERATURE (C)                  | 25    |
| CONDUCTIVITY (micro S/cm @ 25 C) | 22000 |
| RESISTIVITY (ohm.m @ 25 C)       | .46   |

## DERIVED DATA

|                                                    |       |
|----------------------------------------------------|-------|
|                                                    | mg/L  |
| TOTAL DISSOLVED SOLIDS                             |       |
| A. BASED ON CONDUCTIVITY                           | 13700 |
| B. CALCULATED (HCO <sub>3</sub> =CO <sub>3</sub> ) | 12889 |
| TOTAL HARDNESS (as CaCO <sub>3</sub> )             | 409   |
| CARBONATE HARDNESS (as CaCO <sub>3</sub> )         | 409   |
| NON-CARBONATE HARDNESS (as CaCO <sub>3</sub> )     | 0     |
| TOTAL ALKALINITY (as CaCO <sub>3</sub> )           | 1654  |

## TOTALS AND BALANCE

|                       |        |
|-----------------------|--------|
|                       | me/L   |
| CATIONS               | 217.86 |
| ANIONS                | 227.76 |
| DIFFERENCE            | 9.90   |
| SUM                   | 445.62 |
| DIFF*100/SUM          | 2.20   |
| SODIUM / TOTAL CATION | 95.20  |

The reported conductivity and resistivity are based on the sample as received.

ANALYST : DS

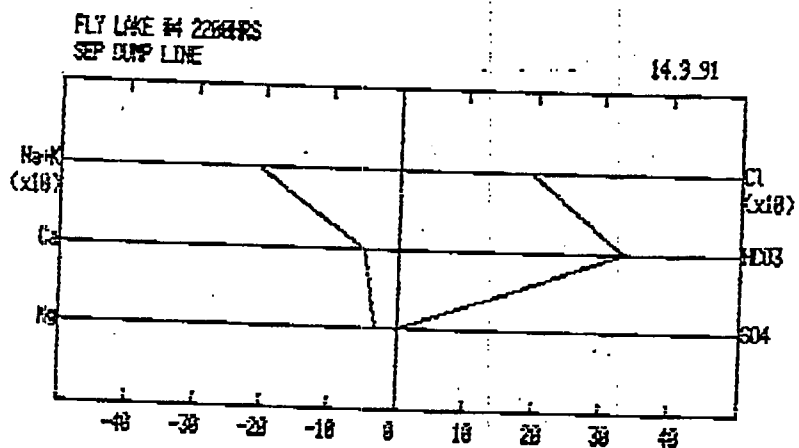
000223

SANTOS Ltd.

MOOMBA LABORATORY - WATER ANALYSIS REPORT

REGISTRATION NUMBER : WD 371

STIFF DIAGRAM



SANTOS Ltd.

MOOMBA LABORATORY - WATER ANALYSIS REPORT

000224

REGISTRATION NUMBER : WD 372

SAMPLE NAME : FLY LAKE #4 1000HRS

SAMPLE POINT : SEP DUMP LINE

DATE SAMPLED : 15.9.91

DATE ANALYSED : 3.11.91

CHEMICAL COMPOSITION

|             |        | mg/L   | me/L   |
|-------------|--------|--------|--------|
| CATIONS     |        |        |        |
| SODIUM      | [Na]   |        |        |
| POTASSIUM   | [K]    | 4900.0 | 213.14 |
| MAGNESIUM   | [Mg]   | 85.0   | 2.17   |
| CALCIUM     | [Ca]   | 40.0   | 3.29   |
| ANIONS      |        | 102.0  | 5.09   |
| BICARBONATE | [HCO3] |        |        |
| CHLORIDE    | [Cl]   | 1998.4 | 32.75  |
| SULPHATE    | [SO4]  | 6871.0 | 193.82 |
|             |        | 2.0    | .04    |

PHYSICAL REACTION

|                                  |       |
|----------------------------------|-------|
| CONDUCTIVITY (micro S/cm)        | 7     |
| TEMPERATURE (C)                  | 21300 |
| CONDUCTIVITY (micro S/cm @ 25 C) | 25    |
| RESISTIVITY (ohm.m @ 25 C)       | 21000 |
|                                  | .47   |

DERIVED DATA

|                                   |       |
|-----------------------------------|-------|
| TOTAL DISSOLVED SOLIDS            | mg/L  |
| BASED ON CONDUCTIVITY             |       |
| CALCULATED (HCO3=CO3)             | 13600 |
| TOTAL HARDNESS (as CaCO3)         | 12983 |
| CARBONATE HARDNESS (as CaCO3)     | 419   |
| NON-CARBONATE HARDNESS (as CaCO3) | 419   |
| TOTAL ALKALINITY (as CaCO3)       | 0     |
|                                   | 1639  |

TOTALS AND BALANCE

|                       |        |
|-----------------------|--------|
| CATIONS               | me/L   |
| ANIONS                | 223.69 |
| DIFFERENCE            | 226.61 |
|                       | 2.92   |
| FF*100/SUM            | 450.30 |
| SODIUM / TOTAL CATION | .60    |
|                       | 95.30  |

reported conductivity and resistivity are based on the sample as received.

ANALYST : DS

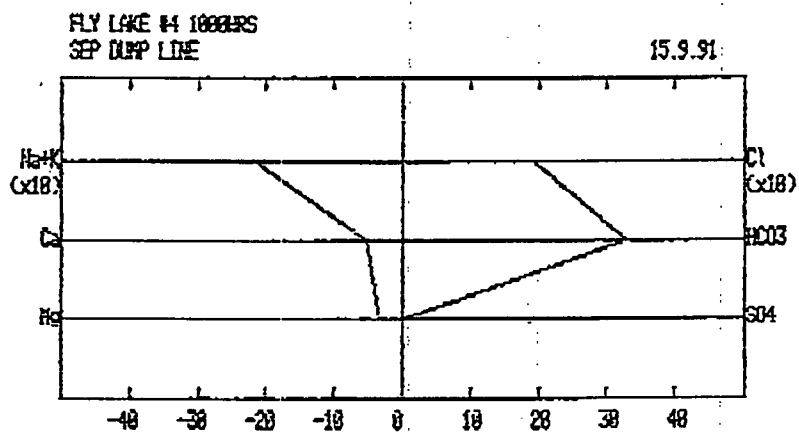
000225

SANTOS Ltd.

MOOMBA LABORATORY - WATER ANALYSIS REPORT

REGISTRATION NUMBER : WD 372

STIFF DIAGRAM



SANTOS Ltd.

000226

MOOMBA LABORATORY - WATER ANALYSIS REPORT

REGISTRATION NUMBER : WD 373

SAMPLE NAME : FLY LAKE #4 2200HRS

SAMPLE POINT : SEP DUMP LINE

DATE SAMPLED : 16.9.91

DATE ANALYSED : 3.11.91

| CHEMICAL COMPOSITION |        | mg/L   | me/L   |
|----------------------|--------|--------|--------|
| CATIONS              |        |        |        |
| SODIUM               | [Na]   | 4770.0 | 207.48 |
| POTASSIUM            | [K]    | 97.0   | 2.23   |
| MAGNESIUM            | [Mg]   | 38.0   | 3.13   |
| CALCIUM              | [Ca]   | 100.0  | 4.99   |
| ANIONS               |        |        |        |
| BICARBONATE          | [HCO3] | 1989.9 | 32.61  |
| CHLORIDE             | [Cl]   | 6900.0 | 194.64 |
| SULPHATE             | [SO4]  | 2.0    | .04    |

PHYSICAL REACTION

|                                  |       |
|----------------------------------|-------|
| pH                               | 7.6   |
| CONDUCTIVITY (micro S/cm)        | 21300 |
| TEMPERATURE (C)                  | 25    |
| CONDUCTIVITY (micro S/cm @ 25 C) | 21000 |
| RESISTIVITY (ohm.m @ 25 C)       | .47   |

DERIVED DATA

|                                   |       |
|-----------------------------------|-------|
| TOTAL DISSOLVED SOLIDS            | mg/L  |
| A. BASED ON CONDUCTIVITY          | 13600 |
| B. CALCULATED (HCO3=CO3)          | 12875 |
| TOTAL HARDNESS (as CaCO3)         | 406   |
| CARBONATE HARDNESS (as CaCO3)     | 406   |
| NON-CARBONATE HARDNESS (as CaCO3) | 0     |
| TOTAL ALKALINITY (as CaCO3)       | 1632  |

TOTALS AND BALANCE

|                       |        |
|-----------------------|--------|
| CATIONS               | me/L   |
| ANIONS                | 217.83 |
| DIFFERENCE            | 227.29 |
| SUM                   | 9.46   |
| DIFF*100/SUM          | 445.12 |
| SODIUM / TOTAL CATION | 2.10   |
|                       | 95.20  |

The reported conductivity and resistivity are based on the sample as received .

ANALYST : DS

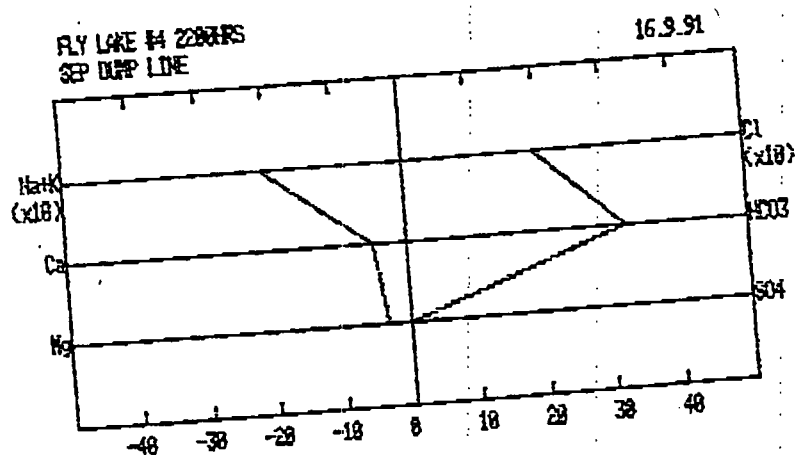
000227

SANTOS Ltd.

MOOMBA LABORATORY - WATER ANALYSIS REPORT

REGISTRATION NUMBER : WD 373

STIFF DIAGRAM



000228

## SANTOS Ltd.

## MOOMBA LABORATORY - WATER ANALYSIS REPORT

REGISTRATION NUMBER : WD 374

SAMPLE NAME : FLY LAKE #4 1000HRS

SAMPLE POINT : SEP DUMP LINE

DATE SAMPLED : 17.9.91

DATE ANALYSED : 3.11.91

| CHEMICAL COMPOSITION |        | mg/L   | me/L   |
|----------------------|--------|--------|--------|
| CATIONS              |        |        |        |
| SODIUM               | [Na]   | 4860.0 | 211.40 |
| POTASSIUM            | [K]    | 92.0   | 2.35   |
| MAGNESIUM            | [Mg]   | 38.0   | 3.13   |
| CALCIUM              | [Ca]   | 94.0   | 4.69   |
| ANIONS               |        |        |        |
| BICARBONATE          | [HCO3] | 1960.6 | 32.13  |
| CHLORIDE             | [Cl]   | 6904.0 | 194.75 |
| SULPHATE             | [SO4]  | 2.0    | .04    |

|                                  |  |       |
|----------------------------------|--|-------|
| PHYSICAL REACTION                |  |       |
| pH                               |  | 7.6   |
| CONDUCTIVITY (micro S/cm)        |  | 21500 |
| TEMPERATURE (C)                  |  | 25    |
| CONDUCTIVITY (micro S/cm @ 25 C) |  | 22000 |
| RESISTIVITY (ohm.m @ 25 C)       |  | .47   |

|                                   |  |       |
|-----------------------------------|--|-------|
| DERIVED DATA                      |  | mg/L  |
| TOTAL DISSOLVED SOLIDS            |  |       |
| A. BASED ON CONDUCTIVITY          |  | 13700 |
| B. CALCULATED (HCO3=CO3)          |  | 12954 |
| TOTAL HARDNESS (as CaCO3)         |  | 391   |
| CARBONATE HARDNESS (as CaCO3)     |  | 391   |
| NON-CARBONATE HARDNESS (as CaCO3) |  | 0     |
| TOTAL ALKALINITY (as CaCO3)       |  | 1608  |

|                       |  |        |
|-----------------------|--|--------|
| TOTALS AND BALANCE    |  | me/L   |
| CATIONS               |  | 221.57 |
| ANIONS                |  | 226.92 |
| DIFFERENCE            |  | 5.35   |
| SUM                   |  | 448.49 |
| DIFF*100/SUM          |  | 1.20   |
| SODIUM / TOTAL CATION |  | 95.40  |

The reported conductivity and resistivity are based on the sample as received.

ANALYST : DS

ANALYST : DS

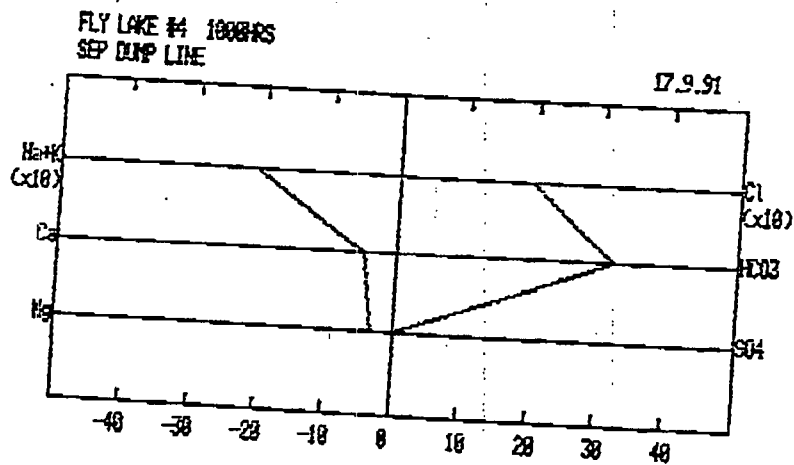
000229

SANTOS Ltd.

MOOMBA LABORATORY - WATER ANALYSIS REPORT

REGISTRATION NUMBER : WD 374

STIFF DIAGRAM



000230

SANTOS Ltd.

## MOOMBA LABORATORY - WATER ANALYSIS REPORT

REGISTRATION NUMBER : WD 375

SAMPLE NAME : FLY LAKE #4 2200HRS

SAMPLE POINT : SEP DUMP LINE

DATE SAMPLED : 17.9.91

DATE ANALYSED : 3.11.91

## CHEMICAL COMPOSITION

|             |                     | mg/L   | me/L   |
|-------------|---------------------|--------|--------|
| CATIONS     |                     |        |        |
| SODIUM      | [Na]                | 4750.0 | 206.61 |
| POTASSIUM   | [K]                 | 167.0  | 4.27   |
| MAGNESIUM   | [Mg]                | 38.0   | 3.13   |
| CALCIUM     | [Ca]                | 94.0   | 4.69   |
| ANIONS      |                     |        |        |
| BICARBONATE | [HCO <sub>3</sub> ] | 1974.0 | 32.35  |
| CHLORIDE    | [Cl]                | 6858.0 | 193.46 |
| SULPHATE    | [SO <sub>4</sub> ]  | 2.0    | .04    |

## PHYSICAL REACTION

|                                  |       |
|----------------------------------|-------|
| pH                               | 7.3   |
| CONDUCTIVITY (micro S/cm)        | 21500 |
| TEMPERATURE (C)                  | 25    |
| CONDUCTIVITY (micro S/cm @ 25 C) | 22000 |
| RESISTIVITY (ohm.m @ 25 C)       | .47   |

## DERIVED DATA

|                                                    |       |
|----------------------------------------------------|-------|
|                                                    | mg/L  |
| TOTAL DISSOLVED SOLIDS                             |       |
| A. BASED ON CONDUCTIVITY                           | 13700 |
| B. CALCULATED (HCO <sub>3</sub> =CO <sub>3</sub> ) | 12880 |
| TOTAL HARDNESS (as CaCO <sub>3</sub> )             | 391   |
| CARBONATE HARDNESS (as CaCO <sub>3</sub> )         | 391   |
| NON-CARBONATE HARDNESS (as CaCO <sub>3</sub> )     | 0     |
| TOTAL ALKALINITY (as CaCO <sub>3</sub> )           | 1619  |

## TOTALS AND BALANCE

|                       |        |
|-----------------------|--------|
|                       | me/L   |
| CATIONS               | 218.70 |
| ANIONS                | 225.85 |
| DIFFERENCE            | 7.15   |
| SUM                   | 444.55 |
| DIFF*100/SUM          | 1.60   |
| SODIUM / TOTAL CATION | 94.50  |

The reported conductivity and resistivity are based on the sample as received .

ANALYST : DS

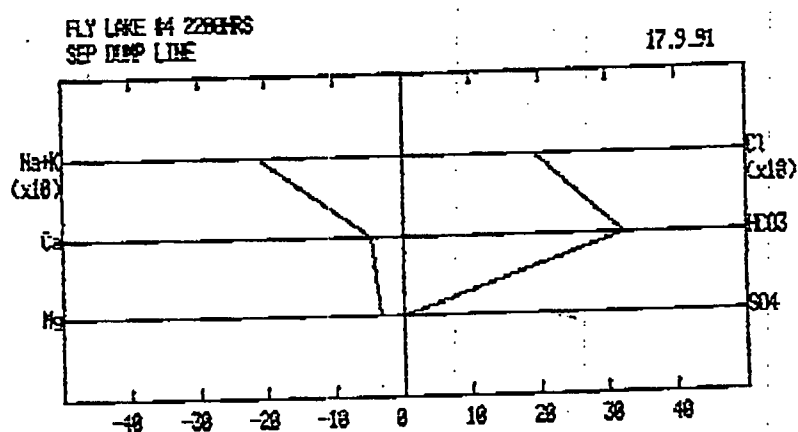
000231

SANTOS Ltd.

MOOMBA LABORATORY - WATER ANALYSIS REPORT

REGISTRATION NUMBER : WD 375

STIFF DIAGRAM



SANTOS Ltd.

000232

## MOOMBA LABORATORY - WATER ANALYSIS REPORT

REGISTRATION NUMBER : WD 376

SAMPLE NAME : FLY LAKE #4 1000HRS

SAMPLE POINT : SEP DUMP LINE

DATE SAMPLED : 18.9.91

DATE ANALYSED : 3.11.91

CHEMICAL COMPOSITION  
CATIONS

|                    | mg/L   | me/L   |
|--------------------|--------|--------|
| SODIUM [Na]        | 4710.0 | 204.87 |
| POTASSIUM [K]      | 93.0   | 2.38   |
| MAGNESIUM [Mg]     | 40.0   | 3.29   |
| CALCIUM [Ca]       | 88.0   | 4.39   |
| ANIONS             |        |        |
| BICARBONATE [HCO3] | 2061.8 | 33.79  |
| CHLORIDE [Cl]      | 7032.0 | 198.36 |
| SULPHATE [SO4]     | 2.0    | .04    |

## PHYSICAL REACTION

|                                  |       |
|----------------------------------|-------|
| pH                               | 7.6   |
| CONDUCTIVITY (micro S/cm)        | 21100 |
| TEMPERATURE (C)                  | 25    |
| CONDUCTIVITY (micro S/cm @ 25 C) | 21000 |
| RESISTIVITY (ohm.m @ 25 C)       | .47   |

## DERIVED DATA

|                                   | mg/L  |
|-----------------------------------|-------|
| TOTAL DISSOLVED SOLIDS            |       |
| A. BASED ON CONDUCTIVITY          | 13400 |
| B. CALCULATED (HCO3=CO3)          | 12979 |
| TOTAL HARDNESS (as CaCO3)         | 384   |
| CARBONATE HARDNESS (as CaCO3)     | 384   |
| NON-CARBONATE HARDNESS (as CaCO3) | 0     |
| TOTAL ALKALINITY (as CaCO3)       | 1691  |

## TOTALS AND BALANCE

|                       | me/L   |
|-----------------------|--------|
| CATIONS               | 214.93 |
| ANIONS                | 232.19 |
| DIFFERENCE            | 17.26  |
| SUM                   | 447.12 |
| DIFF*100/SUM          | 3.90   |
| SODIUM / TOTAL CATION | 95.30  |

The reported conductivity and resistivity are based on the sample as received .

ANALYST : DS

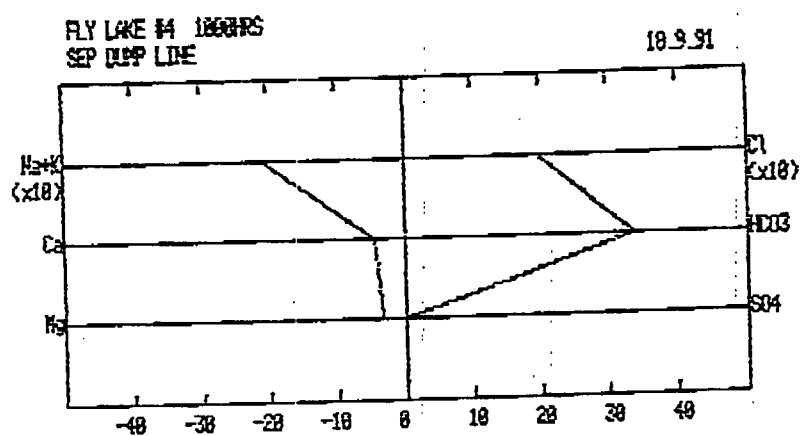
000233

SANTOS Ltd.

MOOMBA LABORATORY - WATER ANALYSIS REPORT

REGISTRATION NUMBER : WD 376

STIFF DIAGRAM





SANTOS Ltd.

MOOMBA LABORATORY

c/- G.P.O. Box 563, Adelaide, S.A. 5001  
Telephone : (086) 512512 extn.4245  
Facsimile : (08) 2247458  
Telex : MOOMGAS AA80699

|                   |                  |
|-------------------|------------------|
| TYPE OF ANALYSIS: | H <sub>2</sub> O |
| COPIES SENT:      | 11, 11, 91       |
| WELL FILE:        | ✓                |
| RESERVOIR ENG:    | ✓                |
| DEVT. GEOLOGY:    | ✓                |

000234

FIELD WATER CONDUCTIVITY / RESISTIVITY TEST REPORT

TEST METHOD : MWP 35-2

REGISTRATION NUMBER : WD338

SAMPLE NAME : FLYLAKE #4

SAMPLE POINT : DUMPLINE TO SEPARATOR TO 459

DATE SAMPLED : 15-09-91

DATE ANALYSED : 16-09-91

CONDUCTIVITY (micro S/cm @ 25 C) 22000

RESISTIVITY (ohm.m @ 25 C) .46

All results reported to ±5%

The reported conductivity and resistivity are based on the sample as received.

ANALYST : RAJ

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SIGNATORY :

*John Hallman*

DATE : 17.9.91

REGISTRATION NUMBER : WD338

SAMPLE NAME : FLYLAKE #4

SAMPLE POINT : DUMPLINE TO SEPARATOR TO 459

DATE SAMPLED : 15-09-91

DATE ANALYSED : 16-09-91

-----  
CHEMICAL COMPOSITION

|             |        | mg/L   | me/L   |
|-------------|--------|--------|--------|
| CATIONS     |        |        |        |
| SODIUM      | [Na]   | 5110.0 | 222.27 |
| POTASSIUM   | [K]    | 103.0  | 2.63   |
| MAGNESIUM   | [Mg]   | 43.0   | 3.54   |
| CALCIUM     | [Ca]   | 103.0  | 5.14   |
| ANIONS      |        |        |        |
| BICARBONATE | [HCO3] | 1989.9 | 32.61  |
| CHLORIDE    | [Cl]   | 6820.0 | 192.38 |
| SULPHATE    | [SO4]  | 16.0   | .33    |

## PHYSICAL REACTION

|                                  |       |
|----------------------------------|-------|
| pH                               | 6.5   |
| CONDUCTIVITY (micro S/cm)        | 21900 |
| TEMPERATURE (C)                  | 25    |
| CONDUCTIVITY (micro S/cm @ 25 C) | 22000 |
| RESISTIVITY (ohm.m @ 25 C)       | .46   |

## DERIVED DATA

|                                   | mg/L  |
|-----------------------------------|-------|
| TOTAL DISSOLVED SOLIDS            |       |
| A. BASED ON CONDUCTIVITY          | 13900 |
| B. CALCULATED (HCO3=CO3)          | 13173 |
| TOTAL HARDNESS (as CaCO3)         | 434   |
| CARBONATE HARDNESS (as CaCO3)     | 434   |
| NON-CARBONATE HARDNESS (as CaCO3) | 0     |
| TOTAL ALKALINITY (as CaCO3)       | 1632  |

## TOTALS AND BALANCE

|                       | me/L   |
|-----------------------|--------|
| CATIONS               | 233.58 |
| ANIONS                | 225.32 |
| DIFFERENCE            | 8.26   |
| SUM                   | 458.90 |
| DIFF*100/SUM          | 1.80   |
| SODIUM / TOTAL CATION | 95.20  |

  
-----

The reported conductivity and resistivity are based on the sample as received .

ANALYST : RAJ

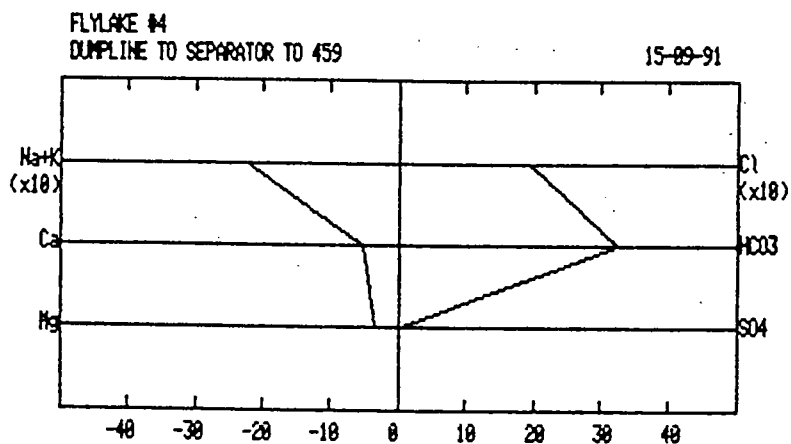
MOOMBA LABORATORY - WATER ANALYSIS REPORT

REGISTRATION NUMBER : WD338

000236

STIFF DIAGRAM

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SANTOS Ltd.

MOOMBA LABORATORY

c/- G.P.O. Box 563, Adelaide, S.A. 5001  
Telephone : (086) 512512 extn.4245  
Facsimile : (08) 2247458  
Telex : MOOMGAS AA80699

WELL NAME: FLYLAKE 71  
TYPE OF ANALYSIS: H<sub>2</sub>O LET  
COPIES SENT: 11/ 11/ 91  
WELL FILE: ✓  
RESERVOIR ENG: ✓  
DEVT. GEOLOGY: ✓

000237

FIELD WATER CONDUCTIVITY / RESISTIVITY TEST REPORT

TEST METHOD : MWP 35-2

REGISTRATION NUMBER : WD339

SAMPLE NAME : FLYLAKE #4

SAMPLE POINT : DUMPLINE TO SEPARATOR TO 459

DATE SAMPLED : 16.09.91

DATE ANALYSED : 16-09-91

CONDUCTIVITY (micro S/cm @ 25 C) 22000

RESISTIVITY (ohm.m @ 25 C) .46

All results reported to  $\pm 5\%$

The reported conductivity and resistivity are based on the sample as received .

ANALYST : RAJ

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SIGNATORY :

*Jul Hollman*

DATE : 17.9.91

REGISTRATION NUMBER : WD339

SAMPLE NAME : FLYLAKE #4

SAMPLE POINT : DUMPLINE TO SEPARATOR TO 459

DATE SAMPLED : 16.09.91

DATE ANALYSED : 16-09-91

-----  
CHEMICAL COMPOSITION  
CATIONS

|                    | mg/L   | me/L   |
|--------------------|--------|--------|
| SODIUM [Na]        | 5260.0 | 228.80 |
| POTASSIUM [K]      | 104.0  | 2.66   |
| MAGNESIUM [Mg]     | 42.0   | 3.46   |
| CALCIUM [Ca]       | 100.0  | 4.99   |
| ANIONS             |        |        |
| BICARBONATE [HCO3] | 1996.0 | 32.71  |
| CHLORIDE [Cl]      | 6813.0 | 192.19 |
| SULPHATE [SO4]     | 11.0   | .23    |

## PHYSICAL REACTION

|                                  |       |
|----------------------------------|-------|
| pH                               | 6.64  |
| CONDUCTIVITY (micro S/cm)        | 21900 |
| TEMPERATURE (C)                  | 25    |
| CONDUCTIVITY (micro S/cm @ 25 C) | 22000 |
| RESISTIVITY (ohm.m @ 25 C)       | .46   |

## DERIVED DATA

|                                   | mg/L  |
|-----------------------------------|-------|
| TOTAL DISSOLVED SOLIDS            |       |
| A. BASED ON CONDUCTIVITY          | 13900 |
| B. CALCULATED (HCO3=CO3)          | 13311 |
| TOTAL HARDNESS (as CaCO3)         | 422   |
| CARBONATE HARDNESS (as CaCO3)     | 422   |
| NON-CARBONATE HARDNESS (as CaCO3) | 0     |
| TOTAL ALKALINITY (as CaCO3)       | 1637  |

## TOTALS AND BALANCE

|                       | me/L   |
|-----------------------|--------|
| CATIONS               | 239.91 |
| ANIONS                | 225.13 |
| DIFFERENCE            | 14.78  |
| SUM                   | 465.04 |
| DIFF*100/SUM          | 3.20   |
| SODIUM / TOTAL CATION | 95.40  |

  
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The reported conductivity and resistivity are based on the sample as received .

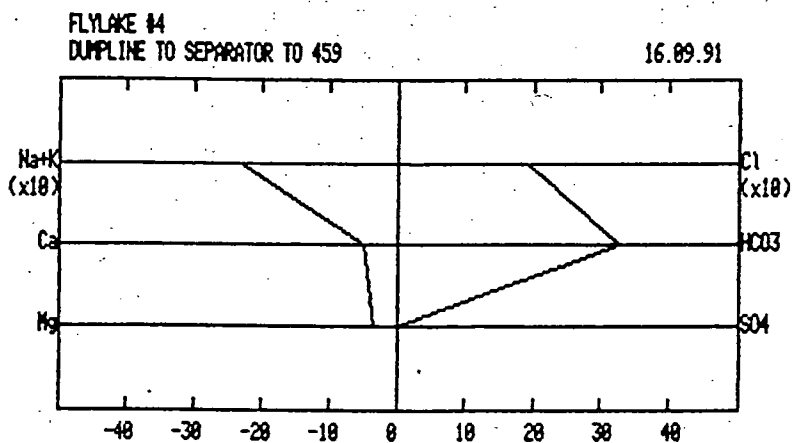
ANALYST : RAJ

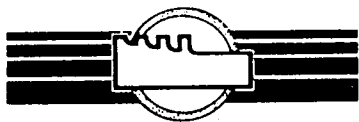
MOOMBA LABORATORY - WATER ANALYSIS REPORT

REGISTRATION NUMBER : WD339

000239

STIFF DIAGRAM





## SEQUENCE OF EVENTS

CUSTOMER : Santos Petroleum Ltd.

PERFORATIONS: 8858-8892 ft. KB.

PAGE: 1 OF 2

WELL NAME: Fly Lake 4

FORMATION : Patchawana

DATE: 13.11.93

TEST TYPE : LET / BHP

OPR : K. Comstock

| DATE/TIME | DESCRIPTION OF EVENTS                                                                                                           |
|-----------|---------------------------------------------------------------------------------------------------------------------------------|
| 12.11.93  |                                                                                                                                 |
| 1445      | Arrive on location.                                                                                                             |
| 1500      | Santos operations rep on location / held safety meeting                                                                         |
| 1510      | Shut-in well / fit swell valve / complete tie in of separator to meter run.                                                     |
| 1700      | Rig-in complete / open well to flow on by-pass thru separator manifold / pressure test good.                                    |
| 13.11.93. |                                                                                                                                 |
| 0800      | Rig up wireline unit.                                                                                                           |
| 0900      | Pressure up lubricator / run in hole w/ 1.75 in. drift.                                                                         |
| 0947      | Tag PBTD @ 8879 ft KB.                                                                                                          |
| 0950      | Pull out of hole / no obstructions / all clear. <span style="float: right;">e</span>                                            |
| 1011      | @ surface / depressure lubricator.                                                                                              |
| 1100      | Direct flow thru separator / commence LET.                                                                                      |
| 14.11.93. |                                                                                                                                 |
| 1430      | Prepare tandem Amerada pressure elements coupled w/ 120 hr. clocks for 96 hr BHP                                                |
| 1500      | Pressure up lubricator                                                                                                          |
| 1600      | Depressure lubricator                                                                                                           |
| 1700      | Pressure up lubricator / run in hole.                                                                                           |
| 1721      | @ hang depth 8830 ft KB.                                                                                                        |
| 1800.     | By-pass separator / end LET.                                                                                                    |
| 15.11.93  |                                                                                                                                 |
| 0800      | Santos operations rep. on location / held safety meeting / shut in well / begin BHPS / begin rig out of test equipment.         |
| 1200      | Rig out complete / drained 14.3 m <sup>3</sup> H <sub>2</sub> O to pit / 1.0 m <sup>3</sup> oil remaining on location (tank 86) |

## SEQUENCE OF EVENTS

CUSTOMER : Santos Petroleum Ltd.

PERFORATIONS: 8858 - 8892 1/2 KB.

PAGE: 2 OF 2

WELL NAME: Fly Lake 4

FORMATION : Patchawana

DATE: 19.11.92.

TEST TYPE : BHPS

OPR :

| DATE/TIME | DESCRIPTION OF EVENTS                                                                                                                        |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 19-11-93. |                                                                                                                                              |
| 0800      | Pullout of hole.                                                                                                                             |
| 0822      | @ surface / depressure lubricator .                                                                                                          |
| 0922      | Pressure up lubricator .                                                                                                                     |
| 1022      | Depressure lubricator / break out same .                                                                                                     |
| 1054      | Disengage stylus / end BHPS / redress Amerada pressure elements coupled w/ 3 hr clocks.<br>for SGS.                                          |
| 1058      | Engage stylus / begin SGS                                                                                                                    |
| 1113      | Pressure up lubricator                                                                                                                       |
| 1128      | Depressure lubricator                                                                                                                        |
| 1133      | Pressure up lubricator / run in hole / commence station stops.                                                                               |
| 1258      | @ hang depth 8875 ft KB. (MPP)                                                                                                               |
| 1328      | Pullout of hole.                                                                                                                             |
| 1353      | Arrive lubricator / depressure same .                                                                                                        |
| 1358      | Pressure up lubricator .                                                                                                                     |
| 1413      | Depressure lubricator / break out same .                                                                                                     |
| 1418      | Disengage stylus / end SGS / rig out wireline equipment / secure lease / inform production<br>well is ready to go back on production.        |
|           | CHOKE : 100%<br>FTHP : 2539 kPa<br>$Q_g$ : 4.173 E3 m <sup>3</sup> /d<br>$Q_c$ : 0.868 m <sup>3</sup> /d<br>$Q_w$ : 11.069 m <sup>3</sup> /d |

000241

ET 102

| EXPERTEST PTY. LTD.                                                              |                                       | FIELD READINGS                   |                              |                          |                    |             |                               |                                   |                            |                     |                         |                   |                              |               |  |
|----------------------------------------------------------------------------------|---------------------------------------|----------------------------------|------------------------------|--------------------------|--------------------|-------------|-------------------------------|-----------------------------------|----------------------------|---------------------|-------------------------|-------------------|------------------------------|---------------|--|
|  |                                       | CUSTOMER : Santos Petroleum Ltd. |                              |                          |                    |             |                               | PERFORATIONS: 8858 - 8892 ft. KB. |                            |                     |                         | PAGE: 1 OF 2.     |                              |               |  |
|                                                                                  |                                       | WELL NAME: Sly Lake 4.           |                              |                          |                    |             |                               | FORMATION : Patchawana            |                            |                     |                         | DATE: 12.11.93.   |                              |               |  |
|                                                                                  |                                       | TEST TYPE : LET / BHP            |                              |                          |                    |             |                               |                                   |                            |                     |                         | OPR : K. Comstock |                              |               |  |
| TIME                                                                             |                                       | WELLHEAD DATA                    |                              |                          |                    |             | SEPARATOR DATA                |                                   |                            |                     |                         | LIQUID PRODUCTION |                              |               |  |
| DATE<br>TIME                                                                     | FLOW OR<br>SHUT IN<br>TIME<br>(HOURS) | TUBING<br>PRESSURE<br>(PSI/      | ANNULUS<br>PRESSURE<br>(PSI/ | WELLHEAD<br>TEMP<br>(°C) | CHOKE<br>SIZE<br>% | BS&W<br>(%) | ORIFICE<br>PLATE<br>SIZE (IN) | STATIC<br>PRESS.<br>(PSIG)        | DIFF.<br>PRESS.<br>(IN WC) | GAS<br>TEMP<br>(°F) | TOTAL<br>LIQUID<br>(IN/ | OIL<br>(IN/       | OIL API<br>GRAVITY<br>@ 60°F | WATER<br>(IN/ |  |
| 12.11.93                                                                         |                                       |                                  |                              |                          |                    |             |                               |                                   |                            |                     |                         |                   |                              |               |  |
| 1445                                                                             |                                       |                                  |                              |                          |                    |             |                               |                                   |                            |                     |                         |                   |                              |               |  |
| 1500                                                                             |                                       |                                  |                              |                          |                    |             |                               |                                   |                            |                     |                         |                   |                              |               |  |
| 1510                                                                             |                                       |                                  |                              |                          |                    |             |                               |                                   |                            |                     |                         |                   |                              |               |  |
| 1700                                                                             |                                       |                                  |                              |                          |                    |             |                               |                                   |                            |                     |                         |                   |                              |               |  |
| 13.11.93                                                                         |                                       |                                  |                              |                          |                    |             |                               |                                   |                            |                     |                         |                   |                              |               |  |
| 0800                                                                             |                                       |                                  |                              |                          |                    |             |                               |                                   |                            |                     |                         |                   |                              |               |  |
| 0900                                                                             |                                       | 374                              | 0                            |                          |                    |             |                               |                                   |                            |                     |                         |                   |                              |               |  |
| 0947                                                                             |                                       |                                  |                              |                          |                    |             |                               |                                   |                            |                     |                         |                   |                              |               |  |
| 0950                                                                             |                                       |                                  |                              |                          |                    |             |                               |                                   |                            |                     |                         |                   |                              |               |  |
| 1011                                                                             |                                       | 379                              | 0                            |                          |                    |             |                               |                                   |                            |                     |                         |                   |                              |               |  |
| 1100                                                                             |                                       | 375                              | 0                            | 39                       |                    |             |                               |                                   |                            |                     |                         |                   |                              |               |  |
| 1200                                                                             | 1.0                                   | 370                              | 0                            | 39                       | 100                |             | 0.500                         | 364                               | 48                         | 39                  | 4.000                   |                   |                              | 4.0           |  |
| 1400                                                                             | 3.0                                   | 353                              | 0                            | 40                       |                    |             |                               | 344                               | 44                         | 36                  | 13.750                  |                   |                              | 13.750        |  |
| 1600                                                                             |                                       | 356                              | 0                            | 41                       |                    |             |                               | 346                               | 42                         | 39                  | 23.750                  |                   |                              | 23.750        |  |
| 1800                                                                             | 7.0                                   | 370                              | 0                            | 39                       | 100                |             | 0.500                         | 355                               | 36                         | 37                  | 33.000                  | 0                 |                              | 33.000        |  |
| 14.11.93                                                                         |                                       |                                  |                              |                          |                    |             |                               |                                   |                            |                     |                         |                   |                              |               |  |
| 0600                                                                             | 19.0                                  | 372                              | 0                            | 30                       | 100                |             | 0.500                         | 362                               | 36                         | 27                  | 93.375                  | 0                 |                              | 93.375        |  |
| 0800                                                                             |                                       | 370                              | 0                            | 28                       |                    |             |                               | 362                               | 34                         | 27                  | 103.375                 |                   |                              | 103.375       |  |
| 1000                                                                             |                                       | 371                              | 0                            | 35                       |                    |             |                               | 358                               | 32                         | 31                  | 115.000                 | 6.000             |                              | 109.000       |  |

CUSTOMER : Santos Petroleum Ltd.

WELL NAME: 3ly Lake 4.

TEST TYPE : LET / BHP

PERFORATIONS: 8858-8892 15 KB.

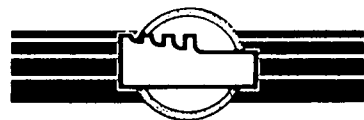
FORMATION : Patchawara

PAGE: 2 OF 2.

DATE: 14.11.93.

OPR : K. Comstock

[illegible]



## TEST RESULTS

CUSTOMER : Santos Petroleum Ltd.

PERFORATIONS: 8858-8892 1x KB.

PAGE: 1 OF 3

WELL NAME: Fly Lake 4.

FORMATION : Patchawana

DATE: 13.11.93.

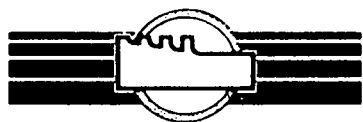
TEST TYPE : LET / BHP

OPR : K. Comstock

| TIME     |                              | WELLHEAD DATA         |                        |                    |              | SEPARATOR                                 |           | FLOW RATES                             |                       |                         | CUMULATIVE PRODUCTION               |                    |                      |                                                     |  |
|----------|------------------------------|-----------------------|------------------------|--------------------|--------------|-------------------------------------------|-----------|----------------------------------------|-----------------------|-------------------------|-------------------------------------|--------------------|----------------------|-----------------------------------------------------|--|
| DATE     | FLOW OR SHUT IN TIME (HOURS) | TUBING PRESSURE (KPa) | ANNULUS PRESSURE (KPa) | WELLHEAD TEMP (°C) | CHOKE SIZE % | PRESSURE (KPa)                            | TEMP (°C) | GAS m <sup>3</sup> /10 <sup>3</sup> /D | OIL m <sup>3</sup> /D | WATER m <sup>3</sup> /D | GAS m <sup>3</sup> /10 <sup>3</sup> | OIL m <sup>3</sup> | WATER m <sup>3</sup> | LGR. m <sup>3</sup> /10 <sup>3</sup> m <sup>3</sup> |  |
| 13.11.93 |                              |                       |                        |                    |              |                                           |           |                                        |                       |                         |                                     |                    |                      |                                                     |  |
| 1100     |                              | 2586                  | 0                      | 39                 | 100          | Direct flow thru separator / commence LET |           |                                        |                       |                         |                                     |                    |                      |                                                     |  |
| 1200     |                              | 2551                  | 0                      | 39                 |              | 2510                                      | 39        | 4.7229                                 | 0                     | 9.466                   | 0.1968                              |                    | 0.394                | 2.0                                                 |  |
| 1400     |                              | 2434                  | 0                      | 40                 |              | 2372                                      | 36        | 4.3702                                 | 0                     | 11.536                  | 0.5610                              |                    | 1.355                | 2.6                                                 |  |
| 1600     |                              | 2555                  | 0                      | 41                 |              | 2386                                      | 39        | 4.2712                                 | 0                     | 11.832                  | 0.5640                              |                    | 2.341                | 2.8                                                 |  |
| 1800     | 7.0                          | 2551                  | 0                      | 39                 | 100          | 2447                                      | 37        | 4.0304                                 | 0                     | 11.052                  | 0.8999                              |                    | 3.253                | 2.7                                                 |  |
| 14.11.93 |                              |                       |                        |                    |              |                                           |           |                                        |                       |                         |                                     |                    |                      |                                                     |  |
| 0600     | 19.0                         | 2565                  | 0                      | 30                 | 100          | 2496                                      | 27        | 4.1951                                 | 0                     | 11.906                  | 2.9974                              |                    | 9.206                | 2.8                                                 |  |
| 0800     |                              | 2551                  | 0                      | 28                 |              | 2496                                      | 27        | 4.0768                                 | 0                     | 11.832                  | 3.3371                              |                    | 10.192               | 2.9                                                 |  |
| 1000     |                              | 2558                  | 0                      | 35                 |              | 2468                                      | 31        | 3.8839                                 | 7.092                 | 6.660                   | 3.6608                              | 0.591              | 10.747               | 3.5                                                 |  |
| 1200     |                              | 2565                  | 0                      | 33                 |              | 2482                                      | 31        | 3.8967                                 | 0.888                 | 10.944                  | 3.9855                              | 0.665              | 11.659               | 3.0                                                 |  |
| 1400     |                              | 2592                  | 0                      | 38                 |              | 2537                                      | 37        | 3.8797                                 | 0.300                 | 10.944                  | 4.3088                              | 0.690              | 12.571               | 2.9                                                 |  |
| 1600     |                              | 2489                  | 0                      | 38                 |              | 2448                                      | 37        | 4.1410                                 | 4.440                 | 11.244                  | 4.6539                              | 1.060              | 13.508               | 3.8                                                 |  |
| 1800     | 31.0                         | 2441                  | 0                      | 37                 | 100          | 2379                                      | 37        | 4.6737                                 | 0.744                 | 9.468                   | 5.0434                              | 1.122              | 14.297               | 2.2                                                 |  |
|          |                              |                       |                        |                    |              | Bypass separator / end LET                |           |                                        |                       |                         |                                     |                    |                      |                                                     |  |
| 15.11.93 |                              |                       |                        |                    |              |                                           |           |                                        |                       |                         |                                     |                    |                      |                                                     |  |
| 0600     |                              | 2565                  | 0                      | 30                 | 100          |                                           |           |                                        |                       |                         |                                     |                    |                      |                                                     |  |
| 0800     |                              | 2537                  | 0                      | 30                 |              |                                           |           |                                        |                       |                         |                                     |                    |                      |                                                     |  |
|          |                              | (2539)                |                        |                    |              | Shut in well / begin BHPS buildup.        |           |                                        |                       |                         |                                     |                    |                      |                                                     |  |
| 0815     |                              | 3006                  | 0                      |                    |              |                                           |           |                                        |                       |                         |                                     |                    |                      |                                                     |  |
| 0830     |                              | 3799                  | 0                      |                    |              |                                           |           |                                        |                       |                         |                                     |                    |                      |                                                     |  |
| 0845     |                              | 4716                  | 0                      |                    |              |                                           |           |                                        |                       |                         |                                     |                    |                      |                                                     |  |

000244

## EXPERTEST PTY. LTD.



## TEST RESULTS

CUSTOMER : Santos Petroleum Ltd.

PERFORATIONS: 8858-8892 ft KB.

PAGE: 2 OF 3

WELL NAME: Sly Lake 4.

FORMATION : Patchawarra

DATE: 15.11.93

TEST TYPE : BHPS

OPR : K. Comstock

| TIME     |                              | WELLHEAD DATA         |                        |                       |            |                    |              | FLOW RATES                   |                           |                             | CUMULATIVE PRODUCTION       |                         |                           |  |  |
|----------|------------------------------|-----------------------|------------------------|-----------------------|------------|--------------------|--------------|------------------------------|---------------------------|-----------------------------|-----------------------------|-------------------------|---------------------------|--|--|
| DATE     | FLOW OR SHUT IN TIME (HOURS) | TUBING PRESSURE (KPa) | ANNULUS PRESSURE (KPa) | WELLHEAD TEMP (°F/°C) | CHOKE SIZE | PRESSURE (PSI/KPa) | TEMP (°F/°C) | GAS MMSCFD m <sup>3</sup> /D | OIL BPD m <sup>3</sup> /D | WATER BPD m <sup>3</sup> /D | GAS MMSCF m <sup>3</sup> /D | OIL BBLS m <sup>3</sup> | WATER BBLS m <sup>3</sup> |  |  |
| 15.11.93 |                              |                       |                        |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 0900     | 1.0                          | 5095                  | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 0915     |                              | 5426                  | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 0930     |                              | 5771                  | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 0945     |                              | 5978                  | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 1000     | 2.0                          | 6171                  | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 1015     |                              | 6288                  | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 1030     |                              | 6461                  | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 1045     |                              | 6661                  | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 1100     | 3.0                          | 6757                  | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 1115     |                              | 6929                  | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 1130     |                              | 7088                  | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 1145     |                              | 7198                  | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 1200     | 4.0                          | 7295                  | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 1600     | 8.0                          | 8777                  | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 16.11.93 |                              |                       |                        |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 0600     | 22.0                         | 11680                 | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 1000     |                              | 11687                 | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 1400     |                              | 11708                 | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 1800     | 34.0                         | 11797                 | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 17.11.93 |                              |                       |                        |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |
| 0600     | 46.0                         | 11866                 | 0                      |                       |            |                    |              |                              |                           |                             |                             |                         |                           |  |  |

000245

|      |         |
|------|---------|
| De 1 | PERFORA |
|------|---------|

WELL NAME: Fly Lake 4.

WELL HEAD DATA

FORMATION : Patchawarra

DATE: 17.11.93

|         |  |
|---------|--|
| DUCTION |  |
|---------|--|

[illegible]

## GAS FLOW CALCULATIONS

CUSTOMER : Santos Petroleum Ltd.

PERFORATIONS: 8858 - 8892 *12* KB.

PAGE: 1 OF 1

WELL NAME: July Lake 4.

FORMATION : Patchawarra

DATE: 13.11.93

TEST TYPE : LET / BHPS

OPR : K. Comstock

ORIFICE METER TYPE: Daniels Senior

STATIC PRESSURE RANGE : 0 - 500 PSIG

GAS SPECIFIC GRAVITY (SG) = 1.0535 .

METER RUN SIZE : 4.026

DIFFERENTIAL PRESS. RANGE: 0 - 200 IN WC

$$FG \sqrt{(I/SG)} = 0.9742.$$

SEPARATOR NO : 38

STANDARD CONDITIONS : 14.73 PSI @ 60°F

$$C_2 \quad (FU \times FG) = 23.3826.$$
[illegible]

000247



|           |               |
|-----------|---------------|
| erum Ltd. | PERFORATIONS: |
|-----------|---------------|

WELL NAME: Fly Lake 4

|     | UPPER<br>PRESSURE | LOWER<br>PRESSURE | TEMP |
|-----|-------------------|-------------------|------|
| 1   |                   |                   |      |
| 2   |                   |                   |      |
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| 100 |                   |                   |      |

FORMATION : Patchawarra

DATE: 14.11.93

|       |  |
|-------|--|
| OPR : |  |
|-------|--|

| GAUGE DATA                          |  |  |  | UPPER<br>PRESSURE<br>GAUGE | LOWER<br>PRESSURE<br>GAUGE | TEMPERATURE<br>GAUGE | RUN DATA                               |  | TIME<br>(HOURS) | TUBING<br>PRESSURE<br>(KPa) | ANNULUS<br>PRESSURE<br>(KPa) |
|-------------------------------------|--|--|--|----------------------------|----------------------------|----------------------|----------------------------------------|--|-----------------|-----------------------------|------------------------------|
| ELEMENT SERIAL NO.                  |  |  |  | 29321                      | 29323                      |                      | DATE : 14.11.93                        |  |                 |                             |                              |
| ELEMENT RANGE PSIG / PSIG           |  |  |  | 4000                       | 3950                       |                      | PRESSURE LUBRICATOR :                  |  | 1500            | 2580                        | 0                            |
| RECORDING SECTION SERIAL NO.        |  |  |  | 14631                      | 12963                      |                      | RUN IN HOLE :                          |  | 1700            | 2461                        | 0                            |
| DATE OF CALIBRATION:                |  |  |  | 25.06.93                   | 25.06.93                   |                      | ON DEPTH AT : 8830 FT:                 |  | 1721            | 2482                        | 0                            |
|                                     |  |  |  |                            |                            |                      |                                        |  |                 |                             |                              |
| CLOCK SERIAL NO.                    |  |  |  | F15295                     | F15683                     |                      | DATE :                                 |  |                 |                             |                              |
| CLOCK RANGE HRS / HRS               |  |  |  | 120                        | 120                        |                      | PULL OUT OF HOLE : 19.11.93            |  | 0800            | 12211                       | 0                            |
| LEAD SCREW TYPE                     |  |  |  | 15                         | 15                         |                      | AT SURFACE :                           |  | 0822            | 12218                       | 0                            |
|                                     |  |  |  |                            |                            |                      | DEPRESSURE LUBRICATOR :                |  | 1022            | 12218                       | 0                            |
| ENGAGE STYLUS DATE 14.11.93 TIME    |  |  |  | 1455                       | 1455                       |                      | MAXIMUM BHT AT 8830 FT. = 250 °F       |  |                 |                             |                              |
| DISENGAGE STYLUS DATE 19.11.93 TIME |  |  |  | 1054                       | 1054                       |                      | N.B. ALL DEPTHS ARE MEASURED FROM K.B. |  |                 |                             |                              |

[illegible]

000243

# SUB-SURFACE PRESSURE SURVEY

|               |   |                        |                                    |
|---------------|---|------------------------|------------------------------------|
| CO. SANTOS    |   | RUN 01 FIELD FLY LAKE  | WELL 4                             |
| EFF DEPTH     |   | WELL STAT              | TOOL HUNG 8830'KB <del>14/11</del> |
| CASING        | - | CASING PRESS           | ON BOTTOM 1721 <u>14/11</u>        |
| LINER         | - | TUBING PRESS           | OFF BOTTOM 0800 <u>19/11</u>       |
| DATE 931115   |   | ELEMENT RANGE 0 - 3989 | ZERO POINT                         |
| ELEVATION     |   | ZONE                   | SHUT-IN 0800 15/11                 |
| MAX TEMP 250  |   | PICK-UP                | ON-PROD                            |
| PERF          | - | CAL SER NO. 29323      | MPP                                |
| TUBING        | - |                        |                                    |
| UNITS ENGLISH |   | PURPOSE LET/BHP        |                                    |

## SURVEY DATA

| CO. SANTOS      |                   |                   |               | RUN 01 FIELD FLY LAKE |                   |                   |                 | WELL 4 |     |       |       |
|-----------------|-------------------|-------------------|---------------|-----------------------|-------------------|-------------------|-----------------|--------|-----|-------|-------|
| TIME            | P-T               | DP-DT             | DTIME         | TIME                  | P-T               | DP-DT             | DTIME           | TIME   | P-T | DP-DT | DTIME |
| <del>8:00</del> | <del>1552.0</del> | <del>1552.0</del> | <del>.0</del> | 16:08                 | 2496.8            | 2496.8            | 32.1            |        |     |       |       |
| 8:03            | 1572.4            | 1572.4            | .0            | 19:14                 | 2507.2            | 2507.2            | 35.2            |        |     |       |       |
| 8:07            | 1636.3            | 1636.3            | .1            | 22:54                 | 2518.7            | 2518.7            | 38.9            |        |     |       |       |
| 8:13            | 1700.3            | 1700.3            | .2            | 4:07                  | 2533.2            | 2533.2            | 44.1            |        |     |       |       |
| 8:19            | 1762.0            | 1762.0            | .3            | 9:14                  | 2544.4            | 2544.4            | 49.2            |        |     |       |       |
| 8:27            | 1833.8            | 1833.8            | .5            | 15:15                 | 2559.9            | 2559.9            | 55.2            |        |     |       |       |
| 8:36            | 1890.2            | 1890.2            | .6            | 20:44                 | 2571.7            | 2571.7            | 60.7            |        |     |       |       |
| 8:46            | 1942.4            | 1942.4            | .8            | 2:49                  | 2582.9            | 2582.9            | 66.8            |        |     |       |       |
| 9:00            | 1988.0            | 1988.0            | 1.0           | 9:59                  | 2594.1            | 2594.1            | 74.0            |        |     |       |       |
| 9:25            | 2048.1            | 2048.1            | 1.4           | 16:43                 | 2603.8            | 2603.8            | 80.7            |        |     |       |       |
| 9:47            | 2088.0            | 2088.0            | 1.8           | 23:53                 | 2613.8            | 2613.8            | 87.9            |        |     |       |       |
| 10:06           | 2113.6            | 2113.6            | 2.1           | 5:45                  | 2618.9            | 2618.9            | 93.8            |        |     |       |       |
| 10:27           | 2138.2            | 2138.2            | 2.5           | <del>8:00</del>       | <del>2620.7</del> | <del>2620.7</del> | <del>96.0</del> |        |     |       |       |
| 10:57           | 2164.5            | 2164.5            | 2.9           | - 2:38                | 1720.3            | 1720.3            | -10.6           |        |     |       |       |
| 11:45           | 2194.8            | 2194.8            | 3.8           | - 1:25                | 1507.8            | 1507.8            | -9.4            |        |     |       |       |
| 12:38           | 2221.2            | 2221.2            | 4.6           | - 0:50                | 1620.9            | 1620.9            | -8.8            |        |     |       |       |
| 14:01           | 2255.1            | 2255.1            | 6.0           | - 0:32                | 1508.8            | 1508.8            | -8.5            |        |     |       |       |
| 15:16           | 2281.5            | 2281.5            | 7.3           | 0:09                  | 1650.5            | 1650.5            | -7.8            |        |     |       |       |
| 16:52           | 2311.1            | 2311.1            | 8.9           | 0:29                  | 1523.8            | 1523.8            | -7.5            |        |     |       |       |
| 18:38           | 2337.1            | 2337.1            | 10.6          | 1:06                  | 1669.9            | 1669.9            | -6.9            |        |     |       |       |
| 20:07           | 2356.8            | 2356.8            | 12.1          | 1:27                  | 1527.0            | 1527.0            | -6.6            |        |     |       |       |
| 21:50           | 2377.6            | 2377.6            | 13.8          | 2:06                  | 1664.5            | 1664.5            | -5.9            |        |     |       |       |
| 22:49           | 2391.1            | 2391.1            | 14.8          | 2:25                  | 1518.9            | 1518.9            | -5.6            |        |     |       |       |
| 23:59           | 2419.8            | 2419.8            | 16.0          | 3:02                  | 1659.1            | 1659.1            | -5.0            |        |     |       |       |
| 1:47            | 2456.5            | 2456.5            | 17.8          | 3:20                  | 1519.8            | 1519.8            | -4.7            |        |     |       |       |
| 3:54            | 2476.0            | 2476.0            | 19.9          | 3:59                  | 1657.7            | 1657.7            | -4.0            |        |     |       |       |
| 5:43            | 2480.4            | 2480.4            | 21.7          | 4:24                  | 1524.3            | 1524.3            | -3.6            |        |     |       |       |
| 8:08            | 2484.8            | 2484.8            | 24.1          | 4:58                  | 1659.7            | 1659.7            | -3.0            |        |     |       |       |
| 11:13           | 2483.5            | 2483.5            | 27.2          | 5:21                  | 1522.7            | 1522.7            | -2.6            |        |     |       |       |
| 13:22           | 2482.8            | 2482.8            | 29.4          | 5:58                  | 1650.7            | 1650.7            | -2.0            |        |     |       |       |

092000

SURVEY DATA

| CO. SANTOS |        |        |       | RUN 01 FIELD FLY LAKE |        | WELL 4 |       |
|------------|--------|--------|-------|-----------------------|--------|--------|-------|
| TIME       | P-T    | DP-DT  | DTIME | TIME                  | P-T    | DP-DT  | DTIME |
| 6:17       | 1519.3 | 1519.3 | -1.7  | 7:12                  | 1519.3 | 1519.3 | -.8   |
| 6:53       | 1650.3 | 1650.3 | -1.1  | 0:00                  | .0     | .0     | .0    |

LUBRICATOR: D.W.T.; IN:374 psi / OUT: 1772 psi  
 AMERADA ; IN:366 psi / OUT: 1767 psi

ELEMENT #29321 WAS ALSO RUN.

NOTE: Flow prior to shut-in was not steady but tended to be cyclic in nature.

CUMULATIVE TOTAL BEFORE S/I = 174.7 E6m<sup>3</sup>

WELL S/I @ 0800 HRS ON 15/11/93.

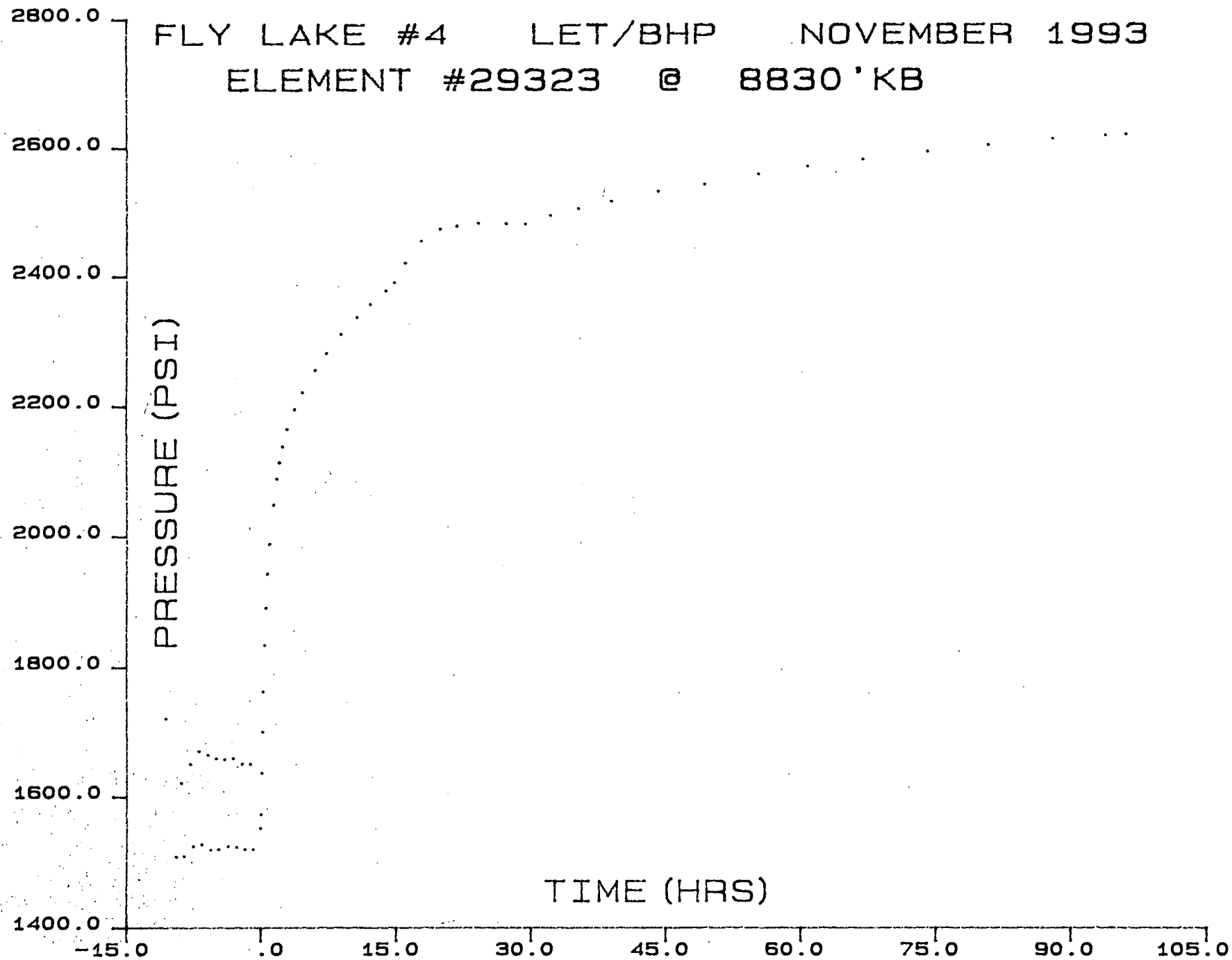
WELL ON LINE FOR 14.333' DAYS IN NOVEMBER BEFORE S/I.

OCTOBER MEAN GAS DAILY :  $5.9 \text{ E3m}^3/\text{d} = 0.0059 \text{ E6m}^3/\text{d}$   
 OCTOBER CUMULATIVE TOTAL : 174.6 E6m<sup>3</sup>

NOVEMBER CUMULATIVE TOTAL BEFORE S/I  
 = 174.6 + (14.333' x 0.0059)  
 = 174.7 E6m<sup>3</sup>

NOTE: ASSUMES OCTOBER AND NOVEMBER RATES WERE EQUIVALENT.

FLY LAKE #4 LET/BHP NOVEMBER 1993  
ELEMENT #29323 @ 8830'KB



000252

### BHP/BHT GAUGE RUN DATA

CUSTOMER : *Santos Petroleum Ltd.*

PERFORATIONS: 8858-8892 \* KB.

PAGE: 2 OF 2.

WELL NAME: Fly Lake. 4.

FORMATION : Patchawanna

DATE: 19.11.93

TEST TYPE : LET / BHPS

OPR : K. Comstock

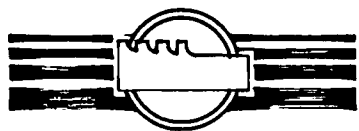
| GAUGE DATA                   |                    | UPPER<br>PRESSURE<br>GAUGE | LOWER<br>PRESSURE<br>GAUGE | TEMPERATURE<br>GAUGE | RUN DATA                               | TIME<br>(HOURS) | TUBING<br>PRESSURE<br>/KPa) | ANNULUS<br>PRESSURE<br>/KPa) |
|------------------------------|--------------------|----------------------------|----------------------------|----------------------|----------------------------------------|-----------------|-----------------------------|------------------------------|
| ELEMENT SERIAL NO.           |                    | 29321                      | 29323                      |                      | DATE : 19.11.93                        |                 |                             |                              |
| ELEMENT RANGE PSIG.          |                    | 4000                       | 3950                       |                      | PRESSURE LUBRICATOR :                  | 1113            | 12190                       | 0                            |
| RECORDING SECTION SERIAL NO. |                    | 14631                      | 12963                      |                      | RUN IN HOLE :                          | 1133            | 12190                       | 0                            |
| DATE OF CALIBRATION:         |                    | 25.06.93                   | 25.06.93                   |                      | ON DEPTH AT : 8875 FT/                 | 1313            | 12190                       | 0                            |
|                              |                    |                            |                            |                      |                                        |                 |                             |                              |
| CLOCK SERIAL NO.             |                    | A 12047                    | A 16080                    |                      | DATE : 19.11.93                        |                 |                             |                              |
| CLOCK RANGE HRS.             |                    | 3                          | 3                          |                      | PULL OUT OF HOLE :                     | 1328            | 12190                       | 0                            |
| LEAD SCREW TYPE TLS          |                    | 15                         | 15                         |                      | AT SURFACE :                           | 1353            | 12190                       | 0                            |
|                              |                    |                            |                            |                      | DEPRESSURE LUBRICATOR :                | 1413            | 12190                       | 0                            |
| ENGAGE STYLUS                | DATE 19.11.93 TIME | 1058                       | 1058                       |                      | MAXIMUM BHT AT 8875 FT/M = 250 °F/     |                 |                             |                              |
| DISENGAGE STYLUS             | DATE 19.11.93 TIME | 1418                       | 1418                       |                      | N.B. ALL DEPTHS ARE MEASURED FROM K.B. |                 |                             |                              |

[illegible]

000253

EXPERTEST PTY. LTD.

## STATIC PRESSURE GRADIENT SURVEY



Location: FLY LAKE 4

Tested: 19th November 1993.

Formation: PATCHAWARRA

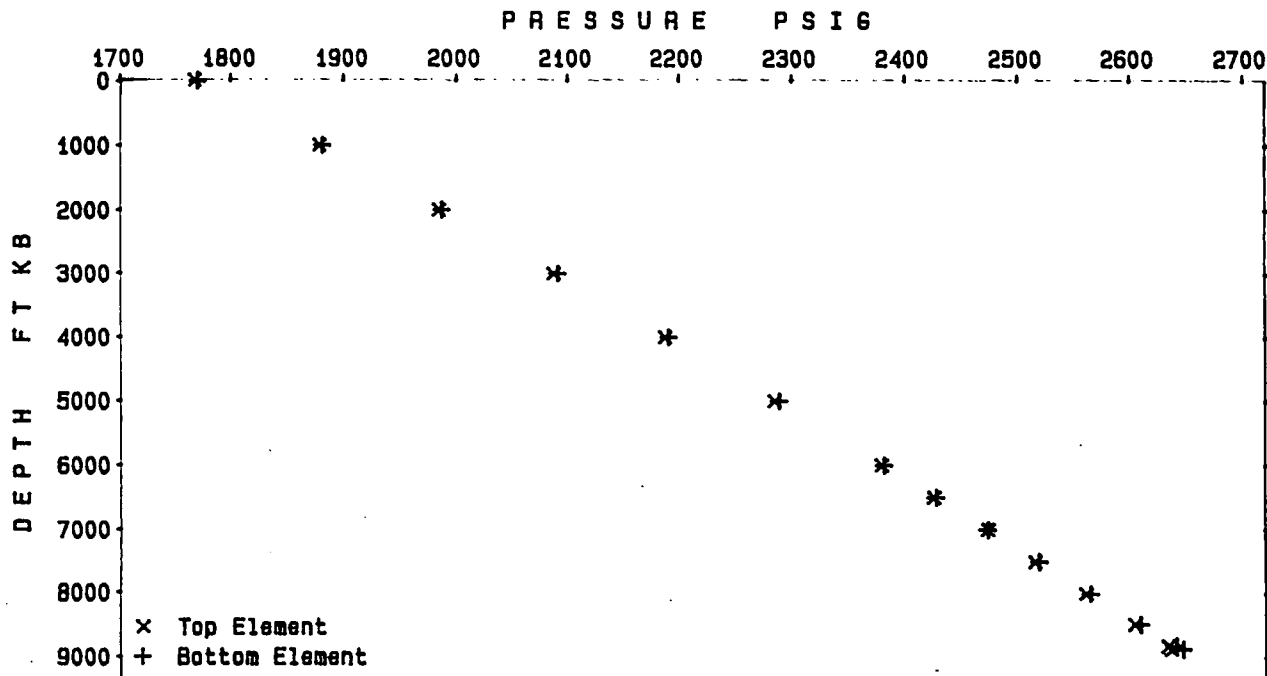
Client: SANTOS LTD.

## PRESSURE ELEMENT DATA

| Position | Serial No | Range | Calibrated |
|----------|-----------|-------|------------|
| Top      | 29321     | 4000  | 25/ 6/93   |
| Bottom   | 29323     | 3950  | 25/ 6/93   |

## WELL DATA

|         |           |
|---------|-----------|
| DWT In  | 1768 PSIG |
| DWT Out | 1768 PSIG |
| Max BHT | 250       |



## TOP ELEMENT

## BOTTOM ELEMENT

| Depth<br>FT KB | Deflection<br>Inches | Pressure<br>PSIG | Gradient<br>PSI/FT | Deflection<br>Inches | Pressure<br>PSIG | Gradient<br>PSI/FT |
|----------------|----------------------|------------------|--------------------|----------------------|------------------|--------------------|
| LUB.           | 0.8810               | 1767.4           | -                  | 0.8915               | 1770.6           | -                  |
| 1000           | 0.9360               | 1878.5           | 0.111              | 0.9470               | 1881.5           | 0.111              |
| 2000           | 0.9885               | 1984.5           | 0.106              | 1.0000               | 1987.4           | 0.106              |
| 3000           | 1.0395               | 2087.5           | 0.103              | 1.0520               | 2091.4           | 0.104              |
| 4000           | 1.0890               | 2187.6           | 0.100              | 1.1020               | 2191.3           | 0.100              |
| 5000           | 1.1370               | 2284.6           | 0.097              | 1.1510               | 2289.3           | 0.098              |
| 6000           | 1.1840               | 2379.6           | 0.095              | 1.1975               | 2382.2           | 0.093              |
| 6500           | 1.2070               | 2426.1           | 0.093              | 1.2205               | 2428.2           | 0.092              |
| 7000           | 1.2305               | 2473.7           | 0.095              | 1.2435               | 2474.2           | 0.092              |
| 7500           | 1.2510               | 2515.1           | 0.083              | 1.2660               | 2519.2           | 0.090              |
| 8000           | 1.2735               | 2560.6           | 0.091              | 1.2890               | 2565.2           | 0.092              |
| 8500           | 1.2950               | 2604.1           | 0.087              | 1.3115               | 2610.1           | 0.090              |
| 8830           | 1.3095               | 2633.5           | 0.089              | 1.3270               | 2641.1           | 0.094              |
| 8875           | 1.3110               | 2636.5           | 0.067              | 1.3300               | 2647.1           | 0.133              |
| LUB.           | 0.8870               | 1779.5           | -                  | 0.8935               | 1774.6           | -                  |

## GENERAL REMARKS