

APPENDIX - F  
NPD STANDARDS DATA

**SR-1 DATA**

**TOC & PYROLYSIS DATA  
STANDARD DATA**

| Sample Code           | SAMPLE | PICKED LITHOLOGY | S1<br>(kg/t) | S1<br>(mg/gC) | S2<br>(kg/t) | TOC<br>(%) | TMAX<br>deg C | HI  | PP<br>S1+S2 | PI<br>S1/(S1+S2) | GOGI | CARBT<br>(%) | S<br>(%) |
|-----------------------|--------|------------------|--------------|---------------|--------------|------------|---------------|-----|-------------|------------------|------|--------------|----------|
| 9907SED009S004        | SR-1   | Mudstone         | 1.33         | 61.37         | 5.65         | 2.17       | 434           | 261 | 6.99        | 0.19             | 0.27 | 16.7         | 1.23     |
| 9907SED009S004 Repeat | SR-1   | Mudstone         | 1.22         |               | 5.49         |            | 436           |     | 6.71        | 0.18             |      |              |          |
| 9907SED009S004 Repeat | SR-1   | Mudstone         | 1.17         |               | 5.98         |            | 438           |     | 7.15        | 0.16             |      |              |          |
| 9907SED009S004 Repeat | SR-1   | Mudstone         | 1.30         |               | 5.08         |            | 435           |     | 6.38        | 0.20             |      |              |          |
| 9907SED009S004 Repeat | SR-1   | Mudstone         | 1.35         |               | 5.81         |            | 437           |     | 7.16        | 0.19             |      |              |          |
| 9907SED009S004 Repeat | SR-1   | Mudstone         | 1.24         |               | 5.36         |            | 433           |     | 6.60        | 0.19             |      |              |          |
| 9907SED009S004 Repeat | SR-1   | Mudstone         | 1.39         |               | 5.00         |            | 436           |     | 6.40        | 0.22             |      |              |          |
| 9907SED009S004 Repeat | SR-1   | Mudstone         | 1.16         |               | 5.68         |            | 432           |     | 6.84        | 0.17             |      |              |          |
| 9907SED009S004 Repeat | SR-1   | Mudstone         | 1.09         |               | 5.10         |            | 436           |     | 6.18        | 0.18             |      |              |          |

**PYROLYSIS-GC DATA  
STANDARD DATA**

| SAMPLE<br>NUMBER | SAMPLE | C1-C2<br>% | C3-C5<br>% | C6-C14<br>% | C15+<br>% | GOGI | PICKED<br>LITHOLOGY | SAMPLE TYPE |
|------------------|--------|------------|------------|-------------|-----------|------|---------------------|-------------|
| 9907SED009S004   | SR-1   | 9          | 12.3       | 45.4        | 33.3      |      | Mudstone            | CUTTINGS    |

**BULK COMPOSITION OF EXTRACTS  
STANDARD DATA**

| Sample code    | SAMPLE | Wt Ext<br>(g) | EOM<br>(mg) | TSE<br>%wt | Saturates<br>%wt | Aromatics<br>%wt | Residue<br>%wt | Asph<br>%wt | HC<br>%wt | NonHC<br>%wt |
|----------------|--------|---------------|-------------|------------|------------------|------------------|----------------|-------------|-----------|--------------|
| 9907SED009S004 | SR-1   | 0.02999       | 29.99       | 0.516      | 38.85            | 23.4             | 36.84          | 0.91        | 62.3      | 36.8         |

EXTRACTION DATA 1  
STANDARD DATA

| Sample code    | SAMPLE | Rock<br>(g) | EOM<br>(mg) | EOM<br>(mg/Kg rock) | Sat/EOM<br>% | Aro/EOM<br>% | Pol/EOM<br>% | Asph/EOM<br>% | HC/EOM<br>% | NON HC/EOM<br>% |
|----------------|--------|-------------|-------------|---------------------|--------------|--------------|--------------|---------------|-------------|-----------------|
| 9907SED009S004 | SR-1   | 5.812       | 29.99       | 5160                | 38.85        | 23.4         | 36.84        | 0.91          | 62.3        | 36.8            |

EXTRACTION DATA 2  
STANDARD DATA

| Sample code    | SAMPLE | Rock<br>(g) | TOC<br>% | EOM/TOC<br>(mg/g TOC) | Sat<br>(mg/g TOC) | Aro<br>(mg/g TOC) | Pol<br>(mg/g TOC) | Asph<br>(mg/g TOC) | 100*Sat/Aro<br>% | 100*HC/NON HC<br>% |
|----------------|--------|-------------|----------|-----------------------|-------------------|-------------------|-------------------|--------------------|------------------|--------------------|
| 9907SED009S004 | SR-1   | 5.812       | 2.17     | 2.38                  | 3.08              | 1.86              | 2.92              | 0.07               | 166              | 169                |

## SATURATE GC

SR-1 STANDARD DATA 9907SED009S004

| Saturates Fraction GC Analysis<br>Component | Area<br>[ $\mu$ V·s] |
|---|----------------------|
| N-C12                                       | 0                    |
| N-C13                                       | 7197.7               |
| N-C14                                       | 40635.33             |
| N-C15                                       | 85588.94             |
| N-C16                                       | 86301.08             |
| N-C17                                       | 91312.3              |
| PRISTANE                                    | 192376.9             |
| N-C18                                       | 85568.8              |
| PHYTANE                                     | 126122.37            |
| N-C19                                       | 124565.2             |
| N-C20                                       | 89698.1              |
| N-C21                                       | 74680.4              |
| N-C22                                       | 76715.4              |
| N-C23                                       | 59515.4              |
| N-C24                                       | 47573.7              |
| N-C25                                       | 41958.03             |
| N-C26                                       | 40521.33             |
| N-C27                                       | 28589                |
| N-C28                                       | 31639.9              |
| N-C29                                       | 26150.4              |
| N-C30                                       | 15338.8              |
| N-C31                                       | 13196.8              |
| N-C32                                       | 9535.8               |
| N-C33                                       | 10390.6              |
| N-C34                                       | 7522.15              |
| N-C35                                       | 3504.39              |
| N-C36                                       | 3716.53              |
| TOTAL                                       | 1419915.34           |

|  |                |
|--|----------------|
| Batch Code                                 | 9907SED009S004 |
| CPI (24 to 32)                             | 0.97           |
| Pr/Ph Ratio                                | 1.53           |
| Pr/n-C17                                   | 2.11           |
| Ph/n-C18                                   | 1.47           |
| Alkane Index (C17/(C17+C27))%              | 76.16          |
| R22 Index $2 \cdot C_{22}/(C_{21}+C_{23})$ | 1.14           |
| (Pr/n-C17)/(Ph/n-C18)                      | 1.43           |

Note: -1 denotes not calculated

Software Version: 4.1<0G07>  
 Date: 14/09/99 16:02  
 Sample Name: 9907SED009S004 SR-1 (Norwegian Std)  
 Data File: C:\\_DATA\B9907009\ARO004B.RAW Date: 14/09/99 15:06  
 Sequence File: C:\\_DATA\B9907008\VARO.SEQ Cycle: 10 Channel:  
 Instrument: SAC\_GC Rack/Vial: 0  
 Sample Amount: 1 Dilution Factor 1

**Aromatics GC**

| Component Name       | Time [min] | Area [ $\mu$ V·s] | Area [%] |
|----------------------|------------|-------------------|----------|
| 1-ME NAPTHALENE      | 9.285      | 15658.1           | 0.87     |
| 2-ME NAPTHALENE      | 9.507      | 20656.5           | 1.14     |
|                      | 10.725     | 18012.2           | 1        |
|                      | 10.906     | 36471.5           | 2.02     |
| 2,6+2,7-DIMETHYLNAPT | 10.978     | 31951.4           | 1.77     |
| 1,3+1,7-DIMETHYLNAPT | 11.082     | 47908.29          | 2.65     |
| 1,6-DIMETHYLNAPTHALE | 11.129     | 54286.11          | 3.01     |
| 1,5+1,5+2,3-DIMETHYL | 11.351     | 39113.5           | 2.17     |
| 1,2-DIMETHYLNAPTHALE | 11.536     | 9119.8            | 0.5      |
|                      | 11.807     | 6371.1            | 0.35     |
|                      | 11.923     | 20752.14          | 1.15     |
|                      | 12.027     | 13449.46          | 0.74     |
|                      | 12.168     | 5091.57           | 0.28     |
|                      | 12.252     | 20838.23          | 1.15     |
|                      | 12.311     | 6834.6            | 0.38     |
|                      | 12.462     | 13088.51          | 0.72     |
|                      | 12.534     | 35184.83          | 1.95     |
|                      | 12.604     | 42927.25          | 2.38     |
|                      | 12.795     | 51013.76          | 2.82     |
|                      | 12.848     | 29328.23          | 1.62     |
|                      | 13.024     | 69673.22          | 3.86     |
|                      | 13.209     | 21700.11          | 1.2      |
|                      | 13.295     | 46729.09          | 2.59     |
|                      | 13.477     | 35728.1           | 1.98     |
|                      | 13.606     | 2408.65           | 0.13     |
|                      | 13.647     | 7349.45           | 0.41     |
|                      | 13.849     | 19368.5           | 1.07     |
|                      | 14.093     | 19388.8           | 1.07     |
|                      | 14.368     | 25998.45          | 1.44     |
|                      | 14.461     | 21621.76          | 1.2      |
|                      | 14.546     | 22369.04          | 1.24     |
|                      | 14.594     | 14895.55          | 0.82     |
|                      | 14.689     | 18937.51          | 1.05     |
|                      | 14.797     | 36535.91          | 2.02     |
|                      | 14.909     | 33317.88          | 1.84     |
|                      | 14.99      | 4922              | 0.27     |
|                      | 15.129     | 5698.3            | 0.32     |
|                      | 15.233     | 12430.9           | 0.69     |
|                      | 15.299     | 7184.4            | 0.4      |
| PHENANTHRENE         | 15.496     | 59815.6           | 3.31     |
|                      | 15.751     | 10615.8           | 0.59     |
|                      | 15.954     | 19493             | 1.08     |
|                      | 16.351     | 29155.4           | 1.61     |
|                      | 16.566     | 13437.4           | 0.74     |
| 3-ME PHENANTHRENE    | 16.805     | 43797.13          | 2.42     |
| 2-ME PHENANTHRENE    | 16.859     | 33920.47          | 1.88     |

|                   |        |            |      |
|-------------------|--------|------------|------|
| 9-ME PHENANTHRENE | 17.06  | 42393.98   | 2.35 |
| 1-ME PHENANTHRENE | 17.114 | 46614.22   | 2.58 |
|                   | 17.361 | 39549.7    | 2.19 |
|                   | 17.458 | 16281.1    | 0.9  |
|                   | 17.678 | 7219.8     | 0.4  |
|                   | 17.956 | 16448.65   | 0.91 |
|                   | 18.004 | 18289.84   | 1.01 |
|                   | 18.092 | 17902.81   | 0.99 |
|                   | 18.222 | 6390.1     | 0.35 |
|                   | 18.284 | 61048.24   | 3.38 |
|                   | 18.344 | 23494.47   | 1.3  |
|                   | 18.394 | 36228.5    | 2.01 |
|                   | 18.502 | 29286.29   | 1.62 |
|                   | 18.584 | 3961.68    | 0.22 |
|                   | 18.634 | 17544.92   | 0.97 |
|                   | 18.79  | 13442.8    | 0.74 |
|                   | 18.935 | 6319.6     | 0.35 |
|                   | 18.998 | 8591.7     | 0.48 |
|                   | 19.4   | 20951.23   | 1.16 |
|                   | 19.497 | 23622.27   | 1.31 |
|                   | 19.652 | 15369.4    | 0.85 |
|                   | 19.729 | 3774.2     | 0.21 |
|                   | 19.978 | 11233.1    | 0.62 |
|                   | 20.107 | 9830.73    | 0.54 |
|                   | 20.231 | 49542.07   | 2.74 |
|                   | 20.418 | 5413.8     | 0.3  |
|                   | 20.499 | 7133.2     | 0.39 |
|                   | 20.918 | 9640.4     | 0.53 |
|                   | 21.68  | 18253.8    | 1.01 |
|                   | 22.019 | 12880      | 0.71 |
|                   | 22.148 | 13237.2    | 0.73 |
|                   | 22.842 | 15720.8    | 0.87 |
|                   | 23.109 | 10013.36   | 0.55 |
|                   | 23.171 | 13576.64   | 0.75 |
|                   | 33.774 | 587.82     | 0.03 |
|                   |        | 1806337.92 | 100  |

Missing Component Report  
Component

"Expected Retention (Calibration File)"

All components were found

## GC-MS PEAK HEIGHT DATA

| PEAK HEIGHTS                | SR-1     |
|-----------------------------|----------|
| PRISTANE                    | 76373200 |
| PHYTANE                     | 70124904 |
| C19 TRICYCLIC TERPANE(19/3) | 741666   |
| C20 TRICYCLIC TERPANE(20/3) | 1728730  |
| C21 TRICYCLIC TERPANE(21/3) | 3917230  |
| C22 TRICYCLIC TERPANE(22/3) | 800555   |
| C23 TRICYC TERPANE(T5:23/3) | 9281260  |
| C24 TRICYC TERPANE (24/3)   | 6367480  |
| C25 TRICYC TERPANE (25/3)   | 3749870  |
| C24 TETRACYC TERP (S:24/4)  | 1393110  |
| C26 TRICYCLIC TERPANE(26/3) | 2605230  |
| C26 TRICYCLIC TERP 2 (26/3) | 2548620  |
| C28 TRICYCLIC TERPANE(28/3) | 3957990  |
| C28 TRICYCLIC TERP 2 (28/3) | 4097100  |
| C29 TRICYCLIC TERPANE(29/3) | 5628830  |
| C29 TRICYCLIC TERP 2 (29/3) | 4899620  |
| C27 18A HOPANE (Ts:27Ts)    | 6486050  |
| C27 17A HOPANE (Tm:27Tm)    | 4232460  |
| C30 TRICYCLIC TERPANE(30/3) | 3263570  |
| C30 TRICYCLIC TERP 2 (30/3) | 2753940  |
| 25-TRISNORm/z177(25nor28ab) | 714068   |
| C28 BISNORHOPANE (X:28ab)   | 0        |
| 25-NOR m/z177 (Y:25nor30ab) | 473197   |
| 25-NORHOPANE (Y:25nor30ab)  | 0        |
| C29 HOPANE (D:29ab)         | 12459100 |
| C29 18A NORHOPANE (D2:29Ts) | 9360660  |
| C30 C30 DIAHOPANE (Pi:30d)  | 5993820  |
| C29 NORMORETANE (A:29ba)    | 1367290  |
| C30 18A OLEANANE (B:30O)    | 0        |
| C30 HOPANE (G:30ab)         | 42681100 |
| NOR-GAMMACERANE? (G2)       | 3664470  |
| C30 MORETANE (K:30ba)       | 5000080  |
| C31 22S HOPANE (N:31abS)    | 14269400 |
| C31 22R HOPANE (O:31abR)    | 11009400 |
| C31 22S M/Z205 (N205)       | 4875730  |
| C31 22R M/Z205 (O205)       | 5544350  |
| C30 GAMACERANE (S:30G)      | 0        |
| C30 17B 21B HOPANE (P)      | 1074490  |
| C32 22S HOPANE (U:32abS)    | 11266100 |
| C32 22R HOPANE (V:32abR)    | 7138580  |
| C33 22S HOPANE(Alpha:33abS) | 10296200 |
| C33 22R HOPANE (Beta:33abR) | 7581720  |
| C34 22S HOPANE(Gamma:34abS) | 6430420  |
| C34 22R HOPANE(Delta:34abR) | 4001950  |
| C35 22S HOP (Epsilon:35abS) | 3943550  |
| C35 22R HOP (Zeta:35abR)    | 2274370  |
| C21 STERANE                 | 1690570  |
| C27 20S DIASTER (10:27dbS)  | 6252780  |
| C27 20R DIASTER (11:27dbR)  | 4090410  |
| C27 20S AAA STER (20:27aaS) | 1867380  |
| C29 20S DIASTER (21A:29dbS) | 7675460  |
| C27 20R ISOST218(21B:27bbR) | 3036120  |
| C27 20S ISOST218 (22:27bbS) | 2153920  |
| C27 20R ISOSTER 217 (27bbR) | 7675460  |
| C27 20S ISOSTER 217 (27bbS) | 2176330  |
| C27 20R AAA STER (25:27aaR) | 1738960  |
| C29 20R DIASTER (27:29dbR)  | 4748080  |
| C28 20R ISOST218(33A:28bbR) | 1870550  |
| C28 20S ISOST218 (34:28bbS) | 1708900  |
| C28 20R ISOSTER 217 (28bbR) | 3452120  |
| C28 20S ISOSTER 217 (28bbS) | 1567890  |
| C28 20R AAA STER (36:28aaR) | 459649   |
| C29 20S AAA STER (39:29aaS) | 2014170  |
| C29 20R ISOST218 (40:29bbR) | 3215880  |
| C29 20S ISOST218 (41:29bbS) | 3125620  |
| C29 20R ISOSTER217 (29bbR)  | 2974610  |
| C29 20S ISOSTER217 (29bbS)  | 2731710  |
| C29 20R AAA STER (42:29aaR) | 1468420  |
| C30 20R ISOSTER218 (30bbR)  | 590455   |
| C30 20S ISOSTER218 (30bbS)  | 590512   |
| C30 4-METHYL STERANE (46)   | 482405   |

## GC-MS PEAK HEIGHT DATA

| PEAK HEIGHTS                | SR-1      |
|-----------------------------|-----------|
| 2-ME NAPHTHALENE            | 207747008 |
| 1-ME NAPHTHALENE            | 234161008 |
| 2-ME BIPHENYL               | 6579220   |
| 3-ME BIPHENYL               | 23548600  |
| 4-ME BIPHENYL               | 6527520   |
| PHENANTHRENE                | 158231008 |
| 3-ME PHENANTHRENE           | 75559800  |
| 2-ME PHENANTHRENE           | 56592200  |
| 9-ME PHENANTHRENE           | 134560000 |
| 1-ME PHENANTHRENE           | 115255000 |
| DIBENZOTHIOPHENE            | 26127200  |
| 4-ME DIBENZOTHIOPHENE       | 56107800  |
| 3+2-ME DIBENZOTHIOPHENE     | 17030200  |
| 1-ME DIBENZOTHIOPHENE       | 17457200  |
| C21 MA STERANE (F22:A1)     | 1116710   |
| C22 MA STERANE (F23:B1)     | 739245    |
| C27 20S 5B DM MA-ST(F2:C1)  | 203553    |
| C27 20S 10B DM MA-DIA (C1)  | 1628850   |
| C27 20R 5B DM MA-ST(F3:D1)  | 1316130   |
| C27 20S 5A DM MA-ST(F4:D1)  | 247742    |
| C28 20S 5B DM MA-ST(F5:E1)  | 1705620   |
| C27 20S 5A DM MA-DS( :F1)   | 392186    |
| C27 20R 5A DM MA-ST(F6:G1)+ | 290480    |
| C28 20S 5A DM MA-ST(F7:G1)  | 290480    |
| C28 20R 5B DM MA-ST(F8:G1)  | 3486570   |
| C29 20S 5B DM MA-ST(F9:G1)  | 0         |
| C29 20S 5A DM MA-ST(F10:H1) | 279397    |
| C28 20R 5A DM MA-ST(F11:H1) | 2329460   |
| C29 20R 5B DM MA-ST(F12:H1) | 0         |
| C29 20R 5A DM MA-ST(F13:I1) | 367247    |
| C20 ME TA-STER(F14:a1)      | 7379320   |
| C21 ME TA-STER(F15:b1)      | 5581080   |
| C26 20S ME TA-STER(F16:c1)  | 3705430   |
| C26 20R ME TA-STER(F17:d1)+ | 9379060   |
| C27 20S ME TA-STER(F18:d1)  | 9379060   |
| C28 20S ME TA-STER(F19:e1)  | 12318700  |
| C27 20R ME TA-STER(F20:f1)  | 3995890   |
| C28 20R ME TA-STER(F21:g1)  | 11425200  |
| ?C21 20S DIASTER            | 1710200   |
| ?C21 20R DIASTER            | 852728    |
| ?C21 AAA+ABB                | 1690570   |
| ?C22 DIASTER                | 0         |
| ?C22 AAA+ABB                | 673989    |

## GC-MS BIOMARKER PARAMETERS

| HSRUN  | SR-1<br>MPDMIO00855201                                     |
|--------|--|
| H1     | C32 HOPANES 22S/(22S+22R) 0.61                             |
| H2     | C31 HOPANES 22S/(22S+22R) M/Z205 0.47                      |
| H3     | C30: HOPANE/(HOPANE+MORETANE) 0.9                          |
| H4     | C30: BB HOPANE / C30 HOPANE AS %                           |
| H5_0   | C29 HOPANE AS % C30 29.19                                  |
| H5_1   | HOPANE DISTRIBUTION RELATIVE TO C30 100                    |
| H5_2   | C31 HOPANES AS % OF C30 (205 CORRECTED) 71.45              |
| H5_3   | C32 HOPANES 43.12  |
| H5_4   | C33 HOPANES 41.89  |
| H5_5   | C34 HOPANES 24.44  |
| H5_6   | C35 HOPANES 14.57  |
| H6     | C27 HOPANES TS/(TS+TM) 0.61                                |
| H7     | C33 HOPANES 22S/(22S+22R) 0.58                             |
| H11    | C23 TRICYCLIC/C30 HOPANE AS % 21.75                        |
| H12    | C24 TETRACYCLIC/C30 HOPANE AS % 3.26                       |
| H13    | 28 30 BISNORHOPANE/HOPANE AS %                             |
| H14    | C30 DIAHOPANE PI/HOPANE AS % 14.04                         |
| H15    | OLEANANE/HOPANE AS %                                       |
| H16    | GAMMACERANE/HOPANE AS % (205 BACK CALCULATED)              |
| H17    | HOPANE INDEX C35/(C35+C34) % 37.34                         |
| H18    | 25-NORHOPANE(Y)/HOPANE AS % G                              |
| H19    | C29 18A-NORHOPANE D2/C30 HOPANE AS % 21.93                 |
| S1     | C29 STERANES 20S/(20S+20R) 0.58                            |
| S2     | C29 STERANES m/z218 ABB/(ABB+AAA) 0.65                     |
| S3_1   | STERANE DISTRIBUTION AAA C27 % 47.42                       |
| S3_2   | C28 % 12.53  |
| S3_3   | C29 % 40.04  |
| S4_1   | STERANE DISTRIBUTION ABB C27 % 34.35                       |
| S4_2   | C28 % 23.69  |
| S4_3   | C29 % 41.97  |
| S5     | BA DIASTERANES/(BA DIASTERANES+AAA+ABB STERANES) 47.06     |
| S7     | STERANE INDEX C27/(C27+C29) % FROM S3 54.22                |
| S8     | C30 4-ME STERANE AS % OF C29 20R AAA 32.85                 |
| M4     | SUM C27 TO C35 HOPANES/(SAME+C27 TO C29 STERANES) 70.02    |
| PR/PH  | PRISTANE/PHYTANE RATIO ESTIMATE 1.63                       |
| M2     | PHENANTHRENES (3ME+2ME) / (9ME+1ME) 0.6                    |
| M3     | MPI1 PHENANTHRENES (3ME+2ME) / (9ME+1ME+PHEN) * 1.5 0.62   |
| A1     | ARO STERANES: C28 20R TRI/(SAME+C29 20R 5A&B MONO) 12 0.82 |
| A2     | ARO STERANES: SUM TRI/(SAME+SUM MONO)(F9&F12split) 0.8     |
| A3     | TRI ARO STERANES: C20/(C20+C28 20R) 0.39                   |
| A4     | TRI ARO STERANES: (C20+C21)/(SAME+SUM C26 TO C28) 0.24     |
| A5     | TRI ARO STERANES: C26 20S / C28 20S 0.3                    |
| A6     | TRI ARO STERANES: C27 20R / C28 20R 0.35                   |
| MDR    | 4-ME DIBENZOTHIOPHENE / 1-ME DIBENZOTHIOPHENE 3.21         |
| MBP    | 3-METHYLBIPHENYL / 2-METHYLBIPHENYL 3.58                   |
| MNR    | 2-ME NAPHTHALENE/1-ME NAPHTHALENE 0.89                     |
| SMN    | (2-ME NAPTH+1-ME NAPTH)/C23 TRICYCLIC                      |
| DBTP   | DIBENZOTHIOPHENE(MZ184)/PHENANTHRENE(MZ178) 0.17           |
| T19    | C19 TRICYCLIC/C23 TRICYCLIC % 7.99                         |
| T20    | C20 TRICYCLIC/C23 TRICYCLIC % 18.63                        |
| T21    | C21 TRICYCLIC/C23 TRICYCLIC % 42.21                        |
| T22    | C22 TRICYCLIC/C23 TRICYCLIC % 8.63                         |
| T23    | C23 TRICYCLIC/C23 TRICYCLIC % 100                          |
| T24    | C24 TRICYCLIC/C23 TRICYCLIC % 68.61                        |
| T25    | C25 TRICYCLIC/C23 TRICYCLIC % 40.4                         |
| T26    | C26 TRICYCLIC/C23 TRICYCLIC % 55.53                        |
| T28    | C28 TRICYCLIC/C23 TRICYCLIC % 86.79                        |
| T29    | C29 TRICYCLIC/C23 TRICYCLIC % 113.44                       |
| T30    | C30 TRICYCLIC/C23 TRICYCLIC % 64.84                        |
| 19/23  | C19 TRICYCLIC/C23 TRICYCLIC AS % 7.99                      |
| 20/21  | C20 TRICYCLIC/C21 TRICYCLIC AS % 44.13                     |
| 22/21  | C22 TRICYCLIC/C21 TRICYCLIC AS % 20.44                     |
| 24/23  | C24 TRICYCLIC/C23 TRICYCLIC AS % 68.61                     |
| 26/25  | C26 TRICYCLIC/C25 TRICYCLIC AS % 137.44                    |
| 244_24 | C24 TETRACYCLIC/C24 TRICYCLIC AS % 21.88                   |
| TET_23 | C24 TETRACYCLIC/C23 TRICYCLIC AS % 15.01                   |

**CARBON ISOTOPE DATA  
STANDARD DATA**

| SAMPLE CODE    | SAMPLE | SATURATES | AROMATICS | RESIDUE | ASPHALTENES | WHOLE OIL | KEROGEN | COMMENT                           |
|----------------|--------|-----------|-----------|---------|-------------|-----------|---------|-----------------------------------|
| 9907SED009S004 | SR-1   | -33.4     | -32.7     | -32.2   | -32.4       | -32.8     | -32.2   | Kerogen - Original Result         |
| 9907SED009S004 | SR-1   |           |           |         |             |           | -32.2   | 1st Repeat - Original Sample      |
| 9907SED009S004 | SR-1   |           |           |         |             |           | -32.2   | 2nd Repeat - Original Sample      |
| 9907SED009S004 | SR-1   |           |           |         |             |           | -32.2   | Sample Re-extracted, Decarbonated |
| del 13 C PBD   |        | Std NBS22 | -29.8     |         |             |           |         |                                   |

**NSO-1 DATA**

# Oil Analysis

**Well name :** NSO-1  
**Suite name :** Statoil Oil Analyses  
**Country Of Origin :** Norway  
**Depth (m) :**  
**Sample name :** Norwegian Standard Oil  
**Test Number :**  
**G number :** G  
**Lab Number:** 9907OIL004S004

### Inspection Properties

**API :** 32.2  
**Density @ 15 deg C :** 0.8644  
**Wax Content %wt :**  
**Wax Melting Point deg C :**  
**Pour Point deg C :**  
**Viscosity cSt @ 20 deg C :**  
**Total Acidity mg KOH/g :**  
**Asphaltenes %wt (IP Method) :**  
**Nitrogen ppm :**  
**Sulphur %wt :**  
**Nickel ppm :**  
**Vanadium ppm :**  
**Nickel/Vanadium :**

### Biomarker Ratios

|                         |               |            |
|-------------------------|---------------|------------|
| H1 : 0.59               | S1 : 0.59     | M2 : 0.58  |
| H2 : 0.56               | S2 : 0.59     | M3 : 0.60  |
| H3 : 0.90               | S3 : 40:18:40 | M4 : 62.82 |
| H4 : 0                  | S4 : 30:31:38 | M5 :       |
| H5 : 100:63:44:35:21:19 | S5 : 45.99    | A1 : 0.69  |
| H6 : 0.55               | S6 :          | A2 : 0.57  |
| H7 : 0.58               | S7 : 50.35    | A3 : 0.36  |
| H8 :                    | S8 : 57.31    | A4 : 0.18  |
| H9 :                    | S9 :          | A5 : 0.63  |
| H10 :                   | S10 :         | A6 : 0.84  |
| H11 : 5.51              |               | MDR : 2.38 |
| H12 : 4.91              |               | MBP : 6.33 |
| H13 : 23.19             |               |            |
| H14 : 8.04              |               |            |
| H15 : 0.00              |               |            |
| H16 : 0.00              |               |            |
| H17 : 47.07             |               |            |
| H18 : 10.62             |               |            |

### HPLC

**Saturates %wt :** 48.05  
**Aromatics %wt :** 43.52  
**Residues %wt :** 7.97  
**Asphaltenes (Micro Method) %wt :** 0.46

### Saturates GC

**Pristane/Phytane :** 1.34  
**Pristane/nC17 :** 0.54  
**Phytane/nC18 :** 0.47  
**CPI :** 1.14  
**ALKIND :** 77.36  
**R22 :** 0.97

### Light Hydrocarbons

**MCH % :** 39.5  
**HER :** 0.41  
**HXR :** 0.46

### Stable Carbon Isotopes

**Saturates :** -29.1  
**Total Oil :** -28.6  
**Aromatics :** -28  
**Residue :** -27.9  
**Asphaltenes :** -27.7  
  
**STANDARD:** NBS22 -29.8

**N.B.** ALKIND -  $100 \cdot n\text{-C17} / (n\text{-C17} + n\text{-C27})$   
 R22 -  $2 \cdot n\text{-C22} / (n\text{-C21} + n\text{-C23})$

**HER - Heptane/Heptamethylcyclohexane**  
**HXR - Hexane/Hexamethylcyclohexane**  
**MCH% - Methylcyclohexane as Percentage of Saturates C7 Components**

**BULK COMPOSITION OF EXTRACTS  
STANDARD DATA**

| Sample code    | SAMPLE | Saturates<br>%wt | Aromatics<br>%wt | Residue<br>%wt | Asph<br>%wt | HC<br>%wt | NonHC<br>%wt |
|----------------|--------|------------------|------------------|----------------|-------------|-----------|--------------|
| 9907OIL004S004 | NSO-1  | 47.83            | 43.32            | 7.93           | 0.46        | 91.2      | 7.9          |

WHOLE OIL GC

NSO-1 STANDARD DATA 9907OIL004S004

| Whole Oil GC Analysis<br>Component | Area<br>[ $\mu$ V·s] |
|------------------------------------|----------------------|
| Propane                            | 5996.8               |
| 2-methylpropane                    | 9361.3               |
| n-butane                           | 51080.6              |
| 2-methylbutane                     | 104174               |
| n-pentane                          | 209316.1             |
| DCM                                | 0                    |
| 2,2-dimethylbutane                 | 8477.8               |
| Cyclopentane                       | 51006.8              |
| 2,3-dimethylbutane                 | 25965                |
| 2-methylpentane                    | 209411.4             |
| 3-methylpentane                    | 139503.4             |
| n-hexane                           | 525323.8             |
| methylcyclopentane                 | 324719.4             |
| 2,4-dimethylpentane                | 32083.2              |
| Benzene                            | 264608.4             |
| cyclohexane                        | 628908               |
| 2-methylhexane + 1,2-DMP           | 391099.7             |
| 3-methylhexane                     | 282798               |
| 1,3-cis-dimethylcyclopentane       | 93033.6              |
| 1,3-trans-dimethylcyclopentane     | 87813.4              |
| 1,2-trans-dimethylcyclopentane     | 191398.6             |
| n-heptane                          | 933599.2             |
| methylcyclohexane                  | 1367306.2            |
| ethylcyclopentane                  | 86226.18             |
| Toluene                            | 922987.08            |
| n-Octane                           | 1176267.3            |
| n-Nonane                           | 1452313.88           |
| n-Decane                           | 1297276.83           |
| n-C11                              | 1324340.4            |
| n-C12                              | 1148005.37           |
| n-C13                              | 985859.8             |
| n-C14                              | 1073885.28           |
| n-C15                              | 951396.64            |
| n-C16                              | 754932.19            |
| n-C17                              | 695876.32            |
| Pristane                           | 418978.99            |
| n-C18                              | 585689.31            |
| Phytane                            | 265857.45            |
| n-C19                              | 550100.8             |
| n-C20                              | 418674.24            |
| n-C21                              | 350064.4             |
| n-C22                              | 335731.52            |
| n-C23                              | 290770.7             |
| n-C24                              | 259916.8             |
| n-C25                              | 235338.52            |
| n-C26                              | 197560.2             |
| n-C27                              | 172270               |
| n-C28                              | 140936.65            |
| n-C29                              | 128660.05            |
| n-C30                              | 114504.64            |
| n-C31                              | 106966.7             |
| n-C32                              | 107187.4             |

**WHOLE OIL GC**

**NSO-1 STANDARD DATA** 9907OIL004S004

| <b>Whole Oil GC Analysis<br/>Component</b> | <b>Area<br/>[<math>\mu</math>V·s]</b> |
|--|---------------------------------------|
|--|---------------------------------------|

|       |          |
|-------|----------|
| n-C33 | 79062.5  |
| n-C34 | 56758.37 |
| n-C35 | 32663.5  |
| n-C36 | 33376.91 |

22687421.59

**Batch Code** 9907OIL004S004

**MCH (MeCyC6 as % all C7 alkanes)** 39.46

**HER (Heptane/(Hp+MeCyC6))** 0.41

**HXR (Hexane/(Hx+CyC6))** 0.46

**Thompson's Heptane Ratio** 23.48

**Thompson's Iso Heptane Index** 1.81

**Note: -1 denotes not calculated**

SATURATE GC

NSO-1 STANDARD DATA 9907OIL004S004

| Saturates Fraction GC Analysis<br>Component | Area<br>[ $\mu$ V·s] |
|---|----------------------|
| N-C12                                       | 972803.55            |
| N-C13                                       | 1149856.72           |
| N-C14                                       | 1196176.2            |
| N-C15                                       | 1224651.94           |
| N-C16                                       | 1305962              |
| N-C17                                       | 1052919.44           |
| PRISTANE                                    | 572886.76            |
| N-C18                                       | 913243.59            |
| PHYTANE                                     | 426992.06            |
| N-C19                                       | 921383.46            |
| N-C20                                       | 708818.18            |
| N-C21                                       | 606133.91            |
| N-C22                                       | 546196.2             |
| N-C23                                       | 516576.42            |
| N-C24                                       | 459165.8             |
| N-C25                                       | 452193.66            |
| N-C26                                       | 341657.87            |
| N-C27                                       | 308218.41            |
| N-C28                                       | 259917.2             |
| N-C29                                       | 254298.3             |
| N-C30                                       | 147279               |
| N-C31                                       | 145385.07            |
| N-C32                                       | 132664.04            |
| N-C33                                       | 126440.2             |
| N-C34                                       | 128036.9             |
| N-C35                                       | 50268.4              |
| N-C36                                       | 41578.3              |
| TOTAL                                       | 14961703.57          |

|  |                |
|--|----------------|
| Batch Code                                     | 9907OIL004S004 |
| CPI (24 to 32)                                 | 1.14           |
| Pr/Ph Ratio                                    | 1.34           |
| Pr/n-C17                                       | 0.54           |
| Ph/n-C18                                       | 0.47           |
| Alkane Index (C17/(C17+C27))%                  | 77.36          |
| R22 Index $2 \cdot C_{22} / (C_{21} + C_{23})$ | 0.97           |
| (Pr/n-C17)/(Ph/n-C18)                          | 1.16           |
| Note: -1 denotes not calculated                |                |

Software Version: 4.1<OG07>  
 Sample Name: 9907OIL004S004 NSO-1 Time:  
 Instrument: SAC\_GC Channel:  
 Raw Data File: C:\\_DATA\B9907004\ARO004.RAW  
 Sequence File: C:\\_DATA\B9907004\ARO.SEQ

| Aromatics GC         |            |                   |          |
|----------------------|------------|-------------------|----------|
| Component Name       | Time [min] | Area [ $\mu$ V-s] | Area [%] |
|                      | 6.529      | 27577.63          | 0.73     |
|                      | 6.769      | 27751.37          | 0.73     |
|                      | 7.041      | 13350.6           | 0.35     |
|                      | 7.175      | 24929.6           | 0.66     |
|                      | 7.287      | 30566.2           | 0.81     |
|                      | 7.512      | 23695             | 0.63     |
|                      | 7.622      | 64749.2           | 1.71     |
|                      | 7.815      | 25322.41          | 0.67     |
|                      | 7.906      | 30865.96          | 0.82     |
|                      | 7.998      | 18324.03          | 0.48     |
|                      | 8.419      | 28422.8           | 0.75     |
|                      | 8.602      | 25523.6           | 0.67     |
|                      | 8.703      | 12063.9           | 0.32     |
|                      | 8.946      | 30371.4           | 0.8      |
|                      | 9.043      | 11600.5           | 0.31     |
| 1-ME NAPHTHALENE     | 9.331      | 161919.8          | 4.28     |
|                      | 9.468      | 31663.2           | 0.84     |
| 2-ME NAPHTHALENE     | 9.555      | 144682.6          | 3.82     |
|                      | 9.789      | 48759.27          | 1.29     |
|                      | 9.897      | 35248.97          | 0.93     |
|                      | 9.958      | 15236.76          | 0.4      |
|                      | 10.143     | 52026.4           | 1.37     |
|                      | 10.317     | 50245.4           | 1.33     |
|                      | 10.5       | 42819.2           | 1.13     |
|                      | 10.602     | 14903.4           | 0.39     |
|                      | 10.712     | 17817.16          | 0.47     |
|                      | 10.77      | 72207.69          | 1.91     |
| 2,6+2,7-DIMETHYLNAPT | 10.955     | 131812.3          | 3.48     |
| 1,3+1,7-DIMETHYLNAPT | 11.136     | 145384            | 3.84     |
| 1,6-DIMETHYLNAPTHALE | 11.182     | 129247.4          | 3.41     |
|                      | 11.273     | 17031.28          | 0.45     |
| 1,5+1,5+2,3-DIMETHYL | 11.4       | 105856.8          | 2.8      |
|                      | 11.476     | 18172.51          | 0.48     |
| 1,2-DIMETHYLNAPTHALE | 11.583     | 32547.75          | 0.86     |
|                      | 11.646     | 14439.74          | 0.38     |
|                      | 11.898     | 26211.57          | 0.69     |
|                      | 11.971     | 66066.93          | 1.75     |
|                      | 12.081     | 33691.3           | 0.89     |
|                      | 12.247     | 20341.99          | 0.54     |
|                      | 12.302     | 52332.21          | 1.38     |
|                      | 12.357     | 32760.93          | 0.87     |
|                      | 12.421     | 17311.77          | 0.46     |
|                      | 12.505     | 28525.38          | 0.75     |
|                      | 12.586     | 73860.02          | 1.95     |
|                      | 12.654     | 60334.9           | 1.59     |
|                      | 12.848     | 92734.73          | 2.45     |
|                      | 12.9       | 43881.57          | 1.16     |
|                      | 13.072     | 81465             | 2.15     |
|                      | 13.225     | 46262.58          | 1.22     |
|                      | 13.345     | 101523.4          | 2.68     |
|                      | 13.481     | 30236.64          | 0.8      |

|                   |        |          |          |
|-------------------|--------|----------|----------|
|                   | 13.529 | 18377.36 | 0.49     |
|                   | 13.741 | 23966.8  | 0.63     |
|                   | 13.896 | 38913.3  | 1.03     |
|                   | 13.982 | 3948.8   | 0.1      |
|                   | 14.152 | 35604.4  | 0.94     |
|                   | 14.356 | 25643.77 | 0.68     |
|                   | 14.421 | 24837.23 | 0.66     |
|                   | 14.543 | 7970.4   | 0.21     |
|                   | 14.595 | 31565.3  | 0.83     |
|                   | 14.741 | 51128.8  | 1.35     |
|                   | 14.855 | 55488.32 | 1.47     |
|                   | 14.956 | 13300.88 | 0.35     |
|                   | 15.054 | 7234.6   | 0.19     |
|                   | 15.462 | 35882.53 | 0.95     |
| PHENANTHRENE      | 15.551 | 65010.98 | 1.72     |
|                   | 15.687 | 10344.59 | 0.27     |
|                   | 15.756 | 9534.38  | 0.25     |
|                   | 15.802 | 24307.42 | 0.64     |
|                   | 15.953 | 8066.8   | 0.21     |
|                   | 16.113 | 24340.79 | 0.64     |
|                   | 16.171 | 16804.71 | 0.44     |
|                   | 16.326 | 22372.96 | 0.59     |
|                   | 16.405 | 23159.93 | 0.61     |
|                   | 16.478 | 24088.11 | 0.64     |
|                   | 16.592 | 42924.39 | 1.13     |
|                   | 16.728 | 16645.22 | 0.44     |
| 3-ME PHENANTHRENE | 16.858 | 52911.78 | 1.4      |
| 2-ME PHENANTHRENE | 16.915 | 40963.09 | 1.08     |
|                   | 17.032 | 34893.53 | 0.92     |
| 9-ME PHENANTHRENE | 17.116 | 47991.53 | 1.27     |
| 1-ME PHENANTHRENE | 17.169 | 50869.71 | 1.34     |
|                   | 17.299 | 21611.59 | 0.57     |
|                   | 17.391 | 23797.16 | 0.63     |
|                   | 17.624 | 9690.7   | 0.26     |
|                   | 17.681 | 4097.1   | 0.11     |
|                   | 18.002 | 40798.6  | 1.08     |
|                   | 18.149 | 18379.6  | 0.49     |
|                   | 18.283 | 16509.15 | 0.44     |
|                   | 18.342 | 42325.25 | 1.12     |
|                   | 18.452 | 35770.81 | 0.94     |
|                   | 18.695 | 10464.69 | 0.28     |
|                   | 18.757 | 17526.78 | 0.46     |
|                   | 18.858 | 32038.45 | 0.85     |
|                   | 19.056 | 31568.67 | 0.83     |
|                   | 19.296 | 21296.8  | 0.56     |
|                   | 19.461 | 7432.6   | 0.2      |
|                   | 19.806 | 4074.7   | 0.11     |
|                   | 20.159 | 38117.5  | 1.01     |
|                   | 20.284 | 14056.2  | 0.37     |
|                   | 20.559 | 14772.6  | 0.39     |
|                   | 23.167 | 7271     | 0.19     |
|                   | 33.777 | 2.85     | 8.00E-05 |
|                   |        | 3785372  | 100      |

## GC-MS PEAK HEIGHT DATA

| PEAK HEIGHTS                | 0 MPDMIO00850051.LIS<br>NSO \$9907OIL004S004S |
|-----------------------------|---|
| PRISTANE                    | 55035400                                      |
| PHYTANE                     | 53099200                                      |
| C19 TRICYCLIC TERPANE(19/3) | 1814310                                       |
| C20 TRICYCLIC TERPANE(20/3) | 1643800                                       |
| C21 TRICYCLIC TERPANE(21/3) | 1981140                                       |
| C22 TRICYCLIC TERPANE(22/3) | 388588  |
| C23 TRICYC TERPANE(T5:23/3) | 3288440                                       |
| C24 TRICYC TERPANE (24/3)   | 2834170                                       |
| C25 TRICYC TERPANE (25/3)   | 1631760                                       |
| C24 TETRACYC TERP (S:24/4)  | 2931820                                       |
| C26 TRICYCLIC TERPANE(26/3) | 1172440                                       |
| C26 TRICYCLIC TERP 2 (26/3) | 1070840                                       |
| C28 TRICYCLIC TERPANE(28/3) | 1089010                                       |
| C28 TRICYCLIC TERP 2 (28/3) | 1113140                                       |
| C29 TRICYCLIC TERPANE(29/3) | 2575290                                       |
| C29 TRICYCLIC TERP 2 (29/3) | 1800790                                       |
| C27 18A HOPANE (Ts:27Ts)    | 9031080                                       |
| C27 17A HOPANE (Tm:27Tm)    | 7531000                                       |
| C30 TRICYCLIC TERPANE(30/3) | 1947770                                       |
| C30 TRICYCLIC TERP 2 (30/3) | 1496180                                       |
| 25-TRISNORm/z177(25nor28ab) | 4743260                                       |
| C28 BISNORHOPANE (X:28ab)   | 13842100                                      |
| 25-NOR m/z177 (Y:25nor30ab) | 4645250                                       |
| 25-NORHOPANE (Y:25nor30ab)  | 6337050                                       |
| C29 HOPANE (D:29ab)         | 23656200                                      |
| C29 18A NORHOPANE (D2:29Ts) | 9785410                                       |
| C30 C30 DIAHOPANE (Pi:30d)  | 4799490                                       |
| C29 NORMORETANE (A:29ba)    | 5441020                                       |
| C30 18A OLEANANE (B:30O)    | 0   |
| C30 HOPANE (G:30ab)         | 59681000                                      |
| NOR-GAMMACERANE? (G2)       | 2146890                                       |
| C30 MORETANE (K:30ba)       | 6870700                                       |
| C31 22S HOPANE (N:31abS)    | 21201100                                      |
| C31 22R HOPANE (O:31abR)    | 15651600                                      |
| C31 22S M/Z205 (N205)       | 7090760                                       |
| C31 22R M/Z205 (O205)       | 5543730                                       |
| C30 GAMACERANE (S:30G)      | 0   |
| C30 17B 21B HOPANE (P)      | 1211690                                       |
| C32 22S HOPANE (U:32abS)    | 15754300                                      |
| C32 22R HOPANE (V:32abR)    | 10823900                                      |
| C33 22S HOPANE(Alpha:33abS) | 12373200                                      |
| C33 22R HOPANE (Beta:33abR) | 8784580                                       |
| C34 22S HOPANE(Gamma:34abS) | 7784960                                       |
| C34 22R HOPANE(Delta:34abR) | 5259220                                       |
| C35 22S HOP (Epsilon:35abS) | 7335930                                       |
| C35 22R HOPANE (Zeta:35abR) | 4265100                                       |
| C21 STERANE                 | 6383690                                       |
| C27 20S DIASTER (10:27dbS)  | 10817500                                      |
| C27 20R DIASTER (11:27dbR)  | 7192790                                       |
| C27 20S AAA STER (20:27aaS) | 4762800                                       |
| C29 20S DIASTER (21A:29dbS) | 9306820                                       |
| C27 20R ISOST218(21B:27bbR) | 5246520                                       |
| C27 20S ISOST218 (22:27bbS) | 4373270                                       |
| C27 20R ISOSTER 217 (27bbR) | 9306820                                       |
| C27 20S ISOSTER 217 (27bbS) | 4069490                                       |
| C27 20R AAA STER (25:27aaR) | 3557790                                       |
| C29 20R DIASTER (27:29dbR)  | 7749610                                       |
| C28 20R ISOST218(33A:28bbR) | 4801280                                       |
| C28 20S ISOST218 (34:28bbS) | 5092850                                       |
| C28 20R ISOSTER 217 (28bbR) | 6323670                                       |
| C28 20S ISOSTER 217 (28bbS) | 4784370                                       |
| C28 20R AAA STER (36:28aaR) | 1641360                                       |
| C29 20S AAA STER (39:29aaS) | 4991910                                       |
| C29 20R ISOST218 (40:29bbR) | 5956500                                       |
| C29 20S ISOST218 (41:29bbS) | 6401120                                       |
| C29 20R ISOSTER217 (29bbR)  | 5488490                                       |
| C29 20S ISOSTER217 (29bbS)  | 5633230                                       |
| C29 20R AAA STER (42:29aaR) | 3507660                                       |
| C30 20R ISOSTER218 (30bbR)  | 2052080                                       |
| C30 20S ISOSTER218 (30bbS)  | 2238730                                       |
| C30 4-METHYL STERANE (46)   | 2010300                                       |

## GC-MS PEAK HEIGHT DATA

| PEAK HEIGHTS                | 0 MPDMIO00850051.LIS<br>NSO \$9907OIL004S004S |
|-----------------------------|---|
| 2-ME NAPHTHALENE            | 637526976                                     |
| 1-ME NAPHTHALENE            | 532559008                                     |
| 2-ME BIPHENYL               | 22557800                                      |
| 3-ME BIPHENYL               | 142816000                                     |
| 4-ME BIPHENYL               | 41053600                                      |
| PHENANTHRENE                | 107390000                                     |
| 3-ME PHENANTHRENE           | 46074100                                      |
| 2-ME PHENANTHRENE           | 41170500                                      |
| 9-ME PHENANTHRENE           | 106175000                                     |
| 1-ME PHENANTHRENE           | 64739300                                      |
| DIBENZOTHIOPHENE            | 21740500                                      |
| 4-ME DIBENZOTHIOPHENE       | 33467300                                      |
| 3+2-ME DIBENZOTHIOPHENE     | 12741700                                      |
| 1-ME DIBENZOTHIOPHENE       | 14039500                                      |
| C21 MA STERANE (F22:A1)     | 6070390                                       |
| C22 MA STERANE (F23:B1)     | 5064650                                       |
| C27 20S 5B DM MA-ST(F2:C1)  | 2572190                                       |
| C27 20S 10B DM MA-DIA (C1)  | 7921230                                       |
| C27 20R 5B DM MA-ST(F3:D1)  | 9075150                                       |
| C27 20S 5A DM MA-ST(F4:D1)  | 3131110                                       |
| C28 20S 5B DM MA-ST(F5:E1)  | 10973300                                      |
| C27 20S 5A DM MA-DS( :F1)   | 1341180                                       |
| C27 20R 5A DM MA-ST(F6:G1)+ | 4893950                                       |
| C28 20S 5A DM MA-ST(F7:G1)  | 4893950                                       |
| C28 20R 5B DM MA-ST(F8:G1)  | 10552700                                      |
| C29 20S 5B DM MA-ST(F9:G1)  | 12406600                                      |
| C29 20S 5A DM MA-ST(F10:H1) | 3090290                                       |
| C28 20R 5A DM MA-ST(F11:H1) | 7492330                                       |
| C29 20R 5B DM MA-ST(F12:H1) | 0   |
| C29 20R 5A DM MA-ST(F13:I1) | 2953960                                       |
| C20 ME TA-STER(F14:a1)      | 10036400                                      |
| C21 ME TA-STER(F15:b1)      | 11276100                                      |
| C26 20S ME TA-STER(F16:c1)  | 11410800                                      |
| C26 20R ME TA-STER(F17:d1)+ | 32371200                                      |
| C27 20S ME TA-STER(F18:d1)  | 32371200                                      |
| C28 20S ME TA-STER(F19:e1)  | 18159700                                      |
| C27 20R ME TA-STER(F20:f1)  | 15089100                                      |
| C28 20R ME TA-STER(F21:g1)  | 18017500                                      |
| ?C21 20S DIASTER            | 4630710                                       |
| ?C21 20R DIASTER            | 2076530                                       |
| ?C21 AAA+ABB                | 6383690                                       |
| ?C22 DIASTER                | 0   |
| ?C22 AAA+ABB                | 3413000                                       |

## GC-MS BIOMARKER PARAMETERS

| HSRUN  | NSO-1  | MPDMIO00850051 |
|--------|--|----------------|
| H1     | C32 HOPANES 22S/(22S+22R)                            | 0.59           |
| H2     | C31 HOPANES 22S/(22S+22R) M/Z205                     | 0.56           |
| H3     | C30: HOPANE/(HOPANE+MORETANE)                        | 0.9            |
| H4     | C30: BB HOPANE / C30 HOPANE AS %                     |                |
| H5_0   | C29 HOPANE AS % C30                                  | 39.64          |
| H5_1   | HOPANE DISTRIBUTION RELATIVE TO C30                  | 100            |
| H5_2   | C31 HOPANES AS % OF C30 (205 CORRECTED)              | 63.3           |
| H5_3   | C32 HOPANES  | 44.53          |
| H5_4   | C33 HOPANES  | 35.45          |
| H5_5   | C34 HOPANES  | 21.86          |
| H5_6   | C35 HOPANES  | 19.44          |
| H6     | C27 HOPANES TS/(TS+TM)                               | 0.55           |
| H7     | C33 HOPANES 22S/(22S+22R)                            | 0.58           |
| H11    | C23 TRICYCLIC/C30 HOPANE AS %                        | 5.51           |
| H12    | C24 TETRACYCLIC/C30 HOPANE AS %                      | 4.91           |
| H13    | 28 30 BISNORHOPANE/HOPANE AS %                       | 23.19          |
| H14    | C30 DIAHOPANE PI/HOPANE AS %                         | 8.04           |
| H15    | OLEANANE/HOPANE AS %                                 |                |
| H16    | GAMMACERANE/HOPANE AS % (205 BACK CALCULATED)        |                |
| H17    | HOPANE INDEX C35/(C35+C34) %                         | 47.07          |
| H18    | 25-NORHOPANE(Y)/HOPANE AS % G                        | 10.62          |
| H19    | C29 18A-NORHOPANE D2/C30 HOPANE AS %                 | 16.4           |
| S1     | C29 STERANES 20S/(20S+20R)                           | 0.59           |
| S2     | C29 STERANES m/z218 ABB/(ABB+AAA)                    | 0.59           |
| S3_1   | STERANE DISTRIBUTION AAA C27 %                       | 40.86          |
| S3_2   | C28 %  | 18.85          |
| S3_3   | C29 %  | 40.29          |
| S4_1   | STERANE DISTRIBUTION ABB C27 %                       | 30.18          |
| S4_2   | C28 %  | 31.04          |
| S4_3   | C29 %  | 38.77          |
| S5     | BA DIASTERANES/(BA DIASTERANES+AAA+ABB STERANES) %   | 45.99          |
| S7     | STERANE INDEX C27/(C27+C29) % FROM S3                | 50.35          |
| S8     | C30 4-ME STERANE AS % OF C29 20R AAA                 | 57.31          |
| M4     | SUM C27 TO C35 HOPANES/(SAME+C27 TO C29 STERANES)    | 62.7           |
| PR/PH  | PRISTANE/PHYTANE RATIO ESTIMATE                      | 1.55           |
| M2     | PHENANTHRENES (3ME+2ME) / (9ME+1ME)                  | 0.58           |
| M3     | MP11 PHENANTHRENES (3ME+2ME) / (9ME+1ME+PHEN) * 1.5  | 0.6            |
| A1     | ARO STERANES: C28 20R TRI/(SAME+C29 20R 5A&B MONO 12 | 0.69           |
| A2     | ARO STERANES: SUM TRI/(SAME+SUM MONO)(F9&F12split)   | 0.57           |
| A3     | TRI ARO STERANES: C20/(C20+C28 20R)                  | 0.36           |
| A4     | TRI ARO STERANES: (C20+C21)/(SAME+SUM C26 TO C28)    | 0.18           |
| A5     | TRI ARO STERANES: C26 20S / C28 20S                  | 0.63           |
| A6     | TRI ARO STERANES: C27 20R / C28 20R                  | 0.84           |
| MDR    | 4-ME DIBENZOTHIOPHENE / 1-ME DIBENZOTHIOPHENE        | 2.38           |
| MBP    | 3-METHYLBIPHENYL / 2-METHYLBIPHENYL                  | 6.33           |
| MNR    | 2-ME NAPHTHALENE/1-ME NAPHTHALENE                    | 1.2            |
| SMN    | (2-ME NAPHTH+1-ME NAPHTH)/C23 TRICYCLIC              |                |
| DBTP   | DIBENZOTHIOPHENE(MZ184)/PHENANTHRENE(MZ178)          | 0.2            |
| T19    | C19 TRICYCLIC/C23 TRICYCLIC %                        | 55.17          |
| T20    | C20 TRICYCLIC/C23 TRICYCLIC %                        | 49.99          |
| T21    | C21 TRICYCLIC/C23 TRICYCLIC %                        | 60.25          |
| T22    | C22 TRICYCLIC/C23 TRICYCLIC %                        | 11.82          |
| T23    | C23 TRICYCLIC/C23 TRICYCLIC %                        | 100            |
| T24    | C24 TRICYCLIC/C23 TRICYCLIC %                        | 86.19          |
| T25    | C25 TRICYCLIC/C23 TRICYCLIC %                        | 49.62          |
| T26    | C26 TRICYCLIC/C23 TRICYCLIC %                        | 68.22          |
| T28    | C28 TRICYCLIC/C23 TRICYCLIC %                        | 66.97          |
| T29    | C29 TRICYCLIC/C23 TRICYCLIC %                        | 133.07         |
| T30    | C30 TRICYCLIC/C23 TRICYCLIC %                        | 104.73         |
| 19/23  | C19 TRICYCLIC/C23 TRICYCLIC AS %                     | 55.17          |
| 20/21  | C20 TRICYCLIC/C21 TRICYCLIC AS %                     | 82.97          |
| 22/21  | C22 TRICYCLIC/C21 TRICYCLIC AS %                     | 19.61          |
| 24/23  | C24 TRICYCLIC/C23 TRICYCLIC AS %                     | 86.19          |
| 26/25  | C26 TRICYCLIC/C25 TRICYCLIC AS %                     | 137.48         |
| 244_24 | C24 TETRACYCLIC/C24 TRICYCLIC AS %                   | 103.45         |
| TET_23 | C24 TETRACYCLIC/C23 TRICYCLIC AS %                   | 89.16          |

CARBON ISOTOPE DATA  
STANDARD DATA

| SAMPLE CODE    | SAMPLE | SATURATES | AROMATICS | RESIDUE | ASPHALTENES | WHOLE OIL |
|----------------|--------|-----------|-----------|---------|-------------|-----------|
| 9907OIL004S004 | NSO-1  | -29.1     | -28       | -27.9   | -27.7       | -28.6     |
| del 13 C PBD   |        | Std NBS22 | -29.8     |         |             |           |