

Table 3-30: Summary of Surrogate Percent Recoveries

| 1997 Results | Tissues (n=13) | | | Sediment (n=197) | | | QC (n=8) | | |
|--------------------|----------------|----|-----|------------------|-----|-----|----------|-----|-----|
| | Mean | SD | RSD | Mean | SD | RSD | Mean | SD | RSD |
| PAH | | | | | | | | | |
| d8-Naphthalene | 74 | 17 | 22 | 66 | 19 | 28 | 61 | 4.6 | 7.5 |
| d10-Acenaphthene | 82 | 14 | 18 | 73 | 14 | 19 | 68 | 3.3 | 4.9 |
| d10-Phenanthrene | 90 | 15 | 16 | 80 | 13 | 16 | 75 | 2.7 | 3.5 |
| d12-Benzo[a]pyrene | 61 | 28 | 46& | 76 | 14 | 18 | 70 | 5.4 | 7.7 |
| SHC | | | | | | | | | |
| OTP | na | na | na | 80 | 14 | 18 | 77 | 2.8 | 3.7 |
| 5AA | na | na | na | 76 | 13 | 17 | 64 | 3.3 | 5.1 |
| D50T | na | na | na | 79 | 13 | 16 | 69 | 3.1 | 4.4 |
| S/T | | | | | | | | | |
| 5B(H)-Cholane | na | na | na | 65 | 12 | 18 | 89 | 3.5 | 4.0 |
| D66-Dotriacontane | na | na | na | 66 | 13 | 19 | 98 | 5.0 | 5.1 |
| 1998 Results | Tissues (n=32) | | | Sediment (n=115) | | | QC (n=5) | | |
| | Mean | SD | RSD | Mean | SD | RSD | Mean | SD | RSD |
| PAH | | | | | | | | | |
| d8-Naphthalene | 70 | 16 | 23 | 74 | 9.6 | 13 | 84 | 18 | 22 |
| d10-Acenaphthene | 76 | 15 | 20 | 77 | 9.1 | 12 | 82 | 17 | 21 |
| d10-Phenanthrene | 76 | 13 | 17 | 81 | 10 | 12 | 92 | 17 | 18 |
| d12-Benzo[a]pyrene | 38& | 14 | 37& | 76 | 11 | 14 | 87 | 27 | 31 |
| SHC | | | | | | | | | |
| OTP | na | na | na | 68 | 9.0 | 13 | 81 | 14 | 17 |
| 5AA | na | na | na | 70 | 8.5 | 12 | 80 | 14 | 18 |
| D50T | na | na | na | 72 | 7.5 | 10 | 82 | 14 | 17 |
| S/T | | | | | | | | | |
| 5B(H)-Cholane | na | na | na | 76 | 9.9 | 13 | 98 | 17 | 17 |
| D66-Dotriacontane | na | na | na | na | na | na | na | na | na |

Notes:

%Rec = Percent Recovery

QC = Quality Control

n = Number of Samples

SD = Standard Deviation

RSD = Relative Standard Deviation

PAH = Polycyclic Aromatic Hydrocarbons

SHC = Saturated Hydrocarbons

S/T = Steranes and Triterpanes

na = Not Applicable

& = Qualifier is outside acceptable range

Table 3-31: Summary of Laboratory Control Spike Recoveries

| 1997 Results | Sediment (n=9) ¹ | | | Water (n=4) | | | Oil (n=1) | | |
|--------------------------|-----------------------------|-----|-----|-------------|-----|-----|-----------|--------|------|
| | Mean | SD | RSD | Mean | SD | RSD | Target | Result | %Rec |
| PAH | | | | | | | | | |
| Naphthalene | 97 | 10 | 10 | 94 | 4.9 | 5.2 | 50 | 56 | 110 |
| Acenaphthylene | 88 | 19 | 21 | 95 | 5.0 | 5.2 | 50 | 63 | 130 |
| Acenaphthene | 96 | 9.7 | 10 | 96 | 3.8 | 3.9 | 50 | 58 | 120 |
| Fluorene | 98 | 11 | 11 | 96 | 3.7 | 3.9 | 50 | 60 | 120 |
| Anthracene | 85 | 16 | 18 | 94 | 6.4 | 6.8 | 50 | 35 | 70 |
| Phenanthrene | 100 | 8.9 | 8.9 | 98 | 2.9 | 2.9 | 50 | 59 | 120 |
| Fluoranthene | 110 | 11 | 10 | 100 | 5.8 | 5.8 | 50 | 63 | 130 |
| Pyrene | 100 | 10 | 10 | 100 | 7.4 | 7.4 | 50 | 62 | 120 |
| Benzo[a]anthracene | 95 | 14 | 15 | 99 | 7.5 | 7.6 | 50 | 62 | 120 |
| Chrysene | 98 | 17 | 18 | 96 | 4.5 | 4.7 | 50 | 64 | 130 |
| Benzo[b]fluoranthene | 120 | 12 | 9.7 | 100 | 6.6 | 6.5 | 50 | 64 | 130 |
| Benzo[k]fluoranthene | 120 | 15 | 12 | 98 | 3.9 | 3.9 | 50 | 65 | 130 |
| Benzo[a]pyrene | 98 | 12 | 12 | 97 | 4.6 | 4.7 | 50 | 62 | 120 |
| Indeno[1,2,3,-c,d]pyrene | 120 | 16 | 13 | 99 | 8.6 | 8.7 | 50 | 61 | 120 |
| Dibenzo[a,h]anthracene | 120 | 16 | 13 | 99 | 9.0 | 9.1 | 50 | 57 | 110 |
| Benzo[g,h,i]perylene | 110 | 14 | 13 | 94 | 8.5 | 9.1 | 50 | 57 | 110 |
| SHC | | | | | | | | | |
| n-Decane | 61 | 8.3 | 14 | 49 | 18 | 37& | 5 | 3.9 | 78 |
| n-Pentadecane | 85 | 6.1 | 7.1 | 86 | 12 | 14 | 5 | 4.5 | 90 |
| Pristane | 89 | 5.3 | 5.9 | 90 | 12 | 14 | 5 | 4.7 | 94 |
| n-Eicosane | 96 | 3.8 | 4.0 | 94 | 9.5 | 10 | 5 | 4.7 | 94 |
| n-Pentacosane | 93 | 5.2 | 5.5 | 92 | 13 | 14 | 5 | 4.6 | 92 |
| n-Triacontane | 90 | 5.0 | 5.6 | 90 | 12 | 13 | 5 | 4.6 | 92 |
| n-Tetratriacontane | 91 | 11 | 12 | 92 | 8.4 | 9.1 | 5 | 4.5 | 90 |
| n-Hexatriacontane | 85 | 14 | 16 | 92 | 8.0 | 8.7 | 5 | 4.4 | 88 |

Notes:

¹ n = 11 for SHC

n = Number of Samples

SD = Standard Deviation

RSD = Relative Standard Deviation

%Rec = Percent Recovery

PAH = Polycyclic Aromatic Hydrocarbons

SHC = Saturated Hydrocarbons

& = Qualifier is outside acceptable range

Table 3-31: Summary of Laboratory Control Spike Recoveries (continued)

| 1998 Results | Sediment (n=6) | | | Water (n=1) | | | Coal (n=1) | | |
|--------------------------|----------------|-----|-----|-------------|--------|------|------------|--------|------|
| | Mean | SD | RSD | Result | Target | %Rec | Result | Target | %Rec |
| PAH | | | | | | | | | |
| Naphthalene | 96 | 7.7 | 8 | 1700 | 2000 | 85 | 160 | 200 | 77 |
| Acenaphthylene | 72 | 26 | 36& | 1800 | 2000 | 90 | 71 | 200 | 36 |
| Acenaphthene | 100 | 10 | 10 | 1800 | 2000 | 90 | 170 | 200 | 85 |
| Fluorene | 100 | 12 | 12 | 1900 | 2000 | 95 | 200 | 200 | 100 |
| Anthracene | 57 | 16 | 28 | 1400 | 2000 | 70 | 78 | 200 | 39 |
| Phenanthrene | 110 | 17 | 15 | 1800 | 2000 | 90 | 180 | 200 | 89 |
| Fluoranthene | 110 | 16 | 14 | 1900 | 2000 | 95 | 210 | 200 | 105 |
| Pyrene | 110 | 16 | 14 | 1800 | 2000 | 90 | 210 | 200 | 105 |
| Benzo[a]anthracene | 100 | 14 | 14 | 1800 | 2000 | 90 | 170 | 200 | 85 |
| Chrysene | 100 | 11 | 11 | 1700 | 2000 | 85 | 190 | 200 | 95 |
| Benzo[b]fluoranthene | 120 | 12 | 10 | 2600 | 2000 | 130 | 206 | 200 | 103 |
| Benzo[k]fluoranthene | 110 | 13 | 12 | 2600 | 2000 | 130 | 177 | 200 | 89 |
| Benzo[a]pyrene | 70 | 23 | 33 | 2000 | 2000 | 100 | 90 | 200 | 45 |
| Indeno[1,2,3,-c,d]pyrene | 110 | 12 | 11 | 2400 | 2000 | 120 | 154 | 200 | 77 |
| Dibenzo[a,h]anthracene | 110 | 10 | 9.1 | 2500 | 2000 | 125 | 154 | 200 | 77 |
| Benzo[g,h,i]perylene | 100 | 12 | 12 | 2400 | 2000 | 120 | 166 | 200 | 82 |
| SHC | | | | | | | | | |
| n-Decane | 47 | 6.4 | 14 | 23 | 50 | 46 | 2.3 | 5 | 44 |
| n-Pentadecane | 84 | 6.1 | 7.3 | 46 | 50 | 92 | 4.2 | 5 | 84 |
| Pristane | 92 | 7.5 | 8.2 | 48 | 50 | 96 | 4.4 | 5 | 88 |
| n-Eicosane | 89 | 6.9 | 7.8 | 46 | 50 | 92 | 4.4 | 5 | 88 |
| n-Pentacosane | 91 | 6.9 | 7.6 | 48 | 50 | 96 | 4.6 | 5 | 92 |
| n-Triacontane | 87 | 6.0 | 6.9 | 46 | 50 | 92 | 4.4 | 5 | 88 |
| n-Tetratriacontane | 83 | 7.6 | 9.2 | 46 | 50 | 92 | 4.5 | 5 | 90 |
| n-Hexatriacontane | 77 | 8.1 | 10 | 43 | 50 | 86 | 4.3 | 5 | 86 |

Notes:

n = Number of Samples

SD = Standard Deviation

RSD = Relative Standard Deviation

%Rec = Percent Recovery

PAH = Polycyclic Aromatic Hydrocarbons

SHC = Saturated Hydrocarbons

& = Qualifier is outside acceptable range

Table 3-32: Standard Reference Material (SRM) Summary

| 1997 Results Compound | SRM 1491 (n=20) Solution | | | SRM 1941a (n=10) ¹ Sediment | | | SRM 1974a (n=1) Tissue | | |
|------------------------------|-----------------------------|-------------------|----------|---|--------------------|----------|---------------------------|--------------------|----------|
| | Mean µg/L | Certified µg/L | % DIF | Mean µg/kg | Certified µg/kg | % DIF | Mean µg/kg | Certified µg/kg | % DIF |
| PAH | | | | | | | | | |
| Naphthalene | 6620 | 6890 | -3.6 | 571 | 1010 | -43& | 75 | 23.5 | 220& |
| Acenaphthylene | 6810 | 6960 | -2.1 | na | na | na | na | na | na |
| Acenaphthene | 6940 | 7280 | -4.7 | na | na | na | na | na | na |
| Biphenyl | 7180 | 7000 | 2.6 | na | na | na | na | na | na |
| Fluorene | 6970 | 7270 | -4.1 | 66 | 97.3 | -32 | na | na | na |
| Anthracene | 8380 | 7820 | 7.2 | 166 | 184 | -10 | 14 | 6.1 | 130& |
| Phenanthrene | 7320 | 7010 | 4.4 | 388 | 489 | -21 | 55 | 22.2 | 150& |
| Fluoranthene | 6040 | 5910 | 2.2 | 809 | 981 | -18 | 170 | 163.7 | 4 |
| Pyrene | 6160 | 5890 | 4.6 | 676 | 811 | -17 | 160 | 151.6 | 6 |
| Benzo[a]anthracene | 3650 | 3590 | 1.7 | 394 | 427 | -8 | 33 | 32.5 | 2 |
| Chrysene | 7510 | 7030 | 6.8 | 492 | 592 | -17 | 89 | 94.9 | -6 |
| Benzo[b]fluoranthene | 5140 | 5250 | -2.1 | 1020 | 979 | 4 | 63 | 46.4 | 36& |
| Benzo[k]fluoranthene | 5750 | 5570 | 3.2 | 291 | 361 | -19 | 22 | 20.18 | 9 |
| Benzo[e]pyrene | 5900 | 5620 | 5.0 | 518 | 553 | -6 | 100 | 84 | 19 |
| Benzo[a]pyrene | 7100 | 6790 | 4.6 | 473 | 628 | -25 | 18 | 15.63 | 15 |
| Perylene | 7610 | 7120 | 6.9 | 329 | 452 | -27 | 7.5 | 7.68 | -2 |
| Indeno[1,2,3,-c,d]pyrene | 5890 | 6290 | -6.3 | 514 | 501 | 3 | 9.2 | 14.2 | -35& |
| Dibenzo[a,h]anthracene | 5070 | 5180 | -2.1 | 96 | 73.9 | 30 | na | na | na |
| Benzo[g,h,i]perylene | 5160 | 5290 | -2.5 | 410 | 525 | -22 | 17 | 22 | -23 |

Notes:

n = Number of Samples

¹ n = 5 for indeno[1,2,3,-c,d]pyrene, dibenzo[a,h]anthracene, benzo[g,h,i]perylene

PAH = Polycyclic Aromatic Hydrocarbons

%DIF = Percent Difference

na = Not Applicable

& = Qualifier is outside acceptable range

Table 3-32: Standard Reference Material (SRM) Summary (continued)

| 1998 Results Compound | SRM 1491 (n=14) Solution | | | SRM 1941a (n=7) ¹ Sediment | | | SRM 1974a (n=3) Tissue | | |
|------------------------------|-----------------------------|-------------------|----------|--|--------------------|----------|---------------------------|--------------------|----------|
| | Mean µg/L | Certified µg/L | % DIF | Mean µg/kg | Certified µg/kg | % DIF | Mean µg/kg | Certified µg/kg | % DIF |
| PAH | | | | | | | | | |
| Naphthalene | 6280 | 6890 | -8.8 | 491 | 1010 | -51& | 18 | 23.5 | -23 |
| Acenaphthylene | 6550 | 6890 | -4.9 | na | na | na | na | na | na |
| Acenaphthene | 6640 | 6890 | -3.6 | na | na | na | na | na | na |
| Biphenyl | 6720 | 6890 | -2.5 | na | na | na | na | na | na |
| Fluorene | 6580 | 6890 | -4.5 | 55.6 | 97.3 | -43& | na | na | na |
| Anthracene | 8140 | 6890 | 18 | 160 | 184 | -13 | 20 | 6.1 | 230& |
| Phenanthrene | 6880 | 6890 | -0.14 | 351 | 489 | -28 | 22 | 22.2 | -0.9 |
| Fluoranthene | 5760 | 6890 | -16 | 803 | 981 | -18 | 190 | 163.7 | 16 |
| Pyrene | 5860 | 6890 | -15 | 643 | 811 | -21 | 170 | 151.6 | 12 |
| Benzo[a]anthracene | 3460 | 6890 | -50 | 338 | 427 | -21 | 33 | 32.5 | 1.5 |
| Chrysene | 6540 | 6890 | -5.1 | 494 | 592 | -16 | 83 | 94.9 | -12 |
| Benzo[b]fluoranthene | 4930 | 6890 | -28 | 836 | 979 | -15 | 94 | 46.4 | 100& |
| Benzo[k]fluoranthene | 5600 | 6890 | -19 | 364 | 361 | 0.83 | 29 | 20.18 | 44& |
| Benzo[e]pyrene | 5560 | 6890 | -19 | 501 | 553 | -9.4 | 140 | 84 | 67& |
| Benzo[a]pyrene | 7170 | 6890 | 4.1 | 508 | 628 | -19 | 19 | 15.63 | 22 |
| Perylene | 7240 | 6890 | 5.1 | 338 | 452 | -25 | 7.5 | 7.68 | -2.3 |
| Indeno[1,2,3,-c,d]pyrene | 5630 | 6890 | -18 | 505 | 501 | 0.8 | 22 | 14.2 | 55& |
| Dibenzo[a,h]anthracene | 4740 | 6890 | -31 | 104 | 73.9 | 41& | na | na | na |
| Benzo[g,h,i]perylene | 4860 | 6890 | -29 | 435 | 525 | -17 | 36 | 22 | 64& |

Notes:

n = Number of Samples

¹ n = 6 for indeno[1,2,3,-c,d]pyrene, dibenzo[a,h]anthracene, benzo[g,h,i]perylene

PAH = Polycyclic Aromatic Hydrocarbons

%DIF = Percent Difference

na = Not Applicable

& = Qualifier is outside acceptable range

Table 3-33: Control Oil Summary for North Slope Crude

| PAH | 1997 Data (n=20) | | | 1998 Data (n=14) | | | Laboratory Data | | |
|------------------------------|------------------|-------|-----|------------------|-------|-----|-----------------|--------------|--------------|
| | Mean µg/g | SD | RSD | Mean µg/g | SD | RSD | Mean µg/g | 1997 %DIF | 1998% DIF |
| Naphthalene | 756 | 18.4 | 2.4 | 742 | 35.6 | 4.8 | 750 | 0.80 | -1.1 |
| C1-Naphthalenes | 1700 | 147 | 8.6 | 1800 | 130 | 7.2 | 1700 | 0.59 | 5.9 |
| C2-Naphthalenes | 2320 | 278 | 12 | 2450 | 268 | 11 | 2400 | -3.3 | 2.1 |
| C3-Naphthalenes | 1900 | 292 | 15 | 1920 | 249 | 13 | 2000 | -5.0 | -4.0 |
| C4-Naphthalenes | 1200 | 207 | 17 | 1130 | 180 | 16 | 1200 | 0.0 | -5.8 |
| Biphenyl | 222 | 9.33 | 4.2 | 218 | 12.5 | 5.7 | 220 | 0.91 | -0.91 |
| Fluorene | 96.8 | 3.87 | 4 | 96.6 | 2.56 | 2.6 | 94 | 3.0 | 2.8 |
| C1-Fluorenes | 245 | 16 | 6.5 | 243 | 17.7 | 7.3 | 240 | 2.1 | 1.2 |
| C2-Fluorenes | 370 | 35 | 9.4 | 352 | 14.2 | 4 | 350 | 5.7 | 0.57 |
| C3-Fluorenes | 430 | 55.9 | 13 | 401 | 24.8 | 6.2 | 400 | 7.5 | 0.25 |
| Phenanthrene | 278 | 8.94 | 3.2 | 283 | 6.11 | 2.2 | 260 | 6.9 | 8.8 |
| C1-Phenanthrenes/anthracenes | 639 | 35.5 | 5.6 | 631 | 33.5 | 5.3 | 600 | 6.5 | 5.2 |
| C2-Phenanthrenes/anthracenes | 791 | 86.6 | 11 | 731 | 61.5 | 8.4 | 740 | 6.9 | -1.2 |
| C3-Phenanthrenes/anthracenes | 590 | 69 | 12 | 546 | 37.7 | 6.9 | 540 | 9.2 | 1.1 |
| C4-Phenanthrenes/anthracenes | 361 | 53.6 | 15 | 351 | 45.3 | 13 | 330 | 9.4 | 6.4 |
| Dibenzothiophene | 233 | 9.79 | 4.2 | 230 | 12.4 | 5.4 | 240 | -2.9 | -4.2 |
| C1-Dibenzothiophenes | 500 | 40 | 8 | 487 | 29.7 | 6.1 | 500 | 0.0 | -2.6 |
| C2-Dibenzothiophenes | 705 | 88.2 | 12 | 654 | 46.2 | 7.1 | 740 | -4.7 | -12 |
| C3-Dibenzothiophenes | 668 | 92.2 | 14 | 596 | 37.6 | 6.3 | 660 | 1.2 | -9.7 |
| Pyrene | 13.6 | 1.05 | 7.7 | 12.9 | 1.33 | 10 | 14 | -2.9 | -7.8 |
| C1-Fluoranthenes/pyrenes | 85.8 | 5.56 | 6.5 | 88.8 | 5.63 | 6.3 | 83 | 3.4 | 7.0 |
| C2-Fluoranthenes/pyrenes | 152 | 15.2 | 10 | 143 | 9.94 | 7 | 150 | 1.3 | -4.7 |
| C3-Fluoranthenes/pyrenes | 180 | 20.6 | 11 | 161 | 14.1 | 8.8 | 170 | 5.9 | -5.3 |
| Chrysene | 49.6 | 2.62 | 5.3 | 45.7 | 4.76 | 10 | 49 | 1.2 | -6.7 |
| C1-Chrysenes | 88.1 | 6.81 | 7.7 | 76.6 | 5.14 | 6.7 | 84 | 4.9 | -8.8 |
| C2-Chrysenes | 115 | 13.5 | 12 | 94.5 | 13.7 | 14 | 110 | 4.5 | -14 |
| C3-Chrysenes | 98.9 | 15.1 | 15 | 82.8 | 9.27 | 11 | 92 | 7.5 | -10 |
| C4-Chrysenes | 80.3 | 11.9 | 15 | 63.8 | 7.42 | 12 | 75 | 7.1 | -15 |
| Benzo[b]fluoranthene | 6.18 | 0.871 | 14 | 6.15 | 0.898 | 15 | 7 | -6.4 | -6.8 |
| Benzo[e]pyrene | 11.9 | 1.13 | 9.5 | 12.0 | 1.29 | 11 | 12 | -0.83 | 0.0 |

Notes:

PAH = Polycyclic Aromatic Hydrocarbons

n = Number of Samples

SD = Standard Deviation

RSD = Relative Standard Deviation

%DIF = Percent Difference

& = Qualifier is outside acceptable range

Table 3-33: Control Oil Summary for North Slope Crude (continued)

| SHC | 1997 Data (n=15) | | | 1998 Data (n=12) | | | Laboratory Data | | |
|------------------------------|------------------|-------|-----|------------------|-------|-----|-----------------|--------------|--------------|
| | Mean µg/g | SD | RSD | Mean µg/g | SD | RSD | Mean µg/g | 1997 %DIF | 1998% DIF |
| n-Nonane | 4700 | 165 | 3.5 | 5080 | 176 | 3.5 | 4800 | -2.1 | 5.8 |
| n-Decane | 4110 | 133 | 3.2 | 4160 | 131 | 3.1 | 4200 | -2.1 | -0.95 |
| n-Undecane | 4150 | 168 | 4 | 4230 | 206 | 4.9 | 4300 | -3.5 | -1.6 |
| n-Dodecane | 3880 | 197 | 5.1 | 3950 | 144 | 3.6 | 4000 | -3 | -1.2 |
| n-Tridecane | 3700 | 220 | 5.9 | 3780 | 166 | 4.4 | 4000 | -7.5 | -5.5 |
| Isoprenoid RRT 1380 | 1050 | 74.5 | 7.1 | 1050 | 179 | 17 | 1000 | 5 | 5.0 |
| n-Tetradecane | 4030 | 388 | 9.6 | 4230 | 456 | 11 | 4200 | -4 | 0.71 |
| Isoprenoid RRT 1470 | 1370 | 72.4 | 5.3 | 1410 | 144 | 10 | 1400 | -2.1 | 0.71 |
| n-Pentadecane | 3540 | 210 | 5.9 | 3680 | 225 | 6.1 | 3700 | -4.3 | -0.54 |
| n-Hexadecane | 3210 | 139 | 4.3 | 3250 | 207 | 6.4 | 3200 | 0.31 | 1.6 |
| Isoprenoid RRT 1650 | 1510 | 96.1 | 6.4 | 1520 | 204 | 13 | 1500 | 0.67 | 1.3 |
| n-Heptadecane | 3020 | 174 | 5.8 | 3150 | 168 | 5.3 | 3200 | -5.6 | -1.6 |
| Pristane | 2030 | 154 | 7.6 | 2120 | 106 | 5.0 | 2200 | -7.7 | -3.6 |
| n-Octadecane | 2790 | 141 | 5 | 2690 | 239 | 8.9 | 2900 | -3.8 | -7.2 |
| Phytane | 1480 | 101 | 6.8 | 1490 | 131 | 8.8 | 1600 | -7.5 | -6.9 |
| n-Nonadecane | 2550 | 160 | 6.3 | 2530 | 187 | 7.4 | 2600 | -1.9 | -2.7 |
| n-Eicosane | 2560 | 199 | 7.8 | 2320 | 185 | 8.0 | 2700 | -5.2 | -14 |
| n-Heneicosane | 2260 | 145 | 6.4 | 2340 | 99.6 | 4.2 | 2400 | -5.8 | -2.5 |
| nDocosane | 2120 | 115 | 5.4 | 2130 | 77.8 | 3.6 | 2200 | -3.6 | -3.2 |
| n-Tricosane | 1950 | 74.3 | 3.8 | 2040 | 90 | 4.4 | 2000 | -2.5 | 2.0 |
| n-Tetracosane | 1790 | 70.4 | 3.9 | 1850 | 67.4 | 3.6 | 2000 | -10 | -7.5 |
| n-Pentacosane | 1690 | 74.3 | 4.4 | 1720 | 62.2 | 3.6 | 1700 | -0.59 | 1.2 |
| n-Hexacosane | 1450 | 64 | 4.4 | 1440 | 51.5 | 3.6 | 1500 | -3.3 | -4.0 |
| n-Heptacosane | 1080 | 67.6 | 6.2 | 1120 | 38.9 | 3.5 | 1200 | -10 | -6.7 |
| n-Octacosane | 859 | 38.3 | 4.4 | 841 | 36.5 | 4.3 | 880 | -2.4 | -4.4 |
| n-Nonacosane | 761 | 40.5 | 5.3 | 788 | 72 | 9.1 | 810 | -6 | -2.7 |
| n-Triacontane | 636 | 38.5 | 6 | 651 | 61.4 | 9.4 | 650 | -2.2 | 0.15 |
| n-Hentriacontane | 555 | 36.4 | 6.6 | 580 | 41.3 | 7.1 | 580 | -4.3 | 0.0 |
| n-Dotriacontane | 451 | 25.6 | 5.7 | 424 | 56 | 13 | 440 | 2.5 | -3.6 |
| n-Tritriacontane | 390 | 20.4 | 5.2 | 357 | 38.4 | 11 | 400 | -2.5 | -11 |
| n-Tetratriacontane | 348 | 31 | 8.9 | 328 | 37.9 | 12 | 350 | -0.57 | -6.3 |
| n-Pentatriacontane | 353 | 20.2 | 5.7 | 372 | 53.3 | 14 | 350 | 0.86 | 6.3 |
| n-Hexatriacontane | 223 | 17.5 | 7.8 | 235 | 14.4 | 6.1 | 230 | -3 | 2.2 |
| n-Heptatriacontane | 222 | 13.7 | 6.2 | 219 | 32.3 | 15 | 230 | -3.5 | -4.8 |
| n-Octatriacontane | 207 | 16.3 | 7.9 | 216 | 22.7 | 10 | 220 | -5.9 | -1.8 |
| n-Nonatriacontane | 167 | 16.7 | 10 | 164 | 19.8 | 12 | 180 | -7.2 | -8.9 |
| n-Tetracontane | 173 | 17.2 | 9.9 | 165 | 19.8 | 12 | 190 | -8.9 | -13 |
| Total Resolved Hydrocarbons | 205000 | 16000 | 7.8 | 204000 | 11600 | 5.7 | 220000 | -6.8 | -7.3 |
| Total Petroleum Hydrocarbons | 613000 | 40100 | 6.5 | 616000 | 18800 | 3.0 | 660000 | -7.1 | -6.7 |

Table 3-33: Control Oil Summary for North Slope Crude (continued)

| S/T | 1997 Data (n=12) | | | 1998 Data (n=10) | | | Laboratory Data | | |
|------------------------|------------------|-----|-----|------------------|------|-----|-----------------|--------------|--------------|
| | Mean µg/g | SD | RSD | Mean µg/g | SD | RSD | Mean µg/g | %DIF 1997 | %DIF 1998 |
| T4-C23 Diterpane | 38 | 8.6 | 23 | 36 | 4.2 | 12 | 46 | -17 | -22 |
| S4-Diacholestane | 41 | 1.8 | 4.4 | 45 | 4.8 | 11 | 50 | -18 | -10 |
| S5-Diacholestane | 27 | 2.4 | 8.9 | 28 | 3.2 | 11 | 29 | -6.9 | -3.4 |
| T9-C29 Tricyclic | 15 | 1.5 | 10 | 16 | 0.97 | 6.1 | 16 | -6.2 | 0 |
| T10-C29 Tricyclic | 16 | 1.3 | 8.1 | 16 | 1.8 | 11 | 18 | -11 | -11 |
| T11-Trisnorhopane (TS) | 22 | 3.2 | 14 | 23 | 1.8 | 7.8 | 26 | -15 | -12 |
| T12-Trisnorhopane (TM) | 26 | 2.2 | 8.5 | 26 | 1.4 | 5.4 | 32 | -19 | -19 |
| S25-Ethylcholestane | 48 | 4.4 | 9.2 | 56 | 7.2 | 13 | 53 | -9.4 | 5.7 |
| S28-Ethylcholestane | 37 | 2.6 | 7 | 41 | 3.2 | 7.8 | 40 | -7.5 | 2.5 |
| T15-Norhopane | 87 | 6.4 | 7.4 | 87 | 4.1 | 4.7 | 96 | -9.4 | -9.4 |
| T19-Hopane | 120 | 9.5 | 7.9 | 120 | 7 | 5.8 | 128 | -6.2 | -6.2 |
| T21-Homohopane | 50 | 3.3 | 6.6 | 52 | 3.5 | 6.7 | 53 | -5.7 | -1.9 |
| T22-Homohopane | 34 | 3 | 8.8 | 37 | 2 | 5.4 | 38 | -10 | -2.6 |

Notes:

S/T= Steranes and Triterpanes

n = Number of Samples

SD = Standard Deviation

RSD = Relative Standard Deviation

%DIF = Percent Difference

& = Qualifier is outside acceptable range

Table 3-34: Control Oil Summary for Cook Inlet Crude

| PAH | 1997 Data (n=15) | | | 1998 Data (n=13) | | | Laboratory Data | | |
|------------------------------|------------------|------|-----|------------------|------|-----|-----------------|--------------|--------------|
| | Mean µg/g | SD | RSD | Mean µg/g | SD | RSD | Mean µg/g | %DIF 1997 | %DIF 1998 |
| Naphthalene | 585 | 27 | 4.6 | 595 | 31 | 5.2 | 607 | -3.6 | -2.0 |
| C1-Naphthalenes | 1430 | 140 | 9.7 | 1550 | 100 | 6.4 | 1500 | -4.7 | 3.3 |
| C2-Naphthalenes | 2190 | 270 | 12 | 2410 | 280 | 12 | 2270 | -3.5 | 6.2 |
| C3-Naphthalenes | 1730 | 280 | 16 | 1850 | 200 | 11 | 1930 | -10 | -4.1 |
| C4-Naphthalenes | 965 | 190 | 20 | 1000 | 110 | 11 | 987 | -2.2 | 1.3 |
| Acenaphthylene | 1.93 | 0.33 | 17 | 2.05 | 2.0 | 98 | 1.8 | 7.2 | 14 |
| Acenaphthene | 52 | 1.8 | 3.5 | 58.3 | 2.0 | 3.4 | 52 | 0 | 12 |
| Biphenyl | 96.9 | 3.9 | 4.1 | 98.8 | 4.1 | 4.1 | 98 | -1.1 | 0.82 |
| Fluorene | 136 | 8.3 | 6.1 | 147 | 7.5 | 5.1 | 133 | 2.2 | 10 |
| C1-Fluorenes | 297 | 15 | 5 | 319 | 30 | 9.4 | 280 | 6.1 | 14 |
| C2-Fluorenes | 371 | 27 | 7.3 | 395 | 20 | 5.1 | 363 | 2.2 | 8.8 |
| C3-Fluorenes | 365 | 46 | 13 | 374 | 23 | 6.1 | 370 | -1.4 | 1.1 |
| Anthracene | 14.7 | 3.4 | 23 | 18.3 | 7.1 | 39 | 11 | 34 | 66& |
| Phenanthrene | 311 | 13 | 4.2 | 349 | 8.6 | 2.5 | 303 | 2.6 | 15 |
| C1-Phenanthrenes/anthracenes | 719 | 41 | 5.7 | 774 | 37 | 4.8 | 690 | 4.2 | 12 |
| C2-Phenanthrenes/anthracenes | 831 | 74 | 8.9 | 849 | 60 | 7.1 | 743 | 12 | 14 |
| C3-Phenanthrenes/anthracenes | 529 | 74 | 14 | 541 | 30 | 5.5 | 483 | 9.5 | 12 |
| C4-Phenanthrenes/anthracenes | 294 | 32 | 11 | 304 | 56 | 18 | 263 | 12 | 16 |
| Dibenzothiophene | 21 | 1.4 | 6.7 | 22.4 | 1.7 | 7.6 | 19 | 10 | 18 |
| C1-Dibenzothiophenes | 66.9 | 5.2 | 7.8 | 64.7 | 6.9 | 11 | 61 | 9.7 | 6.1 |
| C2-Dibenzothiophenes | 99.5 | 14 | 14 | 96.8 | 6.7 | 6.9 | 89 | 12 | 8.8 |
| C3-Dibenzothiophenes | 75.3 | 8.4 | 11 | 76.5 | 5.6 | 7.3 | 70 | 7.6 | 9.3 |
| Fluoranthene | 7.57 | 0.66 | 8.7 | 7.83 | 1.3 | 17 | 7.3 | 3.7 | 7.3 |
| Pyrene | 19.9 | 1.3 | 6.4 | 19.4 | 2.5 | 13 | 19 | 4.7 | 2.1 |
| C1-Fluoranthenes/pyrenes | 130 | 10 | 7.8 | 143 | 12 | 8.4 | 120 | 8.3 | 19 |
| C2-Fluoranthenes/pyrenes | 193 | 18 | 9.1 | 196 | 13 | 6.6 | 173 | 12 | 13 |
| C3-Fluoranthenes/pyrenes | 207 | 25 | 12 | 198 | 23 | 12 | 190 | 8.9 | 4.2 |
| Benz[a]anthracene | 20.2 | 2.3 | 12 | 23.4 | 1.7 | 7.3 | 20 | 1 | 17 |
| Chrysene | 43.3 | 3.8 | 8.8 | 47.1 | 3.2 | 6.8 | 43 | 0.7 | 9.5 |
| C1-Chrysenes | 113 | 12 | 10 | 109 | 11 | 10 | 107 | 5.6 | 1.9 |
| C2-Chrysenes | 151 | 16 | 10 | 135 | 18 | 13 | 137 | 10 | -1.4 |
| C3-Chrysenes | 110 | 15 | 14 | 99.5 | 12 | 12 | 100 | 10 | -0.5 |
| C4-Chrysenes | 86 | 13 | 15 | 76.1 | 14 | 18 | 86 | 0 | -12 |
| Benzo[b]fluoranthene | 6.99 | 1.0 | 14 | 7.85 | 0.75 | 9.6 | 7.3 | -4.2 | 7.5 |
| Benzo[e]pyrene | 11.9 | 1.6 | 13 | 13.7 | 0.63 | 4.6 | 12 | -0.83 | 14 |
| Benzo[a]pyrene | 2.83 | 0.61 | 22 | 3.79 | 0.69 | 18 | 3 | -5.7 | 26 |
| Perylene | 4.59 | 0.96 | 21 | 4.86 | 0.75 | 15 | 5.3 | -13 | -8.3 |
| Dibenzo[a,h]anthracene | 3.17 | 0.32 | 10 | 3.38 | 0.18 | 5.3 | 3.2 | -0.94 | 5.6 |
| Benzo[g,h,i]perylene | 4.51 | 0.49 | 11 | 4.73 | 0.53 | 11 | 4.4 | 2.5 | 7.5 |

Table 3-34: Control Oil Summary for Cook Inlet Crude (continued)

| SHC | 1997 Data (n=12) | | | 1998 Data (n=12) | | | Laboratory Data | | |
|------------------------------|------------------|-------|-----|------------------|-------|-----|-----------------|--------------|--------------|
| | Mean µg/g | SD | RSD | Mean µg/g | SD | RSD | Mean µg/g | %DIF 1997 | %DIF 1998 |
| n-Nonane | 6360 | 400 | 6.3 | 5870 | 260 | 4.4 | 6400 | -0.62 | -8.3 |
| n-Decane | 6020 | 250 | 4.2 | 4970 | 240 | 4.8 | 6100 | -1.3 | -18 |
| n-Undecane | 6660 | 210 | 3.2 | 5580 | 190 | 3.4 | 6700 | -0.6 | -17 |
| n-Dodecane | 6490 | 280 | 4.3 | 5770 | 280 | 4.8 | 6500 | -0.15 | -11 |
| n-Tridecane | 6860 | 150 | 2.2 | 6230 | 230 | 3.7 | 6900 | -0.58 | -9.7 |
| Isoprenoid RRT 1380 | 1730 | 98 | 5.7 | 1460 | 210 | 14 | 1800 | -3.9 | -19 |
| n-Tetradecane | 7360 | 510 | 6.9 | 6660 | 360 | 5.4 | 7300 | 0.82 | -8.8 |
| Isoprenoid RRT 1470 | 2730 | 150 | 5.5 | 2590 | 230 | 8.9 | 2800 | -2.5 | -7.5 |
| n-Pentadecane | 6720 | 130 | 1.9 | 6230 | 300 | 4.8 | 6800 | -1.2 | -8.4 |
| n-Hexadecane | 5830 | 260 | 4.4 | 5550 | 230 | 4.1 | 5900 | -1.2 | -5.9 |
| Isoprenoid RRT 1650 | 2830 | 170 | 6 | 2520 | 270 | 11 | 2800 | 1.1 | -10 |
| n-Heptadecane | 5450 | 220 | 4 | 5580 | 350 | 6.3 | 5500 | -0.91 | 1.4 |
| Pristane | 4610 | 170 | 3.7 | 4540 | 160 | 3.5 | 4600 | 0.22 | -1.3 |
| n-Octadecane | 4820 | 140 | 2.9 | 4370 | 240 | 5.5 | 4900 | -1.6 | -11 |
| Phytane | 1760 | 110 | 6.2 | 1680 | 190 | 11 | 1800 | -2.2 | -6.7 |
| n-Nonadecane | 4520 | 260 | 5.8 | 3920 | 180 | 4.6 | 4500 | 0.44 | -13 |
| n-Eicosane | 4190 | 140 | 3.3 | 3590 | 160 | 4.4 | 4200 | -0.24 | -14 |
| n-Heneicosane | 3470 | 110 | 3.2 | 3360 | 90 | 2.7 | 3500 | -0.86 | -4 |
| nDocosane | 3110 | 120 | 3.8 | 2880 | 83 | 2.9 | 3200 | -2.8 | -10 |
| n-Tricosane | 2960 | 79 | 2.7 | 2840 | 79 | 2.8 | 3000 | -1.3 | -5.3 |
| n-Tetracosane | 2610 | 110 | 4.2 | 2520 | 72 | 2.8 | 2600 | 0.38 | -3.1 |
| n-Pentacosane | 2430 | 120 | 4.9 | 2390 | 67 | 2.8 | 2500 | -2.8 | -4.4 |
| n-Hexacosane | 2060 | 100 | 4.8 | 1950 | 52 | 2.7 | 2100 | -1.9 | -7.1 |
| n-Heptacosane | 1720 | 75 | 4.4 | 1630 | 49 | 3 | 1800 | -4.4 | -9.4 |
| n-Octacosane | 1470 | 65 | 4.4 | 1280 | 58 | 4.5 | 1500 | -2 | -15 |
| n-Nonacosane | 1370 | 65 | 4.7 | 1320 | 100 | 7.6 | 1400 | -2.1 | -5.7 |
| n-Triacontane | 1100 | 74 | 6.7 | 1060 | 79 | 7.4 | 1100 | 0 | -3.6 |
| n-Hentriacontane | 1020 | 55 | 5.4 | 1020 | 110 | 11 | 1000 | 2 | 2 |
| n-Dotriacontane | 798 | 47 | 5.9 | 648 | 44 | 6.8 | 820 | -2.7 | -21 |
| n-Tritriacontane | 552 | 62 | 11 | 532 | 54 | 10 | 560 | -1.4 | -5 |
| n-Tetratriacontane | 496 | 68 | 14 | 441 | 38 | 8.6 | 510 | -2.7 | -14 |
| n-Pentatriacontane | 462 | 52 | 11 | 428 | 50 | 12 | 470 | -1.7 | -8.9 |
| n-Hexatriacontane | 258 | 18 | 7 | 239 | 23 | 9.6 | 260 | -0.77 | -8.1 |
| n-Heptatriacontane | 201 | 14 | 7 | 174 | 26 | 15 | 200 | 0.5 | -13 |
| n-Octatriacontane | 184 | 16 | 8.7 | 162 | 24 | 15 | 190 | -3.2 | -15 |
| n-Nonatriacontane | 130 | 8.5 | 6.5 | 125 | 17 | 14 | 130 | 0 | -3.8 |
| n-Tetracontane | 129 | 7.9 | 6.1 | 113 | 12 | 11 | 130 | -0.77 | -13 |
| Total Resolved Hydrocarbons | 298000 | 9400 | 3.2 | 262000 | 17000 | 6.5 | 300000 | -0.67 | -13 |
| Total Petroleum Hydrocarbons | 731000 | 25000 | 3.4 | 679000 | 19000 | 2.8 | 730000 | 0.14 | -7 |

Table 3-34: Control Oil Summary for Cook Inlet Crude (continued)

| S/T | 1997 Data (n=11) | | | 1998 Data (n=10) | | | Laboratory Data | | |
|------------------------|------------------|-----|-----|------------------|------|-----|-----------------|--------------|--------------|
| | Mean µg/g | SD | RSD | Mean µg/g | SD | RSD | Mean µg/g | %DIF 1997 | %DIF 1998 |
| T4-C23 Diterpane | 6.3 | 1.4 | 22 | 6.9 | 0.44 | 6.4 | 6 | 5 | 15 |
| S4-Diacholestane | 48 | 9.3 | 19 | 57 | 3 | 5.3 | 50 | -4 | 14 |
| S5-Diacholestane | 32 | 8.1 | 25 | 39 | 3.8 | 9.7 | 36 | -11 | 8.3 |
| T11-Trisnorhopane (TS) | 20 | 4.8 | 24 | 20 | 2.1 | 10 | 19 | 5.3 | 5.3 |
| T12-Trisnorhopane (TM) | 15 | 2.5 | 17 | 18 | 0.92 | 5.1 | 16 | -6.2 | 12 |
| S24-Methylcholestane | 22 | 4.7 | 21 | 29 | 2.2 | 7.6 | 26 | -15 | 12 |
| S25-Ethylcholestane | 44 | 11 | 25 | 51 | 6.9 | 14 | 46 | -4.3 | 11 |
| S28-Ethylcholestane | 42 | 8.3 | 20 | 53 | 3.5 | 6.6 | 47 | -11 | 13 |
| T15-Norhopane | 57 | 11 | 19 | 64 | 6.3 | 9.8 | 63 | -9.5 | 1.6 |
| T19-Hopane | 120 | 23 | 19 | 130 | 5.7 | 4.4 | 120 | 0 | 8.3 |
| T21-Homohopane | 43 | 7.8 | 18 | 51 | 4.6 | 9 | 48 | -10 | 6.2 |
| T22-Homohopane | 29 | 5.5 | 19 | 36 | 1.7 | 4.7 | 34 | -15 | 5.9 |

Notes:

PAH – Polycyclic Aromatic Hydrocarbons

SHC – Saturated Hydrocarbons

S/T - Steranes and Triterpanes

n – Number of Samples

SD – Standard Deviation

RSD – Relative Standard Deviation

%DIF – Percent Difference

& - Qualifier is outside acceptable range

na – Not Applicable

Table 3-35: Results for Standard Reference Material (SRM) BCSS-1 and MESS-2, Marine Sediment Samples issued by the National Research Council of Canada (NRC)

| Sample ID | Ag (µg/g) | Al (%) | As (µg/g) | Ba (µg/g) | Be (µg/g) | Ca (%) | Cd (µg/g) | Cr (µg/g) | Cu (µg/g) | Fe (%) | Hg (µg/g) |
|---|---------------|---------------|---------------|--------------|--------------|---------------|---------------|--------------|--------------|---------------|------------------|
| SRM-BCSS-1 This Study (n = 12) 1997 | 0.12 ±0.02 | 6.17 ±0.08 | 10.8 ±0.8 | 336 ±7 | 1.3 ±0.06 | 0.55 ±0.02 | 0.27 ±0.01 | 113 ±3 | 18.8 ±0.4 | 3.31 ±0.08 | 0.035* ±0.001 |
| SRM-BCSS-1 This Study (n = 6) 1998 | 0.11 ±0.02 | 6.30 ±0.17 | 10.5 ±0.3 | 333 ±5 | 1.3 ±0.1 | -- | 0.25 ±0.01 | 117 ±7 | 18.7 ±0.5 | 3.33 ±0.08 | -- |
| SRM BCSS-1 NRC Certified | 0.11 ±0.03 | 6.26 ±0.22 | 11.1 ±1.4 | (330) | 1.3 ±0.3 | 0.54 ±0.05 | 0.25 ±0.04 | 123 ±14 | 18.5 ±2.7 | 3.29 ±0.10 | (0.04)* |
| SRM MESS-2 This Study 1997 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.088 ±0.003 |
| SRM MESS-2 This Study 1998 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.090 ±0.004 |
| SRM MESS-2 NRC Certified | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.092 ±0.009 |
| Spike Recovery (%) 1997 | 81.3 ±3.3 | 96.9 ±3.9 | 98.7 ±9.2 | 102 ±5 | 80.5 ±6.7 | 98.9 ±1.5 | 93.2 ±4.0 | 100 ±7 | 98.5 ±1.9 | 97.3 ±1.8 | 95.0 ±6.3 |
| Spike Recovery (%) 1998 | 60.8 ±19.2 | 102 ±4 | 94.4 ±11.8 | 102 ±2 | 81.5 ±5.2 | -- | 97.5 ±3.6 | 102 ±6 | 95.7 ±1.6 | 98.0 ±4.6 | 83.4 ±8.9 |

Notes:

Values in parenthesis are for reference only; SRM not certified by the NRC or NIST.

*SRM 1646a, issued by the National Institute of Standards and Technology (NIST) was used for Hg, 1997 (Digest 1 and 2).

N.A. = Not Available.

Table 3-35: Results for Standard Reference Material (SRM) BCSS-1 and MESS-2 Marine Sediment Sample, Issued by the National Research Council of Canada (NRC) (continued)

| Sample ID | K (%) | Mg (%) | Mn (µg/g) | Ni (µg/g) | Pb (µg/g) | Sb (µg/g) | Se (µg/g) | Sn (µg/g) | Tl (µg/g) | V (µg/g) | Zn (µg/g) | TOC (%) |
|---|---------------|---------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|--------------|--------------|---------------|
| SRM-BCSS-1 This Study (n = 12) 1997 | 1.82 ±0.01 | 1.39 ±0.04 | 233 ±8 | 55.0 ±1.9 | 23.7 ±0.4 | 0.66 ±0.04 | 0.42 ±0.03 | 2.11 ±0.09 | 0.56 ±0.01 | 94.1 ±6.9 | 114 ±6 | 2.12 ±0.05 |
| SRM-BCSS-1 This Study (n = 6) 1998 | -- | -- | 230 ±3 | 53.9 ±2.0 | 23.6 ±1.1 | 0.67 ±0.05 | 0.45 ±0.04 | 2.03 ±0.22 | 0.55 ±0.02 | 91.6 ±2.2 | 111 ±2 | -- |
| SRM BCSS-1 NRC Certified | 1.80 ±0.03 | 1.47 ±0.14 | 229 ±15 | 55.3 ±3.6 | 22.7 ±3.4 | 0.59 ±0.06 | 0.43 ±0.06 | 1.85 ±0.20 | (0.6) | 93.4 ±4.9 | 119 ±12 | 2.19 ±0.09 |
| SRM MESS-2 This Study 1997 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SRM MESS-2 This Study 1998 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.07 ±0.05 |
| SRM MESS-2 NRC Certified | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.14 ±0.03 |
| Spike Recovery (%) 1997 | 96.9 ±3.4 | 94.4 ±3.3 | 97.1 ±2.5 | 96.9 ±4.0 | 100 ±4 | 99.0 ±3.9 | 64.0 ±14.0 | 108 ±5 | 102 ±5 | 123 ±5 | 99.4 ±3.0 | N.A. |
| Spike Recovery (%) 1998 | -- | -- | 102 ±2 | 102 ±10 | 105 ±3 | 103 ±5 | 35.4 ±6.8 | 122 ±4 | 103 ±3 | 134 ±1 | 96.1 ±2.9 | N.A. |

Notes:

Values in parenthesis are for reference only; SRM not certified by the NRC or NIST.

*SRM 1646a, issued by the National Institute of Standards and Technology was used for Hg, 1997 (Digest 1 and 2).

N.A. = Not Available.

Table 3-36: Results for Standard Reference Material (SRM) 1566a, an Oyster Tissue Issued by the National Institute of Standards & Technology (NIST), SRM DORM-2, a Dogfish Muscle Certified by the National Research Council of Canada (NRC) and SRM TORT-2, a Lobster Hepatopancreas Standard from the NIST

| Standard Reference Material | Ag (µg/g) | Al (µg/g) | As (µg/g) | Ba (µg/g) | Be (µg/g) | Cd (µg/g) | Cr (µg/g) | Cu (µg/g) | Fe (µg/g) |
|--|-----------------|--------------|--------------|--------------------|---------------------|-----------------|---------------|---------------|--------------|
| SRM 1566a (n = 1) (This Study, 1997) | 1.74 | 210 | 13.8 | -- | -- | 4.51 | 1.48 | 63.5 | 544 |
| SRM 1566a (n = 1) (This Study, 1998) | 1.74 | 211 | 13.7 | 2.05 | 0.01 | 4.08 | 1.10 | 66.2 | 534 |
| SRM 1566a (NIST Certified) | 1.68 ±0.15 | 203 ±12.5 | 14.0 ±1.2 | -- | -- | 4.15 ±0.38 | 1.43 ±0.46 | 66.3 ±4.3 | 539 ±15 |
| SRM 1643d* (n = 1) (This Study, 1997) | -- | -- | -- | 513.4 µg/L | 12.44 µg/L | -- | -- | -- | -- |
| SRM 1643d* (n = 1) (This Study, 1998) | | | | 513.4 | 12.44 | | | | |
| SRM 1643d* (NIST Certified) | -- | -- | -- | 506.5 µg/L ±8.9 | 12.53 µg/L ±0.28 | -- | -- | -- | -- |
| SRM DORM-2 (n = 1) (This Study, 1997) | 0.053 | 10.3 | 17.2 | 2.35 | N.D. | N.D. | 32.7 | 2.49 | 148 |
| SRM DORM-2 (NRC Certified) | 0.041 ±0.013 | 10.9 ±1.7 | 18.0 ±1.1 | -- | -- | 0.043 ±0.008 | 34.7 ±5.5 | 2.34 ±0.16 | 142 ±10 |
| SRM TORT-2 (n = 1) (This Study, 1998) | 3.51 | 23.0 | 20.6 | 1.90 | 0.01 | 26.8 | 0.66 | 100 | 100 |
| SRM TORT-2 (NRC Certified) | -- | -- | 21.6 ±1.8 | -- | -- | 26.7 ±0.6 | 0.77 ±0.15 | 106 ±10 | 105 ±13 |
| Spike Recovery (%) Liver (1997) | 94.5 ±1.8 | 96.2 ±1.4 | 100 ±10 | 97.0 ±2.9 | 105 ±4 | 94.9 ±5.6 | 108 ±1 | 91.4 ±0.6 | 99.1 ±1.8 |
| Spike Recovery (%) Liver (1998) | 92.9 ±2.2 | 94.2 ±2.7 | 101 ±6 | 97.7 ±3.6 | 99.6 ±7.0 | 93.8 ±3.6 | 99.6 ±9.2 | 93.0 ±2.1 | 101 ±3 |

Notes:

Values in parenthesis are for reference only; SRM not certified by the NRC or NIST.

* SRM 1643d, a water sample certified by NIST.

N.D. = Not Detected.

Table 3-36: Results for Standard Reference Material (SRM) 1566a, an Oyster Tissue lissued by the National Institute of Standards & Technology (NIST), SRM DORM-2, a Dogfish Muscle Certified by the National Research Council of Canada (NRC) and SRM TORT-2, a Lobster Hepatopancreas Standard from the NIST (continued)

| Standard Reference Material | Hg (µg/g) | Mn (µg/g) | Ni (µg/g) | Pb (µg/g) | Sb (µg/g) | Se (µg/g) | Sn (µg/g) | Tl (µg/g) | V (µg/g) | Zn (µg/g) |
|--|-------------------|---------------|---------------|-----------------|-------------------|----------------|---------------|--------------------|---------------|--------------|
| SRM 1566a (n = 1) (This Study, 1997) | 0.069 | 11.5 | -- | 0.362 | 0.012 | 2.15 | 2.73 | 0.009 | 4.77 | 837 |
| SRM 1566a (n = 1) (This Study, 1998) | 0.068 | 11.1 | 2.33 | 0.382 | 0.008 | 2.20 | 2.62 | 0.005 | 4.70 | 820 |
| SRM 1566a (NIST Certified) | 0.0642 ±0.0067 | 12.3 ±1.5 | 2.25 ±0.44 | 0.371 ±0.014 | (0.01) | 2.21 ± 0.24 | (3) | -- | 4.68 ±0.15 | 830 ±57 |
| SRM 1643d* (n = 1) (This Study, 1997) | -- | -- | -- | -- | 54.6 µg/L | -- | -- | 7.45 µg/L | -- | -- |
| SRM 1643d* (n = 1) (This Study, 1998) | -- | -- | -- | -- | 55.0 | -- | -- | 7.36 | -- | -- |
| SRM 1643d* (NIST Certified) | -- | -- | -- | -- | 54.1 µg/L ±1.1 | -- | -- | 7.28 µg/L ±0.25 | -- | -- |
| SRM DORM-2 (n = 1) (This Study, 1997) | 4.70 | 3.41 | -- | 0.068 | 0.026 | 1.49 | 0.025 | 0.005 | 0.220 | 24.8 |
| SRM DORM-2 (NRC Certified) | 4.64 ±0.26 | 3.66 ±0.34 | -- | 0.065 ±0.007 | -- | 1.40 ±0.09 | (0.023) | (0.004) | -- | 25.6 ±2.3 |
| SRM TORT-2 (n = 1) (This Study, 1998) | 0.28 | 12.8 | 2.33 | 0.338 | 0.024 | 5.37 | 0.051 | 0.011 | 1.57 | 181 |
| SRM TORT-2 (NRC Certified) | 0.27 ±0.06 | 13.6 ±1.2 | 2.50 ±0.19 | 0.35 ±0.13 | -- | 5.63 ±0.67 | (0.04) | -- | 1.64 ±0.19 | 180 ±6 |
| Spike Recovery (%) Liver(1997) | 61.0 ±5.3 | 95.4 ±3.4 | -- | 92.7 ±2.2 | 92.2 ±1.5 | 94.6 ±3.0 | 94.6 ± 5.9 | 90.0 ±1.0 | 91.6 ±2.0 | 93.7 ±2.6 |
| Spike Recovery (%) Liver (1998) | 58.4 ±5.2 | 94.5 ±2.6 | 70.5 ±1.3 | 94.7 ±5.4 | 97.4 ±8.0 | 92.8 ±2.8 | 100 ±7 | 93.5 ±5.3 | 95.0 ±4.4 | 95.9 ±4.0 |

Notes:

Values in parenthesis are for reference only; SRM not certified by the NRC or NIST.

* SRM 1643d, a water sample certified by NIST.

N.D = Not Detected.

Table 3-37: Results for Standard Reference Material (SRM) 1643d, a Water Sample Issued by the National Institute of Standards & Technology (NIST), SRM 2704, a River Sediment from the NIST, SRM SLRS-3, a Riverine Water Sample Certified by the National Research Council of Canada (NRC) and SRM MESS-2 from the NRC

| Standard Reference Material | Ag (mg/L) | Al (mg/L) | As (mg/L) | Ba (mg/L) | Be (mg/L) | Cd (mg/L) | Cr (mg/L) | Cu (mg/L) | Fe (mg/L) | Hg (mg/L) |
|---|-----------------------|---------------|---------------------|-------------------|---------------------|---------------------|---------------------|-------------------|-------------------|-----------------|
| SRM 1643d (n = 1) (This Study, 1997) | 0.0013 | -- | 0.0572 | 0.527 | 0.0125 | 0.0065 | 0.0184 | 0.0199 | 0.0904 | -- |
| SRM 1643d (n = 1) (This Study, 1998) | 0.0013 | -- | -- | -- | 0.0127 | -- | -- | -- | -- | -- |
| SRM 1643d (NIST Certified) | 0.001270 ±0.000057 | -- | 0.05602 ±0.00073 | 0.5065 ±0.0089 | 0.01253 ±0.00028 | 0.00647 ±0.00037 | 0.01853 ±0.00020 | 0.0205 ±0.0038 | 0.0912 ±0.0039 | -- |
| SRM 2704* (n = 2) (This Study, 1998) | 0.42 ±0.03 | 6.05 ±0.04 | 24.2 ±0.2 | 409 ±6 | 3.08 ±0.05 | 3.58 ±0.13 | 131 ±0 | 97.3 ±3.3 | 4.17 ±0.03 | 1.50 ±0.03 |
| SRM 2704* (NIST Certified) | -- | 6.11 ±0.16 | 23.4 ±0.8 | 414 ±12 | -- | 3.45 ±0.22 | 135 ±5 | 98.6 ±5.0 | 4.11 ±0.10 | 1.47 ±0.07 |
| SRM SLRS-3 (n = 1) (This Study, 1997) | -- | -- | -- | 0.0131 | -- | -- | -- | -- | -- | -- |
| SRM SLRS-3 (NRC Certified) | -- | -- | -- | 0.0134 ±0.0006 | -- | -- | -- | -- | -- | -- |
| SRM MESS-2* (n = 1) (This Study, 1997) | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.086 ±0.001 |
| SRM MESS-2* (NRC Certified) | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.092 ±0.009 |
| Spike Recovery (%) | | | | | | | | | | |
| Oil | 53.8 | -- | 56.0 | 94.7 | 102 | 90.8 | 80.6 | 95.6 | 73.7 | -- |
| Water | 52.6 | -- | 87.0 | 144 | 102 | M.O.A. | 93.0 | 102 | 91.6 | -- |
| Particulates | 95.5 | 104.4 | 99.2 | 98.7 | 76.1 | 95.2 | 96.2 | 94.9 | 101.6 | 94.1 |

Notes:

Values in parenthesis are for reference only; SRM not certified by the NIST.

* Values in µg/g.

** Final concentrations are corrected for percent spike recovery.

M.O.A. = Method of Standard Addition analysis.

Table 3-37: Results for Standard Reference Material (SRM) 1643d, a Water Sample Issued by the National Institute of

**Standards & Technology (NIST), SRM 2704, a River Sediment from the NIST, SRM SLRS-3, a Riverine Water Sample
Certified by the National Research Council of Canada (NRC) and SRM MESS-2 from the NRC (continued)**

| Standard Reference Material | Mn (mg/L) | Ni (mg/L) | Pb (mg/L) | Sb (mg/L) | Se (mg/L) | Sn (mg/L) | Tl (mg/L) | V (mg/L) | Zn (mg/L) |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|----------------------|
| SRM 1643d (n = 1) (This Study, 1997) | 0.0374 | 0.0564 | 0.0179 | 0.0528 | 0.0128 | 0.0237 | 0.0072 | 0.0364 | 0.073 |
| SRM 1643d (n = 1) (This Study, 1998) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SRM 1643d (NIST Certified) | 0.03766 ±0.00083 | 0.0581 ±0.0027 | 0.01815 ±0.00064 | 0.0541 ±0.0011 | 0.01143 ±0.00017 | -- | 0.00728 ±0.00025 | 0.0351 ±0.0014 | 0.07248 ±0.00065 |
| SRM 2704* (n = 2) (This Study, 1998) | 562 ±6 | 41.6 ±0.3 | 171 ±8 | 3.79 ±0.11 | 1.07 ±0.00 | 9.52 ±0.42 | 1.08 ±0.06 | 93.5 ±3.5 | 429 ±7 |
| SRM 2704* (NIST Certified) | 555 ±19 | 44.1 ±3.0 | 161 ±17 | 3.79 ±0.15 | 1.12 ±0.05 | (9.5) | 1.06 ±0.07 | 95 ±4 | 438 ±12 |
| SRM SLRS-3 (n = 1) (This Study) | -- | -- | -- | -- | -- | -- | -- | -- | 0.0011 |
| SRM SLRS-3 (NRC Certified) | -- | -- | -- | -- | -- | -- | -- | -- | 0.00104 ±0.00009 |
| SRM MESS-2* (n = 2) (This Study) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SRM MESS-2* (NRC Certified) | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Spike Recovery (%) | | | | | | | | | |
| Oil | 91.6 | 98.4 | 97.0 | 95.8 | 54.5 | 86.3 | 95.0 | 51.1* * | 97.1 |
| Water | 92.5 | 79.6** | M.O.A. | M.O.A. | 68.9 | M.O.A. | M.O.A. | 78.7** | M.O.A. |
| Particulates | 107.3 | 106.7 | 97.8 | 103.4 | 81.7 | 97.0 | 101.5 | 99.8 | 96.6 |

Notes:

Values in parenthesis are for reference only; SRM not certified by the NIST.

* Values in µg/g.

** Final concentrations are corrected for percent spike recovery.

M.O.A. = Method of Standard Addition analysis.

Table 3-38: RGS Fold Induction of TCDD Control

| Test Date | Fold Induction (1 ng/mL TCDD) | Test Date | Fold Induction (1 ng/mL TCDD) |
|-------------------------|--|-------------------------|--|
| 8/4/97 | 112.1 | 8/4/98 | 71.6 |
| 8/5/97 | 115.0 | 8/4/98 | 75.9 |
| 8/15/97 | 85.2 | 1/8/99 | 62.1 |
| 8/18/97 | 127.0 | 1/11/99 | 110.1 |
| 9/29/97 | 99.1 | 1/19/99 | 71.3 |
| 10/17/97 | 103.1 | | |
| 1997 Mean SD | 106.9 ±14.4 | 1998 Mean SD | 78.1 ±18.6 |