

ROSETTE LOG

MISSION ID: 2003-11 STATION: 3103 CAST NUMBER: 1 UTC DATE (dd/mm/yyyy): 27/05/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |   |     |  |     |  |     |  |  |  |  |  | Comments            |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|---|-----|--|-----|--|-----|--|--|--|--|--|---------------------|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |   | NUT |  | TCO |  | C13 |  |  |  |  |  |                     |
|            |            |            |           |                   |                    | OXY           |   |     |  | ALK |  | CHL |  |  |  |  |  |                     |
| 1          | 1          | 1356       | 0.024     | Bot-10            | /                  | /             | / | /   |  |     |  |     |  |  |  |  |  | These samples are   |
| 2          | 2          | 1358       | 0.078     | 200               | /                  | /             | / | /   |  |     |  |     |  |  |  |  |  | no good (182)       |
| 3          | 3          | 1360       | 0.015     | 175               | /                  | /             | / | /   |  |     |  |     |  |  |  |  |  | System contained no |
| 4          | 4          | 1361       | 0.073     | 150               | /                  | /             | / | /   |  |     |  |     |  |  |  |  |  | Thio.               |
| 5          | 5          | 1362       | 0.048     | 150               | /                  | /             | / | /   |  |     |  |     |  |  |  |  |  |                     |
| 6          | 6          | 1363       | 0.038     | 125               | /                  | /             | / | /   |  |     |  |     |  |  |  |  |  |                     |
| 7          | 7          | 1364       | 0.595     | 100               | /                  | /             | / | /   |  |     |  |     |  |  |  |  |  |                     |
| 8          | 8          | 1365       | 4.015     | 75                | /                  | /             | / | /   |  |     |  |     |  |  |  |  |  |                     |
| 9          | 9          | 1366       | 4.744     | 50                | /                  | /             | / | /   |  |     |  |     |  |  |  |  |  |                     |
| 10         | 10         | 1367       | 4.860     | 25                | /                  | /             | / | /   |  |     |  |     |  |  |  |  |  |                     |
| 11         | 11         | 1368       | 8.039     | 10                | /                  | /             | / | /   |  |     |  |     |  |  |  |  |  | temp?               |
| 12         | 12         | 1369       | 8.282     | 0                 | /                  | /             | / | /   |  |     |  |     |  |  |  |  |  |                     |
| 13         |            |            |           |                   |                    |               |   |     |  |     |  |     |  |  |  |  |  |                     |
| 14         |            |            |           |                   |                    |               |   |     |  |     |  |     |  |  |  |  |  |                     |
| 15         |            |            |           |                   |                    |               |   |     |  |     |  |     |  |  |  |  |  |                     |
| 16         |            |            |           |                   |                    |               |   |     |  |     |  |     |  |  |  |  |  |                     |
| 17         |            |            |           |                   |                    |               |   |     |  |     |  |     |  |  |  |  |  |                     |
| 18         |            |            |           |                   |                    |               |   |     |  |     |  |     |  |  |  |  |  |                     |
| 19         |            |            |           |                   |                    |               |   |     |  |     |  |     |  |  |  |  |  |                     |
| 20         |            |            |           |                   |                    |               |   |     |  |     |  |     |  |  |  |  |  |                     |
| 21         |            |            |           |                   |                    |               |   |     |  |     |  |     |  |  |  |  |  |                     |
| 22         |            |            |           |                   |                    |               |   |     |  |     |  |     |  |  |  |  |  |                     |
| 23         |            |            |           |                   |                    |               |   |     |  |     |  |     |  |  |  |  |  |                     |
| 24         |            |            |           |                   |                    |               |   |     |  |     |  |     |  |  |  |  |  |                     |

Comments:

SHIP: JOHN P TULLY  
ENTERED BY: MR  
CHECKED BY: DA

Bottom Depth: 222

Cast # down: 1  
Cast # up: 1

|         |     |       |
|---------|-----|-------|
| Time    | LOC | UTC   |
| Begin:  |     | 23 37 |
| Bottom: |     | 23 43 |
| End:    |     | 00 06 |

START POSITION (GPS)  
LAT: 48 33.57  
LONG: 123 29.89

BOTTOM POSITION (GPS)  
LAT: 48 35.55  
LONG: 123 29.90

END POSITION (GPS)  
LAT: 48 35.47  
LONG: 123 29.93

ROSETTE LOG

DMS CAST

MISSION ID: 2003-11 STATION: P4 CAST NUMBER: 6 UTC DATE (dd/mm/yyyy): 29/05/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |  |     |   |     |  |     |   |         |  |  |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|--|-----|---|-----|--|-----|---|---------|--|--|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |  | NUT |   | TCO |  | C13 |   | (5-sec) |  |  |  |  |
| 1          | 16         |            |           | 200               | ✓ 200              |               |  | ✓   | ✓ |     |  |     |   | ✓       |  |  |  |  |
| 2          | 17         |            |           | 175               | ✓ 174              |               |  |     |   |     |  |     |   |         |  |  |  |  |
| 3          | 18         |            |           | 100               | ✓                  |               |  |     |   |     |  |     | ✓ |         |  |  |  |  |
| 4          | 19         |            |           | 50                | ✓                  |               |  |     |   |     |  |     | ✓ |         |  |  |  |  |
| 5          | 20         |            |           | 40                | ✓                  |               |  |     |   |     |  |     | ✓ |         |  |  |  |  |
| 6          | 21         |            |           | 35                | ✓                  |               |  |     |   |     |  |     | ✓ |         |  |  |  |  |
| 7          | 22         |            |           | 35                | ✓                  |               |  |     |   |     |  |     | ✓ |         |  |  |  |  |
| 8          | 23         |            |           | 30                | ✓                  |               |  |     |   |     |  |     | ✓ |         |  |  |  |  |
| 9          | 24         |            |           | 25                | ✓                  |               |  |     |   |     |  |     | ✓ |         |  |  |  |  |
| 10         | 25         |            |           | 20                | ✓                  |               |  | ✓   | ✓ |     |  |     | ✓ |         |  |  |  |  |
| 11         | 26         |            |           | 20                | ✓                  |               |  |     |   |     |  |     |   |         |  |  |  |  |
| 12         | 27         |            |           | 20                | ✓                  |               |  |     |   |     |  |     |   |         |  |  |  |  |
| 13         | 28         |            |           | 20                | ✓                  |               |  |     |   |     |  |     |   |         |  |  |  |  |
| 14         | 29         |            |           | 20                | ✓                  |               |  |     |   |     |  |     |   |         |  |  |  |  |
| 15         | 30         |            |           | 15                | ✓                  |               |  | ✓   | ✓ |     |  |     | ✓ |         |  |  |  |  |
| 16         | 31         |            |           | 10                | ✓                  |               |  |     |   |     |  |     | ✓ |         |  |  |  |  |
| 17         | 32         |            |           | 5                 | ✓                  |               |  |     |   |     |  |     | ✓ |         |  |  |  |  |
| 18         | 33         |            |           | 0                 | ✓                  |               |  | ✓   | ✓ |     |  |     | ✓ | ✓       |  |  |  |  |
| 19         |            |            |           |                   |                    |               |  |     |   |     |  |     |   |         |  |  |  |  |
| 20         |            |            |           |                   |                    |               |  |     |   |     |  |     |   |         |  |  |  |  |
| 21         |            |            |           |                   |                    |               |  |     |   |     |  |     |   |         |  |  |  |  |
| 22         |            |            |           |                   |                    |               |  |     |   |     |  |     |   |         |  |  |  |  |
| 23         |            |            |           |                   |                    |               |  |     |   |     |  |     |   |         |  |  |  |  |
| 24         |            |            |           |                   |                    |               |  |     |   |     |  |     |   |         |  |  |  |  |

SHIP: JOHN P TULLY  
ENTERED BY: MR  
CHECKED BY: MC

Bottom Depth: 1318

Cast # down: 6  
Cast # up: 6

Time LOC UTC  
Begin: 0231 →  
Bottom: 0338 →  
End: 0359 →

START POSITION (GPS)  
LAT: 48°39.01  
LONG: 126 39 98

BOTTOM POSITION (GPS)  
LAT: 48 39 02  
LONG: 126 39 98

END POSITION (GPS)  
LAT: 48 39 02  
LONG: 126 39 94

Comments:

ROSETTE LOG

MISSION ID: 2003-11

STATION: P4

CAST NUMBER: 8

UTC DATE (dd/mm/yyyy): 29/05/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |  |     |  |     |  |     |  |  |  |  |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|--|-----|--|-----|--|-----|--|--|--|--|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |  | NUT |  | TCO |  | C13 |  |  |  |  |  |  |
|            |            |            |           |                   |                    | OXY           |  |     |  | ALK |  | CHL |  |  |  |  |  |  |
| 1          | 34         | 1356       | 0.607     | Bot-20            | ✓ 1312             |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 2          | 35         | 1358       | 0.494     | 1250              | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 3          | 36         | 1360       | 0.319     | 1000              | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 4          | 37         | 1361       | 0.281     | 800               | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 5          | 38         | 1362       | 0.250     | 800               | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 6          | 39         | 1363       | 0.441     | 600               | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 7          | 40         | 1364       | 1.181     | 400               | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 8          | 41         | 1365       | 1.603     | 300               | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 9          | 42         | 1366       | 1.745     | 250               | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 10         | 43         | 1367       | 2.201     | 200               | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 11         | 44         | 1368       | 2.520     | 175               | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 12         | 45         | 1369       | 3.108     | 150               | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 13         | 46         | 1373       | 4.047     | 125               | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 14         | 47         | 1372       | 4.738     | 100               | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 15         | 48         | 1373       | 5.727     | 75                | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 16         | 49         | 1374       | 6.511     | 50                | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 17         | 50         | 1375       | 6.869     | 25                | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 18         | 51         | 1376       | 6.727     | 10                | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 19         | 52         | 1377       | 6.735     | 0                 | ✓                  |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 20         |            |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 21         |            |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 22         |            |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 23         |            |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |  |
| 24         |            |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |  |

Comments:

SHIP: JOHN P TULLY

ENTERED BY: MR

CHECKED BY: DA

Bottom Depth: 1318

Cast # down: 8

Cast # up: 8

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 0547 |
| Bottom: |     | 0612 |
| End:    |     | 0703 |

START POSITION (GPS)

LAT: 48 39.02

LONG: 126 39.98

BOTTOM POSITION (GPS)

LAT: 48 39.02

LONG: 126 39.96

END POSITION (GPS)

LAT: 48 39.02

LONG: 126 39.95

ROSETTE LOG

MISSION ID: 2003-11 STATION: P8 CAST NUMBER: 13 UTC DATE (dd/mm/yyyy): 30/5/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |  |     |   |     |  |     |   |       |  |  |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|--|-----|---|-----|--|-----|---|-------|--|--|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |  | NUT |   | TCO |  | C13 |   | collo |  |  |  |  |
|            |            |            |           |                   |                    | OXY           |  |     |   | ALK |  | CHL |   |       |  |  |  |  |
| 1          | 56         | 1378       | 0.864     | 1500              | ✓ 1499             |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 2          | 57         | 1379       | 0.444     | 1250              | ✓ 1249             |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 3          | 58         | 1380       | 0.258     | 1000              | ✓ 1000             |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 4          | 59         | 1381       | 0.239     | 1000              | ✓ 1000             |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 5          | 60         | 1382       | 0.211     | 800               | ✓ 804              |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 6          | 61         | 1371       | 0.924     | 600               | ✓ 600              |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 7          | 62         | 1384       | 1.128     | 400               | ✓ 400              |               |  |     | ✓ |     |  |     |   |       |  |  |  |  |
| 8          | 63         | 1385       | 1.753     | 300               | ✓ 297              |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 9          | 64         | 1386       | 2.186     | 250               | ✓ 251              |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 10         | 65         | 1461       | 3.025     | 200               | ✓ 197              |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 11         | 66         | 1432       | 3.527     | 175               | ✓ 174              |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 12         | 67         | 1433       | 3.954     | 150               | ✓ 149              |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 13         | 68         | 1434       | 4.423     | 125               | ✓ 125              |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 14         | 69         | 1435       | 5.304     | 100               | ✓ 99               |               |  |     |   |     |  |     | ✓ |       |  |  |  |  |
| 15         | 70         | 1436       | 5.546     | 75                | ✓ 73               |               |  |     |   |     |  |     | ✓ |       |  |  |  |  |
| 16         | 71         | 1437       | 6.495     | 50                | ✓ 49               |               |  |     |   |     |  |     | ✓ |       |  |  |  |  |
| 17         | 72         | 1438       | 6.770     | 25                | ✓ 24               |               |  |     |   |     |  |     | ✓ |       |  |  |  |  |
| 18         | 73         | 1439       | 6.625     | 10                | ✓ 10               |               |  |     |   |     |  |     | ✓ | ✓     |  |  |  |  |
| 19         | 74         | 1440       | 6.593     | 0                 | ✓ 0                |               |  |     |   |     |  |     | ✓ |       |  |  |  |  |
| 20         |            |            |           |                   |                    |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 21         |            |            |           |                   |                    |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 22         |            |            |           |                   |                    |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 23         |            |            |           |                   |                    |               |  |     |   |     |  |     |   |       |  |  |  |  |
| 24         |            |            |           |                   |                    |               |  |     |   |     |  |     |   |       |  |  |  |  |

SHIP: JOHN P TULLY  
ENTERED BY: MR  
CHECKED BY: DT

Bottom Depth: 2516

Cast # down: 12  
Cast # up: 13

| Time    | LOC  | UTC  |
|---------|------|------|
| Begin:  | 1810 | 0110 |
| Bottom: | 1846 | 0146 |
| End:    |      | 0233 |

START POSITION (GPS)  
LAT: 48 49 02  
LONG: 128 39 96

BOTTOM POSITION (GPS)  
LAT: 48 49 04  
LONG: 128 39 98

END POSITION (GPS)  
LAT: 48 49 04  
LONG: 128 39 70

## ROSETTE LOG

DEEP CAST

MISSION ID: 2003-11

STATION: P12

CAST NUMBER: 18

UTC DATE (dd/mm/yyyy):

30/05/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |     |     |   |     |     |     |     |  |  |  |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|-----|-----|---|-----|-----|-----|-----|--|--|--|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |     | NUT |   | TCO |     | C13 |     |  |  |  |  |  |
|            |            |            |           |                   |                    |               | OXY |     |   |     | ALK |     | CHL |  |  |  |  |  |
| 1          | 78         | 1387       | 2.327     | Bot-20            | ✓                  |               |     | ✓   |   |     | ✓   |     |     |  |  |  |  |  |
| 2          | 79         | 1389       | 2.318     | 3000              | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 3          | 80         | 1391       | 1.902     | 2500              | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 4          | 81         | 1393       | 1.363     | 2000              | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 5          | 82         | 1394       | 0.578     | 1500              | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 6          | 83         | 1397       | 0.597     | 1500              | ✓                  |               |     |     |   |     | ✓   |     |     |  |  |  |  |  |
| 7          | 84         | 1398       | 0.573     | 1250              | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 8          | 85         | 1399       | 0.654     | 1000              | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 9          | 86         | 1400       | 0.636     | 800               | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 10         | 87         | 1402       | 0.471     | 600               | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 11         | 88         | 1403       | 1.133     | 400               | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 12         | 89         | 1404       | 1.650     | 300               | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 13         | 90         | 1406       | 2.012     | 250               | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 14         | 91         | 1407       | 2.751     | 200               | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 15         | 92         | 1410       | 2.885     | 175               | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 16         | 93         | 1411       | 3.599     | 150               | ✓                  |               |     |     | ✓ |     |     |     |     |  |  |  |  |  |
| 17         | 94         | 1414       | 4.299     | 125               | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 18         | 95         | 1417       | 4.511     | 100               | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 19         | 96         | 1421       | 6.003     | 75                | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 20         | 97         | 1422       | 6.698     | 50                | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 21         | 98         | 1423       | 6.719     | 25                | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 22         | 99         | 1424       | 6.731     | 10                | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 23         | 100        | 1425       | 6.792     | 0                 | ✓                  |               |     |     |   |     |     |     |     |  |  |  |  |  |
| 24         |            |            |           |                   |                    |               |     |     |   |     |     |     |     |  |  |  |  |  |

Comments:

white  
rock

SHIP: JOHN P TULLY

ENTERED BY: ML

CHECKED BY: DA

Bottom Depth: 3225

Cast # down: 18

Cast # up: 18

Time LOC UTC

Begin: 1502

Bottom: 1553

End: 1708

START POSITION (GPS)

LAT: 48 58 24

LONG: 130 39 99

BOTTOM POSITION (GPS)

LAT: 48 58 20

LONG: 130 39 99

END POSITION (GPS)

LAT: 48 58 26

LONG: 130 39 96

## ROSETTE LOG

MISSION ID: 2003-11 STATION: P12 CAST NUMBER: 20 UTC DATE (dd/mm/yyyy): 30/05/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |  |     |   |     |  |     |  |                 |  |     |  |           |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|--|-----|---|-----|--|-----|--|-----------------|--|-----|--|-----------|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |  | NUT |   | TCO |  | C13 |  | CO <sub>2</sub> |  | CHL |  |           |
| 1          | 101        |            |           | 200               | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 2          | 102        |            |           | 175               | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 3          | 103        |            |           | 100               | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 4          | 104        |            |           | 50                | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 5          | 105        |            |           | 40                | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 6          | 106        |            |           | 35                | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 7          | 107        |            |           | 30                | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 8          | 108        |            |           | 30                | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 9          | 109        |            |           | 30                | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 10         | 110        |            |           | 30                | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 11         | 111        |            |           | 30                | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 12         | 112        |            |           | 25                | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 13         | 113        |            |           | 20                | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 14         | 114        |            |           | 15                | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 15         | 115        |            |           | 15                | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 16         | 116        |            |           | 10                | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 17         | 117        |            |           | 5                 | ✓                  |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  |           |
| 18         | 118        |            |           | 0                 |                    |               |  | ✓   | ✓ |     |  |     |  | ✓               |  |     |  | No Sample |
| 19         |            |            |           |                   |                    |               |  |     |   |     |  |     |  |                 |  |     |  |           |
| 20         |            |            |           |                   |                    |               |  |     |   |     |  |     |  |                 |  |     |  |           |
| 21         |            |            |           |                   |                    |               |  |     |   |     |  |     |  |                 |  |     |  |           |
| 22         |            |            |           |                   |                    |               |  |     |   |     |  |     |  |                 |  |     |  |           |
| 23         |            |            |           |                   |                    |               |  |     |   |     |  |     |  |                 |  |     |  |           |
| 24         |            |            |           |                   |                    |               |  |     |   |     |  |     |  |                 |  |     |  |           |

Comments:

SHIP: JOHN P TULLY  
ENTERED BY: ML  
CHECKED BY: MLBottom Depth: 3225Cast # down: 20

Cast # up:

Time LOC UTC  
Begin: 1843  
Bottom:  
End: 1902START POSITION (GPS)  
LAT: 48° 58.30  
LONG: 130° 39.91BOTTOM POSITION (GPS)  
LAT:  
LONG:END POSITION (GPS)  
LAT: 48° 58.33  
LONG: 130° 39.98



ROSETTE LOG

DEEP CAST

MISSION ID: 2003-11 STATION: P16 CAST NUMBER: 24/25 UTC DATE (dd/mm/yyyy): 31/05/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |   |     |  |     |  |     |  |  |  |  |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|---|-----|--|-----|--|-----|--|--|--|--|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |   | NUT |  | TCO |  | C13 |  |  |  |  |  |  |
|            |            |            |           |                   |                    | OXY           |   |     |  | ALK |  | CHL |  |  |  |  |  |  |
| 1          | 122        | 1432       | 3.093     | Bot-20            | 3650               | ✓             | ✓ | ✓   |  | ✓   |  |     |  |  |  |  |  |  |
| 2          | 123        | 1433       | 2.832     | 3500              | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 3          | 124        | 1434       | 2.502     | 3000              | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 4          | 125        | 1435       | 1.924     | 2500              | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 5          | 126        | 1436       | 1.366     | 2000              | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 6          | 127        | 1437       | 0.584     | 1500              | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 7          | 128        | 1438       | 0.572     | 1500              | ✓                  |               |   |     |  | ✓   |  |     |  |  |  |  |  |  |
| 8          | 129        | 1439       | 0.329     | 1250              | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 9          | 130        | 1440       | 0.311     | 1000              | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 10         | 131        | 1441       | 0.367     | 800               | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 11         | 132        | 1442       | 0.574     | 600               | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 12         | 133        | 1443       | 1.471     | 400               | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 13         | 134        | 1444       | 2.091     | 300               | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 14         | 135        | 1445       | 2.976     | 250               | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 15         | 136        | 1446       | 3.669     | 200               | ✓                  |               |   | ✓   |  |     |  |     |  |  |  |  |  |  |
| 16         | 137        | 1447       | 4.129     | 175               | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 17         | 138        | 1448       | 5.062     | 150               | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 18         | 139        | 1449       | 5.686     | 125               | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 19         | 140        | 1440       | 6.173     | 100               | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 20         | 141        | 1451       | 6.818     | 75                | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 21         | 142        | 1452       | 6.988     | 50                | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 22         | 143        | 1453       | 6.849     | 25                | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 23         | 144        | 1454       | 6.847     | 10                | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |
| 24         | 145        | 1455       | 6.796     | 0                 | ✓                  |               |   |     |  |     |  |     |  |  |  |  |  |  |

SHIP: JOHN P TULLY  
ENTERED BY: MR  
CHECKED BY: ML

Bottom Depth: 3617

Cast # down: 24  
Cast # up: 25

| Time    | LOC   | UTC  |
|---------|-------|------|
| Begin:  | 17:17 | 1638 |
| Bottom: |       | 1755 |
| End:    |       | 1916 |

START POSITION (GPS)  
LAT: 49.17.03  
LONG: 134.39.99

BOTTOM POSITION (GPS)  
LAT: 49.17.00  
LONG: 134.39.98

END POSITION (GPS)  
LAT: 49.17.00  
LONG: 134.39.98

Comments: GREEN RACK

ROSETTE LOG

DMS CAST

MISSION ID: 2003-11

STATION: P16

CAST NUMBER: 29

UTC DATE (dd/mm/yyyy): 31 MAY 2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |     |       |     |     |  |     |   |      |       |  |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|-----|-------|-----|-----|--|-----|---|------|-------|--|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |     | NUT   |     | TCO |  | C13 |   | GASO |       |  |  |  |
|            |            |            |           |                   |                    |               | OXY |       | DMS | ALK |  | CHL |   |      | COCCO |  |  |  |
| 1          | 146        |            |           | 200               | /                  |               |     | ✓     | ✓   |     |  |     |   | ✓    |       |  |  |  |
| 2          | 147        |            |           | 175               | /                  |               |     | ✓     | ✓   |     |  |     |   | ✓    |       |  |  |  |
| 3          | 148        |            |           | 100               | /                  |               |     |       |     |     |  |     | ✓ |      |       |  |  |  |
| 4          | 149        |            |           | 50                | /                  |               |     | ✓     | ✓   |     |  |     | ✓ |      |       |  |  |  |
| 5          | 150        |            |           | 40                | /                  |               |     | ✓     | ✓   |     |  |     | ✓ |      |       |  |  |  |
| 6          | 151        |            |           | 40                | /                  |               |     |       |     |     |  |     |   |      |       |  |  |  |
| 7          | 152        |            |           | 40                | /                  |               |     |       |     |     |  |     |   |      |       |  |  |  |
| 8          | 153        |            |           | 40                | /                  |               |     |       |     |     |  |     |   |      |       |  |  |  |
| 9          | 154        |            |           | 40                | /                  |               |     |       |     |     |  |     |   |      |       |  |  |  |
| 10         | 155        |            |           | 35                | /                  |               |     | ✓     | ✓   |     |  |     | ✓ |      |       |  |  |  |
| 11         | 156        |            |           | 30                | /                  |               |     | ✓     | ✓   |     |  |     | ✓ |      |       |  |  |  |
| 12         | 157        |            |           | 25                | /                  |               |     | ✓     | ✓   |     |  |     | ✓ |      |       |  |  |  |
| 13         | 158        |            |           | 25                | /                  |               |     | ✓     | ✓   |     |  |     | ✓ |      |       |  |  |  |
| 14         | 159        |            |           | 20                | /                  |               |     | ✓     | ✓   |     |  |     | ✓ |      |       |  |  |  |
| 15         | 160        |            |           | 15                | /                  |               |     | ✓     | ✓   |     |  |     | ✓ |      |       |  |  |  |
| 16         | 161        |            |           | 10                | /                  |               |     | ✓     | ✓   |     |  |     | ✓ |      | ✓✓    |  |  |  |
| 17         | 162        |            |           | 5                 |                    | ✓             |     | ✓     | ✓   |     |  |     | ✓ |      |       |  |  |  |
| 18         | 163        |            |           | 0                 |                    |               |     | ✓     | ✓   |     |  |     | ✓ |      |       |  |  |  |
| 19         |            |            |           |                   |                    |               |     |       |     |     |  |     |   |      |       |  |  |  |
| 20         |            |            |           |                   |                    |               |     |       |     |     |  |     |   |      |       |  |  |  |
| 21         |            |            |           |                   |                    |               |     |       |     |     |  |     |   |      |       |  |  |  |
| 22         |            |            |           |                   |                    |               |     | BLUE  |     |     |  |     |   |      |       |  |  |  |
| 23         |            |            |           |                   |                    |               |     | BLACK |     |     |  |     |   |      |       |  |  |  |
| 24         |            |            |           |                   |                    |               |     |       |     |     |  |     |   |      |       |  |  |  |

Comments:

SHIP: JOHN P TULLY

ENTERED BY: MR

CHECKED BY: DA

Bottom Depth: 3618

Cast # down: 29

Cast # up: 29

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 2049 |
| Bottom: |     | 2055 |
| End:    |     | 2113 |

START POSITION (GPS)

LAT: 49 17 04

LONG: 134 39.98

BOTTOM POSITION (GPS)

LAT: 49 17.05

LONG: 135 39.94

END POSITION (GPS)

LAT: 49 17.08

LONG: 134 39.90



ROSETTE LOG

DEEP CAST

MISSION ID: 2003-11 STATION: P20 CAST NUMBER: 33 UTC DATE (dd/mm/yyyy): 01/06/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |   |     |   |     |  |     |  |  |  |  |  |                   |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|---|-----|---|-----|--|-----|--|--|--|--|--|-------------------|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |   | NUT |   | TCO |  | C13 |  |  |  |  |  |                   |
|            |            |            |           |                   |                    | OXY           |   |     |   | ALK |  | CHL |  |  |  |  |  |                   |
| 1          | 167        | 1356       | 3.373     | Bot-20            | ✓                  | 4014          | ✓ | ✓   | ✓ | ✓   |  |     |  |  |  |  |  |                   |
| 2          | 168        | 1358       | 3.309     | 3500              | ✓                  | 3498          |   |     |   |     |  |     |  |  |  |  |  |                   |
| 3          | 169        | 1360       | 2.570     | 3000              | ✓                  | 2999          |   |     |   |     |  |     |  |  |  |  |  |                   |
| 4          | 170        | 1361       | 1.937     | 2500              | ✓                  | 2500          |   |     |   |     |  |     |  |  |  |  |  |                   |
| 5          | 171        | 1362       | 1.367     | 2000              | ✓                  | 2000          |   |     |   |     |  |     |  |  |  |  |  |                   |
| 6          | 172        | 1363       | 1.304     | 2000              | ✓                  | 2000          |   |     |   | ✓   |  |     |  |  |  |  |  |                   |
| 7          | 173        | 1364       | 0.714     | 1500              | ✓                  | 1499          |   |     |   |     |  |     |  |  |  |  |  |                   |
| 8          | 174        | 1365       | 0.360     | 1250              | ✓                  | 1249          |   |     |   |     |  |     |  |  |  |  |  |                   |
| 9          | 175        | 1366       | 0.318     | 1000              | ✓                  | 799           |   |     |   |     |  |     |  |  |  |  |  | No 1000 m         |
| 10         | 176        | 1367       | 0.377     | 800               | ✓                  | 599           |   |     |   |     |  |     |  |  |  |  |  |                   |
| 11         | 177        | 1369       | 0.583     | 600               | ✓                  | 398           |   |     |   |     |  |     |  |  |  |  |  |                   |
| 12         | 178        | 1368       | 1.264     | 400               | ✓                  | 299           |   |     |   |     |  |     |  |  |  |  |  |                   |
| 13         | 179        | 1383       | 1.789     | 300               | ✓                  | 249           |   |     | ✓ |     |  |     |  |  |  |  |  |                   |
| 14         | 180        | 1372       | 2.184     | 250               | ✓                  | 198           |   |     |   |     |  |     |  |  |  |  |  |                   |
| 15         | 181        | 1373       | 3.098     | 200               | ✓                  | 173           |   |     |   |     |  |     |  |  |  |  |  |                   |
| 16         | 182        | 1374       | 3.905     | 175               | ✓                  | 149           |   |     |   |     |  |     |  |  |  |  |  |                   |
| 17         | 183        | 1376       | 4.638     | 150               | ✓                  | 149           |   |     |   |     |  |     |  |  |  |  |  | Triggered 2@ 150  |
| 18         | 184        | 1375       | 4.654     | 150               | ✓                  | 123           |   |     |   |     |  |     |  |  |  |  |  |                   |
| 19         | 185        | 1378       | 5.462     | 100               | ✓                  | 98            |   |     |   |     |  |     |  |  |  |  |  |                   |
| 20         | 186        | 1377       | 6.230     | 75                | ✓                  | 74            |   |     |   |     |  |     |  |  |  |  |  |                   |
| 21         | 187        | 1379       | 6.923     | 50                | ✓                  | 49            |   |     |   |     |  |     |  |  |  |  |  |                   |
| 22         | 188        | 1380       | 7.005     | 25                | ✓                  | 23            |   |     |   |     |  |     |  |  |  |  |  |                   |
| 23         | 189        | 1381       | 6.894     | 10                | ✓                  | 10            |   |     |   |     |  |     |  |  |  |  |  |                   |
| 24         | 190        | 1382       | 6.917     | 0                 |                    |               | ↓ | ↓   | ↓ | ↓   |  |     |  |  |  |  |  | NO SURFACE SAMPLE |

Comments: ORANGE RACK PROBLEMS WITH BOTTLES, CHECK OUT DEPTH WITH SAL

SHIP: JOHN P TULLY  
ENTERED BY: ML  
CHECKED BY: DA

Bottom Depth: 3940

Cast # down: 33  
Cast # up: 33

|         |     |      |
|---------|-----|------|
| Time    | LOC | UTC  |
| Begin:  | 3   | 1900 |
| Bottom: |     | 1953 |
| End:    |     | 2109 |

START POSITION (GPS)  
LAT: 49 34.04  
LONG: 138 39.99

BOTTOM POSITION (GPS)  
LAT: 49 34.02  
LONG: 138 39.98

END POSITION (GPS)  
LAT: 49 34.02  
LONG: 138 39.99

ROSETTE LOG

DMS CAST

MISSION ID: 2003-11 STATION: P20 CAST NUMBER: 35 UTC DATE (dd/mm/yyyy): 01/06/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |  |     |   |     |  |     |  |       |   |  |  |                 |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|--|-----|---|-----|--|-----|--|-------|---|--|--|-----------------|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |  | NUT |   | TCO |  | C13 |  | CaCO3 |   |  |  |                 |  |
| 1          | 191        |            |           | 200               | ✓                  |               |  | ✓   | ✓ |     |  |     |  |       | ✓ |  |  |                 |  |
| 2          | 192        |            |           | 175               | ✓                  |               |  | ✓   | ✓ |     |  |     |  |       |   |  |  |                 |  |
| 3          | 193        |            |           | 100               | ✓                  |               |  | ✓   | ✓ |     |  | ✓   |  |       |   |  |  |                 |  |
| 4          | 194        |            |           | 50                | ✓                  |               |  | ✓   | ✓ |     |  | ✓   |  |       |   |  |  |                 |  |
| 5          | 195        |            |           | 50                | ✓                  |               |  |     |   |     |  |     |  |       |   |  |  |                 |  |
| 6          | 196        |            |           | 50                | ✓                  |               |  |     |   |     |  |     |  |       |   |  |  |                 |  |
| 7          | 197        |            |           | 50                | ✓                  |               |  |     |   |     |  |     |  |       |   |  |  |                 |  |
| 8          | 198        |            |           | 50                | ✓                  |               |  |     |   |     |  |     |  |       |   |  |  |                 |  |
| 9          | 199        |            |           | 40                | ✓                  |               |  | ✓   | ✓ |     |  | ✓   |  |       |   |  |  |                 |  |
| 10         | 200        |            |           | 35                | ✓                  |               |  | ✓   | ✓ |     |  | ✓   |  |       |   |  |  |                 |  |
| 11         | 201        |            |           | 30                | ✓                  |               |  | ✓   | ✓ |     |  | ✓   |  |       |   |  |  |                 |  |
| 12         | 202        |            |           | 30                | ✓                  |               |  | ✓   | ✓ |     |  | ✓   |  |       |   |  |  |                 |  |
| 13         | 203        |            |           | 25                | ✓                  |               |  |     |   |     |  |     |  |       |   |  |  | 13 didn't trip. |  |
| 14         | 204        |            |           | 20                | ✓                  |               |  |     |   |     |  |     |  |       |   |  |  |                 |  |
| 15         | 205        |            |           | 15                | ✓                  |               |  |     |   |     |  |     |  |       |   |  |  |                 |  |
| 16         | 206        |            |           | 10                | ✓                  |               |  |     |   |     |  |     |  | ✓     |   |  |  |                 |  |
| 17         | 207        |            |           | 5                 | ✓                  | ✓             |  |     |   |     |  |     |  | ✓     |   |  |  |                 |  |
| 18         | 208        |            |           | 0                 | ✓                  |               |  | ✓   | ✓ |     |  | ✓   |  | ✓     |   |  |  |                 |  |
| 19         |            |            |           |                   |                    |               |  |     |   |     |  |     |  |       |   |  |  |                 |  |
| 20         |            |            |           |                   |                    |               |  |     |   |     |  |     |  |       |   |  |  |                 |  |
| 21         |            |            |           |                   |                    |               |  |     |   |     |  |     |  |       |   |  |  |                 |  |
| 22         |            |            |           |                   |                    |               |  |     |   |     |  |     |  |       |   |  |  |                 |  |
| 23         |            |            |           |                   |                    |               |  |     |   |     |  |     |  |       |   |  |  |                 |  |
| 24         |            |            |           |                   |                    |               |  |     |   |     |  |     |  |       |   |  |  |                 |  |

Comments:

SHIP: JOHN P TULLY  
ENTERED BY: MR  
CHECKED BY: DA

Bottom Depth: 3940

Cast # down: 35  
Cast # up: 35

| Time    | LOC | UTC   |
|---------|-----|-------|
| Begin:  |     | 22 19 |
| Bottom: |     | 22 24 |
| End:    |     |       |

START POSITION (GPS)  
LAT: 49 34.03  
LONG: 138 39 96

BOTTOM POSITION (GPS)  
LAT: 49 34.04  
LONG: 138 39.97

END POSITION (GPS)  
LAT: 49 34.02  
LONG: 138 40.04

ROSETTE LOG

MISSION ID: 2003-11 STATION: P24 CAST NUMBER: 40 UTC DATE (dd/mm/yyyy): 31 June / 2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |     |     |  |     |  |     |  |     |  |  |  |                |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|-----|-----|--|-----|--|-----|--|-----|--|--|--|----------------|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |     | NUT |  | TCO |  | C13 |  |     |  |  |  |                |
|            |            |            |           |                   |                    |               | OXY |     |  | ALK |  | CHL |  | CO2 |  |  |  |                |
| 1          | 211        |            |           |                   | 9.5                | ✓             |     | ✓   |  |     |  | ✓   |  | ✓   |  |  |  | Down cast trip |
| 2          | 212        |            |           |                   | 9.8                | ✓             |     | ✓   |  |     |  | ✓   |  | ✓   |  |  |  | UP cast trip   |
| 3          |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 4          |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 5          |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 6          |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 7          |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 8          |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 9          |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 10         |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 11         |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 12         |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 13         |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 14         |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 15         |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 16         |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 17         |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 18         |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 19         |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 20         |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 21         |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 22         |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 23         |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |
| 24         |            |            |           |                   |                    |               |     |     |  |     |  |     |  |     |  |  |  |                |

SHIP: JOHN P TULLY  
ENTERED BY: DT  
CHECKED BY: DT

Bottom Depth: 3964

Cast # down: 40  
Cast # up:

| Time    | LOC  | UTC  |
|---------|------|------|
| Begin:  | 1749 | 0049 |
| Bottom: | 1808 | 0108 |
| End:    | 1823 | 0123 |

START POSITION (GPS)  
LAT: 49 50 44  
LONG: 142 40 38

BOTTOM POSITION (GPS)  
LAT: 49 50 35  
LONG: 142 40 55

END POSITION (GPS)  
LAT: 49 50 42  
LONG: 142 40 19

Comments: Sample 211 tripped on down cast - Sample 212 tripped on upcast

bgm 2001 rosette.xls

ROSETTE LOG

DEEP CAST

MISSION ID: 2003-11 STATION: P26 CAST NUMBER: 47 UTC DATE (dd/mm/yyyy): 03/06/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l      | ROSETTE OPERATION |                    | Samples taken |   |     |   |     |   |     |  |      |  |                    |
|------------|------------|------------|----------------|-------------------|--------------------|---------------|---|-----|---|-----|---|-----|--|------|--|--------------------|
|            |            |            |                | Sample Depth      | Confirmed pressure | SAL           |   | NUT |   | TCO |   | C13 |  | LOCO |  |                    |
| 1          | 215        | 1432       | 3.809          | 500-20            | ✓                  | 4300          | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 2          | 216        | 1433       | 3.359          | 4000              | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 3          | 217        | 1434       | 3.027          | 3500              | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 4          | 218        | 1435       | 2.597          | 3000              | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 5          | 219        | 1437       | 2.037          | 2500              | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 6          | 220        | 1438       | 1.359          | 2000              | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 7          | 221        | 1439       | 0.669          | 1500              | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 8          | 222        | 1440       | Cast 480.441   | 1250              | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  | See notes sit down |
| 9          | 223        | 1441       | Position error | 1000              | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 10         | 224        | 1442       | 0.423          | 800               | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 11         | 225        | 1443       | 0.520          | 600               | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  | Drive by ≈ 615m    |
| 12         | 226        | 1444       | 0.710          | 400               | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 13         | 227        | 1445       | 1.066          | 300               | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 14         | 228        | 1446       | 1.380          | 250               | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 15         | 229        | 1447       | 1.724          | 200               | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 16         | 230        | 1448       | 2.322          | 175               | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 17         | 231        | 1449       | 2.748          | 150               | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 18         | 232        | 1450       | 4.314          | 125               | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 19         | 233        | 1451       | 5.960          | 100               | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 20         | 234        | 1452       | 7.073          | 75                | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 21         | 235        | 1453       | 7.129          | 50                | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 22         | 236        | 1454       | 7.044          | 25                | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 23         | 237        | 1455       | 7.032          | 10                | ✓                  |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |
| 24         | 238        | 1456       | 7.033          | 0                 |                    |               | ✓ | ✓   | ✓ | ✓   | ✓ | ✓   |  |      |  |                    |

SHIP: JOHN P TULLY  
ENTERED BY: MR  
CHECKED BY: DT

Bottom Depth: 4219

Cast # down: 47  
Cast # up: 47 / 48

| Time    | LOC  | UTC   |
|---------|------|-------|
| Begin:  | 1618 | 23.18 |
| Bottom: | 1721 | 0021  |
| End:    |      | 0221  |

START POSITION (GPS)  
LAT: 50 00 07  
LONG: 144 59 92

BOTTOM POSITION (GPS)  
LAT: 50 02 96  
LONG: 144 59 97

END POSITION (GPS)  
LAT: 49 59 81  
LONG: 145 00 19

ROSETTE LOG

MISSION ID: 2003-11

STATION: P26

CAST NUMBER: 49

UTC DATE (dd/mm/yyyy): 4 JUNE 2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |     |     |  |     |  |     |    |     |    |  |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|-----|-----|--|-----|--|-----|----|-----|----|--|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |     | NUT |  | TCO |  | C13 |    |     |    |  |  |  |
|            |            |            |           |                   |                    |               | OXY |     |  | ALK |  | CHL | PP | POC | B. |  |  |  |
| 1          | 239        |            |           | 100               | ✓                  |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 2          | 240        |            |           | 70                | /                  |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 3          | 241        |            |           | 50                | ✓                  |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 4          | 242        |            |           | 30                | ✓                  |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 5          | 243        |            |           | 20                | ✓                  |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 6          | 244        |            |           | 10                | ✓                  |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 7          | 245        |            |           | 5                 | ✓                  |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 8          | 246        |            |           | 2                 | ✓                  |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 9          |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 10         |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 11         |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 12         |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 13         |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 14         |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 15         |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 16         |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 17         |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 18         |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 19         |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 20         |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 21         |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 22         |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 23         |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |
| 24         |            |            |           |                   |                    |               |     |     |  |     |  |     |    |     |    |  |  |  |

Comments:

SHIP: JOHN P TULLY

ENTERED BY: W R

CHECKED BY: DT

Bottom Depth: 4221

Cast # down: 49

Cast # up: 49

|         |      |      |
|---------|------|------|
| Time    | LOC  | UTC  |
| Begin:  | 0437 | 1137 |
| Bottom: | 0439 | 1139 |
| End:    | 0449 | 1149 |

START POSITION (GPS)

LAT: 50 00 01

LONG: 145 00 06

BOTTOM POSITION (GPS)

LAT: 50 00 09

LONG: 145 00 09

END POSITION (GPS)

LAT: 50 00 12

LONG: 145 00 09



ROSETTE LOG

MISSION ID: 2003-11 STATION: Solas CAST NUMBER: 54 UTC DATE (dd/mm/yyyy): 04/06/2003

| Niskin No. | Sample No.              | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |  |     |  |     |  |     |  |  |  |  |
|------------|-------------------------|------------|-----------|-------------------|--------------------|---------------|--|-----|--|-----|--|-----|--|--|--|--|
|            |                         |            |           | Sample Depth      | Confirmed pressure | SAL           |  | NUT |  | TCO |  | C13 |  |  |  |  |
|            |                         |            |           |                   |                    | OXY           |  |     |  | ALK |  | CHL |  |  |  |  |
| 1          | 248                     | 1356       | 5.719     | 105               | ✓                  |               |  |     |  |     |  |     |  |  |  |  |
| 2          | 249                     | 1358       | 7.065     | 62                | ✓                  |               |  |     |  |     |  |     |  |  |  |  |
| 3          | 250                     | 1360       | 7.059     | 56                | ✓                  |               |  |     |  |     |  |     |  |  |  |  |
| 4          | 251                     | 1361       | 7.323     | 50                | ✓                  |               |  |     |  |     |  |     |  |  |  |  |
| 5          | 252                     |            |           | 46                | ✓                  |               |  |     |  |     |  |     |  |  |  |  |
| 6          | 253                     | 1362       | 7.119     | 42                | ✓                  |               |  |     |  |     |  |     |  |  |  |  |
| 7          | 254                     | 1363       | 7.031     | 10                | ✓                  |               |  |     |  |     |  |     |  |  |  |  |
| 8          | 255                     | 1364       | 7.029     | 5                 | ✓                  |               |  |     |  |     |  |     |  |  |  |  |
| 9          | 256                     | 1665       | 7.047     | 0                 |                    |               |  |     |  |     |  |     |  |  |  |  |
| 10         |                         |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |
| 11         |                         |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |
| 12         |                         |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |
| 13         |                         |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |
| 14         | #257 - Loop col. bottle |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |
| 15         |                         | ↑ 1366     | 7.050     |                   |                    |               |  |     |  |     |  |     |  |  |  |  |
| 16         |                         |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |
| 17         |                         |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |
| 18         |                         |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |
| 19         |                         |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |
| 20         |                         |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |
| 21         |                         |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |
| 22         |                         |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |
| 23         |                         |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |
| 24         |                         |            |           |                   |                    |               |  |     |  |     |  |     |  |  |  |  |

Comments: 8 bottles tripped - NO 46 m bottle sample 252

SHIP: JOHN P TULLY  
ENTERED BY: DT  
CHECKED BY: DT

Bottom Depth: 4200

Cast # down: 53  
Cast # up: 54

|         |     |             |
|---------|-----|-------------|
| Time    | LOC | UTC         |
| Begin:  |     | <u>1838</u> |
| Bottom: |     |             |
| End:    |     | <u>1851</u> |

START POSITION (GPS)  
LAT: 50 01 59  
LONG: 144 56 21

BOTTOM POSITION (GPS)  
LAT: 50 01 63  
LONG: 144 56 28

END POSITION (GPS)  
LAT: 50 01 64  
LONG: 144 56 26



## ROSETTE LOG

MISSION ID: 2003-11 STATION: P26 CAST NUMBER: 55 UTC DATE (dd/mm/yyyy): 04/06/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |     |     |     |     |     |     |       |  |  |  |  |     |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|-----|-----|-----|-----|-----|-----|-------|--|--|--|--|-----|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           | OXY | NUT | TCO | ALK | C13 | CHL | COLLO |  |  |  |  |     |
| 1          | 258        |            |           | 200               | /                  |               |     | /   | /   |     |     |     |       |  |  |  |  | 258 |
| 2          | 259        |            |           | 175               | /                  |               |     |     |     |     |     |     |       |  |  |  |  | 259 |
| 3          | 260        |            |           | 100               | /                  |               |     |     |     |     |     |     |       |  |  |  |  | 260 |
| 4          | 261        |            |           | 50                | /                  |               |     |     |     |     |     |     |       |  |  |  |  | 261 |
| 5          | 262        |            |           | 40                | /                  |               |     |     |     |     |     |     |       |  |  |  |  | 262 |
| 6          | 263        |            |           | 35                | /                  |               |     |     |     |     |     |     |       |  |  |  |  | 263 |
| 7          | 264        |            |           | 30                | /                  |               |     |     |     |     |     |     |       |  |  |  |  | 264 |
| 8          | 265        |            |           | 25                | /                  |               |     |     |     |     |     |     |       |  |  |  |  | 265 |
| 9          | 266        |            |           | 25                | /                  |               |     |     |     |     |     |     |       |  |  |  |  | 266 |
| 10         | 267        |            |           | 20                | /                  |               |     |     |     |     |     |     |       |  |  |  |  | 267 |
| 11         | 268        |            |           | 15                | /                  |               |     |     |     |     |     |     |       |  |  |  |  | 268 |
| 12         | 269        |            |           | 10                | /                  |               |     |     |     |     |     |     |       |  |  |  |  | 269 |
| 13         | 270        |            |           | 5                 | /                  |               |     |     |     |     |     |     |       |  |  |  |  | 270 |
| 14         | 271        |            |           | 0                 | /                  |               |     |     |     |     |     |     |       |  |  |  |  | 270 |
| 15         |            |            |           |                   |                    |               |     |     |     |     |     |     |       |  |  |  |  |     |
| 16         |            |            |           |                   |                    |               |     |     |     |     |     |     |       |  |  |  |  |     |
| 17         |            |            |           |                   |                    |               |     |     |     |     |     |     |       |  |  |  |  |     |
| 18         |            |            |           |                   |                    |               |     |     |     |     |     |     |       |  |  |  |  |     |
| 19         |            |            |           |                   |                    |               |     |     |     |     |     |     |       |  |  |  |  |     |
| 20         |            |            |           |                   |                    |               |     |     |     |     |     |     |       |  |  |  |  |     |
| 21         |            |            |           |                   |                    |               |     |     |     |     |     |     |       |  |  |  |  |     |
| 22         |            |            |           |                   |                    |               |     |     |     |     |     |     |       |  |  |  |  |     |
| 23         |            |            |           |                   |                    |               |     |     |     |     |     |     |       |  |  |  |  |     |
| 24         |            |            |           |                   |                    |               |     |     |     |     |     |     |       |  |  |  |  |     |

Comments:

SHIP: John P Tully  
ENTERED BY: MR  
CHECKED BY: DABottom Depth: 42.9Cast # down: 55Cast # up: 55

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 0705 |
| Bottom: |     | 0710 |
| End:    |     | 0728 |

START POSITION (GPS)  
LAT: 50 00.02  
LONG: 144 60.00BOTTOM POSITION (GPS)  
LAT: 50 00.02  
LONG: 145 00.00END POSITION (GPS)  
LAT: 50 00.02  
LONG: 145 00.01

ROSETTE LOG

DMS DAY CAST

MISSION ID: 2003-11 STATION: P26 CAST NUMBER: 56 UTC DATE (dd/mm/yyyy): 05/6/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |  |     |     |     |  |     |  |     |   |       |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|--|-----|-----|-----|--|-----|--|-----|---|-------|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |  | NUT |     | TCO |  | C13 |  | brs |   | 20010 |  |  |
|            |            |            |           |                   |                    | OXY           |  |     | 545 | ALK |  | CHL |  | 300 |   |       |  |  |
| 1          | 271        |            |           | 200               | /                  |               |  | ✓   | ✓   |     |  |     |  | ✓   | / |       |  |  |
| 2          | 272        |            |           | 175               | /                  |               |  | ✓   | ✓   |     |  |     |  | ✓   | ✓ |       |  |  |
| 3          | 273        |            |           | 100               | /                  |               |  | ✓   | ✓   |     |  | ✓   |  | ✓   | ✓ |       |  |  |
| 4          | 274        |            |           | 50                | /                  |               |  | ✓   | ✓   |     |  | ✓   |  | ✓   | ✓ |       |  |  |
| 5          | 275        |            |           | 40                | /                  |               |  | ✓   | ✓   |     |  | ✓   |  | ✓   | ✓ |       |  |  |
| 6          | 276        |            |           | 40                | /                  |               |  | ✓   | ✓   |     |  | ✓   |  | ✓   | ✓ |       |  |  |
| 7          | 277        |            |           | 35                | /                  |               |  | ✓   | ✓   |     |  | ✓   |  | ✓   | ✓ |       |  |  |
| 8          | 278        |            |           | 35                | /                  |               |  |     |     |     |  |     |  | ✓   | ✓ |       |  |  |
| 9          | 279        |            |           | 35                | /                  |               |  |     |     |     |  |     |  | ✓   | ✓ |       |  |  |
| 10         | 280        |            |           | 35                | /                  |               |  |     |     |     |  |     |  | ✓   | ✓ |       |  |  |
| 11         | 281        |            |           | 35                | /                  |               |  |     |     |     |  |     |  | ✓   | ✓ |       |  |  |
| 12         | 282        |            |           | 30                | /                  |               |  | ✓   | ✓   |     |  | ✓   |  | ✓   | ✓ |       |  |  |
| 13         | 283        |            |           | 25                | /                  |               |  | ✓   | ✓   |     |  | ✓   |  | ✓   | ✓ |       |  |  |
| 14         | 284        |            |           | 20                | /                  |               |  | ✓   | ✓   |     |  | ✓   |  | ✓   | ✓ |       |  |  |
| 15         | 285        |            |           | 15                | /                  |               |  | ✓   | ✓   |     |  | ✓   |  | ✓   | ✓ |       |  |  |
| 16         | 286        |            |           | 10                | /                  |               |  | ✓   | ✓   |     |  | ✓   |  | ✓   | ✓ | ✓     |  |  |
| 17         | 287        |            |           | 5                 | /                  | ✓             |  | ✓   | ✓   |     |  | ✓   |  | ✓   | ✓ | ✓     |  |  |
| 18         | 288        |            |           | 0                 |                    |               |  | ✓   | ✓   |     |  | ✓   |  | ✓   | ✓ | ✓     |  |  |
| 19         |            |            |           |                   |                    |               |  |     |     |     |  |     |  |     |   |       |  |  |
| 20         |            |            |           |                   |                    |               |  |     |     |     |  |     |  |     |   |       |  |  |
| 21         |            |            |           |                   |                    |               |  |     |     |     |  |     |  |     |   |       |  |  |
| 22         |            |            |           |                   |                    |               |  |     |     |     |  |     |  |     |   |       |  |  |
| 23         |            |            |           |                   |                    |               |  |     |     |     |  |     |  |     |   |       |  |  |
| 24         |            |            |           |                   |                    |               |  |     |     |     |  |     |  |     |   |       |  |  |

Comments:

SHIP: JOHN P TULLY  
ENTERED BY: MR  
CHECKED BY: DA

Bottom Depth: 4218

Cast # down: 56  
Cast # up: 56

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 1920 |
| Bottom: |     | 1927 |
| End:    |     | 1948 |

START POSITION (GPS)  
LAT: 50 00 .07  
LONG: 144 59 .97

BOTTOM POSITION (GPS)  
LAT: 50 00 .10  
LONG: 145 00 .03

END POSITION (GPS)  
LAT: 50 00 .19  
LONG: 145 00 .35

ROSETTE LOG

MISSION ID: 2003-11 STATION: SOLAS CAST NUMBER: 59 UTC DATE (dd/mm/yyyy): 08/06/2003

|            |            |            |           | ROSETTE OPERATION |                    | Samples taken |     |     |  |     |     |     |     |  |  |  |  |             |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|-----|-----|--|-----|-----|-----|-----|--|--|--|--|-------------|
| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | Sample Depth      | Confirmed pressure | SAL           |     | NUT |  | TCO |     | C13 |     |  |  |  |  |             |
|            |            |            |           |                   |                    |               | OXY |     |  |     | ALK |     | CHL |  |  |  |  |             |
| 1          | 289        | 1432       | 3.597     | 150               | /                  |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 2          | 290        | 1433       | 3.384     | 150               | /                  |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 3          | 291        | 1434       | 5.769     | 110               | /                  |               |     |     |  |     |     |     | ✓   |  |  |  |  |             |
| 4          | 292        | 1435       | 7.055     | 80                | /                  |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 5          | 293        | 1437       | 7.047     | 55                | /                  |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 6          | 294        | 1438       | 7.145     | 32                | /                  |               |     |     |  | ✓   |     |     |     |  |  |  |  |             |
| 7          | 295        | 1439       | 7.179     | 30                | /                  |               |     |     |  |     |     |     | ✓   |  |  |  |  |             |
| 8          | 296        | 1440       | 7.101     | 20                | /                  |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 9          | 297        |            |           | 20                | /                  |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 10         | 298        |            |           | 20                | /                  |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 11         | 299        |            |           | 20                | /                  |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 12         | 300        |            |           | 20                | /                  |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 13         | 301        |            |           | 20                | /                  |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 14         | 302        |            |           | 20                | /                  |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 15         | 303        | 1441       | 7.014     | 10                | /                  |               | x   | x   |  |     |     |     |     |  |  |  |  |             |
| 16         | 304        | 1442       | 7.010     | 0                 |                    |               | x   | x   |  |     |     |     |     |  |  |  |  |             |
| 17         |            |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 18         | 305        | 1443       | 6.976     |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  | wet/ds loop |
| 19         |            |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 20         |            |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 21         |            |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 22         |            |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 23         |            |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |             |
| 24         |            |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |             |

Comments:

SHIP: JOHN P TULLY  
ENTERED BY: DT  
CHECKED BY: DA

Bottom Depth: 4210

Cast # down: 59  
Cast # up:

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 0028 |
| Bottom: |     | 0033 |
| End:    |     | 0047 |

START POSITION (GPS)  
LAT: 50 00.32  
LONG: 144 56.74

BOTTOM POSITION (GPS)  
LAT: 50 01.35  
LONG: 144 56.79

END POSITION (GPS)  
LAT: 50 01.26  
LONG: 144 56.92

ROSETTE LOG

MISSION ID: 2003-11 STATION: Argo 2 CAST NUMBER: 61 UTC DATE (dd/mm/yyyy): 08/06/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |   |     |  |     |  |     |   |      |  |  |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|---|-----|--|-----|--|-----|---|------|--|--|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |   | NUT |  | TCO |  | C13 |   | 6660 |  |  |  |  |
| 1          | 306        | 1387       | 1.405     | 2000              | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 2          | 307        | 1389       | 0.635     | 1500              | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 3          | 308        | 1391       | 0.412     | 1250              | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 4          | 309        | 1393       | 0.407     | 1000              | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 5          | 310        | 1394       | 0.384     | 1000              | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 6          | 311        | 1397       | 0.506     | 800               | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 7          | 312        | 1398       | 0.548     | 600               | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 8          | 313        | 1399       | 0.779     | 400               | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 9          | 314        | 1400       | 1.087     | 300               | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 10         | 315        | 1402       | 1.422     | 250               | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 11         | 316        | 1403       | 2.039     | 200               | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 12         | 317        | 1404       | 2.327     | 175               | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 13         | 318        | 1406       | 2.758     | 150               | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 14         | 319        | 1407       | 3.440     | 125               | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 15         | 320        | 1410       | 4.650     | 100               | ✓                  | ✓             | ✓ | ✓   |  |     |  |     | ✓ |      |  |  |  |  |
| 16         | 321        | 1411       | 7.150     | 75                | ✓                  | ✓             | ✓ | ✓   |  |     |  |     | ✓ |      |  |  |  |  |
| 17         | 322        | 1414       | 7.209     | 50                | ✓                  | ✓             | ✓ | ✓   |  |     |  |     | ✓ |      |  |  |  |  |
| 18         | 323        | 1415       |           | 40                | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 19         | 324        | 1416       |           | 35                | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 20         | 325        | 1417       |           | 30                | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 21         | 326        | 1417       | 7.275     | 25                | ✓                  | ✓             | ✓ | ✓   |  |     |  |     | ✓ |      |  |  |  |  |
| 22         | 327        | 1420       |           | 15                | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |      |  |  |  |  |
| 23         | 328        | 1421       | 7.120     | 10                |                    | ✓             | ✓ | ✓   |  |     |  |     | ✓ | ✓    |  |  |  |  |
| 24         | 329        | 1422       | 7.081     | 0                 |                    | ✓             | ✓ | ✓   |  |     |  |     | ✓ |      |  |  |  |  |

Comments:

SHIP: JOHN P TULLY  
ENTERED BY: MR  
CHECKED BY: DA

Bottom Depth: 4313

Cast # down: 61  
Cast # up: 61

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 1014 |
| Bottom: |     | 1040 |
| End:    |     | 1139 |

START POSITION (GPS)  
LAT: 50 00.14  
LONG: 147 00.06

BOTTOM POSITION (GPS)  
LAT: 50 00.08  
LONG: 146 59.99

END POSITION (GPS)  
LAT: 50 00 04  
LONG: 147 00 03

ROSETTE LOG

CALIBRATION CAST

MISSION ID: 2003-11 STATION: New 1 CAST NUMBER: 62 UTC DATE (dd/mm/yyyy): 08/06/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |     |     |  |     |     |     |     |  |  |  |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|-----|-----|--|-----|-----|-----|-----|--|--|--|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |     | NUT |  | TCO |     | C13 |     |  |  |  |  |  |
|            |            |            |           |                   |                    |               | OXY |     |  |     | ALK |     | CHL |  |  |  |  |  |
| 1          | 330        |            |           | 1500              |                    | ✓             |     |     |  | ✓✓  |     |     |     |  |  |  |  |  |
| 2          | 331        |            |           | 1500              |                    |               |     |     |  | ✓✓  |     |     |     |  |  |  |  |  |
| 3          | 332        |            |           |                   |                    |               |     |     |  | ✓✓  |     |     |     |  |  |  |  |  |
| 4          | 333        |            |           |                   |                    |               |     |     |  | ✓✓  |     |     |     |  |  |  |  |  |
| 5          | 334        |            |           |                   |                    |               |     |     |  | ✓✓  |     |     |     |  |  |  |  |  |
| 6          | 335        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 7          | 336        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 8          | 337        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 9          | 338        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 10         | 339        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 11         | 340        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 12         | 341        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 13         | 342        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 14         | 343        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 15         | 344        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 16         | 345        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 17         | 346        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 18         | 347        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 19         | 348        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 20         | 349        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 21         | 350        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 22         | 351        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 23         | 352        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |
| 24         | 353        |            |           |                   |                    |               |     |     |  |     |     |     |     |  |  |  |  |  |

Comments:

SHIP: JOHN P TULLY  
ENTERED BY: ML  
CHECKED BY: ML

Bottom Depth: 4314

Cast # down: 62  
Cast # up: 62

|         |     |      |
|---------|-----|------|
| Time    | LOC | UTC  |
| Begin:  |     | 1828 |
| Bottom: |     | 1850 |
| End:    |     | 1913 |

START POSITION (GPS)  
LAT: 51.0.10'  
LONG: 147.0.00'

BOTTOM POSITION (GPS)  
LAT: 51.00.01  
LONG: 147.00.00

END POSITION (GPS)  
LAT: 51.00.03  
LONG: 147.00.08

ROSETTE LOG

MISSION ID: 2003-11 STATION: Argo 3 CAST NUMBER: 64 UTC DATE (dd/mm/yyyy): 09/06/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |   |     |  |     |  |     |   |       |  |  |  |                    |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|---|-----|--|-----|--|-----|---|-------|--|--|--|--------------------|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |   | NUT |  | TCO |  | C13 |   | LOLLO |  |  |  |                    |
| 1          | 354        | 1387       | 1.440     | 2000              | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |       |  |  |  |                    |
| 2          | 355        | 1389       | 0.748     | 1500              | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                    |
| 3          | 356        | 1391       | 0.740     | 1500              | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                    |
| 4          | 357        | 1393       | 0.510     | 1250              | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  | In file 357<br>356 |
| 5          | 358        | 1397       | 0.392     | 1000              | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                    |
| 6          | 359        | 1394       | 0.418     | 800               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                    |
| 7          | 360        | 1398       | 0.435     | 600               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                    |
| 8          | 361        | 1399       | 0.572     | 400               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                    |
| 9          | 362        | 1402       | 0.694     | 300               | ✓                  |               |   | ✓   |  |     |  |     |   |       |  |  |  |                    |
| 10         | 363        | 1400       | 0.752     | 250               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                    |
| 11         | 364        | 1403       | 0.973     | 200               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                    |
| 12         | 365        | 1404       | 1.228     | 175               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                    |
| 13         | 366        | 1407       | 1.837     | 150               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                    |
| 14         | 367        | 1406       | 3.511     | 125               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                    |
| 15         | 368        | 1410       | 5.319     | 100               | ✓                  |               |   |     |  |     |  |     | ✓ |       |  |  |  |                    |
| 16         | 369        | 1411       | 6.732     | 75                | ✓                  |               |   |     |  |     |  |     | ✓ |       |  |  |  |                    |
| 17         | 370        | 1414       | 7.214     | 50                | ✓                  |               |   |     |  |     |  |     | ✓ |       |  |  |  |                    |
| 18         | 371        |            |           | 35                | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                    |
| 19         | 372        |            |           | 35                | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                    |
| 20         | 373        |            |           | 35                | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                    |
| 21         | 374        | 1417       | 7.179     | 25                | ✓                  | ✓             | ✓ | ✓   |  |     |  |     | ✓ |       |  |  |  |                    |
| 22         | 375        |            |           | 15                | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                    |
| 23         | 376        | 1411       | 7.063     | 10                | ✓                  | ✓             | ✓ | ✓   |  |     |  |     | ✓ | ✓     |  |  |  |                    |
| 24         | 377        | 1414       | 6.694     | 0                 | ✓                  | ✓             | ✓ | ✓   |  |     |  |     | ✓ |       |  |  |  |                    |

Comments: Yellow Back

SHIP: JOHN P TULLY  
ENTERED BY: ML  
CHECKED BY: ML

Bottom Depth: 2180

Cast # down: 64  
Cast # up: 64

| Time    | LOC | UTC   |
|---------|-----|-------|
| Begin:  |     | 0251  |
| Bottom: |     | 03.29 |
| End:    |     | 0423  |

START POSITION (GPS)  
LAT: 52.0.07'  
LONG: 147.0.10

2000m  
BOTTOM POSITION (GPS)  
LAT: 52.0.04  
LONG: 147.0.05

END POSITION (GPS)  
LAT: 52.0.09  
LONG: 147.0.08



ROSETTE LOG

MISSION ID: 2003-11

STATION: Argo 4

CAST NUMBER: 68

UTC DATE (dd/mm/yyyy): 10 06 2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |   |     |   |     |  |     |  |      |   |  |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|---|-----|---|-----|--|-----|--|------|---|--|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |   | NUT |   | TCO |  | Cl3 |  | Locu |   |  |  |  |
| 1          | 380        | 1387       | 1.290     | 2000              | ✓                  | ✓             |   | ✓   |   |     |  |     |  |      |   |  |  |  |
| 2          | 381        | 1389       | 0.664     | 1500              | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 3          | 382        | 1391       | 0.383     | 1000              | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 4          | 383        | 1393       | 0.368     | 1000              | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 5          | 384        | 1394       | 0.436     | 800               | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 6          | 385        | 1397       | 0.572     | 600               | ✓                  |               |   |     | ✓ |     |  |     |  |      |   |  |  |  |
| 7          | 386        | 1398       | 0.630     | 600               | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 8          | 387        | 1399       | 0.910     | 400               | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 9          | 388        | 1400       | 1.315     | 300               | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 10         | 389        | 1402       | 1.671     | 250               | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 11         | 390        | 1403       | 2.011     | 200               | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 12         | 391        | 1404       | 2.364     | 175               | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 13         | 392        | 1406       | 3.148     | 150               | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 14         | 393        | 1407       | 4.214     | 125               | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 15         | 394        | 1410       | 5.369     | 100               | ✓                  |               |   |     |   |     |  |     |  | ✓    |   |  |  |  |
| 16         | 395        | 1411       | 6.489     | 75                | ✓                  |               |   |     |   |     |  |     |  | ✓    |   |  |  |  |
| 17         | 396        | 1414       | 7.089     | 50                | ✓                  | ✓             | ✓ | ✓   |   |     |  |     |  | ✓    |   |  |  |  |
| 18         | 397        | 1417       |           | 40                | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 19         | 398        |            |           | 40                | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 20         | 399        |            |           | 40                | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 21         | 400        | 1417       | 7.002     | 25                | ✓                  | ✓             | ✓ | ✓   |   |     |  |     |  | ✓    |   |  |  |  |
| 22         | 401        |            |           | 15                | ✓                  |               |   |     |   |     |  |     |  |      |   |  |  |  |
| 23         | 402        | 1422       | 6.969     | 10                | ✓                  | ✓             | ✓ | ✓   |   |     |  |     |  | ✓    | ✓ |  |  |  |
| 24         | 403        | 1421       | 6.841     | 0                 | ✓                  | ✓             | ✓ | ✓   |   |     |  |     |  | ✓    |   |  |  |  |

Comments: HCN New 4 Long sample for Nisk

Flask 1432 DO 6.986 ml/l

ORANGE

PACK

SHIP: Tully

ENTERED BY: MR

CHECKED BY: DT

Bottom Depth: 3742

Cast # down: 68

Cast # up: 68

Time LOC UTC

Begin: 0459 1159

Bottom: 0532 1232

End: 1330

START POSITION (GPS)

LAT: 53 30 01

LONG: 140 60 00

BOTTOM POSITION (GPS)

LAT: 50 30 00

LONG: 140 59 96

END POSITION (GPS)

LAT: 53 30 04

LONG: 140 59 89

ROSETTE LOG

MISSION ID: 2003-11 STATION: Argo 5 CAST NUMBER: 71 UTC DATE (dd/mm/yyyy): 11/06/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |   |     |  |     |  |     |   |       |  |  |  |                            |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|---|-----|--|-----|--|-----|---|-------|--|--|--|----------------------------|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |   | NUT |  | TCO |  | C13 |   | COLLO |  |  |  |                            |
| 1          | 406        | 1432       | 1.351     | 2000              | ✓                  | ✓             |   | ✓   |  |     |  |     |   |       |  |  |  |                            |
| 2          | 407        | 1433       | 1.285     | 2000              | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                            |
| 3          | 408        | 1434       | 0.588     | 1500              | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                            |
| 4          | 409        | 1435       | 0.479     | 1250              | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                            |
| 5          | 410        | 1437       | 0.419     | 1000              | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                            |
| 6          | 411        | 1438       | 0.432     | 800               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                            |
| 7          | 412        | 1439       | 0.612     | 600               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                            |
| 8          | 413        | 1440       | 1.262     | 400               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                            |
| 9          | 414        | 1442       | 1.812     | 300               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                            |
| X 10       | 415        | 1442       | 2.137     | 250               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  | #10 VENT OPEN ON RECOVERY. |
| 11         | 416        | 1443       | 2.554     | 200               | ✓                  |               |   | ✓   |  |     |  |     |   |       |  |  |  |                            |
| 12         | 417        | 1444       | 2.791     | 175               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                            |
| 13         | 418        | 1445       | 3.167     | 150               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                            |
| 14         | 419        | 1446       | 3.968     | 125               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                            |
| 15         | 420        | 1447       | 5.299     | 100               | ✓                  |               |   |     |  |     |  |     | ✓ |       |  |  |  |                            |
| 16         | 421        | 1448       | 6.447     | 75                | ✓                  |               |   |     |  |     |  |     | ✓ |       |  |  |  |                            |
| 17         | 422        | 1449       | 6.804     | 50                | ✓                  | ✓             | ✓ | ✓   |  |     |  |     | ✓ |       |  |  |  | YSI Calibration            |
| 18         | 423        |            |           | 35                | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                            |
| 19         | 424        |            |           | 35                | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                            |
| 20         | 425        |            |           | 35                | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                            |
| 21         | 426        | 1450       | 6.893     | 25                | ✓                  | ✓             | ✓ | ✓   |  |     |  |     | ✓ |       |  |  |  |                            |
| 22         | 427        |            |           | 15                | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |                            |
| 23         | 428        | 1451       | 6.788     | 10                | ✓                  | ✓             | ✓ | ✓   |  |     |  |     | ✓ | ✓     |  |  |  |                            |
| 24         | 429        | 1452       | 6.741     | 0                 | ✓                  | ✓             | ✓ | ✓   |  |     |  |     | ✓ |       |  |  |  |                            |

Comments: GREEN  
BLACK

SHIP: JOHN P TULLY  
ENTERED BY: MR  
CHECKED BY: ML

Bottom Depth: 3258

Cast # down: 71  
Cast # up: 71

| Time    | LOC | UTC   |
|---------|-----|-------|
| Begin:  |     | 03 34 |
| Bottom: |     | 04 05 |
| End:    |     | 04 02 |

START POSITION (GPS)  
LAT: 53. 30. 02  
LONG: 138. 0. 03

BOTTOM POSITION (GPS)  
LAT: 53 29 98  
LONG: 138 0 12

END POSITION (GPS)  
LAT: 53 30 11  
LONG: 138 0 22

ROSETTE LOG

MISSION ID: 2003-11 STATION: Argo 6 CAST NUMBER: 74 UTC DATE (dd/mm/yyyy): 11/06/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |     |     |   |     |     |     |     |      |  |  |  |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|-----|-----|---|-----|-----|-----|-----|------|--|--|--|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |     | NUT |   | TCO |     | C13 |     | 1000 |  |  |  |  |  |
|            |            |            |           |                   |                    |               | OXY |     |   |     | ALK |     | CHL |      |  |  |  |  |  |
| 1          | 431        | 1432       | 1.427     | 2000              | ✓                  |               | ✓   | ✓   | ✓ |     |     |     |     |      |  |  |  |  |  |
| 2          | 432        | 1433       | 0.644     | 1500              | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 3          | 433        | 1434       | 0.372     | 1250              | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 4          | 434        | 1435       | 0.327     | 1000              | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 5          | 435        | 1437       | 0.370     | 800               | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 6          | 436        | 1438       | 0.585     | 600               | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 7          | 437        | 1439       | 1.427     | 400               | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 8          | 438        | 1440       | 2.009     | 300               | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 9          | 439        | 1441       | 2.326     | 250               | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 10         | 440        | 1442       | 2.815     | 200               | ✓                  |               |     |     | ✓ |     |     |     |     |      |  |  |  |  |  |
| 11         | 441        | 1443       | 2.822     | 200               | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 12         | 442        | 1444       | 3.383     | 175               | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 13         | 443        | 1445       | 4.021     | 150               | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 14         | 444        | 1446       | 5.180     | 125               | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 15         | 445        | 1447       | 6.077     | 100               | ✓                  |               |     |     |   |     |     |     | ✓   |      |  |  |  |  |  |
| 16         | 446        | 1448       | 6.404     | 75                | ✓                  |               |     |     |   |     |     |     | ✓   |      |  |  |  |  |  |
| 17         | 447        | 1450       | 6.578     | 50                | ✓                  |               | ✓   | ✓   | ✓ |     |     |     | ✓   |      |  |  |  |  |  |
| 18         | 448        |            |           | 35                | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 19         | 449        |            |           | 35                | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 20         | 450        |            |           | 35                | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 21         | 451        | 1449       | 6.792     | 25                | ✓                  |               | ✓   | ✓   | ✓ |     |     |     | ✓   |      |  |  |  |  |  |
| 22         | 452        |            |           | 15                | ✓                  |               |     |     |   |     |     |     |     |      |  |  |  |  |  |
| 23         | 453        | 1451       | 6.800     | 10                | ✓                  |               | ✓   | ✓   | ✓ |     |     |     | ✓   | ✓    |  |  |  |  |  |
| 24         | 454        | 1452       | 6.850     | 0                 |                    |               | ✓   | ✓   | ✓ |     |     |     | ✓   |      |  |  |  |  |  |

Comments: RED RACK

SHIP: JOHN P TULLY  
ENTERED BY: MR  
CHECKED BY: DA

Bottom Depth: 2926

Cast # down: 74  
Cast # up: 74

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 1802 |
| Bottom: |     | 1833 |
| End:    |     | 1929 |

START POSITION (GPS)  
LAT: 53 30.01  
LONG: 134 59.94

BOTTOM POSITION (GPS)  
LAT: 53 30.02  
LONG: 134 59.99

END POSITION (GPS)  
LAT: 53 30.11  
LONG: 135 00.06

ROSETTE LOG

MISSION ID: 2003-11 STATION: Shelf CAST NUMBER: 79 UTC DATE (dd/mm/yyyy): 13/06/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |   |     |  |     |  |     |   |       |  |  |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|---|-----|--|-----|--|-----|---|-------|--|--|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |   | NUT |  | TCO |  | C13 |   | collo |  |  |  |  |
| 1          | 460        | 1432       | 0.461     | 1000              | ✓                  | ✓             | ✓ | ✓   |  |     |  |     |   |       |  |  |  |  |
| 2          | 461        | 1433       | 0.449     | 800               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 3          | 462        | 1434       | 0.588     | 600               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 4          | 463        | 1435       | 1.150     | 400               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 5          | 464        | 1437       | 1.109     | 400               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 6          | 465        | 1438       | 1.772     | 300               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 7          | 466        | 1439       | 2.004     | 250               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 8          | 467        | 1440       | 2.725     | 200               | ✓                  |               |   | ✓   |  |     |  |     |   |       |  |  |  |  |
| 9          | 468        | 1441       | 2.602     | 175               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 10         | 469        | 1442       | 3.050     | 150               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 11         | 470        | 1443       | 3.605     | 125               | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 12         | 471        | 1444       | 4.626     | 100               | ✓                  |               |   |     |  |     |  |     | ✓ |       |  |  |  |  |
| 13         | 472        | 1445       | 5.912     | 75                | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 14         | 473        | 1446       | 5.812     | 50                | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 15         | 474        | 1447       | 6.525     | 25                | ✓                  |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 16         | 475        | 1448       | 6.550     | 10                | ✓                  |               |   |     |  |     |  |     |   | ✓     |  |  |  |  |
| 17         | 476        | 1450       | 6.535     | 0                 |                    | ✓             | ✓ | ✓   |  |     |  |     | ✓ |       |  |  |  |  |
| 18         |            |            |           |                   |                    |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 19         |            |            |           |                   |                    |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 20         |            |            |           |                   |                    |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 21         |            |            |           |                   |                    |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 22         |            |            |           |                   |                    |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 23         |            |            |           |                   |                    |               |   |     |  |     |  |     |   |       |  |  |  |  |
| 24         |            |            |           |                   |                    |               |   |     |  |     |  |     |   |       |  |  |  |  |

Comments: BLUE KNEK

SHIP: JOHN P TULLY  
ENTERED BY: MR  
CHECKED BY: DA

Bottom Depth: ?

Cast # down: 79  
Cast # up: 79

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 1024 |
| Bottom: |     | 1044 |
| End:    |     |      |

START POSITION (GPS)  
LAT: 50 59.99  
LONG: 129 55.08

BOTTOM POSITION (GPS)  
LAT: 50 60.00  
LONG: 129 54.97

END POSITION (GPS)  
LAT: 51 00.04  
LONG: 129 54.93

ROSETTE LOG

MISSION ID: 2003-11 STATION: SP5 CAST NUMBER: 60 UTC DATE (dd/mm/yyyy): 13/6/03

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |     |     |   |     |  |     |      |  |  |  |  |                  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|-----|-----|---|-----|--|-----|------|--|--|--|--|------------------|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |     | NUT |   | TCO |  | C13 |      |  |  |  |  |                  |
|            |            |            |           |                   |                    |               | OXY |     |   | ALK |  | CHL | 6000 |  |  |  |  |                  |
| 1          | 477        | 1387       | 1.717     | B-20              | ✓                  | ✓             |     | ✓   |   |     |  |     |      |  |  |  |  |                  |
| 2          | 478        | 1389       | 1.774     | 200               | ✓                  |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 3          | 479        | 1391       | 2.051     | 175               | ✓                  |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 4          | 480        | 1393       | 2.368     | 150               | ✓                  |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 5          | 481        | 1394       | 2.359     | 150               | ✓                  |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 6          | 482        | 1397       | 2.849     | 125               | ✓                  |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 7          | 483        | 1398       | 4.319     | 100               | ✓                  |               |     |     | ✓ |     |  | ✓   |      |  |  |  |  |                  |
| 8          | 484        | 1399       | 6.011     | 75                | ✓                  |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 9          | 485        | 1400       | 5.980     | 50                | ✓                  |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 10         | 486        | 1402       | 6.403     | 25                | ✓                  |               |     |     |   |     |  |     | ✓    |  |  |  |  |                  |
| 11         | 487        | 1403       | 6.602     | 10                | ✓                  |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 12         | 488        | 1404       | 6.561     | 0                 | ✓                  | ✓             |     | ✓   |   |     |  | ✓   |      |  |  |  |  | Shmoe in sample. |
| 13         |            |            |           |                   |                    |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 14         |            |            |           |                   |                    |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 15         |            |            |           |                   |                    |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 16         |            |            |           |                   |                    |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 17         |            |            |           |                   |                    |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 18         |            |            |           |                   |                    |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 19         |            |            |           |                   |                    |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 20         |            |            |           |                   |                    |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 21         |            |            |           |                   |                    |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 22         |            |            |           |                   |                    |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 23         |            |            |           |                   |                    |               |     |     |   |     |  |     |      |  |  |  |  |                  |
| 24         |            |            |           |                   |                    |               |     |     |   |     |  |     |      |  |  |  |  |                  |

Comments:

SHIP: JOHN P TULLY  
ENTERED BY: TS  
CHECKED BY: ML

Bottom Depth: 208

Cast # down:  
Cast # up:

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 1601 |
| Bottom: |     | 1606 |
| End:    |     | 1620 |

START POSITION (GPS)  
LAT: 51.21.06'  
LONG: 128 46 96

BOTTOM POSITION (GPS)  
LAT: 51 21 10  
LONG: 128 47 02

END POSITION (GPS)  
LAT: 51 21 06  
LONG: 128 47 07

ROSETTE LOG

MISSION ID: 2003-11 STATION: SM 4 CAST NUMBER: 82 UTC DATE (dd/mm/yyyy): 14 JUNE 2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |   |     |   |     |  |     |  |     |   |  |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|---|-----|---|-----|--|-----|--|-----|---|--|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |   | NUT |   | TCO |  | C13 |  | CHL |   |  |  |  |
| 1          | 490        | 1432       | 0.119     | Bot-10            | ✓                  | 162           | ✓ | ✓   | ✓ |     |  |     |  |     | ✓ |  |  |  |
| 2          | 491        | 1433       | 0.131     | 150               | ✓                  |               | ✓ | ✓   | ✓ |     |  |     |  |     | ✓ |  |  |  |
| 3          | 492        | 1434       | 0.083     | 150               | ✓                  |               | ✓ | ✓   | ✓ |     |  |     |  |     | ✓ |  |  |  |
| 4          | 493        | 1435       | 0.095     | 125               | ✓                  |               | ✓ | ✓   | ✓ |     |  |     |  |     | ✓ |  |  |  |
| 5          | 494        | 1437       | 0.132     | 100               | ✓                  |               | ✓ | ✓   | ✓ |     |  |     |  | ✓   | ✓ |  |  |  |
| 6          | 495        | 1438       | 2.157     | 75                | ✓                  |               | ✓ | ✓   | ✓ |     |  |     |  | ✓   | ✓ |  |  |  |
| 7          | 496        | 1439       | 3.077     | 50                | ✓                  |               | ✓ | ✓   | ✓ |     |  |     |  | ✓   | ✓ |  |  |  |
| 8          | 497        | 1440       | 4.398     | 30                | ✓                  |               | ✓ | ✓   | ✓ |     |  |     |  | ✓   | ✓ |  |  |  |
| 9          | 498        | 1441       | 4.975     | 20                | ✓                  |               | ✓ | ✓   | ✓ |     |  |     |  | ✓   | ✓ |  |  |  |
| 10         | 499        | 1442       | 5.297     | 10                | ✓                  |               | ✓ | ✓   | ✓ |     |  |     |  | ✓   | ✓ |  |  |  |
| 11         | 500        | 1443       | 7.730     | 0                 | ✓                  |               | ✓ | ✓   | ✓ |     |  |     |  | ✓   | ✓ |  |  |  |
| 12         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |   |  |  |  |
| 13         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |   |  |  |  |
| 14         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |   |  |  |  |
| 15         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |   |  |  |  |
| 16         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |   |  |  |  |
| 17         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |   |  |  |  |
| 18         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |   |  |  |  |
| 19         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |   |  |  |  |
| 20         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |   |  |  |  |
| 21         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |   |  |  |  |
| 22         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |   |  |  |  |
| 23         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |   |  |  |  |
| 24         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |   |  |  |  |

Comments: SALS NOT SAMPLED.

SHIP: JOHN P TULLY

ENTERED BY: MR

CHECKED BY: MR

Bottom Depth: 181

Cast # down: 82

Cast # up: 82

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 0055 |
| Bottom: |     | 0101 |
| End:    |     | 0114 |

START POSITION (GPS)

LAT: 51 21 64

LONG: 127 08 85

BOTTOM POSITION (GPS)

LAT: 51 21 66

LONG: 127 08 82

END POSITION (GPS)

LAT: 51 21 67

LONG: 127 08 76



ROSETTE LOG

MISSION ID: 2003-11 STATION: R1 CAST NUMBER: 86 UTC DATE (dd/mm/yyyy): 14/06/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |   |     |   |     |  |     |  |     |  |  |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|---|-----|---|-----|--|-----|--|-----|--|--|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |   | NUT |   | TCO |  | C13 |  | CO2 |  |  |  |  |
|            |            |            |           |                   |                    | OXY           |   |     |   | ALK |  | CHL |  |     |  |  |  |  |
| 1          | 504        | 1387       | 2.987     | Bot-10            | ✓                  |               | ✓ | ✓   | ✓ |     |  |     |  |     |  |  |  |  |
| 2          | 505        | 1389       | 3.037     | 300               | ✓                  |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 3          | 506        | 1391       | 2.989     | 275               | ✓                  |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 4          | 507        | 1393       | 3.024     | 250               | ✓                  |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 5          | 508        | 1394       | 3.002     | 250               | ✓                  |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 6          | 509        | 1397       | 3.029     | 225               | ✓                  |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 7          | 510        | 1398       | 3.235     | 200               | ✓                  |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 8          | 511        | 1399       | 3.160     | 175               | ✓                  |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 9          | 512        | 1400       | 3.230     | 150               | ✓                  |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 10         | 513        | 1402       | 3.272     | 125               | ✓                  |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 11         | 514        | 1403       | 3.456     | 100               | ✓                  |               |   | ✓   |   |     |  | ✓   |  |     |  |  |  |  |
| 12         | 515        | 1404       | 3.863     | 75                | ✓                  |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 13         | 516        | 1406       | 4.659     | 50                | ✓                  |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 14         | 517        | 1407       | 5.246     | 30                | ✓                  |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 15         | 518        | 1410       | 5.530     | 20                | ✓                  |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 16         | 519        | 1411       | 6.472     | 10                | ✓                  |               |   |     |   |     |  |     |  | ✓   |  |  |  |  |
| 17         | 520        | 1414       | 8.338     | 0                 |                    |               | ✓ | ✓   | ✓ |     |  | ✓   |  |     |  |  |  |  |
| 18         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 19         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 20         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 21         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 22         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 23         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |  |  |  |  |
| 24         |            |            |           |                   |                    |               |   |     |   |     |  |     |  |     |  |  |  |  |

ROSETTE LOG

MISSION ID: 2003-11 STATION: R 4 CAST NUMBER: 89 UTC DATE (dd/mm/yyyy): 14/06/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |   |     |  |     |  |     |   |      |  |  |  |  |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|---|-----|--|-----|--|-----|---|------|--|--|--|--|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |   | NUT |  | TCO |  | C13 |   | 2010 |  |  |  |  |
| 1          | 523        | 1356       | 2.060     | Bot - 10          | /                  | /             | / | /   |  |     |  |     |   |      |  |  |  |  |
| 2          | 524        | 1358       | 1.827     | 275               | /                  | /             | / | /   |  |     |  |     |   |      |  |  |  |  |
| 3          | 525        | 1361       | 1.825     | 250               | /                  | /             | / | /   |  |     |  |     |   |      |  |  |  |  |
| 4          | 526        | 1360       | 2.507     | 225               | /                  | /             | / | /   |  |     |  |     |   |      |  |  |  |  |
| 5          | 527        | 1362       | 2.699     | 200               | /                  | /             | / | /   |  |     |  |     |   |      |  |  |  |  |
| 6          | 528        | 1363       | 2.690     | 200               | /                  | /             | / | /   |  |     |  |     |   |      |  |  |  |  |
| 7          | 529        | 1364       | 2.672     | 175               | /                  | /             | / | /   |  |     |  |     |   |      |  |  |  |  |
| 8          | 530        | 1365       | 2.563     | 150               | /                  | /             | / | /   |  |     |  |     |   |      |  |  |  |  |
| 9          | 531        | 1366       | 2.864     | 125               | /                  | /             | / | /   |  |     |  |     |   |      |  |  |  |  |
| 10         | 532        | 1367       | 3.103     | 100               | /                  | /             | / | /   |  |     |  | /   |   |      |  |  |  |  |
| 11         | 533        | 1368       | 3.365     | 75                | /                  | /             | / | /   |  |     |  | /   |   |      |  |  |  |  |
| 12         | 534        | 1369       | 4.148     | 50                | /                  | /             | / | /   |  |     |  | /   |   |      |  |  |  |  |
| 13         | 535        | 1372       | 5.050     | 30                | /                  | /             | / | /   |  |     |  | /   |   |      |  |  |  |  |
| 14         | 536        | 1373       | 5.289     | 20                | /                  | /             | / | /   |  |     |  | /   |   |      |  |  |  |  |
| 15         | 537        | 1374       | 5.954     | 10                |                    | /             | / | /   |  |     |  | /   | / |      |  |  |  |  |
| 16         | 538        | 1375       | 8.011     | 0                 |                    | /             | / | /   |  |     |  | /   | / |      |  |  |  |  |
| 17         |            |            |           |                   |                    |               |   |     |  |     |  |     |   |      |  |  |  |  |
| 18         |            |            |           |                   |                    |               |   |     |  |     |  |     |   |      |  |  |  |  |
| 19         |            |            |           |                   |                    |               |   |     |  |     |  |     |   |      |  |  |  |  |
| 20         |            |            |           |                   |                    |               |   |     |  |     |  |     |   |      |  |  |  |  |
| 21         |            |            |           |                   |                    |               |   |     |  |     |  |     |   |      |  |  |  |  |
| 22         |            |            |           |                   |                    |               |   |     |  |     |  |     |   |      |  |  |  |  |
| 23         |            |            |           |                   |                    |               |   |     |  |     |  |     |   |      |  |  |  |  |
| 24         |            |            |           |                   |                    |               |   |     |  |     |  |     |   |      |  |  |  |  |

Comments:

SHIP: JOHN P TULLY  
ENTERED BY: MR  
CHECKED BY: DA

Bottom Depth: 300

Cast # down: 89  
Cast # up: 89

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 1018 |
| Bottom: |     | 1023 |
| End:    |     | 1048 |

START POSITION (GPS)  
LAT: 51 38 90  
LONG: 127 26 79

BOTTOM POSITION (GPS)  
LAT: 51 38 90  
LONG: 127 26 81

END POSITION (GPS)  
LAT: 51 38 89  
LONG: 127 26 84

ROSETTE LOG

MISSION ID: 2003-11 STATION: CC CAST NUMBER: 92 UTC DATE (dd/mm/yyyy): 15/06/2003

| Niskin No. | Sample No. | OXY. Flask | OXY. ml/l | ROSETTE OPERATION |                    | Samples taken |  |     |  |     |  |     |   |       |  |  |  |         |
|------------|------------|------------|-----------|-------------------|--------------------|---------------|--|-----|--|-----|--|-----|---|-------|--|--|--|---------|
|            |            |            |           | Sample Depth      | Confirmed pressure | SAL           |  | NUT |  | TCO |  | C13 |   | collo |  |  |  |         |
| 1          | 540        | 1387       | 3.320     | Bot-5             | ✓                  | ✓             |  | ✓   |  |     |  |     |   |       |  |  |  |         |
| 2          | 541        | 1389       | 3.332     | 115               | ✓                  |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 3          | 542        | 1391       | 3.357     | 110               | ✓                  |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 4          | 543        | 1393       | 3.360     | 105               | ✓                  |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 5          | 544        | 1394       | 3.423     | 100               | ✓                  |               |  | ✓   |  |     |  |     | ✓ |       |  |  |  |         |
| 6          | 545        | 1397       | 3.562     | 90                | ✓                  |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 7          | 546        | 1398       | 3.680     | 80                | ✓                  |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 8          | 547        | 1399       | 4.036     | 70                | ✓                  |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 9          | 548        | 1400       | 4.254     | 60                | ✓                  |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 10         | 549        | 1402       | 4.664     | 50                | ✓                  |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 11         | 550        | 1403       | 4.846     | 40                | ✓                  |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 12         | 551        | 1404       | 4.947     | 30                | ✓                  |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 13         | 552        | 1406       | 5.924     | 20                | ✓                  |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 14         | 553        | 1407       | 6.786     | 15                | ✓                  |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 15         | 554        | 1410       | 7.266     | 10                | ✓                  |               |  |     |  |     |  |     |   | ✓     |  |  |  |         |
| 16         | 555        | 1411       | 7.414     | 5                 | ✓                  |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 17         | 556        | 1414       | 7.423     | 0                 | ✓                  | ✓             |  | ✓   |  |     |  |     |   | ✓     |  |  |  |         |
| 18         |            |            |           |                   |                    |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 19         | 557        | 1417       | 7.390     |                   |                    |               |  |     |  |     |  |     |   |       |  |  |  | cc loop |
| 20         |            |            |           |                   |                    |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 21         |            |            |           |                   |                    |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 22         |            |            |           |                   |                    |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 23         |            |            |           |                   |                    |               |  |     |  |     |  |     |   |       |  |  |  |         |
| 24         |            |            |           |                   |                    |               |  |     |  |     |  |     |   |       |  |  |  |         |

SHIP: Tully

ENTERED BY: MR

CHECKED BY: ML

Bottom Depth: 126

Cast # down: 92

Cast # up: 92

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 1605 |
| Bottom: |     | 1607 |
| End:    |     | 1624 |

START POSITION (GPS)

LAT: 51.2508

LONG: 127.4693

BOTTOM POSITION (GPS)

LAT: 51.2510

LONG: 127.4694

END POSITION (GPS)

LAT: 51.2519

LONG: 127.4700'

Comments: