

ROSETTE LOG

MISSION ID: 9839  
STATION NAME: JFG3

UTC DATE y/m/d: 18/11/98  
CAST NUMBER: 035

SHIP: TULLY

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                    | Samples taken |  |     |  |     |  |     |  |  |  |  |  |
|------------|------------|------------|------------|--------------|-------------------|--------------------|---------------|--|-----|--|-----|--|-----|--|--|--|--|--|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |  |  |
| 1          | 1          |            |            | 231          |                   | ✓                  | ✓             |  |     |  |     |  |     |  |  |  |  |  |
| 2          | 2          |            |            | 200          |                   | ✓                  | ✓             |  |     |  |     |  |     |  |  |  |  |  |
| 3          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 4          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 5          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 6          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 7          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 8          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 9          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 10         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 11         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 12         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 13         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 14         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 15         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 16         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 17         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 18         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 19         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 20         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 21         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 22         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 23         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 24         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |

ENTERED BY: DJS  
CHECKED BY:

Bottom Depth: 239

Cast # down: 035  
Cast # up: 035

| Time    | LOC | UTC   |
|---------|-----|-------|
| Begin:  |     | 18:10 |
| Bottom: |     | 18:15 |
| End:    |     |       |

START POSITION (GPS)  
LAT: 48 30.33  
LONG: 124 40.20

BOTTOM POSITION (GPS)  
LAT: 30.32  
LONG: 40.32

END POSITION (GPS)  
LAT:  
LONG:

Comments:

ROSETTE LOG

MISSION ID: 9839  
STATION NAME: JFG 4

UTC DATE y/m/d: 18/11/98  
CAST NUMBER: 036

SHIP:

| Niskin<br>No. | Sample<br>No. | OXY.<br>Flask | OXY.<br>Temp. | Sample<br>Depth | ROSETTE OPERATION |                       | Samples taken |     |     |     |     |     |     |  |  |  |  |  |
|---------------|---------------|---------------|---------------|-----------------|-------------------|-----------------------|---------------|-----|-----|-----|-----|-----|-----|--|--|--|--|--|
|               |               |               |               |                 | Trip<br>pressure  | Confirmed<br>Salinity | SAL           |     | NUT |     | ALK |     | TCO |  |  |  |  |  |
|               |               |               |               |                 |                   |                       |               | OXY |     | CHL |     | C13 |     |  |  |  |  |  |
| 1             | 3             |               |               | 249             |                   | ✓                     | ✓             |     |     |     |     |     |     |  |  |  |  |  |
| 2             | 4             |               |               | 225             |                   | ✓                     | ✓             |     |     |     |     |     |     |  |  |  |  |  |
| 3             |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 4             |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 5             |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 6             |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 7             |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 8             |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 9             |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 10            |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 11            |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 12            |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 13            |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 14            |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 15            |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 16            |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 17            |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 18            |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 19            |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 20            |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 21            |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 22            |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 23            |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |
| 24            |               |               |               |                 |                   |                       |               |     |     |     |     |     |     |  |  |  |  |  |

Comments:

ENTERED BY: DJS  
CHECKED BY:

Bottom Depth: 256

Cast # down: 036  
Cast # up: 036

| Time    | LOC | UTC   |
|---------|-----|-------|
| Begin:  |     | 1856  |
| Bottom: |     | 19:02 |
| End:    |     |       |

START POSITION (GPS)  
LAT: 48° 28.38  
LONG: 124° 39.87

BOTTOM POSITION (GPS)  
LAT:  
LONG:

END POSITION (GPS)  
LAT:  
LONG:

ROSETTE LOG

MISSION ID: 9839  
STATION NAME: JFE4

UTC DATE y/m/d:  
CAST NUMBER: 094

SHIP:

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                    | Samples taken |  |     |  |     |  |     |  |  |  |  |  |
|------------|------------|------------|------------|--------------|-------------------|--------------------|---------------|--|-----|--|-----|--|-----|--|--|--|--|--|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |  |  |
| 1          | 5          |            |            | 200          |                   | ✓                  | ✓             |  |     |  |     |  |     |  |  |  |  |  |
| 2          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 3          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 4          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 5          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 6          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 7          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 8          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 9          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 10         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 11         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 12         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 13         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 14         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 15         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 16         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 17         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 18         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 19         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 20         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 21         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 22         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 23         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 24         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |

ENTERED BY: DJS  
CHECKED BY:

Bottom Depth: 228

Cast # down: 094

Cast # up:

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 2047 |
| Bottom: |     |      |
| End:    |     |      |

START POSITION (GPS)  
LAT: 48° 21.25'  
LONG: 124° 14.91'

BOTTOM POSITION (GPS)  
LAT:  
LONG:

END POSITION (GPS)  
LAT:  
LONG:

Comments:

ROSETTE LOG

MISSION ID: 9839  
STATION NAME: D8A

UTC DATE y/m/d: 98/11/25  
CAST NUMBER: 138

SHIP: Tully

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                    | Samples taken |  |     |  |     |  |     |  |  |  |  |  |
|------------|------------|------------|------------|--------------|-------------------|--------------------|---------------|--|-----|--|-----|--|-----|--|--|--|--|--|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |  |  |
| 1          | 6          | /          | /          | 300          | 299               | /                  | /             |  |     |  |     |  |     |  |  |  |  |  |
| 2          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 3          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 4          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 5          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 6          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 7          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 8          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 9          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 10         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 11         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 12         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 13         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 14         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 15         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 16         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 17         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 18         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 19         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 20         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 21         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 22         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 23         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 24         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |

ENTERED BY:  
CHECKED BY:

Bottom Depth:

Cast # down:

Cast # up:

Time LOC UTC  
Begin:  
Bottom:  
End:

START POSITION (GPS)  
LAT:  
LONG:

BOTTOM POSITION (GPS)  
LAT:  
LONG:

END POSITION (GPS)  
LAT:  
LONG:

Comments:

ROSETTE LOG

MISSION ID: 9839  
STATION NAME: D7A

UTC DATE y/m/d: 98/11/25  
CAST NUMBER: 139

SHIP: Tully

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                    | Samples taken |  |     |  |     |  |     |  |  |  | OXY End pt. |   |
|------------|------------|------------|------------|--------------|-------------------|--------------------|---------------|--|-----|--|-----|--|-----|--|--|--|-------------|---|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |             |   |
|            |            |            |            |              |                   |                    | OXY           |  | CHL |  | C13 |  |     |  |  |  |             |   |
| 1          | 7          | 84         |            | bot-10       | 146               | ✓                  |               |  |     |  |     |  |     |  |  |  | 0.841       |   |
| 2          | 8          | 97         |            | 125          | 124               | ✓                  |               |  |     |  |     |  |     |  |  |  | 0.835       |   |
| 3          | 9          | 255        |            | 100          | 101               | ✓                  | 30.855        |  |     |  |     |  |     |  |  |  | 0.827       |   |
| 4          | 10         | 333        |            | 75           | 76                | ✓                  | 30.825        |  |     |  |     |  |     |  |  |  | 0.838       |   |
| 5          | 11         | 337        |            | 50           | 49                | ✓                  | 30.784        |  |     |  |     |  |     |  |  |  | 0.855       |   |
| 6          | 12         | 364        |            | 30           | 30                | ✓                  | 30.773        |  |     |  |     |  |     |  |  |  | 0.851       |   |
| 7          | 13         | 392        |            | 20           | 20                | ✓                  | 30.747        |  |     |  |     |  |     |  |  |  | 0.884       |   |
| 8          | 14         | 412        |            | 10           | 10                | ✓                  | 30.729        |  |     |  |     |  |     |  |  |  | 0.870       | * |
| 9          | 15         | 425        |            | 0            | 1.8               | ✓                  | 30.726        |  |     |  |     |  |     |  |  |  | 0.887       |   |
| 10         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 11         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 12         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 13         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 14         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 15         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 16         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 17         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 18         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 19         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 20         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 21         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 22         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 23         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 24         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |

ENTERED BY:  
CHECKED BY:

Bottom Depth: 166

Cast # down: 139

Cast # up: 139

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 1416 |
| Bottom: |     | 1419 |
| End:    |     | 1431 |

START POSITION (GPS)  
LAT: 48° 43.99'  
LONG: 123° 08.14'

BOTTOM POSITION (GPS)  
LAT: 48° 44.01  
LONG: 123° 07.99

END POSITION (GPS)  
LAT: 48° 44.03  
LONG: 123° 07.45

Comments:

\* Cracked lip on O2 flask

ROSETTE LOG

MISSION ID: 9839  
STATION NAME: SIO2

UTC DATE y/m/d: 25/11/98  
CAST NUMBER: 142

SHIP: TULLY

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                    | Samples taken |  |     |  |     |  |     |  |  |  |  |  |
|------------|------------|------------|------------|--------------|-------------------|--------------------|---------------|--|-----|--|-----|--|-----|--|--|--|--|--|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |  |  |
| 1          | 16         |            |            | 200          | 200               | ✓                  | ✓             |  |     |  |     |  |     |  |  |  |  |  |
| 2          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 3          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 4          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 5          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 6          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 7          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 8          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 9          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 10         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 11         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 12         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 13         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 14         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 15         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 16         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 17         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 18         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 19         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 20         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 21         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 22         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 23         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |
| 24         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |  |  |

ENTERED BY: DJJ  
CHECKED BY:

Bottom Depth: 221

Cast # down: 142  
Cast # up: 142

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 1658 |
| Bottom: |     | 1703 |
| End:    |     | 1708 |

START POSITION (GPS)  
LAT: 48° 50.56  
LONG: 123° 6.98

BOTTOM POSITION (GPS)  
LAT: 50.58  
LONG: 7.04

END POSITION (GPS)  
LAT: 50.59  
LONG: 7.08

Comments: Note! No sample #17!

ROSETTE LOG

MISSION ID: 9839  
STATION NAME: SIO3

UTC DATE y/m/d: 25/11/98  
CAST NUMBER: 143

SHIP: TULLY

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                    | Samples taken |  |     |  |     |  |     |  |  |  | OXY End.pt. |   |
|------------|------------|------------|------------|--------------|-------------------|--------------------|---------------|--|-----|--|-----|--|-----|--|--|--|-------------|---|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |             |   |
| 1          | 18         | 443        |            | 60-10        | 153               | ✓ 30.74            |               |  |     |  |     |  |     |  |  |  | 0.711       |   |
| 2          | 19         | 463        |            | 125          | 126               | ✓ 30.57            |               |  |     |  |     |  |     |  |  |  | 0.802       |   |
| 3          | 20         | 467        |            | 100          | 100               | ✓ 30.53            |               |  |     |  |     |  |     |  |  |  | 0.813       |   |
| 4          | 21         | 486        |            | 75           | 75                | ✓ 30.41            |               |  |     |  |     |  |     |  |  |  | 0.846       |   |
| 5          | 22         | 509        |            | 50           | 50                | ✓ 30.35            |               |  |     |  |     |  |     |  |  |  | 0.854       |   |
| 6          | 23         | 534        |            | 30           | 30                | ✓ 30.31            |               |  |     |  |     |  |     |  |  |  | 0.805       | * |
| 7          | 24         | 535        |            | 20           | 20                | ✓ 30.24            |               |  |     |  |     |  |     |  |  |  | 0.886       |   |
| 8          | 25         | 572        |            | 10           | 10                | ✓ 30.23            |               |  |     |  |     |  |     |  |  |  | 0.887       |   |
| 9          | 26         | 578        |            | 0            | 2.0               | ✓ 30.23            |               |  |     |  |     |  |     |  |  |  | 0.889       |   |
| 10         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 11         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 12         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 13         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 14         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 15         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 16         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 17         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 18         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 19         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 20         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 21         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 22         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 23         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |
| 24         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |             |   |

ENTERED BY: DJS  
CHECKED BY:

Bottom Depth: 161

Cast # down: 143  
Cast # up: 143

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 1730 |
| Bottom: |     | 1733 |
| End:    |     |      |

START POSITION (GPS)  
LAT: 48° 51.87  
LONG: 123° 5.18

BOTTOM POSITION (GPS)  
LAT: 51.90  
LONG: 5.24

END POSITION (GPS)  
LAT:  
LONG:

Comments:  
\* NOTE There is no Sample #17  
\* Unusual O2 profile

ROSETTE LOG

MISSION ID: 9839  
STATION NAME: MIO 3

UTC DATE y/m/d: 98/11/25  
CAST NUMBER: 150

SHIP: TULLY

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                    | Samples taken |     |     |     |     |     |     |  |  |  | OXY Endpt |  |
|------------|------------|------------|------------|--------------|-------------------|--------------------|---------------|-----|-----|-----|-----|-----|-----|--|--|--|-----------|--|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity | SAL           |     | NUT |     | ALK |     | TCO |  |  |  |           |  |
|            |            |            |            |              |                   |                    |               | OXY |     | CHL |     | C13 |     |  |  |  |           |  |
| 1          | 27         | 588        |            | 601-10       | 121               | /                  |               |     |     |     |     |     |     |  |  |  | 0.823     |  |
| 2          | 28         | 597        |            | 100          |                   | /                  |               |     |     |     |     |     |     |  |  |  | 0.805     |  |
| 3          | 29         | 632        |            | 75           |                   | /                  |               |     |     |     |     |     |     |  |  |  | 0.817     |  |
| 4          | 30         | 638        |            | 50           |                   | /                  |               |     |     |     |     |     |     |  |  |  | 0.809     |  |
| 5          | 31         | 641        |            | 30           |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.849     |  |
| 6          | 32         | 650        |            | 20           |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.936     |  |
| 7          | 33         | 657        |            | 10           |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.956     |  |
| 8          | 34         | 695        |            | 0            |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.941     |  |
| 9          |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |
| 10         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |
| 11         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |
| 12         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |
| 13         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |
| 14         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |
| 15         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |
| 16         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |
| 17         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |
| 18         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |
| 19         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |
| 20         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |
| 21         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |
| 22         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |
| 23         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |
| 24         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |           |  |

ENTERED BY:  
CHECKED BY:

Bottom Depth: 129 m

Cast # down: 150  
Cast # up: 150

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  | M   | 2105 |
| Bottom: |     | 2108 |
| End:    |     | 2117 |

START POSITION (GPS)  
LAT: 48° 55.15'  
LONG: 123° 10.72'

BOTTOM POSITION (GPS)  
LAT: 48° 55.15'  
LONG: 123 10.73'

END POSITION (GPS)  
LAT: 48° 55.14'  
LONG: 123 10.76'

Comments:



ROSETTE LOG

MISSION ID: 9839  
STATION NAME: G101

UTC DATE y/m/d: 9/11/25  
CAST NUMBER: 153

SHIP: TULLY

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                    | Samples taken |  |     |  |     |  |     |  |  |  | OXY   | endpt |
|------------|------------|------------|------------|--------------|-------------------|--------------------|---------------|--|-----|--|-----|--|-----|--|--|--|-------|-------|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |       |       |
| 1          | 35         | 712        |            | bet = 10     |                   | -                  |               |  |     |  |     |  |     |  |  |  | 0.621 |       |
| 2          | 36         | 713        |            | 125          |                   | -                  |               |  |     |  |     |  |     |  |  |  | 0.747 | *     |
| 3          | 37         | 715        |            | 100          |                   | -                  |               |  |     |  |     |  |     |  |  |  | 0.780 |       |
| 4          | 38         | 724        |            | 75           |                   | -                  |               |  |     |  |     |  |     |  |  |  | 0.751 |       |
| 5          | 39         | 726        |            | 50           |                   | -                  |               |  |     |  |     |  |     |  |  |  | 0.660 |       |
| 6          | 40         | 727        |            | 30           |                   | -                  |               |  |     |  |     |  |     |  |  |  | 0.731 |       |
| 7          | 41         | 730        |            | 20           |                   | -                  |               |  |     |  |     |  |     |  |  |  | 0.757 |       |
| 8          | 42         | 732        |            | 10           |                   | -                  |               |  |     |  |     |  |     |  |  |  | 0.776 |       |
| 9          | 43         | 734        |            | 0            |                   |                    |               |  |     |  |     |  |     |  |  |  | 0.779 |       |
| 10         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |       |
| 11         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |       |
| 12         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |       |
| 13         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |       |
| 14         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |       |
| 15         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |       |
| 16         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |       |
| 17         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |       |
| 18         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |       |
| 19         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |       |
| 20         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |       |
| 21         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |       |
| 22         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |       |
| 23         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |       |
| 24         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |       |

ENTERED BY:  
CHECKED BY:

Bottom Depth: 163

Cast # down: 153

Cast # up: 153

Time LOC UTC  
Begin:  
Bottom:  
End:

START POSITION (GPS)  
LAT:  
LONG:

BOTTOM POSITION (GPS)  
LAT:  
LONG:

END POSITION (GPS)  
LAT:  
LONG:

Comments:  
\* Forgot to enter Sampled Flask # (maybe!)

## ROSETTE LOG

MISSION ID:

9839

UTC DATE y/m/d:

98/11/25

STATION NAME:

G102

CAST NUMBER:

154

SHIP: Tully

Niskin Sample OXY. OXY. Sample  
No. No. Flask Temp. Depth

| ROSETTE OPERATION |                         | Samples taken |  |     |     |     |              |     |   |   |  |  |  | OXY   | Endpt |
|-------------------|-------------------------|---------------|--|-----|-----|-----|--------------|-----|---|---|--|--|--|-------|-------|
| Trip pressure     | Confirmed Salinity/TEMP | SAL           |  | NUT |     | ALK |              | TCO |   |   |  |  |  |       |       |
|                   |                         |               |  | OXY |     | CHL |              | C13 |   |   |  |  |  |       |       |
| 1                 | 44                      | 735           |  | 250 | 250 | ✓   | 31.165/9.98  |     |   |   |  |  |  | 0.532 |       |
| 2                 | 45                      | 1045          |  | 200 | 200 | ✓   | 31.040/9.96  |     |   |   |  |  |  | 0.545 |       |
| 3                 | 46                      | 1062          |  | 175 | 175 | ✓   | 30.949/9.88  |     |   |   |  |  |  | 0.584 |       |
| 4                 | 47                      | 1090          |  | 150 | 151 | ✓   | 30.813/9.84  |     |   |   |  |  |  | 0.618 |       |
| 5                 | 48                      | 1103          |  | 125 | 125 | ✓   | 30.741/9.83  |     |   |   |  |  |  | 0.609 |       |
| 6                 | 49                      | 1104          |  | 100 | 100 | ✓   | 30.653/9.88  |     |   |   |  |  |  | 0.579 |       |
| 7                 | 50                      | 1105          |  | 75  | 75  | ✓   | 30.542/10.03 |     |   |   |  |  |  | 0.564 |       |
| 8                 | 51                      | 1106          |  | 50  | 50  | ✓   | 30.371/10.11 |     |   |   |  |  |  | 0.545 |       |
| 9                 | 52                      | 1110          |  | 30  | 30  | ✓   | 29.794/9.85  |     |   |   |  |  |  | 0.730 |       |
| 10                | 53                      | 1113          |  | 20  | 20  | ✓   | 29.788/9.85  |     |   |   |  |  |  | 0.755 |       |
| 11                | 54                      | 1114          |  | 10  | 10  | ✓   | 29.692/9.79  |     |   |   |  |  |  | 0.790 |       |
| 12                | 55                      | 1119          |  | 0   | 19  | ✓   | 29.696/9.79  | ↓   | ↓ | ↓ |  |  |  | 0.810 |       |
| 13                |                         |               |  |     |     |     |              |     |   |   |  |  |  |       |       |
| 14                |                         |               |  |     |     |     |              |     |   |   |  |  |  |       |       |
| 15                |                         |               |  |     |     |     |              |     |   |   |  |  |  |       |       |
| 16                |                         |               |  |     |     |     |              |     |   |   |  |  |  |       |       |
| 17                |                         |               |  |     |     |     |              |     |   |   |  |  |  |       |       |
| 18                |                         |               |  |     |     |     |              |     |   |   |  |  |  |       |       |
| 19                |                         |               |  |     |     |     |              |     |   |   |  |  |  |       |       |
| 20                |                         |               |  |     |     |     |              |     |   |   |  |  |  |       |       |
| 21                |                         |               |  |     |     |     |              |     |   |   |  |  |  |       |       |
| 22                |                         |               |  |     |     |     |              |     |   |   |  |  |  |       |       |
| 23                |                         |               |  |     |     |     |              |     |   |   |  |  |  |       |       |
| 24                |                         |               |  |     |     |     |              |     |   |   |  |  |  |       |       |

ENTERED BY:

CHECKED BY:

Bottom Depth: 269

Cast # down: 154

Cast # up: 154

Time LOC UTC

Begin: 0012

Bottom: 0018

End: 0038

START POSITION (GPS)

LAT: 49° 02.69'

LONG: 123° 23.35'

BOTTOM POSITION (GPS)

LAT: 49° 02.68'

LONG: 123° 23.38'

END POSITION (GPS)

LAT: 49° 02.65'

LONG: 123° 23.36'

Comments:

ROSETTE LOG

MISSION ID: 9839  
STATION NAME: VI01

UTC DATE y/m/d: 1998/11/26  
CAST NUMBER: 155

SHIP:

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                         | Samples taken |  |     |  |     |  |     |  |  |  | OXY Endpt |  |
|------------|------------|------------|------------|--------------|-------------------|-------------------------|---------------|--|-----|--|-----|--|-----|--|--|--|-----------|--|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity/TEMP | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |           |  |
| 1          | 56         | 1126       |            | B0-10        | 101               | ✓ 30.485/10.06          |               |  |     |  |     |  |     |  |  |  | 0.533     |  |
| 2          | 57         | 1128       |            | 75           | 75                | ✓ 30.354/10.03          |               |  |     |  |     |  |     |  |  |  | 0.508     |  |
| 3          | 58         | 1130       |            | 50           | 51                | ✓ 30.270/10.01          |               |  |     |  |     |  |     |  |  |  | 0.480     |  |
| 4          | 59         | 1132       |            | 30           | 30                | ✓ 30.128/9.95           |               |  |     |  |     |  |     |  |  |  | 0.547     |  |
| 5          | 60         | 1133       |            | 20           | 21                | ✓ 30.046/9.93           |               |  |     |  |     |  |     |  |  |  | 0.596     |  |
| 6          | 61         | 1134       |            | 10           | 10                | ✓ 29.975/9.90           |               |  |     |  |     |  |     |  |  |  | 0.624     |  |
| 7          | 62         | 1135       |            | 0            | 23                | ✓ 29.971/9.89           |               |  |     |  |     |  |     |  |  |  | 0.628     |  |
| 8          |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 9          |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 10         |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 11         |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 12         |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 13         |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 14         |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 15         |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 16         |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 17         |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 18         |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 19         |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 20         |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 21         |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 22         |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 23         |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |
| 24         |            |            |            |              |                   |                         |               |  |     |  |     |  |     |  |  |  |           |  |

ENTERED BY:  
CHECKED BY:

Bottom Depth: 114

Cast # down: 155  
Cast # up: 155

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 0152 |
| Bottom: |     | 0155 |
| End:    |     | 0204 |

START POSITION (GPS)  
LAT: 49° 02.87'  
LONG: 123° 35.37'

BOTTOM POSITION (GPS)  
LAT: 49° 02.94'  
LONG: 123° 35.37'

END POSITION (GPS)  
LAT: 49° 03.02'  
LONG: 123° 35.56'

Comments:

## ROSETTE LOG

MISSION ID:

9839

UTC DATE y/m/d:

1998/11/26

SHIP:

TULLY

STATION NAME:

V102

CAST NUMBER:

156

| Niskin<br>No. | Sample<br>No. | OXY.<br>Flask | OXY.<br>Temp. | Sample<br>Depth | ROSETTE OPERATION |                       | Samples taken |  |     |  |     |  |     |  |  |  | OXY    |  |
|---------------|---------------|---------------|---------------|-----------------|-------------------|-----------------------|---------------|--|-----|--|-----|--|-----|--|--|--|--------|--|
|               |               |               |               |                 | Trip<br>pressure  | Confirmed<br>Salinity | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |        |  |
|               |               |               |               |                 |                   |                       | OXY           |  | CHL |  | C13 |  |     |  |  |  | End Pt |  |
| 1             | 63            | 1136          |               | Bo-10           | 238               | ✓                     | 31.151/9.97   |  |     |  |     |  |     |  |  |  | 0.485  |  |
| 2             | 64            | 1137          |               | 200             | 199               | ✓                     | 31.078/9.97   |  |     |  |     |  |     |  |  |  | 0.490  |  |
| 3             | 65            | 84            |               | 175             | 175               | ✓                     | 30.931/10.00  |  |     |  |     |  |     |  |  |  | 0.580  |  |
| 4             | 66            | 97            |               | 150             | 151               | ✓                     | 30.721/9.92   |  |     |  |     |  |     |  |  |  | 0.643  |  |
| 5             | 67            | 255           |               | 125             | 125               | ✓                     | 30.616/9.95   |  |     |  |     |  |     |  |  |  | 0.645  |  |
| 6             | 68            | 333           |               | 100             | 100               | ✓                     | 30.508/9.95   |  |     |  |     |  |     |  |  |  | 0.652  |  |
| 7             | 69            | 337           |               | 75              | 75                | ✓                     | 30.463/10.02  |  |     |  |     |  |     |  |  |  | 0.637  |  |
| 8             | 70            | 364           |               | 50              | 50                | ✓                     | 30.152/9.99   |  |     |  |     |  |     |  |  |  | 0.537  |  |
| 9             | 71            | 392           |               | 30              | 30                | ✓                     | 29.836/9.95   |  |     |  |     |  |     |  |  |  | 0.667  |  |
| 10            | 72            | 412           |               | 20              | 20                | ✓                     | 29.753/9.90   |  |     |  |     |  |     |  |  |  | 0.705  |  |
| 11            | 73            | 425           |               | 10              | 10                | ✓                     | 29.455/9.84   |  |     |  |     |  |     |  |  |  | 0.810  |  |
| 12            | 74            | 443           |               | 0               | 2.0               |                       | 29.446/9.84   |  |     |  |     |  |     |  |  |  | 0.845  |  |
| 13            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |        |  |
| 14            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |        |  |
| 15            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |        |  |
| 16            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |        |  |
| 17            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |        |  |
| 18            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |        |  |
| 19            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |        |  |
| 20            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |        |  |
| 21            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |        |  |
| 22            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |        |  |
| 23            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |        |  |
| 24            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |        |  |

Comments:

ENTERED BY:

CHECKED BY:

Bottom Depth: 263

Cast # down: 156

Cast # up: 156

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 0242 |
| Bottom: |     | 0247 |
| End:    |     | 0303 |

| START POSITION (GPS) |             |
|----------------------|-------------|
| LAT:                 | 49° 04.41'  |
| LONG:                | 123° 32.18' |

| BOTTOM POSITION (GPS) |             |
|-----------------------|-------------|
| LAT:                  | 49° 04.35'  |
| LONG:                 | 123° 32.24' |

| END POSITION (GPS) |             |
|--------------------|-------------|
| LAT:               | 49° 04.31'  |
| LONG:              | 123° 32.25' |

## ROSETTE LOG

MISSION ID: 9839  
STATION NAME: VI03UTC DATE y/m/d: 1998/11/26  
CAST NUMBER: 157

SHIP: TULLY

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                      | Samples taken |     |     |  |     |  |     |  |  |  | OXY End Pt |                   |
|------------|------------|------------|------------|--------------|-------------------|----------------------|---------------|-----|-----|--|-----|--|-----|--|--|--|------------|-------------------|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity/T | SAL           |     | NUT |  | ALK |  | TCO |  |  |  |            |                   |
|            |            |            |            |              |                   |                      | EMP           | OXY | CHL |  | C13 |  |     |  |  |  |            |                   |
| 1          | 75         | 463        |            | 80-10        | 331               | ✓ 31.276/9.92        | ↓             | ↓   | ↓   |  |     |  |     |  |  |  | 0.510      |                   |
| 2          | 76         | 467        |            | 300          | 299               | ✓ 31.234/9.94        | ↓             | ↓   | ↓   |  |     |  |     |  |  |  | 0.521      |                   |
| 3          | 77         | 486        |            | 250          | 250               | ✓ 31.153/9.99        | ↓             | ↓   | ↓   |  |     |  |     |  |  |  | 0.541      | elapsed time wave |
| 4          | 78         | 509        |            | 200          | 200               | ✓ 31.068/10.01       | ↓             | ↓   | ↓   |  |     |  |     |  |  |  | 0.543      |                   |
| 5          | 79         | 534        |            | 175          | 175               | ✓ 30.992/10.03       | ↓             | ↓   | ↓   |  |     |  |     |  |  |  | 0.512      |                   |
| 6          | 80         | 535        |            | 150          | 151               | ✓ 30.87/10.08        | ↓             | ↓   | ↓   |  |     |  |     |  |  |  | 0.562      |                   |
| 7          | 81         | 572        |            | 125          | 126               | ✓ 30.89/9.97         | ↓             | ↓   | ↓   |  |     |  |     |  |  |  | 0.620      |                   |
| 8          | 82         | 578        |            | 100          | 100               | ✓ 30.56/10.07        | ↓             | ↓   | ↓   |  |     |  |     |  |  |  | 0.587      |                   |
| 9          | 83         | 588        |            | 75           | 75                | ✓ 30.44/10.12        | ↓             | ↓   | ↓   |  |     |  |     |  |  |  | 0.555      |                   |
| 10         | 84         | 597        |            | 50           | 50                | ✓ 30.17/10.11        | ↓             | ↓   | ↓   |  |     |  |     |  |  |  | 0.520      |                   |
| 11         | 85         | 632        |            | 30           | 30                | ✓ 29.93/10.06        | ↓             | ↓   | ↓   |  |     |  |     |  |  |  | 0.597      |                   |
| 12         | 86         | 638        |            | 20           | 20                | ✓ 29.48/9.91         | ↓             | ↓   | ↓   |  |     |  |     |  |  |  | 0.754      |                   |
| 13         | 87         | 641        |            | 10           | 10                | ✓ 28.64/9.66         | ↓             | ↓   | ↓   |  |     |  |     |  |  |  | 0.936      |                   |
| 14         | 88*        |            |            | 0            | 1.8               | ✓ 28.11/9.49         | ↓             | ↓   | ↓   |  |     |  |     |  |  |  |            |                   |
| 15         |            |            |            |              |                   |                      |               |     |     |  |     |  |     |  |  |  |            |                   |
| 16         |            |            |            |              |                   |                      |               |     |     |  |     |  |     |  |  |  |            |                   |
| 17         |            |            |            |              |                   |                      |               |     |     |  |     |  |     |  |  |  |            |                   |
| 18         |            |            |            |              |                   |                      |               |     |     |  |     |  |     |  |  |  |            |                   |
| 19         |            |            |            |              |                   |                      |               |     |     |  |     |  |     |  |  |  |            |                   |
| 20         |            |            |            |              |                   |                      |               |     |     |  |     |  |     |  |  |  |            |                   |
| 21         |            |            |            |              |                   |                      |               |     |     |  |     |  |     |  |  |  |            |                   |
| 22         |            |            |            |              |                   |                      |               |     |     |  |     |  |     |  |  |  |            |                   |
| 23         |            |            |            |              |                   |                      |               |     |     |  |     |  |     |  |  |  |            |                   |
| 24         |            |            |            |              |                   |                      |               |     |     |  |     |  |     |  |  |  |            |                   |

ENTERED BY:  
CHECKED BY:

Bottom Depth: 343

Cast # down: 157  
Cast # up: 157

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 0343 |
| Bottom: |     | 0349 |
| End:    |     |      |

| START POSITION (GPS) |      |        |
|----------------------|------|--------|
| LAT:                 | 49°  | 05.99' |
| LONG:                | 123° | 29.03' |

| BOTTOM POSITION (GPS) |     |        |
|-----------------------|-----|--------|
| LAT:                  | 49° | 05.99' |
| LONG:                 | 123 | 29.08' |

| END POSITION (GPS) |  |  |
|--------------------|--|--|
| LAT:               |  |  |
| LONG:              |  |  |

## Comments:

\* Bottle #14 did not trip - no sample #88  
NB: Elapsed time on Oxy program very high!

## ROSETTE LOG

MISSION ID: 9839  
STATION NAME: VI04UTC DATE y/m/d: 26/11/98  
CAST NUMBER: 158

SHIP: TULLY

| Niskin<br>No. | Sample<br>No. | OXY.<br>Flask | OXY.<br>Temp. | Sample<br>Depth | ROSETTE OPERATION |                       | Samples taken |  |     |  |     |  |     |  |  |  | OXY<br>End pt |
|---------------|---------------|---------------|---------------|-----------------|-------------------|-----------------------|---------------|--|-----|--|-----|--|-----|--|--|--|---------------|
|               |               |               |               |                 | Trip<br>pressure  | Confirmed<br>Salinity | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |               |
| 1             | 89            | 650           |               | bot-10          | 181               | ✓ 30.94/9.88          |               |  |     |  |     |  |     |  |  |  | 0.615         |
| 2             | 90            | 657           |               | 150             | 150               | ✓ 30.71/9.81          |               |  |     |  |     |  |     |  |  |  | 0.699         |
| 3             | 91            | 695           |               | 125             | 125               | ✓ 30.52/9.69          |               |  |     |  |     |  |     |  |  |  | 0.777         |
| 4             | 92            | 697           |               | 100             | 100               | ✓ 30.46/9.66          |               |  |     |  |     |  |     |  |  |  | 0.826         |
| 5             | 93            | 707           |               | 75              | 75                | ✓ 30.38/9.61          |               |  |     |  |     |  |     |  |  |  | 0.843         |
| 6             | 94            | 708           |               | 50              | 50                | ✓ 30.25/9.49          |               |  |     |  |     |  |     |  |  |  | 0.924         |
| 7             | 95            | 1138          |               | 30              | 30                | ✓ 29.76/9.75          |               |  |     |  |     |  |     |  |  |  | 0.783         |
| 8             | 96            | 1139          |               | 20              | 20                | ✓ 29.59/9.72          |               |  |     |  |     |  |     |  |  |  | 0.799         |
| 9             | 97            | 1141          |               | 10              | 10                | ✓ 28.89/9.49          |               |  |     |  |     |  |     |  |  |  | 0.853         |
| 10            | 98            | 1142          |               | 0               | 1.6               | ✓ 26.68/9.38          |               |  |     |  |     |  |     |  |  |  | 0.906         |
| 11            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |               |
| 12            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |               |
| 13            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |               |
| 14            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |               |
| 15            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |               |
| 16            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |               |
| 17            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |               |
| 18            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |               |
| 19            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |               |
| 20            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |               |
| 21            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |               |
| 22            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |               |
| 23            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |               |
| 24            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |               |

ENTERED BY: DJS  
CHECKED BY:

Bottom Depth: 189

Cast # down: 158

Cast # up: 158

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 0459 |
| Bottom: |     | 0503 |
| End:    |     | 0518 |

| START POSITION (GPS) |       |
|----------------------|-------|
| LAT: 49°             | 8.77  |
| LONG: 123°           | 23.41 |

| BOTTOM POSITION (GPS) |       |
|-----------------------|-------|
| LAT: 49°              | 8.78  |
| LONG: 123°            | 23.33 |

| END POSITION (GPS) |       |
|--------------------|-------|
| LAT: 49°           | 8.71  |
| LONG: 123°         | 23.32 |

Comments:



ROSETTE LOG

MISSION ID: 9839  
STATION NAME: VIO5

UTC DATE y/m/d: 26/11/98  
CAST NUMBER: 159

SHIP: TULLY

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                    | Samples taken |  |     |  |     |  |     |  |  |  | Oxygen<br>Free<br>Point | D.O<br>ml/L |
|------------|------------|------------|------------|--------------|-------------------|--------------------|---------------|--|-----|--|-----|--|-----|--|--|--|-------------------------|-------------|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |                         |             |
| 1          | 99         | 1143       |            | bot-10       | 46                | ✓ 30.15/9.50       |               |  |     |  |     |  |     |  |  |  | 0.868                   |             |
| 2          | 100        | 1144       |            | 30           | 30                | ✓ 29.85/9.63       |               |  |     |  |     |  |     |  |  |  | 0.854                   | 5.265       |
| 3          | 101        | 1146       |            | 20           | 19                | ✓ 29.48/9.57       |               |  |     |  |     |  |     |  |  |  | 0.845                   | 5.219       |
| 4          | 102        | 1148       |            | 10           | 10                | ✓ 27.15/9.34       |               |  |     |  |     |  |     |  |  |  | 0.897                   | 5.596       |
| 5          | 103        | 1150       |            | 0            | 1.6               | ✓ 26.31/9.17       |               |  |     |  |     |  |     |  |  |  | 0.989                   | 6.029       |
| 6          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 7          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 8          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 9          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 10         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 11         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 12         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 13         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 14         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 15         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 16         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 17         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 18         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 19         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 20         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 21         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 22         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 23         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |
| 24         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                         |             |

ENTERED BY: DSS  
CHECKED BY:

Bottom Depth: 54m

Cast # down: 159  
Cast # up: 159

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 0603 |
| Bottom: |     | 0605 |
| End:    |     | 0612 |

START POSITION (GPS)  
LAT: 49° 11.45  
LONG: 123° 17.84

BOTTOM POSITION (GPS)  
LAT: 49° 11.46  
LONG: 123° 17.84

END POSITION (GPS)  
LAT: 49° 11.50  
LONG: 123° 17.85

Comments:

## ROSETTE LOG

MISSION ID: 9839  
STATION NAME: GI03UTC DATE y/m/d: 26/11/98  
CAST NUMBER: 160SHIP: TULLY

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                    | Samples taken |  |     |  |     |  |     |  |  |  | oxygen<br>8 not<br>point | D.O<br>ml/L |
|------------|------------|------------|------------|--------------|-------------------|--------------------|---------------|--|-----|--|-----|--|-----|--|--|--|--------------------------|-------------|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |                          |             |
| 1          | 104        |            |            | bot-10       | 370               | ✓ 31.33/9.89       |               |  |     |  |     |  |     |  |  |  | 0.453                    | 2.735       |
| 2          | 105        |            |            | 300          | 300               | ✓ 31.27/9.92       |               |  |     |  |     |  |     |  |  |  | 0.476                    | 2.873       |
| 3          | 106        |            |            | 250          | 251               | ✓ 31.15/9.99       |               |  |     |  |     |  |     |  |  |  | 0.495                    | 2.986       |
| 4          | 107        |            |            | 200          | 200               | ✓ 31.08/10.00      |               |  |     |  |     |  |     |  |  |  | 0.503                    | 2.987       |
| 5          | 108        |            |            | 175          | 175               | ✓ 31.02/10.04      |               |  |     |  |     |  |     |  |  |  | 0.522                    | 3.035       |
| 6          | 109        |            |            | 150          | 150               | ✓ 30.93/10.04      |               |  |     |  |     |  |     |  |  |  | 0.537                    | 3.193       |
| 7          | 110        |            |            | 125          | 125               | ✓ 30.77/10.01      |               |  |     |  |     |  |     |  |  |  | 0.610                    | 3.385       |
| 8          | 111        |            |            | 100          | 100               | ✓ 30.59/10.16      |               |  |     |  |     |  |     |  |  |  | 0.597                    | 3.351       |
| 9          | 112        |            |            | 75           | 75                | ✓ 30.36/10.09      |               |  |     |  |     |  |     |  |  |  | 0.503                    | 2.873       |
| 10         | 113        |            |            | 50           | 50                | ✓ 30.06/9.91       |               |  |     |  |     |  |     |  |  |  | 0.556                    | 3.093       |
| 11         | 114        |            |            | 30           | 29                | ✓ 29.49/9.90       |               |  |     |  |     |  |     |  |  |  | 0.743                    | 4.077       |
| 12         | 115        |            |            | 20           | 20                | ✓ 29.04/9.81       |               |  |     |  |     |  |     |  |  |  | 0.841                    | 4.624       |
| 13         | 116        |            |            | 10           | 10                | ✓ 28.83/9.80       |               |  |     |  |     |  |     |  |  |  | 0.846                    | 4.639       |
| 14         | 117        |            |            | 0            | 1.8               | ✓ 28.08/9.60       |               |  |     |  |     |  |     |  |  |  | 0.914                    | 5.036       |
| 15         |            |            |            |              | * 1.8             | ✓ 28.13/9.64       |               |  |     |  |     |  |     |  |  |  |                          |             |
| 16         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                          |             |
| 17         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                          |             |
| 18         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                          |             |
| 19         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                          |             |
| 20         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                          |             |
| 21         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                          |             |
| 22         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                          |             |
| 23         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                          |             |
| 24         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |                          |             |

ENTERED BY: DJS  
CHECKED BY:Bottom Depth: 377mCast # down: 160Cast # up: 160

| Time    | LOC | UTC         |
|---------|-----|-------------|
| Begin:  |     | <u>0726</u> |
| Bottom: |     | <u>0733</u> |
| End:    |     | <u>0801</u> |

| START POSITION (GPS) |              |
|----------------------|--------------|
| LAT: <u>49°</u>      | <u>10.24</u> |
| LONG: <u>123°</u>    | <u>33.50</u> |

| BOTTOM POSITION (GPS) |              |
|-----------------------|--------------|
| LAT: <u>49°</u>       | <u>10.23</u> |
| LONG: <u>123°</u>     | <u>33.49</u> |

| END POSITION (GPS) |              |
|--------------------|--------------|
| LAT: <u>49°</u>    | <u>10.19</u> |
| LONG: <u>123°</u>  | <u>33.44</u> |

Comments:

\* Tripped bot/C#15 just in case #14 did not trip!



ROSETTE LOG

MISSION ID: 9839  
STATION NAME: G104

UTC DATE y/m/d: 26/11/98  
CAST NUMBER: 161

SHIP: TULLY

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                    | Samples taken |     |     |     |     |     |     |  |  |  | Oxygen<br>E. unit<br>Point | D.O<br>m/L |
|------------|------------|------------|------------|--------------|-------------------|--------------------|---------------|-----|-----|-----|-----|-----|-----|--|--|--|----------------------------|------------|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity | SAL           |     | NUT |     | ALK |     | TCO |  |  |  |                            |            |
|            |            |            |            |              |                   |                    |               | OXY |     | CHL |     | C13 |     |  |  |  |                            |            |
| 1          | 118        | 712        |            | bot-10       | 385               |                    |               |     |     |     |     |     |     |  |  |  | 0.489                      | 2.745      |
| 2          | 119        | 713        |            | 300          |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.531                      | 2.915      |
| 3          | 120        | 715        |            | 250          |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.518                      | 2.890      |
| 4          | 121        | 724        |            | 200          |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.514                      | 2.973      |
| 5          | 122        | 726        |            | 175          |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.541                      | 3.049      |
| 6          | 123        | 727        |            | 150          |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.554                      | 3.164      |
| 7          | 124        | 730        |            | 125          |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.550                      | 3.073      |
| 8          | 125        | 732        |            | 100          |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.526                      | 2.953      |
| 9          | 126        | 734        |            | 75           |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.506                      | 2.860      |
| 10         | 127        | 735        |            | 50           |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.560                      | 3.014      |
| 11         | 128        | 1045       |            | 30           |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.604                      | 3.463      |
| 12         | 129        | 1062       |            | 20           |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.734                      | 4.241      |
| 13         | 130        | 1090       |            | 10           |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.752                      | 4.386      |
| 14         | 131        | 1103       |            | 0            |                   |                    |               |     |     |     |     |     |     |  |  |  | 0.795                      | 4.821      |
| 15         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |                            |            |
| 16         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |                            |            |
| 17         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |                            |            |
| 18         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |                            |            |
| 19         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |                            |            |
| 20         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |                            |            |
| 21         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |                            |            |
| 22         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |                            |            |
| 23         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |                            |            |
| 24         |            |            |            |              |                   |                    |               |     |     |     |     |     |     |  |  |  |                            |            |

Comments:

ENTERED BY: DJS  
CHECKED BY:

Bottom Depth: 392m

Cast # down: 161  
Cast # up: 161

Time LOC UTC  
Begin:  
Bottom:  
End:

START POSITION (GPS)  
LAT:  
LONG:

BOTTOM POSITION (GPS)  
LAT:  
LONG:

END POSITION (GPS)  
LAT:  
LONG:

ROSETTE LOG

MISSION ID: 9839  
STATION NAME: NIOI

UTC DATE y/m/d: 98/11/26  
CAST NUMBER: 162

SHIP: TULLY

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                    | Samples taken |  |     |  |     |  |     |  |  |  | OXY End Pt |       |  |
|------------|------------|------------|------------|--------------|-------------------|--------------------|---------------|--|-----|--|-----|--|-----|--|--|--|------------|-------|--|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |            |       |  |
| 1          | 132        | 1104       |            | 100-10       | 112 m             | /                  |               |  |     |  |     |  |     |  |  |  |            | 0.470 |  |
| 2          | 133        | 1105       |            | 75           |                   | /                  |               |  |     |  |     |  |     |  |  |  |            | 0.470 |  |
| 3          | 134        | 1106       |            | 50           |                   | /                  |               |  |     |  |     |  |     |  |  |  |            | 0.496 |  |
| 4          | 135        | 1110       |            | 30           |                   | /                  |               |  |     |  |     |  |     |  |  |  |            | 0.568 |  |
| 5          | 136        | 1113       |            | 20           |                   | /                  |               |  |     |  |     |  |     |  |  |  |            | 0.697 |  |
| 6          | 137        | 1114       |            | 10           |                   |                    |               |  |     |  |     |  |     |  |  |  |            | 0.809 |  |
| 7          | 138        | 1119       |            | 0            |                   |                    |               |  |     |  |     |  |     |  |  |  |            | 0.826 |  |
| 8          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 9          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 10         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 11         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 12         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 13         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 14         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 15         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 16         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 17         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 18         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 19         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 20         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 21         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 22         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 23         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |
| 24         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |            |       |  |

ENTERED BY:  
CHECKED BY:

Bottom Depth: 118 m

Cast # down: 162  
Cast # up: 162

Time LOC UTC  
Begin:  
Bottom:  
End:

START POSITION (GPS)  
LAT:  
LONG:

BOTTOM POSITION (GPS)  
LAT:  
LONG:

END POSITION (GPS)  
LAT:  
LONG:

Comments:

## ROSETTE LOG

MISSION ID: 9839  
STATION NAME: NIO3UTC DATE y/m/d: 98/11/26  
CAST NUMBER: 163SHIP: TULLY

| Niskin<br>No. | Sample<br>No. | OXY.<br>Flask | OXY.<br>Temp. | Sample<br>Depth | ROSETTE OPERATION |                       | Samples taken |  |     |  |     |  |     |  |  |  | Oxy<br>End Pt. |  |
|---------------|---------------|---------------|---------------|-----------------|-------------------|-----------------------|---------------|--|-----|--|-----|--|-----|--|--|--|----------------|--|
|               |               |               |               |                 | Trip<br>pressure  | Confirmed<br>Salinity | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |                |  |
| 1             | 139           | 1126          |               | Bot-10          |                   |                       |               |  |     |  |     |  |     |  |  |  | 0.432          |  |
| 2             | 140           | 1128          |               | 300             |                   |                       |               |  |     |  |     |  |     |  |  |  | 0.463          |  |
| 3             | 141           | 1130          |               | 250             |                   |                       |               |  |     |  |     |  |     |  |  |  | 0.365          |  |
| 4             | 142           | 1132          |               | 200             |                   |                       |               |  |     |  |     |  |     |  |  |  | 0.451          |  |
| 5             | 143           | 1133          |               | 175             |                   |                       |               |  |     |  |     |  |     |  |  |  | 0.476          |  |
| 6             | 144           | 1134          |               | 150             |                   |                       |               |  |     |  |     |  |     |  |  |  | 0.428          |  |
| 7             | 145           | 1135          |               | 125             |                   |                       |               |  |     |  |     |  |     |  |  |  | 0.503          |  |
| 8             | 146           | 1136          |               | 100             |                   |                       |               |  |     |  |     |  |     |  |  |  | 0.417          |  |
| 9             | 147           | 1137          |               | 75              |                   |                       |               |  |     |  |     |  |     |  |  |  | 0.457          |  |
| 10            | 148           | 84            |               | 50              |                   |                       |               |  |     |  |     |  |     |  |  |  | 0.514          |  |
| 11            | 149           | 97            |               | 30              |                   |                       |               |  |     |  |     |  |     |  |  |  | 0.572          |  |
| 12            | 150           | —             |               | 20              | Failed to close   |                       |               |  |     |  |     |  |     |  |  |  | —              |  |
| 13            | 151           | 333           |               | 10              |                   |                       |               |  |     |  |     |  |     |  |  |  | 0.826          |  |
| 14            | 152           | 337           |               | 0               |                   |                       |               |  |     |  |     |  |     |  |  |  | 0.933          |  |
| 15            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |                |  |
| 16            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |                |  |
| 17            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |                |  |
| 18            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |                |  |
| 19            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |                |  |
| 20            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |                |  |
| 21            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |                |  |
| 22            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |                |  |
| 23            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |                |  |
| 24            |               |               |               |                 |                   |                       |               |  |     |  |     |  |     |  |  |  |                |  |

ENTERED BY:

CHECKED BY:

Bottom Depth: 416Cast # down: 163Cast # up: 163

Time LOC UTC

Begin:

Bottom:

End:

START POSITION (GPS)

LAT:

LONG:

BOTTOM POSITION (GPS)

LAT:

LONG:

END POSITION (GPS)

LAT:

LONG:

Comments:

ROSETTE LOG

MISSION ID: 9839  
STATION NAME: NI04

UTC DATE y/m/d: 1998/11/26  
CAST NUMBER: 164

SHIP: Tully

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                    | Samples taken |   |     |  |     |  |     |  |  |  | OXY | End Pt                    |
|------------|------------|------------|------------|--------------|-------------------|--------------------|---------------|---|-----|--|-----|--|-----|--|--|--|-----|---------------------------|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity | SAL           |   | NUT |  | ALK |  | TCO |  |  |  |     |                           |
| 1          | 153        | 364        |            | 20           | 20                | ✓ 29.43/9.76       | ✓             | ✓ | ✓   |  |     |  |     |  |  |  |     | in the halobline<br>0.718 |
| 2          |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 3          |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 4          |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 5          |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 6          |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 7          |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 8          |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 9          |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 10         |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 11         |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 12         |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 13         |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 14         |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 15         |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 16         |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 17         |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 18         |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 19         |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 20         |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 21         |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 22         |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 23         |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |
| 24         |            |            |            |              |                   |                    |               |   |     |  |     |  |     |  |  |  |     |                           |

ENTERED BY:  
CHECKED BY:

Bottom Depth: 296

Cast # down: 164  
Cast # up: 164

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 1227 |
| Bottom: |     | 1231 |
| End:    |     | 1236 |

START POSITION (GPS)  
LAT: 49° 17' 80"  
LONG: 123° 42.33'

BOTTOM POSITION (GPS)  
LAT: 49° 17.80'  
LONG: 123° 42.33'

END POSITION (GPS)  
LAT: 49° 17.79'  
LONG: 123° 42.34'

Comments:

## ROSETTE LOG

MISSION ID: 9839  
STATION NAME: NIOSUTC DATE y/m/d: 1998/11/26  
CAST NUMBER: 165SHIP: TULLY

| Niskin<br>No. | Sample<br>No. | OXY.<br>Flask | OXY.<br>Temp. | Sample<br>Depth | ROSETTE OPERATION |                       | Samples taken |   |     |  |     |  |     |  |  |  | Oxy<br>End pt     |  |
|---------------|---------------|---------------|---------------|-----------------|-------------------|-----------------------|---------------|---|-----|--|-----|--|-----|--|--|--|-------------------|--|
|               |               |               |               |                 | Trip<br>pressure  | Confirmed<br>Salinity | SAL           |   | NUT |  | ALK |  | TCO |  |  |  |                   |  |
| 1             | 154           | 392           |               | 1250            | 251               | ✓ 31.173/9.98         |               |   |     |  |     |  |     |  |  |  | 0.528             |  |
| 2             | 155           | 412           |               | 200             | 199               | ✓ 31.001/10.04        |               |   |     |  |     |  |     |  |  |  | 0.497             |  |
| 3             | 156           | 425           |               | 175             | 175               | ✓ 30.981/10.06        |               |   |     |  |     |  |     |  |  |  | 0.566             |  |
| 4             | 157           | 443           |               | 150             | 150               | ✓ 30.892/10.12        |               |   |     |  |     |  |     |  |  |  | 0.547             |  |
| 5             | 158           | 463           |               | 125             | 125               | ✓ 30.742/10.20        |               |   |     |  |     |  |     |  |  |  | 0.564             |  |
| 6             | 159           | 467           |               | 100             | 100               | ✓ 30.645/10.22        |               |   |     |  |     |  |     |  |  |  | 0.543             |  |
| 7             | 160           | 486           |               | 75              | 74                | ✓ 30.475/10.19        |               |   |     |  |     |  |     |  |  |  | 0.531             |  |
| 8             | 161           | 509           |               | 50              | 50                | ✓ 30.075/9.91         |               |   |     |  |     |  |     |  |  |  | 0.553             |  |
| 9             | 162           | 534           |               | 30              | 30                | ✓ 29.745/9.83         |               |   |     |  |     |  |     |  |  |  | 0.690             |  |
| 10            | 163           | —             | —             | 20              | 20                | X 29.720/9.82         |               |   |     |  |     |  |     |  |  |  | no O <sub>2</sub> |  |
| 11            | 164           | 572           |               | 10              | 10                | ✓ 29.192/9.81         |               |   |     |  |     |  |     |  |  |  | 0.779             |  |
| 12            | 165           | 578           |               | 0               | 2.1               | ✓ 29.327/9.64         | Y             | Y | Y   |  |     |  |     |  |  |  | 0.926             |  |
| 13            |               |               |               |                 |                   |                       |               |   |     |  |     |  |     |  |  |  |                   |  |
| 14            |               |               |               |                 |                   |                       |               |   |     |  |     |  |     |  |  |  |                   |  |
| 15            |               |               |               |                 |                   |                       |               |   |     |  |     |  |     |  |  |  |                   |  |
| 16            |               |               |               |                 |                   |                       |               |   |     |  |     |  |     |  |  |  |                   |  |
| 17            |               |               |               |                 |                   |                       |               |   |     |  |     |  |     |  |  |  |                   |  |
| 18            |               |               |               |                 |                   |                       |               |   |     |  |     |  |     |  |  |  |                   |  |
| 19            |               |               |               |                 |                   |                       |               |   |     |  |     |  |     |  |  |  |                   |  |
| 20            |               |               |               |                 |                   |                       |               |   |     |  |     |  |     |  |  |  |                   |  |
| 21            |               |               |               |                 |                   |                       |               |   |     |  |     |  |     |  |  |  |                   |  |
| 22            |               |               |               |                 |                   |                       |               |   |     |  |     |  |     |  |  |  |                   |  |
| 23            |               |               |               |                 |                   |                       |               |   |     |  |     |  |     |  |  |  |                   |  |
| 24            |               |               |               |                 |                   |                       |               |   |     |  |     |  |     |  |  |  |                   |  |

Comments:

ENTERED BY:

CHECKED BY:

Bottom Depth: 263Cast # down: 165Cast # up: 165

Time LOC UTC

Begin: 1303Bottom: 1307End: 1324

START POSITION (GPS)

LAT: 49° 19.63'LONG: 123° 38.64'

BOTTOM POSITION (GPS)

LAT: 49° 19.61'LONG: 123° 38.60'

END POSITION (GPS)

LAT: 49° 19.61LONG: 123° 38.59

ROSETTE LOG

MISSION ID: 9839  
STATION NAME: NI06

UTC DATE y/m/d: 1998/11/26  
CAST NUMBER: 166

SHIP: TULLY

dkm

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                    | Samples taken |  |     |  |     |  |     |  |  |  | Oxy   | End Pt. |
|------------|------------|------------|------------|--------------|-------------------|--------------------|---------------|--|-----|--|-----|--|-----|--|--|--|-------|---------|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |       |         |
| 1          | 166        | 708        |            | 20           | 20                | 29.692/9.86        |               |  |     |  |     |  |     |  |  |  | 0.701 |         |
| 2          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 3          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 4          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 5          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 6          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 7          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 8          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 9          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 10         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 11         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 12         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 13         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 14         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 15         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 16         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 17         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 18         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 19         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 20         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 21         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 22         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 23         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |
| 24         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |         |

ENTERED BY:  
CHECKED BY:

Bottom Depth: 169

Cast # down: 166  
Cast # up: 166

| Time    | LOC | UTC  |
|---------|-----|------|
| Begin:  |     | 1400 |
| Bottom: |     | 1404 |
| End:    |     | 1408 |

START POSITION (GPS)  
LAT: 49° 21.33'  
LONG: 123° 34.92'

BOTTOM POSITION (GPS)  
LAT: 49° 21.35'  
LONG: 123° 34.91'

END POSITION (GPS)  
LAT: 21.36  
LONG: 34.88

Comments:

## ROSETTE LOG

MISSION ID: 9838  
STATION NAME: NFO7UTC DATE y/m/d: 1998/11/26  
CAST NUMBER: 168SHIP: TULLY

| Niskin No. | Sample No. | OXY. Flask | OXY. Temp. | Sample Depth | ROSETTE OPERATION |                    | Samples taken |  |     |  |     |  |     |  |  |  | OXY   |   |
|------------|------------|------------|------------|--------------|-------------------|--------------------|---------------|--|-----|--|-----|--|-----|--|--|--|-------|---|
|            |            |            |            |              | Trip pressure     | Confirmed Salinity | SAL           |  | NUT |  | ALK |  | TCO |  |  |  |       |   |
| 1          | 167        | 588        |            | 50           | 51                | ✓ 30.210/10.13     |               |  |     |  |     |  |     |  |  |  | 0.541 | * |
| 2          | 168        | 597        |            | 30           | 30                | ✓ 29.771/9.96      |               |  |     |  |     |  |     |  |  |  | 0.561 |   |
| 3          | 169        | 632        |            | 20           | 20                | ✓ 28.603/9.63      |               |  |     |  |     |  |     |  |  |  | 0.914 |   |
| 4          | 170        | 638        |            | 10           | 10                | 27.498/9.46        |               |  |     |  |     |  |     |  |  |  | 0.867 |   |
| 5          | 171        | 641        |            | 0            | 21                | 24.194/8.88        |               |  |     |  |     |  |     |  |  |  | 1.018 |   |
| 6          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 7          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 8          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 9          |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 10         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 11         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 12         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 13         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 14         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 15         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 16         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 17         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 18         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 19         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 20         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 21         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 22         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 23         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |
| 24         |            |            |            |              |                   |                    |               |  |     |  |     |  |     |  |  |  |       |   |

ENTERED BY:  
CHECKED BY:Bottom Depth: 82 mCast # down: 168  
Cast # up: 168

| Time    | LOC | UTC         |
|---------|-----|-------------|
| Begin:  |     | <u>1457</u> |
| Bottom: |     | <u>1459</u> |
| End:    |     | <u>1505</u> |

| START POSITION (GPS) |                    |
|----------------------|--------------------|
| LAT:                 | <u>49° 22.46'</u>  |
| LONG:                | <u>123° 33.14'</u> |

| BOTTOM POSITION (GPS) |                    |
|-----------------------|--------------------|
| LAT:                  | <u>49° 22.45'</u>  |
| LONG:                 | <u>123° 33.19'</u> |

| END POSITION (GPS) |                    |
|--------------------|--------------------|
| LAT:               | <u>49° 22.41'</u>  |
| LONG:              | <u>123° 33.36'</u> |

Comments:

\* Incorrect flask + Sample #