

## Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10

Station: SI03

Event #: 112

Ship: Tully

UTC Date (dd mmm yyyy): 19 08 01

| Firing # | Niskin # | Sample # | Rosette Operation |                    | Samples Taken |     |     |       |                 |  |  |  | Oxygen Titrations |                            | Comments                |
|----------|----------|----------|-------------------|--------------------|---------------|-----|-----|-------|-----------------|--|--|--|-------------------|----------------------------|-------------------------|
|          |          |          | Target Pressure   | Confirmed Pressure | Oxy           | Nut | Sal | Chl a | NH <sub>4</sub> |  |  |  | Flask Serial #    | Value mL · L <sup>-1</sup> |                         |
| 1        | 1        | 1        | Bot-10            |                    |               |     |     |       |                 |  |  |  | 611               | 0.00                       |                         |
| 2        | 2        | 2        | 200               |                    |               |     |     |       |                 |  |  |  | 620               | 0.00                       |                         |
| 3        | 3        | 3        | 175               |                    |               |     |     |       |                 |  |  |  | 621               | 0.00                       | Leaked air? from valve. |
| 4        | 4        | 4        | 150               |                    |               |     |     |       |                 |  |  |  | 638               | 0.00                       |                         |
| 5        | 5        | 5        | 125               |                    |               |     |     |       |                 |  |  |  | 639               | 0.141                      |                         |
| 6        | 6        | 6        | 100               |                    |               |     |     |       |                 |  |  |  | 657               | 0.322                      |                         |
| 7        | 7        | 7        | 75                |                    |               |     |     |       |                 |  |  |  | 712               | 2.671                      |                         |
| 8        | 8        | 8        | 50                |                    |               |     |     |       |                 |  |  |  | 715               | 3.512                      |                         |
| 9        | 9        | 9        | 25                |                    |               |     |     |       |                 |  |  |  | 7105              | 5.403                      |                         |
| 10       | 10       | 10       | 10                |                    |               |     |     |       |                 |  |  |  | 1305              | 6.591                      |                         |
| 11       | 11       | 11       | 5                 |                    |               |     |     |       |                 |  |  |  |                   |                            | Did not close           |
| 12       |          |          |                   |                    |               |     |     |       |                 |  |  |  |                   |                            |                         |
| 13       |          |          |                   |                    |               |     |     |       |                 |  |  |  |                   |                            |                         |
| 14       | 5        | 5        | 125               |                    | DUPLICATE     |     |     |       |                 |  |  |  | 1338              | 0.144                      |                         |
| 15       |          |          |                   |                    |               |     |     |       |                 |  |  |  |                   |                            |                         |
| 16       |          |          |                   |                    |               |     |     |       |                 |  |  |  |                   |                            |                         |
| 17       |          |          |                   |                    |               |     |     |       |                 |  |  |  |                   |                            |                         |
| 18       |          |          |                   |                    |               |     |     |       |                 |  |  |  |                   |                            |                         |
| 19       |          |          |                   |                    |               |     |     |       |                 |  |  |  |                   |                            |                         |
| 20       |          |          |                   |                    |               |     |     |       |                 |  |  |  |                   |                            |                         |
| 21       |          |          |                   |                    |               |     |     |       |                 |  |  |  |                   |                            |                         |
| 22       |          |          |                   |                    |               |     |     |       |                 |  |  |  |                   |                            |                         |
| 23       |          |          |                   |                    |               |     |     |       |                 |  |  |  |                   |                            |                         |
| 24       |          |          |                   |                    |               |     |     |       |                 |  |  |  |                   |                            |                         |

Watchkeeper(s): S.R.

Bottom Depth: 225 m

Transmisso Cleaned: Y / N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 2349 |       |
| Bottom | 2352 |       |
| End    | 0011 |       |

## Positional Information

|       |                  |   |
|-------|------------------|---|
| Start | Lat: 48 ° 35.59  | N |
|       | Lon: 123 ° 29.99 | W |

|        |                  |   |
|--------|------------------|---|
| Bottom | Lat: 48 ° 35.59  | N |
|        | Lon: 123 ° 29.99 | W |

|     |                  |   |
|-----|------------------|---|
| End | Lat: 48 ° 35.59  | N |
|     | Lon: 123 ° 29.99 | W |

## Oxygen Info For This Cast

|              |  |                      |
|--------------|--|----------------------|
| Blank Value: |  | mL · L <sup>-1</sup> |
| Std Value:   |  | mL · L <sup>-1</sup> |
| *Date Run:   |  |                      |
| Analyst:     |  |                      |

\* Oxygen blanks and standards should be run daily, if possible

## Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10

Station: SI03

Event #: R 3

Ship: Tully

UTC Date (dd mmm yyyy): 20 08 09

| Firing # | Niskin # | Sample # | Rosette Operation |                                                        | Samples Taken |     |     |       |                 |  |  |  | Oxygen Titrations |                            | Comments |
|----------|----------|----------|-------------------|--------------------------------------------------------|---------------|-----|-----|-------|-----------------|--|--|--|-------------------|----------------------------|----------|
|          |          |          | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | Oxy           | Nut | Sal | Chl a | NH <sub>4</sub> |  |  |  | Flask Serial #    | Value mL · L <sup>-1</sup> |          |
| 1        | 1        | 12       | 200               |                                                        |               |     |     |       |                 |  |  |  | 76                | 0.009                      | Damian   |
| 2        | 2        | 15       | 100               |                                                        |               |     |     |       |                 |  |  |  | 371               | 0.549                      | Damian   |
| 3        | 3        | 16       | 50                |                                                        |               |     |     |       |                 |  |  |  | 557               | 2.609                      | Damian   |
| 4        | 4        | 13       | 200               |                                                        |               |     |     |       |                 |  |  |  | 559               | 0.000                      | DMS      |
| 5        | 5        | 14       | 100               |                                                        |               |     |     |       |                 |  |  |  | 632               | 0.514                      | DMS      |
| 6        | 6        | 19       | 10                |                                                        |               |     |     |       |                 |  |  |  | 3206              | 5.675                      | DMS      |
| 7        | 7        | 17       | 50                |                                                        |               |     |     |       |                 |  |  |  | 1085              | 2.632                      | Karina   |
| 8        | 8        | 18       | 10                |                                                        |               |     |     |       |                 |  |  |  | 1150              | 5.912                      | Janet    |
| 9        |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |
| 10       |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |
| 11       |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |
| 12       |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |
| 13       |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |
| 14       |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |
| 15       |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |
| 16       |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |
| 17       |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |
| 18       |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |
| 19       |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |
| 20       |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |
| 21       |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |
| 22       |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |
| 23       |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |
| 24       |          |          |                   |                                                        |               |     |     |       |                 |  |  |  |                   |                            |          |

Watchkeeper(s): S.R.

Bottom Depth: 225 m

Transmisso Cleaned: Y / N

| Time        | UTC  | Local |
|-------------|------|-------|
| Start 0108  | 2355 |       |
| Bottom 0111 | 0011 |       |
| End 0119    | 0108 |       |

## Positional Information

|       |                  |   |
|-------|------------------|---|
| Start | Lat: 48 ° 35.59  | N |
|       | Lon: 123 ° 29.99 | W |

|        |                  |   |
|--------|------------------|---|
| Bottom | Lat: 48 ° 35.59  | N |
|        | Lon: 123 ° 29.98 | W |

|     |                  |   |
|-----|------------------|---|
| End | Lat: 48 ° 35.59  | N |
|     | Lon: 123 ° 29.99 | W |

30.01

## Oxygen Info For This Cast

Blank Value: mL · L<sup>-1</sup>Std Value: mL · L<sup>-1</sup>

\*Date Run: 1 1 1

Analyst:

\* Oxygen blanks and standards should be run daily, if possible

## Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10

Station: SI03

Event #: 3

Ship: Tully

UTC Date (dd mmm yyyy): 20 08 09

| Firing # | Niskin # | Sample # | Rosette Operation |                                                        | Samples Taken |     |     |              |                 |  |  |  | Oxygen Titrations |                            | Comments |
|----------|----------|----------|-------------------|--------------------------------------------------------|---------------|-----|-----|--------------|-----------------|--|--|--|-------------------|----------------------------|----------|
|          |          |          | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | Oxy           | Nut | Sal | Chl <i>a</i> | NH <sub>4</sub> |  |  |  | Flask Serial #    | Value mL · L <sup>-1</sup> |          |
| 1        | 1        | 12       | 200               | <input checked="" type="checkbox"/>                    |               |     |     |              |                 |  |  |  |                   |                            | Damian   |
| 2        | 4        | 13       | 200               | <input checked="" type="checkbox"/>                    |               |     |     |              |                 |  |  |  |                   |                            | DMS      |
| 3        | 5        | 14       | 100               | <input checked="" type="checkbox"/>                    |               |     |     |              |                 |  |  |  |                   |                            | DMS      |
| 4        | 2        | 15       | 100               | <input checked="" type="checkbox"/>                    |               |     |     |              |                 |  |  |  |                   |                            | Damian   |
| 5        | 3        | 16       | 50                | <input checked="" type="checkbox"/>                    |               |     |     |              |                 |  |  |  |                   |                            | Damian   |
| 6        | 7        | 17       | 50                | <input checked="" type="checkbox"/>                    |               |     |     |              |                 |  |  |  |                   |                            | Karina   |
| 7        | 8        | 18       | 10                |                                                        |               |     |     |              |                 |  |  |  |                   |                            | Janet    |
| 8        | 6        | 19       | 10                |                                                        |               |     |     |              |                 |  |  |  |                   |                            | DMS      |
| 9        |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |
| 10       |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |
| 11       |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |
| 12       |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |
| 13       |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |
| 14       |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |
| 15       |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |
| 16       |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |
| 17       |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |
| 18       |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |
| 19       |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |
| 20       |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |
| 21       |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |
| 22       |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |
| 23       |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |
| 24       |          |          |                   |                                                        |               |     |     |              |                 |  |  |  |                   |                            |          |

Watchkeeper(s): S.R.

Bottom Depth: 725 m

Transmisso Cleaned: Y / N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 0108 |       |
| Bottom | 0111 |       |
| End    | 0119 |       |

## Positional Information

Start  
Lat: 48 ° 35. 59 N  
Lon: 123 ° 29. 99 WBottom  
Lat: 48 ° 35. 59 N  
Lon: 123 ° 29. 96 WEnd  
Lat: 48 ° 35. 59 N  
Lon: 123 ° 30. 01 W

## Oxygen Info For This Cast

Blank Value: mL · L<sup>-1</sup>Std Value: mL · L<sup>-1</sup>

\*Date Run: 20 08 09

Analyst:

\* Oxygen blanks and standards should be run daily, if possible

OXY: GREEN BOX

# Water Properties Group

# Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P2 Event #: 06 Ship: TULLY UTC Date (dd|mmm|yyyy): 20 | 08 | 09

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                      | Samples Taken |     |     |       |                 |     |    |                 |  |  | Comments              |
|----------|----------|-------------------|----------------------------|-------------------|----------------------|---------------|-----|-----|-------|-----------------|-----|----|-----------------|--|--|-----------------------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed ✓ Pressure | Oxy           | Nut | Sal | Chl a | NH <sub>4</sub> | DIC | pH | O <sub>18</sub> |  |  |                       |
| 1        | 21       | 1247              | 1.551                      | Bot-10            | ✓ 105                | ✓             | ✓   | ✓   |       |                 | ✓   | ✓  | ✓               |  |  |                       |
| 2        | 22       | 1320              | *                          | 100               | ✓                    | ✓             | ✓   | ✓   |       |                 | ✓   | ✓  | ✓               |  |  | DIDNT TRIGGER         |
| 3        | 23       | 1400              | 2.192                      | 75                | ✓                    | ✓             | ✓   | ✓   |       |                 | ✓   | ✓  | ✓               |  |  | PH DIPS ON #3 NOT 2   |
| 4        | 24       | 1175              | 2.193                      | 75                | ✓                    | ✓             | ✓   | ✓   |       |                 | ✓   | ✓  | ✓               |  |  |                       |
| 5        | 25       | 1209              | 2.696                      | 50                | ✓                    | ✓             | ✓   | ✓   |       |                 | ✓   | ✓  | ✓               |  |  |                       |
| 6        | 26       | 2020              | 4.621                      | 25                | ✓                    | ✓             | ✓   | ✓   |       |                 | ✓   | ✓  | ✓               |  |  |                       |
| 7        | 27       | 1384              | 5.821                      | 10                | ✓                    | ✓             | ✓   | ✓   |       |                 | ✓   | ✓  | ✓               |  |  |                       |
| 8        | 28       | 1406              | 5.945                      | 5                 | ✓                    | ✓             | ✓   | ✓   |       |                 | ✓   | ✓  | ✓               |  |  |                       |
| 9        |          |                   |                            |                   |                      |               |     |     |       |                 |     |    |                 |  |  |                       |
| 10       |          |                   |                            |                   |                      |               |     |     |       |                 |     |    |                 |  |  |                       |
| 11       | 23       | 1106              | ✓                          |                   |                      |               |     |     |       |                 |     |    |                 |  |  | LID OFF - SAMPLE N.G. |
| 12       |          |                   |                            |                   |                      |               |     |     |       |                 |     |    |                 |  |  |                       |
| 13       |          |                   |                            |                   |                      |               |     |     |       |                 |     |    |                 |  |  |                       |
| 14       |          |                   |                            |                   |                      |               |     |     |       |                 |     |    |                 |  |  |                       |
| 15       |          |                   |                            |                   |                      |               |     |     |       |                 |     |    |                 |  |  |                       |
| 16       |          |                   |                            |                   |                      |               |     |     |       |                 |     |    |                 |  |  |                       |
| 17       |          |                   |                            |                   |                      |               |     |     |       |                 |     |    |                 |  |  |                       |
| 18       |          |                   |                            |                   |                      |               |     |     |       |                 |     |    |                 |  |  |                       |
| 19       |          |                   |                            |                   |                      |               |     |     |       |                 |     |    |                 |  |  |                       |
| 20       |          |                   |                            |                   |                      |               |     |     |       |                 |     |    |                 |  |  |                       |
| 21       |          |                   |                            |                   |                      |               |     |     |       |                 |     |    |                 |  |  |                       |
| 22       |          |                   |                            |                   |                      |               |     |     |       |                 |     |    |                 |  |  |                       |
| 23       |          |                   |                            |                   |                      |               |     |     |       |                 |     |    |                 |  |  |                       |
| 24       |          |                   |                            |                   |                      |               |     |     |       |                 |     |    |                 |  |  |                       |

Watchkeeper(s): H.M/M.P./K.G.

Bottom Depth: 115 m

Transmisso Cleaned: (Y) / N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 1803 |       |
| Bottom | 1806 |       |
| End    | 1815 |       |

Positional Information

Start

Lat: 48 ° 35.93 N

Lon: 125 ° 59.45 W

Bottom

Lat: 48 ° 35.95 N

Lon: 125 ° 59.43 W

End

Lat: 48 ° 35.99 N

Lon: 125 ° 59.38 W

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

# Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P2 Event #: 8 Ship: Tully UTC Date (dd|mmm|yyyy): 20 | Aug | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                      | Samples Taken      |     |     |       |                     |        |        |  |  |  | Comments     |
|----------|----------|-------------------|----------------------------|-------------------|----------------------|--------------------|-----|-----|-------|---------------------|--------|--------|--|--|--|--------------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed ✓ Pressure | <del>Oxy</del> DMS | Nut | Sal | Chl a | <del>NH4</del> HPLC | DHSP c | DHSP d |  |  |  |              |
| 1        | 29       |                   |                            | 100               | ✓                    | ✓                  | ✓   |     | ✓     |                     | ✓      | ✓      |  |  |  |              |
| 2        | 30       |                   |                            | 75                | ✓                    | ✓                  | ✓   |     |       |                     |        |        |  |  |  |              |
| 3        | 31       |                   |                            | 50                | ✓                    | ✓                  | ✓   |     |       |                     |        |        |  |  |  |              |
| 4        | 32       |                   |                            | 40                | ✓                    | ✓                  | ✓   |     |       |                     |        |        |  |  |  |              |
| 5        | 33       |                   |                            | 30                | ✓                    | ✓                  | ✓   |     | ✓     |                     |        |        |  |  |  |              |
| 6        | 34       |                   |                            | 25                | ✓                    | ✓                  | ✓   |     |       | ✓                   |        |        |  |  |  |              |
| 7        | 35       |                   |                            | 20                | ✓                    | ✓                  | ✓   |     |       |                     | ✓      | ✓      |  |  |  |              |
| 8        | 36       |                   |                            | 15                | ✓                    | ✓                  | ✓   |     |       |                     |        |        |  |  |  |              |
| 9        | 37       |                   |                            | 10                | ✓                    | ✓                  | ✓   |     |       | ✓                   |        |        |  |  |  |              |
| 10       | 38       |                   |                            | 5                 | ✓                    | ✓                  | ✓   |     |       | ✓                   | ✓      | ✓      |  |  |  |              |
| 11       | 39       |                   |                            | 0                 |                      | ✓                  | ✓   |     |       |                     | ✓      | ✓      |  |  |  | → NOT CLOSED |
| 12       |          |                   |                            |                   |                      |                    |     |     |       |                     |        |        |  |  |  |              |
| 13       |          |                   |                            |                   |                      |                    |     |     |       |                     |        |        |  |  |  |              |
| 14       |          |                   |                            |                   |                      |                    |     |     |       |                     |        |        |  |  |  |              |
| 15       |          |                   |                            |                   |                      |                    |     |     |       |                     |        |        |  |  |  |              |
| 16       |          |                   |                            |                   |                      |                    |     |     |       |                     |        |        |  |  |  |              |
| 17       |          |                   |                            |                   |                      |                    |     |     |       |                     |        |        |  |  |  |              |
| 18       |          |                   |                            |                   |                      |                    |     |     |       |                     |        |        |  |  |  |              |
| 19       |          |                   |                            |                   |                      |                    |     |     |       |                     |        |        |  |  |  |              |
| 20       |          |                   |                            |                   |                      |                    |     |     |       |                     |        |        |  |  |  |              |
| 21       |          |                   |                            |                   |                      |                    |     |     |       |                     |        |        |  |  |  |              |
| 22       |          |                   |                            |                   |                      |                    |     |     |       |                     |        |        |  |  |  |              |
| 23       |          |                   |                            |                   |                      |                    |     |     |       |                     |        |        |  |  |  |              |
| 24       |          |                   |                            |                   |                      |                    |     |     |       |                     |        |        |  |  |  |              |

Watchkeeper(s): SR

Bottom Depth: 116 m  
Transmisso Cleaned: (Y) / N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 2039 |       |
| Bottom | 2041 |       |
| End    | 2053 |       |

Positional Information  
Start  
Lat: 48 ° 35.89 N  
Lon: 125 ° 59.44 W

Bottom  
Lat: 48 ° 35.89 N  
Lon: 125 ° 59.44 W

End  
Lat: 48 ° 35.89 N  
Lon: 125 ° 59.44 W

Oxygen Info For This Cast  
Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>  
Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>  
\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_  
Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: PA Event #: 10 Ship: TULLY UTC Date (dd|mmm|yyyy): 21 | 08 | 09

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                      | Samples Taken |     |     |       |                 |     |  |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|----------------------|---------------|-----|-----|-------|-----------------|-----|--|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed ✓ Pressure | Oxy           | Nut | Sal | Chl a | NH <sub>4</sub> | UBC |  |  |  |  |          |
| 1        | 41       |                   |                            | 1300              | ✓ 1300               |               | ✓   | ✓   |       |                 | ✓   |  |  |  |  |          |
| 2        | 42       |                   |                            | 1300              | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 3        | 43       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 4        | 44       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 5        | 45       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 6        | 46       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 7        | 47       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 8        | 48       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 9        | 49       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 10       | 50       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 11       | 51       |                   |                            | 1300              | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 12       | 52       |                   |                            | 1300              | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 13       | 53       |                   |                            | 500               | ✓                    |               | ✓   |     |       | ✓               |     |  |  |  |  |          |
| 14       | 54       |                   |                            | 500               | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 15       | 55       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 16       | 56       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 17       | 57       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 18       | 58       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 19       | 59       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 20       | 60       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 21       | 61       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 22       | 62       |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 23       | 63       |                   |                            | 500               | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 24       | 64       |                   |                            | 500               | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |

Watchkeeper(s): H.M.

Bottom Depth: 1321 m

Transmisso Cleaned: Y / N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 1043 |       |
| Bottom | 1105 |       |
| End    | 1133 |       |

### Positional Information

Start  
Lat: 48 ° 38.98 N  
Lon: 126 ° 40.10 W

Bottom  
Lat: 48 ° 38.98 N  
Lon: 126 ° 40.04 W

End  
Lat: 48 ° 39.01 N  
Lon: 126 ° 39.96 W

### Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

② UBC Shallow + DWAR

# Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P4 Event #: 11 Ship: TULLY UTC Date (dd|mmm|yyyy): 21 | 08 | 09

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                      | Samples Taken |     |     |       |                 |      |     |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|----------------------|---------------|-----|-----|-------|-----------------|------|-----|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed ✓ Pressure | Oxy           | Nut | Sal | Chl a | NH <sub>4</sub> | DWAR | UBC |  |  |  |          |
| 1        | 65       |                   |                            | 1000              | ✓                    |               | ✓   | ✓   |       |                 |      | ✓   |  |  |  | } UBC    |
| 2        | 66       |                   |                            | 1000              | ✓                    |               |     | ✓   |       |                 |      |     |  |  |  |          |
| 3        | 67       |                   |                            | 1000              | ✓                    |               |     | ✓   |       |                 |      |     |  |  |  |          |
| 4        | 68       |                   |                            | 1000              | ✓                    |               |     | ✓   |       |                 |      |     |  |  |  |          |
| 5        | 69       |                   |                            |                   | ✓                    |               |     | ✓   |       |                 |      |     |  |  |  |          |
| 6        | 70       |                   |                            |                   | ✓                    |               |     | ✓   |       |                 |      |     |  |  |  |          |
| 7        | 71       |                   |                            |                   | ✓                    |               |     | ✓   |       |                 |      |     |  |  |  |          |
| 8        | 72       |                   |                            |                   | ✓                    |               |     | ✓   |       |                 |      |     |  |  |  |          |
| 9        | 73       |                   |                            |                   | ✓                    |               |     | ✓   |       |                 |      |     |  |  |  |          |
| 10       | 74       |                   |                            |                   | ✓                    |               |     | ✓   |       |                 |      |     |  |  |  |          |
| 11       | 75       |                   |                            | 1000              | ✓                    |               |     | ✓   |       |                 |      |     |  |  |  | } UBC    |
| 12       | 76       |                   |                            | 1000              | ✓                    |               |     | ✓   |       |                 |      |     |  |  |  |          |
| 13       | 77       |                   |                            | 75                | ✓                    |               |     |     |       | ✓               |      |     |  |  |  |          |
| 14       | 78       |                   |                            | 20                | ✓                    |               |     |     |       | ✓               |      |     |  |  |  |          |
| 15       | 79       |                   |                            | 10                | ✓                    |               |     |     |       | ✓               |      |     |  |  |  |          |
| 16       | 80       |                   |                            | 10                | ✓                    |               | ✓   | ✓   |       |                 |      | ✓   |  |  |  |          |
| 17       | 81       |                   |                            | 10                | ✓                    |               |     | ✓   |       |                 |      |     |  |  |  |          |
| 18       | 82       |                   |                            | 10                | ✓                    |               |     | ✓   |       |                 |      |     |  |  |  |          |
| 19       | 83       |                   |                            | 5                 | ✓                    |               |     |     |       | ✓               |      |     |  |  |  |          |
| 20       |          |                   |                            |                   |                      |               |     |     |       |                 |      |     |  |  |  |          |
| 21       |          |                   |                            |                   |                      |               |     |     |       |                 |      |     |  |  |  |          |
| 22       |          |                   |                            |                   |                      |               |     |     |       |                 |      |     |  |  |  |          |
| 23       |          |                   |                            |                   |                      |               |     |     |       |                 |      |     |  |  |  |          |
| 24       |          |                   |                            |                   |                      |               |     |     |       |                 |      |     |  |  |  |          |

Watchkeeper(s): H.N.

Bottom Depth: 1312 m

Transmisso Cleaned: Y / N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 1238 |       |
| Bottom | 1257 |       |
| End    | 1320 |       |

Positional Information

Start

Lat: 40 ° 38.99 N

Lon: 126 ° 39.96 W

Bottom

Lat: 48 ° 38.98 N

Lon: 126 ° 39.94 W

End

Lat: 48 ° 39.01 N

Lon: 126 ° 39.91 W

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P4 Event #: 12 Ship: Tully UTC Date (dd|mmm|yyyy): 21 | 08 | 09

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken |                                     |                                     |                                     |                                     |                                     |                                     |                                     |  |  |  | Comments       |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|--|--|----------------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | Oxy           | Nut                                 | Sal                                 | CHL                                 | NH <sub>4</sub>                     | Urea                                | O <sub>2</sub>                      |                                     |  |  |  |                |
| 1        | 84       | 611               | 0.550                      | Bot-10            | <input checked="" type="checkbox"/>                    | 1300          | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 2        | 85       | 620               | 0.446                      | 1250              | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 3        | 86       | 621               | 0.439                      | 1250              | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 4        | 87       | 638               | 0.250                      | 1000              | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 5        | 88       | 639               | 0.237                      | 800               | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 6        | 89       | 657               | 0.464                      | 600               | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 7        | 90       | 712               | 1.070                      | 400               | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 8        | 91       | 715               | 1.363                      | 300               | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 9        | 92       | 1105              | —                          | 250               | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  | BUBBLE on LENS |
| 10       | 93       | 1301              | 1.734                      | 200               | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 11       | 94       | 1321              | 1.952                      | 175               | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 12       | 95       | 1333              | 2.366                      | 150               | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 13       | 96       | 1374              | 2.890                      | 125               | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 14       | 97       | 1174              | 3.354                      | 100               | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 15       | 98       | 1487              | 4.900                      | 75                | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 16       | 99       | 1465              | 6.373                      | 50                | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 17       | 100      | 1368              | 6.599                      | 25                | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 18       | 101      | 647               | 6.722                      | 10                | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 19       | 102      | 700               | 6.860                      | 5                 |                                                        |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |                |
| 20       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                                     |                                     |                                     |                                     |  |  |  |                |
| 21       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                                     |                                     |                                     |                                     |  |  |  |                |
| 22       | 98B      | 1338              | 4.902                      |                   |                                                        |               |                                     |                                     |                                     |                                     |                                     |                                     |                                     |  |  |  |                |
| 23       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                                     |                                     |                                     |                                     |  |  |  |                |
| 24       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                                     |                                     |                                     |                                     |  |  |  |                |

Watchkeeper(s): H.M.

Bottom Depth: 1301 m  
Transmisso Cleaned: ☒ Y / ☐ N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 1541 |       |
| Bottom | 1605 |       |
| End    | 1642 |       |

Positional Information  
Start  
Lat: 48 ° 39.32 N  
Lon: 126 ° 39.23 W

Bottom  
Lat: 48 ° 39.20 N  
Lon: 126 ° 31.11 W

End  
Lat: 48 ° 39.13 N  
Lon: 126 ° 39.32 W

Oxygen Info For This Cast  
Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>  
Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>  
\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_  
Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

OXY - WHITE NUTS - WHITE

# Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P4 Event #: 14 Ship: TULLY UTC Date (dd|mmm|yyyy): 21 | 06 | 09

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken      |     |     |       |                      |         |         |       |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|--------------------|-----|-----|-------|----------------------|---------|---------|-------|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | <del>Oxy</del> DMS | Nut | Sal | Chl a | NH <sub>4</sub> HPLC | DMS P c | DMS P d | phyto |  |  |          |
| 1        | 103      |                   |                            | 200               | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     |       |                      | ✓       | ✓       |       |  |  |          |
| 2        | 104      |                   |                            | 175               | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     |       |                      | ✓       | ✓       |       |  |  |          |
| 3        | 105      |                   |                            | 100               | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     |                      | ✓       | ✓       |       |  |  |          |
| 4        | 106      |                   |                            | 75                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     |                      |         |         |       |  |  |          |
| 5        | 107      |                   |                            | 50                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     |                      |         |         |       |  |  |          |
| 6        | 108      |                   |                            | 40                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓✓    |                      |         |         |       |  |  |          |
| 7        | 109      |                   |                            | 30                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     |                      |         |         |       |  |  |          |
| 8        | 110      |                   |                            | 25                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     | ✓✓                   |         |         |       |  |  |          |
| 9        | 111      |                   |                            | 20                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     |                      | ✓✓      | ✓✓      |       |  |  |          |
| 10       | 112      |                   |                            | 15                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     | ✓✓                   |         |         |       |  |  |          |
| 11       | 113      |                   |                            | 10                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     | ✓✓                   |         |         |       |  |  |          |
| 12       | 114      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     | ✓✓                   | ✓       | ✓       | ✓✓✓   |  |  |          |
| 13       | 115      |                   |                            | 0                 | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     |                      | ✓       | ✓       |       |  |  |          |
| 14       |          |                   |                            |                   |                                                        |                    |     |     |       |                      |         |         |       |  |  |          |
| 15       |          |                   |                            |                   |                                                        |                    |     |     |       |                      |         |         |       |  |  |          |
| 16       |          |                   |                            |                   |                                                        |                    |     |     |       |                      |         |         |       |  |  |          |
| 17       |          |                   |                            |                   |                                                        |                    |     |     |       |                      |         |         |       |  |  |          |
| 18       |          |                   |                            |                   |                                                        |                    |     |     |       |                      |         |         |       |  |  |          |
| 19       |          |                   |                            |                   |                                                        |                    |     |     |       |                      |         |         |       |  |  |          |
| 20       |          |                   |                            |                   |                                                        |                    |     |     |       |                      |         |         |       |  |  |          |
| 21       |          |                   |                            |                   |                                                        |                    |     |     |       |                      |         |         |       |  |  |          |
| 22       |          |                   |                            |                   |                                                        |                    |     |     |       |                      |         |         |       |  |  |          |
| 23       |          |                   |                            |                   |                                                        |                    |     |     |       |                      |         |         |       |  |  |          |
| 24       |          |                   |                            |                   |                                                        |                    |     |     |       |                      |         |         |       |  |  |          |

Watchkeeper(s): H.M.

Bottom Depth: 1300 m

Transmisso Cleaned: Y / N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 1751 |       |
| Bottom | 1756 |       |
| End    | 1813 |       |

**Positional Information**  
 Start  
 Lat: 48 ° 39.03 N  
 Lon: 126 ° 39.96 W

Bottom  
 Lat: 48 ° 39.02 N  
 Lon: 126 ° 39.97 W

End  
 Lat: 48 ° 38.94 N  
 Lon: 126 ° 40.01 W

**Oxygen Info For This Cast**  
 Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>  
 Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>  
 \*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_  
 Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

## Water Properties Group

⑤ Light Cast  
Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P4 Event #: 15 Ship: TULLY UTC Date (dd|mmm|yyyy): 21 | AUG | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                      | Samples Taken |     |     |       |                 |   |  |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|----------------------|---------------|-----|-----|-------|-----------------|---|--|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed ✓ Pressure | Oxy           | Nut | Sal | Chl a | NH <sub>4</sub> | D |  |  |  |  |          |
| 1        | 116      |                   |                            | 600               | ✓                    |               |     |     |       |                 | ✓ |  |  |  |  | D        |
| 2        | 117      |                   |                            | 300               |                      |               |     |     |       |                 | ✓ |  |  |  |  | D        |
| 3        | 118      |                   |                            | 150               |                      |               |     |     |       |                 | ✓ |  |  |  |  | D        |
| 4        | 119      |                   |                            | 75                |                      |               |     |     |       |                 | ✓ |  |  |  |  | D        |
| 5        | 120      |                   |                            | 1%                |                      |               |     |     |       |                 | ✓ |  |  |  |  | D        |
| 6        | 121      |                   |                            | 1%                |                      |               |     |     |       |                 | ✓ |  |  |  |  | D        |
| 7        | 122      |                   |                            | 1%                |                      |               |     |     |       |                 |   |  |  |  |  | K        |
| 8        | 123      |                   |                            | 10%               |                      |               |     |     |       |                 | ✓ |  |  |  |  | D        |
| 9        | 124      |                   |                            | 10%               |                      |               |     |     |       |                 | ✓ |  |  |  |  | D        |
| 10       | 125      |                   |                            | 10%               |                      |               |     |     |       |                 |   |  |  |  |  | K        |
| 11       | 126      |                   |                            | 30%               |                      |               |     |     |       |                 | ✓ |  |  |  |  | D        |
| 12       | 127      |                   |                            | 30%               |                      |               |     |     |       |                 | ✓ |  |  |  |  | D        |
| 13       | 128      |                   |                            | 30%               |                      |               |     |     |       |                 |   |  |  |  |  | K        |
| 14       | 129      |                   |                            | 55%               |                      |               |     |     |       |                 | ✓ |  |  |  |  | D        |
| 15       | 130      |                   |                            | 55%               |                      |               |     |     |       |                 | ✓ |  |  |  |  | D        |
| 16       | 131      |                   |                            | 55%               |                      |               |     |     |       |                 |   |  |  |  |  | K        |
| 17       | 132      |                   |                            | 100%              |                      |               |     |     |       |                 | ✓ |  |  |  |  | D        |
| 18       | 133      |                   |                            | 100%              |                      |               |     |     |       |                 | ✓ |  |  |  |  | D        |
| 19       | 134      |                   |                            | 100%              |                      |               |     |     |       |                 |   |  |  |  |  | K        |
| 20       | 135      |                   |                            | 5                 |                      |               |     |     |       |                 |   |  |  |  |  | K        |
| 21       |          |                   |                            |                   |                      |               |     |     |       |                 |   |  |  |  |  |          |
| 22       |          |                   |                            |                   |                      |               |     |     |       |                 |   |  |  |  |  |          |
| 23       |          |                   |                            |                   |                      |               |     |     |       |                 |   |  |  |  |  |          |
| 24       |          |                   |                            |                   |                      |               |     |     |       |                 |   |  |  |  |  |          |

Watchkeeper(s):  
SRBottom Depth: 1318 mTransmisso Cleaned: (Y) / N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 1926 |       |
| Bottom | 1935 |       |
| End    | 1956 |       |

## Positional Information

Start  
Lat: 48 ° 38.99 N  
Lon: 126 ° 39.96 WBottom  
Lat: 48 ° 38.97 N  
Lon: 126 ° 40.00 WEnd  
Lat: 48 ° 38.97 N  
Lon: 126 ° 39.99 W

## Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>  
Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>  
\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_  
Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

# Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P8 Event #: 20 Ship: TULLY UTC Date (dd|mmm|yyyy): 22 | 06 | 09

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken |     |     |       |                    |                    |  |  |  |  | Comments                               |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|---------------|-----|-----|-------|--------------------|--------------------|--|--|--|--|----------------------------------------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | Oxy           | Nut | Sal | Chl a | <del>PH</del> HPLC | <del>UCL</del> UCL |  |  |  |  |                                        |
| 1        | 139      | 1247              | 1.451                      | 2000              | <input checked="" type="checkbox"/> 2005               | ✓             | ✓   | ✓   |       |                    | ✓                  |  |  |  |  |                                        |
| 2        | 140      | 1320              | 0.681                      | 1500              | <input checked="" type="checkbox"/>                    | ✓             | ✓   | ✓   |       |                    |                    |  |  |  |  |                                        |
| 3        | 141      | 1400              | 0.681                      | 1500              | <input checked="" type="checkbox"/>                    |               | ✓   |     |       |                    | ✓                  |  |  |  |  |                                        |
| 4        | 142      | 1175              | 0.355                      | 1250              | <input checked="" type="checkbox"/>                    |               |     |     |       |                    | ✓                  |  |  |  |  |                                        |
| 5        | 143      | 1209              | 0.237                      | 1000              | <input checked="" type="checkbox"/>                    |               |     |     |       |                    | ✓                  |  |  |  |  |                                        |
| 6        | 144      | 2020              | 1.005                      | 800               | <input checked="" type="checkbox"/> ?                  |               |     |     |       |                    | ✓                  |  |  |  |  | ? To Hi                                |
| 7        | 145      | 1304              | 0.428                      | 600               | <input checked="" type="checkbox"/>                    |               |     |     |       |                    | ✓                  |  |  |  |  |                                        |
| 8        | 146      | 1406              | 1.099                      | 400               | <input checked="" type="checkbox"/>                    |               | ✓   |     |       |                    | ✓                  |  |  |  |  |                                        |
| 9        | 147      | 1322              | 1.910                      | 300               | <input checked="" type="checkbox"/>                    |               |     |     |       |                    | ✓                  |  |  |  |  |                                        |
| 10       | 148      | 1373              | 2.034                      | 250               | <input checked="" type="checkbox"/>                    |               |     |     |       |                    |                    |  |  |  |  |                                        |
| 11       | 149      | 1146              | 2.046                      | 200               | <input checked="" type="checkbox"/>                    |               |     |     |       |                    | ✓                  |  |  |  |  |                                        |
| 12       | 150      | 1386              | 2.147                      | 175               | <input checked="" type="checkbox"/>                    |               |     |     |       |                    |                    |  |  |  |  |                                        |
| 13       | 151      | 631               | 2.333                      | 150               | <input checked="" type="checkbox"/>                    |               |     |     |       |                    | ✓                  |  |  |  |  |                                        |
| 14       | 152      | 1414              | 2.847                      | 125               | <input checked="" type="checkbox"/>                    |               |     |     |       |                    |                    |  |  |  |  |                                        |
| 15       | 153      | 1397              | 4.212                      | 100               | <input checked="" type="checkbox"/>                    |               |     |     | ✓     |                    | ✓                  |  |  |  |  |                                        |
| 16       | 154      | 1409              | 6.098                      | 75                | <input checked="" type="checkbox"/>                    |               |     |     | ✓     |                    |                    |  |  |  |  |                                        |
| 17       | 155      | 1326              | 6.480                      | 50                | <input checked="" type="checkbox"/>                    |               |     |     | ✓✓    |                    | ✓                  |  |  |  |  |                                        |
| 18       | 156      | 1123              | 5.980                      | 25                | <input checked="" type="checkbox"/> ?                  | ✓             |     |     | ✓     | ✓✓                 | ✓                  |  |  |  |  |                                        |
| 19       | 157      | 1411              | 5.971                      | 10                | <input checked="" type="checkbox"/>                    |               |     |     | ✓     | ✓✓                 | ✓                  |  |  |  |  |                                        |
| 20       | 158      | 1380              | 5.967                      | 5                 | <input checked="" type="checkbox"/>                    | ✓             | ✓   | ✓   | ✓     | ✓✓                 |                    |  |  |  |  |                                        |
| 21       |          |                   |                            |                   |                                                        |               |     |     |       |                    |                    |  |  |  |  |                                        |
| 22       | 156      | 1106              | 6.183                      | 25                |                                                        |               |     |     |       |                    |                    |  |  |  |  | IM FILE CALLED 146<br>1106/400m - 0085 |
| 23       |          |                   |                            |                   |                                                        |               |     |     |       |                    |                    |  |  |  |  |                                        |
| 24       |          |                   |                            |                   |                                                        |               |     |     |       |                    |                    |  |  |  |  |                                        |

Watchkeeper(s): H.M.

Bottom Depth: 2517 m

Transmisso Cleaned: ☒ Y / N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 1117 |       |
| Bottom | 1158 |       |
| End    | 1256 |       |

**Positional Information**

Start  
 Lat: 48° ° 48.97 N  
 Lon: 125° ° 39.95 W

Start

Bottom  
 Lat: 48 ° 48.98 N  
 Lon: 125 ° 39.99 W

Bottom

End  
 Lat: 48 ° 49.01 N  
 Lon: 128 ° 40.03 W

End

**Oxygen Info For This Cast**

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

OXY - YELLOW

NUTS - BLUE

# Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P12 Event #: 26 Ship: TULLY UTC Date (dd|mmm|yyyy): 23 | 08 | 09

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                      | Samples Taken |     |     |       |                 |     |  |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|----------------------|---------------|-----|-----|-------|-----------------|-----|--|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed ✓ Pressure | Oxy           | Nut | Sal | Chl a | NH <sub>4</sub> | Ure |  |  |  |  |          |
| 1        | 162      |                   |                            | 2000              | ✓ 2000               |               | ✓   | ✓   |       |                 | ✓   |  |  |  |  |          |
| 2        | 163      |                   |                            | 2000              | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 3        | 164      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 4        | 165      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 5        | 166      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 6        | 167      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 7        | 168      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 8        | 169      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 9        | 170      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 10       | 171      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 11       | 172      |                   |                            | 2000              | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 12       | 173      |                   |                            | 2000              | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 13       | 174      |                   |                            | 500               | ✓                    |               | ✓   |     |       |                 | ✓   |  |  |  |  |          |
| 14       | 175      |                   |                            | 500               | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 15       | 176      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 16       | 177      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 17       | 178      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 18       | 179      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 19       | 180      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 20       | 181      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 21       | 182      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 22       | 183      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 23       | 184      |                   |                            | 500               | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 24       | 185      |                   |                            | 500               | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |

Watchkeeper(s): H.M.

Bottom Depth: 3236 m

Transmisso Cleaned: Y / N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 1004 |       |
| Bottom | 1041 |       |
| End    | 1117 |       |

Positional Information

Start

Lat: 48 ° 58.14 N

Lon: 130 ° 39.97 W

Bottom

Lat: 48 ° 58.17 N

Lon: 130 ° 40.02 W

End

Lat: 48 ° 58.20 N

Lon: 130 ° 40.00 W

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

② UBC Shallow Cast

# Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P12 Event #: 28 Ship: TULLY UTC Date (dd|mmm|yyyy): 23 | 09 | 09

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                      | Samples Taken |     |     |       |                 |     |  |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|----------------------|---------------|-----|-----|-------|-----------------|-----|--|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed ✓ Pressure | Oxy           | Nut | Sal | Chl a | NH <sub>4</sub> | UOL |  |  |  |  |          |
| 1        | 186      |                   |                            | 1000              | ✓                    |               | ✓   | ✓   |       |                 | ✓   |  |  |  |  |          |
| 2        | 187      |                   |                            | 1000              | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 3        | 188      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 4        | 189      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 5        | 190      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 6        | 191      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 7        | 192      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 8        | 193      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 9        | 194      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 10       | 195      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 11       | 196      |                   |                            | 1000              | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 12       | 197      |                   |                            | 1000              | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 13       | 198      |                   |                            | 10                | ✓                    |               | ✓   |     |       |                 | ✓   |  |  |  |  |          |
| 14       | 199      |                   |                            | 10                | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 15       | 200      |                   |                            | 10                | ✓                    |               |     | ✓   |       |                 |     |  |  |  |  |          |
| 16       | 201      |                   |                            | 5                 | ✓                    |               |     |     |       |                 |     |  |  |  |  | ONAR     |
| 17       |          |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |  |  |          |
| 18       |          |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |  |  |          |
| 19       |          |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |  |  |          |
| 20       |          |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |  |  |          |
| 21       |          |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |  |  |          |
| 22       |          |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |  |  |          |
| 23       |          |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |  |  |          |
| 24       |          |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |  |  |          |

Watchkeeper(s): H.M.

Bottom Depth: 3236 m

Transmisso Cleaned: ① N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 1217 |       |
| Bottom | 1234 |       |
| End    | 1254 |       |

### Positional Information

Start  
Lat: 48 ° 58.19 N  
Lon: 130 ° 40.01 W

Bottom  
Lat: 40 ° 58.21 N  
Lon: 130 ° 39.99 W

End  
Lat: 48 ° 58.20 N  
Lon: 130 ° 40.03 W

### Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

## Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10

Station: P12

Event #: 29

Ship: TULLY

UTC Date (dd|mmm|yyyy): 23 | 08 | 09

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken |     |     |       |                               |    |     |                 |  |  |  | Comments            |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|---------------|-----|-----|-------|-------------------------------|----|-----|-----------------|--|--|--|---------------------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | Oxy           | Nut | Sal | Chl a | <del>NO<sub>3</sub></del> DIC | pH | ORP | O <sub>18</sub> |  |  |  |                     |
| 1        | 202      | 611               | 2.344                      | Bot-10            | <input checked="" type="checkbox"/>                    | 3277          | ✓   | ✓   | ✓     | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 2        | 203      | 620               | 2.291                      | 3000              | <input checked="" type="checkbox"/>                    |               | ✓   | ✓   | ✓     | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 3        | 204      | 621               | 1.982                      | 2500              | <input checked="" type="checkbox"/>                    |               |     | ✓   |       | ✓                             | ✓  | ✓   | ✓               |  |  |  | called 2000 in file |
| 4        | 205      | 638               | 1.862                      | 2500              | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 5        | 206      | 639               | 1.298                      | 2000              | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 6        | 207      | 657               | 0.623                      | 1500              | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 7        | 208      | 712               | 0.445                      | 1250              | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 8        | 209      | 715               | 0.239                      | 1000              | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 9        | 210      | 1105              | 0.311                      | 800               | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 10       | 211      | 1301              | 0.584                      | 600               | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 11       | 212      | 1321              | 1.482                      | 400               | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 12       | 213      | 1333              | 2.731                      | 300               | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 13       | 214      | 1374              | 3.497                      | 250               | <input checked="" type="checkbox"/>                    |               | ✓   |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  | LEAKY               |
| 14       | 215      | 1174              | 4.291                      | 200               | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 15       | 216      | 1487              | 4.644                      | 175               | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 16       | 217      | 1465              | 4.888                      | 150               | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 17       | 218      | 1368              | 5.346                      | 125               | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 18       | 219      | 647               | 6.083                      | 100               | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 19       | 220      | 700               | 6.841                      | 75                | <input checked="" type="checkbox"/>                    |               | ✓   |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 20       | 221      | 1302              | 7.066                      | 50                | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 21       | 222      | 1327              | 6.389                      | 25                | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 22       | 223      | 1367              | 5.919                      | 10                | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 23       | 224      | 622               | 5.925                      | 5                 | <input checked="" type="checkbox"/>                    |               | ✓   | ✓   | ✓     | ✓                             | ✓  | ✓   | ✓               |  |  |  |                     |
| 24       | 220      | 1338              | 6.822                      | 75                |                                                        |               |     |     |       |                               |    |     |                 |  |  |  |                     |

Watchkeeper(s): H.M.

Bottom Depth: 3236 m

Transmisso Cleaned: ☒ Y / ☐ N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 1344 |       |
| Bottom | 1446 |       |
| End    | 1608 |       |

## Positional Information

|      |             |   |
|------|-------------|---|
| Lat: | 48 ° 58.13  | N |
| Lon: | 130 ° 40.07 | W |

|      |             |   |
|------|-------------|---|
| Lat: | 48 ° 58.20  | N |
| Lon: | 130 ° 40.03 | W |

|      |             |   |
|------|-------------|---|
| Lat: | 48 ° 58.21  | N |
| Lon: | 130 ° 39.94 | W |

## Oxygen Info For This Cast

|              |                            |
|--------------|----------------------------|
| Blank Value: | _____ mL · L <sup>-1</sup> |
| Std Value:   | _____ mL · L <sup>-1</sup> |
| *Date Run:   | ____   ____   ____         |
| Analyst:     | _____                      |

\* Oxygen blanks and standards should be run daily, if possible

OXY- WHITE BOX

NUTS- ORANGE RACK

# Water Properties Group

# Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P12 Event #: 30 Ship: TULLY UTC Date (dd|mmm|yyyy): 23 | 08 | 09

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken      |     |     |       |                     |  |           |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|--------------------|-----|-----|-------|---------------------|--|-----------|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | <del>Oxy</del> DMS | Nut | Sal | Chl a | <del>TPH</del> HPLC |  | dmsp d.t. |  |  |  |          |
| 1        | 225      |                   |                            | 200               | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     |       |                     |  | ✓         |  |  |  |          |
| 2        | 226      |                   |                            | 175               | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     |       |                     |  | ✓         |  |  |  |          |
| 3        | 227      |                   |                            | 100               | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     |                     |  | ✓         |  |  |  |          |
| 4        | 228      |                   |                            | 75                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     |                     |  |           |  |  |  |          |
| 5        | 229      |                   |                            | 50                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     |                     |  |           |  |  |  |          |
| 6        | 230      |                   |                            | 40                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     |                     |  |           |  |  |  |          |
| 7        | 231      |                   |                            | 30                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     |                     |  |           |  |  |  |          |
| 8        | 232      |                   |                            | 25                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     | ✓                   |  |           |  |  |  |          |
| 9        | 233      |                   |                            | 20                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     | ✓                   |  | ✓         |  |  |  |          |
| 10       | 234      |                   |                            | 15                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     | ✓                   |  |           |  |  |  |          |
| 11       | 235      |                   |                            | 10                | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     | ✓                   |  |           |  |  |  |          |
| 12       | 236      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     | ✓                   |  | ✓         |  |  |  |          |
| 13       | 237      |                   |                            | 0                 | <input checked="" type="checkbox"/>                    | ✓                  | ✓   |     | ✓     |                     |  | ✓         |  |  |  |          |
| 14       |          |                   |                            |                   |                                                        |                    |     |     |       |                     |  |           |  |  |  |          |
| 15       |          |                   |                            |                   |                                                        |                    |     |     |       |                     |  |           |  |  |  |          |
| 16       |          |                   |                            |                   |                                                        |                    |     |     |       |                     |  |           |  |  |  |          |
| 17       |          |                   |                            |                   |                                                        |                    |     |     |       |                     |  |           |  |  |  |          |
| 18       |          |                   |                            |                   |                                                        |                    |     |     |       |                     |  |           |  |  |  |          |
| 19       |          |                   |                            |                   |                                                        |                    |     |     |       |                     |  |           |  |  |  |          |
| 20       |          |                   |                            |                   |                                                        |                    |     |     |       |                     |  |           |  |  |  |          |
| 21       |          |                   |                            |                   |                                                        |                    |     |     |       |                     |  |           |  |  |  |          |
| 22       |          |                   |                            |                   |                                                        |                    |     |     |       |                     |  |           |  |  |  |          |
| 23       |          |                   |                            |                   |                                                        |                    |     |     |       |                     |  |           |  |  |  |          |
| 24       |          |                   |                            |                   |                                                        |                    |     |     |       |                     |  |           |  |  |  |          |

Watchkeeper(s): H.M.

Bottom Depth: 3235 m

Transmisso Cleaned: ☒ Y / ☐ N

|            | UTC  | Local |
|------------|------|-------|
| Time Start | 1735 |       |
| Bottom     | 1740 |       |
| End        | 1757 |       |

| Positional Information |             |   |
|------------------------|-------------|---|
| Start Lat:             | 48 ° 58.19  | N |
| Lon:                   | 130 ° 40.02 | W |

|             |             |   |
|-------------|-------------|---|
| Bottom Lat: | 48 ° 58.23  | N |
| Lon:        | 130 ° 39.99 | W |

|          |             |   |
|----------|-------------|---|
| End Lat: | 48 ° 58.22  | N |
| Lon:     | 130 ° 39.99 | W |

**Oxygen Info For This Cast**

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

NUTS - red RACK

# Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P12 Event #: 31 Ship: TULLY UTC Date (dd|mmm|yyyy): 23 | 08 | 09

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken |     |     |       |                 |       |  |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|---------------|-----|-----|-------|-----------------|-------|--|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | Oxy           | Nut | Sal | Chl a | NH <sub>4</sub> | DAN-M |  |  |  |  |          |
| 1        | 238      |                   |                            | 600               |                                                        |               |     |     |       |                 | ✓     |  |  |  |  |          |
| 2        | 239      |                   |                            | 300               |                                                        |               |     |     |       |                 | ✓     |  |  |  |  |          |
| 3        | 240      |                   |                            | 150               |                                                        |               |     |     |       |                 | ✓     |  |  |  |  |          |
| 4        | 241      |                   |                            | 75                |                                                        |               |     |     |       |                 | ✓     |  |  |  |  |          |
| 5        | 242      |                   | 65                         | 1'.               |                                                        |               |     |     |       |                 | ✓     |  |  |  |  |          |
| 6        | 243      |                   | 65                         | 1'.               |                                                        |               |     |     |       |                 |       |  |  |  |  |          |
| 7        | 244      |                   | 28                         | 10'.              |                                                        |               |     |     |       |                 | ✓     |  |  |  |  |          |
| 8        | 245      |                   | 28                         | 10'.              |                                                        |               |     |     |       |                 |       |  |  |  |  |          |
| 9        | 246      |                   | 12                         | 30'.              |                                                        |               |     |     |       |                 | ✓     |  |  |  |  |          |
| 10       | 247      |                   | 12                         | 30'.              |                                                        |               |     |     |       |                 |       |  |  |  |  |          |
| 11       | 248      |                   | 7                          | 55'.              |                                                        |               |     |     |       |                 | ✓     |  |  |  |  |          |
| 12       | 249      |                   | 7                          | 55'.              |                                                        |               |     |     |       |                 |       |  |  |  |  |          |
| 13       | 250      |                   | 0                          | 100'.             |                                                        |               |     |     |       |                 | ✓     |  |  |  |  |          |
| 14       | 251      |                   | 0                          | 100'.             |                                                        |               |     |     |       |                 |       |  |  |  |  |          |
| 15       |          |                   |                            |                   |                                                        |               |     |     |       |                 |       |  |  |  |  |          |
| 16       |          |                   |                            |                   |                                                        |               |     |     |       |                 |       |  |  |  |  |          |
| 17       |          |                   |                            |                   |                                                        |               |     |     |       |                 |       |  |  |  |  |          |
| 18       |          |                   |                            |                   |                                                        |               |     |     |       |                 |       |  |  |  |  |          |
| 19       |          |                   |                            |                   |                                                        |               |     |     |       |                 |       |  |  |  |  |          |
| 20       |          |                   |                            |                   |                                                        |               |     |     |       |                 |       |  |  |  |  |          |
| 21       |          |                   |                            |                   |                                                        |               |     |     |       |                 |       |  |  |  |  |          |
| 22       |          |                   |                            |                   |                                                        |               |     |     |       |                 |       |  |  |  |  |          |
| 23       |          |                   |                            |                   |                                                        |               |     |     |       |                 |       |  |  |  |  |          |
| 24       |          |                   |                            |                   |                                                        |               |     |     |       |                 |       |  |  |  |  |          |

Watchkeeper(s): H.M.

Bottom Depth: 3233 m

Transmisso Cleaned: ☒ Y / ☐ N

|            | UTC  | Local |
|------------|------|-------|
| Time Start | 1833 |       |
| Bottom     | 1845 |       |
| End        | 1904 |       |

**Positional Information**

Start Lat: 48 ° 58.21 N  
Lon: 130 ° 40.00 W

Bottom Lat: 48 ° 58.22 N  
Lon: 130 ° 40.02 W

End Lat: 48 ° 58.22 N  
Lon: 130 ° 40.02 W

**Oxygen Info For This Cast**

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P16 Event #: 35 Ship: TULLY UTC Date (dd|mmm|yyyy): 24 | Aug | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken      |     |     |       |                                |                               |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|--------------------|-----|-----|-------|--------------------------------|-------------------------------|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | <del>Oxy</del> DMS | Nut | Sal | Chl a | <del>NH<sub>4</sub></del> HPLC | <del>NO<sub>3</sub></del> DMS |  |  |          |
| 1        | 255      |                   |                            | 200               |                                                        | ✓                  | ✓   |     |       |                                | ✓                             |  |  |          |
| 2        | 256      |                   |                            | 175               |                                                        |                    |     |     |       |                                | ✓                             |  |  |          |
| 3        | 257      |                   |                            | 100               |                                                        |                    |     |     | ✓     |                                | ✓                             |  |  |          |
| 4        | 258      |                   |                            | 75                |                                                        |                    |     |     | ✓     |                                |                               |  |  |          |
| 5        | 259      |                   |                            | 50                |                                                        |                    |     |     | ✓     |                                |                               |  |  |          |
| 6        | 260      |                   |                            | 40                |                                                        |                    |     |     | ✓     |                                |                               |  |  |          |
| 7        | 261      |                   |                            | 30                |                                                        |                    |     |     | ✓     |                                |                               |  |  |          |
| 8        | 262      |                   |                            | 25                |                                                        |                    |     |     | ✓     | ✓                              |                               |  |  |          |
| 9        | 263      |                   |                            | 20                |                                                        | ✓                  |     |     | ✓     |                                | ✓                             |  |  |          |
| 10       | 264      |                   |                            | 15                |                                                        |                    |     |     | ✓     |                                |                               |  |  |          |
| 11       | 265      |                   |                            | 10                |                                                        |                    |     |     | ✓     | ✓                              | ✓                             |  |  |          |
| 12       | 266      |                   |                            | 5                 |                                                        |                    |     |     | ✓     | ✓                              | ✓                             |  |  |          |
| 13       | 267      |                   |                            | 0                 |                                                        | ✓                  |     |     | ✓     |                                | ✓                             |  |  |          |
| 14       |          |                   |                            |                   |                                                        |                    |     |     |       |                                |                               |  |  |          |
| 15       |          |                   |                            |                   |                                                        |                    |     |     |       |                                |                               |  |  |          |
| 16       |          |                   |                            |                   |                                                        |                    |     |     |       |                                |                               |  |  |          |
| 17       |          |                   |                            |                   |                                                        |                    |     |     |       |                                |                               |  |  |          |
| 18       |          |                   |                            |                   |                                                        |                    |     |     |       |                                |                               |  |  |          |
| 19       |          |                   |                            |                   |                                                        |                    |     |     |       |                                |                               |  |  |          |
| 20       |          |                   |                            |                   |                                                        |                    |     |     |       |                                |                               |  |  |          |
| 21       |          |                   |                            |                   |                                                        |                    |     |     |       |                                |                               |  |  |          |
| 22       |          |                   |                            |                   |                                                        |                    |     |     |       |                                |                               |  |  |          |
| 23       |          |                   |                            |                   |                                                        |                    |     |     |       |                                |                               |  |  |          |
| 24       |          |                   |                            |                   |                                                        |                    |     |     |       |                                |                               |  |  |          |

Watchkeeper(s): SR

Bottom Depth: 3685 m

Transmisso Cleaned: ☒ Y / ☐ N

|            | UTC  | Local |
|------------|------|-------|
| Time Start | 2110 |       |
| Bottom     | 2114 |       |
| End        | 2128 |       |

Positional Information

Start Lat: 49 ° 16.70 N  
Lon: 134 ° 43.15 W

Bottom Lat: 49 ° 16.71 N  
Lon: 134 ° 43.18 W

End Lat: 49 ° 16.70 N  
Lon: 134 ° 43.18 W

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

Nuts - green RACK

# Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P16 Event #: 36 Ship: TULLY UTC Date (dd|mmm|yyyy): 24 | Aug | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken                       |                                     |     |                                     |                 |                                     |  |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|-------------------------------------|-------------------------------------|-----|-------------------------------------|-----------------|-------------------------------------|--|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | <del>Chl</del> DIC                  | Nut                                 | Sal | Chl a                               | NH <sub>4</sub> | DAMIAN                              |  |  |  |  |          |
| 1        | 268      |                   |                            | 600               | <input checked="" type="checkbox"/>                    |                                     |                                     |     |                                     |                 | <input checked="" type="checkbox"/> |  |  |  |  | DAMIAN   |
| 2        | 269      |                   |                            | 300               | <input checked="" type="checkbox"/>                    |                                     |                                     |     |                                     |                 | <input checked="" type="checkbox"/> |  |  |  |  | D        |
| 3        | 270      |                   |                            | 150               | <input checked="" type="checkbox"/>                    |                                     |                                     |     |                                     |                 | <input checked="" type="checkbox"/> |  |  |  |  | D        |
| 4        | 271      |                   |                            | 75                |                                                        |                                     |                                     |     |                                     |                 | <input checked="" type="checkbox"/> |  |  |  |  | D        |
| 5        | 272      |                   | 64m                        | 1%                |                                                        |                                     |                                     |     |                                     |                 | <input checked="" type="checkbox"/> |  |  |  |  | D        |
| 6        | 273      |                   | 64m                        | 1%                |                                                        |                                     |                                     |     |                                     |                 |                                     |  |  |  |  | D        |
| 7        | 274      |                   | 64m                        | 1%                |                                                        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     | <input checked="" type="checkbox"/> |                 |                                     |  |  |  |  | KARINA   |
| 8        | 275      |                   | 34m                        | 10%               |                                                        |                                     |                                     |     |                                     |                 | <input checked="" type="checkbox"/> |  |  |  |  | D        |
| 9        | 276      |                   | 34m                        | 10%               |                                                        |                                     |                                     |     |                                     |                 |                                     |  |  |  |  | D        |
| 10       | 277      |                   | 34m                        | 10%               |                                                        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     | <input checked="" type="checkbox"/> |                 |                                     |  |  |  |  | K        |
| 11       | 278      |                   | 15m                        | 30%               |                                                        |                                     |                                     |     |                                     |                 | <input checked="" type="checkbox"/> |  |  |  |  | D        |
| 12       | 279      |                   | 15m                        | 30%               |                                                        |                                     |                                     |     |                                     |                 |                                     |  |  |  |  | D        |
| 13       | 280      |                   | 15m                        | 30%               |                                                        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     | <input checked="" type="checkbox"/> |                 |                                     |  |  |  |  | K        |
| 14       | 281      |                   | 6m                         | 55%               |                                                        |                                     |                                     |     |                                     |                 | <input checked="" type="checkbox"/> |  |  |  |  | D        |
| 15       | 282      |                   | 6m                         | 55%               |                                                        |                                     |                                     |     |                                     |                 |                                     |  |  |  |  | D        |
| 16       | 283      |                   | 6m                         | 55%               |                                                        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     | <input checked="" type="checkbox"/> |                 |                                     |  |  |  |  | K        |
| 17       | 284      |                   | 0m                         | 100%              |                                                        |                                     |                                     |     |                                     |                 | <input checked="" type="checkbox"/> |  |  |  |  | D        |
| 18       | 285      |                   | 0m                         | 100%              |                                                        |                                     |                                     |     |                                     |                 |                                     |  |  |  |  | D        |
| 19       | 286      |                   | 0m                         | 100%              |                                                        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     | <input checked="" type="checkbox"/> |                 |                                     |  |  |  |  | K        |
| 20       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                 |                                     |  |  |  |  |          |
| 21       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                 |                                     |  |  |  |  |          |
| 22       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                 |                                     |  |  |  |  |          |
| 23       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                 |                                     |  |  |  |  |          |
| 24       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                 |                                     |  |  |  |  |          |

Watchkeeper(s): SR

Bottom Depth: 3635 m

Transmisso Cleaned: ☒ Y ☐ N

|        | UTC  | Local |
|--------|------|-------|
| Time   |      |       |
| Start  | 2231 |       |
| Bottom | 2240 |       |
| End    | 2255 |       |

Positional Information

Start

Lat: 49 ° 16.78 N

Lon: 134 ° 43.15 W

Bottom

Lat: 49 ° 16.78 N

Lon: 134 ° 43.15 W

End

Lat: 49 ° 16.78 N

Lon: 134 ° 43.19 W

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_|\_\_\_\_|\_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

## Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10Station: P16Event #: 37Ship: TULLYUTC Date (dd|mmm|yyyy): 25 | Aug | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken |     |     |       |                               |    |                 |                 | Comments                     |  |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|---------------|-----|-----|-------|-------------------------------|----|-----------------|-----------------|------------------------------|--|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | Oxy           | Nut | Sal | Chl a | <del>NO<sub>3</sub></del> DIC | pH | DO <sub>2</sub> | DO <sub>1</sub> |                              |  |
| 1        | 287      | 1247              | —                          | 3600              | <input checked="" type="checkbox"/>                    | ✓             | ✓   | ✓   |       | ✓                             | ✓  | ✓               |                 | SYSTEM HUNG UP IN FILE (M/L) |  |
| 2        | 288      | 1320              | 0.479                      | 3500              | <input checked="" type="checkbox"/>                    |               |     |     |       | ✓                             | ✓  |                 |                 |                              |  |
| 3        | 289      | 1400              | 2.466                      | 3500              | <input checked="" type="checkbox"/>                    |               | ✓   | ✓   |       |                               |    |                 |                 |                              |  |
| 4        | 290      | 1175              | 1.908                      | 3000              | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    | ✓               |                 |                              |  |
| 5        | 291      | 1209              | 1.907                      | 2500              | <input checked="" type="checkbox"/>                    |               |     |     |       |                               | ✓  |                 |                 |                              |  |
| 6        | 292      | 2020              | 1.219                      | 2000              | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    | ✓               |                 |                              |  |
| 7        | 293      | 1384              | 0.507                      | 1500              | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    | ✓               |                 |                              |  |
| 8        | 294      | 1406              | 0.310                      | 1250              | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    | ✓               |                 |                              |  |
| 9        | 295      | 1322              | 0.285                      | 1000              | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    | ✓               |                 |                              |  |
| 10       | 296      | 1373              | 0.388                      | 800               | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    | ✓               |                 |                              |  |
| 11       | 297      | 1146              | 0.619                      | 600               | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    | ✓               |                 |                              |  |
| 12       | 298      | 1386              | 1.510                      | 400               | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    | ✓               |                 |                              |  |
| 13       | 299      | 631               | 2.532                      | 300               | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    | ✓               |                 |                              |  |
| 14       | 300      | 1414              | 3.185                      | 250               | <input checked="" type="checkbox"/>                    |               |     |     |       |                               | ✓  |                 |                 |                              |  |
| 15       | 301      | 1397              | 4.521                      | 200               | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    | ✓               |                 |                              |  |
| 16       | 302      | 1409              | 5.148                      | 175               | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    |                 |                 |                              |  |
| 17       | 303      | 1326              | 6.822                      | 150               | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    | ✓               |                 |                              |  |
| 18       | 304      | 1123              | 6.604                      | 125               | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    |                 |                 |                              |  |
| 19       | 305      | 1411              | 6.813                      | 100               | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    | ✓               |                 |                              |  |
| 20       | 306      | 1380              | 6.967                      | 75                | <input checked="" type="checkbox"/>                    | ✓             |     |     |       |                               | ✓  |                 |                 |                              |  |
| 21       | 307      | 1144              | 6.954                      | 50                | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    | ✓               |                 |                              |  |
| 22       | 308      | 1319              | 6.024                      | 25                | <input checked="" type="checkbox"/>                    |               |     |     |       |                               |    | ✓               |                 |                              |  |
| 23       | 309      | 1404              | 5.967                      | 10                |                                                        |               |     |     |       |                               |    | ✓               |                 |                              |  |
| 24       | 310      | 1106              | 5.978                      | 5                 |                                                        | ↓             | ↓   | ↓   |       | ↓                             | ↓  |                 | ↓               |                              |  |

Watchkeeper(s): ARBottom Depth: 3695 mTransmisso Cleaned: (Y) N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 0102 |       |
| Bottom | 0151 |       |
| End    | 0308 |       |

## Positional Information

Start  
Lat: 49 ° 16.72 N  
Lon: 134 ° 43.12 WBottom  
Lat: 49 ° 16.65 N  
Lon: 134 ° 43.05 WEnd  
Lat: 49 ° 16.39 N  
Lon: 134 ° 43.18 W

## Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_|\_\_\_\_|\_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

306 3157 7.042 75m

# Water Properties Group

# Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

① UBC Deep Cast

Cruise ID: 2009-10 Station: P20 Event #: 41 Ship: TULLY UTC Date (dd|mmm|yyyy): 26 | 09 | 20

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                      | Samples Taken |     |     |       |                 |     |  |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|----------------------|---------------|-----|-----|-------|-----------------|-----|--|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed ✓ Pressure | Oxy           | Nut | Sal | Chl a | NH <sub>4</sub> | UBC |  |  |  |  |          |
| 1        | 313      |                   |                            | 2000              | ✓                    |               | ✓   | ✓   |       |                 | ✓   |  |  |  |  |          |
| 2        | 314      |                   |                            | 2000              | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 3        | 315      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 4        | 316      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 5        | 317      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 6        | 318      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 7        | 319      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 8        | 320      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 9        | 321      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 10       | 322      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 11       | 323      |                   |                            | 2000              | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 12       | 324      |                   |                            | 2000              | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 13       | 325      |                   |                            | 500               | ✓                    |               | ✓   |     |       |                 | ✓   |  |  |  |  |          |
| 14       | 326      |                   |                            | 500               | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 15       | 327      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 16       | 328      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 17       | 329      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 18       | 330      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 19       | 331      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 20       | 332      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 21       | 333      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 22       | 334      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 23       | 335      |                   |                            | 500               | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |
| 24       | 336      |                   |                            | 500               | ✓                    |               |     |     |       |                 |     |  |  |  |  |          |

Watchkeeper(s): H.M.

Bottom Depth: 39.68 m

Transmisso Cleaned: Y / N

|            | UTC  | Local |
|------------|------|-------|
| Time Start | 1040 |       |
| Bottom     | 1113 |       |
| End        | 1152 |       |

Positional Information

Start

Lat: 49 ° 34.04 N

Lon: 139 ° 40.00 W

Bottom

Lat: 49 ° 34.01 N

Lon: 138 ° 39.99 W

End

Lat: 49 ° 33.98 N

Lon: 138 ° 40.04 W

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P26 Event #: 44 Ship: TULLY UTC Date (dd|mmm|yyyy): 27 | 08 | 09

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken |     |     |       |                      |    |                 |    |  |  | Comments        |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|---------------|-----|-----|-------|----------------------|----|-----------------|----|--|--|-----------------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | Oxy           | Nut | Sal | Chl a | NO <sub>3</sub> -DIL | pH | DO <sub>2</sub> | OR |  |  |                 |
| 1        | 337      | 611               | 6.375                      | Bot-10            | <input checked="" type="checkbox"/>                    | 4317          |     |     |       |                      |    |                 |    |  |  | ? High          |
| 2        | 338      | 620               | 3.225                      | 4000              | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 3        | 339      | 621               | 3.199                      | 3500              | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 4        | 340      | 638               | 2.955                      | 3000              | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 5        | 341      | 639               | 2.538                      | 2500              | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 6        | 342      | 657               | 1.953                      | 2000              | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 7        | 343      | 712               | 1.303                      | 1500              | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 8        | 344      | 715               | 0.498                      | 1250              | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 9        | 345      | 1105              | 0.342                      | 1000              | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 10       | 346      | 1301              | 0.378                      | 800               | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 11       | 347      | 1321              | 1.054                      | 600               | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  | Bubble in FLASH |
| 12       | 348      | 1333              | 0.627                      | 400               | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 13       | 349      | 1374              | 1.175                      | 300               | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 14       | 350      | 1174              | 1.895                      | 250               | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 15       | 351      | 1487              | 2.757                      | 200               | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 16       | 352      | 1465              | 3.748                      | 175               | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 17       | 353      | 1368              | 4.412                      | 150               | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 18       | 354      | 647               | 5.407                      | 125               | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 19       | 355      | 700               | 6.527                      | 100               | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 20       | 356      | 1302              | 6.928                      | 75                | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 21       | 357      | 1327              | 6.906                      | 50                | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 22       | 358      | 1367              | 6.913                      | 25                | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 23       | 359      | 622               | 6.241                      | 10                | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |
| 24       | 360      | 1338              | 6.212                      | 5                 | <input checked="" type="checkbox"/>                    |               |     |     |       |                      |    |                 |    |  |  |                 |

Watchkeeper(s): H.M.

Bottom Depth: 4250 m

Transmisso Cleaned: ☒ Y / N

|            | UTC  | Local |
|------------|------|-------|
| Time Start | 1316 | 0616  |
| Bottom     | 1428 | 0728  |
| End        | 1624 |       |

Positional Information

Start Lat: 49 ° 59.97 N  
Lon: 145 ° 00.14 W

Start

Bottom Lat: 49 ° 59.99 N  
Lon: 145 ° 00.07 W

Bottom

End Lat: 50 ° 00.01 N  
Lon: 145 ° 00.01 W

End

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

## (2) UBC Deep Cast Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P26 Event #: 46 Ship: TULLY UTC Date (dd|mmm|yyyy): 27 | 08 | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                      | Samples Taken |     |     |       |                 |     |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|----------------------|---------------|-----|-----|-------|-----------------|-----|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed ✓ Pressure | Oxy           | Nut | Sal | Chl a | NH <sub>4</sub> | UBC |  |  |          |
| 1        | 361      |                   |                            | 2000              |                      |               | ✓   | ✓   |       |                 | ✓   |  |  |          |
| 2        | 362      |                   |                            | 2000              |                      |               |     |     |       |                 |     |  |  |          |
| 3        | 363      |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |          |
| 4        | 364      |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |          |
| 5        | 365      |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |          |
| 6        | 366      |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |          |
| 7        | 367      |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |          |
| 8        | 368      |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |          |
| 9        | 369      |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |          |
| 10       | 370      |                   |                            |                   |                      |               |     |     |       |                 |     |  |  |          |
| 11       | 371      |                   |                            | 2000              |                      |               |     |     |       |                 |     |  |  |          |
| 12       | 372      |                   |                            | 2000              |                      |               |     |     |       |                 |     |  |  |          |
| 13       | 373      |                   |                            | 500               | ✓                    |               | ✓   |     | ✓     |                 |     |  |  |          |
| 14       | 374      |                   |                            | 500               | ✓                    |               |     |     |       |                 |     |  |  |          |
| 15       | 375      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |          |
| 16       | 376      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |          |
| 17       | 377      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |          |
| 18       | 378      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |          |
| 19       | 379      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |          |
| 20       | 380      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |          |
| 21       | 381      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |          |
| 22       | 382      |                   |                            |                   | ✓                    |               |     |     |       |                 |     |  |  |          |
| 23       | 383      |                   |                            | 500               | ✓                    |               |     |     |       |                 |     |  |  |          |
| 24       | 384      |                   |                            | 500               | ✓                    |               |     |     |       |                 |     |  |  |          |

Watchkeeper(s): HUGH

Bottom Depth: 4226 m

Transmisso Cleaned: Y / N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 1754 |       |
| Bottom | 1826 |       |
| End    | 1900 |       |

Positional Information

Start

Lat: 49 ° 59.99 N

Lon: 145 ° 00.02 W

Bottom

Lat: 50 ° 00.01 N

Lon: 144 ° 59.97 W

End

Lat: 50 ° 0.01 N

Lon: 144 ° 59.88 W

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

# Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P26 Event #: 47 Ship: TULLY UTC Date (dd|mmm|yyyy): 27 | Aug | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                      | Samples Taken       |     |     |       |                 |    |  |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|----------------------|---------------------|-----|-----|-------|-----------------|----|--|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed ✓ Pressure | <del>Oxy</del> ONAr | Nut | Sal | Chl a | NH <sub>4</sub> | DO |  |  |  |  |          |
| 1        | 385      |                   |                            | 1000              | ✓                    |                     | ✓   | ✓   |       |                 | ✓  |  |  |  |  |          |
| 2        | 386      |                   |                            | 1000              | ✓                    |                     |     |     |       |                 |    |  |  |  |  |          |
| 3        | 387      |                   |                            |                   | ✓                    |                     |     |     |       |                 |    |  |  |  |  |          |
| 4        | 388      |                   |                            |                   | ✓                    |                     |     |     |       |                 |    |  |  |  |  |          |
| 5        | 389      |                   |                            |                   | ✓                    |                     |     |     |       |                 |    |  |  |  |  |          |
| 6        | 390      |                   |                            |                   | ✓                    |                     |     |     |       |                 |    |  |  |  |  |          |
| 7        | 391      |                   |                            |                   | ✓                    |                     |     |     |       |                 |    |  |  |  |  |          |
| 8        | 392      |                   |                            |                   | ✓                    |                     |     |     |       |                 |    |  |  |  |  |          |
| 9        | 393      |                   |                            |                   | ✓                    |                     |     |     |       |                 |    |  |  |  |  |          |
| 10       | 394      |                   |                            |                   | ✓                    |                     |     |     |       |                 |    |  |  |  |  |          |
| 11       | 395      |                   |                            | 1000              | ✓                    |                     |     |     |       |                 |    |  |  |  |  |          |
| 12       | 396      |                   |                            | 1000              | ✓                    |                     |     |     |       |                 |    |  |  |  |  |          |
| 13       | 397      |                   |                            | 75                | ✓                    | ✓                   |     |     |       |                 |    |  |  |  |  |          |
| 14       | 398      |                   |                            | 50                | ✓                    | ✓                   |     |     |       |                 |    |  |  |  |  |          |
| 15       | 399      |                   |                            | 30                | ✓                    | ✓                   |     |     |       |                 |    |  |  |  |  |          |
| 16       | 400      |                   |                            | 20                | ✓                    | ✓                   |     |     |       |                 |    |  |  |  |  |          |
| 17       | 401      |                   |                            | 10                | ✓                    | ✓                   |     |     |       |                 |    |  |  |  |  |          |
| 18       | 402      |                   |                            | 10                | ✓                    |                     | ✓   | ✓   |       |                 | ✓  |  |  |  |  |          |
| 19       | 403      |                   |                            | 10                | ✓                    |                     |     | ✓   |       |                 |    |  |  |  |  |          |
| 20       | 404      |                   |                            | 10                | ✓                    |                     |     | ✓   |       |                 |    |  |  |  |  |          |
| 21       |          |                   |                            |                   |                      |                     |     |     |       |                 |    |  |  |  |  |          |
| 22       |          |                   |                            |                   |                      |                     |     |     |       |                 |    |  |  |  |  |          |
| 23       |          |                   |                            |                   |                      |                     |     |     |       |                 |    |  |  |  |  |          |
| 24       |          |                   |                            |                   |                      |                     |     |     |       |                 |    |  |  |  |  |          |

Watchkeeper(s): SR

Bottom Depth: 4272 m

Transmisso Cleaned: Y N

|        | Time | UTC  | Local |
|--------|------|------|-------|
| Start  |      | 2000 |       |
| Bottom |      | 2014 |       |
| End    |      | 2031 |       |

Positional Information

Start

Lat: 50 ° 0.02 N

Lon: 144 ° 59.90 W

Bottom

Lat: 50 ° 0.03 N

Lon: 144 ° 59.91 W

End

Lat: 50 ° 0.03 N

Lon: 144 ° 59.89 W

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

# Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10

Station: P26

Event #: 48

Ship: TULLY

UTC Date (dd|mmm|yyyy): 27 | Aug | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                    | Samples Taken      |     |                    |       |                      |                                 |      |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|--------------------|--------------------|-----|--------------------|-------|----------------------|---------------------------------|------|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed Pressure | <del>Oxy</del> DHS | Nut | <del>Sat</del> DHS | Chl a | NH <sub>4</sub> HPLC | NO <sub>3</sub> NO <sub>2</sub> | ONAR |  |  |  |          |
| 1        | 405      |                   |                            | 200               | ✓ 200              | ✓                  | ✓   | ✓                  |       |                      |                                 |      |  |  |  |          |
| 2        | 406      |                   |                            | 175               | ✓                  | ✓                  | ✓   | ✓                  |       |                      |                                 |      |  |  |  |          |
| 3        | 407      |                   |                            | 100               | ✓                  | ✓                  | ✓   | ✓                  | ✓     |                      |                                 |      |  |  |  |          |
| 4        | 408      |                   |                            | 75                | ✓                  | ✓                  | ✓   |                    | ✓     |                      |                                 |      |  |  |  |          |
| 5        | 409      |                   |                            | 50                | ✓                  | ✓                  | ✓   |                    | ✓     |                      |                                 |      |  |  |  |          |
| 6        | 410      |                   |                            | 40                | ✓                  | ✓                  | ✓   |                    | ✓     |                      |                                 |      |  |  |  |          |
| 7        | 411      |                   |                            | 30                | ✓                  | ✓                  | ✓   |                    | ✓     |                      |                                 |      |  |  |  |          |
| 8        | 412      |                   |                            | 30                | ✓                  |                    |     |                    |       |                      |                                 | ✓    |  |  |  |          |
| 9        | 413      |                   |                            | 25                | ✓                  | ✓                  | ✓   |                    | ✓     | ✓                    |                                 |      |  |  |  |          |
| 10       | 414      |                   |                            | 20                | ✓                  | ✓                  | ✓   | ✓                  | ✓     |                      |                                 |      |  |  |  |          |
| 11       | 415      |                   |                            | 20                | ✓                  |                    |     |                    |       |                      |                                 | ✓    |  |  |  |          |
| 12       | 416      |                   |                            | 15                | ✓                  | ✓                  | ✓   |                    | ✓     | ✓                    |                                 |      |  |  |  |          |
| 13       | 417      |                   |                            | 10                | ✓ 15000            | ✓                  | ✓   |                    | ✓     | ✓                    |                                 |      |  |  |  |          |
| 14       | 418      |                   |                            | 10                | ✓                  |                    |     |                    |       |                      |                                 | ✓    |  |  |  |          |
| 15       | 419      |                   |                            | 5                 | ✓                  |                    |     |                    |       |                      |                                 | ✓    |  |  |  |          |
| 16       | 420      |                   |                            | 5                 | ✓                  | ✓                  | ✓   | ✓                  | ✓     | ✓                    | ✓                               |      |  |  |  |          |
| 17       | 421      |                   |                            | 0                 | ✓                  | ✓                  | ✓   | ✓                  | ✓     |                      |                                 |      |  |  |  |          |
| 18       | 422      |                   |                            | 0                 | ✓                  |                    |     |                    |       |                      |                                 | ✓    |  |  |  |          |
| 19       |          |                   |                            | 10                | ✓                  |                    |     |                    |       |                      |                                 |      |  |  |  |          |
| 20       |          |                   |                            |                   |                    |                    |     |                    |       |                      |                                 |      |  |  |  |          |
| 21       |          |                   |                            |                   |                    |                    |     |                    |       |                      |                                 |      |  |  |  |          |
| 22       |          |                   |                            |                   |                    |                    |     |                    |       |                      |                                 |      |  |  |  |          |
| 23       |          |                   |                            |                   |                    |                    |     |                    |       |                      |                                 |      |  |  |  |          |
| 24       |          |                   |                            |                   |                    |                    |     |                    |       |                      |                                 |      |  |  |  |          |

Watchkeeper(s): SR

Bottom Depth: 4272 m

Transmisso Cleaned: (Y) N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 2218 |       |
| Bottom | 2221 |       |
| End    | 2244 |       |

Positional Information

Start

Lat: 49 ° 59.99 N

Lon: 144 ° 59.90 W

Bottom

Lat: 49 ° 59.99 N

Lon: 144 ° 59.90 W

End

Lat: 49 ° 59.98 N

Lon: 144 ° 59.89 W

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

## Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10Station: P26Event #: 49Ship: TULLYUTC Date (dd|mmm|yyyy): 28 | Aug | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken                       |                                     |                                     |                                     |                                     |                                     |      |    |     |      | Comments        |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|------|----|-----|------|-----------------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | Oxy ONAR                            | Nut                                 | Set DIC                             | Chl a                               | NH <sub>4</sub>                     | PAR                                 | TEMP | SP | Sal | Stem |                 |
| 1        | 423      |                   |                            | 600               | <input checked="" type="checkbox"/>                    |                                     |                                     |                                     |                                     |                                     | <input checked="" type="checkbox"/> |      |    |     |      |                 |
| 2        | 424      |                   |                            | 300               | <input checked="" type="checkbox"/>                    |                                     |                                     |                                     |                                     |                                     | <input checked="" type="checkbox"/> |      |    |     |      | → DID NOT CLOSE |
| 3        | 425      |                   |                            | 250               | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> |                                     |                                     |                                     |                                     |                                     |      |    |     |      |                 |
| 4        | 426      |                   |                            | 200               | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> |                                     |                                     |                                     |                                     |                                     |      |    |     |      |                 |
| 5        | 427      |                   |                            | 150               | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> |                                     |                                     |                                     |                                     |                                     |      |    |     |      |                 |
| 6        | 428      |                   |                            | 150               | <input checked="" type="checkbox"/>                    |                                     |                                     |                                     |                                     | <input checked="" type="checkbox"/> |                                     |      |    |     |      |                 |
| 7        | 429      |                   |                            | 100               | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> |                                     |                                     |                                     |                                     |                                     |      |    |     |      |                 |
| 8        | 430      |                   |                            | 75                |                                                        |                                     |                                     |                                     |                                     | <input checked="" type="checkbox"/> |                                     |      |    |     |      |                 |
| 9        | 431      |                   |                            | 1'.               |                                                        | 62m                                 |                                     |                                     |                                     | <input checked="" type="checkbox"/> |                                     |      |    |     |      |                 |
| 10       | 432      |                   |                            | 1'.               |                                                        | 62m                                 |                                     |                                     |                                     | <input checked="" type="checkbox"/> |                                     |      |    |     |      |                 |
| 11       | 433      |                   |                            | 1'.               |                                                        | 62m                                 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                                     |                                     |      |    |     |      |                 |
| 12       | 434      |                   |                            | 10'.              |                                                        | 31m                                 |                                     |                                     |                                     | <input checked="" type="checkbox"/> |                                     |      |    |     |      |                 |
| 13       | 435      |                   |                            | 10'.              |                                                        | 31m                                 |                                     |                                     |                                     | <input checked="" type="checkbox"/> |                                     |      |    |     |      |                 |
| 14       | 436      |                   |                            | 10'.              |                                                        | 31m                                 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                                     |                                     |      |    |     |      |                 |
| 15       | 437      |                   |                            | 30'.              |                                                        | 12m                                 |                                     |                                     |                                     | <input checked="" type="checkbox"/> |                                     |      |    |     |      |                 |
| 16       | 438      |                   |                            | 30'.              |                                                        | 12m                                 |                                     |                                     |                                     | <input checked="" type="checkbox"/> |                                     |      |    |     |      |                 |
| 17       | 439      |                   |                            | 30'.              |                                                        | 12m                                 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                                     |                                     |      |    |     |      |                 |
| 18       | 440      |                   |                            | 55'.              |                                                        | 8m                                  |                                     |                                     |                                     | <input checked="" type="checkbox"/> |                                     |      |    |     |      |                 |
| 19       | 441      |                   |                            | 55'.              |                                                        | 8m                                  |                                     |                                     |                                     | <input checked="" type="checkbox"/> |                                     |      |    |     |      |                 |
| 20       | 442      |                   |                            | 55'.              |                                                        | 8m                                  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                                     |                                     |      |    |     |      |                 |
| 21       | 443      |                   |                            | 5                 |                                                        |                                     | <input checked="" type="checkbox"/> |                                     |                                     |                                     |                                     |      |    |     |      |                 |
| 22       | 444      |                   |                            | 100'.             |                                                        | 0m                                  |                                     |                                     |                                     | <input checked="" type="checkbox"/> |                                     |      |    |     |      |                 |
| 23       | 445      |                   |                            | 100'.             |                                                        | 0m                                  |                                     |                                     |                                     | <input checked="" type="checkbox"/> |                                     |      |    |     |      |                 |
| 24       | 446      |                   |                            | 100'.             |                                                        | 0m                                  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                                     |                                     |      |    |     |      |                 |

Watchkeeper(s): SRBottom Depth: 4275 mTransmisso Cleaned: ☒ Y / ☐ N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 0036 |       |
| Bottom |      |       |
| End    |      |       |

## Positional Information

Start  
Lat: 49 ° 59.98 N  
Lon: 144 ° 59.99 W

Bottom  
Lat: 49 ° 59.94 N  
Lon: 144 ° 59.95 W

End  
Lat: ° N  
Lon: ° W

## Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

# Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

⑥ Deep O<sub>2</sub>A<sub>2</sub> + UBC

Cruise ID: 2009-10

Station: P26

Event #: 51

Ship: TULLY

UTC Date (dd|mmm|yyyy): 28 | AUG | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken                       |     |     |       |                                     |            |  |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|-------------------------------------|-----|-----|-------|-------------------------------------|------------|--|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | O <sub>2</sub> <u>ONK</u>           | Nut | Sal | Chl a | NH <sub>4</sub>                     | <u>DAW</u> |  |  |  |  |          |
| 1        | 447      |                   |                            | 4000              | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> |     |     |       |                                     |            |  |  |  |  |          |
| 2        | 448      |                   |                            | 3000              | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> |     |     |       |                                     |            |  |  |  |  |          |
| 3        | 449      |                   |                            | 2000              | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> |     |     |       |                                     |            |  |  |  |  |          |
| 4        | 450      |                   |                            | 1000              | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> |     |     |       |                                     |            |  |  |  |  |          |
| 5        | 451      |                   |                            | 300               | <input checked="" type="checkbox"/>                    |                                     |     |     |       | <input checked="" type="checkbox"/> |            |  |  |  |  |          |
| 6        | 452      |                   |                            | 75                | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> |     |     |       |                                     |            |  |  |  |  |          |
| 7        | 453      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> |     |     |       |                                     |            |  |  |  |  |          |
| 8        | 454      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 9        | 455      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 10       | 456      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 11       | 457      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 12       | 458      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 13       | 459      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 14       | 460      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 15       | 461      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 16       | 462      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 17       | 463      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 18       | 464      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 19       | 465      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 20       |          |                   |                            |                   |                                                        |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 21       |          |                   |                            |                   |                                                        |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 22       |          |                   |                            |                   |                                                        |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 23       |          |                   |                            |                   |                                                        |                                     |     |     |       |                                     |            |  |  |  |  |          |
| 24       |          |                   |                            |                   |                                                        |                                     |     |     |       |                                     |            |  |  |  |  |          |

Watchkeeper(s): SR

Bottom Depth: 4272 m

Transmisso Cleaned: ☒ Y ☐ N

|        | UTC  | Local |
|--------|------|-------|
| Start  | 0337 |       |
| Bottom | 0443 |       |
| End    | 0547 |       |

Positional Information

Start Lat: 50 ° 0.02 N

Lon: 144 ° 59.96 W

Start

Bottom Lat: 49 ° 59.74 N

Lon: 145 ° 0.08 W

Bottom

End Lat: 49 ° 59.63 N

Lon: 145 ° 0.51 W

End

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

# Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

⑦ Mooring CTD to 500m w/ PAR

Cruise ID: 2009-10

Station: Mooring

Event #: 52

Ship: TULLY

UTC Date (dd|mmm|yyyy): 28 | 08 | 09

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken |                                     |                                     |                                     |                 |                                     |  |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|---------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------------|-------------------------------------|--|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | Oxy           | Nut                                 | Sal                                 | Chl a                               | NH <sub>4</sub> | pH                                  |  |  |  |  |          |
| 1        | 466      |                   |                            | 30                | <input checked="" type="checkbox"/> 30                 |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                 | <input checked="" type="checkbox"/> |  |  |  |  |          |
| 2        | 467      |                   |                            | 20                | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                 | <input checked="" type="checkbox"/> |  |  |  |  |          |
| 3        | 468      |                   |                            | 10                | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                 | <input checked="" type="checkbox"/> |  |  |  |  |          |
| 4        | 469      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                 | <input checked="" type="checkbox"/> |  |  |  |  |          |
| 5        | 470      |                   |                            | 0                 | <input checked="" type="checkbox"/>                    |               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                 | <input checked="" type="checkbox"/> |  |  |  |  |          |
| 6        |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 7        |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 8        |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 9        |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 10       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 11       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 12       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 13       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 14       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 15       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 16       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 17       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 18       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 19       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 20       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 21       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 22       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 23       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |
| 24       |          |                   |                            |                   |                                                        |               |                                     |                                     |                                     |                 |                                     |  |  |  |  |          |

Watchkeeper(s): H.M.

Bottom Depth: 4275 m

Transmisso Cleaned: ☒ Y / N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 0730 |       |
| Bottom | 0738 |       |
| End    | 0751 |       |

**Positional Information**

Start

Lat: 50 ° 09.34 N

Lon: 144 ° 48.62 W

Bottom

Lat: 50 ° 09.31 N

Lon: 144 ° 48.66 W

End

Lat: 50 ° 09.33 N

Lon: 144 ° 48.64 W

**Oxygen Info For This Cast**

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

## CALIBRATION CAST Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10

Station: P24

Event #: 55

Ship: TULLY

UTC Date (dd|mmm|yyyy): 28 | Aug | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                 |     | Samples Taken |     |       |                 |     |    |    | Comments |  |  |  |
|----------|----------|-------------------|----------------------------|-------------------|---------------------------------|-----|---------------|-----|-------|-----------------|-----|----|----|----------|--|--|--|
|          |          | Flask Serial #    | Value mL * L <sup>-1</sup> | Target Pressure   | Confirmed <div>✓</div> Pressure | Oxy | Nut           | Sal | Chl a | NH <sub>4</sub> | DIC | pH |    |          |  |  |  |
| 1        | 473      |                   |                            | 2000              |                                 |     |               |     | ✓     |                 |     | ✓✓ |    |          |  |  |  |
| 2        | 474      |                   |                            | 2000              |                                 |     |               |     |       |                 |     | ✓✓ |    |          |  |  |  |
| 3        | 475      |                   |                            |                   |                                 |     |               |     |       |                 |     | ✓✓ |    |          |  |  |  |
| 4        | 476      |                   |                            |                   |                                 |     |               |     |       |                 |     | ✓✓ |    |          |  |  |  |
| 5        | 477      |                   |                            |                   |                                 |     |               |     |       |                 |     | ✓✓ |    |          |  |  |  |
| 6        | 478      |                   |                            |                   |                                 |     |               |     |       |                 |     |    | ✓✓ |          |  |  |  |
| 7        | 479      |                   |                            |                   |                                 |     |               |     |       |                 |     |    | ✓✓ |          |  |  |  |
| 8        | 480      |                   |                            |                   |                                 |     |               |     |       |                 |     |    | ✓✓ |          |  |  |  |
| 9        | 481      |                   |                            |                   |                                 |     |               |     |       |                 |     |    | ✓✓ |          |  |  |  |
| 10       | 482      |                   |                            |                   |                                 |     |               |     |       |                 |     |    | ✓✓ |          |  |  |  |
| 11       | 483      |                   |                            |                   |                                 |     |               |     |       |                 |     |    |    |          |  |  |  |
| 12       | 484      |                   |                            |                   |                                 |     |               |     |       |                 |     |    |    |          |  |  |  |
| 13       | 485      |                   |                            |                   |                                 |     |               |     |       |                 |     |    |    |          |  |  |  |
| 14       | 486      |                   |                            |                   |                                 |     |               |     |       |                 |     |    |    |          |  |  |  |
| 15       | 487      |                   |                            |                   |                                 |     |               |     |       |                 |     |    |    |          |  |  |  |
| 16       | 488      |                   |                            |                   |                                 |     |               |     |       |                 |     |    |    |          |  |  |  |
| 17       | 489      |                   |                            |                   |                                 |     |               |     |       |                 |     |    |    |          |  |  |  |
| 18       | 490      |                   |                            |                   |                                 |     |               |     |       |                 |     |    |    |          |  |  |  |
| 19       | 491      |                   |                            |                   |                                 |     |               |     |       |                 |     |    |    |          |  |  |  |
| 20       | 492      |                   |                            |                   |                                 |     |               |     |       |                 |     |    |    |          |  |  |  |
| 21       | 493      |                   |                            |                   |                                 |     |               |     |       |                 |     |    |    |          |  |  |  |
| 22       | 494      |                   |                            | 2000              |                                 |     |               |     |       |                 |     |    |    |          |  |  |  |
| 23       | 495      |                   |                            | 2000              |                                 |     |               |     |       |                 |     |    |    |          |  |  |  |
| 24       | 496      |                   |                            | 5                 |                                 |     |               | ✓   | ✓     | ✓               |     |    |    |          |  |  |  |

Watchkeeper(s): SR

Bottom Depth: 4057 m

Transmisso Cleaned: ☒ Y / ☐ N

|        | Time | UTC  | Local |
|--------|------|------|-------|
| Start  |      | 2044 |       |
| Bottom |      | 2109 |       |
| End    |      | 2133 |       |

Positional Information

Start

Lat: 49 ° 50.23 N

Lon: 142 ° 39.94 W

Bottom

Lat: 49 ° 50.22 N

Lon: 142 ° 40.01 W

End

Lat: 49 ° 50.21 N

Lon: 142 ° 40.03 W

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_|\_\_\_\_|\_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P20 Event #: 59 Ship: TULLY UTC Date (dd|mmm|yyyy): 29 | Aug | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken                       |                                     |     |                                     |                                     |                                     |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|-------------------------------------|-------------------------------------|-----|-------------------------------------|-------------------------------------|-------------------------------------|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | <del>Oxy</del> DMS                  | Nut                                 | Sal | Chl a                               | NH <sub>4</sub> HPLC                | DMSP d-t                            |  |  |          |
| 1        | 500      |                   |                            | 200               | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     |                                     |                                     | <input checked="" type="checkbox"/> |  |  |          |
| 2        | 501      |                   |                            | 175               | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     |                                     |                                     | <input checked="" type="checkbox"/> |  |  |          |
| 3        | 502      |                   |                            | 100               | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     |                                     |                                     | <input checked="" type="checkbox"/> |  |  |          |
| 4        | 503      |                   |                            | 75                | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     |                                     |                                     | <input checked="" type="checkbox"/> |  |  |          |
| 5        | 504      |                   |                            | 50                | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     |                                     |                                     | <input checked="" type="checkbox"/> |  |  |          |
| 6        | 505      |                   |                            | 40                | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     |                                     |                                     | <input checked="" type="checkbox"/> |  |  |          |
| 7        | 506      |                   |                            | 30                | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     |                                     |                                     | <input checked="" type="checkbox"/> |  |  |          |
| 8        | 507      |                   |                            | 25                | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |          |
| 9        | 508      |                   |                            | 20                | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     |                                     |                                     | <input checked="" type="checkbox"/> |  |  |          |
| 10       | 509      |                   |                            | 15                | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     |                                     |                                     | <input checked="" type="checkbox"/> |  |  |          |
| 11       | 510      |                   |                            | 10                | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     |                                     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |          |
| 12       | 511      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     |                                     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |          |
| 13       | 512      |                   |                            | 0                 | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     |                                     |                                     | <input checked="" type="checkbox"/> |  |  |          |
| 14       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                                     |                                     |  |  |          |
| 15       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                                     |                                     |  |  |          |
| 16       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                                     |                                     |  |  |          |
| 17       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                                     |                                     |  |  |          |
| 18       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                                     |                                     |  |  |          |
| 19       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                                     |                                     |  |  |          |
| 20       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                                     |                                     |  |  |          |
| 21       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                                     |                                     |  |  |          |
| 22       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                                     |                                     |  |  |          |
| 23       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                                     |                                     |  |  |          |
| 24       |          |                   |                            |                   |                                                        |                                     |                                     |     |                                     |                                     |                                     |  |  |          |

Watchkeeper(s): SR

Bottom Depth: 3956 m

Transmisso Cleaned: ☒ Y / ☐ N

|        | UTC  | Local |
|--------|------|-------|
| Start  | 2014 |       |
| Bottom | 2017 |       |
| End    | 2032 |       |

Positional Information

Start Lat: 49 ° 33.98 N  
Lon: 138 ° 39.92 W

Start

Bottom Lat: 49 ° 33.98 N  
Lon: 138 ° 39.95 W

Bottom

End Lat: 49 ° 34.00 N  
Lon: 138 ° 39.96 W

End

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\*Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

# Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

② Light / ONAR cast

Cruise ID: 2009-10

Station: P20

Event #: 60

Ship: TULLY

UTC Date (dd|mmm|yyyy): 29 | Aug | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                    | Samples Taken |     |     |                 |      |  |  |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|--------------------|---------------|-----|-----|-----------------|------|--|--|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed Pressure | Chl a         | Nut | Sal | NH <sub>4</sub> | DAPI |  |  |  |  |  |          |
| 1        | 513      |                   |                            | 600               | ✓                  |               |     |     |                 | ✓    |  |  |  |  |  |          |
| 2        | 514      |                   |                            | 300               | ✓                  |               |     |     |                 | ✓    |  |  |  |  |  |          |
| 3        | 515      |                   |                            | 150               | ✓                  |               |     |     |                 | ✓    |  |  |  |  |  |          |
| 4        | 516      |                   |                            | 75                | ✓                  |               |     |     |                 | ✓    |  |  |  |  |  |          |
| 5        | 517      |                   |                            | 1%                | ✓                  | 64m           |     |     |                 | ✓    |  |  |  |  |  |          |
| 6        | 518      |                   |                            | 1%                | ✓                  | 64m           |     |     |                 |      |  |  |  |  |  |          |
| 7        | 519      |                   |                            | 10%               | ✓                  | 29m           |     |     |                 | ✓    |  |  |  |  |  |          |
| 8        | 520      |                   |                            | 10%               | ✓                  | 29m           |     |     |                 |      |  |  |  |  |  |          |
| 9        | 521      |                   |                            | 30%               | ✓                  | 7m            |     |     |                 | ✓    |  |  |  |  |  |          |
| 10       | 522      |                   |                            | 30%               | ✓                  | 7m            |     |     |                 |      |  |  |  |  |  |          |
| 11       | 523      |                   |                            | 55%               | ✓                  | 5m            |     |     |                 | ✓    |  |  |  |  |  |          |
| 12       | 524      |                   |                            | 55%               | ✓                  | 5m            |     |     |                 |      |  |  |  |  |  |          |
| 13       | 525      |                   |                            | 5                 | ✓                  |               | ✓   |     |                 |      |  |  |  |  |  |          |
| 14       | 526      |                   |                            | 100%              |                    | 0m            |     |     |                 | ✓    |  |  |  |  |  |          |
| 15       | 527      |                   |                            | 100%              |                    | 0m            |     |     |                 |      |  |  |  |  |  |          |
| 16       |          |                   |                            |                   |                    |               |     |     |                 |      |  |  |  |  |  |          |
| 17       |          |                   |                            |                   |                    |               |     |     |                 |      |  |  |  |  |  |          |
| 18       |          |                   |                            |                   |                    |               |     |     |                 |      |  |  |  |  |  |          |
| 19       |          |                   |                            |                   |                    |               |     |     |                 |      |  |  |  |  |  |          |
| 20       |          |                   |                            |                   |                    |               |     |     |                 |      |  |  |  |  |  |          |
| 21       |          |                   |                            |                   |                    |               |     |     |                 |      |  |  |  |  |  |          |
| 22       |          |                   |                            |                   |                    |               |     |     |                 |      |  |  |  |  |  |          |
| 23       |          |                   |                            |                   |                    |               |     |     |                 |      |  |  |  |  |  |          |
| 24       |          |                   |                            |                   |                    |               |     |     |                 |      |  |  |  |  |  |          |

Watchkeeper(s): SR

Bottom Depth: 3956 m

Transmisso Cleaned: (Y) N

|        | UTC  | Local |
|--------|------|-------|
| Start  | 2112 |       |
| Bottom | 2120 |       |
| End    | 2139 |       |

Positional Information

Start Lat: 49 ° 34.02 N  
Lon: 138 ° 39.99 W

Bottom Lat: 49 ° 34.01 N  
Lon: 138 ° 39.98 W

End Lat: 49 ° 34.04 N  
Lon: 138 ° 39.96 W

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

## Rosette Log

3951 m

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P20 Event #: 61 Ship: TULLY UTC Date (dd|mmm|yyyy): 30 | Aug | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                      | Samples Taken |     |     |       |                               |    |     |                |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|----------------------|---------------|-----|-----|-------|-------------------------------|----|-----|----------------|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed ✓ Pressure | Oxy           | Nut | Sal | Chl a | <del>NO<sub>3</sub></del> DIL | PH | JDL | O <sub>2</sub> |  |  |          |
| 1        | 528      | 1247              | 3.177                      | Bot-10            | ✓                    | 4025          | ✓   | ✓   | ✓     | ✓                             | ✓  | ✓   | ✓              |  |  |          |
| 2        | 529      | 1320              | 2.881                      | 3500              | ✓                    |               |     |     |       | ✓                             |    |     |                |  |  |          |
| 3        | 530      | 1400              | 2.837                      | 3500              | ✓                    |               |     | ✓   |       |                               | ✓  |     |                |  |  |          |
| 4        | 531      | 1175              | 2.484                      | 3000              | ✓                    |               |     |     |       |                               |    | ✓   |                |  |  |          |
| 5        | 532      | 1209              | 1.948                      | 2500              | ✓                    |               |     |     |       |                               |    |     |                |  |  |          |
| 6        | 533      | 2020              | 1.279                      | 2000              | ✓                    |               |     |     |       |                               |    | ✓   |                |  |  |          |
| 7        | 534      | 1384              | 0.544                      | 1500              | ✓                    |               | ✓   |     |       |                               |    | ✓   |                |  |  |          |
| 8        | 535      | 1406              | 0.339                      | 1250              | ✓                    |               |     |     |       |                               |    | ✓   |                |  |  |          |
| 9        | 536      | 1322              | 0.321                      | 1000              | ✓                    |               |     |     |       |                               | ✓  | ✓   |                |  |  |          |
| 10       | 537      | 1373              | 0.471                      | 800               | ✓                    |               |     |     |       |                               |    | ✓   |                |  |  |          |
| 11       | 538      | 1146              | 0.600                      | 600               | ✓                    |               |     |     |       |                               |    | ✓   |                |  |  |          |
| 12       | 539      | 1386              | 1.295                      | 400               | ✓                    |               |     |     |       |                               |    | ✓   |                |  |  |          |
| 13       | 540      | 631               | 2.086                      | 300               | ✓                    |               |     |     |       |                               |    | ✓   |                |  |  |          |
| 14       | 541      | 1414              | 2.666                      | 250               | ✓                    |               |     |     |       |                               | ✓  |     |                |  |  |          |
| 15       | 542      | 1397              | 3.921                      | 200               | ✓                    |               |     |     |       |                               |    | ✓   |                |  |  |          |
| 16       | 543      | 1409              | 4.395                      | 175               | ✓                    |               |     |     |       |                               |    |     |                |  |  |          |
| 17       | 544      | 1326              | 5.434                      | 150               | ✓                    |               |     |     |       |                               |    | ✓   |                |  |  |          |
| 18       | 545      | 1123              | 6.298                      | 125               | ✓                    | ✓             |     |     |       |                               |    |     |                |  |  |          |
| 19       | 546      | 1411              | 6.727                      | 100               | ✓                    |               |     |     |       |                               |    | ✓   |                |  |  |          |
| 20       | 547      | 1380              | 6.843                      | 75                | ✓                    |               |     |     |       |                               | ✓  |     |                |  |  |          |
| 21       | 548      | 1144              | 6.936                      | 50                | ✓                    |               |     |     |       |                               |    | ✓   |                |  |  |          |
| 22       | 549      | 1319              | 6.108                      | 25                | ✓                    |               |     |     |       |                               |    | ✓   |                |  |  |          |
| 23       | 550      | 1404              | 6.104                      | 10                | ✓                    |               |     |     |       |                               |    | ✓   |                |  |  |          |
| 24       | 551      | 1106              | 6.110                      | 5                 |                      |               | ✓   | ✓   | ✓     | ✓                             | ✓  |     | ✓              |  |  |          |

Watchkeeper(s): SR

Bottom Depth: 3951 m

Transmisso Cleaned: (Y) / N

|            | UTC  | Local |
|------------|------|-------|
| Time Start | 0036 |       |
| Bottom     | 0128 |       |
| End        | 0241 |       |

### Positional Information

Start Lat: 49° 34.02 N  
Lon: 138° 39.97 W

Bottom Lat: 49° 34.01 N  
Lon: 138° 40.01 W

End Lat: 49° 34.01 N  
Lon: 138° 39.96 W

### Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

Version: 28 Feb 2008

Transmissometer to be cleaned before each cast, do not use Ammonia products

<http://www.pac.dfo-mpo.gc.ca/sci/osap/projects/waterproperties/>

18 545

3157  
6.282 125

NOTES:

6x7: YELLOW

# Water Properties Group

# Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

④ UBC Shallow Cast

Cruise ID: 2009-10

Station: P20

Event #: 62

Ship: Tully

UTC Date (dd|mmm|yyyy): 30 | Aug | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken |     |     |       |                 |   | Comments |  |  |  |  |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|---------------|-----|-----|-------|-----------------|---|----------|--|--|--|--|
|          |          | Flask Serial #    | Value mL • L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | Oxy           | Nut | Sal | Chl a | NH <sub>4</sub> |   |          |  |  |  |  |
| 1        | 552      |                   |                            | 1000              |                                                        |               | ✓   |     |       |                 | ✓ |          |  |  |  |  |
| 2        | 553      |                   |                            | 1000              |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 3        | 554      |                   |                            | 1000              |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 4        | 555      |                   |                            | 1000              |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 5        | 556      |                   |                            | 1000              |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 6        | 557      |                   |                            | 1000              |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 7        | 558      |                   |                            | 1000              |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 8        | 559      |                   |                            | 1000              |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 9        | 560      |                   |                            | 1000              |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 10       | 561      |                   |                            | 1000              |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 11       | 562      |                   |                            | 1000              |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 12       | 563      |                   |                            | 1000              |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 13       | 564      |                   |                            | 10                |                                                        |               | ✓   |     |       |                 | ✓ |          |  |  |  |  |
| 14       | 565      |                   |                            | 10                |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 15       | 566      |                   |                            | 11.5              |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 16       | 567      |                   |                            | 10.               |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 17       |          |                   |                            |                   |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 18       |          |                   |                            |                   |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 19       |          |                   |                            |                   |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 20       |          |                   |                            |                   |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 21       |          |                   |                            |                   |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 22       |          |                   |                            |                   |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 23       |          |                   |                            |                   |                                                        |               |     |     |       |                 |   |          |  |  |  |  |
| 24       |          |                   |                            |                   |                                                        |               |     |     |       |                 |   |          |  |  |  |  |

Watchkeeper(s): SR

Bottom Depth: 3956 m

Transmisso Cleaned: ☒ Y / ☐ N

|            | UTC  | Local |
|------------|------|-------|
| Time Start | 0406 |       |
| Bottom     | 0421 |       |
| End        | 0436 |       |

Positional Information

Start Lat: 49 ° 34.01 N

Lon: 138 ° 39.93 W

Bottom Lat: 49 ° 34.00 N

Lon: 138 ° 39.97 W

End Lat: 49 ° 34.00 N

Lon: 138 ° 39.91 W

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

Water Properties Group

① UBC Deep Cast  
Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P16 Event #: 67 Ship: Tully UTC Date (dd|mmm|yyyy): 31 | Aug | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken |     |     |       |                 |     |  |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|---------------|-----|-----|-------|-----------------|-----|--|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | Oxy           | Nut | Sal | Chl a | NH <sub>4</sub> | UOL |  |  |  |  |          |
| 1        | 573      |                   |                            | 2000              |                                                        |               | ✓   |     |       |                 | ✓   |  |  |  |  |          |
| 2        | 574      |                   |                            | 2000              |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 3        | 575      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 4        | 576      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 5        | 577      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 6        | 578      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 7        | 579      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 8        | 580      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 9        | 581      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 10       | 582      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 11       | 583      |                   |                            | 2000              |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 12       | 584      |                   |                            | 2000              |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 13       | 585      |                   |                            | 500               |                                                        |               | ✓   |     |       |                 | ✓   |  |  |  |  |          |
| 14       | 586      |                   |                            | 500               |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 15       | 587      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 16       | 588      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 17       | 589      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 18       | 590      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 19       | 591      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 20       | 592      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 21       | 593      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 22       | 594      |                   |                            |                   |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 23       | 595      |                   |                            | 500               |                                                        |               |     |     |       |                 |     |  |  |  |  |          |
| 24       | 596      |                   |                            | 500               |                                                        |               |     |     |       |                 |     |  |  |  |  |          |

Watchkeeper(s): SR

Bottom Depth: 3636 m  
Transmisso Cleaned: (Y) N

|            | UTC  | Local |
|------------|------|-------|
| Time Start | 0505 |       |
| Bottom     | 0531 |       |
| End        | 0555 |       |

Positional Information  
Start Lat: 49 ° 16.99 N  
Lon: 134 ° 39.94 W

Bottom Lat: 49 ° 16.98 N  
Lon: 134 ° 39.96 W

End Lat: 49 ° 16.99 N  
Lon: 134 ° 39.97 W

Oxygen Info For This Cast  
Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>  
Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>  
\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_  
Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P16 Event #: 68 Ship: Tully UTC Date (dd|mmm|yyyy): 31 | Aug | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                      | Samples Taken      |     |       |                 |   |   |  |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|----------------------|--------------------|-----|-------|-----------------|---|---|--|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed ✓ Pressure | <del>Chl</del> Nut | Sal | Chl a | NH <sub>4</sub> |   |   |  |  |  |  |          |
| 1        | 597      |                   |                            | 1000              | ✓ 1600               |                    | ✓   |       |                 |   | ✓ |  |  |  |  |          |
| 2        | 598      |                   |                            | 1000              | ✓                    |                    |     |       |                 |   |   |  |  |  |  |          |
| 3        | 599      |                   |                            |                   | ✓                    |                    |     |       |                 |   |   |  |  |  |  |          |
| 4        | 600      |                   |                            |                   | ✓                    |                    |     |       |                 |   |   |  |  |  |  |          |
| 5        | 601      |                   |                            |                   | ✓                    |                    |     |       |                 |   |   |  |  |  |  |          |
| 6        | 602      |                   |                            |                   | ✓                    |                    |     |       |                 |   |   |  |  |  |  |          |
| 7        | 603      |                   |                            |                   | ✓                    |                    |     |       |                 |   |   |  |  |  |  |          |
| 8        | 604      |                   |                            |                   | ✓                    |                    |     |       |                 |   |   |  |  |  |  |          |
| 9        | 605      |                   |                            |                   | ✓                    |                    |     |       |                 |   |   |  |  |  |  |          |
| 10       | 606      |                   |                            |                   | ✓                    |                    |     |       |                 |   |   |  |  |  |  |          |
| 11       | 607      |                   |                            | 1000              | ✓                    |                    |     |       |                 |   |   |  |  |  |  |          |
| 12       | 608      |                   |                            | 1000              | ✓                    |                    |     |       |                 |   |   |  |  |  |  |          |
| 13       | 609      |                   |                            | 75                | ✓                    | ✓                  |     |       |                 |   |   |  |  |  |  |          |
| 14       | 610      |                   |                            | 30                | ✓                    | ✓                  |     |       |                 |   |   |  |  |  |  |          |
| 15       | 611      |                   |                            | 10                | ✓                    |                    | ✓   |       |                 | ✓ |   |  |  |  |  |          |
| 16       | 612      |                   |                            | 10                | ✓                    |                    |     |       |                 |   |   |  |  |  |  |          |
| 17       | 613      |                   |                            | 10                | ✓                    |                    |     |       |                 |   |   |  |  |  |  |          |
| 18       | 614      |                   |                            | 10                | ✓                    |                    |     |       |                 |   |   |  |  |  |  |          |
| 19       | 615      |                   |                            | 10                | ✓                    | ✓                  |     |       |                 |   |   |  |  |  |  |          |
| 20       | 616      |                   |                            | 5                 | ✓                    | ✓                  |     |       |                 |   |   |  |  |  |  |          |
| 21       |          |                   |                            |                   |                      |                    |     |       |                 |   |   |  |  |  |  |          |
| 22       |          |                   |                            |                   |                      |                    |     |       |                 |   |   |  |  |  |  |          |
| 23       |          |                   |                            |                   |                      |                    |     |       |                 |   |   |  |  |  |  |          |
| 24       |          |                   |                            |                   |                      |                    |     |       |                 |   |   |  |  |  |  |          |

Watchkeeper(s): SR

Bottom Depth: 3636 m

Transmisso Cleaned: (Y) I N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 0642 |       |
| Bottom | 0655 |       |
| End    | 0710 |       |

### Positional Information

Start  
Lat: 49 ° 16.99 N  
Lon: 134 ° 39.96 W

Bottom  
Lat: 49 ° 16.93 N  
Lon: 134 ° 39.99 W

End  
Lat: 49 ° 16.48 N  
Lon: 134 ° 39.99 W

### Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

# Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10 Station: P14 Event #: 71 Ship: TULLY UTC Date (dd|mmm|yyyy): 31 | 08 | 09

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken |     |     |       |                     |                 |                 |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|---------------|-----|-----|-------|---------------------|-----------------|-----------------|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | Oxy           | Nut | Sal | Chl a | AM <sub>2</sub> DIL | CH <sub>4</sub> | OP <sub>2</sub> |  |  |  |          |
| 1        | 617      | 1247              | 1.290                      | 2000              | <input checked="" type="checkbox"/> 2000               | ✓             | ✓   |     |       | ✓                   | ✓               |                 |  |  |  |          |
| 2        | 618      | 1320              | 0.563                      | 1500              | <input checked="" type="checkbox"/>                    |               |     |     |       |                     |                 |                 |  |  |  |          |
| 3        | 619      | 1400              | 0.310                      | 1250              | <input checked="" type="checkbox"/>                    |               |     |     |       |                     |                 |                 |  |  |  |          |
| 4        | 620      | 1175              | 0.254                      | 1000              | <input checked="" type="checkbox"/>                    |               |     |     |       |                     |                 |                 |  |  |  |          |
| 5        | 621      | 1209              | 0.328                      | 800               | <input checked="" type="checkbox"/>                    |               |     |     |       |                     |                 |                 |  |  |  |          |
| 6        | 622      | 2020              | 0.567                      | 600               | <input checked="" type="checkbox"/>                    |               | ✓   |     |       |                     |                 |                 |  |  |  |          |
| 7        | 623      | 1384              | 1.102                      | 400               | <input checked="" type="checkbox"/>                    |               |     |     |       |                     | ✓               |                 |  |  |  |          |
| 8        | 624      | 1406              | 1.546                      | 300               | <input checked="" type="checkbox"/>                    |               |     |     |       |                     |                 |                 |  |  |  |          |
| 9        | 625      | 1322              | 1.821                      | 250               | <input checked="" type="checkbox"/>                    |               |     |     |       |                     |                 |                 |  |  |  |          |
| 10       | 626      | 1373              | 2.229                      | 200               | <input checked="" type="checkbox"/>                    |               |     |     |       |                     |                 |                 |  |  |  |          |
| 11       | 627      | 1146              | 2.455                      | 175               | <input checked="" type="checkbox"/>                    |               |     |     |       |                     |                 |                 |  |  |  |          |
| 12       | 628      | 1386              | 2.766                      | 150               | <input checked="" type="checkbox"/>                    |               |     |     |       |                     |                 |                 |  |  |  |          |
| 13       | 629      | 0631              | 4.164                      | 125               | <input checked="" type="checkbox"/>                    |               |     |     |       |                     |                 |                 |  |  |  |          |
| 14       | 630      | 1414              | 5.714                      | 100               | <input checked="" type="checkbox"/>                    |               |     |     | ✓     |                     | ✓               |                 |  |  |  |          |
| 15       | 631      | 1397              | 6.581                      | 75                | <input checked="" type="checkbox"/>                    |               |     |     |       |                     |                 |                 |  |  |  |          |
| 16       | 632      | 1409              | 6.946                      | 50                | <input checked="" type="checkbox"/>                    |               |     |     |       |                     |                 |                 |  |  |  |          |
| 17       | 633      | 1326              | 7.026                      | 40                | <input checked="" type="checkbox"/>                    | ✓             |     |     |       |                     |                 |                 |  |  |  |          |
| 18       | 634      | 1123              | 6.080                      | 30                | <input checked="" type="checkbox"/>                    |               |     |     | ✓     |                     |                 |                 |  |  |  |          |
| 19       | 635      | 1411              | 6.068                      | 25                | <input checked="" type="checkbox"/>                    |               |     |     |       |                     |                 |                 |  |  |  |          |
| 20       | 636      | 1380              | 6.066                      | 20                | <input checked="" type="checkbox"/>                    |               |     |     |       |                     |                 |                 |  |  |  |          |
| 21       | 637      | 1144              | 6.009                      | 10                | <input checked="" type="checkbox"/>                    |               |     |     |       |                     |                 |                 |  |  |  |          |
| 22       | 638      | 1319              | 5.999                      | 5                 |                                                        |               |     |     |       |                     |                 |                 |  |  |  |          |
| 23       | 639      | 1404              | 6.027                      | 0                 |                                                        |               |     |     |       |                     |                 |                 |  |  |  |          |
| 24       |          |                   |                            |                   |                                                        |               |     |     |       |                     |                 |                 |  |  |  |          |

Watchkeeper(s): H.M.

Bottom Depth: 3316 m

Transmisso Cleaned: (Y) / N

|            | UTC  | Local |
|------------|------|-------|
| Time Start | 1713 |       |
| Bottom     | 1747 |       |
| End        | 1842 |       |

Positional Information

Start Lat: 49 ° 07.42 N  
Lon: 132 ° 39.97 W

Bottom Lat: 49 ° 07.40 N  
Lon: 132 ° 40.00 W

End Lat: 49 ° 07.42 N  
Lon: 132 ° 39.98 W

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

Version: 28 Feb 2008

Transmissometer to be cleaned before each cast, do not use Ammonia products

<http://www.pac.dfo-mpo.gc.ca/sci/osap/projects/waterproperties/>

17 633 1106 6.979 40

OXY - YELLOW CASE

NUTS YELLOW RACK

# Water Properties Group

## Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10

Station: P8

Event #: 74

Ship: TULLY

UTC Date (dd|mmm|yyyy): 1 | 09 | 09

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                    | Samples Taken |     |   |  | Sal | Chl a | NH <sub>4</sub> |  |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|--------------------|---------------|-----|---|--|-----|-------|-----------------|--|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed Pressure | Oxy           | Net |   |  |     |       |                 |  |  |  |  |          |
| 1        | 640      |                   |                            | 2000              | ✓                  | 2006          | ✓   | ✓ |  |     |       | ✓               |  |  |  |  |          |
| 2        | 641      |                   |                            | 1500              | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 3        | 642      |                   |                            | 1250              | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 4        | 643      |                   |                            | 1000              | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 5        | 644      |                   |                            | 800               | ✓                  |               |     | ✓ |  |     |       | ✓               |  |  |  |  |          |
| 6        | 645      |                   |                            | 600               | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 7        | 646      |                   |                            | 500               | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 8        | 647      |                   |                            | 400               | ✓                  |               |     | ✓ |  |     |       | ✓               |  |  |  |  |          |
| 9        | 648      |                   |                            | 300               | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 10       | 649      |                   |                            | 250               | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 11       | 650      |                   |                            | 200               | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 12       | 651      |                   |                            | 175               | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 13       | 652      |                   |                            | 150               | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 14       | 653      |                   |                            | 125               | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 15       | 654      |                   |                            | 100               | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 16       | 655      |                   |                            | 75                | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 17       | 656      |                   |                            | 50                | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 18       | 657      |                   |                            | 25                | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 19       | 658      |                   |                            | 10                | ✓                  |               |     |   |  |     |       |                 |  |  |  |  |          |
| 20       | 659      |                   |                            | 5                 | ✓                  |               |     | ✓ |  |     |       | ✓               |  |  |  |  |          |
| 21       |          |                   |                            |                   |                    |               |     |   |  |     |       |                 |  |  |  |  |          |
| 22       |          |                   |                            |                   |                    |               |     |   |  |     |       |                 |  |  |  |  |          |
| 23       |          |                   |                            |                   |                    |               |     |   |  |     |       |                 |  |  |  |  |          |
| 24       |          |                   |                            |                   |                    |               |     |   |  |     |       |                 |  |  |  |  |          |

Watchkeeper(s): H.M.

Bottom Depth: 2516 m

Transmisso Cleaned: ☒ Y ☐ N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 1621 |       |
| Bottom | 1653 |       |
| End    | 1746 |       |

Positional Information

Start

Lat: 48 ° 48.97 N

Lon: 128 ° 40.01 W

Bottom

Lat: 48 ° 48.97 N

Lon: 128 ° 40.05 W

End

Lat: 48 ° 48.97 N

Lon: 128 ° 39.98 W

Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible

# Water Properties Group

# Rosette Log

Institute of Ocean Sciences, Ocean Sciences Division, Sidney, BC

Cruise ID: 2009-10

Station: P4

Event #: 75

Ship: Tully

UTC Date (dd|mmm|yyyy): 2 | Sept | 2009

| Niskin # | Sample # | Oxygen Titrations |                            | Rosette Operation |                                                        | Samples Taken                       |                                     |     |       |                                     |                                     |  |  |  |  | Comments |
|----------|----------|-------------------|----------------------------|-------------------|--------------------------------------------------------|-------------------------------------|-------------------------------------|-----|-------|-------------------------------------|-------------------------------------|--|--|--|--|----------|
|          |          | Flask Serial #    | Value mL · L <sup>-1</sup> | Target Pressure   | Confirmed <input checked="" type="checkbox"/> Pressure | Oxy 18                              | Nut                                 | Sal | Chl a | NH <sub>4</sub>                     | vol                                 |  |  |  |  |          |
| 1        | 660      |                   |                            | 1300              | <input checked="" type="checkbox"/>                    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |     |       |                                     | <input checked="" type="checkbox"/> |  |  |  |  |          |
| 2        | 661      |                   |                            | 1250              | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 3        | 662      |                   |                            | 1000              | <input checked="" type="checkbox"/>                    |                                     | <input checked="" type="checkbox"/> |     |       |                                     | <input checked="" type="checkbox"/> |  |  |  |  |          |
| 4        | 663      |                   |                            | 800               | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 5        | 664      |                   |                            | 600               | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 6        | 665      |                   |                            | 500               | <input checked="" type="checkbox"/>                    |                                     | <input checked="" type="checkbox"/> |     |       |                                     | <input checked="" type="checkbox"/> |  |  |  |  |          |
| 7        | 666      |                   |                            | 400               | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 8        | 667      |                   |                            | 400               | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  | } JANET  |
| 9        | 668      |                   |                            | 400               | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 10       | 669      |                   |                            | 300               | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 11       | 670      |                   |                            | 250               | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 12       | 671      |                   |                            | 200               | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 13       | 672      |                   |                            | 175               | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 14       | 673      |                   |                            | 150               | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 15       | 674      |                   |                            | 125               | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 16       | 675      |                   |                            | 100               | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 17       | 676      |                   |                            | 75                | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 18       | 677      |                   |                            | 50                | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 19       | 678      |                   |                            | 25                | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 20       | 679      |                   |                            | 10                | <input checked="" type="checkbox"/>                    |                                     | <input checked="" type="checkbox"/> |     |       | <input checked="" type="checkbox"/> |                                     |  |  |  |  |          |
| 21       | 680      |                   |                            | 5                 | <input checked="" type="checkbox"/>                    |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 22       |          |                   |                            |                   |                                                        |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 23       |          |                   |                            |                   |                                                        |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |
| 24       |          |                   |                            |                   |                                                        |                                     |                                     |     |       |                                     |                                     |  |  |  |  |          |

Watchkeeper(s): SR

Bottom Depth: 1354 m

Transmisso Cleaned: ☒ Y / ☐ N

| Time   | UTC  | Local |
|--------|------|-------|
| Start  | 0506 |       |
| Bottom | 0524 |       |
| End    | 0602 |       |

## Positional Information

Start Lat: 48 ° 38.91 N  
Lon: 126 ° 39.94 W

Bottom Lat: 48 ° 38.90 N  
Lon: 126 ° 39.97 W

End Lat: 48 ° 39.02 N  
Lon: 126 ° 39.96 W

## Oxygen Info For This Cast

Blank Value: \_\_\_\_\_ mL · L<sup>-1</sup>

Std Value: \_\_\_\_\_ mL · L<sup>-1</sup>

\*Date Run: \_\_\_\_ | \_\_\_\_ | \_\_\_\_

Analyst: \_\_\_\_\_

\* Oxygen blanks and standards should be run daily, if possible