

# Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

Last Updated: July 2015



SWALLOW

| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                           | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments        |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|------------------------------------------|---------|-----------|---------|---------------|--------------|-----------------------|
| Cruise Number:                                                                 | 2016-10                        | 1       |              | 1         | 557     | 11.2          | 0.617        | - Should check flask volume.             | 1       |           |         |               |              |                       |
| Event:                                                                         | #2                             | 2       |              | 2         | 3025    | 11.1          | 0.642        | - Invalid flask ID? Used 557 to titrate. | 2       |           |         |               |              | > No Flask File! Duh! |
| Station:                                                                       | S1                             | 3       |              | 3         | 3192    | 11.8          | 2.814        |                                          | 3       |           |         |               |              |                       |
| Event Date (Local):                                                            | 22 Sept. 2016                  | 4       |              | 4         | 3040    | 12.2          | 3.380        |                                          | 4       |           |         |               |              |                       |
| Analysis Date (Local):                                                         | 22 Sept. 2016                  | 5       |              | 5A        | 3013    | 12.5          | 2.956        | =>                                       | 5       | 5B        | 3093    | 12.5          | 2.940        |                       |
| Analyst:                                                                       | KS                             | 6       |              | 6         | 3038    | 12.8          | 3.395        |                                          | 6       |           |         |               |              |                       |
| Stdization Date (Local):                                                       | 22 Sept. 2016                  | 7       |              | 7         | 768     | 13.1          | 3.266        |                                          | 7       |           |         |               |              |                       |
| KIO <sub>3</sub> N:                                                            | 0.0122698                      | 8       |              | 8         | 575     | 14.0          | 5.081        |                                          | 8       |           |         |               |              |                       |
| Standard Titer:                                                                | 0.52603                        | 9       |              | 9         | 611     | 15.3          | 6.700        |                                          | 9       |           |         |               |              |                       |
| Blank Titer:                                                                   | 0.00015                        | 10      |              |           |         |               |              |                                          | 10      |           |         |               |              |                       |
| THIO N:                                                                        | 0.23355                        | 11      |              |           |         |               |              |                                          | 11      |           |         |               |              |                       |
| Sample Flask Water Seal?                                                       | Yes                            | 12      |              |           |         |               |              |                                          | 12      |           |         |               |              |                       |
|                                                                                | No                             | 13      |              |           |         |               |              |                                          | 13      |           |         |               |              |                       |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |              |           |         |               |              |                                          | 14      |           |         |               |              |                       |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15      |              |           |         |               |              |                                          | 15      |           |         |               |              |                       |
|                                                                                | H <sub>2</sub> SO <sub>4</sub> | 16      |              |           |         |               |              |                                          | 16      |           |         |               |              |                       |
| NOTE NEW BATCH IN LOG BOOK                                                     | KIO <sub>3</sub>               | 17      |              |           |         |               |              |                                          | 17      |           |         |               |              |                       |
|                                                                                | THIO                           | 18      |              |           |         |               |              |                                          | 18      |           |         |               |              |                       |
| Notes:                                                                         |                                | 19      |              |           |         |               |              |                                          | 19      |           |         |               |              |                       |
|                                                                                |                                | 20      |              |           |         |               |              |                                          | 20      |           |         |               |              |                       |
|                                                                                |                                | 21      |              |           |         |               |              |                                          | 21      |           |         |               |              |                       |
|                                                                                |                                | 22      |              |           |         |               |              |                                          | 22      |           |         |               |              |                       |
|                                                                                |                                | 23      |              |           |         |               |              |                                          | 23      |           |         |               |              |                       |
|                                                                                |                                | 24      |              |           |         |               |              |                                          | 24      |           |         |               |              |                       |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.

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| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|----------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                 | 2016-10                        | 1       |              | 10        | 3053    | 10.1          | 3.077        |                | 1       |           |         |               |              |                |
| Event:                                                                         | 5                              | 2       |              | 11        | 745     | 10.1          | 3.069        |                | 2       |           |         |               |              |                |
| Station:                                                                       | 56                             | 3       |              | 12        | 3034    | 10.2          | 3.095        |                | 3       |           |         |               |              |                |
| Event Date (Local):                                                            | 22 SEPT 2016                   | 4       |              | 13A       | 612     | 10.2          | 3.124        | →              | 4       | 13B       | 2098    | 10.2          | 3.121        |                |
| Analysis Date (Local):                                                         | 22 SEPT 2016                   | 5       |              | 14        | 586     | 10.3          | 3.198        |                | 5       |           |         |               |              |                |
| Analyst:                                                                       | KS                             | 6       |              | 15        | 2099    | 10.4          | 3.262        |                | 6       |           |         |               |              |                |
| Stdization Date (Local):                                                       | 22 Sept. 2016                  | 7       |              | 16        | 3043    | 10.7          | 3.437        |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N:                                                            | 0.0122698                      | 8       |              | 17        | 3162    | 11.0          | 3.612        |                | 8       |           |         |               |              |                |
| Standard Titer:                                                                | 0.52603                        | 9       |              | 18A       | 3096    | 11.1          | 3.646        | →              | 9       | 18B       | 2097    | 11.1          | 3.645        |                |
| Blank Titer:                                                                   | 0.00015                        | 10      |              | 19        | 570     | 11.2          | 3.685        |                | 10      |           |         |               |              |                |
| THIO N:                                                                        | 0.23355                        | 11      |              | 20        | 3175    | 11.3          | 3.733        |                | 11      |           |         |               |              |                |
| Sample Flask Water Seal?                                                       | Yes                            | 12      |              | 21        | 3023    | 11.6          | 3.927        |                | 12      |           |         |               |              |                |
|                                                                                | No                             | 13      |              | 22        | 3161    | 11.8          | 3.987        |                | 13      |           |         |               |              |                |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |              | 23        | 3083    | 12.4          | 4.314        |                | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | Na/NaOH                        | 15      |              |           |         |               |              |                | 15      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> | 16      |              |           |         |               |              |                | 16      |           |         |               |              |                |
|                                                                                | KIO <sub>3</sub>               | 17      |              |           |         |               |              |                | 17      |           |         |               |              |                |
|                                                                                | THIO                           | 18      |              |           |         |               |              |                | 18      |           |         |               |              |                |
| Notes:                                                                         |                                | 19      |              |           |         |               |              |                | 19      |           |         |               |              |                |
|                                                                                |                                | 20      |              |           |         |               |              |                | 20      |           |         |               |              |                |
|                                                                                |                                | 21      |              |           |         |               |              |                | 21      |           |         |               |              |                |
|                                                                                |                                | 22      |              |           |         |               |              |                | 22      |           |         |               |              |                |
|                                                                                |                                | 23      |              |           |         |               |              |                | 23      |           |         |               |              |                |
|                                                                                |                                | 24      |              |           |         |               |              |                | 24      |           |         |               |              |                |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.

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| Cruise and Analysis Information                                                |  | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments      | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--|---------|--------------|-----------|---------|---------------|--------------|---------------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number: 2016-10                                                         |  | 1       |              | 28        | 1429    |               | 99.000       | bottle didn't close | 1       |           |         |               |              |                |
| Event: 14                                                                      |  | 2       |              | 29        | 94      | 10.0          | 2.757        |                     | 2       |           |         |               |              |                |
| Station: 16                                                                    |  | 3       |              | 30        | 1408    | 10.1          | 2.838        |                     | 3       |           |         |               |              |                |
| Event Date (Local): 23 SEPT 2016                                               |  | 4       |              | 31        | 1465    | 10.3          | 3.095        | ⇒                   | 4       | 31        | 3158    | 10.3          | 3.093        |                |
| Analysis Date (Local): 23 Sept. 2016                                           |  | 5       |              | 32        | 2025    | 10.5          | 3.246        |                     | 5       |           |         |               |              |                |
| Analyst: KS                                                                    |  | 6       |              | 33        | 2019    | 10.7          | 3.404        |                     | 6       |           |         |               |              |                |
| Stdization Date (Local): 22 Sept. 2016                                         |  | 7       |              | 34        | 2017    | 10.7          | 3.499        |                     | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0122698                                                  |  | 8       |              | 35        | 2016    | 10.9          | 3.646        |                     | 8       |           |         |               |              |                |
| Standard Titer: 0.52603                                                        |  | 9       |              | 36        | 2015    | 11.0          | 3.674        | ⇒                   | 9       | 36        | 2007    | 11.0          | 3.673        |                |
| Blank Titer: 0.00015                                                           |  | 10      |              | 37        | 2027    | 11.3          | 3.947        |                     | 10      |           |         |               |              |                |
| THIO N: 0.23355                                                                |  | 11      |              | 38        | 2032    | 11.7          | 4.109        |                     | 11      |           |         |               |              |                |
| Sample Flask Water Seal? Yes                                                   |  | 12      |              |           |         |               |              |                     | 12      |           |         |               |              |                |
|                                                                                |  | 13      |              |           |         |               |              |                     | 13      |           |         |               |              |                |
| Reagent Change? HhCl <sub>2</sub>                                              |  | 14      |              |           |         |               |              |                     | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) |  | 15      |              |           |         |               |              |                     | 15      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     |  | 16      |              |           |         |               |              |                     | 16      |           |         |               |              |                |
|                                                                                |  | 17      |              |           |         |               |              |                     | 17      |           |         |               |              |                |
|                                                                                |  | 18      |              |           |         |               |              |                     | 18      |           |         |               |              |                |
| Notes:                                                                         |  | 19      |              |           |         |               |              |                     | 19      |           |         |               |              |                |
|                                                                                |  | 20      |              |           |         |               |              |                     | 20      |           |         |               |              |                |
|                                                                                |  | 21      |              |           |         |               |              |                     | 21      |           |         |               |              |                |
|                                                                                |  | 22      |              |           |         |               |              |                     | 22      |           |         |               |              |                |
|                                                                                |  | 23      |              |           |         |               |              |                     | 23      |           |         |               |              |                |
|                                                                                |  | 24      |              |           |         |               |              |                     | 24      |           |         |               |              |                |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.

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| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L)     | OXY-1 Comments                    | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|------------------|-----------------------------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                 | 2016-10                        | 1       |              | 40        | 3079    | 10.1          | 2.775            |                                   | 1       |           |         |               |              |                |
| Event:                                                                         | 17                             | 2       |              | 41        | 456     | 10.1          | 2.696            |                                   | 2       |           |         |               |              |                |
| Station:                                                                       | 14                             | 3       |              | 42        | 1406    | 10.1          | 2.706            |                                   | 3       |           |         |               |              |                |
| Event Date (Local):                                                            | 23 Sept. 2016                  | 4       |              | 43A       | 471     | 10.1          | 2.696            | ⇒                                 | 4       | 43B       | 196     | 10.1          | 2.696        |                |
| Analysis Date (Local):                                                         | 23 Sept. 2016                  | 5       |              | 44        | 3078    | 10.1          | 2.679            |                                   | 5       |           |         |               |              |                |
| Analyst:                                                                       | KS                             | 6       |              | 45        | 3050    | 10.1          | <del>2.579</del> | 2.609                             | 6       |           |         |               |              |                |
| Stdization Date (Local):                                                       | 22 Sept. 2016                  | 7       |              | 46        | 3005    | 10.3          | 2.843            | Abundant recorded by SPARE???     | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N:                                                            | 0.0122698                      | 8       |              | 47        | 712     | 10.9          | 3.449            | Incorrect Flask ID. and Sample ID | 8       |           |         |               |              |                |
| Standard Titer:                                                                | 0.52603                        | 9       |              | 48        | 3073    | 11.2          | 3.702            |                                   | 9       |           |         |               |              |                |
| Blank Titer:                                                                   | 0.00015                        | 10      |              | 49        | 1055    | 11.3          | <del>2.604</del> | 3.813                             | 10      |           |         |               |              |                |
| THIO N:                                                                        | 0.23355                        | 11      |              | 50A       | 396     | 11.5          | 3.892            |                                   | 11      | 50B       | 2089    | 11.5          | 3.893        |                |
| Sample Flask Water Seal?                                                       | Yes                            | 12      |              | 51        | 439     | 12.2          | 4.359            |                                   | 12      |           |         |               |              |                |
|                                                                                | No                             | 13      |              | 52        | 2060    | 12.3          | 4.365            |                                   | 13      |           |         |               |              |                |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |              | 53        | 2065    | 13.5          | 5.832            |                                   | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15      |              | 54        | 3081    | 14.3          | 6.172            | top cap didn't seal               | 15      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> | 16      |              |           |         |               |                  |                                   | 16      |           |         |               |              |                |
|                                                                                | KIO <sub>3</sub>               | 17      |              |           |         |               |                  |                                   | 17      |           |         |               |              |                |
|                                                                                | THIO                           | 18      |              |           |         |               |                  |                                   | 18      |           |         |               |              |                |
| Notes:                                                                         |                                | 19      |              |           |         |               |                  |                                   | 19      |           |         |               |              |                |
|                                                                                |                                | 20      |              |           |         |               |                  |                                   | 20      |           |         |               |              |                |
|                                                                                |                                | 21      |              |           |         |               |                  |                                   | 21      |           |         |               |              |                |
|                                                                                |                                | 22      |              |           |         |               |                  |                                   | 22      |           |         |               |              |                |
|                                                                                |                                | 23      |              |           |         |               |                  |                                   | 23      |           |         |               |              |                |
|                                                                                |                                | 24      |              |           |         |               |                  |                                   | 24      |           |         |               |              |                |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.

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| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                     | Nisk ID | Sample ID      | Flask 2         | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments                         |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|------------------------------------|---------|----------------|-----------------|---------------|--------------|----------------------------------------|
| Cruise Number:                                                                 | 2016-10                        | 1       |              | 56        | 557     | 10.2          | 2.725        |                                    | 1       |                |                 |               |              |                                        |
| Event:                                                                         | 22                             | 2       |              | 57        | 3025    | 10.2          | 2.781        |                                    | 2       |                |                 |               |              |                                        |
| Station:                                                                       | 12                             | 3       |              | 58        | 3192    | 10.2          | 2.808        |                                    | 3       |                |                 |               |              |                                        |
| Event Date (Local):                                                            | 23 Sept. 2016                  | 4       |              | 59        | 3040    | 10.3          | 2.893        |                                    | 4       |                |                 |               |              |                                        |
| Analysis Date (Local):                                                         | 23 Sept. 2016                  | 5       |              | 60A       | 3013    | 10.3          | 2.918        | ⇒                                  | 5       | 60B            | 3093            | 10.3          | 2.913        |                                        |
| Analyst:                                                                       | KS                             | 6       |              | 61        | 3038    | 10.3          | 2.943        |                                    | 6       |                |                 |               |              |                                        |
| Stdization Date (Local):                                                       | 22 Sept. 2016                  | 7       |              | 62        | 708     | 10.3          | 2.957        |                                    | 7       |                |                 |               |              |                                        |
| KIO <sub>3</sub> N:                                                            | 0.0122698                      | 8       |              | 63        | 575     | 10.2          | 2.828        |                                    | 8       |                |                 |               |              |                                        |
| Standard Titer:                                                                | 0.52603                        | 9       |              | 64        | 611     | 10.2          | 2.826        |                                    | 9       |                |                 |               |              |                                        |
| Blank Titer:                                                                   | 0.00015                        | 10      |              | 65        | 510     | 10.5          | 2.986        |                                    | 10      |                |                 |               |              |                                        |
| THIO N:                                                                        | 0.23355                        | 11      |              | 66A       | 3053    | 11.0          | 3.260        | ⇒                                  | 11      | 66B            | 3034            | 10.9          | 3.257        | -moved dup from 67 bot 12 to 66 bot 11 |
| Sample Flask Water Seal?                                                       | Yes<br>No                      | 12      |              | 67A       | 745     | -             | -            | ✗ Bottle closed in the air (empty) | 12      | <del>67B</del> | <del>3039</del> | -             | -            |                                        |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 13      |              | 68        | 612     | 12.8          | 4.532        |                                    | 13      |                |                 |               |              |                                        |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 14      |              | 69        | 2098    | 14.8          | 6.210        |                                    | 14      |                |                 |               |              |                                        |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> | 15      |              | 70        | 586     | 15.0          | 6.368        |                                    | 15      |                |                 |               |              |                                        |
|                                                                                | KIO <sub>3</sub>               | 16      |              | 71        | 2099    | 15.5          | 6.357        |                                    | 16      |                |                 |               |              |                                        |
|                                                                                | THIO                           | 17      |              |           |         |               |              |                                    | 17      |                |                 |               |              |                                        |
| Notes:                                                                         |                                | 18      |              |           |         |               |              |                                    | 18      |                |                 |               |              |                                        |
|                                                                                |                                | 19      |              |           |         |               |              |                                    | 19      |                |                 |               |              |                                        |
|                                                                                |                                | 20      |              |           |         |               |              |                                    | 20      |                |                 |               |              |                                        |
|                                                                                |                                | 21      |              |           |         |               |              |                                    | 21      |                |                 |               |              |                                        |
|                                                                                |                                | 22      |              |           |         |               |              |                                    | 22      |                |                 |               |              |                                        |
|                                                                                |                                | 23      |              |           |         |               |              |                                    | 23      |                |                 |               |              |                                        |
|                                                                                |                                | 24      |              |           |         |               |              |                                    | 24      |                |                 |               |              |                                        |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.

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| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                          | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|-----------------------------------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                 | 2016-10                        | 1       |              | 86        | 557     | 11.0          | 3.560        | - bubbles during string, maybe too high | 1       |           |         |               |              |                |
| Event:                                                                         | 26                             | 2       |              | 87        | 3025    | 11.1          | 3.563        |                                         | 2       |           |         |               |              |                |
| Station:                                                                       | BS17                           | 3       |              | 88        | 3192    | 11.1          | 3.601        |                                         | 3       |           |         |               |              |                |
| Event Date (Local):                                                            | 23 Sept. 2016                  | 4       |              | 89A       | 3040    | 11.3          | 3.721 =>     |                                         | 4       | 89B       | 3013    | 11.3          | 3.722        |                |
| Analysis Date (Local):                                                         | 24 Sept. 2016                  | 5       |              | 90        | 3093    | 11.7          | 3.896        |                                         | 5       |           |         |               |              |                |
| Analyst:                                                                       | N2                             | 6       |              | 91        | 3038    | 12.4          | 4.970        |                                         | 6       |           |         |               |              |                |
| Stdization Date (Local):                                                       |                                | 7       |              | 92        | 708     | 12.6          | 5.517        |                                         | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N:                                                            | 0.122698                       | 8       |              | 93        | 573     | 12.8          | 5.622        |                                         | 8       |           |         |               |              |                |
| Standard Titer:                                                                | 0.526                          | 9       |              |           |         |               |              |                                         | 9       |           |         |               |              |                |
| Blank Titer:                                                                   | 0.000                          | 10      |              |           |         |               |              |                                         | 10      |           |         |               |              |                |
| THIO N:                                                                        | 0.23355                        | 11      |              |           |         |               |              |                                         | 11      |           |         |               |              |                |
| Sample Flask                                                                   | Yes                            | 12      |              |           |         |               |              |                                         | 12      |           |         |               |              |                |
| Water Seal?                                                                    | No                             | 13      |              |           |         |               |              |                                         | 13      |           |         |               |              |                |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |              |           |         |               |              |                                         | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15      |              |           |         |               |              |                                         | 15      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> | 16      |              |           |         |               |              |                                         | 16      |           |         |               |              |                |
|                                                                                | KIO <sub>3</sub>               | 17      |              |           |         |               |              |                                         | 17      |           |         |               |              |                |
|                                                                                | THIO                           | 18      |              |           |         |               |              |                                         | 18      |           |         |               |              |                |
| Notes:                                                                         |                                | 19      |              |           |         |               |              |                                         | 19      |           |         |               |              |                |
|                                                                                |                                | 20      |              |           |         |               |              |                                         | 20      |           |         |               |              |                |
|                                                                                |                                | 21      |              |           |         |               |              |                                         | 21      |           |         |               |              |                |
|                                                                                |                                | 22      |              |           |         |               |              |                                         | 22      |           |         |               |              |                |
|                                                                                |                                | 23      |              |           |         |               |              |                                         | 23      |           |         |               |              |                |
|                                                                                |                                | 24      |              |           |         |               |              |                                         | 24      |           |         |               |              |                |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.



Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
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Last Updated: July 2015



| Cruise and Analysis Information                                                |  |  |  |  |  |  | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--|--|--|--|--|--|---------|--------------|-----------|---------|---------------|--------------|-------------------------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number: 2016-10                                                         |  |  |  |  |  |  | 1       |              | 95        | 510     | 10.2          | 2.798        |                               | 1       |           |         |               |              |                |
| Event: 29                                                                      |  |  |  |  |  |  | 2       |              | 96        | 3083    | 10.2          | 2.798        |                               | 2       |           |         |               |              |                |
| Station: 6                                                                     |  |  |  |  |  |  | 3       |              | 97        | 745     | 10.3          | 2.887        |                               | 3       |           |         |               |              |                |
| Event Date (Local): 24 SEPT 2016                                               |  |  |  |  |  |  | 4       |              | 98        | 3034    | 10.2          | 2.891        | →                             | 4       | 98        | 612     | 10.2          | 2.891        |                |
| Analysis Date (Local): 24 SEPT 2016                                            |  |  |  |  |  |  | 5       |              | 99        | 2098    | 10.8          | 2.872        |                               | 5       |           |         |               |              |                |
| Analyst: NZ                                                                    |  |  |  |  |  |  | 6       |              | 100       | 586     | 10.5          | 2.874        |                               | 6       |           |         |               |              |                |
| Stdization Date (Local): 27 Sep 2016                                           |  |  |  |  |  |  | 7       |              | 101       | 2099    | 10.8          | 3.308        |                               | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.122698                                                   |  |  |  |  |  |  | 8       |              | 102       | 3043    | 11.7          | 3.521        |                               | 8       |           |         |               |              |                |
| Standard Titer: 0.526                                                          |  |  |  |  |  |  | 9       |              | 103       | 3162    | 11.3          | 3.585        | → B <sub>4</sub> min before A | 9       | 103       | 3096    | 11.3          | 3.581        |                |
| Blank Titer: 0.000                                                             |  |  |  |  |  |  | 10      |              | 104       | 2097    | 11.7          | 3.696        |                               | 10      |           |         |               |              |                |
| THIO N: 0.23335                                                                |  |  |  |  |  |  | 11      |              | 105       | 570     | 13.6          | 5.255        |                               | 11      |           |         |               |              |                |
| Sample Flask Water Seal? Yes                                                   |  |  |  |  |  |  | 12      |              | 106       | 3175    | 14.6          | 6.098        |                               | 12      |           |         |               |              |                |
| Water Seal? No                                                                 |  |  |  |  |  |  | 13      |              | 107       | 3023    | 15.0          | 6.163        |                               | 13      |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                              |  |  |  |  |  |  | 14      |              |           |         |               |              |                               | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) |  |  |  |  |  |  | 15      |              |           |         |               |              |                               | 15      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     |  |  |  |  |  |  | 16      |              |           |         |               |              |                               | 16      |           |         |               |              |                |
|                                                                                |  |  |  |  |  |  | 17      |              |           |         |               |              |                               | 17      |           |         |               |              |                |
|                                                                                |  |  |  |  |  |  | 18      |              |           |         |               |              |                               | 18      |           |         |               |              |                |
| Notes:                                                                         |  |  |  |  |  |  | 19      |              |           |         |               |              |                               | 19      |           |         |               |              |                |
|                                                                                |  |  |  |  |  |  | 20      |              |           |         |               |              |                               | 20      |           |         |               |              |                |
|                                                                                |  |  |  |  |  |  | 21      |              |           |         |               |              |                               | 21      |           |         |               |              |                |
|                                                                                |  |  |  |  |  |  | 22      |              |           |         |               |              |                               | 22      |           |         |               |              |                |
|                                                                                |  |  |  |  |  |  | 23      |              |           |         |               |              |                               | 23      |           |         |               |              |                |
|                                                                                |  |  |  |  |  |  | 24      |              |           |         |               |              |                               | 24      |           |         |               |              |                |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.

# Dissolved Oxygen Analysis Log Sheet

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Water Properties Group

Last Updated: July 2015



| Cruise and Analysis Information                                                |                                               | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                               | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|-----------------------------------------------|---------|--------------|-----------|---------|---------------|--------------|----------------------------------------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                 | 2016-10                                       | 1       |              | 129       | 557     | 99.0          | 99.000       | Bottle 1 did not trip -> changed tag to 008C | 1       |           |         |               |              |                |
| Event:                                                                         | 36                                            | 2       |              | 130       | 3025    | 10.2          | 2.857        |                                              | 2       |           |         |               |              |                |
| Station:                                                                       | 2                                             | 3       |              | 131       | 3192    | 10.3          | 2.870        |                                              | 3       |           |         |               |              |                |
| Event Date (Local):                                                            | Sept 24 2016                                  | 4       |              | 132       | 3040    | 10.3          | 2.910        |                                              | 4       |           |         |               |              |                |
| Analysis Date (Local):                                                         | 24 Sept 2016                                  | 5       |              | 133A      | 3013    | 10.4          | 2.927        | -D                                           | 5       | 133B      | 3093    | 10.5          | 2.919        |                |
| Analyst:                                                                       | KS                                            | 6       |              | 134       | 3038    | 10.5          | 2.972        |                                              | 6       |           |         |               |              |                |
| Stdization Date (Local):                                                       | 24 Sept 2016                                  | 7       |              | 135       | 708     | 10.6          | 2.969        |                                              | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N:                                                            | 0.0119758                                     | 8       |              | 136       | 575     | 10.5          | 3.049        |                                              | 8       |           |         |               |              |                |
| Standard Titer:                                                                | 0.51313                                       | 9       |              | 137       | 611     | 10.6          | 3.070        |                                              | 9       |           |         |               |              |                |
| Blank Titer:                                                                   | 0.00024                                       | 10      |              | 138       | 510     | 10.7          | 3.071        |                                              | 10      |           |         |               |              |                |
| THIO N:                                                                        | 0.23371                                       | 11      |              | 139       | 3053    | 10.8          | 3.054        | ->                                           | 11      | 745       | 10.8    |               | 3.051        |                |
| Sample Flask Water Seal?                                                       | Yes                                           | 12      |              | 140       | 3034    | 11.3          | 3.327        | -D                                           | 12      | 141       |         |               |              |                |
| Reagent Change?                                                                | MnCl <sub>2</sub>                             | 13      |              | 141       | 612     | 13.3          | 5.158        |                                              | 13      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                                      | 14      |              | 142       | 2098    | 11.0          | 5.787        | redrawn 13.8°C on redraw                     | 14      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub>                | 15      |              | 143       | 586     | 14.2          | 5.821        |                                              | 15      |           |         |               |              |                |
|                                                                                | KIO <sub>3</sub>                              | 16      |              |           |         |               |              |                                              | 16      |           |         |               |              |                |
|                                                                                | THIO                                          | 17      |              |           |         |               |              |                                              | 17      |           |         |               |              |                |
| Notes:                                                                         | Re-standardized prior to analyzing this cast. | 18      |              |           |         |               |              |                                              | 18      |           |         |               |              |                |
|                                                                                |                                               | 19      |              |           |         |               |              |                                              | 19      |           |         |               |              |                |
|                                                                                |                                               | 20      |              |           |         |               |              |                                              | 20      |           |         |               |              |                |
|                                                                                |                                               | 21      |              |           |         |               |              |                                              | 21      |           |         |               |              |                |
|                                                                                |                                               | 22      |              |           |         |               |              |                                              | 22      |           |         |               |              |                |
|                                                                                |                                               | 23      |              |           |         |               |              |                                              | 23      |           |         |               |              |                |
|                                                                                |                                               | 24      |              |           |         |               |              |                                              | 24      |           |         |               |              |                |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.



# Dissolved Oxygen Analysis Log Sheet

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Lochness

Last Updated: July 2015



| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                     | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|------------------------------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                 | 2016-10                        | 1       |              | 148       | 3079    | 10.7          | 2.917        | 148                                | 1       |           |         |               |              |                |
| Event:                                                                         | 44                             | 2       |              | 147       | 1456    | 10.7          | 2.951        | 149                                | 2       |           |         |               |              |                |
| Station:                                                                       | 27                             | 3       |              | 146       | 1406    | 10.8          | 2.953        | 1406 150                           | 3       |           |         |               |              |                |
| Event Date (Local):                                                            | 24 Sept. 2016                  | 4       |              | 145       | 1471    | 10.7          | 2.931        | 151                                | 4       |           |         |               |              |                |
| Analysis Date (Local):                                                         | 24 Sept 2016                   | 5       |              | 144A      | 196     | 10.8          | 2.983        | → 152A                             | 5       | 144B      | 3078    | 10.8          | 2.984        | 152B           |
| Analyst:                                                                       | KS                             | 6       |              | 143       | 3050    | 10.9          | 3.009        | 153                                | 6       |           |         |               |              |                |
| Stdization Date (Local):                                                       | 24 Sept. 2016                  | 7       |              | 142       | 3005    | 11.0          | 3.062        | 154                                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N:                                                            | 0.0119758                      | 8       |              | 141       | 712     | 11.0          | 3.051        | 155                                | 8       |           |         |               |              |                |
| Standard Titer:                                                                | 0.51313                        | 9       |              | 140       | 3073    | 10.9          | 3.122        | 156 157                            | 9       |           |         |               |              |                |
| Blank Titer:                                                                   | 0.00024                        | 10      |              | 139       | 1055    | 10.7          | 3.141        | Bottle cap didn't close completely | 10      |           |         |               |              |                |
| THIO N:                                                                        | 0.23371                        | 11      |              | 138       | 396     | 11.0          | 3.039        | 158                                | 11      |           |         |               |              |                |
| Sample Flask Water Seal?                                                       | Yes                            | 12      |              | 137       | 2089    | 11.2          | 3.179        | 159                                | 12      |           |         |               |              |                |
|                                                                                | No                             | 13      |              | 136A      | 439     | 12.3          | 4.022        | → 160A                             | 13      | 136B      | 2060    | 12.3          |              | 160B           |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |              | 135       | 2065    | 13.2          | 4.967        | 161                                | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15      |              | 134       | 3081    | 13.5          | 5.216        | 162                                | 15      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> | 16      |              | 133       | 5005    | 14.2          | 5.779        | 163                                | 16      |           |         |               |              |                |
|                                                                                | KIO <sub>3</sub>               | 17      |              |           |         |               |              |                                    | 17      |           |         |               |              |                |
|                                                                                | THIO                           | 18      |              |           |         |               |              |                                    | 18      |           |         |               |              |                |
| Notes:                                                                         |                                | 19      |              |           |         |               |              |                                    | 19      |           |         |               |              |                |
|                                                                                |                                | 20      |              |           |         |               |              |                                    | 20      |           |         |               |              |                |
|                                                                                |                                | 21      |              |           |         |               |              |                                    | 21      |           |         |               |              |                |
|                                                                                |                                | 22      |              |           |         |               |              |                                    | 22      |           |         |               |              |                |
|                                                                                |                                | 23      |              |           |         |               |              |                                    | 23      |           |         |               |              |                |
|                                                                                |                                | 24      |              |           |         |               |              |                                    | 24      |           |         |               |              |                |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.

# Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
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Jaws

Last Updated: July 2015



| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments              | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|-----------------------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                 | 2016-10                        | 1       |              | 171       | 1429    | 10.6          | 2.839        |                             | 1       |           |         |               |              |                |
| Event:                                                                         | 51                             | 2       |              |           |         |               |              |                             | 2       |           |         |               |              |                |
| Station:                                                                       | 39                             | 3       |              | 173       | 94      | 10.5          | 2.873        |                             | 3       |           |         |               |              |                |
| Event Date (Local):                                                            | 24 Sept. 2016                  | 4       |              | 174       | 1408    | 10.6          | 2.909        | -lots of floaters in sample | 4       |           |         |               |              |                |
| Analysis Date (Local):                                                         | 24 Sept. 2016                  | 5       |              | 175       | 1465    | 10.7          | 2.941        |                             | 5       |           |         |               |              |                |
| Analyst:                                                                       | KS                             | 6       |              | 176A      | 3158    | 10.7          | 2.970        | =>                          | 6       | 176B      | 2025    | 10.7          | 2.968        |                |
| Stdization Date (Local):                                                       | 24 Sept. 2016                  | 7       |              | 177       | 2019    | 10.8          | 3.004        |                             | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N:                                                            | 0.0119758                      | 8       |              | 178       | 2017    | 11.0          | 3.078        |                             | 8       |           |         |               |              |                |
| Standard Titer:                                                                | 0.51313                        | 9       |              | 179       | 2016    | 11.1          | 3.104        |                             | 9       |           |         |               |              |                |
| Blank Titer:                                                                   | 0.00024                        | 10      |              | 180       | 2015    | 11.1          | 3.131        |                             | 10      |           |         |               |              |                |
| THIO N:                                                                        | 0.23371                        | 11      |              |           |         |               |              |                             | 11      |           |         |               |              |                |
| Sample Flask Water Seal?                                                       | Yes                            | 12      |              | 182       | 2007    | 11.0          | 3.183        |                             | 12      |           |         |               |              |                |
|                                                                                | No                             | 13      |              | 183       | 2027    | 10.8          | 3.202        |                             | 13      |           |         |               |              |                |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |              |           |         |               |              |                             | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | NaOH                           | 15      |              | 185       | 2032    | 11.0          | 3.254        |                             | 15      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> | 16      |              | 186A      | 2043    | 11.3          | 3.415        | =>                          | 16      | 186B      | 2040    | 11.3          | 3.412        |                |
|                                                                                | KIO <sub>3</sub>               | 17      |              | 187       | 2051    | 11.8          | 3.649        |                             | 17      |           |         |               |              |                |
|                                                                                | THIO                           | 18      |              |           |         |               |              |                             | 18      |           |         |               |              |                |
| Notes:                                                                         |                                | 19      |              | 189       | 2047    | 13.3          | 5.118        |                             | 19      |           |         |               |              |                |
|                                                                                |                                | 20      |              | 190       | 3033    | 14.1          | 6.227        |                             | 20      |           |         |               |              |                |
|                                                                                |                                | 21      |              | 191       | 3032    | 14.4          | 6.464        |                             | 21      |           |         |               |              |                |
|                                                                                |                                | 22      |              |           |         |               |              |                             | 22      |           |         |               |              |                |
|                                                                                |                                | 23      |              |           |         |               |              |                             | 23      |           |         |               |              |                |
|                                                                                |                                | 24      |              |           |         |               |              |                             | 24      |           |         |               |              |                |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.

# Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

SWALLOW

Last Updated: July 2015



| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments                                |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|----------------|---------|-----------|---------|---------------|--------------|-----------------------------------------------|
| Cruise Number:                                                                 | 2016-10                        | 1       |              | 193       | 557     | 10.3          | 2.800        |                | 1       |           |         |               |              |                                               |
| Event:                                                                         | 58                             | 2       |              | 194       | 3025    | 10.4          | 2.819        |                | 2       |           |         |               |              |                                               |
| Station:                                                                       | 412                            | 3       |              | 195       | 3192    | 10.4          | 2.928        |                | 3       |           |         |               |              |                                               |
| Event Date (Local):                                                            | 24 SEPT 2016                   | 4       |              | 196       | 3040    | 10.5          | 2.976        |                | 4       |           |         |               |              |                                               |
| Analysis Date (Local):                                                         | 25 SEPT 2016                   | 5       |              | 197       | 3013    | 10.6          | 3.001        |                | 5       |           |         |               |              |                                               |
| Analyst:                                                                       | NZ                             | 6       |              | 198       | 3093    | 10.7          | 3.036        |                | 6       |           |         |               |              |                                               |
| Stdization Date (Local):                                                       | 25 SEPT 2016                   | 7       |              | 199A      | 3038    | 10.8          | 3.117        | ⇒              | 7       | 199B      | 708     | 10.8          | 3.118        |                                               |
| KIO <sub>3</sub> N:                                                            | 0.0119758                      | 8       |              | 200       | 575     | 10.9          | 3.174        |                | 8       |           |         |               |              |                                               |
| Standard Titer:                                                                | 0.51309                        | 9       |              | 201       | 611     | 10.9          | 3.209        |                | 9       |           |         |               |              |                                               |
| Blank Titer:                                                                   | 0.0002                         | 10      |              | 202       | 510     | 10.8          | 3.243        |                | 10      |           |         |               |              |                                               |
| THIO N:                                                                        | 0.233724                       | 11      |              | 203       | 3053    | 10.8          | 3.242        | ← missample?   | 11      |           |         |               |              |                                               |
| Sample Flask                                                                   | Yes                            | 12      |              | 204A      | 745     | 11.0          | 3.262        | ⇒ w            | 12      | 204B      | 3034    | 11.0          | 3.244        | initially started with burette not in sample! |
| Water Seal?                                                                    | No                             | 13      |              | 205       | 612     | 11.3          | 3.314        |                | 13      |           |         |               |              |                                               |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |              | 206       | 2098    | 12.2          | 3.678        |                | 14      |           |         |               |              |                                               |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15      |              | 207       | 586     | 13.7          | 4.927        |                | 15      |           |         |               |              |                                               |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> | 16      |              | 208       | 2099    | 15.1          | 6.156        |                | 16      |           |         |               |              |                                               |
|                                                                                | KIO <sub>3</sub>               | 17      |              |           |         |               |              |                | 17      |           |         |               |              |                                               |
|                                                                                | THIO                           | 18      |              |           |         |               |              |                | 18      |           |         |               |              |                                               |
| Notes:                                                                         |                                | 19      |              |           |         |               |              |                | 19      |           |         |               |              |                                               |
|                                                                                |                                | 20      |              |           |         |               |              |                | 20      |           |         |               |              |                                               |
|                                                                                |                                | 21      |              |           |         |               |              |                | 21      |           |         |               |              |                                               |
|                                                                                |                                | 22      |              |           |         |               |              |                | 22      |           |         |               |              |                                               |
|                                                                                |                                | 23      |              |           |         |               |              |                | 23      |           |         |               |              |                                               |
|                                                                                |                                | 24      |              |           |         |               |              |                | 24      |           |         |               |              |                                               |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.

# Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences,  
Water Properties Group

Last Updated: July 2015



| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments       | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments          |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|----------------------|---------|-----------|---------|---------------|--------------|-------------------------|
| Cruise Number:                                                                 | 2016-10                        | 1       |              | 210       | 1429    | 10.9          | 3.240        |                      | 1       |           |         |               |              |                         |
| Event:                                                                         | 63                             | 2       |              | 211       | 94      | 11.0          | 3.262        |                      | 2       |           |         |               |              |                         |
| Station:                                                                       | 46                             | 3       |              | 212A      | 1408    | 10.9          | 3.314        | →                    | 3       | 212B      | 1465    | 3.301         |              |                         |
| Event Date (Local):                                                            | 25 SEPT 2016                   | 4       |              | 213       | 3158    | 11.1          | 3.445        |                      | 4       |           |         |               |              |                         |
| Analysis Date (Local):                                                         | 25 SEPT 2016                   | 5       |              | 214       | 2025    | 11.0          | 3.315        |                      | 5       |           |         |               |              |                         |
| Analyst:                                                                       | N2                             | 6       |              | 215       | 2019    | 11.0          | 3.359        |                      | 6       |           |         |               |              |                         |
| Stdization Date (Local):                                                       | 25 SEPT                        | 7       |              | 216       | 2017    | 11.0          | 3.385        |                      | 7       |           |         |               |              |                         |
| KIO <sub>3</sub> N:                                                            | 0.11976                        | 8       |              | 217A      | 2016    | 11.1          | 3.396        | →                    | 8       | 217B      | 2015    | 11.1          | 3.393        | wrong draw temp entered |
| Standard Titer:                                                                | 0.51309                        | 9       |              | 218       | 2007    | 11.2          | 3.812        | big bubble in sample | 9       |           |         |               |              |                         |
| Blank Titer:                                                                   | 0.0002                         | 10      |              | 219       | 2021    | 11.3          | 3.610        |                      | 10      |           |         |               |              |                         |
| THIO N:                                                                        | 0.233721                       | 11      |              | 220       | 2082    | 12.7          | 4.468        |                      | 11      |           |         |               |              |                         |
| Sample Flask Water Seal?                                                       | Yes                            | 12      |              | 221       | 2043    | 13.1          | 4.679        |                      | 12      |           |         |               |              |                         |
|                                                                                | No                             | 13      |              | 222       | 2073    | 13.1          |              |                      | 13      |           |         |               |              |                         |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |              |           |         |               |              | forgot to enter some | 14      |           |         |               |              |                         |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15      |              |           |         |               |              | draw temps           | 15      |           |         |               |              |                         |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> | 16      |              |           |         |               |              |                      | 16      |           |         |               |              |                         |
|                                                                                | KIO <sub>3</sub>               | 17      |              |           |         |               |              |                      | 17      |           |         |               |              |                         |
|                                                                                | THIO                           | 18      |              |           |         |               |              |                      | 18      |           |         |               |              |                         |
| Notes:                                                                         |                                | 19      |              |           |         |               |              |                      | 19      |           |         |               |              |                         |
|                                                                                |                                | 20      |              |           |         |               |              |                      | 20      |           |         |               |              |                         |
|                                                                                |                                | 21      |              |           |         |               |              |                      | 21      |           |         |               |              |                         |
|                                                                                |                                | 22      |              |           |         |               |              |                      | 22      |           |         |               |              |                         |
|                                                                                |                                | 23      |              |           |         |               |              |                      | 23      |           |         |               |              |                         |
|                                                                                |                                | 24      |              |           |         |               |              |                      | 24      |           |         |               |              |                         |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.

# Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

Loch Ness In data file 06301.1st

Last Updated: July 2015



| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments       |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|----------------|---------|-----------|---------|---------------|--------------|----------------------|
| Cruise Number:                                                                 | 2016-10                        | 1       |              | 223       | 307     | 9.5           | 2.452        |                | 1       |           |         |               |              |                      |
| Event:                                                                         | 74                             | 2       |              | 224A      | 456     | 9.5           | 2.450        | →              | 2       | 224B      | 1406    | 9.4           | 2.445        |                      |
| Station:                                                                       | 62                             | 3       |              | 225       | 471     | 10.1          | 2.799        |                | 3       |           |         |               |              |                      |
| Event Date (Local):                                                            | Sept 25 2016                   | 4       |              | 226       | 196     | 10.4          | 3.019        |                | 4       |           |         |               |              | (empty bottle)       |
| Analysis Date (Local):                                                         | 25 Sept. 2016                  | 5       |              | 227       | 3078    | 10.8          | 3.122        |                | 5       |           |         |               |              |                      |
| Analyst:                                                                       | KS                             | 6       |              | 228       | 3050    | 10.8          | 3.258        |                | 6       |           |         |               |              |                      |
| Stdization Date (Local):                                                       | 25 Sept. 2016                  | 7       |              | 229       | 3005    | 11.2          | 3.439        |                | 7       |           |         |               |              |                      |
| KIO <sub>3</sub> N:                                                            | 0.0119758                      | 8       |              | 230       | 712     | 11.3          | 3.523        |                | 8       |           |         |               |              |                      |
| Standard Titer:                                                                | 0.51309                        | 9       |              | 231       | 3073    | 11.5          | 3.754        |                | 9       |           |         |               |              |                      |
| Blank Titer:                                                                   | 0.00024                        | 10      |              | 232       | 1055    | 11.7          | 3.948        |                | 10      |           |         |               |              |                      |
| THIO N:                                                                        | 0.23372                        | 11      |              | 233A      | 396     | 11.7          | 3.992        | →              | 11      | 233B      | 2089    | 12.5          | 3.995        | - sample d "B" first |
| Sample Flask Water Seal?                                                       | Yes                            | 12      |              |           |         |               |              |                | 12      |           |         |               |              |                      |
|                                                                                | No                             | 13      |              |           |         |               |              |                | 13      |           |         |               |              |                      |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |              |           |         |               |              |                | 14      |           |         |               |              |                      |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15      |              |           |         |               |              |                | 15      |           |         |               |              |                      |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> | 16      |              |           |         |               |              |                | 16      |           |         |               |              |                      |
|                                                                                | KIO <sub>3</sub>               | 17      |              |           |         |               |              |                | 17      |           |         |               |              |                      |
|                                                                                | THIO                           | 18      |              |           |         |               |              |                | 18      |           |         |               |              |                      |
| Notes:                                                                         |                                | 19      |              |           |         |               |              |                | 19      |           |         |               |              |                      |
|                                                                                |                                | 20      |              |           |         |               |              |                | 20      |           |         |               |              |                      |
|                                                                                |                                | 21      |              |           |         |               |              |                | 21      |           |         |               |              |                      |
|                                                                                |                                | 22      |              |           |         |               |              |                | 22      |           |         |               |              |                      |
|                                                                                |                                | 23      |              |           |         |               |              |                | 23      |           |         |               |              |                      |
|                                                                                |                                | 24      |              |           |         |               |              |                | 24      |           |         |               |              |                      |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.



# Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

Shark ~~In data file 06301.LST~~

Last Updated: July 2015



| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|----------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                 | 2016-10                        | 1       |              | 249       | 1429    | 8.7           | 2.262        |                | 1       |           |         |               |              |                |
| Event:                                                                         | 82                             | 2       |              | 250       | 94      | 8.9           | 2.360        |                | 2       |           |         |               |              |                |
| Station:                                                                       | ADCP                           | 3       |              | 251       | 1408    | 9.1           | 2.436        |                | 3       |           |         |               |              |                |
| Event Date (Local):                                                            | 25 Sep. 2016                   | 4       |              | 252       | 1465    | 9.7           | 2.869        |                | 4       |           |         |               |              |                |
| Analysis Date (Local):                                                         | 25 Sep. 2016                   | 5       |              | 253       | 3158    | 9.9           | 3.024        |                | 5       |           |         |               |              |                |
| Analyst:                                                                       | KS                             | 6       |              | 254A      | 2025    | 10.4          | 3.291 =>     |                | 6       | 254B      | 2019    | 10.3          | 3.289        |                |
| Stdization Date (Local):                                                       | 25 Sep. 2016                   | 7       |              | 255       | 2017    | 10.5          | 3.438        |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N:                                                            | 0.0119758                      | 8       |              | 256       | 2016    | 10.7          | 3.594        |                | 8       |           |         |               |              |                |
| Standard Titer:                                                                | 0.51309                        | 9       |              | 257       | 2015    | 11.1          | 3.858        |                | 9       |           |         |               |              |                |
| Blank Titer:                                                                   | 0.00024                        | 10      |              | 258       | 2007    | 11.4          | 4.048        |                | 10      |           |         |               |              |                |
| THIO N:                                                                        | 0.23372                        | 11      |              |           |         |               |              |                | 11      |           |         |               |              |                |
| Sample Flask                                                                   | Yes                            | 12      |              |           |         |               |              |                | 12      |           |         |               |              |                |
| Water Seal?                                                                    | No                             | 13      |              |           |         |               |              |                | 13      |           |         |               |              |                |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |              |           |         |               |              |                | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15      |              |           |         |               |              |                | 15      |           |         |               |              |                |
|                                                                                | H <sub>2</sub> SO <sub>4</sub> | 16      |              |           |         |               |              |                | 16      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | KIO <sub>3</sub>               | 17      |              |           |         |               |              |                | 17      |           |         |               |              |                |
|                                                                                | THIO                           | 18      |              |           |         |               |              |                | 18      |           |         |               |              |                |
| Notes:                                                                         |                                | 19      |              |           |         |               |              |                | 19      |           |         |               |              |                |
|                                                                                |                                | 20      |              |           |         |               |              |                | 20      |           |         |               |              |                |
|                                                                                |                                | 21      |              |           |         |               |              |                | 21      |           |         |               |              |                |
|                                                                                |                                | 22      |              |           |         |               |              |                | 22      |           |         |               |              |                |
|                                                                                |                                | 23      |              |           |         |               |              |                | 23      |           |         |               |              |                |
|                                                                                |                                | 24      |              |           |         |               |              |                | 24      |           |         |               |              |                |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.



# Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

SWALLOW

Last Updated: July 2015



| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID      | Flask 1         | Draw T 1 (°C)   | OXY-1 (mL/L)     | OXY-1 Comments                         | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|----------------|-----------------|-----------------|------------------|----------------------------------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                 | 2010 F10                       | 1       |              | 260            | 557             | 8.2             | 1.667            |                                        | 1       |           |         |               |              |                |
| Event:                                                                         | 85                             | 2       |              | 261            | 3025            | 8.1             | 1.697            |                                        | 2       |           |         |               |              |                |
| Station:                                                                       | 69                             | 3       |              | 262A           | 3192            | 8.1             | 1.773            | ⇒                                      | 3       | 262B      | 3040    | 8.2           | 1.770        |                |
| Event Date (Local):                                                            | 25 SEPT 2016                   | 4       |              | 263            | 3013            | 8.5             | 1.963            |                                        | 4       |           |         |               |              |                |
| Analysis Date (Local):                                                         | 25 Sept. 2016                  | 5       |              | 264            | 3093            | 9.2             | 2.784            |                                        | 5       |           |         |               |              |                |
| Analyst:                                                                       | KS                             | 6       |              | 265            | 3038            | 9.5             | 2.943            |                                        | 6       |           |         |               |              |                |
| Stdization Date (Local):                                                       | 25 Sept. 2016                  | 7       |              | 266            | 708             | 9.7             | 2.976            |                                        | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N:                                                            | 0.0119758                      | 8       |              | 267A           | 575             | 9.9             | 3.186            | ⇒                                      | 8       | 267B      | 611     | 9.9           | 3.187        |                |
| Standard Titer:                                                                | 0.51309                        | 9       |              | 268            | 510             | 10.1            | 3.262            |                                        | 9       |           |         |               |              |                |
| Blank Titer:                                                                   | 0.00024                        | 10      |              | 269            | 3053            | 10.3            | 3.384            |                                        | 10      |           |         |               |              |                |
| THIO N:                                                                        | 0.23372                        | 11      |              | <del>270</del> | <del>3053</del> | <del>10.3</del> | <del>3.384</del> | ~ Skipped bot 11 - bottom seal broken. | 11      |           |         |               |              |                |
| Sample Flask Water Seal?                                                       | Yes                            | 12      |              | 270            | 3053            | 10.3            | 3.441            | 745                                    | 12      |           |         |               |              |                |
|                                                                                | No                             | 13      |              | 271            | 3034            | 10.4            | 3.510            |                                        | 13      |           |         |               |              |                |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |              |                |                 |                 |                  |                                        | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15      |              |                |                 |                 |                  |                                        | 15      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> | 16      |              |                |                 |                 |                  |                                        | 16      |           |         |               |              |                |
|                                                                                | KIO <sub>3</sub>               | 17      |              |                |                 |                 |                  |                                        | 17      |           |         |               |              |                |
|                                                                                | THIO                           | 18      |              |                |                 |                 |                  |                                        | 18      |           |         |               |              |                |
| Notes:                                                                         |                                | 19      |              |                |                 |                 |                  |                                        | 19      |           |         |               |              |                |
|                                                                                |                                | 20      |              |                |                 |                 |                  |                                        | 20      |           |         |               |              |                |
|                                                                                |                                | 21      |              |                |                 |                 |                  |                                        | 21      |           |         |               |              |                |
|                                                                                |                                | 22      |              |                |                 |                 |                  |                                        | 22      |           |         |               |              |                |
|                                                                                |                                | 23      |              |                |                 |                 |                  |                                        | 23      |           |         |               |              |                |
|                                                                                |                                | 24      |              |                |                 |                 |                  |                                        | 24      |           |         |               |              |                |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.

# Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

LOCH NESS

Last Updated: July 2015



| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments  | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|-----------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                 | 2016-10                        | 1       |              | 274       | 3079    | 8.3           | 1.726        |                 | 1       |           |         |               |              |                |
| Event:                                                                         | 89                             | 2       |              | 275       | 456     | 8.1           | 1.731        |                 | 2       |           |         |               |              |                |
| Station:                                                                       | 72                             | 3       |              | 276       | 1406    | 8.1           | 1.745        |                 | 3       |           |         |               |              |                |
| Event Date (Local):                                                            | 26 SEPT 2016                   | 4       |              | 277       | 471     | 8.1           | 1.715        | ⇒               | 4       | 277B      | 196     | 8.1           | 1.705        |                |
| Analysis Date (Local):                                                         | 26 Sept. 2016                  | 5       |              | 278       | 3078    | 8.4           | 1.919        |                 | 5       |           |         |               |              |                |
| Analyst:                                                                       | KS                             | 6       |              | 279       | 3050    | 8.8           | 2.149        |                 | 6       |           |         |               |              |                |
| Stdization Date (Local):                                                       | 25 Sept. 2016                  | 7       |              | 280       | 3005    | 9.4           | 2.838        |                 | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N:                                                            | 0.0119758                      | 8       |              | 281       | 712     | 9.7           | 3.092        |                 | 8       |           |         |               |              |                |
| Standard Titer:                                                                | 0.51309                        | 9       |              | 282       | 3073    | 10.0          | 3.350        | Bottle 9 run 16 | 9       |           |         |               |              |                |
| Blank Titer:                                                                   | 0.00024                        | 10      |              | 283       | 1055    | 10.1          | 3.216        | ⇒               | 10      | 283B      | 396     | 10.0          | 3.218        |                |
| THIO N:                                                                        | 0.23372                        | 11      |              |           |         |               |              |                 | 11      |           |         |               |              |                |
| Sample Flask Water Seal?                                                       | Yes                            | 12      |              | 285       | 2089    | 10.1          | 3.227        |                 | 12      |           |         |               |              |                |
|                                                                                | No                             | 13      |              | 286       | 439     | 10.3          | 3.649        |                 | 13      |           |         |               |              |                |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |              | 287       | 2060    | 10.4          | 3.746        |                 | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15      |              |           |         |               |              |                 | 15      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> | 16      |              |           |         |               |              |                 | 16      |           |         |               |              |                |
|                                                                                | KIO <sub>3</sub>               | 17      |              |           |         |               |              |                 | 17      |           |         |               |              |                |
|                                                                                | THIO                           | 18      |              |           |         |               |              |                 | 18      |           |         |               |              |                |
| Notes:                                                                         |                                | 19      |              |           |         |               |              |                 | 19      |           |         |               |              |                |
|                                                                                |                                | 20      |              |           |         |               |              |                 | 20      |           |         |               |              |                |
|                                                                                |                                | 21      |              |           |         |               |              |                 | 21      |           |         |               |              |                |
|                                                                                |                                | 22      |              |           |         |               |              |                 | 22      |           |         |               |              |                |
|                                                                                |                                | 23      |              |           |         |               |              |                 | 23      |           |         |               |              |                |
|                                                                                |                                | 24      |              |           |         |               |              |                 | 24      |           |         |               |              |                |

Bottle integrity: First test the top vent (V) by opening the lower spigot (S) then test the spigot by opening the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.