

# Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group



Last Updated: July 2018

| 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: 2019-005                                                        | 1       |              | 1         | 3074    | 9.8           | 4.165        |                            | 1       |           |         |               |              |                |
| Event: 2                                                                       | 2       |              | 2         | 930     | 9.8           | 4.178        |                            | 2       |           |         |               |              |                |
| Station: 59                                                                    | 3       |              | 3         | 2133    | 10.0          | 4.382        |                            | 3       |           |         |               |              |                |
| Event Date (Local): 22 MAY 2019                                                | 4       |              | 4         | 3103    | 10.2          | 4.664        |                            | 4       |           |         |               |              |                |
| Analysis Date (Local):                                                         | 5       |              | 5         | 3080    | 10.3          | 4.691        |                            | 5       |           |         |               |              |                |
| Analyst: N2                                                                    | 6       |              | 6         | 3101    | 10.3          | 4.737        | redrawn bubble off the B → | 6       | 6         | 3086    | 10.3          | 4.714        |                |
| Stdization Date (Local): 22 MAY                                                | 7       |              | 7         | 3084    | 10.3          | 4.742        |                            | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       |              | 8         | 3142    | 10.4          | 4.784        |                            | 8       |           |         |               |              |                |
| Standard Titer: 0.4930                                                         | 9       |              | 9         | 3095    | 10.5          | 4.798        |                            | 9       |           |         |               |              |                |
| Blank Titer: 0.0007                                                            | 10      |              | 10        | 3079    | 10.6          | 4.824        | →                          | 10      | 10        | 3078    | 10.6          | 4.826        |                |
| THIO N: 0.23995                                                                | 11      |              | 11        | 3088    | 10.7          | 4.837        |                            | 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) | 15      |              |           |         |               |              |                            | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      |              |           |         |               |              |                            | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                            | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                            | 18      |           |         |               |              |                |
| KIO <sub>3</sub>                                                               | 19      |              |           |         |               |              |                            | 19      |           |         |               |              |                |
| THIO                                                                           | 20      |              |           |         |               |              |                            | 20      |           |         |               |              |                |
| Notes: Samples: CS                                                             | 21      |              |           |         |               |              |                            | 21      |           |         |               |              |                |
| richles: N2                                                                    | 22      |              |           |         |               |              |                            | 22      |           |         |               |              |                |

1 Oxy 59 Bot 1  
2 Oxy 59 Bot 2  
3 Oxy 59 Bot 3  
4 Oxy 59 Bot 4  
5 Oxy 59 Bot 5  
6A Oxy 59 Bot 6  
6B Oxy 59 Bot 6  
7 Oxy 59 Bot 7  
8 Oxy 59 Bot 8  
9 Oxy 59 Bot 9  
10A Oxy 59 Bot 10  
11 Oxy 59 Bot 11  
10B Oxy 59 Bot 10

ain this in the comments column.

ROBOT

## Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

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| Cruise and Analysis Information                                                | Nisk ID | Nisk Int VS | 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: 2019-005                                                        | 1       |             | 12        | 486     | 10.1          | 2.941        |                                   | 1       |           |         |               |              |                |
| Event: 4                                                                       | 2       |             | 13        | 3093    | 9.7           | 4.369        |                                   | 2       |           |         |               |              |                |
| Station: 42                                                                    | 3       |             | 14        | 3148    | 9.7           | 4.466        |                                   | 3       |           |         |               |              |                |
| Event Date (Local): 22 MAY                                                     | 4       |             | 15        | 510     | 9.7           | 4.252        |                                   | 4       |           |         |               |              |                |
| Analysis Date (Local): 23 MAY                                                  | 5       |             | 16        | 3138    | 9.9           | 4.401        |                                   | 5       |           |         |               |              |                |
| Analyst: N2                                                                    | 6       |             | 17        | 3126    | 9.9           | 4.476        |                                   | 6       |           |         |               |              |                |
| Stdization Date (Local): 22 MAY                                                | 7       |             | 18        | 510     | 10.1          | 4.631        |                                   | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       |             | 19A       | 745     | 10.4          | 4.985        |                                   | 8       | 19B       | 612     | 10.4          | 4.992        | run before 4   |
| Standard Titer: 0.49295                                                        | 9       |             | 20        | 3213    | 11.9          | 6.188        |                                   | 9       |           |         |               |              |                |
| Blank Titer: 0.0007                                                            | 10      |             | 21        | 2076    | 12.8          | 6.608        |                                   | 10      |           |         |               |              |                |
| THIO N: 0.23995                                                                | 11      |             | 22        | 3146    | 14.1          | 6.618        | OT - v. low voltage ~1.9 but good | 11      |           |         |               |              |                |
| Sample Flask Water Seal? <input checked="" type="radio"/> Yes                  | 12      |             |           |         |               |              | same, same on OT, not             | 12      |           |         |               |              |                |
|                                                                                | 13      |             |           |         |               |              | sure why the sudden drop.         | 13      |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                              | 14      |             |           |         |               |              |                                   | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | 15      |             |           |         |               |              |                                   | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      |             |           |         |               |              |                                   | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |             |           |         |               |              |                                   | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |             |           |         |               |              |                                   | 18      |           |         |               |              |                |
| THIO                                                                           | 19      |             |           |         |               |              |                                   | 19      |           |         |               |              |                |
| Notes: samples: CS                                                             | 20      |             |           |         |               |              |                                   | 20      |           |         |               |              |                |
|                                                                                | 21      |             |           |         |               |              |                                   | 21      |           |         |               |              |                |
|                                                                                | 22      |             |           |         |               |              |                                   | 22      |           |         |               |              |                |

|        |        |        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 12     | 13     | 14     | 15     | 16     | 17     | 18     | 19 B   | 19 A   | 20     | 21     | 22     |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| 42     | 42     | 42     | 42     | 42     | 42     | 42     | 42     | 42     | 42     | 42     | 42     |
| Bot-10 | 200 m  | 100 m  | 75 m   | 50 m   | 40 m   | 30 m   | 20 m   | 20 m   | 42     | 42     | 0 m    |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 10 m   | 5 m    | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 6  | Bot 7  | Bot 8  | Bot 8  | 19-005 | 19-005 | Bot 11 |
|        |        |        |        |        |        |        |        |        | Bot 9  | Bot 10 |        |

and explain this in the comments column.

Robot (STARTS @ 3RD Row, 1ST BOTTLE)

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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: 2019-005                                                        | 1       | ✓            | ✓         | 23      | 708           | 10.5         | 2.229          |            | 1         |         |               |              |                |
| Event: 8                                                                       | 2       | ✓            | ✓         | 24      | 611           | 10.0         | 4.364          |            | 2         |         |               |              |                |
| Station: GEO1                                                                  | 3       | ✓            | ✓         | 25      | 3165          | 9.5          | 4.497          |            | 3         |         |               |              |                |
| Event Date (Local): 23 May 2019                                                | 4       | ✓            | ✓         | 26A     | 3175          | 9.6          | 4.444          | redraw     | 4         | 26B     | 3002          | 9.7          | 4.444          |
| Analysis Date (Local): 23 May                                                  | 5       | ✓            | ✓         | 27      | 3190          | 9.8          | 4.269          |            | 5         |         |               |              |                |
| Analyst: N2                                                                    | 6       | ✓            | ✓         | 28      | 3129          | 9.8          | 4.293          |            | 6         |         |               |              |                |
| Stdization Date (Local): 22 May                                                | 7       | ✓            | ✓         | 29      | 3162          | 10.0         | 4.513          |            | 7         |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       | ✓            | ✓         | 30      | 3053          | 10.4         | 4.876          |            | 8         |         |               |              |                |
| Standard Titer: 0.49295                                                        | 9       | x            | ✓         | 31      | 3038          | 11.5         | 6.080          | leaky vent | 9         |         |               |              |                |
| Blank Titer: 0.0007                                                            | 10      | ✓            | ✓         | 32      | 3209          | 14.3         | 6.952          |            | 10        |         |               |              |                |
| THIO N: 0.23995                                                                | 11      | ✓            | ✓         | 33      | 3096          | 16.1         | 6.660          |            | 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) | 15      |              |           |         |               |              |                |            | 15        |         |               |              |                |
| NaI/NaOH                                                                       | 16      |              |           |         |               |              |                |            | 16        |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                |            | 17        |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                |            | 18        |         |               |              |                |
| THIO                                                                           | 19      |              |           |         |               |              |                |            | 19        |         |               |              |                |
| Notes:                                                                         | 20      |              |           |         |               |              |                |            | 20        |         |               |              |                |
| Bender                                                                         | 21      |              |           |         |               |              |                |            | 21        |         |               |              |                |
|                                                                                | 22      |              |           |         |               |              |                |            | 22        |         |               |              |                |

Bottle integrity: First test the

23  
Oxy  
GEO1  
Bot-10  
19-005  
Bot 124  
Oxy  
GEO1  
200 m  
19-005  
Bot 225  
Oxy  
GEO1  
100 m  
19-005  
Bot 326A  
Oxy  
GEO1  
75 m  
19-005  
Bot 426B  
Oxy  
GEO1  
75 m  
19-005  
Bot 427  
Oxy  
GEO1  
50 m  
19-005  
Bot 528  
Oxy  
GEO1  
40 m  
19-005  
Bot 629  
Oxy  
GEO1  
30 m  
19-005  
Bot 730  
Oxy  
GEO1  
20 m  
19-005  
Bot 831  
Oxy  
GEO1  
10 m  
19-005  
Bot 932  
Oxy  
GEO1  
5 m  
19-005  
Bot 1033  
Oxy  
GEO1  
0 m  
19-005  
Bot 11

this in the comments column.

Turtle

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| Cruise and Analysis Information                                                | Nisk ID | Nisk Int VS | 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: 2019-005                                                        | 1       | ✓✓          | 47        | 2099    | 10.3          | 2.144        |                | 1       |           |         |               |              |                |
| Event: 12                                                                      | 2       | ✓✓          | 48A       | 2049    | 9.7           | 3.653        |                | 2       | 48B       | 3037    | 9.8           | 3.650        |                |
| Station: 22                                                                    | 3       | ✓✓          | 49        | 3076    | 9.5           | 4.086        |                | 3       |           |         |               |              |                |
| Event Date (Local): 23 May 2019                                                | 4       | ✓✓          | 50        | 3014    | 9.4           | 4.098        |                | 4       |           |         |               |              |                |
| Analysis Date (Local): 23 May                                                  | 5       | ✓✓          | 51        | 3082    | 9.5           | 4.090        |                | 5       |           |         |               |              |                |
| Analyst: N2                                                                    | 6       | ✓✓          | 52        | 3110    | 9.6           | 3.922        |                | 6       |           |         |               |              |                |
| Stdization Date (Local): 22 May                                                | 7       | ✓✓          | 53        | 3078    | 9.8           | 4.170        |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       | ✓✓          | 54        | 3131    | 10.2          | 4.519        |                | 8       |           |         |               |              |                |
| Standard Titer: 0.49295                                                        | 9       | ✓✓          | 55        | 3029    | 11.4          | 5.569        |                | 9       |           |         |               |              |                |
| Blank Titer: 0.0007                                                            | 10      | ✓✓          | 56        | 2085    | 14.7          | 6.840        |                | 10      |           |         |               |              |                |
| THIO N: 0.23995                                                                | 11      | ✓✓          | 57        | 1459    | 15.3          | 6.831        |                | 11      |           |         |               |              |                |
| Sample Flask Water Seal? <div>Yes</div> No                                     | 12      |             |           |         |               |              |                | 12      |           |         |               |              |                |
|                                                                                | 13      |             |           |         |               |              |                | 13      |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                              | 14      |             |           |         |               |              |                | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | 15      |             |           |         |               |              |                | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      |             |           |         |               |              |                | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |             |           |         |               |              |                | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |             |           |         |               |              |                | 18      |           |         |               |              |                |
| KIO <sub>3</sub>                                                               | 19      |             |           |         |               |              |                | 19      |           |         |               |              |                |
| THIO                                                                           | 20      |             |           |         |               |              |                | 20      |           |         |               |              |                |
| Notes: N <sub>2</sub> draw                                                     | 21      |             |           |         |               |              |                | 21      |           |         |               |              |                |
| Robyn Nichols                                                                  | 22      |             |           |         |               |              |                | 22      |           |         |               |              |                |

47

Oxy

22

19-005

Bot 1

48A

Oxy

22

19-005

Bot 2

48B

Oxy

22

19-005

Bot 2

49

Oxy

22

19-005

Bot 3

50

Oxy

22

19-005

Bot 4

51

Oxy

22

19-005

Bot 5

52

Oxy

22

19-005

Bot 6

53

Oxy

22

19-005

Bot 7

54

Oxy

22

19-005

Bot 8

55

Oxy

22

19-005

Bot 9

56

Oxy

22

19-005

Bot 10

57

Oxy

22

19-005

Bot 11

explain this in the comments column.

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Water Properties Group



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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: 2019-005                                                                |  | 1       | ✓✓           | 66        | 2099    | 9.5           | 5.173        |                                 | 1       |           |         |               |              |                |
| Event: 17                                                                              |  | 2       | ✓✓           | 67        | 2049    | 9.5           | 5.353        |                                 | 2       |           |         |               |              |                |
| Station: JS                                                                            |  | 3       | ✓✓           | 68A       | 3037    | 9.5           | 5.455        | Re-draw on A (9.5°C - 2nd read) | 3       | 68B       | 3076    | 9.5           | 5.440        |                |
| Event Date (Local): 24 May 2019                                                        |  | 4       | ✓✓           | 69        | 3014    | 9.6           | 5.550        |                                 | 4       |           |         |               |              |                |
| Analysis Date (Local): 25 MAY                                                          |  | 5       | ✓✓           | 70        | 3031    | 9.7           | 5.565        | OT - late endpoint              | 5       |           |         |               |              |                |
| Analyst: N2                                                                            |  | 6       | ✓✓           | 71        | 3110    | 9.7           | 5.605        |                                 | 6       |           |         |               |              |                |
| Stdization Date (Local): 25 MAY                                                        |  | 7       | ✓✓           | 72        | 3078    | 9.9           | 5.727        |                                 | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                          |  | 8       | ✓✓           | 73A       | 3131    | 9.9           | 5.795        |                                 | 8       | 73B       | 3029    | 9.9           | 5.794        |                |
| Standard Titer: 0.49335                                                                |  | 9       | ✓✓           | 74        | 2085    | 10.0          | 5.850        | leaky top cap on 9.             | 9       |           |         |               |              |                |
| Blank Titer: 0.0007                                                                    |  | 10      | ✓✓           | 75        | 1459    | 10.0          | 5.874        |                                 | 10      |           |         |               |              |                |
| THIO N: 0.23988                                                                        |  | 11      | ✓✓           | 76        | 620     | 10.0          | 5.866        |                                 | 11      |           |         |               |              |                |
| Sample Flask Water Seal? <input checked="" type="radio"/> Yes <input type="radio"/> No |  | 12      |              |           |         |               |              |                                 | 12      |           |         |               |              |                |
|                                                                                        |  | 13      |              |           |         |               |              |                                 | 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: 9C/RS                                                                           |  | 19      |              |           |         |               |              |                                 | 19      |           |         |               |              |                |
| Turtle                                                                                 |  | 20      |              |           |         |               |              |                                 | 20      |           |         |               |              |                |
| - very windy                                                                           |  | 21      |              |           |         |               |              |                                 | 21      |           |         |               |              |                |
| Sampling                                                                               |  | 22      |              |           |         |               |              |                                 | 22      |           |         |               |              |                |

Bottle integrity: First tes

|        |        |        |        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 66     | 67     | 68 A   | 68 B   | 69     | 70     | 71     | 72     | 73 A   | 73 B   | 74     | 75     | 76     |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| JS     | JS     | JS     | JS     | JS     | JS     | JS     | JS     | JS     | JS     | JS     | JS     | JS     |
| 200 m  | 150 m  | 150 m  | 150 m  | 100 m  | 75 m   | 50 m   | 30 m   | 20 m   | 20 m   | 10 m   | 5 m    | 0 m    |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 3  | Bot 4  | Bot 5  | Bot 6  | Bot 7  | Bot 8  | Bot 8  | Bot 9  | Bot 10 | Bot 11 |

# Dissolved Oxygen Analysis Log Sheet

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Water Properties Group



Ribbo Mann

Last Updated: July 2018

| 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: 2019-005                                                        | 1       | ✓            | 77        | 456     | 7.7           | 1.862        |                    | 1       |           |         |               |              |                   |
| Event: 36                                                                      | 2       |              | 78A       | 3093    | 7.8           | 1.893        | → standard         | 2       | 78B       | 3148    | 7.8           | 1.894        | OT - bad endpoint |
| Station: CS09                                                                  | 3       | ✓            | 79        | 570     | 7.9           | 2.118        | OT - bad endpoint  | 3       |           |         |               |              |                   |
| Event Date (Local): 25 MAY 2019                                                | 4       | ✓            | 80        | 3138    | 8.3           | 2.683        |                    | 4       |           |         |               |              |                   |
| Analysis Date (Local): 25 MAY                                                  | 5       | ✓            | 81        | 3126    | 8.6           | 3.396        |                    | 5       |           |         |               |              |                   |
| Analyst: NL                                                                    | 6       | ✓            | 82        | 570     | 8.8           | 4.859        |                    | 6       |           |         |               |              |                   |
| Stdization Date (Local): 25 MAY                                                | 7       | ✓            | 83        | 745     | 9.2           | 5.897        |                    | 7       |           |         |               |              |                   |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       | ✓            | 84        | 1612    | 10.5          | 6.333        | OT - late endpoint | 8       |           |         |               |              |                   |
| Standard Titer: 0.49335                                                        | 9       | ✓            | 85        | 3043    | 10.7          | 6.438        |                    | 9       |           |         |               |              |                   |
| Blank Titer: 0.0007                                                            | 10      | ✓            | 86        | 2098    | 10.7          | 6.432        |                    | 10      |           |         |               |              |                   |
| THIO N: 0.22988                                                                | 11      | ✓            | 87        | 3146    | 10.7          | 6.429        | Top cap level 11   | 11      |           |         |               |              |                   |
| Sample Flask Water Seal? <input checked="" type="radio"/> Yes                  | 12      |              |           |         |               |              |                    | 12      |           |         |               |              |                   |
|                                                                                | 13      |              |           |         |               |              |                    | 13      |           |         |               |              |                   |
| Reagent Change? MnCl <sub>2</sub>                                              | 14      |              |           |         |               |              |                    | 14      |           |         |               |              |                   |
| (Please circle reagent that was changed prior to sampling and standardization) | 15      |              |           |         |               |              |                    | 15      |           |         |               |              |                   |
| NaI/NaOH                                                                       | 16      |              |           |         |               |              |                    | 16      |           |         |               |              |                   |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                    | 17      |           |         |               |              |                   |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                    | 18      |           |         |               |              |                   |
| THIO                                                                           | 19      |              |           |         |               |              |                    | 19      |           |         |               |              |                   |
| Notes: BENDER GPS                                                              | 20      |              |           |         |               |              |                    | 20      |           |         |               |              |                   |
| windy.                                                                         | 21      |              |           |         |               |              |                    | 21      |           |         |               |              |                   |

|         |        |        |        |        |        |        |        |        |        |        |        |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 77      | A 78   | B 78   | 79     | 80     | 81     | 82     | 83     | 84     | 85     | 86     | 87     |
| Oxy     | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| CS09    | CS09   | CS09   | CS09   | CS09   | CS09   | CS09   | CS09   | CS09   | CS09   | CS09   | CS09   |
| tile in | 175 m  | 175 m  | 150 m  | 125 m  | 100 m  | 75 m   | 50 m   | 30 m   | 20 m   | 10 m   | 5 m    |
| bot-10  | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| 19-005  | Bot 2  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 6  | Bot 7  | Bot 8  | Bot 9  | Bot 10 | Bot 11 |
| Bot 1   |        |        |        |        |        |        |        |        |        |        |        |

by check and explain this in the comments column.

Dissolved Oxygen Analysis Log Sheet

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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: 2019-005                                                        | 1       | ✓            | ✓         | 89      | 708           | 9.1          | 4.793          | OT - late endpoint | 1         |         |               |              |                |                        |
| Event: 42                                                                      | 2       | ✓            | ✓         | 90      | 611           | 9.3          | 5.182          |                    | 2         |         |               |              |                |                        |
| Station: CS06                                                                  | 3       | ✓            | ✓         | 91A     | 3165          | 9.9          | 6.035          |                    | 3         | 91B     | 3175          | 9.9          | 6.040          | O2 check late endpoint |
| Event Date (Local): 25 May 2019                                                | 4       | ✓            | ✓         | 92      | 3002          | 11.0         | 7.163          | OT - late endpoint | 4         |         |               |              |                |                        |
| Analysis Date (Local): 25 May                                                  | 5       | ✓            | ✓         | 93      | 3190          | 11.0         | 7.168          |                    | 5         |         |               |              |                |                        |
| Analyst: N2                                                                    | 6       | ✓            | ✓         | 94      | 3129          | 11.0         | 7.174          |                    | 6         |         |               |              |                |                        |
| Stdization Date (Local): 25 May                                                | 7       |              |           |         |               |              |                |                    | 7         |         |               |              |                |                        |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       |              |           |         |               |              |                |                    | 8         |         |               |              |                |                        |
| Standard Titer: 0.49335                                                        | 9       |              |           |         |               |              |                |                    | 9         |         |               |              |                |                        |
| Blank Titer: 0.0007                                                            | 10      |              |           |         |               |              |                |                    | 10        |         |               |              |                |                        |
| THIO N: 0.23988                                                                | 11      |              |           |         |               |              |                |                    | 11        |         |               |              |                |                        |
| Sample Flask Water Seal? <input checked="" type="radio"/> Yes                  | 12      |              |           |         |               |              |                |                    | 12        |         |               |              |                |                        |
|                                                                                | 13      |              |           |         |               |              |                |                    | 13        |         |               |              |                |                        |
| Reagent Change? MnCl <sub>2</sub>                                              | 14      |              |           |         |               |              |                |                    | 14        |         |               |              |                |                        |
| (Please circle reagent that was changed prior to sampling and standardization) | 15      |              |           |         |               |              |                |                    | 15        |         |               |              |                |                        |
| NaI/NaOH                                                                       | 16      |              |           |         |               |              |                |                    | 16        |         |               |              |                |                        |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                |                    | 17        |         |               |              |                |                        |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                |                    | 18        |         |               |              |                |                        |
| KIO <sub>3</sub>                                                               | 19      |              |           |         |               |              |                |                    | 19        |         |               |              |                |                        |
| THIO                                                                           | 20      |              |           |         |               |              |                |                    | 20        |         |               |              |                |                        |
| Notes: N2/K4B                                                                  | 21      |              |           |         |               |              |                |                    | 21        |         |               |              |                |                        |
|                                                                                | 22      |              |           |         |               |              |                |                    |           |         |               |              |                |                        |
|                                                                                | 23      |              |           |         |               |              |                |                    |           |         |               |              |                |                        |
|                                                                                | 24      |              |           |         |               |              |                |                    |           |         |               |              |                |                        |

Bottle integrity: First test the top vent (V) by c...ails the integrity check and explain this in the comments column.

89  
Oxy  
CS06  
Bot -10  
19-005  
Bot 1

90  
Oxy  
CS06  
50 m  
Bot 2

91 A  
Oxy  
CS06  
30 m  
19-005  
Bot 3

91 B  
Oxy  
CS06  
30 m  
19-005  
Bot 3

92  
Oxy  
CS06  
20 m  
19-005  
Bot 4

93  
Oxy  
CS06  
10 m  
19-005  
Bot 5

94  
Oxy  
CS06  
5 m  
19-005  
Bot 6

# Dissolved Oxygen Analysis Log Sheet

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*potentially top cap design*

Last Updated: July 2018

| 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:                                                                 | 2019-005                       |  |  |  |  |  | 1       | ✓            | 96        | 2099    | 9.7           | 4.853        | leaky bottom end cap on 2 <sup>nd</sup> flask | 1       |           |         |               |              |                |  |
| Event:                                                                         | 54                             |  |  |  |  |  | 2       | ✓            | 97        | 2049    | 9.8           | 5.128        | OT - late endpoint                            | 2       |           |         |               |              |                |  |
| Station:                                                                       | CS04                           |  |  |  |  |  | 3       | ✓            | 98        | 3037    | 10.0          | 6.113        | OT - " "                                      | 3       |           |         |               |              |                |  |
| Event Date (Local):                                                            | 25 May 2019                    |  |  |  |  |  | 4       | ✓            | 99        | 3076    | 11.0          | 6.478        |                                               | 4       |           |         |               |              |                |  |
| Analysis Date (Local):                                                         | 26 May                         |  |  |  |  |  | 5       | ✓            | 100       | 3014    | 11.1          | 6.518        | OT - late endpoint                            | 5       |           |         |               |              |                |  |
| Analyst:                                                                       | N2                             |  |  |  |  |  | 6       | ✓            | 101A      | 3081    | 10.3          | 5.972        | →                                             | 6       | 101B      | 3110    | 10.3          | 5.977        |                |  |
| Stdization Date (Local):                                                       | 25 May                         |  |  |  |  |  | 7       | ✓            | 102       | 3078    | 11.1          | 6.581        |                                               | 7       |           |         |               |              |                |  |
| KIO <sub>3</sub> N:                                                            | 0.0118108                      |  |  |  |  |  | 8       |              |           |         |               |              |                                               | 8       |           |         |               |              |                |  |
| Standard Titer:                                                                | 0.49335                        |  |  |  |  |  | 9       |              |           |         |               |              |                                               | 9       |           |         |               |              |                |  |
| Blank Titer:                                                                   | 0.0007                         |  |  |  |  |  | 10      |              |           |         |               |              |                                               | 10      |           |         |               |              |                |  |
| THIO N:                                                                        | 0.23988                        |  |  |  |  |  | 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:                                                                         | TURTLE                         |  |  |  |  |  | 19      |              |           |         |               |              |                                               | 19      |           |         |               |              |                |  |
|                                                                                | CS/N2                          |  |  |  |  |  | 20      |              | 96        | 97      | 98            | 99           | 100                                           | 101A    | 101B      | 102     |               |              |                |  |
|                                                                                |                                |  |  |  |  |  | 21      |              | Oxy       | Oxy     | Oxy           | Oxy          | Oxy                                           | Oxy     | Oxy       | Oxy     |               |              |                |  |
|                                                                                |                                |  |  |  |  |  | 22      |              | CS04      | CS04    | CS04          | CS04         | CS04                                          | CS04    | CS04      | CS04    |               |              |                |  |
|                                                                                |                                |  |  |  |  |  | 23      |              | Bot-10    | 75 m    | 50 m          | 30 m         | 20 m                                          | 10 m    | 10 m      | 5 m     |               |              |                |  |
|                                                                                |                                |  |  |  |  |  | 24      |              | 19-005    | 19-005  | 19-005        | 19-005       | 19-005                                        | 19-005  | 19-005    | 19-005  |               |              |                |  |
|                                                                                |                                |  |  |  |  |  | 25      |              | Bot 1     | Bot 2   | Bot 3         | Bot 4        | Bot 5                                         | Bot 6   | Bot 6     | Bot 7   |               |              |                |  |

Bottle integrity: First test the top vent (V) by opening the spigot, then test the spigot by opening the vent. Mark 'x' in the appropriate column. If the bottle is not sealed, check and explain this in the comments column.

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**Last Updated: July 2018**

| 103    | 104 A  | 104 B  | 105    | 106    | 110 A  | 110 B  | 111    | 112    | 113    | 114    | 115    | 116    | 117    | 118    | 119    | 120    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| CS02   | CS02   | CS02   | CS02   | CS02   | CS02   | CS02   | CS02   | CS02   | CS02   | CS02   | CS02   | CS02   | CS02   | CS02   | CS02   | CS02   |
| Bot-10 | 1500 m | 1500 m | 1250 m | 1000 m | 300 m  | 300 m  | 250 m  | 200 m  | 175 m  | 150 m  | 100 m  | 75 m   | 50 m   | 30 m   | 20 m   |        |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 2  | Bot 3  | Bot 4  | Bot 6  | Bot 8  | Bot 9  | Bot 10 | Bot 11 | Bot 12 | Bot 14 | Bot 15 | Bot 16 | Bot 17 | Bot 18 |        |

# Dissolved Oxygen Analysis Log Sheet

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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) |  | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) |  | OXY-2 Comments |
|--------------------------------------------------------------------------------|--------------------------------|----|--|------|------|------|---------|------------------------------------|-----------|---------|---------------|--------------|--|---------|-----------|---------|---------------|--------------|--|----------------|
| Cruise Number:                                                                 | 2019-005                       | 1  |  | 142A | 3046 | 4.5  | 1.293   |                                    |           |         |               |              |  | 1       | 142B      | 2089    | 4.6           | 1.288        |  |                |
| Event:                                                                         | 67                             | 2  |  | 143  | 371  | 5.0  | 0.660   | redraw                             |           |         |               |              |  | 2       |           |         |               |              |  |                |
| Station:                                                                       | CS00                           | 3  |  | 144  | 2055 | 5.2  | 0.344   |                                    |           |         |               |              |  | 3       |           |         |               |              |  |                |
| Event Date (Local):                                                            | 26 MAY                         | 4  |  | 145  | 1094 | 5.6  | 0.251   | OT - late endpoint                 |           |         |               |              |  | 4       |           |         |               |              |  |                |
| Analysis Date (Local):                                                         | 26 MAY                         | 5  |  | 146  | 396  | 5.9  | 0.292   |                                    |           |         |               |              |  | 5       |           |         |               |              |  |                |
| Analyst:                                                                       | N2                             | 6  |  | 147  | 472  | 6.3  | 0.757   | OT - late endpoint                 |           |         |               |              |  | 6       |           |         |               |              |  |                |
| Stdization Date (Local):                                                       | 25 MAY                         | 7  |  | 148A | 3137 | 6.5  | 1.280   | OT - late endpoint                 |           |         |               |              |  | 7       | 148B      | 3049    | 6.6           | 1.283        |  |                |
| KIO <sub>3</sub> N:                                                            | 0.0118108                      | 8  |  | 149  | 1055 | 7.0  | 1.761   |                                    |           |         |               |              |  | 8       |           |         |               |              |  |                |
| Standard Titer:                                                                | 0.49335                        | 9  |  | 150  | 1406 | 7.3  | 2.090   | OT - late endpoint                 |           |         |               |              |  | 9       |           |         |               |              |  |                |
| Blank Titer:                                                                   | 0.0007                         | 10 |  | 151  | 2060 | 7.6  | 2.815   |                                    |           |         |               |              |  | 10      |           |         |               |              |  |                |
| THIO N:                                                                        | 0.23988                        | 11 |  | 152  | 2068 | 7.9  | 2.799   |                                    |           |         |               |              |  | 11      |           |         |               |              |  |                |
| Sample Flask Water Seal?                                                       | Yes                            | 12 |  | 153  | 3059 | 8.3  | 3.228   |                                    |           |         |               |              |  | 12      |           |         |               |              |  |                |
|                                                                                | No                             | 13 |  | 154  | 3073 | 8.6  | 3.304   |                                    |           |         |               |              |  | 13      |           |         |               |              |  |                |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14 |  | 155  | 505  | 8.8  | 3.767   |                                    |           |         |               |              |  | 14      |           |         |               |              |  |                |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15 |  | 156  | 3057 | 8.9  | 4.801   |                                    |           |         |               |              |  | 15      |           |         |               |              |  |                |
|                                                                                | H <sub>2</sub> SO <sub>4</sub> | 16 |  | 157  | 3030 | 9.9  | 6.119   |                                    |           |         |               |              |  | 16      |           |         |               |              |  |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | KIO <sub>3</sub>               | 17 |  | 158  | 2065 | 10.1 | 6.075   |                                    |           |         |               |              |  | 17      |           |         |               |              |  |                |
|                                                                                | THIO                           | 18 |  | 159A | 3005 | 10.9 | 6.303   | Small bubbles present from reagent |           |         |               |              |  | 18      | 159B      | 1409    | 10.9          | 6.299        |  |                |
| Notes:                                                                         | Dino                           | 19 |  | 160  | 3194 | 11.4 | 6.615   |                                    |           |         |               |              |  | 19      |           |         |               |              |  |                |
|                                                                                | Loch ness                      | 20 |  | 161  | 94   | 11.9 | 6.702   |                                    |           |         |               |              |  | 20      |           |         |               |              |  |                |
|                                                                                | CS drew                        | 21 |  |      |      |      |         |                                    |           |         |               |              |  | 21      |           |         |               |              |  |                |
|                                                                                | 12 push                        | 22 |  |      |      |      |         |                                    |           |         |               |              |  | 22      |           |         |               |              |  |                |

|                                                  |                                                  |                                                 |                                                 |                                                 |                                                |                                                |                                                 |                                                 |                                                |                                                |                                                 |                                                 |                                                 |                                                 |                                                 |                                                |                                                |
|--------------------------------------------------|--------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|------------------------------------------------|------------------------------------------------|-------------------------------------------------|-------------------------------------------------|------------------------------------------------|------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|------------------------------------------------|------------------------------------------------|
| 142A<br>Oxy<br>CS00<br>2000 m<br>19-005<br>Bot 1 | 142B<br>Oxy<br>CS00<br>2000 m<br>19-005<br>Bot 1 | 143<br>Oxy<br>CS00<br>1500 m<br>19-005<br>Bot 2 | 144<br>Oxy<br>CS00<br>1250 m<br>19-005<br>Bot 3 | 145<br>Oxy<br>CS00<br>1000 m<br>19-005<br>Bot 4 | 146<br>Oxy<br>CS00<br>750 m<br>19-005<br>Bot 5 | 147<br>Oxy<br>CS00<br>500 m<br>19-005<br>Bot 6 | 148A<br>Oxy<br>CS00<br>400 m<br>19-005<br>Bot 7 | 148B<br>Oxy<br>CS00<br>400 m<br>19-005<br>Bot 7 | 149<br>Oxy<br>CS00<br>300 m<br>19-005<br>Bot 8 | 150<br>Oxy<br>CS00<br>250 m<br>19-005<br>Bot 9 | 151<br>Oxy<br>CS00<br>200 m<br>19-005<br>Bot 10 | 152<br>Oxy<br>CS00<br>175 m<br>19-005<br>Bot 11 | 153<br>Oxy<br>CS00<br>150 m<br>19-005<br>Bot 12 | 154<br>Oxy<br>CS00<br>125 m<br>19-005<br>Bot 13 | 155<br>Oxy<br>CS00<br>100 m<br>19-005<br>Bot 14 | 156<br>Oxy<br>CS00<br>75 m<br>19-005<br>Bot 15 | 157<br>Oxy<br>CS00<br>50 m<br>19-005<br>Bot 16 |
|--------------------------------------------------|--------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|------------------------------------------------|------------------------------------------------|-------------------------------------------------|-------------------------------------------------|------------------------------------------------|------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|------------------------------------------------|------------------------------------------------|

# Dissolved Oxygen Analysis Log Sheet

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TURLE



Last Updated: July 2018

| 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: 2019-005                                                        |                                | 1       | ✓            | 162       | 2099    | 7.9           | 2.209        |                 | 1       |           |         |               |              |                |
| Event: 82                                                                      |                                | 2       | ✓            | 163       | 2049    | 7.9           | 2.202        |                 | 2       |           |         |               |              |                |
| Station: LBP3                                                                  |                                | 3       | ✓            | 164       | 3037    | 8.0           | 2.329        |                 | 3       |           |         |               |              |                |
| Event Date (Local): 27 May 2019                                                |                                | 4       | ✓            | 165       | 3096    | 8.3           | 2.663        |                 | 4       |           |         |               |              |                |
| Analysis Date (Local): 27 May                                                  |                                | 5       | ✓            | 166       | 3114    | 8.9           | 3.672        |                 | 5       |           |         |               |              |                |
| Analyst: N2                                                                    |                                | 6       | ✓            | 167       | 3081    | 9.6           | 4.702        |                 | 6       |           |         |               |              |                |
| Stdization Date (Local): 27 May                                                |                                | 7       | ✓            | 168       | 3110    | 9.7           | 4.797        |                 | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  |                                | 8       | ✓            | 169       | 3078    | 10.0          | 5.098        |                 | 8       |           |         |               |              |                |
| Standard Titer: 0.4930                                                         |                                | 9       | ✓            | 170A      | 3131    | 10.1          | 5.135        | → leaky top cap | 9       | 170B      | 3029    | 10.1          | 5.127        |                |
| Blank Titer: 0.0005                                                            |                                | 10      | ✓            | 171       | 2085    | 10.2          | 5.201        |                 | 10      |           |         |               |              |                |
| THIO N: 0.23988                                                                |                                | 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      |           |         |               |              |                |

GL sample KTB picks

|                                                 |                                                |                                                |                                                |                                               |                                               |                                               |                                               |                                                |                                                |                                               |
|-------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|------------------------------------------------|------------------------------------------------|-----------------------------------------------|
| 162<br>Oxy<br>LBP3<br>Bot-10<br>19-005<br>Bot 1 | 163<br>Oxy<br>LBP3<br>150 m<br>19-005<br>Bot 2 | 164<br>Oxy<br>LBP3<br>125 m<br>19-005<br>Bot 3 | 165<br>Oxy<br>LBP3<br>100 m<br>19-005<br>Bot 4 | 166<br>Oxy<br>LBP3<br>75 m<br>19-005<br>Bot 5 | 167<br>Oxy<br>LBP3<br>50 m<br>19-005<br>Bot 6 | 168<br>Oxy<br>LBP3<br>30 m<br>19-005<br>Bot 7 | 169<br>Oxy<br>LBP3<br>20 m<br>19-005<br>Bot 8 | 170A<br>Oxy<br>LBP3<br>10 m<br>19-005<br>Bot 9 | 170B<br>Oxy<br>LBP3<br>10 m<br>19-005<br>Bot 9 | 171<br>Oxy<br>LBP3<br>5 m<br>19-005<br>Bot 10 |
|-------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|------------------------------------------------|------------------------------------------------|-----------------------------------------------|

Bottle integrity: First test the to the comments column.

\* check tension on bottle 9

# Dissolved Oxygen Analysis Log Sheet

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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) |                                            | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments                      |
|----------------------------------------------------------------------------------------|---------|--------------|-----------|---------|---------------|--------------|--------------------------------------------|-----------|---------|---------------|--------------|-------------------------------------|
| Cruise Number: 2019-005                                                                | 1       | ✓✓           | 183       | 456     | 5.4           | 0.462        |                                            |           |         |               |              |                                     |
| Event: 85                                                                              | 2       | ✓✓           | 184       | 3093    | 5.3           | 0.460        |                                            |           |         |               |              |                                     |
| Station: LBP5                                                                          | 3       | ✓✓           | 185       | 3148    | 5.7           | 0.326        |                                            |           |         |               |              |                                     |
| Event Date (Local): 27 May 2019                                                        | 4       | ✓✓           | 186       | 570     | 6.1           | 0.319        |                                            |           |         |               |              |                                     |
| Analysis Date (Local): 27 May                                                          | 5       | ✓✓           | 187 a     | 3138    | 6.6           | 0.712        | OT - late endpoint, OT also late, O2 check | 187 b     | 3126    | 6.6           | 0.713        | also late which is why they agree!! |
| Analyst: N2                                                                            | 6       | ✓✓           | 188       | 510     | 6.7           | 1.062        |                                            |           |         |               |              |                                     |
| Stdization Date (Local): 27 May                                                        | 7       | ✓✓           | 189       | 745     | 6.9           | 1.345        |                                            |           |         |               |              |                                     |
| KIO <sub>3</sub> N: 0.0118108                                                          | 8       | ✓✓           | 190       | 612     | 7.2           | 1.618        |                                            |           |         |               |              |                                     |
| Standard Titer: 0.49304                                                                | 9       | ✓✓           | 191       | 3043    | 7.5           | 1.987        |                                            |           |         |               |              |                                     |
| Blank Titer: 0.0005                                                                    | 10      | ✓✓           | 192       | 2098    | 7.7           | 2.087        |                                            |           |         |               |              |                                     |
| THIO N: 0.23988                                                                        | 11      | ✓✓           | 193       | 3146    | 7.8           | 2.209        |                                            |           |         |               |              |                                     |
| Sample Flask Water Seal? <input checked="" type="radio"/> Yes <input type="radio"/> No | 12      | ✓✓           | 194       | 708     | 8.2           | 2.647        |                                            |           |         |               |              |                                     |
| Reagent Change? MnCl <sub>2</sub>                                                      | 13      | ✓✓           | 195       | 611     | 8.5           | 2.862        | OT - late endpoint                         |           |         |               |              |                                     |
| (Please circle reagent that was changed prior to sampling and standardization)         | 14      | ✓✓           | 196       | 3165    | 8.8           | 3.826        | OT - late endpoint                         |           |         |               |              |                                     |
| NaI/NaOH                                                                               | 15      | ✓✓           | 197       | 3175    | 9.5           | 5.391        |                                            |           |         |               |              |                                     |
| H <sub>2</sub> SO <sub>4</sub>                                                         | 16      | ✓✓           | 198       | 3002    | 10.3          | 5.894        |                                            |           |         |               |              |                                     |
| NOTE NEW BATCH IN LOG BOOK                                                             | 17      | ✓✓           | 199 a     | 3190    | 10.4          | 5.879        | OT - late endpoint                         | 199 b     | 3129    | 10.3          | 5.882        | late endpoint O2 check              |
| KIO <sub>3</sub>                                                                       | 18      | ✓✓           | 200       | 3162    | 10.5          | 6.312        |                                            |           |         |               |              |                                     |
| THIO                                                                                   | 19      | ✓✓           | 201       | 3053    | 10.7          | 6.442        |                                            |           |         |               |              |                                     |
| Notes: Sample: N2<br>Piche: 124B                                                       | 20      |              |           |         |               |              |                                            |           |         |               |              |                                     |
|                                                                                        | 21      |              |           |         |               |              |                                            |           |         |               |              |                                     |
|                                                                                        | 22      |              |           |         |               |              |                                            |           |         |               |              |                                     |

|        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 183    | 184    | 185    | 186    | 187 A  | 187 B  | 188    | 189    | 190    | 191    | 192    | 193    | 194    | 195    | 196    | 197    | 198    |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LBP5   | LBP5   | LBP5   | LBP5   | LBP5   | LBP5   | LBP5   | LBP5   | LBP5   | LBP5   | LBP5   | LBP5   | LBP5   | LBP5   | LBP5   | LBP5   | LBP5   |
| Bot-10 | 1250 m | 1000 m | 750 m  | 500 m  | 500 m  | 400 m  | 300 m  | 250 m  | 200 m  | 175 m  | 150 m  | 125 m  | 100 m  | 75 m   | 50 m   | 30 m   |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 5  | Bot 6  | Bot 7  | Bot 8  | Bot 9  | Bot 10 | Bot 11 | Bot 12 | Bot 13 | Bot 14 | Bot 15 | Bot 16 |

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| 202    | 203    | 204    | 205 A  | 205 B  | 206    | 207    | 208    | 209    | 210    | 211    | 212    | 213 A  | 213 B  | 214    | 215    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LBP7   | LBP7   | LBP7   | LBP7   | LBP7   | LBP7   | LBP7   | LBP7   | LBP7   | LBP7   | LBP7   | LBP7   | LBP7   | LBP7   | LBP7   | LBP7   |
| 2000 m | 1500 m | 1250 m | 1000 m | 1000 m | 750 m  | 500 m  | 400 m  | 300 m  | 250 m  | 200 m  | 175 m  | 150 m  | 150 m  | 125 m  | 100 m  |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 4  | Bot 5  | Bot 6  | Bot 7  | Bot 8  | Bot 9  | Bot 10 | Bot 11 | Bot 12 | Bot 12 | Bot 13 | Bot 14 |

Dissolved Oxygen Analysis Log Sheet

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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: 2019-005                                                        | 1       | ✓            | ✓         | 233     | 2099          | 9.7          | 3.976          |                         | 1         |         |               |              |                |
| Event: 103                                                                     | 2       | ✓            | ✓         | 234     | 2049          | (5.9)        | 4.033          | Suspect incorrect draw! | 2         |         |               |              |                |
| Station: LG01                                                                  | 3       | ✓            | ✓         | 235     | 3037          | 10.5         | 5.484          |                         | 3         |         |               |              |                |
| Event Date (Local): 28 MAY 2019                                                | 4       | ✓            | ✓         | 236A    | 3076          | 12.1         | 8.022          | →                       | 4         | 236B    | 3014          | 12.1         | 8.015          |
| Analysis Date (Local): 28 MAY                                                  | 5       | ✓            | ✓         | 237     | 3081          | 12.3         | 8.396          |                         | 5         |         |               |              |                |
| Analyst: N <sup>2</sup>                                                        | 6       |              |           |         |               |              |                |                         | 6         |         |               |              |                |
| Stdization Date (Local): 28 MAY                                                | 7       |              |           |         |               |              |                |                         | 7         |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       |              |           |         |               |              |                |                         | 8         |         |               |              |                |
| Standard Titer: 0.49316                                                        | 9       |              |           |         |               |              |                |                         | 9         |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10      |              |           |         |               |              |                |                         | 10        |         |               |              |                |
| THIO N: 0.23980                                                                | 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) | 15      |              |           |         |               |              |                |                         | 15        |         |               |              |                |
| NaI/NaOH                                                                       | 16      |              |           |         |               |              |                |                         | 16        |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                |                         | 17        |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                |                         | 18        |         |               |              |                |
| KIO <sub>3</sub>                                                               | 19      |              |           |         |               |              |                |                         | 19        |         |               |              |                |
| THIO                                                                           | 20      |              |           |         |               |              |                |                         | 20        |         |               |              |                |
| Notes: turtle. 64/14                                                           | 21      |              |           |         |               |              |                |                         | 21        |         |               |              |                |
|                                                                                | 22      |              |           |         |               |              |                |                         | 22        |         |               |              |                |
|                                                                                |         |              |           |         |               |              |                |                         | 23        |         |               |              |                |
|                                                                                |         |              |           |         |               |              |                |                         | 24        |         |               |              |                |

|        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|
| 233    | 234    | 235    | 236 A  | 236 B  | 237    |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LG01   | LG01   | LG01   | LG01   | LG01   | LG01   |
| Bot-10 | 30 m   | 20 m   | 10 m   | 10 m   | 5 m    |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 4  | Bot 5  |

pigot 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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| 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: 2019-005                                                        | 1       |              | 238       | 3110    |               |              | bottle didn't fire    | 1       |           |         |               |              |                |
| Event: 105                                                                     | 2       | ✓            | 239       | 3078    | 8.9           | 2.529        |                       | 2       |           |         |               |              |                |
| Station: LG02                                                                  | 3       | ✓            | 240       | 3131    | 9.1           | 3.350        |                       | 3       |           |         |               |              |                |
| Event Date (Local): 28 MAY 2019                                                | 4       | ✓            | 241       | 3029    | 9.2           | 4.422        |                       | 4       |           |         |               |              |                |
| Analysis Date (Local): 28 MAY                                                  | 5       | ✓            | 242A      | 2085    | 10.0          | 5.580        | →                     | 5       | 242B      | 1459    | 10.0          | 5.576        |                |
| Analyst: NZ                                                                    | 6       | X            | 243       | 620     | 11.6          | 6.363        | possible leaking vent | 6       |           |         |               |              |                |
| Stdization Date (Local): 28 May                                                | 7       | ✓            | 244       | 622     | 11.9          | 6.613        |                       | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       |              |           |         |               |              |                       | 8       |           |         |               |              |                |
| Standard Titer: 0.49316                                                        | 9       |              |           |         |               |              |                       | 9       |           |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10      |              |           |         |               |              |                       | 10      |           |         |               |              |                |
| THIO N: 0.23980                                                                | 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) | 15      |              |           |         |               |              |                       | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      |              |           |         |               |              |                       | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                       | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                       | 18      |           |         |               |              |                |
| KIO <sub>3</sub>                                                               | 19      |              |           |         |               |              |                       | 19      |           |         |               |              |                |
| THIO                                                                           | 20      |              |           |         |               |              |                       | 20      |           |         |               |              |                |
| Notes: GC/KY                                                                   | 21      |              |           |         |               |              |                       | 21      |           |         |               |              |                |
| turtle                                                                         | 22      |              |           |         |               |              |                       | 22      |           |         |               |              |                |
|                                                                                | 23      |              |           |         |               |              |                       | 23      |           |         |               |              |                |
|                                                                                | 24      |              |           |         |               |              |                       | 24      |           |         |               |              |                |

the vent. Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.

239

Oxy

LG02

75 m

19-005

Bot 2

240

Oxy

LG02

50 m

19-005

Bot 3

241

Oxy

LG02

30 m

19-005

Bot 4

242 A

Oxy

LG02

20 m

19-005

Bot 5

242 B

Oxy

LG02

20 m

19-005

Bot 5

243

Oxy

LG02

10 m

19-005

Bot 6

244

Oxy

LG02

5 m

19-005

Bot 7

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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: 2019-005                                                        | 1  |  | 256  | 3018 | 8.3  | 1.964   |              | 1         |         |               |              |                | 1       |           |         |               |              |                |
| Event: 108                                                                     | 2  |  | 257  | 3048 | 8.5  | 2.464   |              | 2         |         |               |              |                | 2       |           |         |               |              |                |
| Station: LG04                                                                  | 3  |  | 258  | 3120 | 8.9  | 2.904   |              | 3         |         |               |              |                | 3       |           |         |               |              |                |
| Event Date (Local): May 28/2019                                                | 4  |  | 259  | 3041 | 9.0  | 3.247   |              | 4         |         |               |              |                | 4       |           |         |               |              |                |
| Analysis Date (Local): 28 May                                                  | 5  |  | 260  | 3155 | 8.9  | 3.852   |              | 5         |         |               |              |                | 5       |           |         |               |              |                |
| Analyst: N2                                                                    | 6  |  | 261A | 3044 | 9.1  | 4.717   | ⇒            | 6         | 261B    | 1311          | 9.1          | 4.718          | 6       |           |         |               |              |                |
| Stdization Date (Local): 28 May                                                | 7  |  | 262  | 3111 | 9.7  | 5.215   |              | 7         |         |               |              |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8  |  | 263  | 3099 | 10.9 | 6.017   |              | 8         |         |               |              |                | 8       |           |         |               |              |                |
| Standard Titer: 0.49316                                                        | 9  |  | 264  | 3143 | 12.3 | 7.140   |              | 9         |         |               |              |                | 9       |           |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10 |  |      |      |      |         |              | 10        |         |               |              |                | 10      |           |         |               |              |                |
| THIO N: 0.23980                                                                | 11 |  |      |      |      |         |              | 11        |         |               |              |                | 11      |           |         |               |              |                |
| Sample Flask Water Seal? Yes                                                   | 12 |  |      |      |      |         |              | 12        |         |               |              |                | 12      |           |         |               |              |                |
|                                                                                | 13 |  |      |      |      |         |              | 13        |         |               |              |                | 13      |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                              | 14 |  |      |      |      |         |              | 14        |         |               |              |                | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | 15 |  |      |      |      |         |              | 15        |         |               |              |                | 15      |           |         |               |              |                |
|                                                                                | 16 |  |      |      |      |         |              | 16        |         |               |              |                | 16      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 17 |  |      |      |      |         |              | 17        |         |               |              |                | 17      |           |         |               |              |                |
|                                                                                | 18 |  |      |      |      |         |              | 18        |         |               |              |                | 18      |           |         |               |              |                |
| Notes: N2/CS                                                                   | 19 |  |      |      |      |         |              | 19        |         |               |              |                | 19      |           |         |               |              |                |
| draw 10 mL                                                                     | 20 |  |      |      |      |         |              | 20        |         |               |              |                | 20      |           |         |               |              |                |
| Sea turtle                                                                     | 21 |  |      |      |      |         |              | 21        |         |               |              |                | 21      |           |         |               |              |                |
|                                                                                | 22 |  |      |      |      |         |              | 22        |         |               |              |                | 22      |           |         |               |              |                |
|                                                                                |    |  |      |      |      |         |              | 23        |         |               |              |                | 23      |           |         |               |              |                |
|                                                                                |    |  |      |      |      |         |              | 24        |         |               |              |                | 24      |           |         |               |              |                |

|        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 256    | 257    | 258    | 259    | 260    | 261 A  | 261 B  | 262    | 263    | 264    |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LG04   | LG04   | LG04   | LG04   | LG04   | LG04   | LG04   | LG04   | LG04   | LG04   |
| Bot-10 | 125 m  | 100 m  | 75 m   | 50 m   | 30 m   | 30 m   | 20 m   | 10 m   | 5 m    |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 6  | Bot 6  | Bot 7  | Bot 8  | Bot 9  |

if either fails the integrity check and explain this in the comments column.

# Dissolved Oxygen Analysis Log Sheet

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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              | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|----------------------------------------------------------------------------------------|---------|--------------|-----------|---------|---------------|--------------|-----------------------------|-----------|---------|---------------|--------------|----------------|
| Cruise Number: 2019-005                                                                | 1       |              | 265       | 456     | 5.7           |              | lost sample analyst problem | 1         |         |               |              |                |
| Event: 111                                                                             | 2       |              | 266       | 3093    | 6.2           | 0.223        |                             | 2         |         |               |              |                |
| Station: LG06                                                                          | 3       |              | 267       | 3148    | 6.8           | 0.554        |                             | 3         |         |               |              |                |
| Event Date (Local): MAY 28/19                                                          | 4       |              | 268       | 570     | 7.2           | 0.880        |                             | 4         |         |               |              |                |
| Analysis Date (Local): 29 May                                                          | 5       |              | 269A      | 3138    | 7.1           | 1.298        | →                           | 5         | 269B    | 3126          | 6.9          | 1.304          |
| Analyst: N2                                                                            | 6       |              | 270       | 510     | 7.4           | 1.624        |                             | 6         |         |               |              |                |
| Stdization Date (Local): 28 May                                                        | 7       |              | 271       | 745     | 7.9           | 1.985        |                             | 7         |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                          | 8       |              | 272       | 612     | 8.4           | 2.414        |                             | 8         |         |               |              |                |
| Standard Titer: 0.49316                                                                | 9       |              | 273       | 3043    | 8.7           | 2.584        |                             | 9         |         |               |              |                |
| Blank Titer: 0.0004                                                                    | 10      |              | 274       | 2098    | 9.1           | 2.742        |                             | 10        |         |               |              |                |
| THIO N: 0.23980                                                                        | 11      |              | 275       | 3146    | 9.0           | 3.726        |                             | 11        |         |               |              |                |
| Sample Flask Water Seal? <input checked="" type="radio"/> Yes <input type="radio"/> No | 12      |              | 276       | 708     | 8.7           | 5.142        |                             | 12        |         |               |              |                |
|                                                                                        | 13      |              | 277       | 611     | 9.0           | 6.263        |                             | 13        |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                                      | 14      |              | 278       | 3165    | 10.2          | 5.982        |                             | 14        |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization)         | 15      |              | 279A      | 3175    | 10.7          | 6.145        | →                           | 15        | 279B    | 3002          | 10.9         | 6.146          |
| NOTE NEW BATCH IN LOG BOOK                                                             | 16      |              | 280       | 3190    | 11.4          | 6.686        | OT - late endpoint          | 16        |         |               |              |                |
|                                                                                        | 17      |              | 281       | 3129    | 11.7          | 6.795        |                             | 17        |         |               |              |                |
|                                                                                        | 18      |              |           |         |               |              |                             | 18        |         |               |              |                |
| Notes: N2 draw CS pickle                                                               | 19      |              |           |         |               |              |                             | 19        |         |               |              |                |
|                                                                                        | 20      |              |           |         |               |              |                             | 20        |         |               |              |                |
|                                                                                        | 21      |              |           |         |               |              |                             | 21        |         |               |              |                |
|                                                                                        | 22      |              |           |         |               |              |                             | 22        |         |               |              |                |

|        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 265    | 266    | 267    | 268    | 269 A  | 269 B  | 270    | 271    | 272    | 273    | 274    | 275    | 276    | 277    | 278    | 279 A  | 279 B  |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LG06   | LG06   | LG06   | LG06   | LG06   | LG06   | LG06   | LG06   | LG06   | LG06   | LG06   | LG06   | LG06   | LG06   | LG06   | LG06   | LG06   |
| Bot-10 | 750 m  | 500 m  | 400 m  | 300 m  | 300 m  | 250 m  | 200 m  | 175 m  | 150 m  | 125 m  | 100 m  | 75 m   | 50 m   | 30 m   | 20 m   | 20 m   |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 5  | Bot 6  | Bot 7  | Bot 8  | Bot 9  | Bot 10 | Bot 11 | Bot 12 | Bot 13 | Bot 14 | Bot 15 | Bot 15 |

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|        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 284    | 285    | 286    | 287    | 288 A  | 288 B  | 289    | 290    | 291    | 292    | 293 A  | 293 B  | 294    | 295    | 296    | 297    | 298    |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LD11   | LD11   | LD11   | LD11   | LD11   | LD11   | LD11   | LD11   | LD11   | LD11   | LD11   | LD11   | LD11   | LD11   | LD11   | LD11   | LD11   |
| Bot-10 | 1500 m | 1250 m | 1000 m | 750 m  | 750 m  | 500 m  | 400 m  | 300 m  | 250 m  | 200 m  | 200 m  | 175 m  | 150 m  | 125 m  | 100 m  | 75 m   |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 5  | Bot 6  | Bot 7  | Bot 8  | Bot 9  | Bot 10 | Bot 10 | Bot 11 | Bot 12 | Bot 13 | Bot 14 | Bot 15 |

# Dissolved Oxygen Analysis Log Sheet

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Nessy

329

Oxy

LD08

10 m

19-005

Bot 16



OXY-1 Comments

330

Oxy

LD08

5 m

19-005

Bot 17

Last Updated: July 2018

| Cruise and Analysis Information                                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) |
|--------------------------------------------------------------------------------|---------|--------------|-----------|---------|---------------|--------------|
| Cruise Number: 209-05                                                          | 1       | ✓            | 314       | 3046    | 6.3           | 0.231        |
| Event: 124                                                                     | 2       | ✓            | 315       | 2089    | 6.4           | 0.246        |
| Station: LD08                                                                  | 3       | ✓            | 316       | 371     | 6.9           | 0.243        |
| Event Date (Local): 29 May 2019                                                | 4       | ✓            | 317       | 2055    | 7.2           | 1.117        |
| Analysis Date (Local): 29 May                                                  | 5       | ✓            | 318       | 1094    | 7.6           | 1.607        |
| Analyst: N2                                                                    | 6       | ✓            | 319       | 396     | 7.8           | 1.997        |
| Stdization Date (Local): 28 May                                                | 7       | ✓            | 320A      | 471     | 8.3           | 2.428        |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       | ✓            | 321       | 3049    | 8.5           | 2.571        |
| Standard Titer: 0.49316                                                        | 9       | ✓            | 322       | 1055    | 8.6           | 2.867        |
| Blank Titer: 0.0004                                                            | 10      | ✓            | 323       | 1406    | 8.9           | 2.808        |
| THIO N: 0.23980                                                                | 11      | ✓            | 324       | 2060    | 9.0           | 3.396        |
| Sample Flask Water Seal? Yes                                                   | 12      | ✓            | 325       | 2028    | 9.2           | 4.096        |
|                                                                                | 13      | ✓            | 326       | 3059    | 9.3           | 5.634        |
| Reagent Change? MnCl <sub>2</sub>                                              | 14      | ✓            | 327       | 3073    | 10.9          | 6.454        |
| (Please circle reagent that was changed prior to sampling and standardization) | 15      | ✓            | 328A      | 505     | 11.3          | 6.578        |
| NOTE NEW BATCH IN LOG BOOK                                                     | 16      | ✓            | 329       | 3030    | 11.9          | 6.848        |
|                                                                                | 17      | ✓            | 330       | 2065    | 12.1          | 6.869        |
|                                                                                | 18      |              |           |         |               |              |
|                                                                                | 19      |              |           |         |               |              |
|                                                                                | 20      |              |           |         |               |              |
|                                                                                | 21      |              |           |         |               |              |
|                                                                                | 22      |              |           |         |               |              |

Notes:

GC/KIB

OT late endpoint

⇒

320B 3137 8.3 2.425

328B 3057 11.3 6.578 ✓ NICE ONE

|        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 314    | 315    | 316    | 317    | 318    | 319    | 320A   | 320B   | 321    | 322    | 323    | 324    | 325    | 326    | 327    | 328A   | 328B   |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LD08   | LD08   | LD08   | LD08   | LD08   | LD08   | LD08   | LD08   | LD08   | LD08   | LD08   | LD08   | LD08   | LD08   | LD08   | LD08   | LD08   |
| Bot-10 | 750 m  | 500 m  | 400 m  | 300 m  | 250 m  | 200 m  | 200 m  | 175 m  | 150 m  | 125 m  | 100 m  | 75 m   | 50 m   | 30 m   | 20 m   | 20 m   |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 6  | Bot 7  | Bot 7  | Bot 8  | Bot 9  | Bot 10 | Bot 11 | Bot 12 | Bot 13 | Bot 14 | Bot 15 | Bot 15 |

Dissolved Oxygen Analysis Log Sheet

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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: 2019-005                                                        | 1  | ✓ | ✓ | 331  | 3005 | 8.4  | 2.009   |                    | 1         |         |               |              |                | 2       |           |         |               |              |                |
| Event: 127                                                                     | 2  | ✓ | ✓ | 332  | 1409 | 8.9  | 2.717   |                    | 2         |         |               |              |                | 3       |           |         |               |              |                |
| Station: LD06                                                                  | 3  | ✓ | ✓ | 333  | 3194 | 9.1  | 3.453   |                    | 3         |         |               |              |                | 4       | 334B      | 621     | 9.1           | 4.897        | XX NOT GOOD    |
| Event Date (Local): 29 MAY 2019                                                | 4  | ✓ | ✓ | 334A | 94   | 9.1  | 4.886   | →                  | 5         |         |               |              |                | 6       |           |         |               |              |                |
| Analysis Date (Local): 29 MAY                                                  | 5  | ✓ | ✓ | 335  | 1408 | 9.9  | 5.680   |                    | 7         |         |               |              |                | 7       |           |         |               |              |                |
| Analyst: N2                                                                    | 6  | X | X | 336  | 3050 | 11.7 | 6.032   | leaky?             | 8         |         |               |              |                | 8       |           |         |               |              |                |
| Stdization Date (Local): 28 May                                                | 7  | ✓ | ✓ | 337  | 1407 | 12.9 | 8.218   |                    | 9         |         |               |              |                | 9       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8  | ✓ | ✓ | 338  | 1223 | 13.1 | 8.856   | OT - late endpoint | 10        |         |               |              |                | 10      |           |         |               |              |                |
| Standard Titer: 0.49316                                                        | 9  |   |   |      |      |      |         |                    | 11        |         |               |              |                | 11      |           |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10 |   |   |      |      |      |         |                    | 12        |         |               |              |                | 12      |           |         |               |              |                |
| THIO N: 0.23980                                                                | 11 |   |   |      |      |      |         |                    | 13        |         |               |              |                | 13      |           |         |               |              |                |
| Sample Flask Water Seal? Yes                                                   | 12 |   |   |      |      |      |         |                    | 14        |         |               |              |                | 14      |           |         |               |              |                |
|                                                                                | 13 |   |   |      |      |      |         |                    | 15        |         |               |              |                | 15      |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                              | 14 |   |   |      |      |      |         |                    | 16        |         |               |              |                | 16      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | 15 |   |   |      |      |      |         |                    | 17        |         |               |              |                | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 16 |   |   |      |      |      |         |                    | 18        |         |               |              |                | 18      |           |         |               |              |                |
| NaI/NaOH                                                                       | 17 |   |   |      |      |      |         |                    | 19        |         |               |              |                | 19      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 18 |   |   |      |      |      |         |                    | 20        |         |               |              |                | 20      |           |         |               |              |                |
| KIO <sub>3</sub>                                                               | 19 |   |   |      |      |      |         |                    | 21        |         |               |              |                | 21      |           |         |               |              |                |
| THIO                                                                           | 20 |   |   |      |      |      |         |                    | 22        |         |               |              |                | 22      |           |         |               |              |                |
| Notes: Glenn + Kevin                                                           | 21 |   |   |      |      |      |         |                    | 23        |         |               |              |                | 23      |           |         |               |              |                |
|                                                                                | 22 |   |   |      |      |      |         |                    | 24        |         |               |              |                | 24      |           |         |               |              |                |
| Nessy.                                                                         |    |   |   |      |      |      |         |                    |           |         |               |              |                |         |           |         |               |              |                |

riate column if either fails the integrity check and explain this in the comments column.

331

Oxy

LD06

Bot-10

19-005

Bot 1

332

Oxy

LD06

100 m

19-005

Bot 2

333

Oxy

LD06

75 m

19-005

Bot 3

334 A

Oxy

LD06

50 m

19-005

Bot 4

334 B

Oxy

LD06

50 m

19-005

Bot 4

335

Oxy

LD06

30 m

19-005

Bot 5

336

Oxy

LD06

20 m

19-005

Bot 6

337

Oxy

LD06

10 m

19-005

Bot 7

338

Oxy

LD06

5 m

19-005

Bot 8

Dissolved Oxygen Analysis Log Sheet

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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: 2019-005                                                        |  |  |  |  |  |  | 1       |              | 339A      | 456     | 9.8           | 3.785        | -0             | 1       | 339B      | 3093    | 9.8           | 3.788        |                |
| Event: 128                                                                     |  |  |  |  |  |  | 2       |              | 340       | 3148    | 10.0          | 3.883        |                | 2       |           |         |               |              |                |
| Station: L004                                                                  |  |  |  |  |  |  | 3       |              | 341       | 570     | 10.3          | 4.231        |                | 3       |           |         |               |              |                |
| Event Date (Local): 29-05-19                                                   |  |  |  |  |  |  | 4       |              | 342       | 3138    | 12.6          | 6.527        |                | 4       |           |         |               |              |                |
| Analysis Date (Local): 30 MAY                                                  |  |  |  |  |  |  | 5       |              | 343       | 3126    | 13.9          | 7.005        |                | 5       |           |         |               |              |                |
| Analyst: NZ                                                                    |  |  |  |  |  |  | 6       |              |           |         |               |              |                | 6       |           |         |               |              |                |
| Stdization Date (Local): 28 May                                                |  |  |  |  |  |  | 7       |              |           |         |               |              |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  |  |  |  |  |  |  | 8       |              |           |         |               |              |                | 8       |           |         |               |              |                |
| Standard Titer: 0.49316                                                        |  |  |  |  |  |  | 9       |              |           |         |               |              |                | 9       |           |         |               |              |                |
| Blank Titer: 0.0004                                                            |  |  |  |  |  |  | 10      |              |           |         |               |              |                | 10      |           |         |               |              |                |
| THIO N: 0.23990                                                                |  |  |  |  |  |  | 11      |              |           |         |               |              |                | 11      |           |         |               |              |                |
| Sample Flask Water Seal? <input checked="" type="checkbox"/> Yes               |  |  |  |  |  |  | 12      |              |           |         |               |              |                | 12      |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                              |  |  |  |  |  |  | 13      |              |           |         |               |              |                | 13      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) |  |  |  |  |  |  | 14      |              |           |         |               |              |                | 14      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     |  |  |  |  |  |  | 15      |              |           |         |               |              |                | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       |  |  |  |  |  |  | 16      |              |           |         |               |              |                | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 |  |  |  |  |  |  | 17      |              |           |         |               |              |                | 17      |           |         |               |              |                |
| KIO <sub>3</sub>                                                               |  |  |  |  |  |  | 18      |              |           |         |               |              |                | 18      |           |         |               |              |                |
| THIO                                                                           |  |  |  |  |  |  | 19      |              |           |         |               |              |                | 19      |           |         |               |              |                |
| Notes: BENDER                                                                  |  |  |  |  |  |  | 20      |              |           |         |               |              |                | 20      |           |         |               |              |                |
| CS/AS                                                                          |  |  |  |  |  |  | 21      |              |           |         |               |              |                | 21      |           |         |               |              |                |
| sample/pickle                                                                  |  |  |  |  |  |  | 22      |              |           |         |               |              |                | 22      |           |         |               |              |                |
|                                                                                |  |  |  |  |  |  | 23      |              |           |         |               |              |                | 23      |           |         |               |              |                |
|                                                                                |  |  |  |  |  |  | 24      |              |           |         |               |              |                | 24      |           |         |               |              |                |

339 A  
Oxy  
LD04  
Bot-10  
19-005  
Bot 1

339 B  
Oxy  
LD04  
Bot-10  
19-005  
Bot 1

340  
Oxy  
LD04  
30 m  
19-005  
Bot 2

341  
Oxy  
LD04  
20 m  
19-005  
Bot 3

342  
Oxy  
LD04  
10 m  
19-005  
Bot 4

343  
Oxy  
LD04  
5 m  
19-005  
Bot 5

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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| Cruise and Analysis Information                                                | Nisk ID | Nisk Int VS | 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: 2019-005                                                        | 1       |             | 344       | 510     |               |              | NOV ISILIN NOT REPAIRED | 1       |           |         |               |              |                |
| Event: 132                                                                     | 2       |             | 345       | 745     | 10.7          | 4.802        |                         | 2       |           |         |               |              |                |
| Station: LD02                                                                  | 3       |             | 346       | 612     | 11.3          | 5.313        |                         | 3       |           |         |               |              |                |
| Event Date (Local): 29-05-19                                                   | 4       |             | 347A      | 3043    | 13.3          | 7.797        | →                       | 4       | 347B      | 2098    | 13.3          | 7.820        | XX             |
| Analysis Date (Local): 30 May                                                  | 5       |             | 348       | 3146    | 14.5          | 8.017        |                         | 5       |           |         |               |              |                |
| Analyst: N20                                                                   | 6       |             |           |         |               |              |                         | 6       |           |         |               |              |                |
| Stdization Date (Local): 28 May                                                | 7       |             |           |         |               |              |                         | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       |             |           |         |               |              |                         | 8       |           |         |               |              |                |
| Standard Titer: 0.49316                                                        | 9       |             |           |         |               |              |                         | 9       |           |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10      |             |           |         |               |              |                         | 10      |           |         |               |              |                |
| THIO N: 0.23980                                                                | 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) | 15      |             |           |         |               |              |                         | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      |             |           |         |               |              |                         | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |             |           |         |               |              |                         | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |             |           |         |               |              |                         | 18      |           |         |               |              |                |
| KIO <sub>3</sub>                                                               | 19      |             |           |         |               |              |                         | 19      |           |         |               |              |                |
| THIO                                                                           | 20      |             |           |         |               |              |                         | 20      |           |         |               |              |                |
| Notes:                                                                         | 21      |             |           |         |               |              |                         | 21      |           |         |               |              |                |
| Ben der                                                                        | 22      |             |           |         |               |              |                         | 22      |           |         |               |              |                |
|                                                                                | 23      |             |           |         |               |              |                         | 23      |           |         |               |              |                |
|                                                                                | 24      |             |           |         |               |              |                         | 24      |           |         |               |              |                |

345  
Oxy  
LD02  
30 m  
19-005  
Bot 2

346  
Oxy  
LD02  
20 m  
19-005  
Bot 3

347 A  
Oxy  
LD02  
10 m  
19-005  
Bot 4

347 B  
Oxy  
LD02  
10 m  
19-005  
Bot 4

348  
Oxy  
LD02  
5 m  
19-005  
Bot 5

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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Last Updated: July 2018

| 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: 2019.05                                                         | 1       |              | 349       | 708     | 11.5          | 5.484        |                | 1       |           |         |               |              |                |
| Event: 134                                                                     | 2       |              | 350       | 611     | 11.6          | 5.579        |                | 2       |           |         |               |              |                |
| Station: LD01                                                                  | 3       |              | 351       | 3165    | 13.6          | 8.241        |                | 3       |           |         |               |              |                |
| Event Date (Local): 29.05.19                                                   | 4       |              | 352A      | 3175    | 14.5          | 8.423        |                | 4       | 352B      | 3002    | 14.5          | 8.420        |                |
| Analysis Date (Local): 30 May                                                  | 5       |              |           |         |               |              |                | 5       |           |         |               |              |                |
| Analyst: NZ                                                                    | 6       |              |           |         |               |              |                | 6       |           |         |               |              |                |
| Stdization Date (Local): 28 May                                                | 7       |              |           |         |               |              |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       |              |           |         |               |              |                | 8       |           |         |               |              |                |
| Standard Titer: 0.49316                                                        | 9       |              |           |         |               |              |                | 9       |           |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10      |              |           |         |               |              |                | 10      |           |         |               |              |                |
| THIO N: 0.23980                                                                | 11      |              |           |         |               |              |                | 11      |           |         |               |              |                |
| Sample Flask Water Seal? <input checked="" type="radio"/> Yes                  | 12      |              |           |         |               |              |                | 12      |           |         |               |              |                |
|                                                                                | 13      |              |           |         |               |              |                | 13      |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                              | 14      |              |           |         |               |              |                | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | 15      |              |           |         |               |              |                | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      |              |           |         |               |              |                | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                | 18      |           |         |               |              |                |
| KIO <sub>3</sub>                                                               | 19      |              |           |         |               |              |                | 19      |           |         |               |              |                |
| THIO                                                                           | 20      |              |           |         |               |              |                | 20      |           |         |               |              |                |
| Notes: BENDER                                                                  | 21      |              |           |         |               |              |                | 21      |           |         |               |              |                |
|                                                                                | 22      |              |           |         |               |              |                | 22      |           |         |               |              |                |
|                                                                                |         |              |           |         |               |              |                | 23      |           |         |               |              |                |
|                                                                                |         |              |           |         |               |              |                | 24      |           |         |               |              |                |

5) 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.

349

Oxy

LD01

Bot-10

19-005

Bot 1

350

Oxy

LD01

20 m

19-005

Bot 2

351

Oxy

LD01

10 m

19-005

Bot 3

352 A

Oxy

LD01

5 m

19-005

Bot 4

352 B

Oxy

LD01

5 m

19-005

Bot 4

Dissolved Oxygen Analysis Log Sheet

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Last Updated: July 2018

| Cruise and Analysis Information                                                | Nisk ID | Nisk Int VS | 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: 2019-005                                                        | 1       |             | 353       | 3190    | 9.9           | 4.095        |                | 1       |           |         |               |              |                |
| Event: 136                                                                     | 2       |             | 354 A     | 3129    | 10.0          | 4.240        |                | 2       | 354 B     | 3162    | 10.0          | 4.237        |                |
| Station: LC01                                                                  | 3       |             | 355       | 3053    | 10.4          | 4.735        |                | 3       |           |         |               |              |                |
| Event Date (Local): 29-05-19                                                   | 4       |             | 356       | 3038    | 11.0          | 5.137        |                | 4       |           |         |               |              |                |
| Analysis Date (Local): 30 May                                                  | 5       |             | 357       | 3209    | 11.1          | 5.250        |                | 5       |           |         |               |              |                |
| Analyst: NZ                                                                    | 6       |             | 358       | 3096    | 12.1          | 6.945        |                | 6       |           |         |               |              |                |
| Stdization Date (Local): 28 May                                                | 7       |             | 359       | 3144    | 14.9          | 7.930        |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       |             |           |         |               |              |                | 8       |           |         |               |              |                |
| Standard Titer: 0.49316                                                        | 9       |             |           |         |               |              |                | 9       |           |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10      |             |           |         |               |              |                | 10      |           |         |               |              |                |
| THIO N: 0.23980                                                                | 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) | 15      |             |           |         |               |              |                | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      |             |           |         |               |              |                | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |             |           |         |               |              |                | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |             |           |         |               |              |                | 18      |           |         |               |              |                |
| KIO <sub>3</sub>                                                               | 19      |             |           |         |               |              |                | 19      |           |         |               |              |                |
| THIO                                                                           | 20      |             |           |         |               |              |                | 20      |           |         |               |              |                |
| Notes: BENDER                                                                  | 21      |             |           |         |               |              |                | 21      |           |         |               |              |                |
|                                                                                | 22      |             |           |         |               |              |                | 22      |           |         |               |              |                |
|                                                                                | 23      |             |           |         |               |              |                | 23      |           |         |               |              |                |
|                                                                                | 24      |             |           |         |               |              |                | 24      |           |         |               |              |                |

|        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|
| 353    | 354 A  | 354 B  | 355    | 356    | 357    | 358    | 359    |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LC01   | LC01   | LC01   | LC01   | LC01   | LC01   | LC01   | LC01   |
| Bot-10 | 75 m   | 75 m   | 50 m   | 30 m   | 20 m   | 10 m   | 5 m    |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 6  | Bot 7  |

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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Last Updated: July 2018

| 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: 2019-005                                                        | 1       |              | 360       | 2099    | 9.5           | 3.778        |                    | 1       |           |         |               |              |                |
| Event: 138                                                                     | 2       |              | 361       | 2049    | 9.8           | 4.118        |                    | 2       |           |         |               |              |                |
| Station: LC02                                                                  | 3       |              | 362       | 3037    | 10.1          | 4.343        |                    | 3       |           |         |               |              |                |
| Event Date (Local): 29.05.19                                                   | 4       |              | 363       | 3076    | 10.9          | 5.214        |                    | 4       |           |         |               |              |                |
| Analysis Date (Local): 30 May                                                  | 5       |              | 364       | 3014    | 11.5          | 5.804        |                    | 5       |           |         |               |              |                |
| Analyst: N2                                                                    | 6       |              | 365       | 3081    | 12.5          | 6.853        |                    | 6       |           |         |               |              |                |
| Stdization Date (Local): 28 May                                                | 7       |              | 366A      | 3110    | 13.8          | 8.023        | OT - late endpoint | 7       | 366B      | 3078    | 13.8          | 8.024        |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       |              |           |         |               |              |                    | 8       |           |         |               |              |                |
| Standard Titer: 0.49316                                                        | 9       |              |           |         |               |              |                    | 9       |           |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10      |              |           |         |               |              |                    | 10      |           |         |               |              |                |
| THIO N: 0.23980                                                                | 11      |              |           |         |               |              |                    | 11      |           |         |               |              |                |
| Sample Flask Water Seal? Yes                                                   | 12      |              |           |         |               |              |                    | 12      |           |         |               |              |                |
|                                                                                | 13      |              |           |         |               |              |                    | 13      |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                              | 14      |              |           |         |               |              |                    | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | 15      |              |           |         |               |              |                    | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      |              |           |         |               |              |                    | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                    | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                    | 18      |           |         |               |              |                |
| KIO <sub>3</sub>                                                               | 19      |              |           |         |               |              |                    | 19      |           |         |               |              |                |
| THIO                                                                           | 20      |              |           |         |               |              |                    | 20      |           |         |               |              |                |
| Notes: TORTLE N2/CS                                                            | 21      |              |           |         |               |              |                    | 21      |           |         |               |              |                |
|                                                                                | 22      |              |           |         |               |              |                    | 22      |           |         |               |              |                |
|                                                                                | 23      |              |           |         |               |              |                    | 23      |           |         |               |              |                |
|                                                                                | 24      |              |           |         |               |              |                    | 24      |           |         |               |              |                |

|        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|
| 360    | 361    | 362    | 363    | 364    | 365    | 366 A  | 366 B  |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LC02   | LC02   | LC02   | LC02   | LC02   | LC02   | LC02   | LC02   |
| Bot-10 | 75 m   | 50 m   | 30 m   | 20 m   | 10 m   | 5 m    | 5 m    |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 6  | Bot 7  | Bot 7  |

'x' in the appropriate column if either fails the integrity check and explain this in the comments column.

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Last Updated: July 2018

| 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: 2019-05                                                         | 1       |              | 368       | 3131    | 9.3           | 2.983        |                | 1       |           |         |               |              |                |
| Event: 141                                                                     | 2       |              | 369       | 3029    | 9.4           | 3.041        |                | 2       |           |         |               |              |                |
| Station: LC04                                                                  | 3       |              | 370       | 2085    | 9.4           | 3.290        |                | 3       |           |         |               |              |                |
| Event Date (Local): 29.05.19                                                   | 4       |              | 371       | 1459    | 9.5           | 3.500        |                | 4       |           |         |               |              |                |
| Analysis Date (Local): 30 May                                                  | 5       |              | 372       | 620     | 9.5           | 3.789        |                | 5       |           |         |               |              |                |
| Analyst: NZ                                                                    | 6       |              | 373       | 622     | 9.8           | 4.417        |                | 6       |           |         |               |              |                |
| Stdization Date (Local): 28 May                                                | 7       |              | 374       | 3018    | 10.6          | 4.725        |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       |              | 375       | 3048    | 11.5          | 5.399        |                | 8       |           |         |               |              |                |
| Standard Titer: 0.49316                                                        | 9       |              | 376       | 3120    | 12.5          | 7.031        |                | 9       | 376B      | 3041    | 12.6          | 7.061        | XX             |
| Blank Titer: 0.0004                                                            | 10      |              | 377       | 3155    | 14.7          | 8.292        |                | 10      |           |         |               |              |                |
| THIO N: 0.23980                                                                | 11      |              |           |         |               |              |                | 11      |           |         |               |              |                |
| Sample Flask Water Seal? Yes                                                   | 12      |              |           |         |               |              |                | 12      |           |         |               |              |                |
|                                                                                | 13      |              |           |         |               |              |                | 13      |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                              | 14      |              |           |         |               |              |                | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | 15      |              |           |         |               |              |                | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      |              |           |         |               |              |                | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                | 18      |           |         |               |              |                |
| KIO <sub>3</sub>                                                               | 19      |              |           |         |               |              |                | 19      |           |         |               |              |                |
| THIO                                                                           | 20      |              |           |         |               |              |                | 20      |           |         |               |              |                |
| Notes: CS/AS?                                                                  | 21      |              |           |         |               |              |                | 21      |           |         |               |              |                |

|        |        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 368    | 369    | 370    | 371    | 372    | 373    | 374    | 375    | 376 A  | 376    | 377    |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LC04   | LC04   | LC04   | LC04   | LC04   | LC04   | LC04   | LC04   | LC04   | LC04   | LC04   |
| Bot-10 | 150 m  | 125 m  | 100 m  | 75 m   | 50 m   | 30 m   | 20 m   | 10 m   | 10 m   | 5 m    |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 6  | Bot 7  | Bot 8  | Bot 9  | Bot 9  | Bot 10 |

ty check and explain this in the comments column.

Dissolved Oxygen Analysis Log Sheet

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Last Updated: July 2018

| 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: 2019-005                                                        | 1       |              | 379       | 3044    | 8.9           | 2.453        |                | 1       |           |         |               |              |                |
| Event: LC-145                                                                  | 2       |              | 380A      | 1311    | 9.0           | 2.667        |                | 2       | 380B      | 3111    | 9.0           | 2.659        |                |
| Station: LC06                                                                  | 3       |              | 381       | 3099    | 9.4           | 4.422        |                | 3       |           |         |               |              |                |
| Event Date (Local): 29.05.19                                                   | 4       |              | 382       | 3143    | 10.1          | 5.090        |                | 4       |           |         |               |              |                |
| Analysis Date (Local): 30 May                                                  | 5       |              | 383       | 3135    | 10.7          | 5.676        |                | 5       |           |         |               |              |                |
| Analyst: N2                                                                    | 6       |              | 384       | 3083    | 12.6          | 7.888        |                | 6       |           |         |               |              |                |
| Stdization Date (Local): 28 May                                                | 7       |              | 385       | 3121    | 13.6          | 7.755        |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.01181080                                                 | 8       |              |           |         |               |              |                | 8       |           |         |               |              |                |
| Standard Titer: 0.49316                                                        | 9       |              |           |         |               |              |                | 9       |           |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10      |              |           |         |               |              |                | 10      |           |         |               |              |                |
| THIO N: 0.23980                                                                | 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) | 15      |              |           |         |               |              |                | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      |              |           |         |               |              |                | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                | 18      |           |         |               |              |                |
| KIO <sub>3</sub>                                                               | 19      |              |           |         |               |              |                | 19      |           |         |               |              |                |
| THIO                                                                           | 20      |              |           |         |               |              |                | 20      |           |         |               |              |                |
| Notes: TURTLE                                                                  | 21      |              |           |         |               |              |                | 21      |           |         |               |              |                |
|                                                                                | 22      |              |           |         |               |              |                | 22      |           |         |               |              |                |
|                                                                                | 23      |              |           |         |               |              |                | 23      |           |         |               |              |                |
|                                                                                | 24      |              |           |         |               |              |                | 24      |           |         |               |              |                |

Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.

379  
Oxy  
LC06  
Bot-10  
19-005  
Bot 1

380 N  
Oxy  
LC06  
75 m  
19-005  
Bot 2

380 B  
Oxy  
LC06  
75 m  
19-005  
Bot 2

381  
Oxy  
LC06  
50 m  
19-005  
Bot 3

382  
Oxy  
LC06  
30 m  
19-005  
Bot 4

383  
Oxy  
LC06  
20 m  
19-005  
Bot 5

384  
Oxy  
LC06  
10 m  
19-005  
Bot 6

385  
Oxy  
LC06  
5 m  
19-005  
Bot 7

# Dissolved Oxygen Analysis Log Sheet

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LOCH NESS



Last Updated: July 2018

| Cruise and Analysis Information                                                        | Nisk ID | Nisk Int VS | 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: 2019-005                                                                | 1       | ✓           | 386       | 3046    | 8.2           | 2.002        |                    | 1       |           |         |               |              |                |
| Event: 149                                                                             | 2       | ✓           | 387       | 2089    | 8.4           | 2.296        |                    | 2       |           |         |               |              |                |
| Station: LC08                                                                          | 3       | ✓           | 388       | 371     | 8.7           | 2.738        |                    | 3       |           |         |               |              |                |
| Event Date (Local): 30-05-2019                                                         | 4       | ✓           | 389       | 2055    | 9.0           | 2.806        |                    | 4       |           |         |               |              |                |
| Analysis Date (Local): 30 May                                                          | 5       | ✓           | 390       | 1094    | 9.2           | 3.154        |                    | 5       |           |         |               |              |                |
| Analyst: N2                                                                            | 6       | ✓           | 391       | 396     | 9.2           | 3.517        |                    | 6       |           |         |               |              |                |
| Stdization Date (Local): 28 May                                                        | 7       | ✓           | 392       | 471     | 9.2           | 4.296        |                    | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                          | 8       | ✓           | 393A      | 5137    | 9.6           | 5.862        | ⇒ OF-late endpoint | 8       | 393B      | 3071    | 9.6           | 5.872        |                |
| Standard Titer: 0.49316                                                                | 9       | ✓           | 394       | 1055    | 11.7          | 6.800        |                    | 9       |           |         |               |              |                |
| Blank Titer: 0.0004                                                                    | 10      | ✓           | 395       | 1406    | 12.4          | 7.162        |                    | 10      |           |         |               |              |                |
| THIO N: 0.23980                                                                        | 11      | ✓           | 396       | 2060    | 13.1          | 6.990        |                    | 11      |           |         |               |              |                |
| Sample Flask Water Seal? <input checked="" type="radio"/> Yes <input type="radio"/> No | 12      |             |           |         |               |              |                    | 12      |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                                      | 13      |             |           |         |               |              |                    | 13      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization)         | 14      |             |           |         |               |              |                    | 14      |           |         |               |              |                |
| NaI/NaOH                                                                               | 15      |             |           |         |               |              |                    | 15      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                         | 16      |             |           |         |               |              |                    | 16      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                             | 17      |             |           |         |               |              |                    | 17      |           |         |               |              |                |
| KIO <sub>3</sub>                                                                       | 18      |             |           |         |               |              |                    | 18      |           |         |               |              |                |
| THIO                                                                                   | 19      |             |           |         |               |              |                    | 19      |           |         |               |              |                |
| Notes:                                                                                 | 20      |             |           |         |               |              |                    | 20      |           |         |               |              |                |
|                                                                                        | 21      |             |           |         |               |              |                    | 21      |           |         |               |              |                |
|                                                                                        | 22      |             |           |         |               |              |                    | 22      |           |         |               |              |                |

|        |        |        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 386    | 387    | 388    | 389    | 390    | 391    | 392    | 393A   | 393B   | 394    | 395    | 396    |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LC08   | LC08   | LC08   | LC08   | LC08   | LC08   | LC08   | LC08   | LC08   | LC08   | LC08   | LC08   |
| Bot-10 | 175 m  | 150 m  | 125 m  | 100 m  | 75 m   | 50 m   | 30 m   | 30 m   | 20 m   | 10 m   | 5 m    |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 6  | Bot 7  | Bot 8  | Bot 8  | Bot 9  | Bot 10 | Bot 11 |

check and explain this in the comments column.

# Dissolved Oxygen Analysis Log Sheet

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NESSIE

411

Oxy

LC09

10 m

19-005

Bot 15



OXY-1 Comments

412

Oxy

LC09

5 m

19-005

Bot 16

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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: 2019-05                                                         | 1       |              | 397       | 2668    | 6.8           | 0.439        |                | 1       |           |         |               |              |                |
| Event: 153                                                                     | 2       | ✓            | 398       | 3059    | 7.2           | 0.818        |                | 2       |           |         |               |              |                |
| Station: LC09                                                                  | 3       | ✓            | 399       | 3073    | 7.5           | 1.353        |                | 3       |           |         |               |              |                |
| Event Date (Local): 30 May 2019                                                | 4       | ✓            | 400       | 305     | 7.6           | 1.545        |                | 4       |           |         |               |              |                |
| Analysis Date (Local): 30 May 2019                                             | 5       | ✓            | 401A      | 3057    | 7.9           | 1.932        | ⇒              | 5       | 401B      | 3030    | 8.0           | 1.916        | XX             |
| Analyst: NZ                                                                    | 6       | ✓            | 402       | 2665    | 8.4           | 2.285        | leaky top cap  | 6       |           |         |               |              |                |
| Stdization Date (Local): 30 May                                                | 7       | ✓            | 403       | 3005    | 8.7           | 2.619        |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       | ✓            | 404       | 1409    | 9.0           | 3.123        |                | 8       |           |         |               |              |                |
| Standard Titer: 0.49286                                                        | 9       | ✓            | 405       | 394     | 9.0           | 3.422        |                | 9       |           |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10      | ✓            | 406       | 94      | 9.2           | 3.773        |                | 10      |           |         |               |              |                |
| THIO N: 0.23992                                                                | 11      | ✓            | 407       | 621     | 9.5           | 4.029        |                | 11      |           |         |               |              |                |
| Sample Flask Water Seal? Yes                                                   | 12      | ✓            | 408       | 1408    | 9.3           | 5.550        |                | 12      |           |         |               |              |                |
| No                                                                             | 13      | ✓            | 409A      | 3050    | 10.6          | 5.998        | ⇒              | 13      | 409B      | 1407    | 10.6          | 5.930        |                |
| Reagent Change? MnCl <sub>2</sub>                                              | 14      | ✓            | 410       | 1223    | 11.4          | 6.248        |                | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | 15      | ✓            | 411       | 712     | 12.5          | 7.136        | Leaky TOP CAP  | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      | ✓            | 412       | 196     | 12.5          | 7.158        |                | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                | 18      |           |         |               |              |                |
| KIO <sub>3</sub>                                                               | 19      |              |           |         |               |              |                | 19      |           |         |               |              |                |
| THIO                                                                           | 20      |              |           |         |               |              |                | 20      |           |         |               |              |                |
| Notes: GC/KLB                                                                  | 21      |              |           |         |               |              |                | 21      |           |         |               |              |                |
|                                                                                | 22      |              |           |         |               |              |                | 22      |           |         |               |              |                |

|        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 397    | 398    | 399    | 400    | 401 A  | 401 B  | 402    | 403    | 404    | 405    | 406    | 407    | 408    | 409A   | 409B   | 410    |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LC09   | LC09   | LC09   | LC09   | LC09   | LC09   | LC09   | LC09   | LC09   | LC09   | LC09   | LC09   | LC09   | LC09   | LC09   | LC09   |
| Bot-10 | 500 m  | 400 m  | 300 m  | 250 m  | 250 m  | 200 m  | 175 m  | 150 m  | 125 m  | 100 m  | 75 m   | 50 m   | 30 m   | 30 m   | 20 m   |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 5  | Bot 6  | Bot 7  | Bot 8  | Bot 9  | Bot 10 | Bot 11 | Bot 12 | Bot 13 | Bot 13 | Bot 14 |

# Dissolved Oxygen Analysis Log Sheet

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whale

439  
Oxy  
LC11  
50 m  
19-005  
Bot 15



OXY-1 Comment

440  
Oxy  
LC11  
30 m  
19-005  
Bot 16

441  
Oxy  
LC11  
20 m  
19-005  
Bot 17

442 A  
Oxy  
LC11  
10 m  
19-005  
Bot 18

442 B  
Oxy  
LC11  
10 m  
19-005  
Bot 18

443  
Oxy  
LC11  
5 m  
19-005  
Bot 19

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OXY-2 Comments

| Cruise and Analysis Information                                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) |
|--------------------------------------------------------------------------------|---------|--------------|-----------|---------|---------------|--------------|
| Cruise Number: 2019-005                                                        | 1       | ✓            | ✓ 425     | 3074    | 5.7           | 0.690        |
| Event: 156                                                                     | 2       | ✓            | ✓ 426     | 930     | 5.8           | 0.480        |
| Station: LC11                                                                  | 3       | ✓            | ✓ 427     | 3133    | 6.2           | 0.258        |
| Event Date (Local): 30-05-2019                                                 | 4       | ✓            | ✓ 428 A   | 3103    | 6.5           | 0.267        |
| Analysis Date (Local): 30 May                                                  | 5       | ✓            | ✓ 429     | 3101    | 7.0           | 1.327        |
| Analyst: N2                                                                    | 6       | ✓            | ✓ 430     | 3086    | 7.2           | 1.333        |
| Stdization Date (Local): 30 May                                                | 7       | ✓            | ✓ 431     | 3084    | 7.7           | 2.256        |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       | ✓            | ✓ 432     | 3142    | 8.1           | 2.596        |
| Standard Titer: 0.49286                                                        | 9       | ✓            | ✓ 433     | 3095    | 8.6           | 2.567        |
| Blank Titer: 0.0004                                                            | 10      | ✓            | ✓ 434     | 3079    | 8.9           | 2.567        |
| THIO N: 0.23992                                                                | 11      | ✓            | ✓ 435     | 3088    | 9.2           | 2.673        |
| Sample Flask Water Seal? Yes                                                   | 12      | ✓            | ✓ 436     | 3089    | 9.5           | 2.819        |
| No                                                                             | 13      | ✓            | ✓ 437     | 3090    | 9.5           | 3.960        |
| Reagent Change? MnCl <sub>2</sub>                                              | 14      | ✓            | ✓ 438     | 2994    | 9.1           | 5.216        |
| (Please circle reagent that was changed prior to sampling and standardization) | 15      | ✓            | ✓ 439     | 1442    | 9.9           | 6.199        |
| NOTE NEW BATCH IN LOG BOOK                                                     | 16      | ✓            | ✓ 440     | 3000    | 11.2          | 6.593        |
|                                                                                | 17      | ✓            | ✓ 441     | 3036    | 12.1          | 6.713        |
|                                                                                | 18      | ✓            | ✓ 442 A   | 3106    | 12.6          | 6.771        |
|                                                                                | 19      | ✓            | ✓ 443     | 3173    | 12.7          | 6.758        |
|                                                                                | 20      |              |           |         |               |              |
|                                                                                | 21      |              |           |         |               |              |
|                                                                                | 22      |              |           |         |               |              |

Notes: GC/KIB

430  
Oxy  
LC11  
400 m  
19-005  
Bot 6

431  
Oxy  
LC11  
300 m  
19-005  
Bot 7

432  
Oxy  
LC11  
250 m  
19-005  
Bot 8

433  
Oxy  
LC11  
200 m  
19-005  
Bot 9

434 A  
Oxy  
LC11  
175 m  
19-005  
Bot 10

434 B  
Oxy  
LC11  
175 m  
19-005  
Bot 10

435  
Oxy  
LC11  
150 m  
19-005  
Bot 11

436  
Oxy  
LC11  
125 m  
19-005  
Bot 12

437  
Oxy  
LC11  
100 m  
19-005  
Bot 13

438  
Oxy  
LC11  
75 m  
19-005  
Bot 14

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461

Oxy

LB14

20 m

19-005

Bot 16



OXY-1 Comment

462

Oxy

LB14

10 m

19-005

Bot 17

463

Oxy

LB14

5 m

19-005

Bot 18

| Cruise and Analysis Information                                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comment             | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|---------|--------------|-----------|---------|---------------|--------------|---------------------------|-----------|---------|---------------|--------------|----------------|
| Cruise Number: 2019-005                                                        | 1       |              | 446       | 2099    | 5.8           | 0.393        |                           |           |         |               |              |                |
| Event: 164                                                                     | 2       |              | 447       | 2099    | 5.9           | 0.278        |                           |           |         |               |              |                |
| Station: LB14                                                                  | 3       |              | 448       | 3082    | 6.3           | 0.223        |                           |           |         |               |              |                |
| Event Date (Local): 30 May 19                                                  | 4       |              | 449       | 3076    | 6.9           | 0.162        |                           |           |         |               |              |                |
| Analysis Date (Local): 31 May                                                  | 5       |              | 450A      | 3014    | 7.3           | 1.145        | ⇒                         | 450B      | 3081    | 7.3           | 1.141        |                |
| Analyst: N2                                                                    | 6       |              | 451       | 3110    | 7.7           | 1.663        |                           |           |         |               |              |                |
| Stdization Date (Local): 30 May                                                | 7       |              | 452       | 3078    | 8.1           | 2.048        |                           |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       |              | 453       | 3131    | 8.5           | 3.148        |                           |           |         |               |              |                |
| Standard Titer: 0.49287                                                        | 9       |              | 454       | 3029    | 8.7           | 3.405        |                           |           |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10      | X            | 455       | 2085    | 9.0           | 3.442        | valve left open           |           |         |               |              |                |
| THIO N: 0.23992                                                                | 11      |              | 456       | 1457    | 9.1           | 3.865        |                           |           |         |               |              |                |
| Sample Flask Water Seal? Yes                                                   | 12      |              | 457       | 020     | 9.3           | 4.378        |                           |           |         |               |              |                |
| No                                                                             | 13      |              | 458       | 6022    | 9.5           | 5.609        |                           |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                              | 14      |              | 459       | 3008    | 10.1          | 6.574        |                           |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | 15      |              | 460A      | 3008    | 12.1          | 6.670        | ⇒                         | 460B      | 3020    | 12.1          | 6.673        |                |
| NaI/NaOH                                                                       | 16      |              | 461       | 3041    | 12.6          | 6.632        | 4 delioides in sample, OT |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              | 462       | 3155    | 12.7          | 6.639        |                           |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              | 463       | 3044    | 12.7          | 6.525        |                           |           |         |               |              |                |
| KIO <sub>3</sub>                                                               | 19      |              |           |         |               |              |                           |           |         |               |              |                |
| THIO                                                                           | 20      |              |           |         |               |              |                           |           |         |               |              |                |
| Notes: Sea turtle CS/AS                                                        | 21      |              |           |         |               |              |                           |           |         |               |              |                |
|                                                                                | 22      |              |           |         |               |              |                           |           |         |               |              |                |

|        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 446    | 447    | 448    | 449    | A 450  | B 450  | 451    | 452    | 453    | 454    | 455    | 456    | 457    | 458    | 459    | A 460  | B 460  |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LB14   | LB14   | LB14   | LB14   | LB14   | LB14   | LB14   | LB14   | LB14   | LB14   | LB14   | LB14   | LB14   | LB14   | LB14   | LB14   | LB14   |
| Bot-10 | 1000 m | 750 m  | 500m   | 400 m  | 400 m  | 300 m  | 250 m  | 200 m  | 175 m  | 150 m  | 125 m  | 100 m  | 75 m   | 50 m   | 30 m   | 30 m   |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 5  | Bot 6  | Bot 7  | Bot 8  | Bot 9  | Bot 10 | Bot 11 | Bot 12 | Bot 13 | Bot 14 | Bot 15 | Bot 15 |

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| Cruise and Analysis Information                                                | Nisk ID | Nisk Int VS | 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: 2019-005                                                        | 1       | ✓           | 465       | 3046    | 7.0           | 0.611        |                   | 1       |           |         |               |              |                |
| Event: 166                                                                     | 2       | ✓           | 466       | 2089    | 7.3           | 1.024        |                   | 2       |           |         |               |              |                |
| Station: LB12                                                                  | 3       | ✓           | 467       | 371     | 7.8           | 1.689        | OT-late landpoint | 3       |           |         |               |              |                |
| Event Date (Local): 31-05-2019                                                 | 4       | ✓           | 468       | 2055    | 8.1           | 2.090        |                   | 4       |           |         |               |              |                |
| Analysis Date (Local): 31 May                                                  | 5       | ✓           | 469A      | 1094    | 8.7           | 2.413        | → redraw rep A    | 5       | 469B      | 396     | 8.8           | 2.405        | OT-late        |
| Analyst: NZ                                                                    | 6       | ✓           | 470       | 471     | 8.8           | 2.848        |                   | 6       |           |         |               |              |                |
| Stdization Date (Local): 30 May                                                | 7       | ✓           | 471       | 3137    | 9.0           | 3.455        |                   | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       | ✓           | 472       | 3049    | 9.2           | 3.344        |                   | 8       |           |         |               |              |                |
| Standard Titer: 0.49286                                                        | 9       | ✓           | 473       | 1055    | 9.3           | 4.052        |                   | 9       |           |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10      | ✓           | 474A      | 1406    | 9.4           | 4.809        | →                 | 10      | 474B      | 2060    | 9.4           | 4.804        |                |
| THIO N: 0.23992                                                                | 11      | ✓           | 475       | 2068    | 10.1          | 5.897        |                   | 11      |           |         |               |              |                |
| Sample Flask Water Seal? (35) No                                               | 12      | ✓           | 476       | 3059    | 11.3          | 6.521        |                   | 12      |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                              | 13      | ✓           | 477       | 3673    | 11.8          | 6.891        |                   | 13      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | 14      | ✓           | 478       | 505     | 12.8          | 6.932        |                   | 14      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 15      | ✓           | 479       | 3057    | 12.9          | 6.960        |                   | 15      |           |         |               |              |                |
|                                                                                | 16      |             |           |         |               |              |                   | 16      |           |         |               |              |                |
|                                                                                | 17      |             |           |         |               |              |                   | 17      |           |         |               |              |                |
|                                                                                | 18      |             |           |         |               |              |                   | 18      |           |         |               |              |                |
| Notes: GC/K4B                                                                  | 19      |             |           |         |               |              |                   | 19      |           |         |               |              |                |
|                                                                                | 20      |             |           |         |               |              |                   | 20      |           |         |               |              |                |
|                                                                                | 21      |             |           |         |               |              |                   | 21      |           |         |               |              |                |
|                                                                                | 22      |             |           |         |               |              |                   | 22      |           |         |               |              |                |

|        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 465    | 466    | 467    | 468    | A 469  | B 469  | 470    | 471    | 472    | 473    | 474A   | 474B   | 475    | 476    | 477    | 478    | 479    |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LB12   | LB12   | LB12   | LB12   | LB12   | LB12   | LB12   | LB12   | LB12   | LB12   | LB12   | LB12   | LB12   | LB12   | LB12   | LB12   | LB12   |
| Bot-10 | 400 m  | 300 m  | 250 m  | 200 m  | 200 m  | 175 m  | 150 m  | 125 m  | 100 m  | 75 m   | 75 m   | 50 m   | 30 m   | 20 m   | 10 m   | 5 m    |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 5  | Bot 6  | Bot 7  | Bot 8  | Bot 9  | Bot 10 | Bot 10 | Bot 11 | Bot 12 | Bot 13 | Bot 14 | Bot 15 |

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| Cruise and Analysis Information                                                | Nisk ID | Nisk Int VS | 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: 2019-05                                                         | 1       | ✓✓          | 480       | 3030    | 8.6           | 2.367        |                | 1       |           |         |               |              |                |
| Event: 168                                                                     | 2       | ✓✓          | 481       | 2065    | 8.8           | 2.601        |                | 2       |           |         |               |              |                |
| Station: LB11                                                                  | 3       | ✓✓          | 482       | 3005    | 9.3           | 2.851        |                | 3       |           |         |               |              |                |
| Event Date (Local): 31 May 2019                                                | 4       | ✓✓          | 483       | 1409    | 9.4           | 2.961        |                | 4       |           |         |               |              |                |
| Analysis Date (Local): 31 May                                                  | 5       | ✓✓          | 484       | 3194    | 9.4           | 3.455        |                | 5       |           |         |               |              |                |
| Analyst: N2                                                                    | 6       | ✓✓          | 485       | 94      | 9.3           | 4.590        |                | 6       |           |         |               |              |                |
| Stdization Date (Local): 30 May                                                | 7       | ✓✓          | 486       | 621     | 10.1          | 5.870        |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       | ✓✓          | 487       | 1408    | 11.3          | 6.549        |                | 8       |           |         |               |              |                |
| Standard Titer: 0.49287                                                        | 9       | ✓✓          | 488a      | 3050    | 11.6          | 6.773        | ⇒              | 9       | 488b      | 1407    | 11.5          | 6.776        |                |
| Blank Titer: 0.0004                                                            | 10      | ✓✓          | 489       | 1223    | 12.8          | 6.894        |                | 10      |           |         |               |              |                |
| THIO N: 0.23992                                                                | 11      | ✓✓          | 490       | 712     | 12.8          | 6.901        |                | 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) | 15      |             |           |         |               |              |                | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      |             |           |         |               |              |                | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |             |           |         |               |              |                | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |             |           |         |               |              |                | 18      |           |         |               |              |                |
| KIO <sub>3</sub>                                                               | 19      |             |           |         |               |              |                | 19      |           |         |               |              |                |
| THIO                                                                           | 20      |             |           |         |               |              |                | 20      |           |         |               |              |                |
| Notes:                                                                         | 21      |             |           |         |               |              |                | 21      |           |         |               |              |                |
|                                                                                | 22      |             |           |         |               |              |                | 22      |           |         |               |              |                |

480  
Oxy  
LB11  
Bot-10  
19-005  
Bot 1

481  
Oxy  
LB11  
Bot 2

482  
Oxy  
LB11  
Bot 3

483  
Oxy  
LB11  
Bot 4

484  
Oxy  
LB11  
Bot 5

485  
Oxy  
LB11  
Bot 6

486  
Oxy  
LB11  
Bot 7

487  
Oxy  
LB11  
Bot 8

488 A  
Oxy  
LB11  
Bot 9

488 B  
Oxy  
LB11  
Bot 9

489  
Oxy  
LB11  
Bot 10

490  
Oxy  
LB11  
Bot 11

ck and explain this in the comments column.

Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group



Last Updated: July 2018

| 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: 2019-005                                                        | 1       | ✓            | ✓         | 492     | 456           | 8.2          | 1.617          |                        | 1         |         |               |              |                |
| Event: 170                                                                     | 2       | ✓            | ✓         | 493A    | 3093          | 8.3          | 1.750 →        |                        | 2         | 493B    | 3148          | 8.4          | 1.751          |
| Station: LB09                                                                  | 3       | ✓            | ✓         | 494     | 570           | 8.4          | 1.764          |                        | 3         |         |               |              |                |
| Event Date (Local): 31 MAY 2019                                                | 4       | ✓            | ✓         | 495     | 3138          | 9.2          | 2.799          |                        | 4         |         |               |              |                |
| Analysis Date (Local): 31 May                                                  | 5       | ✓            | ✓         | 496     | 3126          | 9.5          | 3.560          |                        | 5         |         |               |              |                |
| Analyst: N2                                                                    | 6       | ✓            | ✓         | 497     | 510           | 10.1         | 3.982          |                        | 6         |         |               |              |                |
| Stdization Date (Local): 30 May                                                | 7       | ✓            | ✓         | 498     | 745           | 11.8         | 6.292          |                        | 7         |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       | ✓            | ✓         | 499     | 612           | 12.1         | 6.592          |                        | 8         |         |               |              |                |
| Standard Titer: 0.49286                                                        | 9       | ✓            | ✓         | 500     | 3043          | 12.1         | 6.593          | slightly leaky bp vent | 9         |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10      |              |           |         |               |              |                |                        | 10        |         |               |              |                |
| THIO N: 0.23992                                                                | 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) | 15      |              |           |         |               |              |                |                        | 15        |         |               |              |                |
| NaI/NaOH                                                                       | 16      |              |           |         |               |              |                |                        | 16        |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                |                        | 17        |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                |                        | 18        |         |               |              |                |
| THIO                                                                           | 19      |              |           |         |               |              |                |                        | 19        |         |               |              |                |
| Notes:                                                                         | 20      |              |           |         |               |              |                |                        | 20        |         |               |              |                |
|                                                                                | 21      |              |           |         |               |              |                |                        | 21        |         |               |              |                |
|                                                                                | 22      |              |           |         |               |              |                |                        | 22        |         |               |              |                |

Bender

|        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 492    | 493A   | 493B   | 494    | 495    | 496    | 497    | 498    | 499    | 500    |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LB09   | LB09   | LB09   | LB09   | LB09   | LB09   | LB09   | LB09   | LB09   | LB09   |
| Bot-10 | 125 m  | 125 m  | 100 m  | 75 m   | 50 m   | 30 m   | 20 m   | 10 m   | 5 m    |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 6  | Bot 7  | Bot 8  | Bot 9  |

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 2018

| 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: 2019-005                                                        | 1       | ✓            | 501       | 2098    | 8.5           | 1.852        |                | 1       |           |         |               |              |                |
| Event: 172                                                                     | 2       | ✓            | 502       | 3146    | 8.5           | 1.951        |                | 2       |           |         |               |              |                |
| Station: LB08                                                                  | 3       | ✓            | 503       | 708     | 8.6           | 2.068        |                | 3       |           |         |               |              |                |
| Event Date (Local): 31 May 2019                                                | 4       | ✓            | 504       | 611     | 8.7           | 2.333        |                | 4       |           |         |               |              |                |
| Analysis Date (Local): 31 May                                                  | 5       | ✓            | 505A      | 3165    | 9.5           | 3.194        | →              | 5       | 505B      | 3175    | 9.5           | 3.194        |                |
| Analyst: N                                                                     | 6       | ✓            | 506       | 3002    | 9.9           | 3.825        |                | 6       |           |         |               |              |                |
| Stdization Date (Local): 30 May                                                | 7       | ✓            | 507       | 2490    | 10.5          | 4.374        |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       | ✓            | 508       | 3129    | 12.1          | 6.338        |                | 8       |           |         |               |              |                |
| Standard Titer: 0.49286                                                        | 9       | ✓            | 509       | 3162    | 12.1          | 6.335        |                | 9       |           |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10      |              |           |         |               |              |                | 10      |           |         |               |              |                |
| THIO N: 0.23992                                                                | 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) | 15      |              |           |         |               |              |                | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      |              |           |         |               |              |                | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                | 18      |           |         |               |              |                |
| THIO                                                                           | 19      |              |           |         |               |              |                | 19      |           |         |               |              |                |
| Notes:                                                                         | 20      |              |           |         |               |              |                | 20      |           |         |               |              |                |
|                                                                                | 21      |              |           |         |               |              |                | 21      |           |         |               |              |                |
|                                                                                | 22      |              |           |         |               |              |                | 22      |           |         |               |              |                |
|                                                                                | 23      |              |           |         |               |              |                | 23      |           |         |               |              |                |
|                                                                                | 24      |              |           |         |               |              |                | 24      |           |         |               |              |                |

|        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 501    | 502    | 503    | 504    | 505 A  | 505 B  | 506    | 507    | 508    | 509    |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LB08   | LB08   | LB08   | LB08   | LB08   | LB08   | LB08   | LB08   | LB08   | LB08   |
| Bot-10 | 125 m  | 100 m  | 75 m   | 50 m   | 50 m   | 30 m   | 20 m   | 10 m   | 5 m    |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 5  | Bot 6  | Bot 7  | Bot 8  | Bot 9  |

umn 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 2018

| 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: 2019-001                                                        | 1       |              | 523       | 3046    | 8.5           | 1.727        |                | 1       |           |         |               |              |                |
| Event: 185                                                                     | 2       |              | 524       | 2088    | 8.5           | 1.746        |                | 2       |           |         |               |              |                |
| Station: LB06                                                                  | 3       |              | 525       | 321     | 8.7           | 2.415        |                | 3       |           |         |               |              |                |
| Event Date (Local): 31 May                                                     | 4       |              | 526       | 2055    | 9.5           | 3.267        |                | 4       |           |         |               |              |                |
| Analysis Date (Local): 01 June                                                 | 5       |              | 527       | 1094    | 10.0          | 4.099        |                | 5       |           |         |               |              |                |
| Analyst: N2                                                                    | 6       |              | 528       | 396     | 11.2          | 5.325        |                | 6       |           |         |               |              |                |
| Stdization Date (Local): 30 May                                                | 7       |              | 529A      | 471     | 13.7          | 7.208        |                | 7       | 529B      | 5137    | 13.7          | 7.207        |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       |              | 530       | 309A    | 13.9          | 7.221        |                | 8       |           |         |               |              |                |
| Standard Titer: 0.49286                                                        | 9       |              |           |         |               |              |                | 9       |           |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10      |              |           |         |               |              |                | 10      |           |         |               |              |                |
| THIO N: 0.23992                                                                | 11      |              |           |         |               |              |                | 11      |           |         |               |              |                |
| Sample Flask Water Seal? Yes                                                   | 12      |              |           |         |               |              |                | 12      |           |         |               |              |                |
|                                                                                | 13      |              |           |         |               |              |                | 13      |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                              | 14      |              |           |         |               |              |                | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | 15      |              |           |         |               |              |                | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      |              |           |         |               |              |                | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                | 18      |           |         |               |              |                |
| THIO                                                                           | 19      |              |           |         |               |              |                | 19      |           |         |               |              |                |
| Notes: NESSIE                                                                  | 20      |              |           |         |               |              |                | 20      |           |         |               |              |                |
| N2/05                                                                          | 21      |              |           |         |               |              |                | 21      |           |         |               |              |                |
|                                                                                | 22      |              |           |         |               |              |                | 22      |           |         |               |              |                |
|                                                                                | 23      |              |           |         |               |              |                | 23      |           |         |               |              |                |
|                                                                                | 24      |              |           |         |               |              |                | 24      |           |         |               |              |                |

|        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 523    | 524    | 525    | 526    | 527    | 528    | 529 A  | 529 B  | 530    |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LB06   | LB06   | LB06   | LB06   | LB06   | LB06   | LB06   | LB06   | LB06   |
| Bot-10 | 100 m  | 75 m   | 50 m   | 30 m   | 20 m   | 10 m   | 10 m   | 5 m    |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 5  | Bot 6  | Bot 7  | Bot 8  |        |

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 2018

| 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: 2019-05                                                         | 1       |              | 532       | 1055    | 8.8           | 2.274        |                | 1       |           |         |               |              |                |
| Event: 188                                                                     | 2       |              | 533       | 1406    | 9.2           | 2.893        |                | 2       |           |         |               |              |                |
| Station: LB04                                                                  | 3       |              | 534       | 2060    | 9.8           | 3.790        |                | 3       |           |         |               |              |                |
| Event Date (Local): 31-05-19                                                   | 4       |              | 535A      | 2068    | 10.3          | 4.016        |                | 4       | 535B      | 3059    | 10.3          | 4.026        |                |
| Analysis Date (Local): 01 JUNE                                                 | 5       |              | 536       | 3073    | 11.3          | 5.080        |                | 5       |           |         |               |              |                |
| Analyst: N2                                                                    | 6       |              | 537       | 505     | 16.9          | 5.882        |                | 6       |           |         |               |              |                |
| Stdization Date (Local): 30 May                                                | 7       |              | 538       | 3051    | 12.0          | 5.904        |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       |              |           |         |               |              |                | 8       |           |         |               |              |                |
| Standard Titer: 0.49286                                                        | 9       |              |           |         |               |              |                | 9       |           |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10      |              |           |         |               |              |                | 10      |           |         |               |              |                |
| THIO N: 0.23992                                                                | 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) | 15      |              |           |         |               |              |                | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      |              |           |         |               |              |                | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                | 18      |           |         |               |              |                |
| KIO <sub>3</sub>                                                               | 19      |              |           |         |               |              |                | 19      |           |         |               |              |                |
| THIO                                                                           | 20      |              |           |         |               |              |                | 20      |           |         |               |              |                |
| Notes: NESSIE                                                                  | 21      |              |           |         |               |              |                | 21      |           |         |               |              |                |
|                                                                                | 22      |              |           |         |               |              |                | 22      |           |         |               |              |                |
|                                                                                | 23      |              |           |         |               |              |                | 23      |           |         |               |              |                |
|                                                                                | 24      |              |           |         |               |              |                | 24      |           |         |               |              |                |

Mark 'x' in the appropriate column if either fails the integrity check and explain this in the comments column.

532 Oxy LB04 11 Bot-10 19-005 Bot 1

533 Oxy LB04 14 Bot 2

534 Oxy LB04 15 Bot 3

A 535 Oxy LB04 16 Bot 4

B 535 Oxy LB04 17 Bot 4

536 Oxy LB04 18 Bot 5

537 Oxy LB04 19 Bot 6

538 Oxy LB04 20 Bot 7

# Dissolved Oxygen Analysis Log Sheet

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Last Updated: July 2018

| 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: 2019-05                                                         | 1       |              | 540A      | 3030    | 9.9           | 3.644        |                | 1       | 540B      | 2065    | 10.0          | 3.648        |                |
| Event: 190                                                                     | 2       |              | 541       | 3005    | 10.6          | 4.517        |                | 2       |           |         |               |              |                |
| Station: LB02                                                                  | 3       |              | 542       | 1409    | 10.7          | 4.533        |                | 3       |           |         |               |              |                |
| Event Date (Local): 31.05.19                                                   | 4       |              | 543       | 3194    | 11.7          | 6.312        |                | 4       |           |         |               |              |                |
| Analysis Date (Local): 01 JUNE                                                 | 5       |              | 544       | 94      | 11.8          | 6.496        |                | 5       |           |         |               |              |                |
| Analyst: N2                                                                    | 6       |              |           |         |               |              |                | 6       |           |         |               |              |                |
| Stdization Date (Local): 30 May                                                | 7       |              |           |         |               |              |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  | 8       |              |           |         |               |              |                | 8       |           |         |               |              |                |
| Standard Titer: 0.49286                                                        | 9       |              |           |         |               |              |                | 9       |           |         |               |              |                |
| Blank Titer: 0.0004                                                            | 10      |              |           |         |               |              |                | 10      |           |         |               |              |                |
| THIO N: 0.23992                                                                | 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) | 15      |              |           |         |               |              |                | 15      |           |         |               |              |                |
| NaI/NaOH                                                                       | 16      |              |           |         |               |              |                | 16      |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 | 17      |              |           |         |               |              |                | 17      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 18      |              |           |         |               |              |                | 18      |           |         |               |              |                |
| THIO                                                                           | 19      |              |           |         |               |              |                | 19      |           |         |               |              |                |
| Notes: NESSIE                                                                  | 20      |              |           |         |               |              |                | 20      |           |         |               |              |                |
|                                                                                | 21      |              |           |         |               |              |                | 21      |           |         |               |              |                |
|                                                                                | 22      |              |           |         |               |              |                | 22      |           |         |               |              |                |
|                                                                                | 23      |              |           |         |               |              |                | 23      |           |         |               |              |                |
|                                                                                | 24      |              |           |         |               |              |                | 24      |           |         |               |              |                |

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.

|        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|
| 540A   | 540 B  | 541    | 542    | 543    | 544    |
| Oxy    | Oxy    | Oxy    | Oxy    | Oxy    | Oxy    |
| LB02   | LB02   | LB02   | LB02   | LB02   | LB02   |
| Bot-10 | Bot-10 | 30 m   | 20 m   | 10 m   | 5 m    |
| 19-005 | 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1  | Bot 1  | Bot 2  | Bot 3  | Bot 4  | Bot 5  |

Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group



Last Updated: July 2018

| 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:                                                                 | 2019-05                        | 1  |  | 545  | 621  | 11.6 | 5.803   |              |           |         |               |              |                | 1       |           |         |               |              |                |
| Event:                                                                         | 192                            | 2  |  | 546  | 1403 | 12.1 | 6.493   |              |           |         |               |              |                | 2       |           |         |               |              |                |
| Station:                                                                       | LB01                           | 3  |  | 547  | 3050 | 12.3 | 7.185   |              |           |         |               |              |                | 3       |           |         |               |              |                |
| Event Date (Local):                                                            | 31-05-19                       | 4  |  | 548A | 1407 | 12.3 | 7.190   |              |           |         |               |              |                | 4       | 548B      | 1023    | 12.3          | 7.190        |                |
| Analysis Date (Local):                                                         | 01 JUNE                        | 5  |  |      |      |      |         |              |           |         |               |              |                | 5       |           |         |               |              |                |
| Analyst:                                                                       | N2                             | 6  |  |      |      |      |         |              |           |         |               |              |                | 6       |           |         |               |              |                |
| Stdization Date (Local):                                                       | 30 May                         | 7  |  |      |      |      |         |              |           |         |               |              |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N:                                                            | 0.0118108                      | 8  |  |      |      |      |         |              |           |         |               |              |                | 8       |           |         |               |              |                |
| Standard Titer:                                                                | 0.49286                        | 9  |  |      |      |      |         |              |           |         |               |              |                | 9       |           |         |               |              |                |
| Blank Titer:                                                                   | 0.0004                         | 10 |  |      |      |      |         |              |           |         |               |              |                | 10      |           |         |               |              |                |
| THIO N:                                                                        | 0.23992                        | 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:                                                                         | NESSIE N2/US                   | 19 |  |      |      |      |         |              |           |         |               |              |                | 19      |           |         |               |              |                |
|                                                                                |                                | 20 |  |      |      |      |         |              |           |         |               |              |                | 20      |           |         |               |              |                |
|                                                                                |                                | 21 |  |      |      |      |         |              |           |         |               |              |                | 21      |           |         |               |              |                |
|                                                                                |                                | 22 |  |      |      |      |         |              |           |         |               |              |                | 22      |           |         |               |              |                |
|                                                                                |                                | 23 |  |      |      |      |         |              |           |         |               |              |                | 23      |           |         |               |              |                |
|                                                                                |                                | 24 |  |      |      |      |         |              |           |         |               |              |                | 24      |           |         |               |              |                |

|               |        |        |        |        |
|---------------|--------|--------|--------|--------|
| 545           | 546    | 547    | 548A   | 548B   |
| Oxy           | Oxy    | Oxy    | Oxy    | Oxy    |
| LB01          | LB01   | LB01   | LB01   | LB01   |
| Bot-10        | 20 m   | 10 m   | 5 m    | 5 m    |
| Bottle 19-005 | 19-005 | 19-005 | 19-005 | 19-005 |
| Bot 1         | Bot 2  | Bot 3  | Bot 4  | Bot 4  |

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.