

Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

Forest



Last Updated: July 2018

| Cruise and Analysis Information |              |           |                 |                | OXY-1 Comments |         |           |         |               | OXY-2 Comments |  |  |  |  |
|---------------------------------|--------------|-----------|-----------------|----------------|----------------|---------|-----------|---------|---------------|----------------|--|--|--|--|
| 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)   |  |  |  |  |
| 1                               |              | 1         | 3204            | 9.9            | 2.386          | 1       |           |         |               |                |  |  |  |  |
| 2                               |              | 2         | 3174            | 9.7            | 3.746          | 2       |           |         |               |                |  |  |  |  |
| 3                               |              | 3         | 1085            | 10.0           | 4.484          | 3       |           |         |               |                |  |  |  |  |
| 4                               |              | 4A        | 3196            | 10.1           | 5.090          | 4       | 4B        | 3171    | 10.3          | 5.089          |  |  |  |  |
| 5                               |              | 5         | <del>3211</del> | <del>9.7</del> | 5.271          | 5       |           |         |               |                |  |  |  |  |
| 6                               |              | 6         | 3206            | 10.4           | 5.334          | 6       |           |         |               |                |  |  |  |  |
| 7                               |              | 7         | 3181            | 11.1           | 5.522          | 7       |           |         |               |                |  |  |  |  |
| 8                               |              | 8         | 3182            | 11.5           | 6.591          | 8       |           |         |               |                |  |  |  |  |
| 9                               |              | 9         | 3604            | 12.3           | 8.924          | 9       |           |         |               |                |  |  |  |  |
| 10                              |              |           | 3191            | 16.1           |                | 10      |           |         |               |                |  |  |  |  |
| 11                              |              |           |                 |                |                | 11      |           |         |               |                |  |  |  |  |
| 12                              |              |           |                 |                |                |         |           |         |               |                |  |  |  |  |
| 13                              |              |           |                 |                |                |         |           |         |               |                |  |  |  |  |
| 14                              |              | 1         |                 |                |                |         |           |         |               |                |  |  |  |  |
| 15                              |              |           |                 |                |                |         |           |         |               |                |  |  |  |  |
| 16                              |              |           |                 |                |                |         |           |         |               |                |  |  |  |  |
| 17                              |              |           |                 |                |                |         |           |         |               |                |  |  |  |  |
| 18                              |              |           |                 |                |                |         |           |         |               |                |  |  |  |  |
| 19                              |              |           |                 |                |                |         |           |         |               |                |  |  |  |  |
| 20                              |              |           |                 |                |                |         |           |         |               |                |  |  |  |  |
| 21                              |              |           |                 |                |                |         |           |         |               |                |  |  |  |  |
| 22                              |              |           |                 |                |                |         |           |         |               |                |  |  |  |  |
| 23                              |              |           |                 |                |                |         |           |         |               |                |  |  |  |  |
| 24                              |              |           |                 |                |                |         |           |         |               |                |  |  |  |  |

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



**Institute of Ocean Sciences  
Water Properties Group**



**Last Updated: July 2018**

[illegible]

2019-050 2019-050

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



Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

Bruce Lee



| Cruise and Analysis Information                                                |                                |  |  | Nis k ID | Nis k Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | Nis k ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments       |
|--------------------------------------------------------------------------------|--------------------------------|--|--|----------|---------------|-----------|---------|---------------|--------------|----------------|----------|-----------|---------|---------------|--------------|----------------------|
| Cruise Number:                                                                 | 2019-050                       |  |  | 1        |               | 1481      | 25A     | 7.5           | 1.824        | =>7            | 1        | 25B       | 1477    | 7.5           | 1.827        |                      |
| Event:                                                                         | 8                              |  |  | 2        |               | 1448      | 26      | 7.4           | 1.817        |                | 2        |           |         |               |              |                      |
| Station:                                                                       | 102                            |  |  | 3        |               | 1482      | 27      | 7.6           | 1.908        |                | 3        |           |         |               |              |                      |
| Event Date (Local):                                                            | 03 Jun 19                      |  |  | 4        |               | 1466      | 28      | 7.6           | 1.882        |                | 4        |           |         |               |              |                      |
| Analysis Date (Local):                                                         | 03 Jun 19                      |  |  | 5        |               | 1495      | 29      | 7.8           | 2.060        |                | 5        |           |         |               |              |                      |
| Analyst:                                                                       | KS                             |  |  | 6        |               | 1485      | 30      | 7.9           | 2.238        |                | 6        |           |         |               |              |                      |
| Standardization Date (Local):                                                  | 02 Jun 19                      |  |  | 7        |               | 1497      | 31      | 8.1           | 2.492        |                | 7        |           |         |               |              |                      |
| KIO <sub>3</sub> N:                                                            | 0.0119329                      |  |  | 8        |               | 1414      | 32      | 8.8           | 2.664        |                | 8        |           |         |               |              |                      |
| Standard Titer:                                                                | 0.147882                       |  |  | 9        |               | 1435      | 33      | 8.5           | 3.180        |                | 9        |           |         |               |              |                      |
| Blank Titer:                                                                   | 6.00054                        |  |  | 10       |               | 1445      | 34A     | 8.5           | 3.194        | =>             | 10       | 25B       | 1475    |               |              |                      |
| THIO N:                                                                        | 0.24936                        |  |  | 11       |               | 1475      | 35A     | 9.1           | 3.687        | =>             | 11       | 35B       | 1458    | 9.0           | 3.681        | B was taken before A |
| Sample Flask Water Seal?                                                       | Yes                            |  |  | 12       |               | 1476      | 36      | 10.3          | 5.204        |                | 12       |           |         |               |              |                      |
|                                                                                | No                             |  |  | 13       |               | 1483      | 37      | 10.8          | 5.848        |                | 13       |           |         |               |              |                      |
| Reagent Change?                                                                | MnCl <sub>2</sub>              |  |  | 14       |               | 1468      | 38      | 11.0          | 6.005        |                | 14       |           |         |               |              |                      |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       |  |  | 15       |               | 1484      | 39      | 11.2          | 6.003        |                | 15       |           |         |               |              |                      |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> |  |  | 16       |               |           |         |               |              |                |          |           |         |               |              |                      |
|                                                                                | KIO <sub>3</sub>               |  |  | 17       |               |           |         |               |              |                |          |           |         |               |              |                      |
|                                                                                | THIO                           |  |  | 18       |               |           |         |               |              |                |          |           |         |               |              |                      |
| Notes:                                                                         |                                |  |  | 19       |               |           |         |               |              |                |          |           |         |               |              |                      |
|                                                                                |                                |  |  | 20       |               |           |         |               |              |                |          |           |         |               |              |                      |
|                                                                                |                                |  |  | 21       |               |           |         |               |              |                |          |           |         |               |              |                      |
|                                                                                |                                |  |  | 22       |               |           |         |               |              |                |          |           |         |               |              |                      |
|                                                                                |                                |  |  | 23       |               |           |         |               |              |                |          |           |         |               |              |                      |
|                                                                                |                                |  |  | 24       |               |           |         |               |              |                |          |           |         |               |              |                      |

Bottle integrity: First test the top vent (V) by of

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

25B OXY Stn 102 2019-050 Bot 1  
25A OXY Stn 102 2019-050 Bot 1  
26 OXY Stn 102 2019-050 Bot 2  
27 OXY Stn 102 2019-050 Bot 3  
29 OXY Stn 102 2019-050 Bot 5  
28 OXY Stn 102 2019-050 Bot 4  
30 OXY Stn 102 2019-050 Bot 6  
31 OXY Stn 102 2019-050 Bot 7  
32 OXY Stn 102 2019-050 Bot 8  
33 OXY Stn 102 2019-050 Bot 9  
34 OXY Stn 102 2019-050 Bot 10  
35A OXY Stn 102 2019-050 Bot 11  
35B OXY Stn 102 2019-050 Bot 11  
36 OXY Stn 102 2019-050 Bot 12  
37 OXY Stn 102 2019-050 Bot 13  
38 OXY Stn 102 2019-050 Bot 14  
39 OXY Stn 102 2019-050 Bot 15

leave from bottom cap



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| Cruise and Analysis Information |              |           |          | OXY-1 Comments |              |          |           | OXY-2 Comments |               |              |                  |          |
|---------------------------------|--------------|-----------|----------|----------------|--------------|----------|-----------|----------------|---------------|--------------|------------------|----------|
| NIS k ID                        | Nisk Int V S | Sample ID | Flask 1  | Draw T 1 (°C)  | OXY-1 (mL/L) | NIS k ID | Sample ID | Flask 2        | Draw T 2 (°C) | OXY-2 (mL/L) |                  |          |
| 1                               |              | 410       | 1455     | 7.6            | 1.968        | 1        |           |                |               |              |                  |          |
| 2                               |              | 411       | 1392     | 7.6            | 1.981        | 2        |           |                |               |              |                  |          |
| 3                               |              | 412       | 1492     | 7.7            | 2.000        | 3        |           |                |               |              |                  |          |
| 4                               |              | 413       | 1398     | 7.16           | 2.046        | 4        |           |                |               |              |                  |          |
| 5                               |              | 414       | 1464     | 8.0            | 2.266        | 5        | 44B       | 1344           | 7.9           | 2.268        | Redrawn before A |          |
| 6                               |              | 415       | 1410     | 8.1            | 2.618        | 6        |           |                |               |              |                  |          |
| 7                               |              | 416       | 1395     | 8.7            | 3.305        | 7        |           |                |               |              |                  |          |
| 8                               |              | 417       | 1393     | 9.1            | 3.841        | 8        |           |                |               |              |                  |          |
| 9                               |              | 418       | 1471     | 9.7            | 4.598        | 9        |           |                |               |              |                  |          |
| 10                              |              | 419       | 1456     | 10.3           | 5.246        | 10       |           |                |               |              |                  |          |
| 11                              |              | 50        | 1488     | 10.4           | 5.404        | 11       |           |                |               |              |                  |          |
| 12                              |              | 51A       | 1498     | 10.5           | 5.482        | 12       | 51B       | 1386           | 10.5          | 5.485        | B drawn before A |          |
| 13                              |              | 52        | 1394     | 11.0           | 5.761        | 13       |           |                |               |              |                  |          |
| 14                              |              | 53        | 1453     | 11.1           | 5.710        | 14       |           |                |               |              |                  |          |
| 15                              |              | 40        | 41       | 42             | 43           | 44A      | 44B       | 45             | 46            | 47           | 48               | 49       |
| 16                              |              | OXY       | OXY      | OXY            | OXY          | OXY      | OXY       | OXY            | OXY           | OXY          | OXY              | OXY      |
| 17                              |              | 75        | 75       | 75             | 75           | 75       | 75        | 75             | 75            | 75           | 75               | 75       |
| 18                              |              | 2019-050  | 2019-050 | 2019-050       | 2019-050     | 2019-050 | 2019-050  | 2019-050       | 2019-050      | 2019-050     | 2019-050         | 2019-050 |
| 19                              |              | Bot 1     | Bot 2    | Bot 3          | Bot 4        | Bot 5    | Bot 5     | Bot 6          | Bot 7         | Bot 8        | Bot 9            | Bot 10   |
| 20                              |              |           |          |                |              |          |           |                |               |              |                  |          |
| 21                              |              | 50        | 51A      | 51B            | 52           | 53       |           |                |               |              |                  |          |
| 22                              |              | OXY       | OXY      | OXY            | OXY          | OXY      |           |                |               |              |                  |          |
| 23                              |              | 75        | 75       | 75             | 75           | 75       |           |                |               |              |                  |          |
| 24                              |              |           |          |                |              |          |           |                |               |              |                  |          |

Bottle integrity: First test the top vent (V) by opening 2019-050 Bot 11, 2019-050 Bot 12, 2019-050 Bot 12, 2019-050 Bot 13, 2019-050 Bot 14. If the appropriate column is either fails the integrity check and explain this in the comments column.

Reagent Change? ☐ MnCl<sub>2</sub>  
(Please circle reagent that was changed prior to sampling and standardization)  
NOTE NEW BATCH IN LOG BOOK  
☒ NaI/NaOH  
☒ H<sub>2</sub>SO<sub>4</sub>  
☐ KIO<sub>3</sub>  
☐ THIO

Notes:



Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

Tree 2



| Cruise and Analysis Information                                                                              |                                |    |          | NIS k ID | Nisk Int V S | Sample ID | Flask 1  | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | NIS k ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------------------------------------|--------------------------------|----|----------|----------|--------------|-----------|----------|---------------|--------------|----------------|----------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                                               | 2019-050                       |    |          | 1        |              | 544       | 3204     | 7.7           | 2.048        | →              | 1        | 548       | 3174    | 7.8           | 2.046        |                |
| Event:                                                                                                       | 15                             |    |          | 2        |              | 55        | 1085     | 7.5           | 2.043        |                | 2        |           |         |               |              |                |
| Station:                                                                                                     | 72                             |    |          | 3        |              | 56        | 3196     | 7.5           | 2.041        |                | 3        |           |         |               |              |                |
| Event Date (Local):                                                                                          | 3 June 2019                    |    |          | 4        |              | 57        | 3171     | 7.5           | 2.063        |                | 4        |           |         |               |              |                |
| Analysis Date (Local):                                                                                       | 3 Jun 2019                     |    |          | 5        |              | 58        | 3206     | 7.9           | 2.449        |                | 5        |           |         |               |              |                |
| Analyst:                                                                                                     | K5                             |    |          | 6        |              | 59        | 3181     | 8.2           | 2.727        |                | 6        |           |         |               |              |                |
| Standardization Date (Local):                                                                                | 2 Jun 2019                     |    |          | 7        |              | 60        | 3182     | 8.3           | 2.930        |                | 7        |           |         |               |              |                |
| KIO <sub>3</sub> N:                                                                                          | 0.0119329                      |    |          | 8        |              | 61        | 3160     | 9.1           | 3.778        |                | 8        |           |         |               |              |                |
| Standard Titer:                                                                                              | 0.47882                        |    |          | 9        |              | 62        | 3191     | 9.5           | 4.166        |                | 9        |           |         |               |              |                |
| Blank Titer:                                                                                                 | 0.00654                        |    |          | 10       |              | 63        | 3201     | 10.1          | 5.105        |                | 10       |           |         |               |              |                |
| THIO N:                                                                                                      | 0.24936                        |    |          | 11       |              | 64        | 1446     | 10.5          | 5.419        |                | 11       |           |         |               |              |                |
| Sample Flask Water Seal?                                                                                     | Yes                            |    |          | 12       |              | 65A       | 3188     | 10.7          | 5.542        | →              | 12       | 656       | 3151    | 10.7          | 5.544        |                |
| Reagent Change?                                                                                              | No                             |    |          | 13       |              | 66        | 3189     | 10.9          | 5.551        |                | 13       |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization)<br>NOTE NEW BATCH IN LOG BOOK | MnCl <sub>2</sub>              | 14 | 54A      | 54B      | 55           | 56        | 57       | 58            | 59           | 60             | 61       | 62        |         |               |              |                |
|                                                                                                              | NaI/NaOH                       | 15 | OXY      | OXY      | OXY          | OXY       | OXY      | OXY           | OXY          | OXY            | OXY      | OXY       |         |               |              |                |
|                                                                                                              | H <sub>2</sub> SO <sub>4</sub> | 16 | 72       | 72       | 72           | 72        | 72       | 72            | 72           | 72             | 72       | 72        |         |               |              |                |
|                                                                                                              | KIO <sub>3</sub>               | 17 | 2019-050 | 2019-050 | 2019-050     | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 | 2019-050  |         |               |              |                |
|                                                                                                              | THIO                           | 18 | Bot 1    | Bot 1    | Bot 2        | Bot 3     | Bot 4    | Bot 5         | Bot 6        | Bot 7          | Bot 8    | Bot 9     |         |               |              |                |
| Notes:                                                                                                       |                                |    |          | 19       |              |           |          |               |              |                |          |           |         |               |              |                |
|                                                                                                              |                                |    |          | 20       | 63           | 64        | 65A      | 65B           | 66           |                | 20       |           |         |               |              |                |
|                                                                                                              |                                |    |          | 21       | OXY          | OXY       | OXY      | OXY           | OXY          |                | 21       |           |         |               |              |                |
|                                                                                                              |                                |    |          | 22       | 72           | 72        | 72       | 72            | 72           |                | 22       |           |         |               |              |                |
|                                                                                                              |                                |    |          | 23       | 2019-050     | 2019-050  | 2019-050 | 2019-050      | 2019-050     |                | 23       |           |         |               |              |                |
|                                                                                                              |                                |    |          | 24       | Bot 10       | Bot 11    | Bot 12   | Bot 12        | Bot 13       |                | 24       |           |         |               |              |                |

Bottle integrity: First test the top vent (V) by opening the appropriate column if either fails the integrity check and explain this in the comments column.



Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

Bruce



| Cruise and Analysis Information                                                                |  |  | NIS k ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                  | NIS k ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|------------------------------------------------------------------------------------------------|--|--|----------|--------------|-----------|---------|---------------|--------------|---------------------------------|----------|-----------|---------|---------------|--------------|----------------|
| Cruise Number: 209-050                                                                         |  |  | 1        |              | 68A       | 1481    | 7.6           | 2.091        | =>                              | 1        | 68B       | 1477    | 7.7           | 2.091        |                |
| Event: 18                                                                                      |  |  | 2        |              | 69        | 1448    | 7.6           | 2.090        |                                 | 2        |           |         |               |              |                |
| Station: 69                                                                                    |  |  | 3        |              | 70        | 1482    | 7.6           | 2.092        |                                 | 3        |           |         |               |              |                |
| Event Date (Local): 03 Jun 2019                                                                |  |  | 4        |              | 71        | 1466    | 7.6           | 2.117        | IP 1466. Sample over-filtrated. | 4        |           |         |               |              |                |
| Analysis Date (Local): 03 Jun 2019                                                             |  |  | 5        |              | 72        | 1495    | 8.3           | 2.936        |                                 | 5        |           |         |               |              |                |
| Analyst: KS                                                                                    |  |  | 6        |              | 73        | 1485    | 8.7           | 3.367        |                                 | 6        |           |         |               |              |                |
| Standardization Date (Local): 02 Jun 2019                                                      |  |  | 7        |              | 74        | 1497    | 8.8           | 3.454        |                                 | 7        |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0119329                                                                  |  |  | 8        |              | 75        | 1414    | 9.2           | 3.875        |                                 | 8        |           |         |               |              |                |
| Standard Titer: 0.47882                                                                        |  |  | 9        |              | 76        | 1435    | 9.4           | 4.178        |                                 | 9        |           |         |               |              |                |
| Blank Titer: 0.00054                                                                           |  |  | 10       |              | 77        | 1445    | 9.5           | 4.259        |                                 | 10       |           |         |               |              |                |
| THIO N: 0.24936                                                                                |  |  | 11       |              | 78        | 1475    | 9.5           | 4.384        |                                 | 11       |           |         |               |              |                |
| Sample Flask Water Seal? Yes                                                                   |  |  | 12       |              | 79A       | 1458    | 9.7           | 4.596        | =>                              | 12       | 79B       | 1476    | 9.7           | 4.598        |                |
| Reagent Change? (Please circle reagent that was changed prior to sampling and standardization) |  |  | 14       |              | 68A       |         | 68B           |              |                                 |          |           |         |               |              |                |
| NaI/NaOH                                                                                       |  |  | 15       |              | OXY       |         | OXY           |              |                                 |          |           |         |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                                 |  |  | 16       |              | 69        |         | 69            |              |                                 |          |           |         |               |              |                |
| KIO <sub>3</sub>                                                                               |  |  | 17       |              | 2019-050  |         | 2019-050      |              |                                 |          |           |         |               |              |                |
| THIO                                                                                           |  |  | 18       |              | Bot 1     |         | Bot 1         |              |                                 |          |           |         |               |              |                |
| Notes:                                                                                         |  |  | 19       |              |           |         |               |              |                                 |          |           |         |               |              |                |
|                                                                                                |  |  | 20       |              | 74        |         | 75            |              |                                 |          |           |         |               |              |                |
|                                                                                                |  |  | 21       |              | OXY       |         | OXY           |              |                                 |          |           |         |               |              |                |
|                                                                                                |  |  | 22       |              | 69        |         | 69            |              |                                 |          |           |         |               |              |                |
|                                                                                                |  |  | 23       |              | 2019-050  |         | 2019-050      |              |                                 |          |           |         |               |              |                |
|                                                                                                |  |  | 24       |              | Bot 7     |         | Bot 8         |              |                                 |          |           |         |               |              |                |

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



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Institute of Ocean Sciences  
Water Properties Group



Bruce Lee

| Cruise and Analysis Information                                                         |                                |  |  | Nis<br>K<br>ID | Nisk<br>Int<br>V<br>S | Sample<br>ID | Flask<br>1 | Draw<br>T 1<br>(°C) | OXY-1<br>(mL/L) | OXY-1 Comments | Nis<br>K<br>ID | Sample<br>ID | Flask<br>2 | Draw<br>T 2<br>(°C) | OXY-2<br>(mL/L) | OXY-2 Comments |
|-----------------------------------------------------------------------------------------|--------------------------------|--|--|----------------|-----------------------|--------------|------------|---------------------|-----------------|----------------|----------------|--------------|------------|---------------------|-----------------|----------------|
| Cruise Number:                                                                          | 2019-050                       |  |  | 1              |                       | 80A          | 1481       | 8.1                 | 2.503           | →              | 1              | 80B          | 1477       | 8.1                 | 2.513           |                |
| Event:                                                                                  | 21                             |  |  | 2              |                       | 81           | 1448       | 8.1                 | 2.620           |                | 2              |              |            |                     |                 |                |
| Station:                                                                                | ADCP                           |  |  | 3              |                       | 82           | 1482       | 8.9                 | 3.617           |                | 3              |              |            |                     |                 |                |
| Event Date (Local):                                                                     | 3 June 19                      |  |  | 4              |                       | 83           | 1466       | 9.1                 | 3.799           |                | 4              |              |            |                     |                 |                |
| Analysis Date (Local):                                                                  | 3 Jun 19                       |  |  | 5              |                       | 84A          | 1495       | 9.3                 | 3.963           | →              | 5              | 84B          | 1485       | 9.3                 | 3.965           |                |
| Analyst:                                                                                | KS                             |  |  | 6              |                       | 85           | 1493       | 9.4                 | 4.129           |                | 6              |              |            |                     |                 |                |
| Standardization Date (Local):                                                           | 2 Jun 19                       |  |  | 7              |                       | 86           | 1444       | 10.2                | 4.970           |                | 7              |              |            |                     |                 |                |
| KIO <sub>3</sub> N:                                                                     | 0.0119329                      |  |  | 8              |                       | 87           | 1435       | 10.3                | 5.178           |                | 8              |              |            |                     |                 |                |
| Standard Titer:                                                                         | 0.47882                        |  |  | 9              |                       | 88           | 1445       | 10.4                | 5.229           |                | 9              |              |            |                     |                 |                |
| Blank Titer:                                                                            | 0.00054                        |  |  | 10             |                       | 89A          | 1475       | 10.6                | 5.358           | →              | 10             | 89B          | 1458       | 10.5                | 5.359           |                |
| THIO N:                                                                                 | 0.24936                        |  |  | 11             |                       |              |            |                     |                 |                |                |              |            |                     |                 |                |
| Sample Flask<br>Water Seal?                                                             | Yes                            |  |  | 12             |                       | 80A          | 80B        |                     |                 |                |                |              |            |                     |                 |                |
|                                                                                         | No                             |  |  | 13             |                       | OXY          | OXY        |                     |                 |                |                |              |            |                     |                 |                |
| Reagent Change?                                                                         | MnCl <sub>2</sub>              |  |  | 14             |                       | adcp         | adcp       |                     |                 |                |                |              |            |                     |                 |                |
| (Please circle reagent<br>that was changed prior<br>to sampling and<br>standardization) | NaI/NaOH                       |  |  | 15             |                       | 2019-050     | 2019-050   |                     |                 |                |                |              |            |                     |                 |                |
| NOTE NEW BATCH IN<br>LOG BOOK                                                           | H <sub>2</sub> SO <sub>4</sub> |  |  | 16             |                       | Bot 1        | Bot 1      |                     |                 |                |                |              |            |                     |                 |                |
|                                                                                         | KIO <sub>3</sub>               |  |  | 17             |                       |              |            |                     |                 |                |                |              |            |                     |                 |                |
|                                                                                         | THIO                           |  |  | 18             |                       | 85           | 86         |                     |                 |                |                |              |            |                     |                 |                |
|                                                                                         |                                |  |  | 19             |                       | OXY          | OXY        |                     |                 |                |                |              |            |                     |                 |                |
| Notes:                                                                                  |                                |  |  | 20             |                       | adcp         | adcp       |                     |                 |                |                |              |            |                     |                 |                |
|                                                                                         |                                |  |  | 21             |                       | 2019-050     | 2019-050   |                     |                 |                |                |              |            |                     |                 |                |
|                                                                                         |                                |  |  | 22             |                       | Bot 6        | Bot 7      |                     |                 |                |                |              |            |                     |                 |                |
|                                                                                         |                                |  |  | 23             |                       |              |            |                     |                 |                |                |              |            |                     |                 |                |
|                                                                                         |                                |  |  | 24             |                       |              |            |                     |                 |                |                |              |            |                     |                 |                |

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



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**Last Updated: July 2018**

[illegible]

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



Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

Bruce Lee



| Cruise and Analysis Information                                                |  |  |  | NIS k ID | Nisk Int V S | Sample ID | Flask 1  | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | NIS k ID | Sample ID | Flask 2  | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |          |
|--------------------------------------------------------------------------------|--|--|--|----------|--------------|-----------|----------|---------------|--------------|----------------|----------|-----------|----------|---------------|--------------|----------------|----------|
| Cruise Number: 2019-050                                                        |  |  |  | 1        |              | 104       | 1458     | 8.6           | 3.097        |                | 1        |           |          |               |              |                |          |
| Event: 29                                                                      |  |  |  | 2        |              | 105A      | 1476     | 8.6           | 3.093        |                | 2        | 105B      | 1483     |               | 3.094        |                |          |
| Station: 62                                                                    |  |  |  | 3        |              | 106       | 1468     | 8.8           | 3.330        |                | 3        |           |          |               |              |                |          |
| Event Date (Local): 04/JUN/2019                                                |  |  |  | 4        |              | 107       | 1484     | 9.1           | 3.650        |                | 4        |           |          |               |              |                |          |
| Analysis Date (Local): 04 Jun 2019                                             |  |  |  | 5        |              | 108       | 1481     | 9.5           | 4.095        |                | 5        |           |          |               |              |                |          |
| Analyst: KS                                                                    |  |  |  | 6        |              | 109       | 1487     | 9.8           | 4.391        |                | 6        | 108       | 1449     |               |              |                |          |
| Standardization Date (Local): 04 Jun 2019                                      |  |  |  | 7        |              | 110A      | 1474     | 10.1          | 4.699        |                | 7        | 110B      | 1449     | 10.1          | 4.700        |                |          |
| KIO <sub>3</sub> N: 0.6118108                                                  |  |  |  | 8        |              | 111       | 1480     | 10.2          | 5.043        |                | 8        |           |          |               |              |                |          |
| Standard Titer: 0.47409                                                        |  |  |  | 9        |              | 112       | 1467     | 10.3          | 5.153        |                | 9        |           |          |               |              |                |          |
| Blank Titer: 0.00058                                                           |  |  |  | 10       |              | 113       | 1491     | 10.3          | 5.174        |                | 10       |           |          |               |              |                |          |
| THIO N: 0.24939                                                                |  |  |  | 11       |              | 114       | 1425     | 10.3          | 5.174        |                | 11       |           |          |               |              |                |          |
| Sample Flask Water Seal? <input checked="" type="checkbox"/> Yes               |  |  |  | 12       |              |           |          |               |              |                |          |           |          |               |              |                |          |
| Reagent Change? <input type="checkbox"/> No                                    |  |  |  | 13       |              | 104       | 105A     | 105B          | 106          | 107            | 108      | 109       | 110A     | 110B          | 111          | 112            |          |
| (Please circle reagent that was changed prior to sampling and standardization) |  |  |  | 14       | OXY          | OXY       | OXY      | OXY           | OXY          | OXY            | OXY      | OXY       | OXY      | OXY           | OXY          | OXY            | OXY      |
| NOTE NEW BATCH IN LOG BOOK                                                     |  |  |  | 15       | 62           | 62        | 62       | 62            | 62           | 62             | 62       | 62        | 62       | 62            | 62           | 62             | 62       |
|                                                                                |  |  |  | 16       | 2019-050     | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 |
|                                                                                |  |  |  | 17       | Bot 1        | Bot 2     | Bot 2    | Bot 3         | Bot 4        | Bot 5          | Bot 6    | Bot 7     | Bot 7    | Bot 8         | Bot 9        |                |          |
|                                                                                |  |  |  | 18       |              |           |          |               |              |                |          |           |          |               |              |                |          |
| Notes:                                                                         |  |  |  | 19       | 113          | 114       |          |               |              |                | 18       |           |          |               |              |                |          |
|                                                                                |  |  |  | 20       | OXY          | OXY       |          |               |              |                | 19       |           |          |               |              |                |          |
|                                                                                |  |  |  | 21       | 62           | 62        |          |               |              |                | 20       |           |          |               |              |                |          |
|                                                                                |  |  |  | 22       | 2019-050     | 2019-050  |          |               |              |                | 21       |           |          |               |              |                |          |
|                                                                                |  |  |  | 23       | Bot 10       | Bot 11    |          |               |              |                | 22       |           |          |               |              |                |          |
|                                                                                |  |  |  | 24       |              |           |          |               |              |                | 23       |           |          |               |              |                |          |
|                                                                                |  |  |  |          |              |           |          |               |              |                | 24       |           |          |               |              |                |          |

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

Heads up: Flasks are out of order as of bottle 10



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**Last Updated: July 201**

**Bottle integrity:** First test the top vent (V) by opening the bottle and observing the vent for any leaks or damage.

agility check and explain this in the comments column.



Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

Redwoods



| Cruise and Analysis Information                                                                |                                                                                             |  |  | Nis k ID | Nisk Int V S | Sample ID | Flask 1  | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | Nis k ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--|--|----------|--------------|-----------|----------|---------------|--------------|----------------|----------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                                 | 2019-050                                                                                    |  |  | 1        |              | 129A      | 3204     | 9.7           | 4.219        | →              | 1        | 129B      | 3174    | 9.7           | 4.216        |                |
| Event:                                                                                         | 43                                                                                          |  |  | 2        |              | 130       | 1085     | 9.7           | 4.266        |                | 2        |           |         |               |              |                |
| Station:                                                                                       | 46                                                                                          |  |  | 3        |              | 131       | 3196     | 9.5           | 4.338        |                | 3        |           |         |               |              |                |
| Event Date (Local):                                                                            | 4 June 2019                                                                                 |  |  | 4        |              | 132       | 3171     | 9.1           | 4.426        |                | 4        |           |         |               |              |                |
| Analysis Date (Local):                                                                         | 4 June 2019                                                                                 |  |  | 5        |              | 133       | 3206     | 9.1           | 4.380        |                | 5        |           |         |               |              |                |
| Analyst:                                                                                       | KS                                                                                          |  |  | 6        |              | 134       | 3181     | 9.3           | 4.237        |                | 6        |           |         |               |              |                |
| Standardization Date (Local):                                                                  | 4 June 2019                                                                                 |  |  | 7        |              | 135       | 3182     | 9.5           | 4.348        |                | 7        |           |         |               |              |                |
| KIO <sub>3</sub> N:                                                                            | 0.0118108                                                                                   |  |  | 8        |              | 136       | 3160     | 9.7           | 4.491        |                | 8        |           |         |               |              |                |
| Standard Titer:                                                                                | 0.4                                                                                         |  |  | 9        |              | 137       | 3191     | 10.3          | 4.852        |                | 9        |           |         |               |              |                |
| Blank Titer:                                                                                   | 0.00058                                                                                     |  |  | 10       |              | 138A      | 3201     | 10.7          | 5.108        | →              | 10       | 138B      | 4461    | 10.7          | 5.109        |                |
| THIO N:                                                                                        | 0.24939                                                                                     |  |  | 11       |              | 139       | 3188     | 12.9          | 6.043        |                | 11       |           |         |               |              |                |
| Sample Flask Water Seal?                                                                       | Yes                                                                                         |  |  | 12       |              | 140       | 3151     | 13.9          | 6.283        |                | 12       |           |         |               |              |                |
| Reagent Change? (Please circle reagent that was changed prior to sampling and standardization) | MnCl <sub>2</sub><br>NaI/NaOH<br>H <sub>2</sub> SO <sub>4</sub><br>KIO <sub>3</sub><br>THIO |  |  | 14       | 129A         | 129B      | 130      | 131           | 132          | 133            | 134      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                                     |                                                                                             |  |  | 15       | OXY          | OXY       | OXY      | OXY           | OXY          | OXY            | OXY      |           |         |               |              |                |
|                                                                                                |                                                                                             |  |  | 16       | 46           | 46        | 46       | 46            | 46           | 46             | 46       |           |         |               |              |                |
|                                                                                                |                                                                                             |  |  | 17       | 2019-050     | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 |           |         |               |              |                |
|                                                                                                |                                                                                             |  |  | 18       | Bot 1        | Bot 1     | Bot 2    | Bot 3         | Bot 4        | Bot 5          | Bot 6    |           |         |               |              |                |
| Notes:                                                                                         |                                                                                             |  |  | 19       |              |           |          |               |              |                |          |           |         |               |              |                |
|                                                                                                |                                                                                             |  |  | 20       | 135          | 136       | 137      | 138A          | 138B         | 139            | 140      |           |         |               |              |                |
|                                                                                                |                                                                                             |  |  | 21       | OXY          | OXY       | OXY      | OXY           | OXY          | OXY            | OXY      |           |         |               |              |                |
|                                                                                                |                                                                                             |  |  | 22       | 46           | 46        | 46       | 46            | 46           | 46             | 46       |           |         |               |              |                |
|                                                                                                |                                                                                             |  |  | 23       | 2019-050     | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 |           |         |               |              |                |
|                                                                                                |                                                                                             |  |  | 24       | Bot 7        | Bot 8     | Bot 9    | Bot 10        | Bot 10       | Bot 11         | Bot 12   |           |         |               |              |                |

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



Dissolved Oxygen Analysis Log Sheet

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| Cruise and Analysis Information                                                                                              |  |  |  | NIS k ID | Nisk Int v S | Sample ID | Flask 1  | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | NIS k ID | Sample ID | Flask 2  | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |          |          |          |
|------------------------------------------------------------------------------------------------------------------------------|--|--|--|----------|--------------|-----------|----------|---------------|--------------|----------------|----------|-----------|----------|---------------|--------------|----------------|----------|----------|----------|
| Cruise Number: 2019-050                                                                                                      |  |  |  | 1        |              | 141       | 3204     | 9.6           | 2.981        |                | 1        |           |          |               |              |                |          |          |          |
| Event: 47                                                                                                                    |  |  |  | 2        |              | 142       | 3114     | 9.6           | 2.971        |                | 2        |           |          |               |              |                |          |          |          |
| Station: 42                                                                                                                  |  |  |  | 3        |              | 143       | 1085     | 9.5           | 3.194        |                | 3        |           |          |               |              |                |          |          |          |
| Event Date (Local): 5 June 19                                                                                                |  |  |  | 4        |              | 144       | 3196     | 9.3           | 3.728        |                | 4        |           |          |               |              |                |          |          |          |
| Analysis Date (Local): 5 June 2019                                                                                           |  |  |  | 5        |              | 145       | 3171     | 9.3           | 3.970        |                | 5        |           |          |               |              |                |          |          |          |
| Analyst: KS                                                                                                                  |  |  |  | 6        |              | 146       | 3206     | 9.3           | 4.312        |                | 6        |           |          |               |              |                |          |          |          |
| Standardization Date (Local): 4 June 2019                                                                                    |  |  |  | 7        |              | 147       | 3181     | 9.3           | 4.519        |                | 7        |           |          |               |              |                |          |          |          |
| KIO <sub>3</sub> N: 0.0118108                                                                                                |  |  |  | 8        |              | 148       | 3182     | 9.1           | 4.280        |                | 8        |           |          |               |              |                |          |          |          |
| Standard Titer: 0.47489                                                                                                      |  |  |  | 9        |              | 149A      | 3160     | 9.3           | 4.105        | →              | 9        | 149B      | 3191     | 9.4           | 4.111        |                |          |          |          |
| Blank Titer: 0.00058                                                                                                         |  |  |  | 10       |              | 150       | 3201     | 9.3           | 4.193        |                | 10       |           |          |               |              |                |          |          |          |
| THIO N: 0.24939                                                                                                              |  |  |  | 11       |              | 151       | 1446     | 9.3           | 4.275        |                | 11       |           |          |               |              |                |          |          |          |
| Sample Flask Water Seal? Yes                                                                                                 |  |  |  | 12       |              | 152A      | 3188     | 9.6           | 4.323        | →              | 12       | 152B      | 3151     | 9.7           | 4.322        |                |          |          |          |
| Reagent Change? No                                                                                                           |  |  |  | 13       |              | 153       | 3189     | 10.0          | 4.727        |                | 13       |           |          |               |              |                |          |          |          |
| Reagent Change? (Please circle reagent that was changed prior to sampling and standardization)<br>NOTE NEW BATCH IN LOG BOOK |  |  |  | 14       |              | 154       | 3157     | 13.4          | 6.638        |                | 14       |           |          |               |              |                |          |          |          |
|                                                                                                                              |  |  |  | 15       |              | 155       | 3207     | 15.0          | 6.630        |                | 15       |           |          |               |              |                |          |          |          |
|                                                                                                                              |  |  |  | 16       |              | 156       | 3184     | 15.4          | 6.559        |                | 16       |           |          |               |              |                |          |          |          |
|                                                                                                                              |  |  |  | 17       |              | 141       | 142      | 143           | 144          | 145            | 146      | 147       | 148      | 149A          | 149B         | 150            | 151      | 152A     |          |
| Notes:                                                                                                                       |  |  |  | 18       |              | OXY       | OXY      | OXY           | OXY          | OXY            | OXY      | OXY       | OXY      | OXY           | OXY          | OXY            | OXY      |          |          |
|                                                                                                                              |  |  |  | 19       |              |           |          |               |              |                |          |           |          |               |              |                |          |          |          |
|                                                                                                                              |  |  |  | 20       |              | 42        | 42       | 42            | 42           | 42             | 42       | 42        | 42       | 42            | 42           | 42             | 42       | 42       | 42       |
|                                                                                                                              |  |  |  | 21       |              | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 | 2019-050 | 2019-050 |
|                                                                                                                              |  |  |  | 22       |              | Bot 1     | Bot 2    | Bot 3         | Bot 4        | Bot 5          | Bot 6    | Bot 7     | Bot 8    | Bot 9         | Bot 9        | Bot 10         | Bot 11   | Bot 12   |          |
|                                                                                                                              |  |  |  | 23       |              | 152B      | 153      | 154           | 155          | 156            |          |           |          |               |              |                |          |          |          |
|                                                                                                                              |  |  |  | 24       |              | OXY       | OXY      | OXY           | OXY          | OXY            |          |           |          |               |              |                |          |          |          |

Bottle integrity: First test the top vent (V) by o

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



Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

FR06



Last Updated: July 2018

| Cruise and Analysis Information |              |           |          | OXY-1 Comments |                        |          |          |          |  |  |          |           |          | OXY-2 Comments |              |          |  |  |
|---------------------------------|--------------|-----------|----------|----------------|------------------------|----------|----------|----------|--|--|----------|-----------|----------|----------------|--------------|----------|--|--|
| Nis k ID                        | Nisk Int V S | Sample ID | Flask 1  | Draw T 1 (°C)  | OXY-1 (mL/L)           |          |          |          |  |  | Nis k ID | Sample ID | Flask 2  | Draw T 2 (°C)  | OXY-2 (mL/L) |          |  |  |
| 1                               |              | 158       | 1455     | 9.8            | 3.503                  |          |          |          |  |  | 1        |           |          |                |              |          |  |  |
| 2                               |              | 159       | 1392     | 9.7            | 3.470                  |          |          |          |  |  | 2        |           |          |                |              |          |  |  |
| 3                               |              | 160A      | 1492     | 9.7            | 3.304                  |          |          |          |  |  | 3        | 1608      | 1398     | 9.8            | 3.301        |          |  |  |
| 4                               |              | 161       | 1464     | 9.7            | <del>2.304</del> 3.761 |          |          |          |  |  | 4        |           |          |                |              |          |  |  |
| 5                               |              | 162       | 1374     | 9.5            | 4.025                  |          |          |          |  |  | 5        |           |          |                |              |          |  |  |
| 6                               |              | 163       | 1410     | 9.3            | 4.220                  |          |          |          |  |  | 6        |           |          |                |              |          |  |  |
| 7                               |              | 164       | 1395     | 9.3            | 4.239                  |          |          |          |  |  | 7        |           |          |                |              |          |  |  |
| 8                               |              | 165       | 1393     | 9.2            | 4.422                  |          |          |          |  |  | 8        |           |          |                |              |          |  |  |
| 9                               |              | 166A      | 1471     | 9.1            | 4.510                  |          |          |          |  |  | 9        | 1668      | 1456     | 9.2            | 4.509        |          |  |  |
| 10                              |              | 167       | 1488     | 9.3            | 4.399                  |          |          |          |  |  | 10       |           |          |                |              |          |  |  |
| 11                              |              | 168       | 1498     | 9.4            | 4.362                  |          |          |          |  |  | 11       |           |          |                |              |          |  |  |
| 12                              |              | 169       | 1386     |                |                        |          |          |          |  |  | 12       |           |          |                |              |          |  |  |
| 13                              |              | 170       | 1394     | 10.5           | 5.127                  |          |          |          |  |  | 13       |           |          |                |              |          |  |  |
| 14                              |              | 171       | 1453     | 11.4           | 5.633                  |          |          |          |  |  | 14       |           |          |                |              |          |  |  |
| 15                              |              | 172       | 1478     | 13.4           | 6.415                  |          |          |          |  |  | 15       |           |          |                |              |          |  |  |
| 16                              |              | 173       | 1454     | 15.9           | 6.710                  |          |          |          |  |  | 16       |           |          |                |              |          |  |  |
| 17                              |              | 174       | 1441     | 16.8           | 6.833                  |          |          |          |  |  | 17       |           |          |                |              |          |  |  |
| 18                              |              |           |          |                |                        |          |          |          |  |  |          |           |          |                |              |          |  |  |
| 19                              |              | 158       | 159      | 160A           | 160B                   | 161      | 162      | 163      |  |  | 164      | 165       | 166A     | 166B           | 167          | 168      |  |  |
| 20                              |              | OXY 39    | OXY 39   | OXY 39         | OXY 39                 | OXY 39   | OXY 39   | OXY 39   |  |  | OXY 39   | OXY 39    | OXY 39   | OXY 39         | OXY 39       | OXY 39   |  |  |
| 21                              |              | 2019-050  | 2019-050 | 2019-050       | 2019-050               | 2019-050 | 2019-050 | 2019-050 |  |  | 2019-050 | 2019-050  | 2019-050 | 2019-050       | 2019-050     | 2019-050 |  |  |
| 22                              |              | Bot 1     | Bot 2    | Bot 3          | Bot 3                  | Bot 4    | Bot 5    | Bot 6    |  |  | Bot 7    | Bot 8     | Bot 9    | Bot 9          | Bot 10       | Bot 11   |  |  |
| 23                              |              |           |          |                |                        |          |          |          |  |  |          |           |          |                |              |          |  |  |
| 24                              |              |           |          |                |                        |          |          |          |  |  |          |           |          |                |              |          |  |  |

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

Did not close (sticky latch)

1691  
OXY 39  
2019-050  
Bot 12



Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

Bruce Lee



| Cruise and Analysis Information                                                |                   |  |  | Nis k ID | Nisk Int V S | Sample ID | Flask 1  | Draw T 1 (°C) | OXY-1 (mL/L)     | OXY-1 Comments | Nis k ID | Sample ID | Flask 2  | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |          |
|--------------------------------------------------------------------------------|-------------------|--|--|----------|--------------|-----------|----------|---------------|------------------|----------------|----------|-----------|----------|---------------|--------------|----------------|----------|
| Cruise Number:                                                                 | 208-050           |  |  | 1        |              | 179       | 1481     | 9.597         |                  | 2.873          | 1        |           |          |               |              |                |          |
| Event:                                                                         | 61                |  |  | 2        |              | 180       | 1477     | 9.6           | 2.764            |                | 2        |           |          |               |              |                |          |
| Station:                                                                       | 27                |  |  | 3        |              | 181       | 1448     | 9.5           | 3.133            |                | 3        |           |          |               |              |                |          |
| Event Date (Local):                                                            | 5 Jun 2019        |  |  | 4        |              | 182       | 1482     | 9.3           | 3.133            |                | 4        |           |          |               |              |                |          |
| Analysis Date (Local):                                                         | 5 June 2019       |  |  | 5        |              | 183       | 1466     | 9.3           | 3.519            |                | 5        |           |          |               |              |                |          |
| Analyst:                                                                       | KS                |  |  | 6        |              | 184       | 1495     | 9.1           | <del>3.443</del> | 3.943          | 6        |           |          |               |              |                |          |
| Standardization Date (Local):                                                  | 4 June 2019       |  |  | 7        |              | 185A      | 1485     | 9.1           | 4.323            | =>             | 7        | 185B      | 1497     | 9.0           | 4.325        |                |          |
| KIO <sub>3</sub> N:                                                            | 0.0118108         |  |  | 8        |              | 186A      | 1414     | 9.0           | 4.453            | =>             | 8        | 186B      | 1435     | 9.0           | 4.454        |                |          |
| Standard Titer:                                                                | 0.47409           |  |  | 9        |              | 187       | 1445     | 9.1           | 4.329            |                | 9        |           |          |               |              |                |          |
| Blank Titer:                                                                   | 0.00058           |  |  | 10       |              | 188       | 1475     | 9.1           | 4.021            |                | 10       |           |          |               |              |                |          |
| THIO N:                                                                        | 0.24939           |  |  | 11       |              | 189       | 1458     | 9.2           | 4.052            |                | 11       |           |          |               |              |                |          |
| Sample Flask Water Seal?                                                       | Yes               |  |  | 12       |              | 190       | 1476     | 9.8           | 4.423            |                | 12       |           |          |               |              |                |          |
|                                                                                | No                |  |  | 13       |              | 191       | 1463     | 10.5          | 5.222            |                | 13       |           |          |               |              |                |          |
| Reagent Change?                                                                | MnCl <sub>2</sub> |  |  | 14       |              | 192       | 1408     | 13.3          | 6.620            |                | 14       |           |          |               |              |                |          |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH          |  |  | 15       |              | 193       | 1484     | 16.3          | 6.782            |                | 15       |           |          |               |              |                |          |
| NOTE NEW BATCH IN LOG BOOK                                                     | KIO <sub>3</sub>  |  |  | 16       |              | 194       | 1421     | 16.5          | 6.645            |                | 16       |           |          |               |              |                |          |
|                                                                                | THIO              |  |  | 17       |              |           |          |               |                  |                |          |           |          |               |              |                |          |
| Notes:                                                                         |                   |  |  | 18       |              | 179       | 180      | 181           | 182              | 183            | 184      | 185A      | 185B     | 186A          | 186B         | 187            | 188      |
|                                                                                |                   |  |  | 19       |              | OXY       | OXY      | OXY           | OXY              | OXY            | OXY      | OXY       | OXY      | OXY           | OXY          | OXY            | OXY      |
|                                                                                |                   |  |  | 20       |              | 27        | 27       | 27            | 27               | 27             | 27       | 27        | 27       | 27            | 27           | 27             | 27       |
|                                                                                |                   |  |  | 21       |              | 2019-050  | 2019-050 | 2019-050      | 2019-050         | 2019-050       | 2019-050 | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 |
|                                                                                |                   |  |  | 22       |              | Bot 1     | Bot 2    | Bot 3         | Bot 4            | Bot 5          | Bot 6    | Bot 7     | Bot 7    | Bot 8         | Bot 8        | Bot 9          | Bot 10   |
|                                                                                |                   |  |  | 23       |              |           |          |               |                  |                |          |           |          |               |              |                |          |
|                                                                                |                   |  |  | 24       |              |           |          |               |                  |                |          |           |          |               |              |                |          |

Bottle integrity: First test the top vent (V) by op

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



Dissolved Oxygen Analysis Log Sheet

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Frog

| Cruise and Analysis Information |                                                                                                              |  |  |  | Nisk<br>k ID | Sample<br>ID | Flask<br>1 | Draw<br>T 1<br>(°C) | OXY-1<br>(mL/L) | OXY-1 Comments |          |          |          |          | Nisk<br>k ID | Sample<br>ID | Flask<br>2 | Draw<br>T 2<br>(°C) | OXY-2<br>(mL/L) | OXY-2 Comments |  |  |  |  |
|---------------------------------|--------------------------------------------------------------------------------------------------------------|--|--|--|--------------|--------------|------------|---------------------|-----------------|----------------|----------|----------|----------|----------|--------------|--------------|------------|---------------------|-----------------|----------------|--|--|--|--|
| Cruise Number:                  | 2019-050                                                                                                     |  |  |  | 1            |              | 200        | 1455                | 9.8             | 2.462          |          |          |          | 1        |              |              |            |                     |                 |                |  |  |  |  |
| Event:                          | 68                                                                                                           |  |  |  | 2            |              | 201        | 1392                | 9.7             | 2.789          |          |          |          | 2        |              |              |            |                     |                 |                |  |  |  |  |
| Station:                        | 2                                                                                                            |  |  |  | 3            |              | 202        | 1492                | 9.3             | 3.725          |          |          |          | 3        |              |              |            |                     |                 |                |  |  |  |  |
| Event Date (Local):             | 5 June 2019                                                                                                  |  |  |  | 4            |              | 203        | 1398                | 9.3             | 3.951          |          |          |          | 4        |              |              |            |                     |                 |                |  |  |  |  |
| Analysis Date (Local):          | 5 June 2019                                                                                                  |  |  |  | 5            |              | 204        | 1464                | 9.1             | 4.207          |          |          |          | 5        |              |              |            |                     |                 |                |  |  |  |  |
| Analyst:                        | KS                                                                                                           |  |  |  | 6            |              | 205A       | 1374                | 8.9             | 4.458          | ⇒        |          |          | 6        | 205B         | 1410         | 9.0        | 4.456               |                 |                |  |  |  |  |
| Stratization Date (Local):      | 4 June 2019                                                                                                  |  |  |  | 7            |              | 206A       | 1395                | 8.9             | 4.321          | ⇒        |          |          | 7        | 206B         | 1393         | 8.9        | 4.322               |                 |                |  |  |  |  |
| KIO <sub>3</sub> N:             | 0.0118108                                                                                                    |  |  |  | 8            |              | 207        | 1471                | 9.1             | 4.135          |          |          |          | 8        |              |              |            |                     |                 |                |  |  |  |  |
| Standard Titer:                 | 0.47409                                                                                                      |  |  |  | 9            |              | 208        | 1456                | 9.5             | 3.897          |          |          |          | 9        |              |              |            |                     |                 |                |  |  |  |  |
| Blank Titer:                    | 0.00058                                                                                                      |  |  |  | 10           |              | 209        | 1488                | 9.6             | 4.032          |          |          |          | 10       |              |              |            |                     |                 |                |  |  |  |  |
| THIO N:                         | 0.24939                                                                                                      |  |  |  | 11           |              | 210        | 1498                | 9.8             | 4.180          |          |          |          | 11       |              |              |            |                     |                 |                |  |  |  |  |
| Sample Flask<br>Water Seal?     | <div>Yes</div> No                                                                                            |  |  |  | 12           |              | 211        | 1386                | 10.3            | 4.715          |          |          |          | 12       |              |              |            |                     |                 |                |  |  |  |  |
| Reagent Change?                 | MnCl <sub>2</sub><br>(Please circle reagent<br>that was changed prior<br>to sampling and<br>standardization) |  |  |  | 14           |              | 212        | 1394                | 14.5            | 6.363          |          |          |          | 13       |              |              |            |                     |                 |                |  |  |  |  |
|                                 | NaI/NaOH                                                                                                     |  |  |  | 15           |              | 213        | 1453                | 16.9            | 6.588          |          |          |          | 14       |              |              |            |                     |                 |                |  |  |  |  |
|                                 | H <sub>2</sub> SO <sub>4</sub>                                                                               |  |  |  | 16           |              | 200        | 201                 | 202             | 203            | 204      | 205A     | 205B     | 206A     | 206B         |              |            |                     |                 |                |  |  |  |  |
|                                 | NOTE NEW BATCH IN<br>LOG BOOK                                                                                |  |  |  | 17           |              | OXY        | OXY                 | OXY             | OXY            | OXY      | OXY      | OXY      | OXY      | OXY          |              |            |                     |                 |                |  |  |  |  |
|                                 | KIO <sub>3</sub>                                                                                             |  |  |  | 18           |              |            |                     |                 |                |          |          |          |          |              |              |            |                     |                 |                |  |  |  |  |
|                                 | THIO                                                                                                         |  |  |  | 19           |              | Stn 2      | Stn 2               | Stn 2           | Stn 2          | Stn 2    | Stn 2    | Stn 2    | Stn 2    | Stn 2        |              |            |                     |                 |                |  |  |  |  |
| Notes:                          |                                                                                                              |  |  |  | 20           | 2019-050     | 2019-050   | 2019-050            | 2019-050        | 2019-050       | 2019-050 | 2019-050 | 2019-050 | 2019-050 | 2019-050     |              |            |                     |                 |                |  |  |  |  |
|                                 |                                                                                                              |  |  |  | 21           | Bot 1        | Bot 2      | Bot 3               | Bot 4           | Bot 5          | Bot 6    | Bot 6    | Bot 7    | Bot 7    |              |              |            |                     |                 |                |  |  |  |  |
|                                 |                                                                                                              |  |  |  | 22           |              |            |                     |                 |                |          |          |          |          |              |              |            |                     |                 |                |  |  |  |  |
|                                 |                                                                                                              |  |  |  | 23           | 207          | 208        | 209                 | 210             | 211            | 212      | 213      | 214      |          |              |              |            |                     |                 |                |  |  |  |  |
|                                 |                                                                                                              |  |  |  | 24           | OXY          | OXY        | OXY                 | OXY             | OXY            | OXY      | OXY      | OXY      |          |              |              |            |                     |                 |                |  |  |  |  |

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



Dissolved Oxygen Analysis Log Sheet

Last Updated: July 2018

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Bruce Lee



| Cruise and Analysis Information                                                |                                |  |  | Nis ID | Nisk Int V S | Sample ID | Flask 1  | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | Nis ID   | Sample ID | Flask 2  | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--------------------------------|--|--|--------|--------------|-----------|----------|---------------|--------------|----------------|----------|-----------|----------|---------------|--------------|----------------|
| Cruise Number:                                                                 | 2019-050                       |  |  | 1      |              | 219       | 1481     | 9.7           | 2.407        |                | 1        |           |          |               |              |                |
| Event:                                                                         | 73                             |  |  | 2      |              | 220       | 1477     | 9.7           | 2.582        | Flock 1477     | 2        |           |          |               |              |                |
| Station:                                                                       | 3                              |  |  | 3      |              | 221       | 1448     | 9.5           | 2.879        |                | 3        |           |          |               |              |                |
| Event Date (Local):                                                            | 6 June 19                      |  |  | 4      |              | 222       | 1482     | 9.4           | 3.199        |                | 4        |           |          |               |              |                |
| Analysis Date (Local):                                                         | 6 June 2019                    |  |  | 5      |              | 223A      | 1466     | 9.1           | 3.561        | →              | 5        | 223B      | 1495     | 9.2           | 3.567        |                |
| Analyst:                                                                       | KLS                            |  |  | 6      |              | 224       | 1485     | 8.9           | 4.103        |                | 6        |           |          |               |              |                |
| Standardization Date (Local):                                                  | 06 June 2019                   |  |  | 7      |              | 225       | 1497     | 8.9           | 4.187        |                | 7        |           |          |               |              |                |
| KIO <sub>3</sub> N:                                                            | 0.0118108                      |  |  | 8      |              | 226       | 1414     | 8.8           | 4.156        |                | 8        |           |          |               |              |                |
| Standard Titer:                                                                | <del>0.00058</del>             |  |  | 9      |              | 227A      | 1435     | 9.1           | 3.771        | →              | 9        | 227B      | 1445     | 9.1           | 3.770        |                |
| Blank Titer:                                                                   | 0.00058                        |  |  | 10     |              | 228       | 1475     | 9.5           | 4.079        |                | 10       |           |          |               |              |                |
| THIO N:                                                                        | 0.24922                        |  |  | 11     |              | 229       | 1458     | 9.7           | 4.240        |                | 11       |           |          |               |              |                |
| Sample Flask Water Seal?                                                       | Yes                            |  |  | 12     |              | 230       | 1476     | 10.1          | 4.467        |                | 12       |           |          |               |              |                |
| Reagent Change?                                                                | MnCl <sub>2</sub>              |  |  | 13     |              | 231       | 1483     | 11.1          | 5.458        |                | 13       |           |          |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       |  |  | 14     |              | 232       | 1468     | 14.4          | 6.429        |                | 14       |           |          |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> |  |  | 15     |              | 233       | 1484     | 16.7          | 6.527        |                | 15       |           |          |               |              |                |
|                                                                                | KIO <sub>3</sub>               |  |  | 16     |              | 234       | 1421     | 16.9          | 6.516        |                | 16       |           |          |               |              |                |
|                                                                                | THIO                           |  |  | 17     |              |           |          |               |              |                |          |           |          |               |              |                |
| Notes:                                                                         | 8.47446                        |  |  | 18     | 219          | 220       | 221      | 222           | 223A         | 223B           | 224      | 225       | 226      | 227A          | 227B         | 228            |
|                                                                                |                                |  |  | 19     | OXY          | OXY       | OXY      | OXY           | OXY          | OXY            | OXY      | OXY       | OXY      | OXY           | OXY          | OXY            |
|                                                                                |                                |  |  | 20     | Stn 3        | Stn 3     | Stn 3    | Stn 3         | Stn 3        | Stn 3          | Stn 3    | Stn 3     | Stn 3    | Stn 3         | Stn 3        | Stn 3          |
|                                                                                |                                |  |  | 21     | 2019-050     | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       |
|                                                                                |                                |  |  | 22     | Bot 1        | Bot 2     | Bot 3    | Bot 4         | Bot 5        | Bot 5          | Bot 6    | Bot 7     | Bot 8    | Bot 9         | Bot 9        | Bot 10         |
|                                                                                |                                |  |  | 23     | 229          | 230       | 231      | 232           | 233          | 234            |          |           |          |               |              |                |
|                                                                                |                                |  |  | 24     | OXY          | OXY       | OXY      | OXY           | OXY          | OXY            |          |           |          |               |              |                |

Bottle integrity: First test the top vent (V) by opening the bottle and measuring DO. If the DO is significantly lower than the other bottles, the bottle may have been opened. If the DO is significantly higher, the bottle may have been sealed incorrectly. If the DO is within 0.1 mg/L of the other bottles, the bottle is likely intact. If the DO is significantly lower than the other bottles, the bottle may have been opened. If the DO is significantly higher, the bottle may have been sealed incorrectly. If the DO is within 0.1 mg/L of the other bottles, the bottle is likely intact.



Dissolved Oxygen Analysis Log Sheet

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| Cruise and Analysis Information                                                                              |                                                                                             |  |  | Nis k ID | Nis k Int V S | Sample ID | Flask 1  | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                                                    | Nis k ID | Sample ID | Flask 2  | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--|--|----------|---------------|-----------|----------|---------------|--------------|-------------------------------------------------------------------|----------|-----------|----------|---------------|--------------|----------------|
| Cruise Number:                                                                                               | 2019-050                                                                                    |  |  | 1        |               | 235       | 1455     | 9.3           | 3.395        | 2 stn bars in sample. Fished 1 out. Accuracy most likely affected | 1        |           |          |               |              |                |
| Event:                                                                                                       | 76                                                                                          |  |  | 2        |               | 236       | 1392     | 9.2           | 3.760        |                                                                   | 2        |           |          |               |              |                |
| Station:                                                                                                     | 6                                                                                           |  |  | 3        |               | 237       | 1492     | 9.1           | 3.938        |                                                                   | 3        |           |          |               |              |                |
| Event Date (Local):                                                                                          | 6 June 2019                                                                                 |  |  | 4        |               | 238       | 1398     | 9.0           | 4.129        |                                                                   | 4        |           |          |               |              |                |
| Analysis Date (Local):                                                                                       | 6 June 2019                                                                                 |  |  | 5        |               | 239       | 1464     | 9.1           | 3.691        |                                                                   | 5        |           |          |               |              |                |
| Analyst:                                                                                                     | KS                                                                                          |  |  | 6        |               | 240A      | 1374     | 9.5           | 3.956        |                                                                   | 6        | 240B      | 1410     | 9.5           | 3.957        |                |
| Standardization Date (Local):                                                                                | 6 June 2019                                                                                 |  |  | 7        |               | 241       | 1395     | 9.7           | 4.398        |                                                                   | 7        |           |          |               |              |                |
| KIO <sub>3</sub> N:                                                                                          | 0.0118108                                                                                   |  |  | 8        |               | 242       | 1393     | 10.1          | 4.556        |                                                                   | 8        |           |          |               |              |                |
| Standard Titer:                                                                                              | 0.47746 446                                                                                 |  |  | 9        |               | 243       | 1471     | 10.7          | 4.860        |                                                                   | 9        |           |          |               |              |                |
| Blank Titer:                                                                                                 | 0.00058                                                                                     |  |  | 10       |               | 244       | 1456     | 11.8          | 5.935        |                                                                   | 10       |           |          |               |              |                |
| THIO N:                                                                                                      | 0.24922                                                                                     |  |  | 11       |               | 245       | 1488     | 14.1          | 6.979        |                                                                   | 11       |           |          |               |              |                |
| Sample Flask Water Seal?                                                                                     | Yes                                                                                         |  |  | 12       |               | 246A      | 1498     | 15.9          | 6.756        |                                                                   | 12       | 246B      | 1386     | 15.8          | 6.748        |                |
| Reagent Change?                                                                                              | No                                                                                          |  |  | 13       |               | 247       | 1394     | 15.8          | 6.770        |                                                                   | 13       |           |          |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization)<br>NOTE NEW BATCH IN LOG BOOK | MnCl <sub>2</sub><br>NaI/NaOH<br>H <sub>2</sub> SO <sub>4</sub><br>KIO <sub>3</sub><br>THIO |  |  | 14       | 235           | 236       | 237      | 238           | 239          | 240A                                                              | 240B     | 241       | 242      |               |              |                |
|                                                                                                              |                                                                                             |  |  | 15       | OXY           | OXY       | OXY      | OXY           | OXY          | OXY                                                               | OXY      | OXY       | OXY      |               |              |                |
|                                                                                                              |                                                                                             |  |  | 16       | Stn 6         | Stn 6     | Stn 6    | Stn 6         | Stn 6        | Stn 6                                                             | Stn 6    | Stn 6     | Stn 6    |               |              |                |
|                                                                                                              |                                                                                             |  |  | 17       | 2019-050      | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050                                                          | 2019-050 | 2019-050  | 2019-050 |               |              |                |
|                                                                                                              |                                                                                             |  |  | 18       | Bot 1         | Bot 2     | Bot 3    | Bot 4         | Bot 5        | Bot 6                                                             | Bot 6    | Bot 7     | Bot 8    |               |              |                |
| Notes:                                                                                                       |                                                                                             |  |  | 19       |               |           |          |               |              |                                                                   |          |           |          |               |              |                |
|                                                                                                              |                                                                                             |  |  | 20       | 243           | 244       | 245      | 246A          | 246B         | 247                                                               |          |           |          |               |              |                |
|                                                                                                              |                                                                                             |  |  | 21       | OXY           | OXY       | OXY      | OXY           | OXY          | OXY                                                               |          |           |          |               |              |                |
|                                                                                                              |                                                                                             |  |  | 22       | Stn 6         | Stn 6     | Stn 6    | Stn 6         | Stn 6        | Stn 6                                                             |          |           |          |               |              |                |
|                                                                                                              |                                                                                             |  |  | 23       | 2019-050      | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050                                                          |          |           |          |               |              |                |
|                                                                                                              |                                                                                             |  |  | 24       | Bot 9         | Bot 10    | Bot 11   | Bot 12        | Bot 12       | Bot 13                                                            |          |           |          |               |              |                |

Bottle integrity: First test the top vent (V) by opening the bottle and observing the liquid level. If the liquid level is not at the top of the bottle, the bottle integrity is compromised. If the liquid level is at the top of the bottle, the bottle integrity is not compromised. If the liquid level is not at the top of the bottle, the bottle integrity is compromised. If the liquid level is at the top of the bottle, the bottle integrity is not compromised.



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| Cruise and Analysis Information                                                |                                |    |          | NIS k ID | Nisk Int V S | Sample ID | Flask 1  | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | NIS k ID | Sample ID | Flask 2  | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |          |          |          |          |          |          |          |          |          |          |
|--------------------------------------------------------------------------------|--------------------------------|----|----------|----------|--------------|-----------|----------|---------------|--------------|----------------|----------|-----------|----------|---------------|--------------|----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Cruise Number:                                                                 | 2019-050                       |    |          | 1        |              | 248       | 1478     | 9.4           | 3.629        |                | 1        |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
| Event:                                                                         | 79                             |    |          | 2        |              | 249       | 1454     | 9.1           | 3.278        |                | 2        |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
| Station:                                                                       | 9                              |    |          | 3        |              | 250A      | 1441     | 8.9           | 3.880        | ⇒              | 3        | 250B      | 1451     | 8.9           | 3.881        |                |          |          |          |          |          |          |          |          |          |          |
| Event Date (Local):                                                            | 06 Jun 2019                    |    |          | 4        |              | 251       | 1439     | 8.9           | 3.807        |                | 4        |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
| Analysis Date (Local):                                                         | 6 June 2019                    |    |          | 5        |              | 252A      | 1496     | 9.3           | 3.762        | ⇒              | 5        | 252B      | 1439     | 9.3           | 3.699        |                |          |          |          |          |          |          |          |          |          |          |
| Analyst:                                                                       | KS                             |    |          | 6        |              | 253       | 1494     | 9.8           | 4.321        |                | 6        |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
| Stratification Date (Local):                                                   | 6 June 2019                    |    |          | 7        |              | 254       | 1412     | 9.9           | 4.318        |                | 7        |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
| KIO <sub>3</sub> N:                                                            | 0.0118308                      |    |          | 8        |              | 255       | 1447     | 10.4          | 4.616        |                | 8        |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
| Standard Titer:                                                                | 0.17446                        |    |          | 9        |              | 256       | 1403     | 10.8          | 4.945        |                | 9        |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
| Blank Titer:                                                                   | 0.00658                        |    |          | 10       |              | 257       | 1397     | 13.5          | 6.475        |                | 10       |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
| THIO N:                                                                        | 0.24922                        |    |          | 11       |              | 258       | 1499     | 16.1          | 6.741        |                | 11       |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
| Sample Flask Water Seal?                                                       | Yes                            |    |          | 12       |              | 259       | 1452     | 16.2          | 6.639        |                | 12       |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
| Reagent Change?                                                                | No                             |    |          | 13       |              |           |          |               |              |                |          |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
| (Please circle reagent that was changed prior to sampling and standardization) | MnCl <sub>2</sub>              | 14 | 248      | OXY      | 249          | OXY       | 250A     | OXY           | 250B         | OXY            | 251      | OXY       | 252A     | OXY           | 252B         | OXY            | 253      | OXY      | 254      | OXY      | 255      | OXY      | 256      | OXY      | 257      | OXY      |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> | 15 | Stn 9    | 2019-050 | Stn 9        | 2019-050  | Stn 9    | 2019-050      | Stn 9        | 2019-050       | Stn 9    | 2019-050  | Stn 9    | 2019-050      | Stn 9        | 2019-050       | Stn 9    | 2019-050 | Stn 9    | 2019-050 | Stn 9    | 2019-050 | Stn 9    | 2019-050 | Stn 9    | 2019-050 |
|                                                                                | KIO <sub>3</sub>               | 16 | 2019-050 | 2019-050 | 2019-050     | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 | 2019-050 | 2019-050 | 2019-050 | 2019-050 | 2019-050 | 2019-050 | 2019-050 | 2019-050 |          |
|                                                                                | THIO                           | 17 | Bot 1    | Bot 2    | Bot 3        | Bot 3     | Bot 4    | Bot 5         | Bot 5        | Bot 6          | Bot 7    | Bot 8     | Bot 9    | Bot 10        |              |                |          |          |          |          |          |          |          |          |          |          |
| Notes:                                                                         |                                |    |          | 18       |              |           |          |               |              |                |          |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
|                                                                                |                                |    |          | 19       |              |           |          |               |              |                |          |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
|                                                                                |                                |    |          | 20       | 258          | 259       |          |               |              |                |          |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
|                                                                                |                                |    |          | 21       | OXY          | OXY       |          |               |              |                |          |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
|                                                                                |                                |    |          | 22       | Stn 9        | Stn 9     |          |               |              |                |          |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
|                                                                                |                                |    |          | 23       | 2019-050     | 2019-050  |          |               |              |                |          |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |
|                                                                                |                                |    |          | 24       | Bot 11       | Bot 12    |          |               |              |                |          |           |          |               |              |                |          |          |          |          |          |          |          |          |          |          |

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



Dissolved Oxygen Analysis Log Sheet

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Spruce



| Cruise and Analysis Information                                                                |                                                                                 |  |  | NIS k ID | NIS k Int V S | Sample ID | Flask 1  | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | NIS k ID | Sample ID | Flask 2  | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |          |
|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--|--|----------|---------------|-----------|----------|---------------|--------------|----------------|----------|-----------|----------|---------------|--------------|----------------|----------|
| Cruise Number:                                                                                 | 2019-050                                                                        |  |  | 1        |               | 260       | 3204     | 10.0          | 2.702        |                | 1        |           |          |               |              |                |          |
| Event:                                                                                         | 83                                                                              |  |  | 2        |               | 261       | 3174     | 9.5           | 3.435        |                | 2        |           |          |               |              |                |          |
| Station:                                                                                       | 12                                                                              |  |  | 3        |               | 262       | 1085     | 9.4           | 3.661        |                | 3        |           |          |               |              |                |          |
| Event Date (Local):                                                                            | 06/JUN/2019                                                                     |  |  | 4        |               | 263       | 3196     | 9.2           | 3.716        |                | 4        |           |          |               |              |                |          |
| Analysis Date (Local):                                                                         | 6 June 2019                                                                     |  |  | 5        |               | 264A      | 3111     | 9.3           | 3.752        |                | 5        | 264B      | 3206     | 9.4           | 3.754        |                |          |
| Analyst:                                                                                       | KS                                                                              |  |  | 6        |               | 265       | 3181     | 9.1           | 3.912        |                | 6        |           |          |               |              |                |          |
| Standardization Date (Local):                                                                  | 6 June 2019                                                                     |  |  | 7        |               | 266A      | 3182     | 9.0           | 3.947        |                | 7        | 266B      | 3160     | 9.1           | 3.944        |                |          |
| KIO <sub>3</sub> N:                                                                            | 0.0118108                                                                       |  |  | 8        |               | 267       | 3191     | 9.0           | 3.803        |                | 8        |           |          |               |              |                |          |
| Standard Titer:                                                                                | 0.47446                                                                         |  |  | 9        |               | 268       | 3201     | 9.3           | 3.619        |                | 9        |           |          |               |              |                |          |
| Blank Titer:                                                                                   | 0.00058                                                                         |  |  | 10       |               | 269       | 1446     | 9.5           | 4.012        |                | 10       |           |          |               |              |                |          |
| THIO N:                                                                                        | 0.24922                                                                         |  |  | 11       |               | 270       | 3188     | 9.6           | 4.089        |                | 11       |           |          |               |              |                |          |
| Sample Flask Water Seal?                                                                       | Yes                                                                             |  |  | 12       |               | 271       | 3151     | 9.7           | 4.221        |                | 12       |           |          |               |              |                |          |
| Reagent Change? (Please circle reagent that was changed prior to sampling and standardization) | MnCl <sub>2</sub> NaI/NaOH H <sub>2</sub> SO <sub>4</sub> KIO <sub>3</sub> THIO |  |  | 13       |               | 272       | 3189     | 10.3          | 4.378        |                | 13       |           |          |               |              |                |          |
| NOTE NEW BATCH IN LOG BOOK                                                                     |                                                                                 |  |  | 14       |               | 273       | 3157     | 14.1          | 6.846        |                | 14       |           |          |               |              |                |          |
| Notes:                                                                                         |                                                                                 |  |  | 15       |               | 274       | 3207     | 16.8          | 6.464        |                | 15       |           |          |               |              |                |          |
|                                                                                                |                                                                                 |  |  | 16       |               | 275       | 3184     | 17.1          | 6.462        |                | 16       |           |          |               |              |                |          |
|                                                                                                |                                                                                 |  |  | 17       |               |           |          |               |              |                |          |           |          |               |              |                |          |
|                                                                                                |                                                                                 |  |  | 18       |               | 260       | 261      | 262           | 263          | 264A           | 264B     | 265       | 266A     | 266B          | 267          | 268            | 269      |
|                                                                                                |                                                                                 |  |  | 19       |               | OXY       | OXY      | OXY           | OXY          | OXY            | OXY      | OXY       | OXY      | OXY           | OXY          | OXY            | OXY      |
|                                                                                                |                                                                                 |  |  | 20       |               | Stn 12    | Stn 12   | Stn 12        | Stn 12       | Stn 12         | Stn 12   | Stn 12    | Stn 12   | Stn 12        | Stn 12       | Stn 12         | Stn 12   |
|                                                                                                |                                                                                 |  |  | 21       |               | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 |
|                                                                                                |                                                                                 |  |  | 22       |               | Bot 1     | Bot 2    | Bot 3         | Bot 4        | Bot 5          | Bot 5    | Bot 6     | Bot 7    | Bot 7         | Bot 8        | Bot 9          | Bot 10   |
|                                                                                                |                                                                                 |  |  | 23       |               |           |          |               |              |                |          |           |          |               |              |                |          |
|                                                                                                |                                                                                 |  |  | 24       |               | 270       | 271      | 272           | 273          | 274            | 275      |           |          |               |              |                |          |
|                                                                                                |                                                                                 |  |  |          |               | OXY       | OXY      | OXY           | OXY          | OXY            | OXY      |           |          |               |              |                |          |
|                                                                                                |                                                                                 |  |  |          |               | Stn 12    | Stn 12   | Stn 12        | Stn 12       | Stn 12         | Stn 12   |           |          |               |              |                |          |
|                                                                                                |                                                                                 |  |  |          |               | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 |           |          |               |              |                |          |
|                                                                                                |                                                                                 |  |  |          |               | Bot 11    | Bot 12   | Bot 13        | Bot 14       | Bot 15         | Bot 16   |           |          |               |              |                |          |

Bottle integrity: First test the top vent (V) by of

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



Dissolved Oxygen Analysis Log Sheet

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Reduced's



| Cruise and Analysis Information                                                                                           |                                |  |  |  |  |  |  |  |  | NIS      |              |           |          |               |              |                                                   |          |           |          |               |              |                |
|---------------------------------------------------------------------------------------------------------------------------|--------------------------------|--|--|--|--|--|--|--|--|----------|--------------|-----------|----------|---------------|--------------|---------------------------------------------------|----------|-----------|----------|---------------|--------------|----------------|
| Cruise Number:                                                                                                            | 2019-050                       |  |  |  |  |  |  |  |  | NIS k ID | Nisk Int V S | Sample ID | Flask 1  | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                                    | NIS k ID | Sample ID | Flask 2  | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
| Event:                                                                                                                    | 86                             |  |  |  |  |  |  |  |  | 1        |              | 277A      | 3204     | 9.6           | 9.           | → 1.075                                           | 1        | 277B      | 3174     | 9.6           | 1.074        |                |
| Station:                                                                                                                  | Pen1                           |  |  |  |  |  |  |  |  | 2        |              | 278       | 1085     | 9.6           | 0.862        |                                                   | 2        |           |          |               |              |                |
| Event Date (Local):                                                                                                       | 06 June 2019                   |  |  |  |  |  |  |  |  | 3        |              | 279       | 3196     | 9.5           | 1.008        |                                                   | 3        |           |          |               |              |                |
| Analysis Date (Local):                                                                                                    | 06 June 2019                   |  |  |  |  |  |  |  |  | 4        |              | 280       | 3171     | 9.3           | 1.147        |                                                   | 4        |           |          |               |              |                |
| Analyst:                                                                                                                  | KS                             |  |  |  |  |  |  |  |  | 5        |              | 281       | 3206     | 9.4           | 1.766        |                                                   | 5        |           |          |               |              |                |
| Stratization Date (Local):                                                                                                | 06 June 2019                   |  |  |  |  |  |  |  |  | 6        |              | 282       | 3181     | 9.2           | 2.225        |                                                   | 6        |           |          |               |              |                |
| KIO <sub>3</sub> N:                                                                                                       | 0.0118108                      |  |  |  |  |  |  |  |  | 7        |              | 283       | 3182     | 9.1           | 2.668        |                                                   | 7        |           |          |               |              |                |
| Standard Titer:                                                                                                           | 0.47446                        |  |  |  |  |  |  |  |  | 8        |              | 284       | 3160     | 9.3           | 3.386        |                                                   | 8        |           |          |               |              |                |
| Blank Titer:                                                                                                              | 0.00058                        |  |  |  |  |  |  |  |  | 9        |              | 285       | 3191     | 9.9           | 4.993        |                                                   | 9        |           |          |               |              |                |
| THIO N:                                                                                                                   | 0.24922                        |  |  |  |  |  |  |  |  | 10       |              | 286       | 3201     | 11.8          | 8.701        |                                                   | 10       |           |          |               |              |                |
| Sample Flask Water Seal?                                                                                                  | <div>Yes</div>                 |  |  |  |  |  |  |  |  | 11       |              | 287A      | 1446     | 15.6          | 9.027        | → draw ↑ increasing quickly as OXY-2 being drawn. | 11       | 287B      | 3188     | 17.0          | 8.529        | Stratified?    |
| Reagent Change? (Please circle reagent that was changed prior to sampling and standardization) NOTE NEW BATCH IN LOG BOOK | <div>No</div>                  |  |  |  |  |  |  |  |  | 12       |              | 288       | 3151     | 19.8          | 6.802        |                                                   | 12       |           |          |               |              |                |
|                                                                                                                           | MnCl <sub>2</sub>              |  |  |  |  |  |  |  |  | 13       |              | 277A      | 277B     | 278           | 279          | 280                                               | 281      | 282       | 283      | 284           | 285          |                |
|                                                                                                                           | NaI/NaOH                       |  |  |  |  |  |  |  |  | 14       |              | OXY       | OXY      | OXY           | OXY          | OXY                                               | OXY      | OXY       | OXY      | OXY           |              |                |
|                                                                                                                           | H <sub>2</sub> SO <sub>4</sub> |  |  |  |  |  |  |  |  | 15       |              | Pen1      | Pen1     | Pen1          | Pen1         | Pen1                                              | Pen1     | Pen1      | Pen1     | Pen1          |              |                |
|                                                                                                                           | KIO <sub>3</sub>               |  |  |  |  |  |  |  |  | 16       |              | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050                                          | 2019-050 | 2019-050  | 2019-050 | 2019-050      |              |                |
|                                                                                                                           | THIO                           |  |  |  |  |  |  |  |  | 17       |              | Bot 1     | Bot 1    | Bot 2         | Bot 3        | Bot 4                                             | Bot 5    | Bot 6     | Bot 7    | Bot 8         | Bot 9        |                |
| Notes:                                                                                                                    |                                |  |  |  |  |  |  |  |  | 18       |              |           |          |               |              |                                                   |          |           |          |               |              |                |
|                                                                                                                           |                                |  |  |  |  |  |  |  |  | 19       |              | 286       | 287A     | 287B          | 288          |                                                   |          |           |          |               |              |                |
|                                                                                                                           |                                |  |  |  |  |  |  |  |  | 20       |              | OXY       | OXY      | OXY           | OXY          |                                                   |          |           |          |               |              |                |
|                                                                                                                           |                                |  |  |  |  |  |  |  |  | 21       |              | Pen1      | Pen1     | Pen1          | Pen1         |                                                   |          |           |          |               |              |                |
|                                                                                                                           |                                |  |  |  |  |  |  |  |  | 22       |              | 2019-050  | 2019-050 | 2019-050      | 2019-050     |                                                   |          |           |          |               |              |                |
|                                                                                                                           |                                |  |  |  |  |  |  |  |  | 23       |              | Bot 10    | Bot 11   | Bot 11        | Bot 12       |                                                   |          |           |          |               |              |                |
|                                                                                                                           |                                |  |  |  |  |  |  |  |  | 24       |              |           |          |               |              |                                                   |          |           |          |               |              |                |

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



Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

Frog



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| Cruise Number:                  | 2019-050 |  |  |  |  |  |  |  |  |          | 1            |           | 290     | 1455          | 9.7          | 2.199          |  |  |  |  |  |  |  |  |  |          |           |         |               |              |                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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Water Properties Group

Redwoods



| Cruise and Analysis Information                                                |                                |  |  | Nis k ID | Nisk Int V S | Sample ID | Flask 1  | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                            | Nis k ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--------------------------------|--|--|----------|--------------|-----------|----------|---------------|--------------|-------------------------------------------|----------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                 | 2019-050                       |  |  | 1        |              | 311       | 3204     | 8.9           | 3.747        | 3.733 - E.P. late. Sample over-tilated. ✓ | 1        |           |         |               |              |                |
| Event:                                                                         | 94                             |  |  | 2        |              | 318A      | 3174     | 8.9           | 3.747        |                                           | 2        | 312B      | 1085    | 8.9           | 3.744        |                |
| Station:                                                                       | 16                             |  |  | 3        |              | 313       | 3196     | 9.0           | 3.705        |                                           | 3        |           |         |               |              |                |
| Event Date (Local):                                                            | 6 June 2019                    |  |  | 4        |              | 314       | 3171     | 9.0           | 3.692        |                                           | 4        |           |         |               |              |                |
| Analysis Date (Local):                                                         | 6 June 2019                    |  |  | 5        |              | 315       | 3206     | 9.2           | 3.807        |                                           | 5        |           |         |               |              |                |
| Analyst:                                                                       | KS                             |  |  | 6        |              | 316       | 3181     | 9.3           | 3.847        |                                           | 6        |           |         |               |              |                |
| Standardization Date (Local):                                                  | 6 June 2019                    |  |  | 7        |              | 317A      | 3182     | 9.6           | 4.124        | =>                                        | 7        | 317B      | 3160    | 9.6           | 4.130        |                |
| KIO <sub>3</sub> N:                                                            | 0.0118108                      |  |  | 8        |              | 318       | 3191     | 10.0          | 4.469        |                                           | 8        |           |         |               |              |                |
| Standard Titer:                                                                | 0.47446                        |  |  | 9        |              | 319       | 3201     | 10.2          | 4.571        |                                           | 9        |           |         |               |              |                |
| Blank Titer:                                                                   | 0.00058                        |  |  | 10       |              | 320       | 1446     | 10.4          | 4.703        |                                           | 10       |           |         |               |              |                |
| THIO N:                                                                        | 0.24922                        |  |  | 11       |              | 321       | 3188     | 11.0          | 5.023        |                                           | 11       |           |         |               |              |                |
| Sample Flask Water Seal?                                                       | Yes                            |  |  | 12       |              |           |          |               |              |                                           |          |           |         |               |              |                |
| Reagent Change?                                                                | MnCl <sub>2</sub>              |  |  | 13       |              | 311       | 312A     |               |              |                                           |          |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       |  |  | 14       |              | OXY       | OXY      |               |              |                                           |          |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> |  |  | 15       |              | stn 16    | stn 16   |               |              |                                           |          |           |         |               |              |                |
|                                                                                | KIO <sub>3</sub>               |  |  | 16       |              | 2019-050  | 2019-050 |               |              |                                           |          |           |         |               |              |                |
|                                                                                | THIO                           |  |  | 17       |              | Bot 1     | Bot 2    |               |              |                                           |          |           |         |               |              |                |
| Notes:                                                                         |                                |  |  | 18       |              |           |          |               |              |                                           |          |           |         |               |              |                |
|                                                                                |                                |  |  | 19       |              | 317A      | 317B     |               |              |                                           |          |           |         |               |              |                |
|                                                                                |                                |  |  | 20       |              | OXY       | OXY      |               |              |                                           |          |           |         |               |              |                |
|                                                                                |                                |  |  | 21       |              | stn 16    | stn 16   |               |              |                                           |          |           |         |               |              |                |
|                                                                                |                                |  |  | 22       |              | 2019-050  | 2019-050 |               |              |                                           |          |           |         |               |              |                |
|                                                                                |                                |  |  | 23       |              | Bot 7     | Bot 7    |               |              |                                           |          |           |         |               |              |                |
|                                                                                |                                |  |  | 24       |              |           |          |               |              |                                           |          |           |         |               |              |                |

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



Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group



| Cruise and Analysis Information                                                |  |  |  | Nis k ID | Nisk Int V S | Sample ID | Flask 1  | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | Nis k ID | Sample ID | Flask 2  | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--|--|--|----------|--------------|-----------|----------|---------------|--------------|----------------|----------|-----------|----------|---------------|--------------|----------------|
| Cruise Number: 2019-050                                                        |  |  |  | 1        |              | 322       | 1455     | 9.3           | 3.145        |                | 1        |           |          |               |              |                |
| Event: 98                                                                      |  |  |  | 2        |              | 323       | 1392     | 9.3           | 3.351        |                | 2        |           |          |               |              |                |
| Station: 14                                                                    |  |  |  | 3        |              | 324A      | 1492     | 9.1           | 3.686        | →              | 3        | 324B      | 1398     | 9.1           | 3.687        |                |
| Event Date (Local): 07/ JUN/2019                                               |  |  |  | 4        |              | 325       | 1464     | 9.1           | 3.718        |                | 4        |           |          |               |              |                |
| Analysis Date (Local): 6 June 2019                                             |  |  |  | 5        |              | 326       | 1374     | 9.1           | 3.688        |                | 5        |           |          |               |              |                |
| Analyst: KS                                                                    |  |  |  | 6        |              | 327       | 1410     | 9.3           | 3.763        |                | 6        |           |          |               |              |                |
| Standardization Date (Local): 6 June 2019                                      |  |  |  | 7        |              | 328       | 1395     | 9.4           | 3.876        |                | 7        |           |          |               |              |                |
| KIO <sub>3</sub> N: 0.0118108                                                  |  |  |  | 8        |              | 329A      | 1393     | 9.7           | 3.947        | →              | 8        | 329B      | 1471     | 9.7           | 3.952        |                |
| Standard Titer: 0.47446                                                        |  |  |  | 9        |              | 330       | 1456     | 10.2          | 4.399        |                | 9        |           |          |               |              |                |
| Blank Titer: 0.00058                                                           |  |  |  | 10       |              | 331       | 1488     | 10.3          | 4.470        |                | 10       |           |          |               |              |                |
| THIO N: 0.24922                                                                |  |  |  | 11       |              | 332       | 1498     | 10.8          | 4.803        |                | 11       |           |          |               |              |                |
| Sample Flask Water Seal? Yes                                                   |  |  |  | 12       |              | 333       | 1386     | 11.1          | 4.889        |                | 12       |           |          |               |              |                |
|                                                                                |  |  |  | 13       |              | 334       | 1394     | 11.6          | 5.472        |                | 13       |           |          |               |              |                |
| Reagent Change? No                                                             |  |  |  | 14       |              | 335       | 1453     | 14.7          | 6.625        |                | 14       |           |          |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) |  |  |  | 15       |              | 336       | 1478     | 16.3          | 6.703        |                | 15       |           |          |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     |  |  |  | 16       |              |           |          |               |              |                |          |           |          |               |              |                |
| H <sub>2</sub> SO <sub>4</sub>                                                 |  |  |  | 17       |              | 322       | 323      | 324A          | 324B         | 325            | 326      | 327       |          |               |              |                |
| KIO <sub>3</sub>                                                               |  |  |  | 18       |              | OXY       | OXY      | OXY           | OXY          | OXY            | OXY      | OXY       |          |               |              |                |
| THIO                                                                           |  |  |  | 19       |              | stn 14    | stn 14   | stn 14        | stn 14       | stn 14         | stn 14   | stn 14    |          |               |              |                |
| Notes:                                                                         |  |  |  | 20       |              | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 | 2019-050  |          |               |              |                |
|                                                                                |  |  |  | 21       |              | Bot 1     | Bot 2    | Bot 3         | Bot 3        | Bot 4          | Bot 5    | Bot 6     |          |               |              |                |
|                                                                                |  |  |  | 22       |              |           |          |               |              |                |          |           |          |               |              |                |
|                                                                                |  |  |  | 23       |              | 328       | 329A     | 329B          | 330          | 331            | 332      | 333       | 334      | 335           | 336          |                |
|                                                                                |  |  |  | 24       |              | OXY       | OXY      | OXY           | OXY          | OXY            | OXY      | OXY       | OXY      | OXY           | OXY          |                |
|                                                                                |  |  |  |          |              | stn 14    | stn 14   | stn 14        | stn 14       | stn 14         | stn 14   | stn 14    | stn 14   | stn 14        | stn 14       |                |
|                                                                                |  |  |  |          |              | 2019-050  | 2019-050 | 2019-050      | 2019-050     | 2019-050       | 2019-050 | 2019-050  | 2019-050 | 2019-050      | 2019-050     |                |

Bottle integrity: First test the top vent (V) by op

Comments column.