

# Dissolved Oxygen Analysis Log Sheet

Institute of Ocean Sciences  
Water Properties Group

Last Updated: January 2017



| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V | S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                          | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments       |
|--------------------------------------------------------------------------------|--------------------------------|---------|------------|---|-----------|---------|---------------|--------------|-----------------------------------------|---------|-----------|---------|---------------|--------------|----------------------|
| Cruise Number:                                                                 | 2018-31                        | 1       |            |   | 1a        | 3056    | 12.7          | 3.005        |                                         | 1       | 16        | 1059    | 12.7          | 0.000        | contaminated. Anoxic |
| Event:                                                                         | 1                              | 2       |            |   | 2         | 3150    | 12.7          | 0.352        | spigot leaking a little                 | 2       |           |         |               |              |                      |
| Station:                                                                       | S1                             | 3       | X          |   | 3a        | 3021    | 13.0          | 2.317        | bottom O-ring leaking                   | 3       | 35        | 3104    | 12.9          | 2.318        |                      |
| Event Date (Local):                                                            | 26 Sept 2018                   | 4       |            |   | 4         | 1053    | 12.9          | 2.933        |                                         | 4       |           |         |               |              |                      |
| Analysis Date (Local):                                                         | 26 Sept 2018                   | 5       |            |   | 5         | 639     | 12.9          | 3.447        |                                         | 5       |           |         |               |              |                      |
| Analyst:                                                                       | Kenny                          | 6       |            |   | 6         | 3134    | 13.1          | 3.402        |                                         | 6       |           |         |               |              |                      |
| Stdization Date (Local):                                                       | 26 Sept 2018                   | 7       |            |   | 7         | 620     | 13.3          | 3.490        |                                         | 7       |           |         |               |              |                      |
| KIO <sub>3</sub> N:                                                            | 0.0119329                      | 8       |            |   | 8         | 3034    | 13.5          | 4.153        |                                         | 8       |           |         |               |              |                      |
| Standard Titer:                                                                | 0.49406                        | 9       |            |   | 9         | 2084    |               | -99          | spigot not working. Spigot was clogged! | 9       |           |         |               |              |                      |
| Blank Titer:                                                                   | 0.00065                        | 10      |            |   | 10        | 715     | 13.3          | 7.981        |                                         | 10      |           |         |               |              |                      |
| THIO N:                                                                        | 0.24189                        | 11      |            |   |           |         |               |              |                                         | 11      |           |         |               |              |                      |
| Sample Flask Water Seal?                                                       | Yes                            | 12      |            |   |           |         |               |              |                                         | 12      |           |         |               |              |                      |
|                                                                                | No                             | 13      |            |   |           |         |               |              |                                         | 13      |           |         |               |              |                      |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |            |   |           |         |               |              |                                         | 14      |           |         |               |              |                      |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15      |            |   |           |         |               |              |                                         | 15      |           |         |               |              |                      |
|                                                                                | H <sub>2</sub> SO <sub>4</sub> | 16      |            |   |           |         |               |              |                                         | 16      |           |         |               |              |                      |
| NOTE NEW BATCH IN LOG BOOK                                                     | KIO <sub>3</sub>               | 17      |            |   |           |         |               |              |                                         | 17      |           |         |               |              |                      |
|                                                                                | THIO                           | 18      |            |   |           |         |               |              |                                         | 18      |           |         |               |              |                      |
| Notes:                                                                         | Sample KS                      | 19      |            |   |           |         |               |              |                                         | 19      |           |         |               |              |                      |
| Octopus                                                                        | For KY                         | 20      |            |   |           |         |               |              |                                         | 20      |           |         |               |              |                      |
|                                                                                |                                | 21      |            |   |           |         |               |              |                                         | 21      |           |         |               |              |                      |
|                                                                                |                                | 22      |            |   |           |         |               |              |                                         | 22      |           |         |               |              |                      |
|                                                                                |                                | 23      |            |   |           |         |               |              |                                         | 23      |           |         |               |              |                      |
|                                                                                |                                | 24      |            |   |           |         |               |              |                                         | 24      |           |         |               |              |                      |

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

|         |         |         |         |         |         |         |         |                    |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|--------------------|---------|---------|
| LA      | 16      | P       | A A     | B       | 4       | 5       | 6       | <del>7</del>       | 8       | 10      |
| OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | <del>OXY</del>     | OXY     | OXY     |
| SI      | SI      | SI      | SI      | SI      | SI      | SI      | SI      | <del>SI</del>      | SI      | SI      |
| 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | <del>2018-31</del> | 2018-31 | 2018-31 |
| Bot 1   | Bot 1   | Bot 2   | Bot 3   | Bot 3   | Bot 4   | Bot 5   | Bot 6   | <del>Bot 9</del>   | Bot 8   | Bot 10  |

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| Cruise and Analysis Information                                                |                                |  |  |  |  |  | Nisk ID | Nisk Int V | S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments          | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments  |                 |
|--------------------------------------------------------------------------------|--------------------------------|--|--|--|--|--|---------|------------|---|-----------|---------|---------------|--------------|-------------------------|---------|-----------|---------|---------------|--------------|-----------------|-----------------|
| Cruise Number:                                                                 | 2018-31                        |  |  |  |  |  | 1       |            |   | 11        | 429     | 11.0          | 2.500        |                         | 1       |           |         |               |              |                 |                 |
| Event:                                                                         | 2                              |  |  |  |  |  | 2       | X          |   | 12        | 650     | 11.1          | 2.521        | Vent leak               | 2       |           |         |               |              |                 | new vent o-ring |
| Station:                                                                       | 59                             |  |  |  |  |  | 3       |            | X | 13        | 691     | 10.9          | 2.519        | bottom leak CT-bbb F.P. | 3       |           |         |               |              |                 | new vent o-ring |
| Event Date (Local):                                                            | 27 Sept 2018                   |  |  |  |  |  | 4       |            |   | 14a       | 1015    | 10.9          | 2.590        |                         | 4       | 14b       | 1019    | 10.9          | 2.536        | " " "           |                 |
| Analysis Date (Local):                                                         | 27 Sept 18                     |  |  |  |  |  | 5       |            | X | 15        | 1314    | 11.0          | 2.603        | bad top O-ring          | 5       |           |         |               |              |                 | New vent O-ring |
| Analyst:                                                                       | KS                             |  |  |  |  |  | 6       |            |   | 16        | 1401    | 11.1          | 2.811        |                         | 6       |           |         |               |              |                 |                 |
| Stdization Date (Local):                                                       | 26 Sept                        |  |  |  |  |  | 7       | X          | X | 17        | 1418    | 11.2          | 3.337        | top O-ring cracked      | 7       |           |         |               |              |                 | new vent o-ring |
| KIO <sub>3</sub> N:                                                            | 0.0119329                      |  |  |  |  |  | 8       |            |   | 18        | 1470    | 11.4          | 3.589        |                         | 8       |           |         |               |              |                 |                 |
| Standard Titer:                                                                | 0.47406                        |  |  |  |  |  | 9       |            |   | 19        | 1457    | 11.5          | 3.721        |                         | 9       |           |         |               |              |                 |                 |
| Blank Titer:                                                                   | 0.00065                        |  |  |  |  |  | 10      |            |   | 20        | 2035    | 11.6          | 3.810        |                         | 10      |           |         |               |              |                 |                 |
| THIO N:                                                                        | 0.24187                        |  |  |  |  |  | 11      |            |   | 21a       | 2069    | 11.8          | 3.856        |                         | 11      | 21b       | 2087    | 11.8          | 3.856        | New vent o-ring |                 |
| Sample Flask Water Seal?                                                       | Yes                            |  |  |  |  |  | 12      |            |   | 22        | 2099    | 11.8          | 3.899        | -late F.P. CT was nice. | 12      |           |         |               |              |                 |                 |
|                                                                                | No                             |  |  |  |  |  | 13      |            |   | 23        | 3014    | 11.9          | 3.905        |                         | 13      |           |         |               |              |                 |                 |
| Reagent Change?                                                                | MnCl <sub>2</sub>              |  |  |  |  |  | 14      |            |   | 24        | 3018    | 12.2          | 3.915        |                         | 14      |           |         |               |              |                 |                 |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       |  |  |  |  |  | 15      |            |   |           |         |               |              |                         | 15      |           |         |               |              |                 |                 |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> |  |  |  |  |  | 16      |            |   |           |         |               |              |                         | 16      |           |         |               |              |                 |                 |
|                                                                                | KIO <sub>3</sub>               |  |  |  |  |  | 17      |            |   |           |         |               |              |                         | 17      |           |         |               |              |                 |                 |
|                                                                                | THIO                           |  |  |  |  |  | 18      |            |   |           |         |               |              |                         | 18      |           |         |               |              |                 |                 |
| Notes:                                                                         | Sample KS                      |  |  |  |  |  | 19      |            |   |           |         |               |              |                         | 19      |           |         |               |              |                 |                 |
|                                                                                | Bender                         |  |  |  |  |  | 20      |            |   |           |         |               |              |                         | 20      |           |         |               |              |                 |                 |
|                                                                                | Fix KY                         |  |  |  |  |  | 21      |            |   |           |         |               |              |                         | 21      |           |         |               |              |                 |                 |
|                                                                                |                                |  |  |  |  |  | 22      |            |   |           |         |               |              |                         | 22      |           |         |               |              |                 |                 |
|                                                                                |                                |  |  |  |  |  | 23      |            |   |           |         |               |              |                         | 23      |           |         |               |              |                 |                 |
|                                                                                |                                |  |  |  |  |  | 24      |            |   |           |         |               |              |                         | 24      |           |         |               |              |                 |                 |

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

|         |         |         |             |             |         |         |         |         |         |         |             |             |         |
|---------|---------|---------|-------------|-------------|---------|---------|---------|---------|---------|---------|-------------|-------------|---------|
| 11      | 12      | 13      | 14 <i>A</i> | 14 <i>B</i> | 15      | 16      | 17      | 18      | 19      | 20      | 21 <i>A</i> | 21 <i>B</i> | 22      |
| OXY     | OXY     | OXY     | OXY         | OXY         | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY         | OXY         | OXY     |
| 59      | 59      | 59      | 59          | 59          | 59      | 59      | 59      | 58      | 59      | 59      | 59          | 59          | 59      |
| 2018-31 | 2018-31 | 2018-31 | 2018-31     | 2018-31     | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31     | 2018-31     | 2018-31 |
| Bot 1   | Bot 2   | Bot 3   | Bot 3       | Bot 4       | Bot 5   | Bot 6   | Bot 7   | Bot 8   | Bot 4   | Bot 10  | Bot 11      | Bot 11      | Bot 12  |

|         |         |
|---------|---------|
| 23      | 24      |
| OXY     | OXY     |
| 59      | 59      |
| 2018-31 | 2018-31 |
| Bot 13  | Bot 14  |

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| Cruise and Analysis Information                                                |                                         | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments       | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments              |
|--------------------------------------------------------------------------------|-----------------------------------------|---------|--------------|-----------|---------|---------------|--------------|----------------------|---------|-----------|---------|---------------|--------------|-----------------------------|
| Cruise Number:                                                                 | 2018-31                                 | 1       |              | 26A       | 3054    | 15.3          | 1.301        |                      | 1       | 26B       | 1059    | 15.3          | 1.307        | EP. is late. Should've OT'd |
| Event:                                                                         | 7                                       | 2       |              | 27        | 3150    | 15.2          | 1.307        |                      | 2       |           |         |               |              |                             |
| Station:                                                                       | 102                                     | 3       |              | 28        | 3024    | 15.3          | 1.212        |                      | 3       |           |         |               |              |                             |
| Event Date (Local):                                                            | 27 Sept 2018                            | 4       |              | 29        | 3104    | 15.6          | 1.275        |                      | 4       |           |         |               |              |                             |
| Analysis Date (Local):                                                         | 27 Sept. 2018                           | 5       |              | 30        | 1053    | 15.2          | 2.733        | - Possible mistfire. | 5       |           |         |               |              |                             |
| Analyst:                                                                       | KS                                      | 6       |              | 31        | 639     | 14.9          | 1.722        |                      | 6       |           |         |               |              |                             |
| Stdization Date (Local):                                                       | 26 Sept 2018                            | 7       |              | 32        | 3034    | 15.0          | 2.324        |                      | 7       |           |         |               |              |                             |
| KIO <sub>3</sub> N:                                                            | 0.0119324                               | 8       |              | 33        | 670     | 15.1          | 2.115        |                      | 8       |           |         |               |              |                             |
| Standard Titer:                                                                | 0.49406                                 | 9       |              | 34        | 2084    | 15.3          | 2.341        |                      | 9       |           |         |               |              |                             |
| Blank Titer:                                                                   | 0.00065                                 | 10      |              | 35        | 3034    | 15.7          | 3.009        |                      | 10      |           |         |               |              |                             |
| THIO N:                                                                        | 0.24189                                 | 11      |              | 36        | 715     | 16.2          | 3.326        |                      | 11      |           |         |               |              |                             |
| Sample Flask Water Seal?                                                       | <input checked="" type="checkbox"/> Yes | 12      |              | 37        | 1002    | 17.3          | 3.802        |                      | 12      |           |         |               |              |                             |
|                                                                                | No                                      | 13      |              | 38        | 3035    | 17.5          | 4.419        |                      | 13      |           |         |               |              |                             |
| Reagent Change?                                                                | MnCl <sub>2</sub>                       | 14      |              | 36A       | 2015    | 18.4          | 4.643        |                      | 14      | 518       | 3061    | 19.9          | 4.645        | repB sampled 1st            |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                                | 15      |              |           |         |               |              |                      | 15      |           |         |               |              |                             |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub>          | 16      |              |           |         |               |              |                      | 16      |           |         |               |              |                             |
|                                                                                | KIO <sub>3</sub>                        | 17      |              |           |         |               |              |                      | 17      |           |         |               |              |                             |
|                                                                                | THIO                                    | 18      |              |           |         |               |              |                      | 18      |           |         |               |              |                             |
| Notes:                                                                         | Sample KS                               | 19      |              |           |         |               |              |                      | 19      |           |         |               |              |                             |
|                                                                                | Fix KY                                  | 20      |              |           |         |               |              |                      | 20      |           |         |               |              |                             |
|                                                                                |                                         | 21      |              |           |         |               |              |                      | 21      |           |         |               |              |                             |
|                                                                                |                                         | 22      |              |           |         |               |              |                      | 22      |           |         |               |              |                             |
|                                                                                |                                         | 23      |              |           |         |               |              |                      | 23      |           |         |               |              |                             |
|                                                                                |                                         | 24      |              |           |         |               |              |                      | 24      |           |         |               |              |                             |

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

|             |             |         |         |         |         |         |         |         |         |         |         |         |         |             |             |
|-------------|-------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------------|-------------|
| 26 <b>A</b> | 26 <b>B</b> | 27      | 28      | 29      | 30      | 31      | 32      | 33      | 34      | 35      | 36      | 37      | 38      | 39 <b>A</b> | 39 <b>B</b> |
| OXY         | OXY         | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY         | OXY         |
| 102         | 102         | 102     | 102     | 102     | 102     | 102     | 102     | 102     | 102     | 102     | 102     | 102     | 102     | 102         | 102         |
| 2018-31     | 2018-31     | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31     | 2018-31     |
| Bot 1       | Bot 1       | Bot 2   | Bot 3   | Bot 4   | Bot 5   | Bot 6   | Bot 7   | Bot 8   | Bot 9   | Bot 10  | Bot 11  | Bot 12  | Bot 13  | Bot 14      | Bot 14      |

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| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                       | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments  |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|--------------------------------------|---------|-----------|---------|---------------|--------------|-----------------|
| Cruise Number:                                                                 | 2018-31                        | 1       |              | 41        | 339     | 13.2          | 1.289        |                                      | 1       |           |         |               |              |                 |
| Event:                                                                         | 11                             | 2       | X            | 42        | 547     | 13.5          | 1.292        | loose vent                           | 2       |           |         |               |              |                 |
| Station:                                                                       | 75                             | 3       |              | 43a       | 557     | 12.7          | 1.291        |                                      | 3       | 43b       | 658     | 12.7          | 1.291        |                 |
| Event Date (Local):                                                            | 27 Sept 2018                   | 4       |              | 44        | 730     | 12.3          | 1.233        |                                      | 4       |           |         |               |              |                 |
| Analysis Date (Local):                                                         | 27 Sept. 18                    | 5       |              | 45a       | 3025    | 12.5          | 1.302        | ⇒ top cap popped up when shaking 2nd | 5       | 45b       | 1035    | 12.5          | 1.277        | sampled B first |
| Analyst:                                                                       | KS                             | 6       |              | 46        | 1050    | 12.9          | 1.553        | ⇒ No good ↑                          | 6       |           |         |               |              |                 |
| Stdization Date (Local):                                                       | 26 Sept 18                     | 7       |              | 47        | 3131    | 13.3          | 2.078        |                                      | 7       |           |         |               |              |                 |
| KIO <sub>3</sub> N:                                                            | 0.019329                       | 8       |              | 48        | 3051    | 13.7          | 2.781        |                                      | 8       |           |         |               |              |                 |
| Standard Titer:                                                                | 0.49406                        | 9       |              | 49        | 1311    | 14.0          | 3.079        |                                      | 9       |           |         |               |              |                 |
| Blank Titer:                                                                   | 0.00065                        | 10      |              | 50        | 1472    | 13.8          | 3.641        |                                      | 10      |           |         |               |              |                 |
| THIO N:                                                                        | 0.24189                        | 11      |              | 51        | 1402    | 13.7          | 3.661        |                                      | 11      |           |         |               |              |                 |
| Sample Flask (Yes)                                                             |                                | 12      |              | 52        | 2014    | 13.9          | 4.039        |                                      | 12      |           |         |               |              |                 |
| Water Seal?                                                                    | No                             | 13      |              | 53        | 3028    | 14.4          | 4.267        |                                      | 13      |           |         |               |              |                 |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |              |           |         |               |              |                                      | 14      |           |         |               |              |                 |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15      |              |           |         |               |              |                                      | 15      |           |         |               |              |                 |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> | 16      |              |           |         |               |              |                                      | 16      |           |         |               |              |                 |
|                                                                                | KIO <sub>3</sub>               | 17      |              |           |         |               |              |                                      | 17      |           |         |               |              |                 |
|                                                                                | THIO                           | 18      |              |           |         |               |              |                                      | 18      |           |         |               |              |                 |
| Notes:                                                                         | Sample KS                      | 19      |              |           |         |               |              |                                      | 19      |           |         |               |              |                 |
|                                                                                | Swordfish fix KY               | 20      |              |           |         |               |              |                                      | 20      |           |         |               |              |                 |
|                                                                                |                                | 21      |              |           |         |               |              |                                      | 21      |           |         |               |              |                 |
|                                                                                |                                | 22      |              |           |         |               |              |                                      | 22      |           |         |               |              |                 |
|                                                                                |                                | 23      |              |           |         |               |              |                                      | 23      |           |         |               |              |                 |
|                                                                                |                                | 24      |              |           |         |               |              |                                      | 24      |           |         |               |              |                 |

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

|         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 41      | 42      | 43 A    | 43 B    | 44      | 45 A    | 45 B    | 46      | 47      | 48      | 49      | 50      | 51      | 52      | 53      |
| OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     |
| 75      | 75      | 75      | 75      | 75      | 75      | 75      | 75      | 75      | 75      | 75      | 75      | 75      | 75      | 75      |
| 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 |
| Bot 1   | Bot 2   | Bot 3   | Bot 3   | Bot 4   | Bot 5   | Bot 5   | Bot 6   | Bot 7   | Bot 8   | Bot 9   | Bot 10  | Bot 11  | Bot 12  | Bot 13  |

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| Cruise and Analysis Information                                                        |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|----------------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|-------------------------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number: 2018-31                                                                 |                                | 1       |              | 55a       | 435     | 11.3          | 1.300        | ⇒                             | 1       | 55b       | 439     | 11.3          | 1.292        |                |
| Event: 14                                                                              |                                | 2       |              | 56        | 456     | 11.3          | 1.246        |                               | 2       |           |         |               |              |                |
| Station: 72                                                                            |                                | 3       | X            | 57        | 458     | 11.4          | 1.304        | leaking bottom cap            | 3       |           |         |               |              |                |
| Event Date (Local): 27 Sept 2018                                                       |                                | 4       |              | 58a       | 575     | 11.5          | 1.319        | ⇒                             | 4       | 58b       | 437     | 11.3          | 1.318        |                |
| Analysis Date (Local): 27 Sep 18                                                       |                                | 5       |              | 59        | 1023    | 11.6          | 2.322        | bottom end cap bumped open    | 5       |           |         |               |              |                |
| Analyst: KS                                                                            |                                | 6       |              | 60        | 1422    | 11.7          | 1.539        | when recovering rosette. Also | 6       |           |         |               |              |                |
| Stdization Date (Local): 26 Sept 18                                                    |                                | 7       |              | 61        | 1442    | 11.9          | 2.531        | a possible mistake again.     | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0119329                                                          |                                | 8       |              | 62        | 2094    | 12.0          | 2.788        |                               | 8       |           |         |               |              |                |
| Standard Titer: 0.49406                                                                |                                | 9       |              | 63        | 3000    | 12.1          | 3.204        |                               | 9       |           |         |               |              |                |
| Blank Titer: 0.00065                                                                   |                                | 10      |              | 64        | 3010    | 12.3          | 3.326        |                               | 10      |           |         |               |              |                |
| THIO N: 0.24189                                                                        |                                | 11      |              | 65        | 3036    | 12.4          | 3.487        |                               | 11      |           |         |               |              |                |
| Sample Flask Water Seal? <input checked="" type="radio"/> Yes <input type="radio"/> No |                                | 12      |              | 66        | 3052    | 12.5          | 3.803        |                               | 12      |           |         |               |              |                |
|                                                                                        |                                | 13      |              | 67        | 3055    | 12.9          | 4.037        |                               | 13      |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                                      |                                | 14      |              |           |         |               |              |                               | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization)         | NaI/NaOH                       | 15      |              |           |         |               |              |                               | 15      |           |         |               |              |                |
|                                                                                        | H <sub>2</sub> SO <sub>4</sub> | 16      |              |           |         |               |              |                               | 16      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                             | KIO <sub>3</sub>               | 17      |              |           |         |               |              |                               | 17      |           |         |               |              |                |
|                                                                                        | THIO                           | 18      |              |           |         |               |              |                               | 18      |           |         |               |              |                |
| Notes: Sample KS                                                                       |                                | 19      |              |           |         |               |              |                               | 19      |           |         |               |              |                |
| turtle                                                                                 | Fix KY                         | 20      |              |           |         |               |              |                               | 20      |           |         |               |              |                |
|                                                                                        |                                | 21      |              |           |         |               |              |                               | 21      |           |         |               |              |                |
|                                                                                        |                                | 22      |              |           |         |               |              |                               | 22      |           |         |               |              |                |
|                                                                                        |                                | 23      |              |           |         |               |              |                               | 23      |           |         |               |              |                |
|                                                                                        |                                | 24      |              |           |         |               |              |                               | 24      |           |         |               |              |                |

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

|         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 55 A    | 55 B    | 56      | 57      | 58 A    | 58 B    | 60      | 61      | 62      | 63      | 64      | 65      | 66      | 67      |
| OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     |
| 72      | 72      | 72      | 72      | 72      | 72      | 72      | 72      | 72      | 72      | 72      | 72      | 72      | 72      |
| 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 |
| Bot 1   | Bot 1   | Bot 2   | Bot 3   | Bot 4   | Bot 4   | Bot 6   | Bot 7   | Bot 8   | Bot 9   | Bot 10  | Bot 11  | Bot 12  | Bot 13  |

# Dissolved Oxygen Analysis Log Sheet

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| Cruise and Analysis Information                                                |  | Nisk ID | Nisk Int V | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments          | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--|---------|------------|-----------|---------|---------------|--------------|-------------------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number: 2018-031                                                        |  | 1       |            | 69        | 3056    | 12.7          | 1.147        |                         | 1       |           |         |               |              |                |
| Event: 18                                                                      |  | 2       |            | 70        | 1059    | 12.8          | 1.156        |                         | 2       |           |         |               |              |                |
| Station: 69                                                                    |  | 3       | X          | 71A       | 3150    | 13.1          | 1.322        |                         | 3       | 71B       | 3021    | 13.0          | 1.309        |                |
| Event Date (Local): Sept 28                                                    |  | 4       |            | 72        | 3104    | 13.2          | 1.318        |                         | 4       |           |         |               |              |                |
| Analysis Date (Local): 28 Sept.                                                |  | 5       |            | 73A       | 1053    | 13.5          | 2.506        |                         | 5       | 73B       | 639     | 13.3          | 2.513        |                |
| Analyst: KS                                                                    |  | 6       |            | 74        | 3134    | 13.5          | 2.961        |                         | 6       |           |         |               |              |                |
| Stdization Date (Local): 28 Sept.                                              |  | 7       |            | 75        | 620     | 13.6          | 2.982        |                         | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0119329                                                  |  | 8       |            | 76        | 2084    | 13.7          | 3.191        |                         | 8       |           |         |               |              |                |
| Standard Titer: 0.49376                                                        |  | 9       |            | 77        | 3108    | 13.7          | 3.524        |                         | 9       |           |         |               |              |                |
| Blank Titer: 0.00012                                                           |  | 10      |            | 78        | 3061    | 13.5          | 3.462        | 3061 Flask # 715 Broken | 10      |           |         |               |              |                |
| THIO N: 0.24189                                                                |  | 11      |            | 79        | 1002    | 15.2          | 3.597        |                         | 11      |           |         |               |              |                |
| Sample Flask Water Seal? <input checked="" type="checkbox"/> Yes               |  | 12      |            | 80        | 3035    | 15.9          | 3.660        |                         | 12      |           |         |               |              |                |
|                                                                                |  | 13      |            |           |         |               |              |                         | 13      |           |         |               |              |                |
| Reagent Change? <input checked="" type="checkbox"/> NaI/NaOH                   |  | 14      |            |           |         |               |              |                         | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) |  | 15      |            |           |         |               |              |                         | 15      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     |  | 16      |            |           |         |               |              |                         | 16      |           |         |               |              |                |
|                                                                                |  | 17      |            |           |         |               |              |                         | 17      |           |         |               |              |                |
|                                                                                |  | 18      |            |           |         |               |              |                         | 18      |           |         |               |              |                |
| Notes:<br>Sample CS<br>Fix HR<br>Ocampus                                       |  | 19      |            |           |         |               |              |                         | 19      |           |         |               |              |                |
|                                                                                |  | 20      |            |           |         |               |              |                         | 20      |           |         |               |              |                |
|                                                                                |  | 21      |            |           |         |               |              |                         | 21      |           |         |               |              |                |
|                                                                                |  | 22      |            |           |         |               |              |                         | 22      |           |         |               |              |                |
|                                                                                |  | 23      |            |           |         |               |              |                         | 23      |           |         |               |              |                |
|                                                                                |  | 24      |            |           |         |               |              |                         | 24      |           |         |               |              |                |

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

hi Kerry, Bottle # 715 Broke sorry! HR  
new bottle 3061 taken from middle of box.

|         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 69      | 70      | 71 A    | 71 B    | 72      | 73 A    | 73 B    | 74      | 75      | 76      | 77      | 78      | 79      | 80      |
| OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     |
| 69      | 69      | 69      | 69      | 69      | 69      | 69      | 69      | 69      | 69      | 69      | 69      | 69      | 69      |
| 2013-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 |
| Bot 1   | Bot 2   | Bot 3   | Bot 3   | Bot 4   | Bot 5   | Bot 5   | Bot 6   | Bot 7   | Bot 8   | Bot 9   | Bot 10  | Bot 11  | Bot 12  |

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| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments    | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|-------------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                 | 2018-031                       | 1       |              | 81        | 435     | 11.3          | 1.740        |                   | 1       |           |         |               |              |                |
| Event:                                                                         | 21                             | 2       |              | 82A       | 439     | 11.5          | 2.006        | =>                | 2       | 82B       | 456     | 11.5          | 1.992        |                |
| Station:                                                                       | APCP                           | 3       | X            | 83        | 458     | 11.6          | 2.139        | Leak              | 3       |           |         |               |              |                |
| Event Date (Local):                                                            | Sept 20                        | 4       |              | 84        | 575     | 11.7          | 2.336        |                   | 4       |           |         |               |              |                |
| Analysis Date (Local):                                                         | 28 Sept.                       | 5       |              | 85        | 437     | 11.9          | 2.627        |                   | 5       |           |         |               |              |                |
| Analyst:                                                                       | KS                             | 6       |              | 86        | 1023    | 12.1          | 2.796        |                   | 6       |           |         |               |              |                |
| Stdization Date (Local):                                                       | 28 Sept.                       | 7       |              | 87A       | 1422    | 12.5          | 3.030        | =>                | 7       | 87B       | 1442    | 12.3          | 3.103        | ~ each!        |
| KIO <sub>3</sub> N:                                                            | 0.0119329                      | 8       |              | 88        | 2094    | 14.3          | 3.516        |                   | 8       |           |         |               |              |                |
| Standard Titer:                                                                | 0.49376                        | 9       |              | 89        | 3000    | 14.0          | 3.700        | EP late. OT good. | 9       |           |         |               |              |                |
| Blank Titer:                                                                   | 0.00012                        | 10      |              | 90        | 3010    | 15.0          | 3.854        |                   | 10      |           |         |               |              |                |
| THIO N:                                                                        | 0.24189                        | 11      |              |           |         |               |              |                   | 11      |           |         |               |              |                |
| Sample Flask Water Seal?                                                       | (Yes)<br>No                    | 12      |              |           |         |               |              |                   | 12      |           |         |               |              |                |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 13      |              |           |         |               |              |                   | 13      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 14      |              |           |         |               |              |                   | 14      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> | 15      |              |           |         |               |              |                   | 15      |           |         |               |              |                |
|                                                                                | KIO <sub>3</sub>               | 16      |              |           |         |               |              |                   | 16      |           |         |               |              |                |
|                                                                                | THIO                           | 17      |              |           |         |               |              |                   | 17      |           |         |               |              |                |
| Notes:                                                                         | Sample CS<br>Fix HR            | 18      |              |           |         |               |              |                   | 18      |           |         |               |              |                |
| TURTLE                                                                         |                                | 19      |              |           |         |               |              |                   | 19      |           |         |               |              |                |
|                                                                                |                                | 20      |              |           |         |               |              |                   | 20      |           |         |               |              |                |
|                                                                                |                                | 21      |              |           |         |               |              |                   | 21      |           |         |               |              |                |
|                                                                                |                                | 22      |              |           |         |               |              |                   | 22      |           |         |               |              |                |
|                                                                                |                                | 23      |              |           |         |               |              |                   | 23      |           |         |               |              |                |
|                                                                                |                                | 24      |              |           |         |               |              |                   | 24      |           |         |               |              |                |

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

|         |             |             |         |         |         |         |             |             |         |         |         |
|---------|-------------|-------------|---------|---------|---------|---------|-------------|-------------|---------|---------|---------|
| 81      | 82 <i>A</i> | 82 <i>B</i> | 83      | 84      | 85      | 86      | 87 <i>A</i> | 87 <i>B</i> | 88      | 89      | 90      |
| OXY     | OXY         | OXY         | OXY     | OXY     | OXY     | OXY     | OXY         | OXY         | OXY     | OXY     | OXY     |
| ADCP    | ADCP        | ADCP        | ADCP    | ADCP    | ADCP    | ADCP    | ADCP        | ADCP        | ADCP    | ADCP    | ADCP    |
| 2018-31 | 2018-31     | 2018-31     | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31     | 2018-31     | 2018-31 | 2018-31 | 2018-31 |
| Bot 1   | Bot 2       | Bot 2       | Bot 3   | Bot 4   | Bot 5   | Bot 6   | Bot 7       | Bot 7       | Bot 8   | Bot 9   | Bot 10  |

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| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                              | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|---------------------------------------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                 | 2018-031                       | 1       |              | 92A       | 3052    | 12.5          | 1.855        | →                                           | 1       | 92B       | 3055    | 12.4          | 1.866        |                |
| Event:                                                                         | 25                             | 2       |              | 93        | 3074    | 12.8          | 2.035        |                                             | 2       |           |         |               |              |                |
| Station:                                                                       | b5                             | 3       |              | 94        | 3079    | 13.0          | 2.755        |                                             | 3       |           |         |               |              |                |
| Event Date (Local):                                                            | 28 Sept                        | 4       |              | 95        | 3084    | 13.2          | 2.970        |                                             | 4       |           |         |               |              |                |
| Analysis Date (Local):                                                         | 28 Sept.                       | 5       |              | 96        | 3086    | 13.4          | 3.152        |                                             | 5       |           |         |               |              |                |
| Analyst:                                                                       | KS                             | 6       |              | 97        | 3088    | 13.7          | 3.363        |                                             | 6       |           |         |               |              |                |
| Stdization Date (Local):                                                       | 28 Sept.                       | 7       |              | 98        | 3089    | 13.8          | 3.413        |                                             | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N:                                                            | 0.049329                       | 8       |              | 99A       | 3090    | 14.8          | 3.602        | →                                           | 8       | 99B       | 3095    | 14.2          | 3.604        |                |
| Standard Titer:                                                                | 0.49376                        | 9       |              | 100       | 3098    | 16.1          | 5.370        | } I think the thermometer was failing here. | 9       |           |         |               |              |                |
| Blank Titer:                                                                   | 0.00012                        | 10      |              | 101       | 3101    | 17.2          | 3.935        |                                             | 10      |           |         |               |              |                |
| THIO N:                                                                        | 0.24189                        | 11      |              |           |         |               |              |                                             | 11      |           |         |               |              |                |
| Sample Flask Water Seal?                                                       | Yes                            | 12      |              |           |         |               |              |                                             | 12      |           |         |               |              |                |
|                                                                                | No                             | 13      |              |           |         |               |              |                                             | 13      |           |         |               |              |                |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |              |           |         |               |              |                                             | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15      |              |           |         |               |              |                                             | 15      |           |         |               |              |                |
|                                                                                | H <sub>2</sub> SO <sub>4</sub> | 16      |              |           |         |               |              |                                             | 16      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | KIO <sub>3</sub>               | 17      |              |           |         |               |              |                                             | 17      |           |         |               |              |                |
|                                                                                | THIO                           | 18      |              |           |         |               |              |                                             | 18      |           |         |               |              |                |
| Notes:                                                                         | Sample                         | 19      |              |           |         |               |              |                                             | 19      |           |         |               |              |                |
|                                                                                | Turtle                         | 20      |              |           |         |               |              |                                             | 20      |           |         |               |              |                |
|                                                                                |                                | 21      |              |           |         |               |              |                                             | 21      |           |         |               |              |                |
|                                                                                |                                | 22      |              |           |         |               |              |                                             | 22      |           |         |               |              |                |
|                                                                                |                                | 23      |              |           |         |               |              |                                             | 23      |           |         |               |              |                |
|                                                                                |                                | 24      |              |           |         |               |              |                                             | 24      |           |         |               |              |                |

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

|             |             |         |         |         |         |         |         |             |             |         |         |
|-------------|-------------|---------|---------|---------|---------|---------|---------|-------------|-------------|---------|---------|
| 92 <i>A</i> | 92 <i>B</i> | 93      | 94      | 95      | 96      | 97      | 98      | 99 <i>A</i> | 99 <i>B</i> | 100     | 101     |
| OXY         | OXY         | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY         | OXY         | OXY     | OXY     |
| 65          | 65          | 65      | 65      | 65      | 65      | 65      | 65      | 65          | 65          | 65      | 65      |
| 2018-31     | 2018-31     | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31     | 2018-31     | 2018-31 | 2018-31 |
| Bot 1       | Bot 1       | Bot 2   | Bot 3   | Bot 4   | Bot 5   | Bot 6   | Bot 7   | Bot 8       | Bot 8       | Bot 9   | Bot 10  |

# Dissolved Oxygen Analysis Log Sheet

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| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                     | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--------------------------------|---------|--------------|-----------|---------|---------------|--------------|------------------------------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                 | 2018-032                       | 1       |              | 105       | 429     | 9.1           | 2.053        |                                    | 1       |           |         |               |              |                |
| Event:                                                                         | 29                             | 2       | X            | 106       | 650     | 9.2           | 2.143        | vent loose. Spigot pouring         | 2       |           |         |               |              |                |
| Station:                                                                       | 62                             | 3       |              | 107       | 691     | 9.5           | 2.413        |                                    | 3       |           |         |               |              |                |
| Event Date (Local):                                                            | 28 Sept                        | 4       |              | 108       | 1015    | 10.1          | 2.858        |                                    | 4       |           |         |               |              |                |
| Analysis Date (Local):                                                         | 28 Sept                        | 5       |              | 109       | 1019    | 10.4          | 3.260        |                                    | 5       |           |         |               |              |                |
| Analyst:                                                                       | KS                             | 6       |              | 110       | 134     | 10.4          | 3.282        |                                    | 6       |           |         |               |              |                |
| Stdization Date (Local):                                                       | 28 Sept                        | 7       |              | 111A      | 1401    | 10.5          | 3.440        | ⇒                                  | 7       | 111B      | 1418    | 10.5          | 3.442        |                |
| KIO <sub>3</sub> N:                                                            | 0.0119329                      | 8       |              | 112       | 1426    | 10.5          | 3.507        |                                    | 8       |           |         |               |              |                |
| Standard Titer:                                                                | 0.44376                        | 9       |              | 113       | 1454    | 10.9          | 3.872        |                                    | 9       |           |         |               |              |                |
| Blank Titer:                                                                   | 0.00012                        | 10      |              | 114       | 2035    | 11.0          | 4.062        |                                    | 10      |           |         |               |              |                |
| THIO N:                                                                        | 0.24189                        | 11      |              | 115A      | 2039    | 10.5          | 4.032        | weird temp changed probe for rep B | 11      | 115B      | 2082    | 11.3          | 4.039        |                |
| Sample Flask Water Seal?                                                       | Yes                            | 12      |              |           |         |               |              |                                    | 12      |           |         |               |              |                |
|                                                                                | No                             | 13      |              |           |         |               |              |                                    | 13      |           |         |               |              |                |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |              |           |         |               |              |                                    | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15      |              |           |         |               |              |                                    | 15      |           |         |               |              |                |
|                                                                                | H <sub>2</sub> SO <sub>4</sub> | 16      |              |           |         |               |              |                                    | 16      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | KIO <sub>3</sub>               | 17      |              |           |         |               |              |                                    | 17      |           |         |               |              |                |
|                                                                                | THIO                           | 18      |              |           |         |               |              |                                    | 18      |           |         |               |              |                |
| Notes:                                                                         | Mad Science                    | 19      |              |           |         |               |              |                                    | 19      |           |         |               |              |                |
|                                                                                | Sample KS                      | 20      |              |           |         |               |              |                                    | 20      |           |         |               |              |                |
|                                                                                | Fix KY                         | 21      |              |           |         |               |              |                                    | 21      |           |         |               |              |                |
|                                                                                |                                | 22      |              |           |         |               |              |                                    | 22      |           |         |               |              |                |
|                                                                                |                                | 23      |              |           |         |               |              |                                    | 23      |           |         |               |              |                |
|                                                                                |                                | 24      |              |           |         |               |              |                                    | 24      |           |         |               |              |                |

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

|         |         |         |         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 105     | 106     | 107     | 108     | 109     | 110     | 111 A   | 111 B   | 112     | 113     | 114     | 115 A   | 115 B   |
| OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     |
| 62      | 62      | 62      | 62      | 62      | 62      | 62      | 62      | 62      | 62      | 62      | 62      | 62      |
| 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 |
| Bot 1   | Bot 2   | Bot 3   | Bot 4   | Bot 5   | Bot 6   | Bot 7   | Bot 7   | Bot 8   | Bot 9   | Bot 10  | Bot 11  | Bot 11  |



# Dissolved Oxygen Analysis Log Sheet

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| Cruise and Analysis Information                                                | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments                    | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|---------|--------------|-----------|---------|---------------|--------------|-----------------------------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number: 2018-31                                                         | 1       |              | 116       | 339     | 9.9           | 2.715        |                                   | 1       |           |         |               |              |                |
| Event: 36                                                                      | 2       |              | 117       | 547     | 9.9           | 2.733        |                                   | 2       |           |         |               |              |                |
| Station: 56                                                                    | 3       |              | 118       | 557     | 9.9           | 2.748        |                                   | 3       |           |         |               |              |                |
| Event Date (Local): 28 Sept 2018                                               | 4       |              | 119       | 658     | 10.0          | 2.837        |                                   | 4       |           |         |               |              |                |
| Analysis Date (Local): 28 Sept 18                                              | 5       |              | 120       | 730     | 10.1          | 2.941        |                                   | 5       |           |         |               |              |                |
| Analyst: KS                                                                    | 6       |              | 121       | 3025    | 10.2          | 3.010        |                                   | 6       |           |         |               |              |                |
| Stdization Date (Local): 28 Sept. 18                                           | 7       |              | 122A      | 1035    | 10.1          | 3.036        | ⇒                                 | 7       | 122B      | 1050    | 10.1          | 3.035        |                |
| KIO <sub>3</sub> N: 0.0119329                                                  | 8       |              | 123       | 3131    | 10.1          | 3.033        |                                   | 8       |           |         |               |              |                |
| Standard Titer: 0.49376                                                        | 9       |              | 124       | 3051    | 10.2          | 3.076        | Skip Niskin 9. Mistakenly fired @ | 9       |           |         |               |              |                |
| Blank Titer: 0.00012                                                           | 10      |              | 125       | 1311    | 10.5          | 3.384        | same depth as 6.                  | 10      |           |         |               |              |                |
| THIO N: 0.24189                                                                | 11      |              | 126       | 1472    | 11.0          | 3.832        |                                   | 11      |           |         |               |              |                |
| Sample Flask Water Seal? Yes                                                   | 12      |              | 127A      | 1402    | 11.6          | 4.296        | ⇒                                 | 12      | 127B      | 2014    | 11.5          | 4.298        |                |
| No                                                                             | 13      |              | 128       | 3028    | 12.1          | 4.690        |                                   | 13      |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                              | 14      |              | 129       | 3176    | 13.1          | 5.498        |                                   | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | 15      |              |           |         |               |              |                                   | 15      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | 16      |              |           |         |               |              |                                   | 16      |           |         |               |              |                |
|                                                                                | 17      |              |           |         |               |              |                                   | 17      |           |         |               |              |                |
|                                                                                | 18      |              |           |         |               |              |                                   | 18      |           |         |               |              |                |
| Notes: Sample KS                                                               | 19      |              |           |         |               |              |                                   | 19      |           |         |               |              |                |
| swordfish Fix KY                                                               | 20      |              |           |         |               |              |                                   | 20      |           |         |               |              |                |
|                                                                                | 21      |              |           |         |               |              |                                   | 21      |           |         |               |              |                |
|                                                                                | 22      |              |           |         |               |              |                                   | 22      |           |         |               |              |                |
|                                                                                | 23      |              |           |         |               |              |                                   | 23      |           |         |               |              |                |
|                                                                                | 24      |              |           |         |               |              |                                   | 24      |           |         |               |              |                |

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

|         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 116     | 117     | 118     | 119     | 120     | 121     | 122 A   | 122 B   | 123     | 124     | 125     | 126     | 127 A   | 127 B   | 128     | 129     |
| OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     |
| 56      | 56      | 56      | 56      | 56      | 56      | 56      | 56      | 56      | 56      | 56      | 56      | 56      | 56      | 56      | 56      |
| 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 |
| Bot 1   | Bot 2   | Bot 3   | Bot 4   | Bot 5   | Bot 6   | Bot 7   | Bot 7   | Bot 8   | Bot 10  | Bot 11  | Bot 12  | Bot 13  | Bot 13  | Bot 14  | Bot 15  |

# Dissolved Oxygen Analysis Log Sheet

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| Cruise and Analysis Information                                                |  | Nisk ID | Nisk Int V S | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--|---------|--------------|-----------|---------|---------------|--------------|----------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number: 2018-031                                                        |  | 1       |              | 131A      | 429     | 10.2          | 2.974        | →              | 1       | 131B      | 650     | 10.2          | 2.967        |                |
| Event: 44                                                                      |  | 2       |              | 132       | 691     | 10.2          | 3.041        |                | 2       |           |         |               |              |                |
| Station: 46                                                                    |  | 3       |              | 133       | 1015    | 10.3          | 3.141        |                | 3       |           |         |               |              |                |
| Event Date (Local): 29 Sept                                                    |  | 4       |              | 134       | 1019    | 10.6          | 3.209        |                | 4       |           |         |               |              |                |
| Analysis Date (Local): 29 Sept. 18                                             |  | 5       |              | 135A      | 1314    | 10.3          | 3.169        | →              | 5       | 135B      | 1401    | 10.3          | 3.164        |                |
| Analyst: KS                                                                    |  | 6       |              | 136       | 1418    | 10.5          | 3.447        |                | 6       |           |         |               |              |                |
| Stdization Date (Local): 28 Sept.                                              |  | 7       |              | 137       | 1470    | 10.5          | 3.448        |                | 7       |           |         |               |              |                |
| KIO <sub>3</sub> N: 0.0119324                                                  |  | 8       |              | 138       | 1491    | 10.6          | 3.532        |                | 8       |           |         |               |              |                |
| Standard Titer: 0.49376                                                        |  | 9       |              | 139       | 2055    | 11.1          | 3.904        |                | 9       |           |         |               |              |                |
| Blank Titer: 0.00012                                                           |  | 10      |              | 140       | 2071    | 12.0          | 4.999        | Flask 2069.    | 10      |           |         |               |              |                |
| THIO N: 0.24189                                                                |  | 11      |              | 141       | 2082    | 14.0          | 6.106        |                | 11      |           |         |               |              |                |
| Sample Flask Water Seal? <input checked="" type="radio"/> Yes                  |  | 12      |              | 142       | 2099    | 15.0          | 7.140        |                | 12      |           |         |               |              |                |
|                                                                                |  | 13      |              |           |         |               |              |                | 13      |           |         |               |              |                |
| Reagent Change? MnCl <sub>2</sub>                                              |  | 14      |              |           |         |               |              |                | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) |  | 15      |              |           |         |               |              |                | 15      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     |  | 16      |              |           |         |               |              |                | 16      |           |         |               |              |                |
|                                                                                |  | 17      |              |           |         |               |              |                | 17      |           |         |               |              |                |
|                                                                                |  | 18      |              |           |         |               |              |                | 18      |           |         |               |              |                |
| Notes:<br>BENDER<br>Sample CS<br>Fix HR                                        |  | 19      |              |           |         |               |              |                | 19      |           |         |               |              |                |
|                                                                                |  | 20      |              |           |         |               |              |                | 20      |           |         |               |              |                |
|                                                                                |  | 21      |              |           |         |               |              |                | 21      |           |         |               |              |                |
|                                                                                |  | 22      |              |           |         |               |              |                | 22      |           |         |               |              |                |
|                                                                                |  | 23      |              |           |         |               |              |                | 23      |           |         |               |              |                |
|                                                                                |  | 24      |              |           |         |               |              |                | 24      |           |         |               |              |                |

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

|         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 131 A   | 131 B   | 132     | 133     | 134     | 135 A   | 135 B   | 136     | 137     | 138     | 139     | 140     | 141     | 142     |
| OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     |
| 46      | 46      | 46      | 46      | 46      | 46      | 46      | 46      | 46      | 46      | 46      | 46      | 46      | 46      |
| 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 |
| Bot 1   | Bot 1   | Bot 2   | Bot 3   | Bot 4   | Bot 5   | Bot 5   | Bot 6   | Bot 7   | Bot 8   | Bot 9   | Bot 10  | Bot 11  | Bot 12  |

# Dissolved Oxygen Analysis Log Sheet

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| Cruise and Analysis Information                                                |                                | Nisk ID | Nisk Int V | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments |
|--------------------------------------------------------------------------------|--------------------------------|---------|------------|-----------|---------|---------------|--------------|----------------|---------|-----------|---------|---------------|--------------|----------------|
| Cruise Number:                                                                 | 2018-031                       | 1       |            | 143       | 435     | 10.1          | 2.755        |                | 1       |           |         |               |              |                |
| Event:                                                                         | 49                             | 2       |            | 144       | 439     | 10.1          | 2.718        |                | 2       |           |         |               |              |                |
| Station:                                                                       | 42                             | 3       |            | 145       | 456     | 10.2          | 2.833        |                | 3       |           |         |               |              |                |
| Event Date (Local):                                                            | 29 Sept                        | 4       |            | 146A      | 458     | 10.2          | 2.906        | →              | 4       | 146B      | 575     | 10.2          | 2.914        |                |
| Analysis Date (Local):                                                         | 29 Sept                        | 5       |            | 147       | 437     | 10.2          | 2.719        | 2.960          | 5       |           |         |               |              |                |
| Analyst:                                                                       | KS                             | 6       |            | 148       | 1023    | 10.5          | 2.960        | 3.024          | 6       |           |         |               |              |                |
| Stdization Date (Local):                                                       | 28 Sept                        | 7       |            | 149A      | 1422    | 10.6          | 3.029        | → 3.098        | 7       | 149B      | 1442    | 10.6          | 3.086        |                |
| KIO <sub>3</sub> N:                                                            | 0.0119329                      | 8       |            | 150       | 2094    | 10.7          | 3.283        |                | 8       |           |         |               |              |                |
| Standard Titer:                                                                | 0.49376                        | 9       |            | 151       | 3000    | 10.2          | 3.121        |                | 9       |           |         |               |              |                |
| Blank Titer:                                                                   | 0.0002                         | 10      |            | 152       | 3010    | 10.3          | 3.268        |                | 10      |           |         |               |              |                |
| THIO N:                                                                        | 0.24189                        | 11      |            | 153       | 3036    | 10.5          | 3.385        |                | 11      |           |         |               |              |                |
| Sample Flask Water Seal?                                                       | Yes                            | 12      |            | 154       | 3052    | 10.9          | 3.550        |                | 12      |           |         |               |              |                |
|                                                                                | No                             | 13      |            | 155       | 3055    | 11.5          | 4.048        |                | 13      |           |         |               |              |                |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14      |            | 156       | 3074    | 13.0          | 5.271        |                | 14      |           |         |               |              |                |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15      |            | 157       | 3079    | 14.2          | 6.119        |                | 15      |           |         |               |              |                |
|                                                                                | H <sub>2</sub> SO <sub>4</sub> | 16      |            | 158       | 3084    | 14.7          | 6.627        |                | 16      |           |         |               |              |                |
| NOTE NEW BATCH IN LOG BOOK                                                     | KIO <sub>3</sub>               | 17      |            |           |         |               |              |                | 17      |           |         |               |              |                |
|                                                                                | THIO                           | 18      |            |           |         |               |              |                | 18      |           |         |               |              |                |
| Notes:                                                                         | Turtle Sample CS               | 19      |            |           |         |               |              |                | 19      |           |         |               |              |                |
|                                                                                | Fix HR                         | 20      |            |           |         |               |              |                | 20      |           |         |               |              |                |
|                                                                                |                                | 21      |            |           |         |               |              |                | 21      |           |         |               |              |                |
|                                                                                |                                | 22      |            |           |         |               |              |                | 22      |           |         |               |              |                |
|                                                                                |                                | 23      |            |           |         |               |              |                | 23      |           |         |               |              |                |
|                                                                                |                                | 24      |            |           |         |               |              |                | 24      |           |         |               |              |                |

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

|        |        |        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 143    | 144    | 145    | 146A    | 146B    | 147     | 148     | 149A    | 149B    | 150     | 151     | 152     | 153     | 154     | 155     | 156     | 157     |
| OXY    | OXY    | OXY    | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     |
| 42     | 42     | 42     | 42      | 42      | 42      | 42      | 42      | 42      | 42      | 42      | 42      | 42      | 42      | 42      | 42      | 42      |
| 018-31 | 018-31 | 018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 |
| Bot 1  | Bot 2  | Bot 3  | Bot 4   | Bot 4   | Bot 5   | Bot 6   | Bot 7   | Bot 7   | Bot 8   | Bot 9   | Bot 10  | Bot 11  | Bot 12  | Bot 13  | Bot 14  | Bot 15  |

158  
OXY  
42  
2018-31  
Bot 16

# Dissolved Oxygen Analysis Log Sheet

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| Cruise and Analysis Information                                                |                                |    |  |      |      |      | Nisk ID | Nisk Int V | Sample ID | Flask 1 | Draw T 1 (°C) | OXY-1 (mL/L) | OXY-1 Comments | Nisk ID | Sample ID | Flask 2 | Draw T 2 (°C) | OXY-2 (mL/L) | OXY-2 Comments              |  |
|--------------------------------------------------------------------------------|--------------------------------|----|--|------|------|------|---------|------------|-----------|---------|---------------|--------------|----------------|---------|-----------|---------|---------------|--------------|-----------------------------|--|
| Cruise Number:                                                                 | 2018-31                        | 1  |  | 160  | 3056 | 10.3 | 2.776   |            |           |         |               |              |                | 1       |           |         |               |              |                             |  |
| Event:                                                                         | 56                             | 2  |  | 161  | 1059 | 10.3 | 2.800   |            |           |         |               |              |                | 2       |           |         |               |              |                             |  |
| Station:                                                                       | 39                             | 3  |  | 162  | 3150 | 10.3 | 2.832   |            |           |         |               |              |                | 3       |           |         |               |              |                             |  |
| Event Date (Local):                                                            | 29 Sept 2018                   | 4  |  | 163  | 3021 | 10.3 | 2.861   |            |           |         |               |              |                | 4       |           |         |               |              |                             |  |
| Analysis Date (Local):                                                         | 29 Sept 2018                   | 5  |  | 164  | 3104 | 10.3 | 2.900   |            |           |         |               |              |                | 5       |           |         |               |              |                             |  |
| Analyst:                                                                       | KS                             | 6  |  | 165  | 1053 | 10.4 | 2.948   |            |           |         |               |              |                | 6       |           |         |               |              |                             |  |
| Stdization Date (Local):                                                       | 28 Sept 2018                   | 7  |  | 166A | 637  | 10.3 | 2.997   | ⇒          |           |         |               |              |                | 7       | 166B      | 3134    | 10.4          | 3.000        | might've got bubble from #2 |  |
| KIO <sub>3</sub> N:                                                            | 0.0119329                      | 8  |  | 167  | 680  | 10.5 | 3.060   |            |           |         |               |              |                | 8       |           |         |               |              |                             |  |
| Standard Titer:                                                                | 0.49736                        | 9  |  | 168  | 2084 | 10.7 | 3.126   |            |           |         |               |              |                | 9       |           |         |               |              |                             |  |
| Blank Titer:                                                                   | 0.00012                        | 10 |  | 169A | 3054 | 9.8  | 2.993   | ⇒          |           |         |               |              |                | 10      | 169B      | 3061    | 9.9           | 2.995        |                             |  |
| THIO N:                                                                        | 0.24189                        | 11 |  | 170  | 1002 | 10.3 | 3.311   |            |           |         |               |              |                | 11      |           |         |               |              |                             |  |
| Sample Flask Water Seal?                                                       | Yes                            | 12 |  | 171  | 3055 | 10.5 | 3.406   |            |           |         |               |              |                | 12      |           |         |               |              |                             |  |
|                                                                                | No                             | 13 |  | 172  | 2075 | 11.0 | 3.659   |            |           |         |               |              |                | 13      |           |         |               |              |                             |  |
| Reagent Change?                                                                | MnCl <sub>2</sub>              | 14 |  | 173  | 1047 | 12.1 | 4.804   |            |           |         |               |              |                | 14      |           |         |               |              |                             |  |
| (Please circle reagent that was changed prior to sampling and standardization) | NaI/NaOH                       | 15 |  | 174  | 3108 | 13.0 | 5.380   |            |           |         |               |              |                | 15      |           |         |               |              |                             |  |
| NOTE NEW BATCH IN LOG BOOK                                                     | H <sub>2</sub> SO <sub>4</sub> | 16 |  | 175  | 1054 | 14.5 | 6.286   |            |           |         |               |              |                | 16      |           |         |               |              |                             |  |
|                                                                                | KIO <sub>3</sub>               | 17 |  | 176  | 631  | 14.8 | 6.576   |            |           |         |               |              |                | 17      |           |         |               |              |                             |  |
|                                                                                | THIO                           | 18 |  |      |      |      |         |            |           |         |               |              |                | 18      |           |         |               |              |                             |  |
| Notes:                                                                         | Sample KS                      | 19 |  |      |      |      |         |            |           |         |               |              |                | 19      |           |         |               |              |                             |  |
|                                                                                | For KY                         | 20 |  |      |      |      |         |            |           |         |               |              |                | 20      |           |         |               |              |                             |  |
|                                                                                |                                | 21 |  |      |      |      |         |            |           |         |               |              |                | 21      |           |         |               |              |                             |  |
|                                                                                |                                | 22 |  |      |      |      |         |            |           |         |               |              |                | 22      |           |         |               |              |                             |  |
|                                                                                |                                | 23 |  |      |      |      |         |            |           |         |               |              |                | 23      |           |         |               |              |                             |  |
|                                                                                |                                | 24 |  |      |      |      |         |            |           |         |               |              |                | 24      |           |         |               |              |                             |  |

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

|         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 160     | 161     | 162     | 163     | 164     | 165     | 166 A   | 166 B   | 167     | 168     | 169 A   | 169 B   | 170     | 171     | 172     | 173     | 174     |
| OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     | OXY     |
| 39      | 39      | 39      | 39      | 39      | 39      | 39      | 39      | 39      | 39      | 39      | 39      | 39      | 39      | 39      | 39      | 39      |
| 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 | 2018-31 |
| Bot 1   | Bot 2   | Bot 3   | Bot 4   | Bot 5   | Bot 6   | Bot 7   | Bot 7   | Bot 8   | Bot 9   | Bot 10  | Bot 10  | Bot 11  | Bot 12  | Bot 13  | Bot 14  | Bot 15  |

|         |         |
|---------|---------|
| 175     | 176     |
| OXY     | OXY     |
| 39      | 39      |
| 2018-31 | 2018-31 |
| Bot 16  | Bot 17  |