4

4)

|                  |                        | -          |                |            | -            |                              |                  |          |               |                       |                    |                                       |                               |           |                 |
|------------------|------------------------|------------|----------------|------------|--------------|------------------------------|------------------|----------|---------------|-----------------------|--------------------|---------------------------------------|-------------------------------|-----------|-----------------|
| VESSEL           |                        |            |                |            | PR           | PROJECT & LEG                | 9                | _        |               |                       |                    | STATION DE                            | STATION DESIGNATION           | _         |                 |
| NOAA R/V M       | NOAA RV MILLER FREEMAN | z          |                |            | MF(          | MF03-03                      |                  |          |               |                       |                    |                                       |                               |           |                 |
| CONSEC<br>CAST # | LATITUDE               | ш          | LONGITUDE      | TUDE       | DATE JD= 058 | 058                          | TIME (GMT)       | DRY BULB | WET BULB      | PRESSURE<br>SEA STATE | VISIBILITY O WIND  | S S S S S S S S S S S S S S S S S S S | язнтаж<br>80<br>ВОТОМ<br>EPPA |           | STA. NAME/ID    |
| _<br>            | DEG MIN                |            | DEG            | MIN        | DAY          | MO                           | HR               | (0,)     | (0,)          | • (qu)                |                    |                                       |                               |           |                 |
| 200              | 5143                   | N 8        | 5515           | w          | T+           | E B 0                        | ~                | ス<br>ス   | 7             | <u></u>               | d                  | 29<br>29                              |                               | 1 H C 8   | 9               |
| SBE 9Plus        | 91220A                 | <u> </u>   | TIMES          | JD/TIME    | ഴ            |                              |                  |          | DATA LOCATION | Z.                    |                    | REMARKS                               | RKS                           |           |                 |
| PRESS SN         | 80020                  | ٦          | DATA ON        |            |              |                              | Tape/Diskette ID | O 8      | elF<br>e      | File Name/Header      | der                | 7                                     | LINE. 8, 5                    | 51A 61    |                 |
| PRI COND         | 915                    | <u>. w</u> | START DOWN     |            |              | 1                            |                  |          | <br>          |                       |                    |                                       | .                             |           |                 |
| PRI TEMP         | 710                    | &_         | AT DEPTH       | 85         |              | ŀ                            | ,                |          | 1             |                       |                    |                                       |                               |           |                 |
| SEC COND         | 530                    | ¥          | AT SURFACE     |            |              |                              |                  |          |               |                       |                    | MAX                                   | MAX. DEPTH ≈                  | ε         |                 |
| SEC TEMP         | 884                    |            | V WETStar SM99 | SM99       |              |                              |                  |          |               |                       | Cleaned air        | Cleaned air bleed valve               |                               |           |                 |
|                  |                        |            |                | CID        | CONVERTED    | CTD CONVERTED MONITOR VALUES | ALUES            | ,        |               | SAM                   | SAMPLE BOTTLE DATA | DATA                                  | SAMPLE BOTTLE NUMBER          | TTLE NUMB | 8               |
| POS. TRIP        | TRIP DEPTH             | PRESSURE   | æ              | PRI. TEMP. | SEC          | SEC. TEMP.                   | PRI. SALINITY    | INITY    | SEC. SALINITY | _                     | SALINITY           | SAL                                   | NUTR.                         | Ŗ<br>F    | WHIT'S<br>NUTR. |
| 1<br>5m          | 5 m from bottom        |            |                | 1          | 75           |                              |                  |          |               |                       | :                  | ĪT                                    |                               |           |                 |
| 2                | 200 m                  |            |                |            |              |                              |                  |          |               |                       |                    |                                       |                               |           |                 |
| ر<br>و           | 150 m                  |            |                |            |              |                              |                  |          |               |                       |                    |                                       |                               |           |                 |
| 4                | 100 m                  |            |                | 9          |              |                              |                  |          |               | •                     |                    |                                       |                               |           |                 |
| ъ                | 75 m                   |            |                | 8          |              |                              |                  |          |               |                       |                    |                                       |                               |           |                 |
| ထ                | 20 ш                   |            |                |            | 10.          |                              |                  |          |               |                       |                    |                                       |                               |           |                 |
| 7                | 40 m                   |            |                |            |              |                              |                  | v        |               |                       |                    |                                       |                               |           |                 |
| 89               | 30 m                   |            |                |            |              |                              |                  |          |               |                       |                    |                                       |                               |           |                 |
| 6                | 20 ш                   | :          |                |            |              |                              |                  |          |               |                       |                    |                                       |                               |           |                 |
| 10               | 10 m                   | 1          | =              |            |              | . ,                          |                  |          |               | ,                     |                    |                                       | •                             |           |                 |
| =                | E 0                    |            |                | :          |              |                              |                  |          | ,             |                       | ,                  |                                       |                               |           |                 |
| 12               |                        |            |                |            |              |                              | i                |          |               |                       |                    |                                       |                               |           |                 |
|                  |                        |            |                |            |              |                              |                  |          |               |                       |                    |                                       |                               |           |                 |

|                 |                        |          |               | 10      |                              |                  |          |               |   |                         |                     |                      |              |          |
|-----------------|------------------------|----------|---------------|---------|------------------------------|------------------|----------|---------------|---|-------------------------|---------------------|----------------------|--------------|----------|
| VESSEL          |                        |          |               |         | PROJECT & LEG                | & LEG            |          |               |   | STATION                 | STATION DESIGNATION | NOF                  |              |          |
| NOAA RV         | NOAA RV MILLER FREEMAN | EMAN     |               |         | MF03-03                      |                  |          |               |   |                         |                     |                      |              |          |
| CONSEC<br>CAST# | ġ.                     | LATITUDE | LONGITUDE     |         | DATE JD= O 55 8              | TIME (GMT)       | DRY BULB | WET BULB      | PRESSURE SEA STATE VISIBILITY DE WIND RING RING RING RING RING RING RING RING | S M<br>O CLOUD (amt)    | ЭЧҮТ<br>МЕАТНЕК     | ВОТТОМ<br>ОЕРТН      | STA. NAME/ID | Q.       |
|                 | DEG                    | MIN      | DEG           |         |                              | YR HR            |          | (*C) (mb)     |   |                         |                     | -                    |              |          |
| 000             | 157 H                  | Z 0      | - 0           | 3       | п<br>В                       | - 3              | 17.      | 2             | 7 7   | 7                       | 26                  | 2900                 | DØ           | 9        |
| SBE 9Plus       | 91220A                 |          | TIMES         | JD/TIME | ш                            |                  | 25       | DATA LOCATION |   |                         | REMARKS             | 4                    |              |          |
| PRESS SN        | 80020                  |          | DATAON        |         |                              | Tape/Diskette ID | tte ID   | Z eji         | ıme/Header  | 4                       | LINE 8 STA          | ST                   | 3            | 1        |
| PRI COND        | 915                    |          | START DOWN    |         |                              |                  | 9        |               |   | <u>ે</u><br>ા           | wocast = Junk       | 30                   | XX           |          |
| PRI TEMP        | 710                    |          | АТ DEРТН      |         |                              | 2                | - 000    | <br>کا        |   | <u>의</u><br>1           | CASTOOY             | 4 15                 | 15 REDO      | <u>@</u> |
| SEC COND        | 530                    |          | AT SURFACE    |         |                              |                  | 3        |               |   | W.                      | MAX. DEPTH =        | SASER                | E TANK       | ω,       |
| SEC TEMP        | 884                    |          | VWETStar SN9Q | σ       |                              |                  |          |               | Cleaned   | Cleaned air bleed valve | ilve                |                      |              |          |
|                 |                        |          |               | CTD     | CTD CONVERTED MONITOR VALUES | OR VALUES        |          |               | SAMPLE BOTTLE DATA  | E DATA                  | SAMPLE              | SAMPLE BOTTLE NUMBER | UMBER        |          |
| POS.            | TRIP DEPTH             | PRESSURE | PRI. TEMP.    | WP.     | SEC. TEMP.                   | PRI. SALINITY    | LINITY   | SEC. SALINITY | SALINITY  |                         | SAL. NUTR.          | TR. CHL              | IL.   WHITS  | F.S.     |
| -               | 5 m from bottom        | 186      |               |         | :<br>•                       |                  |          |               |   |                         | 20                  |                      |              |          |
| 2               | 200 m                  |          | *             |         |                              |                  |          |               |   |                         |                     |                      |              |          |
| ဗ               | 150 ш                  |          |               |         |                              |                  |          | ٠             |   |                         |                     | :                    |              |          |
| 4               | 100 m                  |          |               |         |                              |                  |          |               |   |                         |                     |                      |              |          |
| υ'n             | 75 m                   |          |               | Y)      |                              |                  |          |               |   |                         |                     |                      |              |          |
| ဖ               | 50 m                   | :        |               |         | ě.                           |                  |          |               |   |                         |                     |                      |              |          |
| 7               | 40 m                   |          |               |         |                              | .,               |          |               |   |                         |                     |                      |              |          |
| 80              | E 06                   |          |               |         |                              | !                |          |               |   |                         |                     |                      |              | _        |
| 6               | 20 m                   |          |               |         |                              | :                |          |               |   |                         |                     |                      |              |          |
| 0               | 10 m                   |          | <u> </u>      |         |                              |                  |          |               |   |                         |                     |                      |              |          |
| 1               | E 0                    |          |               |         |                              |                  |          |               |   |                         |                     |                      | _            |          |
| 12              |                        |          |               |         |                              |                  |          |               |   |                         |                     |                      |              |          |
|                 |                        |          |               |         |                              |                  |          |               |   |                         |                     |                      |              | l        |

| VESSEL    | 턻                       |          |               | PROJECT & LEG                | <u></u>             |   | เร                      | STATION DESIGNATION | GNATION              |              | E)              |     |
|-----------|-------------------------|----------|---------------|------------------------------|---------------------|---|-------------------------|---------------------|----------------------|--------------|-----------------|-----|
| NOAA      | NOAA R/V MILLER FREEMAN | EMAN     |               | MF03-03                      |                     | :   |                         |                     |                      |              |                 |     |
|           |                         |          |               |                              |                     | BAUSS                                     | YTIJIBI                 | (tms) OL            | L                    |              |                 |     |
| CAST #    | (i)                     | LATITUDE | LONGITUDE     | DATE JD=058                  | TIME (GMT) DRY BULB | WET BULB                                  | VIS WIND                | ∃4XT                | ВОТТОМ<br>DEPTH      | STA. NAME/ID | ME/ID           |     |
|           | DEG                     | MIN      | DEG           | DAY MO YR                    | HR MIN (°C)         | (°C) (mb)                                 | ш) (бөр)                | (m/s)               | Ē                    | _            |                 |     |
| 0         | 4 E S 4                 | . 28 c   | 15509.86W27   | ഥ                            | 1412                | 0   | 1<br>0<br>0<br>0        | 326                 | 290                  | 8 7          | 9               |     |
| SBE 9Plus | Plus 91220A             | TIMES    | JD/TIME       | ME                           | -                   | DATA LOCATION                             |                         | REMARKS             | છ                    | A.           | 100 ac          | 250 |
| PRESS SN  | S SN 80020              |          | DATA ON       |                              | Tape/Diskette ID    | File Name/Header                          | s/Header                | LINE 8              |                      | STA 60       | 300             | 200 |
| PRI COND  | OND 915                 |          | START DOWN    |                              | A S                 | S. C. |                         | F-3                 | RE-DO @ 5TA 60-      | STA 6        | -0              |     |
| PRI TEMP  | MP 710                  | AT DI    | АТ ОЕРТН      |                              | 3                   | <br>اع                                    |                         | 750                 | TEMP CHANGING FAIF   | SINIS        | FA1E            | 1   |
| SEC COND  | OND 530                 | ATSI     | AT SURFACE    |                              | <b>)</b>            |   |                         | MAX. DEPTH =        | 7TH =                | E            | RAPID           | 7   |
| SEC TEMP  | EMP 884                 | <u></u>  | WETStar S/N99 |                              |                     |   | Cleaned air bleed valve | evled valve         |                      | :            |                 |     |
|           |                         |          | CTD (         | CTD CONVERTED MONITOR VALUES | ALUES               |   | SAMPLE BOTTLE DATA      |                     | SAMPLE BOTTLE NUMBER | E NUMBER     |                 |     |
| Pos.      | TRIP DEPTH              | PRESSURE | PRI. TEMP.    | SEC. TEMP.                   | PRI. SALINITY       | SEC. SALINITY                             | SALINITY                | SAL                 | NUTR.                | CHL.         | WHIT'S<br>NUTR. |     |
| -         | 5 m from bottom         |          |               |                              |                     |   |                         | .—                  |                      |              |                 |     |
| 7.0       | 200 m                   |          |               |                              |                     |   |                         |                     |                      |              |                 |     |
| က         | 150 m                   |          |               |                              |                     |   |                         |                     |                      |              |                 |     |
| 4         | 100 m                   |          |               |                              |                     |   |                         |                     | -                    |              |                 |     |
| က         | 75 m                    |          |               |                              |                     |   |                         |                     |                      |              |                 |     |
| ဖ         | £ 09                    |          |               | ÷.                           |                     |   | :                       |                     |                      |              |                 |     |
| 7         | 40 m                    |          |               |                              |                     |   |                         |                     |                      |              |                 |     |
| •         | 30 m                    |          |               |                              |                     |   |                         |                     |                      |              |                 |     |
| <b>о</b>  | 20 m                    |          |               |                              |                     |   |                         |                     |                      |              |                 |     |
| 5         | 10 m                    |          |               |                              |                     |   |                         |                     | ·                    |              |                 |     |
| Ξ         | E 0                     |          |               |                              |                     |   |                         |                     |                      |              |                 |     |
| 12        | -                       |          |               |                              | Œ                   |   |                         |                     |                      |              |                 |     |
|           |                         |          |               |                              |                     |   |                         |                     |                      |              | ]               |     |

|           |                        | 1        |                |            |            |                              |          |                  |          |               |                  |                    | -                       |                     |                      |          |                 |
|-----------|------------------------|----------|----------------|------------|------------|------------------------------|----------|------------------|----------|---------------|------------------|--------------------|-------------------------|---------------------|----------------------|----------|-----------------|
| VESSEL    | 딥                      |          |                |            | <u>a</u> . | PROJECT & LEG                | LEG      |                  |          |               |                  |                    | STAT                    | STATION DESIGNATION | SNATION              |          | ·               |
| NOA       | NOAA RV MILLER FREEMAN | EMAN     |                | 13         | ≥          | MF03-03                      |          |                  |          |               |                  |                    |                         |                     |                      |          |                 |
|           |                        | _        |                |            | <u>.</u>   |                              |          |                  |          |               | SURE             | STATS<br>YTIJIE    |                         | (ams) C             |                      | (u       |                 |
| CAST #    | K                      | LATITUDE | LONGITUDE      | UDE        | DATE JO    | 80 O FOR                     | TIME     | TIME (GMT) D     | DRY BULB | WET BULB      | PRES             |                    | O WIND                  |                     | BOTTOM<br>DEPTH      |          | STA. NAME/ID    |
|           | DEG                    | MIN      | DEG            | MIN        | DAY        | MO YR                        | R HR     | M                | (°C)     | (0,)          | (qm)             | (deg)              | (m/s)                   | •                   | Œ                    |          |                 |
| 0         | 10<br>12               | 38.41 N  | 1550 F         | 72<br>8    | L<br>L     | E B 0                        | 3 15     | 1 0              | 6.1      |               | 03               | 4720               | 8 1 6                   | 881                 | 1.0                  | 2 1 2    | 20              |
| SBE 9Plus | 9lus 91220A            |          | TIMES          | JD/TIME    | Ą          |                              |          |                  |          | DATA LOCATION | NOIT             |                    |                         | REMARKS             |                      |          |                 |
| PRESS SN  | SN 80020               |          | DATA ON        |            |            | i                            | Tape/    | Tape/Diskette ID | 500,     | 0             | File Name/Header | Header             |                         |                     |                      |          |                 |
| PRI COND  | ND 915                 |          | START DOWN     | İ          |            |                              |          | X                |          | ا<br>ا کے     |                  |                    |                         |                     |                      |          |                 |
| PRI TEMP  |                        |          | АТ ОЕРТН       | 83         |            | <b> </b>                     | 0        |                  |          | <b> </b><br>  |                  |                    |                         | ٠.                  |                      |          |                 |
| SEC COND  | OND 530                |          | AT SURFACE     | į          |            |                              |          |                  |          |               |                  |                    |                         | MAX. DEPTH ≈        | 뿔                    | E        |                 |
| SEC TEMP  | :                      |          | WETStar S/N 99 | PPN        |            |                              |          |                  |          |               |                  | Clean              | Cleaned air bleed valve | d valve             |                      |          |                 |
|           |                        |          |                | 1          | CONVERTE   | CTD CONVERTED MONITOR VALUES | \ VALUES |                  |          |               |                  | SAMPLE BOTTLE DATA | TLE DATA                |                     | SAMPLE BOTTLE NUMBER | LE NUMBE | pr.             |
| Pos.      | TRIP DEPTH             | PRESSURE | PRI            | PRI. TEMP. | SE         | SEC. TEMP.                   | 6        | PRI. SALINITY    |          | SEC. SALINITY |                  | SALINITY           | È                       | Š                   | NUTR.                | 吊        | WHIT'S<br>NUTR. |
| -         | 5 m from bottom        | 242      |                |            | 85         |                              |          |                  |          |               |                  |                    |                         | 10                  |                      |          |                 |
| , , 74    | 200 m                  |          |                |            |            |                              |          |                  |          |               |                  |                    |                         |                     |                      |          |                 |
| က         | 150 m                  |          |                |            |            |                              |          |                  |          | <b>.•</b>     |                  | ;                  |                         |                     |                      |          |                 |
| 4         | 100 m                  |          |                |            |            |                              |          |                  |          |               |                  |                    |                         |                     |                      |          |                 |
| 2         | 75 m                   |          |                |            |            |                              |          |                  |          |               |                  |                    |                         |                     |                      |          |                 |
| 9         | 90 ш                   |          |                |            | E          |                              |          |                  |          |               |                  |                    |                         |                     |                      |          |                 |
| 7         | 40 m                   |          |                |            |            |                              |          |                  |          |               |                  |                    |                         |                     |                      |          |                 |
| 8         | 30 m                   |          |                |            |            |                              |          |                  |          |               |                  |                    |                         |                     |                      | :        |                 |
| 6         | 20 m                   |          |                |            |            |                              |          |                  |          |               |                  |                    |                         |                     |                      |          |                 |
| 9         | 10 m                   |          | *              |            |            |                              |          |                  |          |               |                  |                    |                         |                     | -                    |          |                 |
| =         | E<br>o                 |          |                |            |            |                              |          |                  |          |               |                  |                    |                         |                     |                      |          |                 |
| 12        |                        |          |                |            |            |                              |          |                  | _        |               |                  |                    | •                       |                     |                      |          | _               |
|           |                        | 30.68    |                | 371,05     |            | 70°E1. 5                     |          | 5.138            |          |               |                  |                    |                         |                     |                      |          |                 |

575 5,10

30:05

|                  |                         | ŀ          |                |               |         | f         |                              |          |                  | ŀ        |               | ŀ                |                    | }                       |                     |                      |          |                 |
|------------------|-------------------------|------------|----------------|---------------|---------|-----------|------------------------------|----------|------------------|----------|---------------|------------------|--------------------|-------------------------|---------------------|----------------------|----------|-----------------|
| VESSEL           |                         |            |                |               |         | <u>a.</u> | PROJECT & LEG                | 3 LEG    |                  |          |               |                  |                    | ST                      | STATION DESIGNATION | SIGNATION            | 7        |                 |
| NOAA R           | NOAA R/V MILLER FREEMAN | IAN        |                |               |         |           | MF03-03                      |          |                  |          |               |                  |                    |                         |                     |                      |          |                 |
|                  |                         |            |                |               |         |           |                              |          |                  |          |               | ∄ษกร             | STATE<br>YTUR      |                         | (tms) (             | 4ER                  |          |                 |
| CONSEC<br>CAST # | LATITUDE                | JOE        | 31             | LONGITUDE     |         | DATE JO   | DATE JD=058                  | ¥        | TIME (GMT)       | DRY BULB | B WET BULB    |                  | AISIE<br>SEV 3     | WIND WIND<br>DIRN. SPD. | CLOUE               | MEATI<br>DEPTH       |          | STA. NAMEND     |
|                  | DEG MIN                 |            | DEG            | MIN           |         | DAY       | MO                           | YR H     | MIN              | 5        | (0,)          | (mp)             |                    | (s/m) (Bep)             | •                   | <b>.</b>             | -        |                 |
| 000              | 573                     | N 8        | 5 2            | 0.10          | 4 W     | L. C.     |                              | 3        | 543              | 9        | ر<br>الا      | 1044             | 7                  | マ                       | 9 8                 | - 2 <b>2</b> 3       | 371      | 5 58            |
| SBE 9Plus        | \$ 91220A               |            | TIMES          |               | JD/TIME | ш         |                              |          |                  |          | DATA LOCATION | CATION           |                    |                         | REMARKS             | KS                   | ,        |                 |
| PRESS SN         | 80020                   | ٥          | DATA ON        |               |         |           | ļ                            | de       | Tape/Diskette ID | 0.0      | ()            | File Name/Header | e/Header           |                         | 7                   | Line 8               | 510      | <b>5</b>        |
| PRI COND         | 915                     | _ <u>s</u> | <br>START DOWN | Z             |         |           |                              |          | Σ                | 7        | 3             |                  |                    |                         |                     |                      |          |                 |
| PRI TEMP         |                         | ¥          | АТ ОЕРТН       | 31            |         |           |                              |          |                  |          | 2             |                  |                    |                         | E                   |                      |          |                 |
| SEC COND         | D 530                   | Ā          | AT SURFACE     | ш             |         |           |                              |          |                  | 1        |               |                  |                    |                         | MAX. DEPTH =        | EPTH =               | E        |                 |
| SEC TEMP         |                         |            | V WET          | WETStar S/NOQ |         |           |                              |          |                  |          |               |                  | ් ජී               | Cleaned air bleed valve | eed valve           |                      |          |                 |
|                  | <u>.</u>                |            |                |               | ,       | ONVERTE   | CTD CONVERTED MONITOR VALUES | DR VALUE | ္ဆ               |          | Šū.           |                  | SAMPLE BOTTLE DATA | OTTLE DA                |                     | SAMPLE BOTTLE NUMBER | TTLE NUM | BER             |
| Pos.             | TRIP DEPTH              | PRESSURE   |                | PRI. TEMP.    |         | SE        | SEC. TEMP.                   |          | PRI. SALINITY    | È        | SEC. SALINITY | Ţ.INI.           | SA                 | SALINITY                | SAL                 | NUTR                 | CH.      | WHIT'S<br>NUTR. |
| -                | 5 m from bottom         | 335        |                |               |         | . **      |                              |          |                  |          |               |                  |                    |                         | 45                  |                      |          |                 |
| 2                | 200 m                   |            |                |               | -       |           |                              | -        |                  |          |               |                  |                    |                         |                     |                      |          |                 |
| ო                | 150 m                   |            |                |               |         |           |                              |          |                  |          |               |                  |                    |                         |                     | *                    |          |                 |
| 4                | 100 m                   |            |                |               |         |           |                              |          |                  |          |               |                  |                    |                         |                     |                      |          |                 |
| ĸ                | 75 m                    |            |                |               |         |           |                              |          |                  |          |               |                  |                    |                         |                     |                      |          |                 |
| 9                | т 99<br>ш               |            |                |               |         |           |                              |          |                  |          |               |                  |                    |                         |                     |                      |          |                 |
| 7                | 40 m                    |            |                |               |         |           |                              | <u></u>  |                  |          |               | :                |                    |                         |                     |                      |          |                 |
| 8                | 30 m                    |            |                |               |         |           |                              |          |                  |          |               |                  |                    |                         |                     |                      |          |                 |
| 6                | 20 m                    |            |                |               |         |           |                              |          |                  |          |               |                  |                    |                         |                     |                      |          | :               |
| 10               | 10 m                    |            |                |               |         |           |                              |          |                  |          |               |                  |                    |                         |                     | ٠                    |          |                 |
| =                | E 0                     | į          |                |               |         |           |                              |          |                  |          |               |                  |                    | į                       |                     |                      |          |                 |
| - 2              | _                       |            |                | i             |         |           |                              |          |                  |          |               |                  |                    |                         |                     |                      |          |                 |
|                  |                         |            | 1119-05        |               | 20.7    | 768       |                              |          | 9.186            | 8        | 308           |                  |                    |                         |                     |                      |          |                 |

535 5.100

575 " DVS

|                 |                         |            |             |                  | 3        |                              |               |                  |            |               |                  |                    | -                       |                     |                      |          |                |
|-----------------|-------------------------|------------|-------------|------------------|----------|------------------------------|---------------|------------------|------------|---------------|------------------|--------------------|-------------------------|---------------------|----------------------|----------|----------------|
| VESSEL          | ដ                       |            |             |                  |          | PROJEC                       | PROJECT & LEG |                  |            |               |                  |                    | STATIC                  | STATION DESIGNATION | SNATION              |          |                |
| NOAA            | NOAA R/V MILLER FREEMAN | FREEMAN    |             |                  |          | MF03-03                      |               |                  |            |               |                  |                    |                         |                     |                      |          |                |
|                 |                         |            |             |                  |          |                              |               |                  |            | ,             | 37ATE            | YTIJI8             |                         | (amt) (I            | ,                    |          |                |
| CONSEC<br>CAST# | Ω.#±                    | LATITUDE   |             | LONGITUDE        | _å       | DATE JO=015 R                | 72            | TIME (GMT)       | DRY BULB   | WET BULB      |                  |                    | SPD.                    | <b>347T</b>         | BOTTOM               |          | STA. NAME/ID   |
|                 | DEG                     | NIM        | OHO<br>DEC  | MIN              | <u> </u> | DAY MO                       | Ř             | HR MIN           | (22)       | (2)           | . (qm)           | (Gep)              | (m/s)                   | *                   | (w)                  |          |                |
| 0               | 12<br>73                | 32.98N     | -<br>5<br>1 | 52               | 9 W D    | F B                          | 3 0 3         | 1640             | 5 5        | 4.8           | 044              | 721                | 22                      | 862                 | 22                   | 818      | N.             |
| SBE 9Plus       |                         | 91220A     | TIMES       |                  | JD/TIME  |                              |               |                  |            | DATA LOCATION | NOI              |                    |                         | REMARKS             | *                    |          |                |
| PRESS SN        |                         | 80020      | DATA ON     | ·                |          |                              | -             | Tape/Diskette ID |            |               | File Name/Header | leader             | ····                    | LINE                | S                    | STA 51   |                |
| PRI COND        |                         | 915        | START DOWN  | NWC              |          |                              |               | 7                |            | 200           |                  |                    |                         |                     | -                    |          |                |
| PRI TEMP        |                         | 210        | АТ ОЕРТН    | 18               |          |                              |               | 3                | <b>3</b> 2 | ا<br>ای       |                  |                    |                         | ۶                   |                      |          |                |
| SEC COND        |                         | 530        | AT SURFACE  | ,<br>OE          |          |                              |               | ļ                | <u> </u>   |               |                  | i                  |                         | MAX. DEPTH          | 뿔                    | Ε        |                |
| SEC TEMP        |                         | 884        | × × ×       | √ WETStar S/N 99 |          |                              |               |                  |            |               |                  | Cleaner            | Cleaned air bleed valve | valve               |                      |          |                |
|                 | 1                       |            |             |                  | CTD CON  | CTD CONVERTED MONITOR VALUES | IITOR VAL     | LUES             |            |               | S                | SAMPLE BOTTLE DATA | LE DATA                 | 4                   | SAMPLE BOTTLE NUMBER | LE NUMBE | œ              |
| Pos.            | TRIP DEPTH              | H PRESSURE | 155         | PRI. TEMP.       |          | SEC. TEMP                    | <u>a</u>      | PRI. SALINITY    | , YTINI    | SEC. SALINITY | <u>}</u>         | SALINITY           |                         | SAL.                | NUTR.                |          | WHIT'S<br>NUTR |
| -               | 5 m from bottom         | 215        |             |                  | ٧,       | <b>4</b> :                   |               |                  |            |               |                  |                    |                         | 18                  |                      |          | :              |
| .7              | 80                      | 200 m      |             |                  |          |                              |               |                  |            |               |                  |                    |                         |                     |                      |          |                |
| m               | 15                      | 150 m      |             |                  |          |                              |               |                  |            |               |                  |                    |                         |                     |                      |          |                |
| 4               | 100                     | 100 m      |             |                  |          |                              |               |                  |            |               |                  |                    | ,                       |                     |                      |          |                |
| တ               | 7.                      | 75 m       |             |                  |          |                              |               |                  |            |               |                  |                    |                         |                     |                      |          |                |
| 9               | χ.                      | 50 m       |             |                  |          | jes.                         |               |                  |            |               |                  |                    |                         |                     |                      |          |                |
| 7               | 46                      | 40 m       |             |                  |          |                              |               |                  |            |               |                  |                    | ·                       |                     |                      |          |                |
| **              | )E                      | 30 m       |             |                  |          |                              |               | ,                |            |               |                  |                    |                         |                     |                      |          | -              |
| 6               | ×                       | 20 m       |             |                  |          |                              |               |                  |            |               |                  |                    |                         |                     |                      |          |                |
| 10              | 7                       | 10 m       | 33          |                  | _        |                              |               |                  | -          |               |                  |                    |                         |                     |                      |          | : <u>-</u>     |
| Ξ               |                         | O m        |             |                  |          |                              |               |                  | i          |               | · .              |                    |                         |                     |                      |          |                |
| 12              |                         |            |             |                  |          |                              |               | 2                |            |               |                  |                    |                         |                     |                      |          | -              |
|                 | 1881, 05                | 949 Occ 16 |             | 4,964            | 11.971   | 111                          |               |                  |            |               |                  |                    | İ                       |                     |                      |          |                |

CTD temy Scs tome

70,7651 30,646 CTV31 5C5 501

4.70 4.191 525 ans

30.610 30,748

|    |                     |                        | (E/ID                | 55               |               | S                |            |           |              |                         |                         | WHIT'S<br>NUTR |                 |       |       |       |      |      |      |      |      |      |        |      | ]             |
|----|---------------------|------------------------|----------------------|------------------|---------------|------------------|------------|-----------|--------------|-------------------------|-------------------------|----------------|-----------------|-------|-------|-------|------|------|------|------|------|------|--------|------|---------------|
|    |                     |                        | STA. NAME/ID         | 20               | }             | STA 5            |            |           | ε            |                         | NUMBER                  | E E            |                 |       |       |       |      |      |      |      |      |      |        | ,    | -             |
| 1  | NOIL                |                        | ВОТТОМ<br>DEPTH      | (E) 0            |               | 5 8              |            |           |              |                         | SAMPLE BOTTLE NUMBER    | NUTR. C        |                 |       |       |       |      |      |      |      |      | •    |        |      | 1             |
|    | STATION DESIGNATION |                        | TYPE<br>WEATHER      |                  | REMARKS       | L'ine            |            | -         | MAX. DEPTH = | ę                       | 1                       | SAL. N         | 3               |       |       |       |      |      |      |      |      |      |        |      |               |
|    | TATION              |                        | S WIND (amt)         |                  | RE            |                  |            |           | MA.          | bleed vah               | DATA                    | 8              | 3               |       |       |       |      |      |      |      | ]    |      |        |      |               |
|    |                     |                        | WIND                 | 20               |               |                  |            |           |              | Cleaned air bleed valve | SAMPLE BOTTLE DATA      | SALINITY       |                 |       |       |       |      | :    |      | :    |      |      |        |      |               |
|    |                     |                        | SEA STATE VISIBILITY | L H              |               | File Name/Header |            |           |              |                         | SAMPLE                  | S              |                 |       |       |       |      | į    |      |      |      |      | ,      |      |               |
|    |                     |                        | PRESSURE             | (mb)<br>9 0 5    | ATION         | File Nam         |            | :         |              |                         |                         | È              |                 |       |       |       |      |      |      |      | :    |      |        |      | ]             |
|    |                     |                        | WET BULB             | (°C)             | DATA LOCATION | _<br>_           |            | i<br>s I  |              |                         | N                       | SEC. SALINITY  |                 |       |       |       |      |      |      |      |      |      |        |      |               |
|    |                     |                        | DRY BULB             | (c)<br>5 . 5     | _             | 9                | Z Z        |           |              |                         |                         | >              |                 |       |       |       |      |      |      |      |      |      |        | ļ    |               |
|    |                     |                        |                      | MIN C            |               | Tape/Diskette ID | 7          | 3-<br>3 4 | 3            |                         |                         | PRI. SALINITY  |                 |       |       |       |      |      |      |      |      |      |        |      |               |
|    | စ္တ                 |                        | TIME (GMT)           | HR 1 8           |               | Tape/Di          | <u> </u>   | 3         |              |                         | ALUES                   | P.             |                 |       |       |       |      |      |      |      |      |      |        |      |               |
|    | PROJECT & LEG       | ş                      | 058                  | YR 8 0 3         |               |                  |            |           | [            |                         | ONITOR                  | EMP.           |                 |       |       |       |      |      |      |      |      |      |        |      |               |
|    | PROJ                | MF03-03                | Date JD= (           | DAY MO           |               |                  |            |           |              |                         | ONVERTED MONITOR VALUES | SEC. TEMP.     |                 |       |       |       |      |      |      |      |      |      |        |      |               |
| 75 |                     | ŀ                      | LAO                  | 48 W 27          | JD/TIME       |                  |            |           | ĺ            |                         | CTD CONV                |                | ٠,              |       |       |       |      | 2    |      |      |      |      |        |      |               |
|    |                     |                        | JUDE                 | MIN .            | 7             |                  | '          |           | ļ            |                         | Ī                       | PRI, TEMP.     |                 |       |       |       | 10   |      |      |      |      |      |        |      |               |
|    |                     |                        | LONGITUDE            | -<br>-<br>-<br>- |               | ×.               | START DOWN | ¥         | AT SURFACE   | WETStar S/N             |                         | Æ              |                 |       |       |       |      |      |      |      |      |      |        |      | \<br> -<br> - |
|    |                     |                        | -                    | DEG<br>N   54    | TIMES         | DATA ON          | START      | AT DEPTH  | AT SU        |                         |                         | RE             |                 |       |       |       |      |      |      |      |      | 37   |        |      | ı             |
|    |                     | y.                     | Щ                    | <u>-</u>         |               |                  |            |           |              |                         |                         | PRESSURE       | Se              |       |       |       |      |      |      |      |      |      |        | -    | 1             |
|    |                     | FREEMA                 | LATITUDE             | MIN CP           | 91220A        | 80020            | 915        | 710       | 530          | 884                     |                         | _              | ttom            | 200 m | 150 m | 100 m | 75 m | 20 ш | 40 m | 30 m | 20 m | 10 m | Œ<br>O |      |               |
|    |                     | NOAA RV MILLER FREEMAN | ä                    | DEG<br>5 7       |               |                  |            | •         |              |                         |                         | TRJP DEPTH     | 5 m from bottom | 28    | 15    | 5     | 7    | 9    | . 4  | 9    | 2    | F    | _      |      |               |
|    | VESSEL              | NOAA RA                | CONSEC<br>CAST#      | 000              | SBE 9Plus     | PRESS SN         | PRI COND   | PRI TEMP  | SEC COND     | SEC TEMP                |                         | POS.           | - 20            | 7,0   | en    | 4     | z,   | 9    | 7    | 8    | 6    | 10   | - 1    | - 12 |               |

30,481 30,675 4,610 4.610 Scs cro

| VESSEL          |                         |          |            |                 |          | PROJECT & LEG                | & LEG  |                  |  |               |                                     | SI   | STATION DESIGNATION                   | SIGNATION             | z        |                 |
|-----------------|-------------------------|----------|------------|-----------------|----------|------------------------------|--|------------------|--|---------------|-------------------------------------|--|---------------------------------------|-----------------------|----------|-----------------|
| WOA             | NOAA R/V MILLER FREEMAN | EMAN     |            |                 |          | MF03-03                      |  |                  |  |               |                                     |  |                                       |                       |          |                 |
| CONSEC<br>CAST# |                         | LATITUDE | 9          | LONGITUDE       | DATE     | 850 <b>=</b> 0r              |  | TIME (GMT) DRY   | DRY BULB WET                                     | WET BULB      | PRESSURE<br>SEA STATE<br>VISIBILITY | WIND WI  | S S S S S S S S S S S S S S S S S S S | яантам<br>Воттом<br>Н |          | STA, NAME/ID    |
|                 | DEG                     | MIN      | DEG        | NW              | DAY.     | QM<br>M                      | ęχ   | ļ                | <del>                                     </del> |               |                                     | <del>                                     </del> |                                       |                       | +        |                 |
| - 0             | 0                       |          | 1550       | 5               | T M S    | я<br>В                       | <del>                                     </del> | 5                | u  | 0             | 1 1 1                               |  | 8                                     | <u>द</u> ि<br>ट       | 50 5     | 588             |
| SBE 9Plus       | lus 91220A              |          | TIMES      | 7               | JO/TIME  |                              |  |                  | DATA   | DATA LOCATION | 7                                   |  | REMARKS                               | Ş                     | 84       |                 |
| PRESS SN        | SN 80020                | Tig.     | DATAON     | i               |          |                              | Tape   | Tape/Diskette ID | 3  | File          | File Name/Header                    |  | CAD                                   | at la                 | 200      | Xion /          |
| PRI COND        | ND 915                  |          | START DOWN | j<br>≅          |          |                              |  | 3                | X  |               |                                     |  | 5                                     | 3355                  | 255F 2A  |                 |
| PRI TEMP        | AP 710                  |          | АТ ОЕРТН   | Ş               |          |                              |  |                  | کے   | -             |                                     |  | p'                                    |                       |          |                 |
| SEC COND        | ND 530                  |          | AT SURFACE |                 |          |                              |  | >                |  |               |                                     |  | MAX. DEPTH =                          | PTH=                  | E        |                 |
| SEC TEMP        | MP 884                  |          | √ wers     | V WETStar SANOQ |          | eren (                       |  |                  |  |               | Ö                                   | Cleaned air bleed valve                          | leed valve                            |                       |          |                 |
| •               |                         |          |            | υ               | TD CONVE | CTD CONVERTED MONITOR VALUES | OR VALUE   | 8                |  |               | SAMPLE                              | SAMPLE BOTTLE DATA                               |                                       | SAMPLE BOTTLE NUMBER  | TTLE NUM | BER             |
| Pos             | TRIP DEPTH              | PRESSURE |            | PRI. TEMP.      | -        | SEC. TEMP.                   |  | PRI. SALINITY    | SEC  | SEC. SALINITY | ŻS                                  | SALINITY   | SAL                                   | NUTR.                 | 냥        | WHIT'S<br>NUTR. |
| -               | 5 m from bottom         | 045~     |            |                 | ٠        |                              | -  |                  |  |               |                                     |  | 200                                   |                       |          |                 |
| -0              | 200 m                   |          | 7          |                 |          |                              |  |                  |  |               |                                     |  |                                       |                       |          |                 |
| က               | 150 m                   |          |            |                 |          |                              |  | i                |  | .•            |                                     |  |                                       | 24                    |          |                 |
| 4               | 100 E                   |          |            | :               |          |                              | -  |                  |  |               |                                     |  |                                       |                       |          |                 |
| ro              | 75 m                    | :        | _          |                 |          |                              |  |                  |  |               |                                     |  |                                       |                       |          |                 |
| φ               | 50 m                    | !        |            |                 |          |                              |  |                  |  |               |                                     |  |                                       |                       |          |                 |
| 7               | 40 m                    |          |            |                 |          |                              |  |                  | _  |               |                                     |  |                                       |                       |          |                 |
| 80              | 30 m                    | :        |            |                 |          |                              |  | ^                |  |               |                                     |  |                                       |                       |          |                 |
| 6               | 20 m                    |          |            |                 |          |                              |  |                  |  |               |                                     |  |                                       |                       |          |                 |
| 6               | 10 m                    |          | 10         |                 |          |                              |  |                  | · .  |               |                                     |  |                                       |                       |          |                 |
| =               | E O                     |          |            |                 |          |                              |  |                  |  |               |                                     |  |                                       |                       |          |                 |
| 12              |                         |          | _          |                 |          | :                            |  | 16               |  |               |                                     |  |                                       |                       |          |                 |
|                 |                         |          |            |                 |          |                              |  |                  |  |               |                                     |  |                                       |                       |          |                 |

| Fig. 20   Fig. |        |                 |          |           |          |         |                |              |          |                |          |           |              |            |                |        |                 |
|--|--------|-----------------|----------|-----------|----------|---------|----------------|--------------|----------|----------------|----------|-----------|--------------|------------|----------------|--------|-----------------|
| Second   S | VESS   | ם               |          |           |          |         | PROJECT & LE   | ဥ္ပ          |          |                |          | ·         | STATION      | DESIGNAT   | NOIT           |        |                 |
| Color   Colo | NOA    | RV MILLER FRI   | EEMAN    |           |          |         | MF03-03        |              |          |                |          |           |              |            |                |        |                 |
| CATTILOGE   CANTILOGE   CANT | {      |                 |          |           |          |         |                |              |          |                | STATE A  |           | (JRB) QU     | ЯЭНТ       |                |        |                 |
| State   All  | \$ \$  | 8               | TITUDE   | -         | ONGITUDE | DATE    | JD= 058        | TIME (GMT)   |          | WET BULB       | ⁄3S .    |           | сго          | WEA        | OTTOM<br>SEPTH | STA. N | AME/ID          |
| S 7  |        | DEG             | MIN      | DEG       | MIN      | DAY     | MO             |              |          |                |          | (deb)     | •            | •          | Œ              |        |                 |
| 12204   The State   The Down    | 0      | 157             | 1.2(     |           | -        | K W     | F E B          | 035          | ٠<br>چ   | 4.9            | 1        | 0         | 00           | 200        |                | 035    | S 5 P           |
| 100 m   100  | SBE 96 |                 |          | TIMES     | ρ        | TIME    |                |              |          | DATA LOCATIO   | ×.       |           | REA          | AARKS      |                |        |                 |
| 250   AT DEPTH   AT  | PRESS  |                 |          | DATAON    |          |         |                | Tape/Disketi | · >      | E E            | Name/Hea | der       | 9            | 3.85       | P1A            |        |                 |
| 250   AT SEPTH   | PRI CC |                 |          | START DO  | ¥.       |         |                | ¥            | 9 0      | <br>  <u> </u> |          |           |              |            |                |        |                 |
| SAME BOTH  | PRI TĒ |                 |          | АТ ОЕРТН  | ş        |         |                | 3            | 3        | <br> <br>      |          |           |              | 113        |                |        |                 |
| Note    | SEC C  |                 |          | AT SURFA( | Ж        |         |                |              | <u> </u> |                |          | '<br>'    | MA           | C. DEPTH = |                | ε      |                 |
| TRIP DEPTH         PRESSURE         PRESSURE         PRIL TEMP         SEC. TEMP         PRIL SALINITY         SALINITY         SALINITY         SALINITY         SALINITY         COL.           200 m         150 m  | SEC TE |                 |          | WE        | Star S/N |         |                |              |          |                |          | Cleaned a | ir bleed vah | e          |                |        |                 |
| TRIP DEPTH         PRESSURE         PRI TEMP         SEC, TEMP         PRI, SALINITY         SALINITY         SALINITY         SALINITY         CH.           500 m         2.30 m <t< th=""><th></th><th></th><th></th><th></th><th>CTI</th><th>D CONVE</th><th>RTED MONITOR \</th><th>ALUES</th><th></th><th>114</th><th>SAME</th><th>LE BOTTLE</th><th>DATA</th><th>SAMPLI</th><th>E BOTTLE</th><th>NUMBER</th><th>_</th></t<>  |        |                 |          |           | CTI      | D CONVE | RTED MONITOR \ | ALUES        |          | 114            | SAME     | LE BOTTLE | DATA         | SAMPLI     | E BOTTLE       | NUMBER | _               |
| Son from bottom         ASO         .         Common solution           150 m         .  | Š.     | TRIP DEPTH      | PRESSURE |           |          |         | SEC. TEMP.     | PRI. SAI     | LINITY   | SEC. SALINIT   |          | SALINITY  | 0            |            | 87             |        | WHIT'S<br>NUTR. |
| 150 m<br>100 m<br>50 m<br>50 m<br>30 m<br>30 m   | -      | 5 m from bottom |          | _         |          | 1000    |                |              |          |                |          |           | S            | 5          |                |        |                 |
| 150 m  50 m  30 m  20 m  0 m   | , 2    | 200 m           |          |           |          |         |                | 90           |          |                |          |           |              |            |                |        |                 |
| 30 m<br>30 m<br>30 m<br>30 m   | ю      | 150 m           |          |           |          | :       |                |              |          | *              |          |           |              |            |                |        |                 |
| 50 m<br>30 m<br>20 m   | 4      | 100 m           |          |           |          |         |                |              |          |                |          | !         |              |            |                |        |                 |
| 50 m<br>40 m<br>30 m<br>20 m   | c.     | 75 m            |          |           |          |         |                |              |          |                |          | :         |              |            |                |        |                 |
| 40 m<br>30 m<br>10 m   | 9      |                 |          |           |          | Dell.   |                |              |          | ·              |          |           |              |            |                |        |                 |
| 30 m<br>20 m<br>10 m   | 7      | 40 m            |          |           |          |         |                |              | 1        |                |          |           |              |            |                |        |                 |
| 20 m<br>10 m   | 8      | 30 m            |          |           | 12       |         |                |              |          |                |          |           |              |            |                |        |                 |
| 10 m   | 6      | 20 m            |          |           |          |         |                |              |          |                |          |           |              |            |                |        |                 |
|  | 10     | 10 m            |          | 181       |          |         |                |              |          |                |          |           |              | _          |                |        |                 |
| 12   | 1      | 0 m             |          |           |          |         |                |              | -        |                |          | j         |              |            |                |        |                 |
|  | 12     |                 |          | -         |          |         |                | 100          |          |                |          |           |              |            |                |        |                 |

30.6% 30.50 4.547 4.567 4.567

| VESSEL           | _1                     |          |                |         | PR          | PROJECT & LEG           | ပ္သ              |               |               | :                |                         | STATION DESIGNATION | DESIGN       | ATION                |         |                 |
|------------------|------------------------|----------|----------------|---------|-------------|-------------------------|------------------|---------------|---------------|------------------|-------------------------|---------------------|--------------|----------------------|---------|-----------------|
| NOAA             | NOAA RV MILLER FREEMAN | MAN      |                |         | ¥           | MF03-03                 | , 1              |               |               |                  |                         |                     |              |                      |         |                 |
|                  |                        |          |                |         |             |                         |                  |               |               | BAUSS<br>BTATS   | YTIJIBI                 | (Jms) al            | ЯЗНТ         |                      |         |                 |
| CONSEC<br>CAST # | _                      | LATITUDE | LONGITUDE      | -       | DATE JD= DO | 090                     | TIME (GMT)       | T) DRY BULB   | 3 WET BULB    |                  | VIS VIS                 |                     |              | BOTTOM<br>DEPTH      | STA. N  | STA. NAME/ID    |
| -                | DEG                    | MIN      | DEG            | MIN     | DAY         | MO YR                   | HR               | (°C)          | (0,)          | (mb)             | ) (deg) (               | (m/s)               |              | Ê                    |         |                 |
| 0                | 25510                  | Z<br>T   | 16141          | W O F   | Σ<br>0      | A R 0 3                 | 9                | S<br>5        | 9 5 5         | 050              | 00                      | *                   | *<br>U       | 83                   |         | A A             |
| SBE 9Plus        | us 91220A              |          | TIMES          | JD/TIME | 111         |                         |                  | 4             | DATA LOCATION | NO               | iii                     | Z.                  | REMARKS      |                      |         |                 |
| PRESS SN         | SN 80020               |          | DATA ON        |         | ŀ           | s<br>I                  | Tape/Diskette ID | ette IQ       |               | File Name/Header | sader                   | .3                  | WETSTAN      |                      | 7       |                 |
| PRI COND         | ID 915                 | S        | START DOWN     |         |             | . 1                     | 4                | 7             | <b>8</b>      |                  |                         | [w]                 | d 660 SE     | 06                   |         |                 |
| PRI TEMP         | P 710                  |          | АТ ОЕРТН       |         |             | 1                       | 3                | 3             |               |                  |                         |                     |              |                      |         |                 |
| SEC COND         | ND 530                 | 4        | AT SURFACE     |         |             | Ţ                       |                  | 7             |               | ,                |                         | MA                  | MAX. DEPTH = | 0                    | Æ       |                 |
| SEC TEMP         | AP 884                 |          | WETStar S/N 99 | 66 7    |             |                         |                  |               |               |                  | Cleaned air bleed valve | r bleed vah         | ę            |                      |         |                 |
|                  |                        |          |                | СТВСО   | ONVERTED    | ONVERTED MONITOR VALUES | /ALUES           |               |               | - &              | SAMPLE BOTTLE DATA      | DATA                | SAMP         | SAMPLE BOTTLE NUMBER | E NUMBE | ge              |
| Pos.             | ткір ОЄРТН             | PRESSURE | PRI, TEMP      | EMP.    | SEC         | SEC. TEMP.              | PRI. S           | PRI. SALINITY | SEC. SALINITY | ∠                | SALINITY                | S                   | SAL          | NUTR                 | GH.     | WHIT'S<br>NUTR. |
| -                | 5 m from bottom        | 75       |                |         | i           | ÷ 4                     |                  |               |               |                  |                         |                     | VŽ.          |                      | -       |                 |
| 2                | 200 m                  |          |                |         |             |                         |                  |               |               |                  |                         |                     |              |                      |         |                 |
| က                | 150 m                  |          |                | -       |             |                         | _                |               |               |                  |                         |                     |              |                      |         |                 |
| 4                | 100 m                  |          |                |         |             |                         |                  |               | ,             |                  |                         |                     |              | -                    |         |                 |
| ß                | 75 m                   |          |                | -       |             |                         |                  |               |               | 7                |                         | -                   |              |                      |         |                 |
| 9                | 20 m                   |          |                |         |             |                         |                  |               |               |                  |                         |                     |              |                      |         | 8               |
| 7                | 40 m                   |          |                |         | ļ           |                         |                  |               |               |                  |                         |                     |              |                      |         |                 |
| 80               | 30 H                   |          |                |         |             |                         |                  | -             |               | :                |                         |                     |              |                      |         |                 |
| o                | 20 m                   |          |                |         |             |                         |                  |               |               |                  |                         |                     |              |                      |         |                 |
| 10               | 10 m                   |          |                |         |             |                         |                  |               |               | :                |                         |                     |              |                      |         |                 |
| ŧξ               | E                      |          |                |         |             |                         |                  | =             |               |                  |                         |                     |              |                      |         |                 |
| 12               |                        |          |                |         |             | :                       |                  |               |               |                  |                         |                     | 7            |                      | -       |                 |

WHIT'S NUTR. STA. NAME/ID SAMPLE BOTTLE NUMBER ٤ WETSTAN P/ ᅙ BOTTOM DEPTH STATION DESIGNATION Ξ NUTR. 366052 MAX. DEPTH = REMARKS **MEATHER** SAL. CLOUD (amt) 9 Cleaned air bleed valve WIND SPD. (m/s) SAMPLE BOTTLE DATA 00 SALINITY WIND DIRN. File Name/Header VISIBILITY SEA STATE DATA LOCATION
File Namen 500 PRESSURE (qu SEC. SALINITY WET BULB S TIME (GMT) DRY BULB <u>o</u>. 10 rape/Diskette ID\ PRI. SALINITY کا Z 8 5 W DI M A R O 3 1 7 CTD CONVERTED MONITOR VALUES PROJECT & LEG ጅ MF03-03 SEC. TEMP. Š DATE DA√ JD/TIME PRI. TEMP. WETStar S/N 99 LONGITUDE 1001 START DOWN AT SURFACE AT DEPTH DATA ON TIMES N 2 1 PRESSURE NOAA RV MILLER FREEMAN LATITUDE 0 91220A 80020 915 200 m 150 m 뒨 530 S S 75 m 50 m 884 100 m 40 m 20 m 5 m from bottom 10 m 0 TRIP DEPTH V K CONSEC CAST # SEC COND വ SBE 9Plus PRESS SN PRI COND SEC TEMP PRI TEMP VESSEL POS. 9 Ξ 12 80 0

Re-de of cost 12 - network-those was no date in costs 3-thou 11-

PG \200F\_\_\_

PG HOF

| VESSEL           |                         |          |             |                  |            |         | PROJE                        | PROJECT & LEG | ø                |               |          |               |          |                    | ST                      | STATION DESIGNATION | DESIGN       | ATION           |                      |                 |
|------------------|-------------------------|----------|-------------|------------------|------------|---------|------------------------------|---------------|------------------|---------------|----------|---------------|----------|--------------------|-------------------------|---------------------|--------------|-----------------|----------------------|-----------------|
| NOAA RA          | NOAA R/V MILLER FREEMAN | EMAN     |             |                  |            |         | MF03-03                      | 8             |                  |               |          |               |          |                    |                         |                     |              |                 |                      |                 |
| <u></u>          |                         |          | <u></u>     |                  |            |         |                              |               |                  |               |          |               | SSURE    | STATE<br>YTIJI8    | ·                       | (amt)               | язн          | =               |                      |                 |
| CONSEC<br>CAST # |                         | LATITUDE |             | LONGITUDE        | 핅          | - Fa    | DATE JD= O GO                | q             | TIME (GMT)       | $\rightarrow$ | DRY BULB | WET BULB      | _        | VISI<br>SEV        | WIND W                  |                     |              | BOTTOM<br>DEPTH | $\dashv$             | STA. NAME/ID    |
|                  | DEG                     | MIN      | DEG         |                  | MIN        | DAY     | Y.                           | Œ             | 포                | MIN           | (0.)     | (၁)           | (mb)     |                    | (deg) (m/s)             | <u>.</u>            |              | Ē               | _                    |                 |
| 710              | 5                       | 2<br>0   | 9           | 1                | DO         | N E     | <b>∀</b>                     | R 0 3         | 193              | 0             |          | ·<br>•        | F 00     | 7                  |                         | 0<br>50<br>6        | رة<br>ا      |                 | 4 E O S              | A<br>A          |
| SBE 9Plus        |                         | 91220A   | TIMES       |                  | ğ          | JD/TIME |                              |               |                  |               | -        | DATA LOCATION | TION     |                    |                         | Z<br>Z              | REMARKS      |                 |                      |                 |
| PRESS SN         | 80020                   | 20       | DATA ON     | _                | ł          |         |                              |               | Tape/Diskette ID | kette ID      |          | ं             | ile Name | File Name/Header   |                         | 3                   | er S         | WETSTAN F/      | 7                    |                 |
| PRI COND         | 915                     |          | START DOWN  | OWN              | !          |         |                              |               |                  |               |          | <br>          |          |                    |                         | (va                 | 266032       | 96              |                      |                 |
| PRI TEMP         | 710                     |          | AT DEPTH    | I                | 1          |         |                              |               |                  |               |          | i<br>1        |          |                    |                         |                     | ĺ            |                 |                      |                 |
| SECCOND          | 530                     |          | AT SURFACE  | ACE              | A          |         |                              |               |                  | (             |          | *             |          |                    |                         | MAX                 | MAX. DEPTH = | <u>. n</u>      | ε                    |                 |
| SEC TEMP         |                         |          | \ <u>\$</u> | ✓ WETStar S/N 99 | 66 N       | 2.2     |                              |               |                  |               |          |               |          | Clea               | Cleaned air bleed valve | leed valv           |              |                 |                      |                 |
|                  |                         |          |             |                  | ฮ          | D CONV  | CTD CONVERTED MONITOR VALUES | NITOR V       | ALUES            |               |          |               |          | SAMPLE BOTTLE DATA | этте в                  | ĬΑ                  | SAME         | LE BOTT         | SAMPLE BOTTLE NUMBER | ER              |
| POS.             | TRIP DEPTH              | PRESSURE |             | <u>R</u>         | PRI. TEMP. | -       | SEC. TEMP.                   | ďΡ.           | <u>S</u>         | PRI. SALINITY |          | SEC. SALINITY | Ţ        | SAL                | SALINITY                | Ŋ                   | SAL.         | NUTR.           | 충                    | WHIT'S<br>NUTR. |
| 1 5              | 5 m from bottom         |          |             |                  |            | ٠,      |                              | 0             |                  |               |          |               |          |                    |                         | (1)                 | 30           |                 | ·                    | 25              |
| 7                | 200 m                   |          |             |                  |            |         |                              |               |                  |               | _        |               |          |                    |                         | 5                   |              |                 |                      |                 |
| ဗ                | 150 m                   |          |             |                  |            |         |                              |               |                  |               |          | .•            |          |                    |                         |                     |              |                 |                      |                 |
| 4                | 100 л                   |          |             |                  |            |         |                              |               |                  |               |          |               |          |                    | i                       |                     |              |                 |                      |                 |
| 2                | 75 m                    |          |             |                  | (7)        |         |                              |               |                  |               |          |               | 33       |                    |                         |                     |              |                 |                      |                 |
| 9                | 50 m                    |          |             |                  |            | ٤.      |                              |               |                  |               |          |               |          |                    |                         |                     |              |                 |                      | ×               |
| 7                | 40 m                    |          |             |                  |            |         |                              |               |                  |               |          |               |          |                    |                         |                     |              | -               |                      |                 |
| 80               | 30 m                    |          |             |                  |            |         |                              |               |                  | !             |          |               |          |                    |                         |                     |              |                 |                      |                 |
| <u> </u>         | 20 m                    |          |             |                  |            |         |                              |               |                  | :             |          |               | _        |                    |                         |                     |              |                 |                      |                 |
| 10               | 10 m                    |          |             |                  |            | _       |                              |               |                  |               |          |               |          |                    |                         |                     |              | ·               |                      |                 |
| :: =             | 0                       |          |             |                  |            |         |                              |               |                  |               |          |               |          |                    |                         |                     |              |                 |                      |                 |
| 12               |                         |          |             |                  |            | -"      |                              |               |                  |               |          |               |          |                    |                         |                     |              |                 |                      |                 |

| VESSEL    |                        |          |                  |            |           | PROJECT & LEG                | ËĞ         | !                |               |                    | STATIO                  | STATION DESIGNATION | NATION          | ·                    |                 |        |
|-----------|------------------------|----------|------------------|------------|-----------|------------------------------|------------|------------------|---------------|--------------------|-------------------------|---------------------|-----------------|----------------------|-----------------|--------|
| NOAA RA   | NOAA RV MILLER FREEMAN | EMAN     |                  |            |           | MF03-03                      |            |                  |               |                    |                         |                     |                 |                      |                 |        |
|           |                        |          |                  |            |           |                              |            |                  |               | STATE YTINE        | (,,,,,,,                | (sms) (             |                 |                      |                 |        |
| CAST #    |                        | LATITUDE | LONGITUDE        | 9 <u>9</u> | DATE JD=  | روم)O <del>-</del> ما        | TIME (GMT) | SMT) DRY BULB    | WET BULB      |                    | SPO O                   | TYPE<br>TABE        | BOTTOM<br>DEPTH |                      | STA. NAME/ID    |        |
|           | DEG                    | NEW      | DEG              | MIN        | DAY       | MO YR                        | 똪          | MIN (°C)         | (*C) (mb)     | (deg)              | (m/s)                   | •                   | (m)             |                      |                 |        |
| 015       | 56 25                  | 15       | N 6013           | •          | 39 WO 3 M | A R 0                        | 30554      | <u>고</u>         | 1 3.018       | 37                 | ) EE                    | 189                 | -               |                      | کر<br>2         | Ø      |
| SBE 9Plus | 91220A                 |          | TIMES            | JD/TIME    | M         |                              |            |                  | DATA LOCATION | 10 N.S.            | <u>ix</u>               | REMARKS             |                 |                      |                 |        |
| PRESS SN  | 80020                  |          | DATA ON          |            |           |                              | Tape/Di    | Tape/Diskette ID | File Na       | File Name/Header   |                         | Wer                 | WETSTAN         | 1                    |                 |        |
| PRI COND  | 915                    |          | START DOWN       |            |           |                              |            |                  |               |                    |                         | 2660 SE             | 966             |                      |                 |        |
| PRI TEMP  | 710                    | Ä        | АТ ДЕРТН         |            |           | •                            |            |                  |               | ,                  | 1                       | Seoth               | do Softon (     | Stant F              | 2000            | المرات |
| SEC COND  | 530                    | ¥        | AT SURFACE       |            |           |                              |            |                  |               |                    |                         | MAX. DEPTH =        | ا <u>ٿ</u> و    | O'E                  | •               | า      |
| SEC TEMP  |                        | _        | V WETStar S/N 99 | 66 ¥       |           |                              |            |                  |               | Cleaned            | Cleaned air bleed valve | raive               |                 |                      |                 |        |
|           |                        |          |                  | СТО        | CONVER    | CTD CONVERTED MONITOR VALUES | VALUES     |                  |               | SAMPLE BOTTLE DATA | E DATA                  | SA                  | WPLE BOTT       | SAMPLE BOTTLE NUMBER | ~               |        |
| Pos.      | TRIP DEPTH             | PRESSURE | PR               | PRI, TEMP. | S         | SEC. TEMP.                   | g.         | PRI. SALINITY    | SEC. SALINITY | SALINITY           |                         | SAL.                | NUTR.           | 븅                    | WHIT'S<br>NUTR. |        |
| -         | 5 m from bottom        | ce       |                  |            | 40)<br>•, | ē                            |            |                  |               | 1.00               |                         | 14                  |                 |                      |                 |        |
| - 2       | 200 m                  |          |                  |            |           |                              |            | :                |               |                    |                         |                     |                 | _                    |                 |        |
| ဇ         | 150 m                  |          |                  |            |           | Fi                           |            |                  | .•            |                    |                         |                     |                 |                      | ,               |        |
| 4         | 100 m                  |          |                  | -          |           |                              |            |                  |               |                    |                         |                     |                 |                      |                 |        |
| တ         | 75 m                   |          | _                |            |           |                              |            |                  | 5.6           | ,                  |                         |                     |                 |                      |                 |        |
| ဖ         | £ 09                   |          |                  |            | ų         |                              |            |                  |               |                    |                         |                     | -               |                      | ¥1              |        |
| 7         | 40 m                   |          |                  |            |           |                              |            |                  |               |                    |                         |                     |                 |                      |                 |        |
| 80        | 30 m                   |          |                  |            |           |                              |            |                  |               |                    |                         |                     |                 |                      |                 |        |
| თ         | 20 m                   |          |                  |            | _         |                              |            |                  |               |                    |                         | ٨                   |                 |                      |                 | 4      |
| 10        | 10 m                   |          |                  |            |           |                              |            |                  |               |                    |                         |                     | •               |                      | _               |        |
| æΣ        | E O                    |          |                  |            |           |                              |            | Si.              |               |                    |                         |                     |                 |                      |                 |        |
| 12        |                        |          |                  |            |           |                              |            |                  |               |                    |                         |                     |                 |                      |                 |        |

| VESSEL                 |                 |             |                  |          | PROJE                        | PROJECT & LEG | O                |               |          |               |                               |                         | STATION    | STATION DESIGNATION | ATION                |        |                 |     |
|------------------------|-----------------|-------------|------------------|----------|------------------------------|---------------|------------------|---------------|----------|---------------|-------------------------------|-------------------------|------------|---------------------|----------------------|--------|-----------------|-----|
| NOAA RV MILLER FREEMAN | ER FREEMAN      |             |                  |          | MF03-03                      | 63            |                  |               |          |               |                               |                         |            |                     |                      |        |                 |     |
|                        |                 |             |                  |          |                              |               |                  |               | ·        |               | SSUSS:<br>STATS A<br>YTIJIBIS | Class                   | (amt)      |                     | 7                    |        |                 | -   |
| CAST#                  | LATITUDE        |             | LONGITUDE        | DATE     | ġ                            | 190           | TIME (GMT)       | (T) DRY BULB  | _        | WET BULB      | /3S .                         | DIRN.                   | SP OLO     | q/T                 | DEPTH                |        | STA. NAME/ID    | -   |
| DEG                    | NIW             | DEG         | WIIN             | D¥       | WO<br>'A                     | Œ             | Æ                | Will (C)      | <u> </u> | (C) (mp)      |                               | (6ap)                   | . (s/m)    | •                   | Œ                    |        |                 | 246 |
| 01656                  | 29.99           | ر<br>ا<br>ا | 6059.86          | w ○ 3    | ⋖:                           | R 0 3         | 164              | 1<br>7        | 0        | 3.52×3        | 7                             | CO<br>-                 | 100        | ~                   | 9                    |        | 3               | M   |
| SBE 9Plus              | 91220A          | TIMES       | ğ                | JD/TIME  |                              |               | 5.6<br>          |               | DAT      | DATA LOCATION |                               |                         | <u> </u>   | REMARKS             |                      |        |                 |     |
| PRESS SN               | 80020           | DATAON      | ,                |          |                              |               | Tape/Diskette ID | cette ID      |          | File Na       | File Name/Header              | <u>a</u>                | 3          | Ser!                | WETSTAN F/           | 1/     |                 |     |
| PRI COND               | 915             | START DOWN  | IOWN             |          |                              |               |                  |               |          |               |                               |                         | • -        | 366052              | 96                   |        |                 |     |
| PRI TEMP               | 710             | AT DEPTH    | <b>ا</b><br>ب    |          |                              |               |                  |               |          |               |                               |                         |            |                     |                      |        |                 |     |
| SECCOND                | 530             | AT SURFACE  | ACE              | j        |                              |               |                  |               |          |               |                               | į                       | M          | MAX. DEPTH =        | <b>=</b>             | ε      |                 |     |
| SEC TEMP               | 884             | <u>\$</u>   | V WETStar S/N 99 | _6       |                              |               |                  |               |          |               |                               | Cleaned air bleed valve | r bleed va | ive                 |                      |        |                 |     |
| -                      | _               |             | 5                | D CONV   | CTD CONVERTED MONITOR VALUES | ONITOR V      | ALUES            |               |          |               | SAMP                          | SAMPLE BOTTLE DATA      | DATA       | SAM                 | SAMPLE BOTTLE NUMBER | ENUMBE | ~               |     |
| POS. TRIP DEPTH        | EPTH PRESSURE   |             | PRI. TEMP.       | $\dashv$ | SEC. TE                      | TEMP.         | PRI.             | PRI. SALINITY | SEC      | SEC. SALINITY |                               | SALINITY                |            | SAL                 | NUTR.                | GHL.   | WHIT'S<br>NUTR. |     |
| 1 5 m from             | 5 m from bottom |             |                  | F) .     | 300                          | 53            |                  |               |          |               |                               | j                       |            | 38                  |                      |        |                 |     |
| 2                      | 200 m           |             |                  | -        |                              |               |                  |               |          |               |                               |                         |            |                     |                      |        |                 |     |
| m                      | 150 m           |             |                  | -        |                              |               |                  |               | _        |               |                               |                         | 10         |                     |                      |        |                 |     |
| 4                      | 100 m           |             |                  |          |                              |               | ,                |               |          |               |                               |                         |            |                     |                      |        |                 | _   |
| S                      | 75 m            | -           |                  | ;        |                              |               |                  |               |          | 16            |                               |                         |            |                     |                      |        |                 |     |
| 9                      | 20 m            |             |                  | 25       |                              |               |                  | :             |          |               |                               |                         |            |                     |                      |        | â               |     |
| 7                      | 40 m            | +-0         |                  |          | ,                            | 1             |                  | :             |          |               |                               | !                       |            |                     |                      |        |                 |     |
| 80                     | 30 m            |             |                  |          |                              |               | :                |               |          | :             |                               |                         |            |                     |                      |        |                 |     |
| 6                      | 20 m            |             |                  |          |                              |               |                  |               |          |               |                               |                         |            |                     |                      |        |                 |     |
| 10                     | 10 m            |             |                  |          |                              |               |                  |               |          |               | -                             |                         |            | v                   |                      |        | -               |     |
| E-                     | 0 m             | _           | •                |          |                              |               |                  | *             |          |               |                               |                         |            |                     |                      |        |                 |     |
| 12                     |                 |             |                  |          |                              |               |                  |               |          |               |                               |                         |            |                     |                      |        |                 |     |

| VESSEL   | SEL                     |             |                 |             | <u>a</u> | PROJECT & LEG                | 9          |                  |               |                  |                                 | STATIK                  | STATION DESIGNATION         | SNATION              |         |                 |
|----------|-------------------------|-------------|-----------------|-------------|----------|------------------------------|------------|------------------|---------------|------------------|---------------------------------|-------------------------|-----------------------------|----------------------|---------|-----------------|
| NO<br>A  | NOAA R/V MILLER FREEMAN | EMAN        |                 |             | - ₹      | MF03-03                      |            |                  |               |                  |                                 |                         |                             |                      |         |                 |
| S        | CONSEC                  | U.S.        |                 |             |          |                              |            |                  |               | RESSURE          | SEA STATE VISIBILITY  SEA STATE | DNIM                    | LOUD (amt)<br>397<br>RATHER | BOTTOM               |         |                 |
| <u> </u> | DEG                     | N N         | DEG MIN         | -           | DAIE JUZ | <u> </u>                     | Q I        | MAIN CAT BULB    | S WEI BULB    |                  | *                               | Od (8)                  | ц,                          | HE GE                | +       | STA. NAME/ID    |
| 0        | و                       | z<br>⊖<br>9 | 00              | \<br>⊗<br>* |          | A<br>R                       | <u>"</u> [ | <b>3</b>         | 3 S C         | 2538             | 10                              | ナー                      | 1 1 9                       | 99                   | -0      | X<br>0<br>0     |
| SBE      | SBE 9Plus 912           | 91220A      | TIMES           | JD/TIM      | <u>w</u> |                              |            |                  | DATA LOCATION |                  | · 1-8                           |                         | S<br>REMARKS                |                      |         | ).              |
| PRES     | PRESS SN 80020          |             | DATA ON         |             |          | I                            | Tape/Di    | Tape/Diskette ID | . 12          | File Name/Header | Header                          | '                       | Wer                         | WETSTAN              | 14      |                 |
| PRIC     | PRI COND 915            |             | START DOWN      |             |          | [                            |            |                  |               |                  |                                 |                         | 280                         | 066052               |         |                 |
| PRI TEMP | TEMP 710                |             | АТ DEРТН        |             |          | 1                            |            |                  |               |                  |                                 | ı                       | 23                          |                      |         |                 |
| SEC (    | SEC COND 530            |             | AT SURFACE      |             |          |                              |            | e<br>L           |               |                  |                                 |                         | MAX. DEPTH =                | 표=                   | ε       |                 |
| SEC.1    | SEC TEMP 884            |             | √WETStar S/N 99 | 8           |          |                              |            |                  |               |                  | Cleaned                         | Cleaned air bleed valve | valve                       |                      |         |                 |
|          |                         |             |                 | ,           | ONVERTE  | CTD CONVERTED MONITOR VALUES | VALUES     |                  |               |                  | SAMPLE BOTTLE DATA              | E DATA                  | 8                           | SAMPLE BOTTLE NUMBER | LE NUMB | <b>E</b>        |
| POS      | TRIP DEPTH              | PRESSURE    | PRI. TEMP       |             | Ÿ        | SEC. TEMP.                   | Æ          | PRI. SALINITY    | SEC. SALINITY |                  | SALINITY                        | <b>&gt;</b>             | SAL.                        | NUTR.                | : 명     | WHIT'S<br>NUTR. |
| -        | 5 m from bottom         |             |                 | •           |          | 8                            |            |                  |               |                  |                                 |                         | HI                          |                      |         |                 |
| 8        | 200 m                   | Ã.X         |                 |             |          |                              |            |                  |               |                  |                                 |                         |                             |                      |         |                 |
| 6        | 150 m                   |             |                 |             |          |                              |            |                  | .o            |                  |                                 |                         |                             |                      |         |                 |
| 4        | 100 m                   |             |                 |             |          |                              |            |                  |               |                  |                                 |                         |                             |                      |         |                 |
| ນ        | 75 m                    |             |                 | =           |          |                              |            |                  |               | 9.50             |                                 |                         |                             |                      |         |                 |
| ဖ        | E 96                    |             |                 |             | 4        |                              |            |                  |               |                  | i                               |                         |                             |                      |         | Ð               |
| 7        | 40 m                    |             | **              |             |          |                              |            |                  |               |                  |                                 |                         |                             |                      |         |                 |
| œ        | 30 m                    |             | -               |             |          |                              |            |                  |               |                  |                                 |                         |                             |                      |         |                 |
| o        | 20 m                    |             |                 |             |          |                              |            |                  |               |                  | <b>3</b> 7                      |                         |                             |                      |         |                 |
| 9        | 10 m                    |             |                 |             |          |                              |            |                  |               | 9 (              |                                 |                         |                             | •                    |         |                 |
| 4.       | 0 0                     |             |                 |             |          |                              |            | ¥                |               |                  | i                               |                         |                             |                      |         |                 |
| 12       |                         |             |                 |             |          |                              |            |                  |               |                  |                                 |                         |                             |                      |         |                 |

66 ->EK500 (saso (sasa 6 m)

PG OF

| VESSEL          | <b>6</b>               |          |            |                |         | <u> </u>    | PROJECT & LEG                | EG.    |                  |          |               |                  |                 |                         | STATION DESIGNATION | DESIG        | NATION               |         |                 |
|-----------------|------------------------|----------|------------|----------------|---------|-------------|------------------------------|--------|------------------|----------|---------------|------------------|-----------------|-------------------------|---------------------|--------------|----------------------|---------|-----------------|
| NOA             | NOAA RV MILLER FREEMAN | EMAN     | ,          |                |         | _ ₹         | MF03-03                      |        |                  |          |               |                  |                 |                         |                     |              |                      |         |                 |
| ·               |                        |          |            |                |         |             |                              |        |                  |          |               | SURE             | 3TAT2<br>YTIJI8 |                         | (tms) C             |              | iii                  |         |                 |
| CONSEC<br>CAST# |                        | LATITUDE |            | LONGITUDE      |         | ATE JO      | DATE JD=063                  | TIME   | TIME (GMT)       | DRY BULB | WET BULB      |                  | SEV S           | WIND<br>DIRN            | Cron                | TYP€         | BOTTOM<br>DEPTH      | -       | STA. NAME/ID    |
|                 | DEG                    | MIN      | BG         | MIN            |         | DAY         | MO YR                        | £      | N<br>M           | ົວ       | 9             | (m               |                 | (deg)                   | (m/s)               | •            | Έ)                   |         |                 |
| 0               | 20                     | Z        | 104        | -T<br>6-       | M<br>T  | M<br>H<br>O | A R O                        | 9<br>0 | N<br>V           | <u>.</u> | <u>ල</u>      | 5304             |                 |                         | #                   |              |                      | +       |                 |
| SBE 9Plus       | Plus 91220A            |          | TIMES      |                | JD/TIME |             |                              |        |                  |          | DATA LOCATION | MOIT             |                 | •                       | <b>.</b>            | REMARKS      |                      |         |                 |
| PRESS SN        | SN 80020               |          | DATA ON    |                |         |             | 1                            | Таре   | Tape/Diskette ID | ₽        | ¥.            | File Name/Header | e/Heade         | _                       | 3                   | Jer.         | WET STAN             | 7       |                 |
| PRI COND        | ND 915                 |          | START DOWN | N.             |         |             | ı                            |        |                  | :        |               |                  |                 |                         | Las                 | 2809P        | 96                   |         |                 |
| PRI TEMP        | MP 710                 |          | АТ ОЕРТН   |                |         |             | I                            |        |                  |          | ·<br>         |                  |                 |                         | נע                  | SITE         | d                    |         |                 |
| SEC COND        | OND 530                |          | AT SURFACE | щ              | [       |             |                              |        | [                |          |               |                  |                 |                         | MA                  | MAX. DEPTH = | #<br>T               | E       |                 |
| SEC TEMP        | EMP 884                |          | WE         | WETStar S/N 99 |         |             |                              |        |                  |          |               |                  |                 | Cleaned air bleed valve | bleed val           | 2            |                      |         |                 |
|                 |                        |          |            |                | CTD CO  | NVERTE      | CTD CONVERTED MONITOR VALUES | VALUES |                  |          |               |                  | SAMPLI          | SAMPLE BOTTLE DATA      | DATA                | 1            | SAMPLE BOTTLE NUMBER | LE NUMB | #<br> <br>      |
| POS.            | TRIP DEPTH             | PRESSURE |            | PRI. TEMP      |         | SEC         | SEC. TEMP.                   |        | PRI. SALINITY    | Σ        | SEC. SALINITY | È.               |                 | SALINITY                |                     | SAL.         | NUTR.                | GH.     | WHIT'S<br>NUTR. |
| -               | 5 m from bottom        | 89       |            |                | *       | 31          | 36                           |        | ٠                |          |               |                  |                 |                         | 1                   |              |                      |         |                 |
| 7               | 200 H                  | 50       | -          |                |         |             |                              |        |                  |          |               |                  |                 |                         | · .                 |              |                      |         |                 |
| က               | 150 m                  |          |            |                |         |             |                              |        | į                |          | *             |                  |                 | :                       | -                   |              |                      |         | ,               |
| 4               | 100 m                  |          |            |                |         |             |                              |        |                  |          | -             |                  |                 |                         | !                   |              |                      |         |                 |
| S               | 75 m                   |          | -          |                |         |             |                              | ,      |                  |          |               | 72               |                 | ,                       |                     |              |                      |         |                 |
| ؈               | 50 m                   |          |            |                | ž       | į.          |                              | !      |                  |          |               |                  |                 |                         | <u> </u>            |              |                      |         | 25.             |
| 7               | 40 m                   |          | -          |                |         |             |                              |        | :                |          |               |                  |                 |                         |                     |              |                      |         |                 |
| æ               | 30 m                   |          |            |                |         |             |                              | -      |                  |          |               |                  |                 |                         |                     |              | -                    |         |                 |
| 0               | 20 m                   |          |            |                |         |             | ,                            |        |                  |          |               |                  |                 |                         |                     |              |                      |         |                 |
| 0               | 10 m                   |          |            |                |         |             |                              |        |                  |          |               |                  |                 |                         |                     |              |                      |         |                 |
| 22              | 0 0                    |          |            |                | _       |             |                              |        |                  | *        |               |                  |                 |                         |                     |              |                      |         |                 |
| 12              |                        |          | _          |                |         |             |                              |        |                  |          | i             |                  |                 |                         |                     |              |                      |         |                 |

PG OF

| VESSEL           | ۔ ا                     |                |            |                |         |          | PROJECT & LEG           | , LEG    |                  |          |               |                  |                         | STAT         | ON DESK      | STATION DESIGNATION  |           |                 |
|------------------|-------------------------|----------------|------------|----------------|---------|----------|-------------------------|----------|------------------|----------|---------------|------------------|-------------------------|--------------|--------------|----------------------|-----------|-----------------|
| NOAA             | NOAA RVV MILLER FREEMAN | FREEMAN        |            | •              |         | . 2      | MF03-03                 |          |                  |          |               |                  |                         |              |              |                      |           |                 |
|                  |                         |                |            |                |         |          |                         |          |                  |          |               | 3AUS:            | STATE<br>YTIJIB         |              |              | 201                  |           |                 |
| CONSEC<br>CAST # | S *                     | LATITUDE       |            | LONGITUDE      |         | DATE JD= | <u></u>                 | É        | TIME (GMT)       | DRY BULB | 3 WET BULB    |                  | VES .                   | O WIND       |              | BOTTOM<br>DEPTH      |           | STA. NAME/ID    |
|                  | DEG                     | MIN            | DEG        | MIN            |         | ρĄ       | Q                       | ¥<br>¥   | R<br>MIN         | 5        | <u></u>       | (qm)             | (Gep)                   | (m/s)        | •            | Ê                    |           |                 |
| 0 20             | 5 3                     | 0              | -          | 2              | Ly<br>W |          | A<br>R                  | 6        | 00               | 13.5     |               | 23 (             | 3703                    |              | 1            | - 75                 | 6         |                 |
| SBE 9Plus        |                         | 91220A         | TIMES      |                | JD/TIME | ш        |                         |          |                  | -        | DATA LOCATION | ATION            |                         |              | REMARKS      | 10                   |           |                 |
| PRESS SN         |                         | 80020          | DATAON     | -              |         |          |                         | Tap      | Tape/Diskette ID | Ω.       |               | File Name/Header | √Header                 |              | WET          | WET STAN             | 14        |                 |
| PRI COND         |                         | 915            | START DOWN | NWO            |         |          | 1                       | 7        | CTDS             | 279      | ·<br>         | ,                |                         | i            | 28.0         | 266032               |           |                 |
| PRI TEMP         |                         | 710            | AT DEPTH   | Ŧ              |         |          |                         |          |                  |          |               |                  |                         | ì            |              |                      |           |                 |
| SEC COND         |                         | 530            | AT SURFACE | ACE            | [       |          |                         |          |                  |          | :             |                  |                         |              | MAX. DEPTH = | TH=                  | ٤         | -               |
| SEC TEMP         |                         | 884            | Š          | WETStar S/N 99 | 6       |          |                         | ٠        | ,<br>,           |          |               |                  | Cleaned air bleed valve | rd air bleec | f valve      |                      |           |                 |
|                  |                         |                |            |                | сто со  | ONVERT   | DIVERTED MONITOR VALUES | )R VALUE | 85               |          |               |                  | SAMPLE BOTTLE DATA      | TLE DATA     |              | SAMPLE BOTTLE NUMBER | ILE NUMBI | 8               |
| Pos              | TRIP DEPTH              | + PRESSURE     | Щ          | PRI. TEMP      | Ą.      | SE       | SEC. TEMP.              |          | PRI. SALINITY    | ΥIII     | SEC. SALINITY | <u>N</u> LT      | SALINITY                | ΙΤΥ          | SAL.         | NUTR.                | 균         | WHIT'S<br>NUTR. |
| -                | 5 m from bottom         | tom            |            | ,              |         | Saf      | iiin                    |          |                  |          |               |                  |                         |              | 10           |                      |           |                 |
| 7                | 8                       | 200 m          |            |                |         | ,        |                         |          |                  |          |               |                  |                         |              |              |                      |           |                 |
| ဗ                | 15                      | 150 m          |            |                |         |          |                         |          | -                |          |               | ٠                |                         |              |              |                      | 36        |                 |
| 4                | 100                     | 100 m          | -          |                |         |          |                         |          |                  |          |               |                  |                         |              |              |                      |           |                 |
| 5                | 7.                      | 75 m           |            | 572            | 407     |          |                         |          |                  |          |               | 1.0              |                         |              |              |                      |           |                 |
| 9                | <b>3</b>                | 50 m           |            |                |         | 4        |                         |          |                  |          |               |                  |                         |              |              |                      |           |                 |
| 7                | . 4                     | 40 ш           | *201       | 60             |         |          |                         |          |                  |          |               |                  |                         |              |              |                      |           |                 |
| 80               | ж                       | 30 m           |            |                |         |          |                         |          |                  |          |               |                  |                         |              |              |                      |           |                 |
| 6                | 20                      | 20 m           |            |                |         | ,        |                         |          |                  |          |               |                  |                         |              |              |                      |           |                 |
| 5                | ¥                       | 10 m           |            |                |         |          |                         |          |                  |          |               |                  |                         |              |              | ٠                    |           |                 |
| ; a \Xi          |                         | E <sub>O</sub> |            |                |         |          |                         |          |                  | 8        |               |                  |                         |              |              |                      |           |                 |
| 12               |                         | 5,200          |            |                |         |          |                         |          |                  |          |               |                  |                         |              |              |                      |           |                 |

PG 21 OF

| Columbia  | VESSEL<br>NOAA R | VESSEL<br>NOAA R/V MILLER FREEMAN | EMAN     |            |        | _       | PROJECT & LEG | LEG    |              |         |            |          |            | STATI  | STATION DESIGNATION | SNATION   |          |                 |
|--|------------------|-----------------------------------|----------|------------|--------|---------|---------------|--------|--------------|---------|------------|----------|------------|--|---------------------|-----------|----------|-----------------|
| Size   Name   Cos   Name   Cos   Name   Cos   Name   Cos   | CONS             | # CAI                             | TUDE     | JONOT      |        | DATE J. | <u></u>       | TIME   |              | <b></b> | WET BULB   |          | YTIJIBISIV | QNIM<br>QNIM<br>QNIM<br>QNIM<br>QNIM<br>QNIM<br>QNIM<br>QNIM | YPE                 | BOTTOM    |          | C E L WAS       |
| STEAK  |                  | DEG                               | MIN      |            | MIN    | DAY     | Q             | 1-     |              | _       | (2.)       | (mb)     | (Gap)      | (a/s)  | 4                   | Ē         | ╂╾╌╾     |                 |
| 1/20A   Table   Tabl | 0                | 10                                | . 44     | 3          | . 00   | 70      | ۸<br>8        | 1      | 15.7         |         |            |          | 3          | 1000   |                     | 9         |          |                 |
| STANT DOWN   STA | SBE 9F           |                                   |          | TIMES      | JD/J   | ME      |               |        |              | à       | ATA LOCAT  | NO!      | 9          |  | REMARKS             |           |          |                 |
| 210   AT DEPTH   AT  | PRESS            |                                   | ,        | DATA ON    |        |         | 1             | Tape/D | iskette ID   |         |            | e Name/h | eader      |  | WET                 | STAN      | 1/       |                 |
| 270   AT DEPTH   | PR 00            |                                   |          | START DOWN |        |         | 1             | t      | -005         |         | 1          |          |            |  | 280                 | 966       |          |                 |
| Signature  | PRI TEI          |                                   |          | AT DEPTH   |        |         | i             |        |              |         | -          |          |            | -  |                     | •         |          |                 |
| South  | SECC             |                                   |          | AT SURFACE |        |         |               |        | [            |         |            |          | -          |  | MAX, DEP            | Ē         | E        |                 |
| TRIP DEPTH         PRESSURE         PRI. TEMP.         SEC. TEMP.         PRI. SALINITY         SALINITY         SALINITY         SALINITY         CPL.   | SEC TE           |                                   |          | X WETStar  | 66 N/S |         |               |        |              |         |            |          | Cleanek    | d air bleed  | valve               |           |          |                 |
| Sen from bottom         \$\$\frac{4}{7}\$         PRI, TEMP.         SEC, TEMP.         PRI, SALINITY         SALINITY         SALINITY         CH.           300 m         40         150 m   |                  | -                                 |          |            | СТО    | CONVERT | ED MONITOR    | VALUES |              |         |            |          | WPLE BOTI  | TLE DATA   |                     | MPLE BOTT | LE NUMBE | <u>۾</u>        |
| Some and the control of the control                              | SS.              | TRIP DEPTH                        | PRESSURE |            |        | SE      | C. TEMP.      | - 4    | II. SALINITY | S       | EC. SALINI |          | SALINI     | Δ  | SAL.                | NUTR.     | 동        | WHIT'S<br>NUTR. |
| 150 m 150 m 100 m 20 m 20 m 20 m 20 m  | -                | 5 m from bottom                   | 64       |            | -      | E .     | 300           |        | ;            |         |            |          |            |  | 50                  |           |          |                 |
| 150 m 75 m 50 m 40 m 30 m 30 m 70 m  | 7                | 200 m                             |          |            |        |         |               |        |              |         |            |          |            |  | ·                   |           |          |                 |
| 100 m<br>75 m<br>50 m<br>30 m<br>10 m  | က                | 150 m                             |          |            |        |         | ٠             | -      |              |         | .•         |          |            |  |                     |           |          |                 |
| 75 m<br>40 m<br>30 m<br>10 m   | 4                | 100 m                             |          |            |        |         |               | 1      |              |         |            |          |            |  |                     |           |          |                 |
| 50 m<br>40 m<br>30 m<br>10 m   | z,               | 75 m                              |          |            |        |         | Ψĝ            |        |              |         |            | 14       |            |  |                     |           |          |                 |
|  | 9                | 30 m                              |          |            |        | 600     |               |        |              |         |            | i        |            |  |                     |           |          | ×               |
|  | 7                | 40 m                              |          | <u> </u>   |        |         |               |        |              |         |            |          |            |  |                     |           |          |                 |
|  | 80               | 30 m                              |          |            | 100    |         |               |        |              |         |            |          |            |  |                     |           |          |                 |
|  | - G              | 20 m                              |          | _          | :      |         |               |        |              |         |            |          |            |  |                     |           |          |                 |
|  | 0                | 10 m                              |          |            |        |         |               |        | 1            |         |            |          |            |  |                     |           |          |                 |
| 45   | <sub>@</sub> E   | E O                               |          | •          |        |         | ,             |        |              |         |            |          |            |  |                     |           |          |                 |
|  | 12               |                                   |          |            |        | ,       |               |        |              |         |            |          |            |  |                     |           |          |                 |

PG 77 |

| VESSEL                 |            |                | -          | _ t        | PROJECT & LEG                | 99               |              |                  | 0,7                     | STATION D    | STATION DESIGNATION  | 2  |              |
|------------------------|------------|----------------|------------|------------|------------------------------|------------------|--------------|------------------|-------------------------|--------------|----------------------|--|--------------|
| NOAA RV MILLER FREEMAN | FREEMAN    |                |            |            | MF03-03                      |                  |              |                  |                         |              |                      |  |              |
|                        |            |                |            |            |                              |                  | i            | BAUS             | TATE<br>YTIJI           | (tms)        | <b>НЕ</b> В          |  |              |
| CONSEC<br>CAST#        | LATITUDE   | 의              | LONGITUDE  | DATE JE    | -OC                          | TIME (GMT) DE    | DRY BULB WET | WET BULB         | SEA S                   | SP CLOUD     | BOTTOM<br>DEPTH      |  | STA. NAME/ID |
| DEG                    | WIN        | DEG            | NIM        | DA√        | MO                           | HR               | (2.)         | (*C) (mb)        | <del></del>             |              |                      | <del>                                     </del> |              |
| 02256                  | 52.04n     | 164            | 02.9       | W 0 4      | M A R 0 3                    | 135              | 1.8 10       | 8                | 7                       | 20           | 7                    |  |              |
| SBE 9Plus              | 91220A     | TIMES          | Var        | JD/TIME    |                              |                  | DATA         | DATA LOCATION    | 14                      | REMARKS      | IRKS                 |  |              |
| PRESS SN               | 80020      | DATAON         | 1          |            | 1                            | Tape/Diskette ID |              | File Name/Header | »/Header                | 3            | WETSTAN              | 7  |              |
| PRI COND               | 915        | START DOWN     | į<br>2     |            |                              | 000              | 22           |                  |                         | 32           | 366032               |  |              |
| PRI TEMP               | 710        | АТ ОЕРТН       |            |            | 1                            |                  |              |                  |                         |              |                      | ð  |              |
| SEC COND               | 530        | AT SURFACE     |            |            |                              |                  |              |                  |                         | MAX          | MAX. DEPTH = 6       | E  |              |
| SEC TEMP               | 884        | WETStar S/N 99 | tar S/N 99 |            |                              |                  | ,            |                  | Cleaned air bleed valve | bleed valve  |                      |  |              |
|                        |            |                | CTC        | CONVERTI   | CTD CONVERTED MONITOR VALUES | ALUES            |              |                  | SAMPLE BOTTLE DATA      | ATA          | SAMPLE BOTTLE NUMBER | TTLE NUMB  |              |
| POS. TRIP DEPTH        | H PRESSURE |                | PRI, TEMP. | Š          | SEC. TEMP.                   | PRI. SALINITY    |              | SEC. SALINITY    | SALINITY                | SAL          | L. NUTR.             | 동  | WHITS        |
| 1 5 m from bottom      | ttom       | -              |            | <u> </u>   | 87                           |                  |              |                  | -                       | 32           |                      |  |              |
| 2 40.11 28             | 206 m      |                |            |            |                              |                  |              |                  |                         |              | >                    | ж.,  |              |
| 3 20 N 15              | 150 m      |                |            |            |                              |                  |              | ٠                |                         |              | -                    |  |              |
| 0                      | 790 m      |                |            |            |                              |                  |              |                  |                         |              | >                    | >  |              |
| 5                      | 75 m       |                |            |            |                              |                  |              |                  |                         |              |                      |  |              |
| ري<br>م                | 50 m       |                |            | <u>:</u> 6 |                              |                  |              |                  |                         |              |                      |  |              |
| 7                      | 40 m       | _              |            |            |                              |                  |              |                  |                         |              |                      |  |              |
| 8                      | 30 m       | ,              |            |            |                              |                  |              |                  |                         |              | -                    |  |              |
| 8                      | 20 m       |                |            |            |                              |                  |              |                  |                         |              |                      |  |              |
| 10 10                  | 10 m       | _              |            |            |                              |                  |              |                  |                         | <u> </u><br> | -                    |  |              |
| 11                     | 0          |                |            |            |                              | Đ.               |              |                  |                         |              |                      |  |              |
| 12                     |            | _              |            |            |                              |                  | _            |                  |                         | <u></u>      |                      | 1  |              |

| VESSEL           |                         |          |            |                |         |         | PROJECT & LEG           | » LEG   |                  |          |               |          |                           |                         | STATIO     | STATION DESIGNATION | NATION               |          |                 |
|------------------|-------------------------|----------|------------|----------------|---------|---------|-------------------------|---------|------------------|----------|---------------|----------|---------------------------|-------------------------|------------|---------------------|----------------------|----------|-----------------|
| NOAA             | NOAA RIV MILLER FREEMAN | EMAN     |            |                |         |         | MF03-03                 |         |                  |          |               |          |                           |                         |            |                     |                      |          |                 |
|                  |                         |          |            |                |         |         |                         |         |                  |          |               |          | SSURE<br>STATE<br>YTIJIBI | -                       | (tms) (l   |                     |                      |          |                 |
| CONSEC<br>CAST # |                         | LATITUDE |            | LONGITUDE      |         | DATE JO | 5010 au                 | 一       | TIME (GMT)       | DRY BULB | B WET BULB    |          | SEV                       | WIND<br>DIRN            | SP OLO     | 3 <b>4</b> ∕1       | ВОТТОМ<br>DEPTH      | -        | STA. NAME/ID    |
|                  | DEG                     | MIN      | DEG        | NE<br>V        |         | DAY     | Δ                       | ¥       | E<br>M<br>M      | ္မွ      | <u></u>       | (qu      |                           | (Sap)                   | (u/s)      | •                   | (ω)                  |          |                 |
| 20               | 3565                    | . 9<br>8 | 2          | 03             | 4 2 w   | 0 5     | MAR                     | 0       | 0 1 0            | 7        | 5             | 03       | 747                       | 340                     | 227        | 162                 | 10                   | 2        |                 |
| SBE 9Plus        | us 91220A               |          | TIMES      |                | JD/TIME | w       |                         |         |                  |          | DATA LOCATION | ATION    |                           |                         | <u> </u>   | REMARKS             |                      |          |                 |
| PRESS SN         | SN 80020                | 02       | DATA ON    |                |         |         |                         | Ē       | Tape/Diskette ID | te ID    |               | File Nar | File Name/Header          | *                       | <u> </u>   |                     |                      |          |                 |
| PRI COND         | đD 915                  |          | START DOWN | NWC            |         |         |                         |         |                  |          |               |          |                           |                         |            |                     |                      |          |                 |
| PRI TEMP         | P 710                   |          | АТ ОЕРТН   |                |         |         |                         |         |                  |          |               |          |                           |                         | 3          |                     |                      |          |                 |
| SECCOND          | ND 530                  |          | AT SURFACE | ñ              |         |         | ı[                      |         |                  |          | (S            |          |                           |                         | Ϋ́         | MAX. DEPTH =        | Ţ.                   | E        |                 |
| SECTEMP          |                         |          | WE         | WETStar S/N 99 | 0       |         |                         |         |                  |          | ,             |          |                           | Cleaned air bleed valve | r bleed va | ılve                |                      |          |                 |
|                  |                         |          |            |                | CTD CC  | ONVERT  | ONVERTED MONITOR VALUES | JR VALL | JES              |          |               |          | SAMP                      | SAMPLE BOTTLE DATA      | DATA       |                     | SAMPLE BOTTLE NUMBER | LE NUMBE | <b>E</b>        |
| POS.             | ткір рертн              | PRESSURE | ,,,        | PRI. TEMP      | ΜP.     | SE      | SEC. TEMP.              |         | PRI. SALINITY    | LINITY   | SEC. SALINITY | Σ        |                           | SALINITY                |            | SAL.                | NUTR.                | CHL.     | WHIT'S<br>NUTR. |
| -                | 5 m from bottom         | 100      |            |                |         |         |                         |         |                  |          |               |          |                           |                         |            | 35                  |                      |          |                 |
| 7                | 200 m                   | 13.5     |            |                |         |         |                         |         |                  |          |               |          |                           |                         |            |                     | 7                    |          |                 |
| - п              | 150 m                   |          |            |                |         |         | De .                    |         |                  |          |               |          |                           |                         | 145        |                     |                      |          |                 |
| 4                | 100 m                   |          |            |                |         |         |                         |         |                  |          |               |          |                           |                         |            |                     |                      |          |                 |
| 2                | 75 m                    |          |            |                |         |         |                         |         |                  |          |               |          |                           | ,                       |            |                     |                      |          | ,               |
| æ                | 50 m                    |          | ů.         |                |         |         |                         |         |                  |          |               |          |                           |                         |            |                     |                      |          |                 |
| 7                | 40 m                    |          |            |                | 18      |         |                         |         |                  |          |               |          |                           |                         |            |                     |                      |          |                 |
| 60               | 30 m                    |          |            |                |         |         |                         |         |                  |          |               |          |                           |                         |            |                     |                      |          |                 |
| G)               | 20 m                    |          |            |                |         |         |                         |         |                  |          |               | 1.0      |                           |                         |            |                     |                      |          |                 |
| 9                | 10 m                    |          |            |                |         |         |                         |         |                  |          |               |          |                           |                         |            |                     |                      |          |                 |
| Ξ                | 0                       |          |            |                |         |         |                         |         |                  |          |               |          |                           |                         |            |                     |                      |          |                 |
| 52               |                         |          |            |                |         |         |                         |         |                  | (B)      |               |          |                           |                         |            |                     |                      |          |                 |

| VESSEL           |                         |          |            |                       |         | <u> </u> | PROJECT & LEG                | EG     |                  |          |                 |                  |                    | STATI                   | ON DESI               | STATION DESIGNATION  |               |                 |
|------------------|-------------------------|----------|------------|-----------------------|---------|----------|------------------------------|--------|------------------|----------|-----------------|------------------|--------------------|-------------------------|-----------------------|----------------------|---------------|-----------------|
| AA RW            | NOAA RIV MILLER FREEMAN | $\dashv$ |            |                       |         | Ž        | MF03-03                      |        |                  |          |                 |                  |                    |                         |                       |                      |               |                 |
| •                |                         |          |            |                       |         |          |                              |        |                  |          |                 | 3AU&:            | STATE              |                         |                       |                      |               |                 |
| CONSEC<br>CAST # | LATITUDE                |          | 거          | LONGITUDE             |         | ATE JO   | DATE JD= O.C.                | TIME   | TIME (GMT) D     | DRY BULB | WET BULB        | PRES             |                    | D WIND                  | CLOUI<br>TYPE<br>TABE | BOTTOM<br>DEPTH      | $\overline{}$ | STA. NAME/ID    |
| ٥                | DEG MIN                 | _        | DEG        | Min                   |         | DAY      | MO YR                        | R HR   | MIN              | (0.)     | (00)            | (que)            | .     (deg)        | (m/s)                   | •                     | Ē                    |               |                 |
| 720              | 5707.0                  | Z        | 164        | 50                    | M H E   | OMMAR    | 0                            | 3 O S  | ⊗<br><u>≠</u>    | 1.8      | -               | ~//              | 4                  | 61                      | স<br>১                |                      | Ь             |                 |
| SBE 9Plus        | 91220A                  | <u> </u> | TIMES      |                       | JD/TIME | 110      |                              |        |                  | ,        | DATA LOCATION   |                  | M-8, 8 mi          |                         | SC<br>REMARKS         |                      |               |                 |
| PRESS SN         | 80020                   | å        | DATA ON    |                       |         |          | I                            | Tape/  | Tape/Diskette ID | 0        | Œ               | File Name/Header | Header             |                         | 30 9                  | TO m wolcoth         | Hy            |                 |
| PRI COND         | 915                     | <u> </u> | START DOWN | ¥                     | :       |          | !                            |        |                  |          | -               |                  |                    | <u>-</u>                | 1335                  | to it office         | P             |                 |
| PRI TEMP         | 710                     | ¥        | АТ ОЕРТН   | s.                    | ļ       |          |                              |        |                  |          | - 1<br>- 0<br>- |                  |                    | 25                      |                       |                      |               |                 |
| SEC COND         | 530                     | ¥        | AT SURFACE | щ                     | 1       |          | [                            |        |                  |          |                 |                  | [                  | _                       | MAX. DEPTH =          | 표=                   | ε             |                 |
| SEC TEMP         | 884                     |          | WET        | SGS<br>WETStar S/Need |         |          |                              |        |                  |          | 4               |                  | Cleane             | Cleaned air bleed valve | valve                 |                      |               |                 |
|                  |                         |          |            |                       | CTD     | NVERTE   | CTD CONVERTED MONITOR VALUES | VALUES |                  |          |                 |                  | SAMPLE BOTTLE DATA | TLE DATA                |                       | SAMPLE BOTTLE NUMBER | re NUMBI      | 8               |
| POS.             | TRIP DEPTH PR           | PRESSURE |            | PRI. TEMP.            |         | SEC      | SEC. TEMP.                   | -      | PRI. SALINITY    |          | SEC. SALINITY   |                  | SALINITY           | <u>L</u>                | SAL                   | NUTR.                | 동             | WHIT'S<br>NUTR. |
| 1 5п             | 5 m from bottom         |          |            |                       |         |          |                              | _      |                  |          |                 |                  |                    |                         | 44                    | 5                    | \             |                 |
| 2 40             | 290 m                   |          |            |                       |         |          |                              |        |                  |          | 4               | _                |                    |                         |                       | ,<br>/               | 61            |                 |
| 3                | √ 160.m                 |          |            |                       |         |          |                              |        |                  |          |                 |                  |                    |                         |                       | ŕ                    |               |                 |
| 4                | .√ <del>188-m</del>     |          |            |                       |         |          |                              |        |                  |          |                 |                  |                    |                         |                       |                      |               |                 |
| S                | √ <del>76</del> -m      |          |            |                       |         | :        |                              |        |                  |          |                 | _                | (4)                |                         |                       |                      |               | ,               |
| 9                | F-05                    |          |            |                       |         |          |                              |        | ×                |          |                 |                  |                    |                         |                       |                      |               |                 |
|                  | 40 m                    |          |            |                       |         |          |                              |        |                  |          |                 |                  |                    |                         |                       |                      |               |                 |
| 60               | √ 30-m                  |          |            |                       |         |          |                              |        |                  |          |                 |                  |                    |                         |                       |                      |               |                 |
| 6                | √ -30-tn                |          |            | :                     |         |          |                              |        |                  |          |                 | _/               |                    |                         |                       |                      |               |                 |
| 10               |                         | :        |            |                       |         |          |                              |        |                  |          |                 | _                |                    |                         |                       |                      |               |                 |
| 11               | 20 √ <del>0m</del>      |          |            |                       |         |          |                              |        | м,               |          |                 |                  |                    |                         | . 12.00               |                      |               |                 |
| 12               | Q                       |          |            |                       |         |          |                              |        | 3                |          |                 |                  |                    |                         |                       |                      |               |                 |
|                  |                         |          |            |                       |         |          |                              |        |                  |          |                 |                  |                    | ;<br> <br>              |                       |                      |               |                 |

| VESSEL          | بب                      |          |            |                  |                |              | PROJE                                   | PROJECT & LEG | ၂၅    |                  |            |               |                  |                      |                         | STATIO                 | N DES                    | STATION DESIGNATION  | _        |                 |
|-----------------|-------------------------|----------|------------|------------------|----------------|--------------|---|---------------|-------|------------------|------------|---------------|------------------|----------------------|-------------------------|------------------------|--------------------------|----------------------|----------|-----------------|
| NOAA            | NOAA R/V MILLER FREEMAN | REEMAN   |            |                  |                |              | MF03-03                                 | 23            |       |                  |            |               |                  |                      |                         |                        |                          |                      |          |                 |
| CONSEC<br>CAST# |                         | LATITUDE |            | LONGITUDE        | 70E            | DA<br>I      | Y \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | 3             | TIME  | TIME (GMT)       | ORY BULB   | WET BULB      | PRESSURE         | SEA STATE YTIJIBISIV | WIND<br>DIRN.           | WIND OHO CERTIFICATION | CLOUD (amt) TYPE WEATHER | ВОТТОМ<br>ОЕРТН      |          | STA. NAME/ID    |
| _               | DEG                     | NIM      | DEG        |                  | Z<br>Z         | DAY          | . ≥                                     | ¥             | 품     | Z                | õ          | ę             | (qm)             |                      | (dea)                   | . (s/ш)                | •                        | (5                   |          | ,               |
| 0               | ۲                       | 24.77 N  |            | 5                | - Lt-          | × 0          | $\square$                               |               | )     |                  | (¢         | J             |                  | 4                    |                         |                        | 6<br>6<br>00             |                      | 00       |                 |
| SBE 9Pfus       |                         | 91220A   | TIMES      |                  | ğ              | JO/TIME      |   |               |       |                  | 1.         | DATALOCATION  | NOI              |                      |                         | 04                     | REMARKS                  | ·<br>Ø               |          |                 |
| PRESS SN        |                         | 80020    | DATA ON    | _                | 1              |              |   |               | Tape  | Tape/Diskette ID | <u>0</u>   | Ī             | File Name/Header | »/Heade              | <b>-</b>                | <u> </u>               | AD S                     | TO m. ishockh        | Post A   | 9               |
| PRI COND        |                         | 915      | START DOWN | OWN              |                |              |   |               |       |                  |            |               |                  |                      |                         | И                      | ahra                     | Laro sample, takes   | mole     | 700             |
| PRI TEMP        |                         | 710      | АТ ОЕРТН   | I                | ·              |              |   |               |       |                  |            |               |                  |                      |                         |                        | 4                        | the Me               |          |                 |
| SEC COND        |                         | 530      | AT SURFACE | ACE              | -              |              |   | ı             |       |                  |            |               |                  | [                    |                         | _≥                     | MAX. DEPTH               | 7H=                  | E<br>1   |                 |
| SEC TEMP        |                         | 884      | > <u>*</u> | WETStar S/N (#5) | 8 68<br>S/N 68 |              |   | ,             |       |                  |            | ,             |                  |                      | Cleaned air bleed valve | y beeld                | aive                     |                      |          |                 |
|                 |                         |          |            |                  | ts             | D CONVE      | CTD CONVERTED MONITOR VALUES            | NITOR \       | ALUES |                  |            |               |                  | SAMPL                | SAMPLE BOTTLE DATA      | DATA                   |                          | SAMPLE BOTTLE NUMBER | TLE NUME | E E             |
| POS             | TRIP DEPTH              | PRESSURE | ឃ          | 8                | PRI. TEMP.     |              | SEC, TEMP                               | ΜP.           | •     | PRI. SALINITY    | <u></u> ΔΙ | SEC, SALINITY | <u>`</u>         |                      | SALINITY                |                        | SAL                      | NUTR.                | 섕        | WHIT'S<br>NUTR. |
| -               | 5 m from bottom         | Ę        |            |                  |                |              |   |               |       | ,                |            | -             |                  |                      |                         | - 11                   |                          | <u></u>              |          |                 |
| ~               | HO 200-11               | E        |            |                  |                |              |   |               |       |                  |            |               |                  |                      |                         |                        |                          | 1                    |          | ·               |
| m               | AO 150m                 | Œ        |            |                  |                |              |   |               |       |                  |            |               |                  |                      |                         | /w                     |                          | /                    |          |                 |
| 4               | O<br>E                  | #        |            |                  |                |              |   |               |       |                  |            |               |                  |                      |                         |                        |                          | /                    | ſ        |                 |
| vo              | 羟                       | Ē        |            | Ì                |                |              |   |               |       |                  |            |               |                  |                      |                         |                        |                          |                      |          | ,               |
| ထ               | SB-m                    | Ę        |            |                  |                | -            |   |               |       |                  |            |               |                  |                      |                         | -                      |                          |                      |          |                 |
| ,               | 97                      | 40-т     |            |                  | 33             |              |   |               |       |                  |            |               |                  |                      |                         |                        |                          |                      |          |                 |
| 80              | <del>11.000</del>       | F        |            |                  | ļ              |              |   |               |       |                  |            |               |                  |                      |                         |                        |                          |                      |          |                 |
| σ               | H-98                    | Ę        |            |                  |                |              |   |               |       |                  |            |               |                  |                      |                         |                        |                          |                      |          |                 |
| 5               | 40·m                    | ŧ        |            |                  |                |              |   |               |       |                  |            |               |                  |                      |                         |                        |                          |                      |          |                 |
| Ξ               | 4                       | -G-      |            |                  |                |              |   |               |       |                  | 1.0        |               |                  |                      |                         |                        |                          |                      |          |                 |
| 12              |                         |          |            |                  |                | <del>"</del> |   |               |       | 10               |            |               | _                |                      |                         |                        |                          |                      |          |                 |
|                 |                         |          |            |                  |                |              |   |               |       |                  |            |               |                  |                      |                         |                        |                          |                      |          |                 |

PG 226 OF

| VESSEL           | 岀                      |           |            |                 |         | PROJECT & LEG           | . & LEG       |                  |          |               | ļ                |                         | STATION DESIGNATION | DESIGN        | ATION                |        |                 |
|------------------|------------------------|-----------|------------|-----------------|---------|-------------------------|---------------|------------------|----------|---------------|------------------|-------------------------|---------------------|---------------|----------------------|--------|-----------------|
| NOA              | NOAA RV MILLER FREEMAN | REEMAN    |            |                 |         | MF03-03                 |               |                  |          |               | ,                |                         |                     |               |                      |        |                 |
|                  |                        |           |            |                 |         |                         |               |                  |          |               | <b>BTAT</b> 8    | YTIJK                   | (tms) (             |               |                      |        |                 |
| CONSEC<br>CAST # |                        | LATITUDE  | <u> </u>   | LONGITUDE       | ð       | DATE JO=                | 岸             | TIME (GMT)       | DRY BULB | WET BULB      |                  | VIND<br>DIRN.           | SP OUT              | TYPE<br>ITA3W | BOTTOM<br>DEPTH      |        | STA. NAME/ID    |
|                  | DEG                    | MIN       | DEG        | Z               |         | DAY                     | <u>∓</u><br>¥ | H<br>N           | õ        | Ş             | (qu)             | (dea)                   | • (s/w)             |               | Ê                    |        |                 |
| ে<br>ত           | 4                      | 31.96 N   |            | 1120.9          | Ωo<br>≥ | MAR                     | 0 3           | ₩Ÿ               | - 2      |               | 3                | $\triangle$             | 1 E                 | 7             | 69                   |        |                 |
| SBE 9Plus        |                        | 91220A    | TIMES      |                 | JD/TIME |                         |               |                  | ,        | DATA LOCATION | N<br>O           |                         | <u> </u>            | REMARKS       |                      | ,      |                 |
| PRESS SN         |                        | 80020     | DATA ON    |                 |         |                         | _ <u></u>     | Tape/Diskette ID | <u> </u> | File          | File Name/Header | ader                    |                     | 70 W          | Isoba                | Soft   |                 |
| PRI COND         |                        | 915       | START DOWN | Ę.              |         |                         |               | T002             | of d     | <br>          |                  |                         | -43                 | Ine           |                      |        |                 |
| PRI TEMP         |                        | 710       | АТ БЕРТН   | •*              |         |                         | ļ             |                  |          |               |                  |                         | i                   |               |                      |        |                 |
| SEC COND         |                        | 530       | AT SURFACE | щ               | ì       |                         |               |                  |          |               |                  |                         | MA.                 | MAX. DEPTH =  | 49=1                 | E      |                 |
| SEC TEMP         |                        | 884       | X          | WETStar S/N 839 |         |                         |               |                  |          |               |                  | Cleaned air bleed valve | r bleed val         |               |                      |        |                 |
|                  |                        |           |            |                 | стοα    | NIVERTED MONITOR VALUES | TOR VALU      | ES               |          |               | SAM              | SAMPLE BOTTLE DATA      | DATA                |               | SAMPLE BOTTLE NUMBER | ENUMBE | <u>«</u>        |
| Pos              | TRIP DEPTH             | PRESSURE  |            | PRI. TEMP.      |         | SEC, TEMP.              |               | PRI. SALINITY    | ury .    | SEC. SALINITY | <u></u>          | SALINITY                | 3                   | SAL.          | NUTR.                | Ŗ.     | WHIT'S<br>NUTR. |
| -                | 5 m from bottom        | 6.4<br>ma |            |                 |         |                         |               |                  |          | ,             |                  |                         | 8                   | که            |                      | _      |                 |
| 2                | √0 <u>#96</u> ™        | E         |            |                 |         |                         |               |                  |          |               |                  |                         |                     | 7             |                      |        |                 |
| ю                | 20 t69m                | Į.        |            |                 |         |                         |               |                  |          |               |                  |                         |                     |               | 7                    |        |                 |
| 4                | Å 480-m                | Ŧ         |            | ,               |         |                         |               |                  |          |               |                  |                         |                     |               | 7                    | 42     |                 |
| 2                | 75                     | 75 m      |            |                 |         |                         |               |                  |          |               |                  | 2.                      |                     |               |                      |        |                 |
| g                | 95                     | 50 m      | e:         |                 |         |                         |               |                  |          |               |                  |                         |                     |               |                      |        |                 |
| 7                | 40                     | #0 P      |            | •               |         |                         |               |                  |          |               | -                |                         |                     |               |                      |        |                 |
| 80               | 30                     | 30 m      |            |                 |         |                         |               |                  |          |               |                  | :                       |                     |               |                      |        |                 |
| 6                | 8                      | 20 m      |            |                 |         |                         |               | i                |          |               |                  |                         | _                   |               |                      |        |                 |
| 10               | 10                     | 10 m      |            |                 |         |                         |               |                  |          |               |                  |                         |                     |               |                      |        |                 |
| 11               | 0                      | E O       |            |                 |         |                         | -             | :                |          |               |                  |                         |                     |               |                      |        |                 |
| 12               |                        |           |            |                 |         |                         |               | 147              |          | ļ             |                  |                         |                     |               |                      |        |                 |
|                  |                        |           |            |                 |         |                         |               |                  |          |               |                  |                         |                     |               |                      |        |                 |

PG 24 OF

|                        |                                       |                         |            |        | PROJECT & LEG           | LEG              | 2             |               |                                     |                         | STATION DESIGNATION                      | GNATION              |          |                 |
|------------------------|---------------------------------------|-------------------------|------------|--------|-------------------------|------------------|---------------|---------------|-------------------------------------|-------------------------|--|----------------------|----------|-----------------|
| NOAA RV MILLER FREEMAN |                                       | Ī                       |            |        | MF03-03                 |                  |               | <u> </u>      |                                     |                         |  | i                    | *        |                 |
| LATITUDE               |                                       | LONGITUDE               | TUDE       | DATE   | <u>"</u>                | TIME (GMT)       | DRY BULB      | WET BULB      | PRESSURE<br>SEA STATE<br>VISIBILITY | WIND WI                 | S WING<br>CLOUD (amt)<br>TYPE<br>APHTAEN | BOTTOM               |          | STA. NAME/ID    |
|                        |                                       | DEG                     | MIN        | DΑΥ    | MO                      | YR HR MIN        |               | (.0)          | (mb)                                | Ť                       | •  |                      | $\vdash$ |                 |
| z<br>>0                | -                                     | 6737                    | » > o. (   | 0      | MARO                    | 3 1 3 1 7        | 9 - 1         | 40.1-         | 5H2                                 | 177                     | 78 2                                     |                      | _        |                 |
| 91220A TII             | ፰                                     | TIMES                   | JD/TIME    | ¥      |                         | •                |               | DATA LOCATION | -                                   |                         | REMARKS                                  |                      |          |                 |
|                        | 6                                     | DATA ON                 |            |        |                         | Tape/Diskette ID |               | File          | File Name/Header                    | _                       | 30 C                                     |                      | Isobath  | _               |
|                        | £O.                                   | START DOWN              | ļ          |        | ļ                       | CT0              | 629           |               |                                     |                         | L'ME                                     | V                    |          |                 |
|                        |                                       | АТ DEРТН                |            |        | 5                       |                  |               |               |                                     |                         |  |                      |          |                 |
| ,                      |                                       | AT SURFACE              | İ          |        |                         |                  |               |               |                                     |                         | MAX. DEPTH =                             | тн= 6 <i>4</i>       | E        |                 |
|                        |                                       | Sug<br>WETStar S/N. 302 | SAS<br>SNA |        |                         |                  | 13            |               | N<br>V                              | Cleaned air bleed valve | eed valve                                |                      |          |                 |
|                        |                                       |                         | сто со     | CONVER | NIVERTED MONITOR VALUES | 3 VALUES         |               |               | SAMPLE                              | SAMPLE BOTTLE DATA      |  | SAMPLE BOTTLE NUMBER | LE NUMBE | nc.             |
| PRESSURE               | 311                                   |                         | PRI, TEMP. | S      | SEC. TEMP.              | PRI. SA          | PRI. SALINITY | SEC. SALINITY | 8                                   | SALINITY                | SAL.                                     | NUTR.                | ᅜ        | WHIT'S<br>NUTR. |
| 44                     | · · · · · · · · · · · · · · · · · · · |                         |            |        |                         |                  |               | :             |                                     |                         | 90                                       | >                    |          |                 |
|                        |                                       |                         |            |        |                         |                  | :             |               | _                                   |                         |  | >                    |          |                 |
| ·                      |                                       |                         |            |        | 5-                      |                  |               |               |                                     |                         |  | >                    |          |                 |
|                        |                                       |                         |            |        |                         |                  |               |               |                                     |                         |  | 7                    | A.       | ·               |
|                        |                                       |                         |            |        |                         |                  |               |               |                                     |                         |  |                      |          | ,               |
|                        |                                       | <u> </u>                |            |        |                         |                  | -             |               |                                     |                         |  |                      |          |                 |
|                        |                                       |                         | ٠          |        | 59                      |                  |               |               |                                     |                         |  |                      |          |                 |
|                        | ı                                     |                         |            |        |                         |                  |               |               |                                     |                         |  |                      |          |                 |
|                        |                                       |                         |            |        | i                       |                  |               |               |                                     |                         |  | _                    |          |                 |
|                        |                                       |                         |            |        |                         |                  |               |               |                                     |                         |  |                      |          |                 |
|                        | - 1                                   |                         |            |        |                         |                  |               |               |                                     |                         |  |                      |          |                 |
|                        | i                                     |                         |            |        |                         | i                |               |               |                                     |                         |  |                      |          |                 |
|                        | 1                                     |                         |            |        |                         |                  |               |               |                                     |                         |  | <u>.</u>             |          | 1               |

PG 18 OF

| CONSECTION   CON  | VESSEL    |                 |          |          |                       |          | <del></del> | PROJECT & LEG                         | <u> </u>      |            |               |             |          |           | STAT         | ION DESI  | STATION DESIGNATION |             |                 |
|---|-----------|-----------------|----------|----------|-----------------------|----------|-------------|---------------------------------------|---------------|------------|---------------|-------------|----------|-----------|--------------|-----------|---------------------|-------------|-----------------|
| Fig. 10   Fig.  | 2         | V MILLER FREE   | MAN      |          |                       | ŀ        | ¥           | 03-03                                 |               | }          | $\dashv$      |             | ļ        |           |              |           |                     | ,           |                 |
| Column   C  | SEC       |                 |          |          |                       |          |             |                                       |               |            |               |             | ESSONE   | YTUISIS   |              | OUO (amt) |                     | -           |                 |
| 5   1   1   1   1   1   1   1   1   1   | *LS       | 0.              | TUDE     |          | ONGITUDE              |          | <u>څ </u>   |                                       | $\overline{}$ |            | ORY BULB      | <del></del> | ВЧ       | и.        | $\neg$       | CCC       |                     | -           | NAME/ID         |
| 1720A   Three   DATA LOCATION   Three   DATA LOCATION   The Objective ID   The Objectiv  | 00        | 57 y            | z<br>(+  | N N N    | ار<br>من<br>آ         | <u>₹</u> | ž<br>Ž      | ٥ ۲                                   | +==           | NIN 7      | <del></del> 1 | €           | (mp)     | 9         | 0            |           | E -                 | *********** |                 |
| Sign  | al de     |                 |          | TIMES    |                       | JD/TIME  |             |                                       |               |            |               | DATA LOCA   | NOIL     |           |              | REMARK    |                     |             |                 |
| 250   AT DEPTH   SECTED MONTOR VALUES   SEC SALINITY   SEC SALIN  | SSS       |                 |          | DATA ON  |                       |          |             | ı                                     | Tape/         | Diskette I | ₽             | 11          | ile Name | Header    |              | 80)       |                     | -85         | 7               |
| 250   AT SEPTIALE   SECTION   AT SEPTIALE   SAMPLE SOTTION   SAMPLE SOTT  | CON       |                 |          | START DO | W                     |          |             | i                                     | J             | - 1        |               | י<br>ا      |          | 1         | ĺ            | -         |                     |             |                 |
| SSO   AT SURFACE   CTD CONNEITED MONTTOR VALLES   CHARLES   CTD CONNEITED MONTTOR VALLES     | TEMF      |                 |          | AT DEPTH |                       |          | 23          | I                                     | ŀ             |            |               | '<br>       |          |           | Ī            |           |                     |             |                 |
| National Professional State State   National State   Na  | NO<br>SON |                 |          | AT SURFA | 9                     |          |             |                                       |               |            |               |             |          | [         |              | MAX. DEF  | ₹<br>= #            | ε           |                 |
| TRIP DEPTH PRESSURE PRI TEMP SEC. TEMP PRI SALINITY SEC. SALINITY SAL NUTR. OH.  5 m from bottom  200   | TEM       |                 |          | X        | SLS<br>TStar S/N (66) |          |             |                                       |               |            |               |             |          | Clean     | ed air bleed | 1 valve   |                     |             |                 |
| THEP CEPTH PRESSURE PRILITEMP SEC. TEMP PRILIAMTY SEC. SALINITY SALINITY SALINITY SALINITY CH. 2-6 IN INC. 2-6 IN |           |                 |          |          |                       | CID CO   | NVERTE      | S MONITOR                             | VALUES        | ,          |               |             |          | SAMPLE BO | TTLE DATA    |           | MPLE BOT            | TLE NUMB    | Ä               |
| 200 m  150 m  100 m  40 m  20 | POS.      | ТRIР ОЕРТН      | PRESSURE | ,,,,     | PRI. TEM              |          | SEC         | TEMP.                                 | Ē             | RI. SALIN  | È             | SEC. SALIN  | ΔĮ       | SALIN     | /LII/        | SAL       | NUTR.               | Ę<br>Ę      | WHIT'S<br>NUTR. |
| 200 mr. 150 mr. 50 mr. 30 mr. 10 mr. 40 mr. 30 mr. |           | 5 m from bottom |          |          |                       |          |             |                                       |               |            |               |             |          |           |              | 26        |                     |             |                 |
| 150 m<br>50 m<br>30 m<br>30 m<br>20 m   |           | 200 m           | ,        |          |                       |          |             | , , , , , , , , , , , , , , , , , , , |               |            |               |             |          |           |              |           |                     | ,           |                 |
| 100 m. 50 m. 30 m. 10 m.  | ю.        | 150 m           |          |          |                       |          |             |                                       |               |            |               |             |          |           |              |           |                     |             |                 |
| 20 m<br>30 m<br>20 m<br>10 m  |           | 100 m           |          |          | į                     |          |             |                                       | ==            |            |               |             | â        |           |              |           |                     |             |                 |
| 50 m<br>30 m<br>20 m<br>10 m  |           | 75 m            |          |          |                       |          |             |                                       |               |            |               |             |          |           |              |           |                     |             | ,               |
| 30 m<br>20 m<br>10 m  |           | 50 m            |          | •        |                       |          |             |                                       |               |            |               |             |          |           | į            |           |                     |             |                 |
|   |           | 40 m            |          |          |                       |          |             | ,                                     | ,             |            | 4.7           | 103         |          |           |              |           |                     |             |                 |
|   |           | 30 m            |          |          |                       |          |             |                                       |               |            |               |             |          |           |              |           | ٨                   |             |                 |
|   |           | 20 m            |          |          |                       |          |             |                                       |               |            |               | :           |          |           |              |           |                     |             |                 |
|   |           | 10 m            | i        |          |                       |          | -           |                                       |               |            |               |             |          |           |              |           |                     | :           |                 |
|   |           | E 0             |          |          |                       |          |             |                                       |               |            |               |             |          |           |              |           |                     |             |                 |
|   | 12        |                 |          |          |                       |          |             |                                       |               | 8          |               |             |          |           |              |           |                     |             |                 |

| VESSEL          |                        |             |                   |            | bair.    | PROJECT & LEG                | .EG              |          |               |                         | STATIO      | STATION DESIGNATION          | NATION               |          |                 |
|-----------------|------------------------|-------------|-------------------|------------|----------|------------------------------|------------------|----------|---------------|-------------------------|-------------|------------------------------|----------------------|----------|-----------------|
| NOAA RV         | NOAA RV MILLER FREEMAN | AN          | ·                 |            |          | MF03-03                      |                  |          | 4             |                         |             |                              |                      |          |                 |
| CONSEC<br>CAST# | LATITUDE               |             | LONGITUDE         | 17.<br>10. | DATE .D= | ä                            | TIME (GMT)       | DRY BULB | olor Law      | PRESSURE VISIBILITY     | Olio (gras) | COUD (amt)<br>YPE<br>MEATHER | BOTTOM               |          | STA NAME/ID     |
|                 | DEG                    |             | DEG               | N N        | λ        | OM<br>SY                     | _                |          | Q             |                         |             | ٠,                           | (                    | ┼        |                 |
| 029             | 580                    | ر<br>ا<br>ا | 16843             | 3.5Hw      | 5        | °                            | 200              |          |               | 0 + 4 0                 | 8510        | त                            |                      |          |                 |
| SBE 9Plus       | 91220A                 |             | TIMES             | JD/TIME    | NE NE    |                              |                  |          | DATA LOCATION | 7                       | <u>«</u>    | REMARKS                      |                      |          |                 |
| PRESS SN        | 80020                  |             | DATA ON           | İ          |          |                              | Tape/Diskette ID |          |               | File Name/Header        | _ • •       | Box                          | な                    | x 185-4  | 7               |
| PRI COND        | 915                    | S           | START DOWN        |            |          |                              | 070              | 0029     |               |                         |             |                              |                      |          |                 |
| PRI TEMP        | 710                    | 4           | AT DEPTH          |            |          |                              |                  |          |               |                         | i           |                              |                      |          |                 |
| SEC COND        | 530                    | <u> </u>    | AT SURFACE        |            |          |                              |                  |          |               |                         | 2           | MAX. DEPTH =                 | 79 =H                | E        |                 |
| SEC TEMP        | 884                    |             | X WETStar S/N 100 | SA & SA SA |          |                              | 1                |          | •             | Cleaned air bleed valve | air bleed v | alve                         |                      |          |                 |
|                 |                        |             |                   | CTD        | CONVERT  | CTD CONVERTED MONITOR VALUES | VALUES           | ı        |               | SAMPLE BOTTLE DATA      | E DATA      |                              | SAMPLE BOTTLE NUMBER | LE NUMBE | œ               |
| POS.            | TRIP DEPTH             | PRESSURE    |                   | PRI, TEMP. | <i>™</i> | SEC. TEMP.                   | PRI. SALINITY    | TINITA   | SEC. SALINITY | SALINITY                |             | SAL.                         | NUTR.                | CHL.     | WHIT'S<br>NUTR. |
| ٠.              | 5 m from bottom        | 63          |                   |            |          |                              |                  |          |               |                         |             | 11                           |                      |          |                 |
| 2               | 200 m                  |             |                   |            |          |                              |                  |          |               |                         |             | _                            |                      |          |                 |
| ю               | 150 m                  |             |                   |            |          |                              |                  |          |               |                         | -           |                              |                      |          |                 |
| 4               | 100 m                  |             |                   |            |          |                              |                  |          |               |                         |             | _                            |                      |          |                 |
| 5               | 75 m                   |             |                   |            |          |                              |                  |          |               | 7                       |             |                              |                      |          | •               |
| 9               | 50 m                   |             |                   |            |          |                              |                  |          |               |                         |             |                              |                      |          |                 |
| 7               | 40 m                   |             |                   |            |          | į                            |                  |          |               |                         |             |                              |                      |          |                 |
| 80              | 30 m                   | į           | -                 |            |          |                              |                  |          |               |                         |             |                              |                      |          |                 |
| 6               | 50 m                   |             | -                 |            |          |                              |                  |          |               |                         |             |                              |                      |          |                 |
| 10              | 10 m                   |             |                   |            |          |                              |                  |          |               |                         |             |                              |                      |          |                 |
| 7               | E O                    |             |                   |            |          |                              |                  |          |               |                         |             | $\neg$                       |                      |          |                 |
| 12              |                        |             |                   |            | 7        |                              |                  | <b>.</b> |               |                         |             |                              |                      |          | ,               |
|                 |                        |             |                   |            |          |                              |                  |          |               |                         |             |                              |                      |          |                 |

| VESSEL    | EL                      |           |                       |               | <u> </u> | PROJECT & LEG                | ១                |          |               | STA                     | ATION DES    | STATION DESIGNATION  |          |                 |
|-----------|-------------------------|-----------|-----------------------|---------------|----------|------------------------------|------------------|----------|---------------|-------------------------|--------------|----------------------|----------|-----------------|
| NOA       | NOAA RIV MILLER FREEMAN | EMAN      |                       |               | _≥       | MF03-03                      |                  |          | -             |                         |              |                      |          |                 |
|           |                         |           |                       |               |          |                              |                  |          |               |                         | (Jms) Gl     | язнт                 |          |                 |
| CONSEC    |                         | LATITUDE  | LONGITUDE             | TUDE          | DATE JO= | ال                           | TIME (GMT)       | DRY BULB | WET BULB      | SEV.                    | CLOL         | BOTTOM<br>S DEPTH    | -+       | STA. NAME/ID    |
|           | DEG                     | MIN       | DEG                   | MIN           | DAY      | MO                           | H<br>Min         | <u></u>  | (_C)          | (m/s) (ω/s)             | •            | <b>(</b>             |          | -               |
| 0         | 55755                   | 5 67 N    | 8 1671                | . 7 8         |          | MARO                         | 0                | 1        | 4             | 7040                    | <b>∞</b>     | 7 7                  | 67       |                 |
| SBE 9Plus | Plus 91220A             |           | TIMES                 | JD/TIME       | ME       |                              |                  |          | DATA LOCATION |                         | REMARKS      |                      |          | , ,             |
| PRESS SN  | S SN 80020              |           | DATA ON               |               |          | ļ                            | Tape/Diskette ID | Q e      | File Na       | File Name/Header        | Box          |                      | J 655-4  | 3               |
| PRI COND  | OND 915                 | v         | START DOWN            |               |          | ·                            | E                | 030      |               |                         |              |                      |          |                 |
| PRI TEMP  | 710 Z                   |           | АТ ОЕРТН              |               |          |                              |                  |          |               |                         |              |                      |          |                 |
| SEC COND  | OND 630                 |           | AT SURFACE            |               |          |                              |                  |          |               |                         | MAX. DEPTH = | 9                    | 4        |                 |
| SEC TEMP  |                         |           | 808<br>WETStar S/N 80 | 848<br>S/N 80 |          |                              |                  |          | ,             | Cleaned air bleed valve | ed valve     |                      |          |                 |
|           |                         | 250       | ı                     | CTD           | CONVERT  | CTD CONVERTED MONITOR VALUES | ALUES            |          |               | SAMPLE BOTTLE DATA      |              | SAMPLE BOTTLE NUMBER | TLE NUMB | 8               |
| Pos.      | TRIP DEPTH              | PRESSURE  |                       | PRI. TEMP.    | SE       | SEC. TEMP.                   | PRI. SALINITY    | , YTINI. | SEC. SALINITY | SALINITY                | SAL          | NGTR.                | 동        | WHIT'S<br>NUTR. |
| -         | 5 m from bottom         | \$2       |                       |               |          |                              | 0.0              |          |               |                         | 22           |                      |          |                 |
| 2         | 29011                   | ĝ         |                       |               |          |                              |                  |          |               |                         |              |                      |          |                 |
| 9         | 450-m                   | \.<br>\.( |                       |               |          |                              |                  | 4        |               |                         |              |                      |          |                 |
| 4         | 196m                    |           |                       |               |          |                              | ,                |          |               |                         |              |                      |          |                 |
| ιΩ        | # <del>\$</del> #       |           |                       |               |          |                              |                  |          |               | 25                      |              |                      |          |                 |
| မ         |                         |           | ¥                     |               |          |                              |                  |          |               |                         |              |                      |          |                 |
| 7         | #Q#                     |           |                       | -             |          |                              |                  |          |               |                         |              |                      |          |                 |
| 60        | 9 <del>0</del> .        |           |                       |               |          |                              |                  |          |               |                         |              |                      | b.       |                 |
| 6         | - 190 m                 |           |                       |               |          | ,                            |                  |          |               |                         |              |                      |          |                 |
| õ         | #-0#                    |           |                       |               |          |                              |                  |          |               |                         |              |                      |          |                 |
| Ŧ         | e e                     |           |                       |               |          |                              |                  |          |               |                         |              |                      |          |                 |
| 12        |                         | :         |                       |               |          | i                            |                  |          |               |                         | -            |                      |          |                 |
|           |                         |           |                       |               |          |                              |                  |          |               |                         |              |                      |          |                 |

| VESSEL          | E                      |          |            |  |             | PROJECT & LEG           | & LEG      | ,                |          |               |                  |                         | STA                     | TION DES      | STATION DESIGNATION      |            |                 |
|-----------------|------------------------|----------|------------|--|-------------|-------------------------|------------|------------------|----------|---------------|------------------|-------------------------|-------------------------|---------------|--------------------------|------------|-----------------|
| NOA             | NOAA RV MILLER FREEMAN | REEMAN   |            |  |             | MF03-03                 |            |                  | <i>i</i> |               |                  |                         |                         | j             |                          |            |                 |
|                 | ·                      | 14       |            |  |             | ٠                       |            |                  |          |               | 380              |                         |                         |               | N2                       |            |                 |
| CONSEC<br>CAST# |                        | LATITUDE | 9          | LONGITUDE  | DATE        | DATE JO- DISH           |            | TIME (GMT)       | DRY BULB | B WET BULB    | PRESS            | © ≷<br>AISIBI<br>SEV 2. | WIND WIND<br>DIRN. SPO. | TYPE<br>CLOUD | MEATH<br>BOTTOM<br>DEPTH |            | STA. NAME/ID    |
| -               | DEG                    | MIN      | DEG        | MIN  | DAY         | MO                      | Ϋ́         | HR               |          |               | (qui)            |                         | <del>-</del>            | •             | <b> </b>                 | 1          |                 |
| 0 3             | - 53                   | 50.85 N  | -          | 00   | ر<br>س<br>ا | MAR                     | -          | বে               | 1        |               |                  | 1 1                     | 3                       | K # 80        |                          | 1          |                 |
| SBE 9Plus       |                        | 91220A   | TIMES      | ĝ  | JD/TIME     |                         |            |                  |          | DATA LOCATION | NOIL             | •                       |                         | S<br>REMARKS  | S                        |            |                 |
| PRESS SN        |                        | 80020    | DATA ON    |  |             |                         | <u>. ⊨</u> | Tape/Diskette ID | Θ        | u.            | File Name/Header | //Header                |                         | SITEH         | j                        | m 1280, at | 120             |
| , PRI COND      | OND 915                | 15       | START DOWN | Z  |             |                         |            |                  |          |               |                  |                         |                         |               |                          |            |                 |
| PRI TEMP        | MP 710                 | 01       | АТ ОЕРТН   | -  |             |                         |            |                  |          | 1             |                  |                         | اً                      |               |                          |            |                 |
| SEC COND        | OND                    | 0        | AT SURFACE | 111  | ,           |                         |            | Į                | 514      |               |                  | 1                       |                         | MAX. DEPTH =  | PTH =                    | E          |                 |
| SEC TEMP        |                        | Z        | WET        | WETStar S/N W  |             |                         |            |                  |          | ,             |                  | Ş                       | Cleaned air bleed valve | nd valve      |                          |            |                 |
|                 |                        |          |            | ַט   | CTD CONVE   | NIVERTED MONITOR VALUES | OR VALU    | ES               |          |               |                  | SAMPLE BO               | SAMPLE BOTTLE DATA      |               | SAMPLE BOTTLE NUMBER     | TLE NUMB   | ER              |
| Pos             | TRIP DEPTH             | PRESSURE | 1111       | PRI. TEMP.   |             | SEC.)TEMP.              |            | PRI. SALINITY    | YTINI    | SEC. SALINITY | IITY             | SAL                     | SALINITY                | SAL           | NUTR.                    | 윰          | WHIT'S<br>NUTR. |
| 7               | 6-m-frem-bottem        | W.       |            |  |             | Î                       |            | -                | (6)      |               |                  |                         |                         | N             | >                        | 7          |                 |
| 2               | HO 308-11              | E        |            |  |             |                         |            |                  |          |               |                  |                         |                         |               | 7                        |            |                 |
| 60              | 20 tem                 | 4        | o do day   | S Bath   | 0           |                         | dod        |                  |          |               |                  |                         | ,                       |               | 7                        |            |                 |
| 4               | ()                     | F        |            | Same of the same o |             |                         |            |                  |          |               | -                |                         |                         |               | 1                        | /          |                 |
| vo:             | £.                     | Ę        | ja .       |  |             |                         |            |                  |          |               |                  | ä                       |                         |               |                          |            | ,               |
| ဖ               | <b>98</b>              | Ę.       | 36.        |  |             |                         |            | :                |          |               |                  |                         |                         |               |                          |            |                 |
| 7               | 4 <del>0.</del>        | ŧ        |            |  |             |                         |            |                  |          |               |                  |                         |                         |               |                          |            |                 |
| 60              | <b>8</b>               | <b>E</b> |            |  |             |                         |            |                  | <i>-</i> |               |                  |                         |                         |               |                          |            |                 |
| 6               | 28-11                  | ŧ        | -          |  |             |                         |            |                  |          |               |                  |                         |                         |               |                          |            |                 |
| 5               | 1 <del>0</del>         | ŧ        |            |  |             |                         |            |                  |          |               |                  |                         |                         |               |                          |            |                 |
| 7               | ф                      | E d      |            |  |             |                         |            |                  |          |               |                  |                         |                         |               |                          |            |                 |
| 12              |                        |          |            |  |             |                         |            |                  | 1        |               | _                |                         |                         |               |                          |            |                 |
|                 |                        |          |            | :  |             |                         |            |                  |          |               |                  |                         |                         |               |                          |            |                 |

| VESSEL    | ᇤ                       |                  |                       | ££               |                              | PROJE             | PROJECT & LEG | -                |               |               |                  |                         | STATIO     | STATION DESIGNATION    | NATION               |            |                 |
|-----------|-------------------------|------------------|-----------------------|------------------|------------------------------|-------------------|---------------|------------------|---------------|---------------|------------------|-------------------------|------------|------------------------|----------------------|------------|-----------------|
| NO A      | NOAA R/V MILLER FREEMAN | REEMAN           |                       |                  |                              | MF03-03           | <u>හ</u>      |                  |               |               |                  |                         |            |                        |                      |            |                 |
|           | •                       |                  |                       | ia ia            |                              | ,                 |               |                  | :             |               |                  | YIIII                   | (4000)     |                        |                      |            |                 |
| CAST #    | # C                     | LATITUDE         |                       | LONGITUDE        | DAT                          | DATE JD= CLES     |               | TIME (GMT)       | n) DRY BULB   | B WET BULB    | SEA S            |                         | SPD. CI    | CLOUD<br>TYPE<br>TTATH | ВОТТОМ<br>DEPTH      |            | STA. NAMEAD     |
|           | DEG                     | WIN              | DEG                   | Z                | DAY                          | 9 ≻               | £             | H<br>N<br>N      | 9             | <u></u>       | QE)              | (deg)                   | (m/s)      | •                      | (                    |            |                 |
| 03        | 7                       | # /              | 0<br>0<br>0<br>1<br>2 | 8                | 9<br>∞<br>8                  | $\mathbf{\Sigma}$ | 0 3           | ~ ~              | -             | 0             | 384              | 9                       |            | ₹<br>+                 | 69                   |            |                 |
| SBE 9Plus |                         | 91220A           | TIMES                 | <b>-</b> 7       | JO/TIME                      |                   |               |                  |               | DATA LOCATION | NO               |                         | <u> </u>   | REMARKS                |                      |            |                 |
| PRESS SN  |                         | 80020            | DATA ON               | 1                |                              |                   |               | Tape/Diskette ID | ifte ID       |               | File Name/Header | sader .                 |            | SITE H                 |                      | Southernor | NO MOS          |
| PRICOND   |                         | 915              | START DOWN            | NAAC             |                              |                   | <u>.</u>      |                  |               | ]             |                  |                         |            |                        |                      |            |                 |
| PRI TEMP  |                         | 710              | АТ ОЕРТН              | ·.               |                              | *                 | <u></u>       |                  |               |               |                  |                         | 4          |                        |                      | ļ          |                 |
| SEC COND  |                         | 530              | AT SURFACE            | , ice            | í                            |                   | 1             |                  | ſ             |               |                  |                         | Σ.         | MAX. DEPTH =           | 11<br>I              | E          |                 |
| SEC TEMP  |                         | 884              |                       | % WETStar S/N 9€ |                              |                   |               |                  |               |               |                  | Cleaned air bleed valve | ir bleed v | alve                   |                      |            |                 |
|           |                         |                  |                       | ,                | CTD CONVERTED MONITOR VALUES | ERTED MC          | NITOR VA      | LUES             | 1             | ·a            | SA               | SAMPLE BOTTLE DATA      | DATA       |                        | SAMPLE BOTTLE NUMBER | LE NUMBE   | ı,              |
| POS.      | TRIP DEPTH              | PRESSURE         | ,,,                   | PRI. TEMP.       |                              | SEC. TEMP.        | ą,            | PRt. S           | PRI. SALINITY | SEC. SALINITY |                  | SALINITY                |            | SAL.                   | NUTR.                | 용          | WHIT'S<br>NUTR. |
| -         | 5 m from bottom         | E                |                       |                  |                              |                   |               |                  | <u> </u>      |               |                  |                         |            | 40                     |                      |            |                 |
| 2         | HO 800-11               | Ę.               |                       |                  |                              |                   |               |                  |               |               |                  |                         |            |                        |                      |            |                 |
| 60        | AD 158-                 | •                |                       |                  |                              |                   |               |                  |               |               |                  |                         |            |                        |                      |            |                 |
| 4         |                         | - British        | 9                     |                  |                              |                   |               |                  |               |               |                  |                         |            |                        |                      |            |                 |
| r.        | F                       | <del>75.</del> m | <i>i</i>              |                  |                              |                   |               |                  |               |               |                  | 1 *                     |            |                        |                      |            | ,               |
| 9         | <b>Т</b>                | E 98             | ·                     |                  |                              |                   |               |                  |               |               |                  |                         |            |                        |                      |            |                 |
| 7         | 7                       | 40-m             |                       | •                |                              | :                 |               |                  |               |               |                  |                         |            | ,                      |                      |            |                 |
| 60        | <b>क</b>                | 30 m             |                       |                  |                              |                   |               |                  | ,             |               |                  |                         |            |                        |                      |            |                 |
| ø         | <b>5</b> 4              | 2 <del>0 m</del> |                       |                  |                              |                   |               |                  |               |               |                  |                         |            |                        |                      | _          |                 |
| 9         | F                       | 10 m             |                       |                  |                              |                   |               |                  |               |               | _                |                         | !          |                        | ,                    |            |                 |
| 7         | 7                       | E                |                       |                  |                              |                   |               |                  |               |               |                  |                         |            | 7                      |                      |            |                 |
| 12        |                         |                  |                       |                  |                              |                   |               |                  | TX            |               | $\dashv$         |                         |            |                        |                      |            |                 |
|           |                         |                  |                       |                  |                              |                   |               |                  |               |               |                  |                         |            |                        |                      |            |                 |

| VESSEL          | 1                       |          |                |                | PRC       | PROJECT & LEG                | ဗ                |                   |                          | STATION D       | STATION DESIGNATION | z                    |                |
|-----------------|-------------------------|----------|----------------|----------------|-----------|------------------------------|------------------|-------------------|--------------------------|-----------------|---------------------|----------------------|----------------|
| NOA             | NOAA R/V MILLER FREEMAN | EMAN     |                |                | MFC       | MF03-03                      |                  |                   |                          |                 |                     |                      |                |
|                 | <del></del> .           |          | **             |                | !         |                              |                  |                   | <b>BTAT</b>              | (ims)           | 83                  | <br>                 |                |
| CONSEC<br>CAST# |                         | LATITUDE | LONGITUDE      | TUDE           | DATE JO=  |                              | TIME (GMT) DRY   | DRY BULB WET BULB | PRESS<br>VISIBI<br>DIRN. | S WIND<br>CLOUD | MEATH<br>DEPTH      |                      | STA NAME/ID    |
|                 | DEG                     | MIN      | DEG            | NIM            |           | NO<br>YR                     |                  |                   | (dep)                    | (m/s)           |                     | ├                    |                |
| 03              | 3561                    | 21.42m   | _              | 3              | 90        | 2                            | 177              | 6 0.8             | 7020                     | 2 48            | <u>a</u>            | 7                    |                |
| SBE 9Plus       | Plus 91220A             |          | TIMES          | <b>JD/TIME</b> | Ä         |                              |                  | DATA LOCATION     |                          | REM             | REMARKS             |                      |                |
| PRESS SN        | S SN 80020              |          | DATA ON        |                |           |                              | Tape/Diskette ID |                   | File Name/Header         |                 | Boxa                | 5-88-3               | -3             |
| PRI COND        | OND 915                 |          | START DOWN     | }              |           |                              | CTD03            | 3                 |                          |                 |                     |                      |                |
| PRI TEMP        | WP 710                  |          | AT DEPTH       |                | 38        | ı                            |                  |                   |                          | j               |                     |                      |                |
| SEC COND        | OND 530                 |          | AT SURFACE     |                |           | Ī                            |                  |                   |                          | MAX             | MAX. DEPTH = 1 D    | ~<br>~               |                |
| SEC TEMP        |                         |          | WETStar S/N 99 | 8/N 89         |           |                              |                  | •                 | Cleaned air bleed valve  | bleed valve     |                     |                      |                |
|                 |                         |          |                | СТВ            | CONVERTED | CTD CONVERTED MONITOR VALUES | ALUES            | 4                 | SAMPLE BOTTLE DATA       | DATA            |                     | SAMPLE BOTTLE NUMBER | ÆR             |
| S.              | TRIP DEPTH              | PRESSURE |                | PRI. TEMP.     | SEC.      | SEC. TEMP.                   | PRI, SALINITY    | SEC. SALINITY     | SALINITY                 | SAL             | L. NUTR.            | 푱                    | WHITS<br>NUTR. |
| -               | 5 m from bottom         | 103      |                |                |           |                              | 88               |                   |                          | 33              | 22                  |                      |                |
| 7               | 200 m                   | :        |                |                |           |                              |                  |                   |                          |                 |                     |                      |                |
| က               | 150 m                   |          |                |                |           |                              |                  | ¥                 |                          |                 |                     |                      | - " -          |
| 4               | 100 m                   |          |                |                |           |                              |                  |                   | ;                        |                 |                     |                      |                |
| r.              | 75 m                    |          |                | ,              |           |                              |                  |                   | А                        |                 | , ,                 |                      |                |
| 9               | E 05                    |          | ,              | -              |           |                              |                  |                   |                          |                 |                     |                      |                |
| 7               | 40 m                    |          | -              | ·              |           | ·                            |                  |                   |                          |                 |                     |                      |                |
| 8               | 30 m                    |          |                |                |           |                              |                  |                   |                          |                 |                     |                      |                |
| 6               | 2S                      |          | -              |                |           |                              |                  |                   |                          |                 |                     |                      |                |
| \$              | 10 m                    |          |                |                |           |                              |                  |                   |                          |                 |                     |                      |                |
| =               | E 0                     |          |                |                |           |                              | P                |                   |                          |                 |                     |                      |                |
| 12              |                         |          |                |                |           |                              | Х                |                   |                          |                 |                     |                      |                |
|                 |                         |          |                |                |           |                              |                  |                   |                          |                 |                     |                      |                |

| VESSEL           | 15                                      |             |            | 8%             |          | PROJECT & LEG                | & LEG    |                  | _        |               |                  |                         | STATION           | DESIG        | STATION DESIGNATION  |          |                 |
|------------------|---|-------------|------------|----------------|----------|------------------------------|----------|------------------|----------|---------------|------------------|-------------------------|-------------------|--------------|----------------------|----------|-----------------|
| NOA              | NOAA RV MILLER FREEMAN                  | MAN         |            |                |          | MF03-03                      |          |                  | 200      |               |                  |                         |                   |              |                      |          |                 |
|                  | ••••••••••••••••••••••••••••••••••••••• |             |            |                |          |                              |          |                  |          |               |                  |                         | (fms)             |              |                      | _        |                 |
| CONSEC<br>CAST # |   | LATITUDE    |            | LONGITUDE      | DATE     | E .D.                        | Ĕ        | TIME (GMT)       | DRY BULB | B WET BULB    | DRESS            | SEA S<br>VISIBI         | WIND<br>SPO CLOUD | WEATH        | BOTTOM<br>DEPTH      |          | STA. NAMEAD     |
|                  | DEG                                     | N           | DEG        | MIN            | DAY      | QW >                         | ¥        | E S              | Ş        | ( <u>5</u> )  | . (qw)           | (0 <del>00</del> )      |                   |              | (#)                  | ╁─       |                 |
| 03               | 4561                                    | у<br>В<br>В | ~          | 05-193w        | 3 w D    | MAR                          |          | + - 1            |          | 6 - 2         | 2295             | 12                      |                   | 7            | 301                  |          |                 |
| SBE 9Ptus        | Nus 91220A                              |             | TIMES      | 5              | JOYTIME  |                              |          |                  |          | DATA LOCATION | NOF              | <b>-</b>                | <u> </u>          | REMARKS      |                      |          |                 |
| PRESS SN         | . SN 80020                              |             | DATA ON    | 1              |          |                              | <u> </u> | Tape/Diskette tD |          | <b>E</b>      | File Name/Header | leader                  | -                 | 80 X         | か                    | 185-3    | 3               |
| PRI COND         | ND 915                                  |             | START DOWN | I NWI          |          |                              |          | 045              | 034      |               |                  |                         |                   |              |                      |          |                 |
| PR! TEMP         | MP 710                                  |             | AT DEPTH   |                |          | (¥)                          |          |                  |          | 12            |                  |                         |                   |              |                      |          |                 |
| SEC COND         | 089<br>DNC                              |             | AT SURFA   |                |          |                              |          |                  |          |               |                  |                         | MA                | MAX. DEPTH = | 66=                  | E        |                 |
| SEC TEMP         |   |             | Ž          | WETStar S/N 99 |          |                              |          |                  |          |               |                  | Cleaned air bleed valve | ir bleed val      | <u>\$</u>    |                      | :        | :               |
|                  |   |             |            | )<br> <br>     | TD CONVE | CTD CONVERTED MONITOR VALUES | OR VALUI | ES               |          |               | S                | SAMPLE BOTTLE DATA      | E DATA            |              | SAMPLE BOTTLE NUMBER | LE NUMBE | gg.             |
| POS.             | TRIP DEPTH                              | PRESSURE    | u u        | PRI. TEMP.     |          | SEC. TEMP.                   | - 85     | PRI. SALINITY    | F        | SEC. SALINITY | Ł                | SALINITY                | _                 | SAL          | NUTR.                | CH.      | WHIT'S<br>NUTR. |
| -                | 5 m from bottom                         |             |            |                |          |                              |          | <i>3</i> 6       |          |               | lii              |                         |                   | 61           |                      |          |                 |
| 2                | 200 m                                   |             |            |                |          |                              |          |                  |          |               |                  | i.                      |                   |              |                      |          |                 |
| ю                | 150 m                                   |             |            |                |          | **                           |          |                  |          |               |                  |                         |                   |              |                      |          |                 |
| 4                | 100 m                                   |             |            |                |          |                              |          |                  |          |               |                  |                         |                   |              |                      |          |                 |
| ĸ                | 75 m                                    |             | *.         |                |          |                              |          |                  |          |               |                  | 1                       |                   |              |                      |          | ,               |
| ω                | ш<br>Э                                  |             | m)         |                |          |                              |          |                  |          |               |                  |                         |                   |              |                      |          | •               |
| 7                | 40 m                                    |             |            |                | 1.0.     |                              |          |                  |          |               |                  |                         |                   |              |                      |          |                 |
| 80               | 30 m                                    |             |            |                |          |                              |          |                  |          |               |                  |                         |                   |              |                      |          |                 |
| o                | 20 m                                    |             |            |                |          |                              |          |                  |          |               | _                |                         |                   |              |                      |          |                 |
| 9                | 10 E                                    |             |            |                |          |                              |          |                  |          |               |                  |                         |                   |              |                      | _        |                 |
| `E)#-            | E 0                                     |             |            |                |          |                              |          |                  |          |               | _                |                         | - 11              |              |                      |          |                 |
| 12               |   |             |            | 1              |          |                              |          | î                |          |               |                  |                         |                   |              |                      |          |                 |
|                  |   |             |            |                |          |                              |          |                  |          | :             |                  |                         |                   |              |                      |          |                 |

| VESSEL        | <u>п</u>                |          |            |                |         | -        | PROJECT & LEG                | LEG        |                  |               |                  |                         | STATIC     | N DESIC       | STATION DESIGNATION  |          |                 |
|---------------|-------------------------|----------|------------|----------------|---------|----------|------------------------------|------------|------------------|---------------|------------------|-------------------------|------------|---------------|----------------------|----------|-----------------|
| ¥<br>ON<br>ON | NOAA RIV MILLER FREEMAN | EEMAN    |            |                |         | 2        | MF03-03                      |            |                  |               |                  |                         |            |               |                      |          |                 |
|               | <u>.</u>                | 31       |            | T.             |         |          |                              |            |                  |               | SURE             | ALITIE                  | (,00)      | (amt) C       |                      |          |                 |
| CAST #        |                         | LATITUDE |            | LONGITUDE      |         | DATE JD= | ă                            | TIME (GMT) | SMT) DRY BULB    | JLB WET BULB  | PRES             |                         | SPD. G     | TYPE<br>TTABE | BOTTOM<br>DEPTH      |          | STA. NAME/ID    |
|               | DEG                     | MIN      | DEG        | Min            |         | DAY      | ¥Q                           | X<br>H     | MIN (C)          | (2)           | (дш)             | (deg)                   | (ш/s)      | •             | Ē                    |          |                 |
| 0<br>3<br>5   | 5                       | 58.92°   | 991        | 34.            | 2 ×     | 90       | MAR                          | 3 5        | 60               | 2 11.8        | 285              | 380t                    | - 88<br> - | 7             | 128                  | <b>∞</b> |                 |
| SBE 9Plus     |                         | 91220A   | TIMES      |                | JO/TIME | ш        |                              |            |                  | DATA LOCATION | NO               |                         | <u> </u>   | REMARKS       |                      |          |                 |
| PRESS SN      |                         | 80020    | DATA ON    |                |         |          |                              | Tape/Di    | Tape/Diskette ID | 3             | File Name/Header | leader                  | , ]        | 808           | 4                    | 88-3     | •               |
| PRI COND      | OND 915                 | 15       | START DOWN | NWC            | ,       |          |                              | 5          | 0035             |               |                  |                         | L          |               |                      |          |                 |
| PRI TEMP      | MP 710                  |          | AT DEPTH   | ·.             | ,       | 1.0      | 911                          |            |                  |               |                  |                         | 191        |               |                      |          |                 |
| SEC COND      | OND 530                 |          | AT SURFACE |                |         | 21       |                              |            |                  |               |                  |                         | 2          | MAX. DEPTH=   | 표                    | ε        |                 |
| SEC TEMP      |                         |          | Ž          | WETStar S/N 99 | 6       |          |                              |            |                  | •             |                  | Cleaned air bleed valve | r bleed v  | aive          |                      |          |                 |
|               |                         |          | }          |                | CTD C   | ONVERT   | CTD CONVERTED MONITOR VALUES | VALUES     |                  | •             | _ \&             | SAMPLE BOTTLE DATA      | DATA       |               | SAMPLE BOTTLE NUMBER | TLE NUMB | <u> </u>        |
| POS.          | TRIP DEPTH              | PRESSURE | 111        | PRI. TEMP      |         | 8        | SEC. TEMP.                   | PRI        | PRI. SALINITY    | SEC. SALINITY |                  | SALINITY                |            | SAL.          | NUTR.                | 굕        | WHIT'S<br>NUTR. |
| -             | 5 m from bottom         | 123      |            |                |         |          |                              |            | 15               |               | 9:               |                         | ,          | 39            |                      | ,        |                 |
| 2             | 200 m                   | C        |            |                |         |          |                              |            |                  |               |                  | :                       |            |               |                      |          | _               |
| <u>س</u>      | 150 m                   |          |            |                |         |          |                              |            |                  |               |                  |                         |            |               |                      |          |                 |
| 4             | 100 m                   |          |            |                |         |          |                              |            |                  |               |                  | :                       |            |               |                      |          |                 |
| 5             | 75 m                    |          |            |                |         |          |                              |            |                  |               |                  |                         | 3          |               |                      |          |                 |
| 9             | E 06                    | E        | ð          |                |         |          |                              |            |                  | 11            |                  |                         |            |               |                      |          | ,               |
| 7             | 40 m                    | E        |            |                |         |          |                              |            |                  |               |                  |                         |            |               |                      |          |                 |
| 8             | 30 m                    | E.       |            |                |         |          | :                            |            |                  |               |                  |                         |            |               |                      | -        |                 |
| 6             | 20 m                    | ĮI.      |            |                |         |          |                              |            |                  |               |                  |                         |            |               |                      |          |                 |
| 5             | 10 m                    |          |            |                |         |          |                              |            |                  |               |                  |                         |            |               |                      |          |                 |
| 11            | 0 m                     |          |            |                |         | dit ,    | ·<br>}                       |            | t<br>2           |               |                  | :                       |            |               | -                    |          |                 |
| 42            |                         |          |            |                |         |          |                              |            | 700              |               |                  | ;                       |            |               |                      |          |                 |
|               |                         |          |            |                |         |          |                              |            |                  |               |                  |                         |            |               |                      |          |                 |

| VESSEL           | ត                      |          |            |                | <u>R</u> _                   | PROJECT & LEG | 9:               |          |               |                  | ST                      | STATION DESIGNATION                   | IGNATION             |           |                 |
|------------------|------------------------|----------|------------|----------------|------------------------------|---------------|------------------|----------|---------------|------------------|-------------------------|---------------------------------------|----------------------|-----------|-----------------|
| NOA              | NOAA RV MILLER FREEMAN | REEMAN   |            |                | MF                           | MF03-03       |                  | _        |               |                  |                         |                                       |                      |           |                 |
| <u> </u>         | <del>.</del>           | 6        |            |                |                              |               |                  |          |               | BTATE<br>YTIJI8  |                         | (amt) Ol                              |                      |           |                 |
| CONSEC<br>CAST # |                        | LATITUDE | 2]         | LONGITUDE      | DATE JD=                     |               | TIME (GMT)       | DRY BULB | WET BULB      | VBS .            | WIND WIN                | 3dVT                                  | BOTTOM<br>DEPTH      |           | STA. NAMEAD     |
|                  | DEG                    | MIN      | DEG        | MIN            | DAY                          | MO            | H<br>Min         | 5        | <u>5</u>      | · (qm)           | (deg) (m/s)             | · · · · · · · · · · · · · · · · · · · | Ĵ                    | <u> </u>  |                 |
| 036              | 56                     | 03.06 W  | 2991       | 10.04 W        | W 9 8                        |               | C                | H        | 0./:          | 55               | <u>~</u>                | 58 2                                  | 77                   | 2         |                 |
| SBE 9Plus        |                        | 91220A   | TIMES      | Jar            | JD/TIME                      |               |                  | 7        | DATA LOCATION | z                |                         | REMARKS                               |                      |           |                 |
| PRESS SN         |                        | 80020    | DATA ON    |                |                              | ł             | Tape/Diskette ID |          | File          | File Name/Header |                         | 130x                                  | ちょ                   | 65-3      | 5               |
| PRICOND          |                        | 915      | START DOWN | Z              |                              | 1             | 95               | 536      |               | :                |                         |                                       |                      |           |                 |
| PRI TEMP         |                        | 710      | АТ ОЕРТН   | •              | 1,000                        | 1             | 8                |          | 1             |                  | Ĭ                       |                                       |                      |           |                 |
| SEC COND         |                        | 530      | AT SURFACE |                |                              | i             |                  |          |               |                  |                         | MAX. DEPTH =                          | 11 = HL              | E         |                 |
| SEC TEMP         |                        | 884      | X          | WETStar S/N 99 |                              |               |                  |          |               | Š                | Cleaned air bleed valve | ed valve                              |                      |           |                 |
|                  |                        |          |            | , 1            | CTD CONVERTED MONITOR VALUES | MONITORV      | ALUES            | .4       |               | SAMPLE           | SAMPLE BOTTLE DATA      |                                       | SAMPLE BOTTLE NUMBER | ILE NUMBE | ac ac           |
| Pos              | TRIP DEPTH             | PRESSURE | E E        | PRI. TEMP.     | SEC                          | SEC. TEMP.    | PRI. SALINITY    | YLINI    | SEC. SALINITY | S                | SALINITY                | SAL                                   | NGTR.                | 욯         | WHIT'S<br>NUTR. |
| -                | 5 m from bottom        | 7. Z.    | ,          |                |                              |               | 99               | •        |               | 2                |                         | 45                                    | >                    |           |                 |
| 2                | 80 com                 | £        |            |                |                              |               |                  |          |               |                  |                         |                                       | >                    |           |                 |
|                  | 60 sem                 | Æ        |            |                |                              | 37            |                  |          |               |                  |                         |                                       | ^                    | 7         |                 |
| 4                | 40 00                  | E        |            |                |                              |               |                  |          |               |                  |                         |                                       |                      |           |                 |
| s.               | O som                  | F        |            |                |                              |               |                  |          |               | 99               |                         |                                       | /                    | /         | ,               |
| 9                | #-05                   | Ŧ        |            |                |                              | :             |                  | 100      |               |                  |                         |                                       |                      |           | ,               |
| 7                | 04                     | 40 m     |            |                |                              |               |                  |          |               |                  |                         |                                       |                      |           |                 |
| , 60             | 8                      | 30 m     |            |                |                              |               |                  |          |               |                  |                         |                                       |                      |           |                 |
| 6                | 82                     | 20 m     |            |                |                              |               |                  | -        | :             | _                | ٠.                      |                                       |                      |           |                 |
| 10               | 10                     | 10 m     |            |                |                              |               |                  |          |               |                  | ,                       |                                       |                      |           |                 |
| <b>∓</b>         | 0                      | E        |            |                |                              |               |                  |          |               |                  |                         |                                       |                      |           |                 |
| 12               |                        |          | -          |                |                              |               |                  |          | ,             |                  |                         |                                       |                      |           |                 |
|                  |                        |          |            |                |                              |               |                  |          |               |                  |                         |                                       |                      |           |                 |

PG 27 OF

| VESSEL    | 15                     |              |                | _   | - A      | PROJECT & LEG                | g<br>9           |          |               |                                | S                         | STATION DESIGNATION | SIGNATION            |          |                 |
|-----------|------------------------|--------------|----------------|---|----------|------------------------------|------------------|----------|---------------|--------------------------------|---------------------------|---------------------|----------------------|----------|-----------------|
| NOAA      | NOAA RV MILLER FREEMAN | MAN          |                |   | MF       | MF03-03                      |                  | _        |               |                                |                           |                     |                      |          |                 |
|           |                        |              |                |   | -        |                              |                  |          |               | SSURE<br>STATE,<br>YTIJIBILITY |                           | (amt) OL            | язнт                 |          |                 |
| CONSEC    |                        | LATITUDE     | LONG           | LONGITUDE                                     | DATE JD= |                              | TIME (GMT)       | DRY BULB | WET BULB      | VES .                          | WIND<br>DIRN. W           | 34YT                | BOTTOM<br>DEPTH      | $\dashv$ | STA. NAME/ID    |
|           | DEG                    | NIM          | DEG            | \ <u>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</u> | DAY      | MO                           |                  | (C)      | (5.)          | (mb)                           |                           | (s/m)               | Ē                    |          |                 |
| 03        | 7557                   | . 00<br>0. C | 1660           | 9.96 w  | 8        | MAROS                        | 0461             | 2        | <u>&amp;</u>  | 82757                          | 70521                     | <u></u>             | 7 112                | 777      |                 |
| SBE 9Plus | lus 91220A             |              | TIMES          | JO/TIME                                       | IME      |                              |                  | 13       | DATALOCATION  | 7                              |                           | REMARKS             |                      | -        | (               |
| PRESS SN  | SN 80020               |              | DATA ON        | ļ   |          | I                            | Tape/Diskette ID | <u>_</u> | File          | File Name/Header               | L                         | 8                   | Boxa                 | at 85-5  | 3               |
| PRI COND  | OND 915                |              | START DOWN     | !   |          | ļ                            | CTD 8            | 53 F     |               |                                |                           |                     | į                    |          |                 |
| PRI TEMP  | MP 710                 |              | AT DEPTH       | -   |          | i                            |                  |          |               |                                |                           |                     |                      | 0        |                 |
| SECCOND   | OND 530                |              | AT SURFACE     |   |          | 1                            |                  |          |               |                                |                           | MAX. DEPTH =        | EPTH = / /           | E<br>V   |                 |
| SECTEMP   |                        |              | WETStar S/N 99 | 8 N/S   |          |                              |                  |          |               | X                              | X Cleaned air bleed valve | feed valve          |                      |          |                 |
|           |                        |              |                | 7   | CONVERTE | CTD CONVERTED MONITOR VALUES | ALUES            |          |               | SAMPLI                         | SAMPLE BOTTLE DATA        |                     | SAMPLE BOTTLE NUMBER | TLE NUMB | 8               |
| P.S.      | TRIP DEPTH             | PRESSURE     |                | PRI. TEMP.                                    | SEC      | SEC. TEMP.                   | PRI. SALINITY    |          | SEC. SALINITY |                                | SALINITY                  | SAL                 | NCTR                 | 뜐        | WHIT'S<br>NUTR. |
| -         | 5 m from bottom        | 135          |                |   |          |                              |                  |          |               |                                |                           | 59                  |                      |          |                 |
| 7         | 200 m                  |              |                |   |          |                              |                  |          | ļ             |                                |                           |                     |                      |          |                 |
| 9         | 150 m                  |              | TV.            |   |          |                              |                  |          |               |                                |                           |                     |                      |          |                 |
| 4         | 100 m                  |              |                |   | ď        |                              |                  |          |               |                                |                           |                     |                      |          |                 |
| ę,        | 75 m                   |              |                |   |          |                              |                  |          | :             |                                |                           |                     |                      |          | ,               |
| မ         | ₩ 09                   |              | ±.             |   |          |                              |                  |          |               |                                |                           |                     |                      |          |                 |
| 7         | 40 m                   |              |                |   |          | 4                            |                  |          |               |                                |                           |                     |                      | ·        |                 |
| 89        | 30 m                   |              |                |   |          |                              |                  |          |               |                                |                           |                     |                      |          |                 |
| Ф         | 20 ш                   |              |                |   |          |                              |                  |          |               |                                |                           |                     |                      |          |                 |
| 10        | 10 ш                   |              |                |   |          |                              |                  |          |               |                                |                           |                     |                      |          |                 |
| ‡         | 0 m                    |              |                |   |          |                              |                  |          | :             |                                |                           |                     |                      |          |                 |
| 12        |                        |              | -              |   |          |                              | 12               |          |               |                                |                           |                     |                      |          |                 |
|           |                        |              |                |   |          |                              |                  | ŀ        |               |                                |                           |                     |                      |          |                 |