

Not to be cited without prior reference to Marine Scotland, Marine Laboratory, Aberdeen.

**Vessel:** MV *Waterfall* (Moray First Marine)

**Survey 0922H**

**Report**

4-10 March 2023

**Ports:**

**Loading:** Buckie, 3 March 2023

**Unloading:** Buckie, 10 March 2023

**Mid-survey load/unload:** Wick, 9 March 2023

In setting the survey programme and specific objectives, etc. the Scientist-in-Charge needs to be aware of the restrictions on working hours and the need to build in adequate rest days and rest breaks as set out in Marine Scotland's Working Time Policy (Lab Notice 34/03). In addition, the Scientist-in-Charge must formally review the risk assessments for the survey with staff on-board before work is commenced.

In the interest of efficient data management it is now mandatory to return the Survey Report, to I Gibb and the Survey Summary Report (old ROSCOP form) to M Geldart, within four weeks of a survey ending. In the case of the Survey Summary Report a nil return is required, if appropriate.

**Project:** 20696 (5 days)

**Gear:** Subsurface passive acoustic moorings (incl. fish tag detectors).

Moray East Offshore Windfarm – MEOW  
Beatrice Offshore Windfarm Ltd - BOWL

**Objectives:**

1. To retrieve, service and redeploy 84 fish tracking moorings at in the BOWL and MEOW windfarms.
2. To deploy an array of 60 smolt detecting moorings to the north and to the south of the west side of the BOWL windfarm lease area.

**Narrative**

The *Waterfall* started this survey some days early in order to get ahead of poor weather. *Waterfall* sailed on Saturday 4 March from Buckie to service moorings at BOWL and deploy salmon moorings west of BOWL. The vessel returned to Buckie that same Saturday evening and scientists returned to Aberdeen.

The weather deteriorated from Sunday 5 till Tuesday 7 March and the *Waterfall* re-started the moorings work on Wednesday 8 March by steaming from Buckie to the BOWL windfarm. The scientists aboard the *Waterfall* serviced 11 moorings at the south part of the BOWL windfarm then deployed nine moorings as part of the south leg of the salmon detection array. The *Waterfall* berthed at Wick harbour that evening.

On Thursday 9 March the survey continued and moorings were serviced at BOWL and the north leg of the salmon array was deployed in full. The Waterfall berthed in Wick harbour that night.

On Friday 10 March moorings were serviced at the MEOW windfarm then the vessel returned to Buckie.

One of the moorings at MEOW, turbine ME-C16, was activated and instructed to open. This unit did not open and hence became a potential hazard to navigation should it open and release the rope in its cannister. The control staff from MEOW were contacted and an update to the notice to mariners was issued as immediate actions to remedy this situation.

The scientific staff departed and the remaining moorings and surplus weights were stored in the Buckie harbour container.

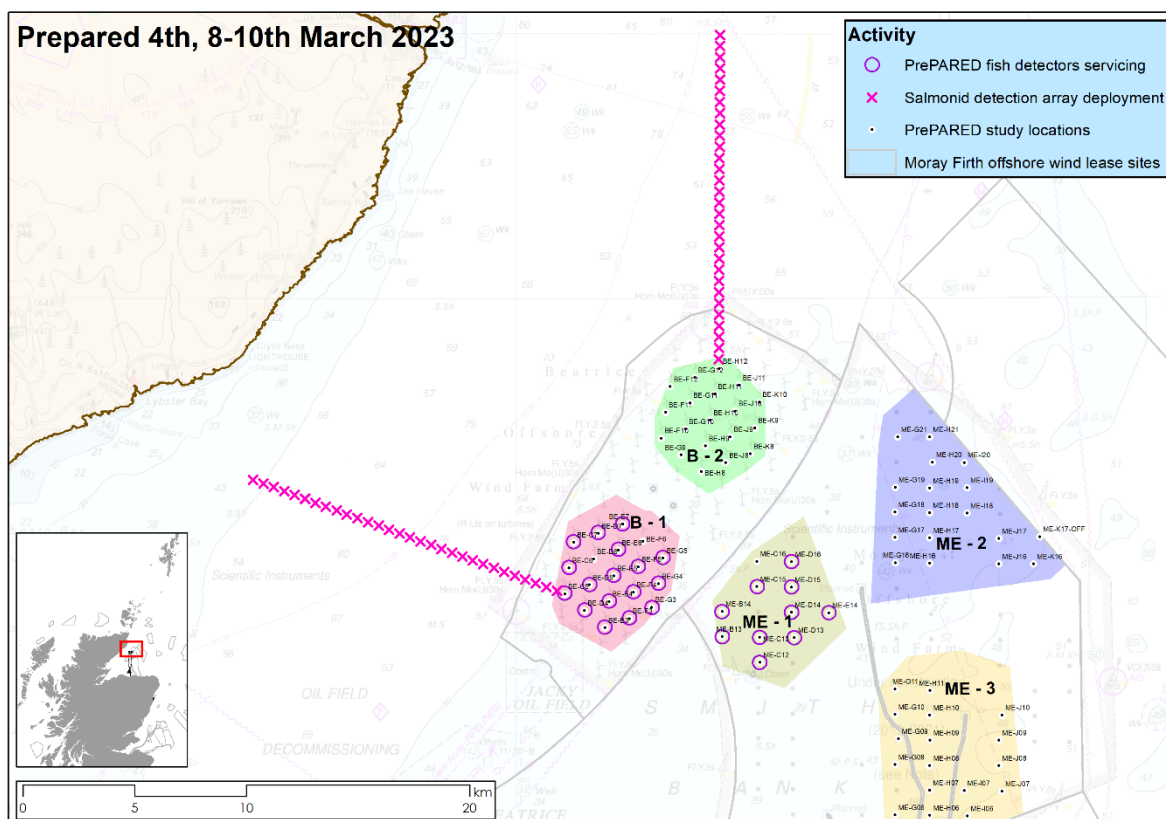
Update:

On Wednesday 15 March the activated device at ME-C16 was recovered safely using the ROV capabilities of the *Waterfall*.

## Results

Twenty seven moorings were serviced as part of the PrePARED project. 60 moorings were deployed as part of the salmon detection array.

Figure 1 shows the location of all the moorings serviced and deployed and Table 1 describes the survey activities on a day by day basis.



**Figure 1:** Location of moorings serviced and deployed during 0922H.

**Table 1: Moorings serviced and deployed during 0922H.**

| Latitude  | Longitude | Date Time        | Heading | AR_number deployed 2023 | Turbine | Activity                 | Notes  |
|-----------|-----------|------------------|---------|-------------------------|---------|--------------------------|--|
| 58.20132  | -2.9329   | 04/03/2023 11:54 | 17      | 551861                  | BE-E3   | PrePARED fish detectors  | Serviced   |
| 58.20498  | -2.91422  | 04/03/2023 12:28 | 280     | 546171                  | BE-F3   | PrePARED fish detectors  | Serviced   |
| 58.2092   | -2.89705  | 04/03/2023 12:52 | 23      | 551867                  | BE-G3   | PrePARED fish detectors  | Serviced   |
| 58.21895  | -2.89203  | 04/03/2023 13:17 | 241     | 551865                  | BE-G4   | PrePARED fish detectors  | Serviced   |
| 58.21548  | -2.911    | 04/03/2023 13:41 | 242     | 551918                  | BE-F4   | PrePARED fish detectors  | Serviced   |
| 58.21182  | -2.92968  | 04/03/2023 14:07 | 116     | 551916                  | BE-E4   | PrePARED fish detectors  | Serviced   |
| 58.2082   | -2.94823  | 04/03/2023 14:31 | 265     | 546187                  | BE-D4   | PrePARED fish detectors  | Serviced   |
| 58.21503  | -2.9636   | 04/03/2023 14:56 | 357     | 551882                  | BE-C5   | PrePARED fish detectors  | Serviced   |
| 58.21837  | -2.94438  | 04/03/2023 15:18 | 125     | 546201                  | BE-D5   | PrePARED fish detectors  | Serviced   |
| 58.22207  | -2.92608  | 04/03/2023 15:38 | 262     | 546188                  | BE-E5   | PrePARED fish detectors  | Serviced   |
| 58.22527  | -2.96     | 04/03/2023 16:26 | 198     | 551864                  | BE-C6   | PrePARED fish detectors  | Serviced   |
| 58.2159   | -2.96935  | 04/03/2023 16:34 | 219     | 551929                  | N/A     | Salmonid detection array | SOUTH 1  |
| 58.21743  | -2.97747  | 04/03/2023 16:39 | 232     | 546178                  | N/A     | Salmonid detection array | SOUTH 2  |
| 58.21897  | -2.98537  | 04/03/2023 16:43 | 270     | 552492                  | N/A     | Salmonid detection array | SOUTH 3  |
| 58.22053  | -2.99343  | 04/03/2023 16:47 | 330     | 551907                  | N/A     | Salmonid detection array | SOUTH 4  |
| 58.22208  | -3.00147  | 04/03/2023 16:50 | 297     | 551914                  | N/A     | Salmonid detection array | SOUTH 5  |
| 58.2236   | -3.0095   | 04/03/2023 16:53 | 308     | 546194                  | N/A     | Salmonid detection array | SOUTH 6  |
| 58.22517  | -3.0174   | 04/03/2023 16:56 | 341     | 551933                  | N/A     | Salmonid detection array | SOUTH 7  |
| 58.22673  | -3.02548  | 04/03/2023 17:00 | 310     | 546192                  | N/A     | Salmonid detection array | SOUTH 8  |
| 58.22822  | -3.03343  | 04/03/2023 17:03 | 299     | 551915                  | N/A     | Salmonid detection array | SOUTH 9  |
| Latitude  | Longitude | Date Time        | Heading | AR_number deployed 2023 | Turbine | Activity                 | Notes  |
| 58.2603   | -3.20097  | 08/03/2023 15:51 | 52      | 551878                  | N/A     | Salmonid detection array | SOUTH 30   |
| 58.25882  | -3.19312  | 08/03/2023 15:54 | 123     | 551881                  | N/A     | Salmonid detection array | SOUTH 29   |
| 58.25737  | -3.18522  | 08/03/2023 15:56 | 120     | 551880                  | N/A     | Salmonid detection array | SOUTH 28   |
| 58.2558   | -3.17715  | 08/03/2023 15:59 | 132     | 548287                  | N/A     | Salmonid detection array | SOUTH 27   |
| 58.25427  | -3.16922  | 08/03/2023 16:02 | 121     | 546191                  | N/A     | Salmonid detection array | SOUTH 26   |
| 58.25277  | -3.16122  | 08/03/2023 16:05 | 132     | 551893                  | N/A     | Salmonid detection array | SOUTH 25   |
| 58.252783 | -3.161333 | 08/03/2023 16:18 | 350     | 546177                  | N/A     | Salmonid detection array | SOUTH 25 floats broke so re-deployed another unit. |
| 58.2512   | -3.15328  | 08/03/2023 16:22 | 132     | 546195                  | N/A     | Salmonid detection array | SOUTH 24   |
| 58.24958  | -3.14537  | 08/03/2023 16:27 | 103     | 546181                  | N/A     | Salmonid detection array | SOUTH 23   |
| 58.24812  | -3.13713  | 08/03/2023 16:30 | 128     | 551913                  | N/A     | Salmonid detection array | SOUTH 22   |
| 58.24653  | -3.12935  | 08/03/2023 16:34 | 68      | 551856                  | N/A     | Salmonid detection array | SOUTH 21   |
| 58.24512  | -3.12128  | 08/03/2023 16:37 | 93      | 552491                  | N/A     | Salmonid detection array | SOUTH 20   |
| 58.24352  | -3.11313  | 08/03/2023 16:41 | 151     | 551912                  | N/A     | Salmonid detection array | SOUTH 19   |
| 58.24203  | -3.1052   | 08/03/2023 16:44 | 122     | 551857                  | N/A     | Salmonid detection array | SOUTH 18   |
| 58.24048  | -3.09722  | 08/03/2023 16:47 | 128     | 551875                  | N/A     | Salmonid detection array | SOUTH 17   |
| 58.23893  | -3.08925  | 08/03/2023 16:51 | 107     | 552428                  | N/A     | Salmonid detection array | SOUTH 16   |
| 58.23743  | -3.08123  | 08/03/2023 16:55 | 119     | 552429                  | N/A     | Salmonid detection array | SOUTH 15   |
| 58.23583  | -3.07312  | 08/03/2023 16:58 | 122     | 551927                  | N/A     | Salmonid detection array | SOUTH 14   |
| 58.23433  | -3.06525  | 08/03/2023 17:01 | 102     | 552432                  | N/A     | Salmonid detection array | SOUTH 13   |
| 58.2328   | -3.05732  | 08/03/2023 17:04 | 119     | 552527                  | N/A     | Salmonid detection array | SOUTH 12   |
| 58.23122  | -3.04928  | 08/03/2023 17:08 | 144     | 552437                  | N/A     | Salmonid detection array | SOUTH 11   |
| 58.22972  | -3.04127  | 08/03/2023 17:11 | 20      | 552458                  | N/A     | Salmonid detection array | SOUTH 10   |
| Latitude  | Longitude | Date Time        | Heading | AR_number deployed 2023 | Turbine | Activity                 | Notes  |
| 58.43912  | -2.84394  | 09/03/2023 10:22 | 0       | 552496                  | N/A     | Salmonid detection array | NORTH 30   |
| 58.43463  | -2.84397  | 09/03/2023 10:33 | 151     | 551911                  | N/A     | Salmonid detection array | NORTH 29   |
| 58.4301   | -2.84403  | 09/03/2023 10:37 | 153     | 551890                  | N/A     | Salmonid detection array | NORTH 28   |
| 58.42565  | -2.84418  | 09/03/2023 10:42 | 78      | 548158                  | N/A     | Salmonid detection array | NORTH 27   |
| 58.42113  | -2.84403  | 09/03/2023 10:46 | 192     | 552440                  | N/A     | Salmonid detection array | NORTH 26   |
| 58.4166   | -2.8443   | 09/03/2023 10:49 | 203     | 552439                  | N/A     | Salmonid detection array | NORTH 25   |
| 58.41212  | -2.84442  | 09/03/2023 10:52 | 128     | 552525                  | N/A     | Salmonid detection array | NORTH 24   |
| 58.40763  | -2.84427  | 09/03/2023 10:55 | 175     | 552447                  | N/A     | Salmonid detection array | NORTH 23   |
| 58.40315  | -2.84437  | 09/03/2023 10:58 | 147     | 552436                  | N/A     | Salmonid detection array | NORTH 22   |
| 58.39867  | -2.84448  | 09/03/2023 11:06 | 211     | 552448                  | N/A     | Salmonid detection array | NORTH 21   |
| 58.3942   | -2.8445   | 09/03/2023 11:09 | 182     | 552494                  | N/A     | Salmonid detection array | NORTH 20   |
| 58.38967  | -2.84462  | 09/03/2023 11:12 | 163     | 552493                  | N/A     | Salmonid detection array | NORTH 19   |
| 58.3852   | -2.84463  | 09/03/2023 11:17 | 156     | 552529                  | N/A     | Salmonid detection array | NORTH 18   |
| 58.38068  | -2.84475  | 09/03/2023 11:20 | 120     | 552425                  | N/A     | Salmonid detection array | NORTH 17   |
| 58.37617  | -2.84472  | 09/03/2023 11:23 | 221     | 552438                  | N/A     | Salmonid detection array | NORTH 16   |
| 58.37173  | -2.84472  | 09/03/2023 11:27 | 117     | 551932                  | N/A     | Salmonid detection array | NORTH 15   |
| 58.36728  | -2.84475  | 09/03/2023 11:31 | 51      | 552430                  | N/A     | Salmonid detection array | NORTH 14   |
| 58.36272  | -2.84495  | 09/03/2023 11:36 | 208     | 552528                  | N/A     | Salmonid detection array | NORTH 13   |
| 58.35813  | -2.84492  | 09/03/2023 11:39 | 190     | 552426                  | N/A     | Salmonid detection array | NORTH 12   |
| 58.35377  | -2.84502  | 09/03/2023 11:41 | 176     | 552427                  | N/A     | Salmonid detection array | NORTH 11   |
| 58.34927  | -2.845    | 09/03/2023 11:45 | 192     | 552495                  | N/A     | Salmonid detection array | NORTH 10   |
| 58.3448   | -2.84508  | 09/03/2023 11:48 | 212     | 552524                  | N/A     | Salmonid detection array | NORTH 9  |
| 58.34032  | -2.8452   | 09/03/2023 11:53 | 191     | 546176                  | N/A     | Salmonid detection array | NORTH 8  |
| 58.33575  | -2.84517  | 09/03/2023 11:56 | 208     | 552526                  | N/A     | Salmonid detection array | NORTH 7  |
| 58.33128  | -2.84517  | 09/03/2023 11:59 | 214     | 551850                  | N/A     | Salmonid detection array | NORTH 6  |
| 58.32683  | -2.84528  | 09/03/2023 12:03 | 193     | 552475                  | N/A     | Salmonid detection array | NORTH 5  |
| 58.3223   | -2.84525  | 09/03/2023 12:06 | 204     | 552431                  | N/A     | Salmonid detection array | NORTH 4  |
| 58.3178   | -2.84535  | 09/03/2023 12:10 | 163     | 552433                  | N/A     | Salmonid detection array | NORTH 3  |
| 58.31335  | -2.84547  | 09/03/2023 12:14 | 168     | 551866                  | N/A     | Salmonid detection array | NORTH 2  |
| 58.30882  | -2.84553  | 09/03/2023 12:17 | 161     | 552523                  | N/A     | Salmonid detection array | NORTH 1  |
| 58.22928  | -2.88863  | 09/03/2023 13:18 | 327     | 551851                  | BE-G5   | PrePARED fish detectors  | Serviced   |
| 58.22577  | -2.9074   | 09/03/2023 13:50 | 36      | 550098                  | BE-F5   | PrePARED fish detectors  | Serviced   |
| 58.23568  | -2.95665  | 09/03/2023 14:31 | 275     | 551862                  | BE-C7   | PrePARED fish detectors  | Serviced - 1 float broke off                       |
| 58.23942  | -2.93795  | 09/03/2023 14:55 | 308     | 546182                  | BE-D7   | PrePARED fish detectors  | Serviced   |
| 58.23257  | -2.92257  | 09/03/2023 15:45 | 321     | 551894                  | BE-E6   | PrePARED fish detectors  | Serviced   |
| 58.24277  | -2.91928  | 09/03/2023 16:23 | 137     | 551898                  | BE-E7   | PrePARED fish detectors  | Serviced - 1 float broke off                       |
| Latitude  | Longitude | Date Time        | Heading | AR_number deployed 2023 | Turbine | Activity                 | Notes  |
| 58.22745  | -2.7906   | 10/03/2023 10:51 | 39      | 551852                  | ME-D16  | PrePARED fish detectors  | Serviced - 1 float broke off                       |
| 58.21745  | -2.81688  | 10/03/2023 11:16 | 0       | 551897                  | ME-C15  | PrePARED fish detectors  | Serviced - 2 floats broke off                      |
| 58.21723  | -2.79078  | 10/03/2023 11:45 | 0       | 546209                  | ME-D15  | PrePARED fish detectors  | Serviced - all 3 floats broke off                  |
| 58.20685  | -2.76237  | 10/03/2023 12:19 | 230     | 546179                  | ME-E14  | PrePARED fish detectors  | Serviced   |
| 58.20713  | -2.7908   | 10/03/2023 12:36 | 0       | 546180                  | ME-D14  | PrePARED fish detectors  | Serviced   |
| 58.20748  | -2.84358  | 10/03/2023 13:23 | 288     | 550097                  | ME-B14  | PrePARED fish detectors  | Serviced   |
| 58.19742  | -2.84352  | 10/03/2023 13:52 | 55      | 551860                  | ME-B13  | PrePARED fish detectors  | Serviced   |
| 58.19707  | -2.81507  | 10/03/2023 14:18 | 261     | 547051                  | ME-C13  | PrePARED fish detectors  | Serviced   |
| 58.19692  | -2.7887   | 10/03/2023 14:41 | 34      | 550104                  | ME-D13  | PrePARED fish detectors  | Serviced - 1 float broke off                       |
| 58.18698  | -2.8151   | 10/03/2023 15:07 | 7       | 551930                  | ME-C12  | PrePARED fish detectors  | Serviced   |

**Submitted:**  
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1 March 2023

**Approved:**  
Jared Wilson  
9 June 2023