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# Cruise Report

## FV MARY LOUISE

April ~~May~~ 15-17, 1987

Brad Butman
U.S. Geological Survey
Woods Hole, MA 02543
617-548-8700

CRUISE REPORT

VESSEL: FV MARY LOUISE

DATES: ~~May~~ April 15 to May 17, 1987

PORTS: Woods Hole, MA to Woods Hole, MA

PURPOSE: The purpose of the MARY LOUISE cruise was to conduct a hydrographic survey of western Massachusetts Bay and Boston Harbor following a period of record rainfall and stream runoff. Following heavy rains in early April, the streamflow on the Merrimack River reached 35 year flood levels, and 20 year flood levels on the Charles River. The hydrographic measurements will be used to interpret current observations made in Mass. Bay during this period of intense runoff.

PERSONNEL: Brad Butman
John Larson
Mike Bothner

NARRATIVE;

| | | |
|---|---|---|
| April 15 | 0500 | Depart Woods Hole |
| | 0800 | Start hydrographic survey in Cape Cod Bay. |
| | 2200 | Arrive Pt. Allerton Coast Guard Station. Pickup Bothner |
| | 2300 | Depart Pt. Allerton. |
| April 16 | 0057 | Continue hydrographic survey in Massachusetts Bay. |
| April 17 | 0430 | Complete hydrographic survey. |
| | 0700 | Arrive Woods Hole. Offload. |

TABULATED INFORMATION

Days at sea: 3

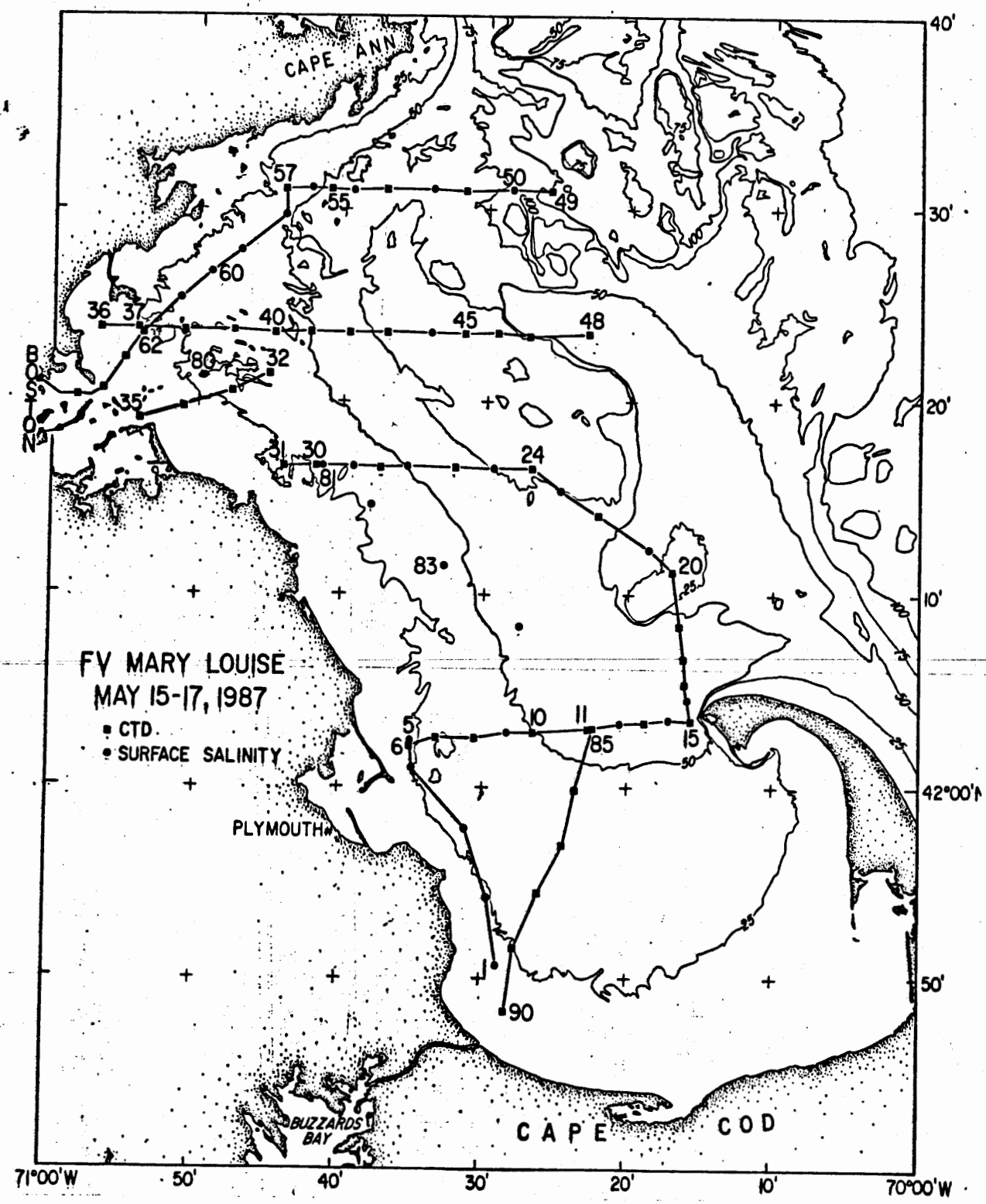
Hydrographic Stations: 90

Table 1. Hydrographic stations occupied on MARY LOUISE cruise April 15-17, 1987. All times are Eastern Standard. SS is surface salinity. CTD is conductivity temperature, depth and transmission profile. Latitude and longitude from Raytheon Loran C and are uncorrected.

| Sta | Type | Date MODY | Time EST | Depth (m) | Latitude °N | Longitude °W | Loran | | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SS | 4/15 | 800 | | 41 50.70 | 70 28.99 | 13983.60 | 44058.50 | |
| 2 | SS | 4/15 | 830 | | 41 54.03 | 70 29.60 | 13971.91 | 44079.73 | |
| 3 | SS | 4/15 | 900 | | 41 57.88 | 70 31.13 | 13964.40 | 44105.53 | |
| 4 | SS | 4/15 | 933 | | 42 1.03 | 70 35.00 | 13971.80 | 44132.20 | |
| 5 | SS | 4/15 | 949 | 26 | 42 2.34 | 70 34.90 | 13966.90 | 44137.70 | |
| 6 | CTD | 4/15 | 1030 | 25 | 42 2.00 | 70 35.00 | 13969.10 | 44135.90 | |
| 7 | CTD | 4/15 | 1055 | 35 | 42 2.60 | 70 33.10 | 13953.50 | 44136.30 | |
| 8 | CTD | 4/15 | 1117 | 47 | 42 2.39 | 70 30.38 | 13938.50 | 44130.36 | |
| 9 | SS | 4/15 | 1145 | 50 | 42 2.81 | 70 28.18 | 13922.48 | 44129.31 | |
| 10 | CTD | 4/15 | 1200 | 55 | 42 2.78 | 70 26.42 | 13912.58 | 44125.72 | |
| 11 | CTD | 4/15 | 1231 | 59 | 42 3.03 | 70 22.33 | 13886.70 | 44121.00 | |
| 12 | SS | 4/15 | 1252 | 60 | 42 3.30 | 70 20.36 | 13872.60 | 44199.40 | |
| 13 | CTD | 4/15 | 1304 | 62 | 42 3.37 | 70 18.57 | 13862.26 | 44116.93 | |
| 14 | SS | 4/15 | 1325 | 64 | 42 3.54 | 70 17.00 | 13851.40 | 44115.00 | |
| 15 | CTD | 4/15 | 1335 | 62 | 42 3.52 | 70 15.43 | 13842.63 | 44112.70 | |
| 16 | SS | 4/15 | 1352 | | 42 4.56 | 70 15.83 | 13839.75 | 44120.18 | |
| 17 | CTD | 4/15 | 1400 | 64 | 42 5.38 | 70 15.87 | 13836.30 | 44124.30 | |
| 18 | CTD | 4/15 | 1420 | 67 | 42 6.78 | 70 15.97 | 13830.13 | 44132.66 | |
| 19 | CTD | 4/15 | 1442 | 57 | 42 8.53 | 70 16.42 | 13824.16 | 44143.30 | |
| 20 | CTD | 4/15 | 1515 | 27 | 42 11.38 | 70 17.00 | 13813.66 | 44160.62 | |
| 21 | SS | 4/15 | 1545 | | 42 12.38 | 70 18.63 | 13818.00 | 44169.12 | |
| 22 | CTD | 4/15 | 1614 | 72 | 42 14.08 | 70 22.08 | 13831.11 | 44184.53 | |
| 23 | SS | 4/15 | 1641 | | 42 15.47 | 70 24.75 | 13841.10 | 44197.29 | |
| 24 | CTD | 4/15 | 1707 | 89 | 42 16.50 | 70 26.86 | 13848.96 | 44206.53 | |
| 25 | SS | 4/15 | 1731 | | 42 16.53 | 70 29.47 | 13865.40 | 44211.47 | |
| 26 | CTD | 4/15 | 1748 | 69 | 42 16.51 | 70 32.07 | 13881.30 | 44215.46 | |
| 27 | SS | 4/15 | 1807 | 56 | 42 16.55 | 70 34.55 | 13897.07 | 44220.40 | |
| 28 | CTD | 4/15 | 1825 | 46 | 42 16.52 | 70 37.47 | 13914.80 | 44225.08 | |
| 29 | SS | 4/15 | 1837 | | 42 16.49 | 70 39.29 | 13927.25 | 44228.37 | |
| 30 | CTD | 4/15 | 1900 | 30 | 42 16.56 | 70 41.93 | 13942.78 | 44233.15 | |
| 31 | CTD | 4/15 | 1924 | 28 | 42 16.46 | 70 44.24 | 13957.98 | 44236.72 | |
| 32 | CTD | 4/15 | 2027 | 29 | 42 21.46 | 70 45.34 | 13940.23 | 44268.44 | |
| 33 | CTD | 4/15 | 2050 | 36 | 42 20.54 | 70 47.83 | 13960.79 | 44263.73 | |
| 34 | CTD | 4/15 | 2129 | 22 | 42 19.74 | 70 51.23 | 13986.40 | 44268.40 | |
| 35 | CTD | 4/15 | 2147 | 17 | 42 19.02 | 70 54.23 | 14009.35 | 44269.72 | |
| 36 | CTD | 4/16 | 057 | 13 | 42 23.69 | 70 56.96 | 14004.03 | 44301.45 | |
| 37 | CTD | 4/16 | 133 | 27 | 42 23.65 | 70 54.30 | 13986.98 | 44296.25 | |
| 38 | CTD | 4/16 | 204 | 32 | 42 23.65 | 70 51.11 | 13996.19 | 44290.44 | |
| 39 | CTD | 4/16 | 238 | 35 | 42 23.66 | 70 47.69 | 13944.25 | 44285.18 | |
| 40 | SS | 4/16 | 300 | | 42 23.62 | 70 44.93 | 13925.83 | 44278.83 | |
| 41 | CTD | 4/16 | 326 | 52 | 42 23.58 | 70 42.34 | 13910.59 | 44274.06 | |
| 42 | CTD | 4/16 | 400 | 73 | 42 23.59 | 70 39.57 | 13893.11 | 44268.90 | |
| 43 | CTD | 4/16 | 435 | 84 | 42 23.64 | 70 37.10 | 13877.13 | 44264.56 | |
| 44 | SS | 4/16 | 505 | 94 | 42 23.59 | 70 34.04 | 13857.54 | 44258.83 | |

Table 1. - Continued

| Sta | Type | Date MODY | Time EST | Depth (m) | Latitude °N | Longitude °W | Loran | | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 45 | CTD | 4/16 | 525 | 90 | 42 23.60 | 70 31.61 | 13842.85 | 44254.61 | |
| 46 | SS | 4/16 | 554 | | 42 23.60 | 70 29.29 | 13827.74 | 44250.63 | |
| 47 | CTD | 4/15 | 630 | 38 | 42 23.42 | 70 27.06 | 13815.38 | 44245.51 | |
| 48 | CTD | 4/16 | 730 | 30 | 42 23.65 | 70 23.02 | 13789.22 | 44239.71 | |
| 49 | CTD | 4/16 | 845 | 104 | 42 31.15 | 70 25.67 | 13766.60 | 44285.40 | |
| 50 | SS | 4/16 | | | 42 31.15 | 70 28.40 | 13784.50 | 44290.40 | |
| 51 | CTD | 4/16 | 933 | 59 | 42 31.11 | 70 31.63 | 13804.20 | 44295.90 | |
| 52 | SS | 4/16 | | | 42 31.12 | 70 34.03 | 13819.80 | 44300.60 | |
| 53 | CTD | 4/16 | 1017 | 71 | 42 31.16 | 70 37.25 | 13839.46 | 44206.49 | |
| 54 | SS | 4/16 | 1034 | | 42 31.02 | 70 39.05 | 13852.20 | 44309.15 | |
| 55 | CTD | 4/16 | 1048 | 56 | 42 31.12 | 70 41.03 | 13863.04 | 44313.31 | |
| 56 | SS | 4/16 | | | 42 31.12 | 70 42.44 | 13873.95 | 44316.06 | |
| 57 | CTD | 4/16 | 1115 | 34 | 42 31.11 | 70 44.31 | 13884.90 | 44319.37 | |
| 58 | SS | 4/16 | | | 42 29.71 | 70 44.34 | 13892.90 | 44311.30 | |
| 59 | SS | 4/16 | | | 42 27.91 | 70 47.31 | 13920.10 | 44307.10 | |
| 60 | SS | 4/16 | | | 42 26.68 | 70 49.32 | 13940.40 | 44303.90 | |
| 61 | SS | 4/16 | 1255 | 28 | 42 25.28 | 70 51.45 | 13961.10 | 44300.00 | |
| 62 | CTD | 4/16 | 1300 | 27 | 42 23.58 | 70 54.04 | 13985.76 | 44295.37 | Sta. A |
| 63 | CTD | 4/16 | 1342 | 17 | 42 22.08 | 70 55.29 | 14001.19 | 44289.21 | R2, North Channel |
| 64 | CTD | 4/16 | 1405 | 20 | 42 20.44 | 70 56.37 | 14016.47 | 44281.92 | R10, Deer Island |
| 65 | CTD | 4/16 | 1426 | 17 | 42 19.95 | 70 58.48 | 14032.56 | 44283.27 | C1-C13 Anchorage |
| 66 | CTD | 4/16 | 1455 | 15 | 42 20.92 | 71 1.11 | 14044.55 | 44293.46 | R12, Logan |
| 67 | CTD | 4/16 | 1515 | 15 | 42 22.01 | 71 2.64 | 14049.01 | 44303.01 | Boston Coast Guard |
| 68 | CTD | 4/16 | 1543 | 15 | 42 23.17 | 71 3.38 | 14048.44 | 44310.93 | Charles River Dam |
| 69 | CTD | 4/16 | 1558 | 16 | 42 22.86 | 71 2.57 | 14044.84 | 44307.29 | Mystic/Charles |
| 70 | CTD | 4/16 | 1700 | 8 | 42 19.19 | 71 0.59 | 14049.38 | 44282.38 | |
| 71 | CTD | 4/16 | 1710 | 6 | 42 19.17 | 71 0.54 | 14049.30 | 44282.41 | |
| 72 | CTD | 4/16 | 1833 | 13 | 42 23.15 | 71 3.38 | 14048.59 | 44310.58 | Charles River Dam |
| 73 | CTD | 4/16 | 1844 | 14 | 42 22.84 | 71 2.55 | 14045.96 | 44307.05 | Mystic Charles |
| 74 | CTD | 4/16 | 1856 | 14 | 42 22.20 | 71 2.66 | 14045.31 | 44303.78 | Boston Coast Guard |
| 75 | CTD | 4/16 | 1924 | 12 | 42 20.88 | 71 1.09 | 14044.68 | 44293.26 | R12, Logan |
| 76 | CTD | 4/16 | 1937 | 13 | 42 20.12 | 70 59.84 | 14040.10 | 44286.30 | R4 |
| 77 | CTD | 4/16 | 2012 | 14 | 42 20.51 | 70 56.22 | 14014.94 | | R10, Deer Island |
| 78 | CTD | 4/16 | 2034 | 15 | 42 22.02 | 70 54.89 | 13998.91 | 44288.13 | R2, North Channel |
| 79 | CTD | 4/16 | 2058 | 22 | 42 23.40 | 70 54.08 | 13986.91 | 44294.50 | Station A |
| 80 | SS | 4/16 | 2133 | | 42 21.43 | 70 49.77 | 13968.80 | 44275.20 | |
| 81 | SS | 4/16 | | | 42 16.52 | 70 41.45 | 13940.00 | 44232.13 | |
| 82 | SS | 4/16 | 2312 | 37 | 42 14.61 | 70 38.00 | 13927.40 | 44214.62 | |
| 83 | SS | 4/16 | 2355 | 32 | 42 11.36 | 70 32.86 | 13911.10 | 44186.96 | |
| 84 | SS | 4/17 | 030 | 59 | 42 8.38 | 70 28.51 | 13899.19 | 44/161.55 | |
| 85 | CTD | 4/17 | 144 | 59 | 42 3.07 | 70 22.59 | 13887.98 | 44121.75 | |
| 86 | CTD | 4/17 | 226 | 53 | 41 59.84 | 70 23.56 | 13909.25 | 44104.28 | |
| 87 | CTD | 4/17 | 254 | 46 | 41 56.86 | 70 24.45 | 13928.50 | 44087.10 | |
| 88 | CTD | 4/17 | 319 | 38 | 41 54.40 | 70 26.03 | 13949.33 | 44075.62 | |
| 89 | CTD | 4/17 | 356 | 28 | 41 51.60 | 70 27.8 | 13971.31 | 44058.87 | |
| 90 | CTD | 4/17 | 432 | 20 | 41 48.33 | 70 28.29 | 13990.33 | 44041.97 | |




Cruise track for FV MARY LOUISE, May 15-17, 1987. Only one of two hydrographic sections in Boston Harbor are indicated.