

24288

Hydroid, Inc.  
81 Technology Park Drive  
East Falmouth, MA 02536  
(508) 457-9191

Mission 4

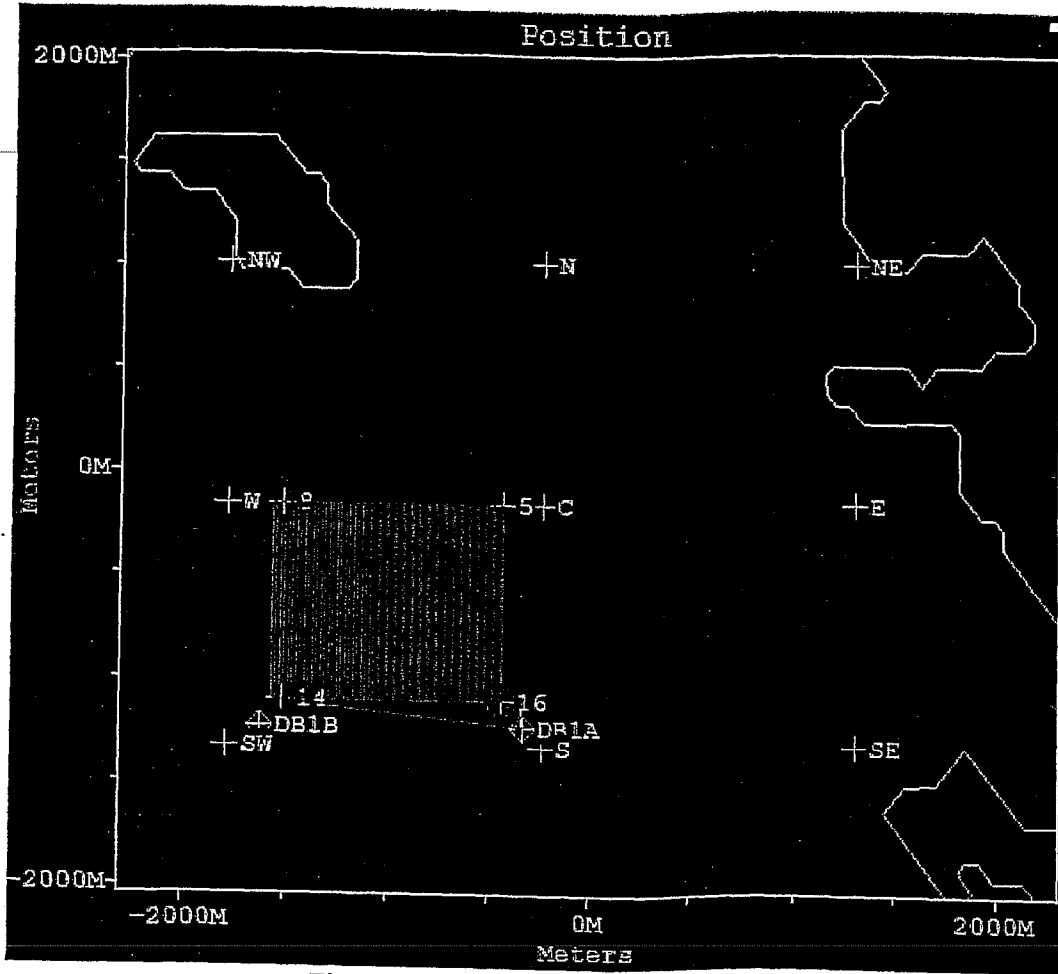


Figure 4A, Mission 4 Survey Area

Mission 4 Targets

As defined above, mission 4 produced 35 "filtered" potential targets. Figure 4B provides a close-up view of the mission area with target map positions; Table 4C provides a list of the map positions (by #) and the latitude/longitudes for these positions.

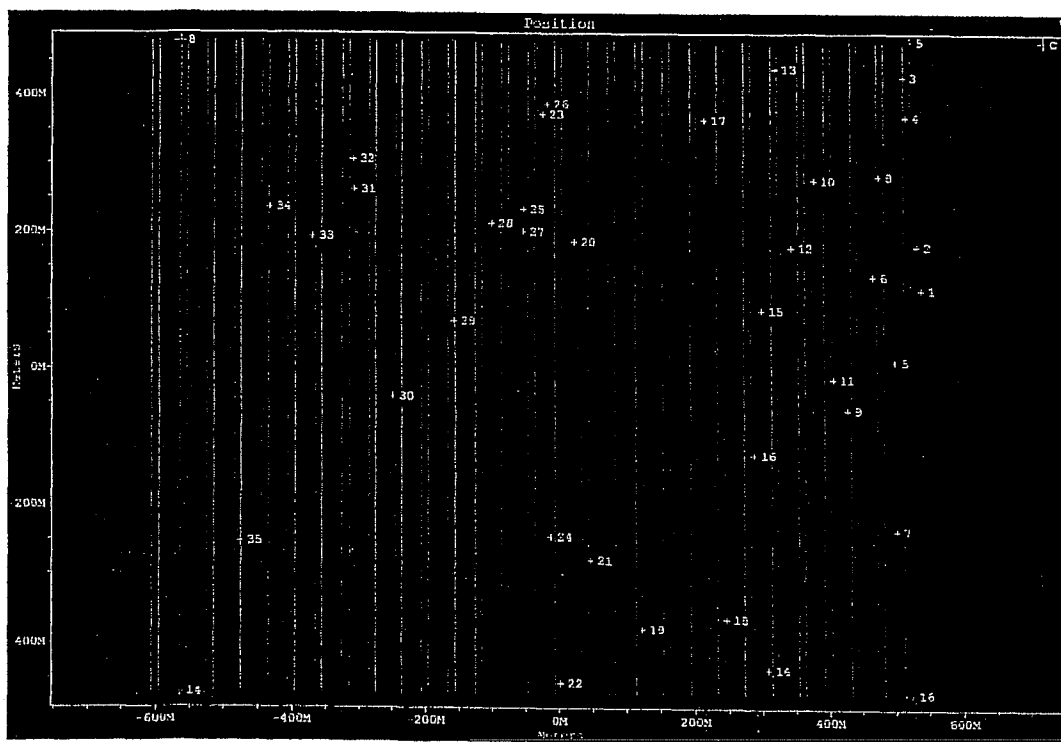


Figure 4B, Mission 4 Filtered Target Map Positions

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### Mission 4 Parameters

Start Time:	08:04:32
Mission Duration:	6:39:04
Distance Traveled:	30.73 nautical miles
Area Covered:	1090m by 953m, 58 rows w/10,30m line spacing providing 150% sidescan coverage
# of Sidescan Files	710
# of Images Identified	99 (including multiples)
# of Map Locations	35 (filtered)

Table 4A, Mission 4 Operational Parameters & Results

### Mission 4 Waypoints

Label	Position
SW	122W21.538' 37N52.469'
5	122W20.619' 37N53.107'
8	122W21.362' 37N53.106'
14	122W21.362' 37N52.592'
16	122W20.619' 37N52.592'
SE	122W19.425' 37N52.469'
NW	122W21.538' 37N53.744'
NE	122W19.425' 37N53.740'
N	122W20.482' 37N53.744'
S	122W20.482' 37N52.469'
E	122W19.425' 37N53.103'
W	122W21.538' 37N53.107'
C	122W20.482' 37N53.107'
DB1A	122W20.551' 37N52.524'
DB1B	122W21.430' 37N52.524'

Table 4B, Mission 4 Waypoints

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Map Position	Image #	File #	Latitude/Longitude
1	img00002.gif	010.MST	37 52.911N 122 20.608W
2	img00003.gif	011.MST	37 52.945N 122 20.612W
3	img00006.gif	014.MST	37 53.079N 122 20.627W
4	img00007.gif	016.MST	37 53.047N 122 20.624W
5	img00008.gif	020.MST	37 52.854N 122 20.635W
5	img00010.gif	021.MST	37 52.854N 122 20.635W
6	img00012.gif	034.MST	37 52.921N 122 20.657W
7	img00013.gif	024.MST	37 52.720N 122 20.634W
8	img00015.gif	041.MST	37 53.000N 122 20.651W
9	img00023.gif	069.MST	37 52.815N 122 20.684W
10	img00029.gif	089.MST	37 52.997N 122 20.718W
11	img00030.gif	093.MST	37 52.840N 122 20.699W
12	img00033.gif	114.MST	37 52.944N 122 20.741W
13	img00037.gif	135.MST	37 53.085N 122 20.757W
14	img00039.gif	146.MST	37 52.611N 122 20.766W
15	img00041.gif	153.MST	37 52.894N 122 20.771W
16	img00044.gif	166.MST	37 52.779N 122 20.780W
17	img00047.gif	184.MST	37 53.045N 122 20.829W
18	img00049.gif	193.MST	37 52.650N 122 20.808W
19	img00054.gif	265.MST	37 52.642N 122 20.893W
20	img00058.gif	305.MST	37 52.948N 122 20.960W
21	img00059.gif	311.MST	37 52.696N 122 20.945W
22	img00060.gif	314.MST	37 52.600N 122 20.975W
23	img00063.gif	327.MST	37 53.049N 122 20.993W
24	img00064.gif	335.MST	37 52.714N 122 20.985W
25	img00065.gif	346.MST	37 52.974N 122 21.013W
26	img00066.gif	348.MST	37 53.057N 122 20.988W
27	img00067.gif	353.MST	37 52.956N 122 21.013W
28	img00069.gif	377.MST	37 52.964N 122 21.045W
28	img00071.gif	394.MST	37 52.961N 122 21.045W
29	img00074.gif	426.MST	37 52.885N 122 21.084W
30	img00075.gif	463.MST	37 52.825N 122 21.147W
31	img00080.gif	514.MST	37 52.989N 122 21.187W
32	img00082.gif	519.MST	37 53.013N 122 21.188W
33	img00084.gif	544.MST	37 52.952N 122 21.229W
34	img00087.gif	586.MST	37 52.975N 122 21.273W
35	img00090.gif	622.MST	37 52.710N 122 21.302W

Table 4C, Mission 4 Map Position Coordinates

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Mission 5

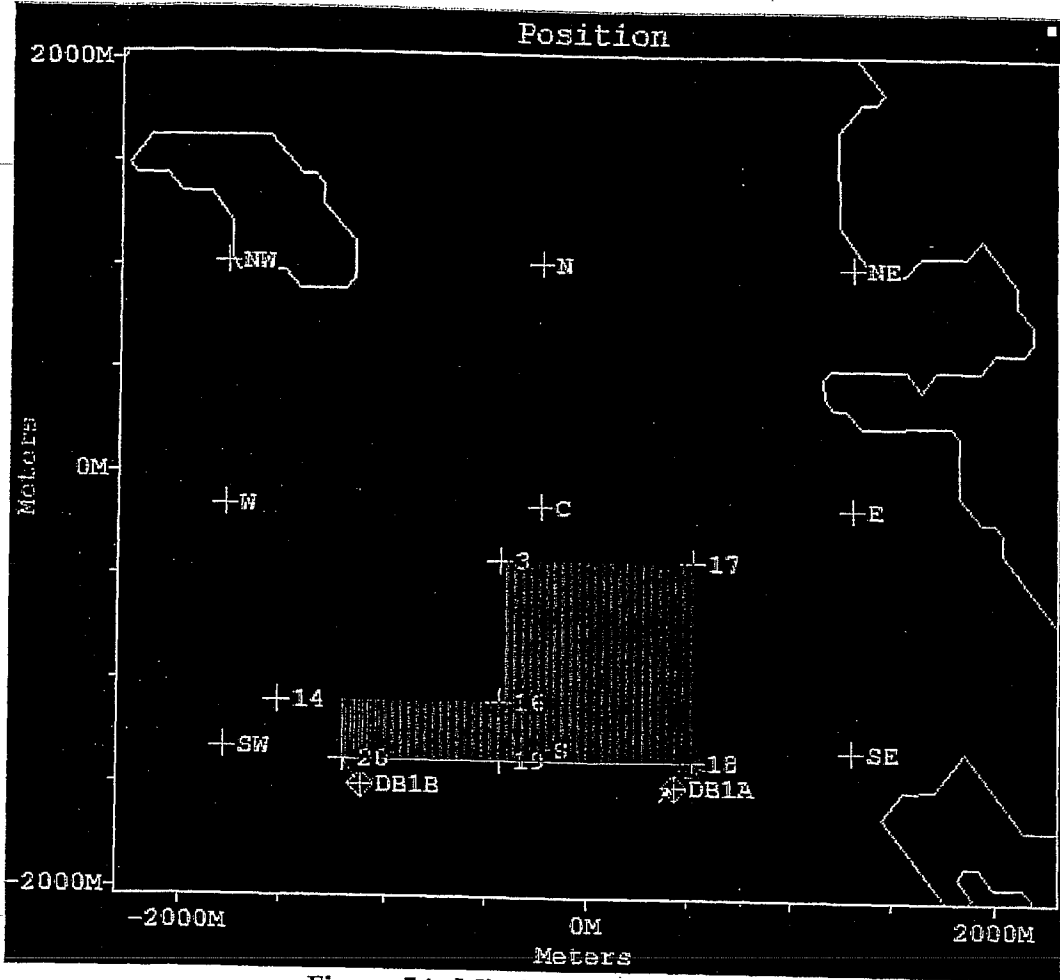


Figure 5A, Mission 5 Survey Area

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 (508) 457-9191

### Mission 5 Parameters

Start Time:	08:05:02
Mission Duration:	6:53:21
Distance Traveled:	31.42 nautical miles
Area Covered:	960m by 960m, 50 rows and 773M by 278m, 40 rows w/10,30m line spacing providing 150% sidescan coverage
# of Sidescan Files	733
# of Images Identified	71 (including multiples)
# of Map Locations	24 (filtered)

Table 5A, Mission 5 Operational Parameters & Results

### Mission 5 Waypoints

Label	Position
SW	122W21.538' 37N52.469'
3	122W20.619' 37N52.961'
14	122W21.362' 37N52.592'
16	122W20.619' 37N52.592'
17	122W19.964' 37N52.961'
18	122W19.964' 37N52.442'
19	122W20.619' 37N52.442'
20	122W21.146' 37N52.442'
SE	122W19.425' 37N52.469'
NW	122W21.538' 37N53.744'
NE	122W19.425' 37N53.740'
N	122W20.482' 37N53.744'
S	122W20.482' 37N52.469'

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E	122W19.425' 37N53.103"
W	122W21.538' 37N53.107"
C	122W20.482' 37N53.107"
DB1A	122W20.025' 37N52.374"
DB1B	122W21.085' 37N52.374"

Table 5B, Mission 5 Waypoints

Mission 5 Targets

As defined above, mission 5 produced 24 "filtered" potential targets. Figure 5B provides a close-up view of the mission area with target map positions; Table 5C provides a list of the map positions (by #) and the latitude/longitudes for these positions.

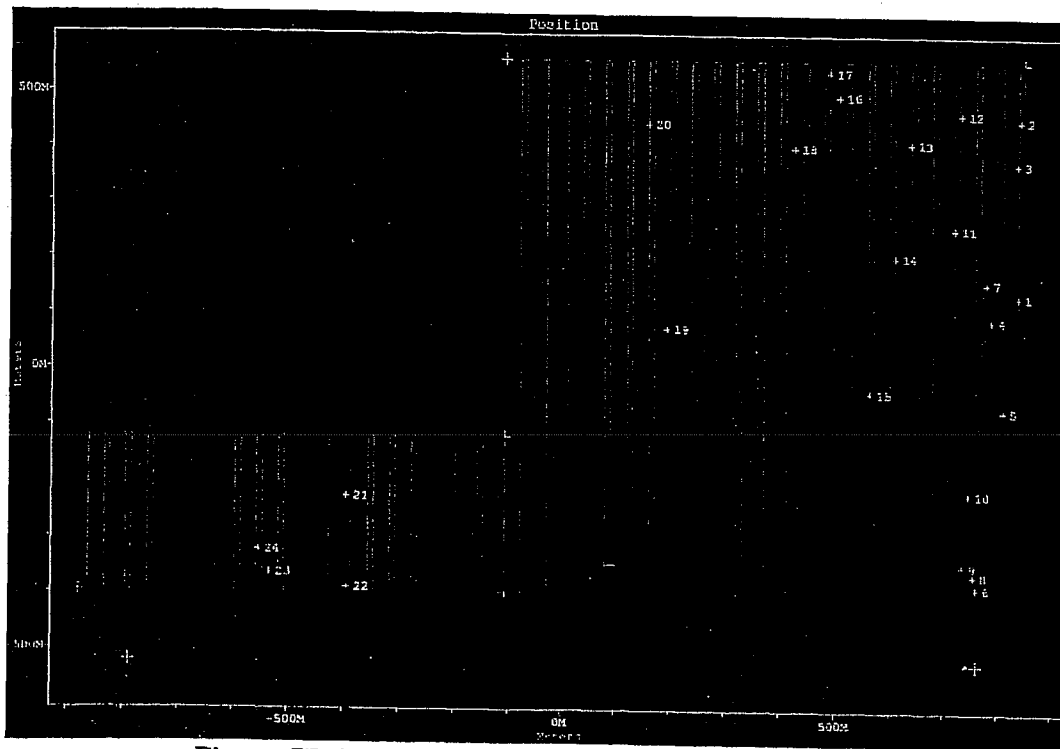


Figure 5B, Mission 5 Filtered Target Map Positions

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Map Position	Image #	File #	Latitude/Longitude
1	img00003.gif	009.MST	37 52.731N 122 19.972W
2	img00004.gif	013.MST	37 52.903N 122 19.969W
2	img00006.gif	016.MST	37 52.906N 122 19.968W
3	img00007.gif	017.MST	37 52.861N 122 19.973W
4	img00010.gif	044.MST	37 52.708N 122 20.006W
5	img00011.gif	046.MST	37 52.620N 122 19.992W
6	img00012.gif	050.MST	37 52.449N 122 20.026W
7	img00013.gif	057.MST	37 52.743N 122 20.012W
7	img00014.gif	067.MST	37 52.745N 122 20.012W
8	img00015.gif	073.MST	37 52.461N 122 20.029W
9	img00016.gif	075.MST	37 52.470N 122 20.043W
10	img00017.gif	076.MST	37 52.539N 122 20.036W
11	img00018.gif	082.MST	37 52.796N 122 20.052W
12	img00019.gif	087.MST	37 52.910N 122 20.044W
13	img00023.gif	132.MST	37 52.880N 122 20.108W
14	img00026.gif	154.MST	37 52.768N 122 20.128W
15	img00028.gif	175.MST	37 52.637N 122 20.160W
16	img00029.gif	207.MST	37 52.926N 122 20.198W
17	img00031.gif	231.MST	37 52.950N 122 20.210W
18	img00037.gif	257.MST	37 52.876N 122 20.254W
19	img00042.gif	397.MST	37 52.698N 122 20.412W
20	img00045.gif	426.MST	37 52.898N 122 20.435W
21	img00059.gif	649.MST	37 52.533N 122 20.816W
22	img00060.gif	651.MST	37 52.446N 122 20.815W
23	img00064.gif	673.MST	37 52.459N 122 20.910W
24	img00065.gif	675.MST	37 52.481N 122 20.923W

Table 5C, Mission 5 Map Position Coordinates



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Mission 6

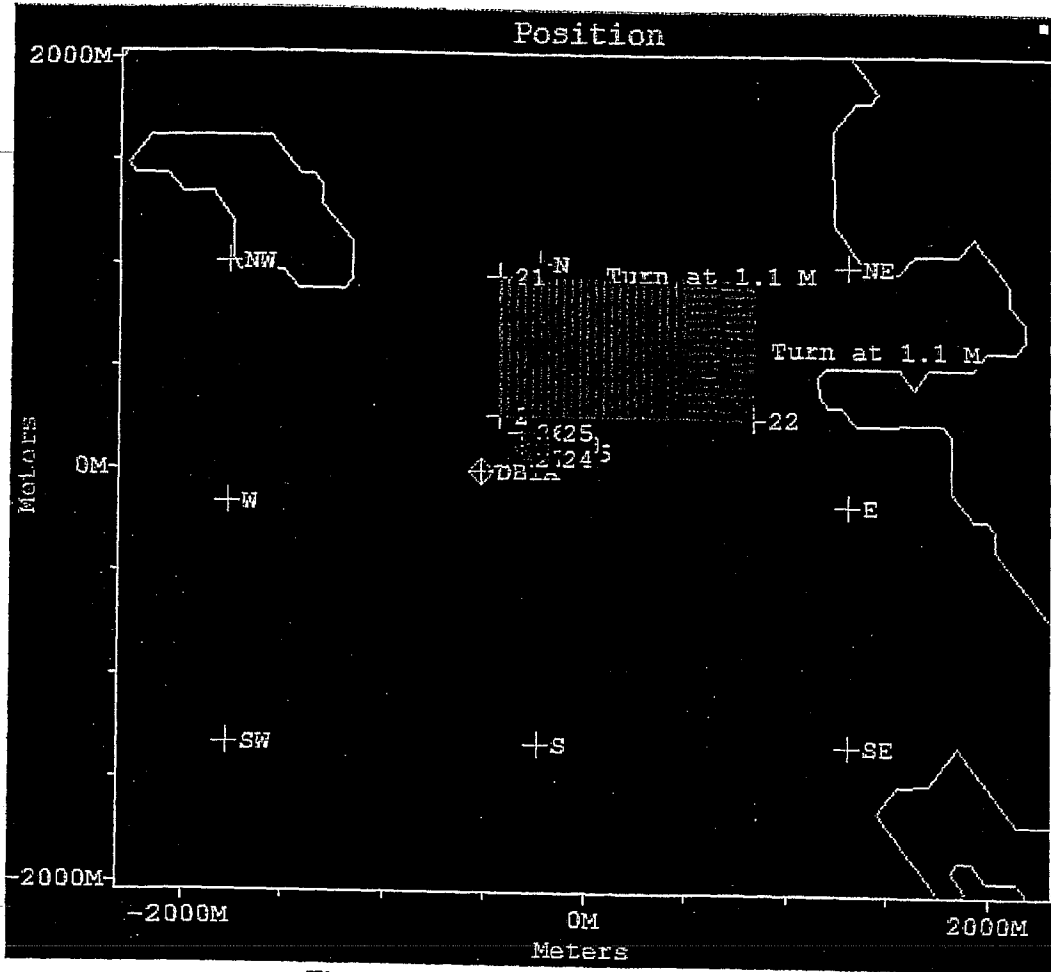


Figure 6A, Mission 6 Survey Area

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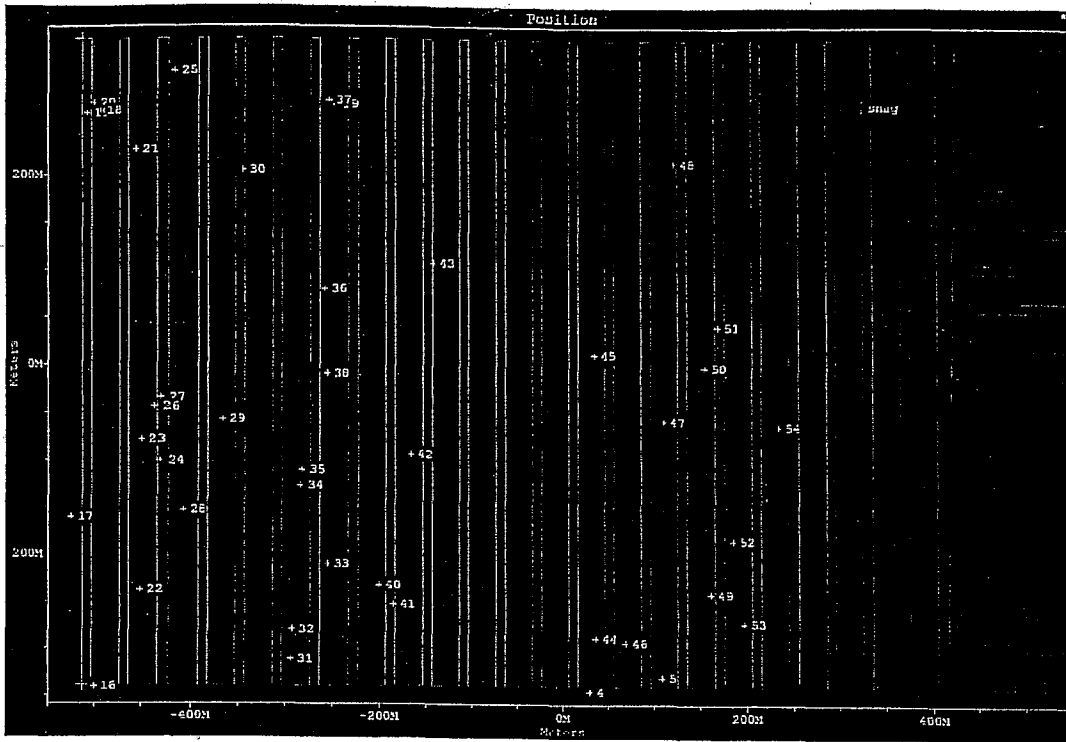


Figure 6C, Mission 6b Filtered Target Map Positions

Map Position	Image #	File #	Latitude/Longitude
1	img00001.gif	014.MST	37 53.261N 122 20.517W
2	img00002.gif	016.MST	37 53.261N 122 20.479W
2	img00037.gif	071.MST	37 53.257N 122 20.479W
2	img00039.gif	073.MST	37 53.260N 122 20.481W
2	img00040.gif	074.MST	37 53.260N 122 20.479W
2	img00043.gif	076.MST	37 53.261N 122 20.480W
3	img00003.gif	021.MST	37 53.278N 122 20.518W
3	img00049.gif	079.MST	37 53.278N 122 20.519W
4	img00008.gif	035.MST	37 53.336N 122 20.250W
4	img00009.gif	035.MST	37 53.336N 122 20.246W
5	img00010.gif	037.MST	37 53.344N 122 20.194W
6	img00018.gif	053.MST	37 53.260N 122 20.438W
7	img00019.gif	055.MST	37 53.240N 122 20.555W
8	img00032.gif	068.MST	37 53.230N 122 20.506W
9	img00034.gif	069.MST	37 53.251N 122 20.487W
10	img00035.gif	070.MST	37 53.256N 122 20.483W
11	img00044.gif	076.MST	37 53.275N 122 20.510W

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Map Position	Image #	File #	Latitude/Longitude
12	img00048.gif	079.MST	37 53.287N 122 20.531W
13	img00053.gif	082.MST	37 53.278N 122 20.525W
14	img00056.gif	084.MST	37 53.291N 122 20.465W
15	img00057.gif	086.MST	37 53.301N 122 20.556W
16	img00058.gif	087.MST	37 53.338N 122 20.610W
17	img00061.gif	089.MST	37 53.436N 122 20.627W
18	img00068.gif	095.MST	37 53.667N 122 20.606W
18	img00074.gif	097.MST	37 53.670N 122 20.605W
19	img00069.gif	095.MST	37 53.667N 122 20.615W
20	img00070.gif	095.MST	37 53.673N 122 20.610W
21	img00087.gif	115.MST	37 53.646N 122 20.579W
22	img00088.gif	121.MST	37 53.394N 122 20.576W
23	img00091.gif	126.MST	37 53.480N 122 20.575W
24	img00092.gif	126.MST	37 53.468N 122 20.563W
25	img00093.gif	131.MST	37 53.689N 122 20.553W
25	img00094.gif	131.MST	37 53.693N 122 20.555W
26	img00097.gif	137.MST	37 53.499N 122 20.566W
27	img00098.gif	137.MST	37 53.504N 122 20.562W
28	img00100.gif	143.MST	37 53.440N 122 20.547W
29	img00103.gif	155.MST	37 53.493N 122 20.520W
29	img00104.gif	162.MST	37 53.490N 122 20.518W
30	img00108.gif	166.MST	37 53.634N 122 20.504W
31	img00111.gif	194.MST	37 53.354N 122 20.469W
32	img00112.gif	194.MST	37 53.371N 122 20.468W
33	img00113.gif	196.MST	37 53.409N 122 20.443W
34	img00114.gif	197.MST	37 53.454N 122 20.462W
35	img00115.gif	198.MST	37 53.463N 122 20.461W
36	img00117.gif	200.MST	37 53.566N 122 20.445W
37	img00118.gif	204.MST	37 53.674N 122 20.442W
38	img00119.gif	208.MST	37 53.518N 122 20.443W
39	img00123.gif	221.MST	37 53.672N 122 20.437W
40	img00124.gif	232.MST	37 53.397N 122 20.406W
41	img00125.gif	232.MST	37 53.386N 122 20.395W
42	img00127.gif	252.MST	37 53.472N 122 20.382W
43	img00128.gif	254.MST	37 53.581N 122 20.366W
44	img00132.gif	338.MST	37 53.366N 122 20.244W
44	img00134.gif	354.MST	37 53.367N 122 20.244W
45	img00133.gif	342.MST	37 53.529N 122 20.245W
46	img00135.gif	356.MST	37 53.364N 122 20.221W

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Map Position	Image #	File #	Latitude/Longitude
47	img00136.gif	369.MST	37 53.491N 122 20.193W
48	img00139.gif	383.MST	37 53.639N 122 20.185W
49	img00141.gif	392.MST	37 53.391N 122 20.158W
49	img00146.gif	407.MST	37 53.393N 122 20.158W
50	img00142.gif	395.MST	37 53.522N 122 20.163W
51	img00143.gif	403.MST	37 53.545N 122 20.153W
52	img00144.gif	406.MST	37 53.423N 122 20.142W
53	img00147.gif	409.MST	37 53.375N 122 20.134W
54	img00150.gif	430.MST	37 53.488N 122 20.108W

Table 6C, Mission 6 Map Position Coordinates

### Mission 6 Notes

Mission 6 was actually started twice. The first launch was at 08:41 and ran for a total of 47 minutes. The tide was too low at this hour of the day and the vehicle was turning around too early (using an automatic minimum depth turnaround parameter set within the vehicle) so an "abort" command was sent to the vehicle returning it to the launch location. The vehicle was recovered and reprogrammed to operate in shallower waters.

The second launching of the vehicle was at 11:35. This second attempt at mission 6 was run for a duration of 5:13:25. After this period the communications between the Paradigm radio buoys and the vehicle became too intermittent to reliably track the system on the final portion of the mission. Again an abort command was sent to the vehicle returning it to the programmed "home" location. It was discovered that something had fouled the vehicle's pitch control fins driving the vehicle's nose into the bottom. The vehicle dragged its nose along the final legs of the mission area. No useful information was gathered in that portion of the mission.

Sidescan files from the first 47 minutes (57 sidescan files) of mission 6 were included within the HTML Report and the mapped position targets reported.

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Mission 7

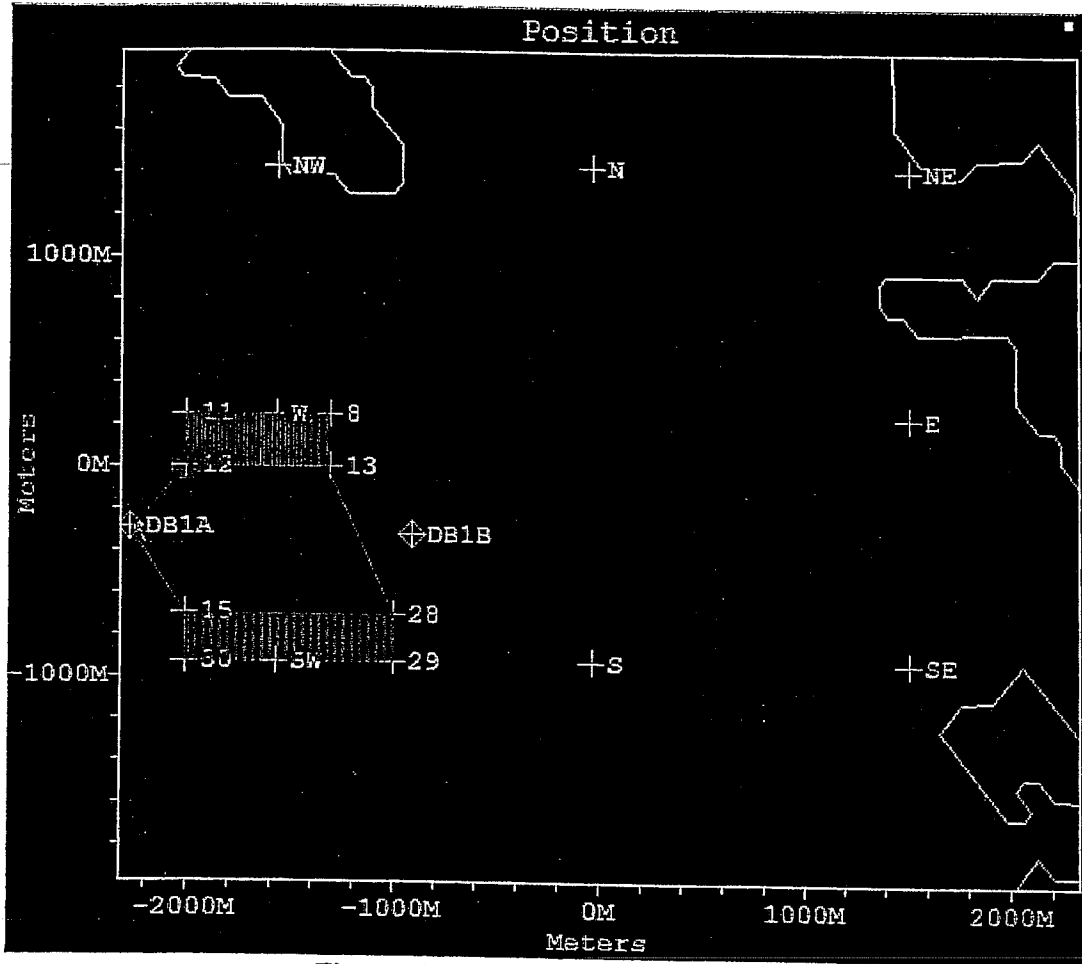


Figure 7A, Mission 7 Survey Area

24303

Hydroid, Inc.  
81 Technology Park Drive  
East Falmouth, MA 02536  
(508) 457-9191

Mission 7 Parameters

Start Time:	09:47:23
Mission Duration:	3:16:29
Distance Traveled:	11.34 nautical miles
Area Covered:	700m by 250m, 36 rows and 1016m by 225m, 52 rows w/10,30m line spacing providing 150% sidescan coverage
# of Sidescan Files	277
# of Images Identified	32 (including multiples)
# of Map Locations	2 (filtered)

Table 7A, Mission 7 Operational Parameters & Results

Mission 7 Waypoints

Label	Position
SW	122W21.538' 37N52.469'
8	122W21.362' 37N53.106'
11	122W21.839' 37N53.106'
28	122W21.146' 37N52.590'
12	122W21.839' 37N52.971'
13	122W21.362' 37N52.971'
15	122W21.839' 37N52.592'
29	122W21.146' 37N52.469'
30	122W21.836' 37N52.469'
SE	122W19.425' 37N52.469'
NW	122W21.538' 37N53.744'
NE	122W19.425' 37N53.740'
N	122W20.482' 37N53.744'

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S	122W20.482' 37N52.469'
E	122W19.425' 37N53.103''
W	122W21.538' 37N53.107''
DB1B	122W21.085' 37N52.798''
DB1A	122W22.019' 37N52.813''

Table 7B, Mission 7 Waypoints

### Mission 7 Targets

As defined above, mission 6 produced 2 "filtered" potential targets. Figure 7B provides a close-up view of the mission area with target map positions; Table 7C provides a list of the map positions (by #) and the latitude/longitudes for these positions.

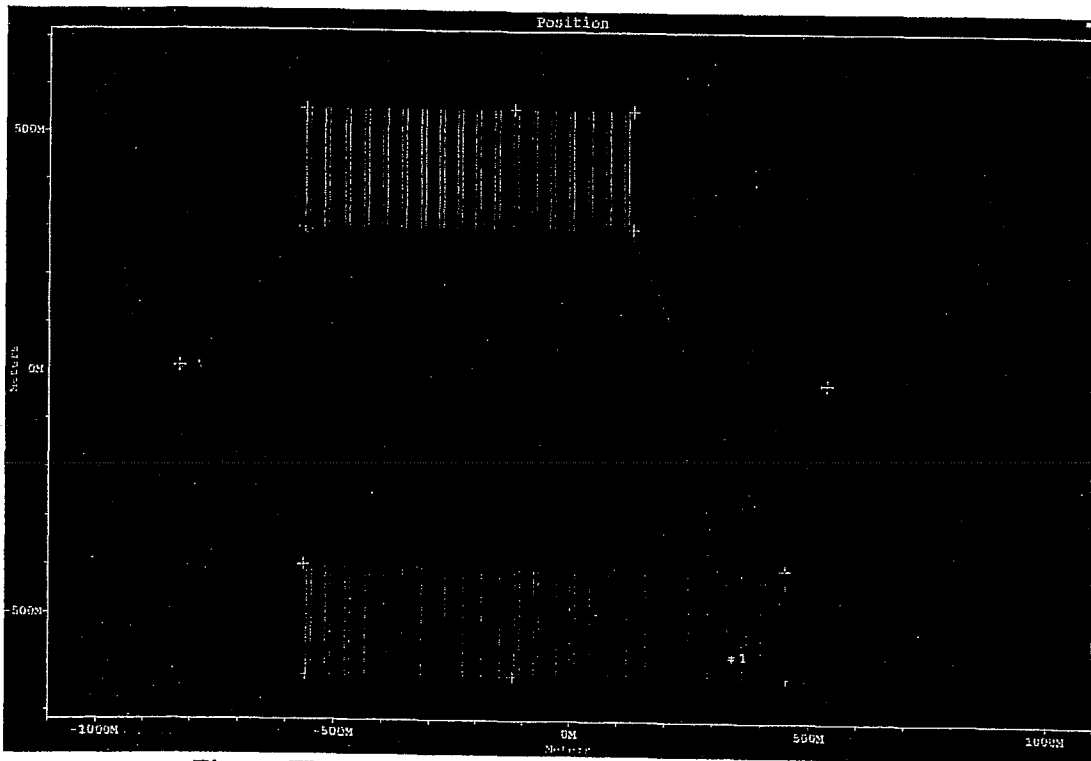


Figure 7B, Mission 7 Filtered Target Map Positions

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Map Position	Image #	File #	Latitude/Longitude
1	img00025.gif	189.MST	37 52.495N 122 21.219W
1	img00027.gif	194.MST	37 52.493N 122 21.222W
2	img00028.gif	195.MST	37 52.491N 122 21.222W

Table 7C, Mission 7 Map Position Coordinates

Mission 7 Notes

Mission 7 was aborted prior to the scheduled completion of the programmed mission. Progress of the mission was being properly tracked by the Paradigm system, but the speed (forward progress) of the vehicle was significantly slower than the programmed speed. Again the vehicle was found to have been fouled (sea weed in the propeller).