

2017

An investigation into the response of a modular pontoon system to wave loading

Gathergood, G.

Gathergood, G. (2017) 'An investigation into the response of a modular pontoon system to wave loading', The Plymouth Student Scientist, 10(1), p. 239-280.

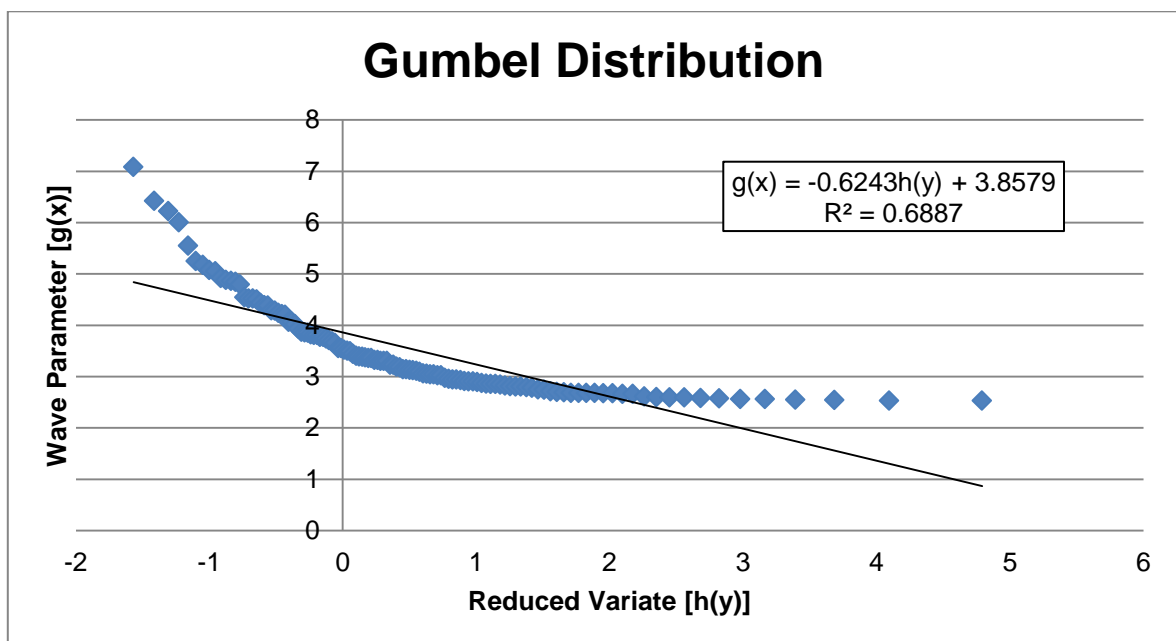
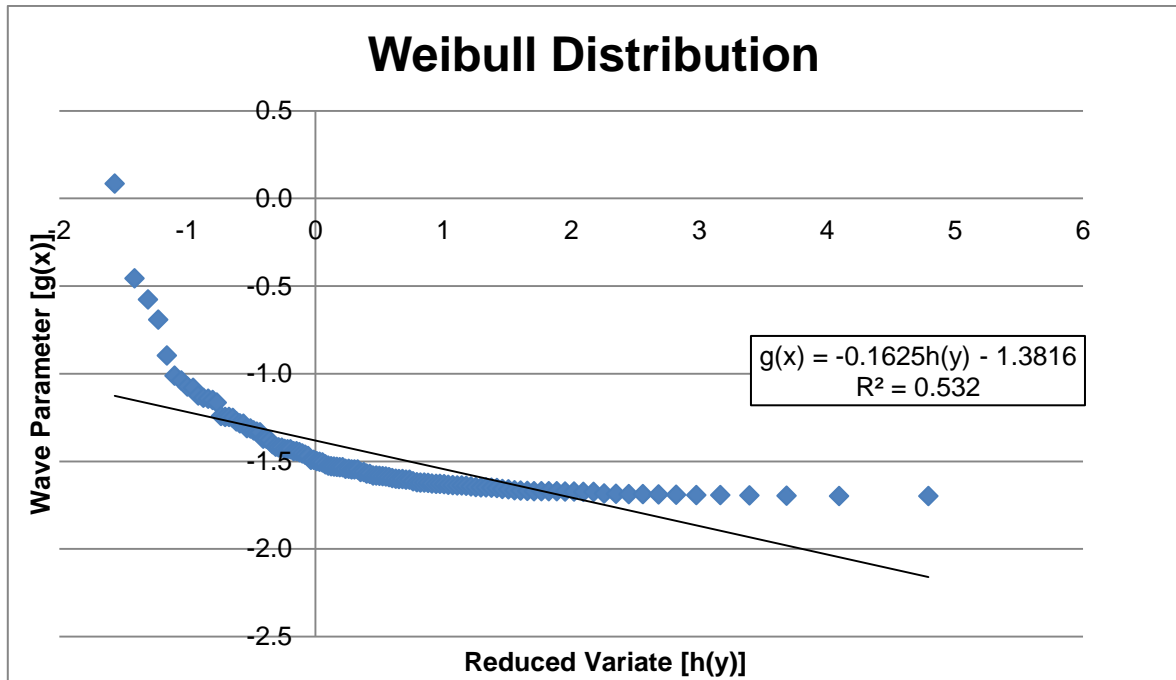
<http://hdl.handle.net/10026.1/14145>

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University of Plymouth

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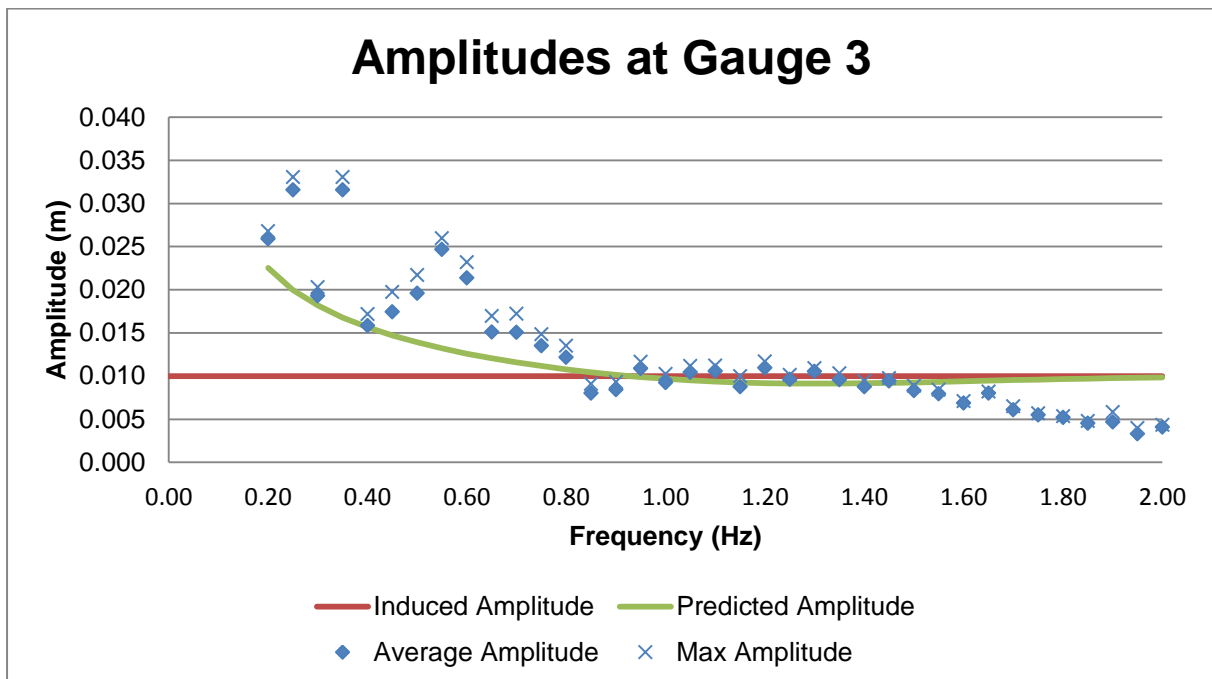
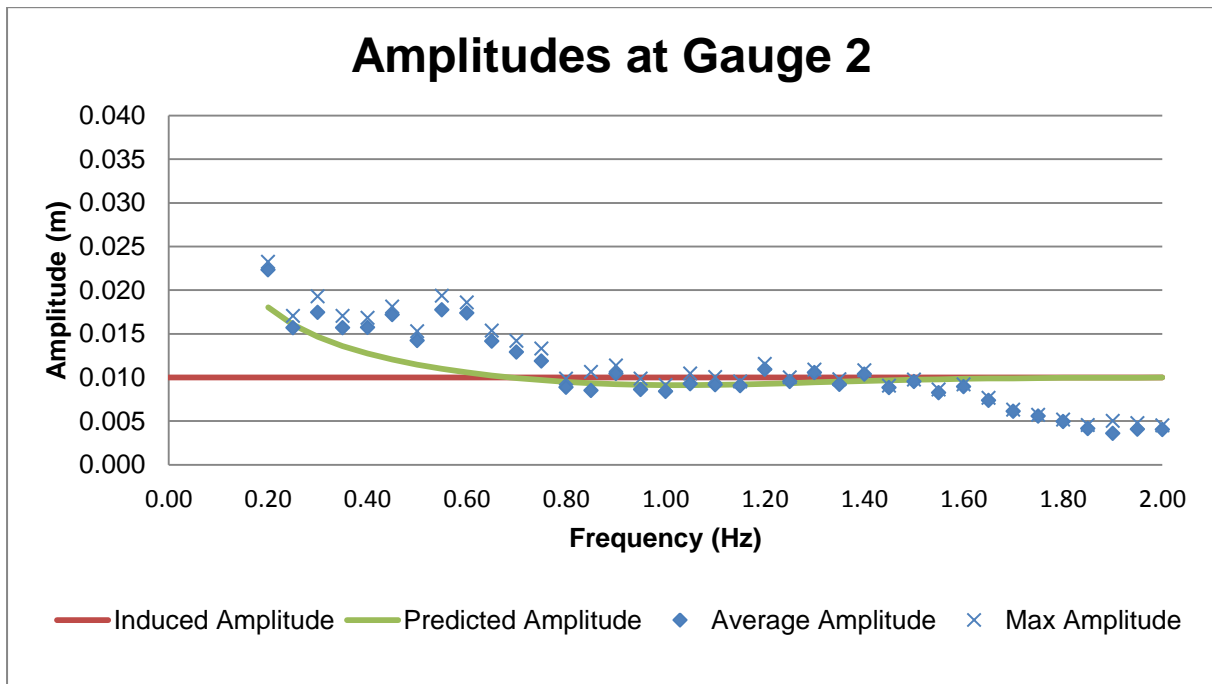
Appendices

Appendix A – POT Data Distributions

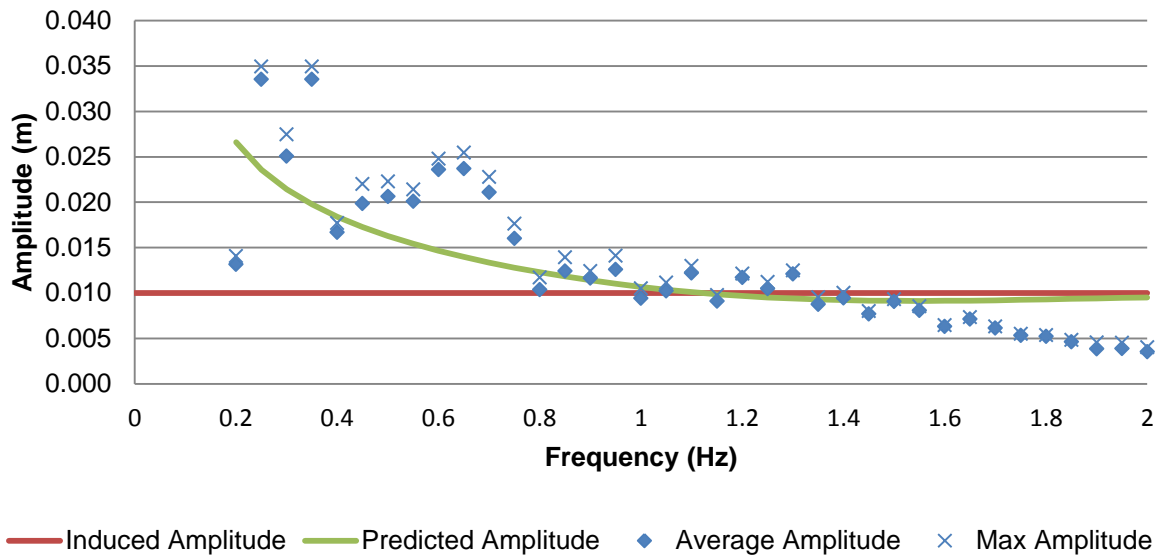


Appendix B

1.1.1 Wave Gauge Data – 0.01m Amplitude

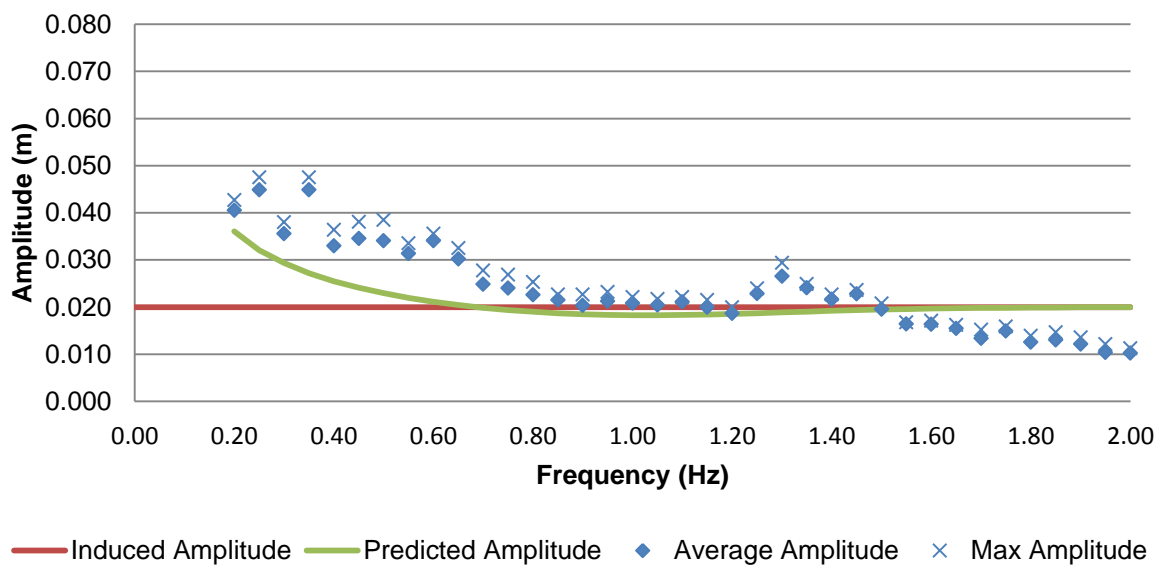


Amplitudes at Gauge 4

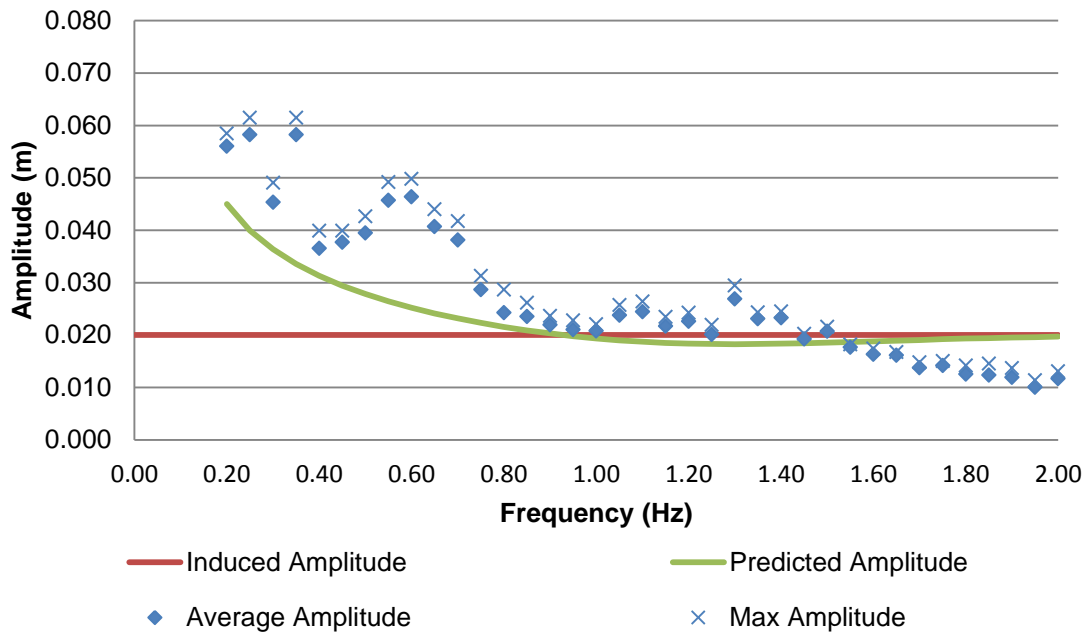


Wave Gauge Data – 0.02m Amplitude

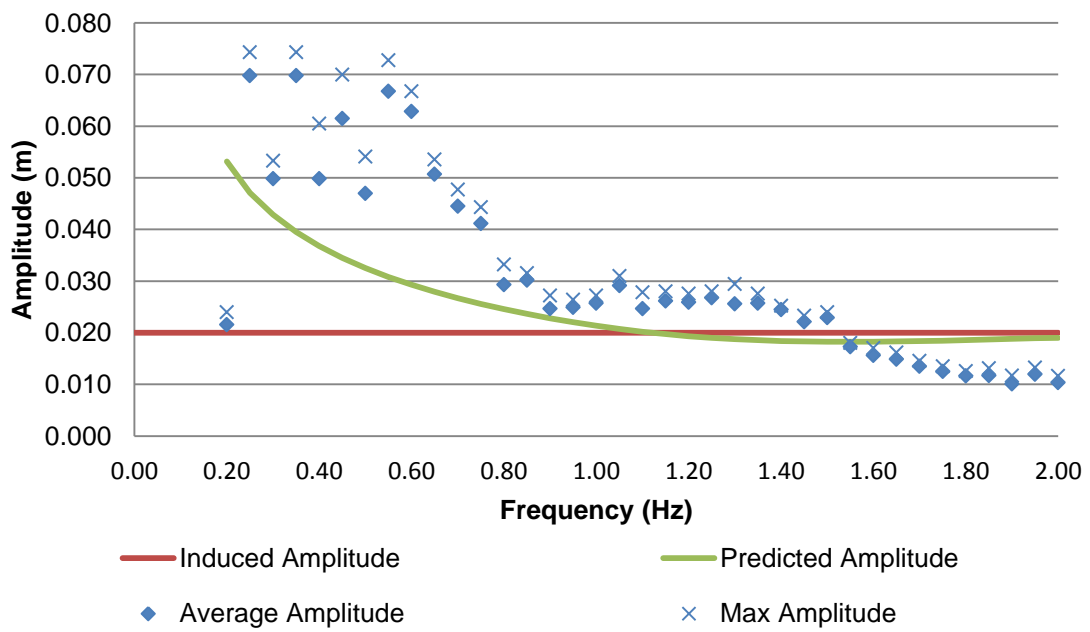
Amplitudes at Gauge 2



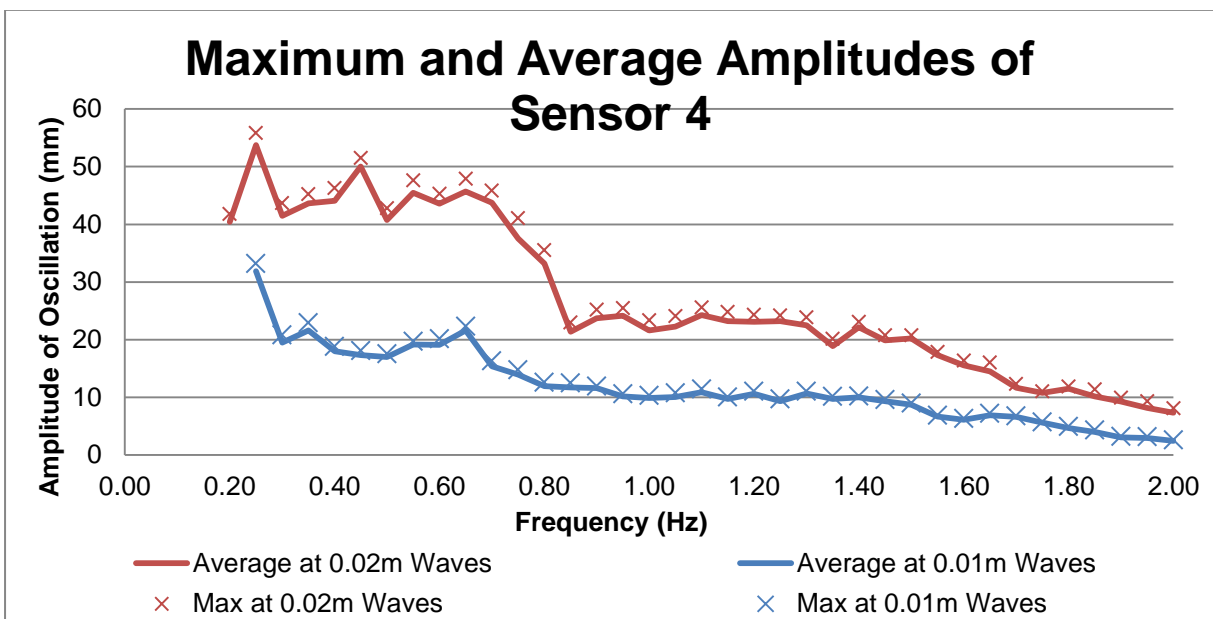
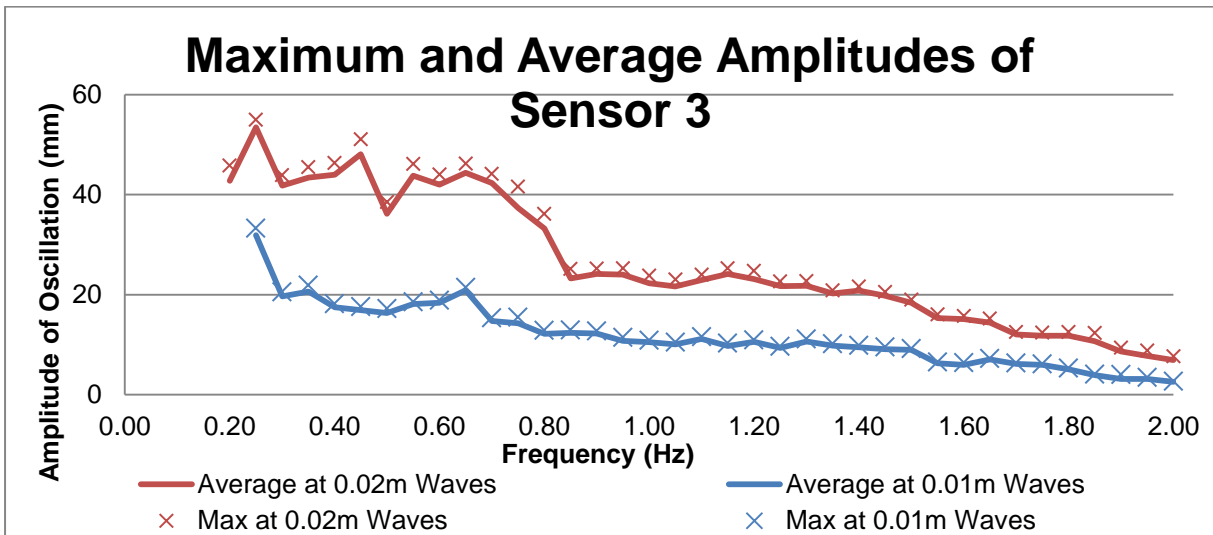
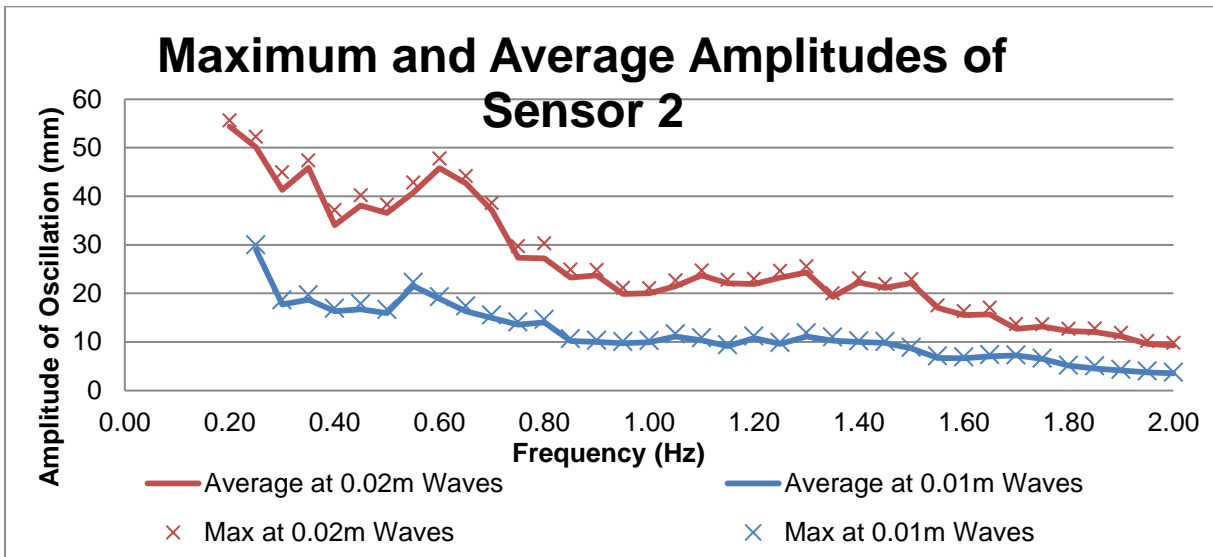
Amplitudes at Gauge 3



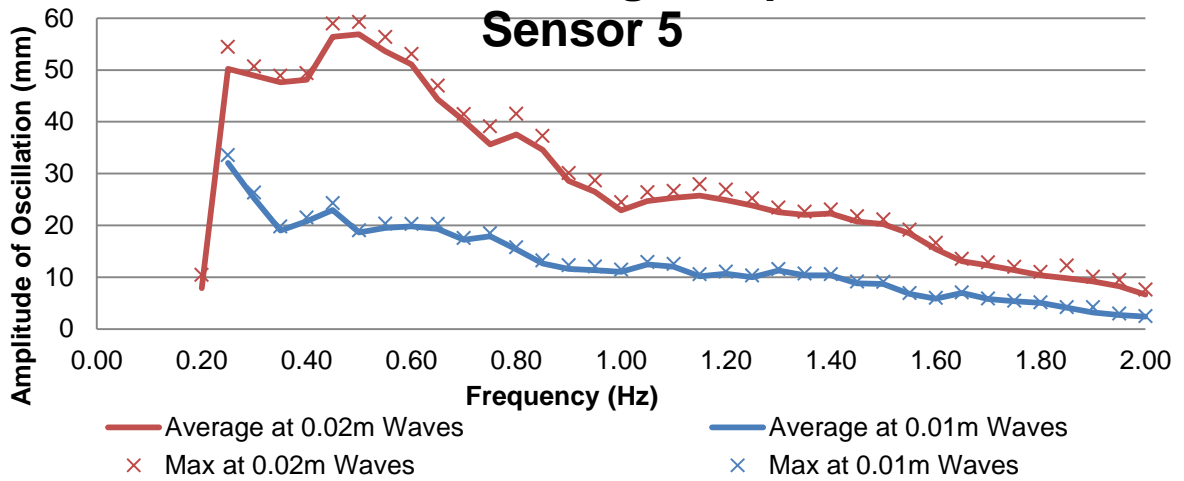
Amplitudes at Gauge 4



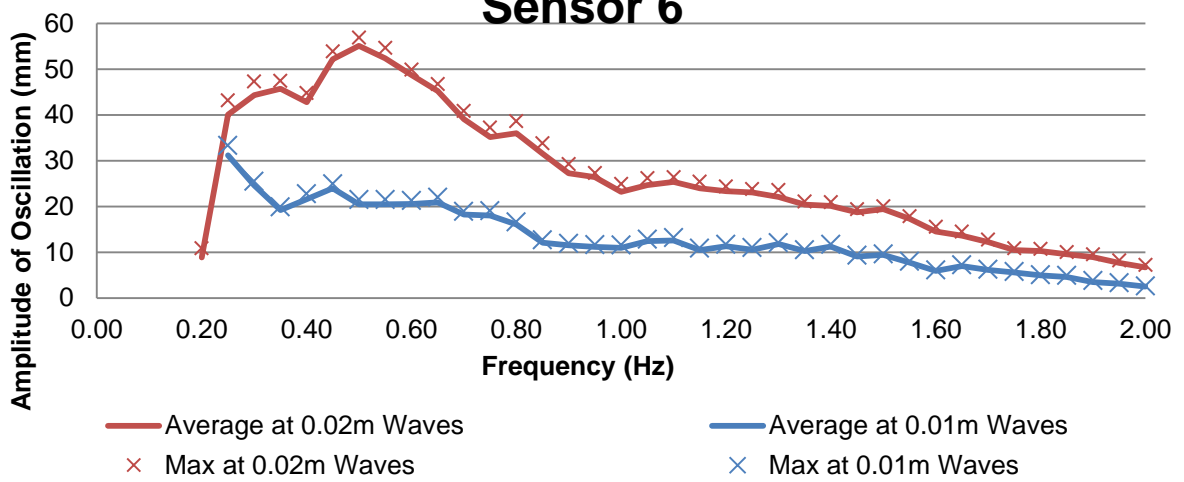
Appendix C – Pontoon Maximum and Average Amplitudes



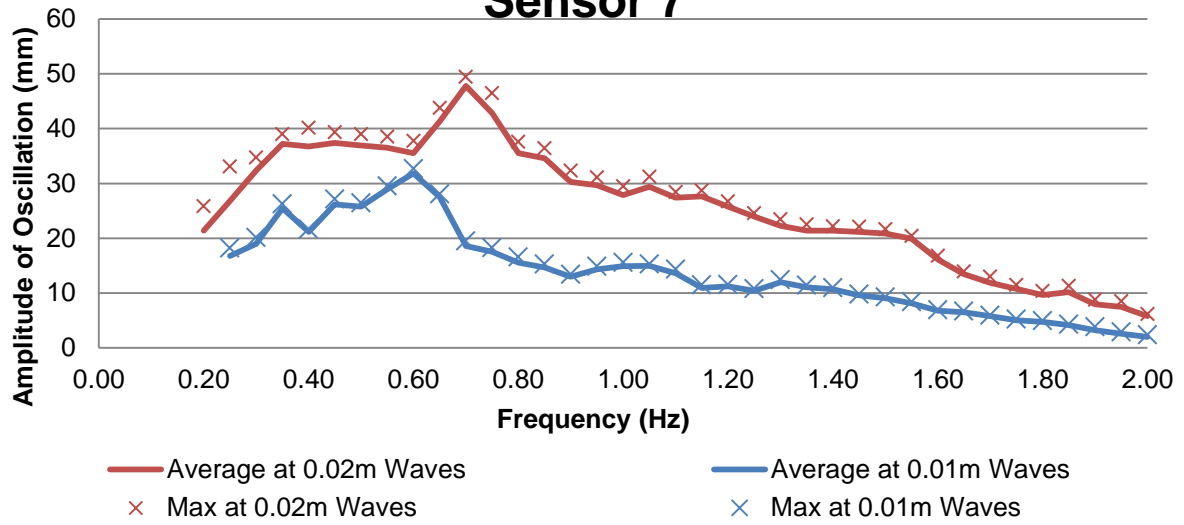
Maximum and Average Amplitudes of Sensor 5



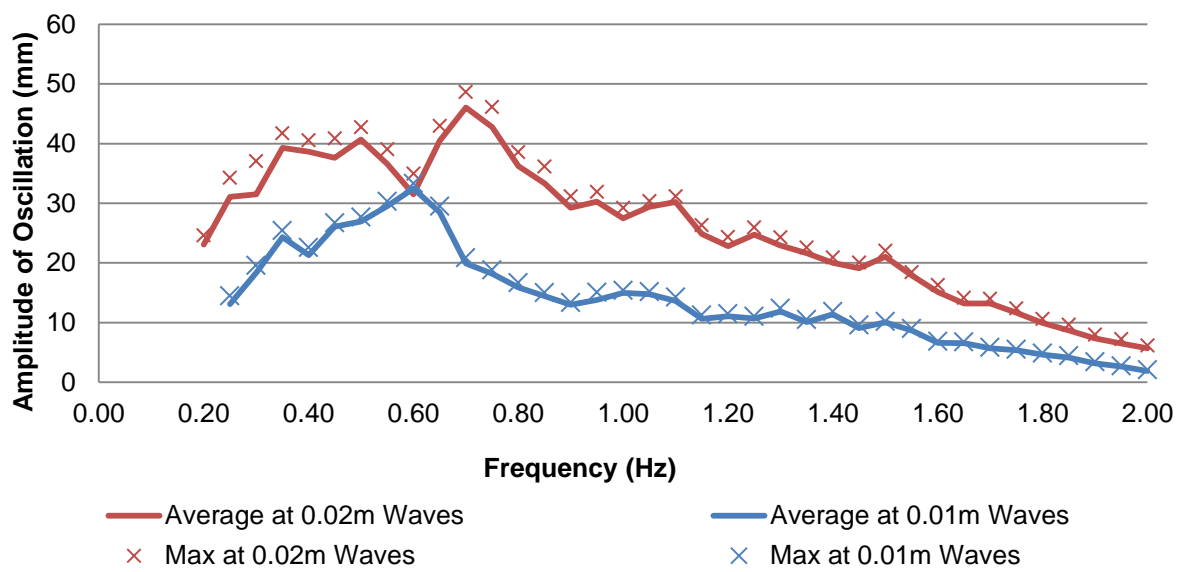
Maximum and Average Amplitudes of Sensor 6



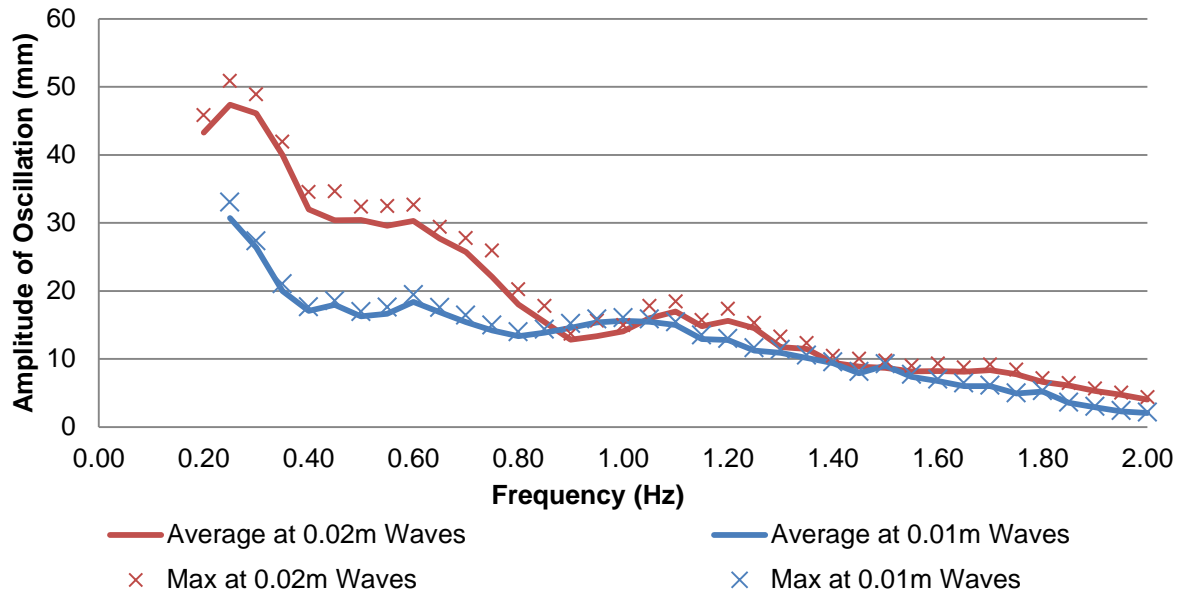
Maximum and Average Amplitudes of Sensor 7



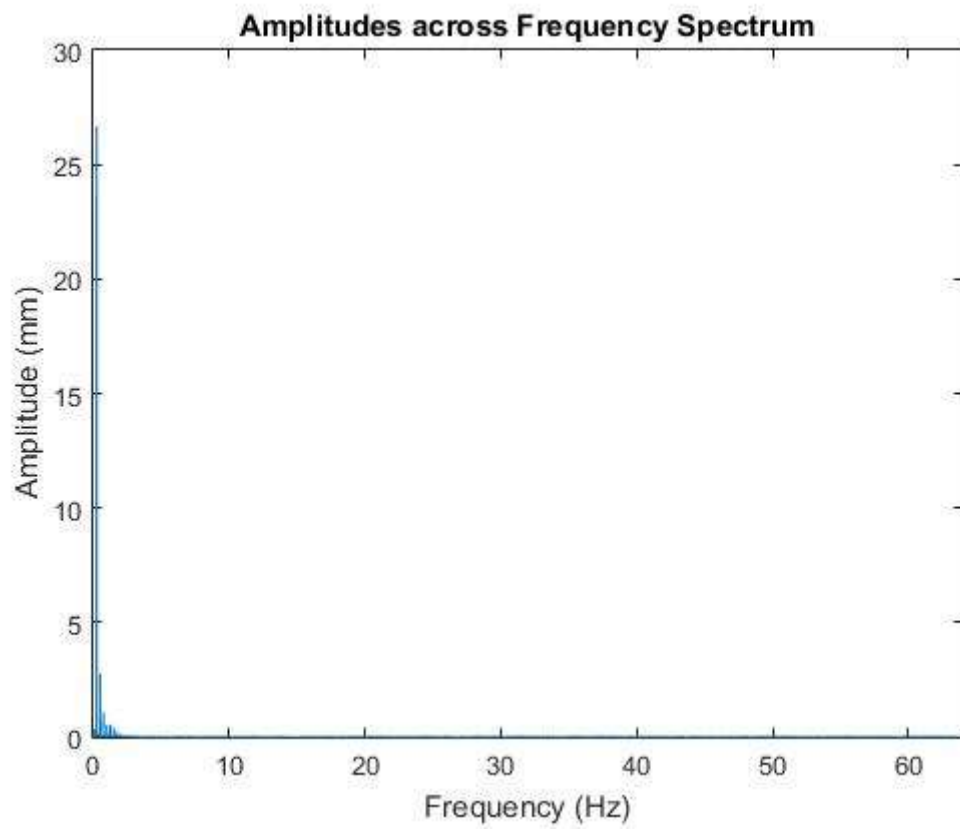
Maximum and Average Amplitudes of Sensor 8



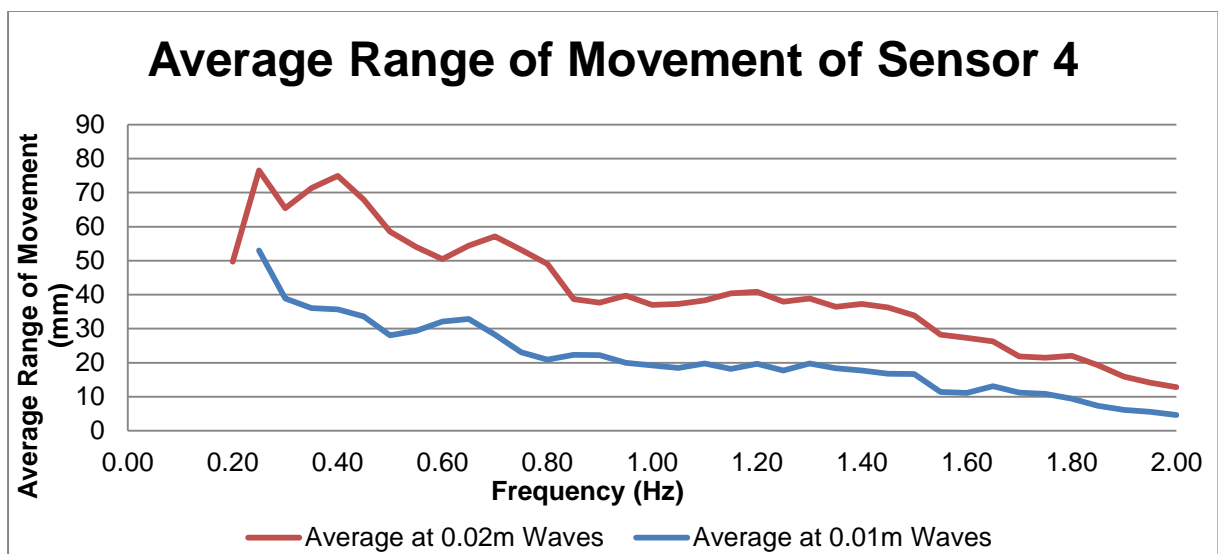
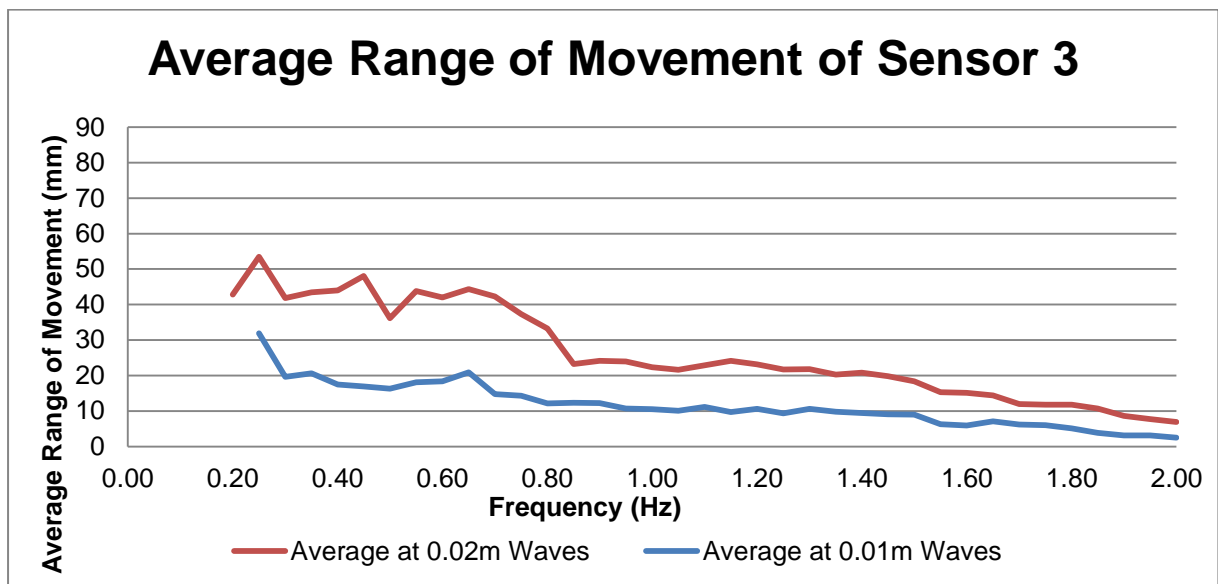
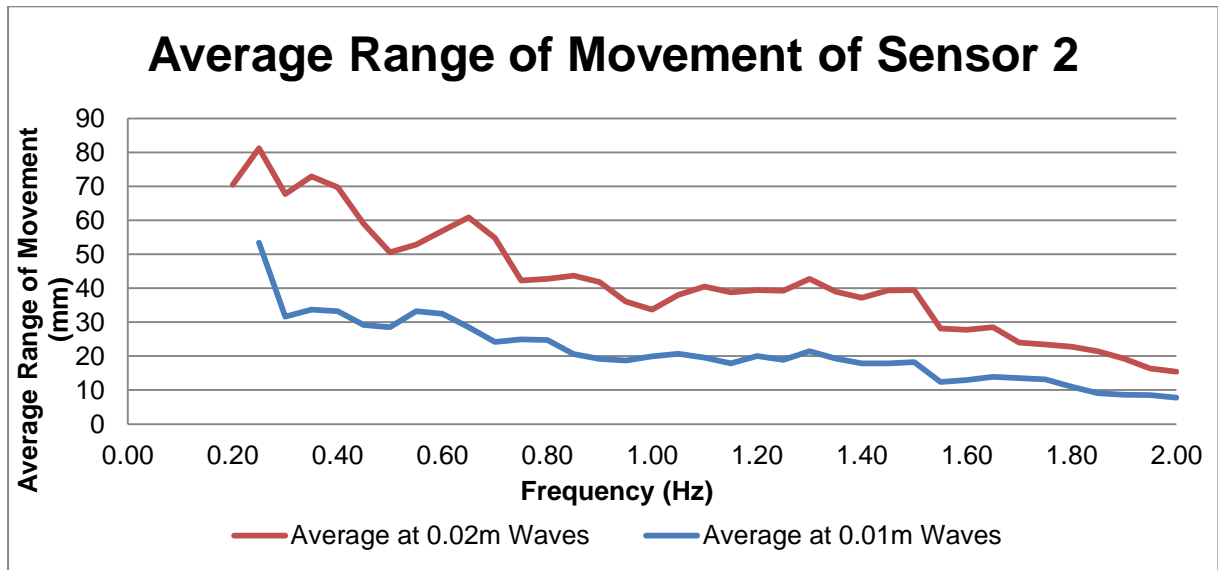
Maximum and Average Amplitudes of Sensor 10



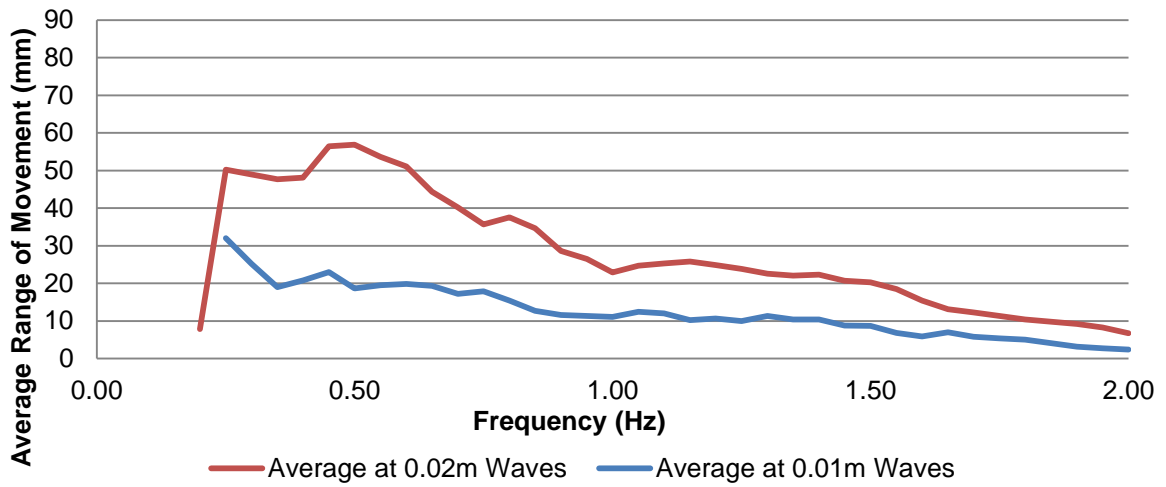
Appendix D – FFT Output



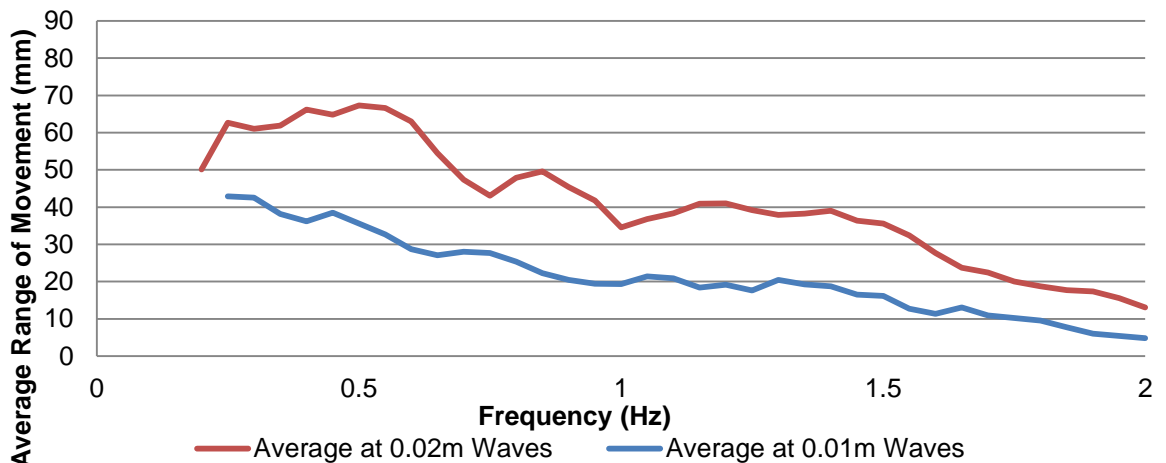
Appendix E – Pontoon Average Movement Range



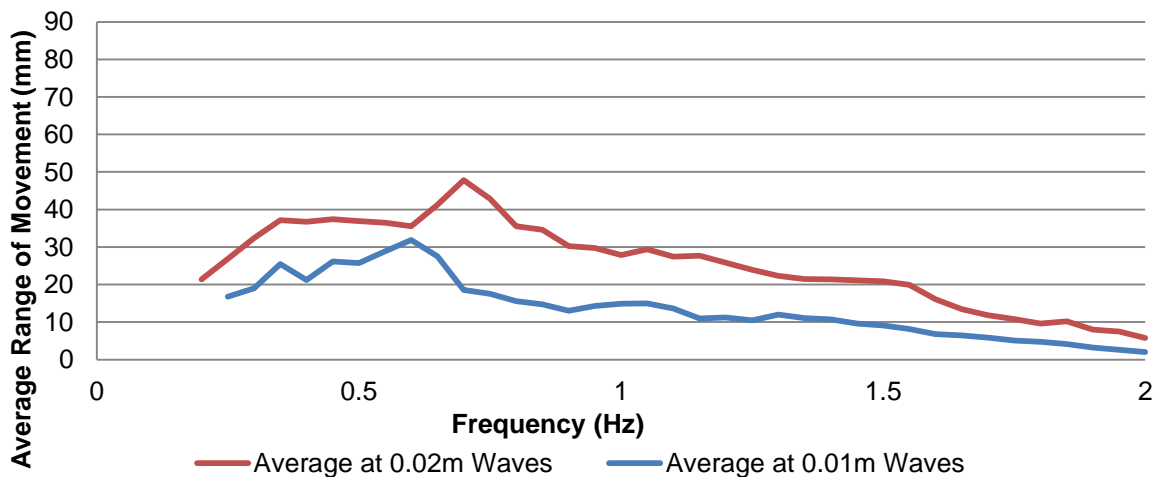
Average Range of Movement of Sensor 5



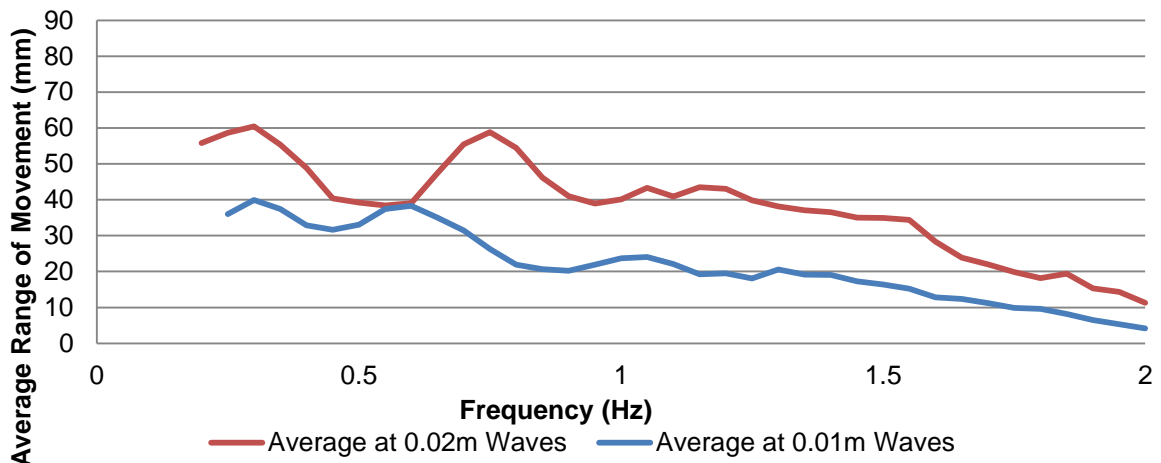
Average Range of Movement of Sensor 6



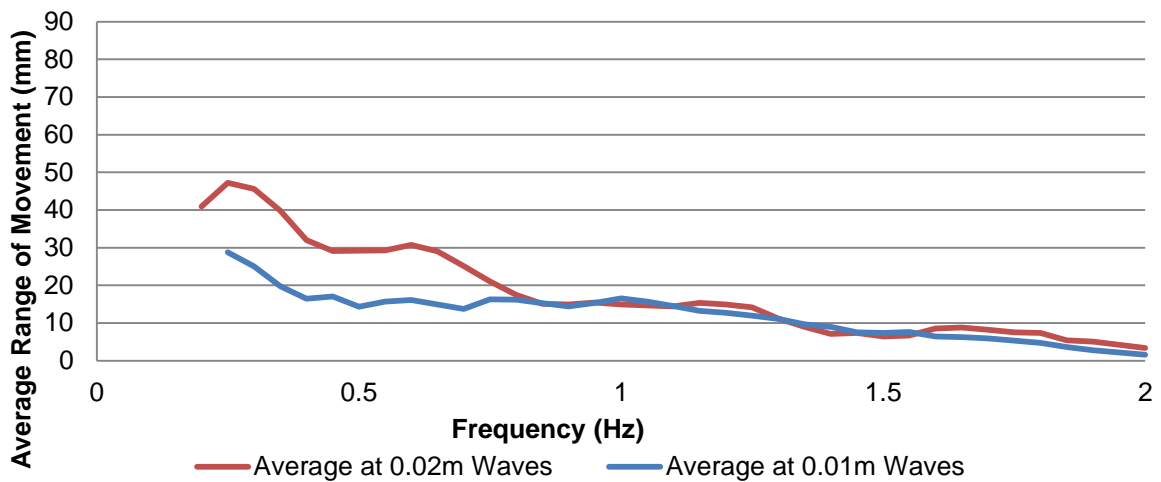
Average Range of Movement of Sensor 7



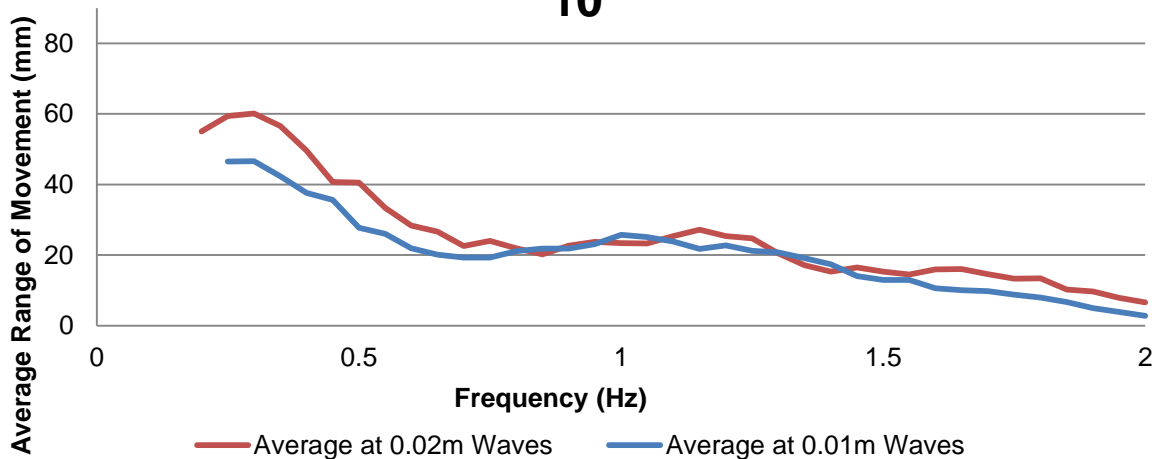
Average Range of Movement of Sensor 8



Average Range of Movement of Sensor 9



Average Range of Movement of Sensor 10



Appendix F – Repeats

1.1.2 Wave Gauge Data

Wave Run	Average Amplitude at 1.5Hz (mm)			
	Gauge 1	Gauge 2	Gauge 3	Gauge 4
1	8.690	9.555	8.307	9.076
2	7.885	9.114	8.149	8.954
3	8.267	9.425	8.288	9.265

Wave Run	Average Amplitude at 2.0Hz (mm)			
	Gauge 1	Gauge 2	Gauge 3	Gauge 4
1	4.721	4.031	4.075	3.539
2	4.095	3.948	3.686	2.974
3	4.288	3.867	4.146	3.369

Wave Run	Maximum Amplitude at 1.5Hz (mm)			
	Gauge 1	Gauge 2	Gauge 3	Gauge 4
1	9.012	9.749	8.858	9.319
2	8.129	9.413	8.536	9.276
3	8.499	9.711	8.577	9.533

Wave Run	Maximum Amplitude at 2.0Hz (mm)			
	Gauge 1	Gauge 2	Gauge 3	Gauge 4
1	4.883	4.524	4.333	4.031
2	4.153	4.346	4.039	3.446
3	4.371	4.328	4.467	3.888

Wave Run	Average Movement Range at 1.5Hz (mm)			
	Gauge 1	Gauge 2	Gauge 3	Gauge 4
1	16.831	18.866	15.781	17.332
2	15.966	19.13	15.413	17.302
3	16.397	19.201	15.761	17.753

Wave Run	Average Movement Range at 2.0Hz (mm)			
	Gauge 1	Gauge 2	Gauge 3	Gauge 4
1	9.5124	8.5122	7.9838	7.7947
2	8.9587	8.7943	7.5409	6.5443
3	9.196	8.622	8.3992	7.3028

1.1.3 Qualisys Data

Sensor No.	Average Amplitude for Wave Run at 1.5Hz (mm)		
	1	2	3
1	9.609	9.280	9.308
2	8.668	8.858	8.653
3	8.979	8.813	8.989
4	8.715	8.245	8.278
5	8.673	8.276	8.325
6	9.403	9.507	9.417
7	9.081	8.930	8.755
8	10.024	9.932	9.840
9	7.400	7.389	7.126
10	9.023	7.963	8.029

Sensor No.	Average Amplitude for Wave Run at 2.0Hz (mm)		
	1	2	3
1	4.031	4.235	4.177
2	3.559	3.418	3.433
3	2.529	2.718	2.719
4	2.426	2.548	2.420
5	2.402	2.516	2.365
6	2.507	2.491	2.435
7	2.021	2.140	2.046
8	1.880	1.993	1.904
9	1.568	1.560	1.478
10	2.045	2.212	2.094

Sensor No.	Maximum Amplitude for Wave Run at 1.5Hz (mm)		
	1	2	3
1	9.873	9.598	9.473
2	8.894	9.070	8.888
3	9.203	9.198	9.186
4	8.961	8.525	8.450
5	9.088	8.650	8.721
6	9.613	9.812	9.715
7	9.291	9.295	9.011
8	10.176	10.173	10.051
9	7.802	7.651	7.356
10	9.269	8.111	8.135

Sensor No.	Maximum Amplitude for Wave Run at 2.0Hz (mm)		
	1	2	3
1	4.371	4.709	4.697
2	3.750	3.539	3.529
3	2.655	2.839	2.821
4	2.569	2.654	2.456
5	2.513	2.614	2.450
6	2.596	2.585	2.526
7	2.389	2.435	2.454
8	2.042	2.201	2.138
9	1.667	1.652	1.614
10	2.169	2.312	2.204

Sensor No.	Average Range for Wave Run at 1.5Hz (mm)		
	1	2	3
1	19.917	19.327	19.001
2	18.821	18.564	18.438
3	19.262	18.404	18.025
4	18.386	17.773	17.408
5	19.370	19.360	18.797
6	19.023	19.177	18.801
7	23.700	22.787	22.474
8	23.313	22.286	21.984
9	25.722	24.507	23.918
10	25.531	24.720	24.796

Sensor No.	Average Range for Wave Run at 2.0Hz (mm)		
	1	2	3
1	19.917	19.327	19.001
2	18.821	18.564	18.438
3	19.262	18.404	18.025
4	18.386	17.773	17.408
5	19.370	19.360	18.797
6	19.023	19.177	18.801
7	23.700	22.787	22.474
8	23.313	22.286	21.984
9	25.722	24.507	23.918
10	25.531	24.720	24.796

Wave Run	1.5Hz Frequency			
	Average Gradient	Average Slope	Maximum Gradient	Maximum Slope
1	0.0271	36.86	0.11621	8.60534
2	0.0261	38.32	0.11233	8.90267
3	0.0261	38.25	0.11323	8.83146

Wave Run	2.0Hz Frequency			
	Average Gradient	Average Slope	Maximum Gradient	Maximum Slope
1	0.0036	281.34	0.03292	30.3738
2	0.0038	265.77	0.03563	28.0684
3	0.0038	264.74	0.03701	27.0194

Appendix G – Average Pontoon Slope with Standards

