

Map 21. Wave height thresholds

TABLE - Wave height frequencies.

Albers Equal-Area Conic Projection

Graphs: Wave height thresholds

Wave height frequencies.

<u>WAVE HEIGHT (M)</u>	<u>%</u>
0 - 0.5	10.0
1 - 1.5	20.0
2 - 2.5	30.0
3 - 3.5	20.0
4 - 5.5	10.0
≥ 6.0	10.0
N =	1363

Percent frequency of various ranges within the area.

(30.0% of all observed wave heights were in the range 2 to 2.5 meters.)

N = Observation count.

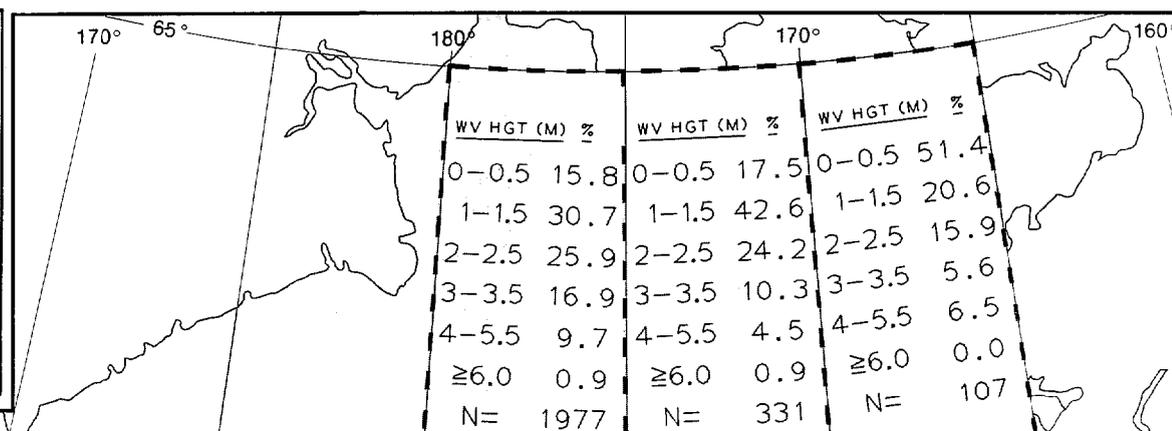
Wave data for these tables were selected from the higher of sea or swell when both were reported.

The wave height should be estimated from the best available point on the ship that permits the height of the waves to be compared to the height of the ship. The point of observation should be chosen amidships where the pitching of the vessel is at a minimum, and the wave height should be estimated when the ship is on an even keel. In general, it has been found by comparing instrument measurements to "eyeball" estimates that small wave heights are underestimated while large wave heights are overestimated. Theoretically, the wave height cannot exceed 1/3 of the wave length, measured from trough to trough. When both sea and swell, or two systems of swell, are present at the same time, the observer first estimates the higher system of waves and then repeats the process for the lower system.

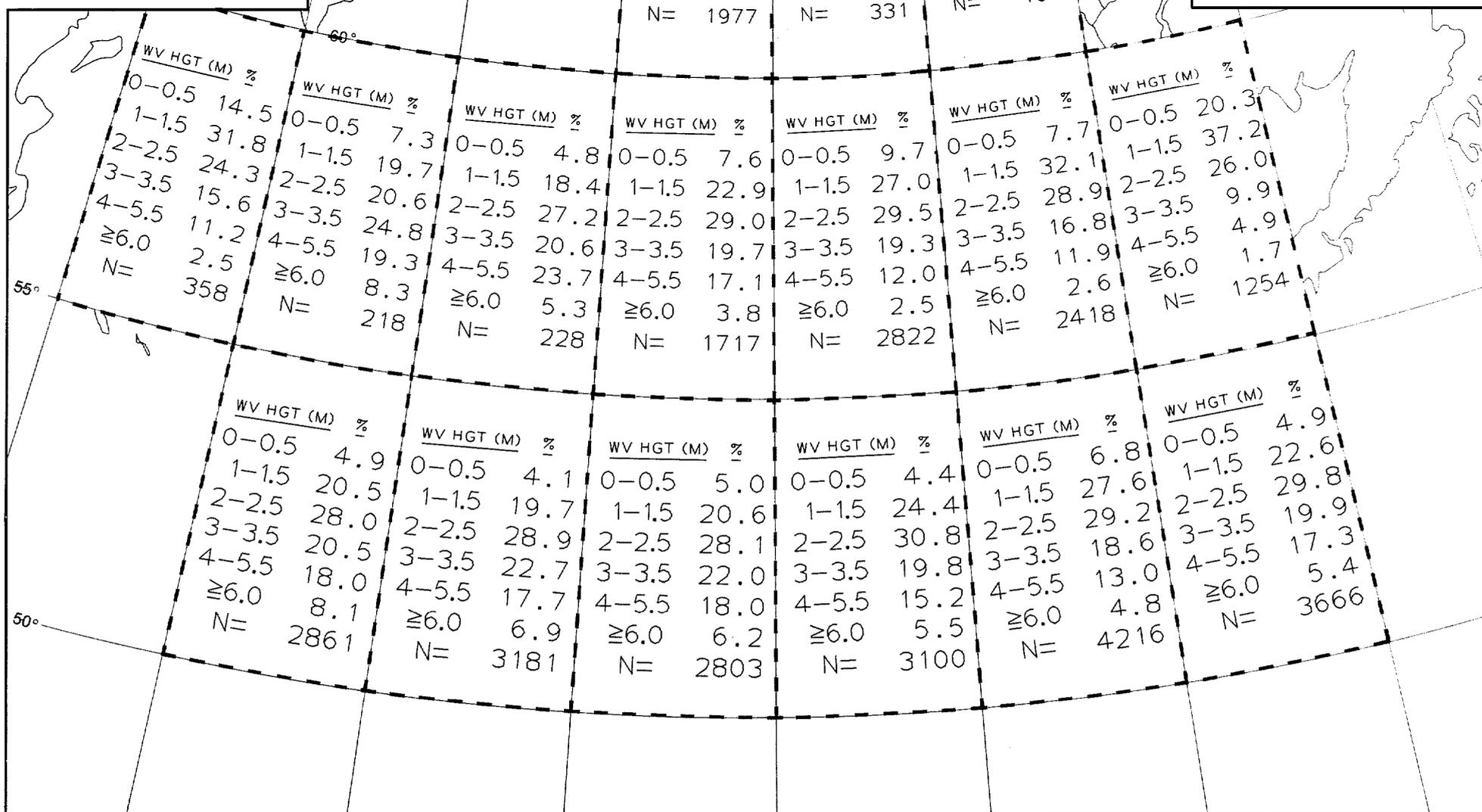
Swell direction may be determined by "eyeball" or by sighting from a compass along wave crests and adding or subtracting 90°. Ship's true heading can also be used to determine the direction from which swells are approaching. The higher the observation point, the easier it is to determine swell direction. The average of several observations, rounded to the nearest 10°, should be used as the observed swell direction. Refer to the texts for Sets 14 and 18-21 for complete information on waves.

Marine Area A		Marine Area B		Marine Area C		Marine Area D	
WAVE HEIGHT (M)	%						
0-0.5	17.5	0-0.5	9.0	0-0.5	11.8	0-0.5	5.8
1-1.5	32.1	1-1.5	26.2	1-1.5	33.1	1-1.5	25.6
2-2.5	25.1	2-2.5	29.4	2-2.5	28.2	2-2.5	29.6
3-3.5	15.6	3-3.5	19.0	3-3.5	14.9	3-3.5	20.0
4-5.5	8.8	4-5.5	13.6	4-5.5	9.6	4-5.5	14.7
≥6.0	0.9	≥6.0	2.9	≥6.0	2.4	≥6.0	4.4
N=	2398	N=	4806	N=	3378	N=	5878

Marine Area E	
WAVE HEIGHT (M)	%
0-0.5	5.8
1-1.5	23.9
2-2.5	28.7
3-3.5	19.7
4-5.5	15.3
≥6.0	6.7
N=	4238



Marine Area F	
WAVE HEIGHT (M)	%
0-0.5	6.7
1-1.5	22.6
2-2.5	29.5
3-3.5	19.6
4-5.5	16.6
≥6.0	5.1
N=	5468

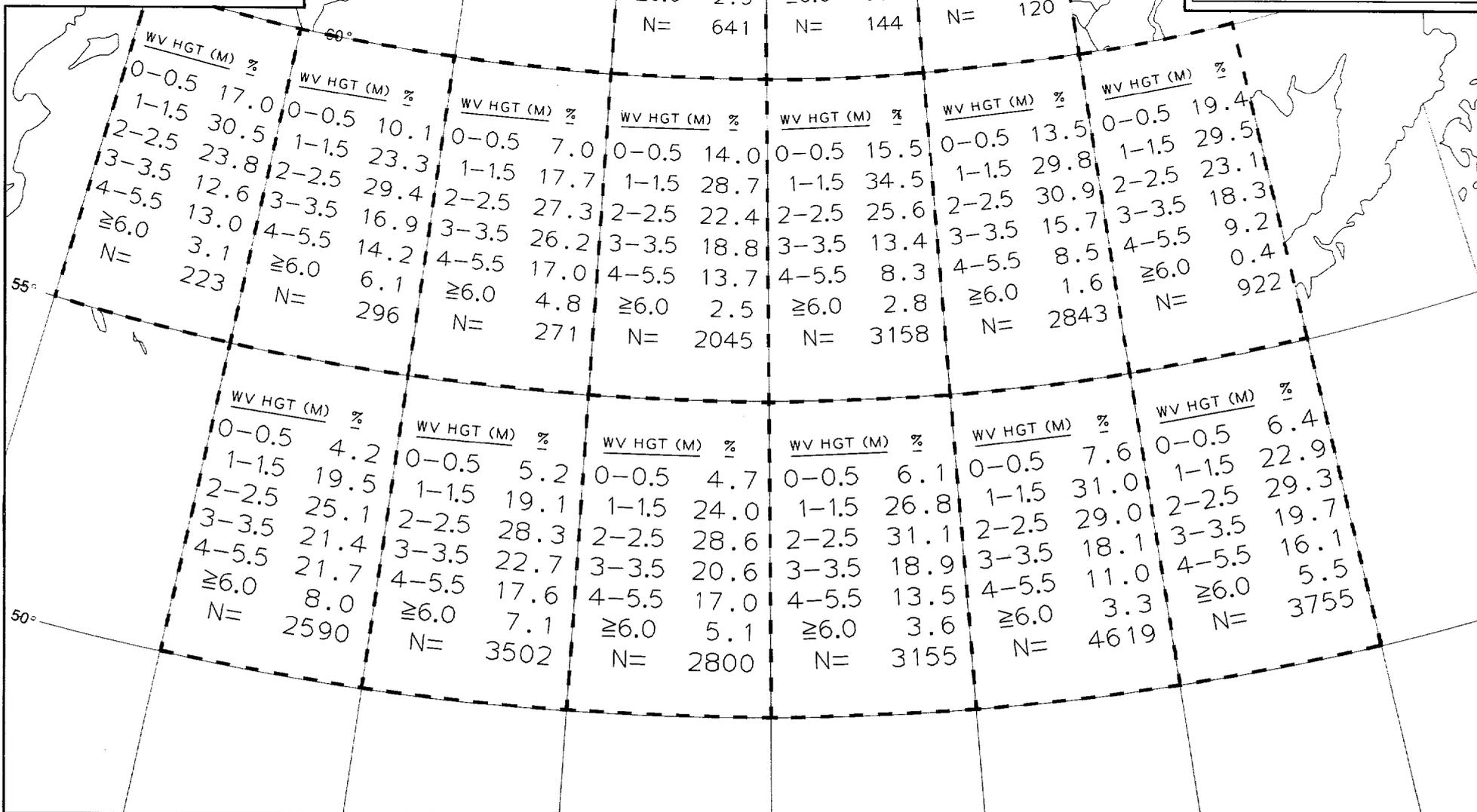


Marine Area A		Marine Area B		Marine Area C		Marine Area D	
WAVE HEIGHT (M)	%						
0-0.5	34.0	0-0.5	14.7	0-0.5	14.9	0-0.5	7.2
1-1.5	24.4	1-1.5	32.8	1-1.5	28.4	1-1.5	29.3
2-2.5	20.2	2-2.5	24.7	2-2.5	28.9	2-2.5	29.6
3-3.5	10.9	3-3.5	15.1	3-3.5	17.2	3-3.5	18.5
4-5.5	8.8	4-5.5	10.1	4-5.5	9.3	4-5.5	12.3
≥6.0	1.8	≥6.0	2.6	≥6.0	1.3	≥6.0	3.1
N=	901	N=	5581	N=	3324	N=	6139

Marine Area E	
WAVE HEIGHT (M)	%
0-0.5	5.5
1-1.5	26.3
2-2.5	29.4
3-3.5	19.4
4-5.5	14.5
≥6.0	4.9
N=	4434

170° 65°		180°		170°		160°	
WV HGT (M)	%	WV HGT (M)	%	WV HGT (M)	%	WV HGT (M)	%
0-0.5	23.2	0-0.5	43.8	0-0.5	81.7		
1-1.5	26.7	1-1.5	23.6	1-1.5	12.5		
2-2.5	24.0	2-2.5	15.3	2-2.5	5.0		
3-3.5	12.3	3-3.5	11.8	3-3.5	0.8		
4-5.5	11.2	4-5.5	5.6	4-5.5	0.0		
≥6.0	2.5	≥6.0	0.0	≥6.0	0.0		
N=	641	N=	144	N=	120		

Marine Area F	
WAVE HEIGHT (M)	%
0-0.5	6.7
1-1.5	23.1
2-2.5	29.7
3-3.5	19.9
4-5.5	15.6
≥6.0	5.0
N=	5606



Marine Area A		Marine Area B		Marine Area C		Marine Area D	
WAVE HEIGHT (M)	%						
0-0.5	42.9	0-0.5	18.8	0-0.5	20.7	0-0.5	7.7
1-1.5	22.9	1-1.5	31.1	1-1.5	35.9	1-1.5	28.7
2-2.5	17.4	2-2.5	26.6	2-2.5	26.7	2-2.5	30.0
3-3.5	9.5	3-3.5	13.4	3-3.5	10.7	3-3.5	17.5
4-5.5	5.5	4-5.5	7.9	4-5.5	4.7	4-5.5	12.2
≥6.0	1.9	≥6.0	2.2	≥6.0	1.3	≥6.0	3.8
N=	529	N=	5067	N=	3720	N=	7406

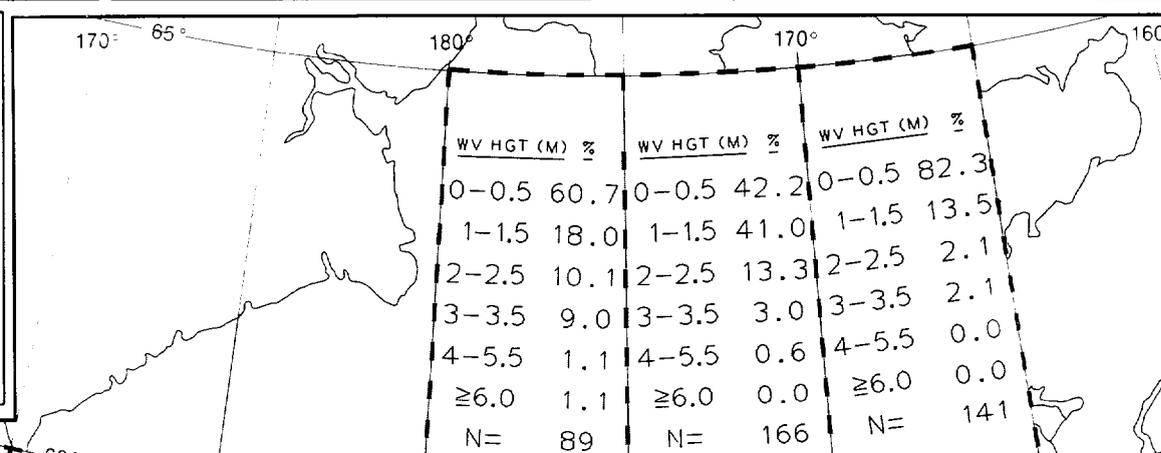
Marine Area E		Map Section (60°N - 65°N)						Marine Area F	
WAVE HEIGHT (M)	%	WV HGT (M) %		WV HGT (M) %		WV HGT (M) %		WAVE HEIGHT (M)	%
0-0.5	5.5	0-0.5	21.1	0-0.5	48.7	0-0.5	83.6	0-0.5	7.2
1-1.5	24.0	1-1.5	29.9	1-1.5	21.7	1-1.5	9.8	1-1.5	25.6
2-2.5	29.8	2-2.5	22.7	2-2.5	16.2	2-2.5	4.9	2-2.5	28.8
3-3.5	19.5	3-3.5	12.9	3-3.5	8.7	3-3.5	1.6	3-3.5	19.3
4-5.5	15.8	4-5.5	11.3	4-5.5	2.5	4-5.5	0.0	4-5.5	15.1
≥6.0	5.4	≥6.0	2.1	≥6.0	2.2	≥6.0	0.0	≥6.0	4.0
N=	5303	N=	194	N=	277	N=	61	N=	7075

Map Section (55°N - 60°N)		Map Section (55°N - 60°N)		Map Section (55°N - 60°N)		Map Section (55°N - 60°N)		Map Section (55°N - 60°N)		Map Section (55°N - 60°N)		Map Section (55°N - 60°N)	
WV HGT (M) %	N	WV HGT (M) %	N	WV HGT (M) %	N	WV HGT (M) %	N						
0-0.5 23.1	221	0-0.5 7.6	157	0-0.5 7.7	247	0-0.5 12.3	1295	0-0.5 21.6	3381	0-0.5 18.5	2552	0-0.5 24.2	1643
1-1.5 35.3		1-1.5 19.7		1-1.5 25.5		1-1.5 28.6		1-1.5 31.6		1-1.5 31.8		1-1.5 41.6	
2-2.5 23.5		2-2.5 33.1		2-2.5 30.8		2-2.5 28.3		2-2.5 26.5		2-2.5 28.1		2-2.5 23.1	
3-3.5 12.7		3-3.5 24.8		3-3.5 21.5		3-3.5 16.3		3-3.5 12.1		3-3.5 13.0		3-3.5 7.7	
4-5.5 4.5		4-5.5 13.4		4-5.5 11.3		4-5.5 10.6		4-5.5 6.8		4-5.5 6.5		4-5.5 2.7	
≥6.0 0.9		≥6.0 1.3		≥6.0 3.2		≥6.0 3.9		≥6.0 1.4		≥6.0 2.1		≥6.0 0.7	
N=		N=		N=		N=		N=		N=		N=	

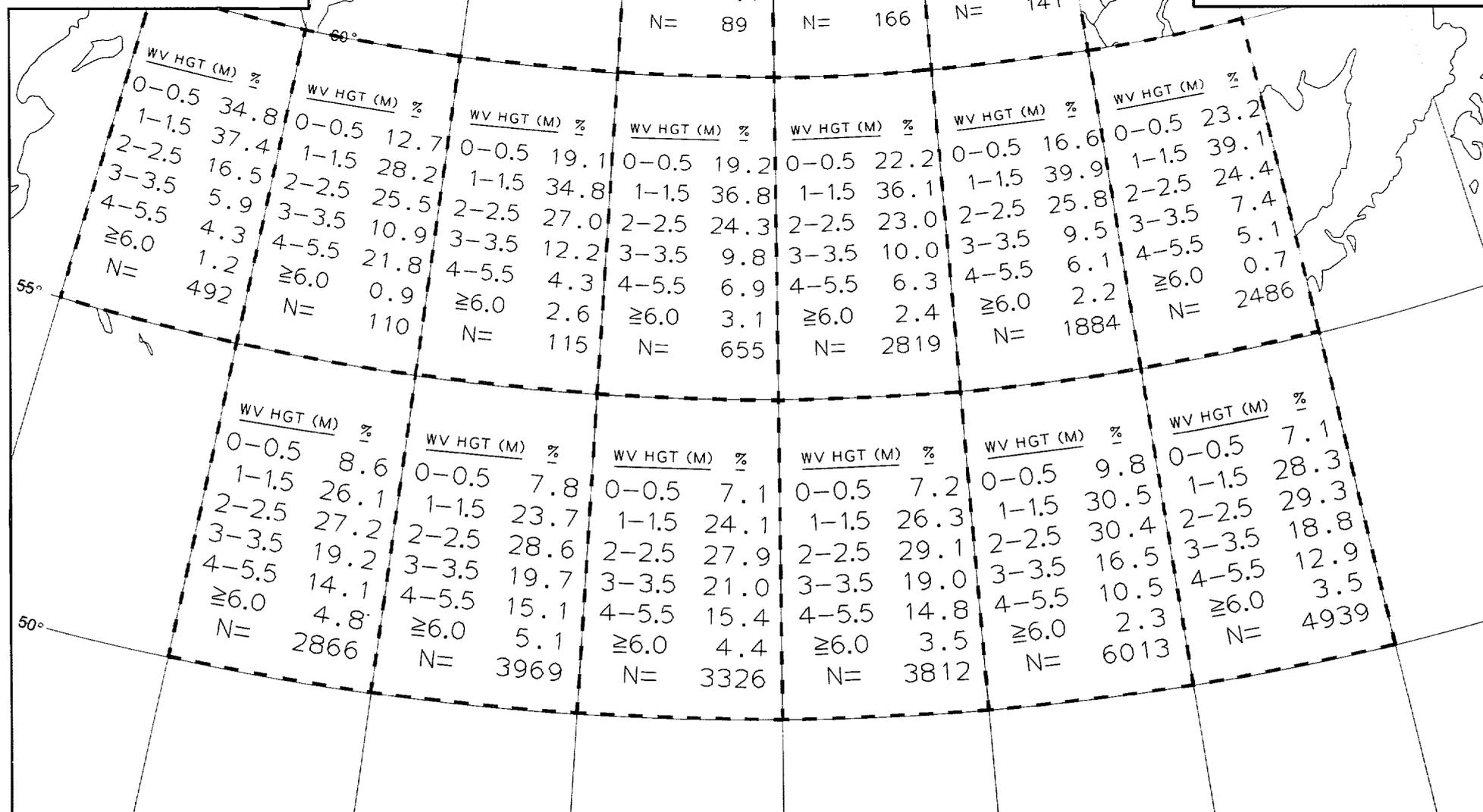
Map Section (50°N - 55°N)		Map Section (50°N - 55°N)		Map Section (50°N - 55°N)		Map Section (50°N - 55°N)		Map Section (50°N - 55°N)		Map Section (50°N - 55°N)		Map Section (50°N - 55°N)	
WV HGT (M) %	N	WV HGT (M) %	N										
0-0.5 5.2	3095	0-0.5 4.9	4352	0-0.5 3.9	3264	0-0.5 4.4	3721	0-0.5 9.8	5727	0-0.5 6.5	4588	0-0.5 24.8	
1-1.5 18.4		1-1.5 21.5		1-1.5 20.9		1-1.5 24.5		1-1.5 31.0		1-1.5 24.8		1-1.5 28.9	
2-2.5 29.8		2-2.5 28.8		2-2.5 29.9		2-2.5 31.4		2-2.5 29.3		2-2.5 28.9		2-2.5 28.9	
3-3.5 22.1		3-3.5 21.7		3-3.5 21.2		3-3.5 19.2		3-3.5 16.4		3-3.5 19.9		3-3.5 19.9	
4-5.5 17.9		4-5.5 16.7		4-5.5 18.2		4-5.5 14.9		4-5.5 10.4		4-5.5 15.6		4-5.5 15.6	
≥6.0 6.5		≥6.0 6.3		≥6.0 5.8		≥6.0 5.6		≥6.0 3.2		≥6.0 4.3		≥6.0 4.3	
N=		N=		N=		N=		N=		N=		N=	

Marine Area A		Marine Area B		Marine Area C		Marine Area D	
WAVE HEIGHT (M)	%						
0-0.5	60.6	0-0.5	22.0	0-0.5	19.8	0-0.5	9.1
1-1.5	26.0	1-1.5	36.6	1-1.5	39.2	1-1.5	29.6
2-2.5	8.6	2-2.5	23.0	2-2.5	25.5	2-2.5	29.5
3-3.5	4.0	3-3.5	9.7	3-3.5	8.5	3-3.5	17.3
4-5.5	0.5	4-5.5	6.3	4-5.5	5.6	4-5.5	12.2
≥6.0	0.3	≥6.0	2.3	≥6.0	1.4	≥6.0	2.4
N=	396	N=	3745	N=	4070	N=	6849

Marine Area E	
WAVE HEIGHT (M)	%
0-0.5	7.9
1-1.5	25.8
2-2.5	29.1
3-3.5	19.4
4-5.5	13.7
≥6.0	4.1
N=	6302

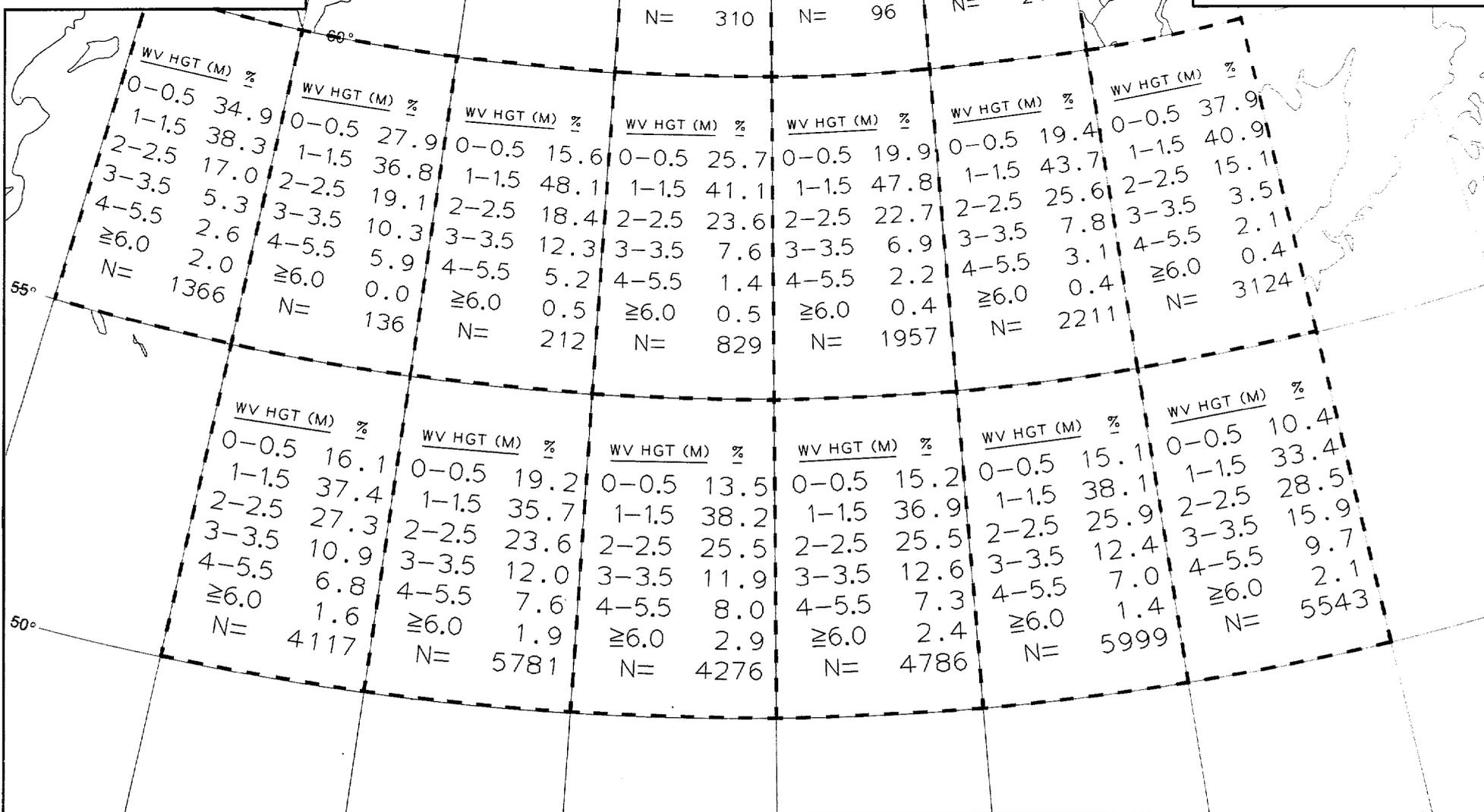


Marine Area F	
WAVE HEIGHT (M)	%
0-0.5	9.0
1-1.5	29.5
2-2.5	28.7
3-3.5	17.8
4-5.5	11.8
≥6.0	3.1
N=	7948



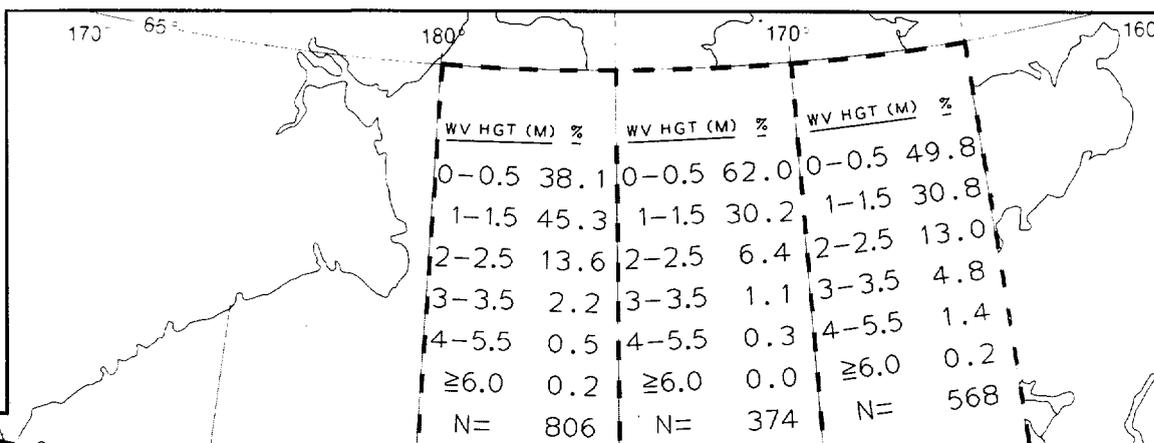
Marine Area A		Marine Area B		Marine Area C		Marine Area D	
WAVE HEIGHT (M)	%						
0-0.5	49.7	0-0.5	22.0	0-0.5	30.1	0-0.5	17.2
1-1.5	41.0	1-1.5	45.3	1-1.5	42.7	1-1.5	40.5
2-2.5	7.2	2-2.5	22.9	2-2.5	19.3	2-2.5	24.3
3-3.5	2.0	3-3.5	7.3	3-3.5	5.1	3-3.5	10.7
4-5.5	0.2	4-5.5	2.1	4-5.5	2.4	4-5.5	5.8
≥6.0	0.0	≥6.0	0.4	≥6.0	0.4	≥6.0	1.5
N=	598	N=	3032	N=	5197	N=	7342

Marine Area E		Map Data						Marine Area F	
WAVE HEIGHT (M)	%	WV HGT (M) %		WV HGT (M) %		WV HGT (M) %		WAVE HEIGHT (M)	%
0-0.5	12.7	0-0.5	29.0	0-0.5	76.0	0-0.5	68.7	0-0.5	13.3
1-1.5	35.4	1-1.5	59.4	1-1.5	20.8	1-1.5	22.7	1-1.5	33.7
2-2.5	26.7	2-2.5	9.7	2-2.5	3.1	2-2.5	5.2	2-2.5	27.2
3-3.5	13.8	3-3.5	1.9	3-3.5	0.0	3-3.5	2.8	3-3.5	14.7
4-5.5	8.7	4-5.5	0.0	4-5.5	0.0	4-5.5	0.5	4-5.5	9.2
≥6.0	2.7	≥6.0	0.0	≥6.0	0.0	≥6.0	0.0	≥6.0	1.9
N=	7706	N=	310	N=	96	N=	211	N=	8841

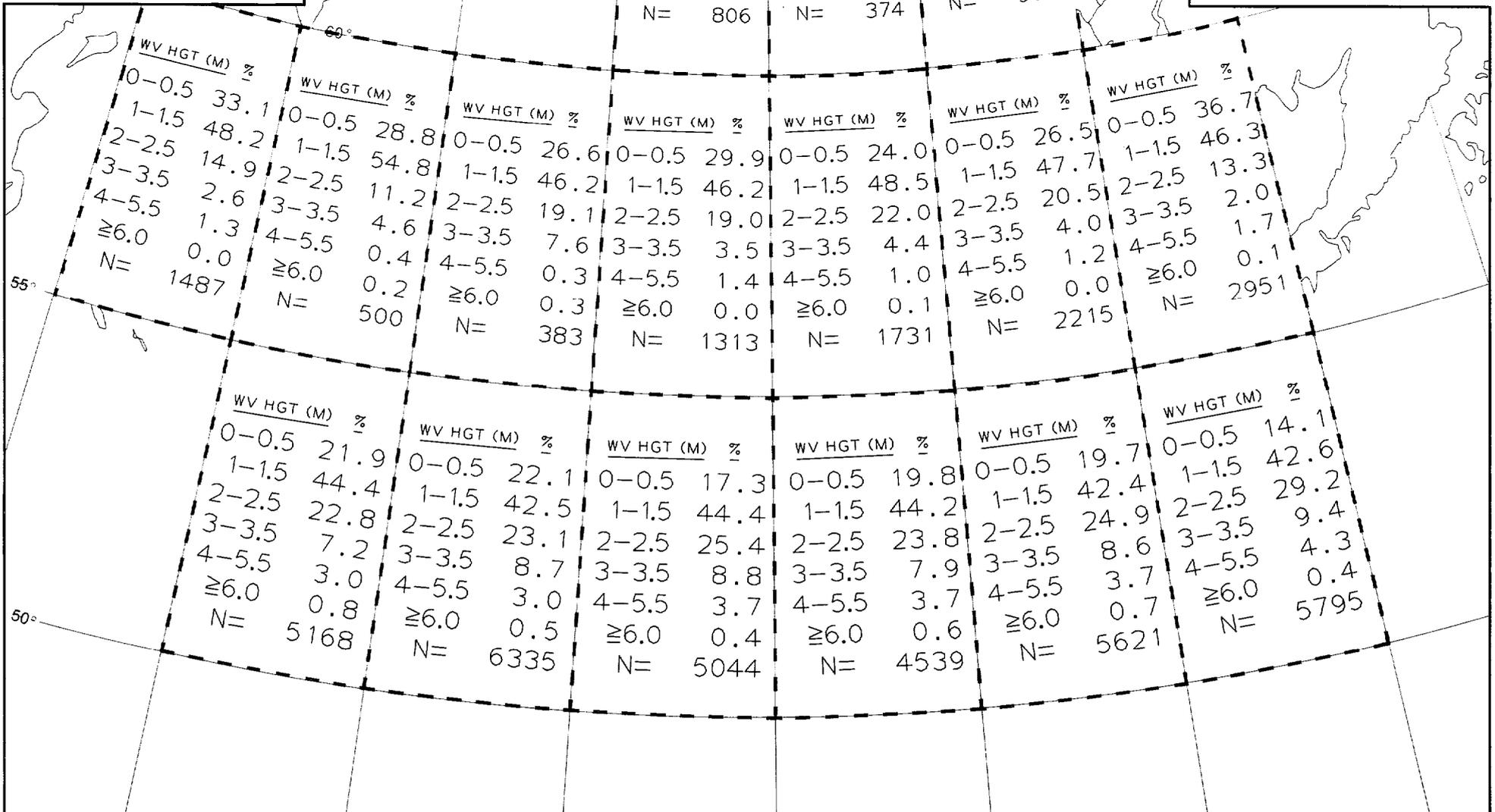


Marine Area A		Marine Area B		Marine Area C		Marine Area D	
WAVE HEIGHT (M)	%						
0-0.5	48.8	0-0.5	26.9	0-0.5	33.8	0-0.5	22.6
1-1.5	36.2	1-1.5	47.1	1-1.5	46.3	1-1.5	46.5
2-2.5	11.1	2-2.5	20.5	2-2.5	15.9	2-2.5	21.2
3-3.5	2.8	3-3.5	4.1	3-3.5	2.6	3-3.5	6.4
4-5.5	0.8	4-5.5	1.3	4-5.5	1.3	4-5.5	3.0
≥6.0	0.2	≥6.0	0.0	≥6.0	0.0	≥6.0	0.3
N=	1511	N=	3482	N=	5175	N=	7150

Marine Area E	
WAVE HEIGHT (M)	%
0-0.5	16.4
1-1.5	40.9
2-2.5	27.5
3-3.5	10.2
4-5.5	4.2
≥6.0	0.8
N=	8053

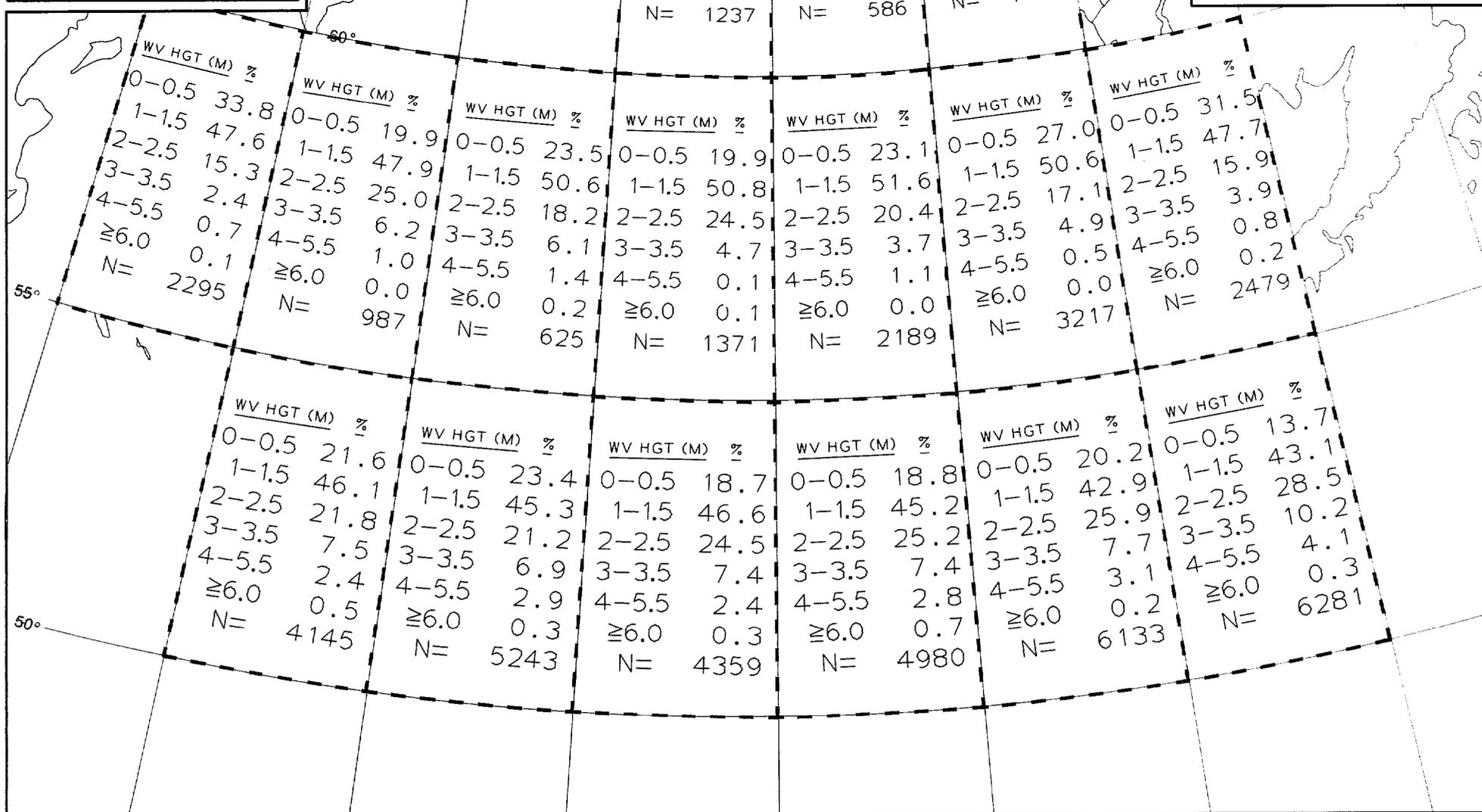


Marine Area F	
WAVE HEIGHT (M)	%
0-0.5	15.8
1-1.5	42.7
2-2.5	27.7
3-3.5	9.3
4-5.5	4.1
≥6.0	0.4
N=	8441



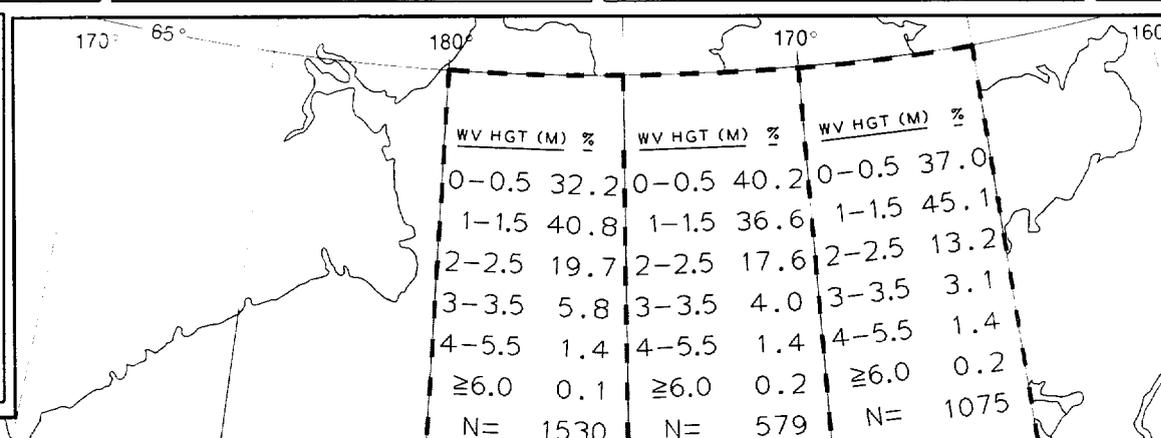
Marine Area A		Marine Area B		Marine Area C		Marine Area D	
WAVE HEIGHT (M)	%						
0-0.5	43.3	0-0.5	22.0	0-0.5	30.6	0-0.5	24.1
1-1.5	41.2	1-1.5	51.4	1-1.5	48.6	1-1.5	46.1
2-2.5	12.4	2-2.5	21.9	2-2.5	15.7	2-2.5	21.1
3-3.5	2.3	3-3.5	4.0	3-3.5	4.3	3-3.5	6.1
4-5.5	0.6	4-5.5	0.7	4-5.5	0.7	4-5.5	2.2
≥6.0	0.1	≥6.0	0.1	≥6.0	0.1	≥6.0	0.4
N=	3111	N=	3916	N=	5657	N=	6785

Marine Area E		Map Data						Marine Area F	
WAVE HEIGHT (M)	%	WV HGT (M)	%	WV HGT (M)	%	WV HGT (M)	%	WAVE HEIGHT (M)	%
0-0.5	16.3	0-0.5	37.6	0-0.5	43.5	0-0.5	46.1	0-0.5	14.7
1-1.5	43.3	1-1.5	41.0	1-1.5	39.4	1-1.5	42.3	1-1.5	43.0
2-2.5	28.3	2-2.5	17.1	2-2.5	14.3	2-2.5	8.8	2-2.5	28.3
3-3.5	8.5	3-3.5	3.7	3-3.5	2.0	3-3.5	2.0	3-3.5	9.8
4-5.5	3.2	4-5.5	0.5	4-5.5	0.5	4-5.5	0.8	4-5.5	3.9
≥6.0	0.4	≥6.0	0.2	≥6.0	0.2	≥6.0	0.1	≥6.0	0.3
N=	8682	N=	1237	N=	586	N=	1448	N=	9083

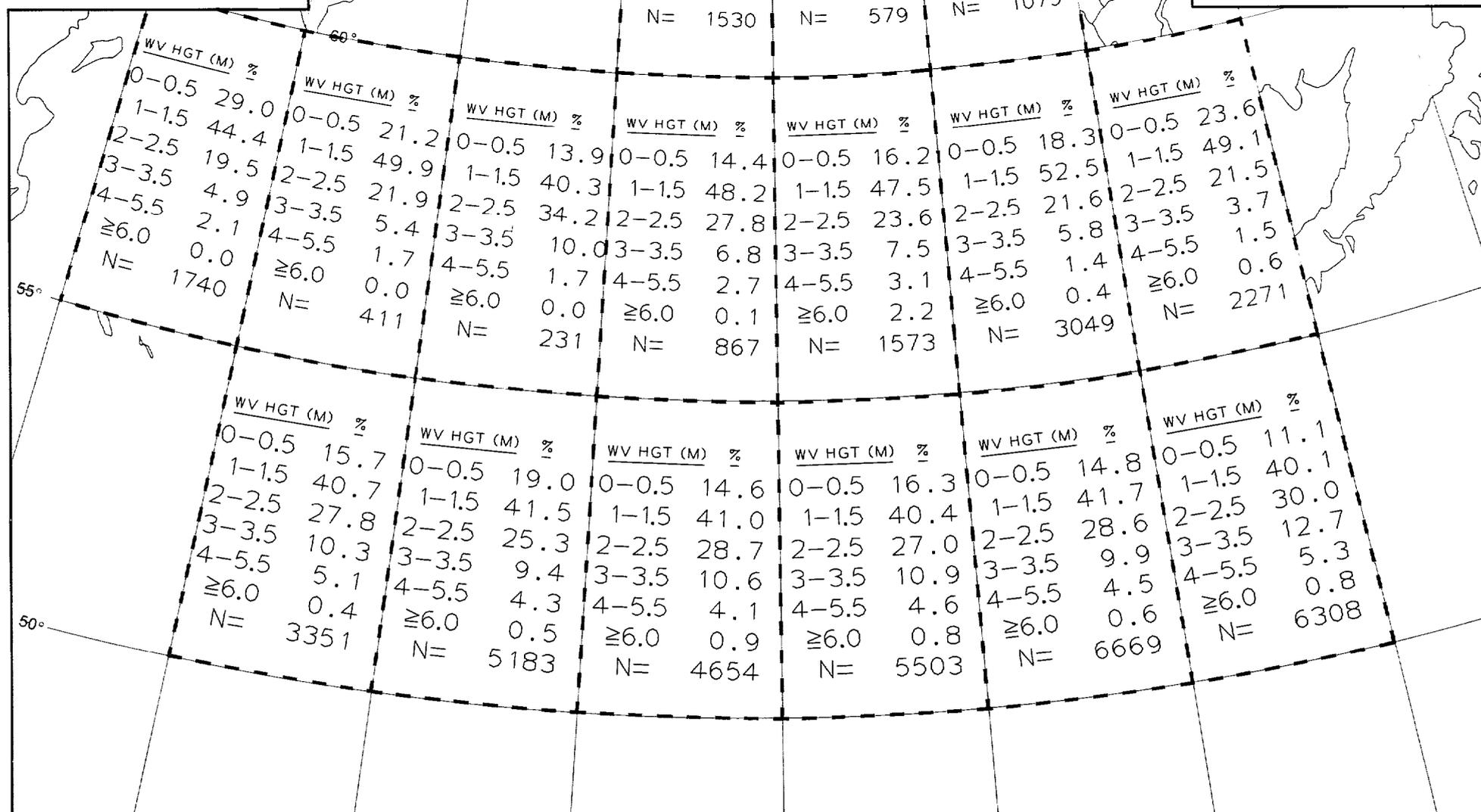


Marine Area A		Marine Area B		Marine Area C		Marine Area D	
WAVE HEIGHT (M)	%						
0-0.5	33.9	0-0.5	16.4	0-0.5	20.5	0-0.5	18.2
1-1.5	42.4	1-1.5	48.3	1-1.5	50.9	1-1.5	43.7
2-2.5	17.4	2-2.5	23.8	2-2.5	21.9	2-2.5	24.8
3-3.5	4.7	3-3.5	7.0	3-3.5	4.9	3-3.5	8.8
4-5.5	1.5	4-5.5	2.9	4-5.5	1.4	4-5.5	3.8
≥6.0	0.1	≥6.0	1.6	≥6.0	0.3	≥6.0	0.7
N=	2895	N=	2708	N=	5072	N=	6807

Marine Area E	
WAVE HEIGHT (M)	%
0-0.5	13.6
1-1.5	39.2
2-2.5	30.1
3-3.5	11.5
4-5.5	4.9
≥6.0	0.8
N=	10019

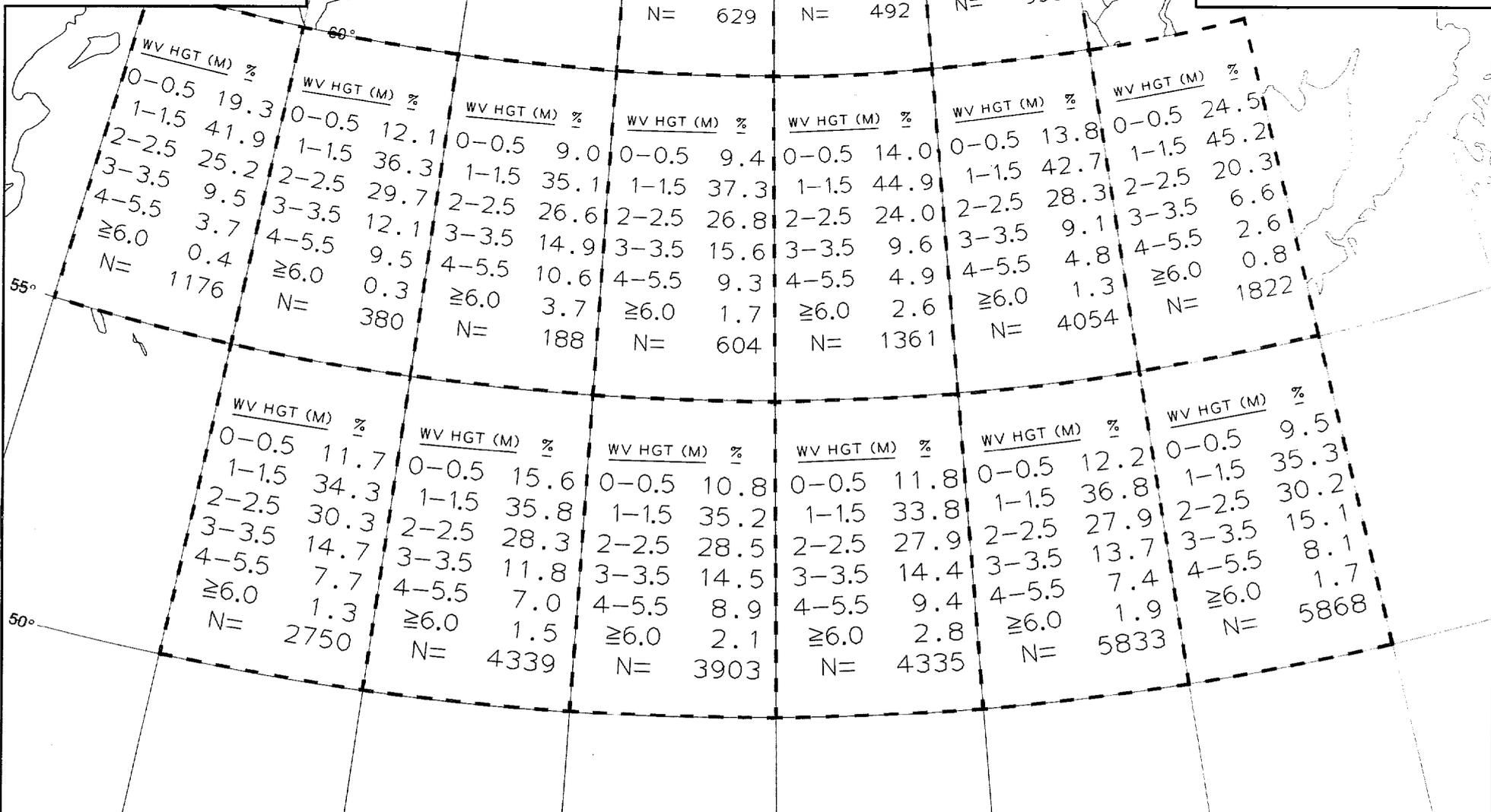


Marine Area F	
WAVE HEIGHT (M)	%
0-0.5	11.6
1-1.5	39.5
2-2.5	30.4
3-3.5	12.5
4-5.5	5.3
≥6.0	0.7
N=	9003



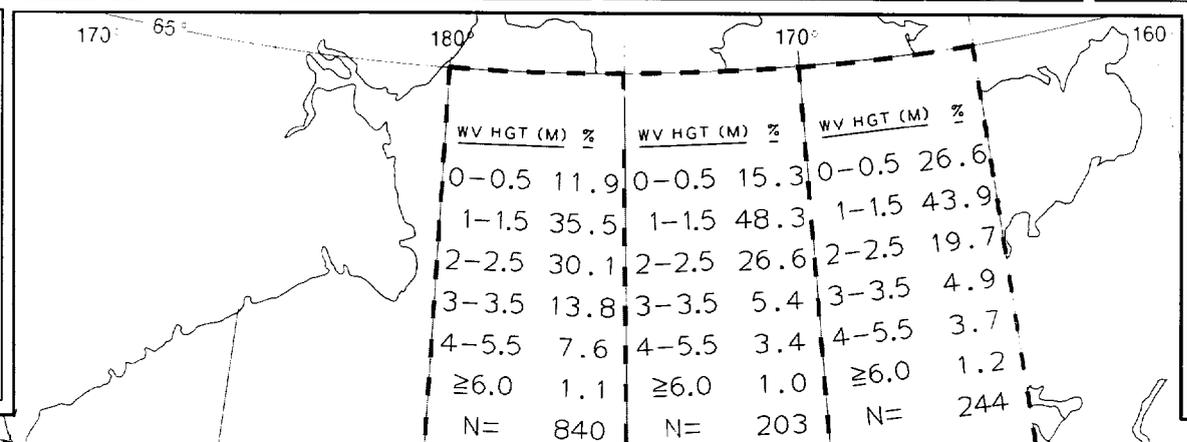
Marine Area A		Marine Area B		Marine Area C		Marine Area D	
WAVE HEIGHT (M)	%						
0-0.5	30.7	0-0.5	13.4	0-0.5	16.4	0-0.5	13.7
1-1.5	42.6	1-1.5	43.3	1-1.5	43.5	1-1.5	35.6
2-2.5	17.4	2-2.5	24.1	2-2.5	26.3	2-2.5	26.7
3-3.5	5.8	3-3.5	10.3	3-3.5	8.7	3-3.5	13.6
4-5.5	2.9	4-5.5	6.1	4-5.5	4.2	4-5.5	8.2
≥6.0	0.6	≥6.0	2.8	≥6.0	0.9	≥6.0	2.1
N=	2130	N=	2240	N=	5573	N=	6481

Marine Area E		Map Data						Marine Area F	
WAVE HEIGHT (M)	%	WV HGT (M) %		WV HGT (M) %		WV HGT (M) %		WAVE HEIGHT (M)	%
0-0.5	10.2	0-0.5	23.1	0-0.5	27.6	0-0.5	31.1	0-0.5	10.6
1-1.5	35.5	1-1.5	38.2	1-1.5	43.9	1-1.5	45.2	1-1.5	34.9
2-2.5	28.9	2-2.5	24.0	2-2.5	19.9	2-2.5	16.2	2-2.5	29.8
3-3.5	14.4	3-3.5	9.9	3-3.5	5.5	3-3.5	4.6	3-3.5	14.9
4-5.5	8.5	4-5.5	3.8	4-5.5	1.8	4-5.5	2.8	4-5.5	8.1
≥6.0	2.4	≥6.0	1.1	≥6.0	1.2	≥6.0	0.1	≥6.0	1.8
N=	7585	N=	629	N=	492	N=	958	N=	8510

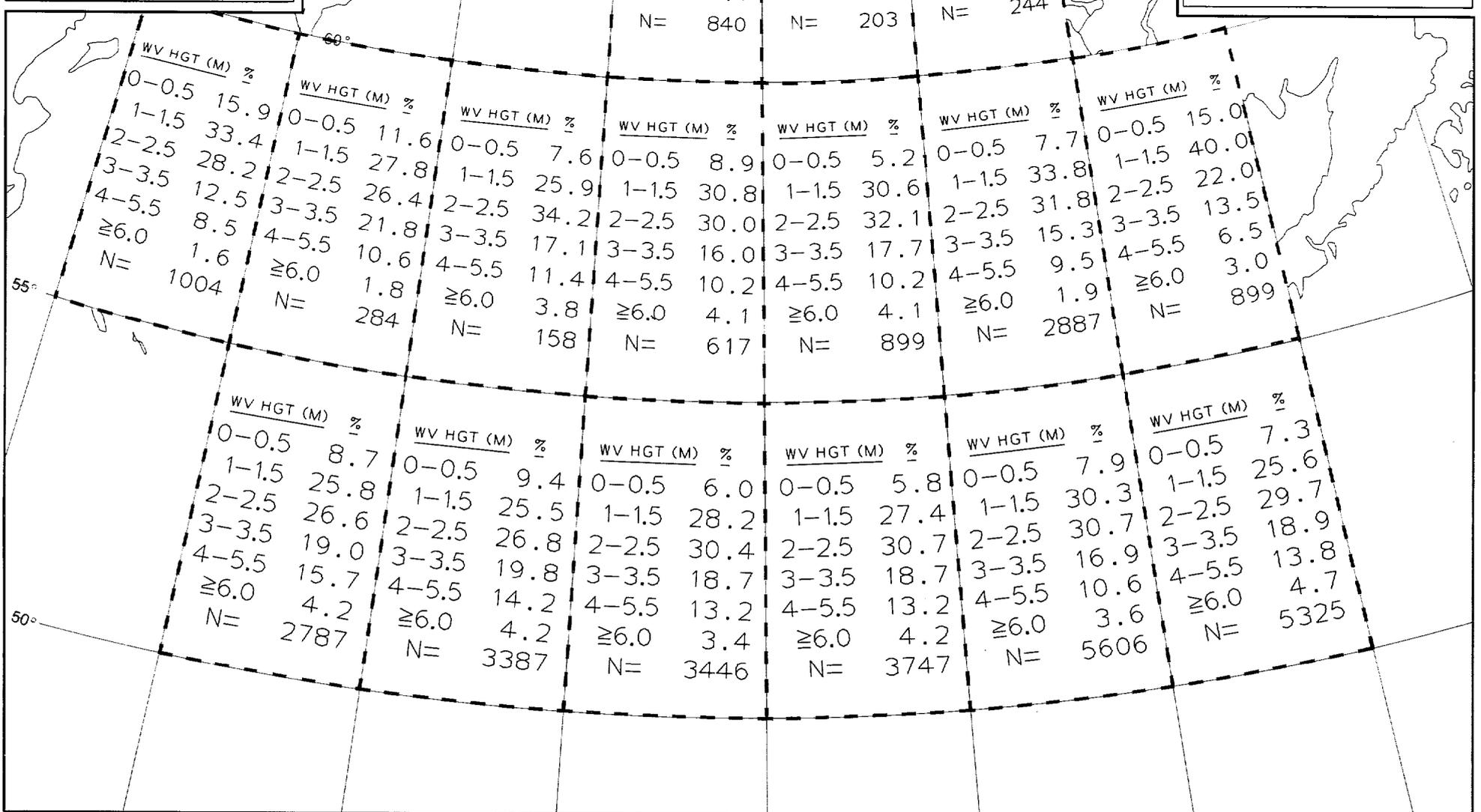


Marine Area A		Marine Area B		Marine Area C		Marine Area D	
WAVE HEIGHT (M)	%						
0-0.5	15.8	0-0.5	6.9	0-0.5	8.8	0-0.5	7.2
1-1.5	39.5	1-1.5	30.4	1-1.5	35.8	1-1.5	30.2
2-2.5	26.8	2-2.5	31.2	2-2.5	29.9	2-2.5	29.5
3-3.5	10.8	3-3.5	16.9	3-3.5	14.8	3-3.5	17.4
4-5.5	6.1	4-5.5	10.6	4-5.5	8.6	4-5.5	11.9
≥6.0	1.1	≥6.0	3.9	≥6.0	2.2	≥6.0	3.8
N=	1231	N=	1675	N=	3593	N=	6111

Marine Area E	
WAVE HEIGHT (M)	%
0-0.5	6.9
1-1.5	27.8
2-2.5	31.3
3-3.5	18.3
4-5.5	12.1
≥6.0	3.5
N=	6686

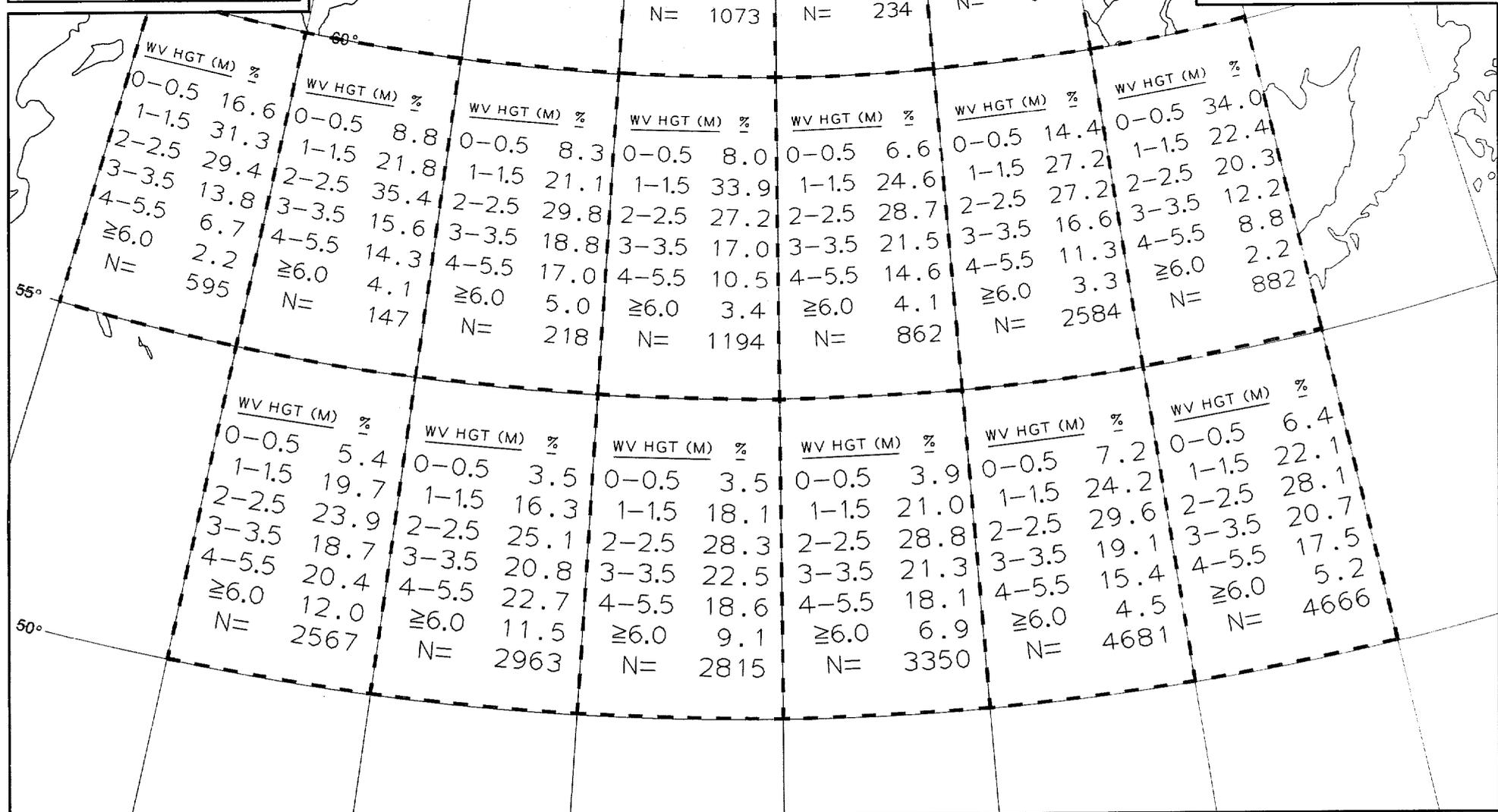


Marine Area F	
WAVE HEIGHT (M)	%
0-0.5	8.1
1-1.5	26.6
2-2.5	28.3
3-3.5	18.6
4-5.5	13.9
≥6.0	4.5
N=	7832



Marine Area A		Marine Area B		Marine Area C		Marine Area D	
WAVE HEIGHT (M)	%						
0-0.5	8.9	0-0.5	7.6	0-0.5	7.3	0-0.5	5.9
1-1.5	31.7	1-1.5	30.4	1-1.5	29.3	1-1.5	22.6
2-2.5	30.5	2-2.5	27.9	2-2.5	29.3	2-2.5	28.1
3-3.5	15.3	3-3.5	18.8	3-3.5	17.9	3-3.5	20.6
4-5.5	10.1	4-5.5	11.8	4-5.5	12.7	4-5.5	17.4
≥6.0	3.6	≥6.0	3.6	≥6.0	3.5	≥6.0	5.5
N=	1094	N=	2246	N=	2793	N=	5810

Marine Area E		Map Data						Marine Area F	
WAVE HEIGHT (M)	%	WV HGT (M) %		WV HGT (M) %		WV HGT (M) %		WAVE HEIGHT (M)	%
0-0.5	4.9	0-0.5	30.0	0-0.5	7.3	0-0.5	13.8	0-0.5	6.5
1-1.5	20.9	1-1.5	23.8	1-1.5	32.9	1-1.5	27.7	1-1.5	22.8
2-2.5	29.8	2-2.5	21.3	2-2.5	40.6	2-2.5	27.7	2-2.5	27.9
3-3.5	20.6	3-3.5	12.5	3-3.5	13.2	3-3.5	16.9	3-3.5	19.7
4-5.5	16.6	4-5.5	9.4	4-5.5	5.1	4-5.5	4.6	4-5.5	17.7
≥6.0	7.3	≥6.0	3.0	≥6.0	0.9	≥6.0	9.2	≥6.0	5.3
N=	5030	N=	1073	N=	234	N=	65	N=	7079



Marine Area A		Marine Area B		Marine Area C		Marine Area D	
WAVE HEIGHT (M)	%						
0-0.5	19.2	0-0.5	8.8	0-0.5	13.2	0-0.5	5.2
1-1.5	32.3	1-1.5	32.3	1-1.5	29.9	1-1.5	23.8
2-2.5	22.6	2-2.5	27.3	2-2.5	26.8	2-2.5	27.1
3-3.5	11.8	3-3.5	16.1	3-3.5	18.7	3-3.5	21.1
4-5.5	9.8	4-5.5	11.4	4-5.5	9.4	4-5.5	16.3
≥6.0	4.3	≥6.0	4.1	≥6.0	2.1	≥6.0	6.5
N=	1865	N=	3030	N=	3161	N=	5237

Marine Area E	
WAVE HEIGHT (M)	%
0-0.5	4.5
1-1.5	22.6
2-2.5	28.9
3-3.5	19.7
4-5.5	16.7
≥6.0	7.6
N=	4229

170° 65°		180°		170°		160°	
WV HGT (M)	%	WV HGT (M)	%	WV HGT (M)	%	WV HGT (M)	%
0-0.5	18.0	0-0.5	23.0	0-0.5	28.9		
1-1.5	28.7	1-1.5	46.6	1-1.5	31.6		
2-2.5	22.7	2-2.5	22.5	2-2.5	23.7		
3-3.5	13.8	3-3.5	4.3	3-3.5	7.9		
4-5.5	11.7	4-5.5	3.0	4-5.5	5.3		
≥6.0	5.3	≥6.0	0.5	≥6.0	2.6		
N=	1465	N=	369	N=	38		

Marine Area F	
WAVE HEIGHT (M)	%
0-0.5	5.9
1-1.5	22.6
2-2.5	28.0
3-3.5	19.0
4-5.5	18.1
≥6.0	6.3
N=	5955

