

FARR

PERFORMANCE PREDICTION

DESIGN 128 - FARR 37

FOR
DWIGHT M. ALLGOOD

BRUCE FARR & ASSOCIATES, INC.

YACHT DESIGNERS

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DESIGN 128 - FARR 37
for DWIGHT M. ALLGOOD

3 May 1983

TRUE WIND SPEED	TRUE WIND ANGLE	APP. WIND SPEED	APP. WIND ANGLE	BOAT SPEED	VELOCITY MADE GOOD	HEEL ANGLE	LEEMAY ANGLE	FLAT COEFF.	REEF COEFF.
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3.0 knots

	36.0	4.9	25.2	1.986	1.606	1.5	3.8	1.00	1.00
	44.0	5.2	28.9	2.433	1.750	1.6	2.9	1.00	1.00
Opt Tack	46.1	5.2	29.8	2.533	1.757	1.6	2.8	1.00	1.00
	52.0	5.3	32.2	2.780	1.712	1.7	2.4	1.00	1.00
	60.0	5.4	35.5	3.037	1.519	1.7	2.0	1.00	1.00
	70.0	5.2	39.6	3.239	1.108	1.7	1.7	1.00	1.00
	80.0	5.0	44.1	3.313	.575	1.5	1.5	1.00	1.00
	90.0	4.5	49.2	3.276	0.000	1.3	1.2	1.00	1.00
	90.6								
	105.0	3.9	57.4	3.205	-.830	1.2	.9	1.00	1.00
	120.0	3.0	70.3	2.842	-1.421	.8	.6	1.00	1.00
	135.0	2.2	90.7	2.357	-1.667	.3	.3	1.00	1.00
Opt Gybe	141.3	2.0	101.9	2.155	-1.683	.2	.2	1.00	1.00
	150.0	1.8	119.5	1.896	-1.642	.1	.1	1.00	1.00
	165.0	1.6	150.4	1.618	-1.563	0.0	.1	1.00	1.00
	180.0	1.7	180.0	1.495	-1.495	0.0	0.0	1.00	1.00

6.0 knots

	36.0	9.6	25.4	3.725	3.014	3.9	4.2	1.00	1.00
Opt Tack	44.0	10.0	29.6	4.452	3.202	4.3	3.2	1.00	1.00
	44.0	10.0	29.6	4.452	3.202	4.3	3.2	1.00	1.00
	52.0	10.2	33.4	4.984	3.069	4.5	2.7	1.00	1.00
	60.0	10.1	37.1	5.381	2.690	4.5	2.3	1.00	1.00
	70.0	9.8	41.8	5.684	1.944	4.2	1.9	1.00	1.00
	80.0	9.3	47.0	5.779	1.004	3.7	1.6	1.00	1.00
	84.5								
	90.0	8.6	52.1	5.881	0.000	3.8	1.3	1.00	1.00
	105.0	7.3	61.8	5.654	-1.463	2.8	1.0	1.00	1.00
	120.0	5.8	75.3	5.086	-2.543	1.8	.7	1.00	1.00
	135.0	4.5	94.7	4.369	-3.090	1.0	.4	1.00	1.00
Opt Gybe	143.8	3.9	109.6	3.939	-3.178	.6	.2	1.00	1.00
	150.0	3.7	121.6	3.629	-3.143	.4	.2	1.00	1.00
	165.0	3.4	151.1	3.152	-3.044	.2	.1	1.00	1.00
	180.0	3.4	180.0	2.925	-2.925	.1	0.0	1.00	1.00

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9.0 knots

	36.0	13.7	25.1	4.978	4.027	14.3	4.8	1.00	1.00
Opt Tack	43.2	14.1	29.1	5.789	4.222	16.7	3.8	1.00	1.00
	44.0	14.1	29.5	5.865	4.219	16.8	3.7	1.00	1.00
	52.0	14.1	33.9	6.387	3.932	17.1	3.1	1.00	1.00
	60.0	13.8	38.6	6.680	3.340	15.8	2.7	1.00	1.00
	70.0	13.3	44.8	6.880	2.353	13.1	2.4	1.00	1.00
	78.7								
				Genoa /	Spinnaker v				
	80.0	12.5	50.8	6.994	1.214	14.2	2.0	1.00	1.00
	90.0	11.7	57.5	7.075	0.000	10.3	1.6	1.00	1.00
	105.0	10.2	68.2	6.985	-1.808	4.6	1.2	1.00	1.00
	120.0	8.4	80.9	6.670	-3.335	2.9	.7	1.00	1.00
	135.0	6.7	98.3	6.091	-4.307	1.6	.4	1.00	1.00
Opt Gybe	144.1	5.9	113.0	5.541	-4.488	1.0	.2	1.00	1.00
	150.0	5.6	123.9	5.156	-4.465	.7	.2	1.00	1.00
	165.0	5.2	151.9	4.558	-4.403	.4	.1	1.00	1.00
	180.0	5.2	180.0	4.258	-4.258	.2	0.0	1.00	1.00

13.0 knots

	36.0	18.2	24.1	5.699	4.610	22.7	4.6	.72	1.00
Opt Tack	40.0	18.3	26.6	6.129	4.698	23.9	4.1	.72	1.00
	44.0	18.3	29.2	6.435	4.629	24.6	3.7	.75	.99
	52.0	17.9	34.4	6.847	4.215	25.5	3.4	.86	.96
	60.0	17.4	39.6	7.130	3.565	26.6	3.2	.93	.97
	70.0	16.4	46.5	7.393	2.529	27.3	3.0	1.00	.98
	80.0	15.7	54.5	7.598	1.319	23.7	2.6	1.00	1.00
	88.6								
				Genoa /	Spinnaker v				
	90.0	14.6	62.2	7.743	0.000	23.3	2.0	1.00	1.00
	105.0	13.6	75.3	7.868	-2.036	12.4	1.4	1.00	1.00
	120.0	11.8	89.3	7.683	-3.841	4.3	.9	1.00	1.00
	135.0	10.0	106.3	7.289	-5.154	2.3	.4	1.00	1.00
	150.0	8.5	127.6	6.738	-5.835	1.2	.2	1.00	1.00
Opt Gybe	165.0	7.8	153.0	6.255	-6.042	.7	.1	1.00	1.00
	165.0	7.8	153.0	6.255	-6.042	.7	.1	1.00	1.00
	180.0	7.8	179.9	5.912	-5.912	.4	.1	1.00	1.00

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20.0 knots

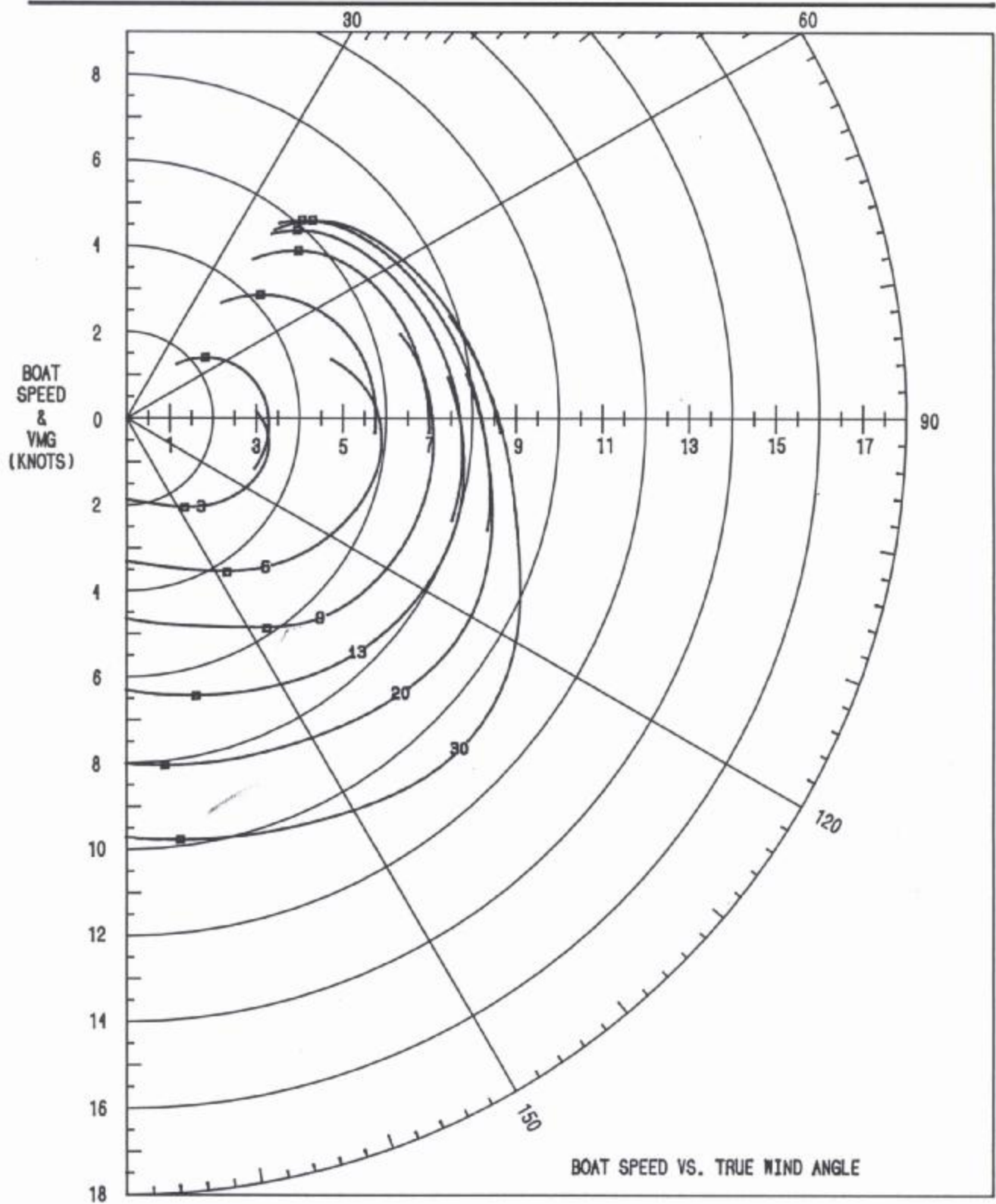
	36.0	25.3	24.1	6.003	4.857	25.1	5.0	.70	.81
Opt Tack	39.4	25.4	26.6	6.381	4.933	25.8	4.5	.73	.80
	44.0	25.2	30.0	6.734	4.844	26.4	4.2	.83	.77
	52.0	24.6	35.8	7.146	4.400	27.6	3.8	.92	.76
	60.0	23.7	41.8	7.439	3.720	28.5	3.5	1.00	.76
	70.0	22.6	49.9	7.732	2.645	28.7	3.2	1.00	.80
	80.0	21.3	58.4	8.005	1.390	28.8	2.9	1.00	.85
	90.0	19.8	67.3	8.256	0.000	29.2	2.6	1.00	.92
	90.9			Genoa / Spinnaker v					
	105.0	17.8	82.2	8.709	-2.254	28.6	1.8	1.00	1.00
	120.0	17.7	97.3	8.982	-4.491	13.7	1.1	1.00	1.00
	135.0	16.1	114.2	8.663	-6.126	3.9	.6	1.00	1.00
	150.0	14.5	134.0	8.181	-7.085	2.4	.4	1.00	1.00
	165.0	13.6	156.3	7.842	-7.574	1.5	.2	1.00	1.00
Opt Gybe	173.2	13.4	169.2	7.696	-7.642	1.2	.1	1.00	1.00
	180.0	13.4	179.9	7.608	-7.608	.9	.1	1.00	1.00

30.0 knots

	36.0	34.9	23.3	5.810	4.700	27.4	6.4	.73	.64
Opt Tack	41.0	34.9	27.7	6.530	4.928	28.6	5.2	.80	.62
	44.0	34.6	30.1	6.790	4.884	29.3	4.9	.84	.62
	52.0	33.7	36.5	7.269	4.475	30.5	4.4	.95	.60
	60.0	32.5	43.3	7.609	3.804	31.0	4.0	1.00	.61
	70.0	31.1	52.4	7.972	2.726	30.8	3.5	1.00	.64
	80.0	29.4	61.8	8.308	1.443	31.2	3.1	1.00	.68
	80.8			Genoa / Spinnaker v					
	90.0	28.0	72.1	8.685	0.000	30.7	2.3	1.00	.70
	105.0	25.5	88.0	9.348	-2.419	31.5	1.8	1.00	.83
	120.0	23.8	104.3	10.272	-5.136	29.9	1.3	1.00	1.00
	135.0	24.5	119.2	10.576	-7.478	14.3	.8	1.00	1.00
	150.0	23.3	137.6	10.090	-8.738	4.9	.6	1.00	1.00
	165.0	22.4	158.3	9.620	-9.292	3.0	.4	1.00	1.00
Opt Gybe	172.3	22.2	168.8	9.440	-9.355	2.4	.3	1.00	1.00
	180.0	22.3	179.8	9.299	-9.299	1.9	.2	1.00	1.00

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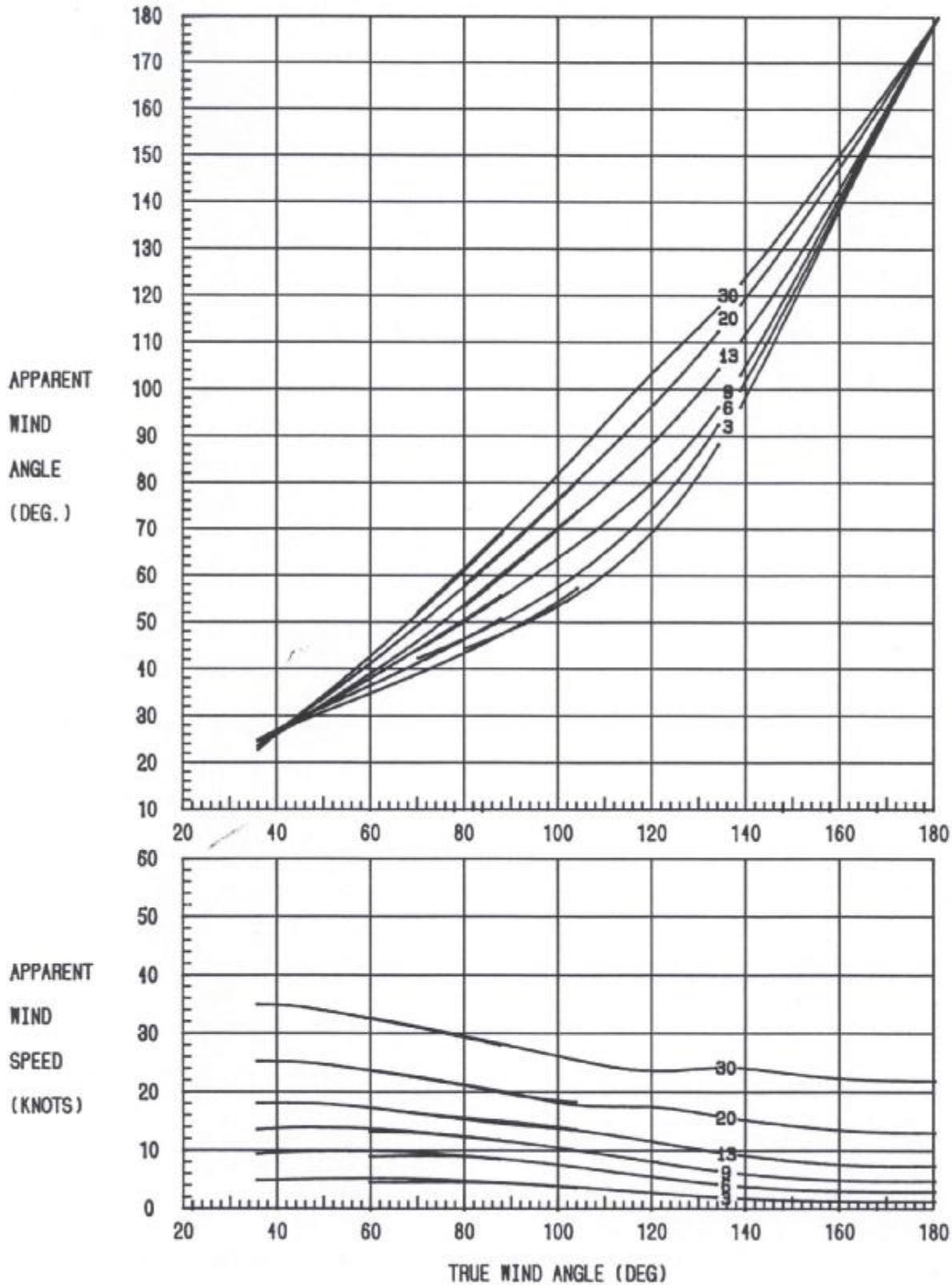
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128M01

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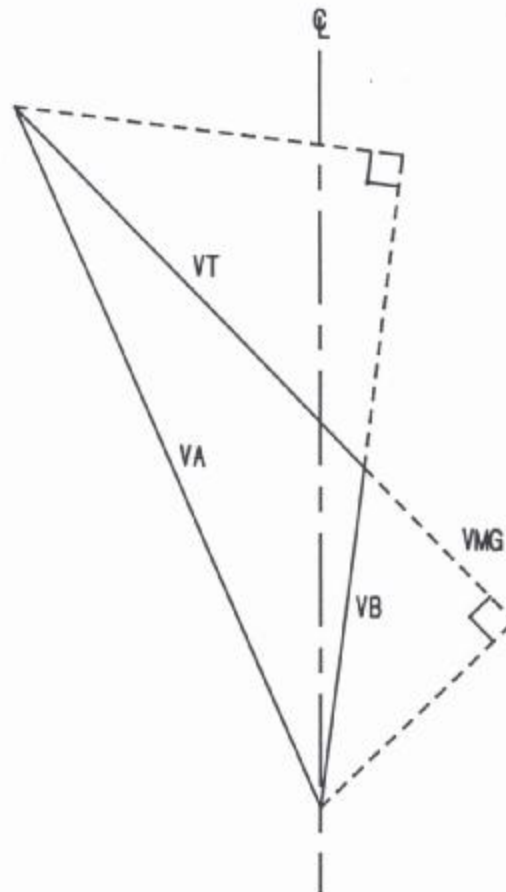
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128W01

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TRUE WIND SPEED = VT
 APPARENT WIND SPEED = VA
 BOAT SPEED = VB
 TRUE WIND ANGLE = G
 APPARENT WIND ANGLE = B
 LEEWAY ANGLE = L
 UPWASH ANGLE = E
 HEEL ANGLE = H

THE SYMBOL ^ INDICATES EXPONENTIATION.
 THE SYMBOL * INDICATES MULTIPLICATION.
 THE LETTER m INDICATES A MEASURED QUANTITY.
 THE LETTERS mh INDICATE A VALUE TAKEN AT THE MASTHEAD.

$$L = 47.68 * H / [VB]^3$$

$$E = 6.84 * \text{SIN} [(180 - B_m) / 1.667]^{2.5} * \text{REEF}^2 * \text{FLAT}$$

$$B = B_m + L - E$$

$$VBAUG = \text{COS} (B) * VAm$$

$$VTMCG = VBAUG - VB$$

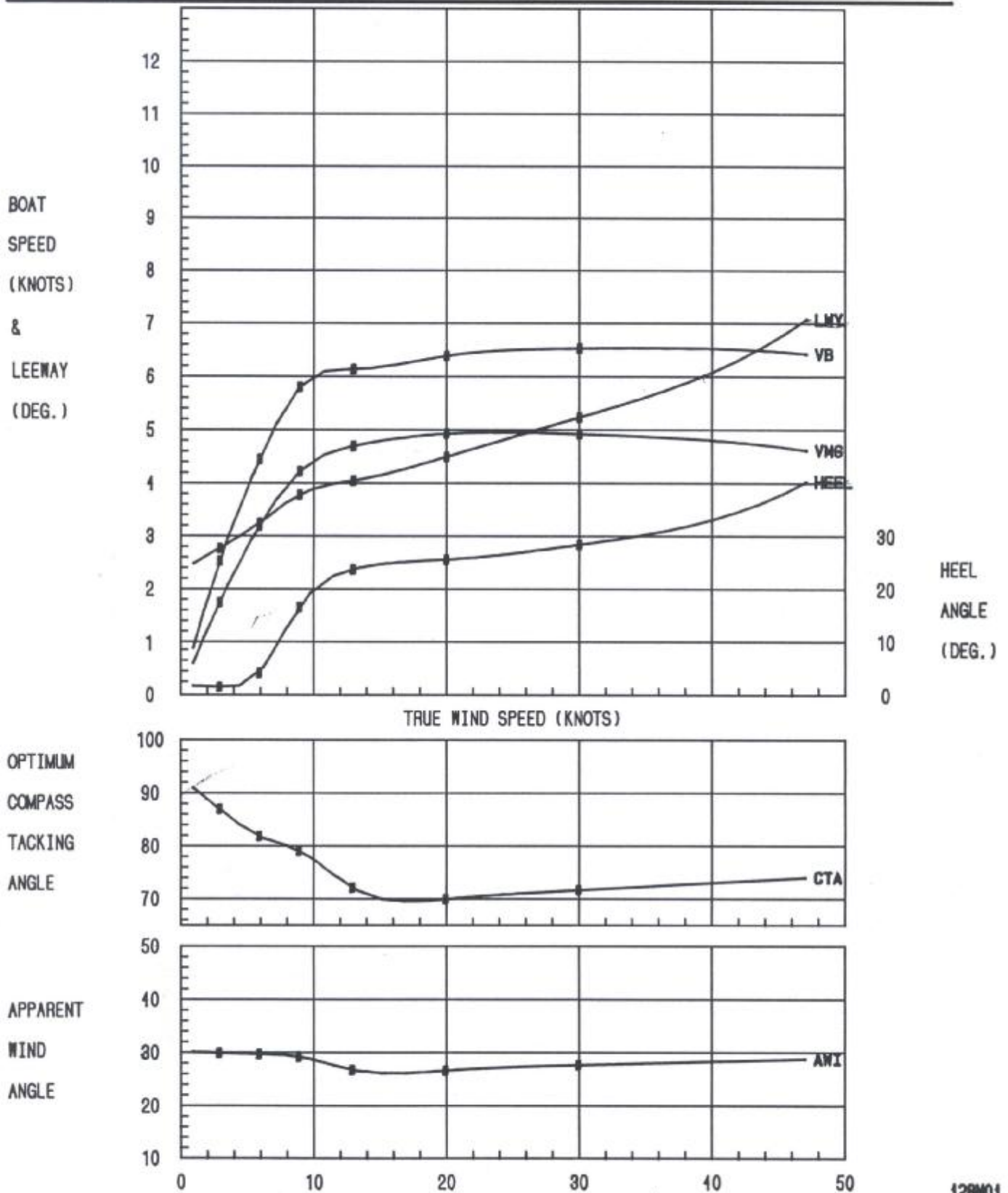
$$G = \text{ArcTAN} \{ \text{TAN} (B) * VBAUG / [\text{COS} (H) * VTMCG] \}$$

$$VTmh = VTMCG / \text{COS} (G)$$

$$VT = VTmh / (.15055 * \text{COS} (H) + .901)$$

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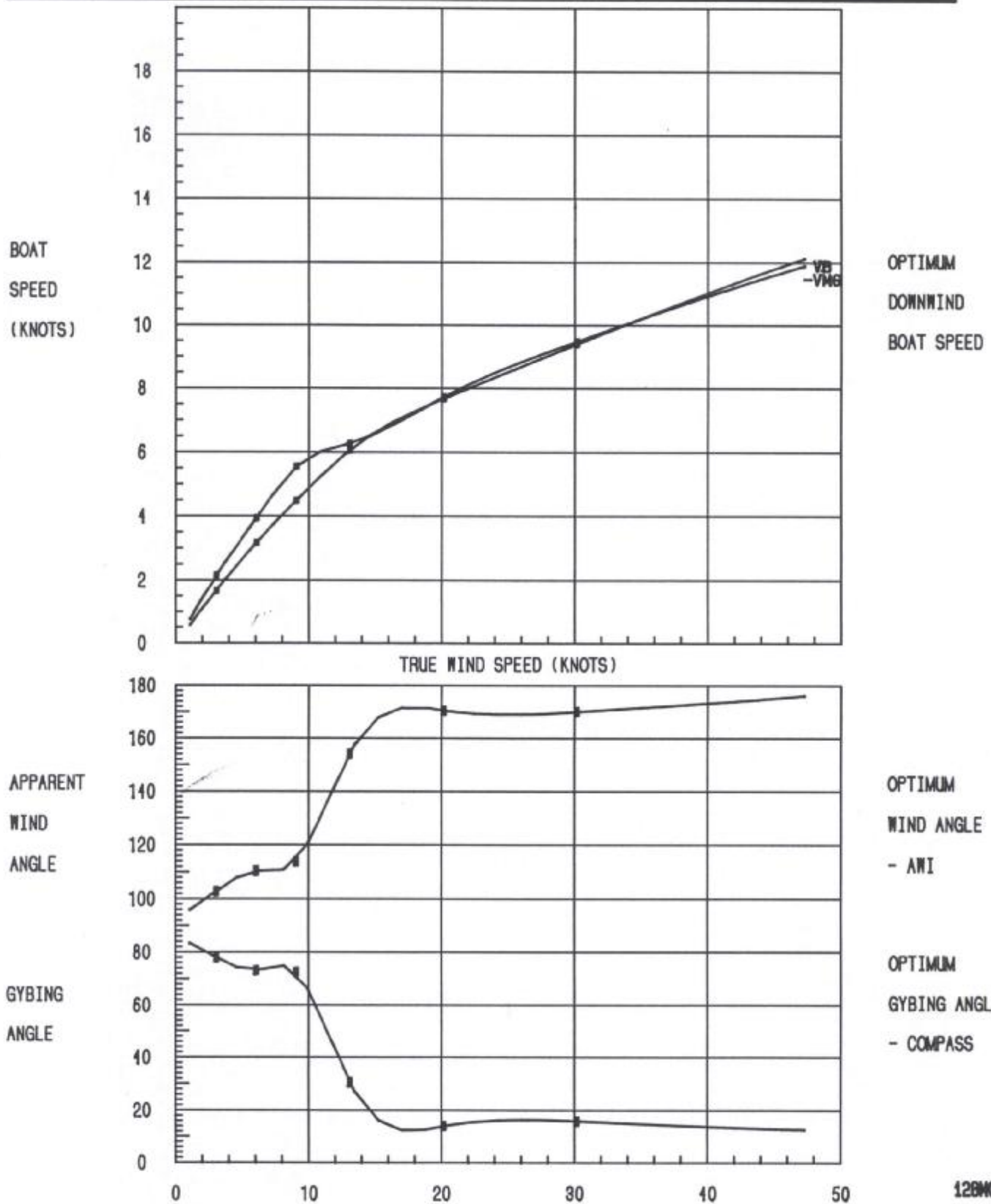
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128M01

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128W01