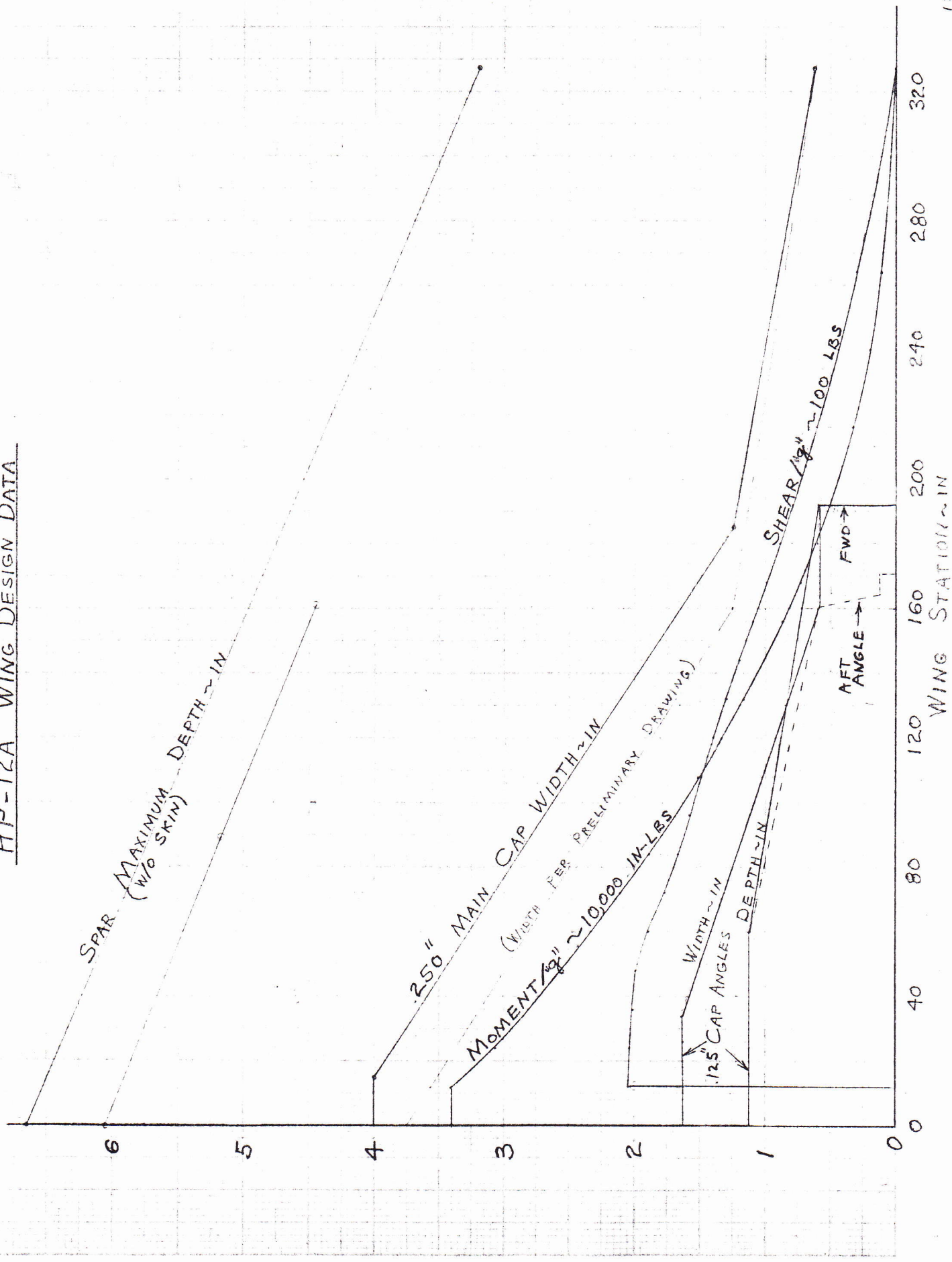
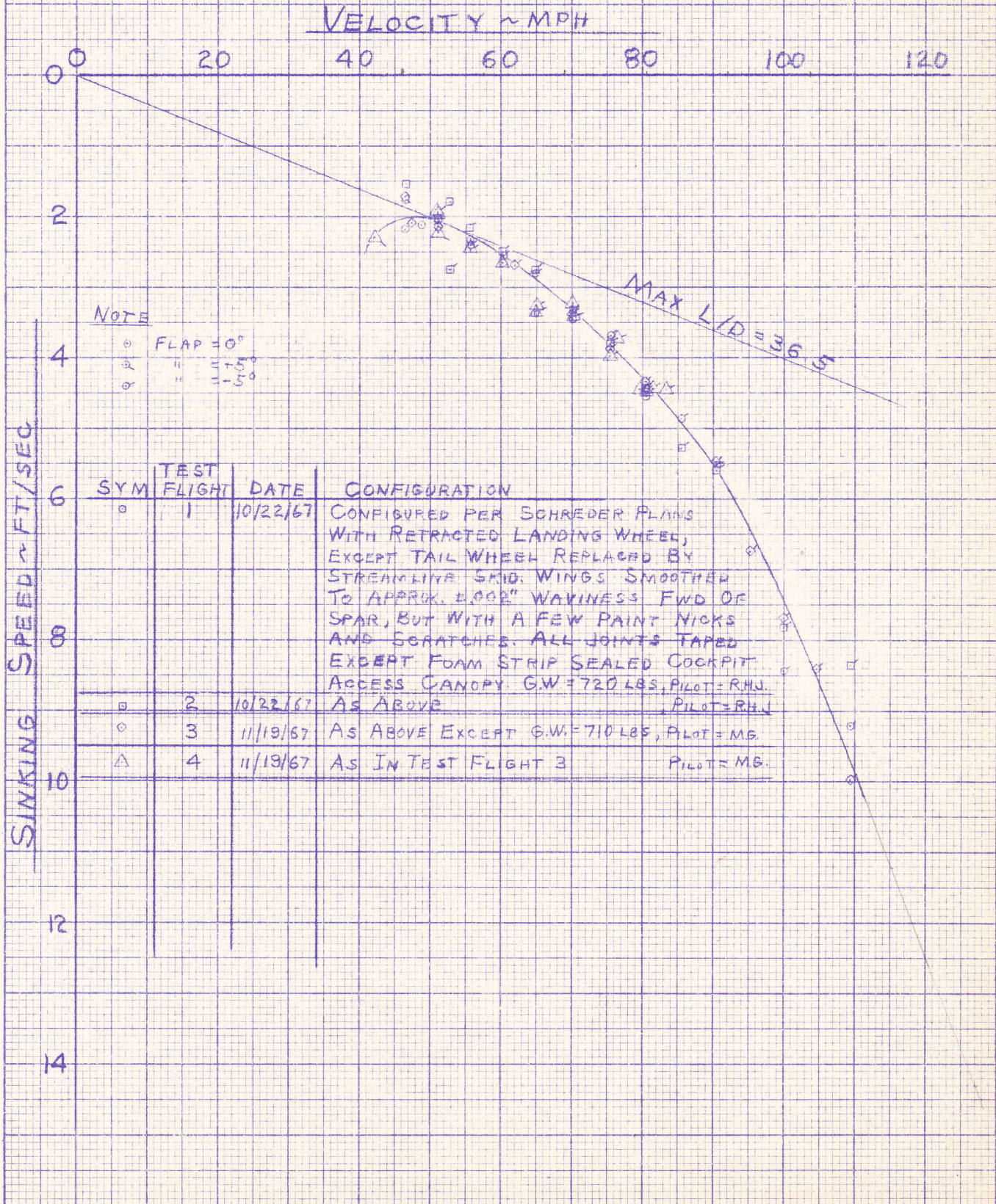


HP-12A WING DESIGN DATA



HP-13 FLIGHT TEST DATA

TEST DATA CORRECTED TO S.L. STD. ATMOS. CONDITIONS



NOTE

- FLAP = 0°
- " " = 10°
- ◇ " " = 15°
- △ " " = 5°

22 OCT 1967 - SECOND FLIGHT II

FLAP	V_i	V_e	H	Δh_i	Δt	Δh	Hand	$\frac{(T)}{T_s}^{\circ}C$	$\frac{T}{T_s}^{\circ}K$	V_s	$\frac{P}{T}$	$9.63 \frac{P}{F}$	V_s	
	0°	45	46.6	11,250 10,750	500	279	516	11,000	(+2.0) -6.8	275.2 266.4	1.85	19.78 275.2	.693	1.54
2	↓	50	51.1	10,600 10,100		215	517	10,350	(+3.4) -5.5	276.6 267.7	2.41	20.30 276.6	.707	2.03
3	-5°	55	55.7	10,000 9,500		202	516	9,750	(+4.6) -4.3	277.8 268.9	2.55	20.78 277.8	.721	2.17
4		60	60.2	9,400 8,900		177	517	9,150	5.8 -3.2	279.0 270.0	2.92	21.25 279.0	.734	2.50
5		65	64.9	8,800 8,300		161	517	8,550	7.0 -2.0	280.2 271.2	3.21	21.75 280.2	.748	2.78
6		70	70.1	8,100 7,600		141	516	7,850	8.4 -0.5	281.6 272.7	3.66	22.35 281.6	.765	3.21
7		75	75.4	7,400 6,900		120	516	7,150	9.8 +0.8	283.0 274.0	4.30	22.97 283.0	.782	3.80
8		80	80.4	6,700 6,200		104	516	6,450	11.1 +2.2	284.3 275.4	4.96	23.57 284.3	.798	4.43
9		85	85.4	6,000 5,500		88	515	5,750	12.3 +3.6	285.5 276.8	5.85	24.20 285.5	.816	5.29
10		90	90.3	5,300 4,800		84	515	5,050	13.5 +5.0	286.7 278.2	6.13	24.84 286.4	.835	5.60
11		100	100.0	4,500 4,000		61	515	4,250	15.0 +6.6	288.2 279.8	8.44	25.60 288.2	.855	7.81
12		110	109.4	3,600 3,100		58	515	3,350	16.6 +8.3	289.8 281.5	8.89	26.46 289.8	.880	8.35
13	↓	52	52.9	3,200 2,700		177	514	2,950	17.3 +9.2	290.5 282.4	2.91	26.66 290.5	.891	2.75
14	0°	52	"	2,600 2,100	↓	273	514	2,350	18.3 10.4	291.5 283.6	1.89	27.48 291.5	.909	1.80

$\Delta h_i \frac{T}{T_s}$

HP-13 FLIGHT TEST MEASUREMENTS

N 544J - 22 OCT 1967 - FIRST FLIGHT

FLAP	GETABRY		H	Δh _i	Δt	Δh	H _{avg}	(T) T _s	T T _s °K	V _s	P T	9.63 $\frac{P}{T}$	V _{s0}
	V _i MPH	V _c MPH											
0°	45	46.6	13,400 12,900	500	233.5	516	13,150	(-2.8) -11.1	$\frac{270.4}{262.1}$	2.21	$\frac{18.18}{270.4}$	.647	1.78
	50	51.1	12,700 12,200		197.5	516	12,450	(-1.3) -9.7	$\frac{271.9}{263.5}$	2.61	$\frac{18.70}{271.9}$	.663	2.13
30°	55	55.7	12,100 11,600		183	516	11,850	(+0.1) -8.5	$\frac{273.3}{264.7}$	2.82	$\frac{19.15}{273.3}$	.675	2.32
	60	60.2	11,400 10,900		162	516	11,150	(+1.6) -7.1	$\frac{274.8}{266.1}$	3.18	$\frac{19.68}{274.8}$	.689	2.64
V	65	64.9	10,800 10,300		128	516	10,550	(+2.9) -5.9	$\frac{276.1}{267.3}$	4.03	$\frac{20.14}{276.1}$	.702	3.38
	-5°	70	70.1	10,100 9,600		126	516	9,850	(+4.4) -4.5	$\frac{277.6}{268.7}$	4.10	$\frac{20.70}{277.6}$.718	3.47
		75	75.4	9,400 8,900		119.7	516	9,150	(+5.8) -3.2	$\frac{279.0}{270.0}$	4.31	$\frac{21.25}{279.0}$.733	3.69
	80	80.4	8,700 8,200		98.5	516	8,450	(+7.2) -1.7	$\frac{280.4}{271.5}$	5.24	$\frac{21.84}{280.4}$	.751	4.55
	85	85.4	8,000 7,500		93	516	7,750	(+8.6) -0.4	$\frac{281.8}{272.8}$	5.55	$\frac{22.45}{281.8}$	.768	4.87
	90	90.3	7,300 6,800		83	516	7,050	(+9.9) +1.0	$\frac{283.1}{274.2}$	6.22	$\frac{23.04}{283.1}$	.784	5.51
	100	100.0	6,400 5,900		55	516	6,150	(+11.6) +2.8	$\frac{284.8}{276.0}$	9.38	$\frac{23.85}{284.8}$	.806	8.43
	110	109.4	5,500 5,000		51	516	5,250	(+13.2) +4.6	$\frac{286.4}{277.8}$	10.12	$\frac{24.66}{286.4}$	.829	9.21
	65	64.9	5,100 4,600		169	515	4,850	(+13.9) 5.4	$\frac{287.1}{278.6}$	3.05	$\frac{25.02}{287.1}$	.840	2.80
	60	60.2	4,500 4,000		186	515	4,250	(+15.0) +6.6	$\frac{288.2}{279.8}$	2.77	$\frac{25.61}{288.2}$	.855	2.56
V	55	55.7	3,800 3,300		201	514	3,550	(+16.2) +8.3	$\frac{289.4}{281.5}$	2.56	$\frac{26.27}{289.4}$	.874	2.40
0°	50	51.1	3,200 2,700		233.5	514	2,950	(+17.3) +9.2	$\frac{290.5}{282.4}$	2.16	$\frac{26.86}{290.5}$	.890	2.04
	45	46.6	2,600 2,100	V	225	514	2,350	(+18.3) +10.4	$\frac{291.5}{283.6}$	2.29	$\frac{27.47}{291.5}$	.908	2.18
V	47.5	48.8	2,000 1,200	800	374	820	1,600	+19.0 +11.8	$\frac{292.2}{285.0}$	2.19	$\frac{28.24}{292.2}$	.930	2.11

$$\Delta h = \Delta h_i \frac{T}{T_s}$$

$$V_{s0} = V_s \sqrt{\frac{P}{29.92} \times \frac{288.2}{T}}$$

$$= V_s \sqrt{9.63 \frac{P}{T}}$$

HP-13M FLIGHT TEST 26 OCT 68

FIRST FLIGHT (T₀ = 7:56 CDT)

FLAP	MPH	V _i	V _c	ALT	ΔTIME	($\frac{db}{dt}$) _i	$\frac{T}{T_s}$	$\frac{P}{T}$	$\sqrt{9.63 \frac{P}{T}}$	V ₅₀
0°	45	46.3	12.5 ^{12.25}	245 ^{sec}	2.04	274	18.85	1.73		
			12.0			263.5	274			
↓	50	50.8	11.9 ^{11.75}	161.5	2.47	276	19.23	2.11		
			11.4			264.5	276			
↓	55	55.5	10.9 ^{11.15}	195	2.57	278.4	19.68	2.22		
			10.8			265.7	278.4			
↓	60	60.6	10.3 ^{10.55}	185	2.71	279.4	20.13	2.35		
			10.3			279.4	279.4			
-5	65	65.0	10.2 ^{9.95}	144	3.48	280.0	20.62	3.06		
			9.7			268.1	280.0			
↓	70	70.1	9.6 ^{9.35}	139	3.60	280.7	21.09	3.19		
			9.1			280.7	280.7			
↓	75	75.2	8.9 ^{8.55}	110	4.55	281.4	21.67	4.07		
			8.4			270.7	281.4			
↓	80	80.0	8.2 ^{7.95}	101.5	4.92	282	22.27	4.44		
			7.7			272.1	282			
↓	85	84.9	7.2 ^{6.95}	93	5.38	283.1	23.12	4.93		
			6.7			274.1	283.1			
↓	90	89.9	6.5 ^{6.25}	73	6.86	283.8	23.74	6.34		
			6.0			275.5	283.8			
↓	100	92.5	5.7 ^{5.45}	55	9.10	284.5	24.46	8.50		
			5.2			277.1	284.5			
0°	47.5	48.3	5.3 ^{5.05}	247	2.02	284.9	24.83	1.90		
			4.8			277.9	284.9			
↓	52.5	53.1	4.7 ^{4.45}	208	2.40	285.9	25.40	2.27		
			4.2			279.1	285.9			
↓	57.5	57.7	4.1 ^{3.85}	208	2.40	287.5	25.95	2.29		
			3.6			280.3	287.5			
-5	62.5	62.5	3.5 ^{3.25}	191.5	2.61	289.3	26.55	2.52		
			3.0			281.5	289.3			
↓	67.5	67.5	2.9 ^{2.65}	141	3.55	290.7	27.15	3.46		
			2.4			282.7	290.7			
↓	72.5	72.8	2.2 ^{1.95}	145	3.45	292.1	27.85	3.40		
			1.7			284.1	292.1			
0°	42.5	44.1	1.65 ^{1.40}	214	2.33	293.2	28.40	2.31		
			1.15			285.2	293.2			

$$V_{50} = \left(\frac{db}{dt}\right)_i \frac{T}{T_s} \sqrt{9.63 \frac{P}{T}}$$