REPORT No. 93

AERODYNAMIC CHARACTERISTICS OF AEROFOILS

BY NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

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INTRODUCTION.

This collection of data on aerofoils has been made from the published reports of a number of the leading aerodynamic laboratories of this country and Europe. The information which was originally expressed according to the different customs of the several laboratories is here presented in a uniform series of charts and tables suitable for the use of designing engineers and for purposes of general reference.

It is a well-known fact that the results obtained in different laboratories, because of their individual methods of testing, are not strictly comparable even if proper scale corrections for size of model and speed of test are supplied. It is, therefore, unwise to compare too closely the coefficients of two wing sections tested in different laboratories. Tests of different wing sections from the same source, however, may be relied on to give true relative values.

The absolute system of coefficients has been used, since it is thought by the National Advisory Committee for Aeronautics that this system is the one most suited for international use, and yet is one for which a desired transformation can be easily made. For this purpose a set of transformation constants is included in this report.

Each aerofoil section is given a reference number, and the test data are presented in the form of curves from which the coefficients can be read with sufficient accuracy for design purposes. The dimensions of the profile of each section are given at various stations along the chord in per cent of the chord, using as datum the line shown on the curves. The shape of the section is also shown in reasonable accuracy to enable one to more clearly visualize the section under consideration, together with its characteristics. To obtain more accurately the dimensions of the profile of each section, a separate data sheet for each section has been included which gives an additional decimal place for the greater portion of the ordinates.

The authority for the results here presented is given as the name of the laboratory at which the experiments were conducted, with the size of model, wind velocity, and date of test.

TRANSFORMATION COEFFICIENTS.

For the convenience of those who prefer to use a system of units other than the absolute system there is given below a table of transformation constants based on the standard condition adopted by the National Advisory Committee for Aeronautics of:

Temperature	=	15° C.
Pressure	=	760 mm. Hg.
Humidity	=	0.
Gravity	=	9.80 m./sec.^{2} = 32.2 ft./sec.^{2}

thus giving values of specific weight of air

$$W = 0.1225 \text{ kg./m.}^3 = 0.07636 \text{ lbs./ft.}^3$$

and of density

$\sigma = 0.01250$ in the French engineering or kilogram, meter, second system.

or

$= 0.00238$ in the English or foot, pound, second system.

In absolute units	$P = C\sigma V^2$.
In kg./m.^{2} —— m./sec.	$P = .1250\ CV^2$.
In kg./m.^{2} —— km./hr.	$P = .009645\ CV^2$.
In lbs./sq. ft. —— ft./sec.	$P = .002378\ CV^2$.
In lbs./sq. ft. —— mi./hr.	$P = .005116\ CV^2$.

INDEX.

Three separate types of index are given; chart indexes which make it possible for a designer to select the wing section most suitable for the particular design in which he is interested; a group index which is arranged in the same order as the curve sheets, i. e., by countries and laboratories at which tests were conducted, each section also being designated by a reference number; and an alphabetical index.

CHART INDEX.

In order that the designer may easily pick out a wing section which is suited to the type of machine on which he is working, four index charts are given which classify the wings according to their aerodynamic and structural properties.

In Chart No. 1 the minimum drag is plotted against the L/D at one-fourth the maximum lift. This chart should be used in choosing a wing section for a high-speed machine, the wing sections being more suited for this use the farther they are from the lower left-hand corner.

In Chart No. 2 the mean spar depth is plotted against the maximum lift in order to show the possible strength and lightness of the wing structure. The higher the maximum lift coefficient is the smaller will be the wing area and the lighter the structural weight, and in the same way the greater the depth of the spars the lighter will be their weight, so that the sections the greatest distance from the lower left-hand corner will give the lightest and strongest wings.

The maximum L/D is plotted against the maximum lift in Chart No. 3, which is of use in choosing the wing section for a slow and efficient machine. In the same way as before, the sections farthest from the lower left-hand corner are the best for this purpose.

In Chart No. 4 the L/D at two-thirds the maximum lift is plotted against the maximum lift, so that this chart can be used for choosing a section that will give an efficient climb or a long range at cruising speed. The best sections for this purpose will be the farthest from the lower left-hand corner of the chart.

GROUP INDEX.

UNITED STATES.

Aerofoil.	Wind tunnel.	Report reference No.	Aerofoil.	Wind tunnel.	Report reference No.
U. S. A. 1	M. I. T.	1	U. S. A. T. S. 7	M. I. T.	30
U. S. A. 2	M. I. T.	2	U. S. A. T. S. 8	M. I. T.	31
U. S. A. 3	M. I. T.	3	U. S. A. T. S. 9	M. I. T.	32
U. S. A. 4	M. I. T.	4	U. S. A. T. S. 10	M. I. T.	33
U. S. A. 5	M. I. T.	5	U. S. A. T. S. 11	M. I. T.	34
U. S. A. 6	M. I. T.	6	U. S. A. T. S. 12	M. I. T.	35
U. S. A. 7	M. I. T.	7	U. S. A. T. S. 13	M. I. T.	36
U. S. A. 8	M. I. T.	8	U. S. A. T. S. 14	M. I. T.	37
U. S. A. 9	M. I. T.	9	U. S. A. T. S. 15	M. I. T.	38
U. S. A. 10	M. I. T.	10	U. S. A. T. S. 16	M. I. T.	39
U. S. A. 11	M. I. T.	11	U. S. A. T. S. 17	M. I. T.	40
U. S. A. 12	M. I. T.	12	U. S. A. T. S. 18	M. I. T.	41
U. S. A. 14	M. I. T.	13	Durand Propeller No. 4	M. I. T.	42
U. S. A. 15	M. I. T.	14	Durand Propeller No. 7	M. I. T.	43
U. S. A. 16	M. I. T.	15	Durand Propeller No. 10	M. I. T.	44
U. S. A. 17	M. I. T.	16	Durand Propeller No. 13	M. I. T.	45
U. S. A. 18	M. I. T.	17	Durand Propeller No. 16	M. I. T.	46
U. S. A. 19	M. I. T.	18	Offenstein	M. I. T.	47
U. S. A. 20	M. I. T.	19	Offenstein (modified)	M. I. T.	48
U. S. A. 21	M. I. T.	20	Spad	M. I. T.	49
U. S. A. 23	M. I. T.	21	Standard Aircraft Corp. No. 48	M. I. T.	50
U. S. A. 24	M. I. T.	22	V. E. Clark	M. I. T.	51
U. S. D. 9A	M. I. T.	23	W-1	M. I. T.	52
U. S. A. T. S. 1	M. I. T.	24	Navy Yard 1	W. N. Y.	53
U. S. A. T. S. 2	M. I. T.	25	Navy Yard 2	W. N. Y.	54
U. S. A. T. S. 3	M. I. T.	26	Navy Yard 3	W. N. Y.	55
U. S. A. T. S. 4	M. I. T.	27	Navy Yard 4	W. N. Y.	56
U. S. A. T. S. 5	M. I. T.	28		W. N. Y.	57
U. S. A. T. S. 6	M. I. T.	29			

BRITISH.

R. A. F. 3	N. P. L.	58	Naylor & Griffiths 8	N. P. L.	86
R. A. F. 4	N. P. L.	59	Naylor & Griffiths 9	N. P. L.	87
R. A. F. 5	N. P. L.	60	Naylor & Griffiths 10	N. P. L.	88
R. A. F. 6	N. P. L.	61	Naylor & Griffiths 11	N. P. L.	89
R. A. F. 6 (modified)	N. P. L.	62	Naylor & Griffiths 12	N. P. L.	90
R. A. F. 6a	N. P. L.	63	Naylor & Griffiths 13	N. P. L.	91
R. A. F. 6c	N. P. L.	64	Naylor & Griffiths 14	N. P. L.	92
R. A. F. 6c (both surfaces)	N. P. L.	65	Naylor & Griffiths 15	N. P. L.	93
R. A. F. 8	N. P. L.	66	Naylor & Griffiths 16	N. P. L.	94
R. A. F. 9	N. P. L.	67	Naylor & Griffiths 17	N. P. L.	95
R. A. F. 12	N. P. L.	68	Naylor & Griffiths 18	N. P. L.	96
R. A. F. 13	N. P. L.	69	Naylor & Griffiths 19	N. P. L.	97
R. A. F. 14	N. P. L.	70	Naylor & Griffiths 20	N. P. L.	98
R. A. F. 14 (modified)	N. P. L.	71	Naylor & Griffiths 21	N. P. L.	99
R. A. F. 15	N. P. L.	72	Naylor & Griffiths 22	N. P. L.	100
R. A. F. 15 (modified)	N. P. L.	73	Naylor & Griffiths 23	N. P. L.	101
R. A. F. 16	N. P. L.	74	Naylor & Griffiths 24	N. P. L.	102
R. A. F. 17	N. P. L.	75	Naylor & Griffiths 25	N. P. L.	103
R. A. F. 18	N. P. L.	76	Naylor & Griffiths 26	N. P. L.	104
R. A. F. 19	N. P. L.	77	Naylor & Griffiths 27	N. P. L.	105
R. A. F. 20	N. P. L.	78	Naylor & Griffiths 28	N. P. L.	106
Naylor & Griffiths 1	N. P. L.	79	Naylor & Griffiths 29	N. P. L.	107
Naylor & Griffiths 2	N. P. L.	80	Naylor & Griffiths 30	N. P. L.	108
Naylor & Griffiths 3	N. P. L.	81	Naylor & Griffiths 31	N. P. L.	109
Naylor & Griffiths 4	N. P. L.	82	A. D. No. 1	N. P. L.	110
Naylor & Griffiths 5	N. P. L.	83	A. D. No. 4	N. P. L.	111
Naylor & Griffiths 6	N. P. L.	84	N. P. L. 64	N. P. L.	112
Naylor & Griffiths 7	N. P. L.	85	Albatross	N. P. L.	113

BRITISH—Continued.

Aerofoil.	Wind tunnel.	Report reference No.	Aerofoil.	Wind tunnel.	Report reference No.
Avro	N. P. L.	114	N. P. L. 73	N. P. L.	135
Bristol	N. P. L.	115	N. P. L. 214	N. P. L.	136
B. I. R. 1a	N. P. L.	116	Portholme	N. P. L.	137
B. I. R. 3	N. P. L.	117	Scout E	N. P. L.	138
B. I. R. 33a	N. P. L.	118	Sopwith	N. P. L.	139
Curtiss	N. P. L.	119	White	N. P. L.	140
DeH-2	N. P. L.	120	Cowley & Levy—A. 1	N. P. L.	141
DeH-3	N. P. L.	121	Cowley & Levy—A. 2	N. P. L.	142
F. 2. B	N. P. L.	122	Cowley & Levy—A. 3	N. P. L.	143
Fairey	N. P. L.	123	Cowley & Levy—A. 4	N. P. L.	144
Handley Page 166	N. P. L.	124	Cowley & Levy—A. 5	N. P. L.	145
Handley Page 166a	N. P. L.	125	Cowley & Levy—A. 6	N. P. L.	146
Handley Page 166b	N. P. L.	126	Cowley & Levy—A. 7	N. P. L.	147
Handley Page 166c	N. P. L.	127	Cowley & Levy—B. 1	N. P. L.	148
N. P. L. 4	N. P. L.	128	Cowley & Levy—B. 2	N. P. L.	149
N. P. L. 4a	N. P. L.	129	Cowley & Levy—B. 3	N. P. L.	150
N. P. L. 4b	N. P. L.	130	Cowley & Levy—B. 4	N. P. L.	151
N. P. L. 4c	N. P. L.	131	Cowley & Levy—B. 5	N. P. L.	152
N. P. L. 4cα	N. P. L.	132	Cowley & Levy—B. 6	N. P. L.	153
N. P. L 4cβ	N. P. L.	133	Cowley & Levy—B. 7	N. P. L.	154
N. P. L. 4cγ	N. P. L.	134			

FRENCH.

Eiffel 8	Eiffel	155	Eiffel 43	Eiffel	184
Eiffel 9	Eiffel	156	Eiffel 44 (Voisin)	Eiffel	185
Eiffel 10	Eiffel	157	Eiffel 45 (Buch)	Eiffel	186
Eiffel 11	Eiffel	158	Eiffel 46 (Buch)	Eiffel	187
Eiffel 12 (M. Farman)	Eiffel	159	Eiffel 47 (Howard-Wright)	Eiffel	188
Eiffel 13 (Bleriot 11)	Eiffel	160	Eiffel 48 (Howard-Wright)	Eiffel	189
Eiffel 13 bis (Bleriot 11a)	Eiffel	161	Eiffel 49 (Howard-Wright)	Eiffel	190
Eiffel 14 (Breguet)	Eiffel	162	Eiffel 52 (Nieuport)	Eiffel	181
Eiffel 15 (M. Ernoult)	Eiffel	163	Eiffel 53 (Nieuport)	Eiffel	192
Eiffel 16 (M. Drzewiecki)	Eiffel	164	Eiffel 54 (Deperdussin)	Eiffel	193
Eiffel 16a	Eiffel	165	Eiffel 55 (Deperdussin)	Eiffel	194
Eiffel 16b	Eiffel	166	Eiffel 56 (Deperdussin)	Eiffel	195
Eiffel 16c	Eiffel	167	Eiffel 57	Eiffel	196
Eiffel 16d	Eiffel	168	Eiffel 58	Eiffel	197
Eiffel 17 (M. Drzewiecki)	Eiffel	169	Eiffel 59	Eiffel	198
Eiffel 18 (M. Drzewiecki)	Eiffel	170	Eiffel 60	Eiffel	199
Eiffel 30	Eiffel	171	Eiffel 61	Eiffel	200
Eiffel 31	Eiffel	172	Eiffel 62	Eiffel	201
Eiffel 32 (Lanier-Lawrançe)	Eiffel	173	Dorand	Eiffel	202
Eiffel 33 (Breguet)	Eiffel	174	Halbroun 2	Eiffel	203
Eiffel 34 (Colliex)	Eiffel	175	Halbroun 3	Eiffel	204
Eiffel 35 (Dorand)	Eiffel	176	S. E. A.	Eiffel	205
Eiffel 36 (Odier)	Eiffel	177	St. Cyr 1	Eiffel	206
Eiffel 37 (Kauffmann)	Eiffel	178	St. Cyr 2	Eiffel	207
Eiffel 38 (Coanda)	Eiffel	179	St. Cyr 3	Eiffel	208
Eiffel 39 (16b modified)	Eiffel	180	Turin 1	Eiffel	209
Eiffel 40	Eiffel	181	Turin 2	Eiffel	210
Eiffel 41	Eiffel	182	Bleriot Triplane	Eiffel	211
Eiffel 42	Eiffel	183			

MISCELLANEOUS.

Italian 1	Crocco	212	Italian 3	Crocco	214
Italian 2	Crocco	213			

ALPHABETICAL INDEX.

Aerofoil.	Report reference No.
A. D. No. 1	110
A. D. No. 4	111
Albatross	113
Avro	114
B. I. R. 1a	116
B. I. R. 3	117
B. I. R. 33a	118
Bleriot Triplane	211
Bristol	115
Clark, V. E	51
Cowley & Levy—A. 1	141
Cowley & Levy—A. 2	142
Cowley & Levy—A. 3	143
Cowley & Levy—A. 4	144
Cowley & Levy—A. 5	145
Cowley & Levy—A. 6	146
Cowley & Levy—A. 7	147
Cowley & Levy—B. 1	148
Cowley & Levy—B. 2	149
Cowley & Levy—B. 3	150
Cowley & Levy—B. 4	151
Cowley & Levy—B. 5	152
Cowley & Levy—B. 6	153
Cowley & Levy—B. 7	154
Curtiss	119
DeH-2	120
DeH-3	121
Dorand	202
Durand Propeller No. 4	42
Durand Propeller No. 7	43
Durand Propeller No. 10	44
Durand Propeller No. 13	45
Durand Propeller No. 16	46
Eiffel 8	155
Eiffel 9	156
Eiffel 10	157
Eiffel 11	158
Eiffel 12 (M. Farman)	159
Eiffel 13 (Bleriot 11)	160
Eiffel 13 bis (Bleriot 11a)	161
Eiffel 14 (Breguet)	162
Eiffel 15 (M. Ernoult)	163
Eiffel 16 (M. Drzewiecki)	164
Eiffel 16a	165
Eiffel 16b	166
Eiffel 16c	167
Eiffel 16d	168
Eiffel 17 (M. Drzewiecki)	169
Eiffel 18 (M. Drzewiecki)	170
Eiffel 30	171
Eiffel 31	172
Eiffel 32 (Lanier-Lawrance)	173
Eiffel 33 (Breguet)	174
Eiffel 34 (Colliex)	175
Eiffel 35 (Dorand)	176
Eiffel 36 (Odier)	177
Eiffel 37 (Kauffmann)	178
Eiffel 38 (Coanda)	179
Eiffel 39 (16b Modified)	180
Eiffel 40	181
Eiffel 41	182
Eiffel 42	183
Eiffel 43	184
Eiffel 44 (Voisin)	185
Eiffel 45 (Buch)	186
Eiffel 46 (Buch)	187
Eiffel 47 (Howard-Wright)	188
Eiffel 48 (Howard-Wright)	189
Eiffel 49 (Howard-Wright)	190
Eiffel 52 (Nieuport)	191
Eiffel 53 (Nieuport)	192
Eiffel 54 (Deperdussin)	193
Eiffel 55 (Deperdussin)	194
Eiffel 56 (Deperdussin)	195
Eiffel 57	196
Eiffel 58	197
Eiffel 59	198
Eiffel 60	199
Eiffel 61	200
Eiffel 62	201
F. 2 B	122
Fairey	123
Halbronn 2	203
Halbronn 3	204
Handley Page 166	124
Handley Page 166a	125
Handley Page 166b	126
Handley Page 166c	127
Italian 1	212
Italian 2	213
Italian 3	214
N. P. L. 4	128
N. P. L. 4a	129
N. P. L. 4b	130
N. P. L. 4c	131
N. P. L. 4cα	132
N. P. L. 4cβ	133
N. P. L. 4cγ	134
N. P. L. 64	112
N. P. L. 73	135
N. P. L. 214	136
Naylor & Griffiths 1	79
Naylor & Griffiths 2	80
Naylor & Griffiths 3	81
Naylor & Griffiths 4	82
Naylor & Griffiths 5	83
Naylor & Griffiths 6	84
Naylor & Griffiths 7	85
Naylor & Griffiths 8	86
Naylor & Griffiths 9	87
Naylor & Griffiths 10	88
Naylor & Griffiths 11	89
Naylor & Griffiths 12	90
Naylor & Griffiths 13	91
Naylor & Griffiths 14	92
Naylor & Griffiths 15	93
Naylor & Griffiths 16	94
Naylor & Griffiths 17	95
Naylor & Griffiths 18	96
Naylor & Griffiths 19	97
Naylor & Griffiths 20	98
Naylor & Griffiths 21	99
Naylor & Griffiths 22	100
Naylor & Griffiths 23	101
Naylor & Griffiths 24	102
Naylor & Griffiths 25	103
Naylor & Griffiths 26	104
Naylor & Griffiths 27	105
Naylor & Griffiths 28	106

Aerofoil.	Report reference No.	Aerofoil.	Report reference No.
Naylor & Griffiths 29	107	U. S. A. 6	6
Naylor & Griffiths 30	108	U. S. A. 7	7
Naylor & Griffiths 31	109	U. S. A. 8	8
Offenstein	47	U. S. A. 9	9
Offenstein (modified)	48	U. S. A. 10	10
Portholme	137	U. S. A. 11	11
R. A. F. 3	58	U. S. A. 12	12
R. A. F. 4	59	U. S. A. 14	13
R. A. F. 5	60	U. S. A. 15	14
R. A. F. 6	61	U. S. A. 16	15
R. A. F. 6 (modified)	62	U. S. A. 17	16
R. A. F. 6a	63	U. S. A. 18	17
R. A. F. 6c	64	U. S. A. 19	18
R. A. F. 6c (both surfaces)	65	U. S. A. 20	19
R. A. F. 8	66	U. S. A. 21	20
R. A. F. 9	67	U. S. A. 23	21
R. A. F. 12	68	U. S. A. 24	22
R. A. F. 13	69	U. S. A. T. S. 1	24
R. A. F. 14	70	U. S. A. T. S. 2	25
R. A. F. 14 (modified)	71	U. S. A. T. S. 3	26
R. A. F. 15	72	U. S. A. T. S. 4	27
R. A. F. 15 (modified)	73	U. S. A. T. S. 5	28
R. A. F. 16	74	U. S. A. T. S. 6	29
R. A. F. 17	75	U. S. A. T. S. 7	30
R. A. F. 18	76	U. S. A. T. S. 8	31
R. A. F. 19	77	U. S. A. T. S. 9	32
R. A. F. 20	78	U. S. A. T. S. 10	33
S. E. A	205	U. S. A. T. S. 11	34
St.-Cyr 1	206	U. S. A. T. S. 12	35
St.-Cyr 2	207	U. S. A. T. S. 13	36
St.-Cyr 3	208	U. S. A. T. S. 14	37
Scout E	138	U. S. A. T. S. 15	38
Sloane	57	U. S. A. T. S. 16	39
Sopwith	139	U. S. A. T. S. 17	40
Spad	49	U. S. A. T. S. 18	41
Standard Aircraft Corp. 48	209	U. S. D. 9A	23
Turin 1	209	W-1	52
Turin 2	210	Washington Navy Yard 1	53
U. S. A. 1	1	Washington Navy Yard 2	54
U. S. A. 2	2	Washington Navy Yard 3	55
U. S. A. 3	3	Washington Navy Yard 4	56
U. S. A. 4	4	White	140
U. S. A. 5	5		

The following tables have been prepared to give additional decimal places for the greater portion of the ordinates:

Per cent of chord.	Ref. No. 1. U. S. A. 1. Ordinates. Upper.	Ref. No. 1. U. S. A. 1. Ordinates. Lower.	Ref. No. 2. U. S. A. 2. Ordinates. Upper.	Ref. No. 2. U. S. A. 2. Ordinates. Lower.
0	1.22	0.81	0.80	0.0
1.25	2.56	0.42	1.80	0.27
2.5	3.44	0.19	2.98	0.49
5	4.77	0.0	4.38	0.88
7.5	5.58	0.12	5.50	1.23
10	6.11	0.39	6.38	1.51
15	6.80	0.90	7.65	1.94
20	7.28	1.60	8.37	2.23
30	7.61	2.27	8.80	2.57
40	7.55	2.28	8.50	2.73
50	7.11	1.72	7.85	2.53
60	6.36	1.04	6.88	1.95
70	5.32	0.34	5.62	1.27
80	3.90	0.0	4.12	0.72
90	2.47	0.03	2.48	0.30
95	1.50	0.23	1.50	0.15
100	0.83	0.49	0.70	0.0

Per cent of chord.	Ref. No. 3. U. S. A. 3. Ordinates. Upper.	Ref. No. 3. U. S. A. 3. Ordinates. Lower.	Ref. No. 4. U. S. A. 4. Ordinates. Upper.	Ref. No. 4. U. S. A. 4. Ordinates. Lower.	Ref. No. 5. U. S. A. 5. Ordinates. Upper.	Ref. No. 5. U. S. A. 5. Ordinates. Lower.	Ref. No. 6. U. S. A. 6. Ordinates. Upper.	Ref. No. 6. U. S. A. 6. Ordinates. Lower.
0	0.79	0.0	0.81	0.0	0.73	0.33	0.72	0.72
1.25	1.87	0.13	2.43	0.25	2.10	0.17	1.77	0.08
2.5	2.64	0.30	3.44	0.51	3.03	0.03	2.39	0.0
*5	3.91	0.62	4.88	1.07	4.40	0.03	3.49	0.086
7.5	5.00	0.90	6.00	1.47	5.40	0.25	4.41	0.32
10	5.98	1.15	6.83	1.82	6.20	0.57	5.13	0.63
15	7.30	1.65	7.87	2.35	7.16	1.10	6.12	1.25
20	8.20	1.87	8.57	2.57	7.92	1.55	6.90	1.97
30	8.68	2.30	8.90	2.83	8.30	2.02	7.40	2.77
40	8.44	2.50	8.57	2.93	8.14	2.17	7.36	2.90
50	7.75	2.33	7.82	2.63	7.55	1.96	6.85	2.52
60	6.80	1.78	6.90	1.98	6.75	1.55	6.03	1.93
70	5.57	1.15	5.60	1.22	5.63	1.16	4.91	1.32
80	4.08	0.63	4.08	0.62	4.24	0.76	3.52	0.72
90	2.39	0.33	2.32	0.30	2.52	0.55	2.01	0.12
95	1.55	0.15	1.45	0.18	1.50	0.35	1.15	0.0
100	0.69	0.0	0.71	0.0	0.50	0.0	0.29	0.29
*3.5	.....	.....	.....	.....	.....	0.0	.....	.....

Per cent of chord.	Ref. No. 7. U. S. A. 7. Ordinates. Upper.	Ref. No. 7. U. S. A. 7. Ordinates. Lower.	Ref. No. 8. U. S. A. 8. Ordinates. Upper.	Ref. No. 8. U. S. A. 8. Ordinates. Lower.	Ref. No. 9. U. S. A. 9. Ordinates. Upper.	Ref. No. 9. U. S. A. 9. Ordinates. Lower.	Ref. No. 10. U. S. A. 10. Ordinates. Upper.	Ref. No. 10. U. S. A. 10. Ordinates. Lower.
0	1.25	0.0	1.25	0.0	1.25	0.0	1.25	0.0
1.25	3.40	−1.07	4.65	−0.38	3.25	0.0	2.43	0.0
2.5	5.38	−1.58	6.33	−0.58	4.58	0.0	3.43	0.0
5	8.70	−2.32	8.73	−0.81	6.35	0.0	4.50	0.0
7.5	11.39	−2.80	10.21	−0.95	7.47	0.0	5.73	0.0
10	13.28	−3.13	11.25	−1.05	8.22	0.0	6.32	0.0
15	16.00	−3.65	12.45	−1.15	9.15	0.0	6.90	0.0
20	17.93	−3.80	13.33	−1.22	9.70	0.0	7.27	0.0
30	20.00	−4.02	13.93	−1.29	10.07	0.0	7.50	0.0
40	20.50	−3.87	13.80	−1.28	10.00	0.0	7.45	0.0
50	19.33	−3.52	13.00	−1.20	9.47	0.0	7.10	0.0
60	17.23	−3.03	11.63	−1.09	8.43	0.0	6.43	0.0
70	14.37	−2.50	9.74	−0.91	7.12	0.0	5.38	0.0
80	10.60	−1.92	7.28	−0.66	5.56	0.0	4.20	0.0
90	6.25	−1.17	4.50	−0.40	3.62	0.0	2.92	0.0
95	3.95	−0.75	2.95	−0.15	2.60	0.0	2.23	0.0
100	1.50	0.0	1.40	0.0	1.50	0.0	1.50	0.0

Per cent of chord.	Ref. No. 11. U. S. A. 11. Ordinates. Upper.	Ref. No. 11. U. S. A. 11. Ordinates. Lower.	Ref. No. 12. U. S. A. 12. Ordinates. Upper.	Ref. No. 12. U. S. A. 12. Ordinates. Lower.	Ref. No. 13. U. S. A. 14. Ordinates. Upper.	Ref. No. 13. U. S. A. 14. Ordinates. Lower.	Ref. No. 14. U. S. A. 15. Ordinates. Upper.	Ref. No. 14. U. S. A. 15. Ordinates. Lower.
0	1.25	0.0	1.25	0.0	1.25	0.633	1.22	0.63
1.25	2.32	0.0	4.73	0.0	2.277	0.467	2.56	0.46
2.5	3.21	0.0	6.88	0.0	3.100	0.333	3.44	0.33
5	4.45	0.0	9.34	0.0	4.250	0.150	4.80	0.15
7.5	5.30	0.0	11.13	0.0	4.970	0.033	5.58	0.03
10	5.85	0.0	12.27	0.0	5.417	0.0	6.11	0.0
15	6.42	0.0	13.55	0.0	6.050	0.117	6.88	0.12
20	6.78	0.0	14.56	0.0	6.567	0.333	7.28	0.33
30	7.12	0.0	15.59	0.0	6.850	0.867	7.61	0.86
40	7.05	0.0	15.07	0.0	6.867	1.000	7.55	1.00
50	6.63	0.0	14.20	0.0	6.600	0.717	7.11	0.72
60	5.95	0.0	12.71	0.0	5.967	0.277	6.36	0.28
70	5.00	0.0	10.63	0.0	5.017	0.0	5.32	0.0
80	3.92	0.0	8.03	0.0	3.850	0.110	3.90	0.11
90	2.77	0.0	4.97	0.0	2.433	0.233	2.50	0.23
95	2.12	0.0	2.65	0.0	1.620	0.370	1.67	0.37
100	1.50	0.0	1.50	0.0	0.833	0.500	0.83	0.50

Per cent of chord.	Ref. No. 15.		Ref. No. 16.		Ref. No. 17.		Ref. No. 18.	
	U. S. A. 16.		U. S. A. 17.		U. S. A. 18.		U. S. A. 19.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower	Upper.	Lower.	Upper.	Lower.
0	0.0	0.0	0.0	0.0	1.07	1.070	0.75	0.0
1.25	2.10	−0.42	1.60	0.40	1.80	0.467	1.80	0.10
2.5	2.99	−0.64	2.55	−0.64	2.98	0.339	2.40	0.00
5	3.88	−0.76	3.70	−0.70	4.38	0.150	3.47	0.10
7.5	4.52	−0.83	4.46	−0.76	5.50	0.033	4.35	0.30
10	4.95	−0.83	4.90	−0.83	6.38	0.000	5.07	0.55
15	5.42	−0.76	5.42	−0.96	7.65	0.117	6.11	1.25
20	5.67	−0.51	5.67	−1.02	8.37	0.333	6.73	1.77
30	5.86	−0.06	5.80	−1.08	8.80	0.867	7.17	2.45
40	5.74	0.0	5.60	−1.15	8.50	1.000	6.97	2.50
50	5.29	−0.19	5.23	−1.09	7.85	0.717	6.37	1.90
60	4.65	−0.70	4.65	−1.02	6.88	0.277	5.40	1.20
70	4.01	−0.76	4.01	−0.89	5.62	0.000	4.17	0.47
80	3.25	−0.70	3.06	−0.76	4.12	0.110	3.17	0.03
90	2.23	−0.446	1.97	−0.57	2.48	0.233	2.18	0.29
95	1.37	−0.27	1.10	−0.35	1.50	0.370	2.00	0.58
100	0.0	0.0	0.0	0.0	0.74	0.740	1.50	0.0

Per cent of chord.	Ref. No. 19.		Ref. No. 20.		Ref. No. 21.		Ref. No. 22.	
	U. S. A. 20.		U. S. A. 21.		U. S. A. 23.		U. S. A. 24.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	1.30	0.0	1.667	0.0	1.50	1.50	1.50	1.50
1.25	3.05	0.50	2.340	0.72	2.52	0.65	2.60	1.13
2.5	3.90	0.32	2.967	0.34	3.00	0.50	3.10	0.46
5	4.83	0.13	4.370	0.15	3.81	0.20	4.12	0.20
7.5	5.47	0.03	5.500	0.033	4.45	0.07	5.00	0.05
10	5.86	0.0	6.367	0.0	5.00	0.0	5.65	0.0
15	6.37	0.16	7.600	0.100	5.77	0.09	6.65	0.09
20	6.60	0.30	8.367	0.300	6.32	0.30	7.30	0.30
30	6.77	0.67	8.800	0.866	6.92	0.80	7.93	0.80
40	6.60	0.83	8.500	1.000	6.95	1.00	7.90	1.00
50	6.10	0.62	7.833	0.717	6.60	0.94	7.45	0.94
60	5.50	0.15	6.867	0.277	5.82	0.74	6.60	0.74
70	4.83	0.0	5.600	0.0	4.72	0.55	5.33	0.55
80	4.17	0.30	4.300	0.270	3.44	0.38	3.83	0.38
90	3.47	1.05	3.317	1.000	2.00	0.19	2.10	0.19
95	3.25	1.60	2.93	1.550	1.12	0.10	1.16	0.10
100	2.55	0.0	2.643	0.0	0.10	0.10	0.10	0.10

Per cent of chord.	Ref. No. 23.		Ref. No. 24.		Ref. No. 25.		Ref. No. 26.	
	U. S. D. 9A.		U. S. A. T. S. 1.		U. S. A. T. S. 2.		U. S. A. T. S. 3.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	1.31	1.31	2.0	+2.00	2.0	+2.00	2.0	2.00
1.25	2.67	0.55	4.4	−1.30	4.4	0.0	4.4	0.30
2.5	3.46	0.33	5.5	−2.30	5.5	−0.50	5.5	0.00
5	4.62	0.11	7.4	−4.00	7.4	−1.35	7.4	0.50
7.5	5.35	0.05	8.8	−5.40	8.8	−1.85	8.8	0.85
10	5.90	0.0	10.0	−6.50	10.0	−2.25	10.0	1.15
15	6.36	0.10	11.8	−7.90	11.8	−2.80	11.8	1.60
20	6.62	0.26	13.1	−8.90	13.1	−3.40	13.1	2.00
30	6.70	0.63	14.7	−9.55	14.7	−4.00	14.7	2.30
40	6.59	0.62	14.8	−9.10	14.8	−4.10	14.8	2.50
50	6.38	0.42	13.9	−8.30	13.9	−4.00	13.9	2.40
60	5.95	0.22	12.3	−7.30	12.3	−3.85	12.3	2.10
70	5.31	0.06	10.3	−5.85	10.3	−3.00	10.3	1.80
80	4.24	0.0	7.8	−4.10	7.8	−2.00	7.8	1.30
90	2.67	0.08	4.9	−2.10	4.9	−1.00	4.9	0.70
95	1.77	0.15	3.3	−1.00	3.3	−0.45	3.3	0.30
100	0.59	0.59	1.0	+1.00	1.0	+1.00	1.0	1.0

Per cent of chord.	Ref. No. 27.		Ref. No. 28.		Ref. No. 29.		Ref. No. 30.	
	U. S. A. T. S. 4.		U. S. A. T. S. 5.		U. S. A. T. S. 6.		U. S. A. T. S. 7.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	2.0	2.00	2.0	+2.00	2.0	+2.00	2.0	+2.00
1.25	4.4	0.45	4.4	0.0	4.4	0.10	4.4	0.60
2.5	5.5	0.20	5.5	−0.80	5.5	−0.40	5.5	0.0
5	7.4	0.80	7.4	−1.80	7.4	−0.75	7.4	0.20
7.5	8.8	1.30	8.8	−2.50	8.8	−1.10	8.8	0.5
10	10.0	1.80	10.0	−3.00	10.0	−1.45	10.0	0.74
15	11.8	2.65	11.8	−3.40	11.8	−1.80	11.8	1.00
20	13.1	3.20	13.1	−3.50	13.1	−2.00	13.1	1.25
30	14.7	3.90	14.7	−2.90	14.7	−2.10	14.7	1.47
40	14.8	3.90	14.8	−1.50	14.8	−1.35	14.8	1.00
50	13.9	3.60	13.9	−0.65	13.9	0.0	13.9	0.0
60	12.3	3.10	12.3	−0.30	12.3	+1.00	12.3	−1.20
70	10.3	2.65	10.3	−0.20	10.3	1.40	10.3	−2.00
80	7.8	2.00	7.8	−0.10	7.8	1.35	7.8	−2.50
90	4.9	1.00	4.9	0.0	4.9	0.80	4.9	−1.90
95	3.3	0.70	3.3	0.0	3.3	0.50	3.3	−1.20
100	1.2	1.20	1.0	+1.00	1.0	1.00	1.0	+1.00

Per cent of chord.	Ref. No. 31.		Ref. No. 32.		Ref. No. 33.		Ref. No. 34.	
	U. S. A. T. S. 8.		U. S. A. T. S. 9.		U. S. A. T. S. 10.		U. S. A. T. S. 11.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	2.0	2.00	1.50	1.5	1.50	1.5	1.50	1.5
1.25	4.4	+0.50	3.90	0.2	4.00	0.1	3.25	0.1
2.5	5.5	−0.20	5.75	0.0	5.60	0.0	4.25	0.0
5.0	7.4	−1.20	8.50	0.0	8.30	0.0	5.90	0.0
7.5	8.8	−1.50	10.56	0.0	10.00	0.0	7.10	0.0
10	10.0	−1.90	12.30	0.0	11.40	0.0	8.40	0.0
15	11.8	−1.90	14.50	0.0	13.30	0.0	10.10	0.0
20	13.1	−1.45	15.70	0.0	14.50	0.0	11.30	0.0
30	14.7	0.00	16.90	0.0	15.75	0.0	12.70	0.0
40	14.8	1.20	16.90	0.0	15.70	0.0	13.00	0.0
50	13.9	1.90	15.80	0.0	14.70	0.0	12.30	0.0
60	12.3	1.50	14.00	0.0	13.10	0.0	11.00	0.0
70	10.3	0.73	11.50	0.0	10.90	0.0	9.00	0.0
80	7.8	0.0	8.50	0.0	8.00	0.0	6.90	0.0
90	4.9	−0.50	5.30	0.0	5.00	0.0	4.46	0.0
95	3.3	−0.30	3.60	0.0	3.40	0.0	3.20	0.0
100	1.0	+1.00	1.00	1.0	1.00	1.0	1.00	1.0

Per cent of chord.	Ref. No. 35.		Ref. No. 36.		Ref. No. 37.		Ref. No. 38.	
	U. S. A. T. S. 12.		U. S. A. T. S. 13.		U. S. A. T. S. 14.		U. S. A. T. S. 15.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	1.50	1.5	1.40	1.4	1.50	1.5	2.00	2.0
1.25	3.30	0.1	3.50	0.1	3.50	0.1	2.00	0.4
2.5	4.35	0.0	5.40	0.0	5.25	0.0	2.20	0.0
5	6.40	0.0	8.00	0.0	7.65	0.0	3.90	0.0
*7.5	7.90	0.0	9.70	0.0	9.30	0.0	.....	.....
10	9.00	0.0	11.00	0.0	10.50	0.0	10.50	0.0
15	11.00	0.0	12.90	0.0	12.10	0.0	12.30	0.0
20	12.40	0.0	13.75	0.0	13.20	0.0	13.50	0.0
30	14.00	0.0	14.30	0.0	14.00	0.0	14.75	0.0
40	14.30	0.0	13.70	0.0	13.50	0.0	14.75	0.0
50	13.80	0.0	12.30	0.0	12.00	0.0	13.80	0.0
60	12.75	0.0	10.80	0.0	10.10	0.0	12.40	0.0
70	11.00	0.0	8.90	0.0	8.00	0.0	10.30	0.0
80	8.60	0.0	6.80	0.0	6.00	0.0	7.90	0.0
90	5.65	0.0	4.35	0.0	3.80	0.0	5.20	0.0
95	3.75	0.0	3.00	0.0	2.80	0.0	3.70	0.0
100	1.00	1.0	1.00	1.0	1.00	1.0	1.50	1.5
*6.75	.....	.....	.....	.....	.....	.....	8.70	0.0

Per cent of chord.	Ref. No. 39.		Ref. No. 40.		Ref. No. 41.		Ref. No. 42.	
	U. S. A. T. S. 16.		U. S. A. T. S. 17.		U. S. A. T. S. 18.		Durand Prop. 4.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	2.0	2.0	2.0	2.00	2.0	2.0	0.60	0.60
1.25	4.4	0.3	4.4	0.25	4.4	0.2	5.70	0.0
2.5	5.5	−0.1	5.5	−0.25	5.5	−0.3	8.25	−0.20
5.0	7.4	−1.1	7.4	−0.70	7.4	−1.0	12.70	−1.10
7.5	8.8	−1.8	8.8	−1.00	8.8	−1.5	15.70	−1.90
10	10.0	−2.5	10.0	−1.30	10.0	−1.9	18.41	−2.60
15	11.8	−3.4	11.8	−1.80	11.8	−2.6	22.70	−3.60
20	13.1	−4.3	13.1	−2.10	13.1	−3.1	25.10	−4.30
30	14.7	−5.3	14.7	−2.70	14.7	−3.7	28.10	−5.30
40	14.8	−5.8	14.8	−3.00	14.8	−4.0	28.50	−5.80
50	13.9	−5.7	13.9	−2.90	13.9	−3.7	27.00	−6.00
60	12.3	−4.9	12.3	−2.60	12.3	−3.2	23.80	−5.90
70	10.3	−3.9	10.3	−2.10	10.3	−2.6	19.50	−5.40
80	7.8	−2.7	7.8	−1.50	7.8	−1.8	14.40	−4.70
90	4.9	−1.2	4.9	−0.70	4.9	−0.9	8.50	−3.00
95	3.3	−0.55	3.3	−0.30	3.3	−0.5	5.40	−1.25
100	1.0	+1.0	1.0	+1.00	1.0	+1.0	1.20	+1.20

Per cent of chord.	Ref. No. 43.		Ref. No. 44.		Ref. No. 45.		Ref. No. 46.	
	Durand Prop. 7.		Durand Prop. 10		Durand Prop. 13		Durand Prop. 16	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00
1.25	4.10	0.0	3.20	0.0	4.40	0.30	2.60	0.0
2.5	6.00	0.0	5.00	0.0	5.50	0.0	3.50	0.0
5.0	9.00	0.0	7.50	0.0	7.40	0.0	5.00	0.0
7.5	11.40	0.0	9.60	0.0	8.80	0.0	6.30	0.0
10	13.16	0.0	11.50	0.0	10.00	0.0	7.30	0.0
15	16.60	0.0	14.40	0.0	11.80	0.0	9.00	0.0
20	19.00	0.0	16.50	0.0	13.10	0.0	10.00	0.0
30	21.85	0.0	18.60	0.0	14.70	0.0	11.00	0.0
40	22.00	0.0	18.60	0.0	14.80	0.0	11.10	0.0
50	20.32	0.0	17.10	0.0	13.90	0.0	10.70	0.0
60	18.05	0.0	15.00	0.0	12.30	0.0	9.60	0.0
70	14.65	0.0	12.40	0.0	10.30	0.0	8.00	0.0
80	10.80	0.0	9.20	0.0	7.80	0.0	6.20	0.0
90	6.55	0.0	5.60	0.0	4.90	0.0	4.10	0.0
95	4.20	0.0	3.70	0.0	3.30	0.0	3.00	0.0
100	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Per cent of chord.	Ref. No. 47.		Ref. No. 48.		Ref. No. 49.		Ref. No. 50.	
	Offenstein.		Offenstein-Mod.		Spad.		St. Air. Co. No. 48.	
	Ordinates.							
	Upper.	Lower.	Upper	Lower.	Upper.	Lower.	Upper.	Lower.
0	1.00	1.00	1.00	1.00	0.26	0.26	1.27	1.27
1.25	1.83	0.55	1.96	0.570	1.55	0.07	2.10	0.45
2.5	2.50	0.70	2.50	0.274	2.14	0.03	2.68	0.24
5	3.57	0.04	3.572	0.0357	3.00	0.08	3.57	0.0
7.5	4.21	0.04	4.210	0.0357	3.75	0.16	4.20	0.04
10	4.65	0.11	4.65	0.1071	4.37	0.26	4.68	0.15
15	5.20	0.32	5.25	0.310	5.31	0.55	5.30	0.36
20	5.56	0.48	5.56	0.478	5.95	0.85	5.62	0.56
30	5.84	0.67	5.84	0.666	6.60	1.25	5.85	0.67
40	5.79	0.63	5.79	0.631	6.67	1.31	5.84	0.60
50	5.51	0.51	5.51	0.512	6.28	1.10	5.55	0.48
60	5.04	0.43	5.045	0.429	5.53	0.82	5.06	0.37
70	4.36	0.32	4.360	0.3214	4.51	0.51	4.35	0.30
80	3.42	0.19	3.419	0.1904	3.26	0.29	3.46	0.22
90	1.96	0.83	1.962	0.0834	1.80	0.15	2.34	0.11
95	1.30	0.78	1.050	0.0190	1.06	0.07	1.64	0.04
100	0.0	0.0	0.00	0.000	0.32	0.0	0.48	0.48

Per cent of chord.	Ref. No. 51.		Ref. No. 52.		Ref. No. 53.		Ref. No. 54.	
	V. E. Clark.		W-1.		W. N. Y. 1.		W. N. Y. 2.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper	Lower.	Upper.	Lower.
0	1.0	0.8	0.0	0.0	1.018	1.018	1.018	1.018
1.25	2.6	0.7	1.25	−1.10	1.802	0.548	1.802	0.548
2.5	3.7	0.5	1.95	−1.40	2.508	0.235	2.508	0.235
5	4.8	0.0	3.00	−1.90	3.605	0.0	3.605	0.0
7.5	5.6	0.3	3.90	−2.15	4.467	0.235	4.467	0.235
10	6.3	0.7	4.50	−2.50	5.265	0.687	5.265	0.687
15	7.0	1.7	5.35	−2.85	6.270	1.489	6.270	1.489
20	7.3	2.2	5.70	−3.00	7.175	2.228	7.175	2.228
30	7.5	2.7	5.80	−3.00	7.870	2.954	7.870	2.954
40	7.1	2.3	5.70	−3.00	7.080	2.725	7.450	2.725
50	6.5	1.8	5.20	−2.80	7.060	2.060	6.560	2.062
60	5.5	1.3	4.50	−2.50	6.070	1.210	5.310	1.210
70	4.7	0.5	3.60	−2.10	4.770	0.573	4.100	0.573
80	3.5	0.2	2.75	−1.75	3.460	0.229	2.905	0.229
90	2.2	0.0	1.75	−1.25	2.150	0.051	1.810	0.051
95	1.3	0.1	1.30	−1.10	1.450	0.080	1.260	0.080
100	0.8	0.7	0.0	0.0	0.814	0.229	0.814	0.229

Per cent of chord.	Ref. No. 55.		Ref. No. 56.		Ref. No. 57		Ref. No. 58.	
	W. N. Y. 3.		W. N. Y. 4.		Sloane.		R. A. F. 3.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	1.018	1.018	0.0	0.0	0.71	0.71	0.80	0.80
1.25	1.802	0.548	1.179	0.0	1.80	0.26	2.00	0.0
2.5	2.508	0.235	2.044	0.0	2.56	0.07	3.00	0.0
5	3.605	0.0	3.880	0.0	3.40	0.01	4.40	0.90
7.5	4.467	0.235	4.409	0.235	3.95	0.05	5.50	1.30
10	5.265	0.687	5.265	0.687	4.38	0.12	6.40	1.60
15	6.270	1.489	6.270	1.489	4.93	0.36	7.68	2.10
20	7.175	2.228	7.175	2.228	5.25	0.51	8.40	2.40
30	7.870	2.954	7.870	2.954	5.62	0.63	8.80	2.90
40	7.190	2.725	7.450	2.725	5.62	0.55	8.50	3.20
50	5.925	2.062	6.560	2.062	5.30	0.46	7.80	3.10
60	4.575	1.210	5.310	1.210	4.82	0.38	6.90	2.60
70	3.356	0.573	4.100	0.573	4.10	0.33	5.60	2.10
80	2.355	0.229	2.905	0.229	3.26	0.21	4.10	1.40
90	1.502	0.051	1.810	0.051	2.14	0.08	2.40	0.80
95	1.150	0.080	1.260	0.080	1.43	0.04	1.60	0.40
100	0.814	0.229	0.814	0.229	0.58	0.0	0.70	0.0

Per cent of chord.	Ref. No. 59.		Ref. No. 60.		Ref. No. 61.		Ref. No. 62.	
	R. A. F. 4.		R. A. F. 5.		R. A. F. 6.		R. A. F. 6-Mod.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.80	0.80	0.80	0.80	0.50	0.0	0.50	0.0
1.25	2.20	0.05	2.25	0.20	2.30	0.10	2.00	0.05
2.5	3.10	0.0	3.10	0.0	3.21	0.0	3.05	0.13
5	4.30	0.90	4.30	−0.50	4.43	0.22	4.50	0.24
7.5	5.25	1.30	5.20	−0.75	5.35	0.35	5.40	0.34
10	6.00	1.60	6.00	−0.80	6.01	0.41	6.10	0.45
15	6.90	2.00	6.90	−0.55	7.08	0.70	7.15	0.63
20	7.40	2.10	7.40	−0.10	7.40	0.68	7.80	0.70
30	7.50	2.20	7.50	+1.70	7.59	0.77	8.20	0.80
40	7.20	2.10	7.20	2.20	7.47	0.68	7.70	0.80
50	6.60	1.90	6.60	2.00	7.11	0.53	7.10	0.75
60	5.90	1.60	5.90	1.60	6.51	0.41	6.43	0.64
70	4.90	1.30	4.90	1.30	5.65	0.30	5.80	0.80
80	3.80	0.90	3.80	0.90	4.42	0.19	5.33	1.45
90	2.50	0.40	2.50	0.40	2.73	0.09	4.90	2.50
95	1.70	0.22	1.65	0.30	1.85	0.05	4.76	3.20
100	0.80	0.10	0.80	0.10	0.50	0.0	4.30	4.30

Per cent of chord.	Ref. No. 63.		Ref. No. 64.		Ref. No. 65.		Ref. No. 66.	
	R. A. F. 6a.		R. A. F. 6c.		R. A. F. 6c (BS)		R. A. F. 8.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	5.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.25	2.30	0.0	2.25	0.0	2.25	−2.25	3.30	0.0
2.5	3.21	0.0	3.10	0.11	3.10	−3.10	4.10	0.10
5	4.43	0.0	4.53	0.25	4.53	−4.53	5.30	0.35
7.5	5.35	0.0	5.50	0.37	5.50	−5.50	6.00	0.57
10	6.01	0.0	6.17	0.45	6.17	−6.17	6.47	0.76
15	7.08	0.0	6.95	0.67	6.95	−6.95	7.20	1.00
20	7.40	0.0	7.40	0.80	7.40	−7.40	7.52	0.95
30	7.59	0.0	7.85	0.90	7.85	−7.85	7.58	0.85
40	7.47	0.0	7.70	0.80	7.70	−7.70	7.40	0.70
50	7.11	0.0	7.30	0.65	7.30	−7.30	7.10	0.55
60	6.51	0.0	6.80	0.50	6.80	−6.80	6.50	0.30
70	5.65	0.0	5.90	0.35	5.90	−5.90	5.60	0.18
80	4.42	0.0	4.70	0.20	4.70	−4.70	4.50	0.0
90	2.73	0.0	3.20	0.10	3.20	−3.20	2.80	0.0
95	1.85	0.0	2.30	0.05	2.30	−2.30	1.85	0.0
100	0.50	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Per cent of chord.	Ref. No. 67.		Ref. No. 68.		Ref. No. 69.		Ref. No. 70.	
	R. A. F. 9.		R. A. F. 12.		R. A. F. 13.		R. A. F. 14.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.0	0.0	0.0	0.0	0.0	0.0	0.68	0.68
1.25	2.75	0.02	2.00	−0.46	2.05	−0.50	1.80	0.13
2.5	3.52	0.06	2.74	−0.63	2.85	−0.65	2.54	0.05
5	4.82	0.20	3.83	−0.89	3.95	−0.89	3.65	0.03
7.5	5.70	0.30	4.55	−1.05	4.80	−1.06	4.52	0.16
10	6.33	0.35	5.05	−1.22	5.34	−1.18	5.25	0.39
15	7.00	0.40	5.55	−1.33	6.00	−1.33	6.18	0.94
20	7.23	0.37	5.76	−1.40	6.50	−1.38	6.63	1.22
30	7.33	0.35	5.75	−1.38	7.05	−1.42	7.06	1.39
40	7.10	0.30	5.59	−1.36	6.88	−1.36	6.82	1.27
50	6.70	0.25	5.27	−1.28	6.25	−1.28	6.50	1.06
60	6.10	0.20	4.80	−1.17	4.60	−1.17	6.08	0.85
70	5.20	0.16	4.58	−0.99	4.08	−0.99	5.43	0.62
80	4.00	0.10	3.79	−0.76	3.14	−0.76	4.28	0.42
90	2.50	0.07	2.48	−0.47	1.96	−0.47	2.65	0.19
95	1.67	0.03	1.62	0.26	1.24	−0.27	1.70	0.17
100	0.0	0.0	0.0	0.0	0.0	0.0	0.38	0.38

Per cent of chord.	Ref. No. 71.		Ref. No. 72.		Ref. No. 73.		Ref. No. 74.	
	R. A. F. 14-Mod.		R. A. F. 15.		R. A. F. 15-Mod.		R. A. F. 16.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.66	0.66	0.20	+0.20	1.33	1.33	0.30	+0.30
1.25	1.74	0.42	1.90	−0.45	3.00	0.55	2.20	−0.47
2.5	2.55	0.40	2.80	−0.73	3.75	0.26	3.15	−0.75
5	3.82	0.40	3.90	−0.90	4.85	0.10	4.42	−0.90
7.5	4.76	0.42	4.60	−1.00	5.56	0.05	5.20	−1.00
10	5.50	0.40	5.05	−1.00	6.00	0.0	5.70	−1.03
15	6.40	0.80	5.58	−0.80	6.55	0.17	6.25	−0.80
20	6.80	1.26	5.76	−0.50	6.70	0.50	6.50	−0.50
30	6.90	1.24	5.80	−0.10	6.70	0.80	6.58	−0.10
*40	6.78	1.12	5.58	−0.05	6.49	0.91	6.32	0.0
50	6.47	0.86	5.17	−0.28	6.13	0.67	6.00	0.0
60	6.00	0.40	4.68	−0.47	5.62	0.34	5.49	0.0
*70	5.37	−0.08	4.07	−0.62	4.98	0.10	4.70	0.0
*80	4.16	−0.50	3.28	−0.67	4.22	0.16	3.80	0.0
90	2.63	−0.40	2.24	−0.35	3.33	0.55	2.68	0.0
95	1.66	−0.15	1.63	−0.20	2.77	0.76	1.90	0.0
100	0.40	0.40	0.30	+0.30	1.33	1.33	0.30	+0.30
*35	.....	.....	5.74	0.0	.....	.....	.....	.....
*36.7	.....	.....	.....	.....	.....	.....	.....	0.0
*68	.....	0.0	.....	.....	.....	.....	.....	.....
*73.3	.....	.....	.....	.....	.....	0.0	.....	.....

Per cent of chord.	Ref. No. 75.		Ref. No. 76.		Ref. No. 77.		Ref. No. 78.	
	R. A. F. 17.		R. A. F. 18.		R. A. F. 19.		R. A. F. 20.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.30	+0.30	0.70	0.70	1.20	1.20	0.0	0.0
1.25	1.80	−0.32	1.82	0.25	3.90	0.22	0.90	−0.53
2.5	2.76	−0.48	2.41	0.05	5.80	0.03	1.60	−0.68
*5	3.90	−0.70	3.30	0.0	8.50	0.10	2.70	−0.90
7.5	4.55	−0.80	4.00	0.05	10.38	0.62	3.50	−0.96
10	5.00	−0.85	4.50	0.16	11.75	1.40	4.06	−1.05
15	5.54	−0.87	5.20	0.52	13.70	3.15	4.86	−1.20
20	5.78	−0.82	5.62	0.90	14.72	4.85	5.43	−1.27
30	5.80	−1.00	5.90	1.40	15.20	6.90	6.00	−1.40
40	5.62	−0.95	5.90	1.30	14.70	7.50	6.00	−1.50
50	5.20	−0.87	5.60	1.00	13.40	7.20	5.70	−1.50
60	4.65	−0.80	5.10	0.70	11.70	6.20	5.10	−1.40
70	3.98	−0.70	4.40	0.40	9.50	5.00	4.20	−1.40
80	3.22	−0.60	3.50	0.20	7.10	3.40	3.10	−1.10
90	2.24	−0.40	2.20	0.0	4.30	1.70	1.80	−0.80
95	1.64	−0.30	1.50	0.0	2.60	0.80	1.10	−0.60
*100	0.42	+0.42	0.30	0.30	0.60	0.60	0.0	0.0
*3.5	.....	.....	.....	.....	.....	0.0	.....	.....
*99	.....	.....	.....	.....	.....	0.0	.....	.....

Per cent of chord.	Ref. No. 79.		Ref. No. 80.		Ref. No. 81.		Ref. No. 82.	
	N. & G. 1.		N. & G. 2.		N. & G. 3.		N. & G. 4.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.25	1.13	0.0	1.44	0.0	1.69	0.0	2.25	0.0
2.5	1.58	0.0	2.01	0.0	2.36	0.0	3.14	0.0
5	2.29	0.0	2.94	0.0	3.44	0.0	4.58	0.0
7.5	2.78	0.0	3.56	0.0	4.16	0.0	5.55	0.0
10	3.07	0.0	3.94	0.0	4.61	0.0	6.14	0.0
15	3.47	0.0	4.45	0.0	5.21	0.0	6.94	0.0
20	3.70	0.0	4.74	0.0	5.55	0.0	7.40	0.0
30	3.89	0.0	4.99	0.0	5.84	0.0	7.78	0.0
*40	3.85	0.0	4.94	0.0	5.78	0.0	7.70	0.0
50	3.65	0.0	4.68	0.0	5.48	0.0	7.30	0.0
60	3.40	0.0	4.36	0.0	5.10	0.0	6.80	0.0
70	2.95	0.0	3.78	0.0	4.40	0.0	5.90	0.0
80	2.35	0.0	3.01	0.0	3.50	0.0	4.70	0.0
90	1.60	0.0	2.05	0.0	2.40	0.0	3.20	0.0
95	1.15	0.0	1.47	0.0	1.73	0.0	2.30	0.0
100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* 32	3.90	0.0	5.00	0.0	5.85	0.0	7.80	0.0

Per cent of chord.	Ref. No. 83.		Ref. No. 84.		Ref. No. 85.		Ref. No. 86.	
	N. & G. 5.		N. & G. 6.		N. & G. 7.		N. & G. 8.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.25	2.37	0.0	2.53	0.0	1.78	0.0	1.90	0.0
2.5	3.40	0.0	3.71	0.0	2.55	0.0	2.78	0.0
5	4.85	0.0	5.24	0.0	3.64	0.0	3.93	0.0
7.5	5.83	0.0	6.16	0.0	4.37	0.0	4.62	0.0
10	6.44	0.0	6.77	0.0	4.83	0.0	5.08	0.0
15	7.20	0.0	7.39	0.0	5.40	0.0	5.54	0.0
20	7.52	0.0	7.73	0.0	5.64	0.0	5.80	0.0
* 30	7.79	0.0	7.76	0.0	5.84	0.0	5.82	0.0
40	7.59	0.0	7.47	0.0	5.70	0.0	5.60	0.0
50	7.16	0.0	7.03	0.0	5.37	0.0	5.27	0.0
60	6.59	0.0	6.47	0.0	4.94	0.0	4.85	0.0
70	5.67	0.0	5.60	0.0	4.25	0.0	4.21	0.0
80	4.53	0.0	4.45	0.0	3.40	0.0	3.34	0.0
90	3.11	0.0	3.04	0.0	2.33	0.0	2.28	0.0
95	2.27	0.0	2.20	0.0	1.70	0.0	1.65	0.0
100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* 24	.....	.....	7.80	0.0	.....	.....	5.85	0.0
* 28	7.80	0.0	.....	.....	5.85	0.0	.....	.....

Per cent of chord.	Ref. No. 87.		Ref. No. 88.		Ref. No. 89.		Ref. No. 90.	
	N. & G. 9.		N. & G. 10.		N. & G. 11.		N. & G. 12.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.0	−0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.25	1.90	−0.65	1.90	−0.325	1.90	−1.14	1.90	−0.76
2.5	2.78	−0.95	2.78	−0.475	2.78	−1.75	2.78	−1.17
5	3.93	−1.34	3.93	−0.670	3.93	−2.50	3.93	−1.67
7.5	4.62	−1.58	4.62	−0.790	4.62	−2.84	4.62	−1.89
10	5.08	−1.74	5.08	−0.870	5.08	−2.99	5.08	−1.99
* 15	5.54	−1.89	5.54	−0.945	5.54	−2.68	5.54	−1.79
20	5.80	−1.98	5.80	−0.990	5.80	−1.80	5.80	−1.20
* 30	5.82	−1.99	5.82	−0.995	5.82	−0.20	5.82	−0.133
40	5.60	−1.91	5.60	−0.955	5.60	0.0	5.60	0.0
50	5.27	−1.80	5.27	−0.900	5.27	0.0	5.27	0.0
60	4.85	−1.66	4.85	−0.830	4.85	0.0	4.85	0.0
70	4.21	−1.44	4.21	−0.720	4.21	0.0	4.21	0.0
80	3.34	−1.14	3.34	−0.570	3.34	0.0	3.34	0.0
90	2.28	−0.78	2.28	−0.340	2.28	0.0	2.28	0.0
95	1.65	−0.56	1.65	−0.280	1.65	0.0	1.65	0.0
100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* 10.7	.....	.....	.....	.....	.....	−3.0	.....	−2.0
* 24	5.85	−0.20	5.85	−0.10	5.85	.....	5.85	.....

Per cent of chord.	Ref. No. 91.		Ref. No. 92.		Ref. No. 93.		Ref. No. 94.	
	N. & G. 13.		N. & G. 14.		N. & G. 15.		N. & G. 16.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.25	1.90	−0.380	1.90	−0.94	1.90	−0.470	1.90	−1.30
2.5	2.78	−0.580	2.78	−1.36	2.78	−0.680	2.78	−1.50
5	3.93	−0.830	3.93	−1.83	3.93	−0.915	3.93	−1.38
7.5	4.62	−0.950	4.62	−2.00	4.62	−1.000	4.62	−1.20
10	5.08	−0.997	5.08	−1.85	5.08	−0.925	5.08	−1.07
* 15	5.54	−0.890	5.54	−1.20	5.54	−0.600	5.54	−0.70
20	5.80	−0.600	5.80	−0.70	5.80	−0.350	5.80	−0.30
* 30	5.82	−0.067	5.82	−0.10	5.82	−0.050	5.82	−0.06
* 40	5.60	0.0	5.60	0.0	5.60	0.0	5.60	0.0
50	5.27	0.0	5.27	0.0	5.27	0.0	5.27	0.0
60	4.85	0.0	4.85	0.0	4.85	0.0	4.85	0.0
70	4.21	0.0	4.21	0.0	4.21	0.0	4.21	0.0
80	3.34	0.0	3.34	0.0	3.34	0.0	3.34	0.0
90	2.28	0.0	2.28	0.0	2.28	0.0	2.28	0.0
95	1.65	0.0	1.65	0.0	1.65	0.0	1.65	0.0
100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* 10.7	.....	−1.0	.....	.....	.....	.....	.....	.....
* 24	5.85	.....	5.85	.....	5.85	.....	5.85	.....
* 33.3	.....	.....	.....	0.0	.....	.....	.....	.....

Per cent of chord.	Ref. No. 95.		Ref. No. 96.		Ref. No. 97.		Ref. No. 98.	
	N. & G. 17.		N. & G. 18.		N. & G. 19.		N. & G. 20.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.25	1.90	−0.866	1.90	−0.433	1.13	−0.380	1.13	−0.470
2.5	2.78	−1.000	2.78	−0.500	1.58	−0.580	1.58	−0.680
5	3.93	−0.920	3.93	−0.460	2.29	−0.830	2.29	−0.915
7.5	4.62	−0.800	4.62	−0.400	2.78	−0.930	2.78	−1.000
10	5.08	−0.713	5.08	−0.357	3.07	−0.997	3.07	−0.925
*15	5.54	−0.466	5.54	−0.233	3.47	−0.890	3.47	−0.600
20	5.80	−0.200	5.80	−0.100	3.70	−0.600	3.70	−0.350
−*30	5.82	−0.040	5.82	−0.020	3.89	−0.067	3.89	−0.050
*40	5.60	0.0	5.60	0.0	3.85	0.0	3.85	0.0
50	5.27	0.0	5.27	0.0	3.65	0.0	3.65	0.0
60	4.85	0.0	4.85	0.0	3.40	0.0	3.40	0.0
70	4.21	0.0	4.21	0.0	2.95	0.0	2.95	0.0
80	3.34	0.0	3.34	0.0	2.35	0.0	2.35	0.0
90	2.28	0.0	2.28	0.0	1.60	0.0	1.60	0.0
95	1.65	0.0	1.65	0.0	1.15	0.0	1.15	0.0
100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
*10.7	.....	.....	.....	.....	.....	−1.0	.....	.....
−*24	5.85	.....	5.85	.....	.....	.....	.....	.....
*32	.....	.....	.....	.....	3.90	.....	3.90	.....
*33.3	.....	.....	.....	.....	.....	0.0	.....	0.0

Per cent of chord.	Ref. No. 99.		Ref. No. 100.		Ref. No. 101.		Ref. No. 102.	
	N. & G. 21.		N. & G. 22.		N. & G. 23.		N. & G. 24.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.25	1.13	−0.235	1.13	−0.290	1.13	−0.145	2.25	−0.290
2.5	1.58	−0.340	1.58	−0.400	1.58	−0.200	3.14	−0.400
5	2.29	−0.458	2.29	−0.590	2.29	−0.295	4.58	−0.590
7.5	2.78	−0.500	2.78	−0.760	2.78	−0.380	5.55	−0.760
10	3.07	−0.463	3.07	−0.790	3.07	−0.395	6.14	−0.790
15	3.47	−0.300	3.47	−0.890	3.47	−0.445	6.94	−0.890
20	3.70	−0.175	3.70	−0.950	3.70	−0.475	7.40	−0.950
30	3.89	−0.025	3.89	−0.997	3.89	−0.498	7.78	−0.997
*40	3.85	0.0	3.85	−0.990	3.85	−0.495	7.70	−0.990
50	3.65	0.0	3.65	−0.940	3.65	−0.470	7.30	−0.940
60	3.40	0.0	3.40	−0.870	3.40	−0.435	6.80	−0.870
70	2.95	0.0	2.95	−0.760	2.95	−0.380	5.90	−0.760
80	2.35	0.0	2.35	−0.600	2.35	−0.300	4.70	−0.600
90	1.60	0.0	1.60	−0.410	1.60	−0.205	3.20	−0.410
95	1.15	0.0	1.15	−0.290	1.15	−0.145	2.30	−0.290
100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
*32	3.90	.....	3.90	−1.000	3.90	−0.500	7.80	−1.000
*33.3	.....	0.0	.....	.....	.....	.....	.....	.....

Per cent of chord.	Ref. No. 103.		Ref. No. 104.		Ref. No. 105.		Ref. No. 106.	
	N. & G. 25.		N. & G. 26.		N. & G. 27.		N. & G. 28.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.0	0.0	0.0	0.0	0.834	0.834	1.67	1.67
1.25	1.69	−0.290	1.44	−0.290	.....	.....	.....	.....
2.5	2.36	−0.400	2.01	−0.400	.....	.....	.....	.....
5.0	3.44	−0.590	2.94	−0.590	4.580	0.0	.....	.....
7.5	4.16	−0.760	3.56	−0.760	5.550	0.0	.....	.....
10	4.61	−0.790	3.94	−0.790	6.140	0.0	6.14	0.0
15	5.21	−0.890	4.45	−0.890	6.940	0.0	6.94	0.0
20	5.55	−0.950	4.74	−0.950	7.400	0.0	7.40	0 0
30	5.84	−0.997	4.99	−0.997	7.780	0.0	7.78	0.0
*40	5.78	−0.990	4.94	−0.990	7.700	0.0	7.70	0.0
50	5.48	−0.940	4.68	−0.940	7.300	0.0	7.30	0.0
60	5.10	−0.870	4.36	−0.870	6.800	0.0	6.80	0.0
70	4.40	−0.760	3.78	−0.760	5.900	0.0	5.90	0.0
80	3.50	−0.600	3.01	−0.600	4.700	0.0	4.70	0.0
90	2.40	−0.410	2.05	−0.410	3.200	0.0	3.20	0.0
95	1.73	−0.290	1.47	−0.290	2.300	0.0	2.30	0.0
100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
*32	5.85	−1.000	5.00	−1.000	7.800	0.0	7.80	0.0

Per cent of chord.	Ref. No. 107.		Ref. No. 108.		Ref. No. 109.		Ref. No. 110.	
	N. & G. 29.		N. & G. 30.		N. & G. 31.		A. D. No. 1.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	3.34	3.34	5.00	5.00	−0.834	−0.834	0.0	0.0
1.25	.....	.....	.....	.....	.....	.....	1.10	−0.780
2.5	.....	.....	.....	.....	.....	.....	1.63	−1.000
5	.....	.....	.....	.....	.....	.....	2.62	−1.160
7.5	.....	.....	.....	.....	.....	.....	3.50	−1.270
10	.....	.....	.....	.....	6.14	0.0	4.21	−1.360
15	6.94	0.0	.....	.....	6.94	0.0	5.20	−1.450
20	7.40	0.0	7.40	0.0	7.40	0.0	5.67	−1.500
30	7.78	0.0	7.78	0.0	7.78	0.0	6.32	−1.600
*40	7.70	0.0	7.70	0.0	7.70	0.0	6.38	−1.620
50	7.30	0.0	7.30	0.0	7.30	0.0	6.08	−1.610
60	6.80	0.0	6.80	0.0	6.80	0.0	5.38	−1.600
70	5.90	0.0	5.90	0.0	5.90	0.0	4.50	−1.400
80	4.70	0.0	4.70	0.0	4.70	0.0	3.43	−0.900
90	3.20	0.0	3.20	0.0	3.20	0.0	1.90	−0.700
95	2.30	0.0	2.30	0.0	2.30	0.0	1.10	−0.620
100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
*32	7.80	0.0	7.80	0.0	7.80	0.0	.....	.....

Per cent of chord.	Ref. No. 111.		Ref. No. 112.		Ref. No. 113.		Ref. No. 114.	
	A. D. 4.		N. P. L. 64		Albatross.		Avro.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.0	0.0	0.0	0.0	0.74	0.74	0.34	0.34
*1.25	1.600	−0.700	2.3	0.0	2.20	0.0	1.28	0.015
2.5	2.403	−0.945	3.3	0.0	3.20	0.20	2.08	0.06
5	3.717	−1.125	4.6	0.0	5.00	0.60	3.30	0.17
7.5	4.60	−1.300	5.5	0.0	6.20	0.95	4.30	0.26
10	5.310	−1.440	6.2	0.0	7.05	1.25	5.20	0.42
15	6.300	−1.647	7.2	0.0	8.25	1.75	6.68	0.88
20	6.858	−1.737	7.6	0.0	9.00	2.12	7.50	1.25
30	7.200	−1.800	8.0	0.0	9.64	2.50	8.30	1.78
40	6.912	−1.773	7.2	0.0	9.45	2.62	8.43	1.93
50	6.300	−1.710	7.1	0.0	8.55	2.50	8.05	1.76
60	5.472	−1.575	6.2	0.0	7.40	2.17	7.20	1.40
70	4.383	−1.368	5.1	0.0	6.02	1.76	5.75	1.04
80	3.177	−1.125	3.9	0.0	4.30	1.25	4.00	0.66
90	1.845	−0.882	2.5	0.0	2.47	0.65	2.23	0.30
95	1.060	−0.660	1.6	0.0	1.50	0.30	1.30	0.08
*100	0.0	0.0	0.0	0.0	0.35	0.35	0.20	0.20
*1	.....	.....	.....	.....	.....	.....	.....	0.0
*96	.....	.....	.....	.....	.....	.....	.....	0.0

Per cent of chord.	Ref. No. 115.		Ref. No. 116.		Ref. No. 117.		Ref. No. 118.	
	Bristol.		B. I. R. 1a.		B. I. R. 3.		B. I. R. 33a.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	1.74	1.39	0.0	0.0	0.0	0.0	0.0	0.0
1.25	2.38	1.00	2.18	0.0	2.18	1.20	2.15	0.21
2.5	2.90	0.75	3.40	0.0	3.40	2.05	3.42	0.34
5	3.81	0.40	5.30	0.0	5.30	3.20	5.30	0.53
7.5	4.50	0.18	6.65	0.0	6.65	3.95	6.52	0.65
10	5.08	0.04	7.62	0.0	7.62	4.55	7.50	0.75
15	5.92	0.08	8.80	0.0	8.80	5.34	8.87	0.88
20	6.41	0.35	9.50	0.0	9.50	5.74	9.50	0.95
30	6.77	0.83	9.98	0.0	9.98	6.00	9.95	0.99
*40	6.76	1.05	9.88	0.0	9.88	5.84	9.80	0.98
50	6.65	0.99	9.16	0.0	9.16	5.50	9.05	0.90
60	6.14	0.71	8.10	0.0	8.10	4.80	8.00	0.80
70	5.31	0.27	6.64	0.0	6.64	3.92	6.50	0.65
80	4.14	0.0	4.78	0.0	4.78	2.85	4.75	0.47
90	2.72	0.12	2.65	0.0	2.65	1.50	2.60	0.26
95	1.90	0.40	1.50	0.0	1.50	0.78	1.42	0.14
100	1.04	0.69	0.0	0.0	0.0	0.0	0.0	0.0
*33.2	.....	.....	10.00	0.0	10.00	0.0	.....	.....

Per cent of chord.	Ref. No. 119.		Ref. No. 120.		Ref. No. 121.		Ref. No. 122.	
	Curtiss.		DeH-2.		DeH-3.		F. 2. B.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	1.43	1.43	2.00	2.00	2.30	2.30	0.8	0.8
1.25	3.50	0.22	2.80	1.30	3.15	1.60	1.87	0.3
2.5	4.25	0.07	3.40	0.95	3.78	1.12	2.7	0.1
*5	5.21	0.04	4.33	0.58	4.67	0.50	4.0	0.0
7.5	5.86	0.18	4.93	0.45	5.26	0.20	4.92	0.03
10	6.30	0.40	5.36	0.38	5.63	0.10	5.7	0.1
15	6.84	0.73	5.83	0.43	6.10	0.0	6.8	0.5
20	7.21	0.90	6.10	0.60	6.35	0.07	7.3	1.0
30	7.40	0.90	6.45	0.83	6.53	0.38	7.6	1.7
40	7.21	0.83	6.50	0.86	6.57	0.57	7.6	1.6
50	6.83	0.73	6.44	0.87	6.47	0.57	7.3	1.4
60	6.13	0.52	5.73	0.77	6.03	0.50	6.1	1.1
70	5.28	0.42	5.31	0.62	5.35	0.35	5.8	0.8
80	4.08	0.28	4.07	0.43	4.20	0.17	4.5	0.4
*90	2.35	0.15	2.53	0.23	2.73	0.0	2.9	0.1
95	1.37	0.07	1.70	0.12	1.93	0.10	1.8	0.0
*100	0.13	0.13	0.40	0.40	0.70	0.70	0.3	0.3
*3.3	.....	0.0	.....	.....	.....	.....	.....	.....
*88.0	.....	.....	.....	.....	.....	0.0	.....	.....
*98.3	.....	0.0	.....	.....	.....	.....	.....	.....

Per cent of chord.	Ref. No. 123.		Ref. No. 124.		Ref. No. 125.		Ref. No. 126.	
	Fairey.		H. P. 166.		H. P. 166a.		H. P. 166b.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.13	0.13	0.70	0.70	0.0	0.0	0.0	0.0
*1.25	1.90	0.08	2.62	0.02	2.62	0.33	2.62	0.66
2.5	3.06	0.03	3.55	0.05	3.55	0.33	3.55	0.63
5	4.86	0.07	5.14	0.15	5.14	0.35	5.14	0.60
7.5	6.20	0.40	6.25	0.30	6.25	0.40	6.25	0.60
10	7.10	0.70	7.00	0.40	7.00	0.50	7.00	0.60
15	8.10	1.10	8.00	0.60	8.00	0.63	8.00	0.61
20	8.85	1.46	8.50	0.72	8.50	0.72	8.50	0.72
30	9.40	1.80	8.84	0.88	8.84	0.88	8.84	0.88
40	9.22	1.80	8.72	0.96	8.72	0.96	8.72	0.96
50	8.72	1.67	8.20	0.85	8.20	0.85	8.20	0.85
60	7.83	1.47	7.36	0.68	7.36	0.68	7.36	0.68
70	6.45	1.10	6.28	0.46	6.28	0.46	6.28	0.46
80	4.85	0.70	4.90	0.30	4.90	0.30	4.90	0.30
90	2.90	0.33	3.27	0.14	3.27	0.14	3.27	0.14
95	1.83	0.17	2.28	0.08	2.28	0.08	2.28	0.08
100	0.67	0.0	0.0	0.0	0.0	0.0	0.0	0.0
*0.7	.....	.....	.....	0.0	.....	.....	.....	.....

Per cent of chord.	Ref. No. 127.		Ref. No. 128.		Ref. No. 129.		Ref. No. 130.	
	H. P. 166c.		N. P. L. 4.		N. P. L. 4a.		N. P. L. 4b.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.25	2.62	0.94	2.30	0.0	2.3	0.46	2.30	0.92
2.5	3.55	0.88	3.73	0.0	3.73	0.746	3.73	1.49
5	5.14	0.75	5.70	0.0	5.70	1.14	5.70	2.28
7.5	6.25	0.71	7.13	0.0	7.13	1.43	7.13	2.85
10	7.00	0.70	8.00	0 0	8.00	1.60	8.00	3.20
15	8.00	0.70	9.10	0.0	9.10	1.82	9.10	3.64
20	8.50	0.72	9.70	0.0	9.70	1.94	9.70	3.88
30	8.84	0.88	9.90	0.0	9.90	1.98	9.90	3.96
40	8.72	0.96	9.70	0.0	9.70	1.94	9.70	3.88
50	8.20	0.85	8.80	0.0	8.80	1.76	8.80	3.52
60	7.36	0.68	7.80	0.0	7.80	1.56	7.80	3.12
70	6.28	0.46	6.30	0.0	6.30	1.26	6.30	2.92
80	4.90	0.30	4.50	0.0	4.50	0.90	4.50	1.80
90	3.27	0.14	2.50	0.0	2.50	0.50	2.50	1.00
95	2.28	0.08	1.40	0.0	1.40	0.28	1.40	0.56
100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Per cent of chord.	Ref. No. 131.		Ref. No. 132.		Ref. No. 133.		Ref. No. 134.	
	N. P. L. 4c.		N. P. L. 4cα.		N. P. L. 4cβ		N. P. L. 4cγ.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.0	0.0	1.50	1.50	2.39	2.39	3.90	3.90
1.25	2.3	1.38	3.50	0.0.	4.30	0.32	6.60	1.00
2.5	3.73	2.24	4.60	0.25	5.35	0.0	7.50	0.25
5	5.70	3.42	6.20	1.90	6.90	0.58	8.30	0.15
7.5	7.13	4.28	7.30	3.25	7.90	2.20	8.86	1.64
10	8.00	4.80	8.10	4.10	8.50	3.60	9.20	3.30
15	9.10	5.46	9.20	5.20	9.26	5.00	9.56	4.20
20	9.70	5.82	9.70	5.80	9.70	5.60	9.80	5.03
30	9.90	5.95	9.90	5.90	9.90	5.90	9.90	5.90
40	9.70	5.82	9.70	5.80	9.70	5.80	9.70	5.80
50	8.80	5.28	8.80	5.30	8.80	5.30	8.80	5.30
60	7.80	4.68	7.80	4.70	7.80	4.70	7.80	4.70
70	6.30	3.78	6.30	3.80	6.30	3.80	6.30	3.80
80	4.50	2.70	4.50	2.70	4.50	2.70	4.50	2.70
90	2.50	1.50	2.50	1.50	2.50	1.50	2.50	1.50
95	1.40	0.84	1.40	0.80	1.40	0.80	1.40	0.80
100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Per cent of chord.	Ref. No. 135.		Ref. No. 136.		Ref. No. 137.		Ref. No. 138.	
	N. P. L. 73.		N. P. L. 214.		Portholme.		Scout E.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.50	0.50	0.0	0.0	1.00	1.00	1.10	1.10
1.25	2.80	0.0	2.20	0.31	2.15	+0.40	2.50	0.50
2.5	3.95	0.08	3.50	0.70	3.00	0.12	3.50	0.20
5	5.40	0.20	5.25	1.25	4.30	0.02	4.90	0.0
7.5	6.28	0.34	6.58	1.70	5.08	−0.04	5.82	0.02
10	6.90	0.40	7.50	2.09	5.80	−0.10	6.40	0.10
15	7.95	0.60	8.78	2.70	6.70	−0.20	7.10	0.40
20	8.50	0.80	9.51	3.25	7.20	−0.27	7.40	0.70
30	8.80	1.00	9.99	3.90	7.50	−0.35	7.50	1.10
40	8.70	1.00	9.84	3.60	7.34	−0.30	7.30	1.20
50	8.30	0.90	9.21	3.20	6.93	−0.25	7.00	1.10
60	7.30	0.70	7.92	2.55	6.30	−0.20	6.50	0.80
70	6.20	0.50	6.39	1.98	5.50	−0.12	5.60	0.40
80	5.00	0.30	4.73	1.30	4.30	−0.10	4.30	0.20
90	3.30	0.10	2.72	0.67	2.60	−0.05	2.90	0.0
95	2.10	0.05	1.65	0.32	1.65	−0.02	2.00	0.0
*100	0.40	0.40	0.50	0.0	0.20	+0.02	0.30	0.30
*97.5	.....	.....	.....	.....	.....	0.0	.....	.....

Per cent of chord.	Ref. No. 139		Ref. No. 140.		Ref. No. 141.		Ref. No. 142.	
	Sopwith.		White.		C. & L.—A. 1.		C. & L.—A. 2.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.80	0.80	0.58	0.58	Rad.=1.04.		Rad.=1.04.	
1.25	2.40	0.20	2.33	0.02	2.15	0.0	2.167	0.0
*2.5	3.15	0.05	3.23	0.16	2.40	0.0	2.45	0.0
5	4.30	0.0	4.55	0.70	2.97	0.0	3.07	0.0
7.5	5.20	0.0	5.50	1.13	3.46	0.0	3.57	0.0
10	5.90	0.0	6.20	1.55	3.91	0.0	4.08	0.0
15	7.00	0.25	7.20	2.20	4.75	0.0	5.01	0.0
20	7.80	0.55	7.67	2.68	5.49	0.0	5.77	0.0
30	8.60	1.10	7.70	3.22	6.64	0.0	7.00	0.0
40	8.40	1.00	6.83	3.48	7.30	0.0	7.73	0.0
50	7.80	0.70	5.70	3.30	7.50	0.0	8.00	0.0
60	7.00	0.30	7.81	2.90	7.30	0.0	7.73	0.0
70	5.80	0.0	7.10	2.40	6.64	0.0	7.00	0.0
80	4.40	0.0	5.42	1.76	5.49	0.0	5.77	0.0
90	2.80	0.0	3.26	0.91	3.91	0.0	4.08	0.0
95	1.80	0.0	2.05	0.46	2.97	0.0	3.07	0.0
*100	0.60	0.60	0.24	0.24	Rad.=1.04.		Rad.=1.04.	
*1.5	.....	.....	2.59	0.0	.....	.....	.....	.....
*99.6	.....	.....	0.88	0.0	.....	.....	.....	.....

Per cent of chord.	Ref. No. 143.		Ref. No. 144.		Ref. No. 145.		Ref. No. 146	
	C. & L.—A. 3.		C. & L.—A. 4.		C. & L.—A. 5.		C. & L.—A. 6.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	Rad.=1.04.		Rad.=1.04.		Rad.=1.04.		Rad.=1.04.	
1.25	2.184	0.0	2.20	0.0	2.30	0.0	2.40	0.0
2.5	2.50	0.0	2.56	0.0	2.75	0.0	3.10	0.0
5	3.19	0.0	3.37	0.0	3.75	0.0	4.50	0.0
7.5	3.80	0.0	4.08	0.0	4.65	0.0	5.83	0.0
10	4.44	0.0	4.79	0.0	5.54	0.0	7.07	0.0
15	5.51	0.0	6.00	0.0	7.05	0.0	9.21	0.0
20	6.44	0.0	7.07	0.0	8.42	0.0	11.07	0.0
30	7.88	0.0	8.71	0.0	10.43	0.0	13.84	0.0
40	8.72	0.0	9.67	0.0	11.62	0.0	15.45	0.0
50	9.00	0.0	10.00	0.0	12.00	0.0	16.00	0.0
60	8.72	0.0	9.67	0.0	11.62	0.0	15.45	0.0
70	7.88	0.0	8.71	0.0	10.43	0.0	13.84	0.0
80	6.44	0.0	7.07	0.0	8.42	0.0	11.07	0.0
90	4.44	0.0	4.79	0.0	5.54	0.0	7.07	0.0
95	3.19	0.0	3.37	0.0	3.75	0.0	4.50	0.0
100	Rad.=1.04.		Rad.=1.04.		Rad.=1.04.		Rad.=1.04.	

Per cent of chord.	Ref. No. 147.		Ref. No. 148.		Ref. No. 149.		Ref. No. 150.	
	C. & L.—A. 7.		C. & L.—B. 1.		C. & L.—B. 2.		C. & L.—B. 3.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	Rad.=1.04.		Rad.=1.04.		Rad.=1.04.		Rad.=1.04.	
1.25	2.50	0.0	2.20	0.0	2.30	0.0	2.30	0.0
2.5	3.50	0.0	2.60	0.0	2.70	0.0	2.80	0.0
5	5.42	0.0	3.28	0.0	3.40	0.0	3.65	0.0
7.5	7.14	0.0	3.91	0.0	4.08	0.0	4.44	0.0
10	8.76	0.0	4.45	0.0	4.75	0.0	5.15	0.0
15	11.53	0.0	5.49	0.0	5.77	0.0	6.44	0.0
20	13.87	0.0	6.28	0.0	6.65	0.0	7.45	0.0
30	17.36	0.0	7.30	0.0	7.73	0.0	8.72	0.0
*40	19.34	0.0	.....	.....	.....	.....	.....	.....
50	20.00	0.0	7.30	0.0	7.73	0.0	8.72	0.0
60	19.34	0.0	6.85	0.0	7.15	0.0	8.10	0.0
70	17.36	0.0	6.00	0.0	6.30	0.0	7.05	0.0
80	13.87	0.0	4.90	0.0	5.15	0.0	5.70	0.0
90	8.76	0.0	3.55	0.0	3.70	0.0	3.95	0.0
95	5.42	0.0	2.75	0.0	2.85	0.0	2.95	0.0
100	Rad.=1.04.		Rad.=1.04.		Rad.=1.04.		Rad.=1.04.	
*37.5	.....	.....	7.50	0.0	8.00	0.0	9.00	0.0

Per cent of chord.	Ref. No. 151.		Ref. No. 152.		Ref. No. 153.		Ref. No. 154.	
	C. & L.—B. 4.		C. & L.—B. 5.		C. & L.—B. 6.		C. & L.—B. 7.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	Rad.=1.04.		Rad.=1.04.		Rad.=1.04.		Rad.=1.04.	
1.25	2.30	0.0	2.45	0.0	2.64	0.0	2.80	0.0
2.5	2.80	0.0	3.10	0.0	3.55	0.0	4.15	0.0
5	3.80	0.0	4.35	0.0	5.35	0.0	6.55	0.0
7.5	4.79	0.0	5.54	0.0	7.07	0.0	8.75	0.0
10	5.60	0.0	6.55	0.0	8.50	0.0	10.65	0.0
15	7.07	0.0	8.42	0.0	11.07	0.0	13.87	0.0
20	8.20	0.0	9.84	0.0	13.00	0.0	16.25	0.0
30	9.67	0.0	11.62	0.0	15.45	0.0	19.34	0.0
*40	.....	.....	.....	.....	.....	.....	.....	.....
50	9.67	0.0	11.62	0.0	15.45	0.0	19.34	0.0
60	8.90	0.0	10.70	0.0	14.20	0.0	17.88	0.0
70	7.75	0.0	9.30	0.0	12.20	0.0	15.45	0.0
80	6.20	0.0	7.30	0.0	9.60	0.0	11.95	0.0
90	4.25	0.0	4.85	0.0	6.00	0.0	7.50	0.0
95	3.10	0.0	3.40	0.0	3.95	0.0	4.72	0.0
100	Rad.=1.04.		Rad.=1.04.		Rad.=1.04.		Rad.=1.04.	
*37.5	10.00	0.0	12.00	0.0	16.00	0.0	20.00	0.0

Per cent of chord.	Ref. No. 155.		Ref. No. 156.		Ref. No. 157.		Ref. No. 158.	
	Eiffel 8.		Eiffel 9.		Eiffel 10.		Eiffel 11.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.0	0.0	3.60	3.60	2.73	0.0	1.33 thick.	0.0
1.25	0.66	0.12	6.35	1.0	2.96	0.32		0.20
2.5	1.24	0.32	7.28	0.22	3.23	0.60		0.40
*5	2.40	0.70	8.60	0.21	3.75	1.17		0.80
7.5	3.55	1.10	9.60	1.73	4.23	1.70		1.20
10	4.55	1.40	10.45	3.25	4.68	2.23		1.60
15	6.62	2.18	11.80	5.75	5.50	3.15		2.30
20	8.45	3.00	12.70	7.35	6.14	3.90		3.00
30	10.20	3.80	13.70	8.45	7.01	4.86		3.96
40	10.65	4.05	13.75	8.33	7.18	5.27		4.12
50	10.20	3.85	12.83	7.70	6.93	5.18		3.64
60	9.18	3.50	11.25	6.70	6.23	4.56		2.93
70	7.45	2.80	9.10	5.45	5.10	3.70		2.19
80	5.26	1.95	6.64	4.00	3.70	2.55		1.46
90	2.75	1.00	3.65	2.06	2.20	1.27		0.76
95	1.43	0.45	2.12	1.30	1.43	0.65		0.35
100	0.0	0.0	0.50	0.0	0.64	0.0		0.0
*3.75	.....	.....	.....	0.0	.....	.....		.....

Per cent of chord.	Ref. No. 159.		Ref. No. 160.		Ref. No. 161.		Ref. No. 162.	
	Eiffel 12.		Eiffel 13.		Eiffel 13 bis.		Eiffel 14.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.53	0.53	0.80	.80	0.70	0.70	1.25	1.25
1.25	1.48	0.10	2.88	0.12	2.06	0.16	2.75	0.0
2.5	1.60	0.16	4.20	0.88	2.85	0.45	3.28	0.15
5	1.84	0.30	6.10	2.10	4.15	1.50	4.20	0.60
7.5	2.08	0.43	7.40	3.60	5.10	1.58	4.95	1.05
10	2.30	0.53	8.30	3.80	5.83	2.05	5.60	1.40
15	2.68	0.65	9.30	4.90	6.90	2.80	6.60	2.10
20	2.85	0.74	9.70	5.65	7.58	3.35	7.25	2.73
30	3.10	0.85	9.75	6.10	8.00	3.65	7.78	3.80
40	3.05	0.84	9.40	5.93	7.40	3.22	7.55	4.27
50	2.95	0.75	8.60	5.45	6.45	2.73	6.95	4.30
60	2.80	0.60	7.43	4.60	5.40	2.13	6.05	3.90
70	2.50	0.48	5.95	3.50	4.28	1.58	4.90	3.30
80	1.96	0.30	4.25	2.33	3.10	1.04	3.50	2.40
90	1.05	0.14	2.48	1.16	1.95	0.45	2.00	1.25
95	0.68	0.06	1.56	0.58	1.31	0.23	1.24	0.60
100	0.30	0.0	0.55	0.0	0.65	0.0	0.45	0.0

Per cent of chord.	Ref. No. 163.		Ref. No. 164.		Ref. No. 165.		Ref. No. 166.	
	Eiffel 15.		Eiffel 16.		Eiffel 16a.		Eiffel 16b.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower	Upper.	Lower.
0	1.90	1.90	0.0	0.0	0.0	0.0	0.0	0.0
1.25	3.37	0.32	1.00	0.0	1.74	0.0	3.10	0.0
2.5	3.60	0.06	1.85	0.0	2.86	0.0	5.05	0.0
5	3.86	0.15	3.17	0.0	4.80	0.0	7.87	0.0
7.5	3.93	0.26	4.24	0.0	6.36	0.0	9.80	0.0
10	3.95	0.37	5.15	0.0	7.70	0.0	11.22	0.0
15	3.82	0.43	6.30	0 0	9.38	0.0	12.83	0.0
20	3.60	0.34	6.66	0.0	9.99	0.0	13.32	0.0
30	3.13	0.0	6.25	0.0	9.63	0.0	13.05	0.0
40	2.92	0.16	5.33	0.0	8.66	0.0	11.99	0.0
50	2.90	0.56	4.63	0.0	7.33	0.0	10.30	0.0
60	2.95	1.15	3.79	0.0	5.99	0.0	8.46	0.0
70	3.20	1.83	2.90	0.0	4.57	0.0	6.42	0.0
80	3.75	2.70	1.99	0.0	3.13	0.0	4.39	0.0
90	4.50	3.80	1.10	0.0	1.76	0.0	2.42	0.0
95	4.94	4.42	0.65	0.0	1.05	0.0	1.43	0.0
100	5.40	5.10	0.0	0.0	0.0	0.0	0.0	0.0

Per cent of chord.	Ref. No. 167.		Ref. No. 168.		Ref. No. 169.		Ref. No. 170.	
	Eiffel 16c.		Eiffel 16d.		Eiffel 17.		Eiffel 18.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.0	0.0	0.0	0.0	0.0	0.0	.....	.....
1.25	4.75	0.0	7.25	0.0	0.83	0.0	.....	.....
2.5	7.20	0.0	10.15	0.0	1.25	0.0	.....	.....
5	10.57	0.0	13.65	0.0	2.06	0.0	.....	.....
7.5	12.80	0.0	15.93	0.0	2.80	0.0	.....	.....
10	14.38	0.0	17.56	0.0	3.53	0.0	.....	.....
15	16.10	0.0	19.42	0.0	4.75	0.0	.....	.....
20	16.65	0.0	19.99	0.0	5.66	0.0	6.65	0.0
30	16.05	0.0	19.37	0.0	6.54	0.0	6.50	0.0
40	14.66	0.0	17.99	0.0	6.54	0.0	6.10	0.0
50	12.86	0.0	15.83	0.0	6.00	0.0	5.35	0.0
60	10.66	0.0	12.99	0.0	5.30	0.0	4.35	0.0
70	8.00	0.0	9.83	0.0	4.18	0.0	3.35	0.0
80	5.33	0.0	6.66	0.0	3.00	0.0	2.35	0.0
90	2.84	0.0	3.50	0.0	1.75	0.0	1.40	0.0
95	1.56	0.0	1.90	0.0	1.10	0.0	0.90	0.0
100	0.0	0.0	0.0	0.0	0.0	0.0	0.40	0.0

Per cent of chord.	Ref. No. 171.		Ref. No. 172.		Ref. No. 173.		Ref. No 174.	
	Eiffel 30.		Eiffel 31.		Eiffel 32.		Eiffel 33.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.20	0.0	0.0	0.0	1.00	1.00	1.10	0.0
1.25	0.73	0.17	0.68	0.26	2.00	0.37	2.80	0.0
2.5	1.33	0.40	1.33	0.55	2.67	0.18	3.63	0.10
5	2.45	0.82	2.53	1.07	3.75	0.0	5.00	0.43
7.5	3.52	1.20	3.65	1.56	4.65	0.24	6.07	0.77
10	4.60	1.60	4.75	2.00	5.35	0.64	6.93	1.12
15	6.50	2.36	6.85	2.84	6.56	1.50	8.20	1.80
20	8.16	3.06	8.67	3.50	7.36	2.24	8.88	2.36
30	10.50	4.08	10.90	4.55	7.92	2.93	9.27	2.98
40	11.12	4.40	11.40	4.75	7.26	2.70	9.00	3.35
50	10.60	4.43	11.20	4.66	5.93	1.96	8.15	3.30
60	9.28	4.08	9.86	4.15	4.50	1.13	7.10	2.94
70	7.40	3.37	8.10	3.34	3.33	0.54	5.76	2.39
80	5.30	2.44	5.80	2.35	2.36	0.26	4.16	1.68
90	2.84	1.24	3.10	1.20	1.50	0.0	2.33	0.93
95	1.58	0.63	1.72	0.60	1.20	0.10	1.38	0.45
100	0.20	0.0	0.0	0.0	0.70	0.70	0.43	0.0

Per cent of chord.	Ref. No. 175.		Ref. No. 176.		Ref. No. 177.		Ref. No. 178.	
	Eiffel 34.		Eiffel 35.		Eiffel 36.		Eiffel 37.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.50	0.50	0.90	0.90	0.70	0.70	3.00	3.00
1.25	1.65	0.10	2.28	0.08	1.90	0.23	3.60	1.80
2.5	2.30	0.41	2.66	0.26	2.84	0.05	4.06	1.00
*5	3.62	1.06	3.33	0.95	4.30	0.04	4.88	0.18
7.5	4.90	1.67	4.03	1.56	5.28	0.15	5.60	0.02
10	6.13	2.20	4.66	2.00	6.05	0.35	6.28	0.30
15	8.25	3.45	5.76	2.76	7.05	0.76	7.25	1.06
20	10.00	4.45	6.66	3.33	7.80	1.15	7.95	2.00
30	11.90	5.40	7.70	4.32	8.66	1.78	8.50	3.30
40	12.40	5.70	8.00	4.74	8.78	2.10	8.24	3.96
50	11.50	5.20	7.95	5.00	8.40	2.30	7.60	4.10
60	9.82	4.20	7.34	4.74	7.46	2.15	6.76	3.95
70	7.95	3.30	6.22	4.33	5.92	1.86	5.55	3.50
80	5.85	2.30	4.24	3.00	4.23	1.33	4.00	2.65
90	3.56	1.20	2.16	1.40	2.34	0.70	2.33	1.50
95	2.32	0.63	1.16	0.67	1.40	0.40	1.40	0.83
100	1.00	0.0	0.10	0.10	0.40	0.0	0.0	0.0
*4.4	.....	.....	.....	.....	.....	0.0	.....	.....

Per cent of chord.	Ref. No. 179.		Ref. No. 180.		Ref. No. 181.		Ref. No. 182.	
	Eiffel 38.		Eiffel 39.		Eiffel 40.		Eiffel 41.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.50	0.50	0.40	0.0	0.35	0.0	0.10	0.0
1.25	1.65	0.0	0.94	0.0	0.90	0.03	1.10	0.15
2.5	2.46	0.0	1.75	0.0	1.67	0.23	3.00	0.30
5	3.76	0.20	4.50	0.0	3.50	0.63	4.00	0.70
7.5	4.75	0.60	9.55	0.0	4.25	1.06	4.65	1.10
10	5.62	1.22	11.22	0.0	4.95	1.45	5.20	1.45
15	6.88	2.43	12.83	0.0	6.10	2.13	6.40	2.06
20	7.74	3.22	13.32	0.0	6.95	2.62	6.75	2.60
30	8.70	4.32	13.05	0.0	7.63	3.05	7.65	3.65
40	8.70	4.52	11.99	0.0	7.70	3.18	7.68	3.92
50	8.32	4.13	10.30	0.0	7.50	3.05	7.35	4.00
60	7.55	3.35	8.46	0.0	6.75	2.76	6.54	3.64
70	6.13	2.60	6.42	0.0	5.62	2.16	5.46	3.00
80	4.65	1.80	4.39	0.0	4.23	1.42	4.16	2.10
90	2.85	0.94	2.42	0.0	2.54	0.70	2.35	1.06
95	1.85	0.50	1.43	0.0	1.68	0.30	1.34	0.54
100	1.25	0.0	0.0	0.0	0.70	0.0	0.50	0.0

Per cent of chord.	Ref. No. 183.		Ref. No. 184.		Ref. No. 185.		Ref. No. 186.	
	Eiffel 42.		Eiffel 43.		Eiffel 44.		Eiffel 45.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.13	0.0	0.13	0.0	1.05	1.05	1.38	1.38
1.25	1.08	0.25	1.08	0.25	2.10	0.0	3.74	0.02
2.5	2.80	0.50	2.80	0.50	2.20	0.05	4.72	0.0
5	6.15	0.93	6.15	0.93	2.45	0.23	5.62	0.03
7.5	7.54	1.33	7.54	1.33	2.73	0.45	6.45	0.48
10	8.68	1.68	8.68	1.68	3.13	0.78	7.20	1.32
15	10.24	2.30	10.24	2.30	4.23	1.77	7.95	3.27
20	10.90	2.90	10.90	2.90	6.30	2.93	8.30	4.10
30	10.90	3.64	10.90	3.64	9.08	4.00	8.55	4.37
40	10.47	3.84	10.47	3.84	8.70	3.90	8.10	4.06
50	9.55	3.90	9.55	3.90	7.80	3.35	7.33	3.75
60	8.30	3.63	8.30	3.63	6.16	2.45	6.25	3.18
70	6.75	3.14	6.75	3.14	4.22	1.45	5.10	2.46
80	4.86	2.25	4.86	2.25	2.45	0.67	3.80	1.68
90	2.86	1.20	2.86	1.20	1.14	0.14	2.26	0.83
95	1.73	0.55	1.73	0.55	0.63	0.02	1.44	0.40
100	0.53	0.0	0.53	0.0	0.30	0.0	0.60	0.0

Per cent of chord.	Ref. No. 187.		Ref. No. 188.		Ref. No. 189.		Ref. No. 190.	
	Eiffel 46.		Eiffel 47.		Eiffel 48.		Eiffel 49.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	1.25	1.25	0.75	0.75	0.60	0.60	0.40	0.40
1.25	2.30	0.08	2.35	0.06	2.55	0.14	2.12	0.0
2.5	3.24	0.0	3.30	0.30	3.78	0.38	2.86	0.13
5	5.07	0.32	4.93	0.78	5.40	0.80	4.00	0.56
7.5	6.30	1.05	6.23	1.20	6.30	1.17	4.78	0.95
10	6.96	1.90	7.12	1.60	6.65	1.50	5.38	1.30
15	9.30	3.40	8.16	2.26	6.42	2.03	6.10	1.90
20	10.60	4.70	8.68	2.75	6.08	2.40	6.26	2.27
30	10.93	6.10	8.30	3.38	5.25	2.85	5.58	2.75
*40	10.40	6.40	7.45	3.85	7.82	2.95	6.64	2.95
50	9.24	6.00	6.03	4.00	7.40	2.80	6.53	2.94
60	7.65	4.8	8.93	3.75	5.56	2.45	5.53	2.80
**70	5.75	3.32	7.95	3.15	5.85	2.00	5.40	2.40
80	3.65	1.76	5.90	2.20	6.53	1.43	5.55	1.66
90	1.70	0.60	3.70	1.16	4.10	0.78	3.75	0.85
95	1.00	0.16	2.45	0.56	2.72	0.40	2.37	0.40
100	0.50	0.0	1.15	0.0	1.30	0.0	0.85	0.0
*33.9	.....	.....	.....	.....	.....	.....	4.92	2.95
**66.82	.....	.....	.....	.....	.....	.....	4.28	2.31

Per cent of chord.	Ref. No. 191.		Ref. No. 192.		Ref. No. 193.		Ref. No. 194.	
	Eiffel 52.		Eiffel 53.		Eiffel 54.		Eiffel 55.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.70	0.70	0.30	0.30	0.60	0.60	0.67	0.67
1.25	2.00	0.30	1.82	0.14	1.70	0.11	1.32	0.20
2.5	3.00	0.20	2.82	0.30	2.50	0.0	1.56	0.13
5	4.40	0.05	4.33	0.66	3.75	0.05	2.00	0.03
7.5	5.43	0.07	5.36	1.00	4.70	0.15	2.36	0.0
10	6.20	0.30	6.14	1.35	5.40	0.30	2.70	0.0
15	7.33	1.00	7.15	1.83	6.35	0.62	3.30	0.02
20	8.10	1.85	7.85	2.10	6.70	0.80	3.75	0.06
30	9.13	3.00	8.70	2.70	6.50	1.00	4.44	0.28
40	9.54	3.50	8.86	2.80	6.00	1.17	4.92	0.40
50	9.40	3.54	8.55	2.60	5.25	1.15	5.10	0.22
60	8.60	2.65	7.40	2.40	4.50	1.05	4.95	0.08
70	6.96	1.57	5.76	1.30	3.60	0.54	4.38	0.03
80	4.53	0.58	3.97	0.60	2.65	0.06	3.55	0.01
90	2.00	0.03	2.10	0.13	1.90	0.21	2.45	0.0
95	1.26	0.0	1.35	0.04	1.71	0.56	1.80	0.03
100	0.65	0.0	0.50	0.0	1.65	1.00	0.70	0.70

Per cent of chord.	Ref. No. 195.		Ref. No. 196.		Ref. No. 197.		Ref. No. 198.	
	Eiffel 56.		Eiffel 57.		Eiffel 58.		Eiffel 59.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.0	0.0	8.00	8.00	4.10	4.10	0.60	0.60
1.25	0.70	−0.64	12.70	3.50	7.06	1.14	1.95	0.15
2.5	0.90	−0.66	14.72	2.00	7.90	0.35	2.83	0.45
5	1.30	−0.70	17.55	0.50	8.90	0.0	4.46	1.03
7.5	1.62	−0.77	19.30	0.0	9.56	0.0	5.90	1.53
10	1.90	−0.85	20.60	0.0	9.90	0.0	7.13	2.00
*15	2.36	−1.00	22.40	0.0	9.92	0.0	9.37	2.84
20	2.66	−1.13	23.12	0.0	9.50	0.0	10.87	3.50
30	2.85	−1.55	22.00	0.0	8.50	0.0	13.30	4.55
40	2.86	−1.92	19.74	0.0	7.50	0.0	14.20	4.75
50	2.85	−2.24	16.94	0.0	6.43	0.0	13.66	4.66
60	2.76	−2.35	13.90	0.0	5.27	0.0	12.13	4.15
70	2.50	−2.40	10.60	0.0	4.05	0.0	9.75	3.34
80	1.94	−2.20	7.20	0.0	2.85	0.0	7.07	2.35
90	1.32	−1.70	3.78	0.0	1.62	0.0	3.72	1.20
95	0.90	−1.20	2.05	0.0	1.00	0.0	2.05	0.60
100	0.0	0.0	0.35	0.0	0.20	0.20	0.30	0.0
*12.5	.....	.....	.....	.....	10.00	0.0	.....	.....

Per cent of chord.	Ref. No. 199.		Ref. No. 200.		Ref. No. 201.		Ref. No. 202.	
	Eiffel 60.		Eiffel 61.		Eiffel 62.		Dorand.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.60	0.60	0.60	0.60	0.60	0.60	1.00	1.00
1.25	2.22	0.15	2.30	0.15	2.40	0.15	2.25	0.03
2.5	3.37	0.45	3.73	0.45	3.94	0.45	2.70	0.23
5	5.50	1.03	6.18	1.03	6.80	1.03	3.50	0.63
7.5	7.28	1.53	8.33	1.53	9.34	1.53	4.25	1.06
10	8.87	2.00	10.26	2.00	11.70	2.00	4.95	1.45
15	11.57	2.84	13.63	2.84	15.56	2.84	6.10	2.13
20	13.73	3.50	16.40	3.50	18.60	3.50	6.95	2.62
30	16.55	4.55	19.87	4.55	23.00	4.55	7.63	3.05
40	17.73	4.75	21.06	4.75	24.53	4.75	7.70	3.18
50	16.84	4.66	19.85	4.66	23.00	4.66	7.50	3.05
60	15.00	4.15	17.33	4.15	19.90	4.15	6.75	2.76
70	12.15	3.34	13.65	3.34	16.00	3.34	5.62	2.16
80	8.73	2.35	9.67	2.35	11.33	2.35	4.23	1.42
90	4.65	1.20	5.15	1.20	6.03	1.20	2.54	0.70
95	2.50	0.60	2.75	0.60	3.20	0.60	1.68	0.30
100	0.35	0.0	0.40	0.0	0.40	0.0	0.70	0.0

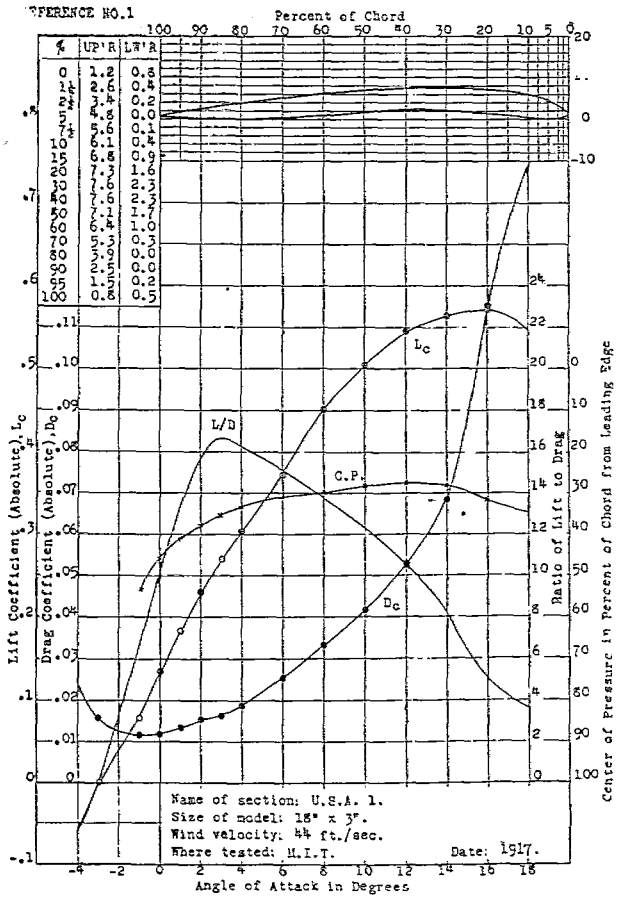
Per cent of chord.	Ref. No. 203.		Ref. No. 204.		Ref. No. 205.		Ref. No. 206.	
	Halbronn 2.		Halbronn 3.		S. E. A.		St. Cyr. 1.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	2.73	2.73	0.75	0.75	0.90	0.90	0.25	0.25
1.25	3.72	1.35	1.70	0.25	2.00	0.50	0.70	0.0
2.5	4.52	0.66	2.36	0.0	2.80	0.33	0.96	0.0
5	5.66	0.0	3.39	0.0	4.05	0.08	1.45	0.0
7.5	6.55	0.0	4.30	0.08	4.90	0.0	1.88	0.0
10	7.27	0.0	4.99	0.18	5.55	0.10	2.26	0.0
15	8.00	0.10	5.90	0.40	6.45	0.35	2.76	0.0
20	8.30	0.37	6.41	0.56	6.95	0.65	3.00	0.0
30	8.48	0.66	6.78	0.94	7.30	1.00	3.10	0.0
40	8.12	0.75	6.60	1.22	7.20	0.95	3.10	0.0
50	7.36	0.66	6.02	0.94	6.90	0.65	3.10	0.0
60	6.42	0.48	5.18	0.66	6.27	0.27	3.10	0.0
70	5.28	0.23	4.20	0.37	5.42	0.12	3.10	0.0
80	4.20	0.09	3.15	0.19	4.10	0.08	3.00	0.0
90	2.64	0.0	1.85	0.0	2.25	0.03	2.11	0.0
95	1.63	0.15	1.15	0.05	1.20	0.0	1.38	0.0
100	0.47	0.47	0.47	0.19	0.0	0.0	0.25	0.25

Per cent of chord.	Ref. No. 207.		Ref. No. 208.		Ref. No. 209.		Ref. No. 210.	
	St. Cyr. 2.		St. Cyr. 3.		Turin 1.		Turin 2.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	1.10	1.10	2.30	2.30	0.65	0.65	0.60	0.60
1.25	2.00	0.25	3.65	1.25	1.85	0.0	1.80	0.05
2.5	2.45	0.0	4.60	0.60	2.52	0.10	2.55	0.15
5	3.25	0.50	5.85	0.0	3.60	0.30	3.80	0.55
7.5	3.85	1.10	6.60	0.40	4.42	0.60	4.65	0.95
10	4.25	1.70	7.20	1.00	5.00	0.90	5.25	1.30
15	5.05	2.50	8.00	2.10	5.55	1.35	5.80	1.75
20	5.65	3.00	8.50	3.10	5.75	1.60	6.07	2.00
30	6.40	3.50	9.35	4.60	5.80	1.70	6.20	2.10
40	6.25	3.25	9.85	5.25	5.70	1.60	5.90	1.75
50	5.75	2.85	9.80	5.20	5.15	1.35	5.50	1.40
60	4.95	2.40	9.40	4.45	4.28	0.80	4.82	1.10
70	4.00	1.90	8.20	3.30	3.30	0.40	3.95	0.70
80	2.90	1.25	5.85	1.95	2.35	0.0	3.15	0.50
90	1.70	0.65	2.90	0.40	1.40	0.0	1.90	0.20
95	1.10	0.30	1.85	0.0	1.00	0.0	1.29	0.05
100	0.30	0.30	1.00	1.00	0.40	0.40	0.40	0.40

Per cent of chord.	Ref. No. 211.		Ref. No. 212.		Ref. No. 213.		Ref. No. 214.	
	Bleriot 3-pl.		Italian 1.		Italian 2.		Italian 3.	
	Ordinates.							
	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.
0	0.0	0.0	0.58	0.58	0.80	0.80	0.65	0.65
1.25	2.40	0.0	1.40	0.10	1.60	0.30	2.10	0.15
2.5	3.20	0.0	2.10	0.0	2.22	0.05	3.05	0.0
5	4.30	0.0	3.12	0.05	3.35	0.08	4.36	0.18
7.5	4.80	0.0	3.90	0.20	4.20	0.20	5.20	0.70
10	5.30	0.0	4.58	0.48	4.90	0.45	5.87	1.38
15	5.60	0.0	5.48	1.12	6.05	1.10	6.60	2.10
20	5.70	0.0	6.00	1.83	6.67	1.65	7.00	2.40
30	6.00	0.0	6.35	2.42	7.40	2.70	7.15	2.50
40	5.80	0.0	6.14	2.48	7.50	3.00	6.95	2.37
50	5.20	0.0	5.70	2.00	7.18	2.80	6.38	2.10
60	4.60	0.0	5.05	1.47	6.70	2.50	5.58	1.68
70	3.70	0.0	3.95	0.93	5.40	1.75	4.72	1.17
80	2.60	0.0	2.55	0.60	3.80	0.73	3.70	0.62
90	1.60	0.0	1.37	0.28	2.00	0.35	2.18	0.30
95	1.05	0.0	0.75	0.20	1.30	0.38	1.27	0.0
100	0.45	0.0	0.25	0.25	0.38	0.38	0.0	0.0

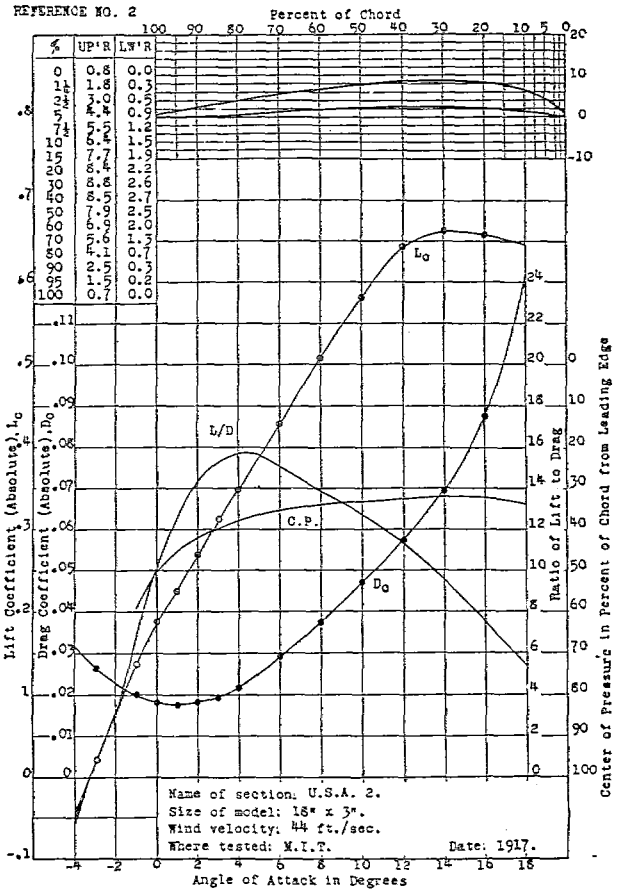
REFERENCE NO. 1

%	UP'R	LW'R
0	1.2	0.8
1¼	2.6	0.4
2½	3.4	0.2
5	4.8	0.0
7½	5.6	0.1
10	6.1	0.4
15	6.8	0.9
20	7.3	1.6
30	7.6	2.3
40	7.6	2.3
50	7.1	1.7
60	6.4	1.0
70	5.3	0.3
80	3.9	0.0
90	1.5	0.0
95	1.2	0.2
100	0.8	0.5



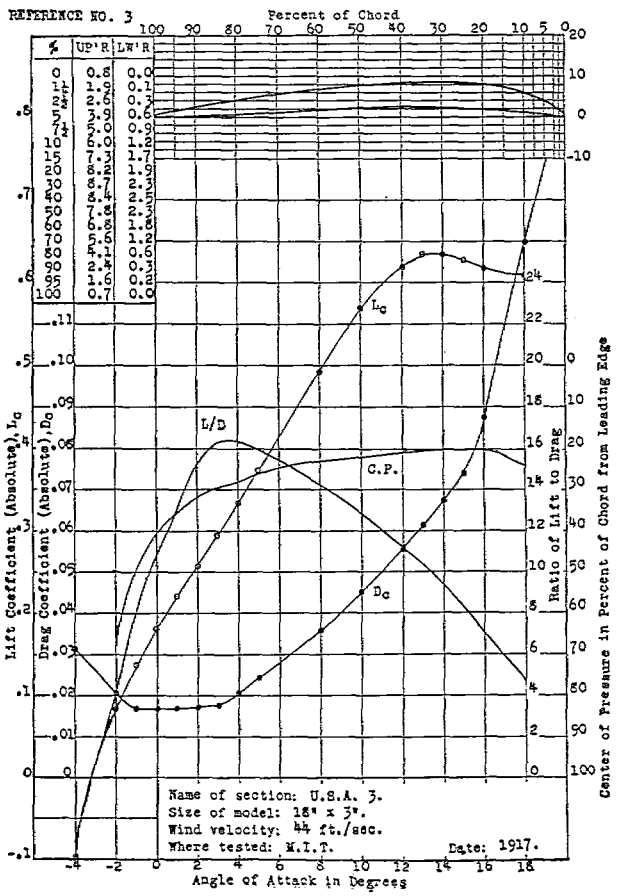
REFERENCE NO. 2

%	UP'R	LW'R
0	0.8	0.0
1¼	1.8	0.3
2½	3.0	0.5
5	4.4	0.9
7½	5.5	1.2
10	6.4	1.5
15	7.7	1.9
20	8.4	2.2
30	8.8	2.6
40	8.5	2.7
50	7.9	2.5
60	6.9	2.0
70	5.6	1.3
80	4.1	0.7
90	2.5	0.3
95	1.5	0.2
100	0.7	0.0



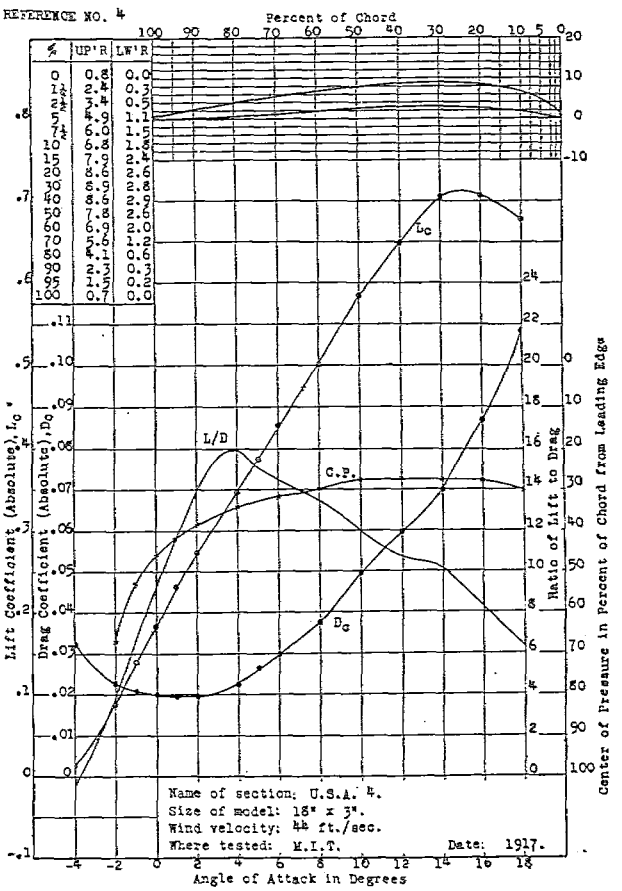
REFERENCE NO. 3

%	UP'R	LW'R
0	0.8	0.0
1¼	1.9	0.1
2½	2.6	0.3
5	3.9	0.6
7½	5.0	0.9
10	6.0	1.2
15	7.3	1.7
20	8.2	1.9
30	8.7	2.3
40	8.4	2.5
50	7.8	2.3
60	6.8	1.8
70	5.6	1.2
80	4.1	0.6
90	2.4	0.3
95	1.6	0.2
100	0.7	0.0



REFERENCE NO. 4

%	UP'R	LW'R
0	0.8	0.0
1¼	2.4	0.3
2½	3.4	0.5
5	4.9	1.1
7½	6.0	1.5
10	6.8	1.8
15	7.9	2.4
20	8.6	2.6
30	8.9	2.8
40	8.6	2.9
50	7.8	2.6
60	6.9	2.0
70	5.6	1.2
80	4.1	0.6
90	2.3	0.3
95	1.5	0.2
100	0.7	0.0



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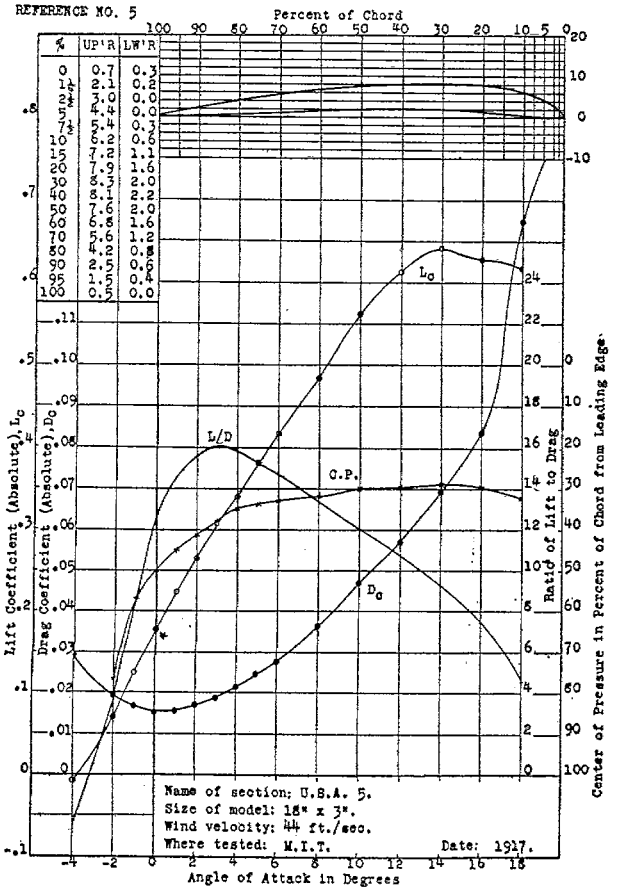
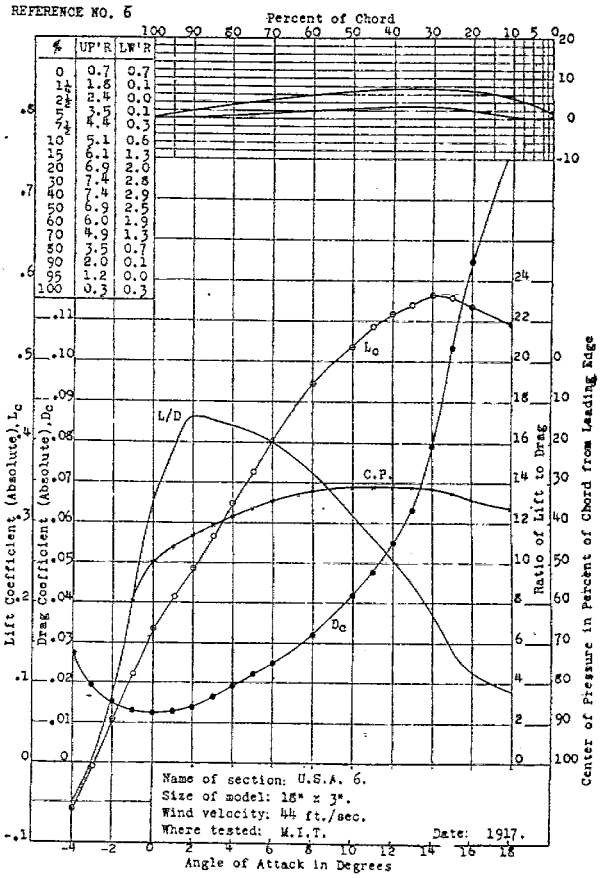


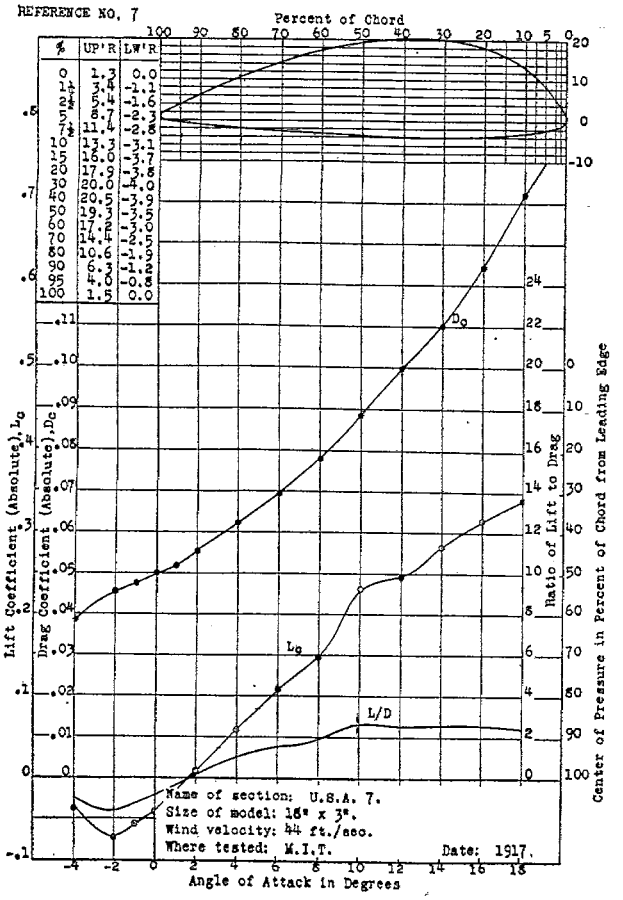
%	UP'R	LW'R
0	0.7	0.3
1¼	2.1	0.2
2½	3.0	0.0
5	4.4	0.0
7½	5.4	0.1
10	6.2	0.6
15	7.2	1.1
20	7.9	1.6
30	8.3	2.0
40	8.1	2.2
50	7.6	2.0
60	6.8	1.6
70	5.6	1.2
80	4.2	0.8
90	2.5	0.6
95	1.5	0.4
100	0.5	0.0

REFERENCE NO. 6



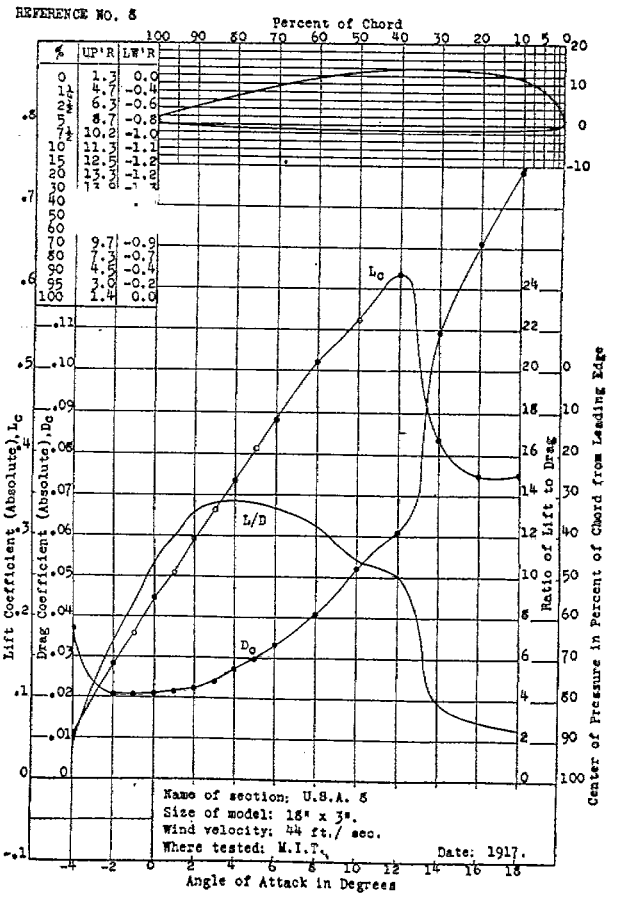
%	UP'R	LW'R
0	0.7	0.7
1¼	1.8	0.1
2½	2.4	0.0
5	3.5	0.1
7½	4.4	0.3
10	5.1	0.6
15	6.1	1.3
20	6.9	2.0
30	7.4	2.8
40	7.4	2.9
50	6.9	2.5
60	6.0	1.9
70	4.9	1.3
80	3.5	0.7
90	2.0	0.1
95	1.2	0.0
100	0.3	0.3

REFERENCE NO. 7



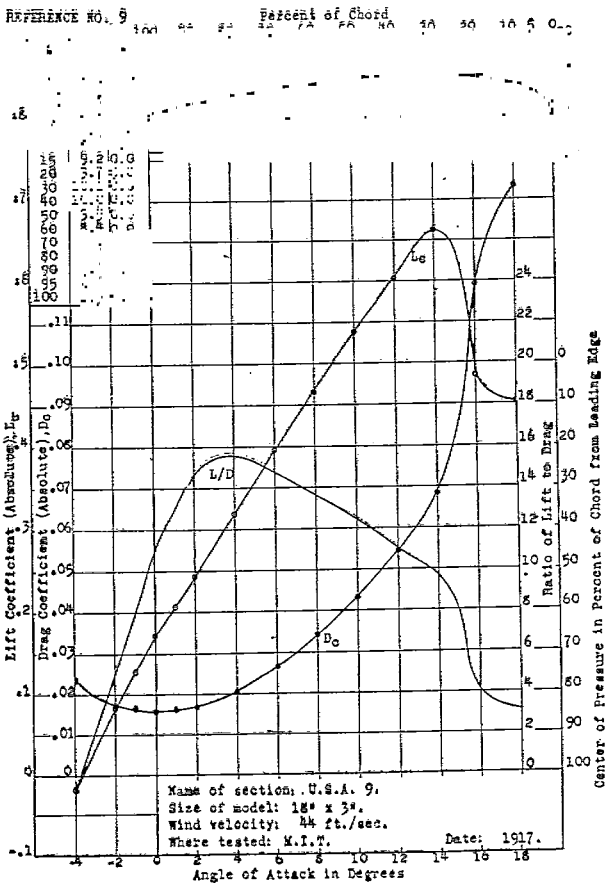
%	UP'R	LW'R
0	1.3	0.0
1¼	3.4	-1.1
2½	5.4	-1.6
5	8.7	-2.3
7½	11.4	-2.8
10	13.3	-3.1
15	16.0	-3.7
20	17.9	-3.8
30	20.0	-4.0
40	20.5	-3.9
50	19.3	-3.5
60	17.2	-3.0
70	14.4	-2.5
80	10.6	-1.9
90	6.3	-1.2
95	4.0	-0.8
100	1.5	0.0

REFERENCE NO. 8



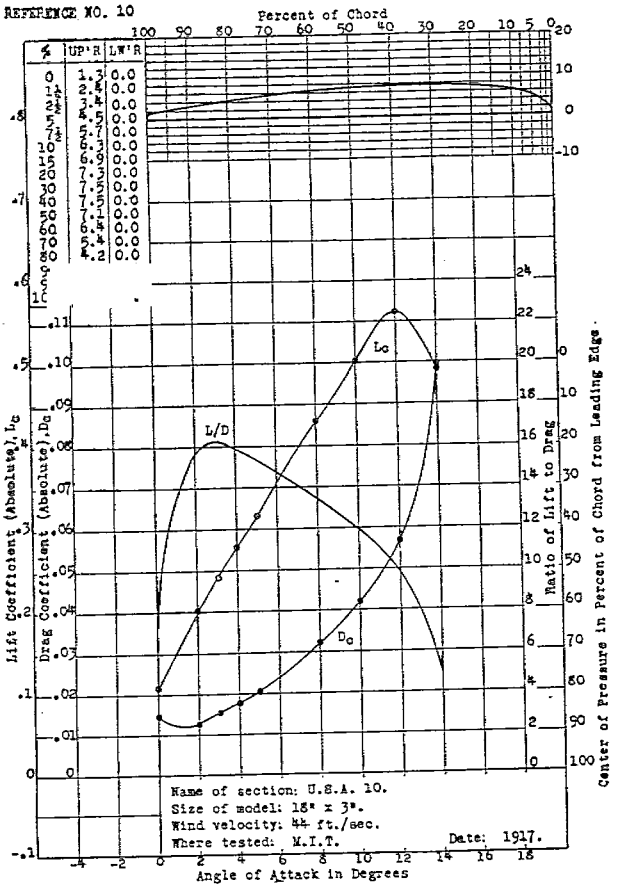
%	UP'R	LW'R
0	1.3	0.0
1¼	4.7	-0.4
2½	6.3	-0.6
5	8.7	-0.8
7½	10.2	-1.0
10	11.3	-1.1
15	12.5	-1.2
20	13.3	-1.2
30	[illegible]	[illegible]
40		
50		
60		
70	9.7	-0.9
80	7.3	-0.7
90	4.5	-0.4
95	3.0	-0.2
100	1.4	0.0

REFERENCE NO. 9



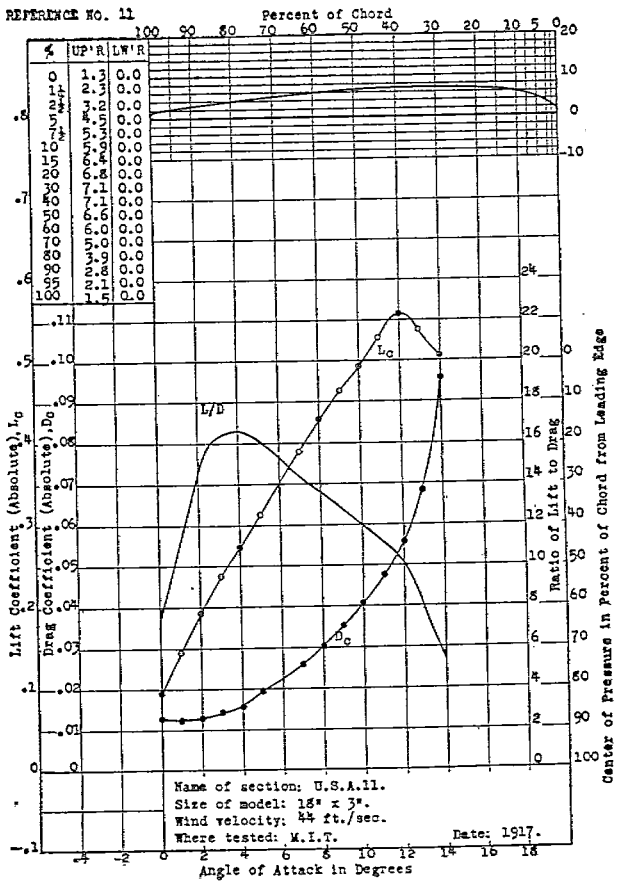
REFERENCE NO. 10

%	UP'R	LW'R
0	1.3	0.0
1¼	2.4	0.0
2½	3.4	0.0
5	4.5	0.0
7½	5.7	0.0
10	6.3	0.0
15	6.9	0.0
20	7.3	0.0
30	7.5	0.0
40	7.5	0.0
50	7.1	0.0
60	6.4	0.0
70	5.4	0.0
80	4.2	0.0



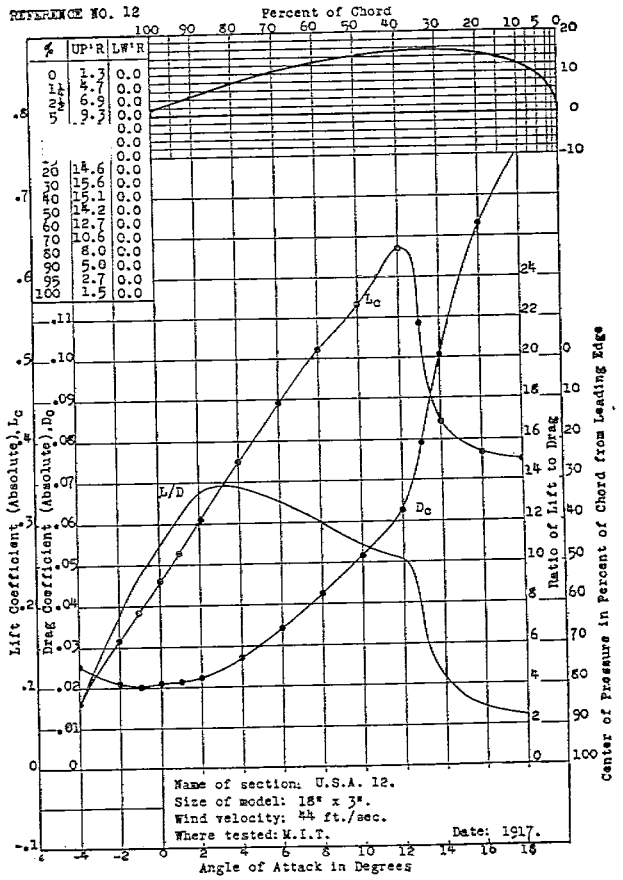
REFERENCE NO. 11

%	UP'R	LW'R
0	1.3	0.0
1¼	2.3	0.0
2½	3.2	0.0
5	4.5	0.0
7½	5.3	0.0
10	5.9	0.0
15	6.4	0.0
20	6.8	0.0
30	7.1	0.0
40	7.1	0.0
50	6.6	0.0
60	6.0	0.0
70	5.0	0.0
80	3.9	0.0
90	2.8	0.0
95	2.1	0.0
100	1.5	0.0

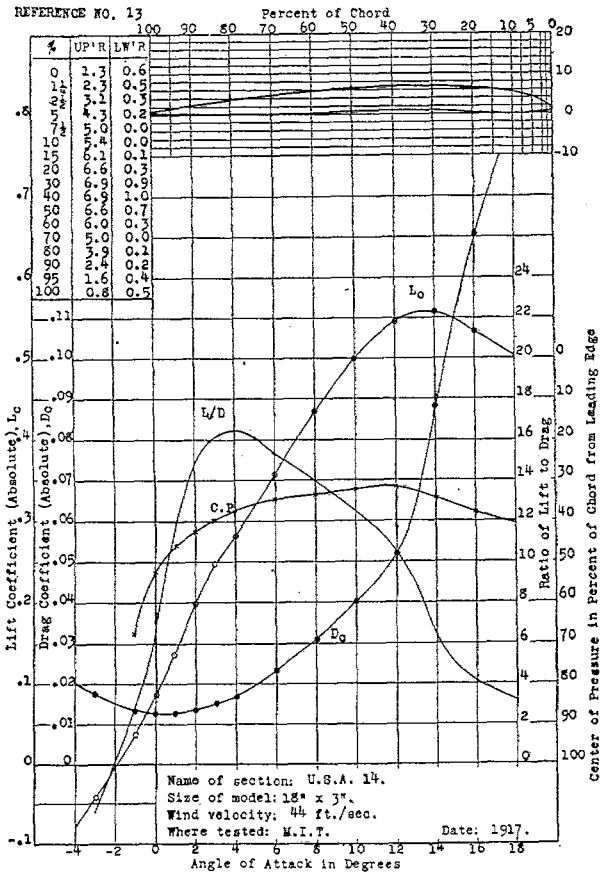


REFERENCE NO. 12

%	UP'R	LW'R
0	1.3	0.0
1¼	4.7	0.0
2½	6.9	0.0
5	9.3	0.0
		0.0
		0.0
		0.0
20	14.6	0.0
30	15.6	0.0
40	15.1	0.0
50	14.2	0.0
60	12.7	0.0
70	10.6	0.0
80	8.0	0.0
90	5.0	0.0
95	2.7	0.0
100	1.5	0.0

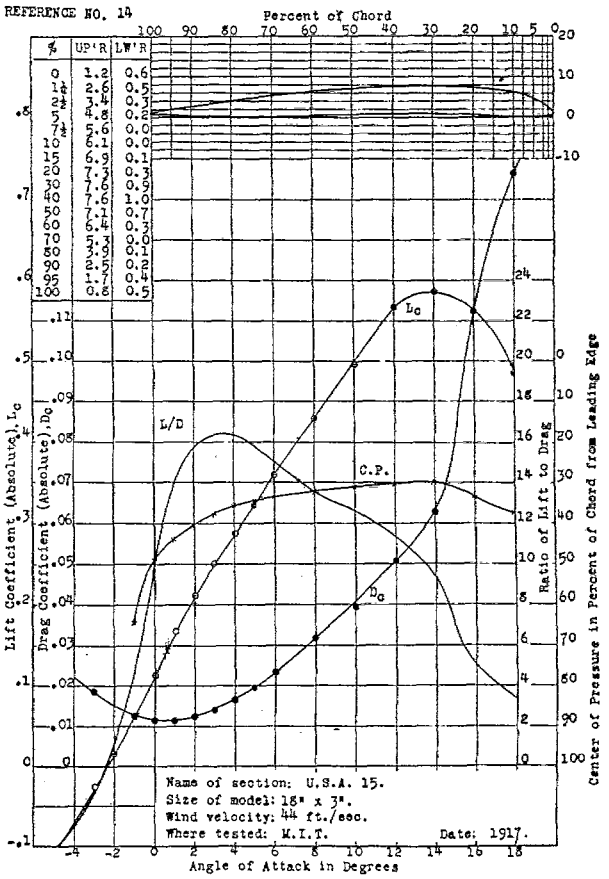


REFERENCE NO. 13



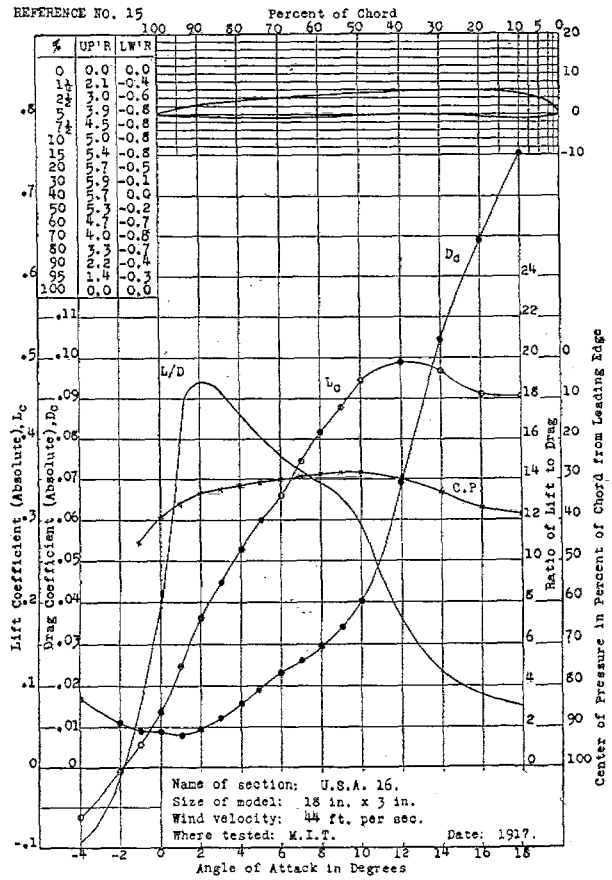
%	UP'R	LW'R
0	2.3	0.6
1¼	2.3	0.5
2½	3.1	0.3
5	4.3	0.2
7½	5.0	0.0
10	5.4	0.0
15	6.1	0.1
20	6.6	0.3
30	6.9	0.9
40	6.9	1.0
50	6.6	0.7
60	6.0	0.3
70	5.0	0.0
80	3.9	0.1
90	2.4	0.2
95	1.6	0.4
100	0.8	0.5

REFERENCE NO. 14



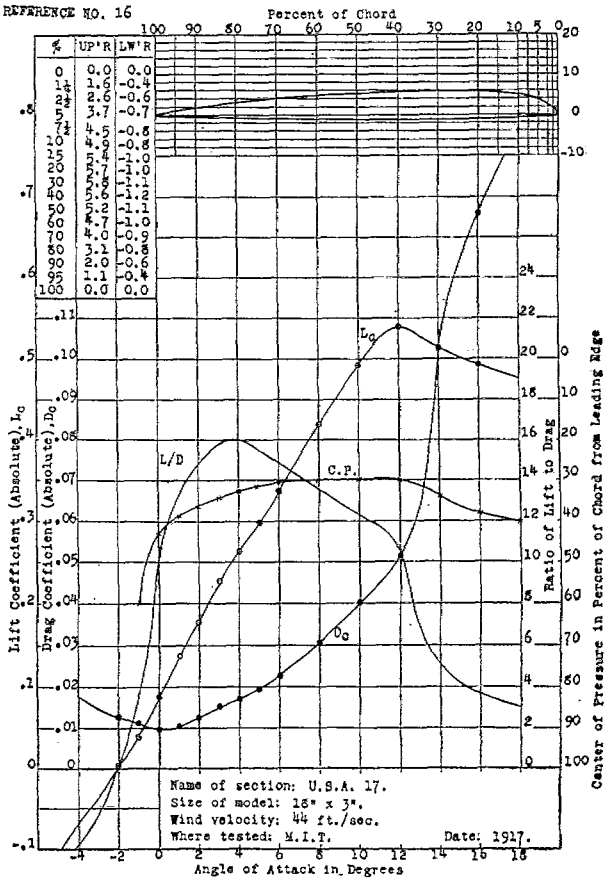
%	UP'R	LW'R
0	1.2	0.6
1¼	2.6	0.5
2½	3.4	0.3
5	4.8	0.2
7½	5.6	0.0
10	6.1	0.0
15	6.9	0.1
20	7.3	0.3
30	7.6	0.9
40	7.6	1.0
50	7.1	0.7
60	6.4	0.3
70	5.3	0.0
80	3.9	0.1
90	2.5	0.2
95	1.7	0.4
100	0.8	0.5

REFERENCE NO. 15



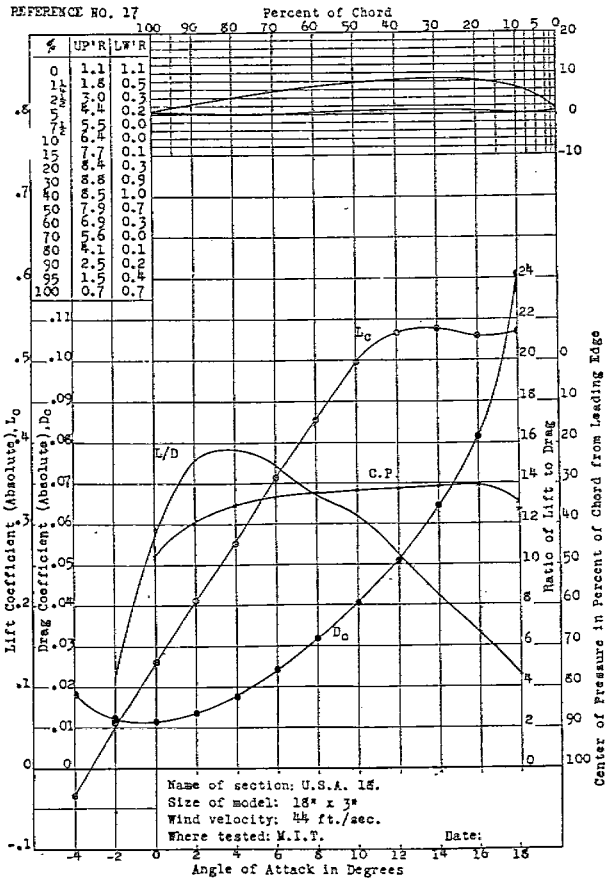
%	UP'R	LW'R
0	0.0	0.0
1¼	2.1	-0.4
2½	3.0	-0.6
5	3.9	-0.8
7½	4.5	-0.8
10	5.0	-0.8
15	5.4	-0.8
20	5.7	-0.5
30	5.9	-0.1
40	5.7	0.0
50	5.3	-0.2
60	4.7	-0.7
70	4.0	-0.8
80	3.3	-0.7
90	2.2	-0.4
95	1.4	-0.3
100	0.0	0.0

REFERENCE NO. 16



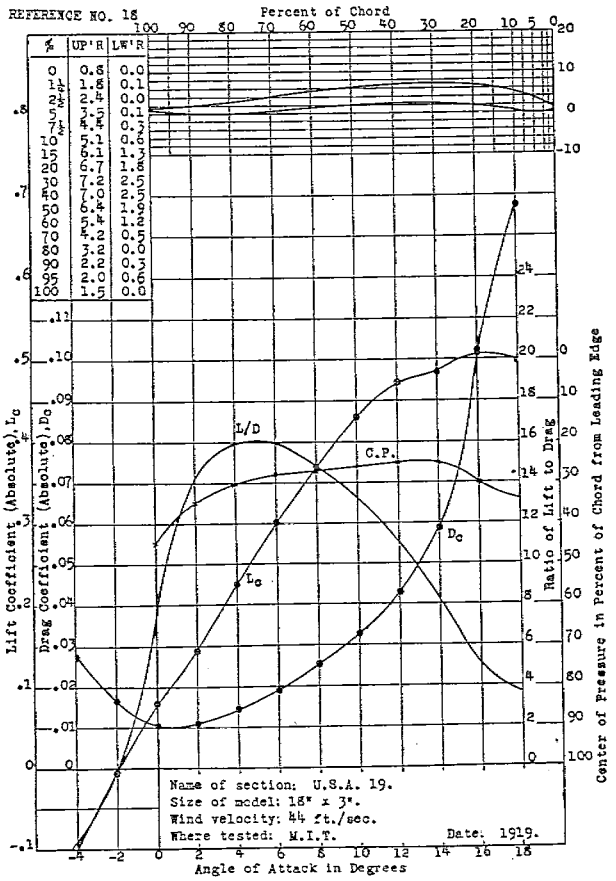
%	UP'R	LW'R
0	0.0	0.0
1¼	1.6	-0.4
2½	2.6	-0.6
5	3.7	-0.7
7½	4.5	-0.8
10	4.9	-0.8
15	5.4	-1.0
20	5.7	-1.0
30	5.8	-1.1
40	5.6	-1.2
50	5.2	-1.1
60	4.7	-1.0
70	4.0	-0.9
80	3.1	-0.8
90	2.0	-0.6
95	1.1	-0.4
100	0.0	0.0

REFERENCE NO. 17



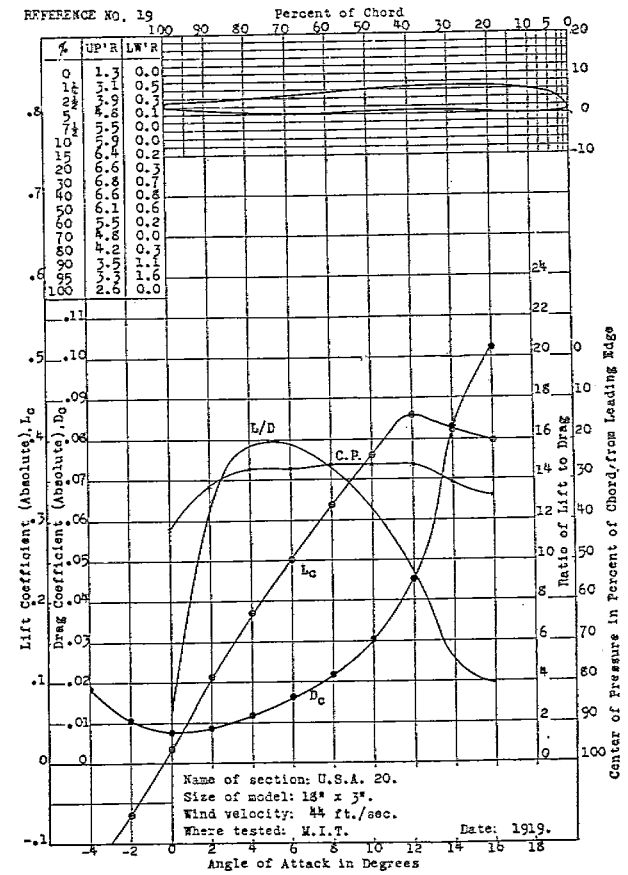
%	UP'R	LW'R
0	1.1	1.1
1¼	1.8	0.5
2½	3.0	0.3
5	4.4	0.2
7½	5.5	0.0
10	6.4	0.0
15	7.7	0.1
20	8.4	0.3
30	8.8	0.9
40	8.5	1.0
50	7.9	0.7
60	6.9	0.3
70	5.6	0.0
80	4.1	0.1
90	2.5	0.2
95	1.5	0.4
100	0.7	0.7

REFERENCE NO. 18



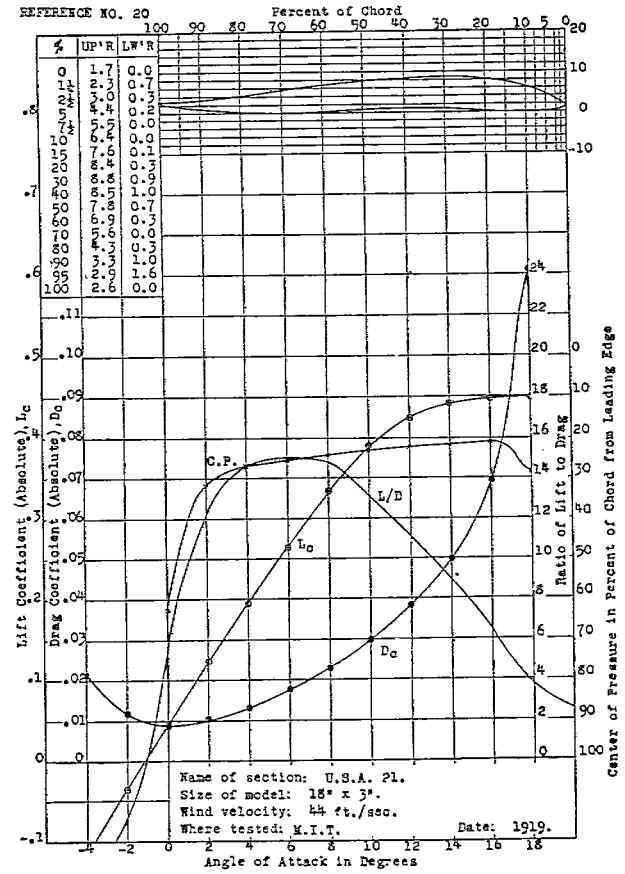
%	UP'R	LW'R
0	0.8	0.0
1¼	1.8	0.1
2½	2.4	0.0
5	3.5	0.1
7½	4.4	0.3
10	5.1	0.6
15	6.1	1.3
20	6.7	1.8
30	7.2	2.5
40	7.0	2.5
50	6.4	1.9
60	5.4	1.2
70	4.2	0.5
80	3.2	0.0
90	2.2	0.3
95	2.0	0.6
100	1.5	0.0

REFERENCE NO. 19



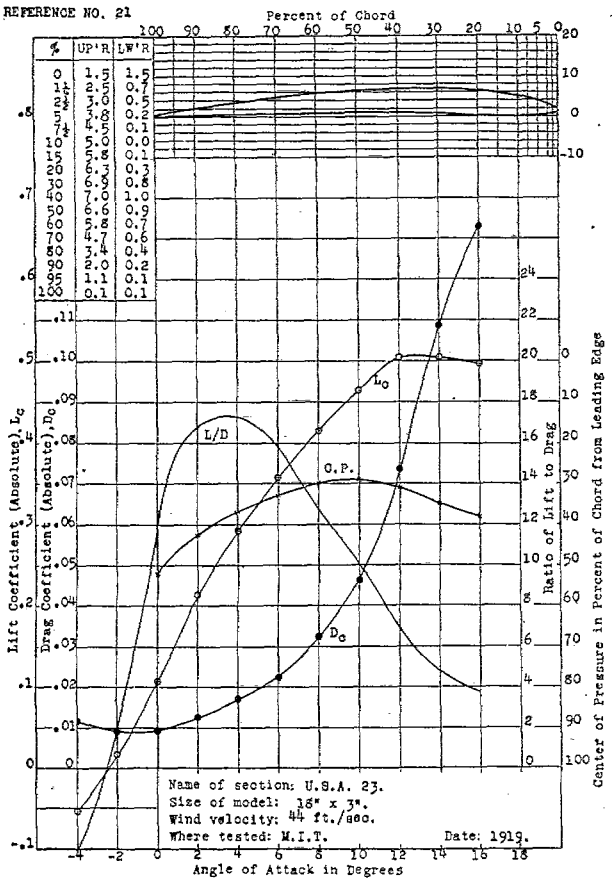
%	UP'R	LW'R
0	1.3	0.0
1¼	3.1	0.5
2½	3.9	0.3
5	4.8	0.1
7½	5.5	0.0
10	5.9	0.0
15	6.4	0.2
20	6.6	0.3
30	6.8	0.7
40	6.6	0.8
50	6.1	0.6
60	5.5	0.2
70	4.8	0.0
80	4.2	0.3
90	3.5	1.1
95	3.3	1.6
100	2.6	0.0

REFERENCE NO. 20



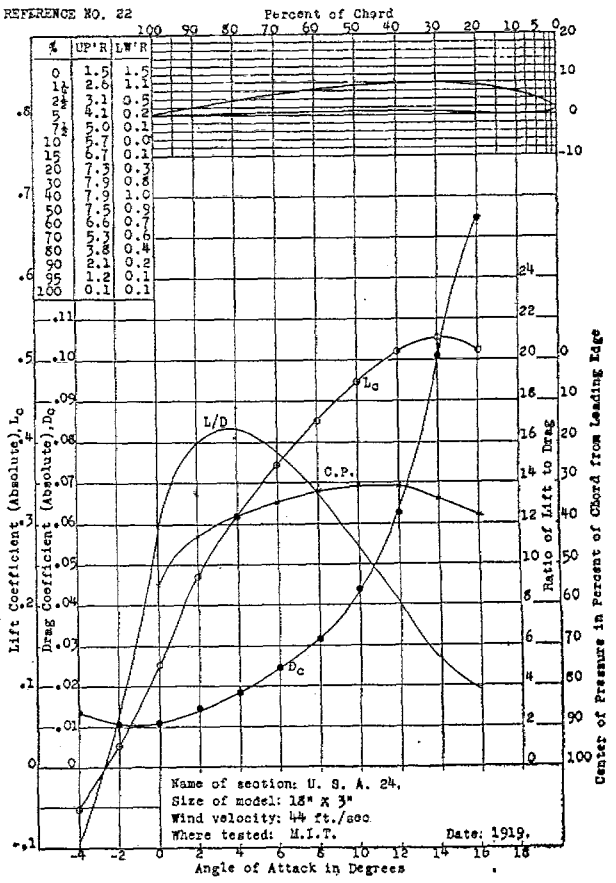
%	UP'R	LW'R
0	1.7	0.0
1¼	2.3	0.7
2½	3.0	0.3
5	4.4	0.2
7½	5.5	0.0
10	6.4	0.0
15	7.6	0.1
20	8.4	0.3
30	8.8	0.9
40	8.5	1.0
50	7.8	0.7
60	6.9	0.3
70	5.6	0.0
80	4.3	0.3
90	3.3	1.0
95	2.9	1.6
100	2.6	0.0

REFERENCE NO. 21



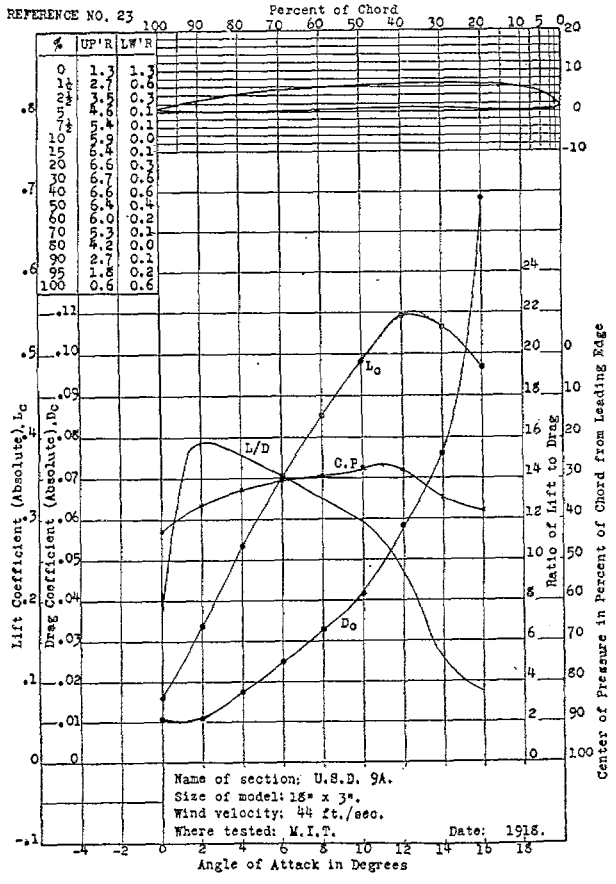
%	UP'R	LW'R
0	1.5	1.5
1¼	2.5	0.7
2½	3.0	0.5
5	3.8	0.2
7½	4.5	0.1
10	5.0	0.0
15	5.8	0.1
20	6.3	0.3
30	6.9	0.8
40	7.0	1.0
50	6.6	0.9
60	5.8	0.7
70	4.7	0.6
80	3.4	0.4
90	2.0	0.2
95	1.1	0.1
100	0.1	0.1

REFERENCE NO. 22



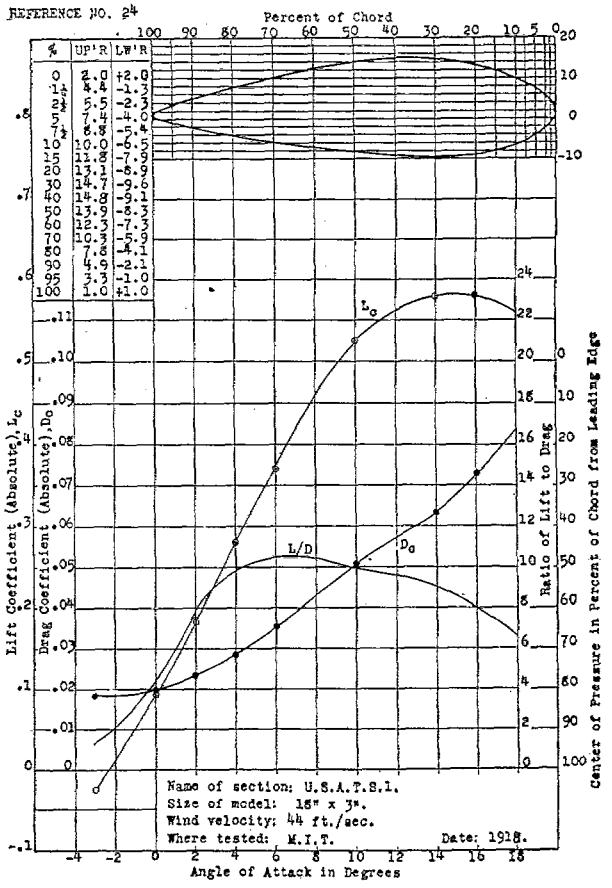
%	UP'R	LW'R
0	1.5	1.5
1¼	2.6	1.1
2½	3.1	0.5
5	4.1	0.2
7½	5.0	0.1
10	5.7	0.0
15	6.7	0.1
20	7.3	0.3
30	7.9	0.8
40	7.9	1.0
50	7.5	0.9
60	6.6	0.7
70	5.3	0.6
80	3.8	0.4
90	2.1	0.2
95	1.2	0.1
100	0.1	0.1

REFERENCE NO. 23



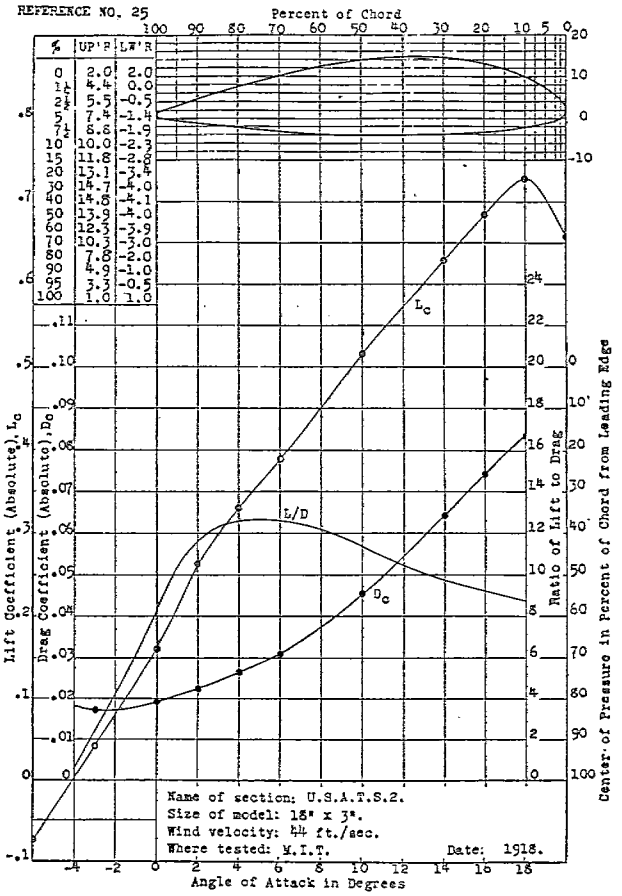
%	UP'R	LW'R
0	1.3	1.3
1¼	2.7	0.6
2½	3.5	0.3
5	4.6	0.1
7½	5.4	0.1
10	5.9	0.0
15	6.4	0.1
20	6.6	0.3
30	6.7	0.6
40	6.6	0.6
50	6.4	0.4
60	6.0	0.2
70	5.3	0.1
80	4.2	0.0
90	2.7	0.1
95	1.8	0.2
100	0.6	0.6

REFERENCE NO. 24



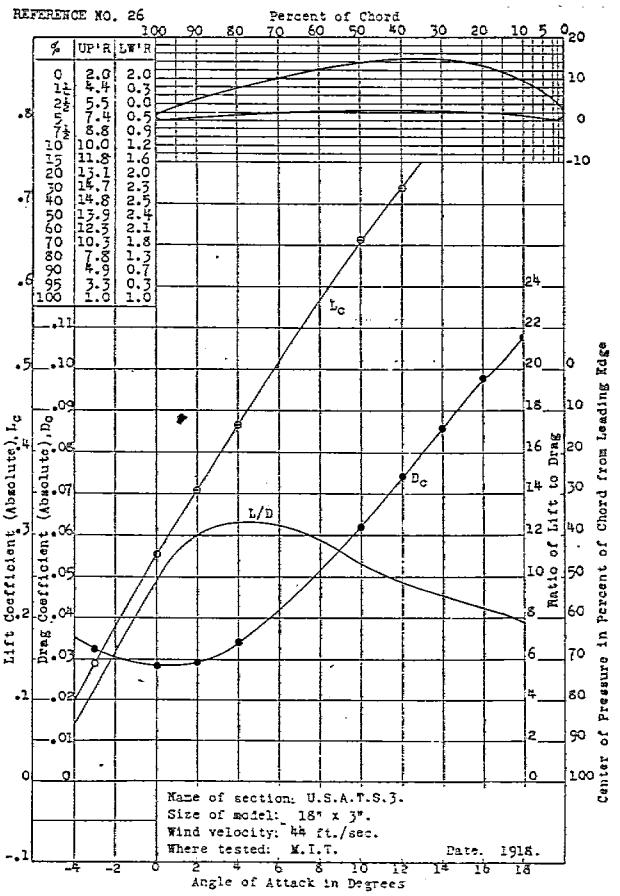
%	UP'R	LW'R
0	2.0	+2.0
1¼	4.4	-1.3
2½	5.5	-2.3
5	7.4	-4.0
7½	8.8	-5.4
10	10.0	-6.5
15	11.8	-7.9
20	13.1	-8.9
30	14.7	-9.6
40	14.8	-9.1
50	13.9	-8.3
60	12.3	-7.3
70	10.3	-5.9
80	7.8	-4.1
90	4.9	-2.1
95	3.3	-1.0
100	1.0	+1.0

REFERENCE NO. 25



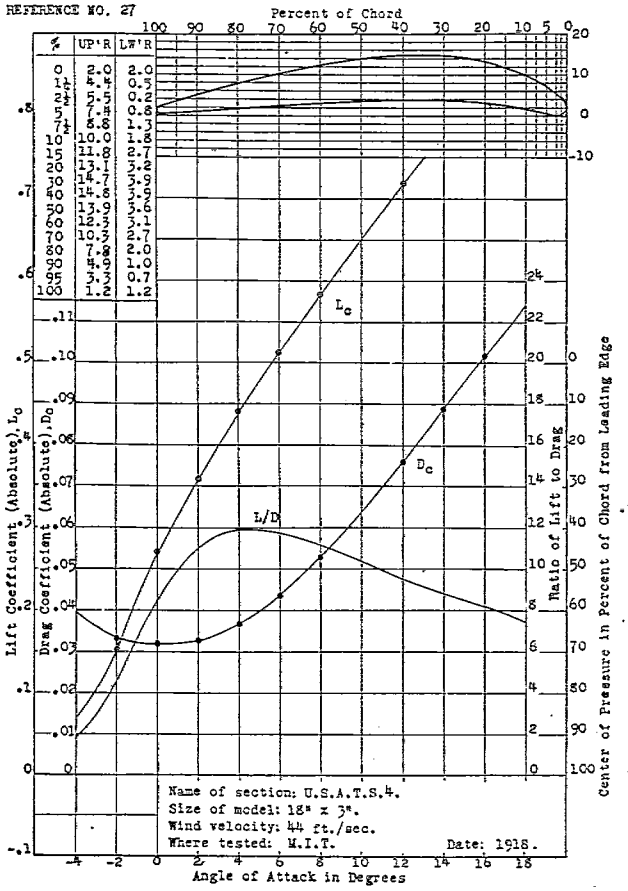
%	UP'R	LW'R
0	2.0	2.0
1¼	4.4	0.0
2½	5.5	-0.5
5	7.4	-1.4
7½	8.8	-1.9
10	10.0	-2.3
15	11.8	-2.8
20	13.1	-3.4
30	14.7	-4.0
40	14.8	-4.1
50	13.9	-4.0
60	12.3	-3.9
70	10.3	-3.0
80	7.8	-2.0
90	4.9	-1.0
95	3.3	-0.5
100	1.0	1.0

REFERENCE NO. 26



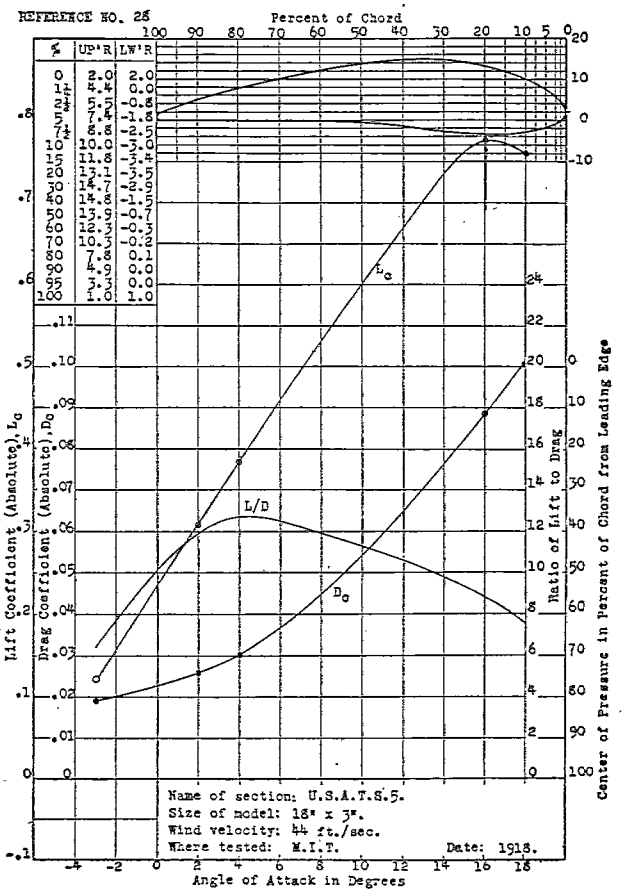
%	UP'R	LW'R
0	2.0	2.0
1¼	4.4	0.3
2½	5.5	0.0
5	7.4	0.5
7½	8.8	0.9
10	10.0	1.2
15	11.8	1.6
20	13.1	2.0
30	14.7	2.3
40	14.8	2.5
50	13.9	2.4
60	12.3	2.1
70	10.3	1.8
80	7.8	1.3
90	4.9	0.7
95	3.3	0.3
100	1.0	1.0

REFERENCE NO. 27



%	UP'R	LW'R
0	2.0	2.0
1¼	4.4	0.5
2½	5.5	0.2
5	7.4	0.8
7½	8.8	1.3
10	10.0	1.8
15	11.8	2.7
20	13.1	3.2
30	14.7	3.9
40	14.8	3.9
50	13.9	3.6
60	12.3	3.1
70	10.3	2.7
80	7.8	2.0
90	4.9	1.0
95	3.3	0.7
100	1.2	1.2

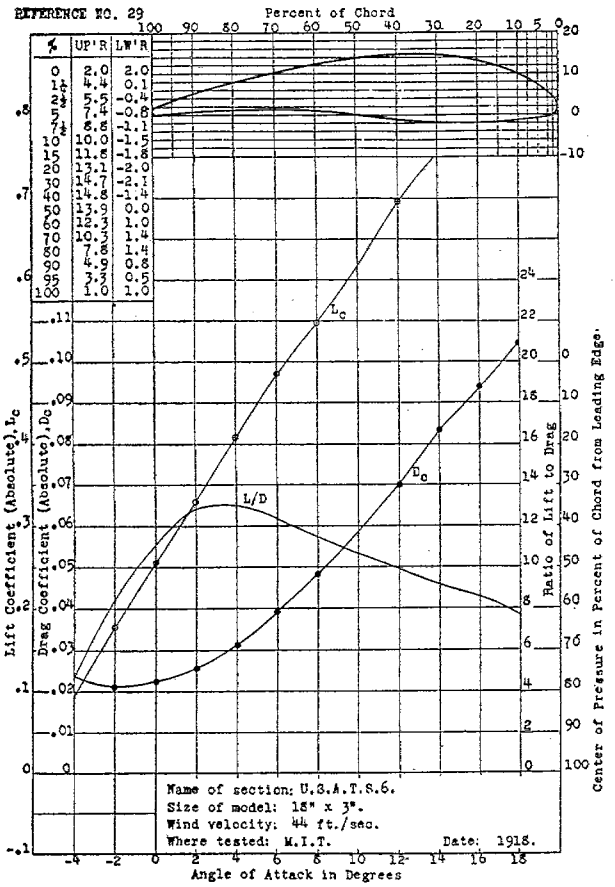
REFERENCE NO. 28



%	UP'R	LW'R
0	2.0	2.0
1¼	4.4	0.0
2½	5.5	-0.8
5	7.4	-1.8
7½	8.8	-2.5
10	10.0	-3.0
15	11.8	-3.4
20	13.1	-3.5
30	14.7	-2.9
40	14.8	-1.5
50	13.9	-0.7
60	12.3	-0.3
70	10.3	-0.2
80	7.8	0.1
90	4.9	0.0
95	3.3	0.0
100	1.0	1.0

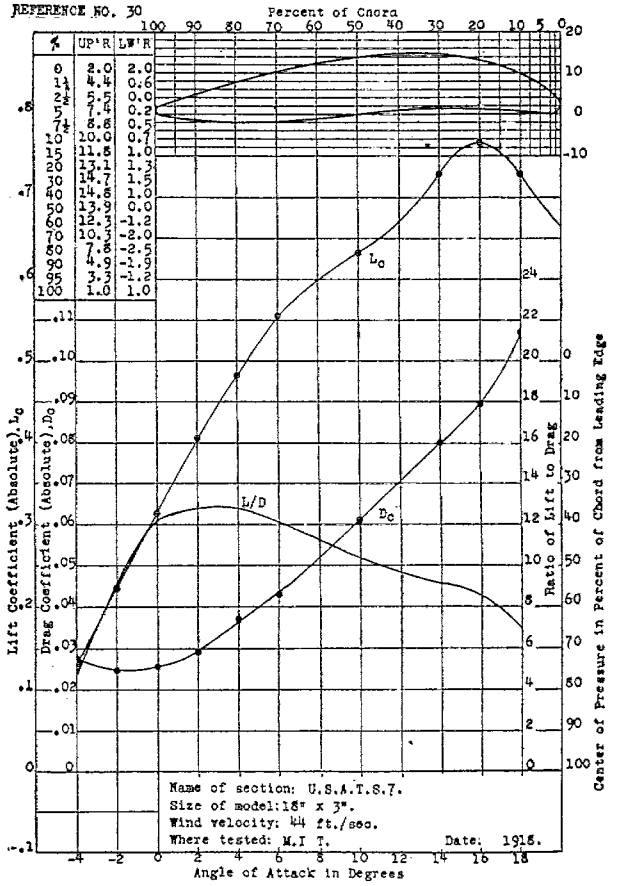
REFERENCE NO. 29

%	UP'R	LW'R
0	2.0	2.0
1¼	4.4	0.1
2½	5.5	-0.4
5	7.4	-0.8
7½	8.8	-1.1
10	10.0	-1.5
15	11.8	-1.8
20	13.1	-2.0
30	14.7	-2.1
40	14.8	-1.4
50	13.9	0.0
60	12.3	1.0
70	10.3	1.4
80	7.8	1.4
90	4.9	0.8
95	3.3	0.5
100	1.0	1.0



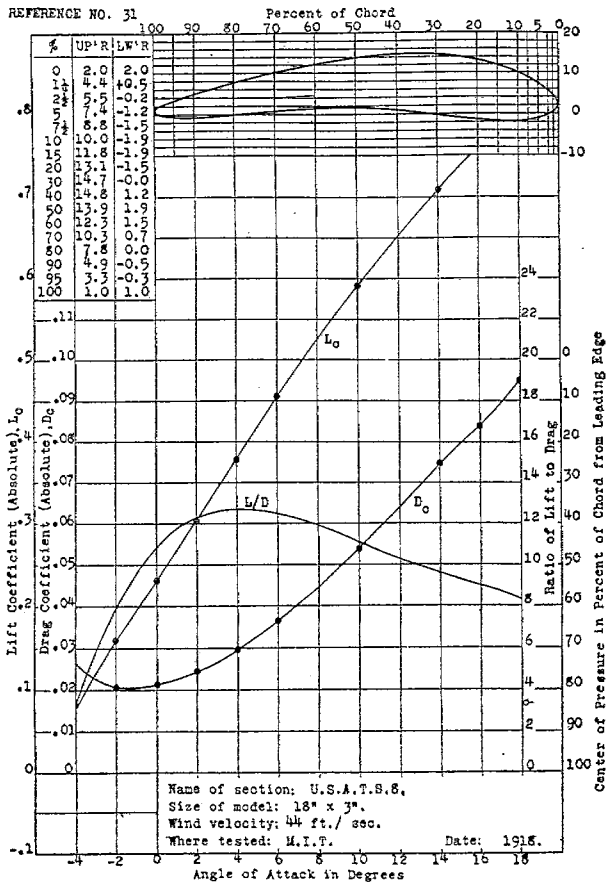
REFERENCE NO. 30

%	UP'R	LW'R
0	2.0	2.0
1¼	4.4	0.6
2½	5.5	0.0
5	7.4	0.2
7½	8.8	0.5
10	10.0	0.7
15	11.8	1.0
20	13.1	1.3
30	14.7	1.5
40	14.8	1.0
50	13.9	0.0
60	12.3	-1.2
70	10.3	-2.0
80	7.8	-2.5
90	4.9	-1.9
95	3.3	-1.2
100	1.0	1.0



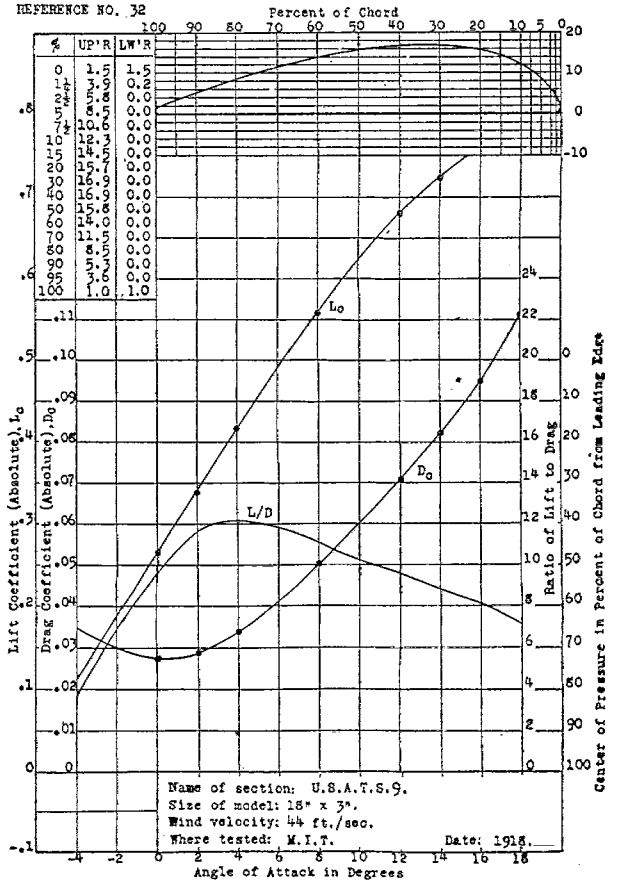
REFERENCE NO. 31

%	UP'R	LW'R
0	2.0	2.0
1¼	4.4	+0.5
2½	5.5	-0.2
5	7.4	-1.2
7½	8.8	-1.5
10	10.0	-1.9
15	11.8	-1.9
20	13.1	-1.5
30	14.7	-0.0
40	14.8	1.2
50	13.9	1.9
60	12.3	1.5
70	10.3	0.7
80	7.8	0.0
90	4.9	-0.5
95	3.3	-0.3
100	1.0	1.0

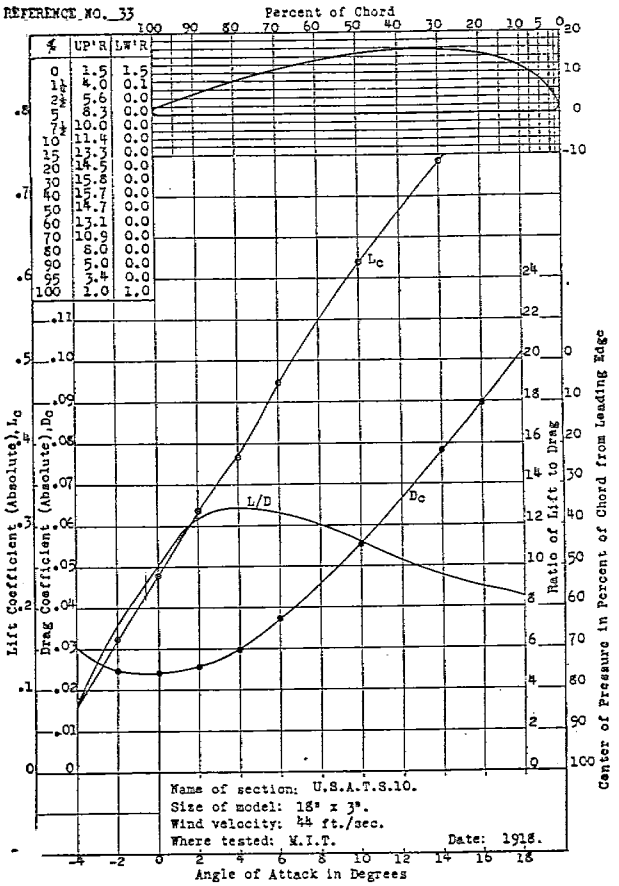


REFERENCE NO. 32

%	UP'R	LW'R
0	1.5	1.5
1¼	3.9	0.2
2½	5.8	0.0
5	8.5	0.0
7½	10.6	0.0
10	12.3	0.0
15	14.5	0.0
20	15.7	0.0
30	16.9	0.0
40	16.9	0.0
50	15.8	0.0
60	14.0	0.0
70	11.5	0.0
80	8.5	0.0
90	5.3	0.0
95	3.6	0.0
100	1.0	1.0

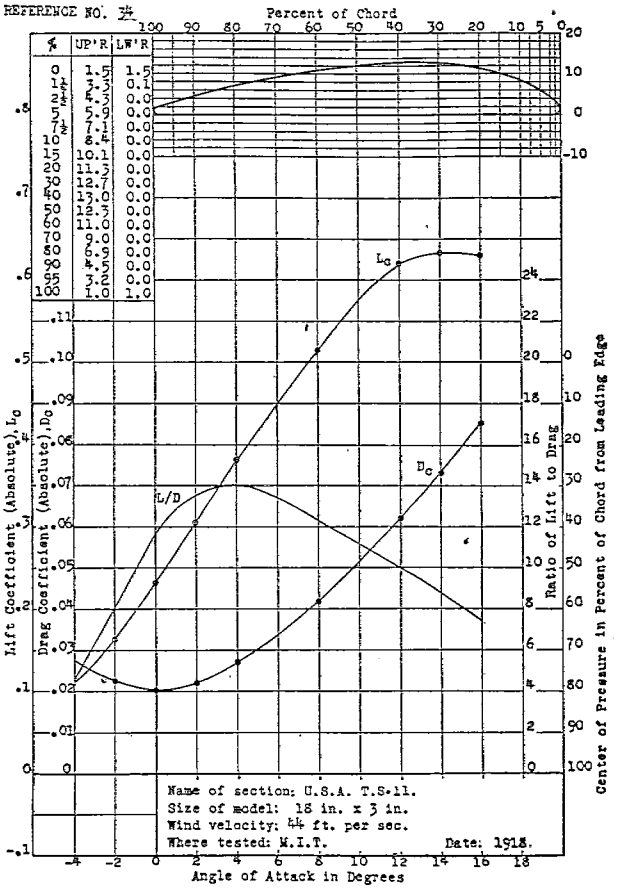


REFERENCE NO. 33



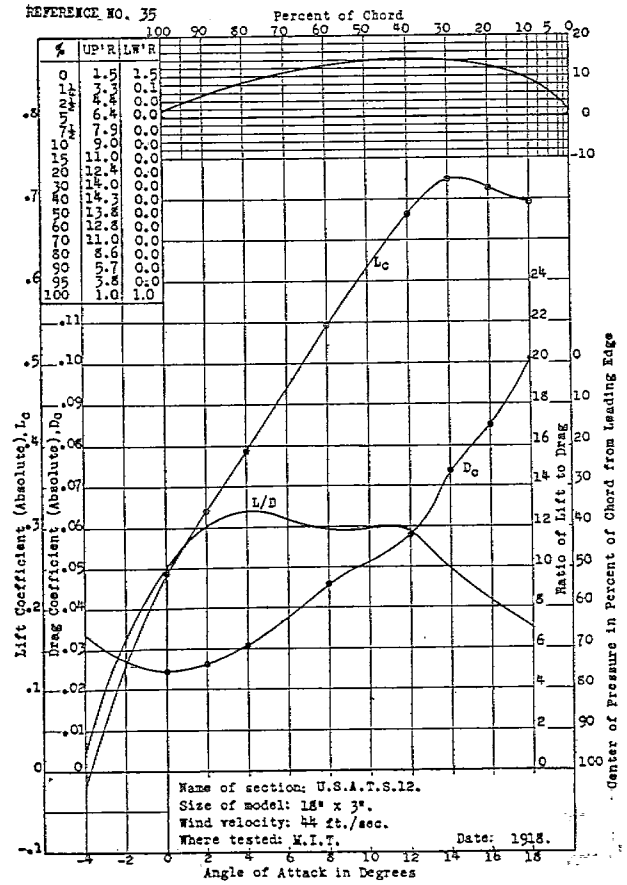
%	UP'R	LW'R
0	1.5	1.5
1¼	4.0	0.1
2½	5.6	0.0
5	8.3	0.0
7½	10.0	0.0
10	11.4	0.0
15	13.3	0.0
20	14.5	0.0
30	15.8	0.0
40	15.7	0.0
50	14.7	0.0
60	13.1	0.0
70	10.9	0.0
80	8.0	0.0
90	5.0	0.0
95	3.4	0.0
100	1.0	1.0

REFERENCE NO. 34



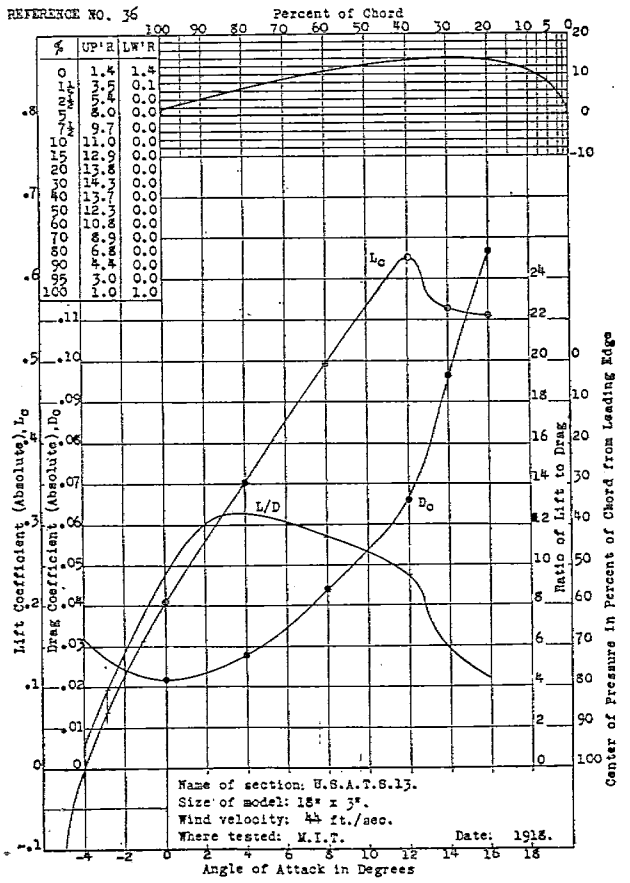
%	UP'R	LW'R
0	1.5	1.5
1¼	3.3	0.1
2½	4.3	0.0
5	5.9	0.0
7½	7.1	0.0
10	8.4	0.0
15	10.1	0.0
20	11.3	0.0
30	12.7	0.0
40	13.0	0.0
50	12.3	0.0
60	11.0	0.0
70	9.0	0.0
80	6.9	0.0
90	4.5	0.0
95	3.2	0.0
100	1.0	1.0

REFERENCE NO. 35



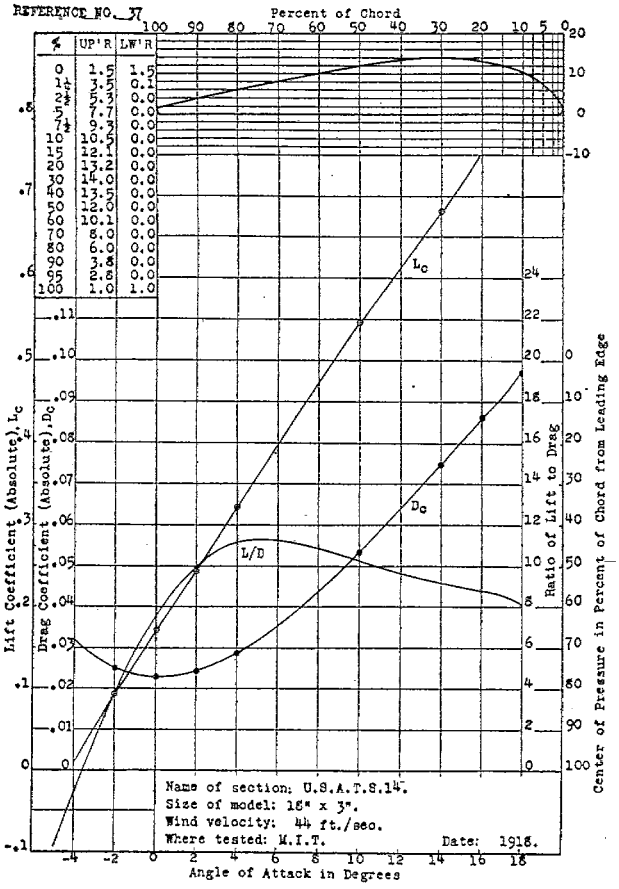
%	UP'R	LW'R
0	1.5	1.5
1¼	3.3	0.1
2½	4.4	0.0
5	6.4	0.0
7½	7.9	0.0
10	9.0	0.0
15	11.0	0.0
20	12.4	0.0
30	14.0	0.0
40	14.3	0.0
50	13.8	0.0
60	12.8	0.0
70	11.0	0.0
80	8.6	0.0
90	5.7	0.0
95	3.8	0.0
100	1.0	1.0

REFERENCE NO. 36



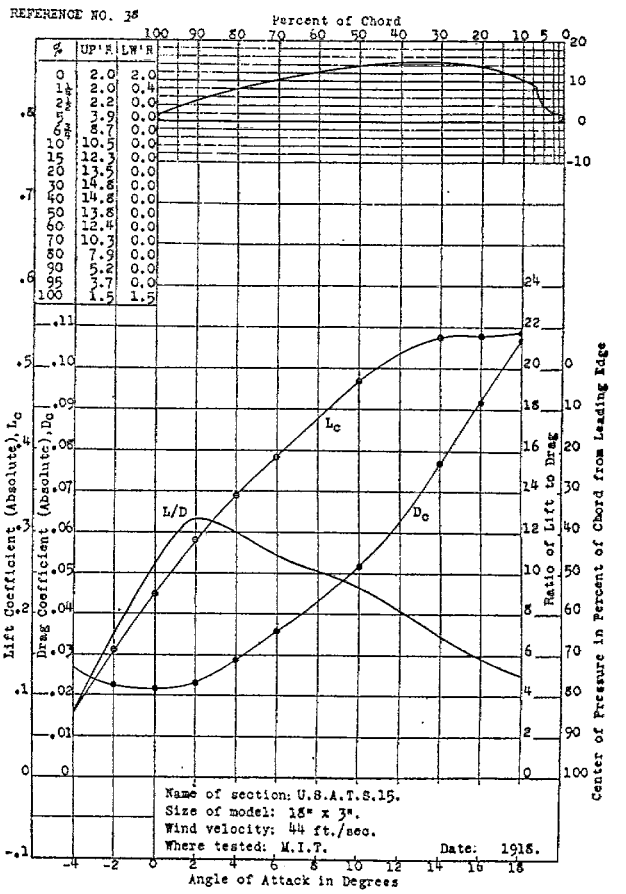
%	UP'R	LW'R
0	1.4	1.4
1¼	3.5	0.1
2½	5.4	0.0
5	8.0	0.0
7½	9.7	0.0
10	11.0	0.0
15	12.9	0.0
20	13.8	0.0
30	14.3	0.0
40	13.7	0.0
50	12.3	0.0
60	10.8	0.0
70	8.9	0.0
80	6.8	0.0
90	4.4	0.0
95	3.0	0.0
100	1.0	1.0

REFERENCE NO. 37



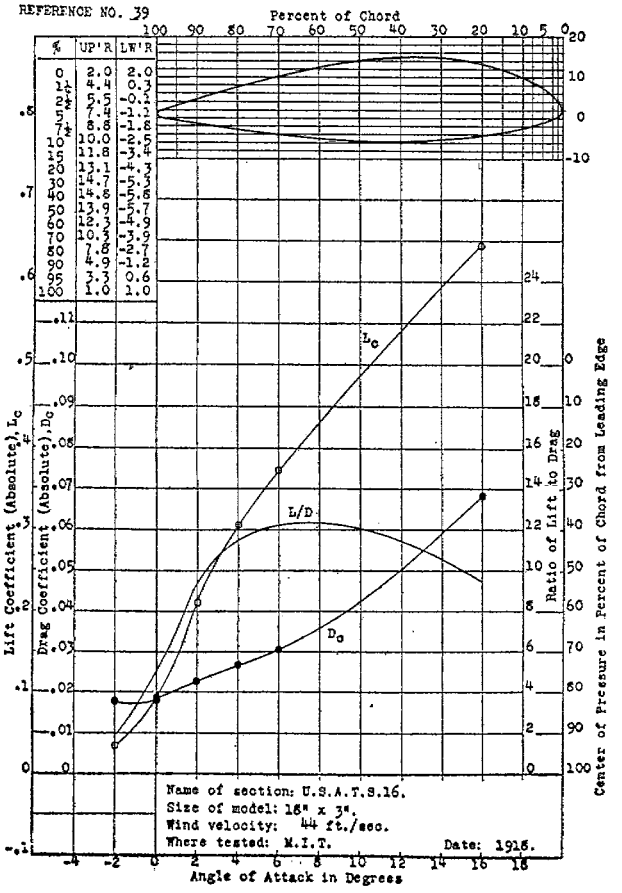
%	UP'R	LW'R
0	1.5	1.5
1¼	3.5	0.1
2½	5.3	0.0
5	7.7	0.0
7½	9.3	0.0
10	10.5	0.0
15	12.1	0.0
20	13.2	0.0
30	14.0	0.0
40	13.5	0.0
50	12.0	0.0
60	10.1	0.0
70	8.0	0.0
80	6.0	0.0
90	3.8	0.0
95	2.8	0.0
100	1.0	1.0

REFERENCE NO. 38



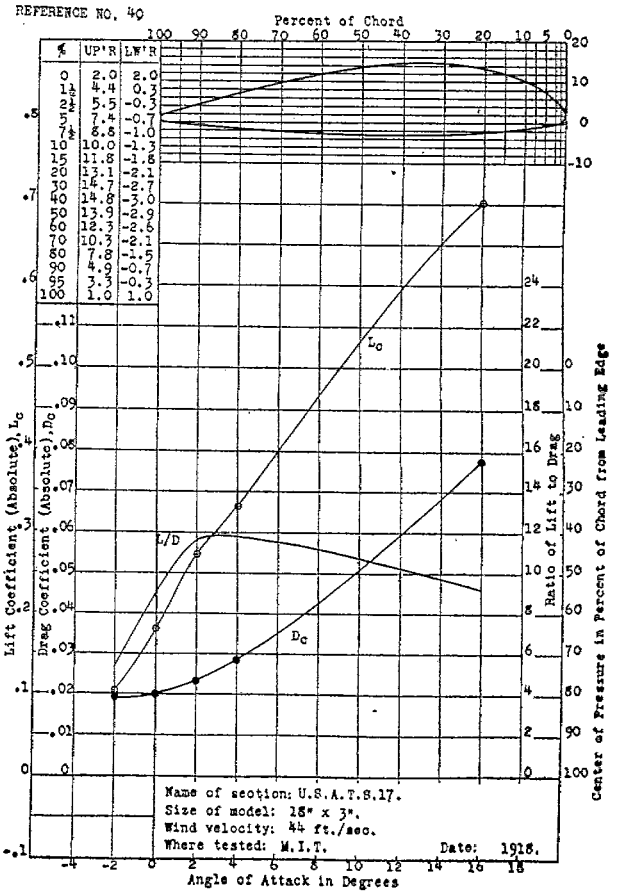
%	UP'R	LW'R
0	2.0	2.0
1¼	2.0	0.4
2½	2.2	0.0
5	3.9	0.0
7½	8.7	0.0
10	10.5	0.0
15	12.3	0.0
20	13.5	0.0
30	14.8	0.0
40	14.8	0.0
50	13.8	0.0
60	12.4	0.0
70	10.3	0.0
80	7.9	0.0
90	5.2	0.0
95	3.7	0.0
100	1.5	1.5

REFERENCE NO. 39



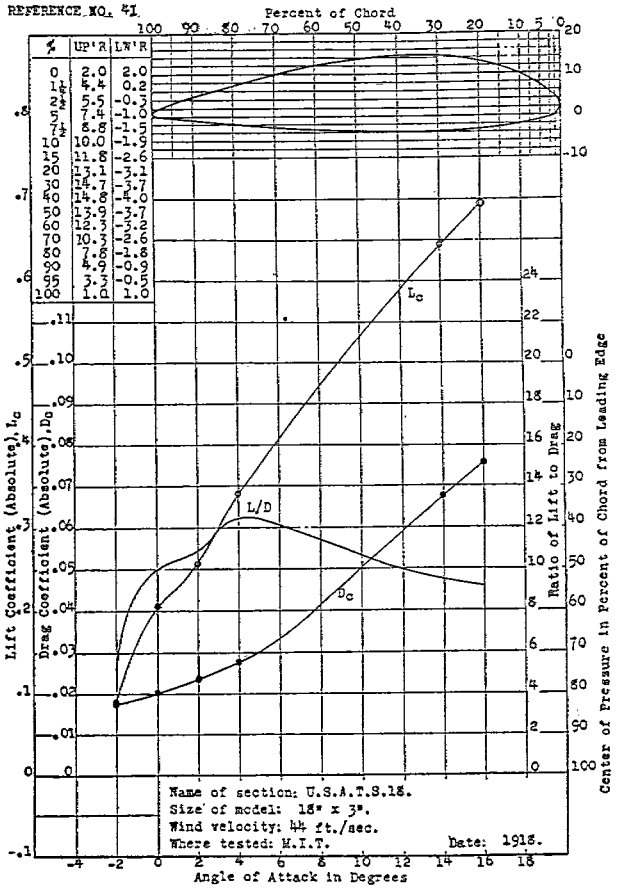
%	UP'R	LW'R
0	2.0	2.0
1¼	4.4	0.3
2½	5.5	-0.1
5	7.4	-1.1
7½	8.8	-1.8
10	10.0	-2.5
15	11.8	-3.4
20	13.1	-4.3
30	14.7	-5.3
40	14.8	-5.8
50	13.9	-5.7
60	12.3	-4.9
70	10.3	-3.9
80	7.8	-2.7
90	4.9	-1.2
95	3.3	0.6
100	1.0	1.0

REFERENCE NO. 40



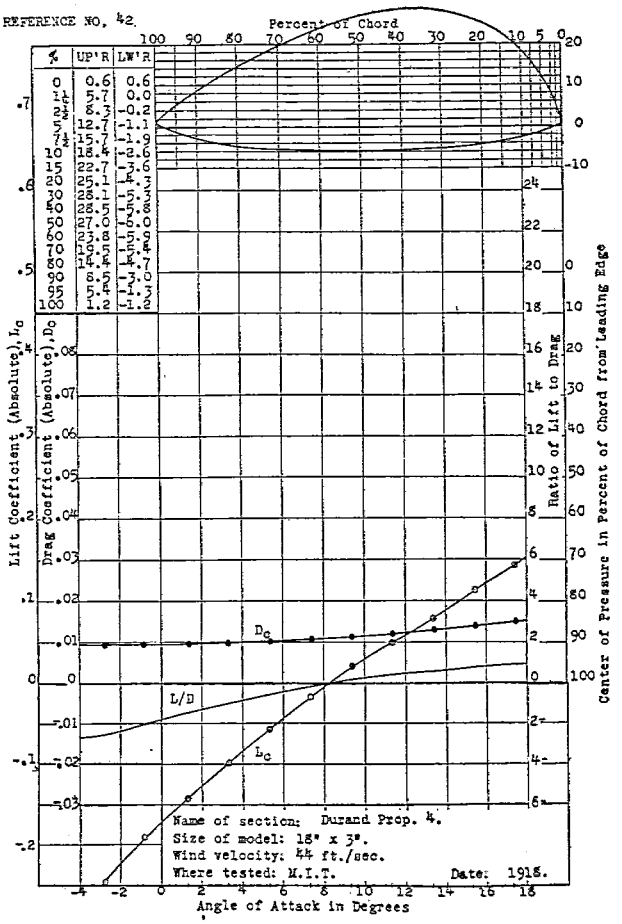
%	UP'R	LW'R
0	2.0	2.0
1¼	4.4	0.3
2½	5.5	-0.3
5	7.4	-0.7
7½	8.8	-1.0
10	10.0	-1.3
15	11.8	-1.8
20	13.1	-2.1
30	14.7	-2.7
40	14.8	-3.0
50	13.9	-2.9
60	12.3	-2.6
70	10.3	-2.1
80	7.8	-1.5
90	4.9	-0.7
95	3.3	-0.3
100	1.0	1.0

REFERENCE NO. 41.



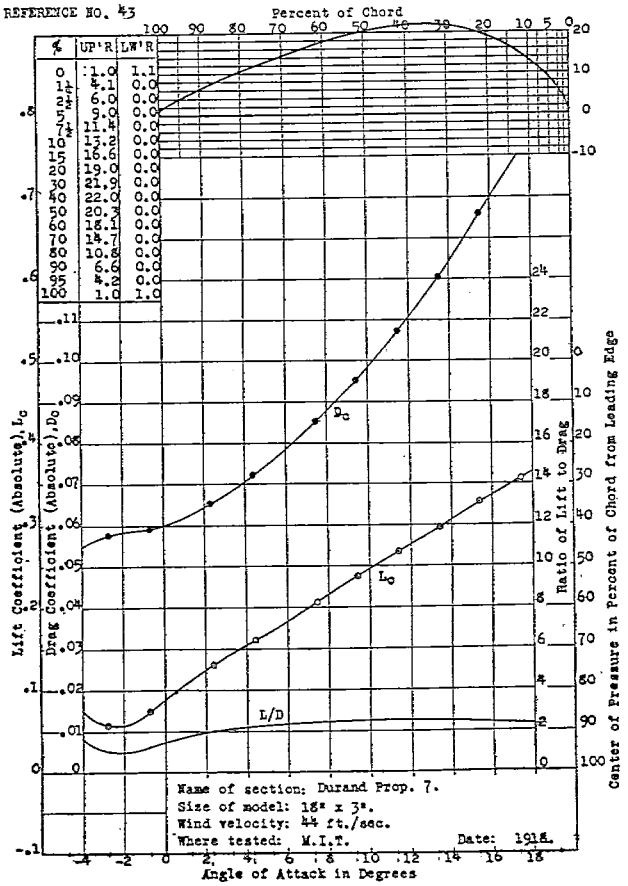
%	UP'R	LW'R
0	2.0	2.0
1¼	4.4	0.2
2½	5.5	-0.3
5	7.4	-1.0
7½	8.8	-1.5
10	10.0	-1.9
15	11.8	-2.6
20	13.1	-3.1
30	14.7	-3.7
40	14.8	-4.0
50	13.9	-3.7
60	12.3	-3.2
70	10.3	-2.6
80	7.8	-1.8
90	4.9	-0.9
95	3.3	-0.5
100	1.0	1.0

REFERENCE NO. 42.



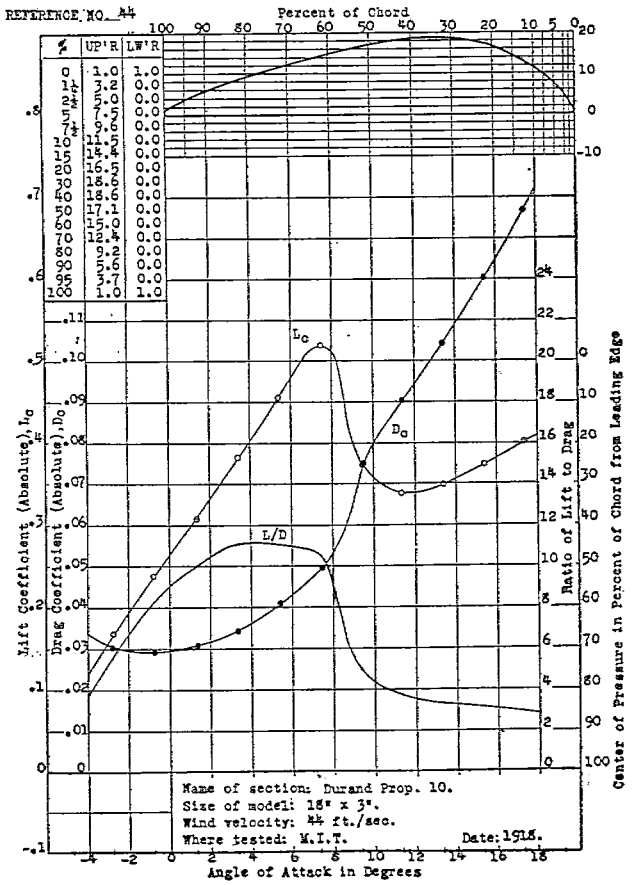
%	UP'R	LW'R
0	0.6	0.6
1¼	5.7	0.0
2½	8.3	-0.2
5	12.7	-1.1
7½	15.7	-1.9
10	18.4	-2.6
15	22.7	-3.6
20	25.1	-4.3
30	28.1	-5.3
40	28.5	-5.8
50	27.0	-6.0
60	23.8	-5.8
70	19.5	-5.4
80	14.4	-4.7
90	8.5	-3.0
95	5.4	-1.5
100	1.2	-1.2

REFERENCE NO. 43



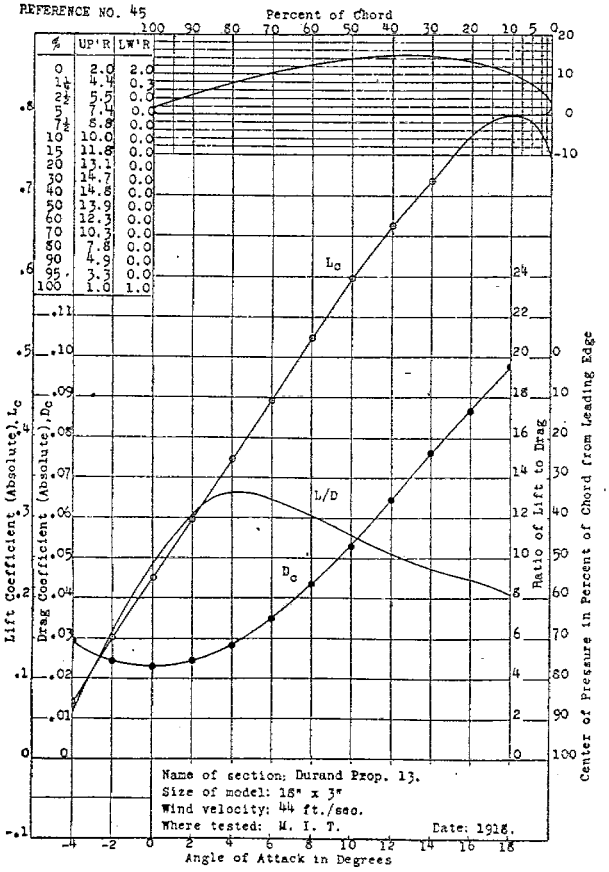
%	UP'R	LW'R
0	1.0	1.1
1¼	4.1	0.0
2½	6.0	0.0
5	9.0	0.0
7½	11.4	0.0
10	13.2	0.0
15	16.6	0.0
20	19.0	0.0
30	21.9	0.0
40	22.0	0.0
50	20.3	0.0
60	18.1	0.0
70	14.7	0.0
80	10.8	0.0
90	6.6	0.0
95	4.2	0.0
100	1.0	1.0

REFERENCE NO. 44



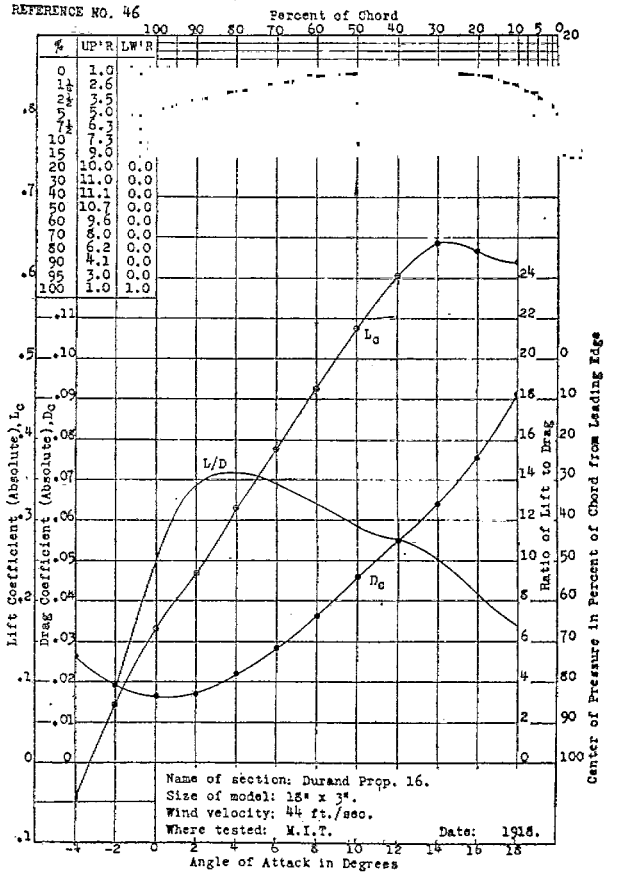
%	UP'R	LW'R
0	1.0	1.0
1¼	3.2	0.0
2½	5.0	0.0
5	7.5	0.0
7½	9.6	0.0
10	11.5	0.0
15	14.4	0.0
20	16.5	0.0
30	18.6	0.0
40	18.6	0.0
50	17.1	0.0
60	15.0	0.0
70	12.4	0.0
80	9.2	0.0
90	5.6	0.0
95	3.7	0.0
100	1.0	1.0

REFERENCE NO. 45



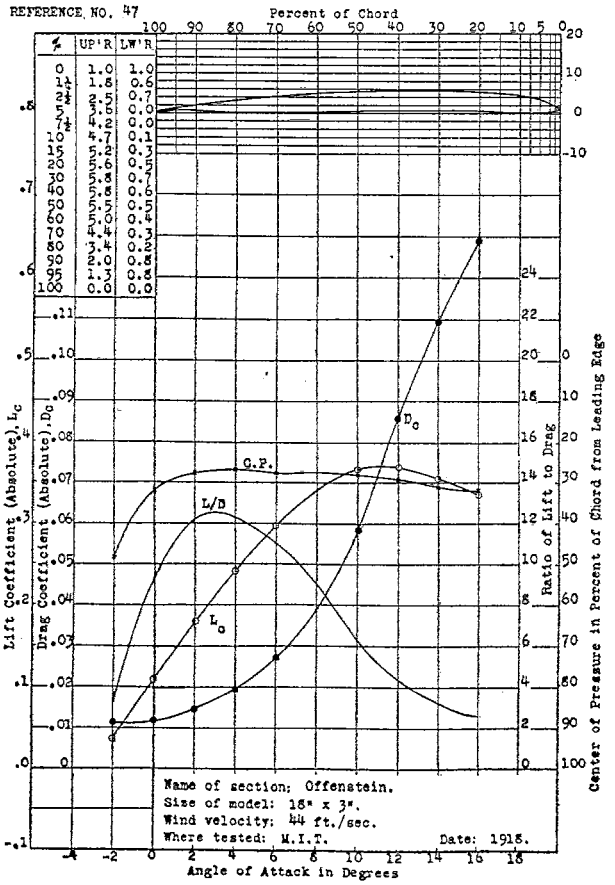
%	UP'R	LW'R
0	2.0	2.0
1¼	4.4	0.3
2½	5.5	0.0
5	7.4	0.0
7½	8.8	0.0
10	10.0	0.0
15	11.8	0.0
20	13.1	0.0
30	14.7	0.0
40	14.8	0.0
50	13.9	0.0
60	12.3	0.0
70	10.3	0.0
80	7.8	0.0
90	4.9	0.0
95	3.3	0.0
100	1.0	1.0

REFERENCE NO. 46



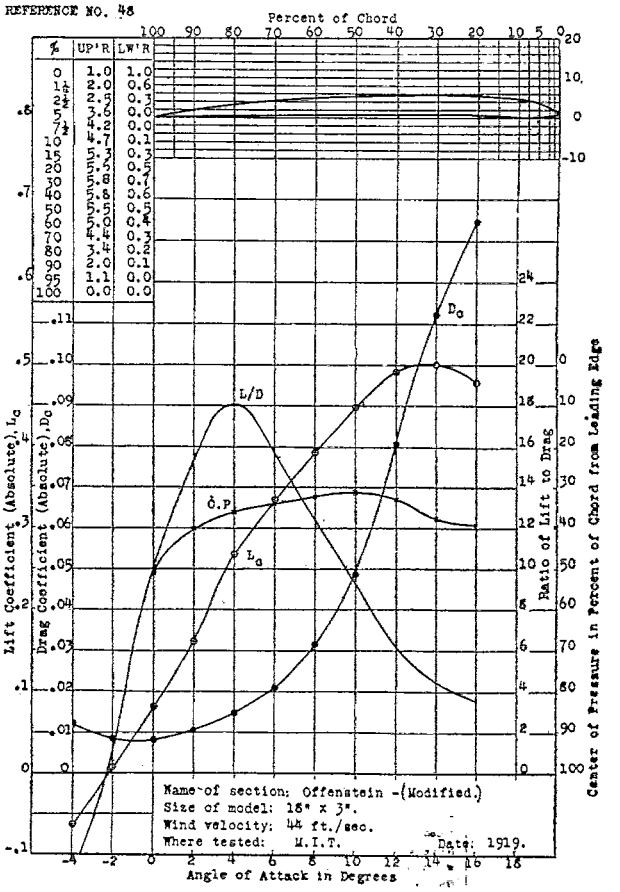
%	UP'R	LW'R
0	1.0	
1¼	2.6	
2½	3.5	
5	5.0	
7½	6.3	
10	7.3	
15	9.0	
20	10.0	0.0
30	11.0	0.0
40	11.1	0.0
50	10.7	0.0
60	9.6	0.0
70	8.0	0.0
80	6.2	0.0
90	4.1	0.0
95	3.0	0.0
100	1.0	1.0

REFERENCE NO. 47



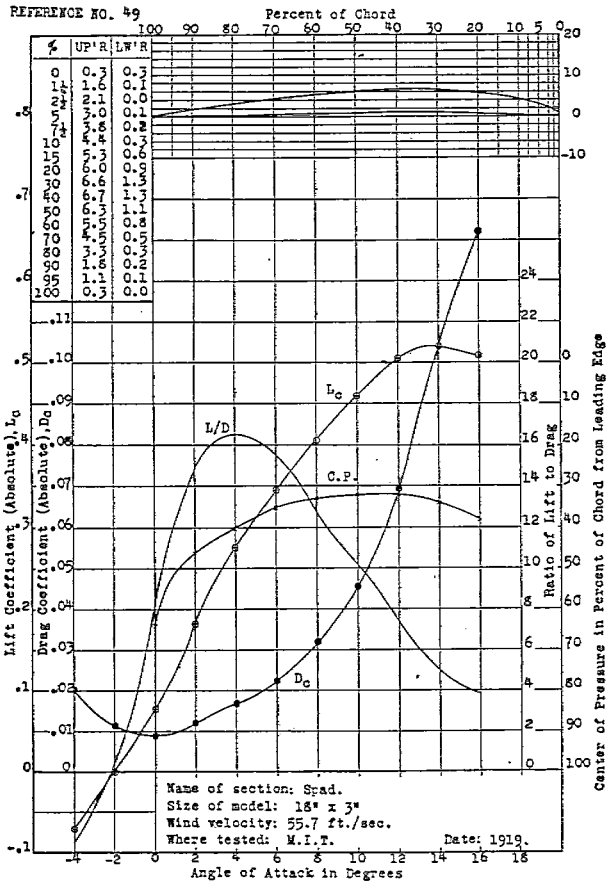
%	UP'R	LW'R
0	1.0	1.0
1¼	1.8	0.6
2½	2.5	0.7
5	3.5	0.0
7½	4.2	0.0
10	4.7	0.1
15	5.2	0.3
20	5.6	0.5
30	5.8	0.7
40	5.8	0.6
50	5.5	0.5
60	5.0	0.4
70	4.4	0.3
80	3.4	0.2
90	2.0	0.8
95	1.3	0.8
100	0.0	0.0

REFERENCE NO. 48



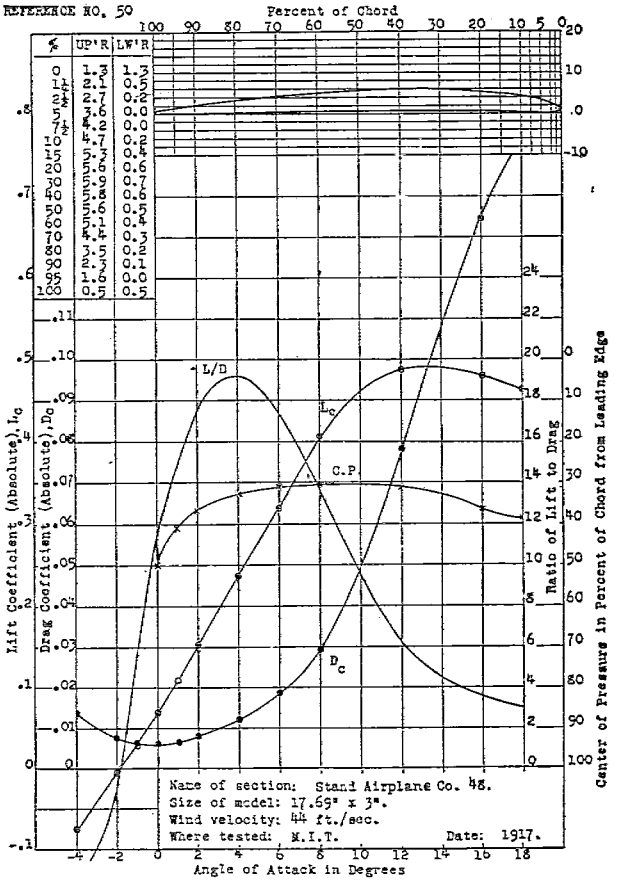
%	UP'R	LW'R
0	1.0	1.0
1¼	2.0	0.6
2½	2.5	0.3
5	3.6	0.0
7½	4.2	0.0
10	4.7	0.1
15	5.3	0.3
20	5.5	0.5
30	5.8	0.7
40	5.8	0.6
50	5.5	0.5
60	5.0	0.4
70	4.4	0.3
80	3.4	0.2
90	2.0	0.1
95	1.1	0.0
100	0.0	0.0

REFERENCE NO. 49



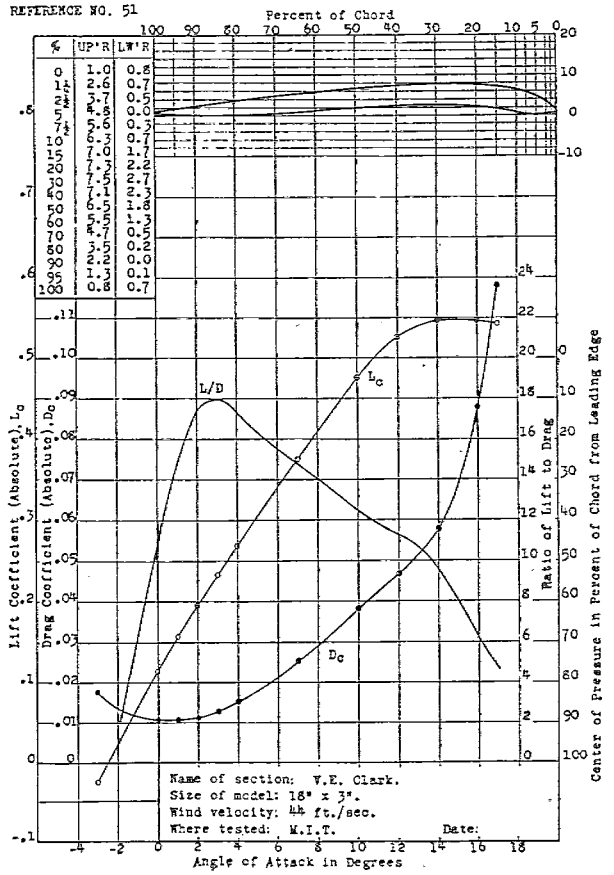
%	UP'R	LW'R
0	0.3	0.3
1¼	1.6	0.1
2½	2.1	0.0
5	3.0	0.1
7½	3.8	0.2
10	4.4	0.3
15	5.3	0.6
20	6.0	0.9
30	6.6	1.3
40	6.7	1.3
50	6.3	1.1
60	5.5	0.8
70	4.5	0.5
80	3.3	0.3
90	1.8	0.2
95	1.1	0.1
100	0.3	0.0

REFERENCE NO. 50



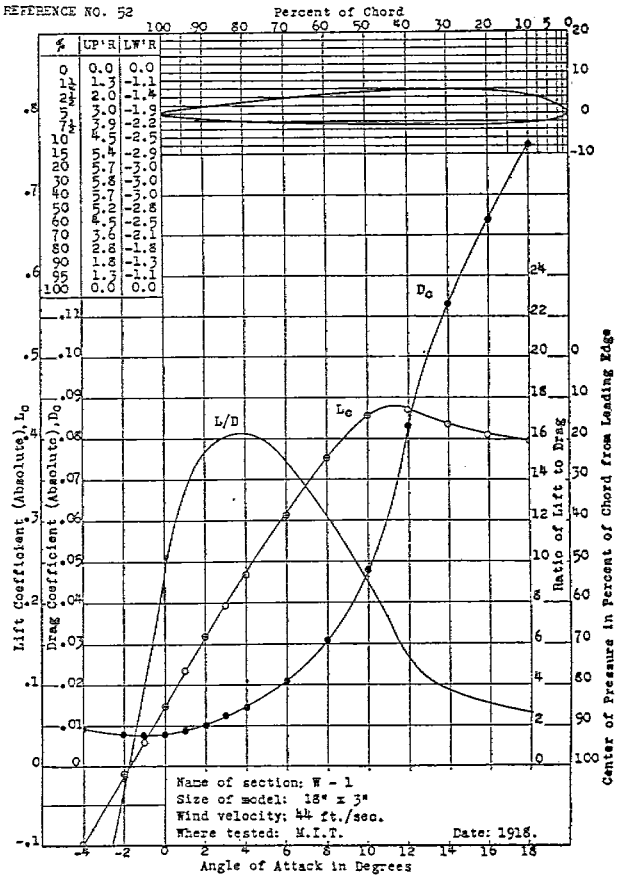
%	UP'R	LW'R
0	1.3	1.3
1¼	2.1	0.5
2½	2.7	0.2
5	3.6	0.0
7½	4.2	0.0
10	4.7	0.2
15	5.3	0.4
20	5.6	0.6
30	5.9	0.7
40	5.8	0.6
50	5.6	0.5
60	5.1	0.4
70	4.4	0.3
80	3.5	0.2
90	2.3	0.1
95	1.6	0.0
100	0.5	0.5

REFERENCE NO. 51



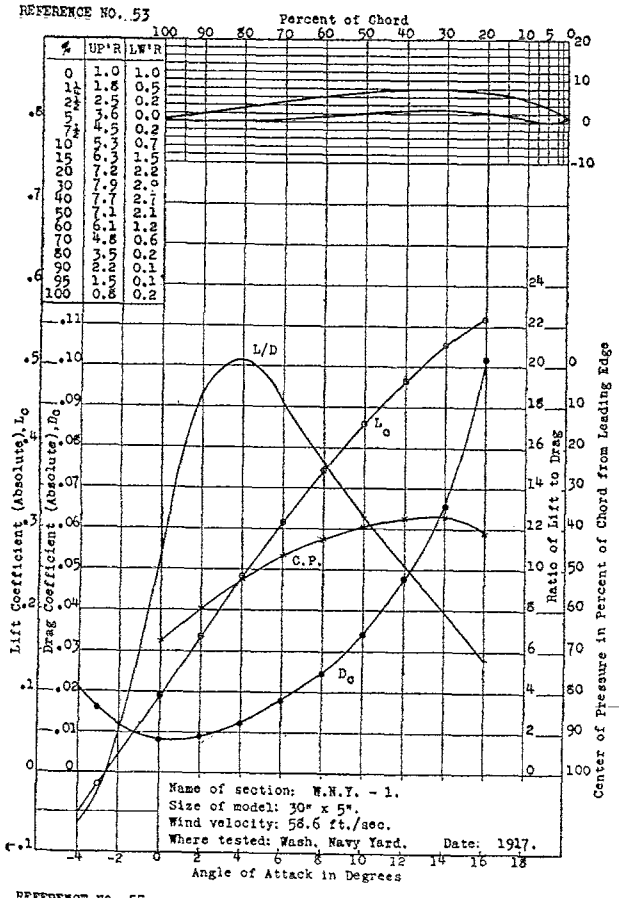
%	UP'R	LW'R
0	1.0	0.8
1¼	2.6	0.7
2½	3.7	0.5
5	4.8	0.0
7½	5.6	0.3
10	6.3	0.7
15	7.0	1.7
20	7.3	2.2
30	7.5	2.7
40	7.1	2.3
50	6.5	1.8
60	5.5	1.3
70	4.7	0.5
80	3.5	0.2
90	2.2	0.0
95	1.3	0.1
100	0.8	0.7

REFERENCE NO. 52



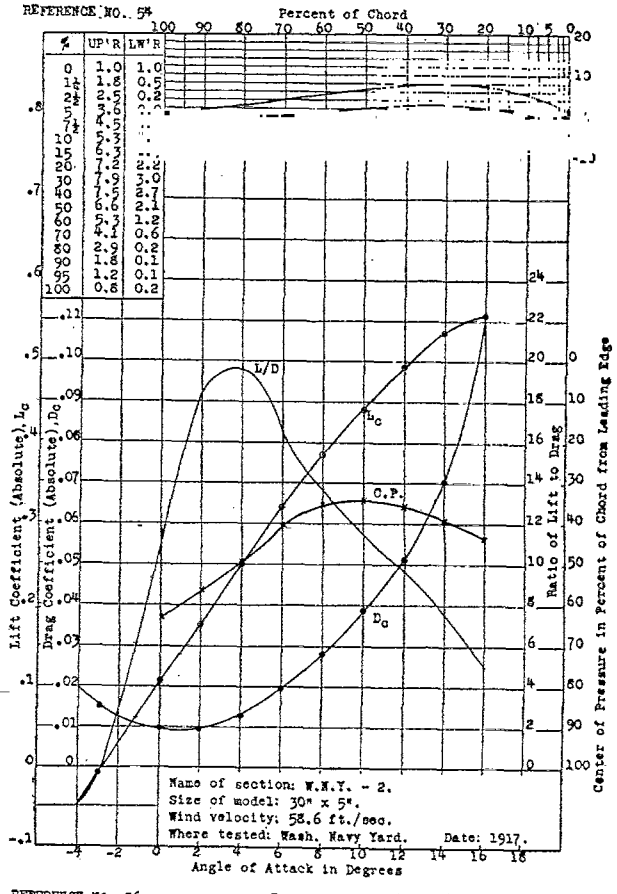
%	UP'R	LW'R
0	0.0	0.0
1¼	1.3	-1.1
2½	2.0	-1.4
5	3.0	-1.9
7½	3.9	-2.2
10	4.5	-2.5
15	5.4	-2.9
20	5.7	-3.0
30	5.8	-3.0
40	5.7	-3.0
50	5.2	-2.8
60	4.5	-2.5
70	3.6	-2.1
80	2.8	-1.8
90	1.8	-1.3
95	1.3	-1.1
100	0.0	0.0

REFERENCE NO. 53



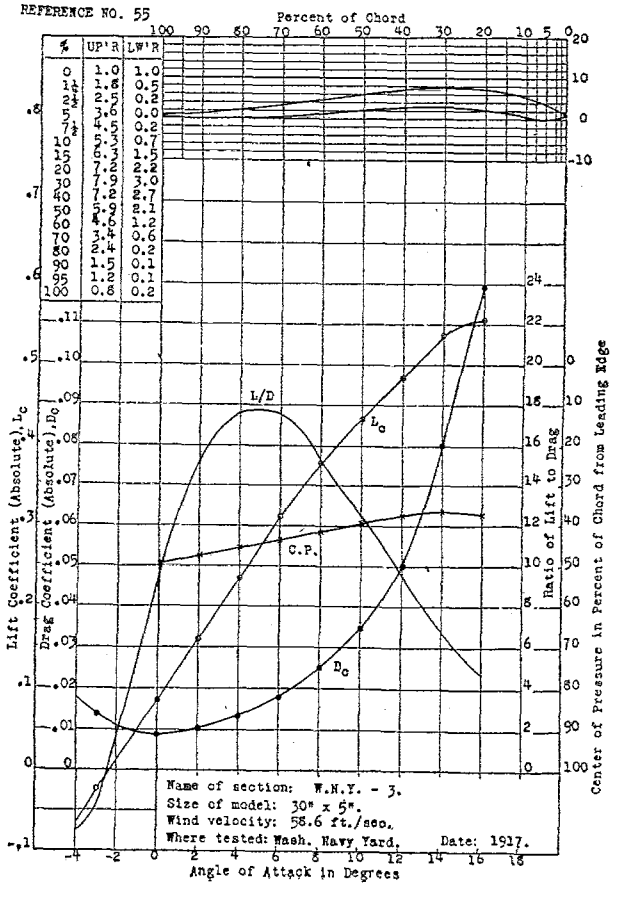
%	UP'R	LW'R
0	1.0	1.0
1¼	1.8	0.5
2½	2.5	0.2
5	3.6	0.0
7½	4.5	0.2
10	5.3	0.7
15	6.3	1.5
20	7.2	2.2
30	7.9	3.0
40	7.7	2.7
50	7.1	2.1
60	6.1	1.2
70	4.8	0.6
80	3.5	0.2
90	2.2	0.1
95	1.5	0.1
100	0.8	0.2

REFERENCE NO. 54



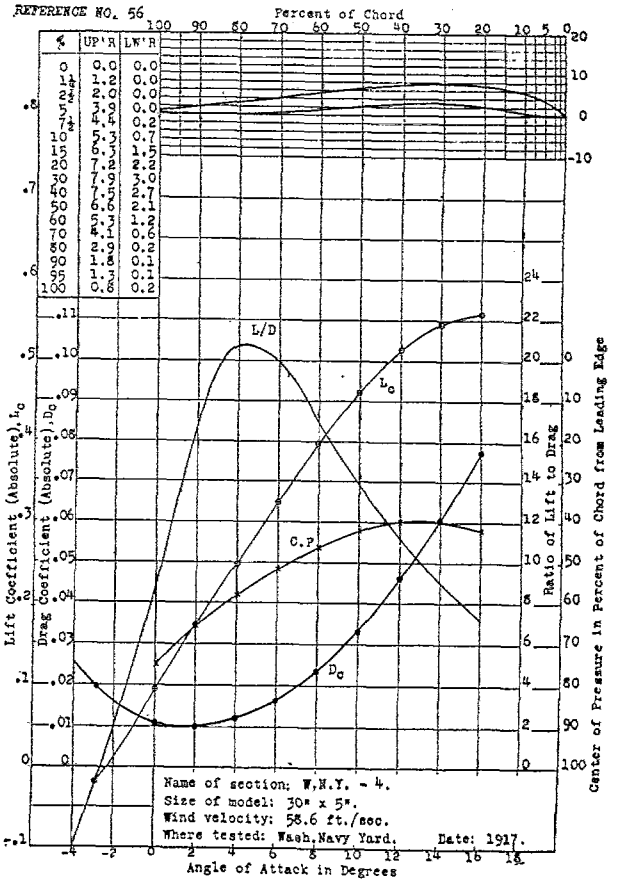
%	UP'R	LW'R
0	1.0	1.0
1¼	1.8	0.5
2½	2.5	0.2
5	3.6	0.0
7½	4.5	..
10	5.3	..
15	6.3	..
20	7.2	2.2
30	7.9	3.0
40	7.5	2.7
50	6.6	2.1
60	5.3	1.2
70	4.1	0.6
80	2.9	0.2
90	1.8	0.1
95	1.2	0.1
100	0.8	0.2

REFERENCE NO. 55



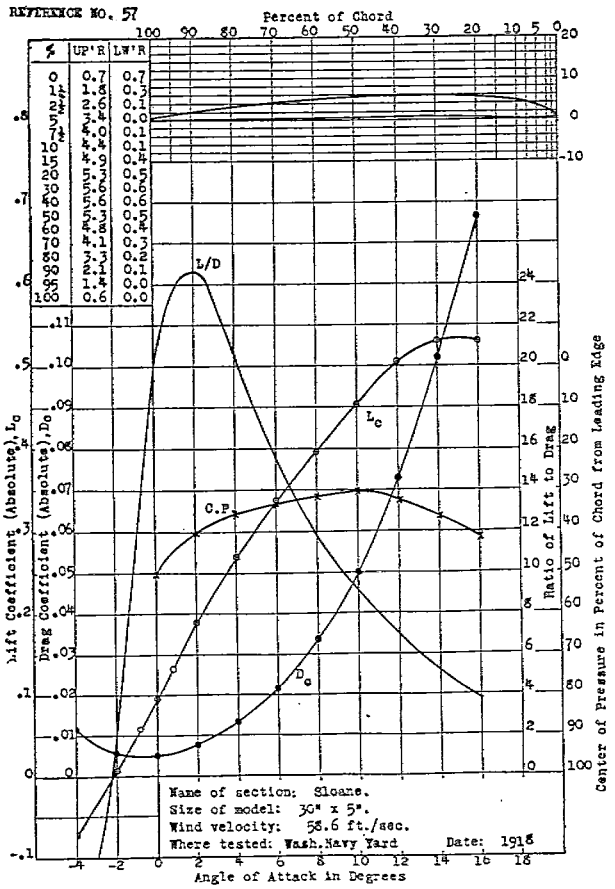
%	UP'R	LW'R
0	1.0	1.0
1¼	1.8	0.5
2½	2.5	0.2
5	3.6	0.0
7½	4.5	0.2
10	5.3	0.7
15	6.3	1.5
20	7.2	2.2
30	7.9	3.0
40	7.2	2.7
50	5.9	2.1
60	4.6	1.2
70	3.4	0.6
80	2.4	0.2
90	1.5	0.1
95	1.2	0.1
100	0.8	0.2

REFERENCE NO. 56



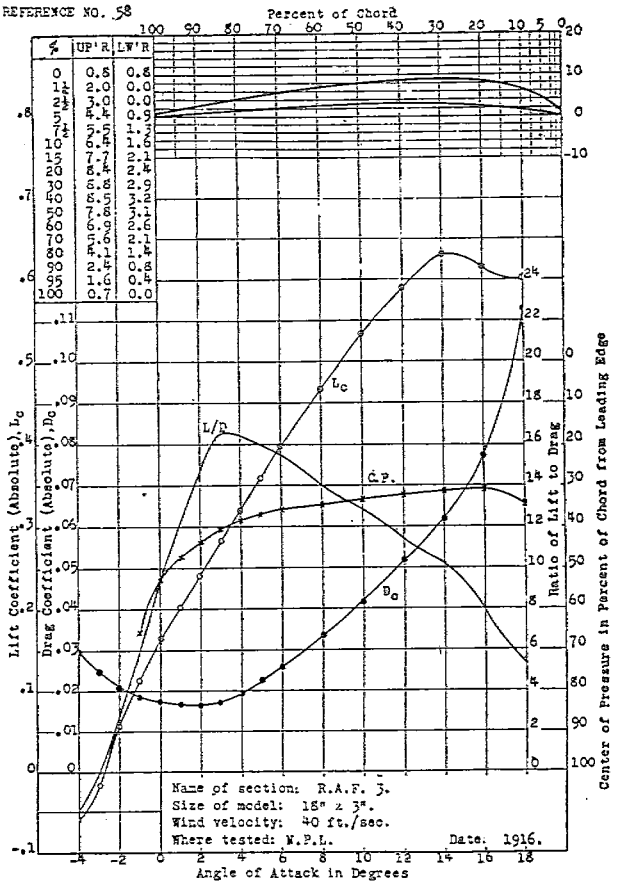
%	UP'R	LW'R
0	0.0	0.0
1¼	1.2	0.0
2½	2.0	0.0
5	3.9	0.0
7½	4.4	0.2
10	5.3	0.7
15	6.3	1.5
20	7.2	2.2
30	7.9	3.0
40	7.5	2.7
50	6.6	2.1
60	5.3	1.2
70	4.1	0.6
80	2.9	0.2
90	1.8	0.1
95	1.3	0.1
100	0.8	0.2

REFERENCE NO. 57



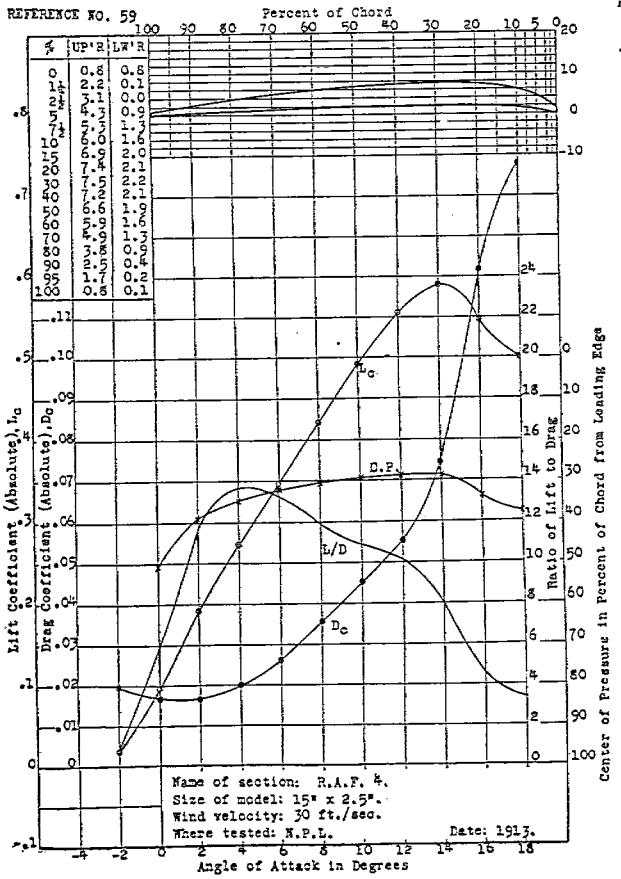
%	UP'R	LW'R
0	0.7	0.7
1¼	1.8	0.3
2½	2.6	0.1
5	3.4	0.0
7½	4.0	0.1
10	4.4	0.1
15	4.9	0.4
20	5.3	0.5
30	5.6	0.6
40	5.6	0.6
50	5.3	0.5
60	4.8	0.4
70	4.1	0.3
80	3.3	0.2
90	2.1	0.1
95	1.4	0.0
100	0.6	0.0

REFERENCE NO. 58



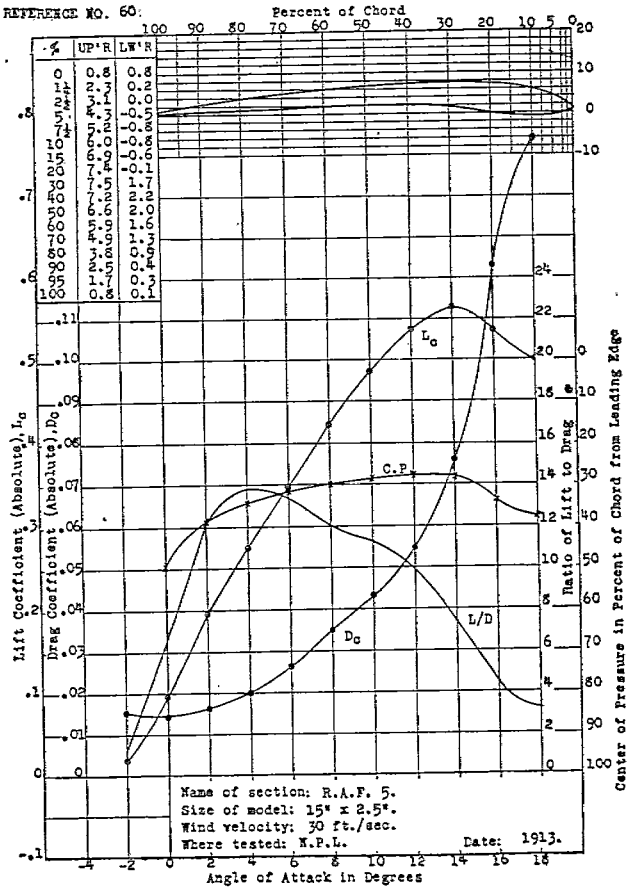
%	UP'R	LW'R
0	0.8	0.8
1¼	2.0	0.0
2½	3.0	0.0
5	4.4	0.9
7½	5.5	1.2
10	6.4	1.6
15	7.7	2.1
20	8.4	2.4
30	8.8	2.9
40	8.5	3.2
50	7.8	3.1
60	6.9	2.6
70	5.6	2.1
80	4.1	1.4
90	2.4	0.8
95	1.6	0.4
100	0.7	0.0

REFERENCE NO. 59



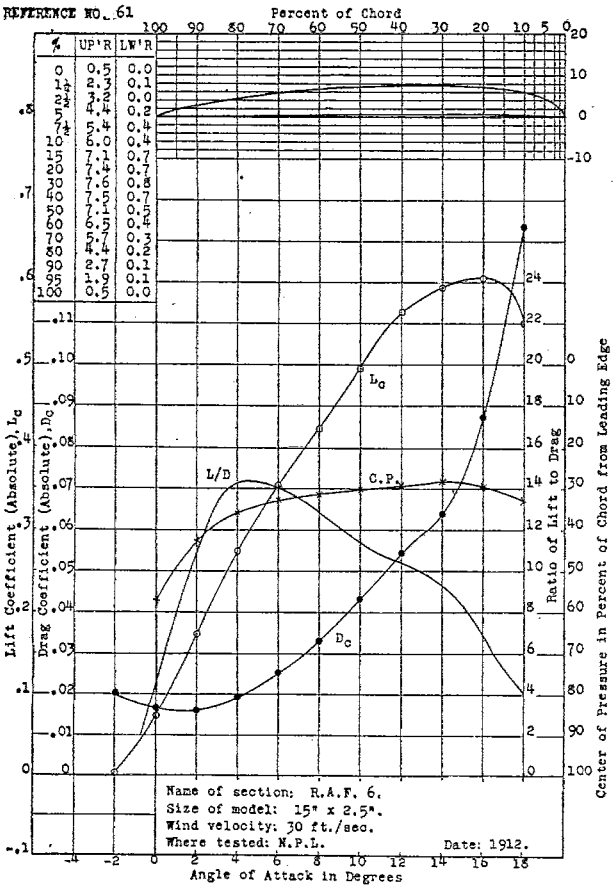
%	UP'R	LW'R
0	0.8	0.8
1¼	2.2	0.1
2½	3.1	0.0
5	4.3	0.9
7½	5.3	1.3
10	6.0	1.6
15	6.9	2.0
20	7.4	2.1
30	7.5	2.2
40	7.2	2.1
50	6.6	1.9
60	5.9	1.6
70	4.9	1.3
80	3.8	0.9
90	2.5	0.4
95	1.7	0.2
100	0.5	0.1

REFERENCE NO. 60



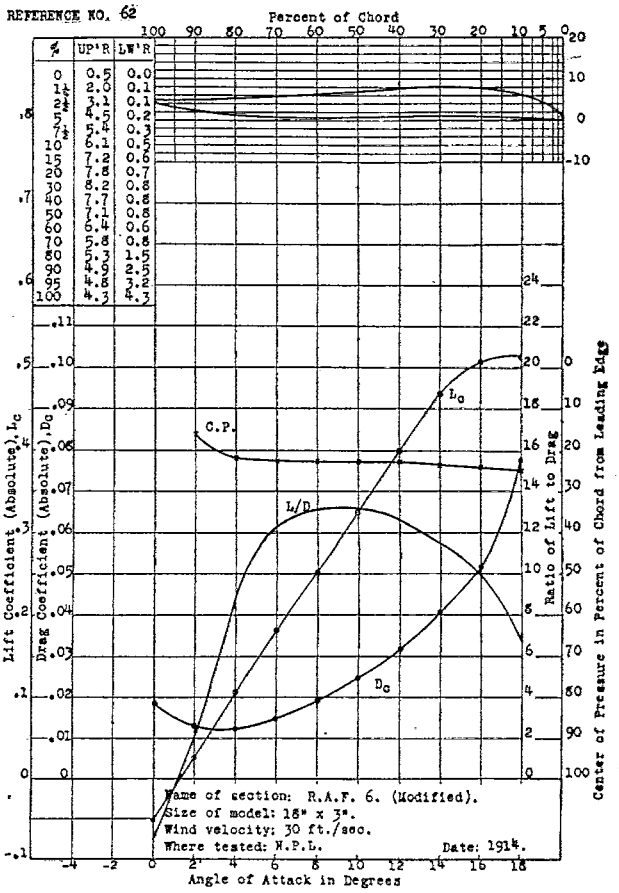
%	UP'R	LW'R
0	0.8	0.8
1¼	2.3	0.2
2½	3.1	0.0
5	4.3	-0.5
7½	5.2	-0.8
10	6.0	-0.8
15	6.9	-0.6
20	7.4	-0.1
30	7.5	1.7
40	7.2	2.2
50	6.6	2.0
60	5.9	1.6
70	4.9	1.3
80	3.8	0.9
90	2.5	0.4
95	1.7	0.3
100	0.8	0.1

REFERENCE NO. 61



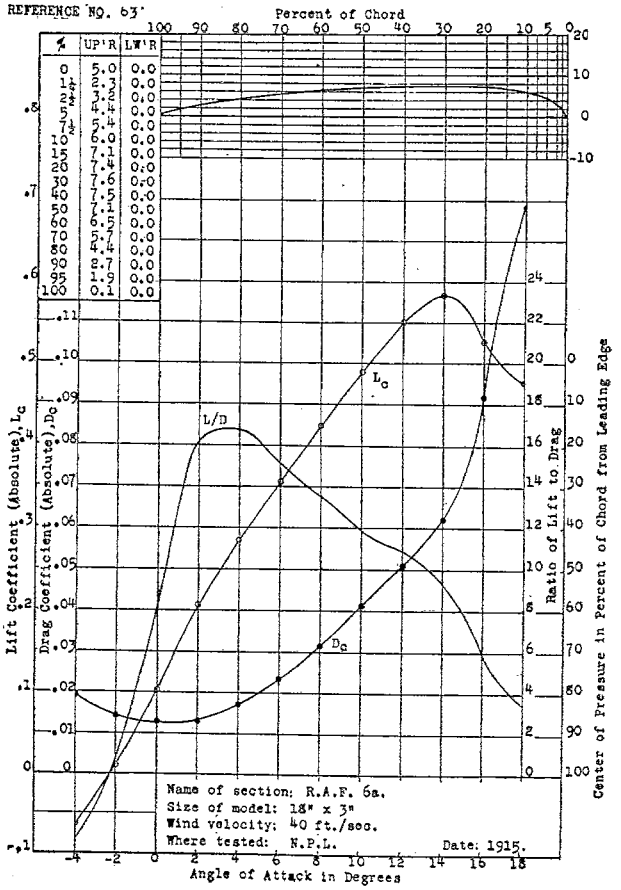
%	UP'R	LW'R
0	0.5	0.0
1¼	2.3	0.1
2½	3.2	0.0
5	4.4	0.2
7½	5.4	0.4
10	6.0	0.4
15	7.1	0.7
20	7.4	0.7
30	7.6	0.8
40	7.5	0.7
50	7.1	0.5
60	6.5	0.4
70	5.7	0.3
80	4.4	0.2
90	2.7	0.1
95	1.9	0.1
100	0.5	0.0

REFERENCE NO. 62



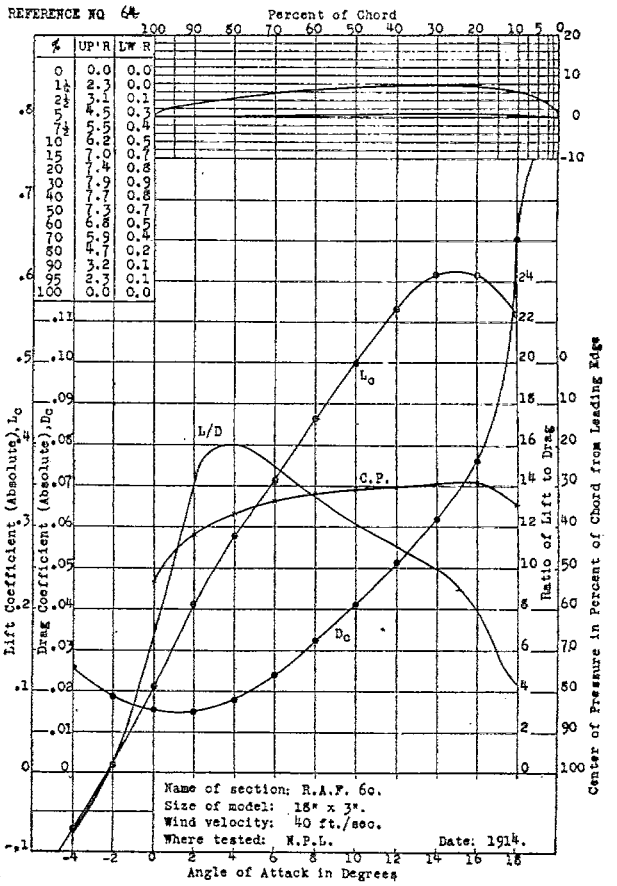
%	UP'R	LW'R
0	0.5	0.0
1¼	2.0	0.1
2½	3.1	0.1
5	4.5	0.2
7½	5.4	0.3
10	6.1	0.5
15	7.2	0.6
20	7.8	0.7
30	8.2	0.8
40	7.7	0.8
50	7.4	0.8
60	6.4	0.6
70	5.8	0.8
80	5.3	1.5
90	4.5	2.5
95	4.8	3.2
100	4.3	4.3

REFERENCE NO. 63



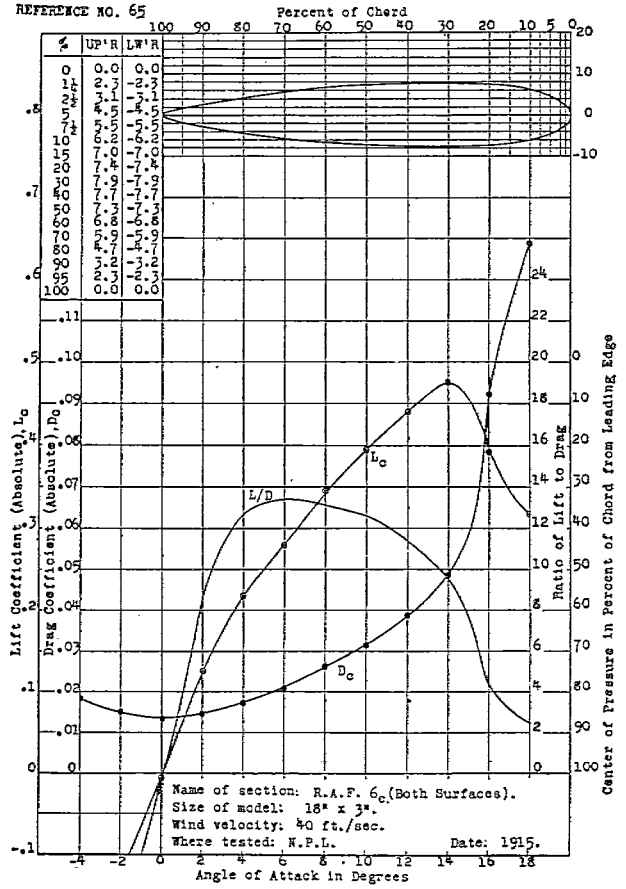
%	UP'R	LW'R
0	5.0	0.0
1¼	2.3	0.0
2½	3.5	0.0
5	4.4	0.0
7½	5.4	0.0
10	6.0	0.0
15	7.1	0.0
20	7.4	0.0
30	7.6	0.0
40	7.5	0.0
50	7.1	0.0
60	6.5	0.0
70	5.7	0.0
80	4.4	0.0
90	2.7	0.0
95	1.9	0.0
100	0.1	0.0

REFERENCE NO. 64



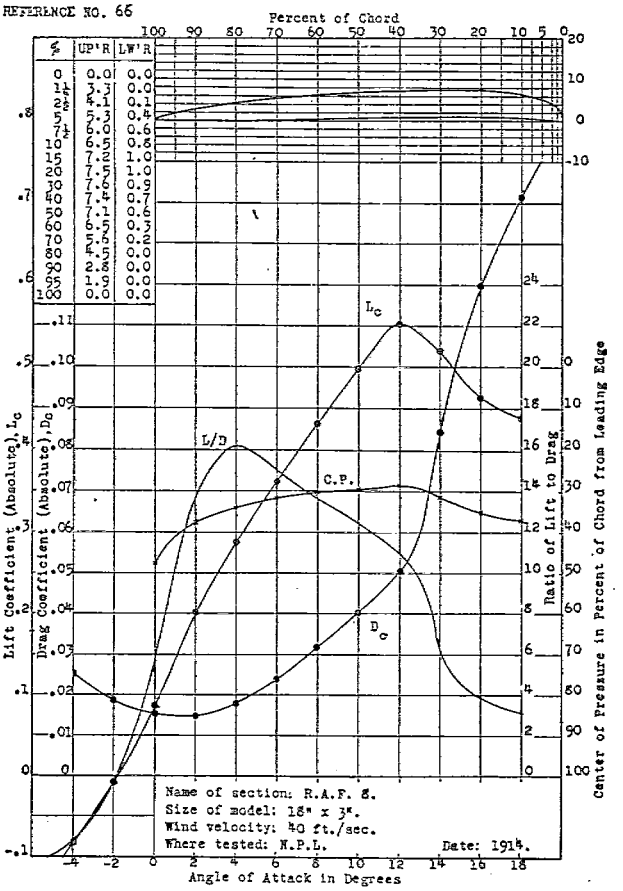
%	UP'R	LW'R
0	0.0	0.0
1¼	2.3	0.0
2½	3.1	0.1
5	4.5	0.3
7½	5.5	0.4
10	6.2	0.5
15	7.0	0.7
20	7.4	0.8
30	7.9	0.9
40	7.7	0.8
50	7.3	0.7
60	6.6	0.5
70	5.9	0.4
80	4.7	0.2
90	3.2	0.1
95	2.3	0.1
100	0.0	0.0

REFERENCE NO. 65



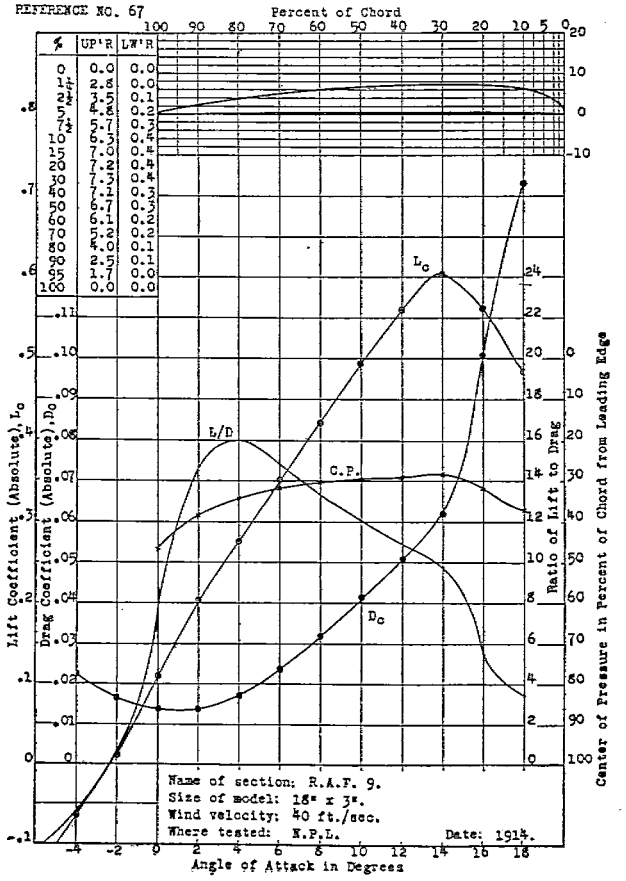
%	UP'R	LW'R
0	0.0	0.0
1¼	2.3	-2.3
2½	3.1	-3.1
5	4.5	-4.5
7½	5.5	-5.5
10	6.2	-6.2
15	7.0	-7.0
20	7.4	-7.4
30	7.9	-7.9
40	7.7	-7.7
50	7.3	-7.3
60	6.8	-6.8
70	5.9	-5.9
80	4.7	-4.7
90	3.2	-3.2
95	2.3	-2.3
100	0.0	0.0

REFERENCE NO. 66



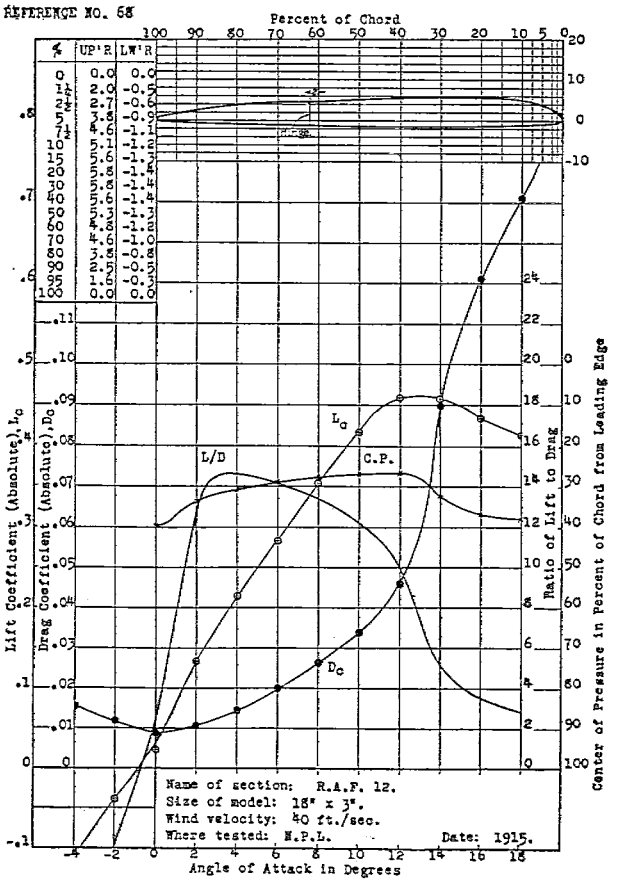
%	UP'R	LW'R
0	0.0	0.0
1¼	3.3	0.0
2½	4.1	0.1
5	5.3	0.4
7½	6.0	0.6
10	6.5	0.8
15	7.2	1.0
20	7.5	1.0
30	7.6	0.9
40	7.4	0.7
50	7.1	0.6
60	6.5	0.3
70	5.6	0.2
80	4.5	0.0
90	2.8	0.0
95	1.9	0.0
100	0.0	0.0

REFERENCE NO. 67



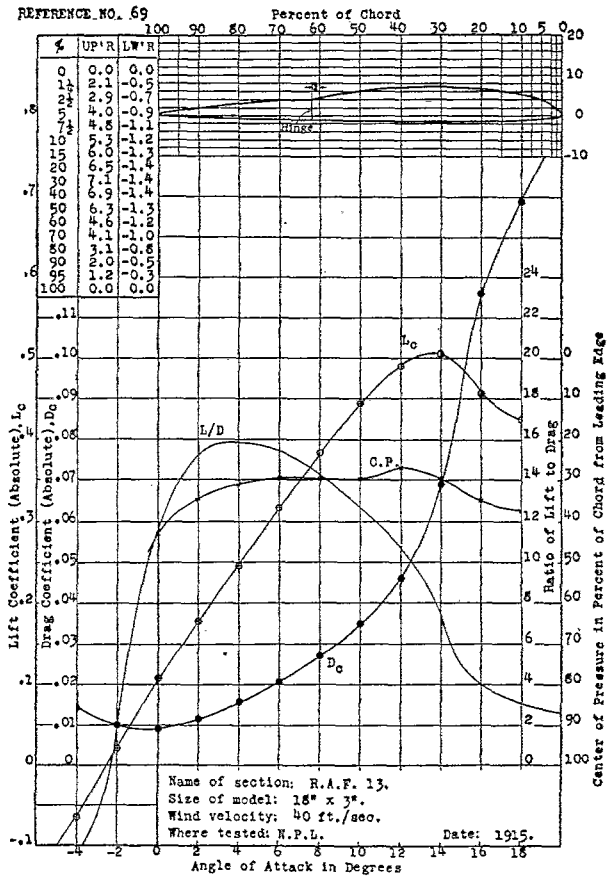
%	UP'R	LW'R
0	0.0	0.0
1¼	2.8	0.0
2½	3.5	0.1
5	4.8	0.2
7½	5.7	0.3
10	6.3	0.4
15	7.0	0.4
20	7.2	0.4
30	7.3	0.4
40	7.1	0.3
50	6.7	0.3
60	6.1	0.2
70	5.2	0.2
80	4.0	0.1
90	2.5	0.1
95	1.7	0.0
100	0.0	0.0

REFERENCE NO. 68



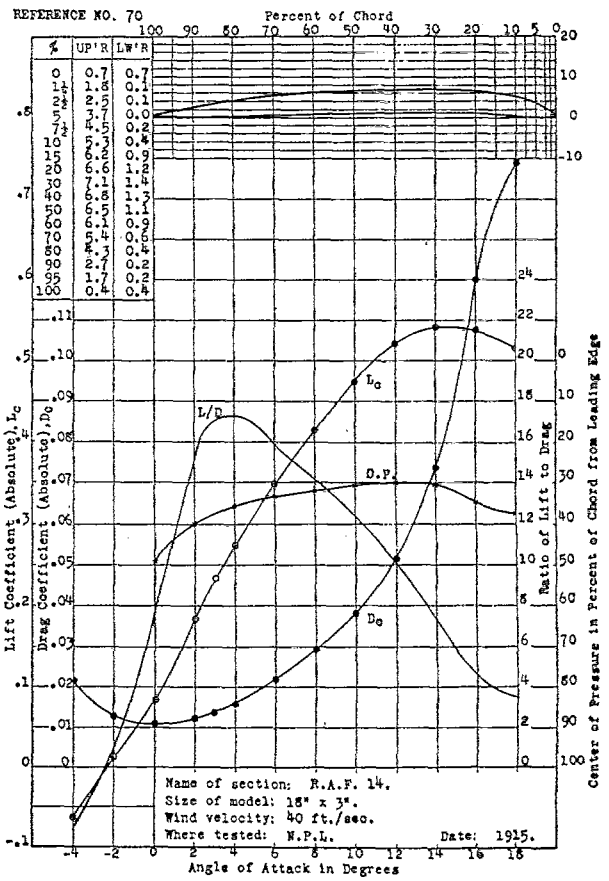
%	UP'R	LW'R
0	0.0	0.0
1¼	2.0	-0.5
2½	2.7	-0.6
5	3.8	-0.9
7½	4.6	-1.1
10	5.1	-1.2
15	5.6	-1.3
20	5.8	-1.4
30	5.8	-1.4
40	5.6	-1.4
50	5.3	-1.3
60	4.8	-1.2
70	4.6	-1.0
80	3.8	-0.8
90	2.5	-0.5
95	1.6	-0.3
100	0.0	0.0

REFERENCE NO. 69



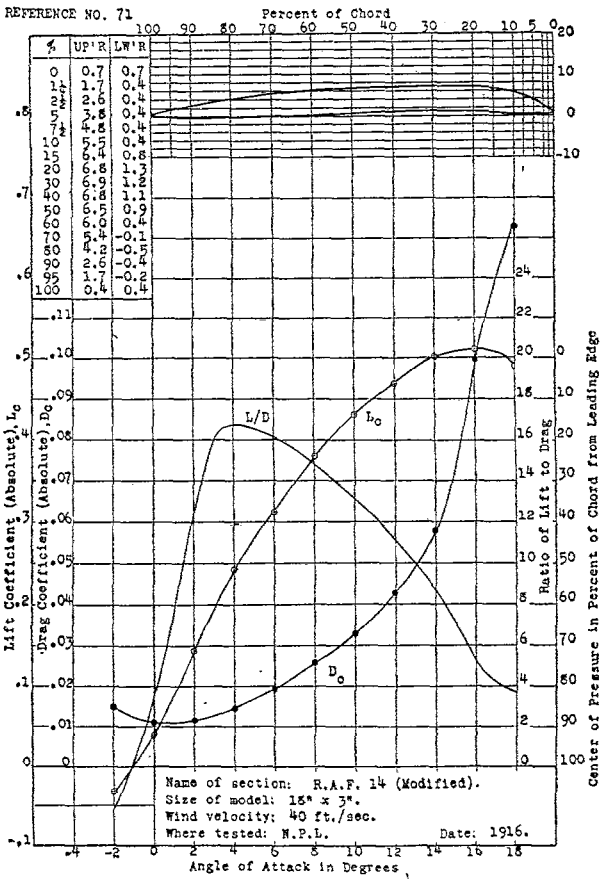
%	UP'R	LW'R
0	0.0	0.0
1¼	2.1	-0.5
2½	2.9	-0.7
5	4.0	-0.9
7½	4.8	-1.1
10	5.3	-1.2
15	6.0	-1.3
20	6.5	-1.4
30	7.1	-1.4
40	6.9	-1.4
50	6.3	-1.3
60	4.6	-1.2
70	4.1	-1.0
80	3.1	-0.8
90	2.0	-0.5
95	1.2	-0.3
100	0.0	0.0

REFERENCE NO. 70



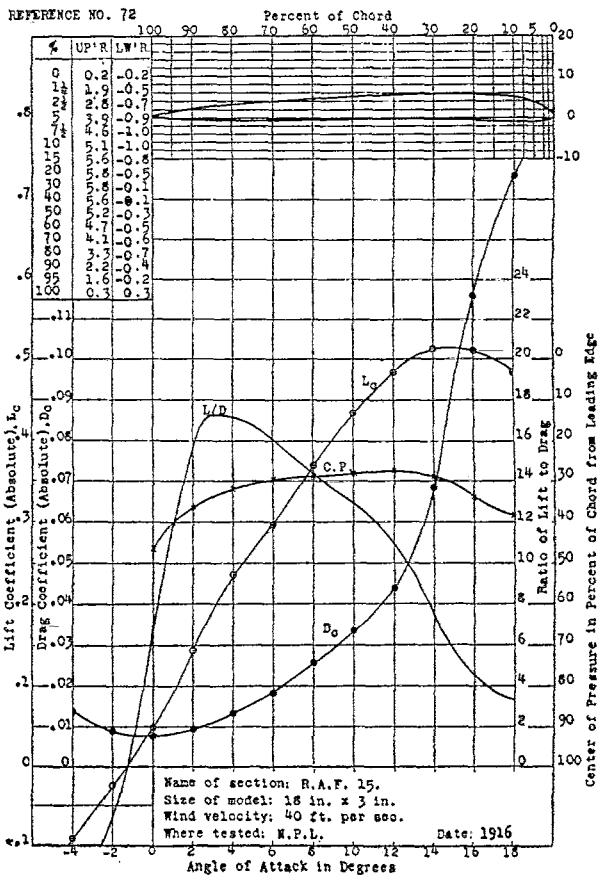
%	UP'R	LW'R
0	0.7	0.7
1¼	1.8	0.1
2½	2.5	0.1
5	3.7	0.0
7½	4.5	0.2
10	5.3	0.4
15	6.2	0.9
20	6.6	1.2
30	7.1	1.4
40	6.8	1.3
50	6.5	1.1
60	6.1	0.9
70	5.4	0.6
80	4.3	0.4
90	2.7	0.2
95	1.7	0.2
100	0.4	0.4

REFERENCE NO. 71



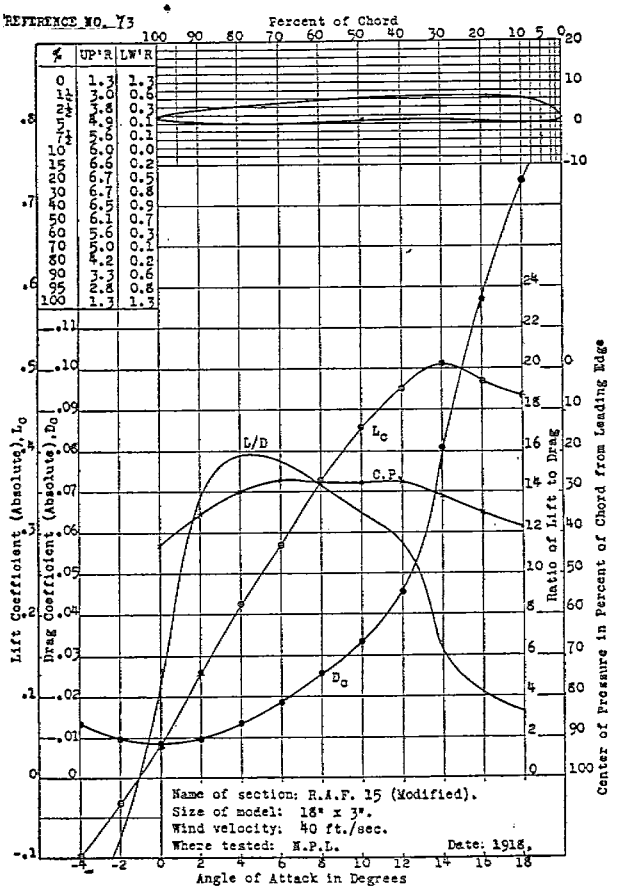
%	UP'R	LW'R
0	0.7	0.7
1¼	1.7	0.4
2½	2.6	0.4
5	3.8	0.4
7½	4.8	0.4
10	5.5	0.4
15	6.4	0.8
20	6.8	1.3
30	6.9	1.2
40	6.8	1.1
50	6.5	0.9
60	6.0	0.4
70	5.4	-0.1
80	4.2	-0.5
90	2.6	-0.4
95	1.7	-0.2
100	0.4	0.4

REFERENCE NO. 72



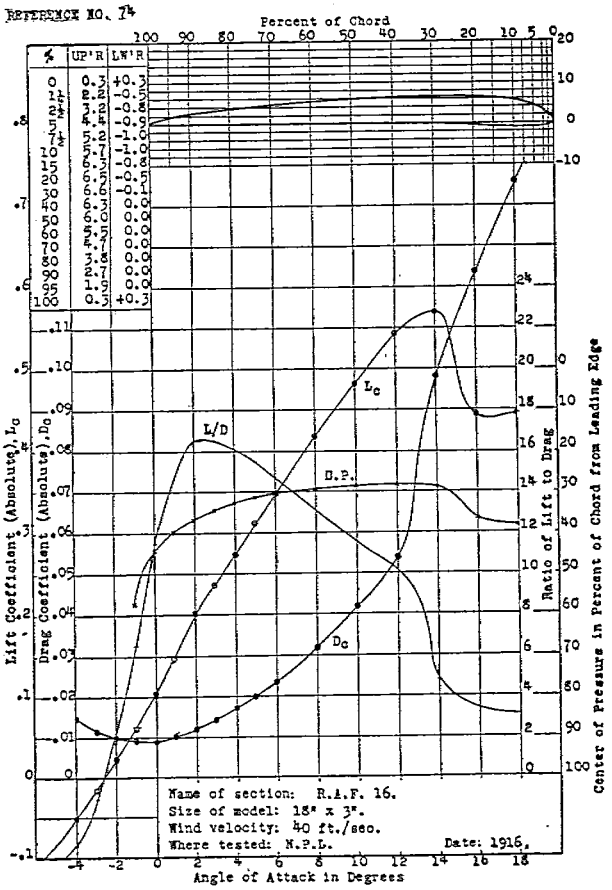
%	UP'R	LW'R
0	0.2	-0.2
1¼	1.9	-0.5
2½	2.8	-0.7
5	3.9	-0.9
7½	4.6	-1.0
10	5.1	-1.0
15	5.6	-0.8
20	5.8	-0.5
30	5.8	-0.1
40	5.6	-0.1
50	5.2	-0.3
60	4.7	-0.5
70	4.1	-0.6
80	3.3	-0.7
90	2.2	-0.4
95	1.6	-0.2
100	0.3	0.3

REFERENCE NO. 73



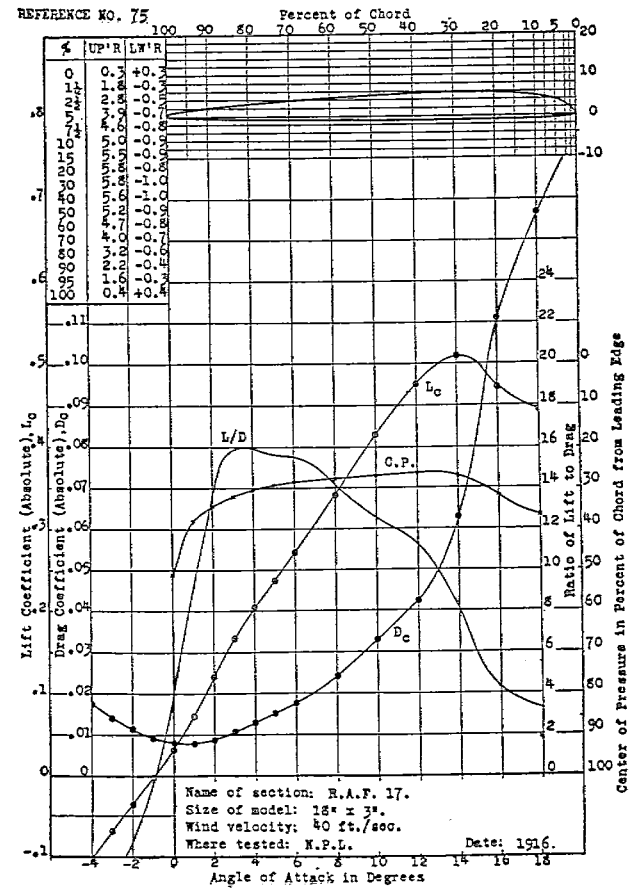
%	UP'R	LW'R
0	1.3	1.3
1¼	3.0	0.6
2½	3.8	0.3
5	4.9	0.1
7½	5.6	0.1
10	6.0	0.0
15	6.6	0.2
20	6.7	0.5
30	6.7	0.8
40	6.5	0.9
50	6.1	0.7
60	5.6	0.3
70	5.0	0.1
80	4.2	0.2
90	3.3	0.6
95	2.8	0.8
100	1.3	1.3

REFERENCE NO. 74



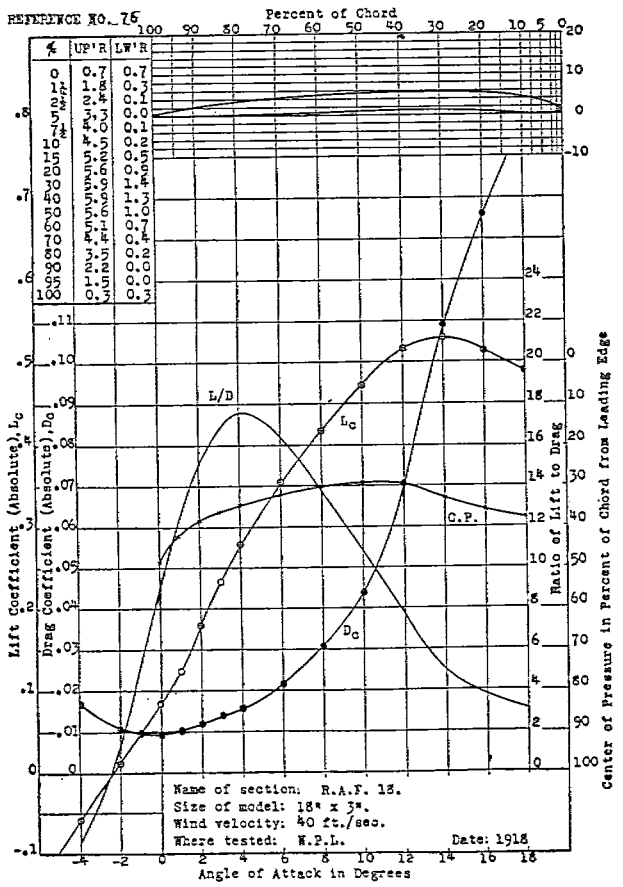
%	UP'R	LW'R
0	0.3	+0.3
1¼	2.2	-0.5
2½	3.2	-0.8
5	4.4	-0.9
7½	5.2	-1.0
10	5.7	-1.0
15	6.3	-0.8
20	6.5	-0.5
30	6.6	-0.1
40	6.3	0.0
50	6.0	0.0
60	5.5	0.0
70	4.7	0.0
80	3.8	0.0
90	2.7	0.0
95	1.9	0.0
100	0.3	+0.3

REFERENCE NO. 75



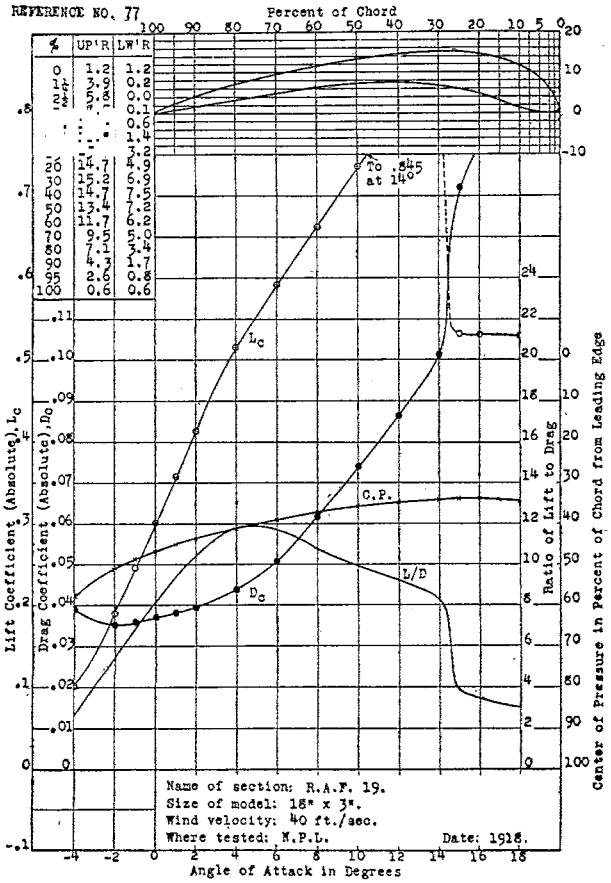
%	UP'R	LW'R
0	0.3	+0.3
1¼	1.8	-0.3
2½	2.8	-0.5
5	3.9	-0.7
7½	4.6	-0.8
10	5.0	-0.9
15	5.5	-0.9
20	5.6	-0.8
30	5.8	-1.0
40	5.6	-1.0
50	5.2	-0.9
60	4.7	-0.8
70	4.0	-0.7
80	3.2	-0.6
90	2.2	-0.4
95	1.6	-0.3
100	0.4	+0.4

REFERENCE NO. 76



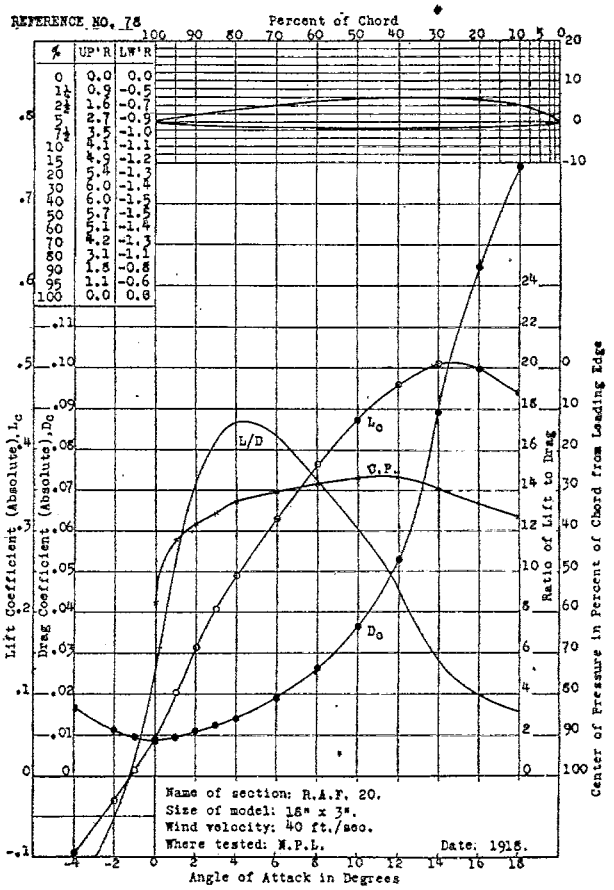
%	UP'R	LW'R
0	0.7	0.7
1¼	1.8	0.3
2½	2.4	0.1
5	3.3	0.0
7½	4.0	0.1
10	4.5	0.2
15	5.2	0.5
20	5.6	0.8
30	5.9	1.4
40	5.9	1.3
50	5.6	1.0
60	5.1	0.7
70	4.4	0.4
80	3.5	0.2
90	2.2	0.0
95	1.5	0.0
100	0.3	0.3

REFERENCE NO. 77



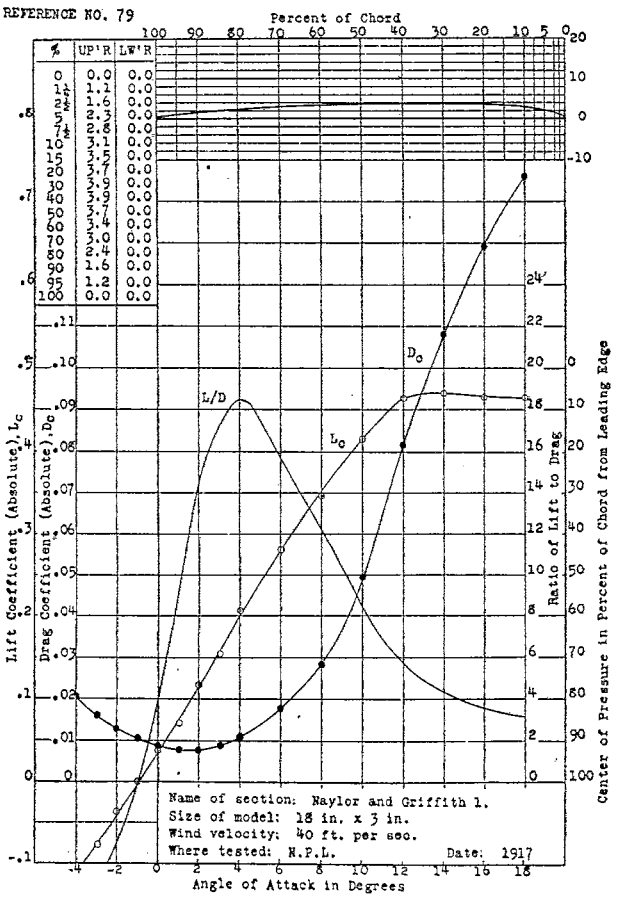
%	UP'R	LW'R
0	1.2	1.2
1¼	3.9	0.2
2½	5.8	0.0
5	[illegible]	0.1
7½	[illegible]	0.6
10	[illegible]	1.4
15	[illegible]	3.2
20	14.7	4.9
30	15.2	6.9
40	14.7	7.5
50	13.4	7.2
60	11.7	6.2
70	9.5	5.0
80	7.1	3.4
90	4.3	1.7
95	2.6	0.8
100	0.6	0.6

REFERENCE NO. 78



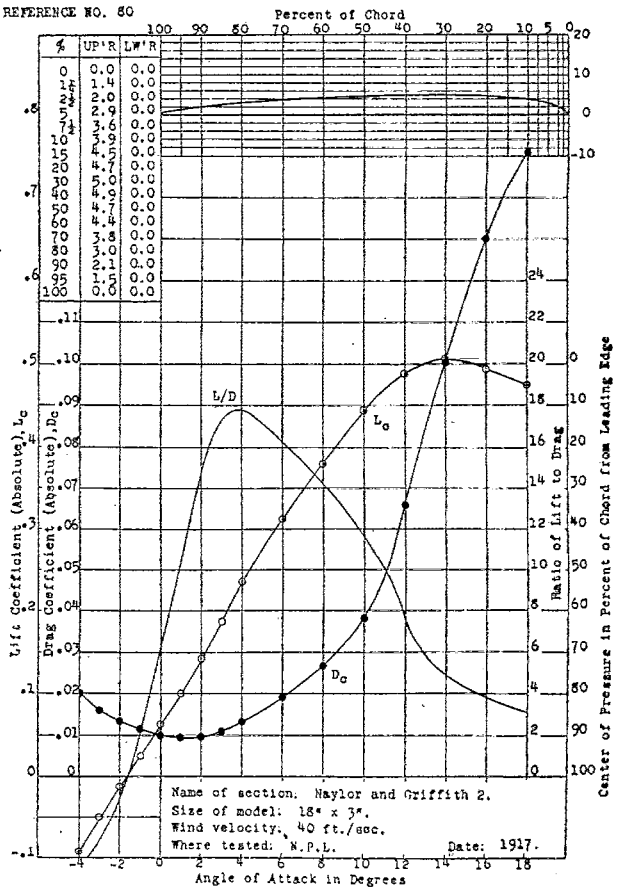
%	UP'R	LW'R
0	0.0	0.0
1¼	0.9	-0.5
2½	1.6	-0.7
5	2.7	-0.9
7½	3.5	-1.0
10	4.1	-1.1
15	4.9	-1.2
20	5.4	-1.3
30	6.0	-1.4
40	6.0	-1.5
50	5.7	-1.5
60	5.1	-1.4
70	4.2	-1.3
80	3.1	-1.1
90	1.8	-0.8
95	1.1	-0.6
100	0.0	0.0

REFERENCE NO. 79



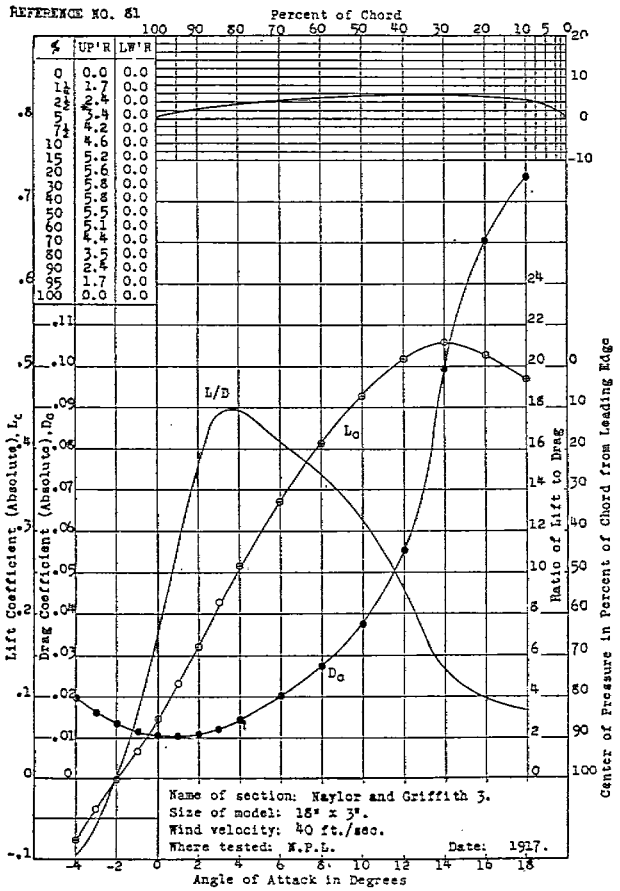
%	UP'R	LW'R
0	0.0	0.0
1¼	1.1	0.0
2½	1.6	0.0
5	2.3	0.0
7½	2.8	0.0
10	3.1	0.0
15	3.5	0.0
20	3.7	0.0
30	3.9	0.0
40	3.9	0.0
50	3.7	0.0
60	3.4	0.0
70	3.0	0.0
80	2.4	0.0
90	1.6	0.0
95	1.2	0.0
100	0.0	0.0

REFERENCE NO. 80



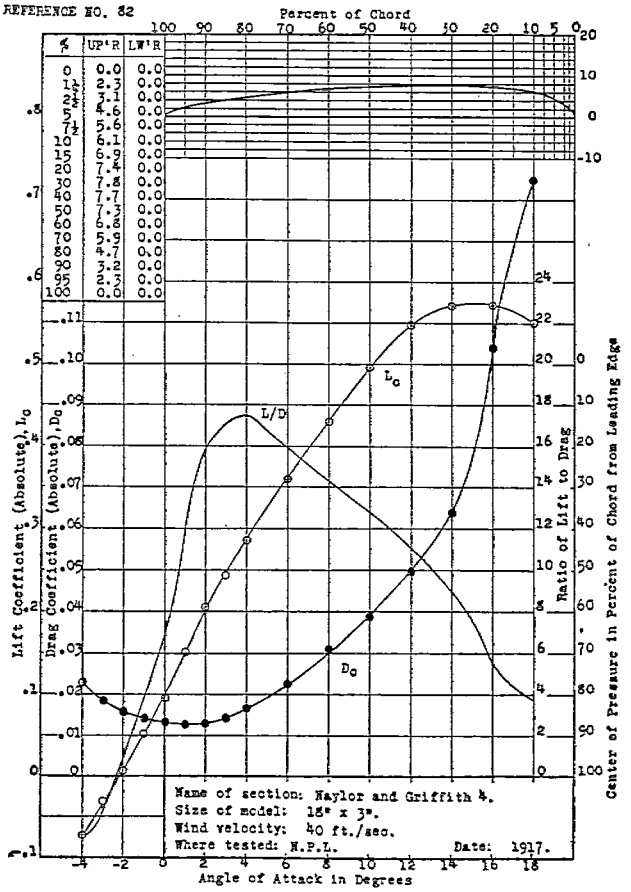
%	UP'R	LW'R
0	0.0	0.0
1¼	1.4	0.0
2½	2.0	0.0
5	2.9	0.0
7½	3.6	0.0
10	3.9	0.0
15	4.5	0.0
20	4.7	0.0
30	5.0	0.0
40	4.9	0.0
50	4.7	0.0
60	4.4	0.0
70	3.8	0.0
80	3.0	0.0
90	2.1	0.0
95	1.5	0.0
100	0.0	0.0

REFERENCE NO. 81



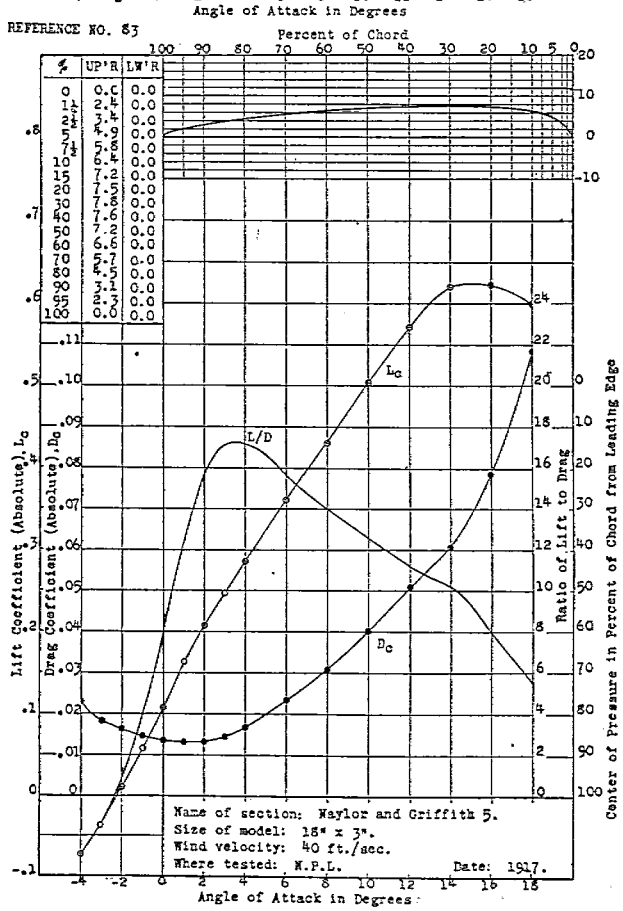
%	UP'R	LW'R
0	0.0	0.0
1¼	1.7	0.0
2½	2.4	0.0
5	3.4	0.0
7½	4.2	0.0
10	4.6	0.0
15	5.2	0.0
20	5.6	0.0
30	5.8	0.0
40	5.8	0.0
50	5.5	0.0
60	5.1	0.0
70	4.4	0.0
80	3.5	0.0
90	2.4	0.0
95	1.7	0.0
100	0.0	0.0

REFERENCE NO. 82



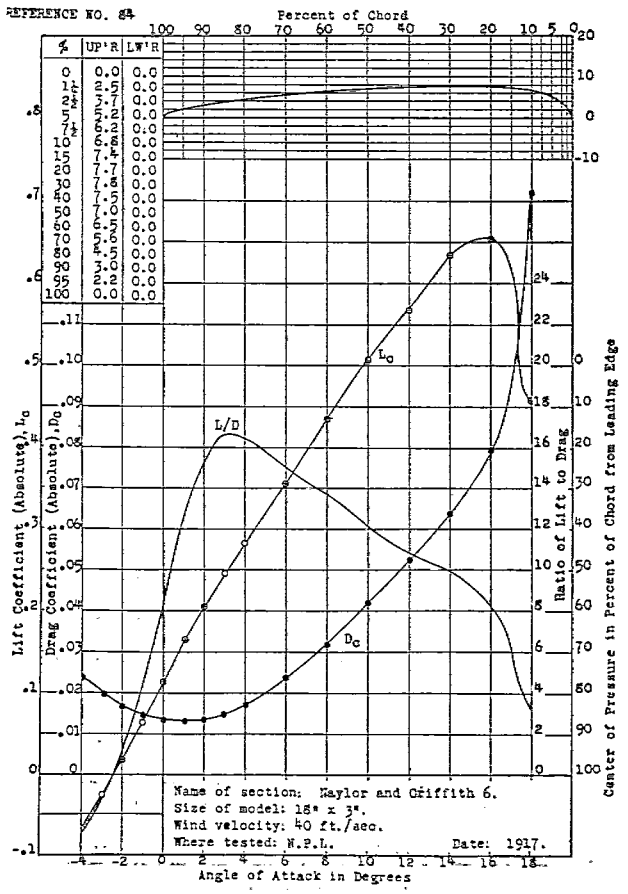
%	UP'R	LW'R
0	0.0	0.0
1¼	2.3	0.0
2½	3.1	0.0
5	4.6	0.0
7½	5.6	0.0
10	6.1	0.0
15	6.9	0.0
20	7.4	0.0
30	7.8	0.0
40	7.7	0.0
50	7.3	0.0
60	6.8	0.0
70	5.9	0.0
80	4.7	0.0
90	3.2	0.0
95	2.3	0.0
100	0.0	0.0

REFERENCE NO. 83



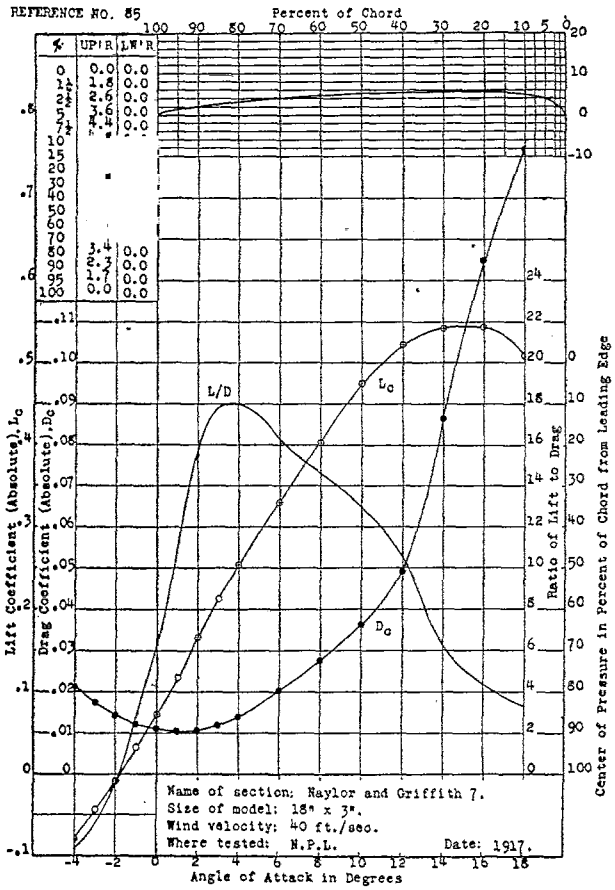
%	UP'R	LW'R
0	0.0	0.0
1¼	2.4	0.0
2½	3.4	0.0
5	4.9	0.0
7½	5.8	0.0
10	6.4	0.0
15	7.2	0.0
20	7.5	0.0
30	7.8	0.0
40	7.6	0.0
50	7.2	0.0
60	6.6	0.0
70	5.7	0.0
80	4.5	0.0
90	3.1	0.0
95	2.3	0.0
100	0.0	0.0

REFERENCE NO. 84



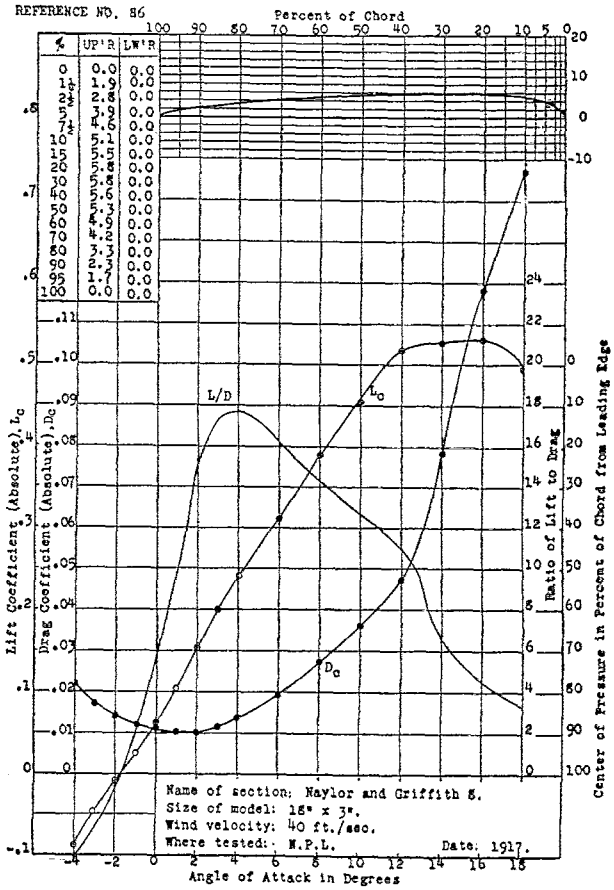
%	UP'R	LW'R
0	0.0	0.0
1¼	2.5	0.0
2½	3.7	0.0
5	5.2	0.0
7½	6.2	0.0
10	6.8	0.0
15	7.4	0.0
20	7.7	0.0
30	7.8	0.0
40	7.5	0.0
50	7.0	0.0
60	6.5	0.0
70	5.6	0.0
80	4.5	0.0
90	3.0	0.0
95	2.2	0.0
100	0.0	0.0

REFERENCE NO. 85



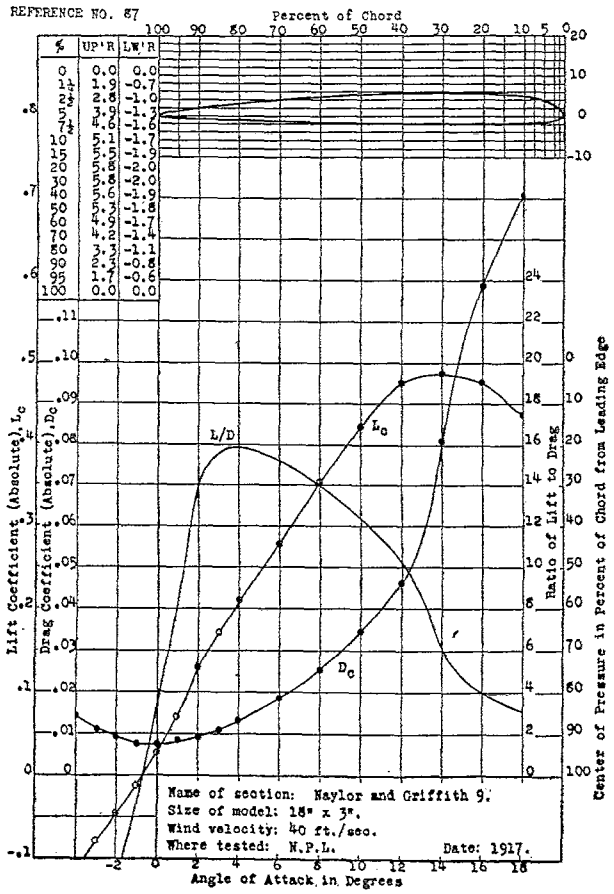
%	UP'R	LW'R
0	0.0	0.0
1¼	1.8	0.0
2½	2.6	0.0
5	3.6	0.0
7½	4.4	0.0
10		
15		
20		
30		
40		
50		
60		
70		
80	3.4	0.0
90	2.3	0.0
95	1.7	0.0
100	0.0	0.0

REFERENCE NO. 86



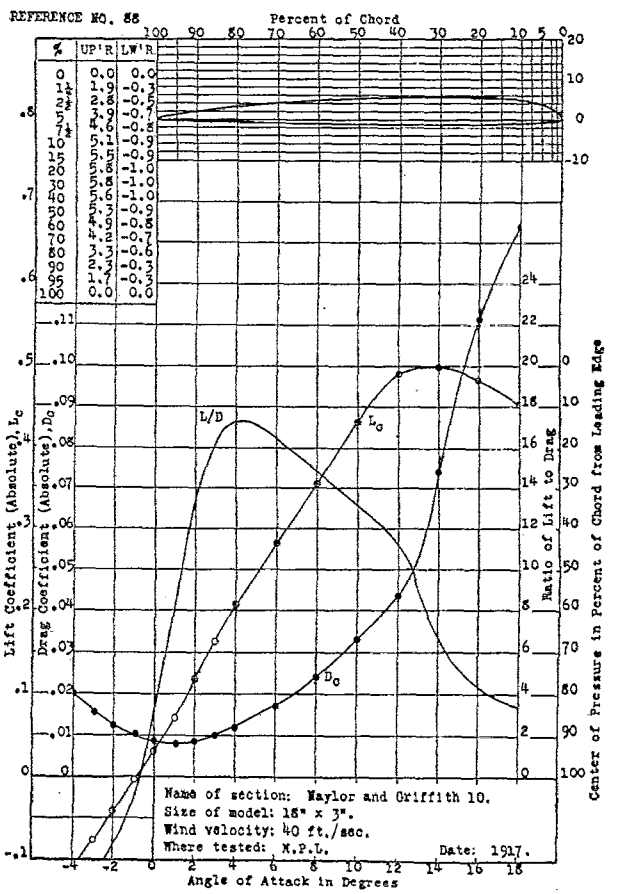
%	UP'R	LW'R
0	0.0	0.0
1¼	1.9	0.0
2½	2.8	0.0
5	3.9	0.0
7½	4.6	0.0
10	5.1	0.0
15	5.5	0.0
20	5.8	0.0
30	5.8	0.0
40	5.6	0.0
50	5.3	0.0
60	4.9	0.0
70	4.2	0.0
80	3.3	0.0
90	2.3	0.0
95	1.7	0.0
100	0.0	0.0

REFERENCE NO. 87



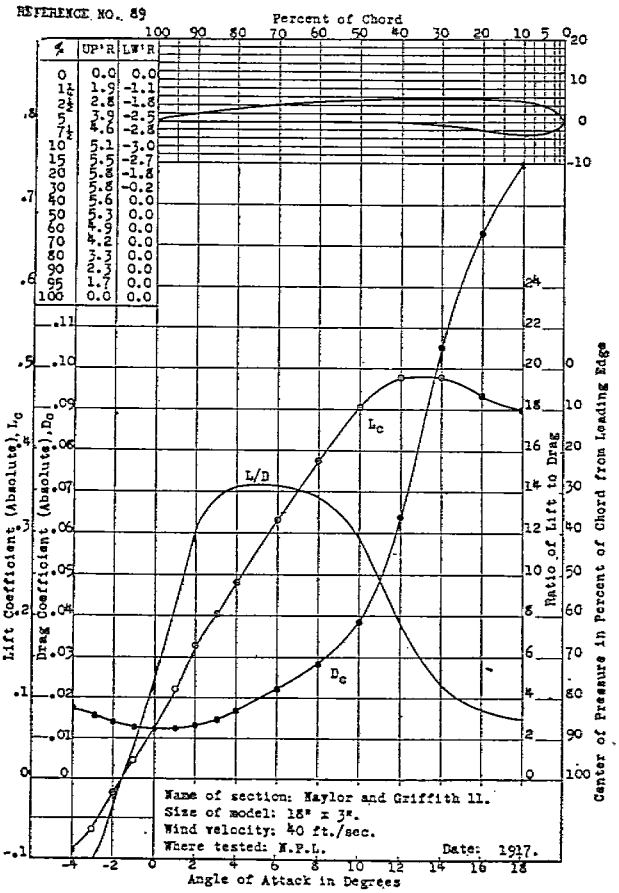
%	UP'R	LW'R
0	0.0	0.0
1¼	1.9	-0.7
2½	2.8	-1.0
5	3.9	-1.2
7½	4.6	-1.6
10	5.1	-1.7
15	5.5	-1.9
20	5.8	-2.0
30	5.8	-2.0
40	5.6	-1.9
50	5.3	-1.8
60	4.9	-1.7
70	4.2	-1.4
80	3.3	-1.1
90	2.3	-0.8
95	1.7	-0.6
100	0.0	0.0

REFERENCE NO. 88



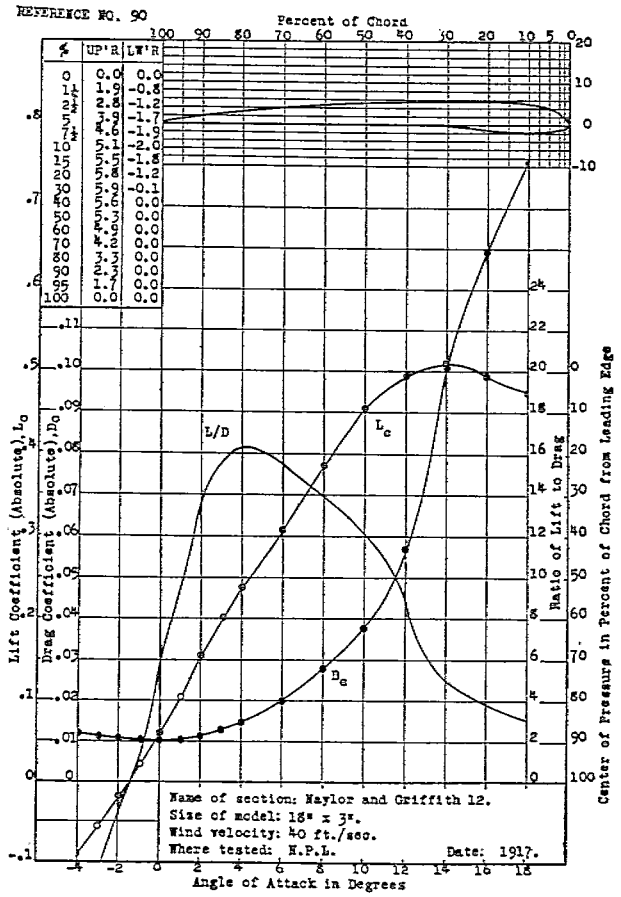
%	UP'R	LW'R
0	0.0	0.0
1¼	1.9	-0.3
2½	2.8	-0.5
5	3.9	-0.7
7½	4.6	-0.8
10	5.1	-0.9
15	5.5	-0.9
20	5.8	-1.0
30	5.8	-1.0
40	5.6	-1.0
50	5.3	-0.9
60	4.9	-0.8
70	4.2	-0.7
80	3.3	-0.6
90	2.3	-0.3
95	1.7	-0.3
100	0.0	0.0

REFERENCE NO. 89



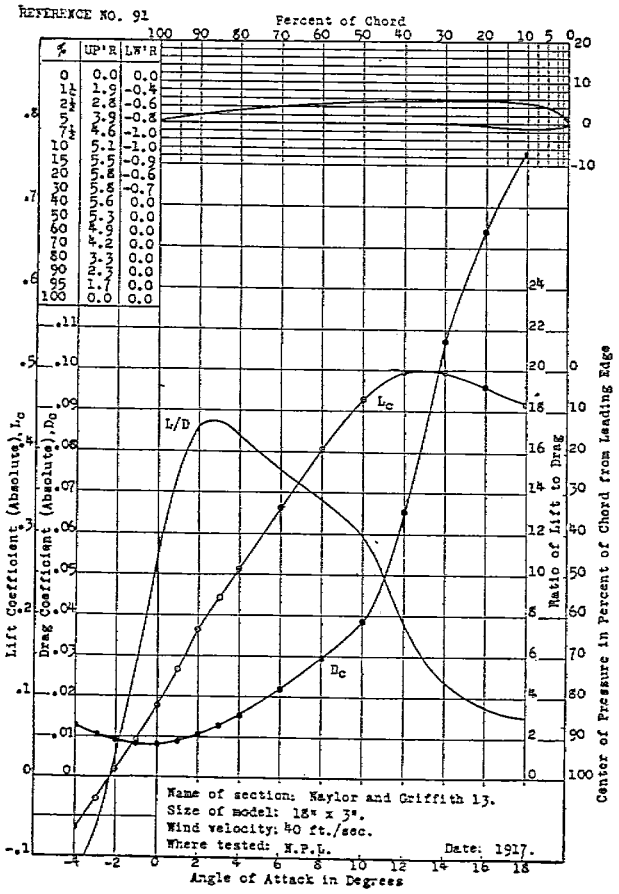
%	UP'R	LW'R
0	0.0	0.0
1¼	1.9	-1.1
2½	2.8	-1.8
5	3.9	-2.5
7½	4.6	-2.8
10	5.1	-3.0
15	5.5	-2.7
20	5.8	-1.8
30	5.8	-0.2
40	5.6	0.0
50	5.3	0.0
60	4.9	0.0
70	4.2	0.0
80	3.3	0.0
90	2.3	0.0
95	1.7	0.0
100	0.0	0.0

REFERENCE NO. 90



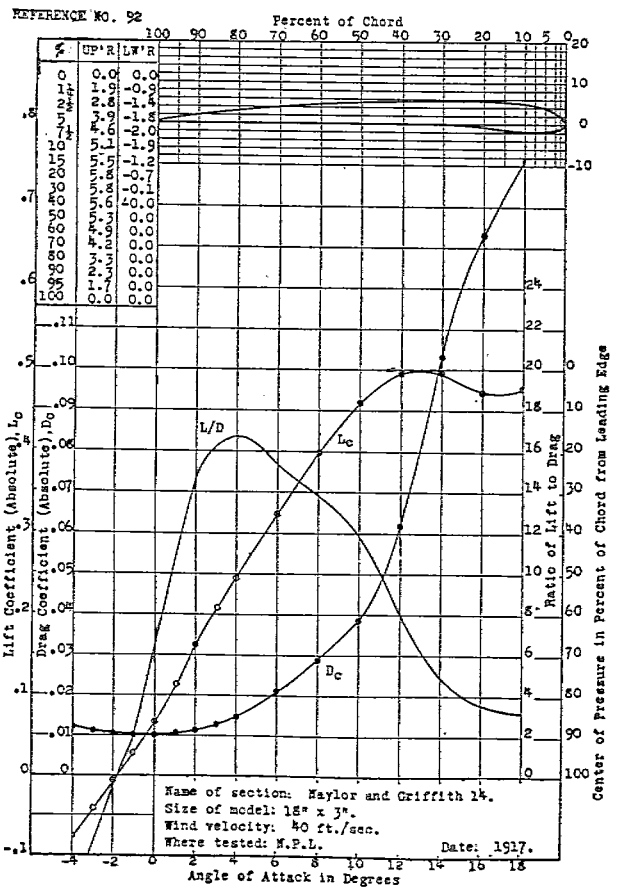
%	UP'R	LW'R
0	0.0	0.0
1¼	1.9	-0.8
2½	2.8	-1.2
5	3.9	-1.7
7½	4.6	-1.9
10	5.1	-2.0
15	5.5	-1.8
20	5.8	-1.2
30	5.9	-0.1
40	5.6	0.0
50	5.3	0.0
60	4.9	0.0
70	4.2	0.0
80	3.3	0.0
90	2.3	0.0
95	1.7	0.0
100	0.0	0.0

REFERENCE NO. 91



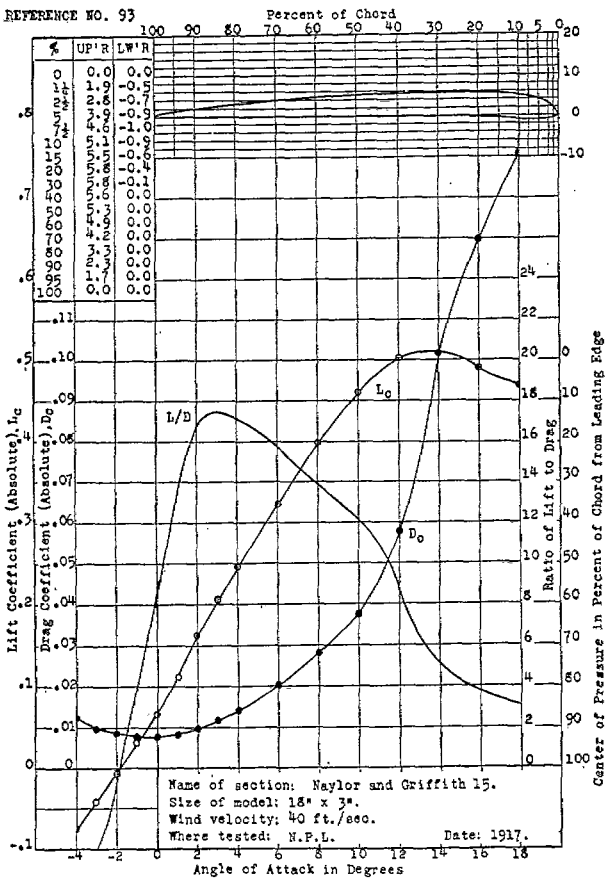
%	UP'R	LW'R
0	0.0	0.0
1¼	1.9	-0.4
2½	2.8	-0.6
5	3.9	-0.8
7½	4.6	-1.0
10	5.1	-1.0
15	5.5	-0.9
20	5.8	-0.6
30	5.8	-0.7
40	5.6	0.0
50	5.3	0.0
60	4.9	0.0
70	4.2	0.0
80	3.3	0.0
90	2.3	0.0
95	1.7	0.0
100	0.0	0.0

REFERENCE NO. 92



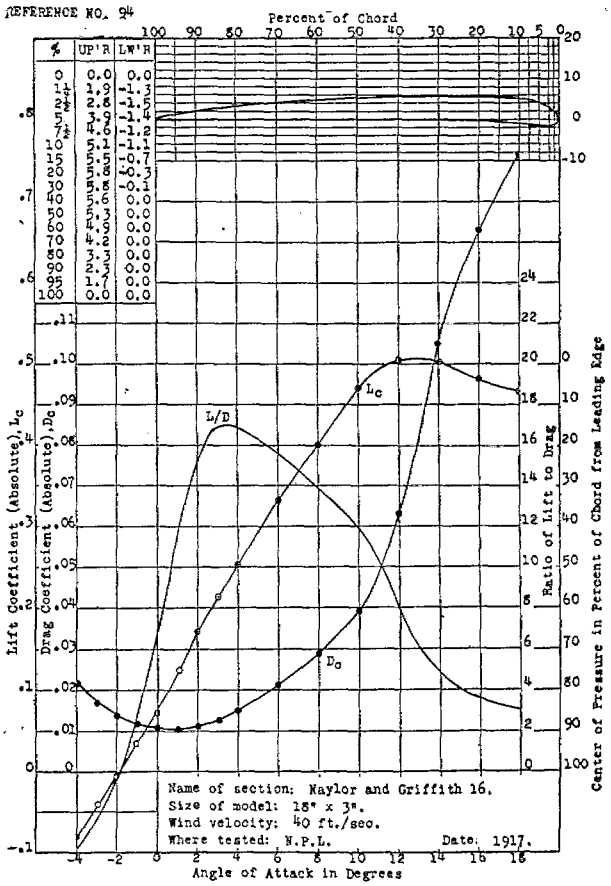
%	UP'R	LW'R
0	0.0	0.0
1¼	1.9	-0.9
2½	2.8	-1.4
5	3.9	-1.8
7½	4.6	-2.0
10	5.1	-1.9
15	5.5	-1.2
20	5.8	-0.7
30	5.8	-0.1
40	5.6	0.0
50	5.3	0.0
60	4.9	0.0
70	4.2	0.0
80	3.3	0.0
90	2.3	0.0
95	1.7	0.0
100	0.0	0.0

REFERENCE NO. 93



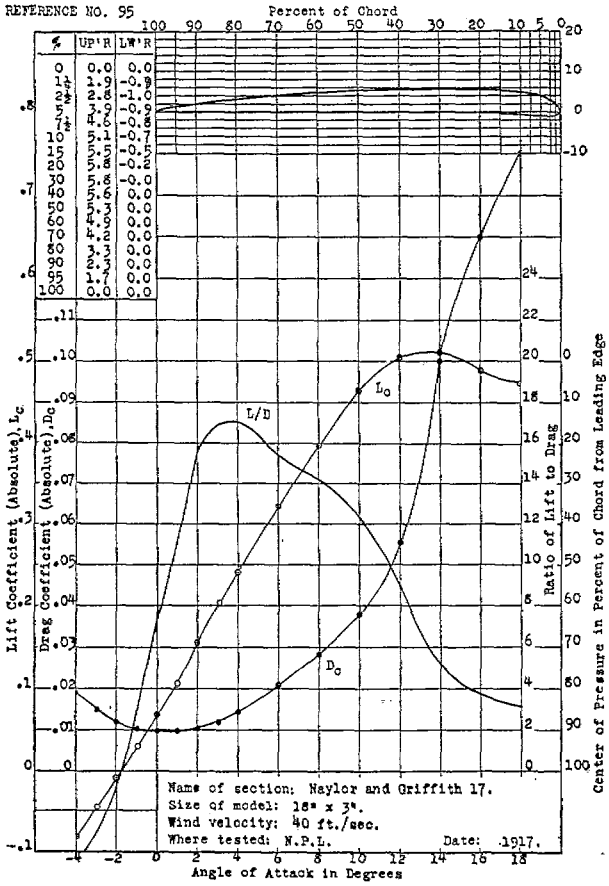
%	UP'R	LW'R
0	0.0	0.0
1¼	1.9	-0.5
2½	2.8	-0.7
5	3.9	-0.9
7½	4.6	-1.0
10	5.1	-0.9
15	5.5	-0.6
20	5.8	-0.4
30	5.8	-0.1
40	5.6	0.0
50	5.3	0.0
60	4.9	0.0
70	4.2	0.0
80	3.3	0.0
90	2.3	0.0
95	1.7	0.0
100	0.0	0.0

REFERENCE NO. 94



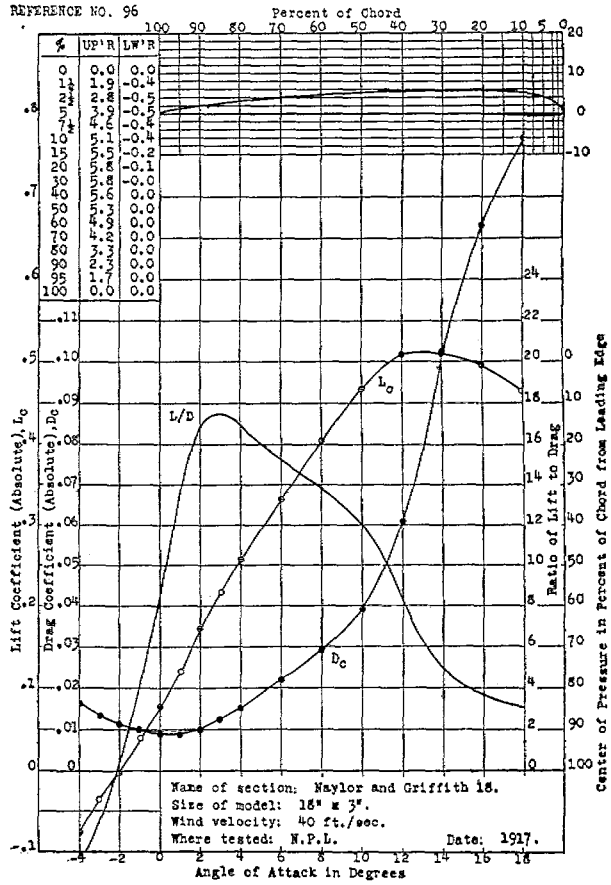
%	UP'R	LW'R
0	0.0	0.0
1¼	1.9	-1.3
2½	2.8	-1.5
5	3.9	-1.4
7½	4.6	-1.2
10	5.1	-1.1
15	5.5	-0.7
20	5.8	-0.3
30	5.8	-0.1
40	5.6	0.0
50	5.3	0.0
60	4.9	0.0
70	4.2	0.0
80	3.3	0.0
90	2.3	0.0
95	1.7	0.0
100	0.0	0.0

REFERENCE NO. 95

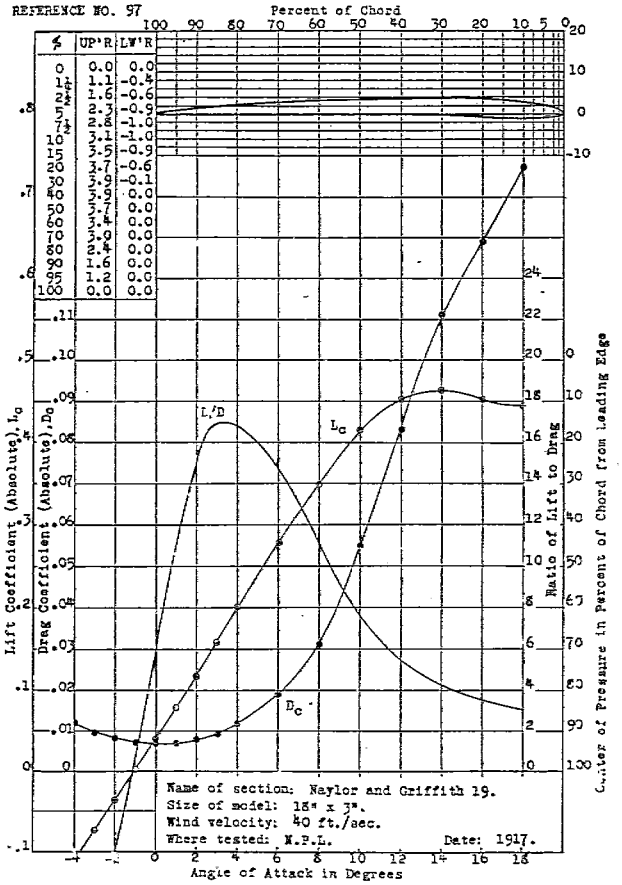


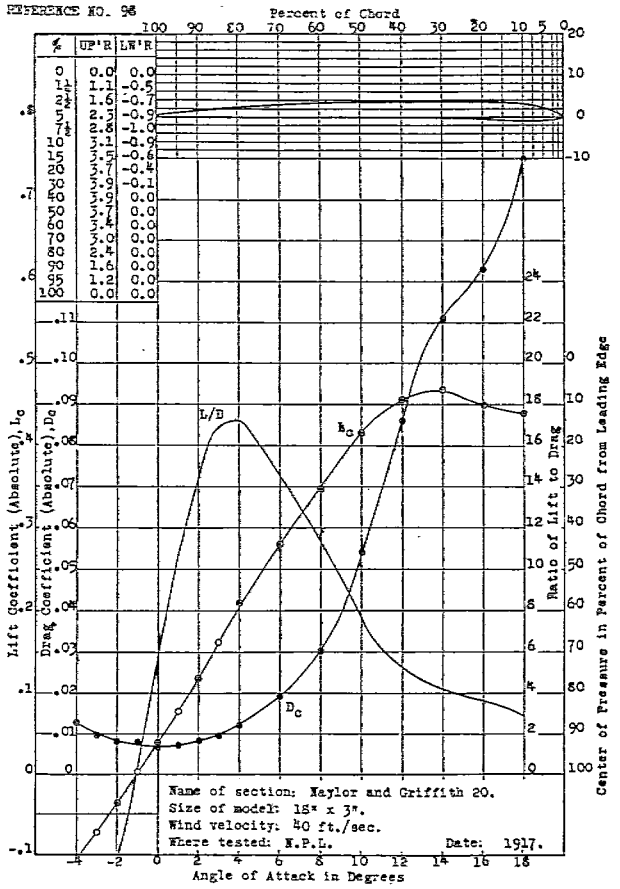
%	UP'R	LW'R
0	0.0	0.0
1¼	1.9	-0.9
2½	2.8	-1.0
5	3.9	-0.9
7½	4.6	-0.8
10	5.1	-0.7
15	5.5	-0.5
20	5.8	-0.2
30	5.8	-0.0
40	5.6	0.0
50	5.3	0.0
60	4.9	0.0
70	4.2	0.0
80	3.3	0.0
90	2.3	0.0
95	1.7	0.0
100	0.0	0.0

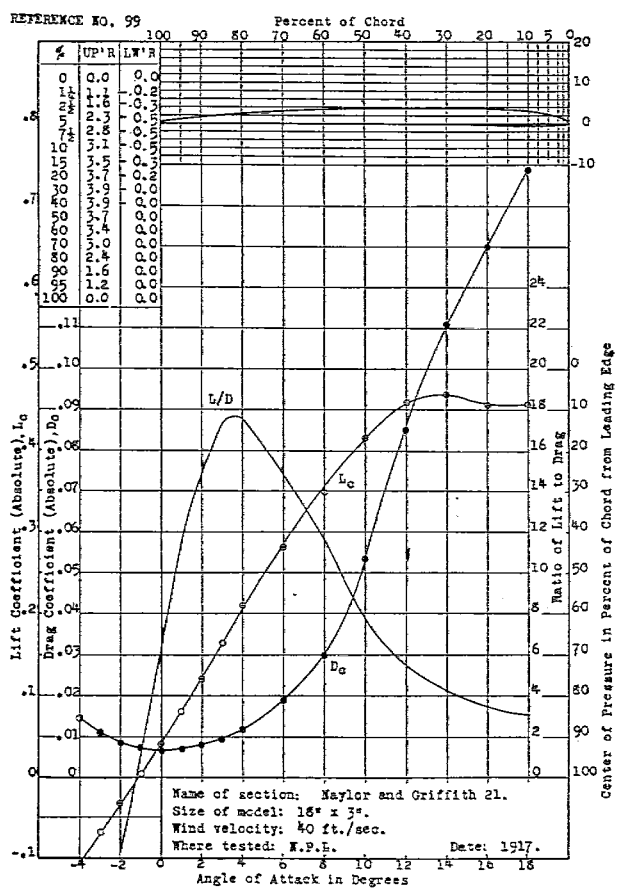
REFERENCE NO. 96

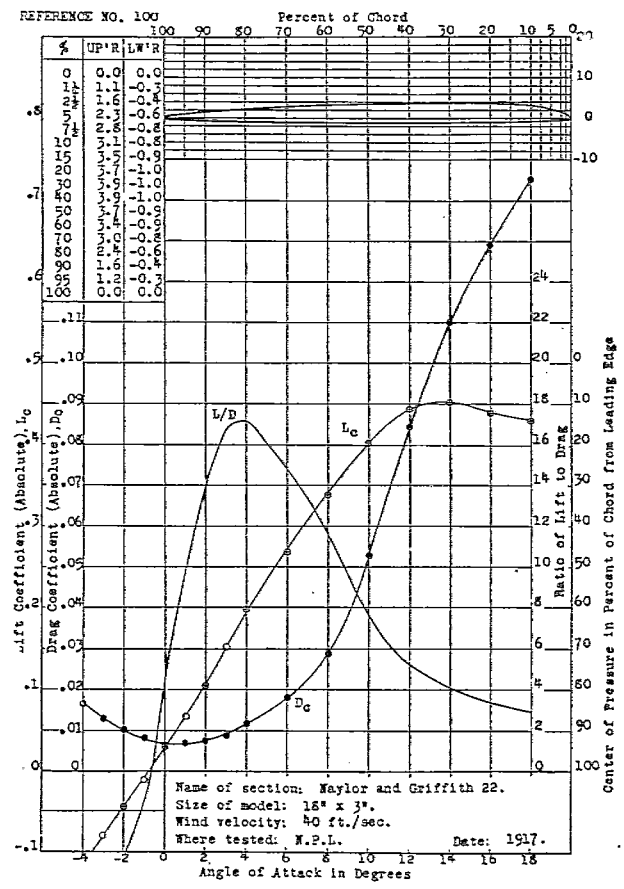


%	UP'R	LW'R
0	0.0	0.0
1¼	1.9	-0.4
2½	2.8	-0.5
5	3.9	-0.5
7½	4.6	-0.4
10	5.1	-0.4
15	5.5	-0.2
20	5.8	-0.1
30	5.8	-0.0
40	5.6	0.0
50	5.3	0.0
60	4.9	0.0
70	4.2	0.0
80	3.3	0.0
90	2.3	0.0
95	1.7	0.0
100	0.0	0.0

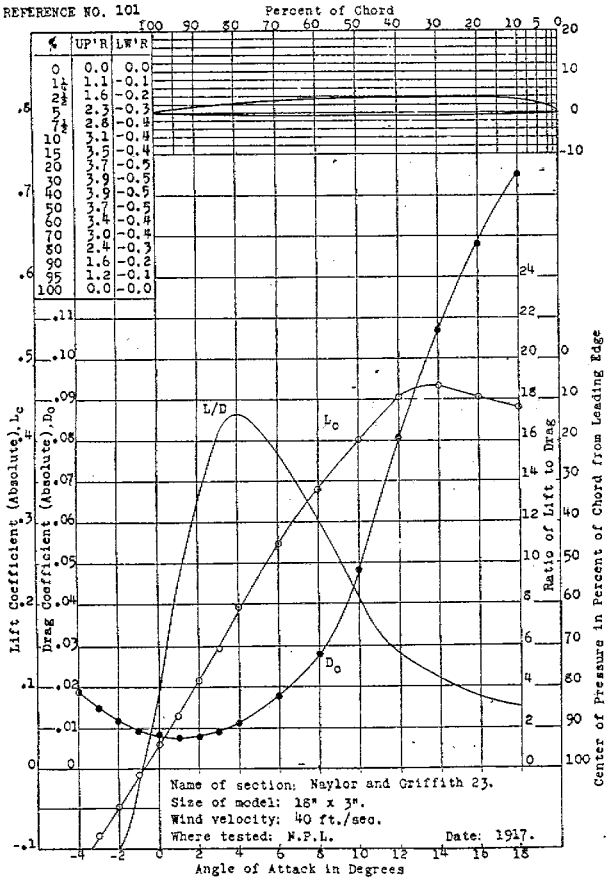

REFERENCE NO. 97
Percent of Chord
% UP'R LW'R
0 0.0 0.0
1¼ 1.1 -0.4
2½ 1.6 -0.6
5 2.3 -0.9
7½ 2.8 -1.0
10 3.1 -1.0
15 3.5 -0.9
20 3.7 -0.6
30 3.9 -0.1
40 3.9 0.0
50 3.7 0.0
60 3.4 0.0
70 3.0 0.0
80 2.4 0.0
90 1.6 0.0
95 1.2 0.0
100 0.0 0.0
L/D
L_c
D_c
Lift Coefficient (Absolute), L_c
Drag Coefficient (Absolute), D_c
Ratio of Lift to Drag
Center of Pressure in Percent of Chord from Leading Edge
Name of section: Naylor and Griffith 19.
Size of model: 18" x 3".
Wind velocity: 40 ft./sec.
Where tested: N.P.L.
Date: 1917.
Angle of Attack in Degrees


REFERENCE NO. 98
Percent of Chord
% UP'R LW'R
0 0.0 0.0
1¼ 1.1 -0.5
2½ 1.6 -0.7
5 2.3 -0.9
7½ 2.8 -1.0
10 3.1 -0.9
15 3.5 -0.6
20 3.7 -0.4
30 3.9 -0.1
40 3.9 0.0
50 3.7 0.0
60 3.4 0.0
70 3.0 0.0
80 2.4 0.0
90 1.6 0.0
95 1.2 0.0
100 0.0 0.0
L/D
L_c
D_c
Lift Coefficient (Absolute), L_c
Drag Coefficient (Absolute), D_c
Ratio of Lift to Drag
Center of Pressure in Percent of Chord from Leading Edge
Name of section: Naylor and Griffith 20.
Size of model: 18" x 3".
Wind velocity: 40 ft./sec.
Where tested: N.P.L.
Date: 1917.
Angle of Attack in Degrees


REFERENCE NO. 99
Percent of Chord
% UP'R LW'R
0 0.0 0.0
1¼ 1.1 -0.2
2½ 1.6 -0.3
5 2.3 -0.5
7½ 2.8 -0.5
10 3.1 -0.5
15 3.5 -0.3
20 3.7 -0.2
30 3.9 0.0
40 3.9 0.0
50 3.7 0.0
60 3.4 0.0
70 3.0 0.0
80 2.4 0.0
90 1.6 0.0
95 1.2 0.0
100 0.0 0.0
L/D
L_c
D_c
Lift Coefficient (Absolute), L_c
Drag Coefficient (Absolute), D_c
Ratio of Lift to Drag
Center of Pressure in Percent of Chord from Leading Edge
Name of section: Naylor and Griffith 21.
Size of model: 18" x 3".
Wind velocity: 40 ft./sec.
Where tested: N.P.L.
Date: 1917.
Angle of Attack in Degrees

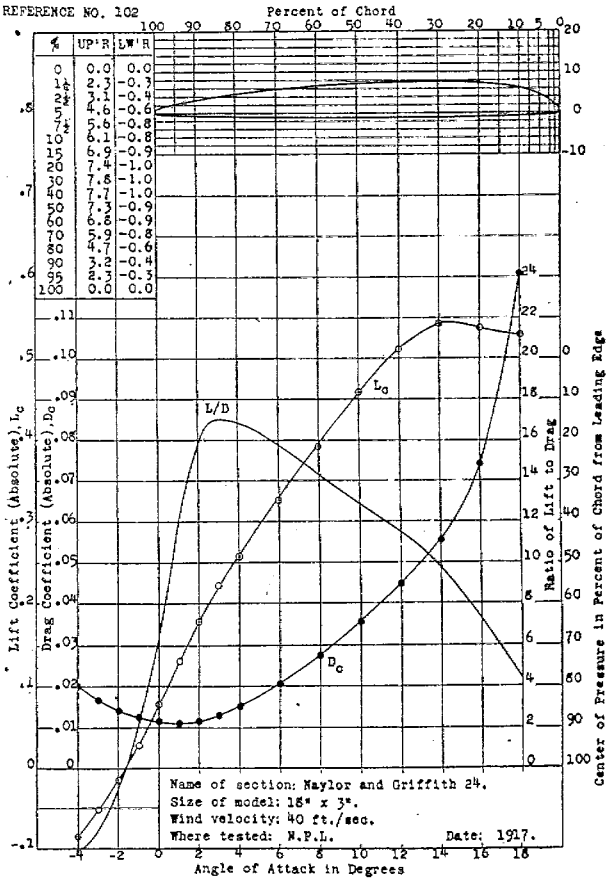

REFERENCE NO. 100
Percent of Chord
% UP'R LW'R
0 0.0 0.0
1¼ 1.1 -0.3
2½ 1.6 -0.4
5 2.3 -0.6
7½ 2.8 -0.8
10 3.1 -0.8
15 3.5 -0.9
20 3.7 -1.0
30 3.9 -1.0
40 3.9 -1.0
50 3.7 -0.9
60 3.4 -0.9
70 3.0 -0.8
80 2.4 -0.6
90 1.6 -0.4
95 1.2 -0.3
100 0.0 0.0
L/D
L_c
D_c
Lift Coefficient (Absolute), L_c
Drag Coefficient (Absolute), D_c
Ratio of Lift to Drag
Center of Pressure in Percent of Chord from Leading Edge
Name of section: Naylor and Griffith 22.
Size of model: 18" x 3".
Wind velocity: 40 ft./sec.
Where tested: N.P.L.
Date: 1917.
Angle of Attack in Degrees

REFERENCE NO. 101



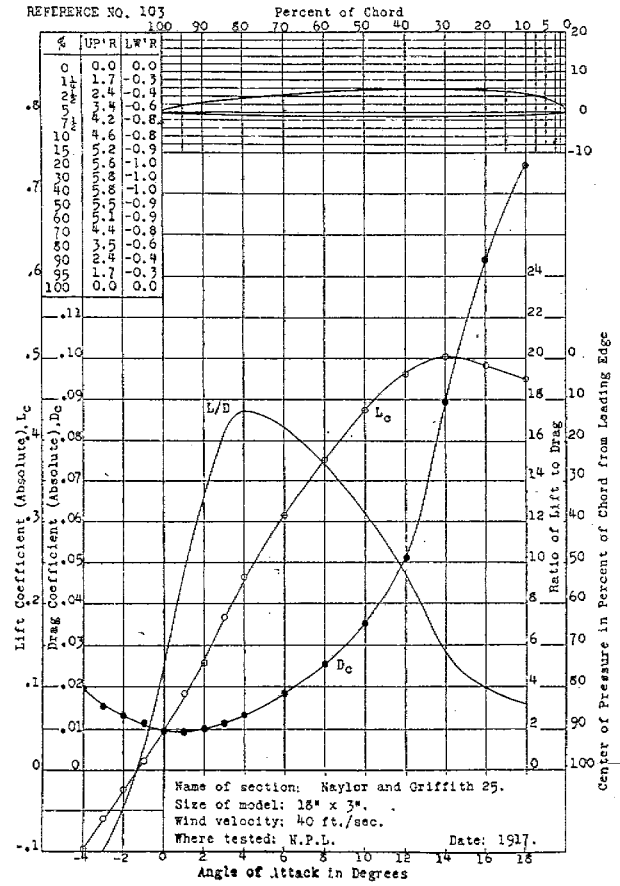
%	UP'R	LW'R
0	0.0	0.0
1¼	1.1	-0.1
2½	1.6	-0.2
5	2.3	-0.3
7½	2.8	-0.4
10	3.1	-0.4
15	3.5	-0.4
20	3.7	-0.5
30	3.9	-0.5
40	3.9	-0.5
50	3.7	-0.5
60	3.4	-0.4
70	3.0	-0.4
80	2.4	-0.3
90	1.6	-0.2
95	1.2	-0.1
100	0.0	-0.0

REFERENCE NO. 102



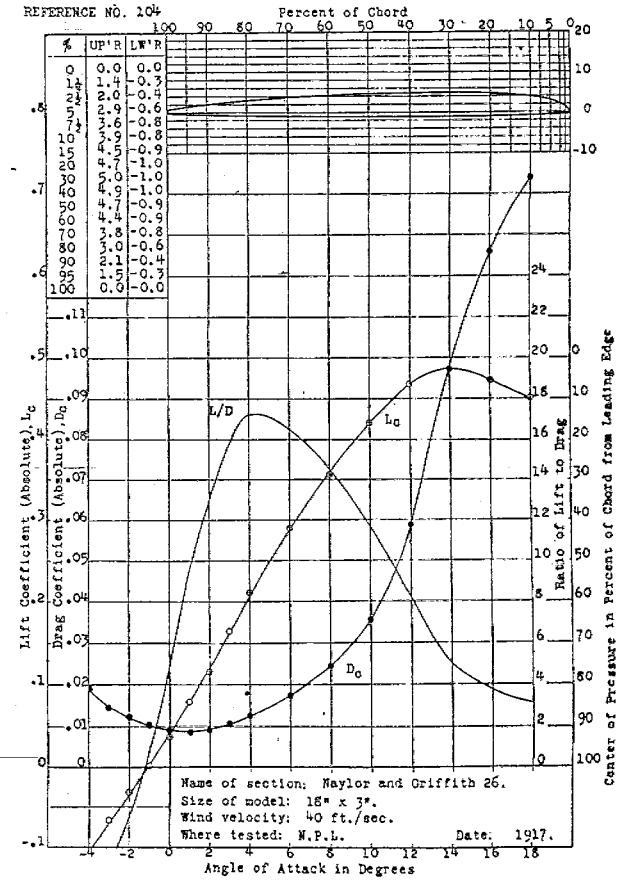
%	UP'R	LW'R
0	0.0	0.0
1¼	2.3	-0.3
2½	3.1	-0.4
5	4.6	-0.6
7½	5.6	-0.8
10	6.1	-0.8
15	6.9	-0.9
20	7.4	-1.0
30	7.6	-1.0
40	7.7	-1.0
50	7.3	-0.9
60	6.8	-0.9
70	5.9	-0.8
80	4.7	-0.6
90	3.2	-0.4
95	2.3	-0.3
100	0.0	0.0

REFERENCE NO. 103



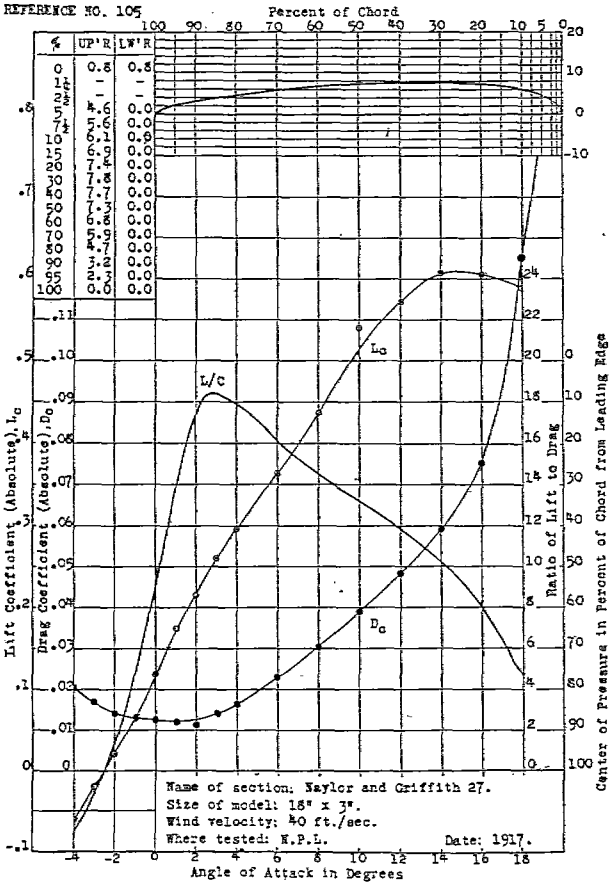
%	UP'R	LW'R
0	0.0	0.0
1¼	1.7	-0.3
2½	2.4	-0.4
5	3.4	-0.6
7½	4.2	-0.8
10	4.6	-0.8
15	5.2	-0.9
20	5.6	-1.0
30	5.8	-1.0
40	5.8	-1.0
50	5.5	-0.9
60	5.1	-0.9
70	4.4	-0.8
80	3.5	-0.6
90	2.4	-0.4
95	1.7	-0.3
100	0.0	0.0

REFERENCE NO. 104



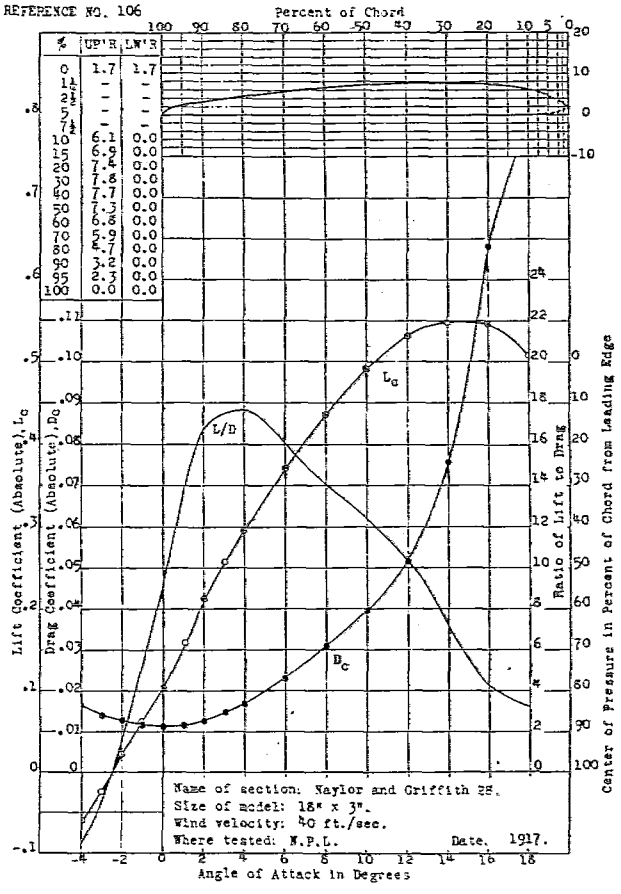
%	UP'R	LW'R
0	0.0	0.0
1¼	1.4	-0.3
2½	2.0	-0.4
5	2.9	-0.6
7½	3.6	-0.8
10	3.9	-0.8
15	4.5	-0.9
20	4.7	-1.0
30	5.0	-1.0
40	4.9	-1.0
50	4.7	-0.9
60	4.4	-0.9
70	3.8	-0.8
80	3.0	-0.6
90	2.1	-0.4
95	1.5	-0.3
100	0.0	-0.0

REFERENCE NO. 105



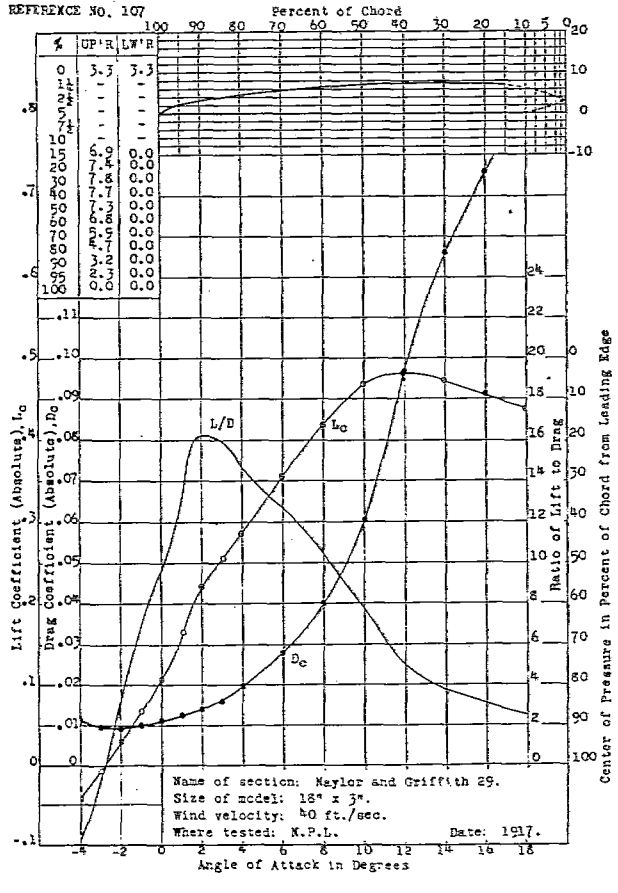
%	UP'R	LW'R
0	0.8	0.8
1¼	-	-
2½	-	-
5	4.6	0.0
7½	5.6	0.0
10	6.1	0.0
15	6.9	0.0
20	7.4	0.0
30	7.8	0.0
40	7.7	0.0
50	7.3	0.0
60	6.8	0.0
70	5.9	0.0
80	4.7	0.0
90	3.2	0.0
95	2.3	0.0
100	0.0	0.0

REFERENCE NO. 106



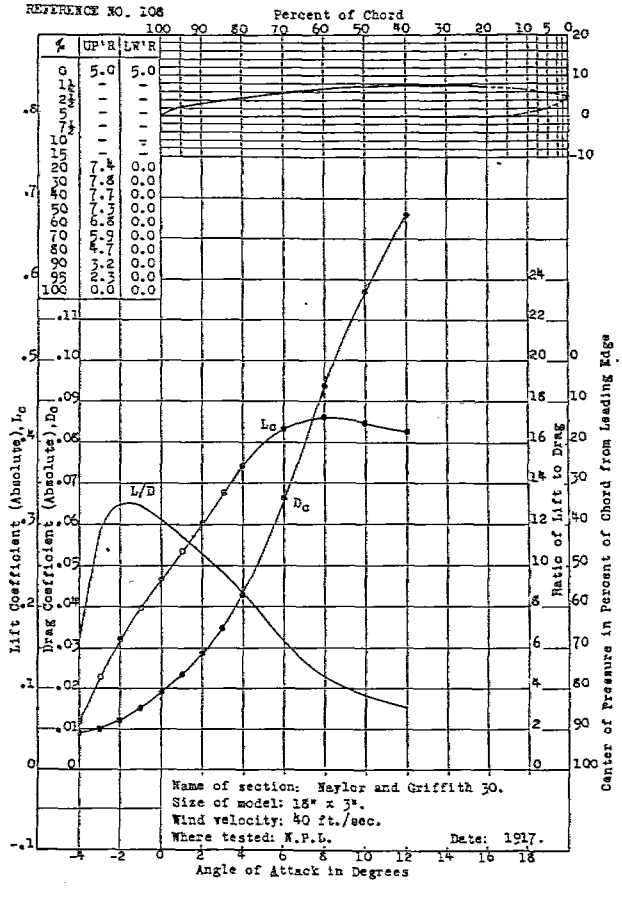
%	UP'R	LW'R
0	1.7	1.7
1¼	-	-
2½	-	-
5	-	-
7½	-	-
10	6.1	0.0
15	6.9	0.0
20	7.4	0.0
30	7.8	0.0
40	7.7	0.0
50	7.3	0.0
60	6.8	0.0
70	5.9	0.0
80	4.7	0.0
90	3.2	0.0
95	2.3	0.0
100	0.0	0.0

REFERENCE NO. 107



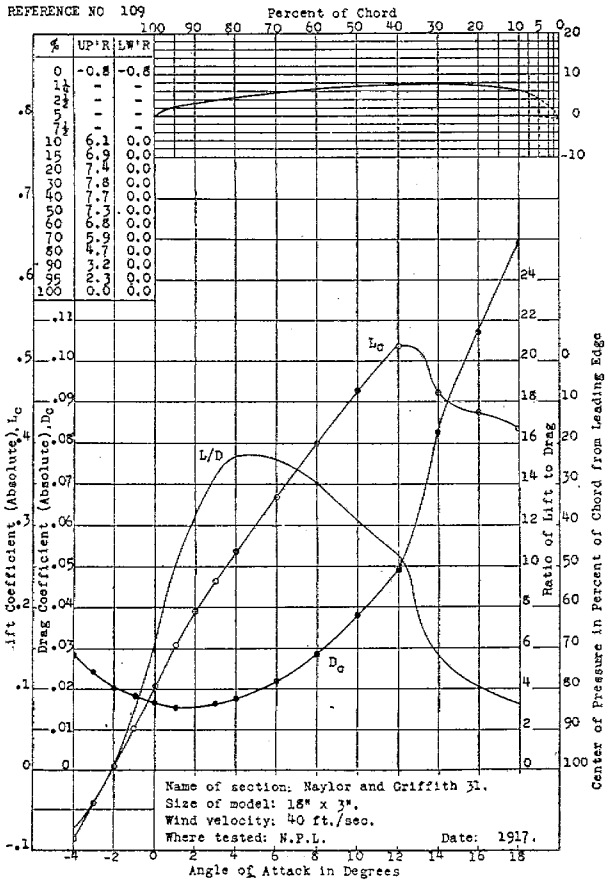
%	UP'R	LW'R
0	3.3	3.3
1¼	-	-
2½	-	-
5	-	-
7½	-	-
10	-	-
15	6.9	0.0
20	7.4	0.0
30	7.8	0.0
40	7.7	0.0
50	7.3	0.0
60	6.8	0.0
70	5.9	0.0
80	4.7	0.0
90	3.2	0.0
95	2.3	0.0
100	0.0	0.0

REFERENCE NO. 108



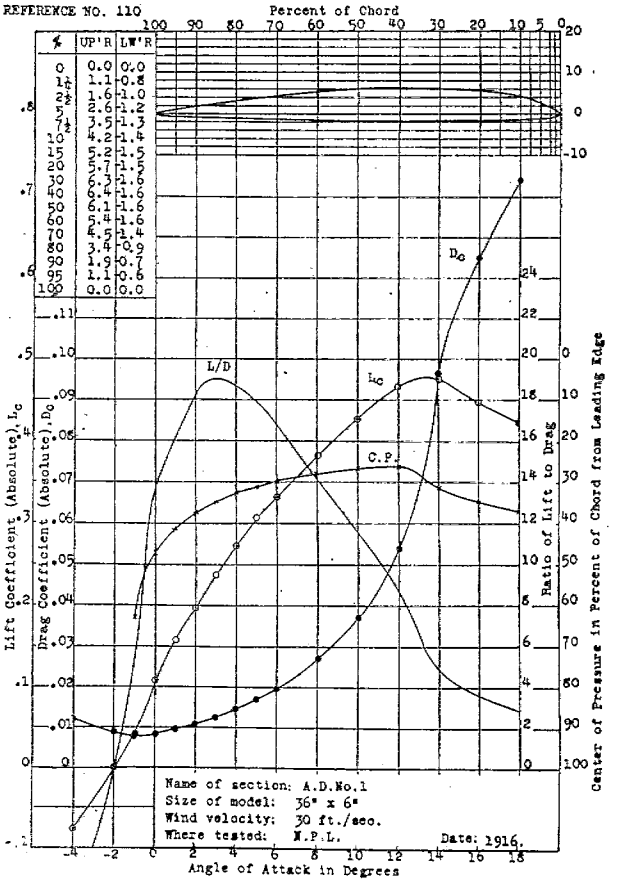
%	UP'R	LW'R
0	5.0	5.0
1¼	-	-
2½	-	-
5	-	-
7½	-	-
10	-	-
15	-	-
20	7.4	0.0
30	7.8	0.0
40	7.7	0.0
50	7.3	0.0
60	6.8	0.0
70	5.9	0.0
80	4.7	0.0
90	3.2	0.0
95	2.3	0.0
100	0.0	0.0

REFERENCE NO 109



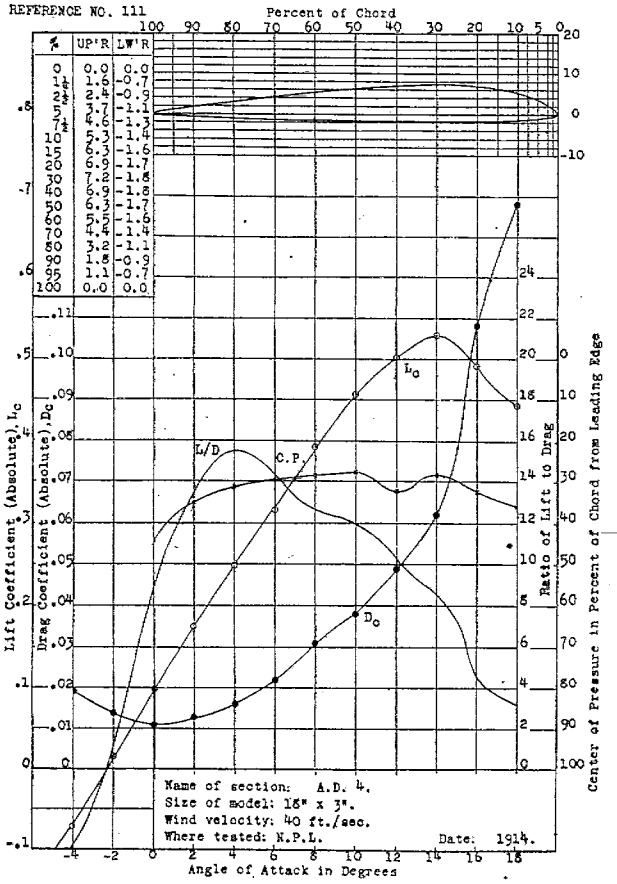
%	UP'R	LW'R
0	-0.8	-0.8
1¼	-	-
2½	-	-
5	-	-
7½	-	-
10	6.1	0.0
15	6.9	0.0
20	7.4	0.0
30	7.8	0.0
40	7.7	0.0
50	7.3	0.0
60	6.8	0.0
70	5.9	0.0
80	4.7	0.0
90	3.2	0.0
95	2.3	0.0
100	0.0	0.0

REFERENCE NO. 110



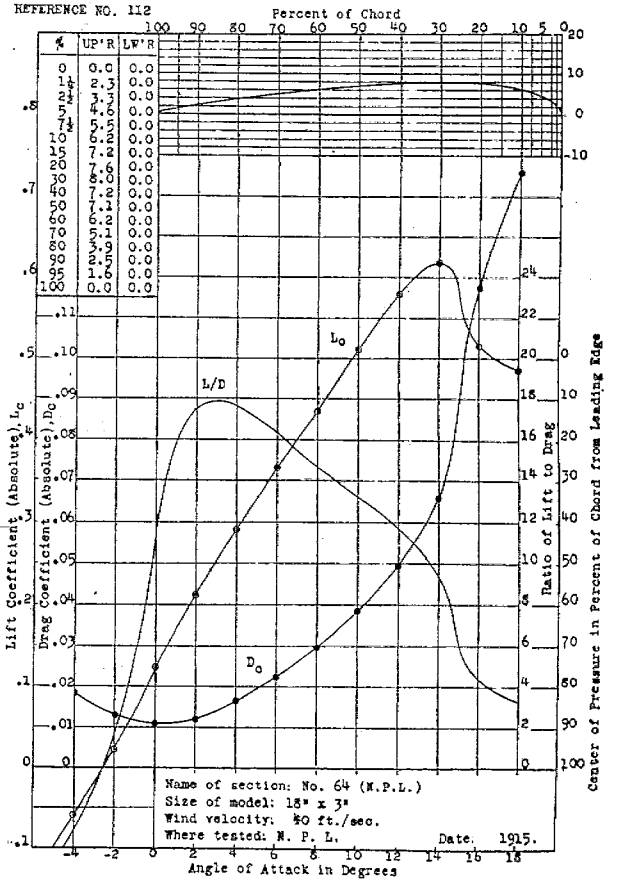
%	UP'R	LW'R
0	0.0	0.0
1¼	1.1	0.8
2½	1.6	1.0
5	2.6	1.2
7½	3.5	1.3
10	4.2	1.4
15	5.2	1.5
20	5.7	1.5
30	6.3	1.6
40	6.4	1.6
50	6.1	1.6
60	5.4	1.6
70	4.5	1.4
80	3.4	0.9
90	1.9	0.7
95	1.1	0.6
100	0.0	0.0

REFERENCE NO. 111



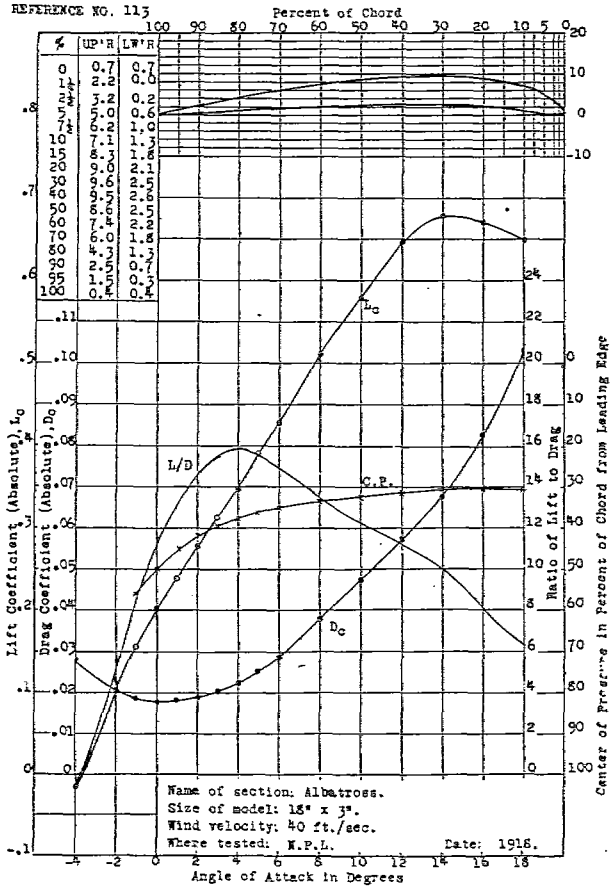
%	UP'R	LW'R
0	0.0	0.0
1¼	1.6	-0.7
2½	2.4	-0.9
5	3.7	-1.1
7½	4.6	-1.3
10	5.3	-1.4
15	6.3	-1.6
20	6.9	-1.7
30	7.2	-1.8
40	6.9	-1.8
50	6.3	-1.7
60	5.5	-1.6
70	4.4	-1.4
80	3.2	-1.1
90	1.8	-0.9
95	1.1	-0.7
100	0.0	0.0

REFERENCE NO. 112



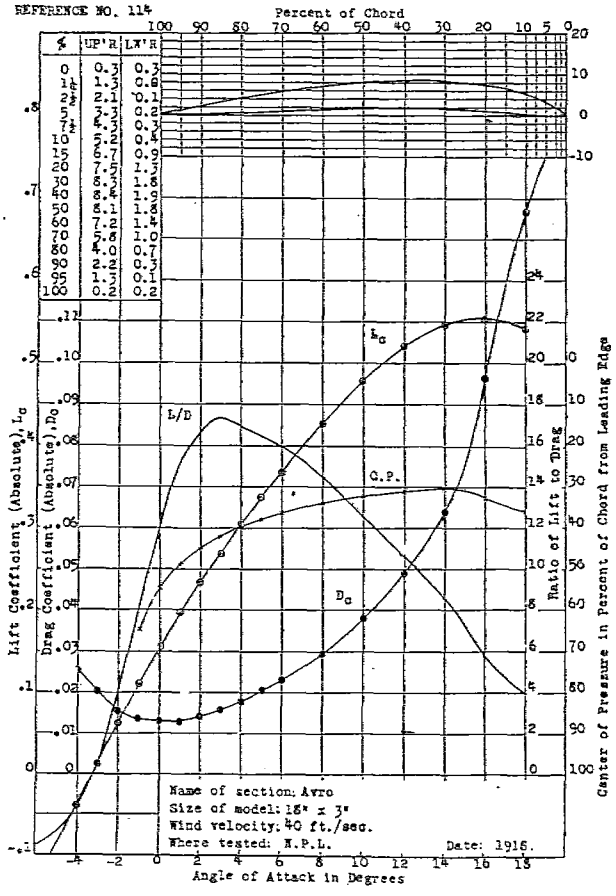
%	UP'R	LW'R
0	0.0	0.0
1¼	2.3	0.0
2½	3.3	0.0
5	4.6	0.0
7½	5.5	0.0
10	6.2	0.0
15	7.2	0.0
20	7.6	0.0
30	8.0	0.0
40	7.2	0.0
50	7.1	0.0
60	6.2	0.0
70	5.1	0.0
80	3.9	0.0
90	2.5	0.0
95	1.6	0.0
100	0.0	0.0

REFERENCE NO. 113



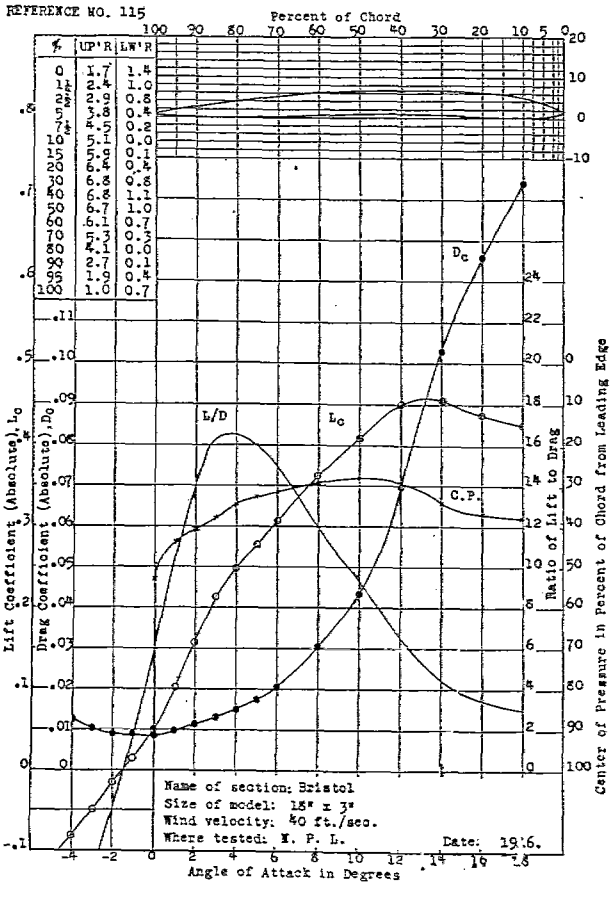
%	UP'R	LW'R
0	0.7	0.7
1¼	2.2	0.0
2½	3.2	0.2
5	5.0	0.6
7½	6.2	1.0
10	7.1	1.3
15	8.3	1.8
20	9.0	2.1
30	9.6	2.5
40	9.5	2.6
50	8.6	2.5
60	7.4	2.2
70	6.0	1.8
80	4.3	1.3
90	2.5	0.7
95	1.5	0.3
100	0.4	0.4

REFERENCE NO. 114



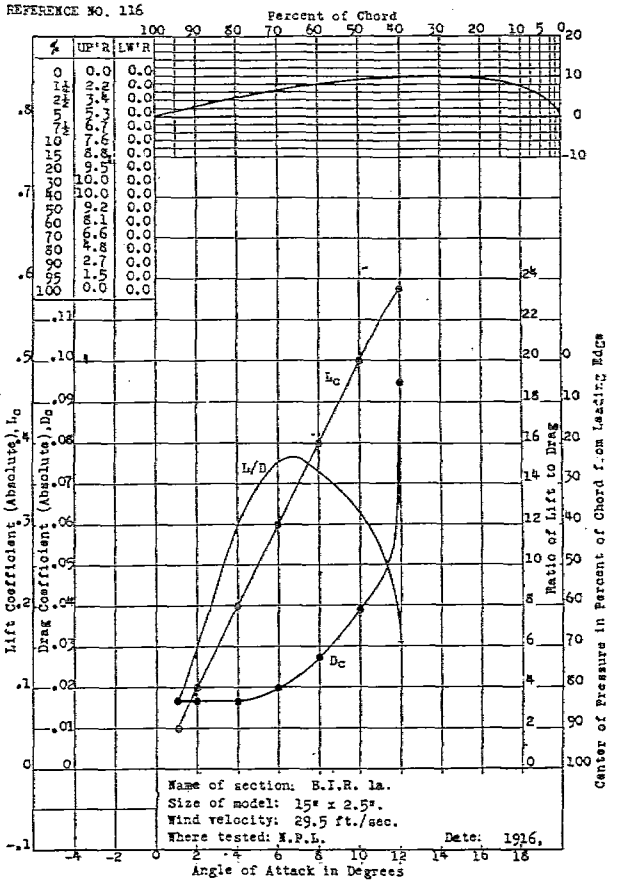
%	UP'R	LW'R
0	0.3	0.3
1¼	1.3	0.6
2½	2.1	0.1
5	3.3	0.2
7½	4.3	0.3
10	5.2	0.4
15	6.7	0.9
20	7.5	1.3
30	8.3	1.8
40	8.4	1.9
50	8.1	1.8
60	7.2	1.4
70	5.8	1.0
80	4.0	0.7
90	2.2	0.3
95	1.3	0.1
100	0.2	0.2

REFERENCE NO. 115



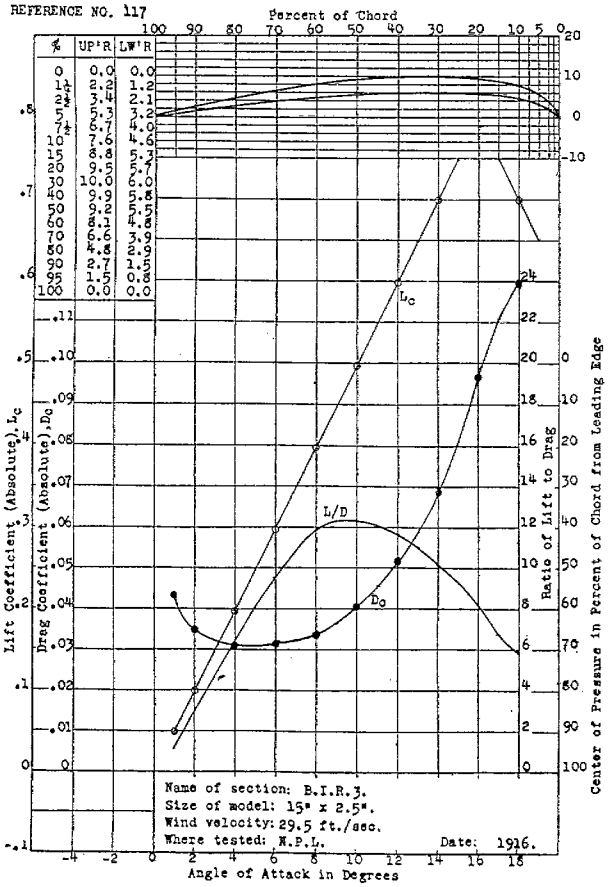
%	UP'R	LW'R
0	1.7	1.4
1¼	2.4	1.0
2½	2.9	0.8
5	3.8	0.4
7½	4.5	0.2
10	5.1	0.0
15	5.9	0.1
20	6.4	0.4
30	6.8	0.8
40	6.8	1.1
50	6.7	1.0
60	6.1	0.7
70	5.3	0.3
80	4.1	0.0
90	2.7	0.1
95	1.9	0.4
100	1.0	0.7

REFERENCE NO. 116



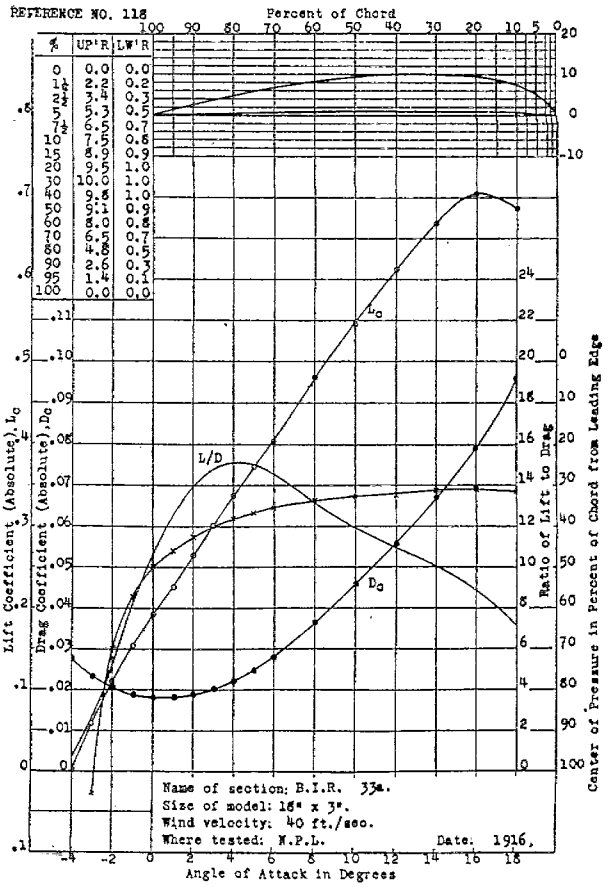
%	UP'R	LW'R
0	0.0	0.0
1¼	2.2	0.0
2½	3.4	0.0
5	5.3	0.0
7½	6.7	0.0
10	7.6	0.0
15	8.8	0.0
20	9.5	0.0
30	10.0	0.0
40	10.0	0.0
50	9.2	0.0
60	8.1	0.0
70	6.6	0.0
80	4.8	0.0
90	2.7	0.0
95	1.5	0.0
100	0.0	0.0

REFERENCE NO. 117



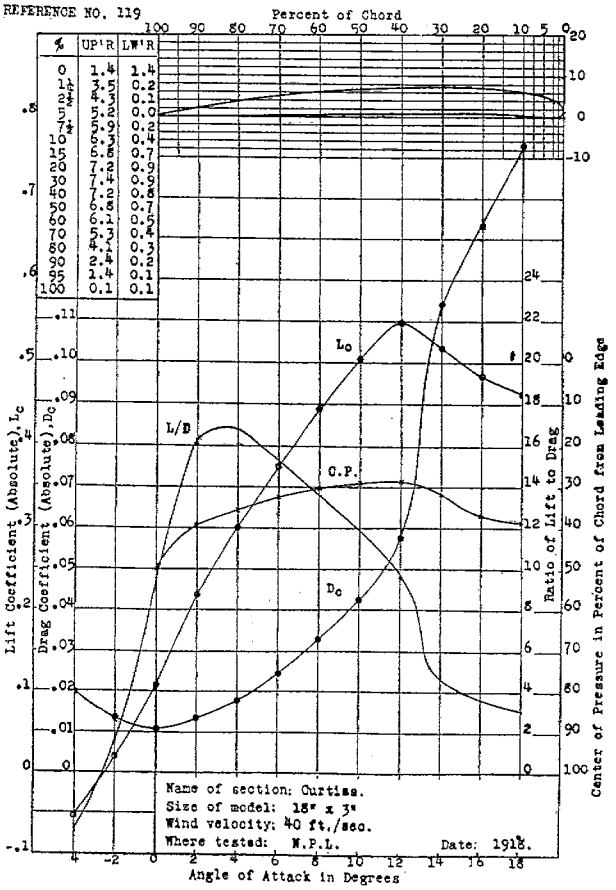
%	UP'R	LW'R
0	0.0	0.0
1¼	2.2	1.2
2½	3.4	2.1
5	5.3	3.2
7½	6.7	4.0
10	7.6	4.6
15	8.8	5.3
20	9.5	5.7
30	10.0	6.0
40	9.9	5.8
50	9.2	5.5
60	8.1	4.8
70	6.6	3.9
80	4.8	2.9
90	2.7	1.5
95	1.5	0.8
100	0.0	0.0

REFERENCE NO. 118



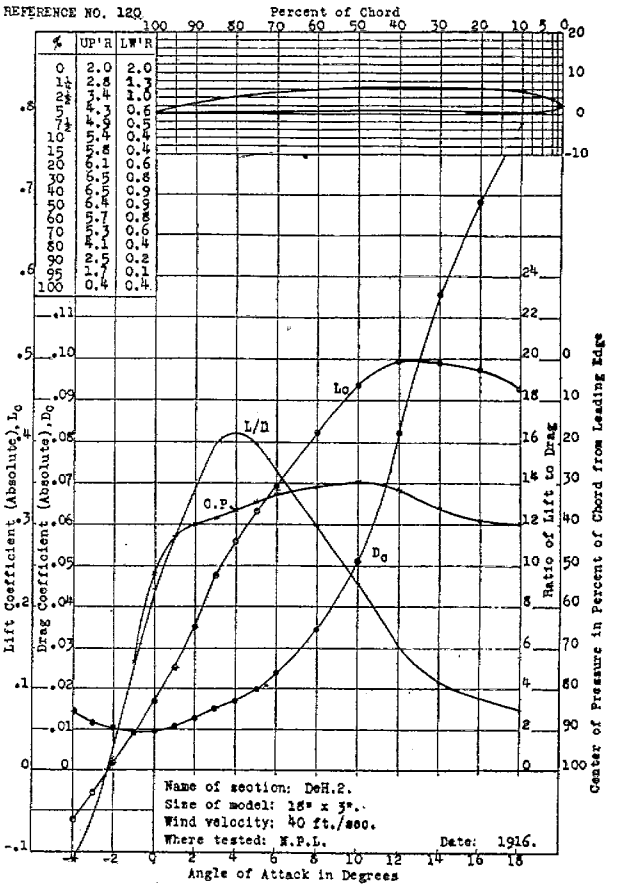
%	UP'R	LW'R
0	0.0	0.0
1¼	2.2	0.2
2½	3.4	0.3
5	5.3	0.5
7½	6.5	0.7
10	7.5	0.8
15	8.9	0.9
20	9.5	1.0
30	10.0	1.0
40	9.8	1.0
50	9.1	0.9
60	8.0	0.8
70	6.5	0.7
80	4.8	0.5
90	2.6	0.3
95	1.4	0.1
100	0.0	0.0

REFERENCE NO. 119



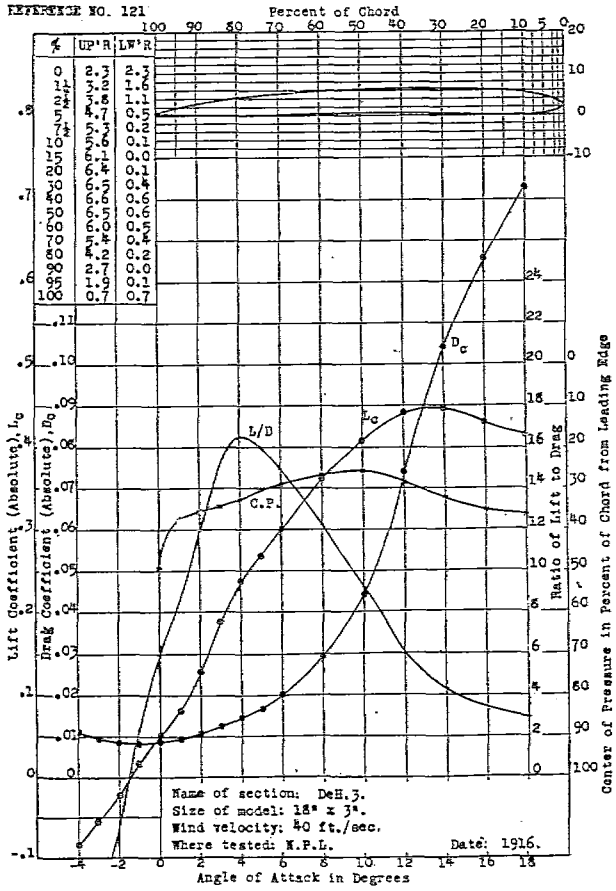
%	UP'R	LW'R
0	1.4	1.4
1¼	3.5	0.2
2½	4.3	0.1
5	5.2	0.0
7½	5.9	0.2
10	6.3	0.4
15	6.8	0.7
20	7.2	0.9
30	7.4	0.9
40	7.2	0.8
50	6.8	0.7
60	6.1	0.5
70	5.3	0.4
80	4.1	0.3
90	2.4	0.2
95	1.4	0.1
100	0.1	0.1

REFERENCE NO. 120



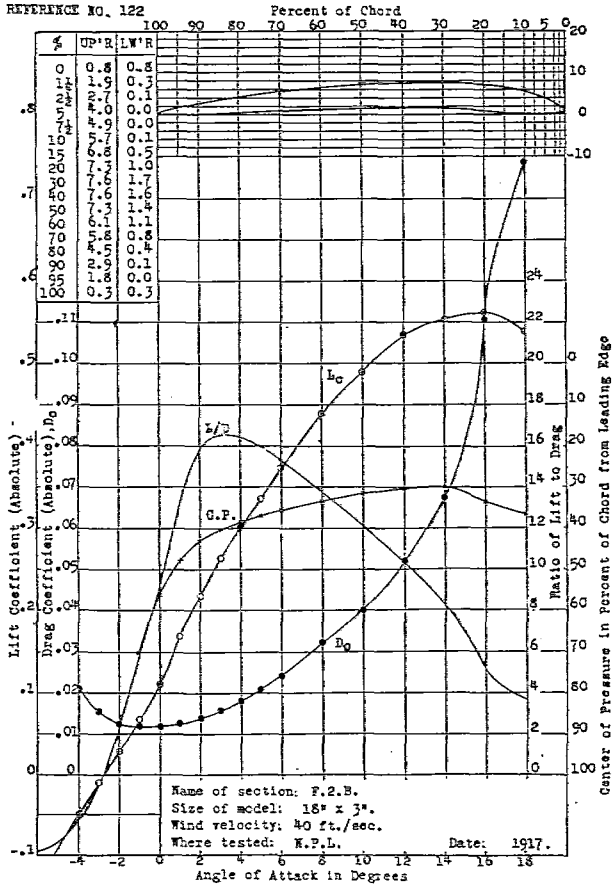
%	UP'R	LW'R
0	2.0	2.0
1¼	2.8	1.3
2½	3.4	1.0
5	4.3	0.6
7½	4.9	0.5
10	5.4	0.4
15	5.8	0.4
20	6.1	0.6
30	6.5	0.8
40	6.5	0.9
50	6.4	0.9
60	5.7	0.8
70	5.3	0.6
80	4.1	0.4
90	2.5	0.2
95	1.7	0.1
100	0.4	0.4

REFERENCE NO. 121



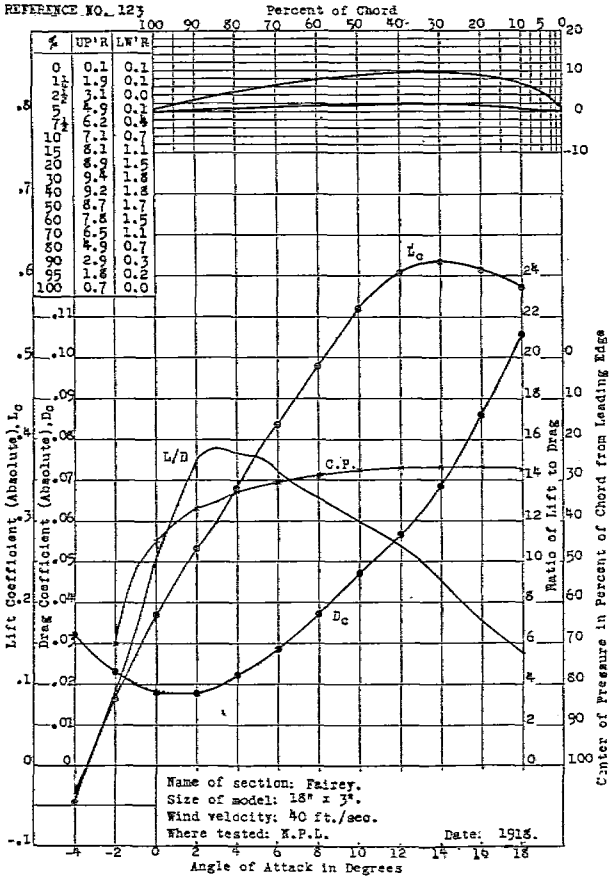
%	UP'R	LW'R
0	2.3	2.3
1¼	3.2	1.6
2½	3.8	1.1
5	4.7	0.5
7½	5.3	0.2
10	5.6	0.1
15	6.1	0.0
20	6.4	0.1
30	6.5	0.4
40	6.6	0.6
50	6.5	0.6
60	6.0	0.5
70	5.4	0.4
80	4.2	0.2
90	2.7	0.0
95	1.9	0.1
100	0.7	0.7

REFERENCE NO. 122



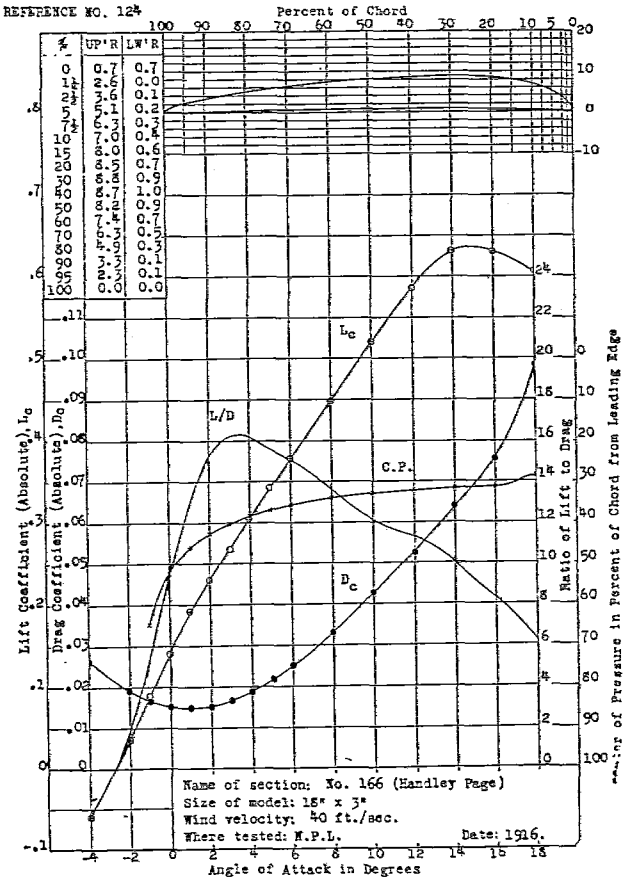
%	UP'R	LW'R
0	0.8	0.8
1¼	1.9	0.3
2½	2.7	0.1
5	4.0	0.0
7½	4.9	0.0
10	5.7	0.1
15	6.8	0.5
20	7.3	1.0
30	7.6	1.7
40	7.6	1.6
50	7.3	1.4
60	6.1	1.1
70	5.8	0.8
80	4.5	0.4
90	2.9	0.1
95	1.8	0.0
100	0.3	0.3

REFERENCE NO. 123



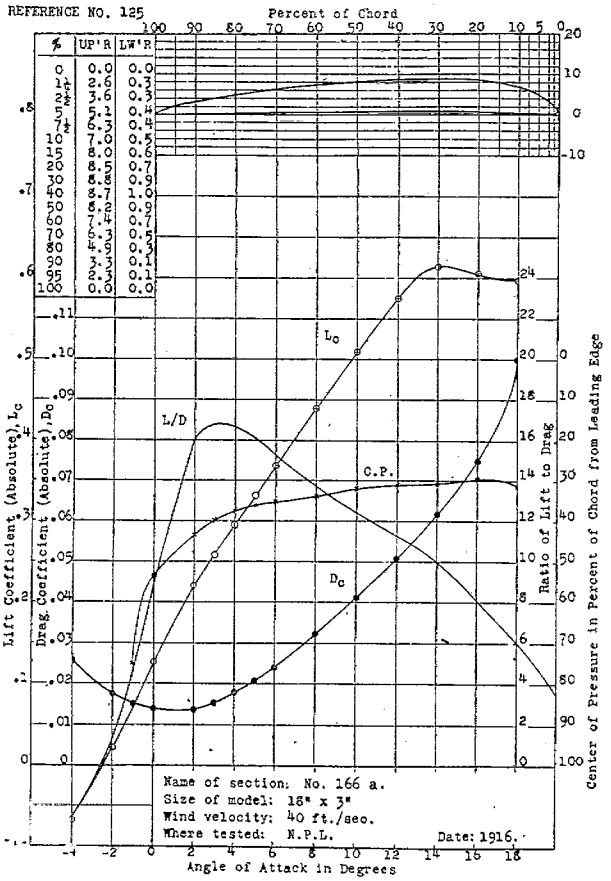
%	UP'R	LW'R
0	0.1	0.1
1¼	1.9	0.1
2½	3.1	0.0
5	4.9	0.1
7½	6.2	0.4
10	7.1	0.7
15	8.1	1.1
20	8.9	1.5
30	9.4	1.8
40	9.2	1.8
50	8.7	1.7
60	7.8	1.5
70	6.5	1.1
80	4.9	0.7
90	2.9	0.3
95	1.8	0.2
100	0.7	0.0

REFERENCE NO. 124



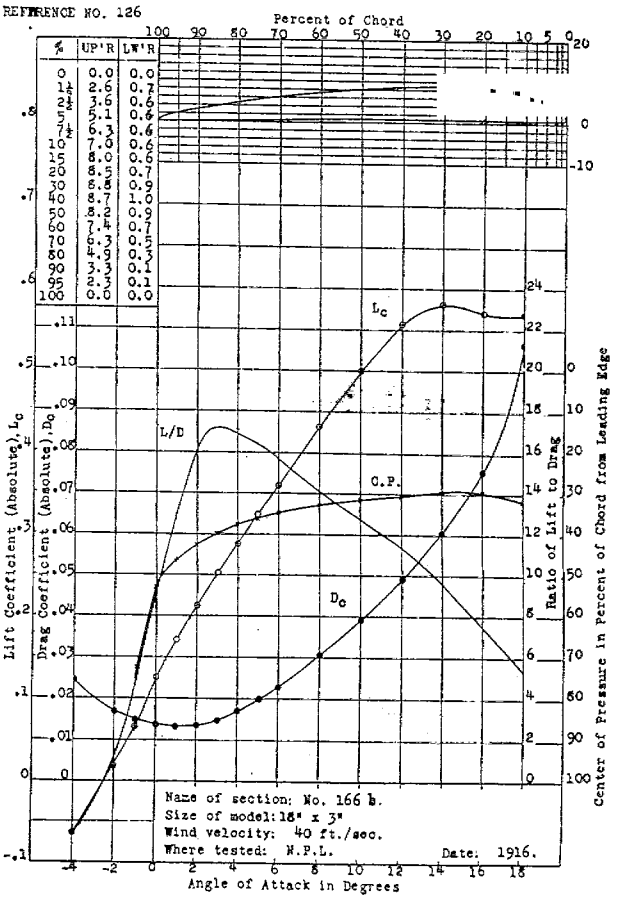
%	UP'R	LW'R
0	0.7	0.7
1¼	2.6	0.0
2½	3.6	0.1
5	5.1	0.2
7½	6.3	0.3
10	7.0	0.4
15	8.0	0.6
20	8.5	0.7
30	8.8	0.9
40	8.7	1.0
50	8.2	0.9
60	7.4	0.7
70	6.3	0.5
80	4.9	0.3
90	3.3	0.1
95	2.3	0.1
100	0.0	0.0

REFERENCE NO. 125



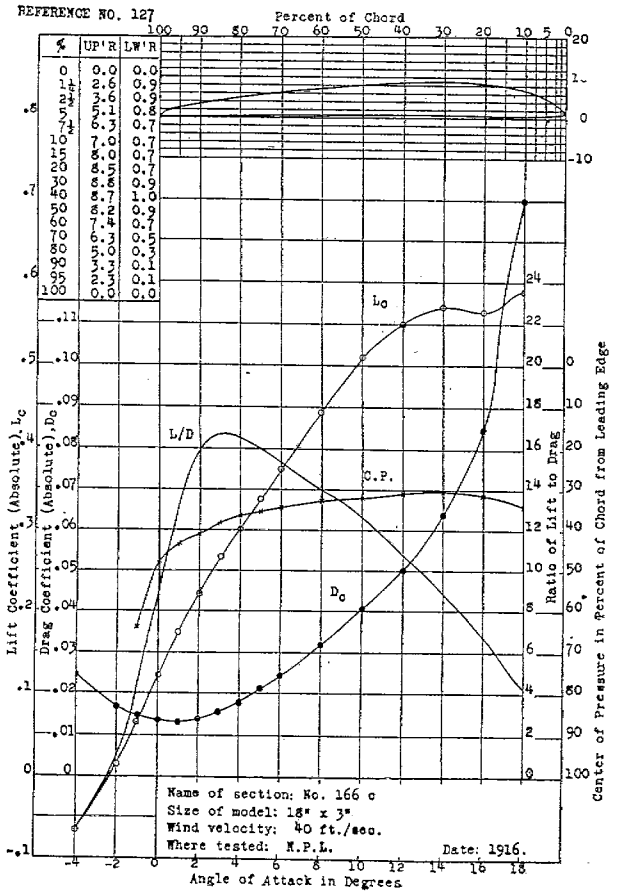
%	UP'R	LW'R
0	0.0	0.0
1¼	2.6	0.3
2½	3.6	0.3
5	5.1	0.4
7½	6.3	0.4
10	7.0	0.5
15	8.0	0.6
20	8.5	0.7
30	8.8	0.9
40	8.7	1.0
50	8.2	0.9
60	7.4	0.7
70	6.3	0.5
80	4.9	0.3
90	3.3	0.1
95	2.3	0.1
100	0.0	0.0

REFERENCE NO. 126



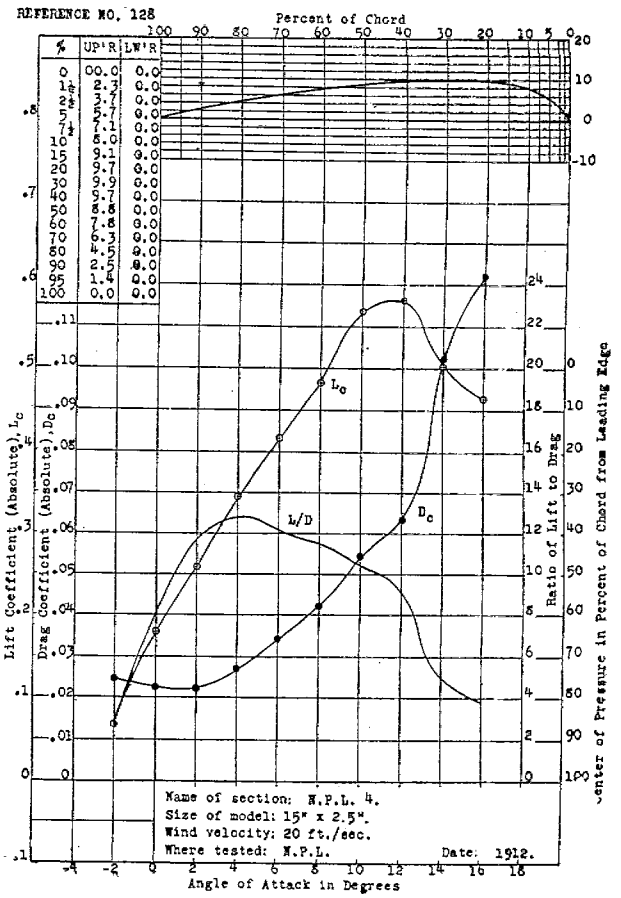
%	UP'R	LW'R
0	0.0	0.0
1¼	2.6	0.7
2½	3.6	0.6
5	5.1	0.6
7½	6.3	0.6
10	7.0	0.6
15	8.0	0.6
20	8.5	0.7
30	8.8	0.9
40	8.7	1.0
50	8.2	0.9
60	7.4	0.7
70	6.3	0.5
80	4.9	0.3
90	3.3	0.1
95	2.3	0.1
100	0.0	0.0

REFERENCE NO. 127



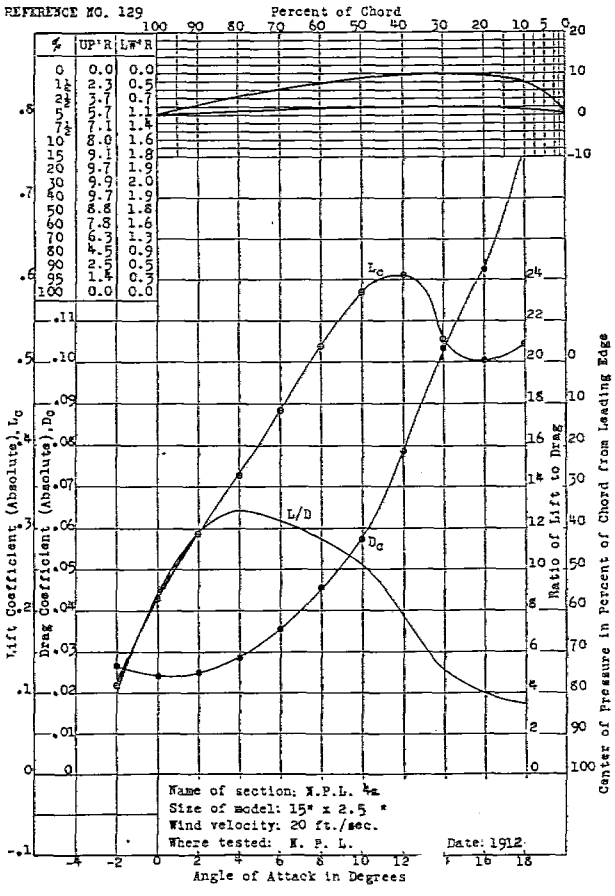
%	UP'R	LW'R
0	0.0	0.0
1¼	2.6	0.9
2½	3.6	0.9
5	5.1	0.8
7½	6.3	0.7
10	7.0	0.7
15	8.0	0.7
20	8.5	0.7
30	8.8	0.9
40	8.7	1.0
50	8.2	0.9
60	7.4	0.7
70	6.3	0.5
80	5.0	0.3
90	3.3	0.1
95	2.3	0.1
100	0.0	0.0

REFERENCE NO. 128



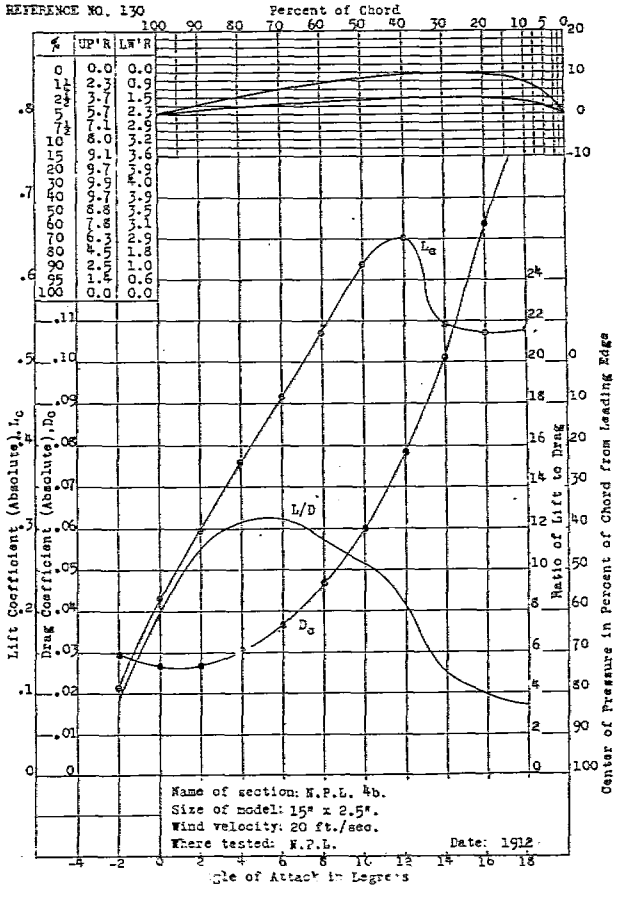
%	UP'R	LW'R
0	00.0	0.0
1¼	2.3	0.0
2½	3.7	0.0
5	5.7	0.0
7½	7.1	0.0
10	8.0	0.0
15	9.1	0.0
20	9.7	0.0
30	9.9	0.0
40	9.7	0.0
50	8.8	0.0
60	7.8	0.0
70	6.3	0.0
80	4.5	0.0
90	2.5	0.0
95	1.4	0.0
100	0.0	0.0

REFERENCE NO. 129



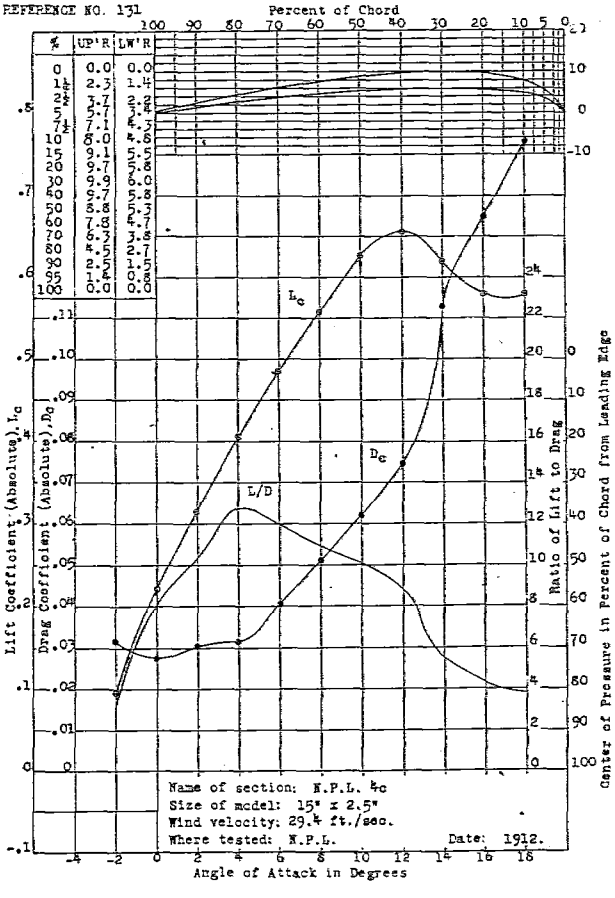
%	UP'R	LW'R
0	0.0	0.0
1¼	2.3	0.5
2½	3.7	0.7
5	5.7	1.1
7½	7.1	1.4
10	8.0	1.6
15	9.1	1.8
20	9.7	1.9
30	9.9	2.0
40	9.7	1.9
50	8.8	1.8
60	7.8	1.6
70	6.3	1.3
80	4.5	0.9
90	2.5	0.5
95	1.4	0.3
100	0.0	0.0

REFERENCE NO. 130



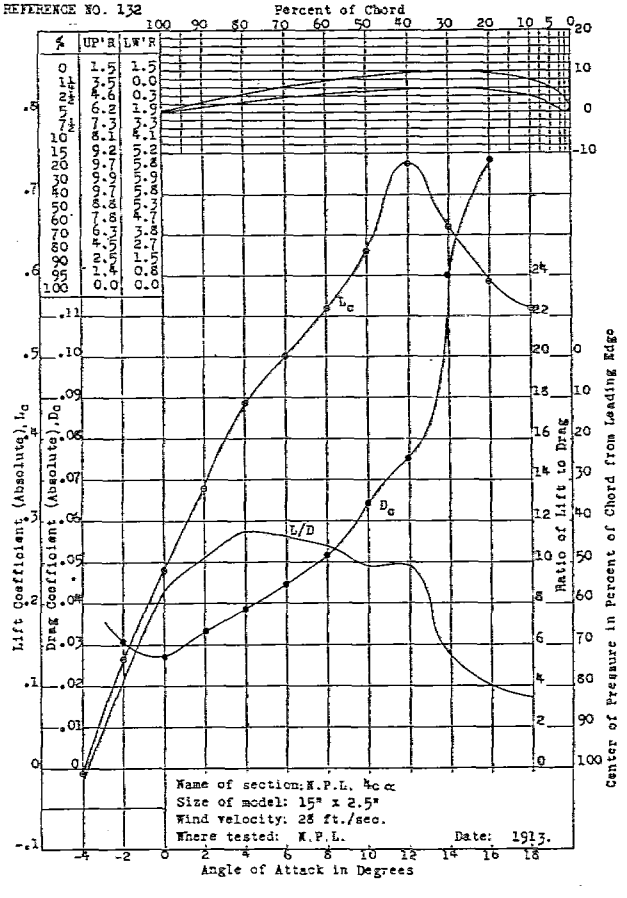
%	UP'R	LW'R
0	0.0	0.0
1¼	2.3	0.9
2½	3.7	1.5
5	5.7	2.3
7½	7.1	2.9
10	8.0	3.2
15	9.1	3.6
20	9.7	3.9
30	9.9	4.0
40	9.7	3.9
50	8.8	3.5
60	7.8	3.1
70	6.3	2.9
80	4.5	1.8
90	2.5	1.0
95	1.4	0.6
100	0.0	0.0

REFERENCE NO. 131



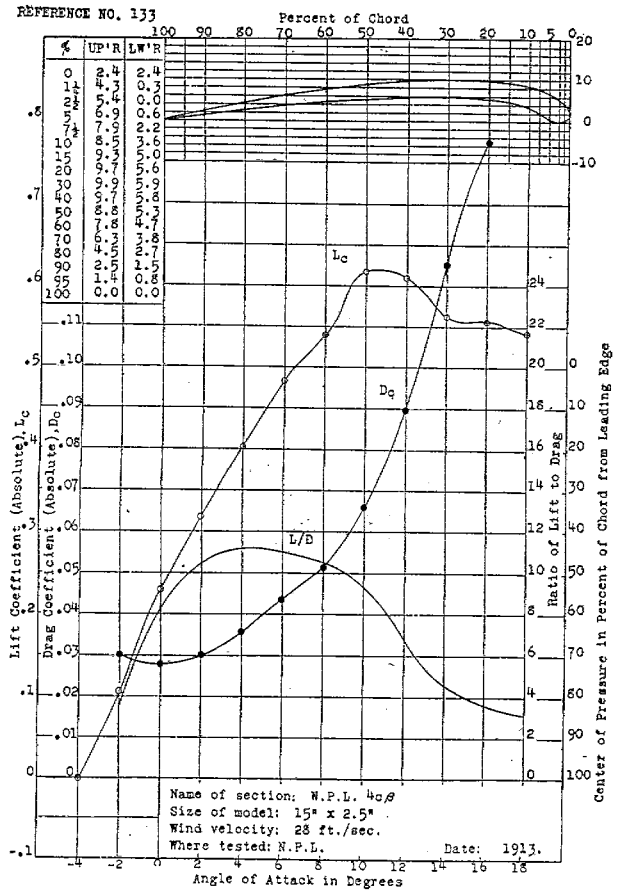
%	UP'R	LW'R
0	0.0	0.0
1¼	2.3	1.4
2½	3.7	2.2
5	5.7	3.4
7½	7.1	4.3
10	8.0	4.8
15	9.1	5.5
20	9.7	5.8
30	9.9	6.0
40	9.7	5.8
50	8.8	5.3
60	7.8	4.7
70	6.3	3.8
80	4.5	2.7
90	2.5	1.5
95	1.4	0.8
100	0.0	0.0

REFERENCE NO. 132



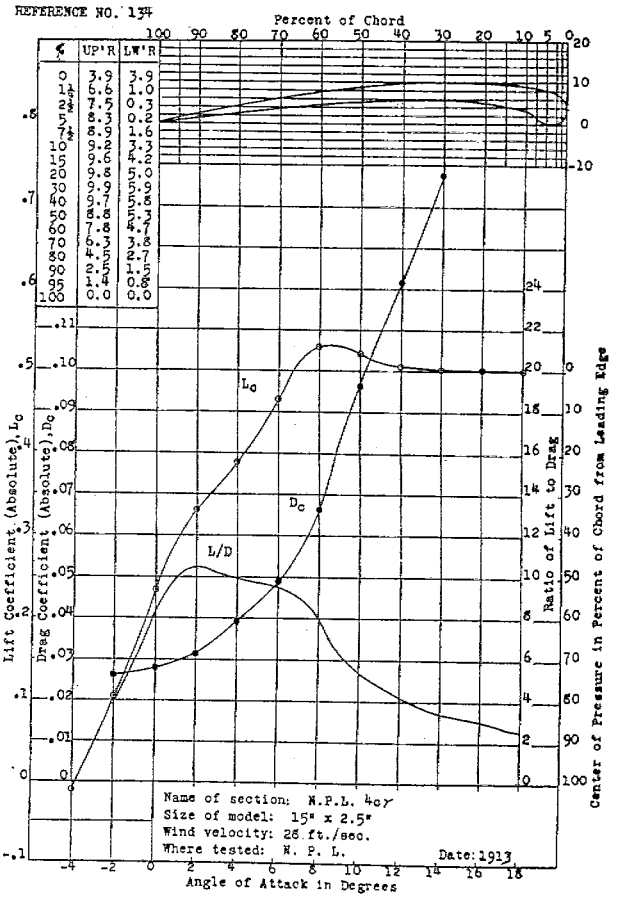
%	UP'R	LW'R
0	1.5	1.5
1¼	3.5	0.0
2½	4.6	0.3
5	6.2	1.9
7½	7.3	3.3
10	8.1	4.1
15	9.2	5.2
20	9.7	5.8
30	9.9	5.9
40	9.7	5.8
50	8.8	5.3
60	7.8	4.7
70	6.3	3.8
80	4.5	2.7
90	2.5	1.5
95	1.4	0.8
100	0.0	0.0

REFERENCE NO. 133



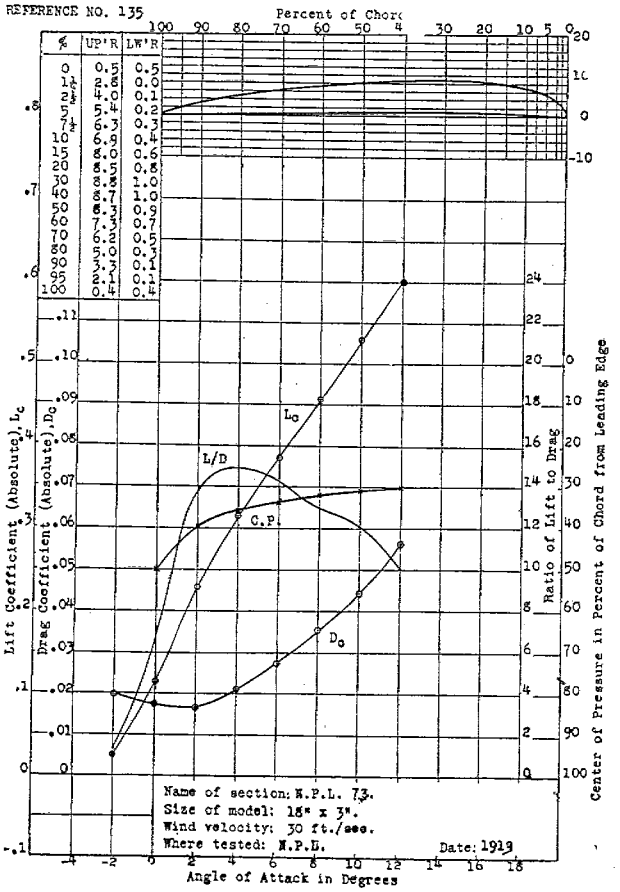
%	UP'R	LW'R
0	2.4	2.4
1¼	4.3	0.3
2½	5.4	0.0
5	6.9	0.6
7½	7.9	2.2
10	8.5	3.6
15	9.3	5.0
20	9.7	5.6
30	9.9	5.9
40	9.7	5.8
50	8.8	5.3
60	7.8	4.7
70	6.3	3.8
80	4.5	2.7
90	2.5	1.5
95	1.4	0.8
100	0.0	0.0

REFERENCE NO. 134



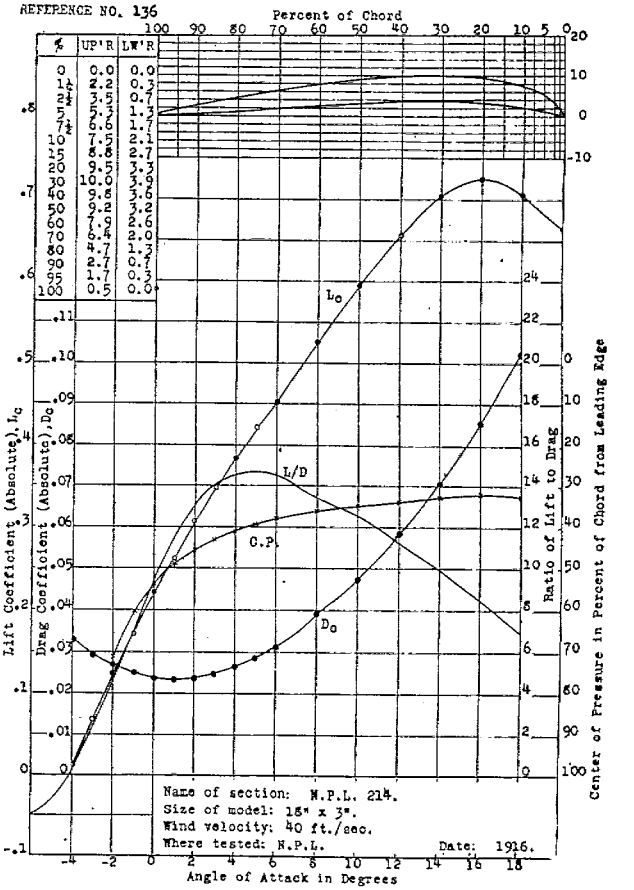
%	UP'R	LW'R
0	3.9	3.9
1¼	6.6	1.0
2½	7.5	0.3
5	8.3	0.2
7½	8.9	1.6
10	9.2	3.3
15	9.6	4.2
20	9.8	5.0
30	9.9	5.9
40	9.7	5.8
50	8.8	5.3
60	7.8	4.7
70	6.3	3.8
80	4.5	2.7
90	2.5	1.5
95	1.4	0.8
100	0.0	0.0

REFERENCE NO. 135



%	UP'R	LW'R
0	0.5	0.5
1¼	2.8	0.0
2½	4.0	0.1
5	5.4	0.2
7½	6.3	0.3
10	6.8	0.4
15	8.0	0.6
20	8.5	0.8
30	8.8	1.0
40	8.7	1.0
50	8.3	0.9
60	7.3	0.7
70	6.2	0.5
80	5.0	0.3
90	3.3	0.1
95	2.1	0.1
100	0.4	0.4

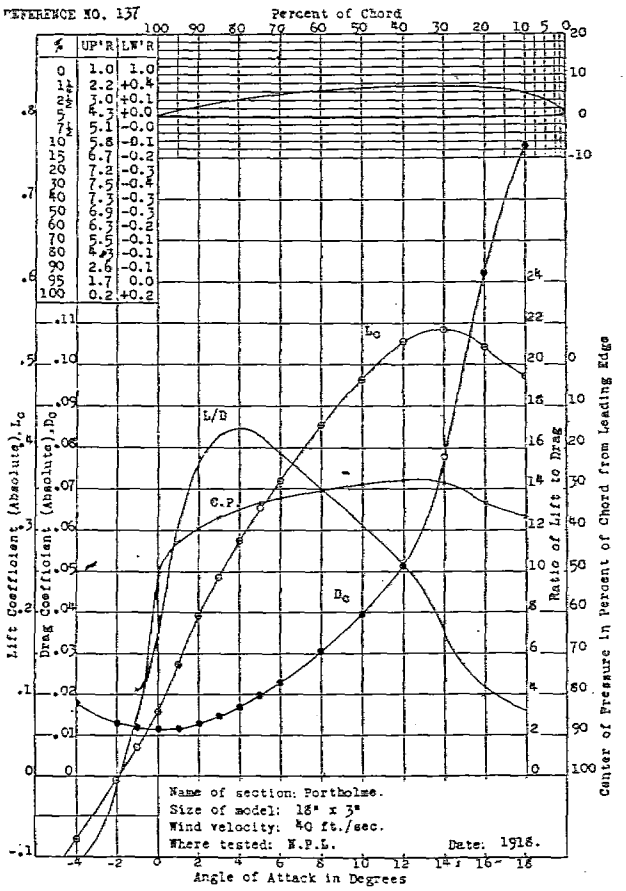
REFERENCE NO. 136



%	UP'R	LW'R
0	0.0	0.0
1¼	2.2	0.3
2½	3.5	0.7
5	5.3	1.3
7½	6.6	1.7
10	7.5	2.1
15	8.8	2.7
20	9.5	3.3
30	10.0	3.9
40	9.8	3.6
50	9.2	3.2
60	7.9	2.6
70	6.4	2.0
80	4.7	1.3
90	2.7	0.7
95	1.7	0.3
100	0.5	0.0

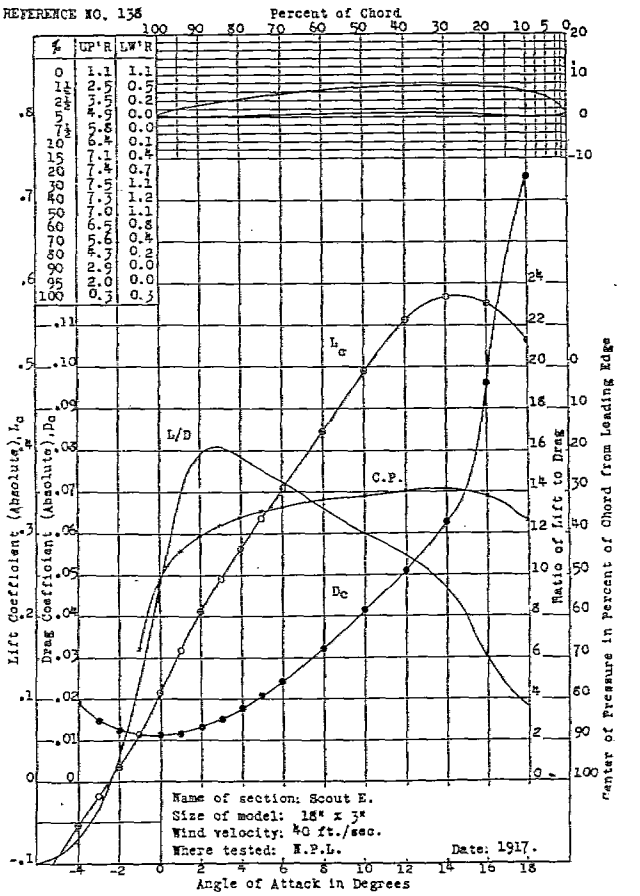
REFERENCE NO. 137

%	UP'R	LW'R
0	1.0	1.0
1¼	2.2	+0.4
2½	3.0	+0.1
5	4.3	+0.0
7½	5.1	-0.0
10	5.8	-0.1
15	6.7	-0.2
20	7.2	-0.3
30	7.5	-0.4
40	7.3	-0.3
50	6.9	-0.3
60	6.3	-0.2
70	5.5	-0.1
80	4.3	-0.1
90	2.6	-0.1
95	1.7	0.0
100	0.2	+0.2



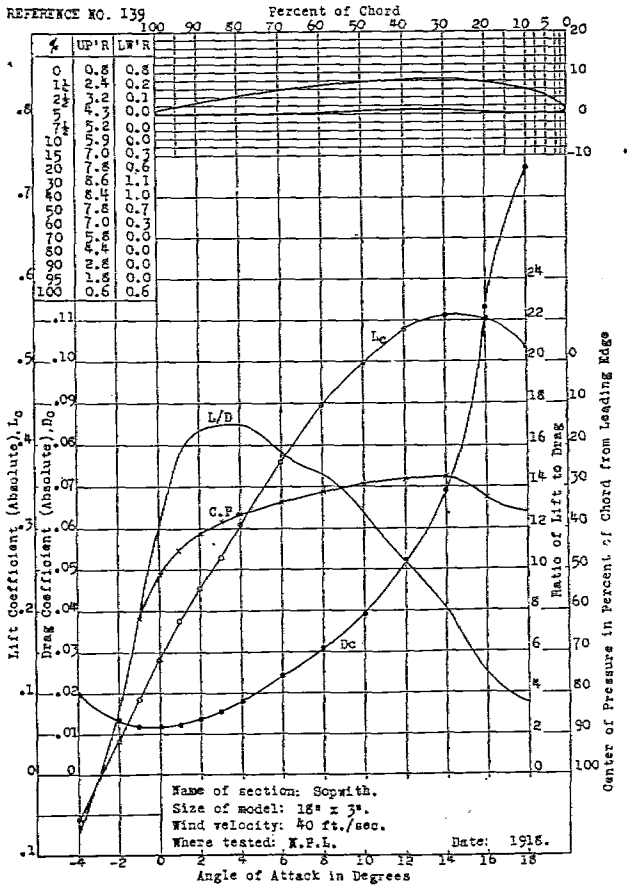
REFERENCE NO. 138

%	UP'R	LW'R
0	1.1	1.1
1¼	2.5	0.5
2½	3.5	0.2
5	4.9	0.0
7½	5.8	0.0
10	6.4	0.1
15	7.1	0.4
20	7.4	0.7
30	7.5	1.1
40	7.3	1.2
50	7.0	1.1
60	6.5	0.8
70	5.6	0.4
80	4.3	0.2
90	2.9	0.0
95	2.0	0.0
100	0.3	0.3



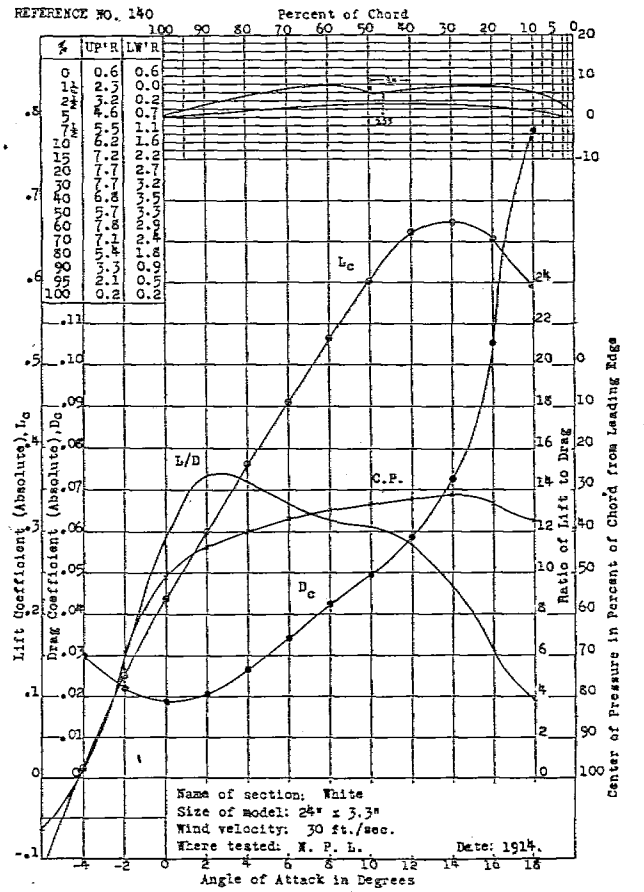
REFERENCE NO. 139

%	UP'R	LW'R
0	0.8	0.8
1¼	2.4	0.2
2½	3.2	0.1
5	4.3	0.0
7½	5.2	0.0
10	5.9	0.0
15	7.0	0.3
20	7.8	0.6
30	8.6	1.1
40	8.4	1.0
50	7.8	0.7
60	7.0	0.3
70	5.8	0.0
80	4.4	0.0
90	2.8	0.0
95	1.8	0.0
100	0.6	0.6

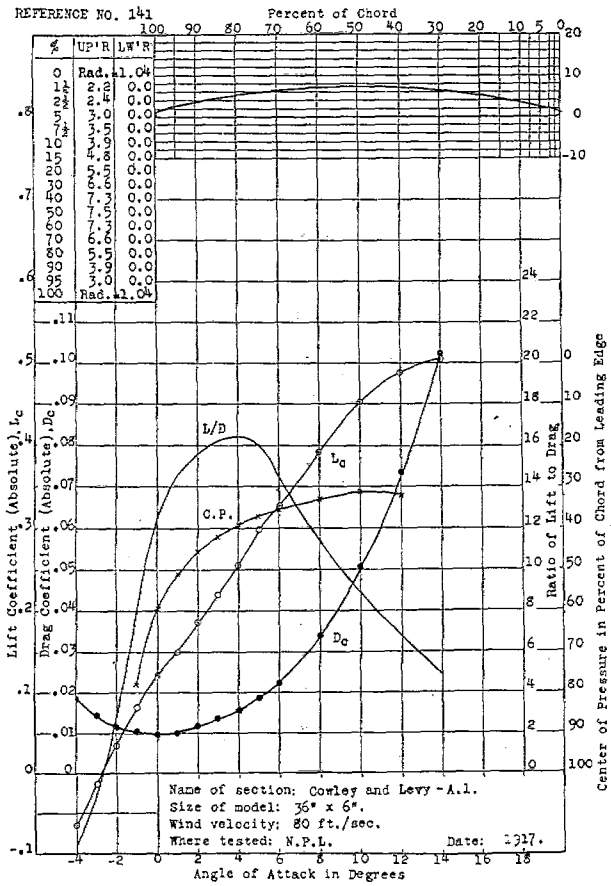


REFERENCE NO. 140

%	UP'R	LW'R
0	0.6	0.6
1¼	2.3	0.0
2½	3.2	0.2
5	4.6	0.7
7½	5.5	1.1
10	6.2	1.6
15	7.2	2.2
20	7.7	2.7
30	7.7	3.2
40	6.8	3.5
50	5.7	3.3
60	4.8	2.9
70	7.1	2.4
80	5.4	1.8
90	3.3	0.9
95	2.1	0.5
100	0.2	0.2

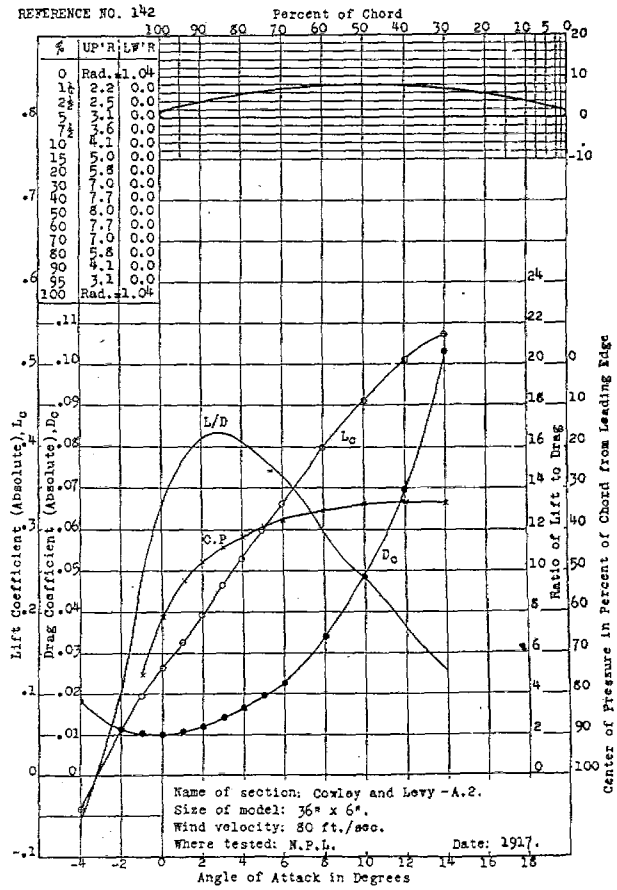


REFERENCE NO. 141



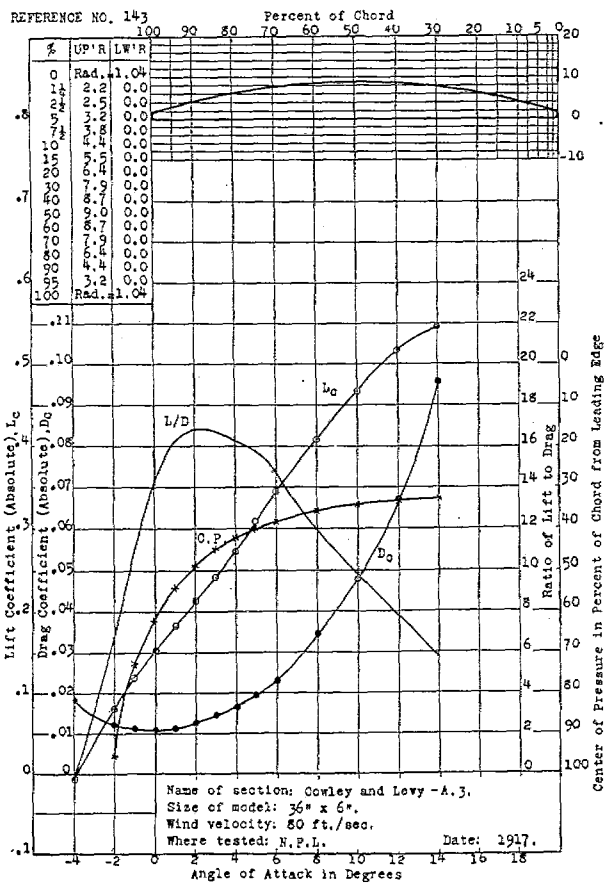
%	UP'R	LW'R
0	Rad.	±1.04
1¼	2.2	0.0
2½	2.4	0.0
5	3.0	0.0
7½	3.5	0.0
10	3.9	0.0
15	4.8	0.0
20	5.5	0.0
30	6.6	0.0
40	7.3	0.0
50	7.5	0.0
60	7.3	0.0
70	6.6	0.0
80	5.5	0.0
90	3.9	0.0
95	3.0	0.0
100	Rad.	±1.04

REFERENCE NO. 142



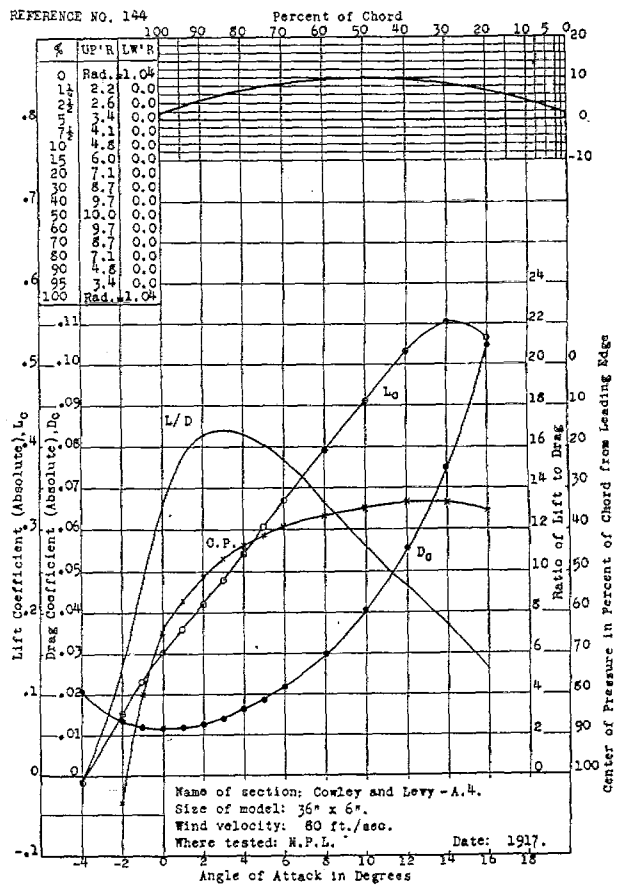
%	UP'R	LW'R
0	Rad.	±1.04
1¼	2.2	0.0
2½	2.5	0.0
5	3.1	0.0
7½	3.6	0.0
10	4.1	0.0
15	5.0	0.0
20	5.8	0.0
30	7.0	0.0
40	7.7	0.0
50	8.0	0.0
60	7.7	0.0
70	7.0	0.0
80	5.8	0.0
90	4.1	0.0
95	3.1	0.0
100	Rad.	±1.04

REFERENCE NO. 143



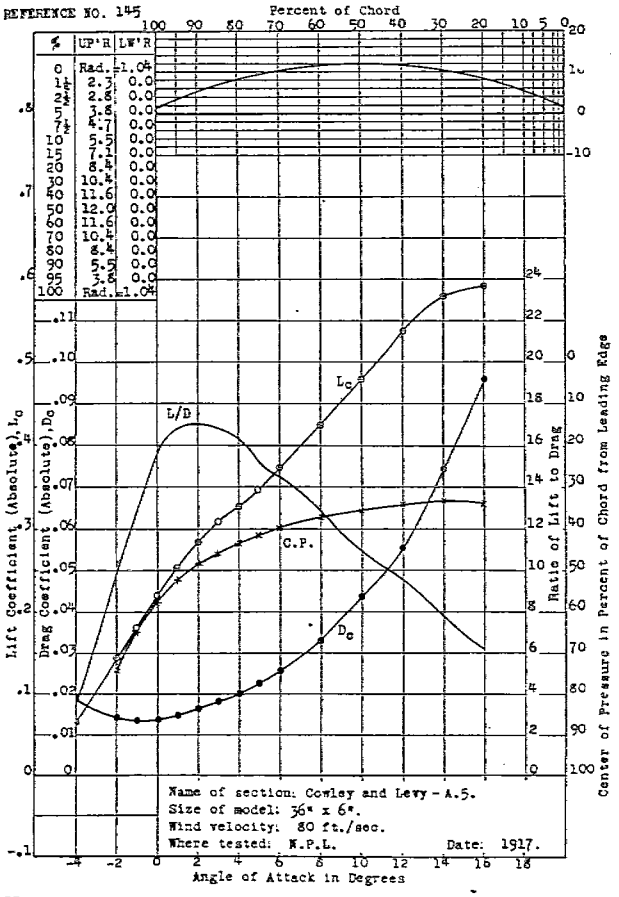
%	UP'R	LW'R
0	Rad.	±1.04
1¼	2.2	0.0
2½	2.5	0.0
5	3.2	0.0
7½	3.8	0.0
10	4.4	0.0
15	5.5	0.0
20	6.4	0.0
30	7.9	0.0
40	8.7	0.0
50	9.0	0.0
60	8.7	0.0
70	7.9	0.0
80	6.4	0.0
90	4.4	0.0
95	3.2	0.0
100	Rad.	±1.04

REFERENCE NO. 144



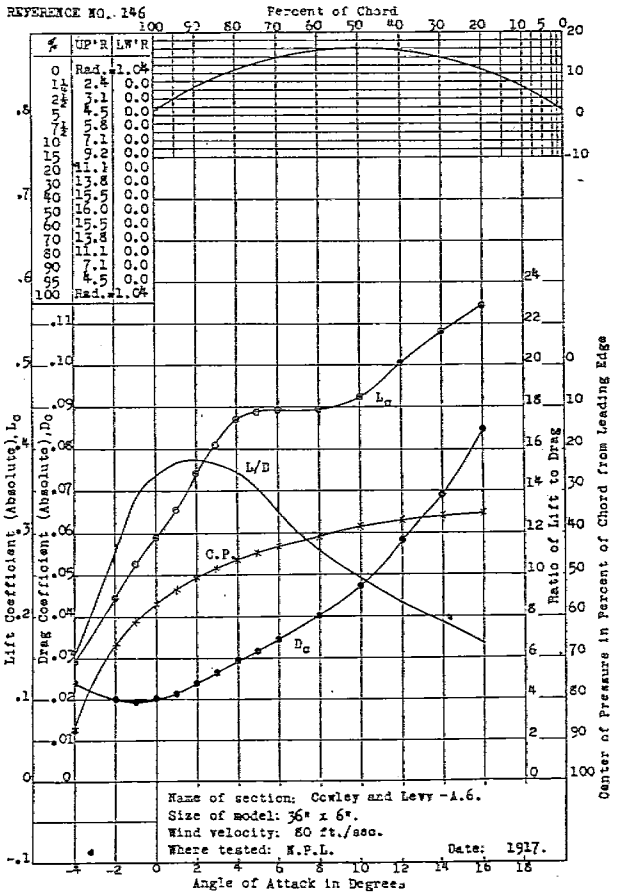
%	UP'R	LW'R
0	Rad.	±1.04
1¼	2.2	0.0
2½	2.6	0.0
5	3.4	0.0
7½	4.1	0.0
10	4.8	0.0
15	6.0	0.0
20	7.1	0.0
30	8.7	0.0
40	9.7	0.0
50	10.0	0.0
60	9.7	0.0
70	8.7	0.0
80	7.1	0.0
90	4.8	0.0
95	3.4	0.0
100	Rad.	±1.04

REFERENCE NO. 145



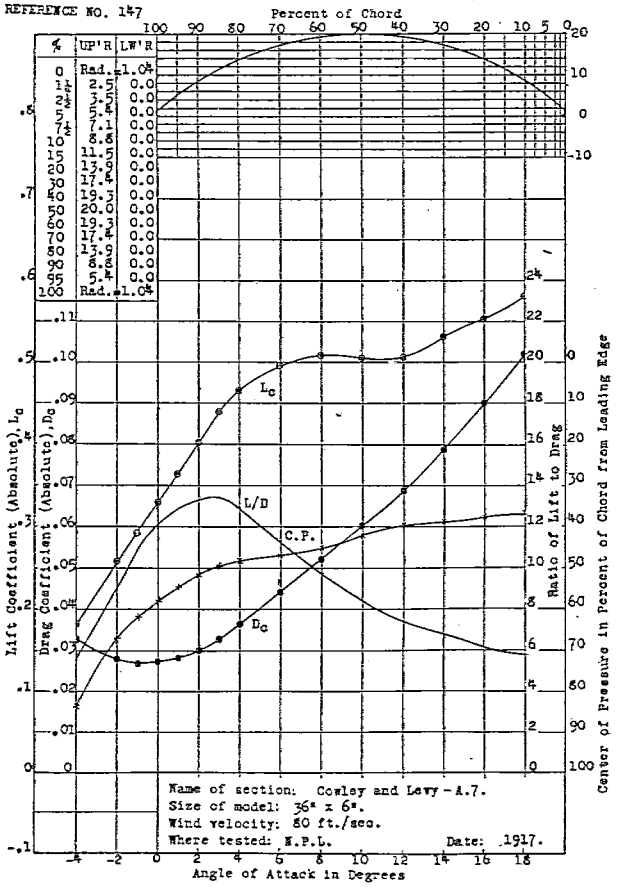
%	UP'R	LW'R
0	Rad.	=1.0%
1¼	2.3	0.0
2½	2.8	0.0
5	3.8	0.0
7½	4.7	0.0
10	5.5	0.0
15	7.1	0.0
20	8.4	0.0
30	10.4	0.0
40	11.6	0.0
50	12.0	0.0
60	11.6	0.0
70	10.4	0.0
80	8.4	0.0
90	5.5	0.0
95	3.8	0.0
100	Rad.	=1.0%

REFERENCE NO. 146



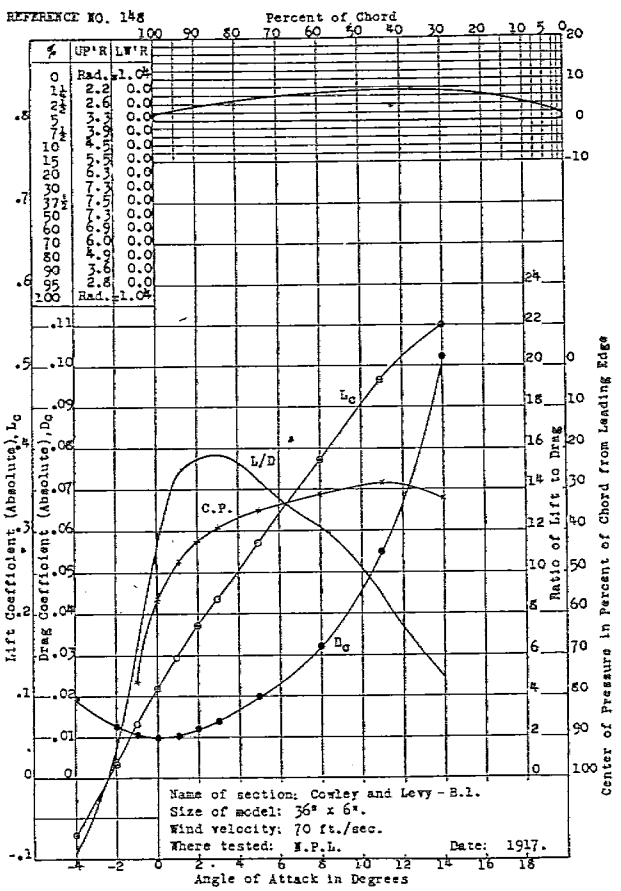
%	UP'R	LW'R
0	Rad.	=1.0%
1¼	2.4	0.0
2½	3.1	0.0
5	4.5	0.0
7½	5.8	0.0
10	7.1	0.0
15	9.2	0.0
20	11.1	0.0
30	13.8	0.0
40	15.5	0.0
50	16.0	0.0
60	15.5	0.0
70	13.8	0.0
80	11.1	0.0
90	7.1	0.0
95	4.5	0.0
100	Rad.	=1.0%

REFERENCE NO. 147



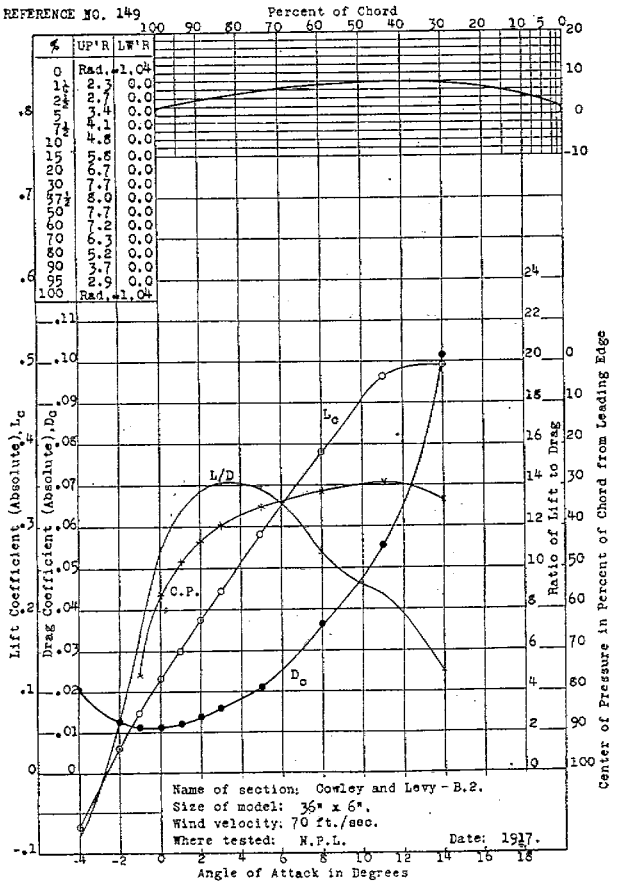
%	UP'R	LW'R
0	Rad.	=1.0%
1¼	2.5	0.0
2½	3.4	0.0
5	5.4	0.0
7½	7.1	0.0
10	8.8	0.0
15	11.5	0.0
20	13.9	0.0
30	17.4	0.0
40	19.3	0.0
50	20.0	0.0
60	19.3	0.0
70	17.4	0.0
80	13.9	0.0
90	8.8	0.0
95	5.4	0.0
100	Rad.	=1.0%

REFERENCE NO. 148



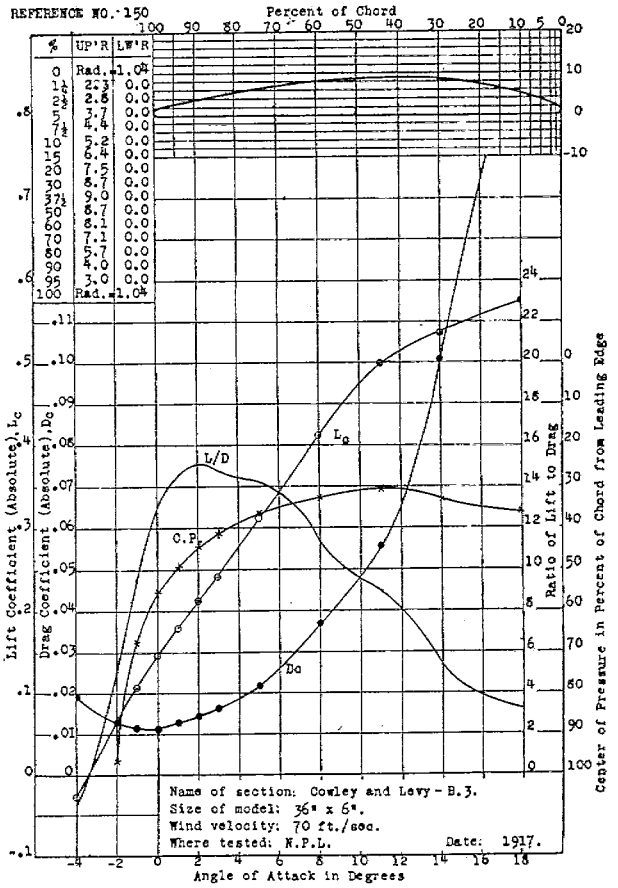
%	UP'R	LW'R
0	Rad.	=1.0%
1¼	2.2	0.0
2½	2.6	0.0
5	3.3	0.0
7½	3.9	0.0
10	4.5	0.0
15	5.5	0.0
20	6.3	0.0
30	7.3	0.0
37½	7.5	0.0
50	7.3	0.0
60	6.9	0.0
70	6.0	0.0
80	4.9	0.0
90	3.6	0.0
95	2.8	0.0
100	Rad.	=1.0%

REFERENCE NO. 149



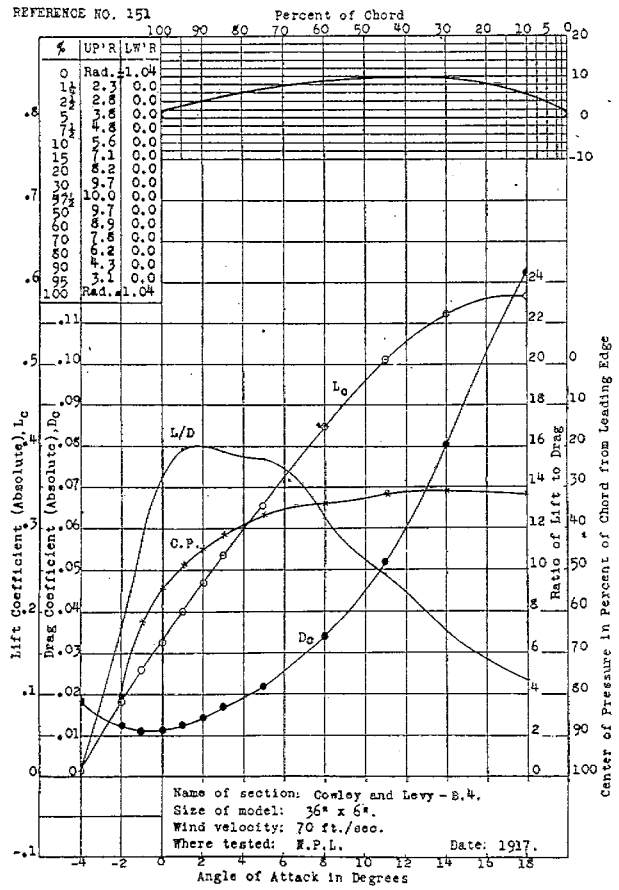
%	UP'R	LW'R
0	Rad.=1.04	
1¼	2.3	0.0
2½	2.7	0.0
5	3.4	0.0
7½	4.1	0.0
10	4.8	0.0
15	5.8	0.0
20	6.7	0.0
30	7.7	0.0
37½	8.0	0.0
50	7.7	0.0
60	7.2	0.0
70	6.3	0.0
80	5.2	0.0
90	3.7	0.0
95	2.9	0.0
100	Rad.=1.04	

REFERENCE NO. 150



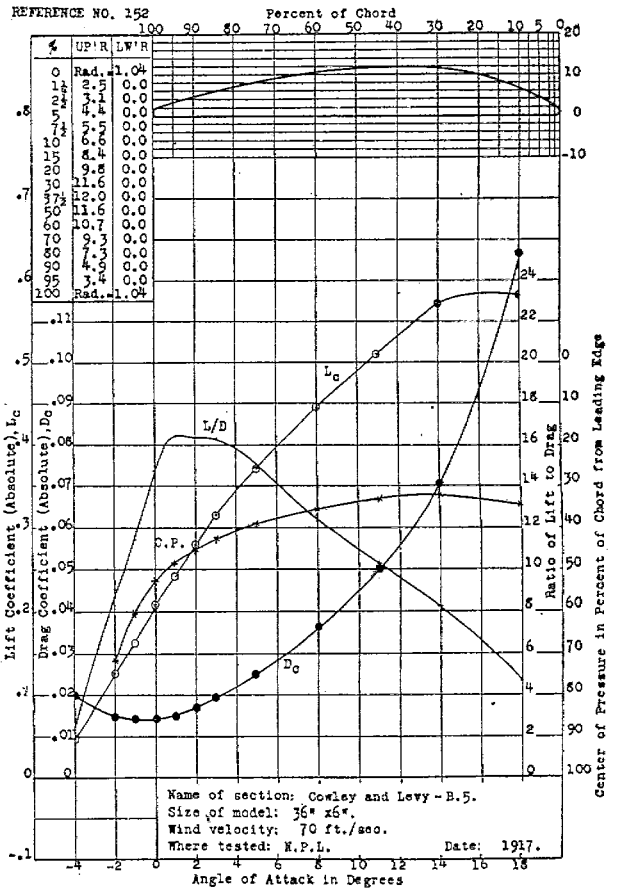
%	UP'R	LW'R
0	Rad.=1.04	
1¼	2.3	0.0
2½	2.8	0.0
5	3.7	0.0
7½	4.4	0.0
10	5.2	0.0
15	6.4	0.0
20	7.5	0.0
30	8.7	0.0
37½	9.0	0.0
50	8.7	0.0
60	8.1	0.0
70	7.1	0.0
80	5.7	0.0
90	4.0	0.0
95	3.0	0.0
100	Rad.=1.04	

REFERENCE NO. 151



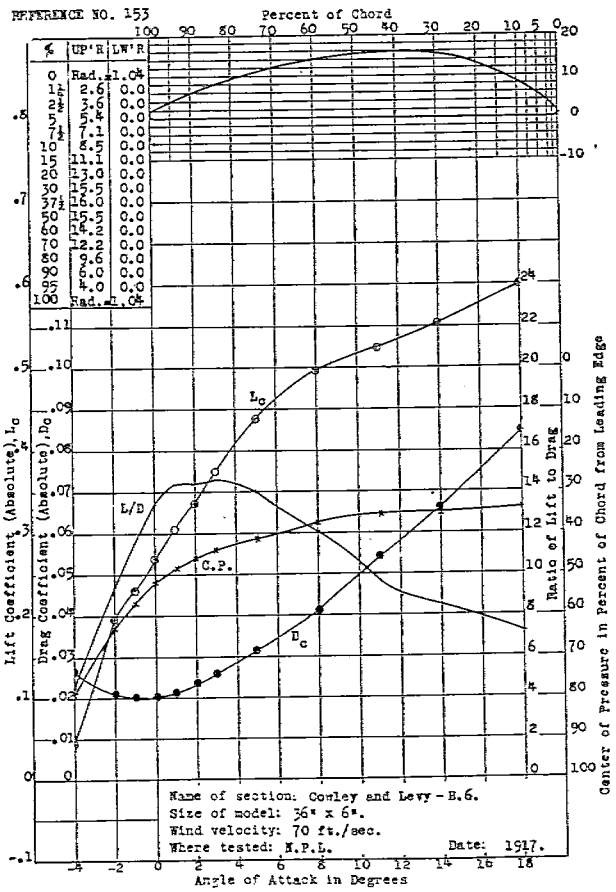
%	UP'R	LW'R
0	Rad.=1.04	
1¼	2.3	0.0
2½	2.8	0.0
5	3.8	0.0
7½	4.8	0.0
10	5.6	0.0
15	7.1	0.0
20	8.2	0.0
30	9.7	0.0
37½	10.0	0.0
50	9.7	0.0
60	8.9	0.0
70	7.8	0.0
80	6.2	0.0
90	4.3	0.0
95	3.1	0.0
100	Rad.=1.04	

REFERENCE NO. 152



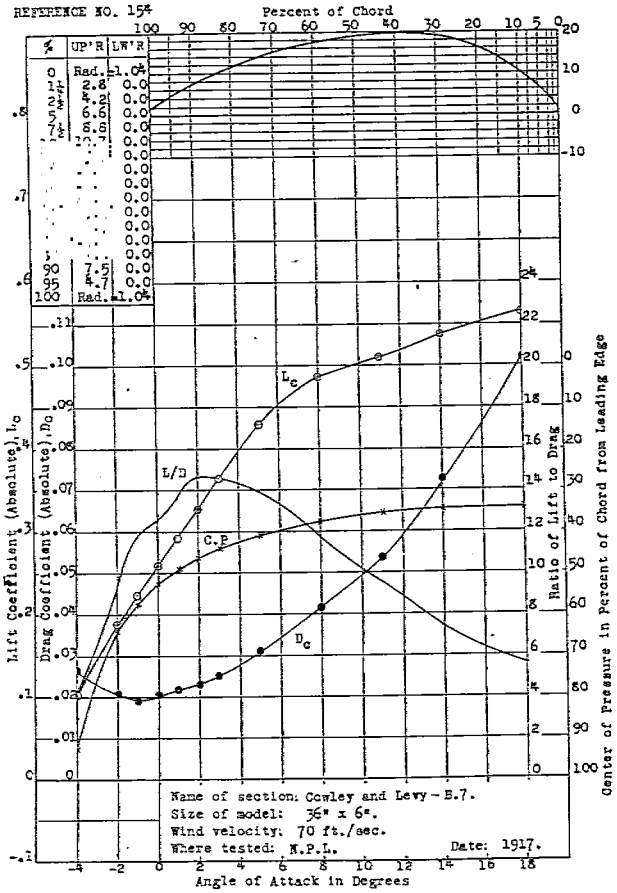
%	UP'R	LW'R
0	Rad.=1.04	
1¼	2.5	0.0
2½	3.1	0.0
5	4.4	0.0
7½	5.5	0.0
10	6.6	0.0
15	8.4	0.0
20	9.8	0.0
30	11.6	0.0
37½	12.0	0.0
50	11.6	0.0
60	10.7	0.0
70	9.3	0.0
80	7.3	0.0
90	4.9	0.0
95	3.4	0.0
100	Rad.=1.04	

REFERENCE NO. 153



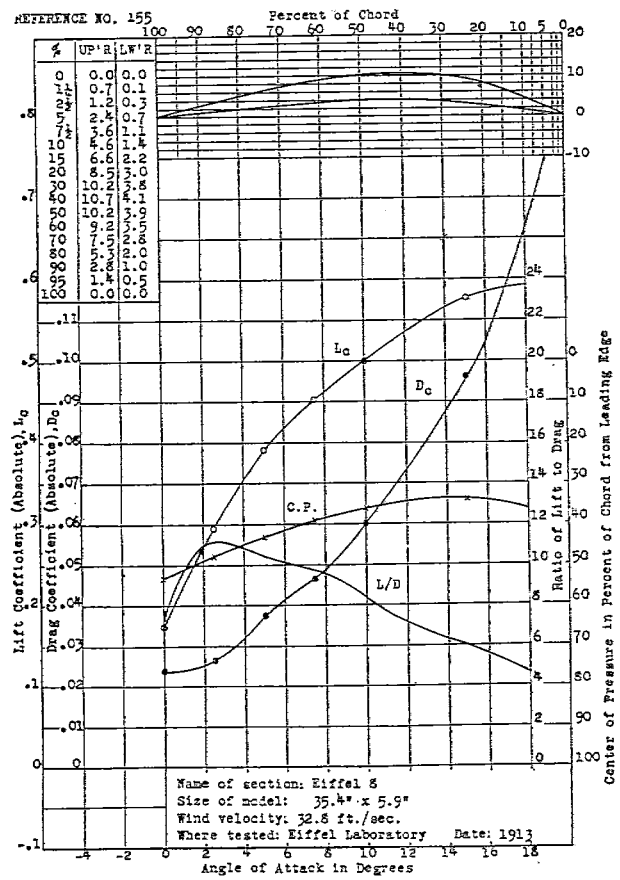
%	UP'R	LW'R
0	Rad.	+1.0%
1¼	2.6	0.0
2½	3.6	0.0
5	5.4	0.0
7½	7.1	0.0
10	8.5	0.0
15	11.1	0.0
20	13.0	0.0
30	15.5	0.0
37½	16.0	0.0
50	15.5	0.0
60	14.2	0.0
70	12.2	0.0
80	9.6	0.0
90	6.0	0.0
95	4.0	0.0
100	Rad.	+1.0%

REFERENCE NO. 154



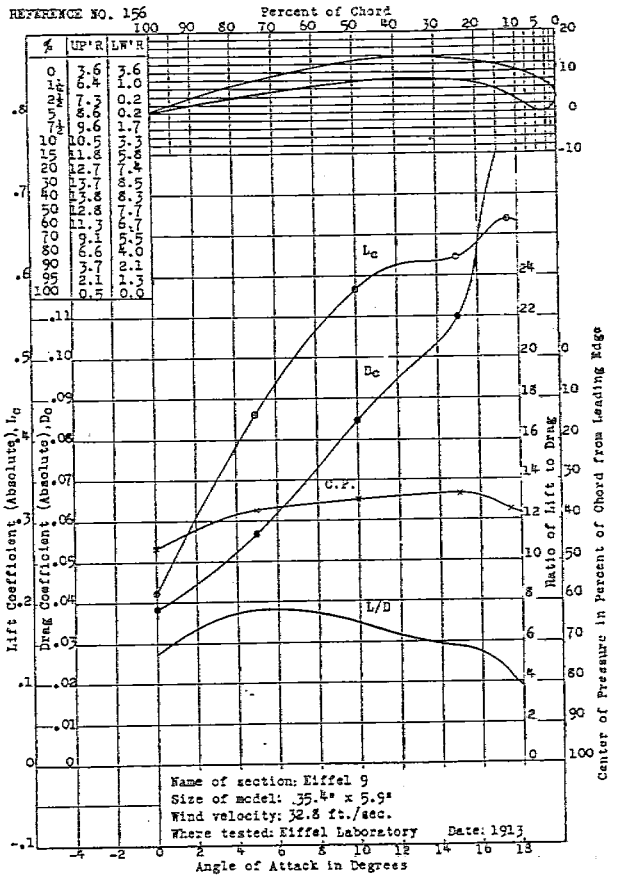
%	UP'R	LW'R
0	Rad.	+1.0%
1¼	2.8	0.0
2½	4.2	0.0
5	6.6	0.0
7½	8.8	0.0
[illegible]	[illegible]	0.0
[illegible]	[illegible]	0.0
[illegible]	[illegible]	0.0
[illegible]	[illegible]	0.0
[illegible]	[illegible]	0.0
[illegible]	[illegible]	0.0
[illegible]	[illegible]	0.0
90	7.5	0.0
95	4.7	0.0
100	Rad.	+1.0%

REFERENCE NO. 155



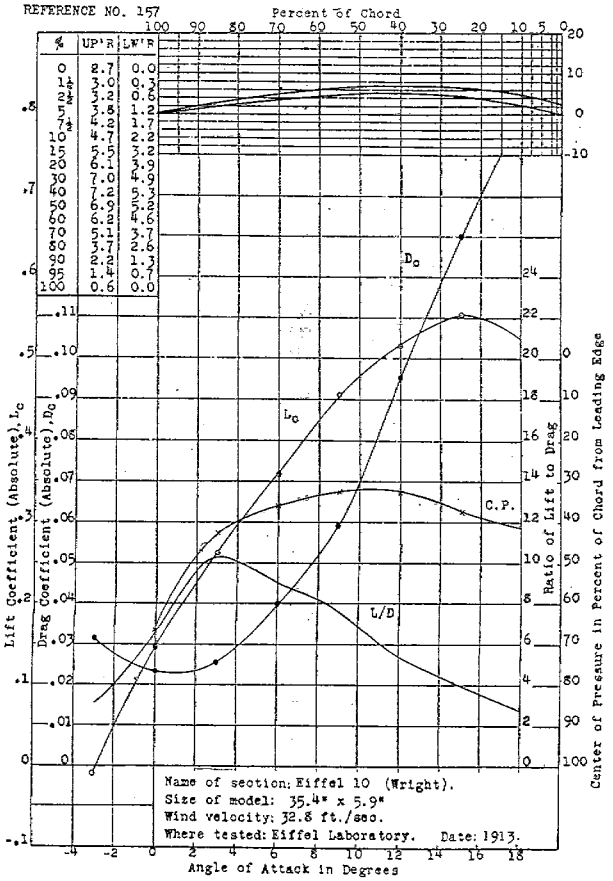
%	UP'R	LW'R
0	0.0	0.0
1¼	0.7	0.1
2½	1.2	0.3
5	2.4	0.7
7½	3.6	1.1
10	4.6	1.4
15	6.6	2.2
20	8.5	3.0
30	10.2	3.8
40	10.7	4.1
50	10.2	3.9
60	9.2	3.5
70	7.5	2.8
80	5.3	2.0
90	2.8	1.0
95	1.4	0.5
100	0.0	0.0

REFERENCE NO. 156



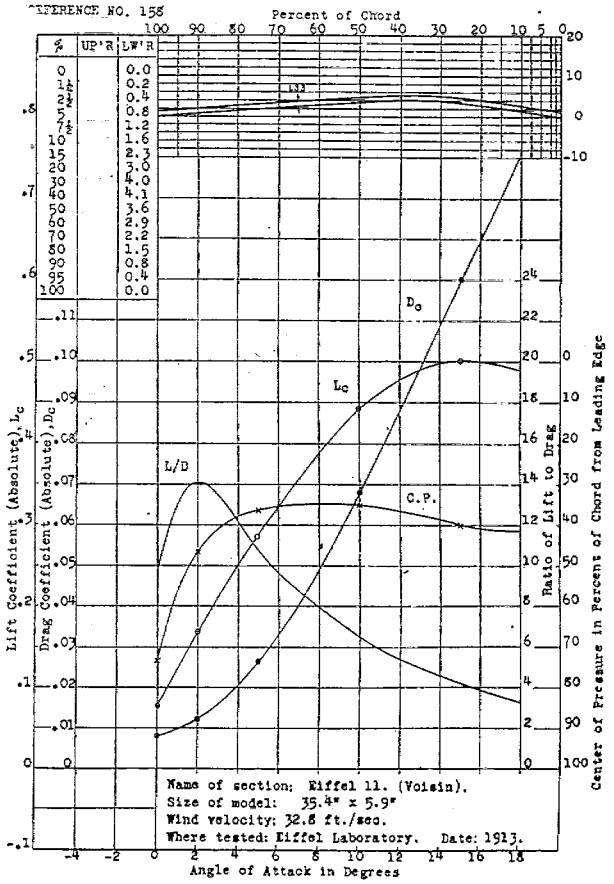
%	UP'R	LW'R
0	3.6	3.6
1¼	6.4	1.0
2½	7.3	0.2
5	8.6	0.2
7½	9.6	1.7
10	10.5	3.3
15	11.8	5.8
20	12.7	7.4
30	13.7	8.5
40	13.8	8.3
50	12.8	7.7
60	11.3	6.7
70	9.1	5.5
80	6.6	4.0
90	3.7	2.1
95	2.1	1.3
100	0.5	0.0

REFERENCE NO. 157



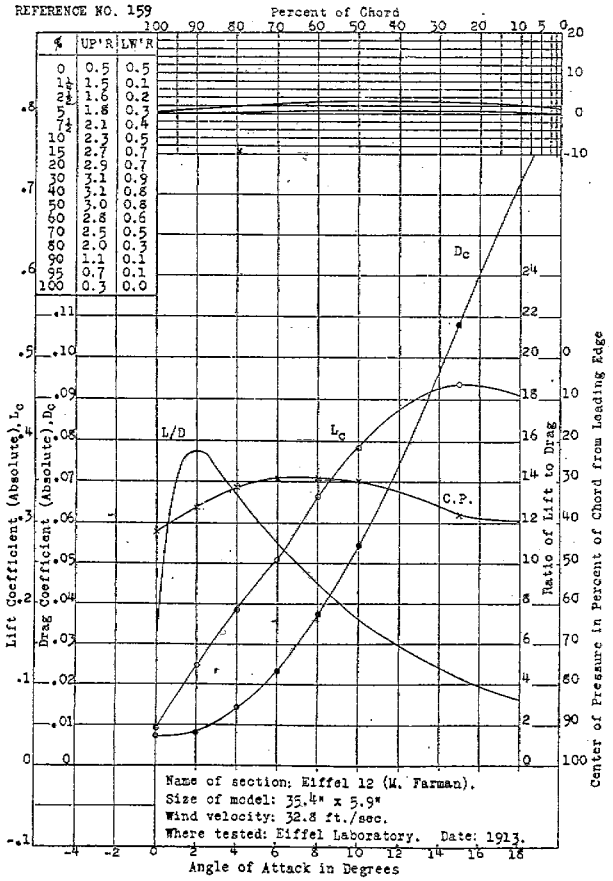
%	UP'R	LW'R
0	2.7	0.0
1¼	3.0	0.3
2½	3.2	0.6
5	3.8	1.2
7½	4.2	1.7
10	4.7	2.2
15	5.5	3.2
20	6.1	3.9
30	7.0	4.9
40	7.2	5.3
50	6.9	5.2
60	6.2	4.6
70	5.1	3.7
80	3.7	2.6
90	2.2	1.3
95	1.4	0.7
100	0.6	0.0

REFERENCE NO. 158



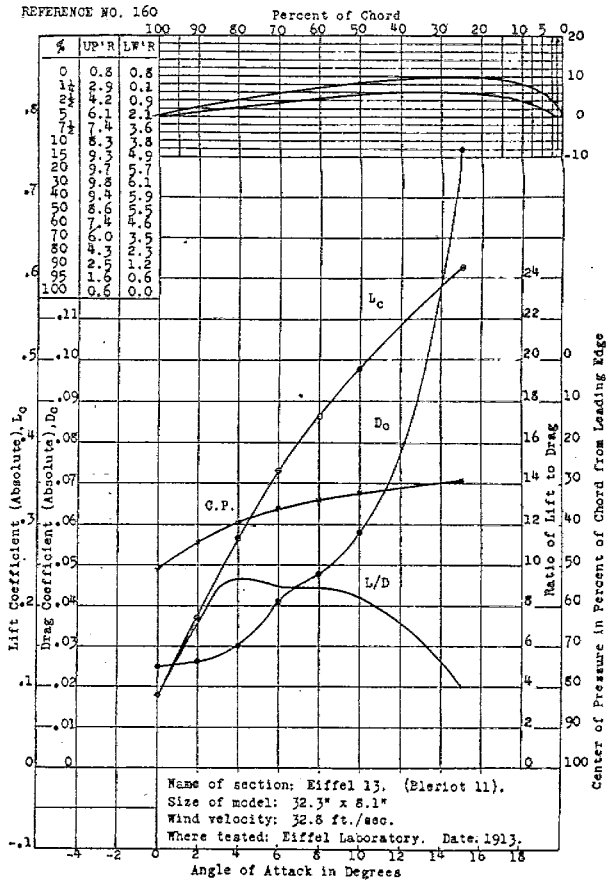
%	UP'R	LW'R
0		0.0
1¼		0.2
2½		0.4
5		0.8
7½		1.2
10		1.6
15		2.3
20		3.0
30		4.0
40		4.1
50		3.6
60		2.9
70		2.2
80		1.5
90		0.8
95		0.4
100		0.0

REFERENCE NO. 159



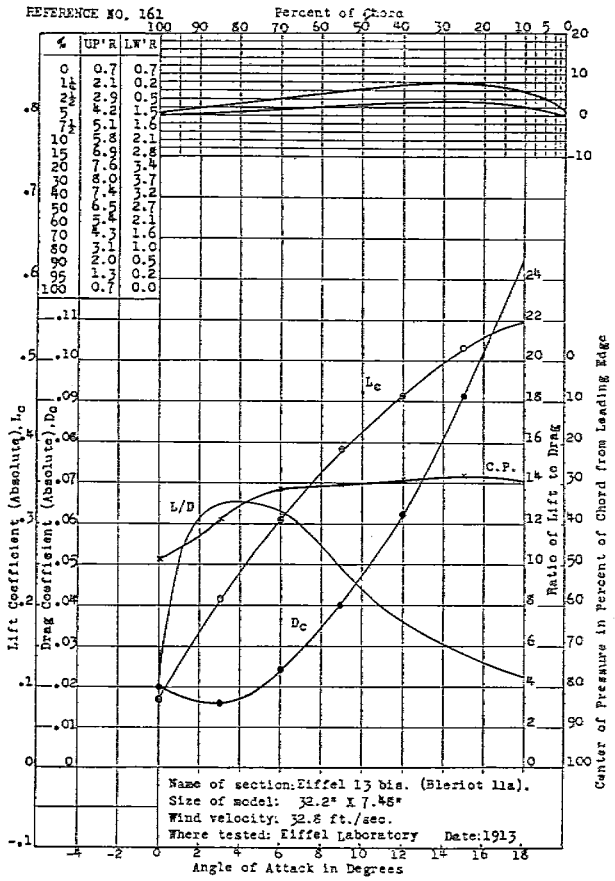
%	UP'R	LW'R
0	0.5	0.5
1¼	1.5	0.1
2½	1.6	0.2
5	1.8	0.3
7½	2.1	0.4
10	2.3	0.5
15	2.7	0.7
20	2.9	0.7
30	3.1	0.9
40	3.1	0.8
50	3.0	0.8
60	2.8	0.6
70	2.5	0.5
80	2.0	0.3
90	1.1	0.1
95	0.7	0.1
100	0.3	0.0

REFERENCE NO. 160



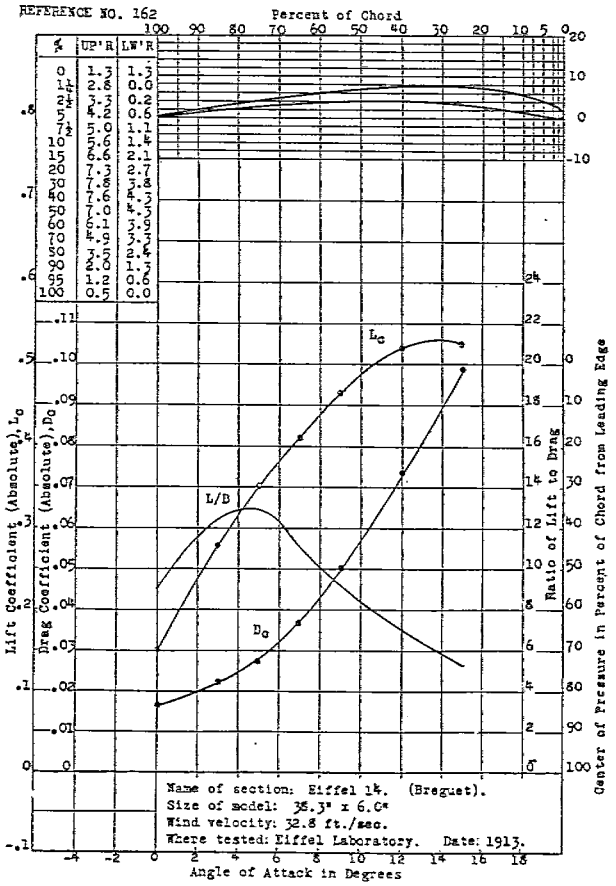
%	UP'R	LW'R
0	0.8	0.8
1¼	2.9	0.1
2½	4.2	0.9
5	6.1	2.1
7½	7.4	3.6
10	8.3	3.8
15	9.3	4.9
20	9.7	5.7
30	9.8	6.1
40	9.4	5.9
50	8.6	5.5
60	7.4	4.6
70	6.0	3.5
80	4.3	2.3
90	2.5	1.2
95	1.6	0.6
100	0.6	0.0

REFERENCE NO. 161



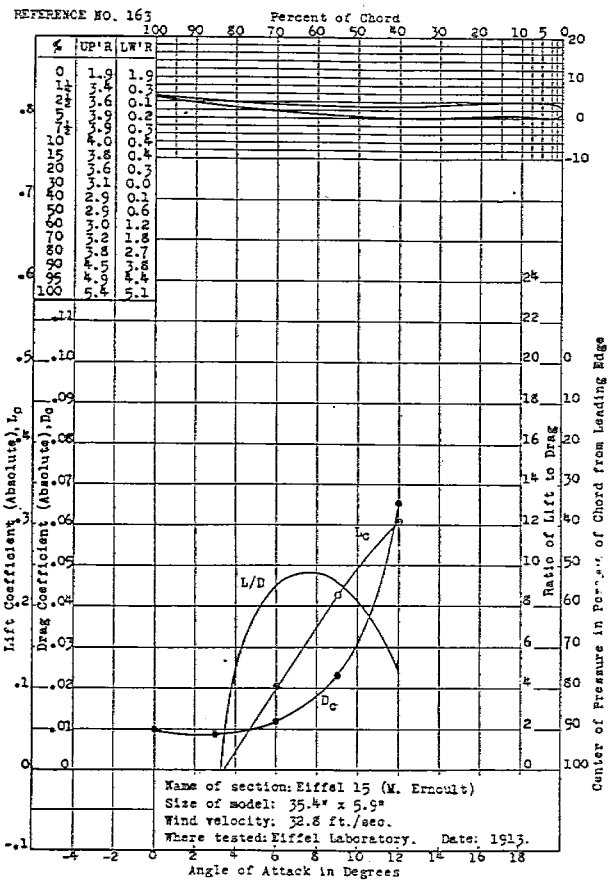
%	UP'R	LW'R
0	0.7	0.7
1¼	2.1	0.2
2½	2.9	0.5
5	4.2	1.5
7½	5.1	1.6
10	5.8	2.1
15	6.9	2.8
20	7.6	3.4
30	8.0	3.7
40	7.4	3.2
50	6.5	2.7
60	5.4	2.1
70	4.3	1.6
80	3.1	1.0
90	2.0	0.5
95	1.3	0.2
100	0.7	0.0

REFERENCE NO. 162



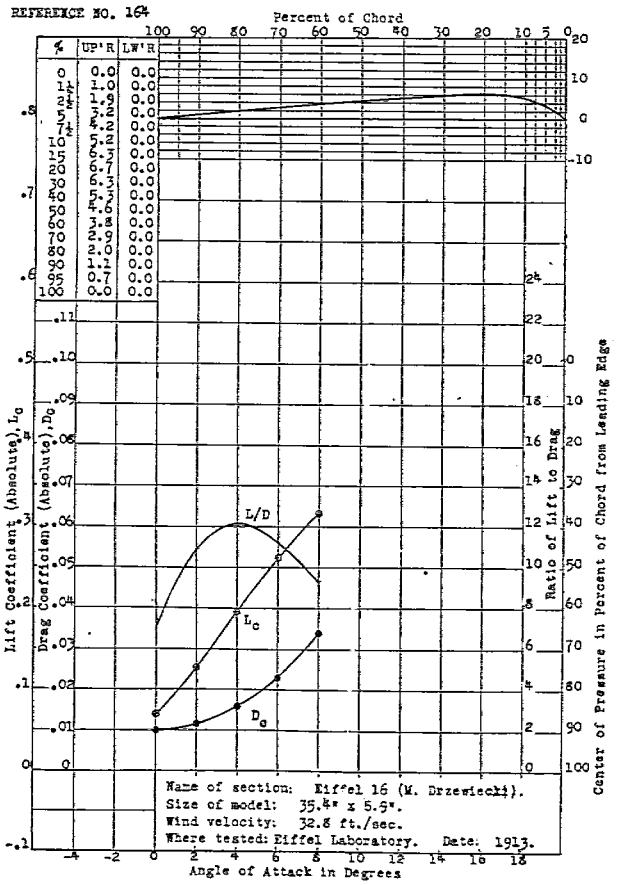
%	UP'R	LW'R
0	1.3	1.3
1¼	2.8	0.0
2½	3.3	0.2
5	4.2	0.6
7½	5.0	1.1
10	5.6	1.4
15	6.6	2.1
20	7.3	2.7
30	7.8	3.8
40	7.6	4.3
50	7.0	4.3
60	6.1	3.9
70	4.9	3.3
80	3.5	2.4
90	2.0	1.3
95	1.2	0.6
100	0.5	0.0

REFERENCE NO. 163



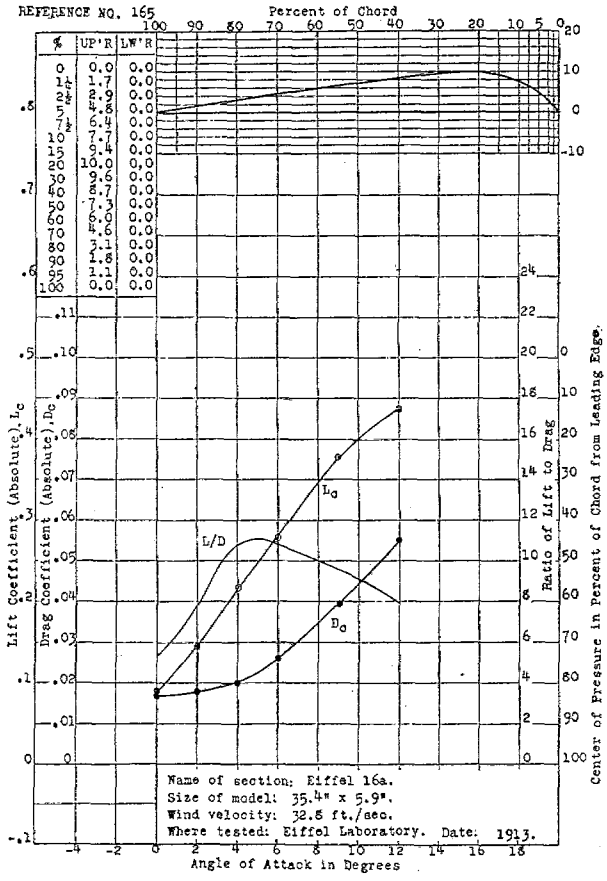
%	UP'R	LW'R
0	1.9	1.9
1¼	3.4	0.3
2½	3.6	0.1
5	3.9	0.2
7½	3.9	0.3
10	4.0	0.4
15	3.8	0.4
20	3.6	0.3
30	3.1	0.0
40	2.9	0.1
50	2.9	0.6
60	3.0	1.2
70	3.2	1.8
80	3.8	2.7
90	4.5	3.8
95	4.9	4.4
100	5.4	5.1

REFERENCE NO. 164



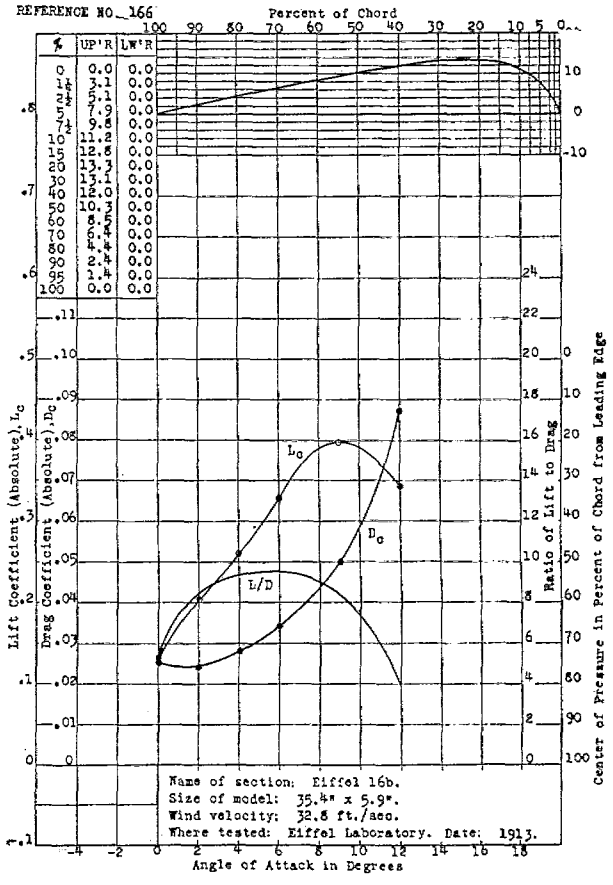
%	UP'R	LW'R
0	0.0	0.0
1¼	1.0	0.0
2½	1.9	0.0
5	3.2	0.0
7½	4.2	0.0
10	5.2	0.0
15	6.3	0.0
20	6.7	0.0
30	6.3	0.0
40	5.3	0.0
50	4.6	0.0
60	3.8	0.0
70	2.9	0.0
80	2.0	0.0
90	1.1	0.0
95	0.7	0.0
100	0.0	0.0

REFERENCE NO. 165



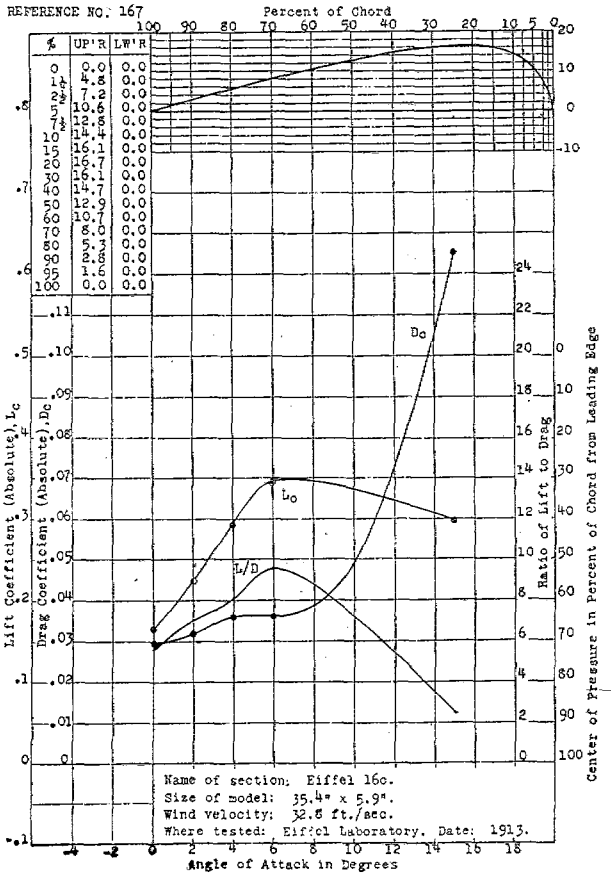
%	UP'R	LW'R
0	0.0	0.0
1¼	1.7	0.0
2½	2.9	0.0
5	4.8	0.0
7½	6.4	0.0
10	7.7	0.0
15	9.4	0.0
20	10.0	0.0
30	9.6	0.0
40	8.7	0.0
50	7.3	0.0
60	6.0	0.0
70	4.6	0.0
80	3.1	0.0
90	1.8	0.0
95	1.1	0.0
100	0.0	0.0

REFERENCE NO. 166



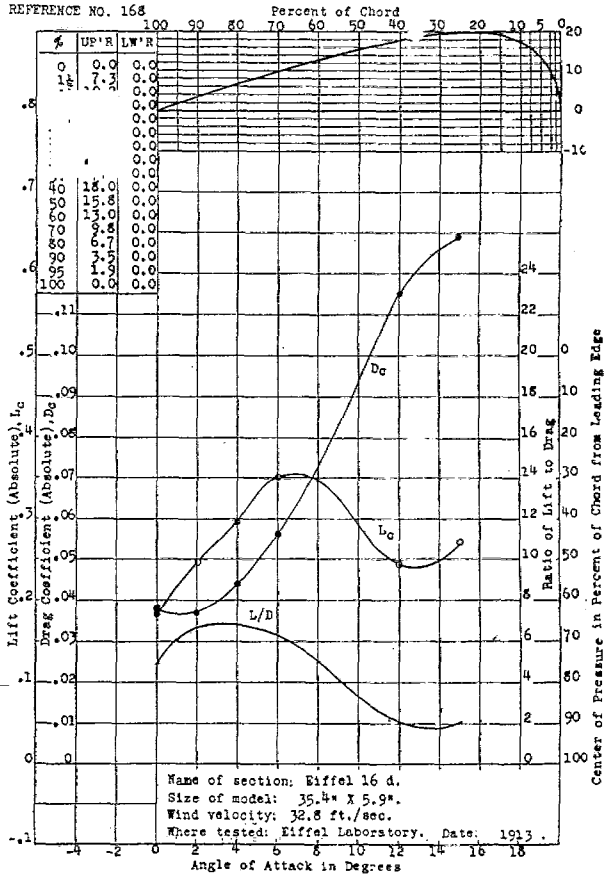
%	UP'R	LW'R
0	0.0	0.0
1¼	3.1	0.0
2½	5.1	0.0
5	7.9	0.0
7½	9.8	0.0
10	11.2	0.0
15	12.8	0.0
20	13.3	0.0
30	13.1	0.0
40	12.0	0.0
50	10.3	0.0
60	8.5	0.0
70	6.4	0.0
80	4.4	0.0
90	2.4	0.0
95	1.4	0.0
100	0.0	0.0

REFERENCE NO. 167



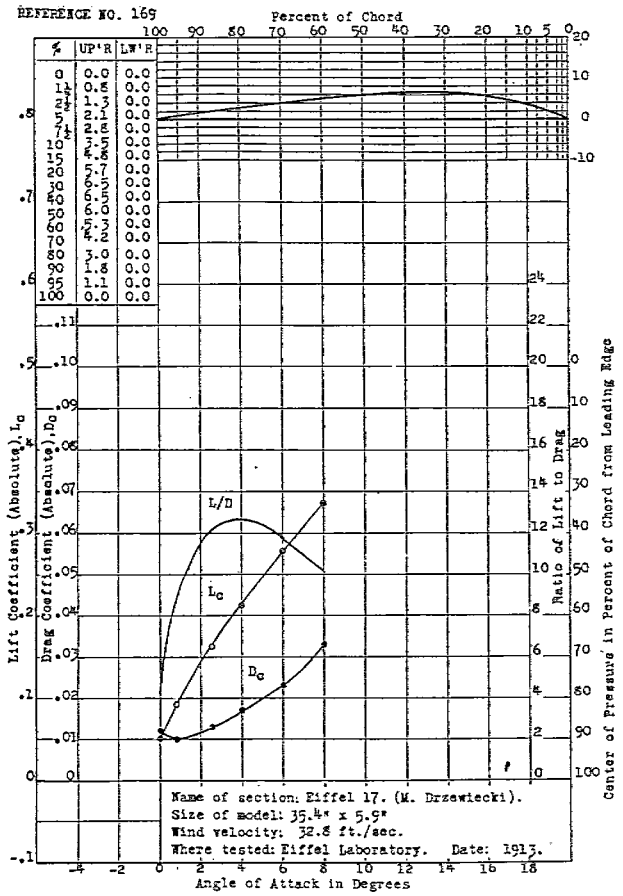
%	UP'R	LW'R
0	0.0	0.0
1¼	4.8	0.0
2½	7.2	0.0
5	10.6	0.0
7½	12.8	0.0
10	14.4	0.0
15	16.1	0.0
20	16.7	0.0
30	16.1	0.0
40	14.7	0.0
50	12.9	0.0
60	10.7	0.0
70	8.0	0.0
80	5.3	0.0
90	2.8	0.0
95	1.6	0.0
100	0.0	0.0

REFERENCE NO. 168



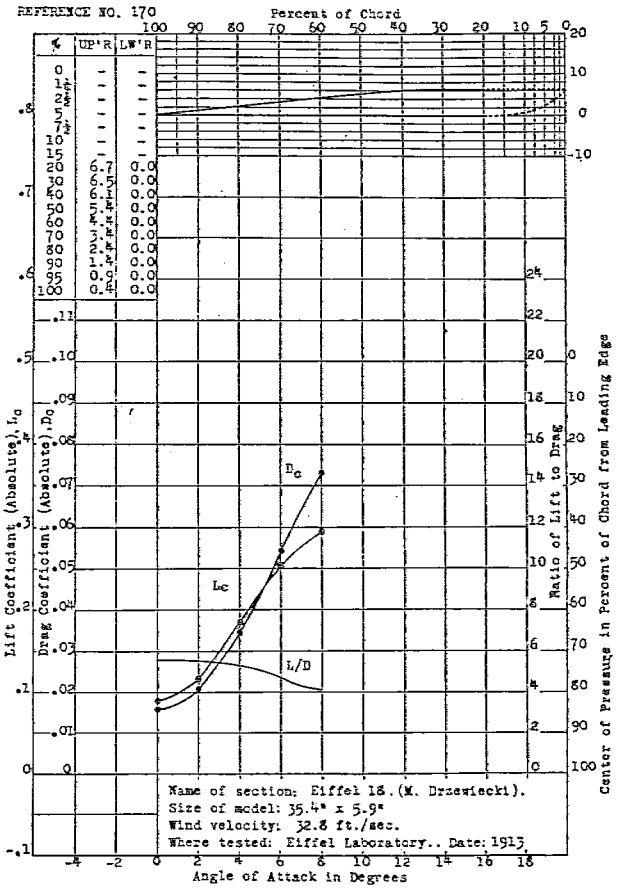
%	UP'R	LW'R
0	0.0	0.0
1¼	7.3	0.0
40	18.0	0.0
50	15.8	0.0
60	13.0	0.0
70	9.8	0.0
80	6.7	0.0
90	3.5	0.0
95	1.9	0.0
100	0.0	0.0

REFERENCE NO. 169



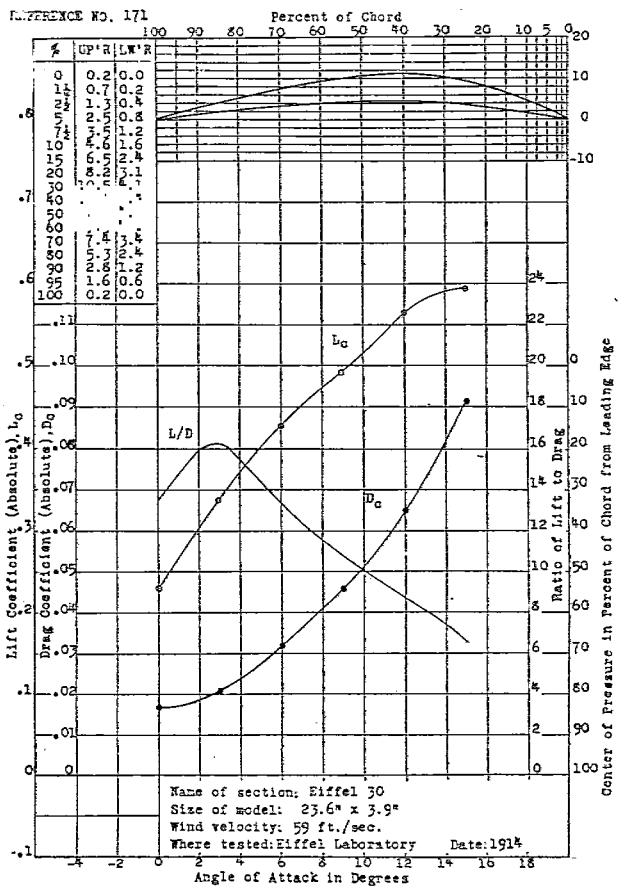
%	UP'R	LW'R
0	0.0	0.0
1¼	0.8	0.0
2½	1.3	0.0
5	2.1	0.0
7½	2.8	0.0
10	3.5	0.0
15	4.6	0.0
20	5.7	0.0
30	6.5	0.0
40	6.5	0.0
50	6.0	0.0
60	5.3	0.0
70	4.2	0.0
80	3.0	0.0
90	1.8	0.0
95	1.1	0.0
100	0.0	0.0

REFERENCE NO. 170



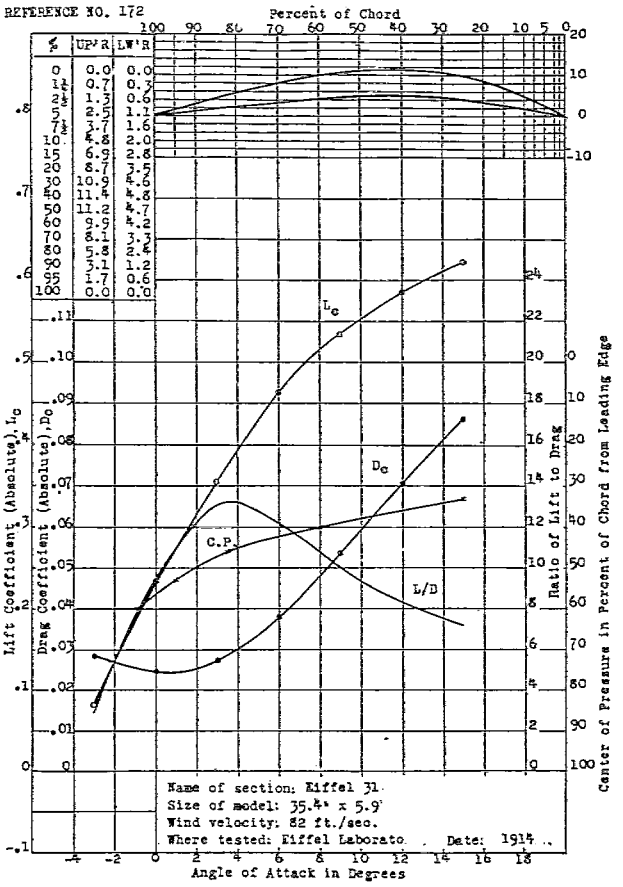
%	UP'R	LW'R
0	-	-
1¼	-	-
2½	-	-
5	-	-
7½	-	-
10	-	-
15	-	-
20	6.7	0.0
30	6.5	0.0
40	6.1	0.0
50	5.4	0.0
60	4.4	0.0
70	3.4	0.0
80	2.4	0.0
90	1.4	0.0
95	0.9	0.0
100	0.4	0.0

REFERENCE NO. 171



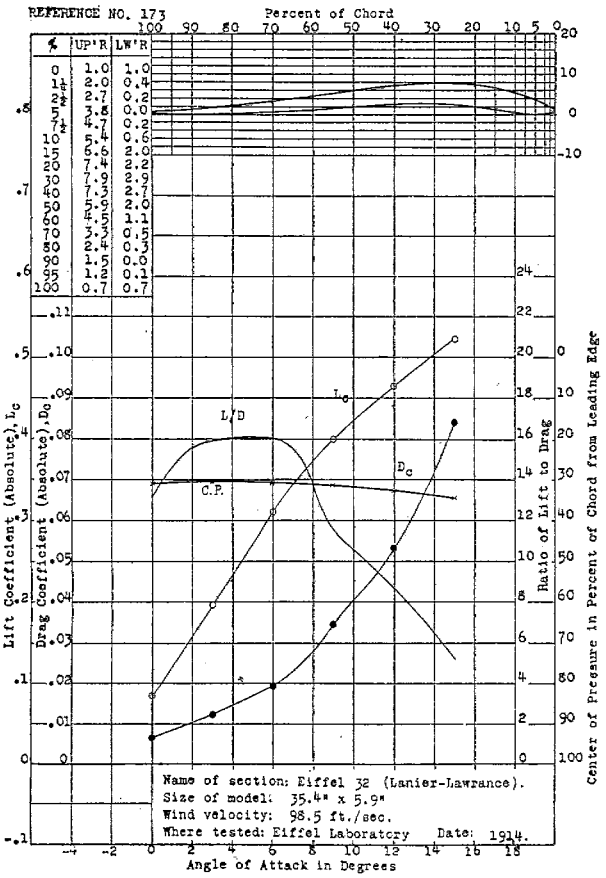
%	UP'R	LW'R
0	0.2	0.0
1¼	0.7	0.2
2½	1.3	0.4
5	2.5	0.8
7½	3.5	1.2
10	4.6	1.6
15	6.5	2.4
20	8.2	3.1
30	[illegible]	[illegible]
40	[illegible]	[illegible]
50	[illegible]	[illegible]
60	[illegible]	[illegible]
70	7.4	3.4
80	5.3	2.4
90	2.8	1.2
95	1.6	0.6
100	0.2	0.0

REFERENCE NO. 172



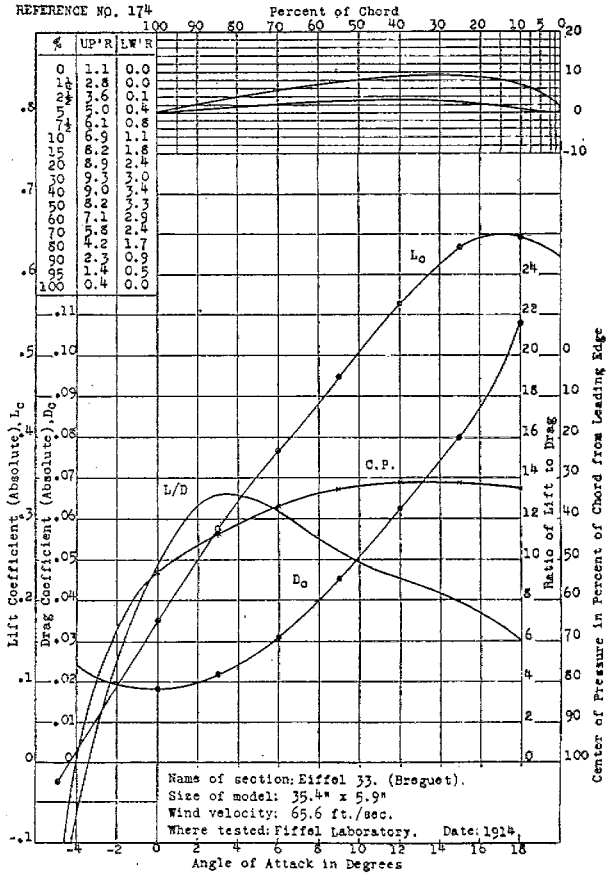
%	UP'R	LW'R
0	0.0	0.0
1¼	0.7	0.3
2½	1.3	0.6
5	2.5	1.1
7½	3.7	1.6
10	4.8	2.0
15	6.9	2.8
20	8.7	3.5
30	10.9	4.6
40	11.4	4.8
50	11.2	4.7
60	9.9	4.2
70	8.1	3.3
80	5.8	2.4
90	3.1	1.2
95	1.7	0.6
100	0.0	0.0

REFERENCE NO. 173



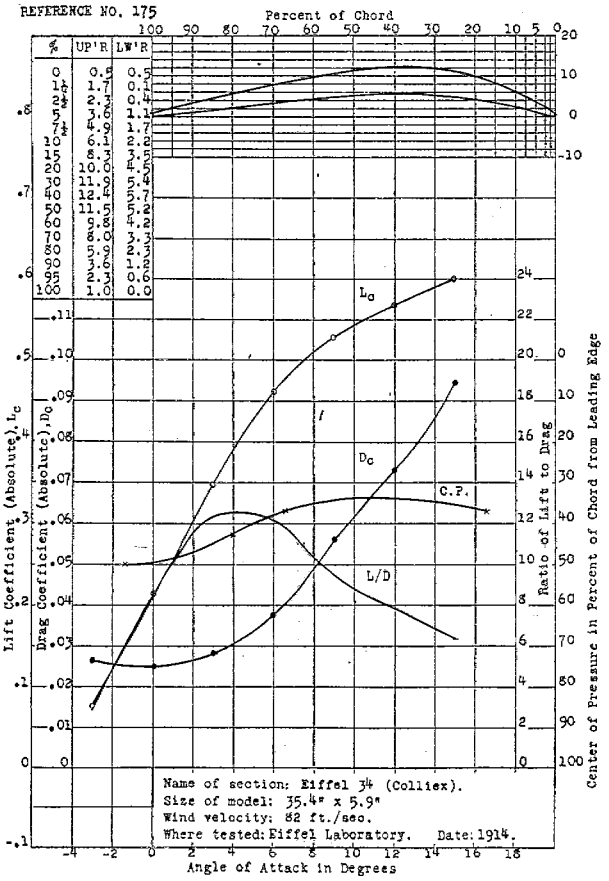
%	UP'R	LW'R
0	1.0	1.0
1¼	2.0	0.4
2½	2.7	0.2
5	3.8	0.0
7½	4.7	0.2
10	5.4	0.6
15	6.6	2.0
20	7.4	2.2
30	7.9	2.9
40	7.3	2.7
50	5.9	2.0
60	4.5	1.1
70	3.3	0.5
80	2.4	0.3
90	1.5	0.0
95	1.2	0.1
100	0.7	0.7

REFERENCE NO. 174



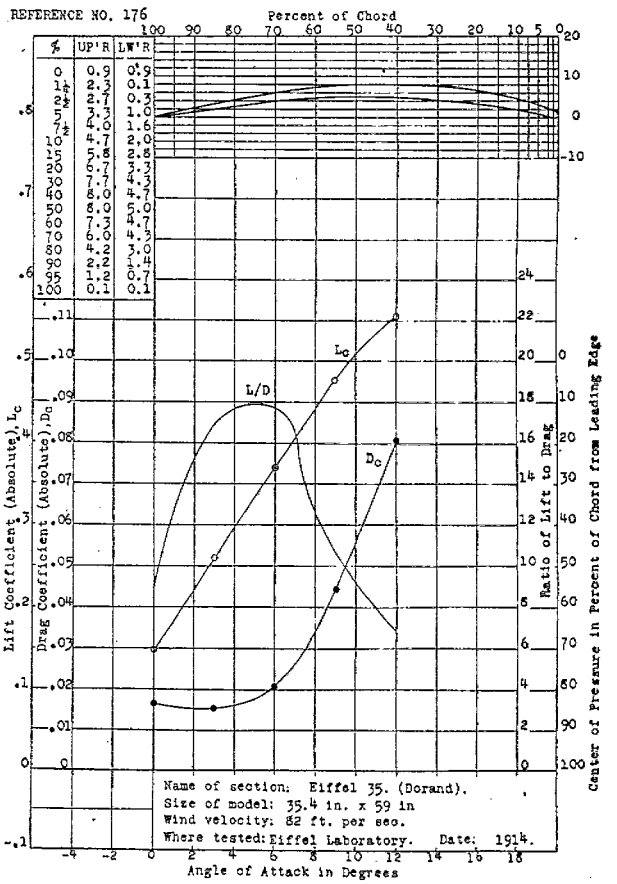
%	UP'R	LW'R
0	1.1	0.0
1¼	2.8	0.0
2½	3.6	0.1
5	5.0	0.4
7½	6.1	0.8
10	6.9	1.1
15	8.2	1.8
20	8.9	2.4
30	9.3	3.0
40	9.0	3.4
50	8.2	3.3
60	7.1	2.9
70	5.8	2.4
80	4.2	1.7
90	2.3	0.9
95	1.4	0.5
100	0.4	0.0

REFERENCE NO. 175



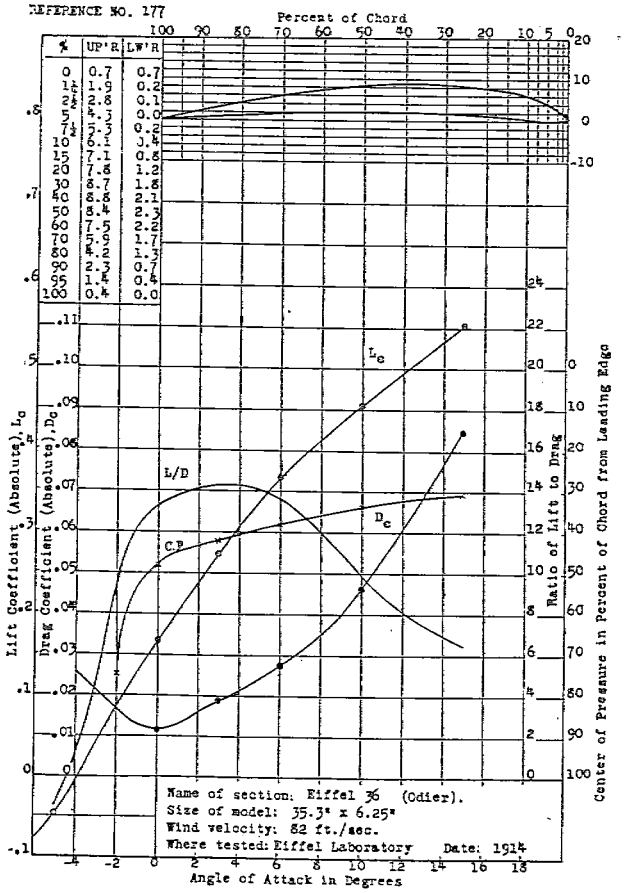
%	UP'R	LW'R
0	0.9	0.5
1¼	1.7	0.1
2½	2.3	0.4
5	3.6	1.1
7½	4.9	1.7
10	6.1	2.2
15	8.3	3.5
20	10.0	4.5
30	11.9	5.4
40	12.4	5.7
50	11.5	5.2
60	9.8	4.2
70	8.0	3.3
80	5.9	2.3
90	3.6	1.2
95	2.3	0.6
100	1.0	0.0

REFERENCE NO. 176



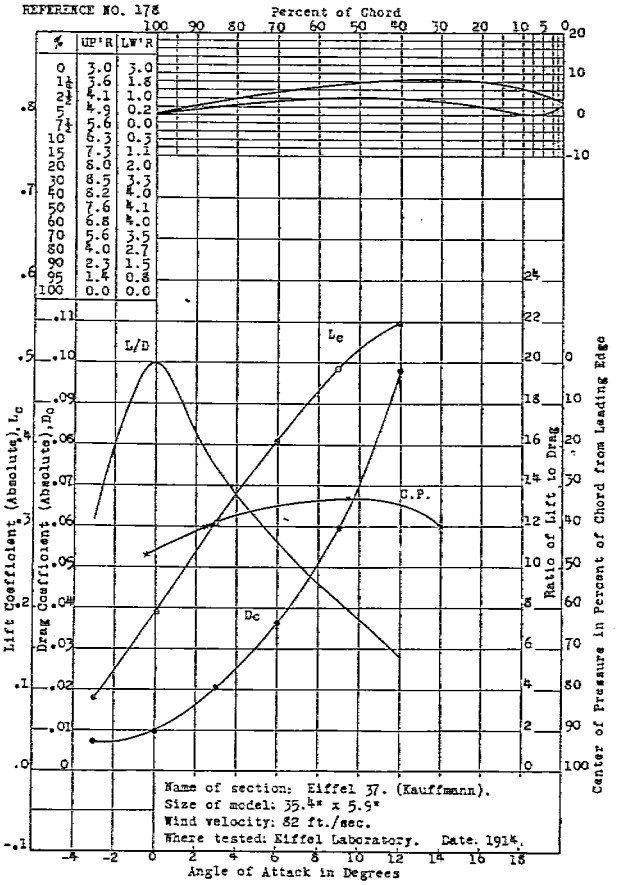
%	UP'R	LW'R
0	0.9	0.9
1¼	2.3	0.1
2½	2.7	0.3
5	3.3	1.0
7½	4.0	1.6
10	4.7	2.0
15	5.8	2.8
20	6.7	3.3
30	7.7	4.3
40	8.0	4.7
50	8.0	5.0
60	7.3	4.7
70	6.0	4.3
80	4.2	3.0
90	2.2	1.4
95	1.2	0.7
100	0.1	0.1

REFERENCE NO. 177



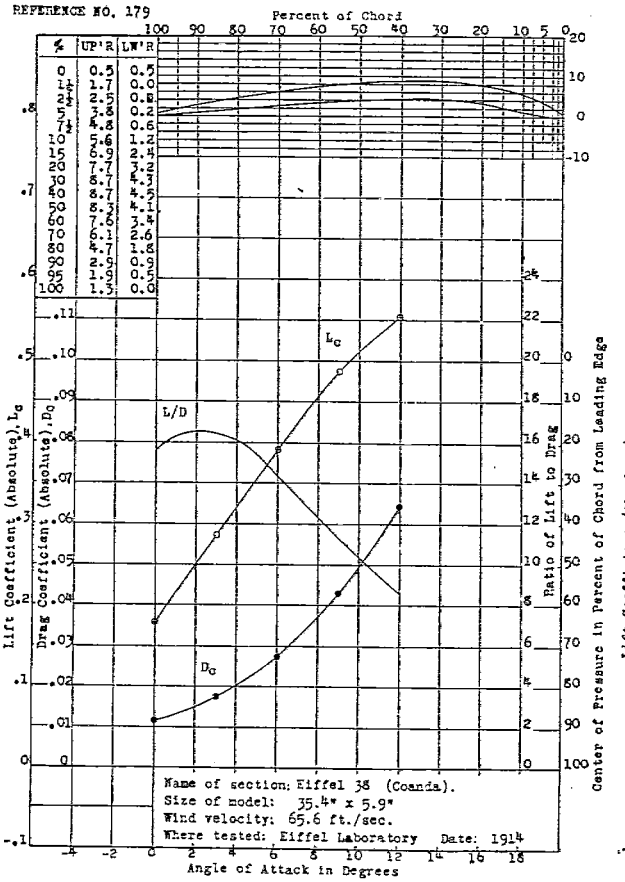
%	UP'R	LW'R
0	0.7	0.7
1¼	1.9	0.2
2½	2.8	0.1
5	4.3	0.0
7½	5.5	0.2
10	6.1	0.4
15	7.1	0.8
20	7.8	1.2
30	8.7	1.8
40	8.8	2.1
50	8.4	2.3
60	7.5	2.2
70	5.9	1.7
80	4.2	1.3
90	2.3	0.7
95	1.4	0.4
100	0.4	0.0

REFERENCE NO. 178



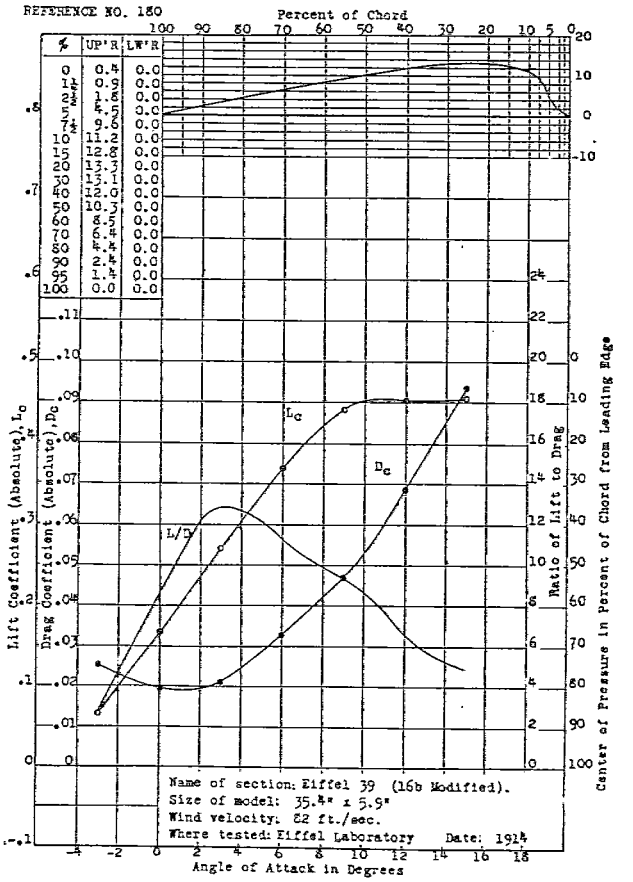
%	UP'R	LW'R
0	3.0	3.0
1¼	3.6	1.8
2½	4.1	1.0
5	4.9	0.2
7½	5.6	0.0
10	6.3	0.3
15	7.3	1.1
20	8.0	2.0
30	8.5	3.3
40	8.2	4.0
50	7.6	4.1
60	6.8	4.0
70	5.6	3.5
80	4.0	2.7
90	2.3	1.5
95	1.4	0.8
100	0.0	0.0

REFERENCE NO. 179



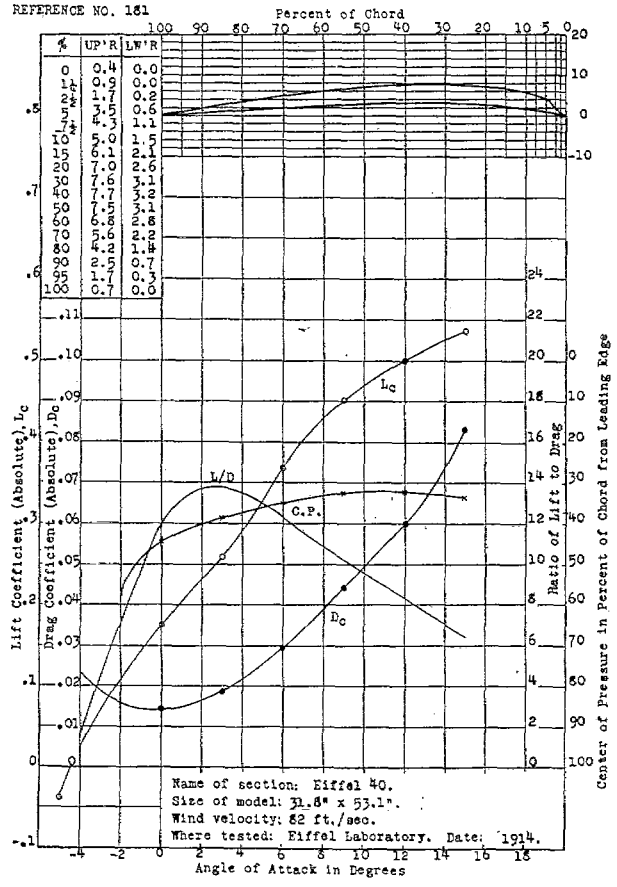
%	UP'R	LW'R
0	0.5	0.5
1¼	1.7	0.0
2½	2.5	0.8
5	3.8	0.2
7½	4.8	0.6
10	5.6	1.2
15	6.9	2.4
20	7.7	3.2
30	8.7	4.3
40	8.7	4.5
50	8.3	4.1
60	7.6	3.4
70	6.1	2.6
80	4.7	1.8
90	2.9	0.9
95	1.9	0.5
100	1.3	0.0

REFERENCE NO. 180



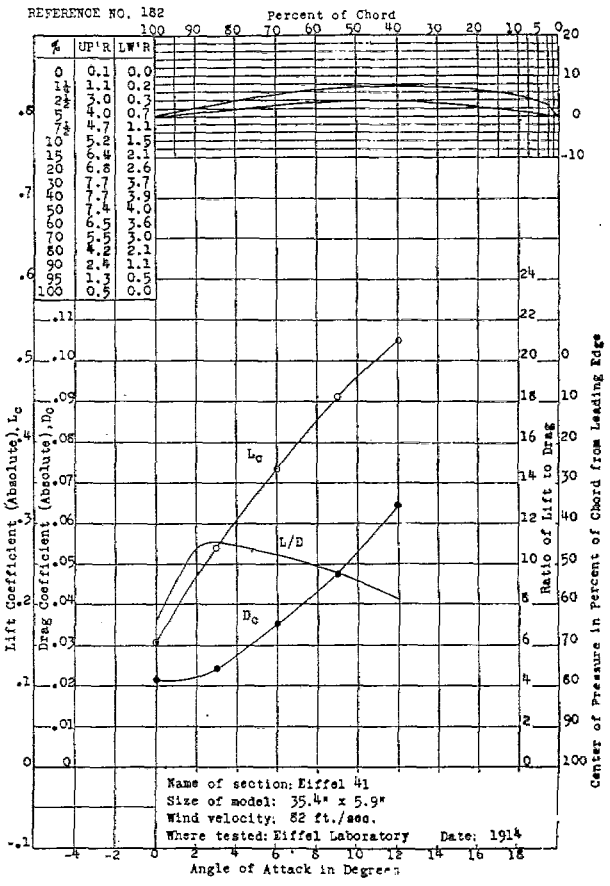
%	UP'R	LW'R
0	0.4	0.0
1¼	0.9	0.0
2½	1.8	0.0
5	4.5	0.0
7½	9.6	0.0
10	11.2	0.0
15	12.8	0.0
20	13.3	0.0
30	13.1	0.0
40	12.0	0.0
50	10.3	0.0
60	8.5	0.0
70	6.4	0.0
80	4.4	0.0
90	2.4	0.0
95	1.4	0.0
100	0.0	0.0

REFERENCE NO. 181



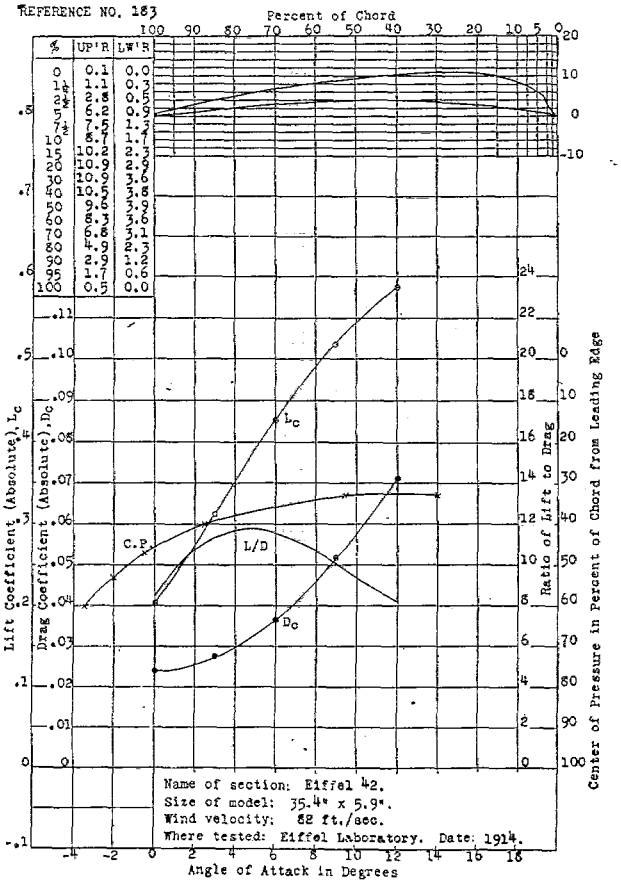
%	UP'R	LW'R
0	0.4	0.0
1¼	0.9	0.0
2½	1.7	0.2
5	3.5	0.6
7½	4.3	1.1
10	5.0	1.5
15	6.1	2.1
20	7.0	2.6
30	7.6	3.1
40	7.7	3.2
50	7.5	3.1
60	6.8	2.8
70	5.6	2.2
80	4.2	1.4
90	2.5	0.7
95	1.7	0.3
100	0.7	0.0

REFERENCE NO. 182



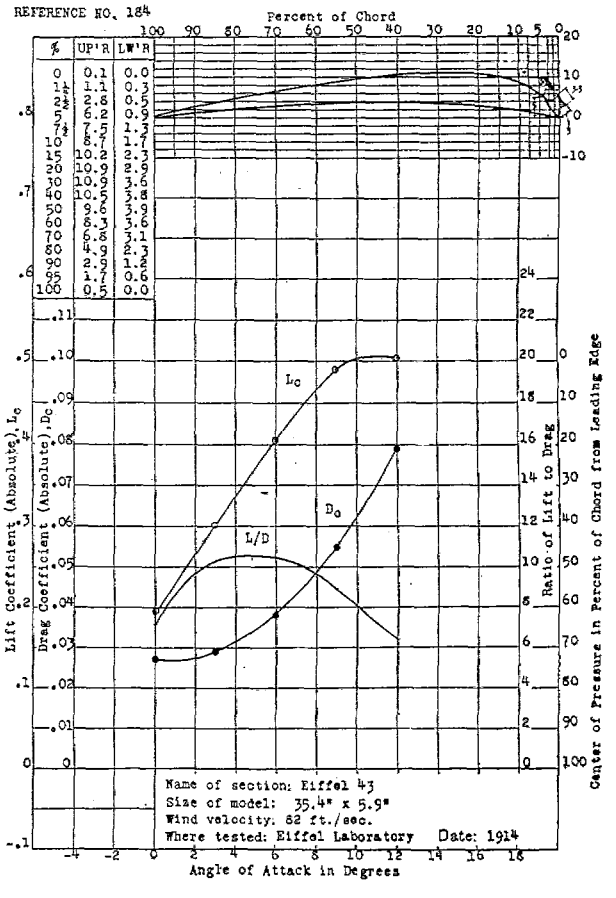
%	UP'R	LW'R
0	0.1	0.0
1¼	1.1	0.2
2½	3.0	0.3
5	4.0	0.7
7½	4.7	1.1
10	5.2	1.5
15	6.4	2.1
20	6.8	2.6
30	7.7	3.7
40	7.7	3.9
50	7.4	4.0
60	6.5	3.6
70	5.5	3.0
80	4.2	2.1
90	2.4	1.1
95	1.3	0.5
100	0.5	0.0

REFERENCE NO. 183



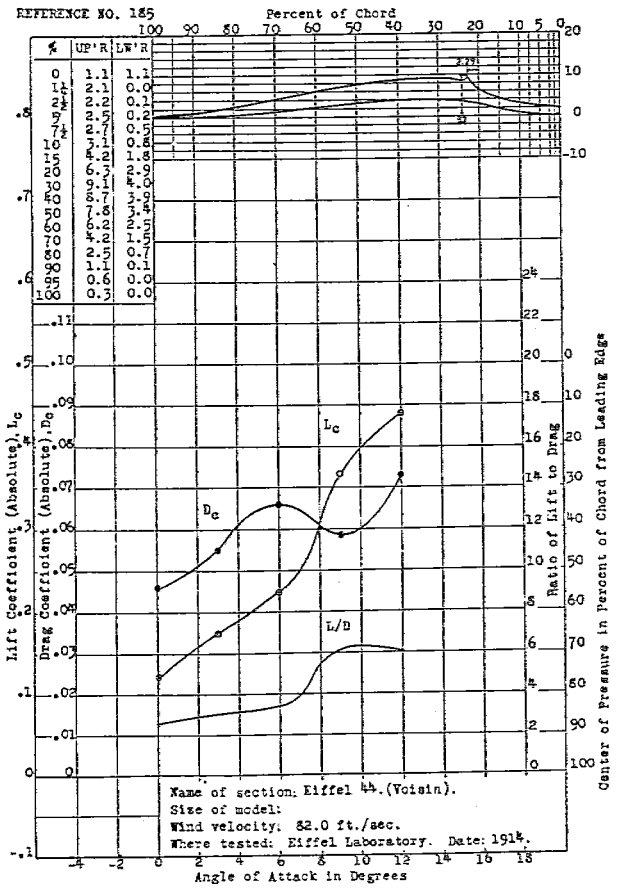
%	UP'R	LW'R
0	0.1	0.0
1¼	1.1	0.3
2½	2.8	0.5
5	6.2	0.9
7½	7.5	1.3
10	8.7	1.7
15	10.2	2.3
20	10.9	2.9
30	10.9	3.6
40	10.5	3.8
50	9.6	3.9
60	8.3	3.6
70	6.8	3.1
80	4.9	2.3
90	2.9	1.2
95	1.7	0.6
100	0.5	0.0

REFERENCE NO. 184



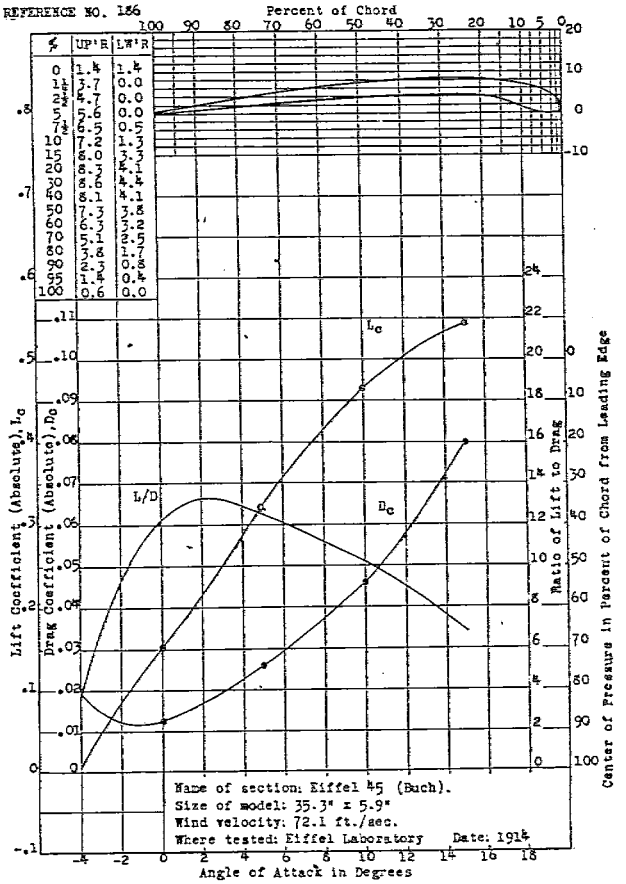
%	UP'R	LW'R
0	0.1	0.0
1¼	1.1	0.3
2½	2.8	0.5
5	6.2	0.9
7½	7.5	1.3
10	8.7	1.7
15	10.2	2.3
20	10.9	2.9
30	10.9	3.6
40	10.5	3.8
50	9.6	3.9
60	8.3	3.6
70	6.8	3.1
80	4.9	2.3
90	2.9	1.2
95	1.7	0.6
100	0.5	0.0

REFERENCE NO. 185



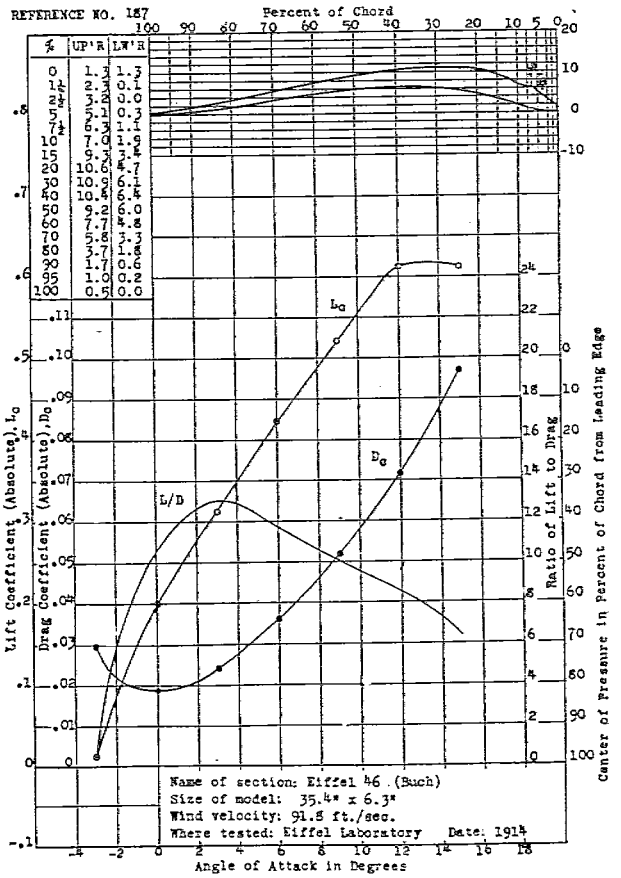
%	UP'R	LW'R
0	1.1	1.1
1¼	2.1	0.0
2½	2.2	0.1
5	2.5	0.2
7½	2.7	0.5
10	3.1	0.8
15	4.2	1.8
20	6.3	2.9
30	9.1	4.0
40	8.7	3.9
50	7.8	3.4
60	6.2	2.5
70	4.2	1.5
80	2.5	0.7
90	1.1	0.1
95	0.6	0.0
100	0.3	0.0

REFERENCE NO. 186



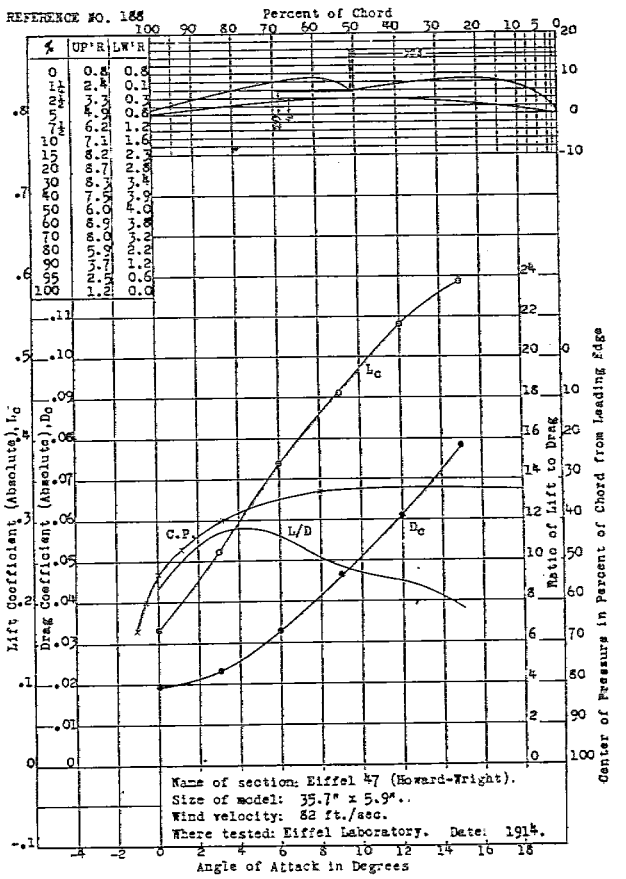
%	UP'R	LW'R
0	1.4	1.4
1¼	3.7	0.0
2½	4.7	0.0
5	5.6	0.0
7½	6.5	0.5
10	7.2	1.3
15	8.0	3.3
20	8.3	4.1
30	8.6	4.4
40	8.1	4.1
50	7.3	3.8
60	6.3	3.2
70	5.1	2.5
80	3.8	1.7
90	2.3	0.8
95	1.4	0.4
100	0.6	0.0

REFERENCE NO. 187



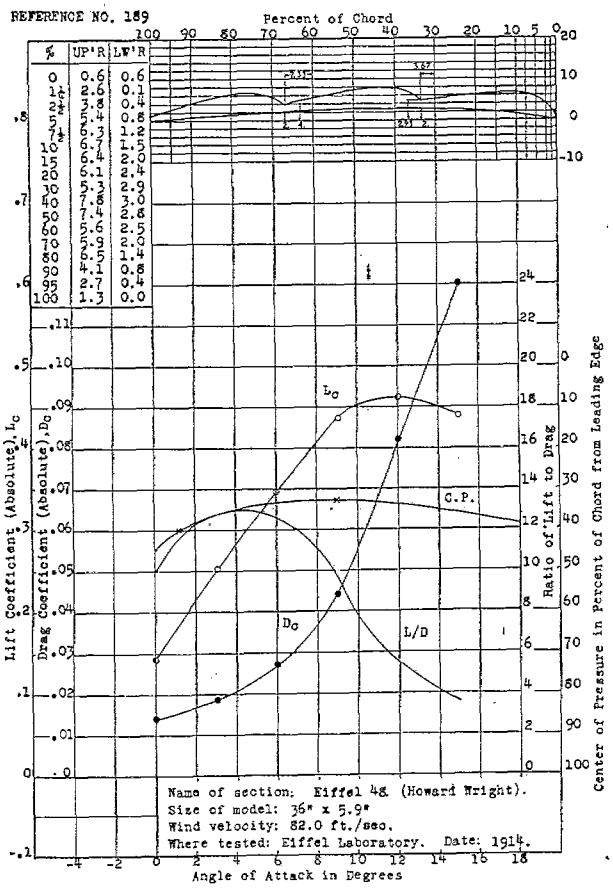
%	UP'R	LW'R
0	1.3	1.3
1¼	2.3	0.1
2½	3.2	0.0
5	5.1	0.3
7½	6.3	1.1
10	7.0	1.9
15	9.3	3.4
20	10.6	4.7
30	10.9	6.1
40	10.4	6.4
50	9.2	6.0
60	7.7	4.8
70	5.8	3.3
80	3.7	1.8
90	1.7	0.6
95	1.0	0.2
100	0.5	0.0

REFERENCE NO. 188



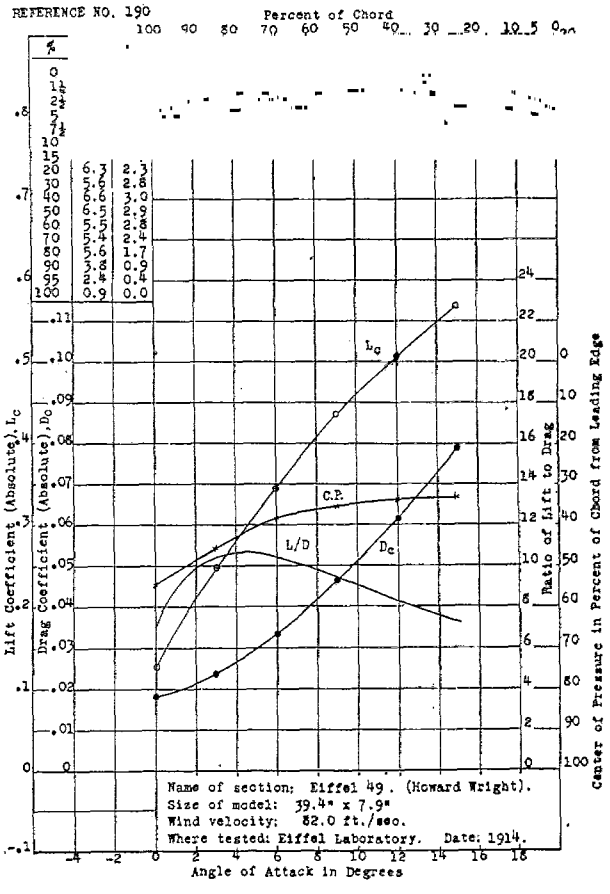
%	UP'R	LW'R
0	0.8	0.8
1¼	2.4	0.1
2½	3.3	0.3
5	4.9	0.8
7½	6.2	1.2
10	7.1	1.6
15	8.2	2.3
20	8.7	2.8
30	8.3	3.4
40	7.5	3.9
50	6.0	4.0
60	6.5	3.8
70	8.0	3.2
80	5.9	2.2
90	3.7	1.2
95	2.5	0.6
100	1.2	0.0

REFERENCE NO. 189



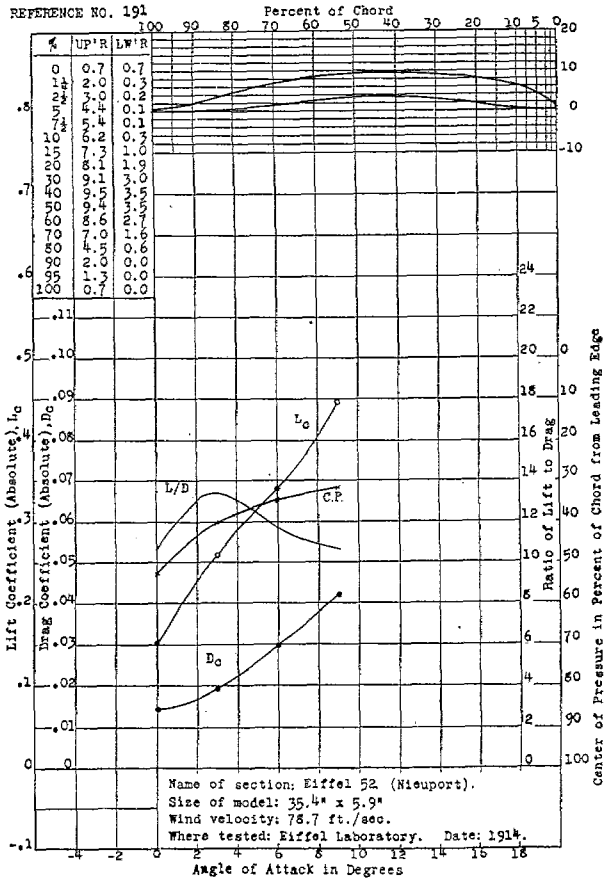
%	UP'R	LW'R
0	0.6	0.6
1¼	2.6	0.1
2½	3.8	0.4
5	5.4	0.8
7½	6.3	1.2
10	6.7	1.5
15	6.4	2.0
20	6.1	2.4
30	5.3	2.9
40	7.8	3.0
50	7.4	2.8
60	5.6	2.5
70	5.9	2.0
80	6.5	1.4
90	4.1	0.8
95	2.7	0.4
100	1.3	0.0

REFERENCE NO. 190



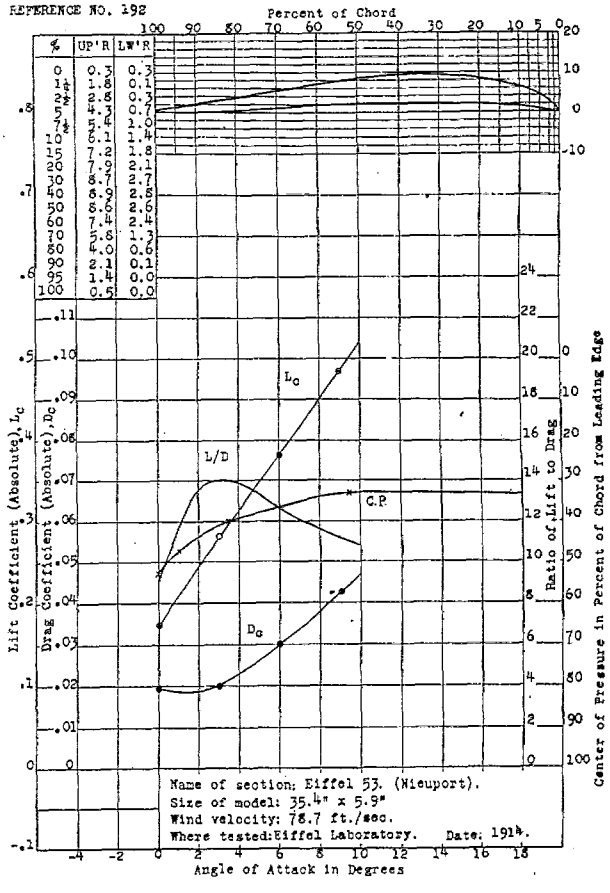
%	UP'R	LW'R
0		
1¼		
2½		
5		
7½		
10		
15		
20	6.3	2.3
30	7.9	2.8
40	6.6	3.0
50	6.5	2.9
60	5.5	2.8
70	5.4	2.4
80	5.6	1.7
90	3.8	0.9
95	2.4	0.4
100	0.9	0.0

REFERENCE NO. 191



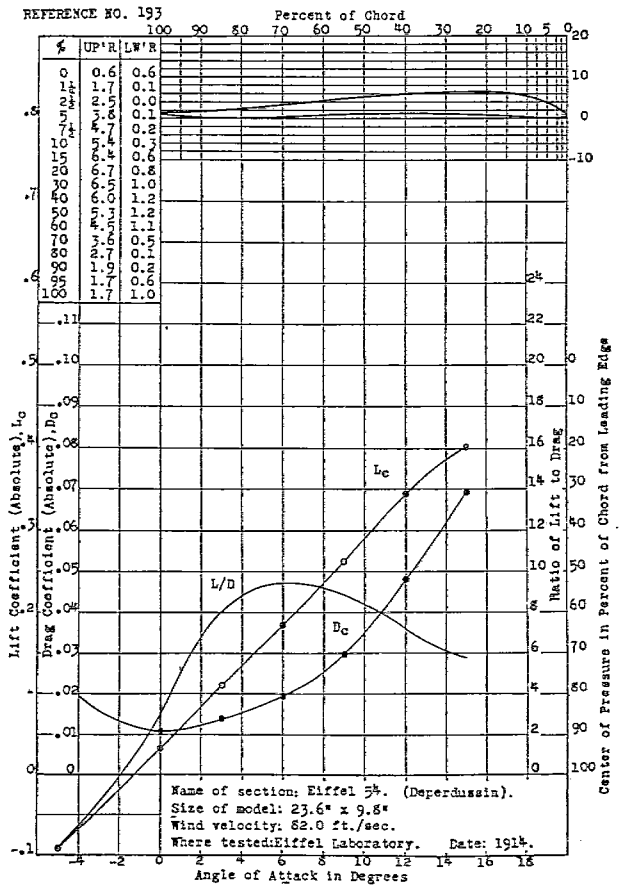
%	UP'R	LW'R
0	0.7	0.7
1¼	2.0	0.3
2½	3.0	0.2
5	4.4	0.1
7½	5.4	0.1
10	6.2	0.3
15	7.3	1.0
20	8.1	1.9
30	9.1	3.0
40	9.5	3.5
50	9.4	3.5
60	8.6	2.7
70	7.0	1.6
80	4.5	0.6
90	2.0	0.0
95	1.3	0.0
100	0.7	0.0

REFERENCE NO. 192



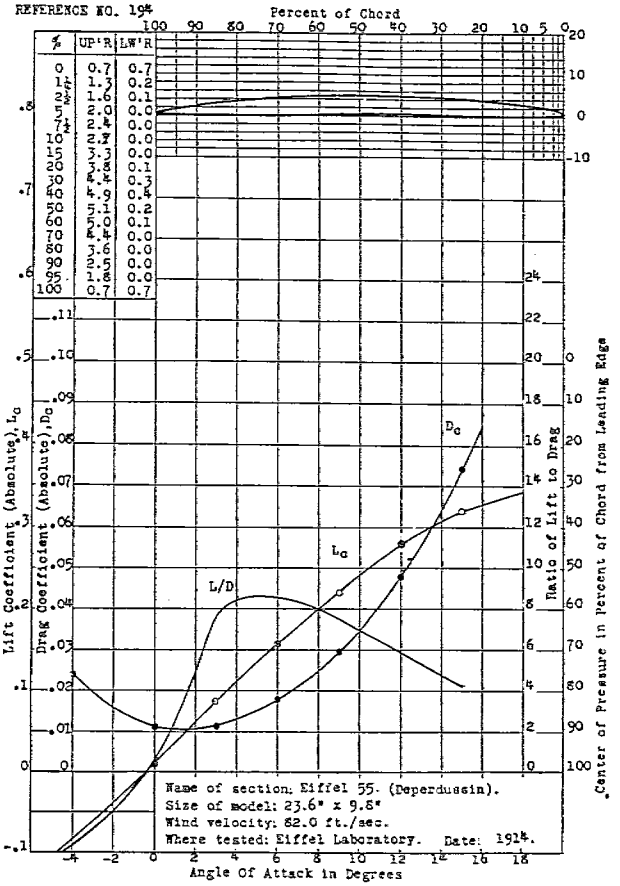
%	UP'R	LW'R
0	0.3	0.3
1¼	1.8	0.1
2½	2.8	0.3
5	4.3	0.7
7½	5.4	1.0
10	6.1	1.4
15	7.2	1.8
20	7.9	2.1
30	8.7	2.7
40	8.9	2.8
50	8.6	2.6
60	7.4	2.4
70	5.8	1.3
80	4.0	0.6
90	2.1	0.1
95	1.4	0.0
100	0.5	0.0

REFERENCE NO. 193



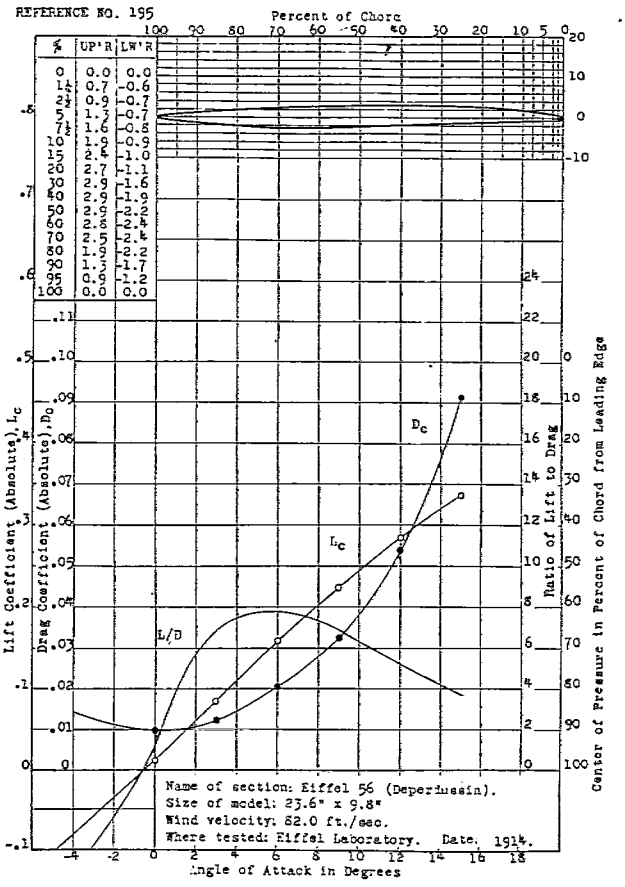
%	UP'R	LW'R
0	0.6	0.6
1¼	1.7	0.1
2½	2.5	0.0
5	3.8	0.1
7½	4.7	0.2
10	5.4	0.3
15	6.4	0.6
20	6.7	0.8
30	6.5	1.0
40	6.0	1.2
50	5.3	1.2
60	4.5	1.1
70	3.6	0.5
80	2.7	0.1
90	1.9	0.2
95	1.7	0.6
100	1.7	1.0

REFERENCE NO. 194



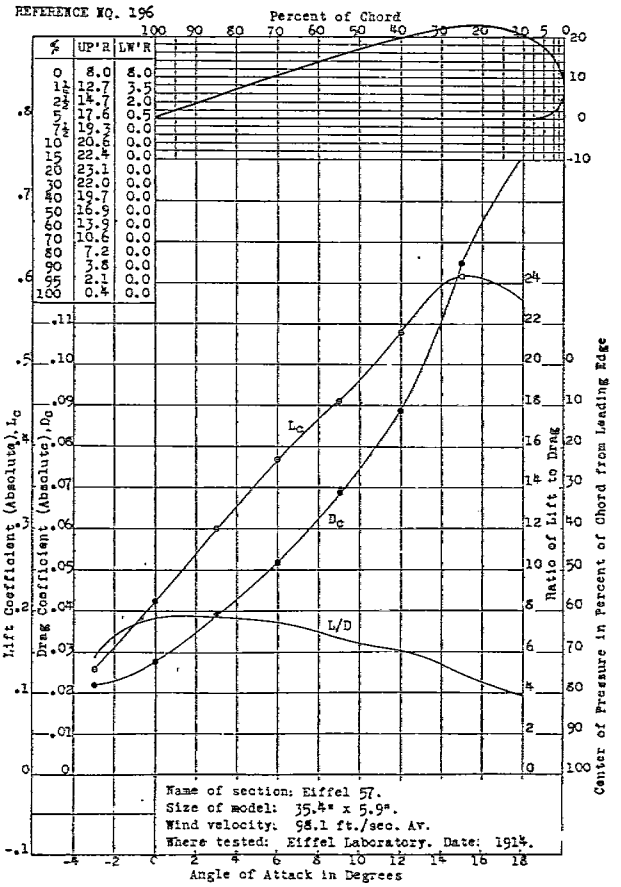
%	UP'R	LW'R
0	0.7	0.7
1¼	1.3	0.2
2½	1.6	0.1
5	2.0	0.0
7½	2.4	0.0
10	2.7	0.0
15	3.3	0.0
20	3.8	0.1
30	4.4	0.3
40	4.9	0.4
50	5.1	0.2
60	5.0	0.1
70	4.4	0.0
80	3.6	0.0
90	2.5	0.0
95	1.8	0.0
100	0.7	0.7

REFERENCE NO. 195



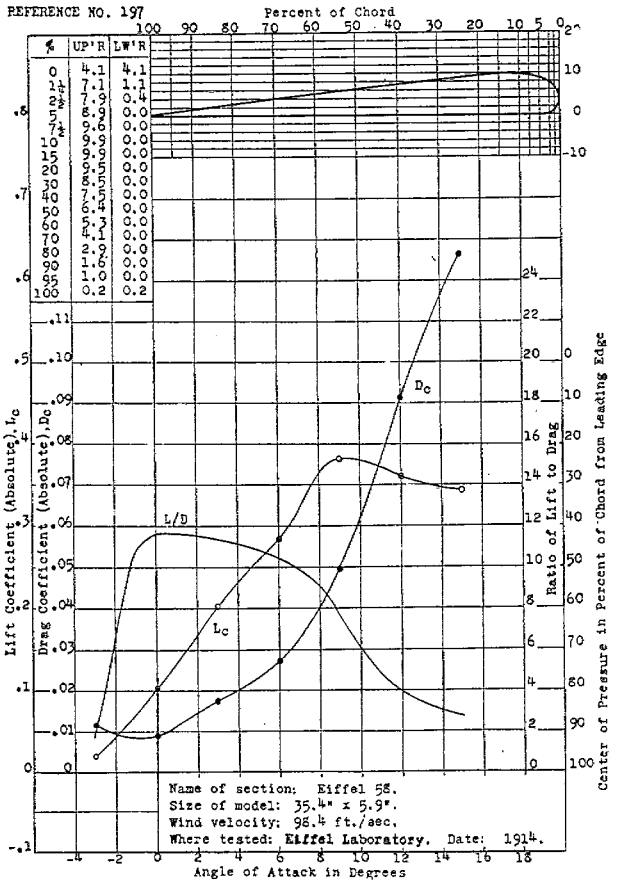
%	UP'R	LW'R
0	0.0	0.0
1¼	0.7	-0.6
2½	0.9	-0.7
5	1.3	-0.7
7½	1.6	-0.8
10	1.9	-0.9
15	2.4	-1.0
20	2.7	-1.1
30	2.9	-1.6
40	2.9	-1.9
50	2.9	-2.2
60	2.8	-2.4
70	2.5	-2.4
80	1.9	-2.2
90	1.3	-1.7
95	0.9	-1.2
100	0.0	0.0

REFERENCE NO. 196



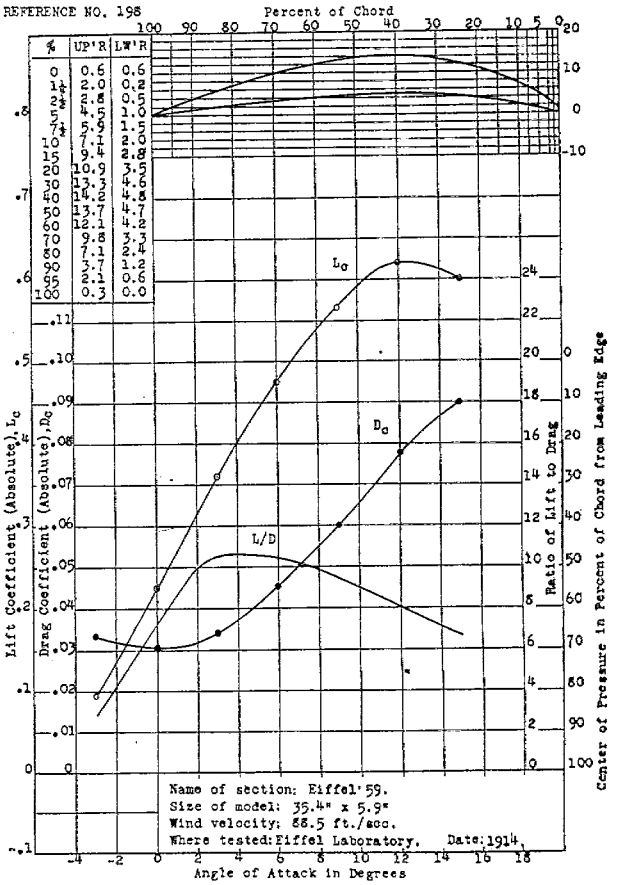
%	UP'R	LW'R
0	8.0	8.0
1¼	12.7	3.5
2½	14.7	2.0
5	17.6	0.5
7½	19.3	0.0
10	20.6	0.0
15	22.4	0.0
20	23.1	0.0
30	22.0	0.0
40	19.7	0.0
50	16.9	0.0
60	13.9	0.0
70	10.6	0.0
80	7.2	0.0
90	3.8	0.0
95	2.1	0.0
100	0.4	0.0

REFERENCE NO. 197



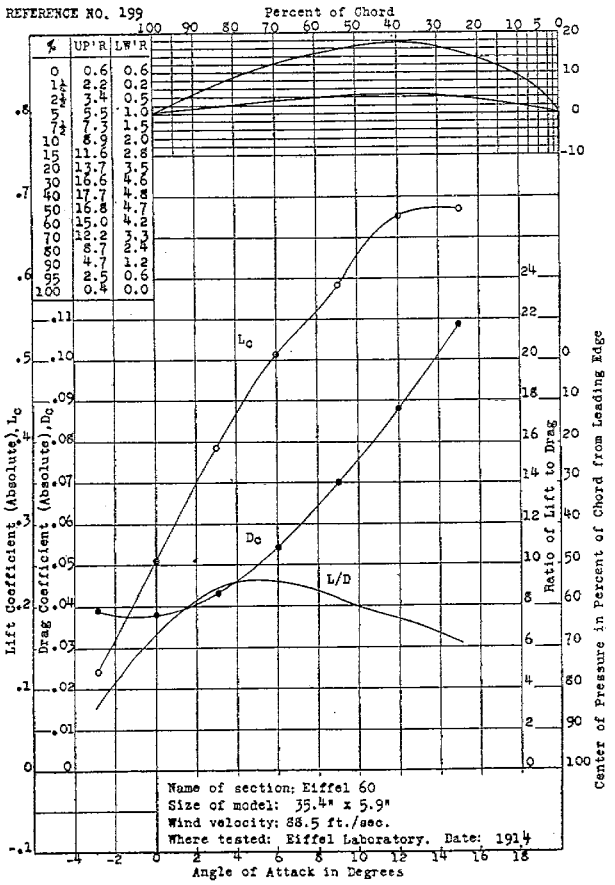
%	UP'R	LW'R
0	4.1	4.1
1¼	7.1	1.1
2½	7.9	0.4
5	8.9	0.0
7½	9.6	0.0
10	9.9	0.0
15	9.9	0.0
20	9.5	0.0
30	8.5	0.0
40	7.5	0.0
50	6.4	0.0
60	5.3	0.0
70	4.1	0.0
80	2.9	0.0
90	1.6	0.0
95	1.0	0.0
100	0.2	0.2

REFERENCE NO. 198



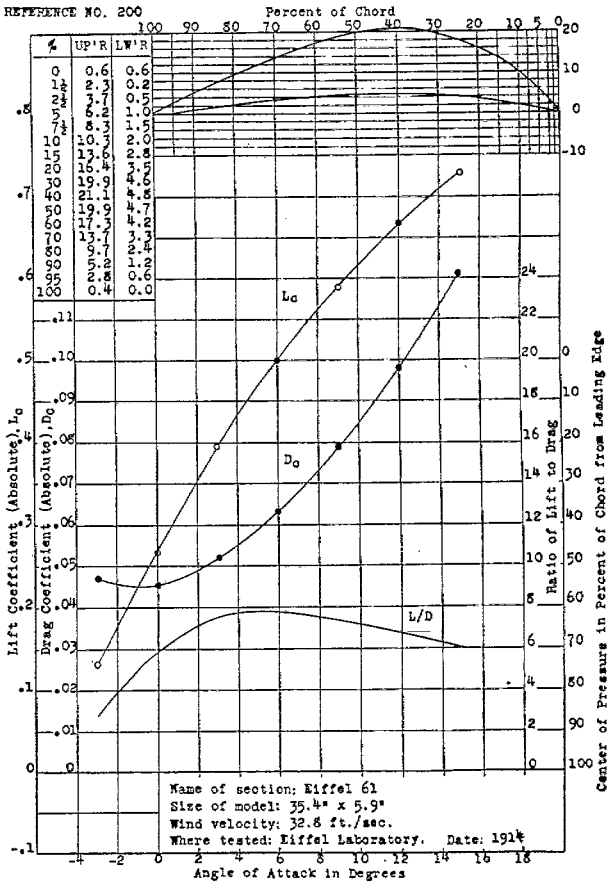
%	UP'R	LW'R
0	0.6	0.6
1¼	2.0	0.2
2½	2.8	0.5
5	4.5	1.0
7½	5.9	1.5
10	7.1	2.0
15	9.4	2.8
20	10.9	3.5
30	13.3	4.6
40	14.2	4.8
50	13.7	4.7
60	12.1	4.2
70	9.8	3.3
80	7.1	2.4
90	3.7	1.2
95	2.1	0.6
100	0.3	0.0

REFERENCE NO. 199



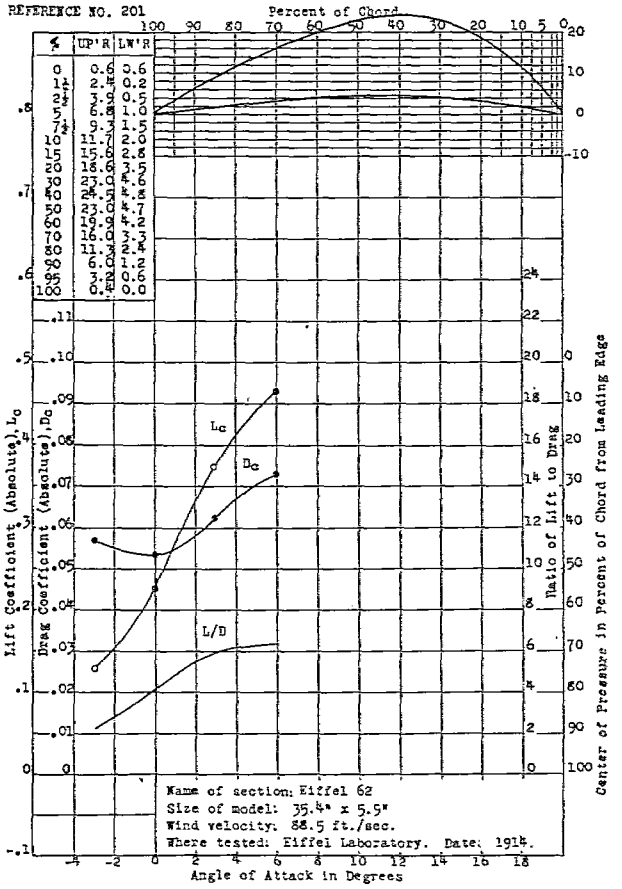
%	UP'R	LW'R
0	0.6	0.6
1¼	2.2	0.2
2½	3.4	0.5
5	5.5	1.0
7½	7.3	1.5
10	8.9	2.0
15	11.6	2.8
20	13.7	3.5
30	16.6	4.6
40	17.7	4.8
50	16.8	4.7
60	15.0	4.2
70	12.2	3.3
80	8.7	2.4
90	4.7	1.2
95	2.5	0.6
100	0.4	0.0

REFERENCE NO. 200



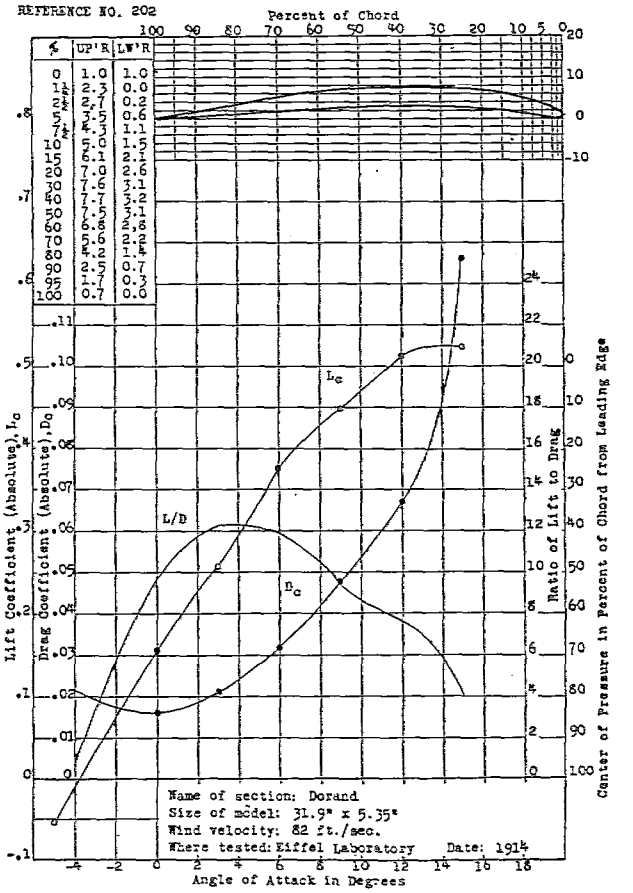
%	UP'R	LW'R
0	0.6	0.6
1¼	2.3	0.2
2½	3.7	0.5
5	6.2	1.0
7½	8.3	1.5
10	10.3	2.0
15	13.6	2.8
20	16.4	3.5
30	19.9	4.6
40	21.1	4.8
50	19.9	4.7
60	17.3	4.2
70	13.7	3.3
80	9.7	2.4
90	5.2	1.2
95	2.8	0.6
100	0.4	0.0

REFERENCE NO. 201



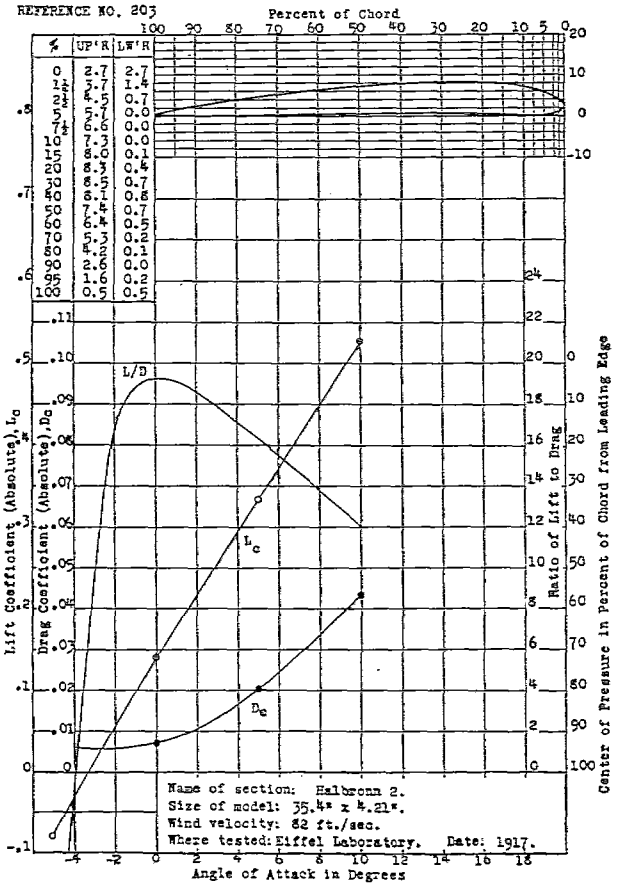
%	UP'R	LW'R
0	0.6	0.6
1¼	2.4	0.2
2½	3.9	0.5
5	6.8	1.0
7½	9.3	1.5
10	11.7	2.0
15	15.6	2.8
20	18.6	3.5
30	23.0	4.6
40	24.5	4.8
50	23.0	4.7
60	19.9	4.2
70	16.0	3.3
80	11.3	2.4
90	6.0	1.2
95	3.2	0.6
100	0.4	0.0

REFERENCE NO. 202



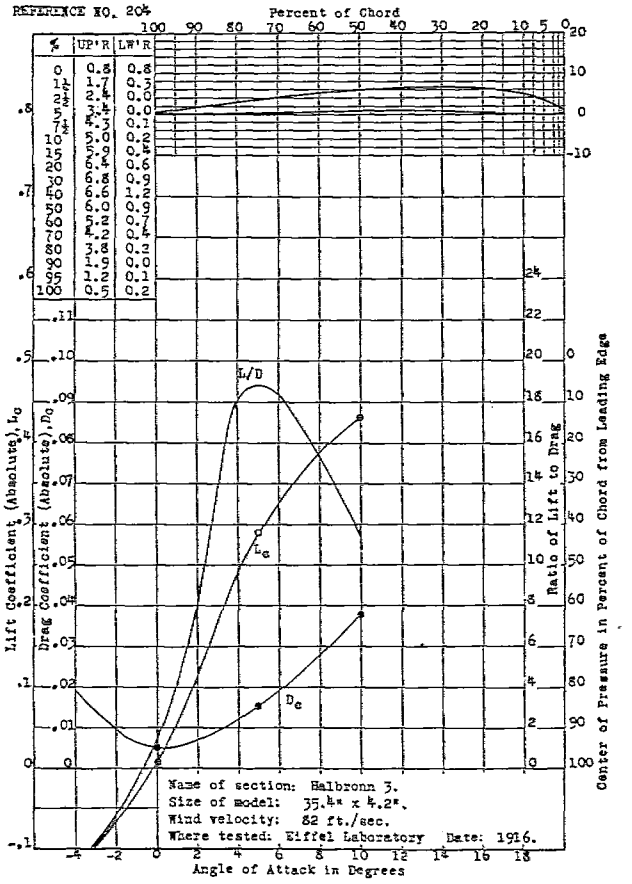
%	UP'R	LW'R
0	1.0	1.0
1¼	2.3	0.0
2½	2.7	0.2
5	3.5	0.6
7½	4.3	1.1
10	5.0	1.5
15	6.1	2.1
20	7.0	2.6
30	7.6	3.1
40	7.7	3.2
50	7.5	3.1
60	6.8	2.6
70	5.6	2.2
80	4.2	1.4
90	2.5	0.7
95	1.7	0.3
100	0.7	0.0

REFERENCE NO. 203



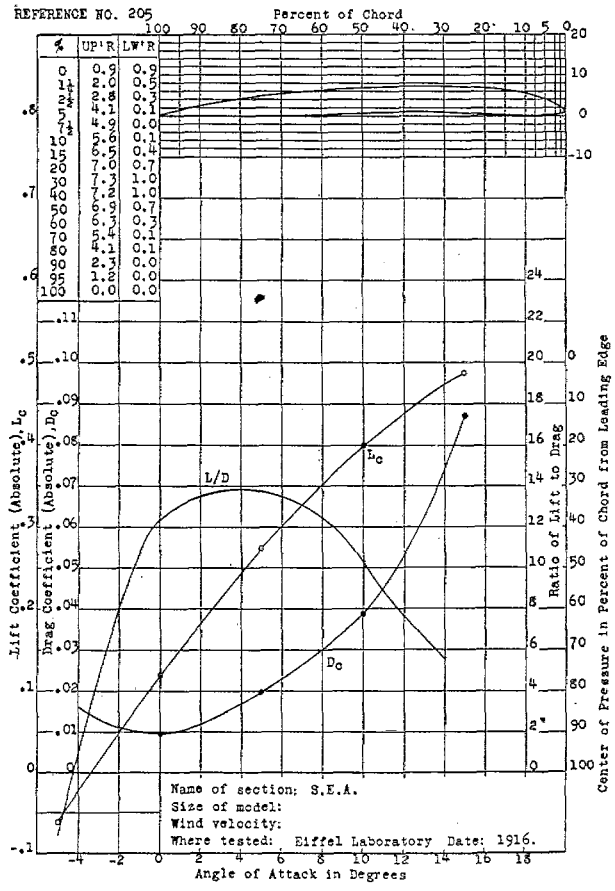
%	UP'R	LW'R
0	2.7	2.7
1¼	3.7	1.4
2½	4.5	0.7
5	5.7	0.0
7½	6.6	0.0
10	7.3	0.0
15	8.0	0.1
20	8.3	0.4
30	8.5	0.7
40	8.1	0.8
50	7.4	0.7
60	6.4	0.5
70	5.3	0.2
80	4.2	0.1
90	2.6	0.0
95	1.6	0.2
100	0.5	0.5

REFERENCE NO. 204



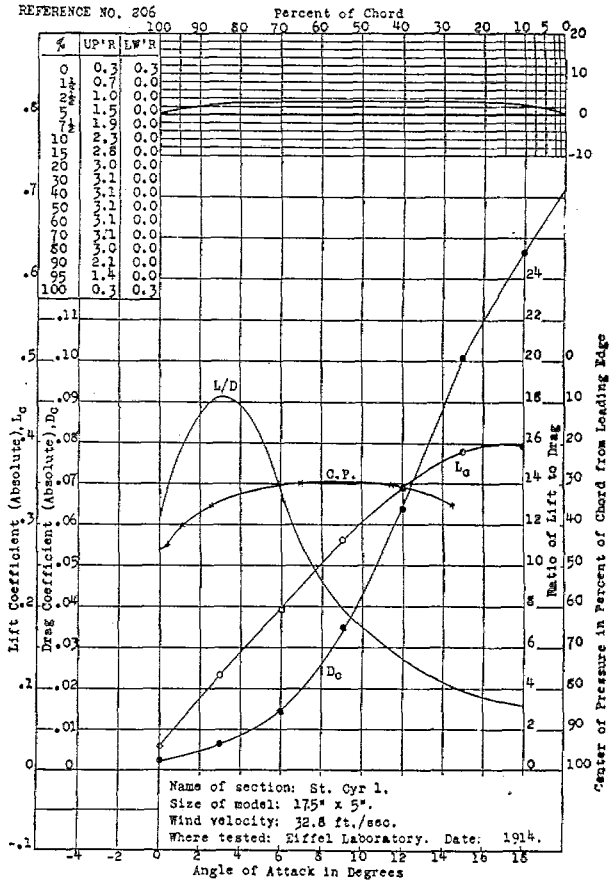
%	UP'R	LW'R
0	0.8	0.8
1¼	1.7	0.3
2½	2.4	0.0
5	3.4	0.0
7½	4.3	0.1
10	5.0	0.2
15	5.9	0.4
20	6.4	0.6
30	6.8	0.9
40	6.6	1.2
50	6.0	0.9
60	5.2	0.7
70	4.2	0.4
80	3.8	0.2
90	1.9	0.0
95	1.2	0.1
100	0.5	0.2

REFERENCE NO. 205



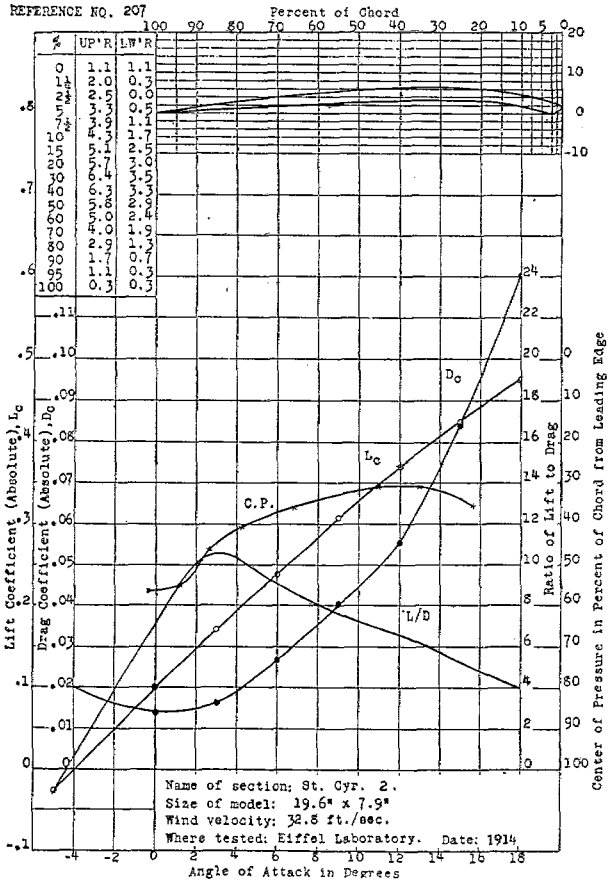
%	UP'R	LW'R
0	0.9	0.9
1¼	2.0	0.5
2½	2.8	0.3
5	4.1	0.1
7½	4.9	0.0
10	5.6	0.1
15	6.5	0.4
20	7.0	0.7
30	7.3	1.0
40	7.2	1.0
50	6.9	0.7
60	6.3	0.3
70	5.4	0.1
80	4.1	0.1
90	2.3	0.0
95	1.2	0.0
100	0.0	0.0

REFERENCE NO. 206



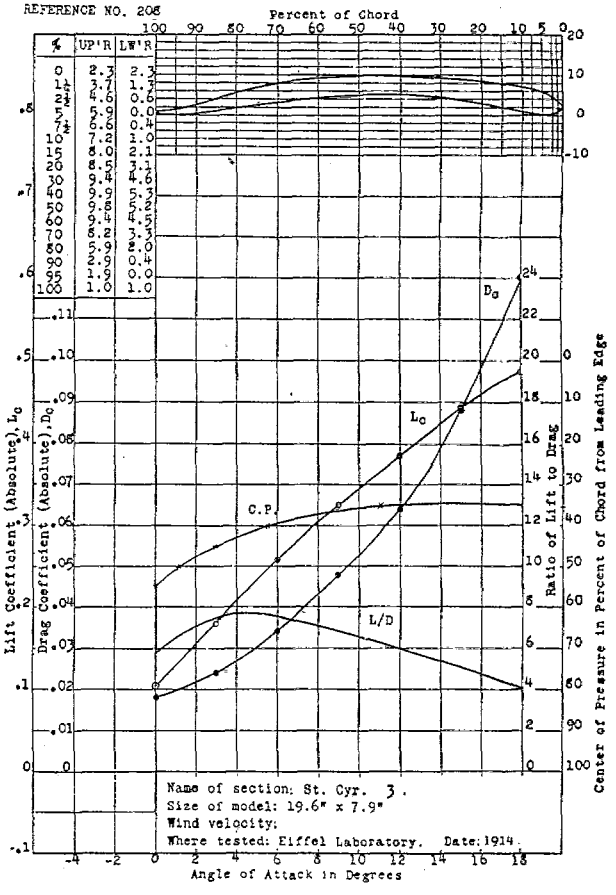
%	UP'R	LW'R
0	0.3	0.3
1¼	0.7	0.0
2½	1.0	0.0
5	1.5	0.0
7½	1.9	0.0
10	2.3	0.0
15	2.8	0.0
20	3.0	0.0
30	3.1	0.0
40	3.1	0.0
50	3.1	0.0
60	3.1	0.0
70	3.1	0.0
80	3.0	0.0
90	2.1	0.0
95	1.4	0.0
100	0.3	0.3

REFERENCE NO. 207



%	UP'R	LW'R
0	1.1	1.1
1¼	2.0	0.3
2½	2.5	0.0
5	3.3	0.5
7½	3.9	1.1
10	4.3	1.7
15	5.1	2.5
20	5.7	3.0
30	6.4	3.5
40	6.3	3.3
50	5.8	2.9
60	5.0	2.4
70	4.0	1.9
80	2.9	1.3
90	1.7	0.7
95	1.1	0.3
100	0.3	0.3

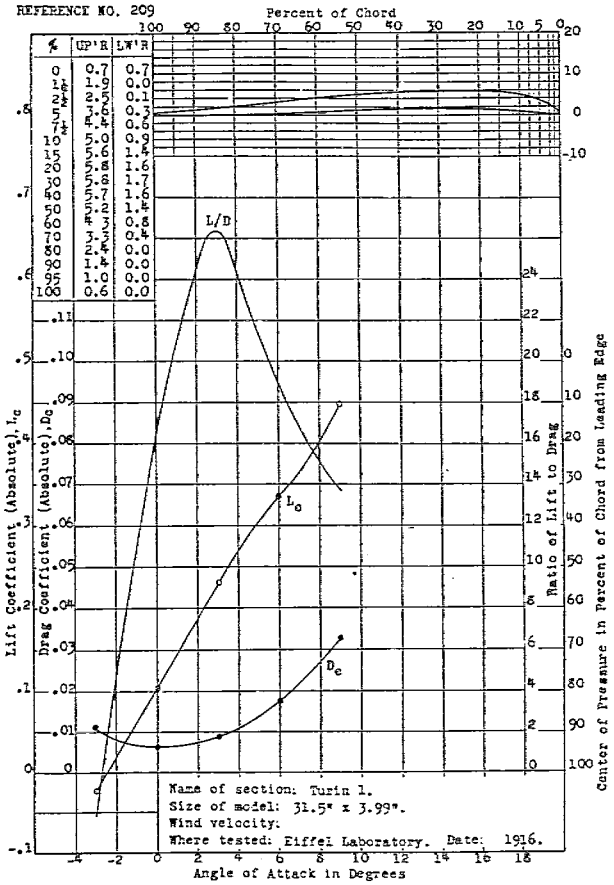
REFERENCE NO. 208



%	UP'R	LW'R
0	2.3	2.3
1¼	3.7	1.3
2½	4.6	0.6
5	5.9	0.0
7½	6.6	0.4
10	7.2	1.0
15	8.0	2.1
20	8.5	3.1
30	9.4	4.6
40	9.9	5.3
50	9.8	5.2
60	9.4	4.5
70	8.2	3.3
80	5.9	2.0
90	2.9	0.4
95	1.9	0.0
100	1.0	1.0

REFERENCE NO. 209

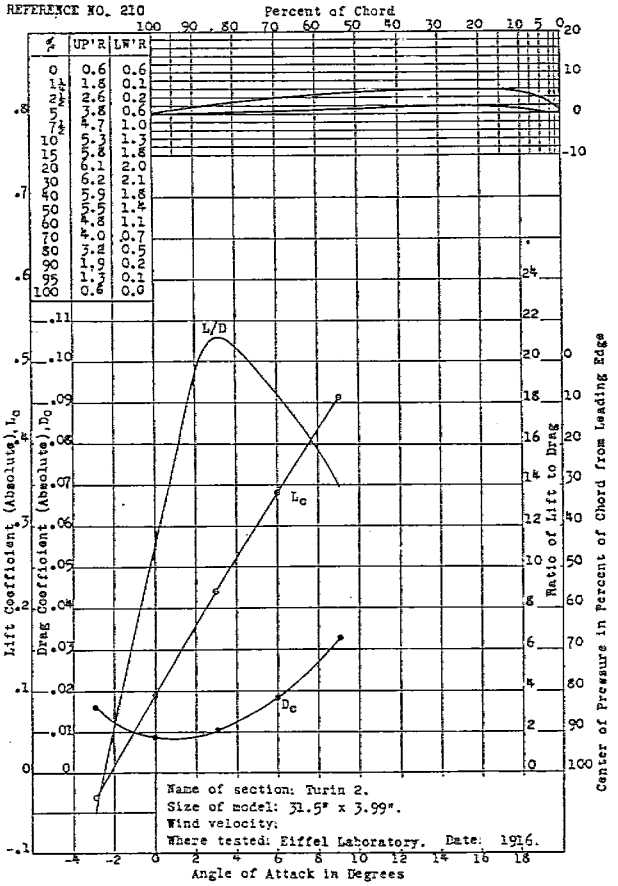
%	UP'R	LW'R
0	0.7	0.7
1¼	1.9	0.0
2½	2.5	0.1
5	3.6	0.3
7½	4.4	0.6
10	5.0	0.9
15	5.6	1.4
20	5.8	1.6
30	5.8	1.7
40	5.7	1.6
50	5.2	1.4
60	4.3	0.8
70	3.3	0.4
80	2.4	0.0
90	1.4	0.0
95	1.0	0.0
100	0.6	0.0



Name of section: Turin 1.
Size of model: 31.5" x 3.99".
Wind velocity:
Where tested: Eiffel Laboratory. Date: 1916.

REFERENCE NO. 210

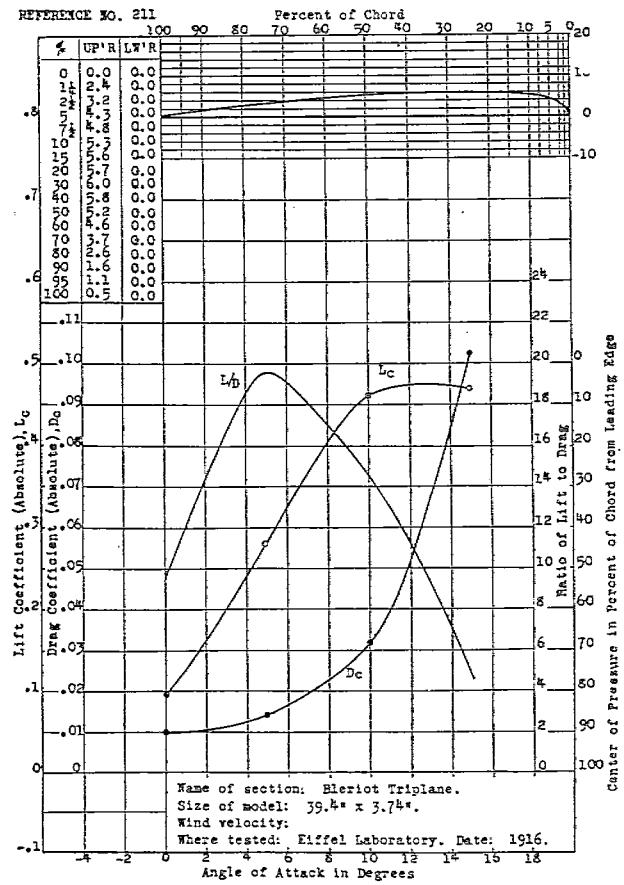
%	UP'R	LW'R
0	0.6	0.6
1¼	1.8	0.1
2½	2.6	0.2
5	3.8	0.6
7½	4.7	1.0
10	5.3	1.3
15	5.8	1.8
20	6.1	2.0
30	6.2	2.1
40	5.9	1.8
50	5.5	1.4
60	4.8	1.1
70	4.0	0.7
80	3.2	0.5
90	1.9	0.2
95	1.3	0.1
100	0.6	0.0



Name of section: Turin 2.
Size of model: 31.5" x 3.99".
Wind velocity:
Where tested: Eiffel Laboratory. Date: 1916.

REFERENCE NO. 211

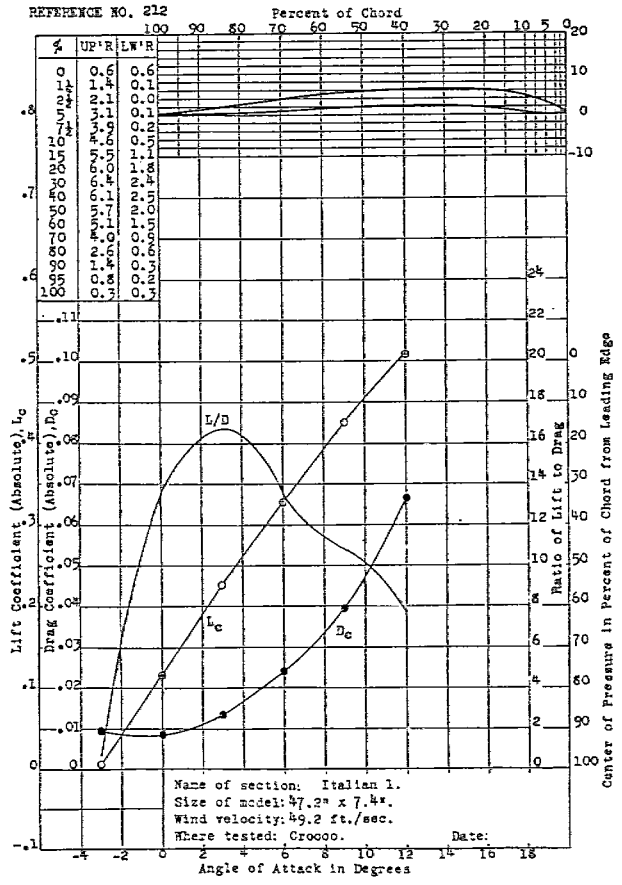
%	UP'R	LW'R
0	0.0	0.0
1¼	2.4	0.0
2½	3.2	0.0
5	4.3	0.0
7½	4.8	0.0
10	5.3	0.0
15	5.6	0.0
20	5.7	0.0
30	6.0	0.0
40	5.8	0.0
50	5.2	0.0
60	4.6	0.0
70	3.7	0.0
80	2.6	0.0
90	1.6	0.0
95	1.1	0.0
100	0.5	0.0



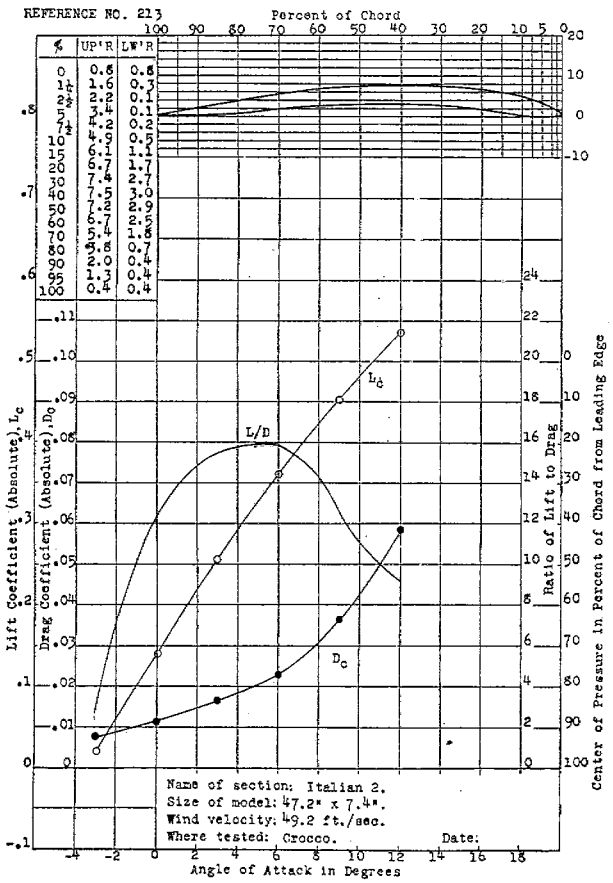
Name of section: Bleriot Triplane.
Size of model: 39.4" x 3.74".
Wind velocity:
Where tested: Eiffel Laboratory. Date: 1916.

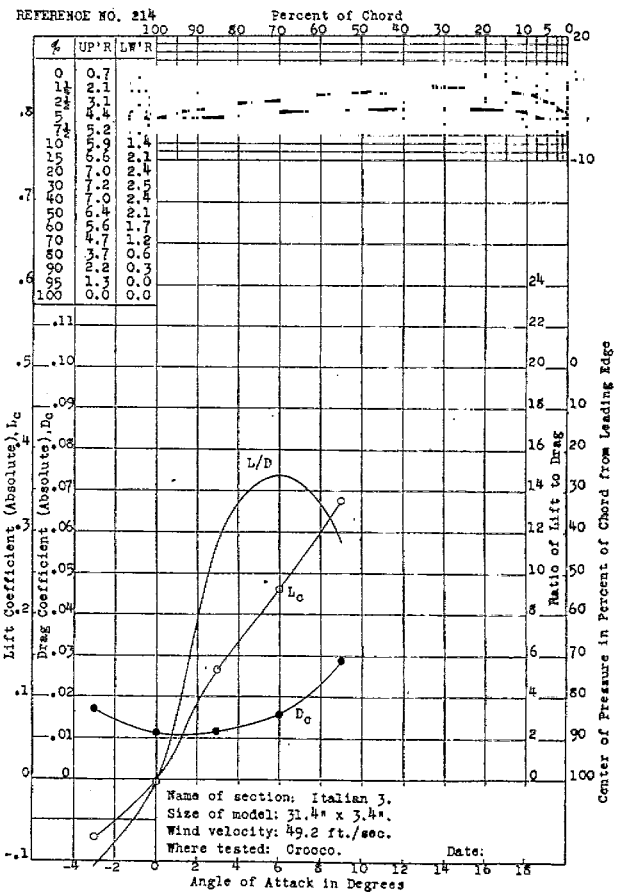
REFERENCE NO. 212

%	UP'R	LW'R
0	0.6	0.6
1¼	1.4	0.1
2½	2.1	0.0
5	3.1	0.1
7½	3.9	0.2
10	4.6	0.5
15	5.5	1.1
20	6.0	1.8
30	6.4	2.4
40	6.1	2.5
50	5.7	2.0
60	5.1	1.5
70	4.0	0.9
80	2.6	0.6
90	1.4	0.3
95	0.8	0.2
100	0.3	0.3



Name of section: Italian 1.
Size of model: 47.2" x 7.4".
Wind velocity: 49.2 ft./sec.
Where tested: Crocco. Date:


REFERENCE NO. 213
Percent of Chord
% UP'R LW'R
0 0.8 0.8
1¼ 1.6 0.3
2½ 2.2 0.1
5 3.4 0.1
7½ 4.2 0.2
10 4.9 0.5
15 6.1 1.1
20 6.7 1.7
30 7.4 2.7
40 7.5 3.0
50 7.2 2.9
60 6.7 2.5
70 5.4 1.8
80 3.8 0.7
90 2.0 0.4
95 1.3 0.4
100 0.4 0.4
L/D
L_c
D_c
Lift Coefficient (Absolute), L_c
Drag Coefficient (Absolute), D_c
Ratio of Lift to Drag
Center of Pressure in Percent of Chord from Leading Edge
Name of section: Italian 2.
Size of model: 47.2" x 7.4".
Wind velocity: 49.2 ft./sec.
Where tested: Crocco.
Date:
Angle of Attack in Degrees


REFERENCE NO. 214
Percent of Chord
% UP'R LW'R
0 0.7 ...
1¼ 2.1 ...
2½ 3.1 ...
5 4.4 ...
7½ 5.2 ...
10 5.9 1.4
15 6.6 2.1
20 7.0 2.4
30 7.2 2.5
40 7.0 2.4
50 6.4 2.1
60 5.6 1.7
70 4.7 1.2
80 3.7 0.6
90 2.2 0.3
95 1.3 0.0
100 0.0 0.0
L/D
L_c
D_c
Lift Coefficient (Absolute), L_c
Drag Coefficient (Absolute), D_c
Ratio of Lift to Drag
Center of Pressure in Percent of Chord from Leading Edge
Name of section: Italian 3.
Size of model: 31.4" x 3.4".
Wind velocity: 49.2 ft./sec.
Where tested: Crocco.
Date:
Angle of Attack in Degrees

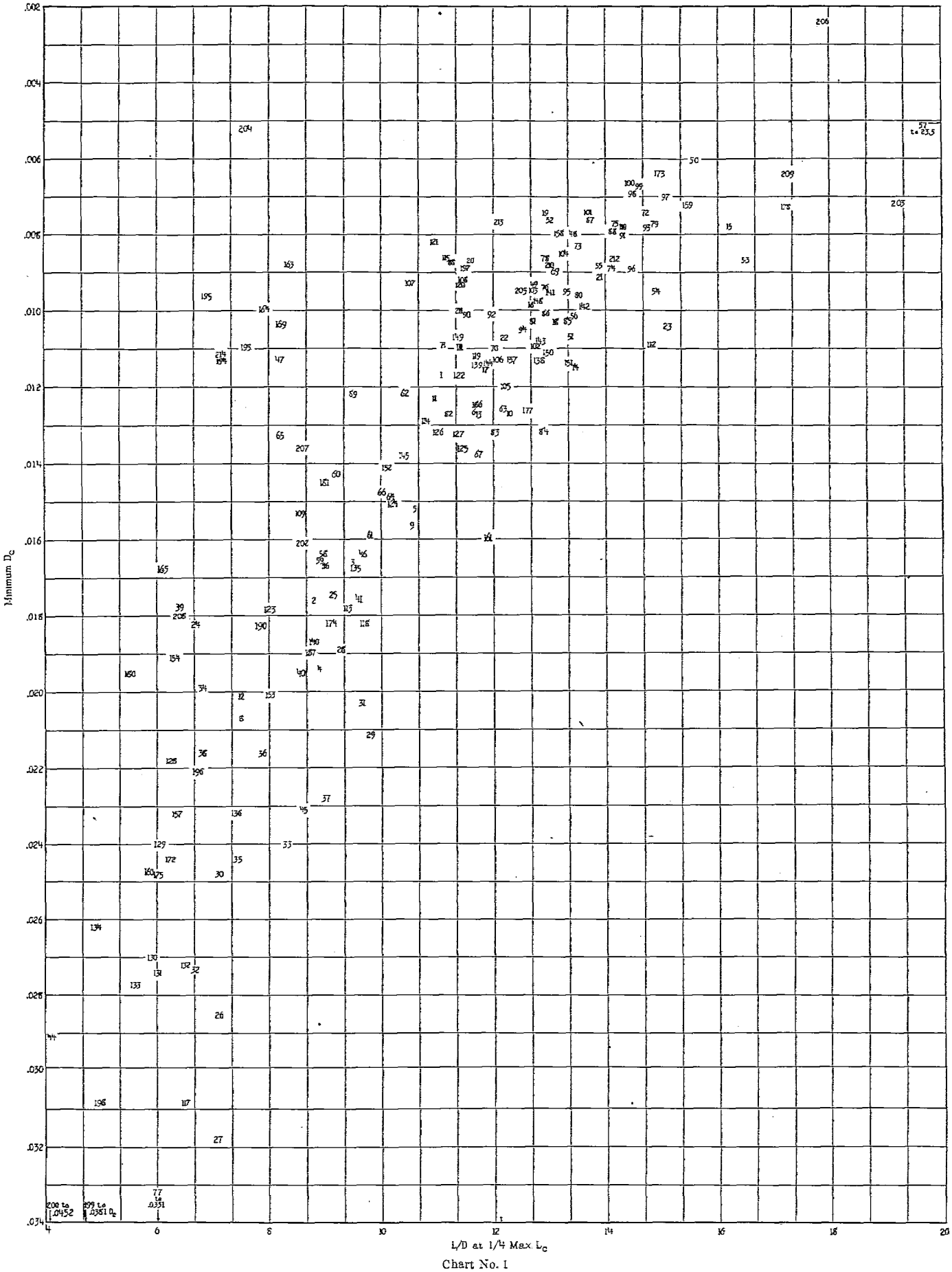

Minimum D_c
L/D at 1/4 Max L_c
.002
.004
.006
.008
.010
.012
.014
.016
.018
.020
.022
.024
.026
.028
.030
.032
.034
4
6
8
10
12
14
16
18
20
200 to .0452
199 to .0351 D_c
77 to .0351
57 to 23.5

Chart No. 1

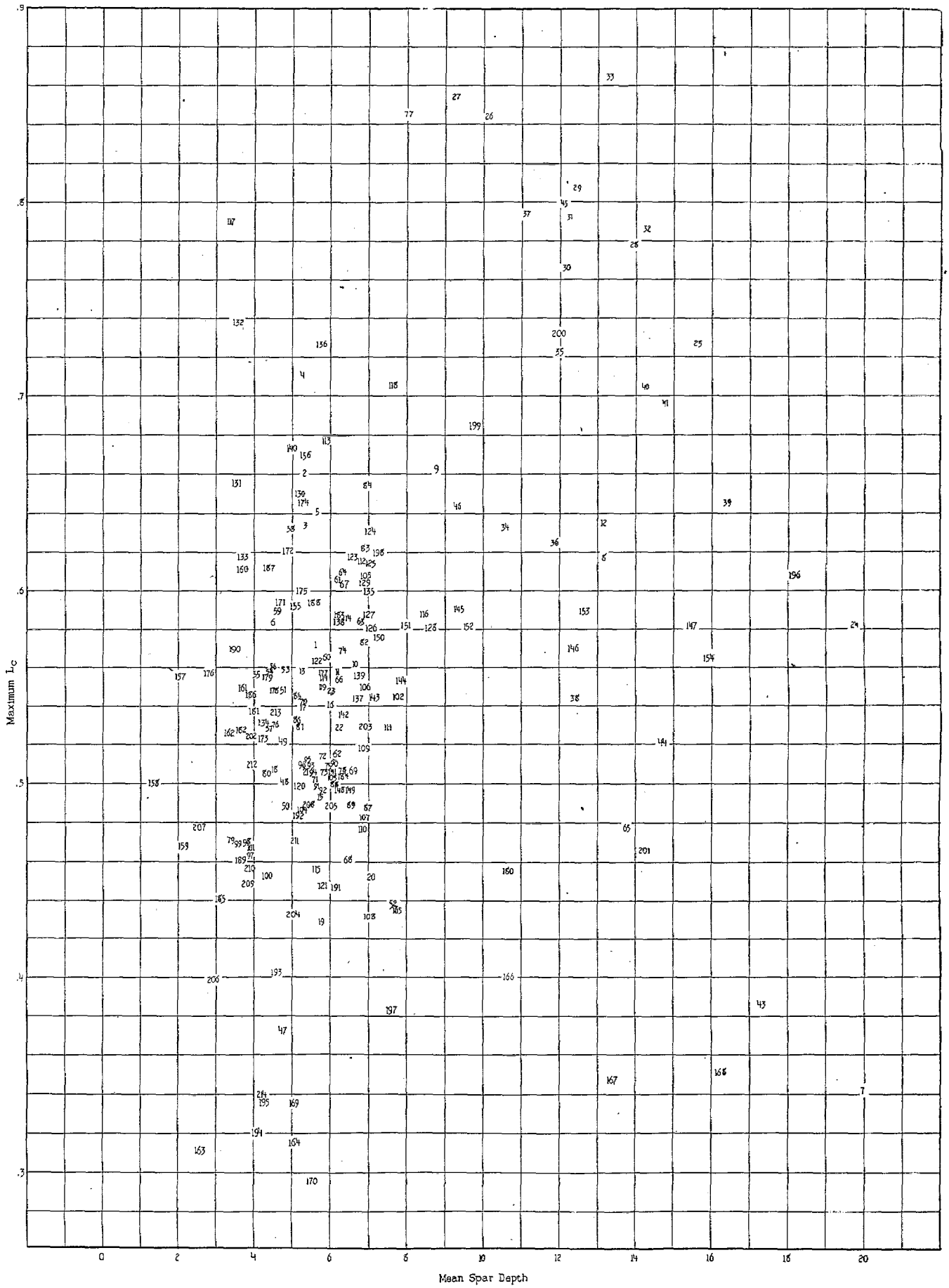


Chart No. 2.

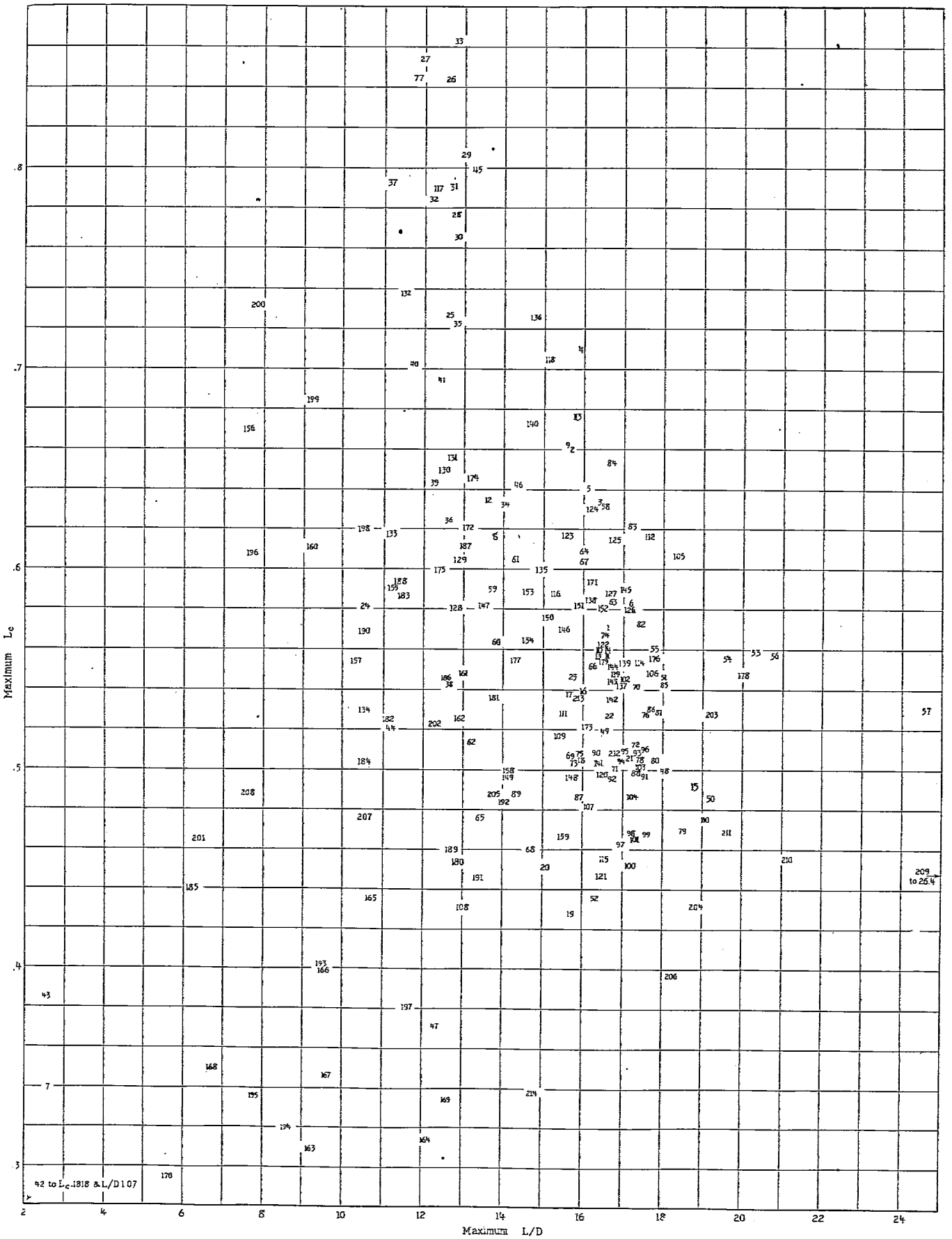

Maximum L_c
Maximum L/D
.8
.7
.6
.5
.4
.3
2
4
6
8
10
12
14
16
18
20
22
24
209 to 26.4
42 to L_c.1818 & L/D 107

Chart No. 3.

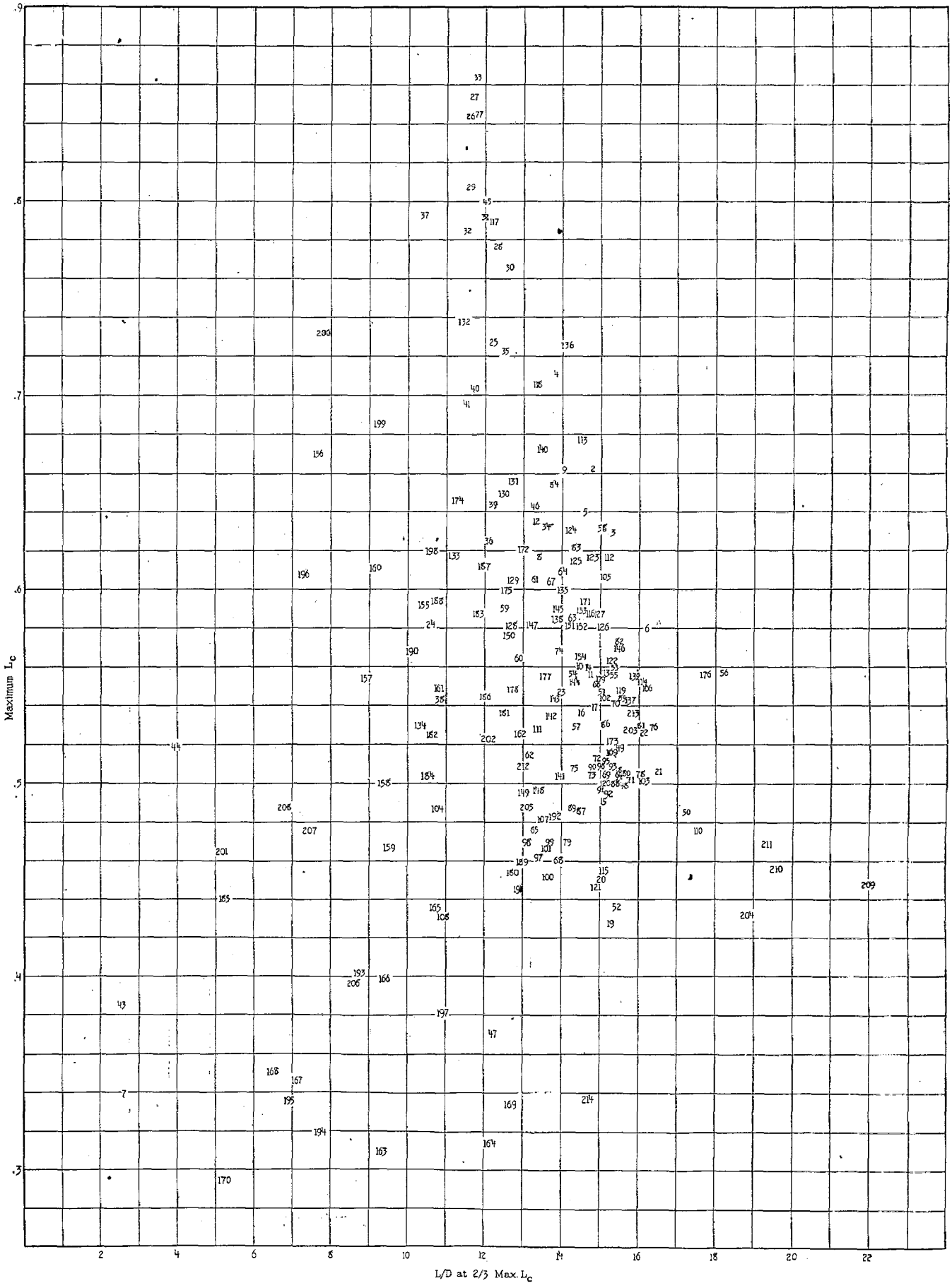


Chart No. 4.