C-105 P/WIND TUNNEL/40

ANALYZED ADW

C.A.L. WIND TUNNEL TESTS AUGUST 1954.

DERIVATIVES AND ZERO VALUES

UNCLASSIFIED

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TO
A

DATE

Report no.: QCX - AVRO - CF105 - P-WT 40

has been ☐ downgraded to : _____

☒ de-classified

by (Name): Michel W. Drapeau

(Dept.): A/DND Coordinator, Access to Information

Date: Dec. 7, 1992

R. Auger
Signature

A. V ROE CANADA LIMITED
MALTON · ONTARIO

TECHNICAL DEPARTMENT (Aircraft)

AIRCRAFT C-105 REPORT NO P/WIND TUNNEL/40

FILE NO NO OF SHEETS

TITLE

DERIVATIVES AND ZERO VALUES

PREPARED BY D. Ewart DATE Aug. '54.

CHECKED BY DATE

SUPERVISED BY DATE

APPROVED BY DATE

ISSUE NO	REVISION NO	REVISED BY	APPROVED BY	DATE	REMARKS

FORM 1316A

LONGITUDINAL STABILITY

4. Lateral and Directional Derivatives (Continued) — SECTION

5. $C_{\ell_{\delta r}}$ — 4.5

6. $C_{y_{\delta r}}$ — 4.6

7. $C_{N_{\delta a}}$ — 4.7

8. $C_{\ell_{\delta a}}$ — 4.8

9. $C_{y_{\delta a}}$ — 4.9

5. Control Hinge Moments

1. $C_{H_{\delta e}}$ — 5.1

2. $C_{H_{\delta r}}$ — 5.2

3. $C_{H_{\delta a}}$ — 5.3

COMPONENT SHEET No. 1-1 REPORT No. P/WT/40

DATE AUG. '54 PREP. BY L. Stewart

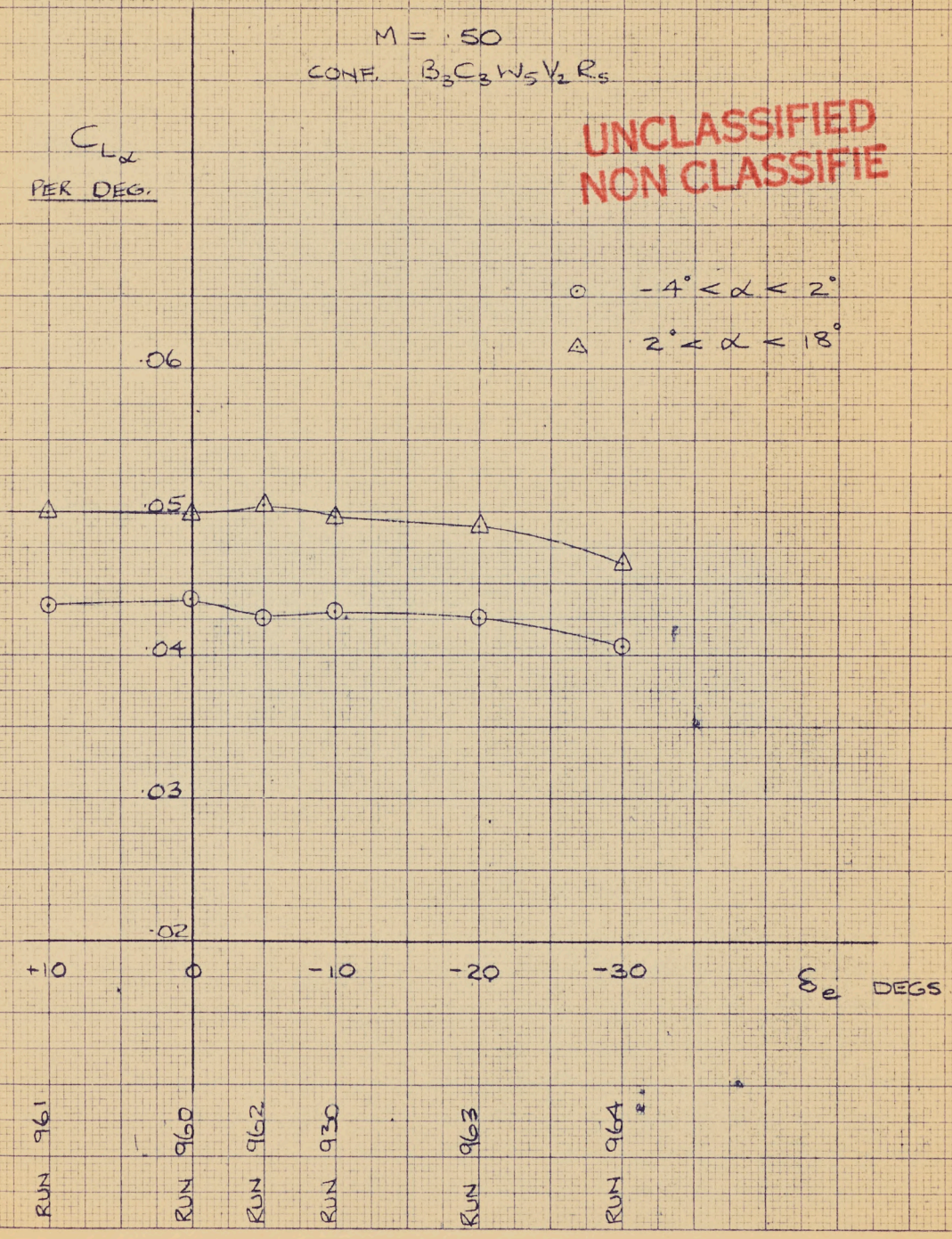
C-105

C.A.L. WIND TUNNEL TESTS ~ AUG. '54

C_{L_α} vs δ_e

M = .50

CONF. $B_3C_3W_5V_2R_5$



FORM 1746

COMPONENT

SHEET No. 1.2 REPORT No. P/WT/40

DATE AUG '54 PREP BY [redacted]

C-105

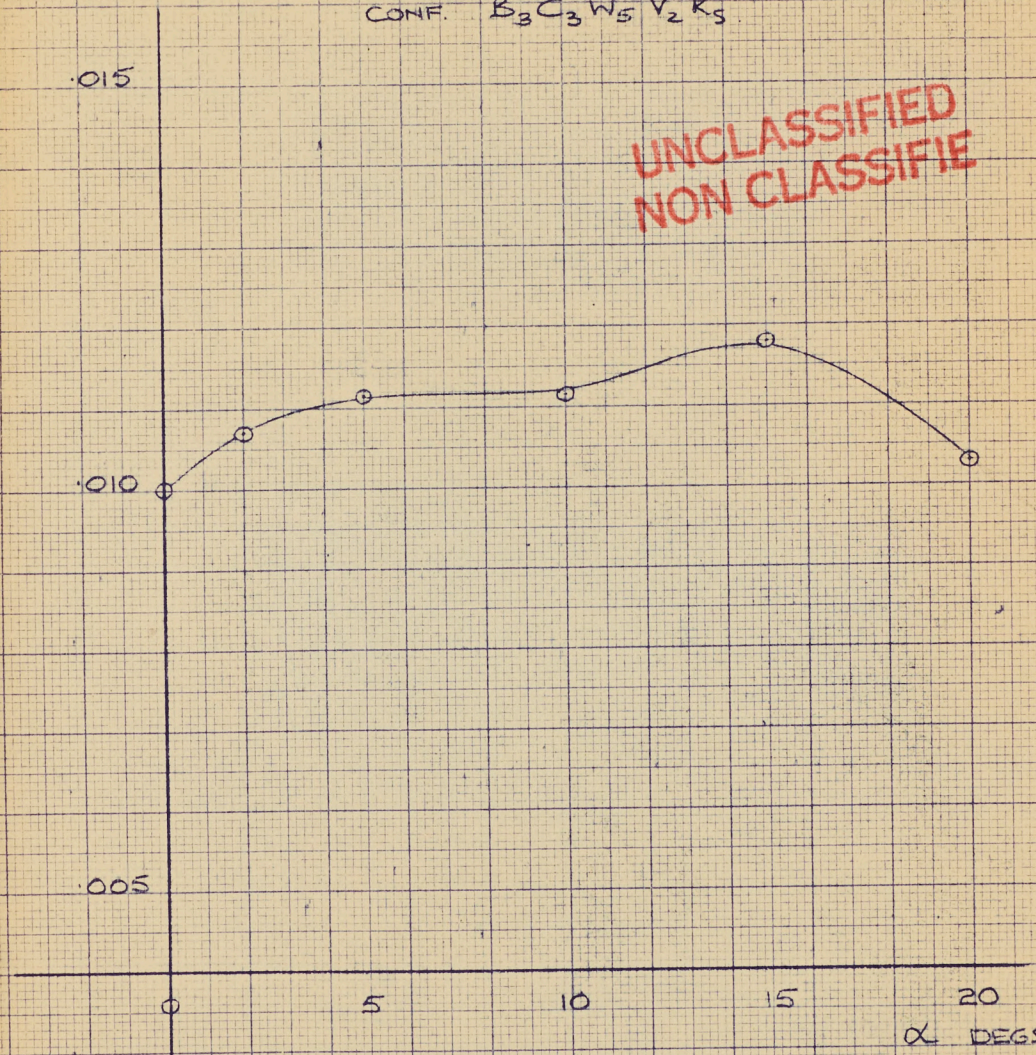
C.A.L WIND TUNNEL TESTS AUG. '54

C_{L_δ} VS α

C_{L_δ} PER DEG

M = .50

CONF. $B_3 C_3 W_5 V_2 R_5$



FORM 1746

COMPONENT

SHEET No. 1.3 REPORT No. P/WT/40

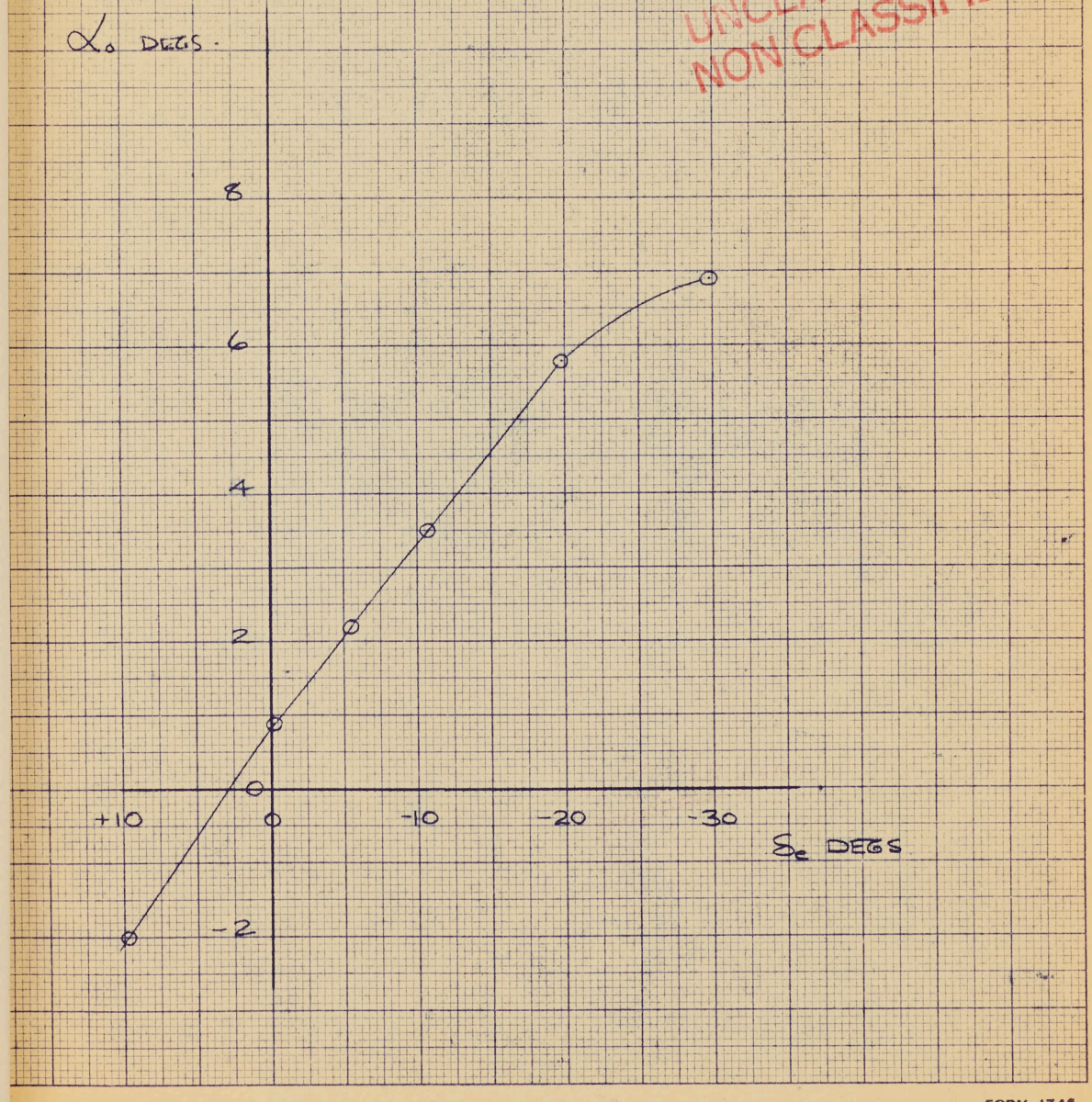
DATE AUG '54 PREP BY [redacted]

C-105

C.A.L. WIND TUNNEL TESTS AUG '54.

α_o vs δ_e

M = .50 CONFIG. $B_3C_3W_5V_2R_5$



FORM 1746

C105 COMPONENT

SHEET No 2·1·1 REPORT No P/W.T. 140

DATE AUG 1/57. PREP BY Kuriakose C.

C105

C.A.L. WIND TUNNEL TESTS JULY 57

AERODYNAMIC CENTRE VS ELEVATOR DEFLECTION

M = ·3

$-5 < C_L < +·2$

$-5 < C_L < -·2$

$-·2 < C_L < +·2$

$+·2 < C_L < +·5$

$+·5 < C_L < +·8$

$+·8 < C_L < +1·0$

C_L RANGE

$-5 < C_L < -·2$

$-·2 < C_L < +·2$

$+·2 < C_L < +·5$

$+·5 < C_L < +·8$

$+·8 < C_L < +1·0$

Q.C. % MAC

10%

35%

30%

25%

20%

$-30°$ d_E

$-20°$

$-10°$

$-5°$

0

$10°$

FORM 1746

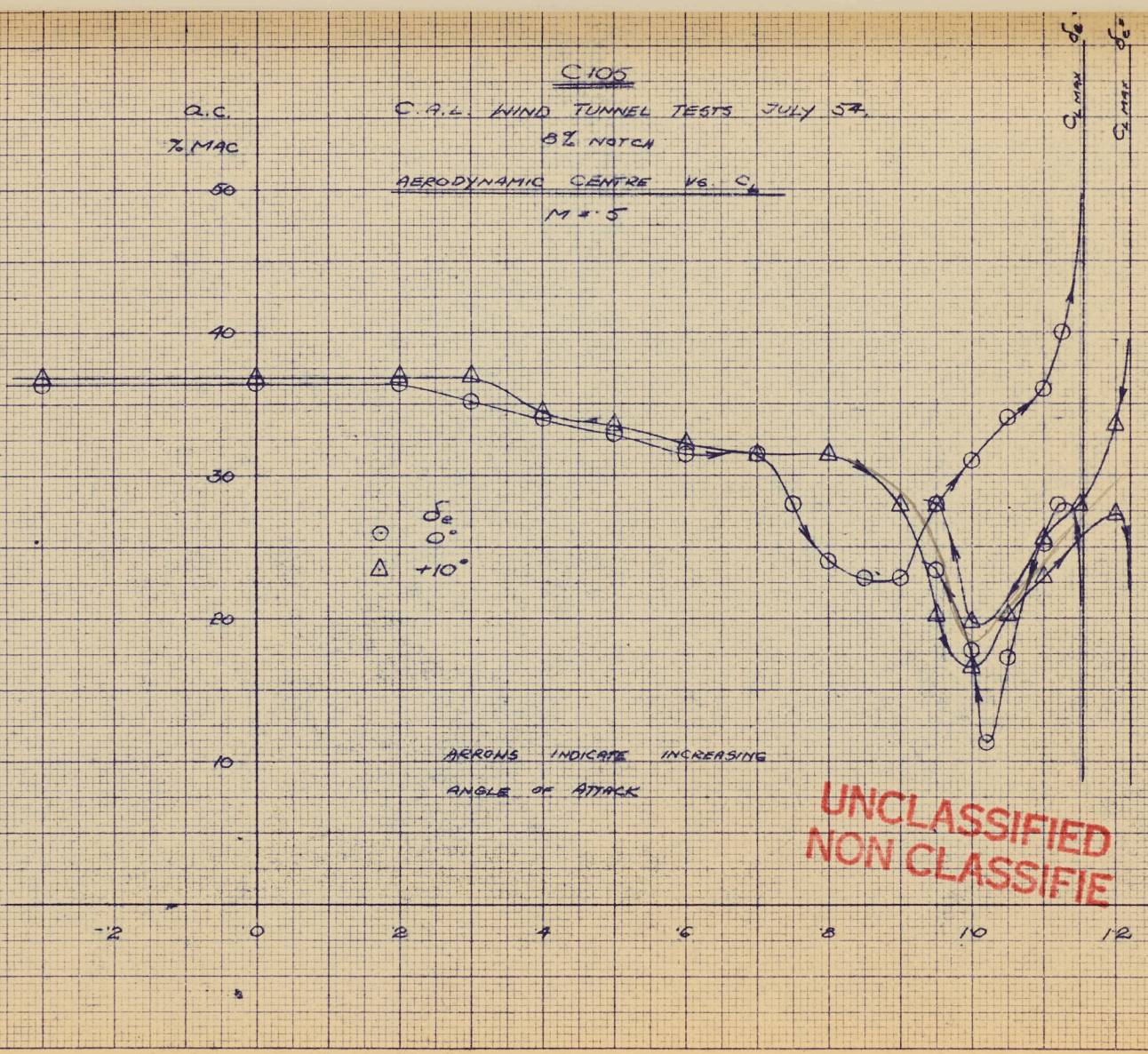
C105

C.A.L. WIND TUNNEL TESTS JULY 54.

8% NOTCH

AERODYNAMIC CENTRE VS. C_L

M = .5



Sheet 2.1.2 R/N.T./140
Aug/54 Kinaston C.

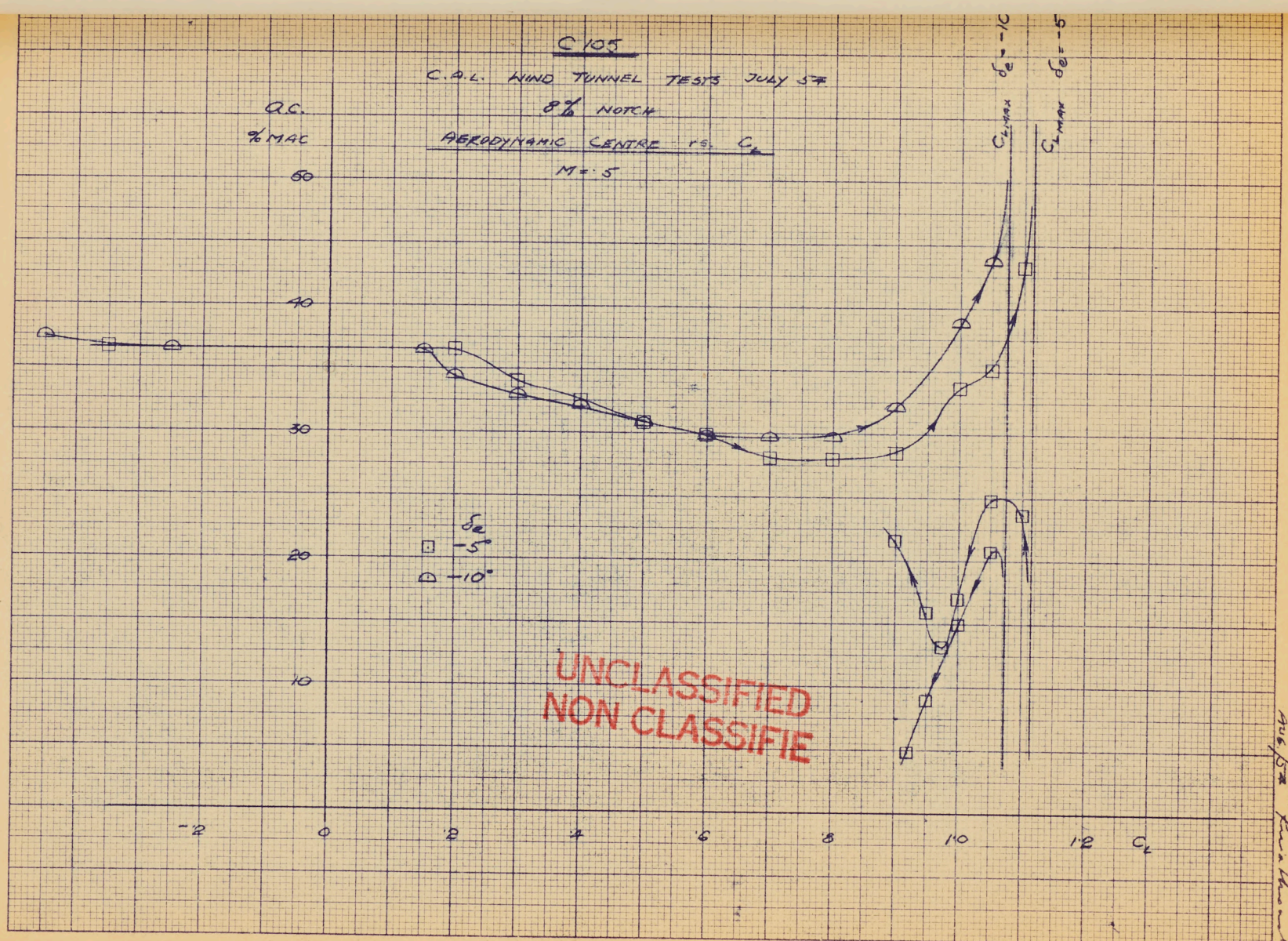
C 105

C.A.L. WIND TUNNEL TESTS JULY 57

8% NOTCH

AERODYNAMIC CENTRE vs. C_L

M = .5



Sheet 2.1.3 R/A.T./40

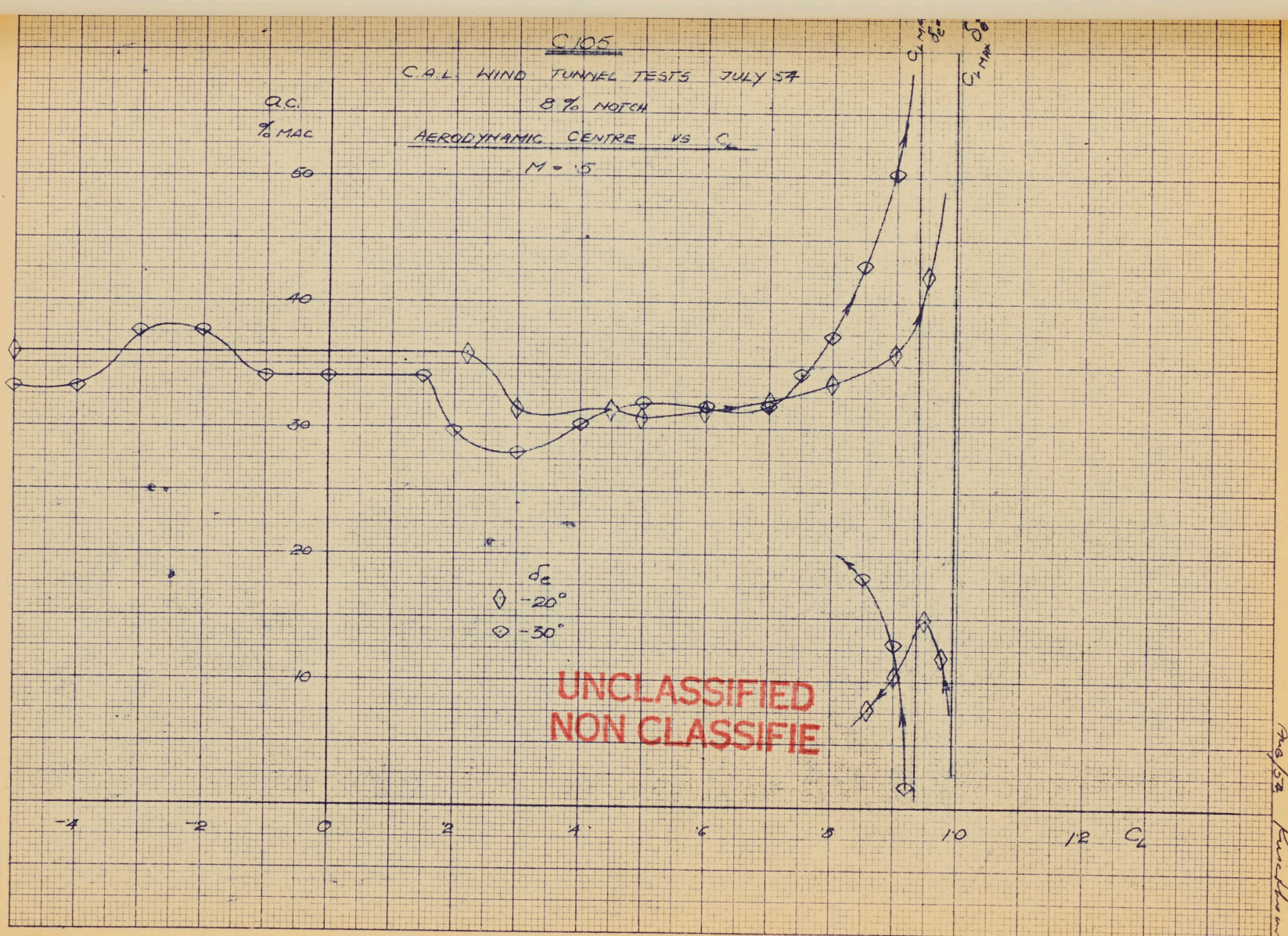
C105

C.A.L. WIND TUNNEL TESTS JULY 54

8% NOTCH

AERODYNAMIC CENTRE VS C_L

M = .5



Sheet 2.1.4 P/W.T. 140

Aug/54 Kuchemann

COMPONENT SHEET No. 2·2 REPORT No. P/WT/40

DATE AUG '54 PREP. BY [illegible] Smart

C-105

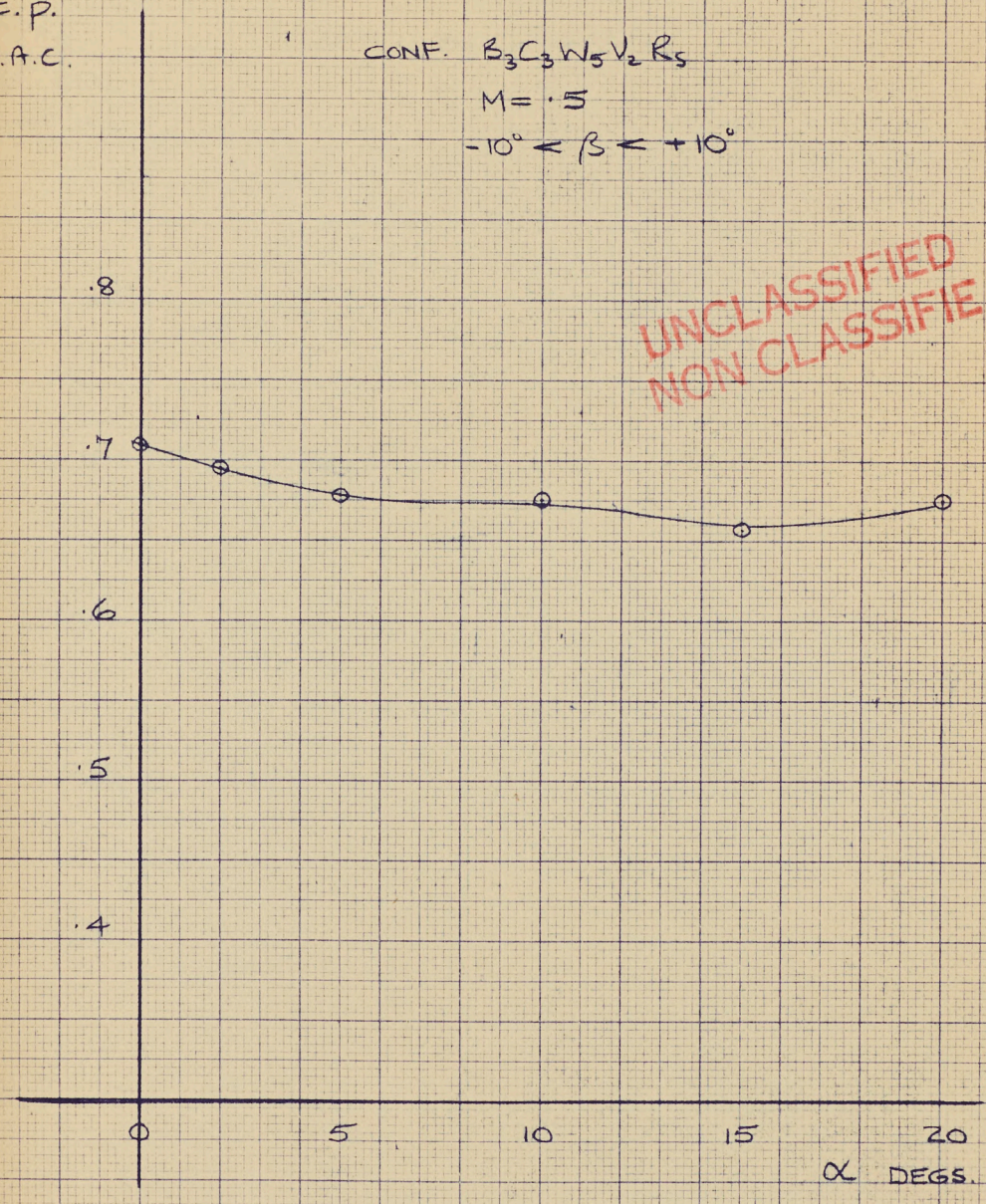
C.A.L. WIND TUNNEL TESTS AUG '54.

ELEVATOR LOAD C.P. VS. α

CONF. $B_3C_3W_5V_2R_5$

$M = .5$

$-10° < \beta < +10°$



FORM 1746

COMPONENT SHEET No. 2-3 REPORT No. P/WT/40

DATE Aug '54 PREP. BY D. Sinnat

C-105

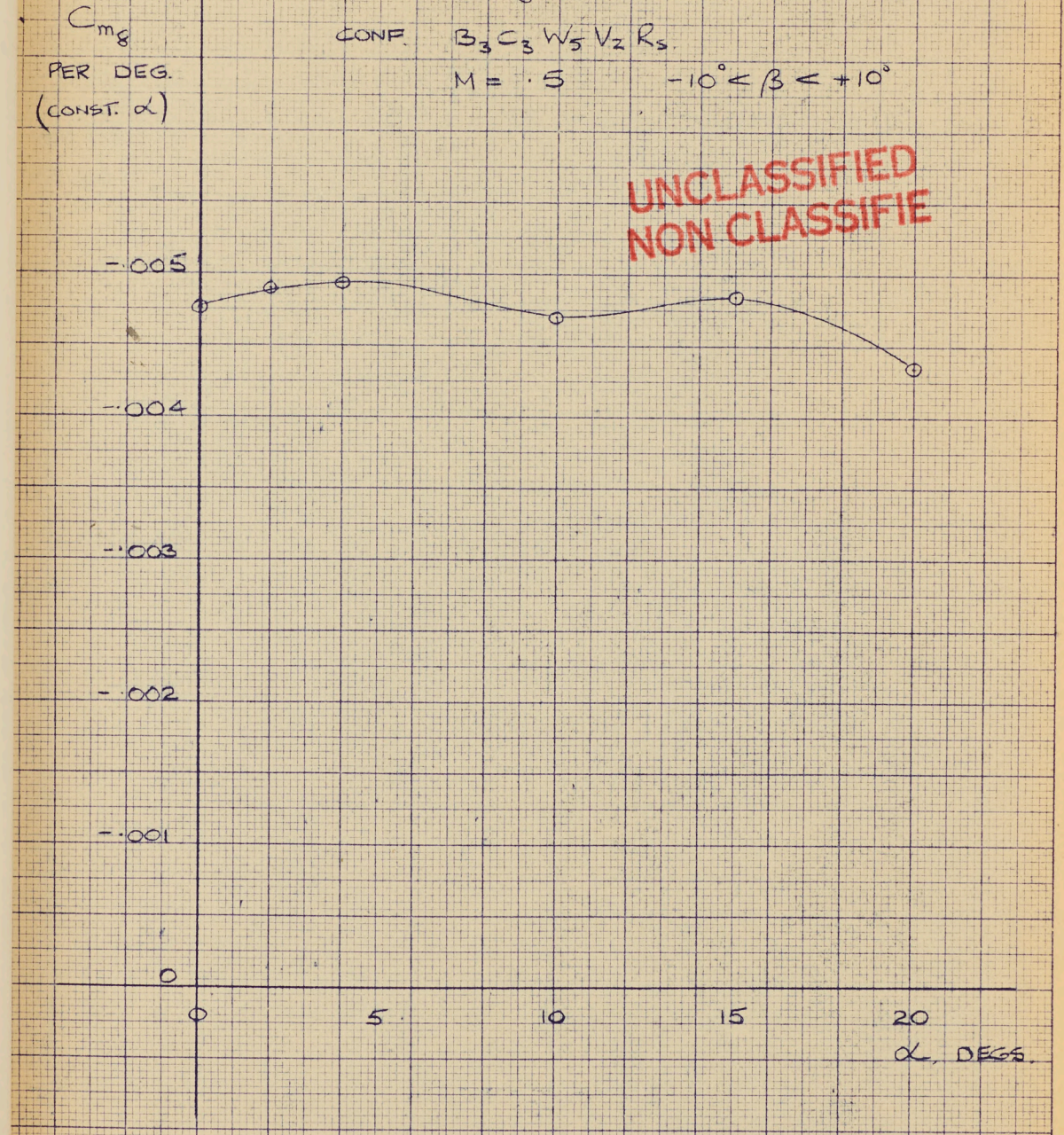
C.A.L. WIND TUNNEL TESTS

AUGUST '54.

C_{m_δ} vs α

CONF. $B_3 C_3 W_5 V_2 R_5$.

$M = .5$ $-10° < \beta < +10°$



FORM 1746

COMPONENT

SHEET No. 2·4 REPORT No. P/WT/40

DATE AUG. '54 PREP. BY D D Ewart

C-105

C.A.L. WIND TUNNEL TESTS

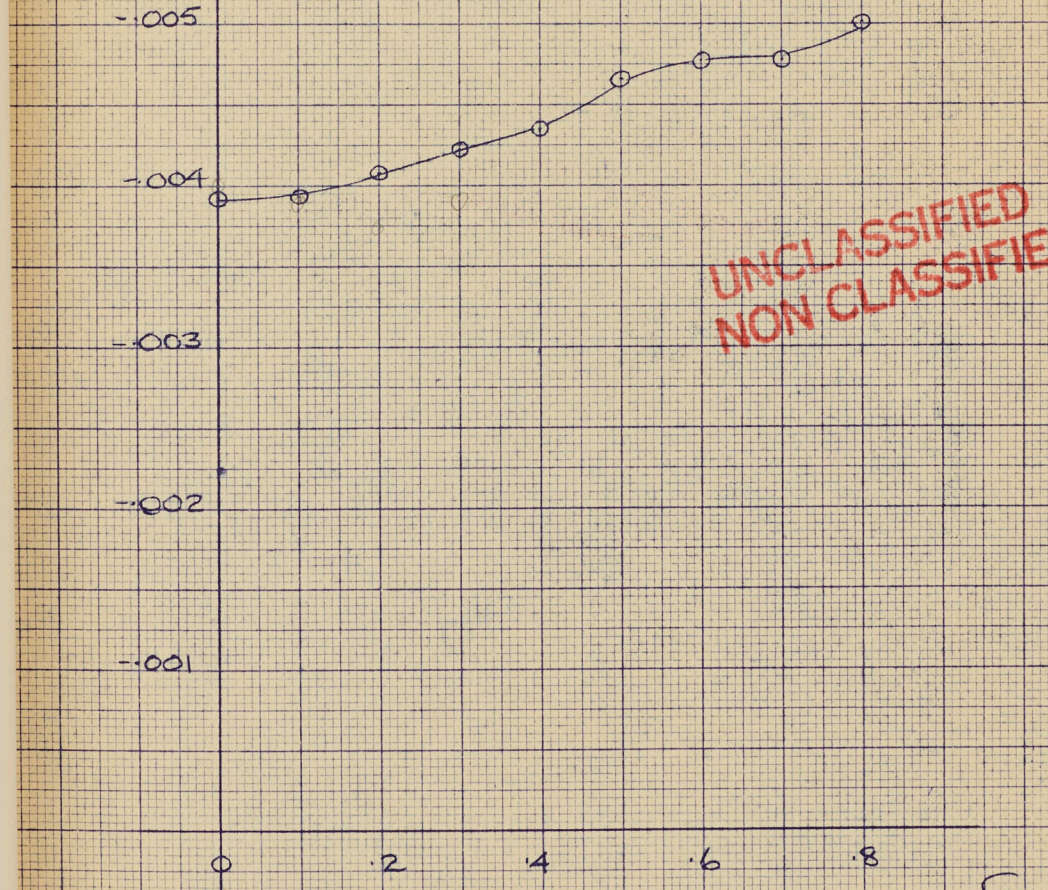
AUGUST '54

C_{m_δ} vs C_L

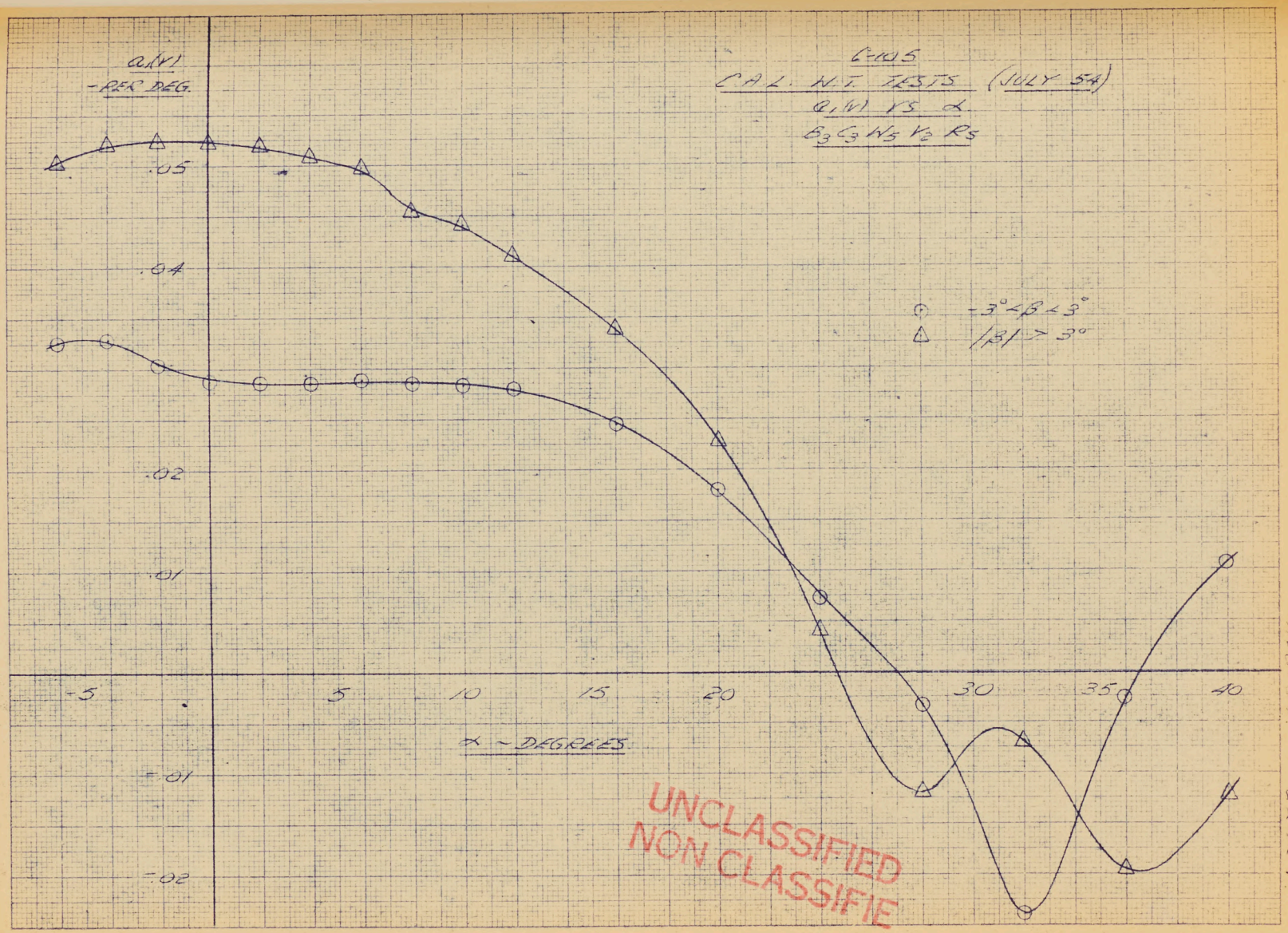
C_{m_δ} PER DEG. (CONST. C_L)

CONF. $B_3 C_3 W_5 V_2 R_5'$

$M = .50$ $-10° < \beta < 10°$



FORM 1746


C-W-S
CAL. N.T. TESTS (JULY 54)
Q,M VS α
B3 C3 W5 V2 R5
Q,M
-PER DEG.
.05
.04
.02
.01
-.01
-.02
-5
5
10
15
20
30
35
40
α - DEGREES
⊙ -3° < β < 3°
△ |β| > 3°
UNCLASSIFIED
NON CLASSIFIE

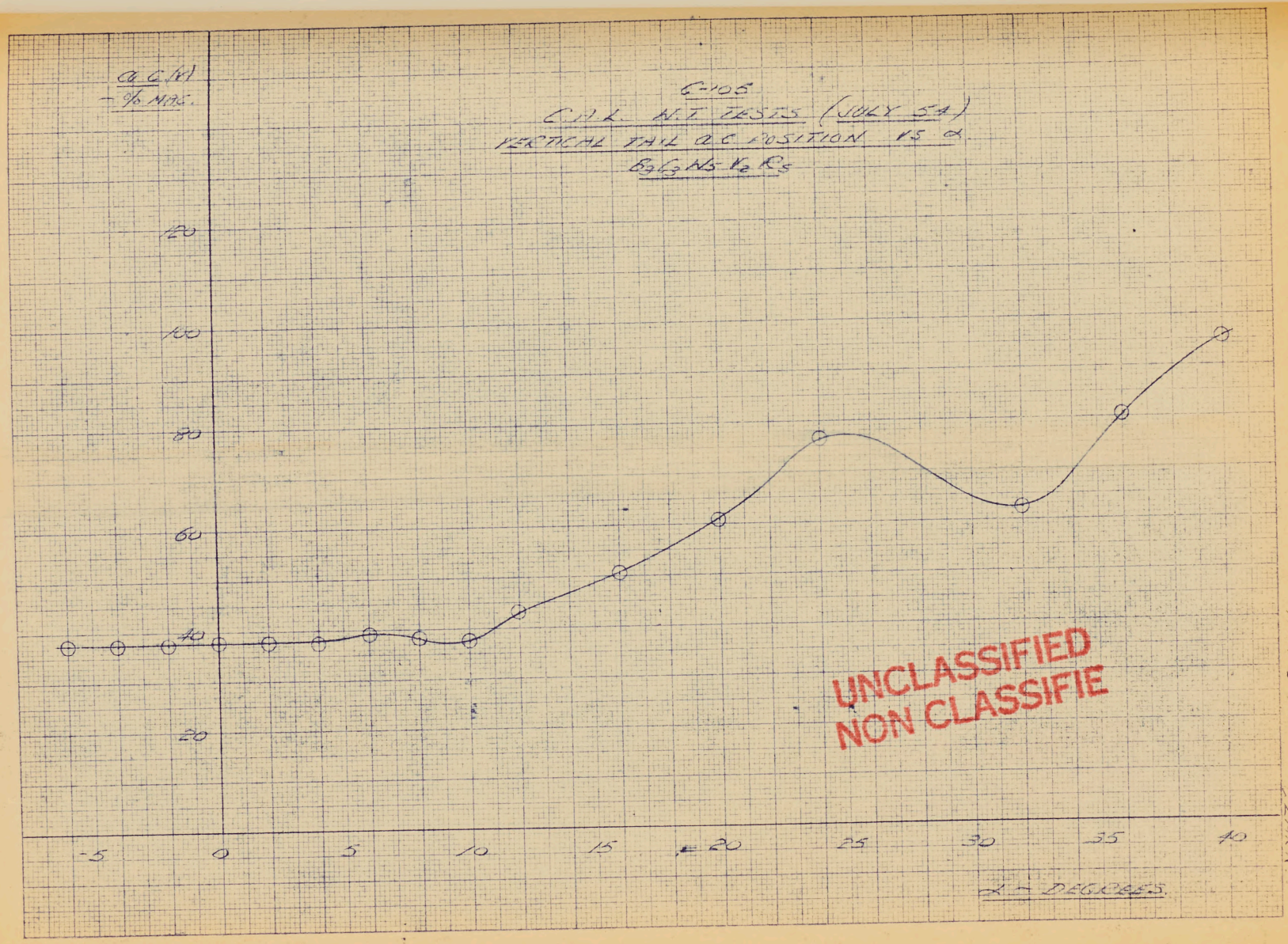
Sheet 3.1

C-105

C.G.L. W.T. TESTS (JULY 54)

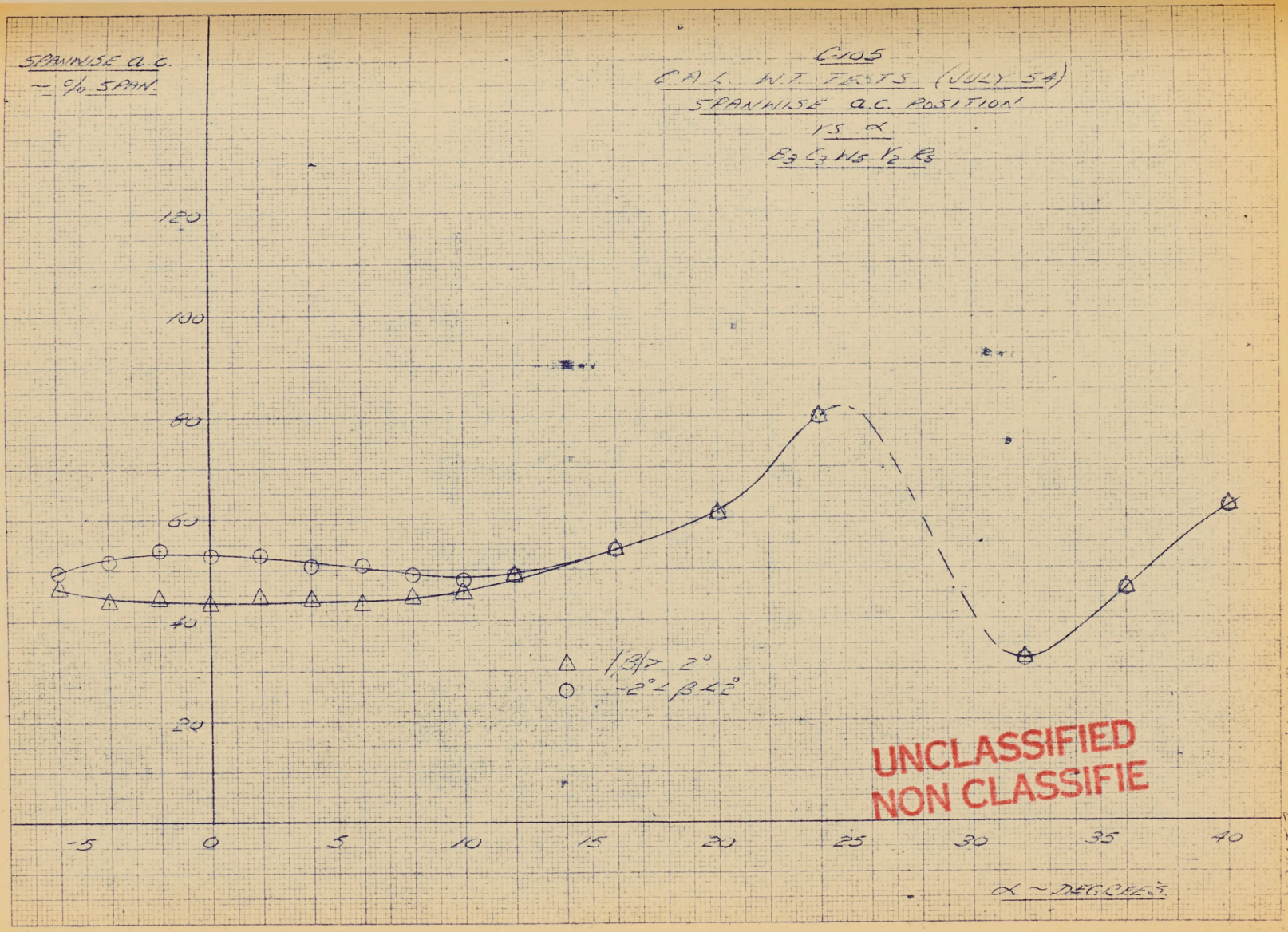
VERTICAL TAIL A.C. POSITION AS A

B3 G3 N5 V2 R5



Sheet 3.2

NOV 54.

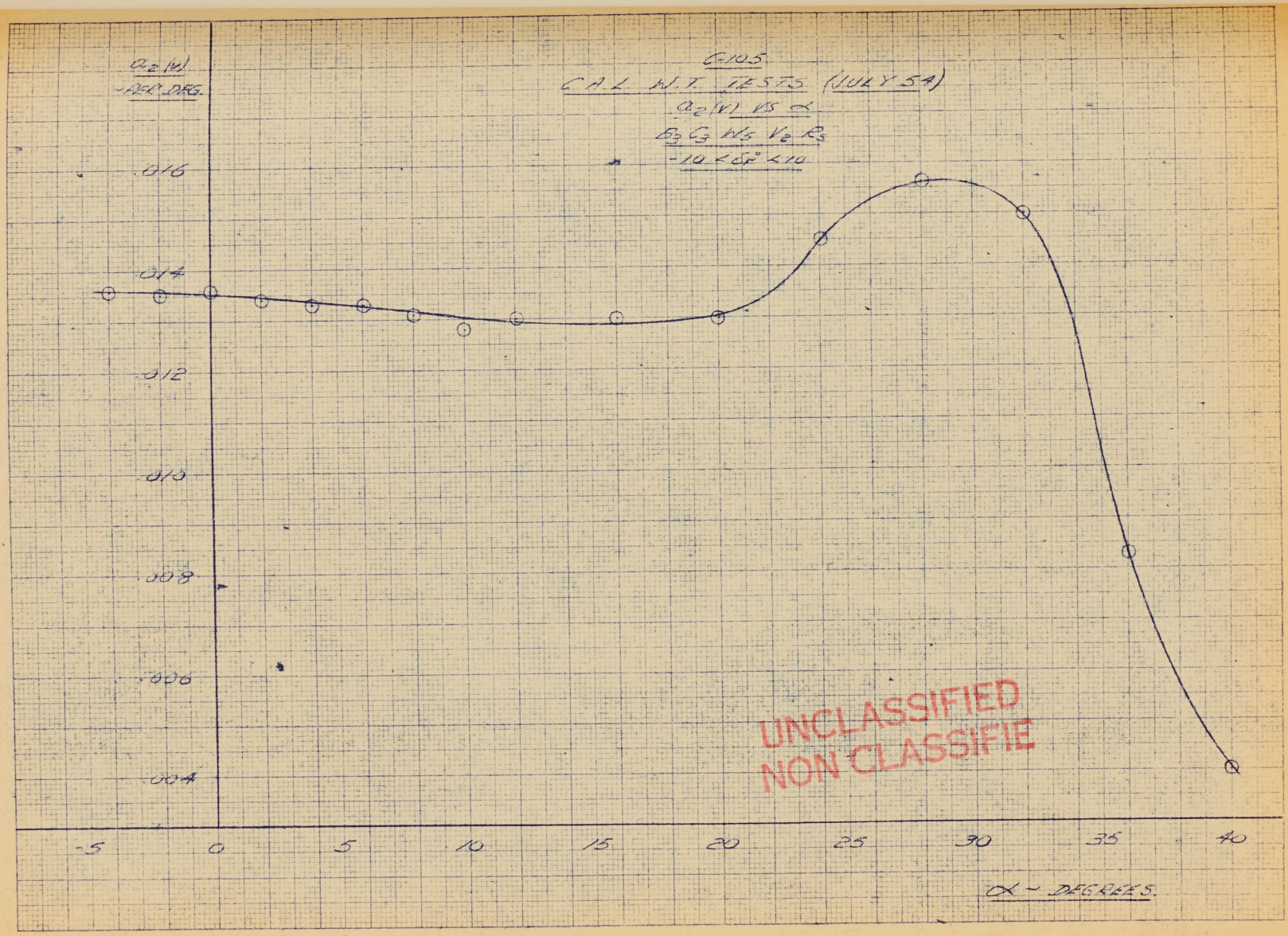


Sheet 3.3

AUG. '54.

R/N T 140

SPARK



C.N.5
CAL W.T. TESTS (JULY 54)
$C_{N_2}(w)$ VS α
B_3 C_3 W_5 V_2 R_3
$-10 < \delta F° < 10$

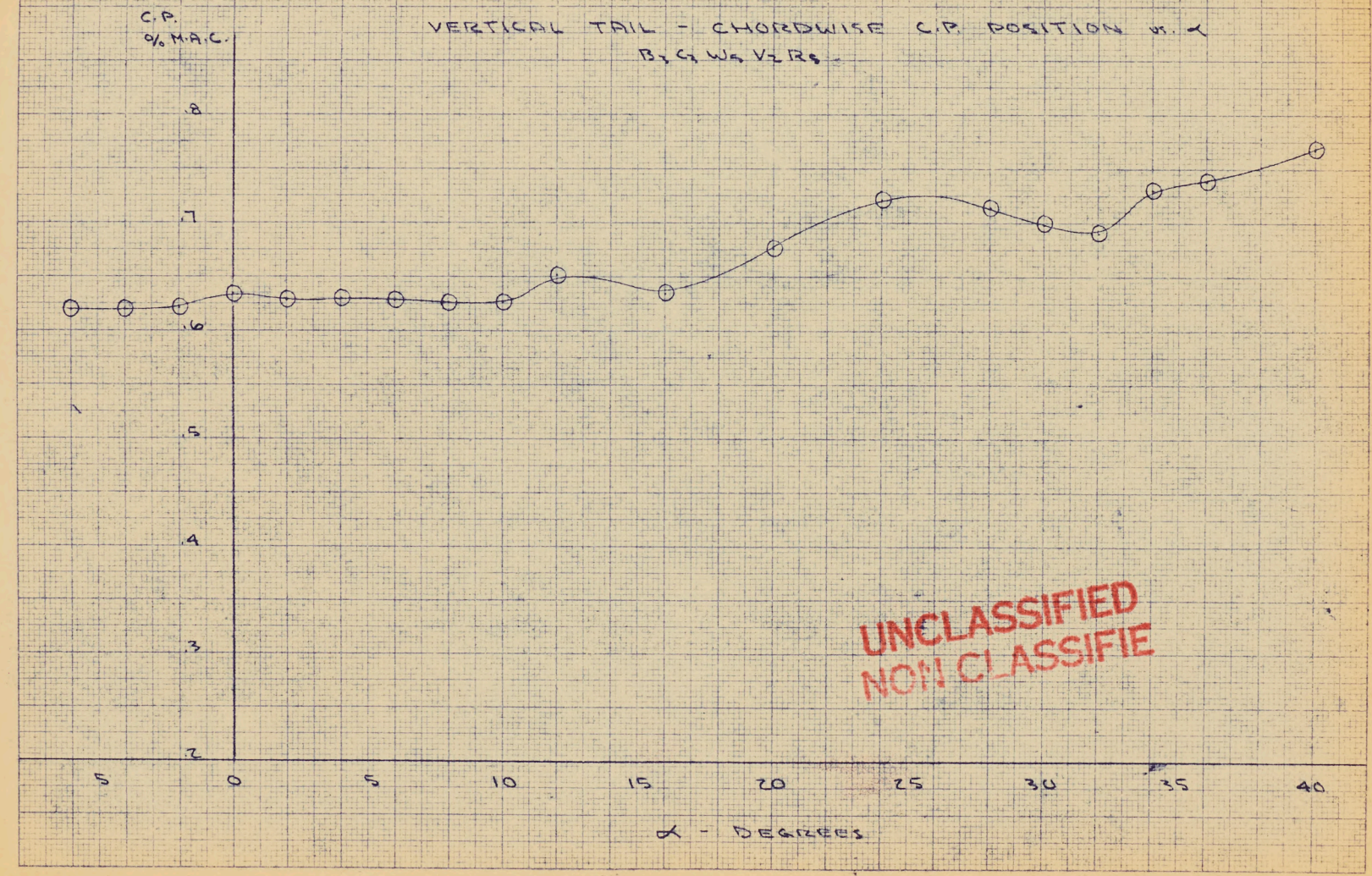
Sheet 3.4

C-105

C.A.L WIND TUNNEL TESTS JULY '54

VERTICAL TAIL - CHORDWISE C.P. POSITION vs. α

$B_1 C_1 W_5 V_2 R_5$



Sheet 35 P/W.T./40

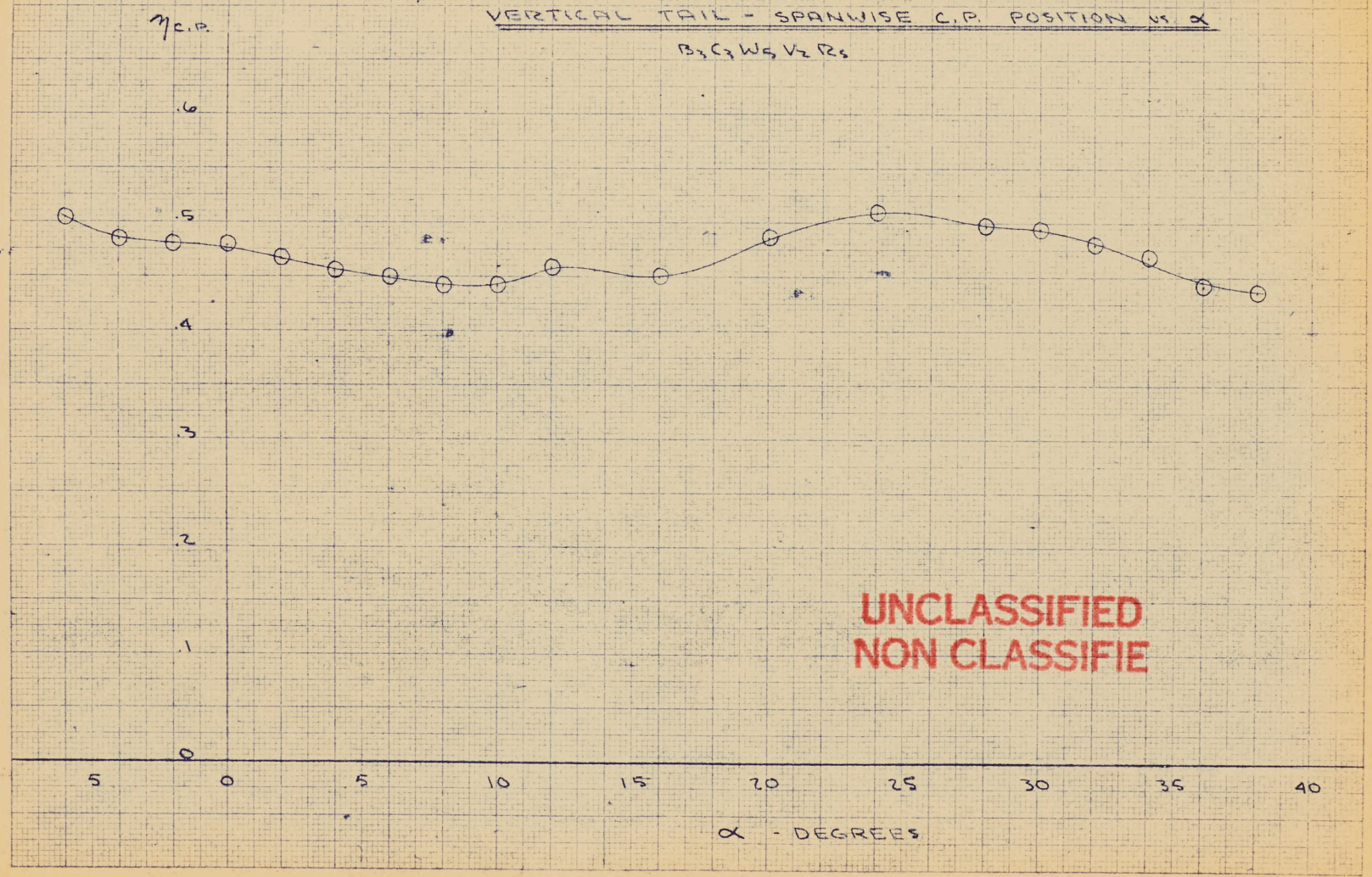
Aug. '54 G.K.Dimock

C-105

C.A.L. WIND TUNNEL TESTS JULY '54

VERTICAL TAIL - SPANWISE C.P. POSITION vs α

$B_3 C_3 W_5 V_2 R_5$



SHEET 3.6

P/W.T./40

AUG. '54

G.K. DIRIDON

Sheet 4.1 P/N.T./40

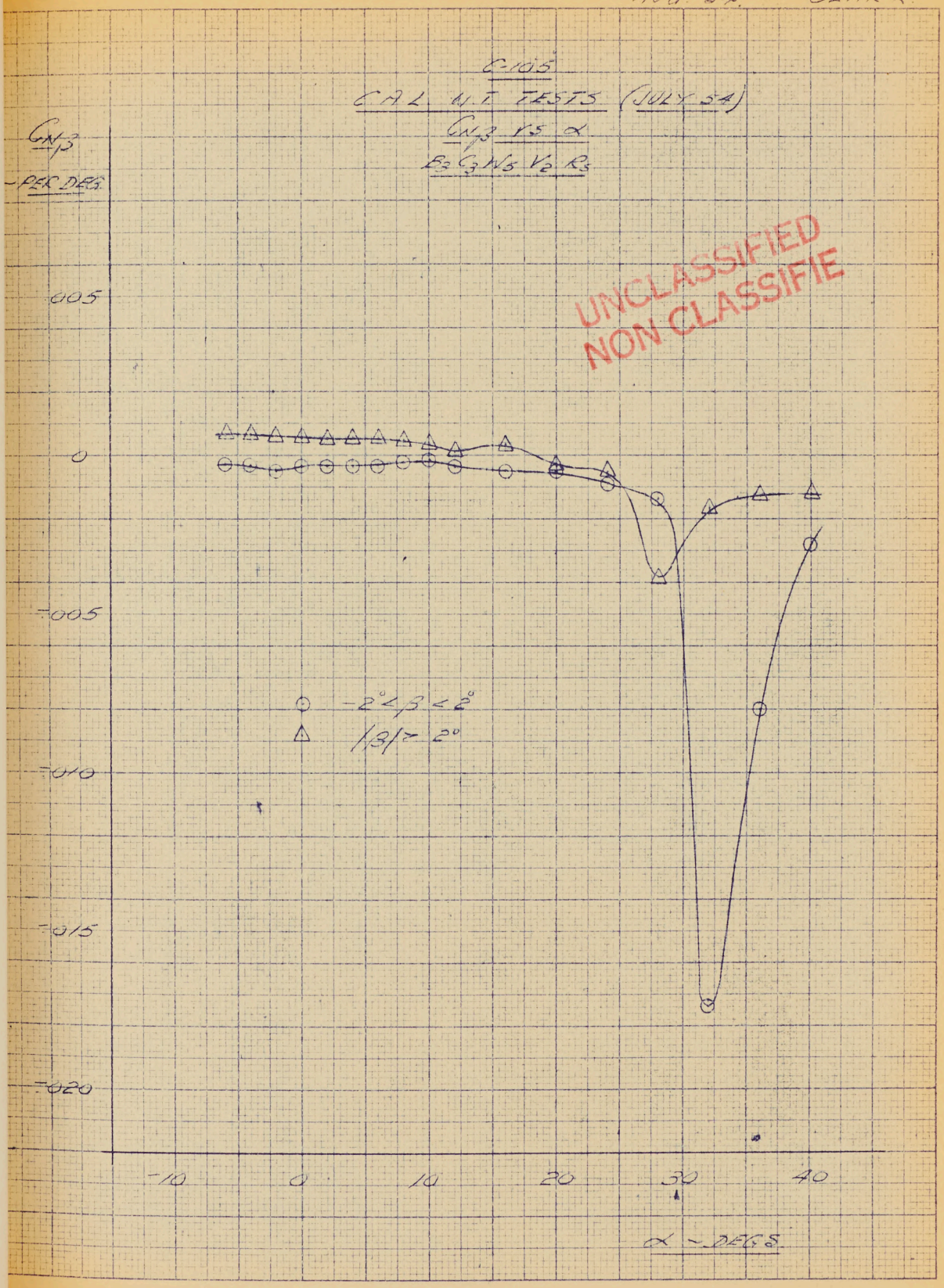
AUG. 54. CLARK.

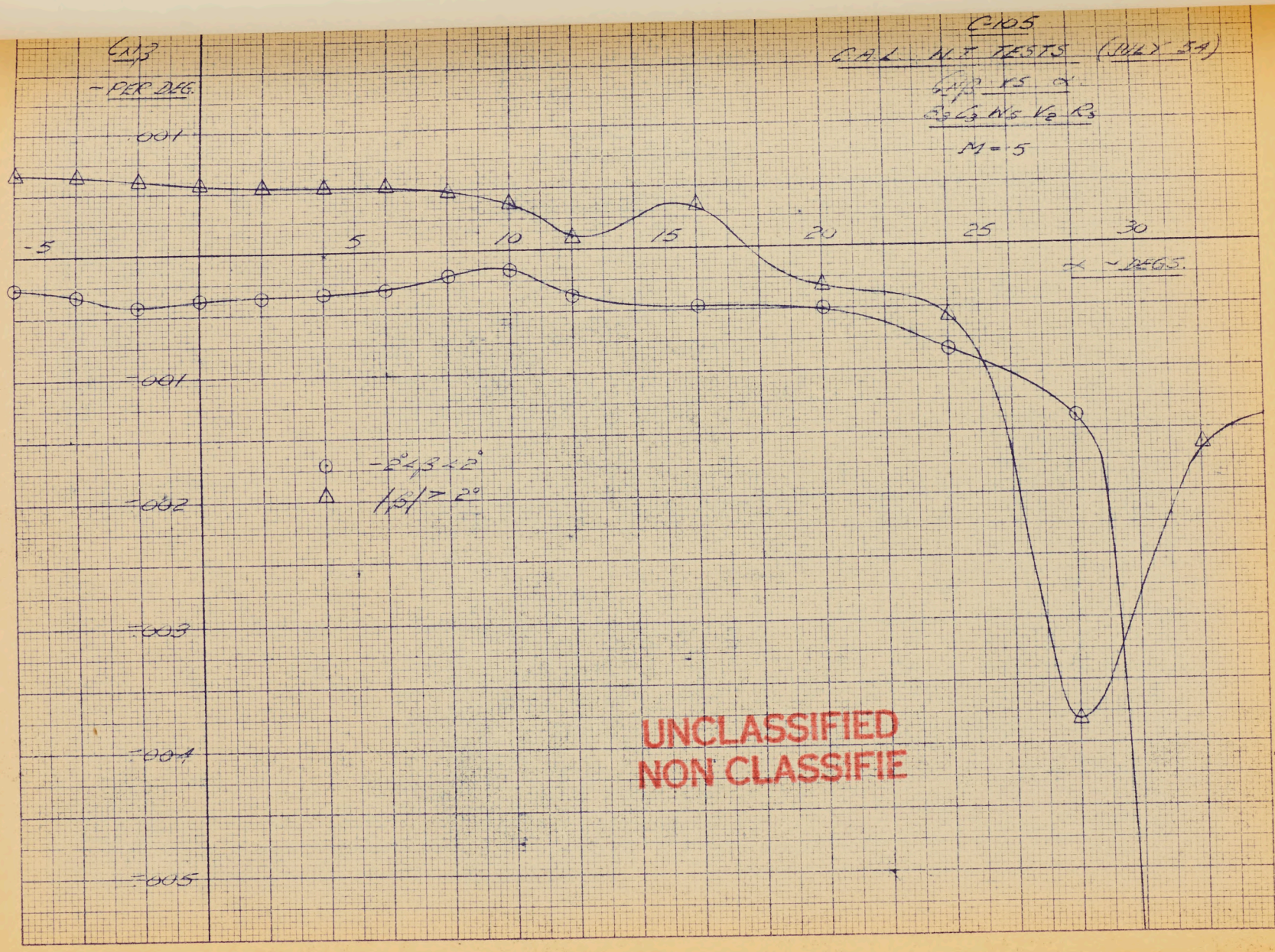
C-105

CAL W.T. TESTS (JULY 54)

C_{N_β} VS α

E_2 C_3 N_5 V_2 R_3




C105
$C_{m_{1/3}}$
-PER DEG.
.001
-001
-002
-003
-004
-005
-5
5
10
15
20
25
30
α - DEGS.
$-2° \leq \beta \leq 2°$
$|\beta| = 2°$
UNCLASSIFIED
NON CLASSIFIE

C105

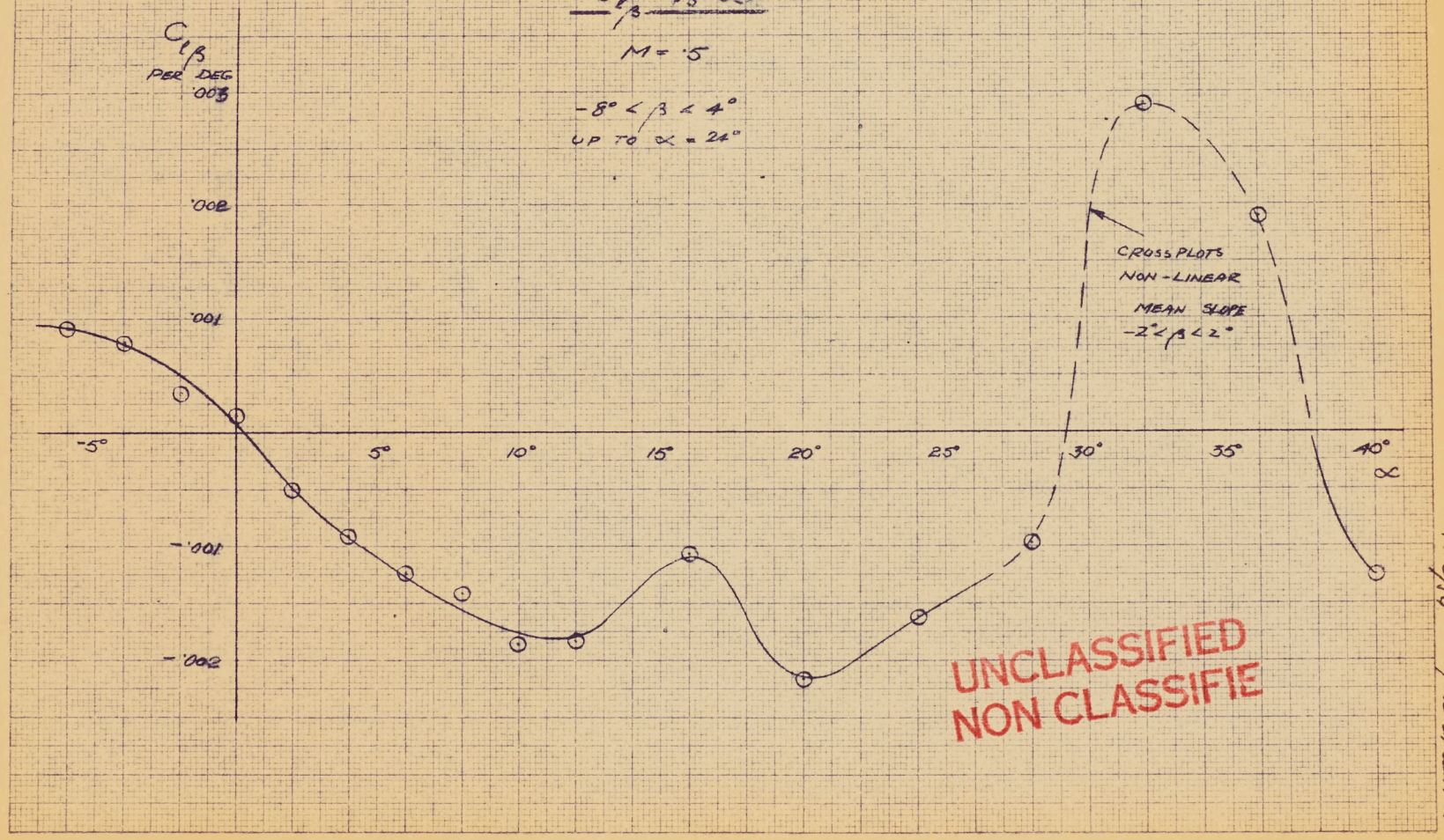
C.A.L. W.T. TESTS (JULY 57)

C_{l_β} vs α

M = .5

$-8° < \beta < 4°$

UP TO $\alpha = 24°$



Aug/57 Kinaffleans

Sheet 4.2 P/M.T/40

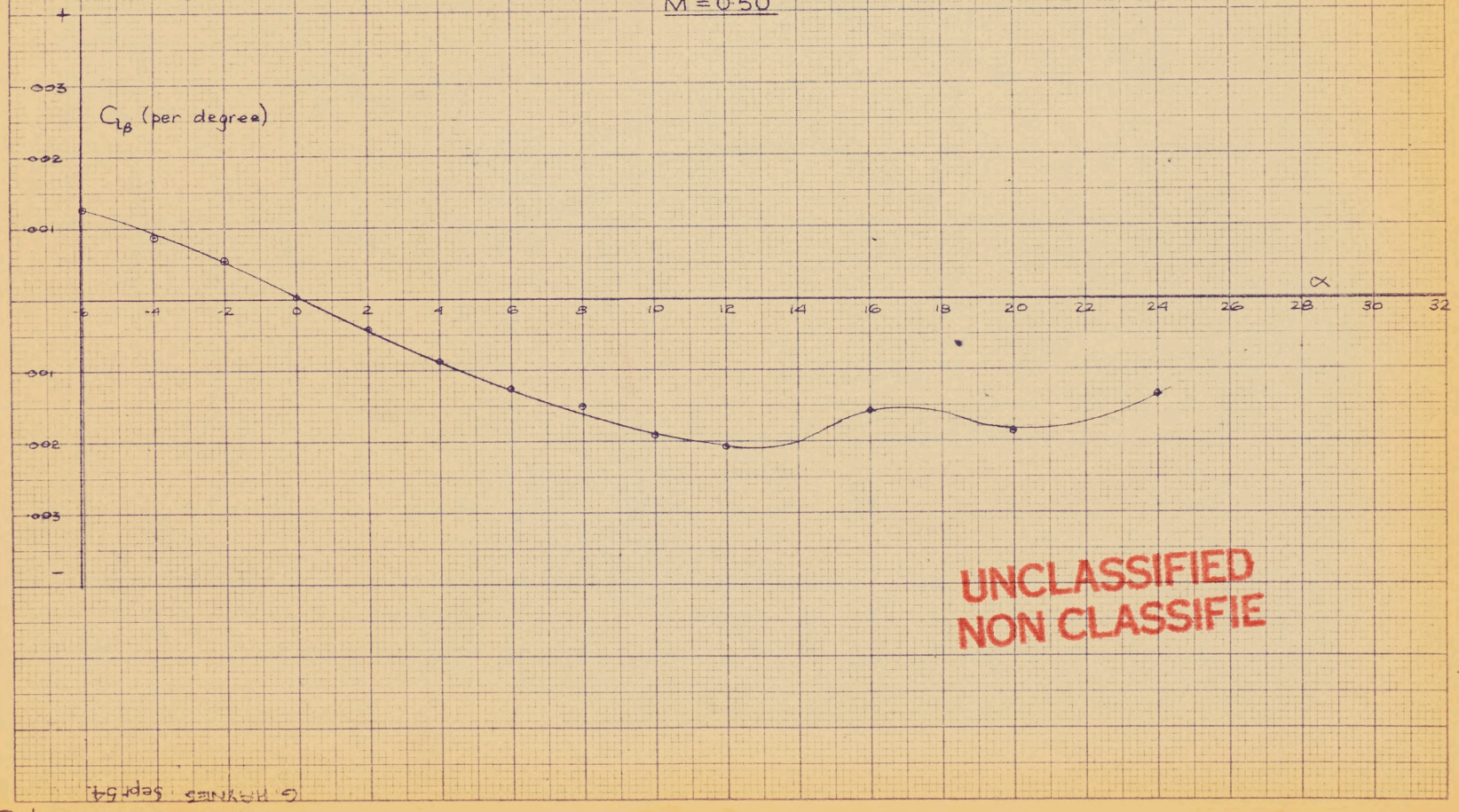
C.A.L. WIND TUNNEL TESTS

$C_{l_\beta} \sim \alpha$

Config. $B_3 C_3 R_5 W_5$

Tail Off

M = 0·50



G. PAYNES. Sept 54

P/WT/59 9.3.2

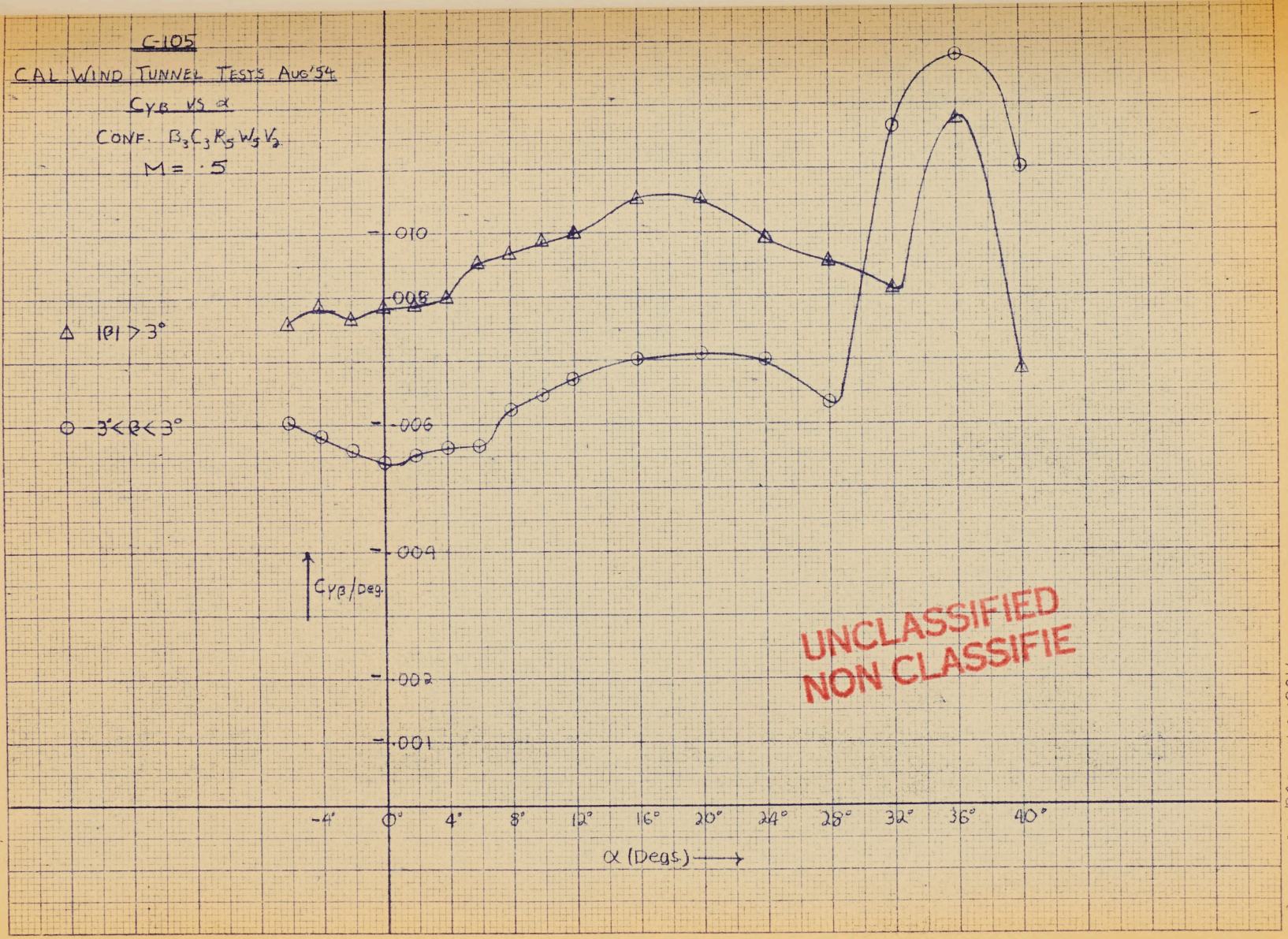
C-105

CAL WIND TUNNEL TESTS AUG'54

$C_{Y\beta}$ VS α

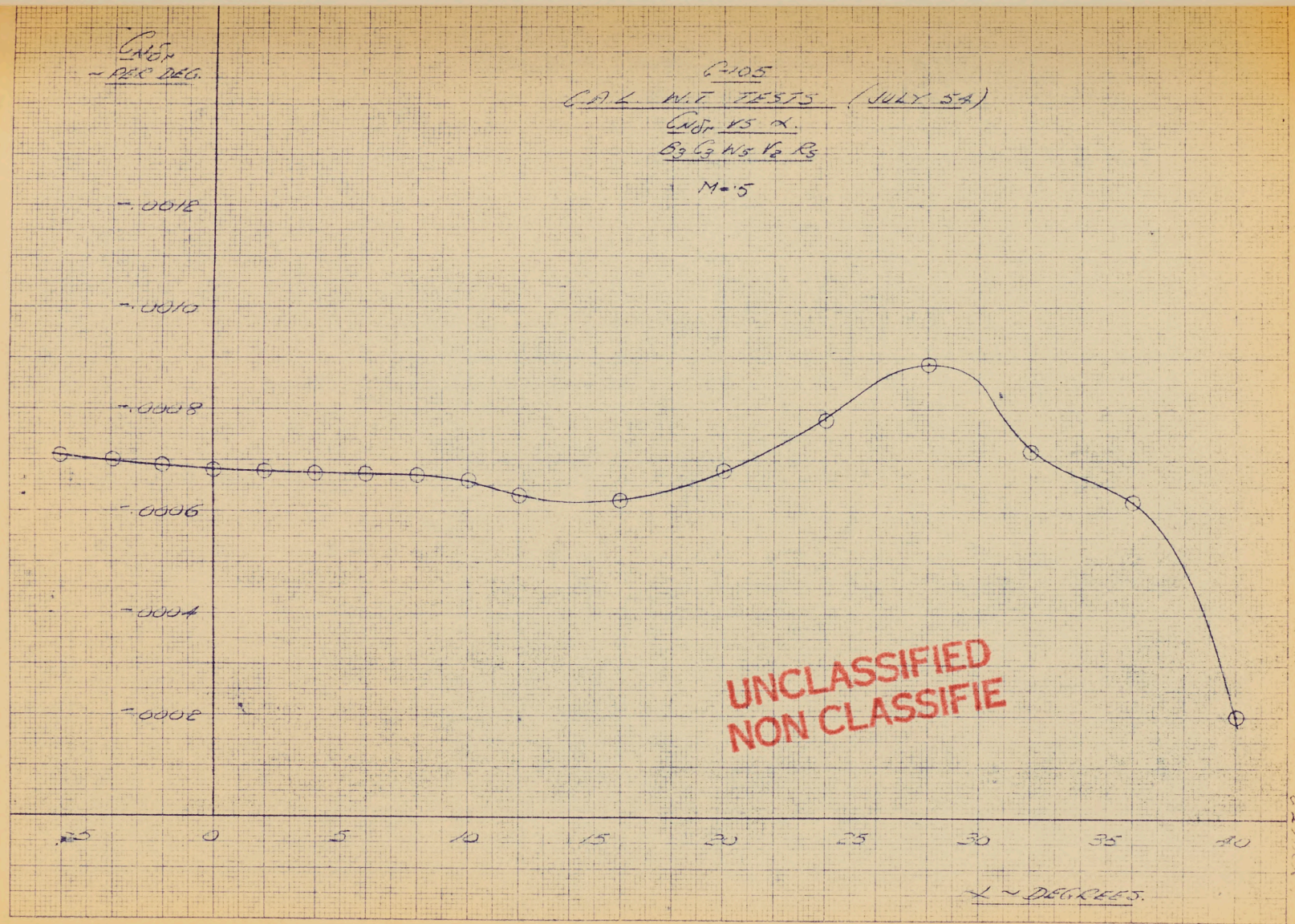
CONF. $B_3C_3R_5W_5V_2$

M = .5



P/W. T/40 Sheet 4.3

AUG. '54 BQ Pownall.


$C_{M_{0_w}}$ ~ REF DEG.
C-105
C.A.L. W.T. TESTS (JULY 54)
$C_{M_{0_w}}$ VS α.
B_3 C_3 W_5 V_2 R_3
M=.5
-.0012
-.0010
-.0008
-.0006
-.0004
-.0002
-5
0
5
10
15
20
25
30
35
40
α ~ DEGREES.
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NON CLASSIFIE

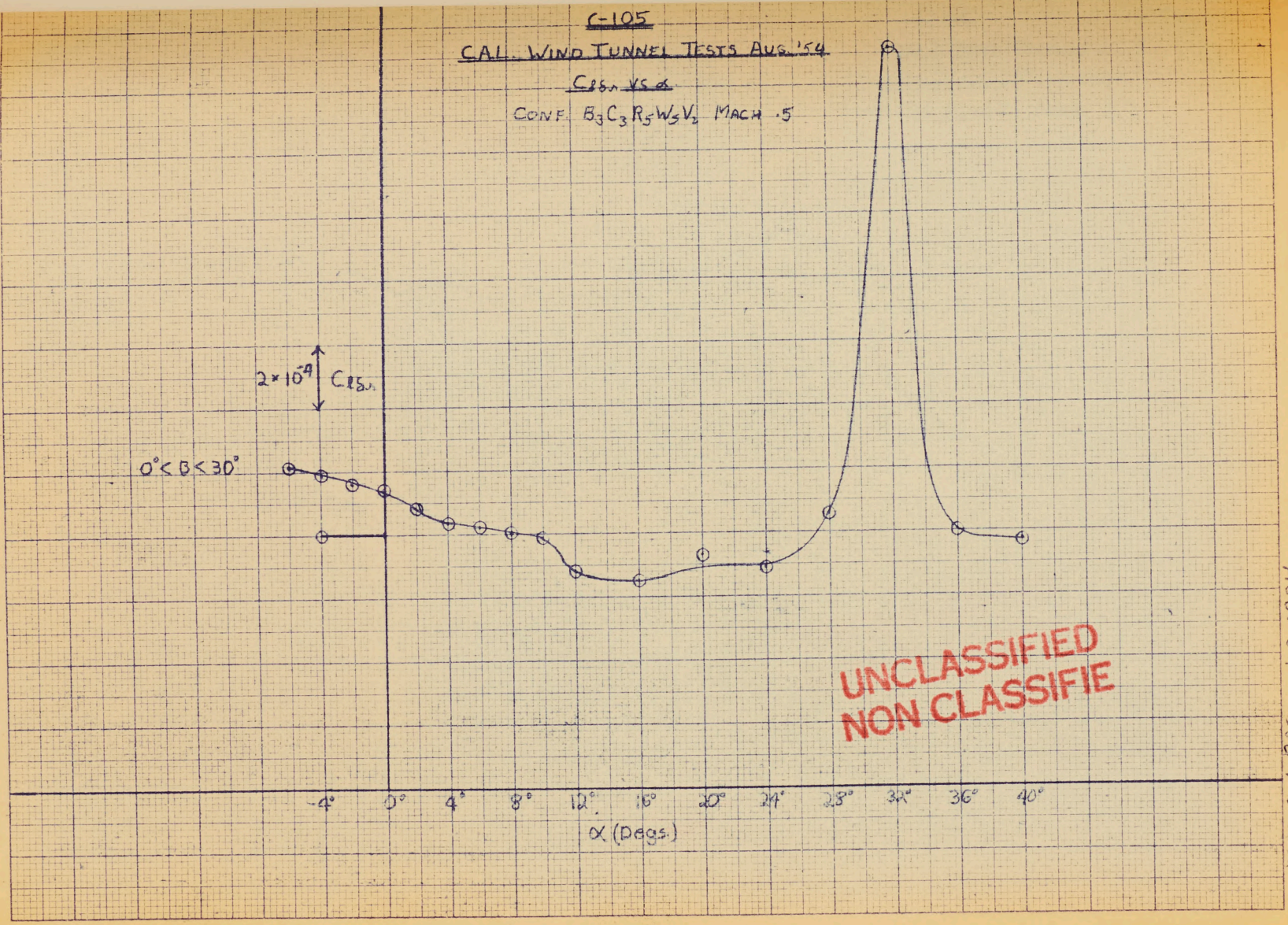
Sheet 4.4

C-105

CAL. WIND TUNNEL TESTS AUG. '54

$C_{l\beta n}$ vs α

CONF. $B_3C_3R_5W_5V_2$ MACH .5



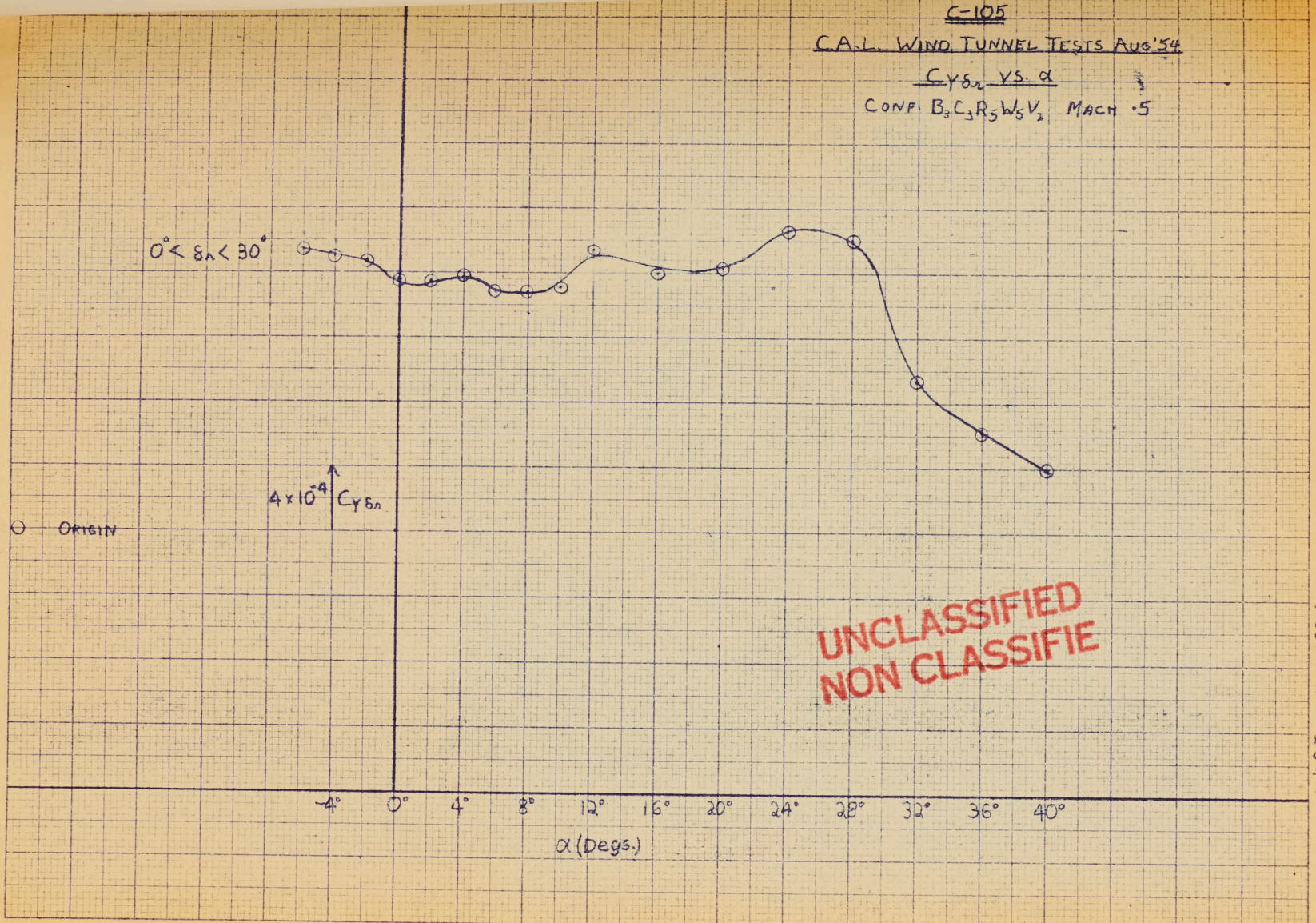
P/W.T./40 Sheet 4.5
Aug. '54 R.O. Mundell

C-105

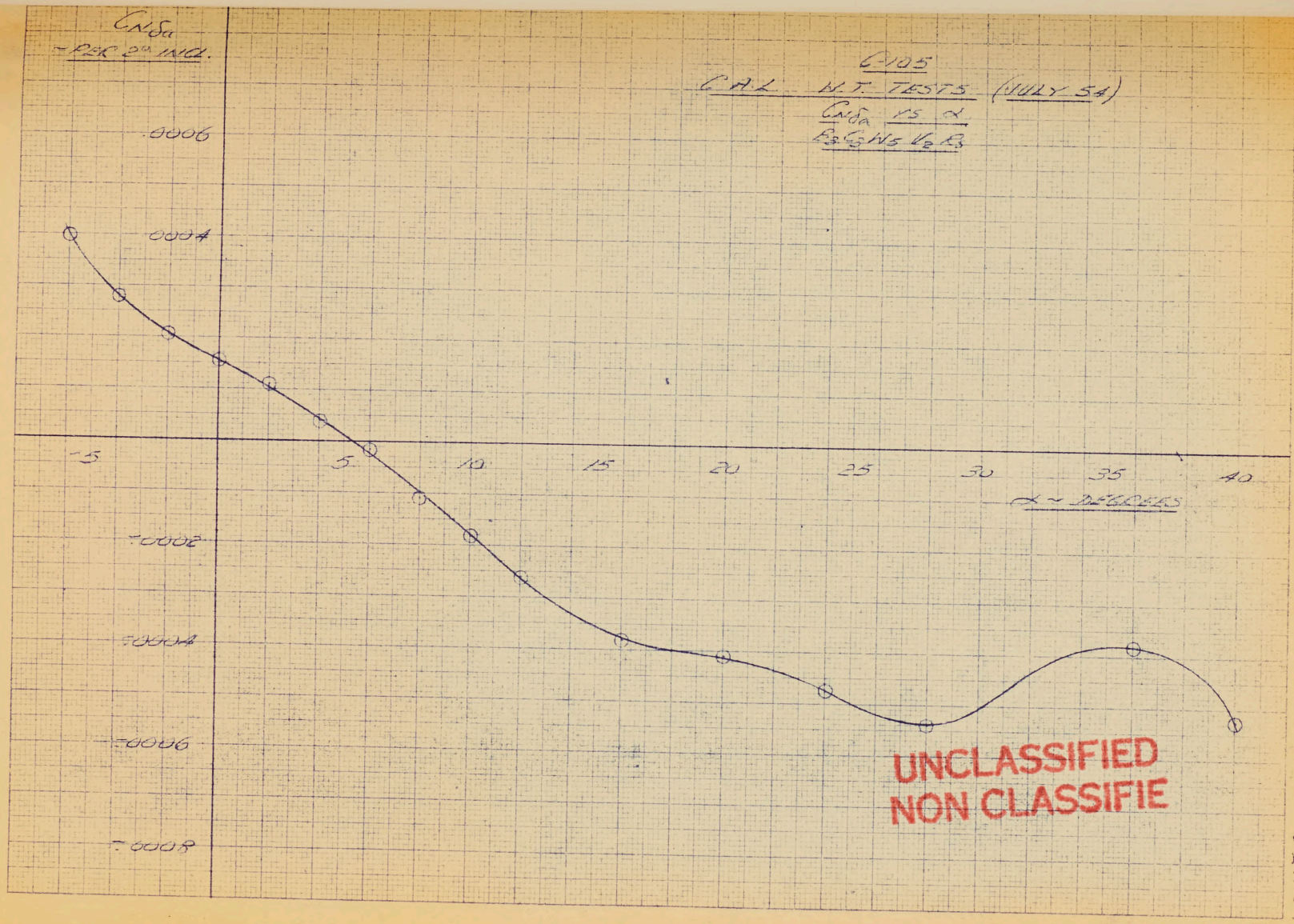
C.A.L. WIND TUNNEL TESTS AUG '54

$C_{Y\delta_R}$ VS. α

CONF: $B_3C_3R_5W_5V_2$ MACH .5



P/W.T./40. Sheet 4.6
AUG. '54. B.D. Munkel.



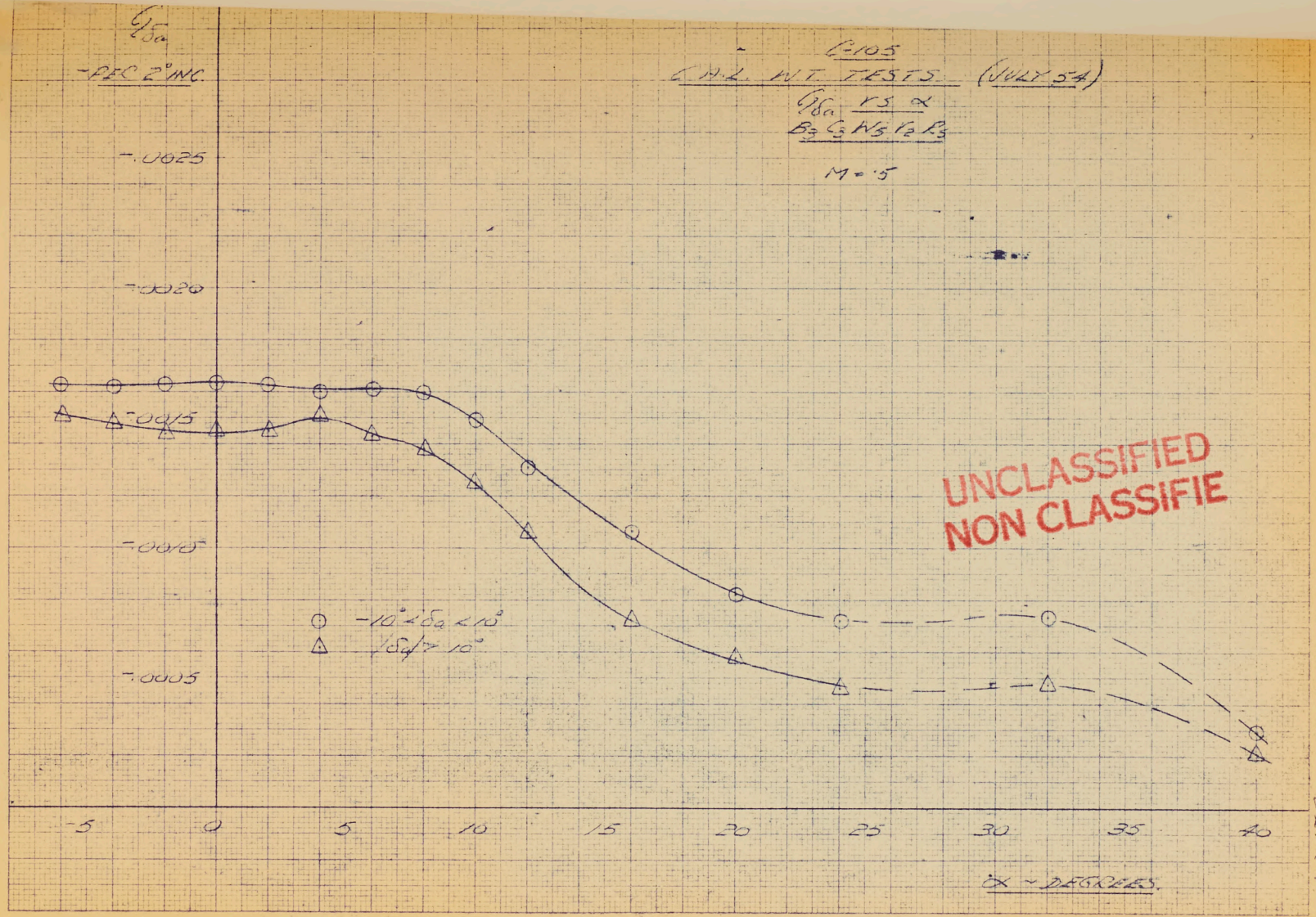
C105

CAL N.T. TESTS (JULY 54)

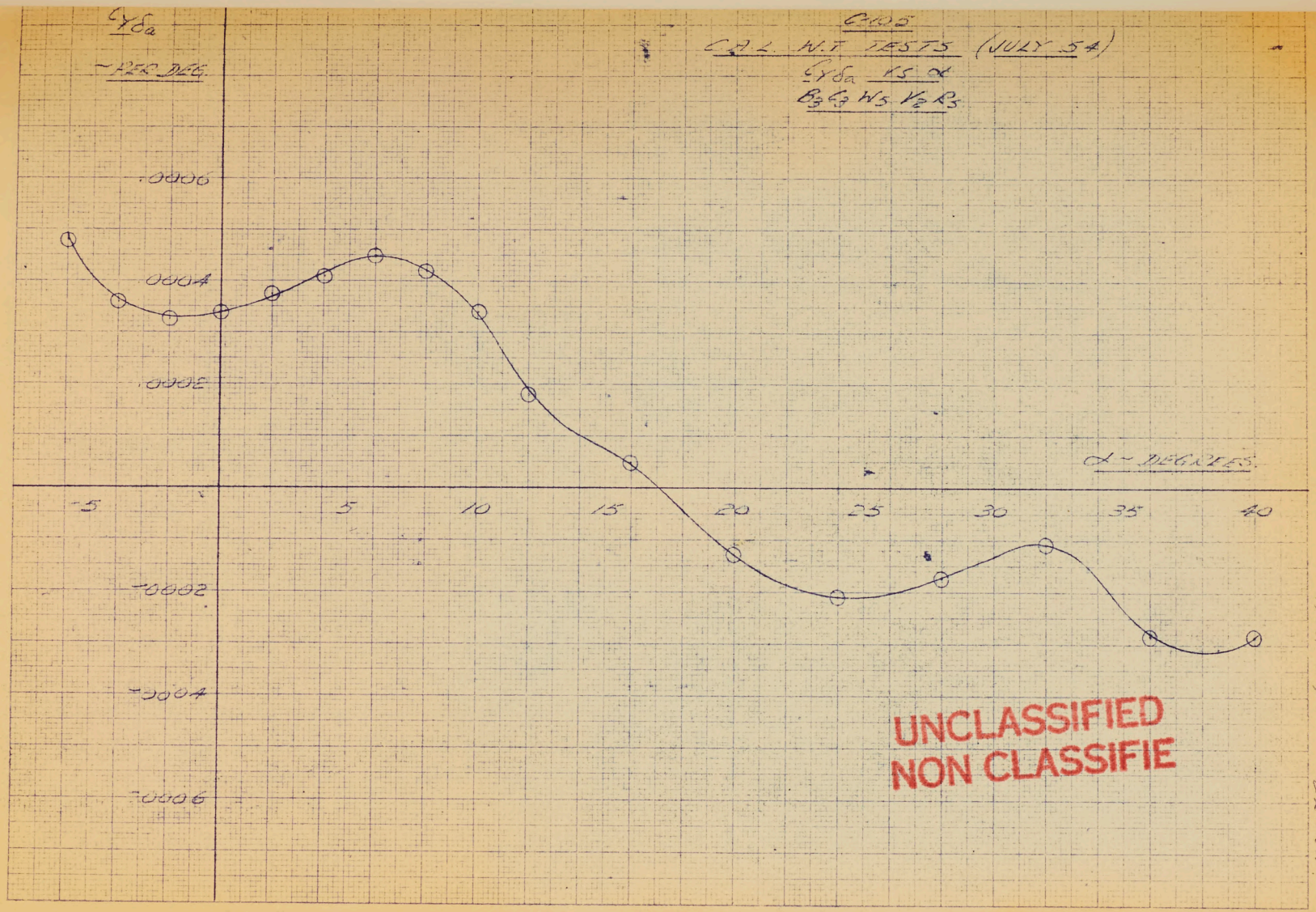
$C_{N\delta a}$ VS α

P_3 C_3 M_3 V_e R_3

Sheet 4.7 PRINTED AUG. 54. CANADA



Sheet 4.8



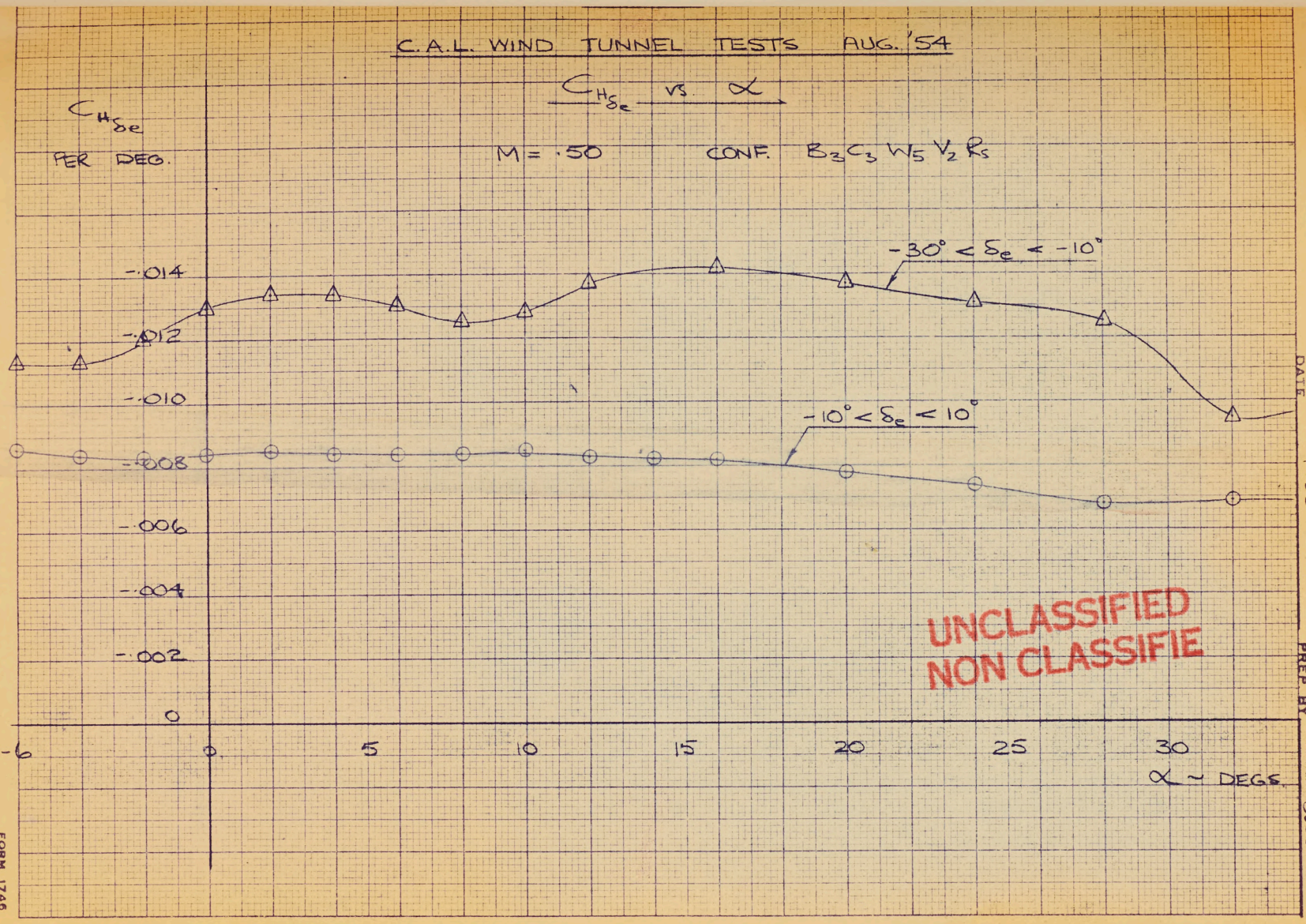
$C_{y\delta_a}$

$C_{y\delta_a}$ VS α

B_3 C_3 W_5 V_2 R_3

UNCLASSIFIED
NON CLASSIFIE

Sheet 4.9



COMPONENT

SHEET NO. 5:1

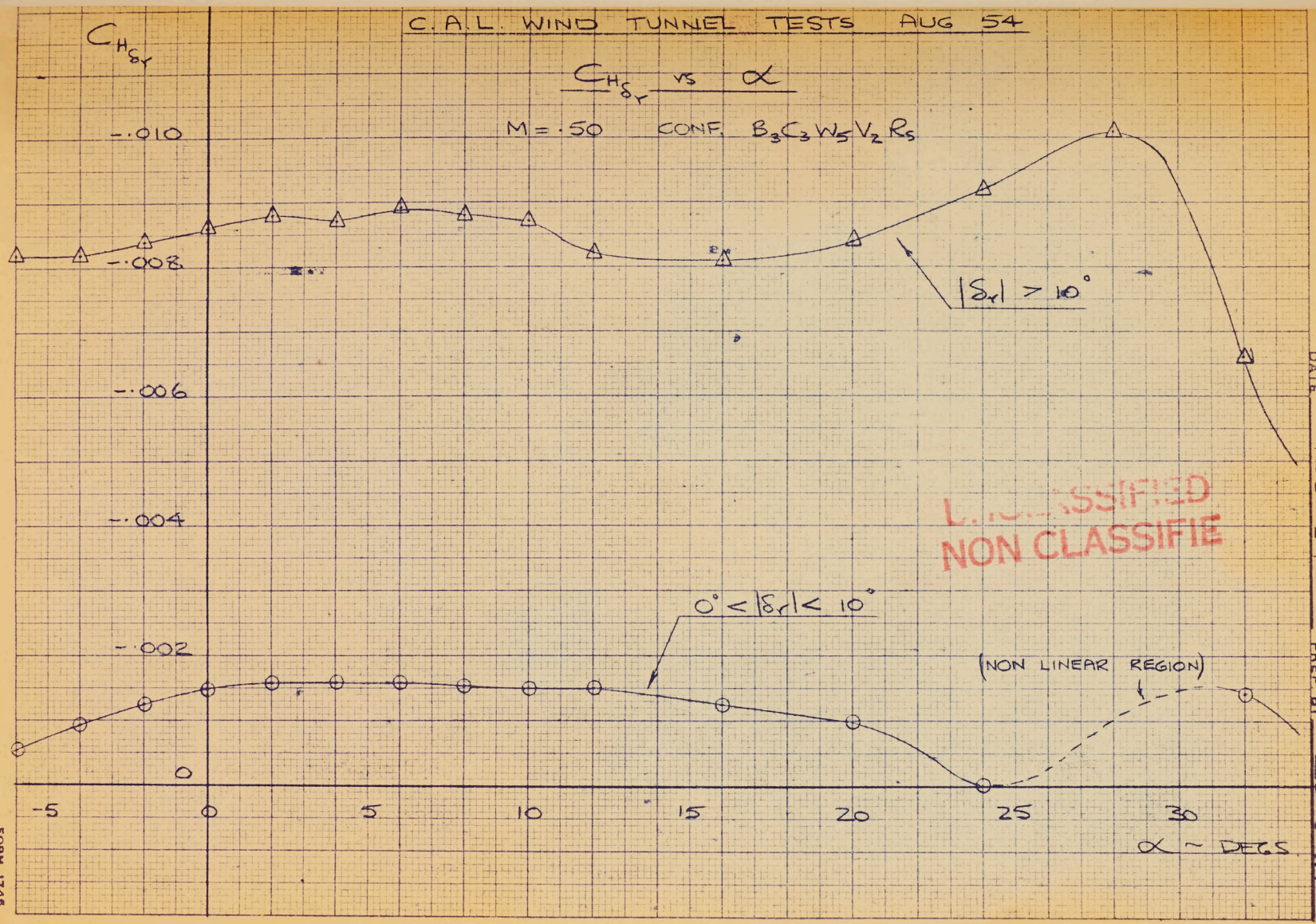
DATE AUG '54

REPORT NO P/WT/40

PREP. BY

FORM 1746

C.A.L. WIND TUNNEL TESTS AUG 54



COMPONENT

SHEET No. 5.2

DATE AUG. 54

REPORT No. P/WT/40

PREP. BY [illegible]

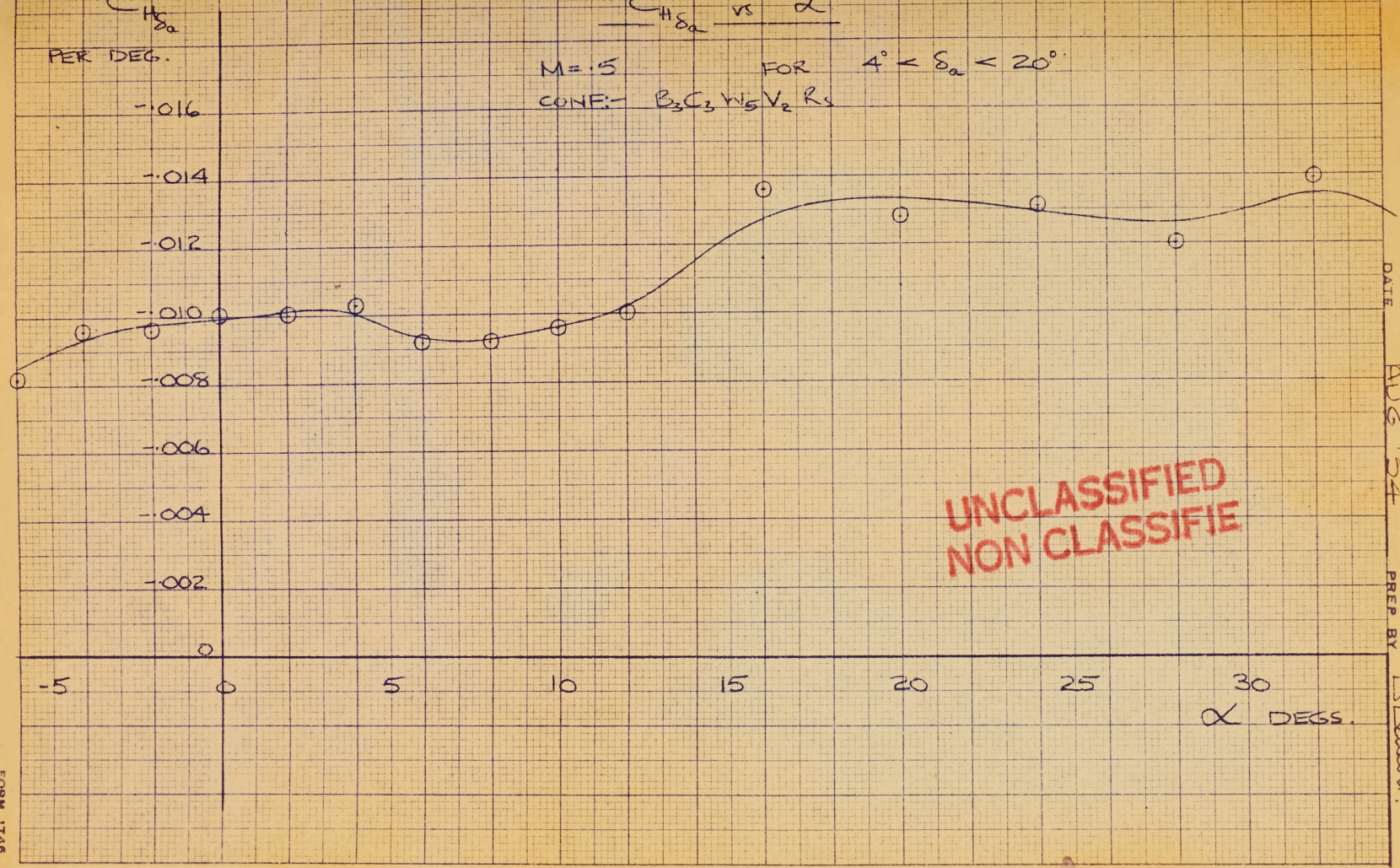
FORM 1746

C.A.L. WIND TUNNEL TESTS AUG '54.

$C_{H_{\delta_a}}$ vs α

M = .5 FOR $4° < \delta_a < 20°$

CONF:- $B_3 C_3 W_5 V_2 R_5$



COMPONENT

SHEET NO. 5.3

DATE AUG '54

REPORT NO. P/WT/40

PREP BY [illegible]

FORM 1746