P/WT/30

SECRET

P/Wind Tunnel/30
C-15
AVRO

C.A.I. WIND TUNNEL TESTS

SERIES III

JUNE 1954

DERIVATIVES AND ZERO VALUES

A V ROE CANADA LIMITED

MALTON ONTARIO

TECHNICAL DEPARTMENT (Aircraft)

~~SECRET~~

Templin

AIRCRAFT C 105.

REPORT NO P/WT/30

FILE NO

Classification cancelled / changed to UNCLASS

By authority of AVRS

Date 27 Sept 56

Signature

Unit / Rank / Appointment AVRS 5

NO OF SHEETS

TITLE

ANALYZED

C.A.L. WIND TUNNEL TESTS

SERIES 111

JUNE 54

DERIVATIVES & ZERO VALVES

PREPARED BY S. Kwiatkowski DATE Oct. 1954

CHECKED BY DATE

SUPERVISED BY DATE

APPROVED BY DATE

ISSUE NO	REVISION NO	REVISED BY	APPROVED BY	DATE	REMARKS

FORM 1316A

INDEX

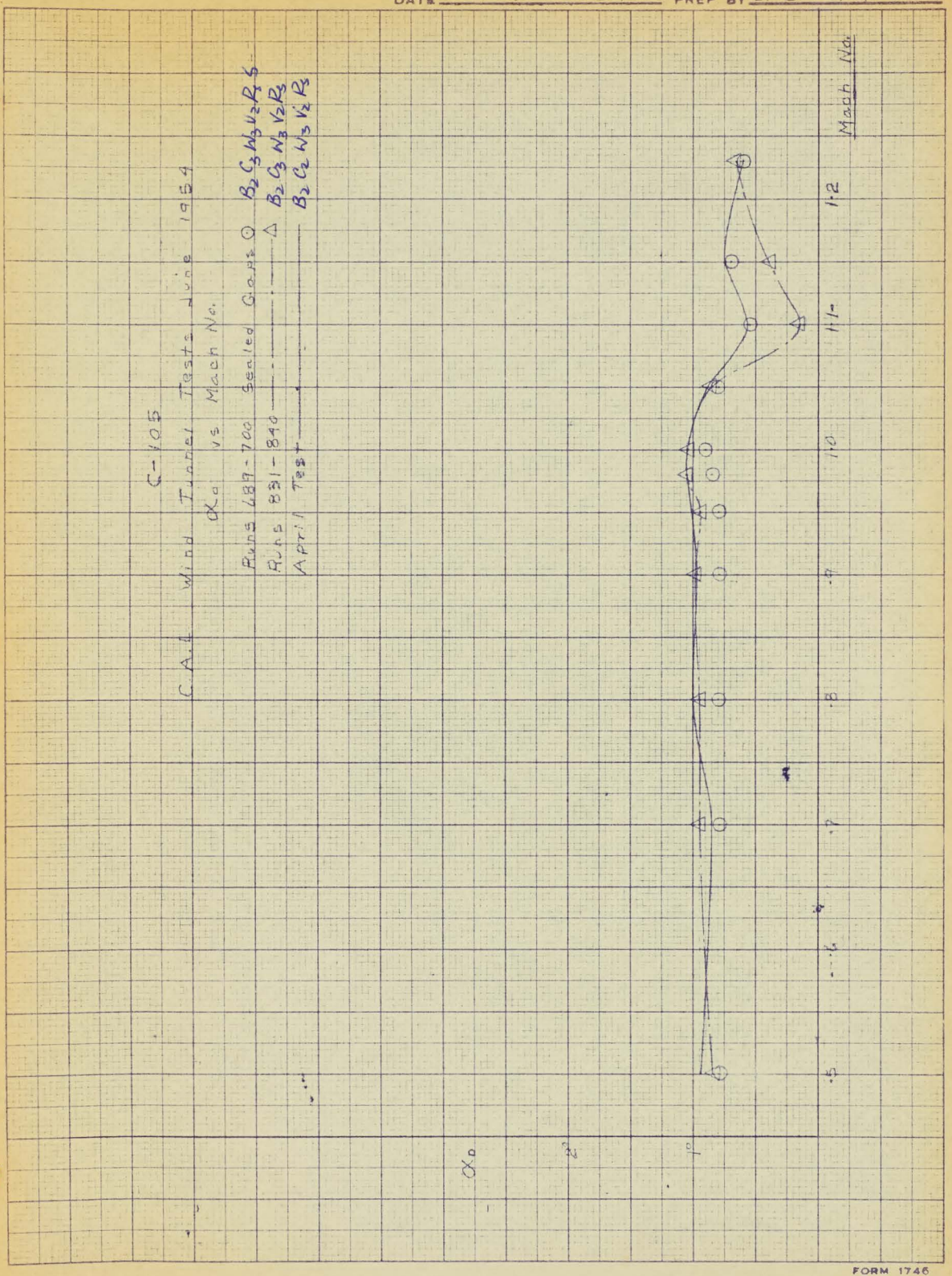
* Includes sealing, canopies on, and off, dorsal fin and faired intakes.

HINGE MOMENTS		SECTION
7. Elevator		
1. C_{He_0}		7.1.1
2. C_{He_α}		7.2.1
3. C_{He_β}		7.3.1
9. Rudder		
1. C_{H_β} and C_{Hb_r}	(Effect of q change)	9.1.1
10 Drag		10.1

AIRCRAFT C-105 COMPONENT
A.U.W.

SHEET No. 1.2.1. REPORT No. P/W T /30
DATE July 1954 PREP BY L. C. Catcliffe

C-105
C.A.L. Wind Tunnel Tests June 1954
C_{m_0} vs Mach No.
Runs 687-700 Sealed Gaps ○ $B_2 C_3 N_3 V_2 R_4 S$
Runs 831-846 △ $B_2 C_3 N_3 V_2 R_3$
April Test — $B_2 C_2 N_3 V_2 R_2$



FORM 1746

AIRCRAFT
A. U. W.

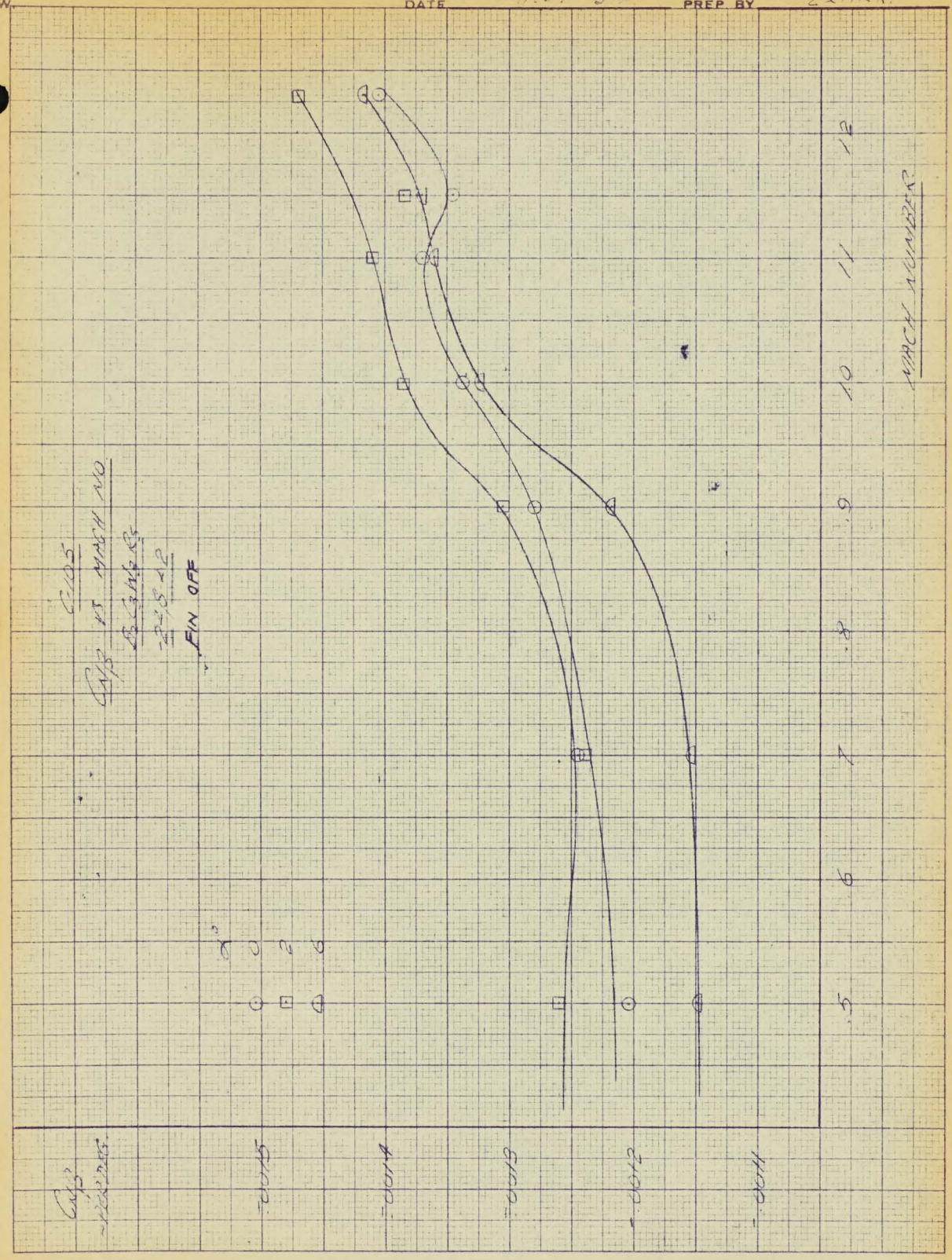
COMPONENT

SHEET No. 3.1.2.1

DATE JULY 54

REPORT No. C/W.T. 136

PREP. BY C.A.R.R.



FORM 1746

AIRCRAFT
A U.W.

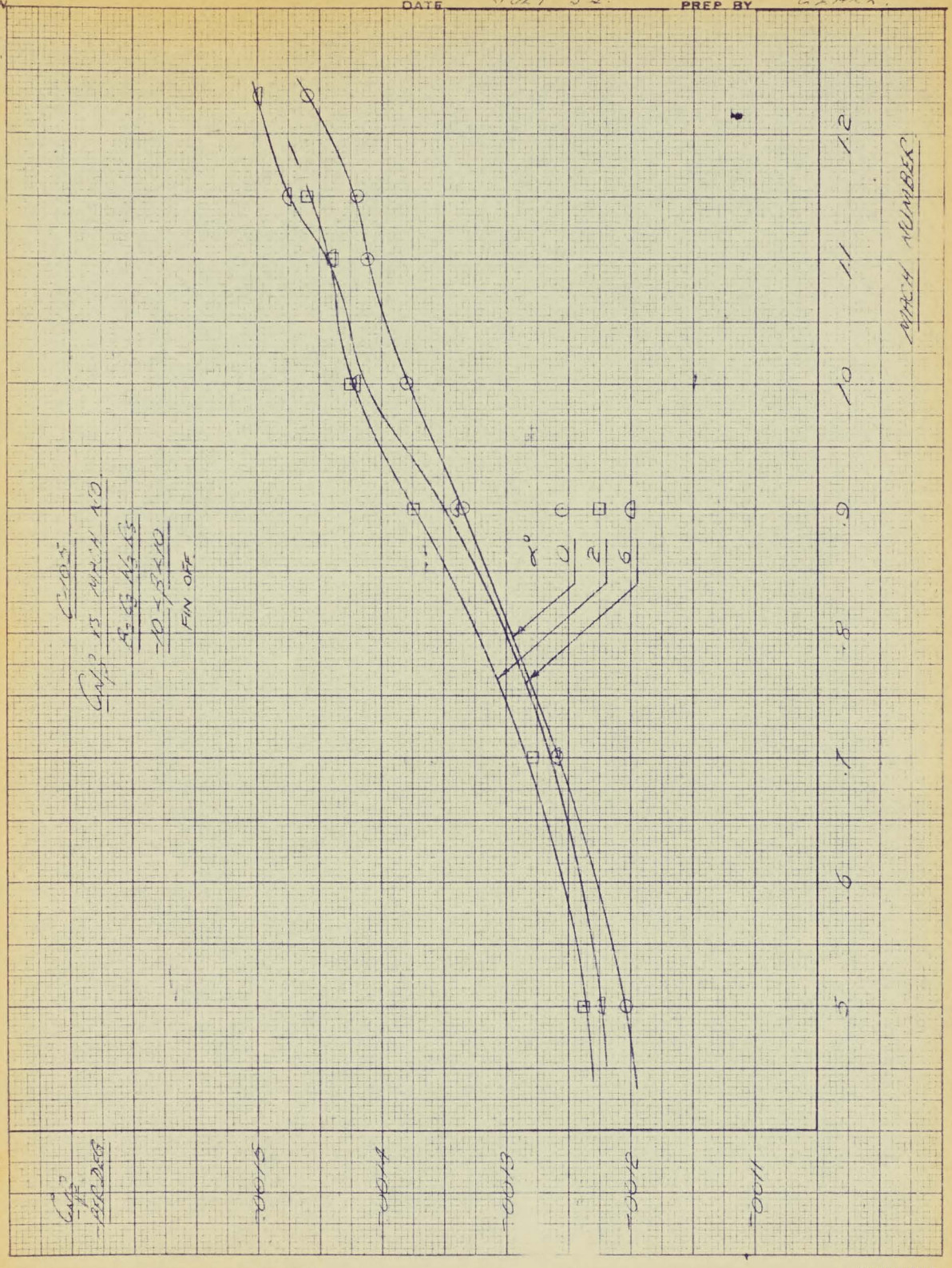
COMPONENT

SHEET No. 3.1.2.2.

REPORT No. P/WT/30.

DATE JULY 54.

PREP. BY CLARK.



FORM 1746

C105

C.A.L. WIND TUNNEL TESTS JUNE 57

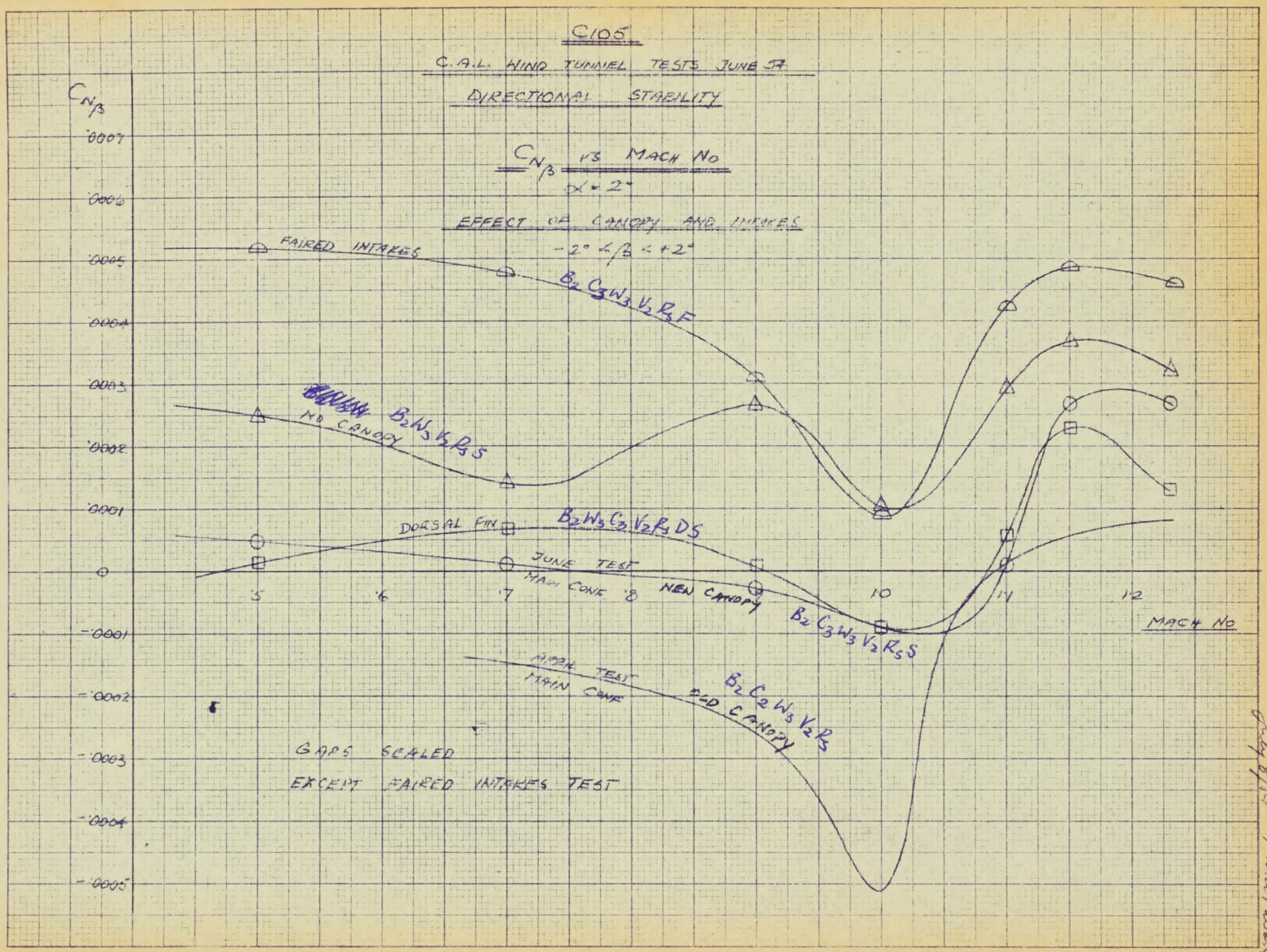
DIRECTIONAL STABILITY

C_{N_β} vs MACH NO

$\alpha = 2°$

EFFECT OF CANOPY AND INTAKES

$-2° < \beta < +2°$



3.1.3.1. P/W, T/20

C105

C.A.L. WIND TUNNEL TESTS JUNE 57

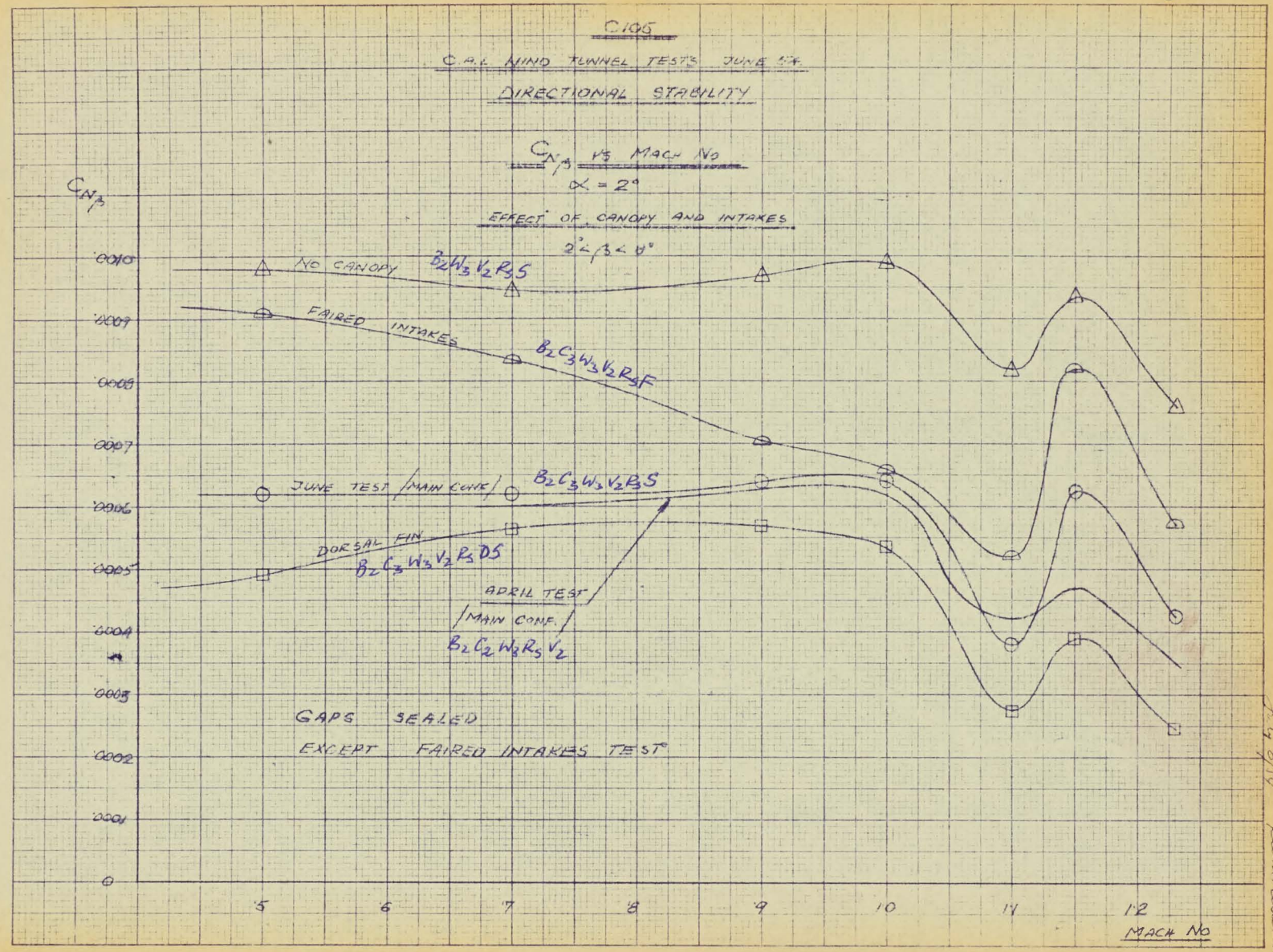
DIRECTIONAL STABILITY

C_{N_β} VS MACH NO

$\alpha = 2°$

EFFECT OF CANOPY AND INTAKES

$2° < \beta < 8°$



GAPS SEALED

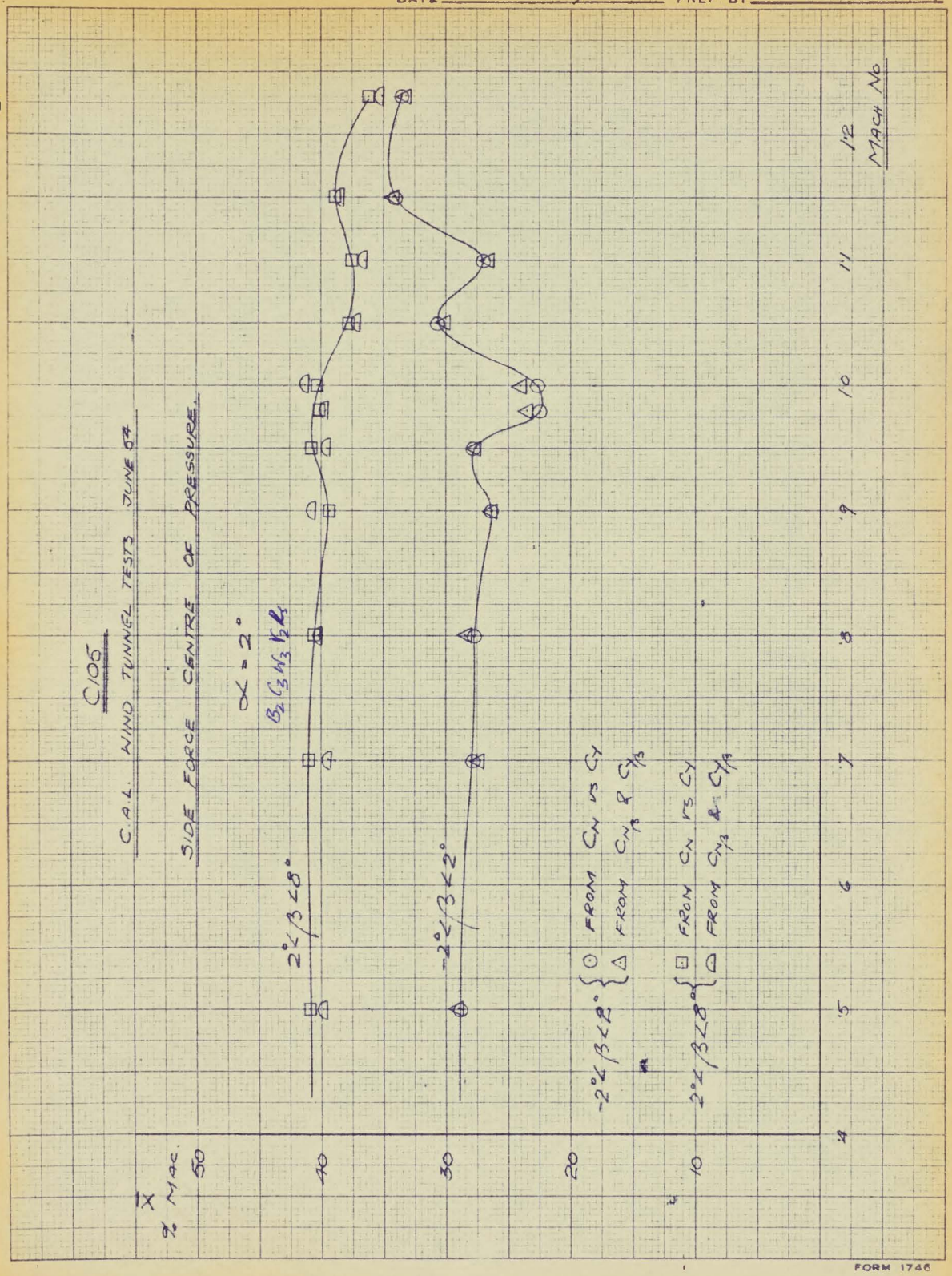
EXCEPT FAIRED INTAKES TEST

3.1.3.2. P/M T-130

7.4.8/57 Kuethe

AIRCRAFT C105 COMPONENT
A.U.W.

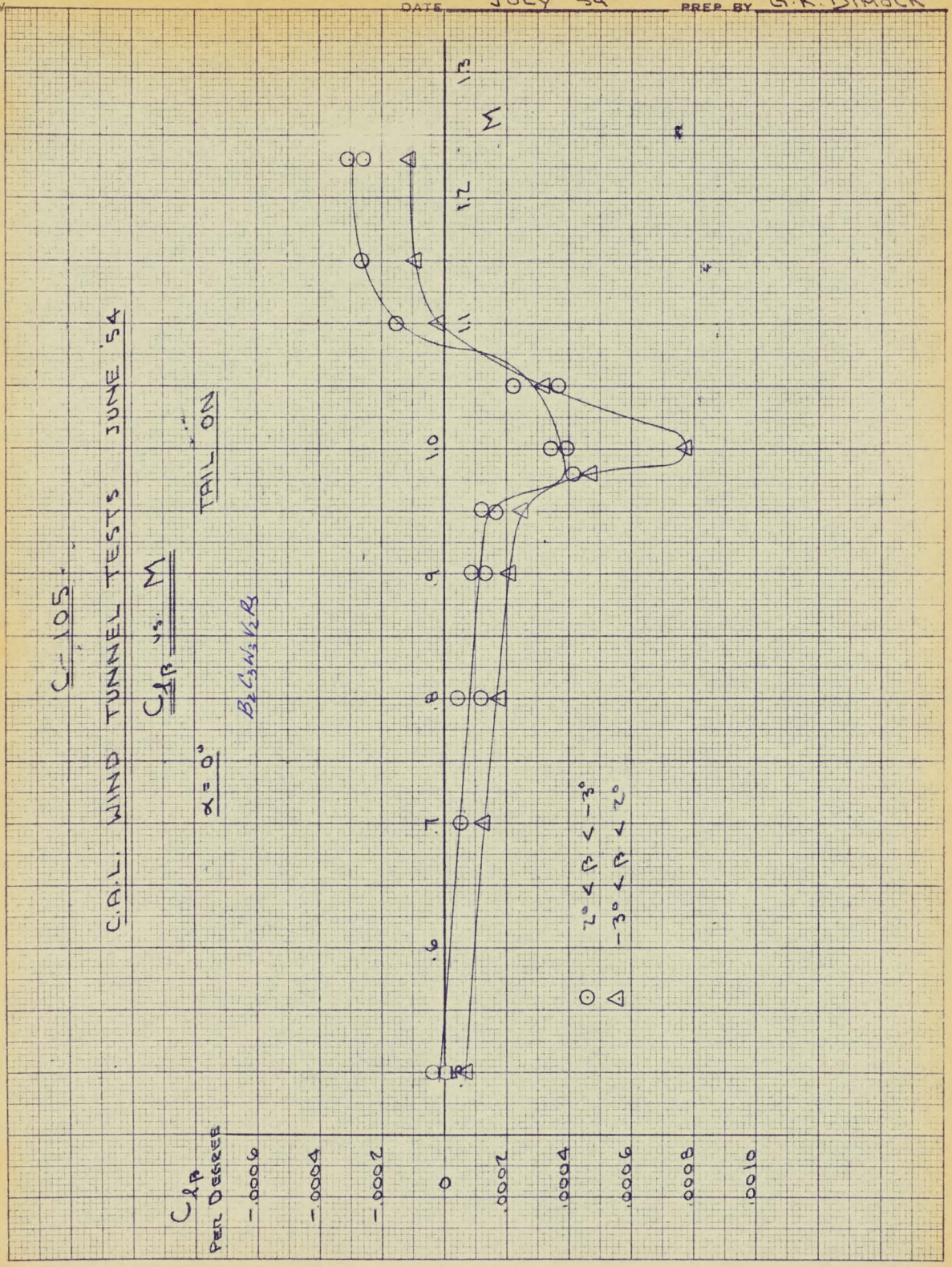
SHEET No. _____ REPORT No P/H.T/30.
DATE AUGUST /54 PREP BY Kwakhowski



FORM 1746

AIRCRAFT C105 COMPONENT SHEET No. 3.2.1.2 REPORT No. P/W.T./30

A. U. W. DATE JULY '54 PREP. BY G. K. DIMOCK



FORM 1746

AIRCRAFT C-105 COMPONENT

A.U.W.

SHEET NO. 3.2.1.3

DATE JULY '54

REPORT NO. P/W.T./30

PREP BY G.K. DIMOCK

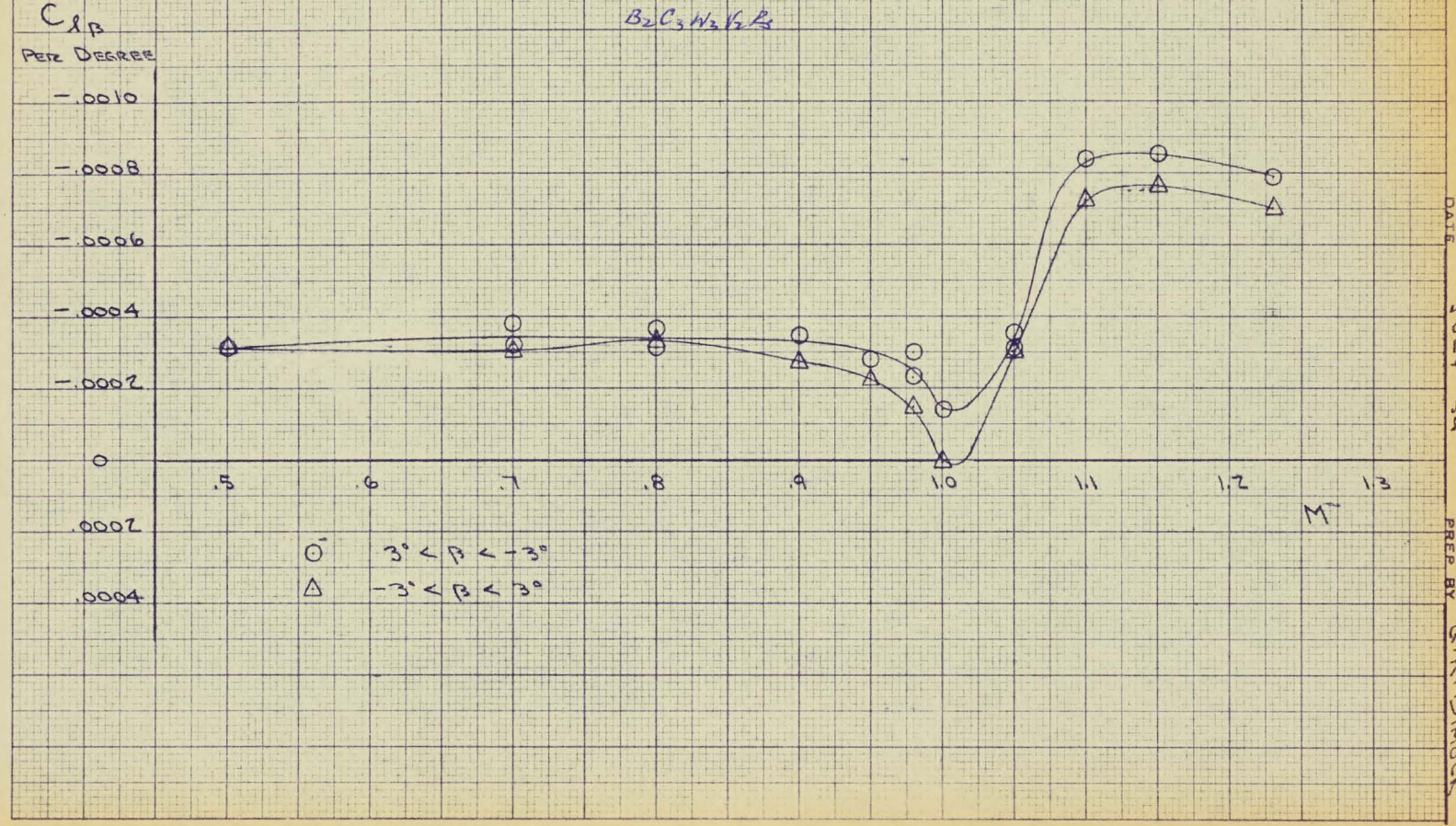
C-105

C.A.L WIND TUNNEL TESTS JUNE '54

C_{l_β} vs. M

$\alpha = 2°$ TAIL ON

$B_2 C_3 W_3 V_2 B_3$



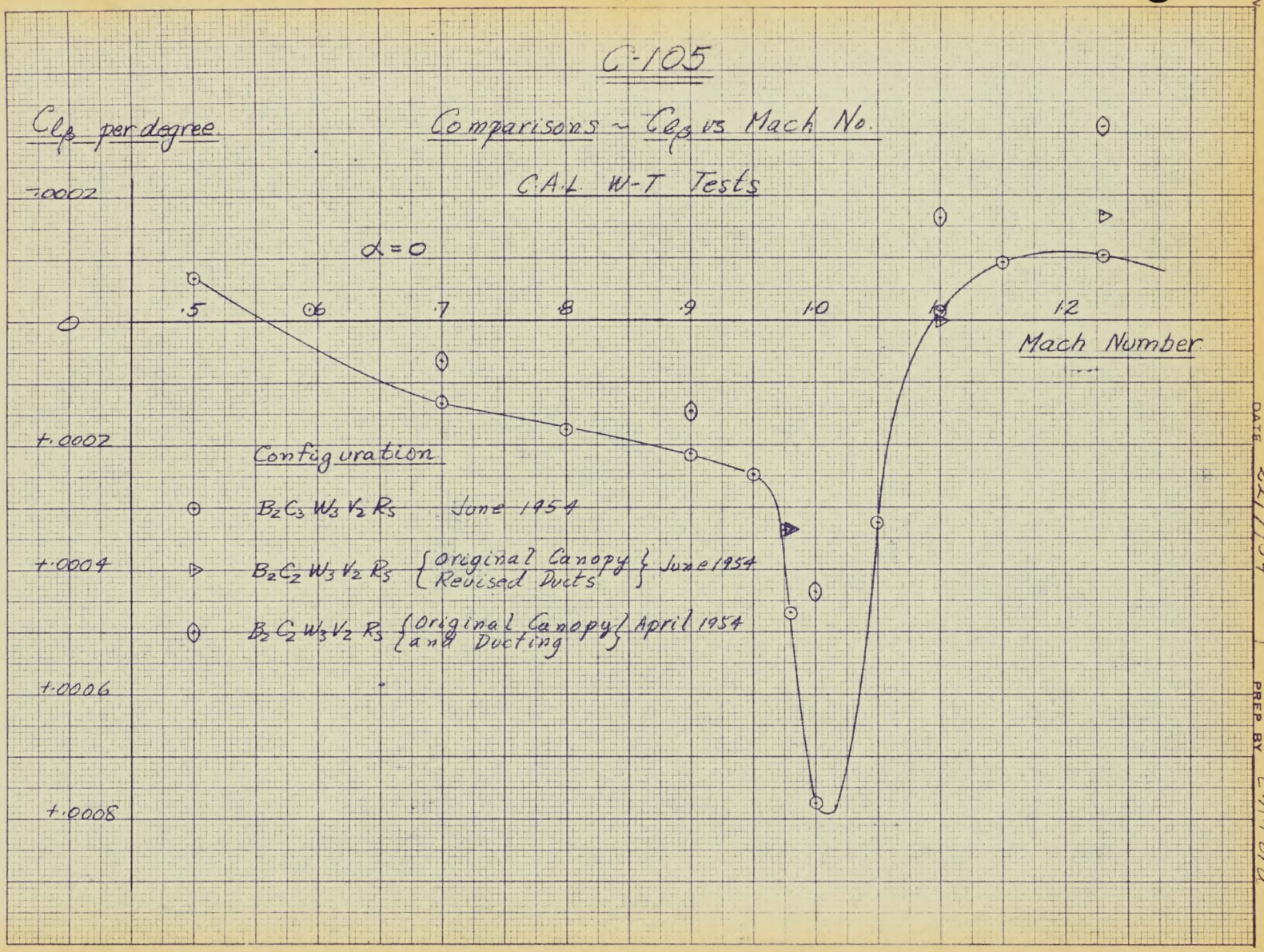
FORM 1746

C-105

C_{l_β} per degree

Comparisons ~ C_{l_β} vs Mach No.

C.A.L. W-T Tests



Configuration

- ⊕ $B_2C_3W_3V_2R_5$ June 1954
- ▷ $B_2C_2W_3V_2R_5$ {Original Canopy / Revised Ducts} June 1954
- ⊕ $B_2C_2W_3V_2R_5$ {Original Canopy / and Ducting} April 1954

AIRCRAFT C-105 COMPONENT A U W

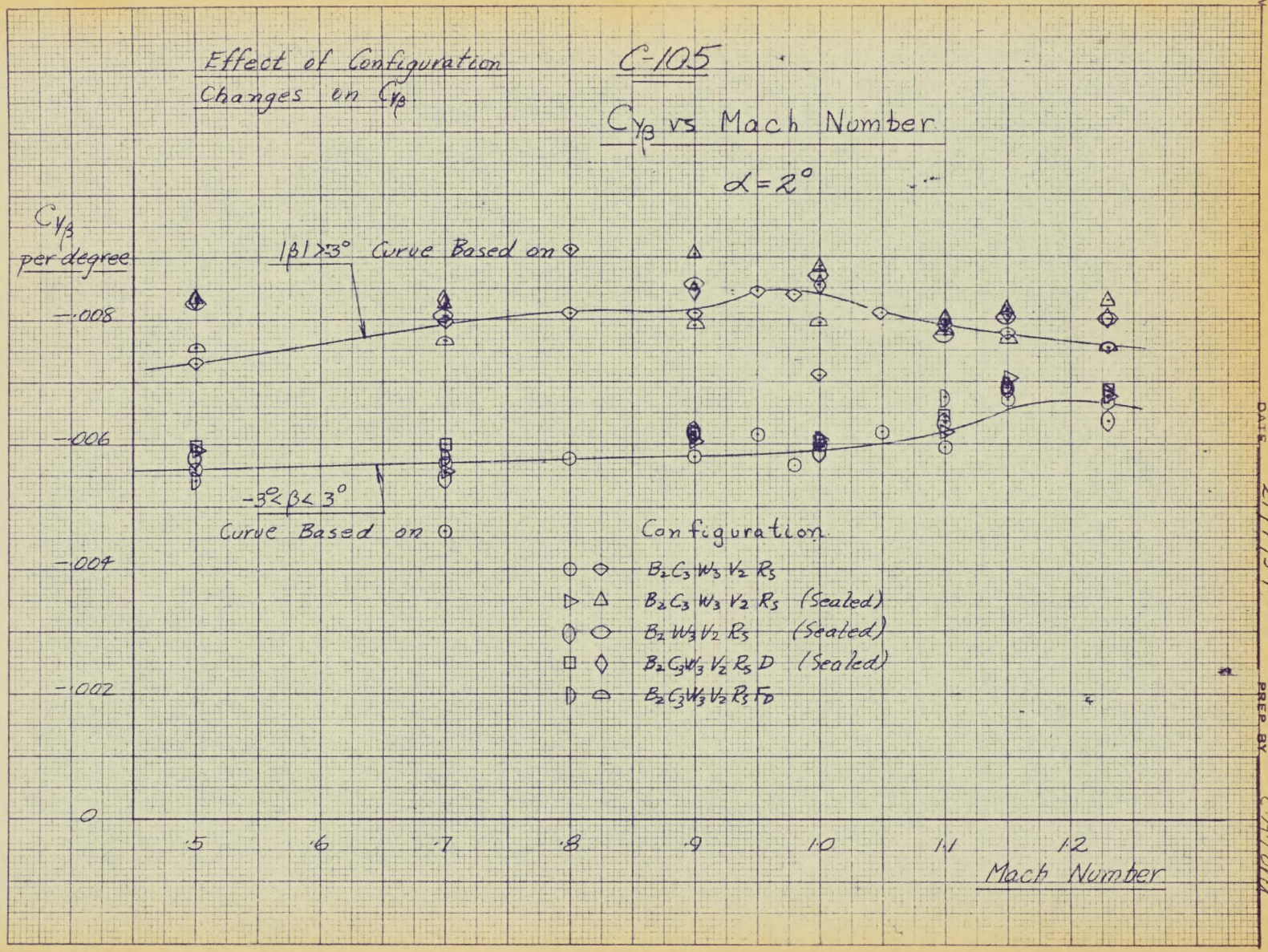
SHEET NO. 3.2.3.1

DATE 12/7/54

REPORT NO. PWT/30

PREP BY C.A. Ford

FORM 1746



AIRCRAFT C-105 COMPONENT
A U W
SHEET NO. 3.3.3.2
DATE 2/7/54
REPORT NO. PWT/30
PREP BY C.A. Ford

FORM 1746

AIRCRAFT C105 COMPONENT SHEET No. 4.1.1.1 REPORT No. P/W.T./130

A.U.W. DATE JUNE 29/52 PREP BY Kwathorn.

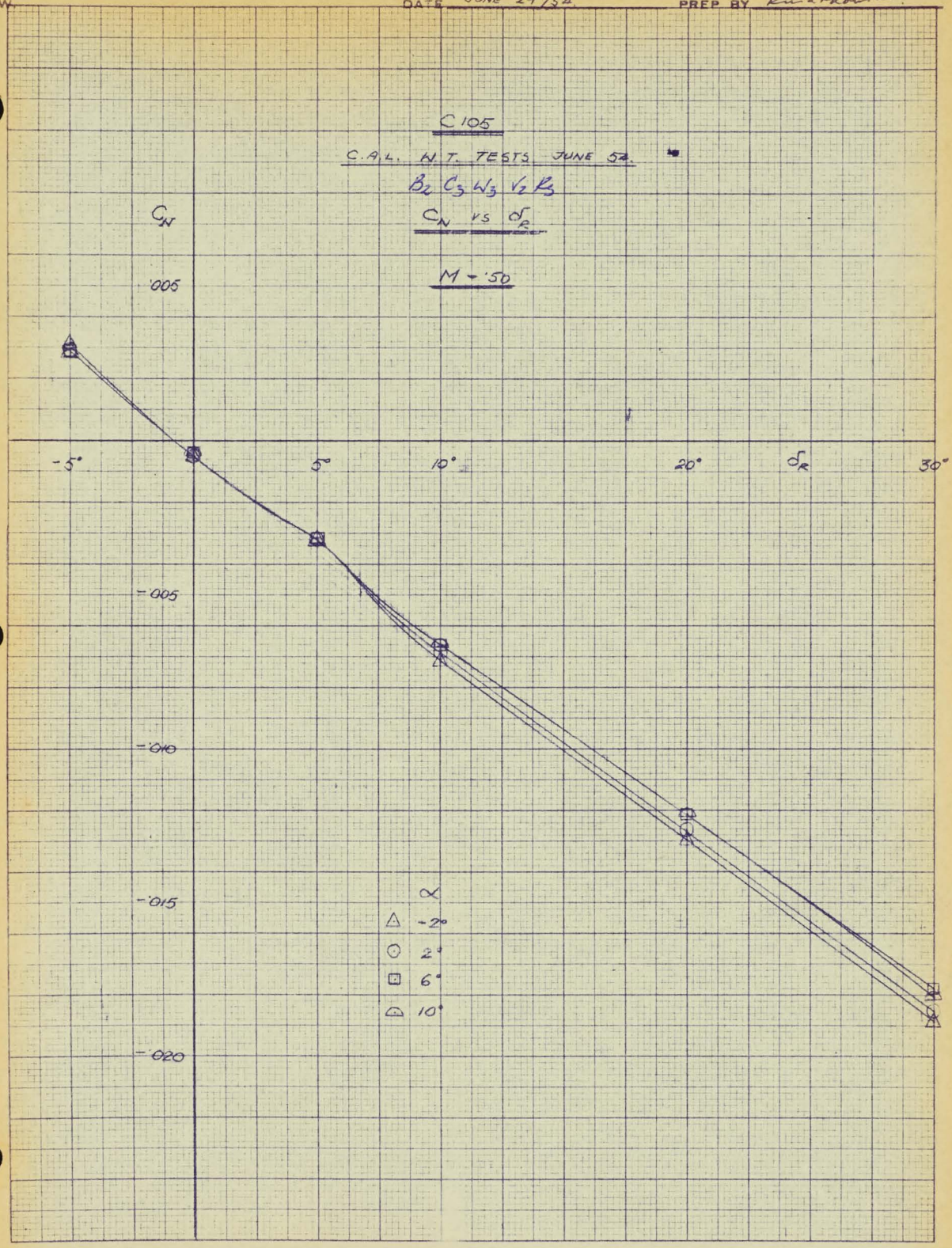
C105

C.A.L. W.T. TESTS JUNE 52.

$B_2\ C_3\ W_3\ V_2\ R_3$

C_N vs δ_E

M = .50



FORM 1746

AIRCRAFT C105 COMPONENT SHEET No. 4.1.1.3. REPORT No. P/W.T./30.

A.U.W. DATE JUNE 29/54 PREP. BY Kwakkowski

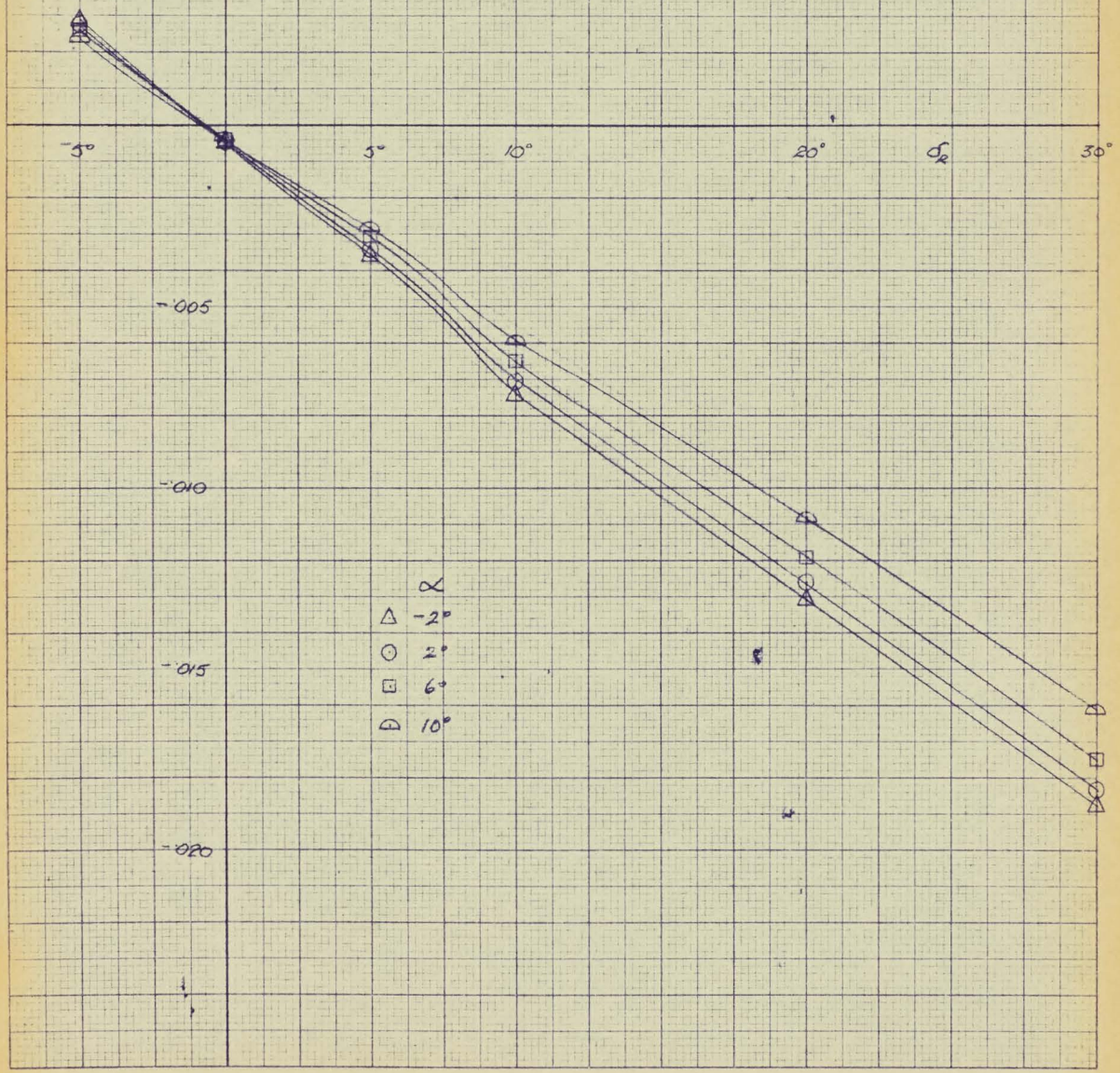
C105

C.A.L. W.T. TESTS JUNE 54

$B_2 C_3 W_3 V_2 R_3$

C_N vs δ_2

M = .80



FORM 1746

AIRCRAFT C105 COMPONENT

A. U. W.

SHEET No. 4.1.1.4. REPORT No. P/W.T./30

DATE JUNE 29/57 PREP. BY Kwiatkowski

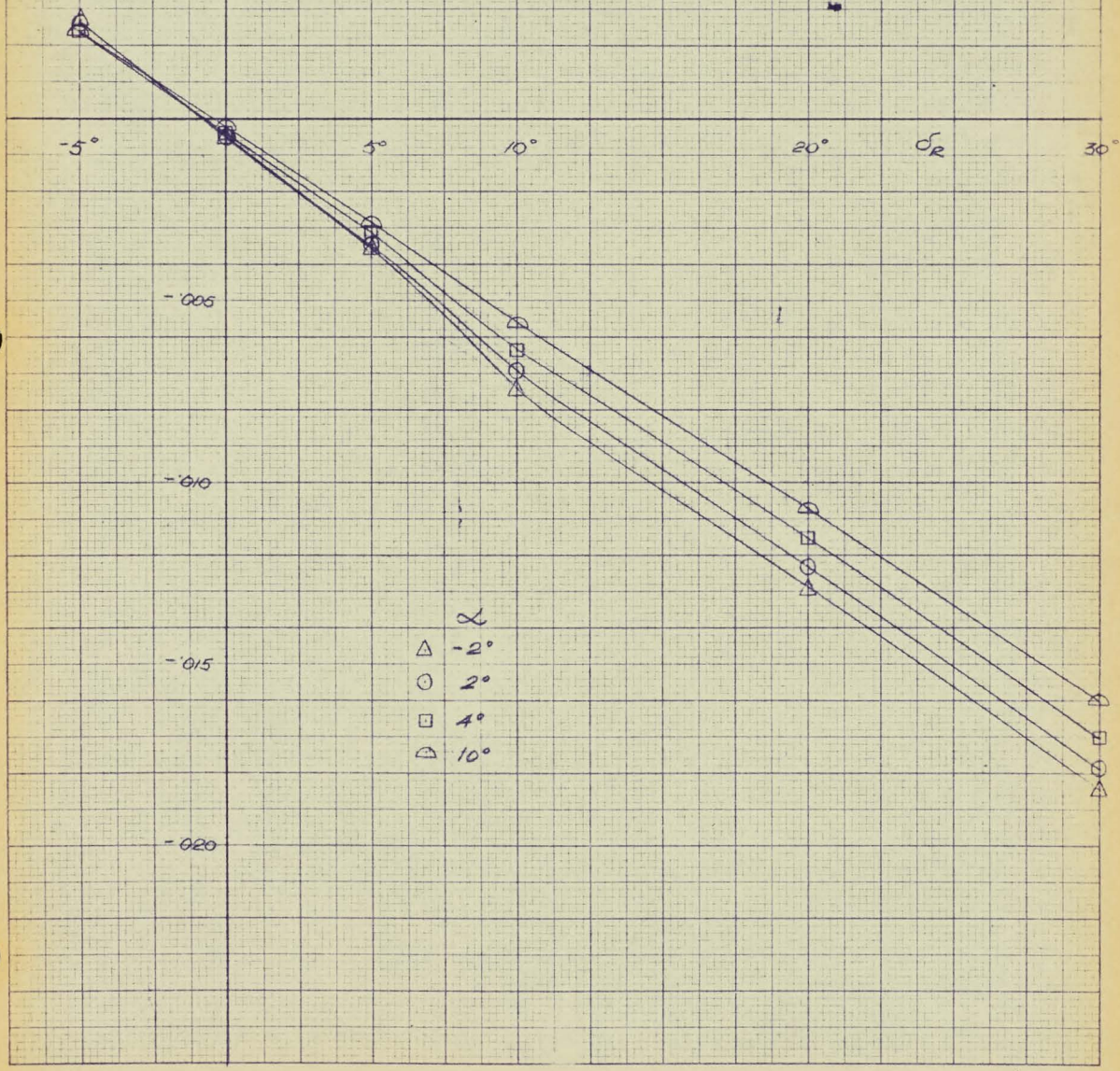
C105

C.A.L. WIND TUNNEL JUNE 57

$B_2 C_3 W_3 V_2 R_3$

C_N vs δ_R

$M = .90$



FORM 1746

AIRCRAFT C105 COMPONENT SHEET No. 4.1.1.6. REPORT No. P/W.T./30

A. U. W. DATE June 29/54 PREP. BY Kusatkowski

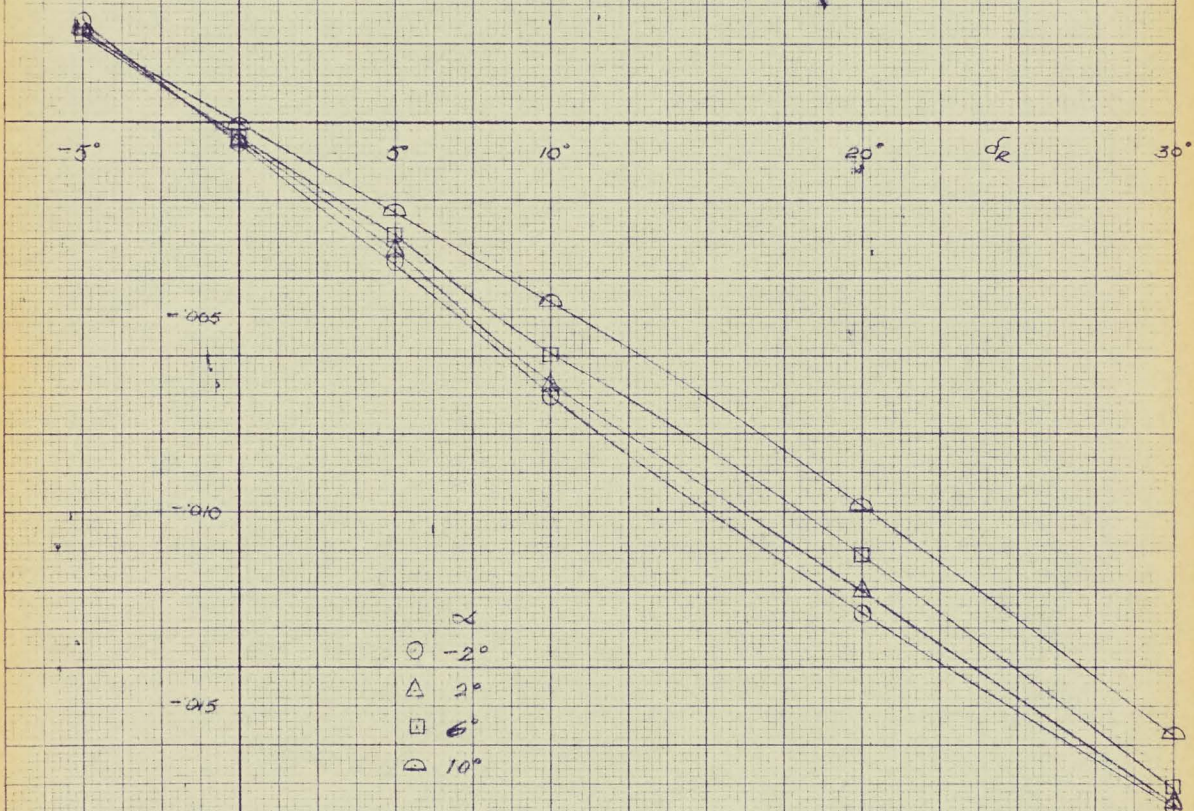
C105

C.A.L. WIND TUNNEL TESTS JUNE 54

$B_2 C_3 W_3 V_2 R_3$

C_N vs δ_e

M = .93



FORM 1746

AIRCRAFT C105 COMPONENT SHEET No. 4.1.1.7. REPORT No P/W.T. 130

A.U.W. DATE June 29/54 PREP. BY Kwiatkowski.

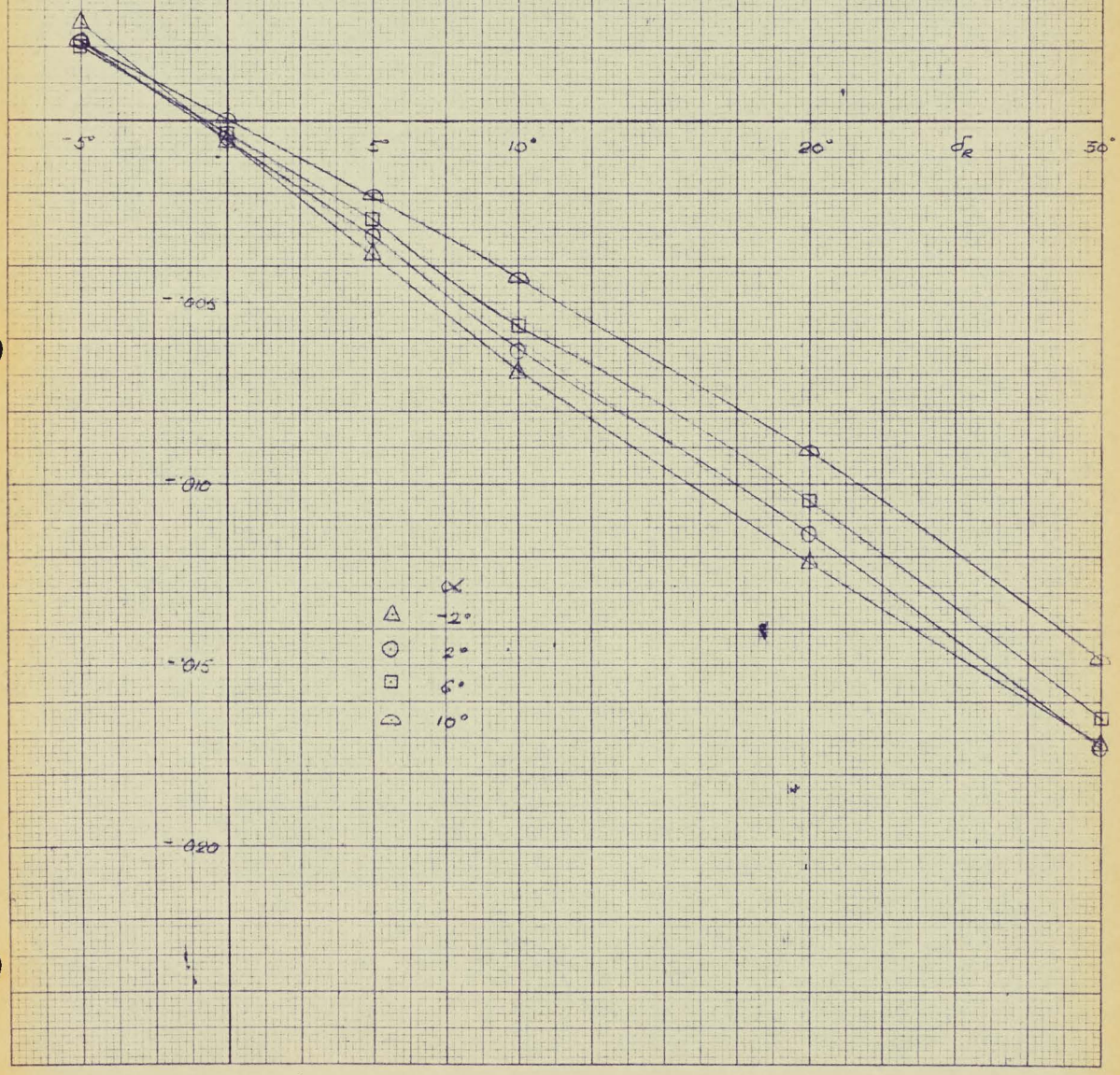
C105

O.A.L. WIND TUNNEL TESTS JUNE 54.

$B_2 C_3 W_3 V_2 R_5$

C_N vs δ_E

M = 1.570



FORM 1746

AIRCRAFT C105 COMPONENT SHEET No. 4.1.1.8. REPORT No. P/W.T. 130.

A. U. W. DATE June 23 /54 PREP BY Kwalkowski

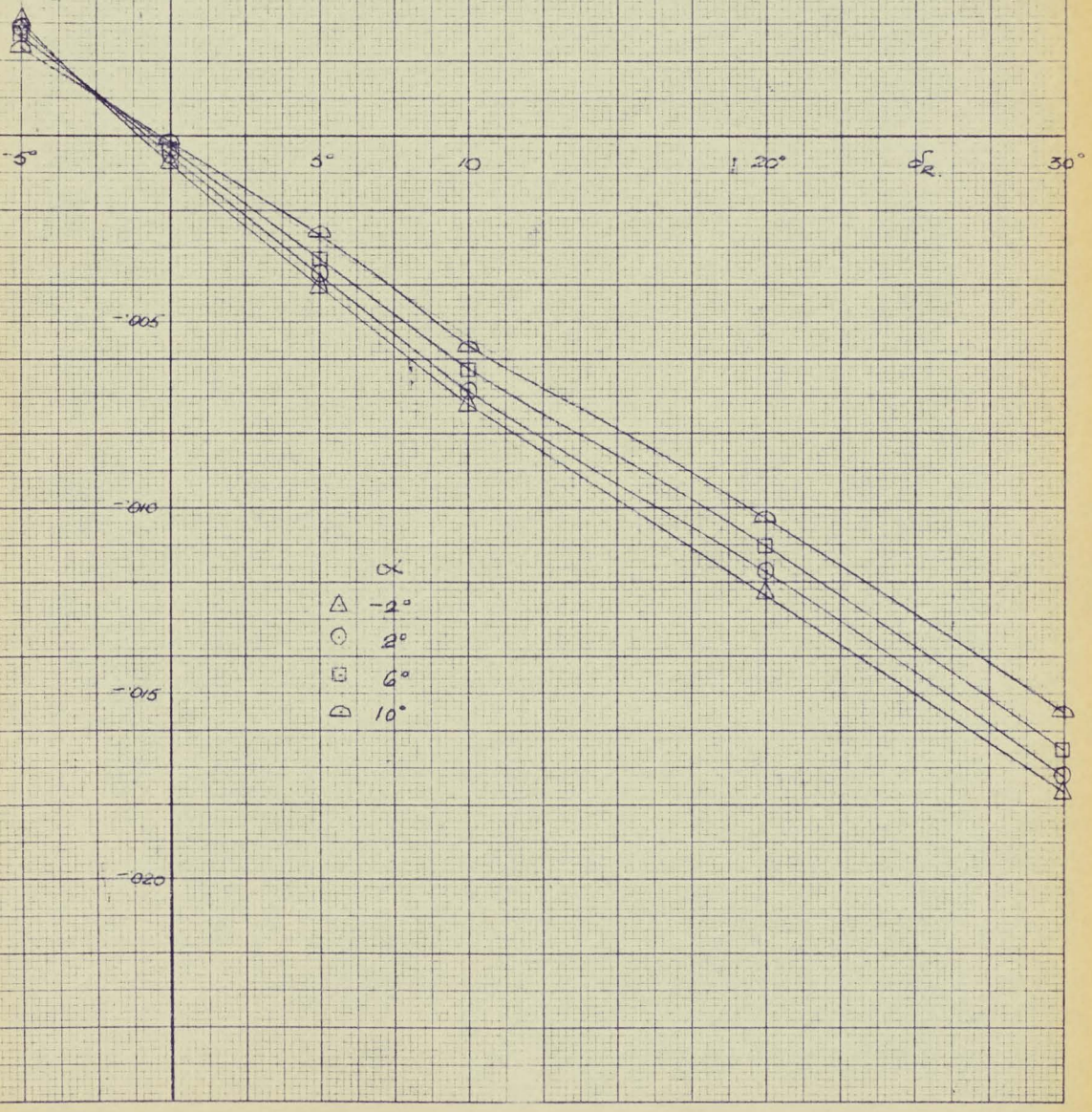
C105

C.A.L. W.T. TESTS JUNE 54

$B_2 C_3 H_3 V_2 P_3$

C_N Vs δ_R

M - 105



FORM 1746

AIRCRAFT C105 COMPONENT SHEET No. 4.1.1.9 REPORT No P/W.T./30

A.U.W. DATE June 29/54 PREP BY Kuethonka

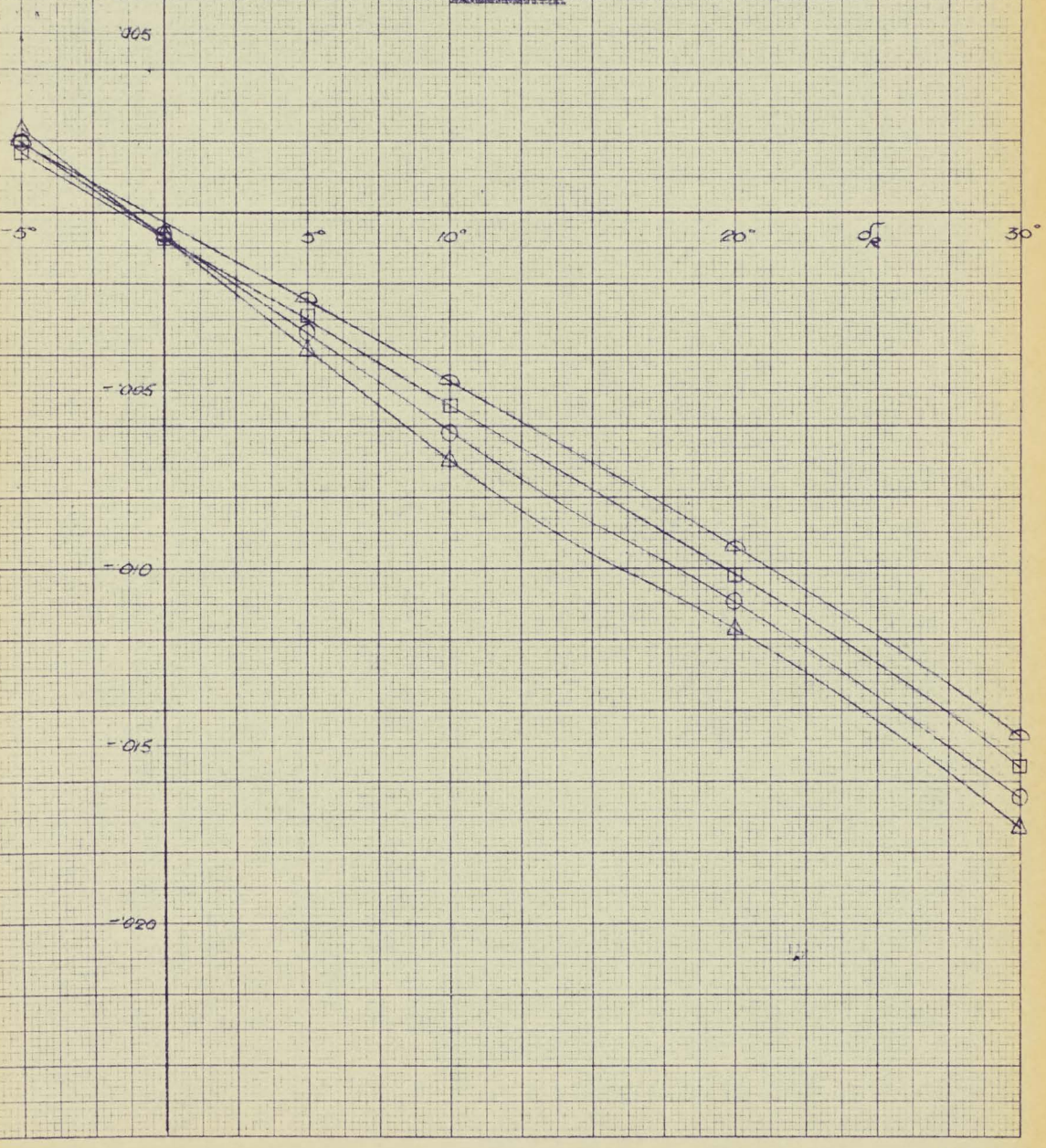
C105

C.A.L. W.T. TESTS JUNE 54

$B_2 C_3 W_3 V_2 R_3$

C_N vs δ_R

$M = 1.10$



FORM 1746

AIRCRAFT C105 COMPONENT SHEET No. A.1.1.10. REPORT No. P/N T/130

A.U.W. DATE JUNE 29/54 PREP. BY Kwiatkowski

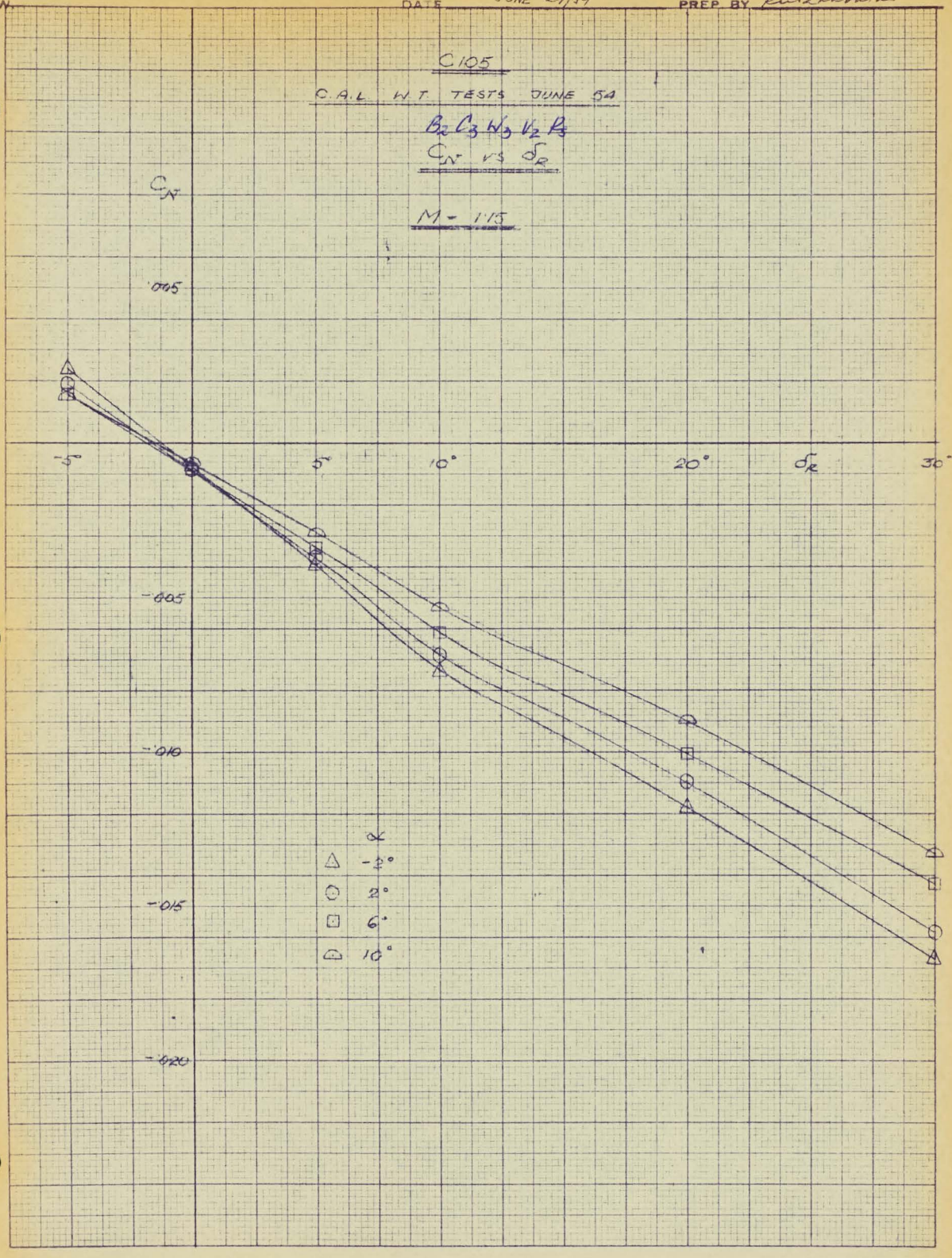
C105

C.A.L. W.T. TESTS JUNE 54

$B_2 C_3 H_3 V_2 R_3$

C_N vs δ_R

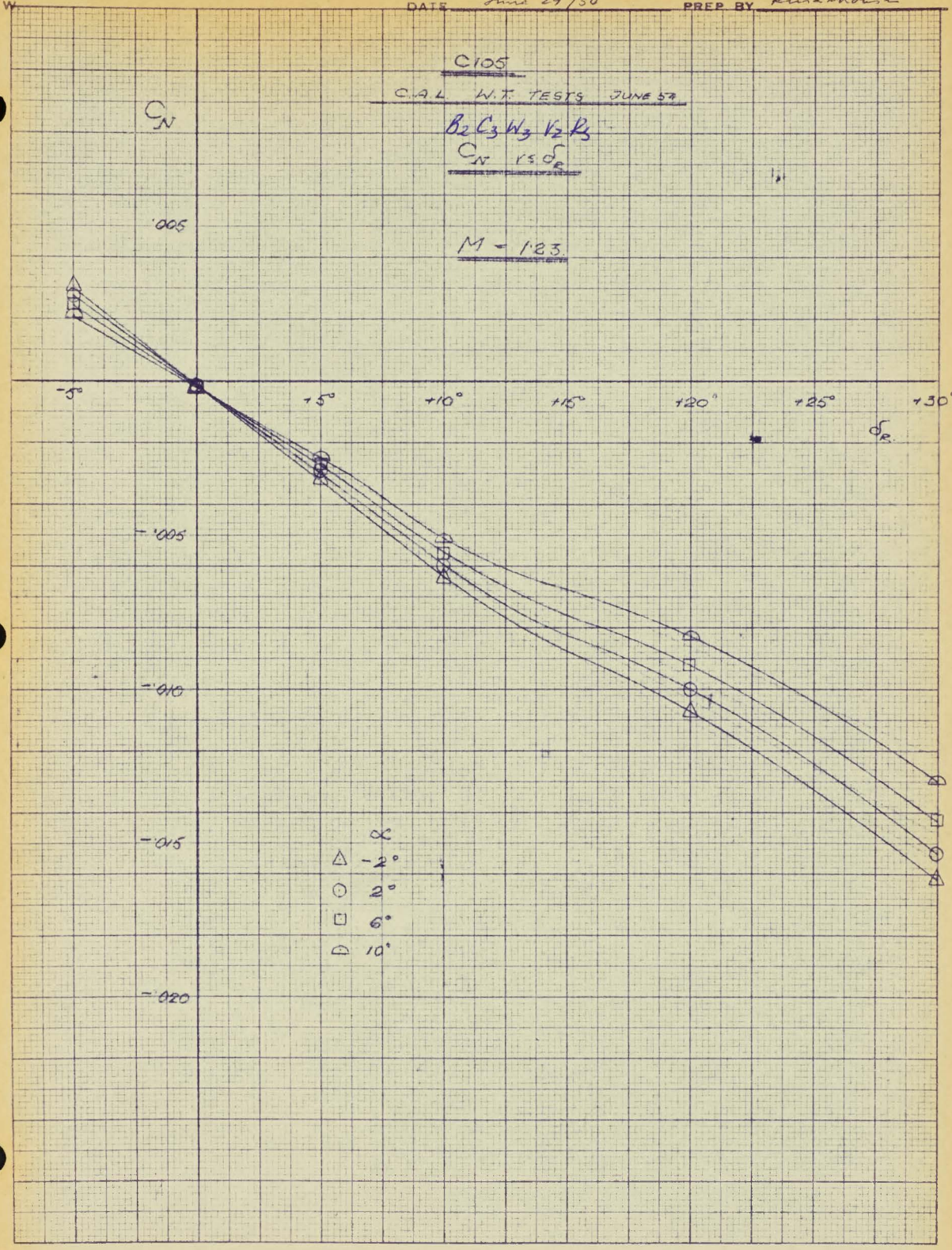
M = 1.15



FORM 1746

AIRCRAFT C105 COMPONENT SHEET No. A.1.1.11. REPORT No. P/W.T/30

A.U.W. DATE June 29/56 PREP. BY Kwathmey



FORM 1746

AIRCRAFT C105 COMPONENT

A. U. W.

SHEET No. 41.2.2. REPORT No. P/4.T 120

DATE July 6/54 PREP. BY Kwatkowski

C 105

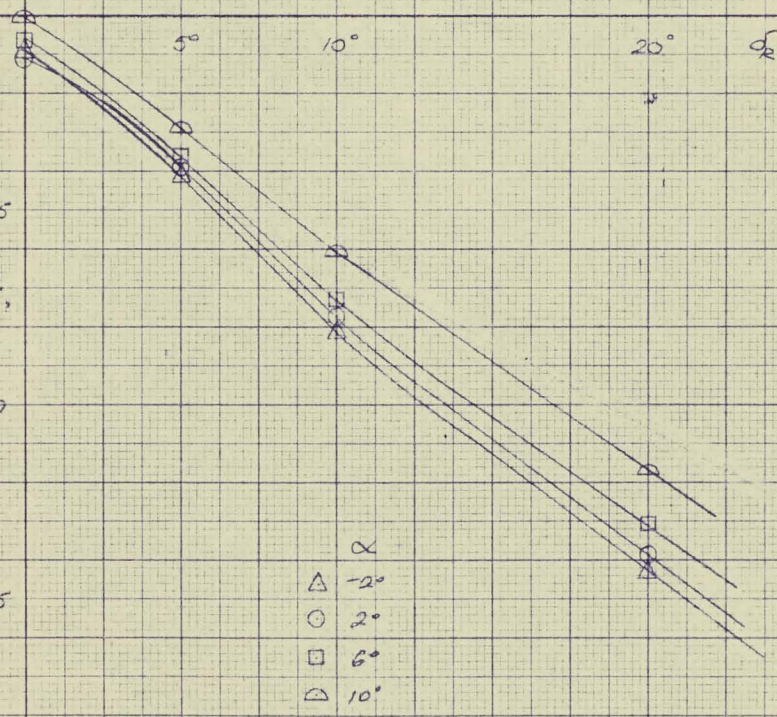
C.A.L. WIND TUNNEL TEST JUNE 54

$B_2 C_3 W_3 V_2 R_5$

C_N vs δ_E

$\beta = -3°$

$M = .70$



FORM 1746

AIRCRAFT C105 COMPONENT SHEET No. 4.1.2.3. REPORT No. P/W.T./30

A.U.W. DATE July 6/54 PREP. BY Kwiatkowski

C105

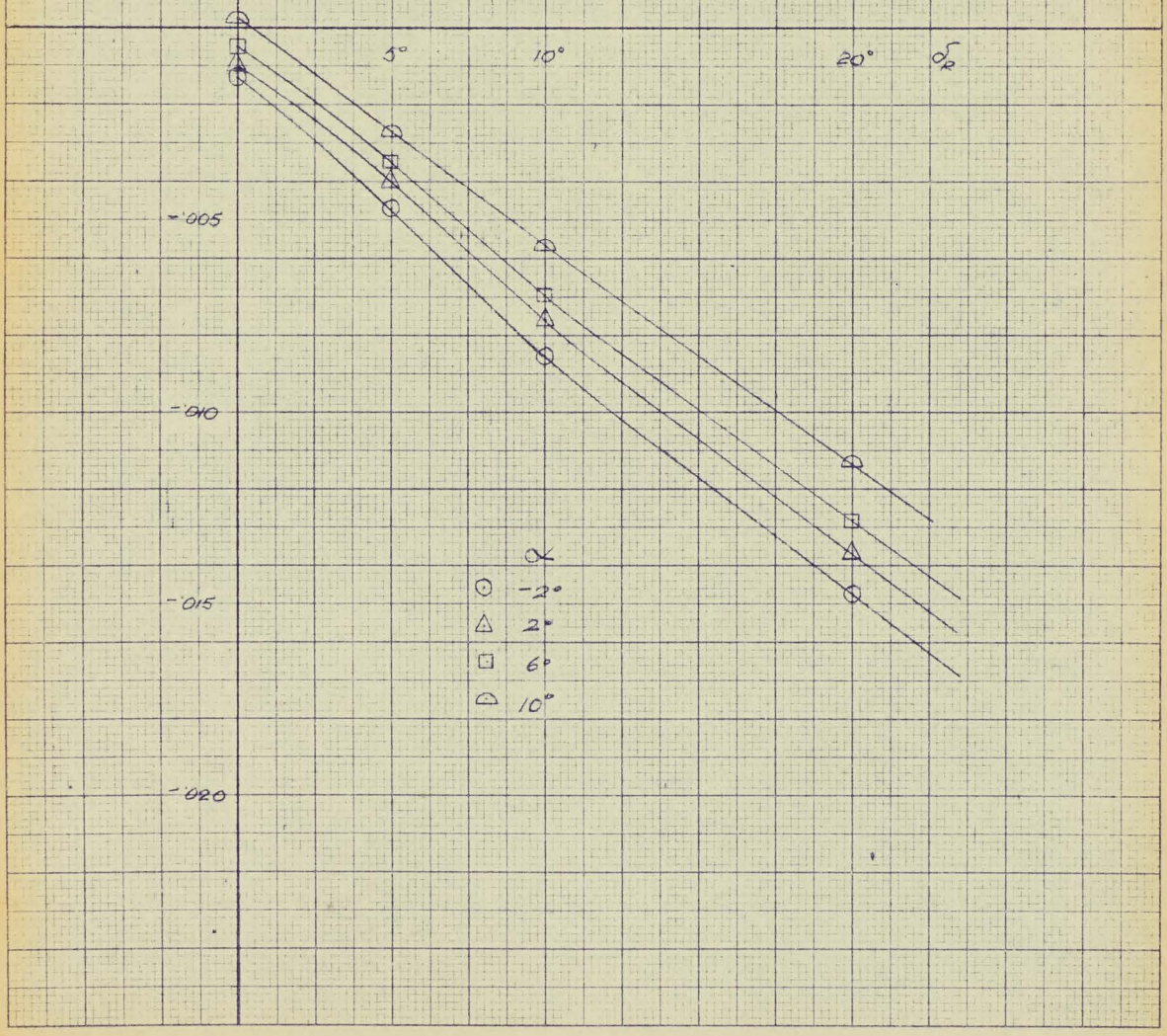
C.A.L. WIND TUNNEL TESTS JUNE 54

$B_2 C_3 W_3 V_2 R_3$

C_N vs δ_2

$\beta = -3°$

$M = .90$



FORM 1746

AIRCRAFT C105 COMPONENT SHEET No. 4124 REPORT No. P/W.T. 130
A. U. W. DATE July 6/54 PREP. BY Kuwahara

C105

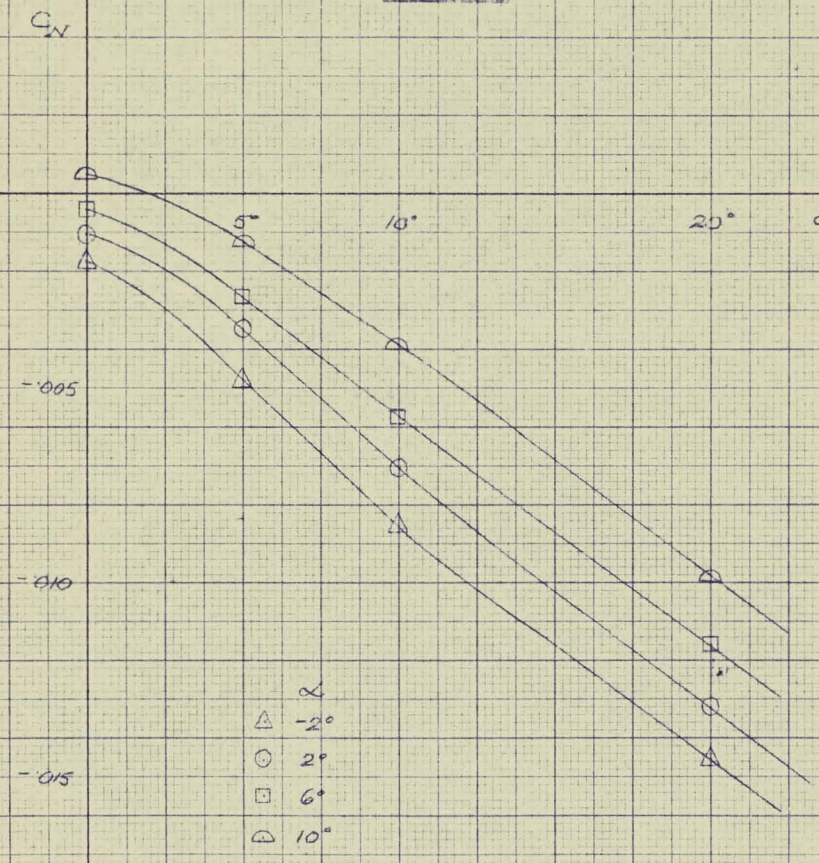
C.A.L. WIND TUNNEL TEST JUNE 54

$B_2 C_3 W_3 V_2 R_5$

C_N vs δ_2

$\beta = -3°$

$M = 1.00$



FORM 1746

AIRCRAFT C/C5 COMPONENT SHEET No 4126 REPORT No P/W T/130
A. U. W. DATE July 6/54 PREP. BY Kwiatkowski

C 105

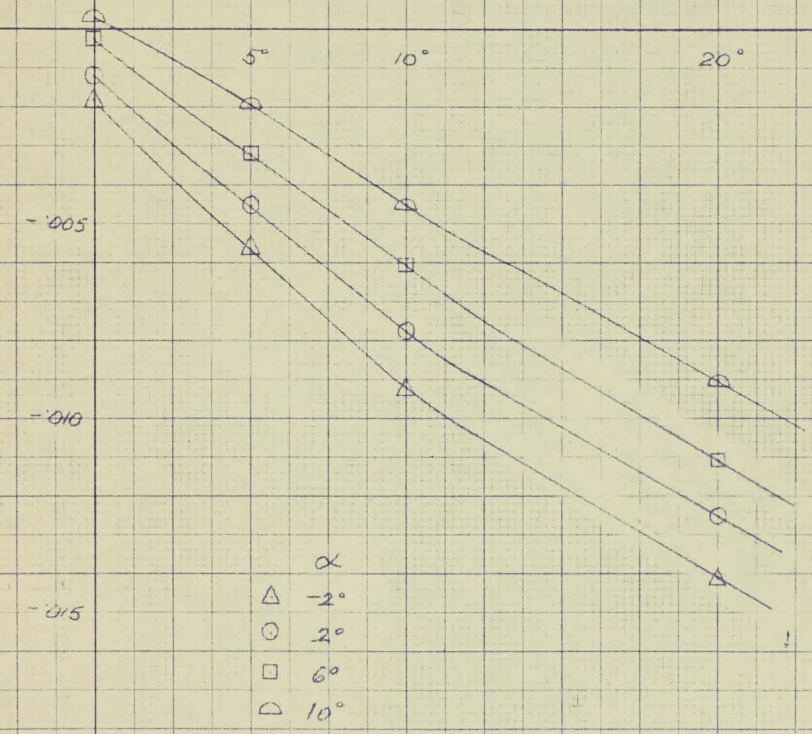
C.A.L. W.T. TESTS JUNE 54.

$B_2 C_3 W_3 V_2 R_3$

C_N vs δ_R

$\beta = -3°$

$M = .115$



FORM 1746

AIRCRAFT C105 COMPONENT SHEET No. 41.27 REPORT No P/W.T/130
A U W. DATE July 6/57 PREP. BY Kris Hlusek

C105

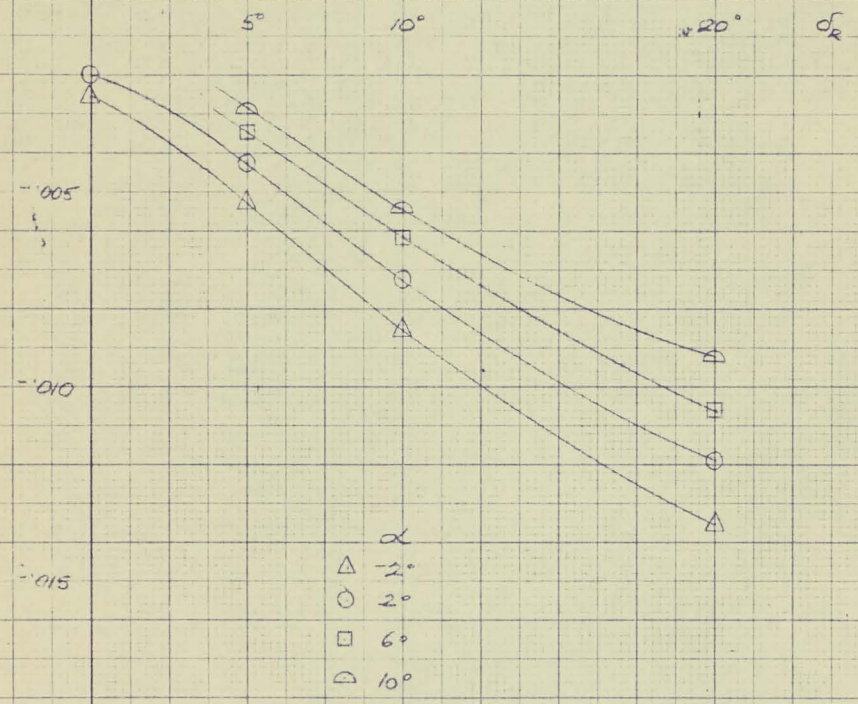
C.A.L. W.T TESTS JUNE '57

$B_2 C_3 W_3 V_2 R_5$

C_N vs δ_R

$\beta = +3°$

$M = 1.23$



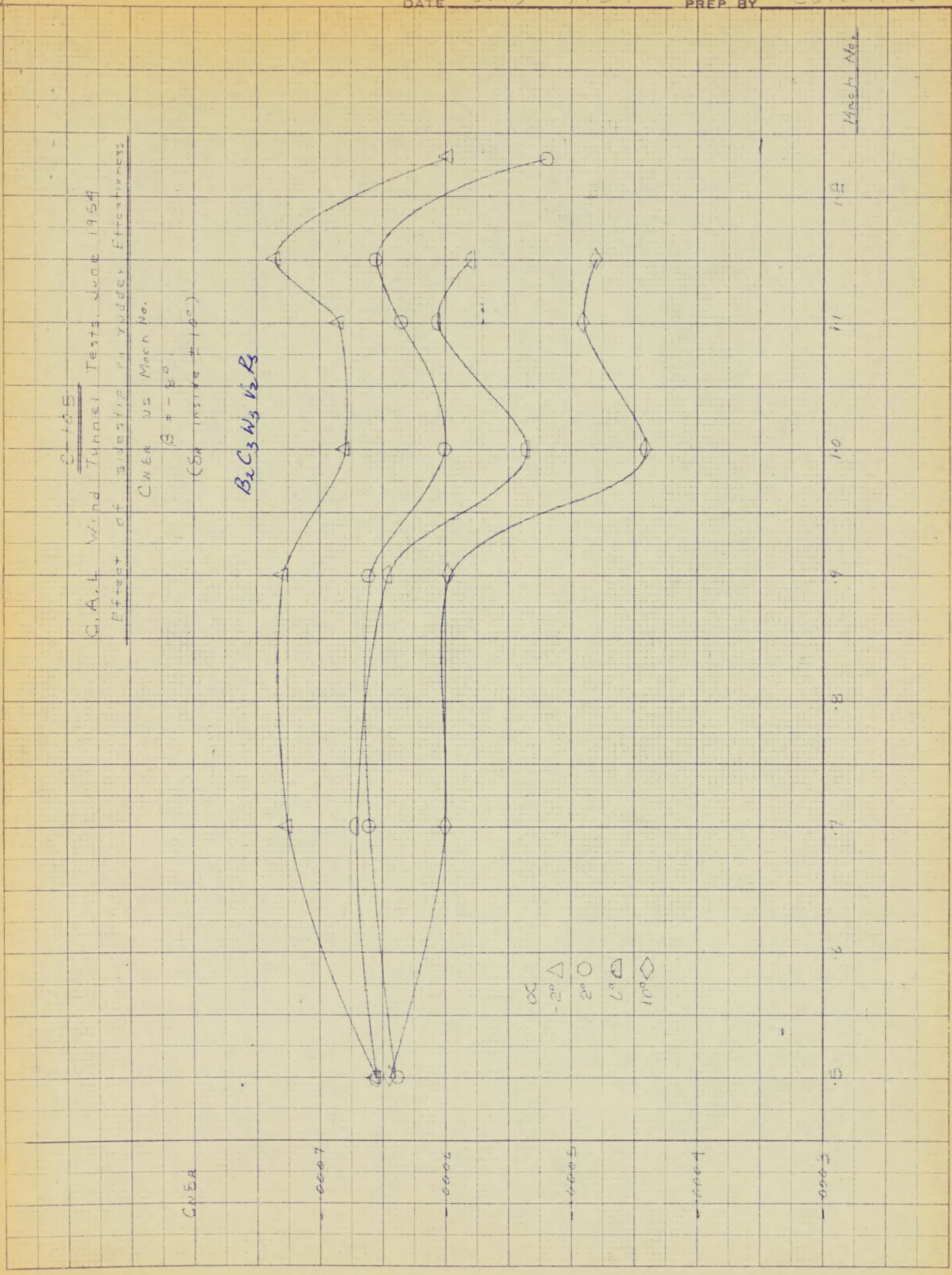
FORM 1746

AIRCRAFT C-105 COMPONENT

A.U.W.

SHEET No. REPORT No.

DATE July 1954 PREP. BY



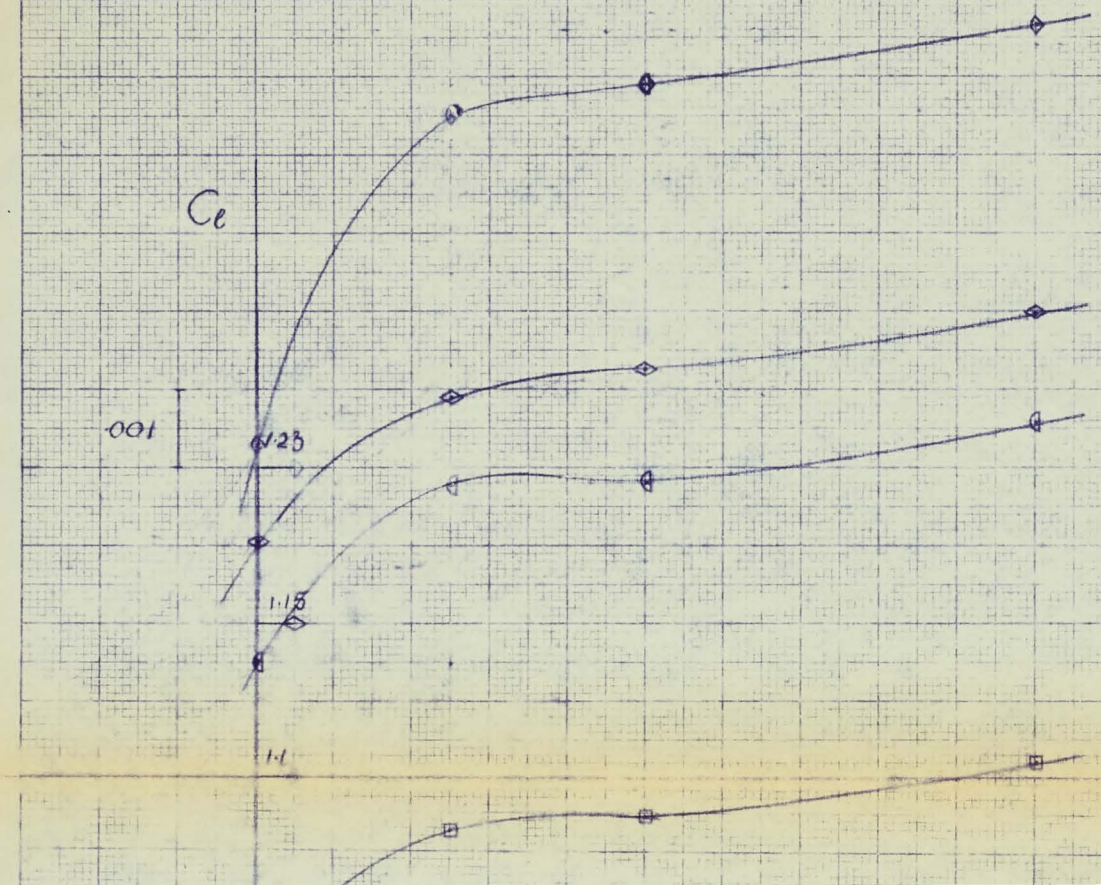
FORM 1746

C 105

C.A.L. WIND TUNNEL TESTS, JUNE 1954.

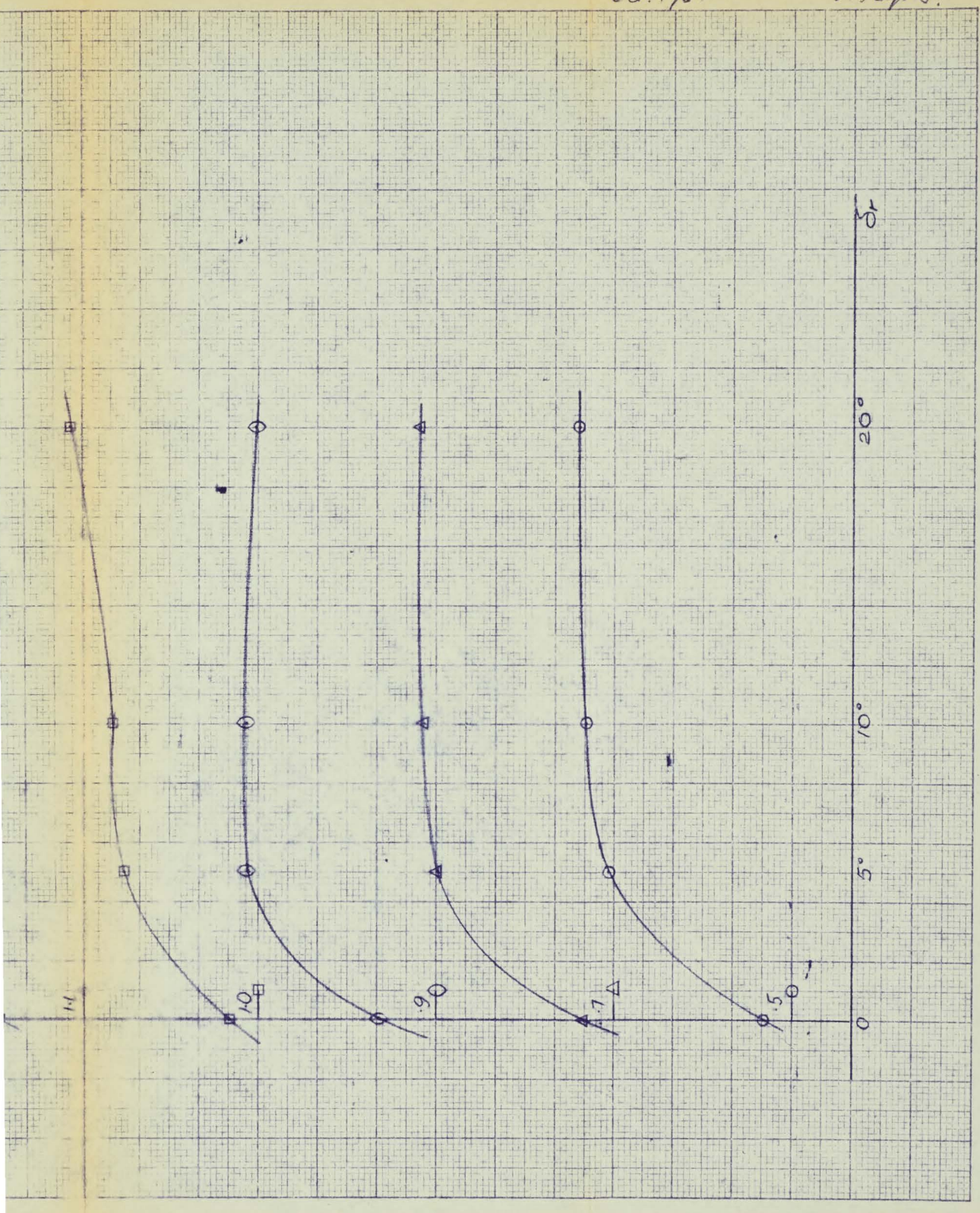
C_e vs δ_r $\alpha = 6°$, $\beta = -3°$

$B_2 C_3 W_3 V_2 R_3$



Shiet H.R.A.E. H.
Oct. 1954

P/WT/30
T. Papis.



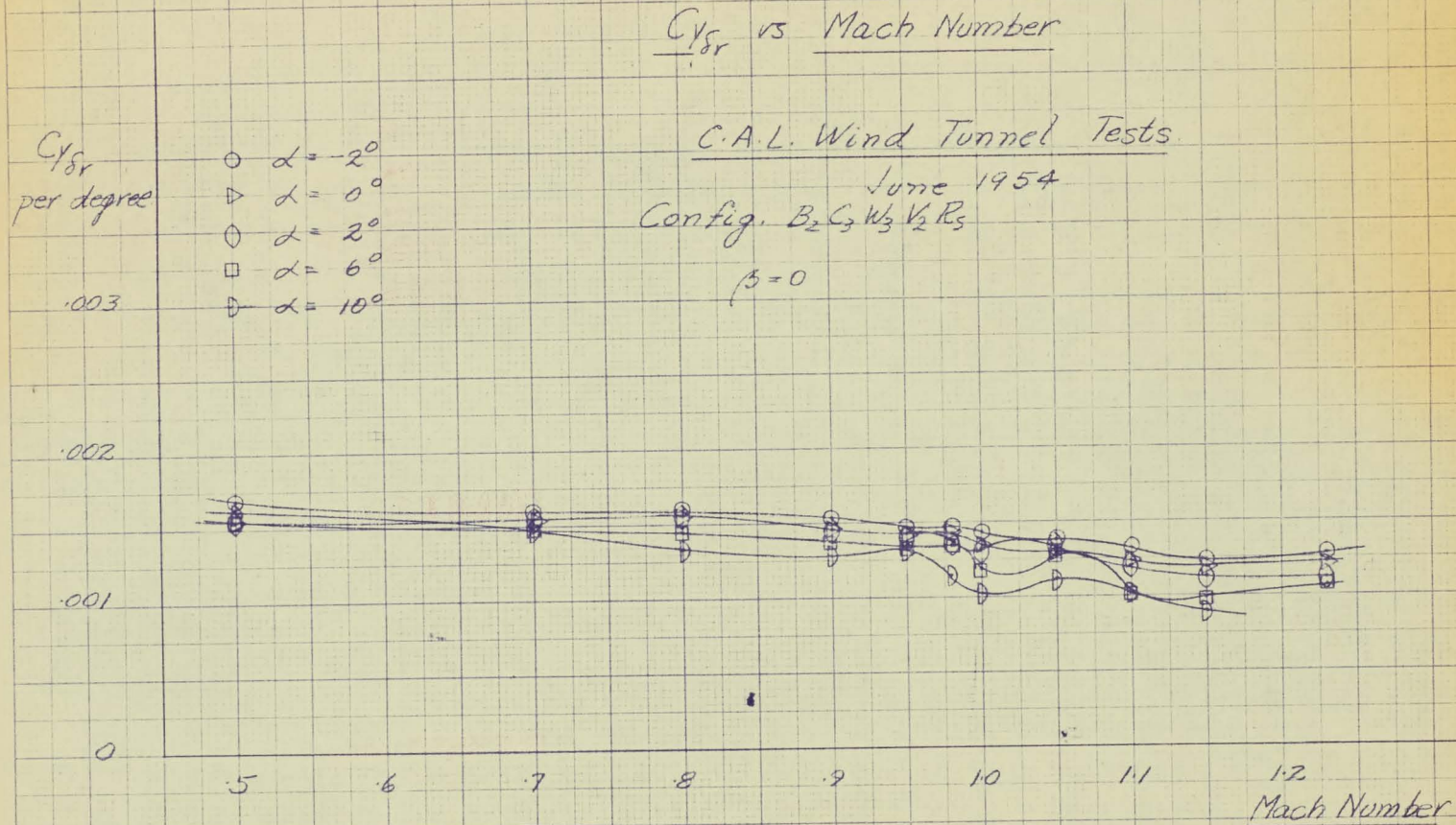
AIRCRAFT C-105 COMPONENT
A U W.

SHEET NO. 4.3.1.9
DATE 12/7/54
REPORT NO PWT130
PREP BY C.A. Ford

C-105

$C_{Y_{\delta r}}$ vs Mach Number

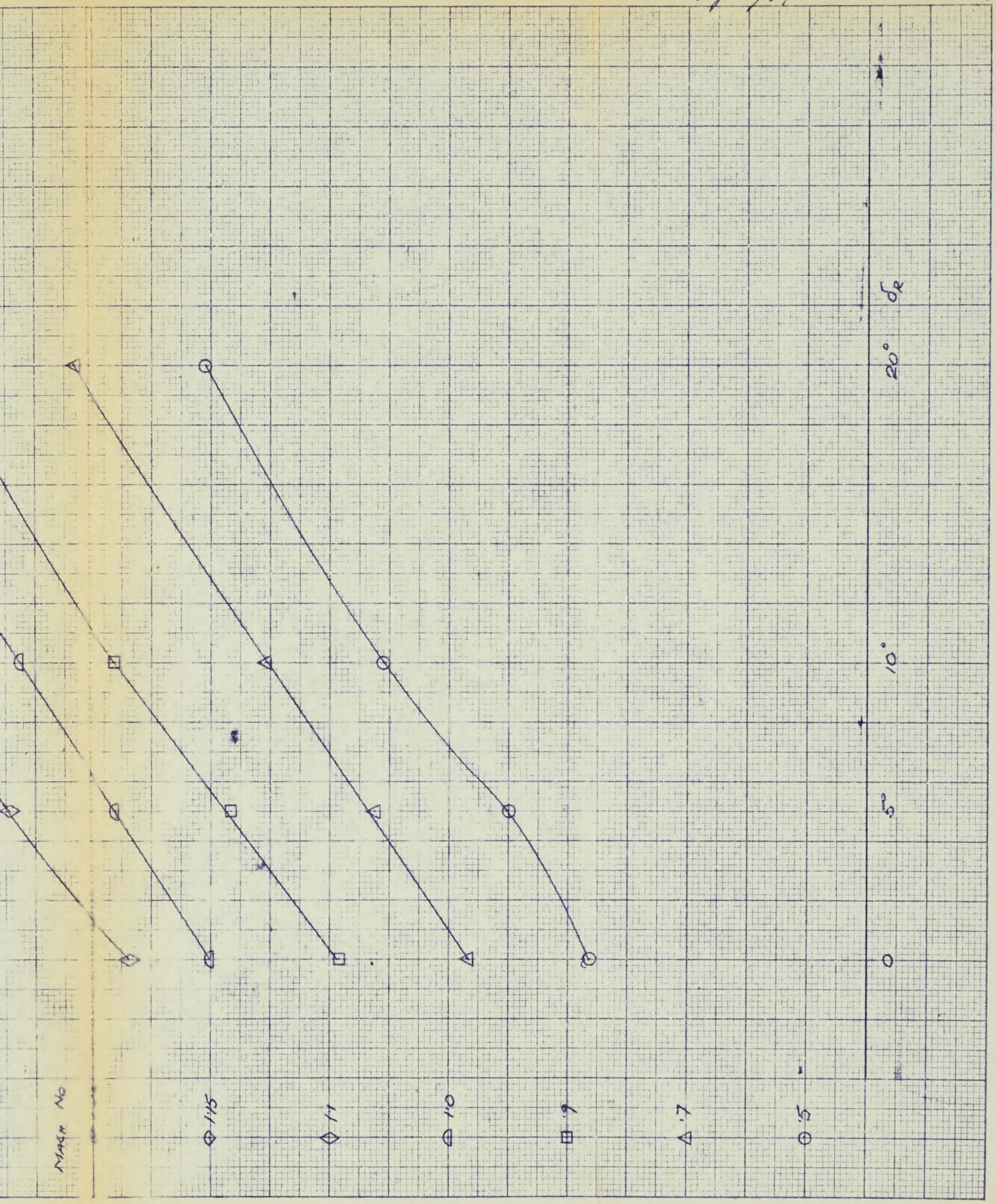
C.A.L. Wind Tunnel Tests
June 1954
Config. $B_2 C_3 W_3 V_2 R_5$
$\beta = 0$



FORM 1745

P/WT/30 4.3.2.2.

Sept/54



AIRCRAFT C105 COMPONENT SHEET No. 4.3.2.3 REPORT No P/AT/30

A.U.W. DATE July 1/57 PREP'D BY Kuathamk

C105

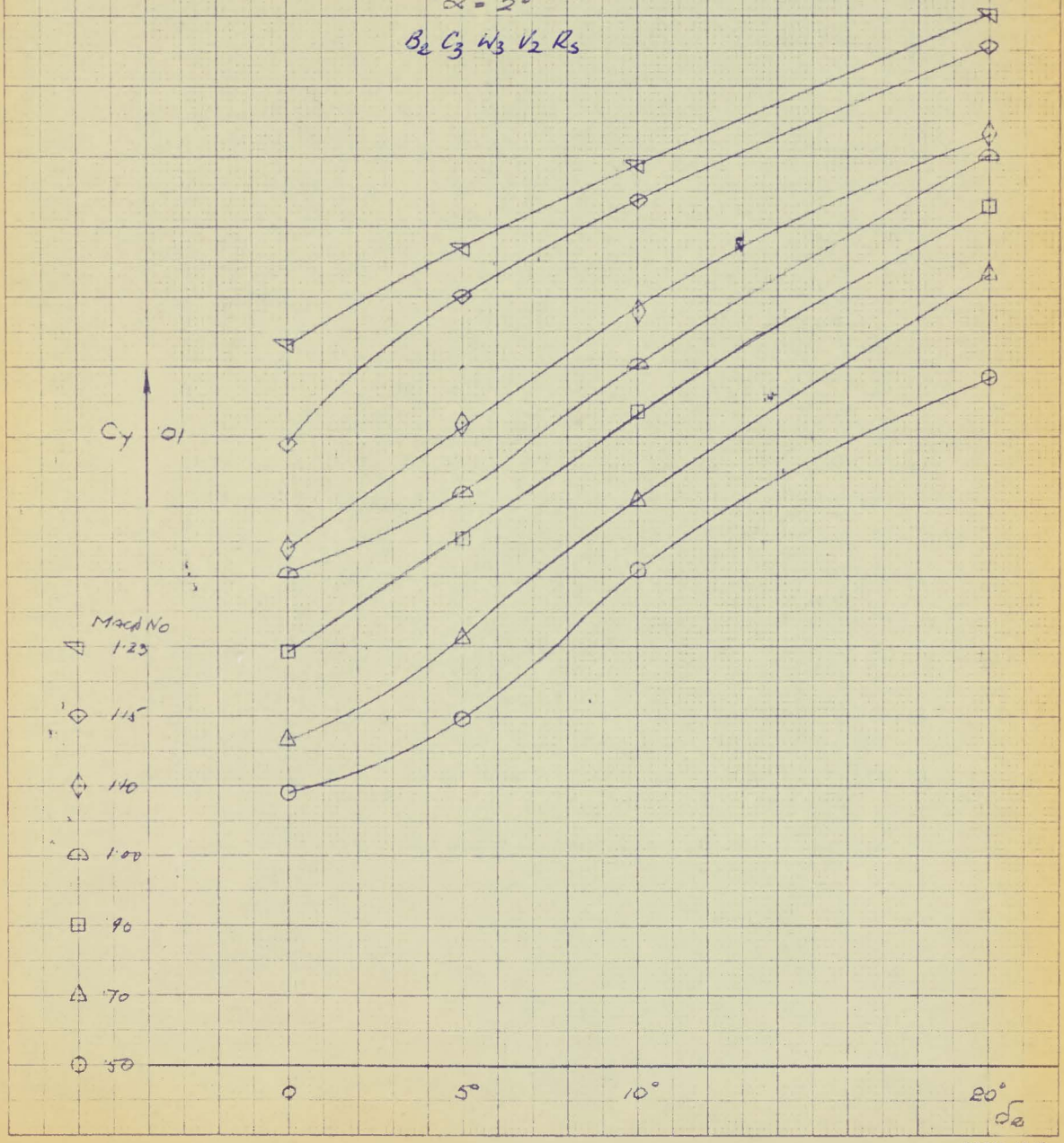
C.P. WIND TUNNEL TESTS JUNE 57

C_y vs δ_R

$\beta = -3°$

$\alpha = 2°$

$B_2\ C_3\ W_3\ V_2\ R_3$



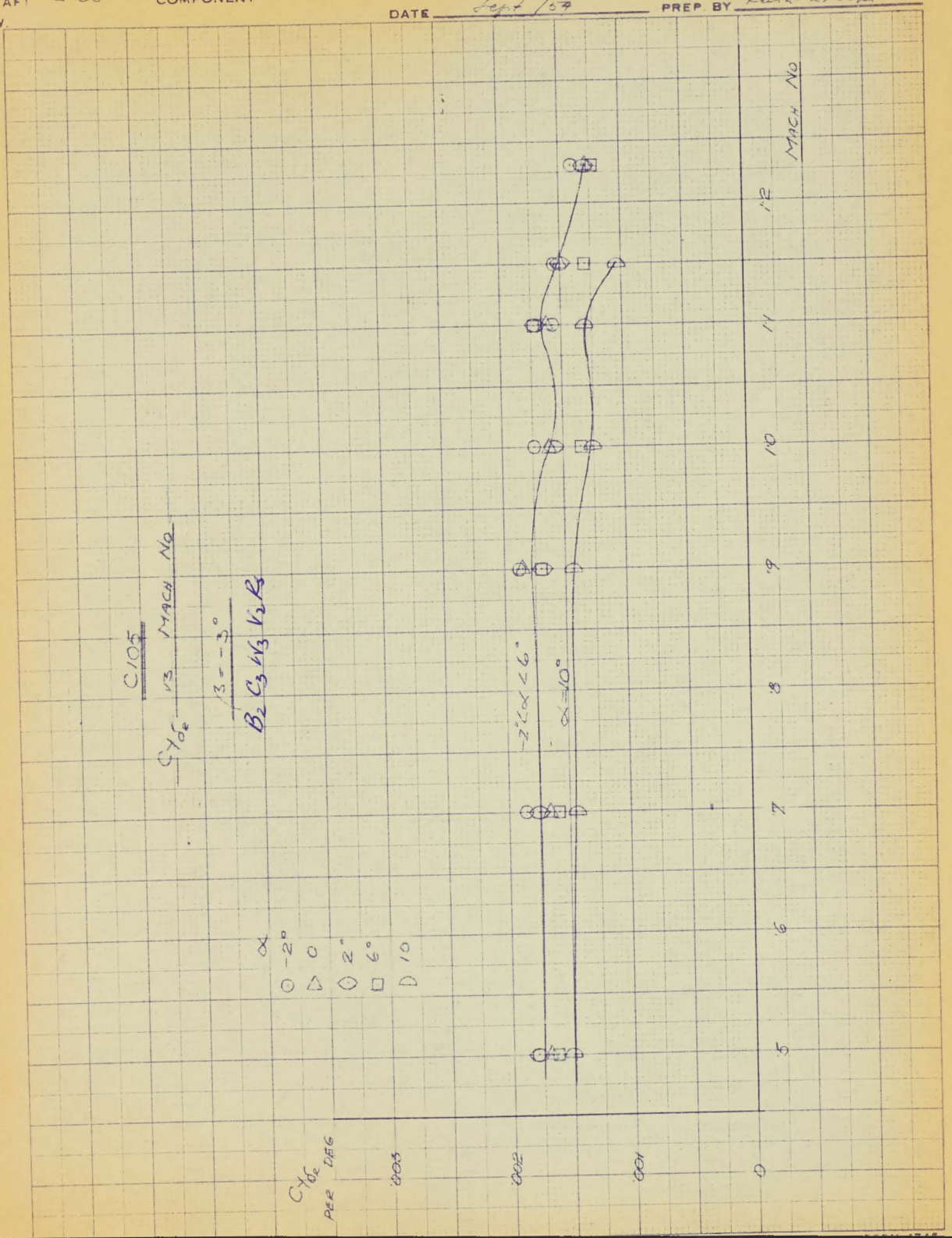
FORM 1746

AIRCRAFT C105 COMPONENT

A.U.W.

SHEET No. 4327 REPORT No. P/H.T/30.

DATE Sept/54 PREP. BY Kawakami



AIRCRAFT
A U W.

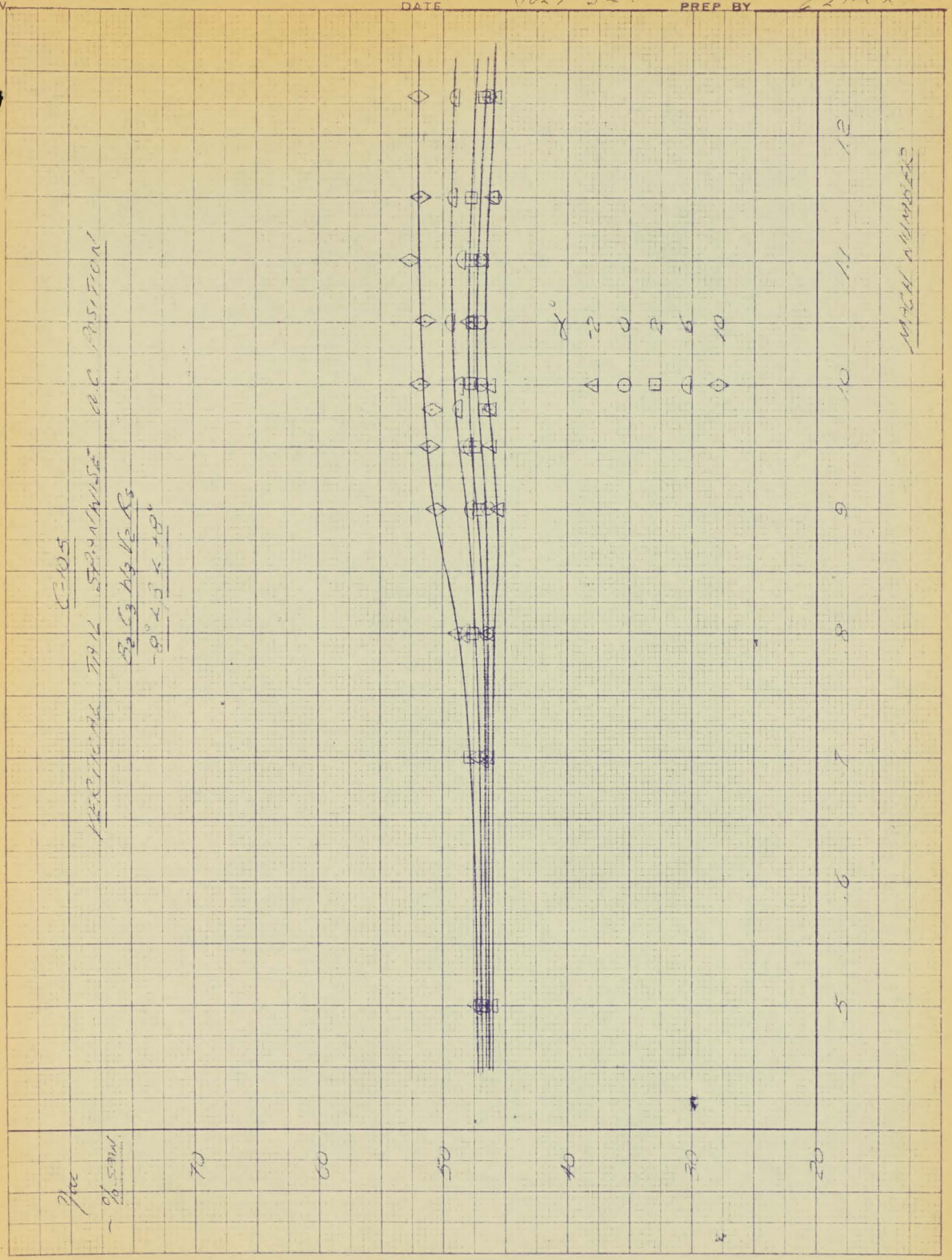
COMPONENT

SHEET No. 5313.

DATE JULY 52.

REPORT No P/H.T/30

PREP BY



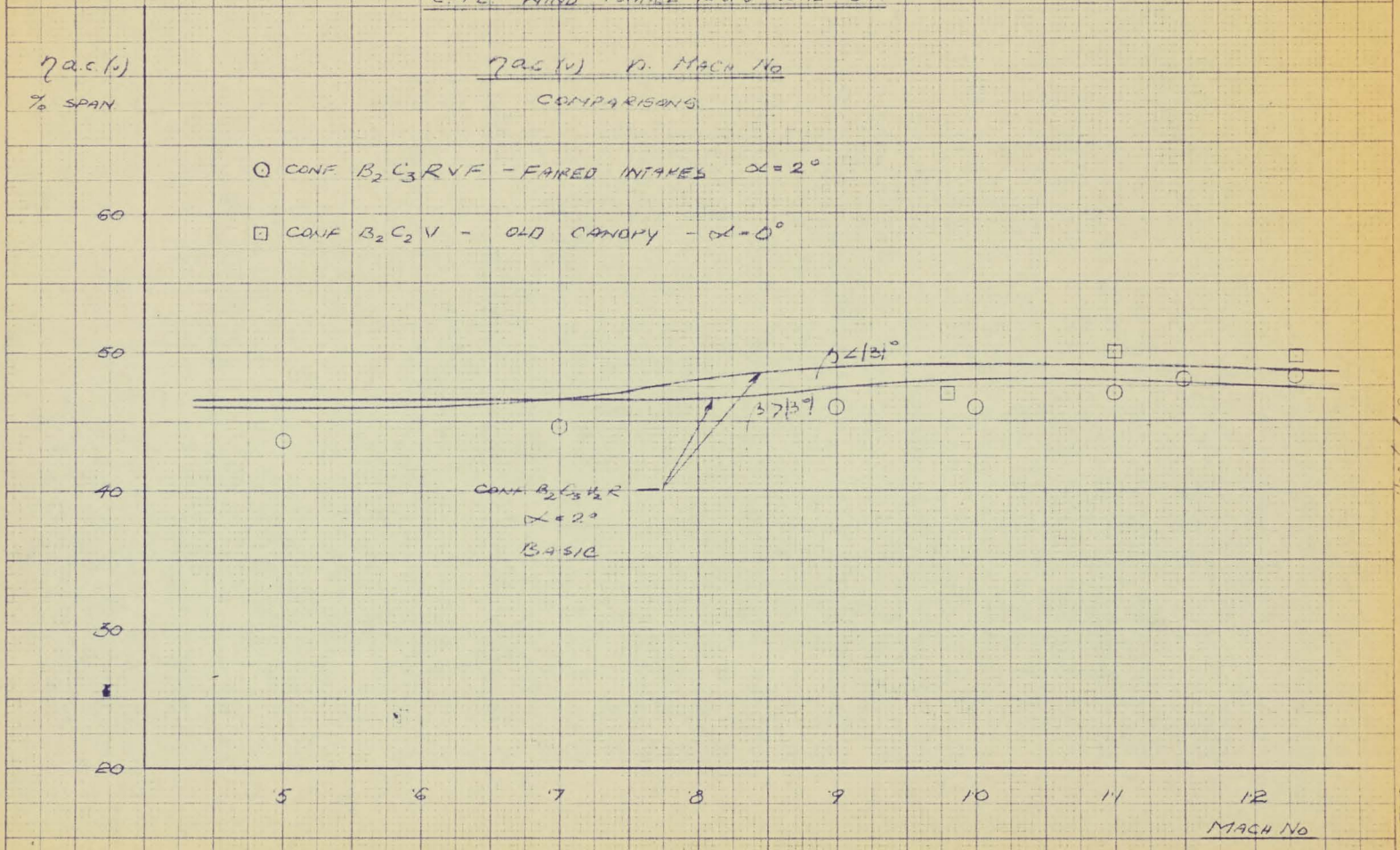
FORM 1746

C105

C.A.L. WIND TUNNEL TESTS JUNE 54

$\eta_{a.c.(v)}$ vs. MACH No

COMPARISONS



C105

Ref 4/37, Kimberley S.3.2.2

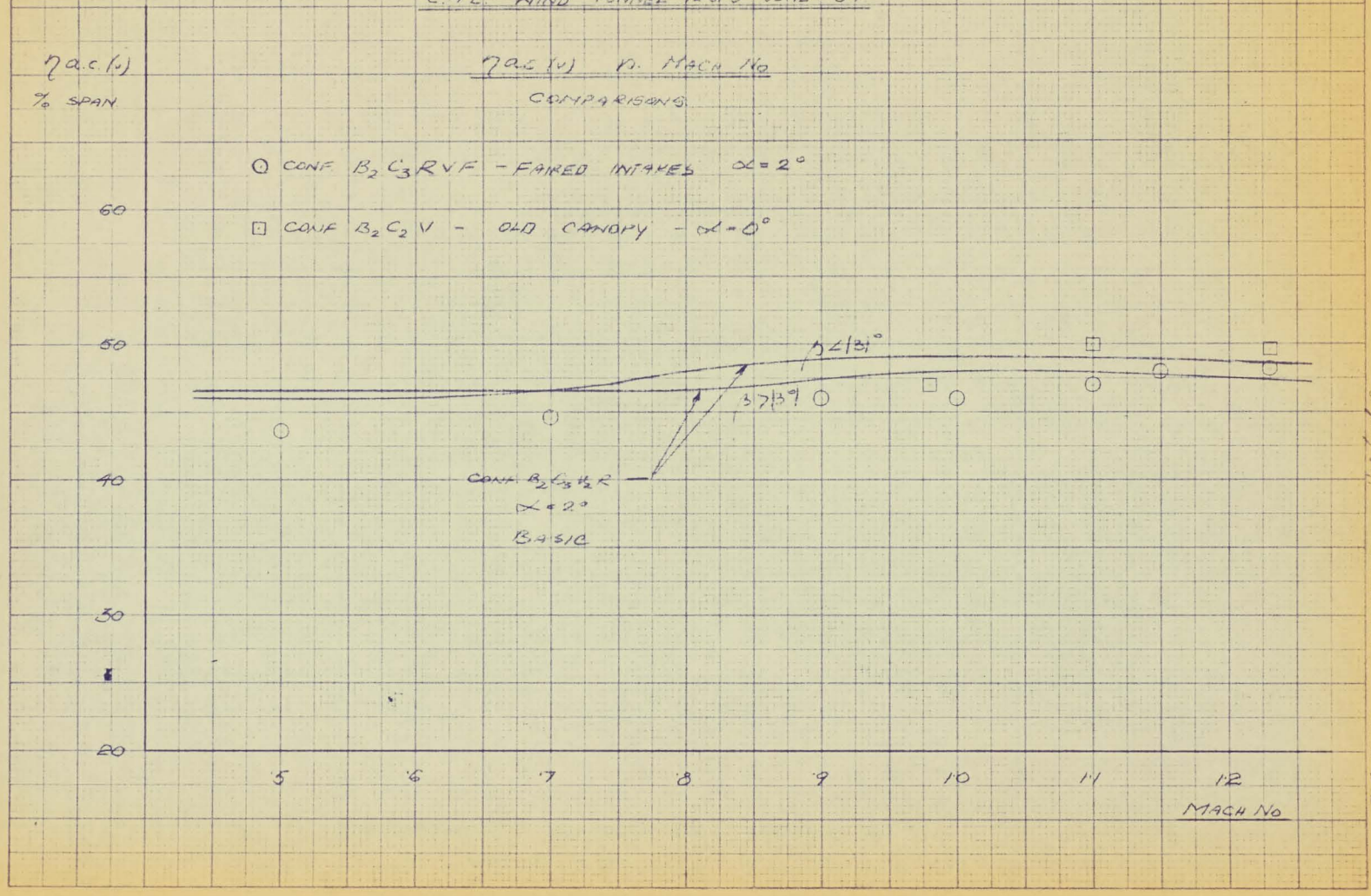
P.H.T./30

C105

C.A.L. WIND TUNNEL TESTS JUNE 54

$\eta_{a.c.(v)}$ vs. MACH No

COMPARISONS.



C105

P.W.T. 130

5.3.2.2

July 54 Kuwahara

C105

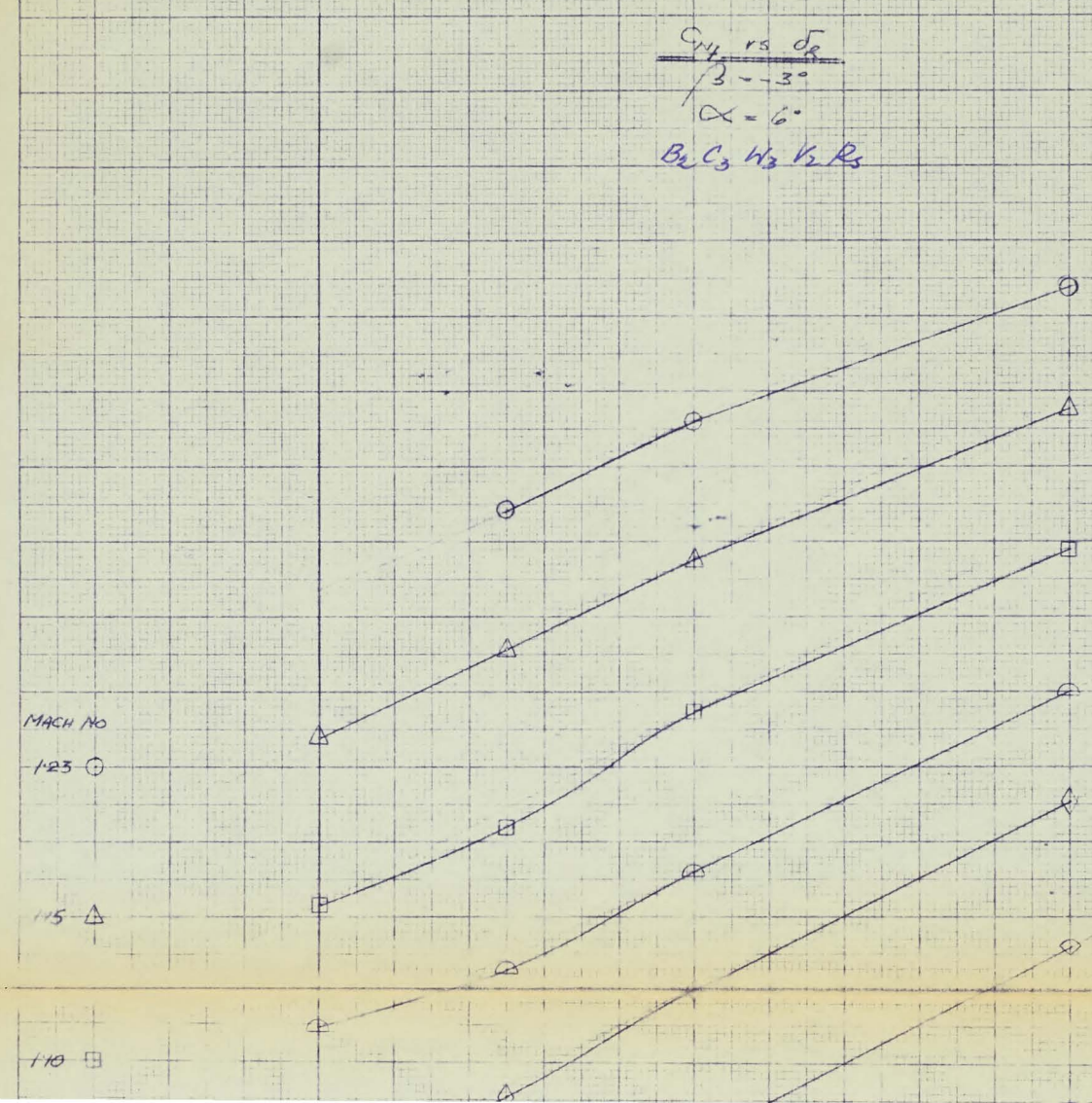
C.A.L. WIND TUNNEL TESTS JUNE 5TH.

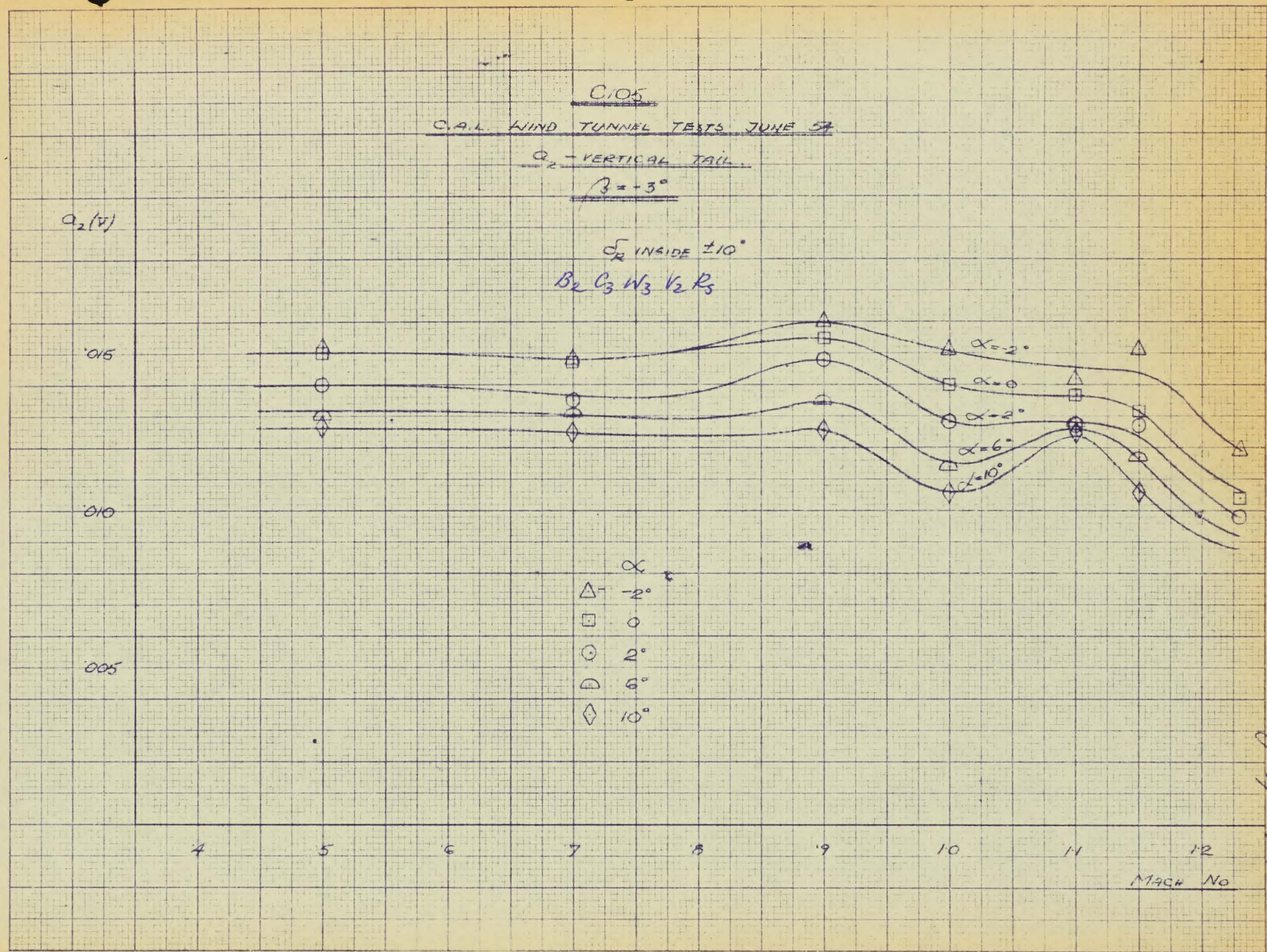
C_{M_4} vs δ_E

$\beta = -3°$

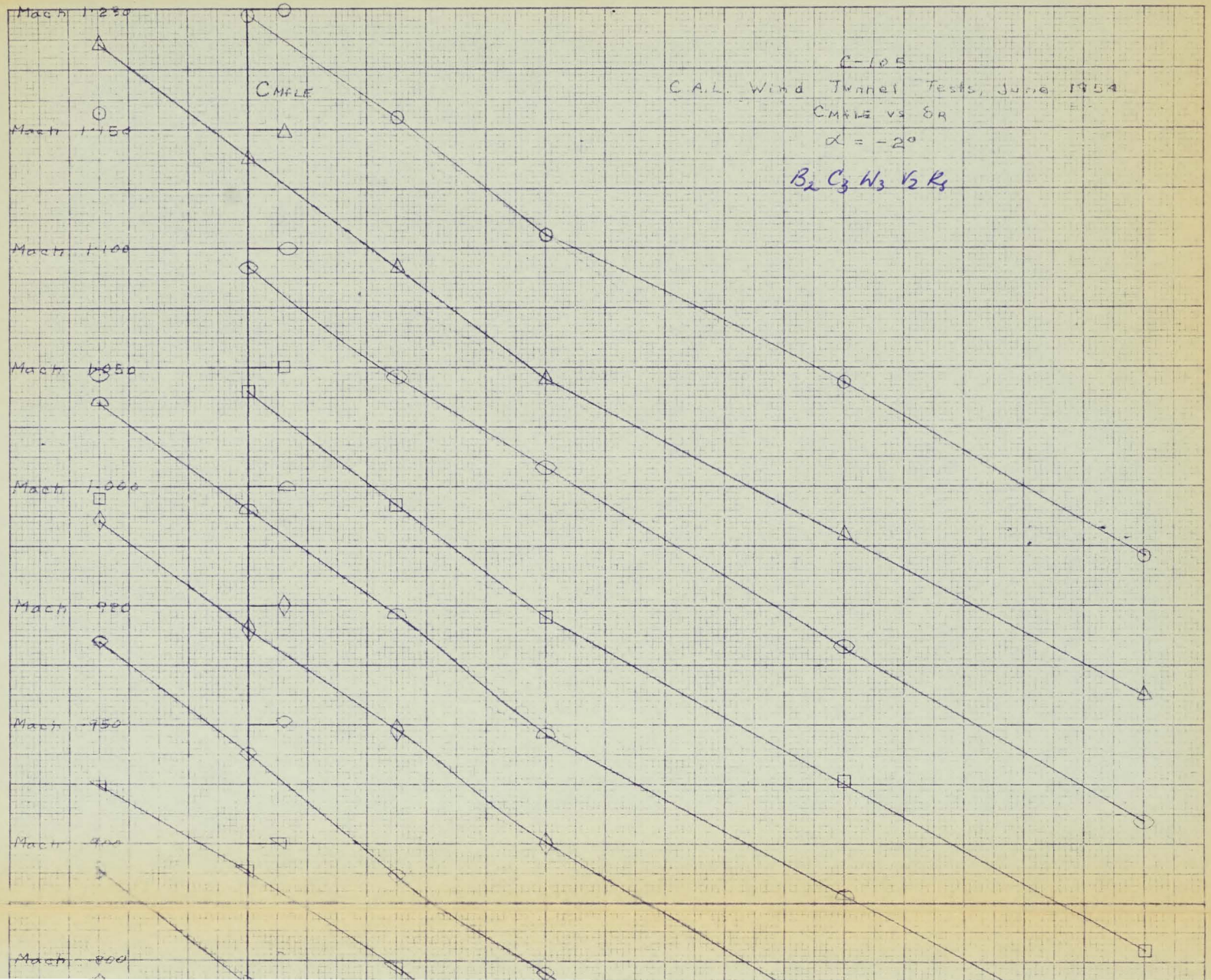
$\alpha = 6°$

$B_2 C_3 W_3 V_2 R_5$





P/W.T./30. 6.1.2.7.
July 54, Kwiatkowski



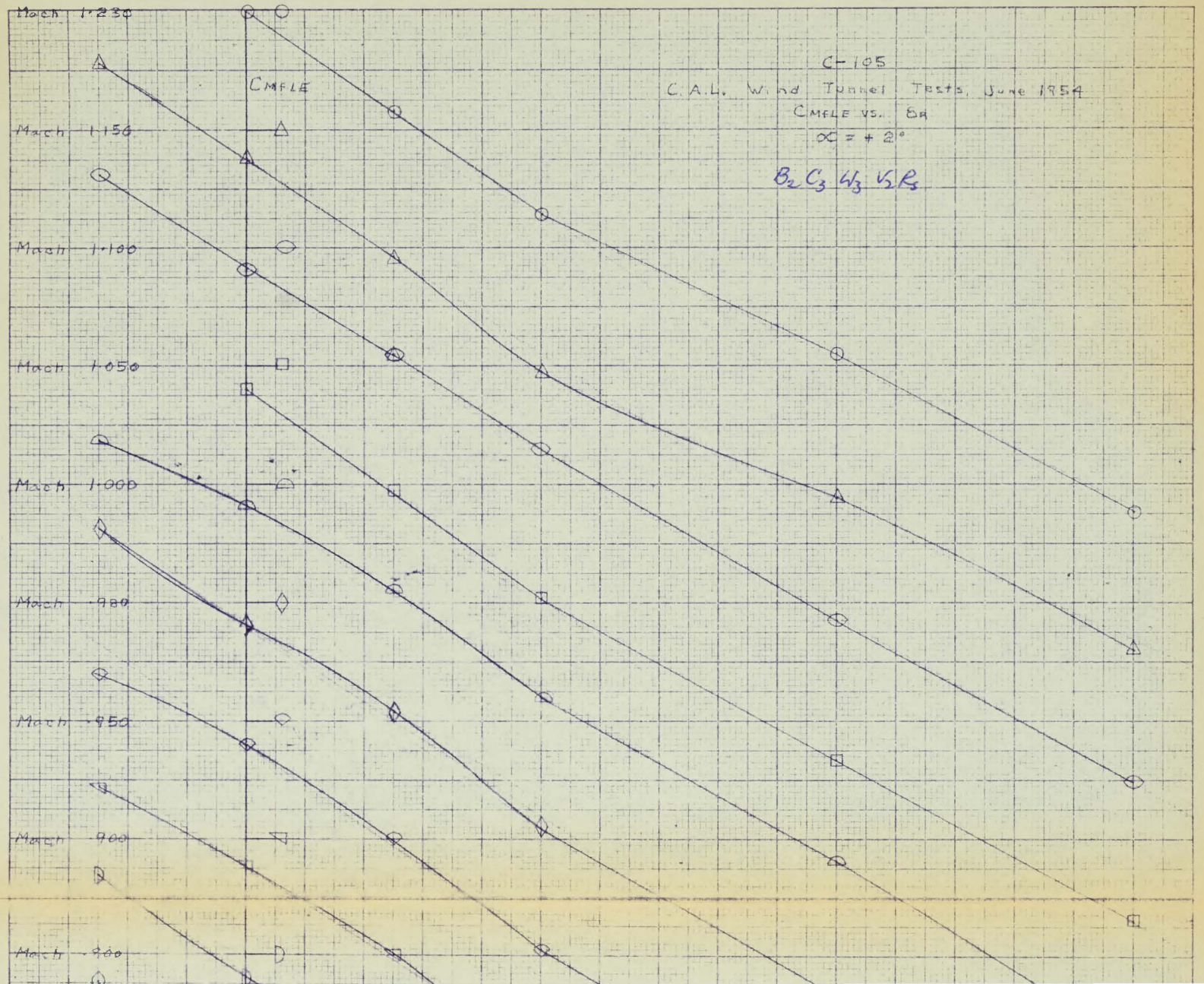
C-105

C.A.L. Wind Tunnel Tests, June 1954

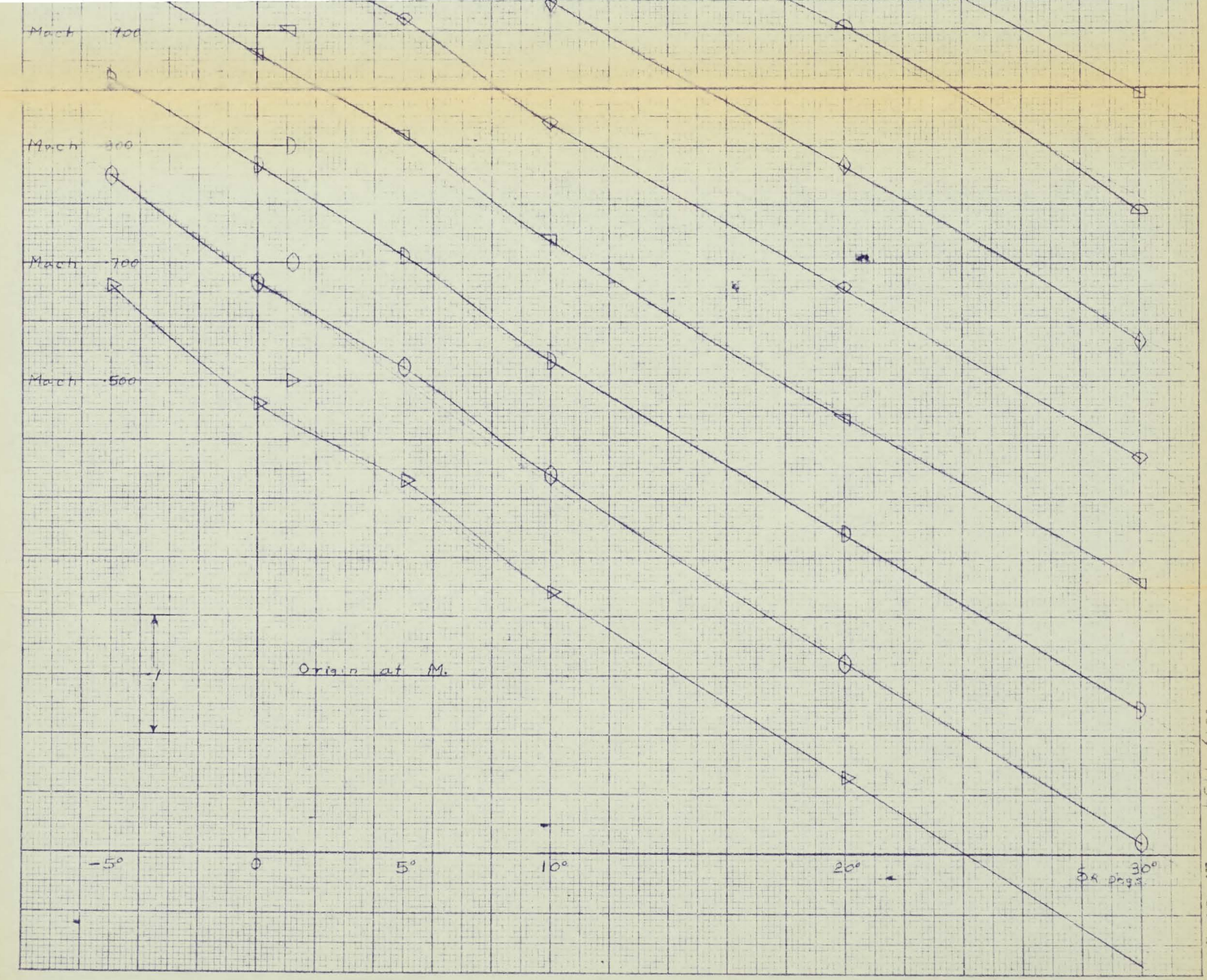
$C_{M_{LE}}$ vs δ_R

$\alpha = -2^\circ$

$B_2 C_3 W_3 V_2 R_3$



C-105
C.A.L. Wind Tunnel Tests, June 1954
C_{MFLE} vs. δ_R
$\alpha = +2°$
$B_2 C_3 W_3 V_2 R_3$


Mach .400
Mach .600
Mach .700
Mach .800
Origin at M.
-5°
0
5°
10°
20°
30°
Sheet 6.2.14. P/W. T./30
July 1954 L. Cutaliffe

AIRCRAFT
A U W

COMPONENT

C-105

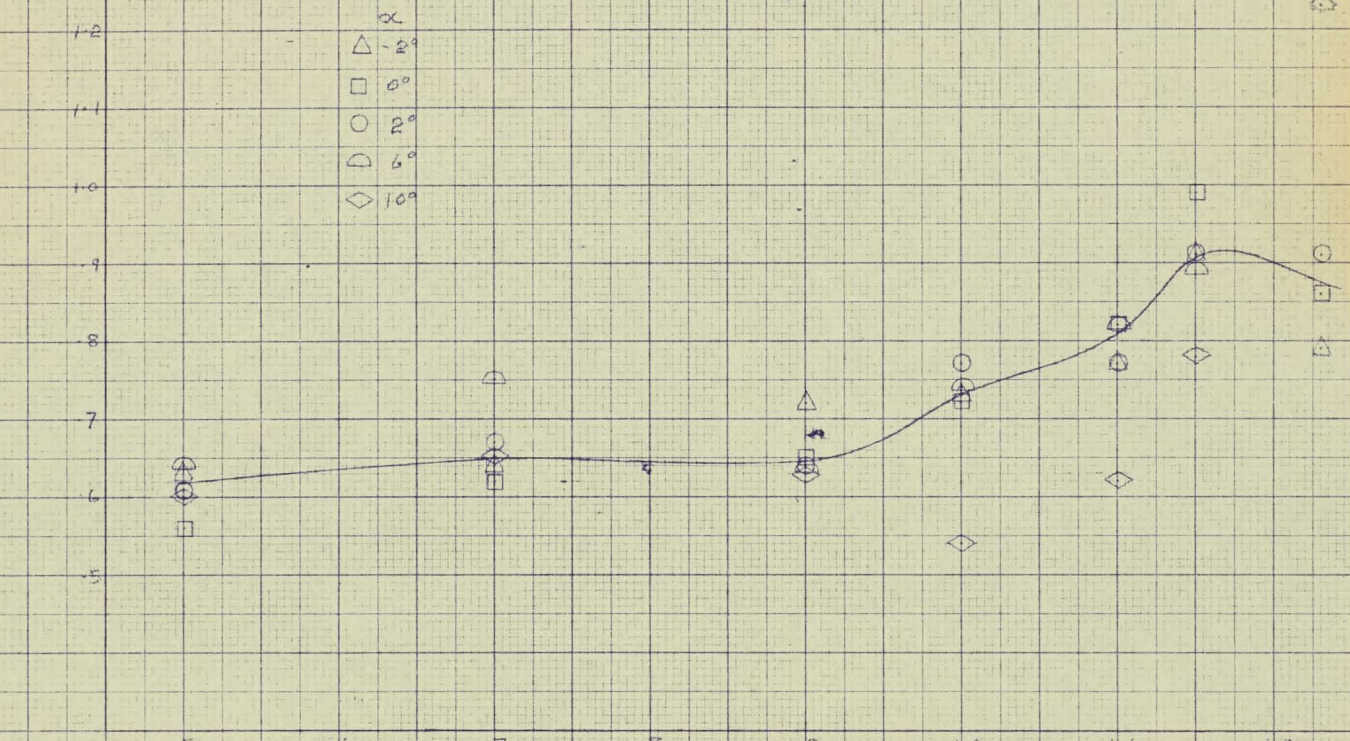
C.A.L. Wind Tunnel Tests, June 1954

Chordwise C.P. — Rudder Load

δ_R Inside = 10°

β = -3°

$B_2 C_3 W_3 V_2 R_3$



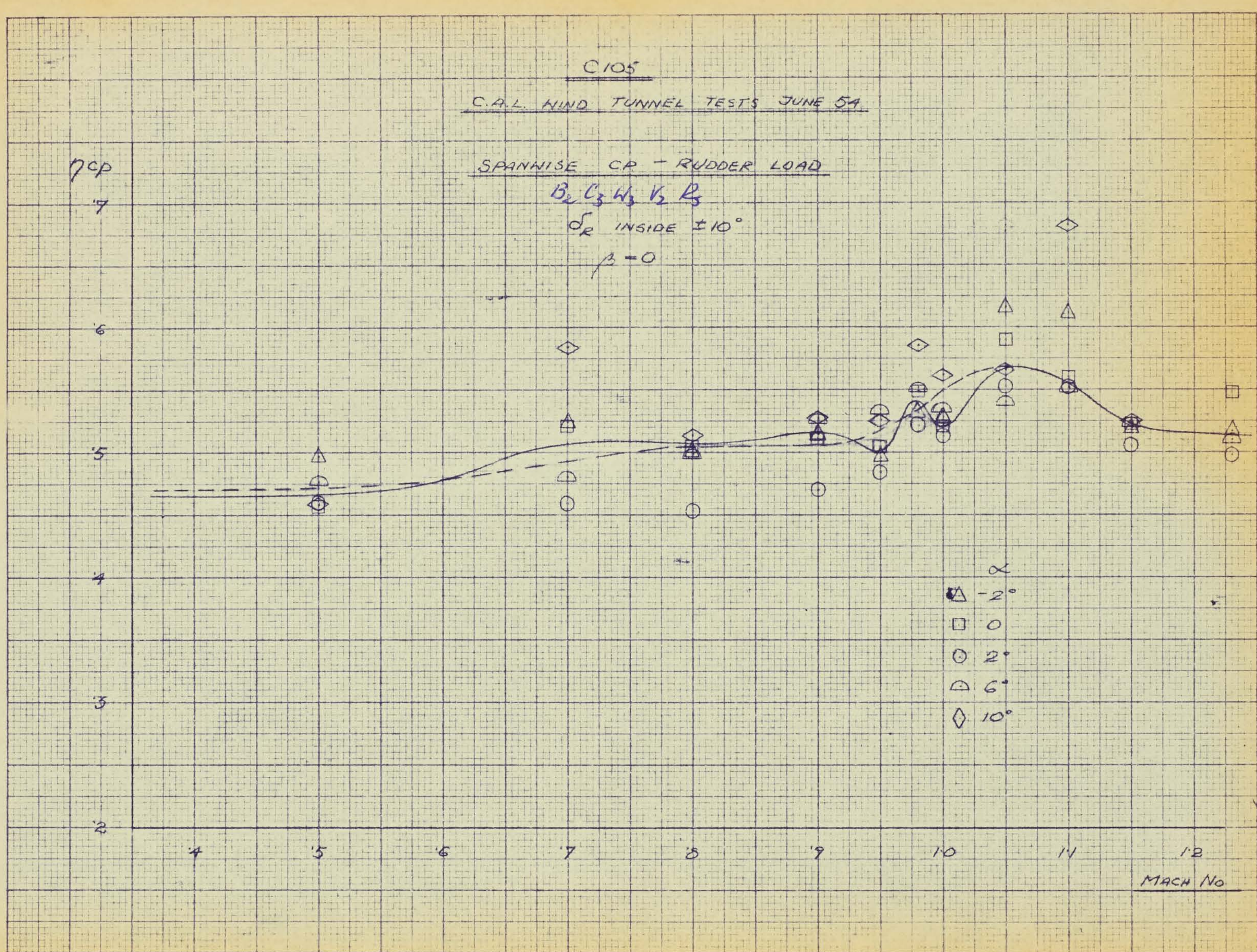
SHEET NO 6.2.2.10

REPORT NO P/W.T. 30

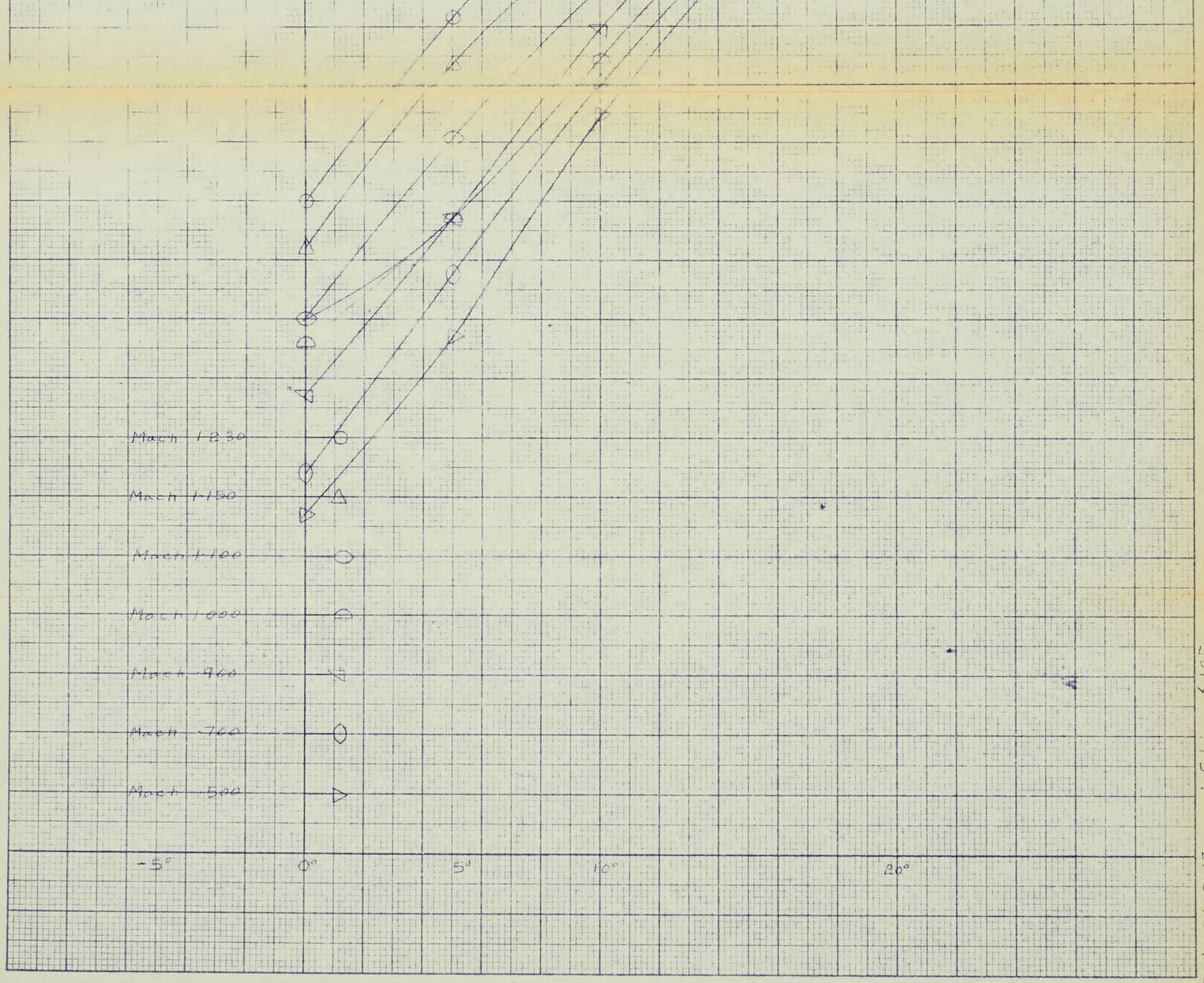
DATE July 1954

PREP. BY L. Cutcliffe

FORM 1746



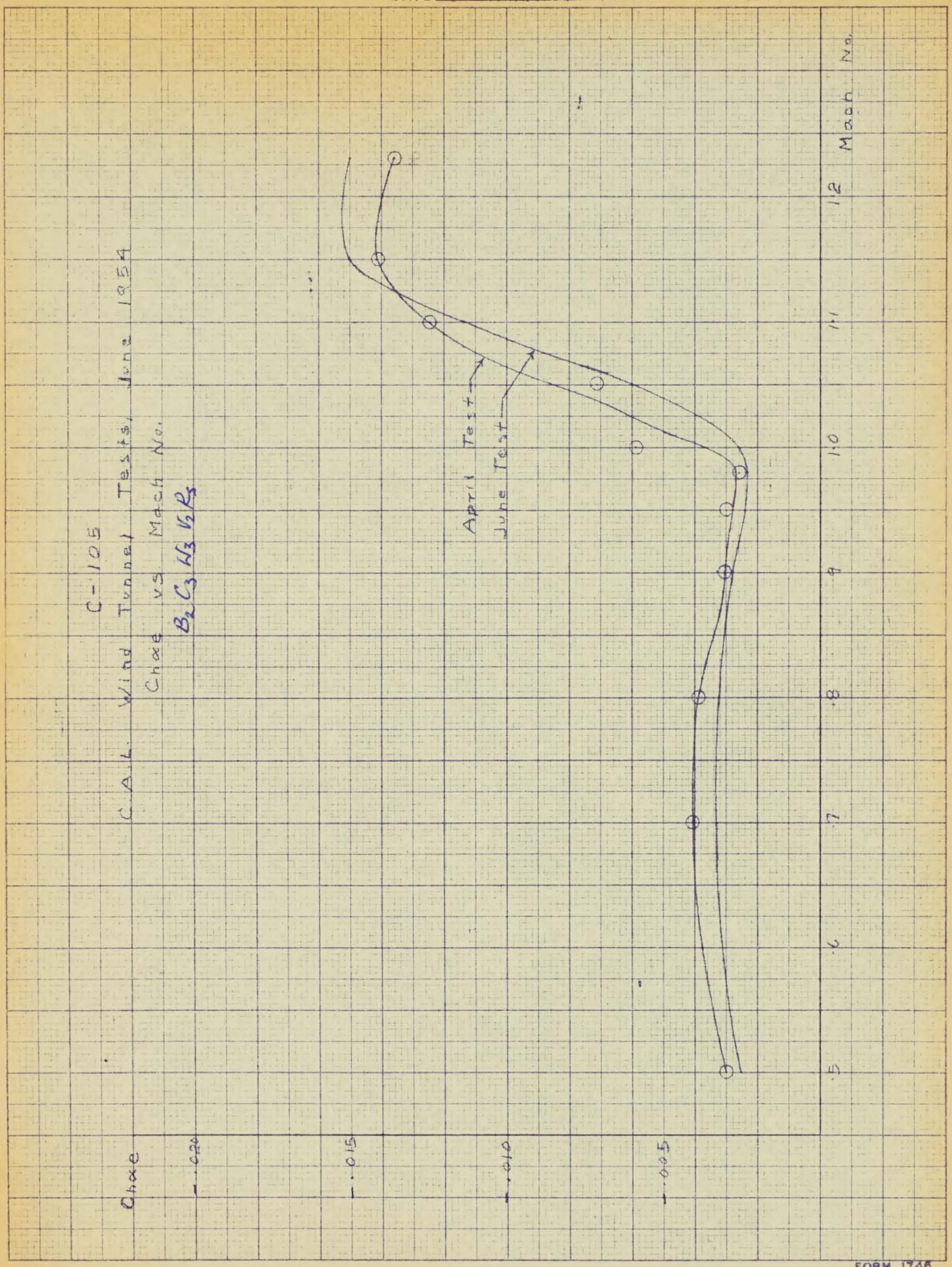
6.3.1.8. P/W.T./130
July 54, Kwiatkowski



Sheet 6.3.2.5 P/W T./30
July 1954 L. Cutcliffe

AIRCRAFT C-105 COMPONENT
A.U.W.

SHEET No. 72.1 REPORT No. P/W.T./3c
DATE July 1954 PREP. BY L. Cutcliffe



FORM 1748

P/WT/130 7.3.2.

Oct /54.

K&E 10 X 10 TO THE ½ INCH 359-12 KEUFFEL & ESSER CO.

C105

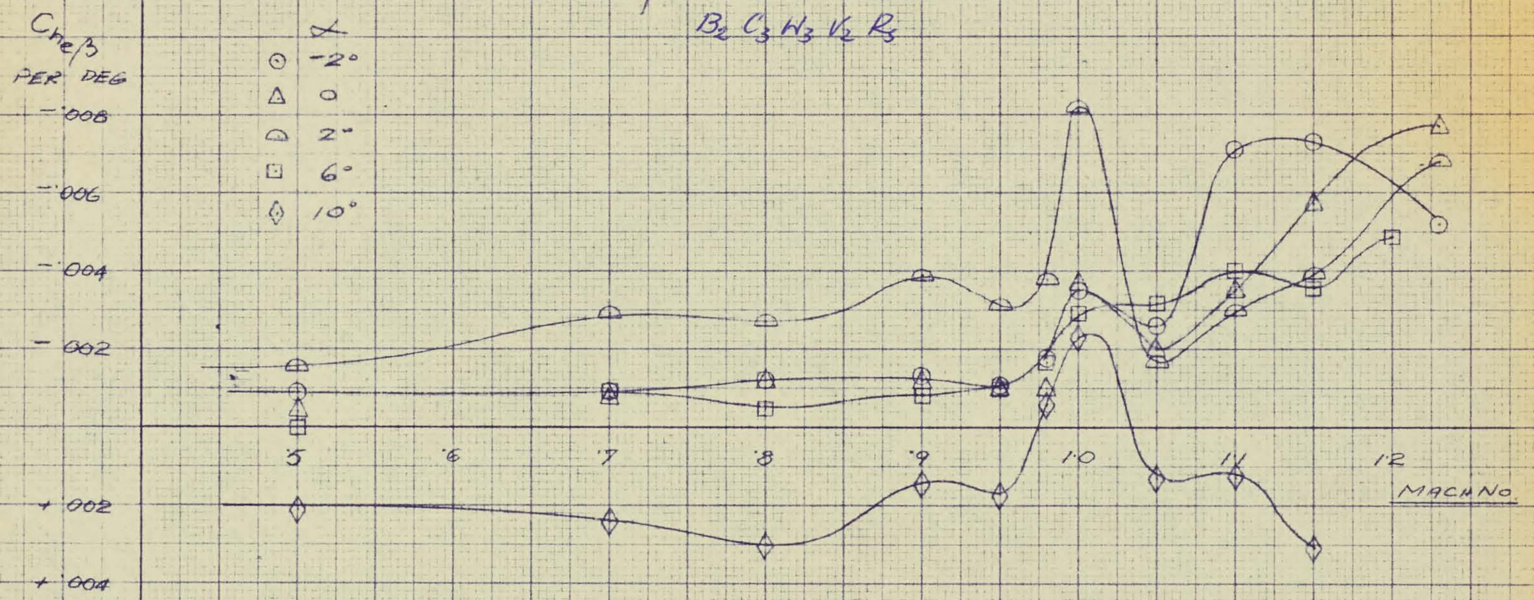
C.A.L. WIND TUNNEL TESTS JUNE 54

ELEVATOR HINGE MOMENT DUE TO SIDESLIP

$\beta < 6°$ for $-2 \leq \alpha \leq 6°$

$\beta < 2°$ for $\alpha = 10°$

$B_2 C_3 H_3 V_2 R_3$



C-105

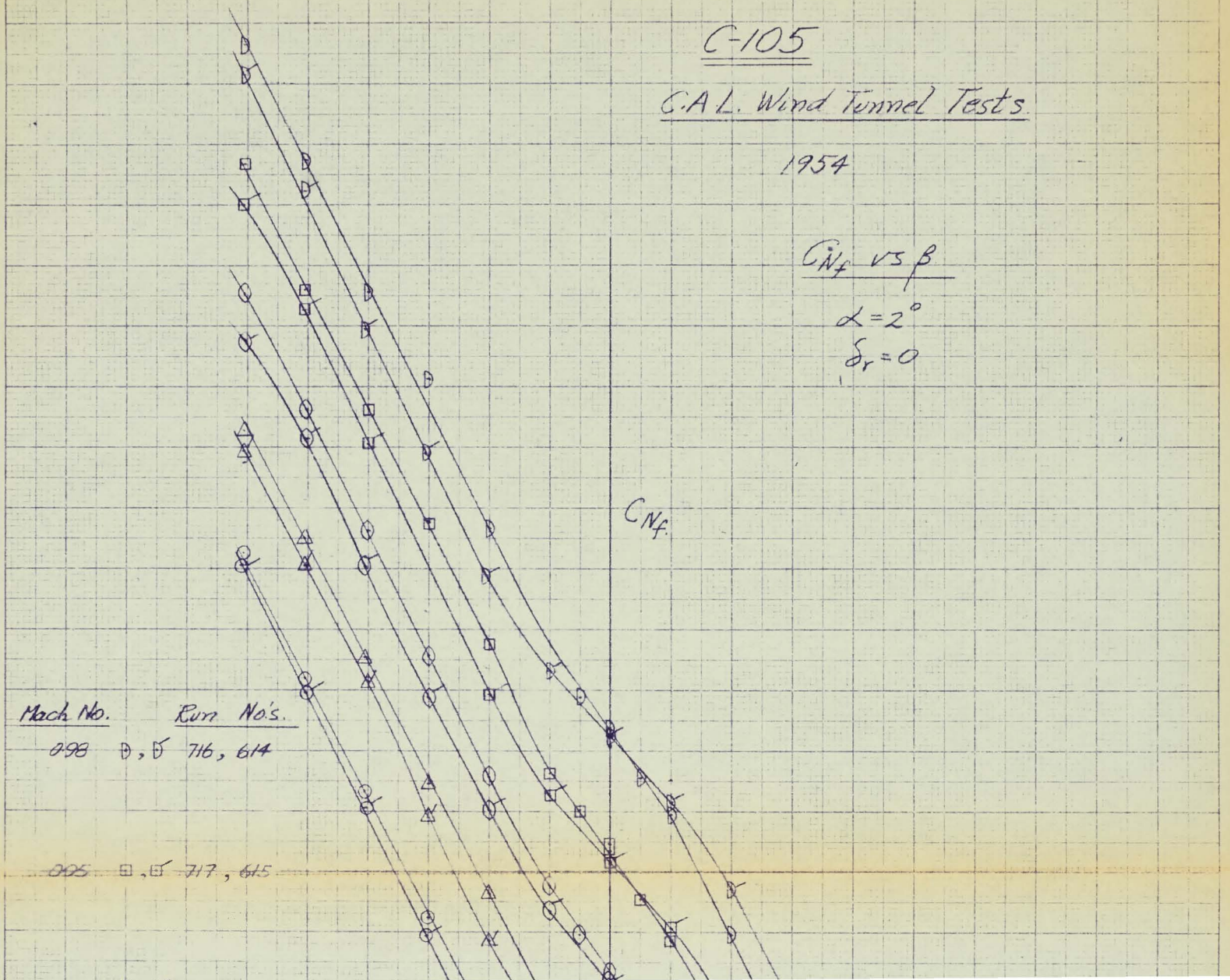
C.A.L. Wind Tunnel Tests

1954

C_{N_f} vs β

$\alpha = 2°$

$\delta_r = 0$



Mach No.	Run No's.
.098	○, ◇ 716, 614
.095	□, ◇ 717, 615