

QCX
Auro
CF105
P-AD-
42
C.2

C-105

P/AERO DATA/42

LATERAL STABILITY DERIVATIVES

(RIGID)

EXTENDED WING

Copy 3.

February 1955.

FILE IN VAULT

NRC - CISTI
J. H. PARKIN
BRANCH

MAY 11 1995

ANNEXE
J. H. PARKIN
CNRC - ICIST

A. V. ROE CANADA LIMITED
MILTON - ONTARIO
TECHNICAL DEPARTMENT (Aircraft)

REPORT NO. _____

SHEET NO. _____

AIRCRAFT:

C-105

PREPARED BY _____

DATE _____

CHECKED BY _____

DATE _____

GEOMETRY

Reference No: P/GEOM/33.

WING

AREA	1225.0 ft. ²
MAC	30.2177 ft.
$\bar{Y}$	9.0136 ft.

VERTICAL TAIL (V₃)

AREA	158.792 ft. ²
MAC	13.534 ft.
$\bar{Z}$	5.278 ft.

ELEVATOR

AREA	53.541 ft. ² each
RMS Chord	5.250 ft.

AILERON

AREA	33.276 ft. ² each
RMS Chord	3.504 ft.

RUDDER

AREA	38.168 ft. ²
RMS Chord	3.950 ft.

N.B. Wing dimensions are projections on the horizontal.
Control surface dimensions are projections on the
chord plane.

TECHNICAL DEPARTMENT (Aircraft)

REPORT NO. P/AERO DATA/

SHEET NO.

AIRCRAFT

C-105

INDEX

PREPARED BY

DATE

Kwiatkowski

August 1954

CHECKED BY

DATE

4. Vertical Tail

PAGE

$a_1(V)$ vs Mach No.

4.1

$a.c.(V)$ vs Mach No.

4.2

$\eta_{a.c.}(V)$ vs Mach No.

4.3

5. Rolling Derivatives

C_{N_p} vs Mach No.

5.1

C_{l_p} vs Mach No.

5.2

C_{y_p} vs Mach No.

5.3

6. Yawing Derivatives

C_{N_r} vs Mach No.

6.1

C_{l_r} vs Mach No.

6.2

C_{y_r} vs Mach No.

6.3

N.B. Derivatives in sections 1 to 4 measured in C.A.L. Wind Tunnel up to $M = 1.23$.

AIRCRAFT C105

COMPONENT

SHEET No. 1.1.

REPORT No. P/AERO DATA/37

A. U. W.

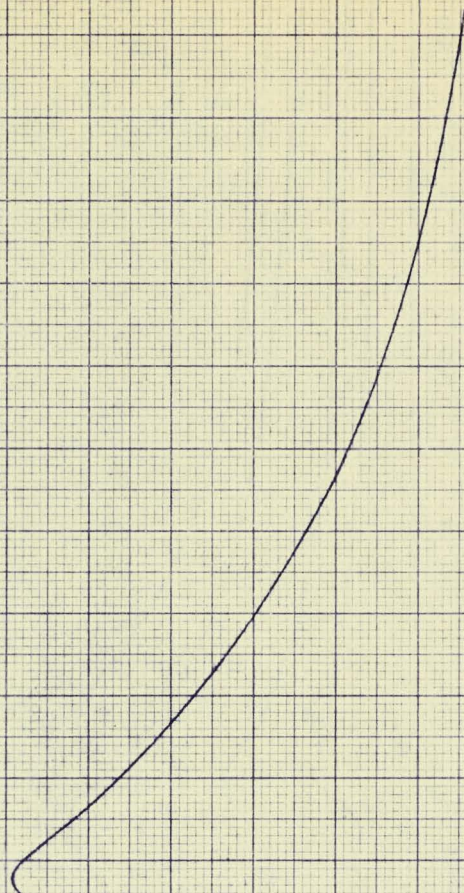
DATE

August 1952

PREP BY

K. A. K. K. K.

C105
VS. MACH No
 $C_{L\alpha}$
 $-5^\circ \alpha$
 $B_2 S_2 H_3 V_2 R_3$



AIRCRAFT C105

COMPONENT

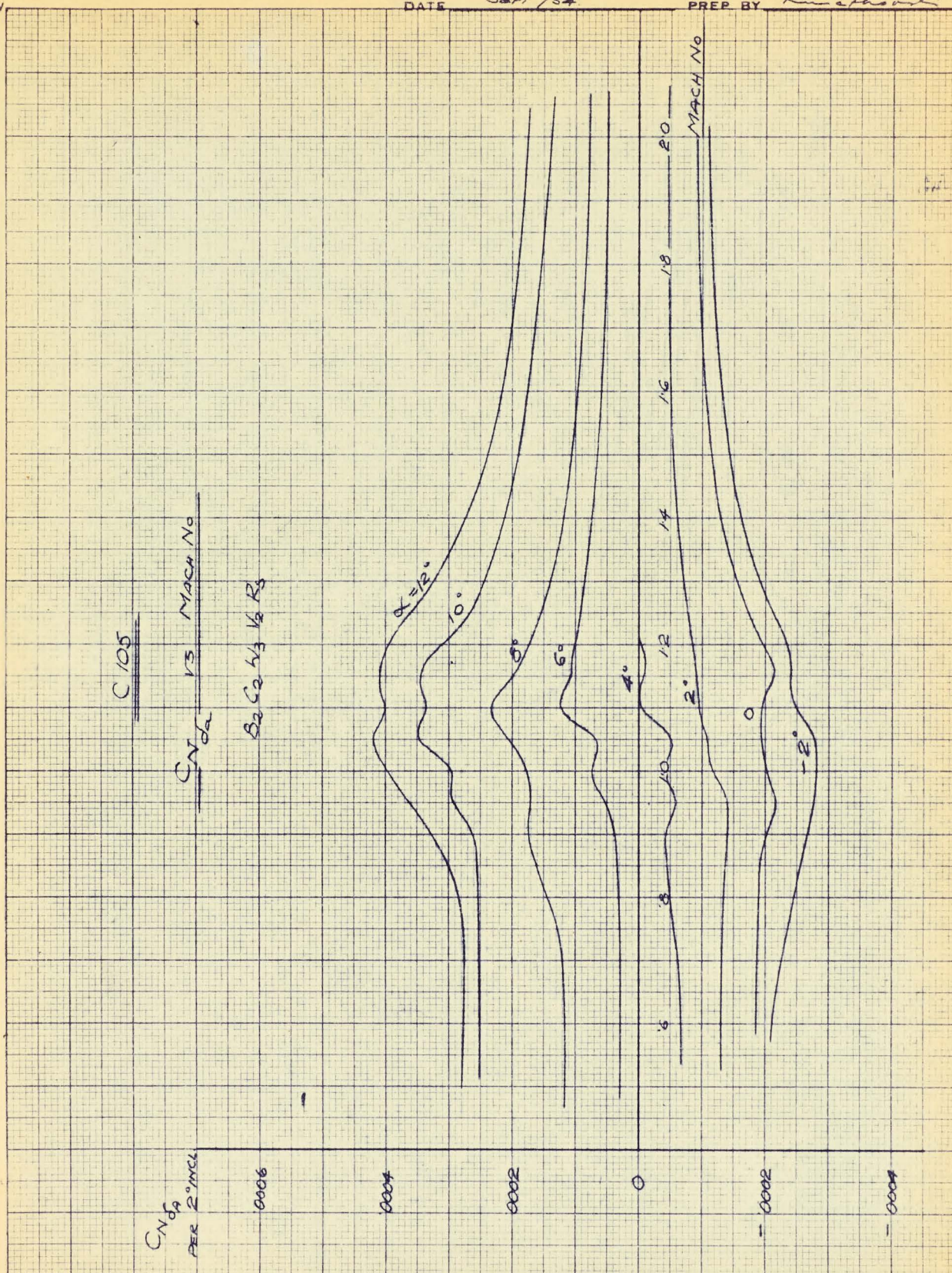
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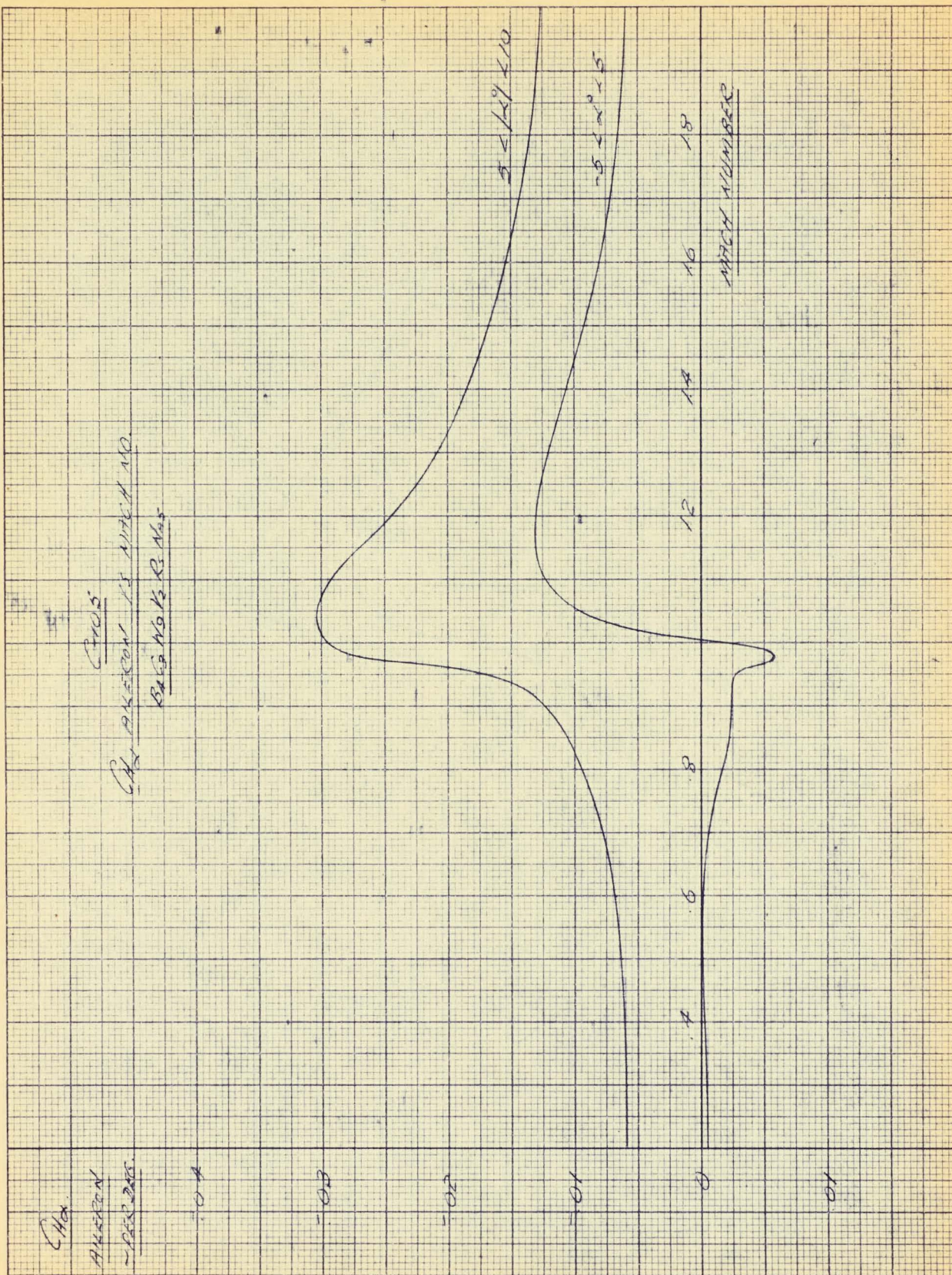
DATE SEPT / 57

PREP BY K. A. H. H. H.

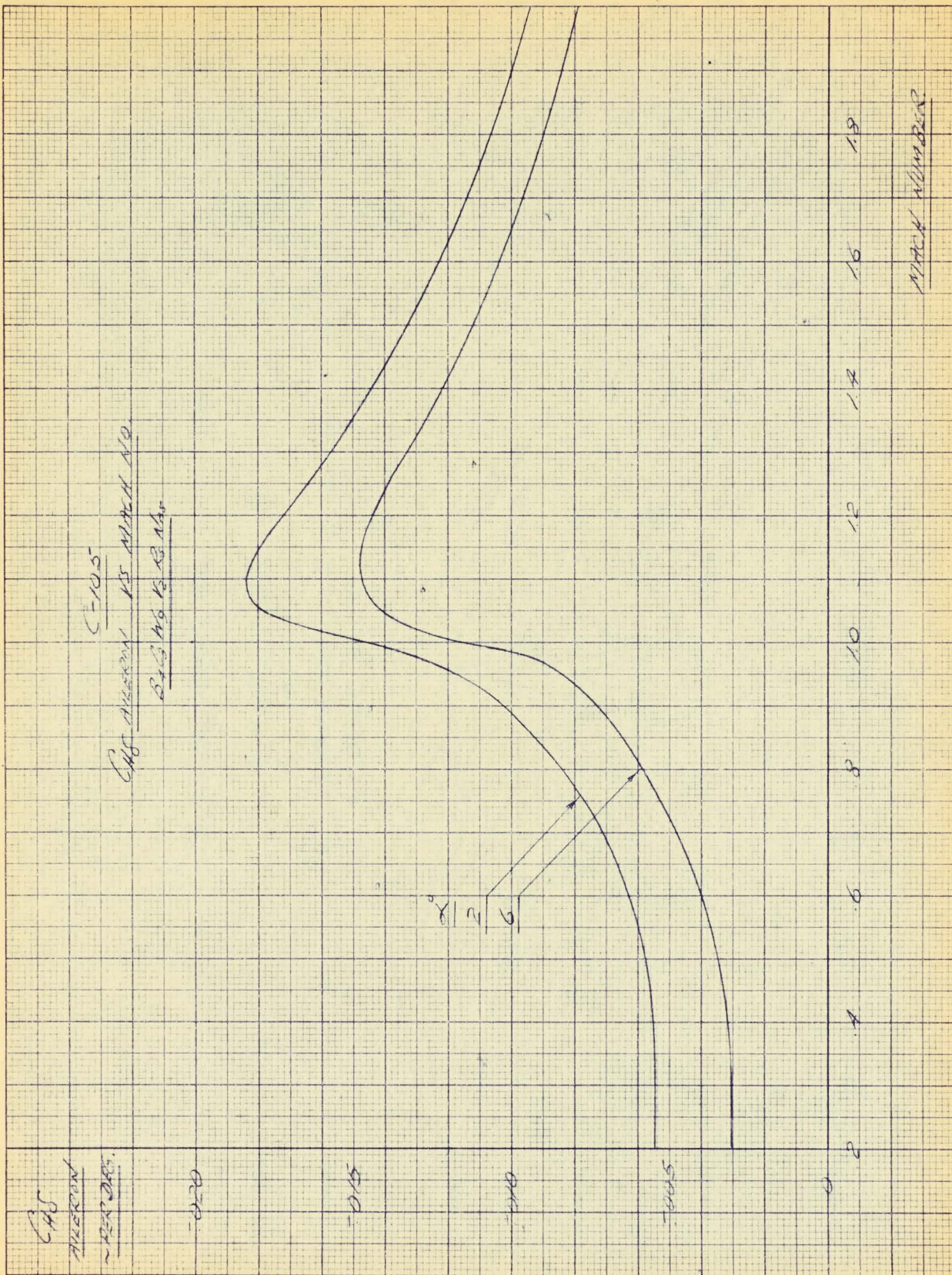


1.5
JAN 55

P/PER DATA 142.
CLARK



1.6. PAPER DATA / 12
VAN 28 CLARK.



AIRCRAFT C105
A. U. W.

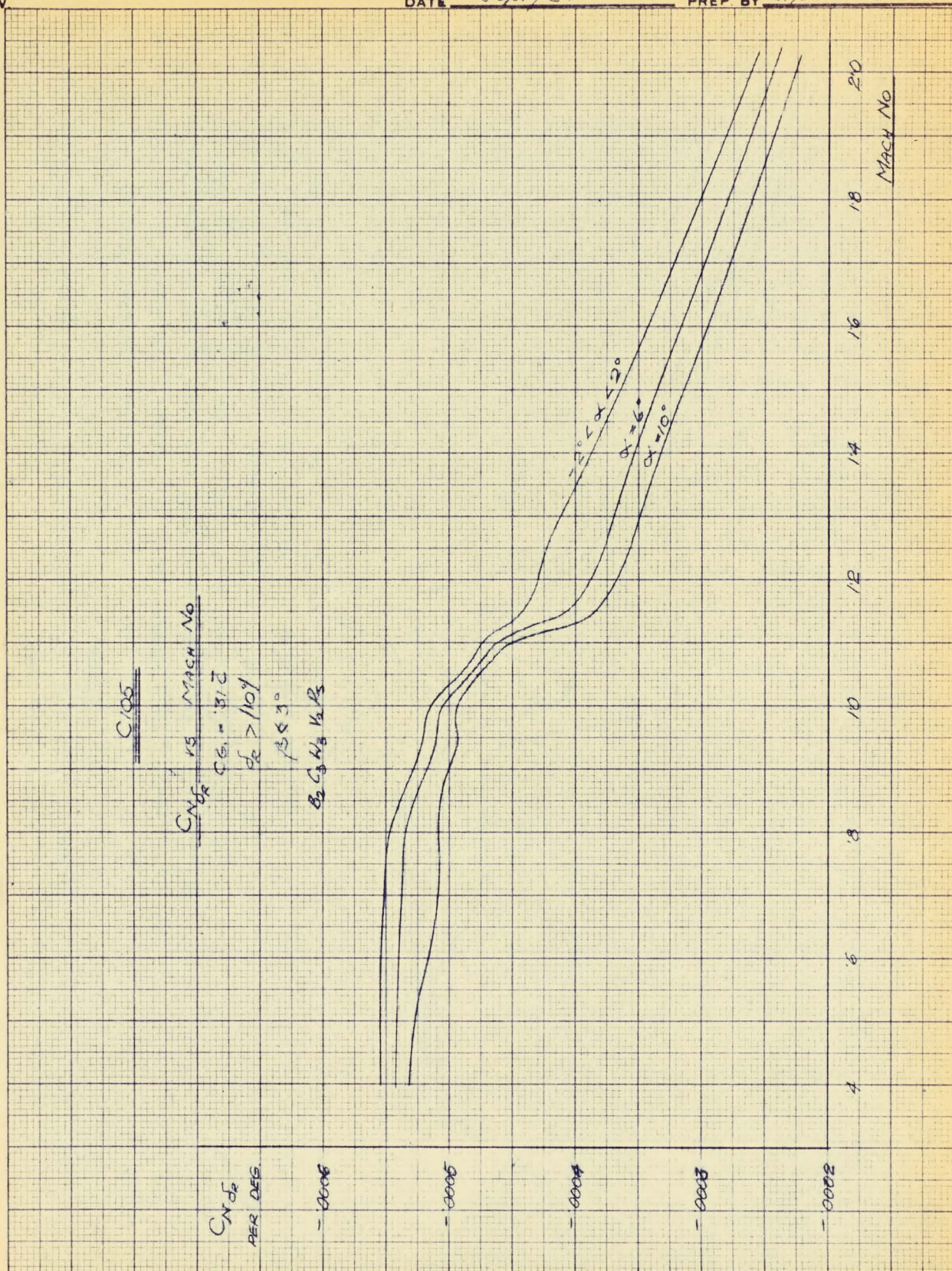
COMPONENT

SHEET No. 2.1.2.

REPORT No. P/AERO DATA/37

DATE Sept/57

PREP BY S. K. Koush



AIRCRAFT C105
A. U. W.

COMPONENT

SHEET No. 2.1.3.

REPORT No. P/1720 D419/37

DATE Sept/57

PREP BY Kunalhouri

10 x 10 TO THE 1/2 INCH 359-12
KEUFFEL & ESSER CO.

K&E

C105

CN_{SE} vs MACH No

CG = 1315

$\sigma_r < 10^\circ$

$\beta > 3^\circ$

Re $C_0 W_1 V_2 P_3$

CN_{SE}
PER DEG.

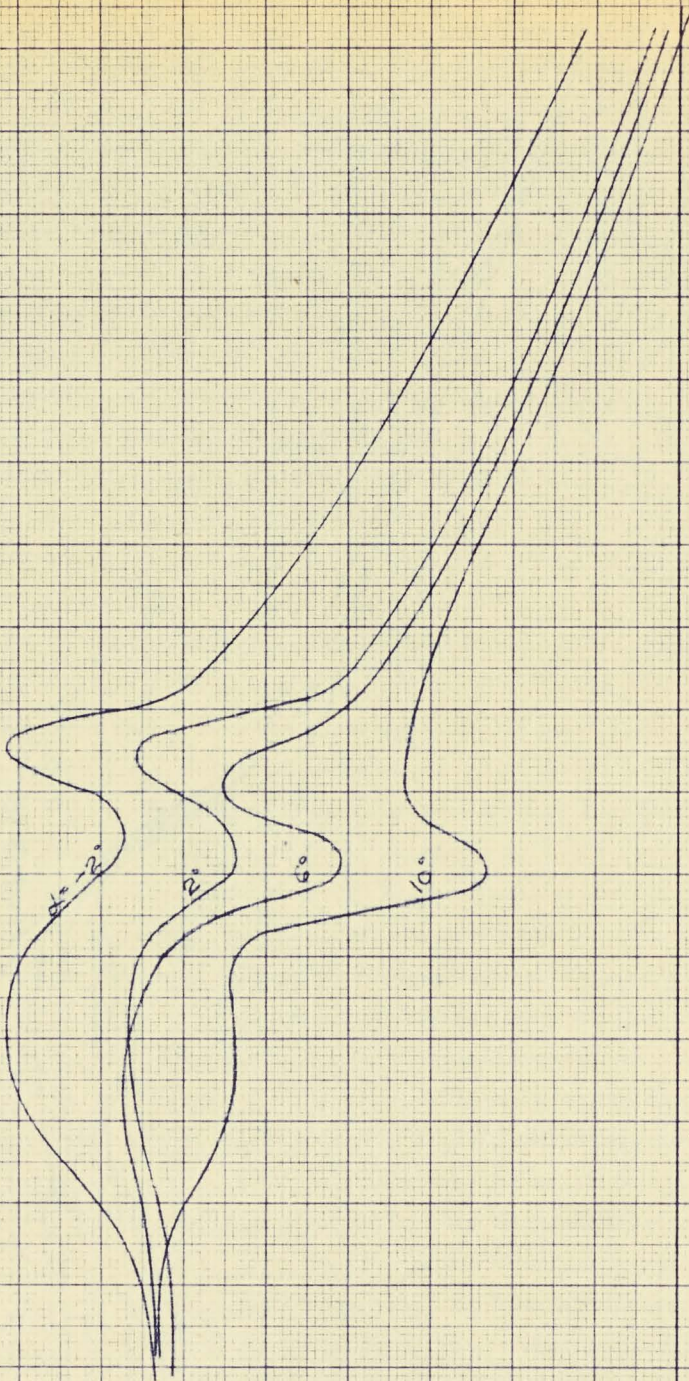
-0007

-0000

-0005

-0010

-0015



MACH No

AIRCRAFT C105
A. U. W.

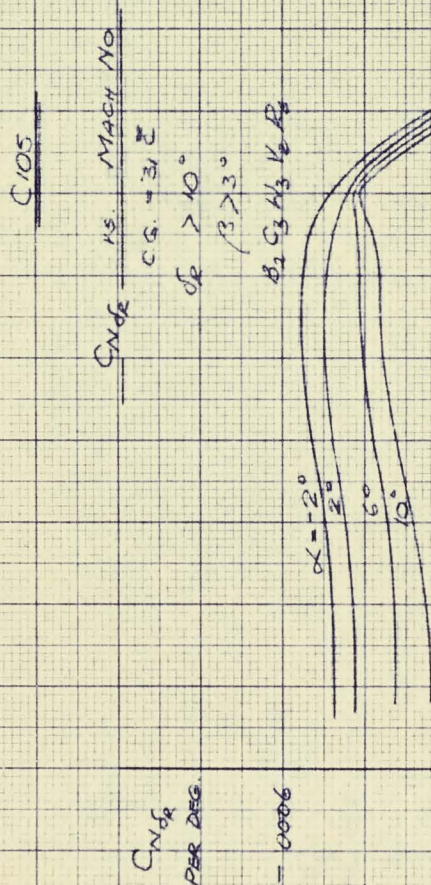
COMPONENT

SHEET No. 2.1.4

REPORT No. D/ZERO DATA/37

DATE Oct/52

PREP. BY K. L. D. W. S.



MACH No

18

16

14

12

10

8

6

4

2

0

AIRCRAFT C105
A. U. W.

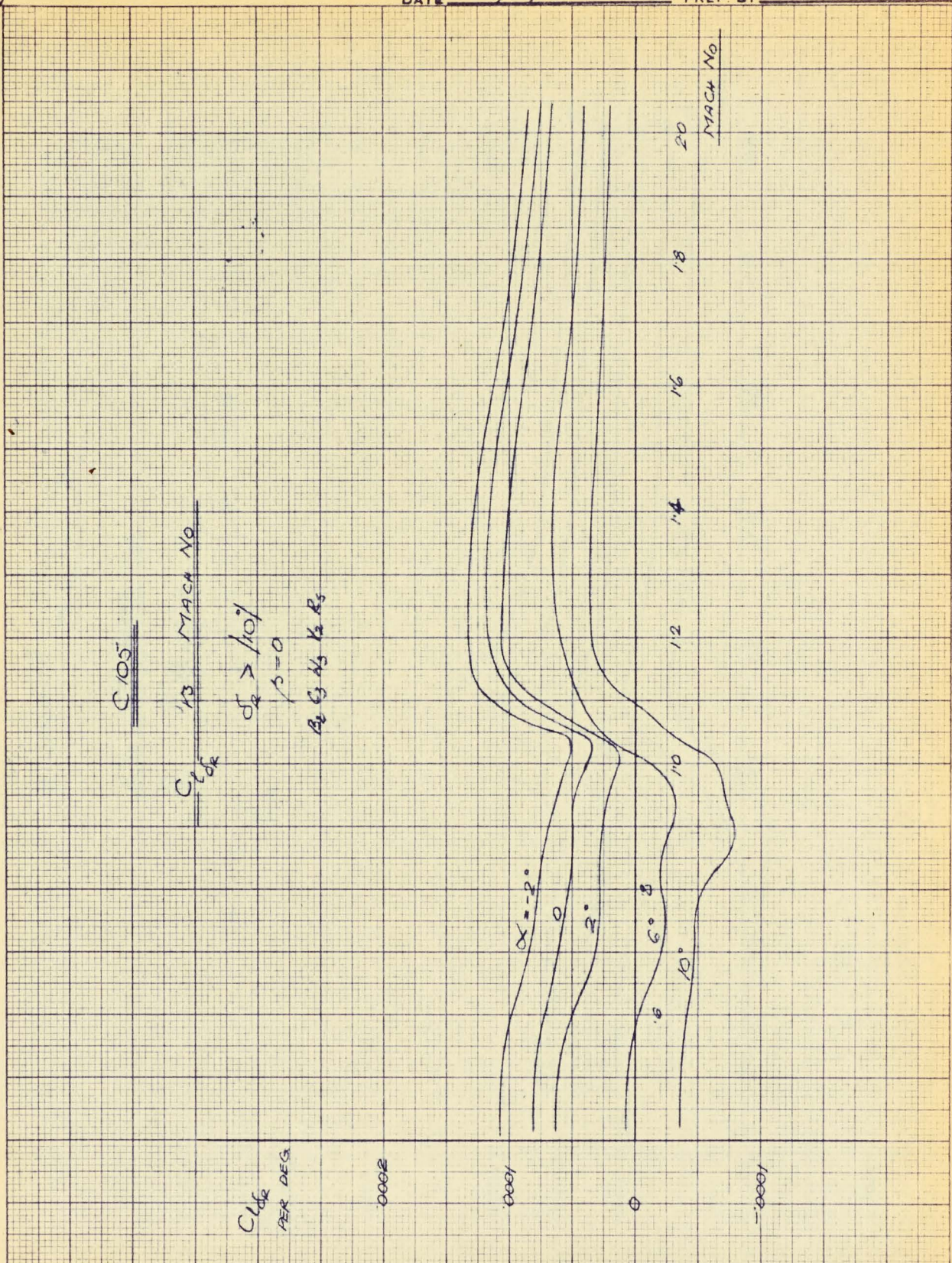
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REPORT No. P/AERO DATA/37

DATE Sept 6/52

PREP BY Kwathovich



AIRCRAFT C105
A. U. W.

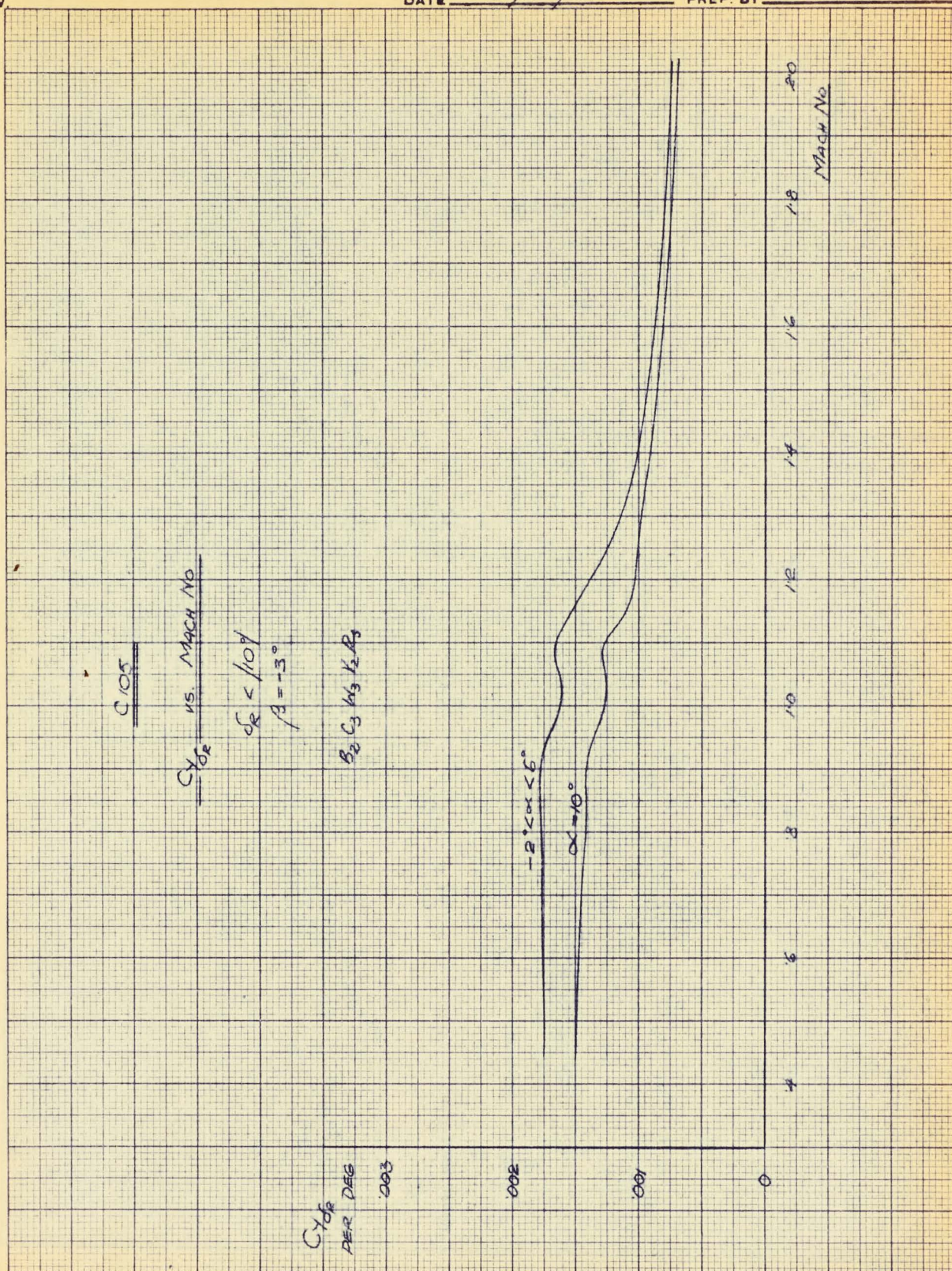
COMPONENT

SHEET No. 2.3.1.

REPORT No. P/AERO DATA/37

DATE Sept 4 / 57

PREP. BY K. A. H. H. H.



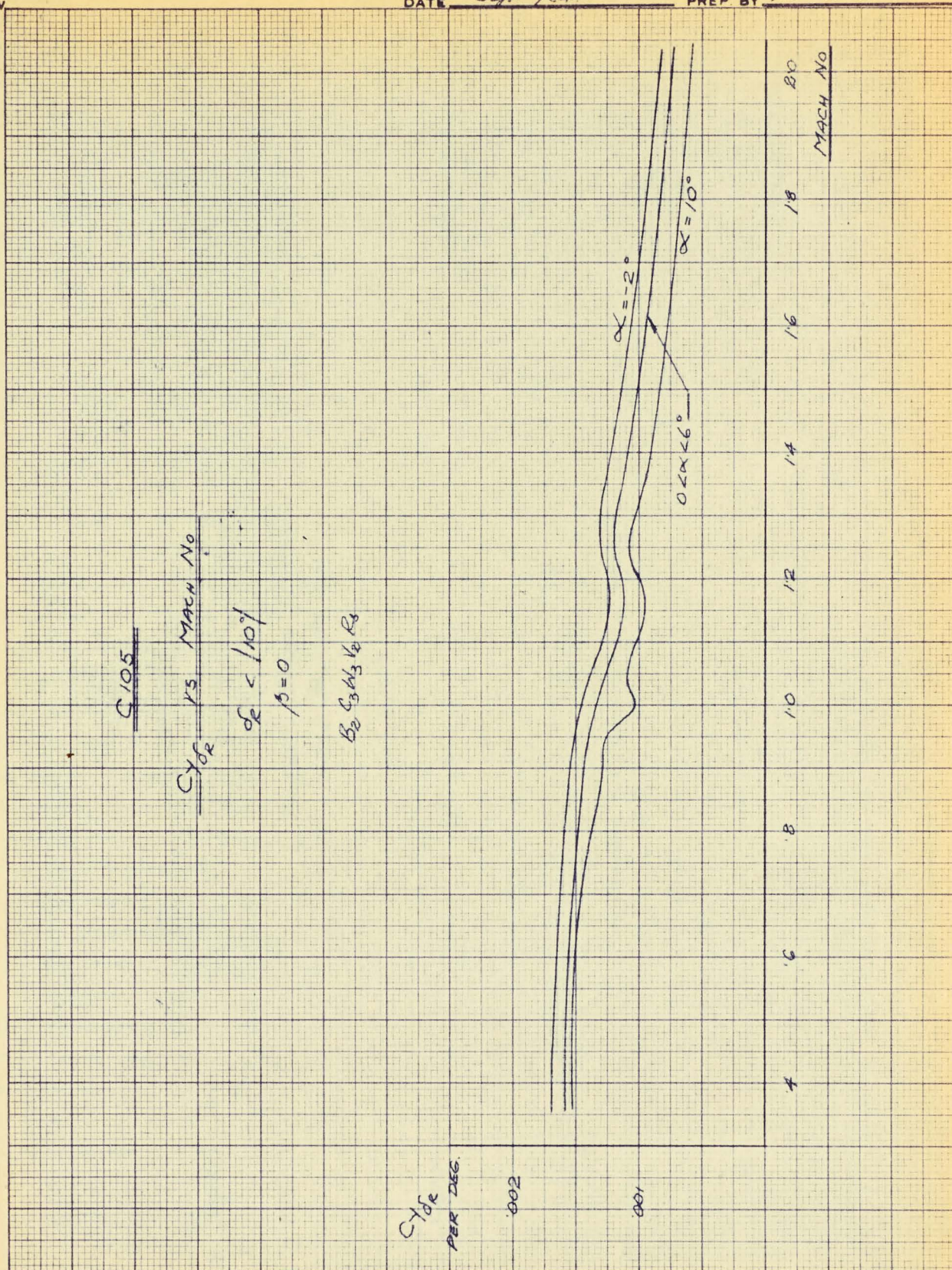
AIRCRAFT C105
A. U. W.

COMPONENT

SHEET NO. 2.3.2.
DATE Sept 1/57

REPORT NO. P/AERO DATA/37
PREP BY K. Matheson

PLotted DATA 127



AIRCRAFT C-105 COMPONENT

SHEET NO. 2.5.1

REPORT NO. P/4ERO/1295A/37

A. U. W.

DATE 20/8/54

PREP BY C.A. Ford.

C-105

Estimate

Chfr vs Mach Number

Rudder Hinge Moment
due to Deflection

$B_2 C_3 W_3 V_2 R_3$

$\alpha = 2^\circ$

Chfr
per degree

-03

-02

-01

0

2

4

6

8

10

12

14

16

18

20

Mach Number

AIRCRAFT C105
A. U. W.

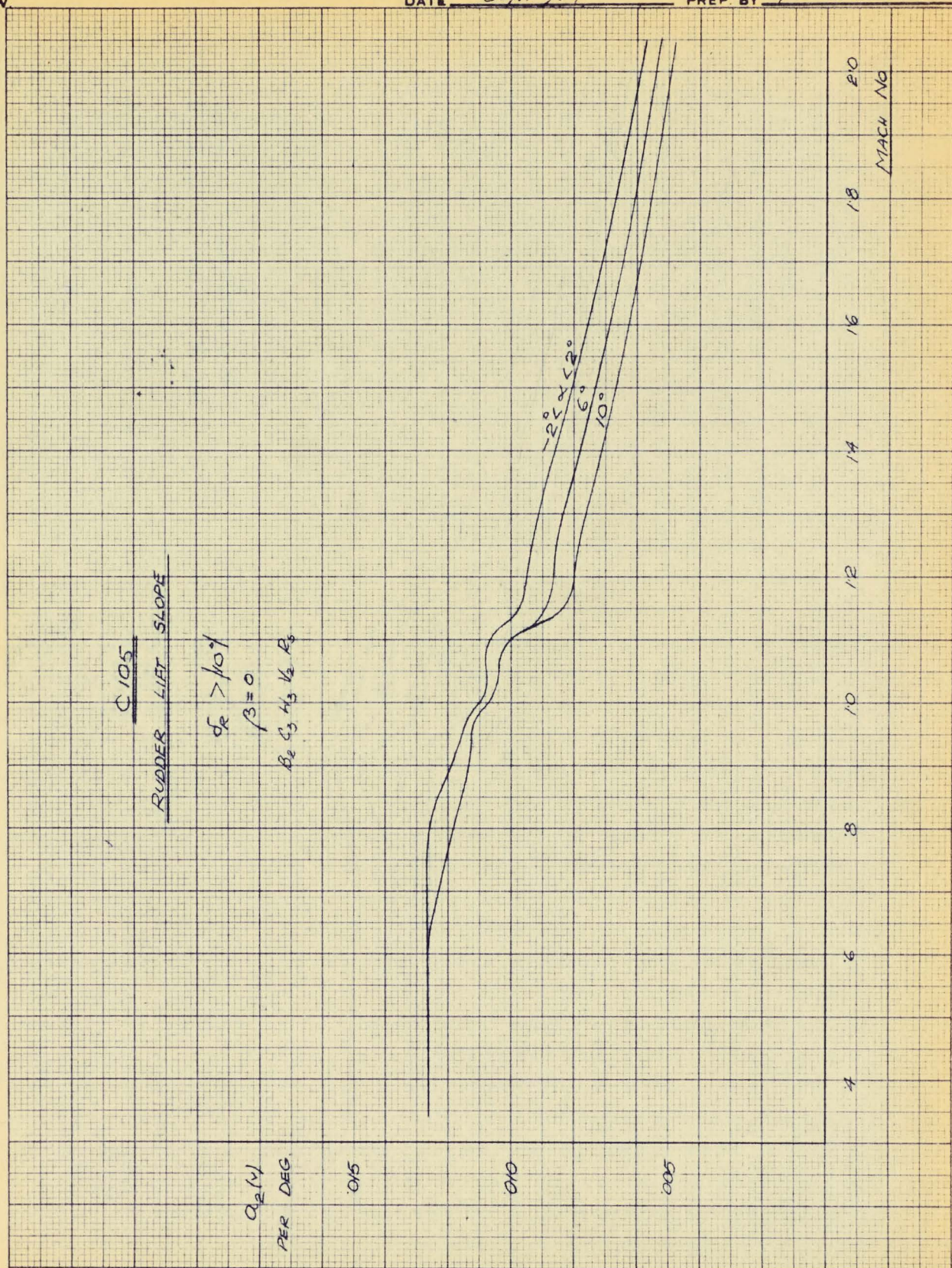
COMPONENT

SHEET No. 262.

REPORT No. P/AERO DATA/57

DATE Sept 1/54

PREP BY Kurakawa



AIRCRAFT C105
A. U. W.

COMPONENT

SHEET No. 2.6.3.

REPORT No. P/46P-2057/57

DATE Sep. 6 / 57

PREP. BY K. W. F. Smith

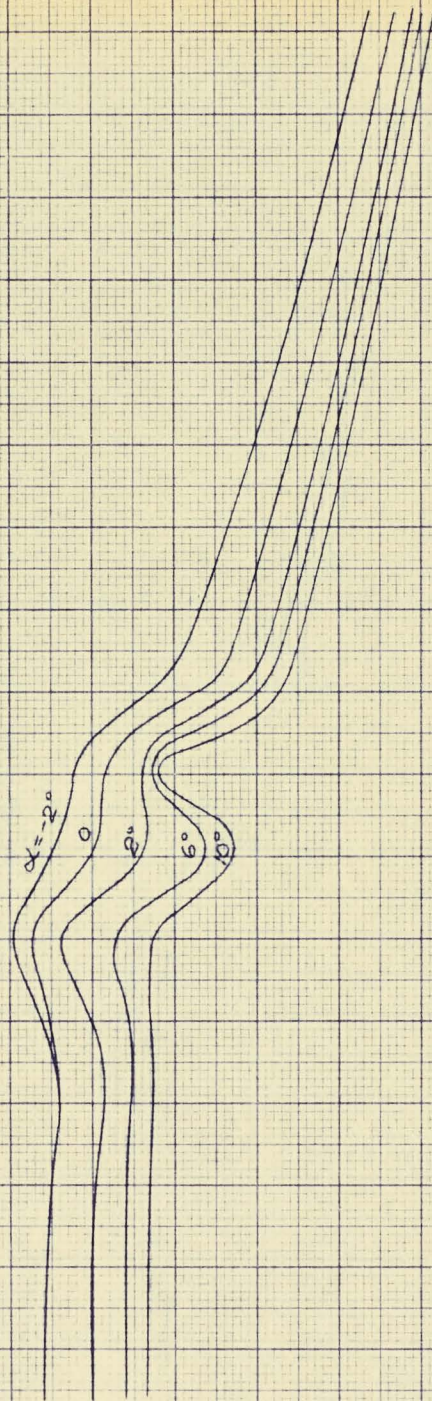
C105

RUDDER LIFT SLOPE

$\alpha_R < 10^\circ$

$\beta \approx 3^\circ$

$B_2 C_3 A_3 V_2 R_3$



MACH NO
20
18
16
14
12
10
8
7

AIRCRAFT C105
A. U. W.

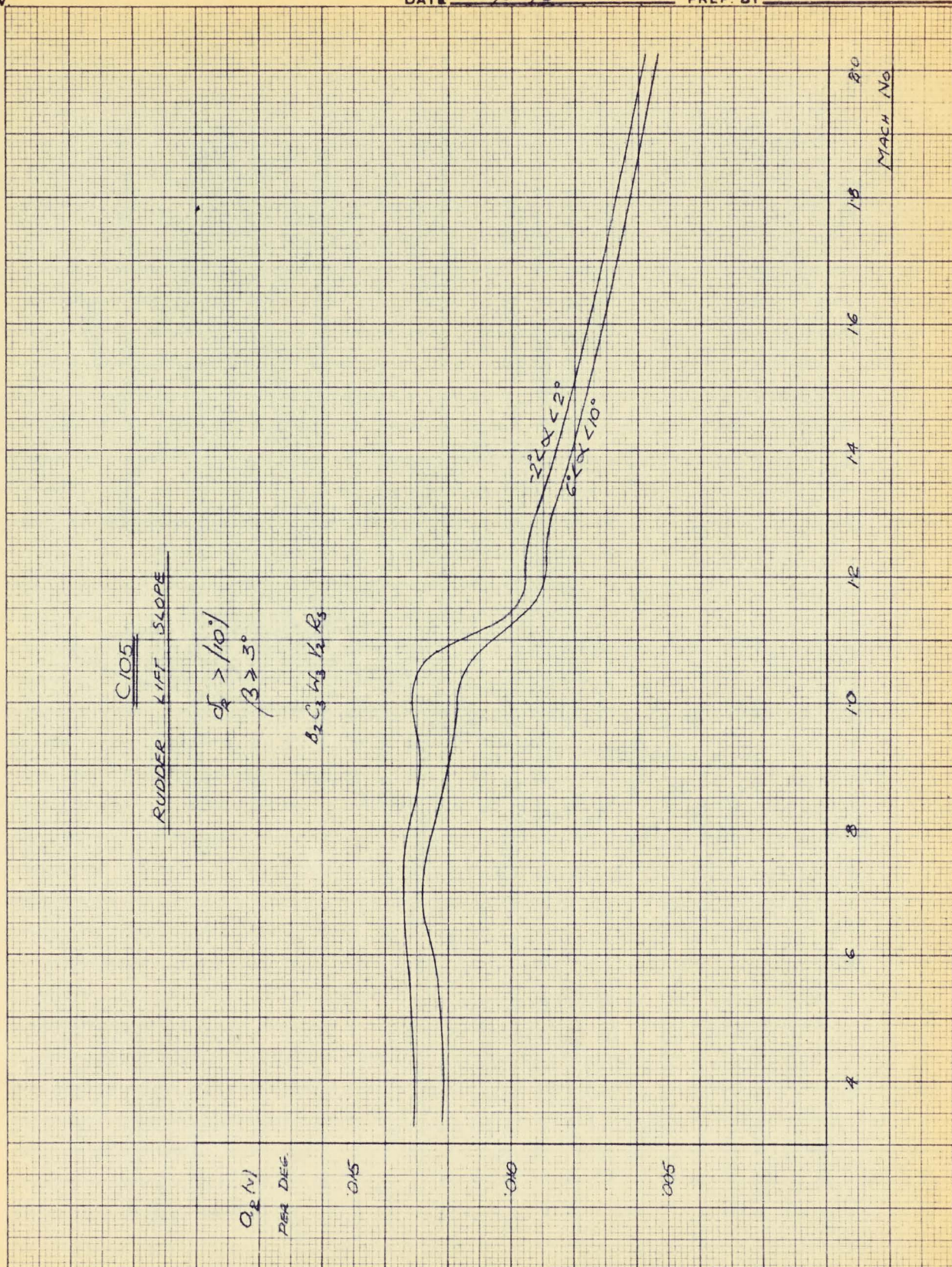
COMPONENT

SHEET No. 2.6.A.

REPORT No. P/PERO DATA/37

DATE Sept 157

PREP. BY K. A. H. H.



AIRCRAFT C105
A. U. W.

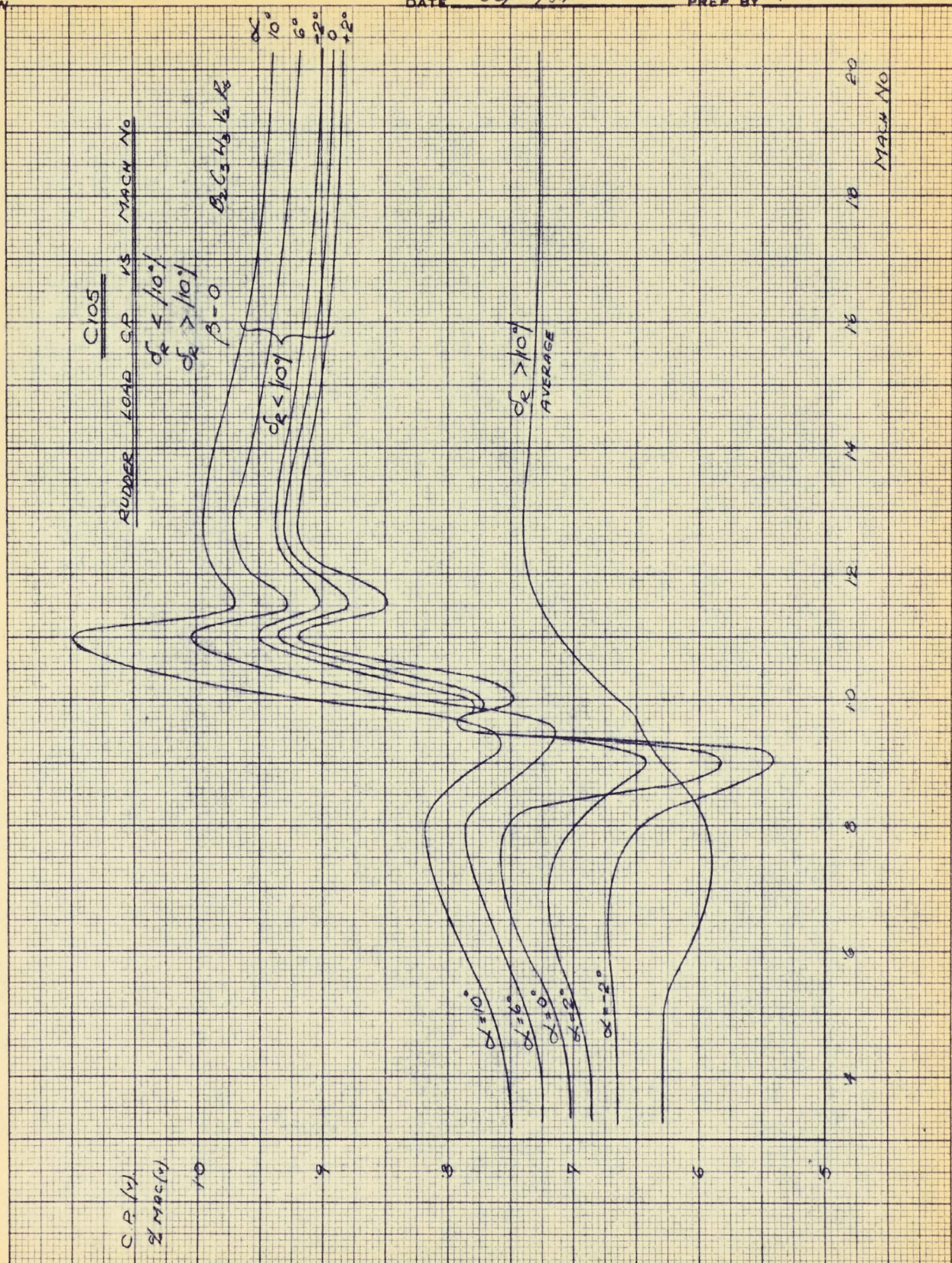
COMPONENT

SHEET No. 2.7.1.

REPORT No. P/1720 DATA /37

DATE Sept 6/57

PREP BY K. H. H. H.



AIRCRAFT C105
A. U. W.

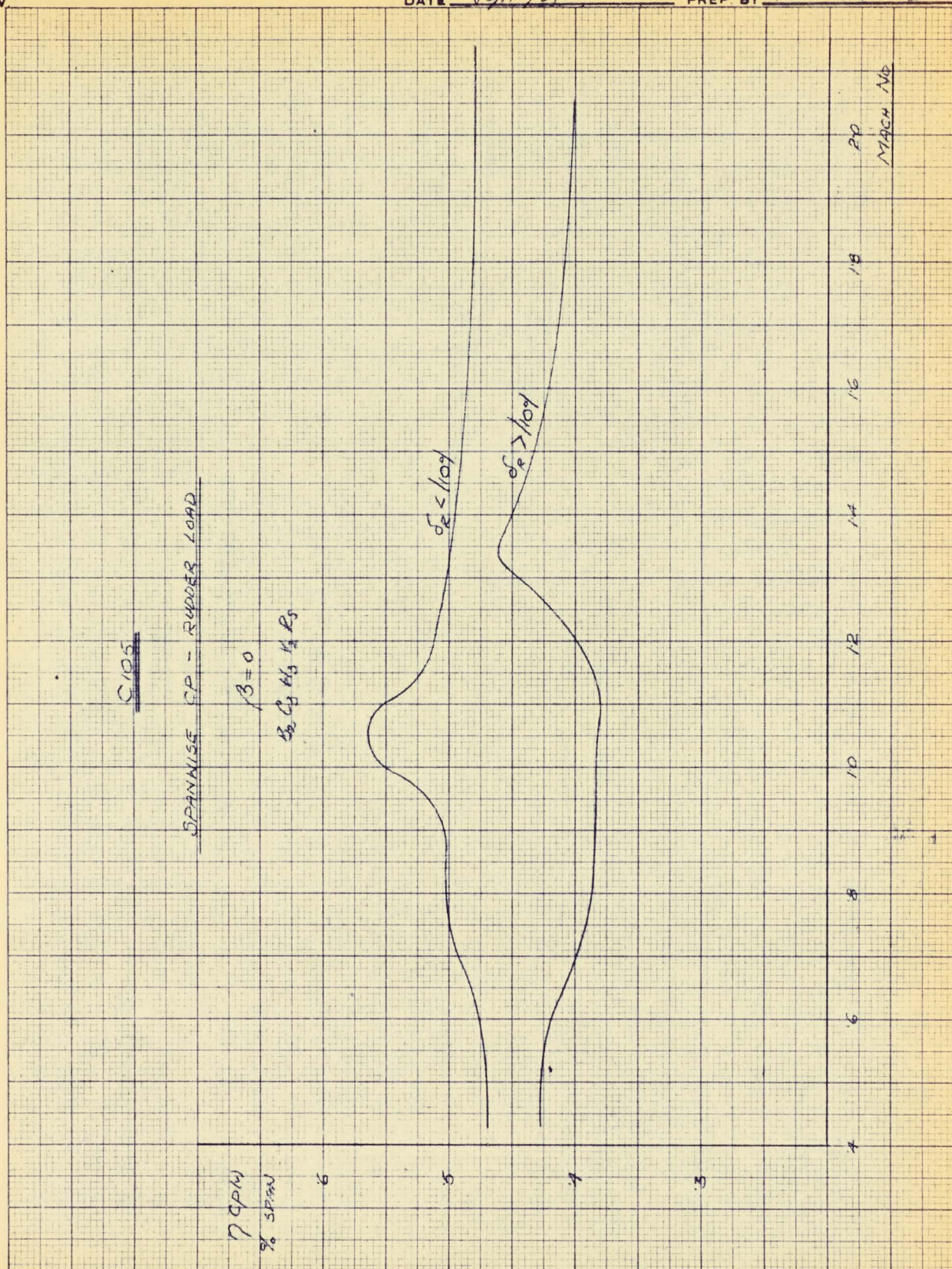
COMPONENT

SHEET No. 2.8.1

REPORT No. P/AERO DATA/37

DATE Sept/57

PREP BY K. A. B. - L.



AIRCRAFT C105
A. U. W.

COMPONENT

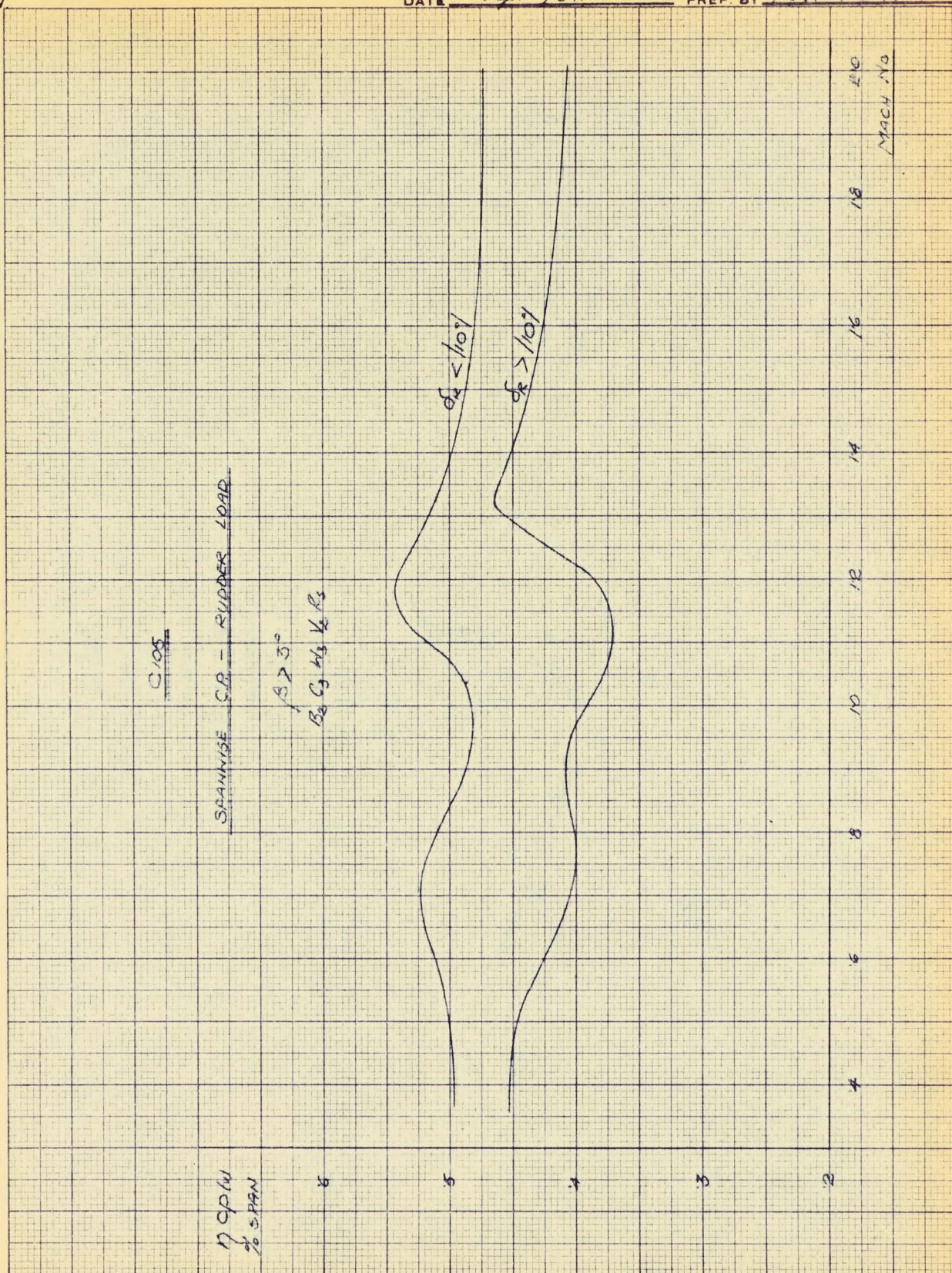
SHEET No. 2.8.2.

REPORT No. P/1780 DATA/37

DATE Sept 1957

PREP BY Skratkowski

10 X 10 TO THE 1/2 INCH 359-12
KEUFFEL & ESSER CO. MADE IN U.S.A.



C 105
Cm/b vs Mach No
13.13"

RIGID

8.5 lb 1/2 lb Net
C.G. = 48.5"

Cm/b
per lbs

2000

1000

0

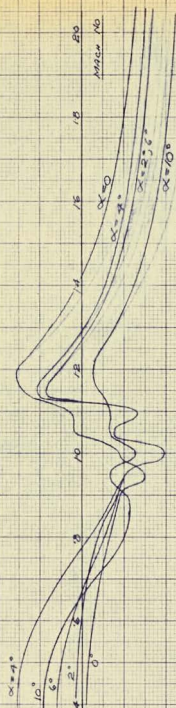
-1000

-2000

-3000

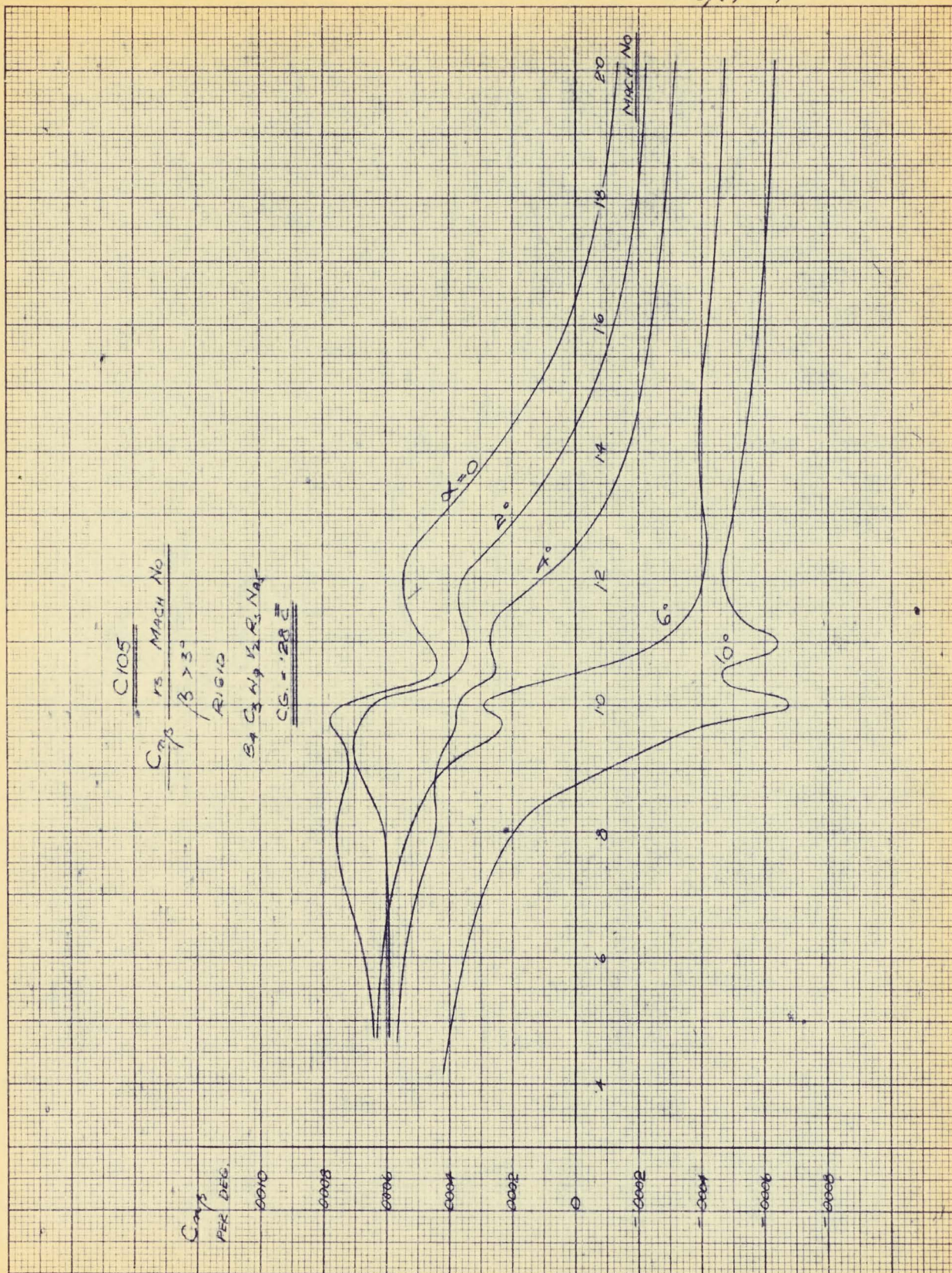
-4000

-5000

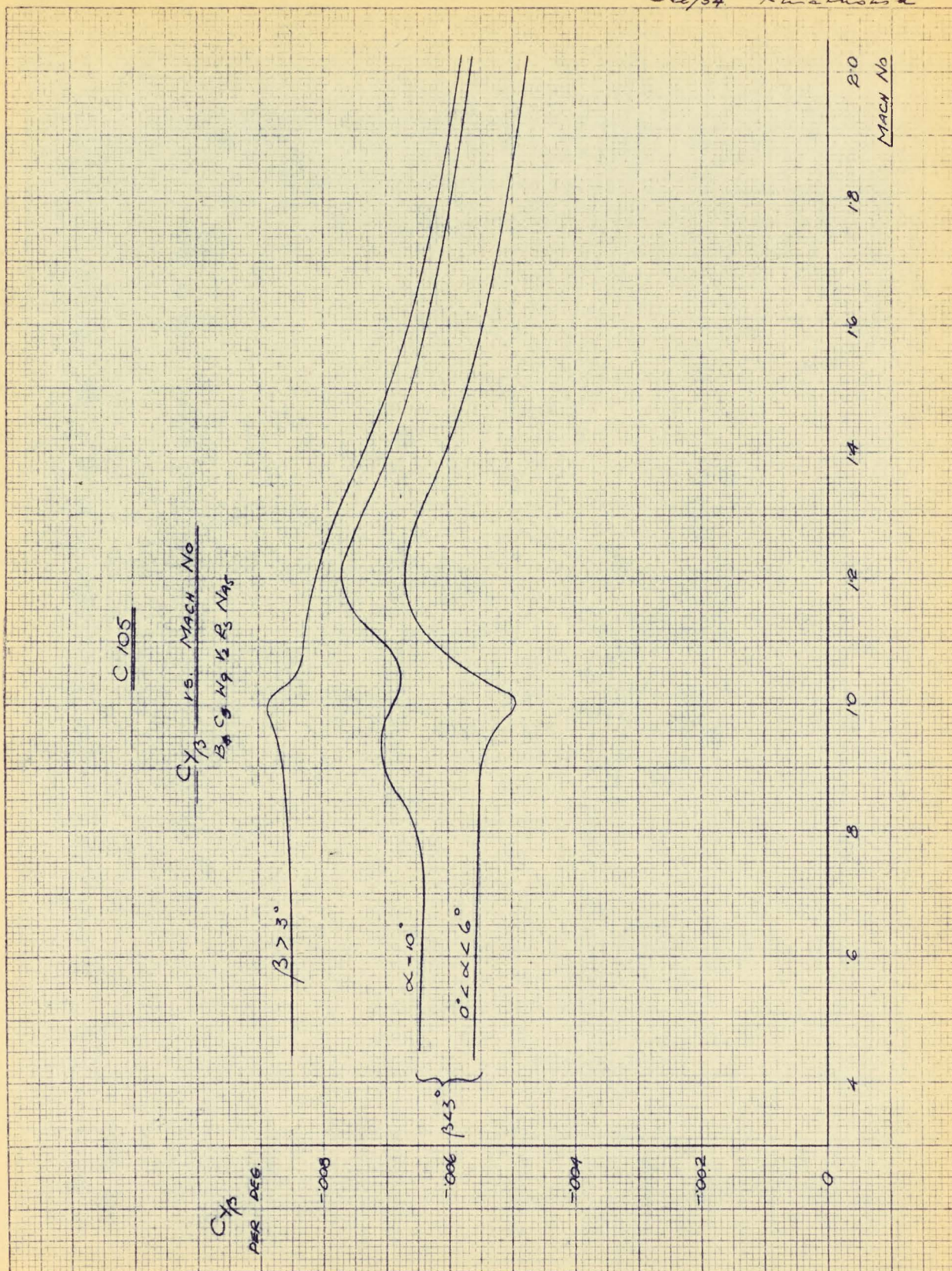


3.1.1. P/AERO DATA /42
DUE /14. Kwa-thun, C

3.1.2. P/AERO DATA/42
Dec/54 Kunkowski

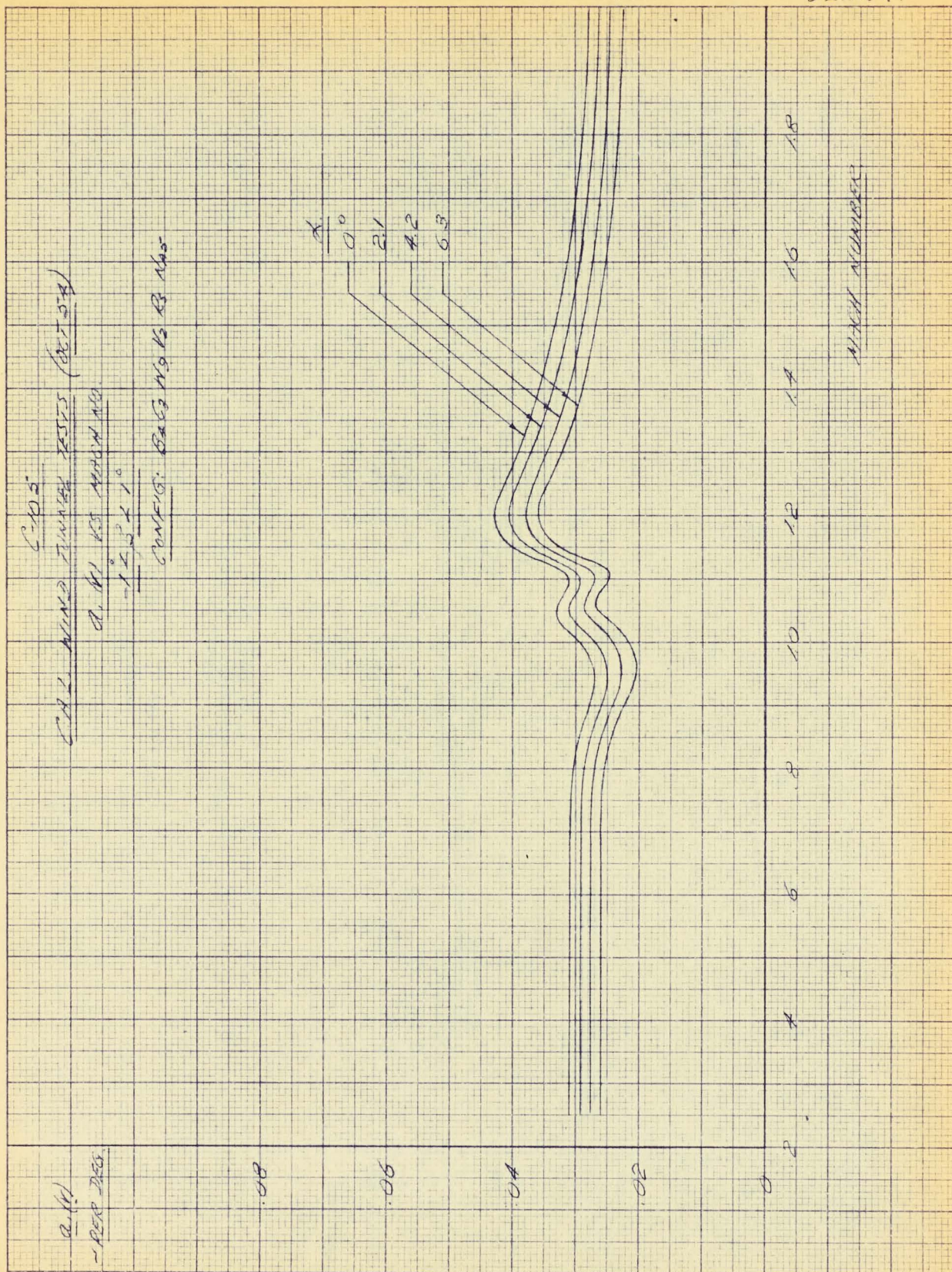


3.3. P/AERO DATA/A2.
Dec/57 Kwaalhouk

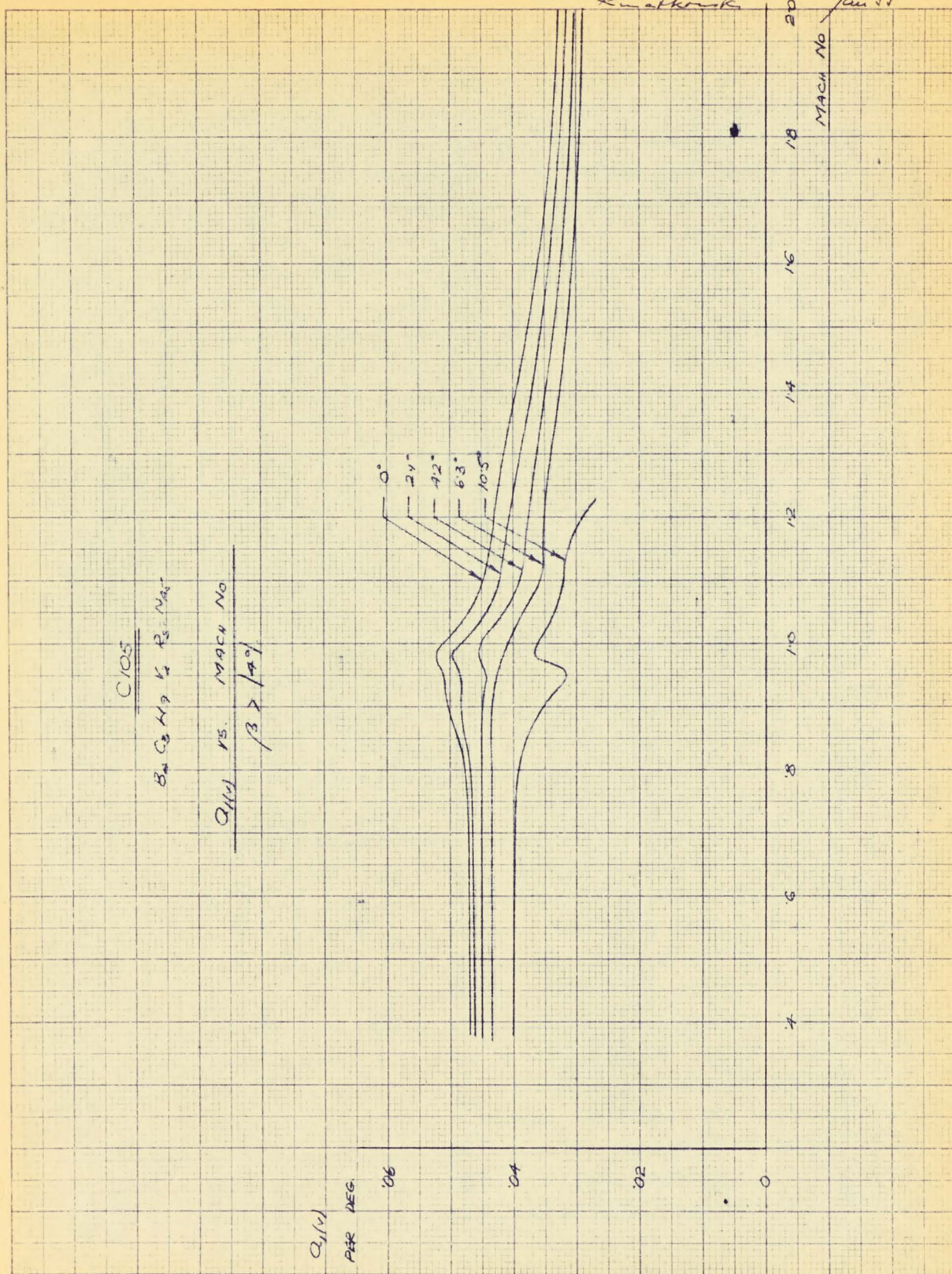


4.1.1.
NOV. 5A.

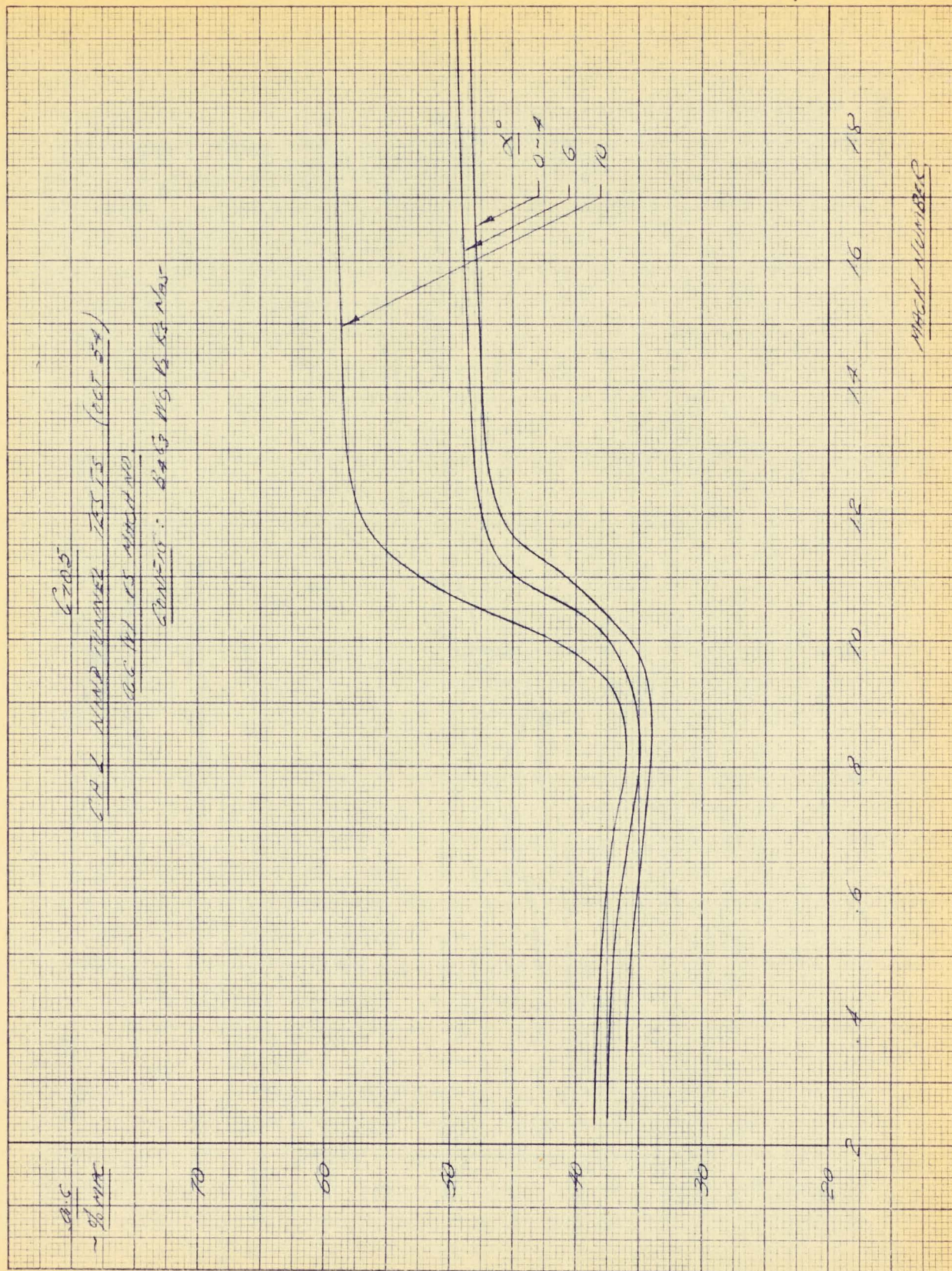
P/PERO DATA/42
CLARK.

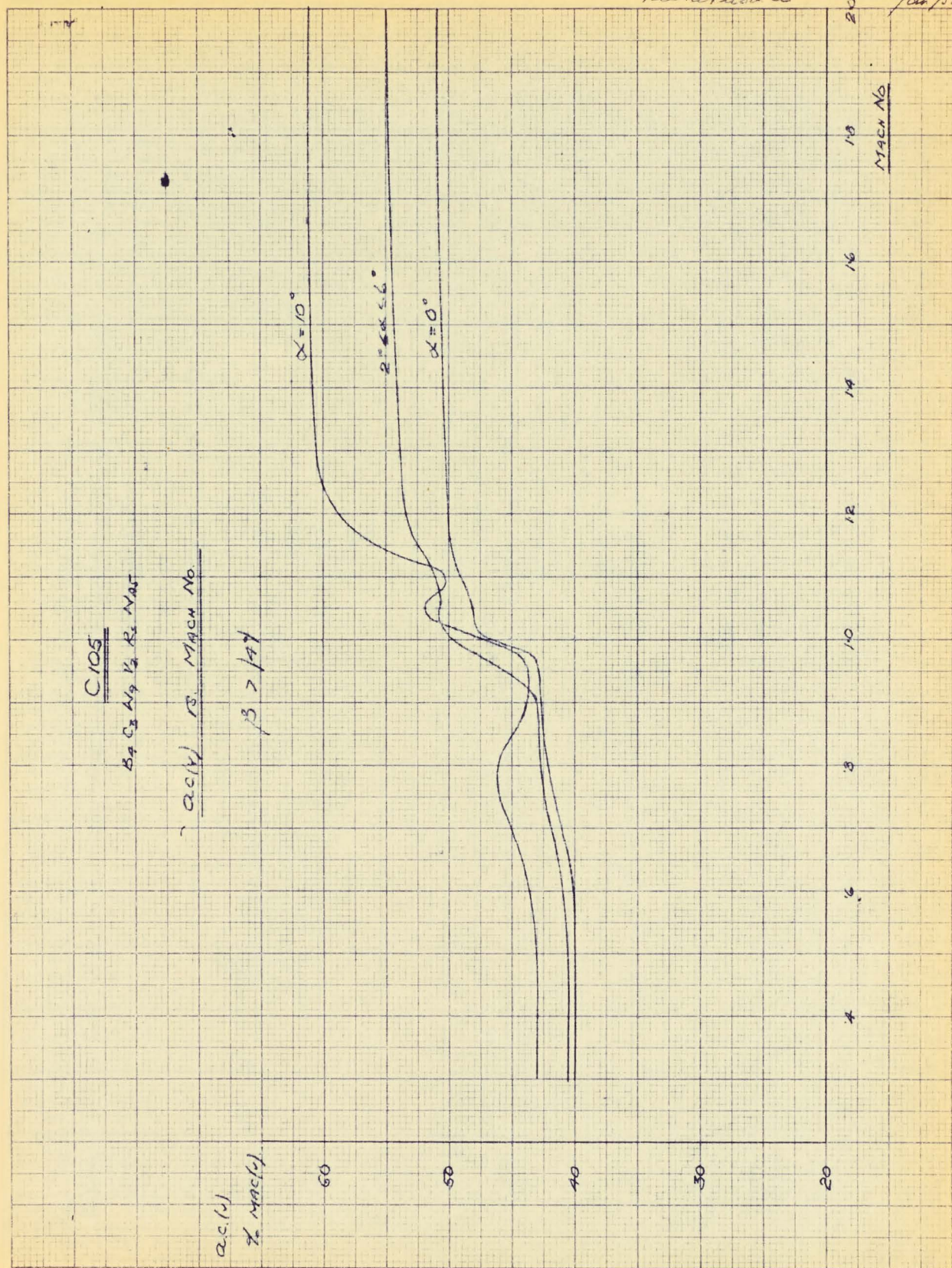


P/AERO DATA/42. 4.1.2.
Kluatkovski

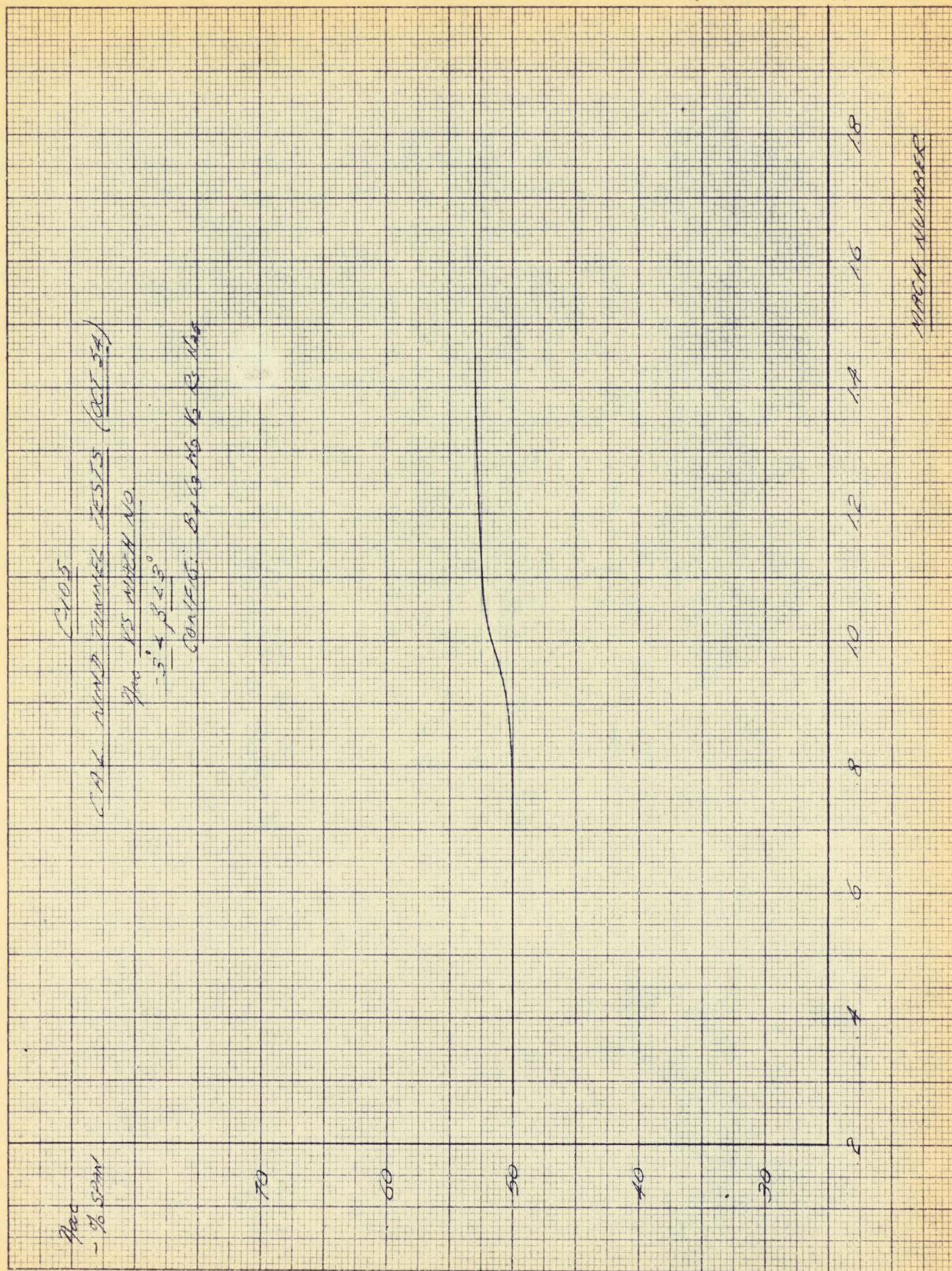


42.1. PAPER DATA / 42.
NOV. 54. CLARK.





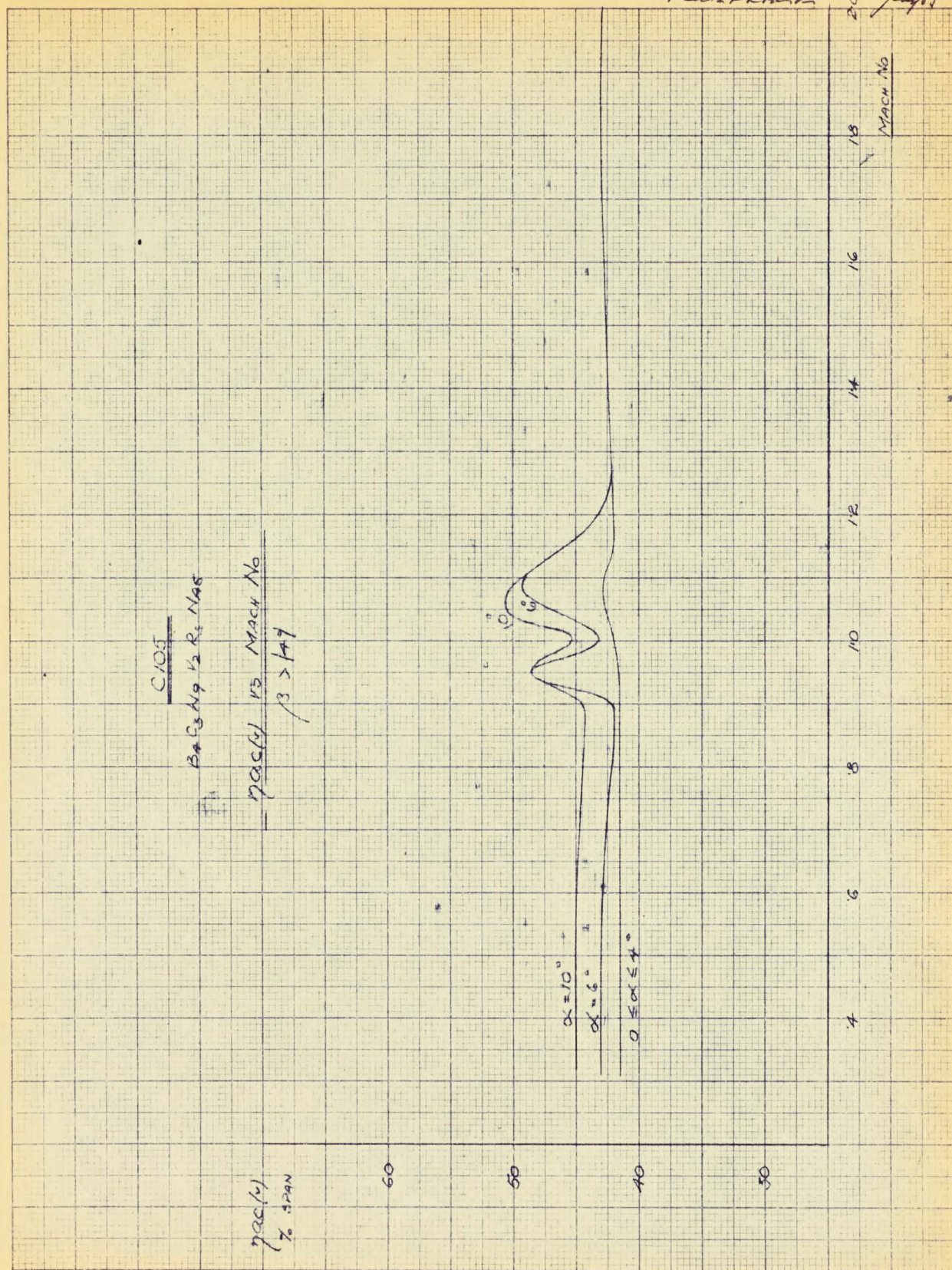
431. PAPER DATA 142.
NOV. 54. CLARK.



4.3.2.

P/AERO DATA / 42

Kinattromb. 20 *Jan 1955*



P/Stab/73
March 1953

1.6
CA-Ford. 5.2

C-105

Estimated Damping-in-Roll

Cp vs Mach No.

Cp
per radian.

-20

-15

-10

-05

0

4

8

12

16

20

24

28

32

36

Complete Aircraft
Rigid Extended Wing
All ~ cg positions
~ weights
~ Altitudes

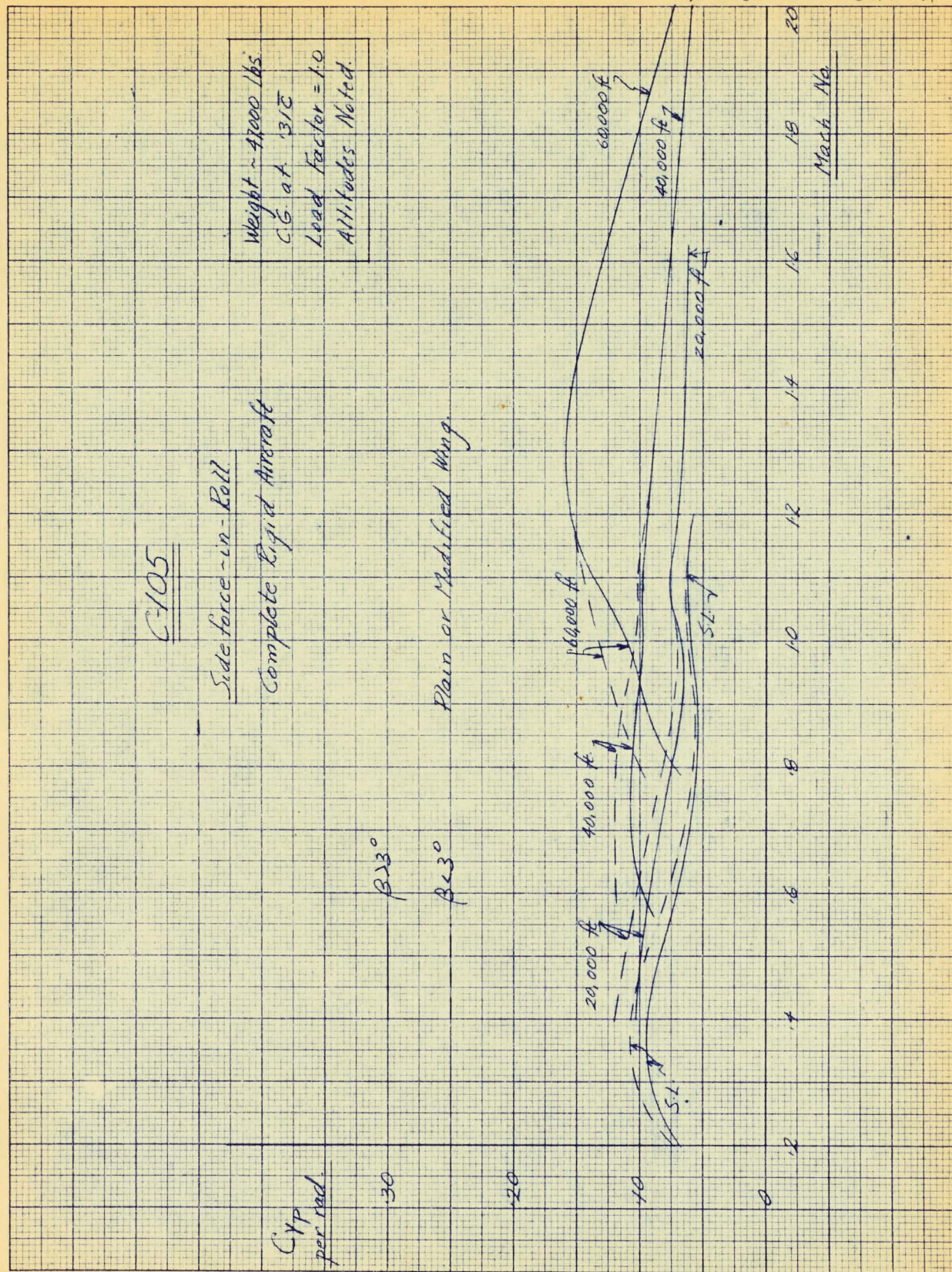
Mach No.

P/5tab/13

5.3 3.7

Mar 55.

C.A. Ford



6.1.1

P/Stalr/70 Sheet 38
1088. Mar 55

C-105

C_N (RIGID) VS MACH NO.

EXTENDED & PLAIN WING $|\beta| < 2^\circ$

S.G. AT 27% MAC

15% INCREASE IN FIN AREA

C_N

PER RADIAN

0 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0
MACH NO.

-0.05

$\alpha = 0^\circ$
 $\alpha = 2^\circ$
 $\alpha = 4^\circ$
 $\alpha = 6^\circ$

$\alpha = 0^\circ$
 $\alpha = 2^\circ$
 $\alpha = 4^\circ$
 $\alpha = 6^\circ$

-0.10

-0.15

C-105

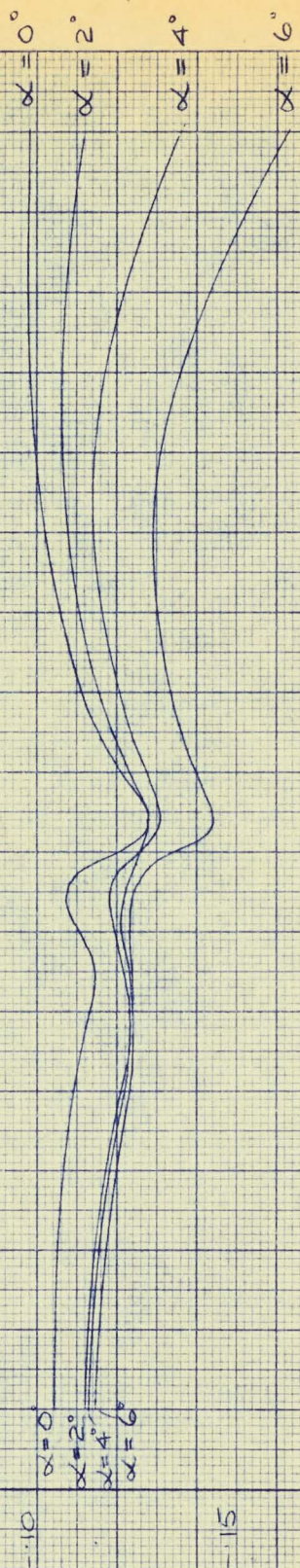
C_N (RIGID) VS MACH NO.
EXTENDED & PLAIN WING, $\beta = 3^\circ$

C.G. AT 27% MAC.
15% INCREASE IN FIN AREA

C_N
PER RADIAN

0 .4 .6 .8 1.0 1.2 1.4 1.6 1.8 2.0
MACH NO.

-05



6.1.2.

P/Stair/70 Sheet 33

Mar 55

G.I.4.

P/Stahl-70 Sheet 32

Mar 55

C-105

C_N (RIGID) VS MACH NO.

EXTENDED & PLAIN WING $1/4 > 3^\circ$

C_N
PER RADIAN

C.G. AT 31% M.A.C.

15% INCREASE IN FIN AREA

0

-0.05

-0.10

-0.15

0.4

0.6

0.8

1.0

1.2

1.4

1.6

1.8

2.0

MACH NO.

$\alpha = 0^\circ$

$\alpha = 2^\circ$

$\alpha = 4^\circ$

$\alpha = 6^\circ$

$\alpha = 0^\circ$

$\alpha = 2^\circ$

$\alpha = 4^\circ$

$\alpha = 6^\circ$

C-105

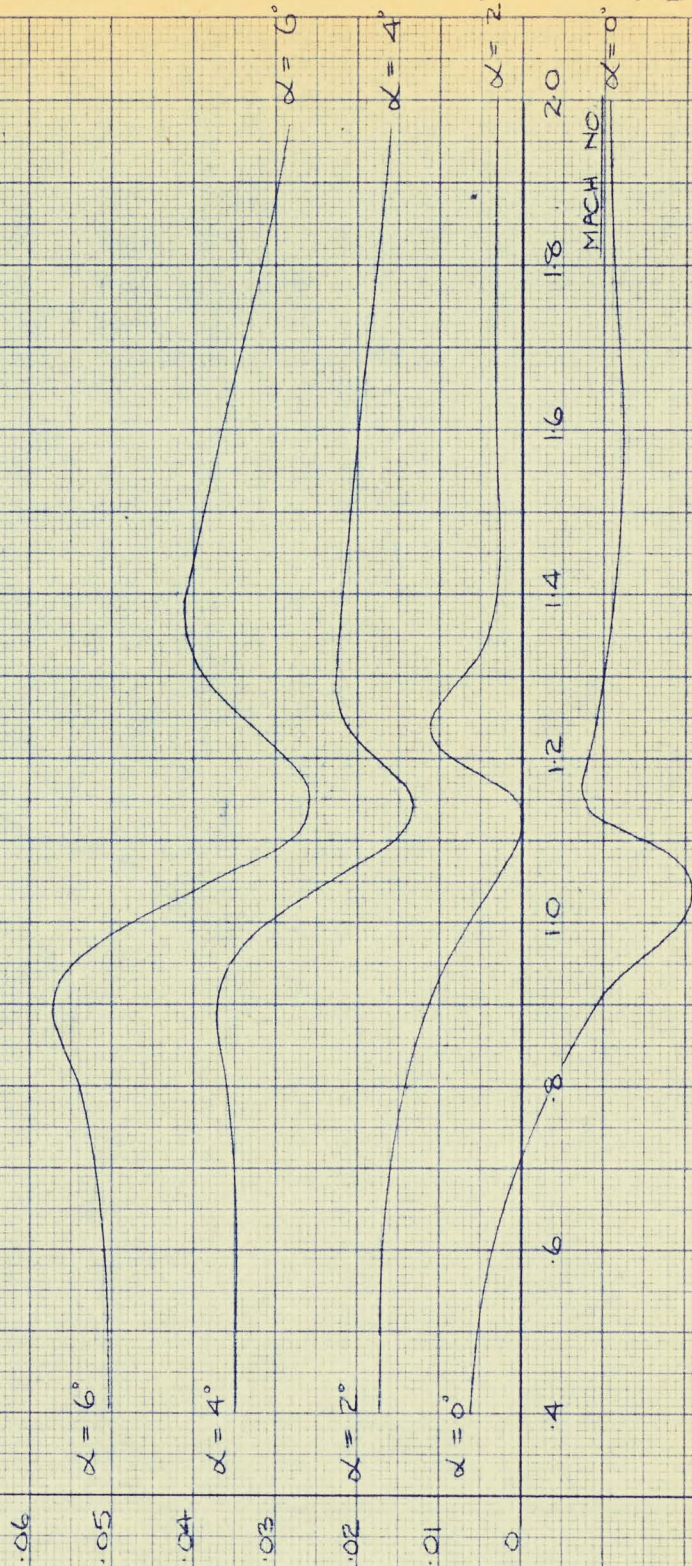
$C_{L\alpha}$ (RIGID) vs MACH NO.

EXTENDED & PLAIN WING

$|\beta| > 3^\circ$

$C_{L\alpha}$
PER RADIAN

C.G. AT 31% TO 27% M.A.C.
15% INCREASE IN FIN AREA

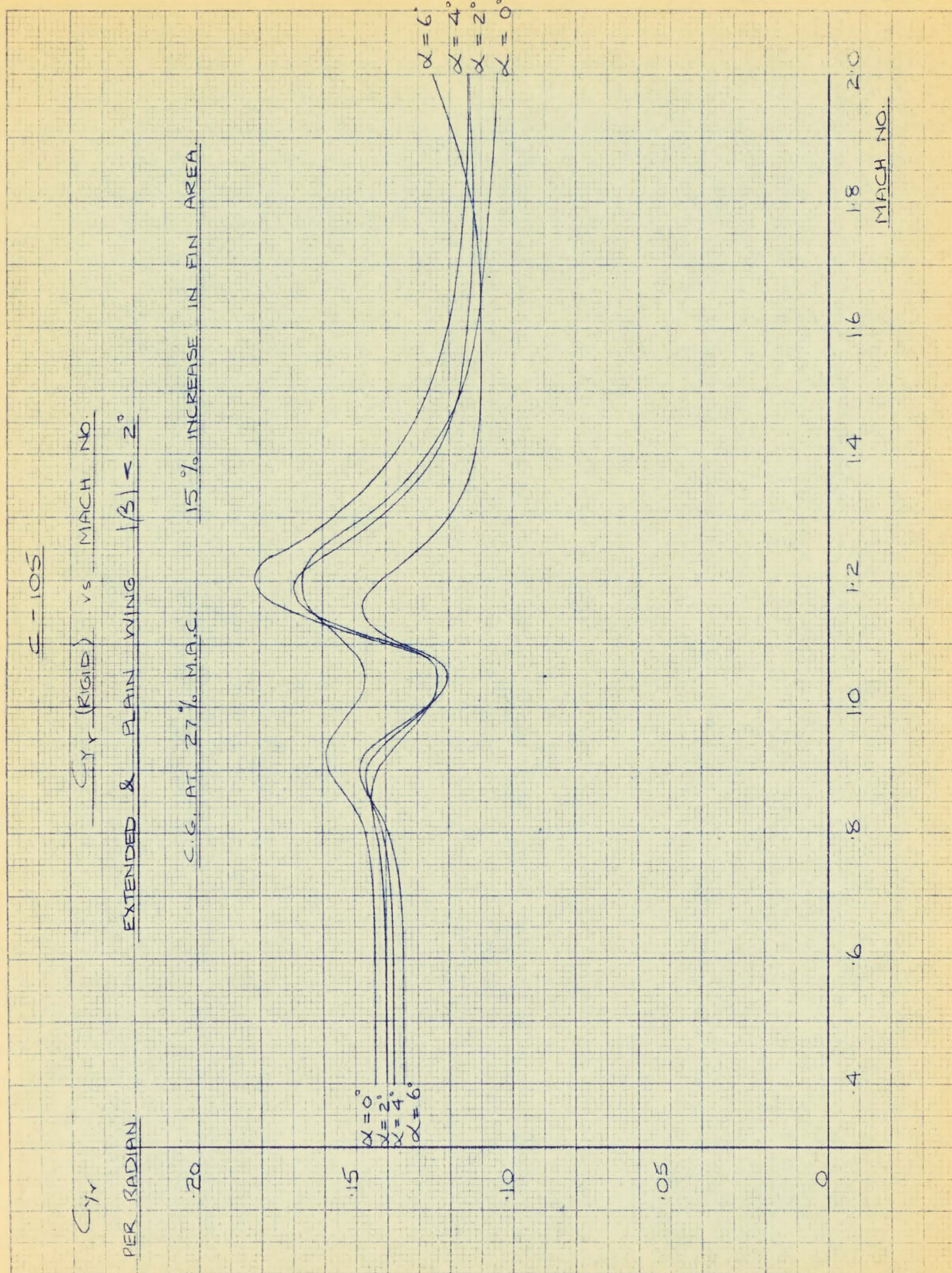


6.2.2.

P/Stair/70

Sheet 36

108. Mar '55



158. Mar '55.

