

QCX
Avro
CF105
P-AD-61

ANALYZED

C-105

P/Aero Data/61

LATERAL STABILITY DERIVATIVES

IN LEVEL FLIGHT

L.E. Droop, Notch and Extension

Copy (2)

July 1955

ANALYZED

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A. V. ROE CANADA LIMITED
MILTON - ONTARIO

TECHNICAL DEPARTMENT (Aircraft)

AIRCRAFT: C-105

REPORT No. P/Aero Data/61

FILE NO.

NO. OF SHEETS: _____

TITLE:

Classification cancelled / Changed to UNCLASS
By authority of AVES
Date 27 Sept 96
Signature APSL
Unit / Rank / Appointment AVES 5

C-105

ELASTIC LATERAL STABILITY DERIVATIVES IN LEVEL FLIGHT

L.E. Droop, Notch and Extension

PREPARED BY

DATE July 1955

CHECKED BY

DATE

SUPERVISED BY

DATE

APPROVED BY

DATE

ISSUE No	REVISION No	REVISED BY	APPROVED BY	DATE	REMARKS

TECHNICAL DEPARTMENT Aircraft

C-105

July 1955

INDEXC-105 ELASTIC LATERAL DERIVATIVES IN LEVEL FLIGHT1. Aileron Derivatives and Hinge Moments

$C_{l\delta_a}$	1.1
$C_{n\delta_a}$	1.2
$C_{y\delta_a}$	1.3
$C_{h\delta}$	1.4
$C_{h\dot{\delta}}$	1.5
$C_{h\delta}$	1.6

2. Rudder Derivatives and Hinge Moments

$C_{n\delta_r}$	2.1
$C_{l\delta_r}$	2.2
$C_{y\delta_r}$	2.3
$C_{h\dot{\delta}}$	2.4
$C_{h\delta}$	2.5

3. Sideslip Derivatives

$C_{n\beta}$	3.1
$C_{l\beta}$	3.2
$C_{y\beta}$	3.3



AVRO AIRCRAFT LIMITED

TECHNICAL DEPARTMENT (Aircraft)

REPORT NO. P/Aero Data/61

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AIRCRAFT

C-105

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DATE

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CHECKED BY

DATE

4. Yawing Derivatives C_{n_r} 4.1 C_{l_r} 4.2 C_{y_r} 4.35. Rolling Derivatives C_{n_p} 5.1 C_{l_p} 5.2 C_{y_p} 5.3

C105
ELASTIC C₁₀₅ VS MACH No.

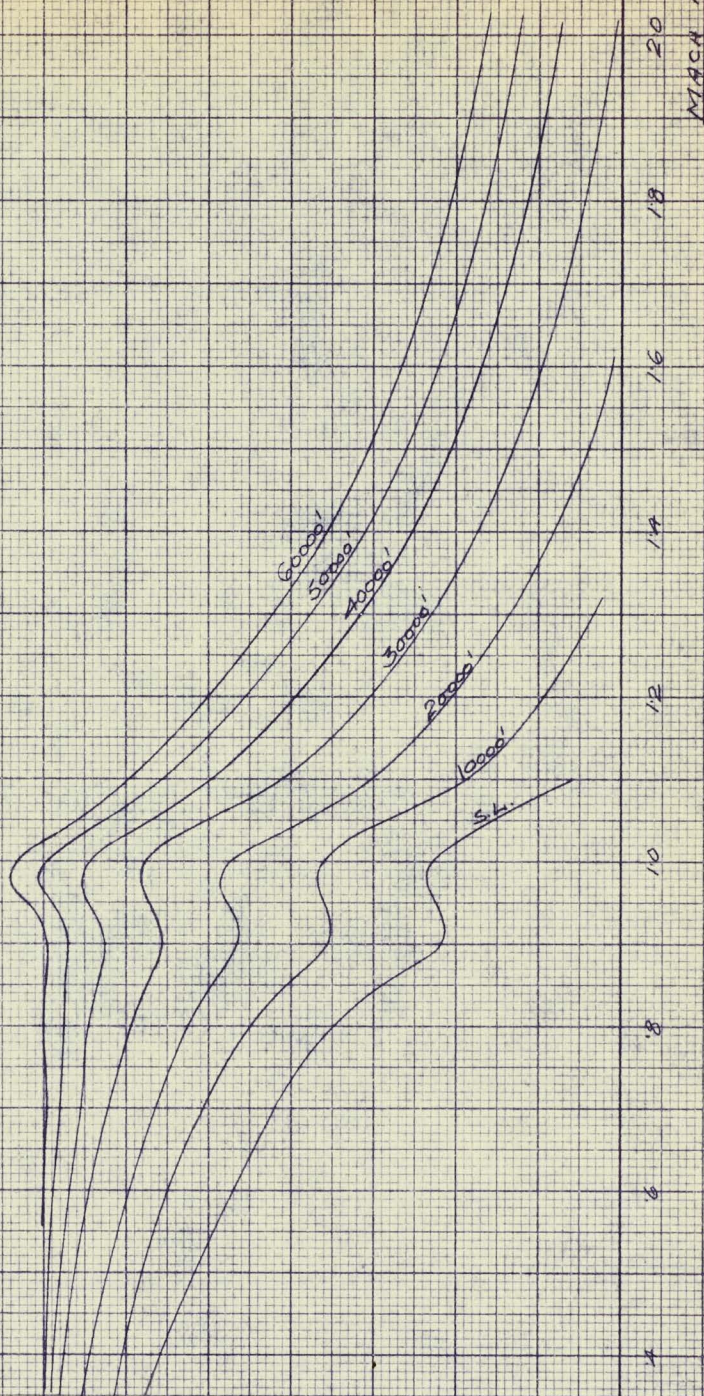
* ALL FLIGHT CONDITIONS
WING NOTED & EXTENDED

C₁₀₅
PER 2"
INCLUDED

-0005

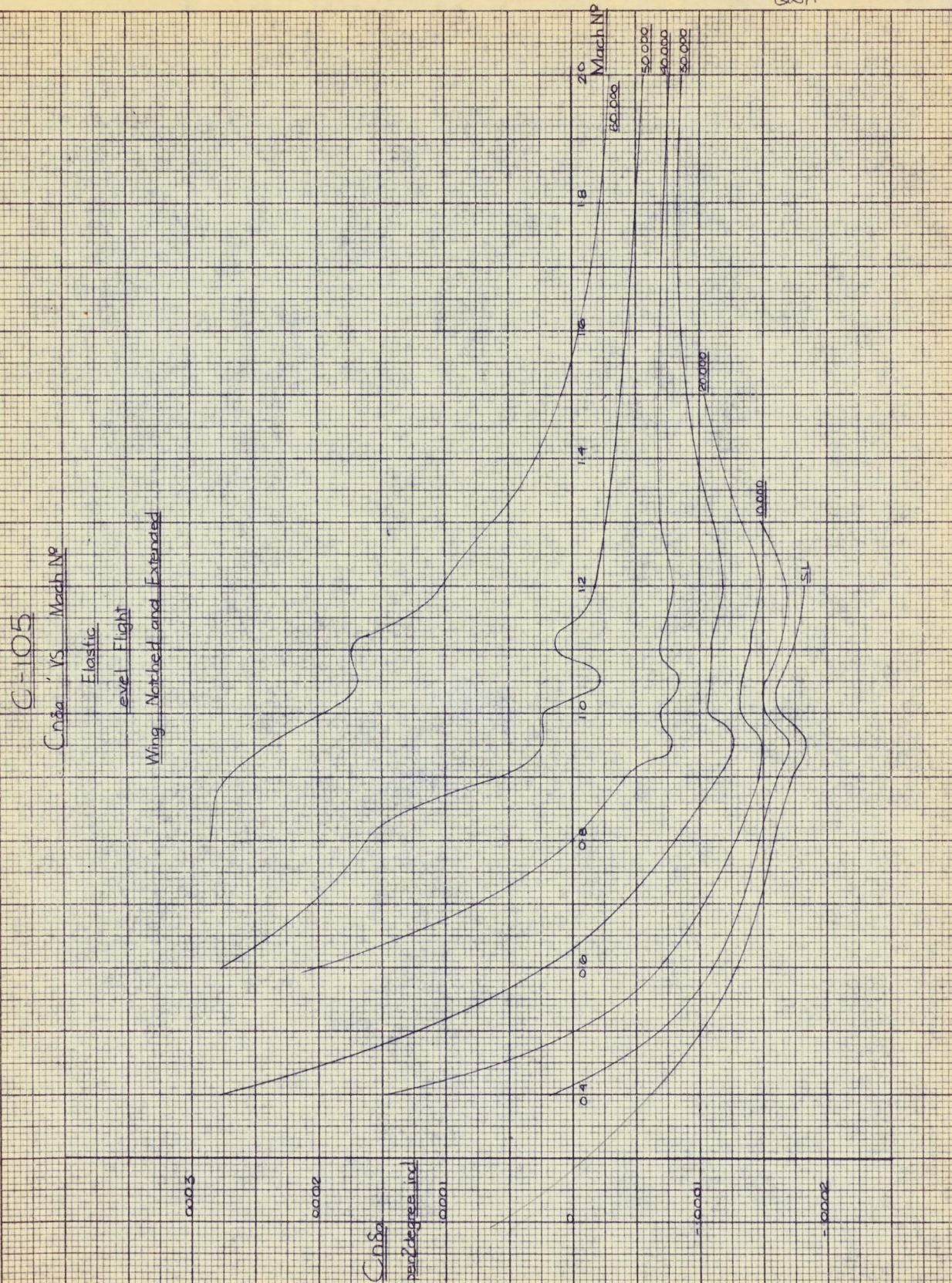
-0010

-0015



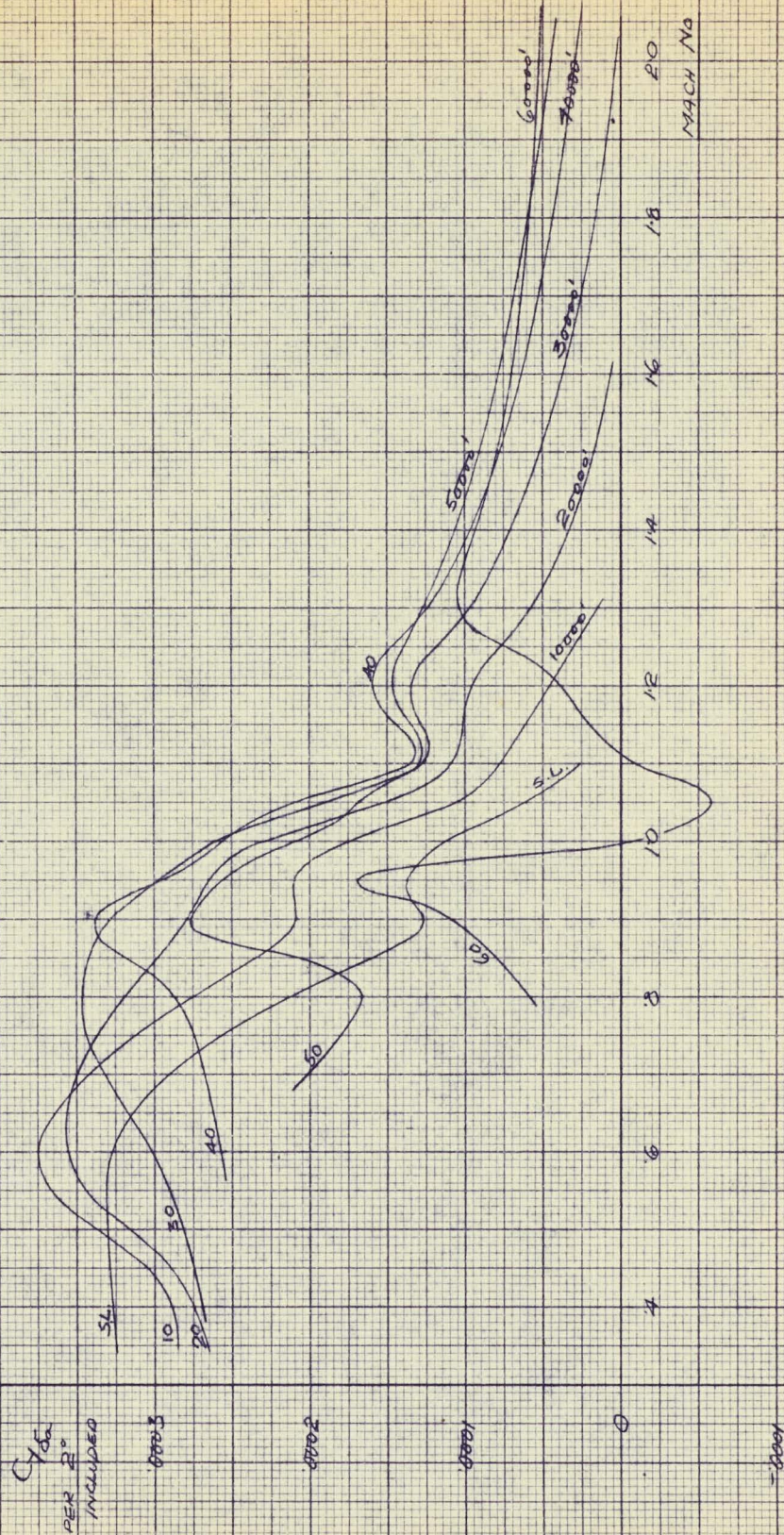
MACH No

P/AERO DATA/61 - 1.1.
April 15 Kwaikheul



P/AERO DATA/61 1.8.
Hard/ST Kuntzheim

C105
ELASTIC CYCLE VS MACH No
IN LEVEL FLIGHT
WINGS NOTCHED & EXTENDED



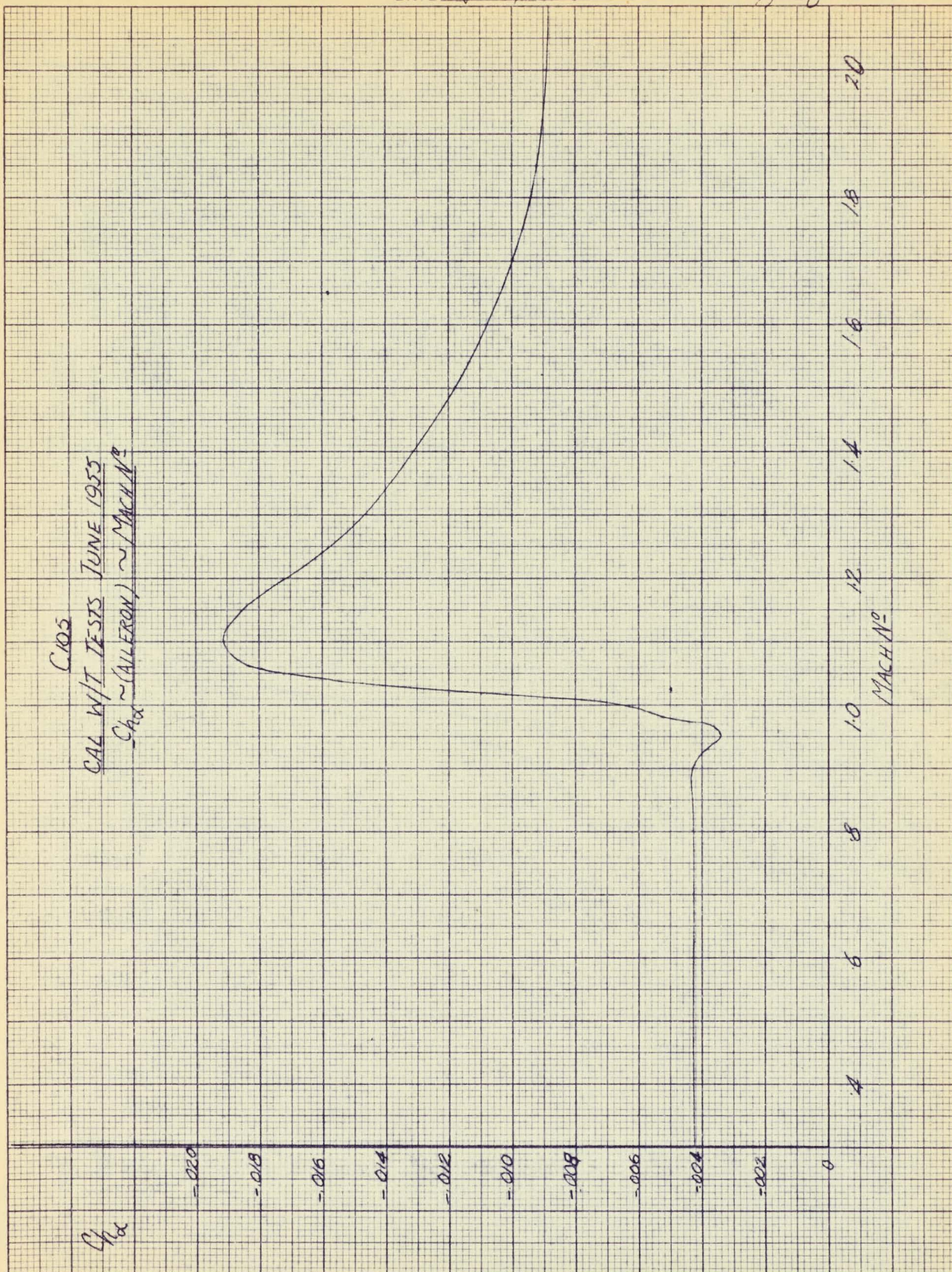
AIRCRAFT
A. U. W.

COMPONENT

SHEET NO. 1.5
DATE July, 1958

REPORT NO. P/AERO DATA/61
PREP. BY Galegowski

C105
CAL W/T TESTS JUNE 1953
 $C_{L\alpha}$ ~ (AILERON) ~ MACH N°



AIRCRAFT
A. U. W.

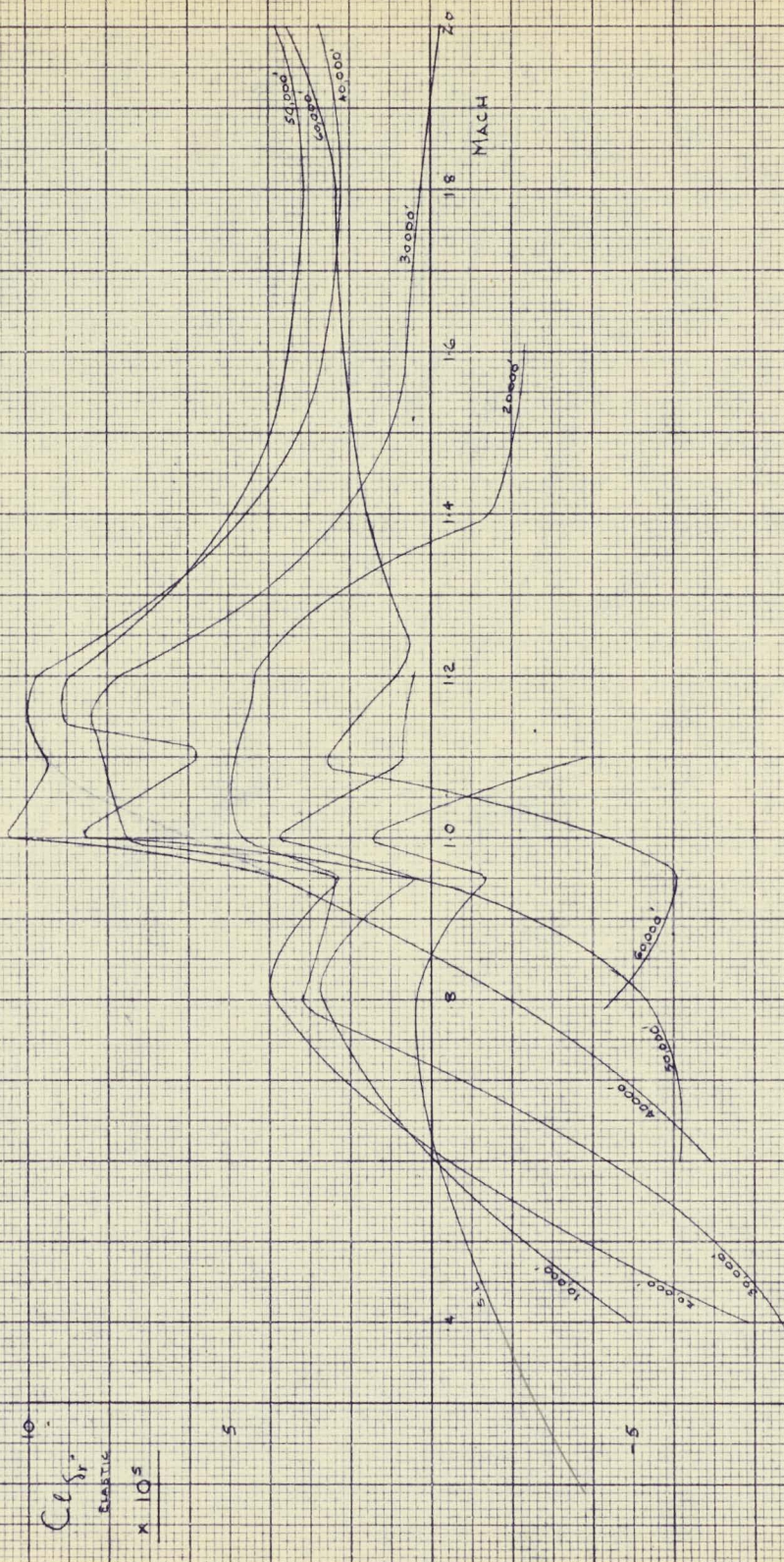
COMPONENT

SHEET No. 2.2
DATE July 1955

REPORT No. PIAERO DATA/61
PREP. BY JLB

CLOS
CAL W/T TESTS JUNE 55
 $C_{L_{SRE}}$ VS MACH No.

$C_{L_{SRE}}$
ELASTIC
 $\times 10^5$



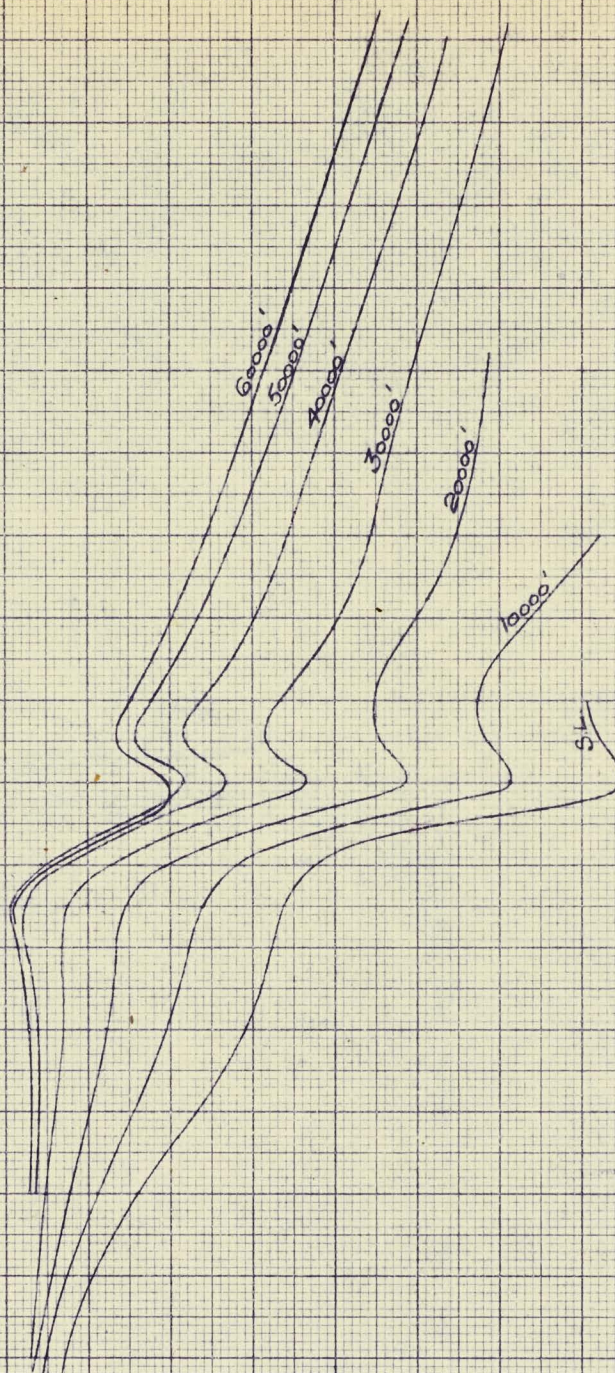
C105
ELASTIC $C_{Y_{\delta_2}}$ IN LEVEL FLIGHT
L.E. DROOP, NOTCH & EXTENSION.

$C_{Y_{\delta_2}}$
PER DEG

0005

0010

0005



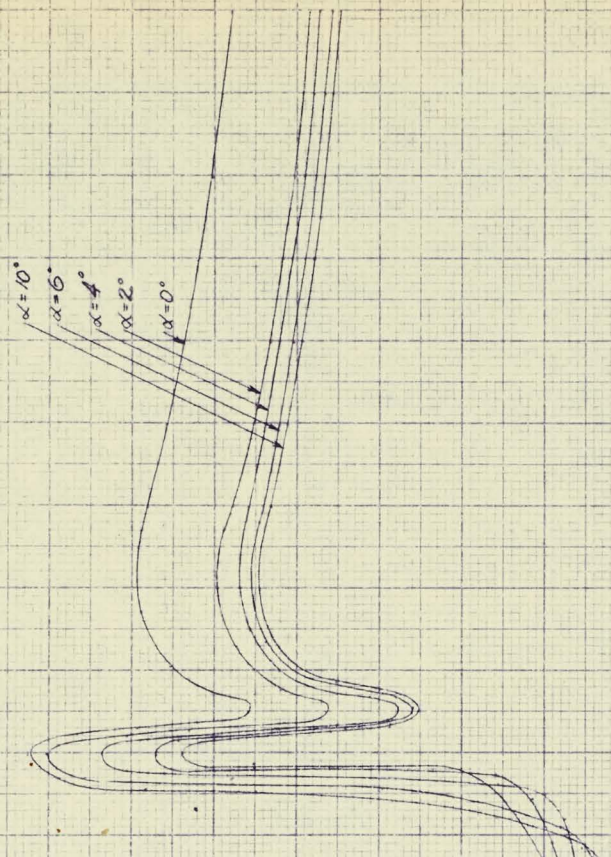
4 6 8 10 12 14 16 18 20
MACH NO

2.4 P/HERODATA/61
July 155 Gulegowski

C-105
CAL W/T TESTS JUNE 1955
C_{h3} (RUDDER) ~ MACH N²
-5 < β < +5

C_{h3}

01
009
008
007
006
005
004
003
002
001
0

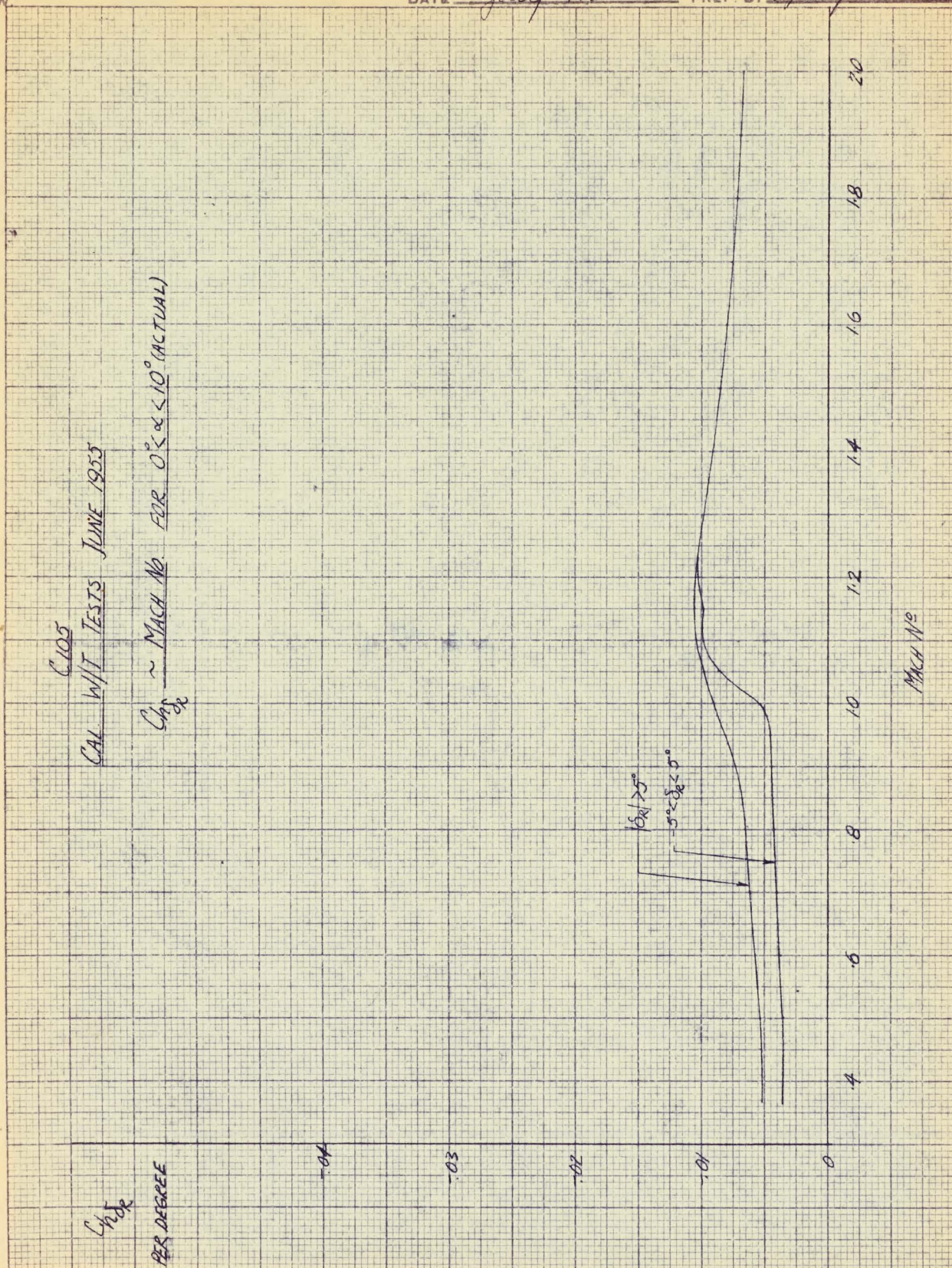


20
18
16
14
12
10
8
6
4
MACH N²

K
10 X 10 TO THE ½ INCH
359-12
MADE IN U.S.A.
KEUFFEL & ESSER CO.

REPORT NO. P/AD/61

PREP. BY Suley onaka



FORM 1746

AIRCRAFT C-105
A. U. W.

COMPONENT

SHEET No. 33.

REPORT No. P/Aero Data/ 61

DATE VISS

PREP. BY PRIDMORE

C-105

CYCLE VS MACH NO.

ELASTIC A/C - WING NOTCHED, EXTENDED & DROPPED

Cycle
per deg.

0.010

0.008

0.006

0.004

0.002

0

SL
10000'
20000'
30000'
40000'
50000'
60000'

MACH No.

2

4

6

8

10

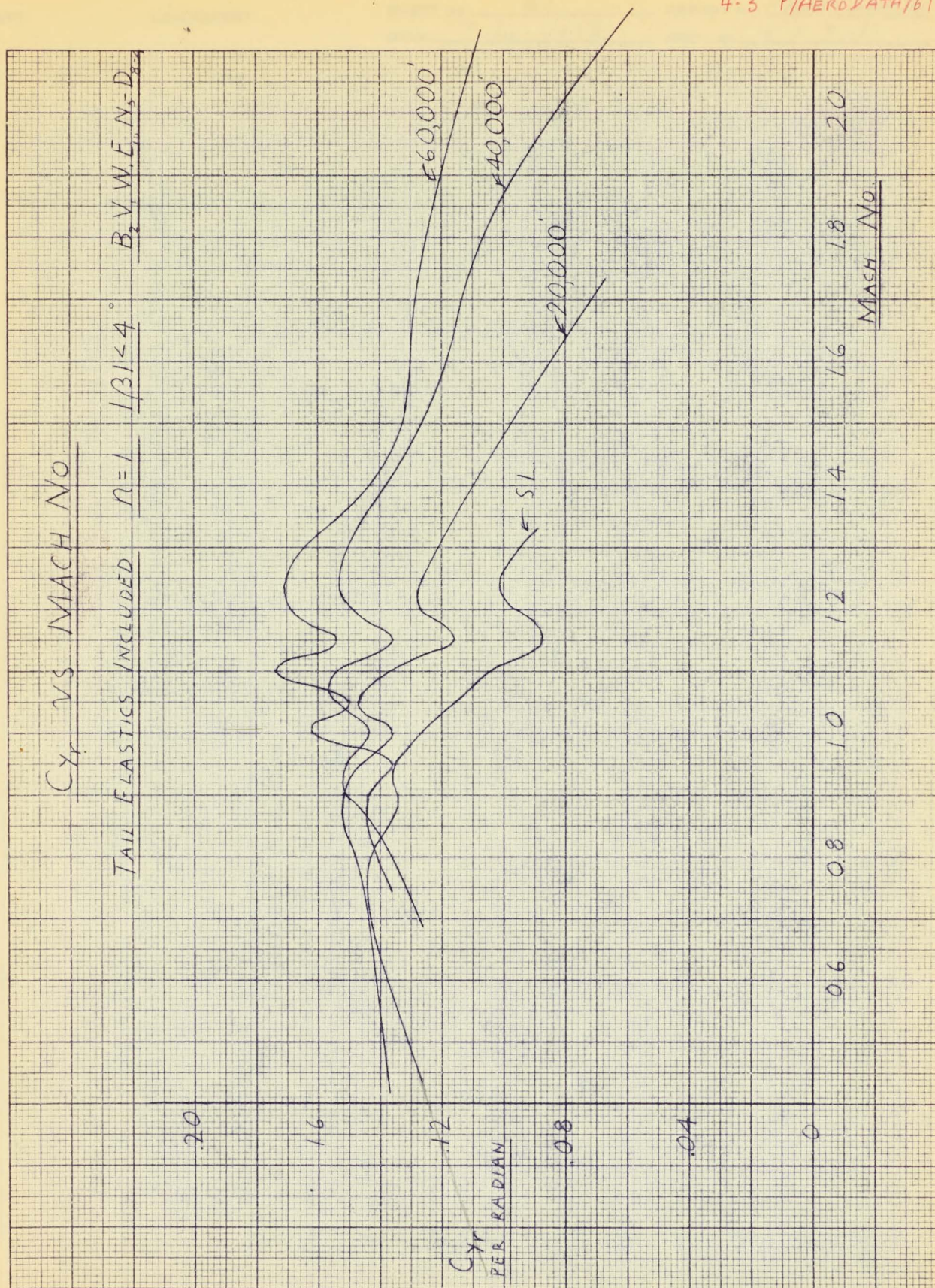
12

14

16

18

20



AIRCRAFT
A. U. W.

COMPONENT

SHEET NO. 51.

REPORT NO. P/AERO DATA/61

DATE July 1955

PREP. BY E. R. Fish.

C-105

AEROELASTIC YAW DUE TO ROLL $\beta < 3^\circ$

$C_{n\beta}$ vs MACH No.

$C_{n\beta}$ PER RADIAN

COMPLETE AIRCRAFT
LOAD FACTOR = 1
WEIGHT = 47,000 lbs.
C.G. AT .312

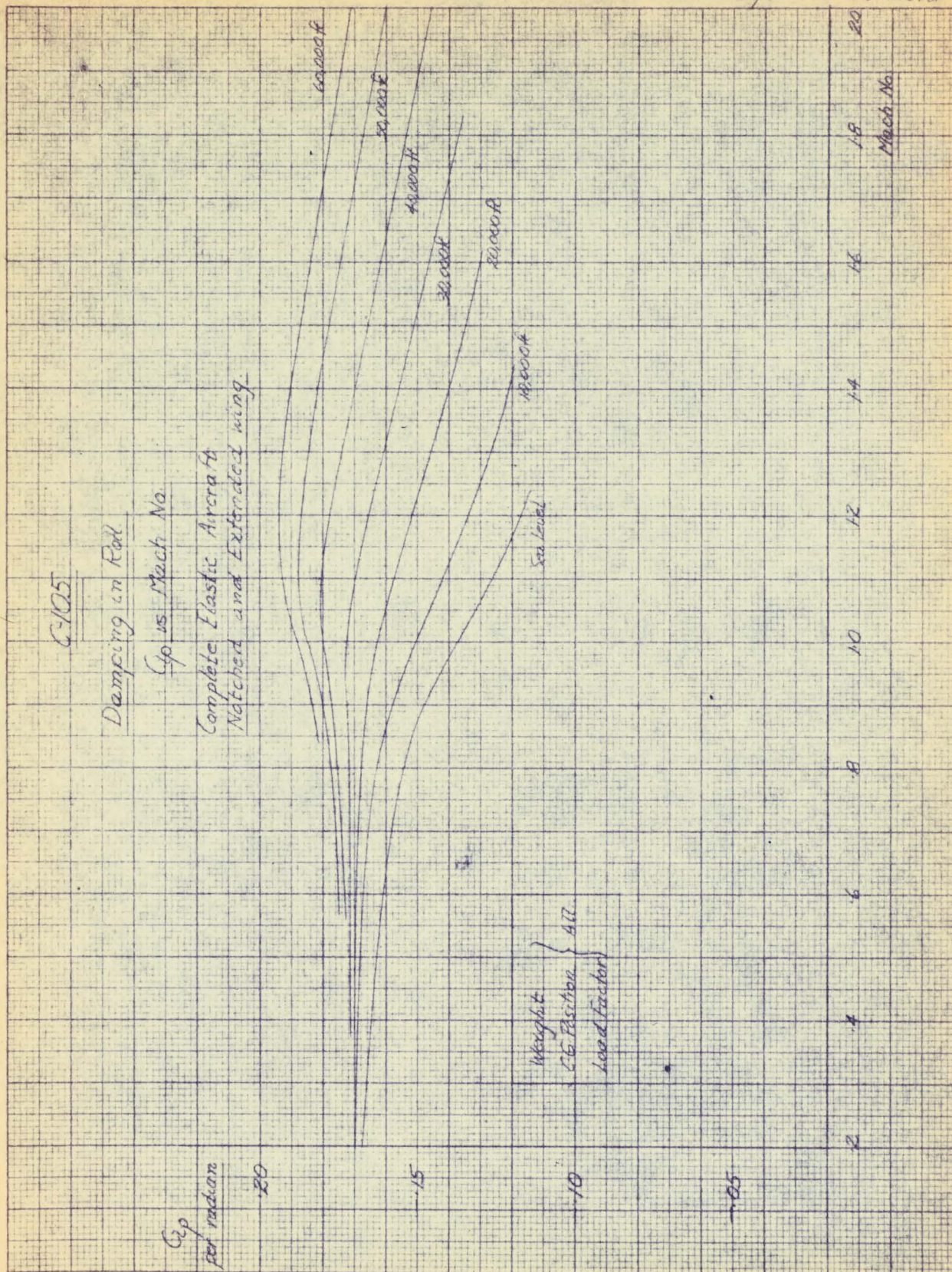
SEA LEVEL

20,000 ft

40,000 ft

60,000 ft

MACH No. 2.0
1.8
1.6
1.4
1.2
1.0
.8
.6
.4
2
-2
-4
-6
-8
-10



AIRCRAFT
A. U. W.

COMPONENT

SHEET No. 5.3.
DATE July 1955

REPORT No. P/NERO DATA/61
PREP. BY E. R. Felt

KE 10X10 TO THE 1/2 INCH
KEUFFEL & ESSER CO.
MADE IN U.S.A.

COMPLETE AIRCRAFT
LOAD FACTOR = 1
WEIGHT = 47,000 lb
C.G. at 312

$C = 105$

AEROELASTIC SIDE FORCE DUE TO ROLLING $13/13^\circ$

C_{Y_e} VS MACH No.

C_{Y_e} per radian

30

60,000 lb

40,000 lb

20,000 lb

SEP LEVEL

20

18

16

14

12

10

8

6

4

2

MACH No.

FORM 1746

