

QC
Avro
C-105
P-WT/20
Vol. II

QCX
Avro
CF105
P-WT-20
V.2

(24)

FILE IN VAULT

C-105

P/WIND TUNNEL/20

DERIVATIVES AND ZERO VALUES

VOLUME II

ANALYZED

LATERAL STABILITY

Copy No. 2

June 1954.

UNCLASSIFIED



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Canada

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ANALYZED

TO
A

DATE

Dec. 7, 1992

Report no.: QCX - AVRO - CF105- P-WT-20 V.2

has been ☐ downgraded to: _____
☒ de-classified

by (Name): Michel W. Drapeau

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

Date: Dec. 7, 1992

R. Drapeau
Signature



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12416802



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A. V. ROE CANADA LIMITED
MALTON - ONTARIO

TECHNICAL DEPARTMENT (Aircraft)

AIRCRAFT: C-105

REPORT NO. P/WIND TUNNEL/20

FILE NO:

NO. OF SHEETS:

TITLE:

DERIVATIVES AND ZERO VALUESVOLUME IILATERAL STABILITYClassification ~~cancelled~~ ^{confirmed as:} changed to: UNCLASSIFIED

By authority of: DRDA 7/DARFT 5-8/DAS Eng 6-4-5

Date: 5 Nov 1992

Signature: B. Aubrey

Unit / Rank / Appointment: DSIP 3, Secretary CRAD HQ DRP

PREPARED BY

DATE June 1954.

CHECKED BY

DATE

SUPERVISED BY

DATE

APPROVED BY

DATE

ISSUE NO.	REVISION NO.	REVISED BY	APPROVED BY	DATE	REMARKS

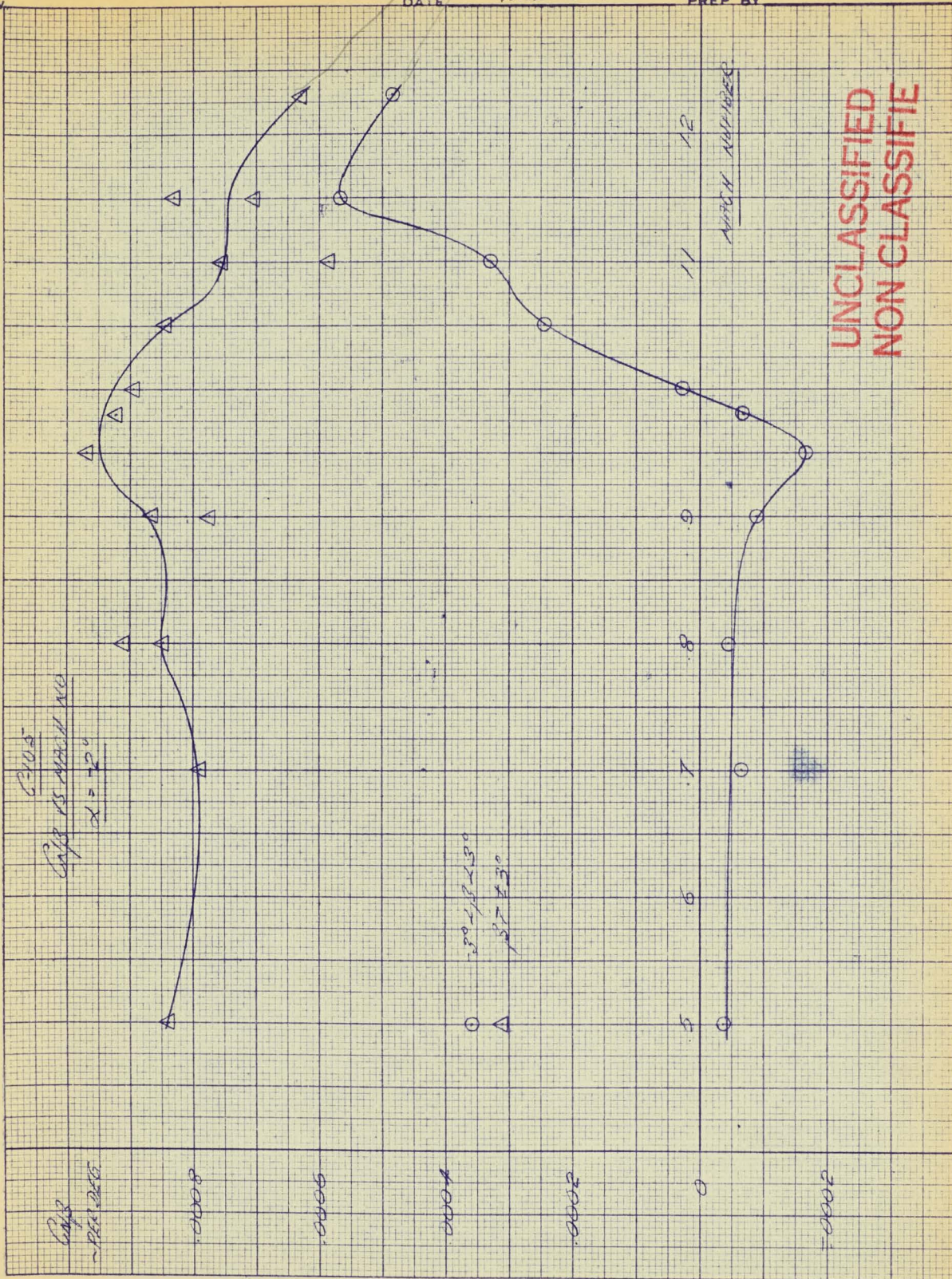
AIRCRAFT
A. U. W.

COMPONENT

SHEET No. 1111
DATE JUNE 24

REPORT No. P/N T/20
PREP BY 62ARK

359-12 KEUFFEL & ESSER CO.
10 X 10 to the 1/2 inch, 5th times accounted.
MADE IN U.S.A.



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NON CLASSIFIE

AIRCRAFT
A. U. W.

COMPONENT

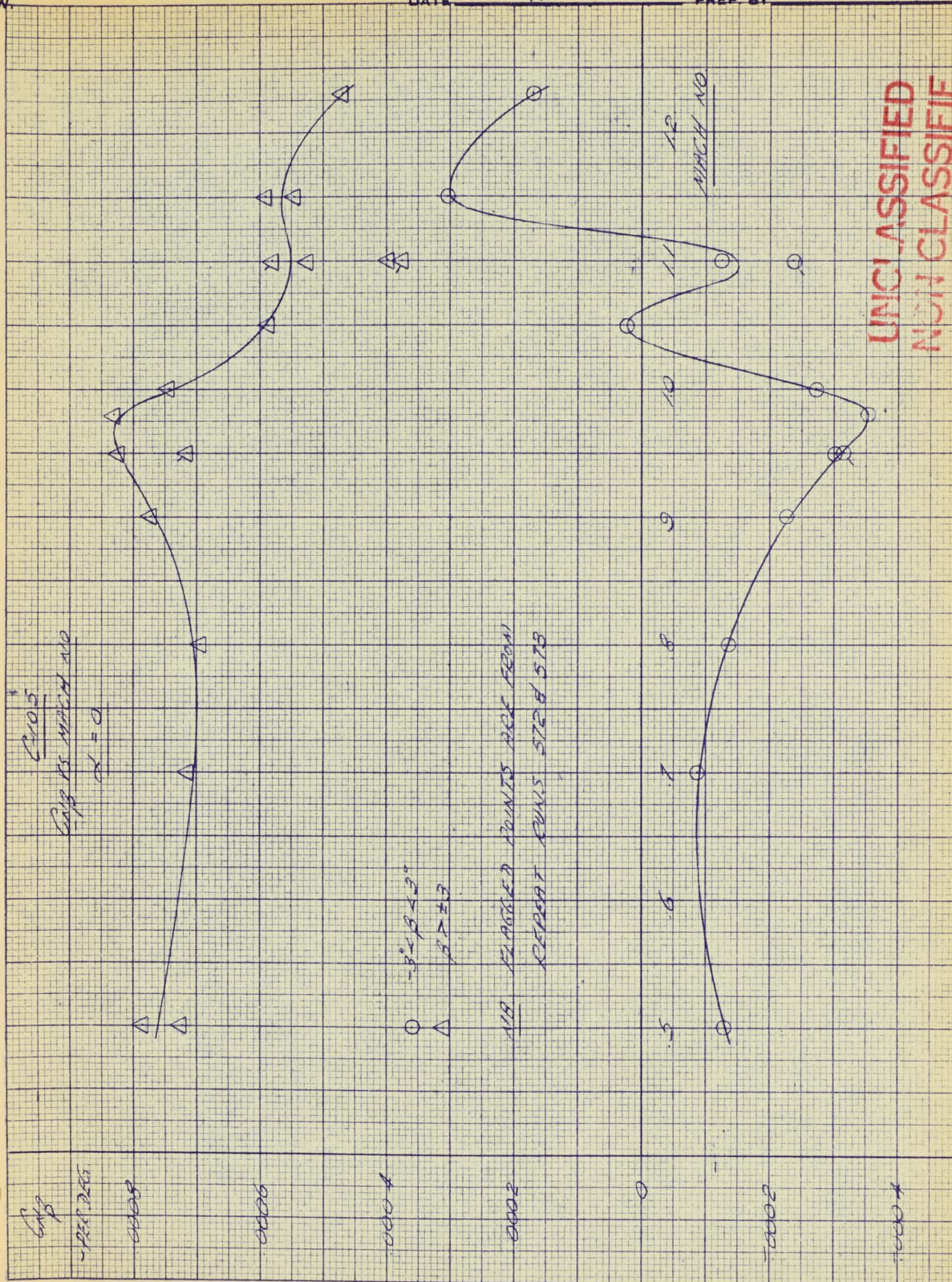
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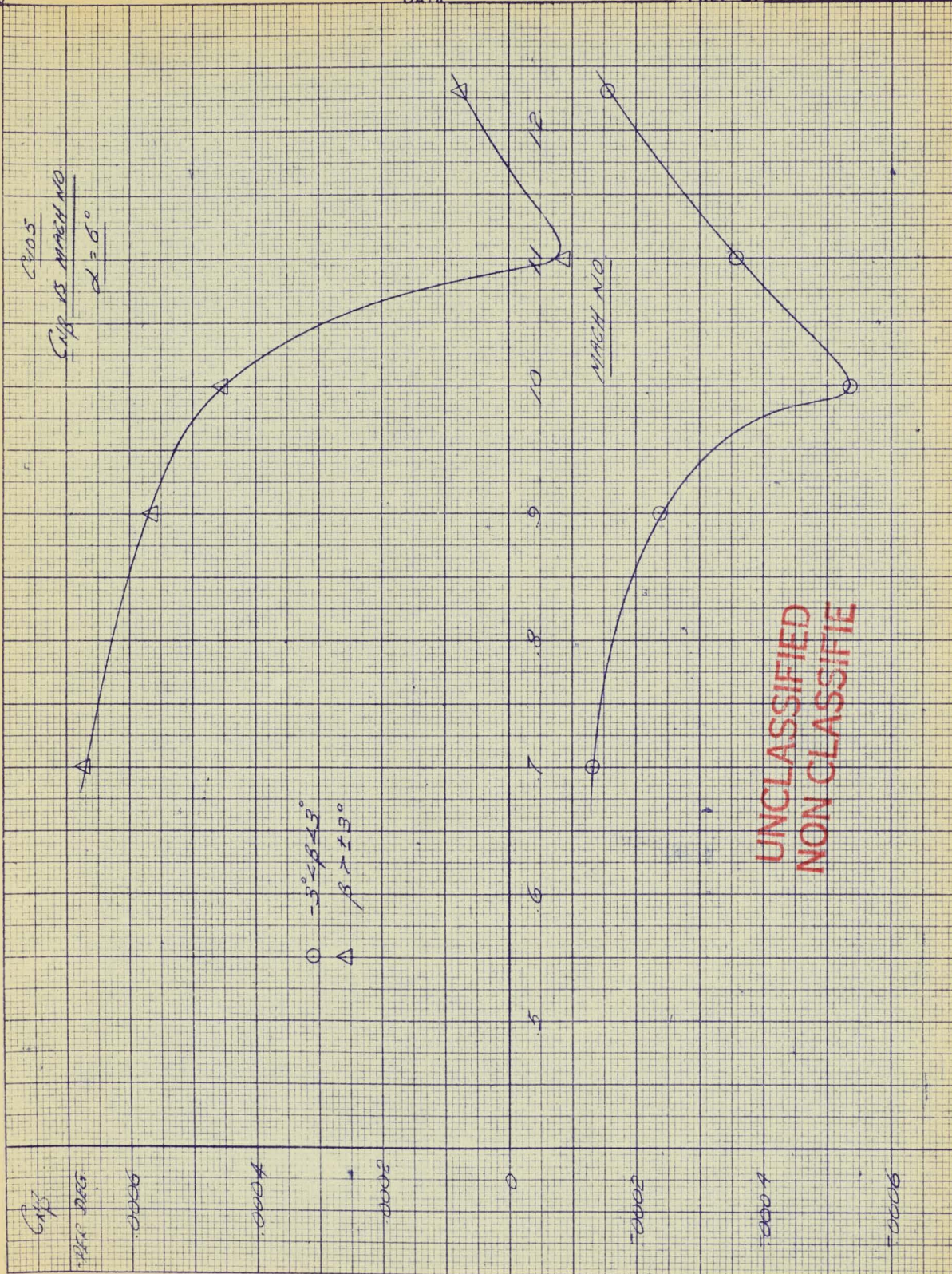
REPORT No. P/W.T/20

DATE JUNE 54

PREP BY CLARK

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A. U. W.

COMPONENT

SHEET No. 1.132.

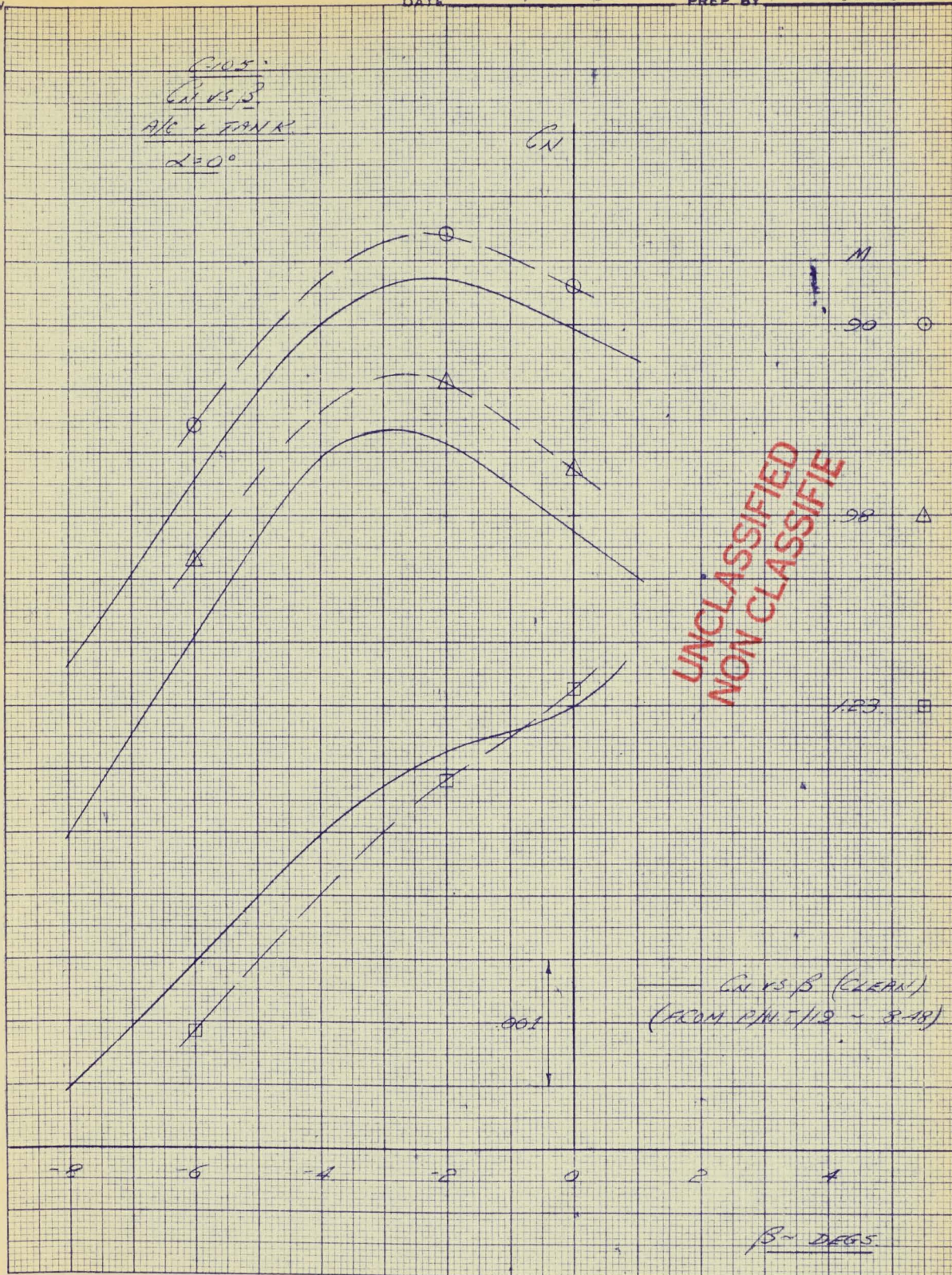
REPORT No. P/W.T/20

DATE JUNE 5-1

PREP BY CLARK.

C_{105}
 $C_{105, \beta}$
A/C + FANK
 $\alpha = 0^\circ$

C_N



AIRCRAFT
A. U. W.

COMPONENT

SHEET No. 1-14-1

REPORT No. P/W.T. 120

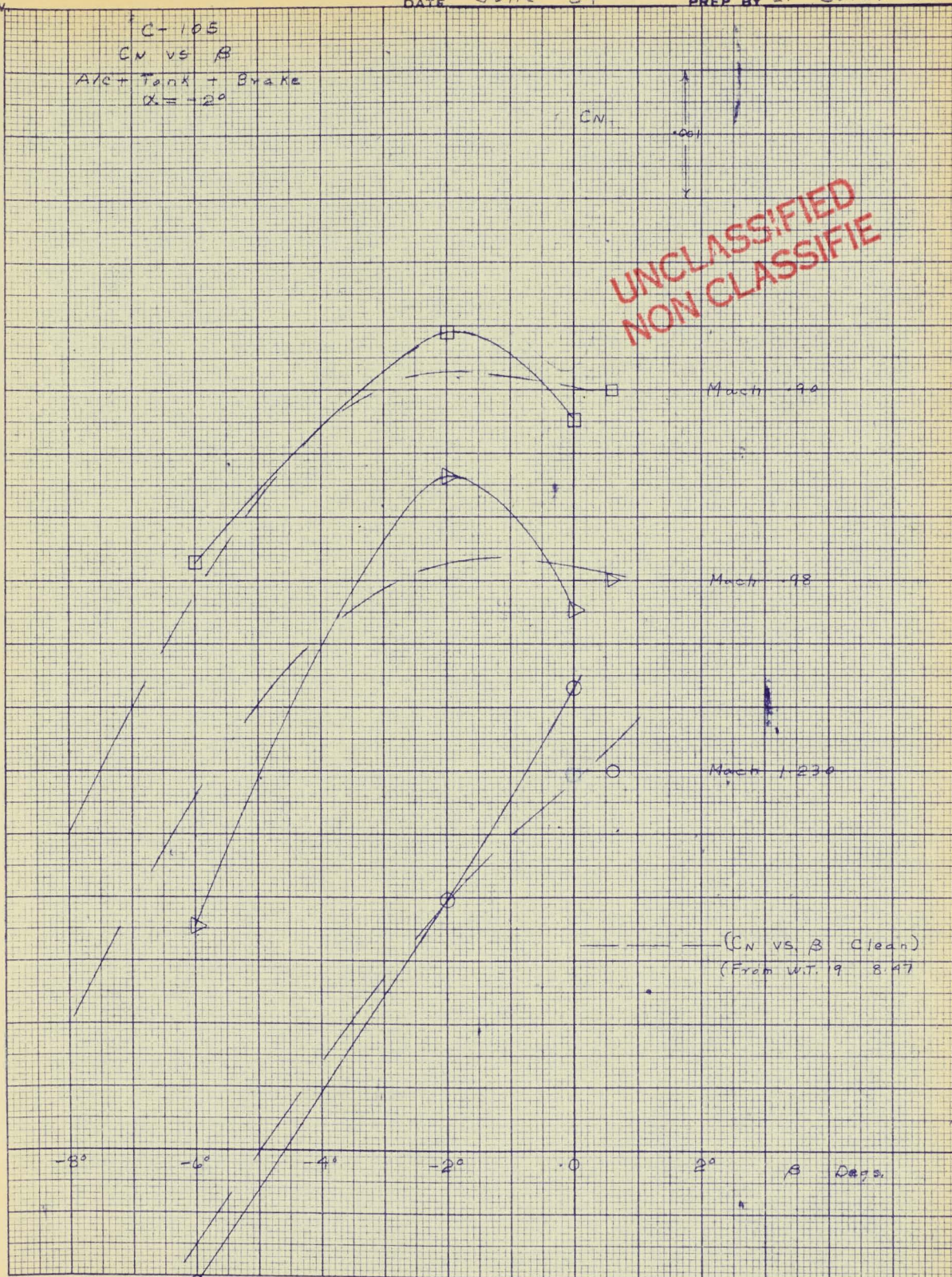
DATE June '59

PREP BY L. Cutcliffe

C-105
CN vs β
A/C + Tank + Brake
 $\alpha = -20^\circ$

CN

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359-12 KEUFFEL & ESSER CO.
10 x 10 to the 1/2 inch, 5th lines accented.
MADE IN U.S.A.

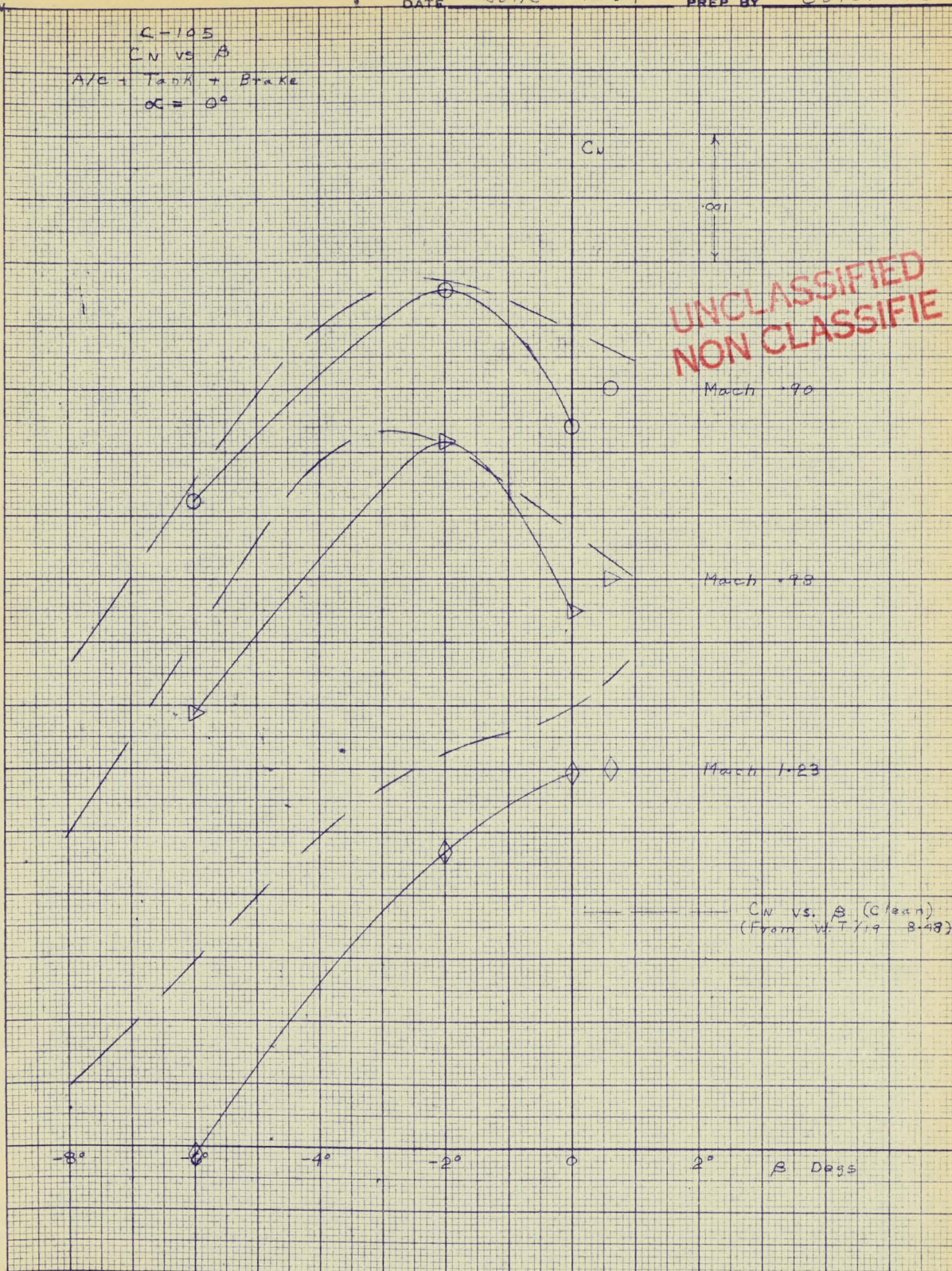
AIRCRAFT
A. U. W.

COMPONENT

SHEET No. 1-1-4-2
DATE June 1954

REPORT No. P/W.T./20
PREP BY Cutcliffe

C-105
C_N vs β
A/C + Tank + Brake
 $\alpha = 0^\circ$



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NON CLASSIFIE

359-12 KEUFFEL & ESSER CO.
10 X 10 to the 1/2 inch, 5th lines accented.
MADE IN U.S.A.

AIRCRAFT
A. U. W.

COMPONENT

SHEET NO. 1-1-4-3

REPORT NO. F/W.T. 20

DATE June 1959

PREP BY L. Cutcliffe

C-105
CN vs β
A/C + Tank + Brakes
 $\alpha = +2^\circ$

CN

0.001

Mach .90

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Mach .98

Mach 1.25

CN vs β (Clean)
(From W.T. 19, 8.50)

β Degs.

350-12 REUFEL & ESSER CO.
10 X 10 10 for 1/2 inch. 5th line account.
MADE IN U.S.A.

AIRCRAFT
A. U. W.

COMPONENT

SHEET No. 1211

REPORT No. P/WT/20

DATE 4-V-54

PREP BY [Signature]

C-105

C.A.L. WIND TUNNEL TESTS

$C_{L\beta}$ vs M

$\alpha = -2$

$C_{L\beta}$
PER DEGREE

-0.0006
-0.0004
-0.0002
0
+0.0002
+0.0004
+0.0006
+0.0008
+0.0010
+0.0012

M

1.2

1.1

1.0

.9

.8

.7

.6

.5

○ TAIL ON
○ TAIL OFF

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AIRCRAFT

COMPONENT

SHEET No. 1-2-2-2

REPORT No. P/W.T. 129

A. U. W.

DATE June 1959

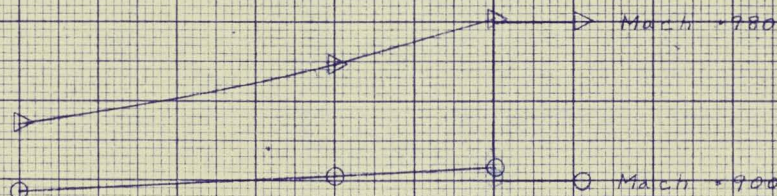
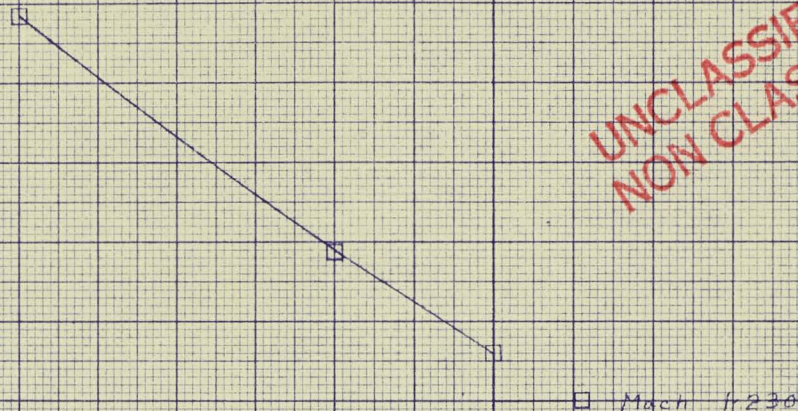
PREP BY L. Cutcliffe

G-105
 C_L vs β
 A/c + Tank
 $\alpha = 0^\circ$

 C_L

0.001

UNCLASSIFIED
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-8° -6° -4° -2° 0 2° β Degs

AIRCRAFT C-105 COMPONENT
A. U. W.

SHEET No. 1-2-2-3

REPORT No. P/w. T. 199

DATE June 1954

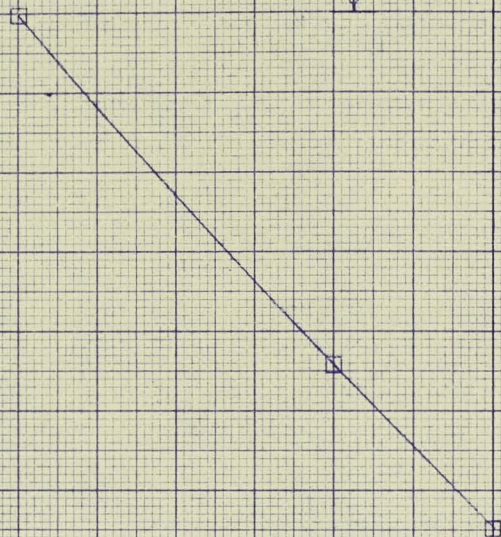
PREP BY L. Coteliffe

Ca

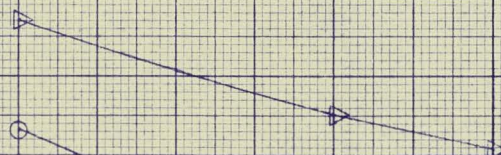
C-105
Ca vs β
A/c + Tanks
 $\alpha = +2^\circ$

UNCLASSIFIED
NON CLASSIFIED

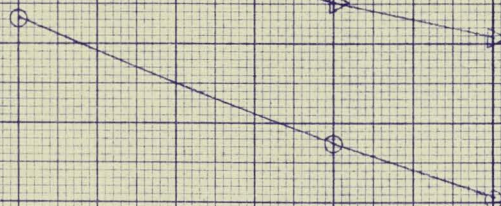
↑
-0.01
↓



□ Mach 1.230



▷ Mach 1.80



○ Mach 2.00

-8° -6° -4° -2° 0 2° β Degs.

AIRCRAFT C-105
A. U. W.

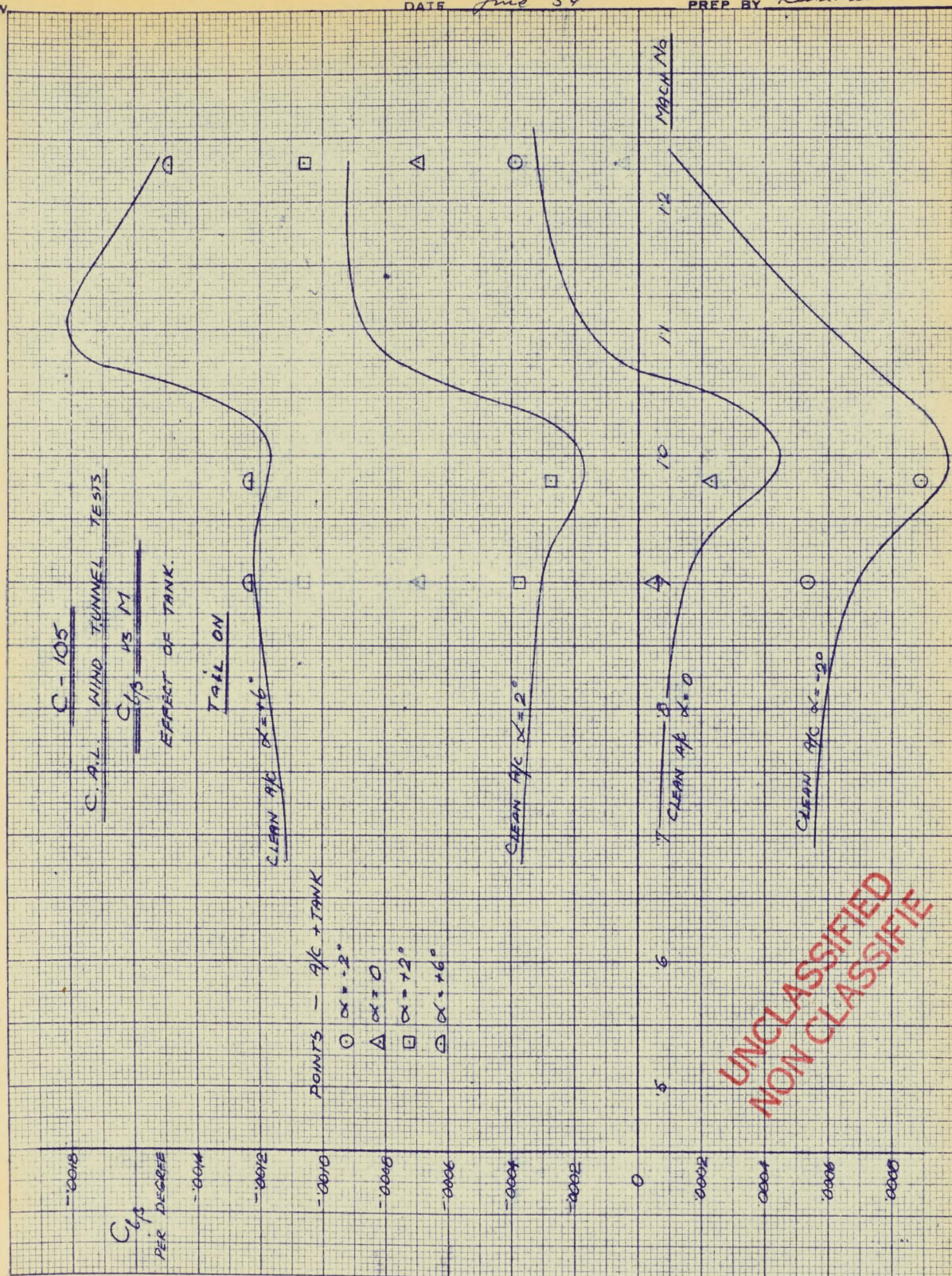
COMPONENT

SHEET No. 1.2.2.5

REPORT No. P/WIND TUNNEL/20

DATE June 54

PREP BY K. K. K.



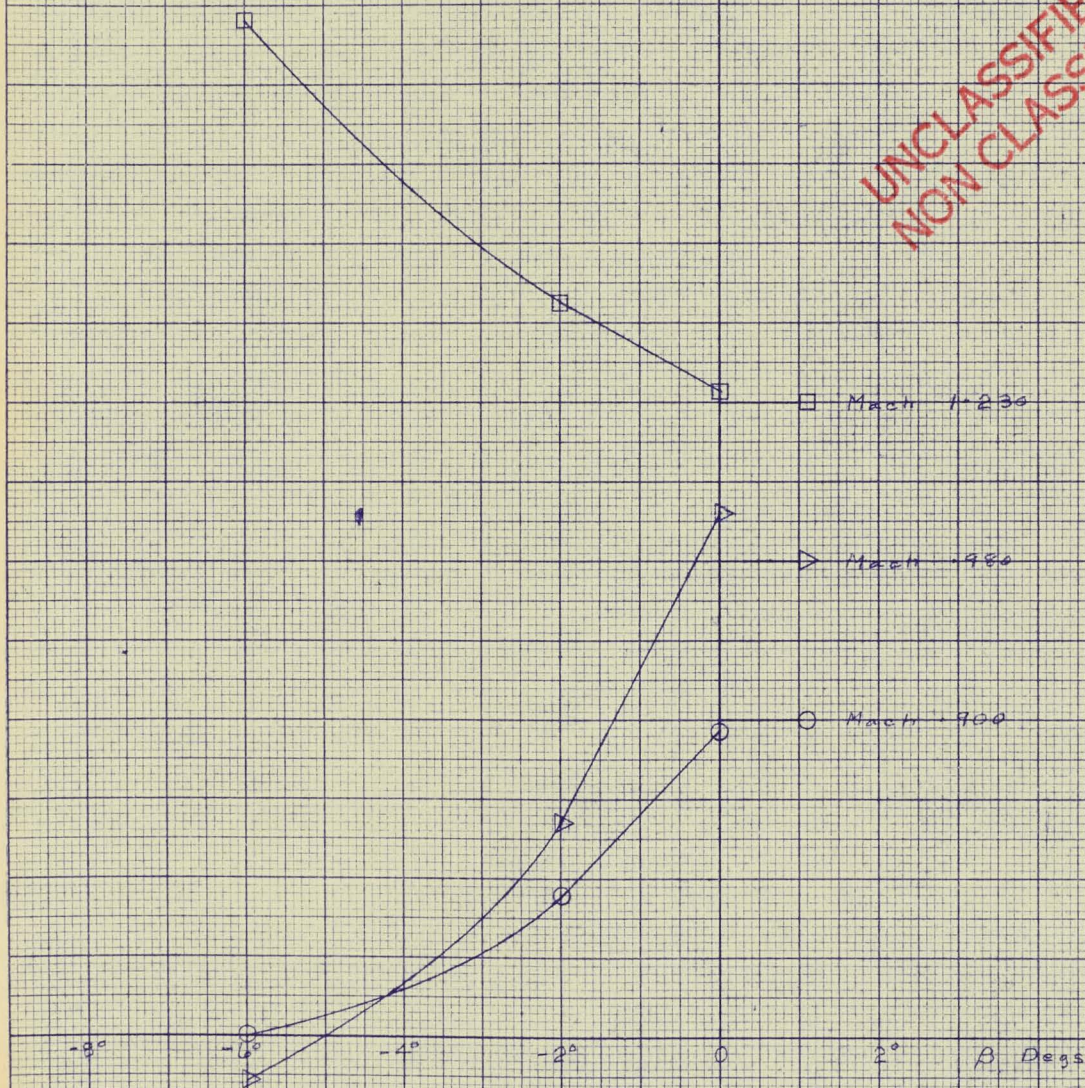
UNCLASSIFIED
NOW CLASSIFIED

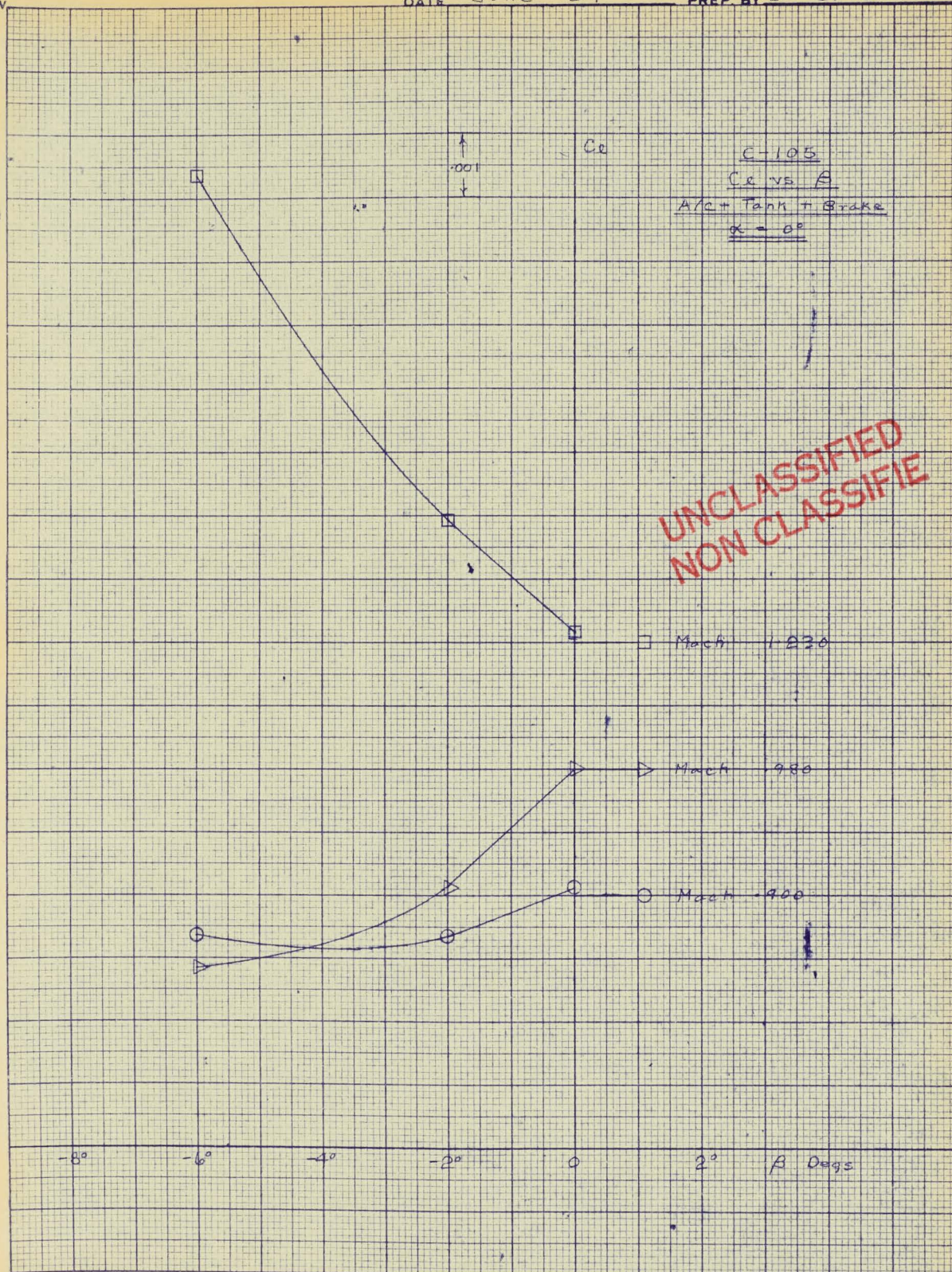
C-105
C_L vs β
A/G + Tank + Brake
 $\alpha = -2^\circ$

C_L

↑
0.001
↓

UNCLASSIFIED
NON CLASSIFIED







AIRCRAFT C-105 COMPONENT

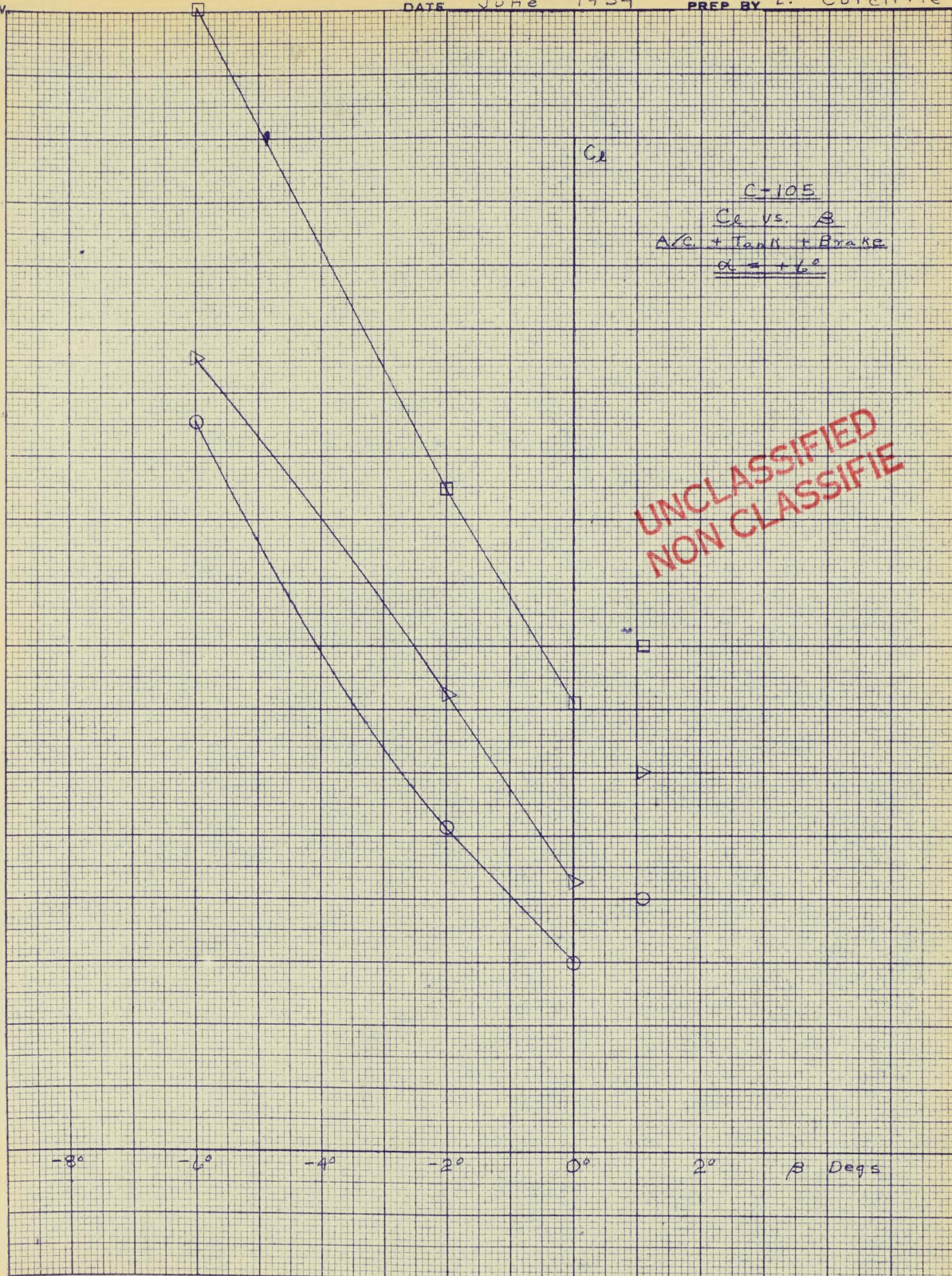
A. U. W.

SHEET No. 1.2.3.4

DATE June 1954

REPORT No. P/W.T.129

PREP BY L. Cutcliffe



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358-12 KEUFFEL & ESSER CO.
10 X 10 to the 1/2 inch, 5th lines accented.
MADE IN U.S.A.

AIRCRAFT
A. U. W.

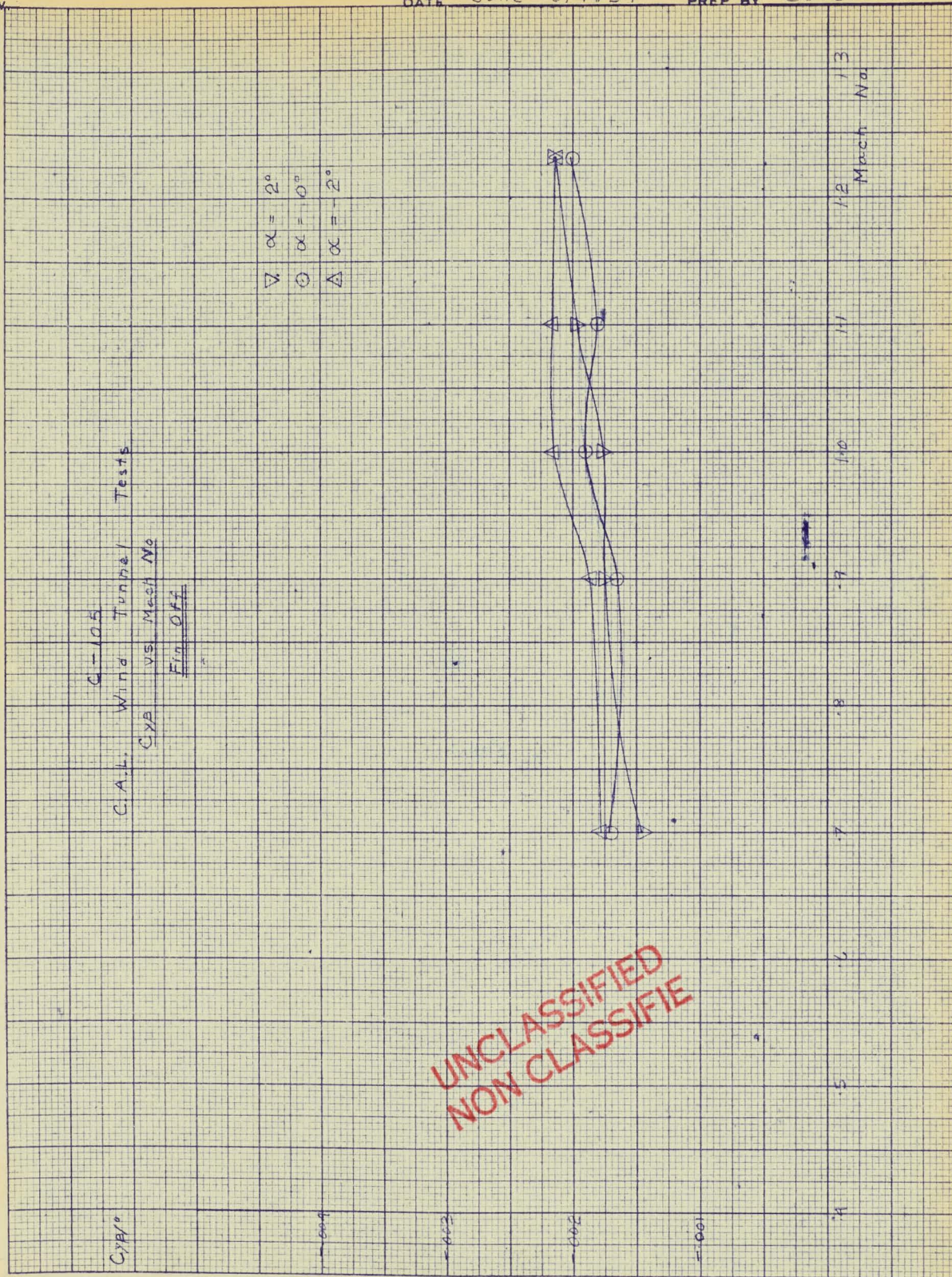
COMPONENT

SHEET No. 1321

REPORT No. P/W.T. 120

DATE June 8, 1954

PREP BY Cutcliffe



C-105
C.A.L. Wind Tunnel Tests
CYP vs Mach No
Fin Off

UNCLASSIFIED
NON CLASSIFIED

35242 KEUFFEL & ESSER CO.
10 x 10 to the 1/2 inch, 5th lines accord.
MADE IN U.S.A.

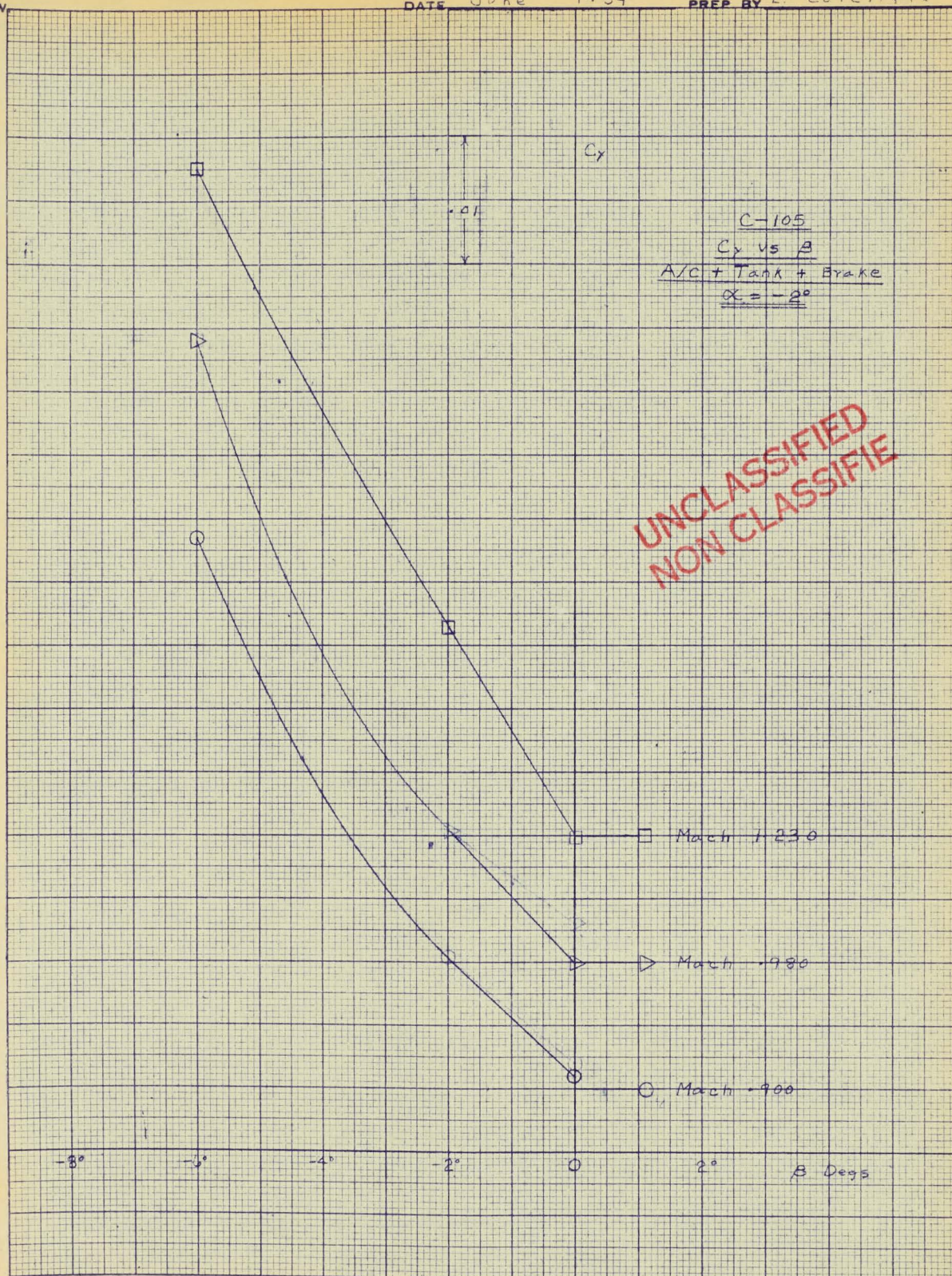
AIRCRAFT C-105 COMPONENT
A. U. W.

SHEET No. 1-3-41

REPORT No. P/W.T. 149

DATE June 1959

PREP BY L. Cutcliffe



558-12 KEUFFEL & ESSER CO.
10 x 10 to the 1/2 inch, 5th lines accented.
MADE IN U.S.A.

AIRCRAFT C105

COMPONENT

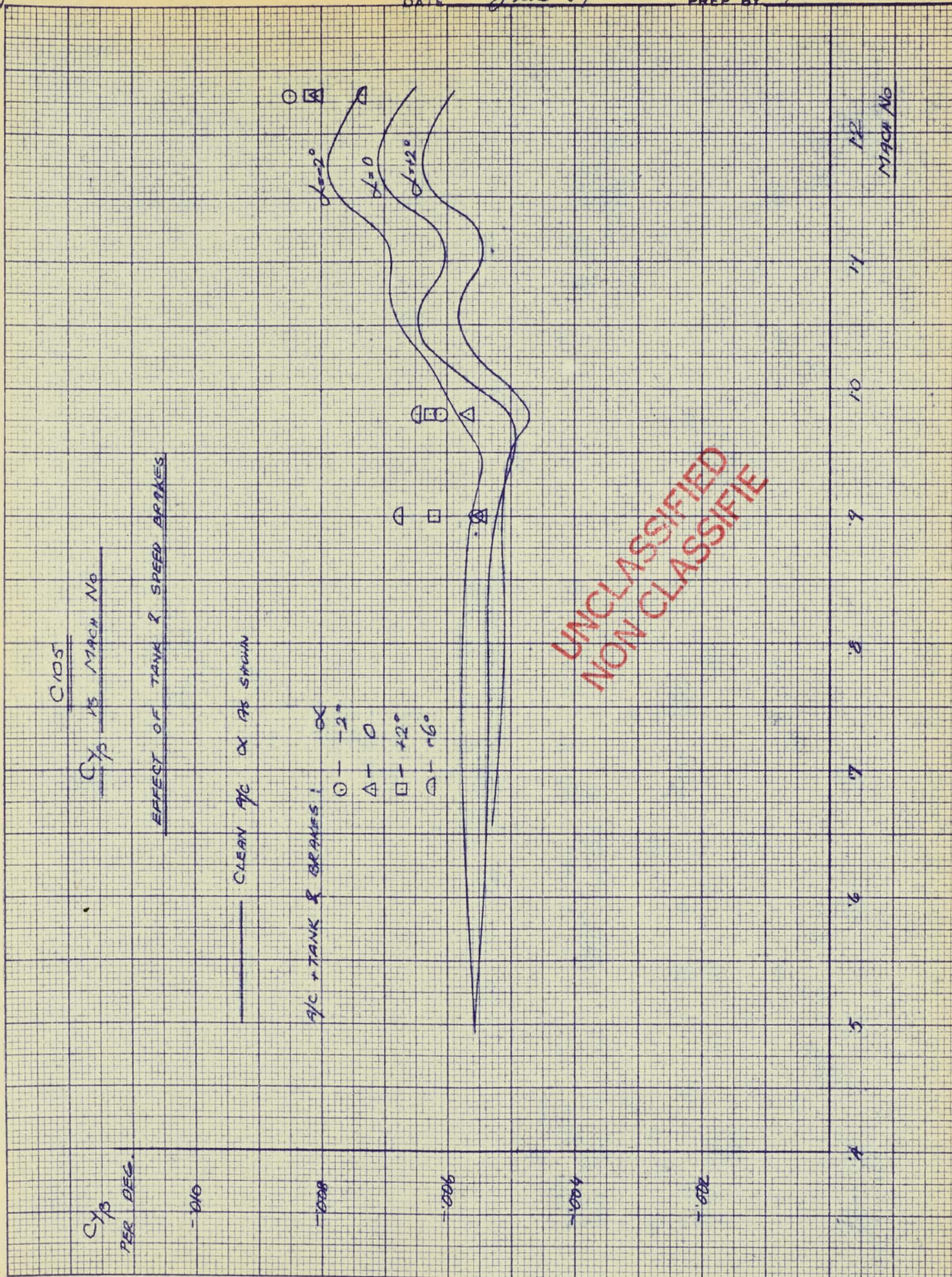
SHEET No. 1.3.4.5

REPORT No. P/WIND TUNNEL/20

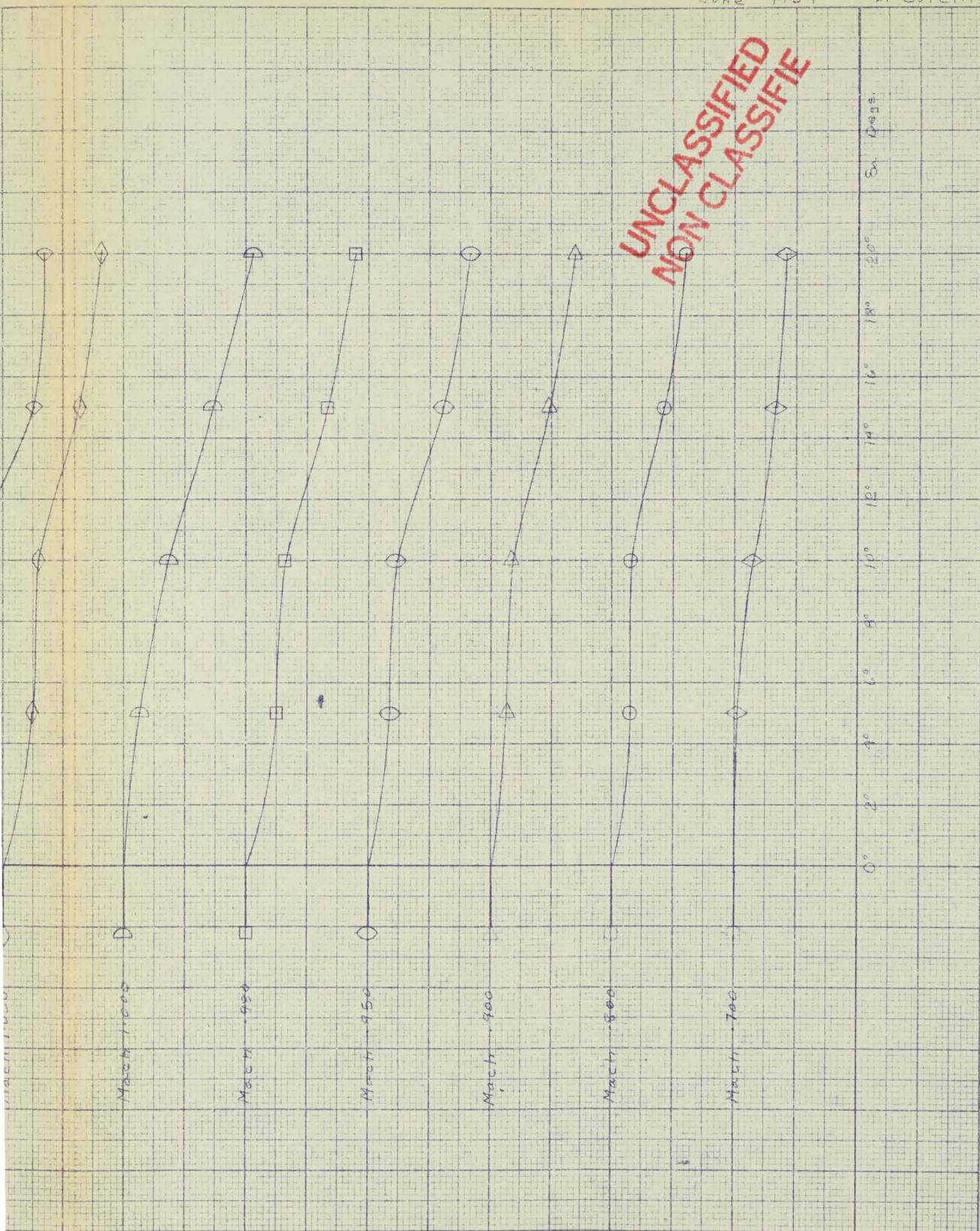
A.U.W.

DATE June 54

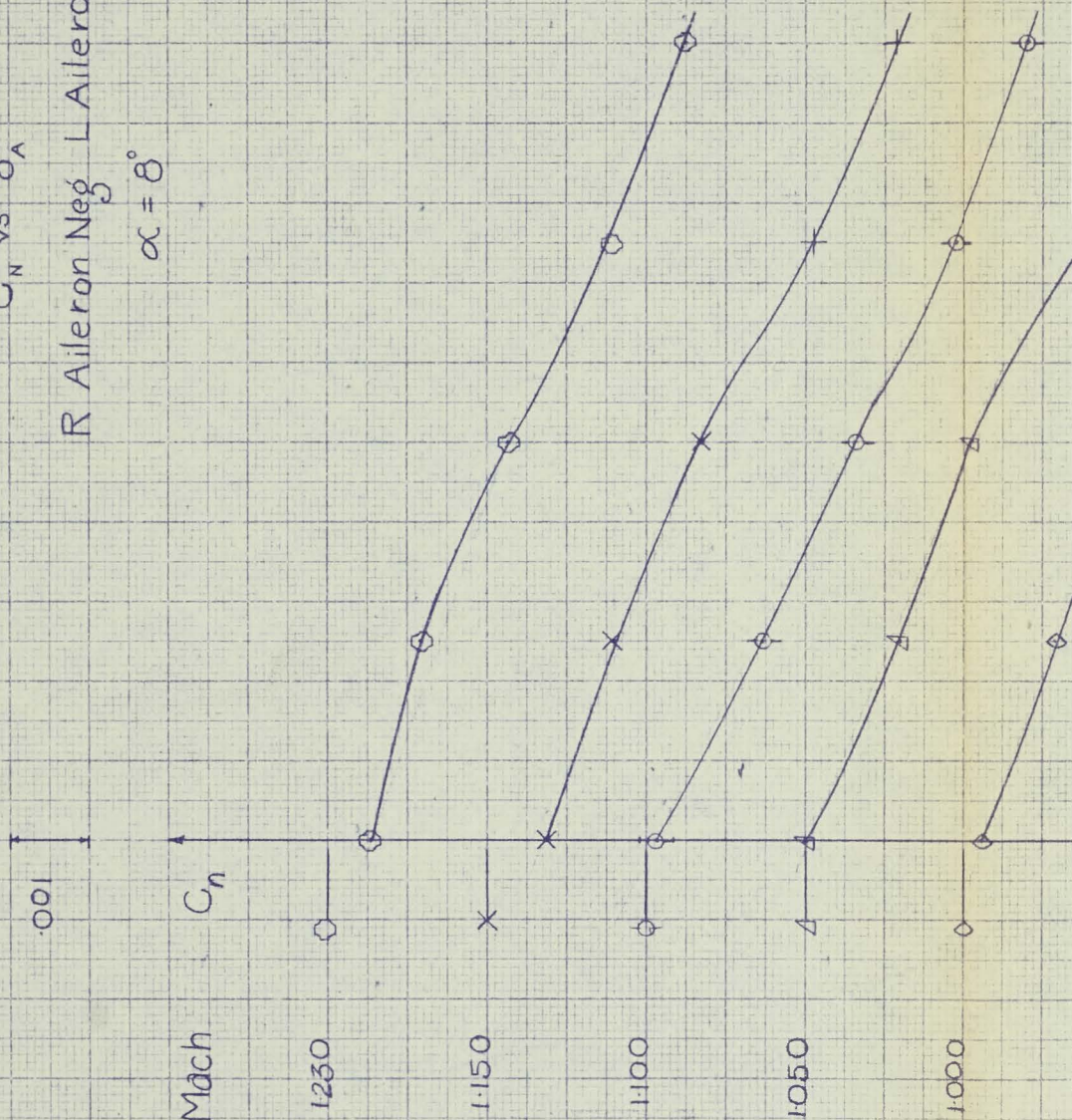
PREP BY K. A. H. A. H.



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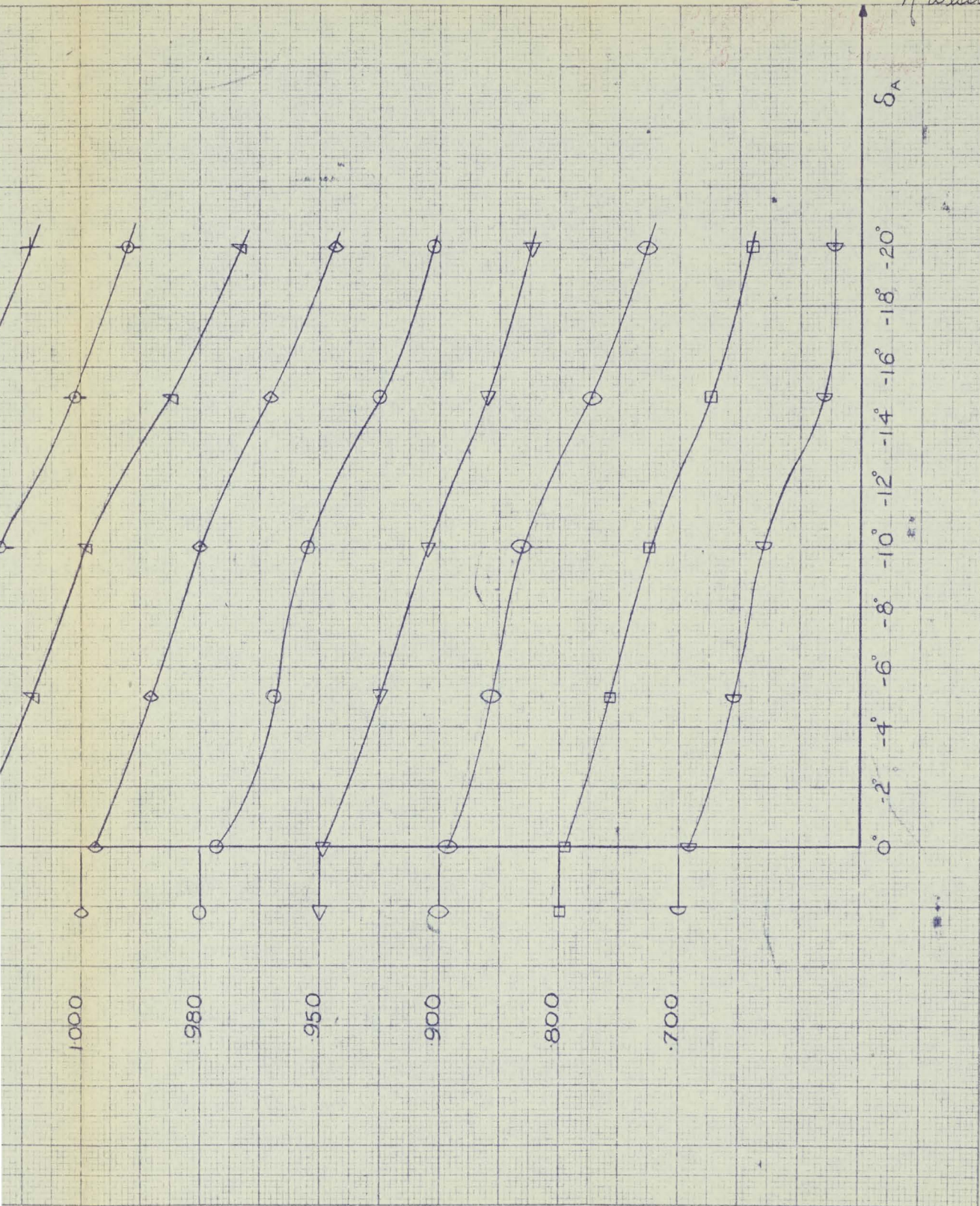
C-105
 CAL. WIND TUNNEL TESTS
 C_N vs δ_A
 R Aileron Neg L Aileron Pos.,
 $\alpha = 8^\circ$



PWT 20 21.8

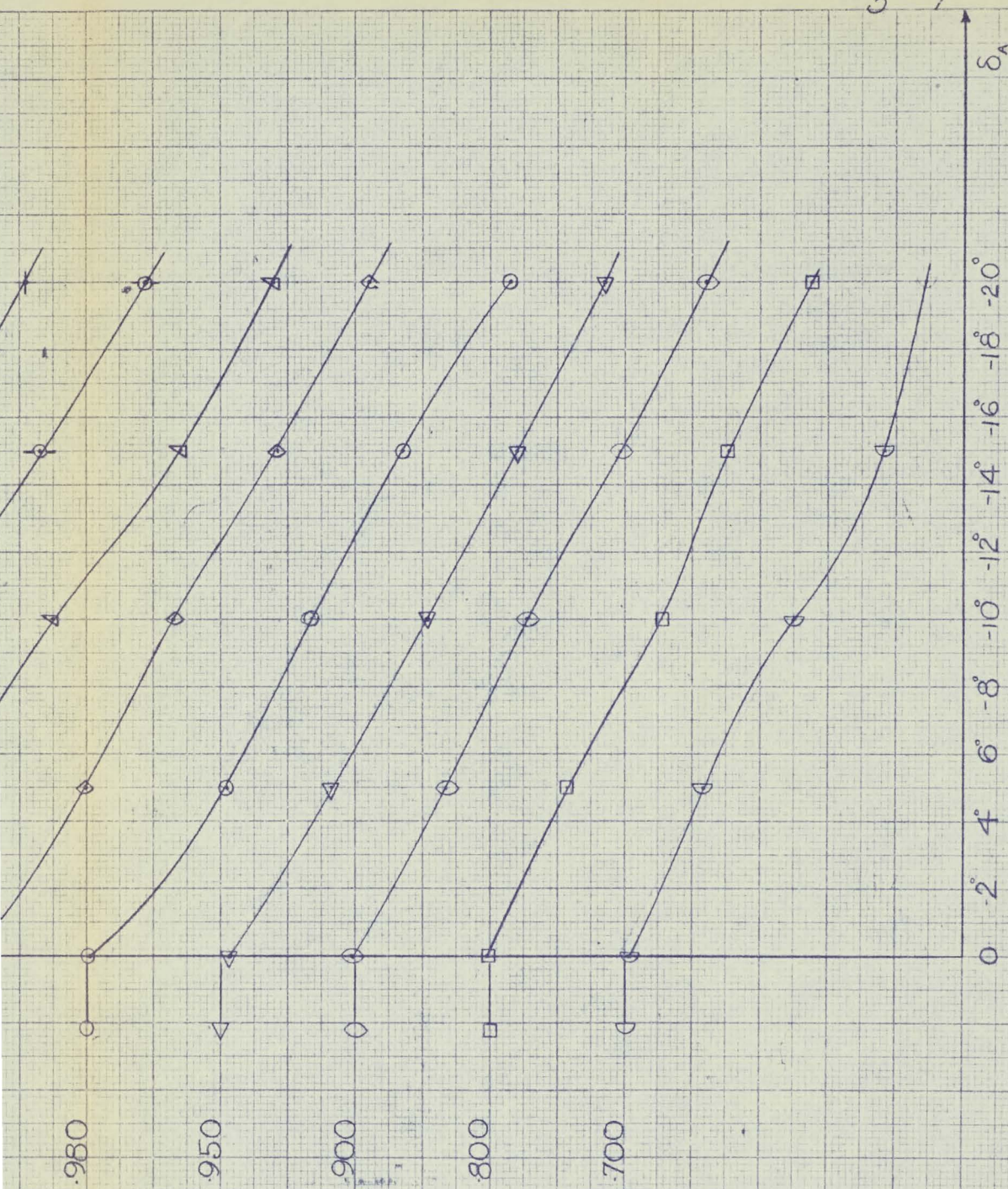
Aug 27/54

Wesson



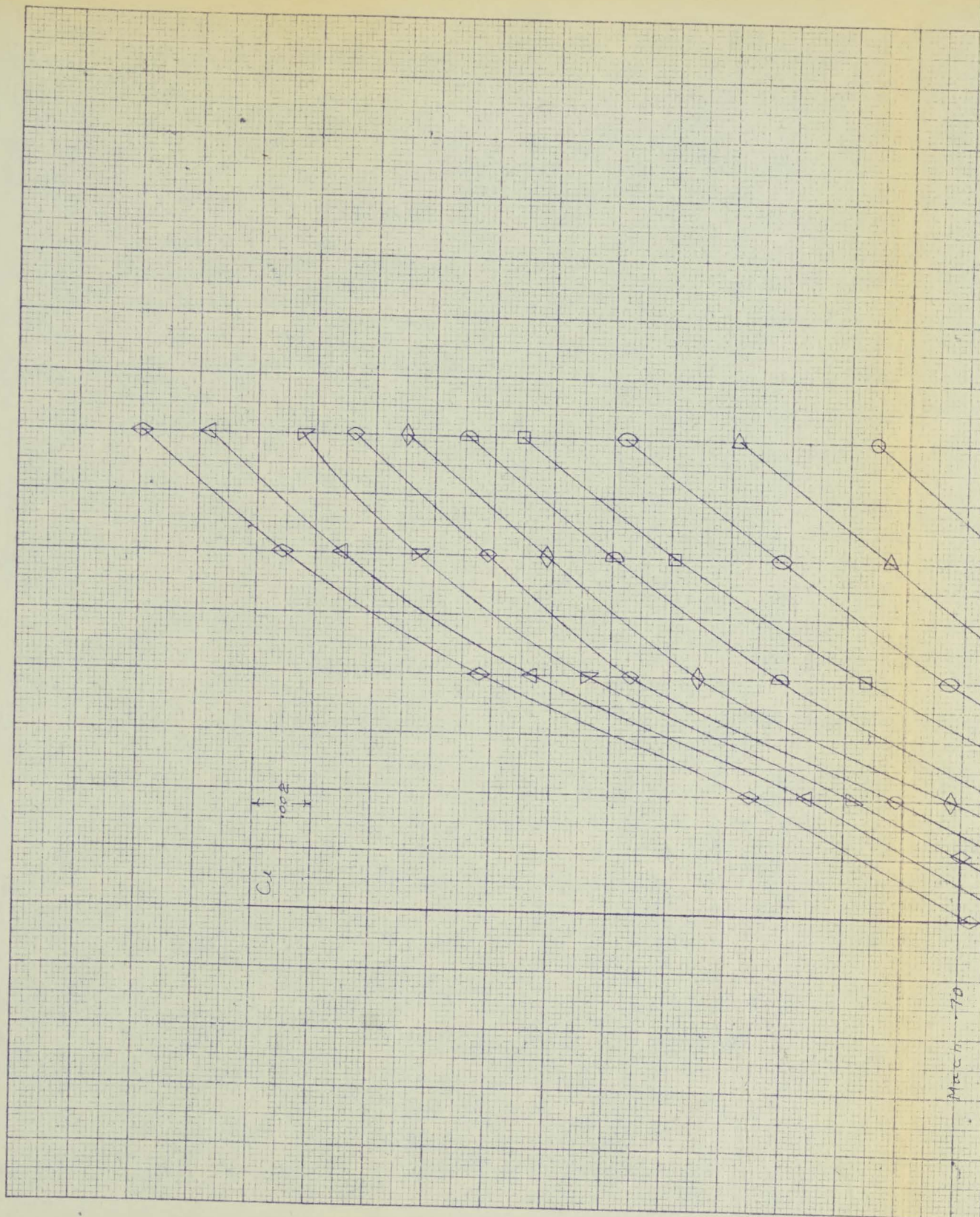
UNCLASSIFIED
NON CLASSIFIE

PWT 20 2-1-9
 Aug 27/54 *W. W. W.*



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359-11L KUFFEL & ESSER CO.
 10 x 10 to the 1/2 inch, 5th lines accounted,
 MADE IN U.S.A.



Mach 70

June 1959 L. Cutcliffe

$M = 1.50$ { 8% L.E. SLOTS }
X 18M NEW NOSE

C-105

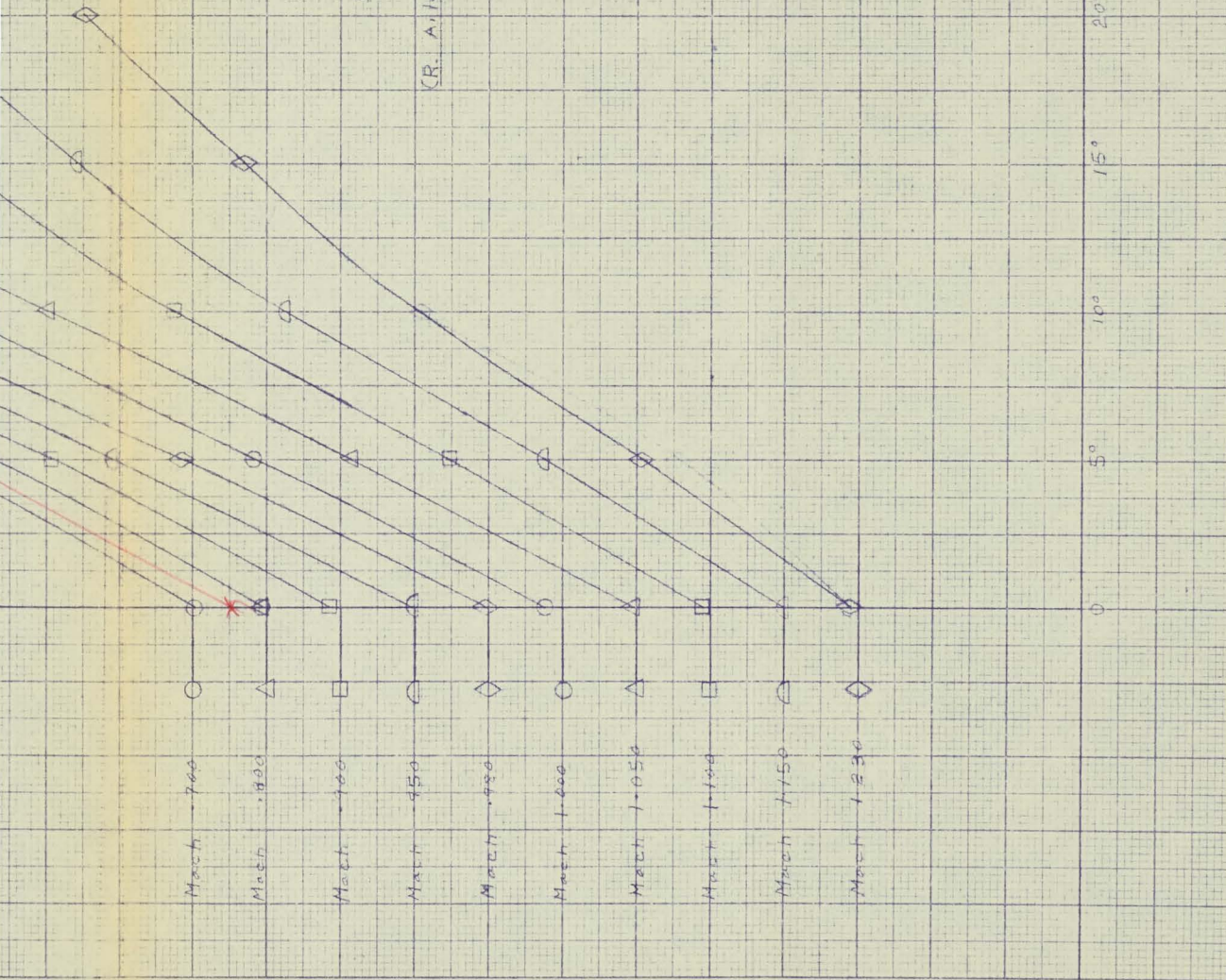
C.A.L. Wind Tunnel Tests

C_L vs. δA

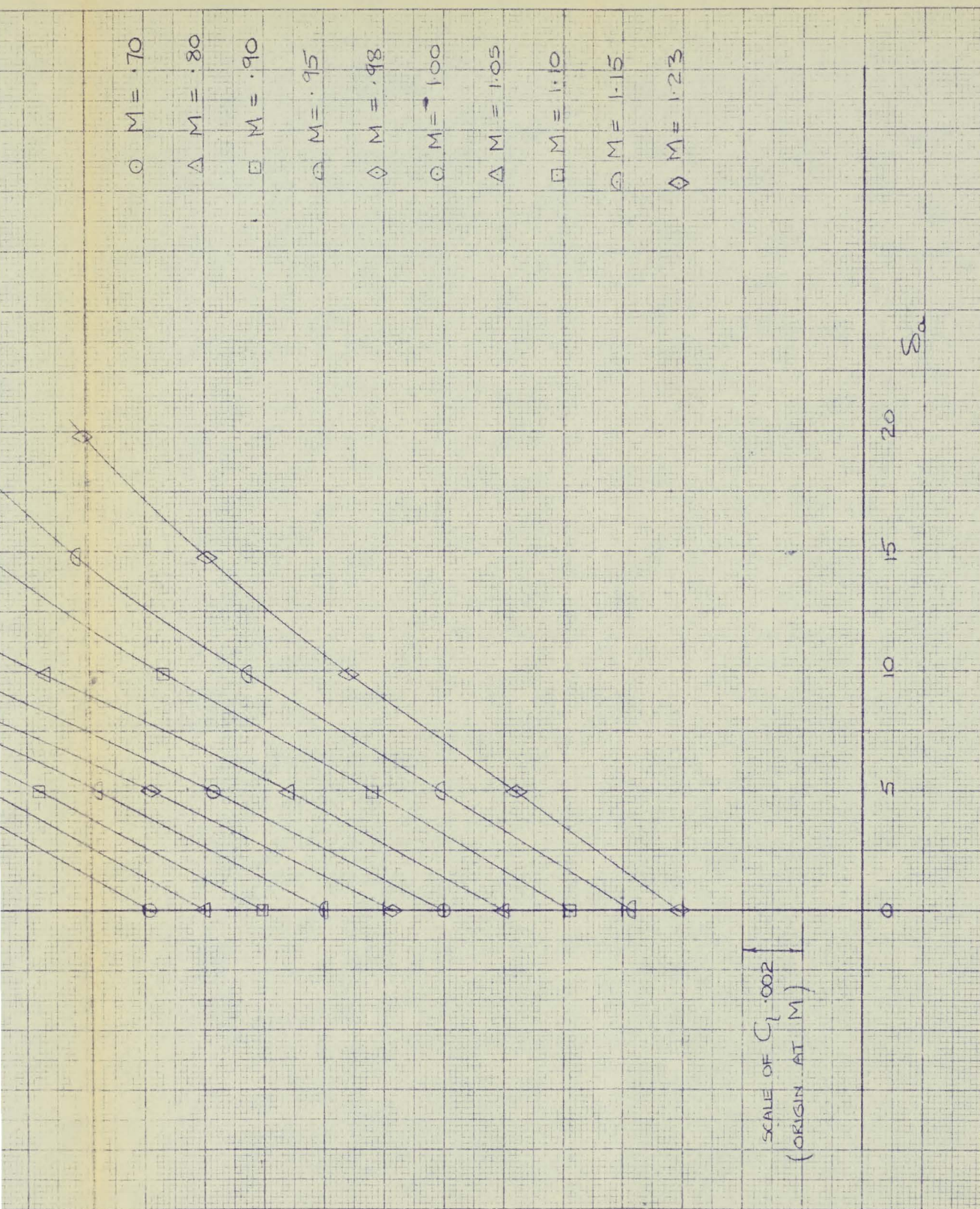
(R. Aileron -ve, L. Aileron +ve Deflection)

$\alpha = 0^\circ$

A/C Clean



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NON CLASSIFIE



UNCLASSIFIED
NON CLASSIFIE

AIRCRAFT
A. U. W.

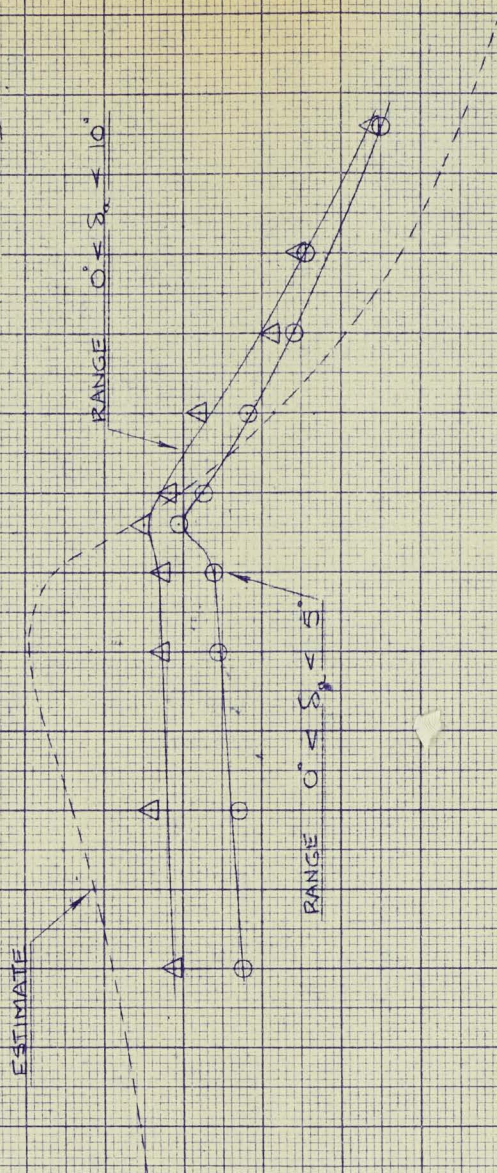
COMPONENT

SHEET No. 2.2.5.
DATE 6.V.54

REPORT No. P/WT/20
PREP BY W. S. G. S. G. S.

C-105
C.A.L. WIND TUNNEL TEST

$C_{L\alpha}$ vs M
 $\alpha = 2^\circ$



$C_{L\alpha}$
PER 2° DEG
INCLUDED

-0.002

-0.001

0

1.2 M

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C-105
C.A. Wind Tunnel Tests
C.V. 8a
(Aileron -ve, L Aileron +ve Deflection)
A/C C-105
 $\alpha = 0^\circ$

C_d

$\uparrow$
0.00
 $\downarrow$

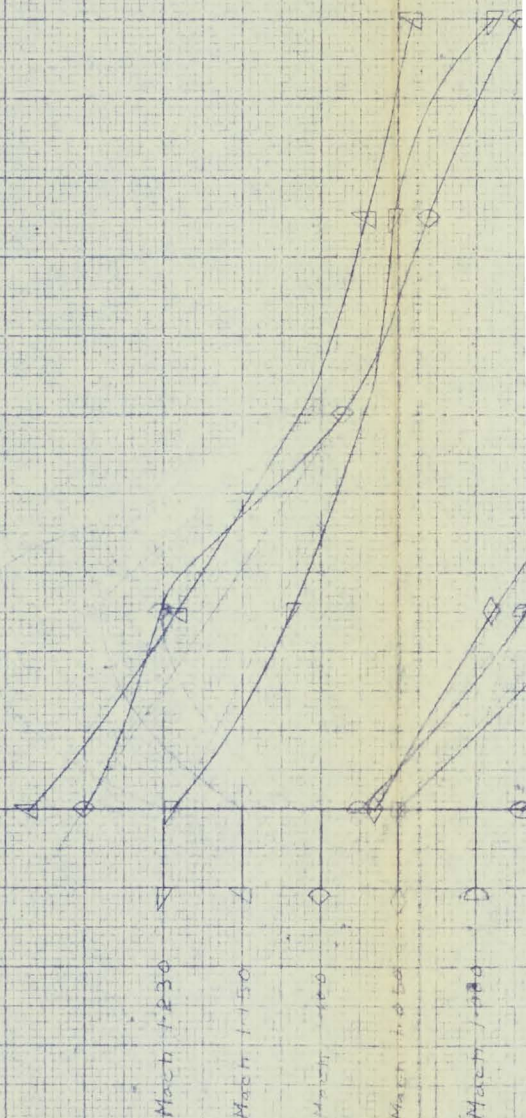
Mach 1.250

Mach 1.150

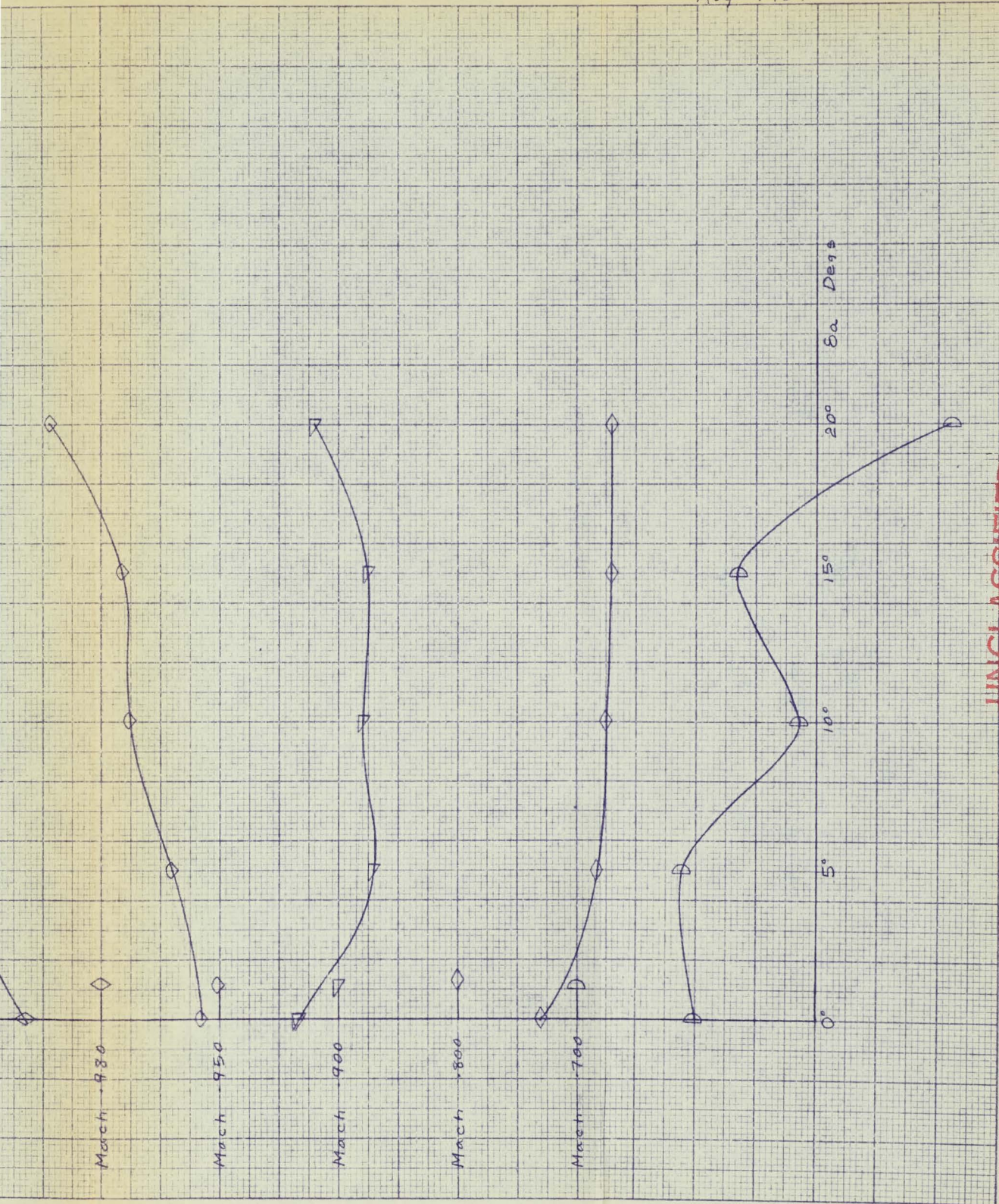
Mach 1.000

Mach 0.850

Mach 0.750



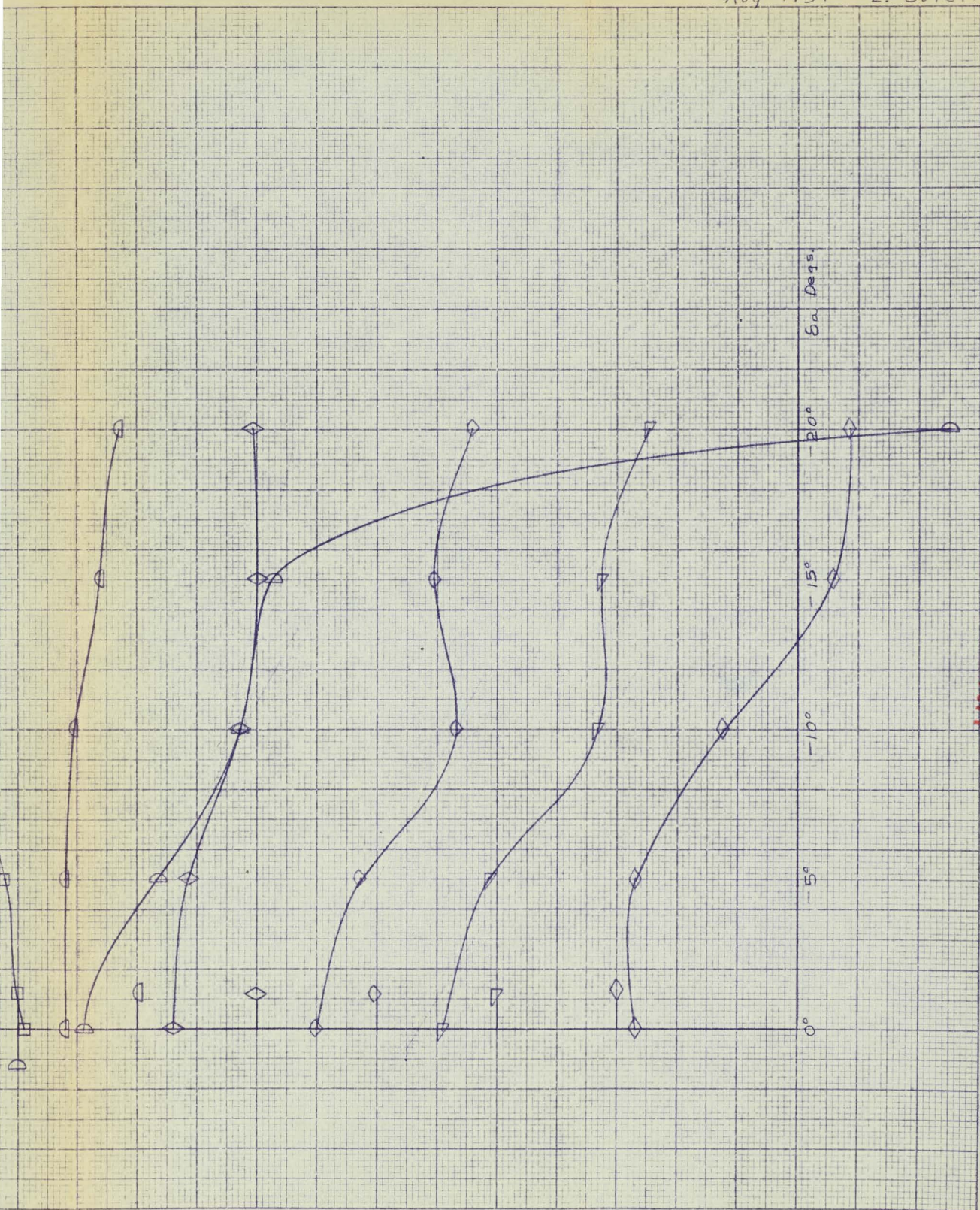




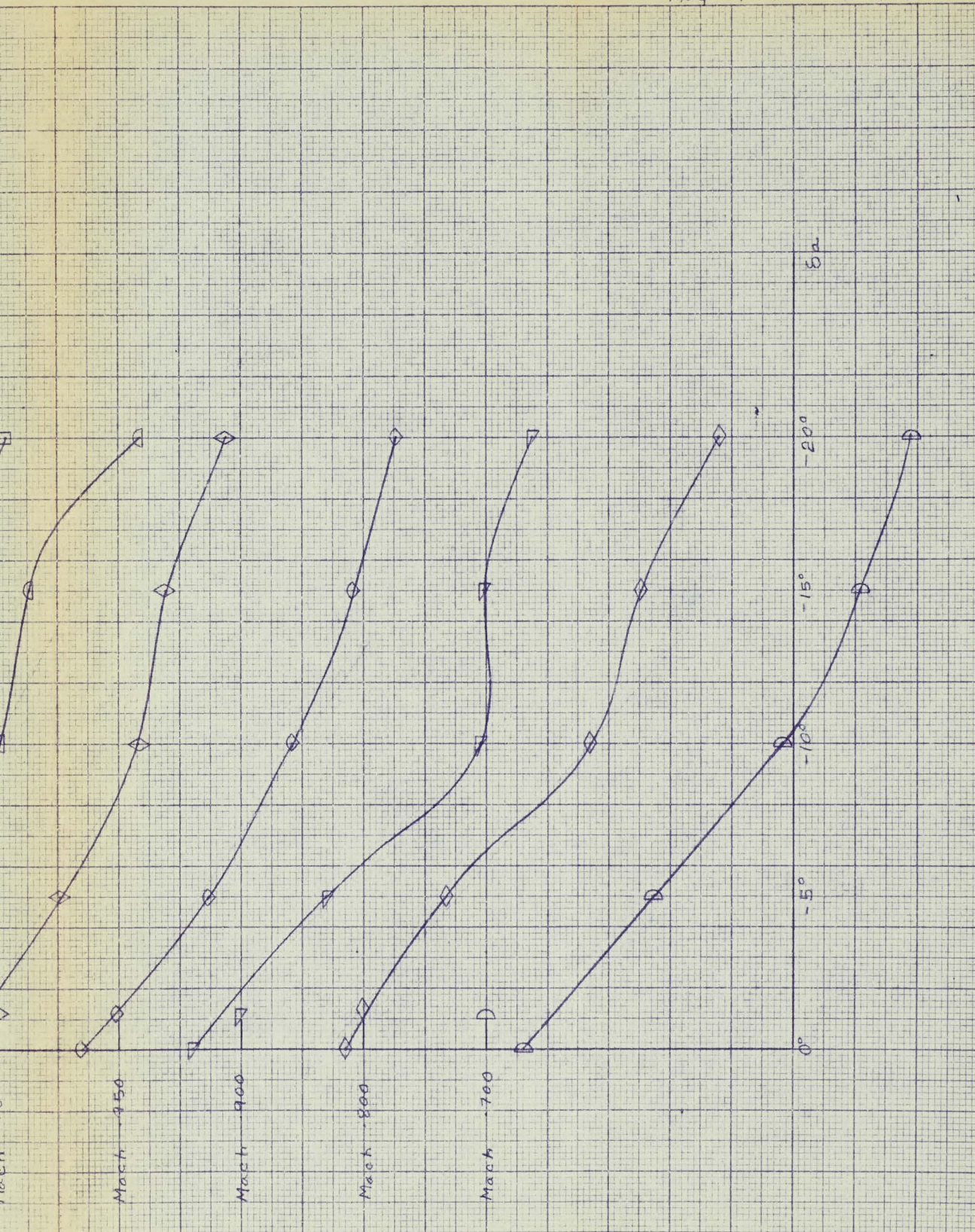
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Sheet P/W.T./20

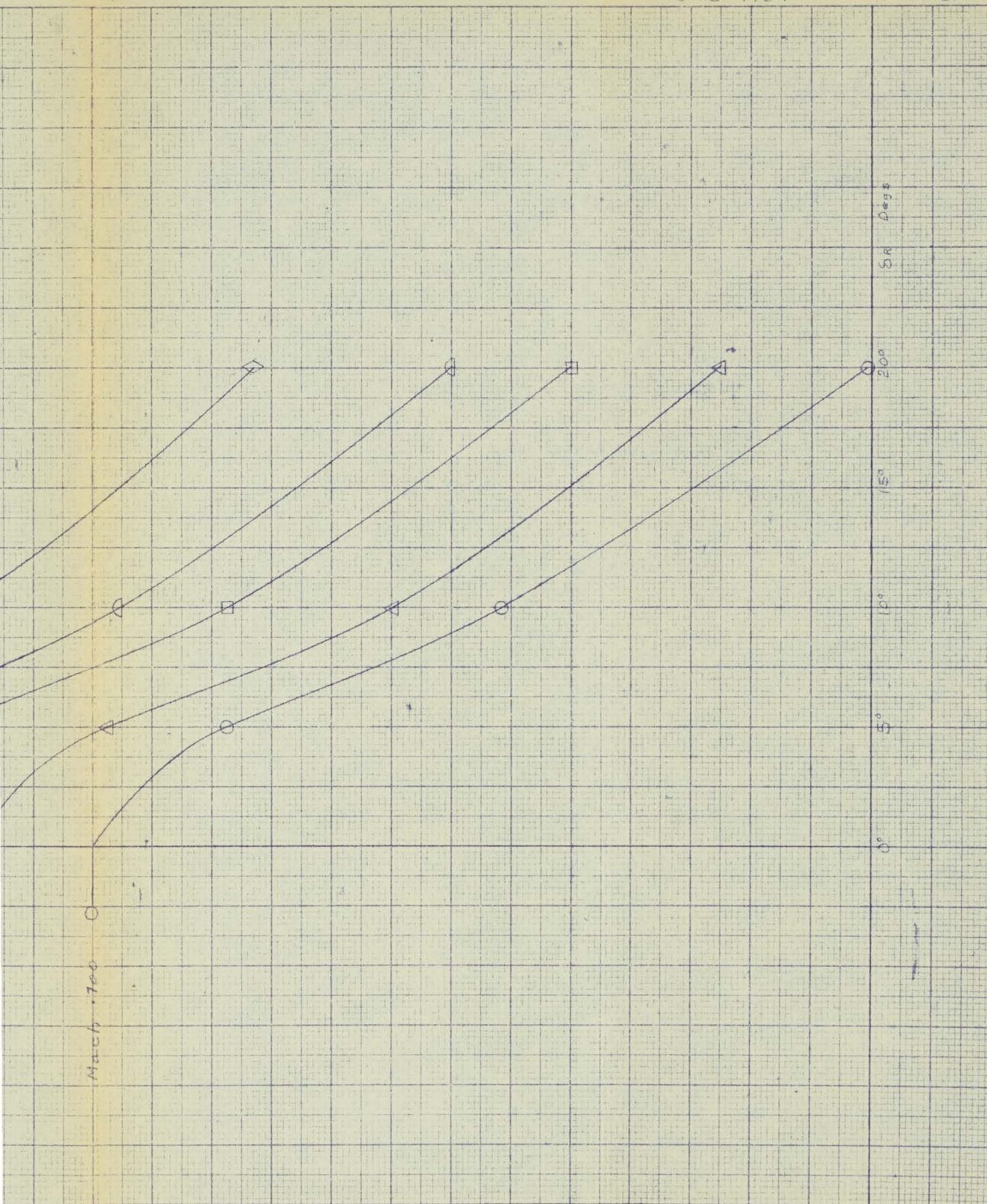
Aug 1954 L. Cutcliffe



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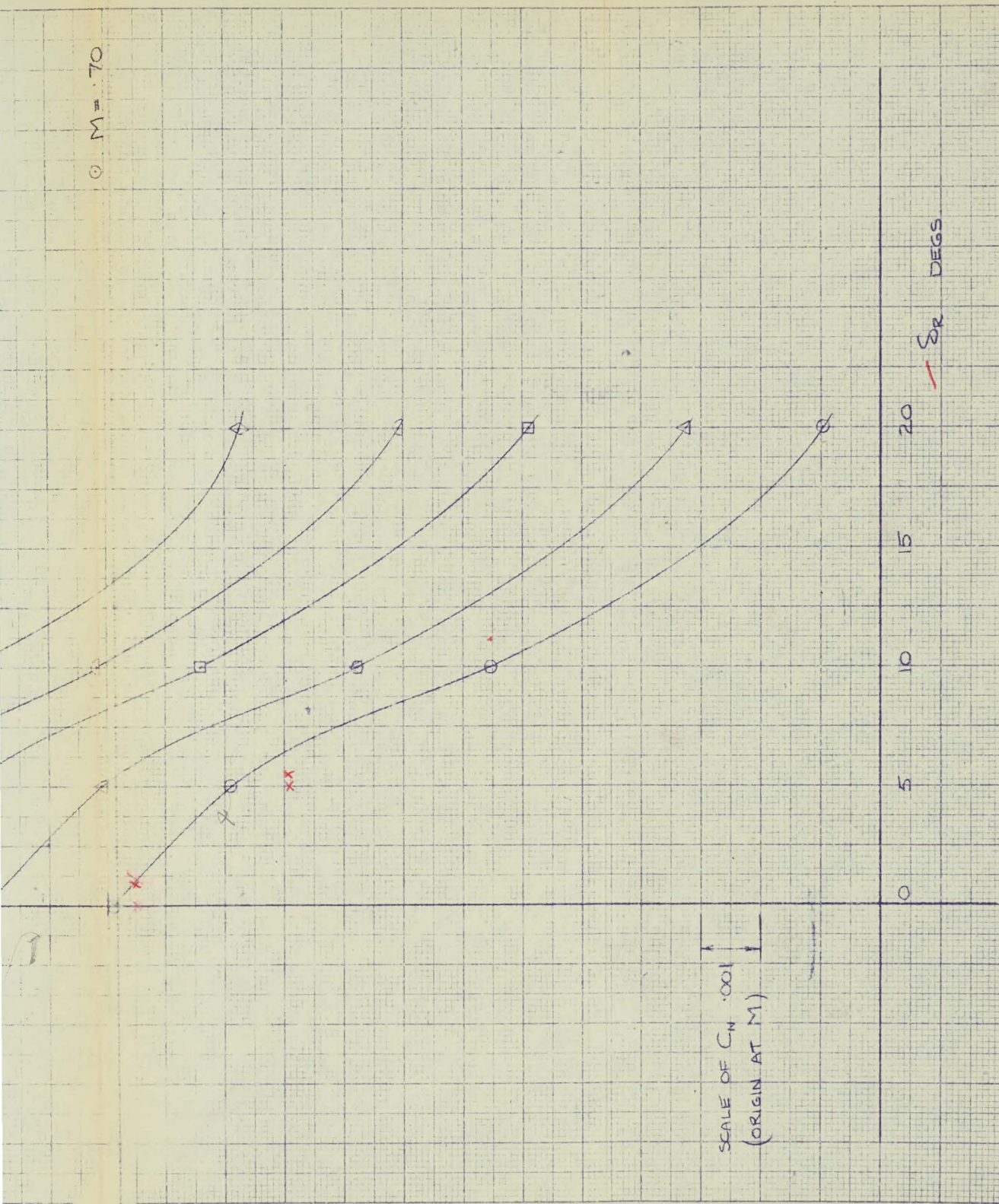
UNCLASSIFIED
NON CLASSIFIE



UNCLASSIFIED
NON CLASSIFIE

3.1.2.

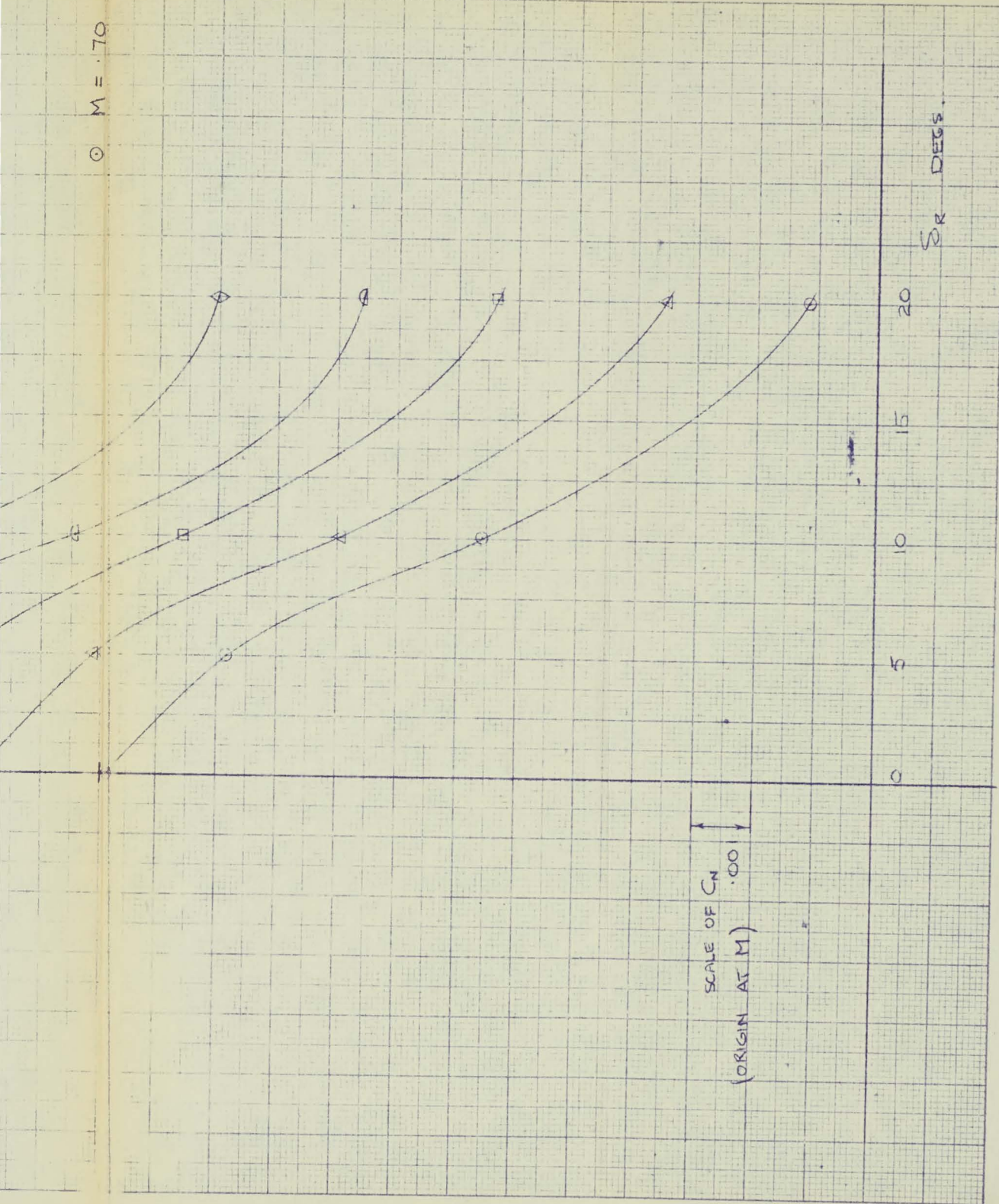
0. M = 70



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3.13.

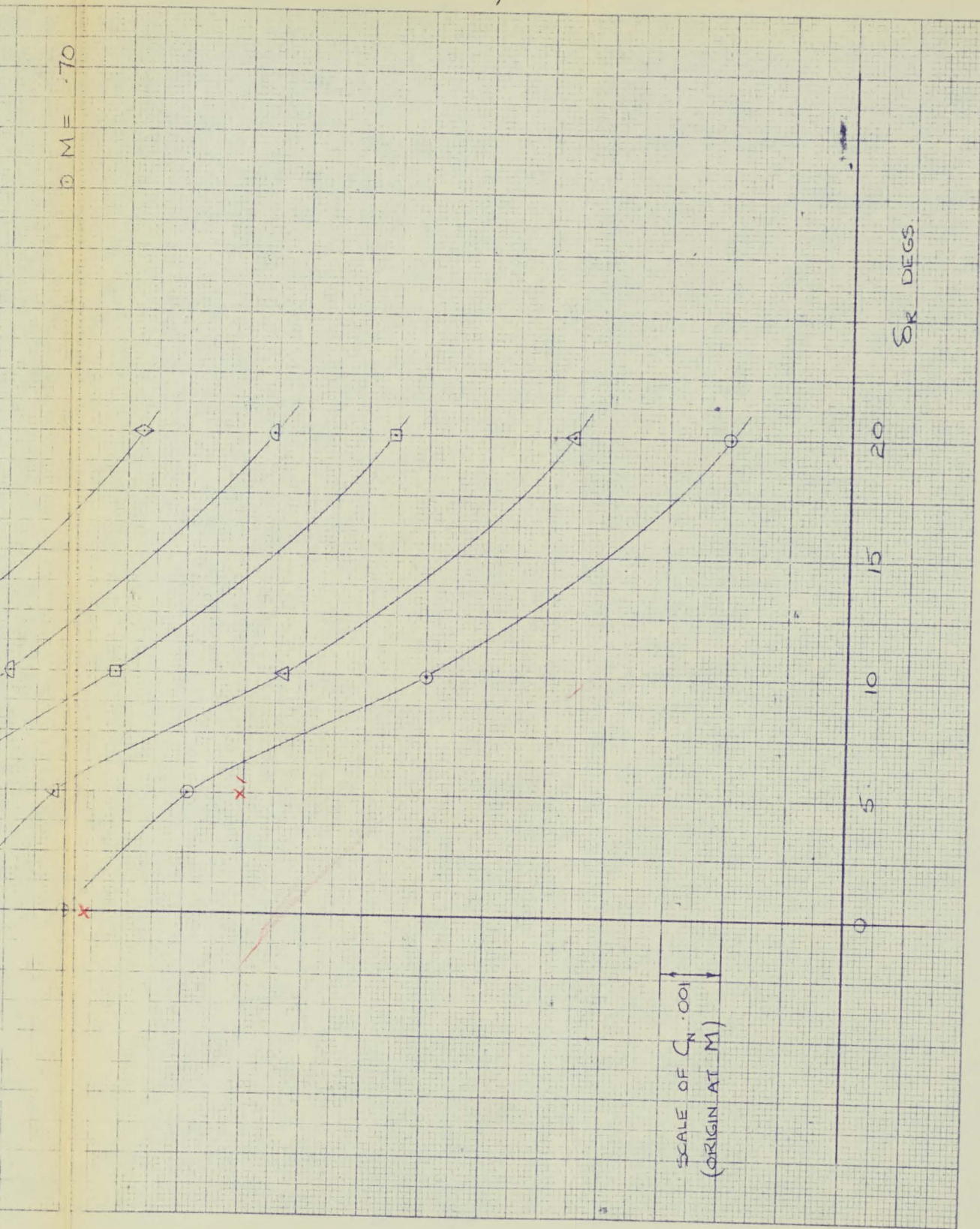
$\odot M = .70$



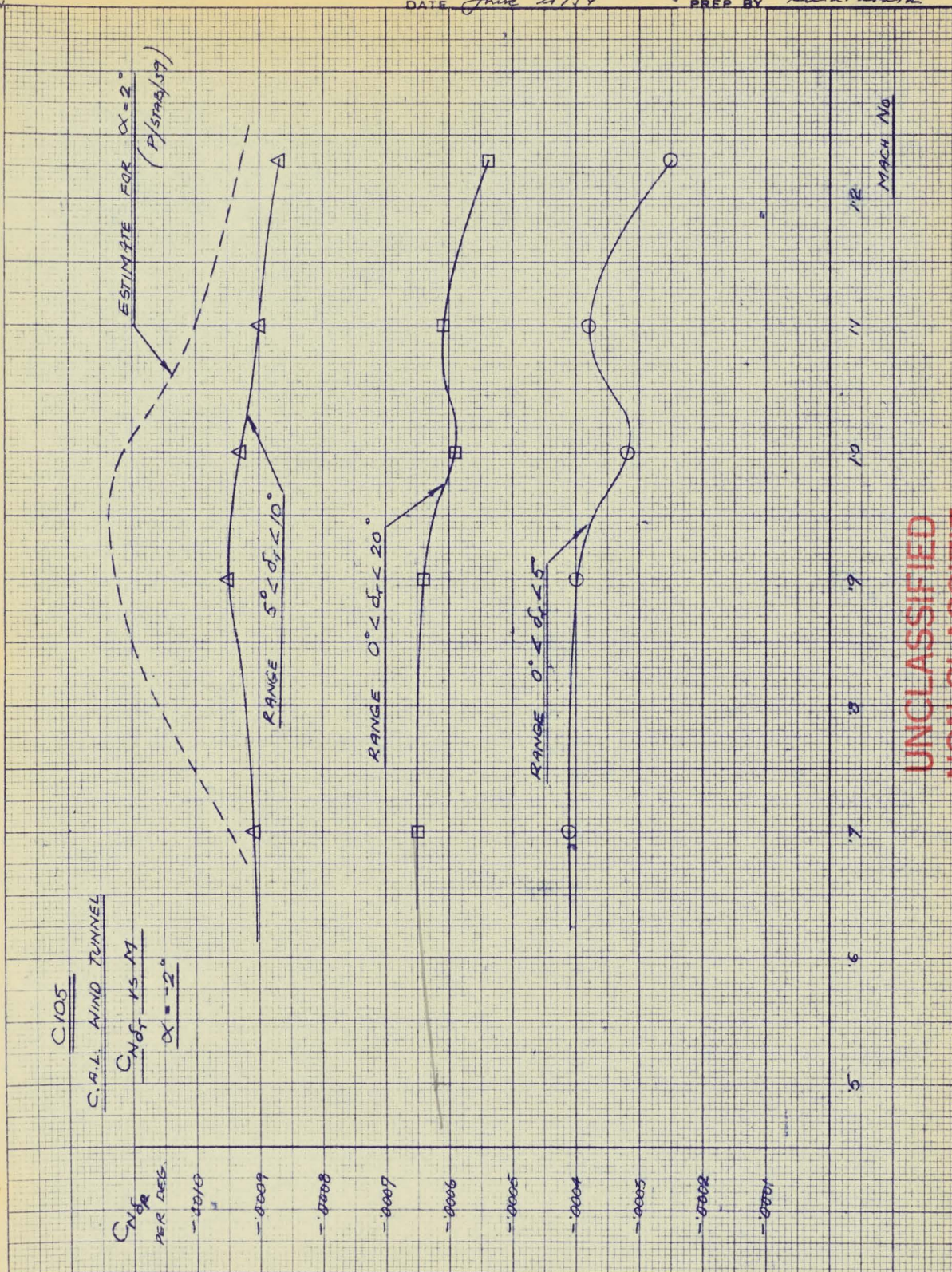
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3.1.4.

$\phi M = .70$



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NON CLASSIFIE

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35912 KEUFFEL & ESSER CO.
10 x 10 to 10 1/2 inch. 5th lines acorned.
MADE IN U.S.A.

C-105

CAL. WIND TUNNEL

CNSK VS M

$\alpha = 0^\circ$

CNSK

PER DEG.

-0.0010

-0.0009

-0.0008

-0.0007

-0.0006

-0.0005

-0.0004

-0.0003

-0.0002

-0.0001

0

ESTIMATE FOR $\alpha = 2^\circ$
(P/STAB/3H)

RANGE $5^\circ < \delta_k < 10^\circ$

RANGE $0^\circ < \delta_k < 20^\circ$

RANGE $0^\circ < \delta_k < 5^\circ$

12

11

10

9

8

7

6

5

M

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AIRCRAFT
A. U. W.

COMPONENT

SHEET No. 3.18

REPORT No. P/W.T./20

DATE

PREP BY

D.D.E.

C-105
C.A.L. WIND TUNNEL TESTS

$C_{N_{\delta R}}$ VS M

$\alpha = 2^\circ$

ESTIMATE { P/AERO DATA/30
S/P/STAB/39

RANGE $5^\circ \leq \delta_R \leq 10^\circ$

RANGE $0^\circ \leq \delta_R \leq 20^\circ$

RANGE $0^\circ \leq \delta_R \leq 5^\circ$

$C_{N_{\delta R}}$
PER DEG

- .0009

- .0008

- .0007

- .0006

- .0005

- .0004

- .0003

- .0002

- .0001

0

.5

.6

.7

.8

.9

1.0

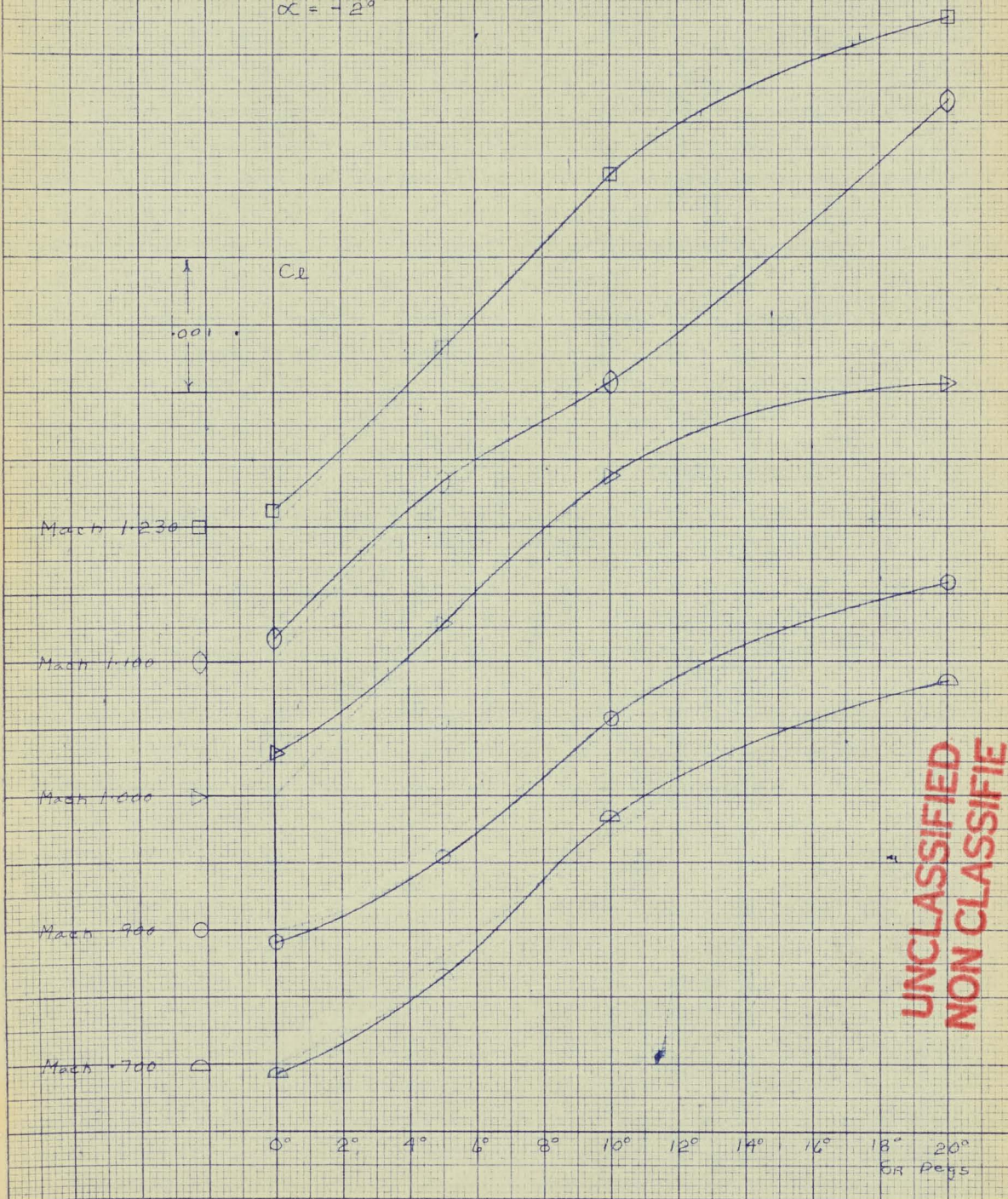
1.1

1.2

M

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C-105
C.A.L. Wind Tunnel Tests
Cl vs α
A/c Clean
 $\alpha = -2^\circ$



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AIRCRAFT
A. U. W.

COMPONENT

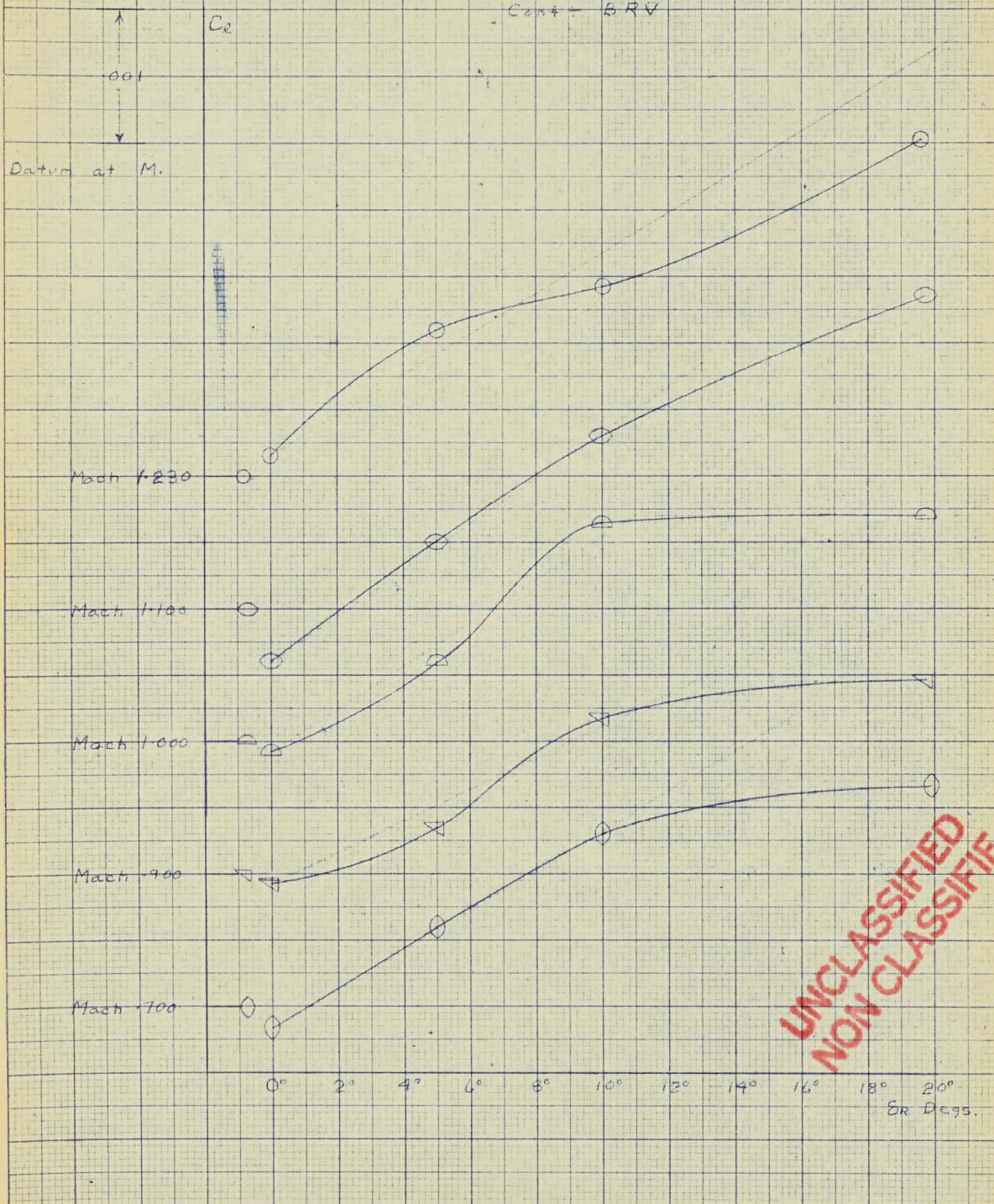
SHEET NO. 3-2-3

REPORT NO. P/W.T. 120

DATE July 1954

PREP BY L. Cutcliffe

C-105
C.A.L. Wind Tunnel Tests, April 1954
 C_L vs. $\delta\alpha$
 $\alpha = 2^\circ$
Cont: BRV



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AIRCRAFT
A. U. W.

COMPONENT

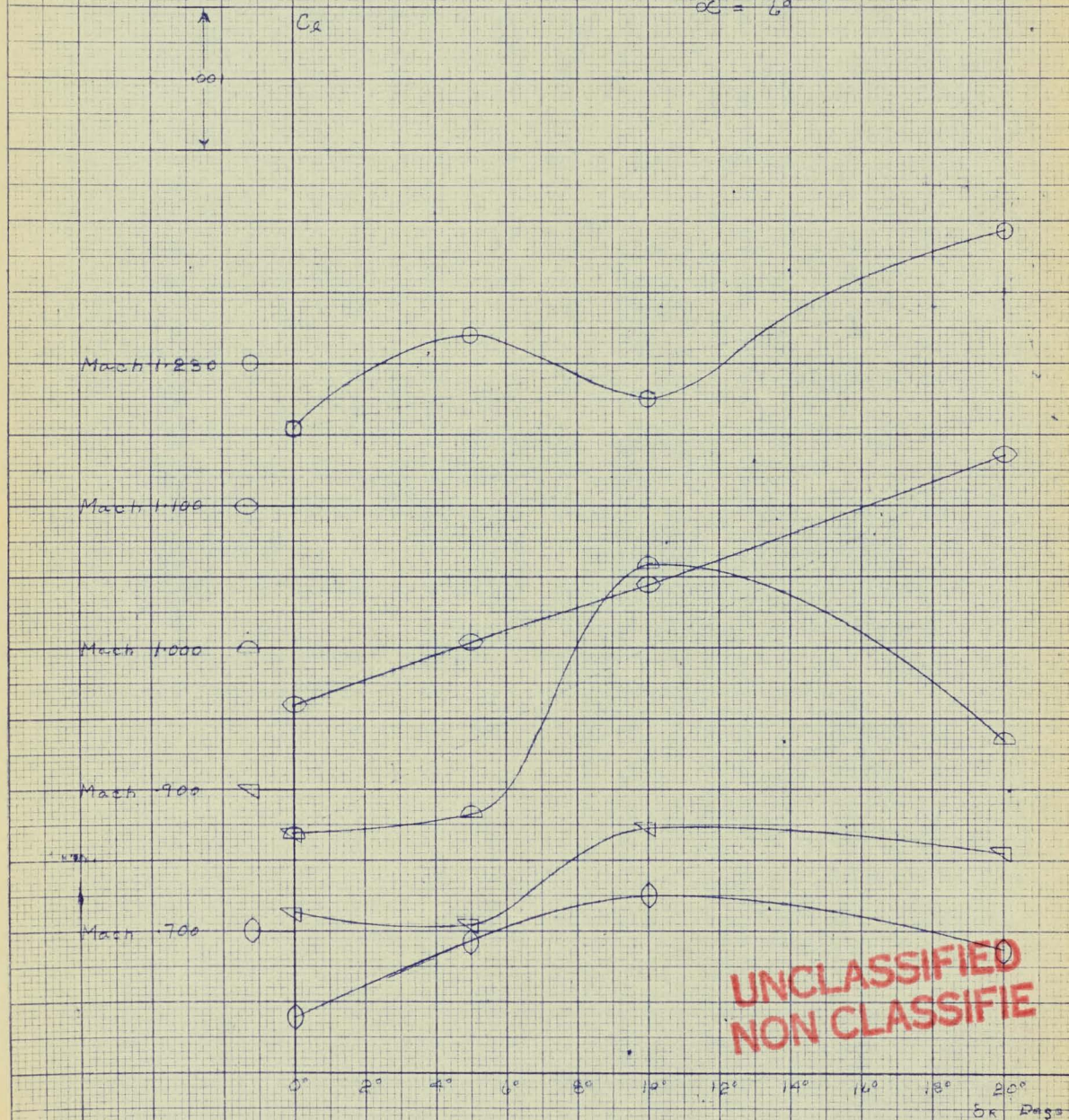
SHEET No. 3.2.7

REPORT No. P/W.T./2

DATE July 1954

PREP BY L. Cuthbert

C-145
C.A.L. Wind Tunnel Tests April 1954
C_d vs. α
A/c Clean
 $\alpha = 6^\circ$



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C_y

.04

.03

.02

.01

0

$M = .70$

$M = .90$

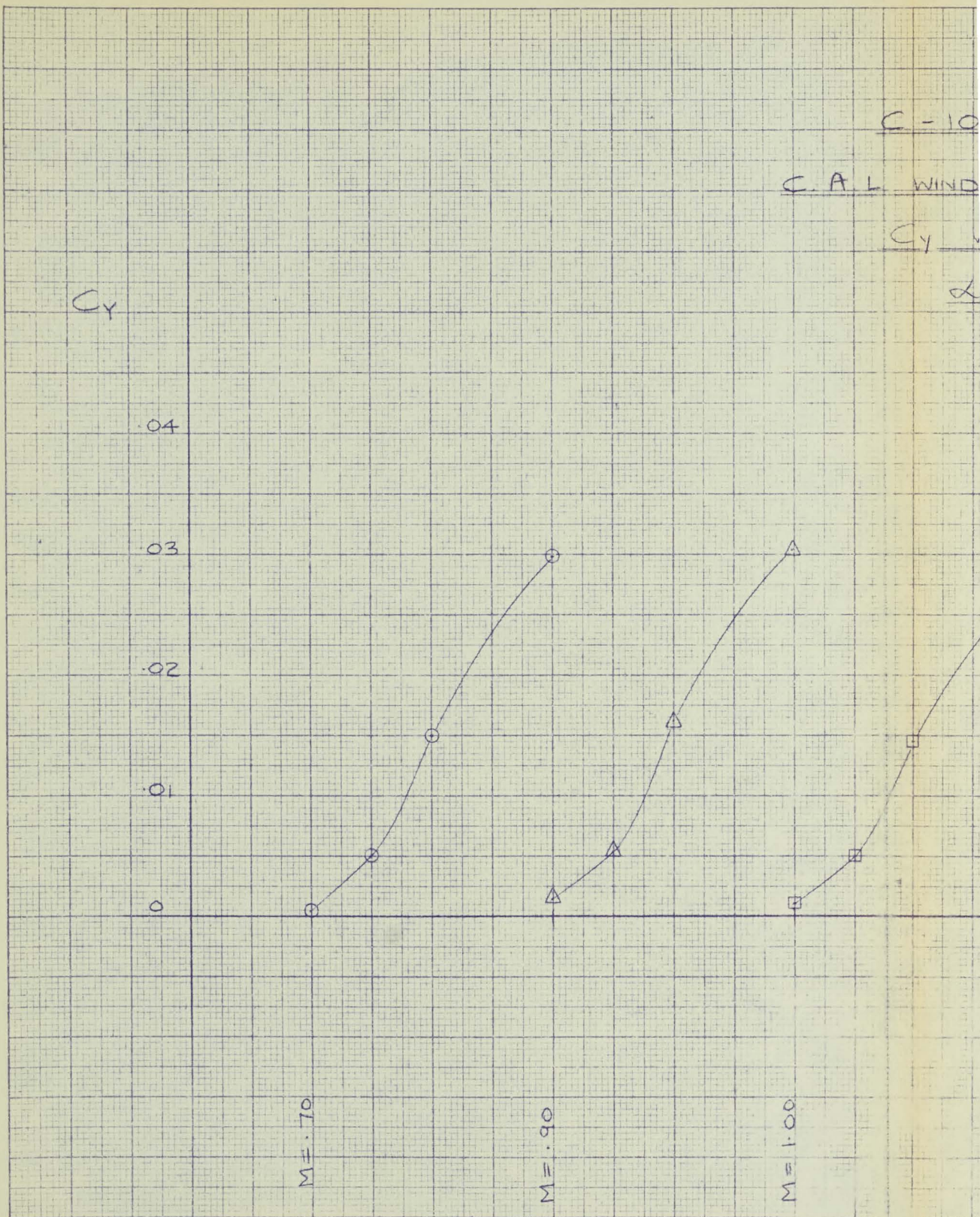
$M = 1.00$

C-10

C. A. L. WIND

C_y

α

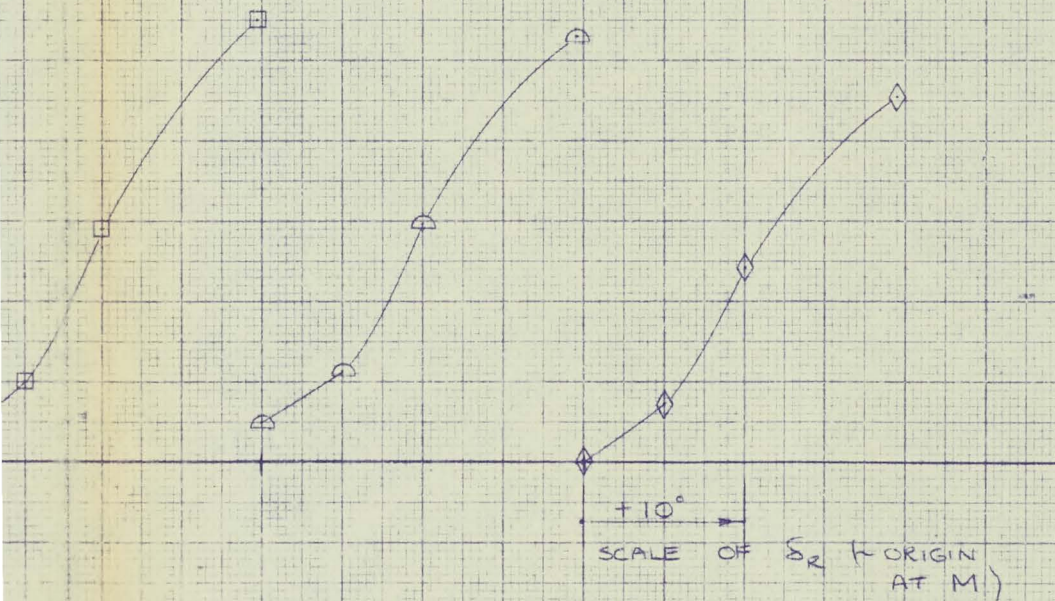


C-105

A L WIND TUNNEL TESTS

C_y vs δ_R

$\alpha = 0^\circ$



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C-105

C.A.L. WIND TUNNEL

C_y vs δ_R

$\alpha = 2^\circ$

C_y

04

03

02

01

0

$M = .70$

$M = .90$

$M = 1.00$

0

0

0

0

0

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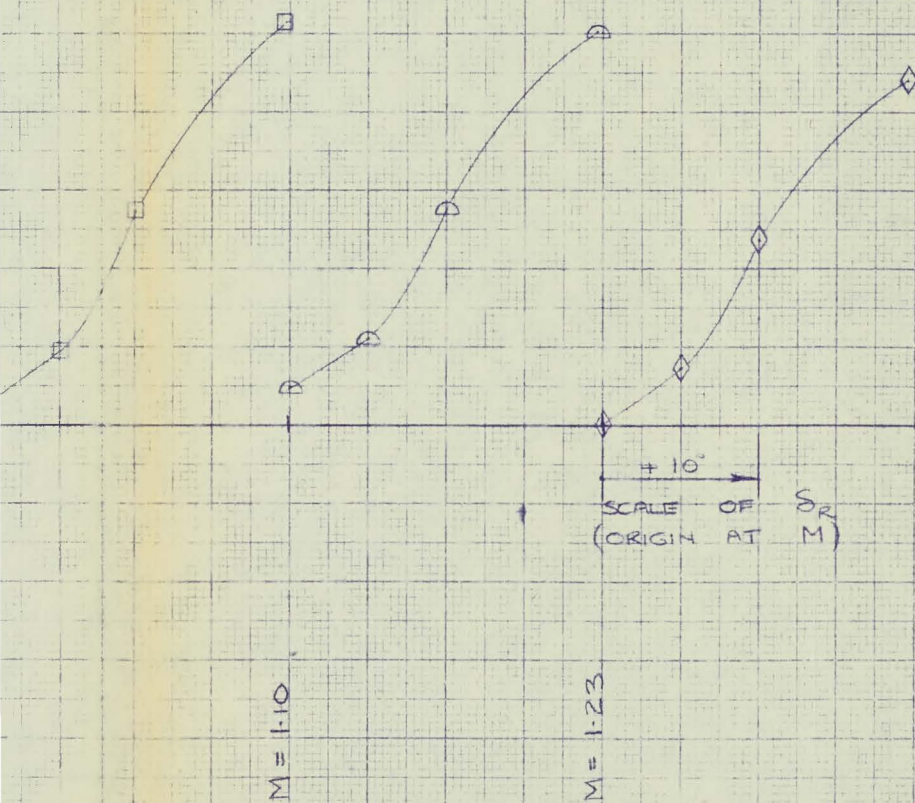
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C-105

WIND TUNNEL TESTS

C_y vs S_R

$\alpha = 2^\circ$



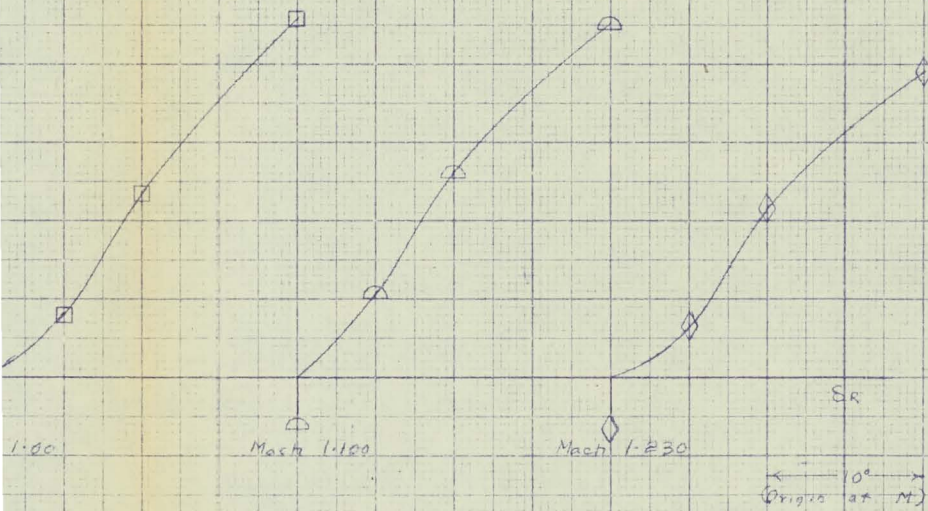
UNCLASSIFIED
 NON CLASSIFIED

C-105
C.A.L. Wind Tunnel Tests

C_x vs S_r

A/C Clean

$\alpha = +6^\circ$



UNCLASSIFIED
NON CLASSIFIE

AIRCRAFT C105

COMPONENT

SHEET No. 3.3.5

REPORT No. P/H.T./20

A. U. W.

DATE June 21/54

PREP BY Kira Khouri

C105
CAL. WIND TUNNEL TESTS

CY05, YB MACH No

$\alpha = -2^\circ$

CY05

PER DES.

004

003

002

001

0

RANGE $5^\circ < \delta < 10^\circ$

RANGE $0^\circ < \delta < 5^\circ$

MACH No

12

14

10

8

8

7

UNCLASSIFIED
NON CLASSIFIED

