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ARROW 1 ~~CONFIDENTIAL~~ 71/FAR/26
A/C 25201

~~PRELIMINARY ANALYSIS OF FLIGHTS~~

~~NOS. 1 TO 2~~

Copy No. 1 ~~SECRET~~ May 1968

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13



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MALTON - ONTARIO

TECHNICAL DEPARTMENT (Aircraft)

AIRCRAFT: ARROW I
A/C 25201

REPORT NO. 72/FAR/26

FILE NO.

NO. OF SHEETS:

TITLE:

~~CONFIDENTIAL~~

UNCLASSIFIED
~~SECRET~~

PRELIMINARY ANALYSIS OF FLIGHTS

NOS. 1 TO 9

Classification cancelled/changed to **UNCLASSIFIED**
by authority of.....(date).....
Signature.....Rank.....

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DATE May 1958

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DATE May 1958

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DATE May 1958

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DATE May 1958

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A/C 25201

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Introduction

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FIGURES

1. α Trim vs Mach No. and altitude
2. Periodic time for longitudinal short period mode
3. Periodic time for lateral short period mode
4. Time to 1/2 amplitude for lateral short period mode
 - 4.1 h = 10,000 ft.
 - 4.2 h = 20,000 ft.
 - 4.3 h = 40,000 ft.



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TECHNICAL DEPARTMENT

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INTRODUCTION

This extract contains data available from a preliminary analysis of the telemetry Sanborn traces for the first nine flights of A/C 25201 and comparison with estimated values.

It should be remembered that the telemetry instrumentation was installed for the purpose of flight safety monitoring rather than for engineering evaluation. Selection of instrument ranges from monitoring standpoint resulted in relatively poor accuracy of data for engineering purposes. In spite of this a number of parameters has been measured with reasonable accuracy and only these parameters are presented in this report.

An excellent agreement with predictions was obtained. A few curves presented do not describe adequately handling qualities and therefore a detailed program is required for accurate evaluation of all of the parameters affecting handling qualities, damper performance etc.

G9-11L
10 X 10 to the 1/2 inch, 5th lines accented
MADE IN CANADA

ARROW 1

CLTRIM VS. MACH. NO

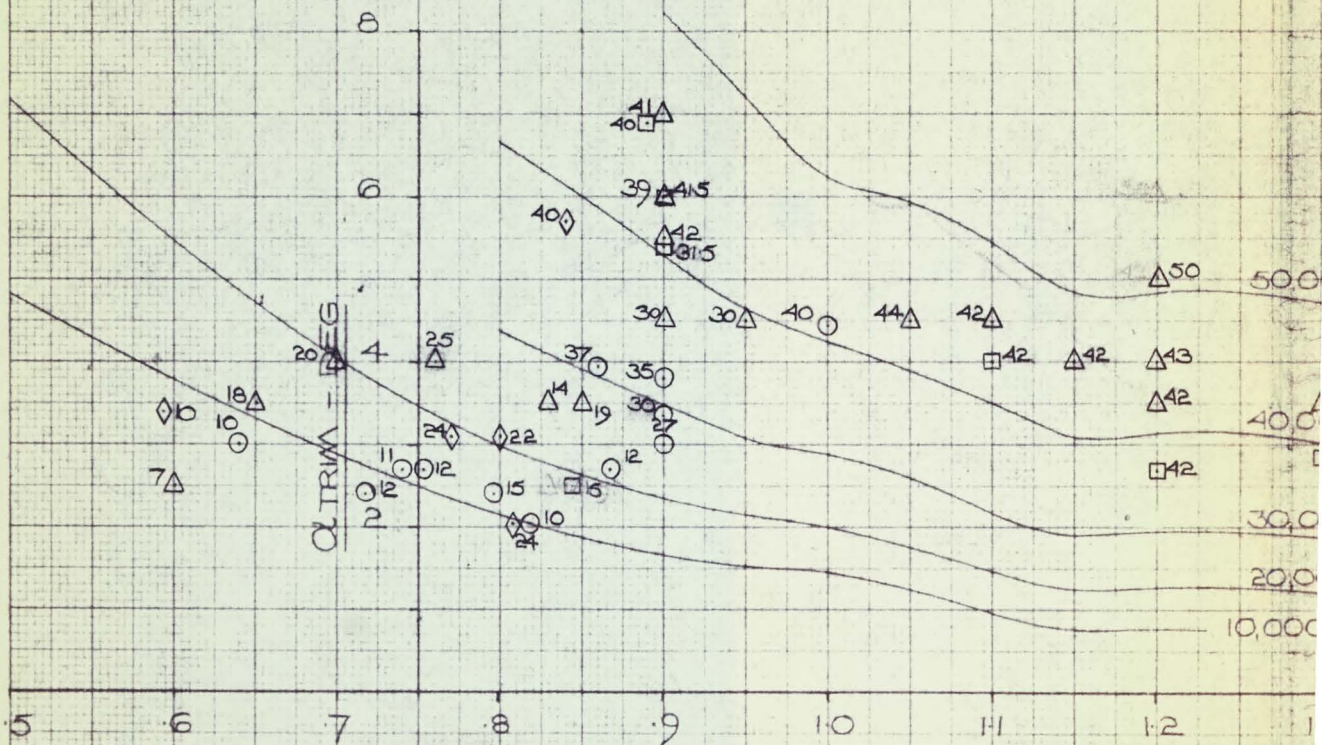


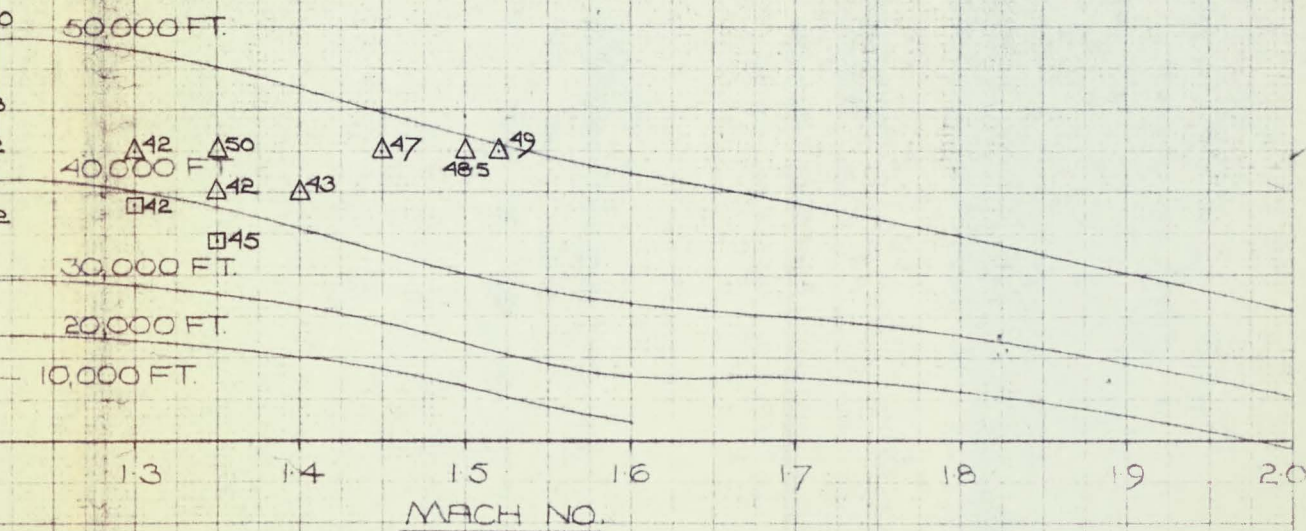
FIG. 1

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NO $W = 60,000 \text{ LB.}$
 $CG = .31 \bar{c}$

- FLIGHT # 6
- △ FLIGHT # 7
- FLIGHT # 8
- ◇ FLIGHT # 9

NUMBERS DENOTE ALTITUDE
IN THOUSANDS OF FEET



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FIG. 2

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C-105

FIG. 1. PERIOD (SECS) - MACH N°

$h = 0, 10000', 20000', 30000', 40000', 50000', \text{E.T.C.}$

$n = 1.0$

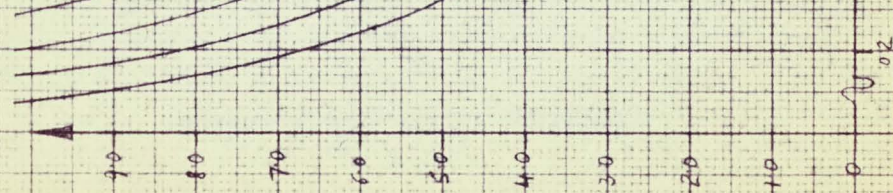
O FLIGHT # 3

Δ FLIGHT # 5

NUMBERS DENOTE ALTITUDE IN
THOUSANDS OF FEET

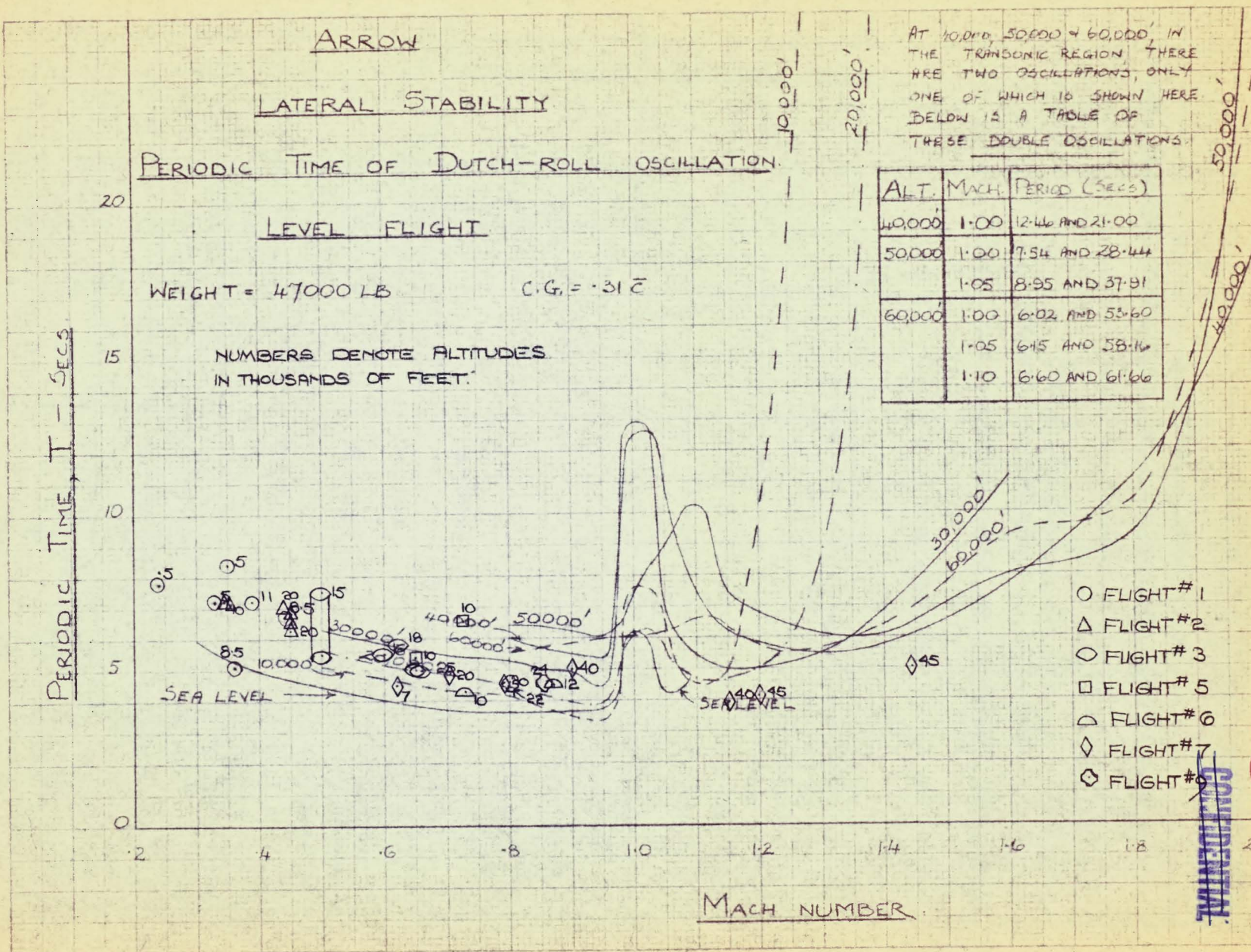
$W = 60000 \text{ lb}$
 $C.G. = 0.28 \bar{C}$
 $K_y = 178.95 \text{ ft}$

PERIOD (SECS)



MACH N°

EX. APR. 1958.



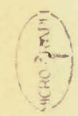
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FIG. 4.1

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FIG. 4.2

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ARROW:

LATERAL STABILITY.

TIME TO HALF AMPLITUDE OF DUTCH-ROLL OSCILLATION.

LEVEL FLIGHT.

ALT = 20000'

WEIGHT = 47,000 LB

C.G. = .312

----- DENOTES RANGE OF DIVERGENT OSCILLATIONS.

▲ FLIGHT #7

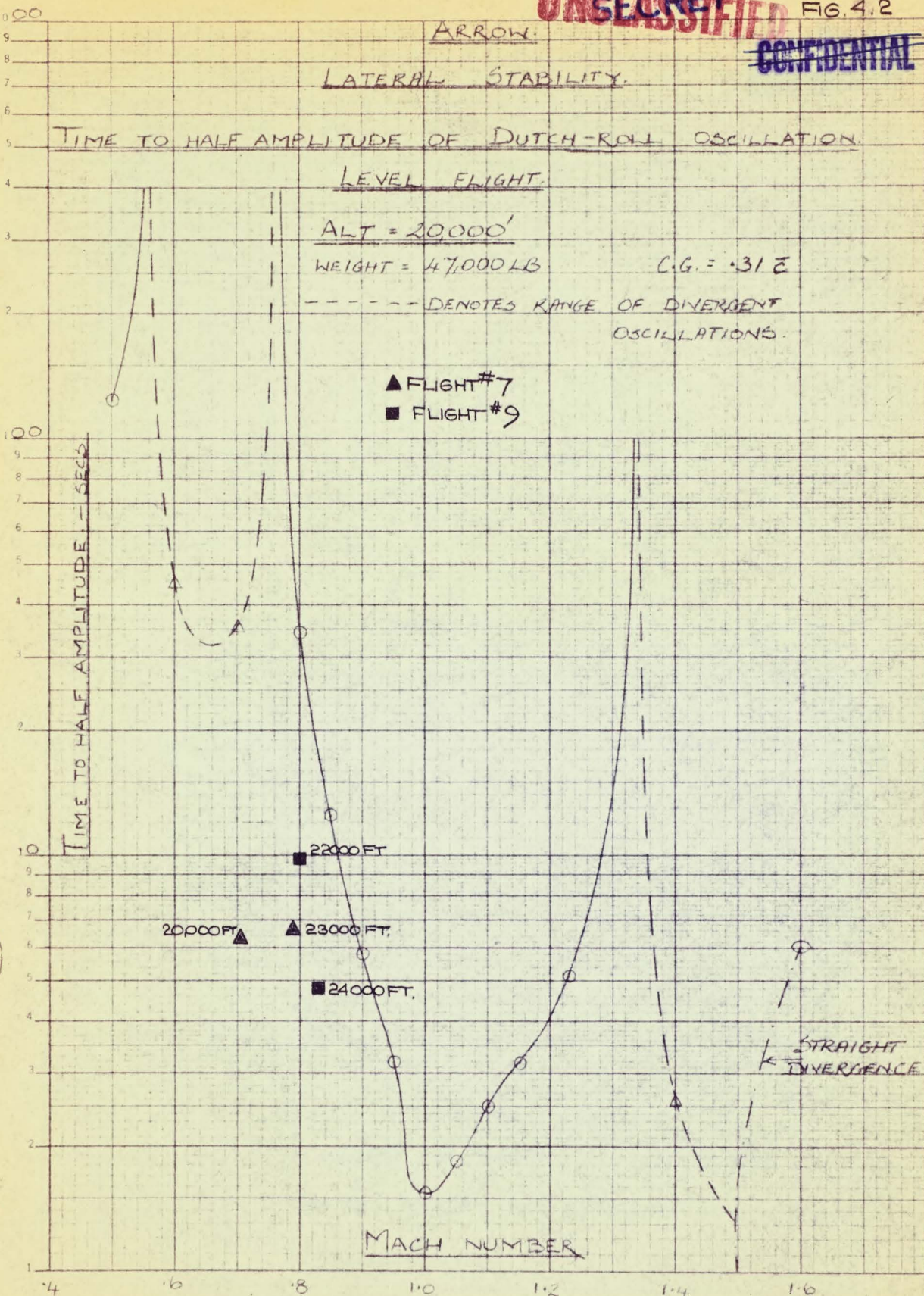
■ FLIGHT #9

TIME TO HALF AMPLITUDE - SECS

MACH NUMBER

G9-71
SEMI LOGARITHMIC
SCALES X 20 DIVISIONS

MICRO PATH



SECRET

FIG 4.3

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G 9-71
SEMI LOGARITHMIC
2 CYCLES X 70 DIVISIONS

TIME TO HALF AMPLITUDE - SECS.

▲ 42000 FT.

▲ FLIGHT #7

ARROW

LATERAL STABILITY

TIME TO HALF AMPLITUDE OF DUTCH-ROLL
OSCILLATION.

ALT = 40000'

LEVEL FLIGHT.

WEIGHT = 47000 LB

C.G. = .312

----- DENOTES RANGE OF DIVERGENT OSCILLATIONS

MACH NUMBER

