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STATIC-STABILITY INDEX AND AERODYNAMIC COEFFICIENTS FOR THE 0.125-SCALE MODEL MARK 82 LOW-DRAG BOMB WITH STANDARD AND EMTEX SNAKEYE I FINS WITH SIX RETARDATION ANGLES AT SUBSONIC SPEEDS

By
V. L. Schermerhorn

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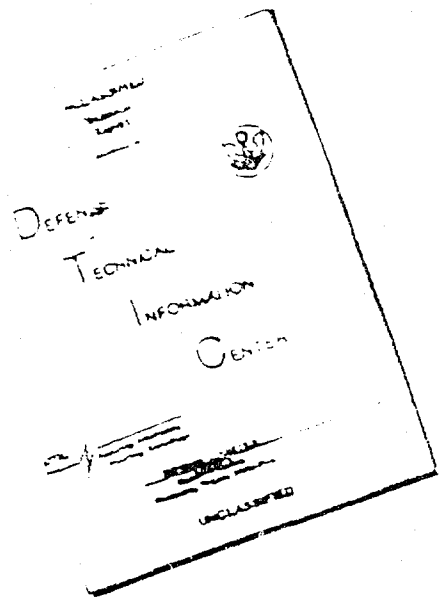
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STATIC-STABILITY INDEX AND AERODYNAMIC COEFFICIENTS FOR THE 0.125-SCALE MODEL MARK 82 LOW-DRAG BOMB WITH STANDARD AND EMTEX SNAKEYE I FINS WITH SIX RETARDATION ANGLES AT SUBSONIC SPEEDS

Prepared by:
V. L. Schermerhorn

ABSTRACT: The static-stability index, force and moment coefficients are presented as functions of angle of attack for the Mk 82 Low-Drag Bomb with Standard and Emtex Snakeye I Fins. For these tests the fin-opening angles were 60, 70, 80, 90, 100 and 110 degrees; the models' angle of attack ranged from -10 to +20 degrees; the free-stream Mach number was varied from 0.25 to 0.95, and roll angles were at 0, 22.5 and 45 degrees.

U. S. NAVAL ORDNANCE LABORATORY
WHITE OAK, MARYLAND

NOLTR 69-100 20 May 1969

STATIC-STABILITY INDEX AND AERODYNAMIC COEFFICIENTS FOR THE 0.125-SCALE MODEL MARK 82 LOW-DRAG BOMB WITH STANDARD AND EMTEX SNAKEYE I FINS WITH SIX RETARDATION ANGLES AT SUBSONIC SPEEDS

The purpose of this test program was to determine whether or not the Emtex fin, designed to minimize the opening shock at launch, would be sufficiently stable to warrant changing the configuration from that employing the standard Snakeye I fins. These tests were conducted at the request of the Naval Weapons Center under Task No. NOL-483/NWC.

E. F. SCHREITER
Captain, USN
Commander

L. H. SCHINDEL
By direction

CONTENTS

	Page
INTRODUCTION	1
SYMBOLS	1
MODELS, DATA ACQUISITION AND DATA REDUCTION	2
RESULTS	4
CONCLUSIONS	5
REFERENCES	6

TABLES

Table	Title
1	Nominal Wind-Tunnel Test Conditions

ILLUSTRATIONS

Figure	Title
1	Mk 82 Low-Drag Bomb - 0.125-Scale Model with Standard and Emtrex Snakeye I Tail Assemblies
2	Mk 82 Low-Drag Bomb with Standard Snakeye I Tail Assembly
3	Mk 82 Low-Drag Bomb with Emtex Snakeye I Tail Assembly
4-93	Normal-Force and Pitching-Moment Coefficients, C_N and C_m, vs Angle of Attack, α, for the 0.125-Scale Model Mk 82 Snakeye Bomb with Fins Open (Standard Tail: β_a = 60°, 70°, 80°, 90°, 100° and 110°; ϕ = 0°, 22.5° and 45°; M = 0.25, 0.50, 0.80, 0.90 and 0.95)
94-183	Side-Force, Yawing-Moment, Rolling-Moment and Axial-Force Coefficients, C_y, C_n, C_ℓ and C_{A_f} vs Angle of Attack, α, for the 0.125-Scale Model Mk 82 Snakeye Bomb with Fins Open (Standard Tail: β_a = 60°, 70°, 80°, 90°, 100° 110°; ϕ = 0°, 22.5° and 45°; M = 0.25, 0.50, 0.80, 0.90, and 0.95)
184-273	Normal-Force and Pitching-Moment Coefficients, C_N and C_m, vs Angle of Attack, α, for the 0.125-Scale Model Mk 82 Snakeye Bomb with Fins Open (Emtex Tail: β_f = 60°, 70°, 80°, 90°, 100° and 110°; ϕ = 0°, 22.5° and 45°; M = 0.25, 0.50, 0.80, 0.90 and 0.95)
274-363	Side-Force, Yawing-Moment, Rolling-Moment and Axial-Force Coefficients, C_y, C_n, C_ℓ and C_{A_f}, vs Angle of Attack, α, for the 0.125-Scale Model Mk 82 Snakeye Bomb with Fins Open (Emtex Tail: β_f = 60°, 70°, 80°, 90°, 100° and 110°; ϕ = 0°, 22.5° and 45°; M = 0.25, 0.50, 0.80, 0.90 and 0.95)

ILLUSTRATIONS (Cont'd)

364 Center-of-Pressure Location, in Calibers, from the Moment Reference Center, $C_{m_\alpha}/C_{N_\alpha}$, vs Mach Number for the 0.125-Scale Model Mk 82 Low-Drag Bomb with Standard and Emtex Snakeye I Tails (β = 60°, 70°, 80°, 90°, 100° and 110°)

365 Center-of-Pressure Location, in Calibers, from the Moment Reference Center, $C_{m_\alpha} / C_{N_\alpha}$, vs Fin-Opening Angle for the 0.125-Scale Model Mk 82 Low-Drag Bomb with Standard and Emtex Snakeye I Tails (M = 0.25, 0.50, 0.80, 0.90 and 0.95)

366-367 Axial-Force Coefficient at Zero Angle of Attack, $C_{A_{f_o}}$, vs Fin-Opening Angle for the 0.125-Scale Model Mk 82 Low-Drag Bomb with Standard and Emtex Snakeye I Tails

368-369 Axial-Force Coefficient at Zero Angle of Attack, $C_{A_{f_o}}$, vs Mach Number for the 0.125-Scale Model Mk 82 Low-Drag Bomb with Standard and Emtex Snakeye I Tails (β = 60°, 70°, 80°, 90°, 100° and 110°)

370 Average Location of the Center of Pressure vs Fin-Opening Angle for the 0.125-Scale Model Mk 82 Low-Drag Bomb with Standard and Emtex Snakeye I Fins.

371 Average Axial-Force Coefficient, and Average Nondimensional Center-of-Pressure Location vs Fin-Opening Angle for the 0.125-Scale Model Mk 82 Low-Drag Bomb with Standard and Emtex Snakeye I Tails

372 Base-Pressure Ratio, P_b/P_o, vs Mach Number for the 0.125-Scale Model Mk 82 Low-Drag Bomb with Emtex Tail (β = 60° and 110°)

373 Drag-Chamber-Pressure Ratio, P_c/P_o, vs Mach Number for the the 0.125-Scale Model Mk 82 Low-Drag Bomb with Standard and Emtex Snakeye I Tails (β = 60° and 110°)

374-375 Base-Pressure Ratio, P_b/P_o, vs Angle of Attack for the 0.125-Scale Model Mk 82 Low-Drag Bomb with Emtex Tail (β = 60° and 110°; M = 0.26, 0.38, 0.50, 0.65, 0.80, 0.85, 0.90, 0.93, 0.95 and 0.98)

376-377 Drag-Chamber-Pressure Ratio, P_c/P_o, vs Angle of Attack for the 0.125-Scale Model Mk 82 Low-Drag Bomb with Emtex Tail (β = 60° and 110°; M = 0.26, 0.38, 0.50, 0.65, 0.80, 0.85, 0.90, 0.93, 0.95 and 0.98)

INTRODUCTION

Standard Snakeye I fins and Emtex fins were fitted to an 0.125-scale model Navy Mk 82 low-drag bomb. Since the opening shock loads are known to damage the standard fins, the Emtex fins have been designed to minimize these loads.

SYMBOLS

A	body cross-sectional area reference, $\pi d^2/4$ (1.424 $in.^2$)
C_A	axial-force coefficient, F_A/q_A
C_{A_f}	corrected axial-force coefficient
$C_{A_{f_o}}$	axial-force coefficient at zero angle of attack
C_l	rolling-moment coefficient, M_x/qAd
C_m	pitching-moment coefficient M_y/qAd
C_{m_α}	pitching-moment derivative
C_N	normal-force coefficient, F_N/qA
C_{N_α}	normal-force coefficient derivative
C_n	yawing-moment coefficient, M_z/qAd
C_y	side-force coefficient, F_y/qA
c.g.	moment reference center
d	maximum body diameter (1.347 in.)
F_A	axial force
F_N	normal force
F_y	side force
L	axial distance from c.g. to fin-tip plane (calibers)
M	Mach number
M_x	rolling moment

M_y	pitching moment
M_z	yawing moment
P_b	base pressure
P_c	drag-chamber pressure
P_s	free-stream static pressure
P_o	stagnation pressure,
q	dynamic pressure, $\rho V^2/2$
Re	Reynolds number per foot
V	wind-tunnel free-stream speed
x,y,z	body axes
α	angle of attack
β_a	fin-opening angle (standard fin)
β_f	fin-opening angle (Emtex fin)
ρ	free-stream density
ϕ	roll angle

MODELS, DATA ACQUISITION AND DATA REDUCTION

MODELS

The Mk 82 low-drag bomb, with two Snakeye I tail configurations, was tested (Fig. 1). The standard Snakeye I fins are shown in the sketch on Figure 2; while the Emtex fins are shown in the sketch on Figure 3. Figure 1 is a photograph of the 0.125-scale models as tested in the wind tunnel. Both models have the same fin panels; these differ only in hinge location. The standard tail is mounted on fixed hinges at the base with the struts hinge mounted on a movable ring over the center shaft (Fig. 2). The Emtex fins are hinge mounted, at the rear, to a movable ring; and, the struts are mounted to fixed hinges at the root of the tail assembly (Fig. 3). Both assemblies have the same external shape when closed ($\beta = 0°$).

The models tested were 11.248 inches long, and had a maximum diameter of 1.347 inches.

BALANCES

The NOL 5-59 balance with the 1-35 external drag link was used to obtain the data shown herein. These data were acquired and stored in digital form on magnetic tape.

TEST CONDITIONS

Both models were tested at fin-opening angles of 60, 70, 80, 90, 100 and 110 degrees; at roll angles of 0, 22.5 and 45 degrees; at angles of attack ranging from -10 to +20 degrees; and, at nominal free-stream Mach numbers of 0.25, 0.50, 0.80, 0.90 and 0.95. The tests were conducted in the NOL Supersonic Tunnel No. 1 fitted with the subsonic nozzle blocks. The nominal wind-tunnel test conditions, which may vary slightly from day to day due to atmospheric pressure and temperature changes, are noted in Table 1.

DATA REDUCTION

These data have been reduced to aerodynamic coefficient form, and are referred to a c.g. located 6.234 inches ahead of the base of the model. Corrections have been made to the angle of attack to account for elastic deflection of the sting balance due to aerodynamic loading.

Since an external drag link was used for these tests, the axial-force data have been corrected by means of the following expression:

$$C_{A_f} = C_A + \left[(P_b - P_s)\ (A_b - A_s + A_s\ (P_c - P_s) \right] / qA$$

In this expression values for the pressures, P_b and P_c, have been determined from the data obtained at the 110 degrees fin-opening angle and at zero angle of attack. For the models tested the value of A_b and A_s were as follows:

Configuration	A_s	A_b
Standard	0.159 in^2	0.4255 (fixed hexagonal base ring)
Emtex	0.193 in^2	0.3595 (shaft area)

Base and drag-chamber pressures as a function of angle of attack, and for 60 and 110 degrees fin-opening angle, were obtained for the

model fitted with the Emtex tail. A check on these data, made at a 60-degree fin-open angle, using the base- and drag-chamber pressures as determined for both 60 and 110 degrees fin angles, indicates that the maximum error (of 0.3 percent of the total axial force) was introduced when one uses the values determined from tests with 110-degree fin angle only. That is, the maximum increment in $C_{A_{f_o}}$ was noted to be:

$$\Delta C_{A_{f_o}} = 0.054 \text{ at } M = 0.95$$

RESULTS

The experimentally determined normal-force and pitching-moment coefficients are presented, as functions of angle of attack, on Figures 4 through 93, for the model fitted with the standard tail. The corresponding side-force, yawing-moment, rolling-moment and axial-force coefficients - versus angle of attack - are presented on Figures 94 through 183. Similar plots for the Emtex tail configuration are found on Figures 184 through 273, and figures 274 through 363, respectively.

During the tests on the model fitted with the standard tail, the pitch-plane fins were noted to undergo stressing and subsequent relaxing as the fins were moved out of, or into, the leeward side of the model, as the angle of attack was changed. The fins were noted to have a tendency to roll in a negative direction at the onset of the wind-tunnel test blow. At the end of the blow, however, the fins relaxed and resumed their original setting. The Emtex fins, which were attached more rigidly to the model, did not appear to have as much fin movement; however, the induced rolling moment was greater and (generally) of opposite sign. In general, most of the discontinuities which appear in the plotted data can be attributed to fin movement occurring during a given run.

Figures 364 and 365 are composite plots showing the location of the center of pressure, in calibers, as measured from the center of gravity. These locations are plotted versus Mach number and fin-opening angle, respectively, for both model configurations. Axial-force coefficients, measured at zero angle of attack, and plotted as a function of fin-opening angle, with Mach number as the parameter, are presented on Figures 366 and 367 for the standard and Emtex tail configurations, respectively. Figures 368 and 369 are cross plots of these data with the fin angle used as a parameter. The average center-of-pressure location, for all Mach numbers, versus fin-opening

angle, is shown on Figure 370. Figure 371 depicts the average axial-force coefficient, for both tail configurations, as a function of fin-opening angle. Also shown is the average center-of-pressure location, nondimensionalized by the distance from the c.g. to the fin-tip plane, for each configuration plotted as a function of the fin-opening angle. Figures 372 through 377 are plots of the base and drag-chamber pressures versus free-stream Mach number, and angle of attack, for tests with 0, 60 and 110 degrees fin-opening angles.

CONCLUSIONS

Both of the configurations tested were statically stable; very little change in stability with Mach number was noted (see Fig. 364). A small increase in static stability did occur as the fin-opening angle was increased (see Fig. 365). In general, the center of pressure is located approximately one caliber further aft on the model when the standard tail was used (see Fig. 370). The center-of-pressure location, nondimensionalized by the distance to the fin-tip plane from the c.g., was noted to have identical curves for both configurations (see Fig. 371). This indicates that accounting for the large fin span the static margin is almost entirely dependent on fin-tip location alone.

The maximum-drag coefficient (at $\alpha = 0$) for both configurations occurs at approximately a 90-degree fin-opening angle (see Figs. 366 to 369). Since the Emtex tail (with fins open) does not extend as far from the main body as the standard tail, it has less fin surface exposed to the free stream and has a smaller drag compared to the standard tail (which extends more into the wake from the body (see Fig. 371)).

Only a small change in base pressure was noted to occur with changes in fin-opening angle (see Fig. 372). The dip in base-pressures measurements, versus angle of attack (see Figs. 374, 375) between $\alpha = -8°$ and $\alpha = +8°$, seems to coincide with the greatest fin movement noted to occur during the test; this was the test range when the fins underwent a bending and a relaxing as they moved out of or into the lee of the model.

The side-force, yawing-moment and induced rolling-moment coefficients were smaller for the standard tail. However, this configuration rotated slightly at onset of blowing; more so than the Emtex tail, which had a more rigid construction. This action would seem to indicate that, if the fins were allowed to rotate more freely, some compensation for fin misalignment could be obtained. Thus, it

would seem likely that some of the stressing, which tends to break off the fins at launch, would be alleviated if the fins were allowed to rotate more freely.

REFERENCES

(a) V. L. Schermerhorn, "Static-Stability Index and Aerodynamic Coefficients for the 0.125-Scale Model Mark 82 Low-Drag Bomb with Closed Snakeye I Fins at Subsonic and Transonic Speeds," NOLTR (in preparation)

Table 1

NOMINAL WIND-TUNNEL TEST CONDITIONS

Average Supply Temperature = 22 Degrees Centigrade

Average Mach No.	Average Supply Pressure mm Hg.	Reynolds Number $(Re/ft)10^{-6}$
0.26	760	1.80
0.50	748	2.90
0.60	745	3.80
0.70	742	3.90
0.80	740	4.15
0.90	738	4.35
0.95	738	4.40
0.99	738	4.45

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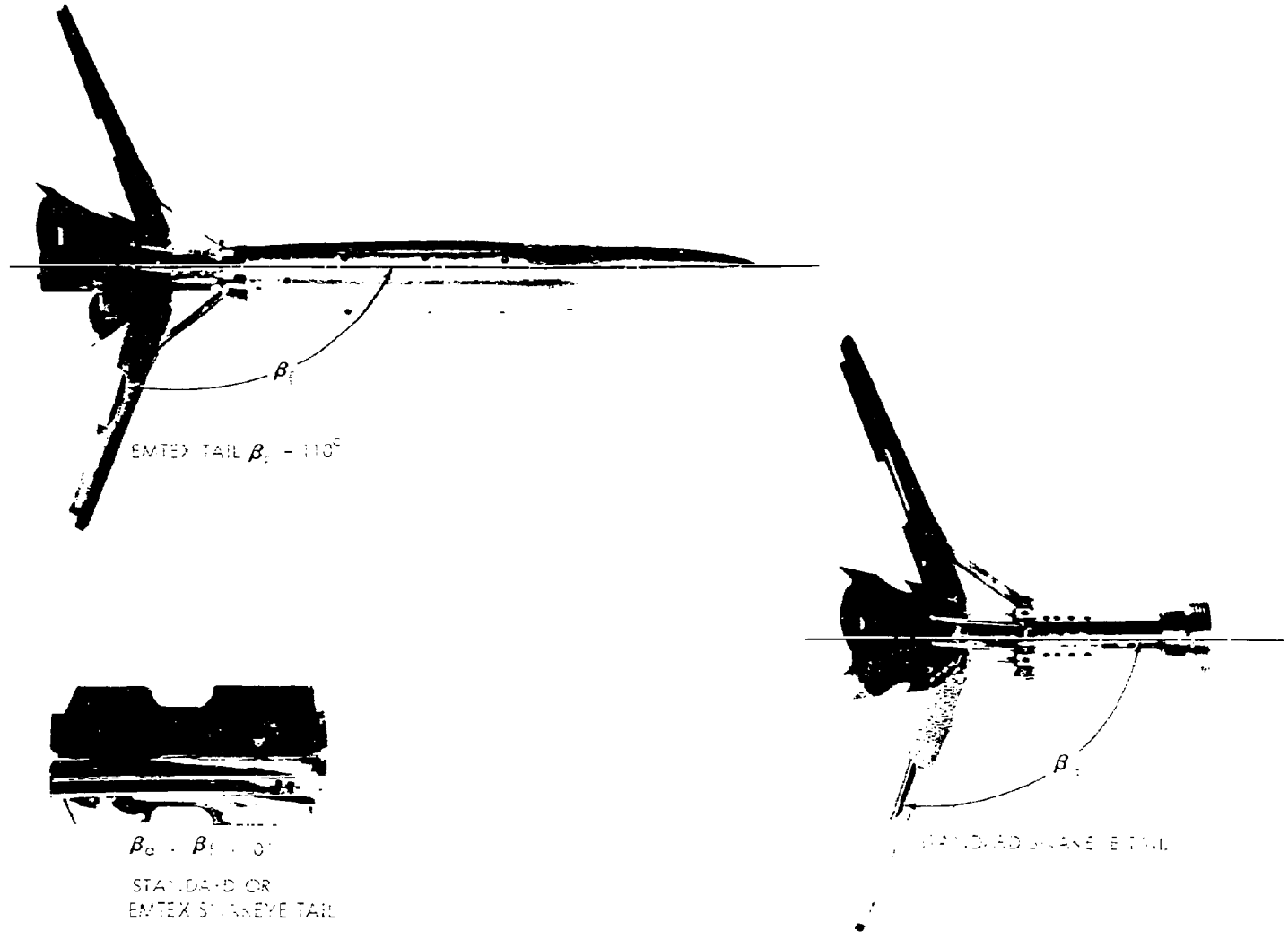


FIG 1 MK82 LOW DRAG BOMB 0.125 SCALE MODEL WITH STANDARD AND EMTEX SNAKEYE 1 TAIL ASSEMBLIES

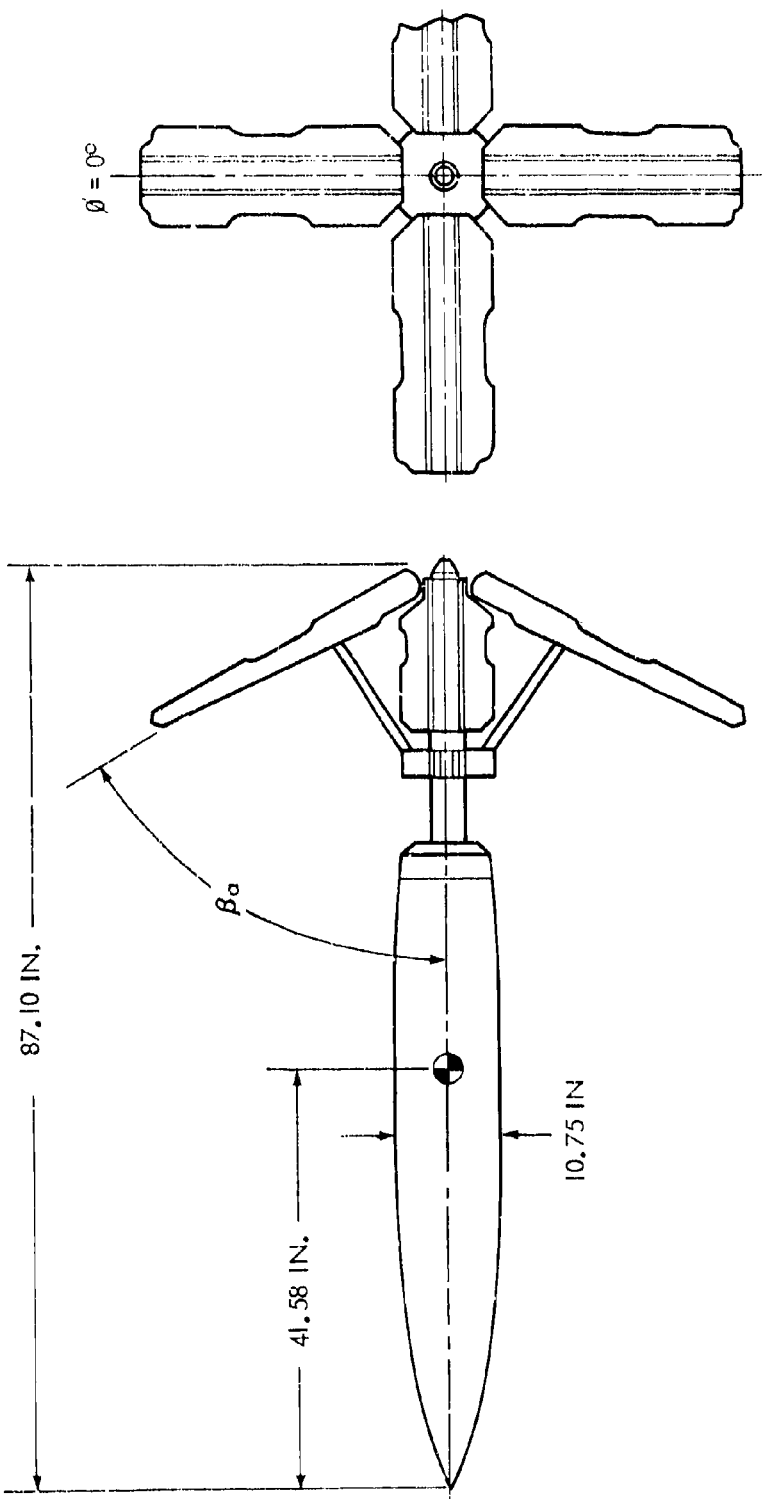


FIG. 2 MK82 LOW DRAG BOMB WITH STANDARD SNAKEYE I FINS

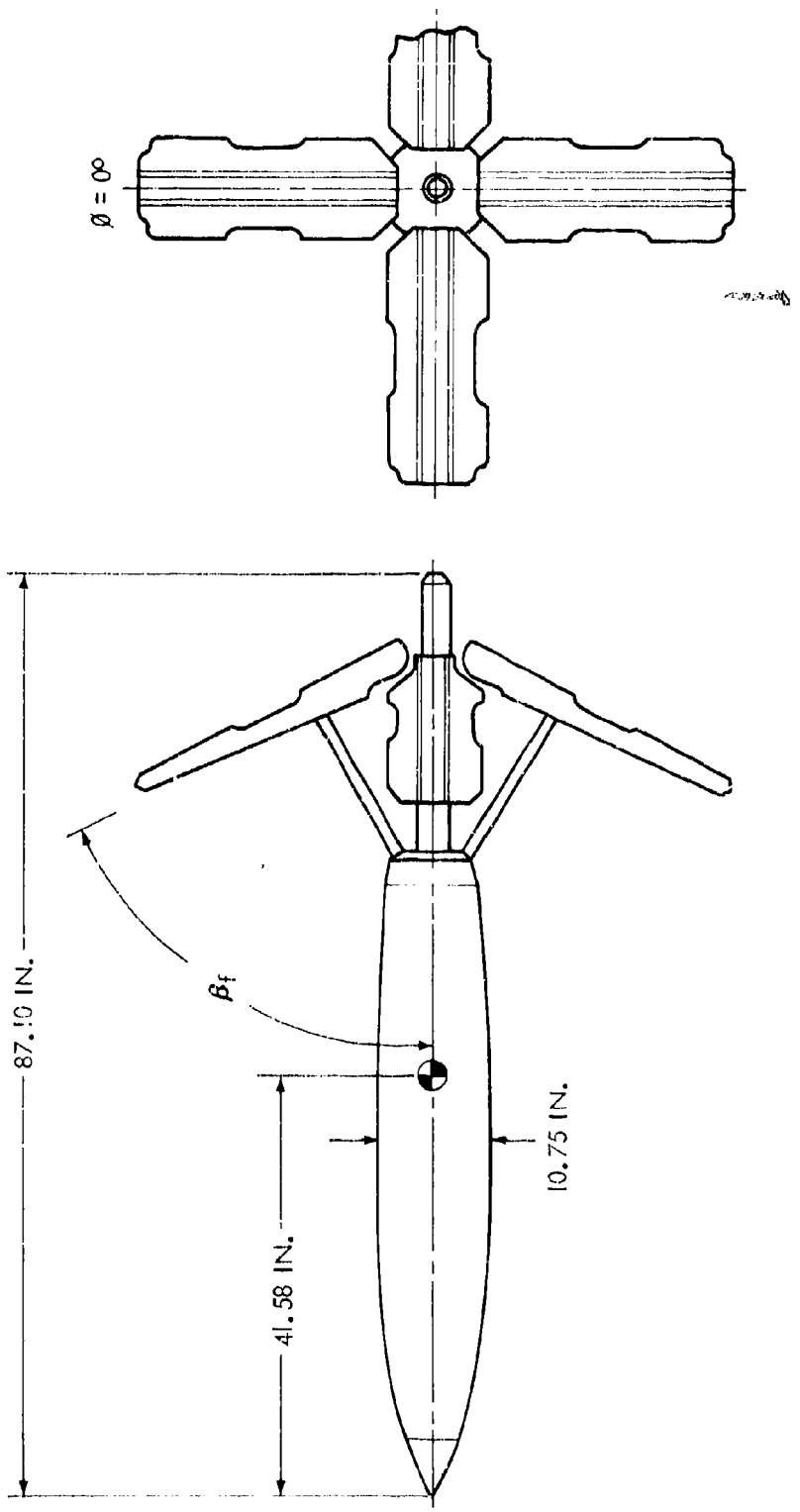


FIG 3 MARK 82 LOW DRAG BOMB WITH EMTEX SNAKEYE I FINS

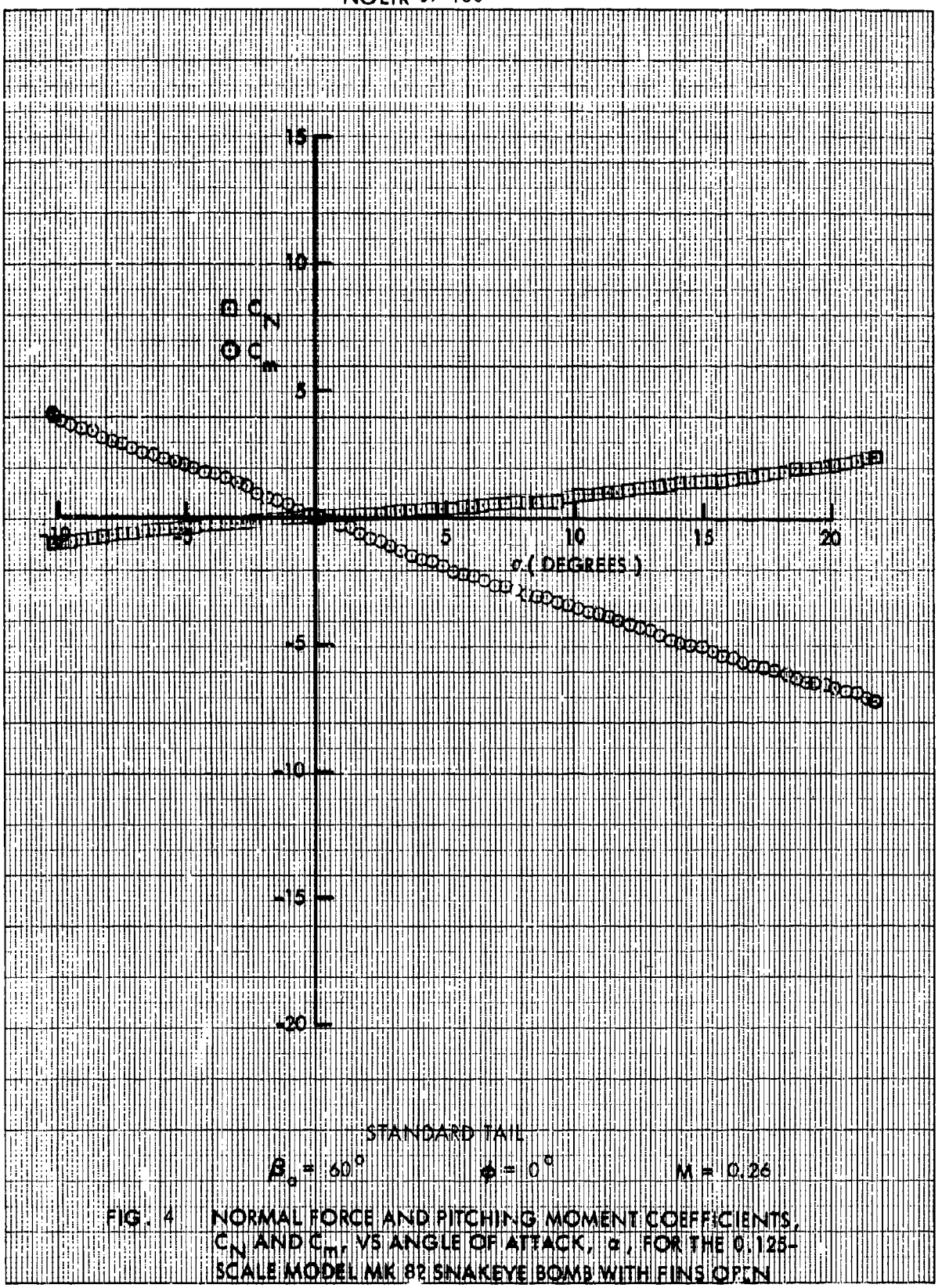


FIG. 4 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

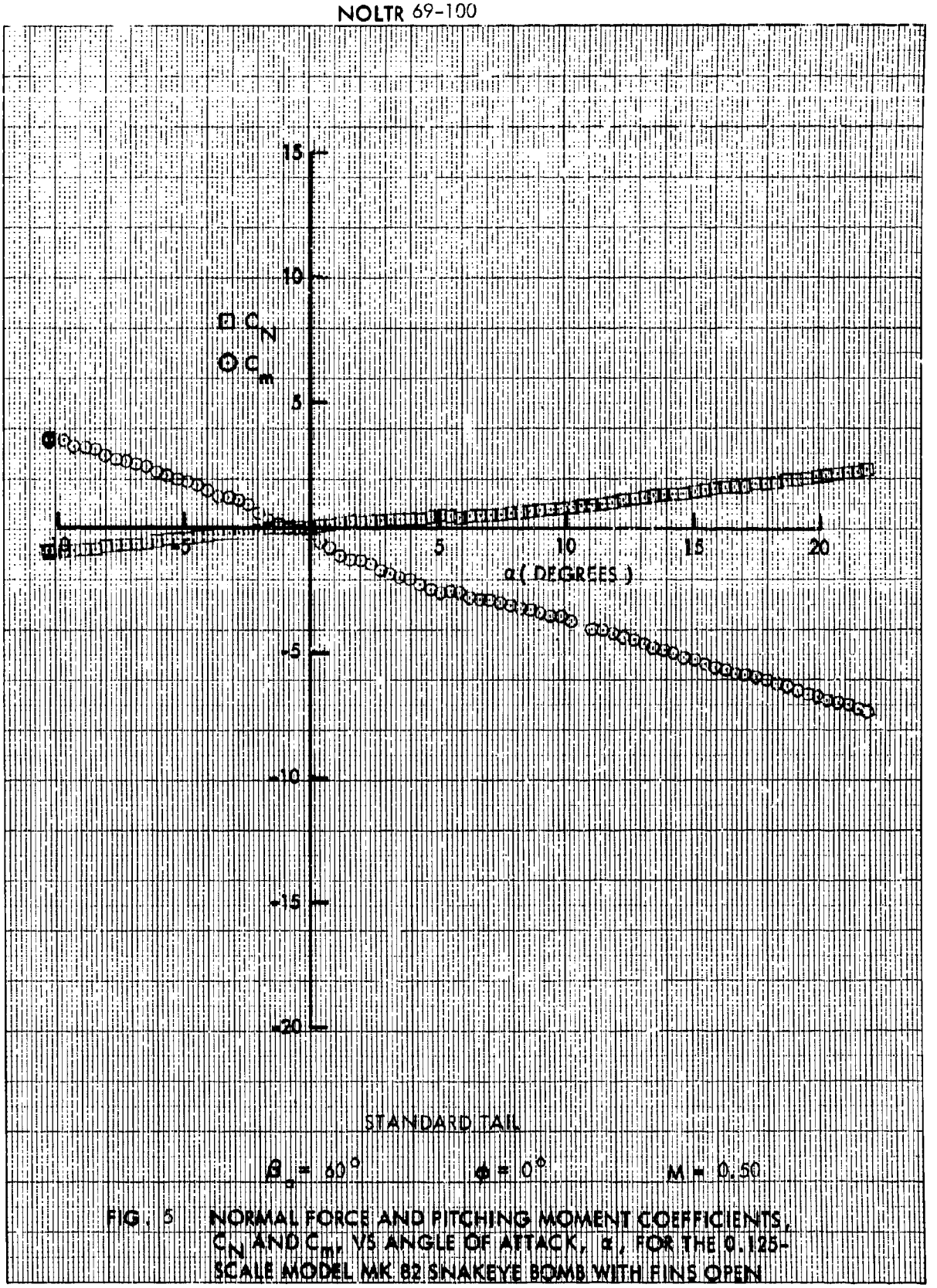


FIG. 5 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

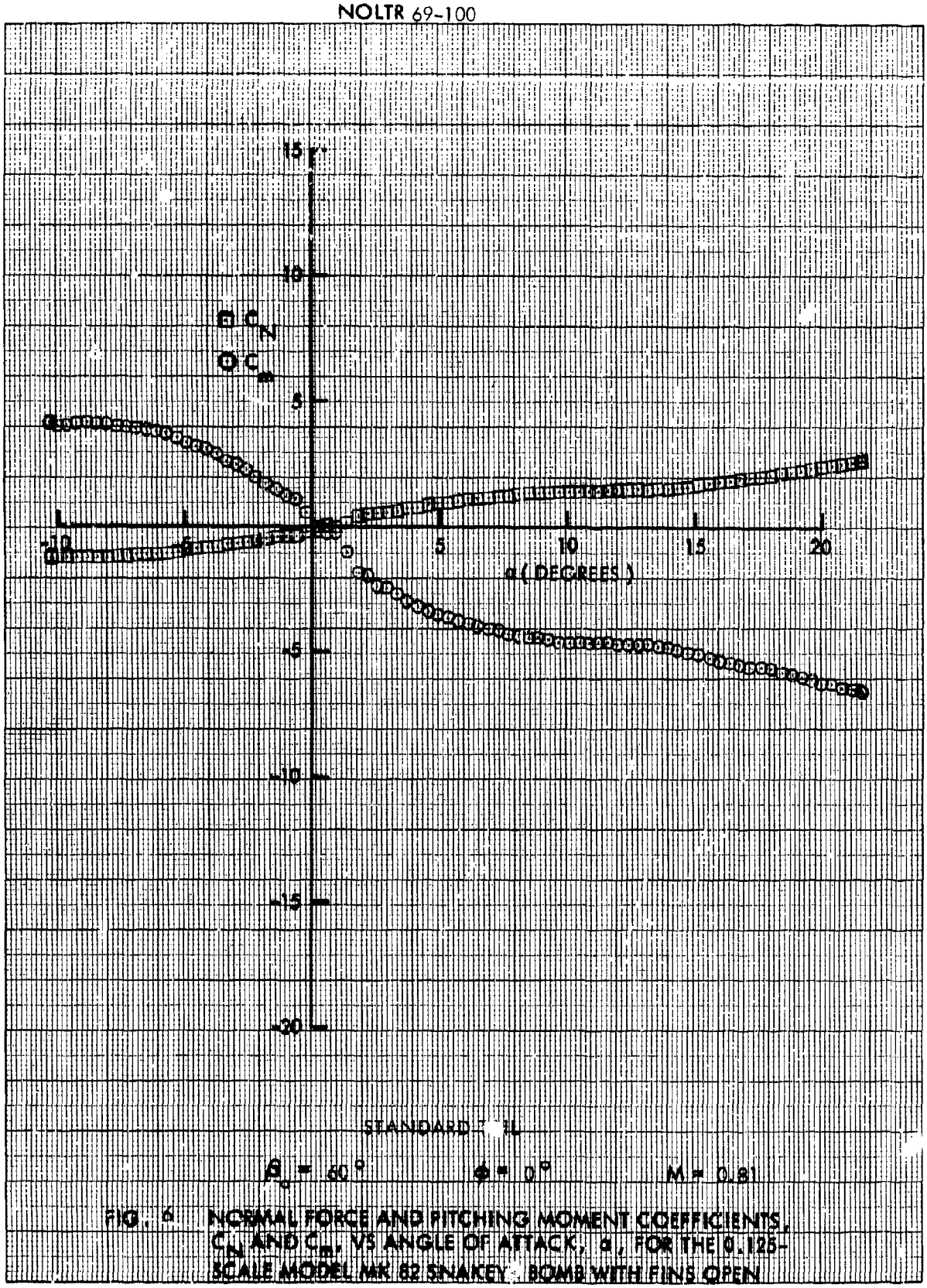


FIG. 6 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

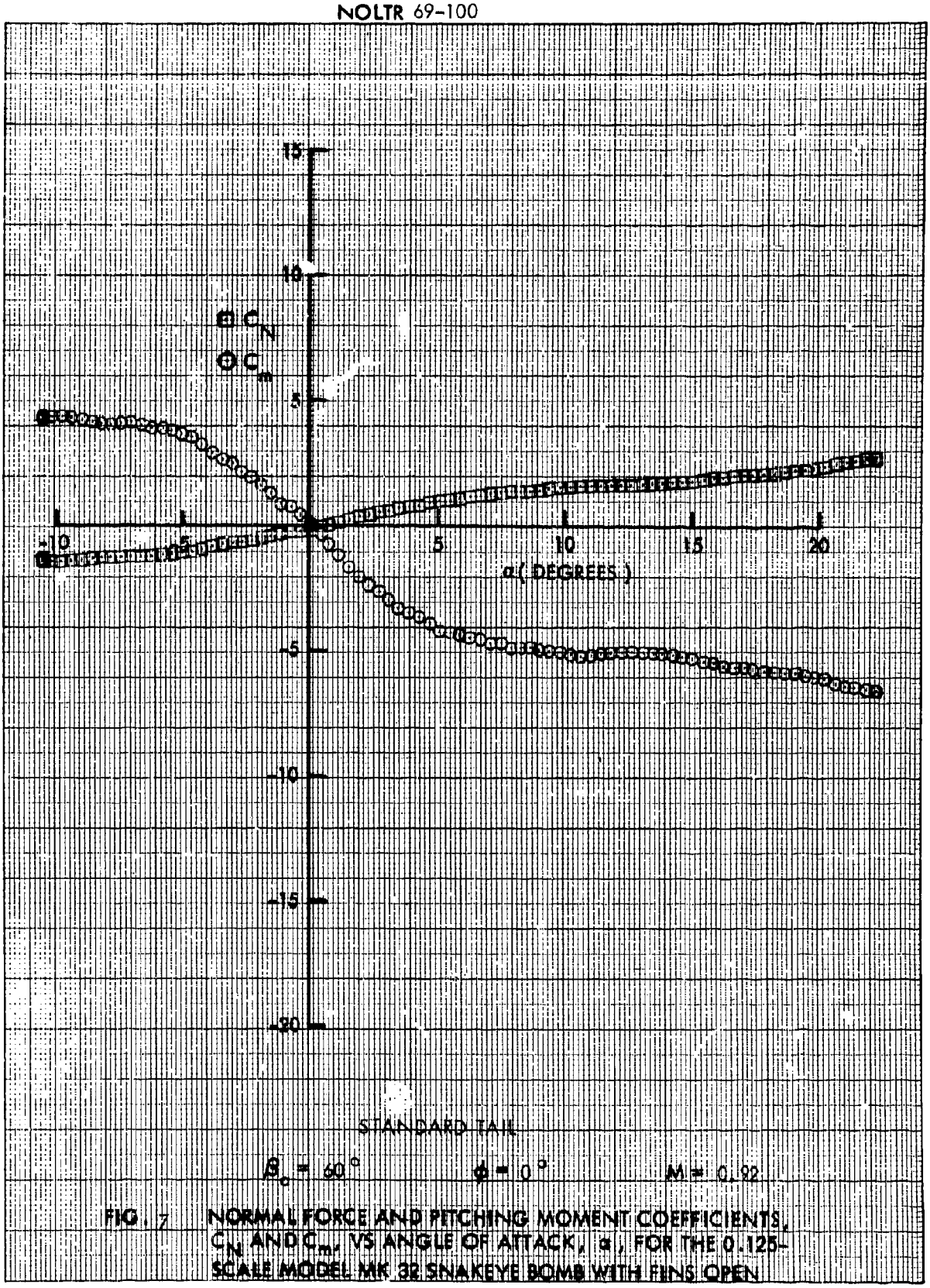


FIG. 7 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 32 SNAKEYE BOMB WITH FINS OPEN

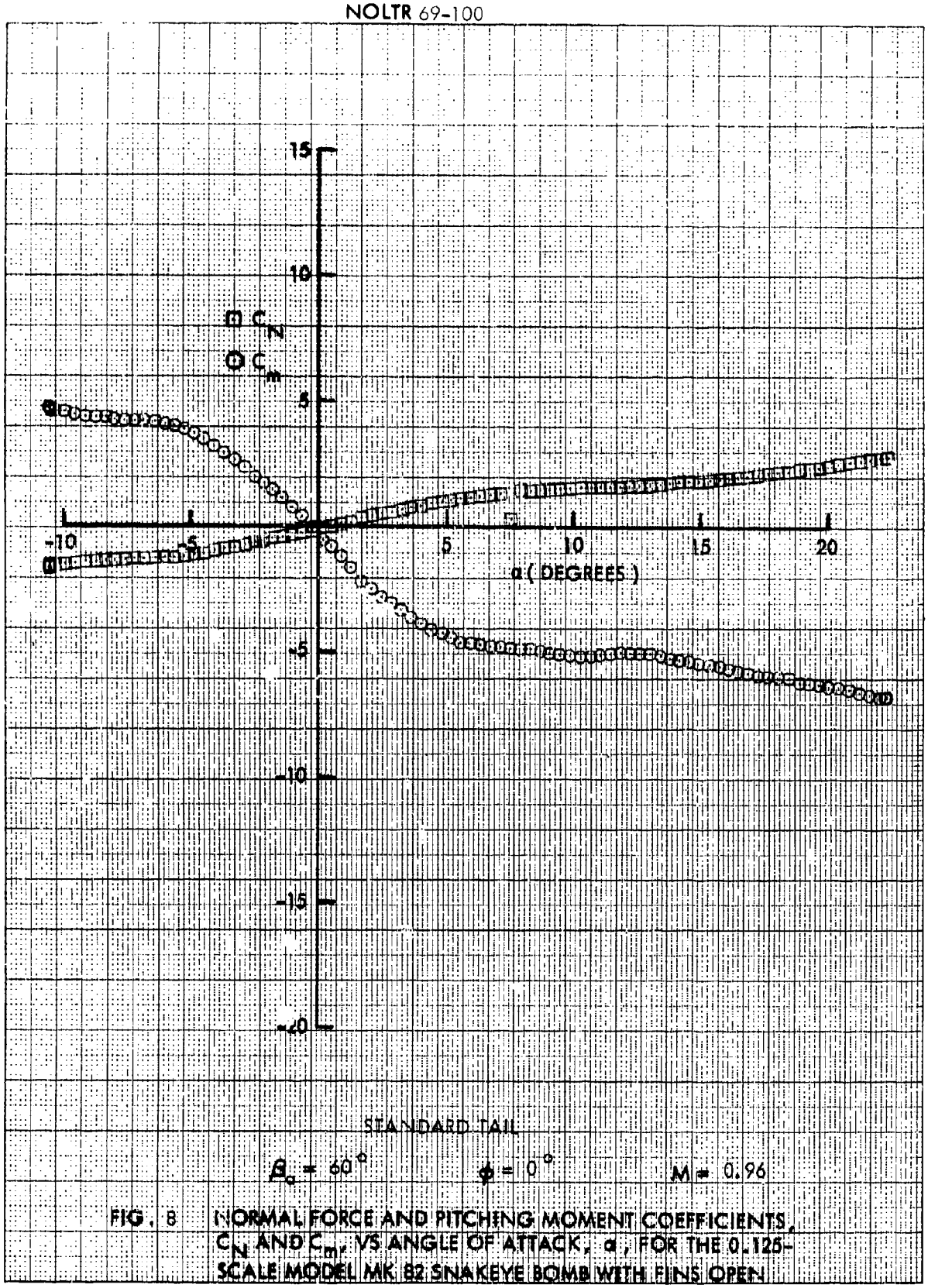


FIG. 8 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

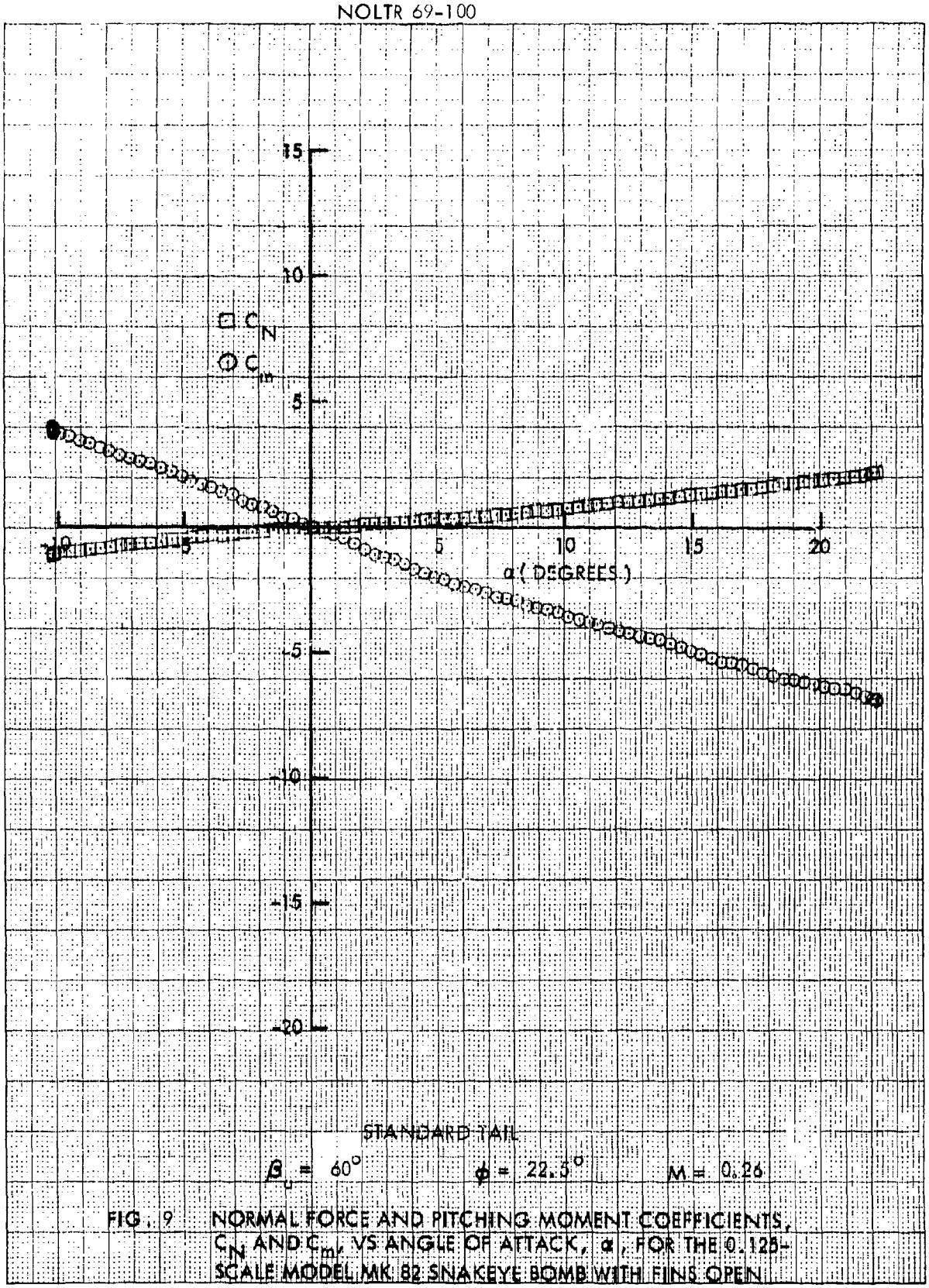


FIG. 9 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.128-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

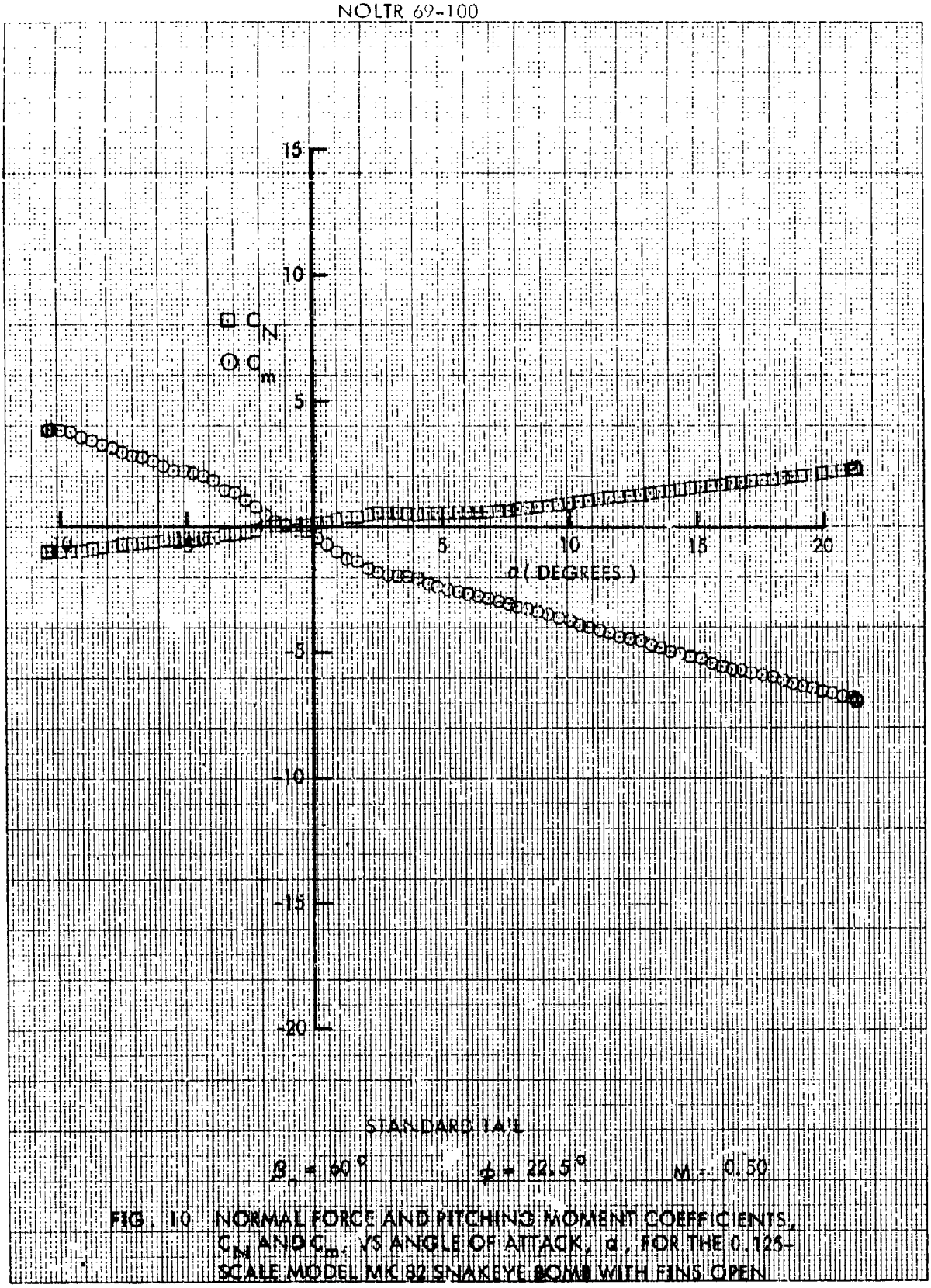


FIG. 10 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

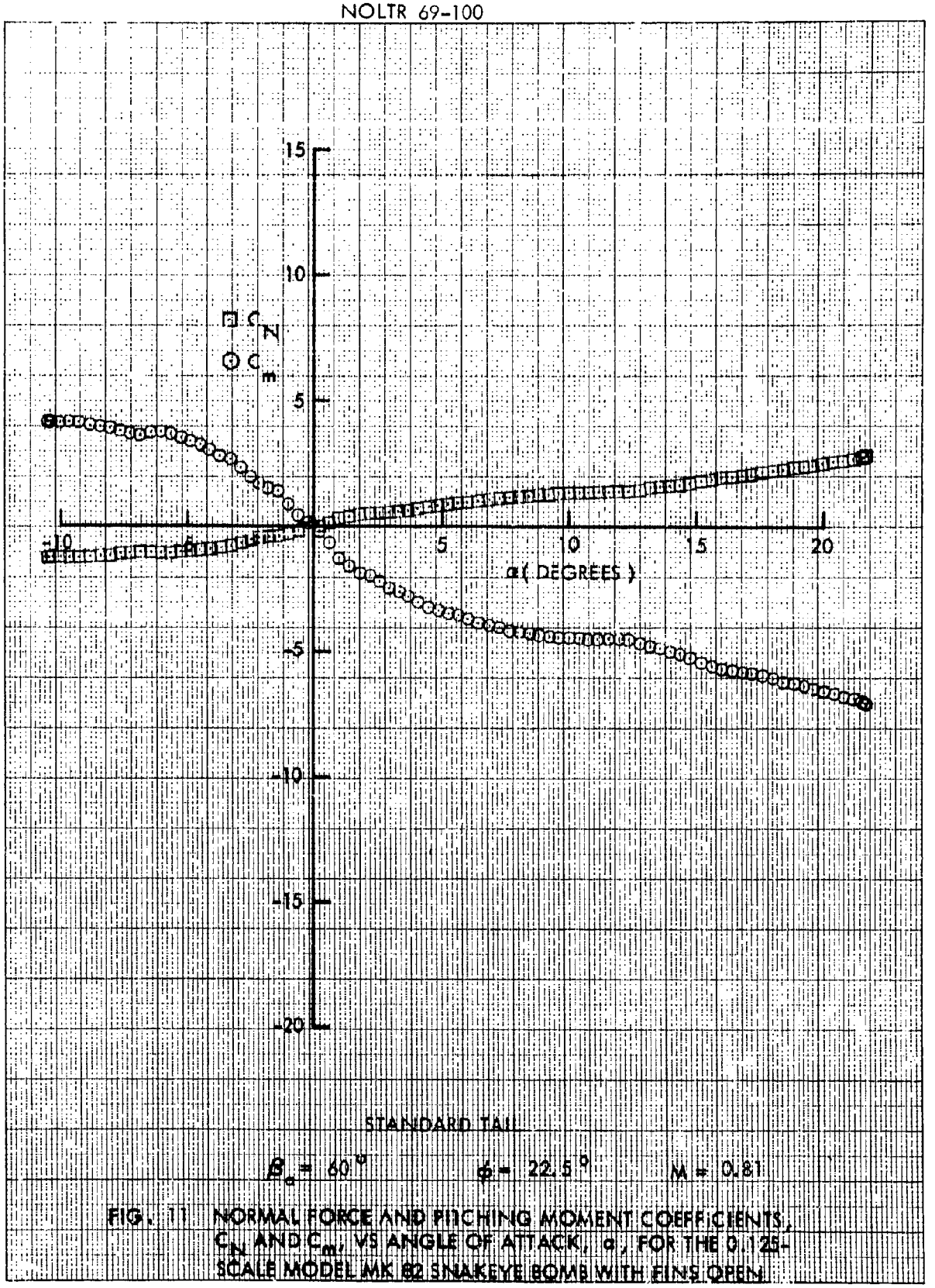


FIG. 11 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

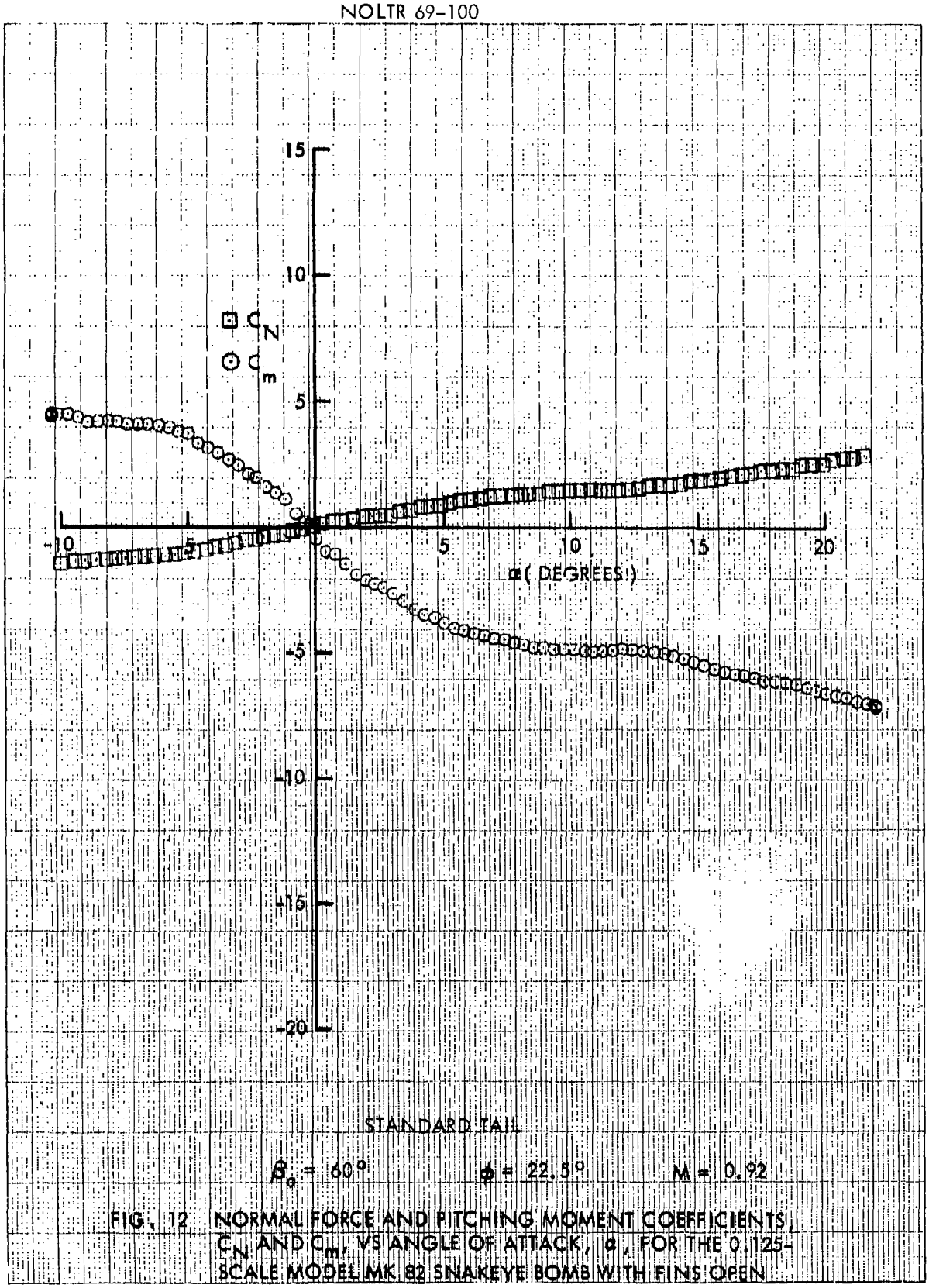


FIG. 12 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

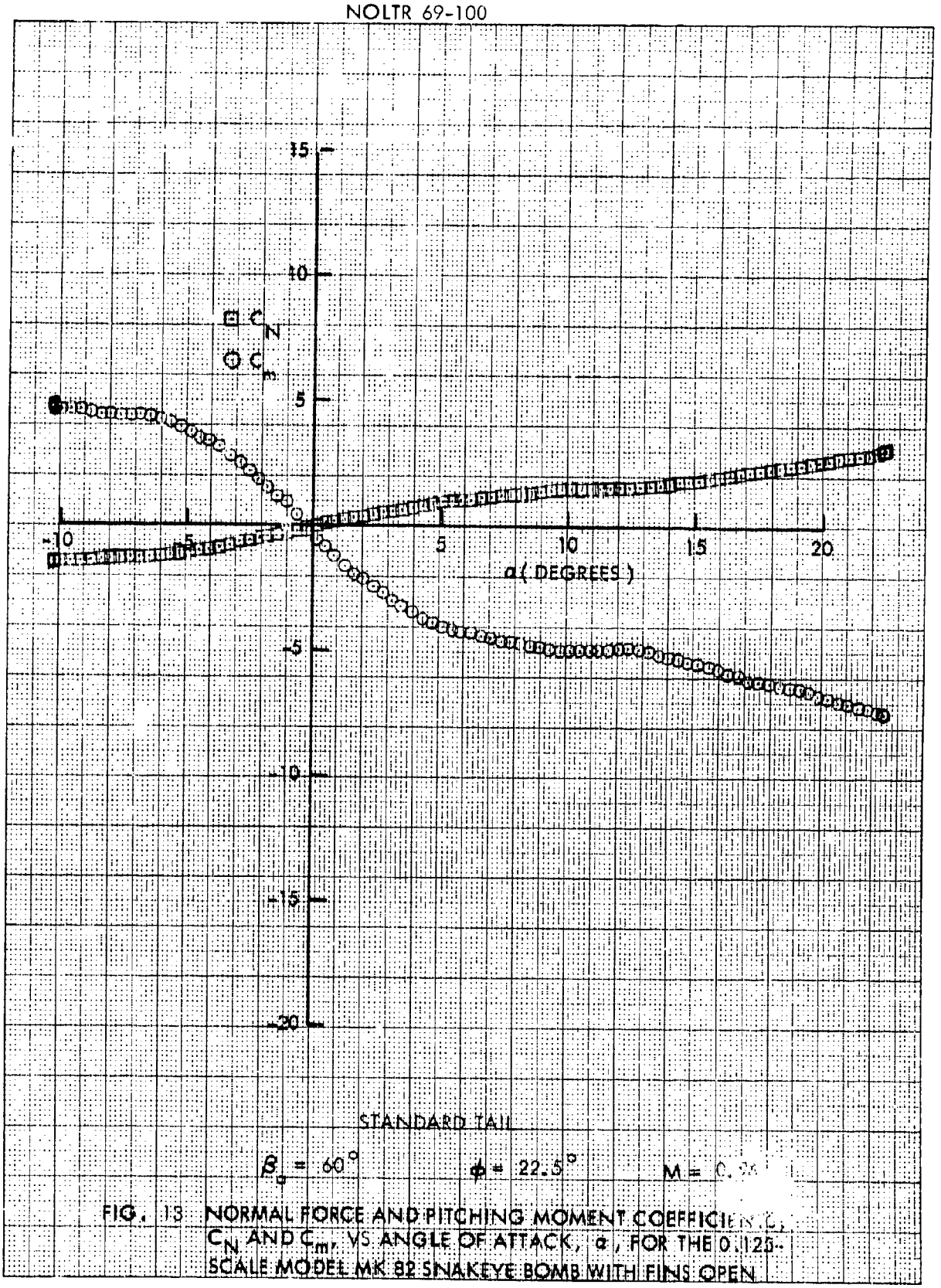


FIG. 13 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

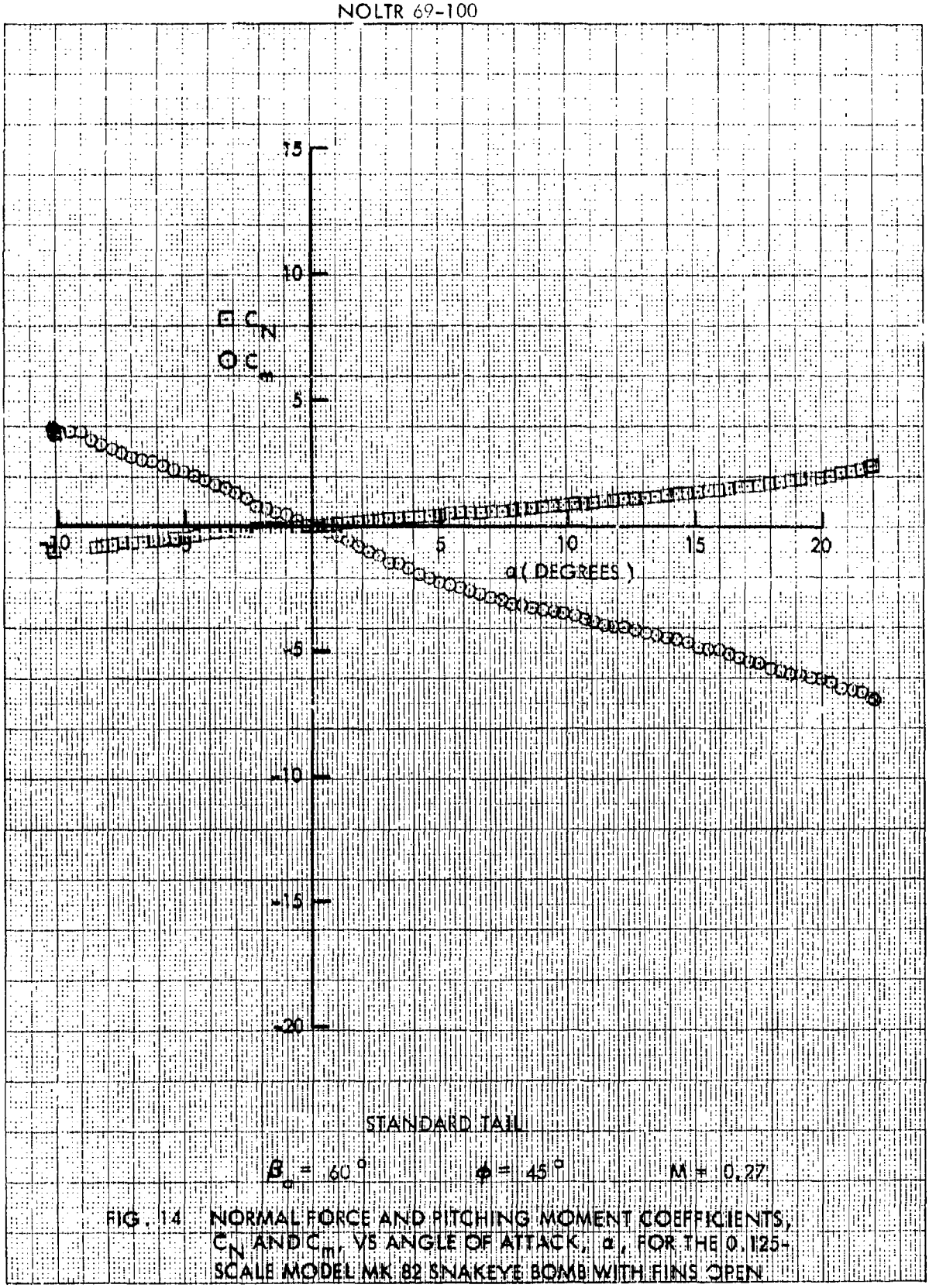


FIG. 14 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

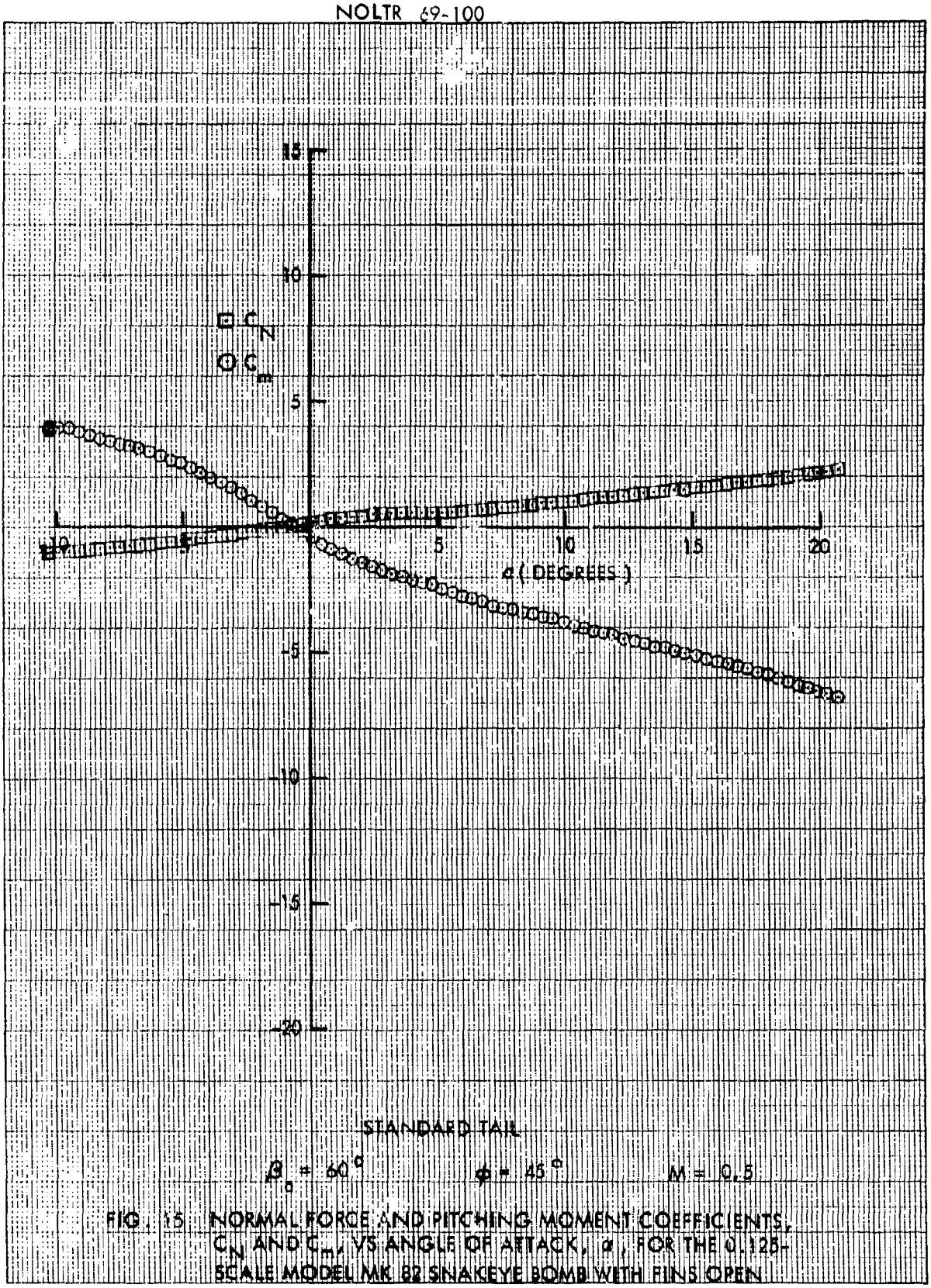


FIG. 15 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

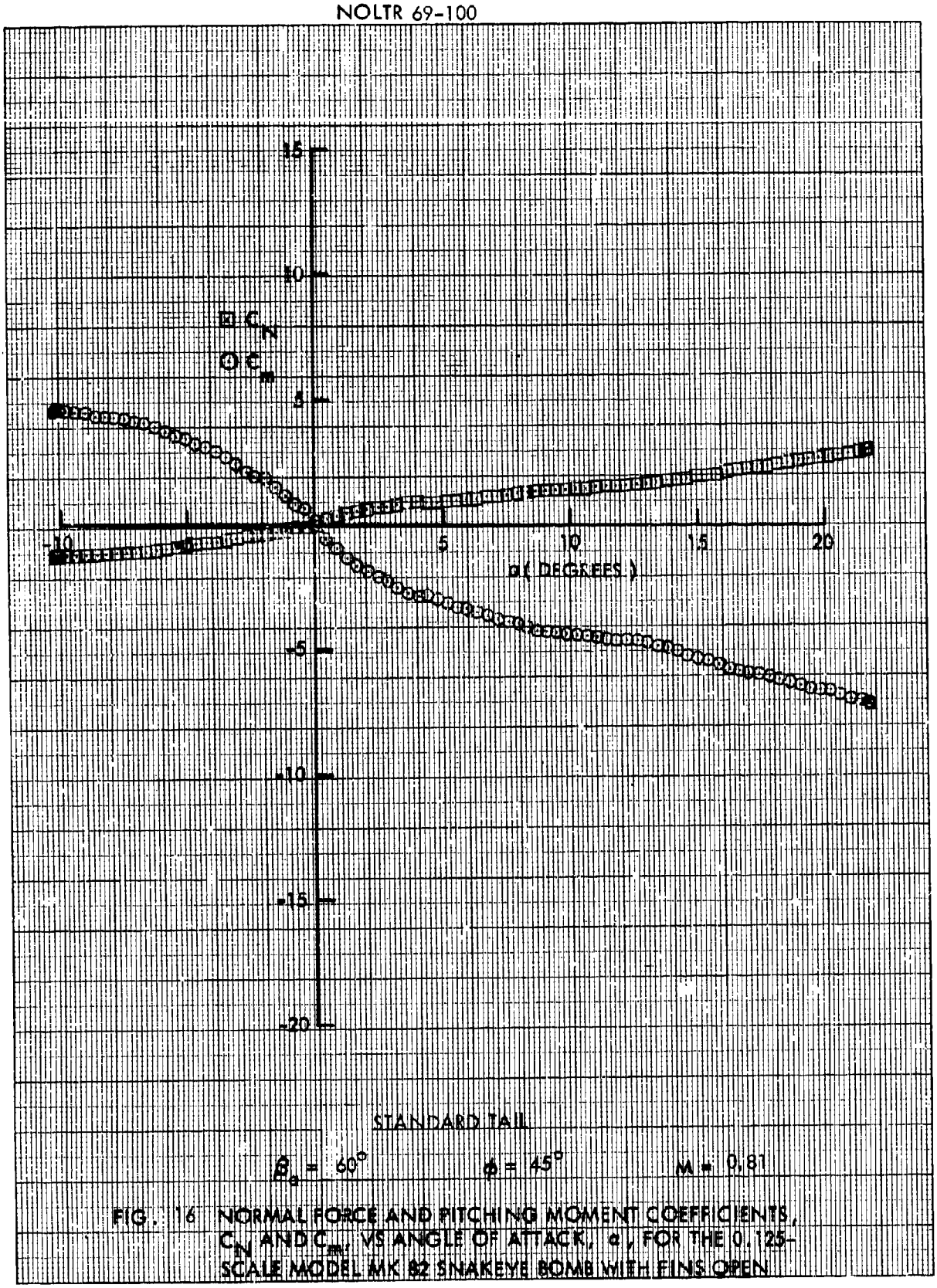


FIG. 16 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

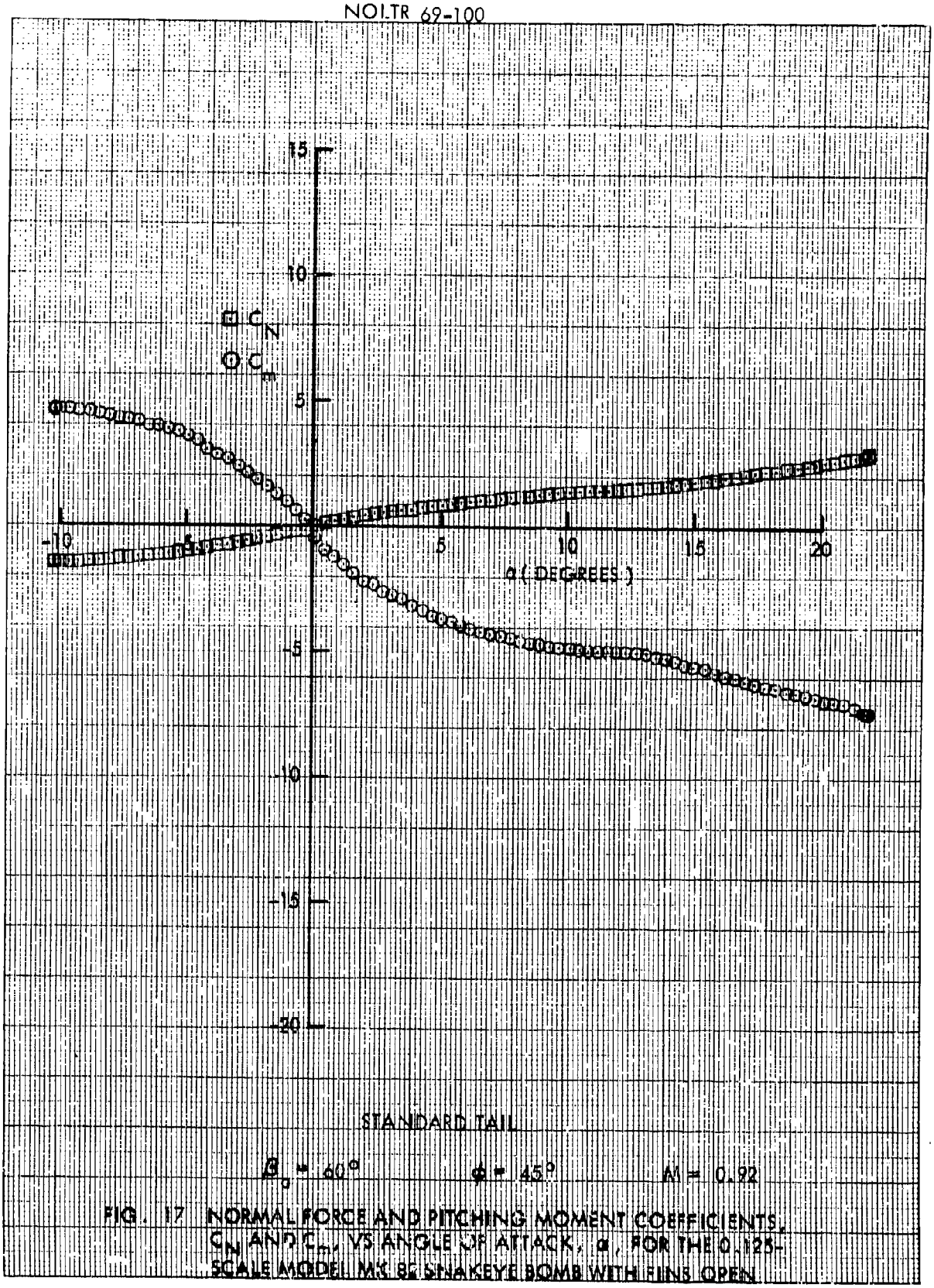


FIG. 17 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

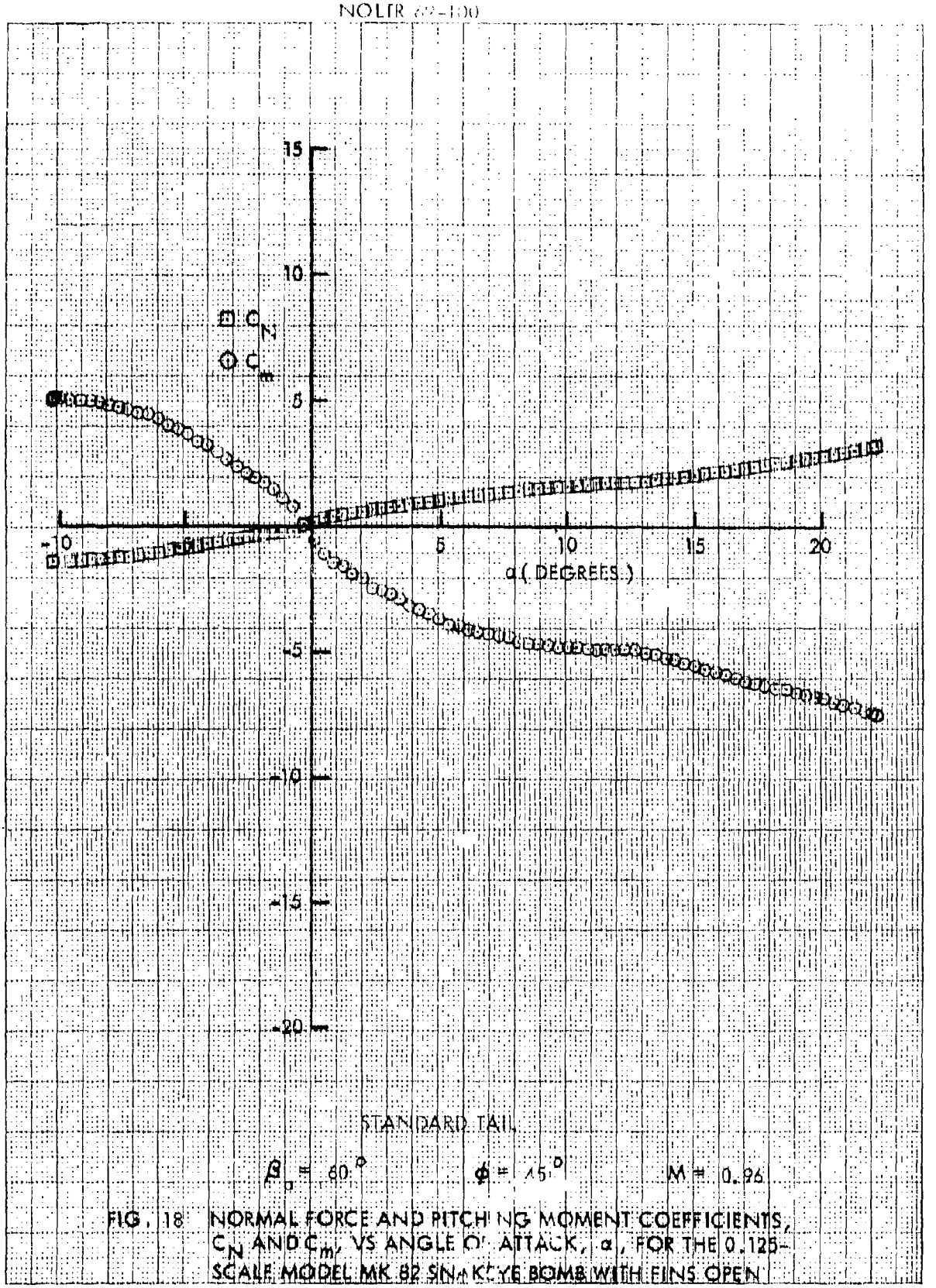


FIG. 18 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

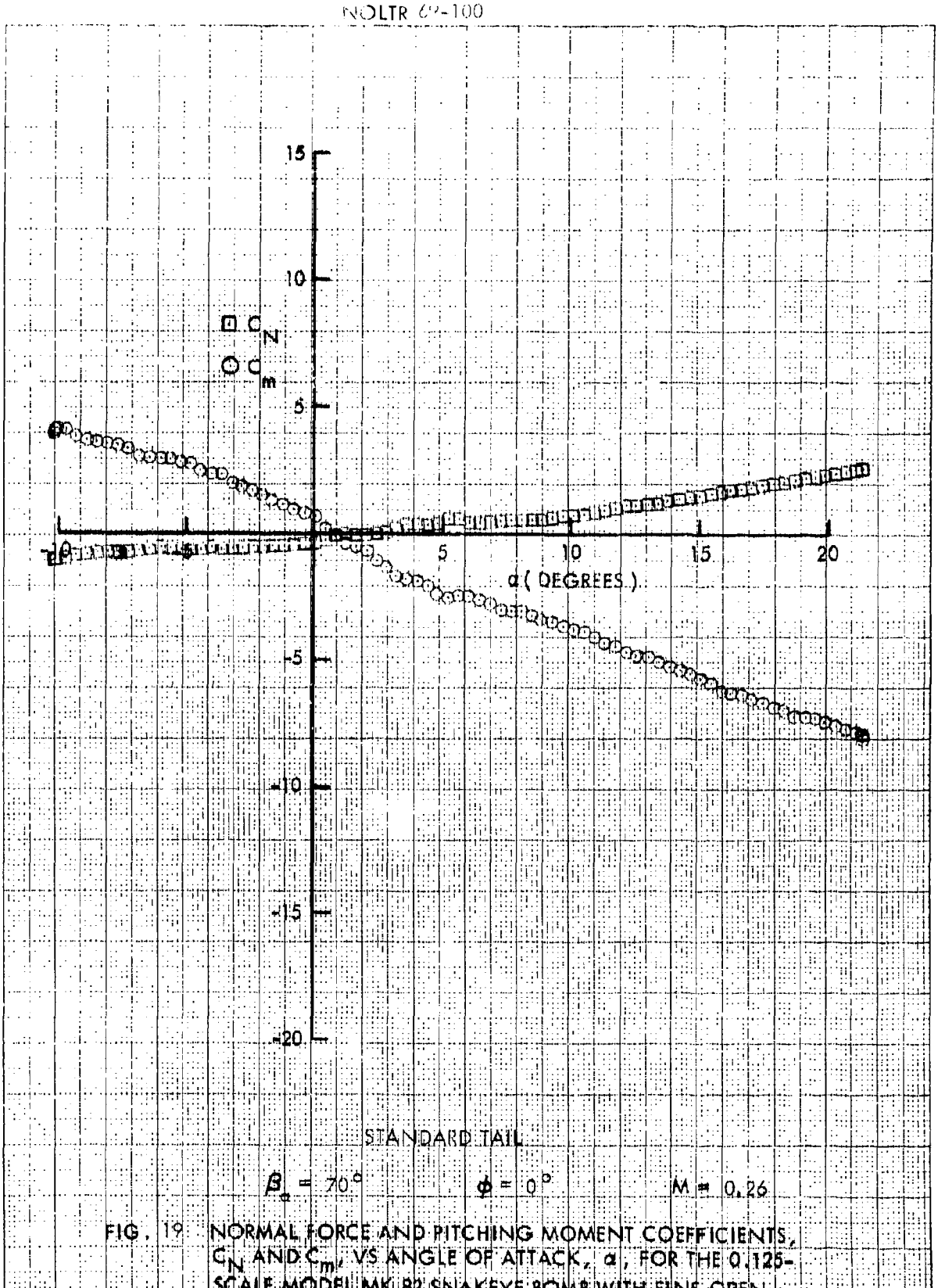


FIG. 19 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

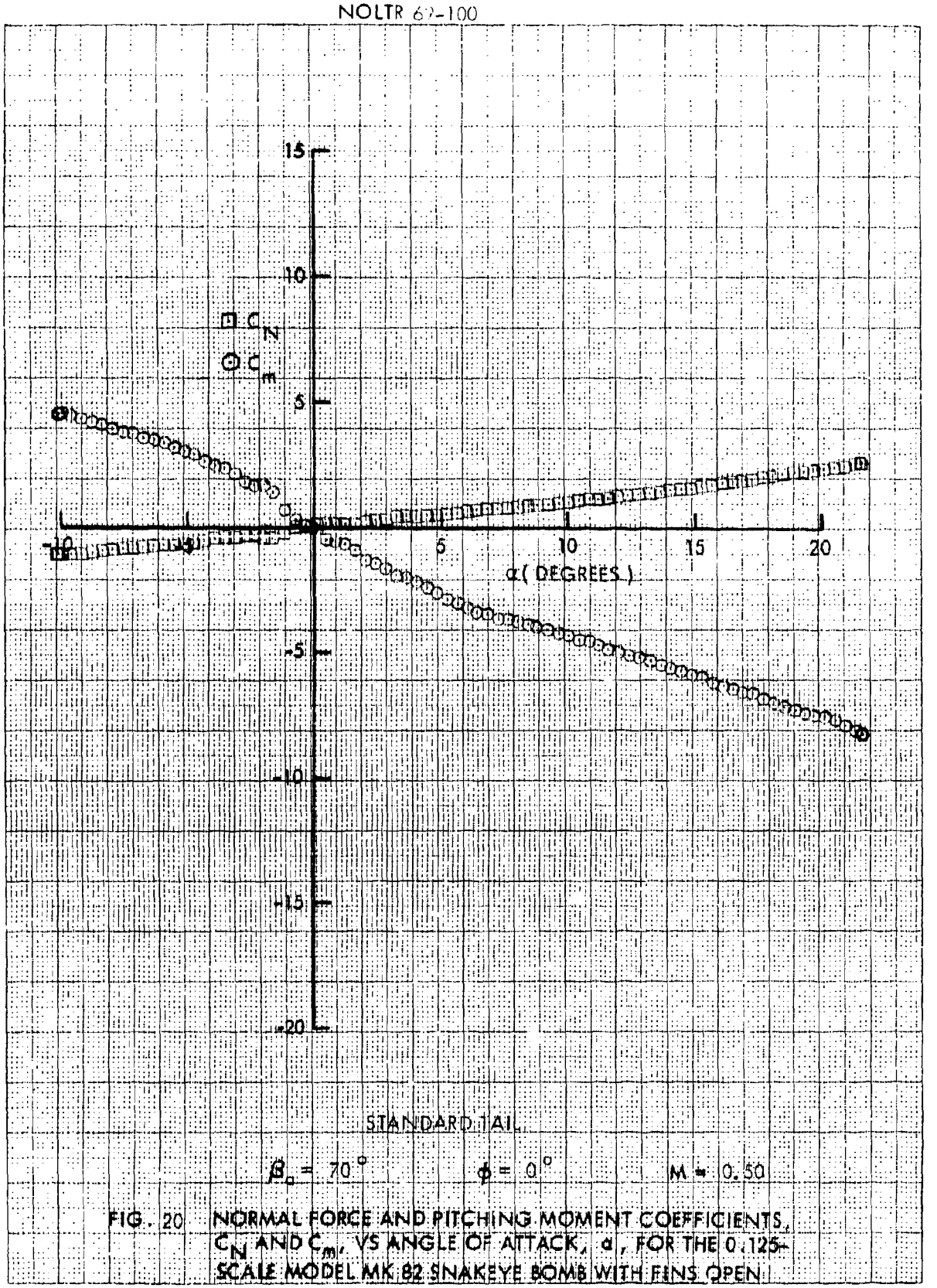


FIG. 20 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

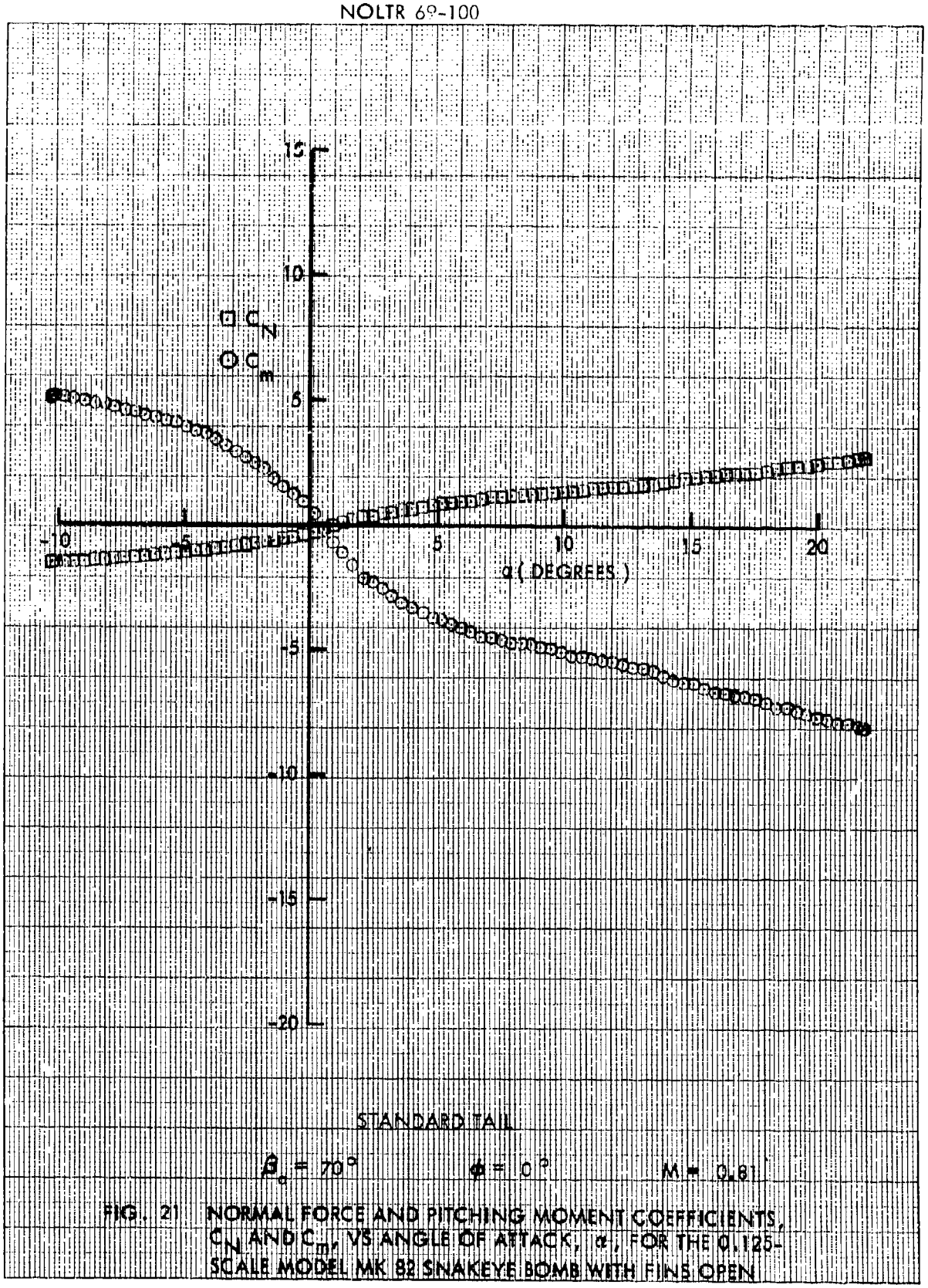


FIG. 21 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

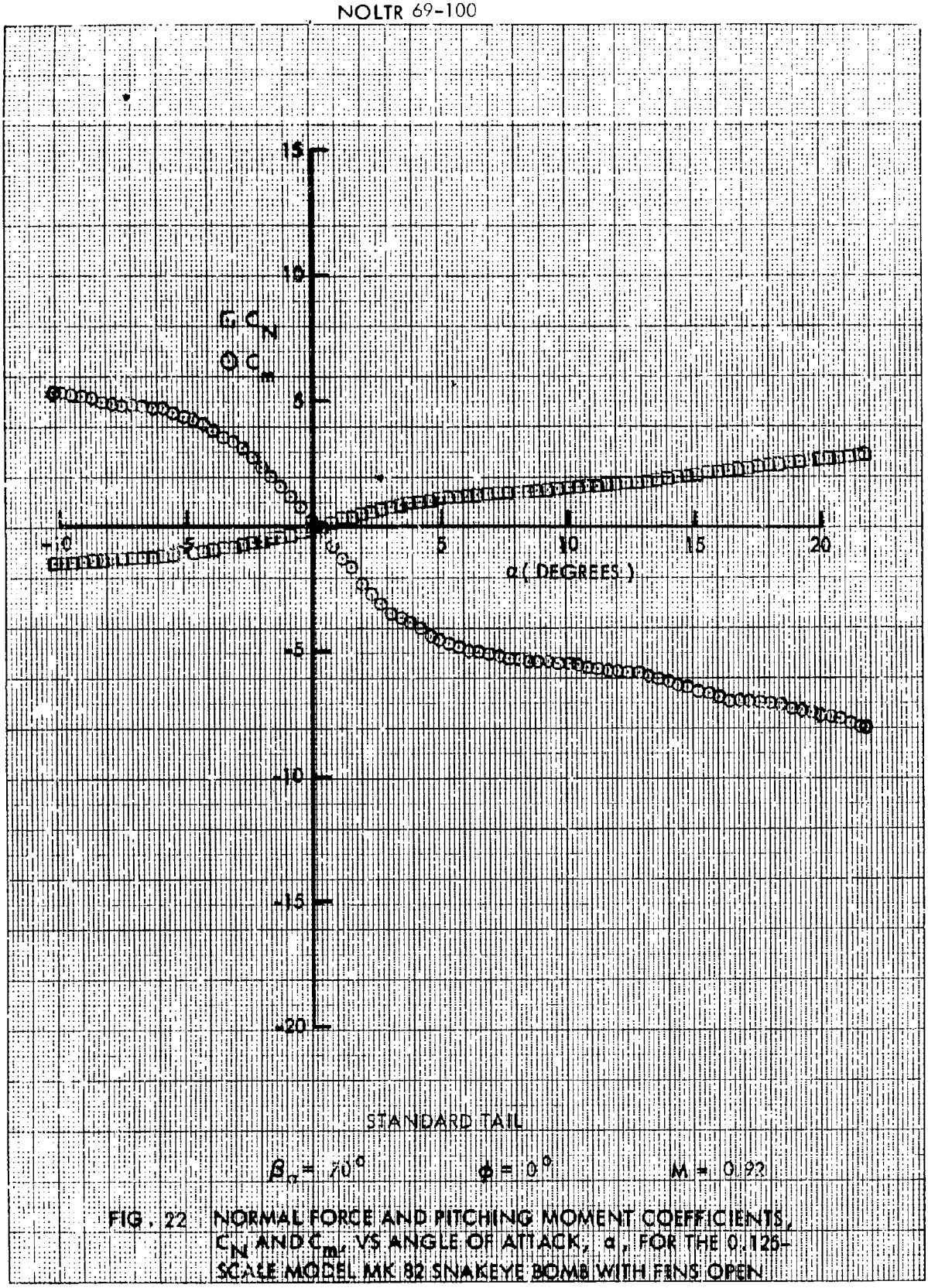
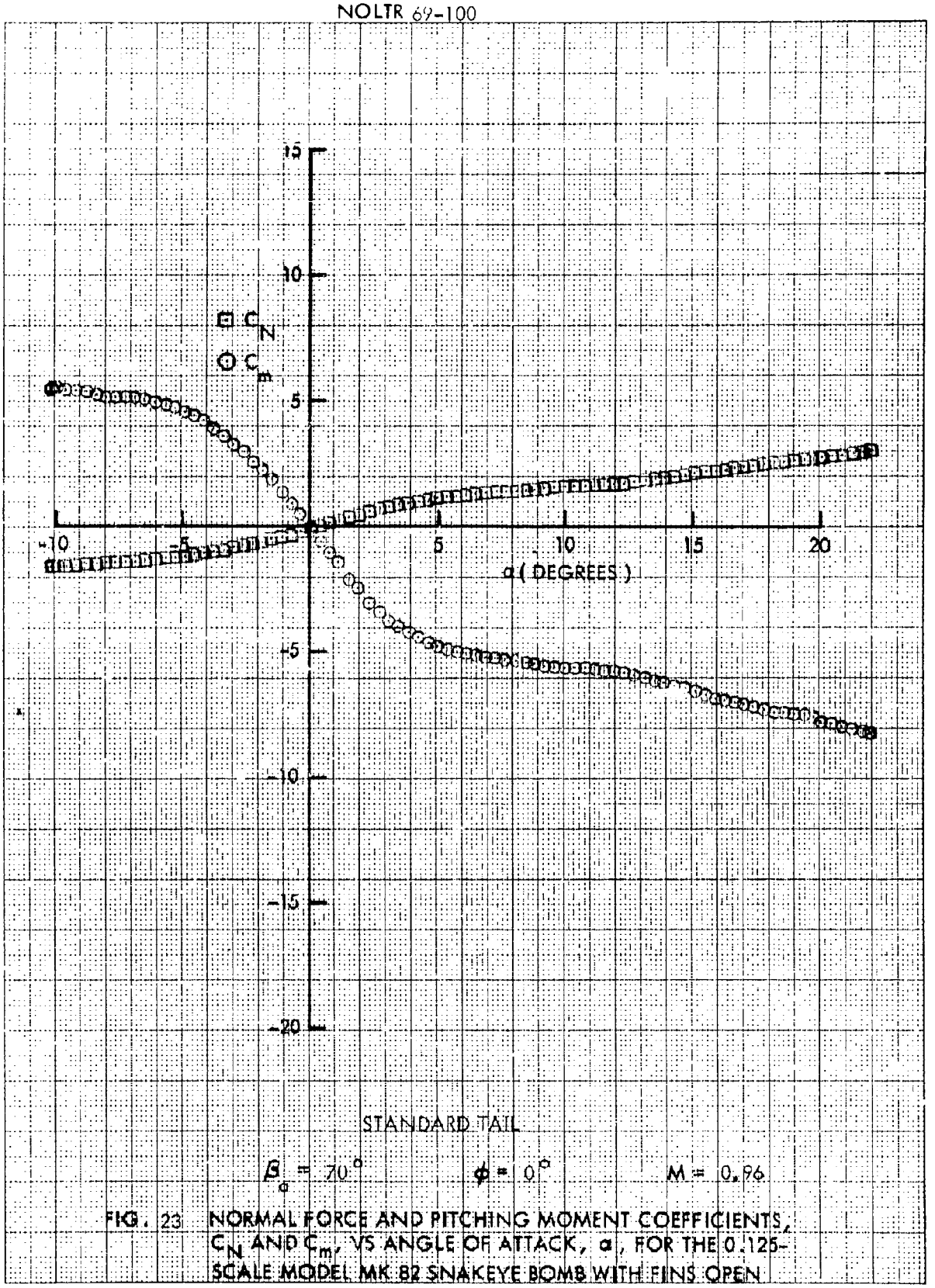


FIG. 22 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN



STANDARD TAIL

β_a = 70° ϕ = 0° M = 0.96

FIG. 23 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

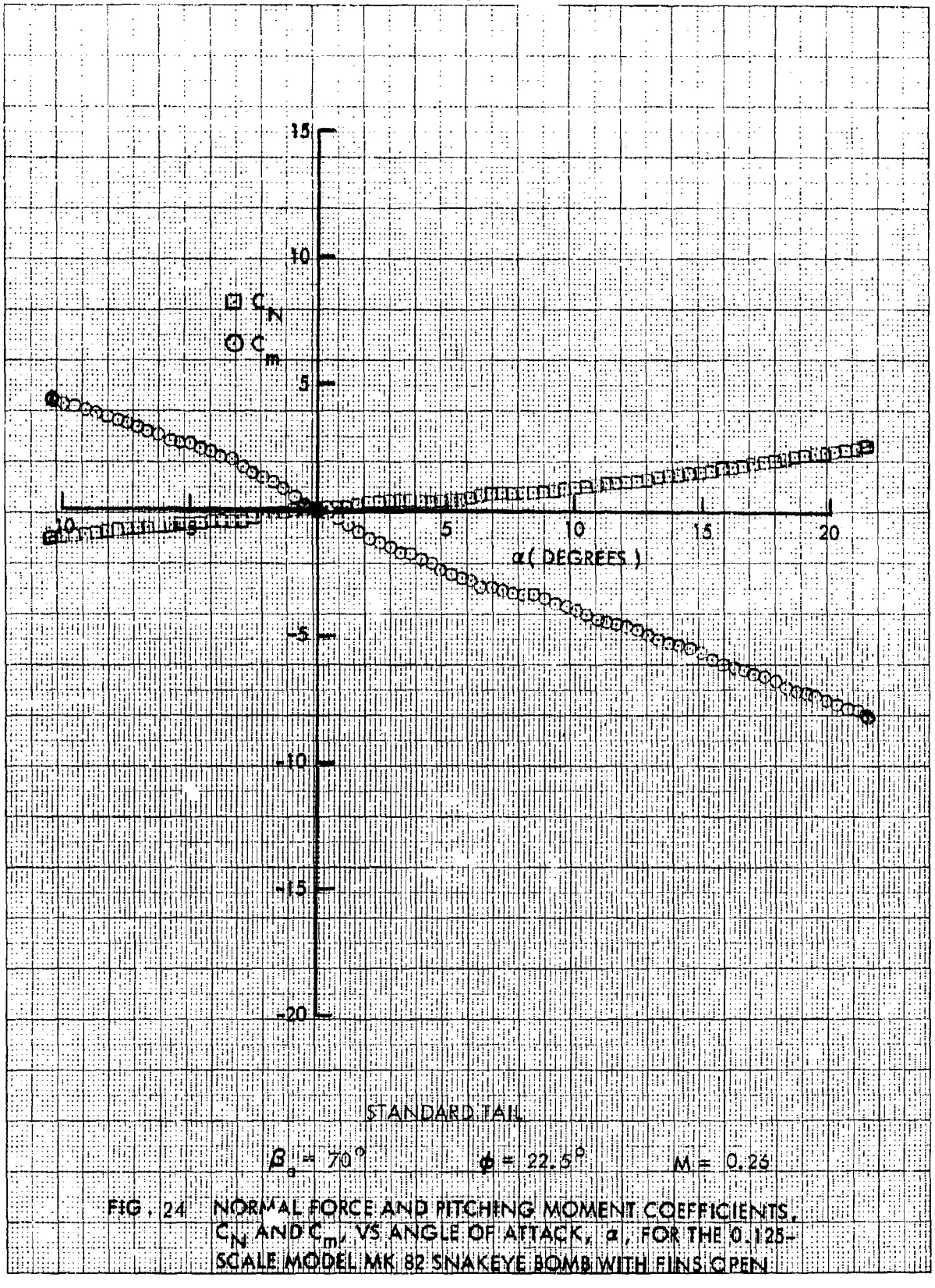


FIG. 24 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

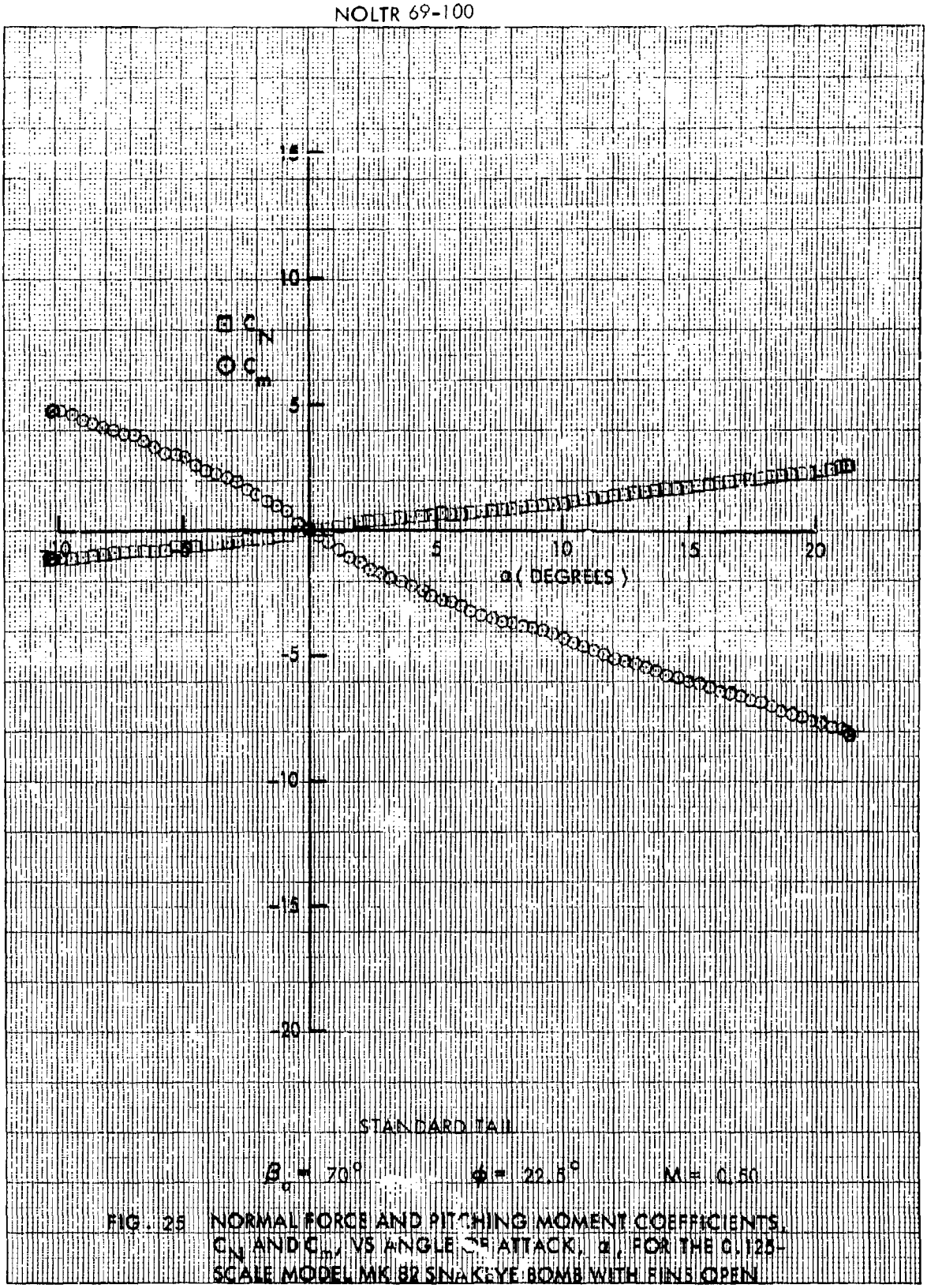


FIG. 25 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

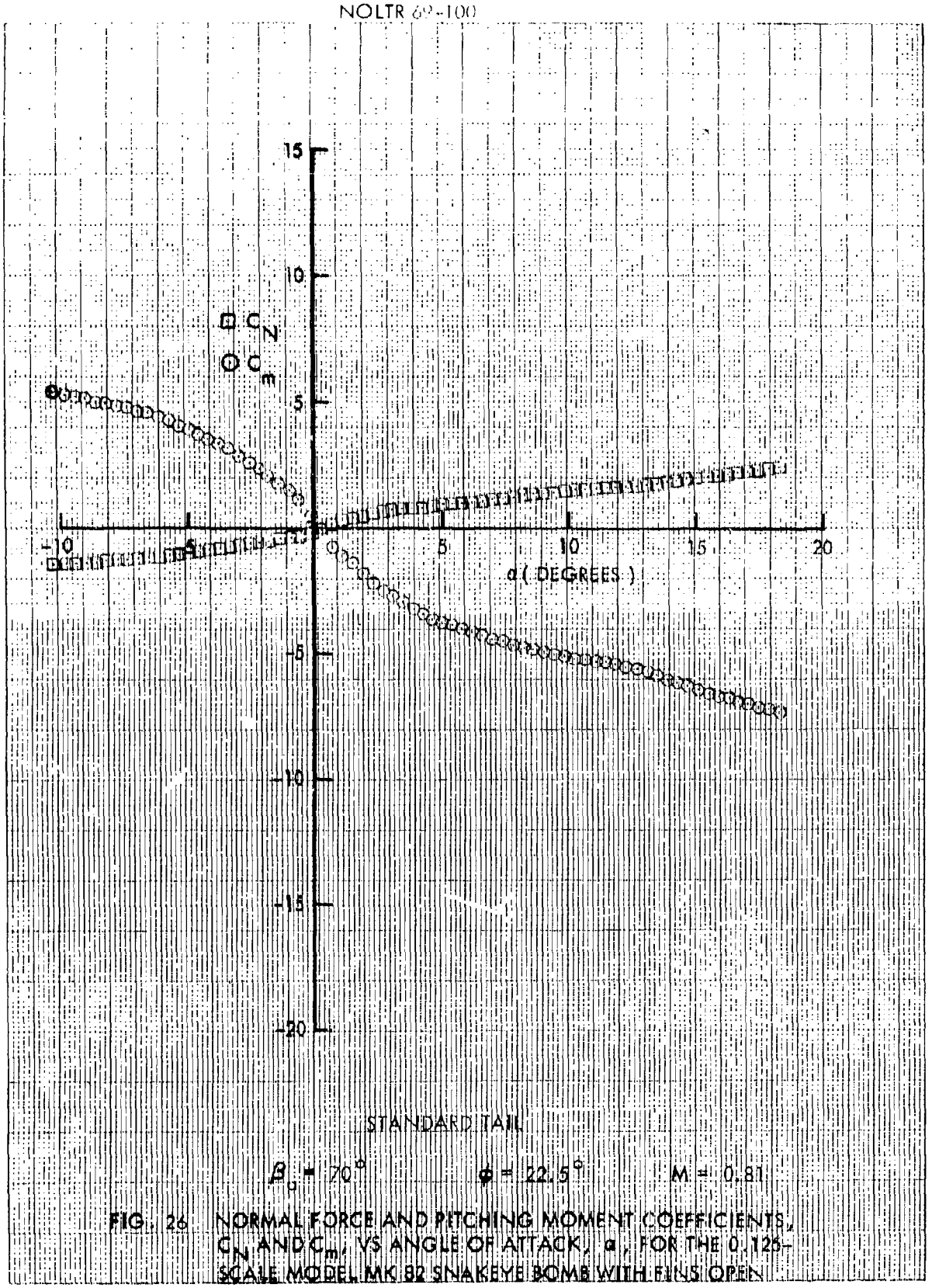


FIG. 26 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.126-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

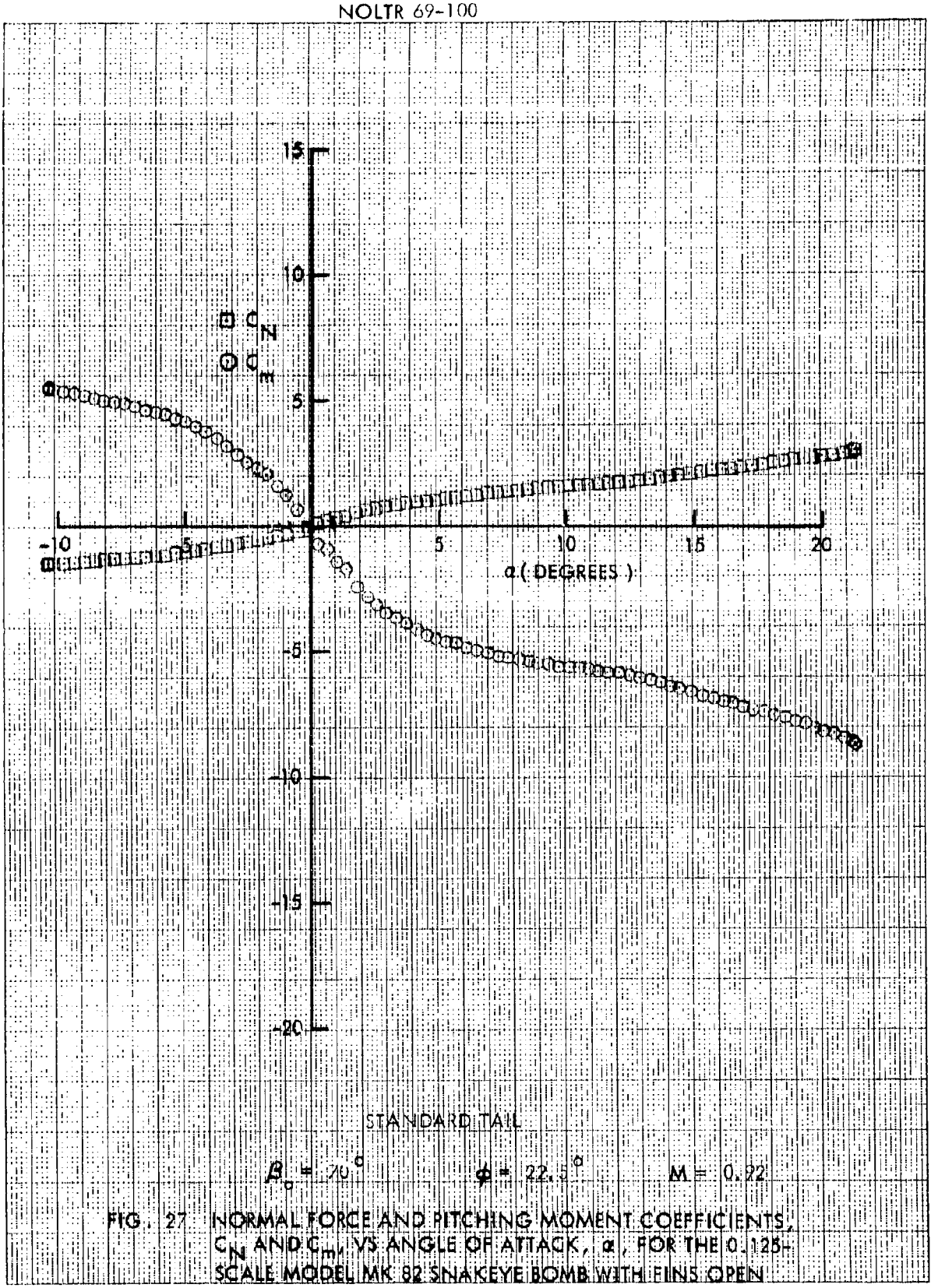


FIG. 27 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

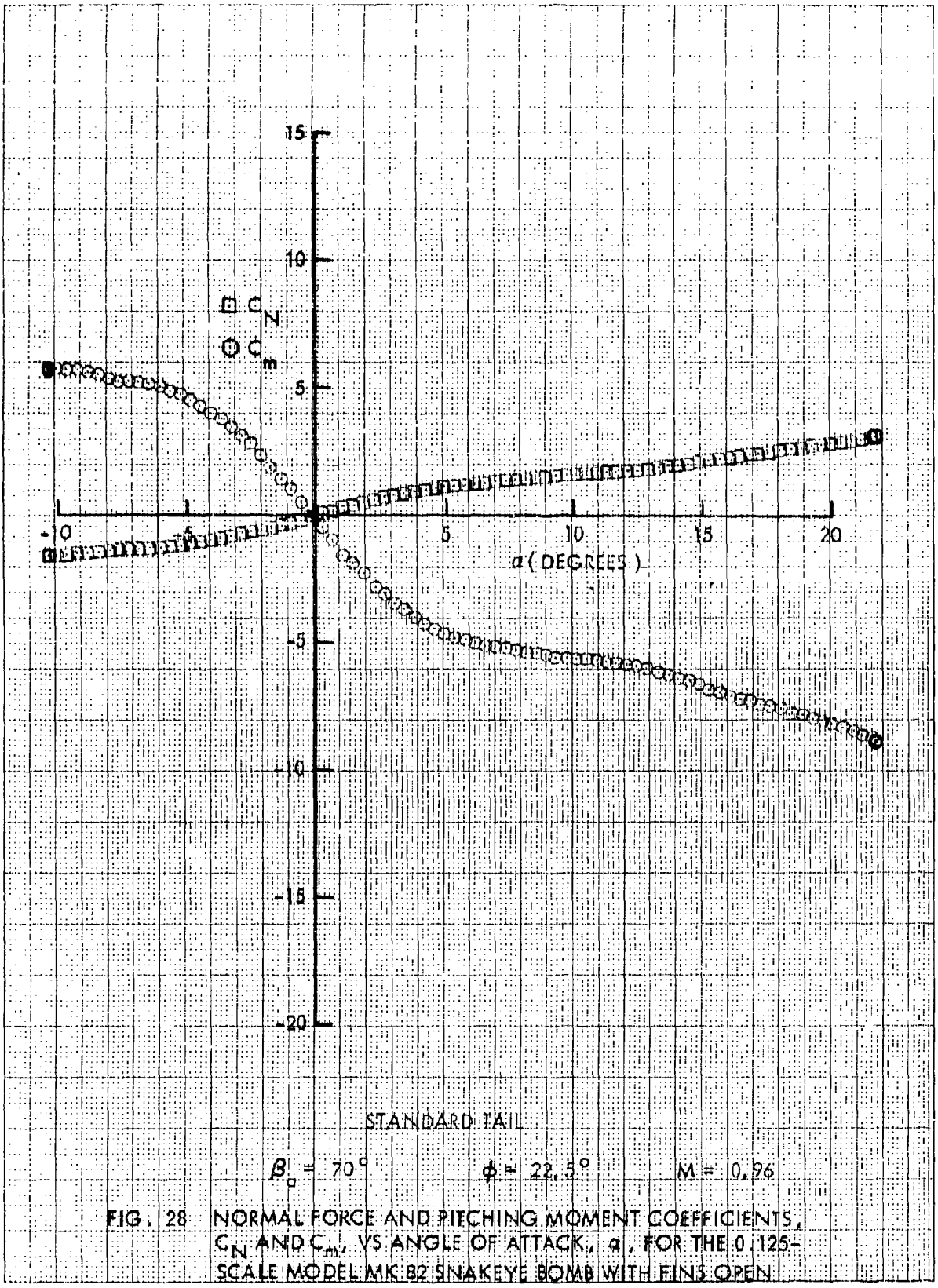
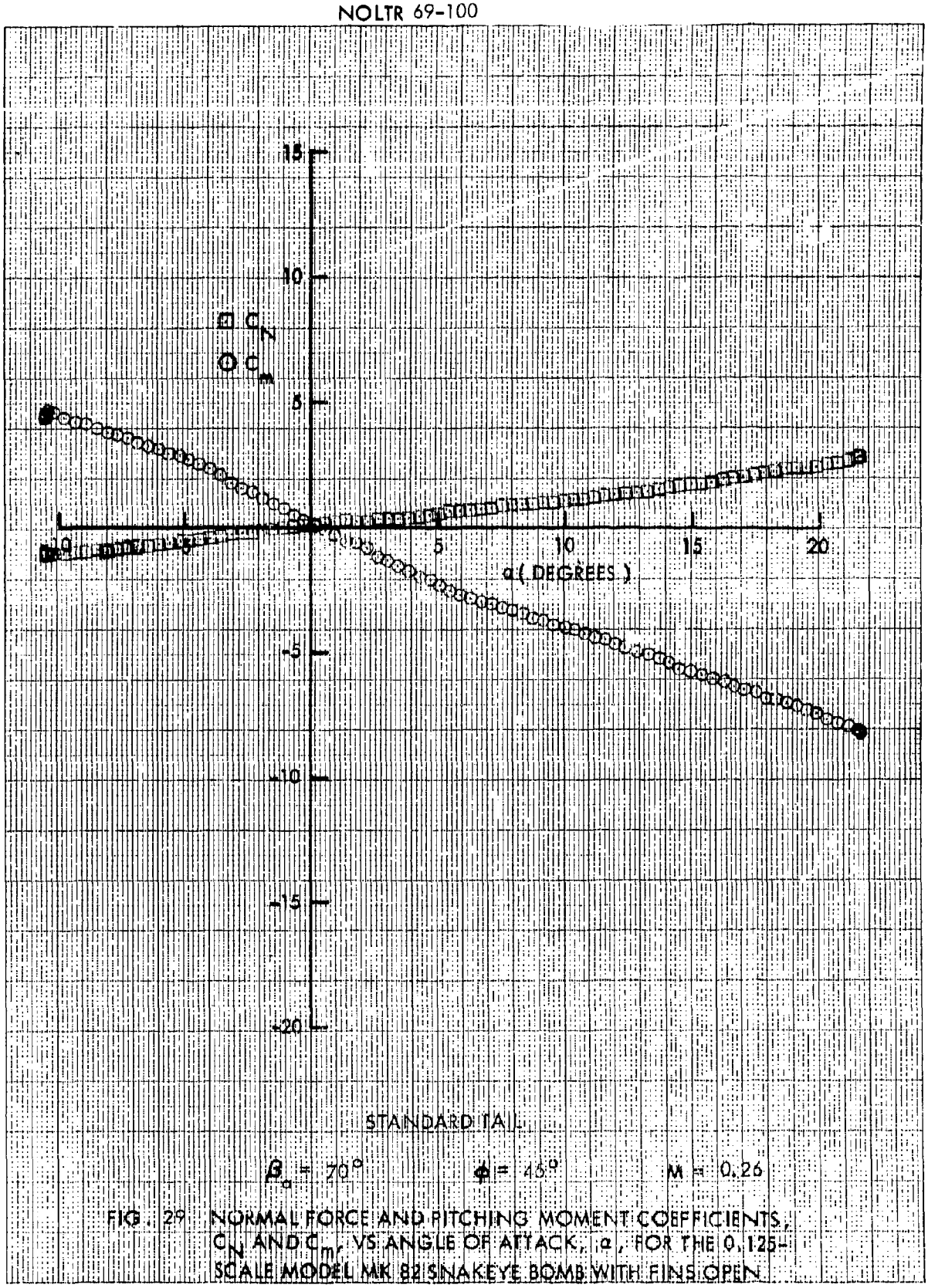


FIG. 28 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN



STANDARD TAIL

β_a = 70° ϕ = 45° M = 0.26

FIG. 29 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

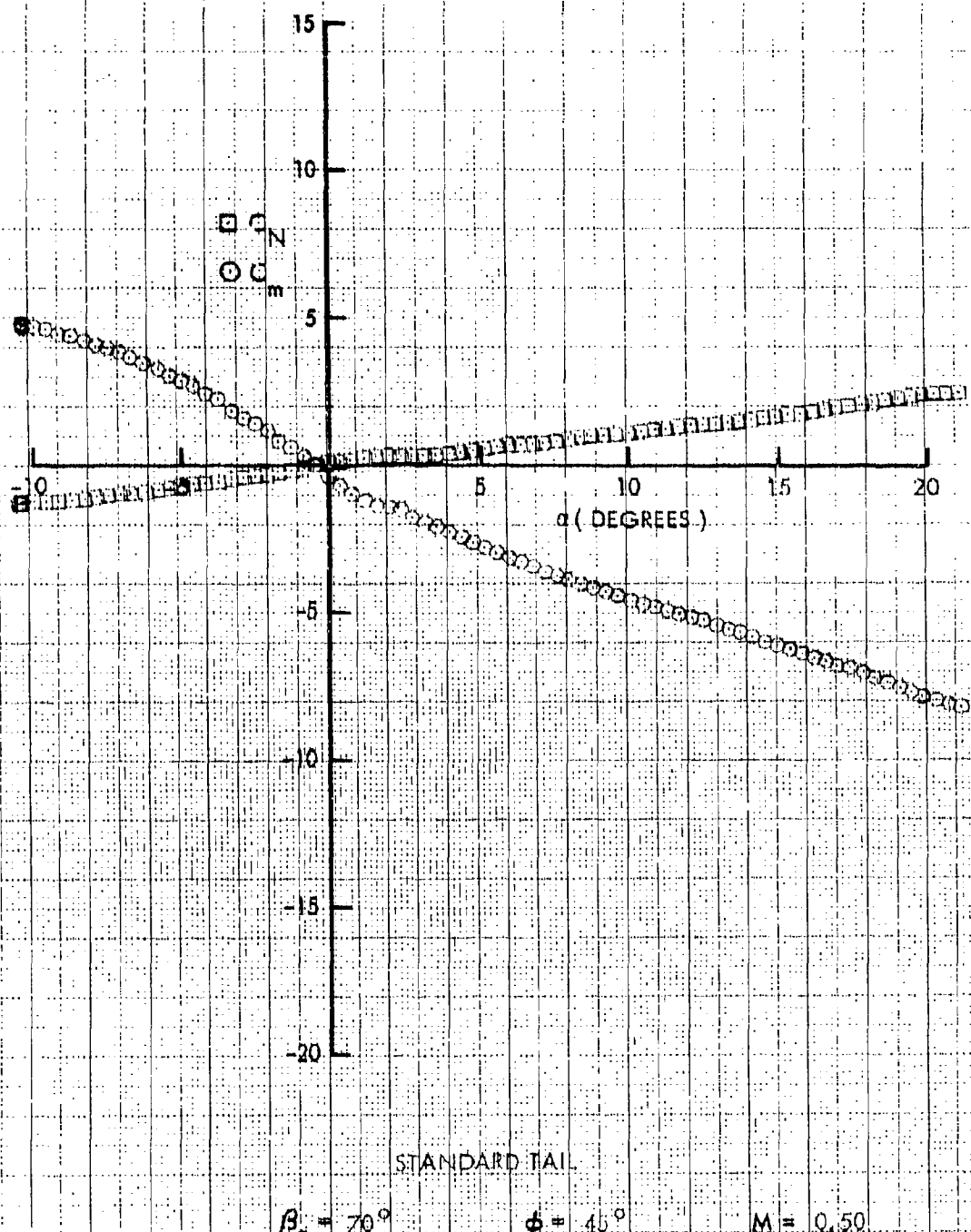


FIG. 30 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

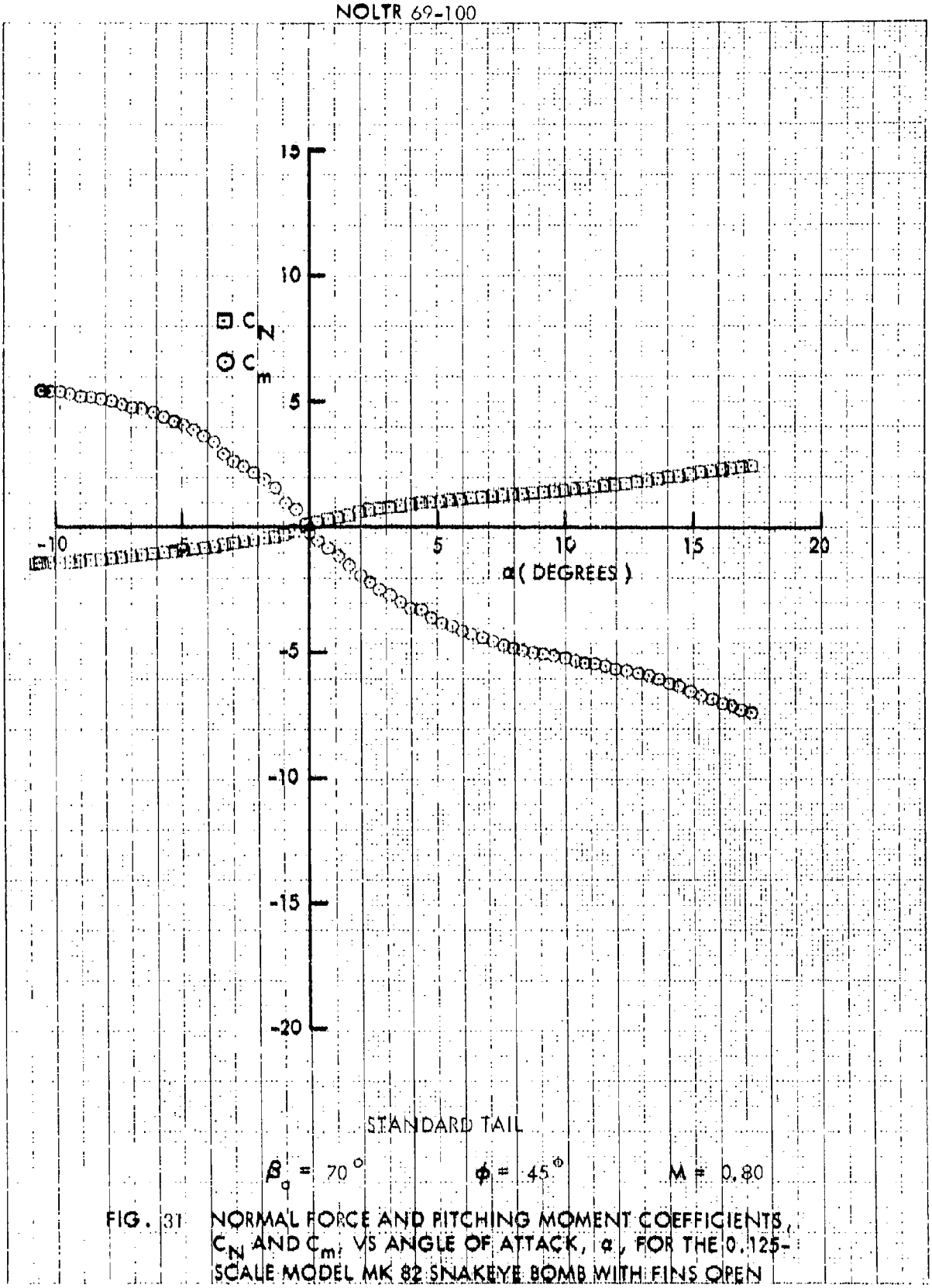


FIG. 31 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

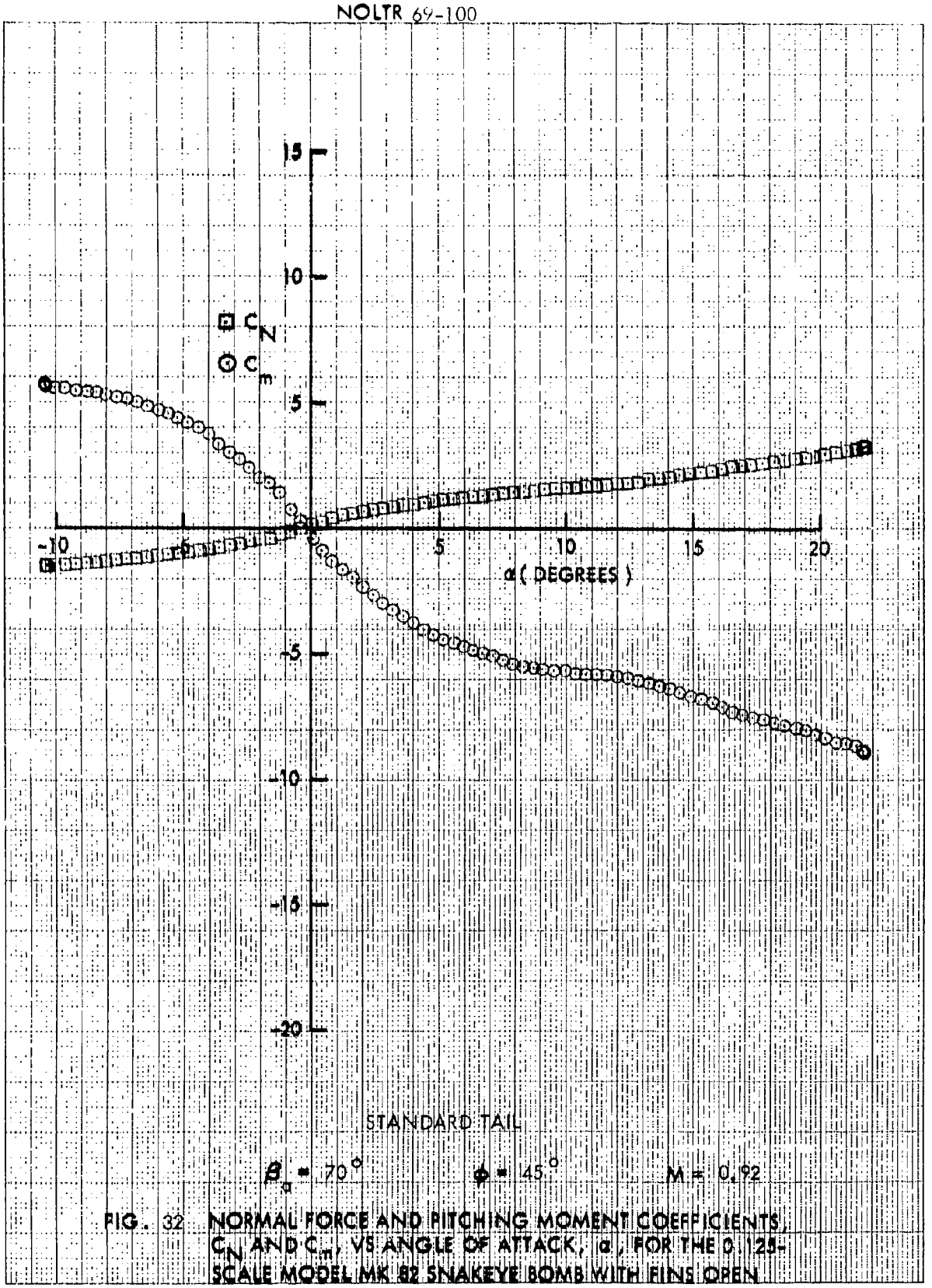


FIG. 32 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

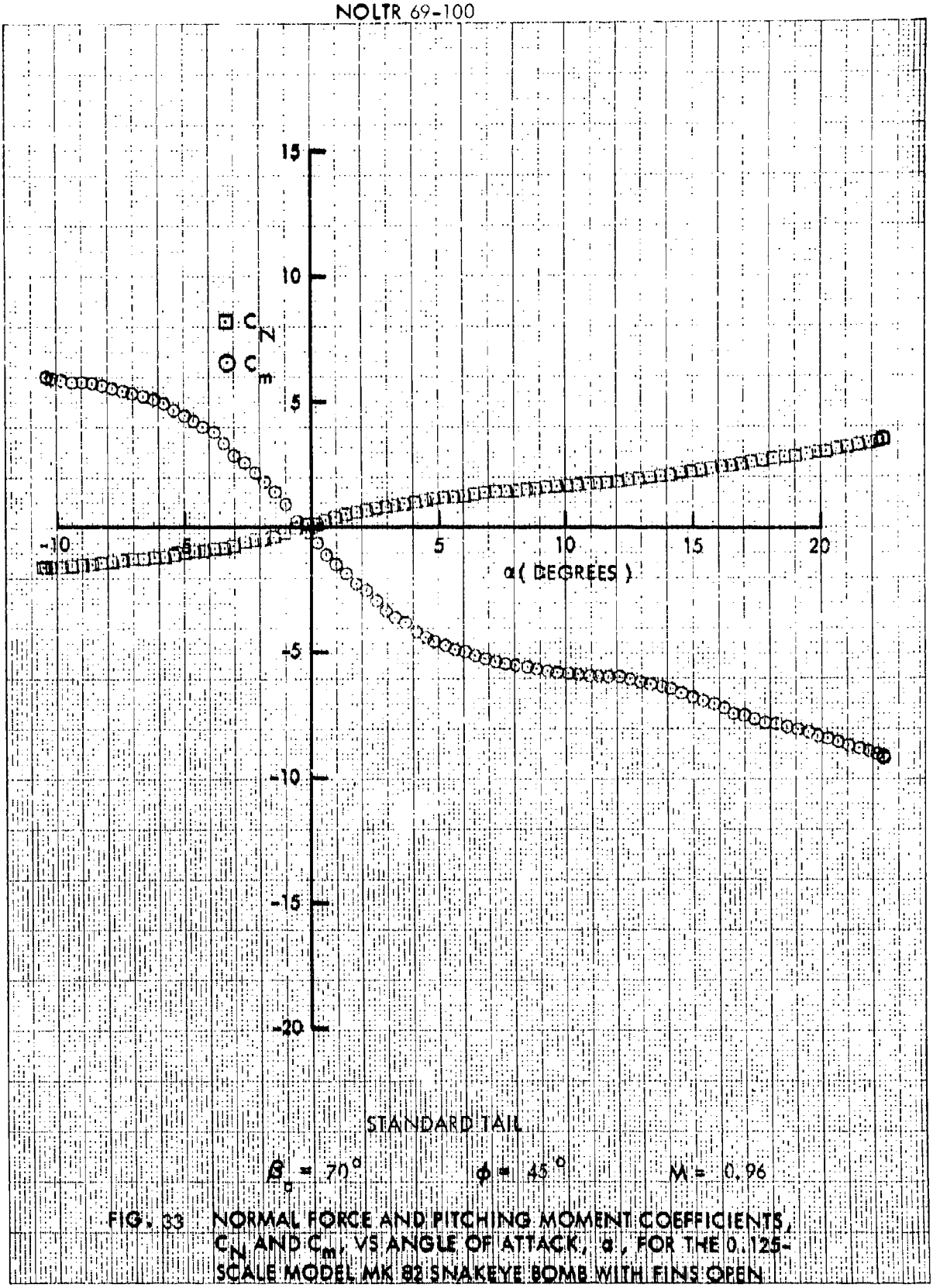


FIG. 33 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

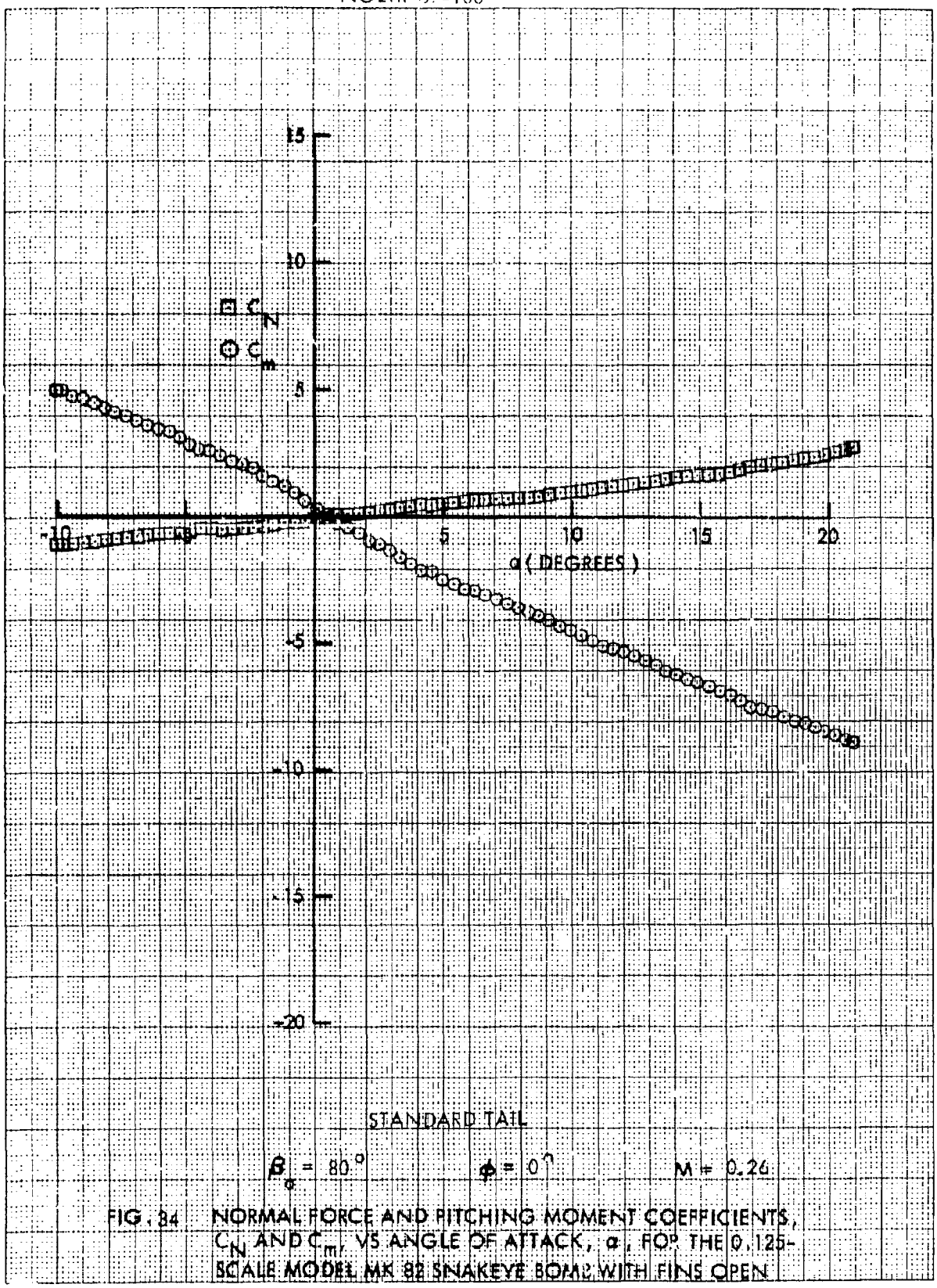


FIG. 34 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

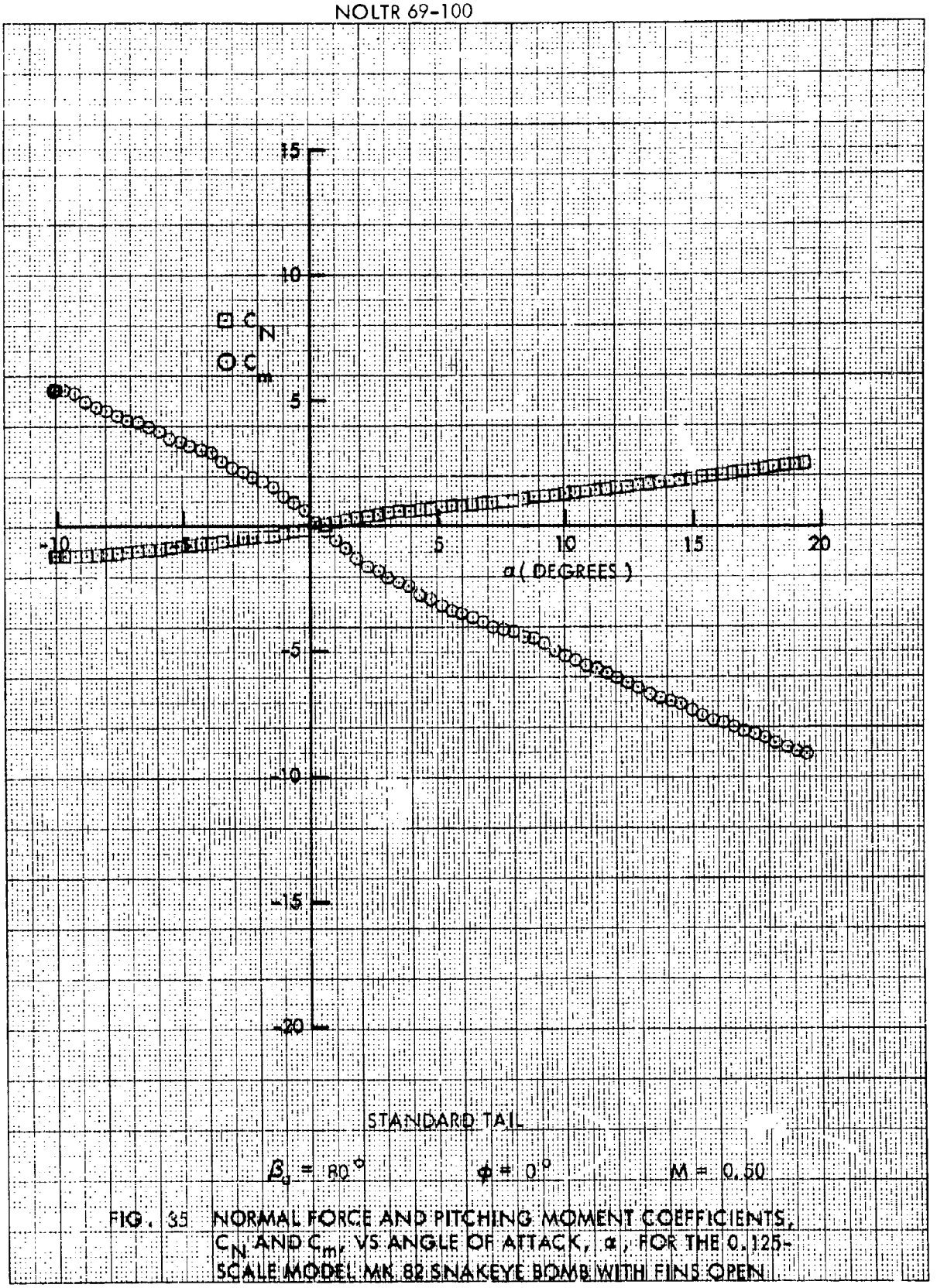


FIG. 35 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

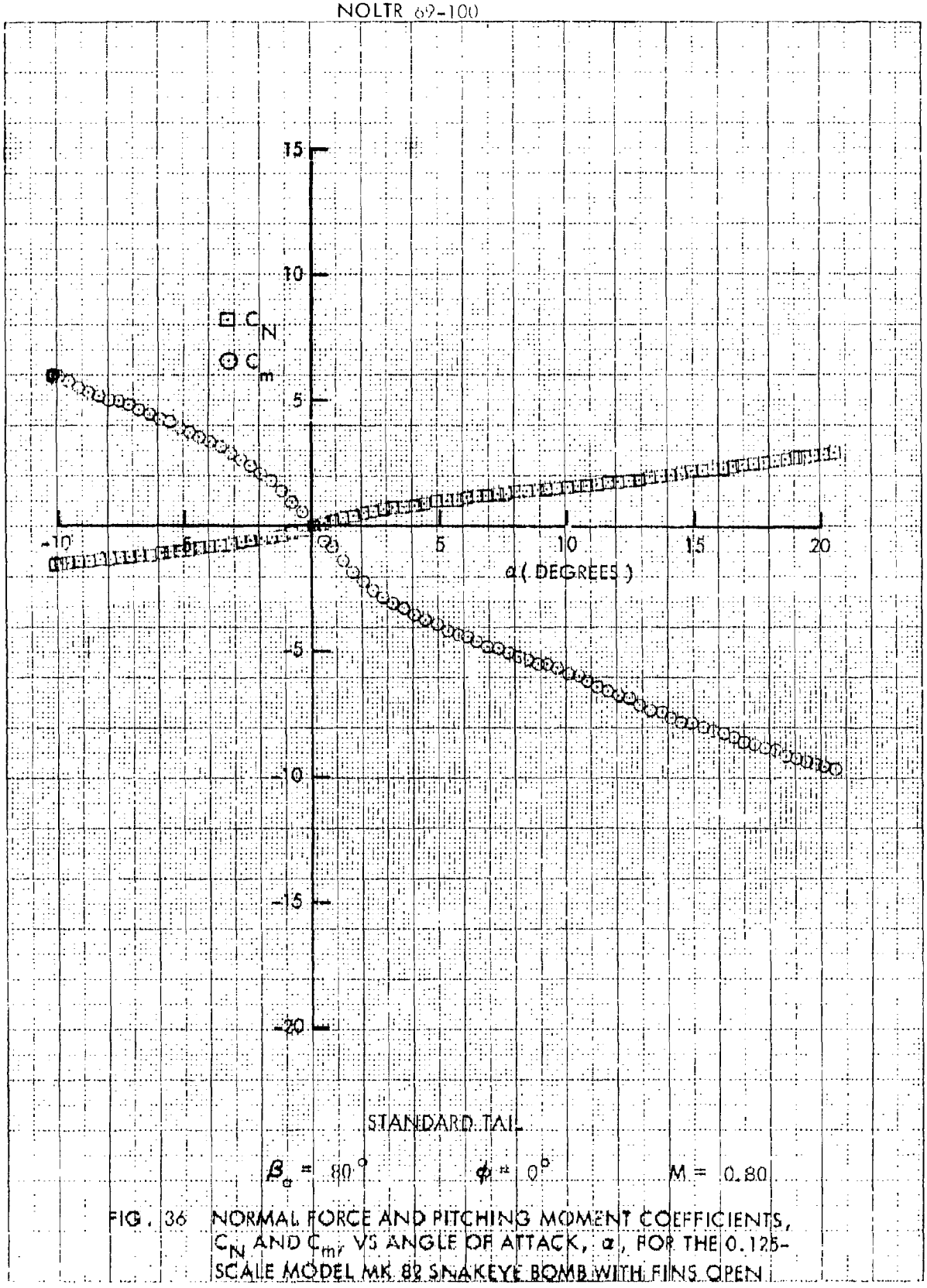


FIG. 36 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

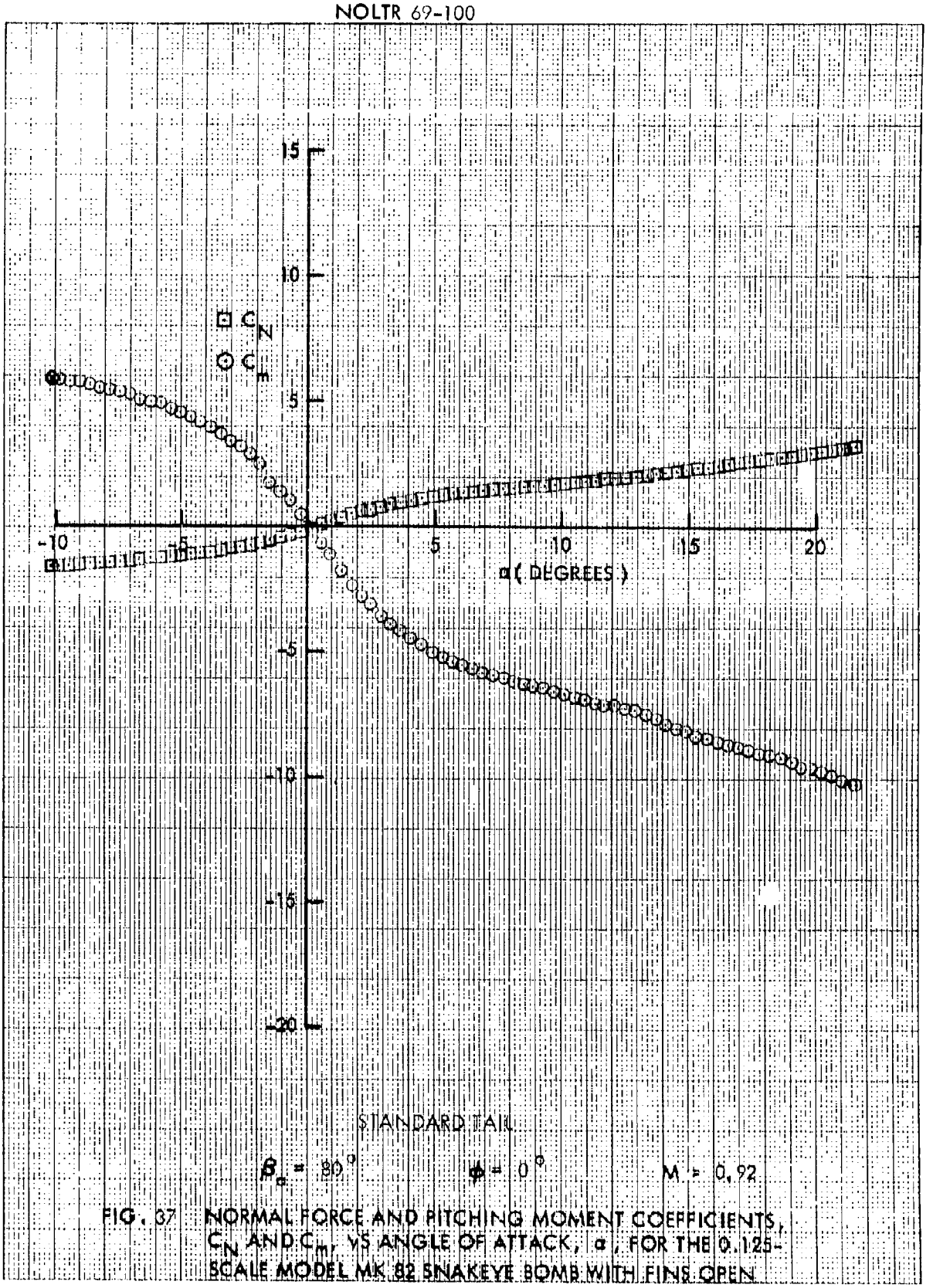


FIG. 37 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

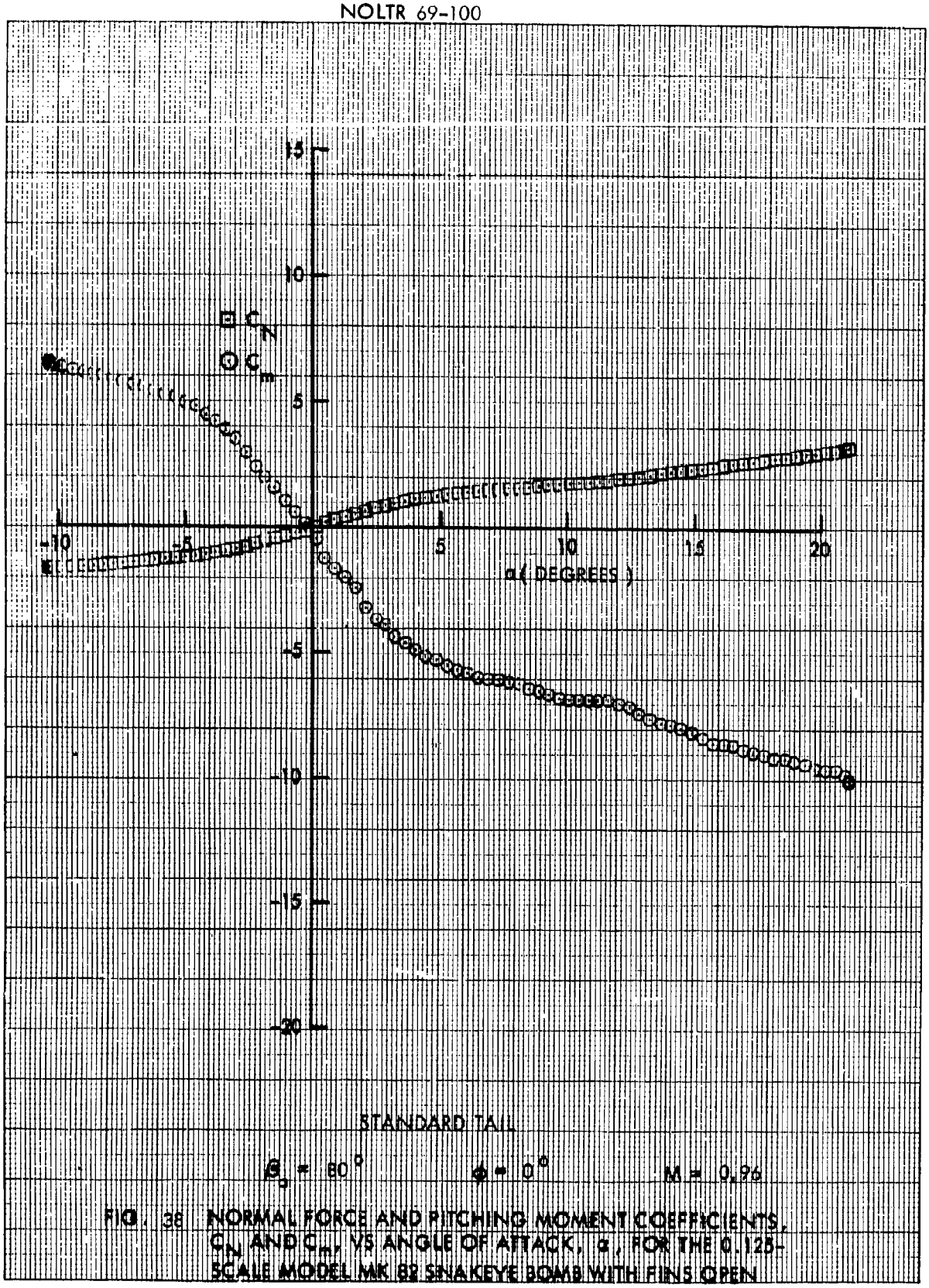


FIG. 38 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

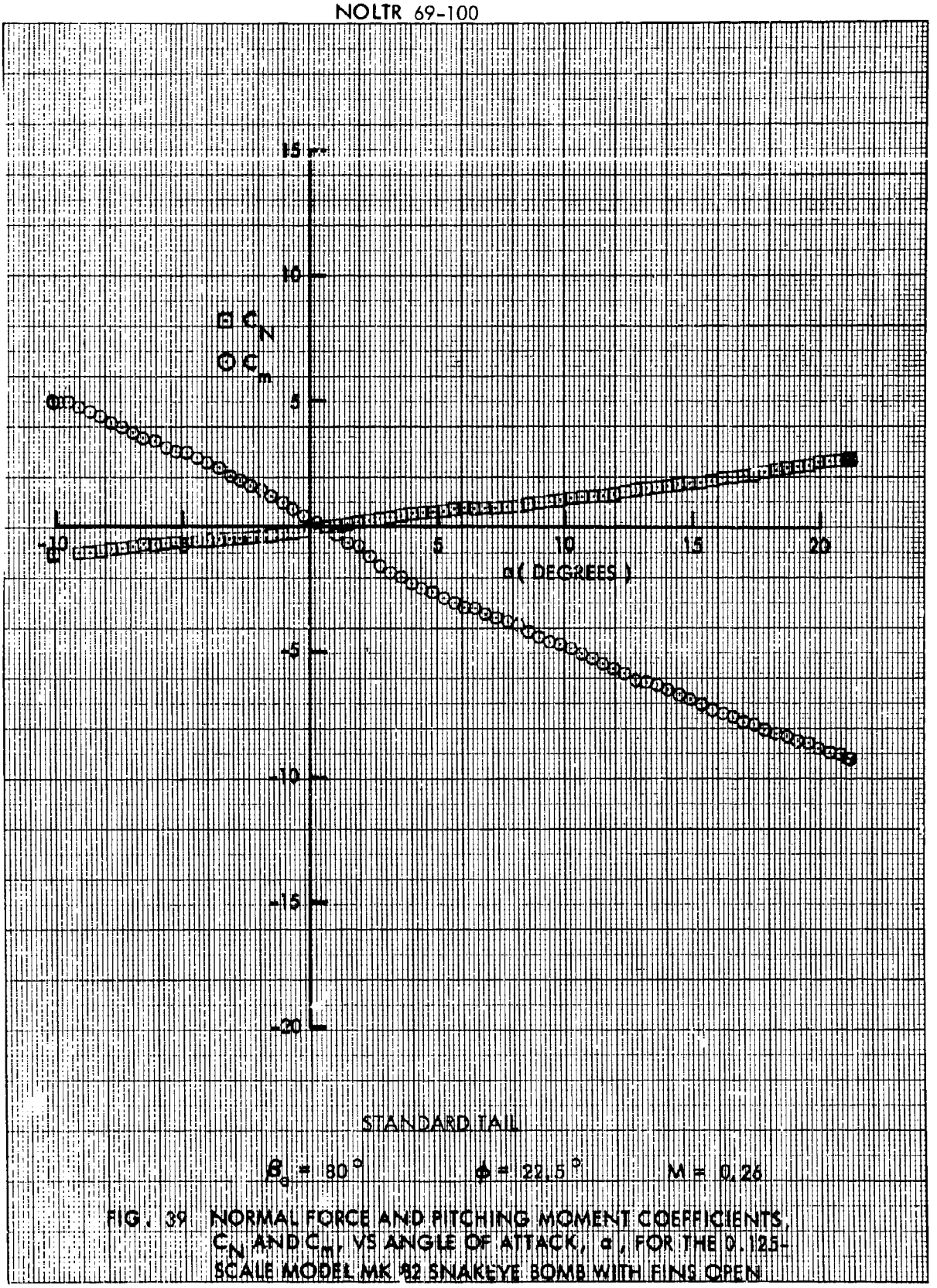


FIG. 39 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

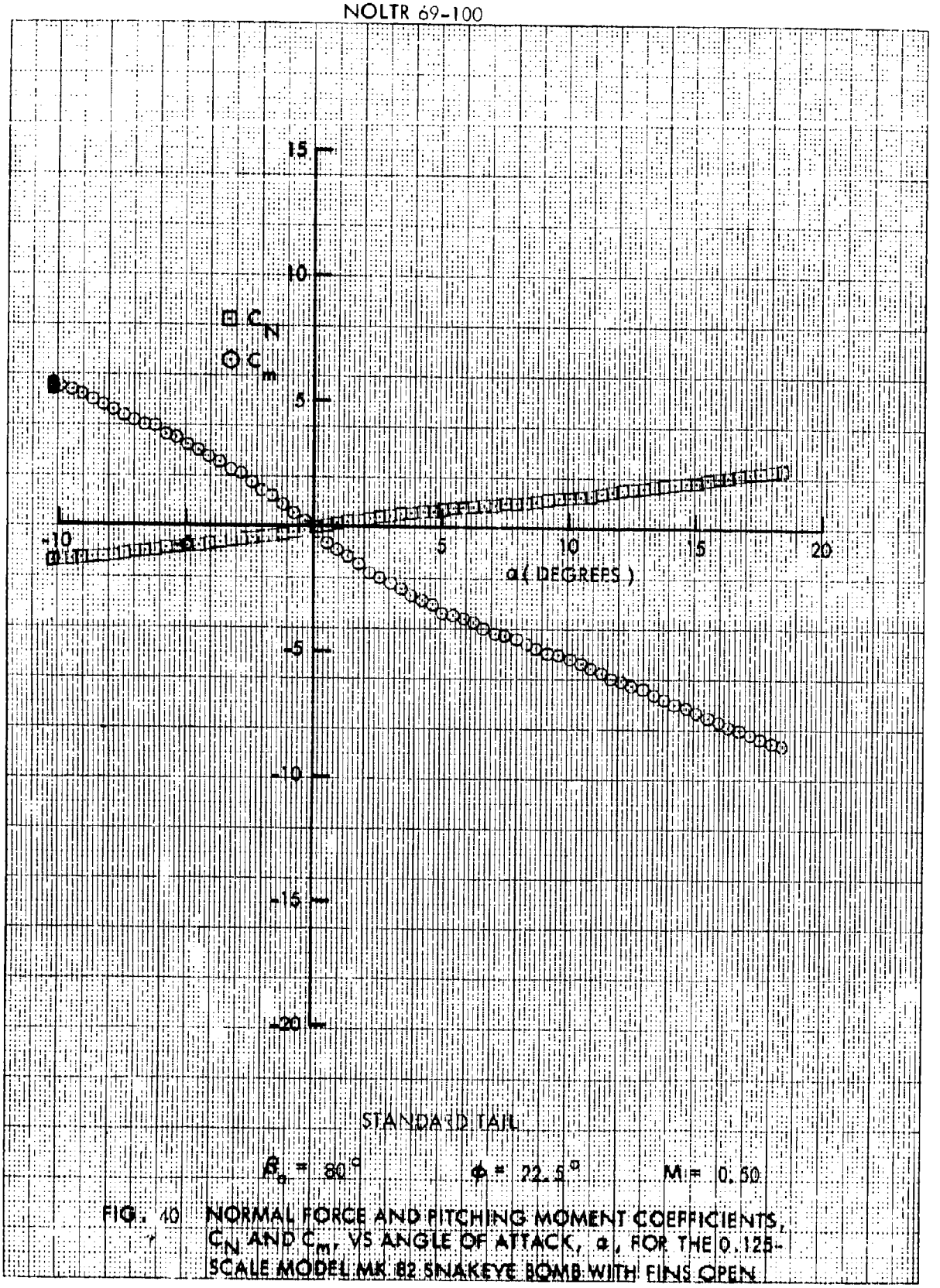


FIG. 10 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

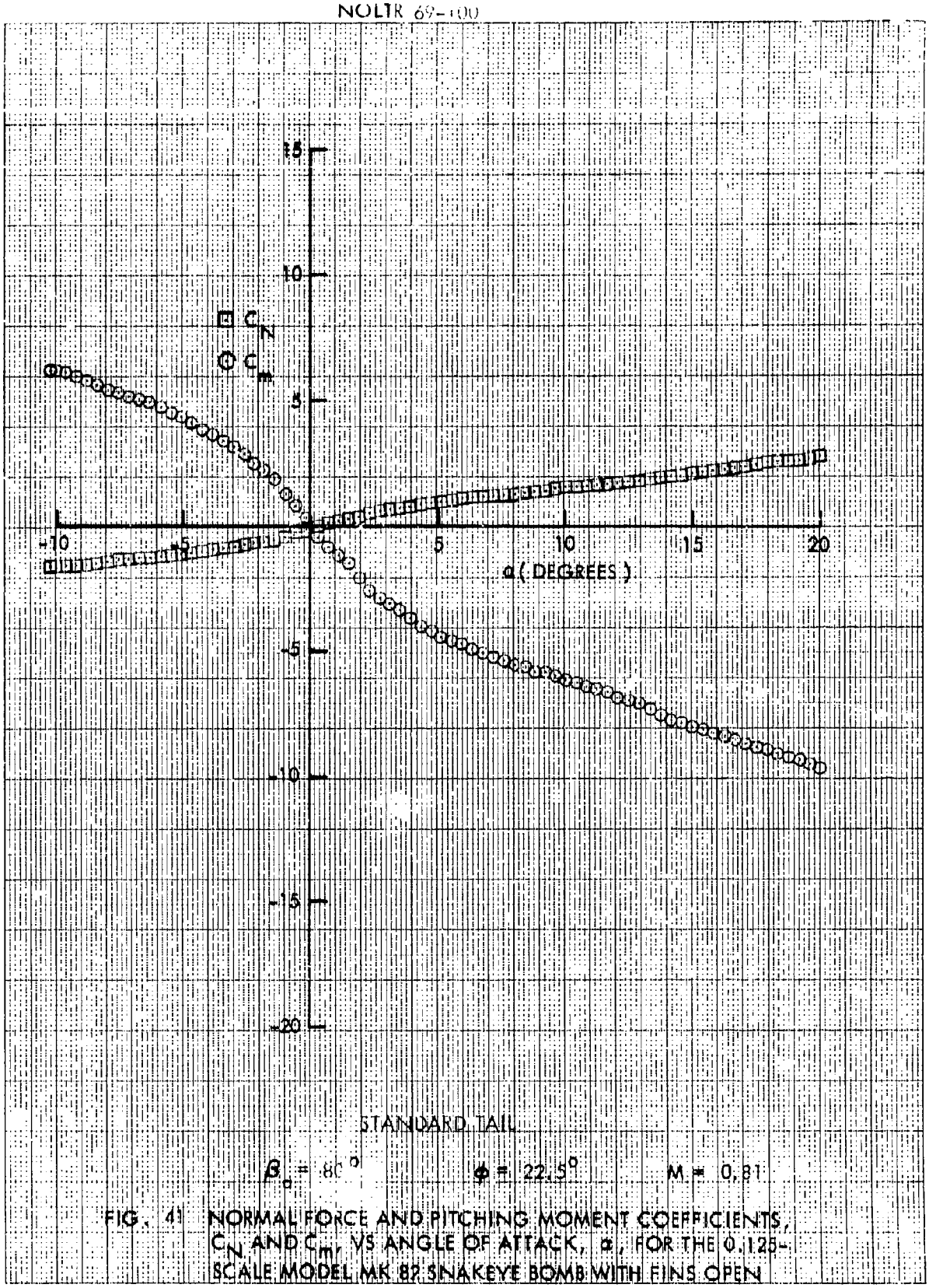


FIG. 41 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

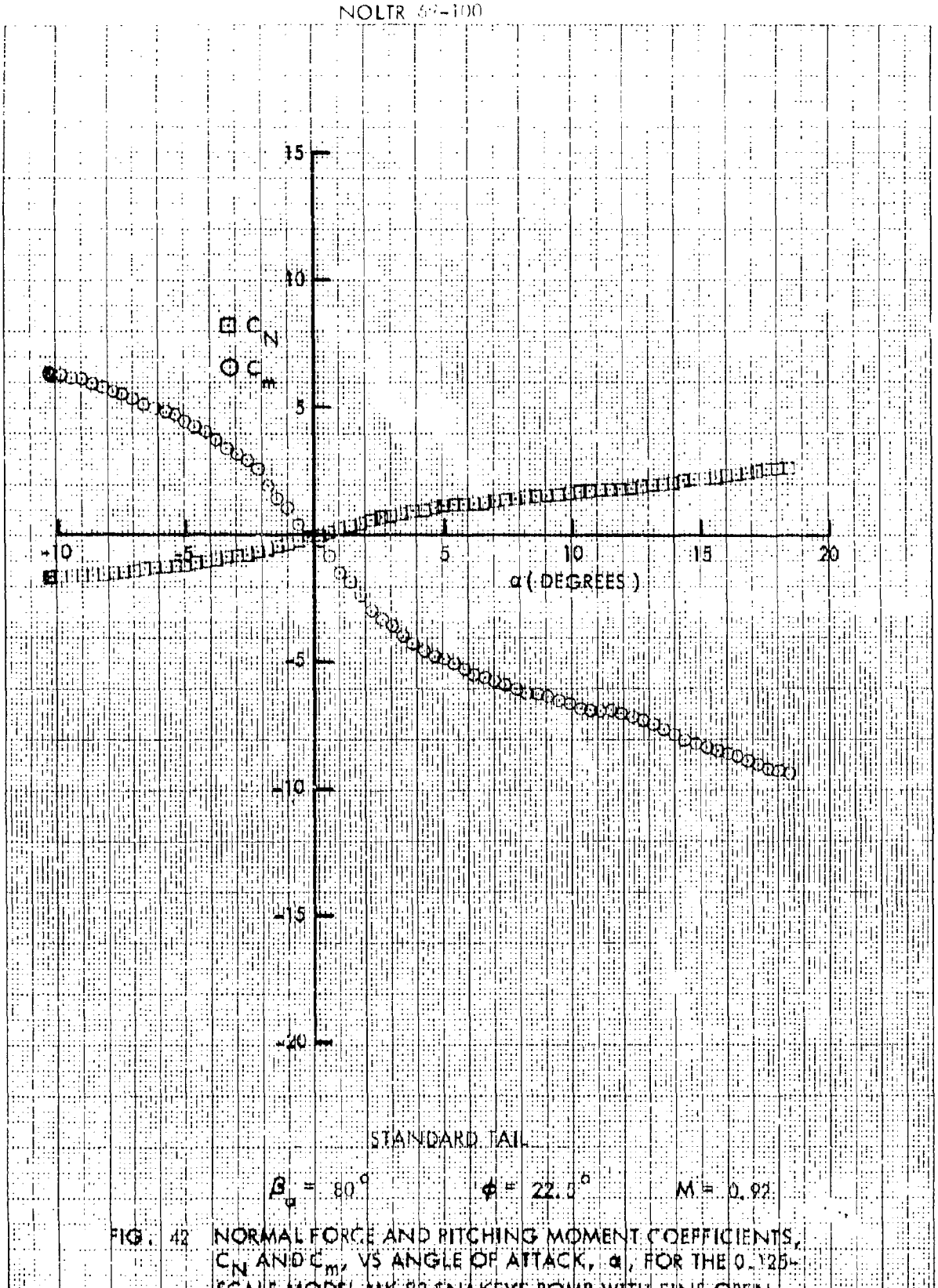


FIG. 42 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

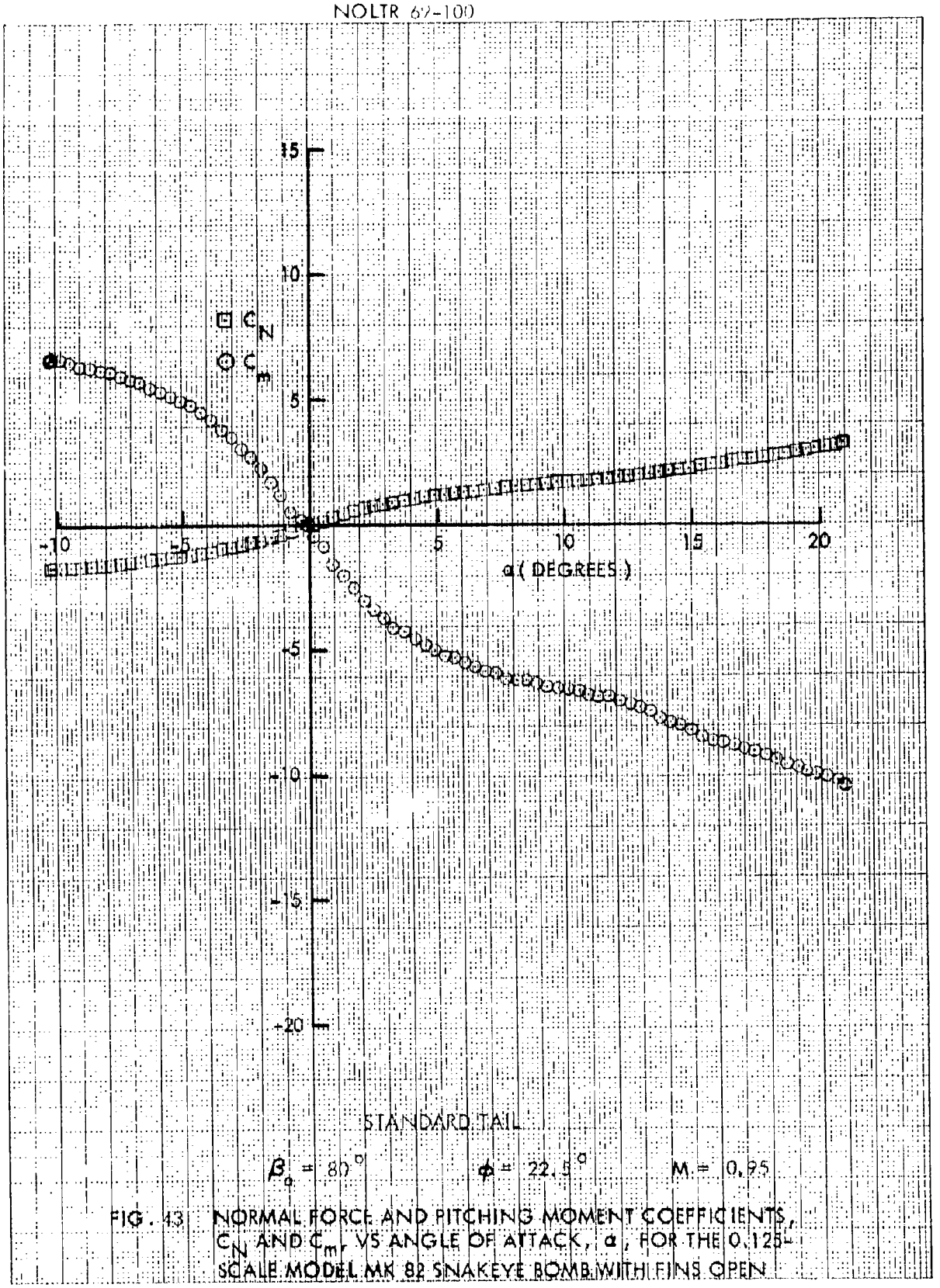


FIG. 43 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

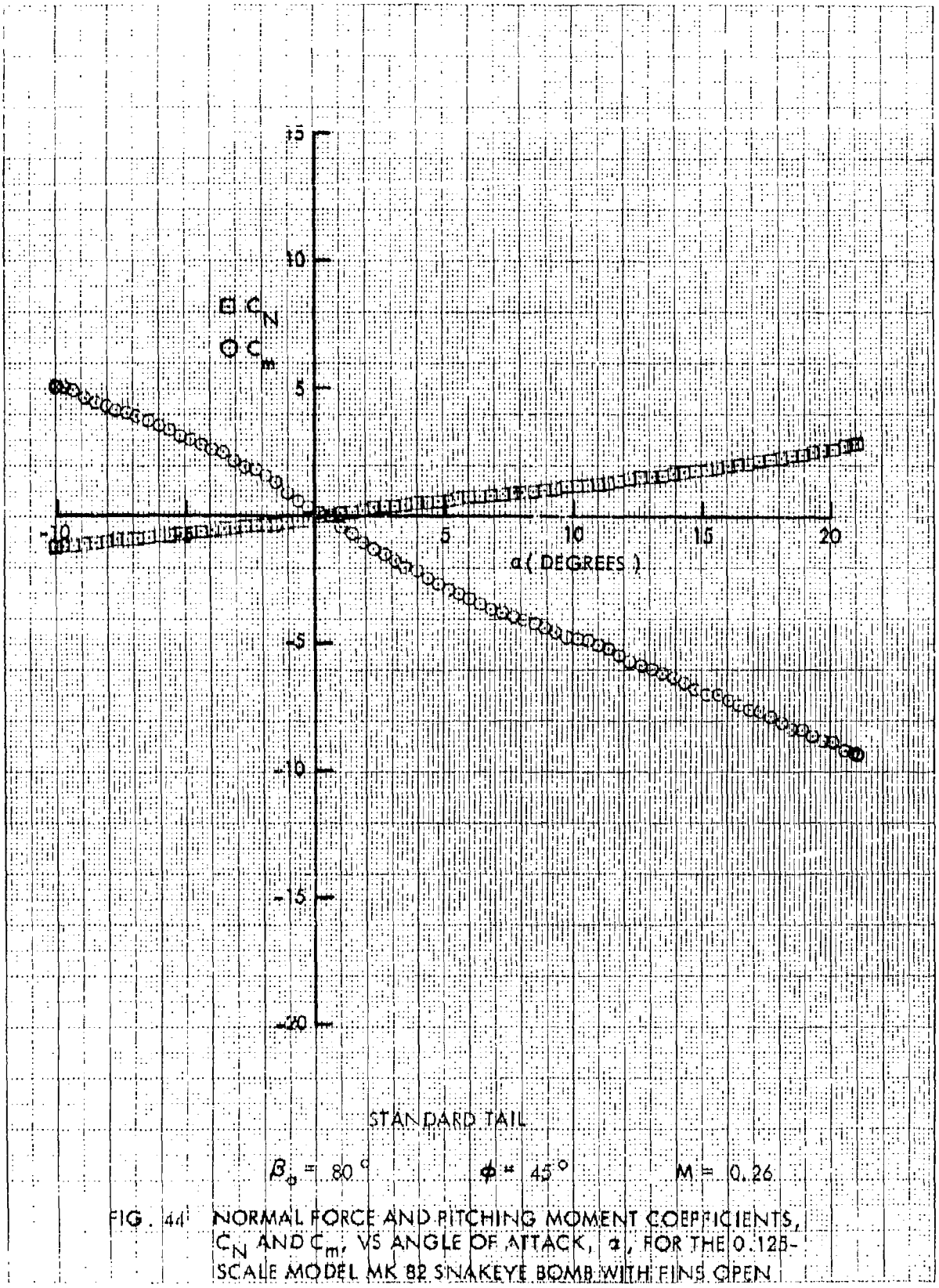


FIG. 44 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

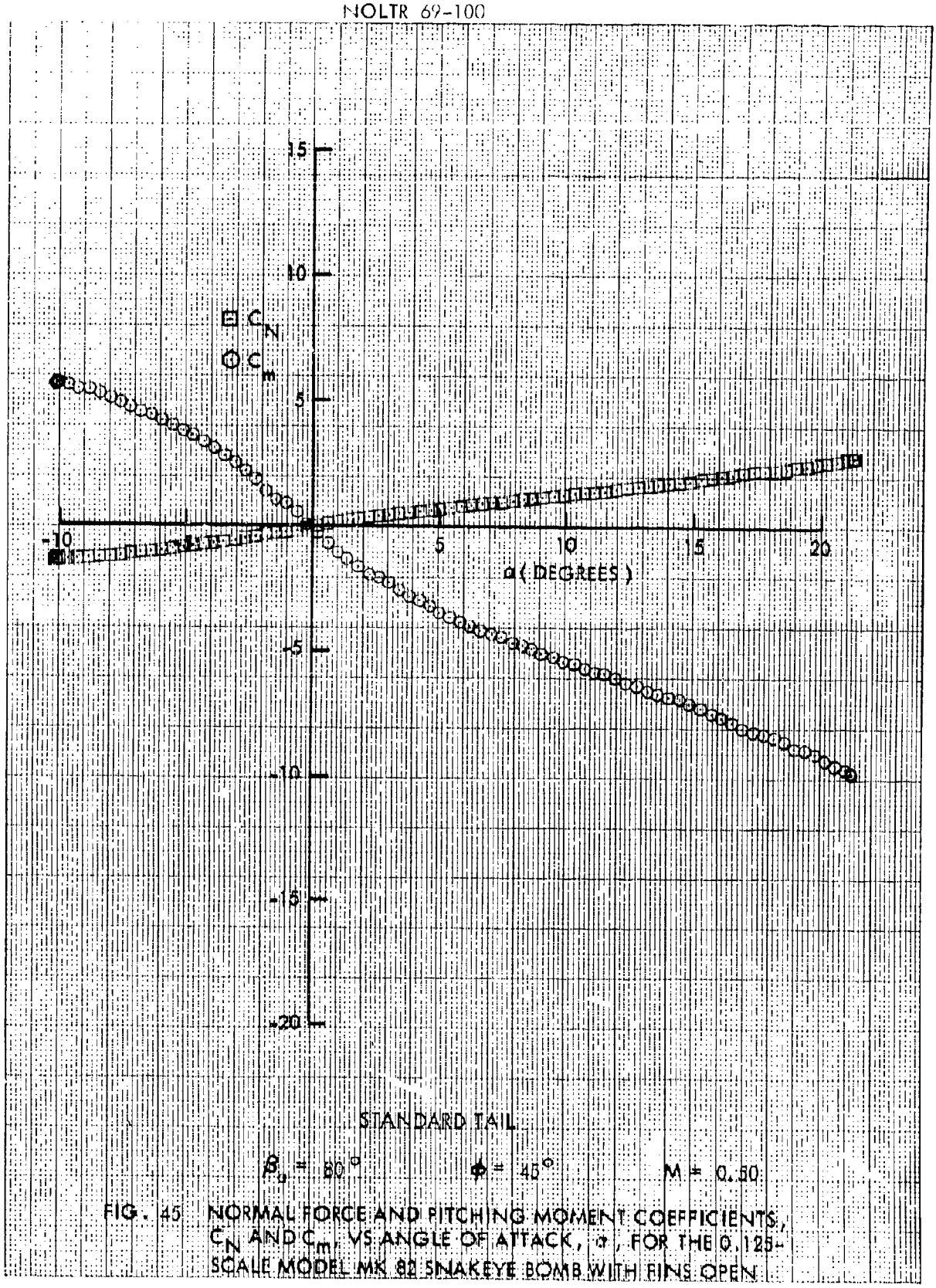


FIG. 45 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

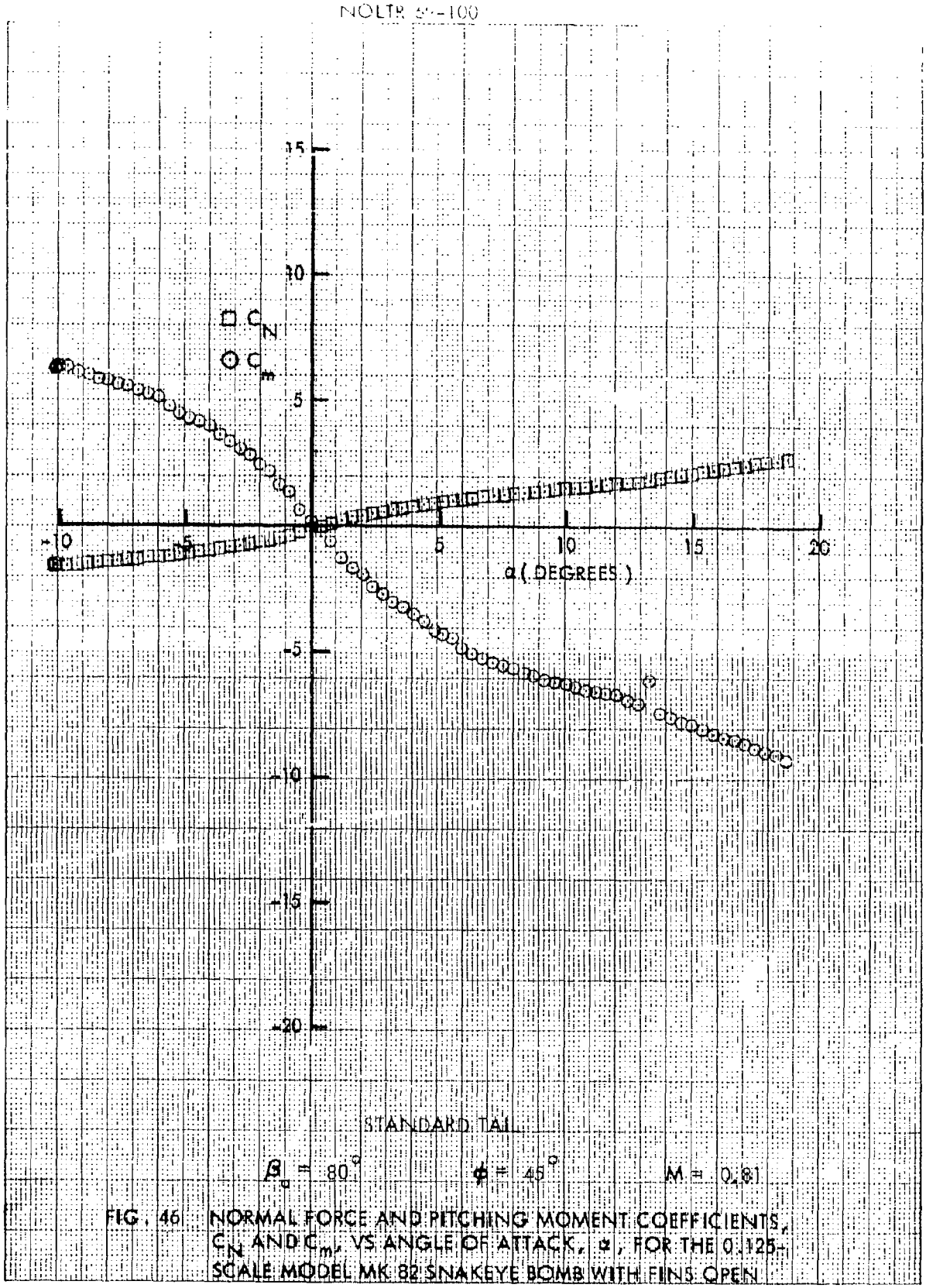


FIG. 46 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

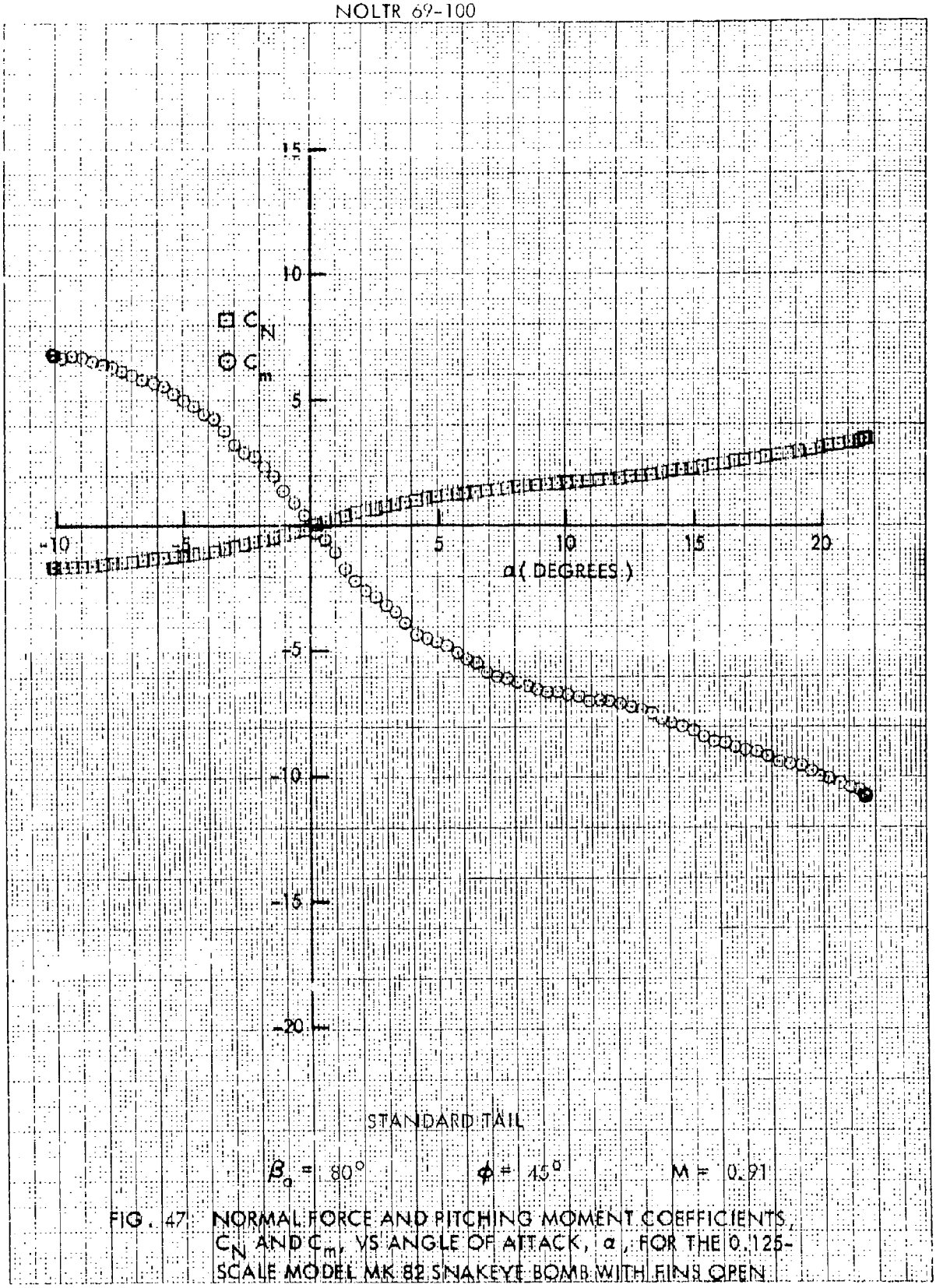


FIG. 47 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

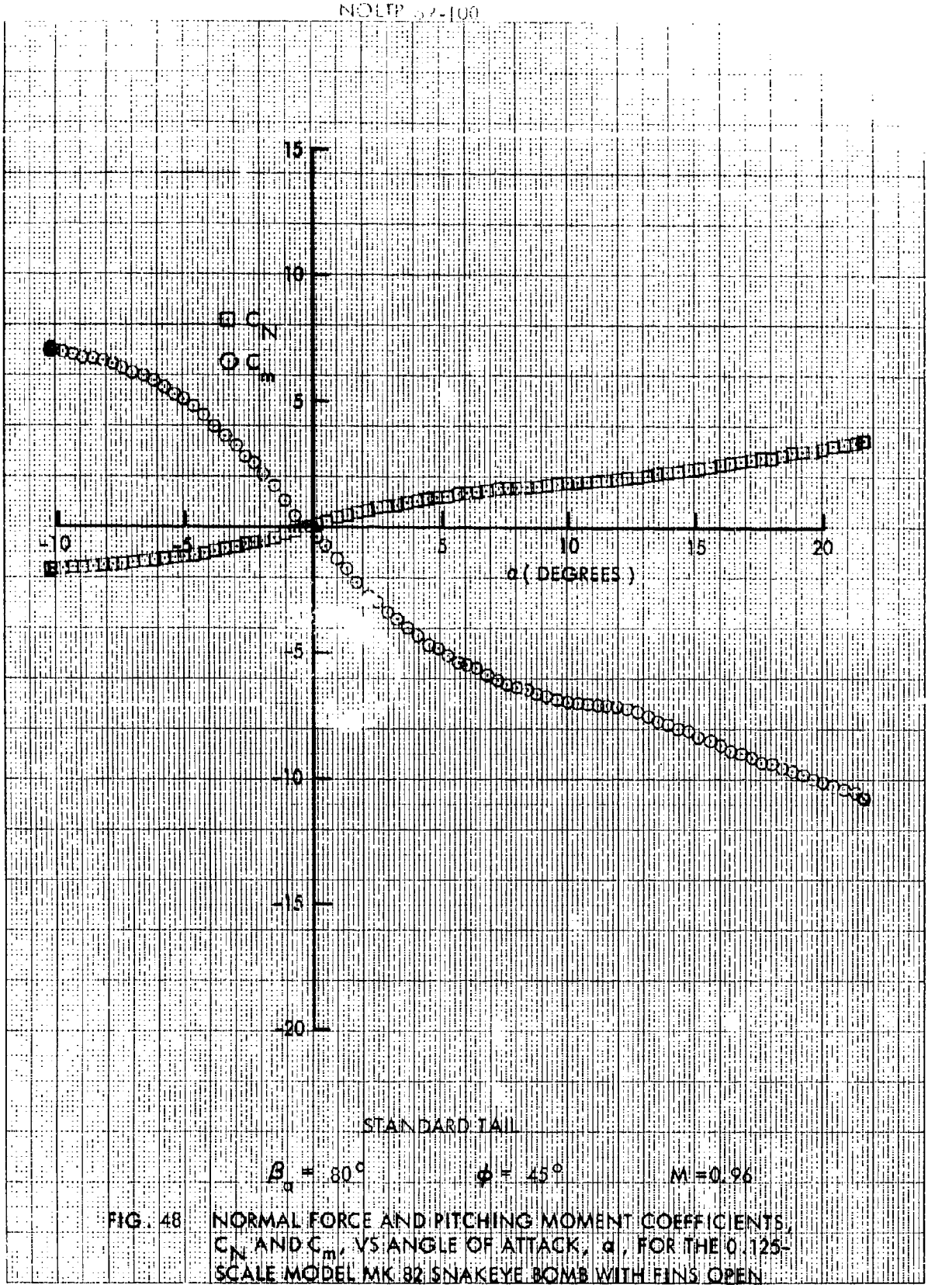


FIG. 48 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

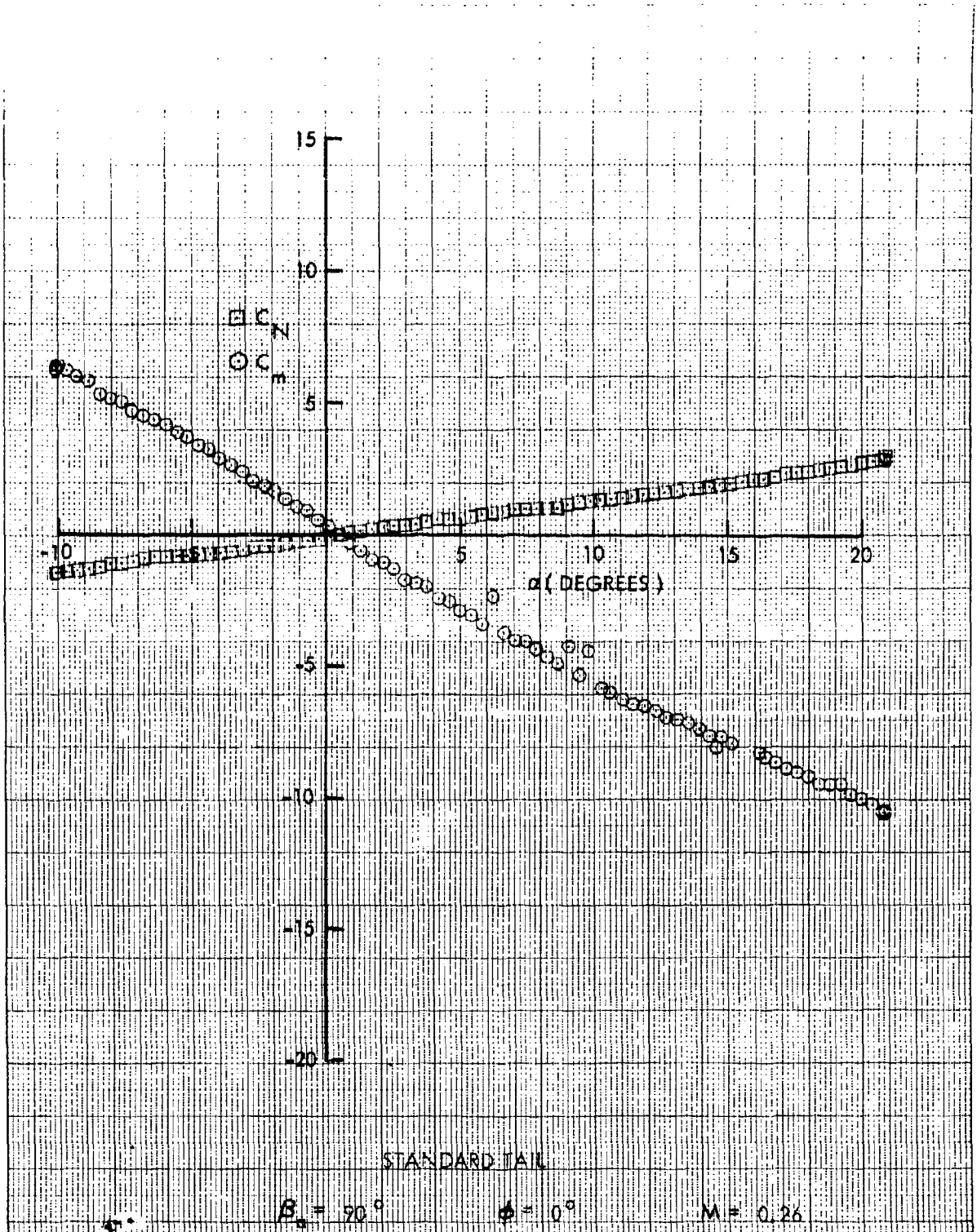
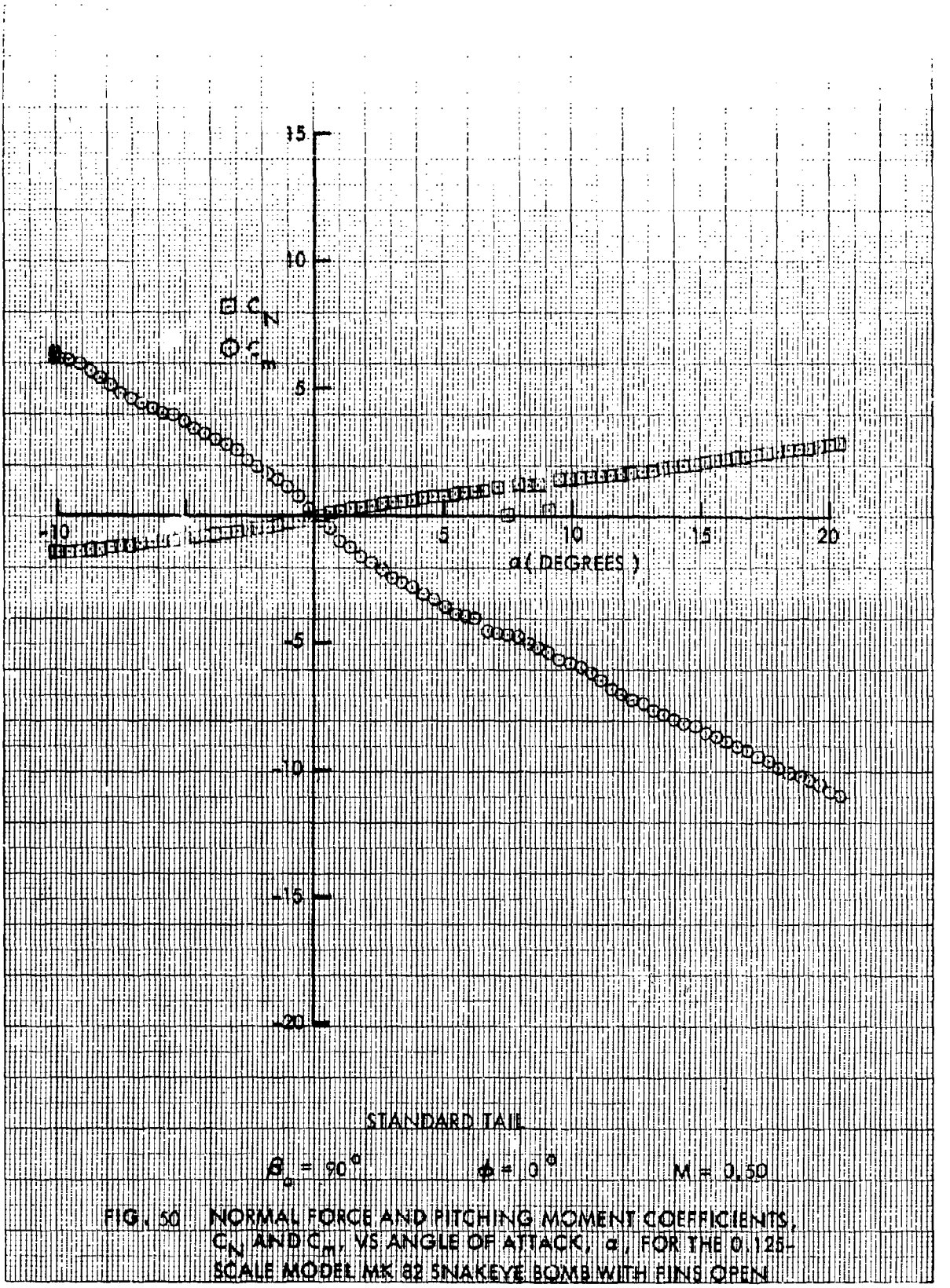


FIG. 49 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN



STANDARD TAIL

β_a = 90° ϕ = 0° M = 0.50

FIG. 50 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

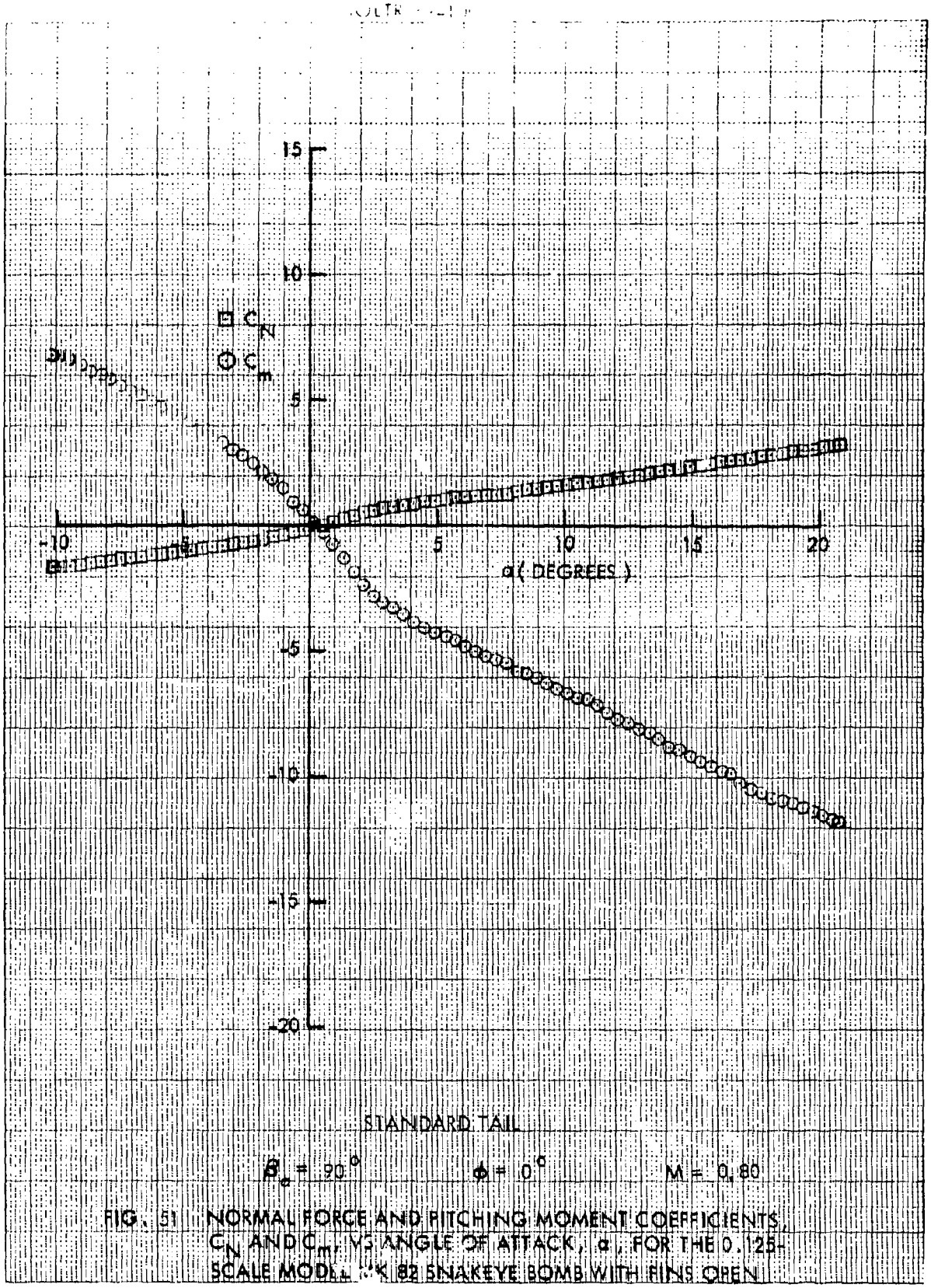


FIG. 51 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL OF MK 82 SNAKEYE BOMB WITH FINS OPEN

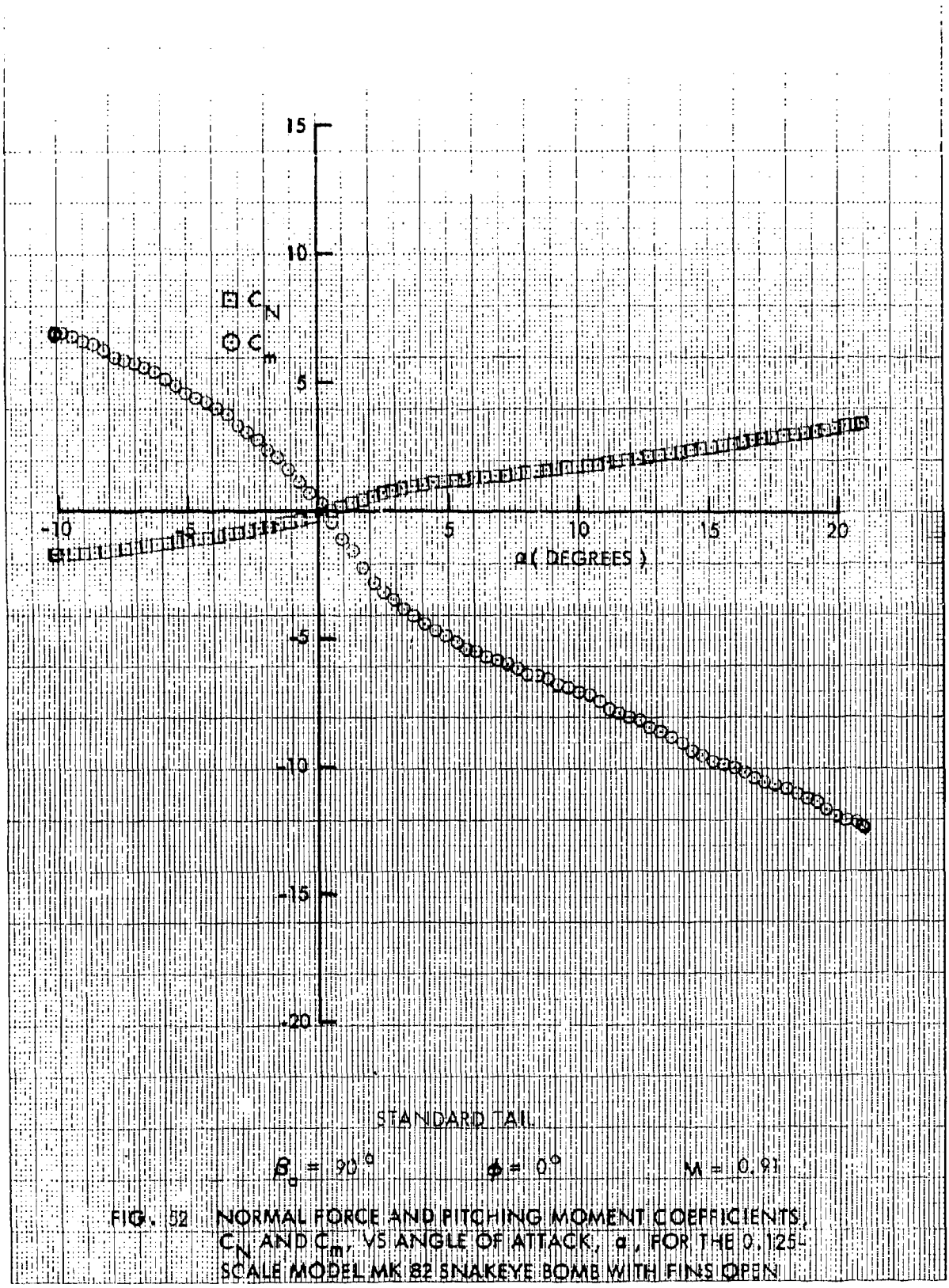


FIG. 52 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

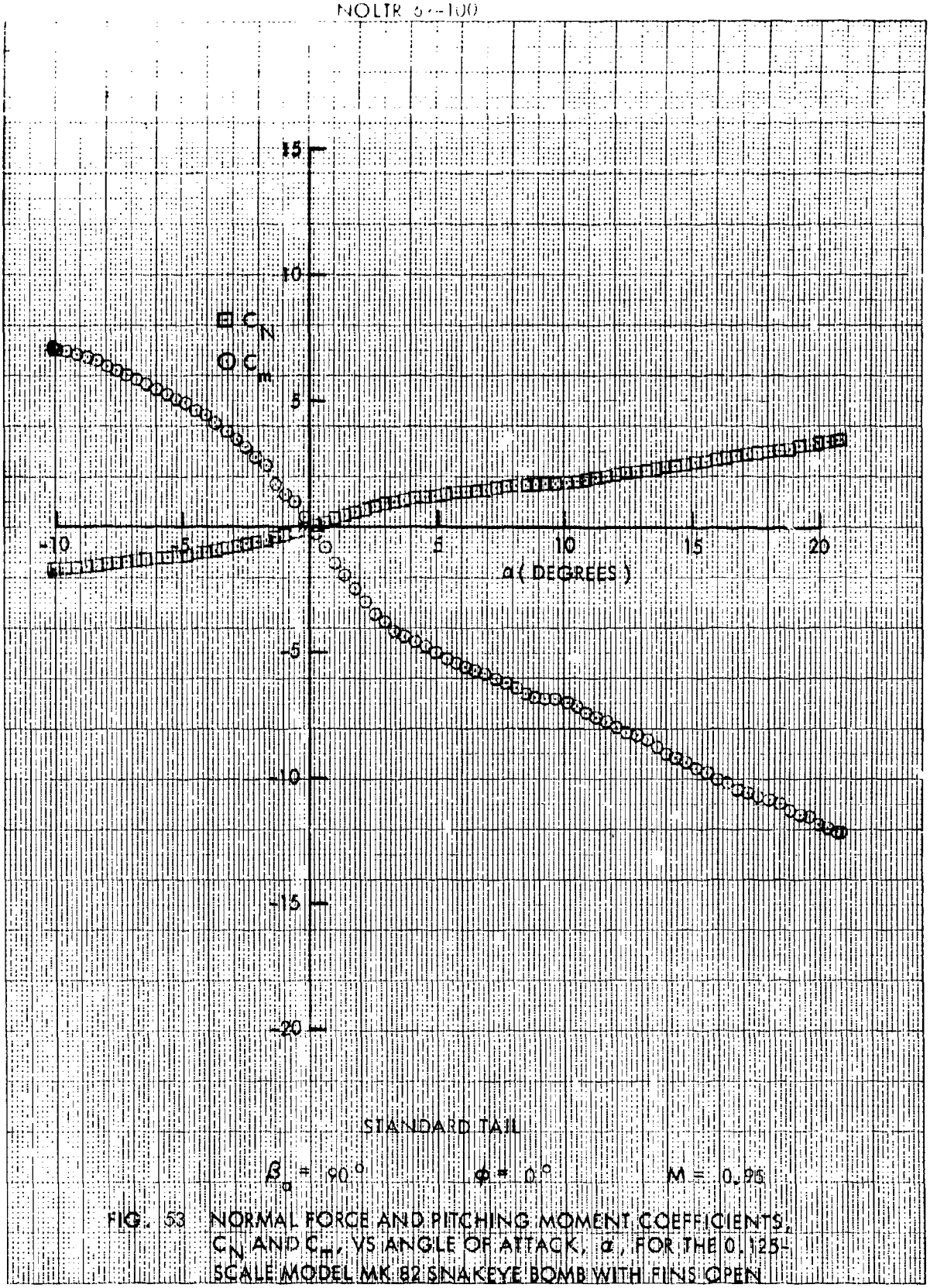


FIG. 53 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

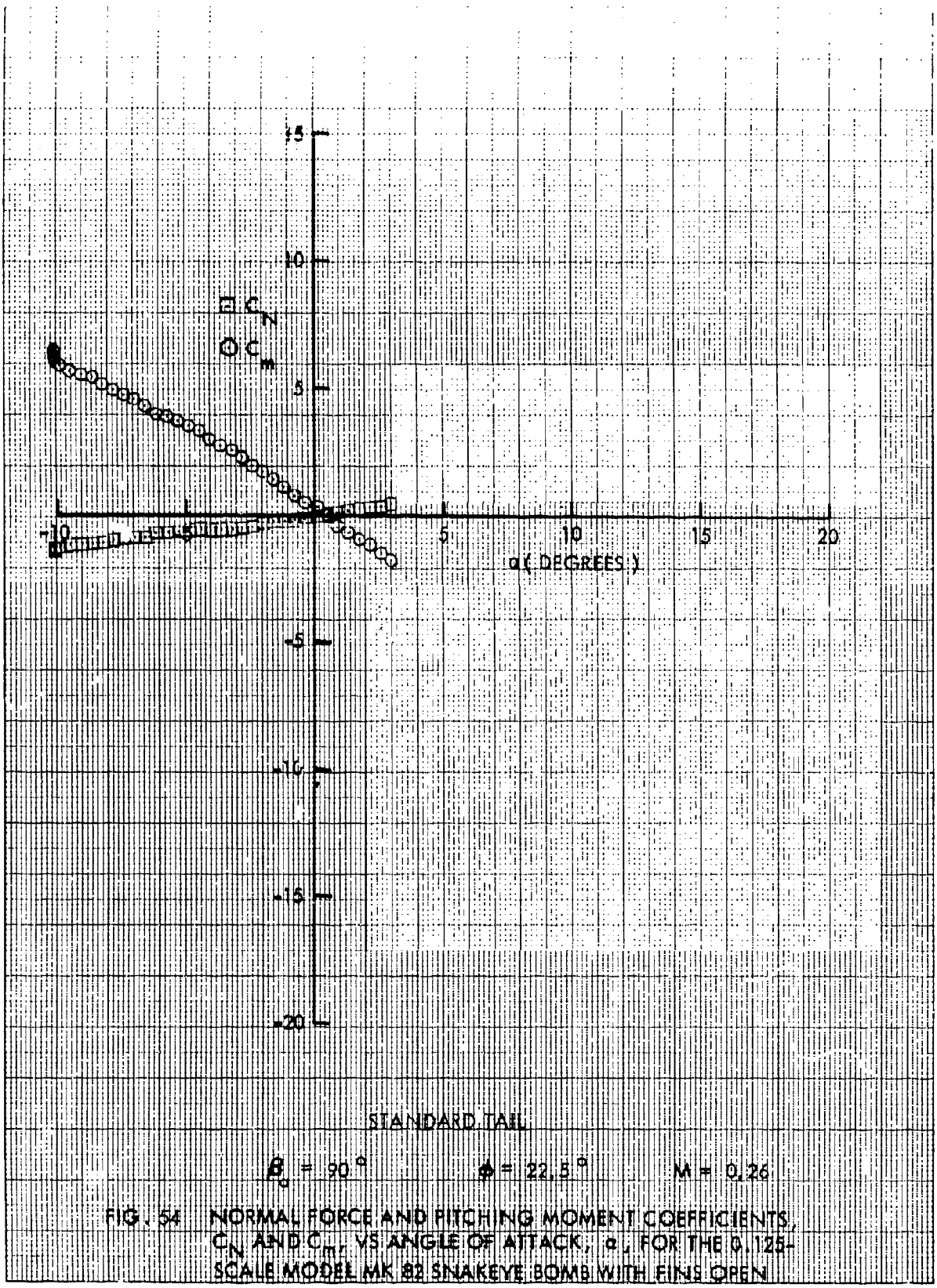


FIG. 54 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

FIG. 55 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

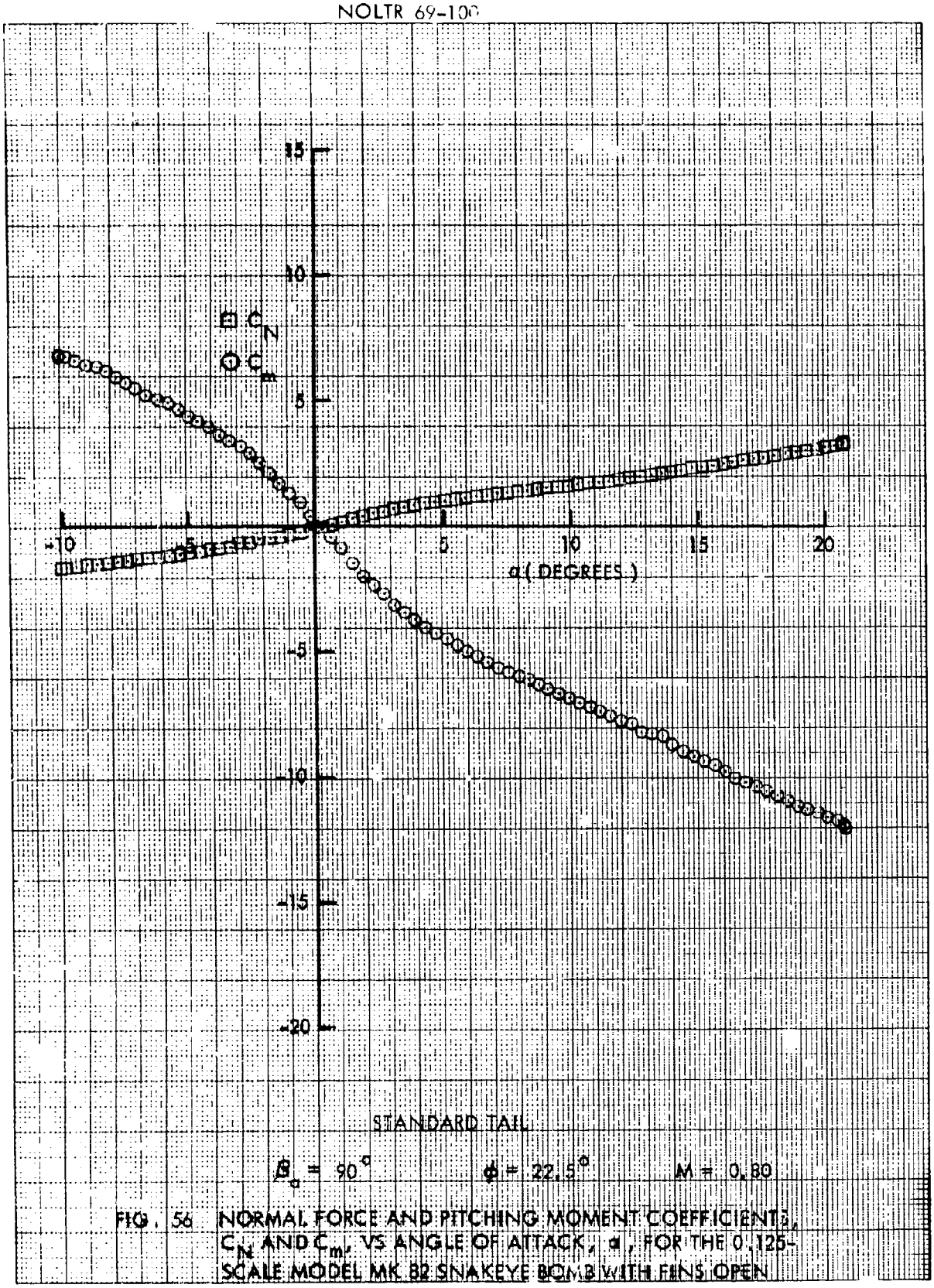


FIG. 56 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

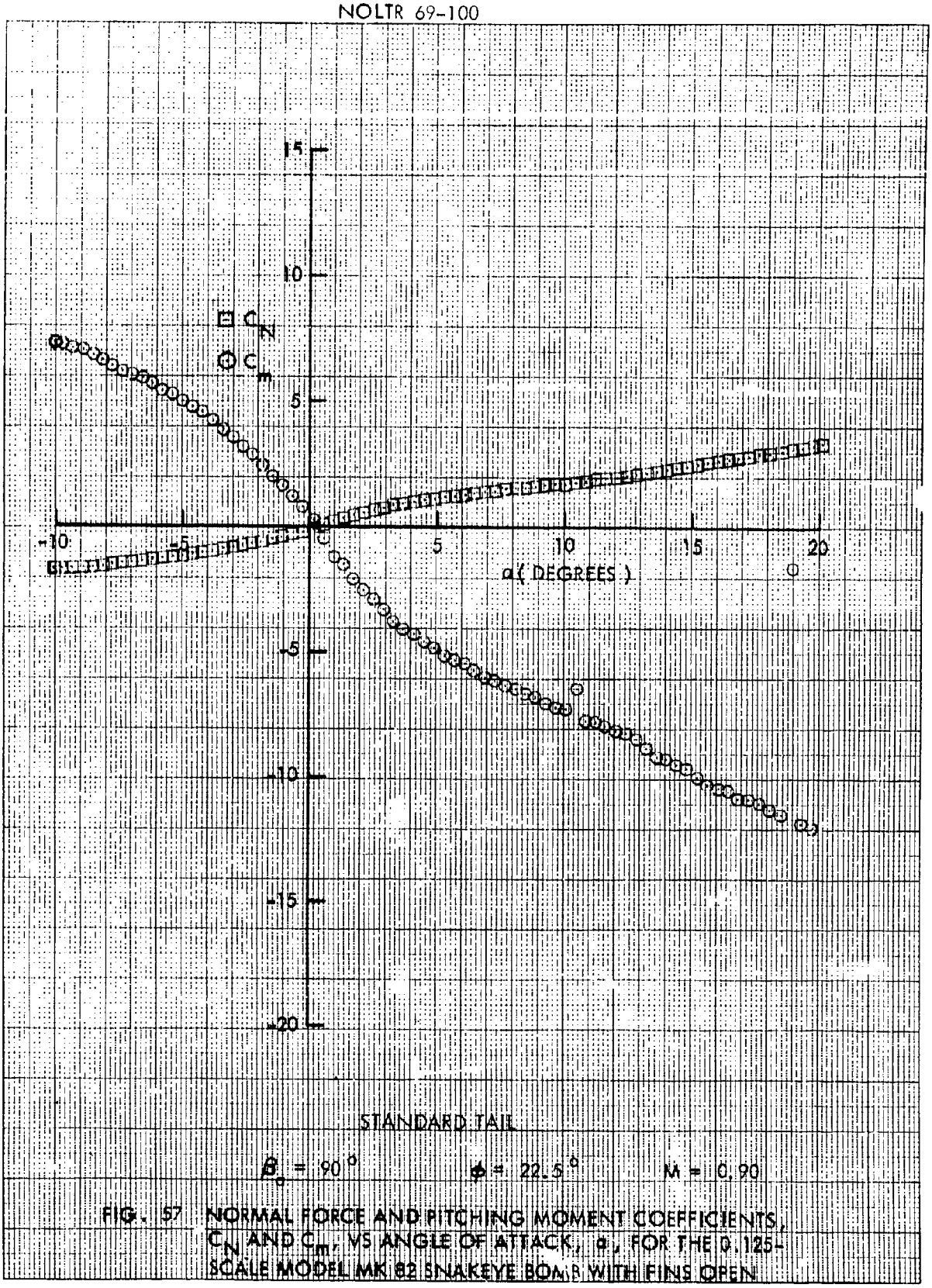


FIG. 57 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

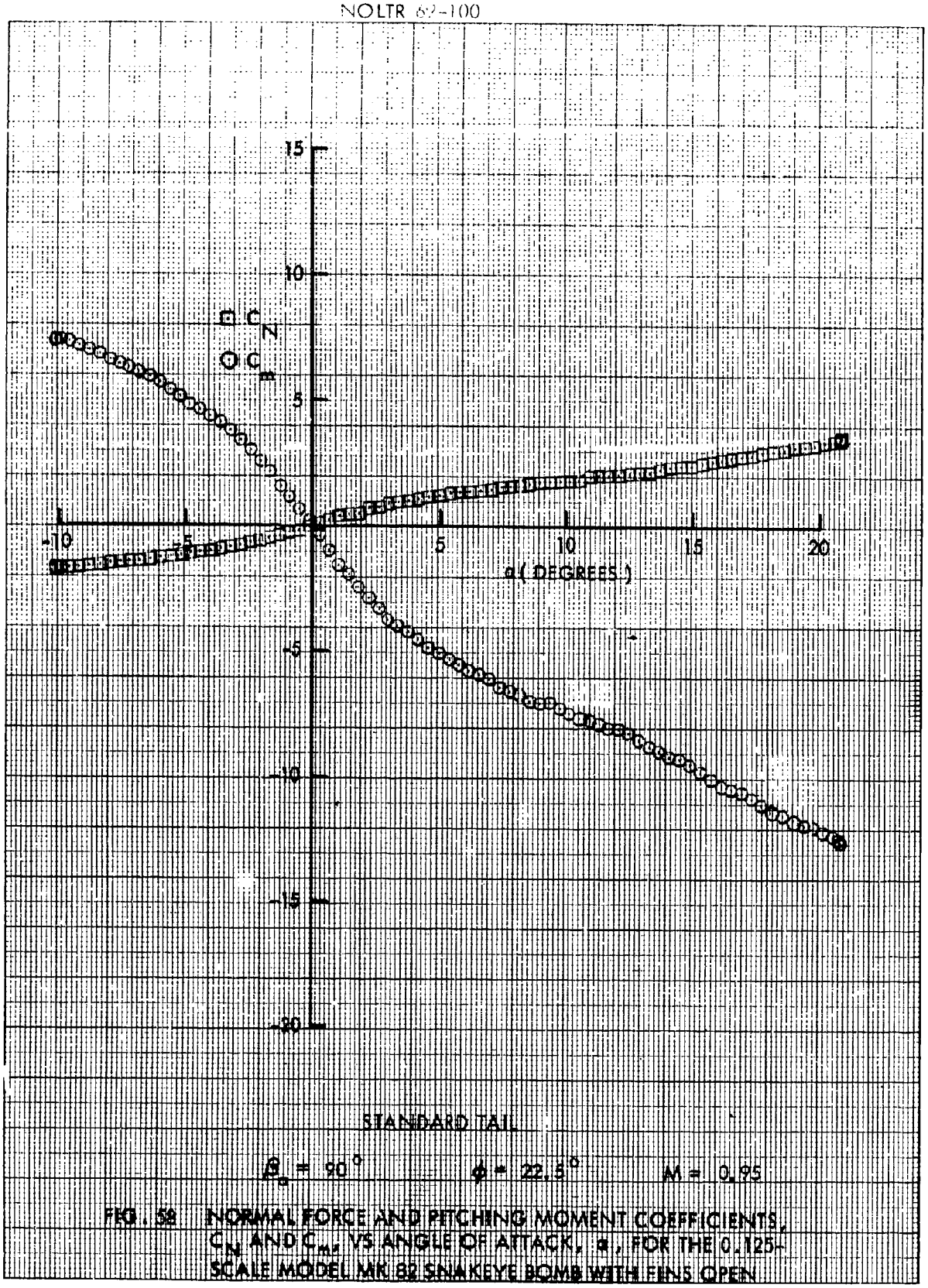


FIG. 58 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

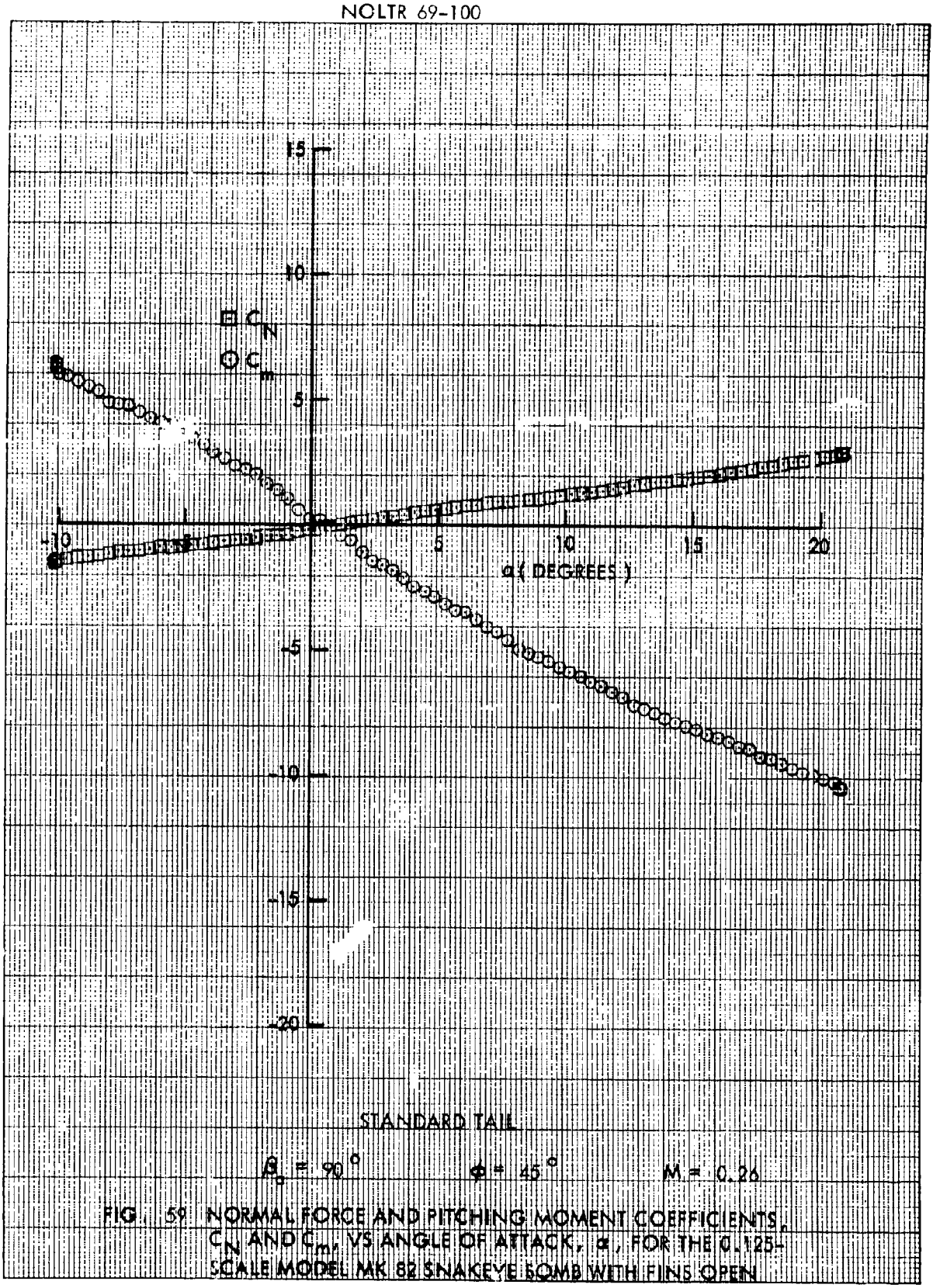


FIG. 59 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

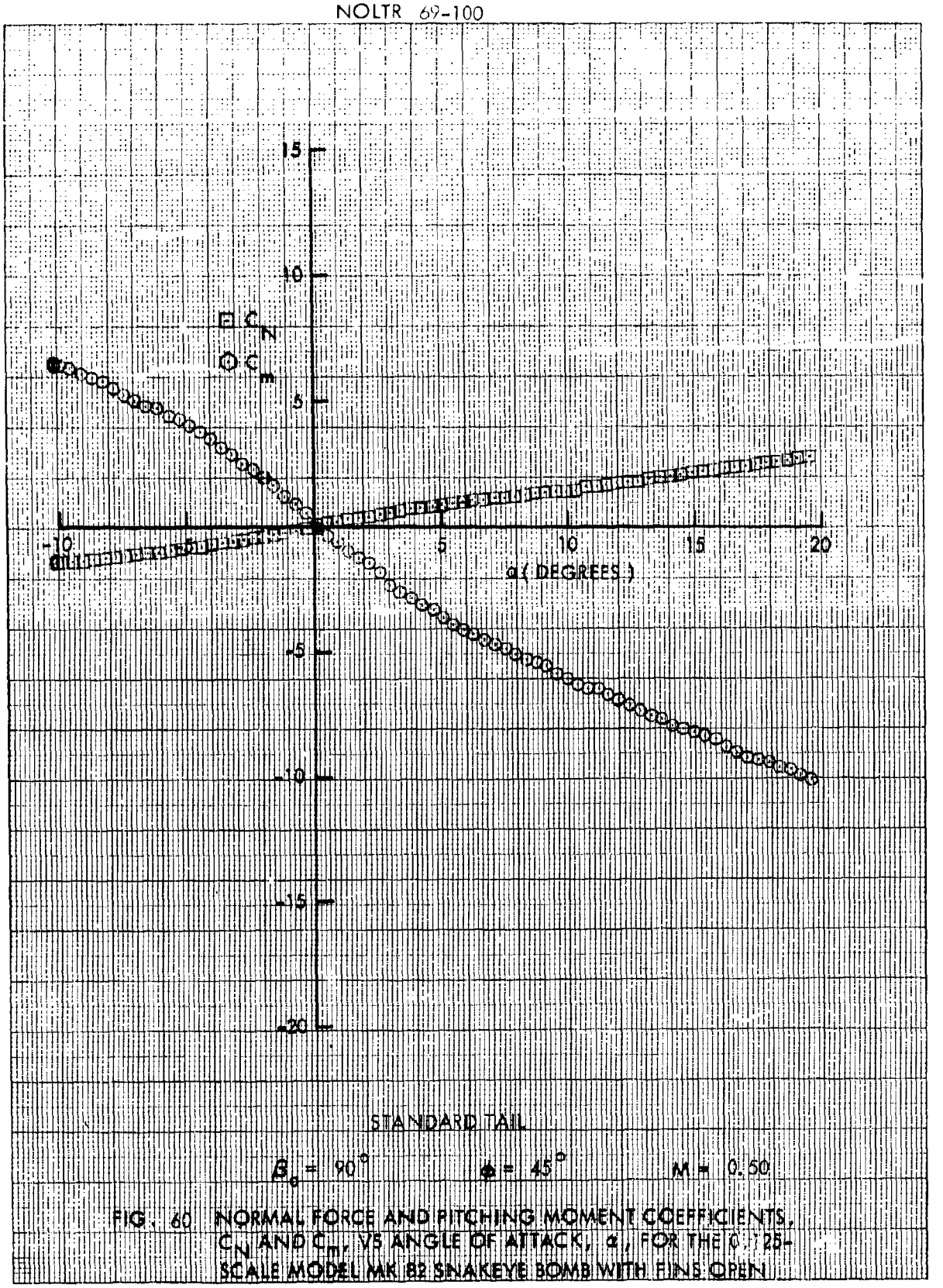


FIG. 60 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

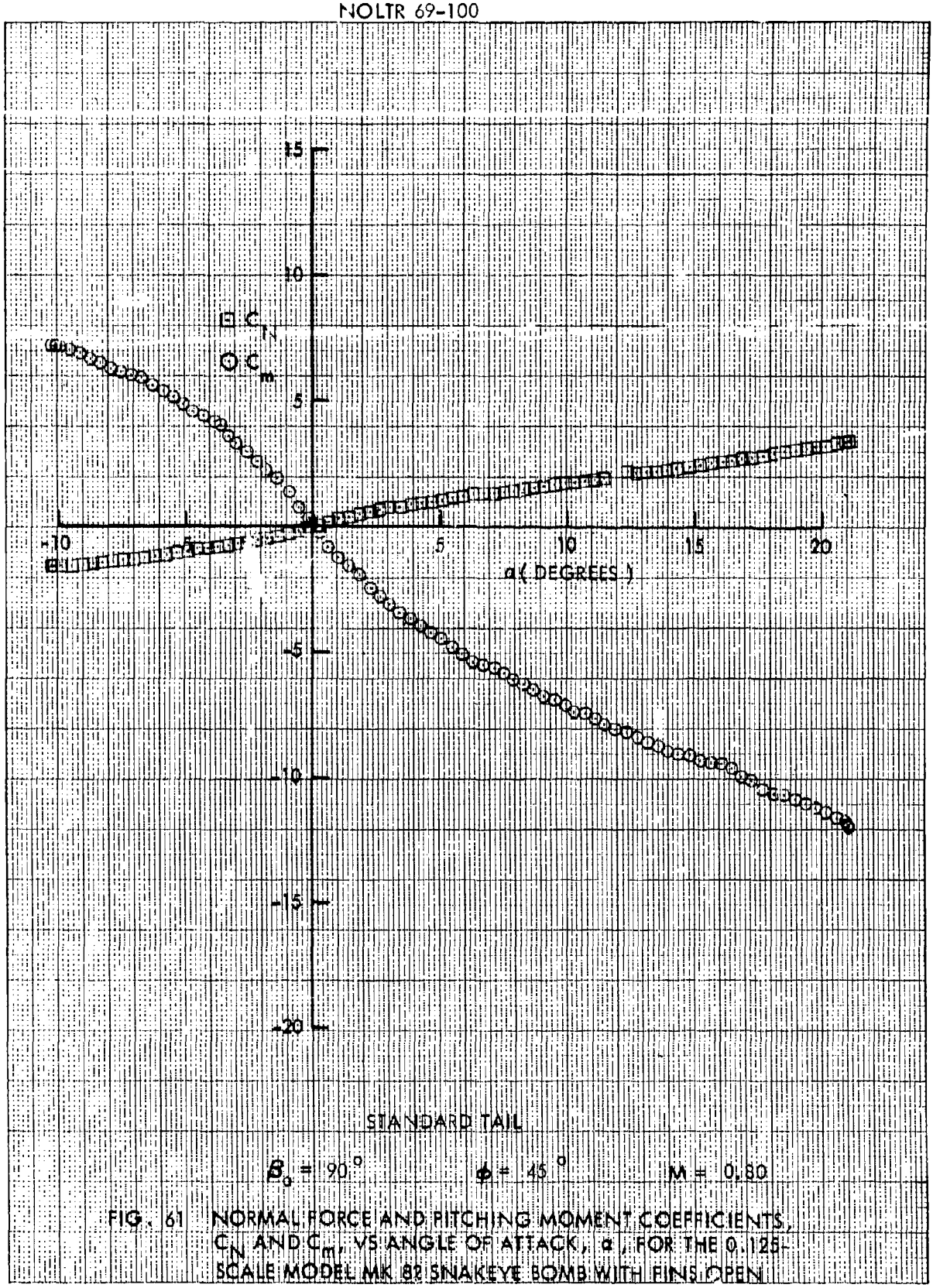


FIG. 61 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

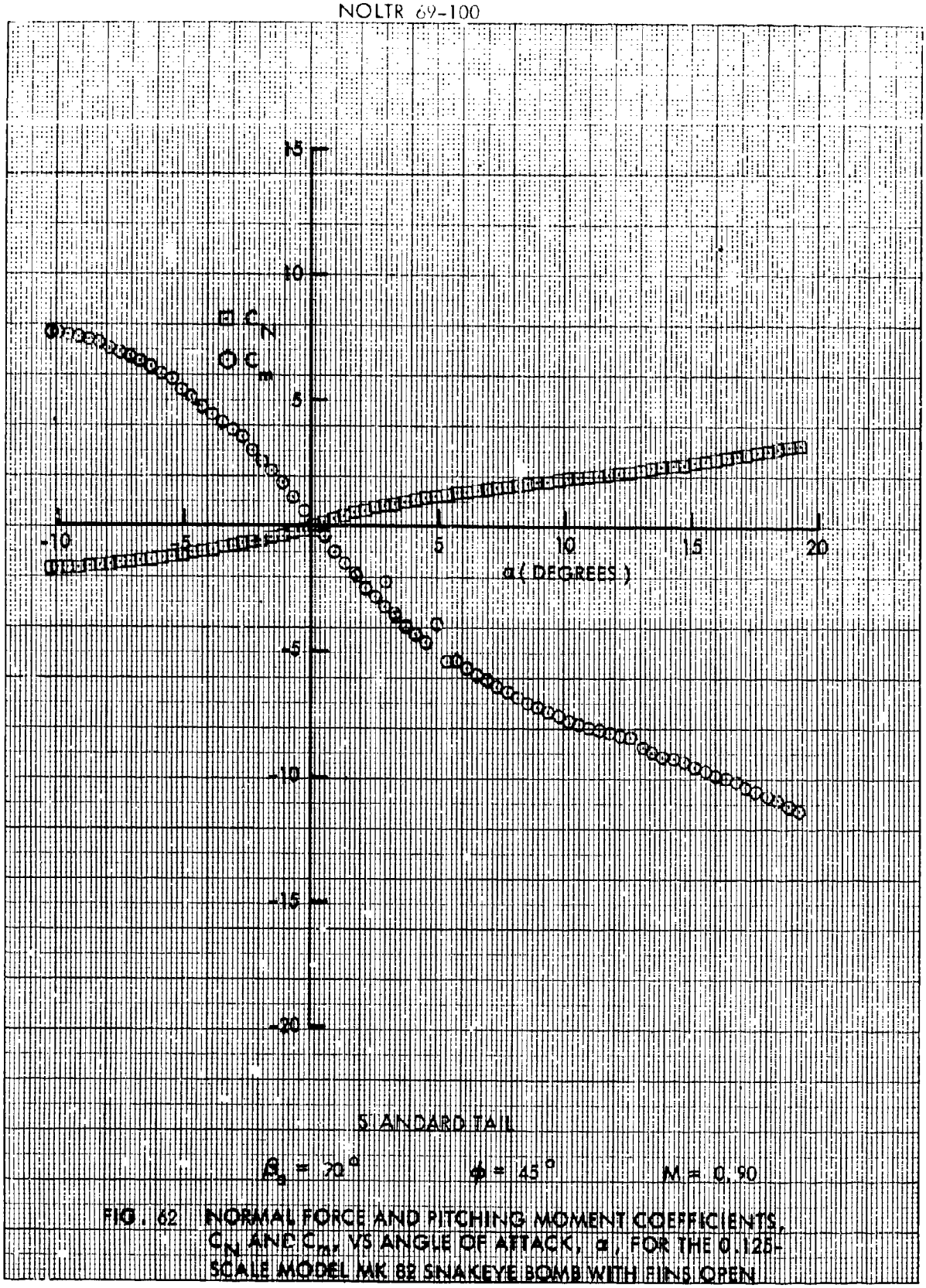


FIG. 62 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

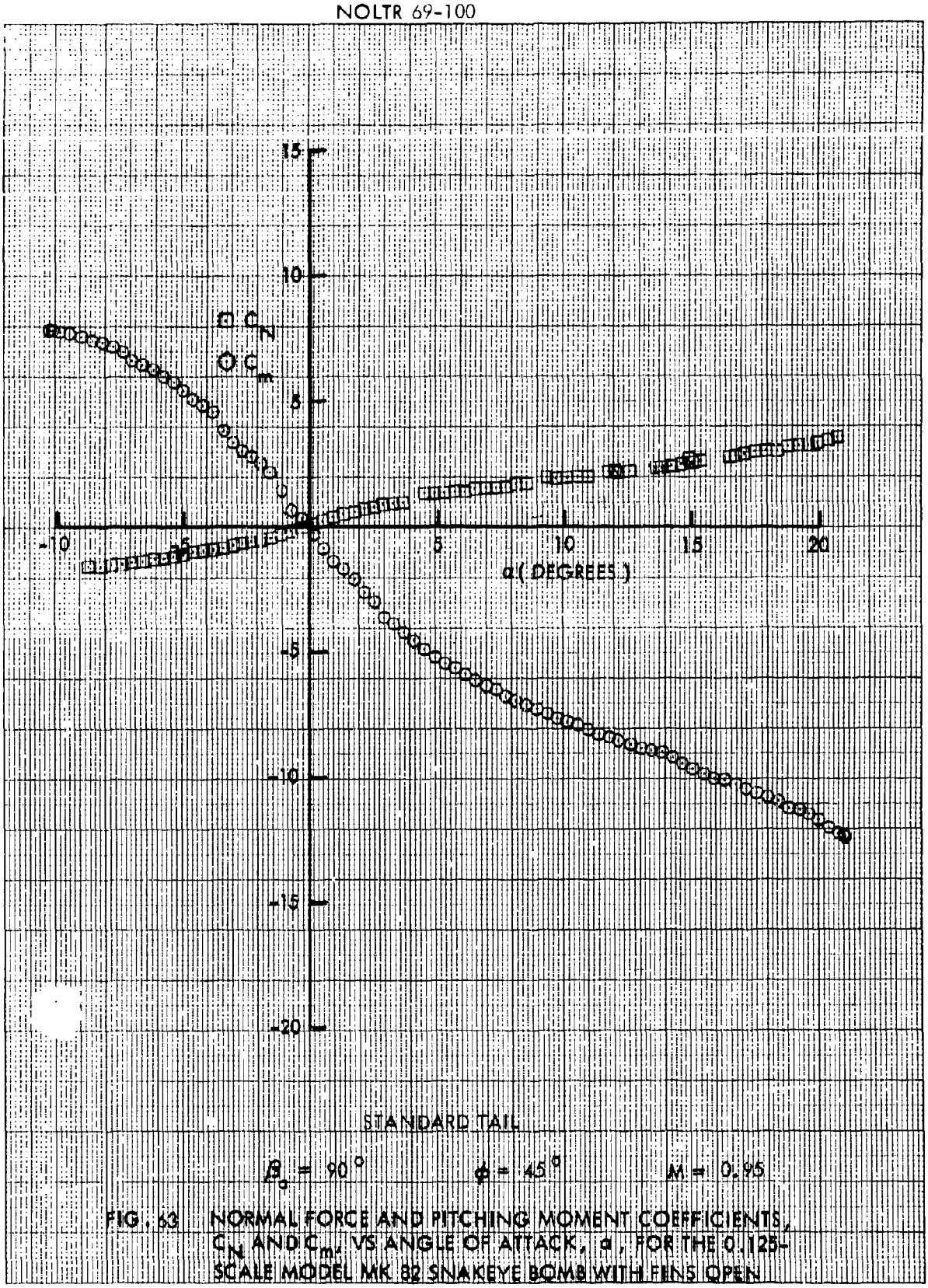


FIG. 63 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

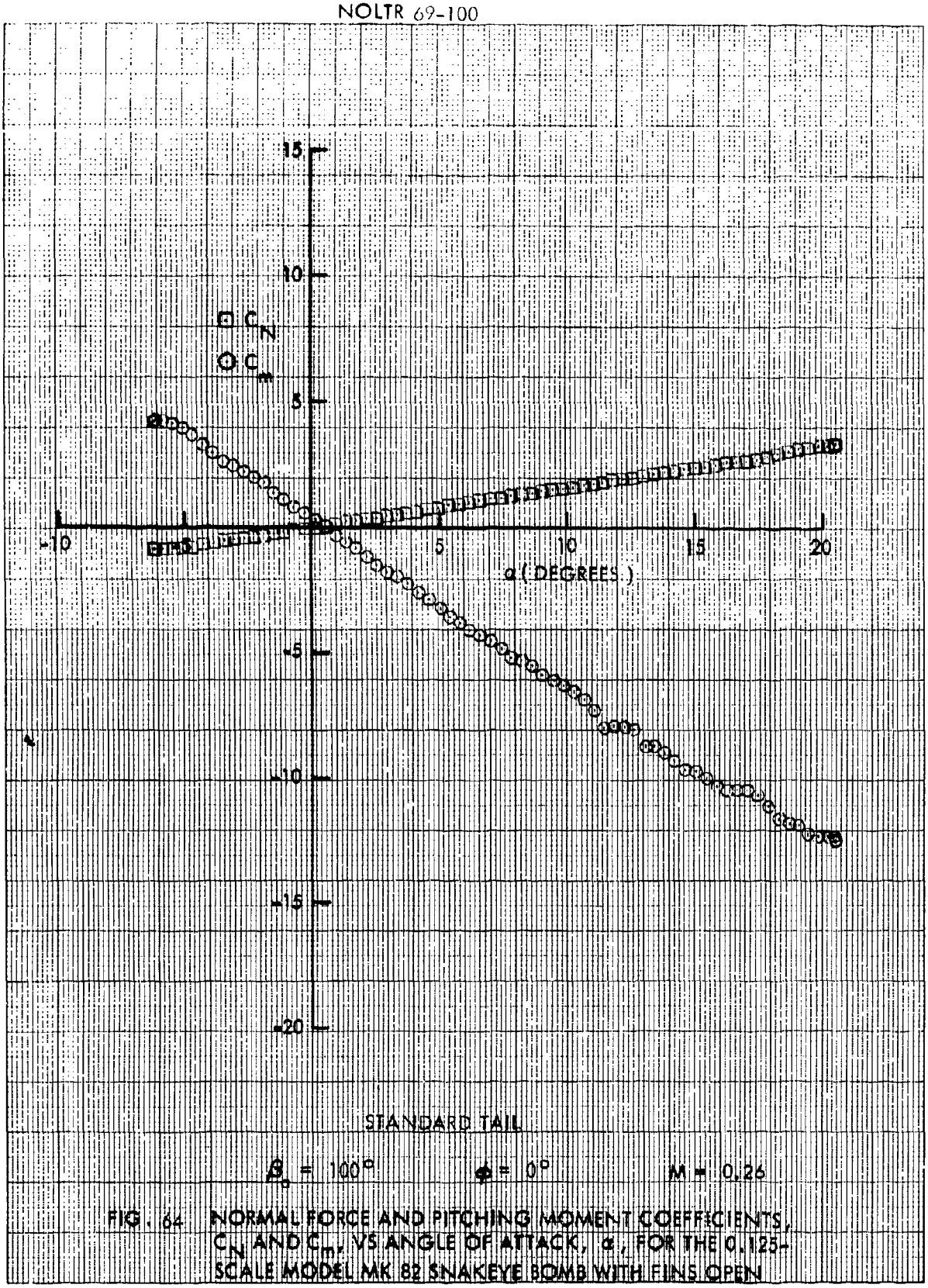


FIG. 64 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

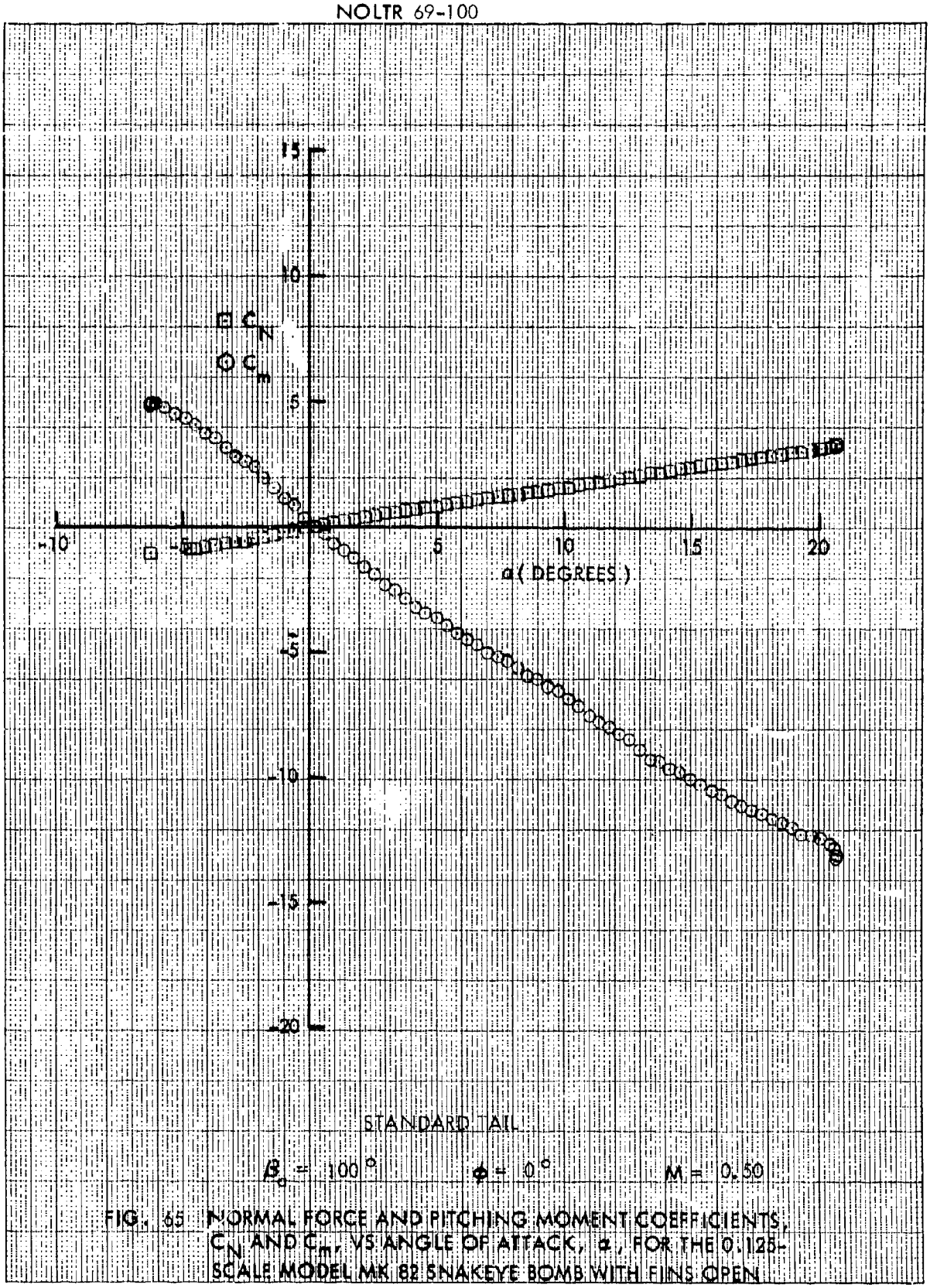


FIG. 65 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

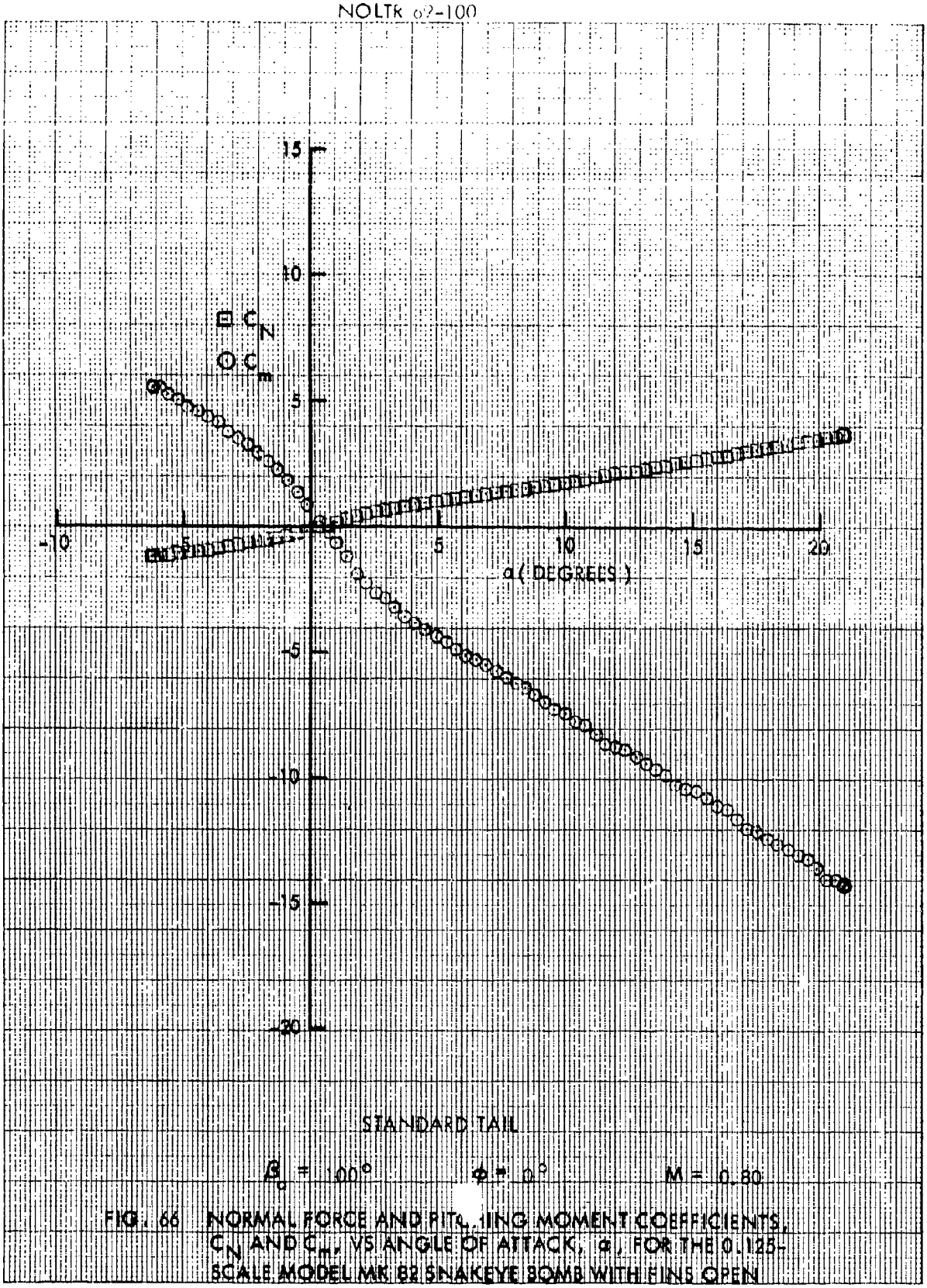


FIG. 66 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

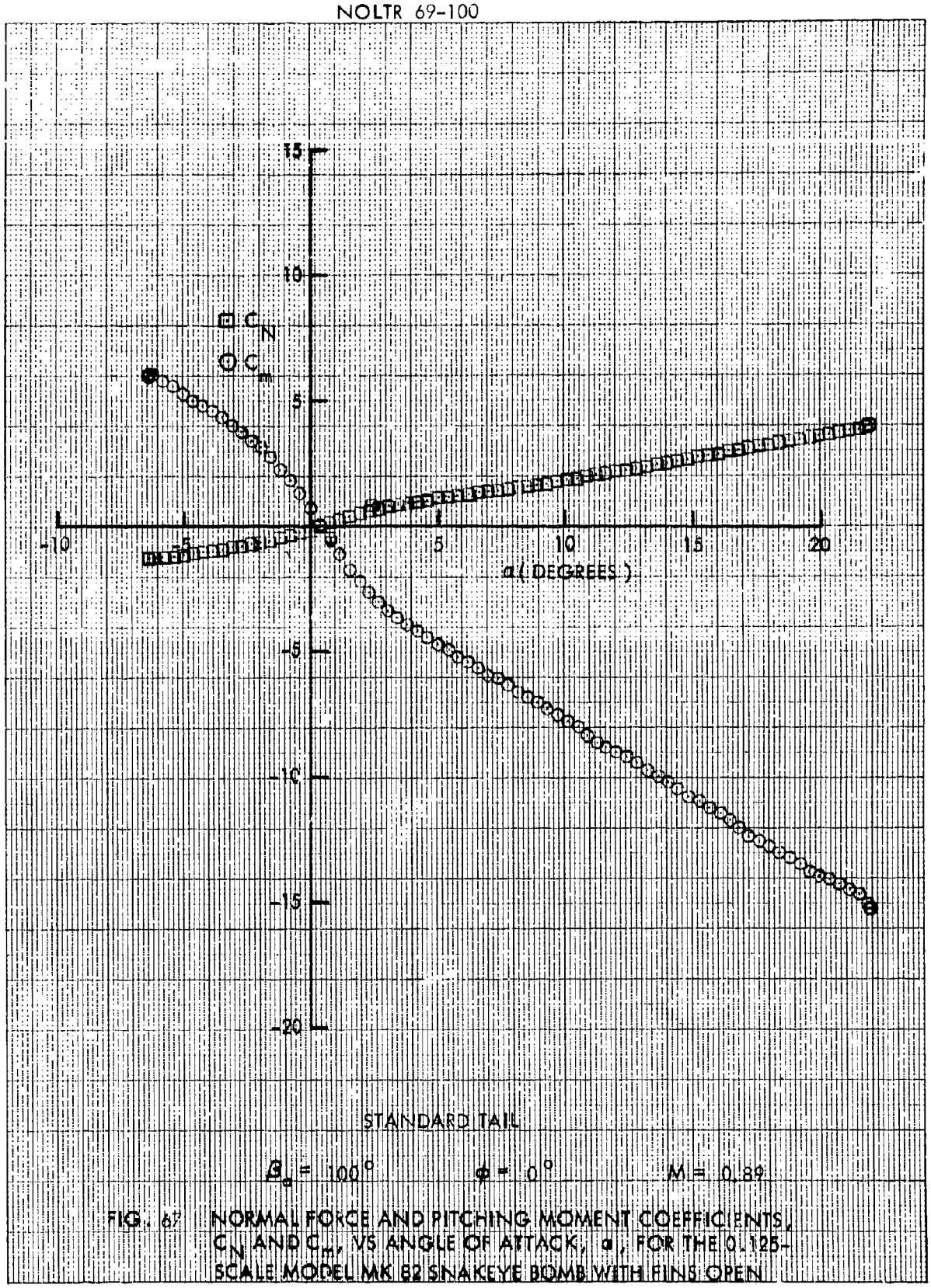


FIG. 67 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

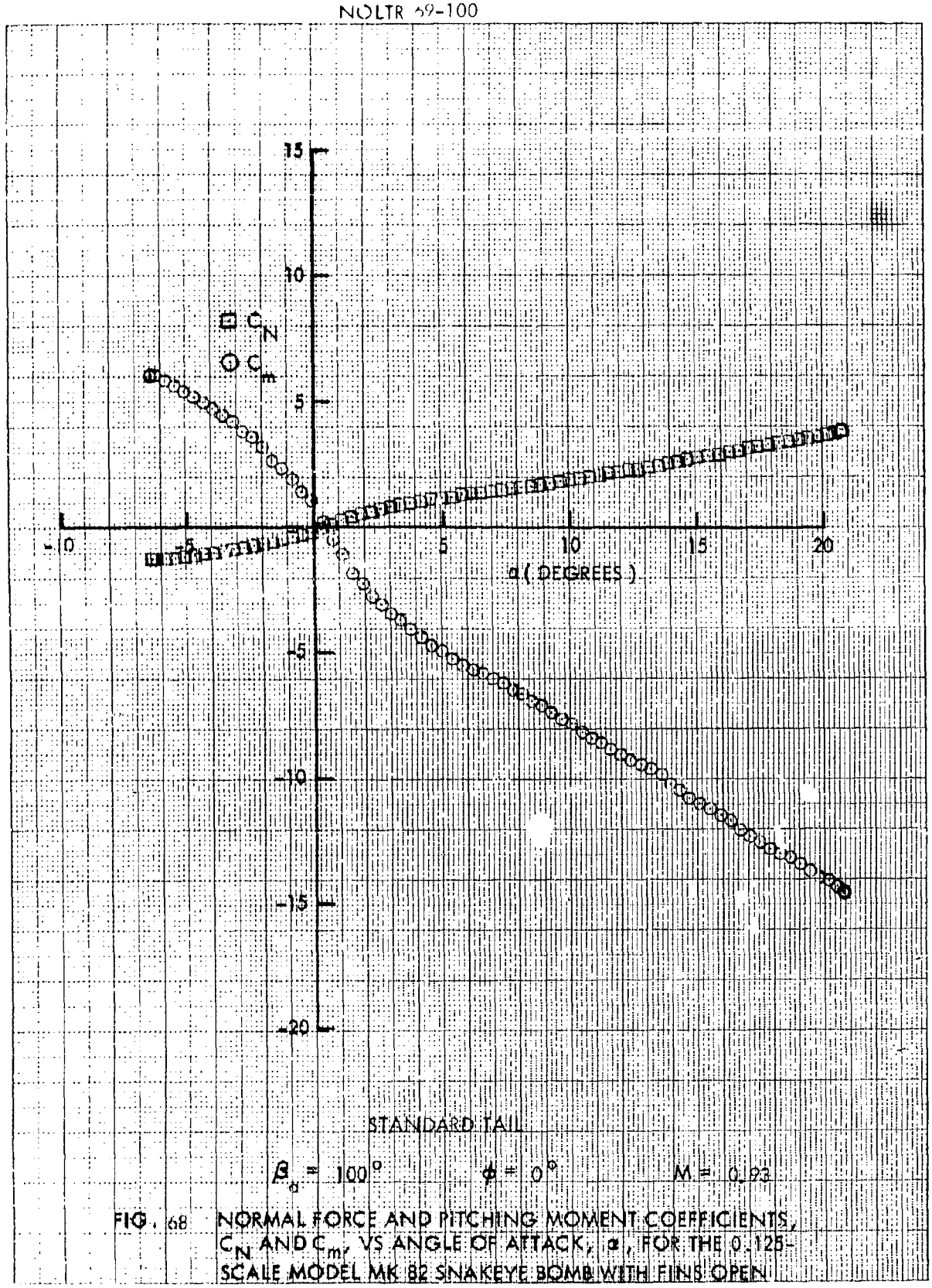


FIG. 68 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

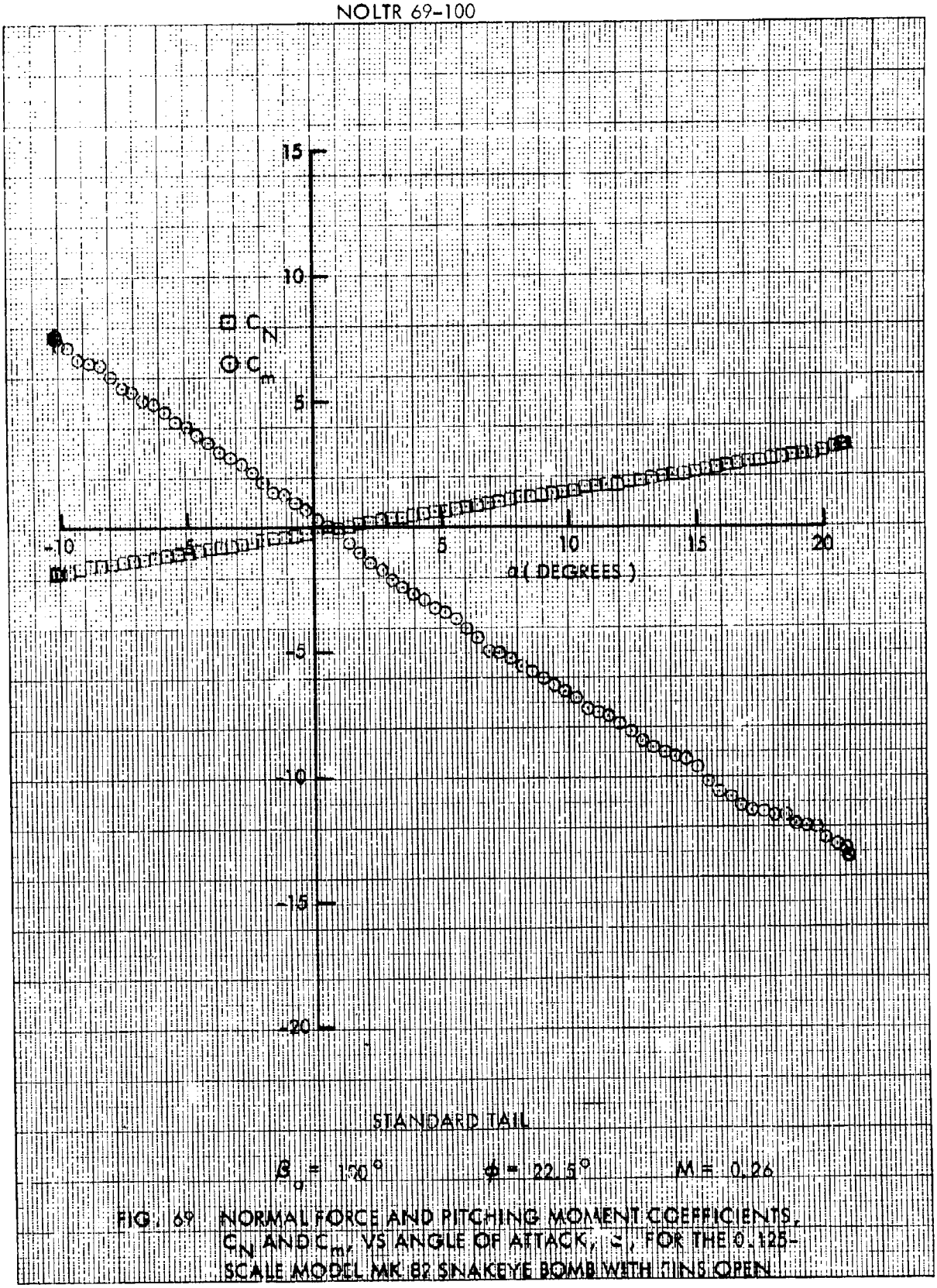


FIG. 69 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

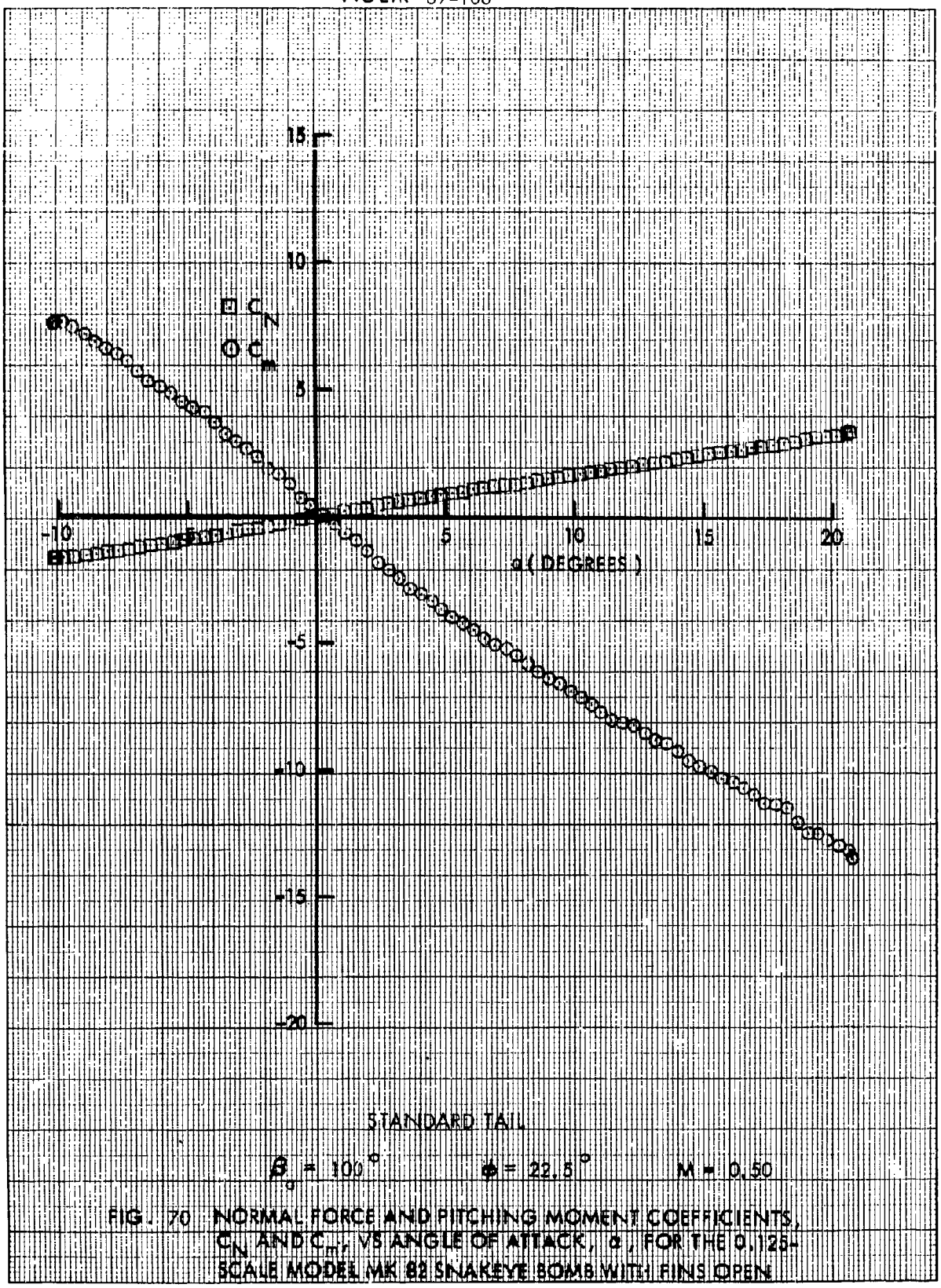


FIG. 70 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

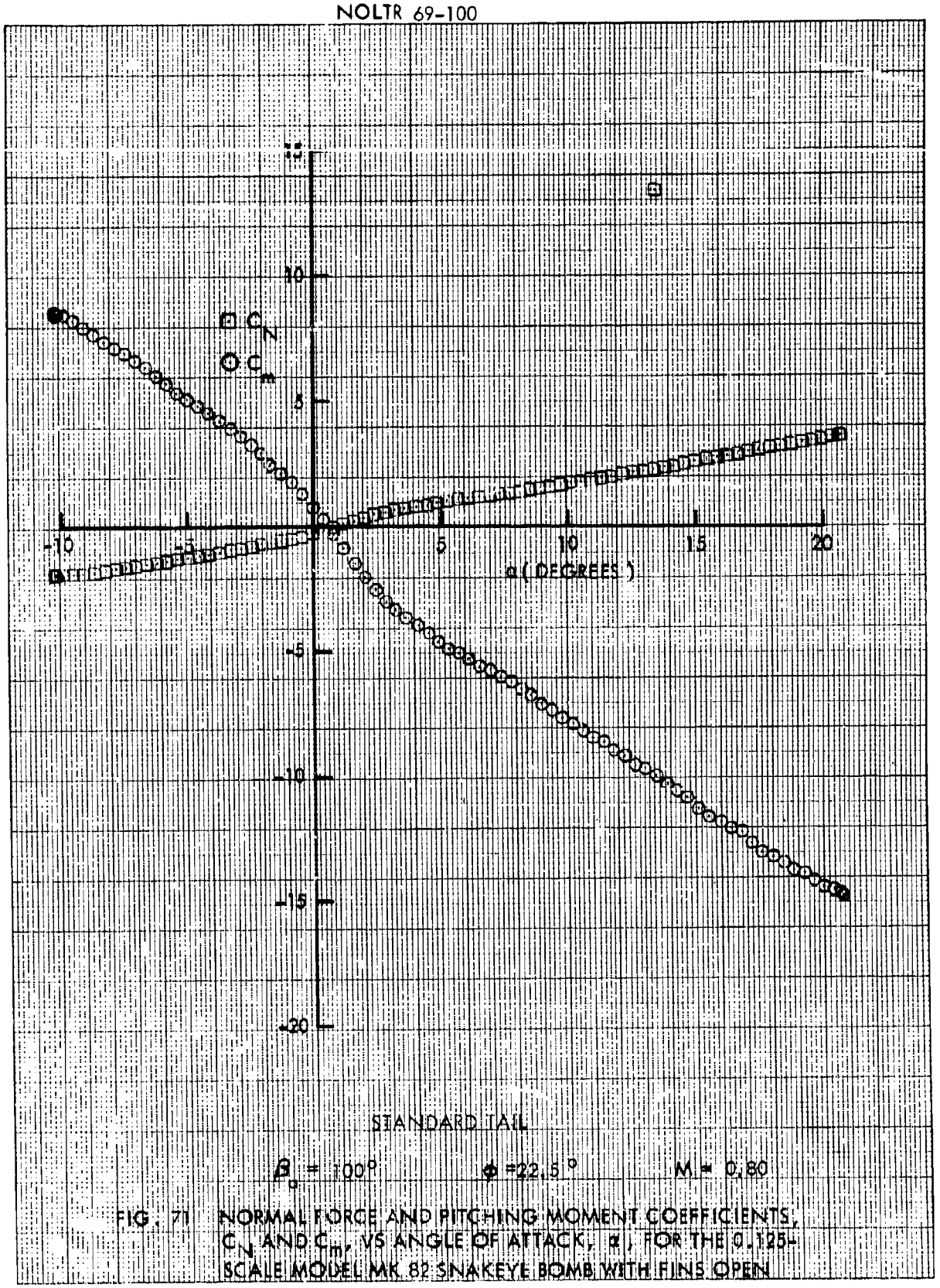


FIG. 71 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

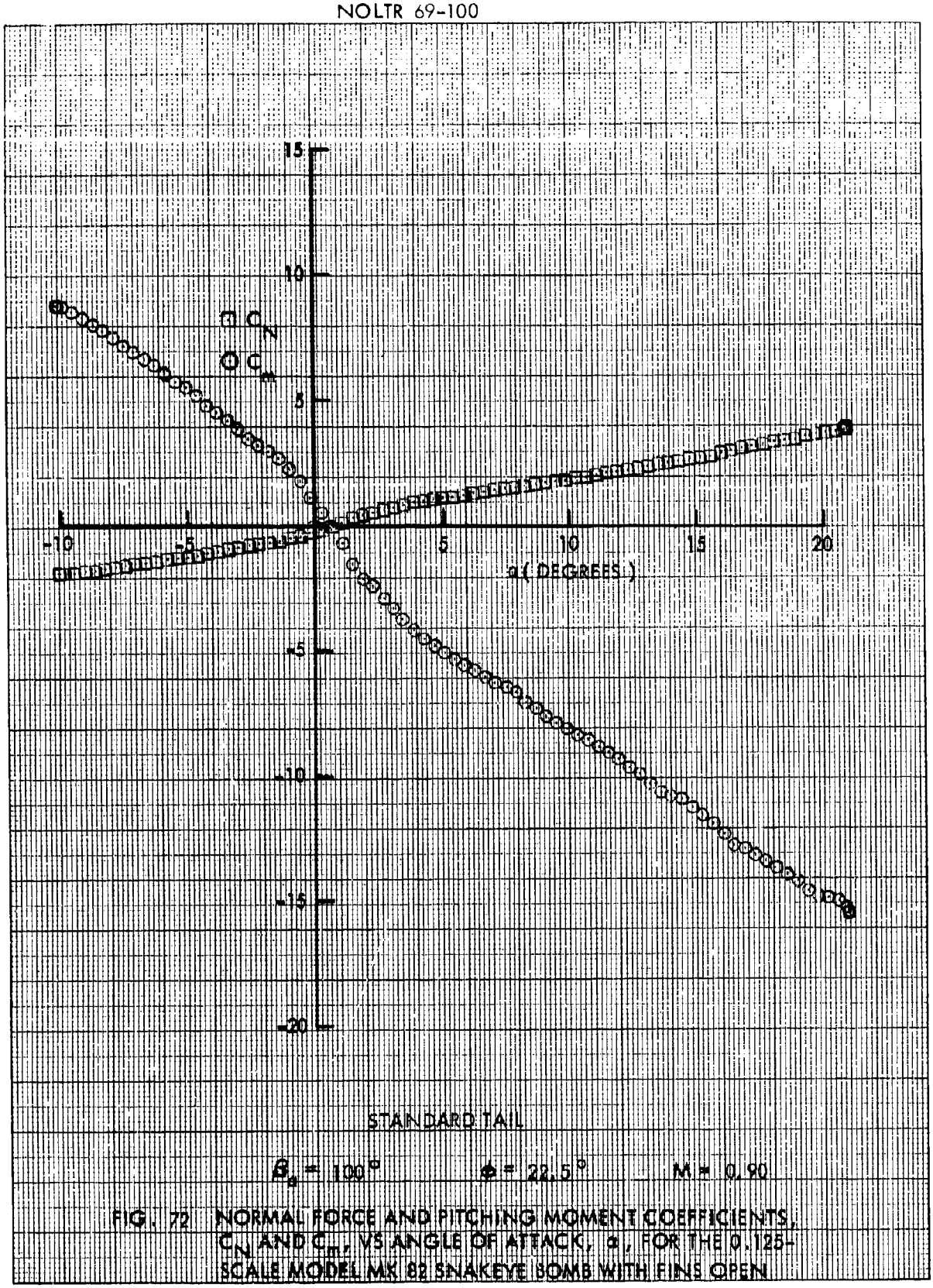


FIG. 72 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

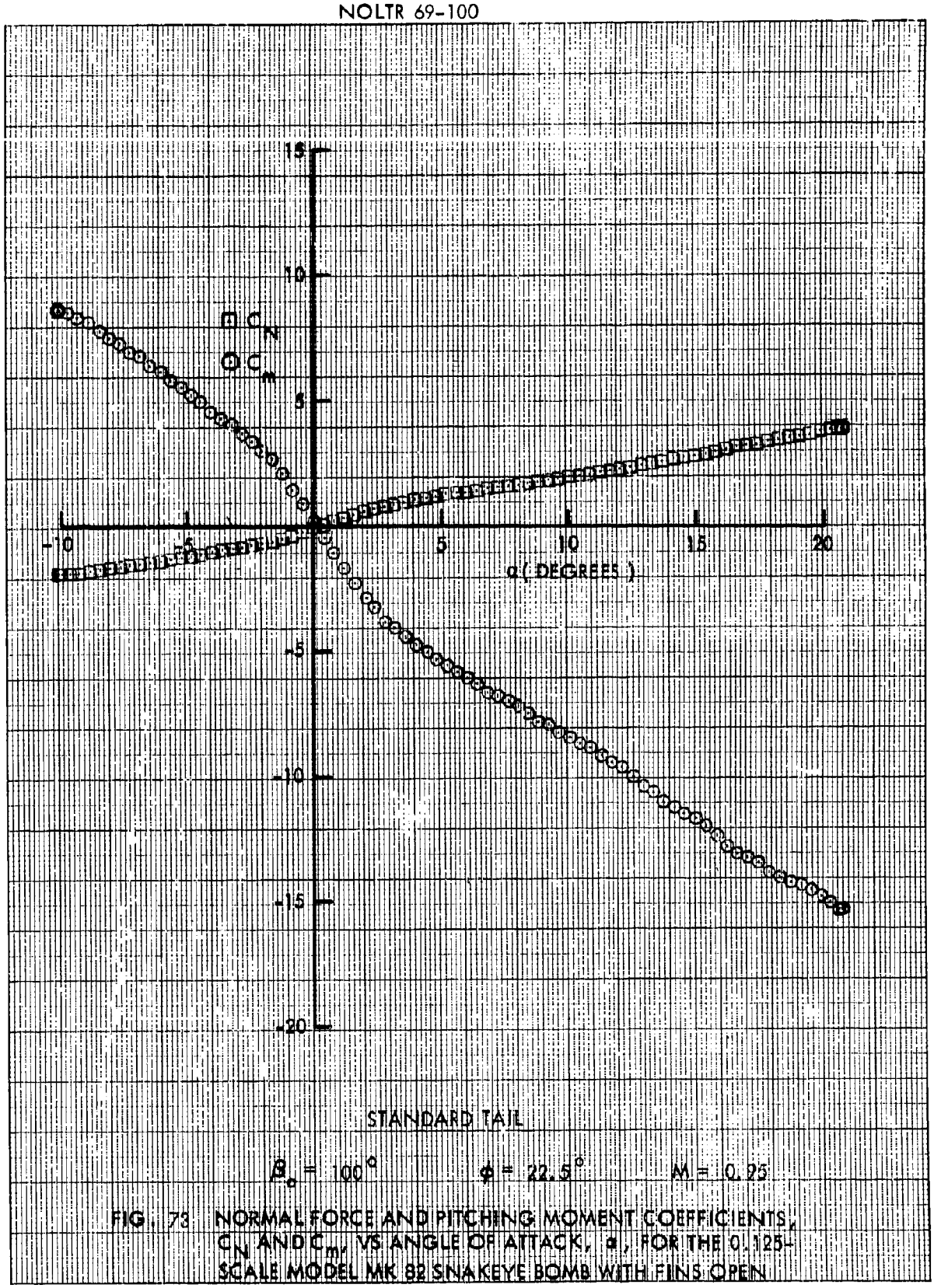


FIG. 73 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

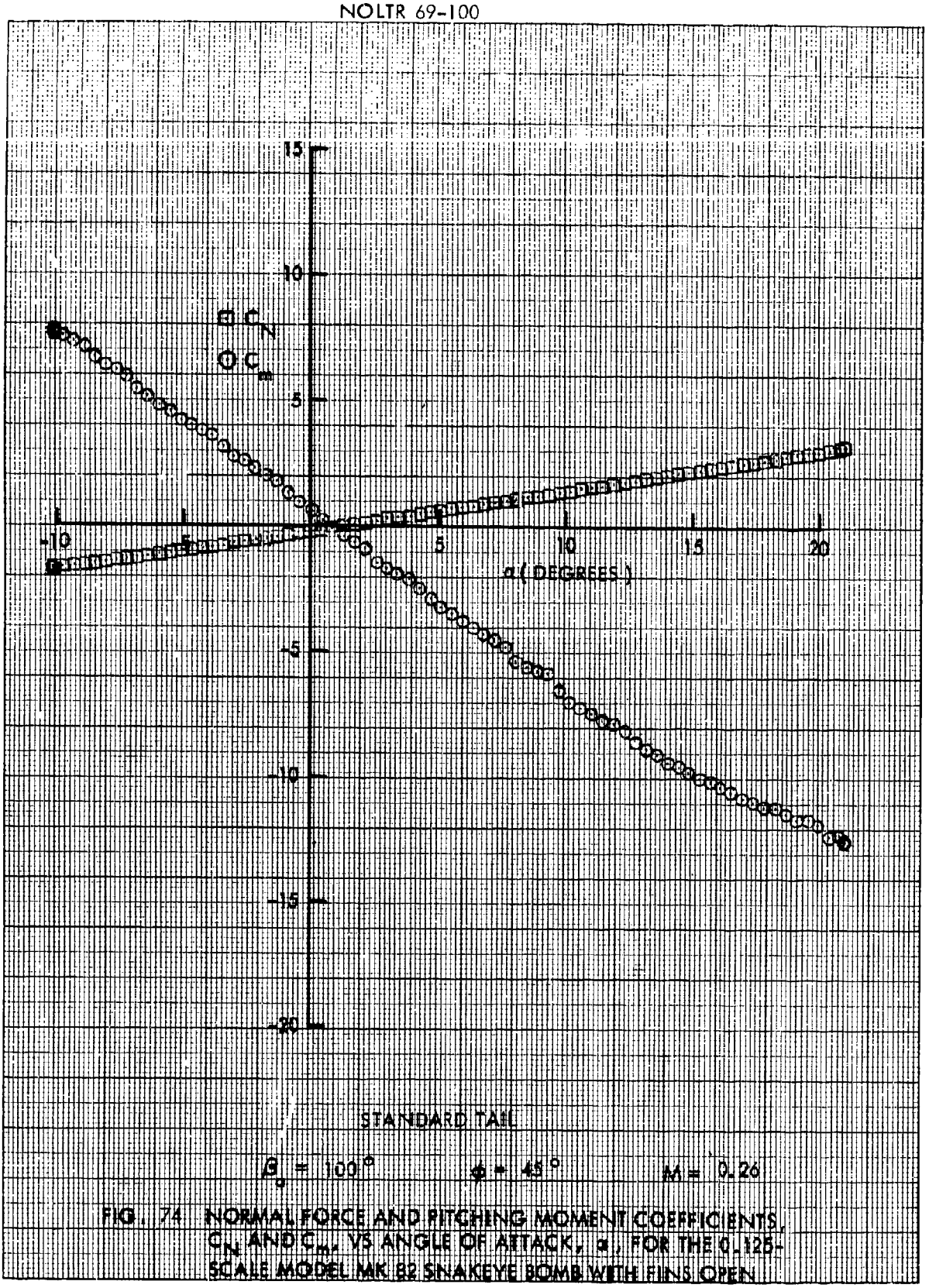


FIG. 74 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

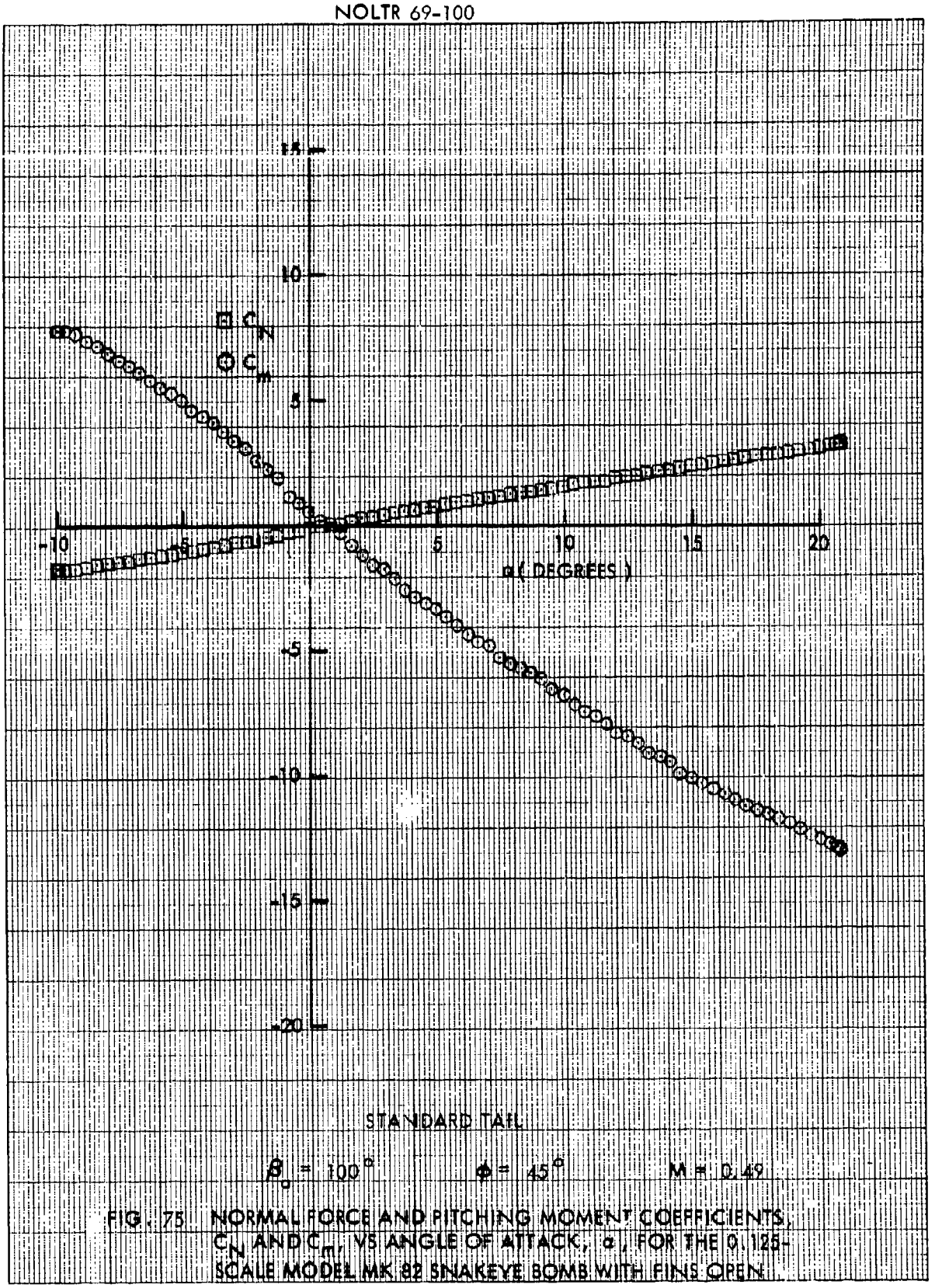


FIG. 75 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

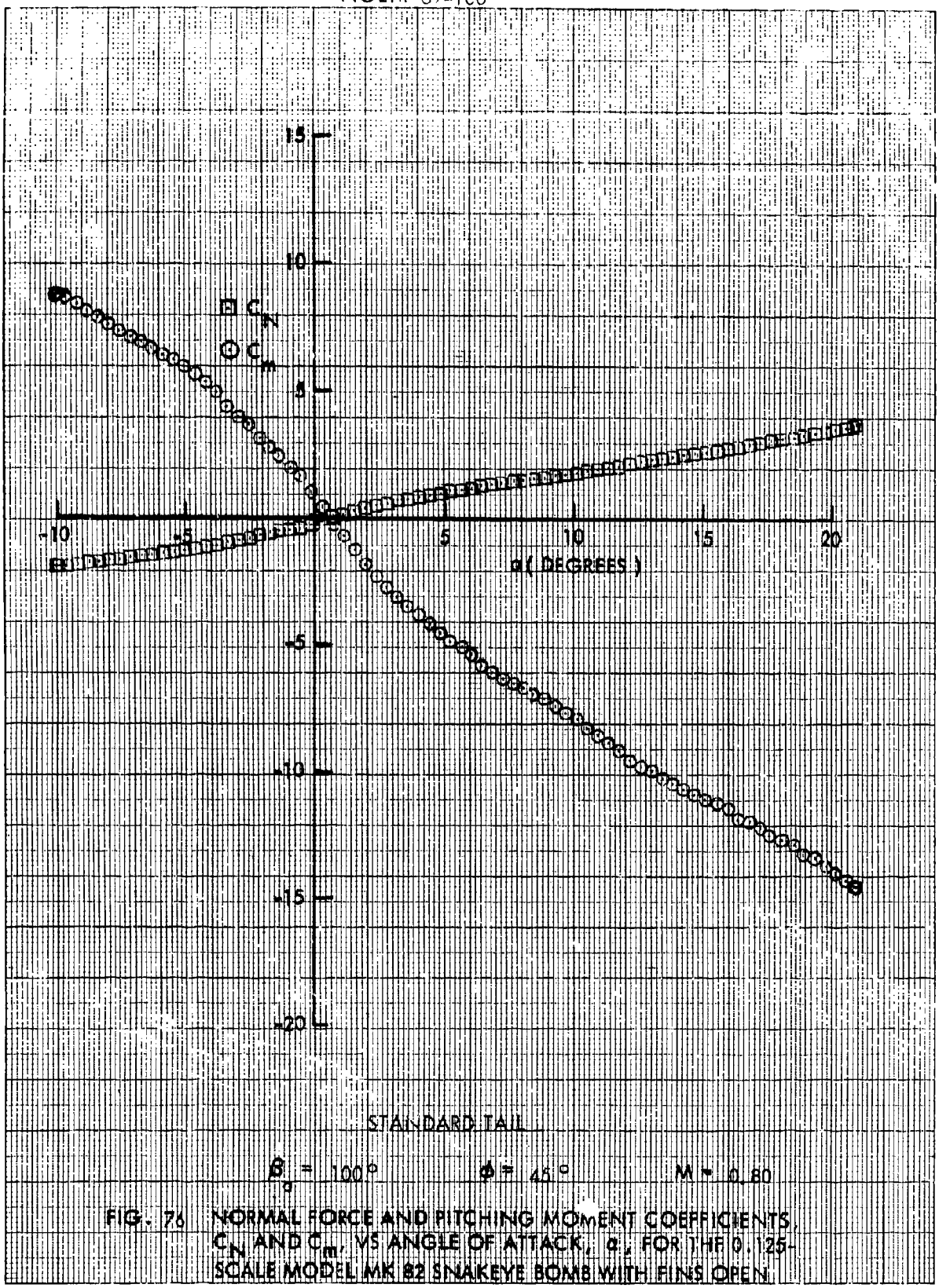


FIG. 76 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

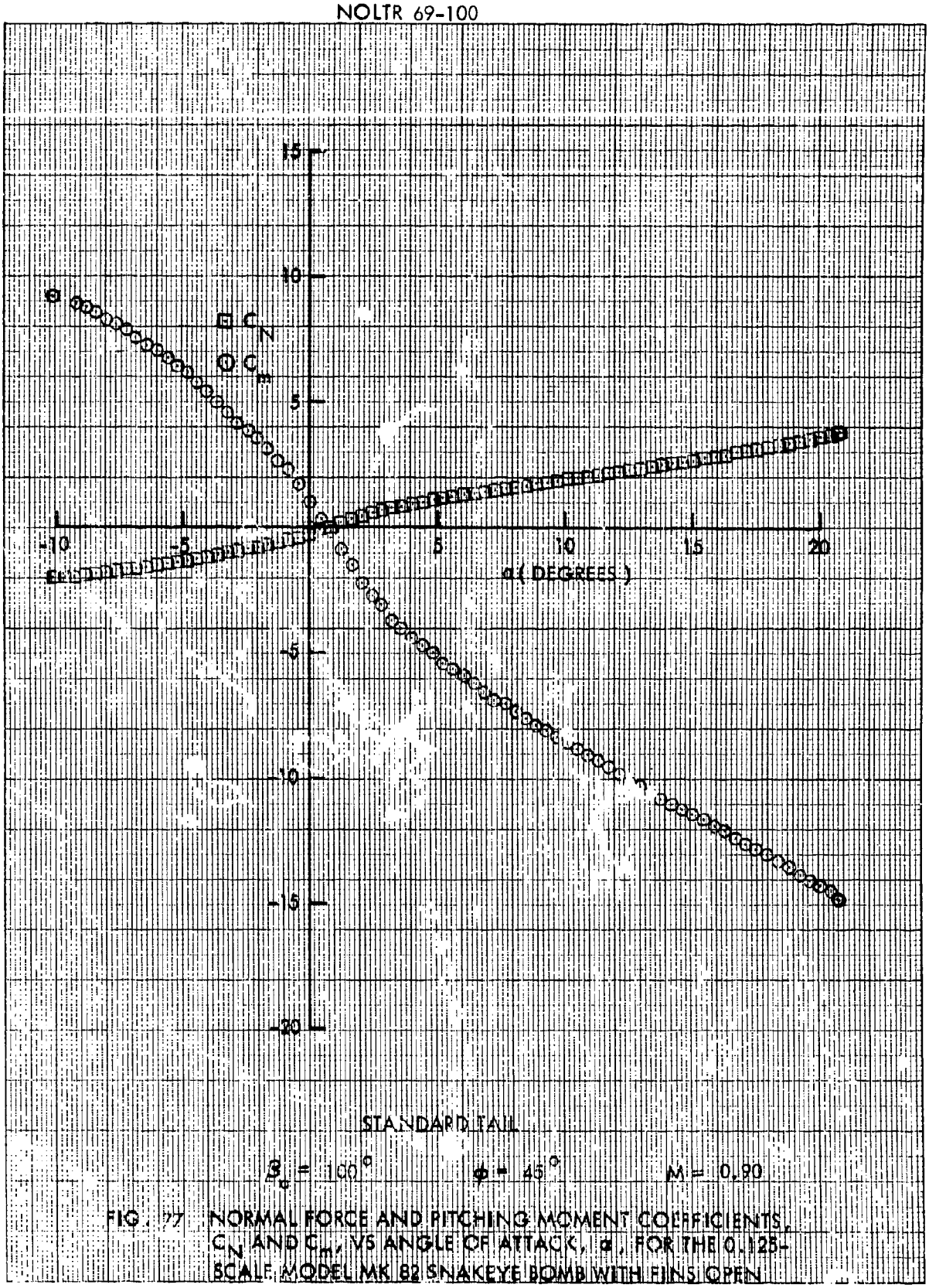


FIG. 77 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

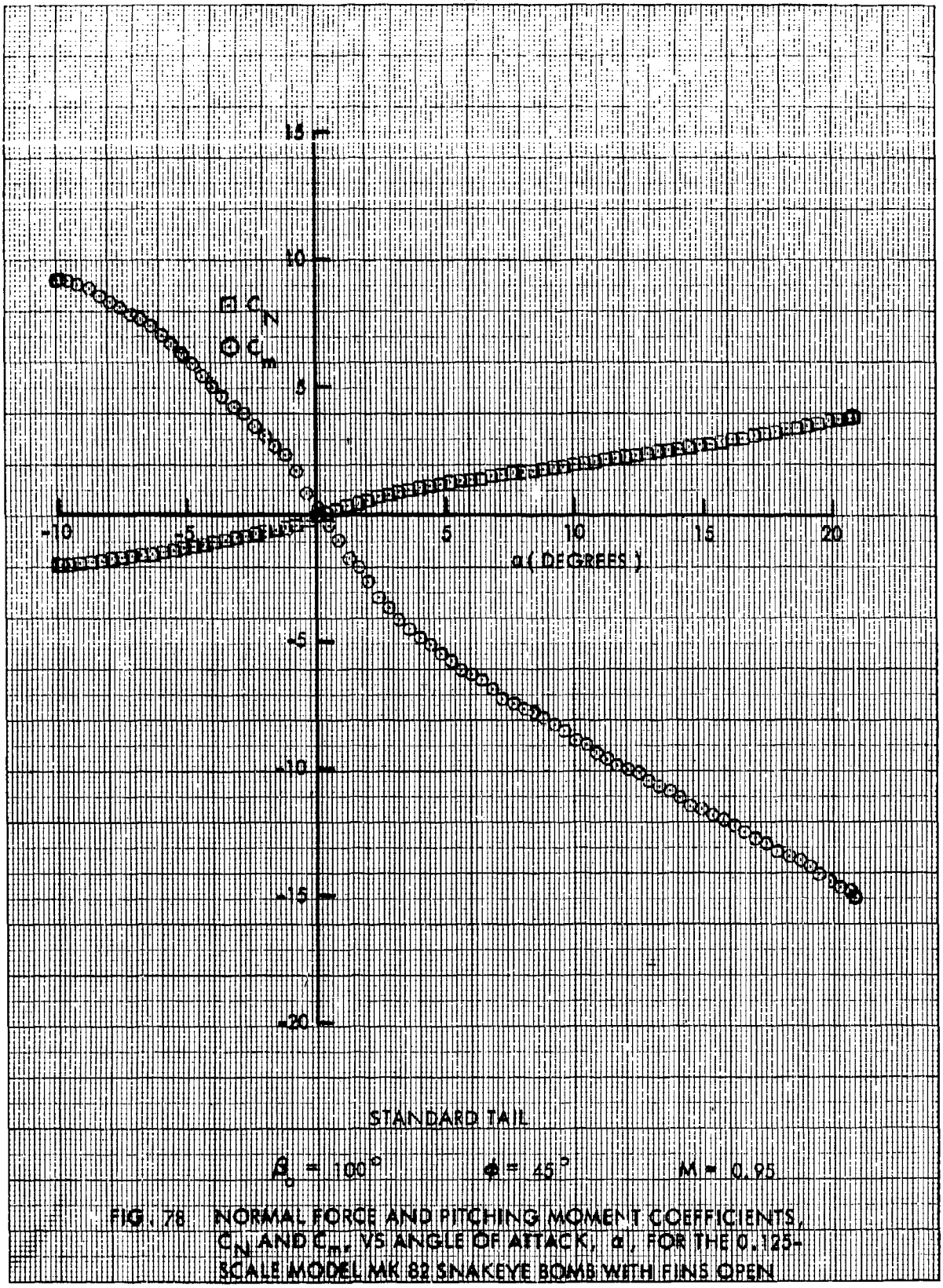


FIG. 78 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

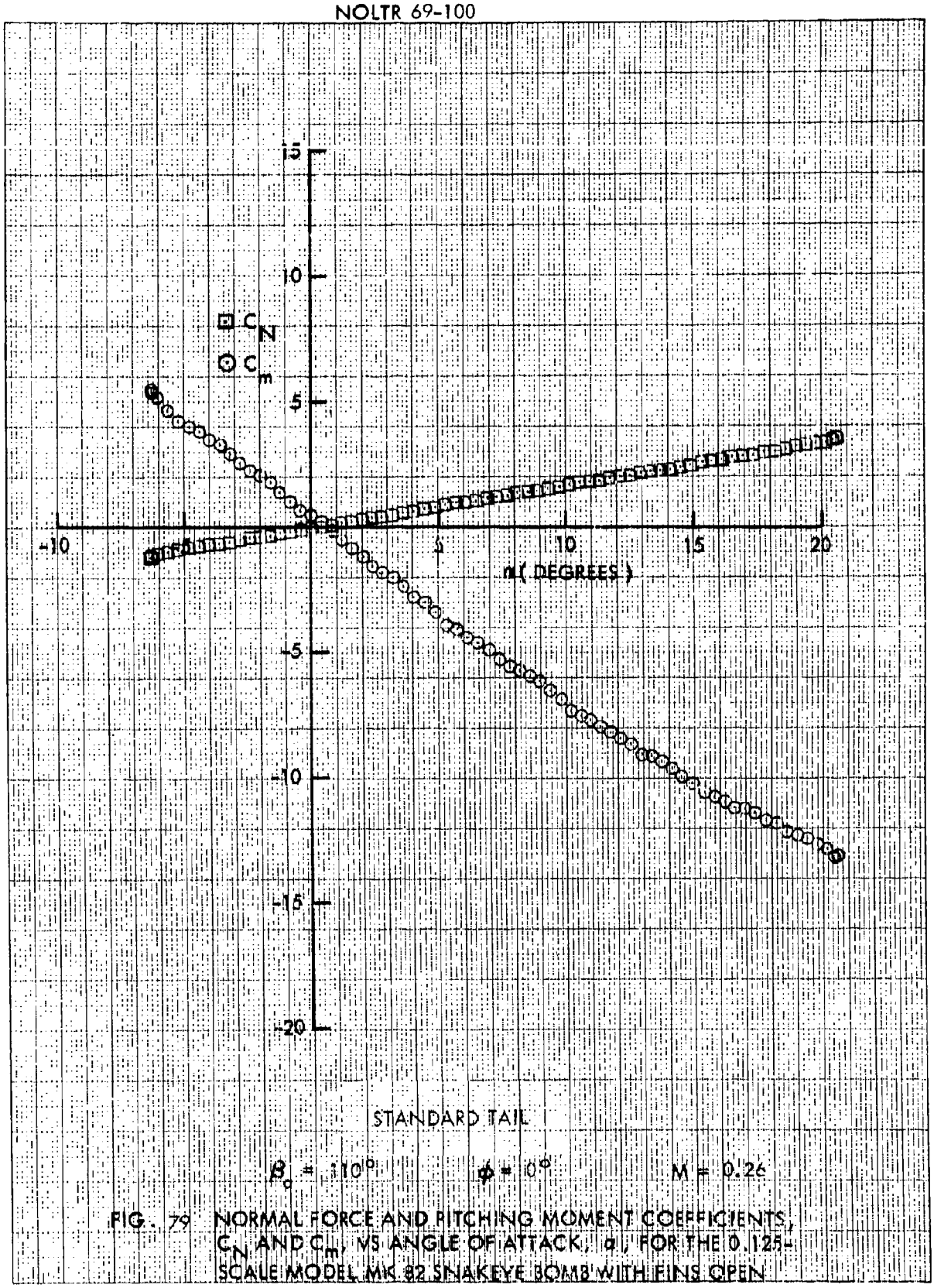


FIG. 79 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

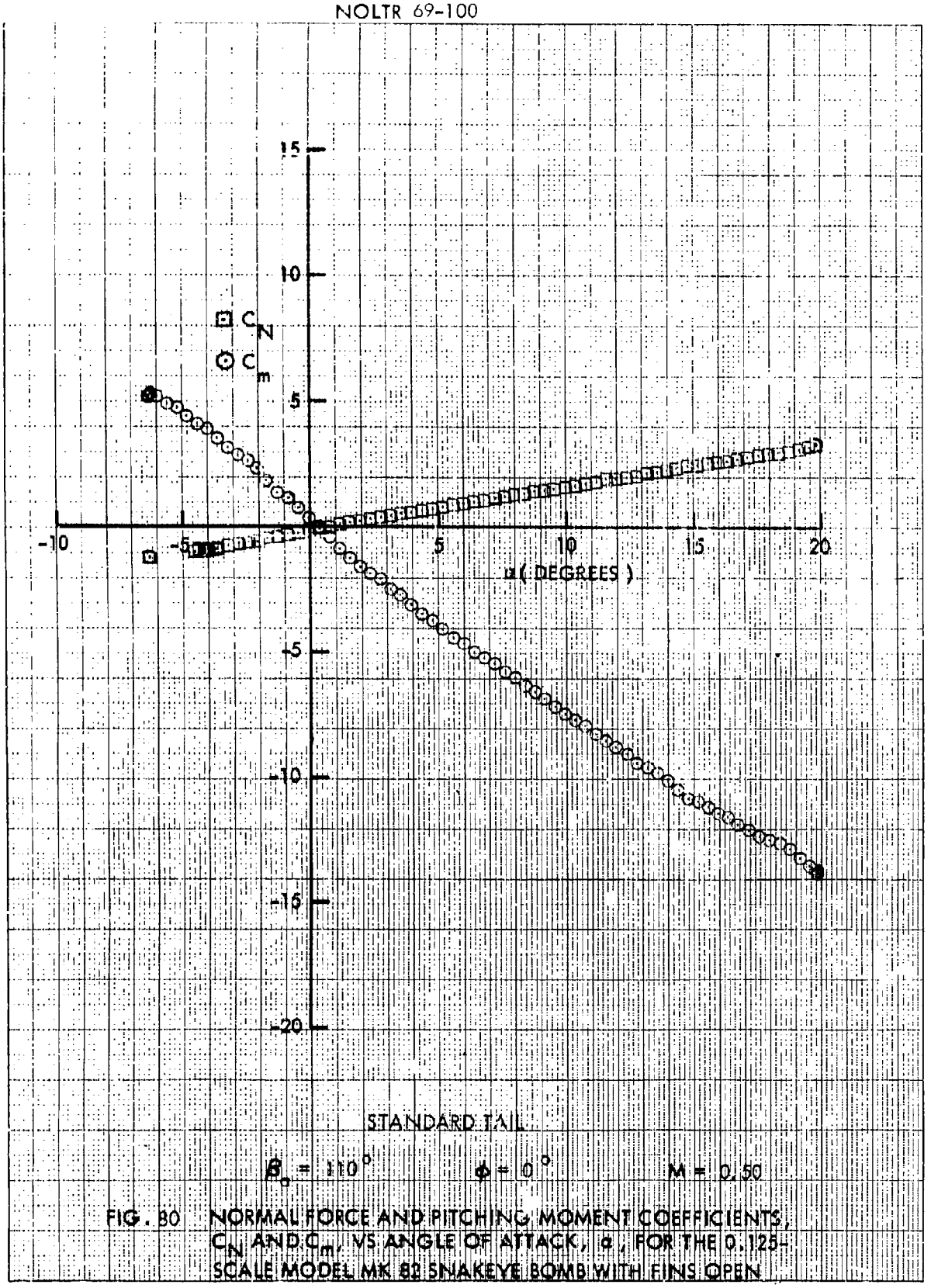


FIG. 80 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

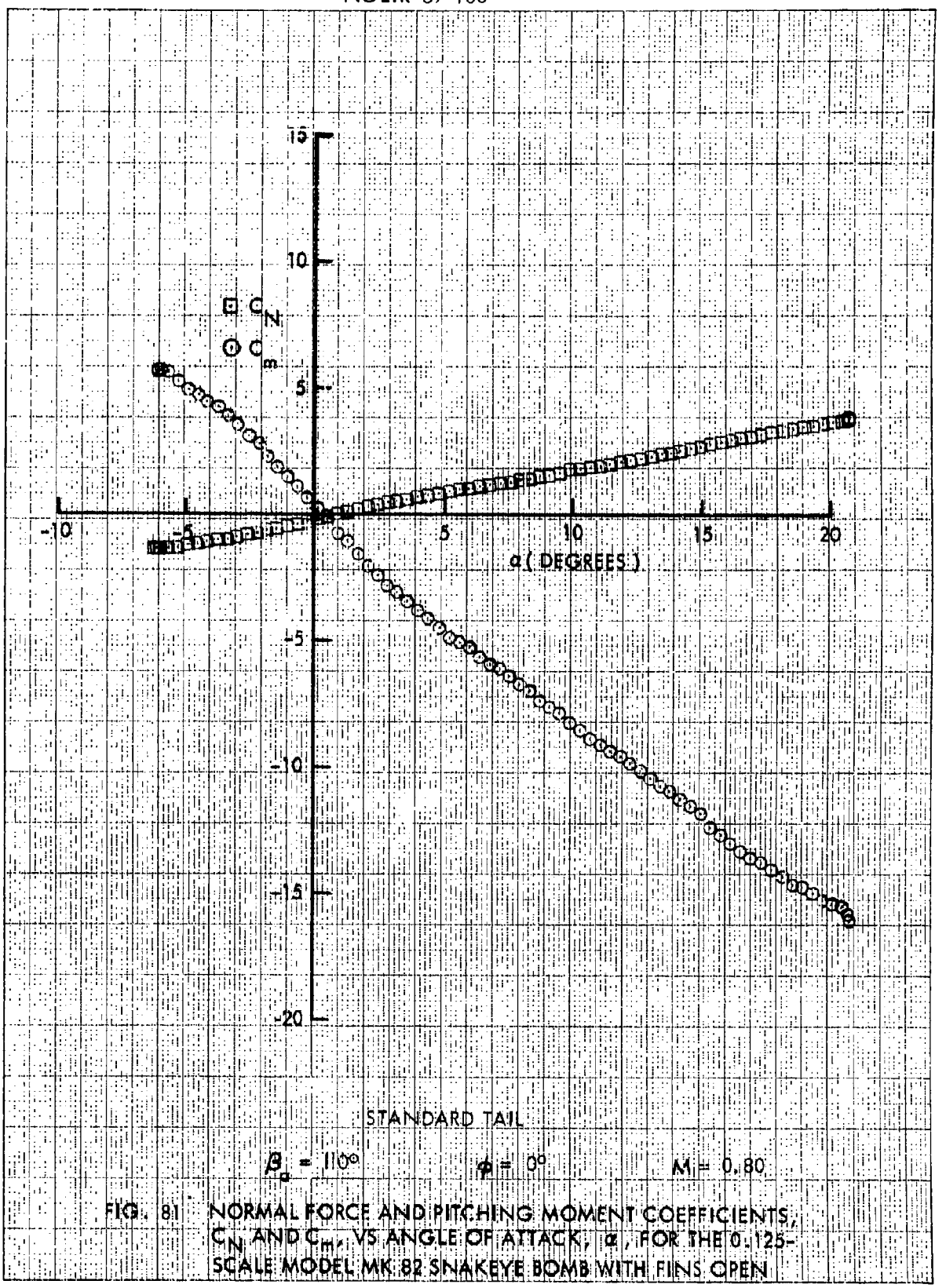


FIG. 81 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

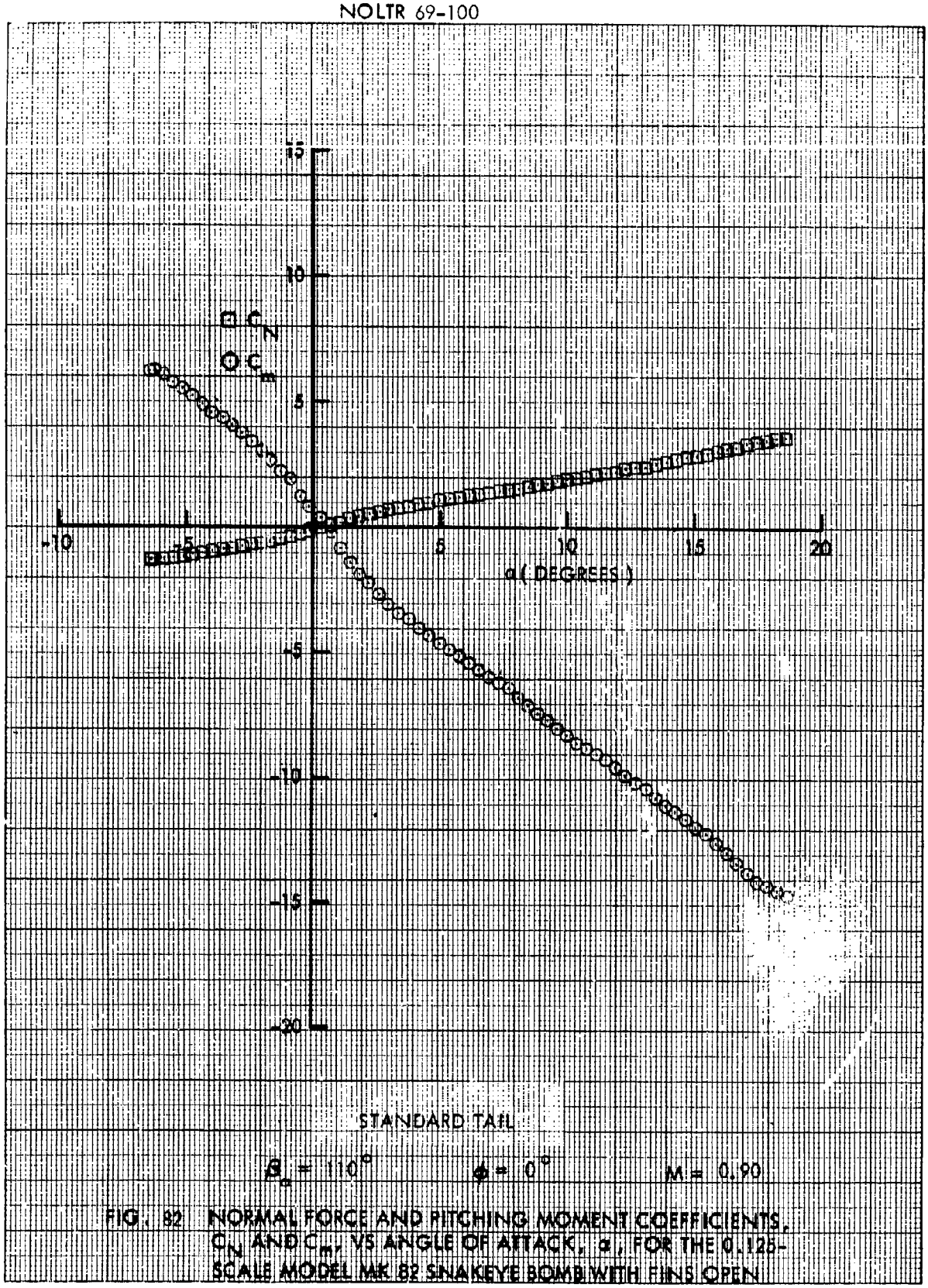


FIG. 82 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.128-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

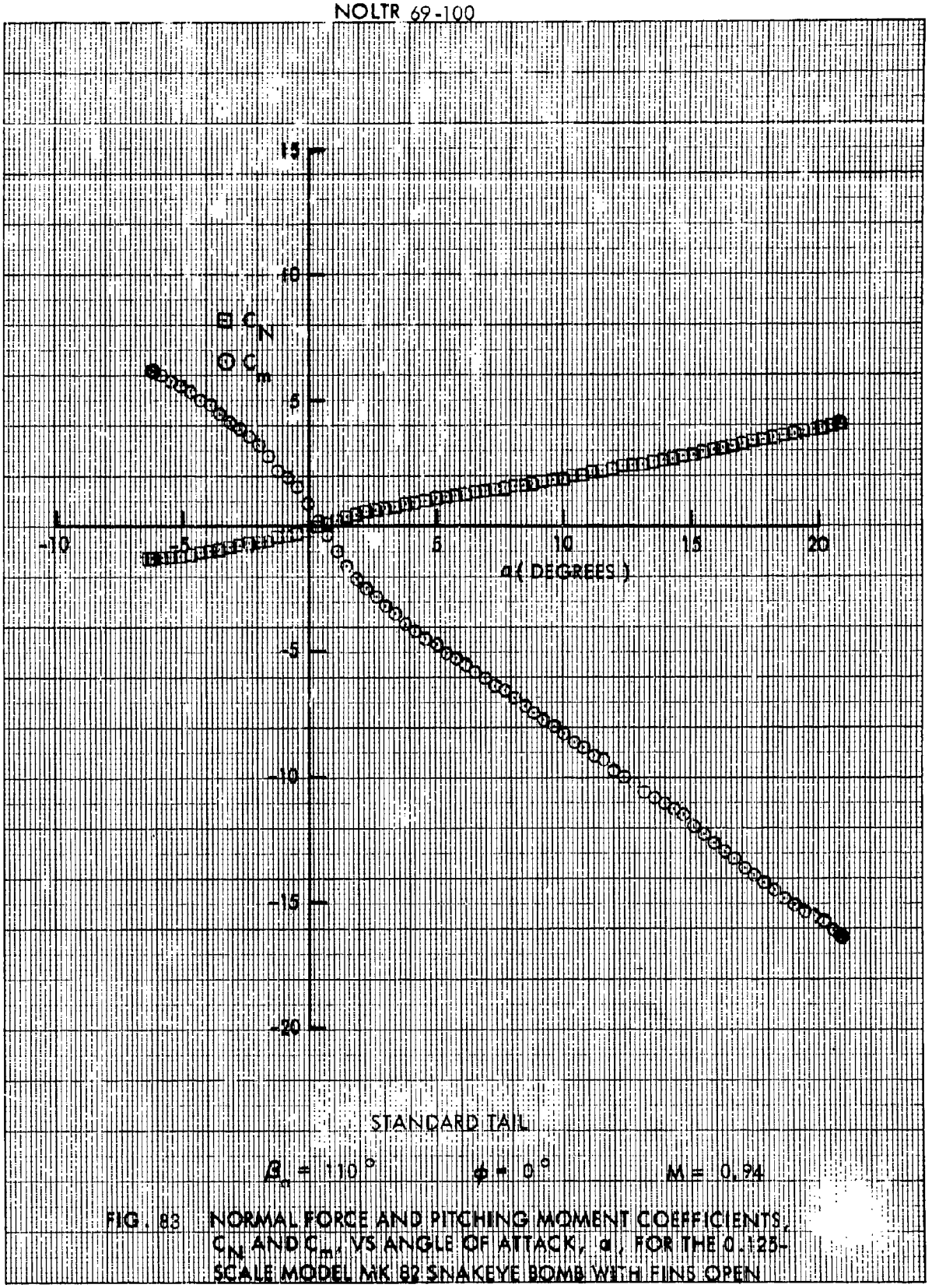


FIG. 83 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

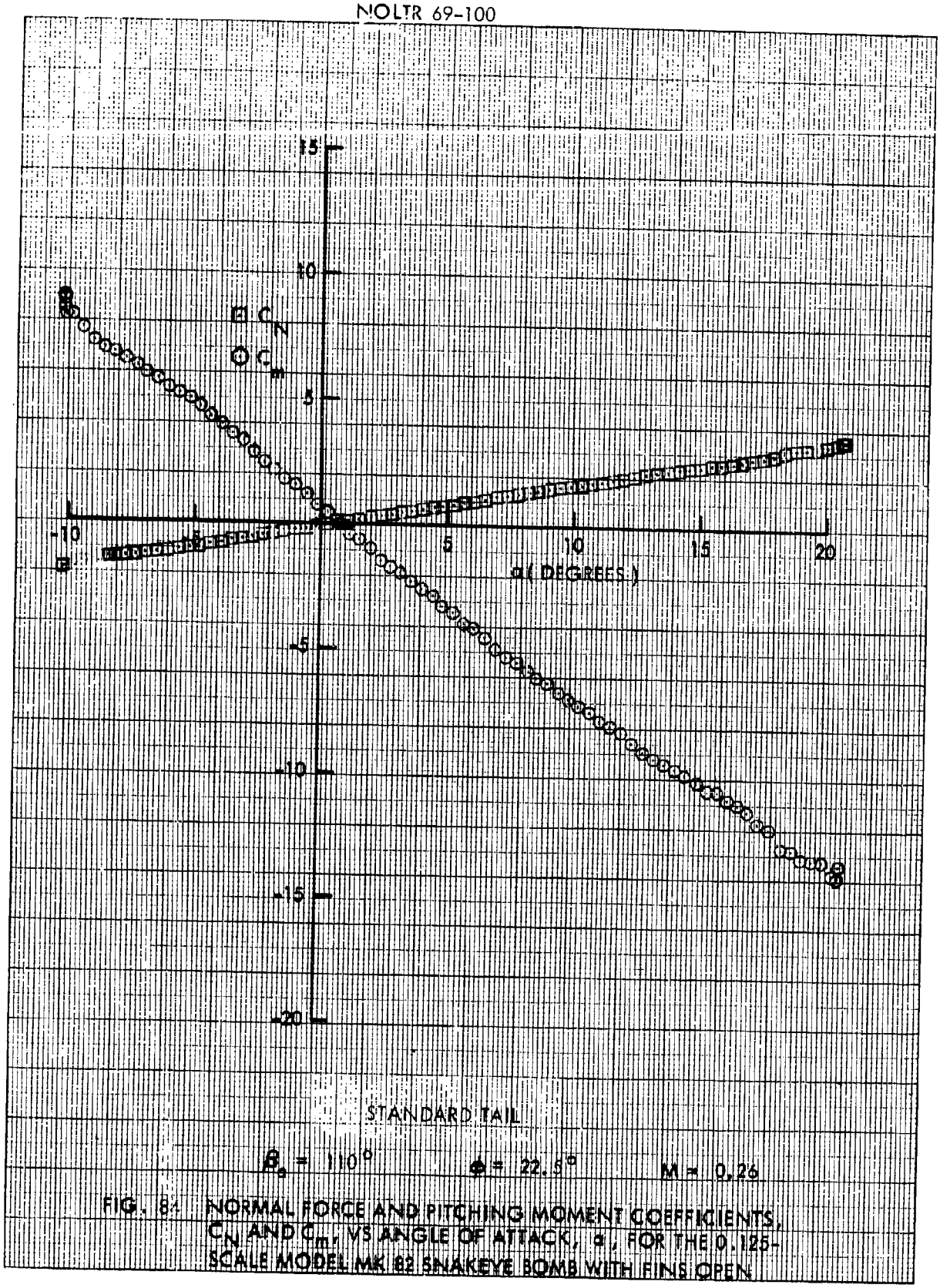


FIG. 8: NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

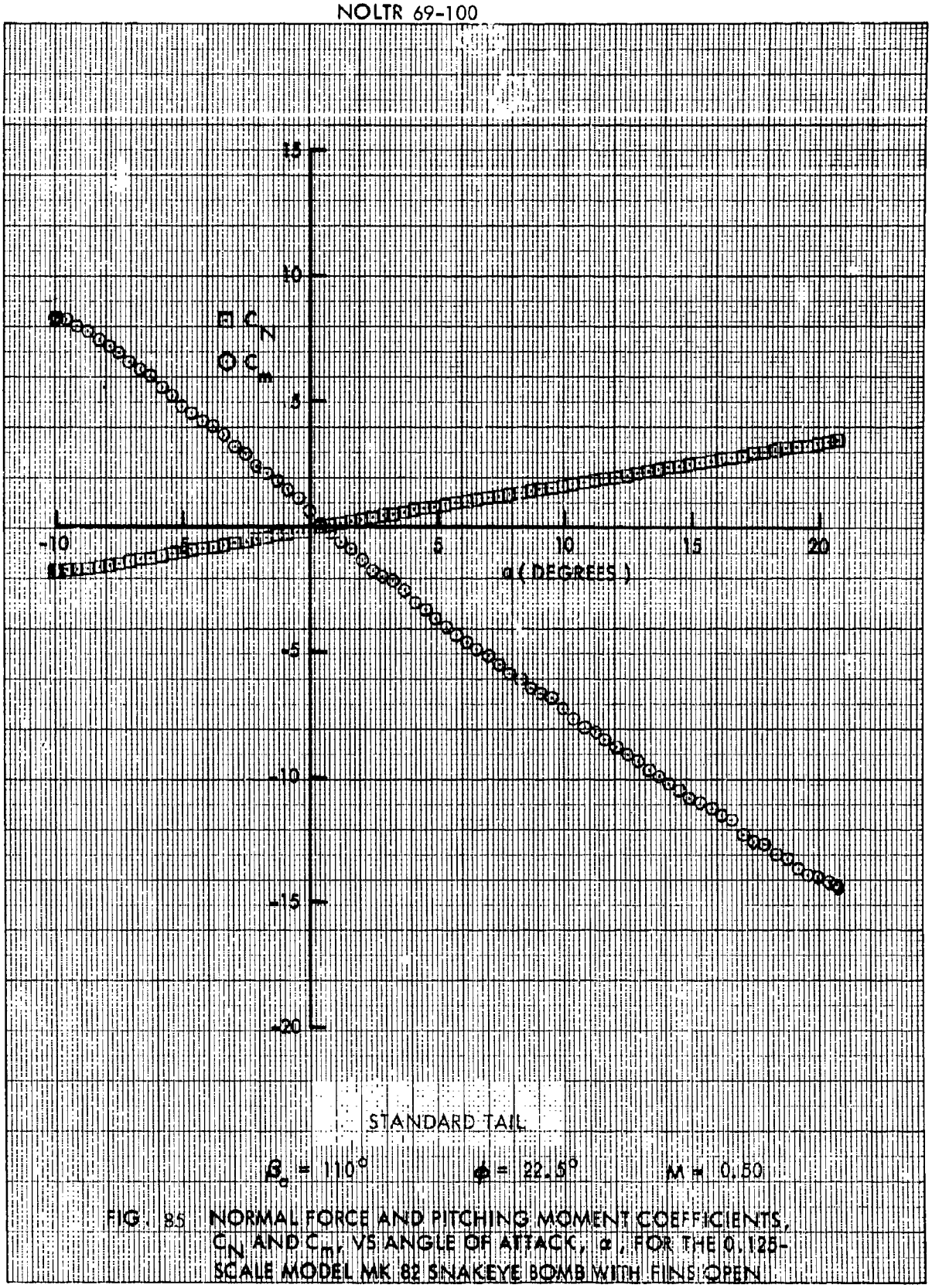


FIG. 85 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

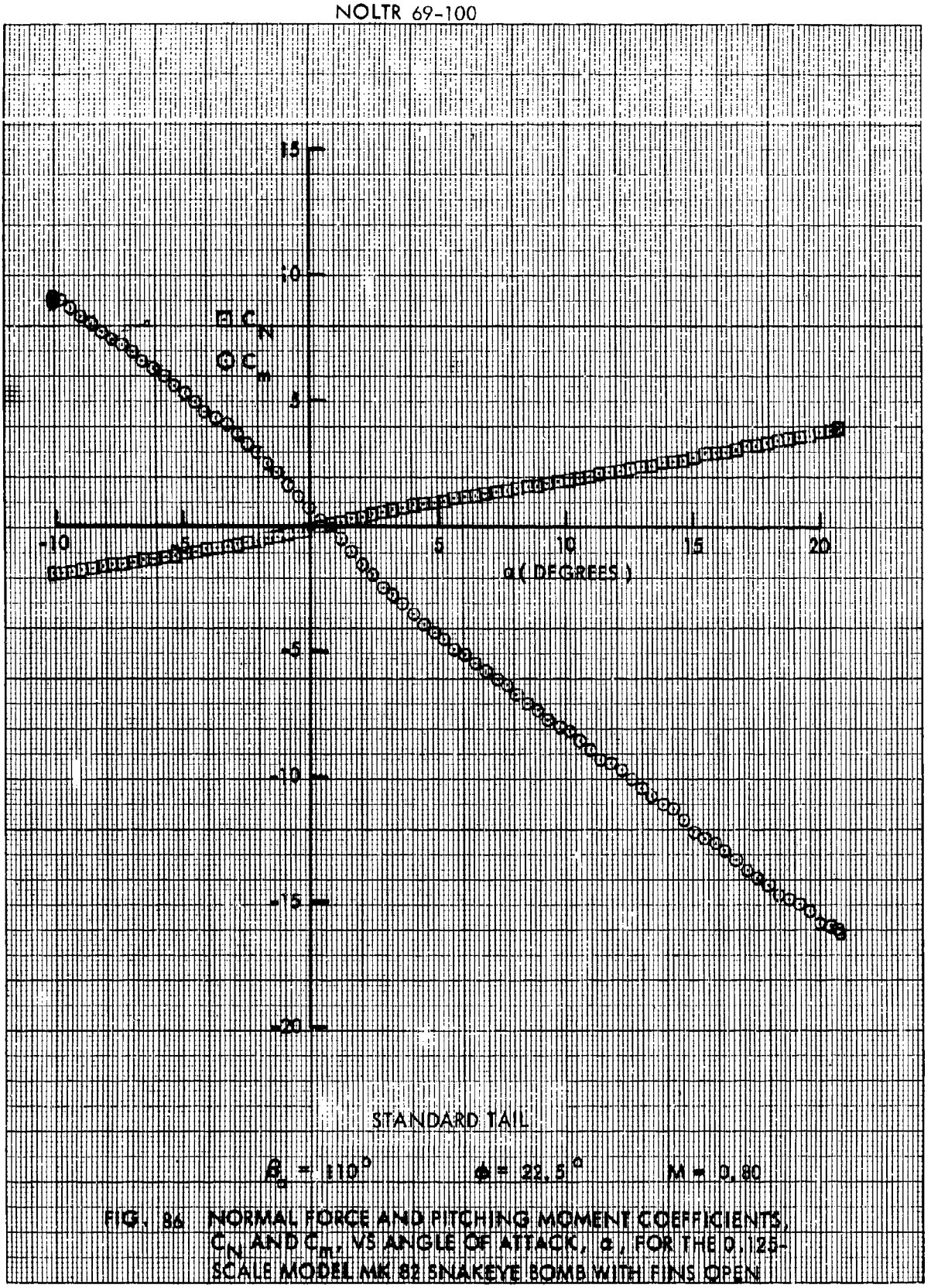


FIG. 86 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

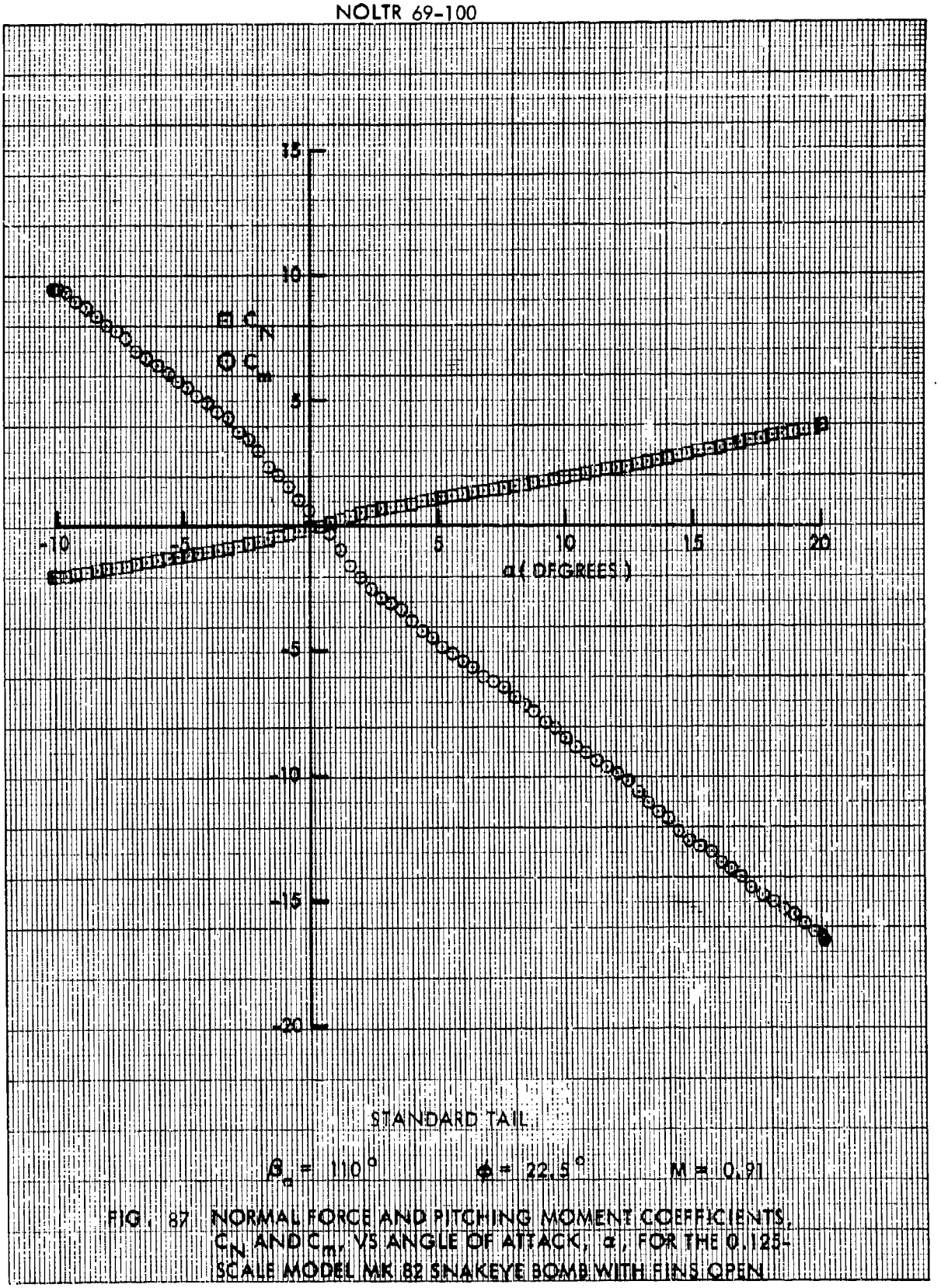


FIG. 87 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

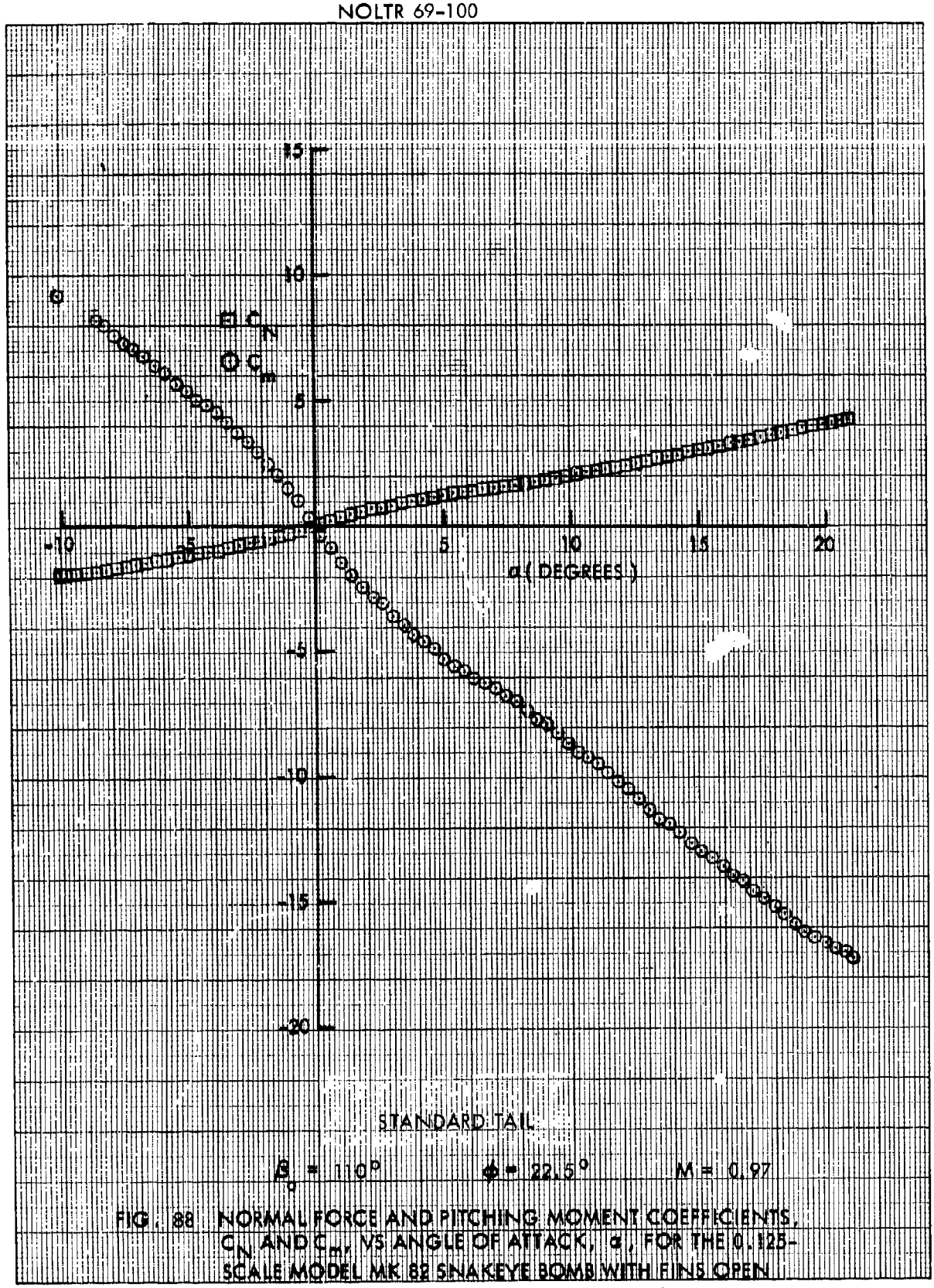


FIG. 88 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

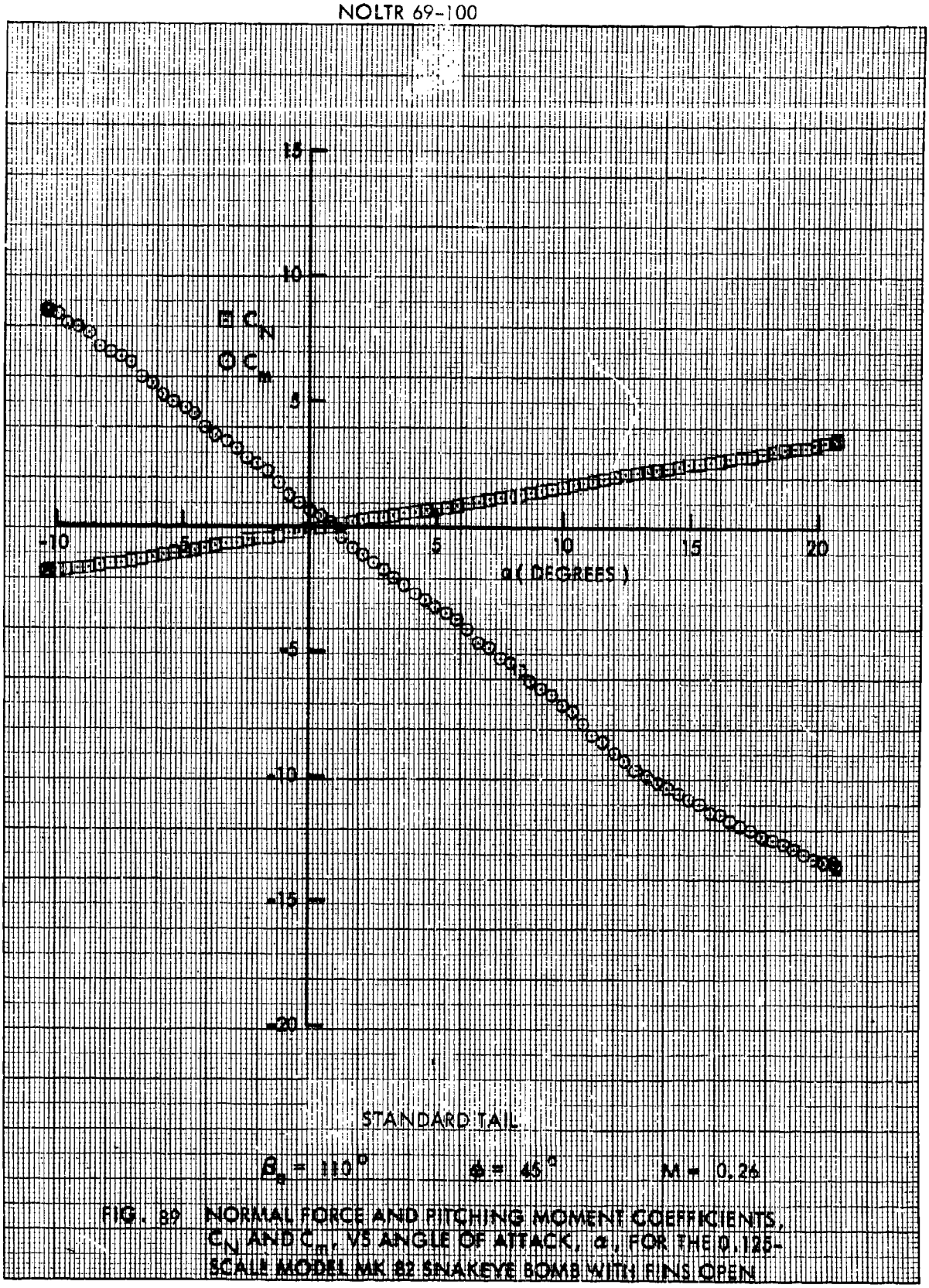


FIG. 89 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

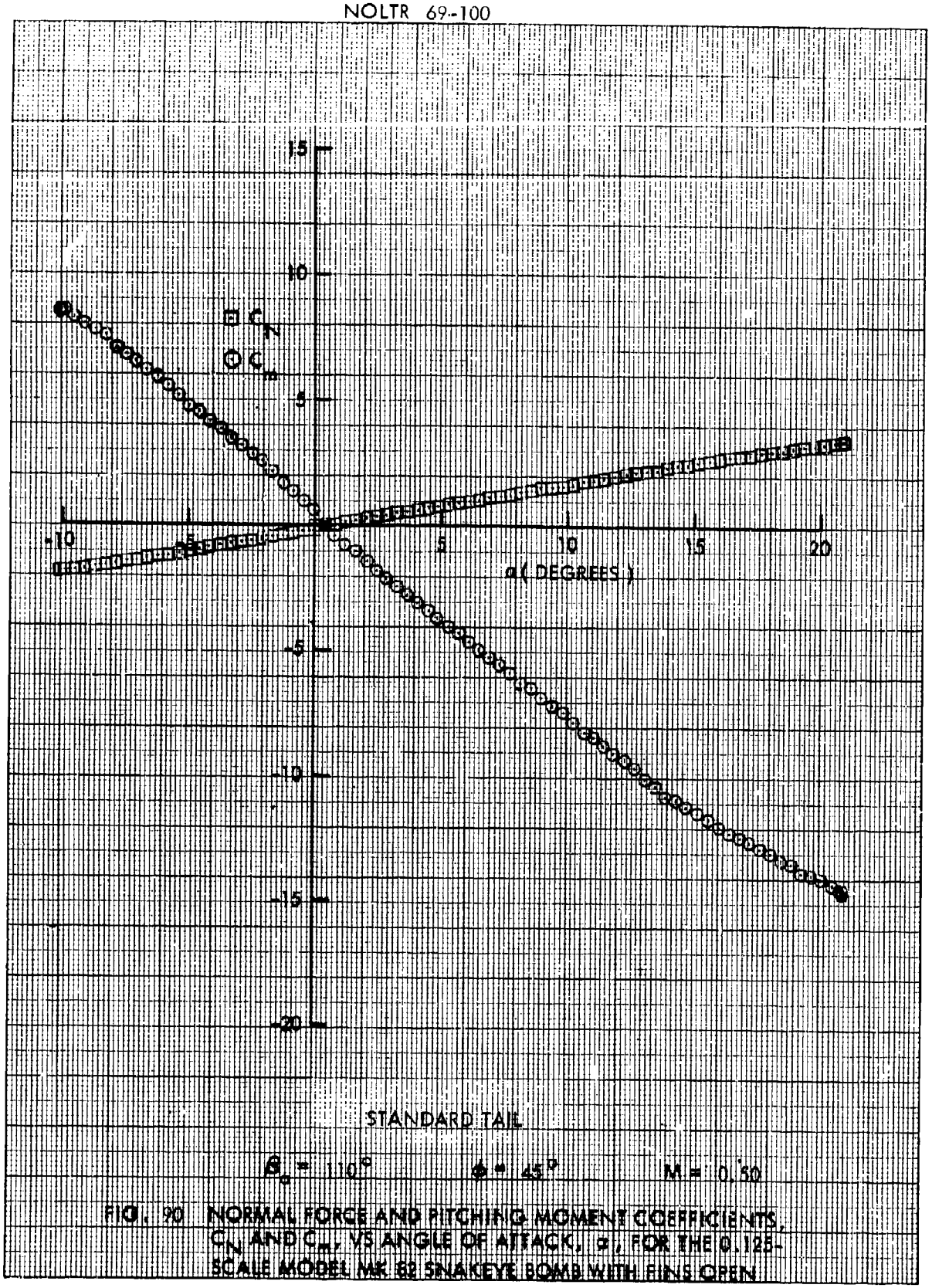


FIG. 90 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

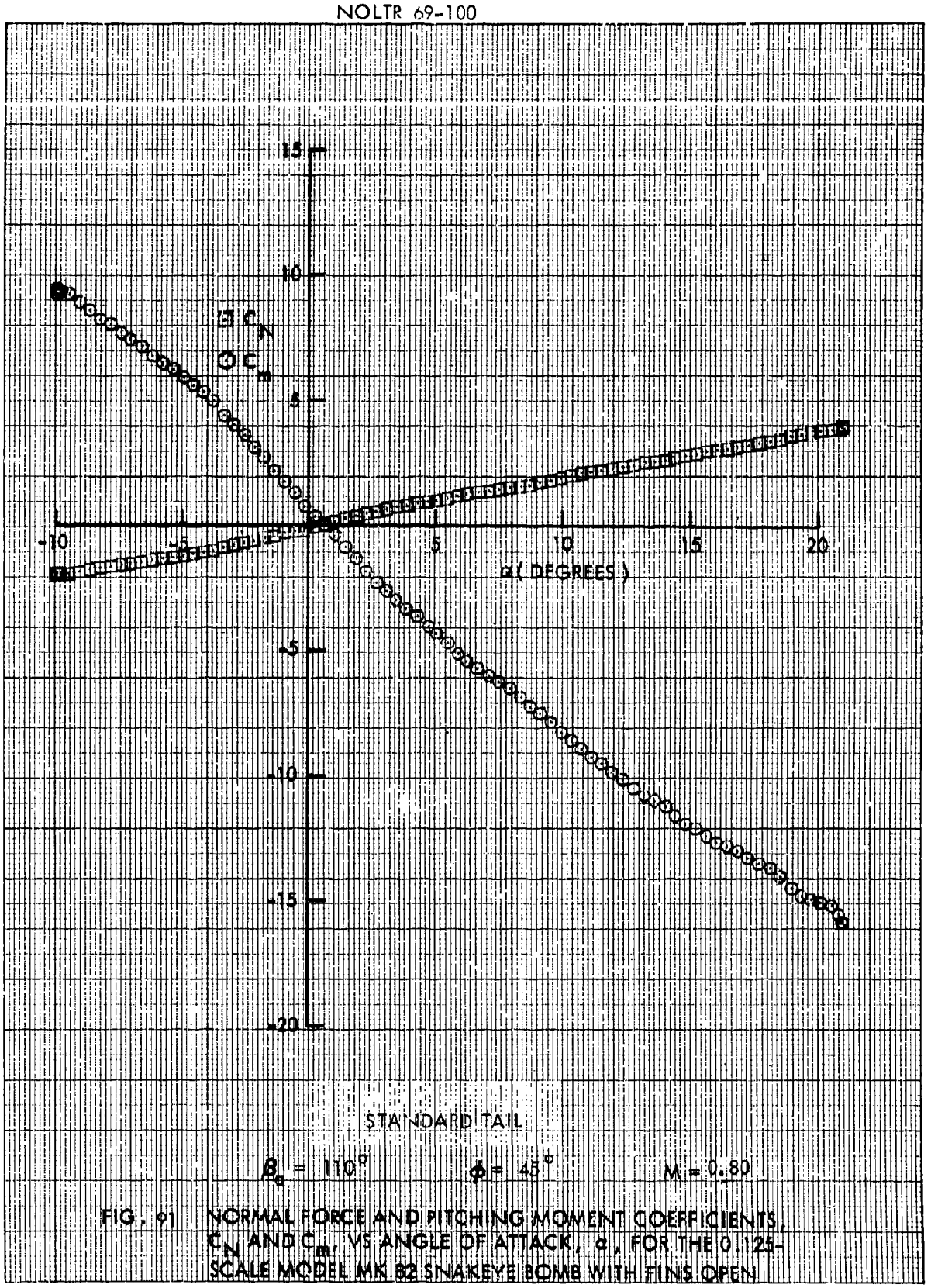


FIG. 91 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

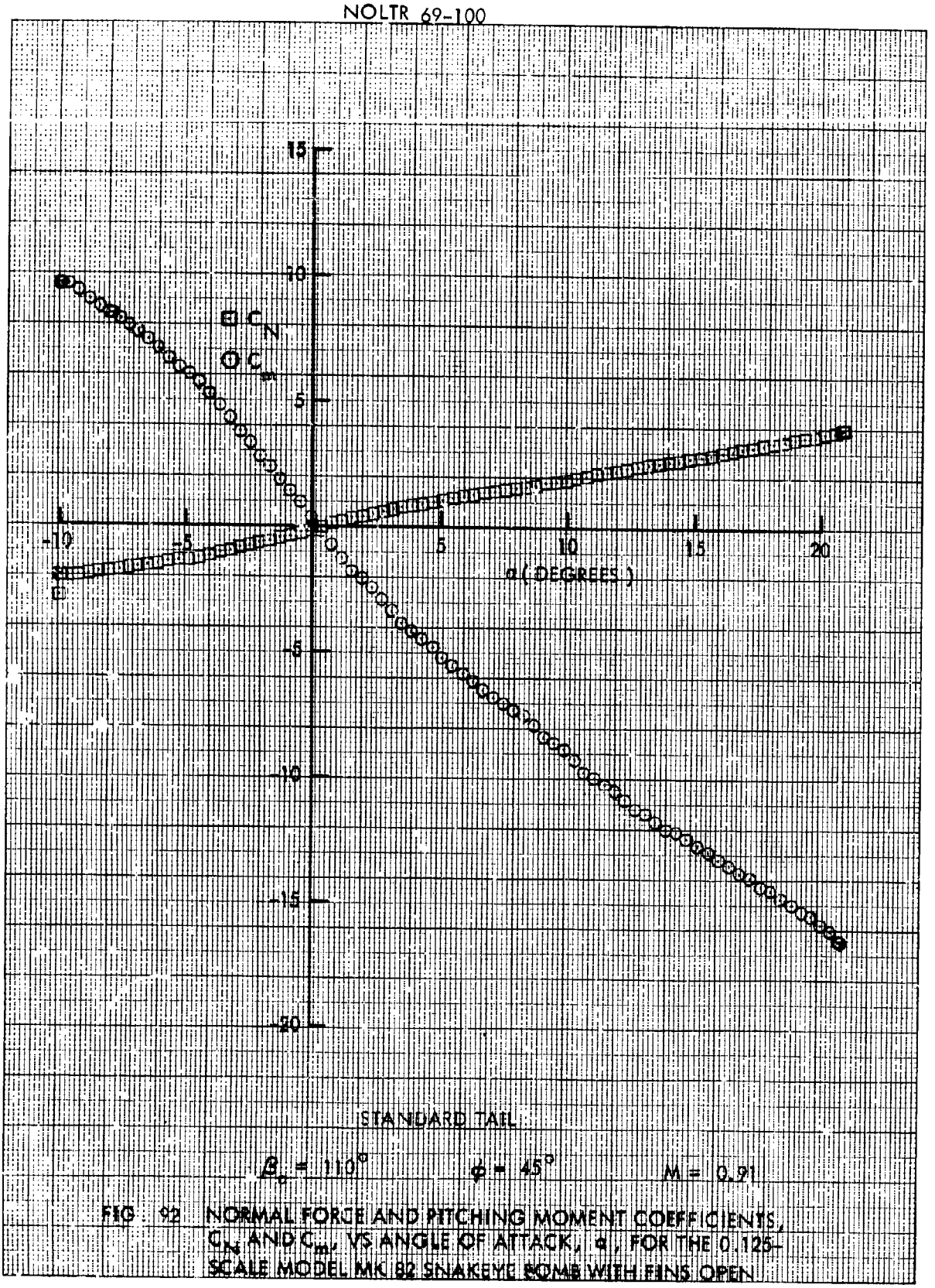


FIG. 92 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

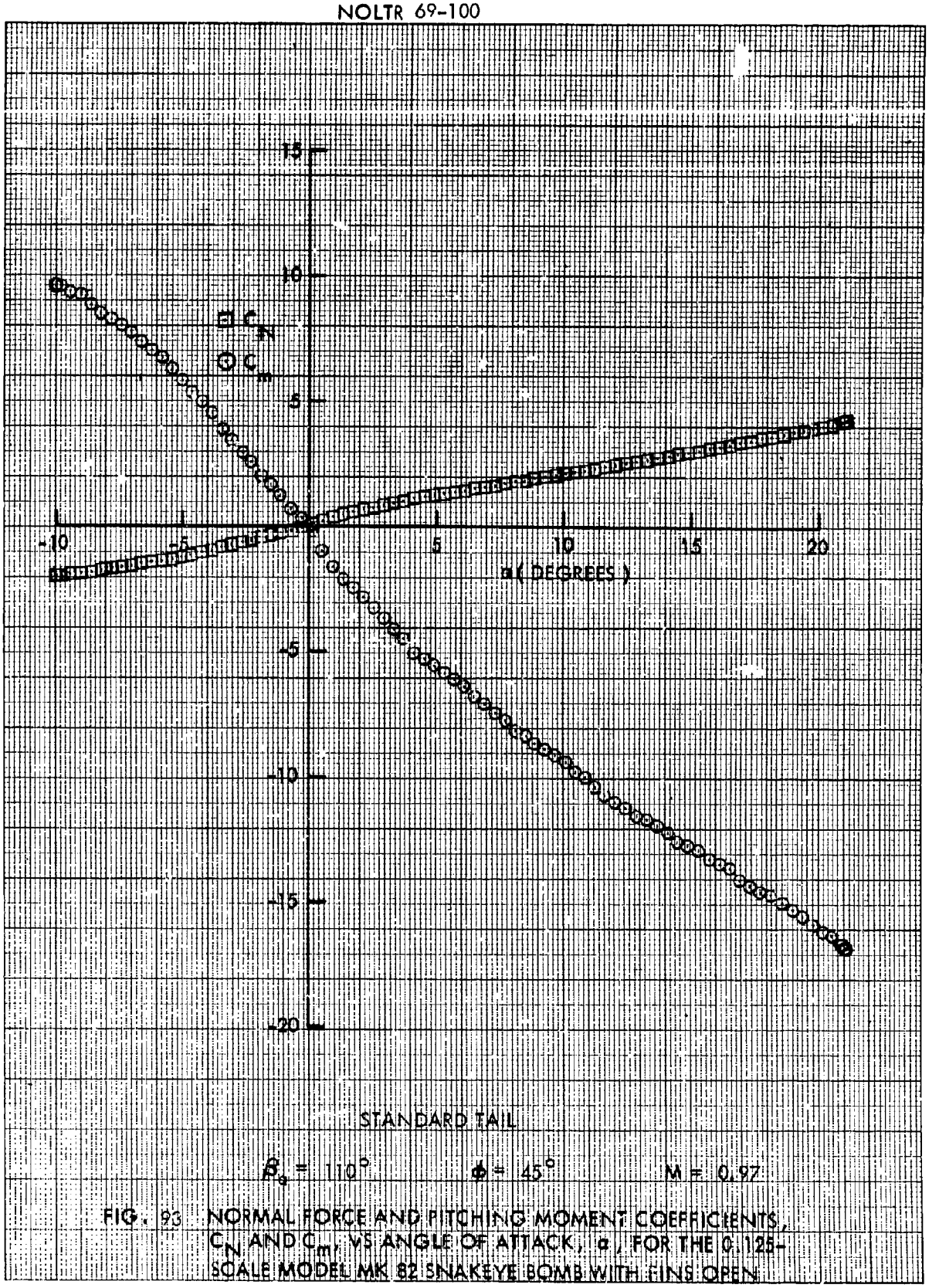


FIG. 93 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

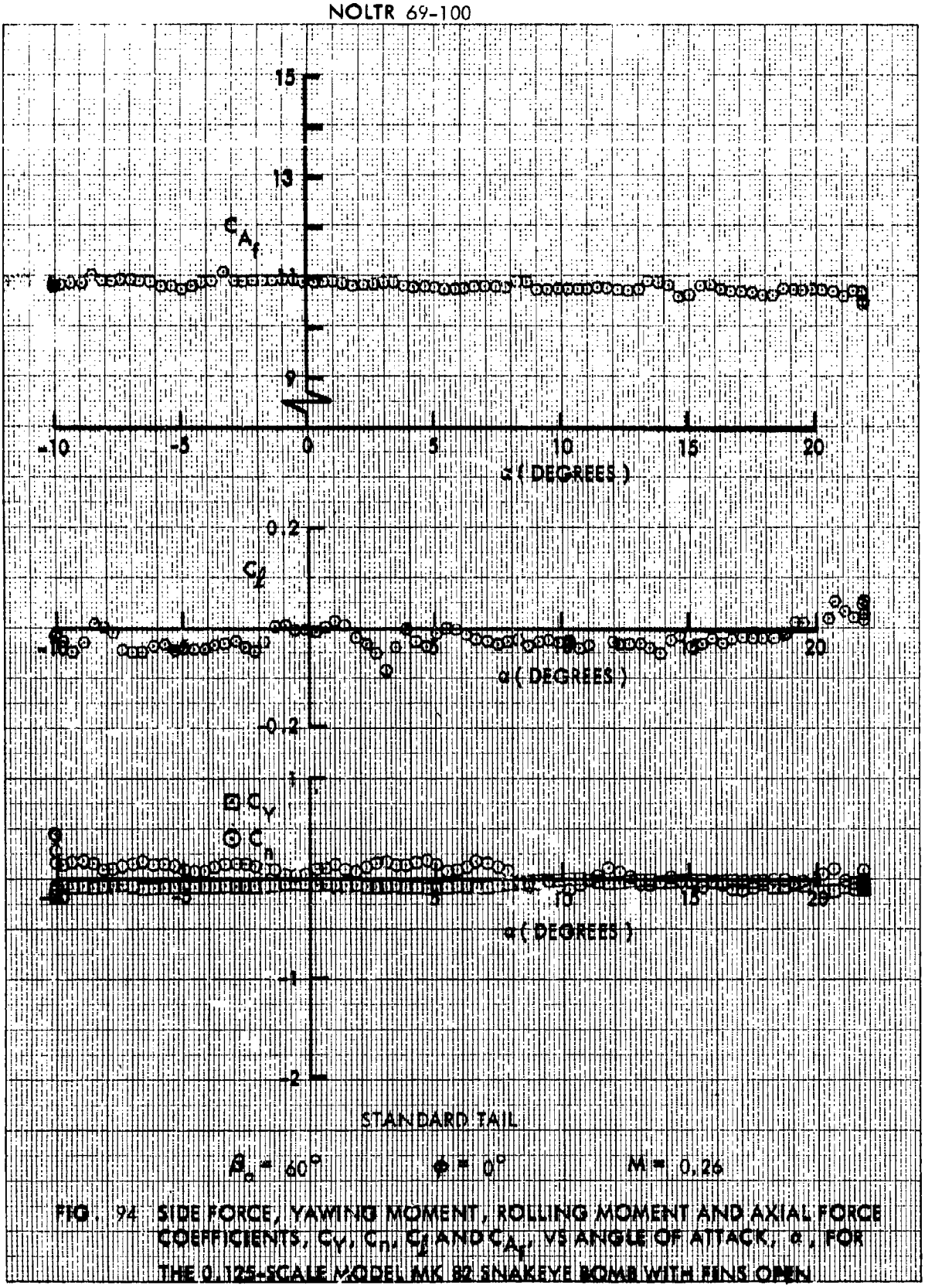


FIG. 94 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

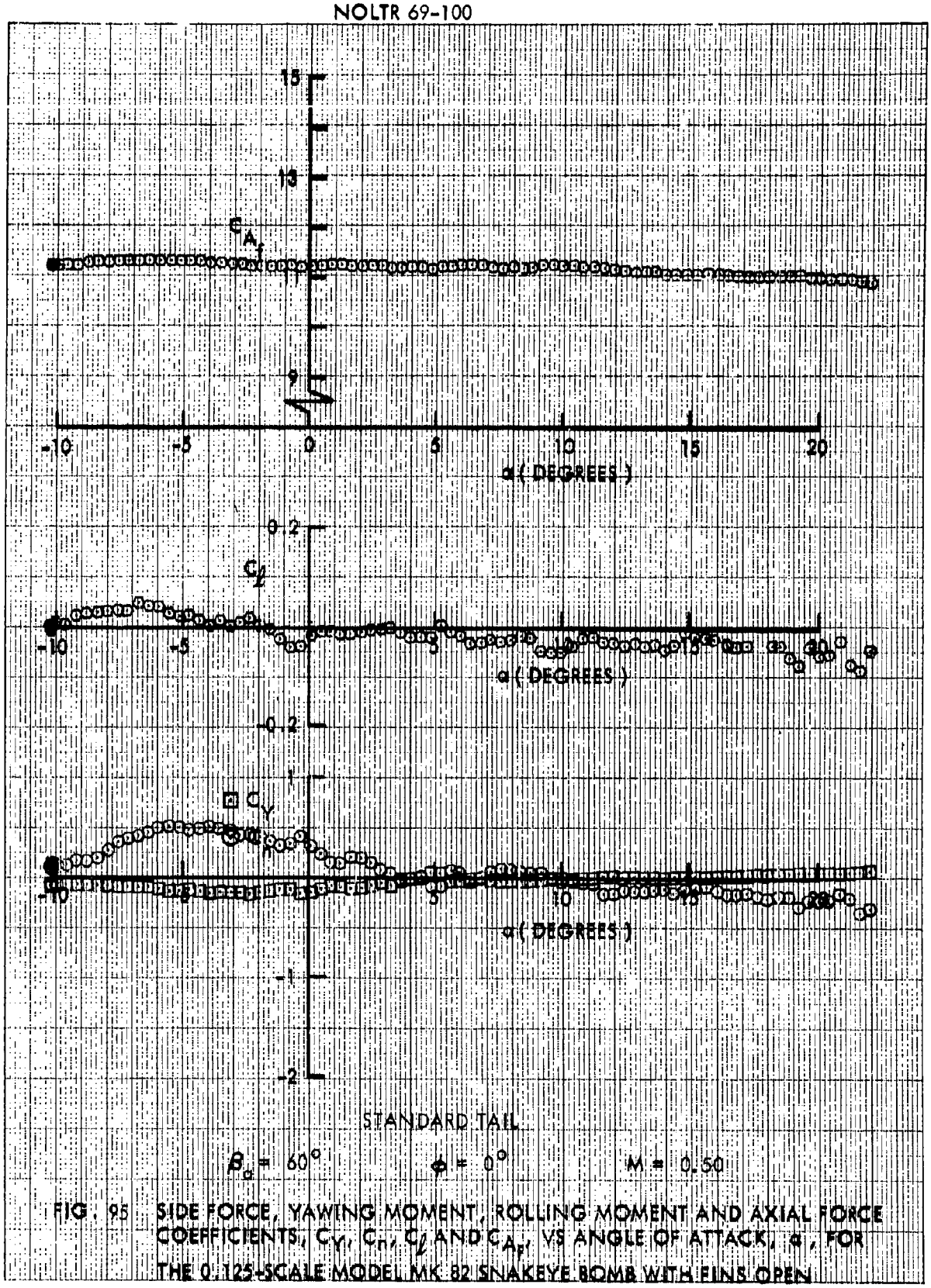


FIG. 95 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

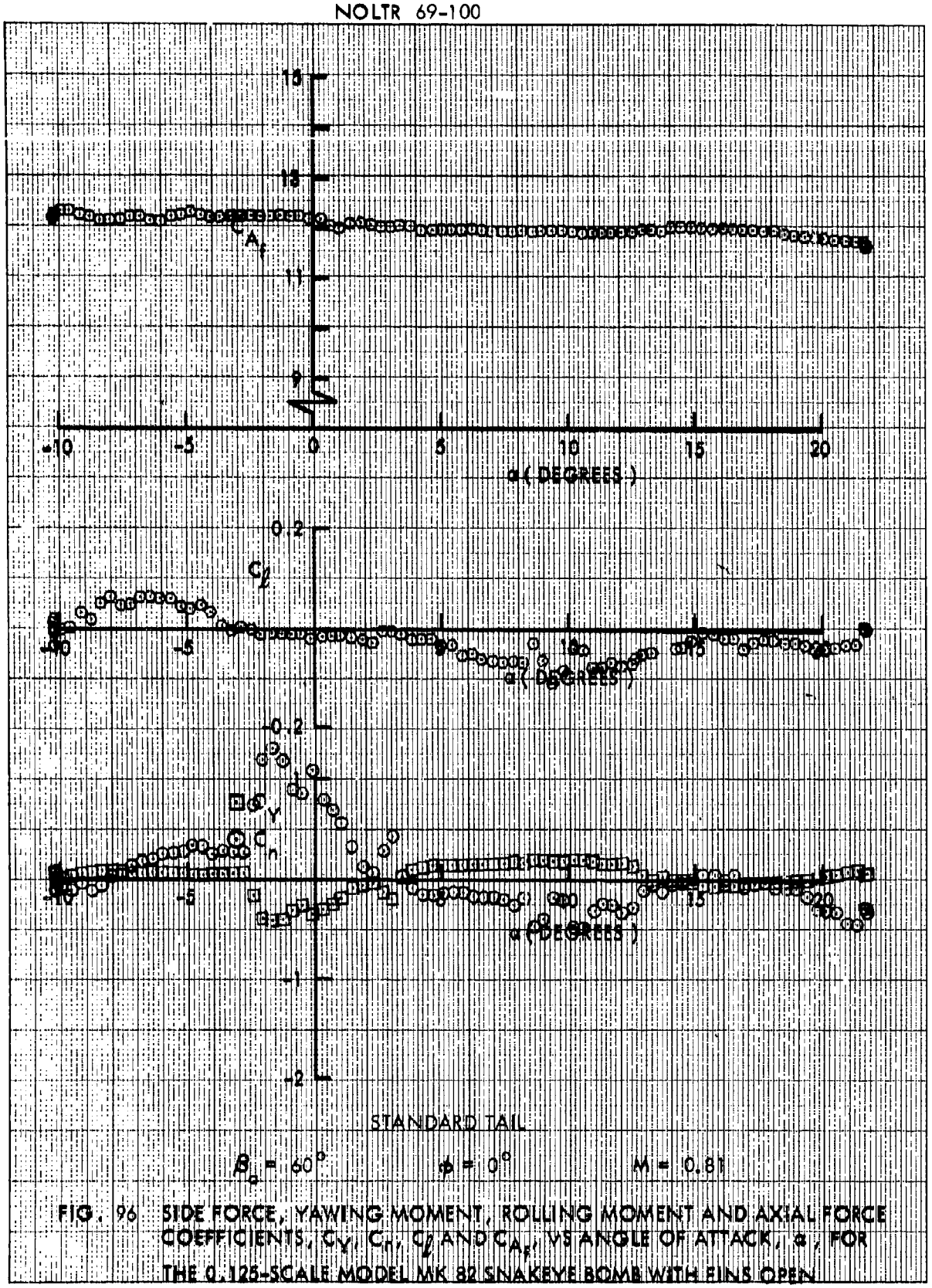


FIG. 96 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

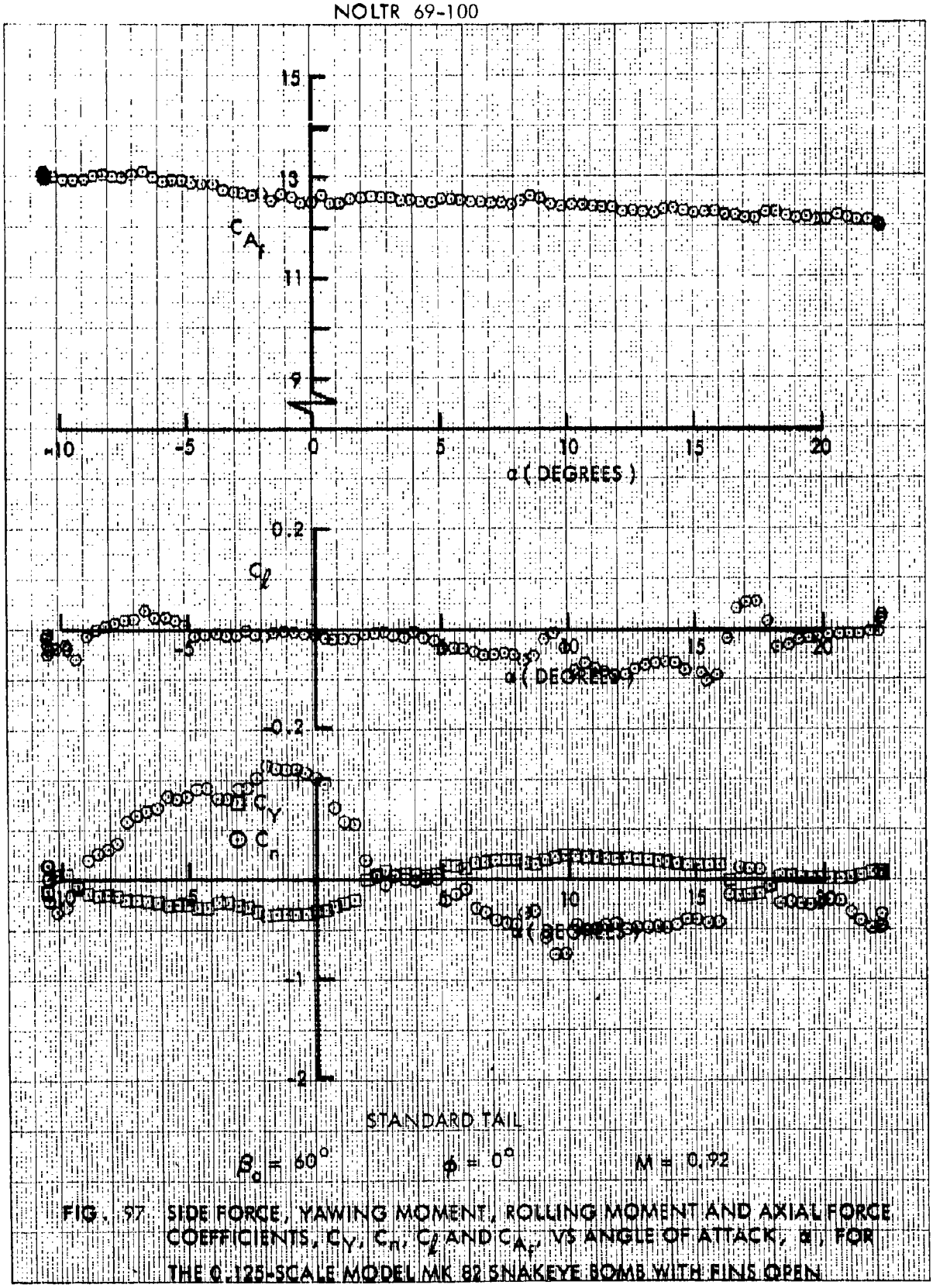


FIG. 97 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

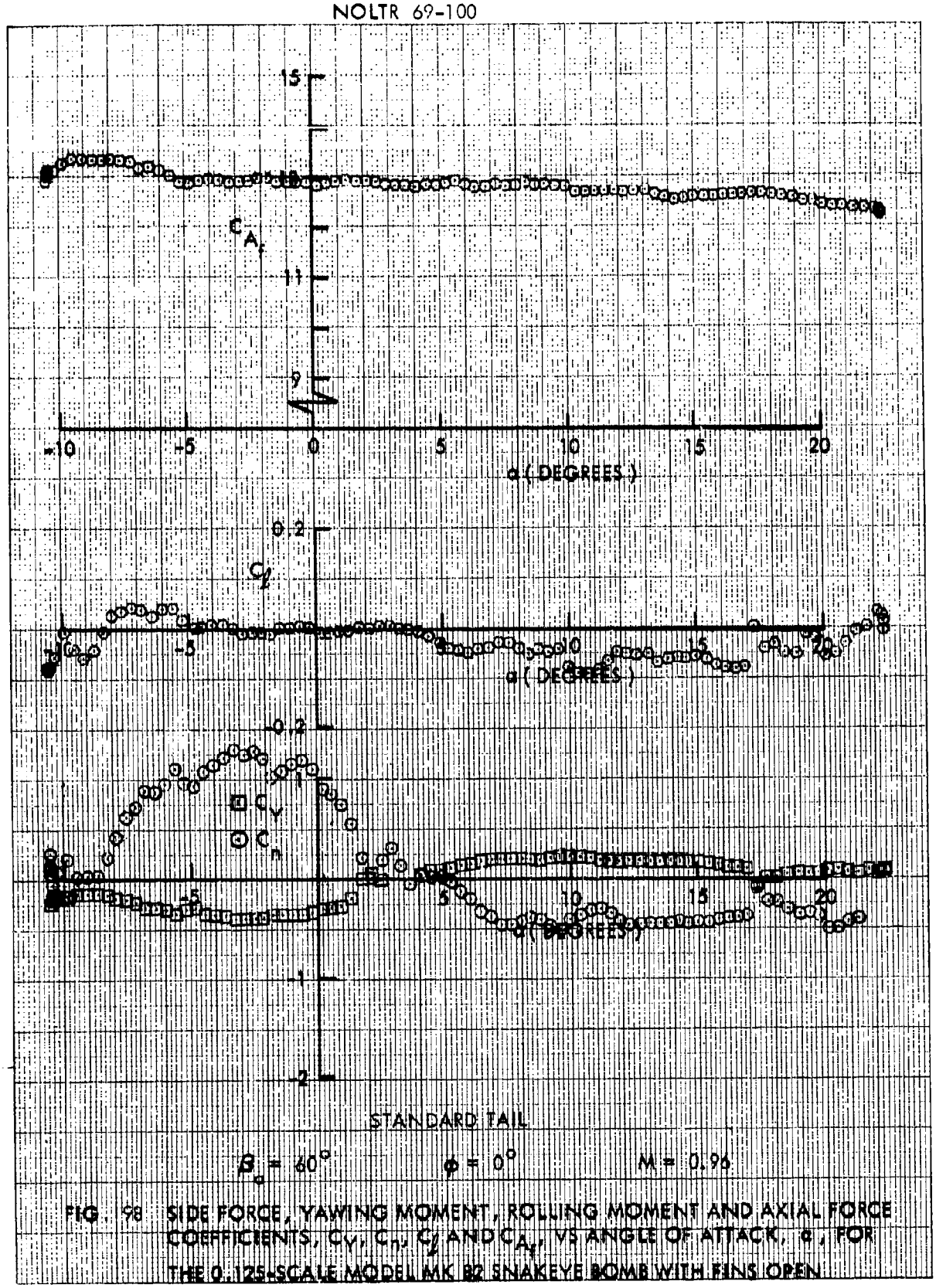


FIG. 98 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

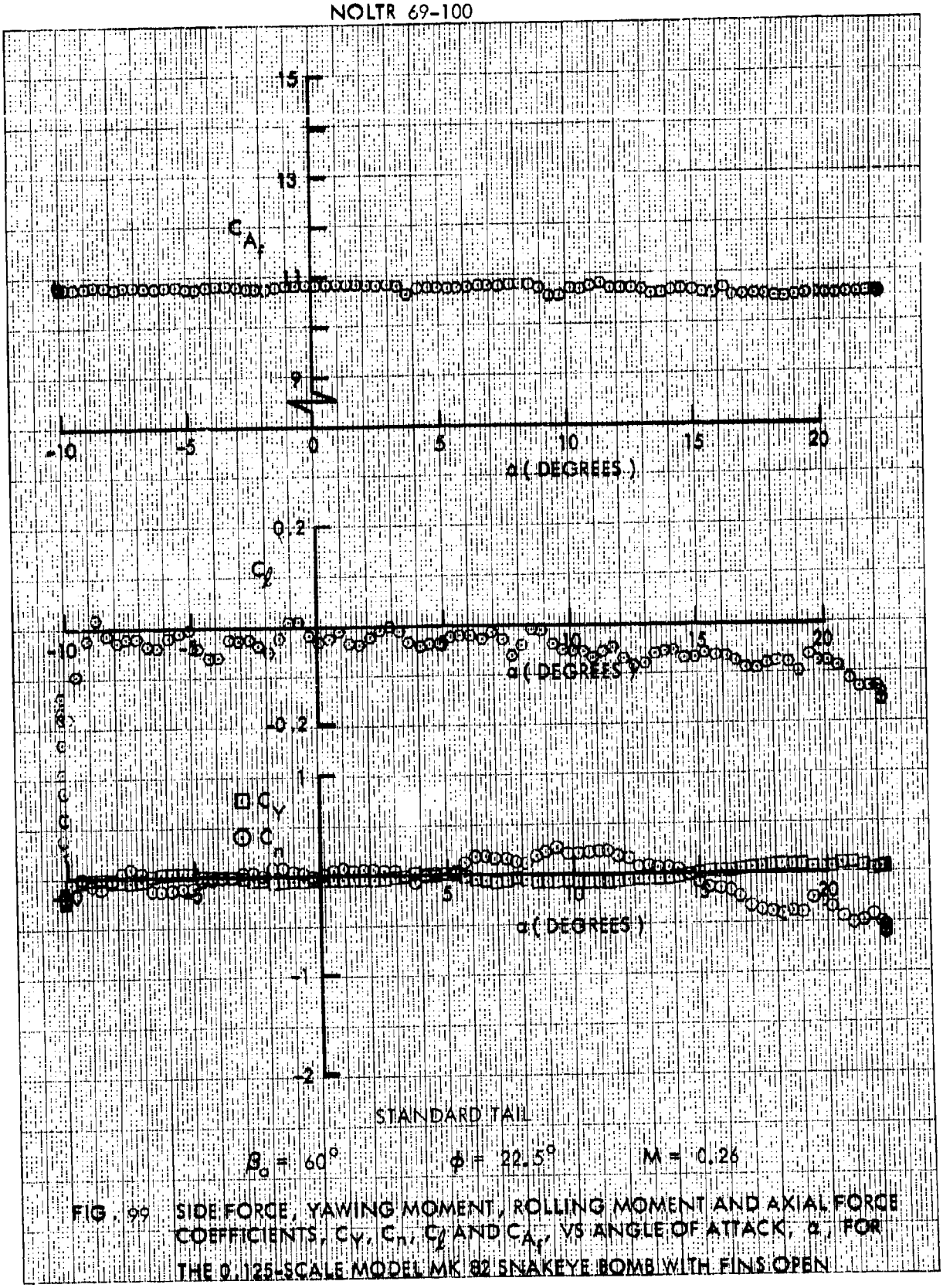


FIG. 99 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

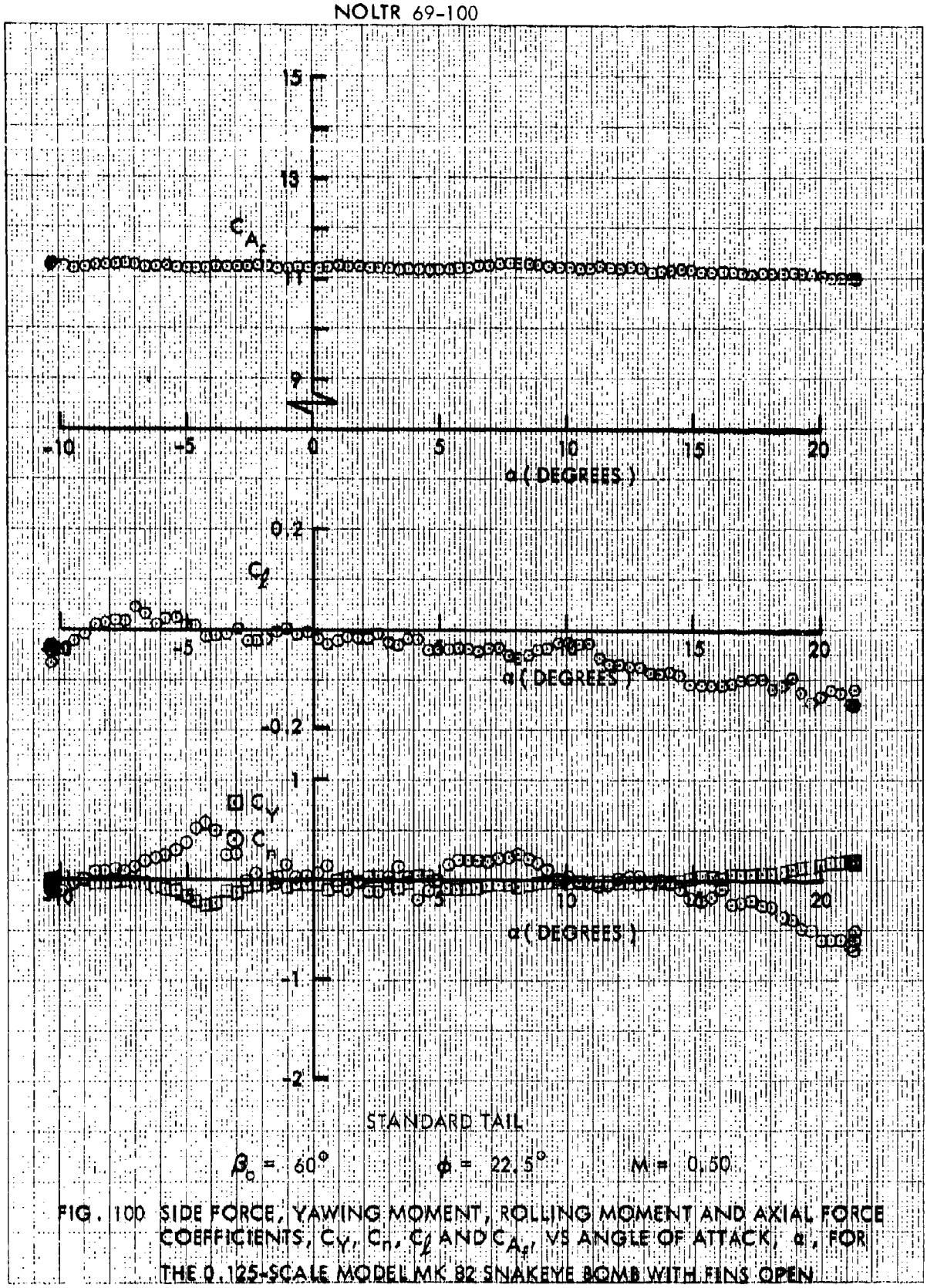


FIG. 100 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

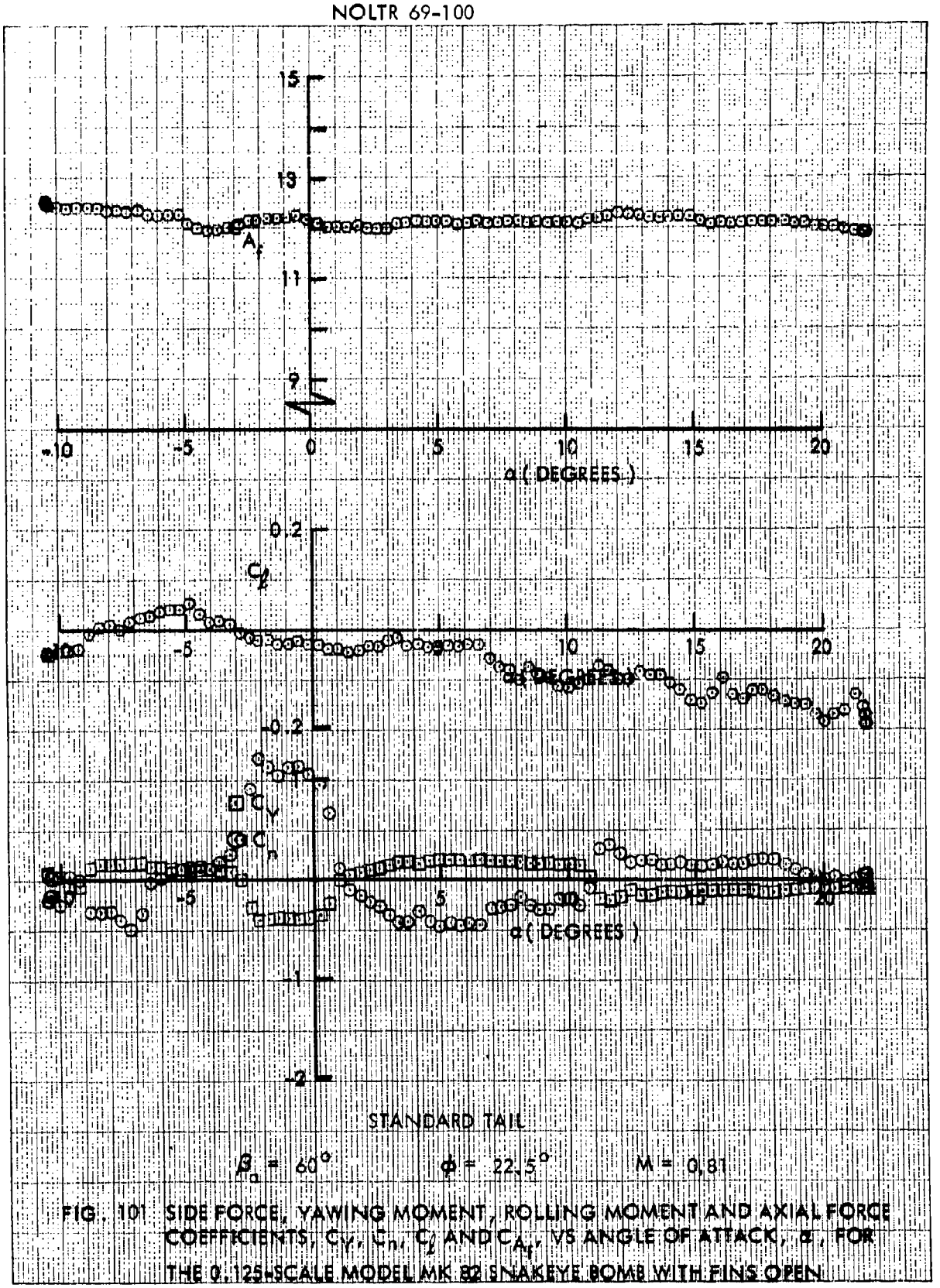


FIG. 101 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

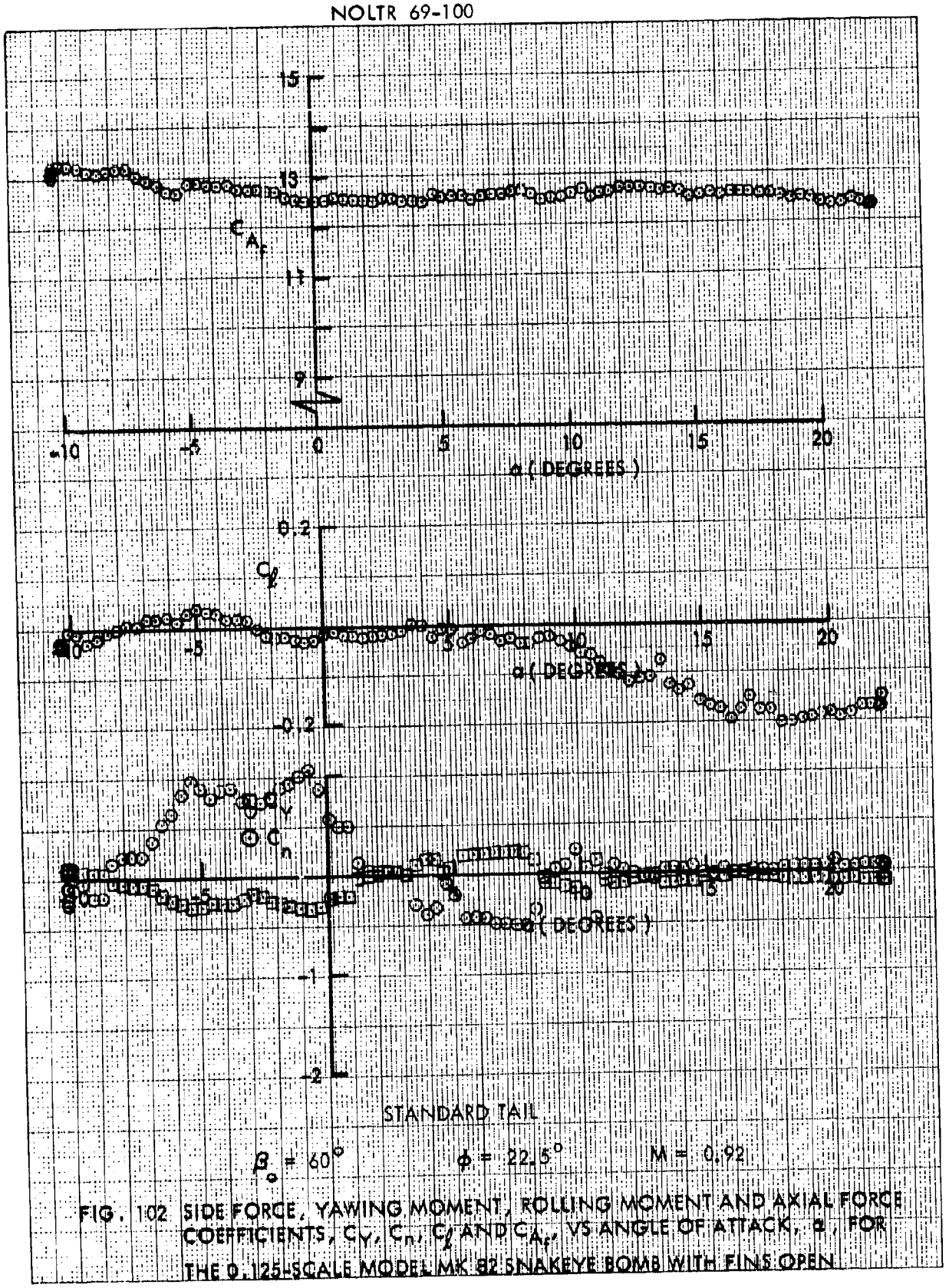


FIG. 102 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

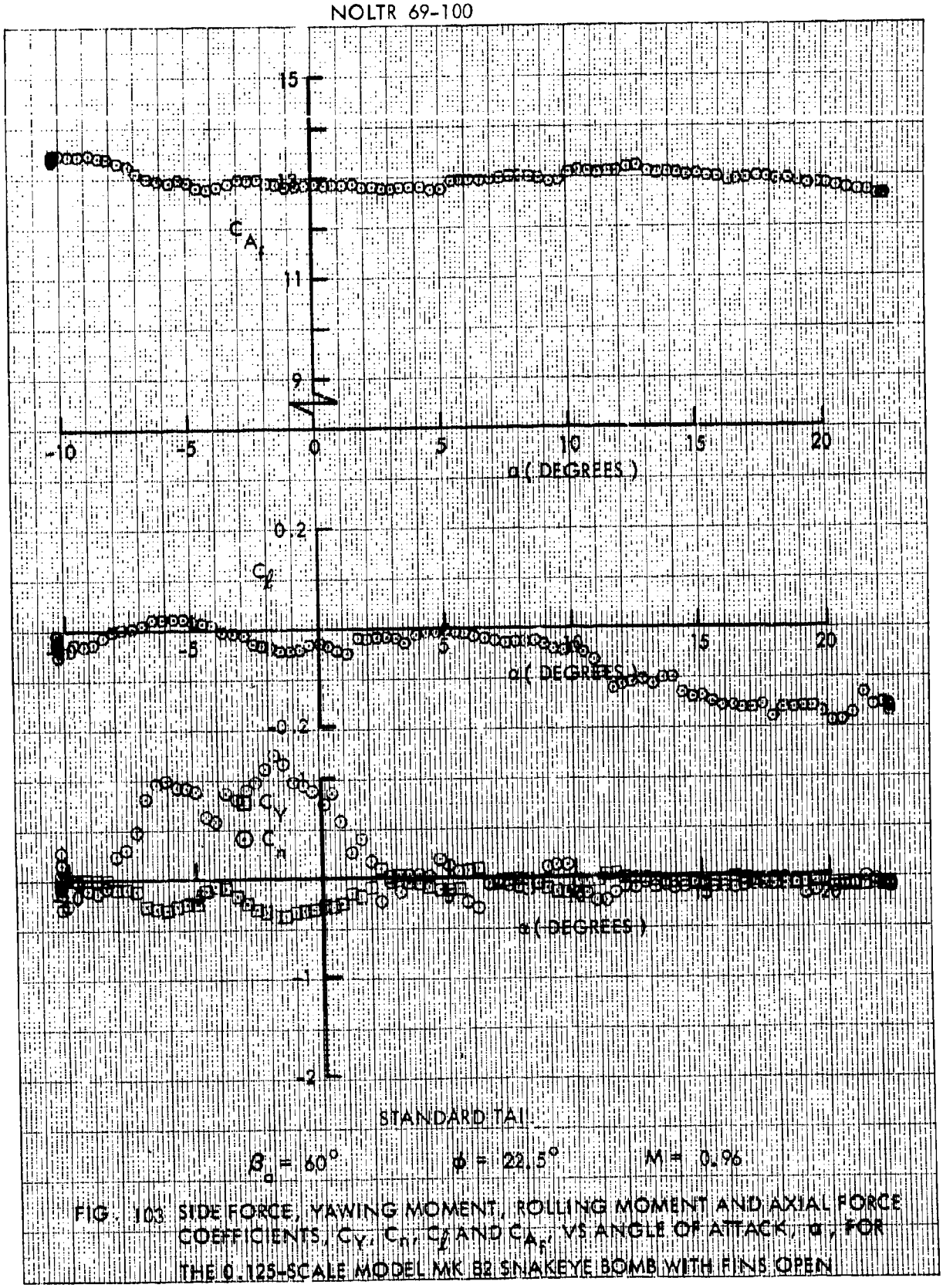


FIG. 103 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

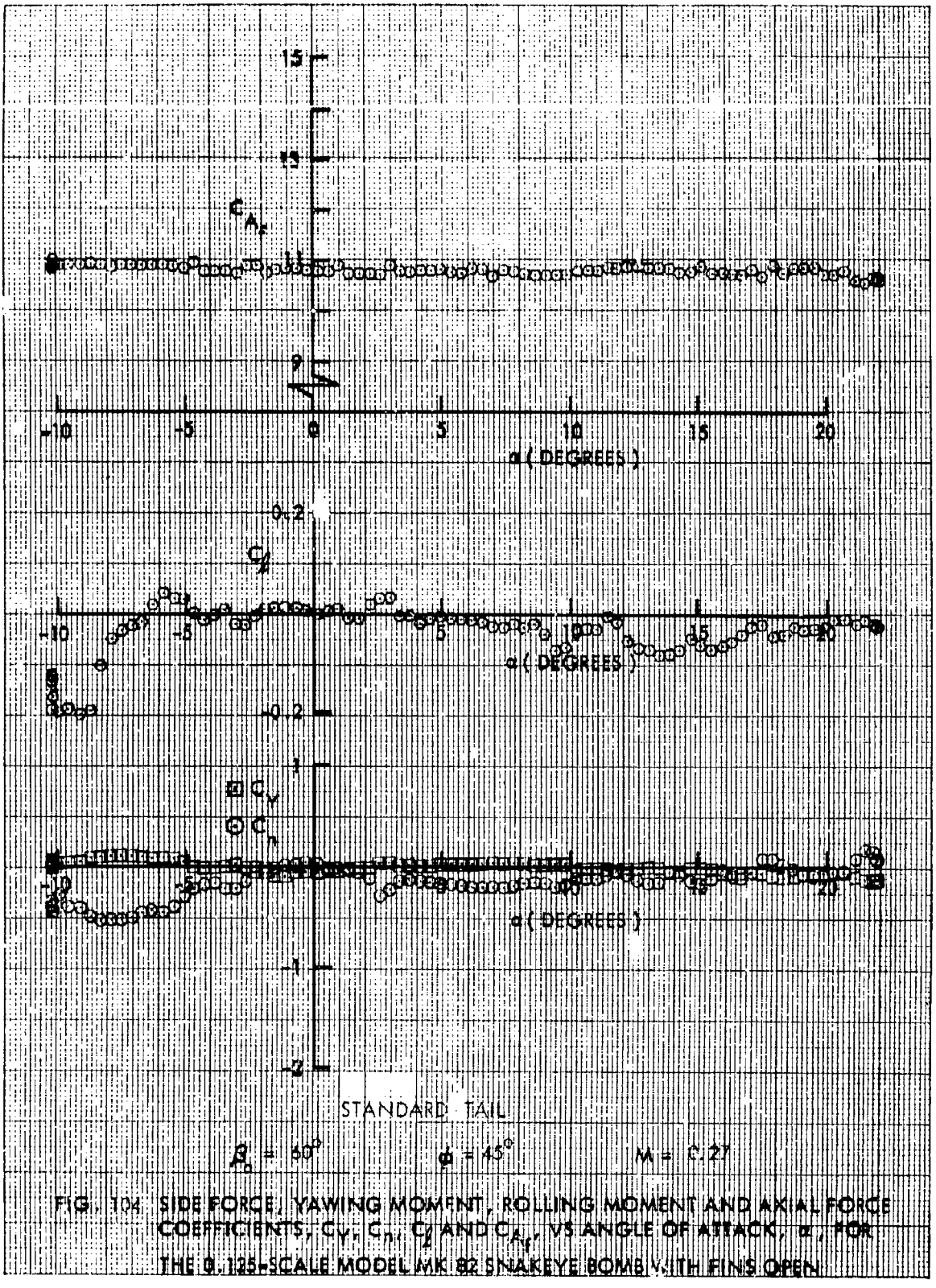


FIG. 104 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_{l_β} AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

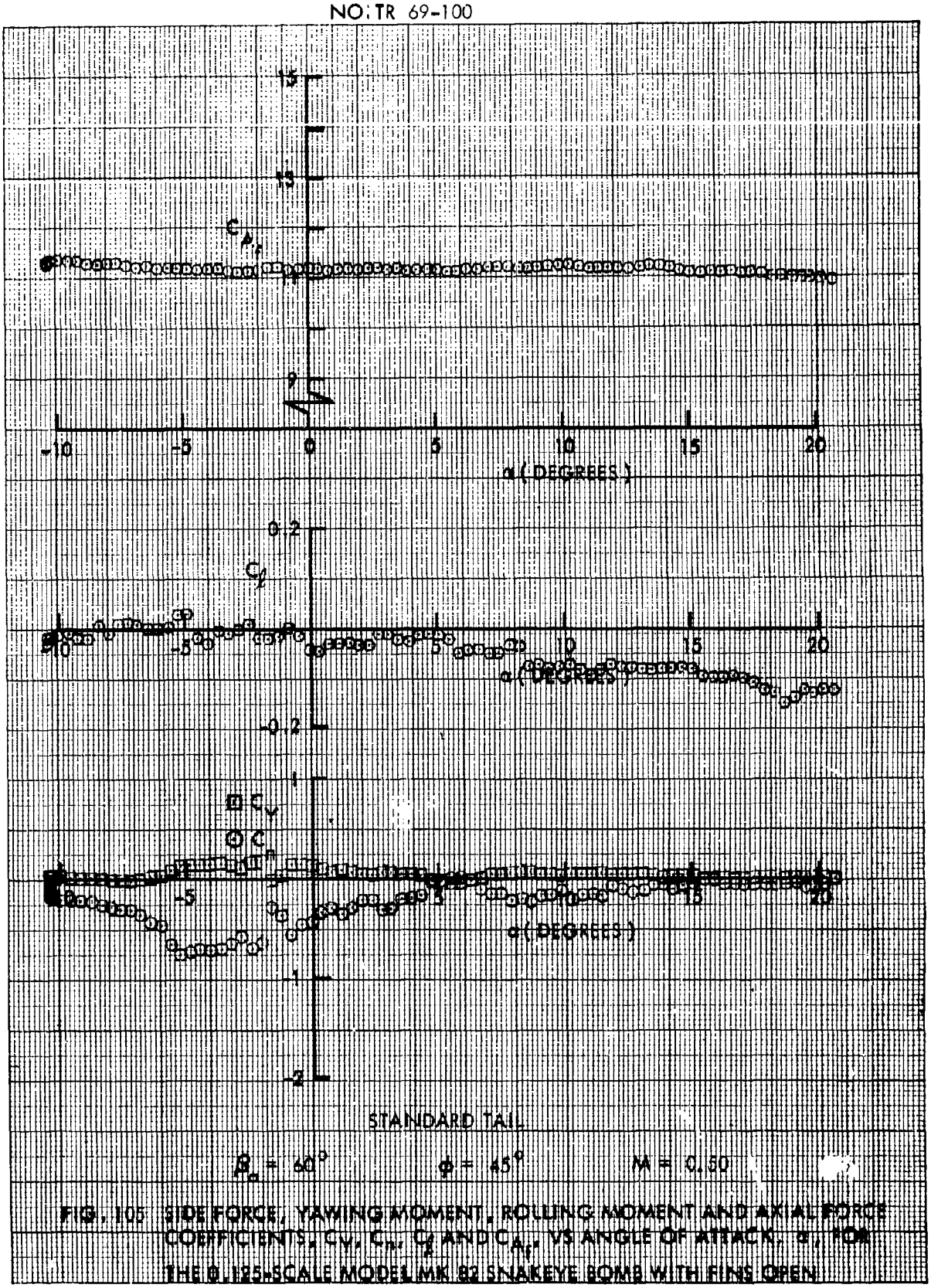


FIG. 105 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

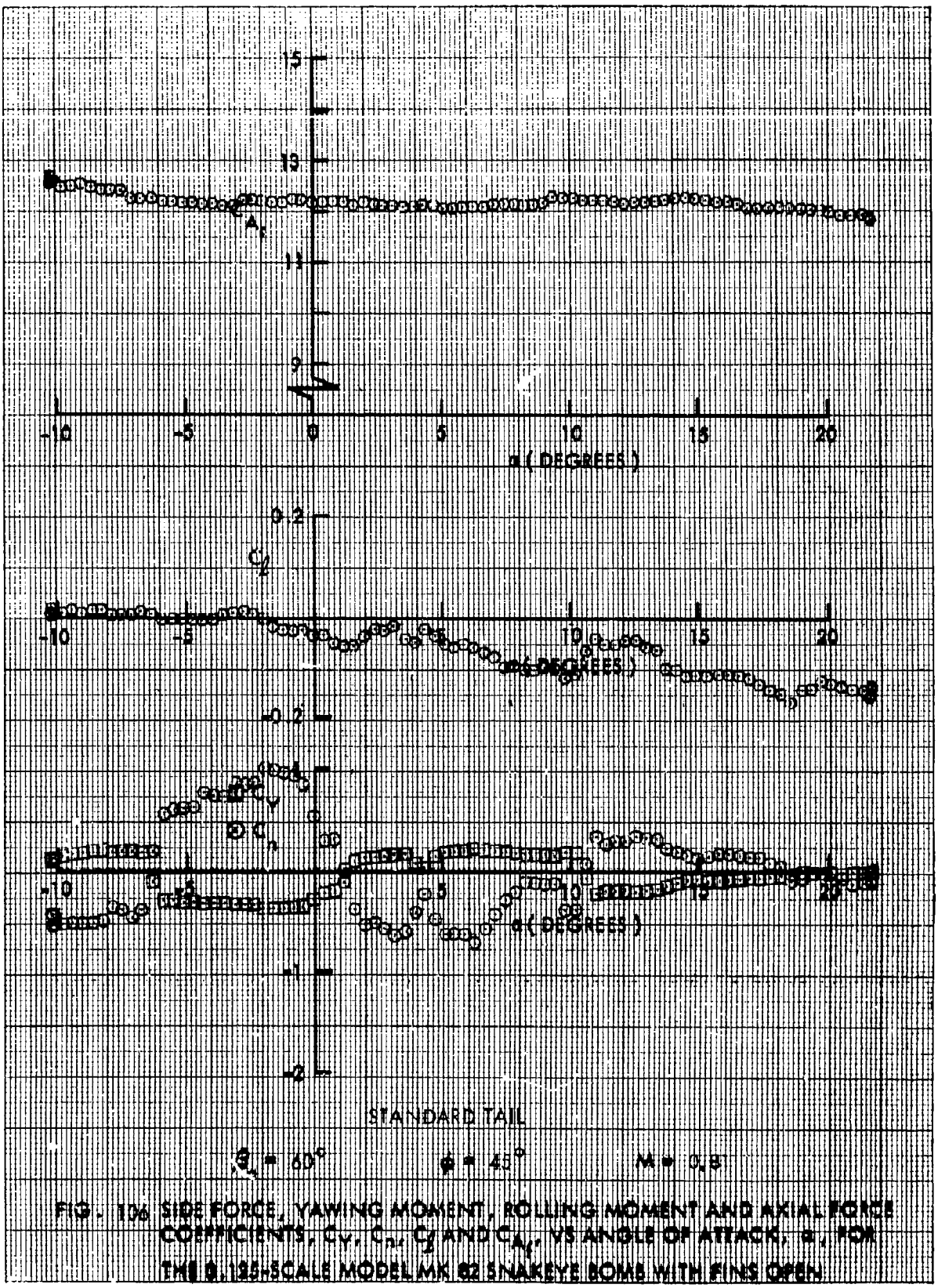


FIG. 10b SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

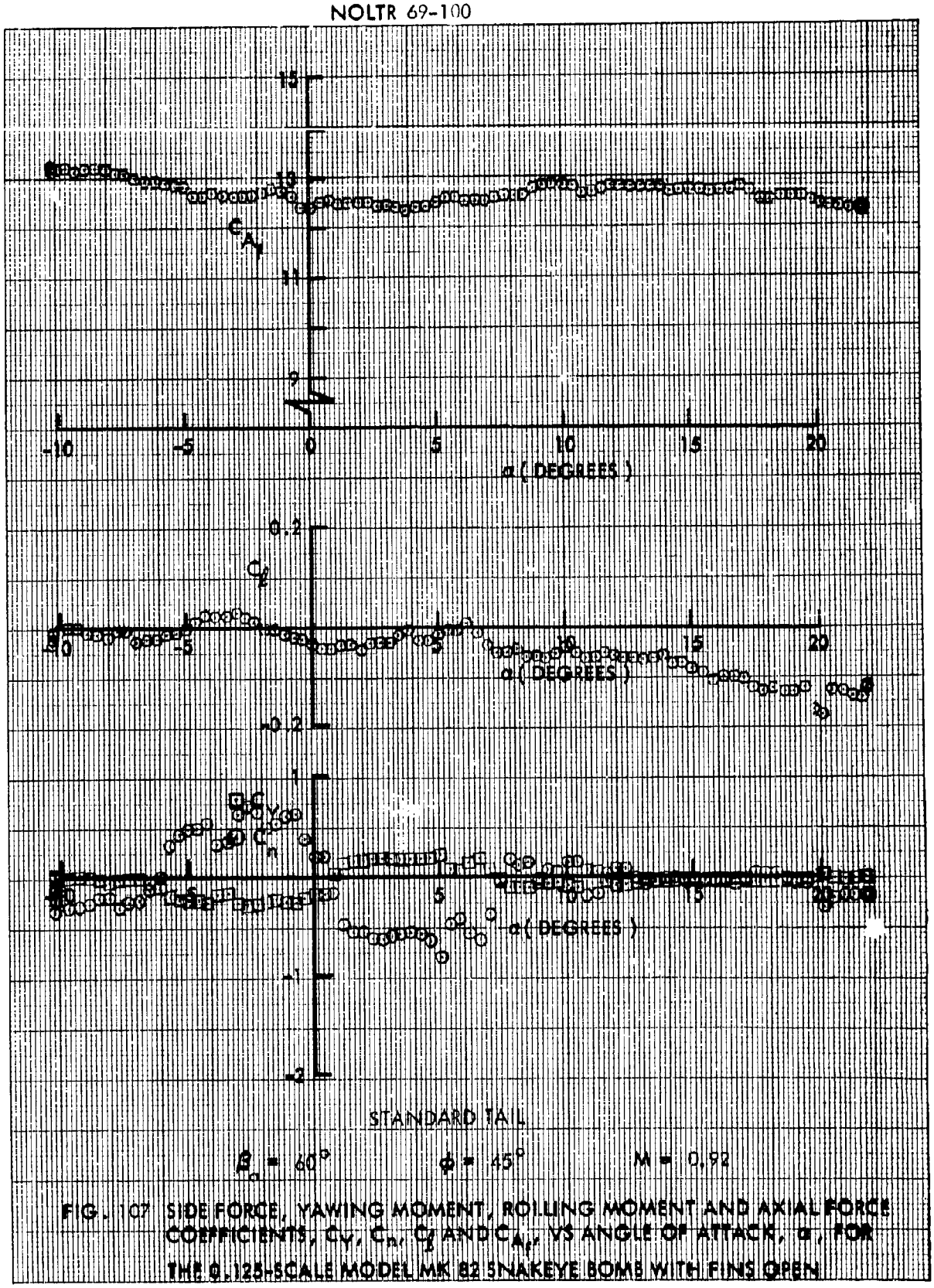


FIG. 107 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_{Y_β}, C_{n_β}, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

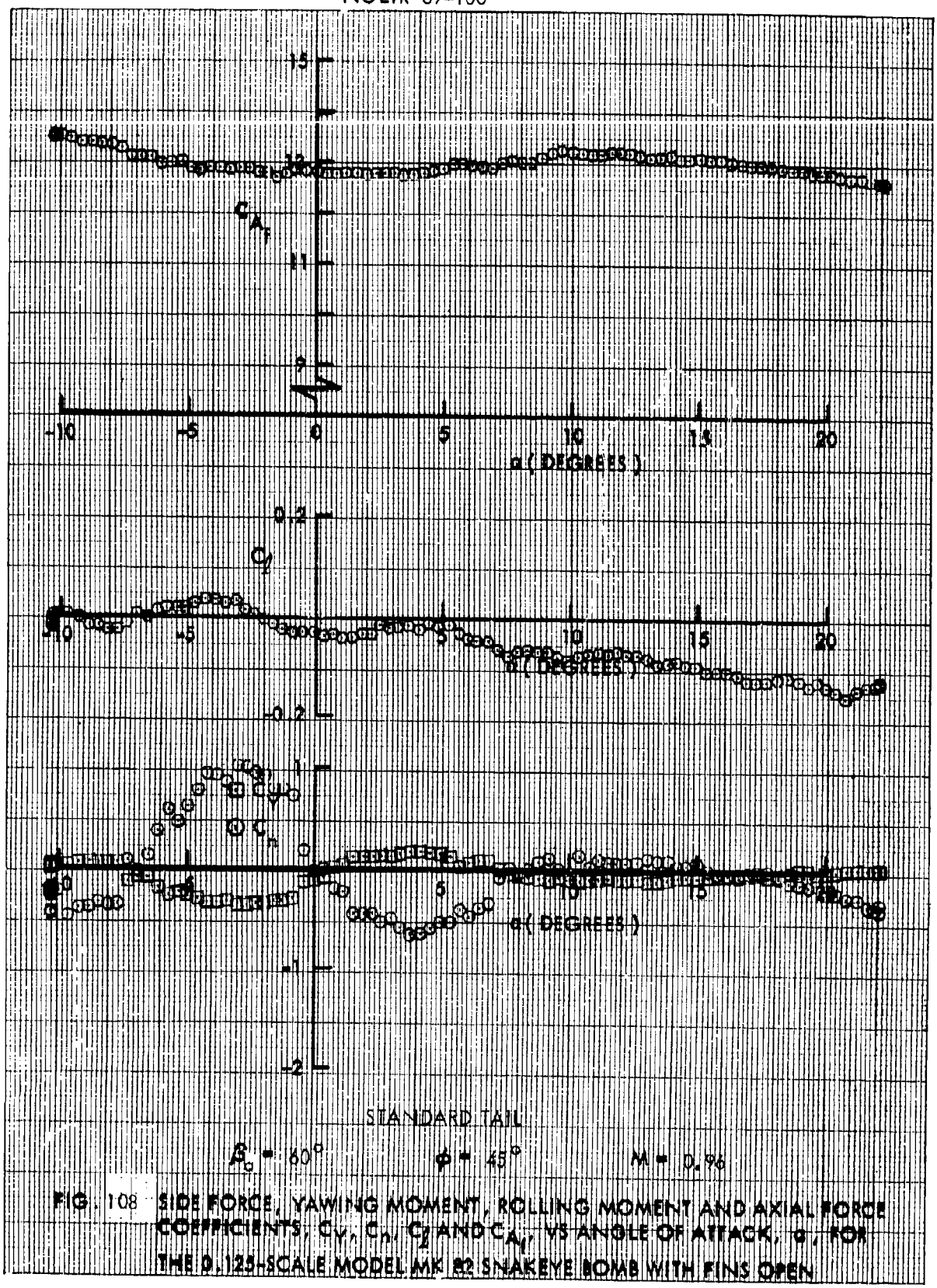


FIG. 108 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

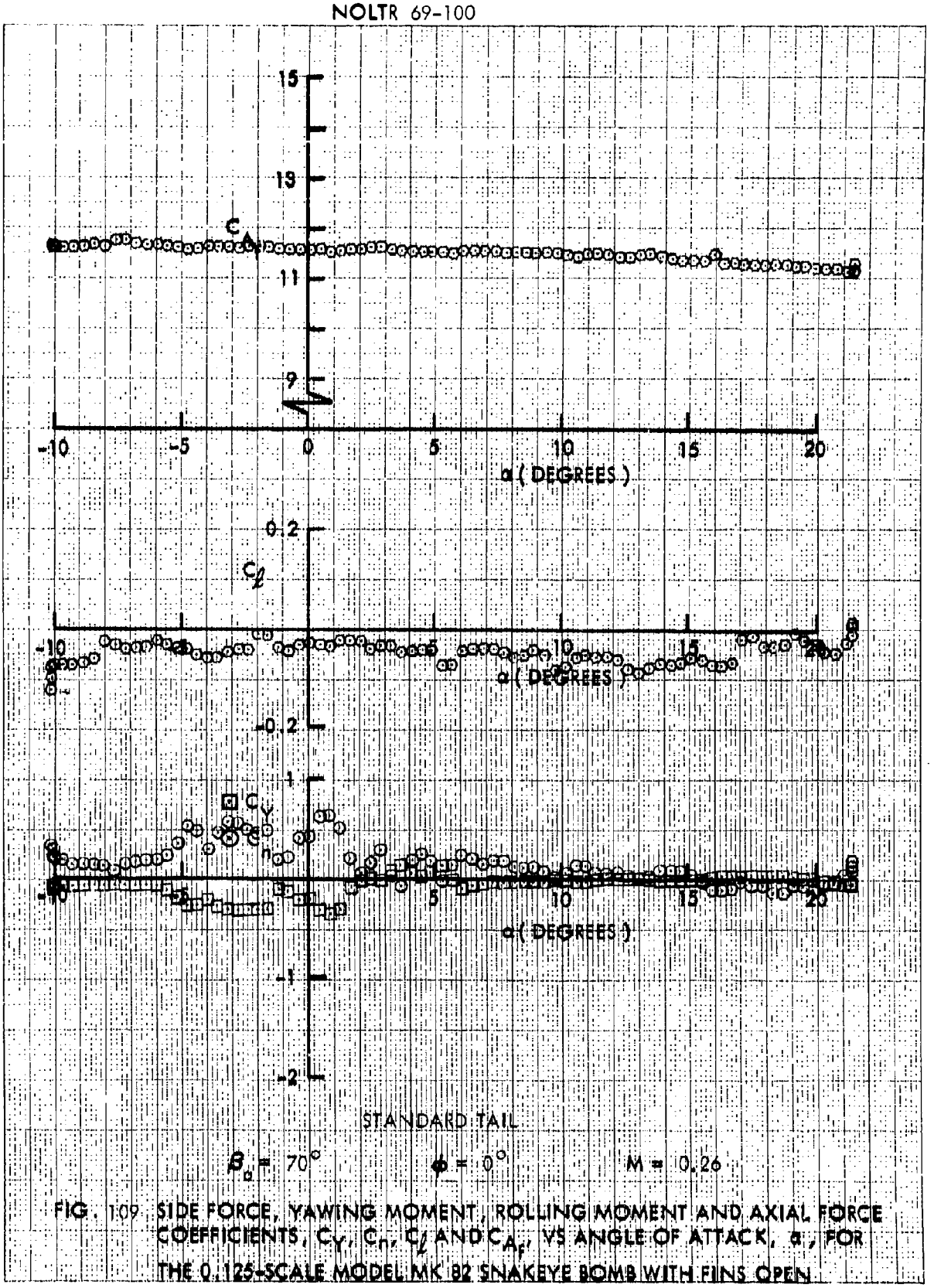


FIG. 109 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

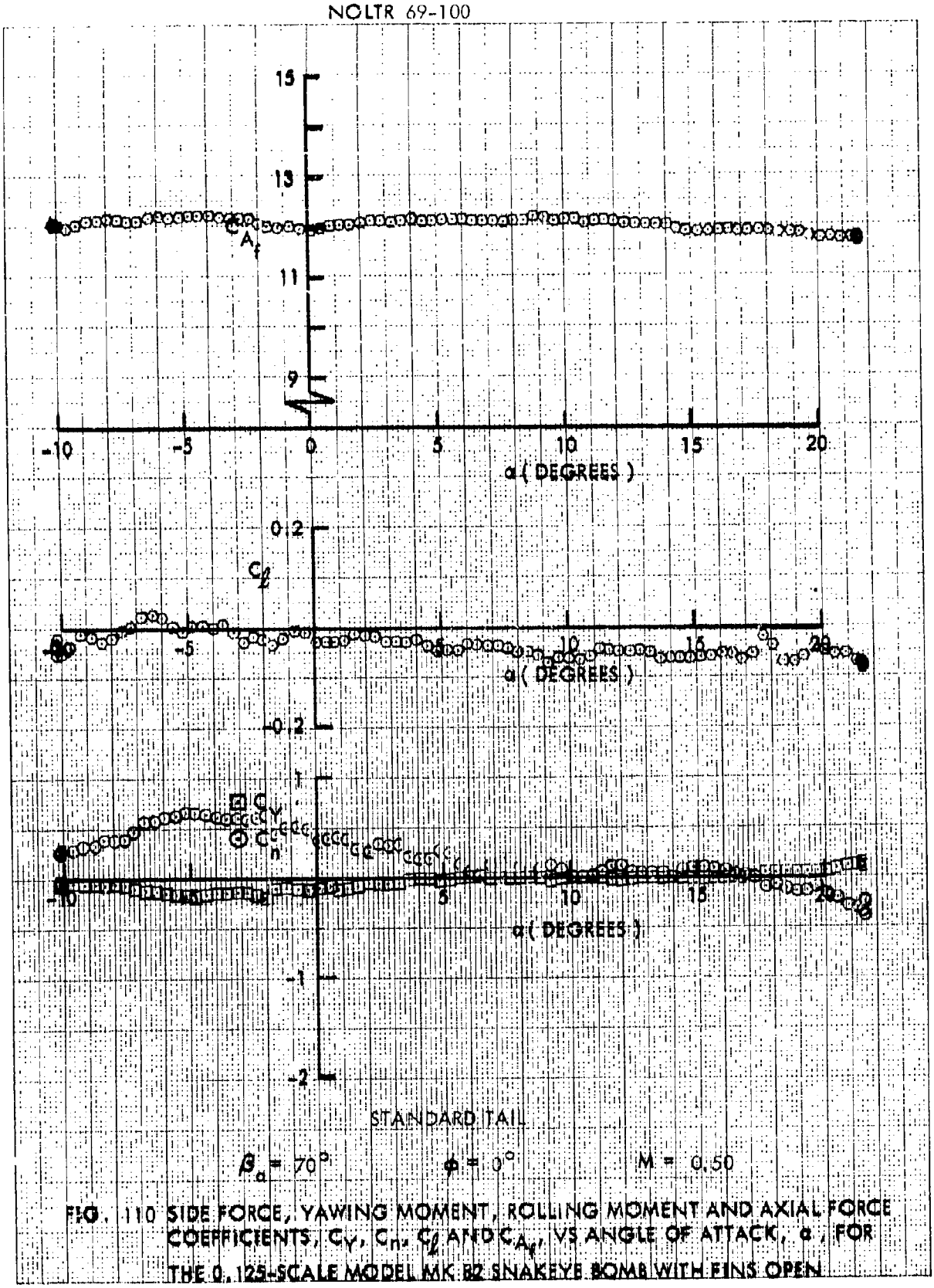


FIG. 110 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

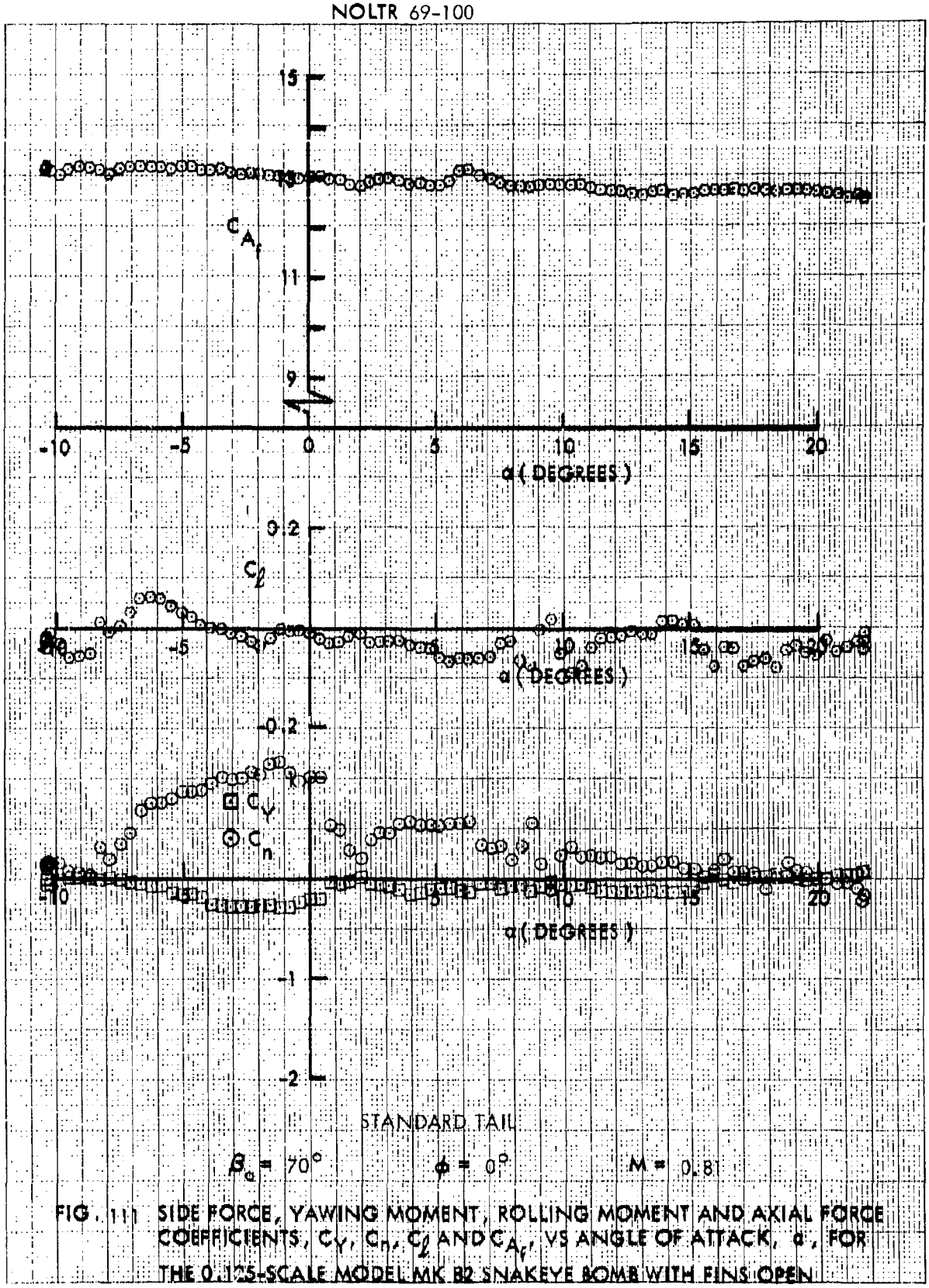


FIG. 11 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

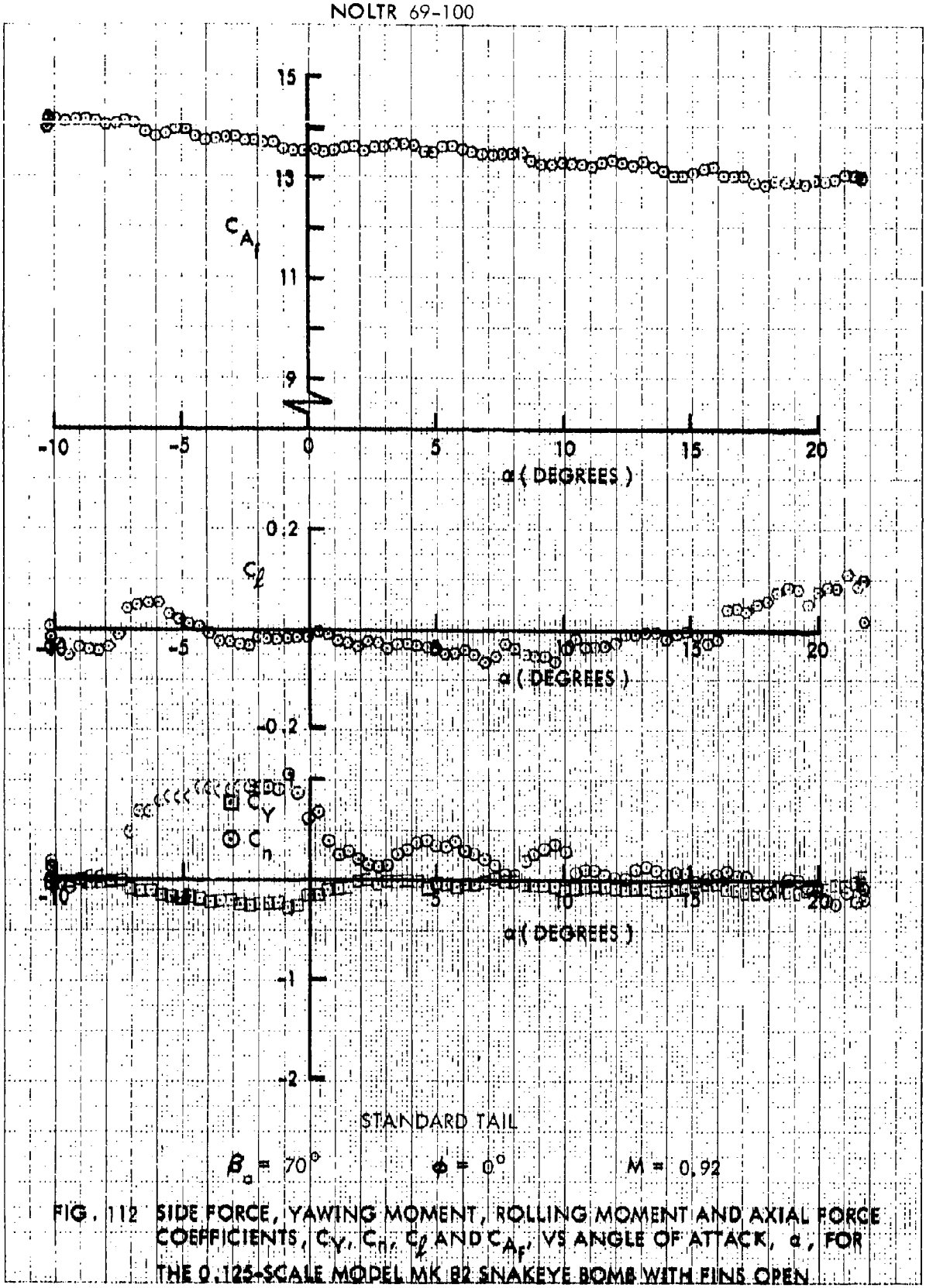


FIG. 112 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

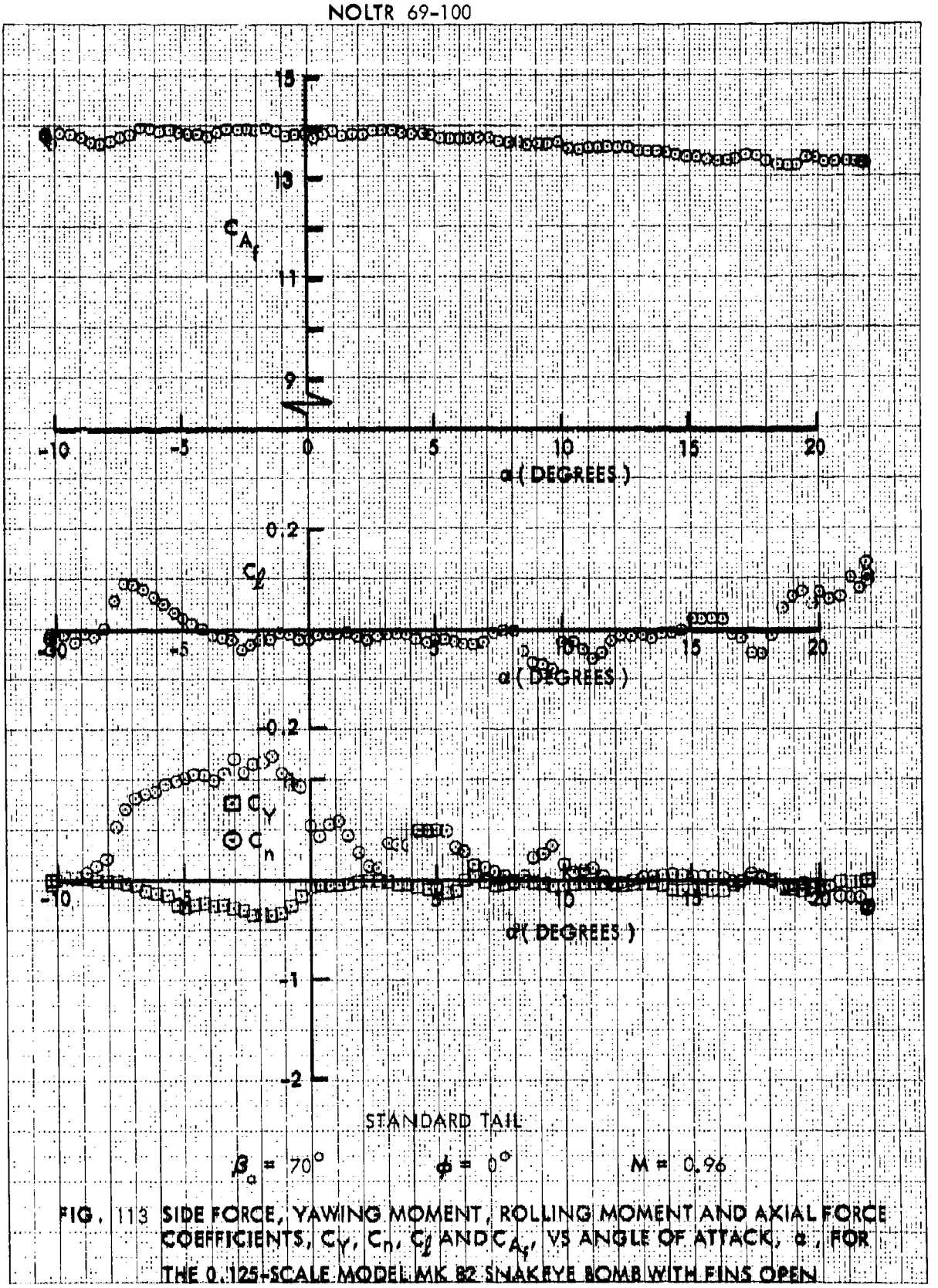


FIG. 113 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

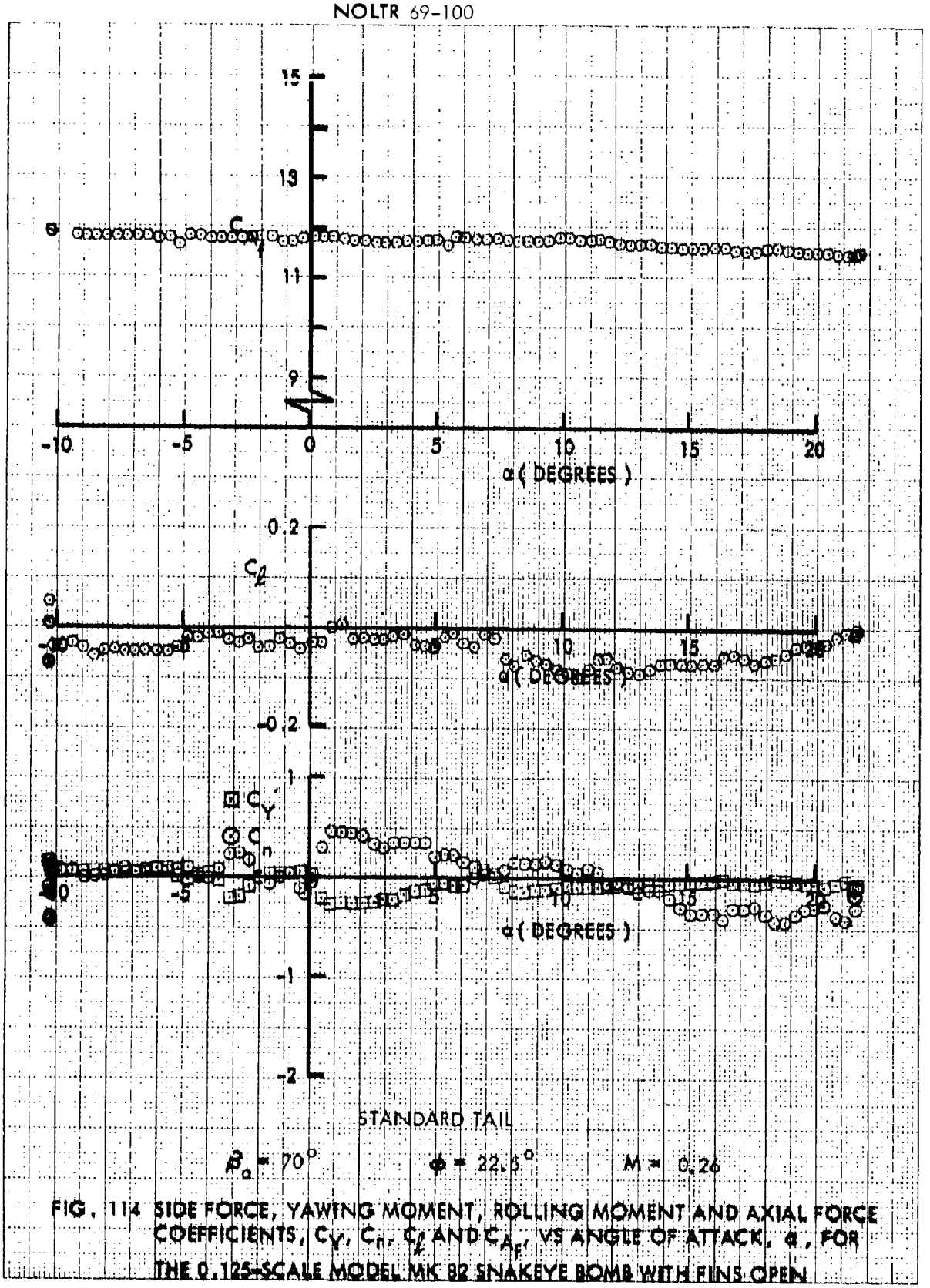


FIG. 114 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_F}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

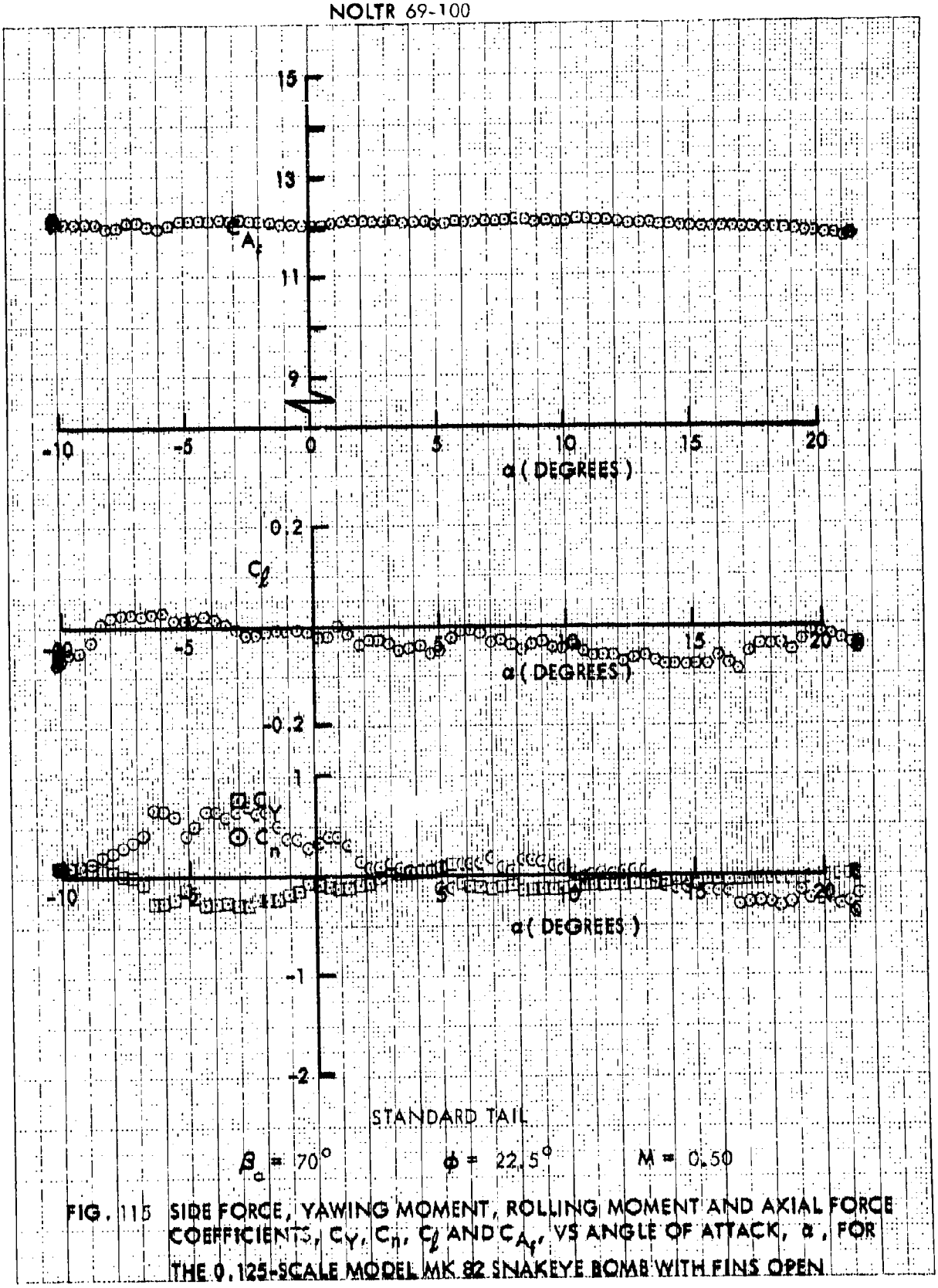


FIG. 115 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

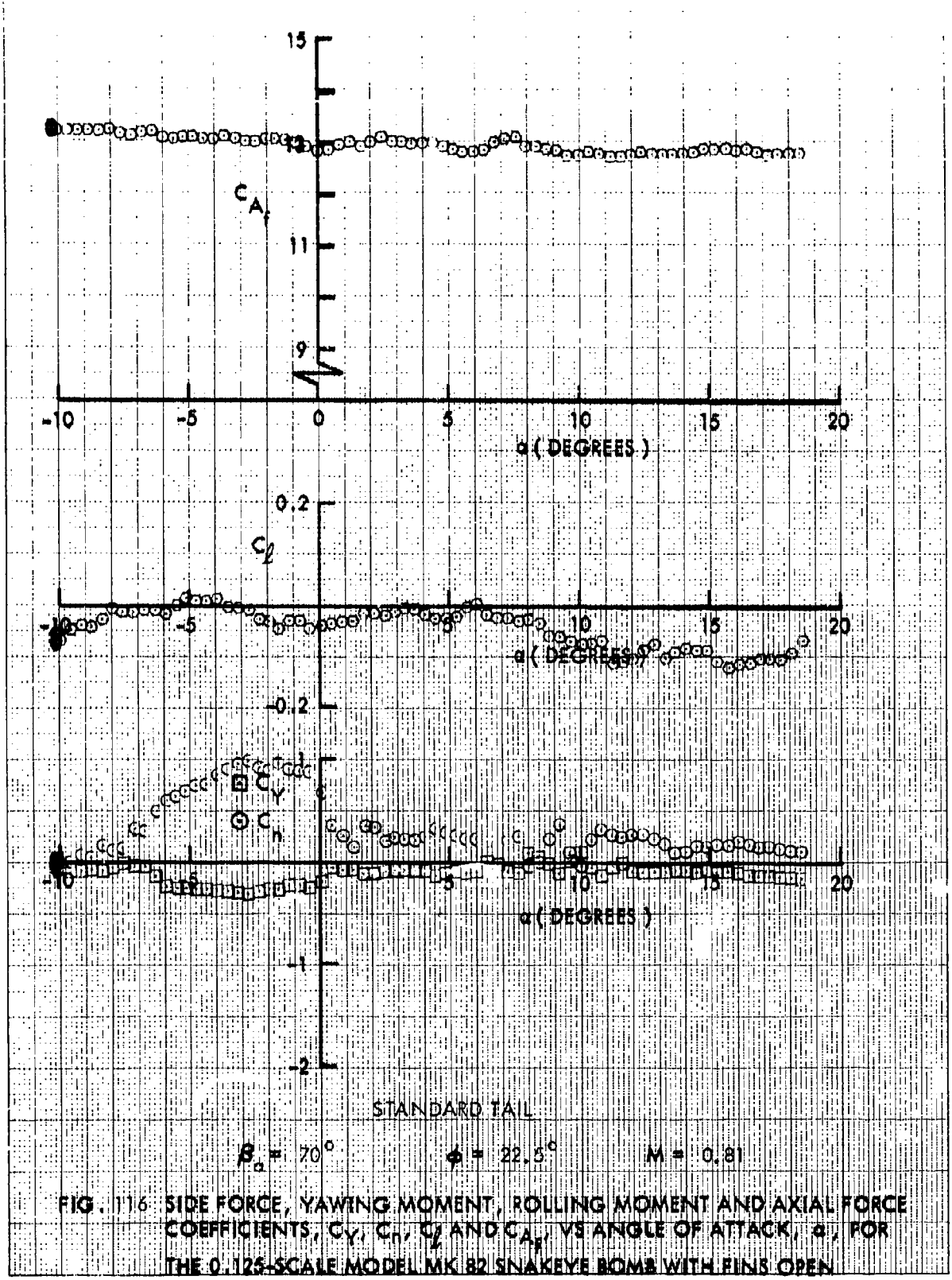


FIG. 116 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

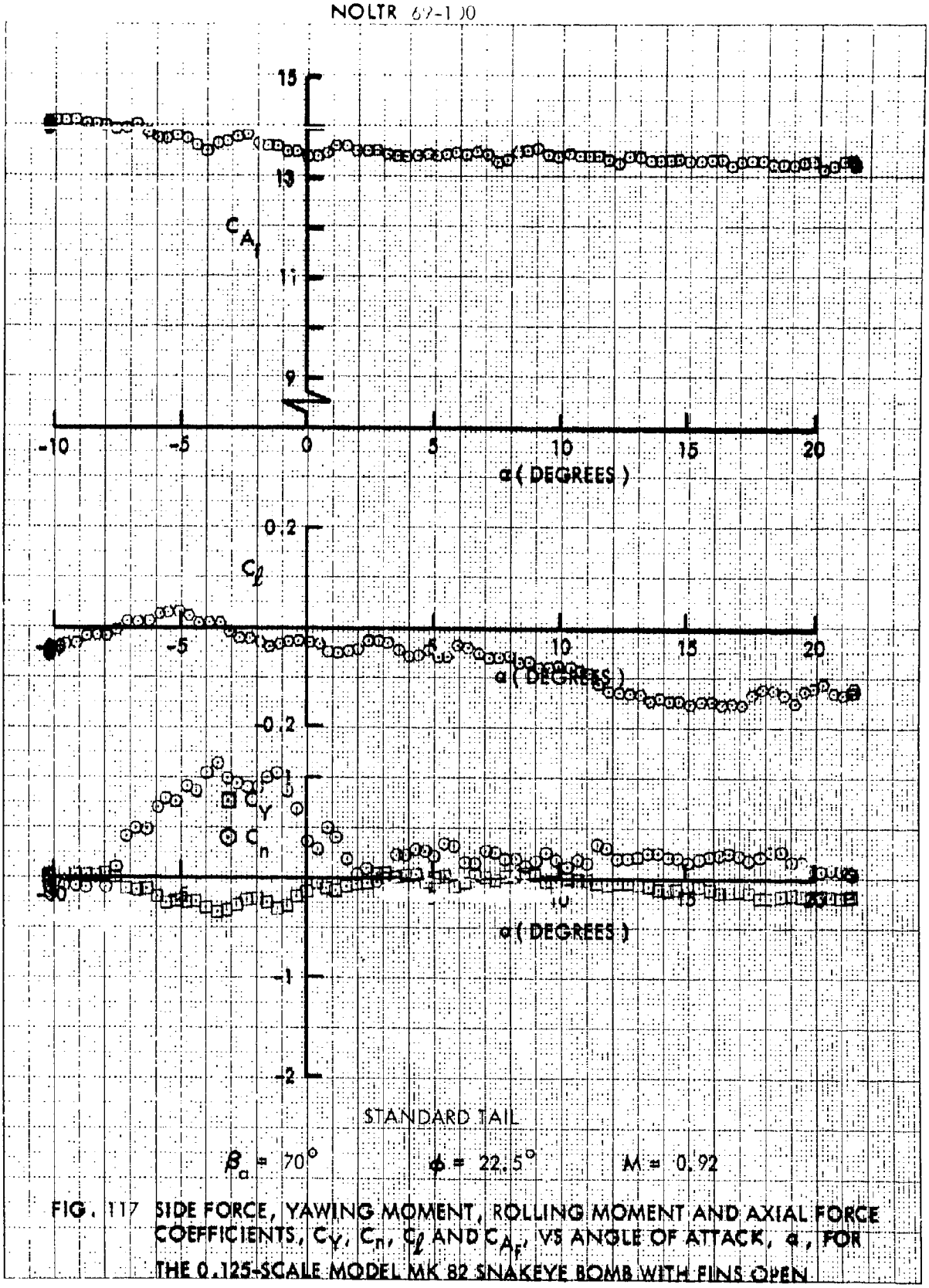


FIG. 117 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_F}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

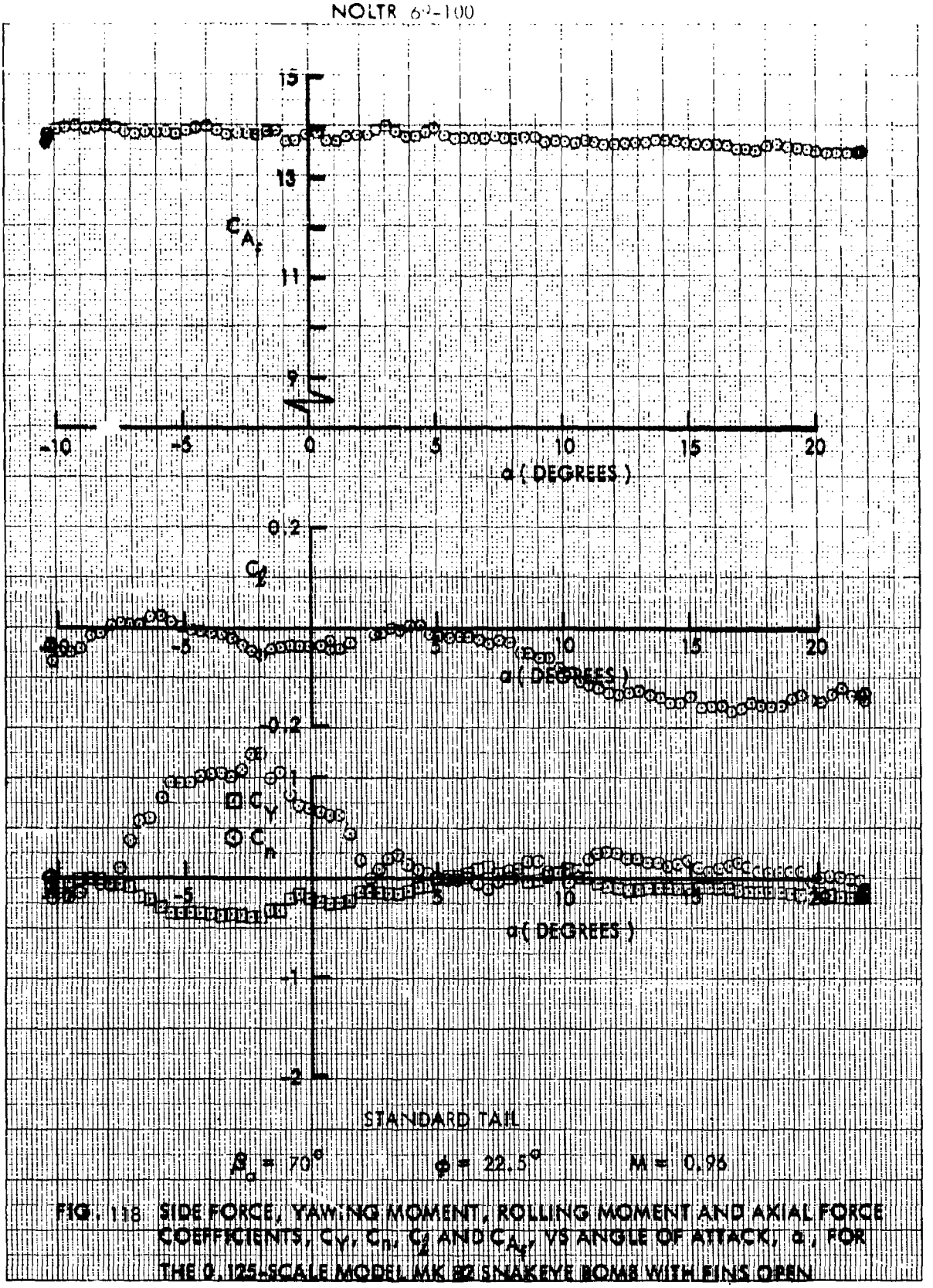


FIG. 118 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

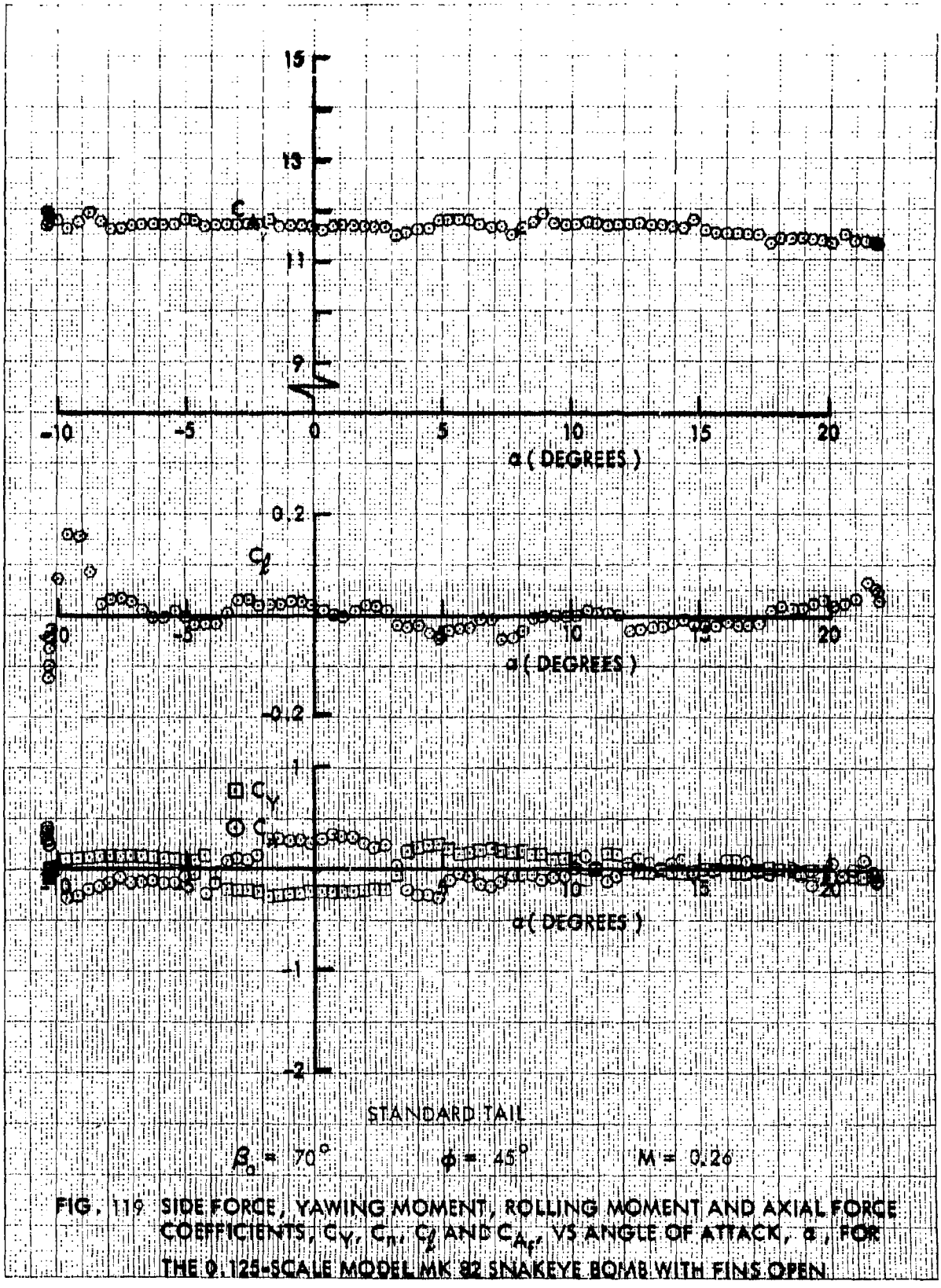


FIG. 119 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

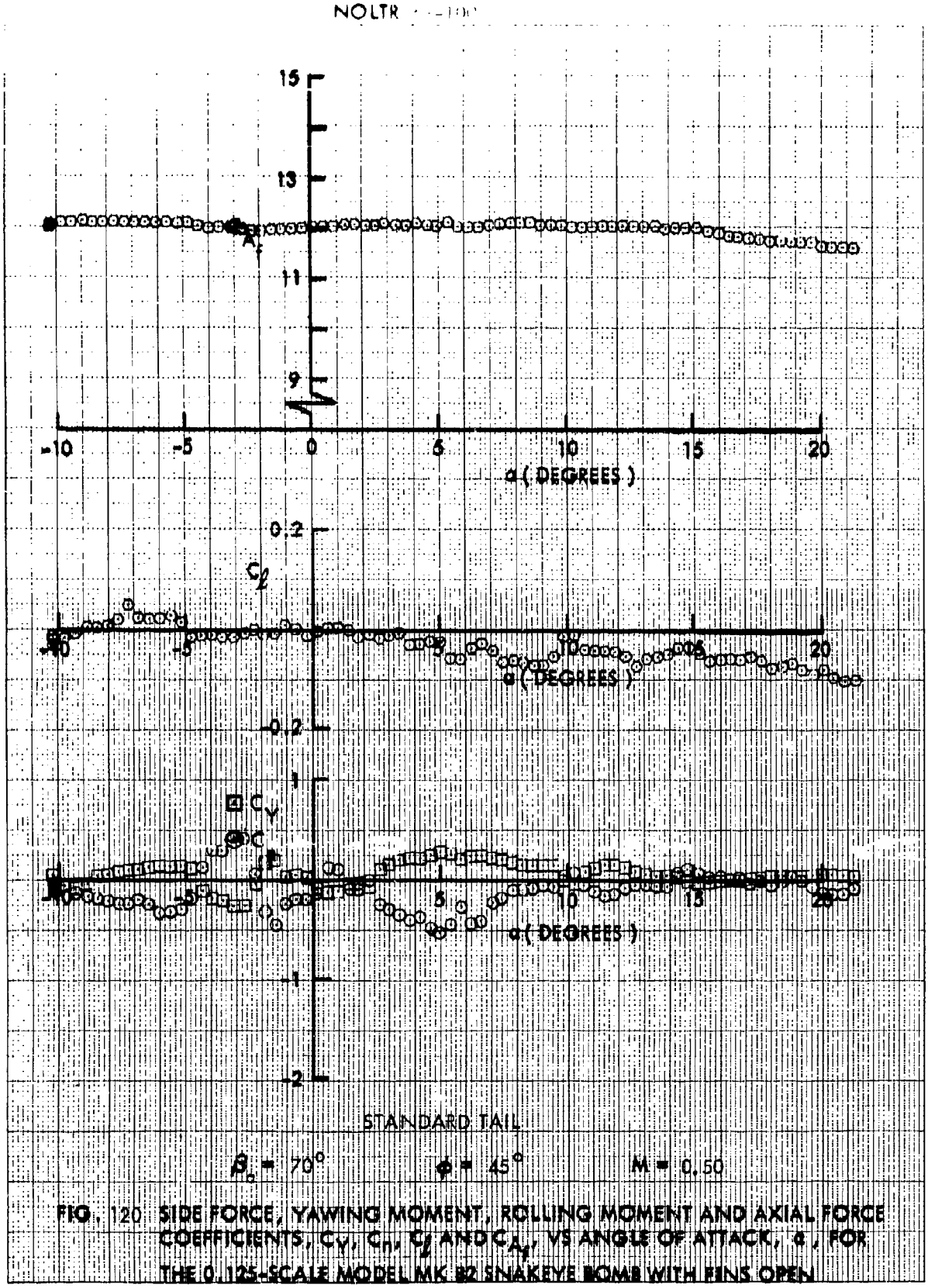


FIG. 120 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_1}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

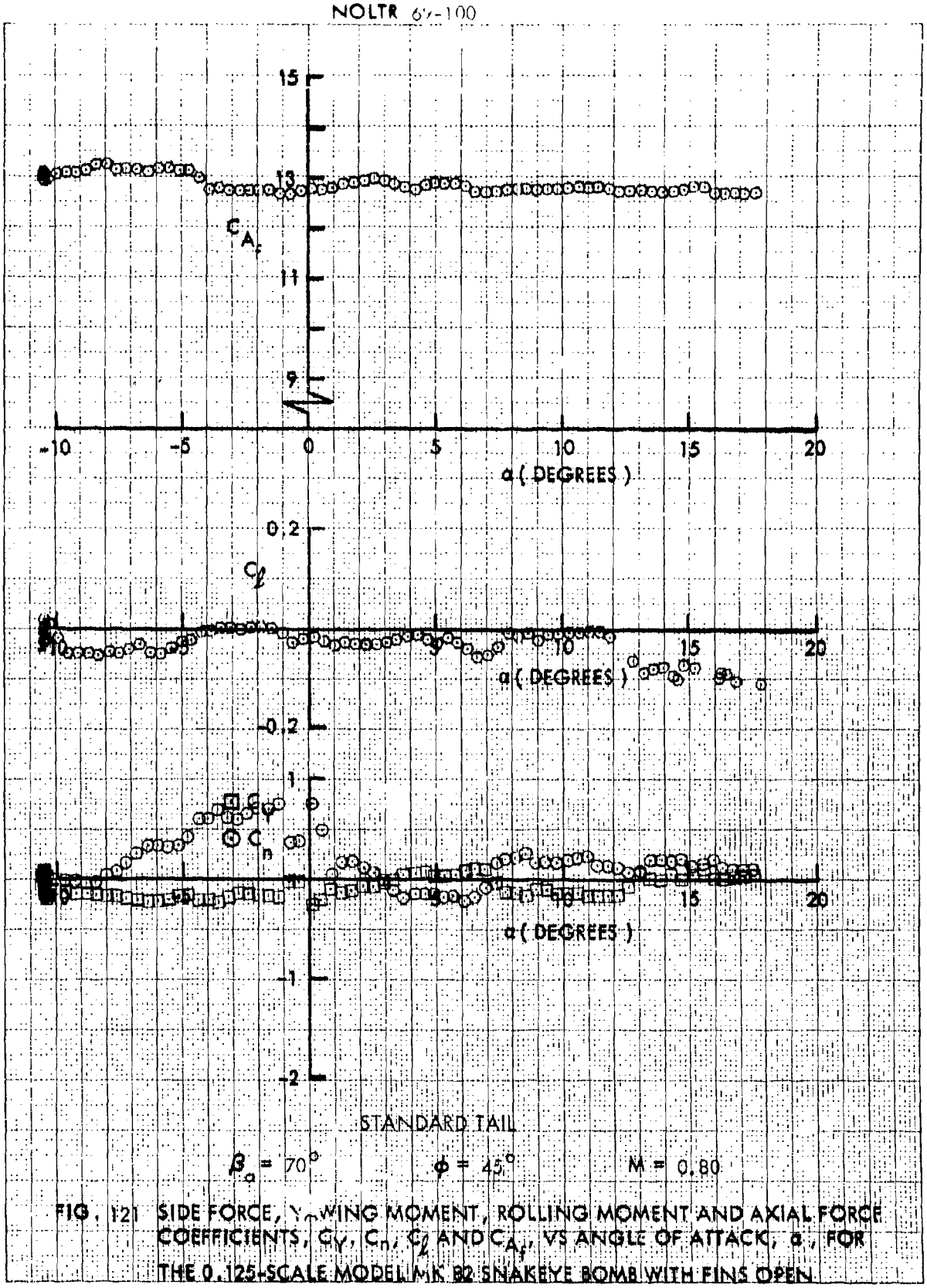


FIG. 121 SIDE FORCE, Y, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

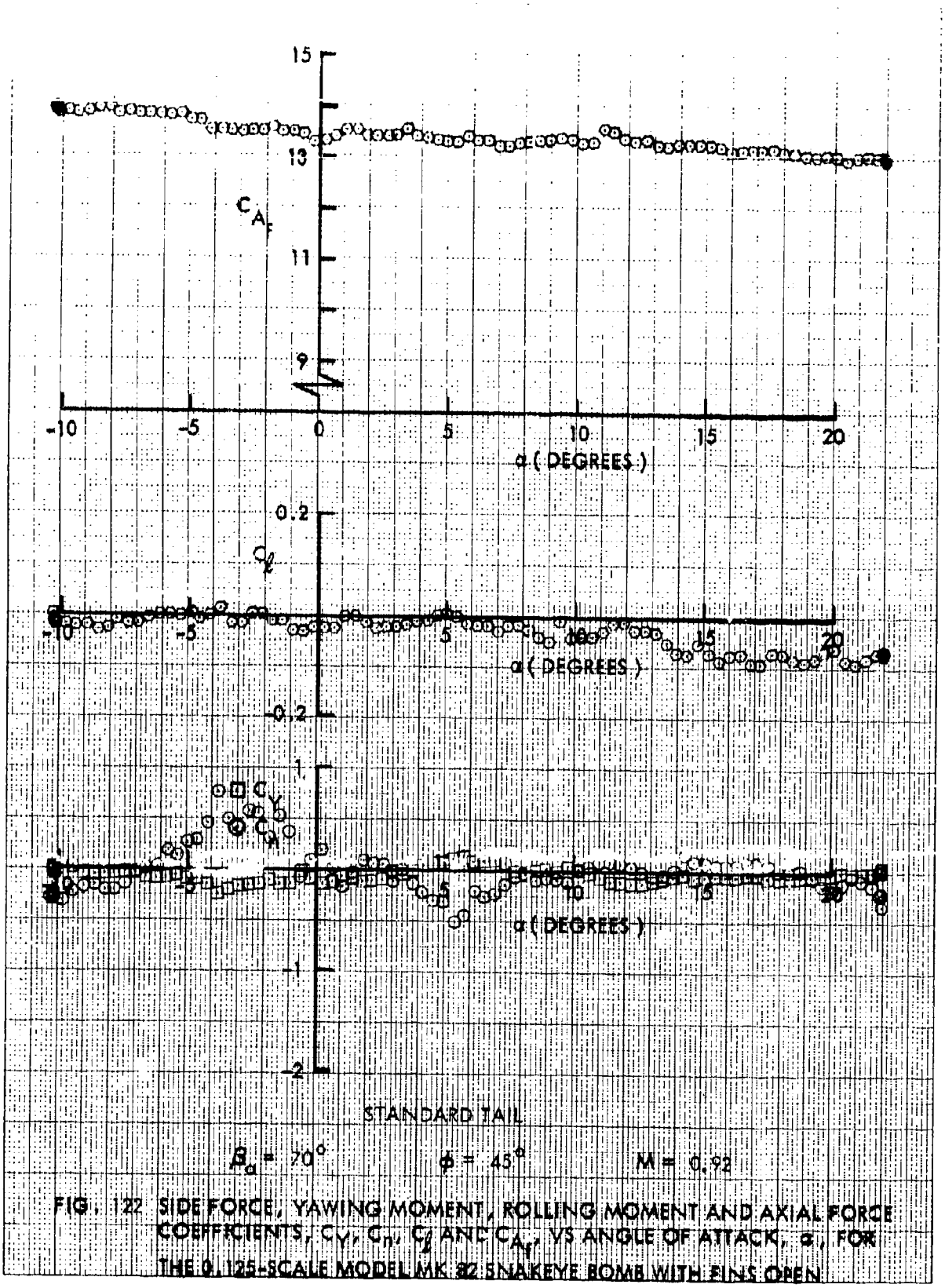


FIG. 122 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

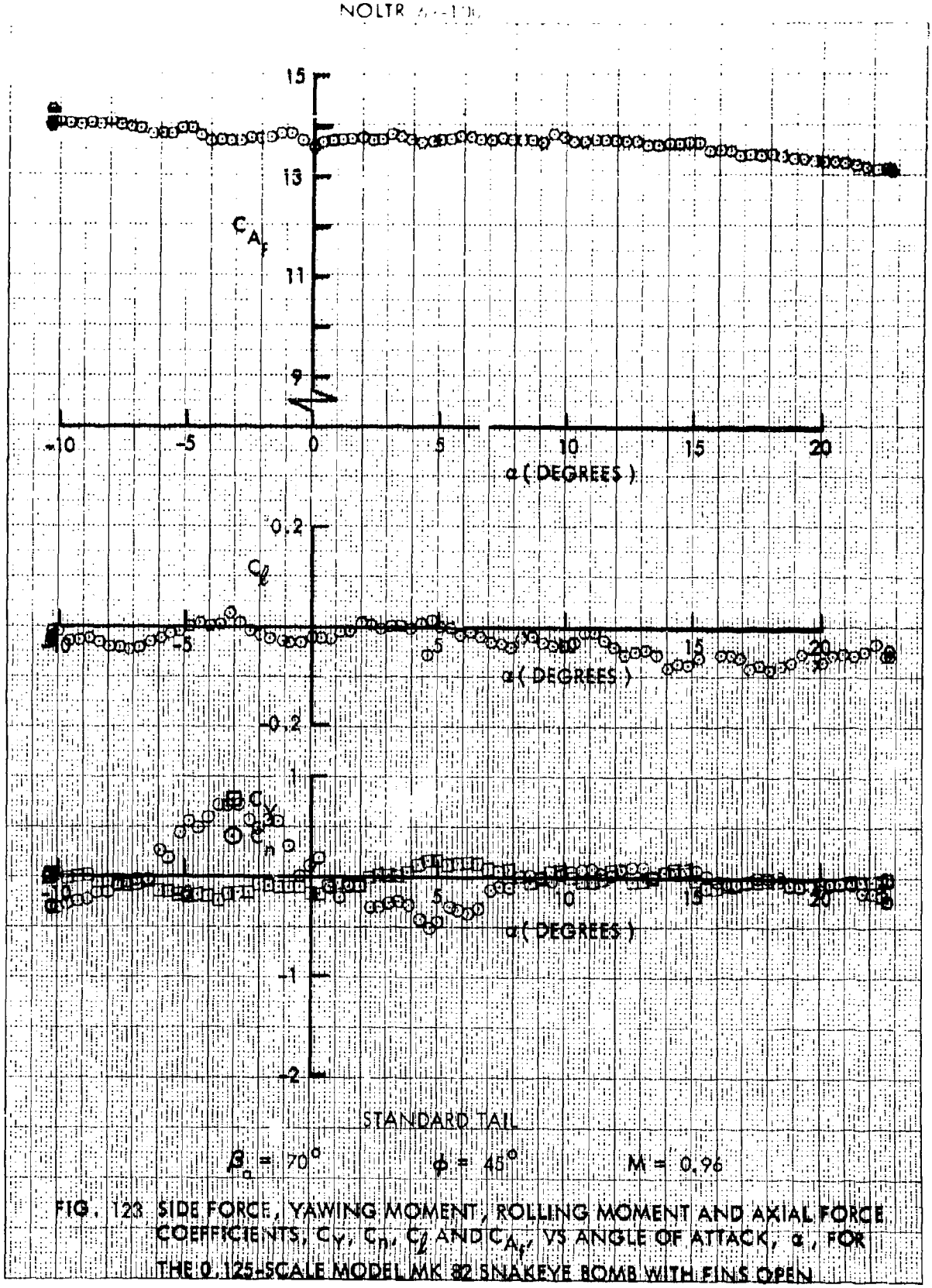


FIG. 123 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

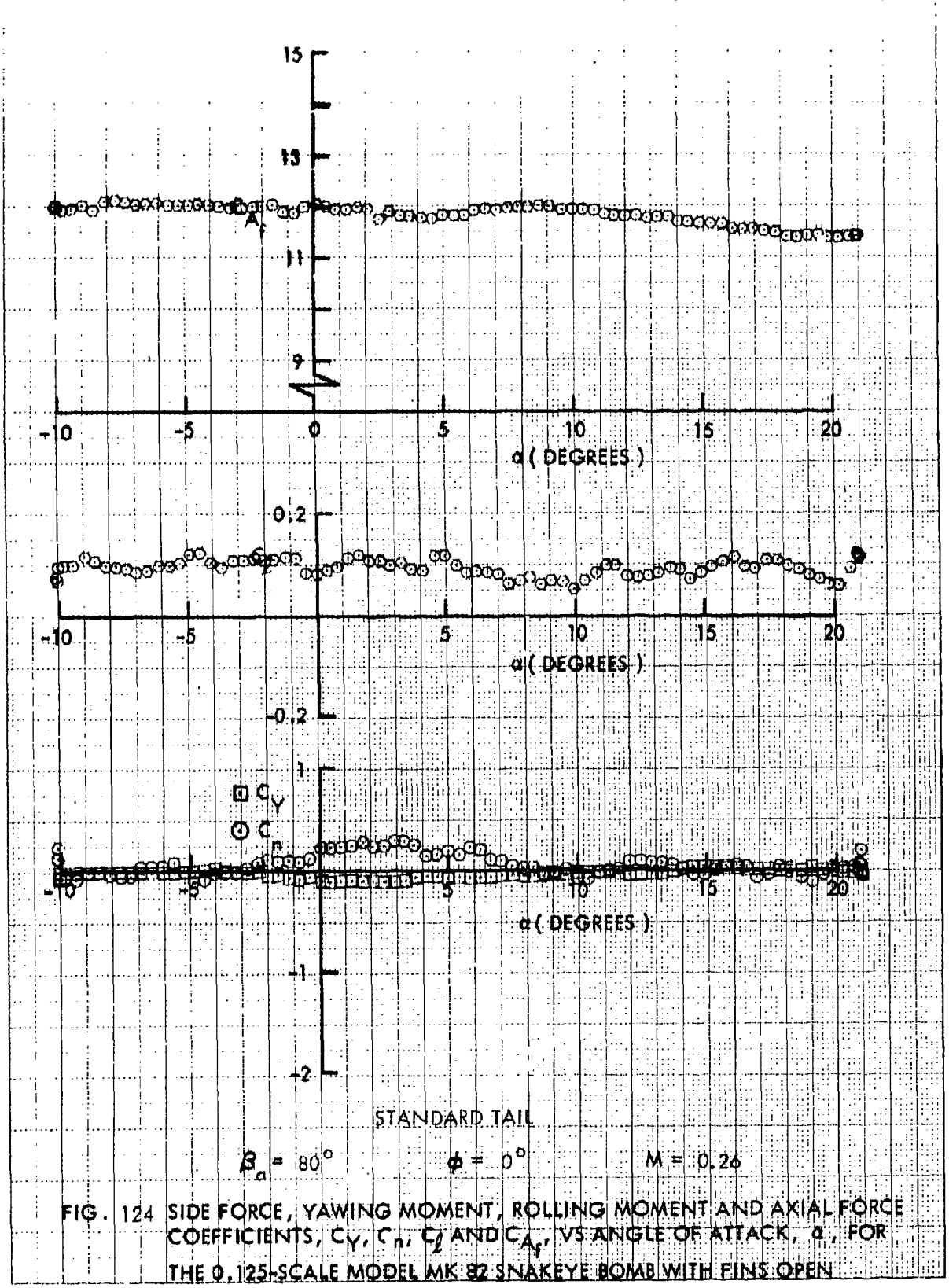


FIG. 124 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

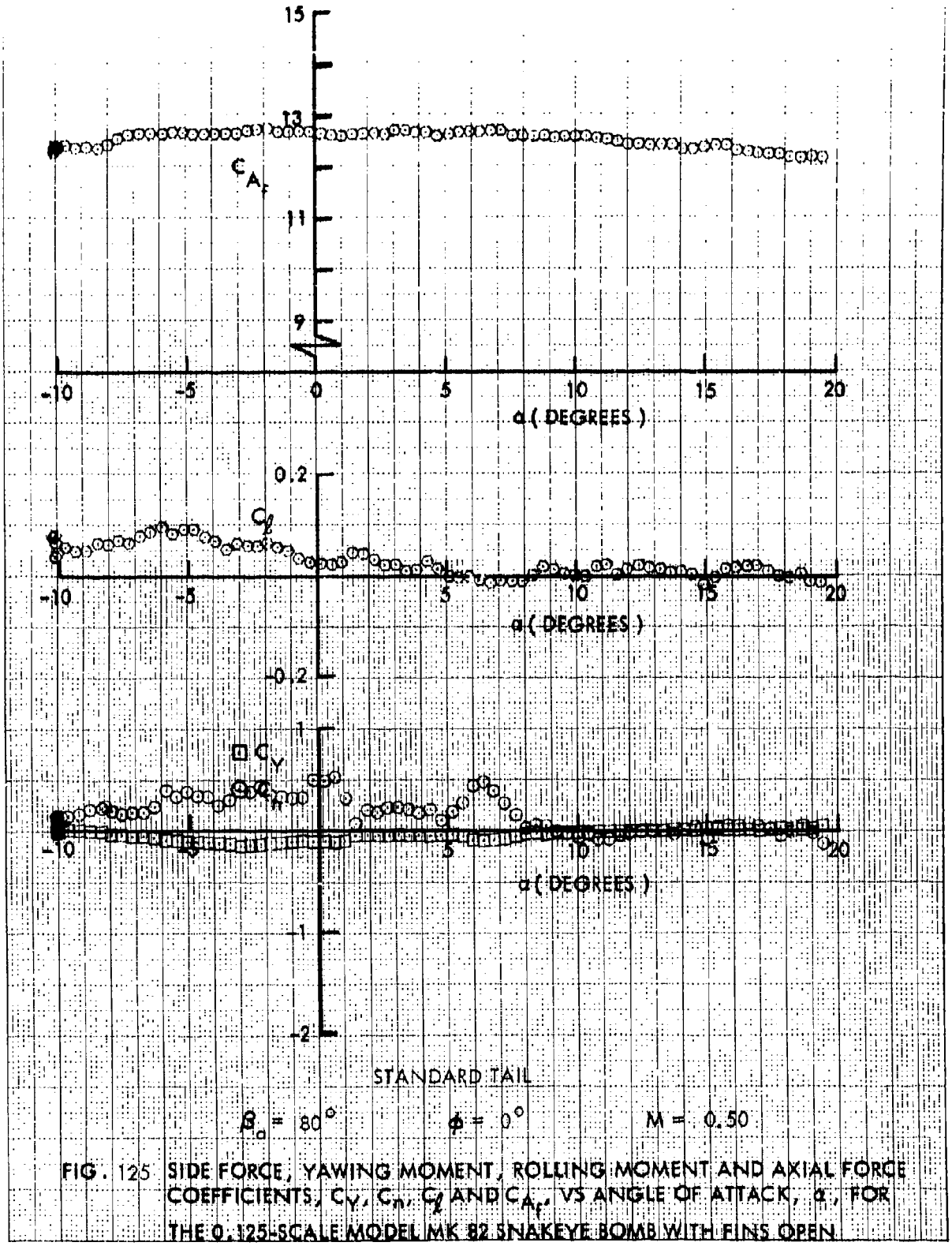


FIG. 125 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

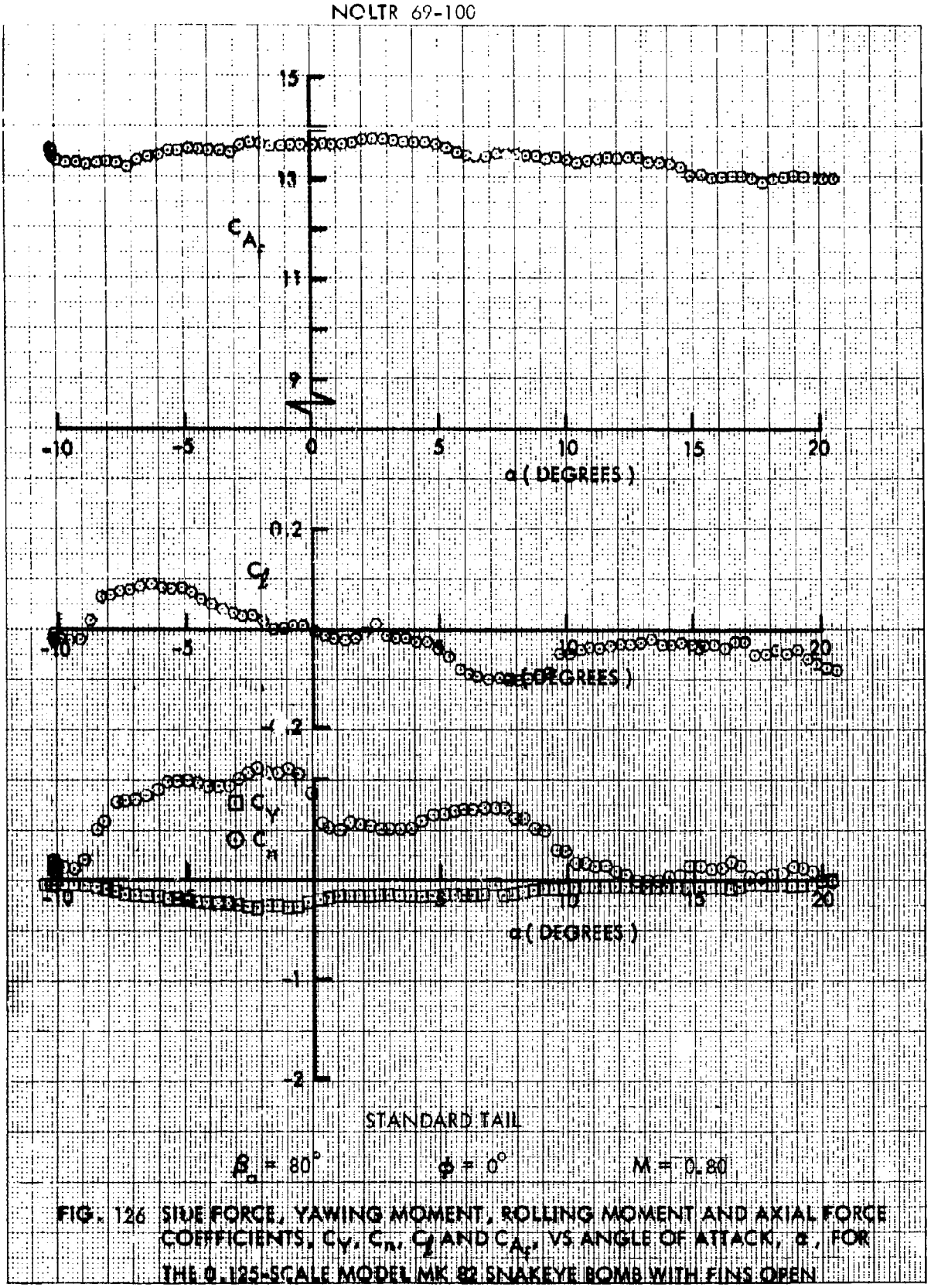


FIG. 126 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

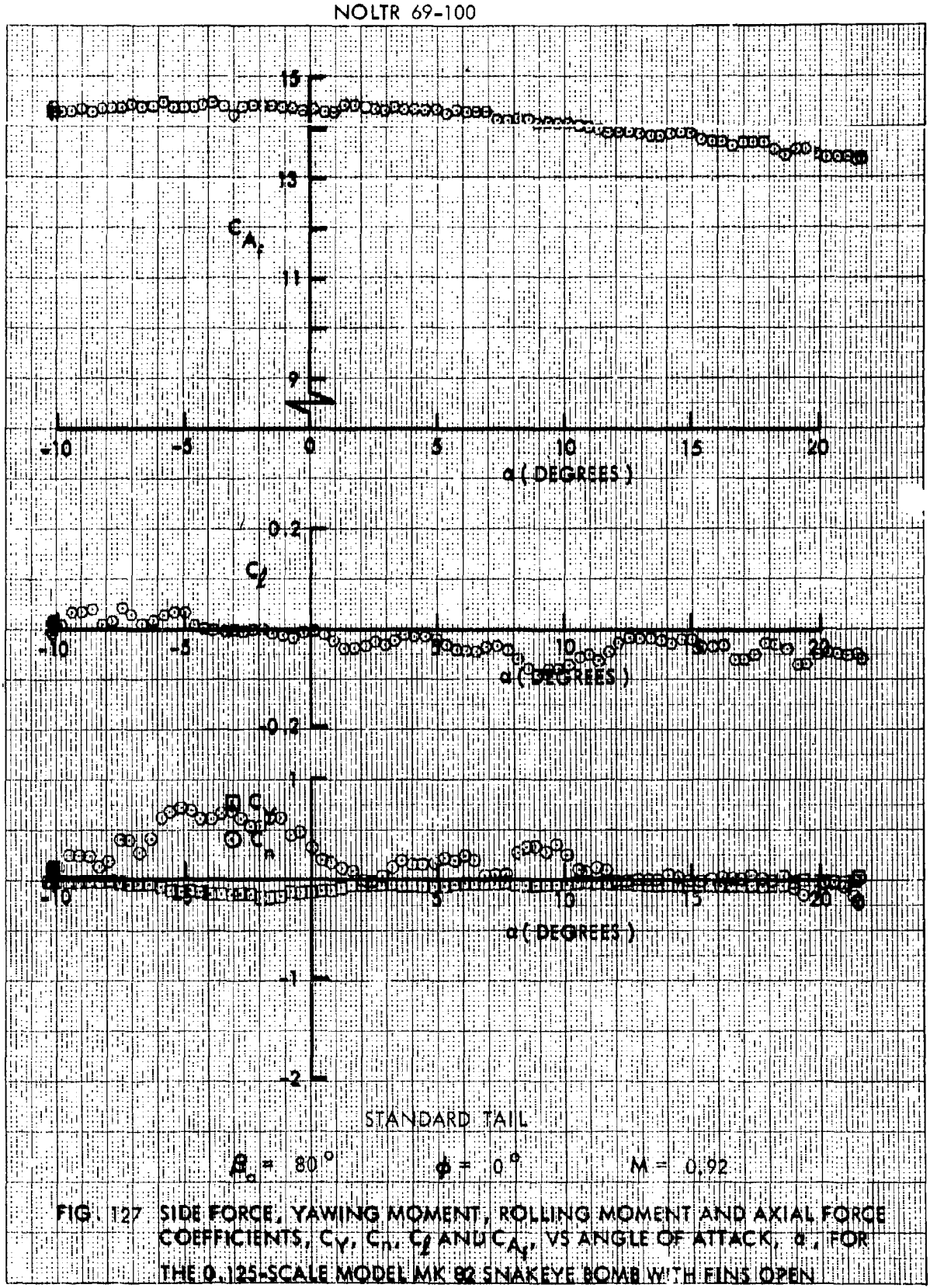


FIG. 127 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

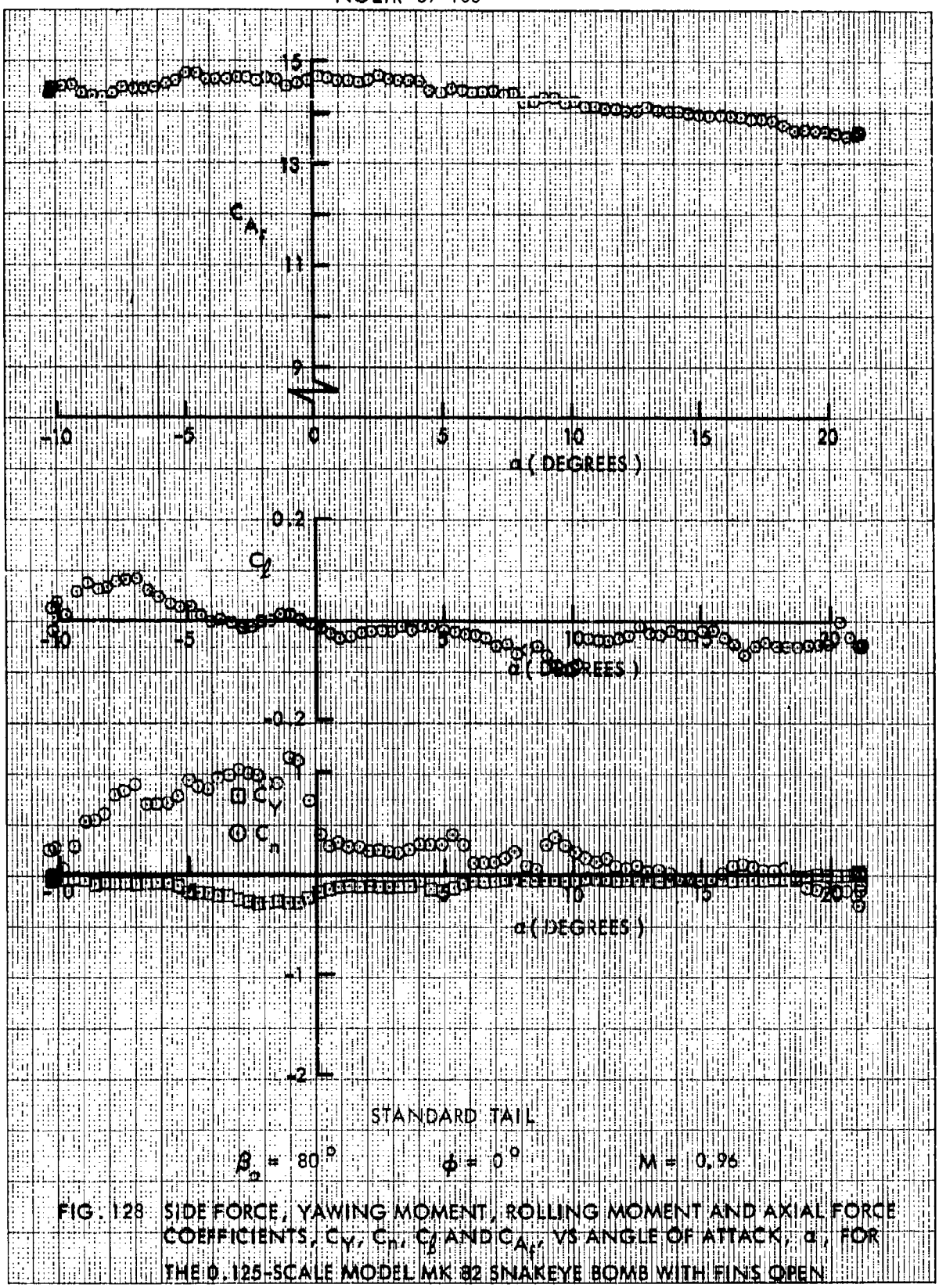


FIG. 128 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

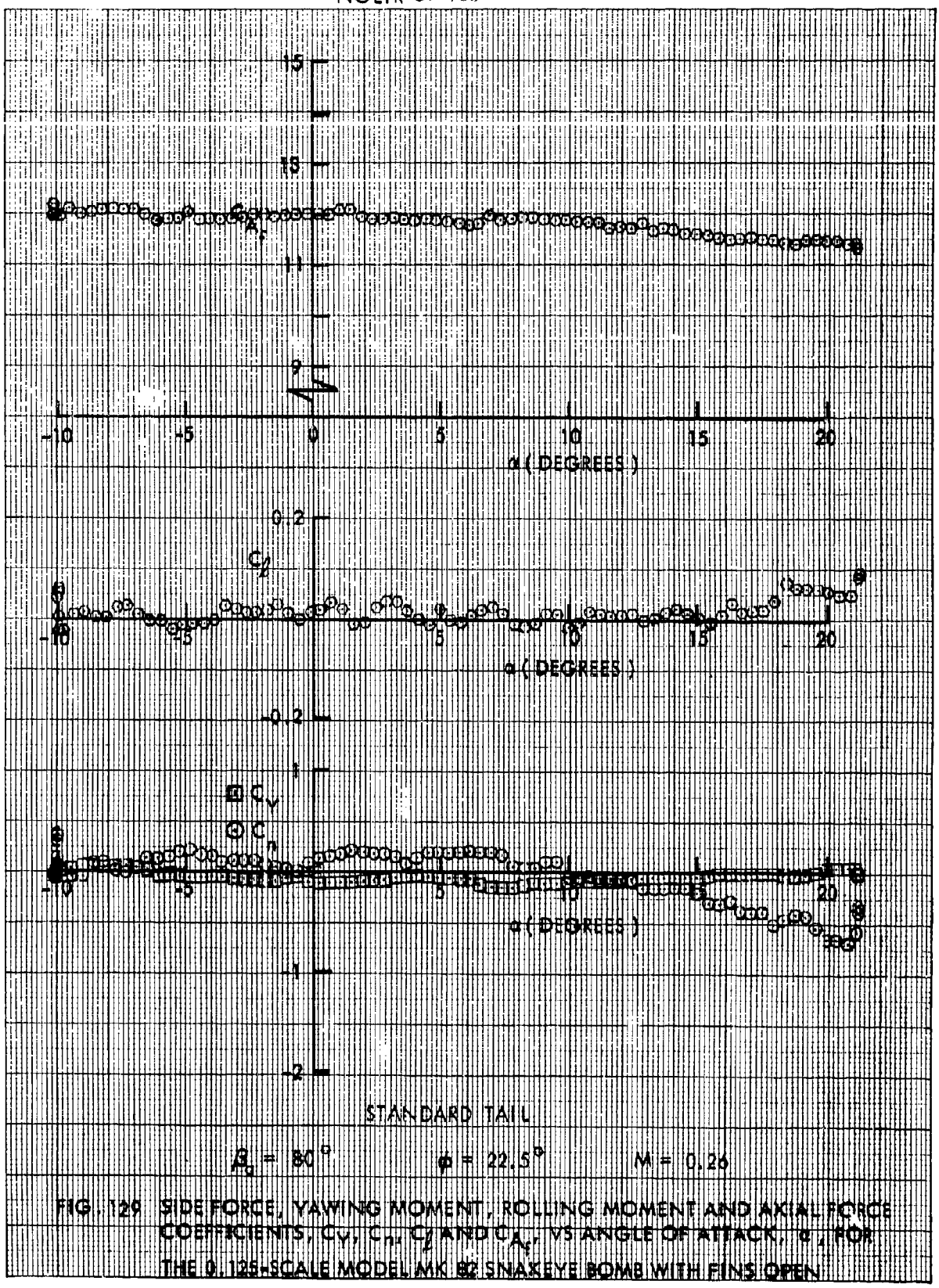


FIG. 129 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

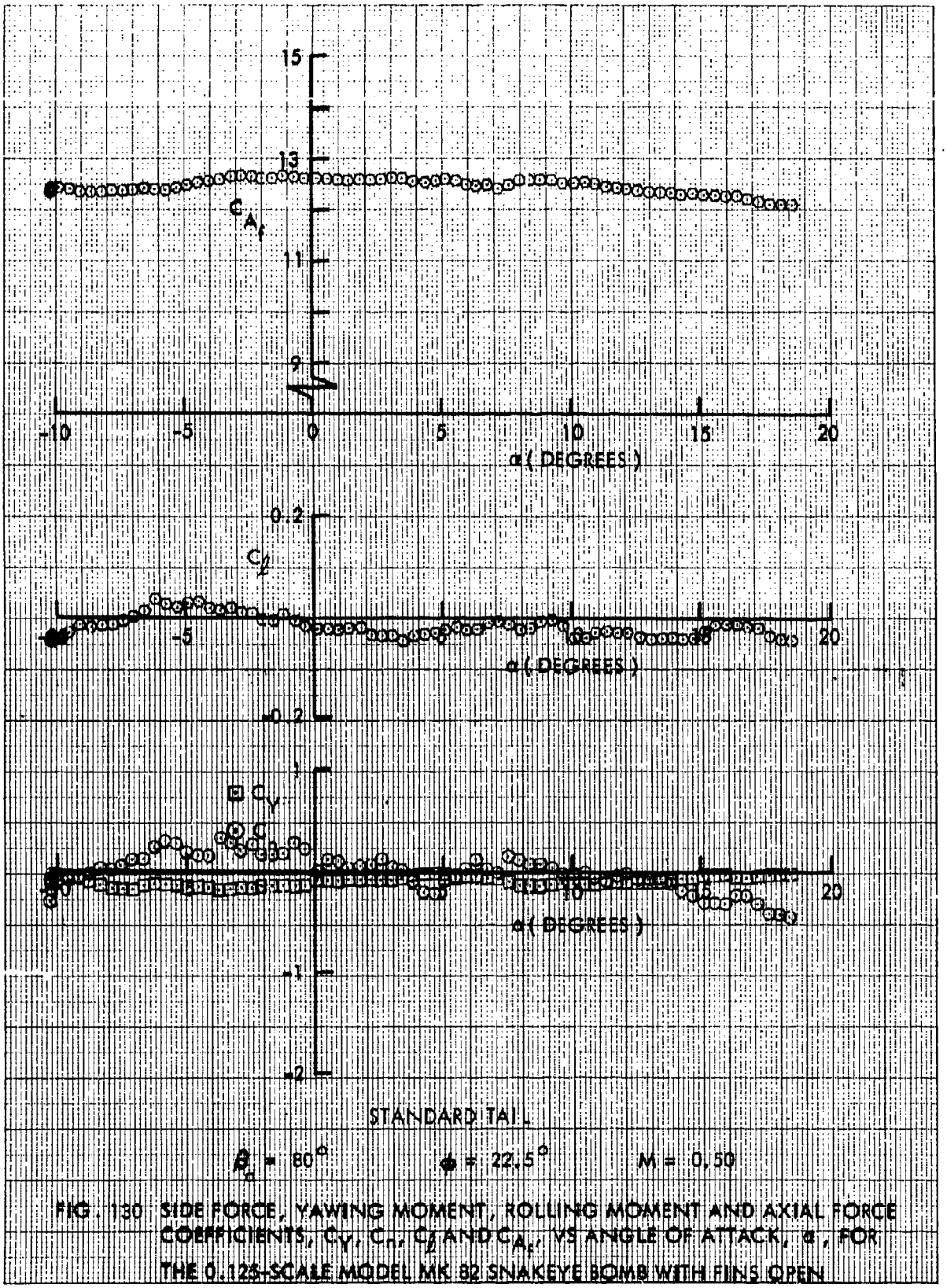


FIG. 130 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

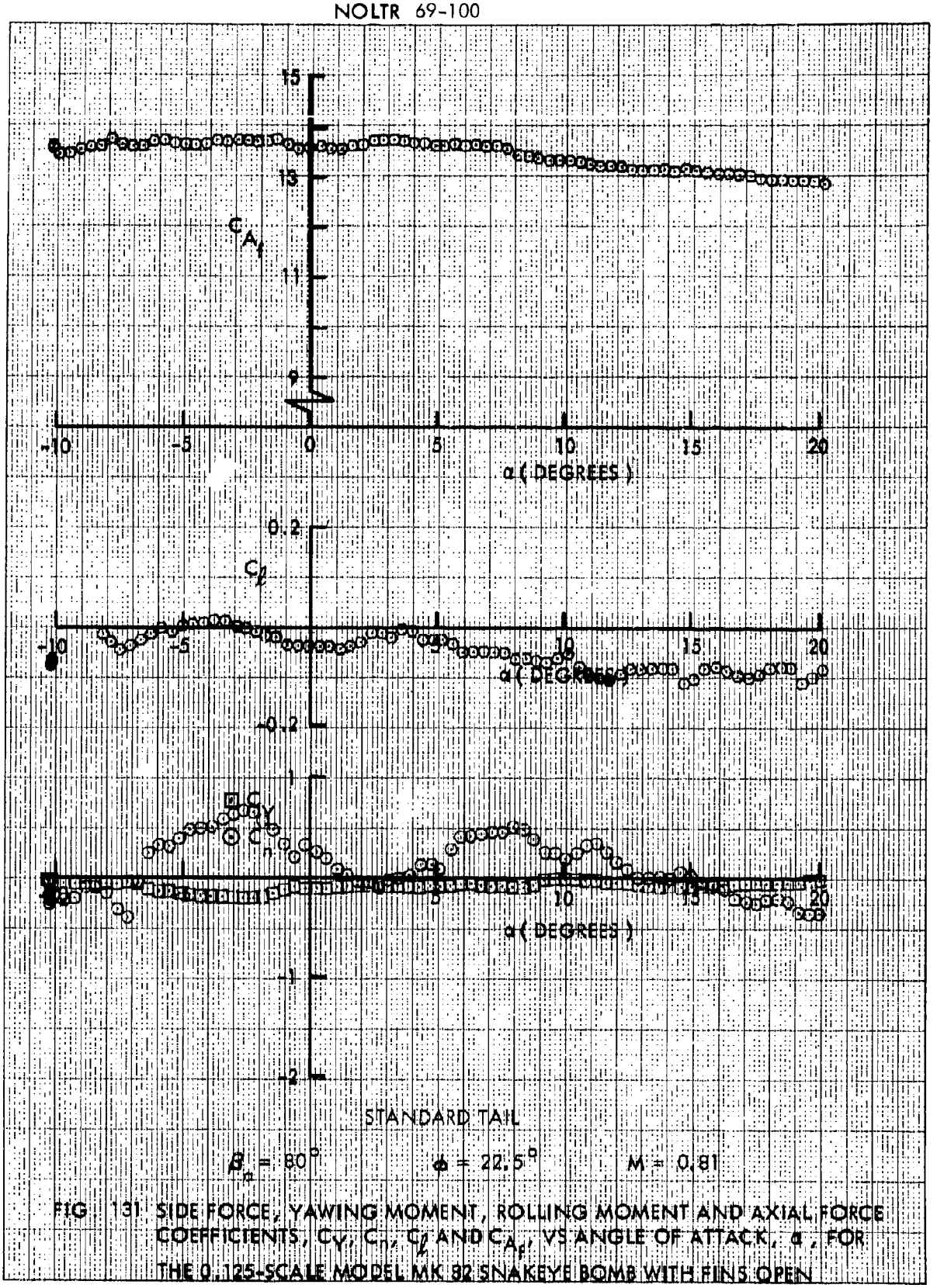


FIG 131 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

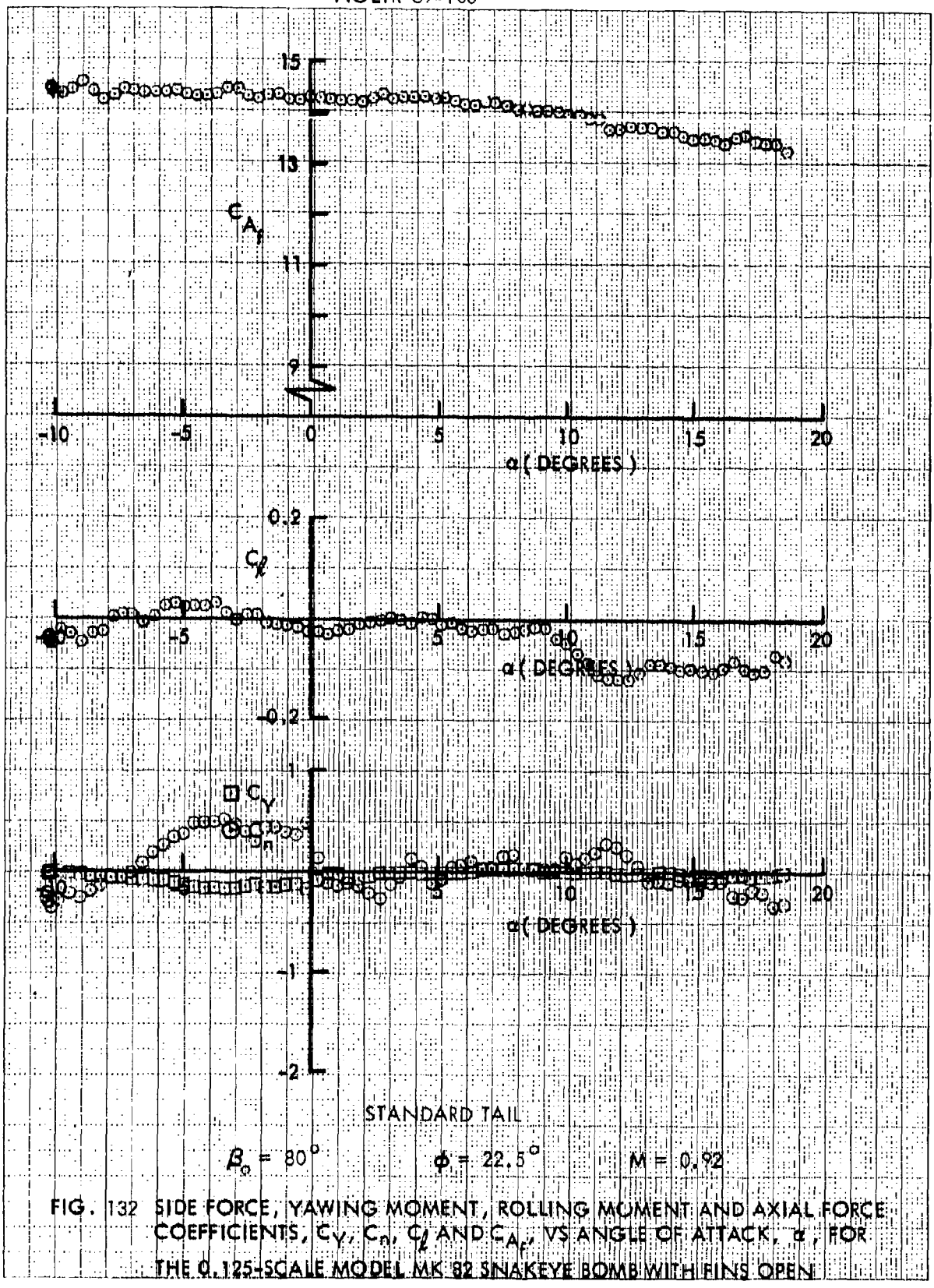


FIG. 132 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

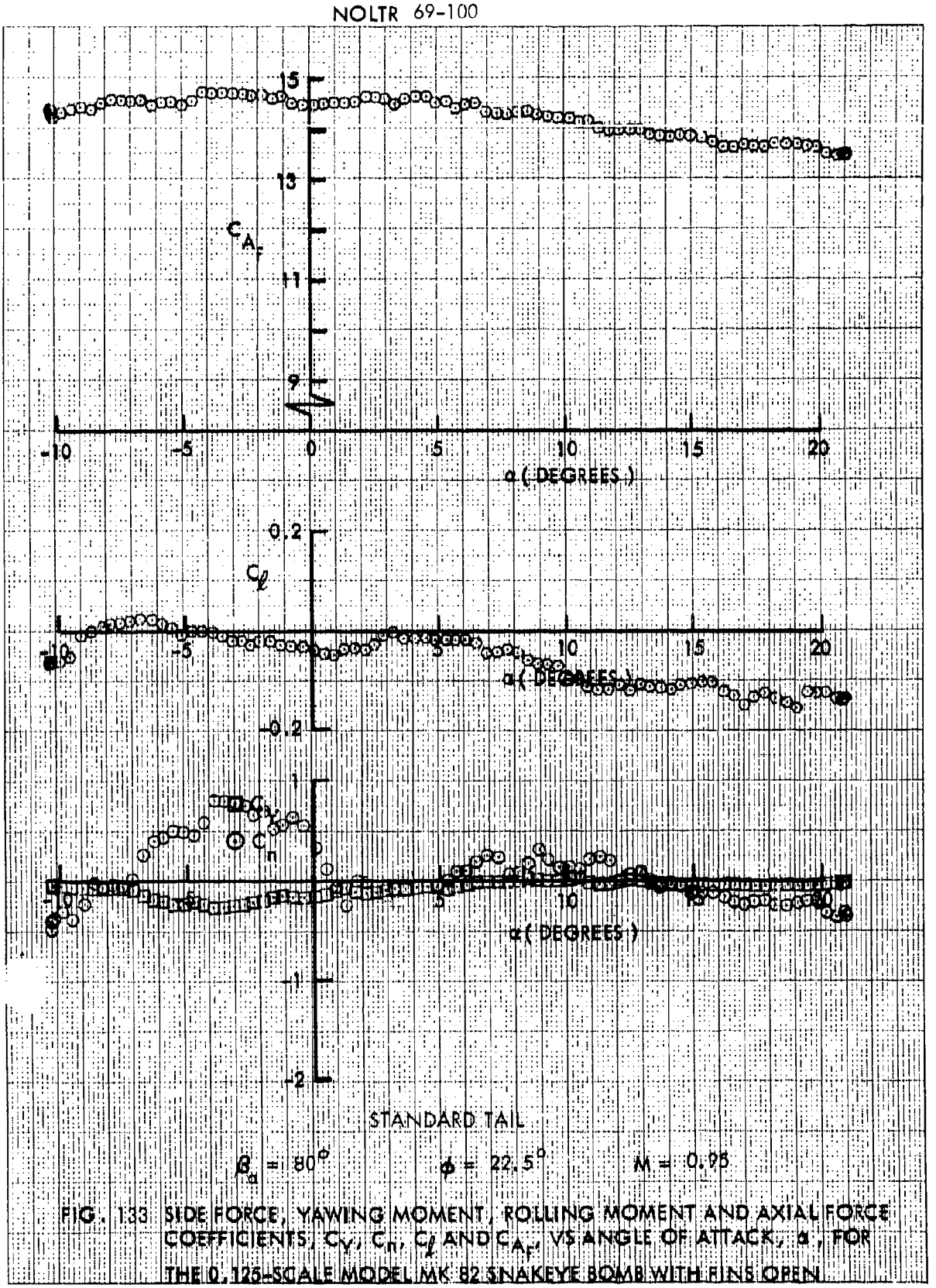


FIG. 133 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_F}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

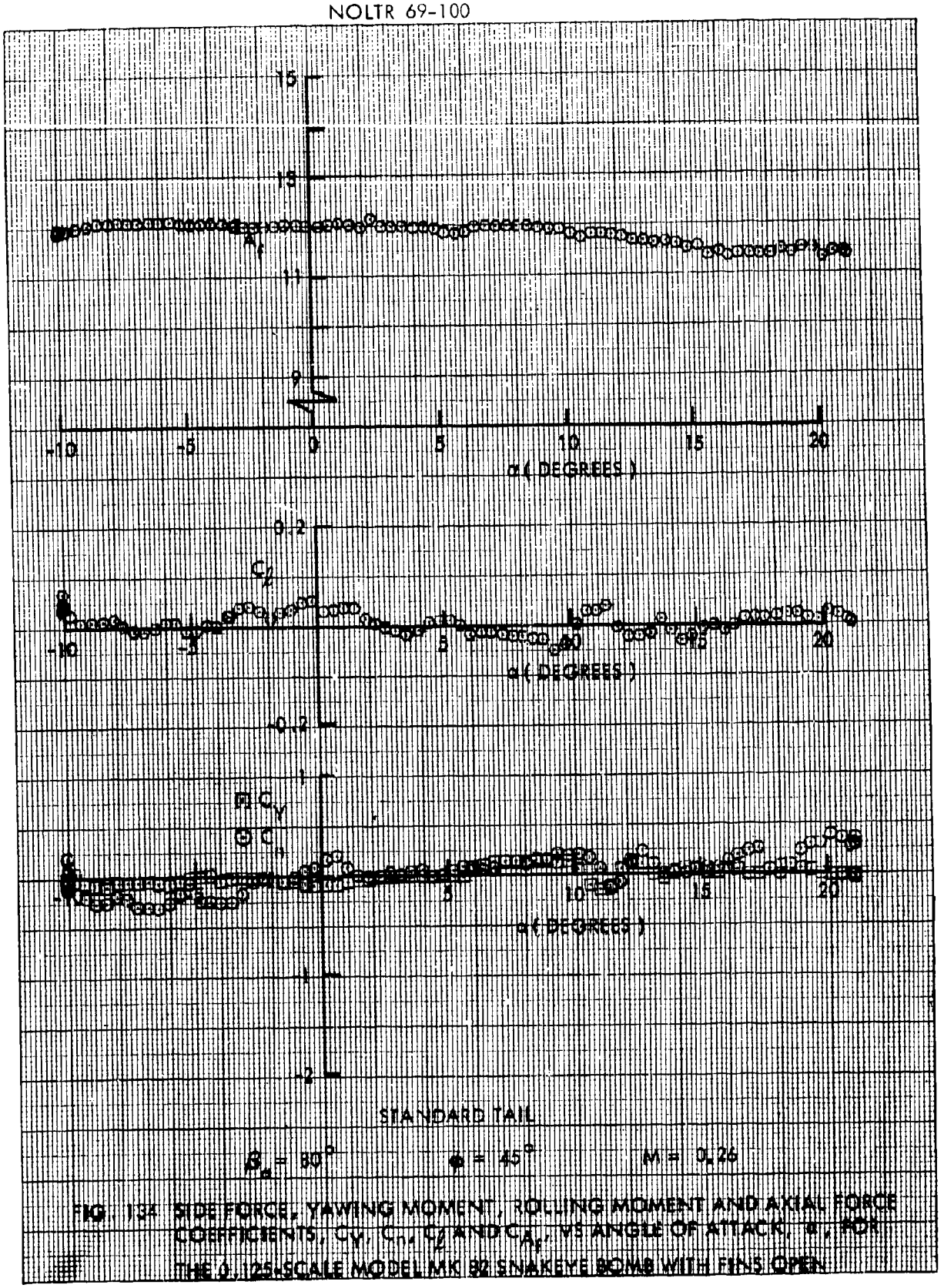


FIG. 134 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

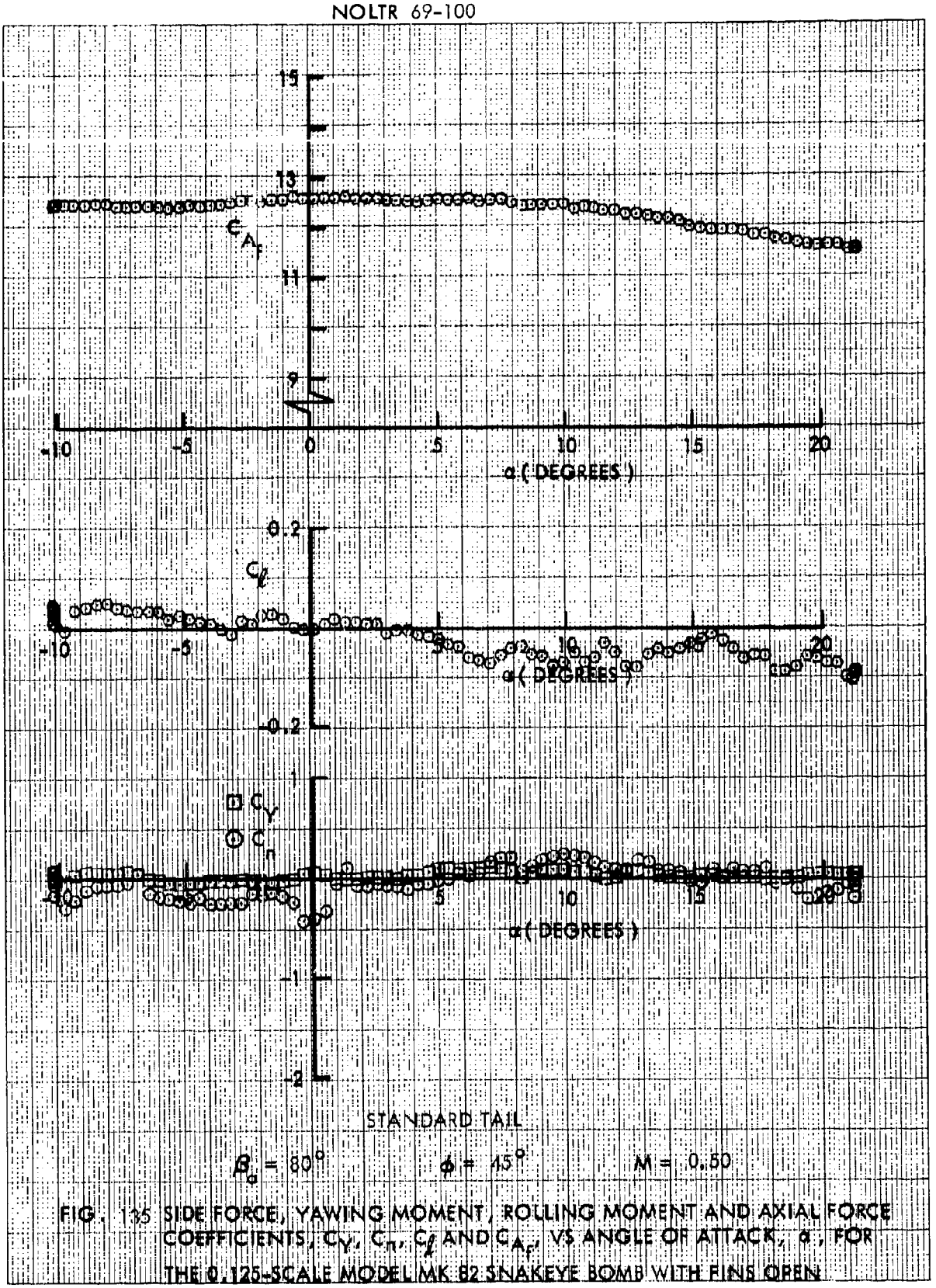


FIG. 135 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_F}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

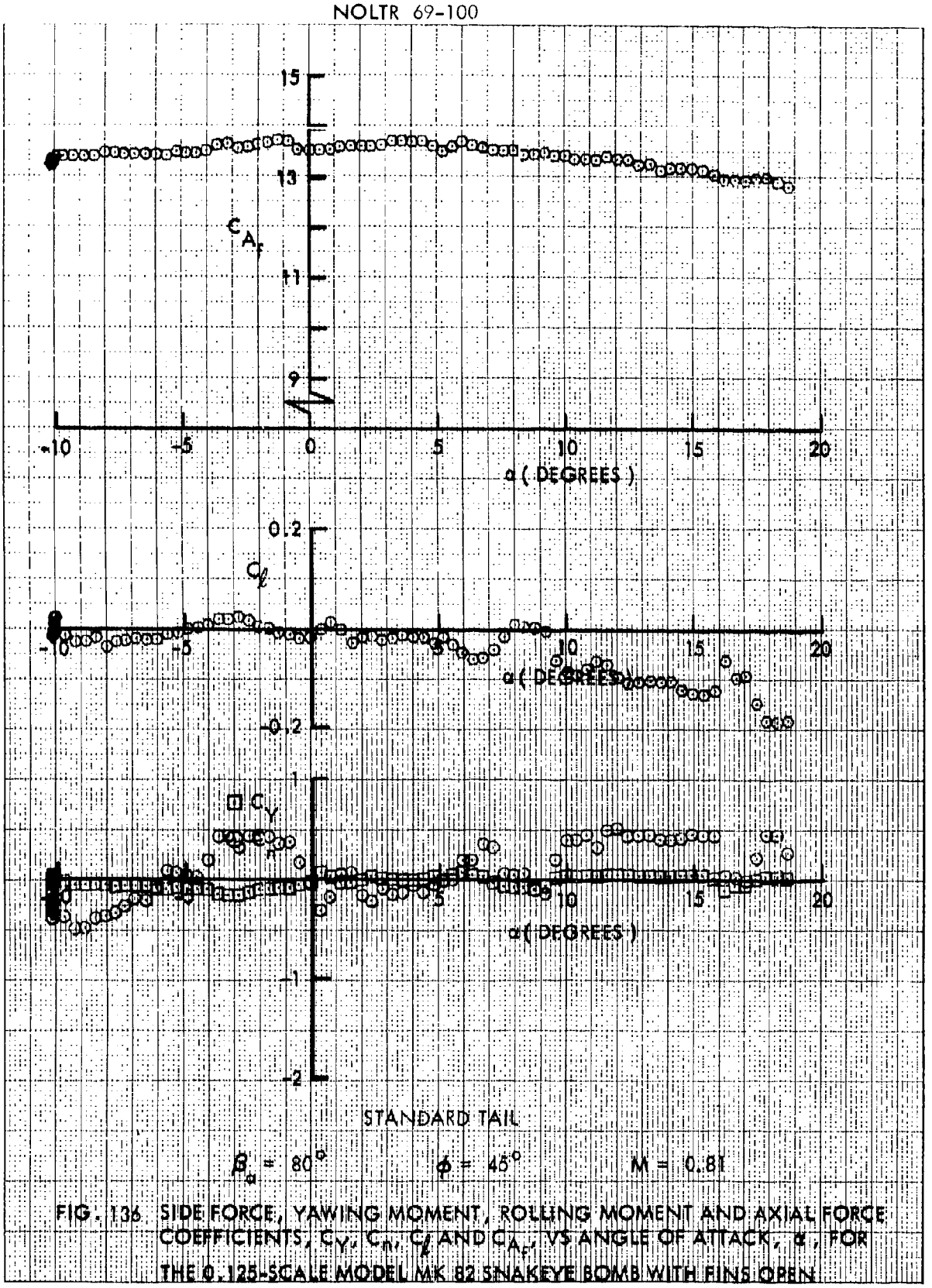


FIG. 136 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

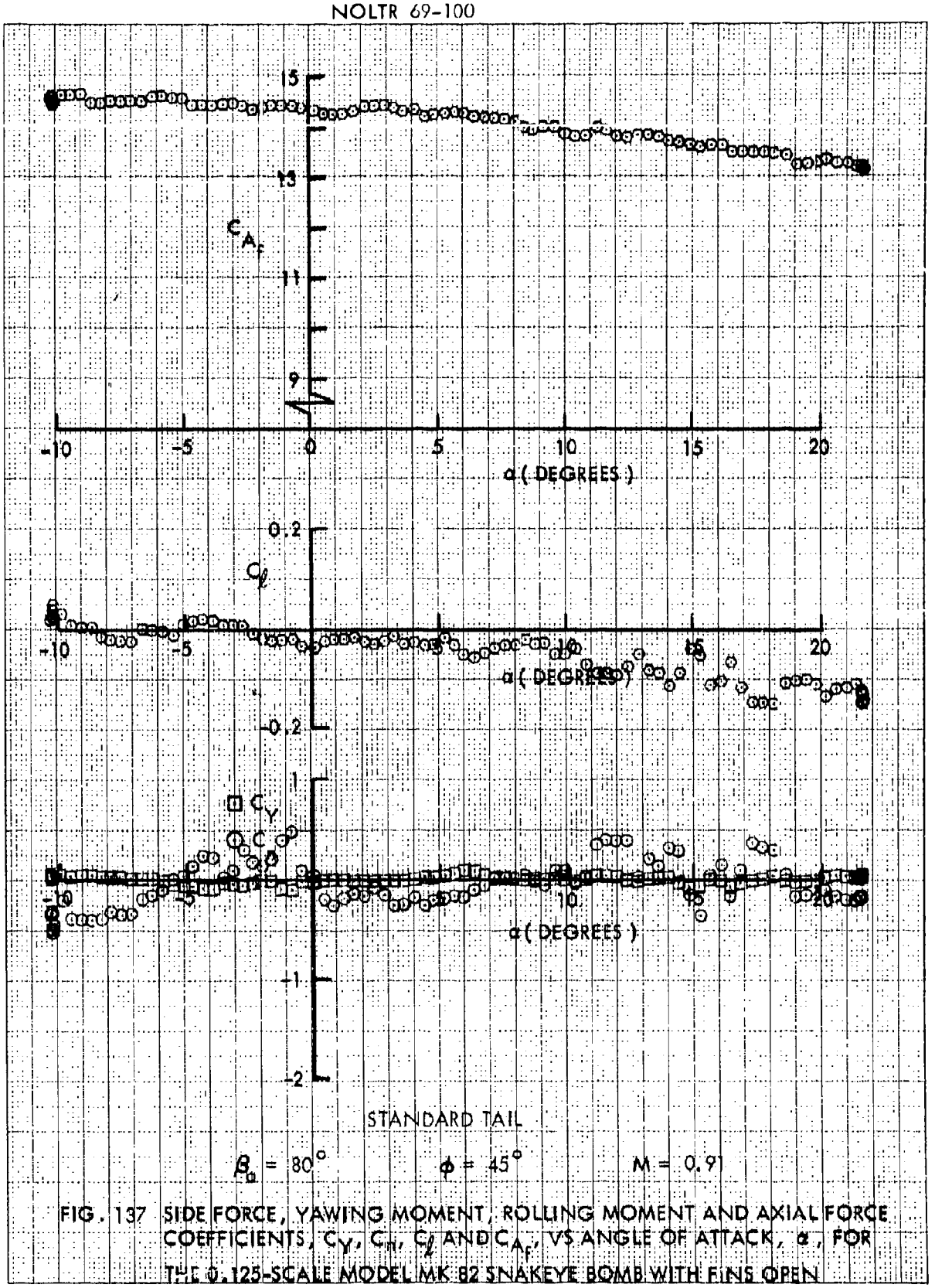


FIG. 137 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

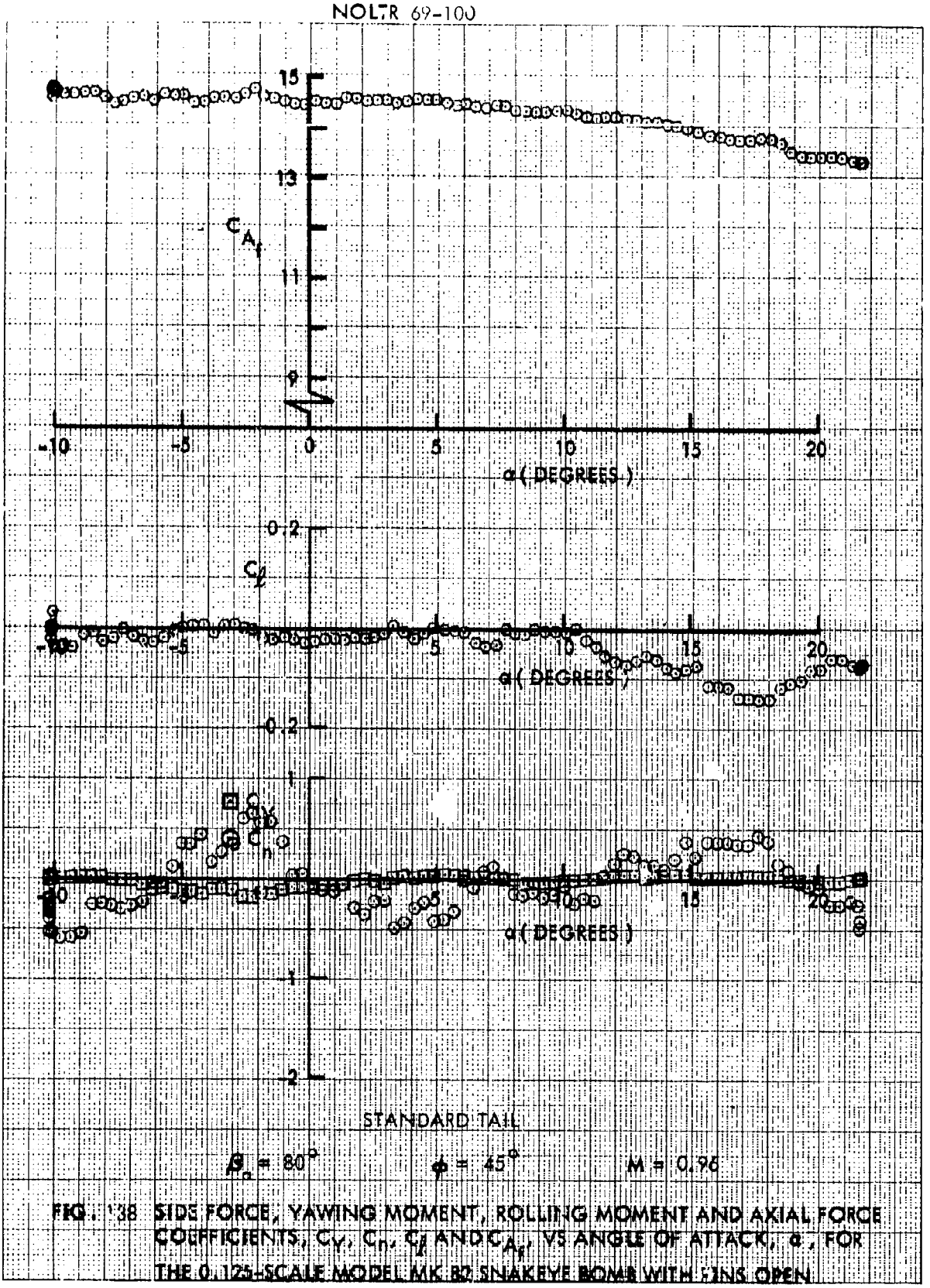
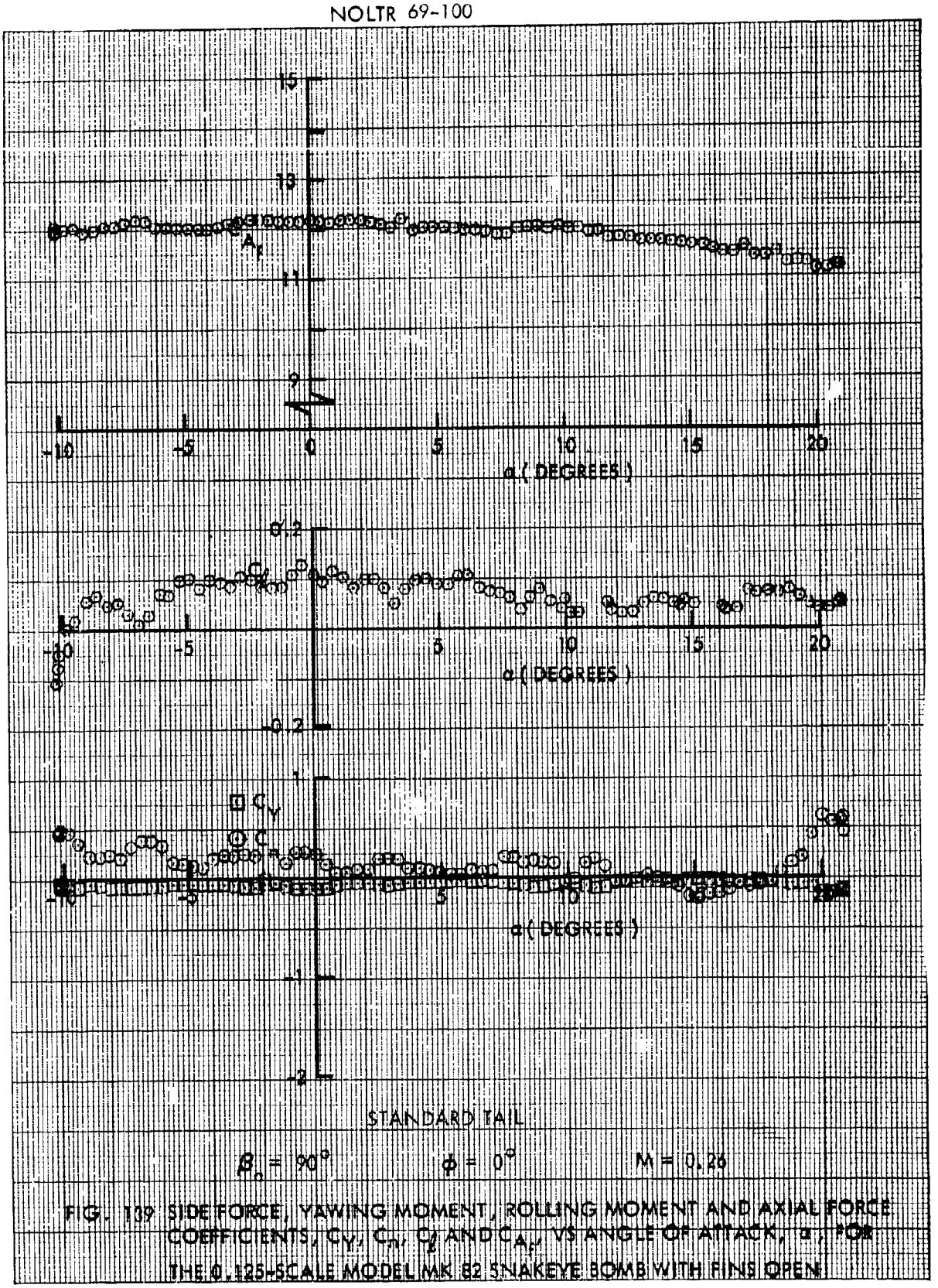


FIG. 38 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 80 SNAKEYE BOMB WITH FINS OPEN



STANDARD TAIL

$\beta_o = 90^\circ$ $\phi = 0^\circ$ M = 0.26

FIG. 139 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

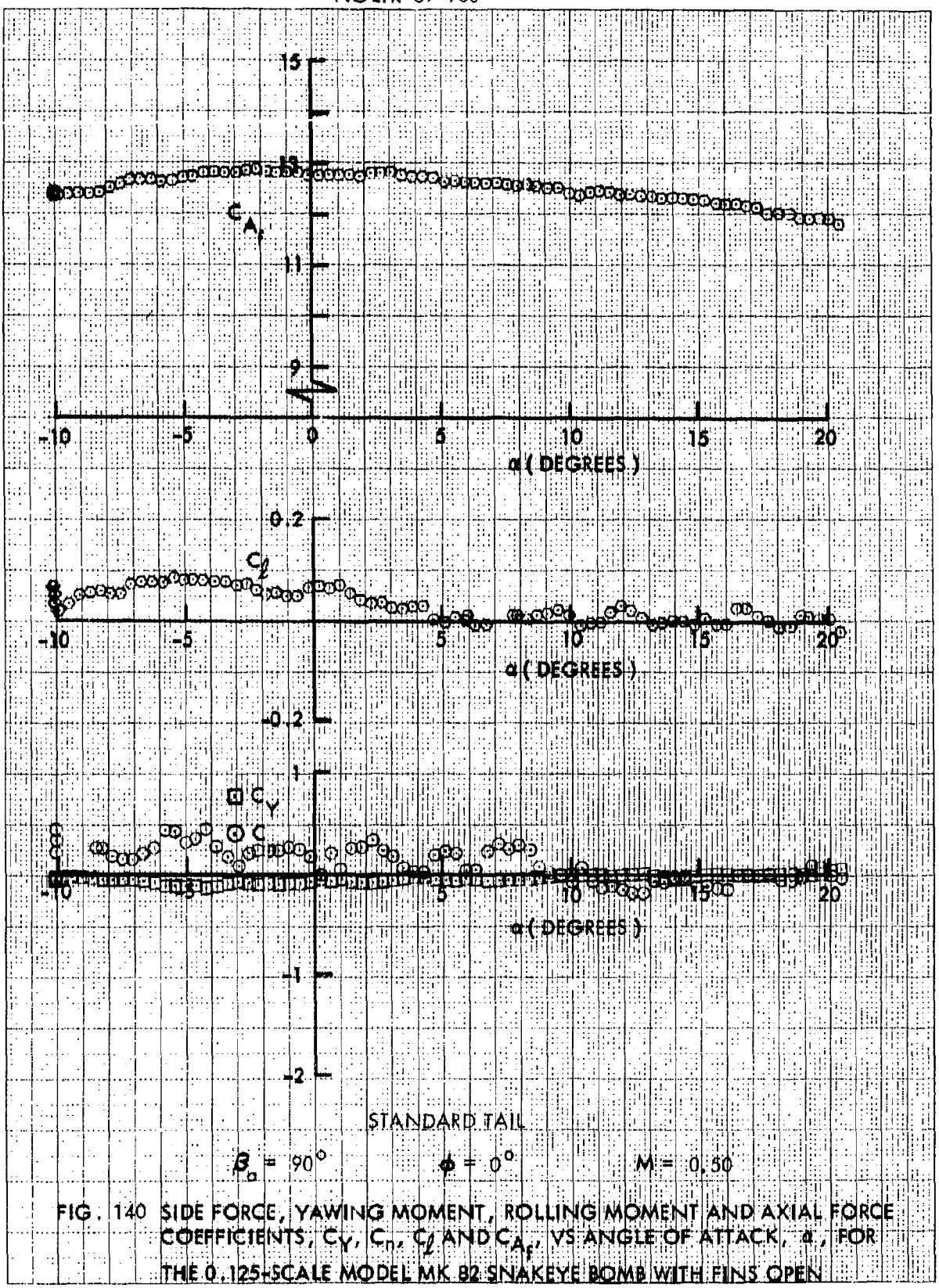


FIG. 140 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

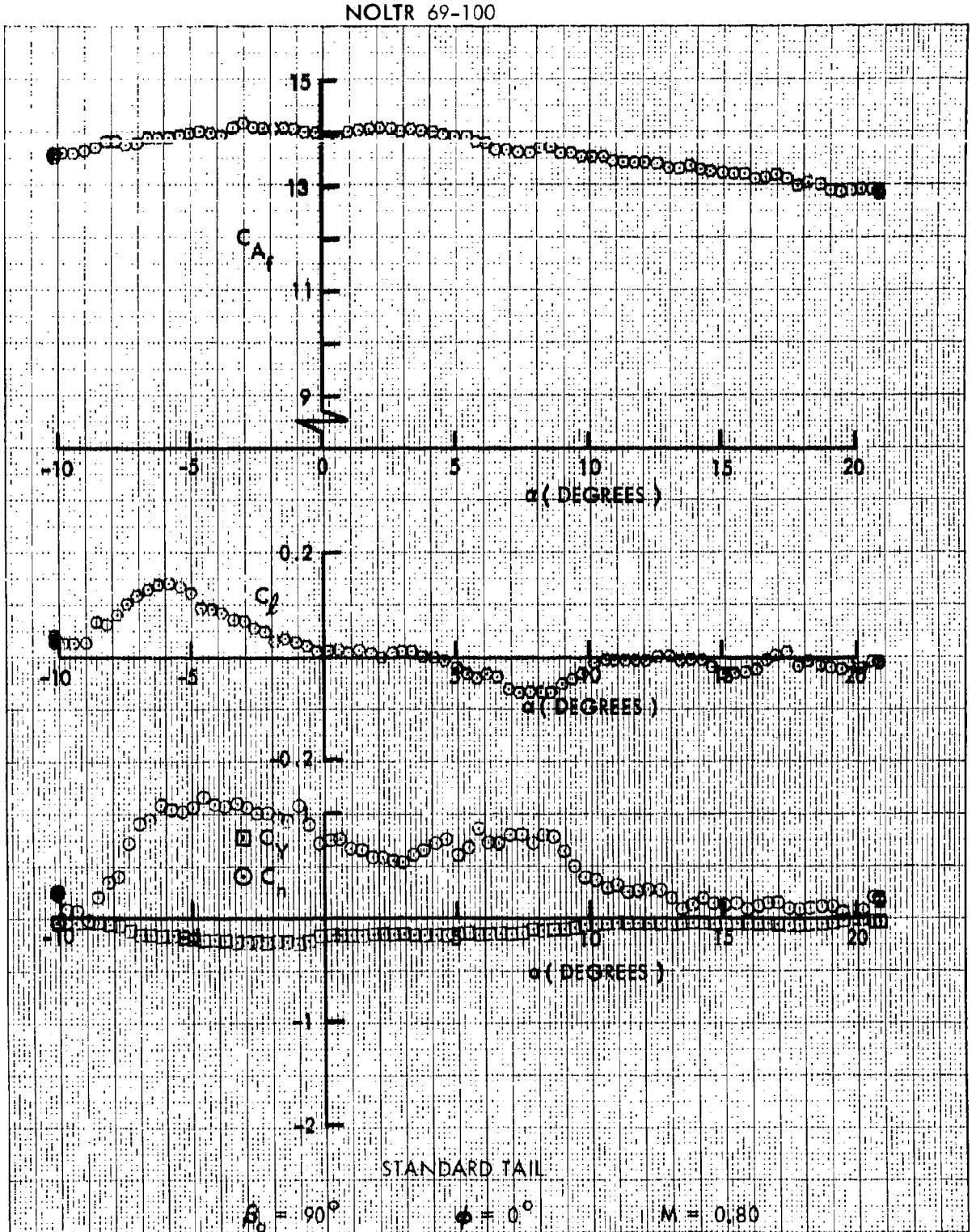


FIG. 141 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

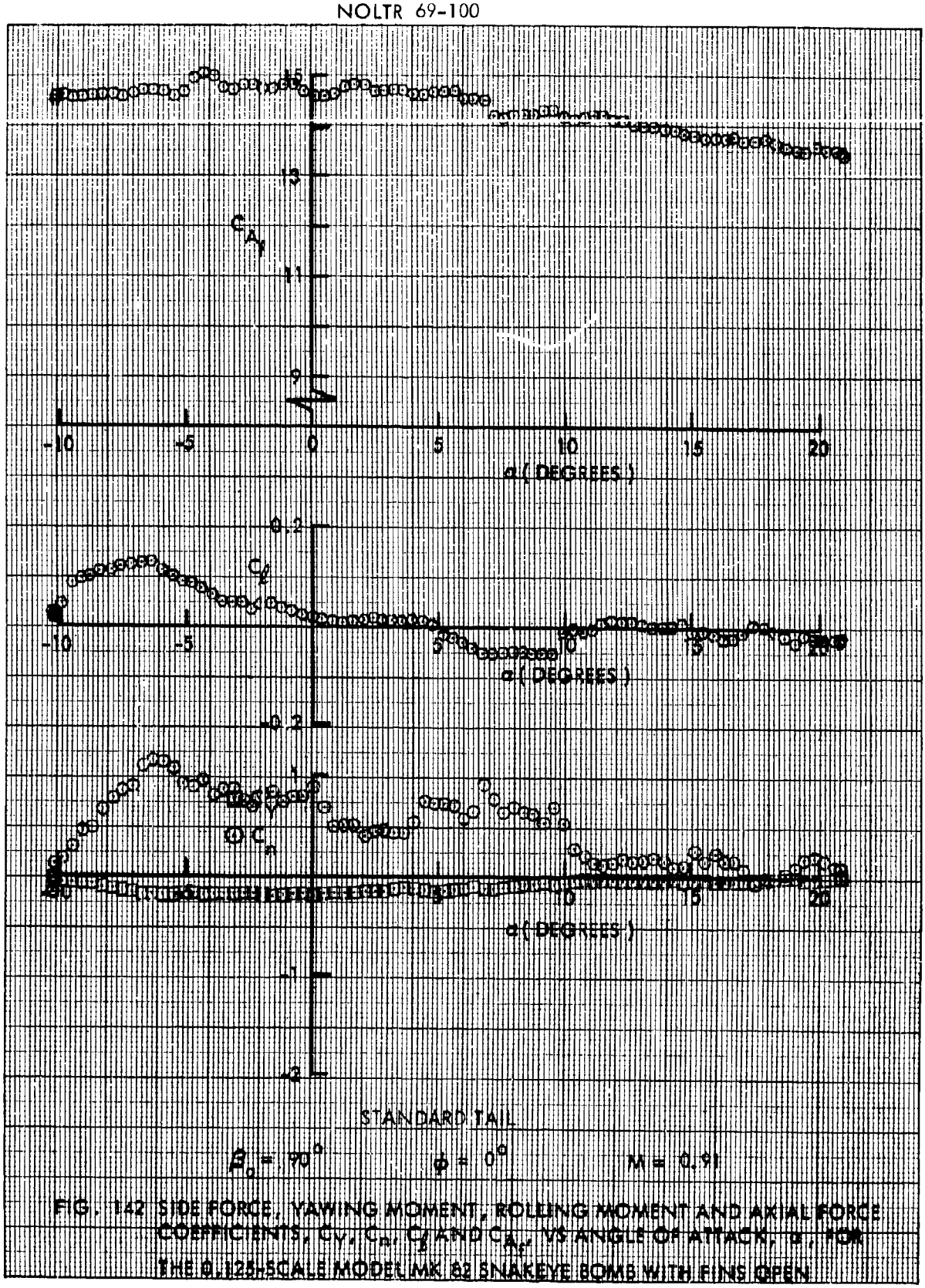


FIG. 142 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

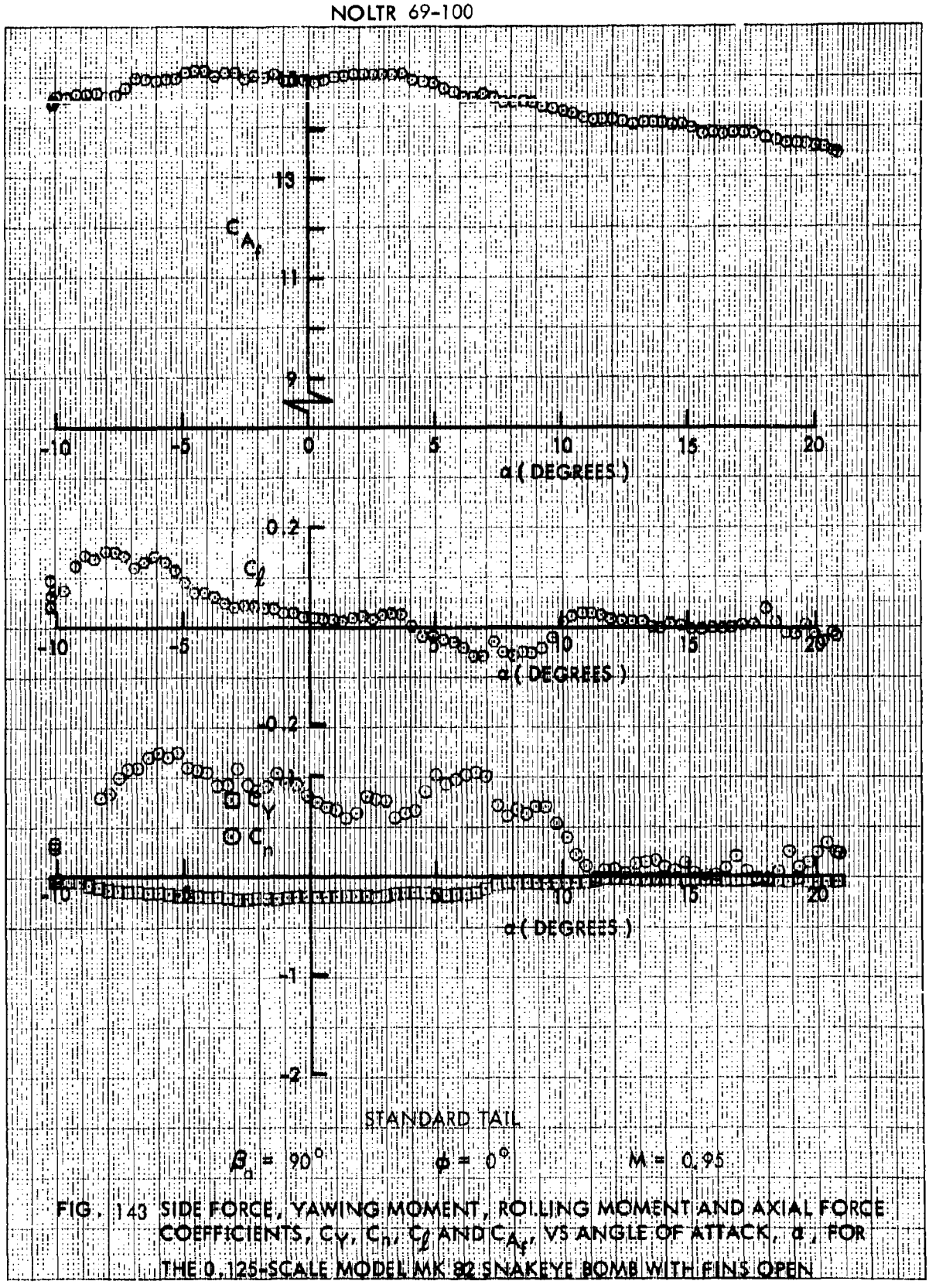


FIG. 143 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

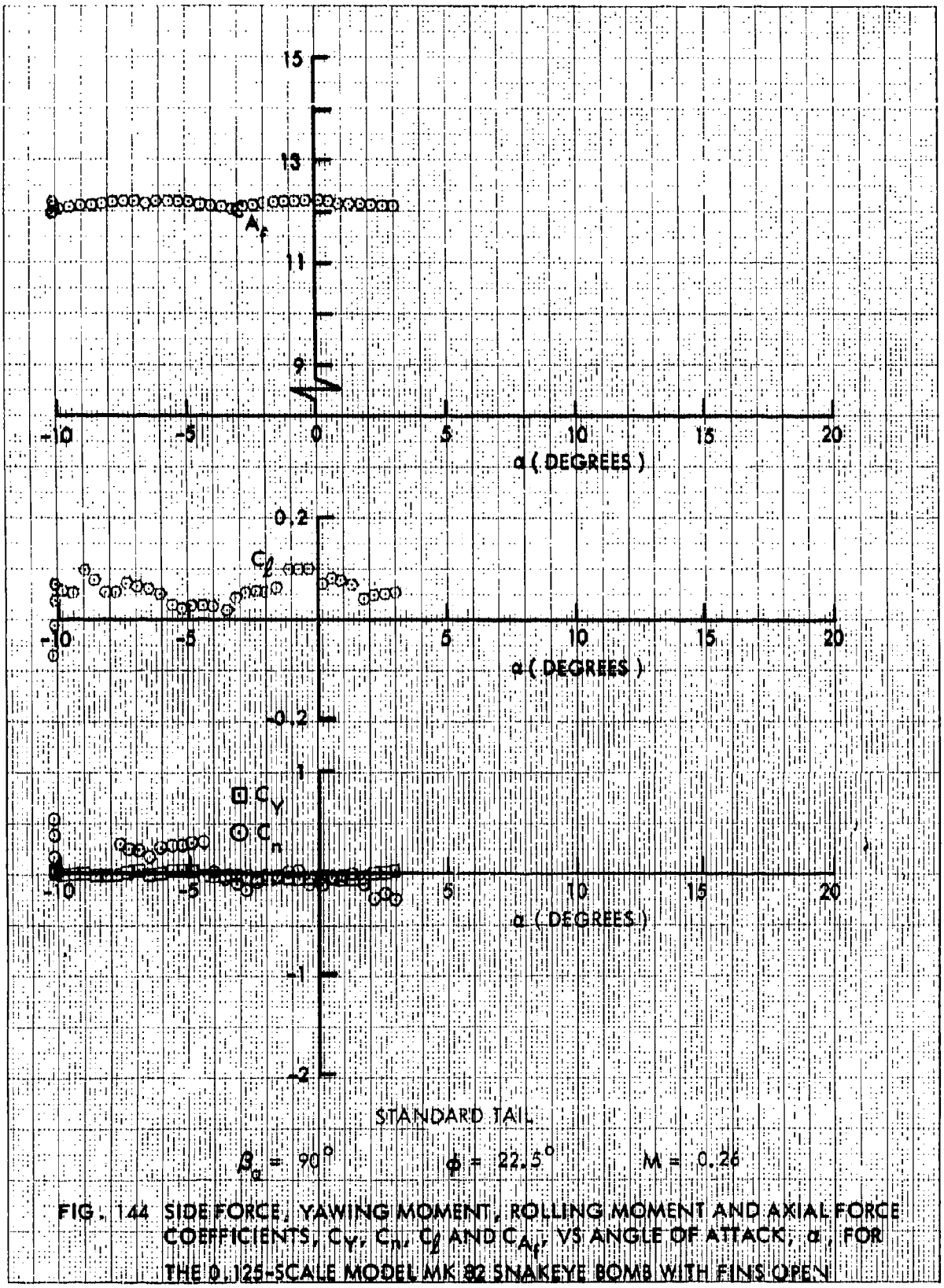


FIG. 144 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

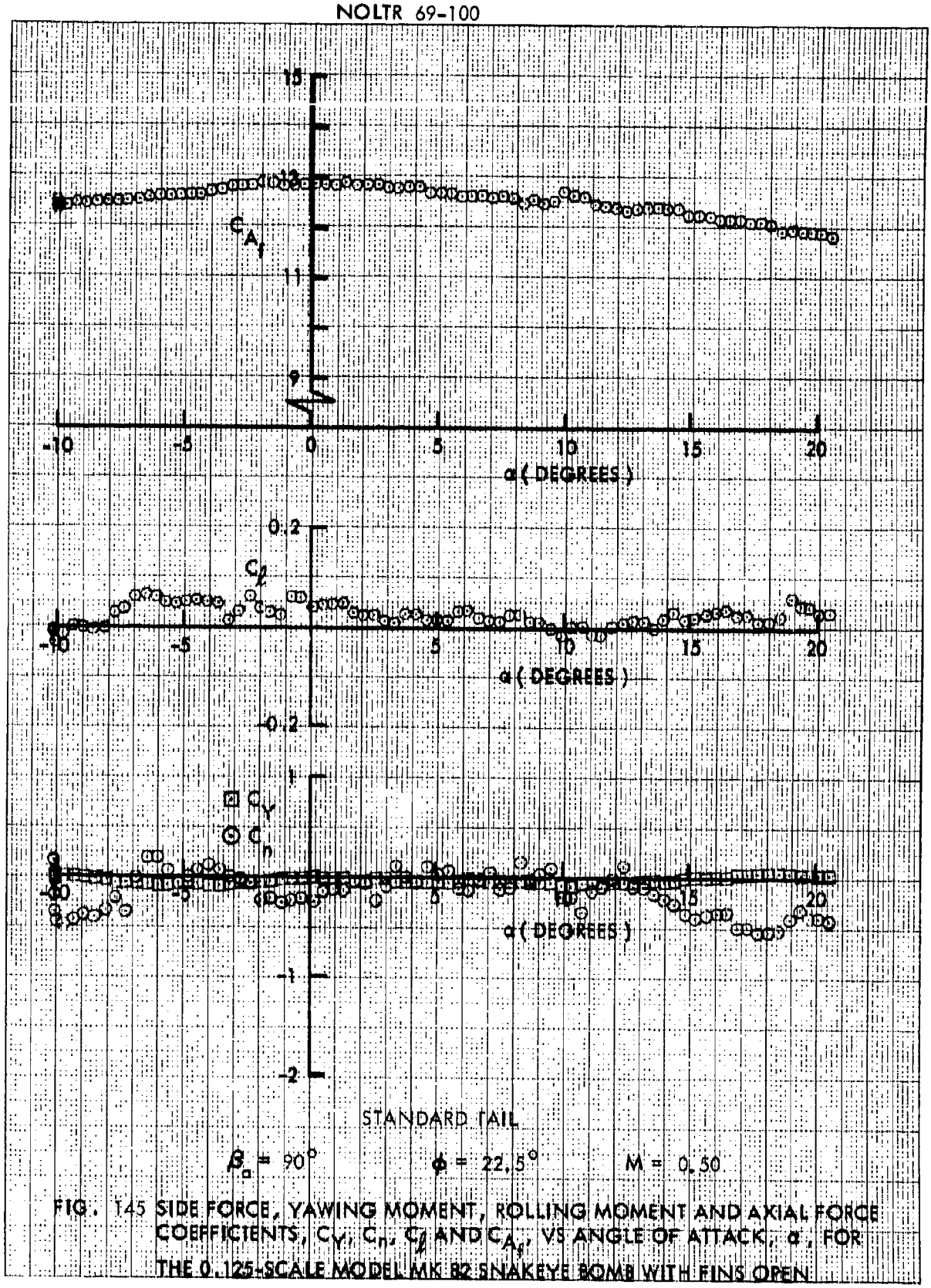


FIG. 145 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

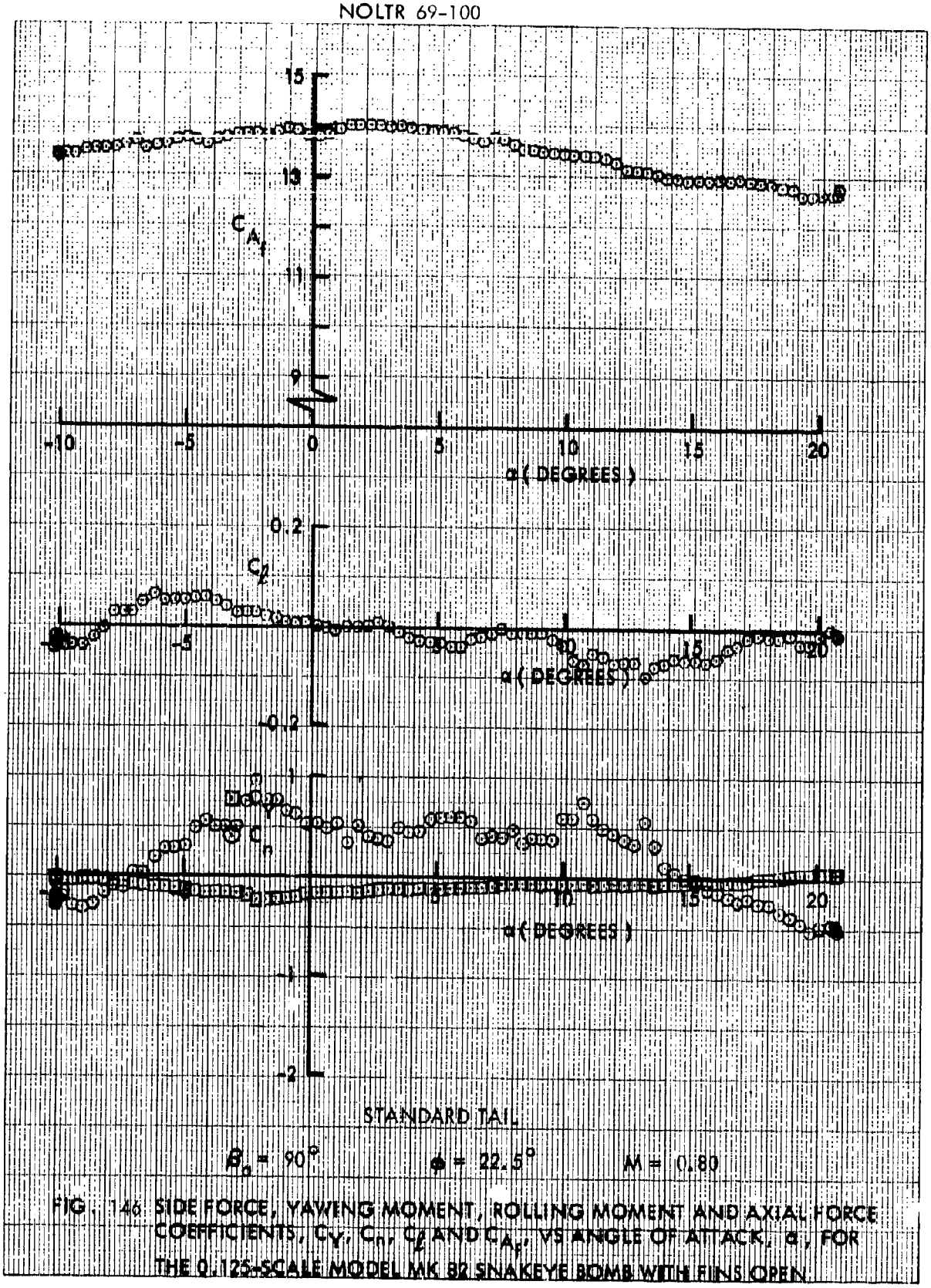


FIG. 146 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

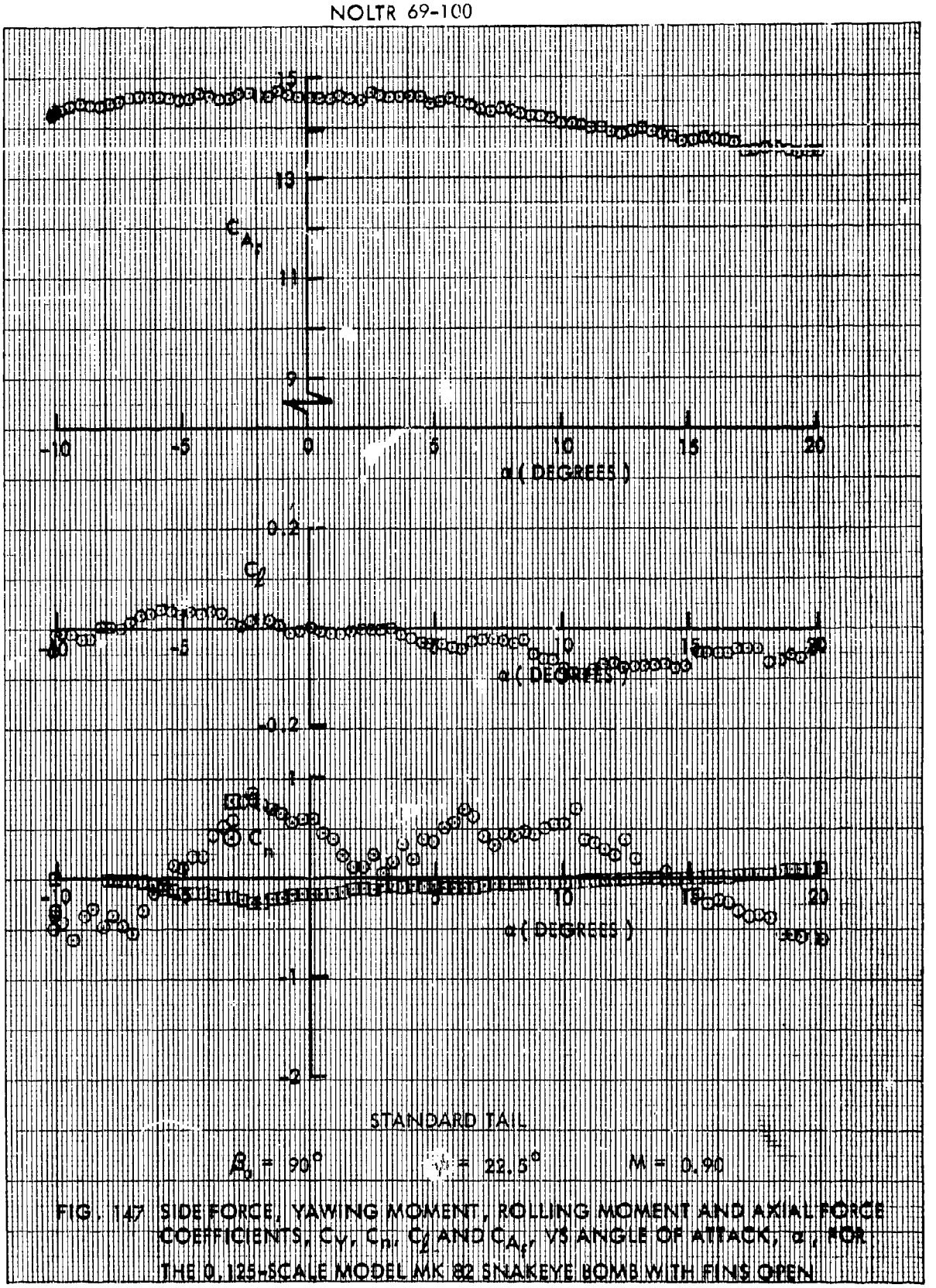


FIG. 147 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

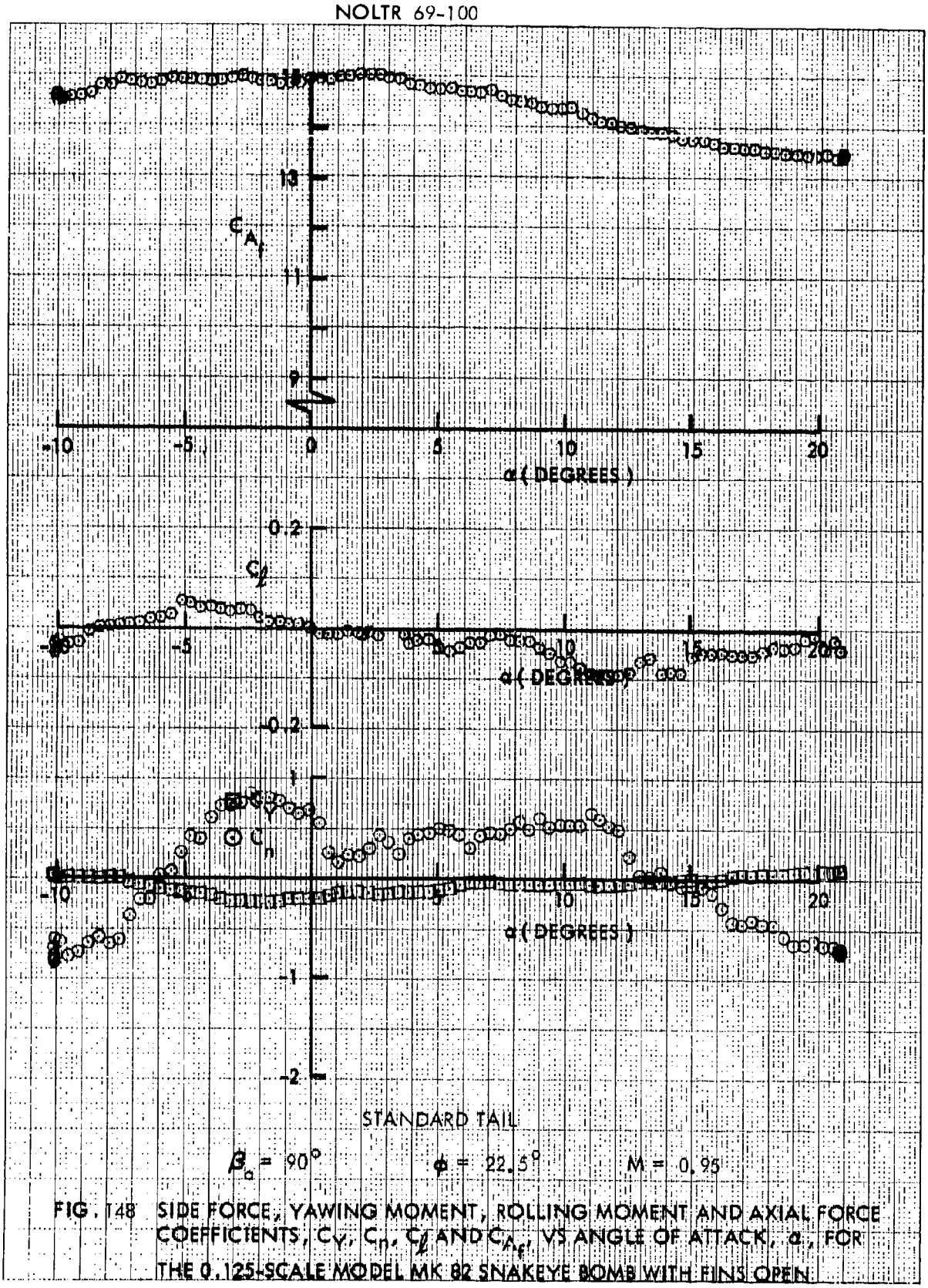


FIG. 148 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

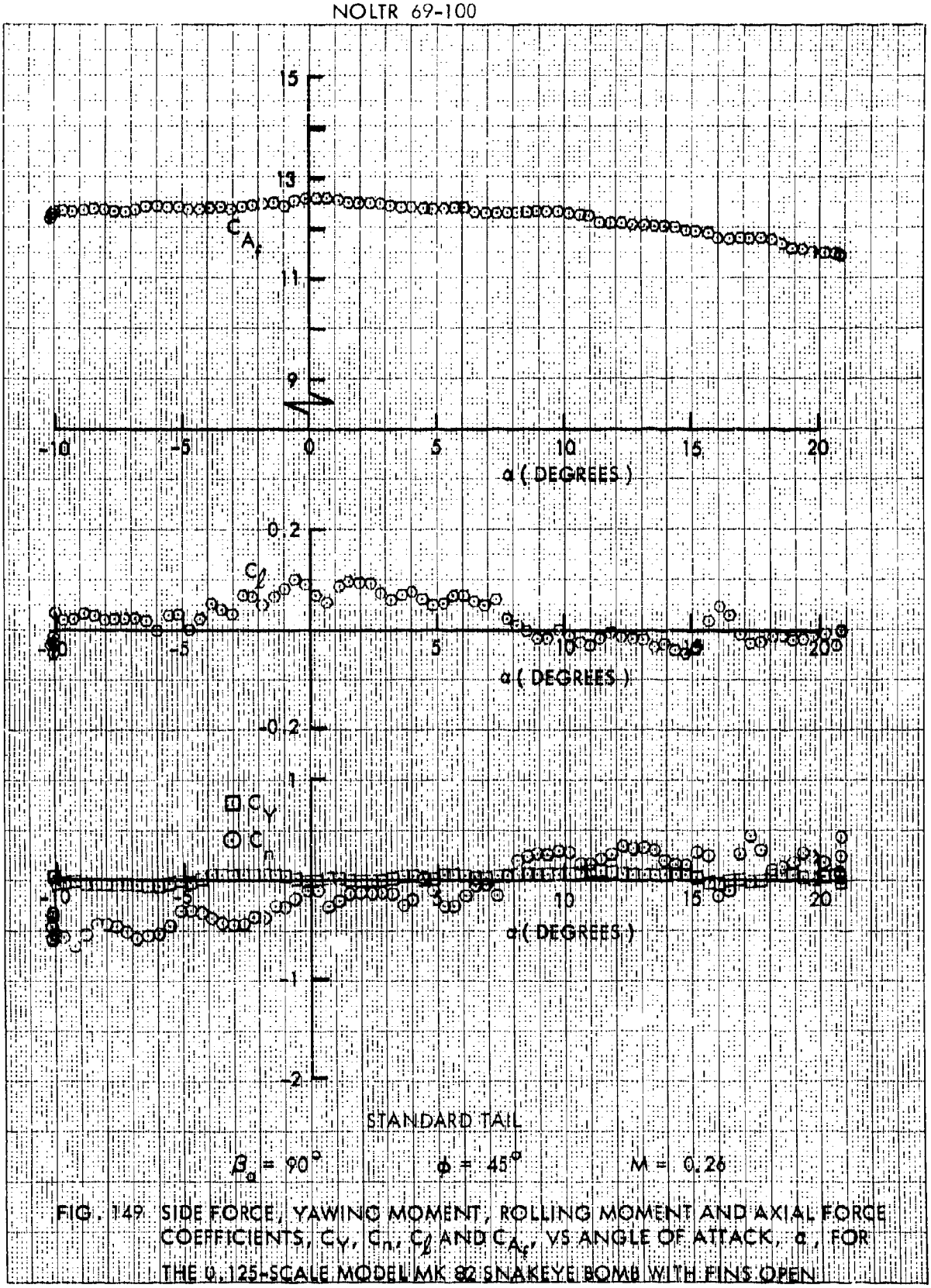


FIG. 149 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

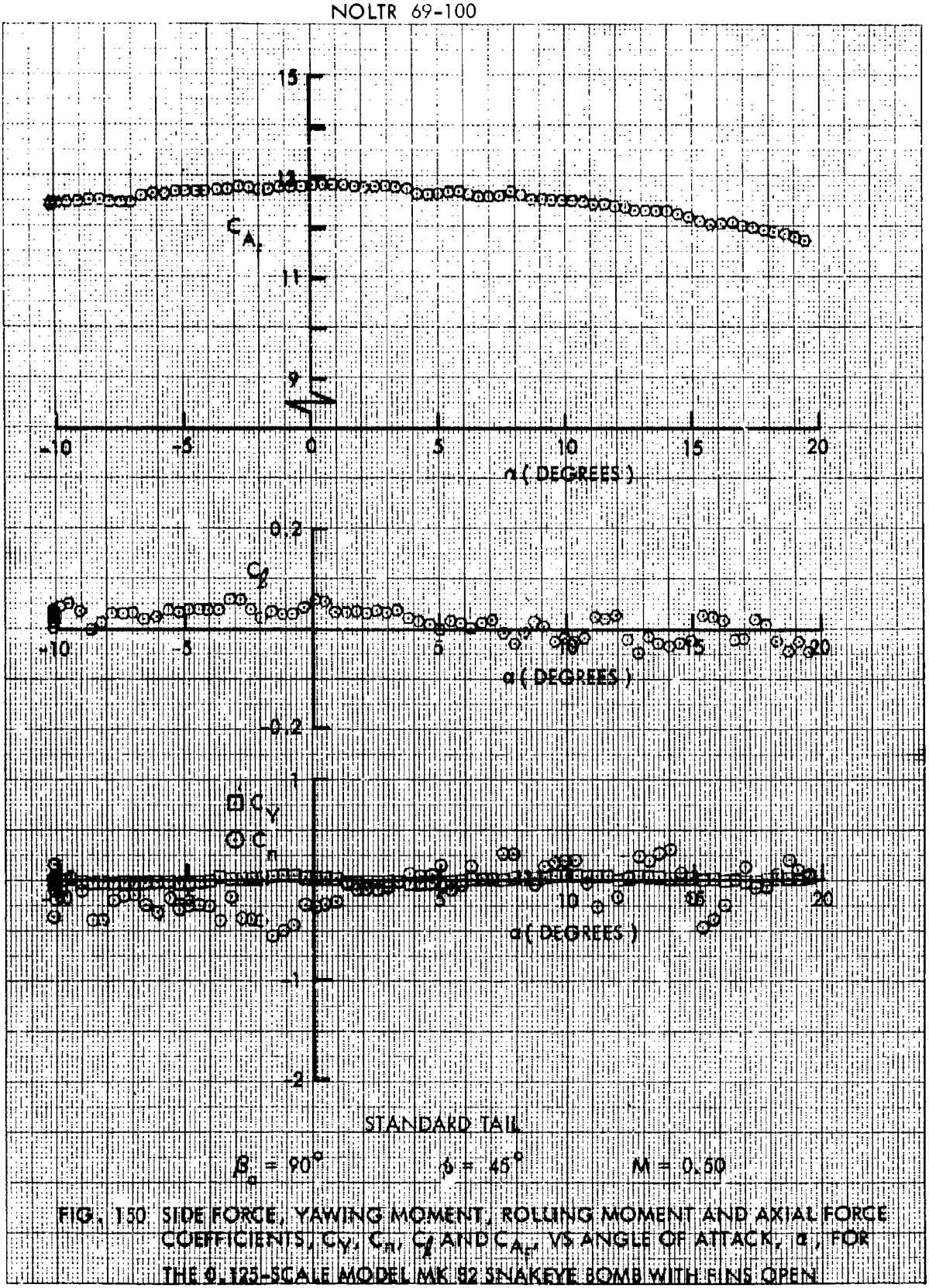


FIG. 150 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f} VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

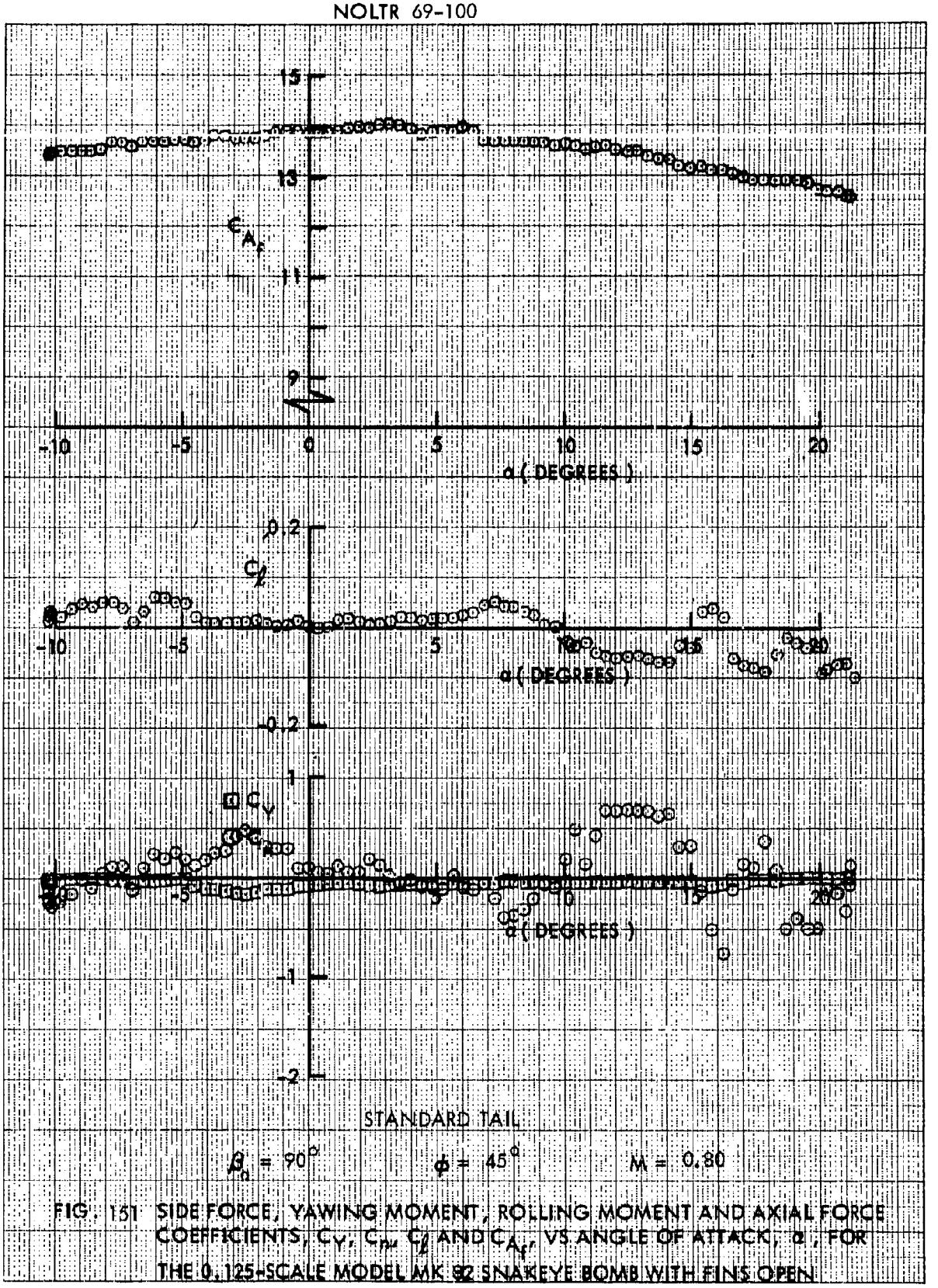


FIG. 151 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

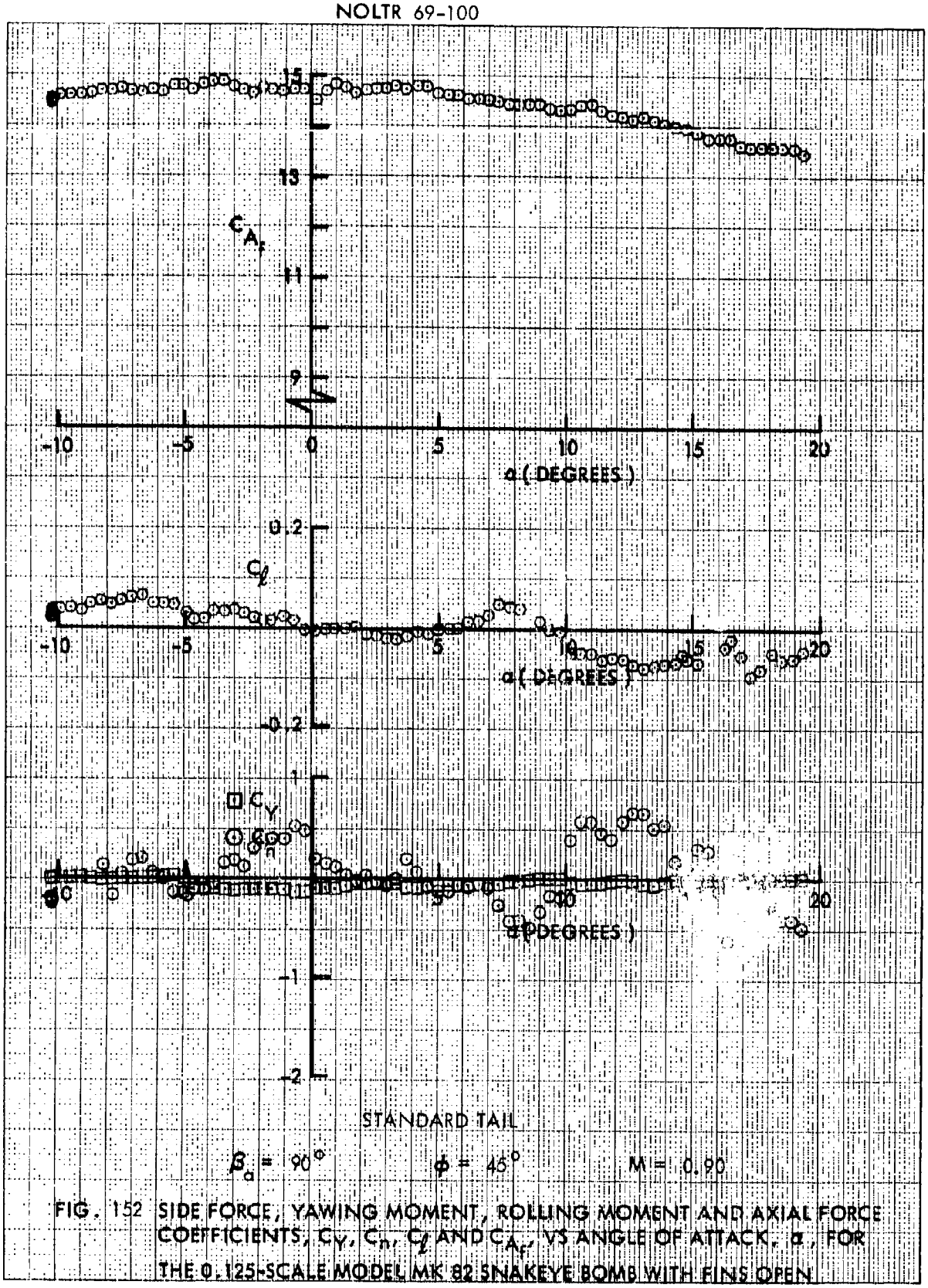


FIG. 152 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

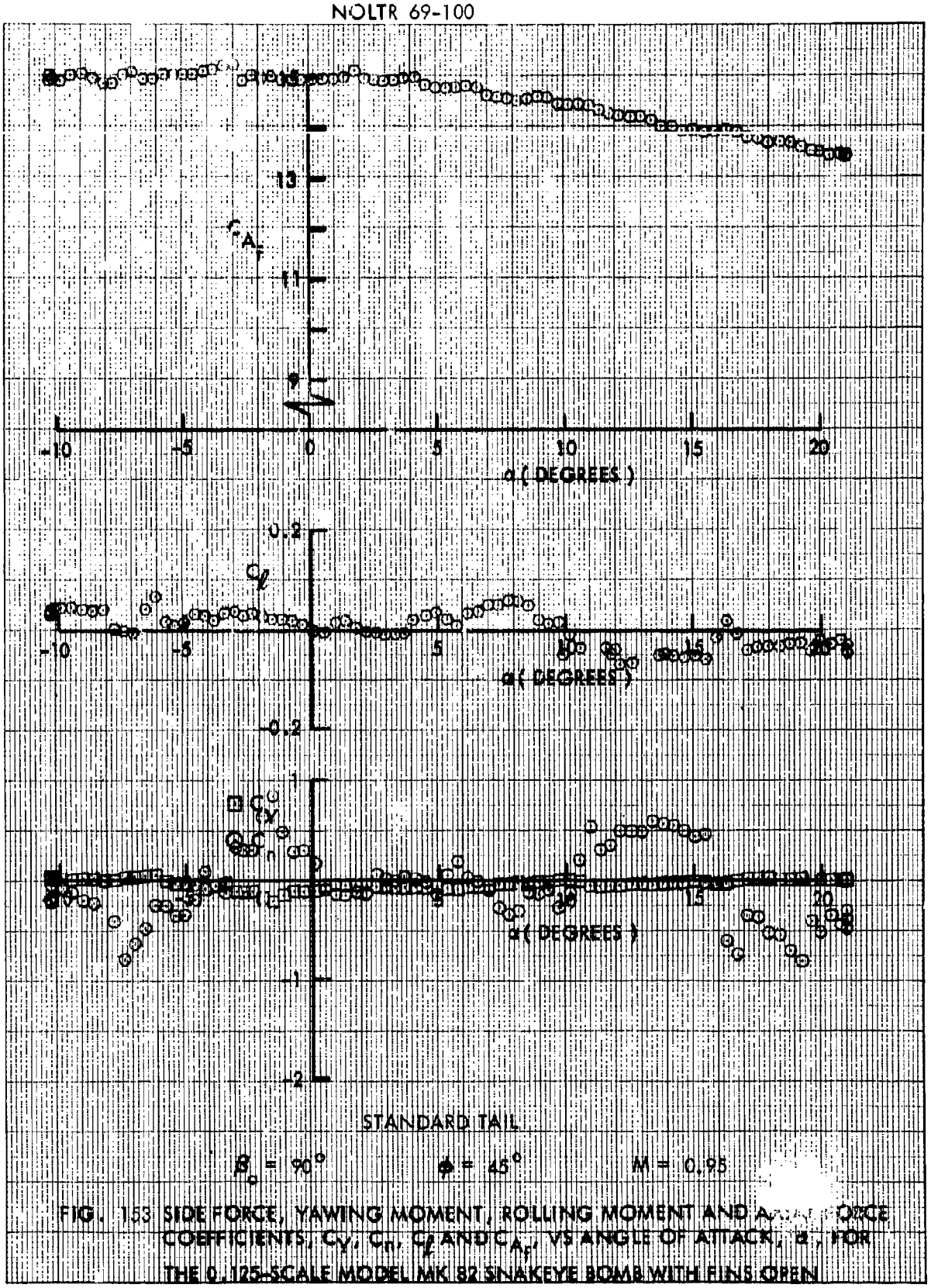


FIG. 153 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_{Y_β}, C_{n_β}, C_{ℓ_β} AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

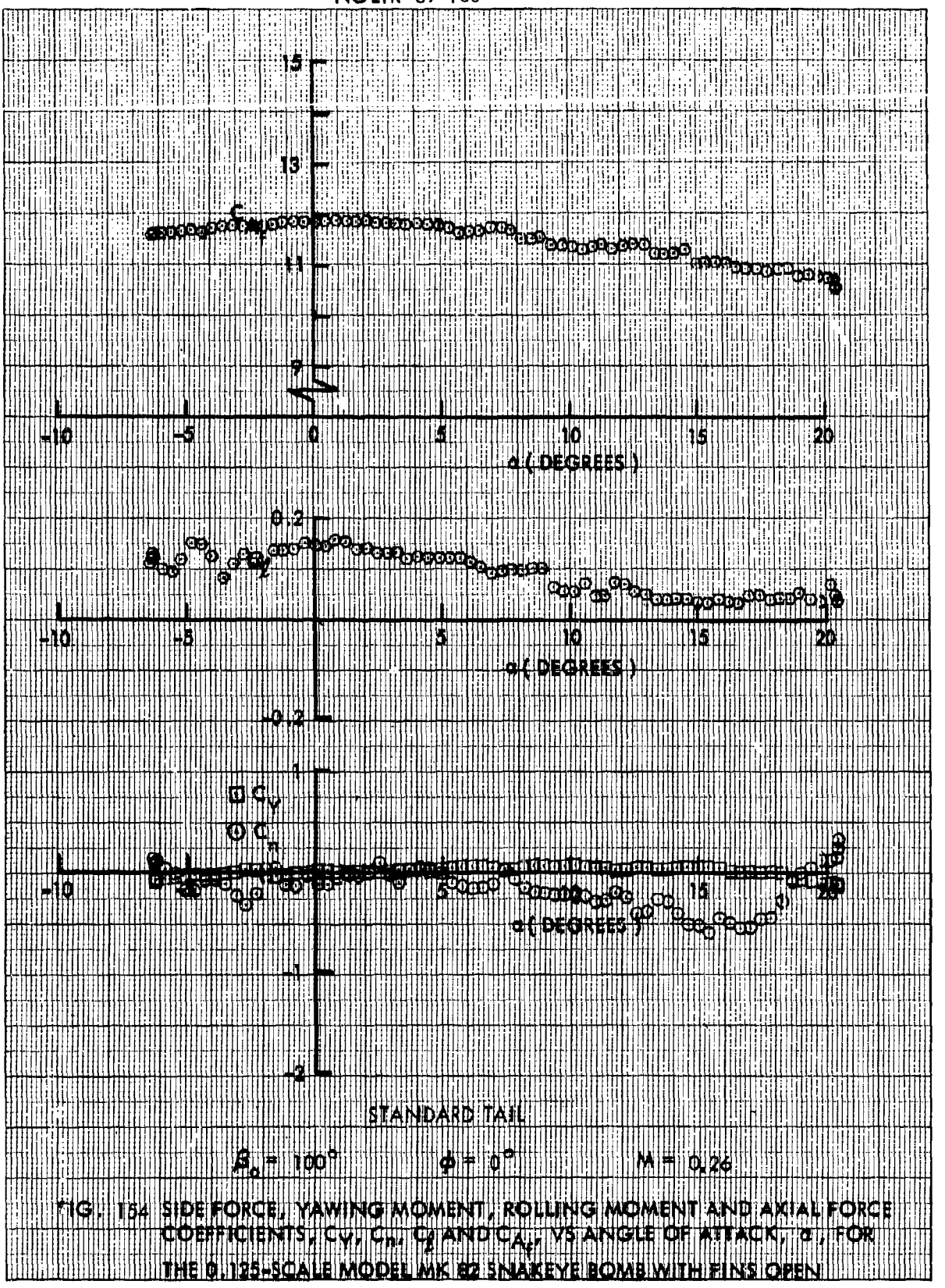


FIG. 154 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

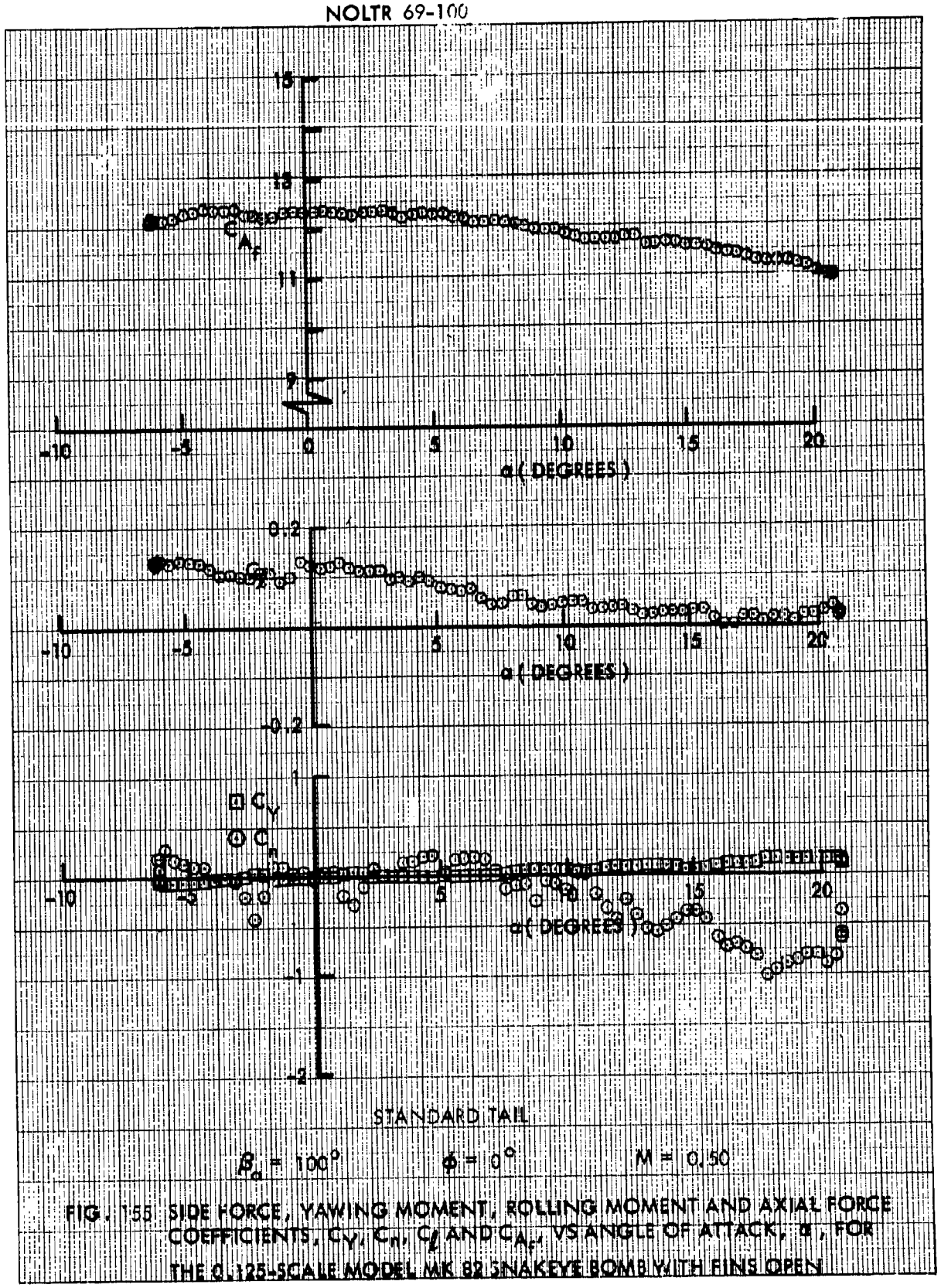


FIG. 155 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

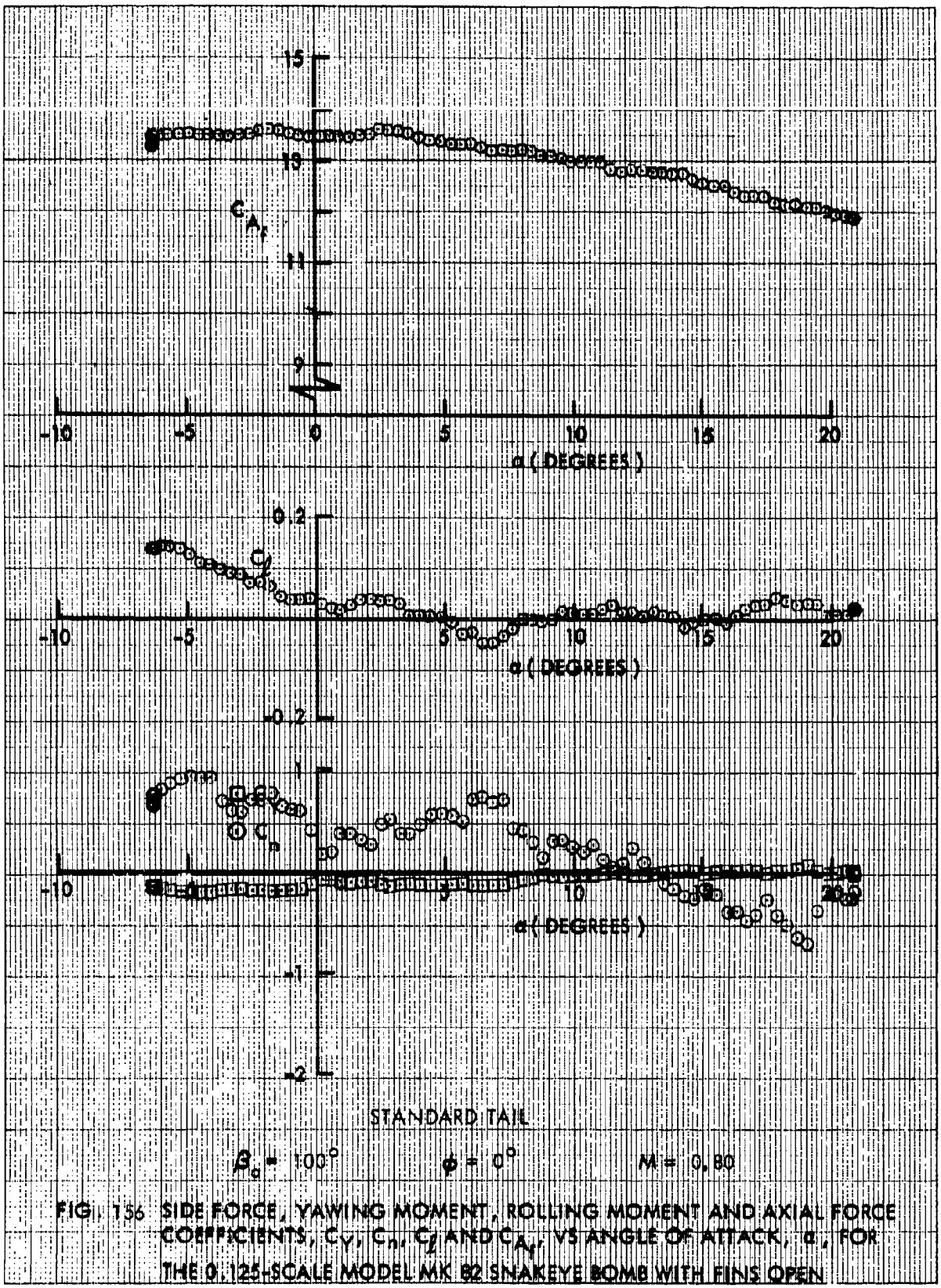


FIG. 156 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

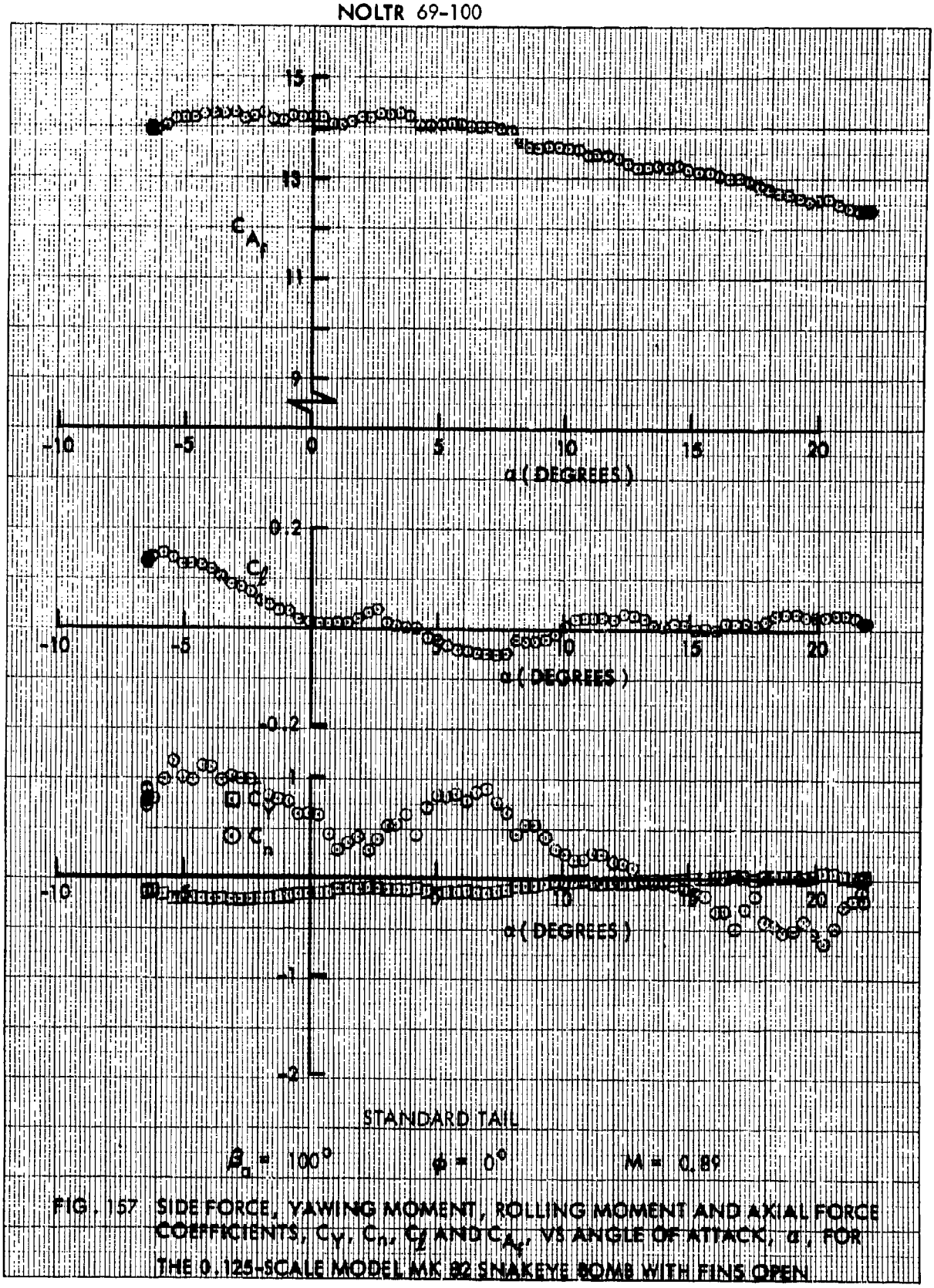


FIG. 157 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

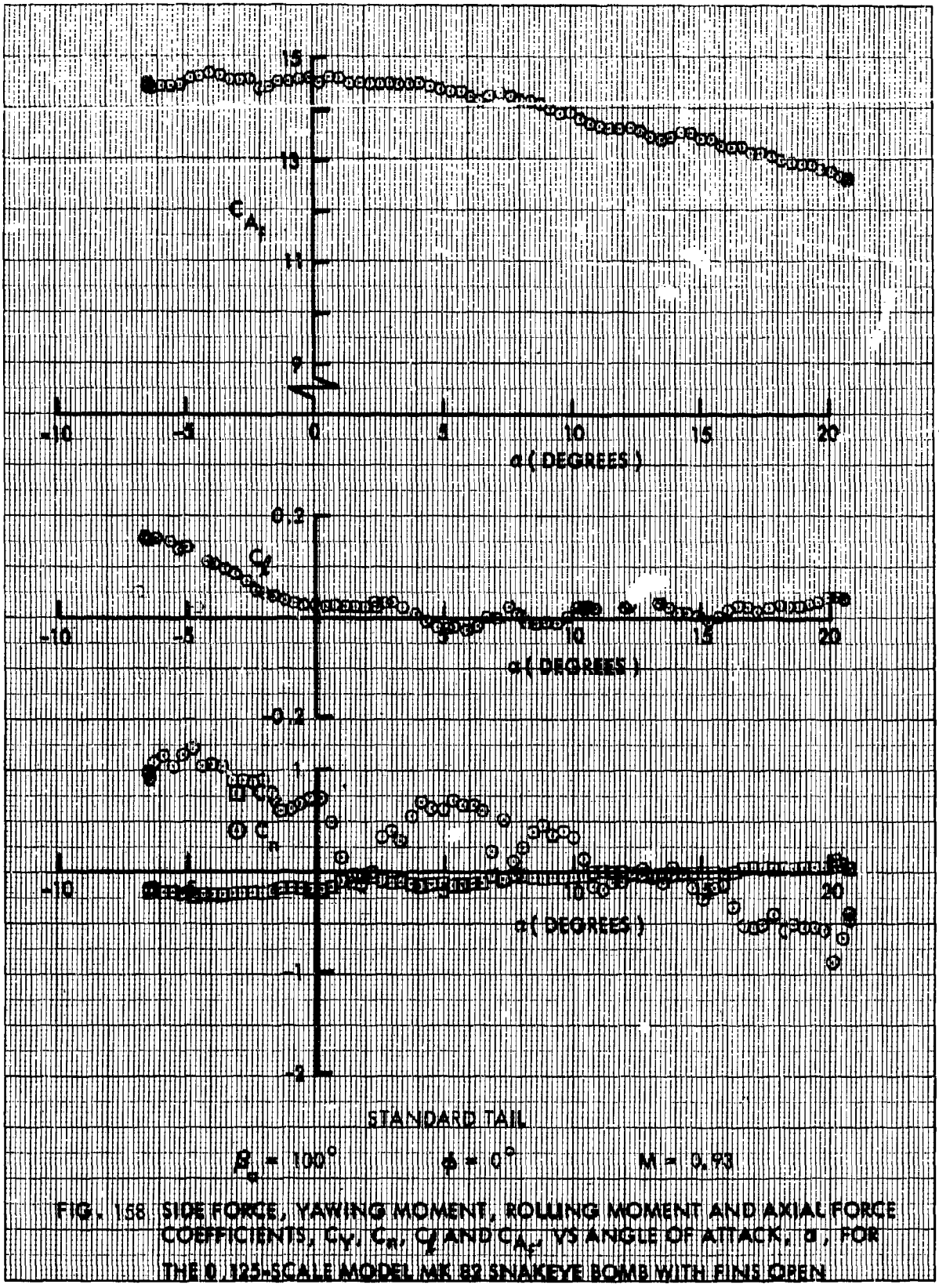


FIG. 158 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_R, C_ℓ AND C_{A_f} VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

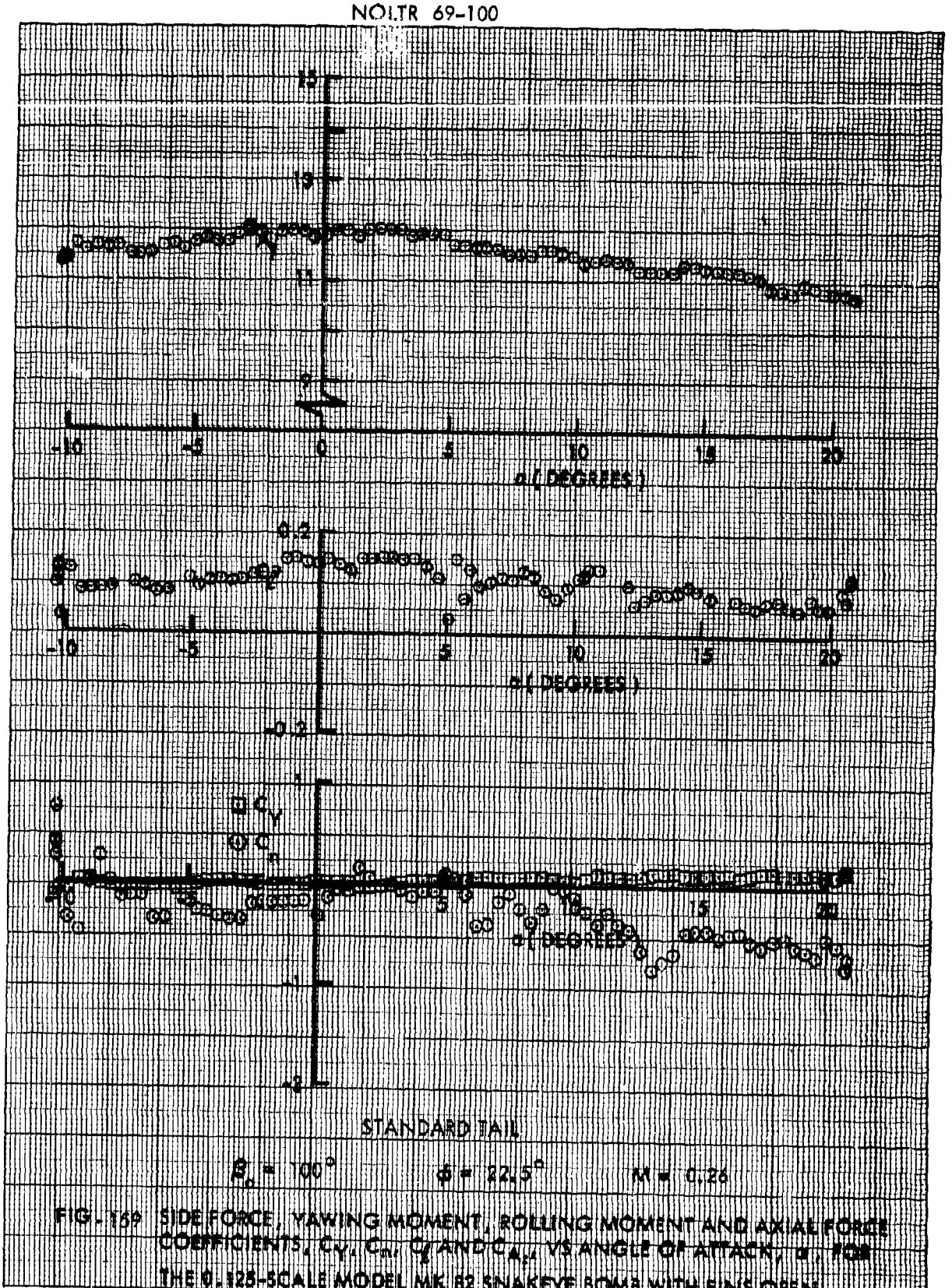


FIG. 159 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_A, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

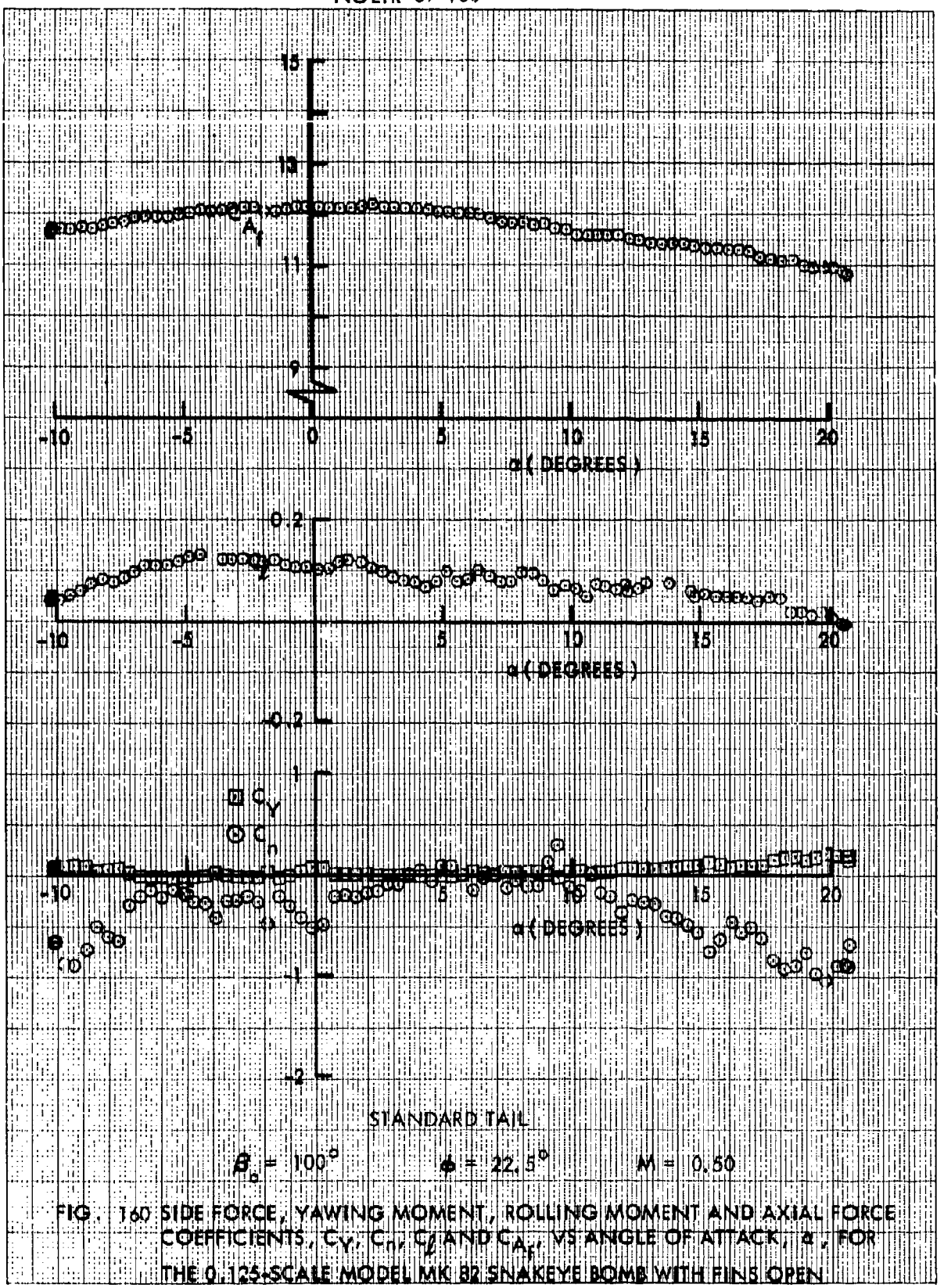


FIG. 160 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

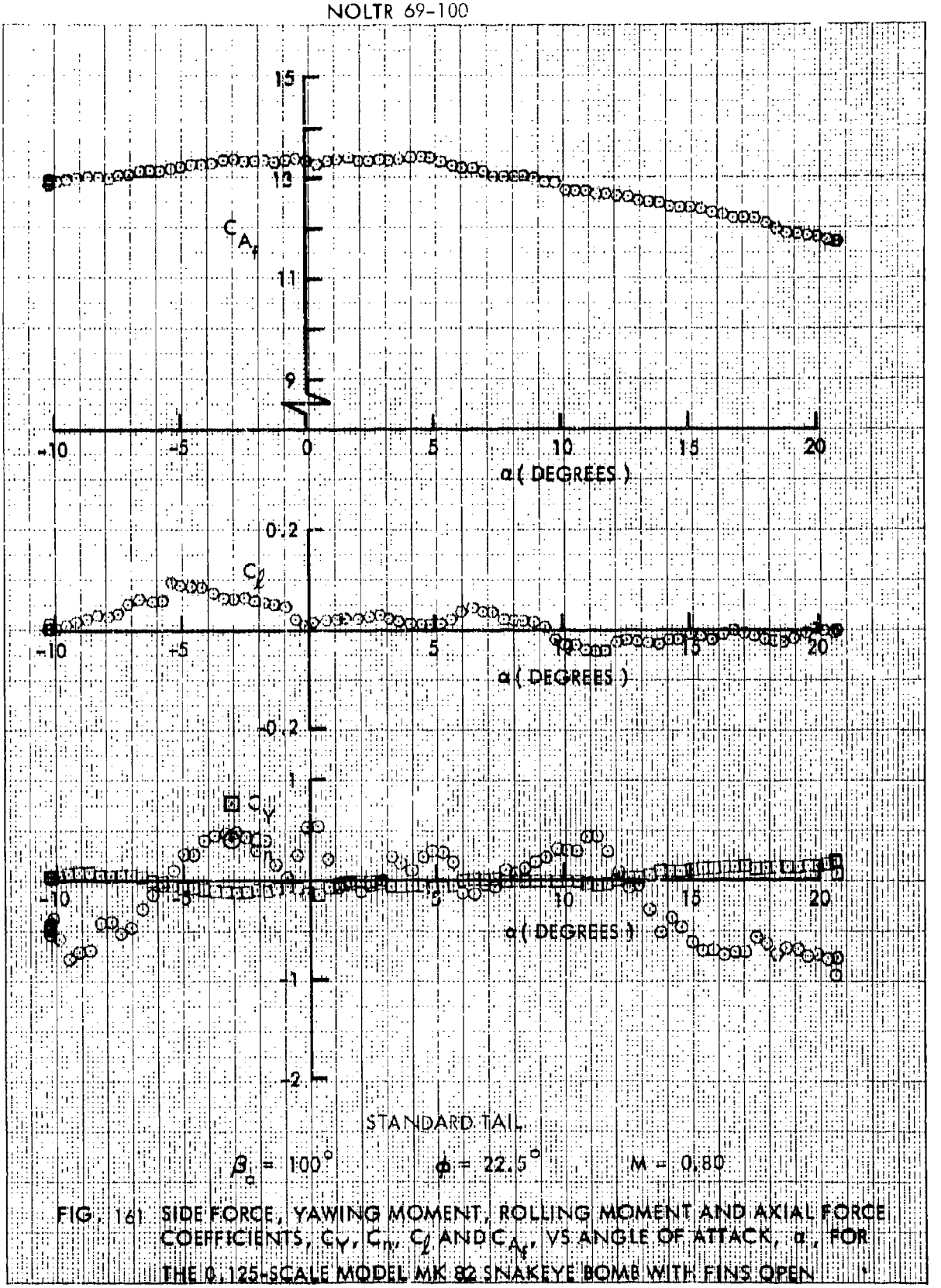


FIG. 161 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

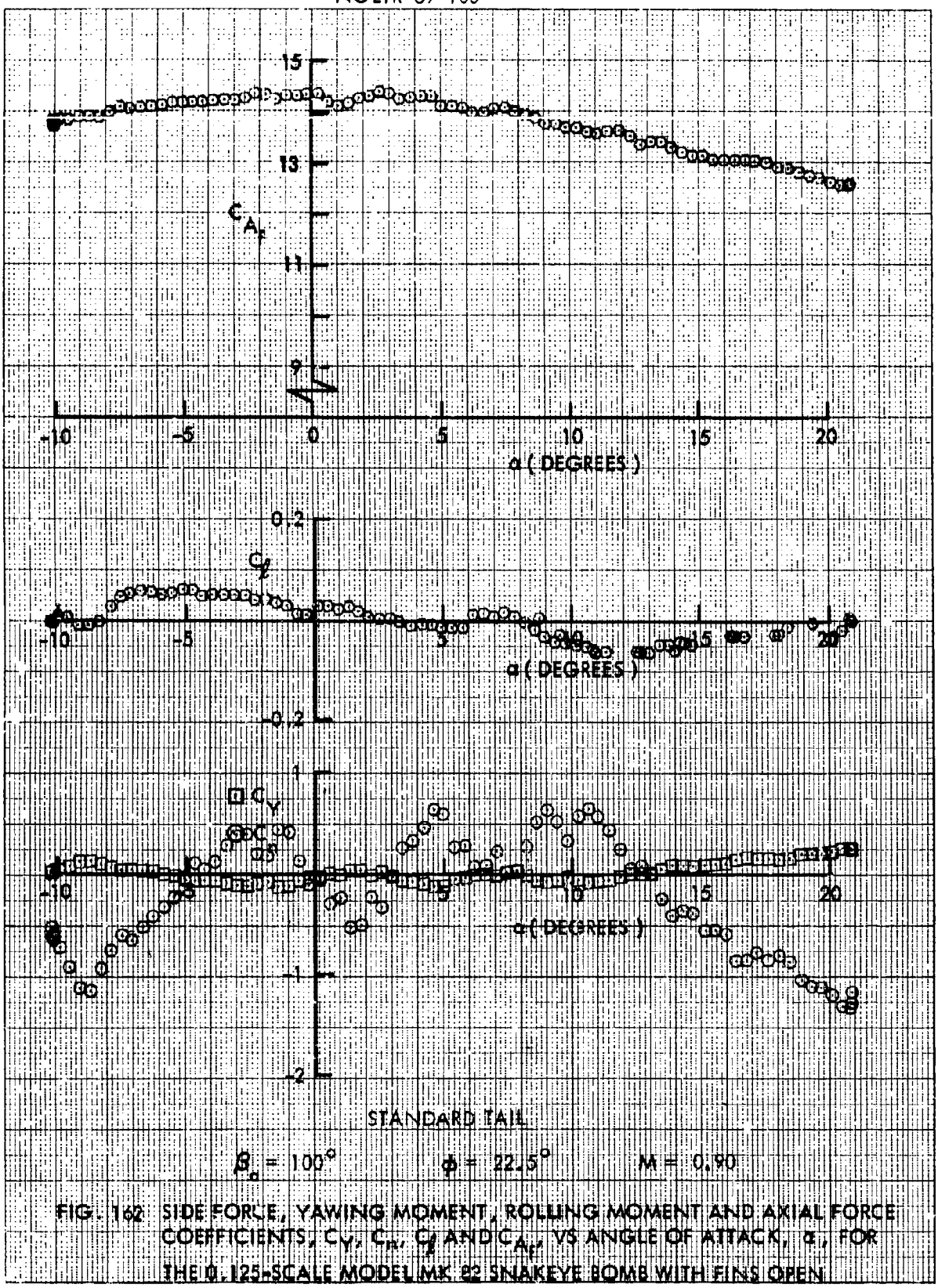


FIG. 162 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

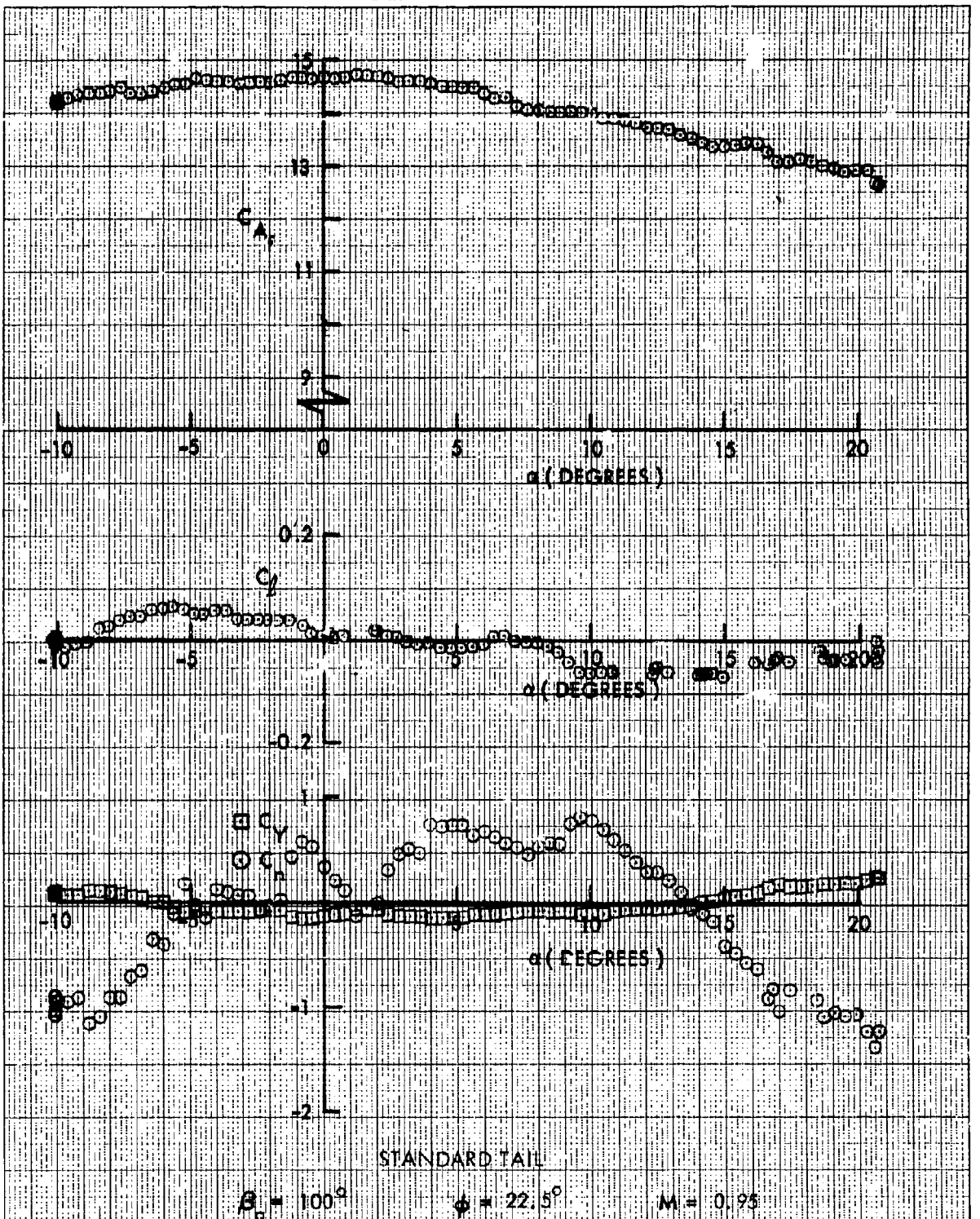


FIG. 163 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

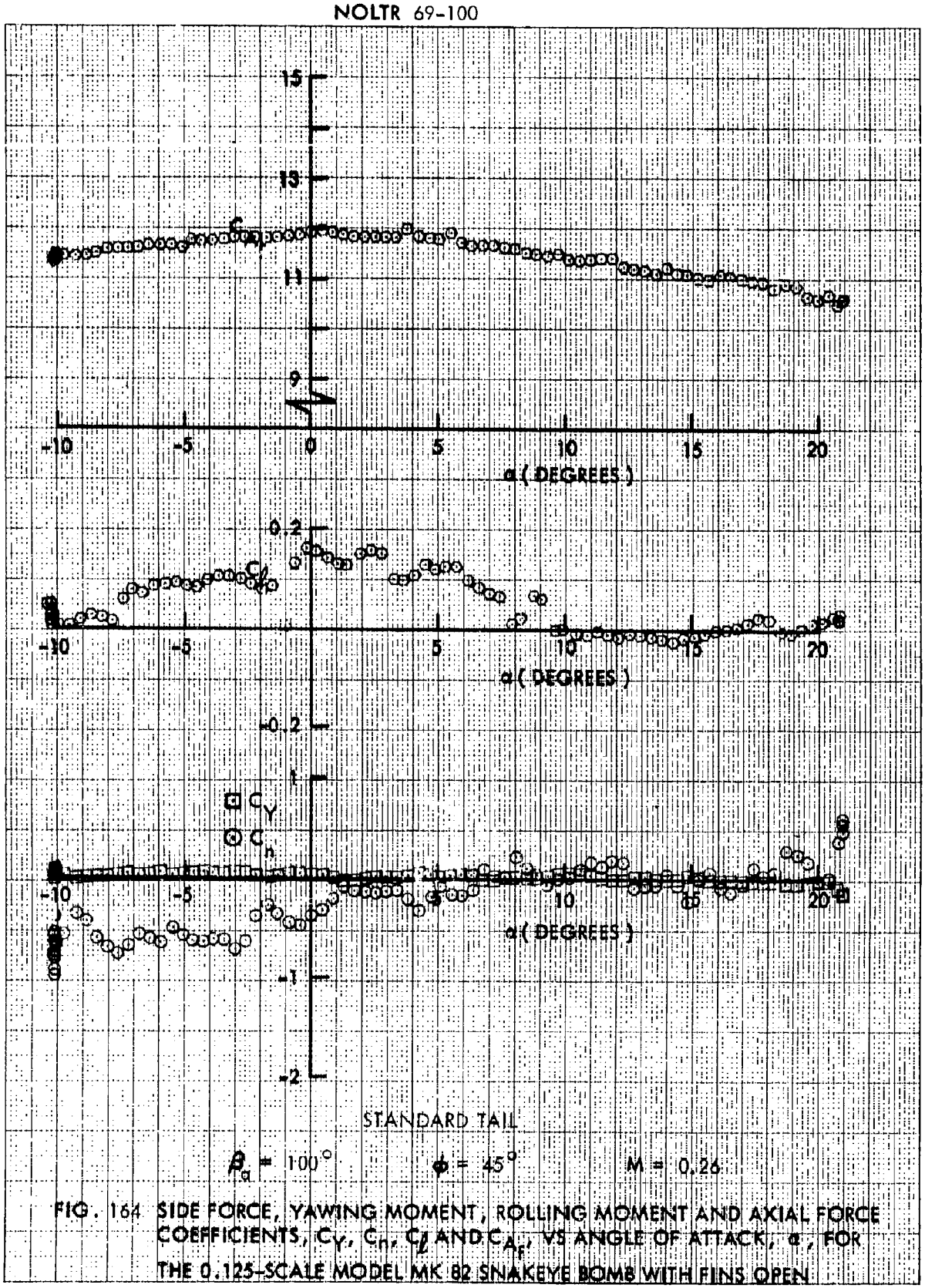


FIG. 164 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

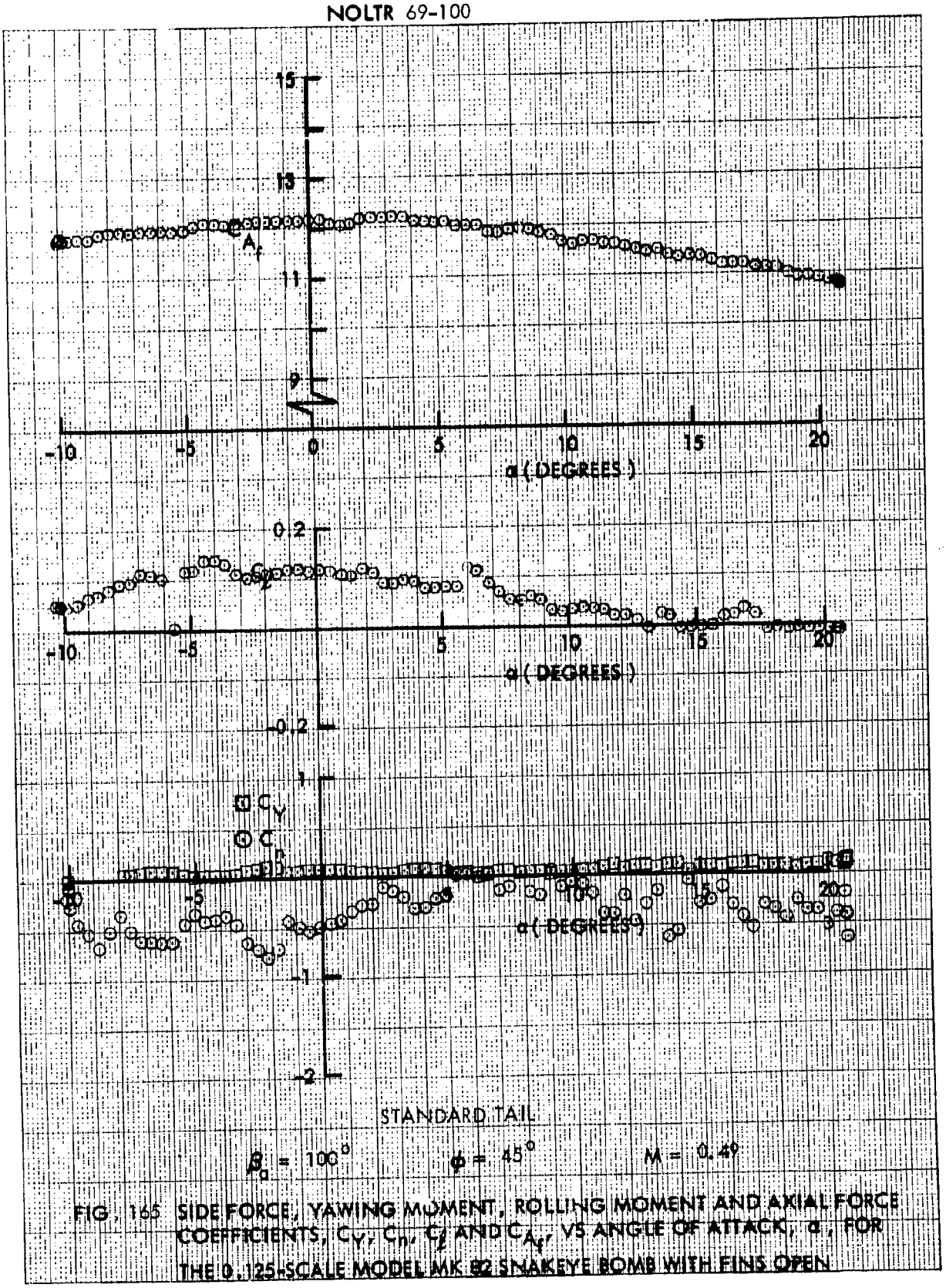


FIG. 165 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

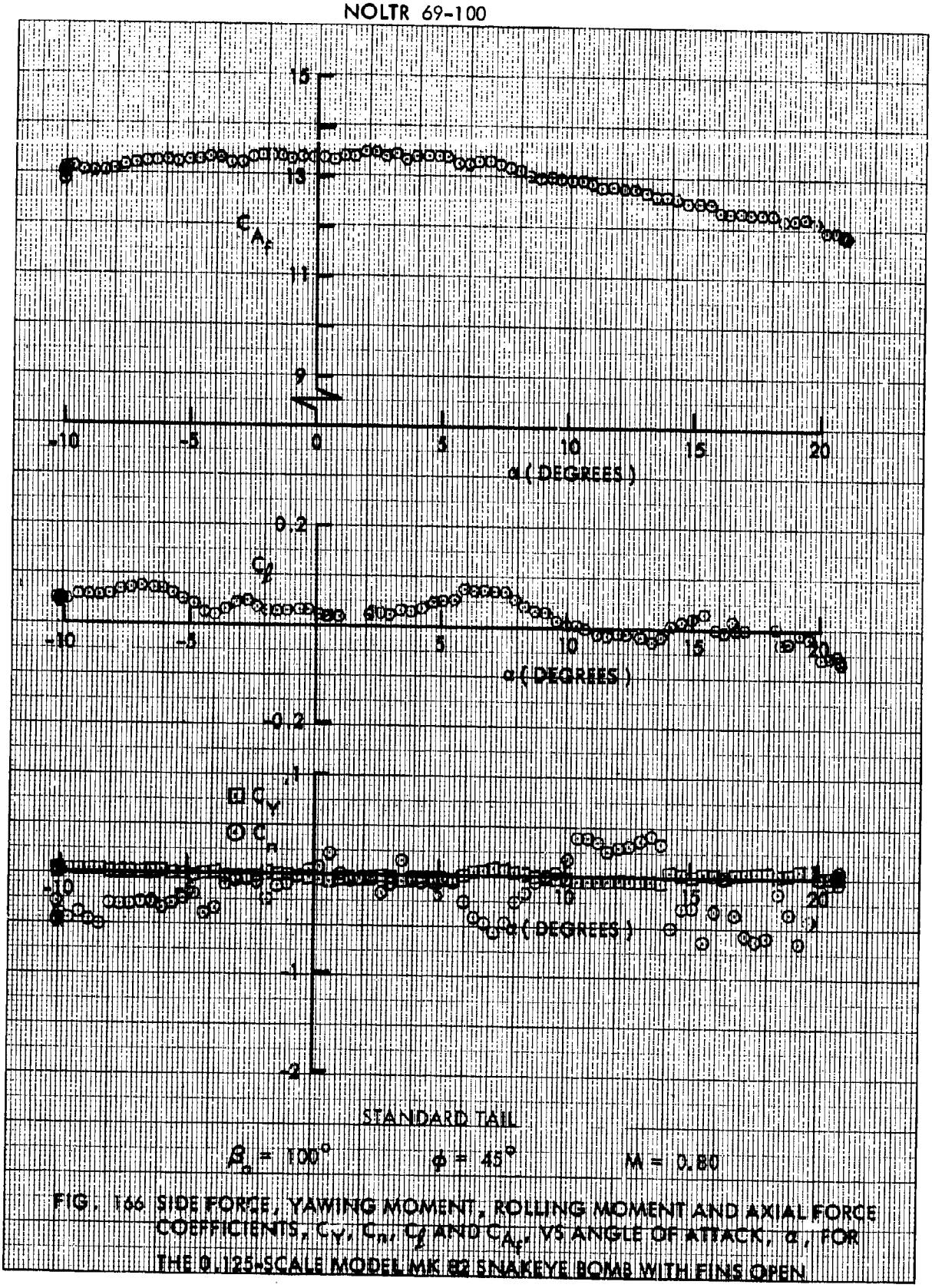


FIG. 166 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

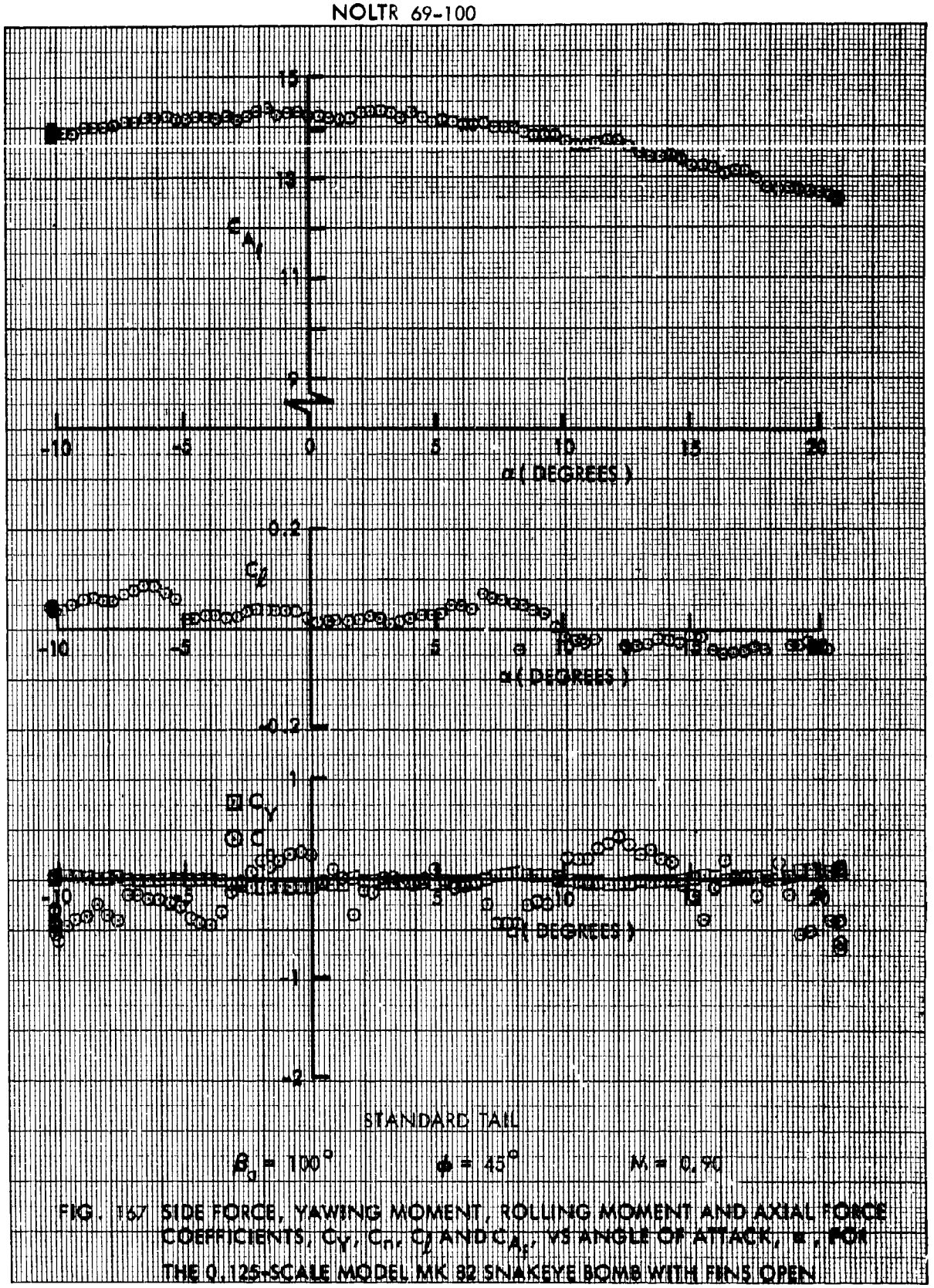


FIG. 167 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

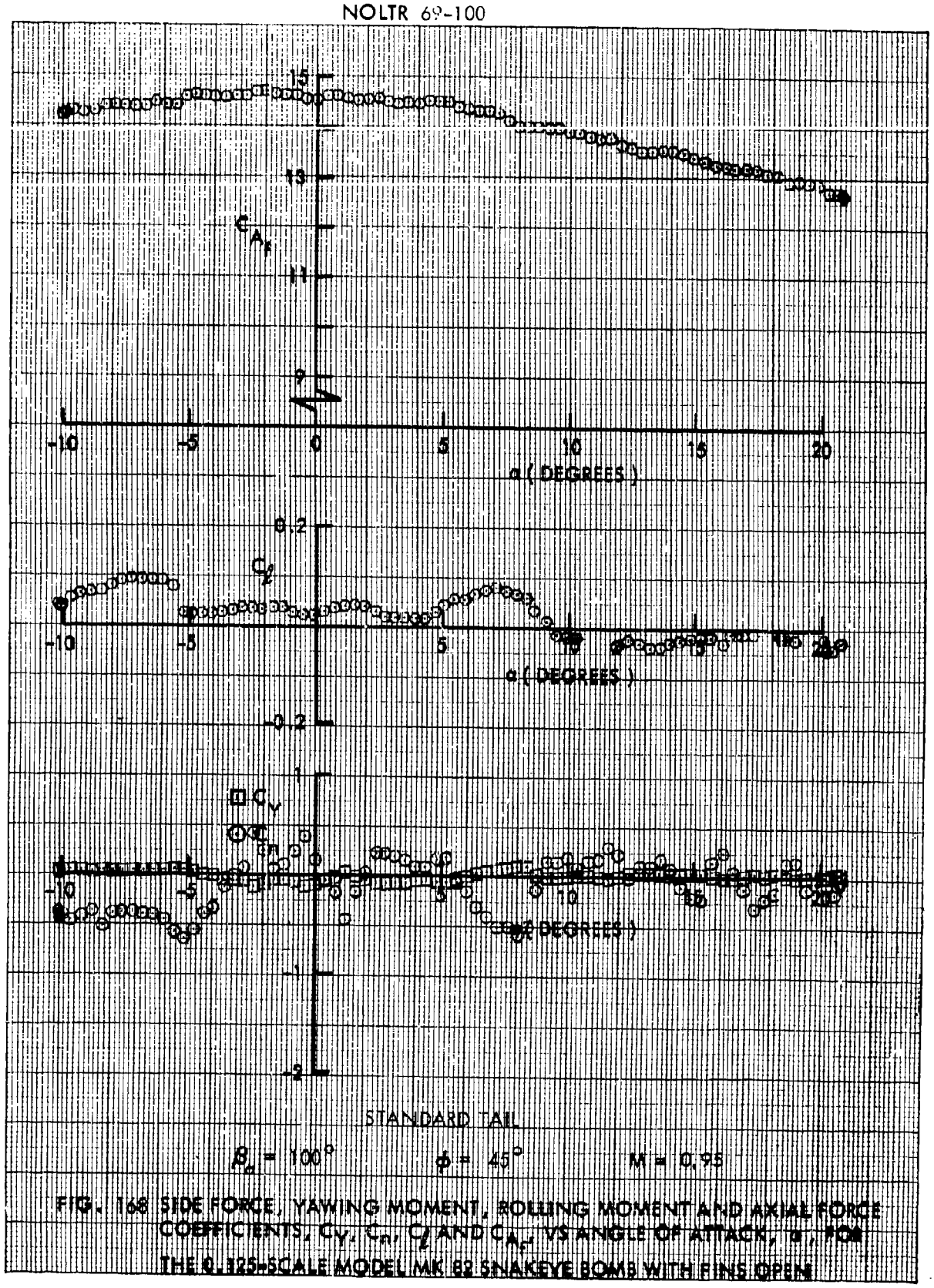


FIG. 168 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

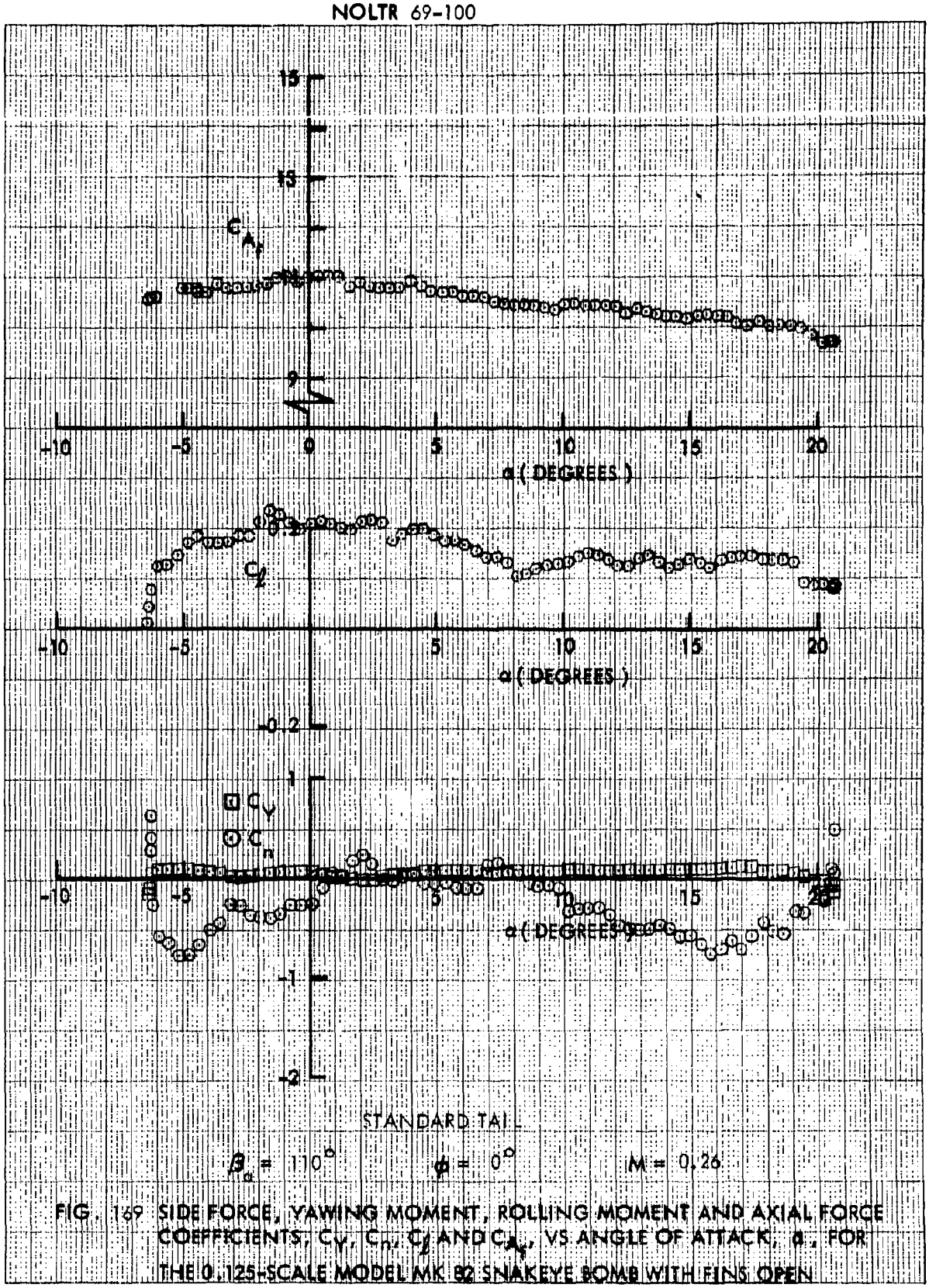


FIG. 169 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

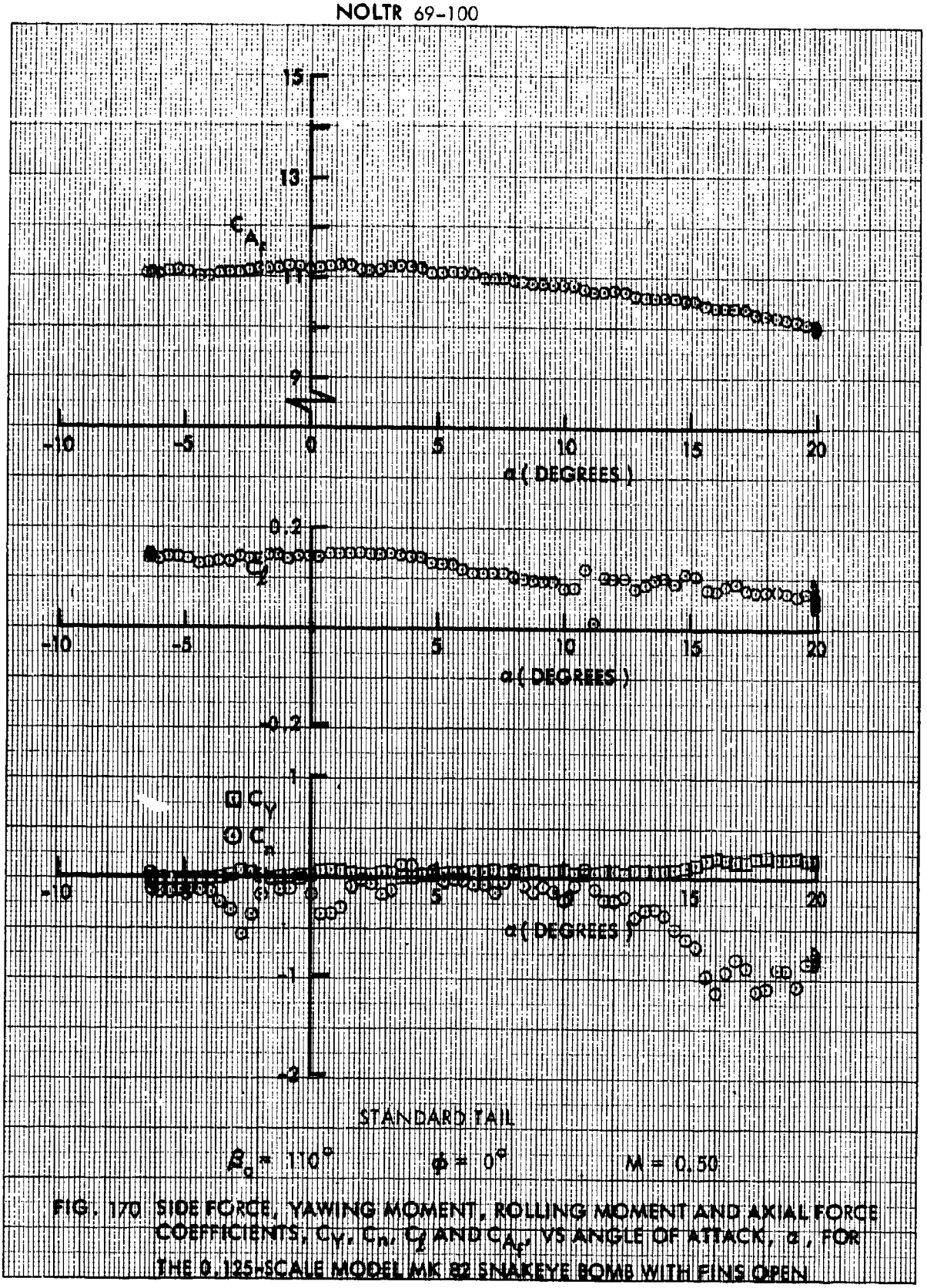


FIG. 170 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

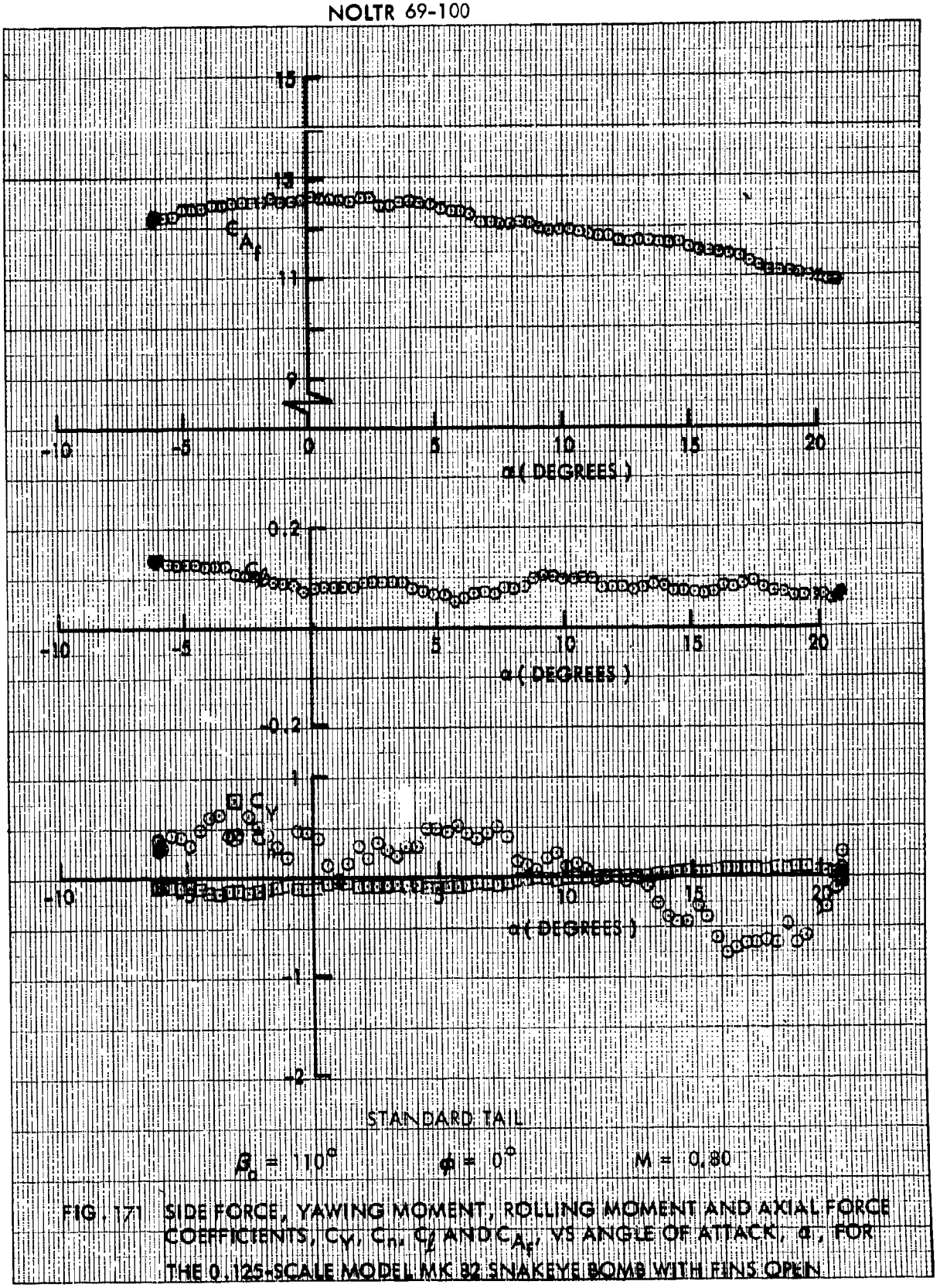


FIG. 171 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

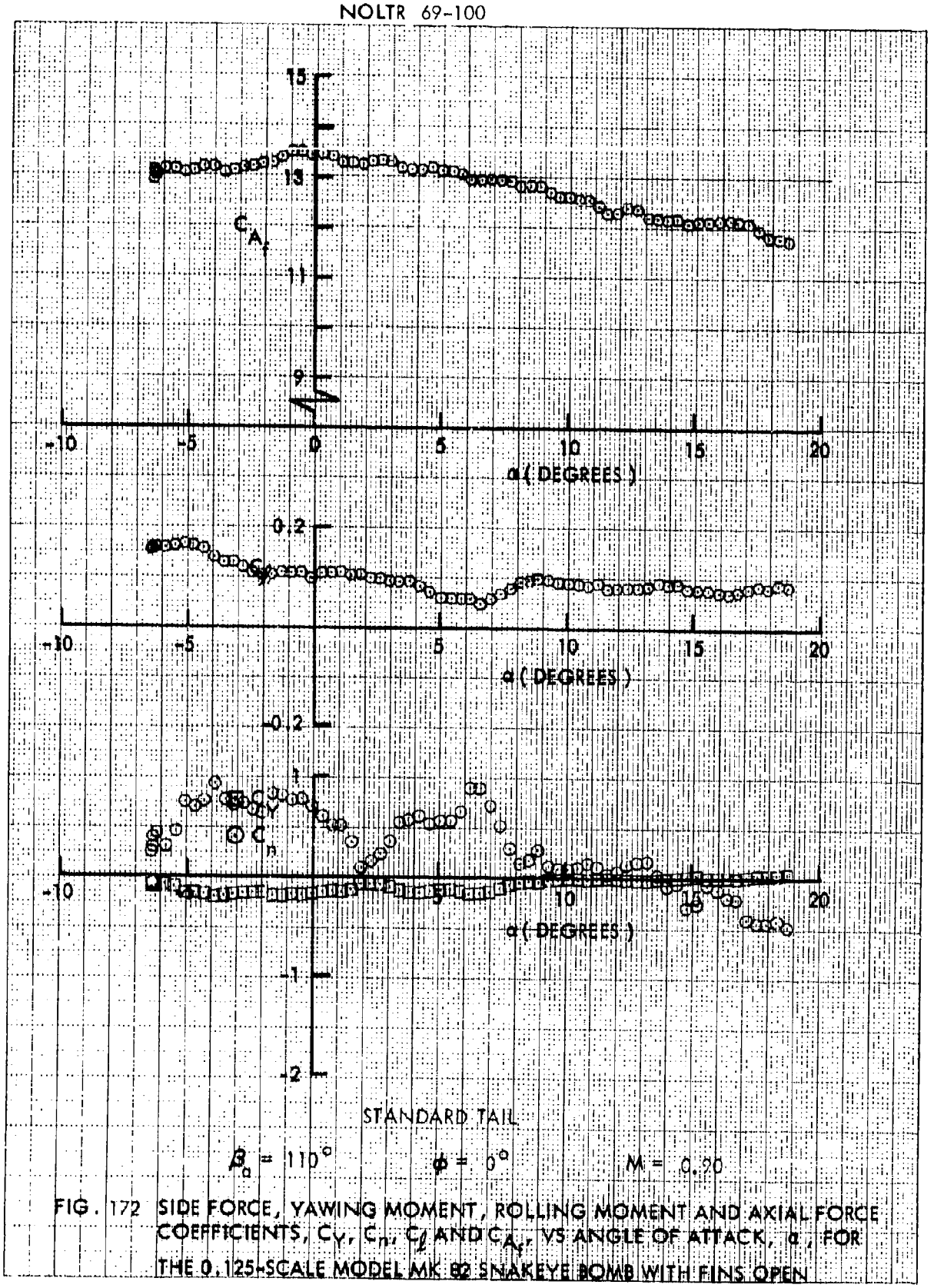


FIG. 172 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

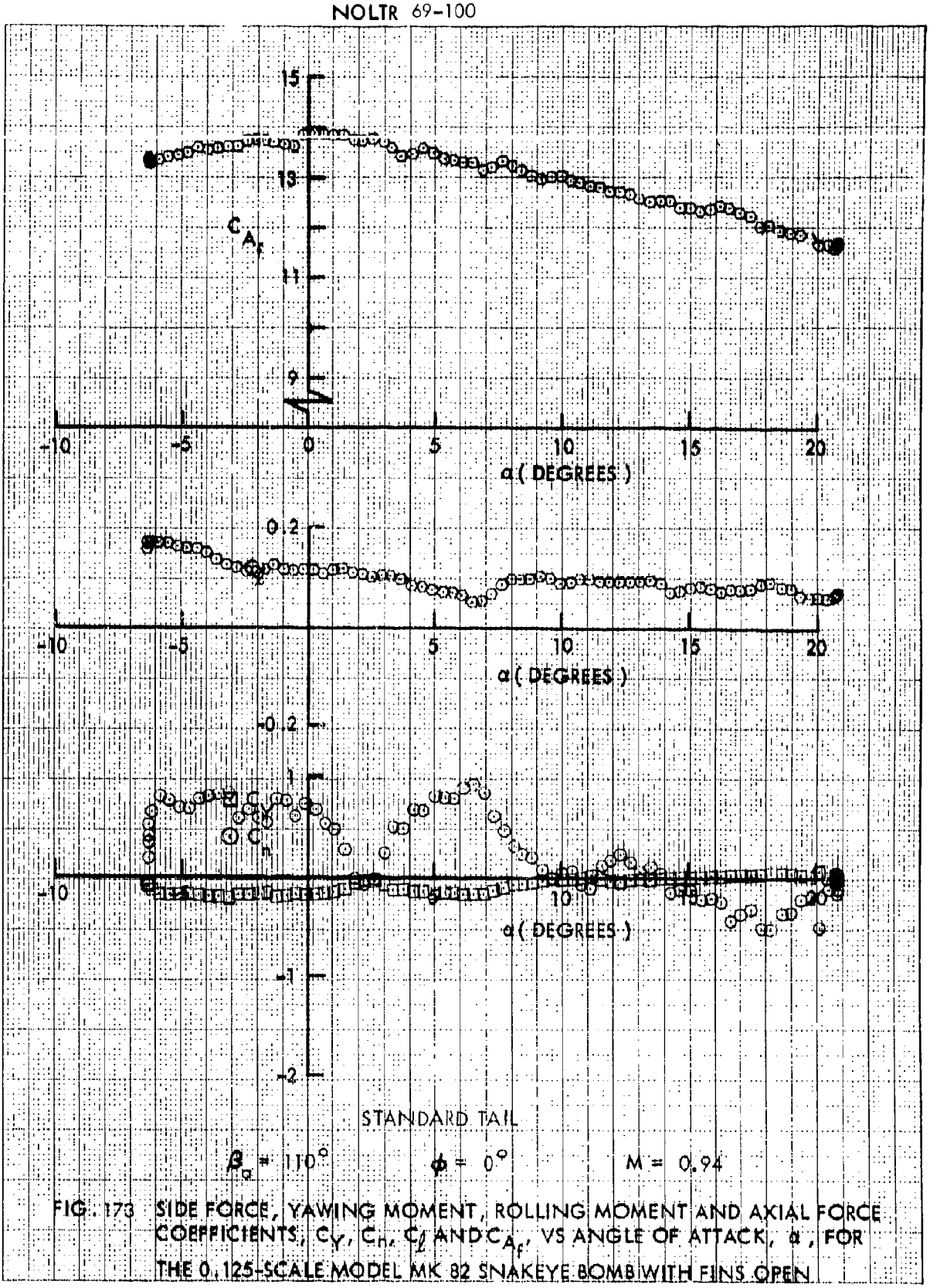


FIG. 173 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

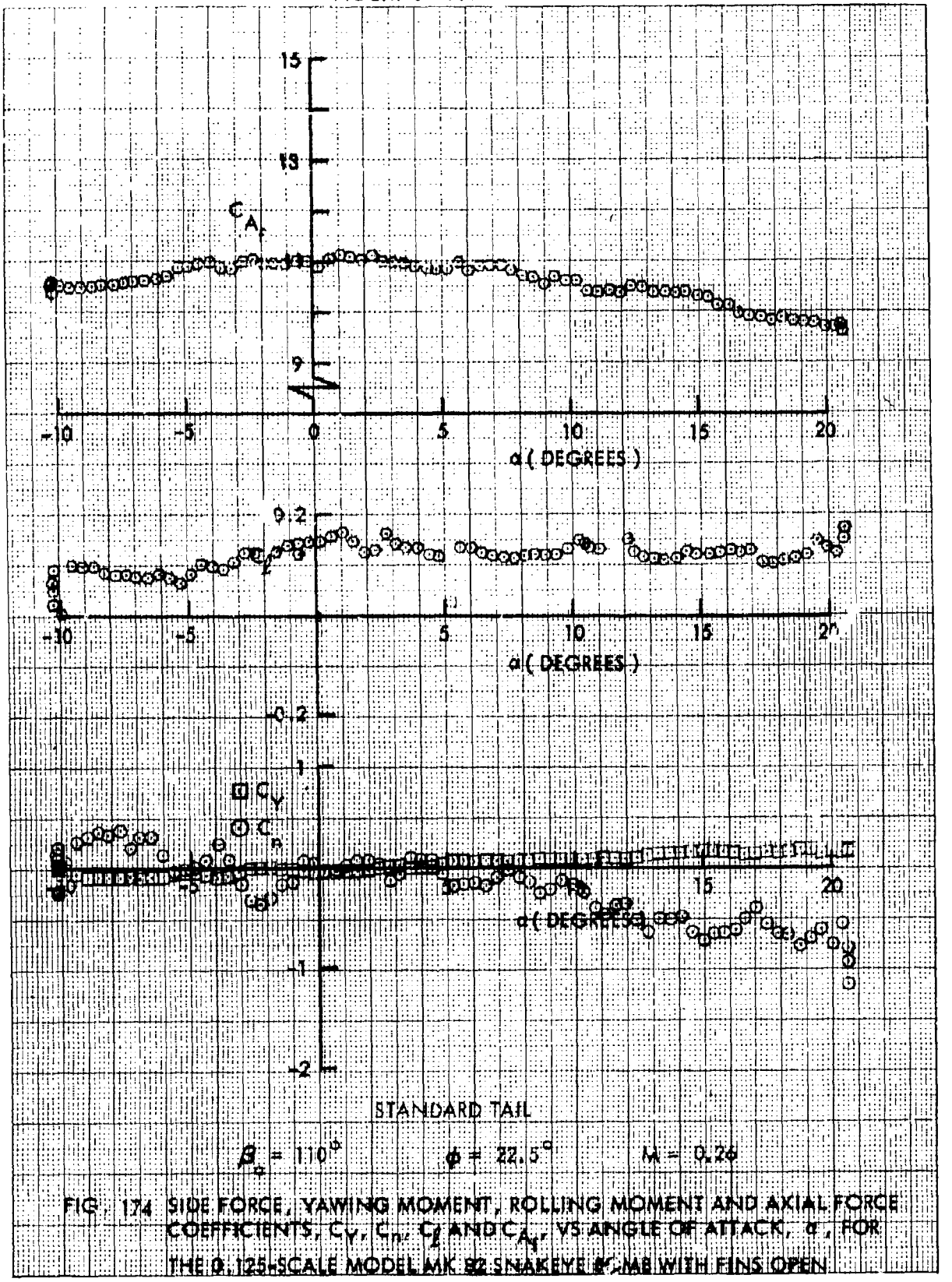
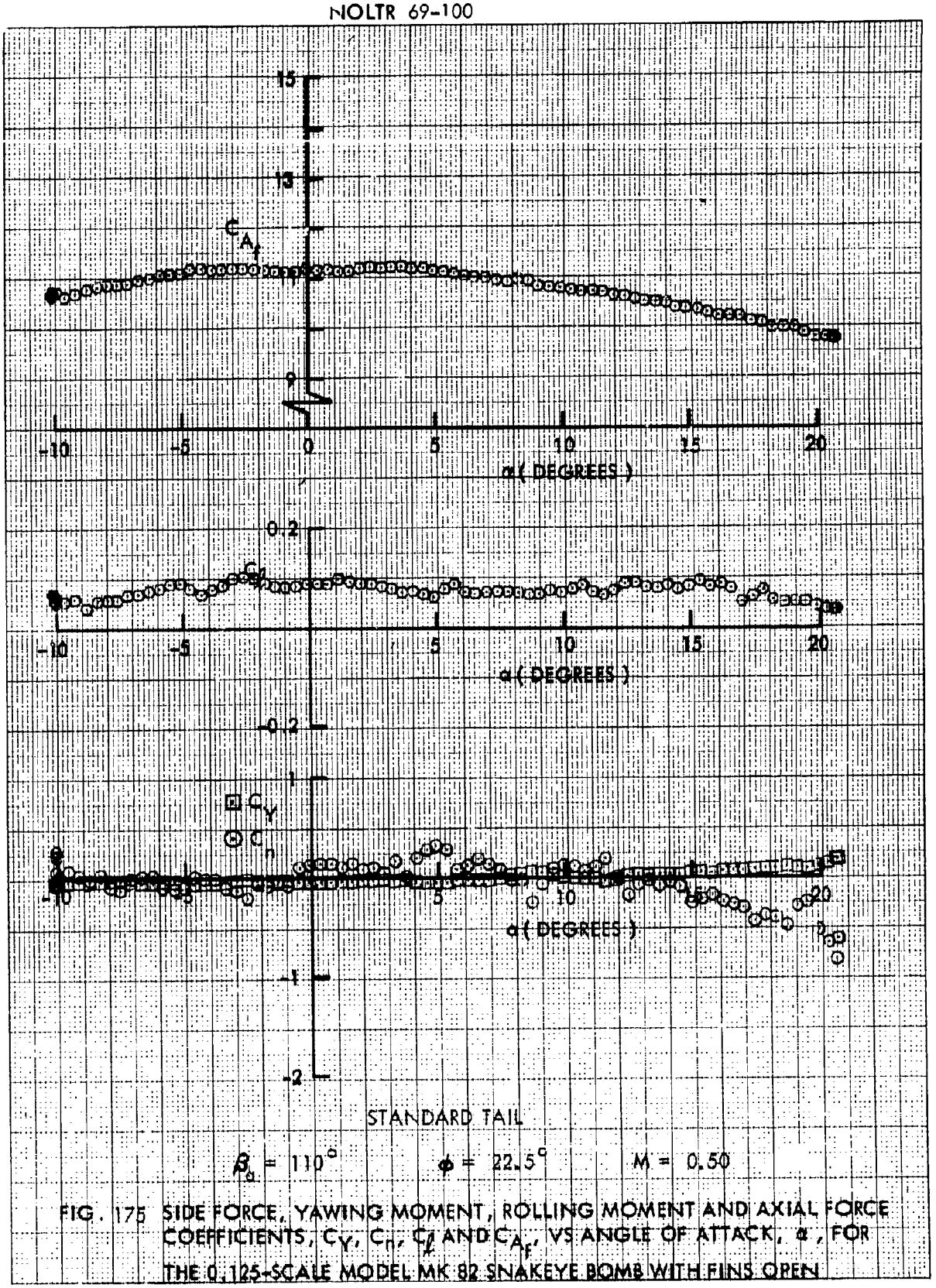


FIG. 174 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BC-MB WITH FINS OPEN



STANDARD TAIL

β_0 = 110° ϕ = 22.5° M = 0.50

FIG. 175 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

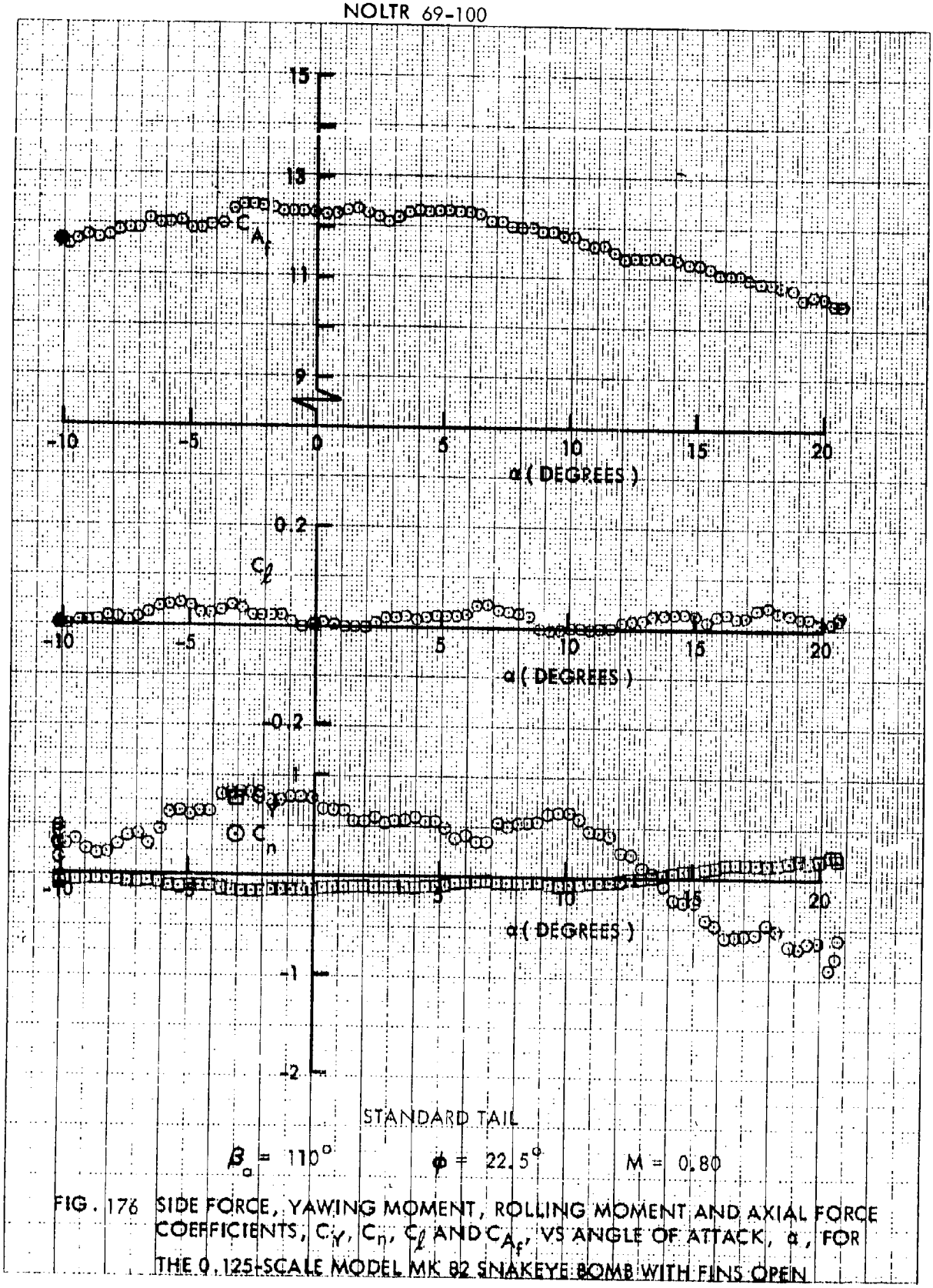


FIG. 176 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

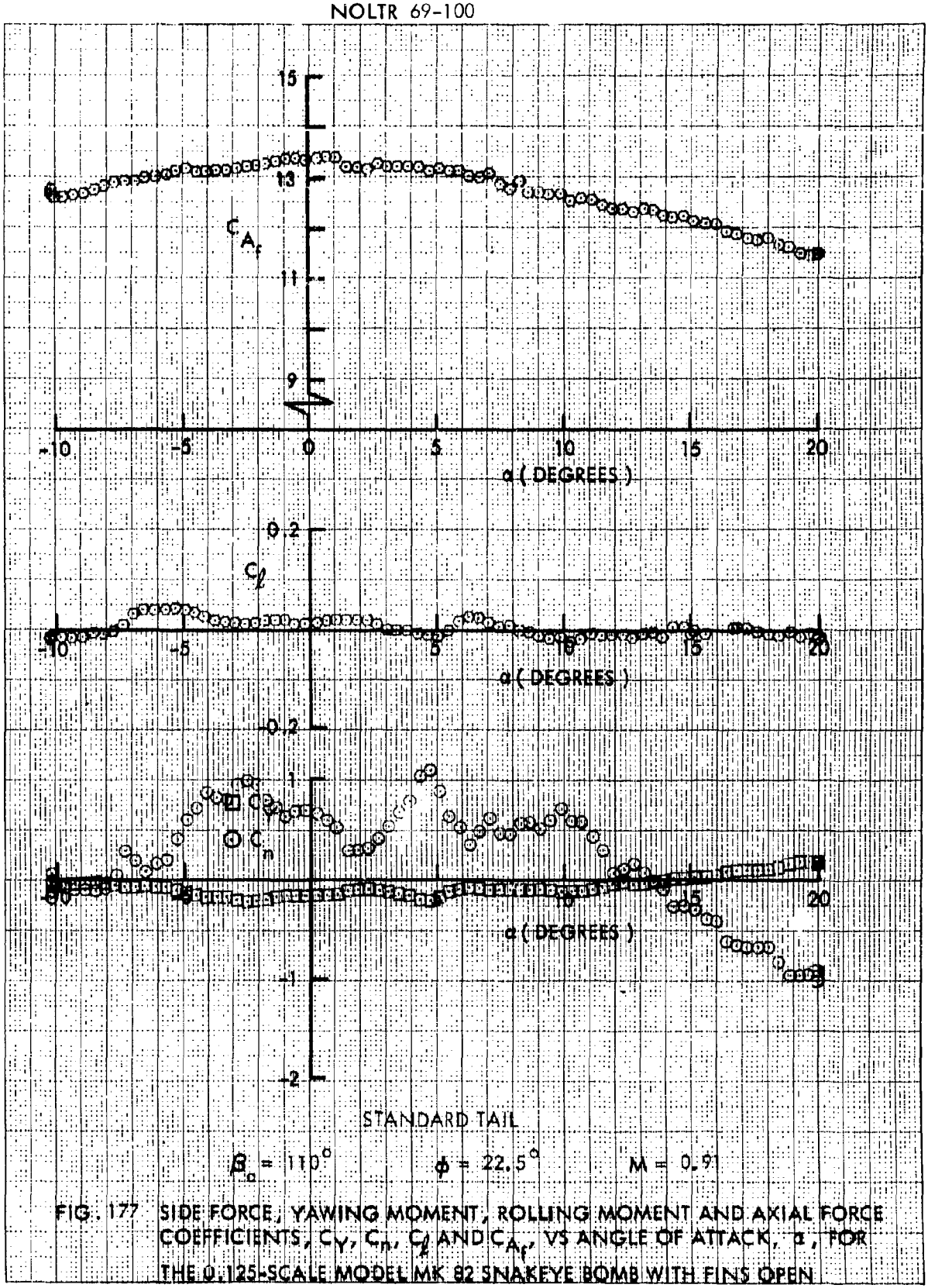


FIG. 177 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

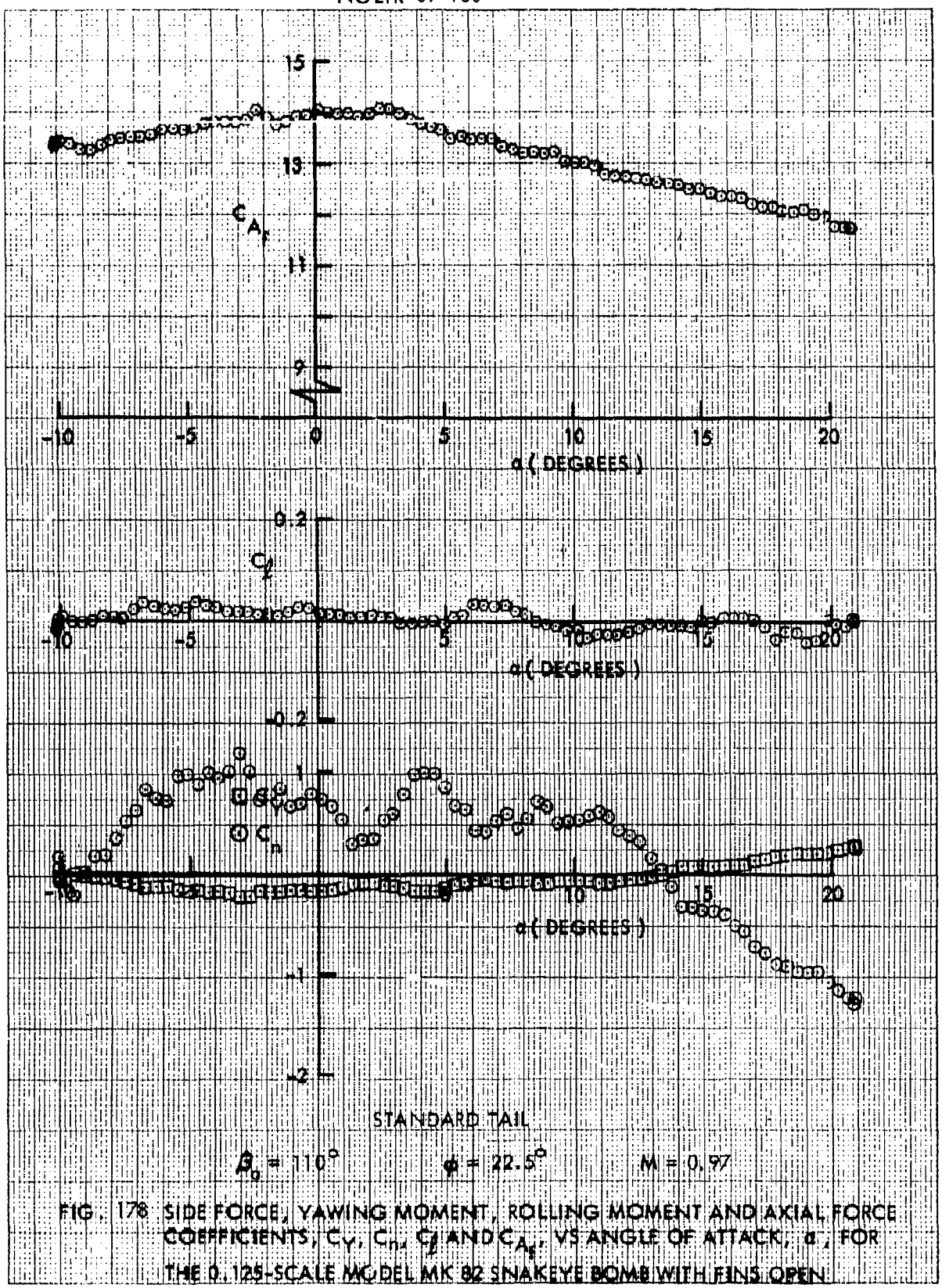


FIG. 178 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

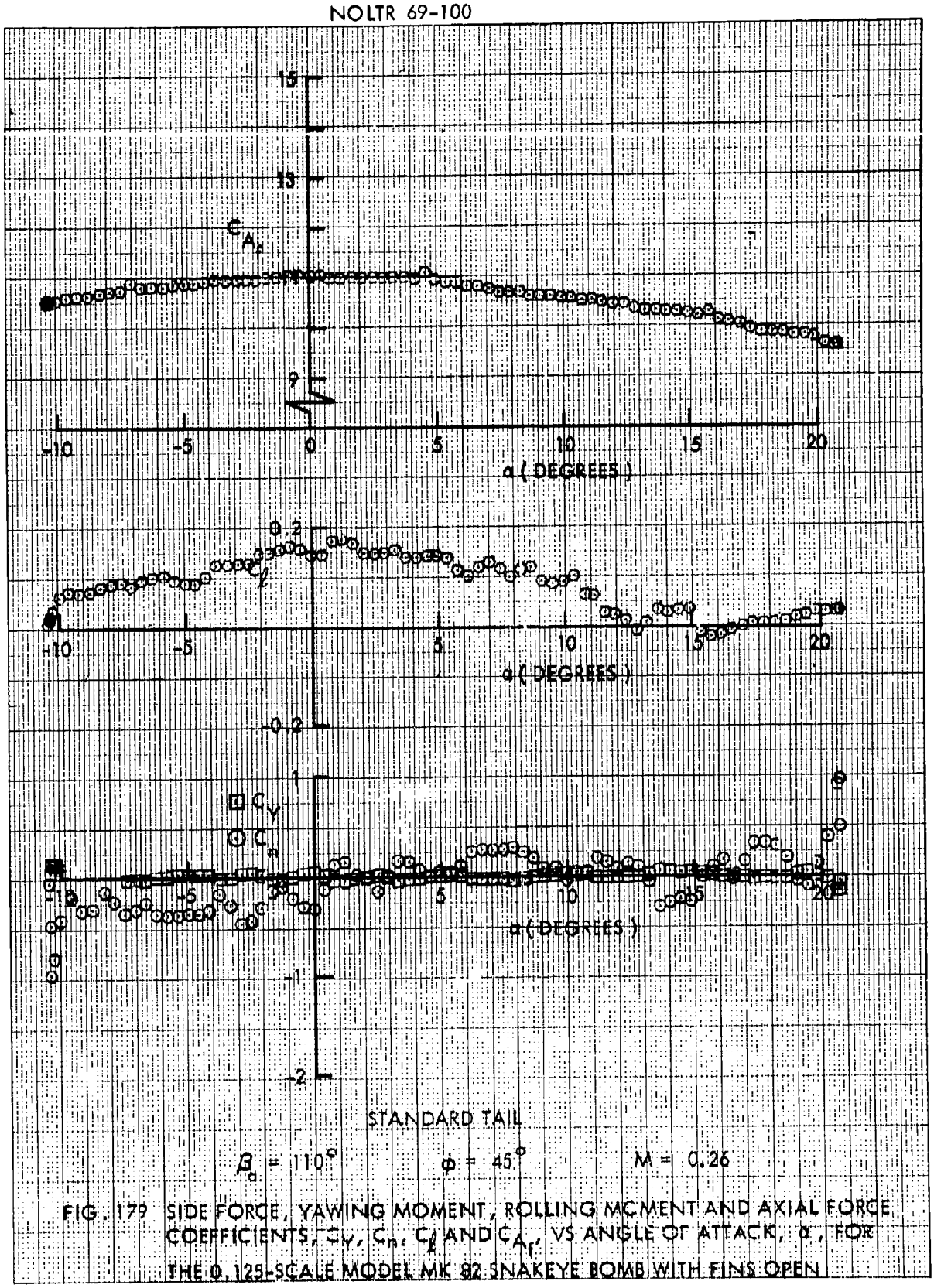


FIG. 179 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

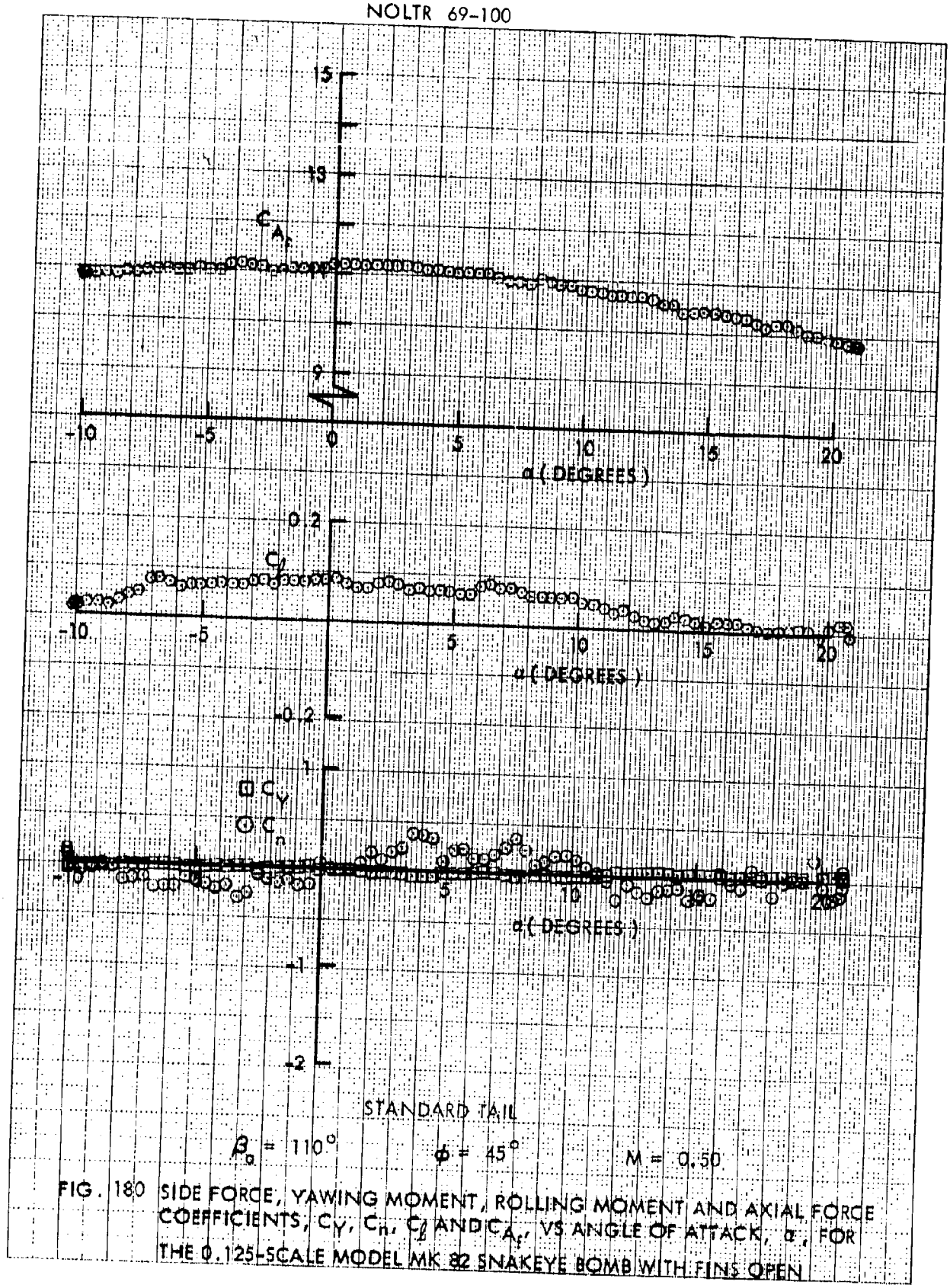


FIG. 180 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

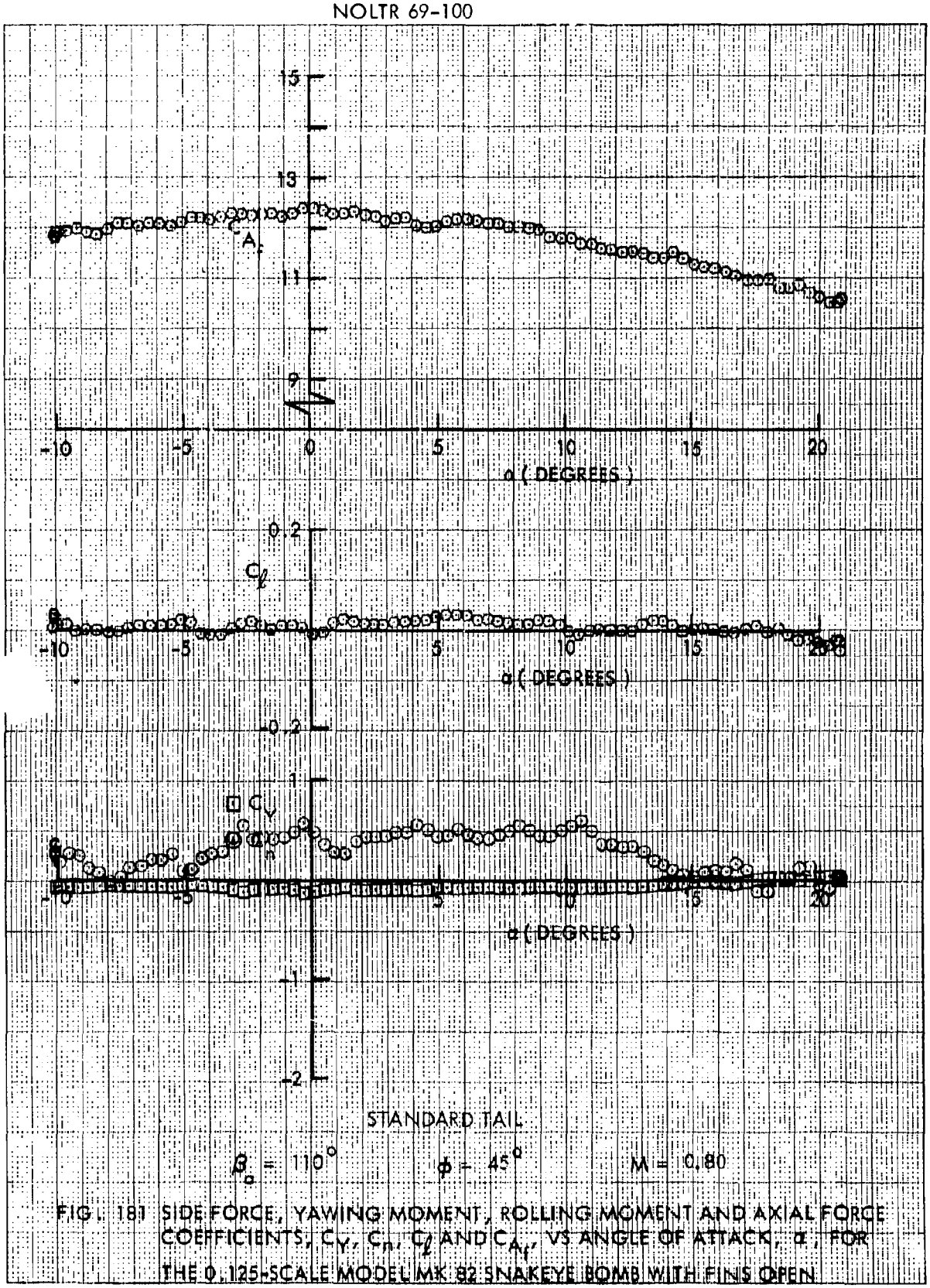


FIG. 181 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

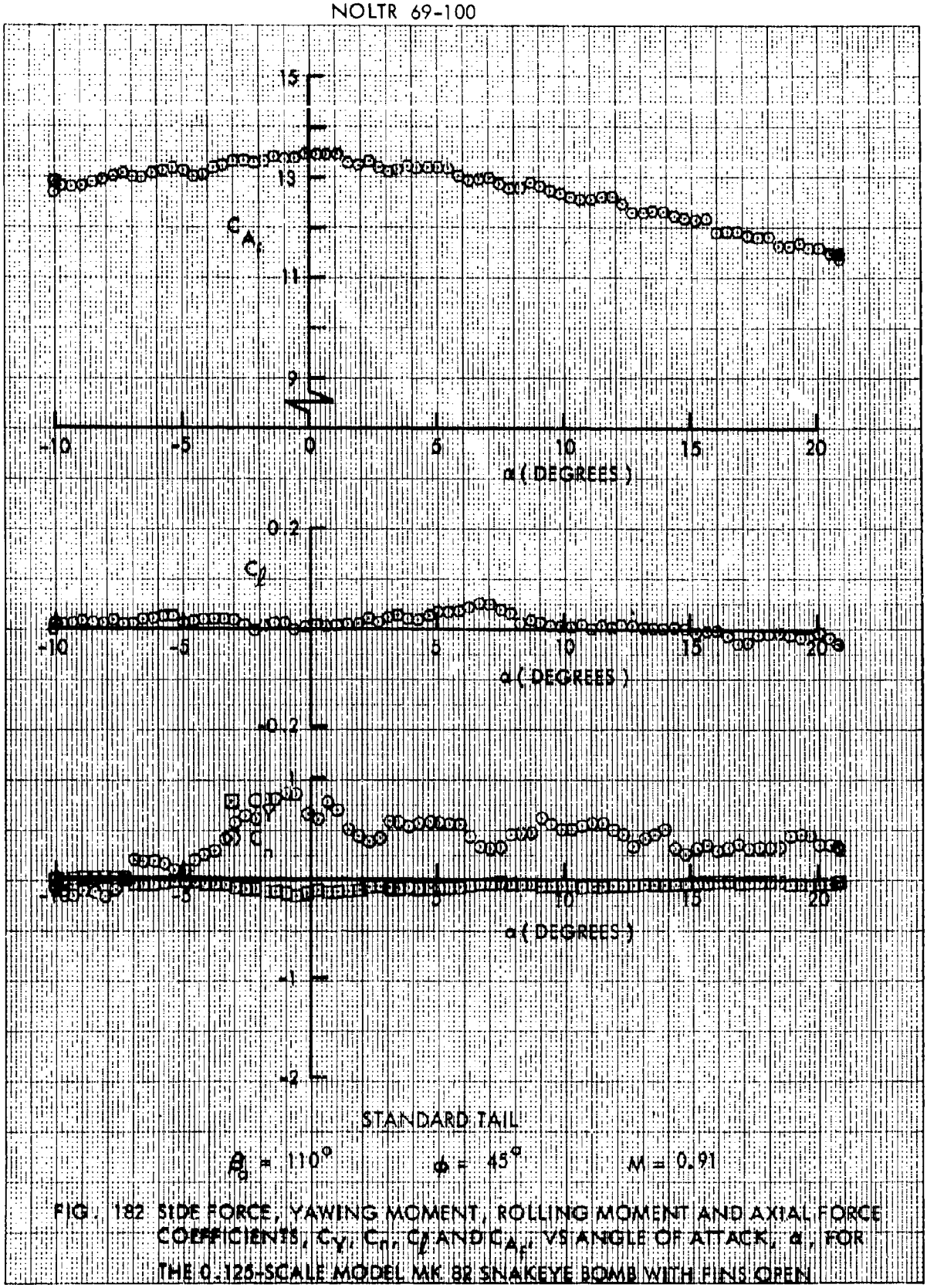
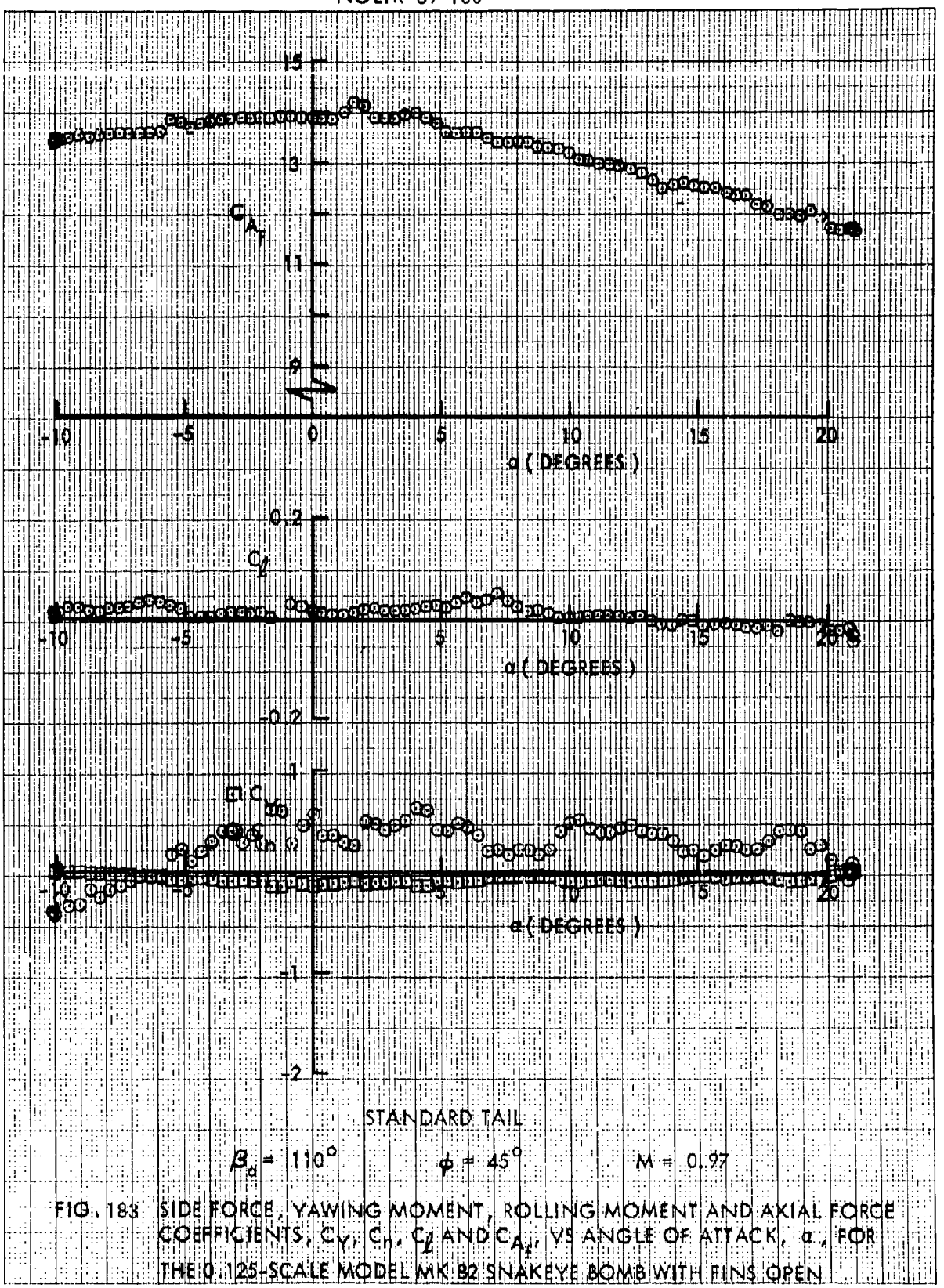


FIG. 182 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN



STANDARD TAIL

β_d = 110° ϕ = 45° M = 0.97

FIG. 183 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_F}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

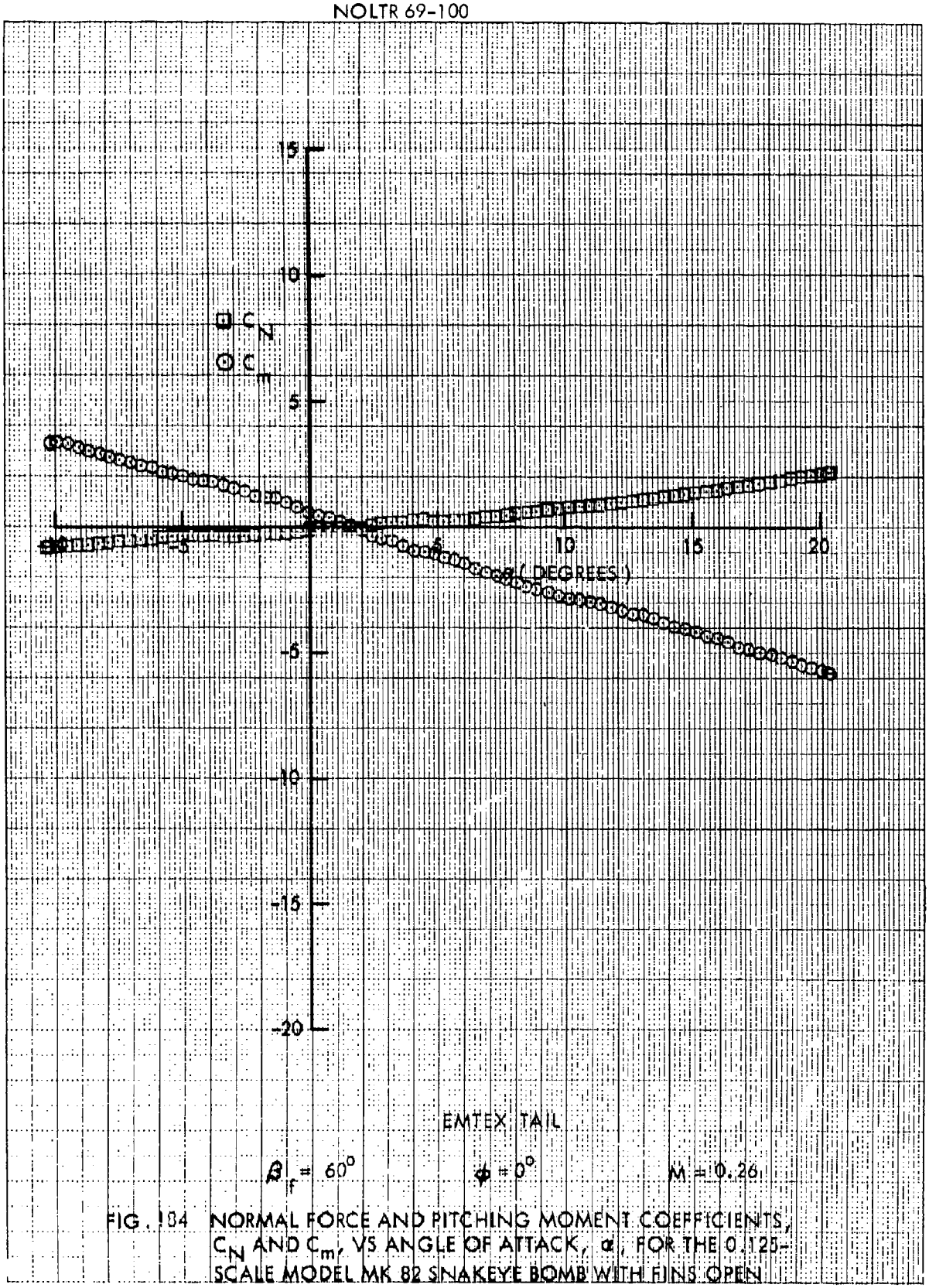


FIG. 184 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

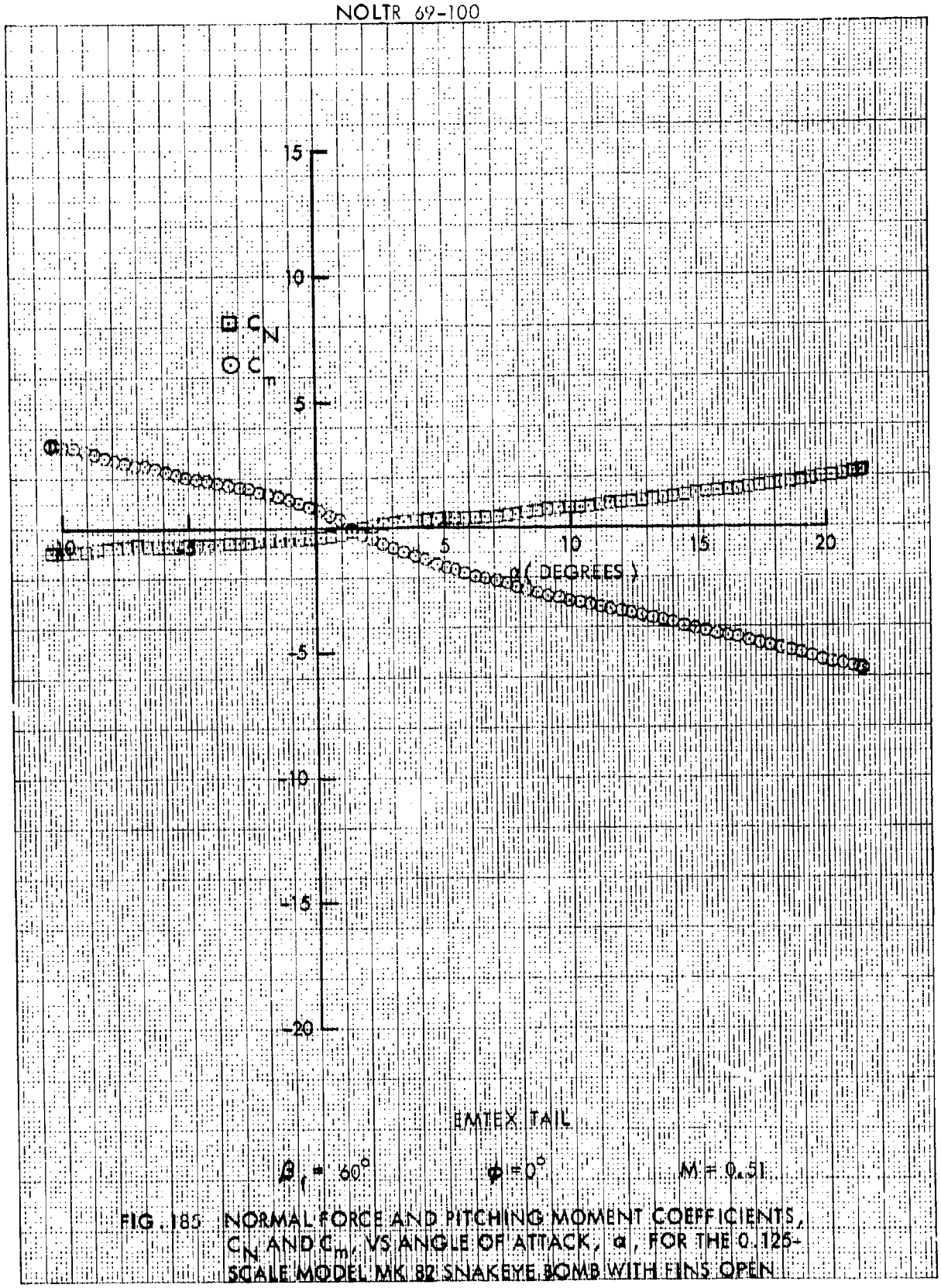


FIG. 185 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

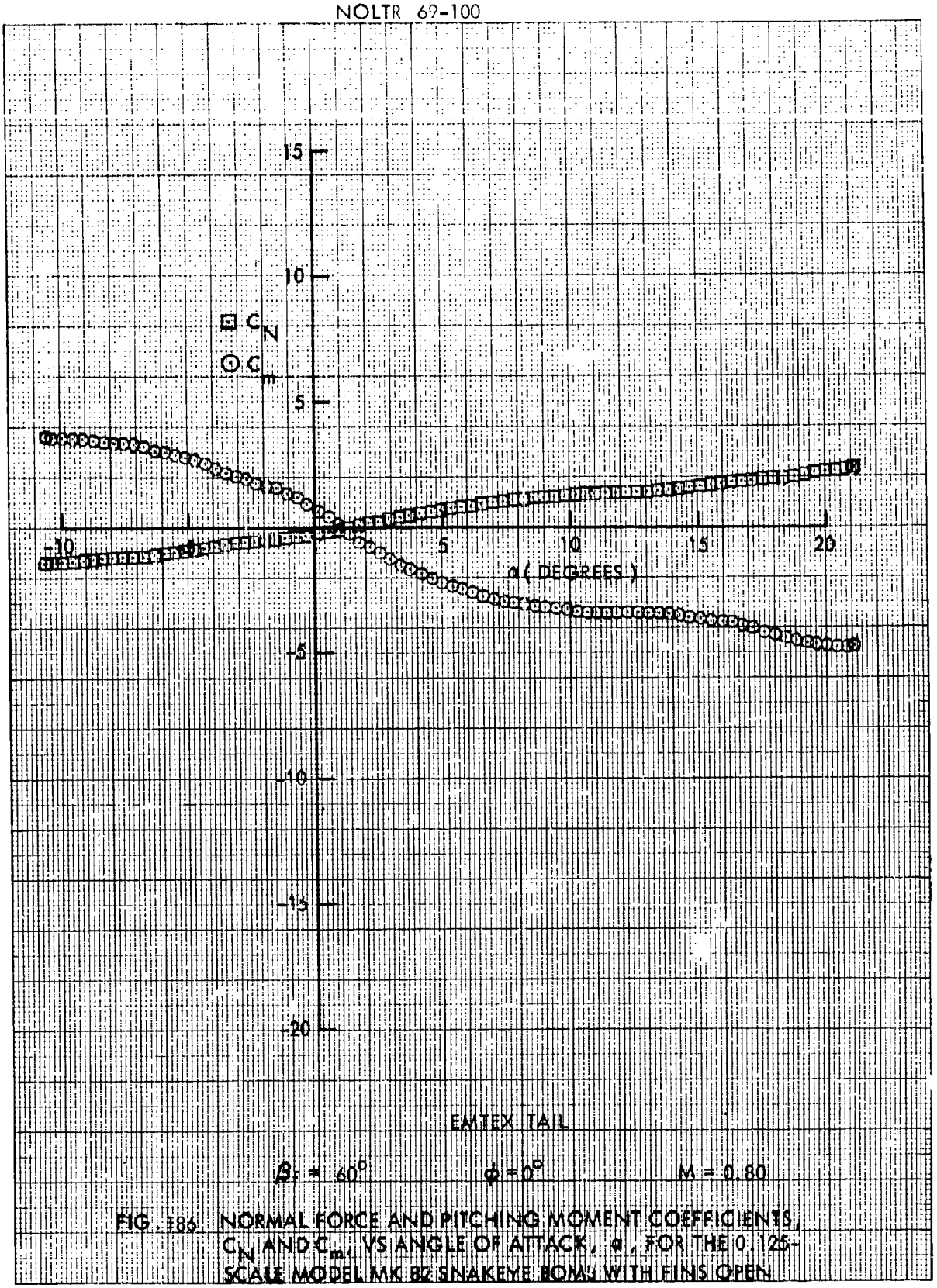


FIG. 186 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

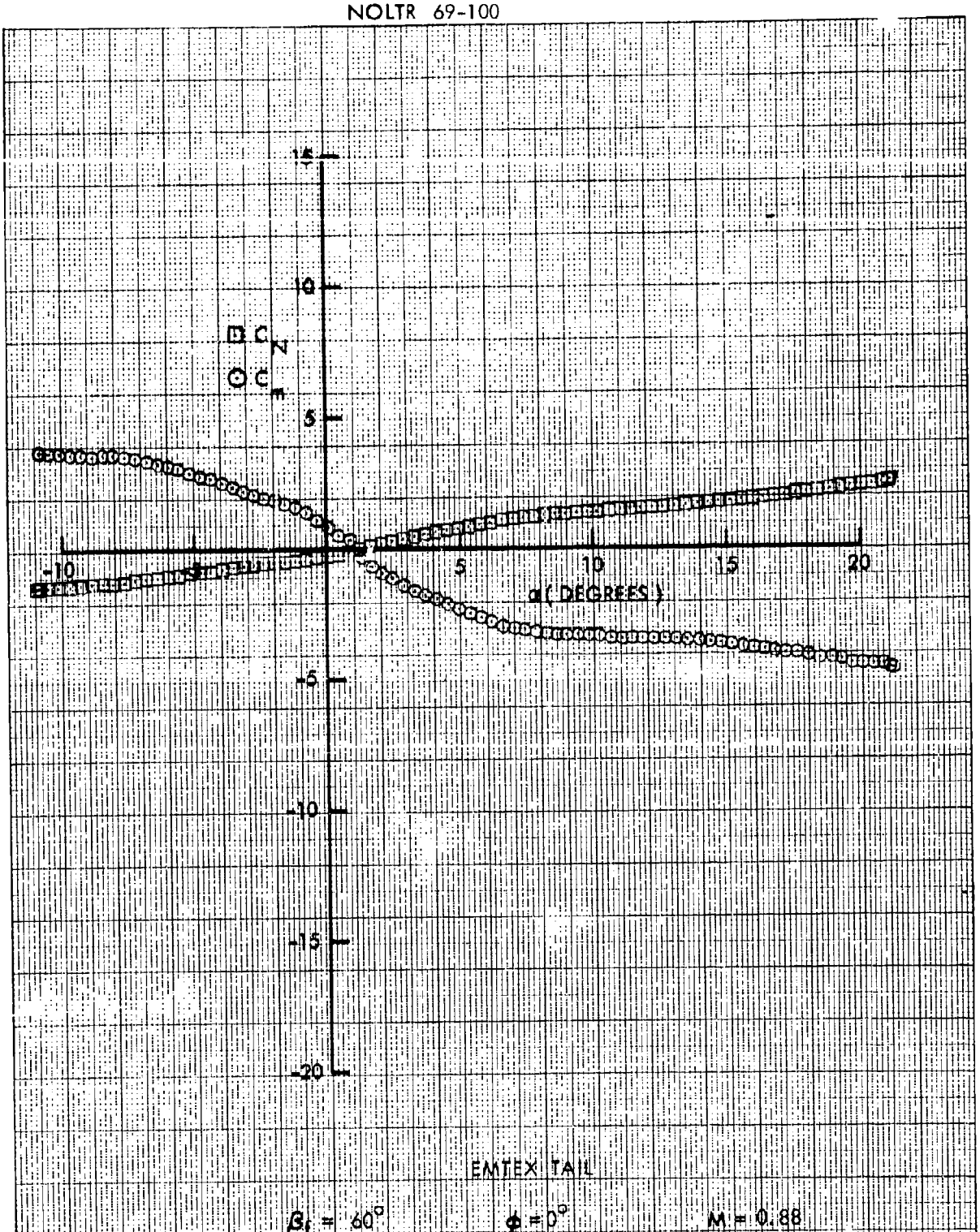


FIG. 187 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

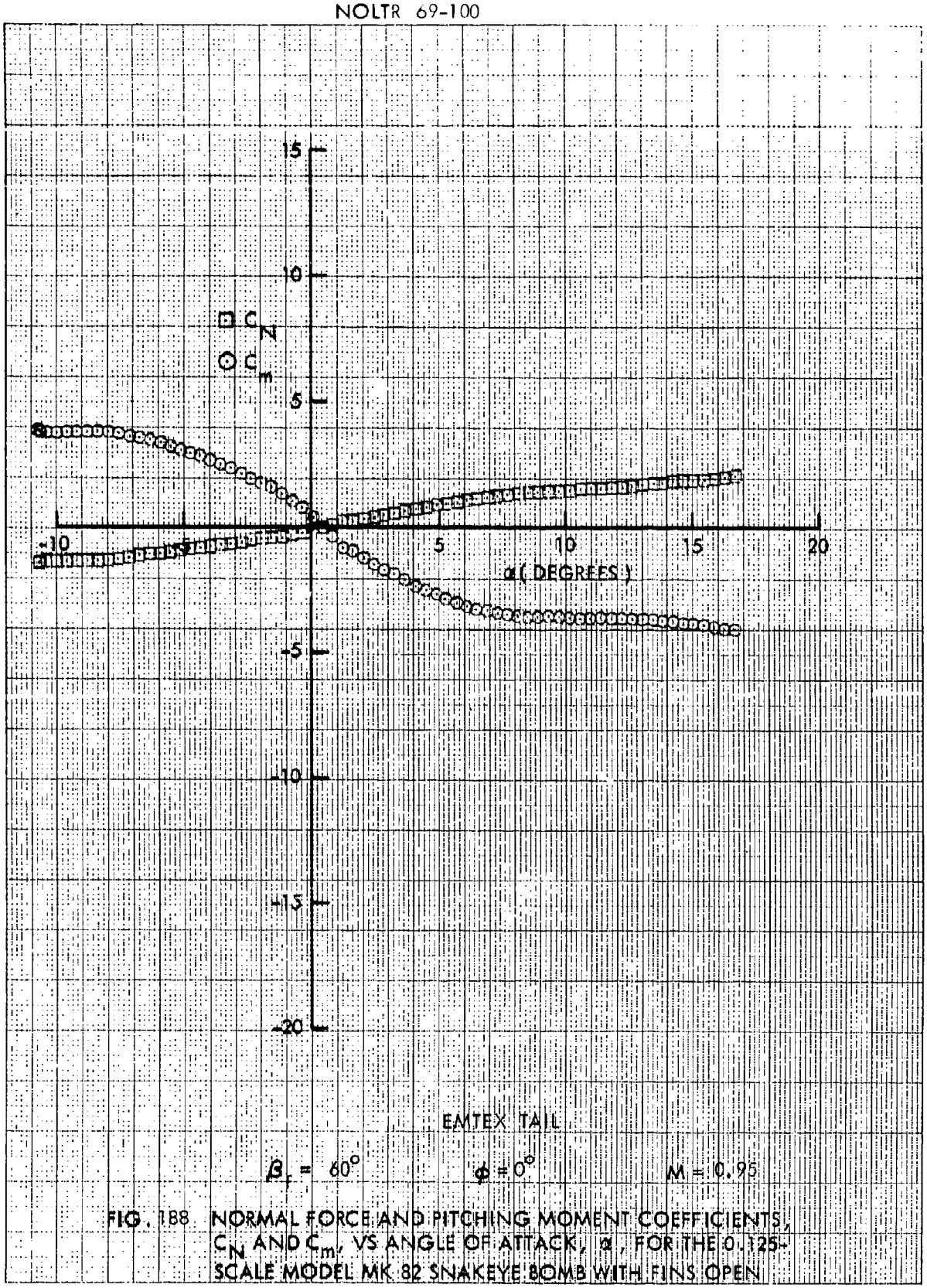


FIG. 188 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

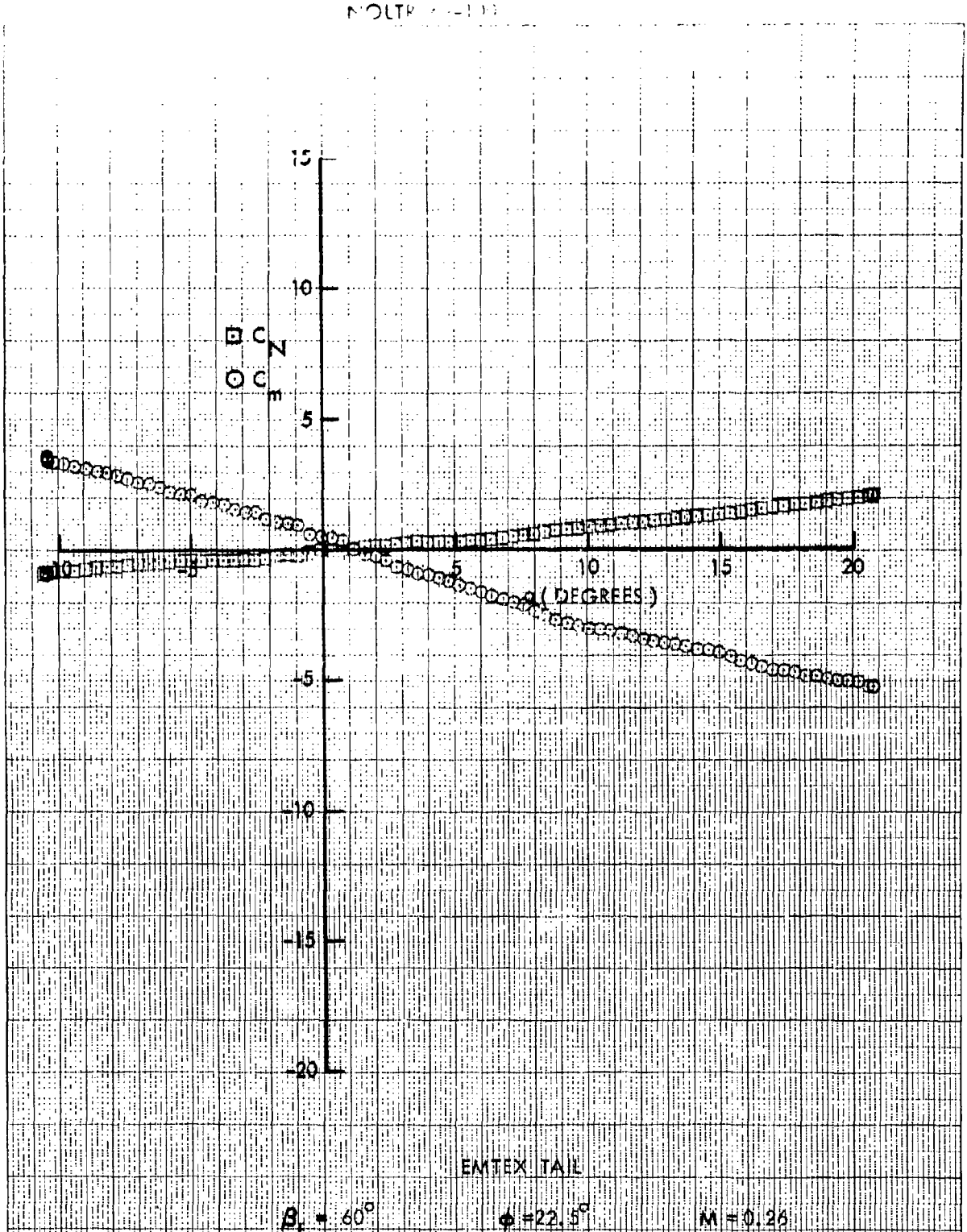


FIG. 189 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

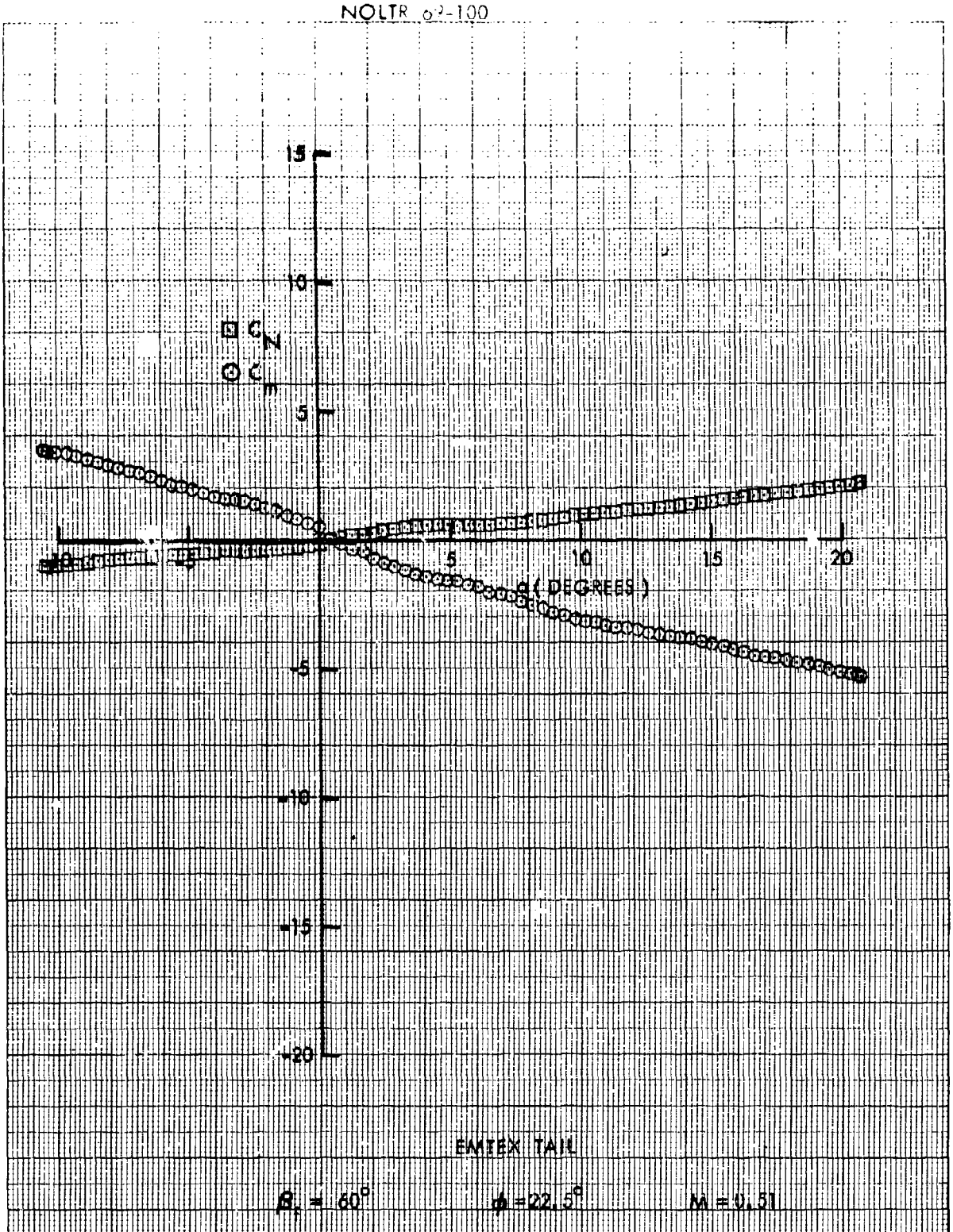


FIG. 190 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

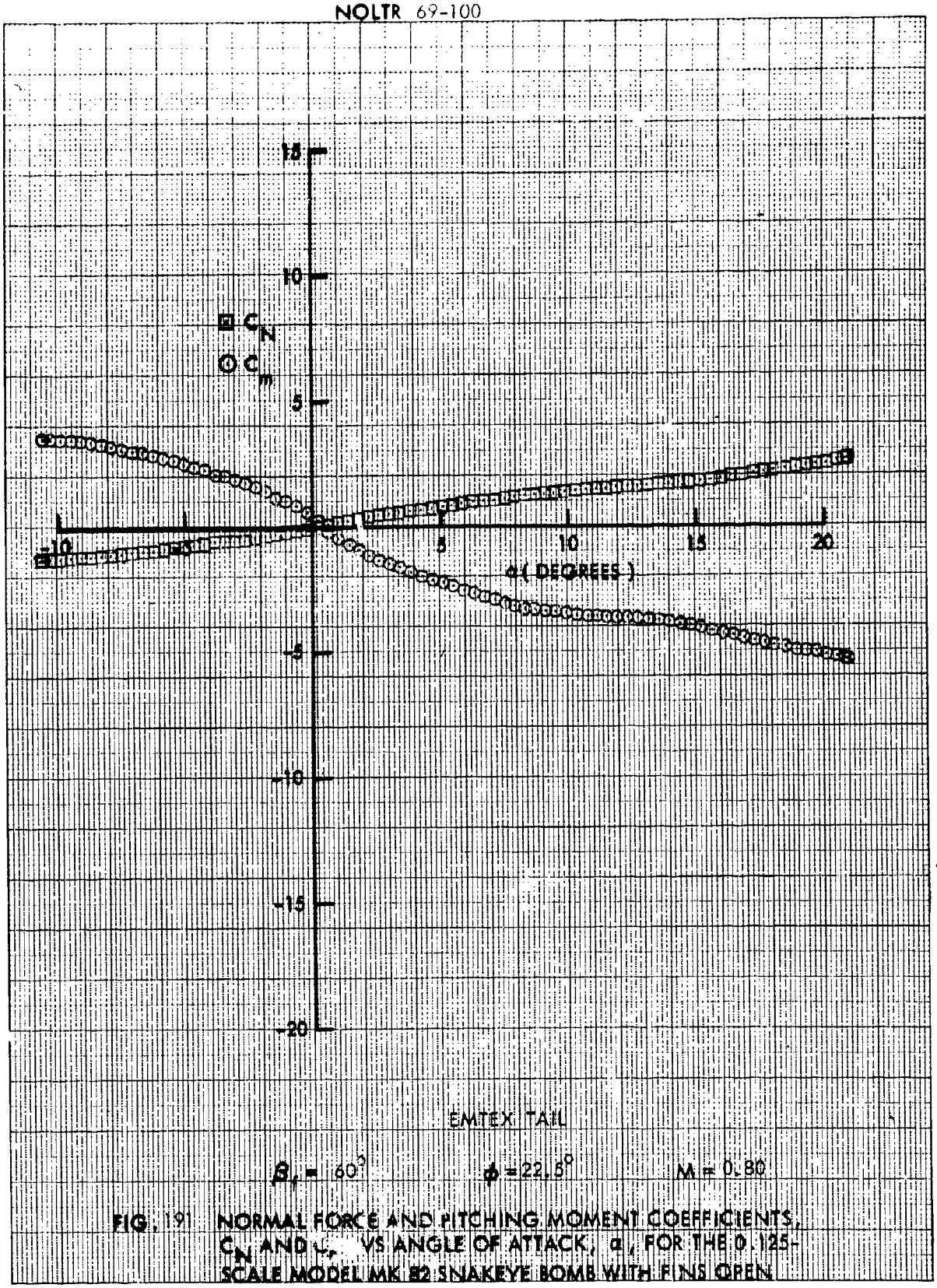


FIG. 191 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

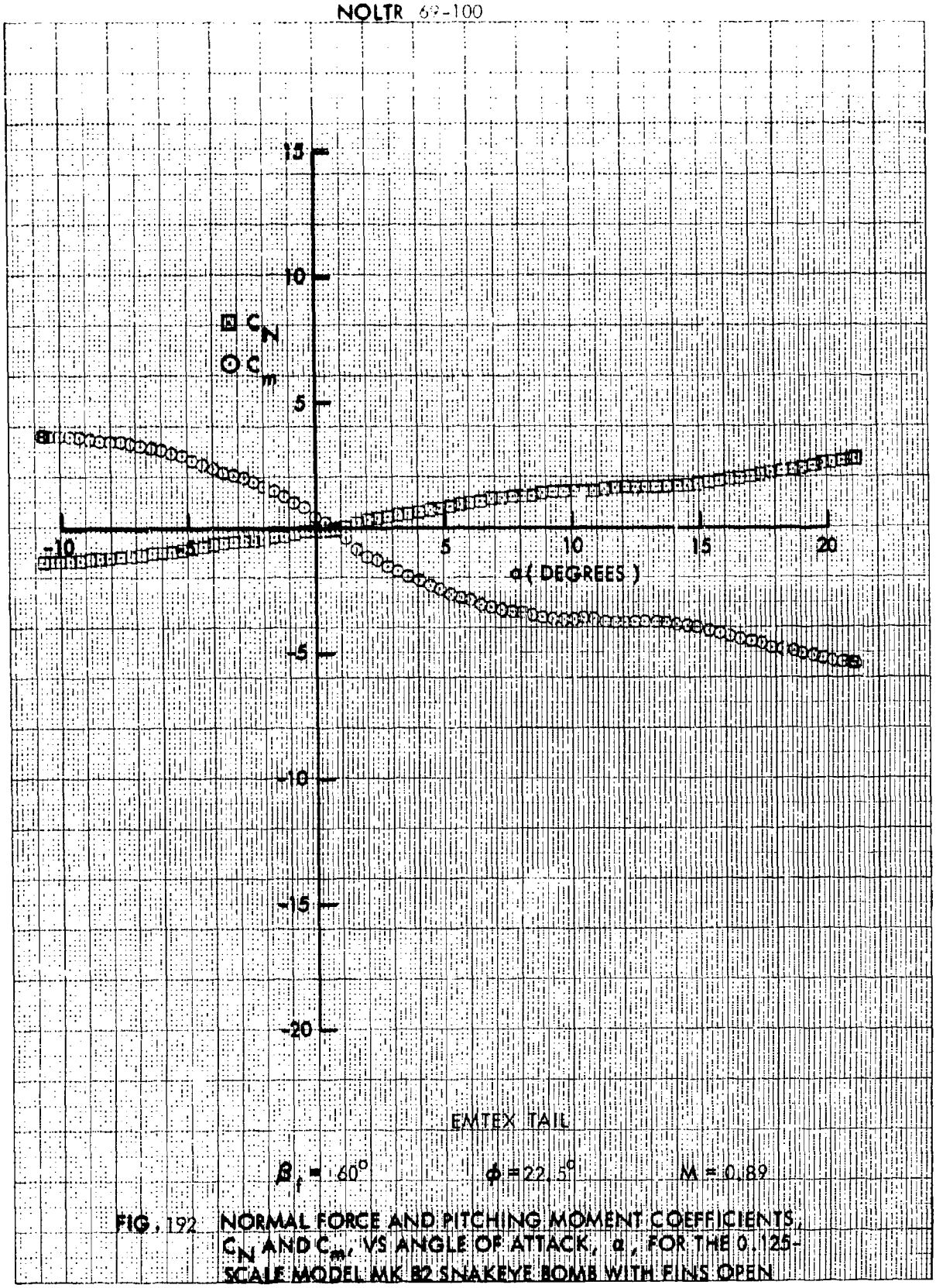


FIG. 192 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

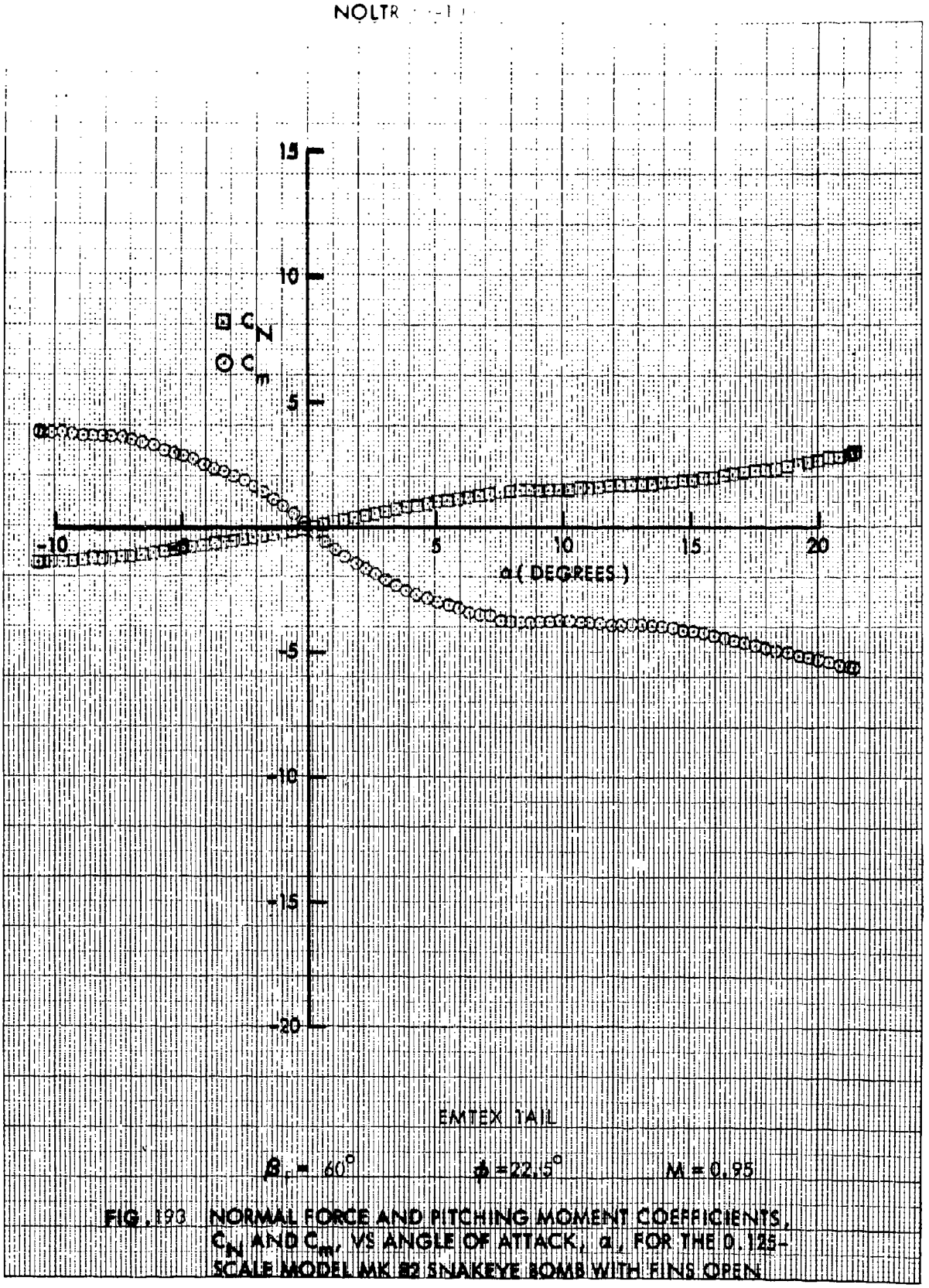


FIG. 193 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

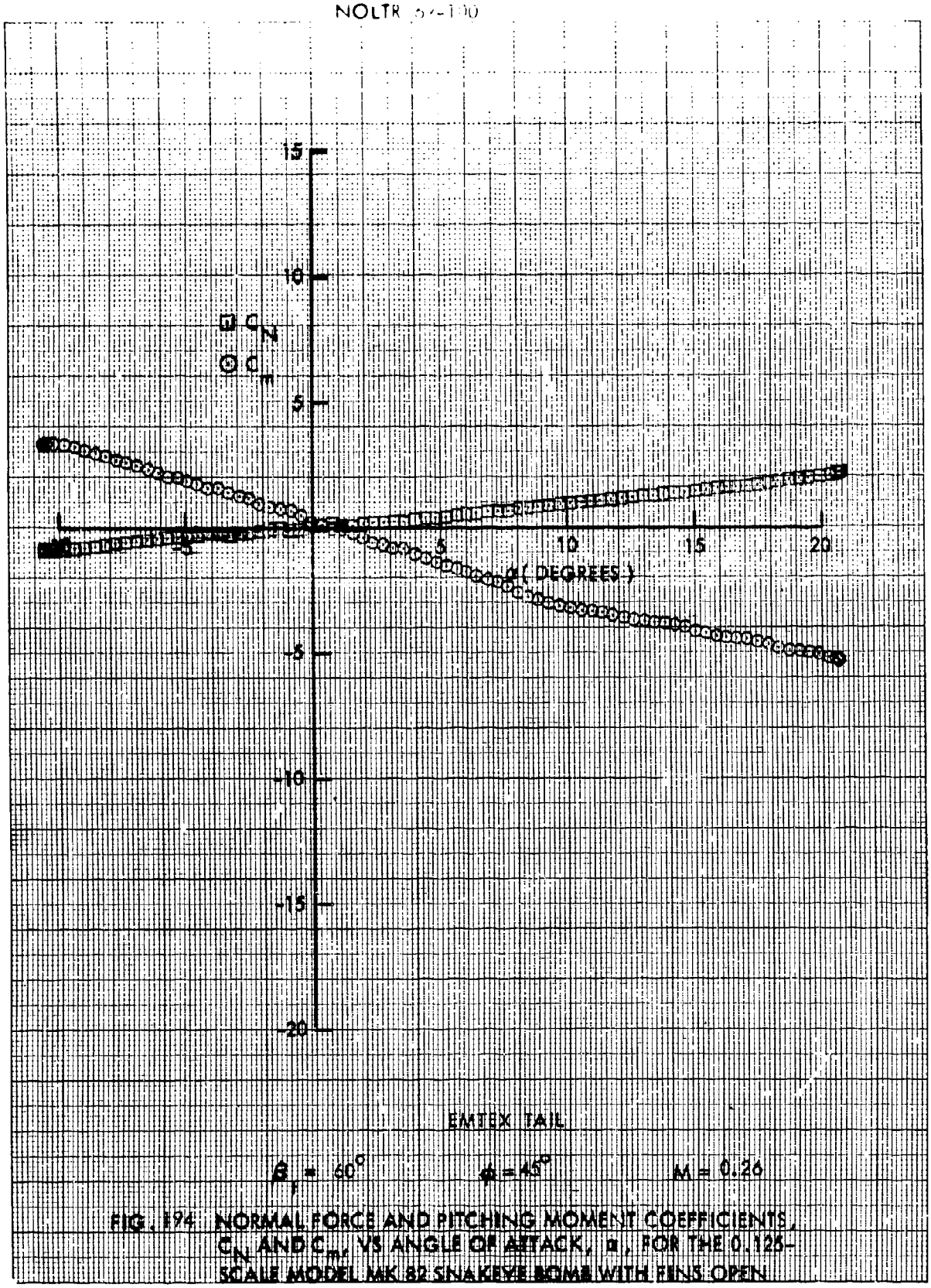


FIG. 194 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

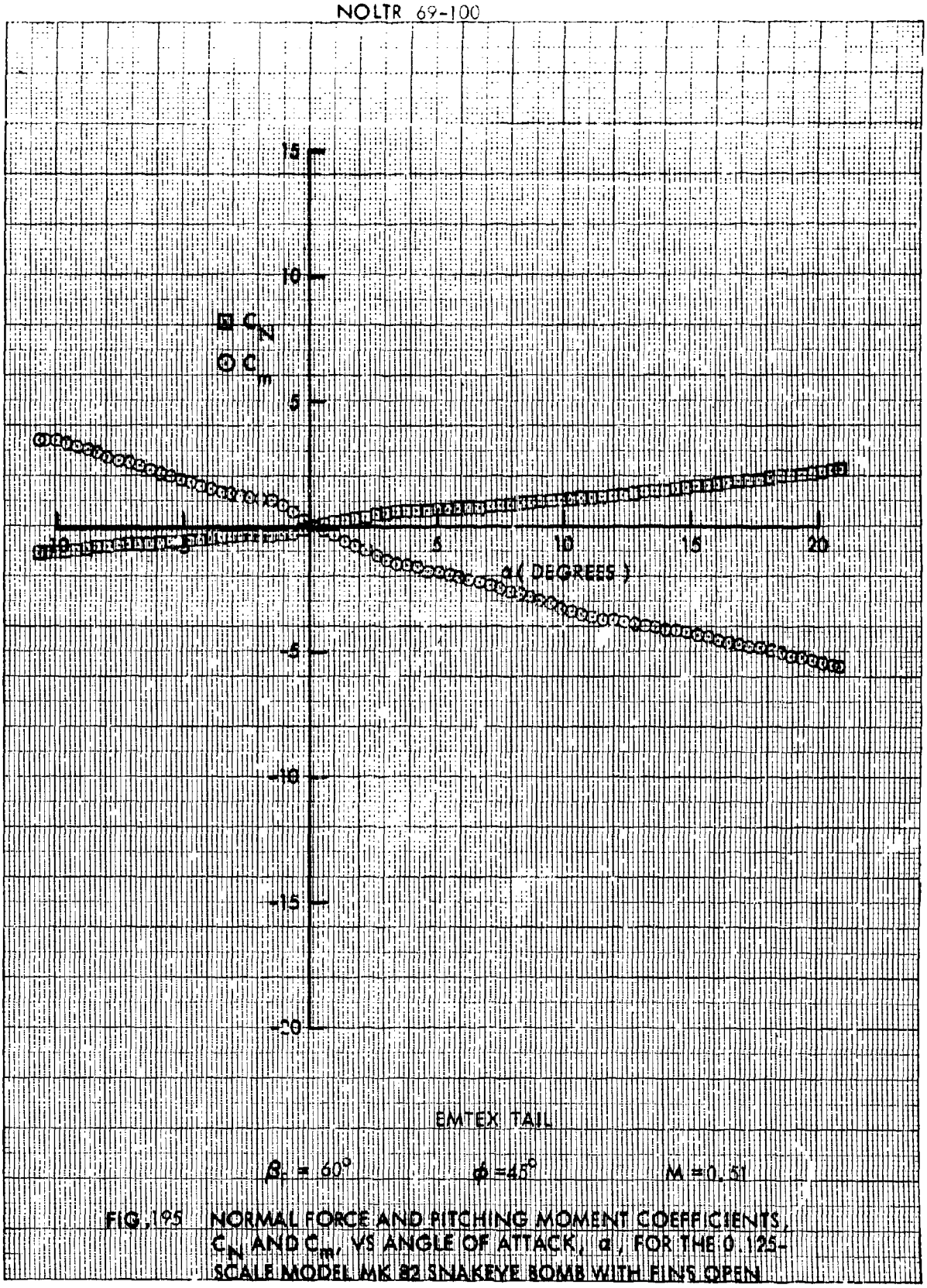


FIG. 195 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

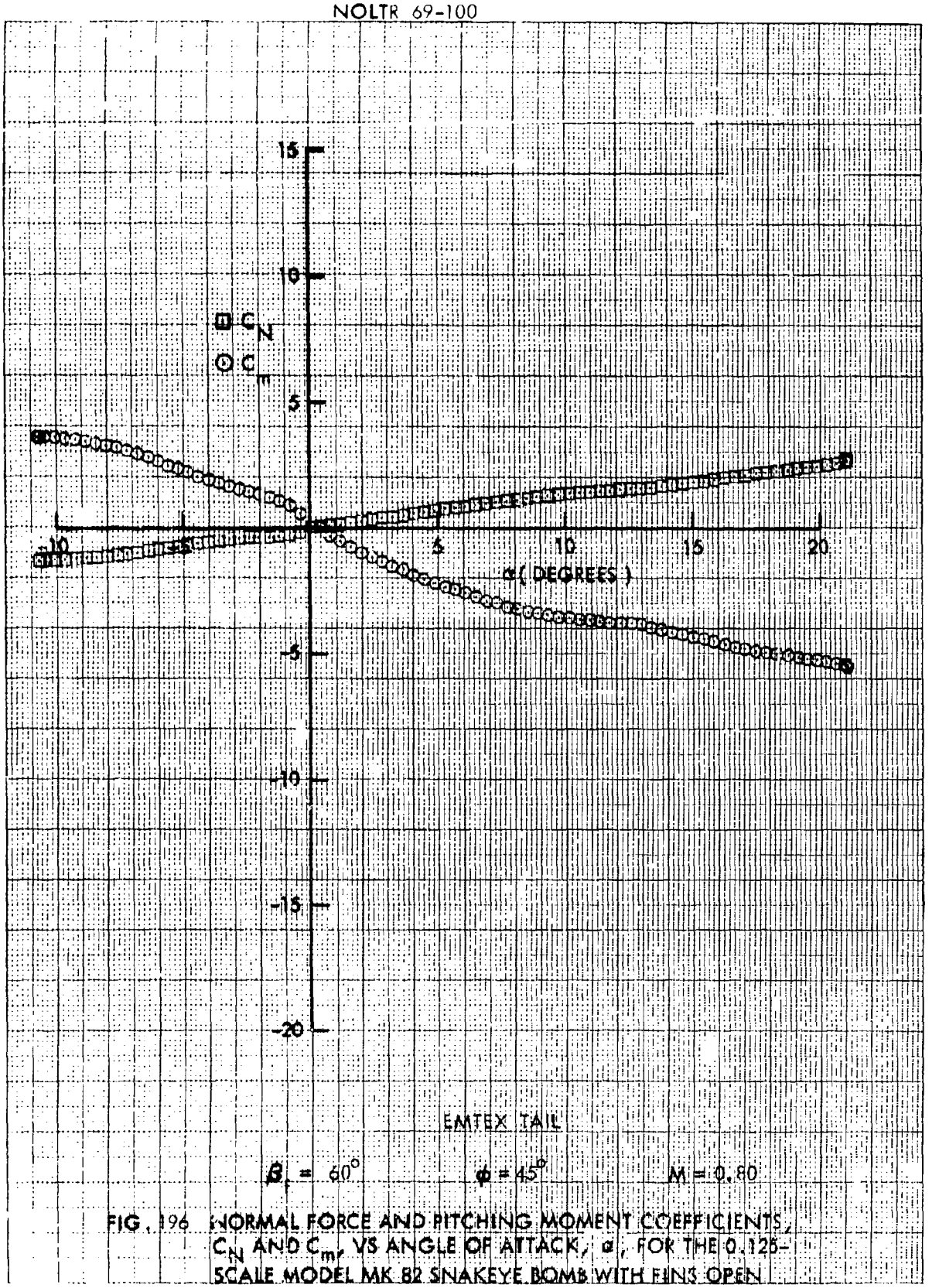


FIG. 196 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

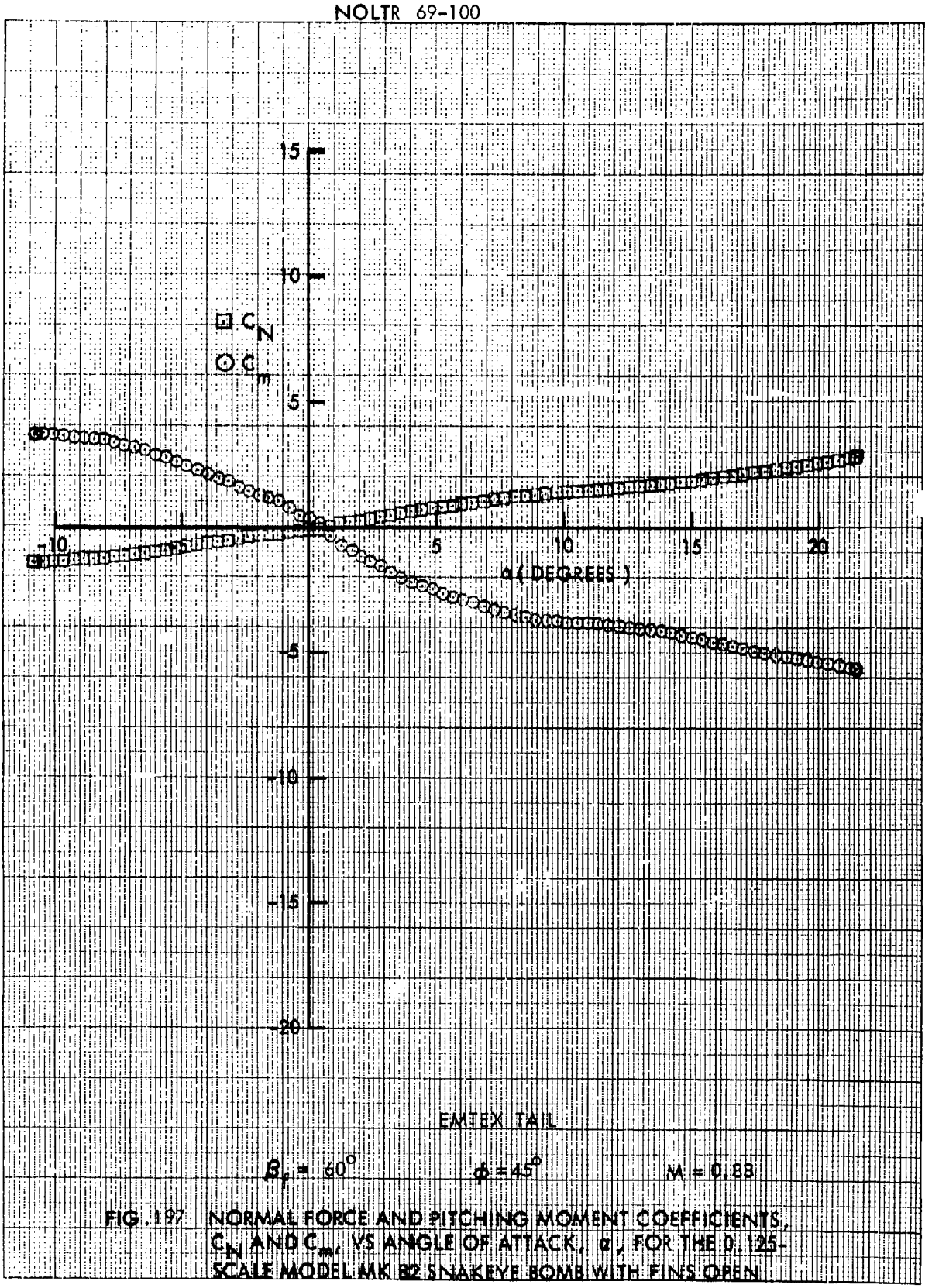


FIG. 197 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

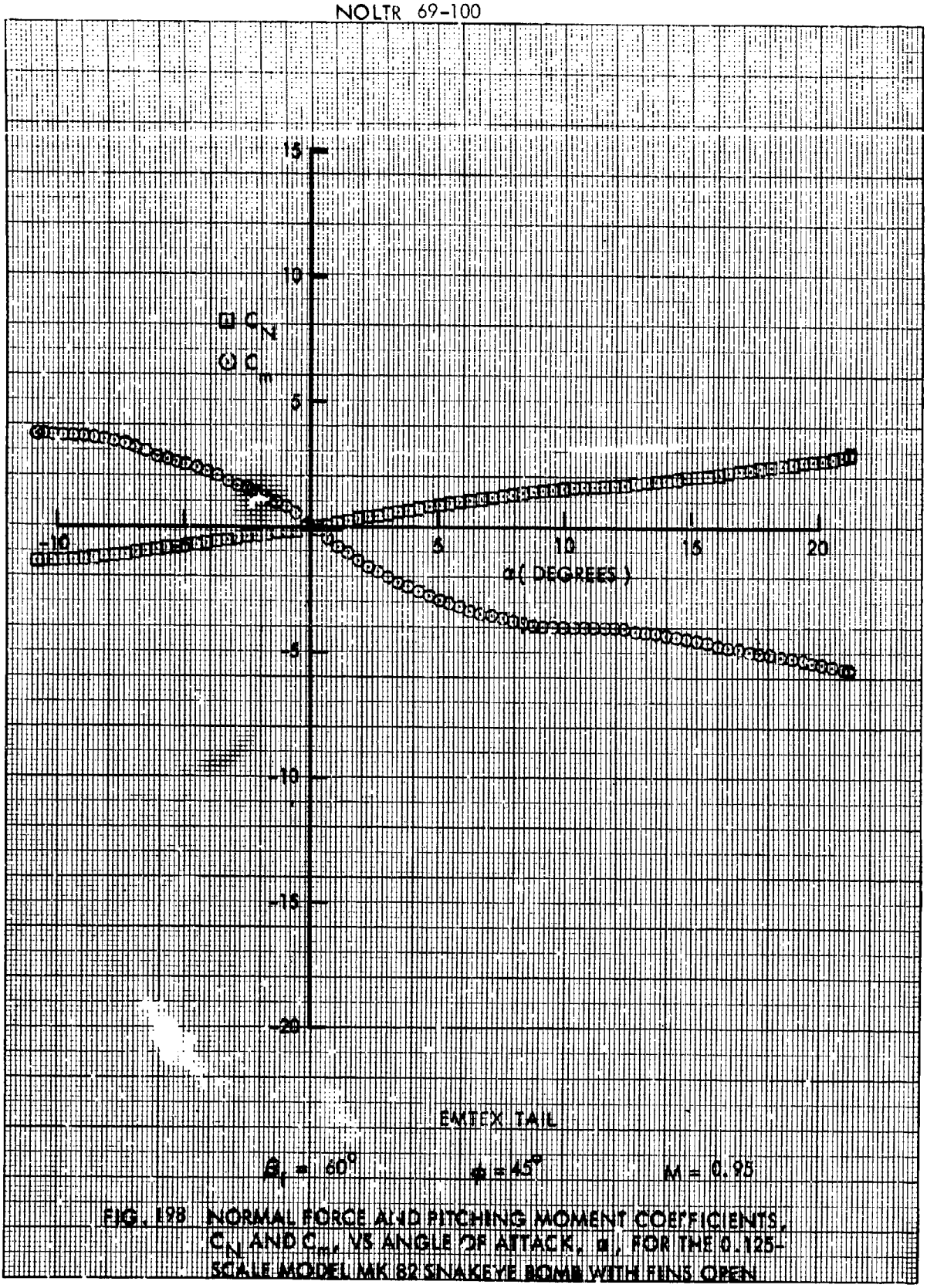


FIG. 198 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

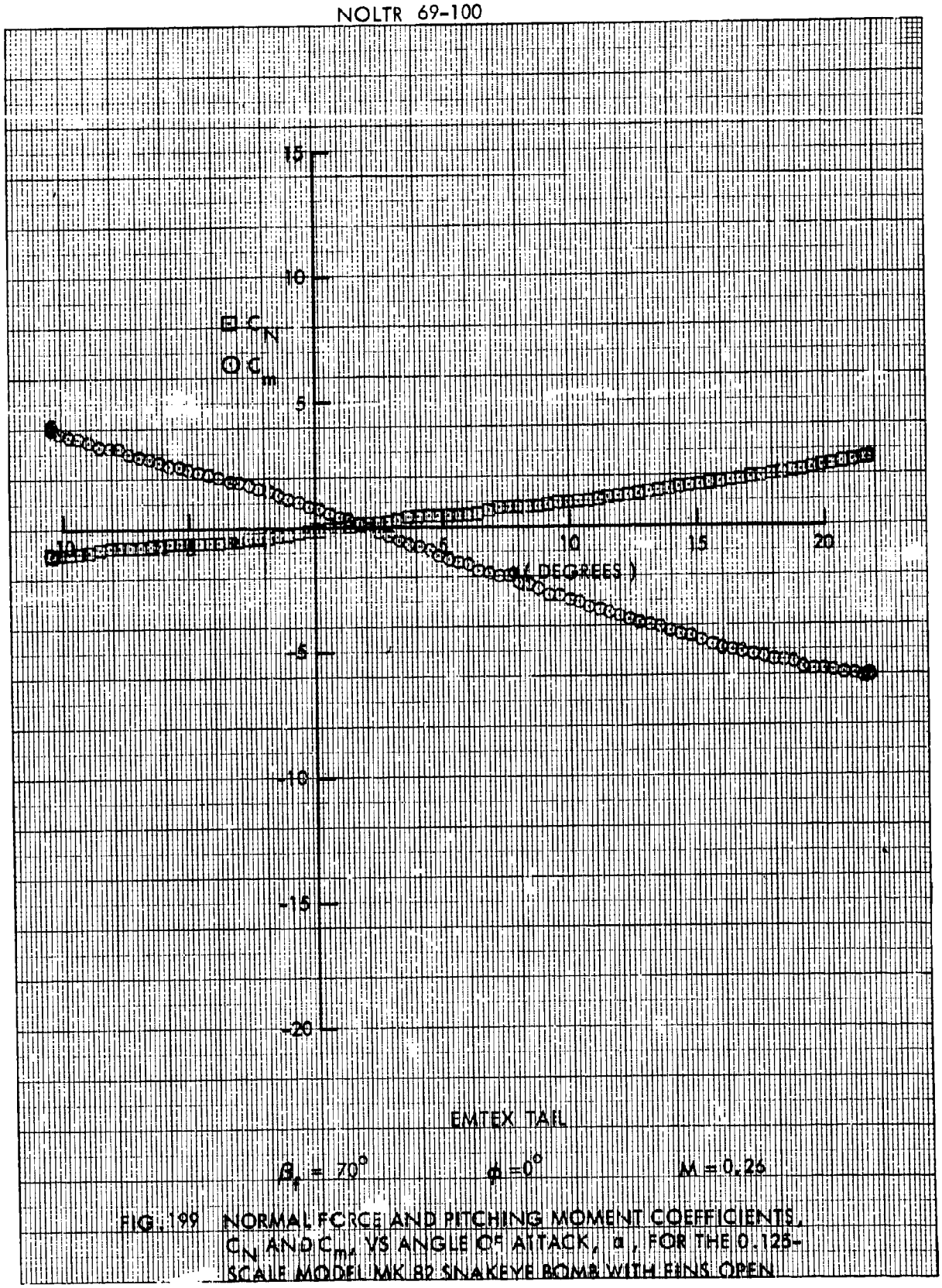


FIG. 199 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

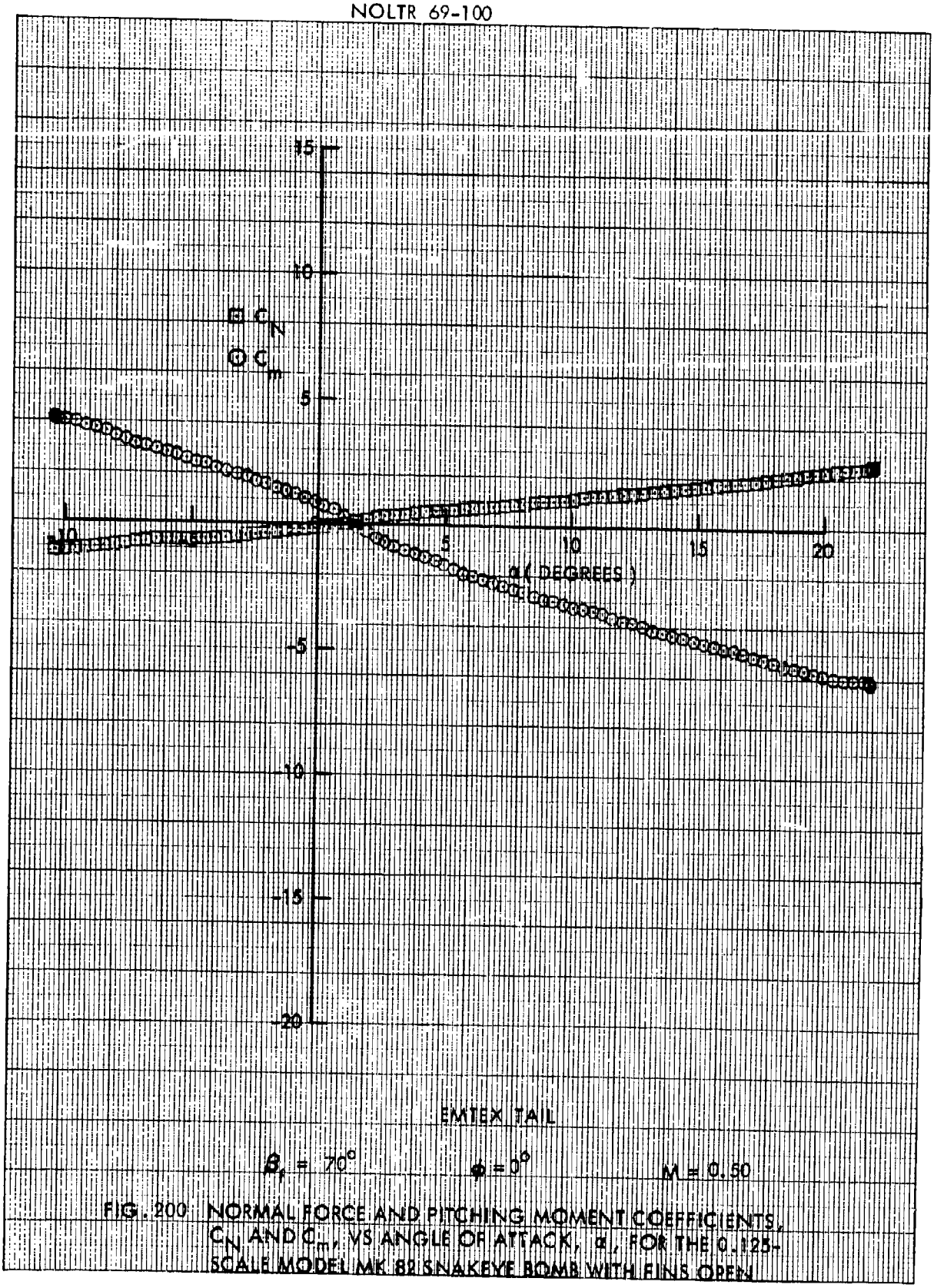


FIG. 200 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

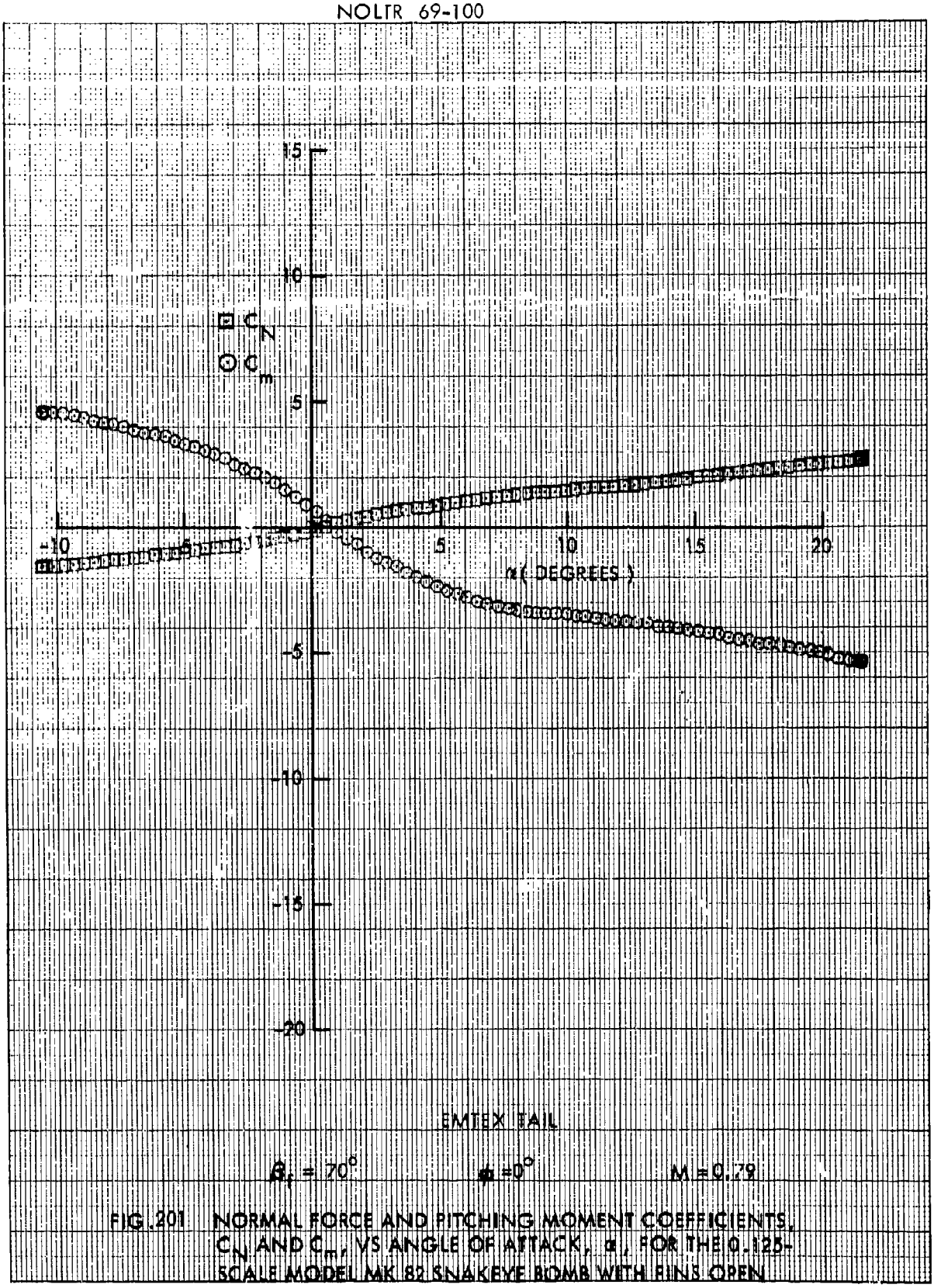


FIG. 201 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

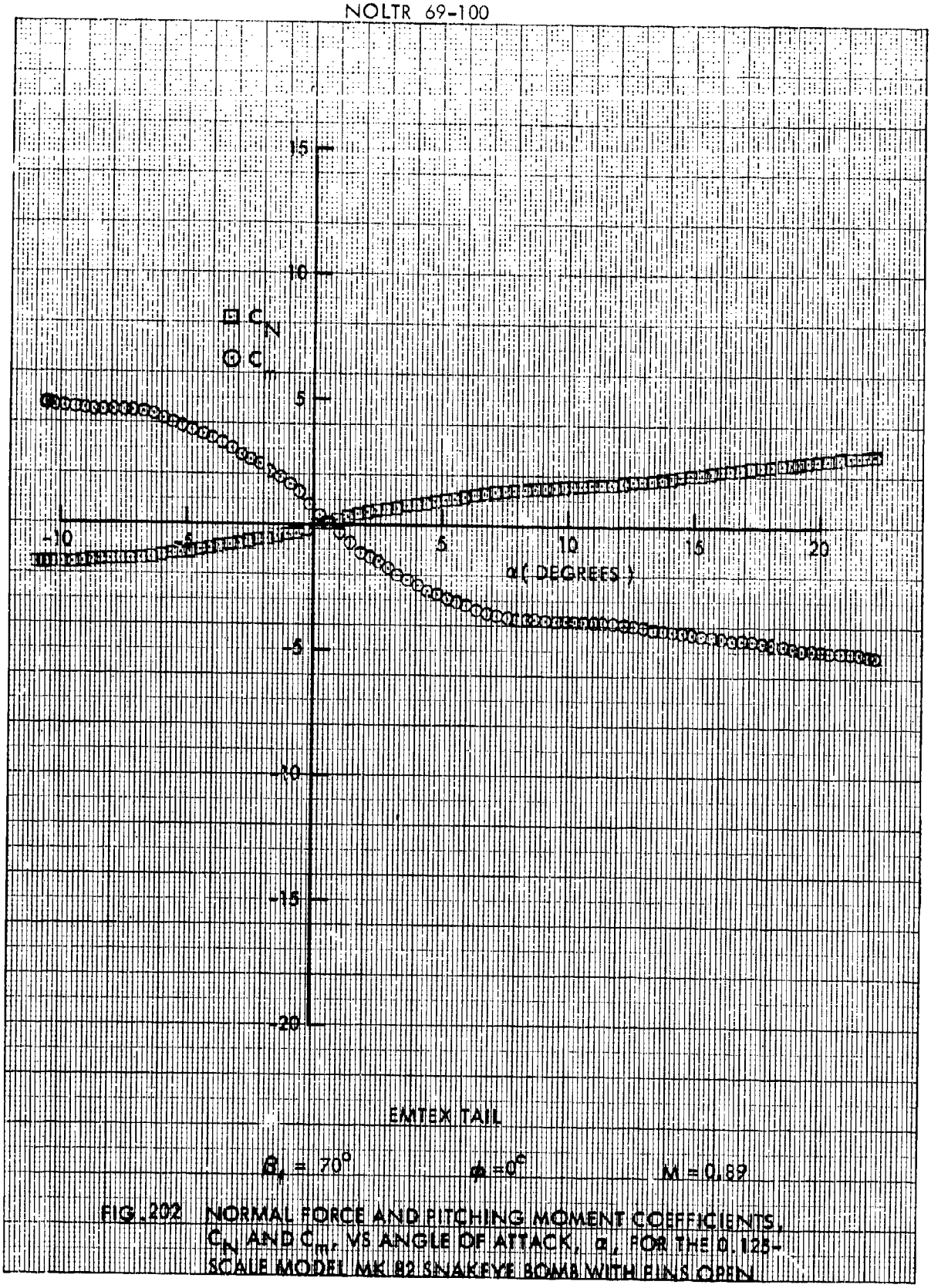


FIG. 202 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

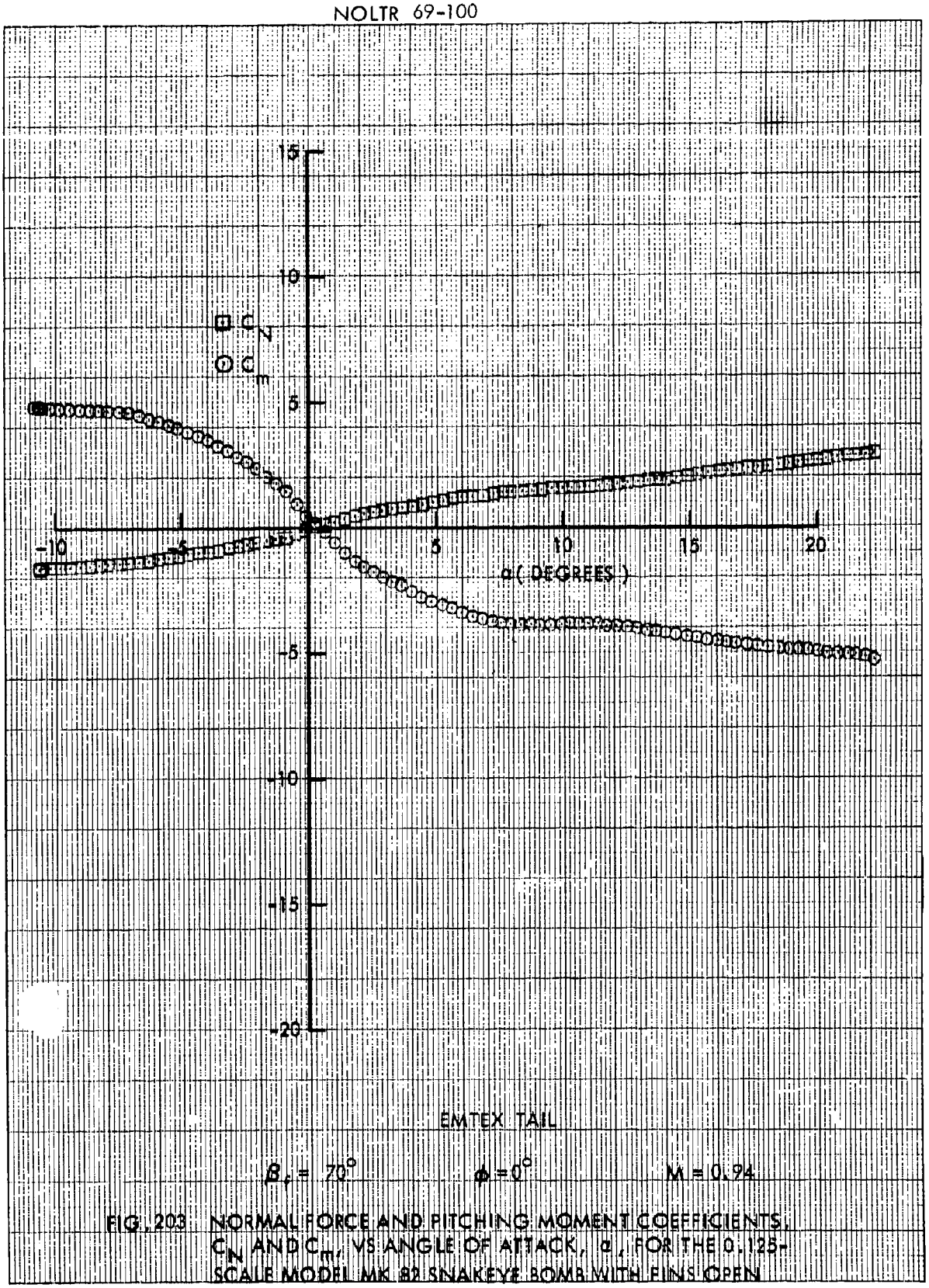


FIG. 203 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

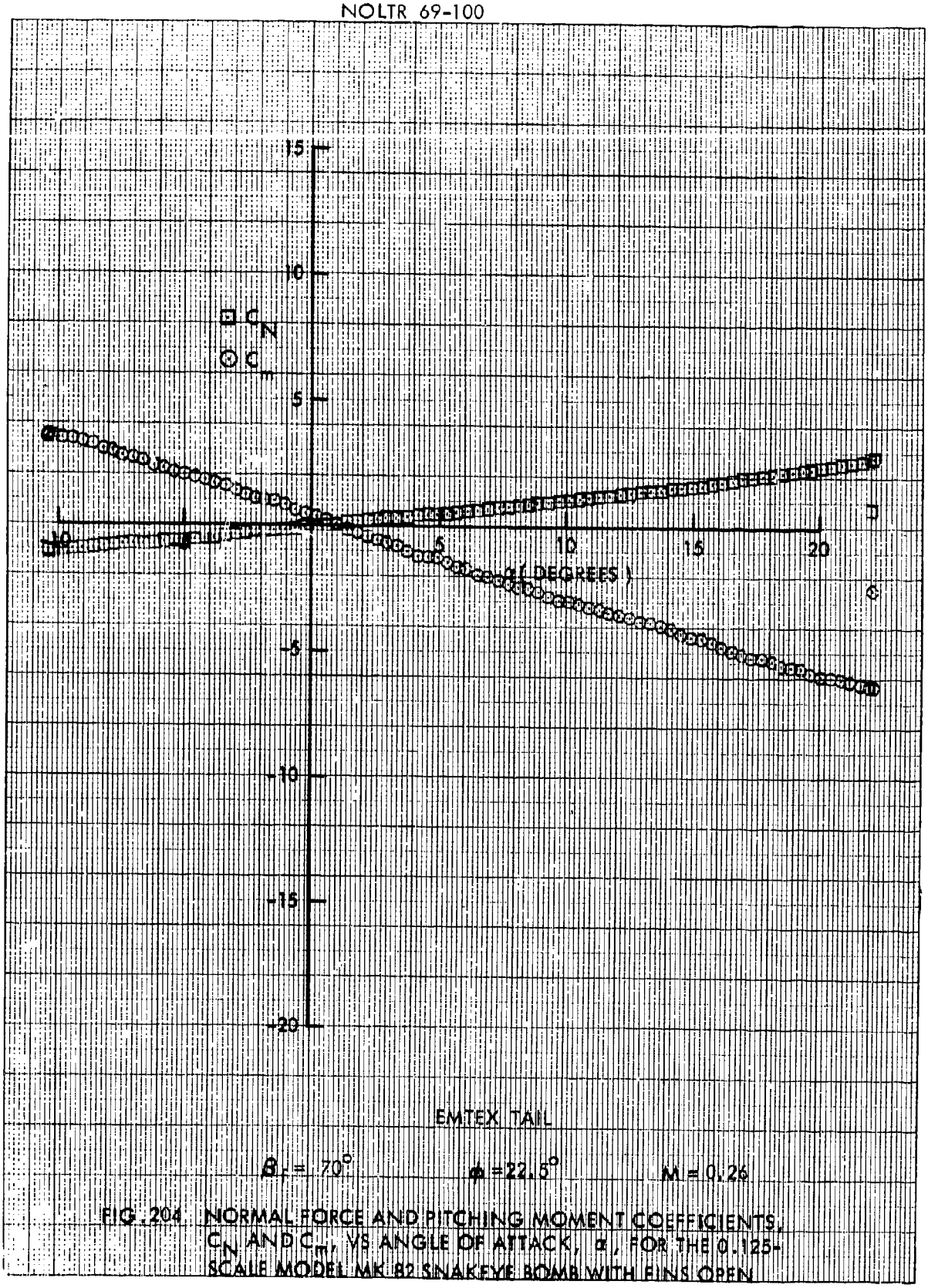


FIG. 204 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

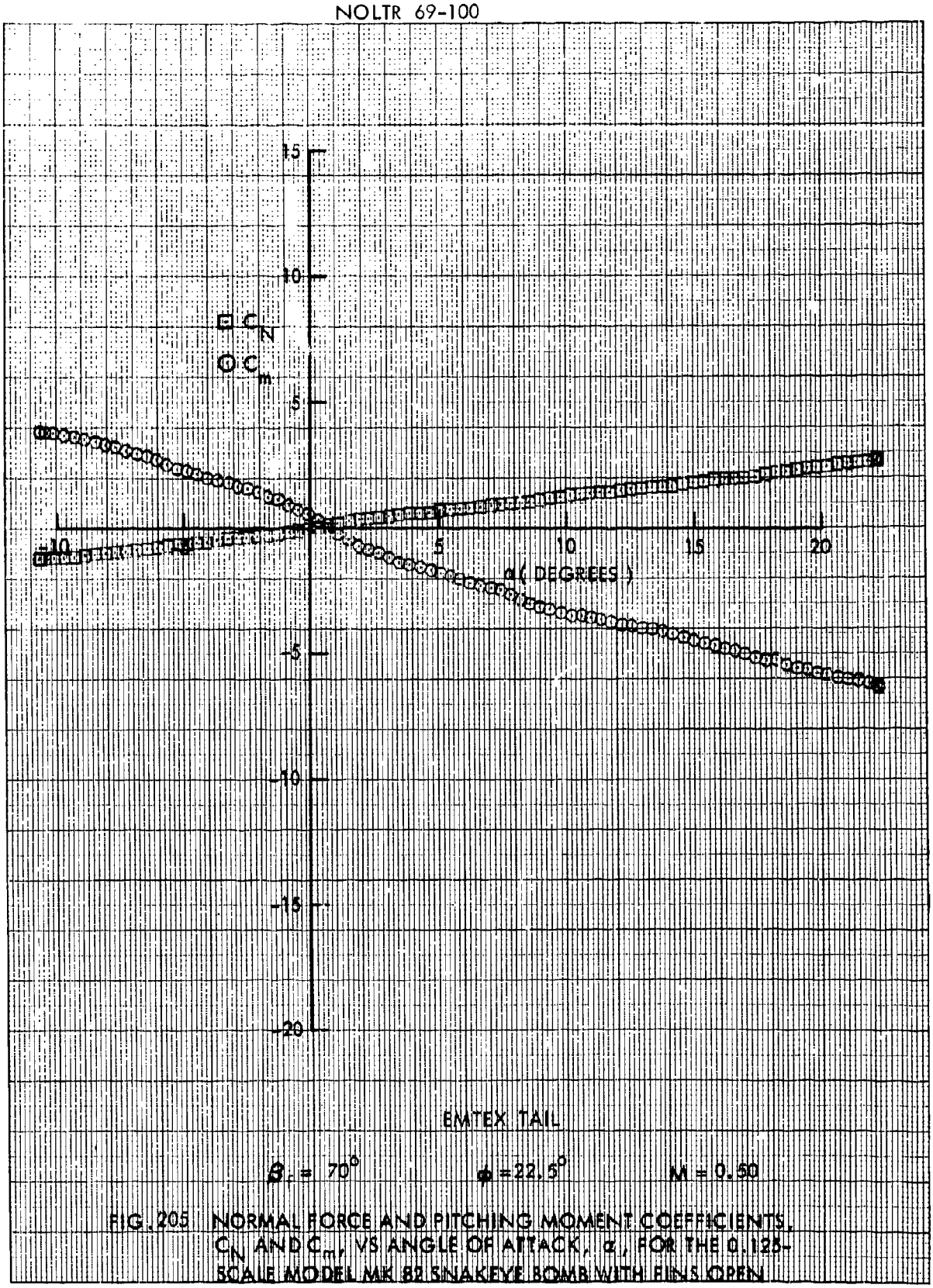


FIG. 205 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

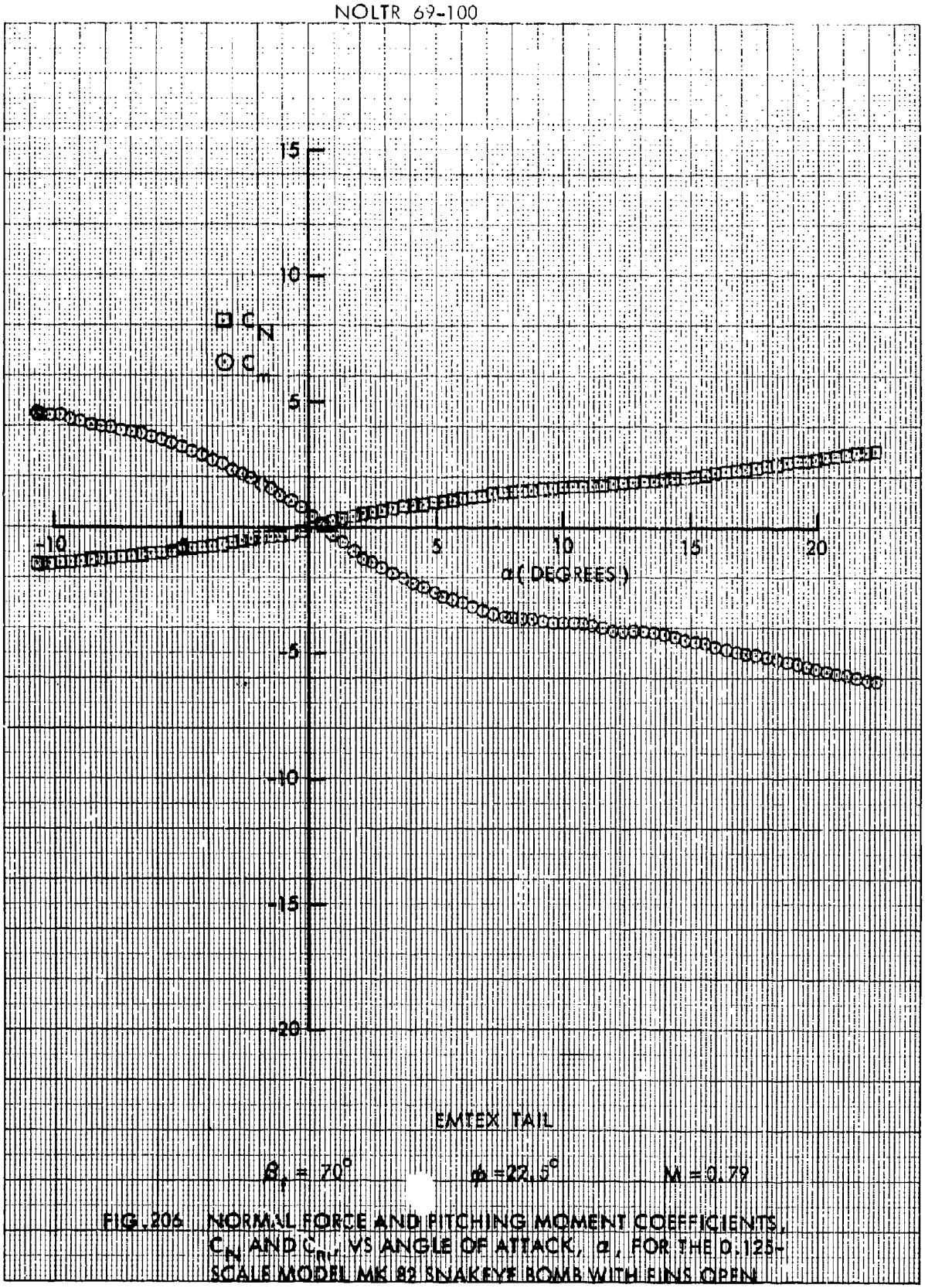


FIG. 206 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_{m_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

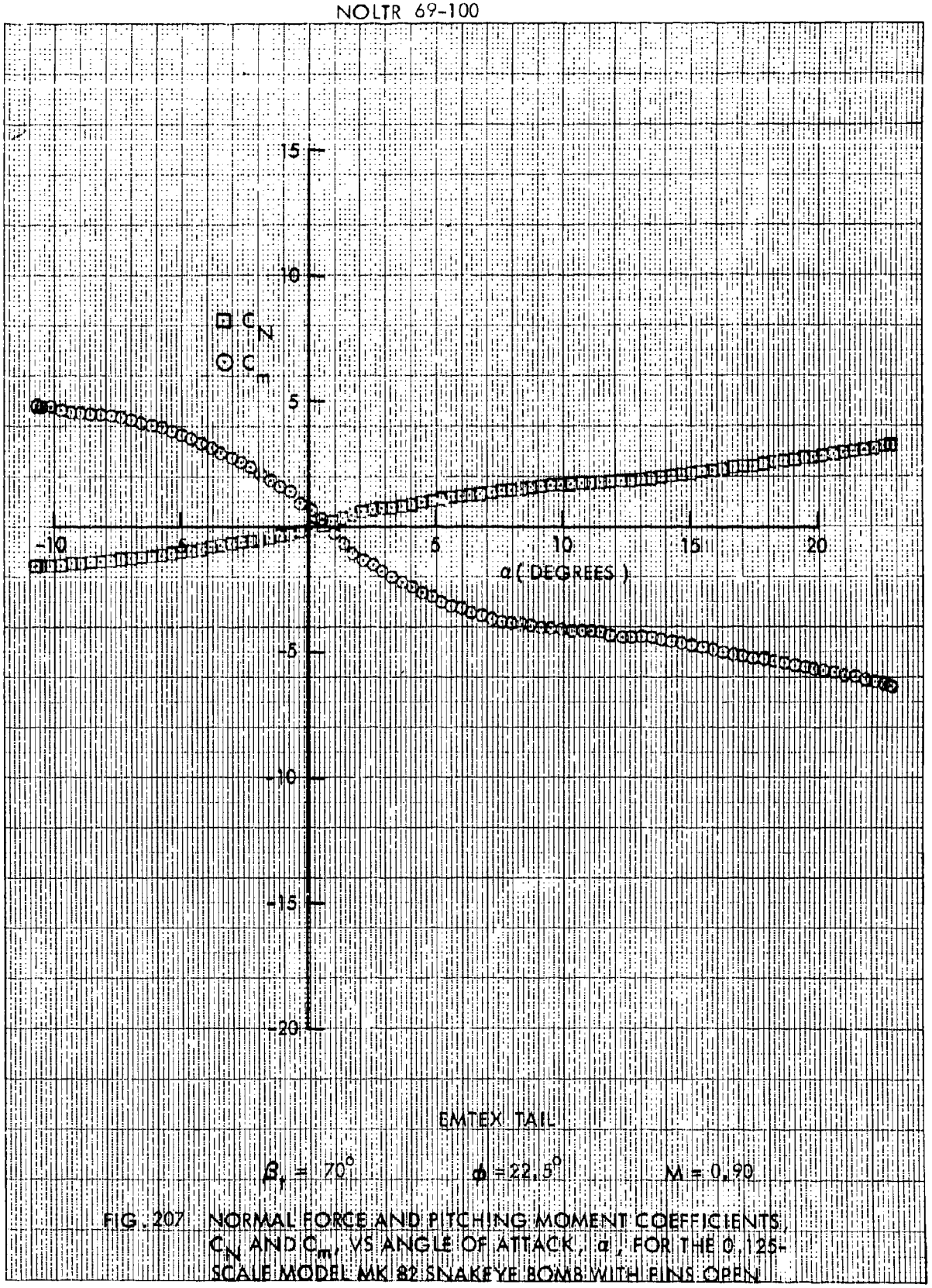


FIG. 207 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

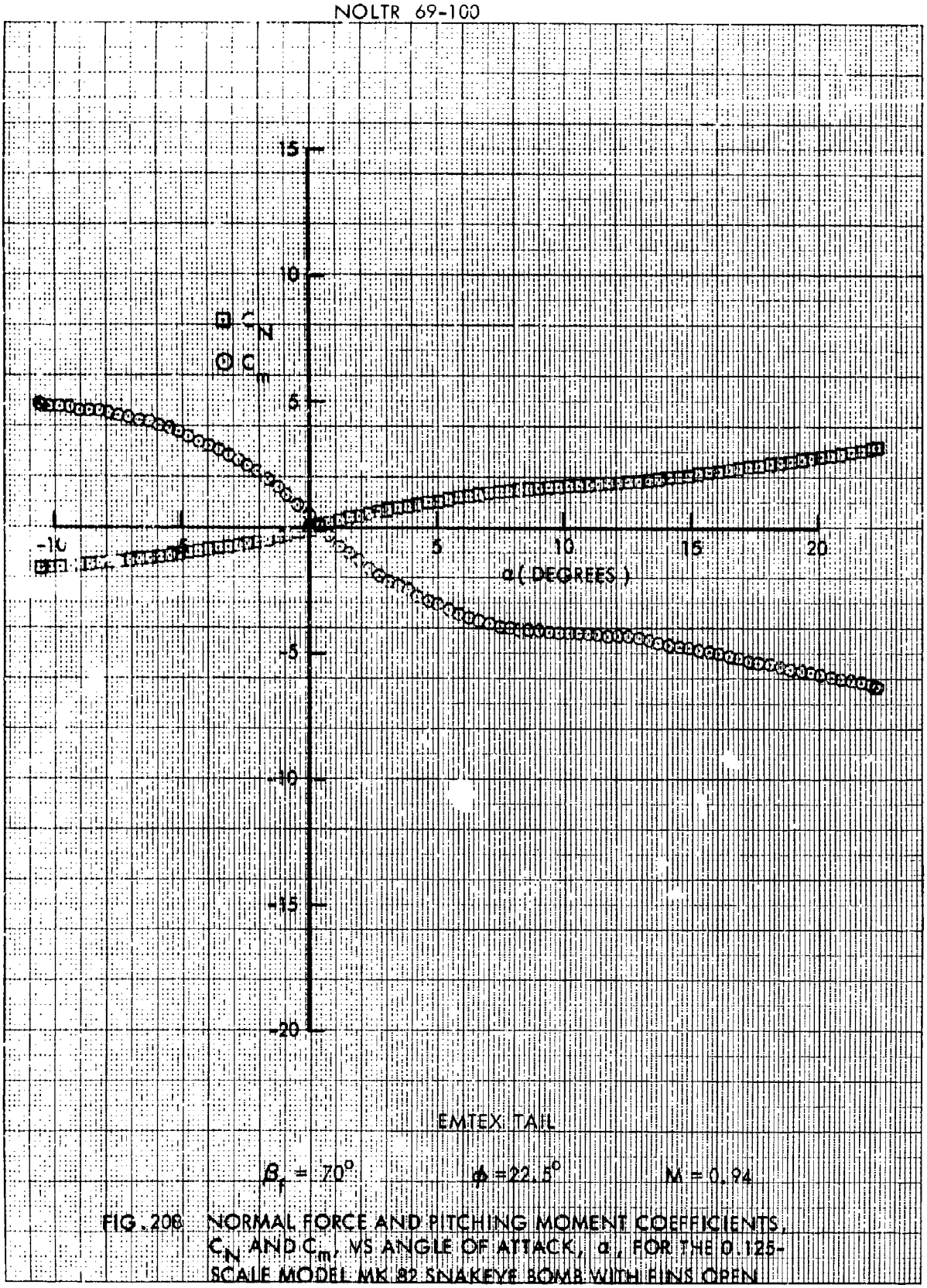


FIG. 208 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

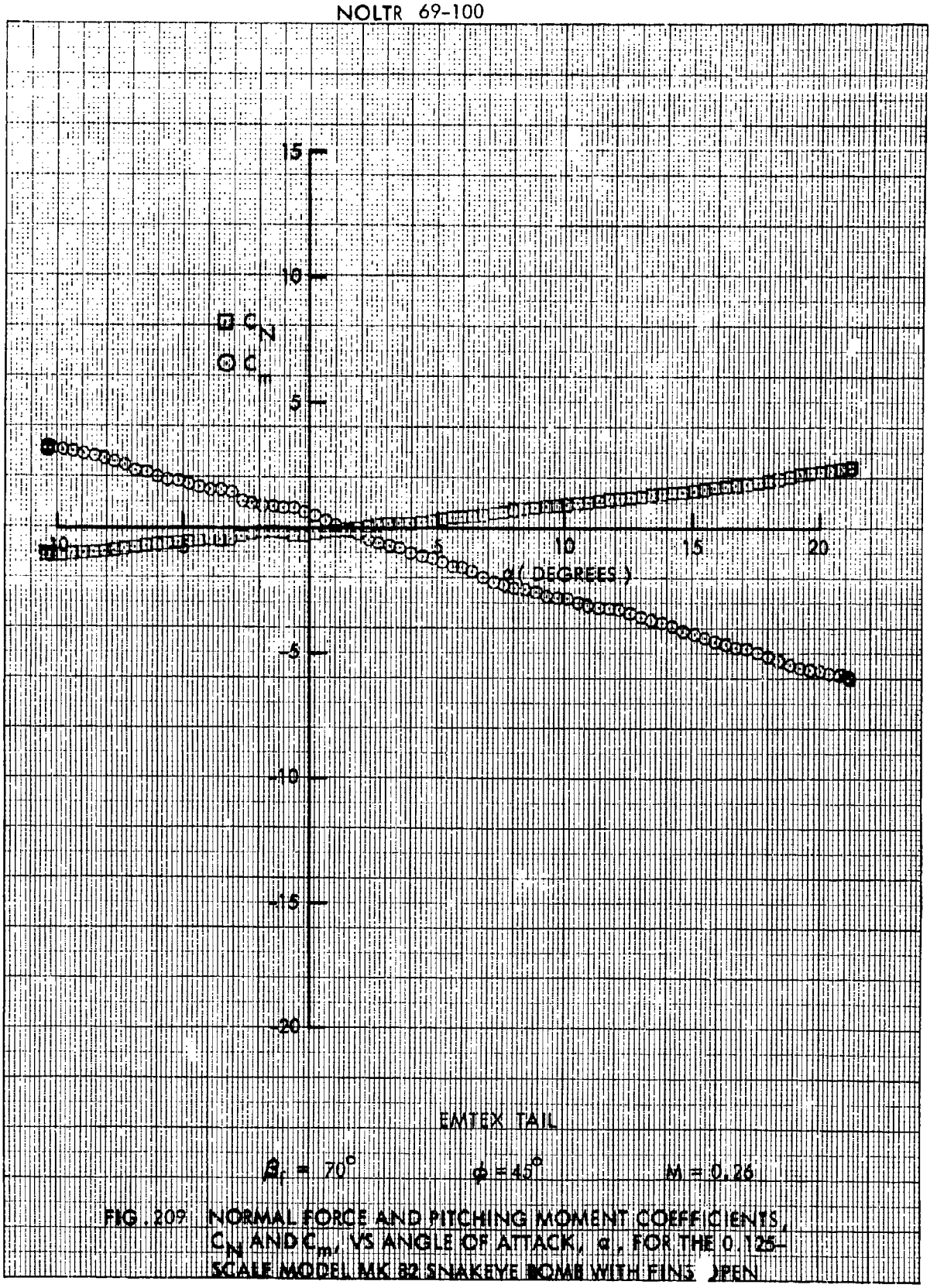


FIG. 209 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

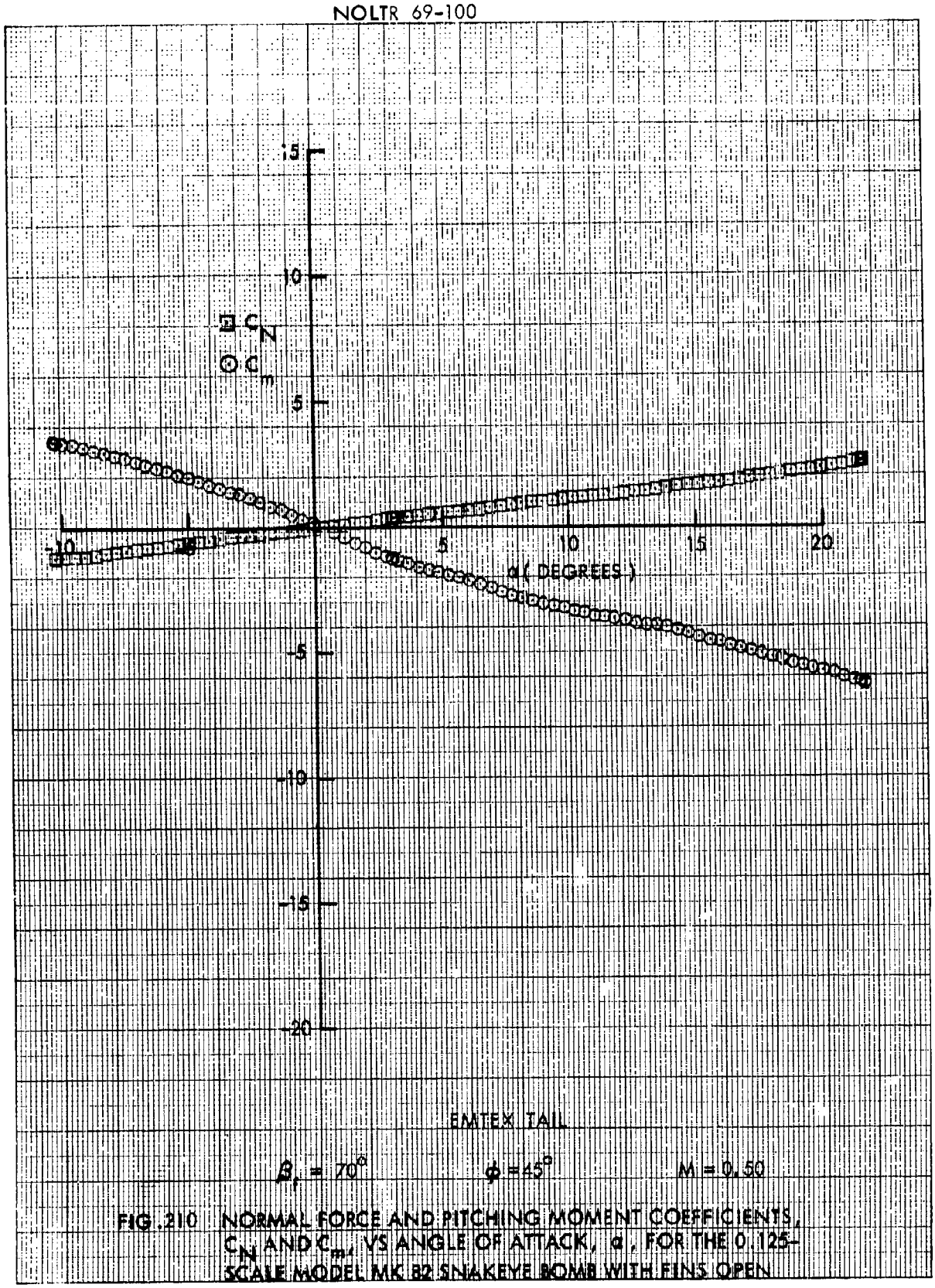


FIG. 210 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

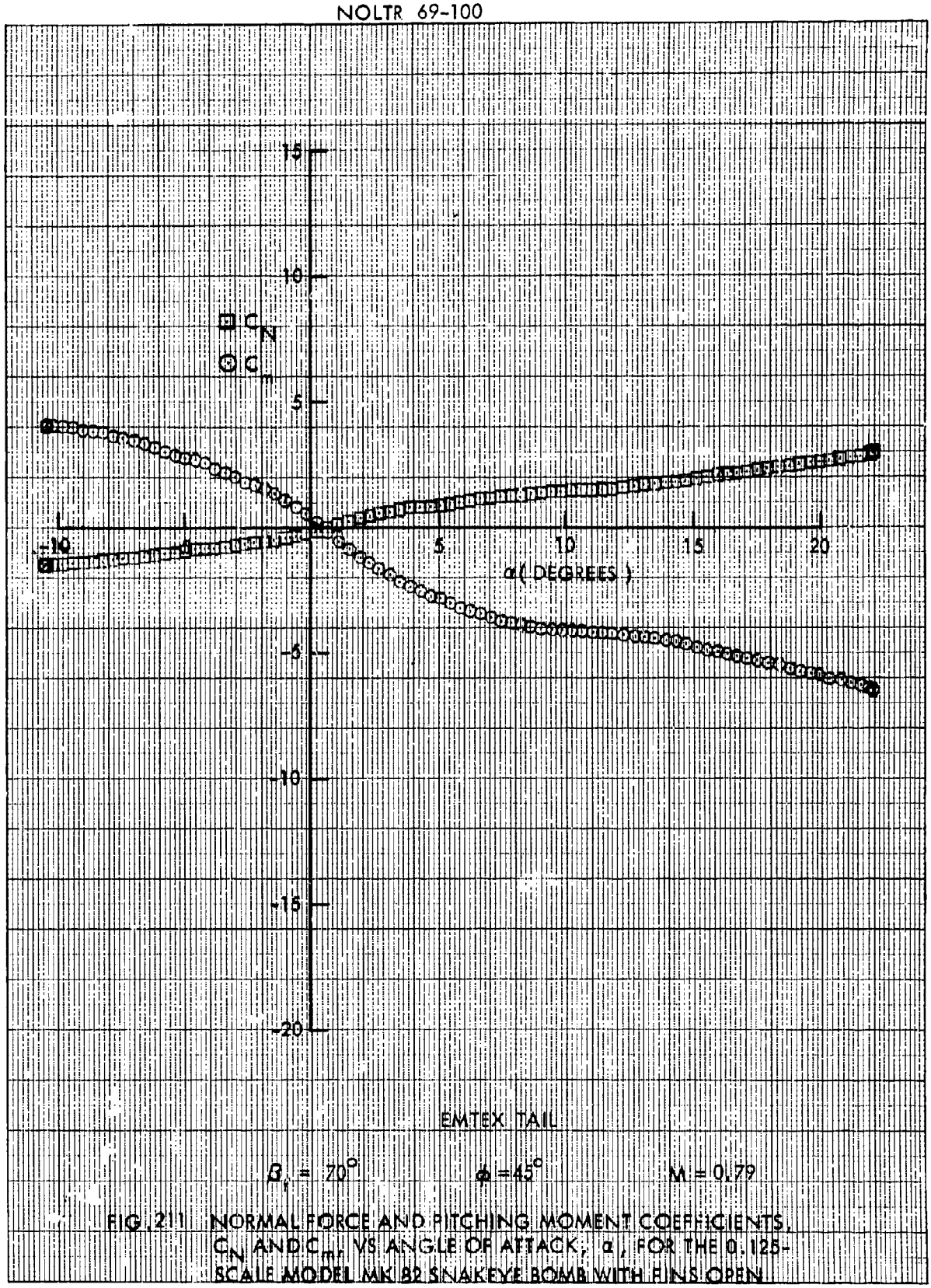


FIG. 211 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

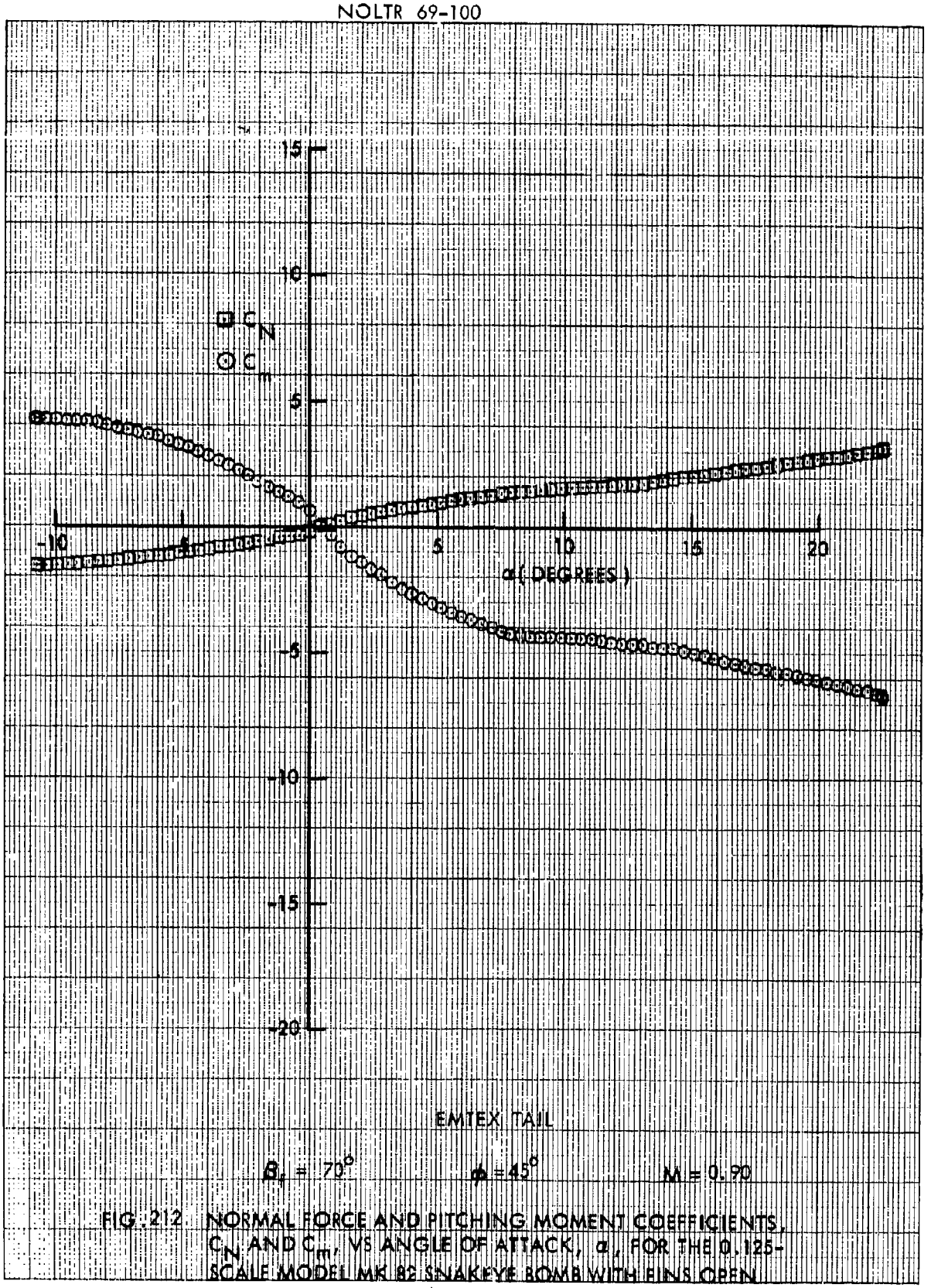


FIG. 212 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

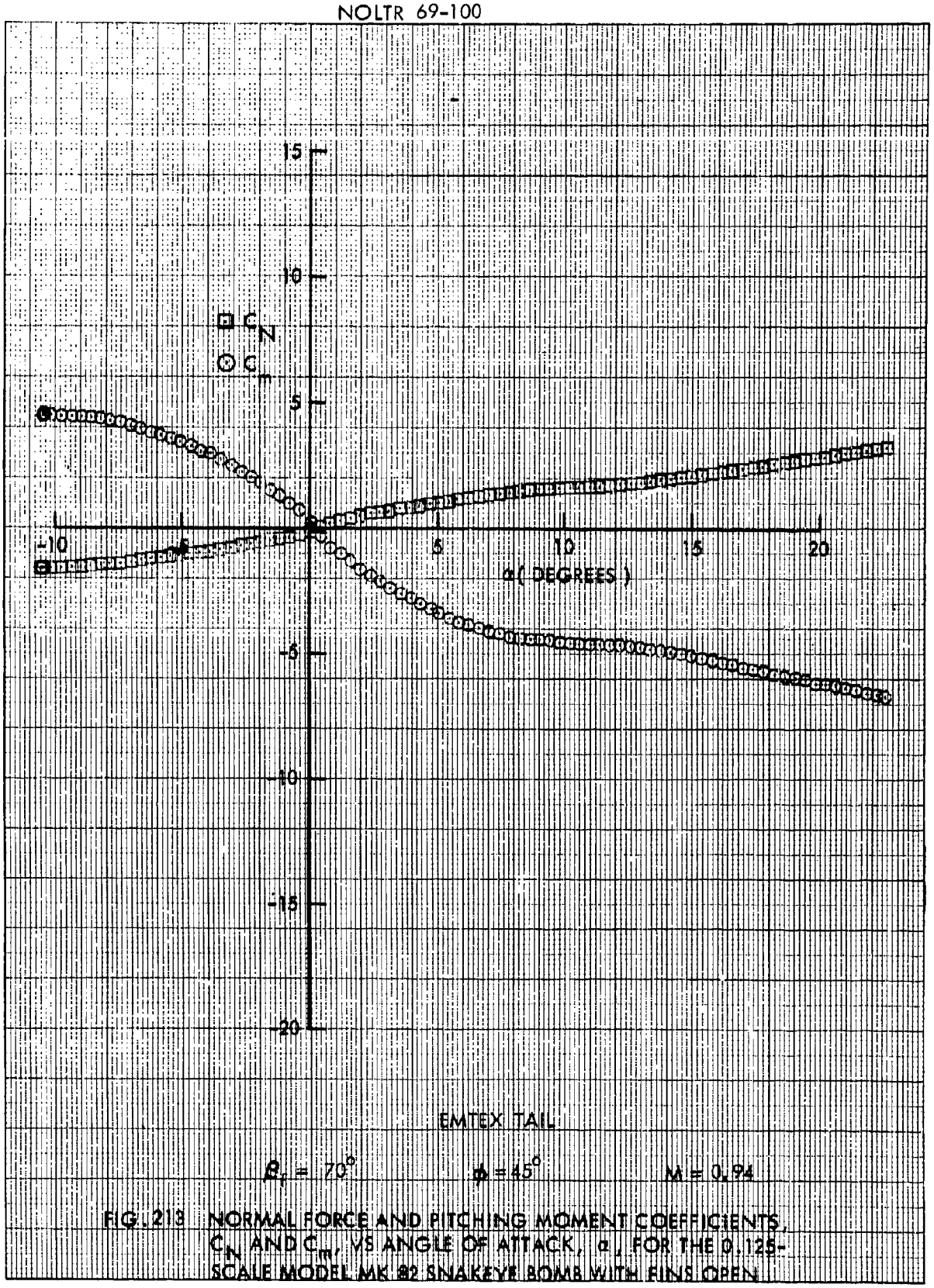


FIG. 213 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND $C_{m'}$ VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

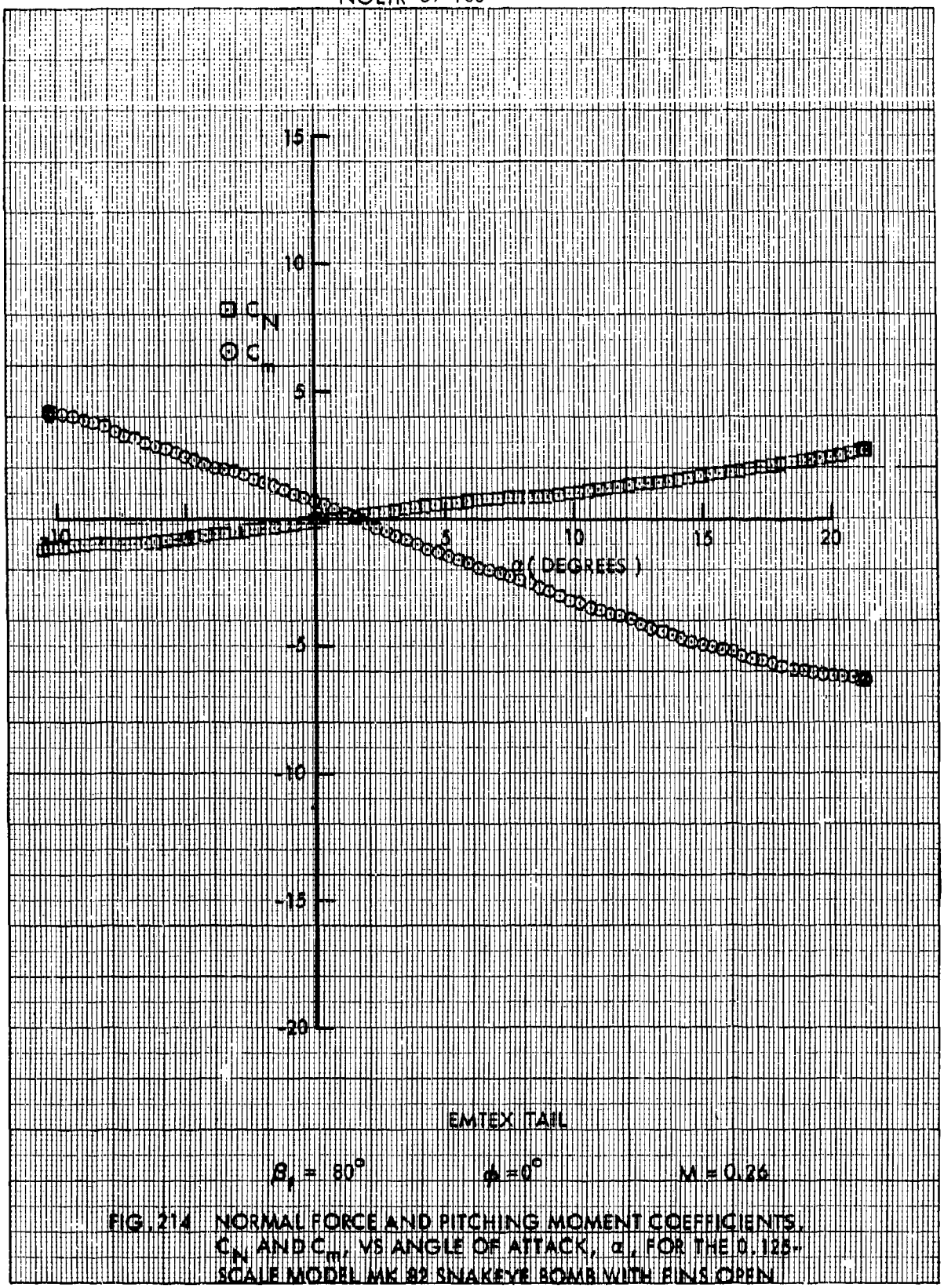


FIG. 214 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

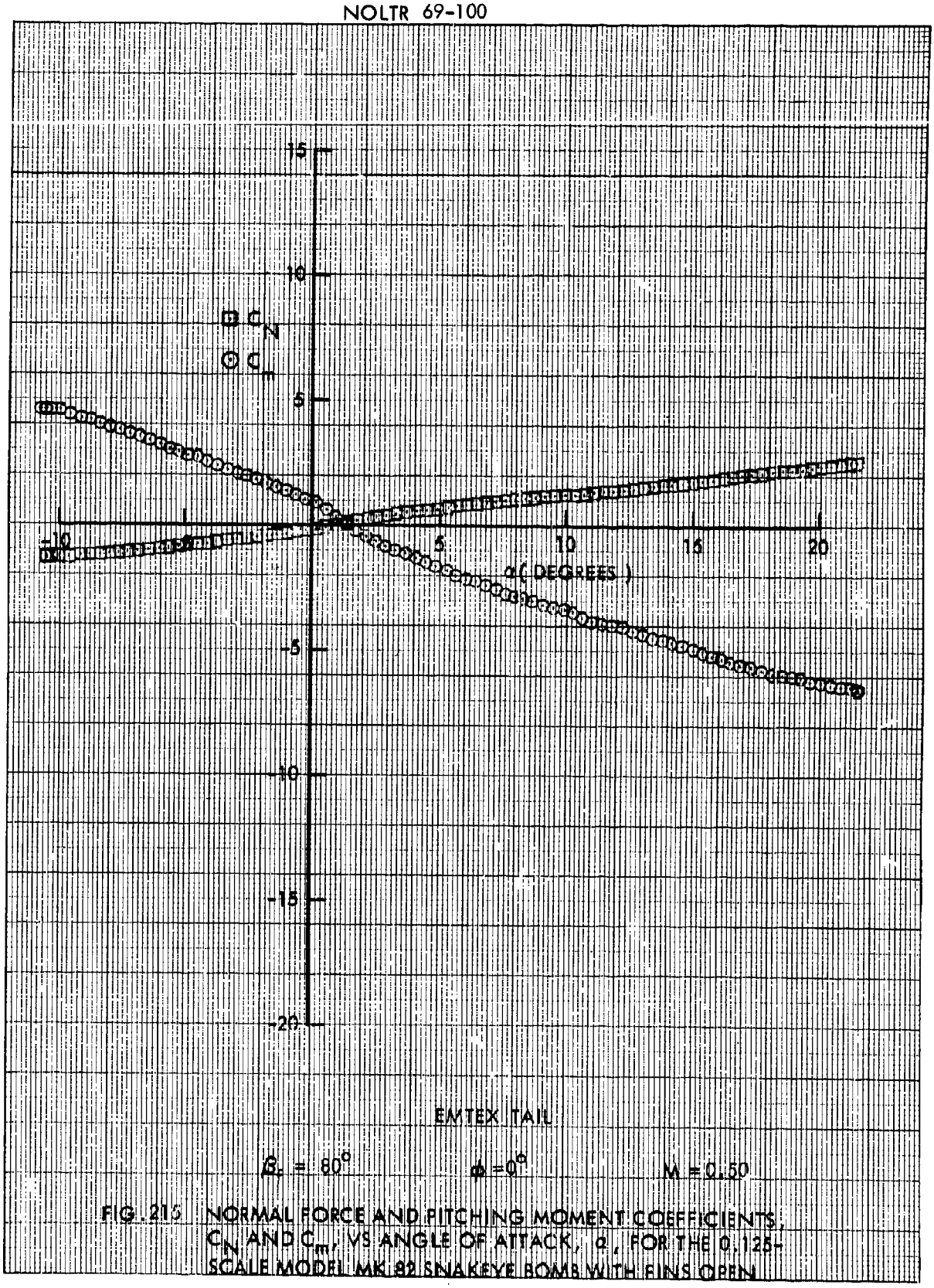


FIG. 215 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

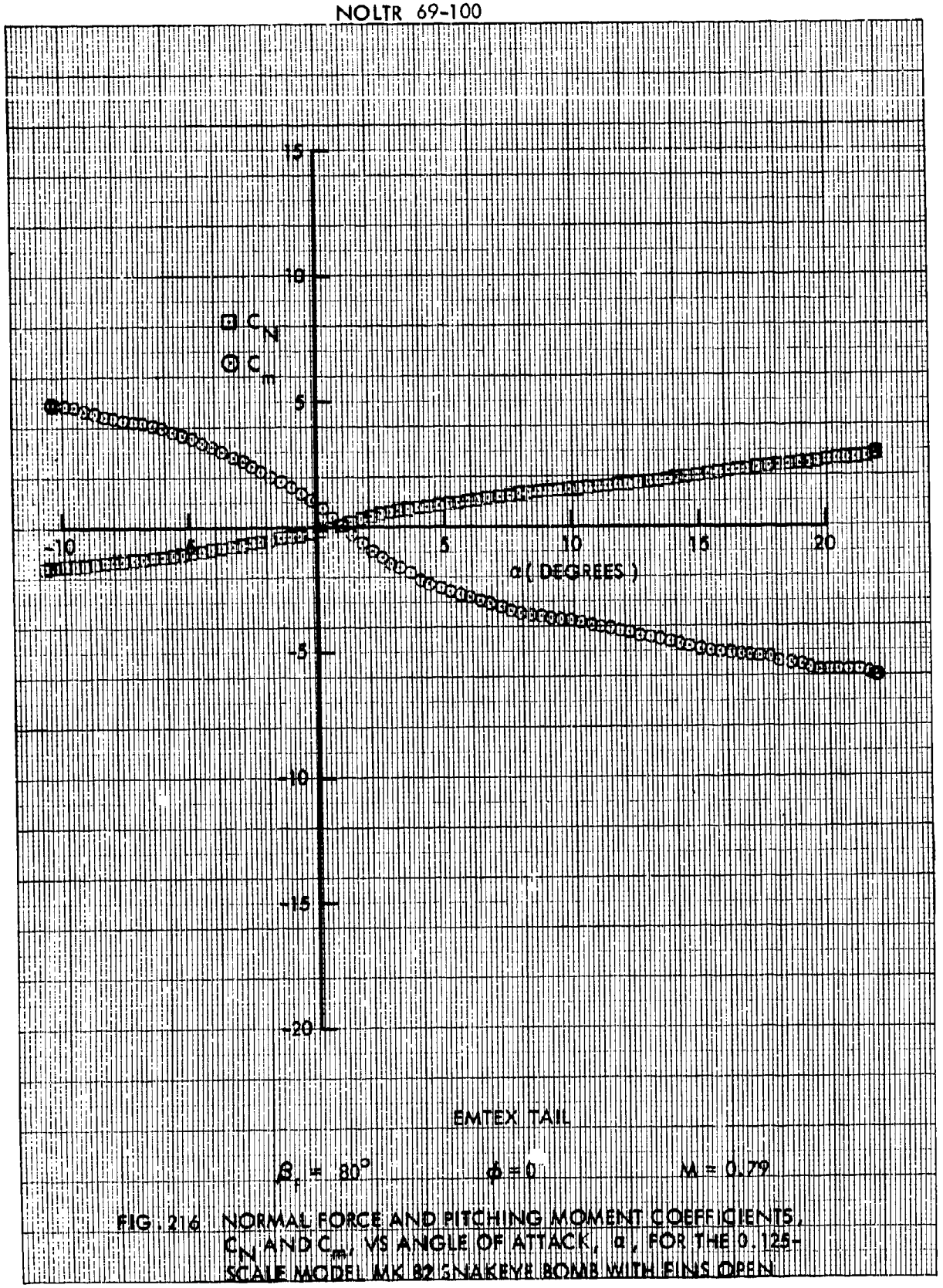


FIG. 216 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

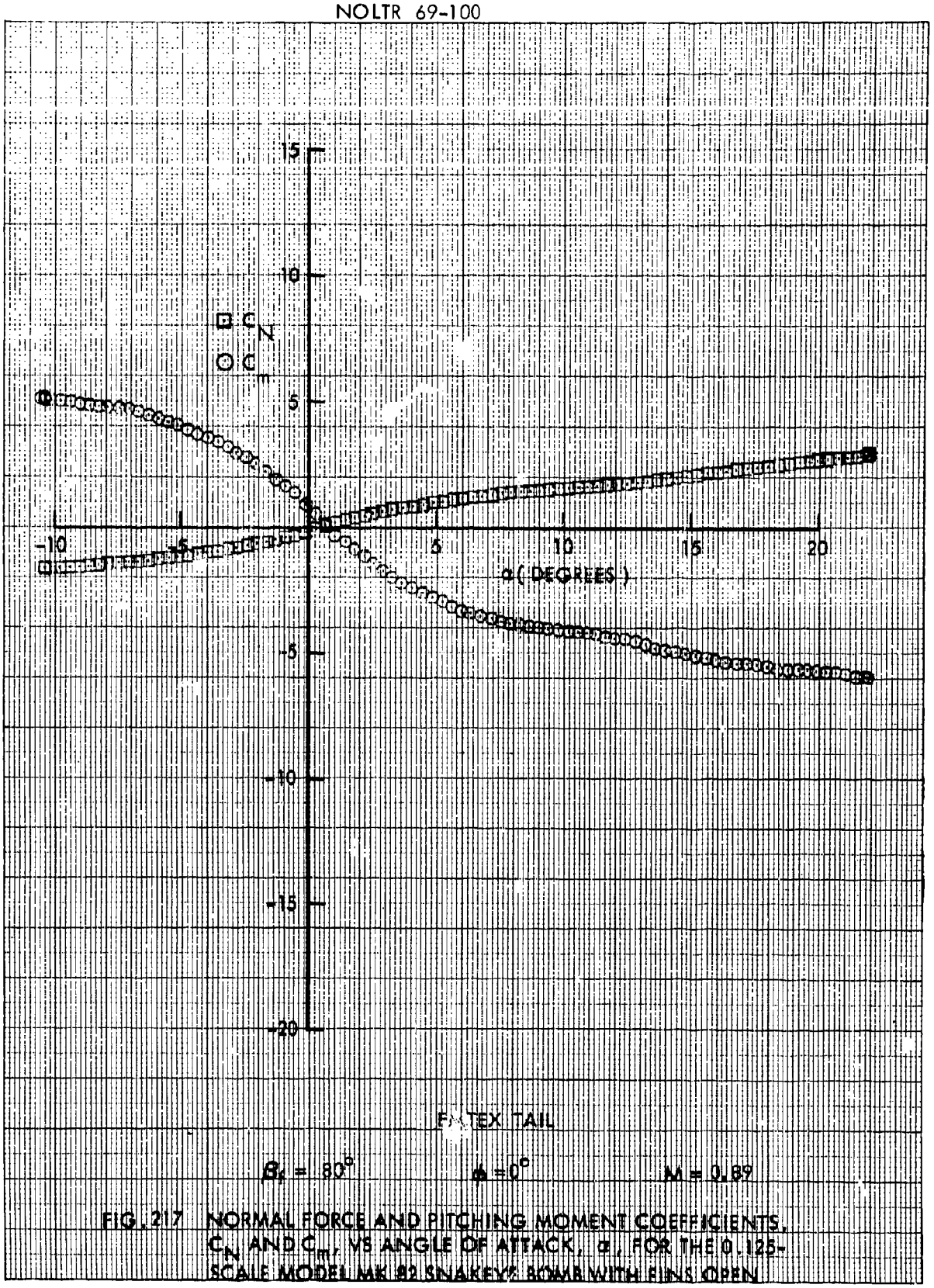


FIG. 217 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

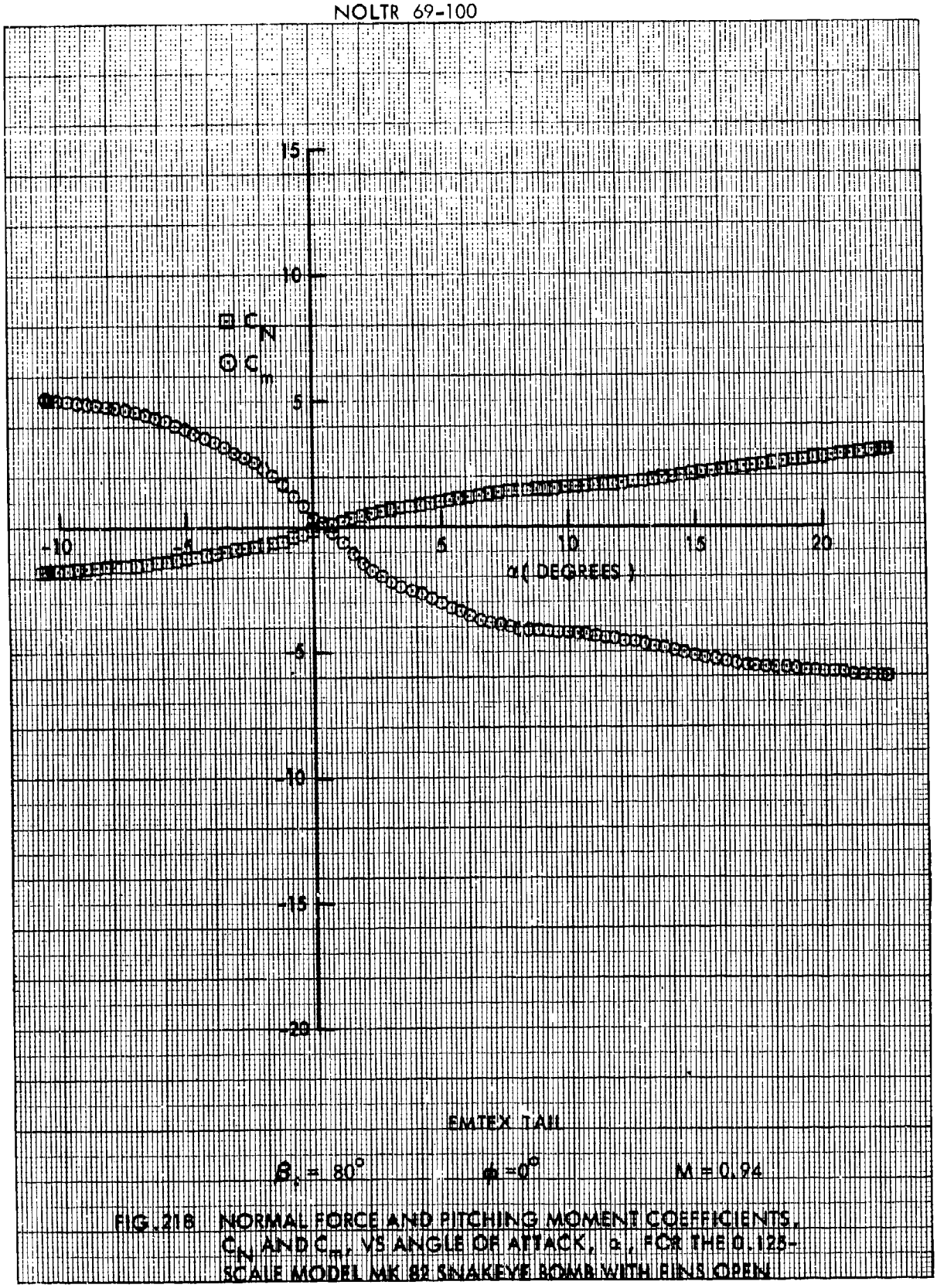


FIG. 218 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

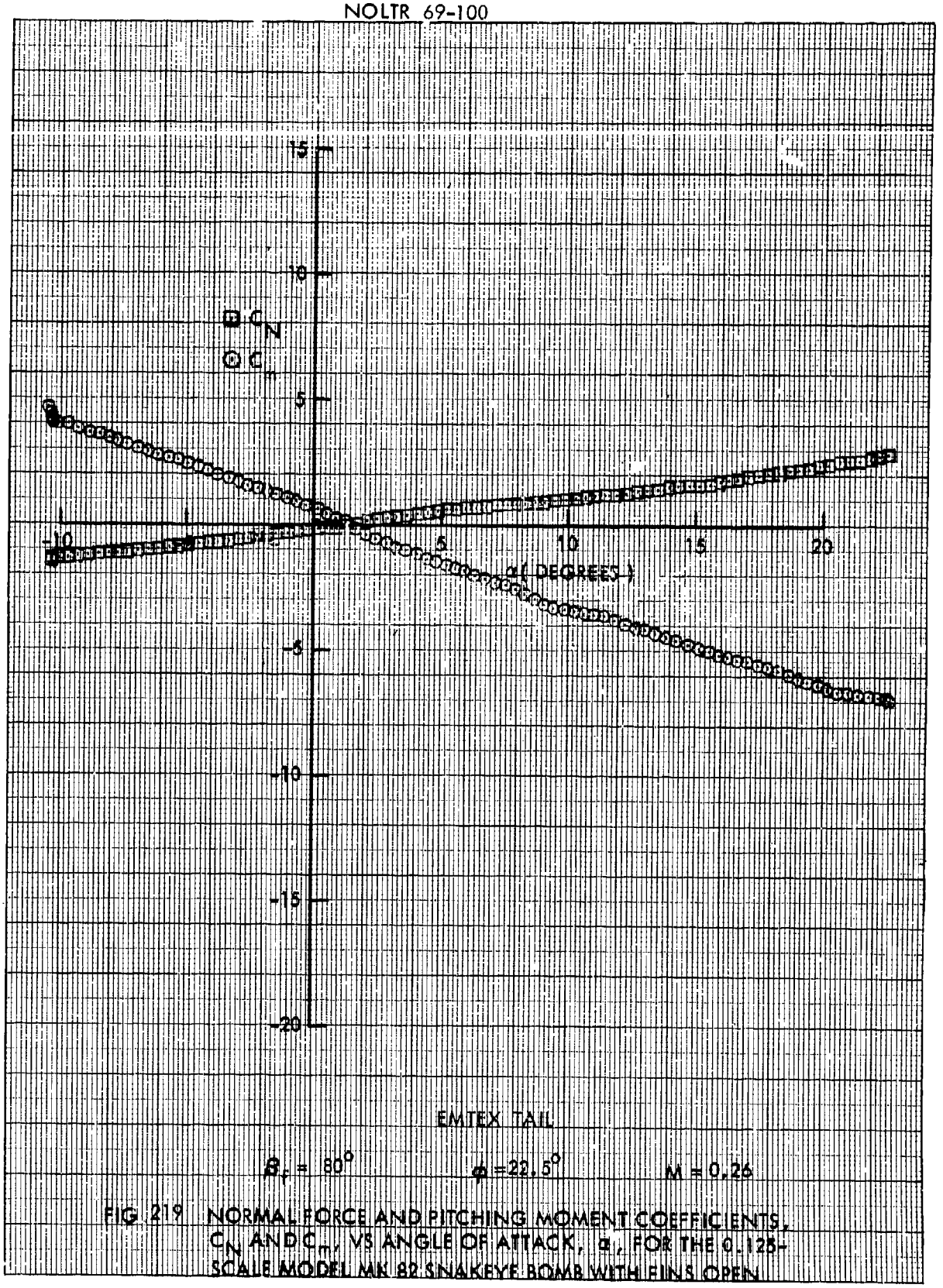


FIG 219 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

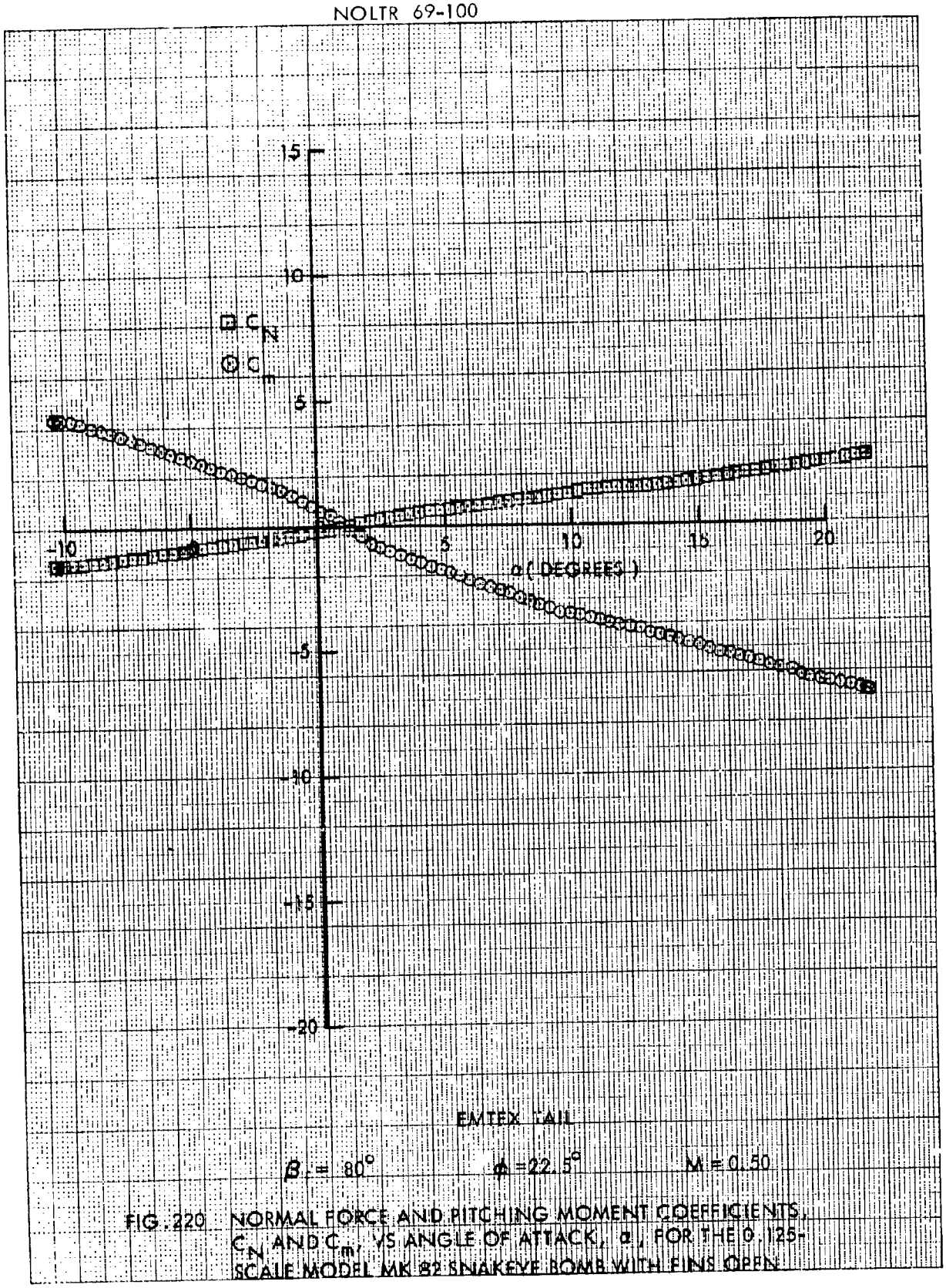


FIG. 220 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

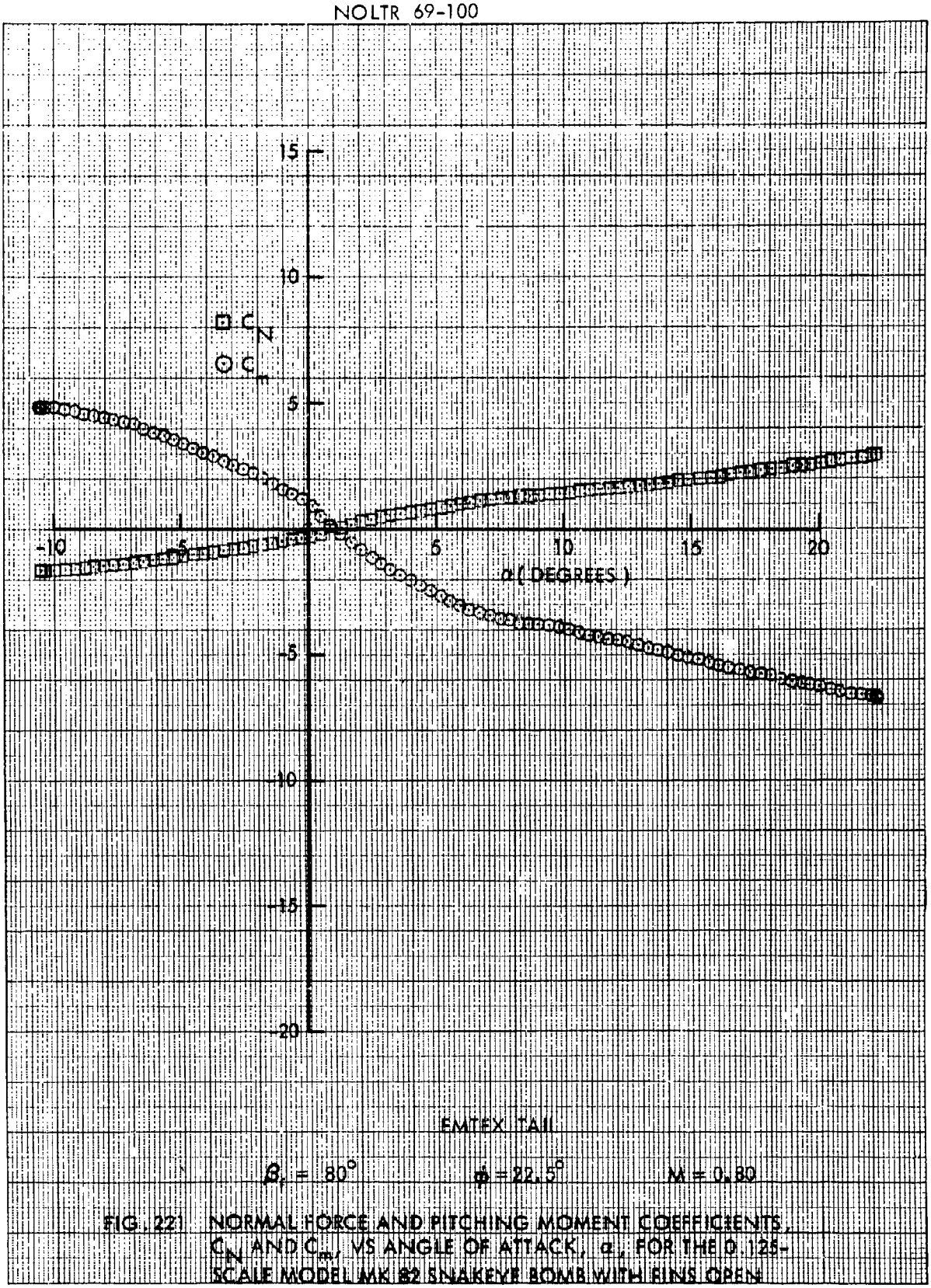


FIG. 221 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

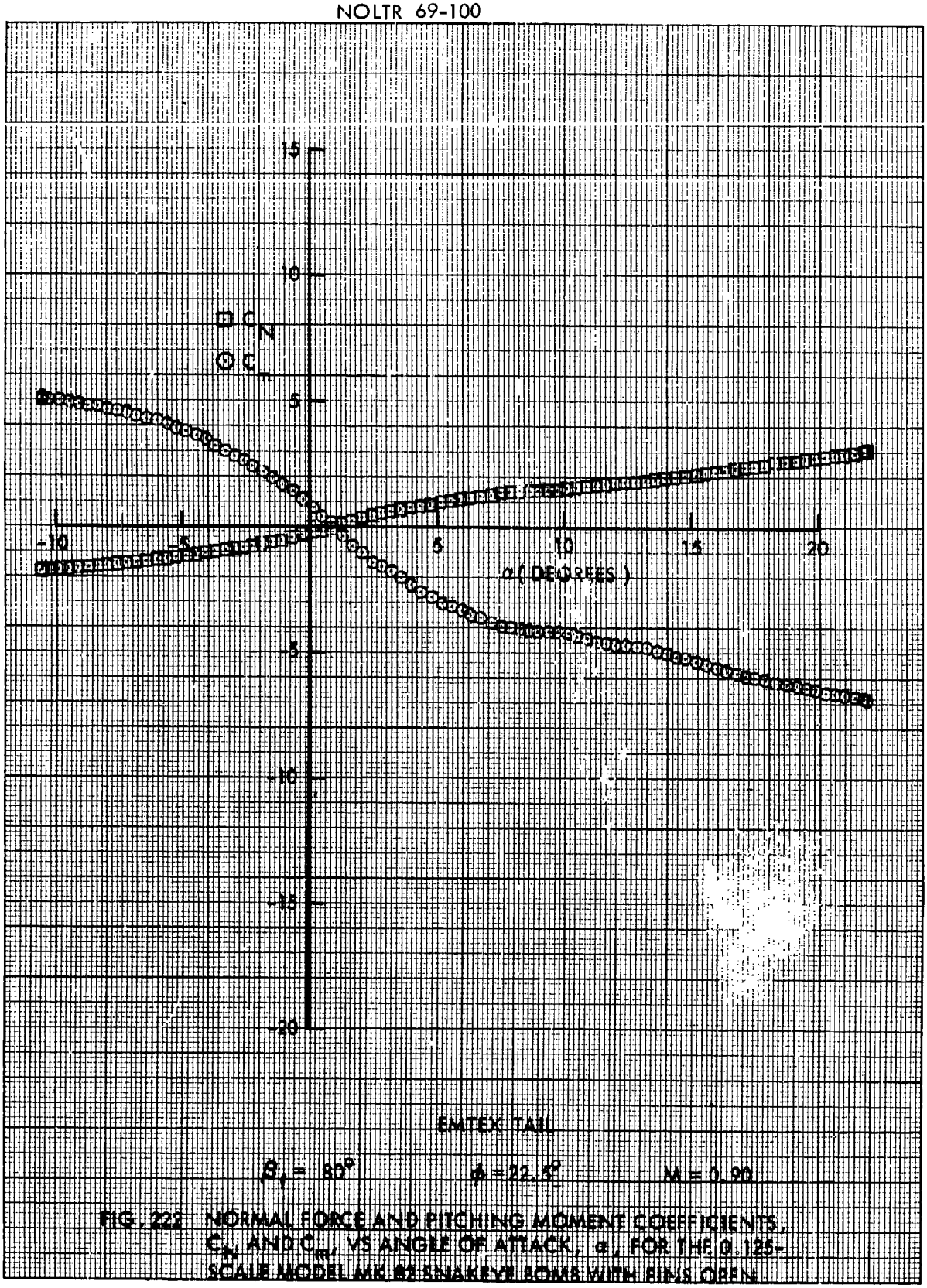


FIG. 222 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

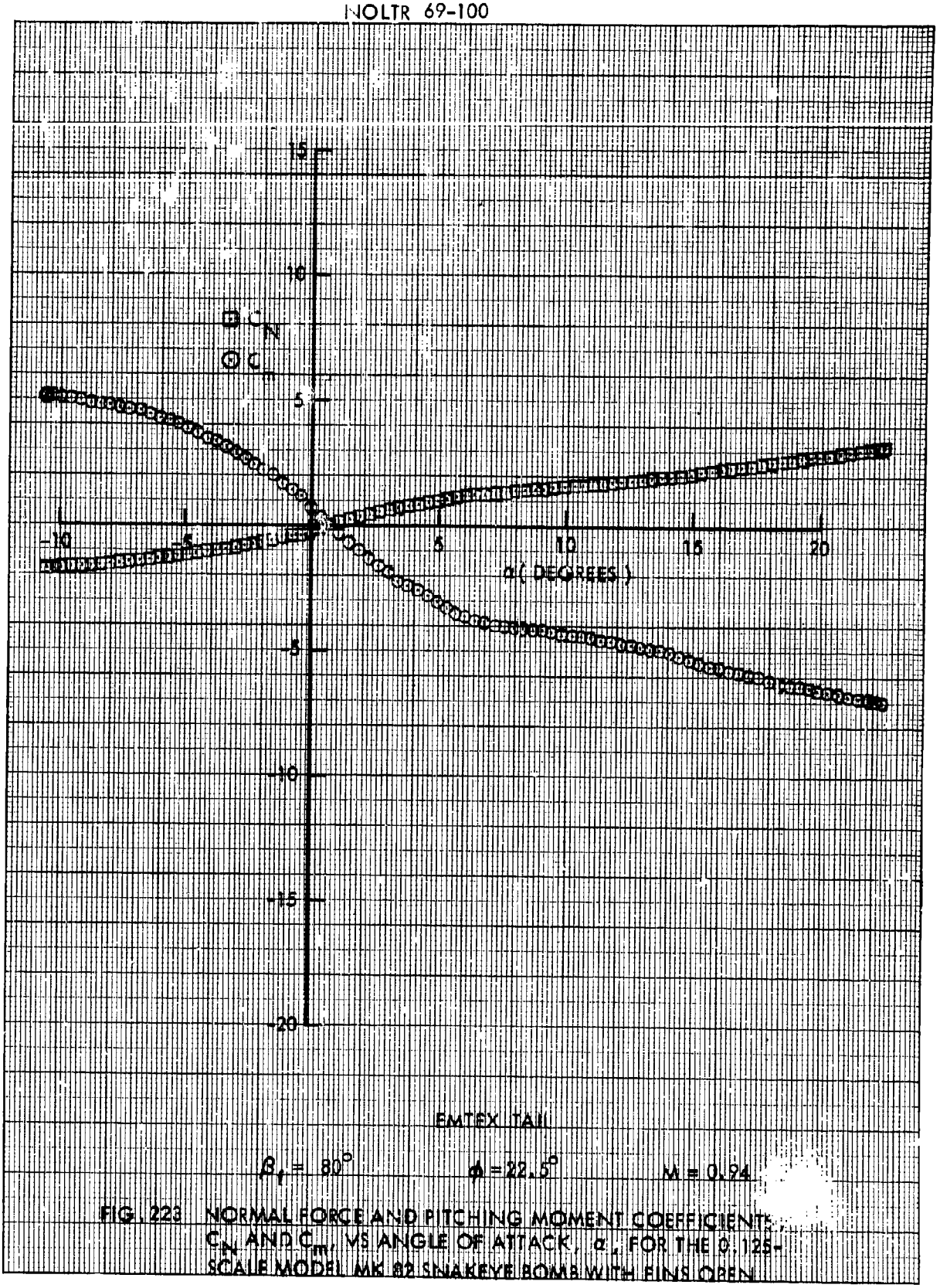


FIG. 223 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

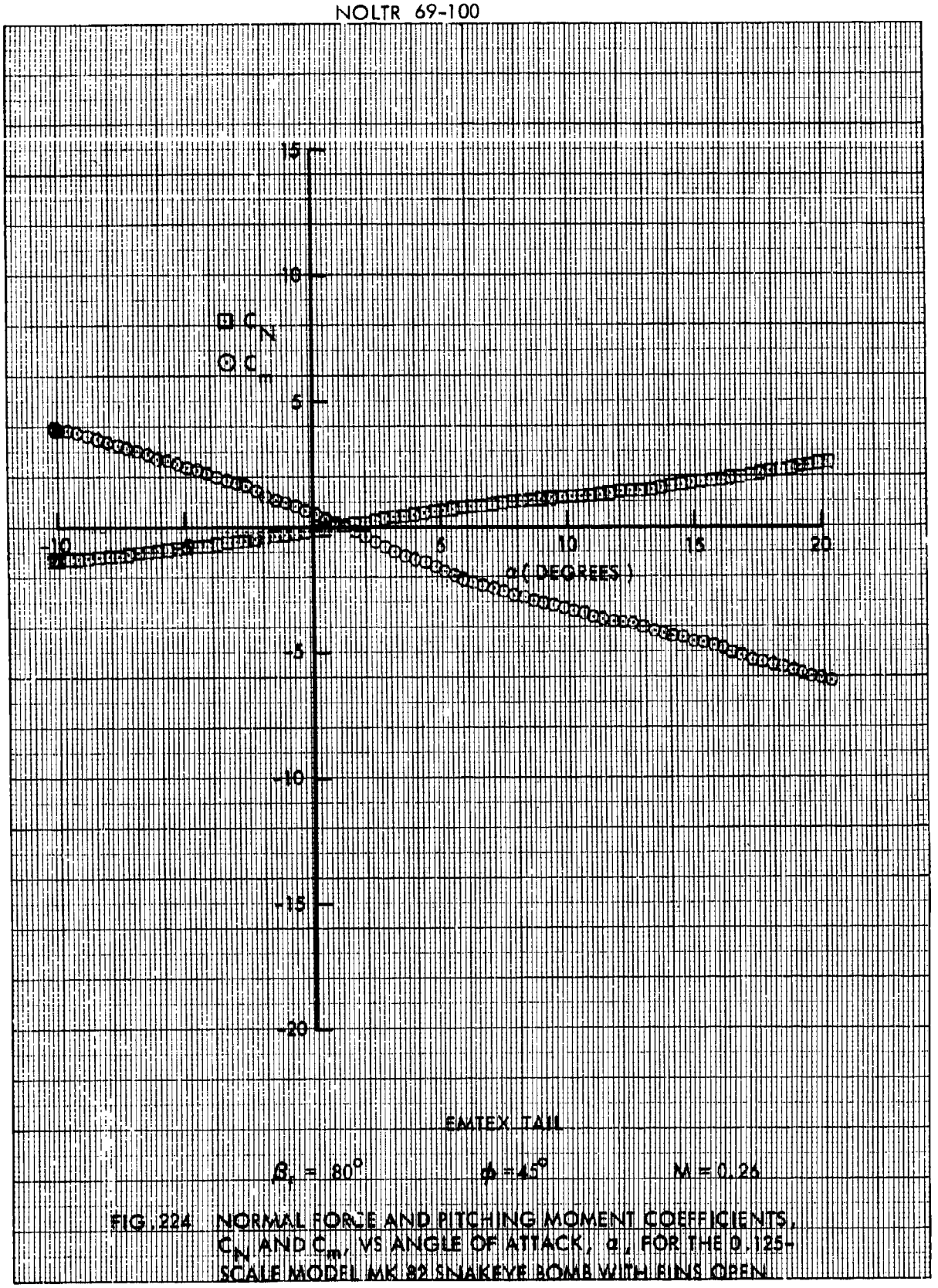


FIG. 224 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

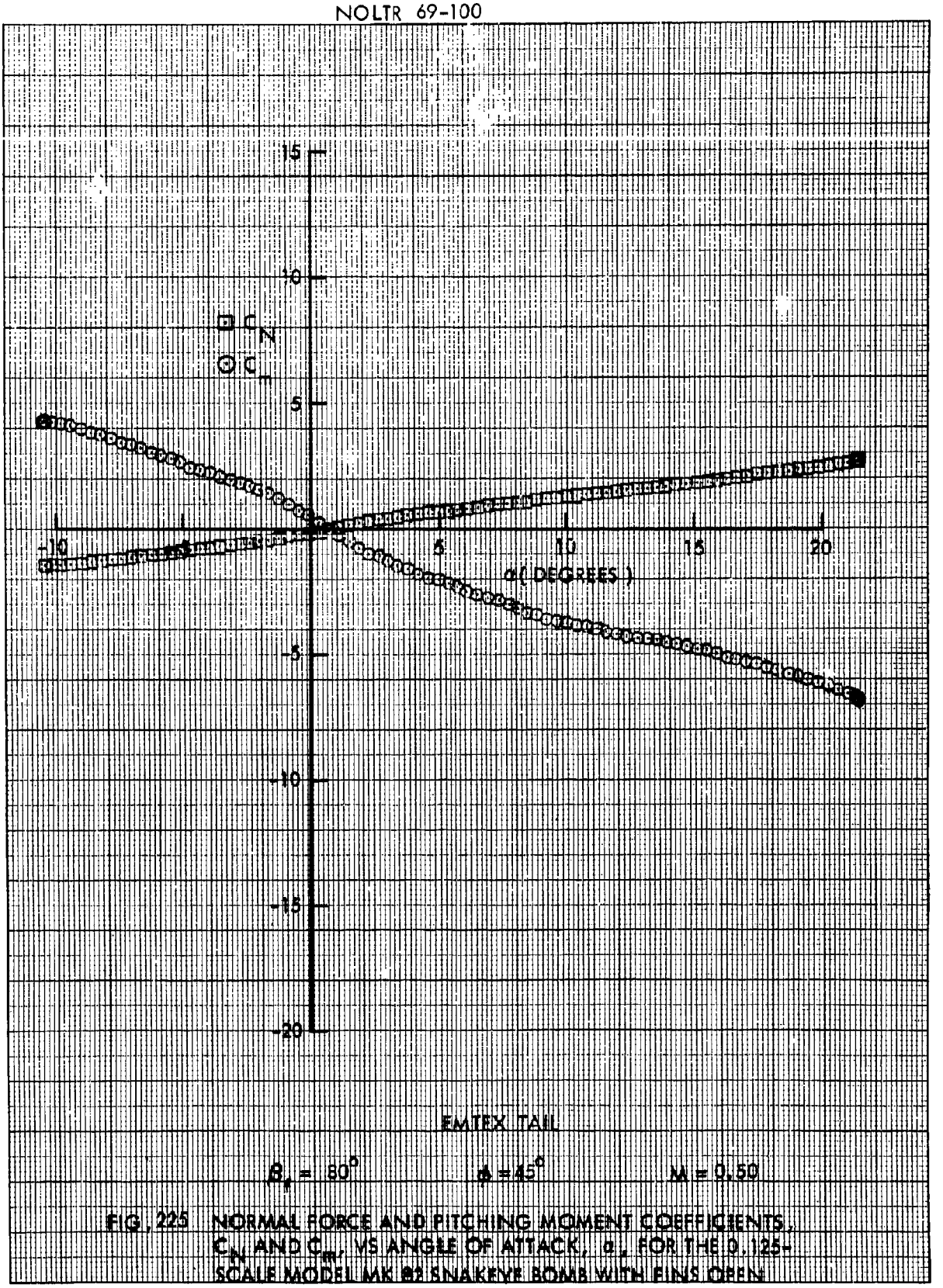


FIG. 225 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

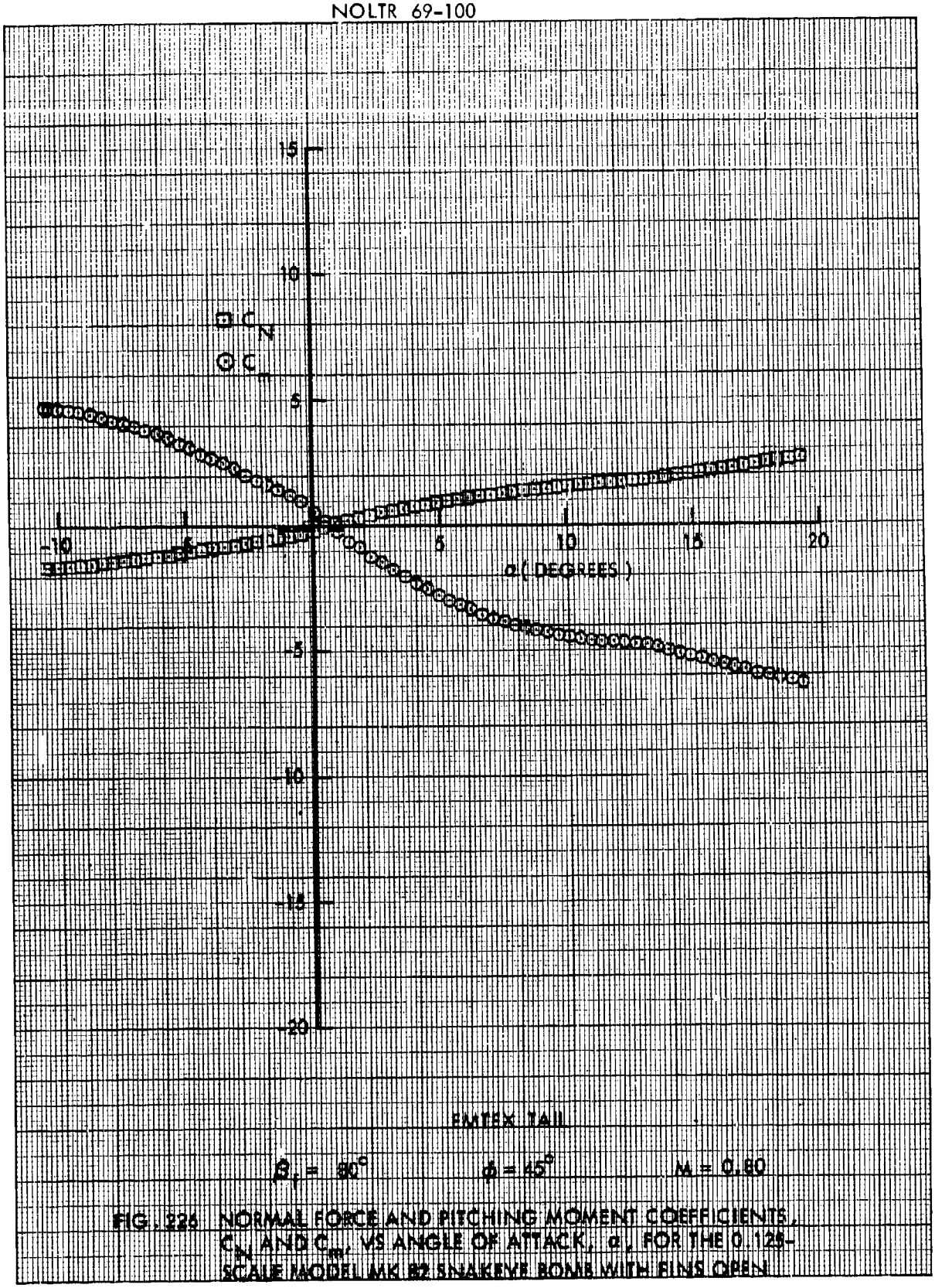


FIG. 226 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

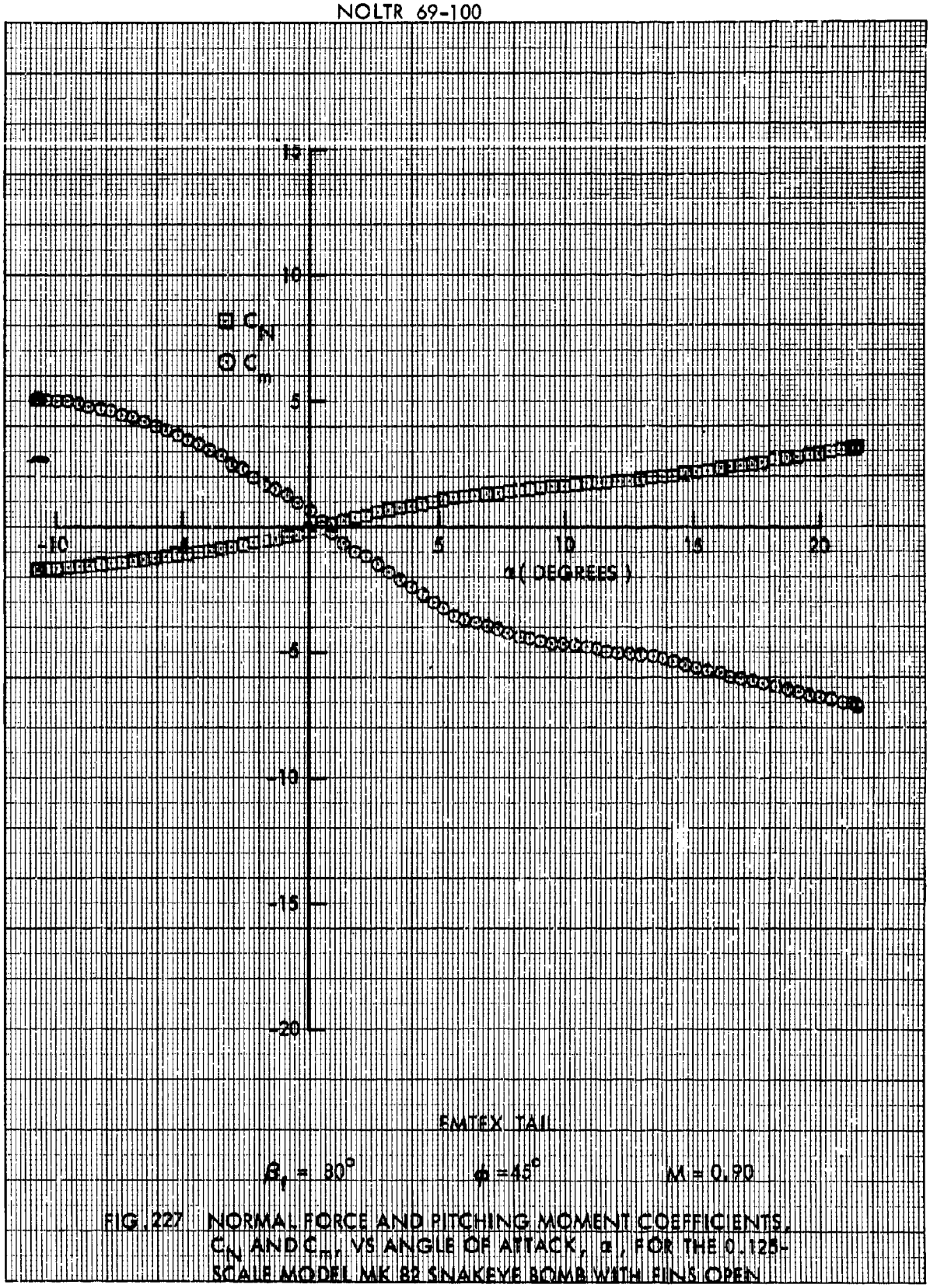


FIG. 227 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

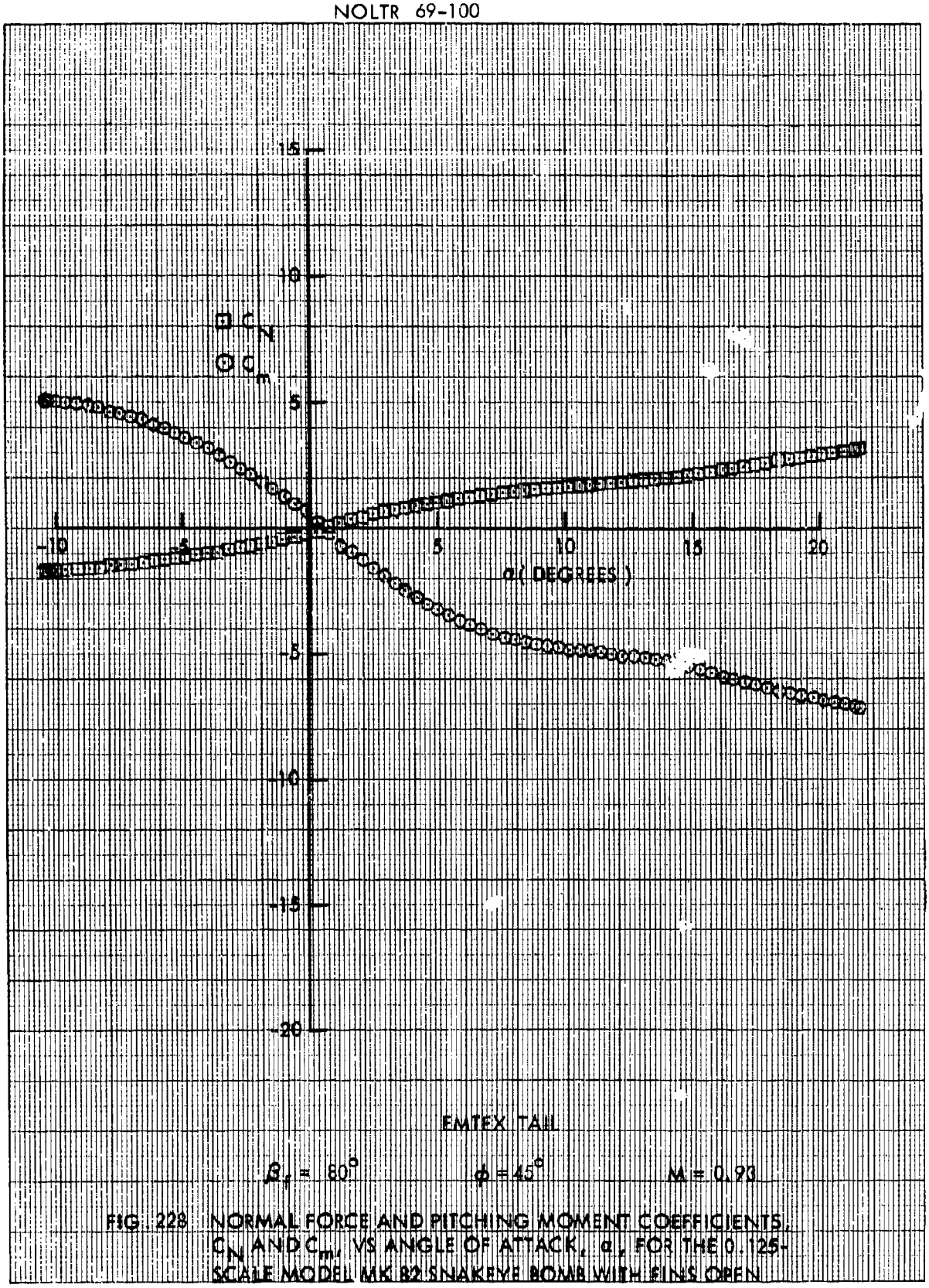


FIG. 228 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

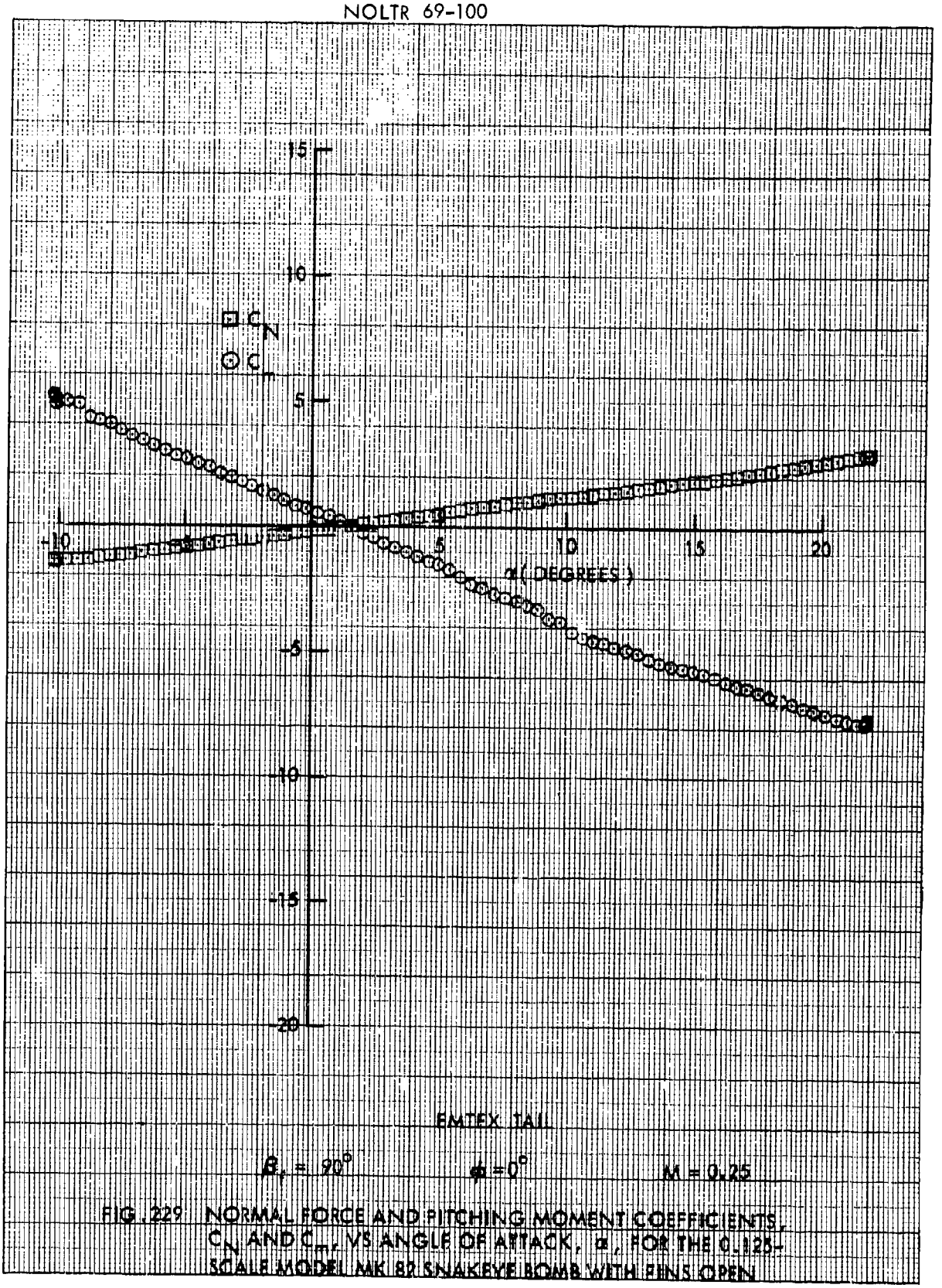


FIG. 229 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

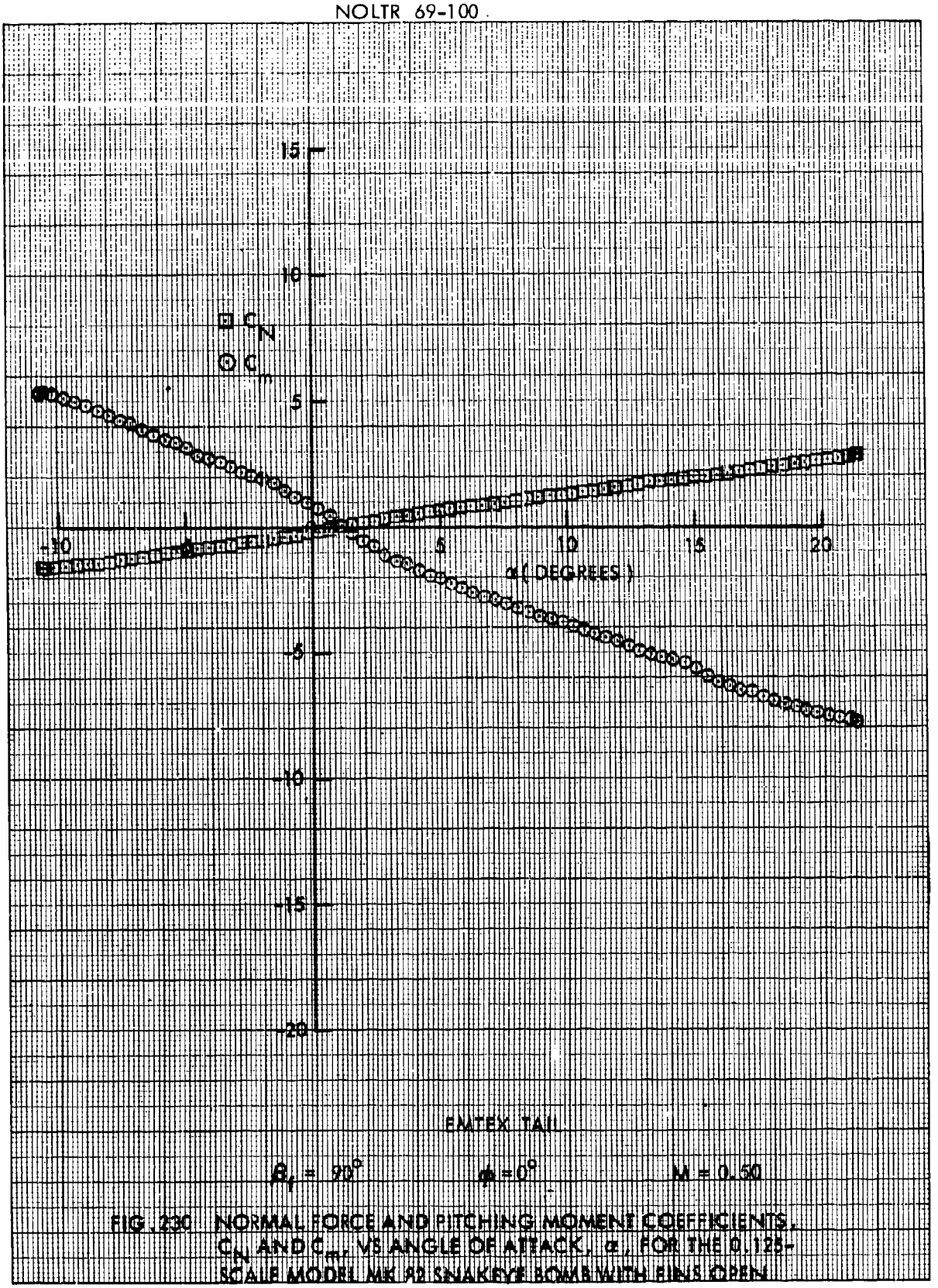


FIG. 230 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

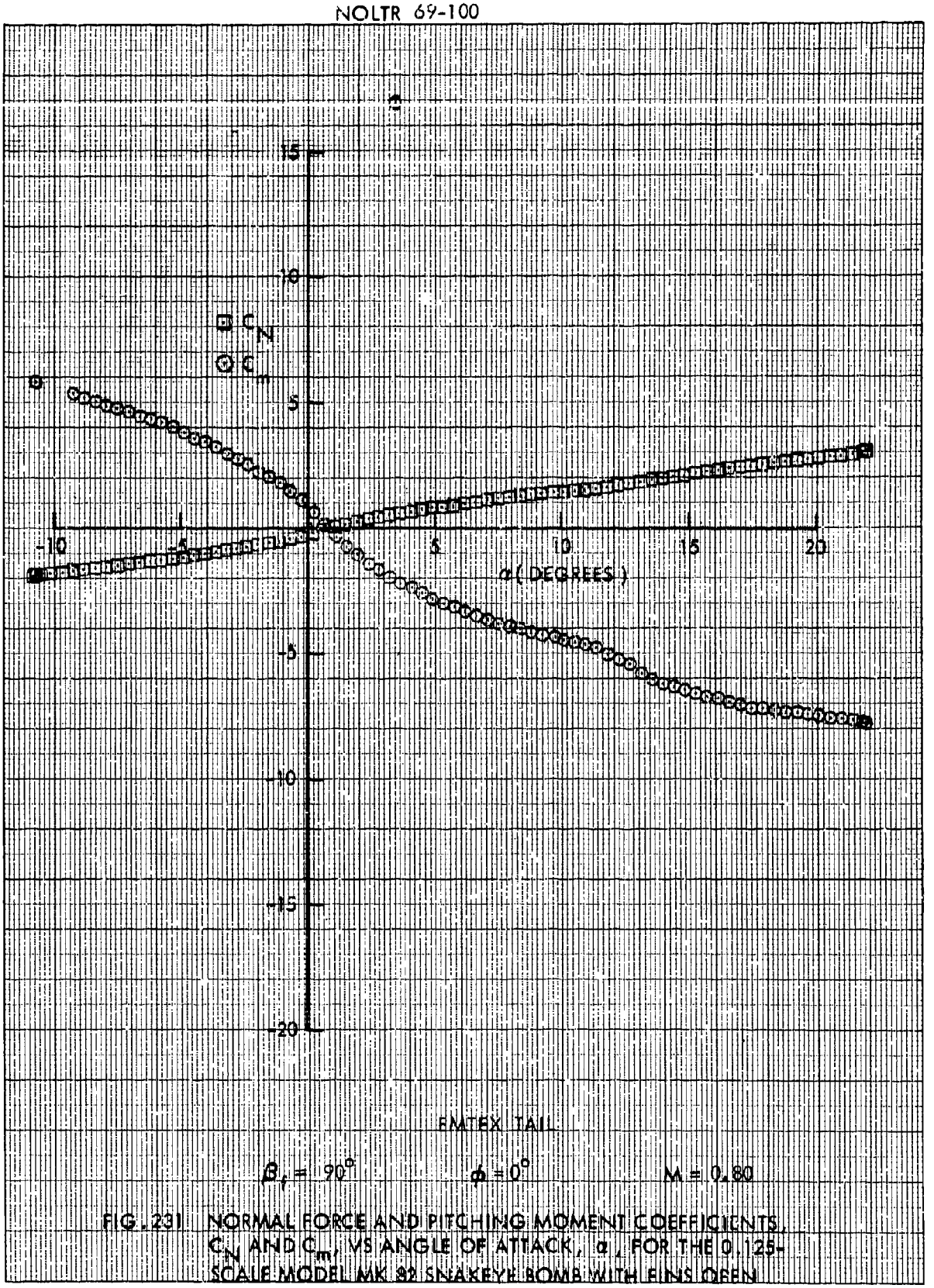


FIG. 231 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

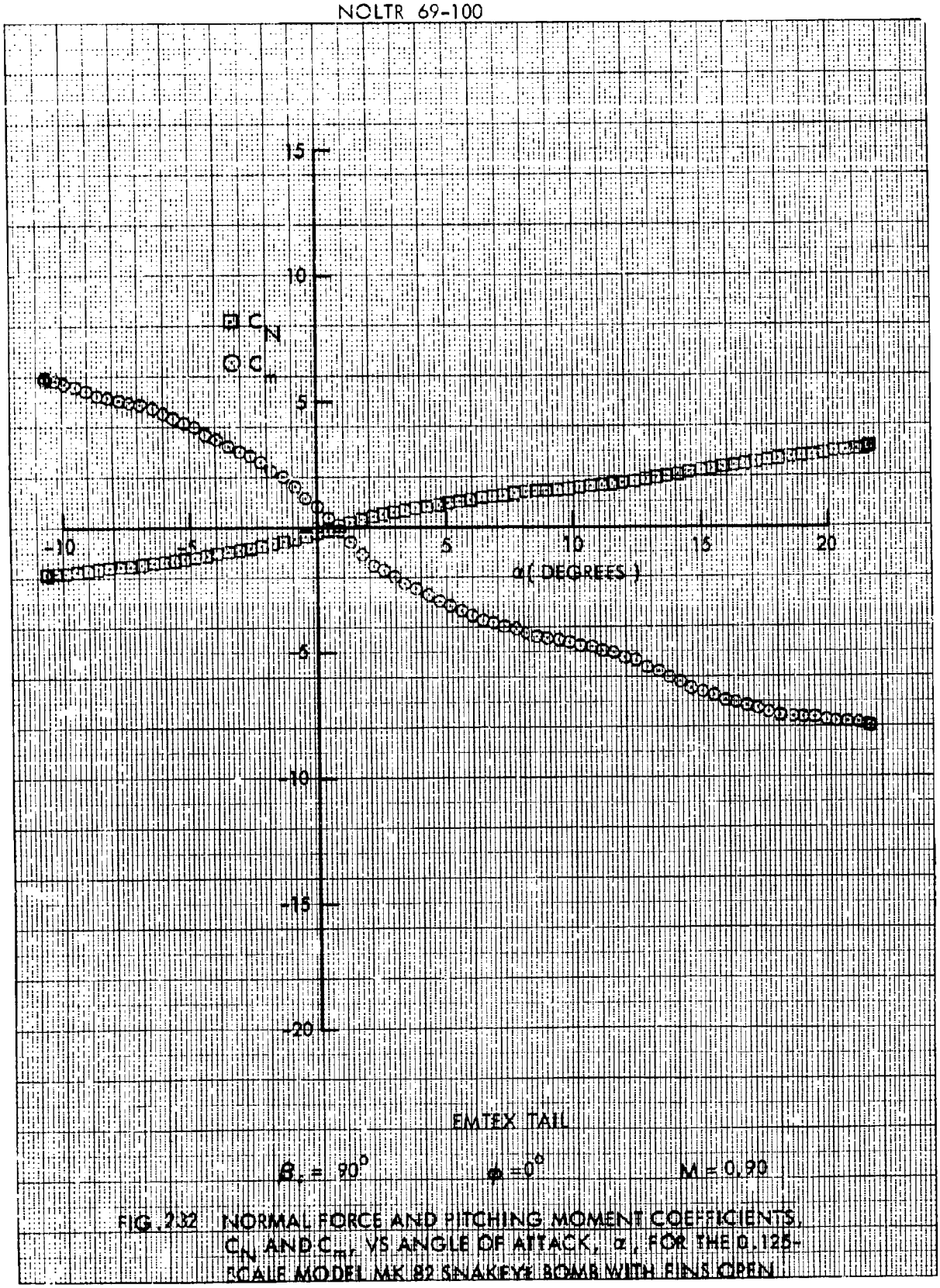


FIG. 232 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

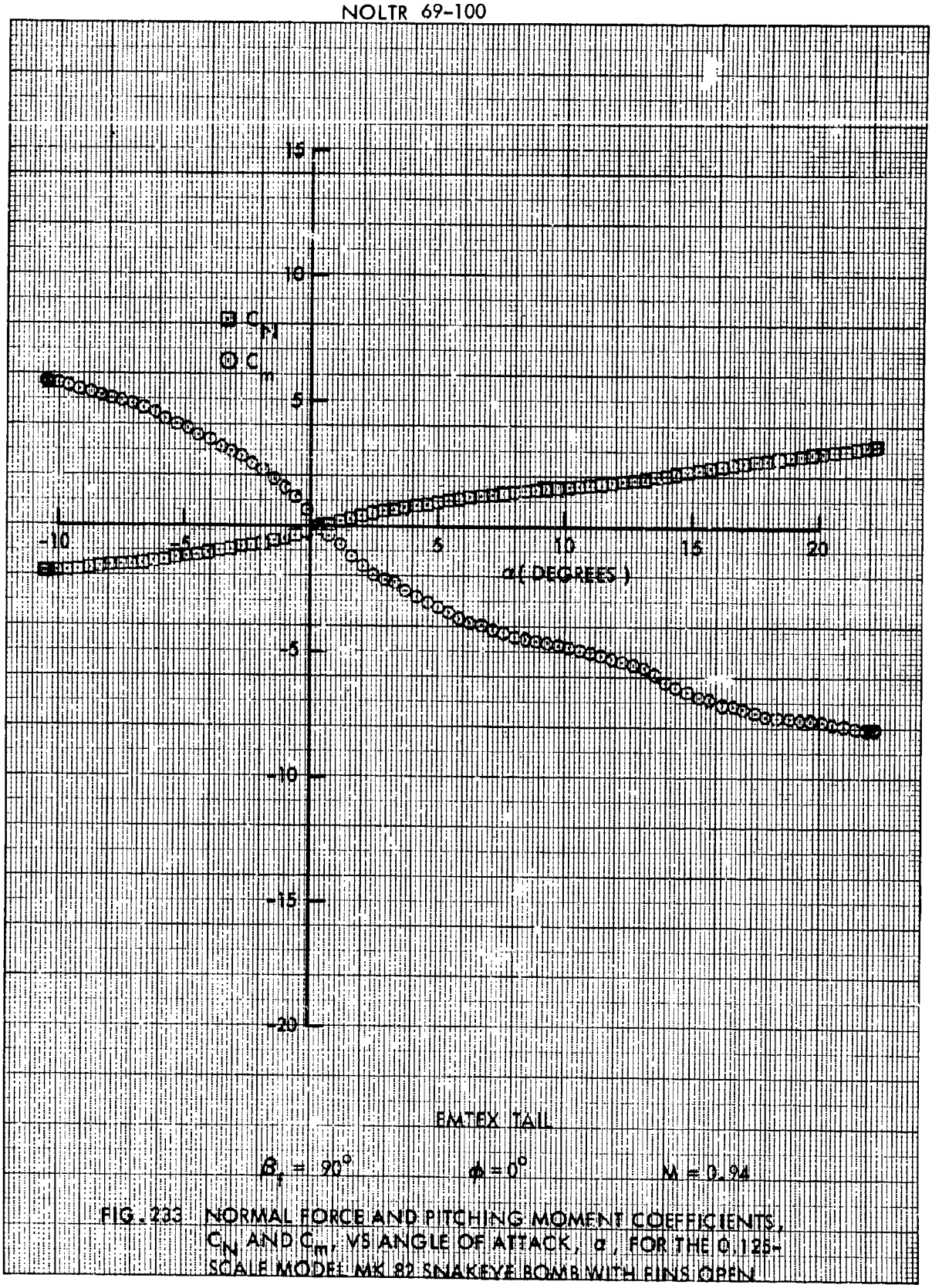


FIG. 233 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

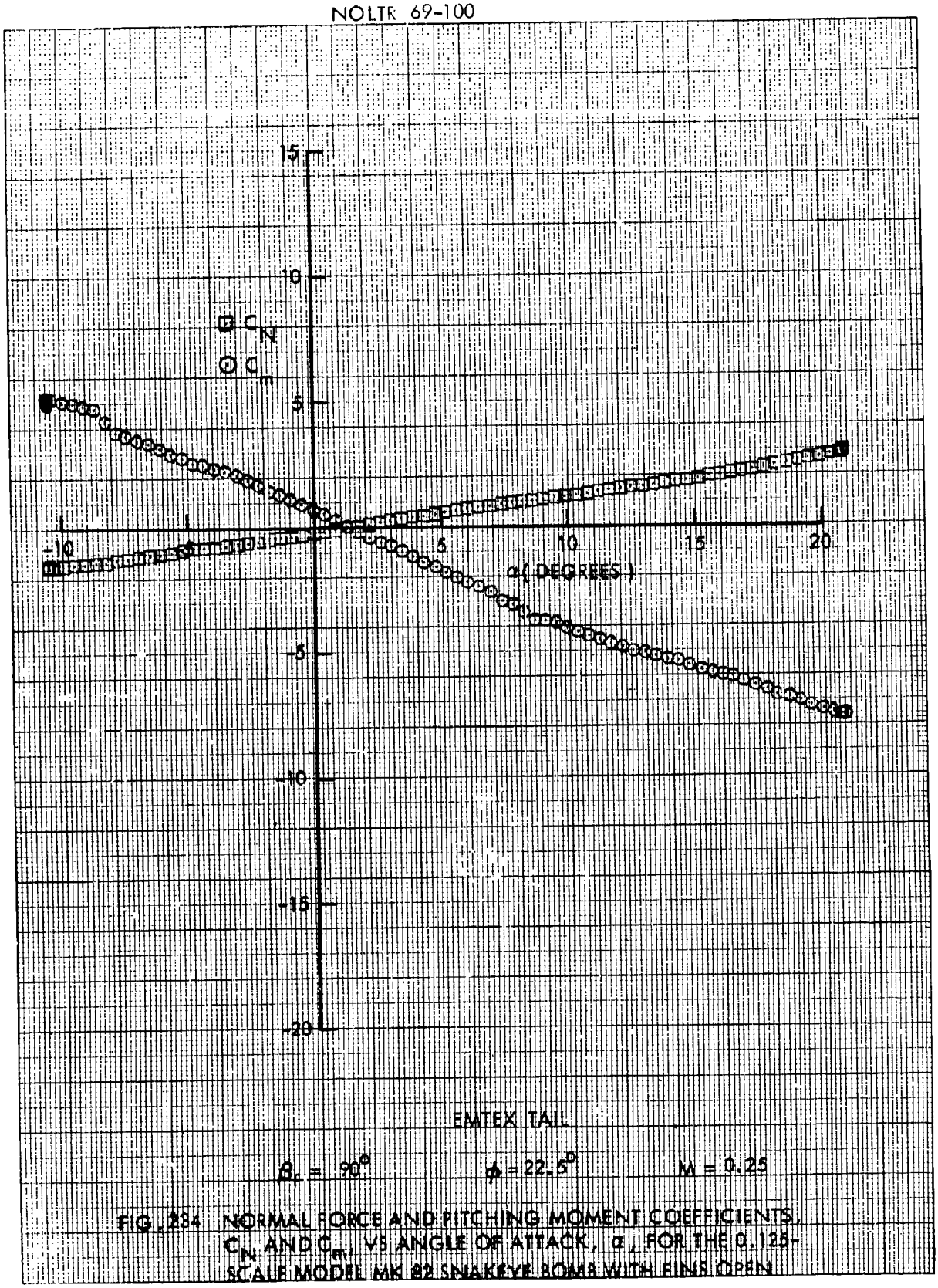


FIG. 234 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

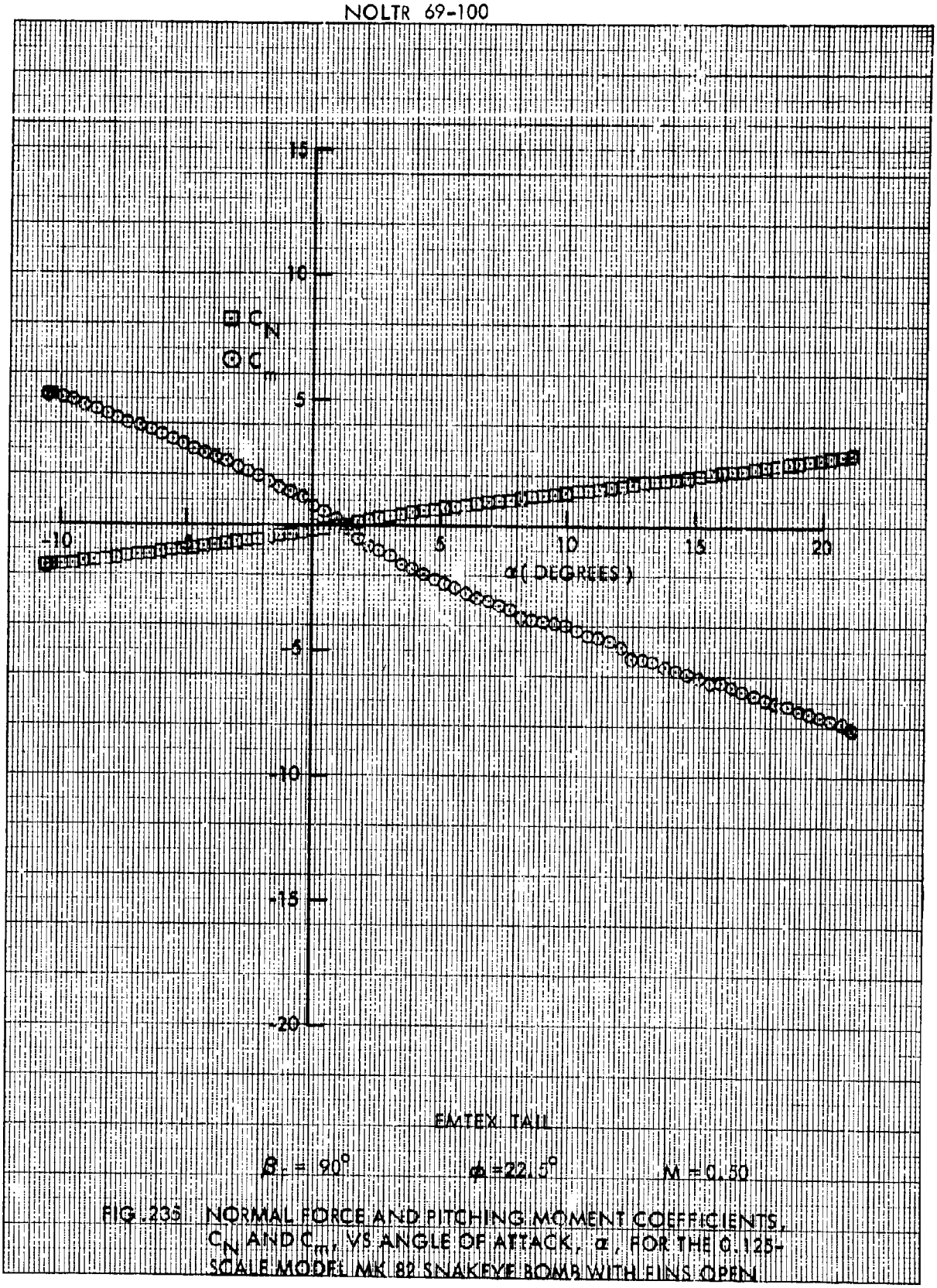


FIG. 235 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

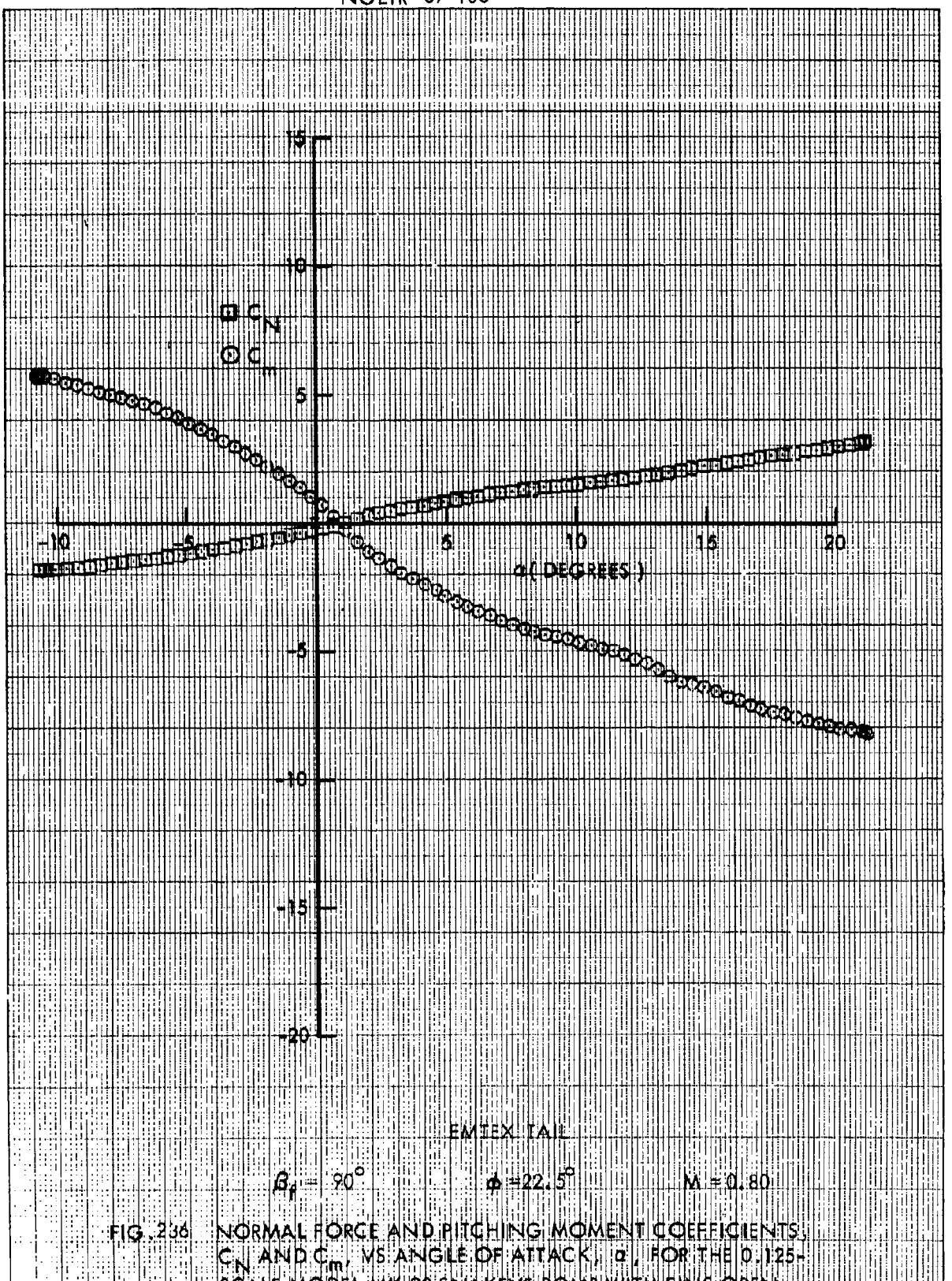


FIG. 236 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

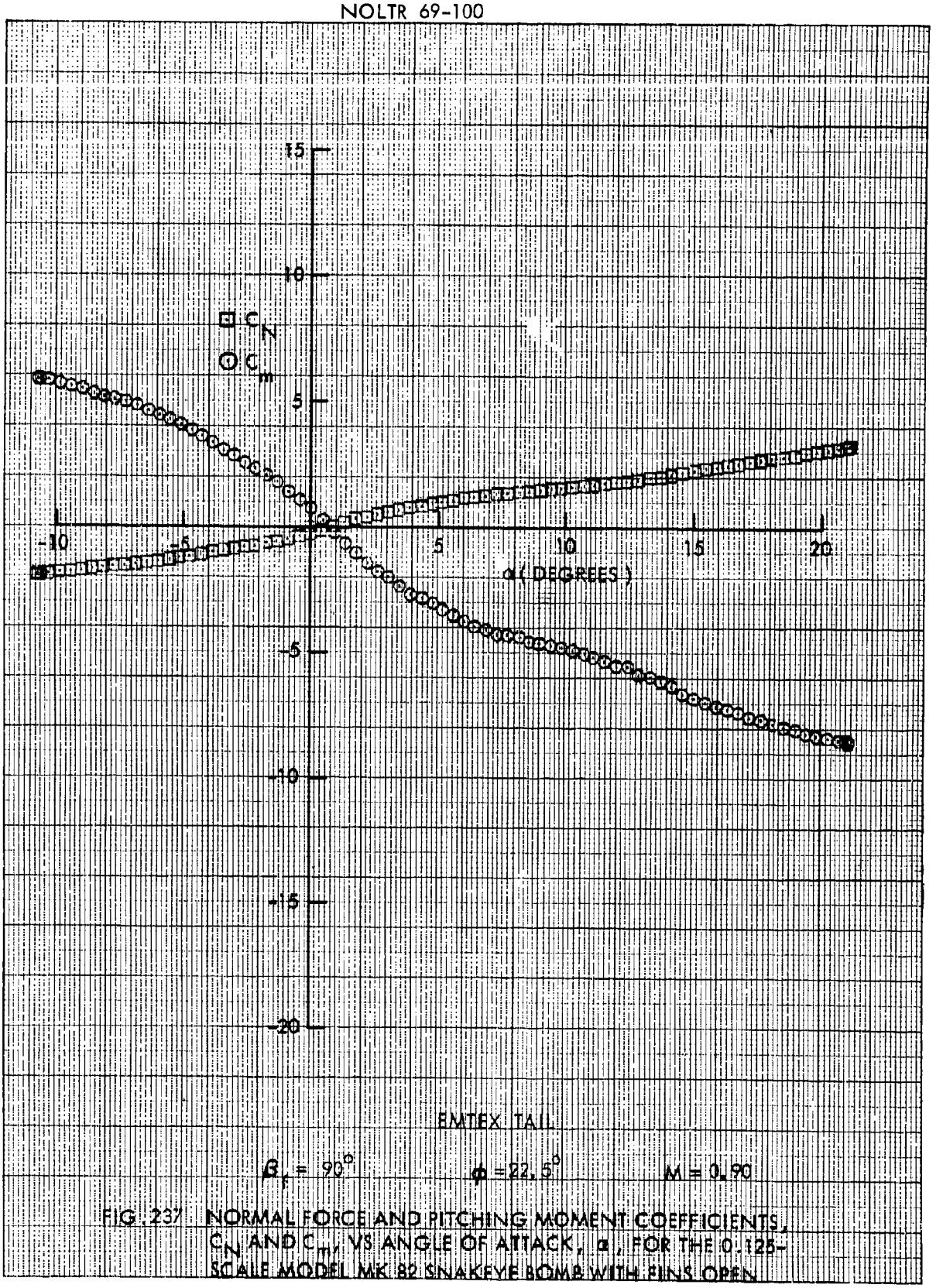


FIG. 237 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

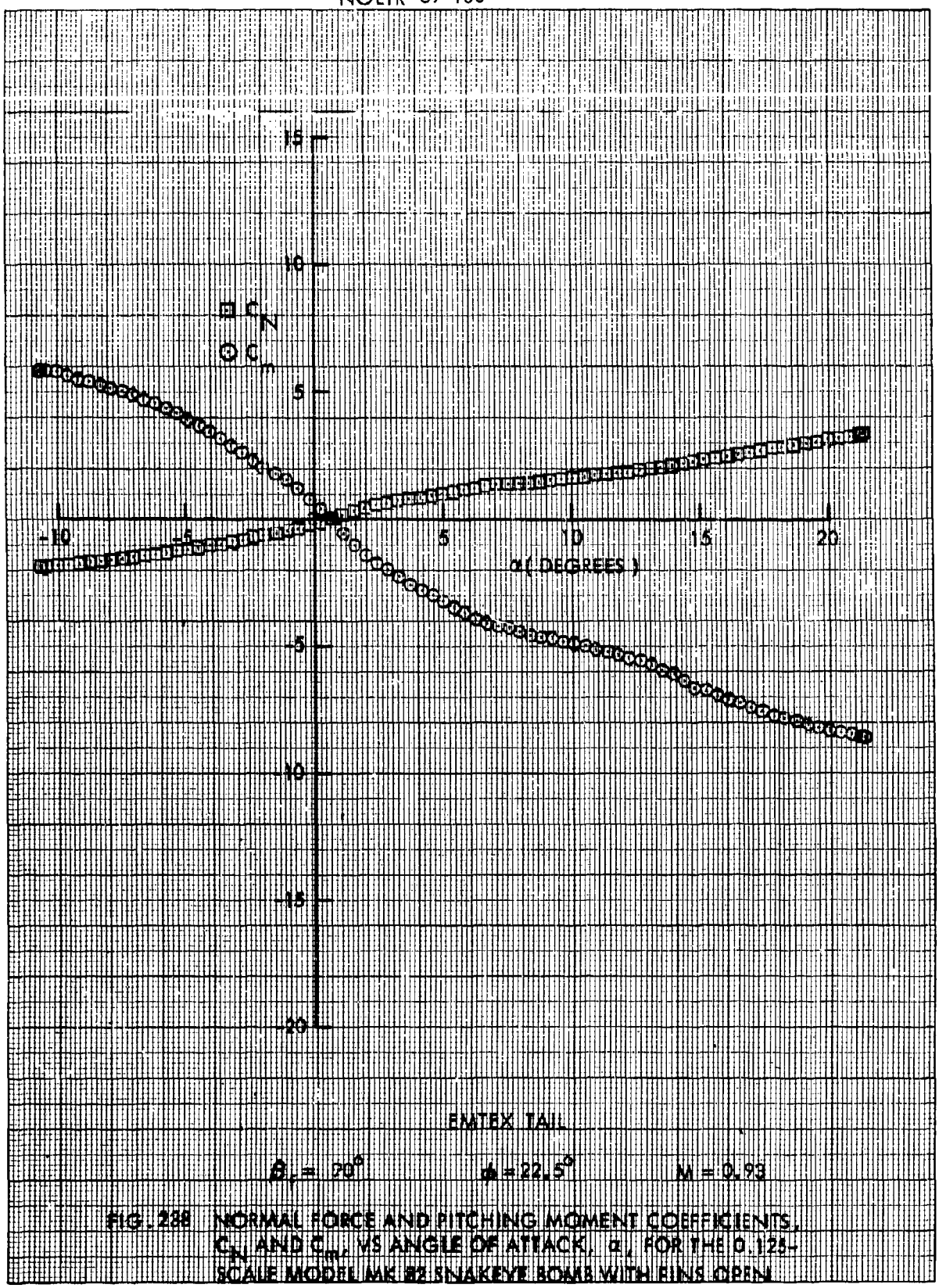


FIG. 238 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

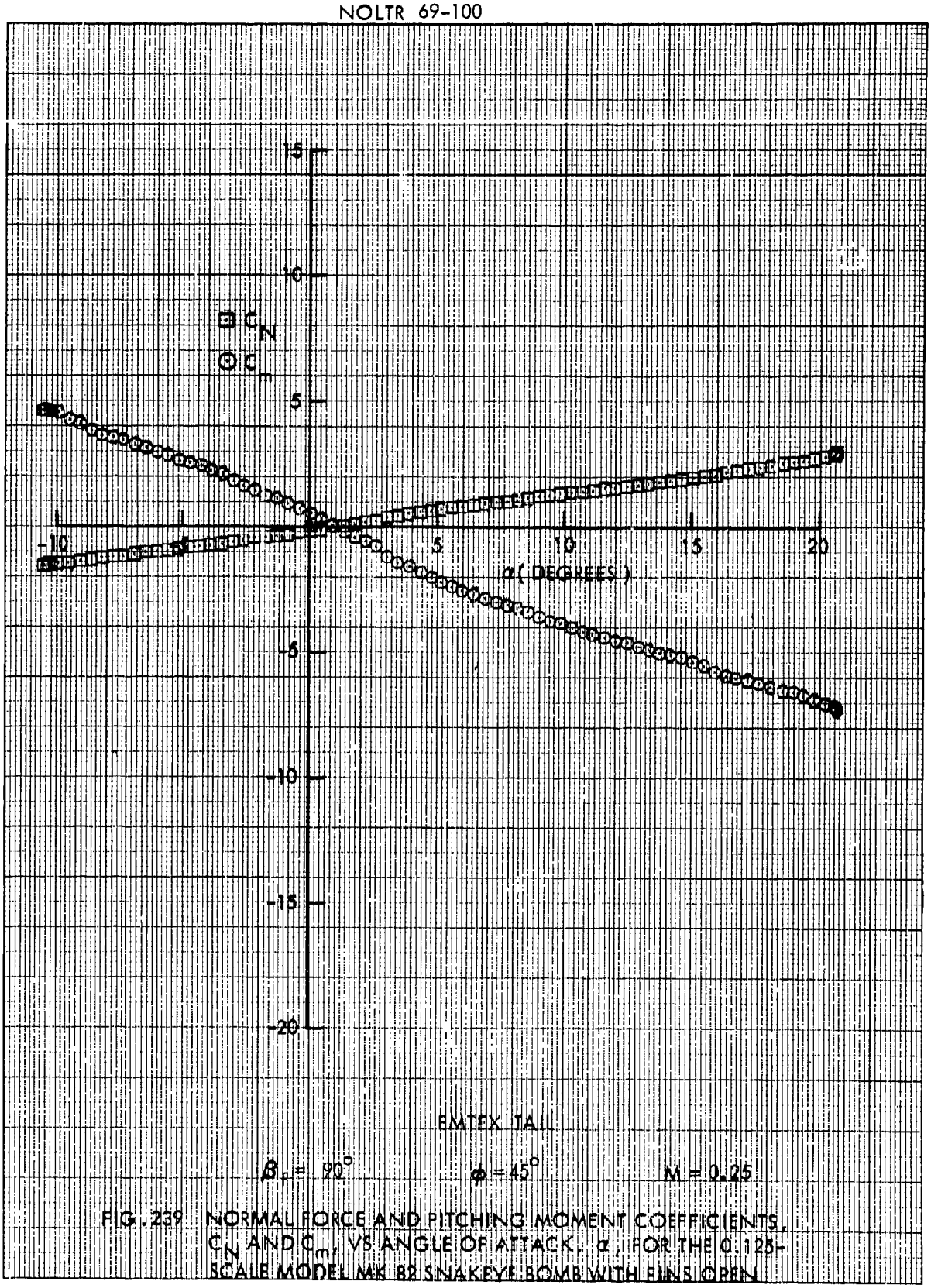


FIG. 239 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

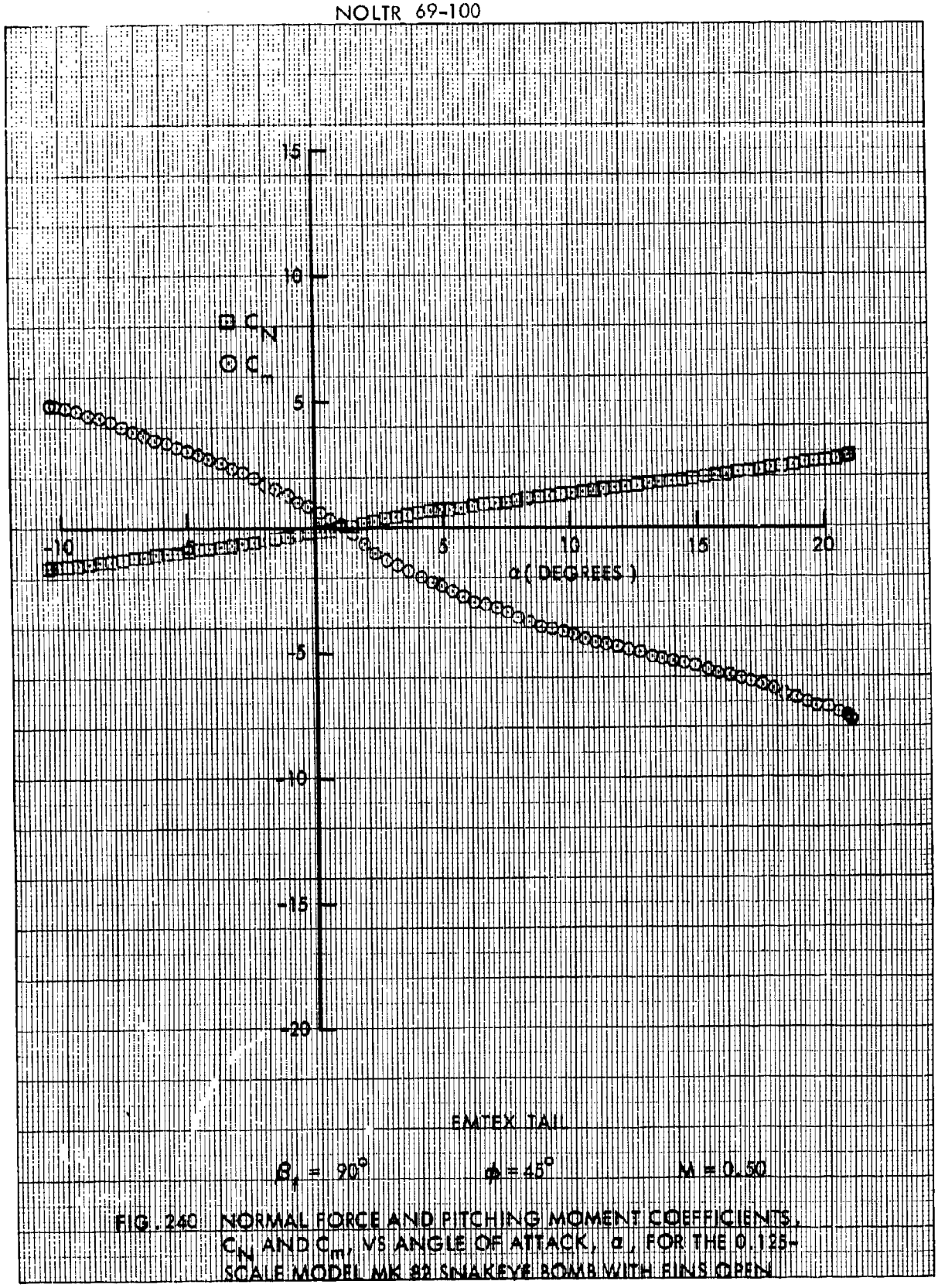


FIG. 240 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND $C_{m'}$ VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

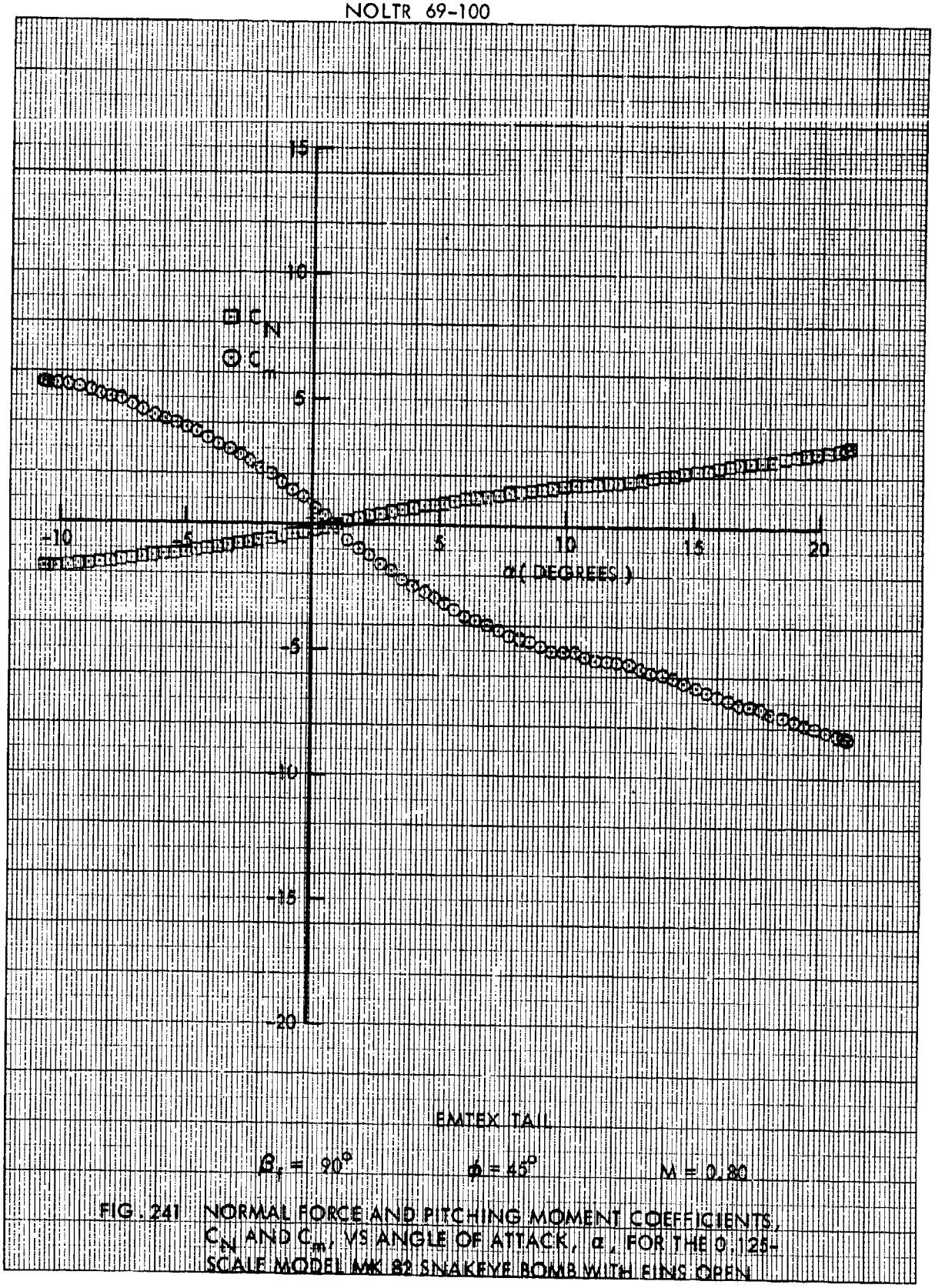


FIG. 241 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

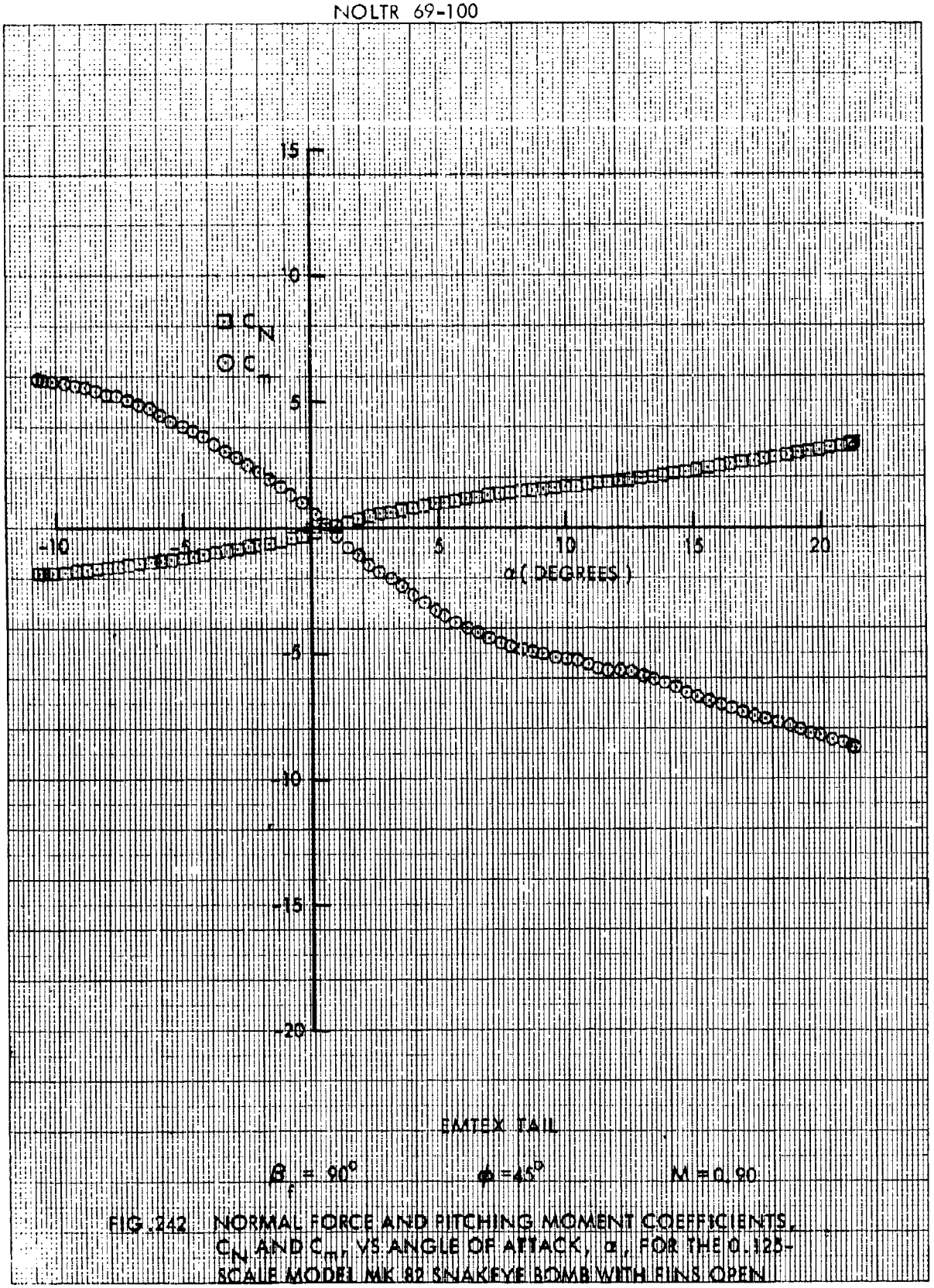


FIG. 242 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

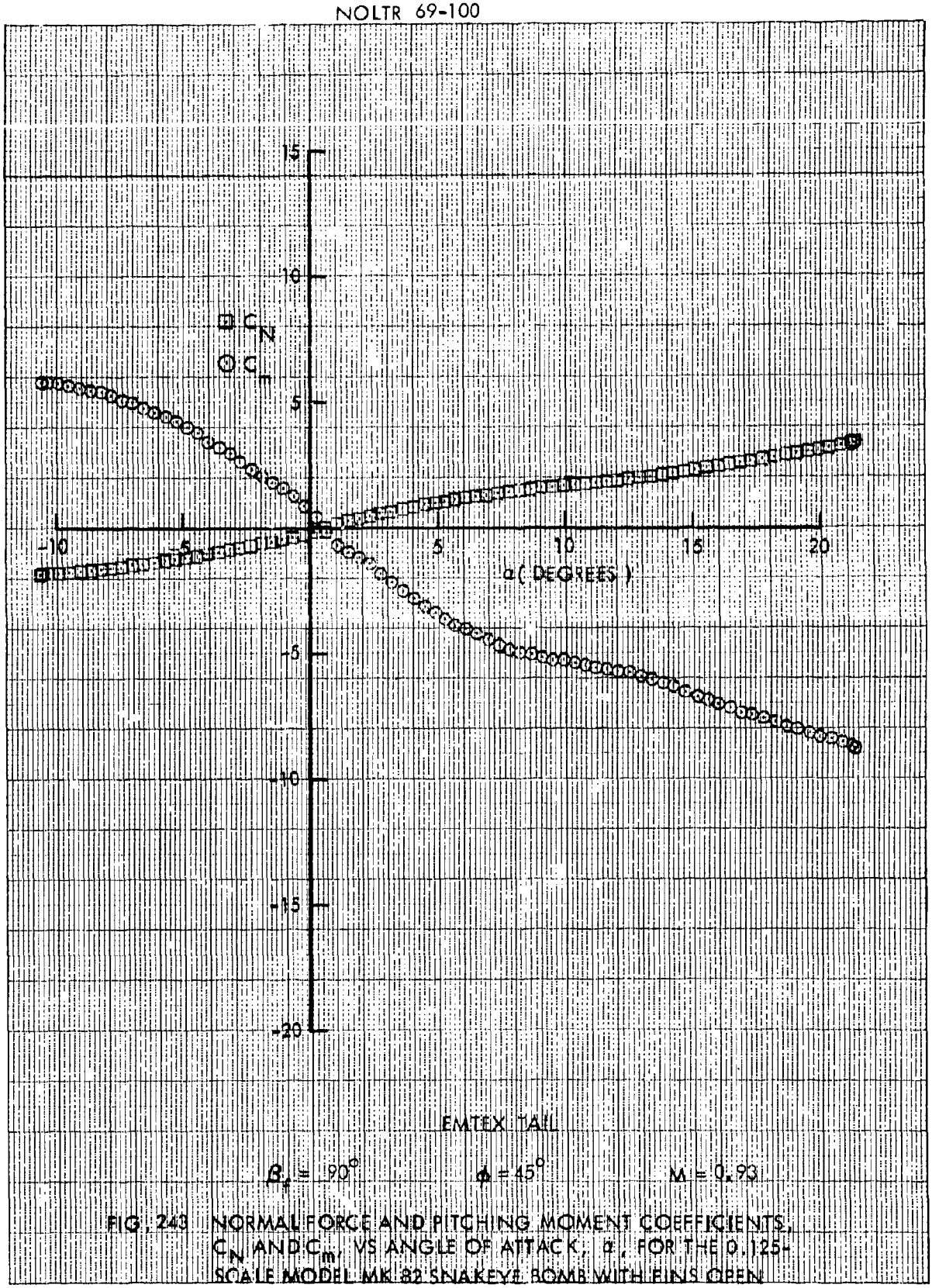


FIG. 243 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

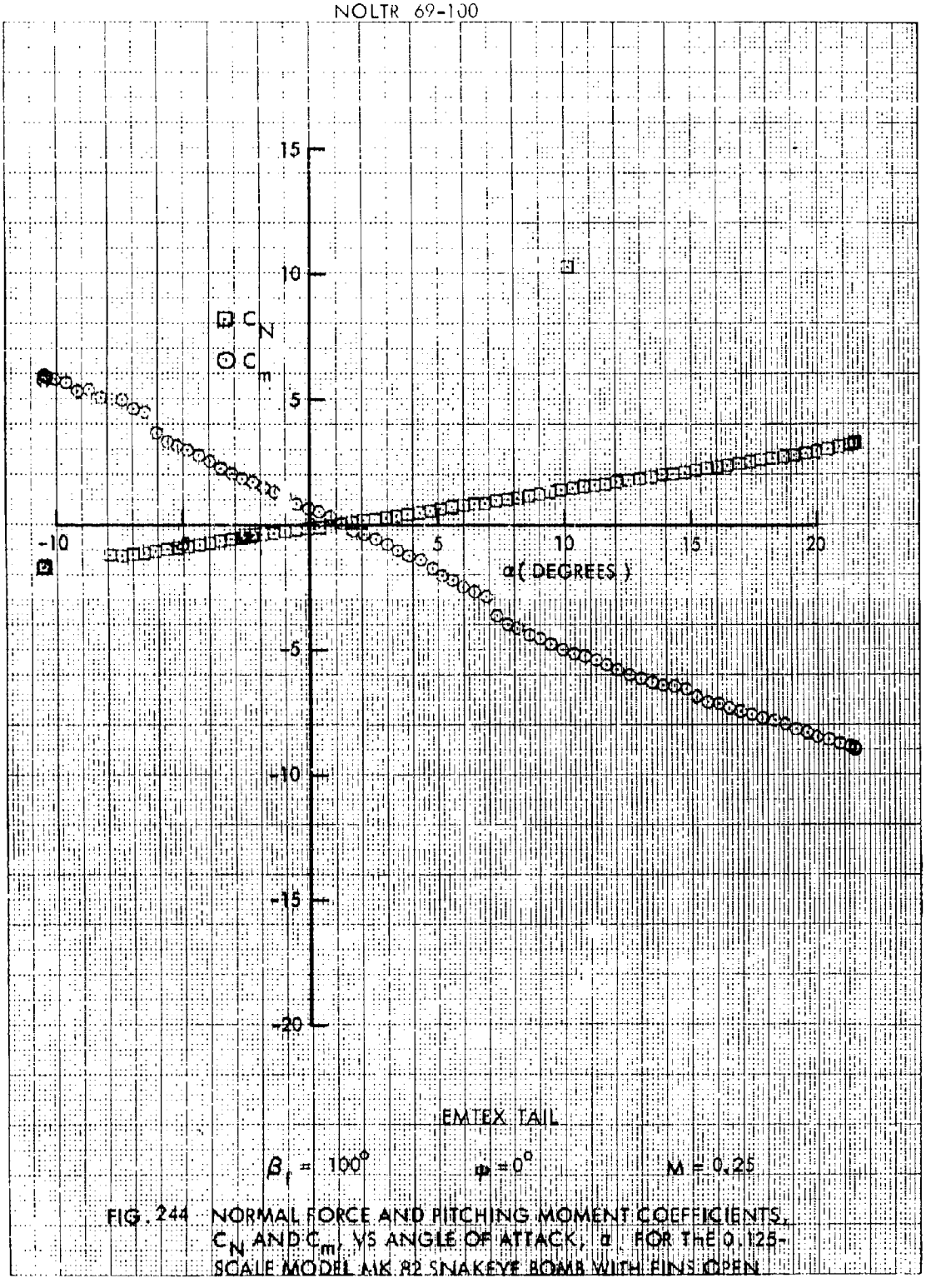


FIG. 244 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

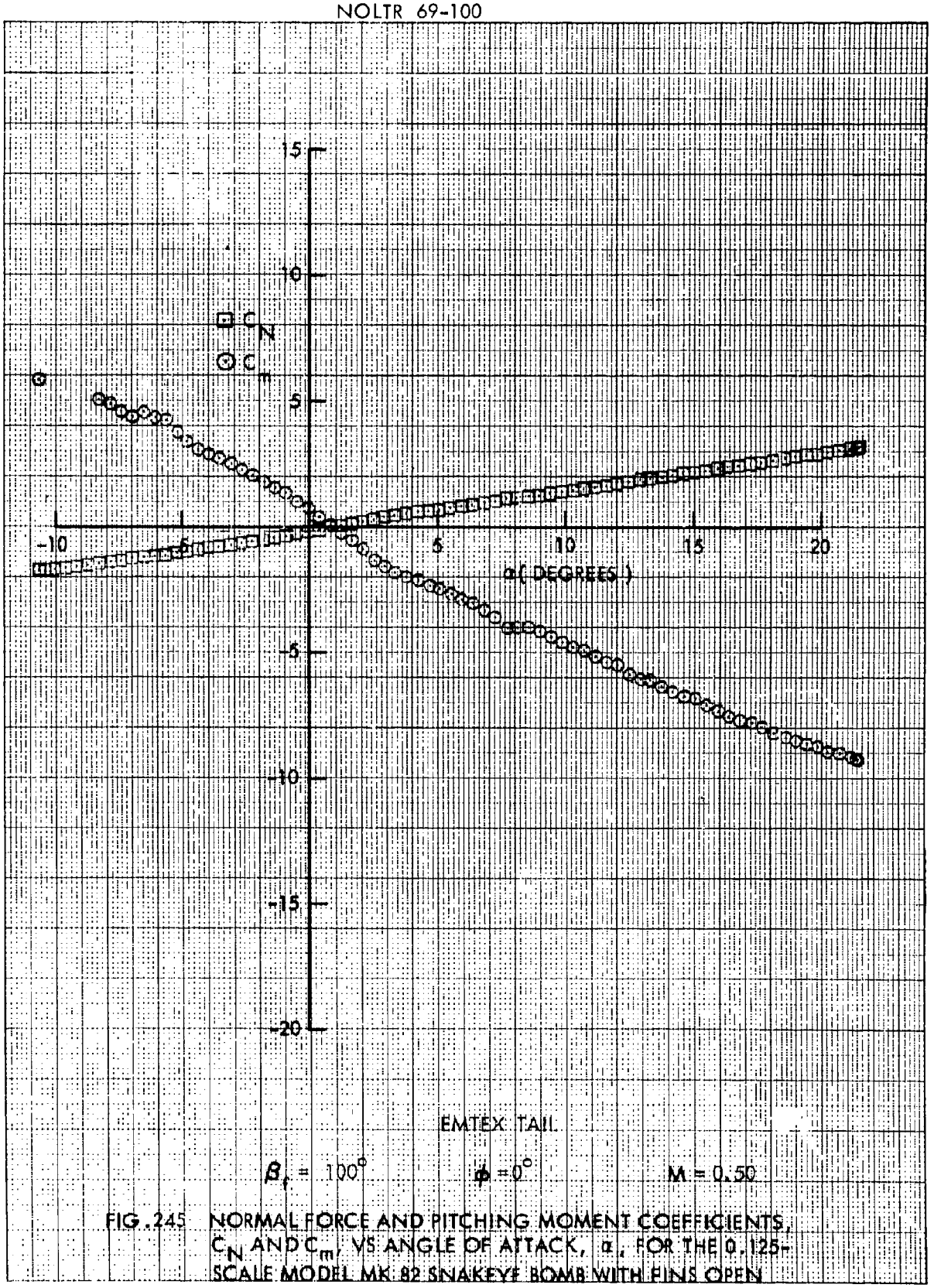


FIG. 245 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

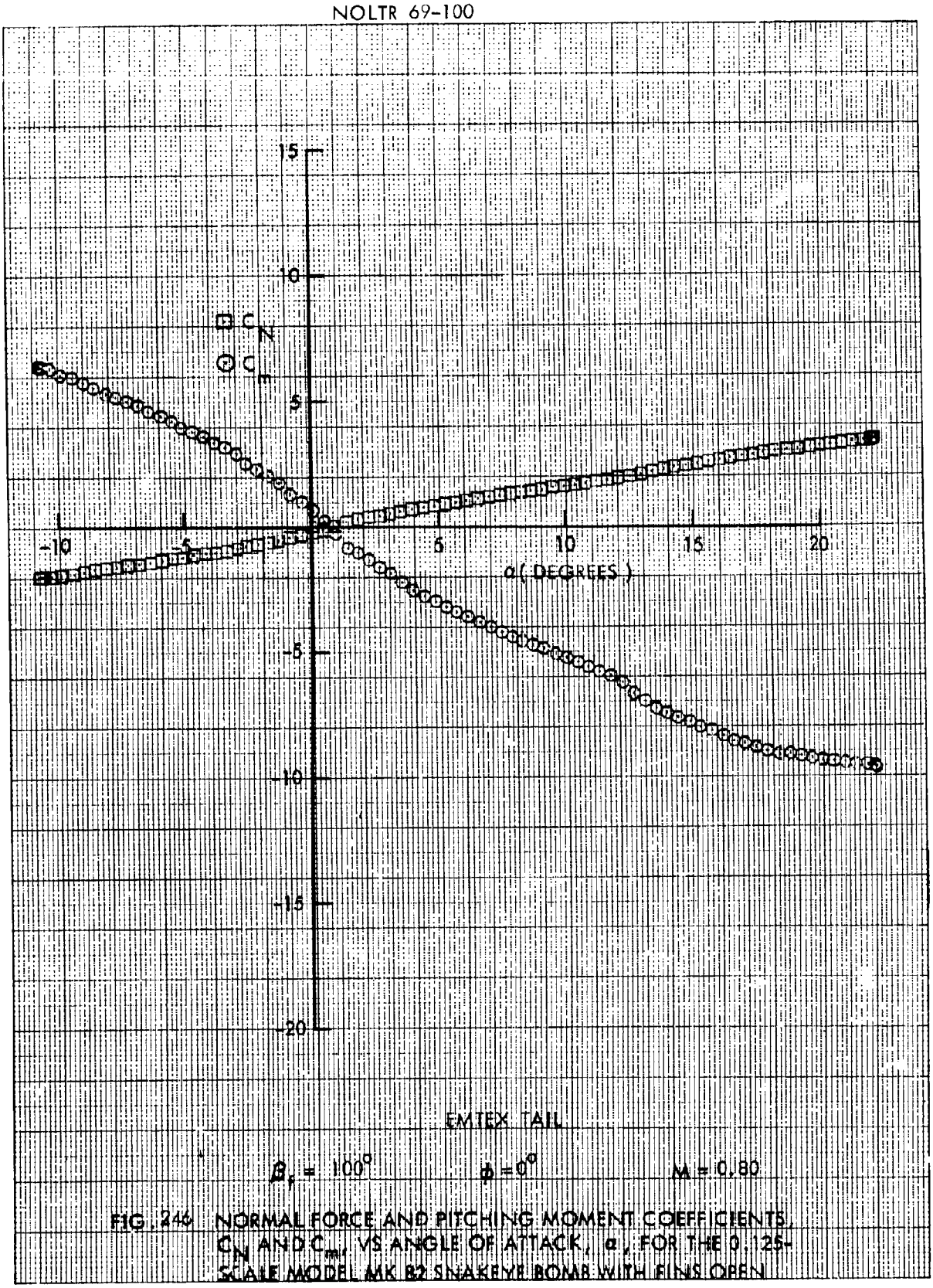


FIG. 246 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_{m_1} VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

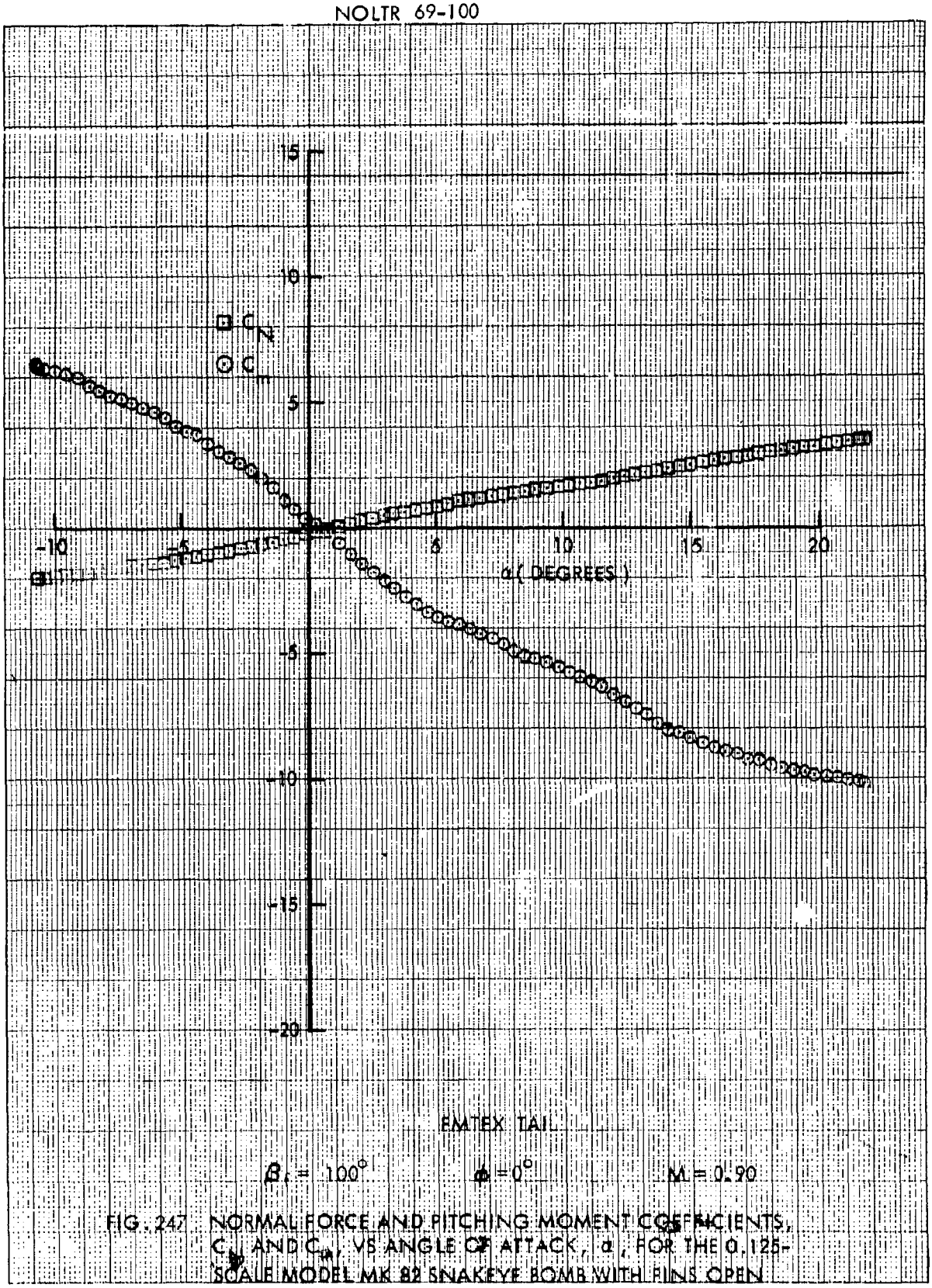


FIG. 247 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

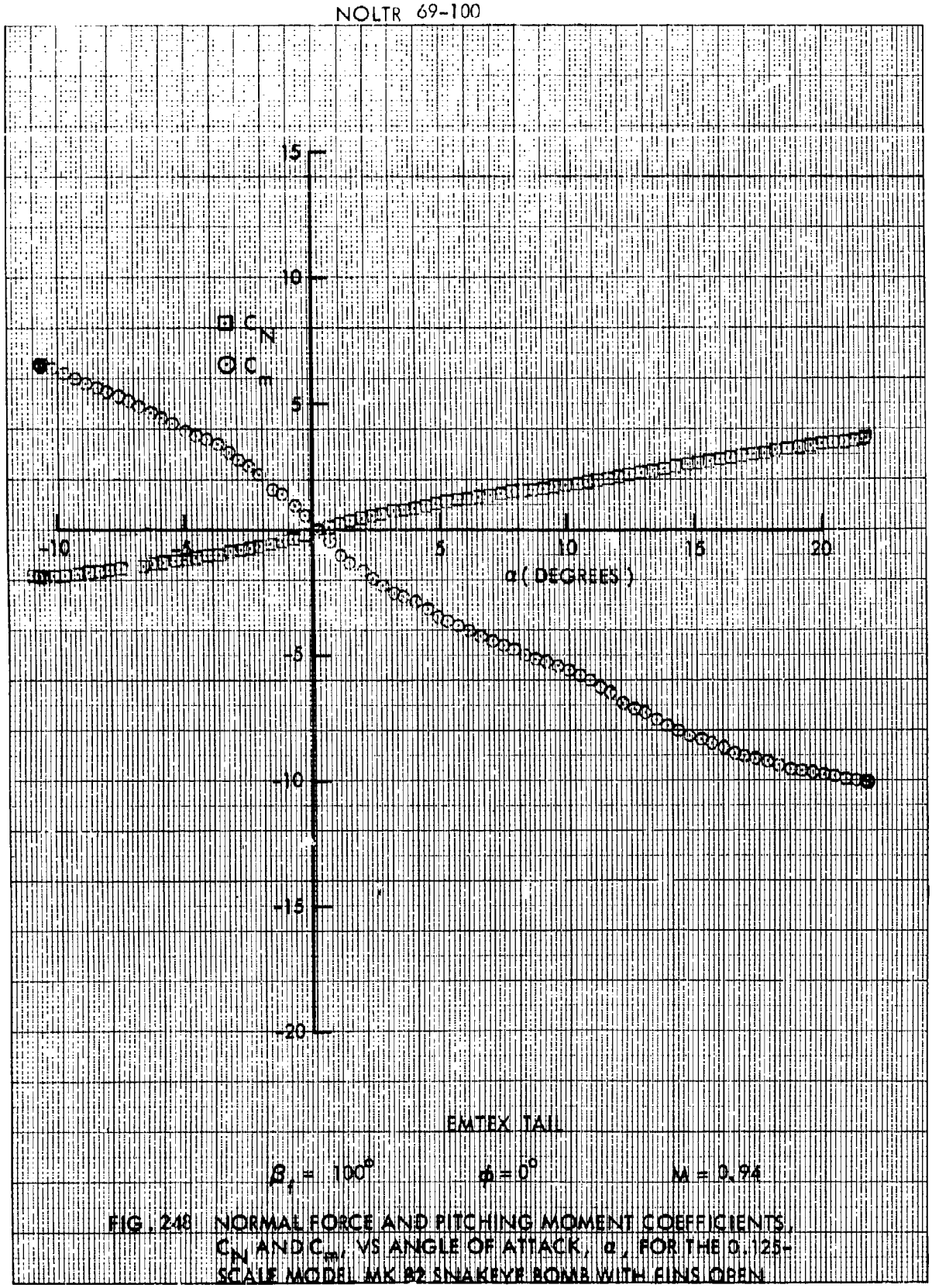


FIG. 248 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND $C_{m'}$ VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

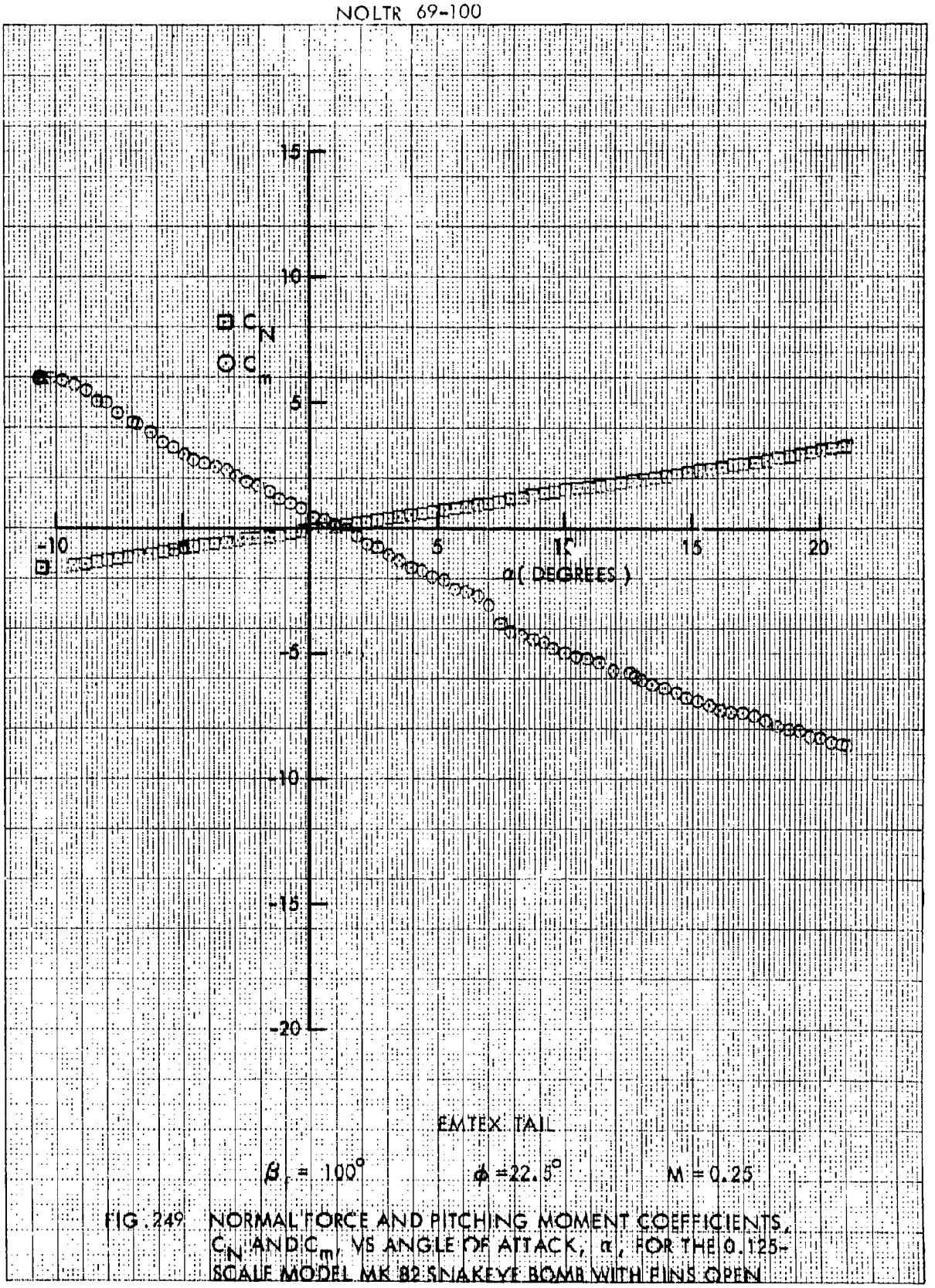


FIG. 249 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

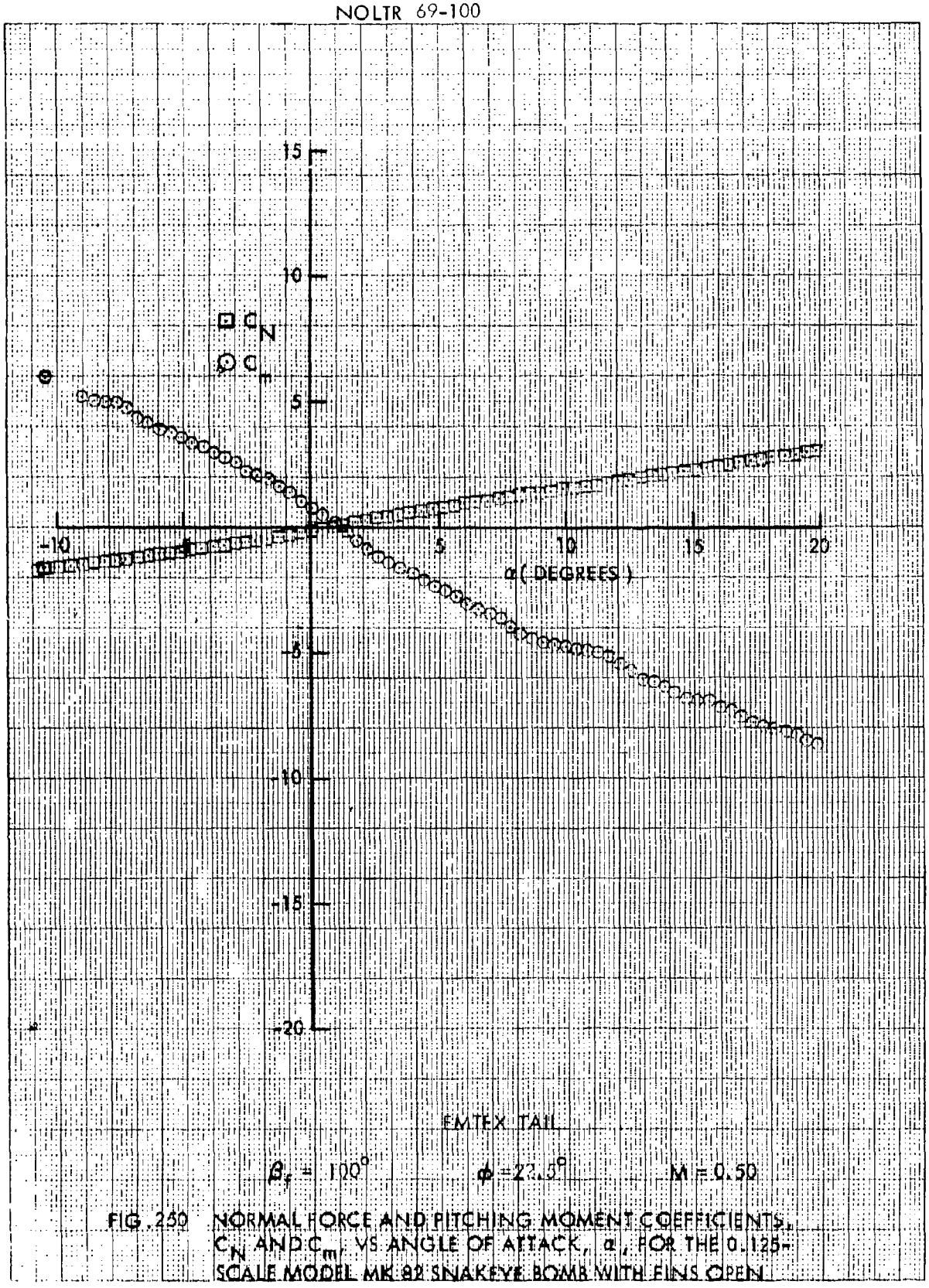


FIG. 250 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

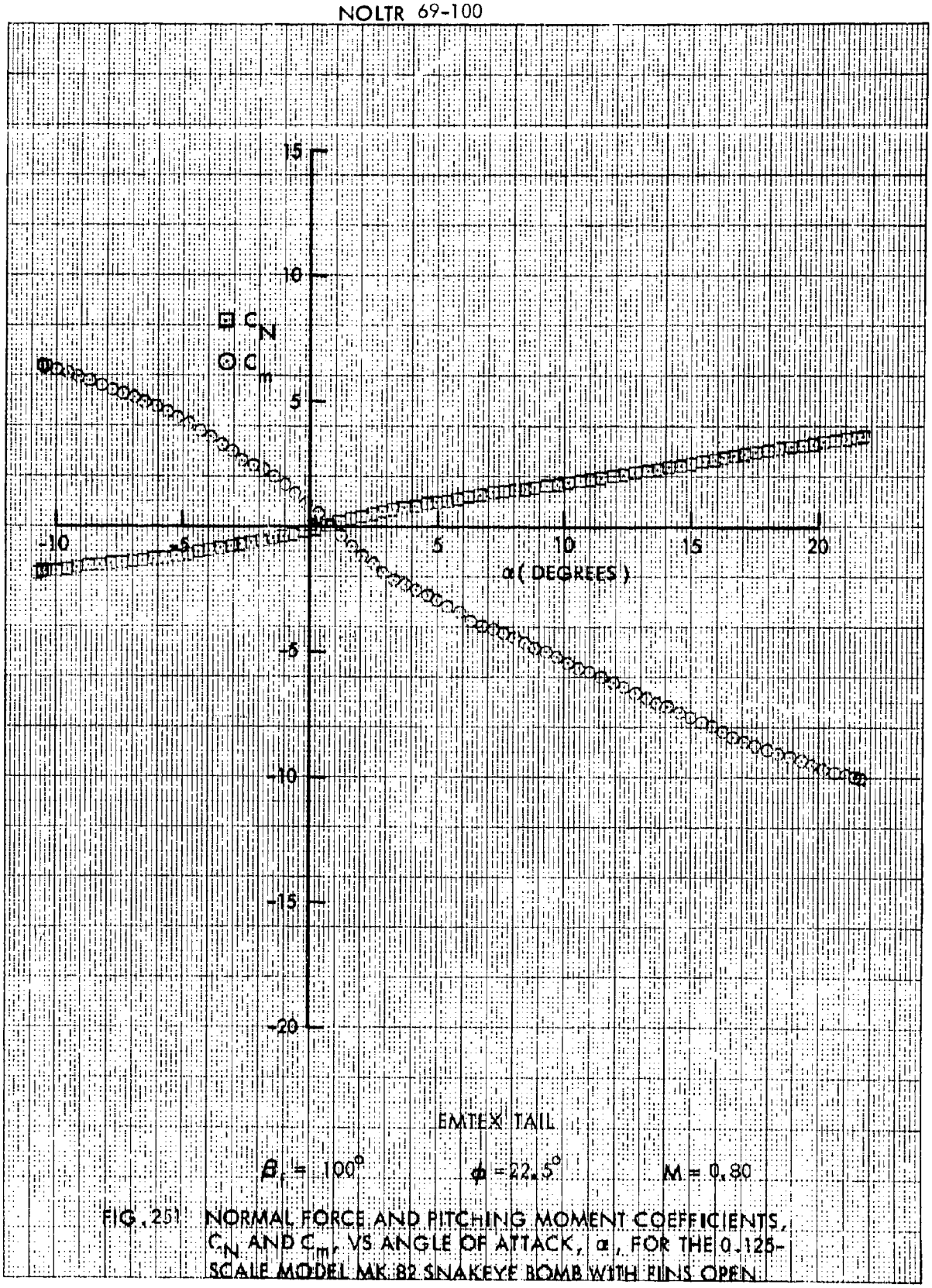


FIG. 251 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN.

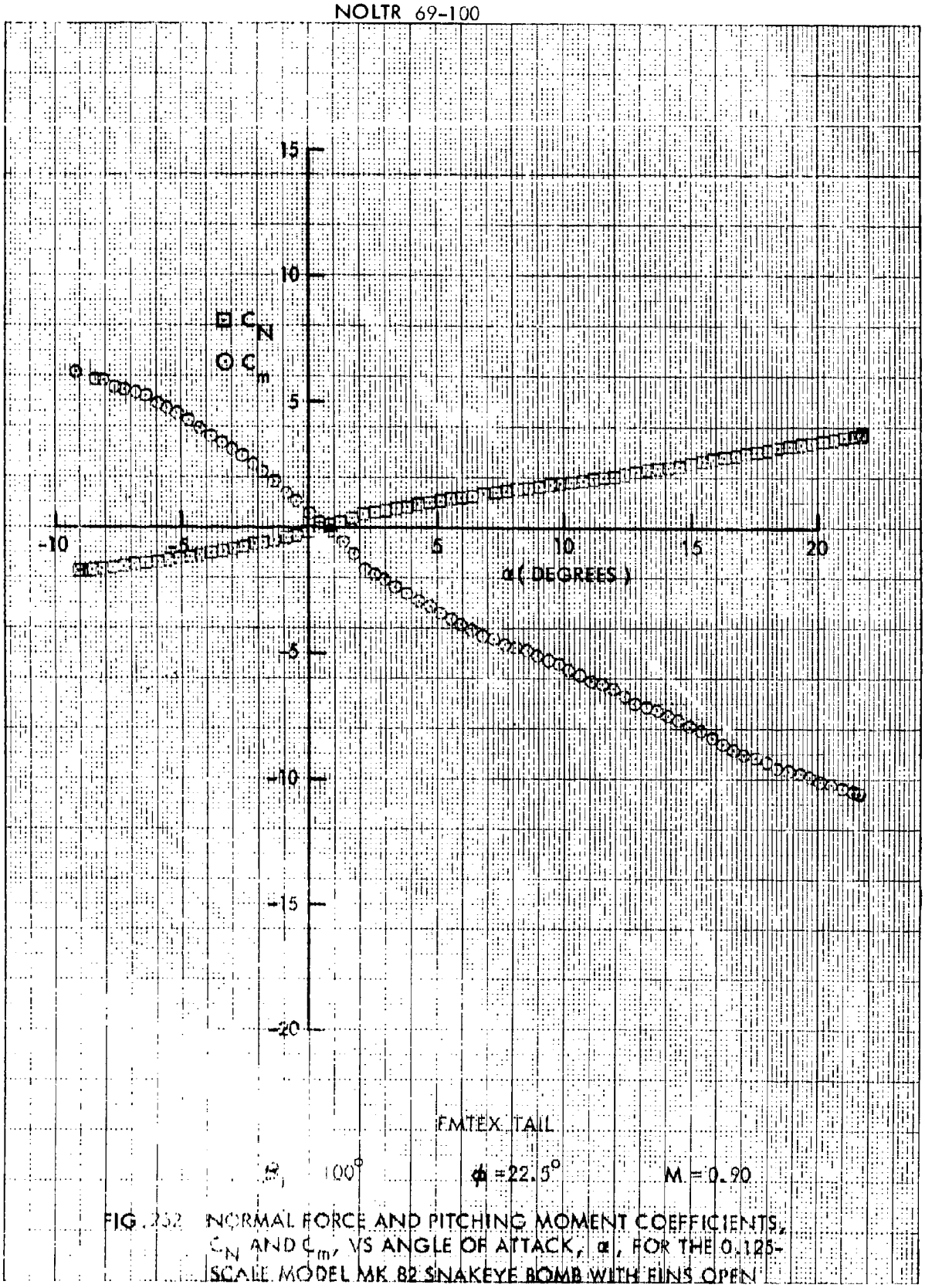


FIG. 252 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

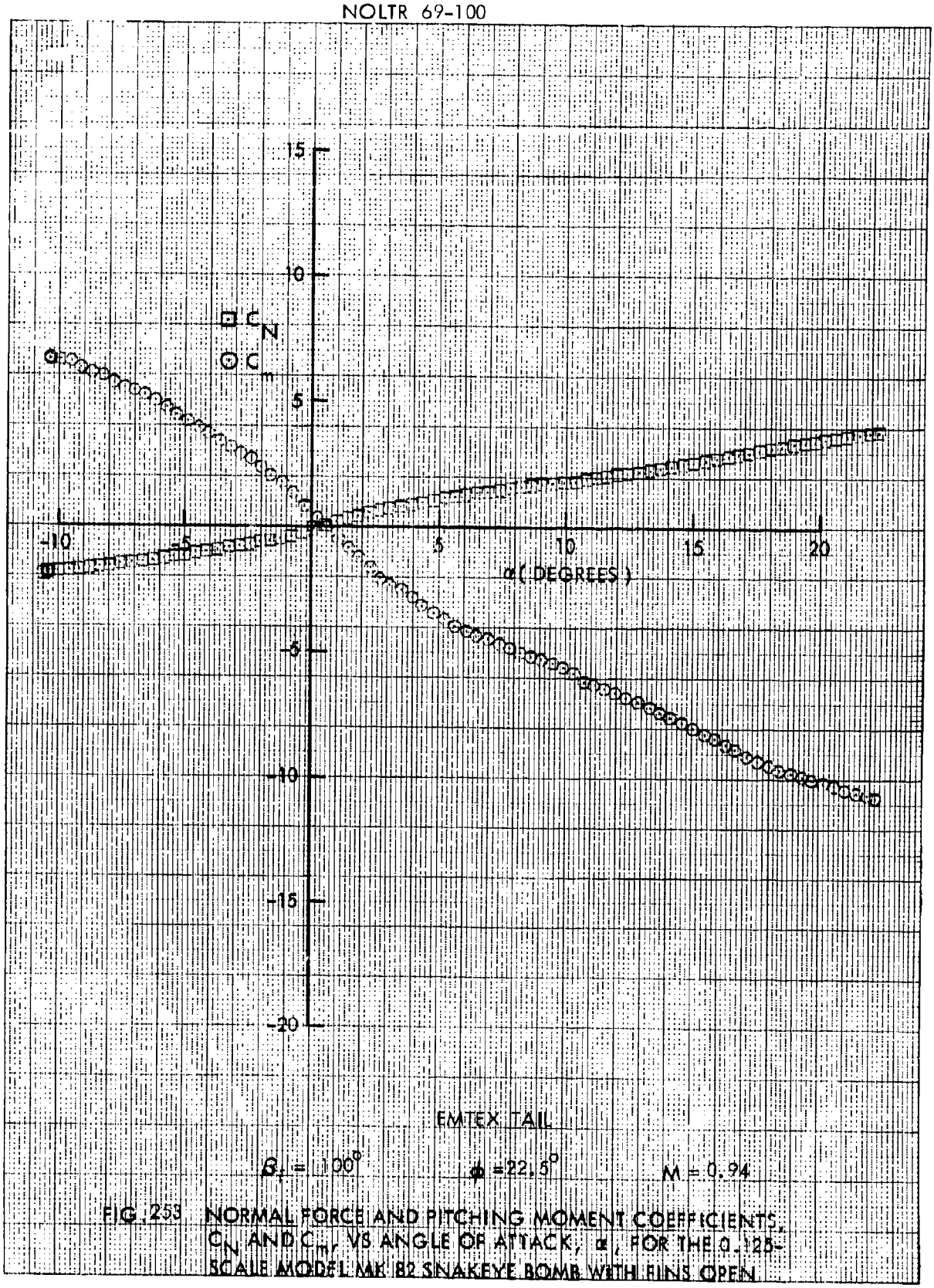


FIG. 253 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

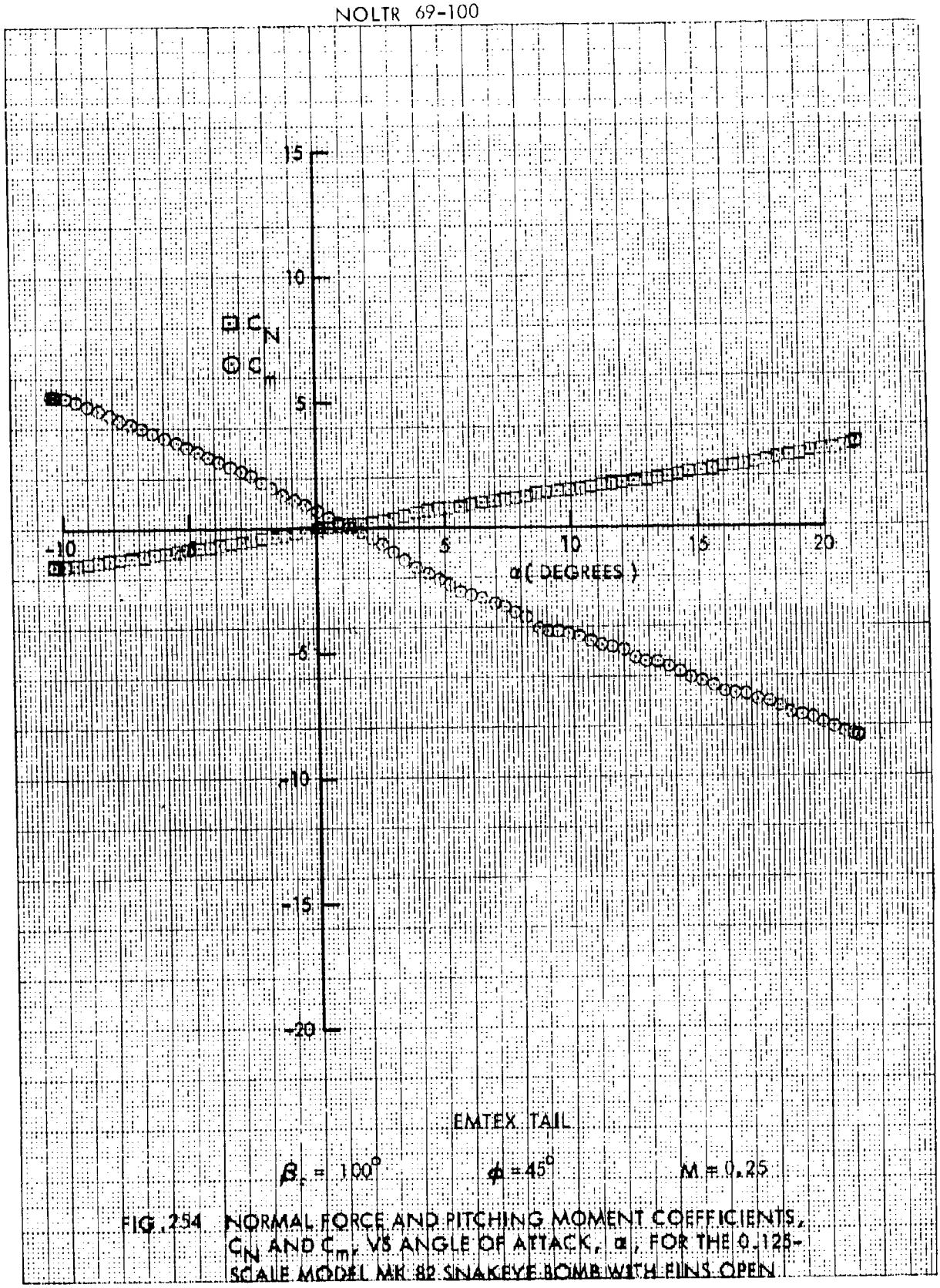


FIG. 254 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

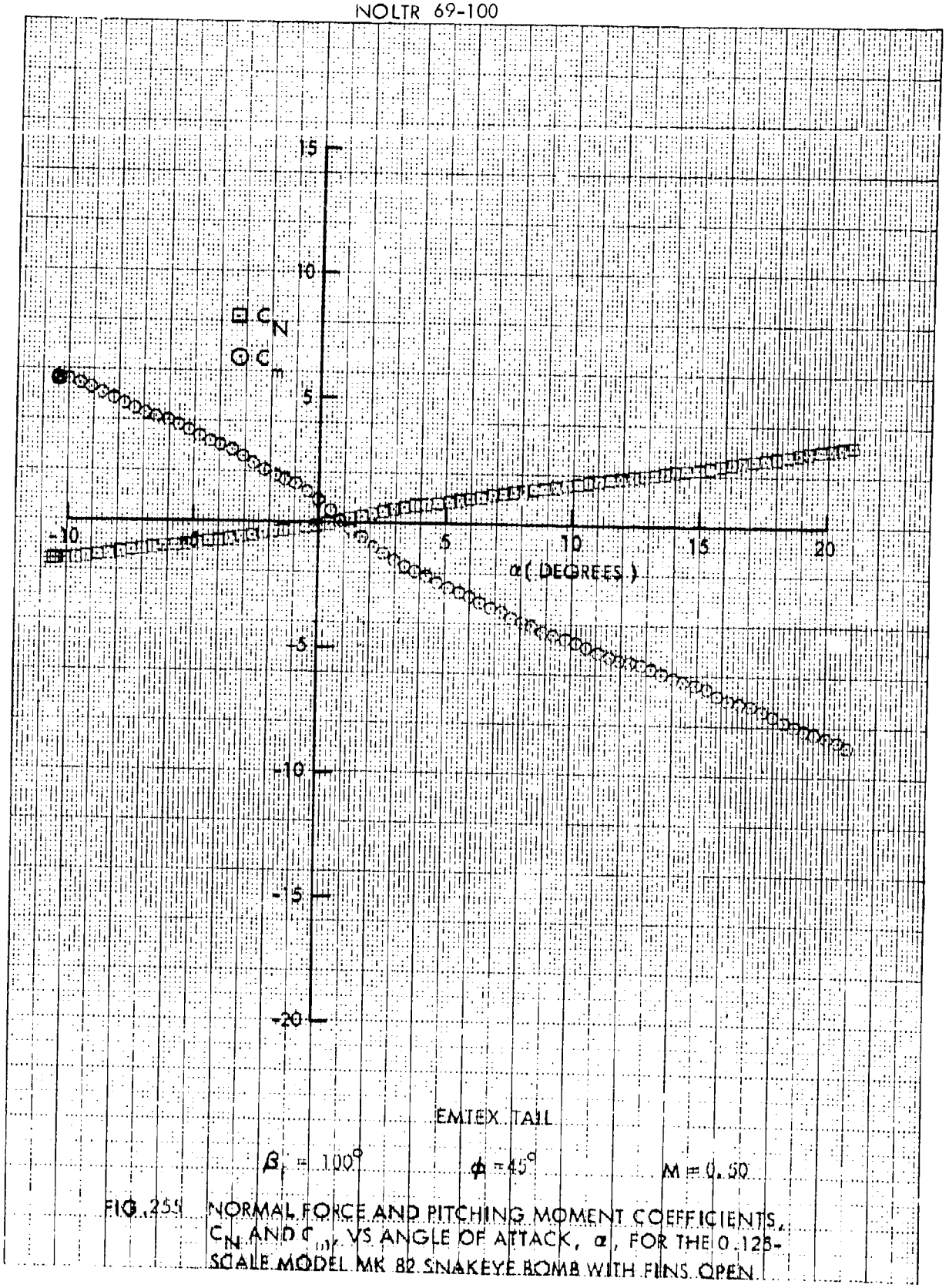


FIG. 259 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN.

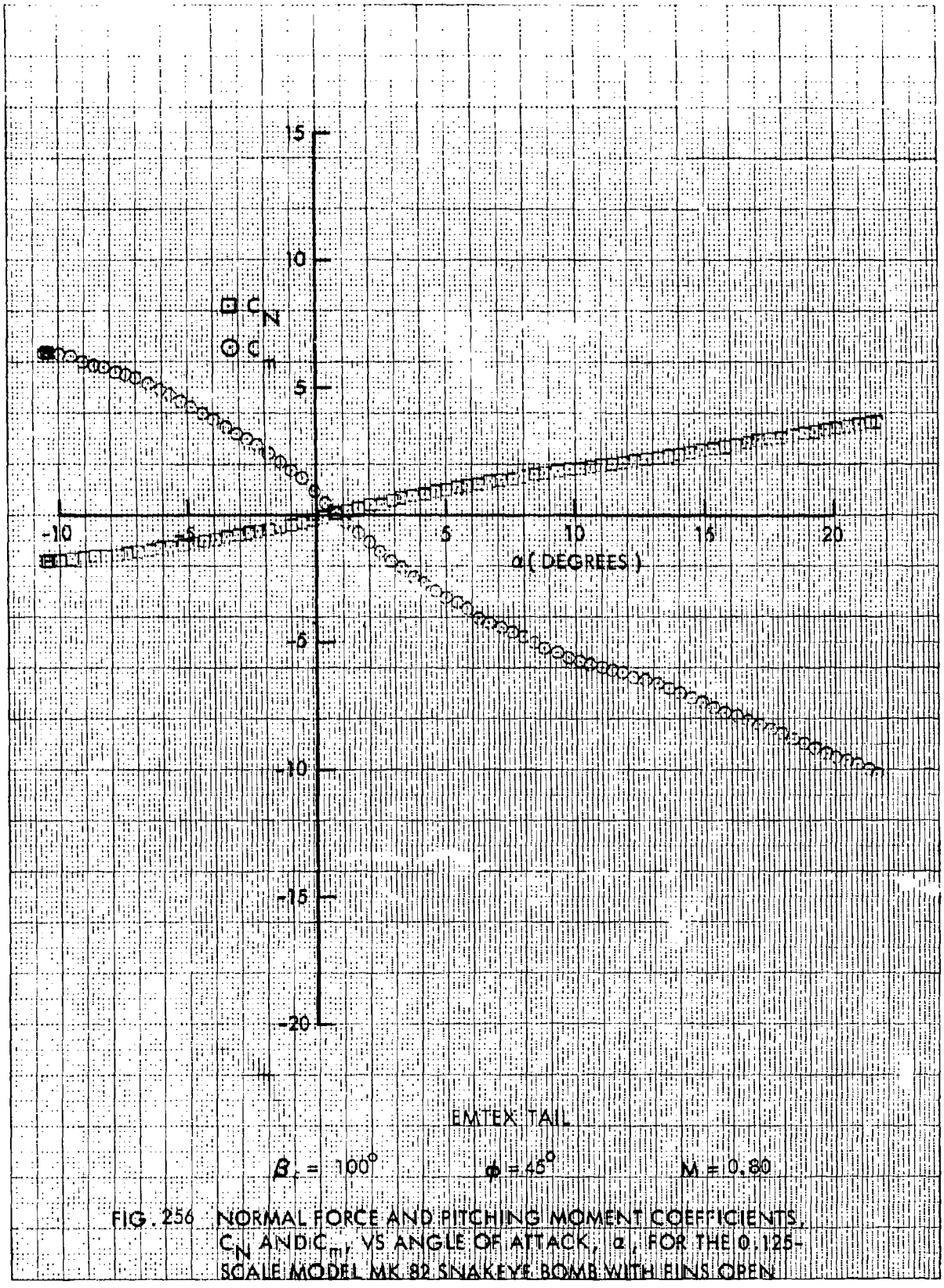


FIG. 256 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

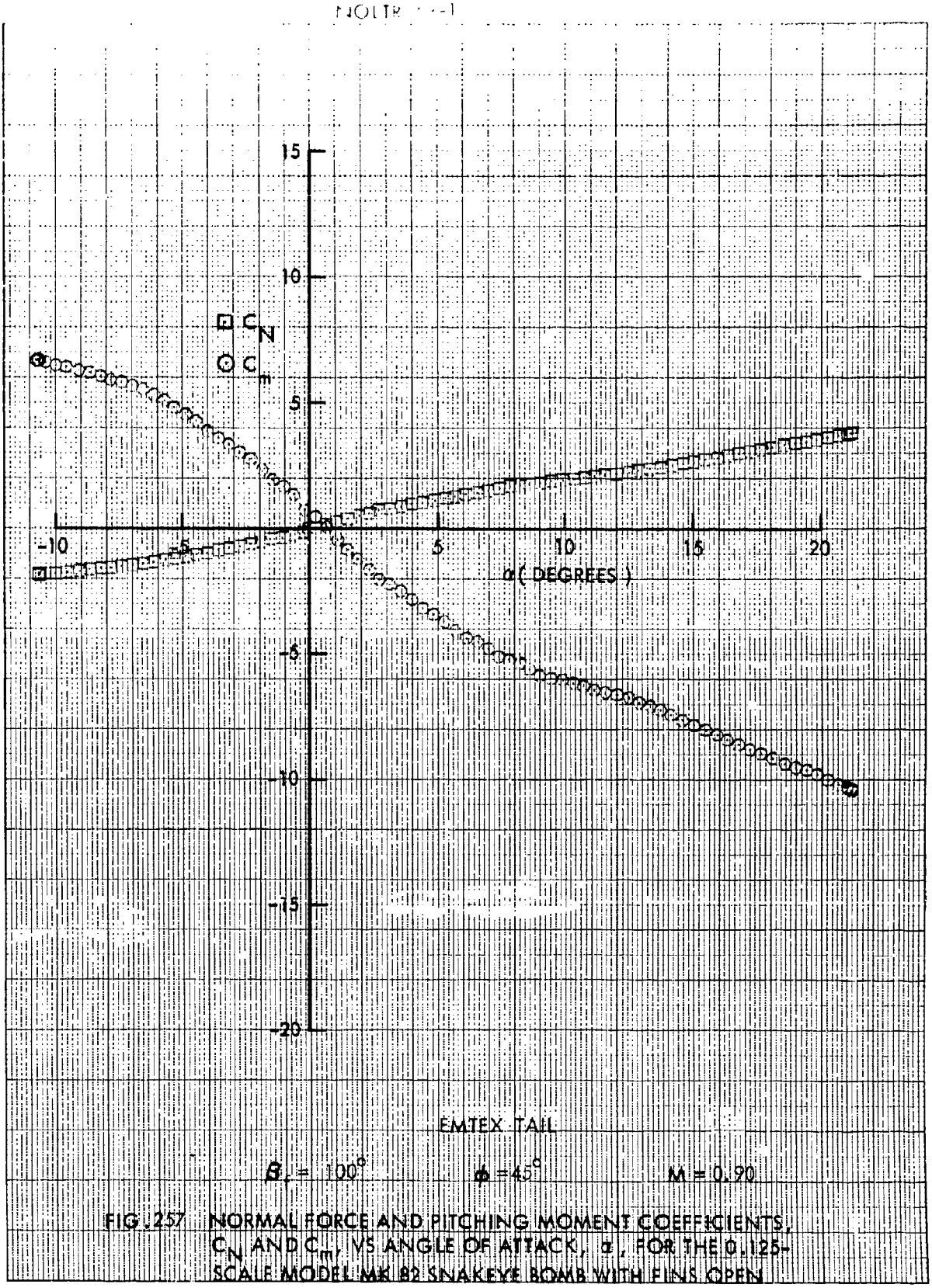


FIG. 257 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

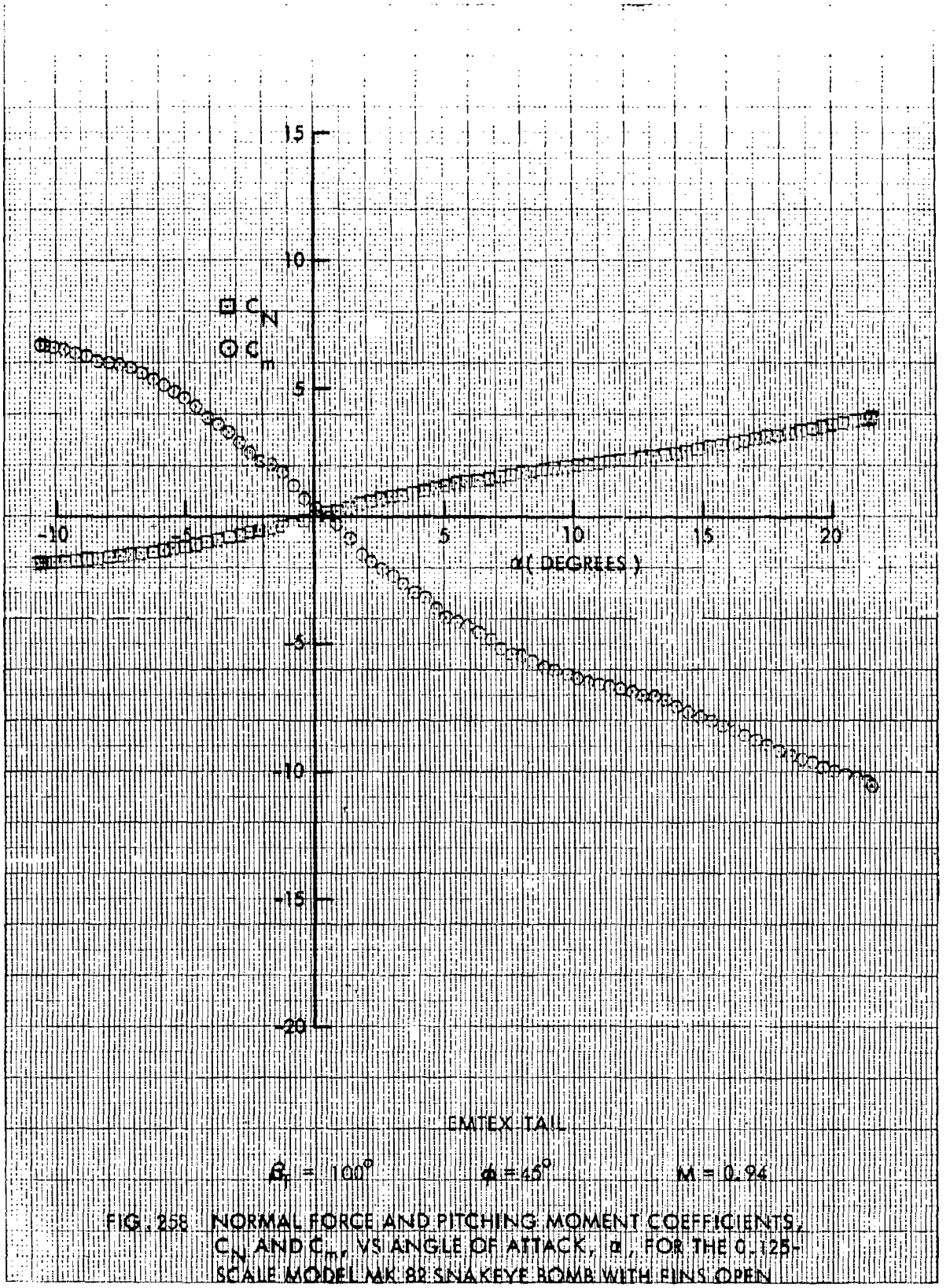


FIG. 258 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

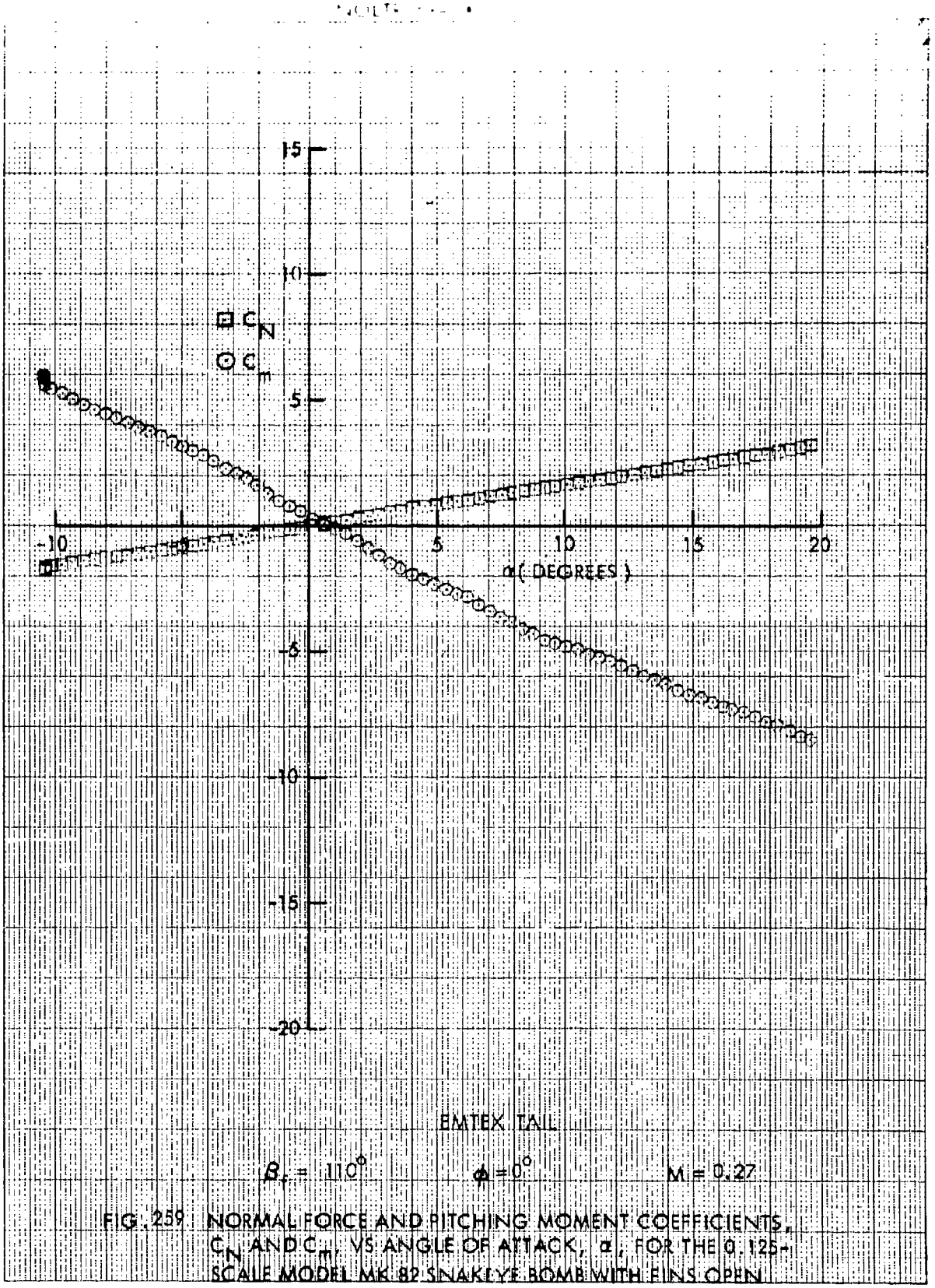


FIG. 259 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

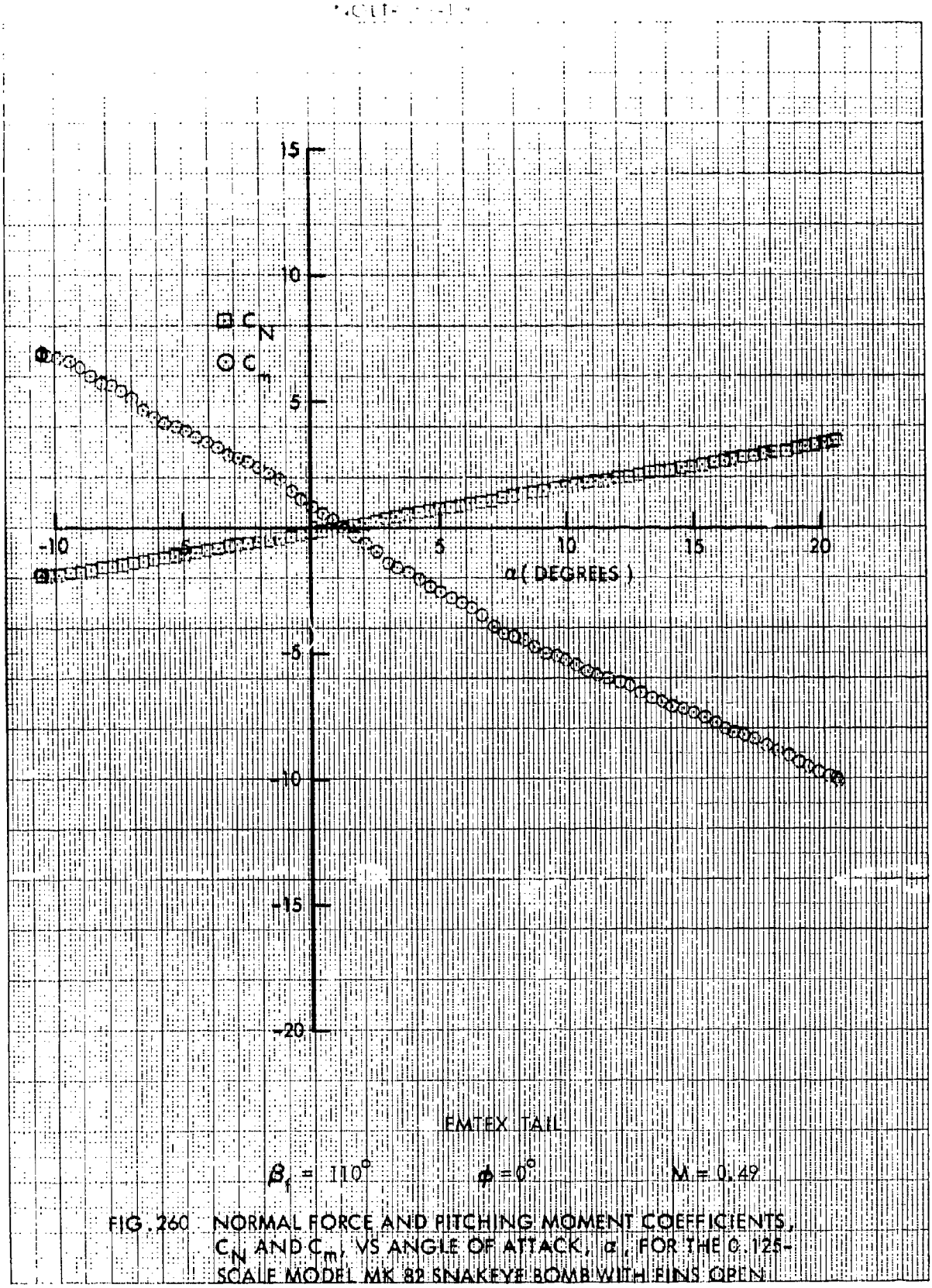


FIG. 260 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

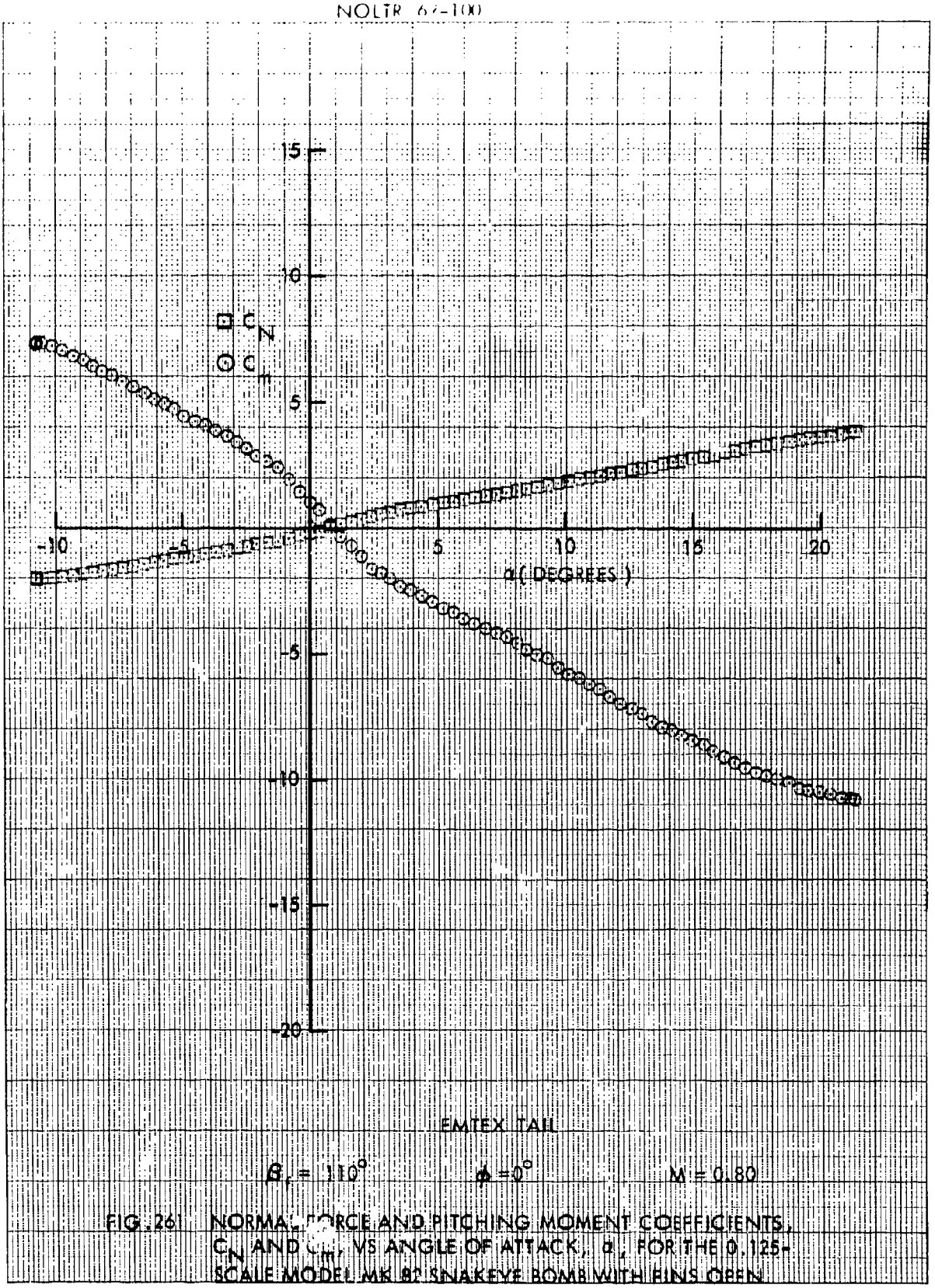


FIG. 261 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

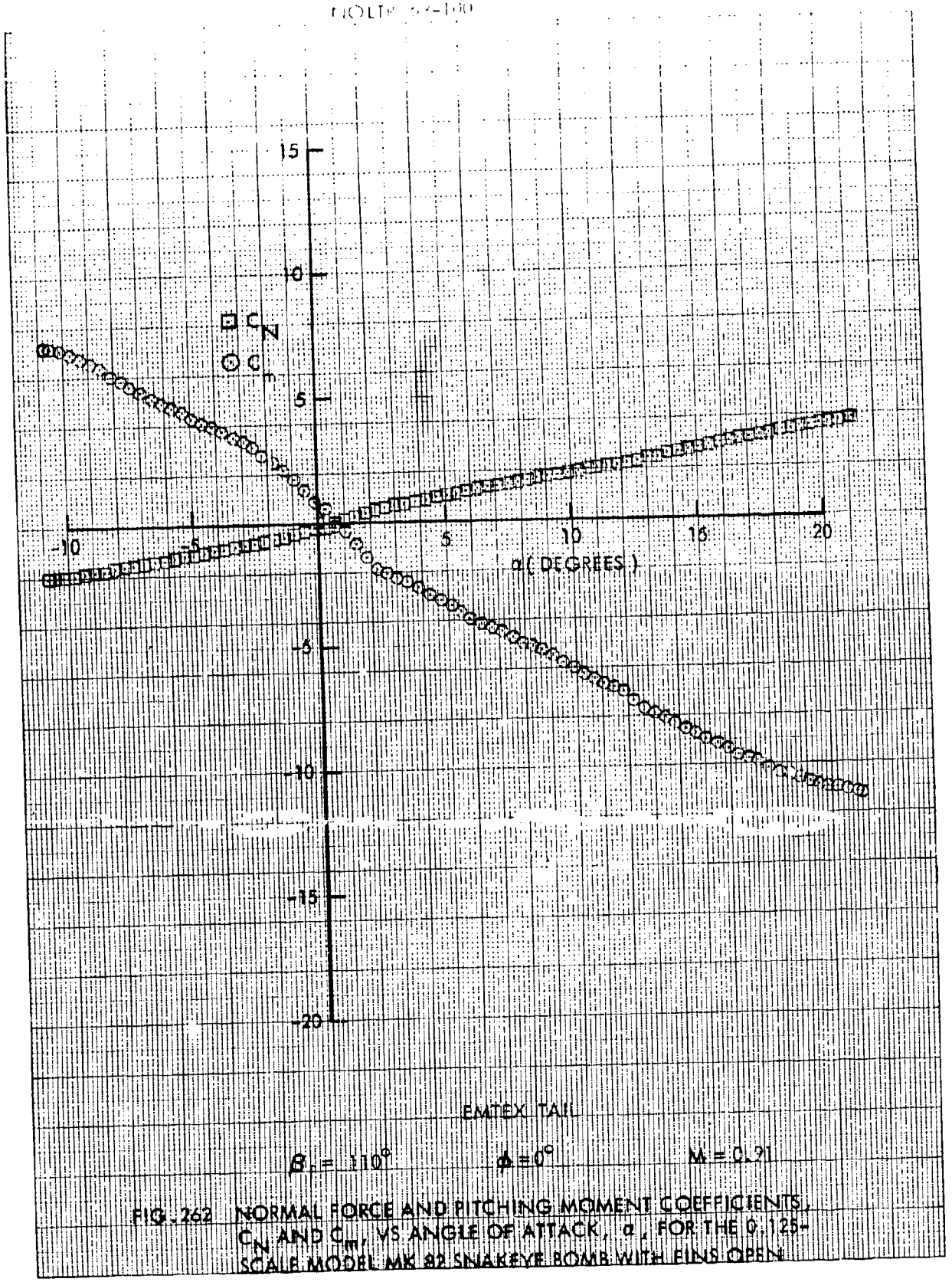


FIG. 262 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

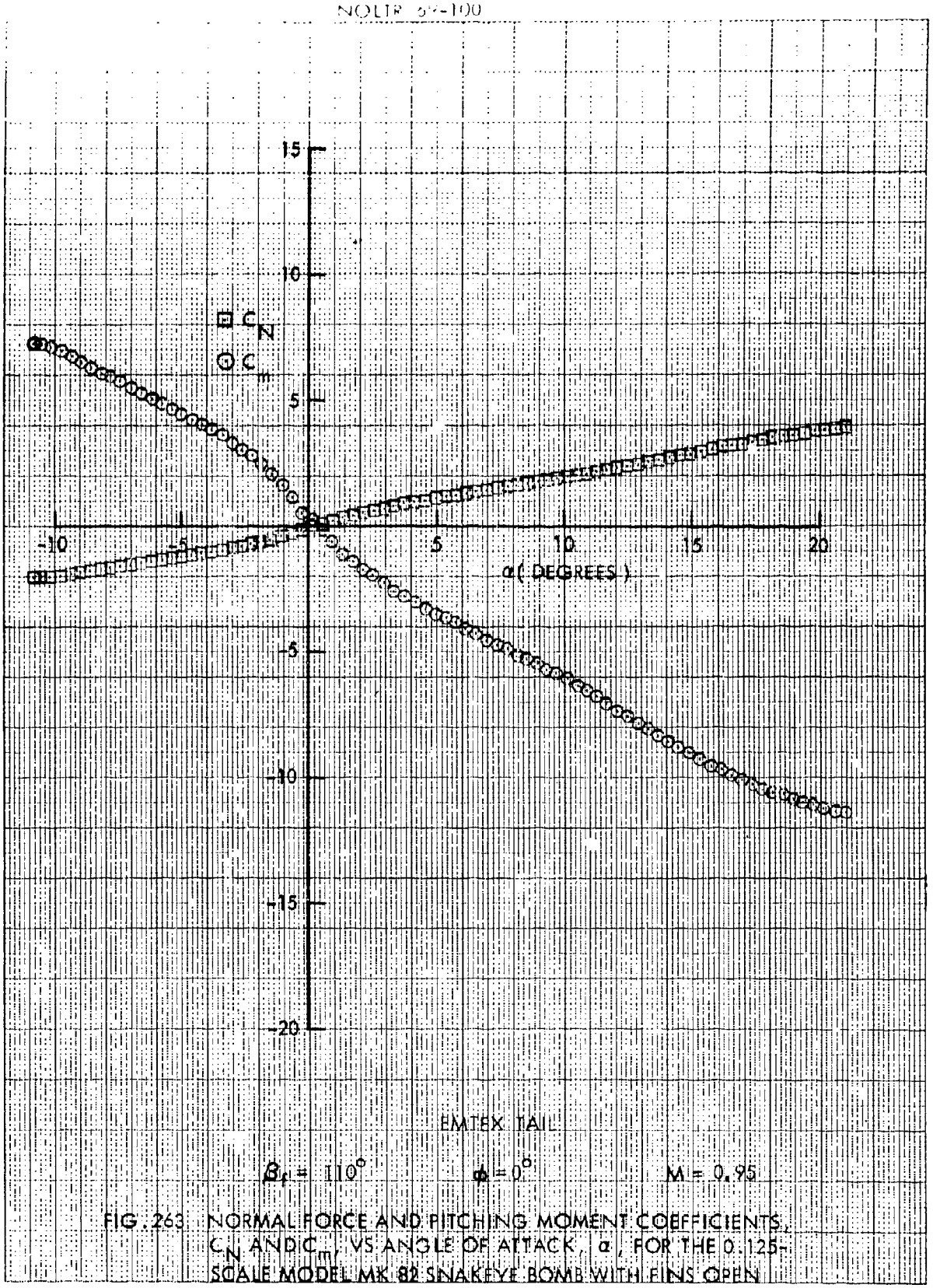


FIG. 263 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

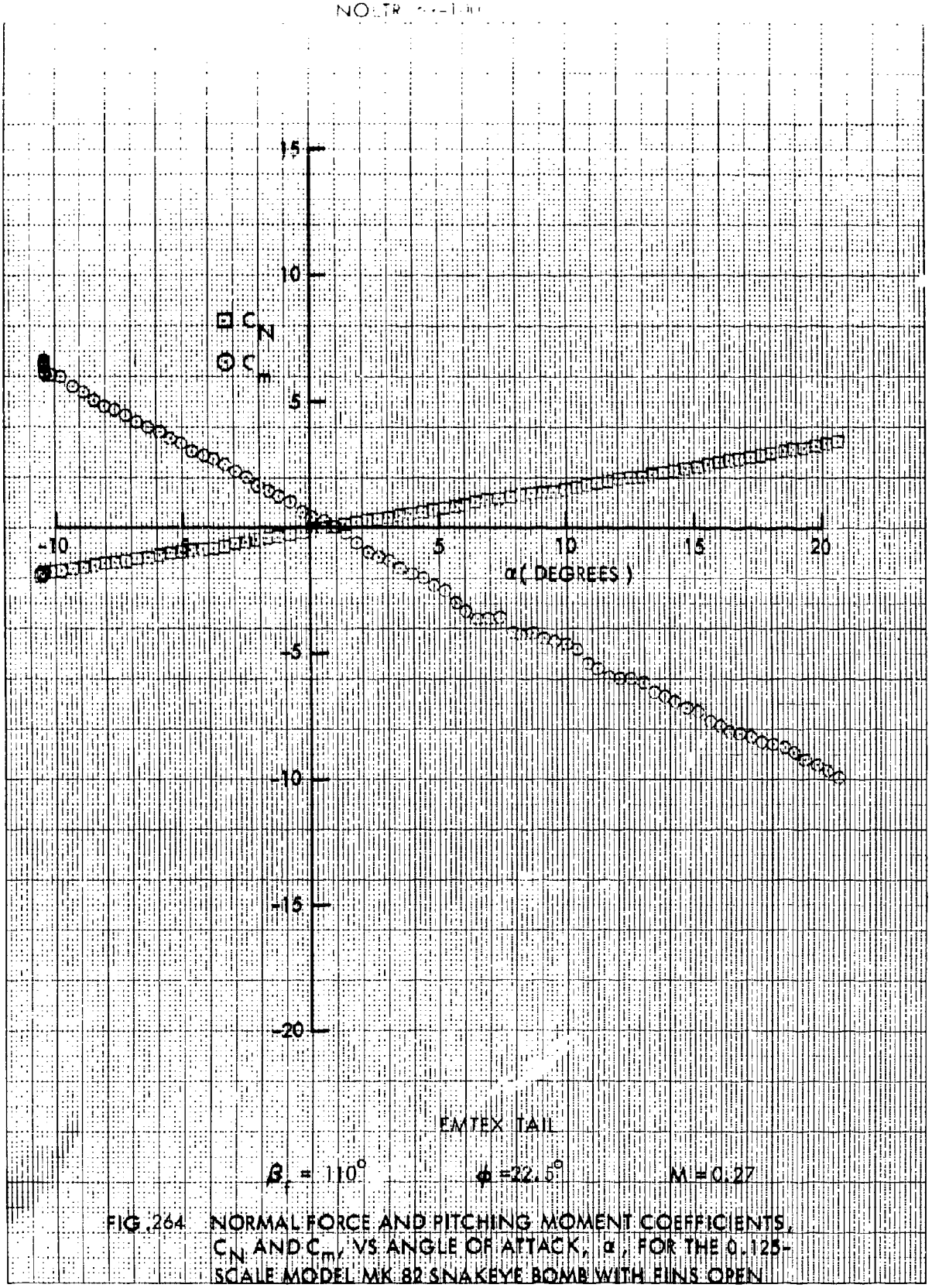


FIG.264 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_{m_y} VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

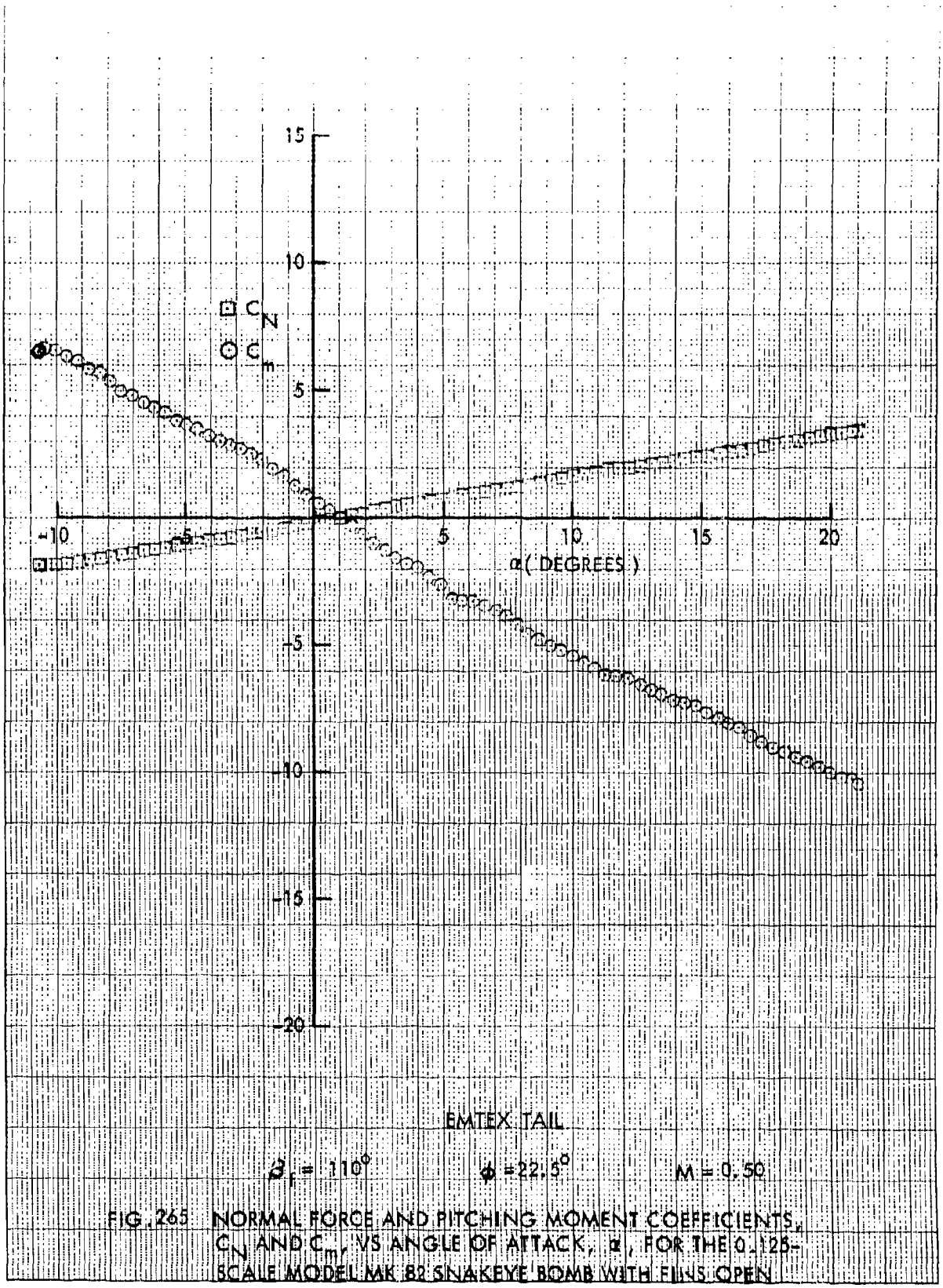


FIG.265 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

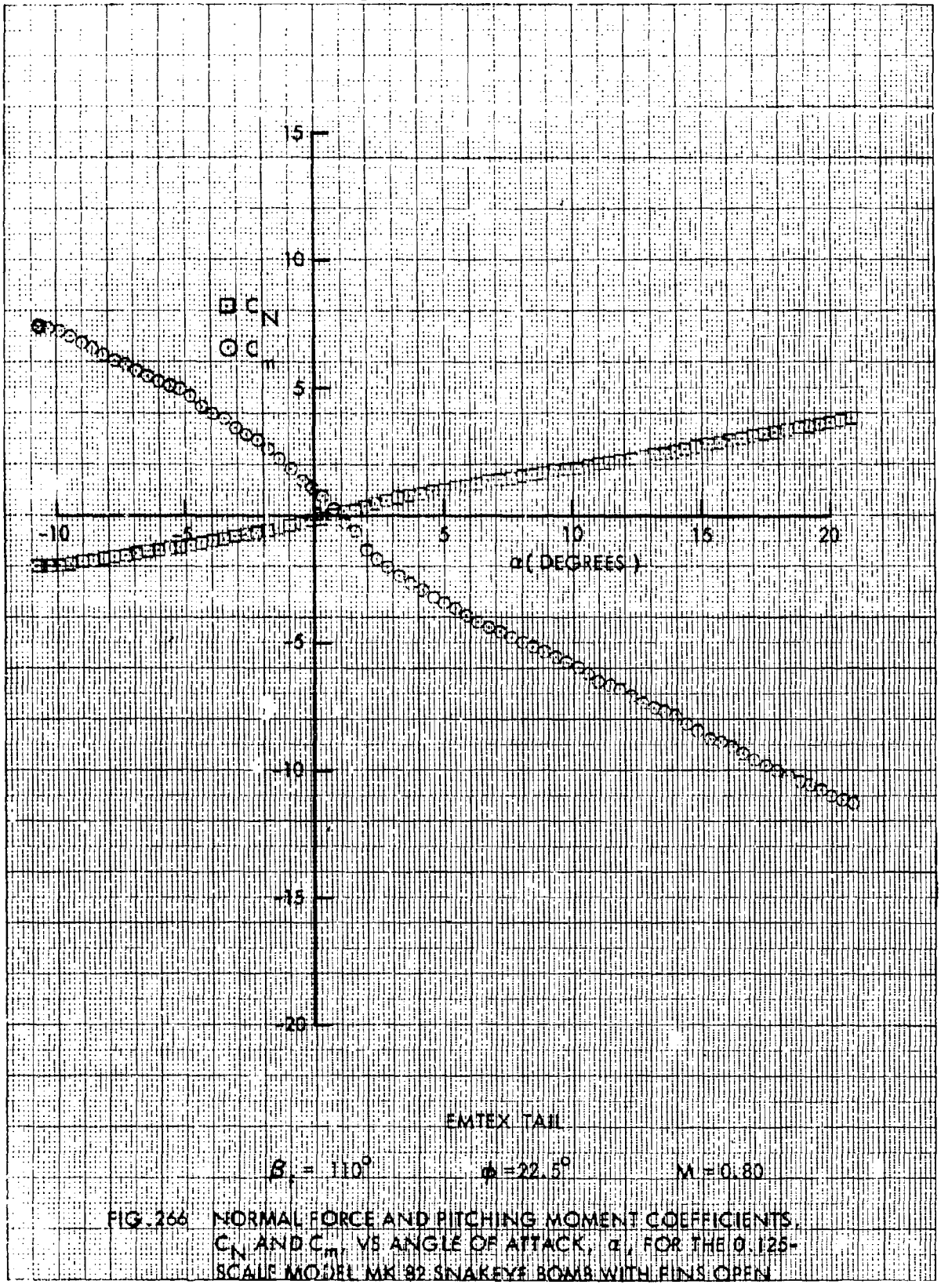


FIG. 266 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

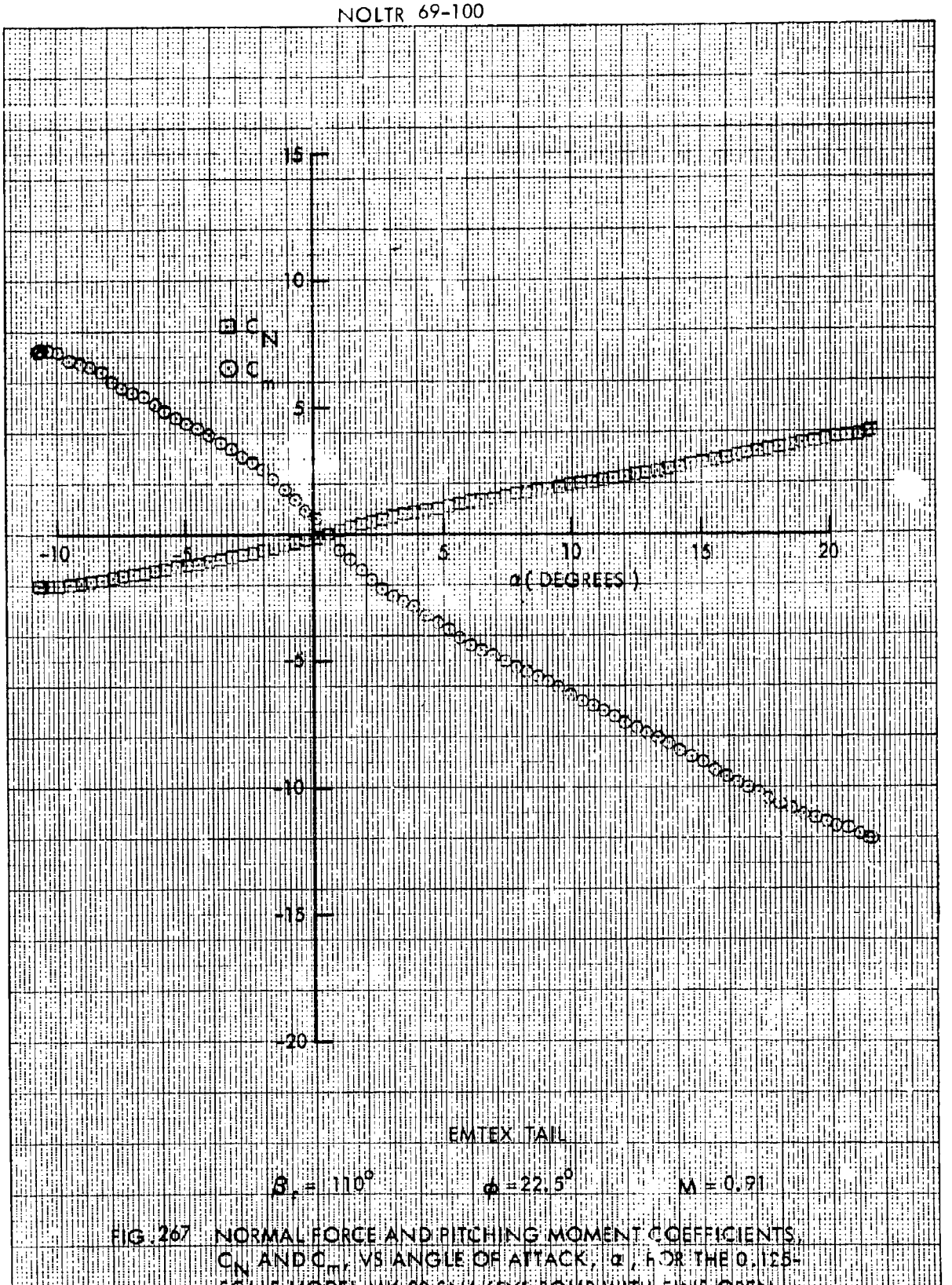


FIG. 267 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

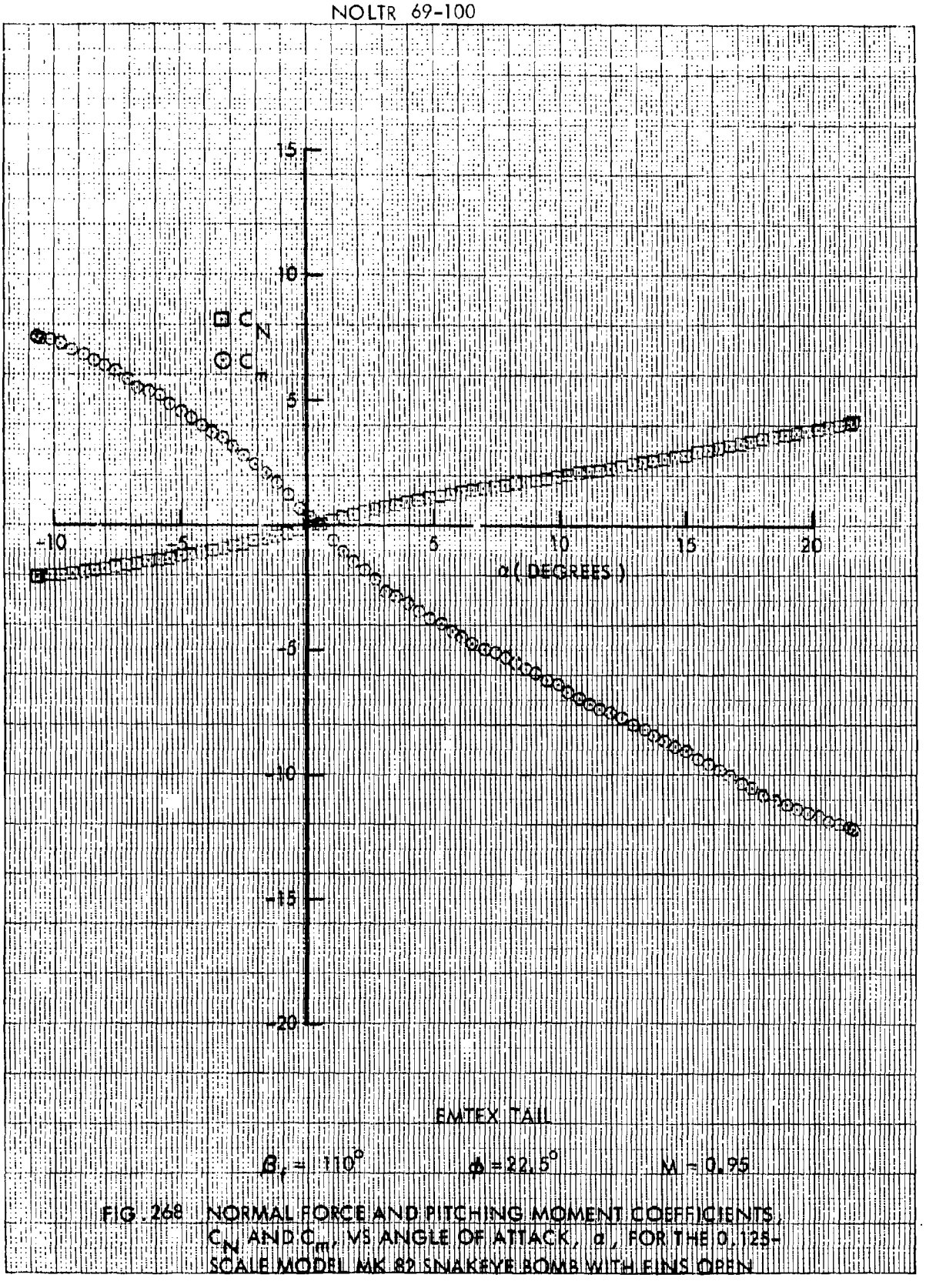


FIG. 268 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

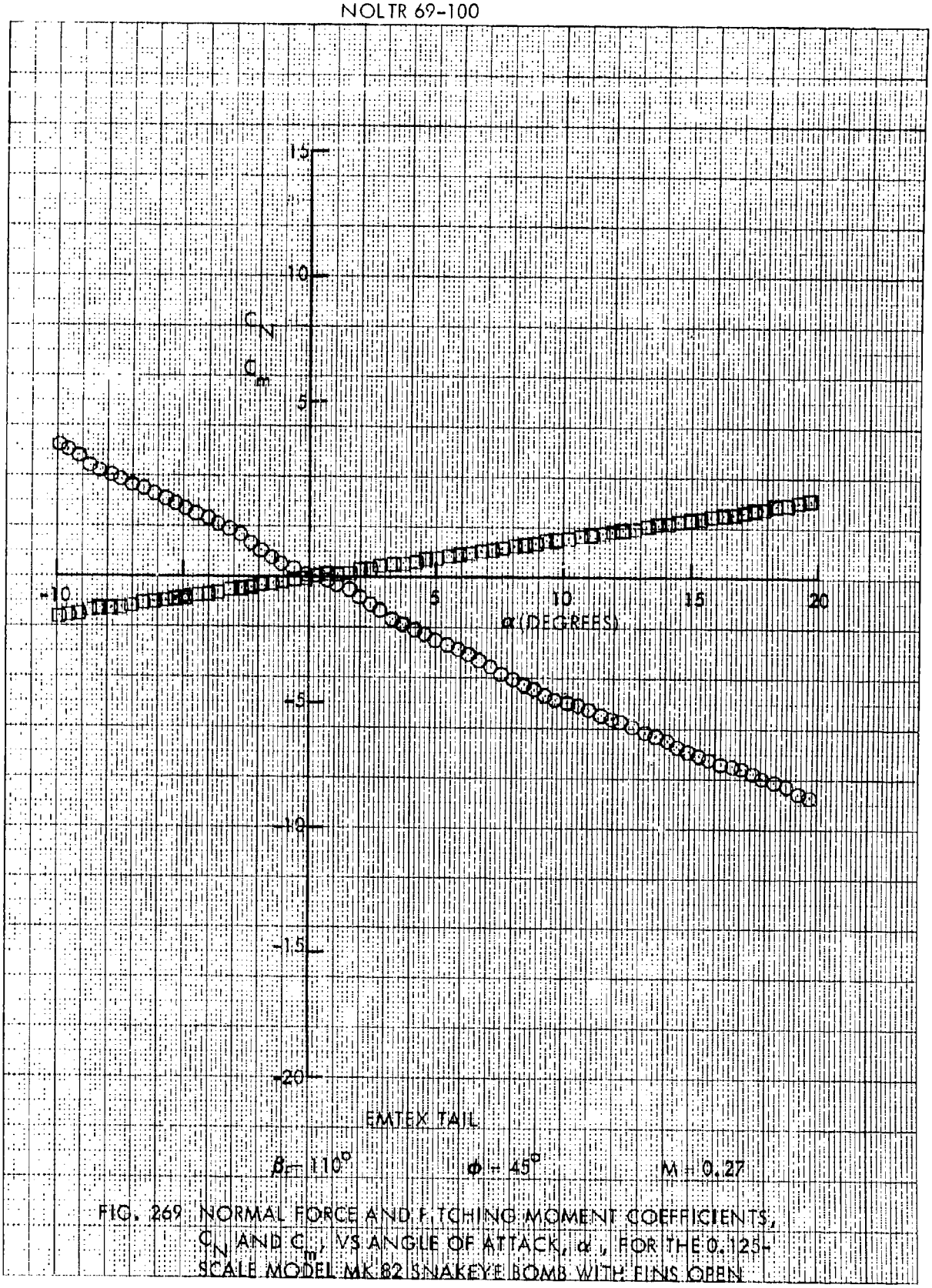


FIG. 269 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

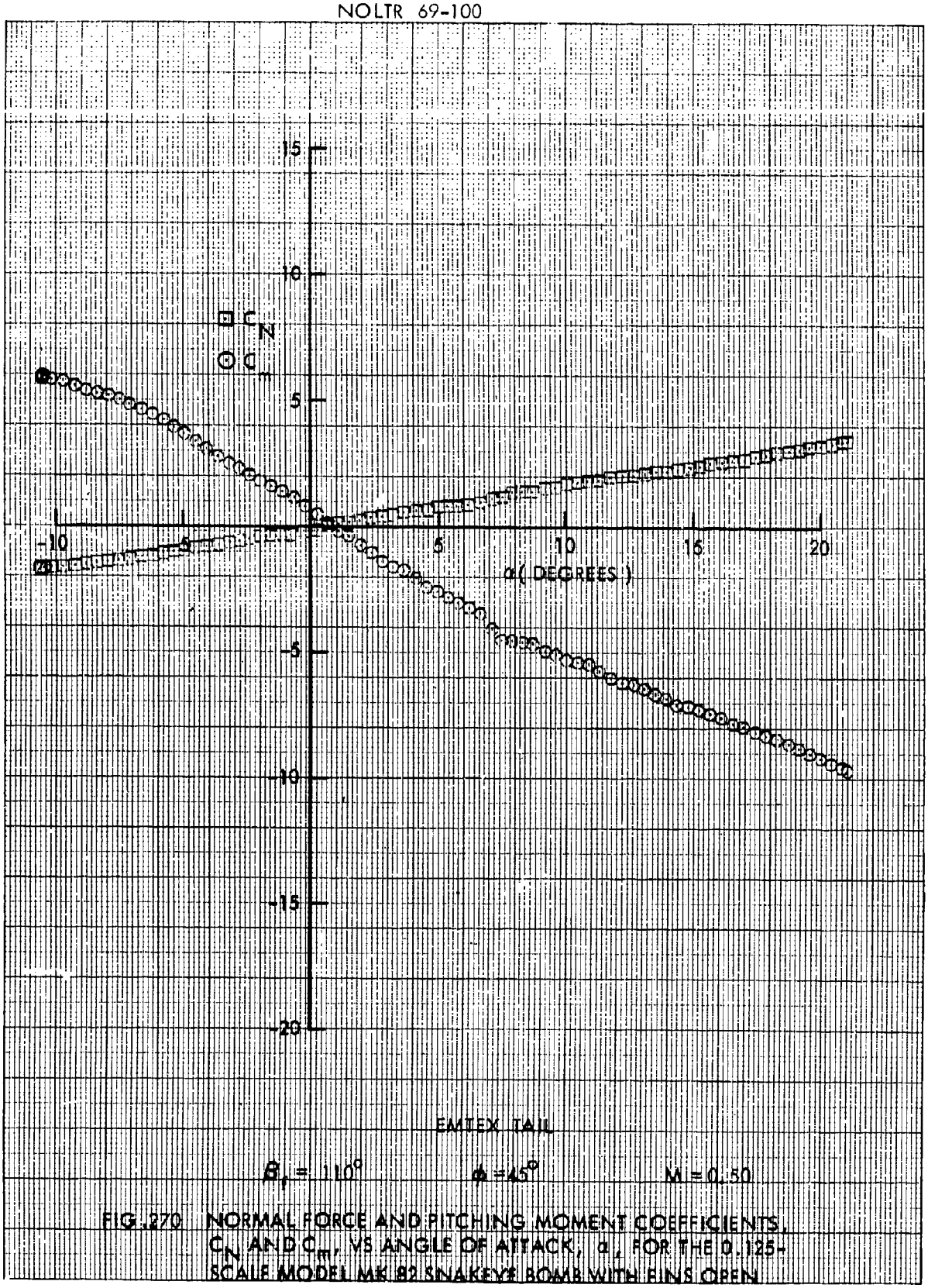


FIG. 270 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

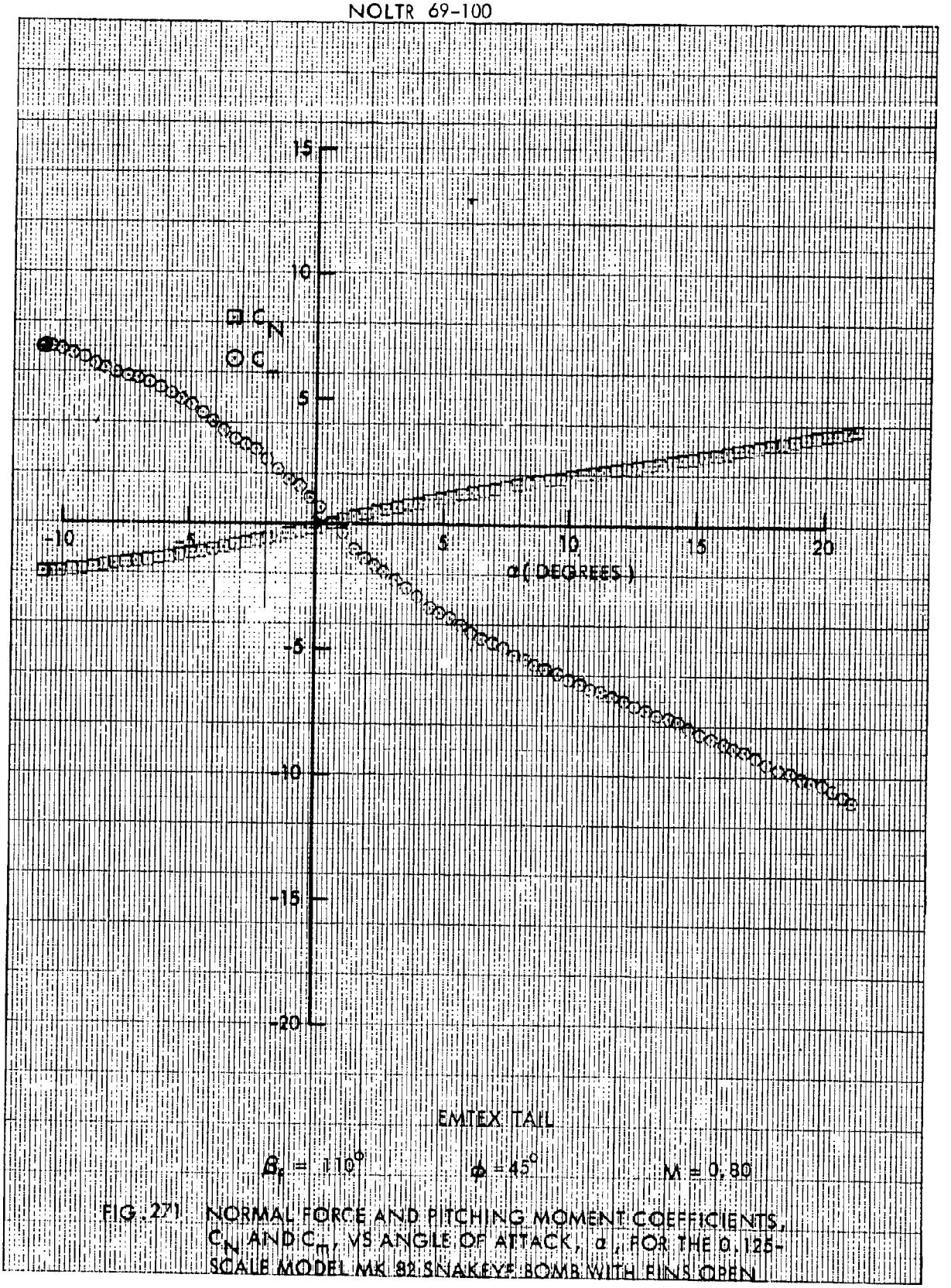


FIG. 271 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

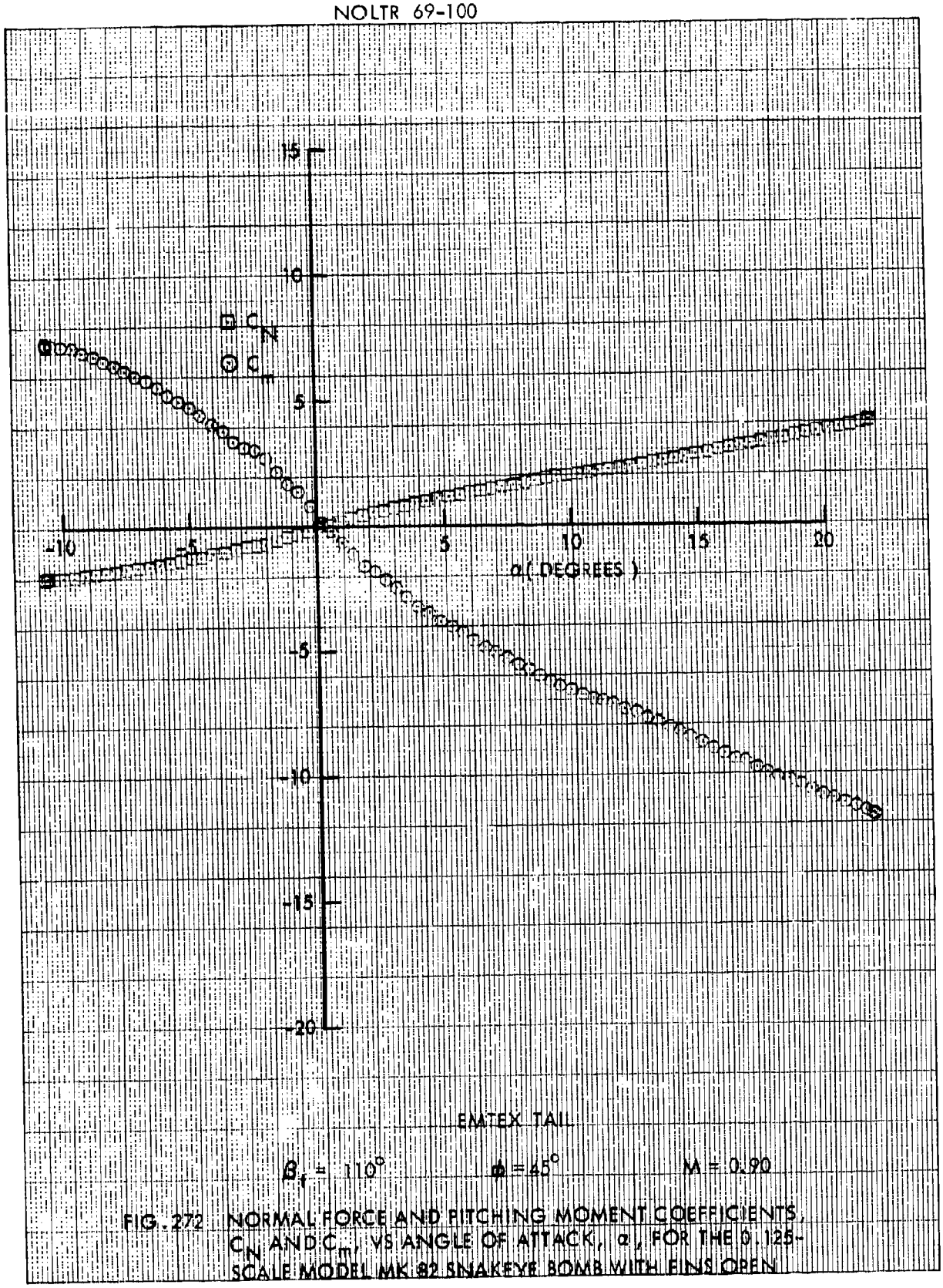


FIG. 272 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

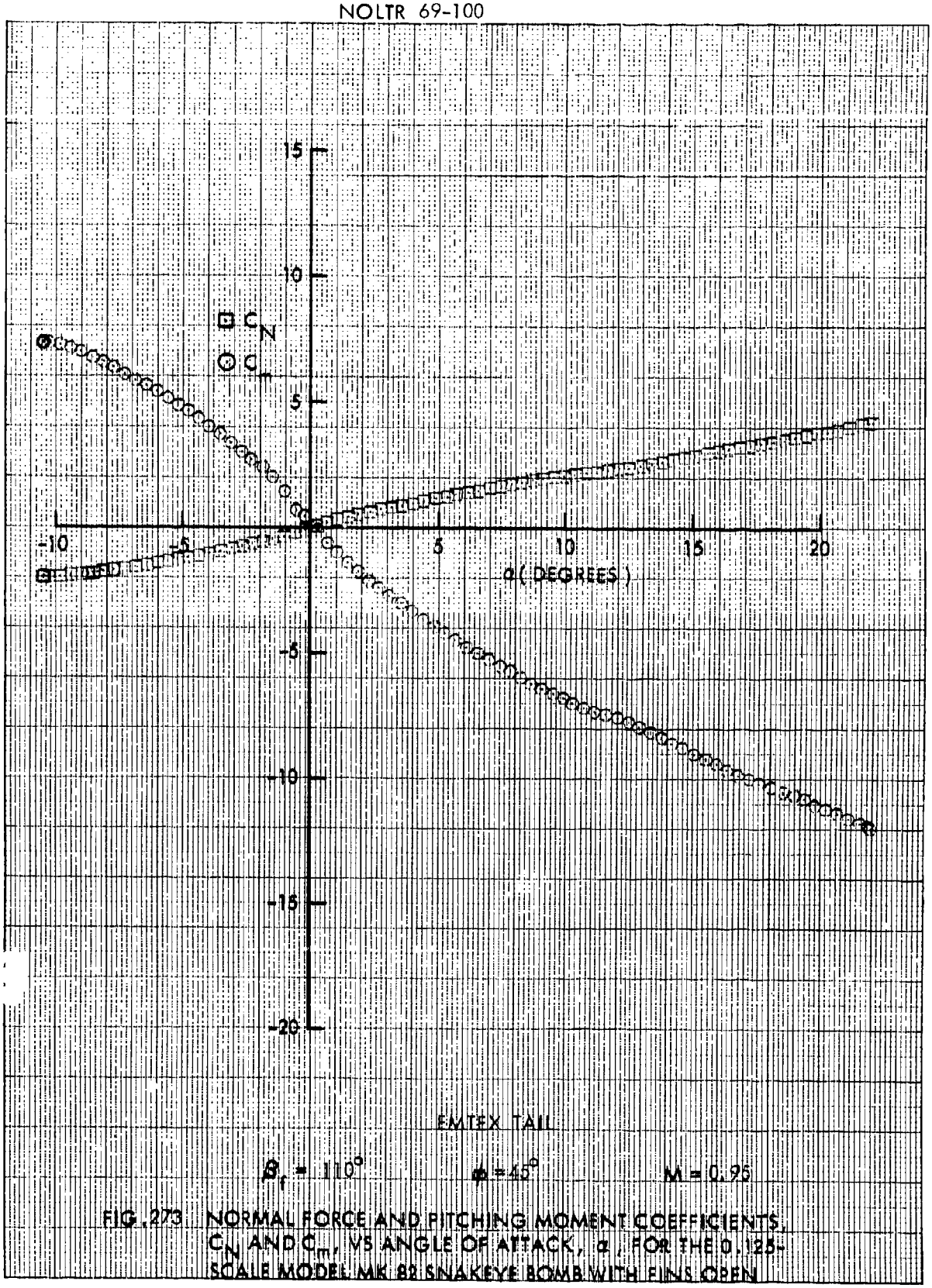


FIG. 273 NORMAL FORCE AND PITCHING MOMENT COEFFICIENTS, C_N AND C_m, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

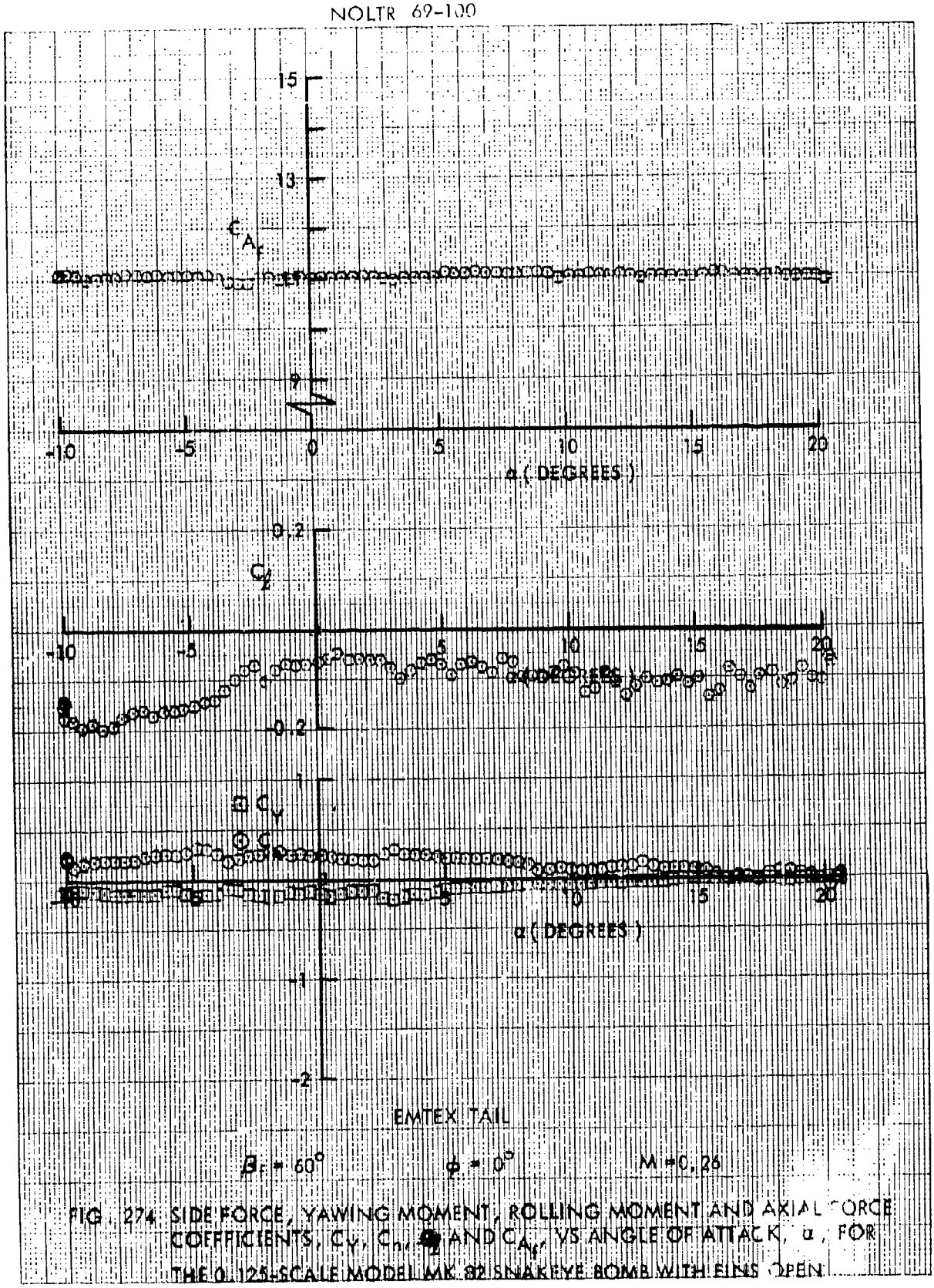


FIG. 274 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

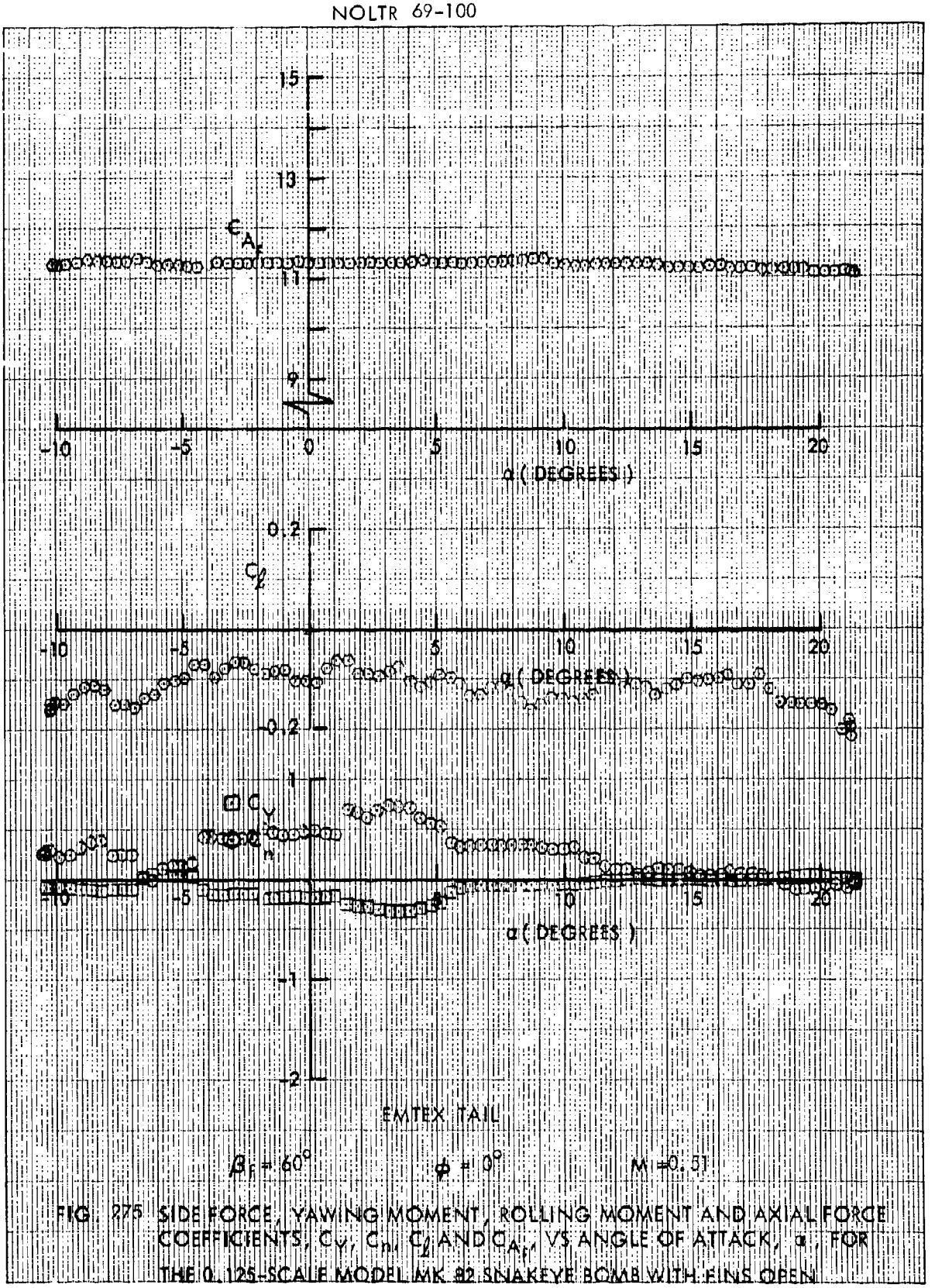


FIG. 275 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

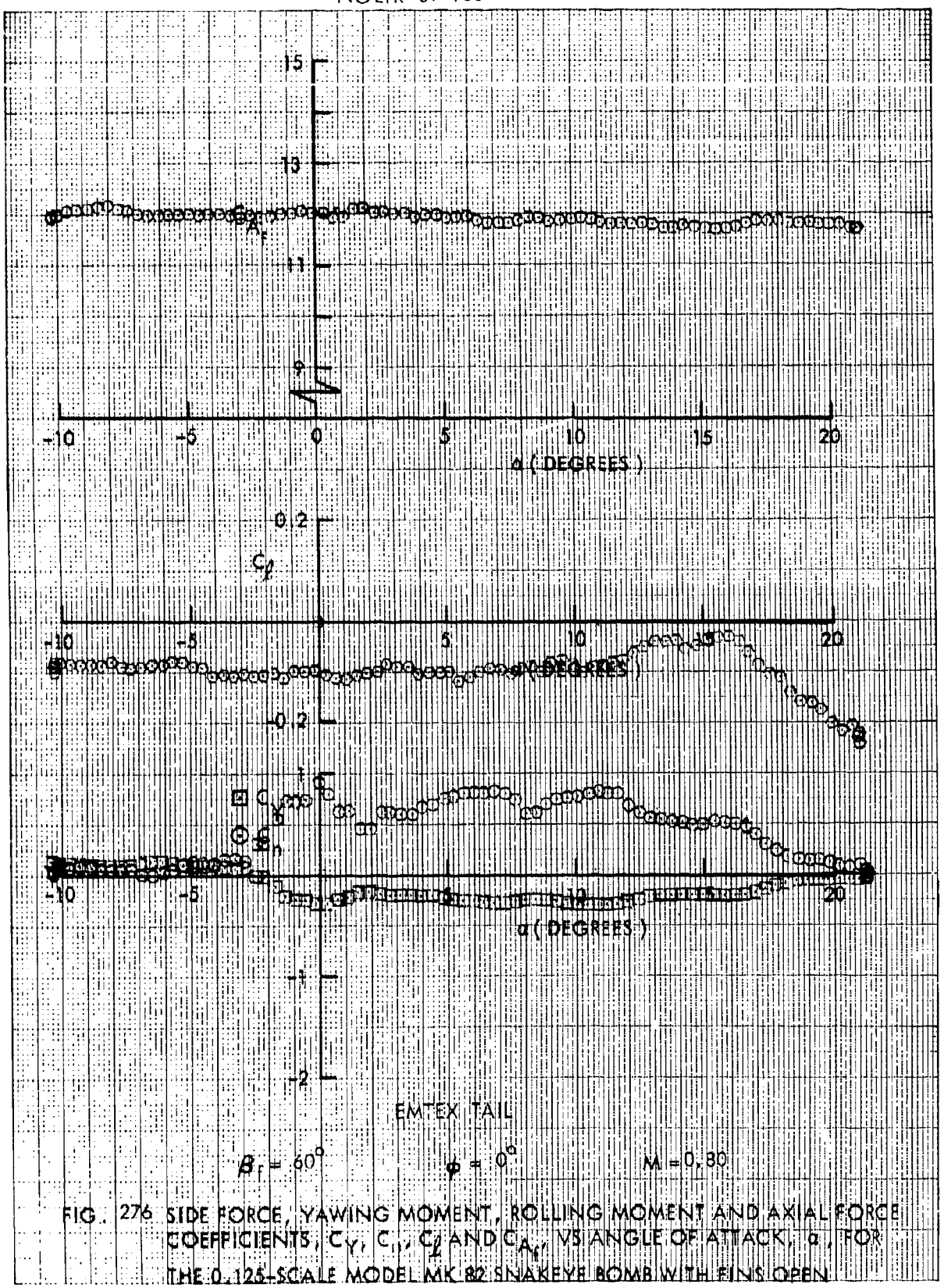


FIG. 276 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

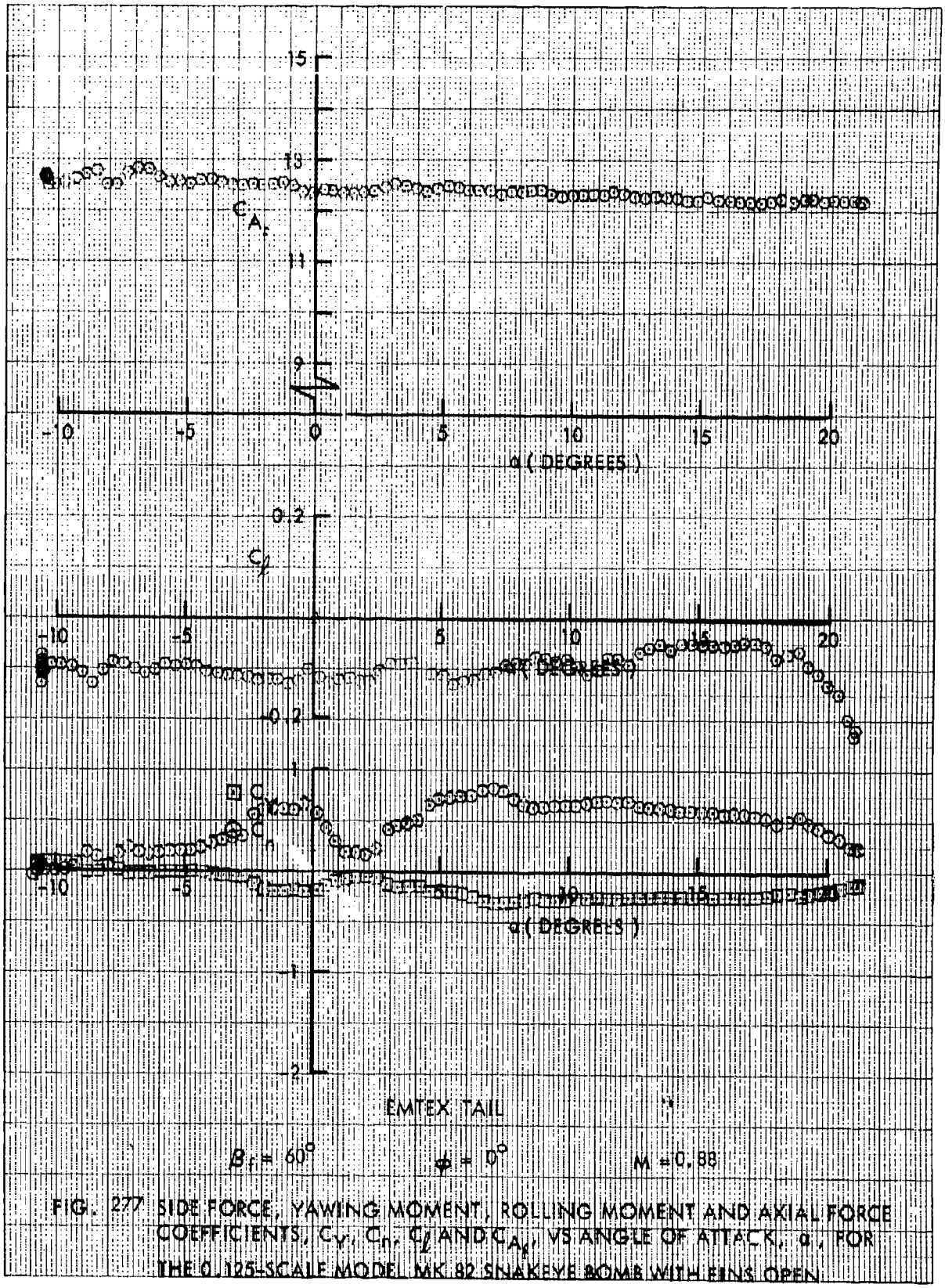


FIG. 277 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

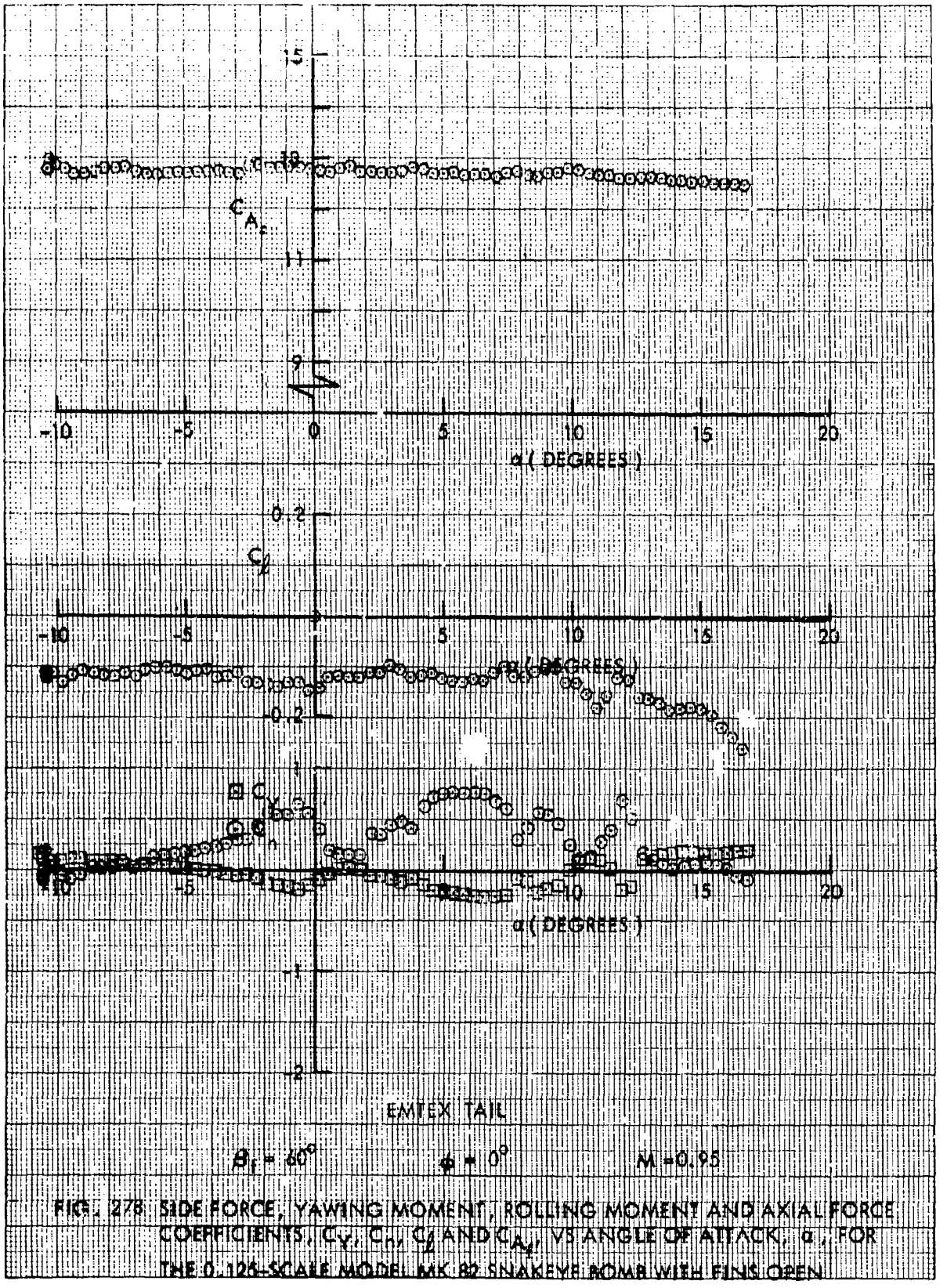


FIG. 278 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_{Y_β}, C_{n_β}, C_{ℓ} AND C_{A_2}, VS ANGLE OF ATTACK, α, FOR THE 0.126-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

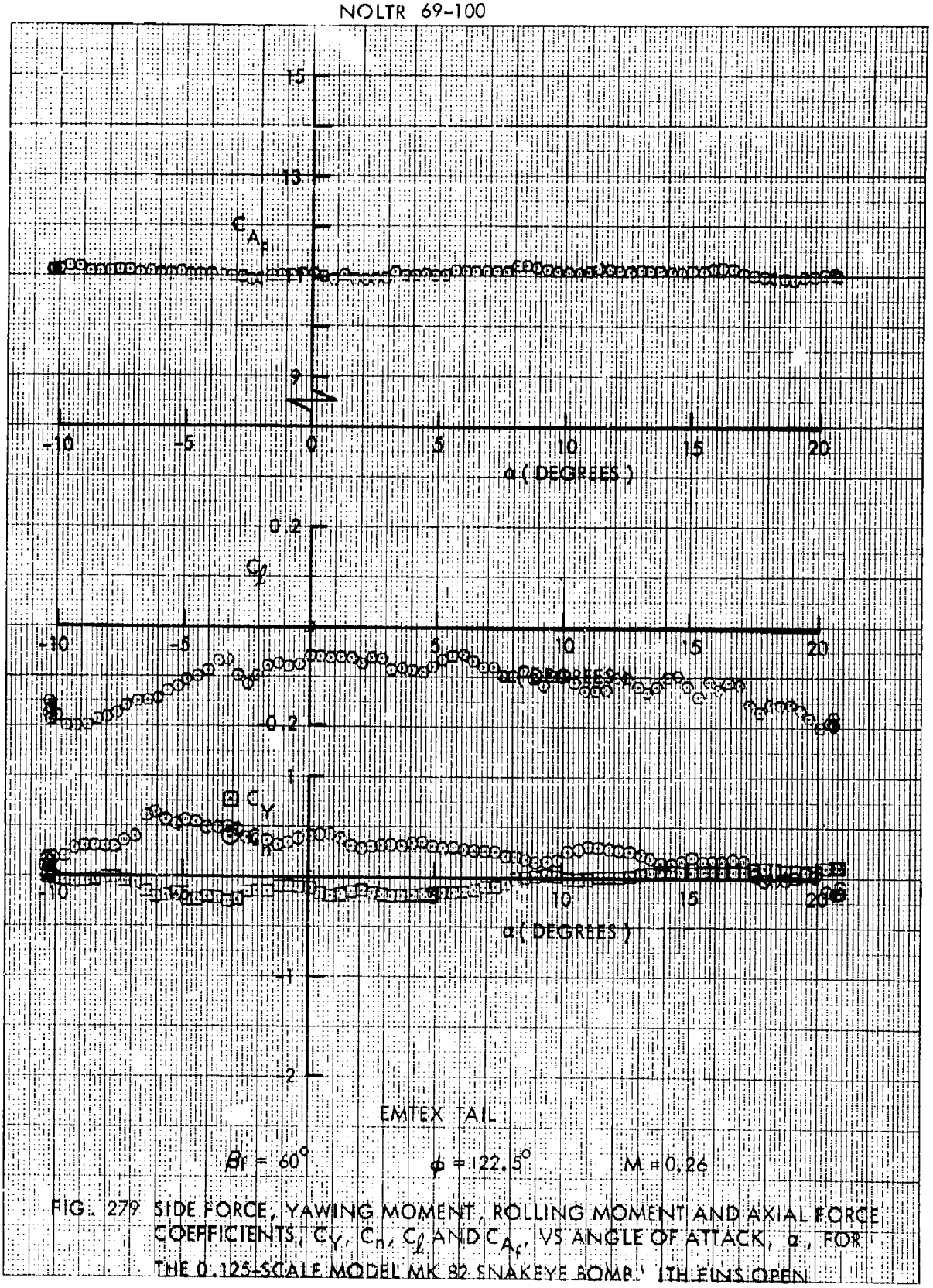


FIG. 279 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

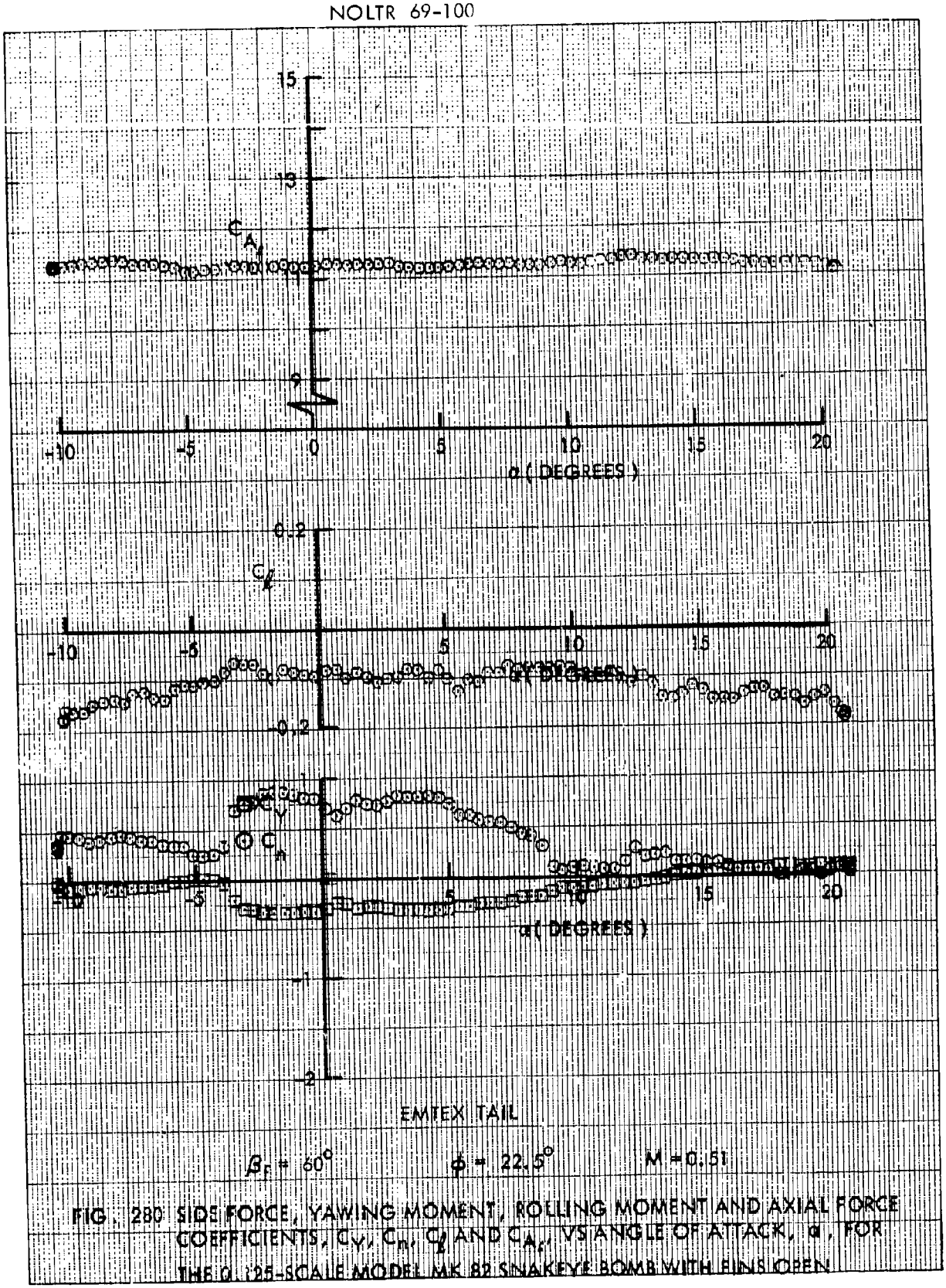


FIG. 280 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f} VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

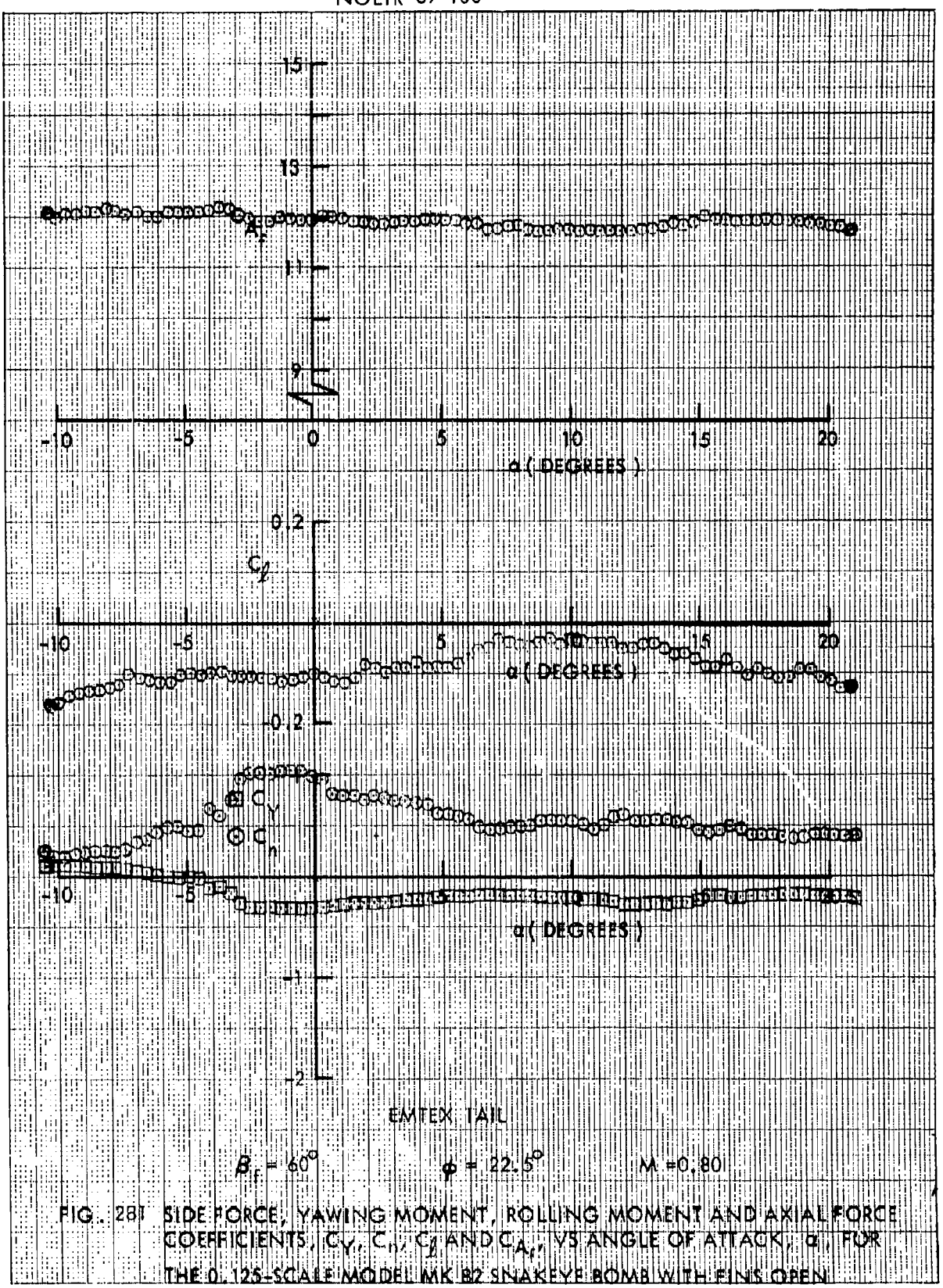


FIG. 281 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

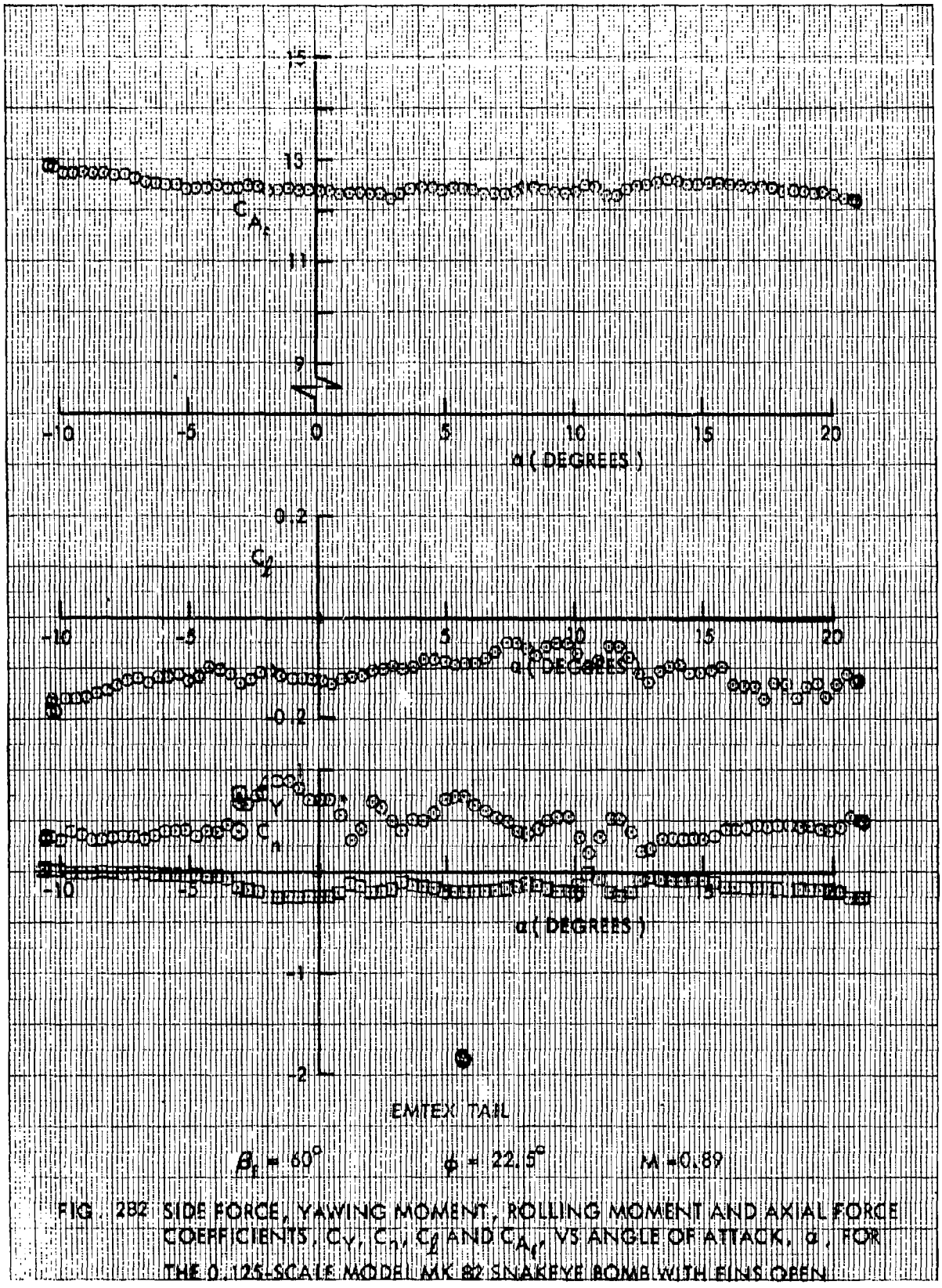


FIG. 282 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

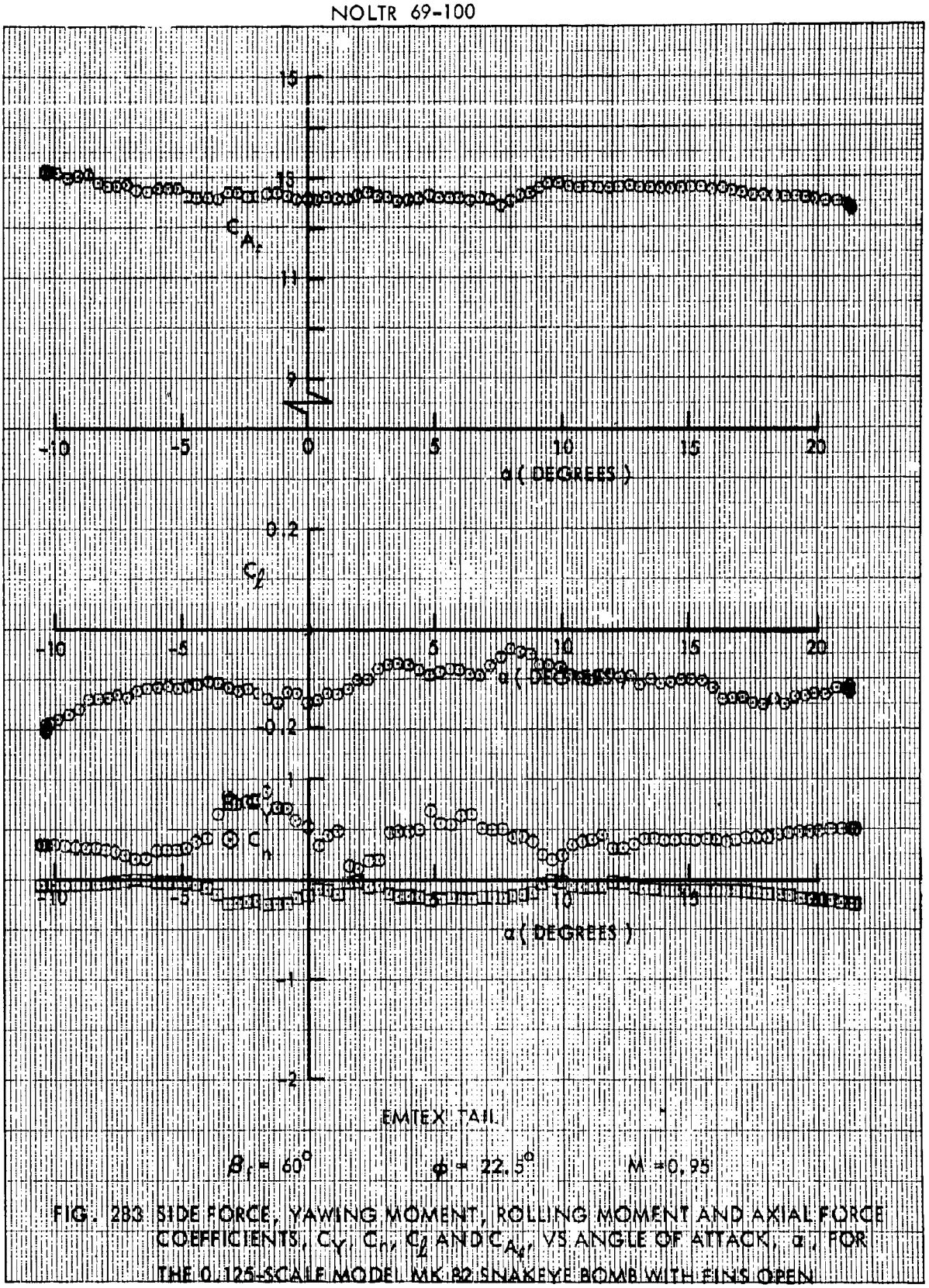


FIG. 283 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

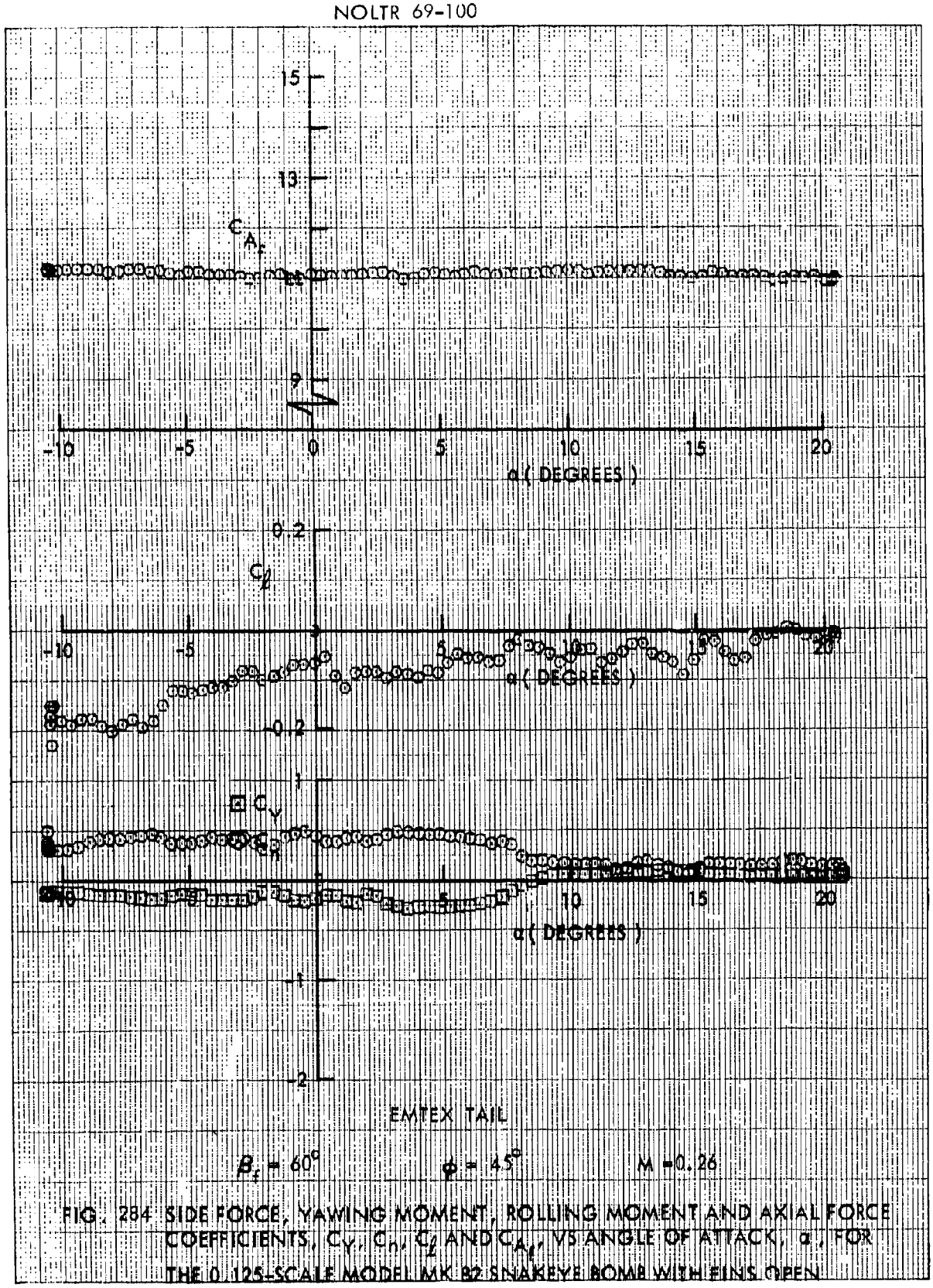


FIG. 284 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

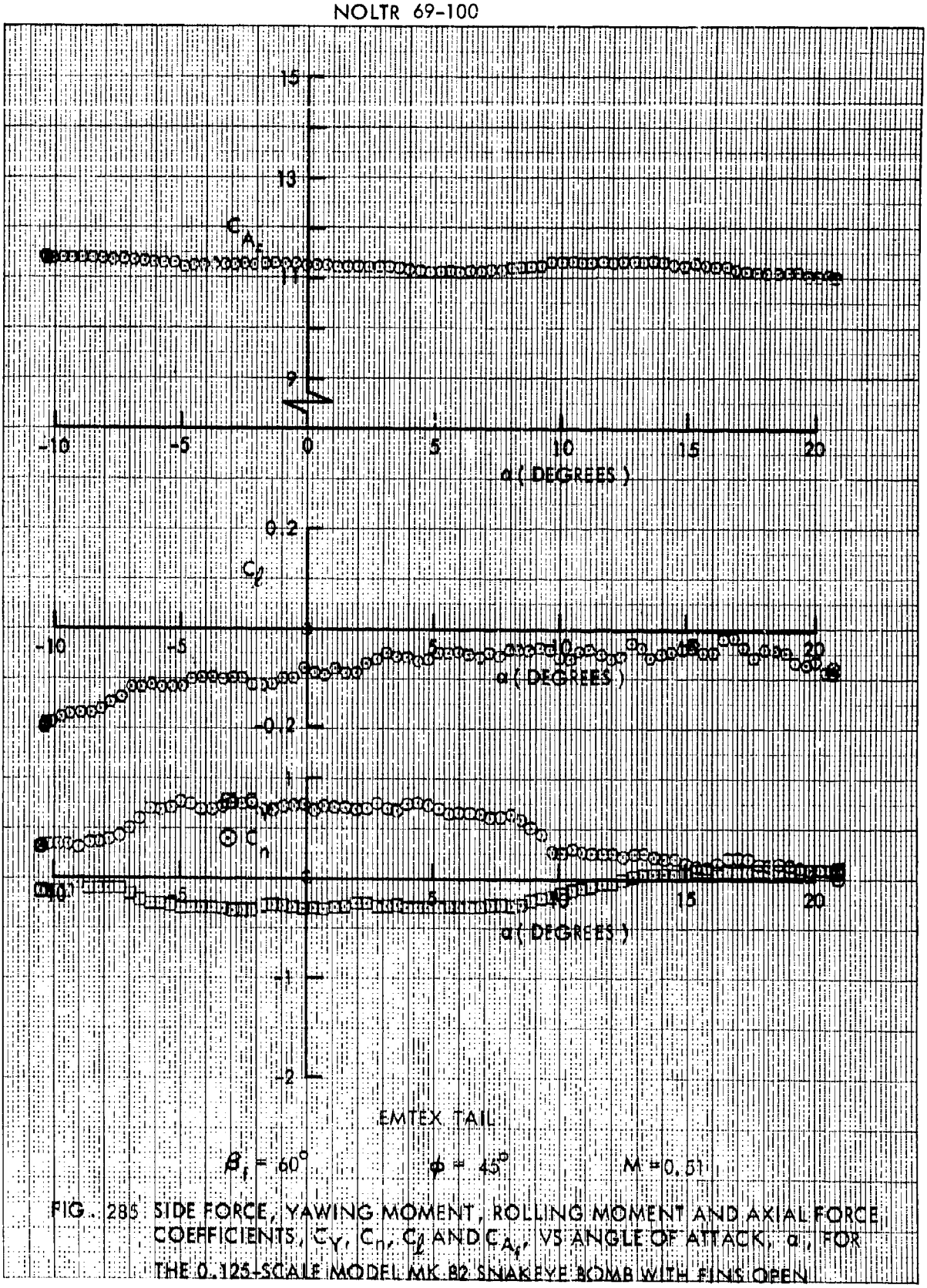


FIG. 285 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

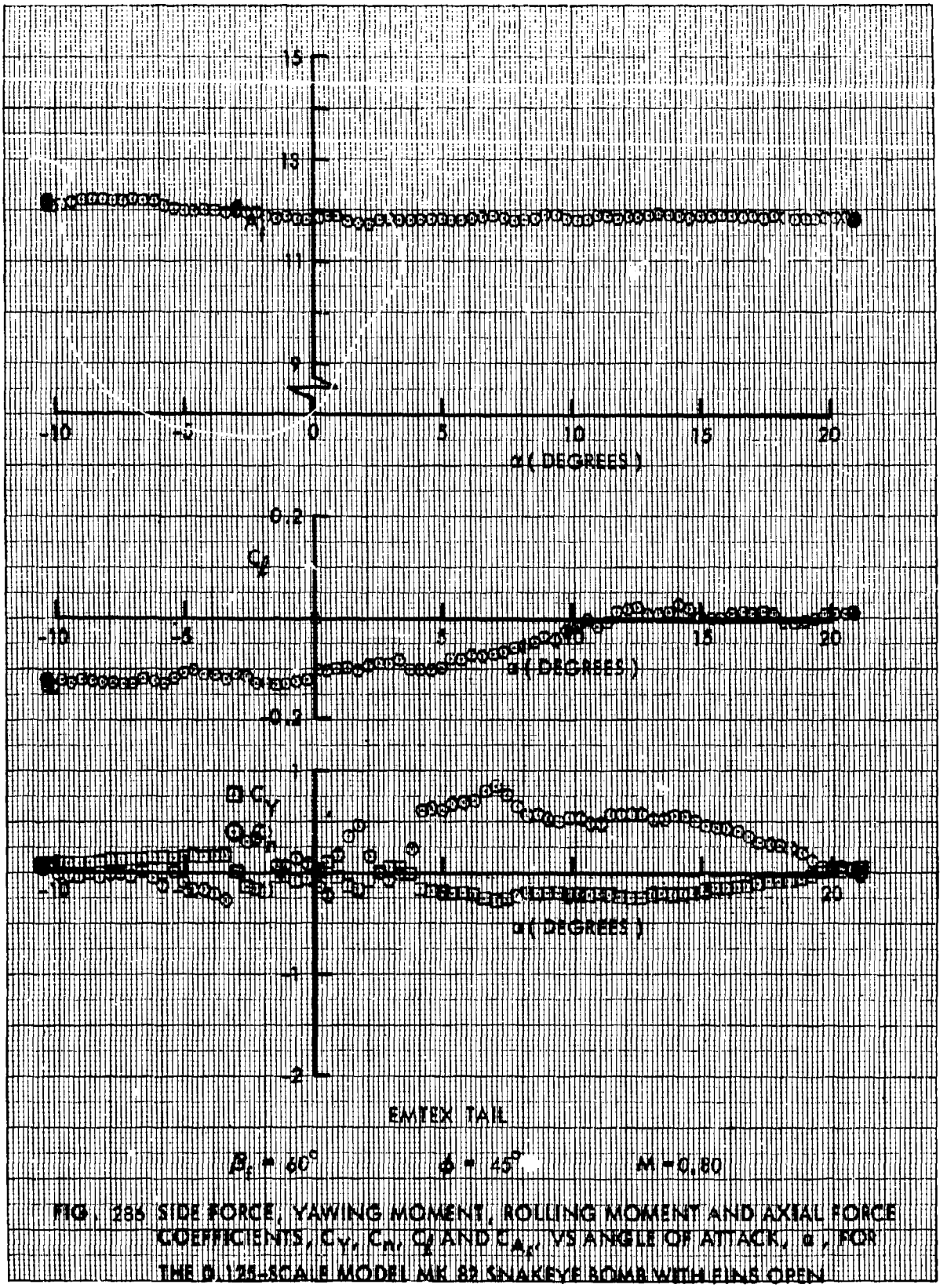


FIG. 286 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

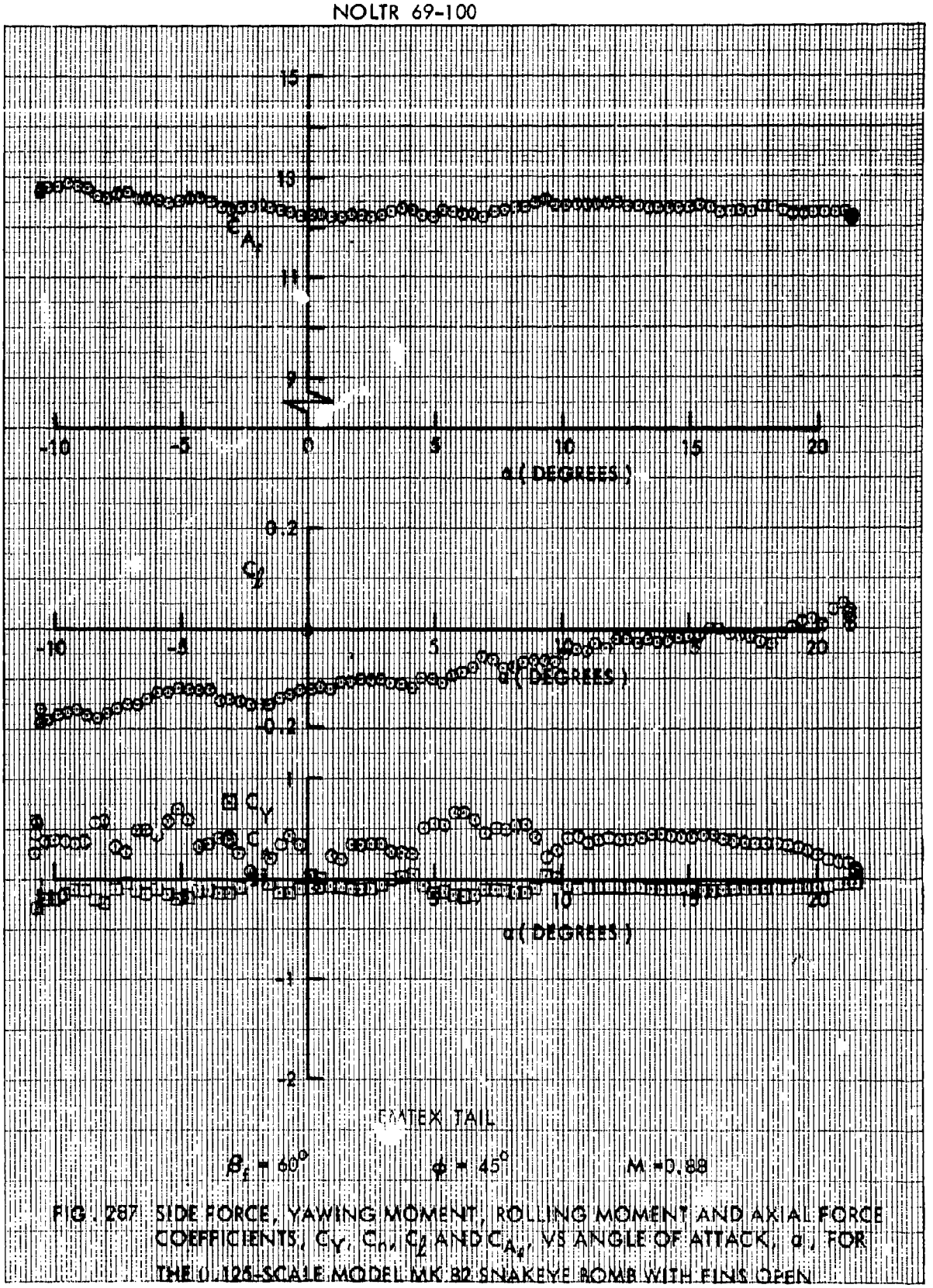


FIG. 287 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f} VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

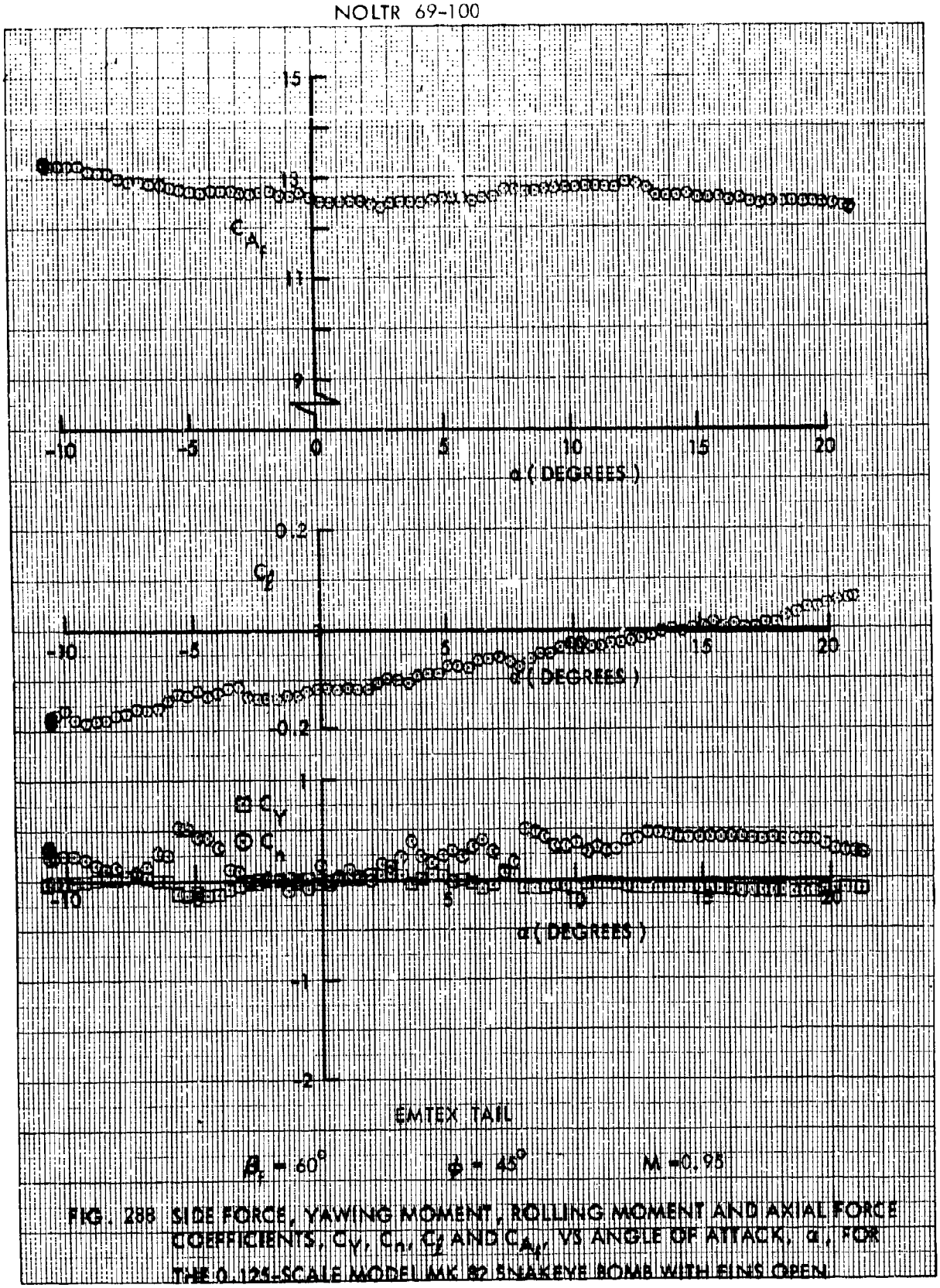


FIG. 288 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

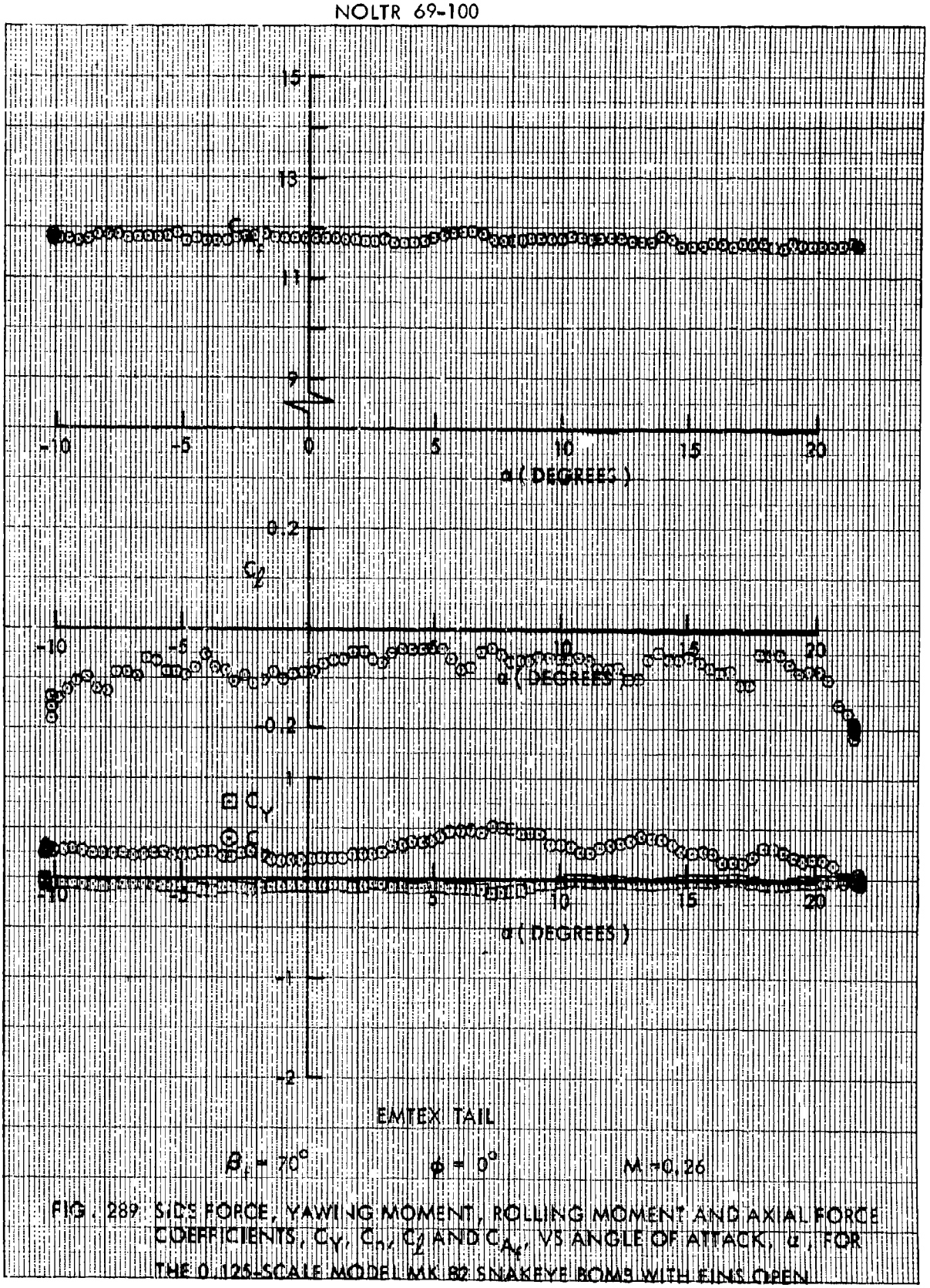


FIG. 289 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

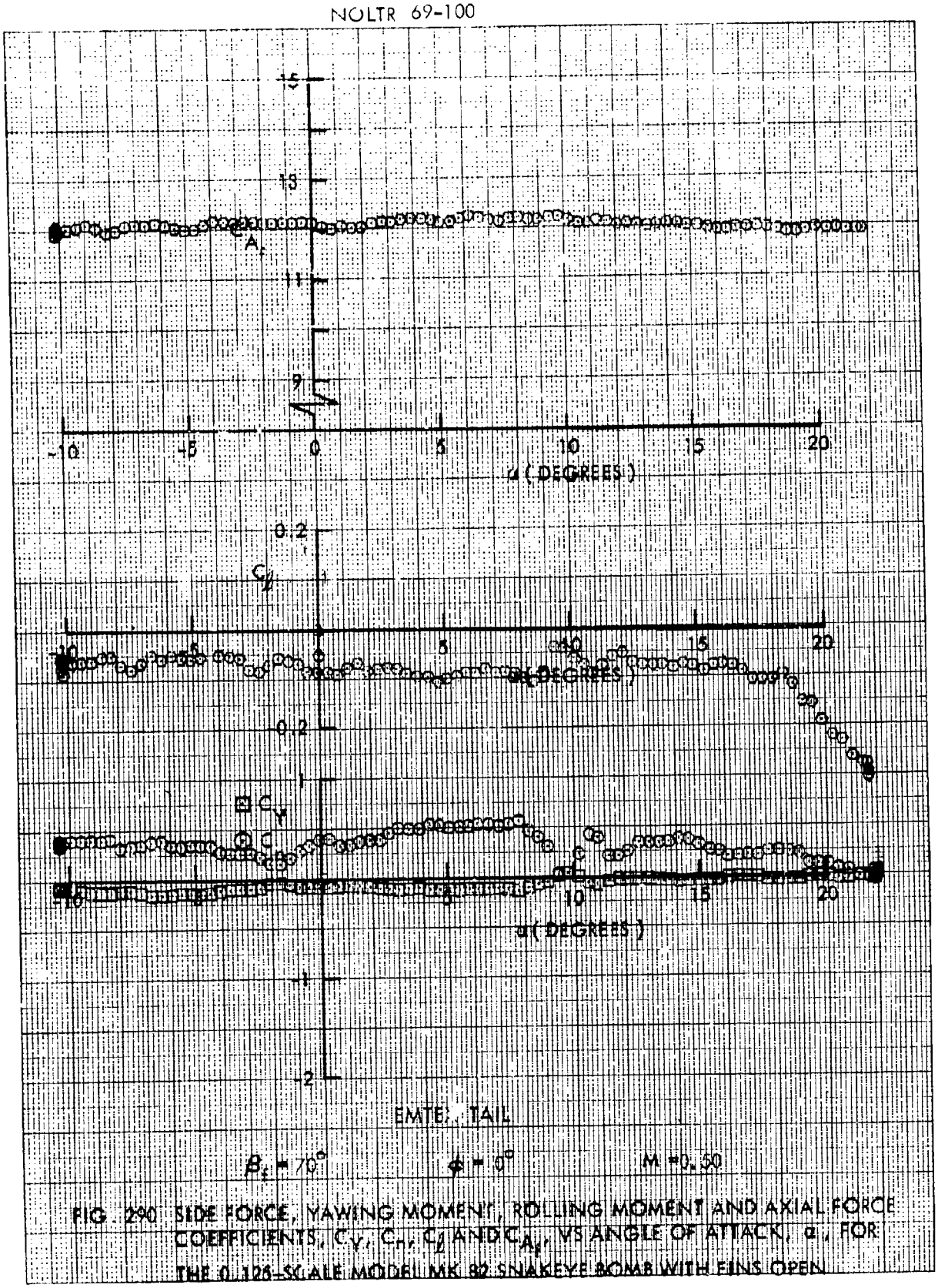


FIG. 290 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.126-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

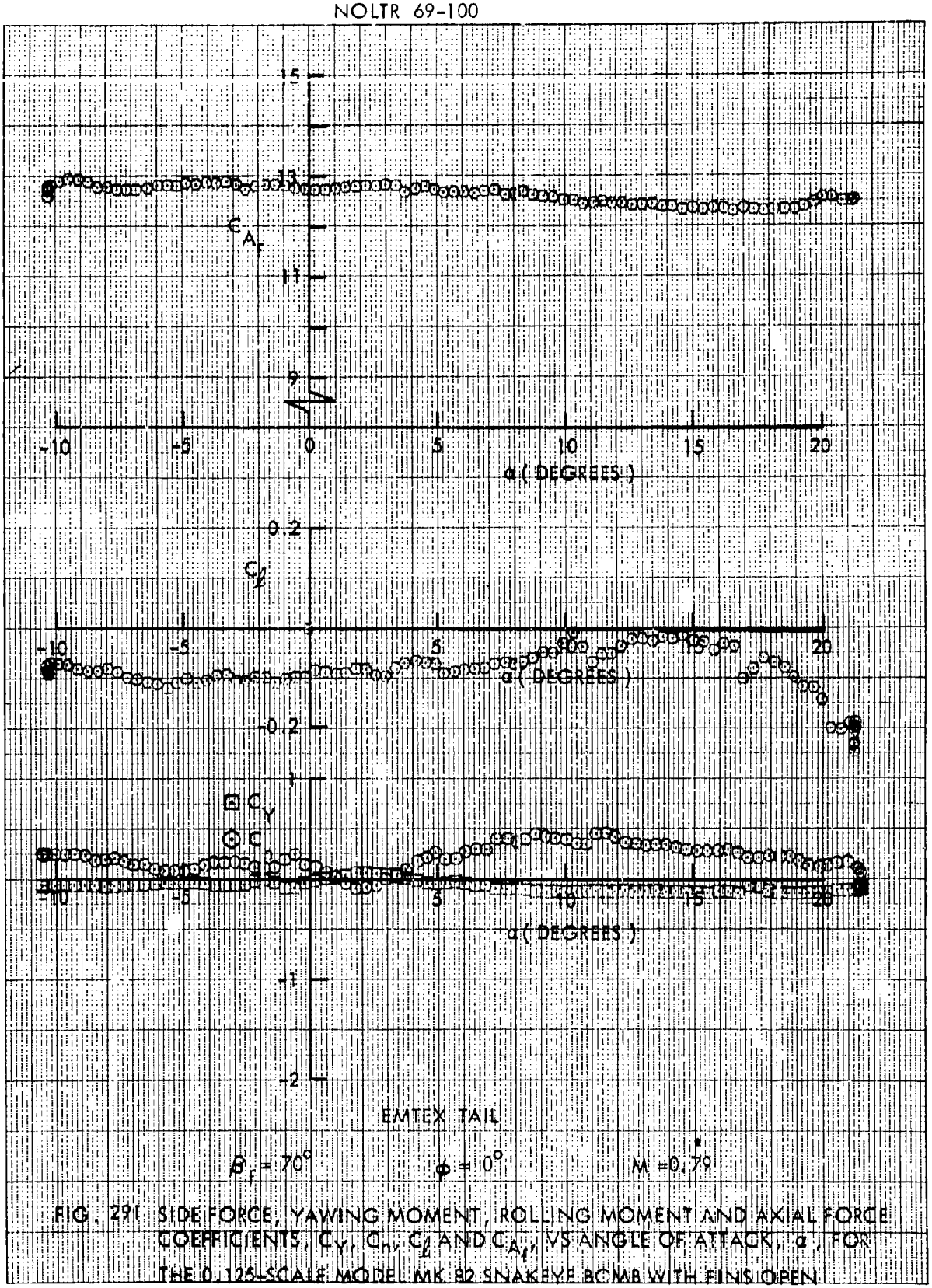


FIG. 291 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.126-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

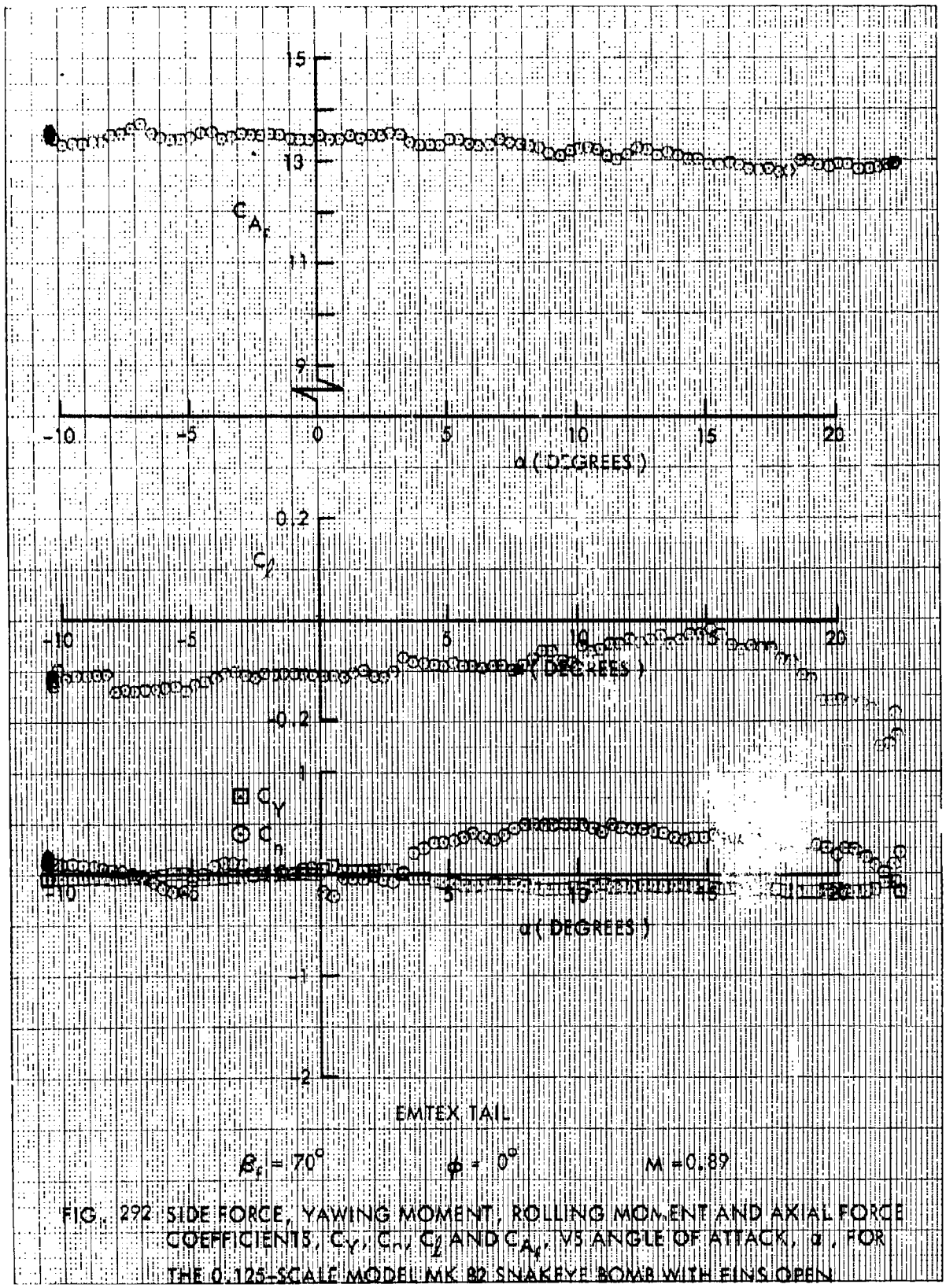


FIG. 292 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

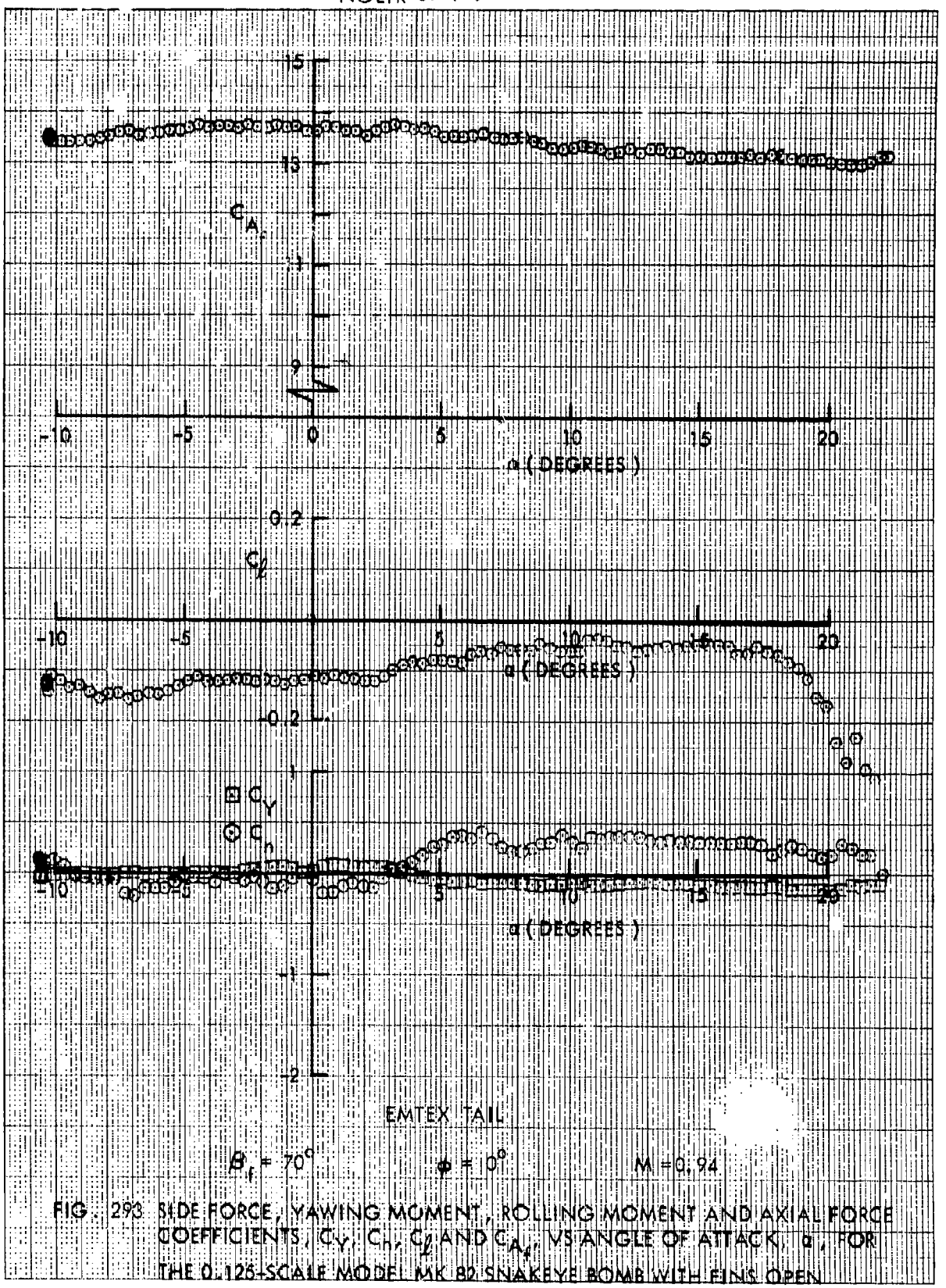


FIG. 293 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

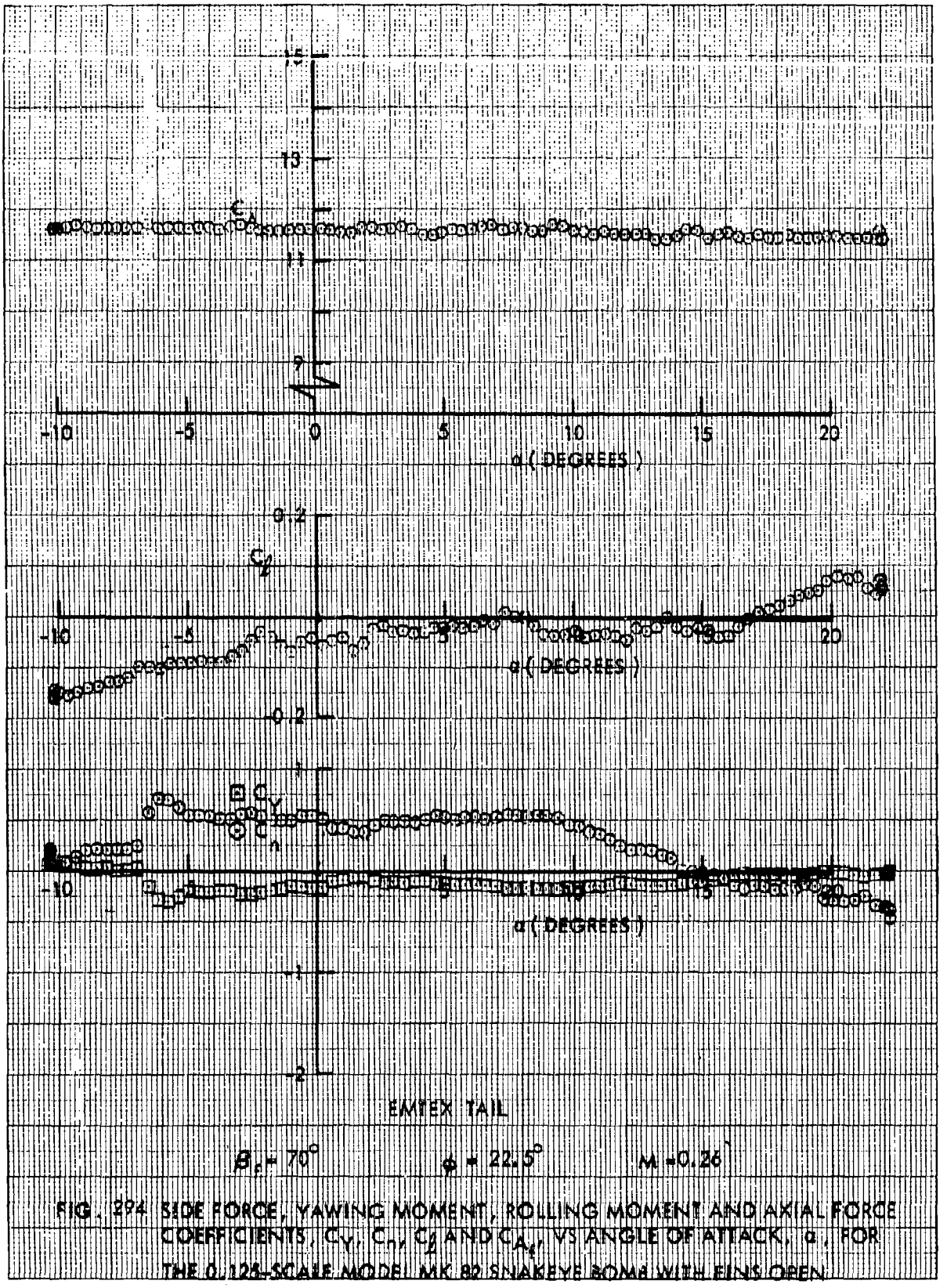


FIG. 294 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.128-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

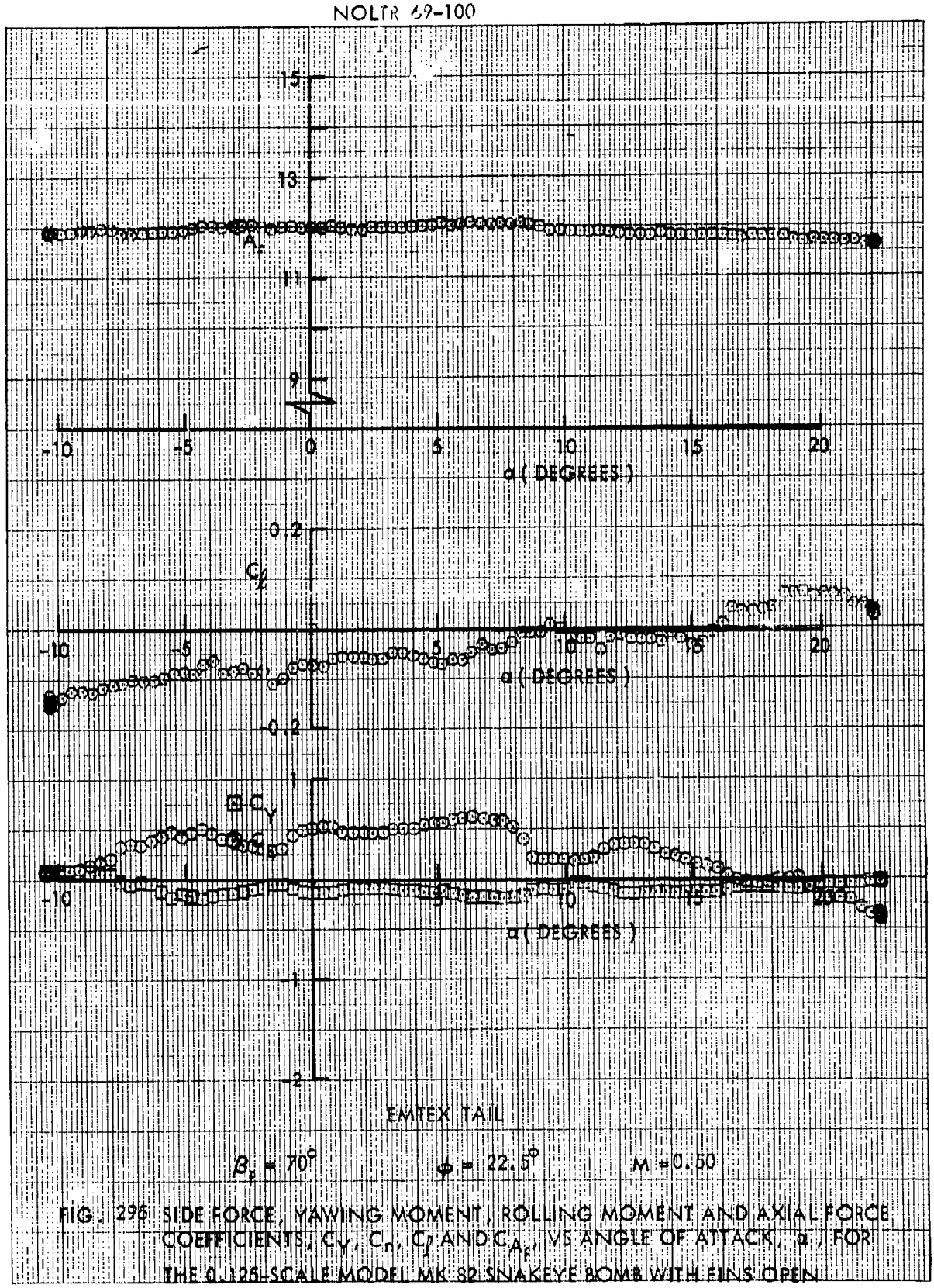


FIG. 296 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.126-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

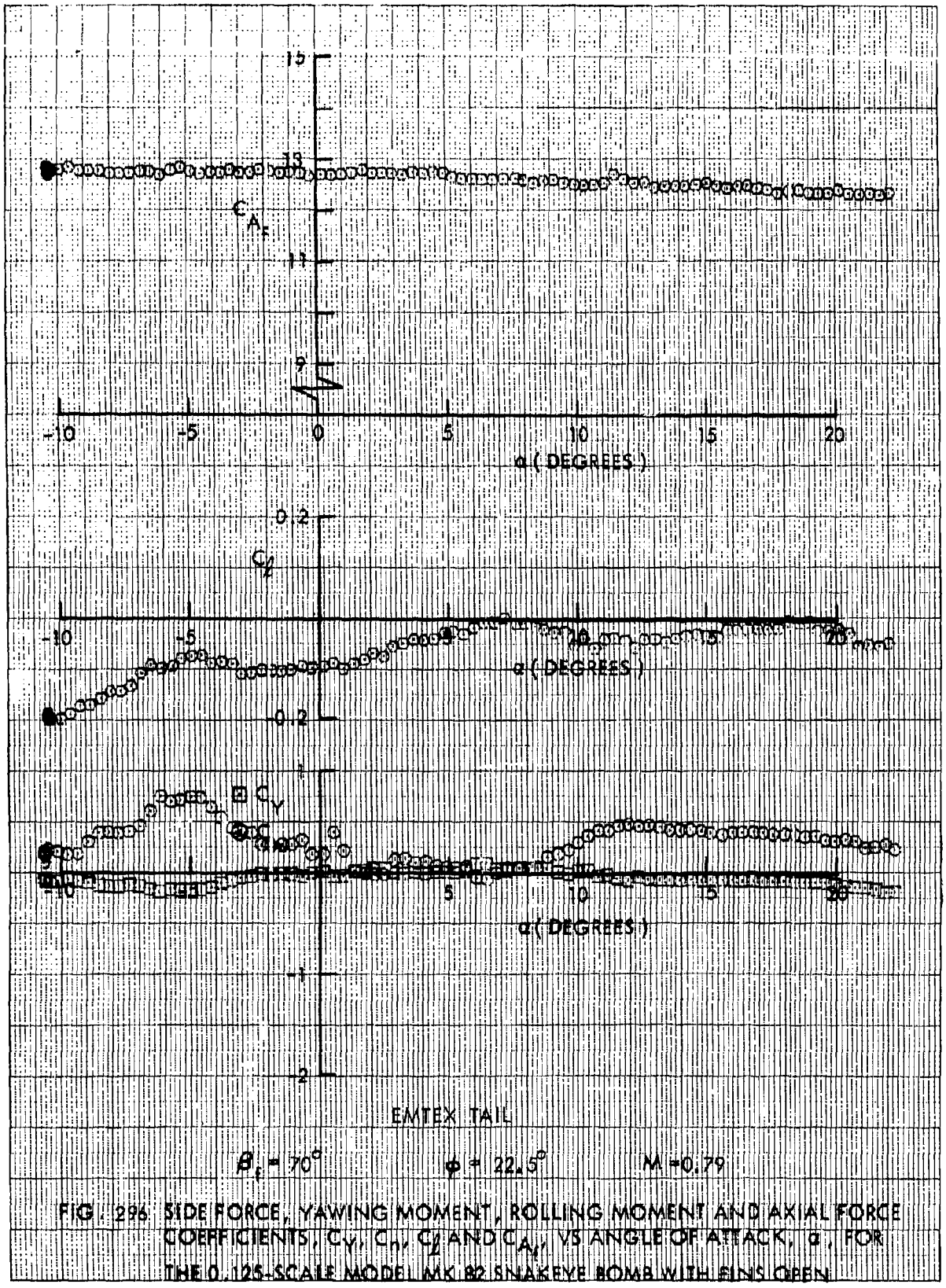


FIG. 296 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

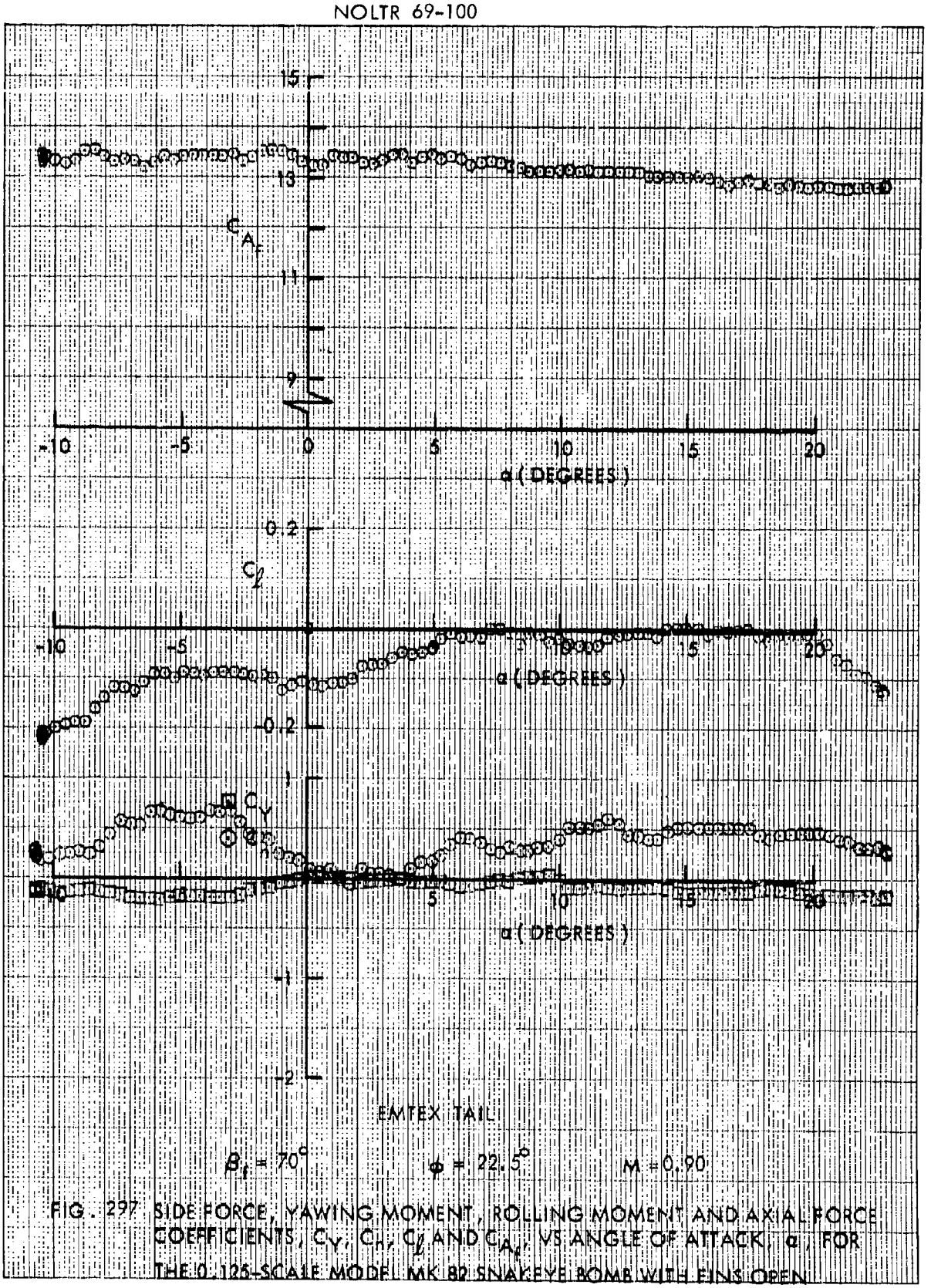


FIG. 297 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

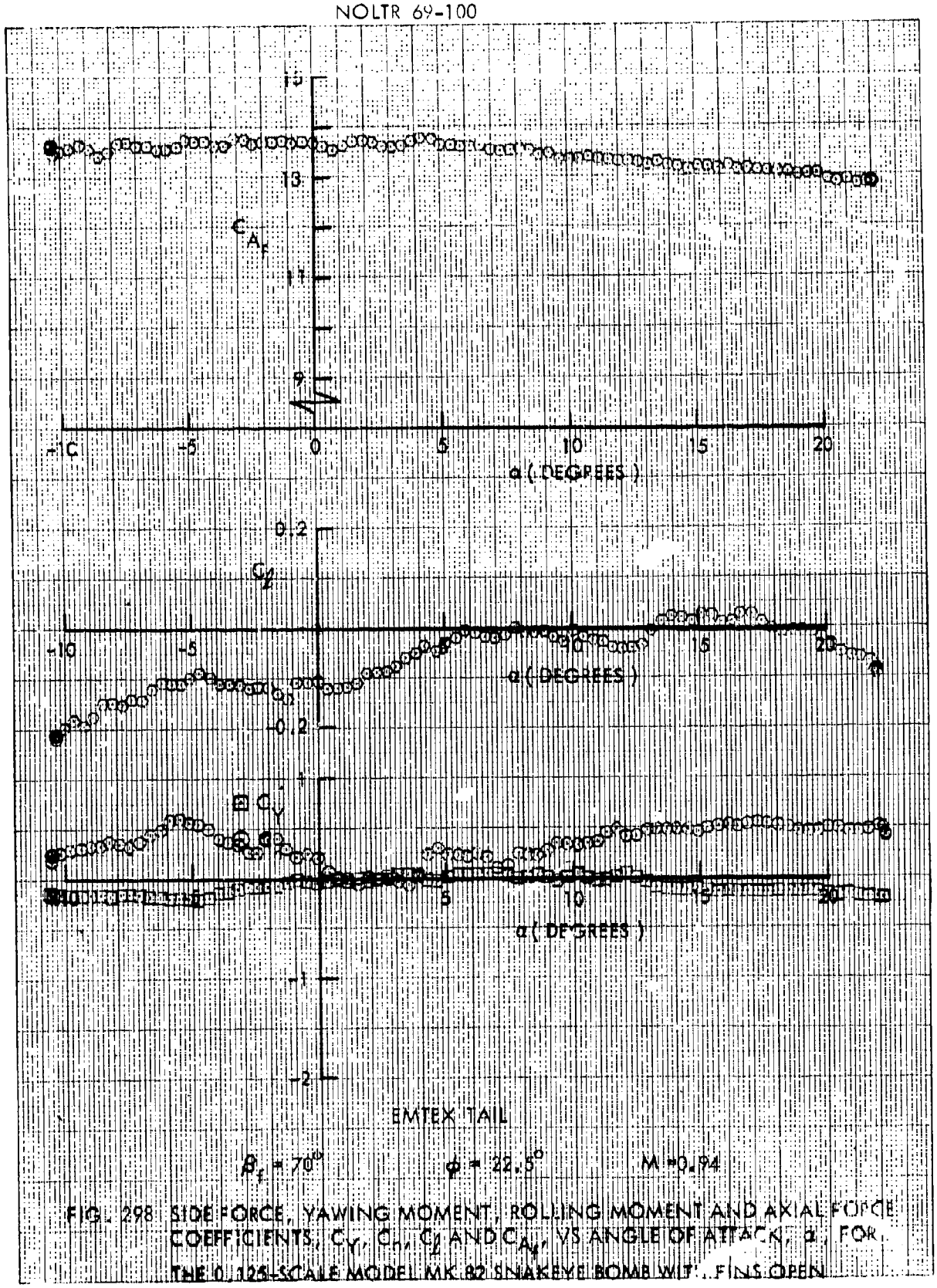


FIG. 298 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f} VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

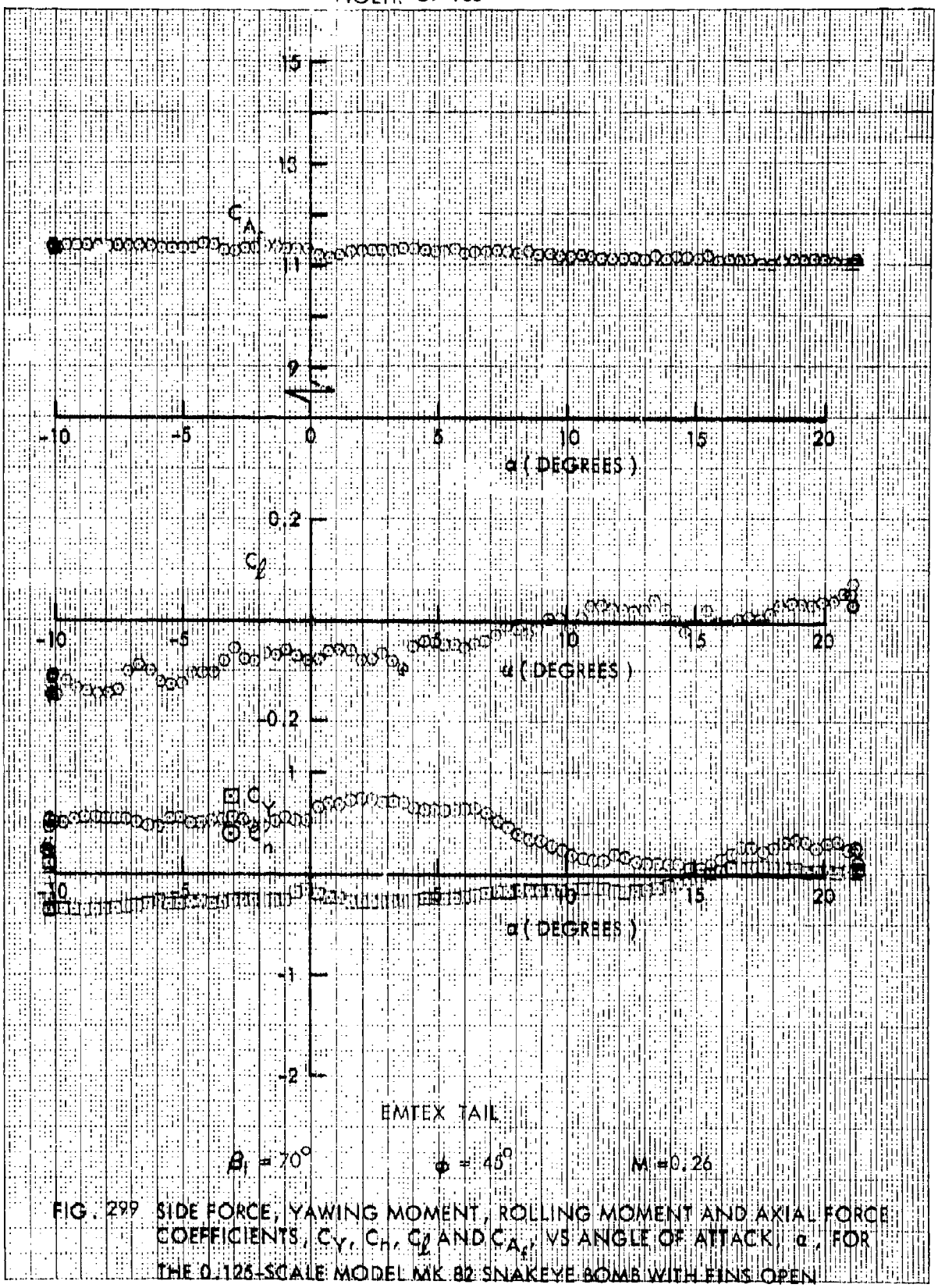


FIG. 299 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

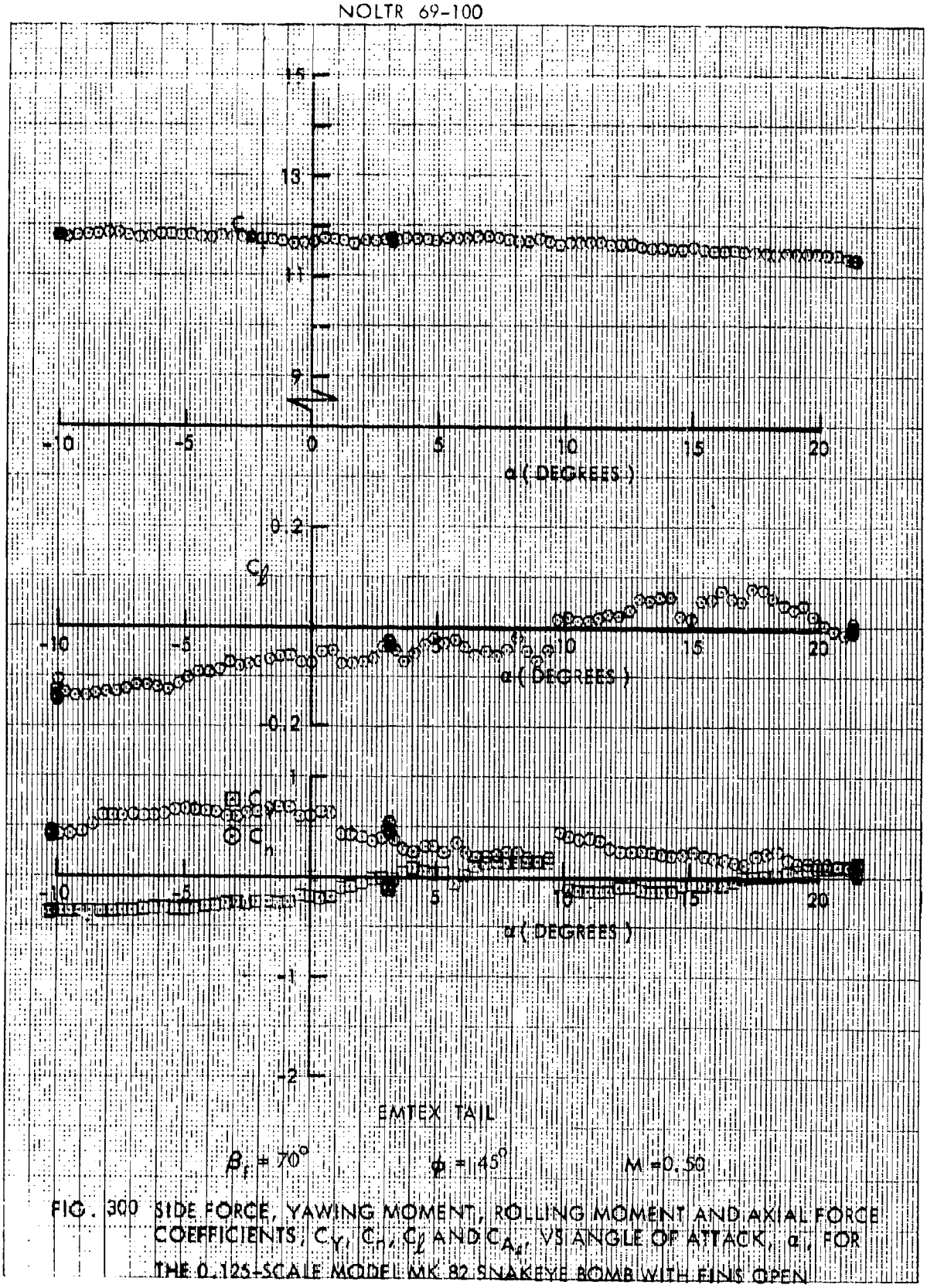


FIG. 300 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

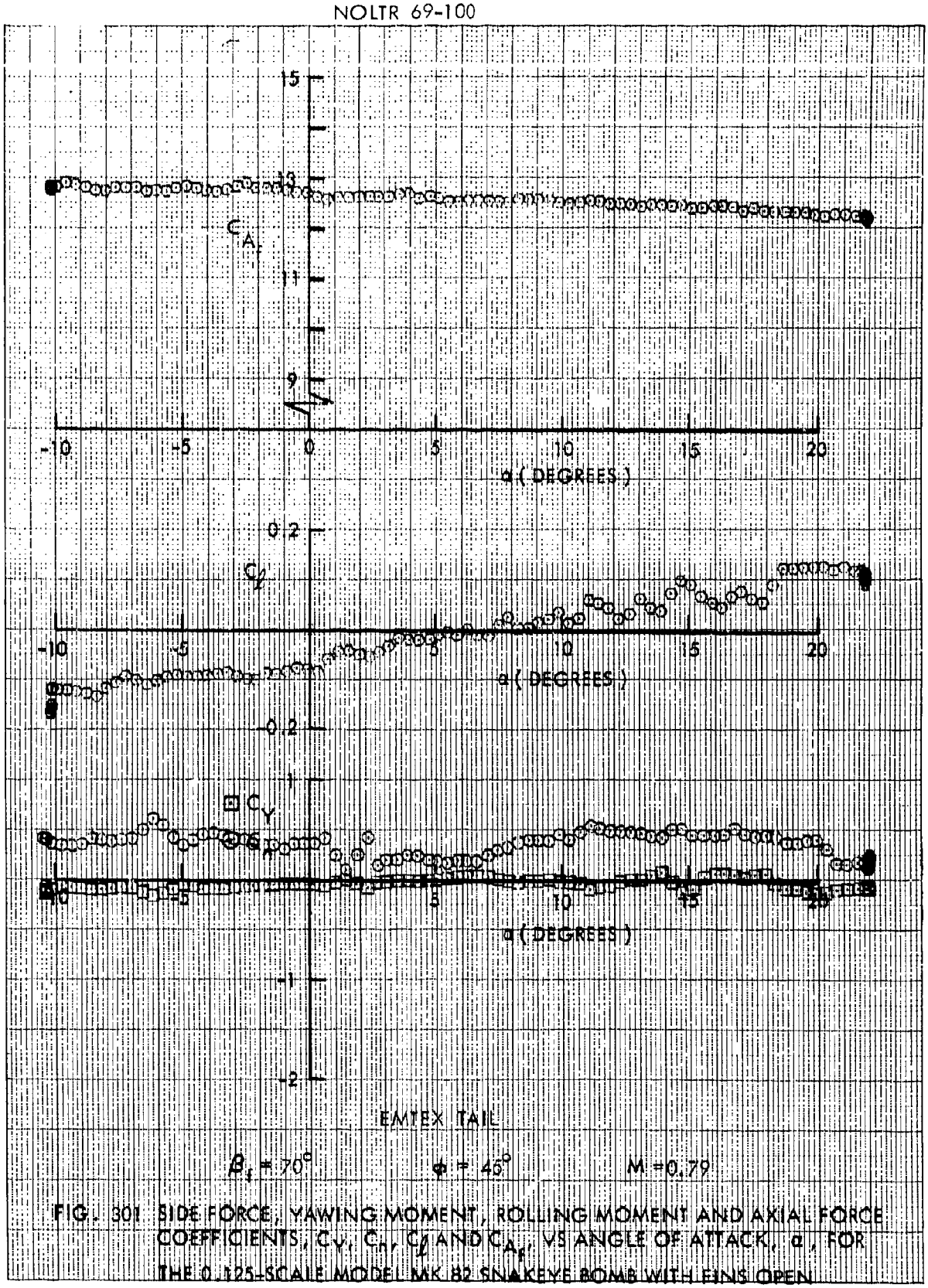


FIG. 301 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

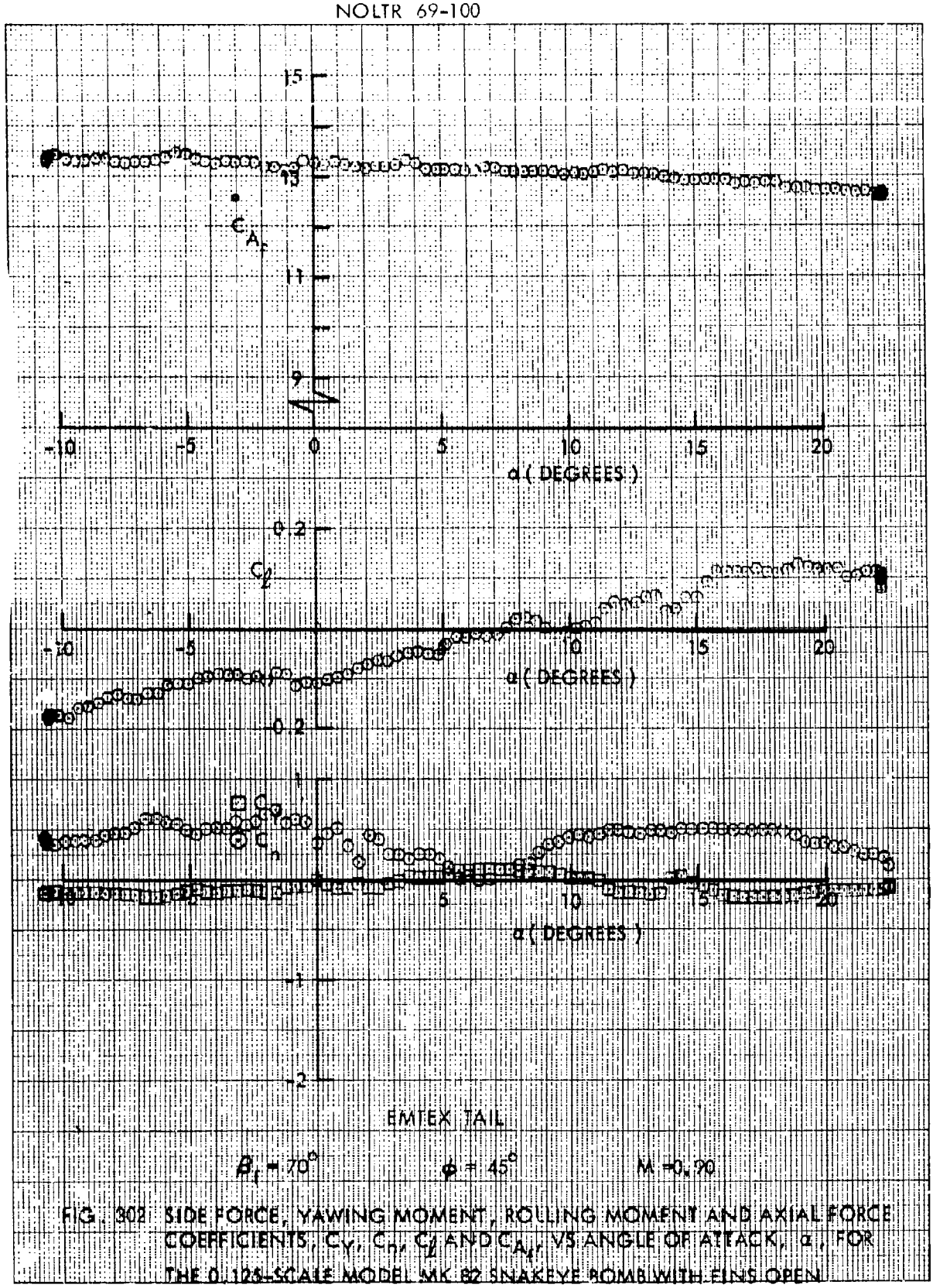


FIG. 302 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

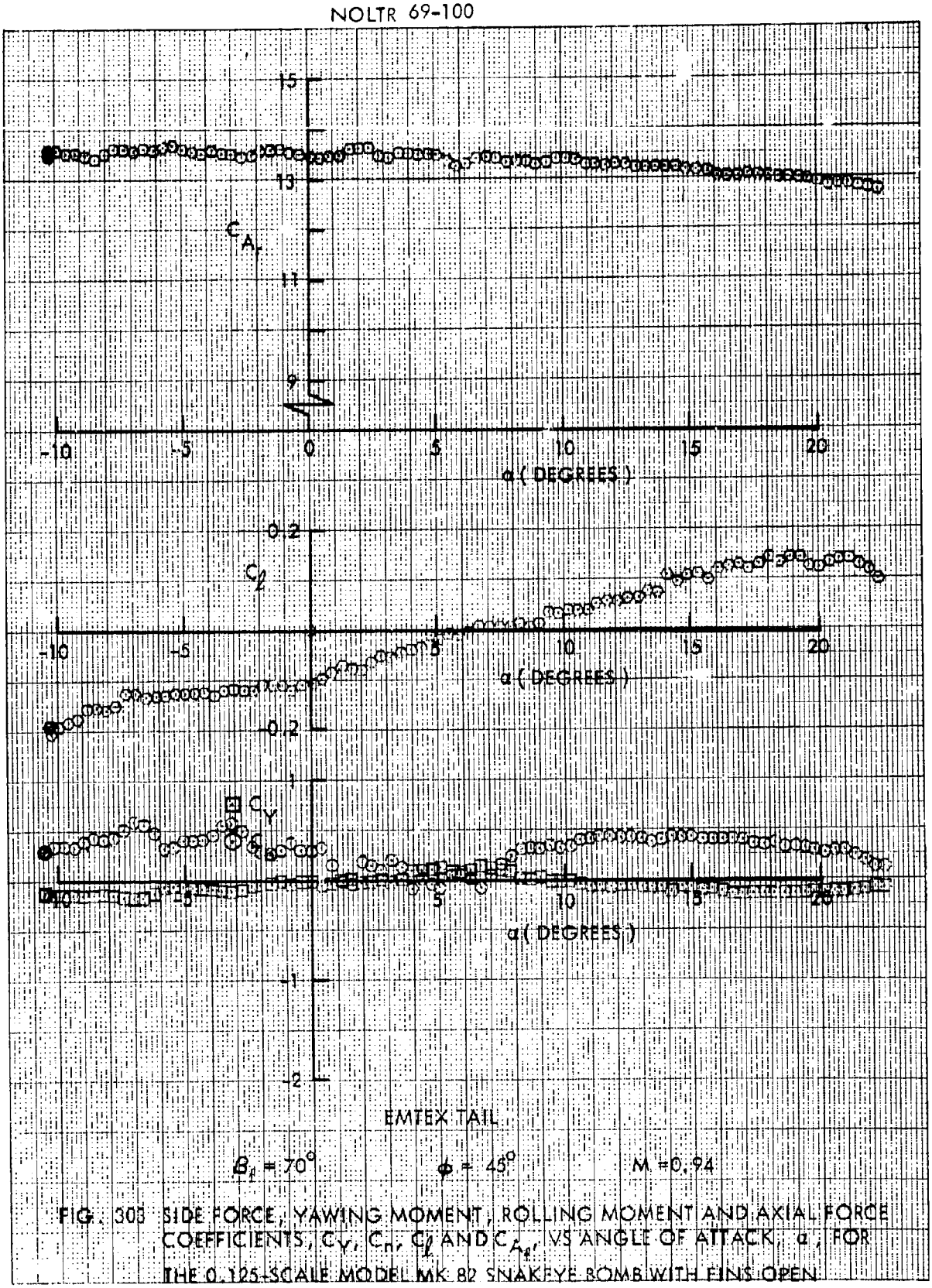


FIG. 303 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

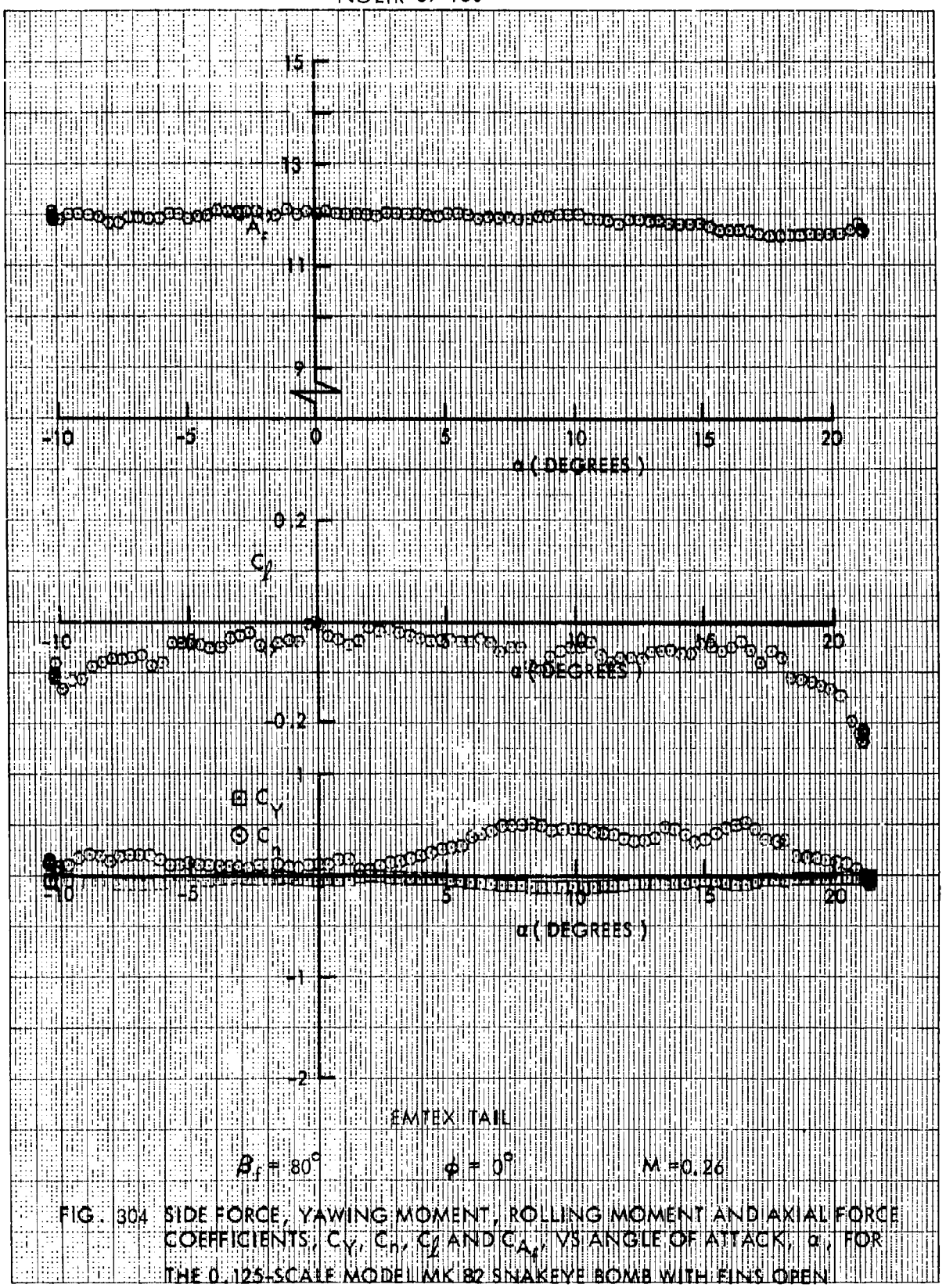


FIG. 304 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

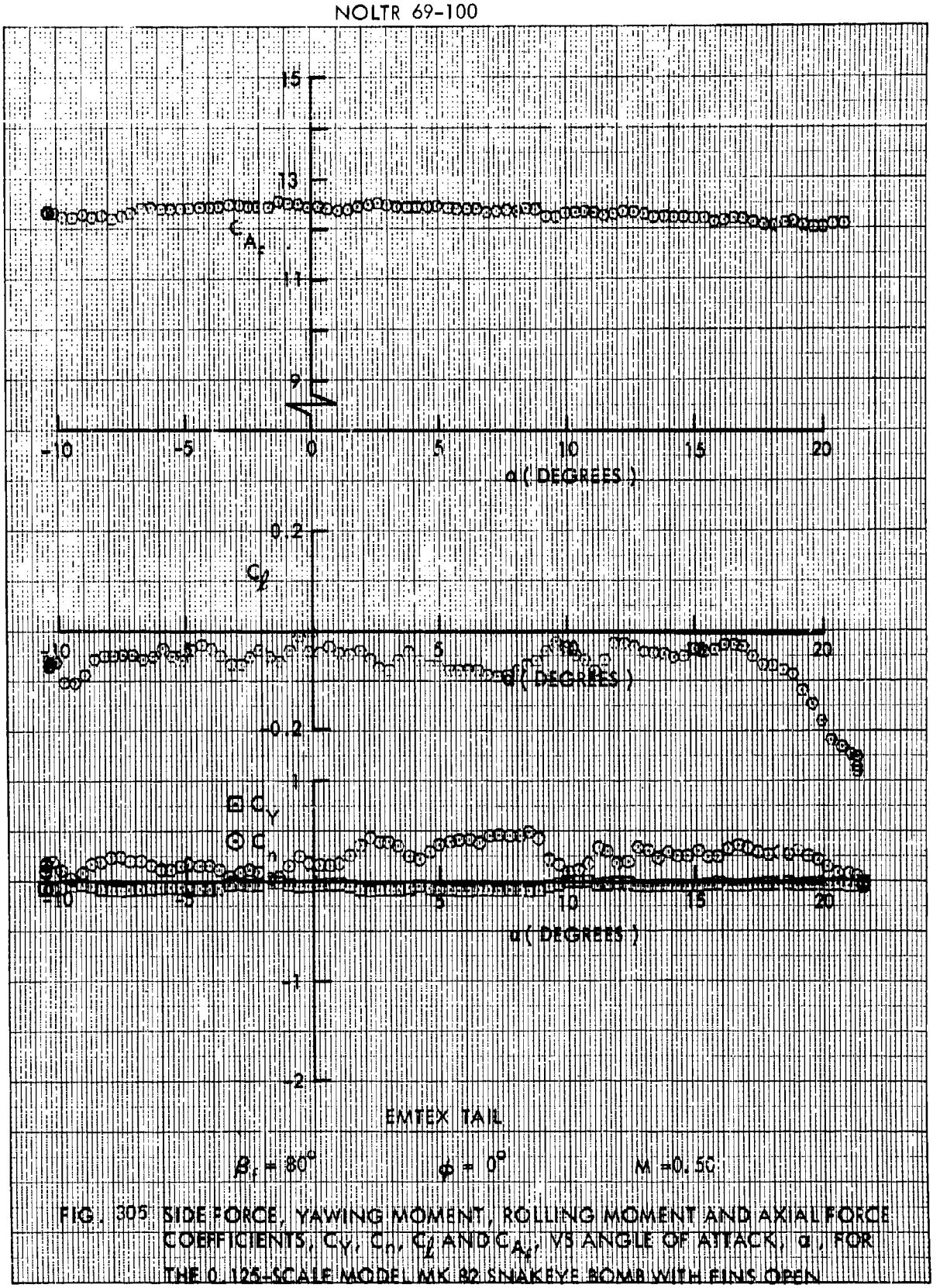


FIG. 305 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

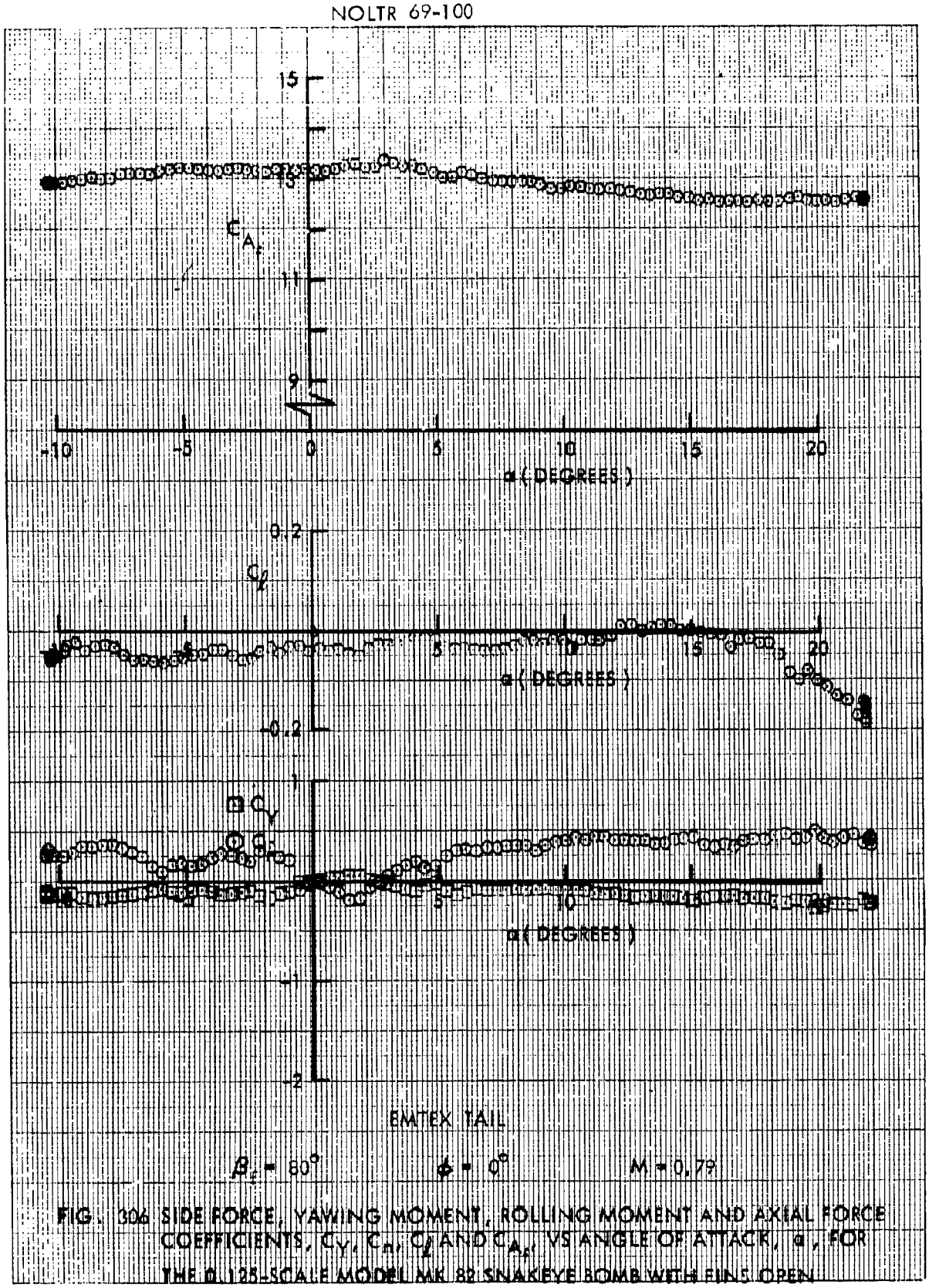


FIG. 306 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f} VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

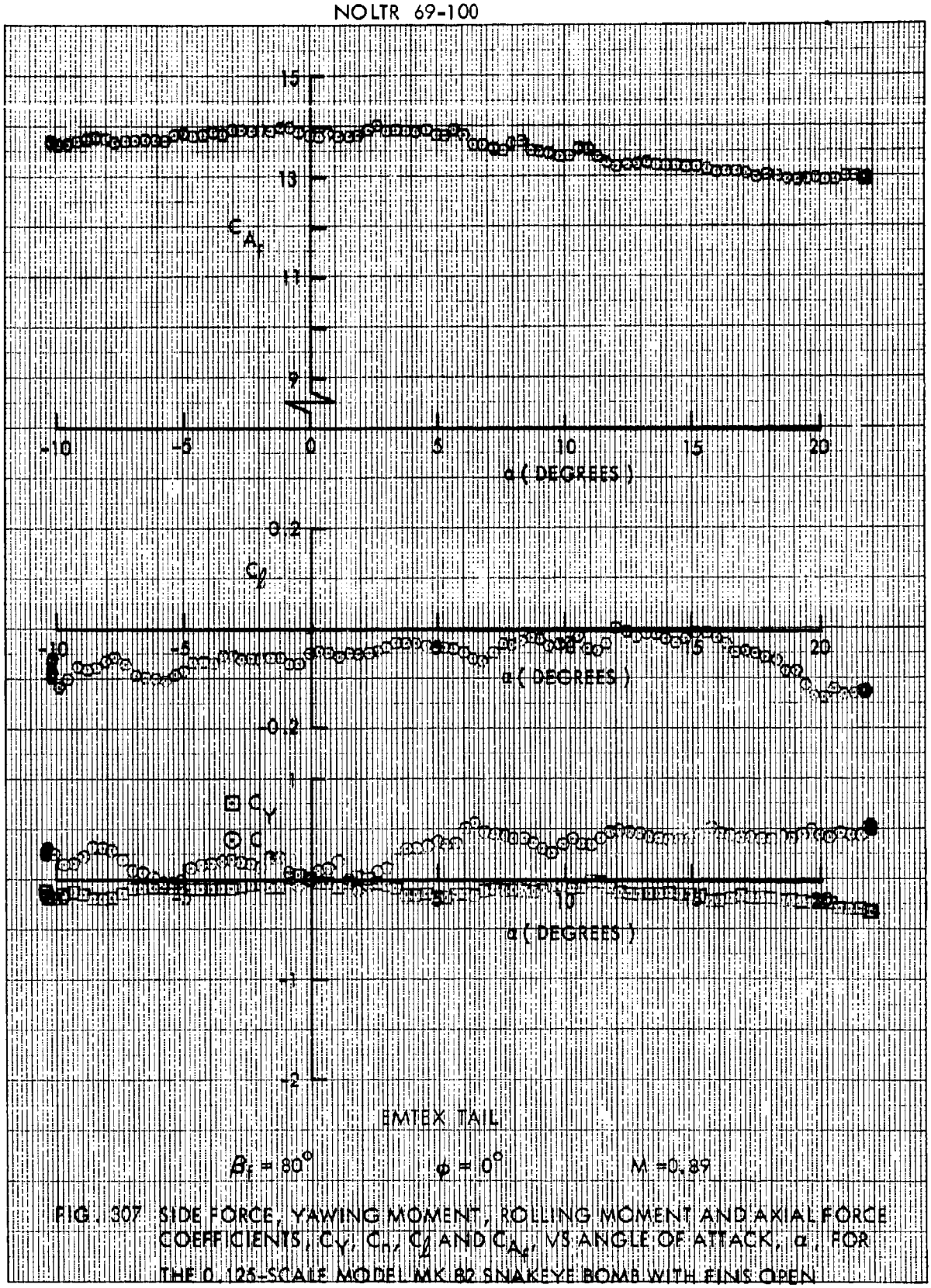


FIG. 307 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

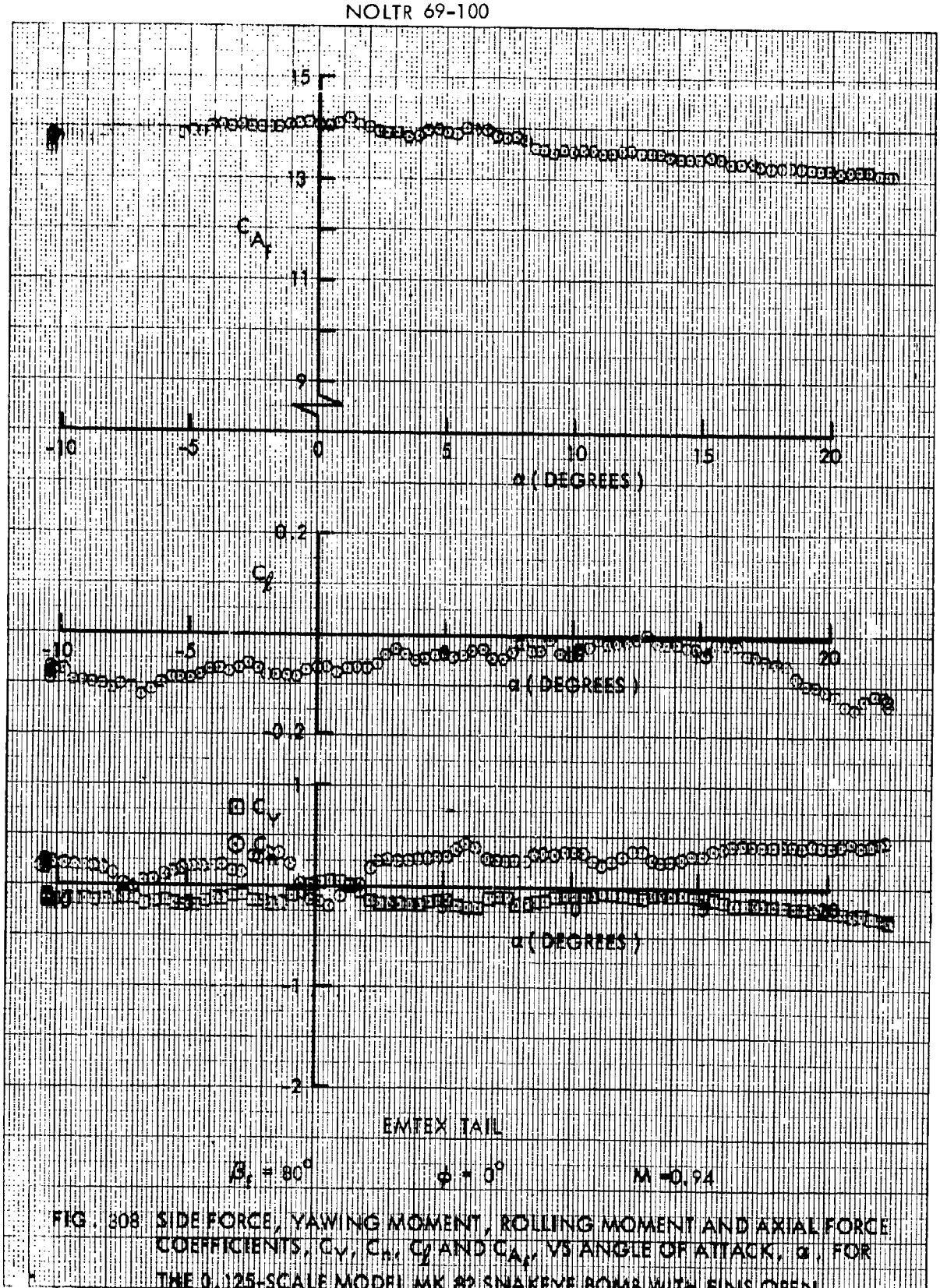


FIG. 308 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

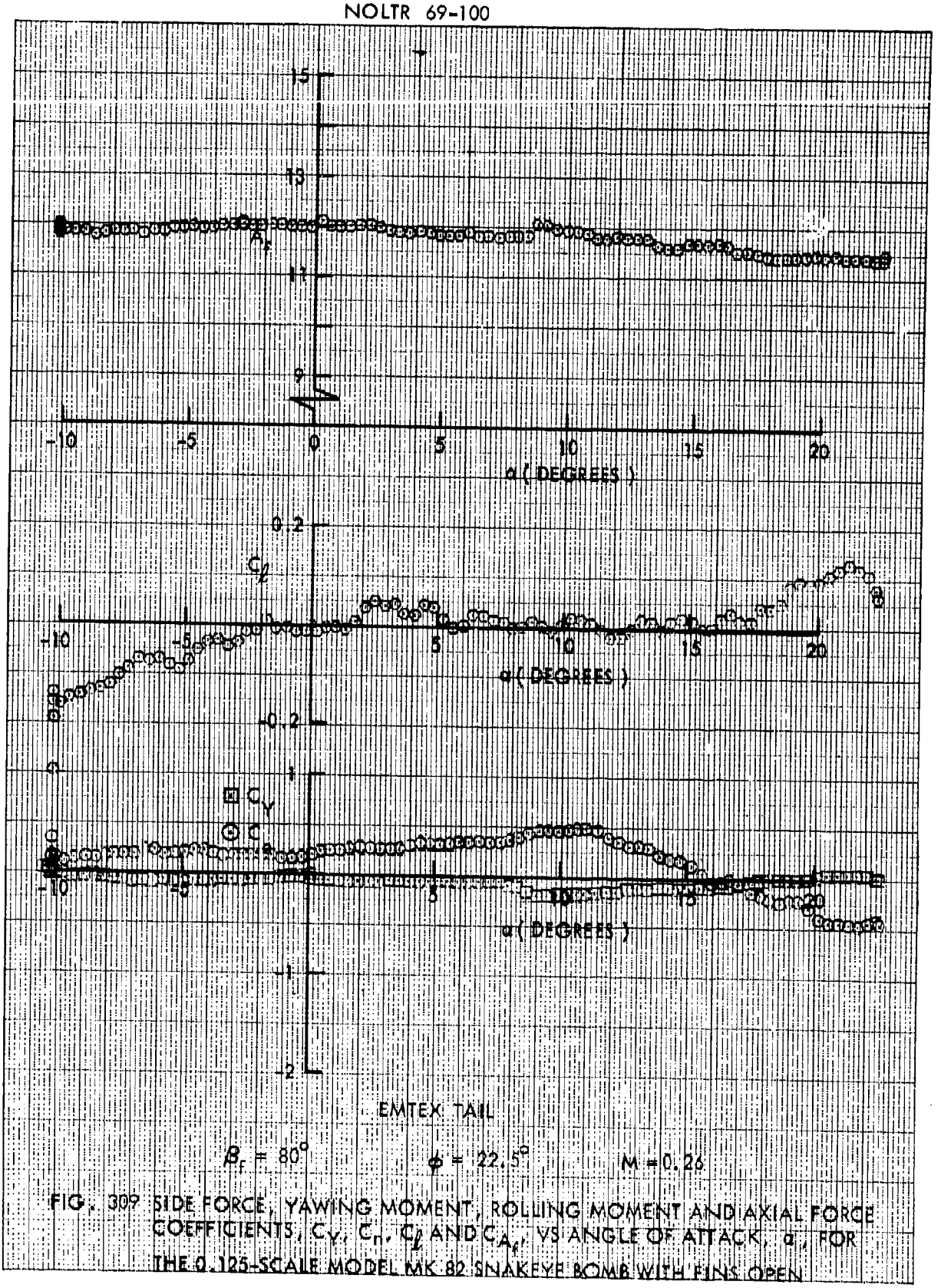


FIG. 309 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

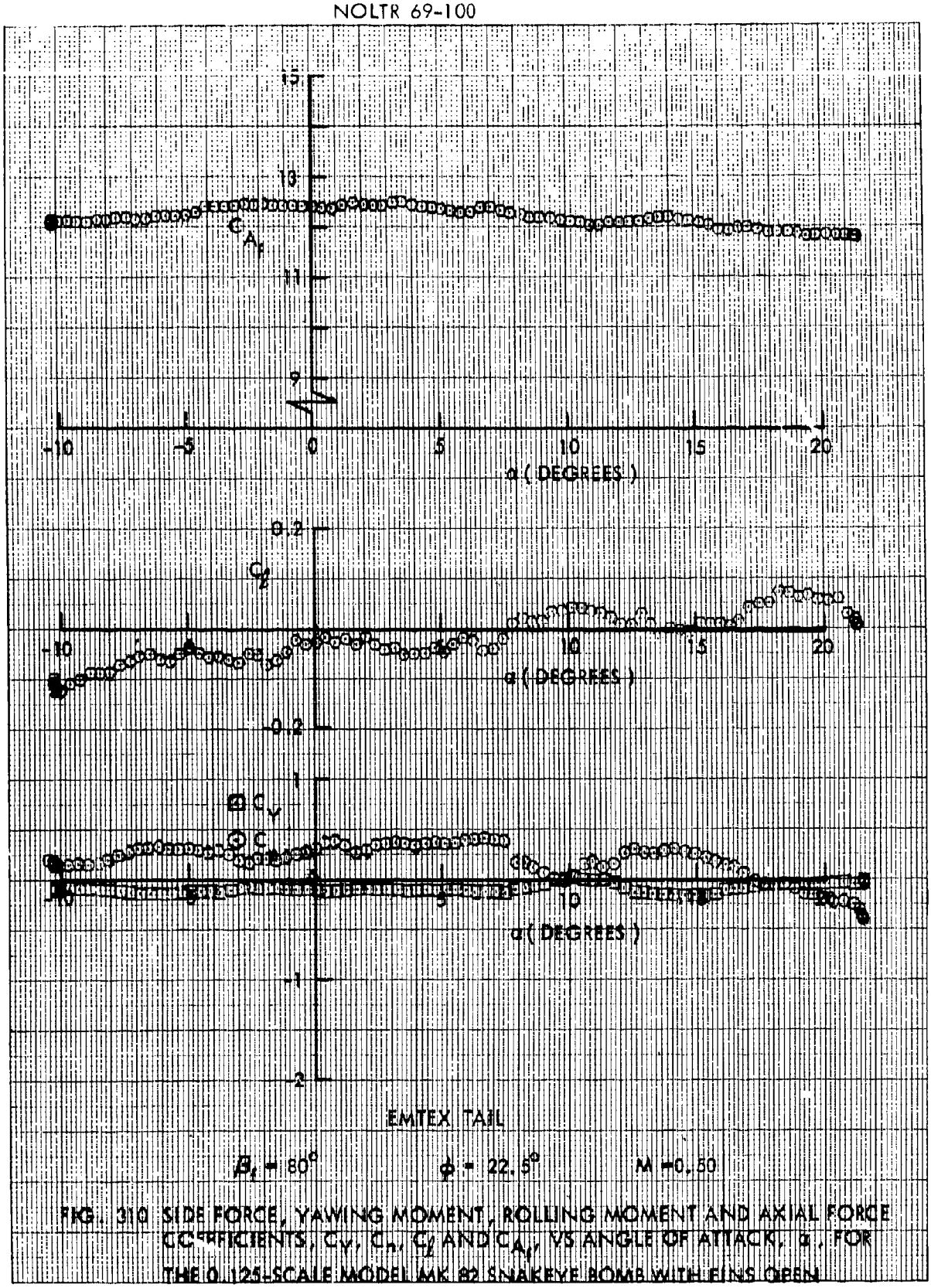


FIG. 310 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

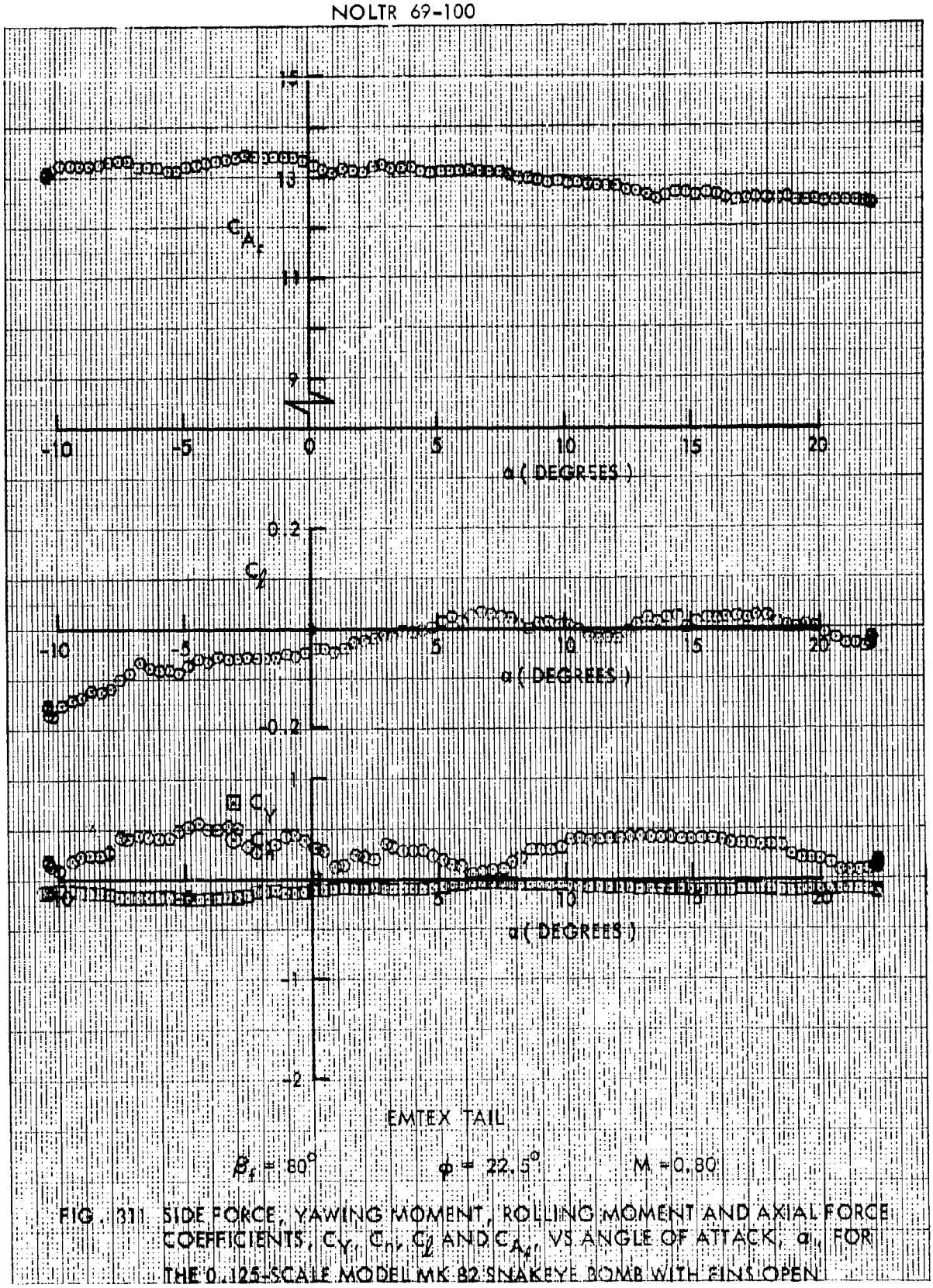


FIG. 311 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α_t, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

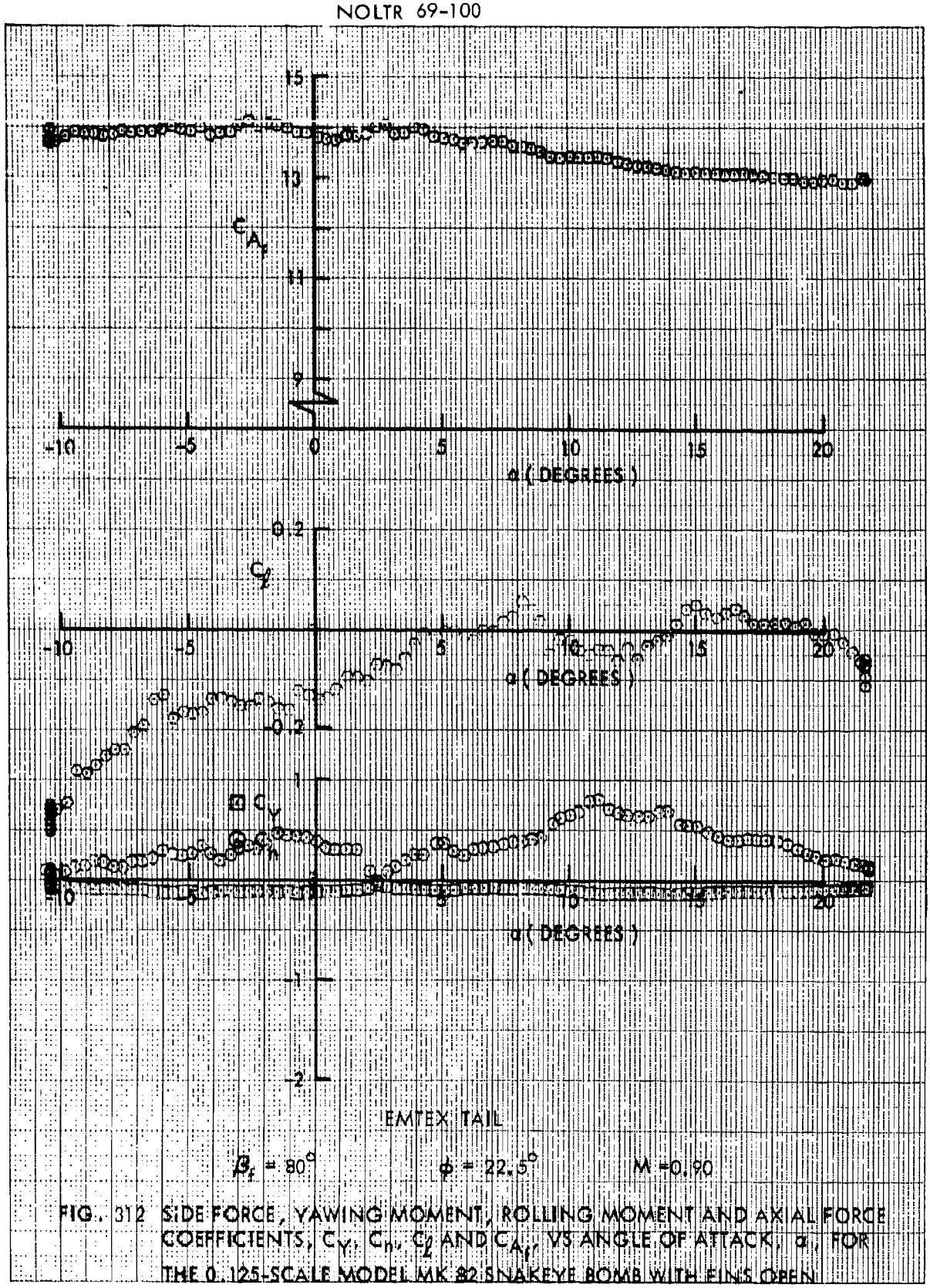


FIG. 312 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_{Y_β}, C_{n_β}, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

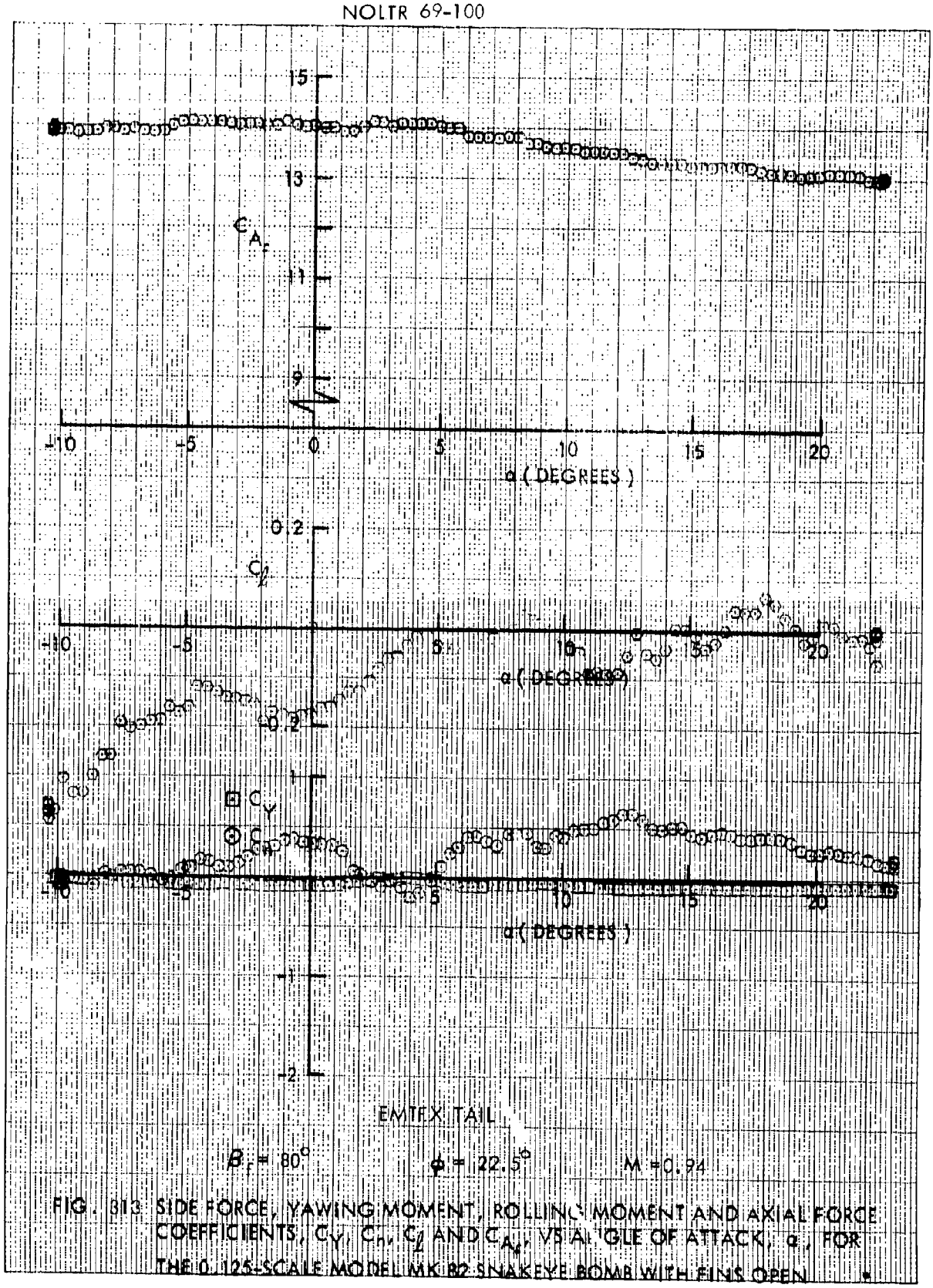


FIG. 313 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

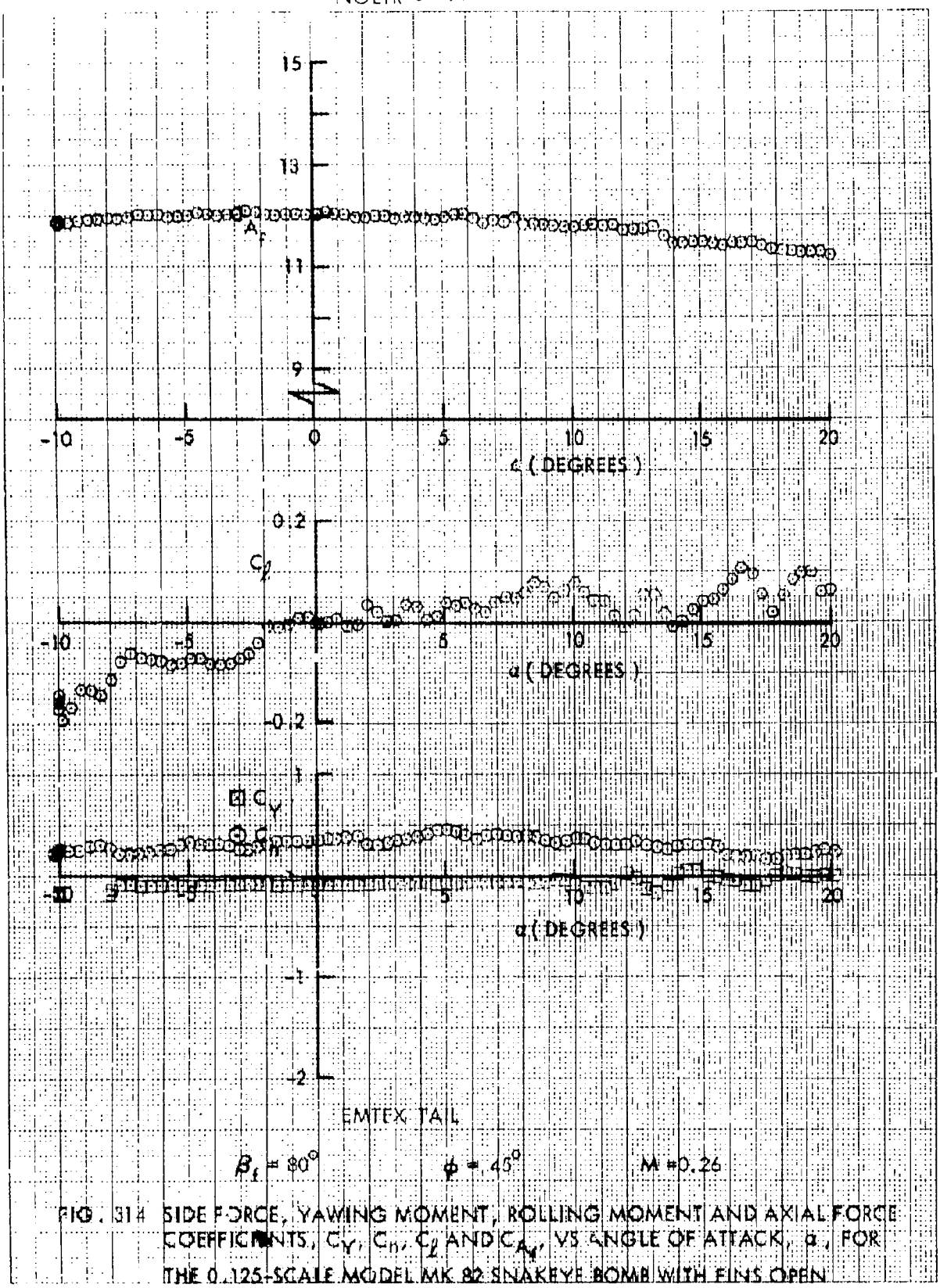


FIG. 314 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

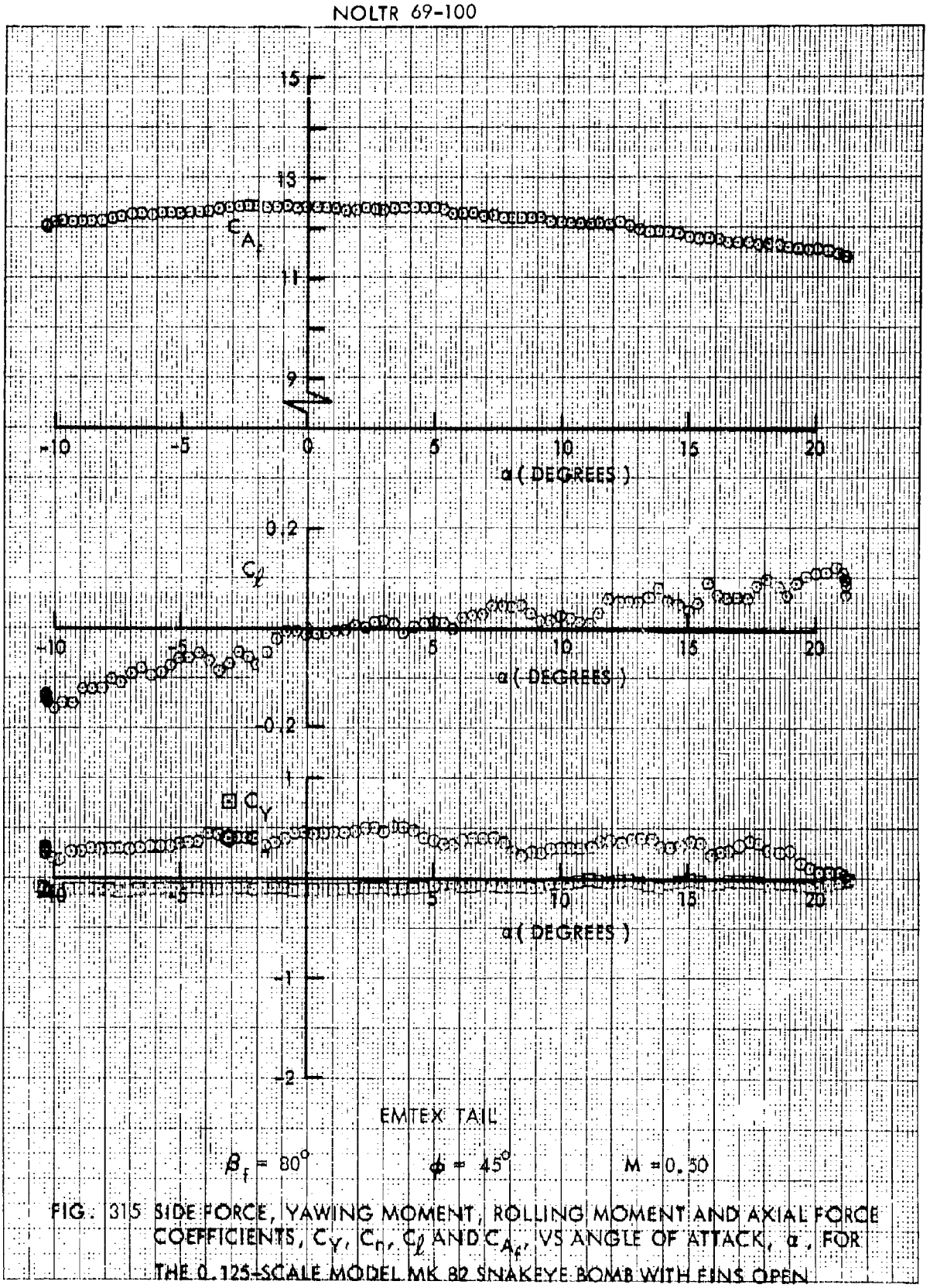


FIG. 315 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

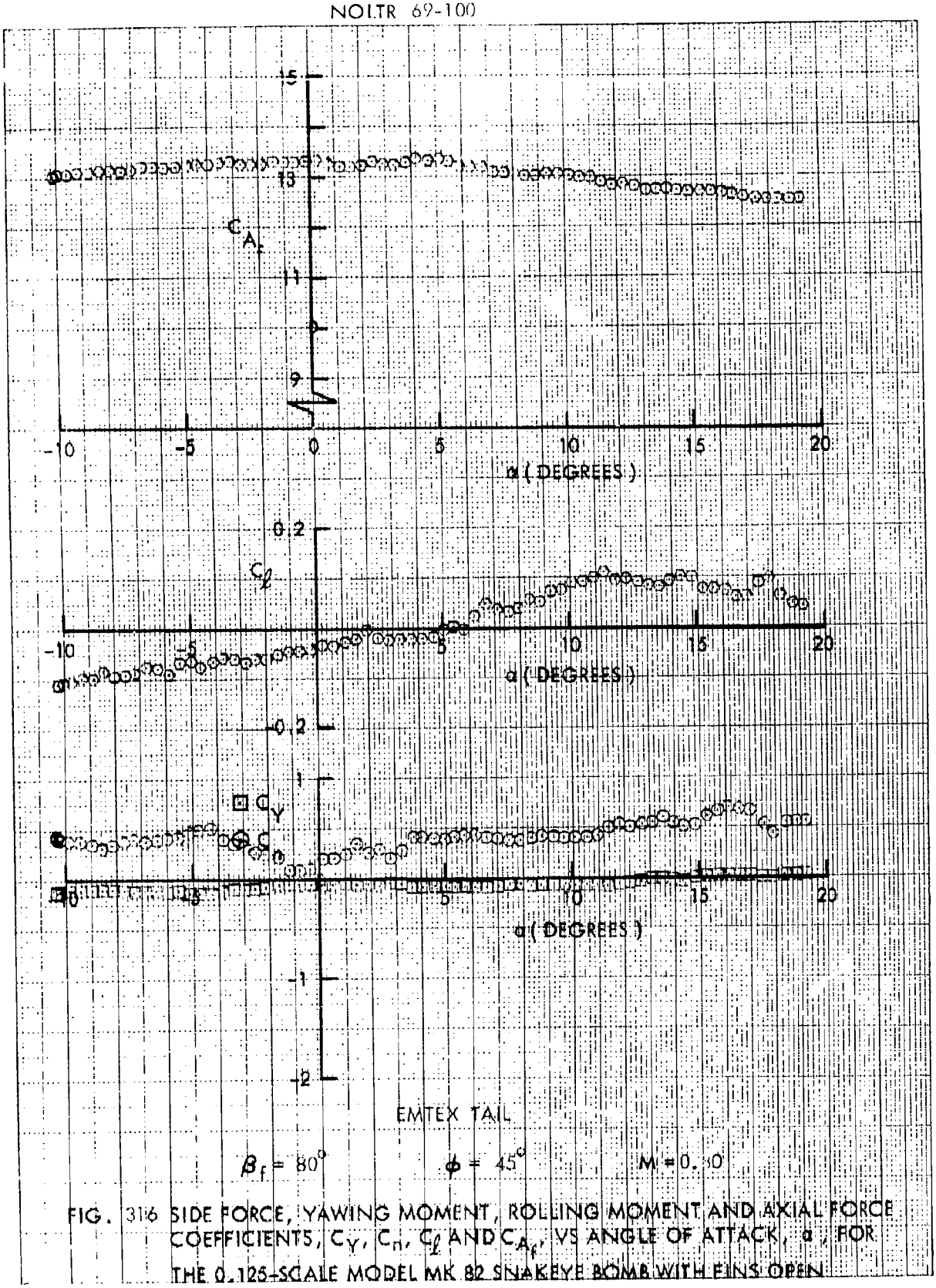


FIG. 316 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

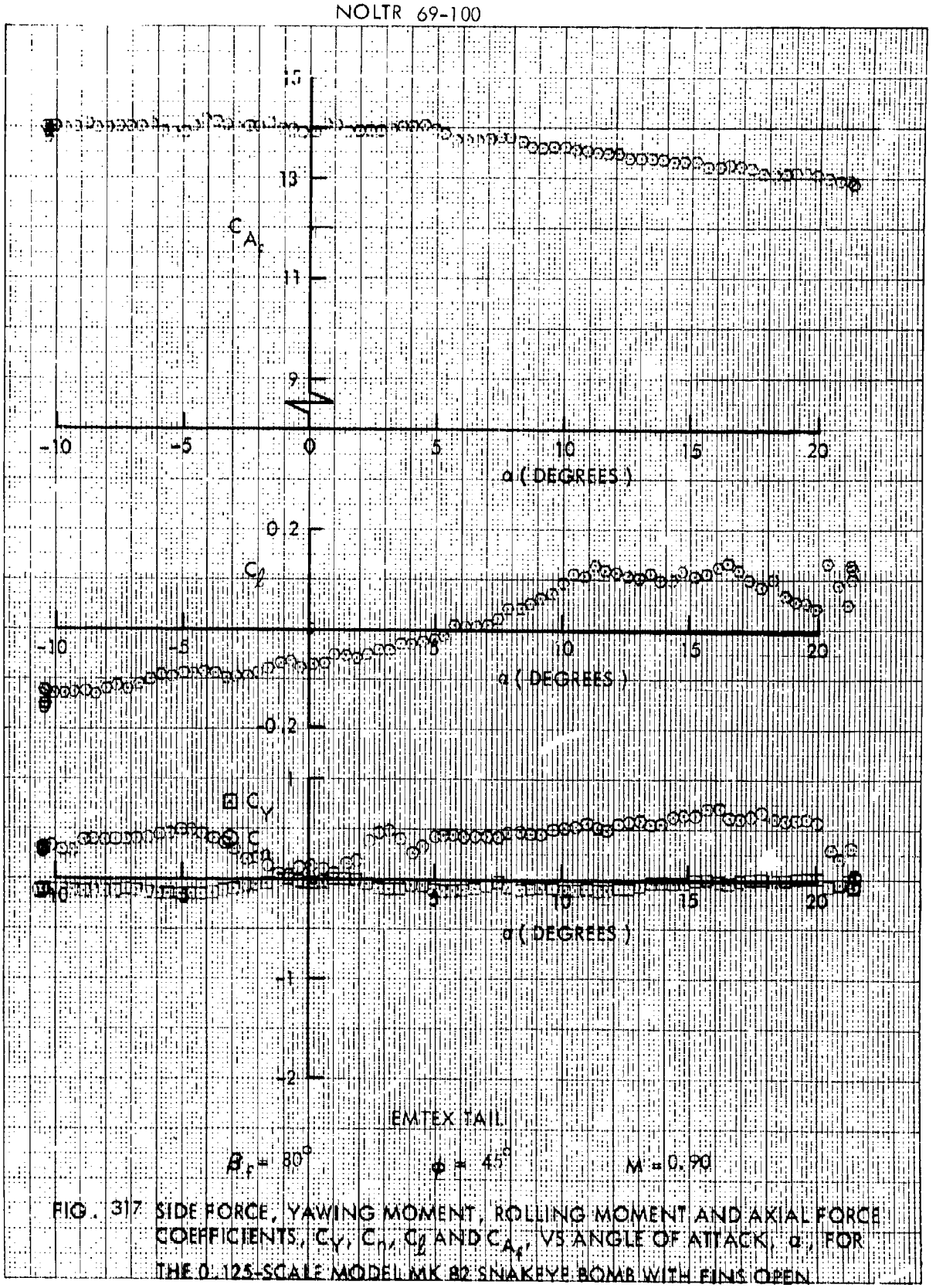


FIG. 317 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

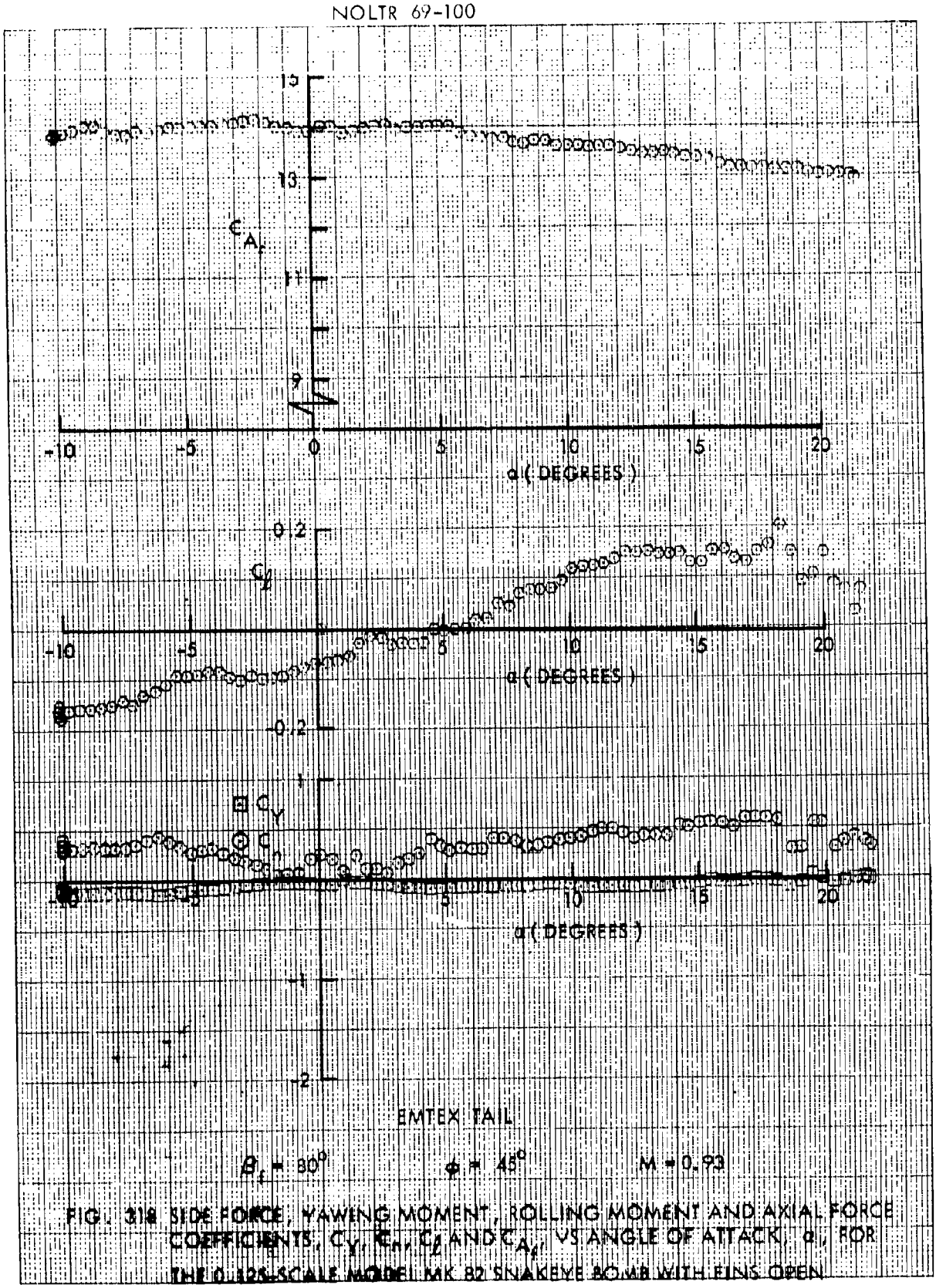


FIG. 318 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f} VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

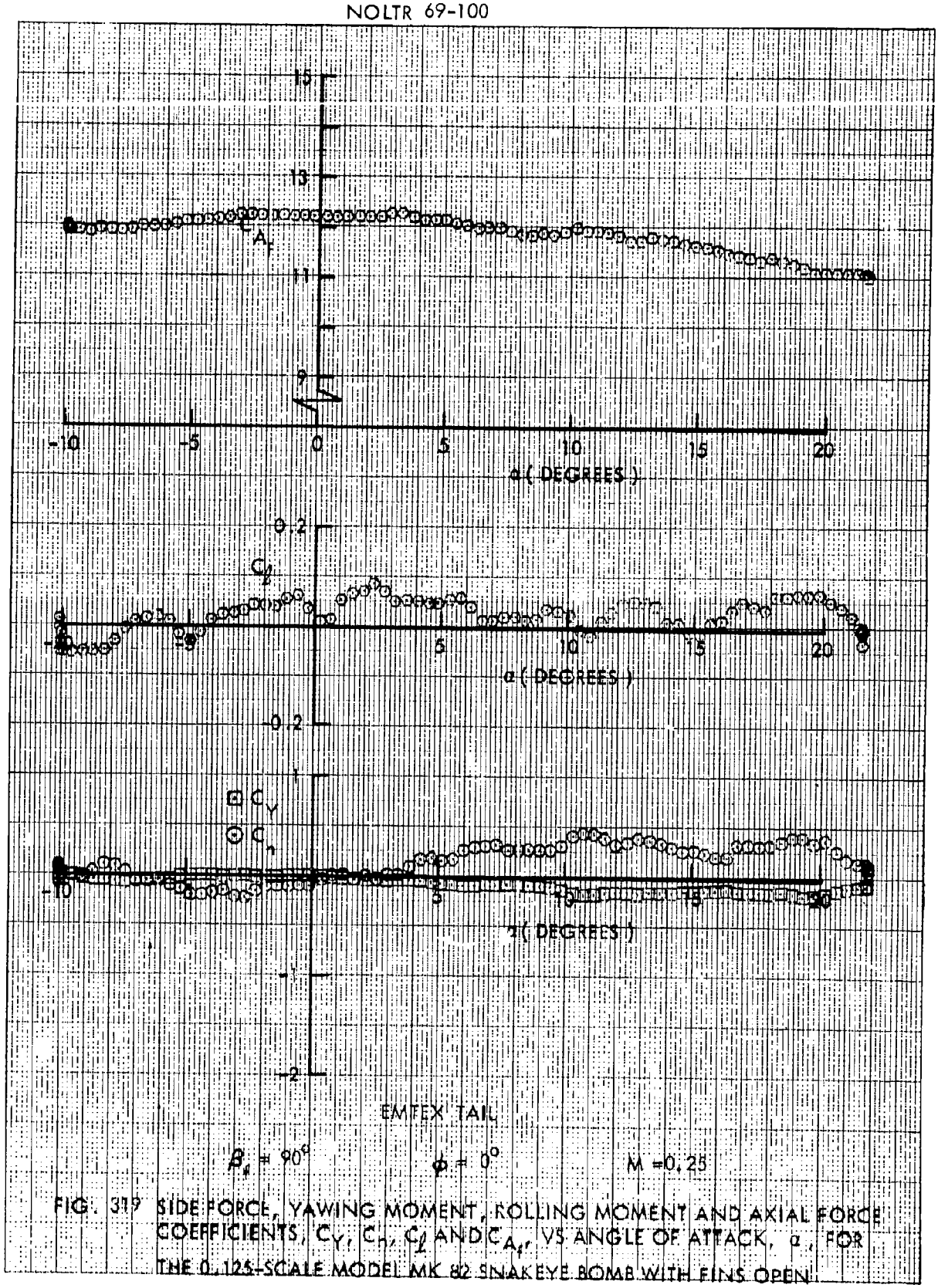


FIG. 319 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

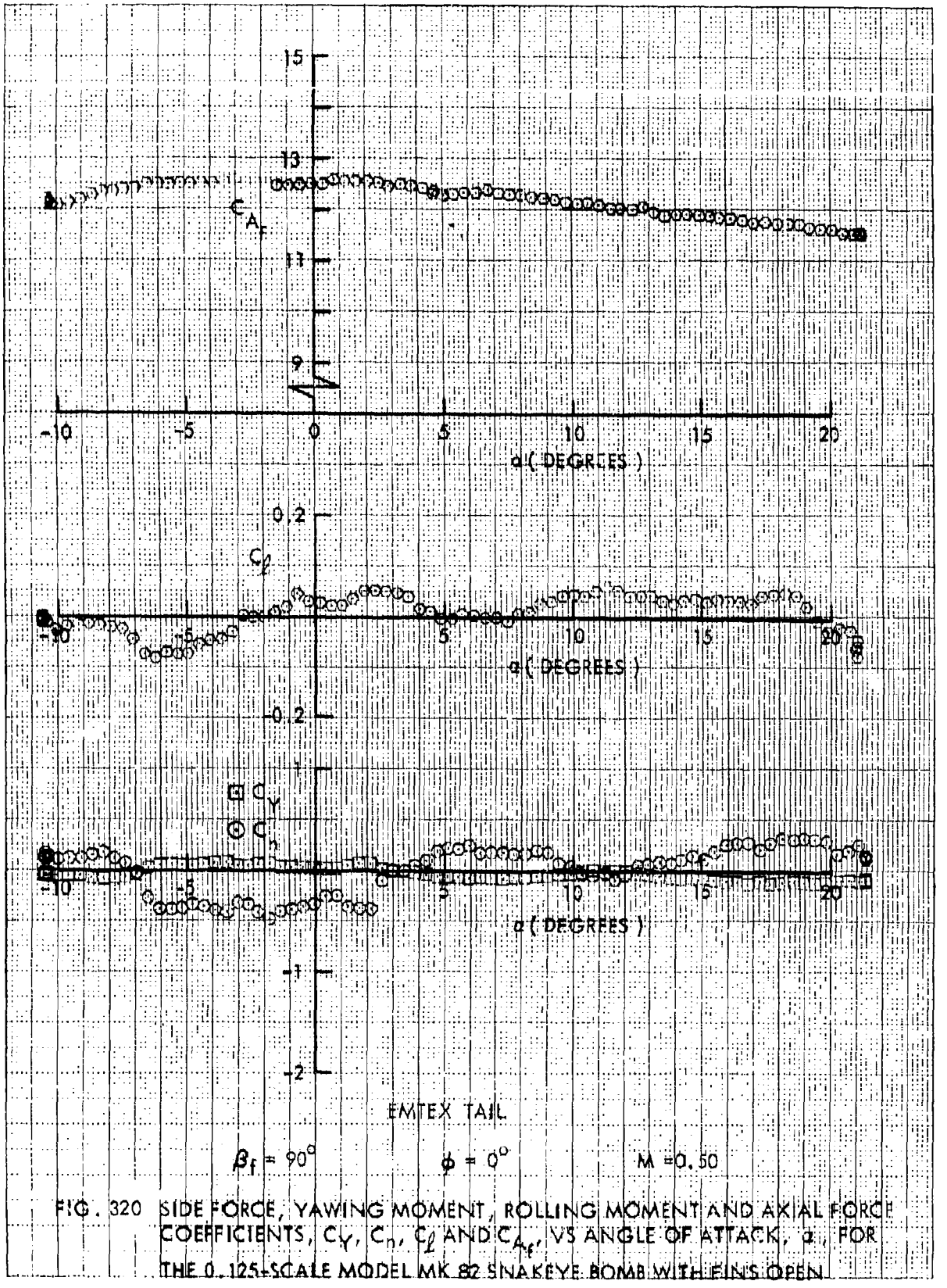


FIG. 320 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

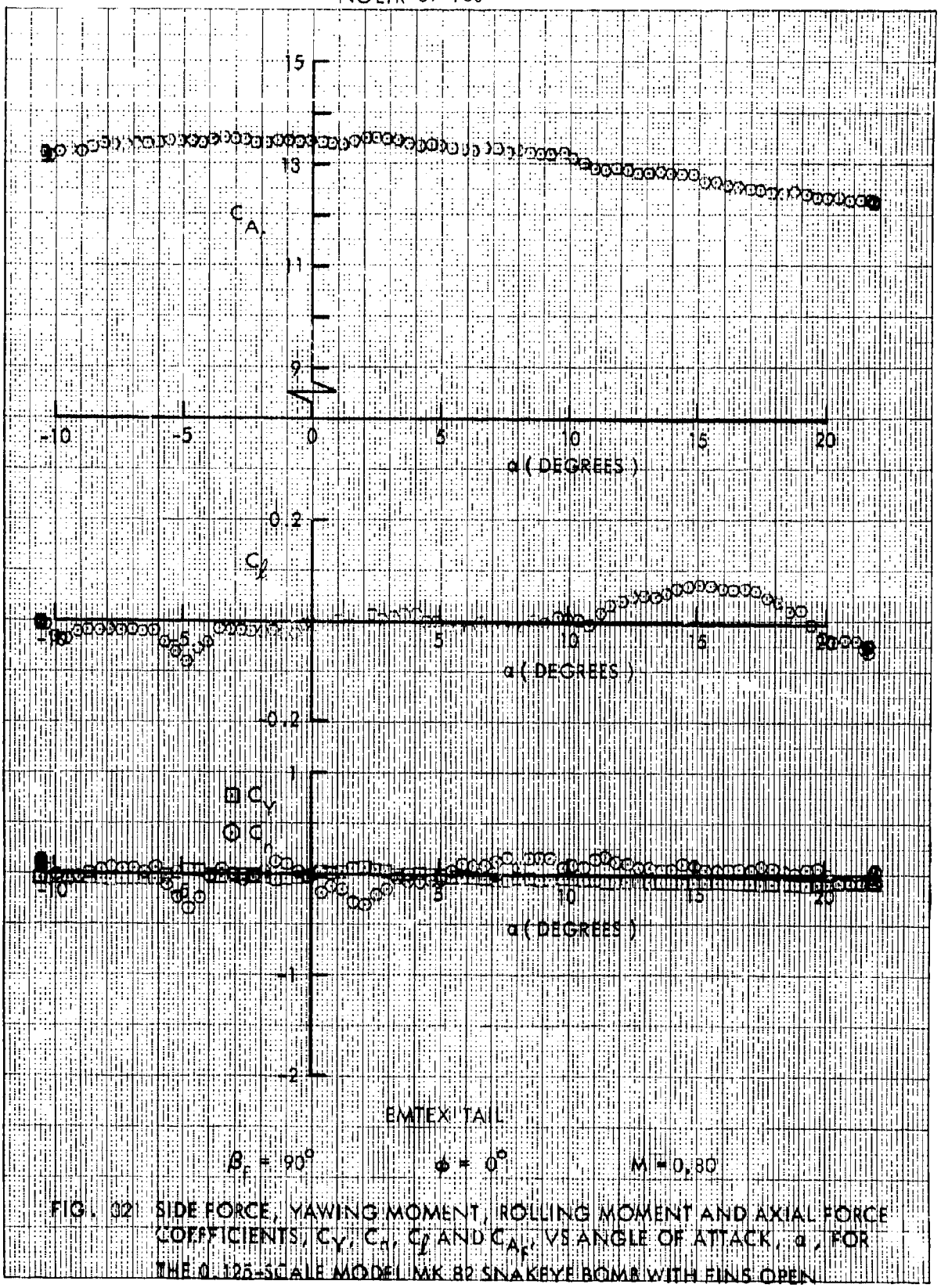


FIG. 92 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

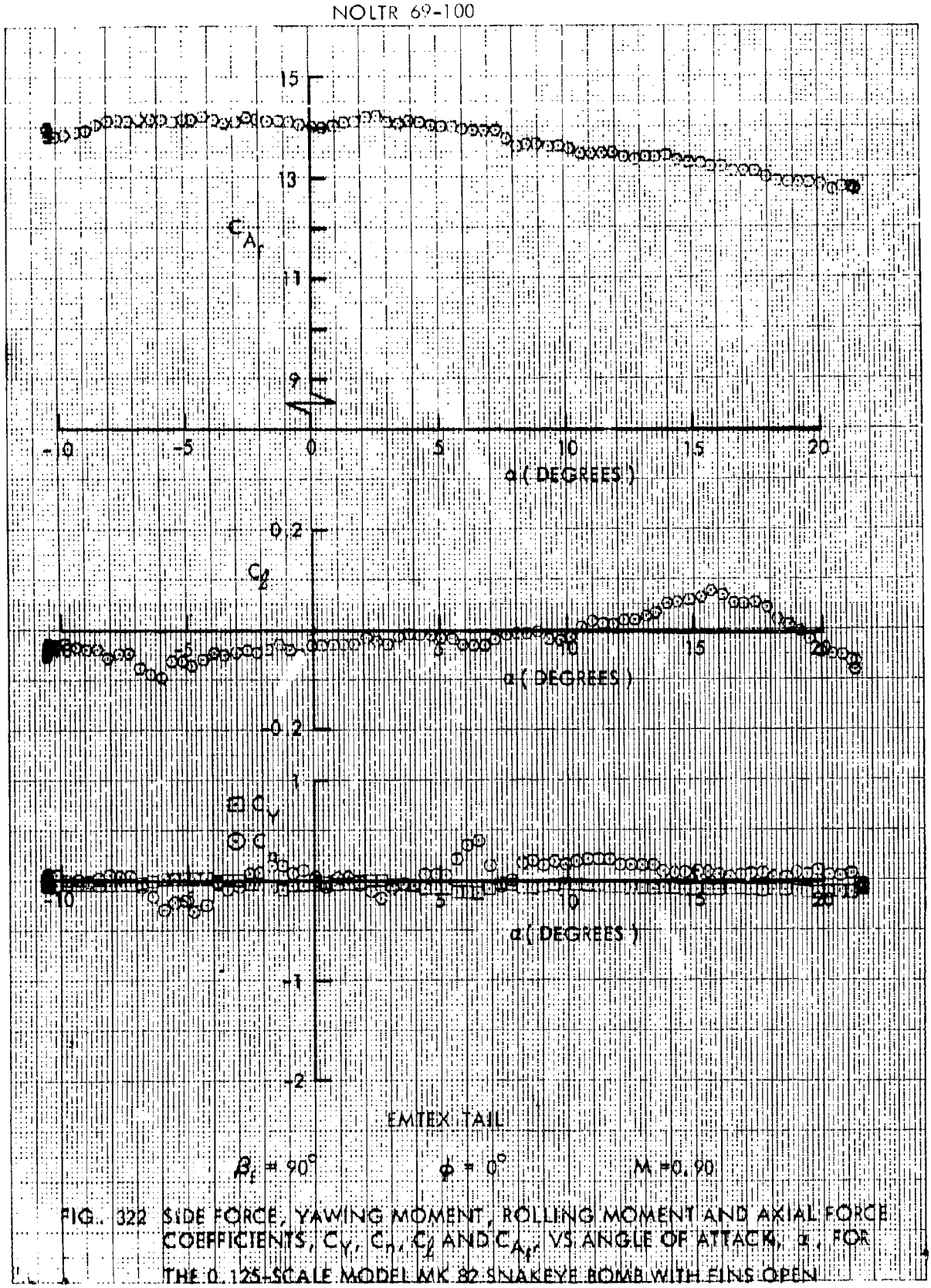


FIG. 322 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

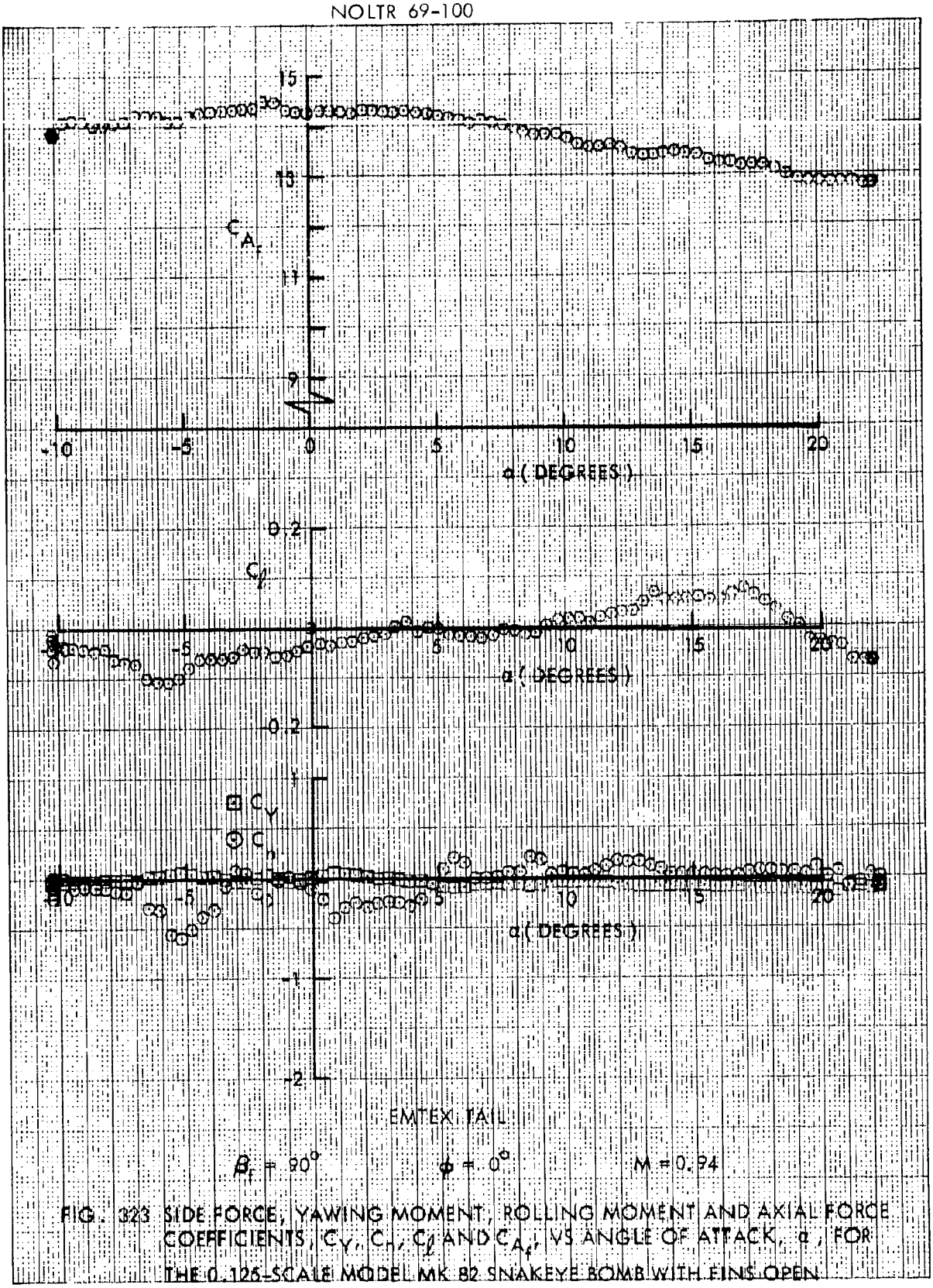


FIG. 323 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.126-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

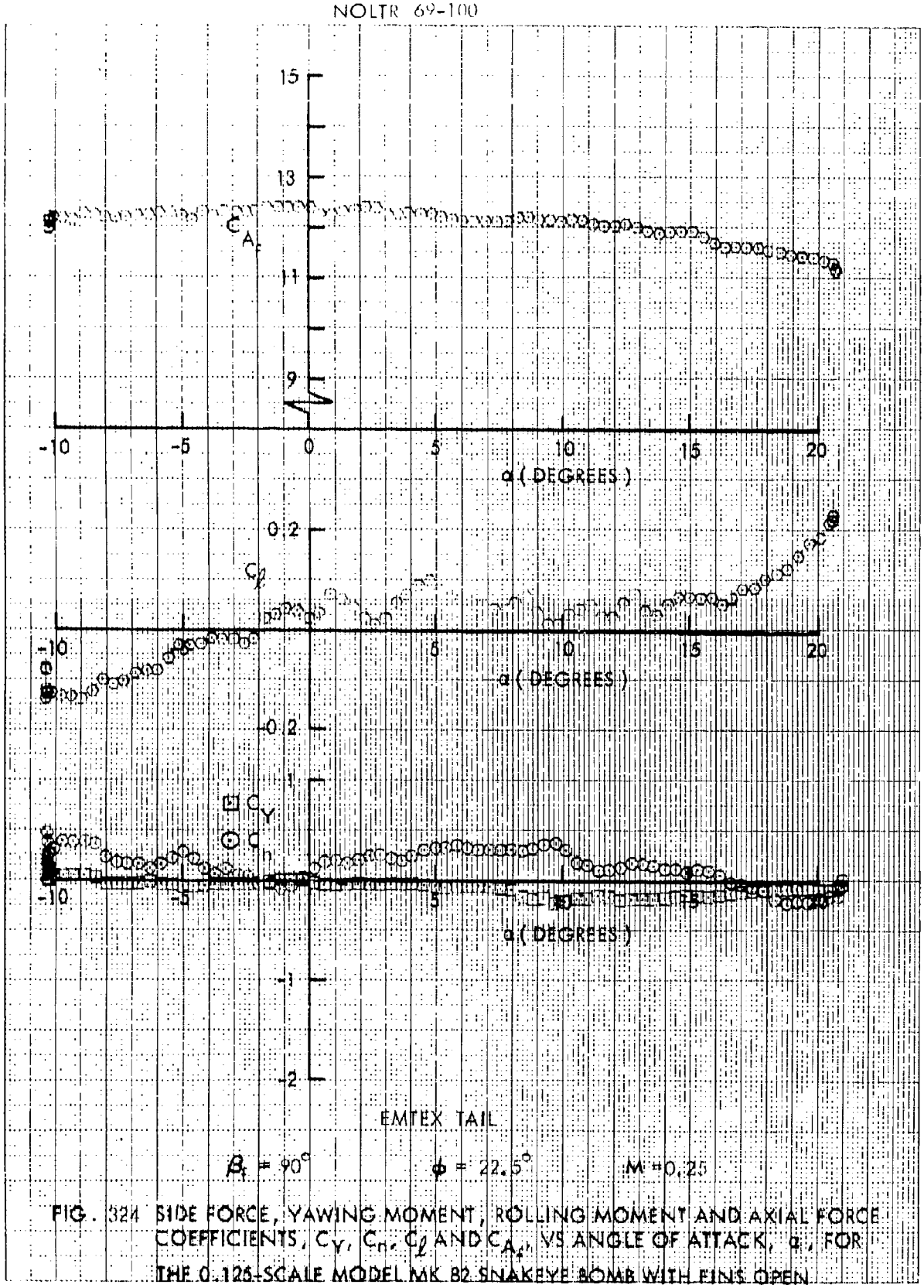


FIG. 324 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

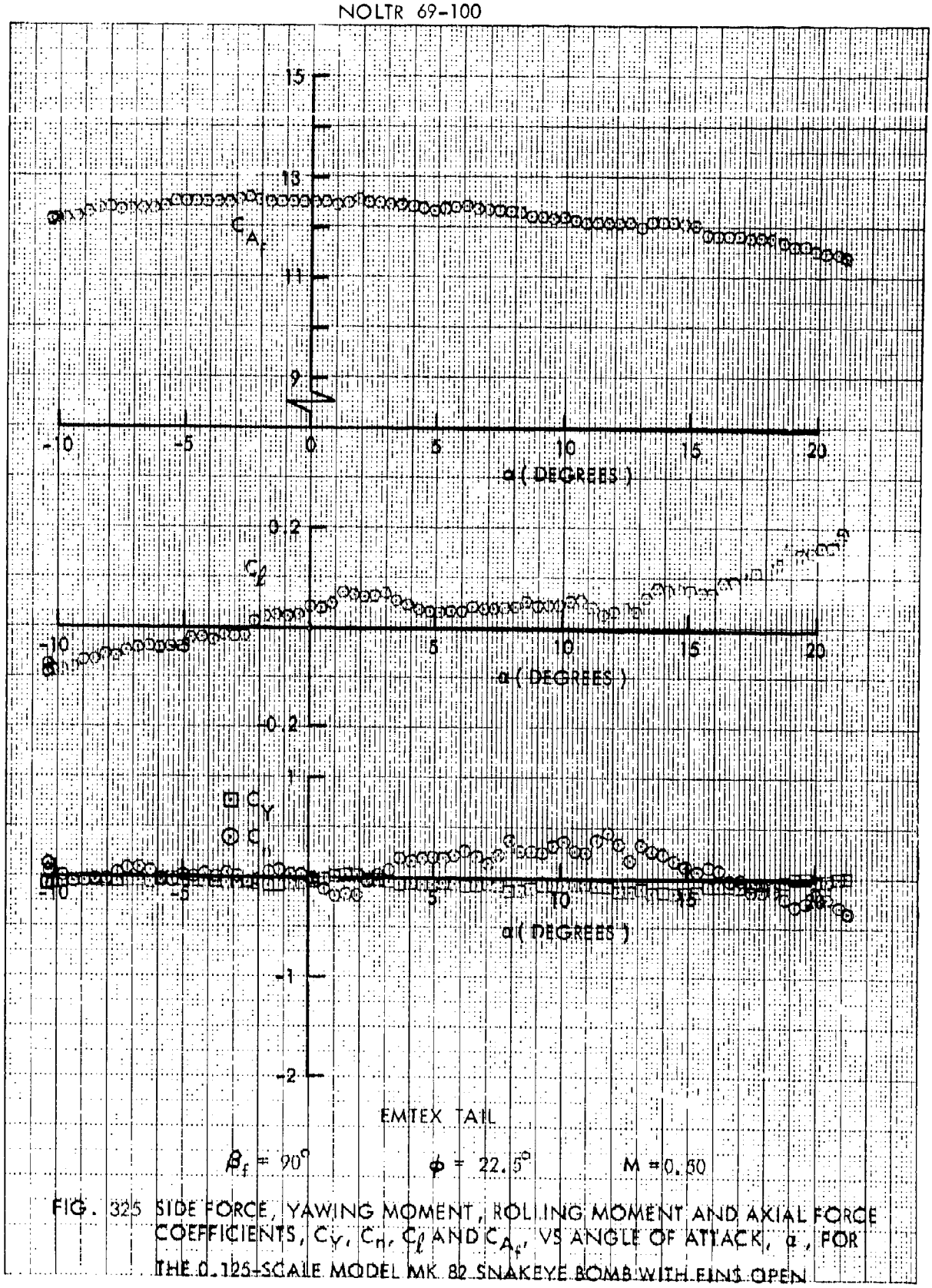


FIG. 325 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

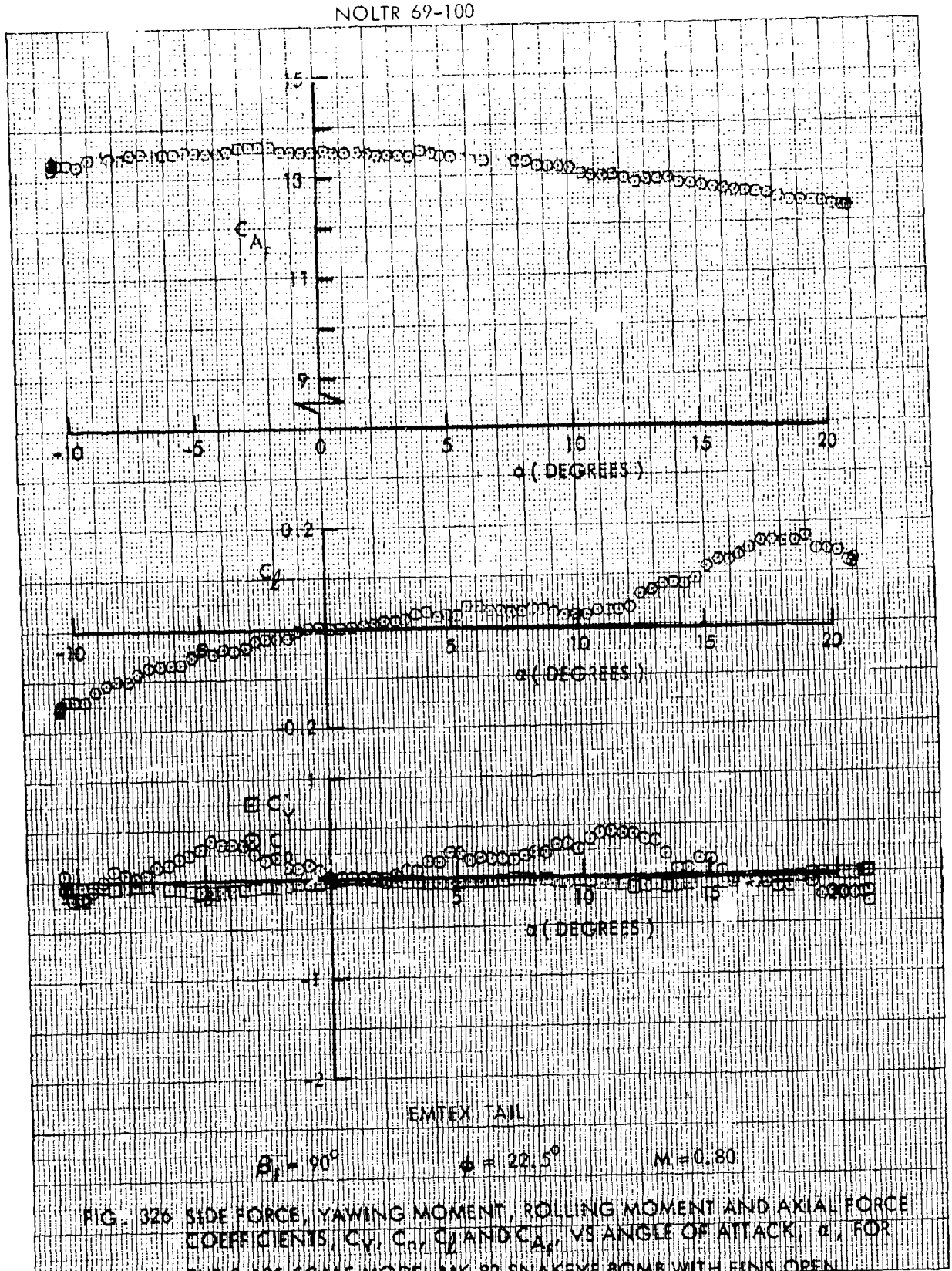


FIG. 326 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

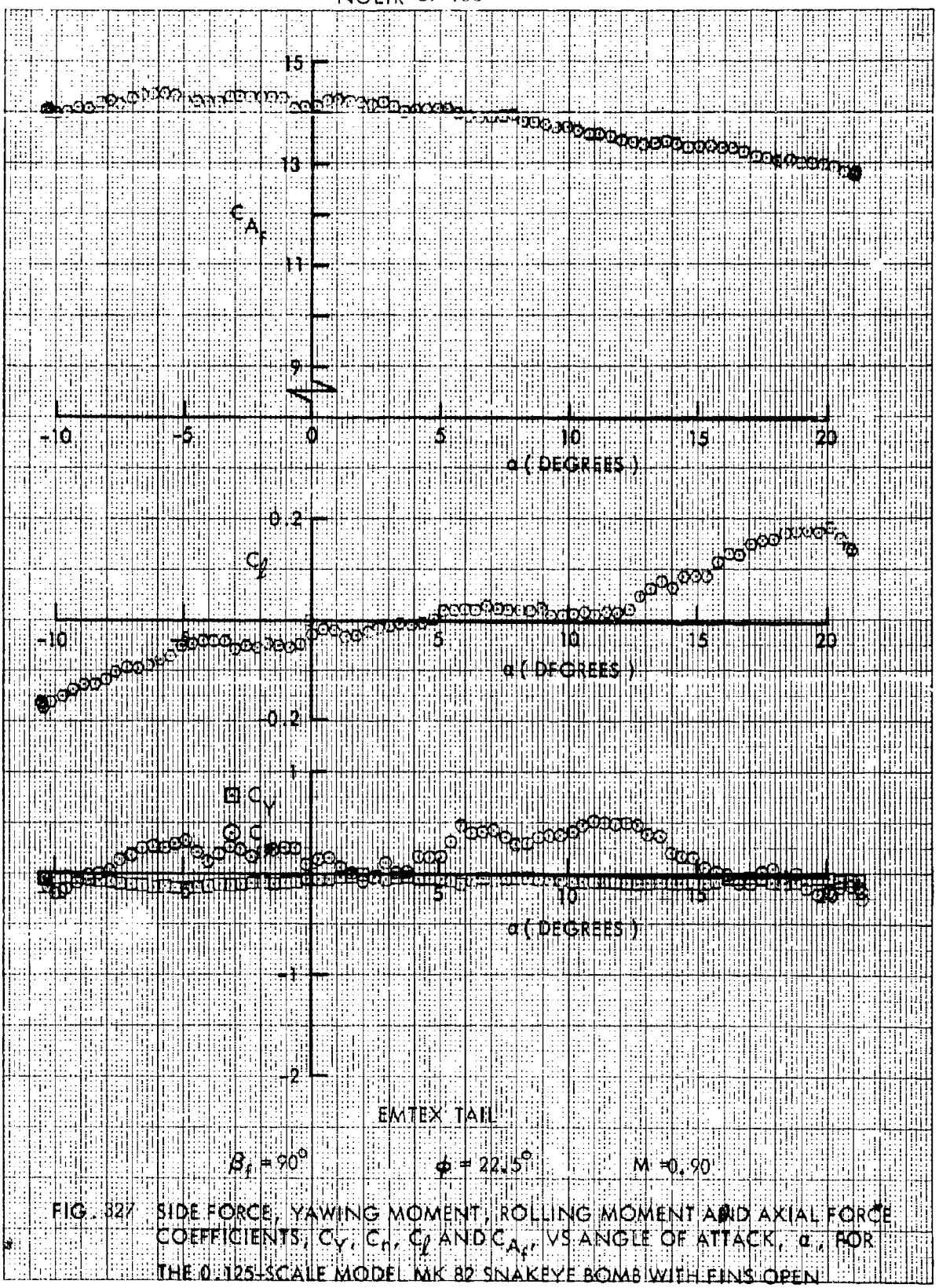


FIG. 327 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

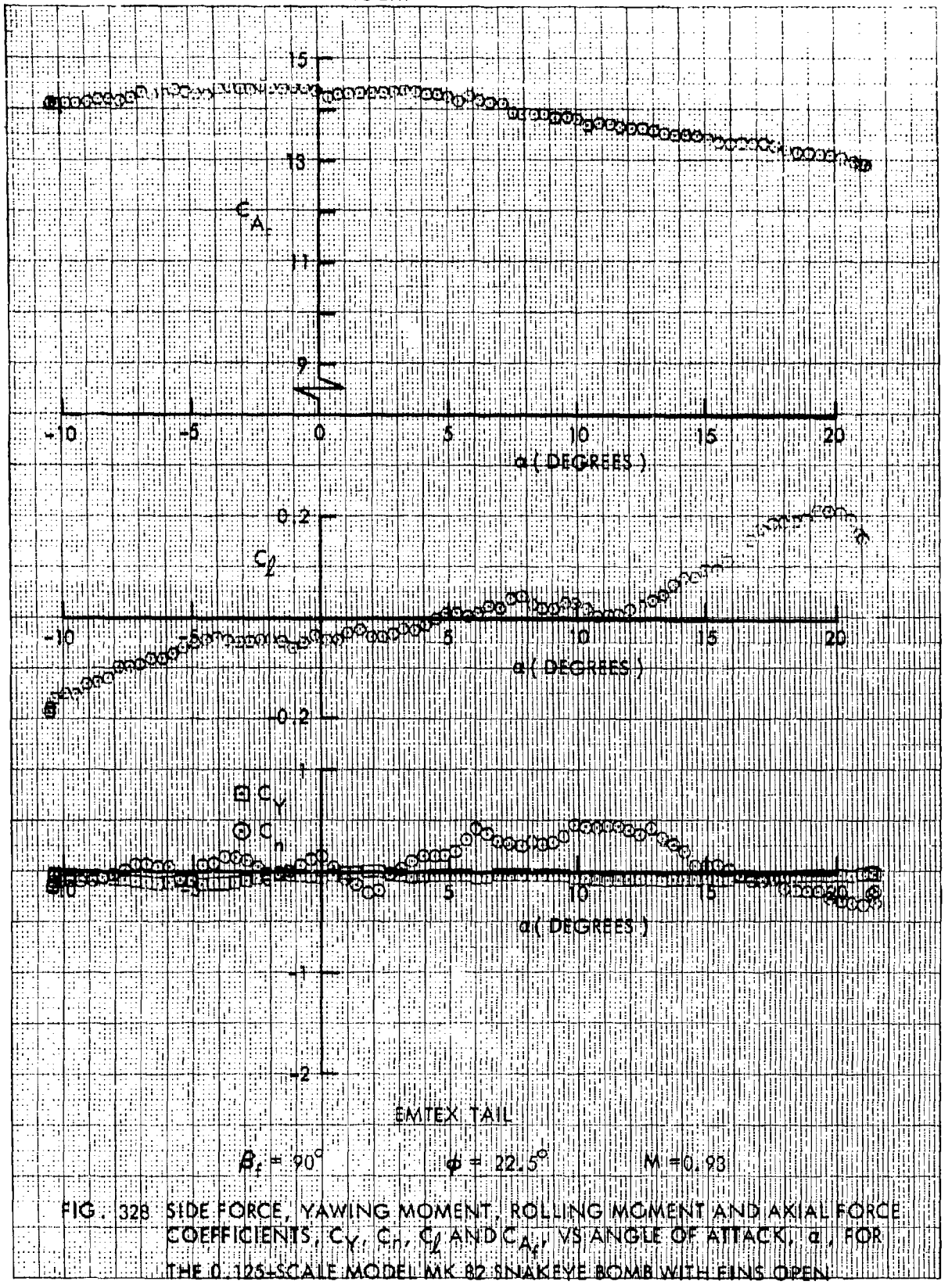


FIG. 328 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

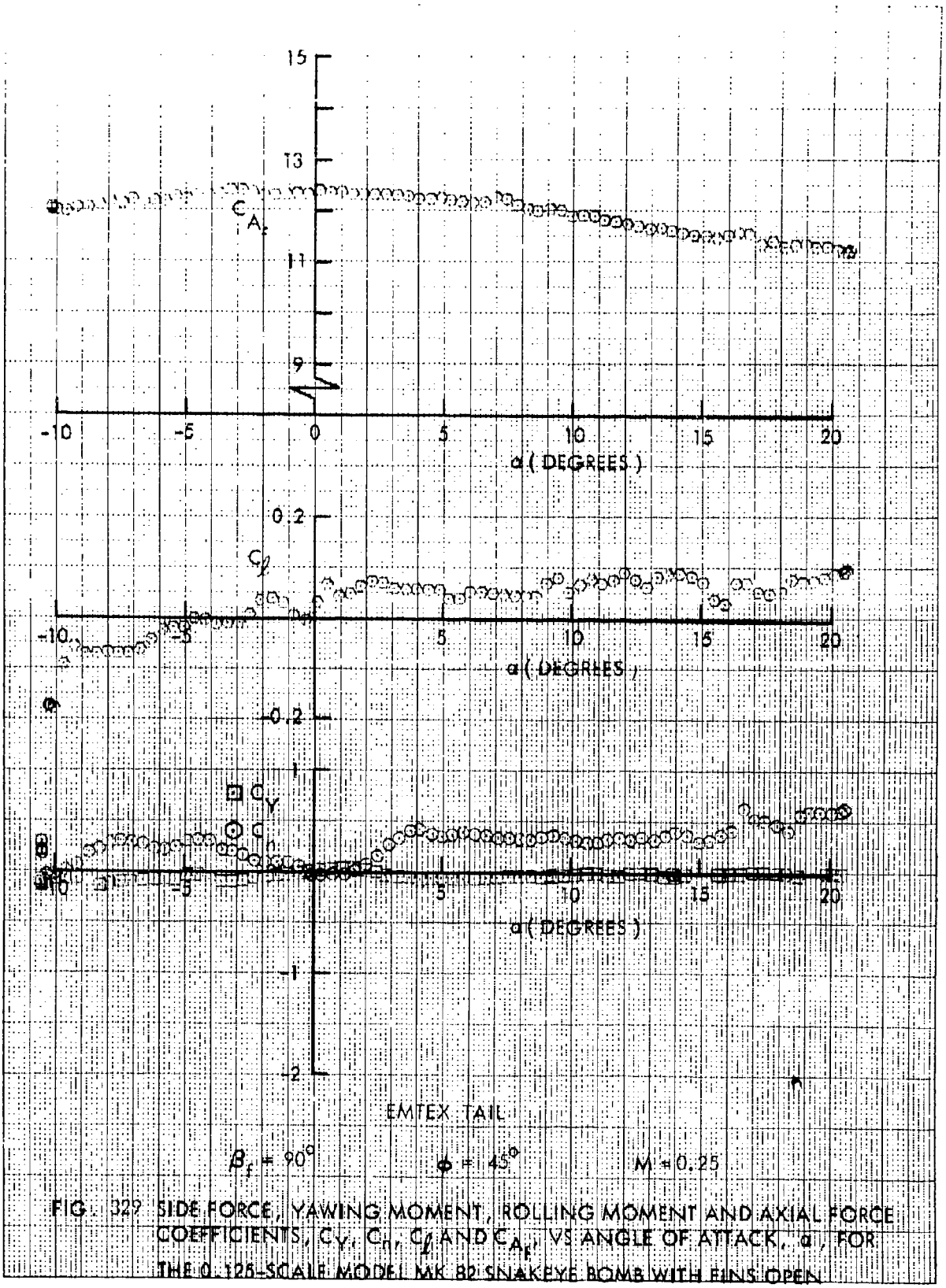


FIG. 329 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_t}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

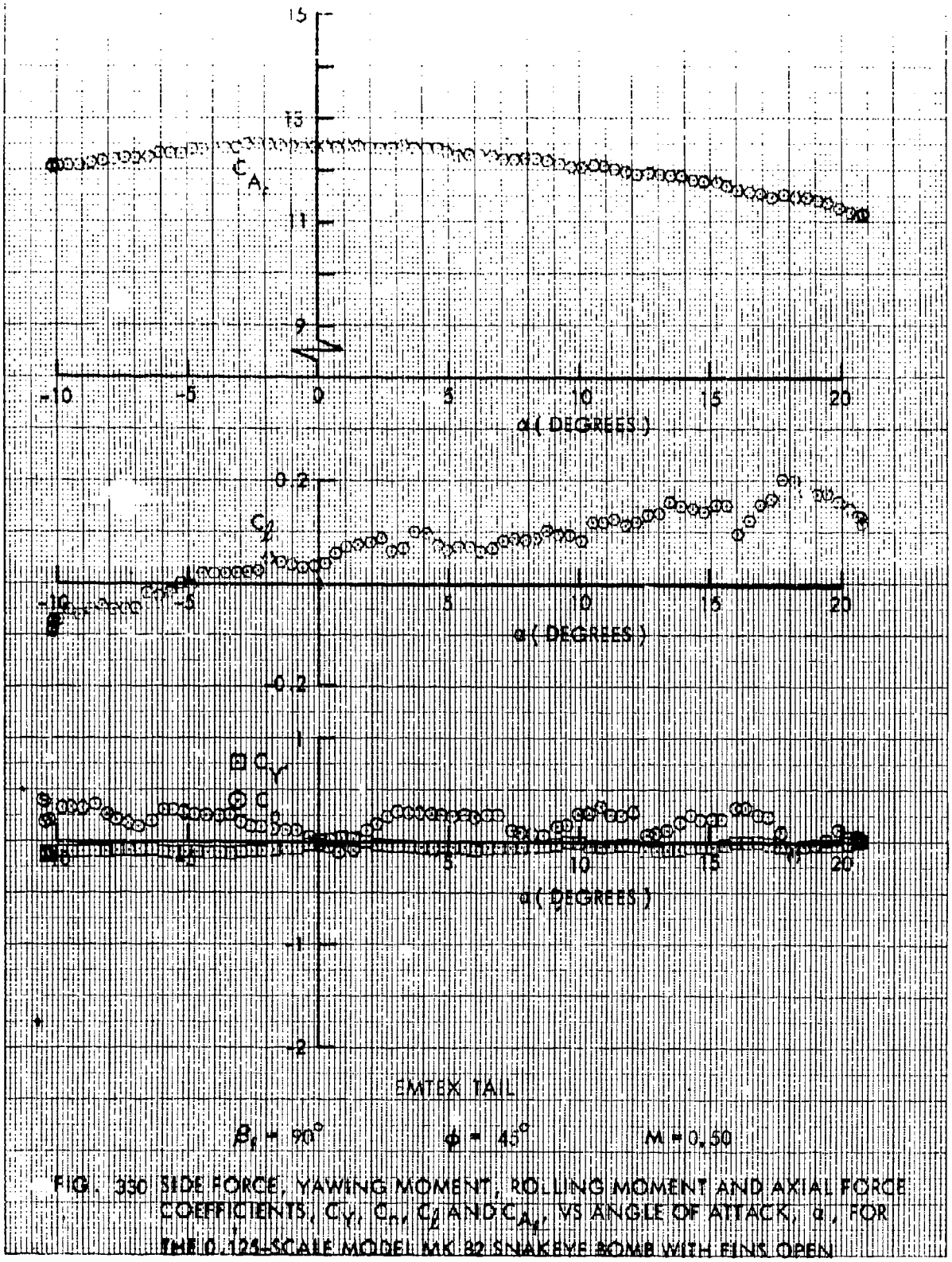


FIG. 330 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_{Y_β}, C_{n_β}, C_{l_β} AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.124-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

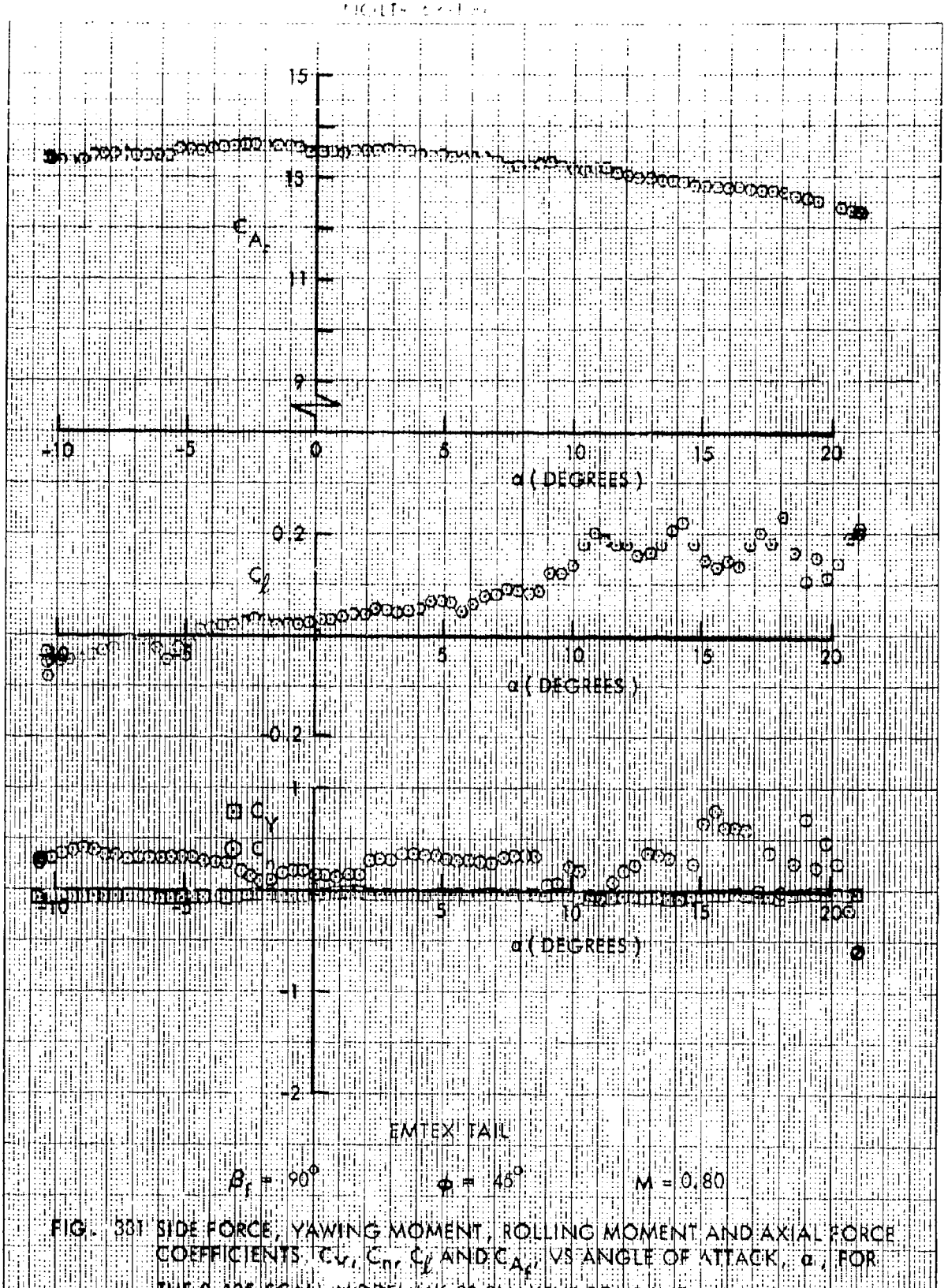


FIG. 331 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_{Y_f}, C_{n_f}, C_{ℓ_f} AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

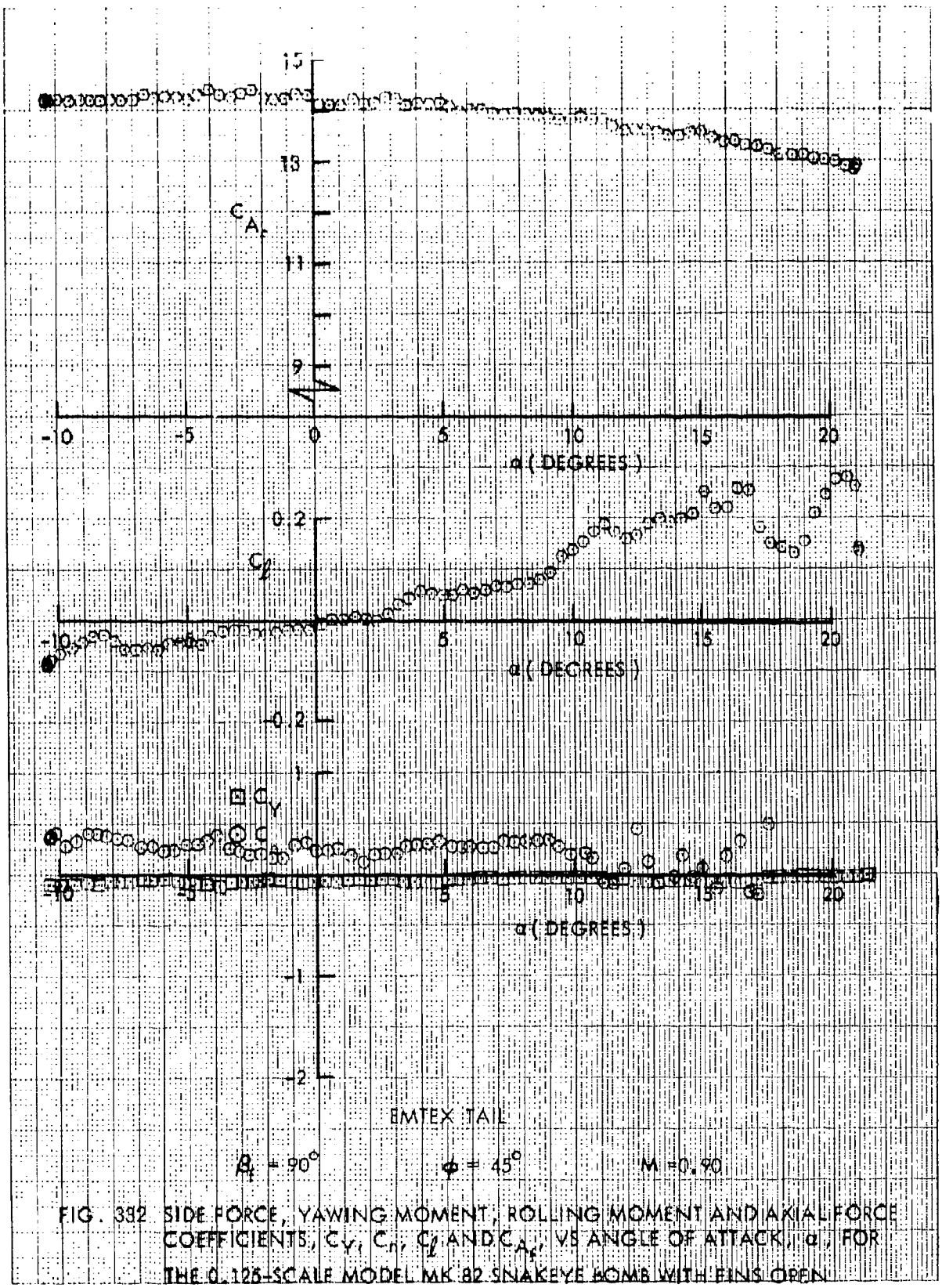


FIG. 332 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

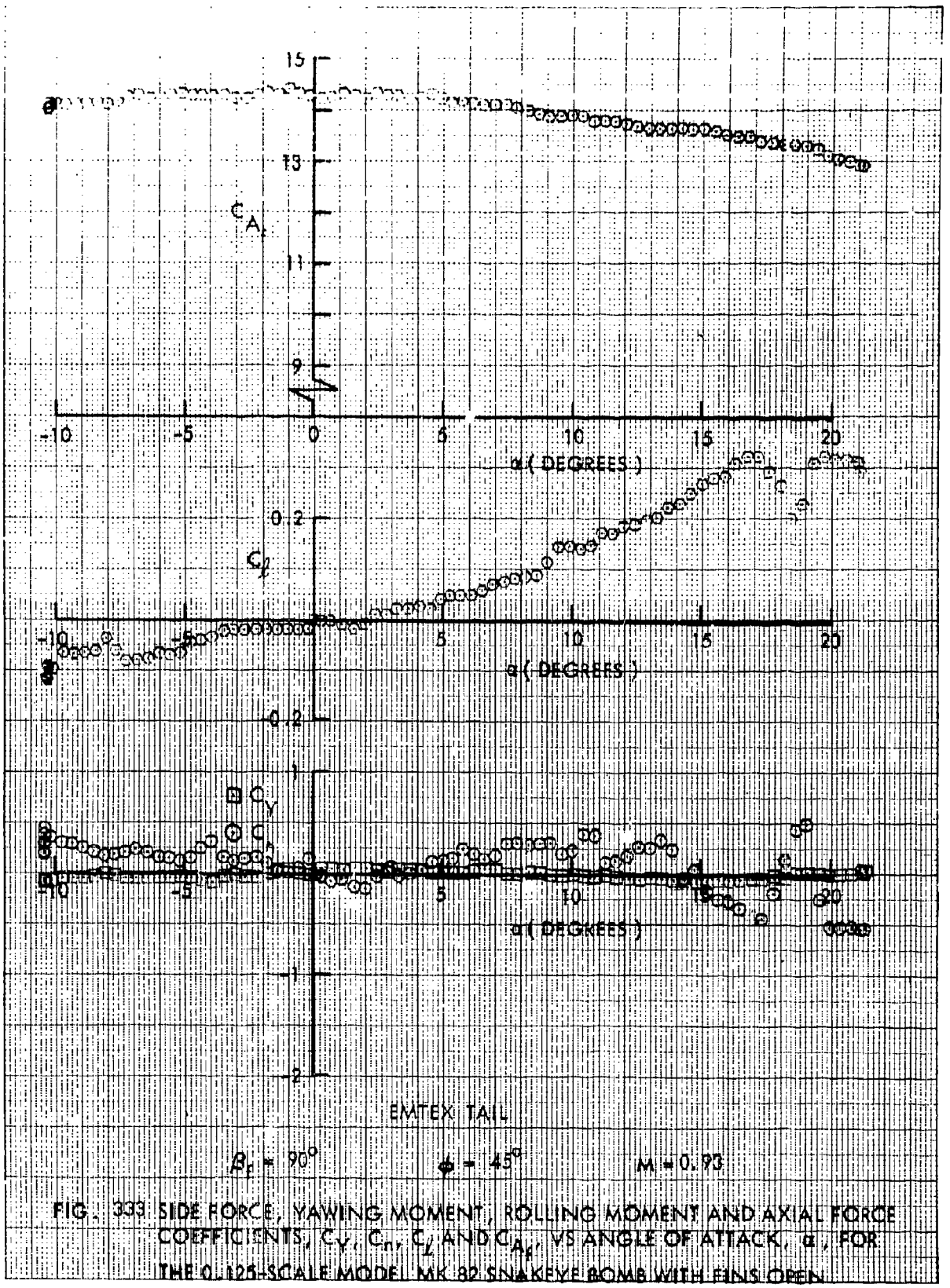


FIG. 333 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

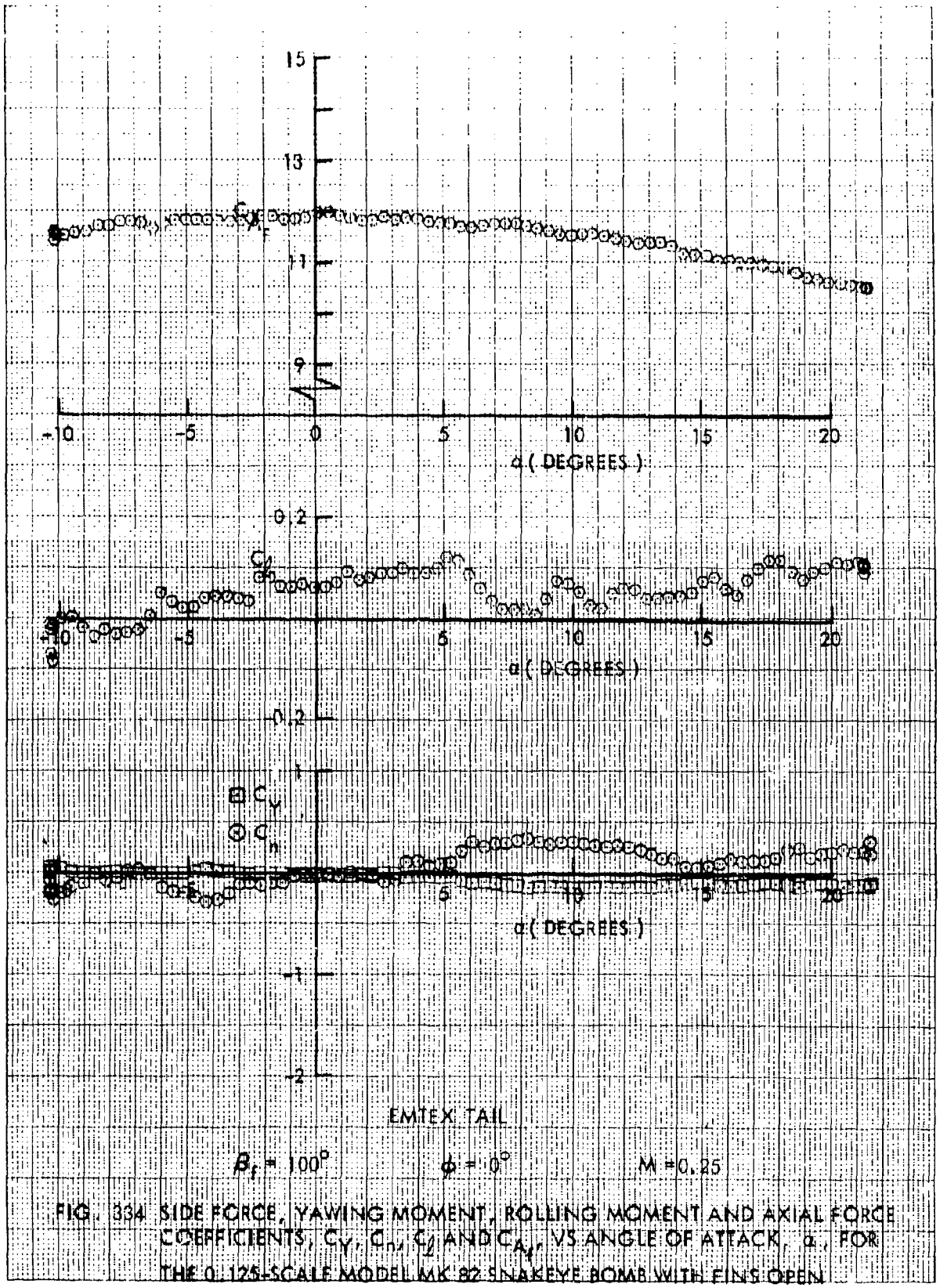


FIG. 334 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

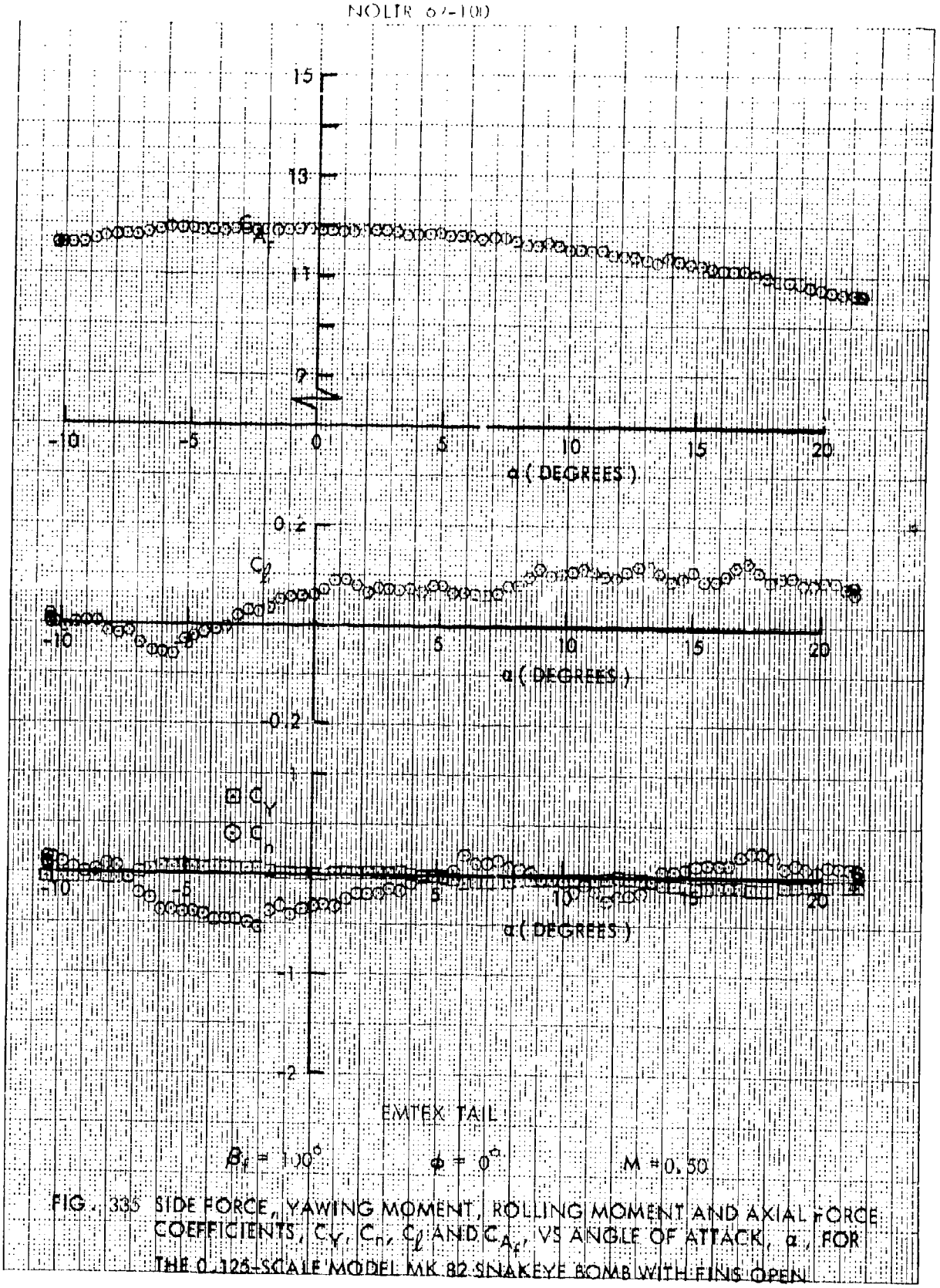


FIG. 335 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

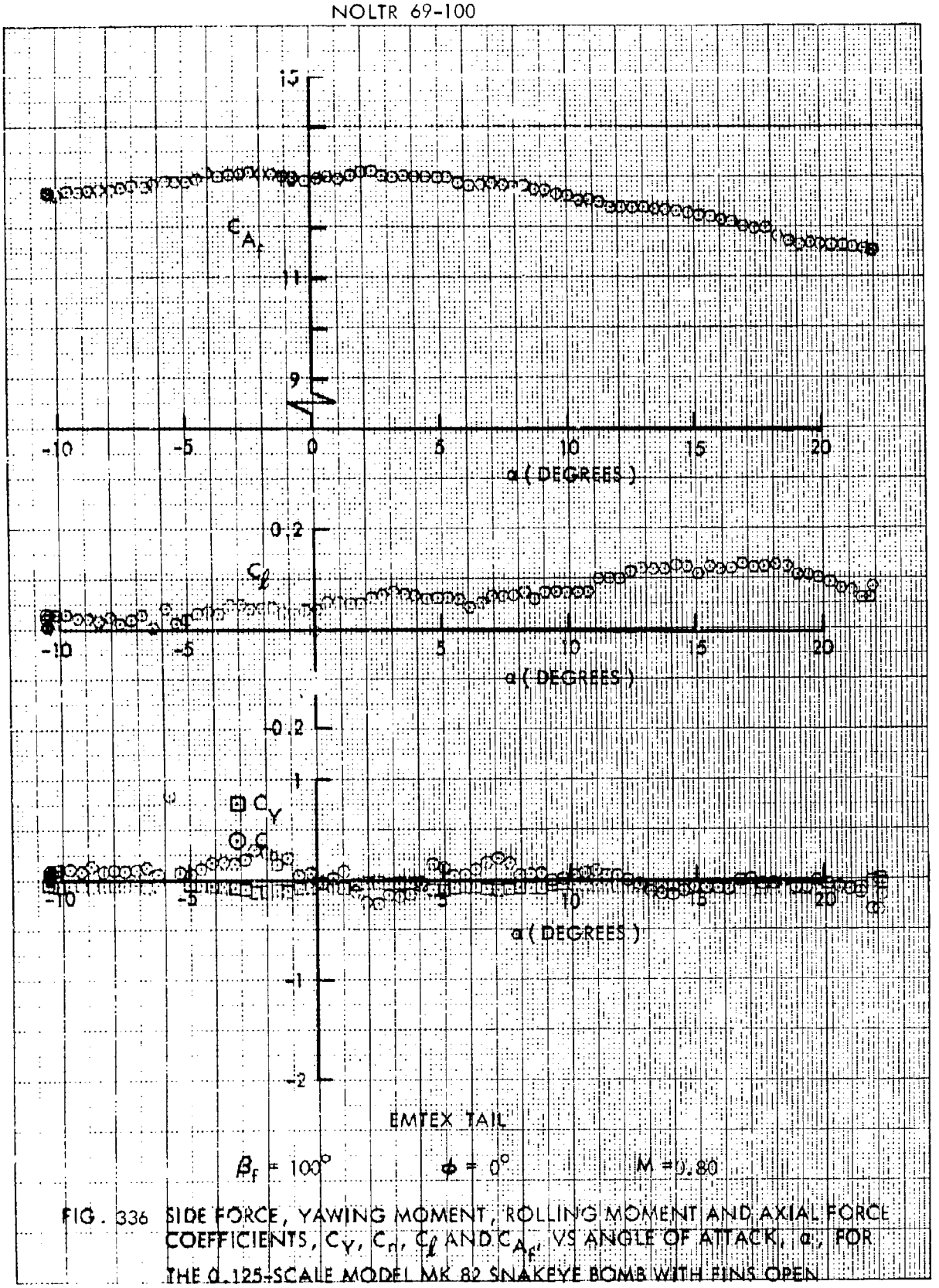


FIG. 336 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

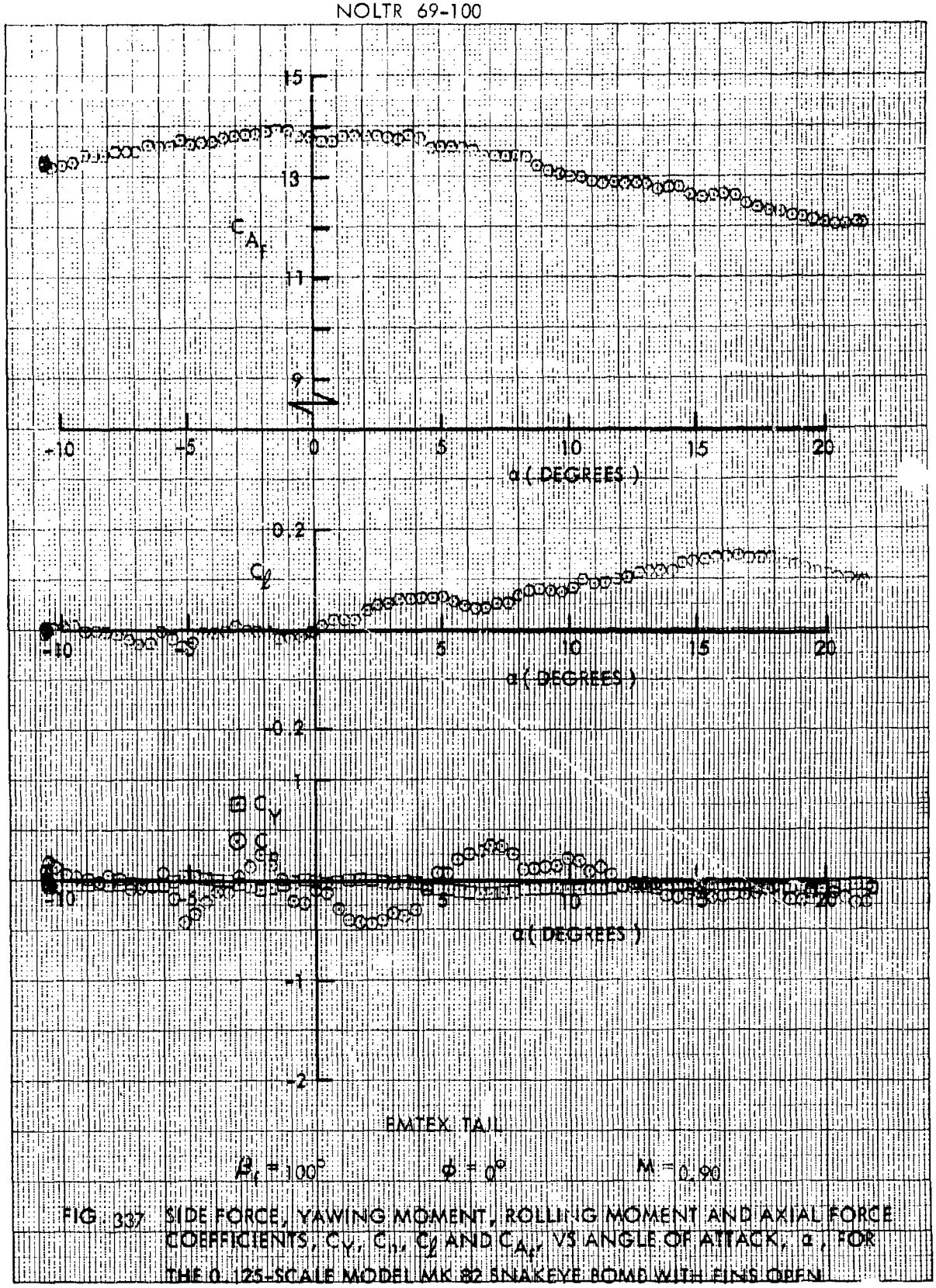


FIG. 337 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_{n_β}, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

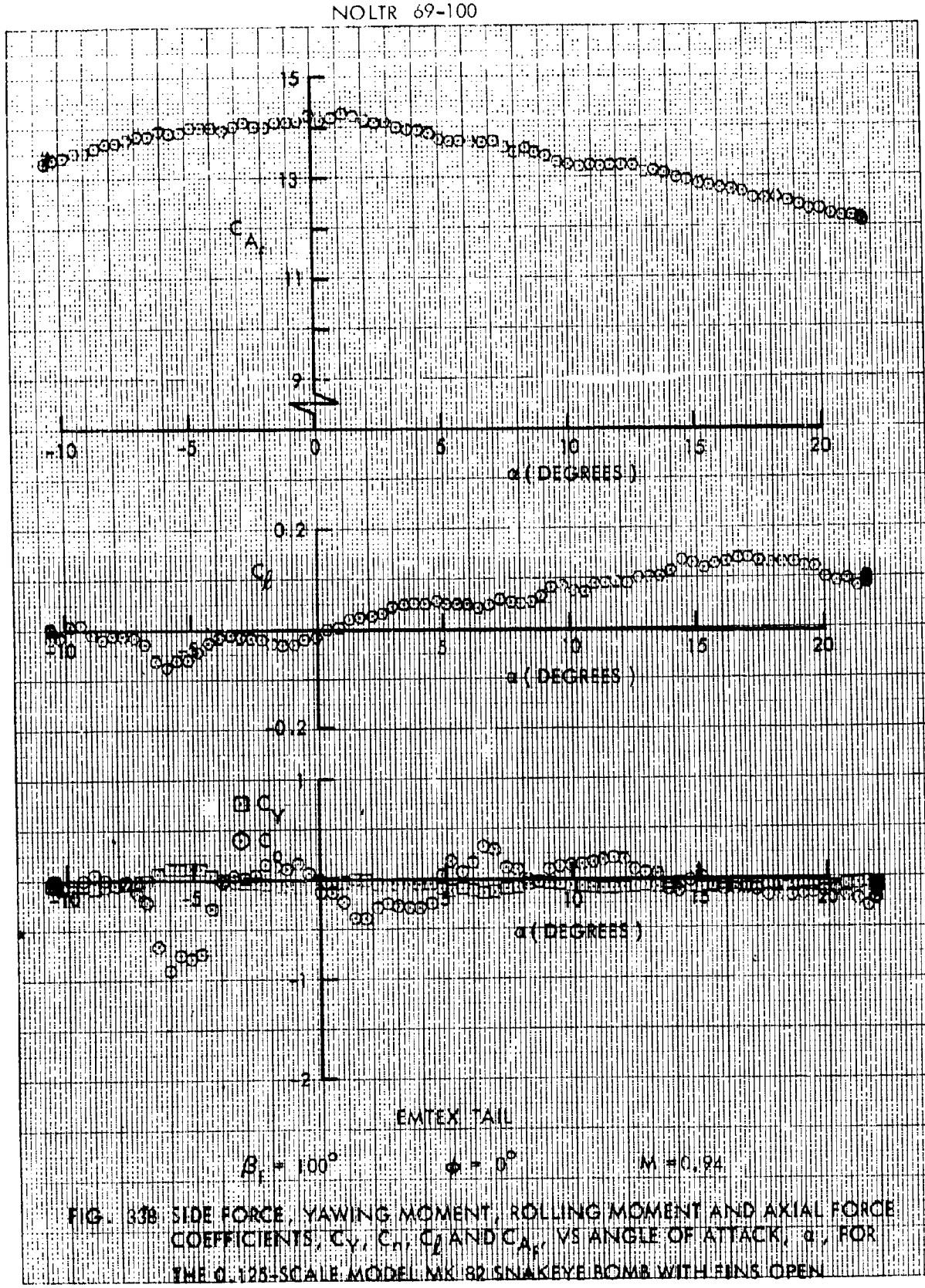


FIG. 338 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

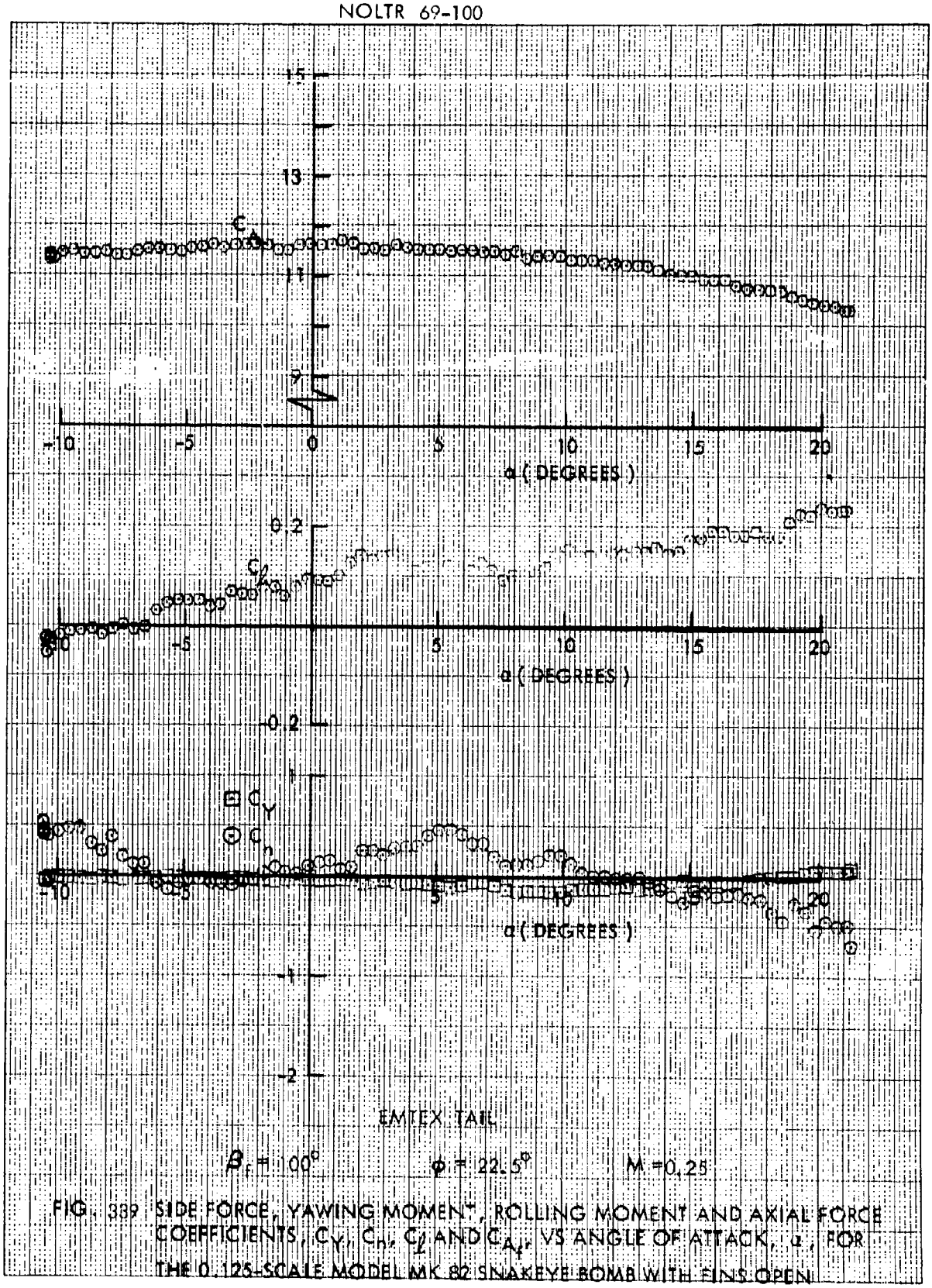


FIG. 389 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

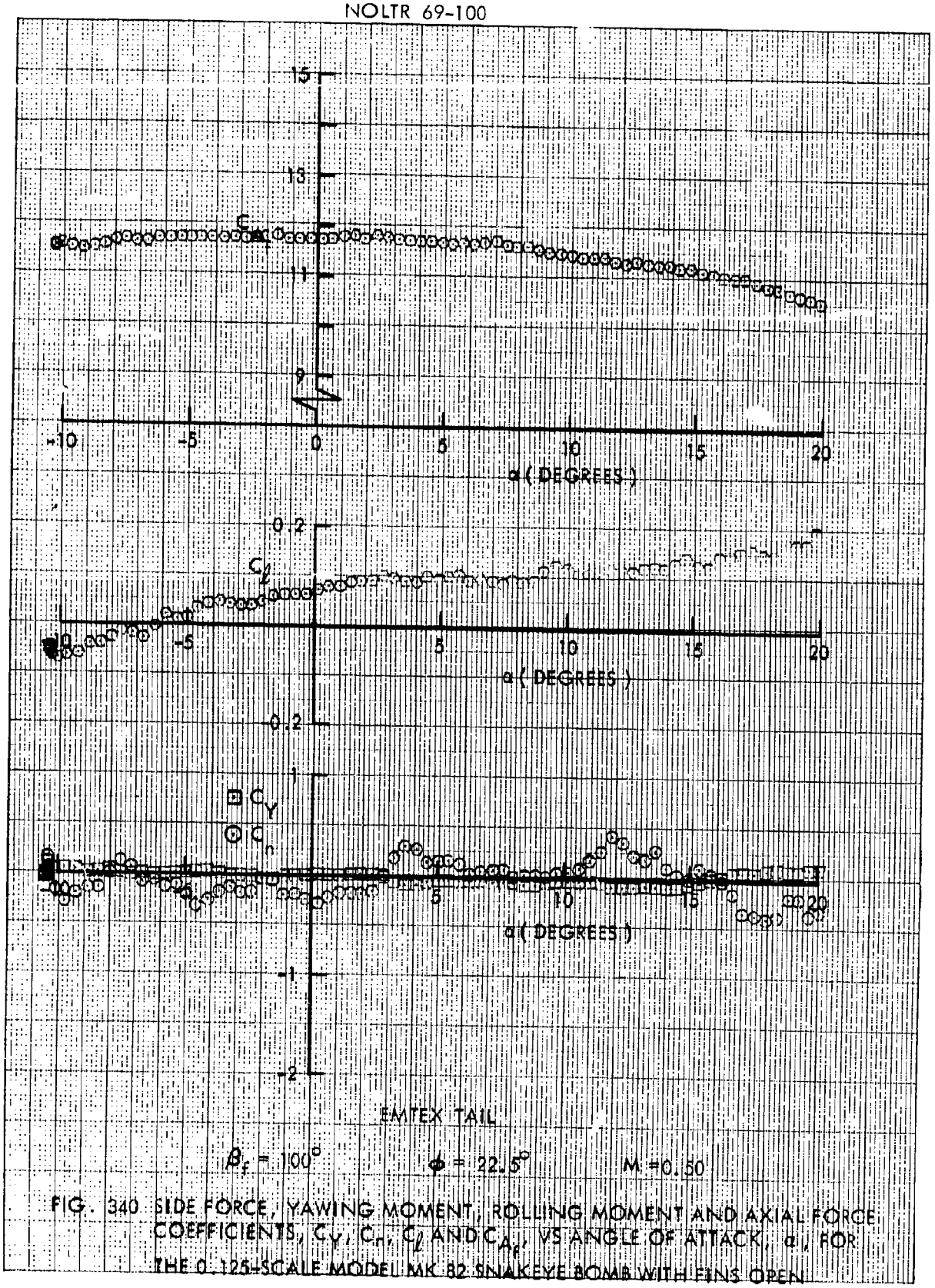


FIG. 340 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.126-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

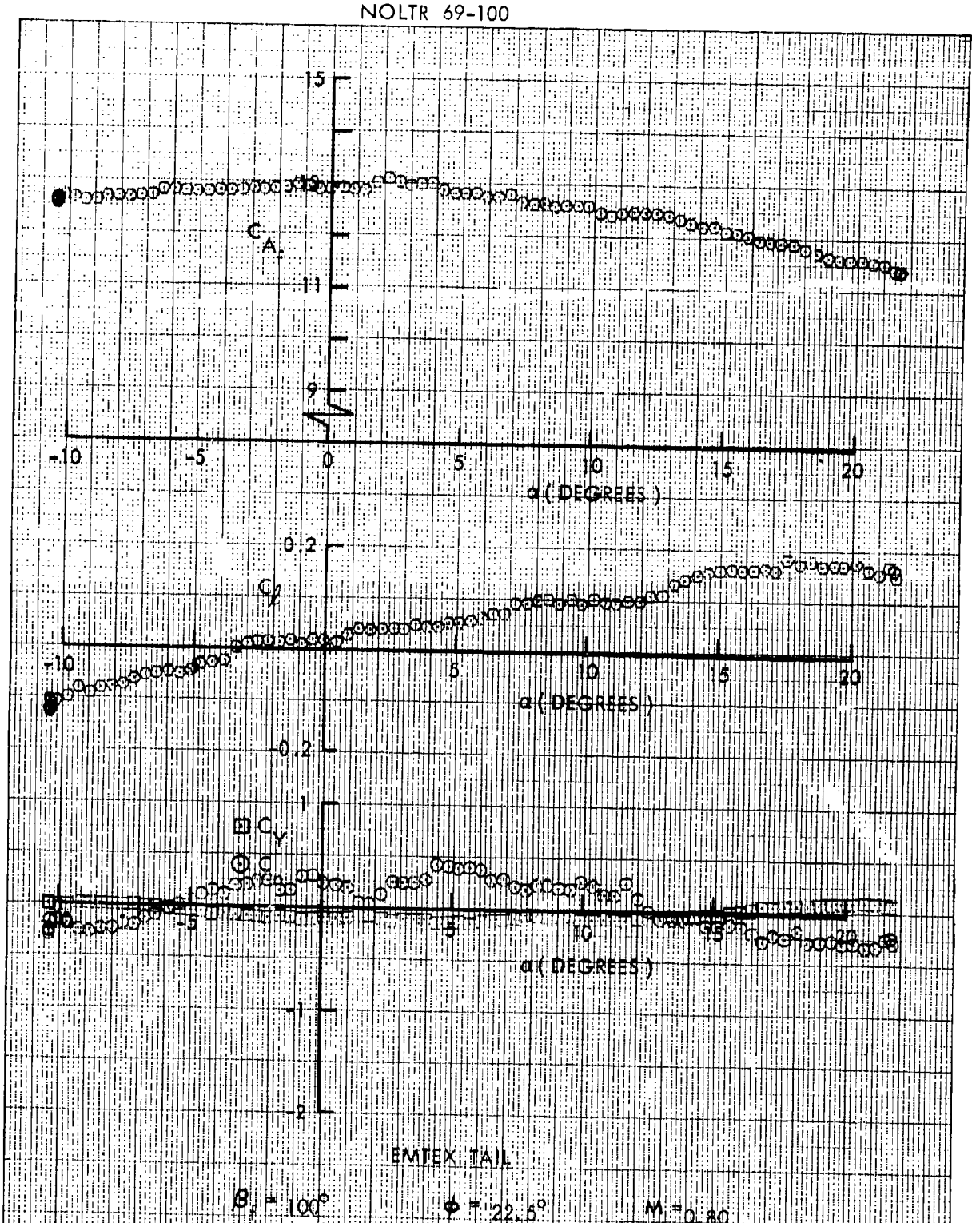


FIG. 341 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

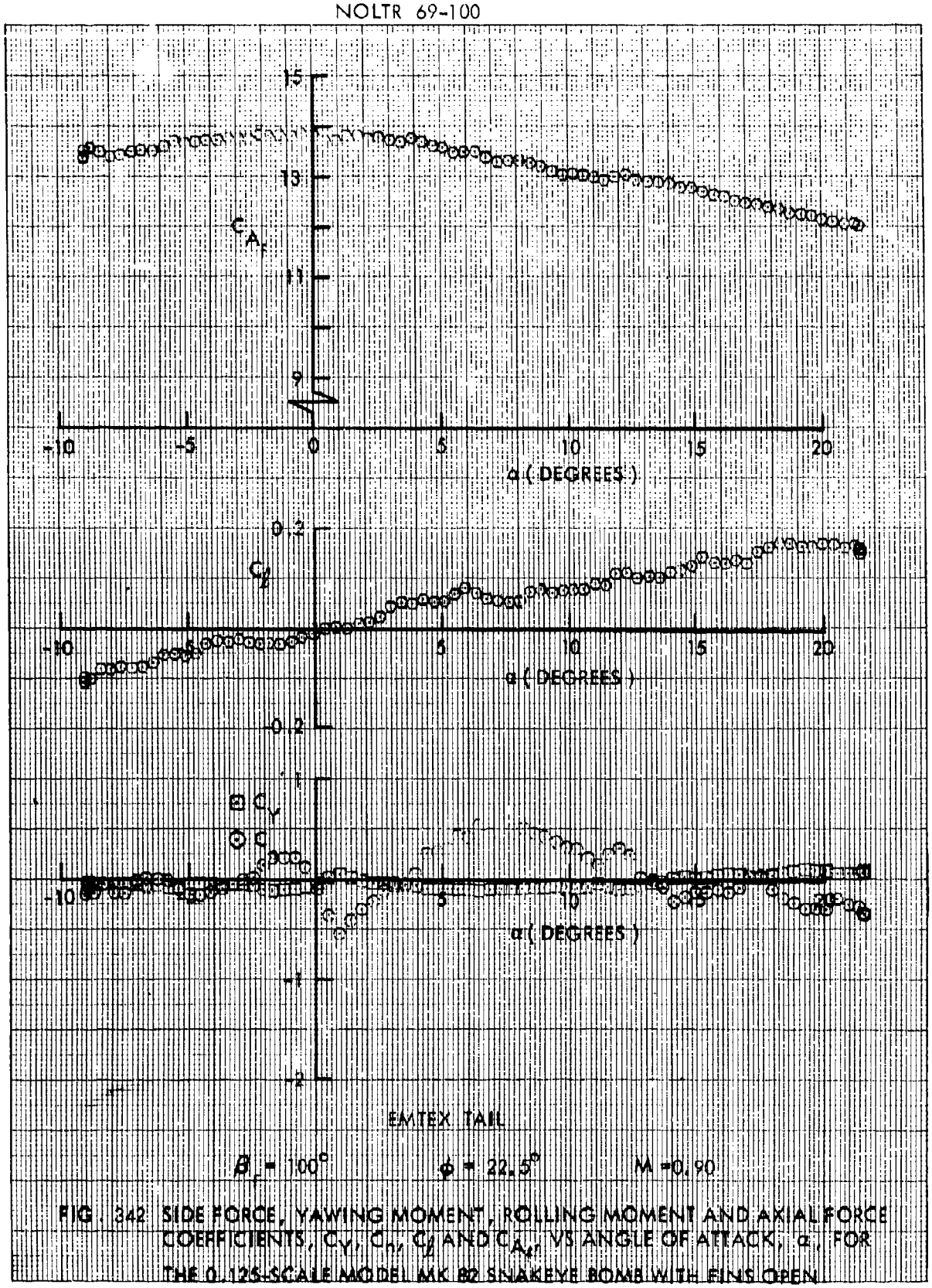


FIG. 342 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_F} VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

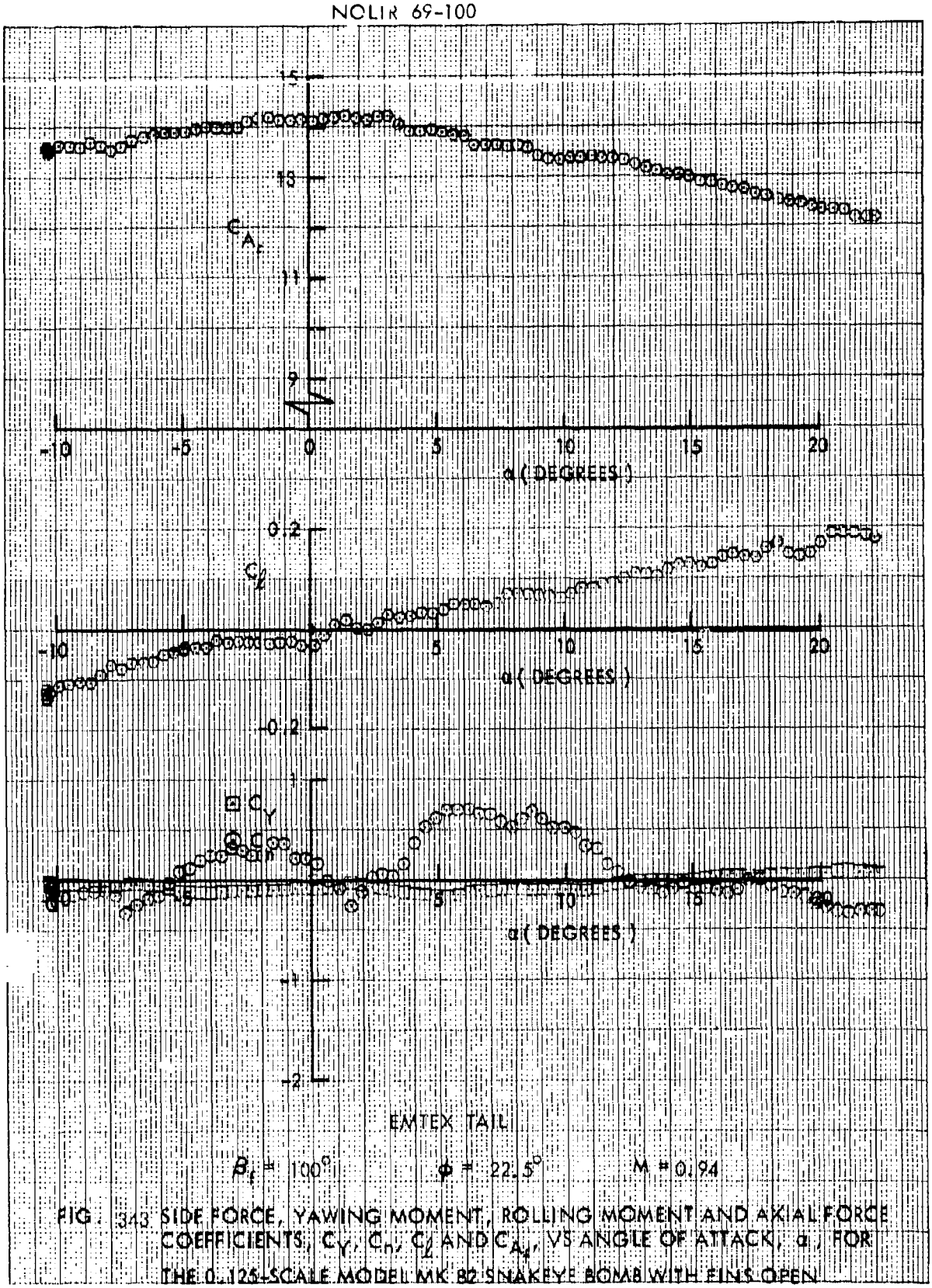


FIG. 313 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

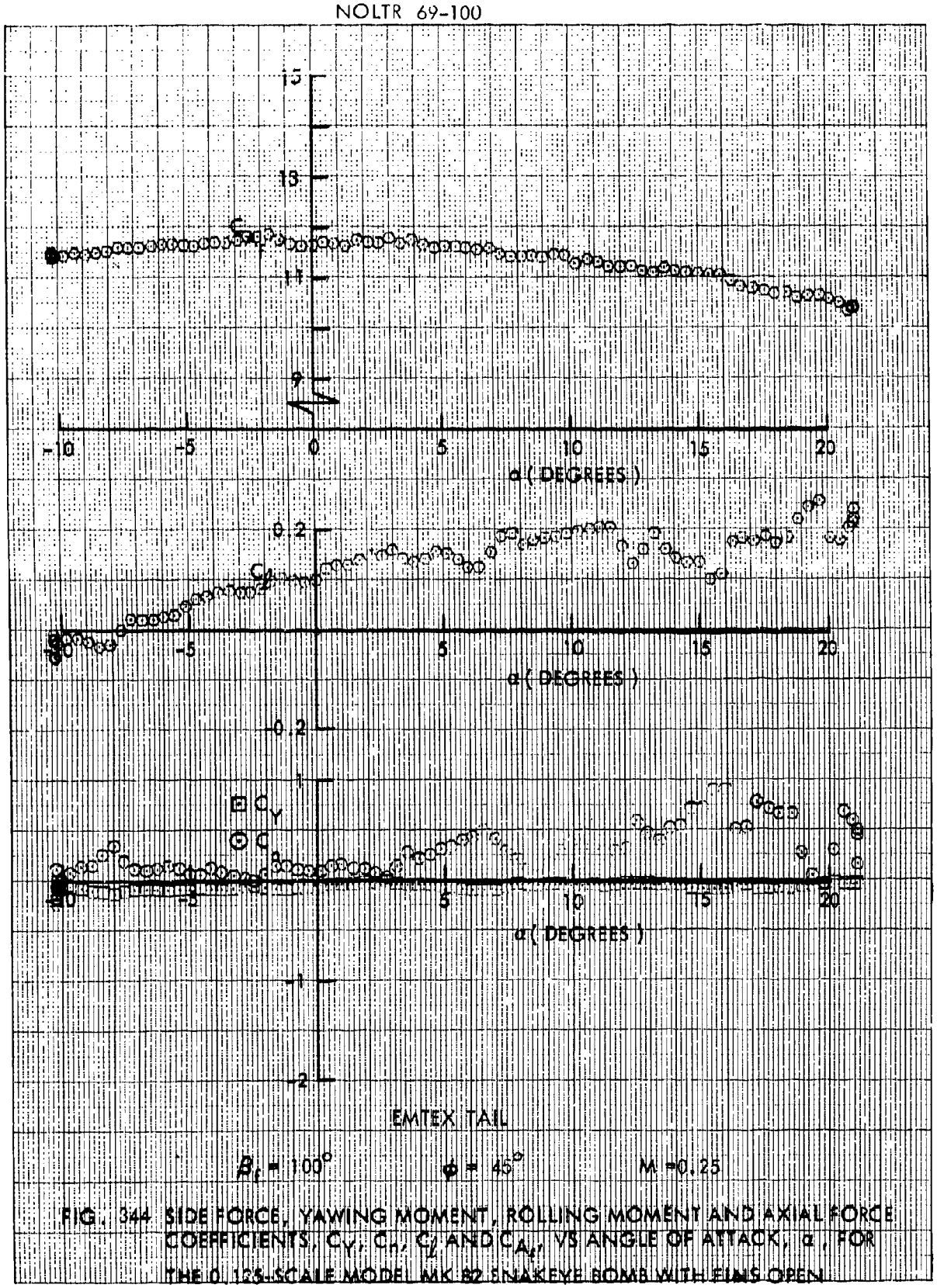


FIG. 344 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

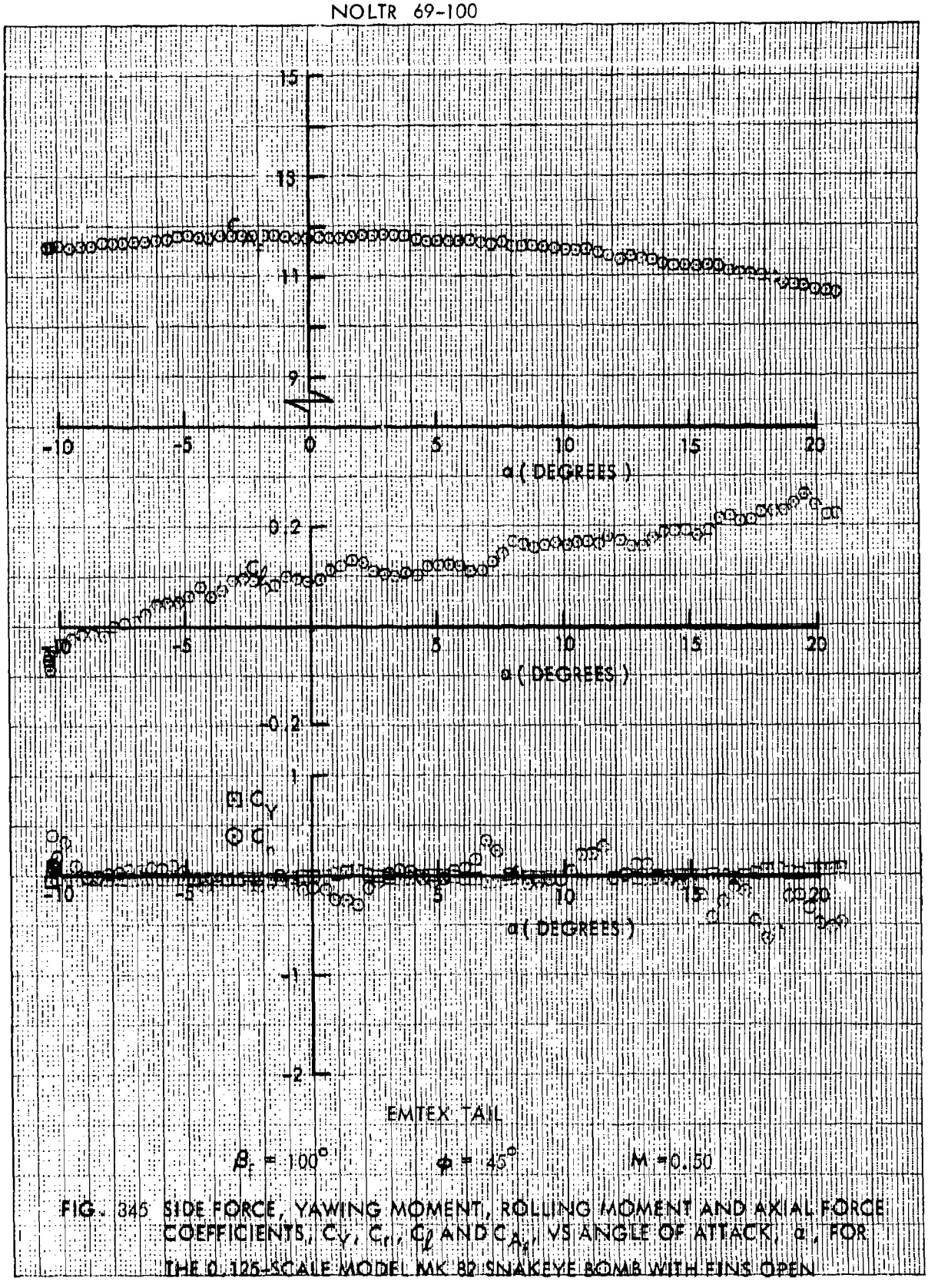


FIG. 345 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_1}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

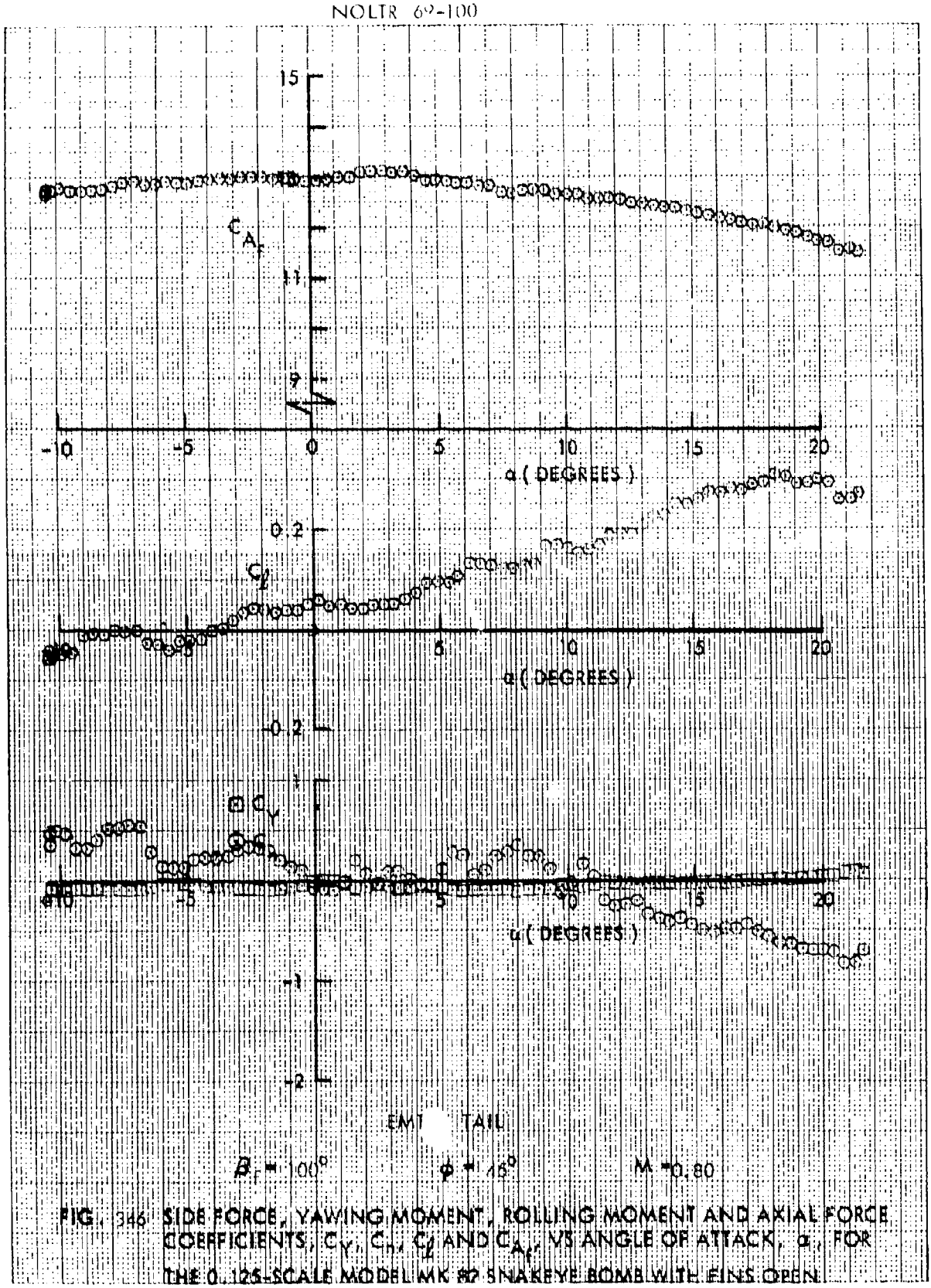


FIG. 346 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK #2 SNAKEYE BOMB WITH FINS OPEN

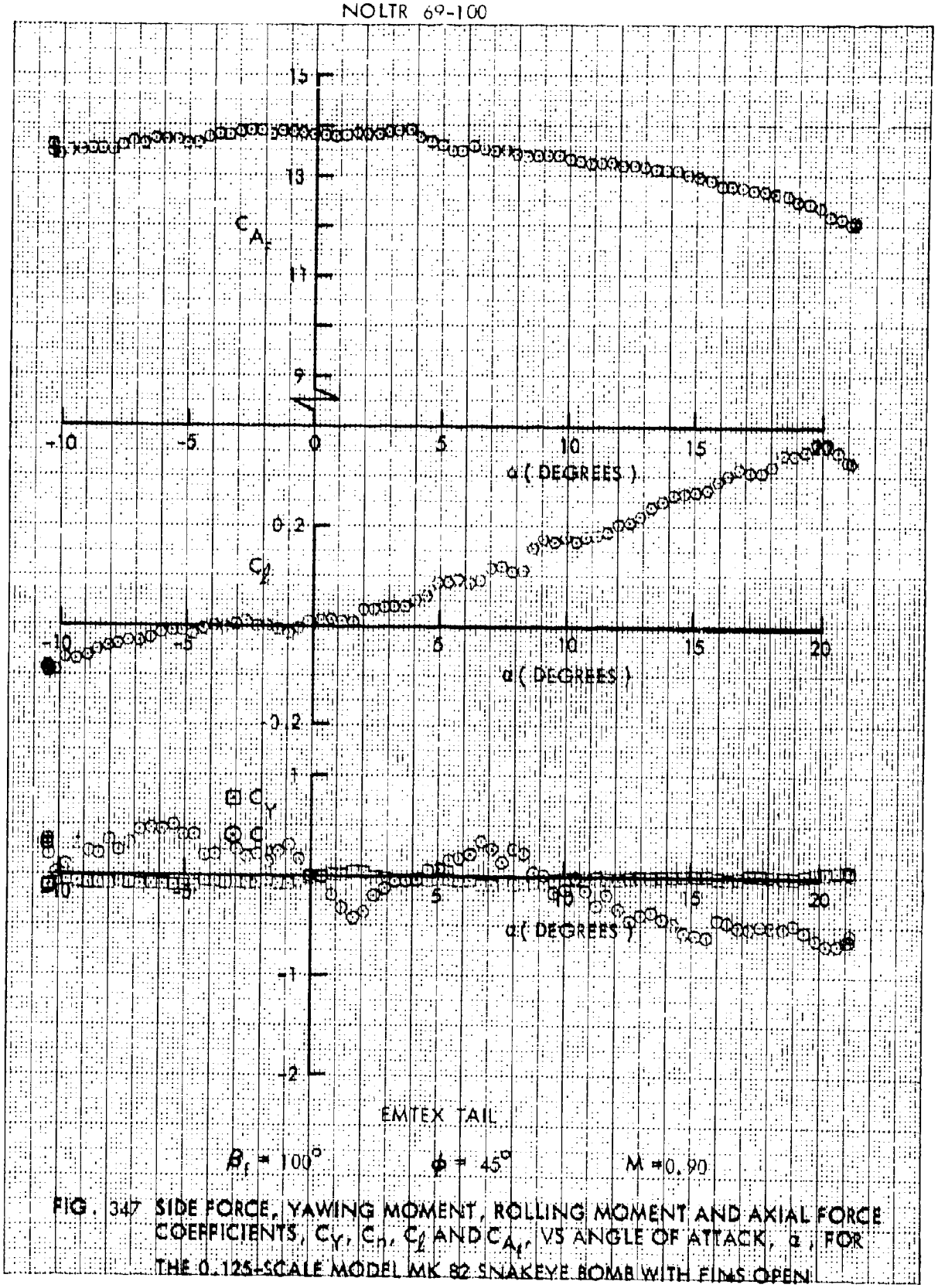


FIG. 347 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

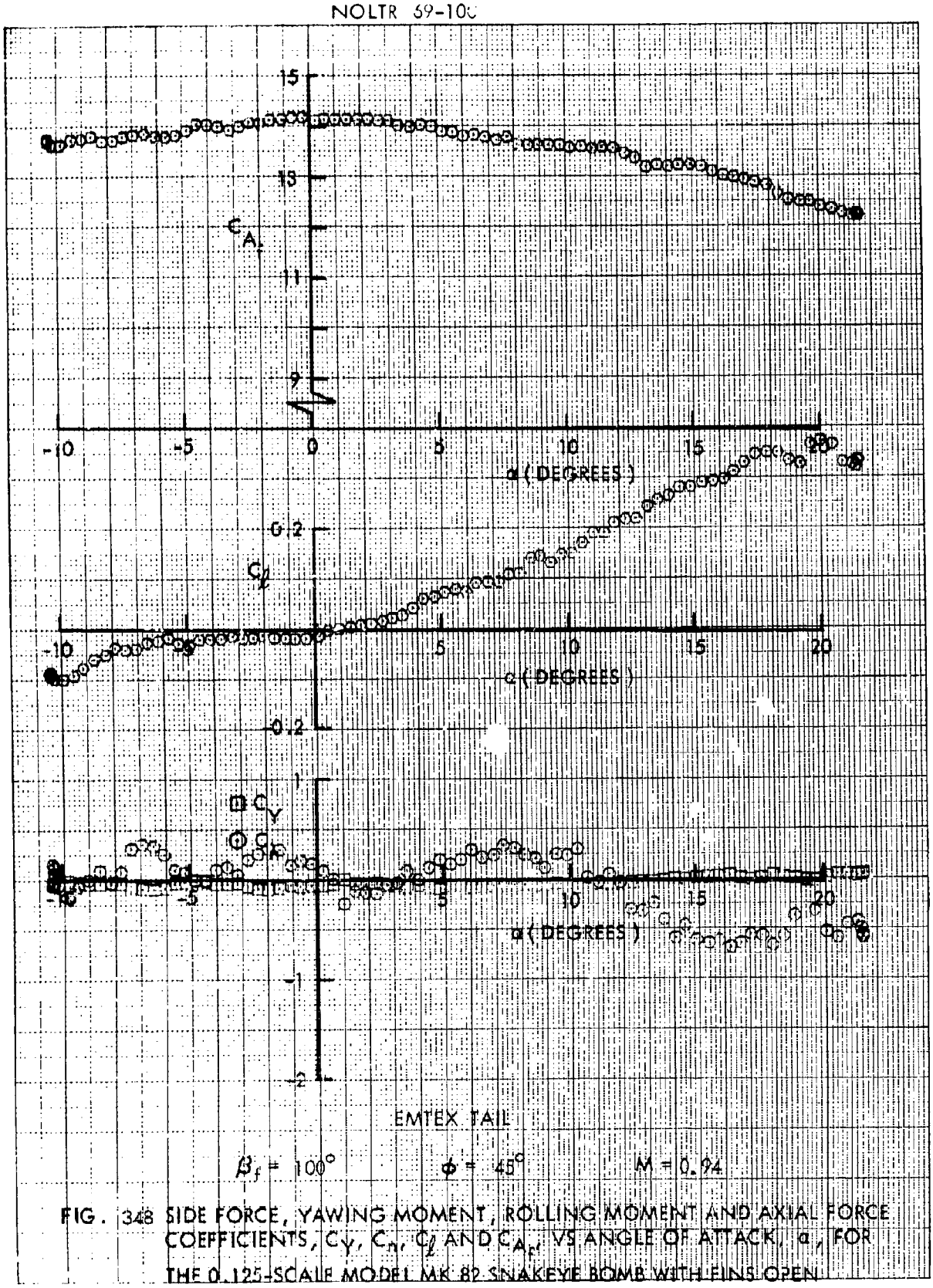


FIG. 348 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

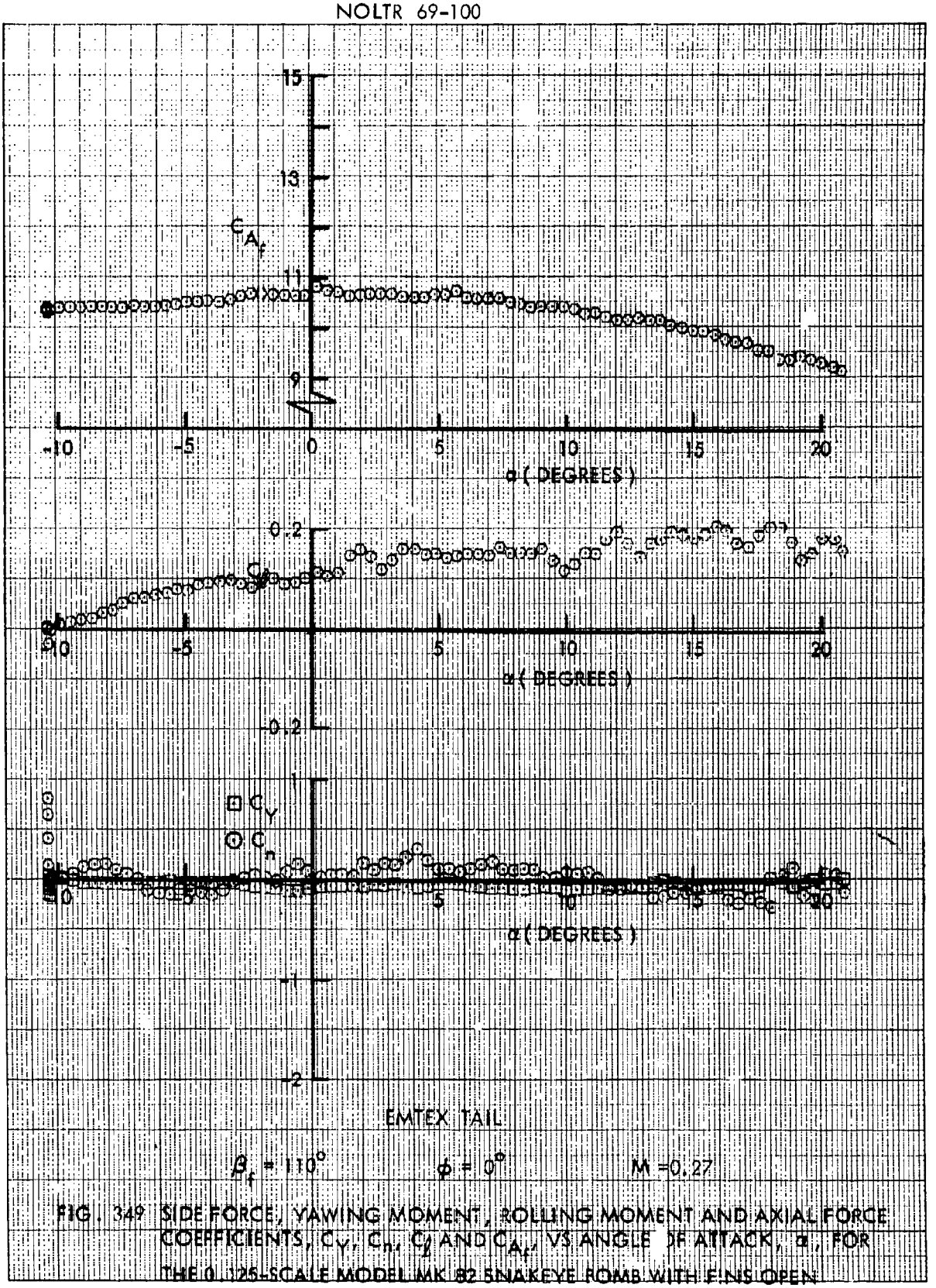


FIG. 349 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

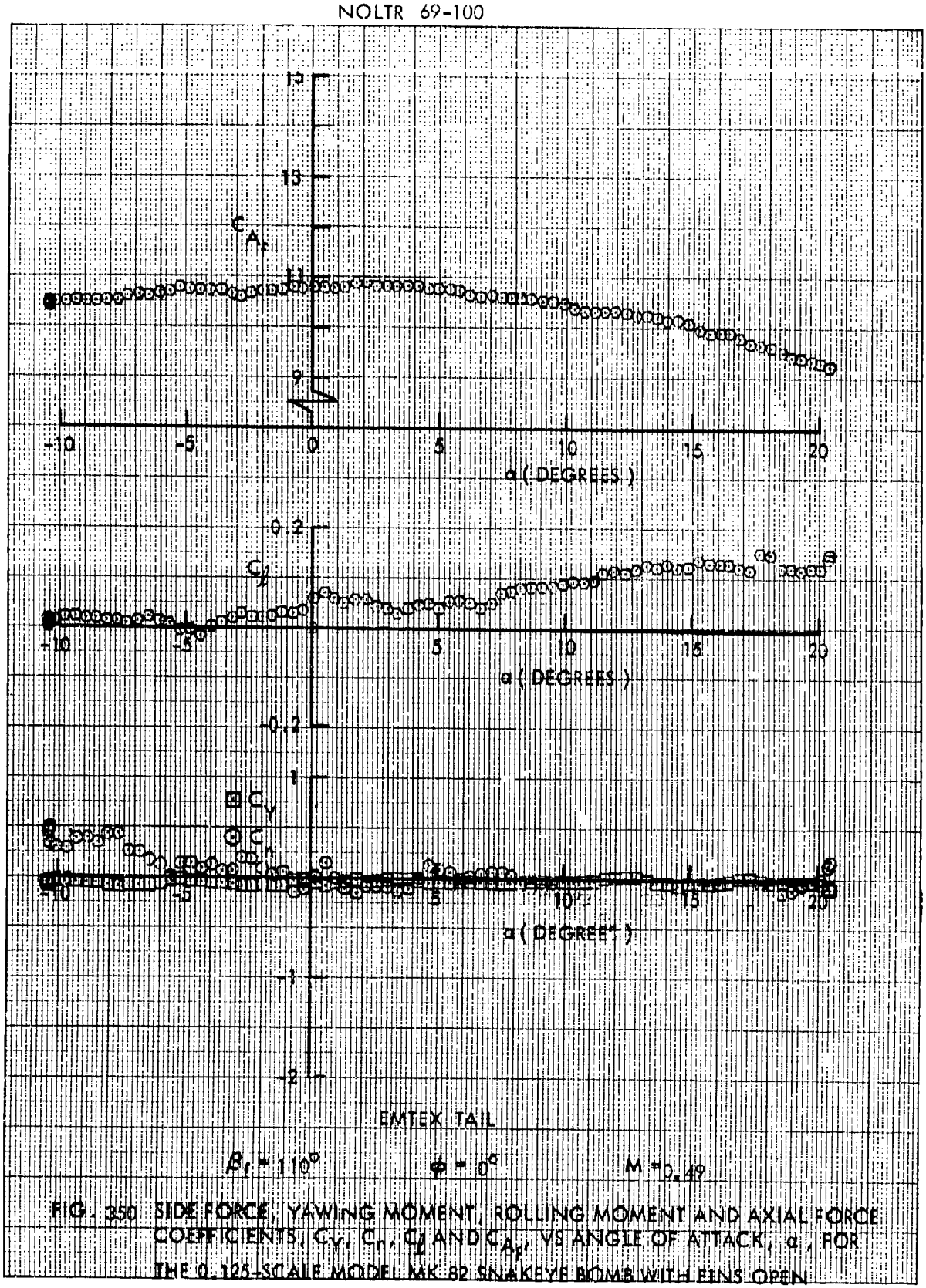


FIG. 350 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

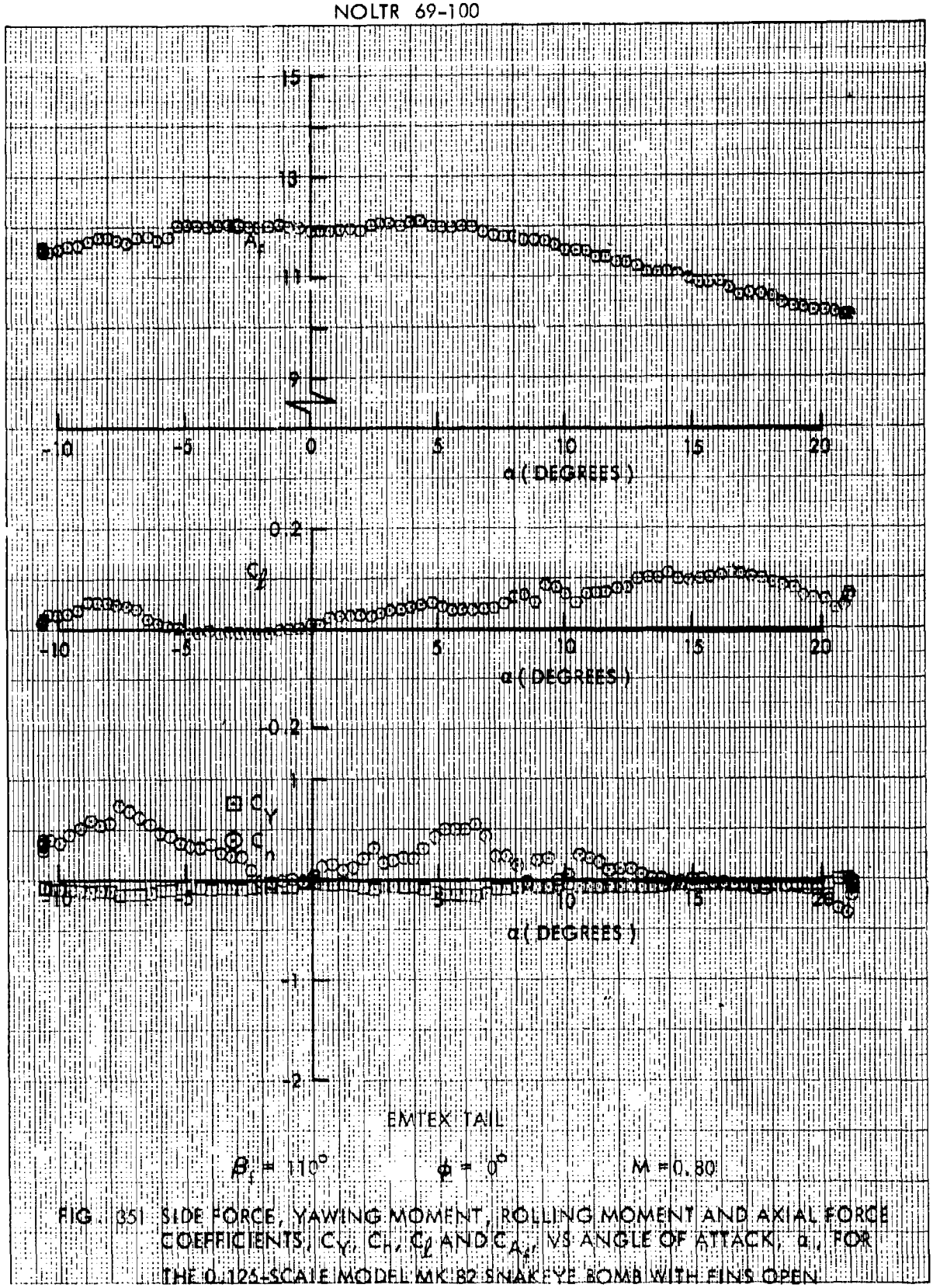


FIG. 351 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

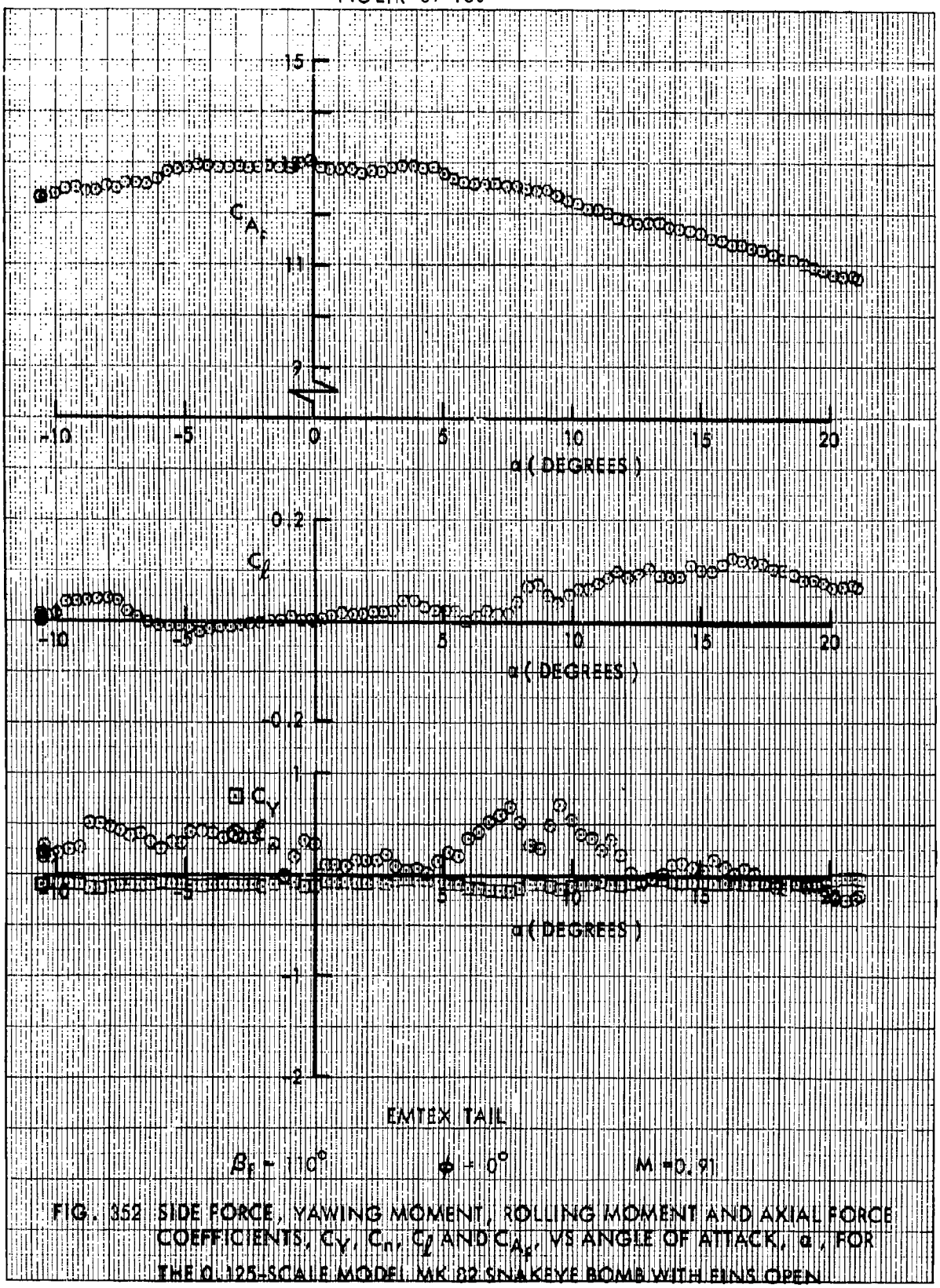


FIG. 352 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_F}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

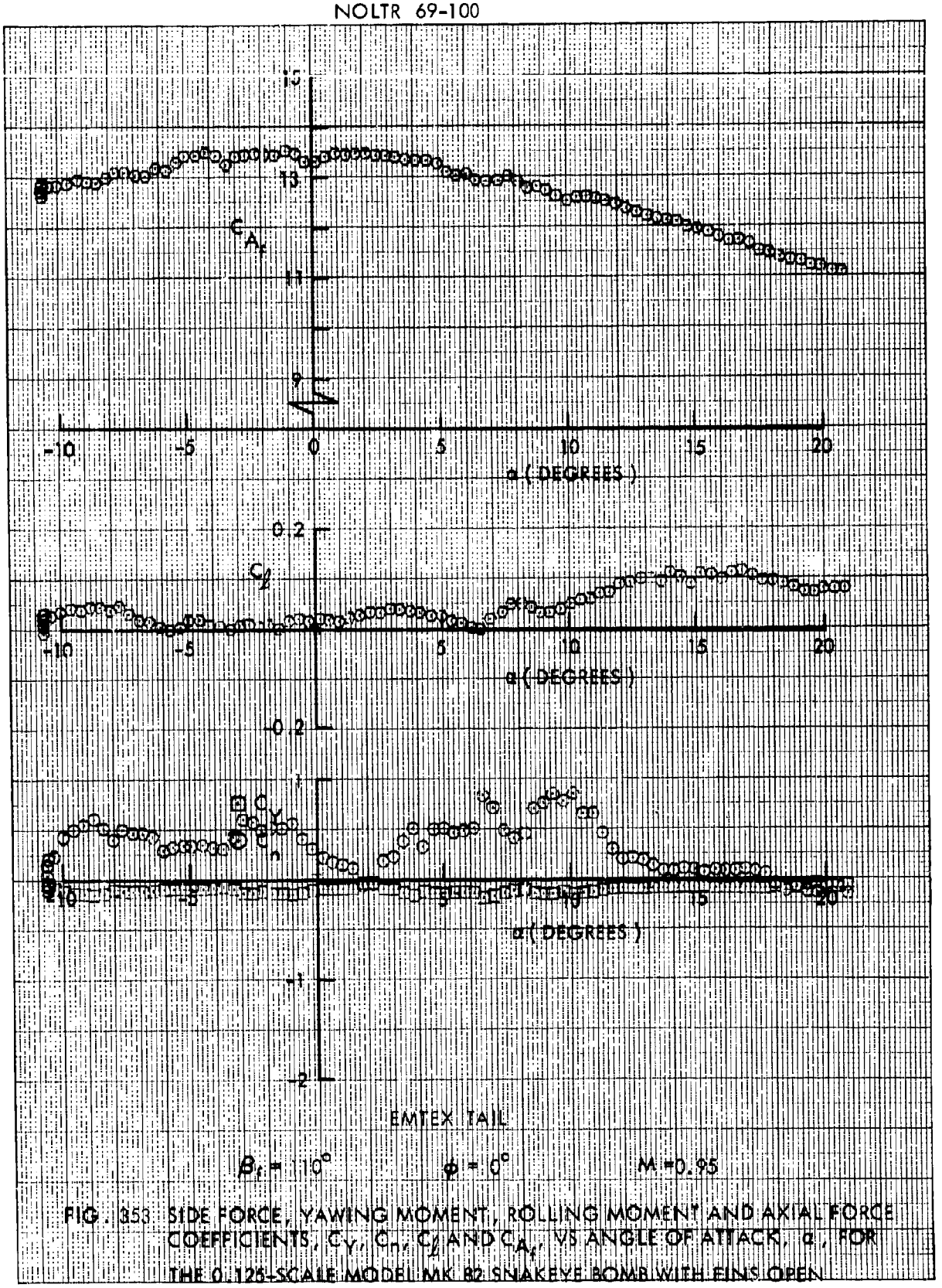


FIG. 353 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

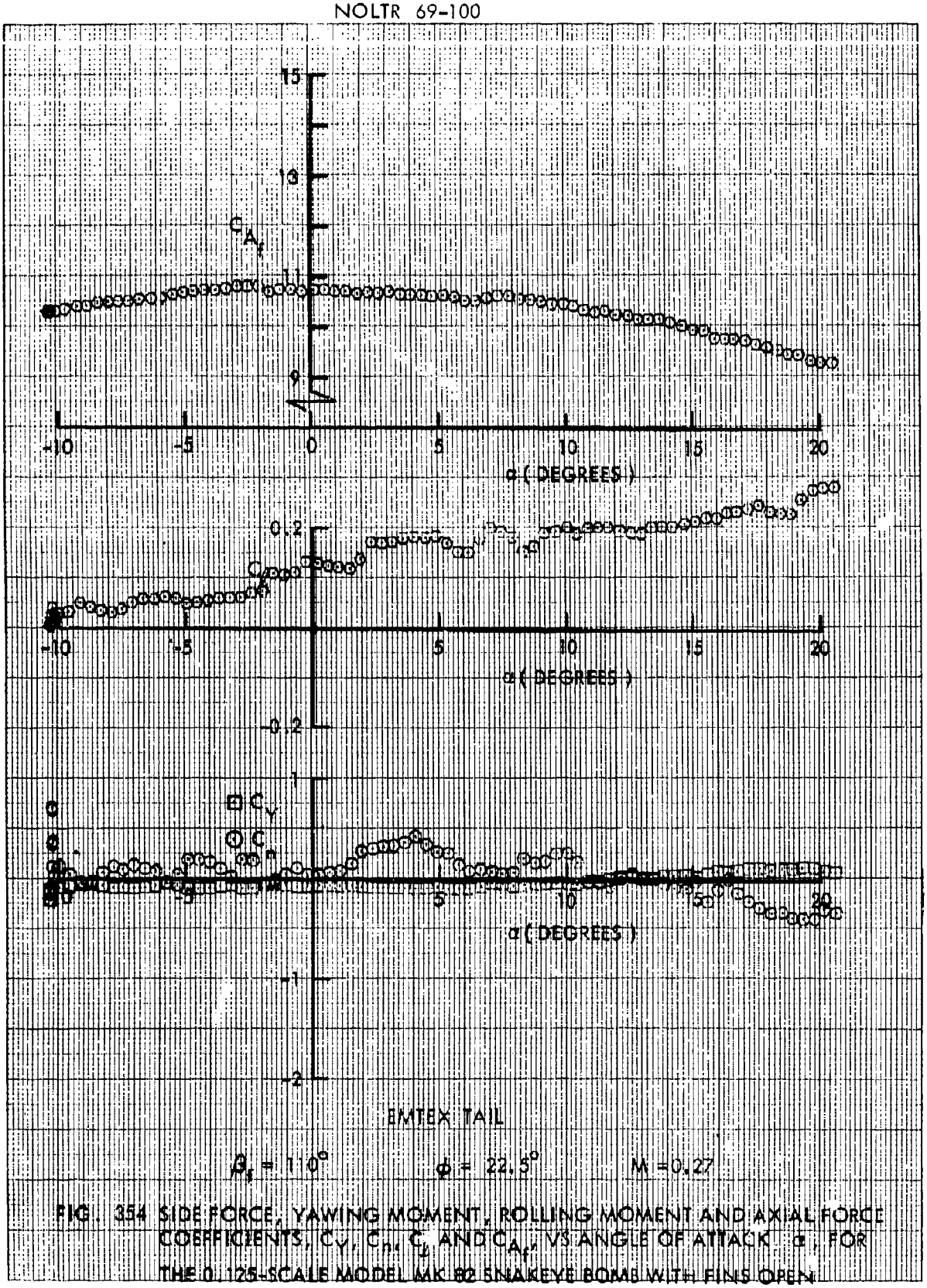


FIG. 354 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_{l_ϕ} AND C_{A_f}, VS ANGLE OF ATTACK α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

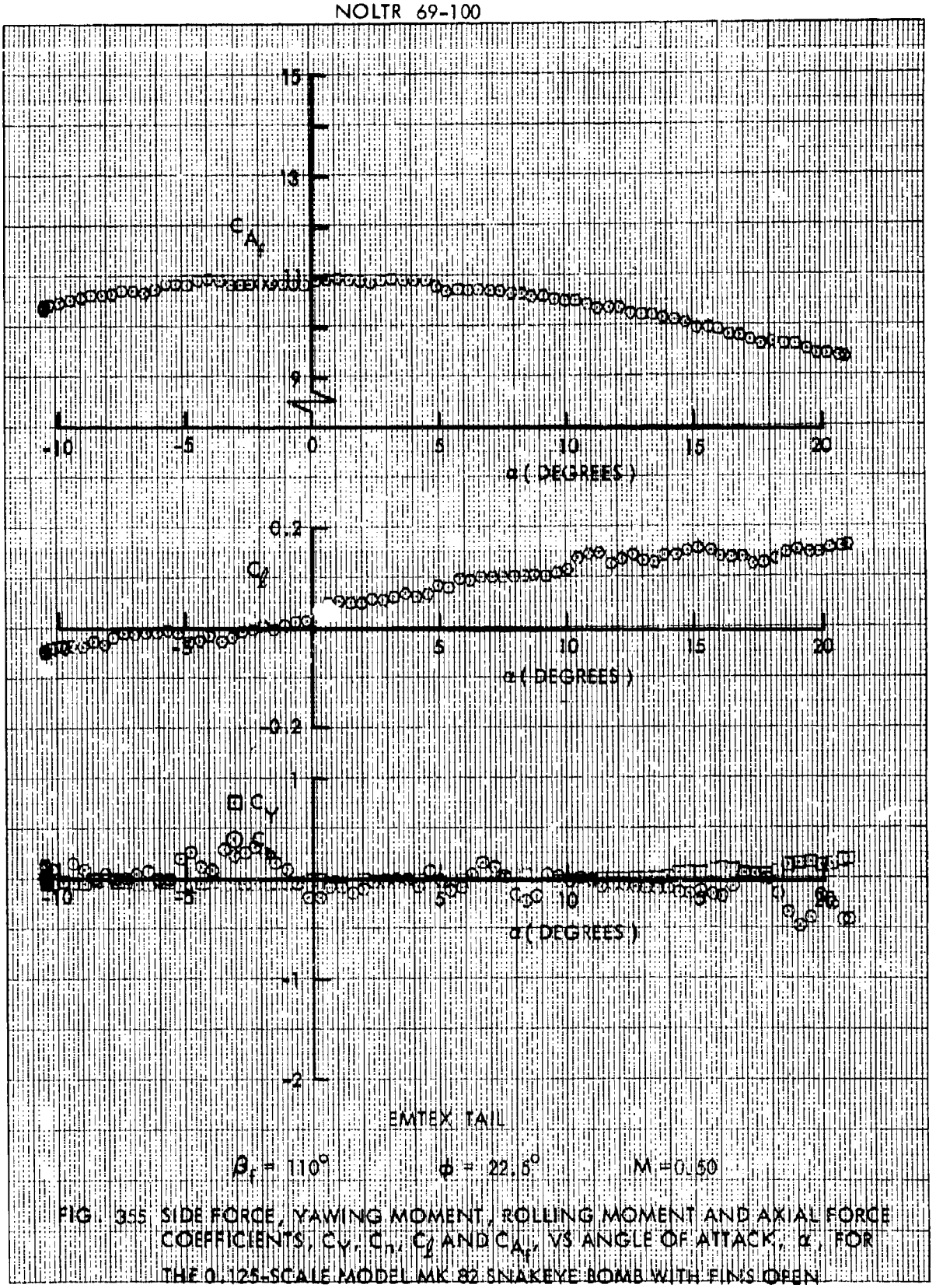


FIG. 355 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

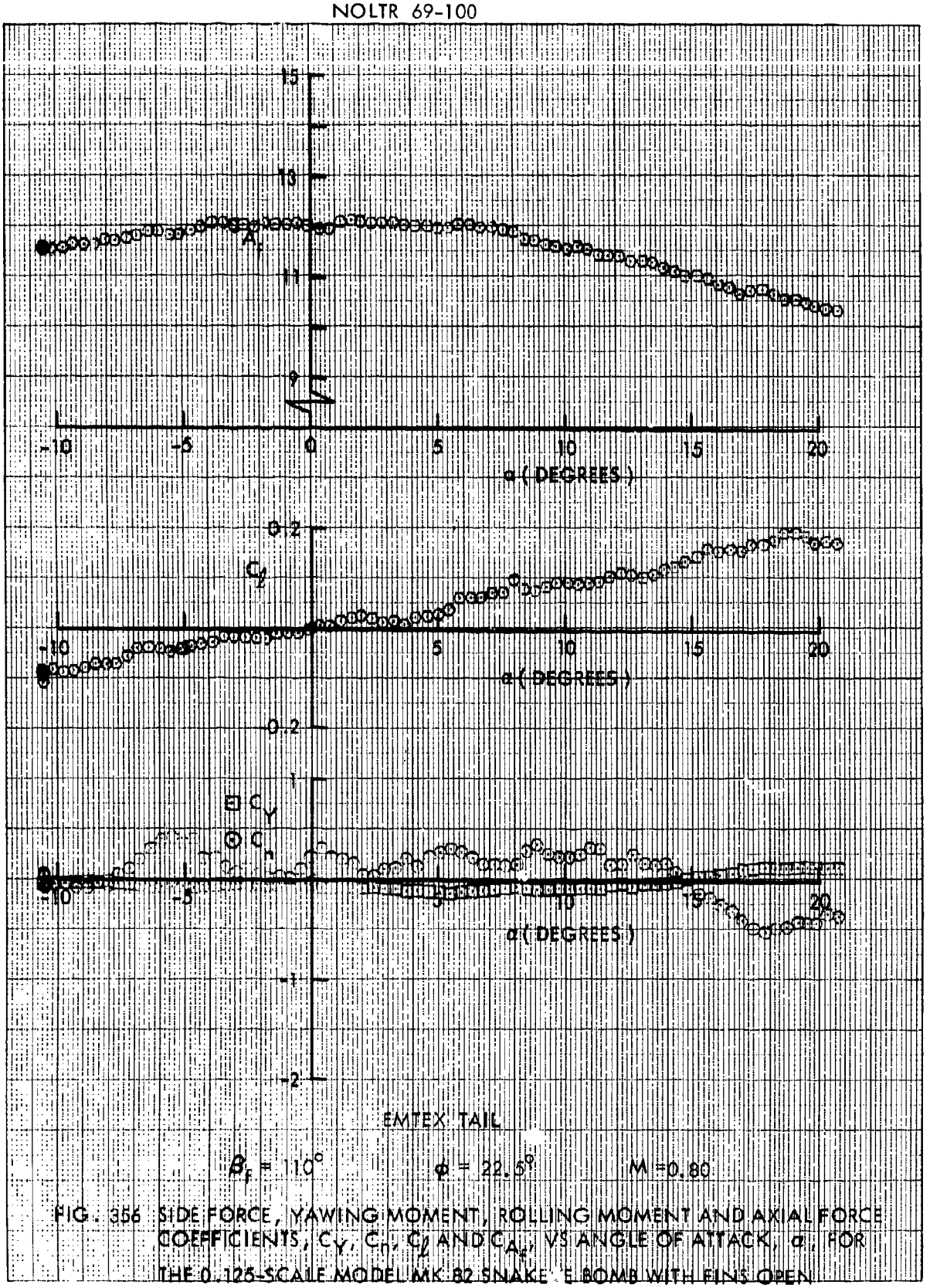


FIG. 356 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND CA_f, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKE E BOMB WITH FINS OPEN

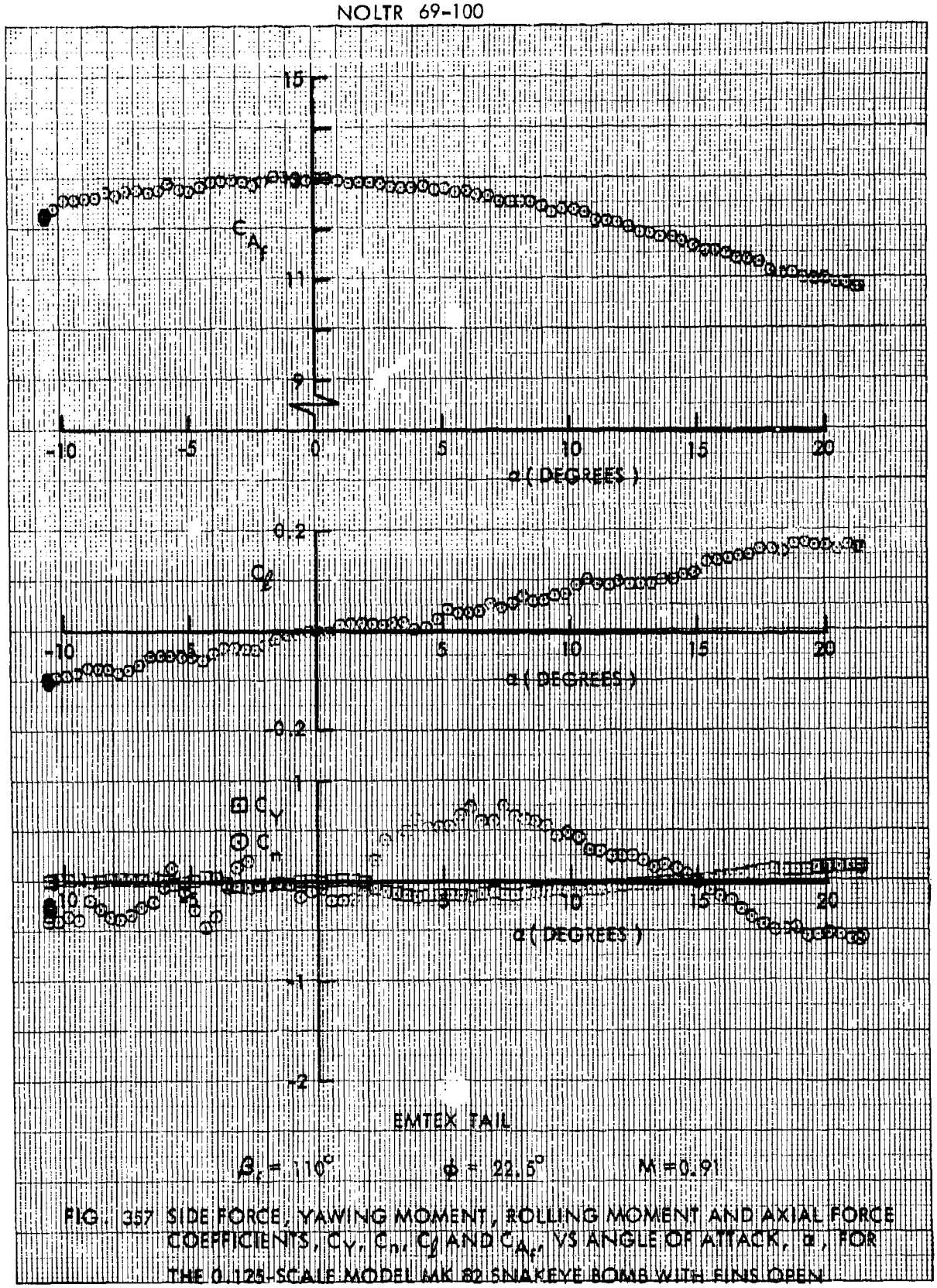


FIG. 357 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

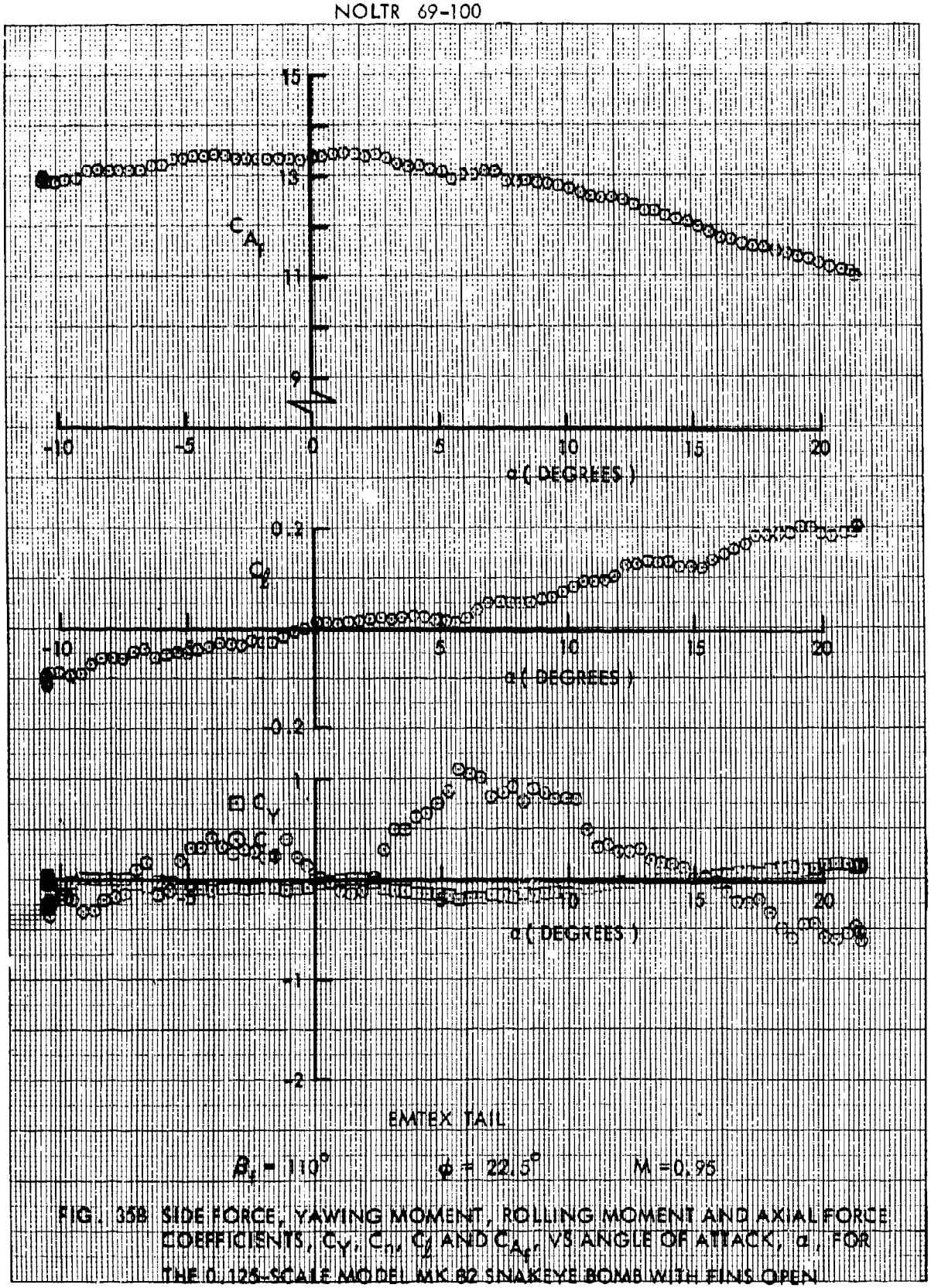


FIG. 35B SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

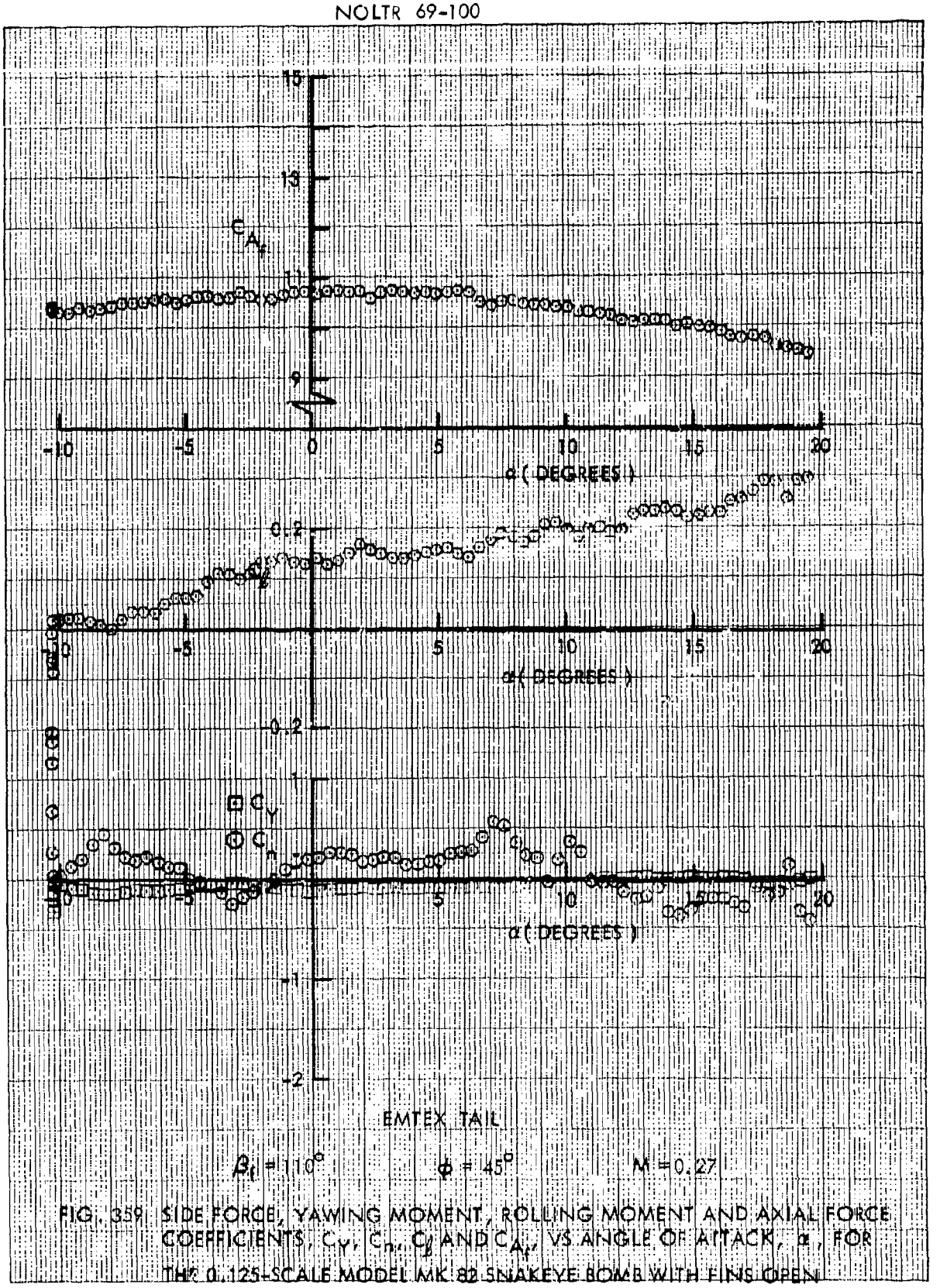


FIG. 359 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_{Y_β}, C_{n_β}, C_{l_β} AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

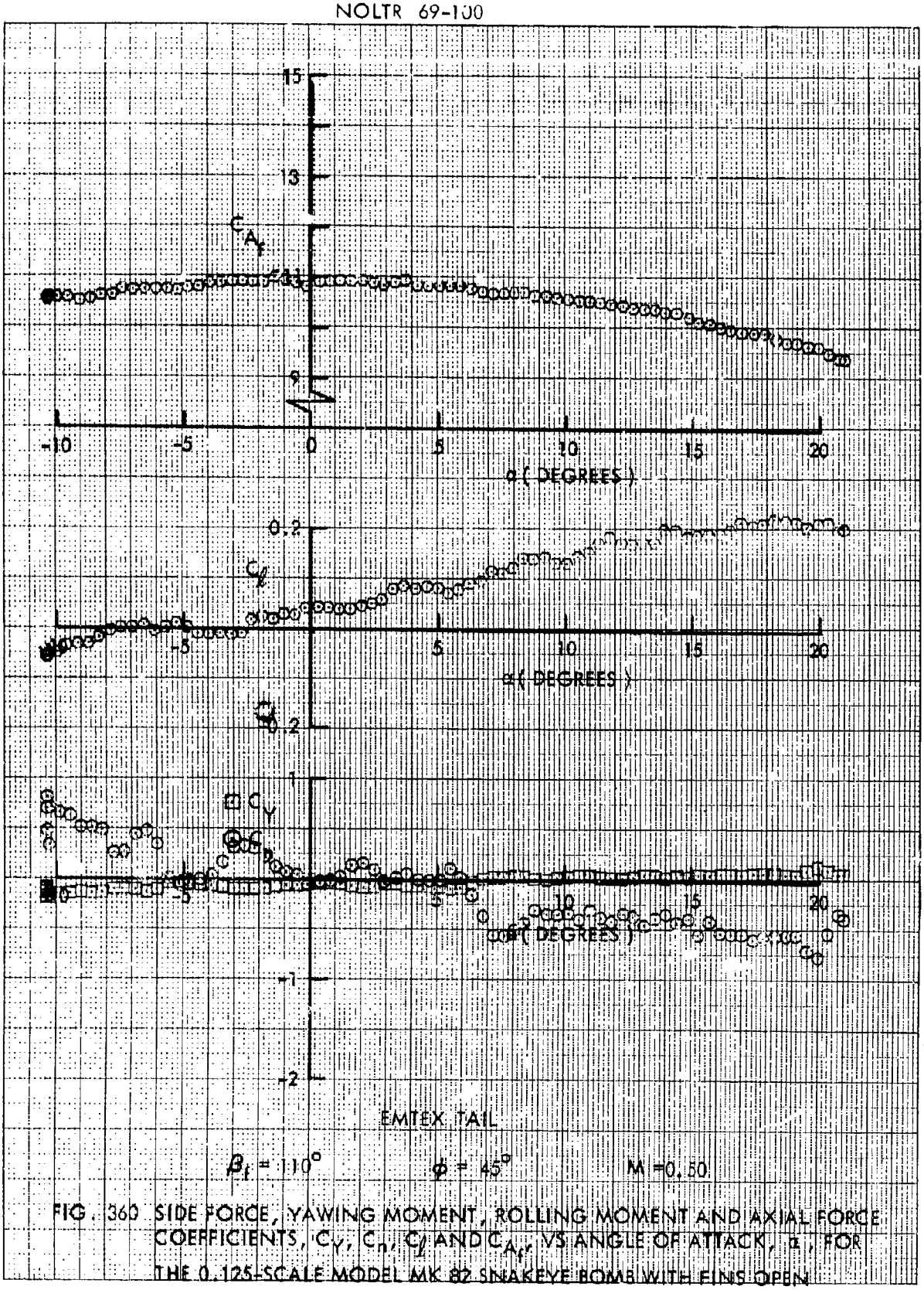


FIG. 360 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

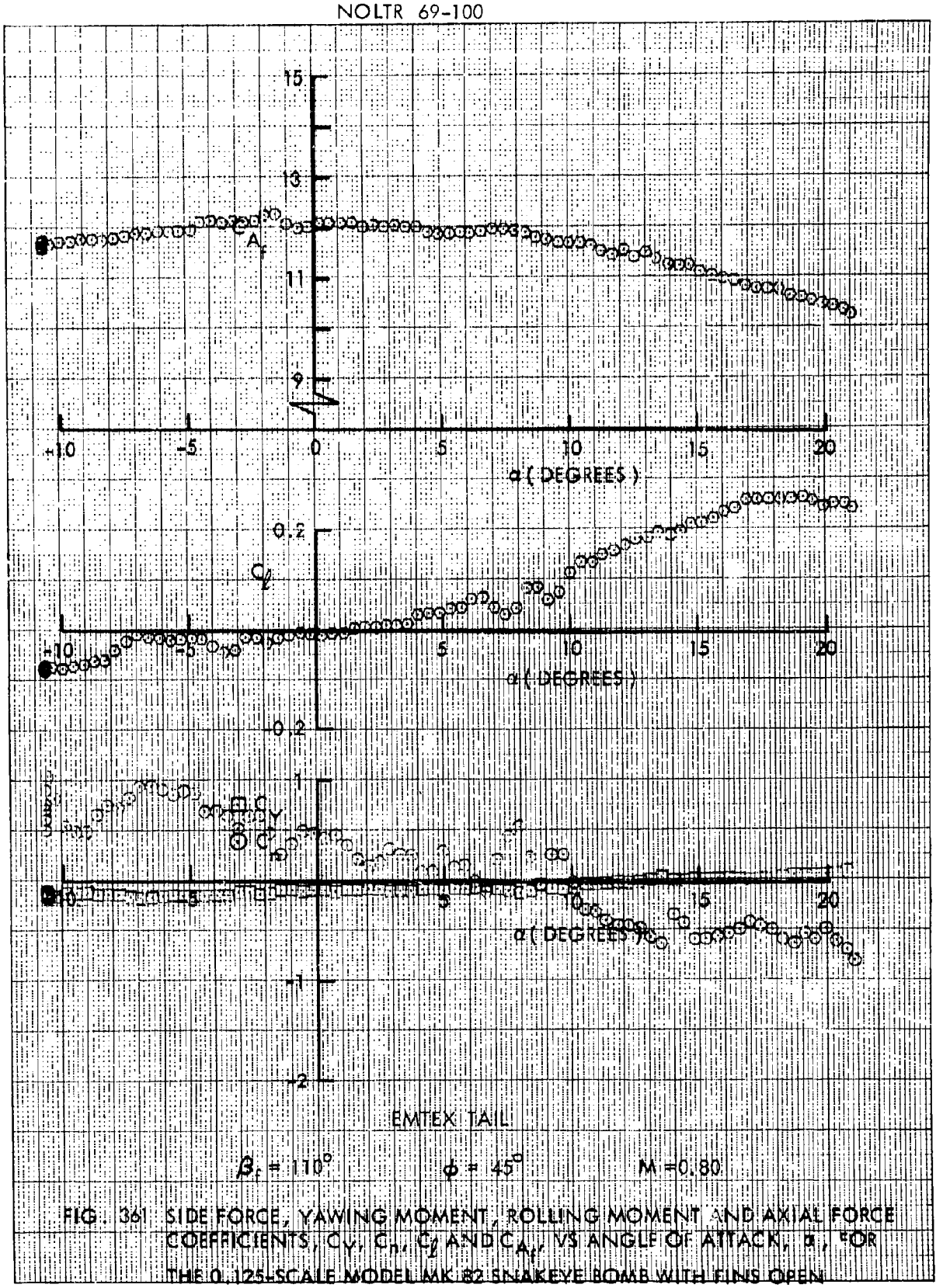


FIG. 361 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_{Y_β}, C_{n_β}, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

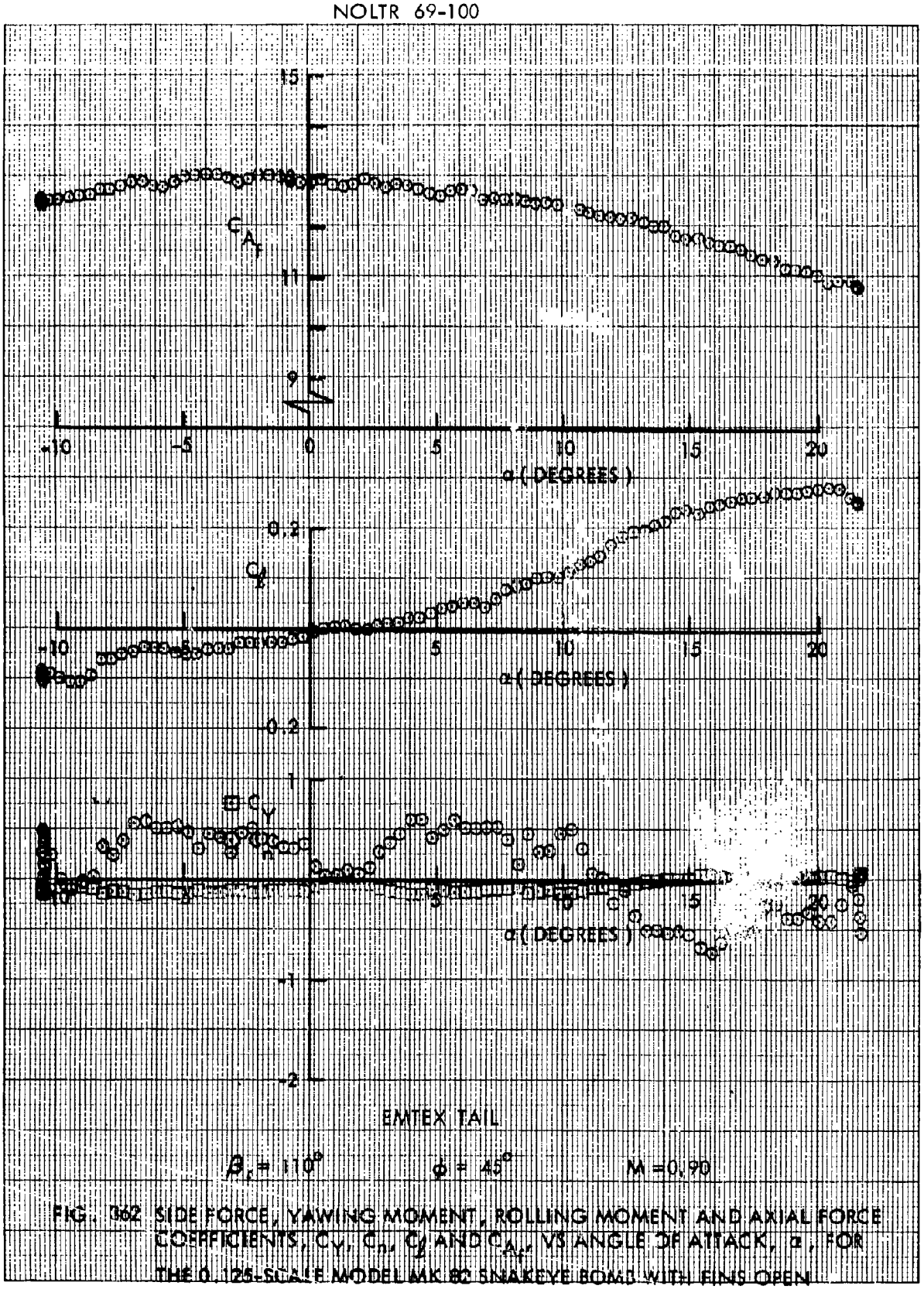


FIG. 362 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_l AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

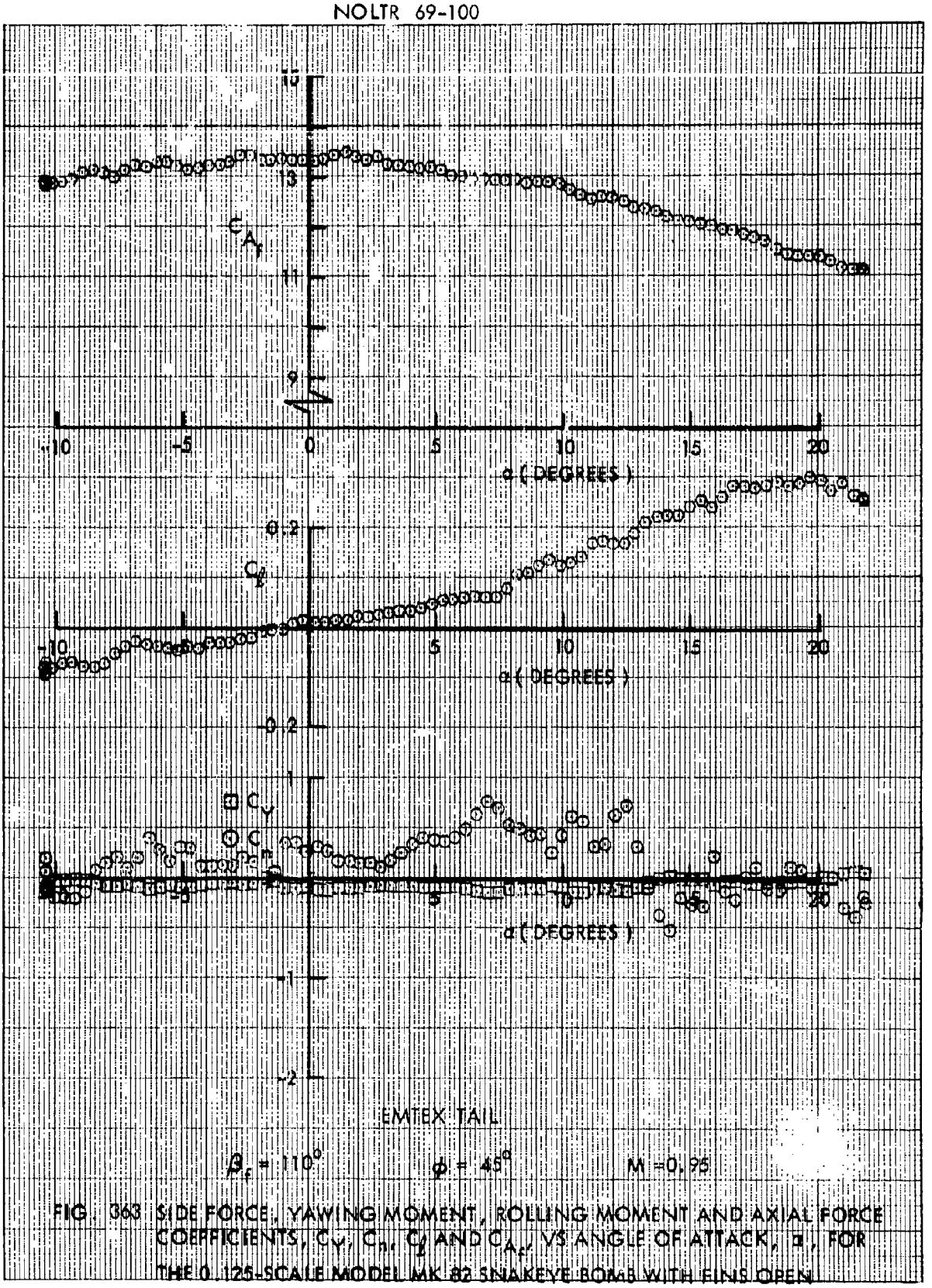


FIG. 363 SIDE FORCE, YAWING MOMENT, ROLLING MOMENT AND AXIAL FORCE COEFFICIENTS, C_Y, C_n, C_ℓ AND C_{A_f}, VS ANGLE OF ATTACK, α, FOR THE 0.125-SCALE MODEL MK 82 SNAKEYE BOMB WITH FINS OPEN

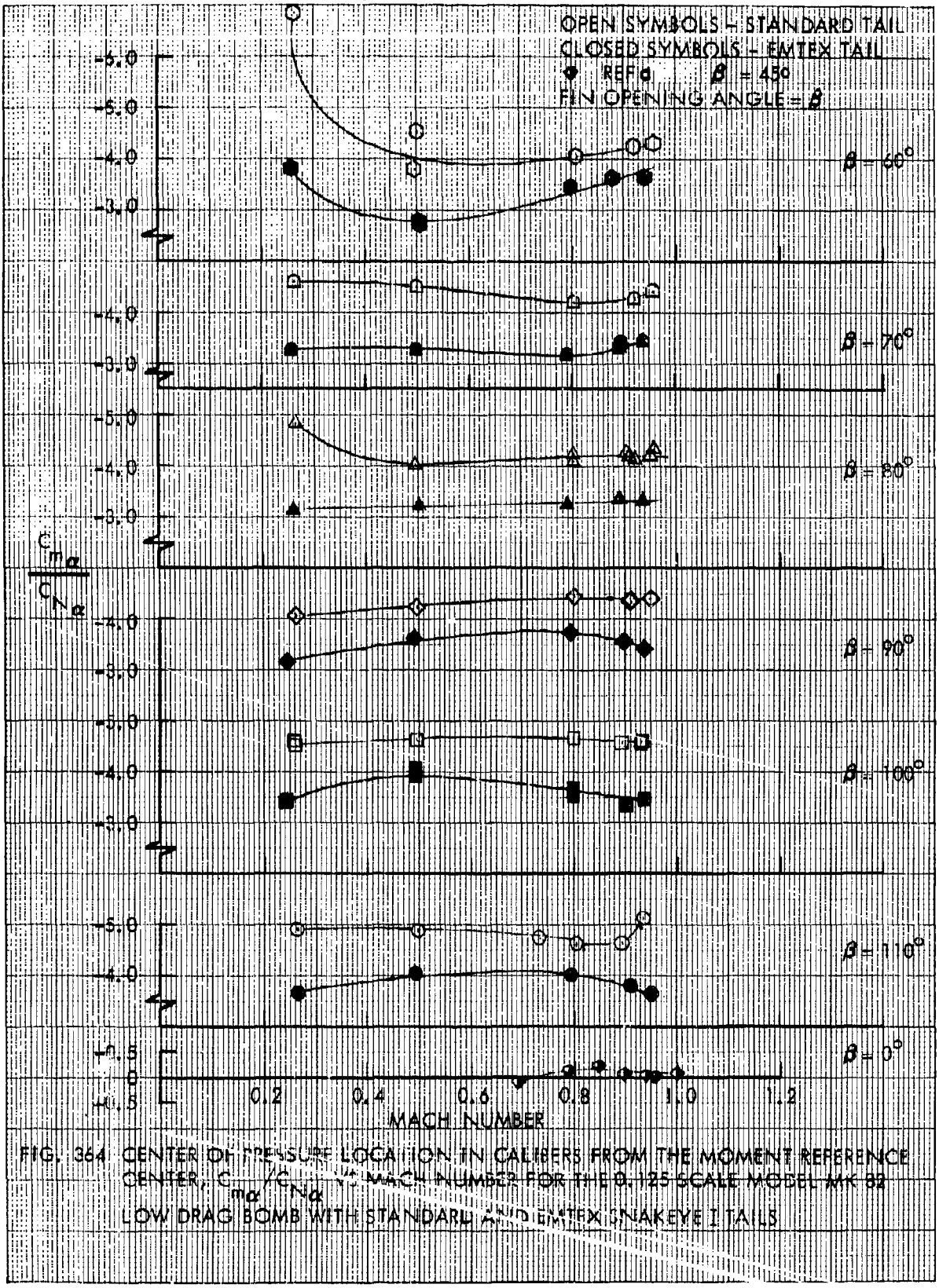


FIG. 364 CENTER OF PRESSURE LOCATION IN CALIBERS FROM THE MOMENT REFERENCE CENTER, $C_{m_\alpha}/C_{N_\alpha}$ VS MACH NUMBER FOR THE 0.125 SCALE MODEL MK 82 LOW DRAG BOMB WITH STANDARD AND EMTEX SNAKEYE I TAILS

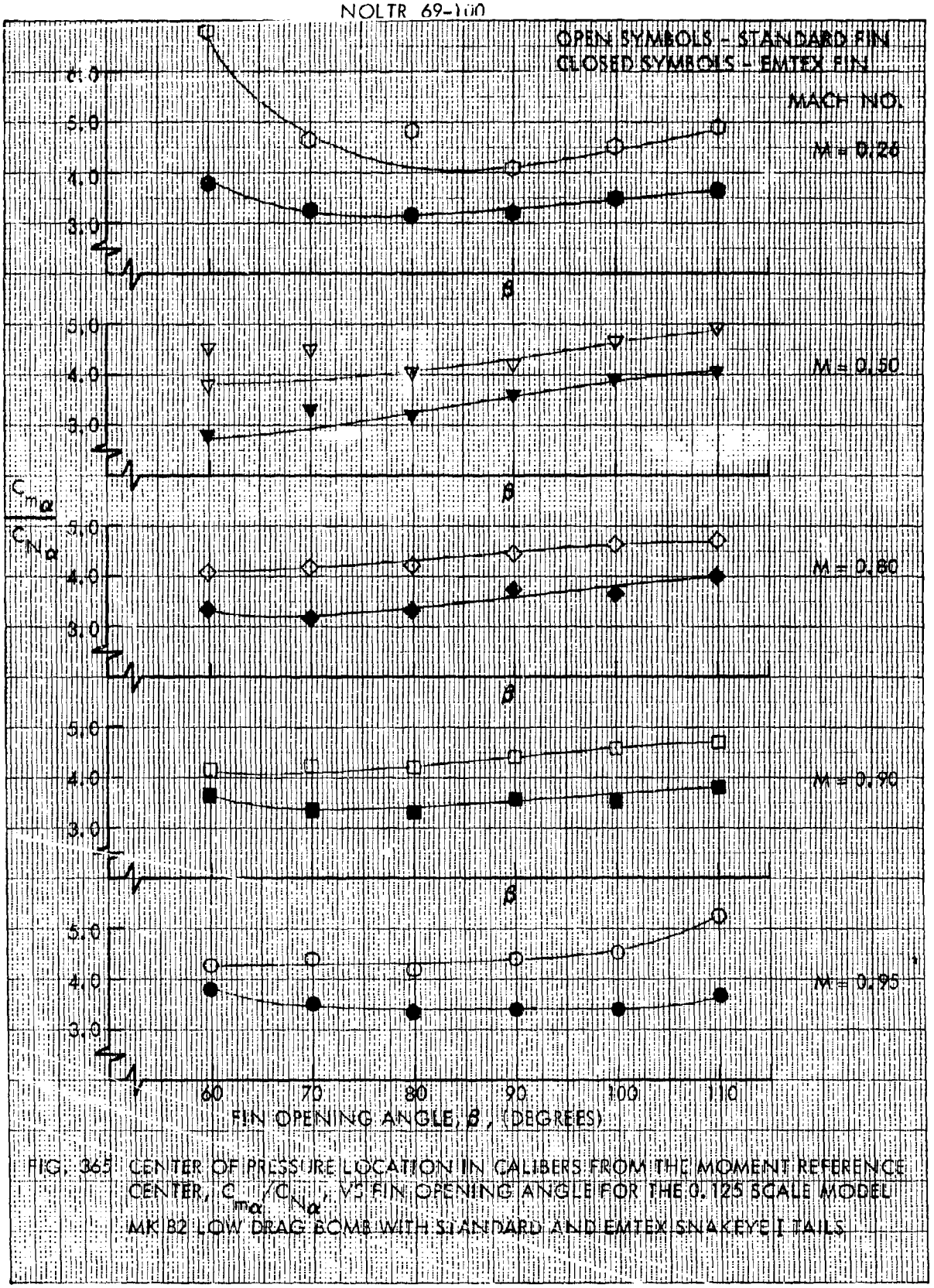


FIG. 365 CENTER OF PRESSURE LOCATION IN CALIBERS FROM THE MOMENT REFERENCE CENTER, $C_{m_\alpha}/C_{N_\alpha}$, VS FIN OPENING ANGLE FOR THE 0.125 SCALE MODEL MK 82 LOW DRAG BOMB WITH STANDARD AND EMTEX SNAKEYE I TAILS

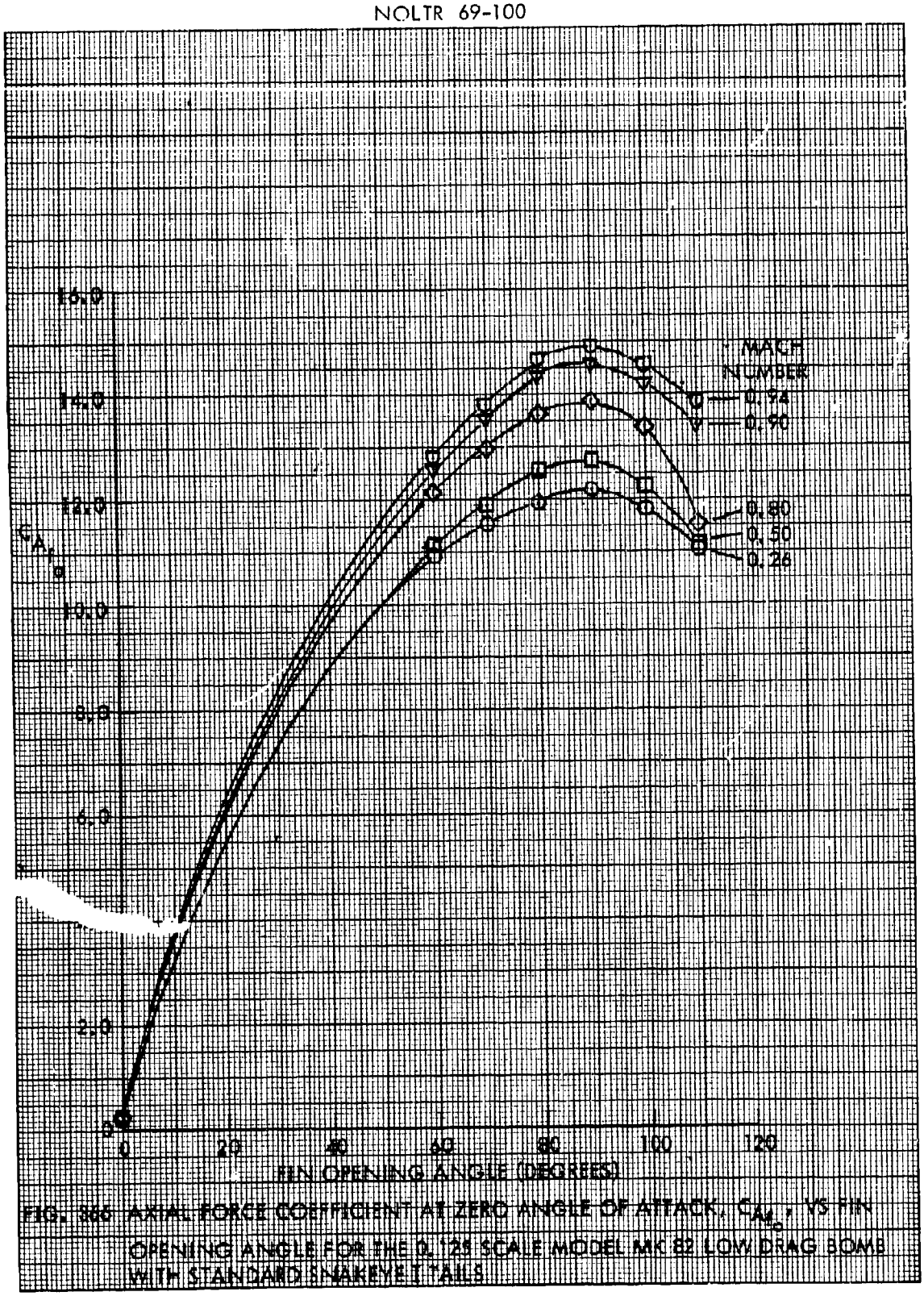


FIG. 366 AXIAL FORCE COEFFICIENT AT ZERO ANGLE OF ATTACK, $C_{A_{f_0}}$, VS FIN OPENING ANGLE FOR THE 0.125 SCALE MODEL MK 82 LOW DRAG BOMB WITH STANDARD SNAKEYE II TAILS

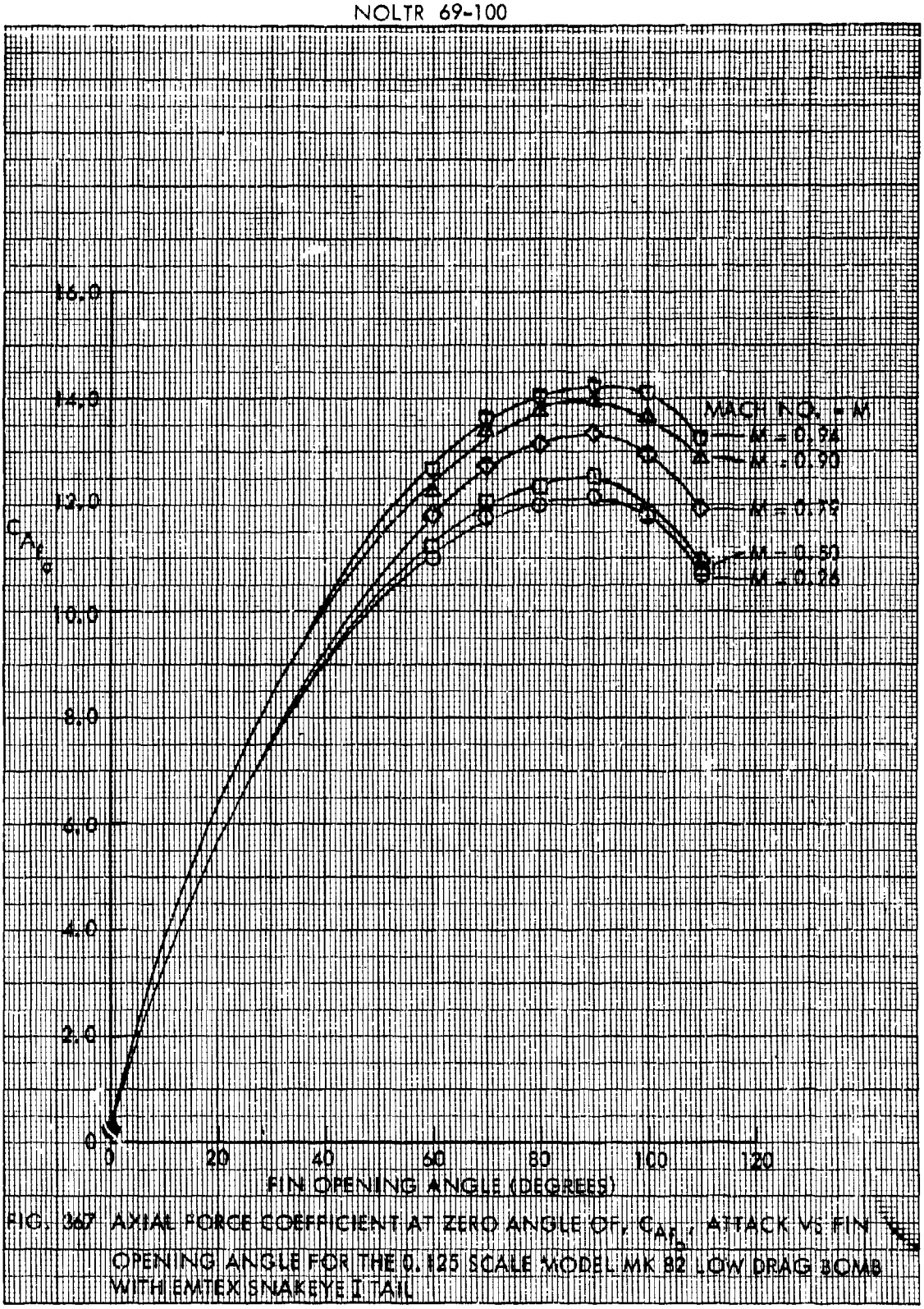


FIG. 367 AXIAL FORCE COEFFICIENT AT ZERO ANGLE OF ATTACK VS FIN OPENING ANGLE FOR THE 0.125 SCALE MODEL MK 82 LOW DRAG BOMB WITH EMTEX SNAKEYE II TAIL

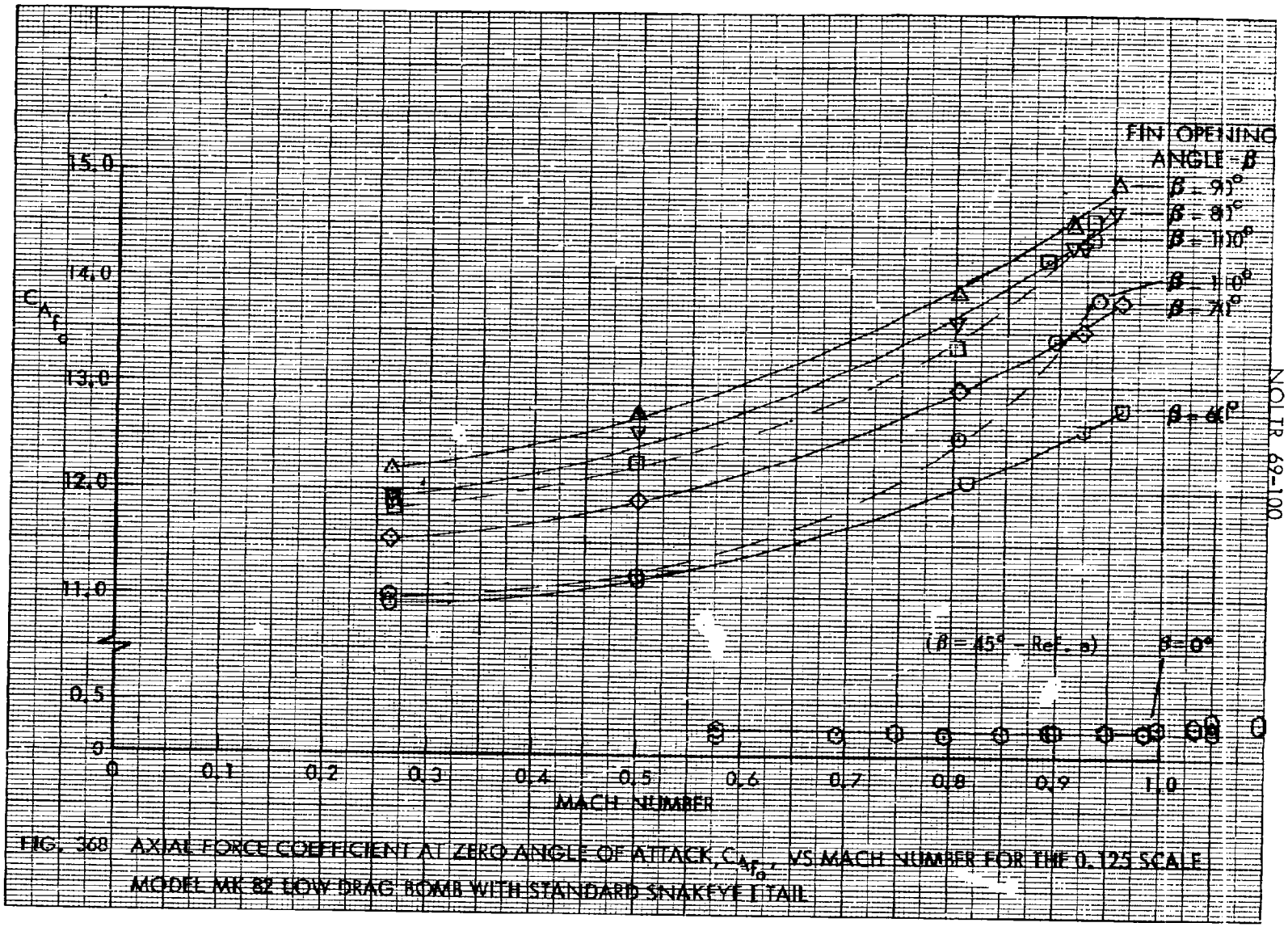


FIG. 368 AXIAL FORCE COEFFICIENT AT ZERO ANGLE OF ATTACK, $C_{A_{f_o}}$, VS MACH NUMBER FOR THE 0.125 SCALE MODEL MK 82 LOW DRAG BOMB WITH STANDARD SNAKEYE I TAIL

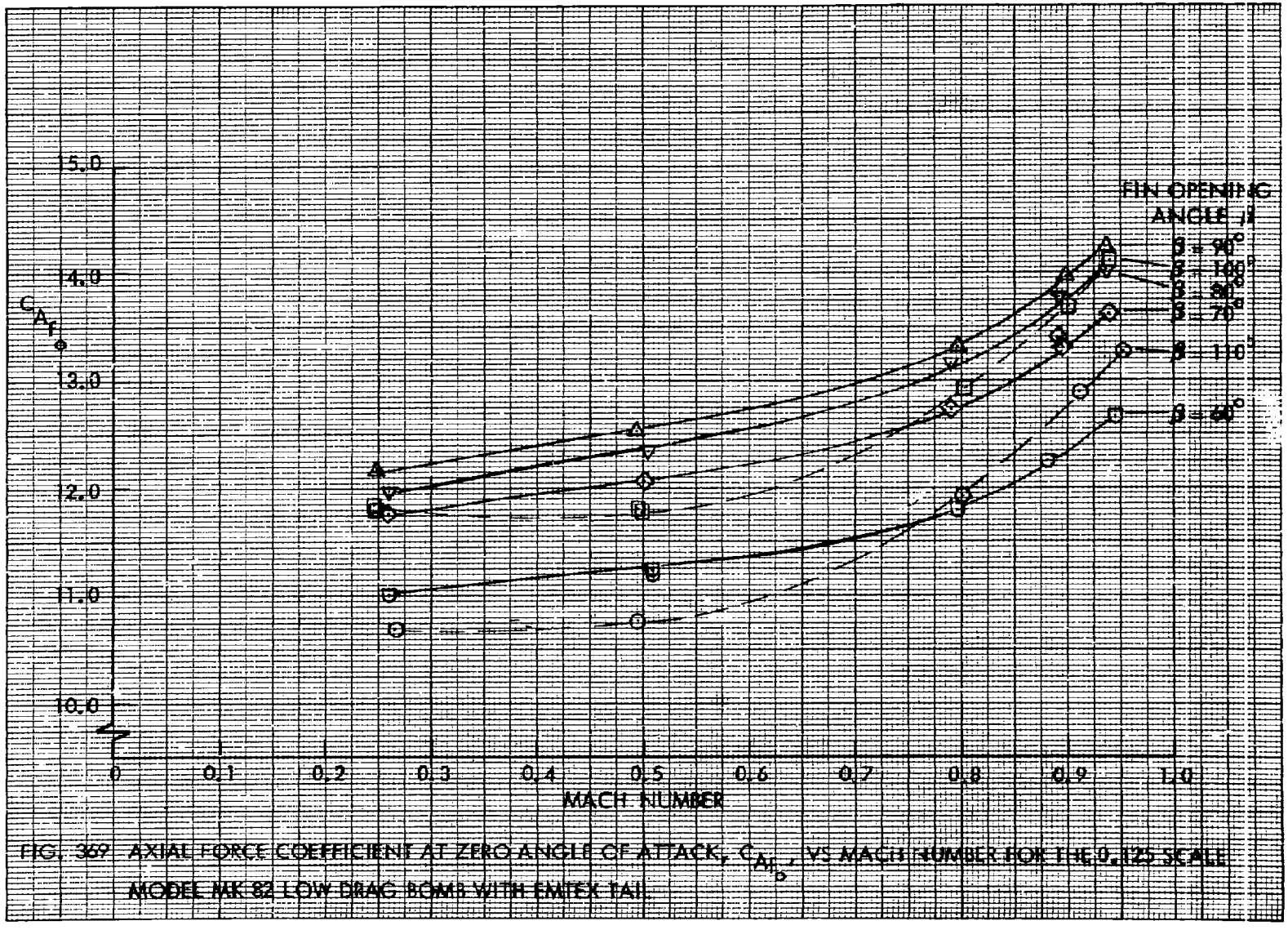


FIG. 369 AXIAL FORCE COEFFICIENT AT ZERO ANGLE OF ATTACK, $C_{A_{f_0}}$, VS MACH NUMBER FOR THE 0.125 SCALE MODEL MK 82 LOW DRAG BOMB WITH EMTEX TAIL

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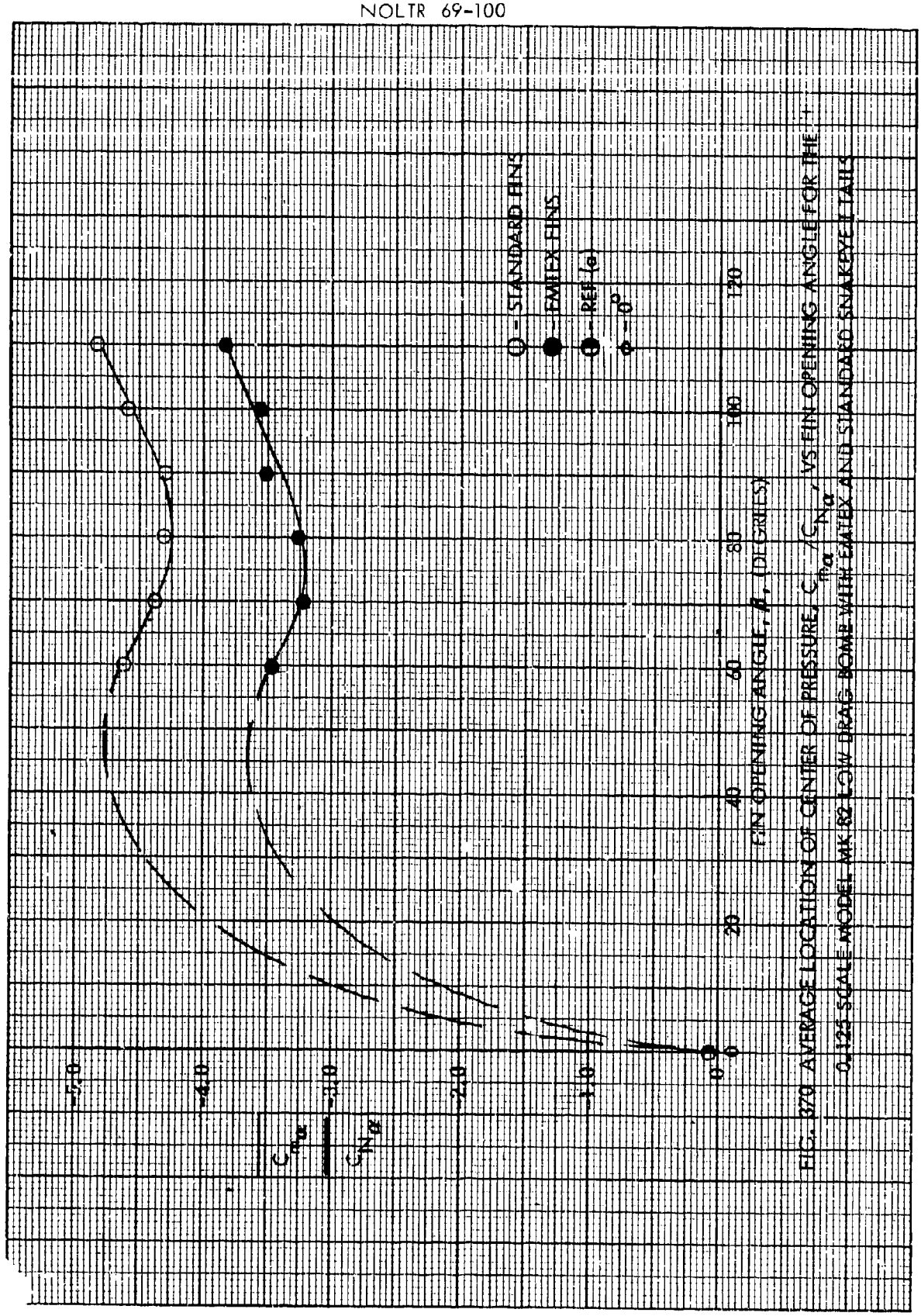


FIG. 370 AVERAGE LOCATION OF CENTER OF PRESSURE, $C_{n_\alpha}/C_{N_\alpha}$, VS FIN OPENING ANGLE FOR THE 0.125 SCALE MODEL MK 82 LOW DRAG BOMB WITH EMTEX AND STANDARD SNAKEYE I TAILS

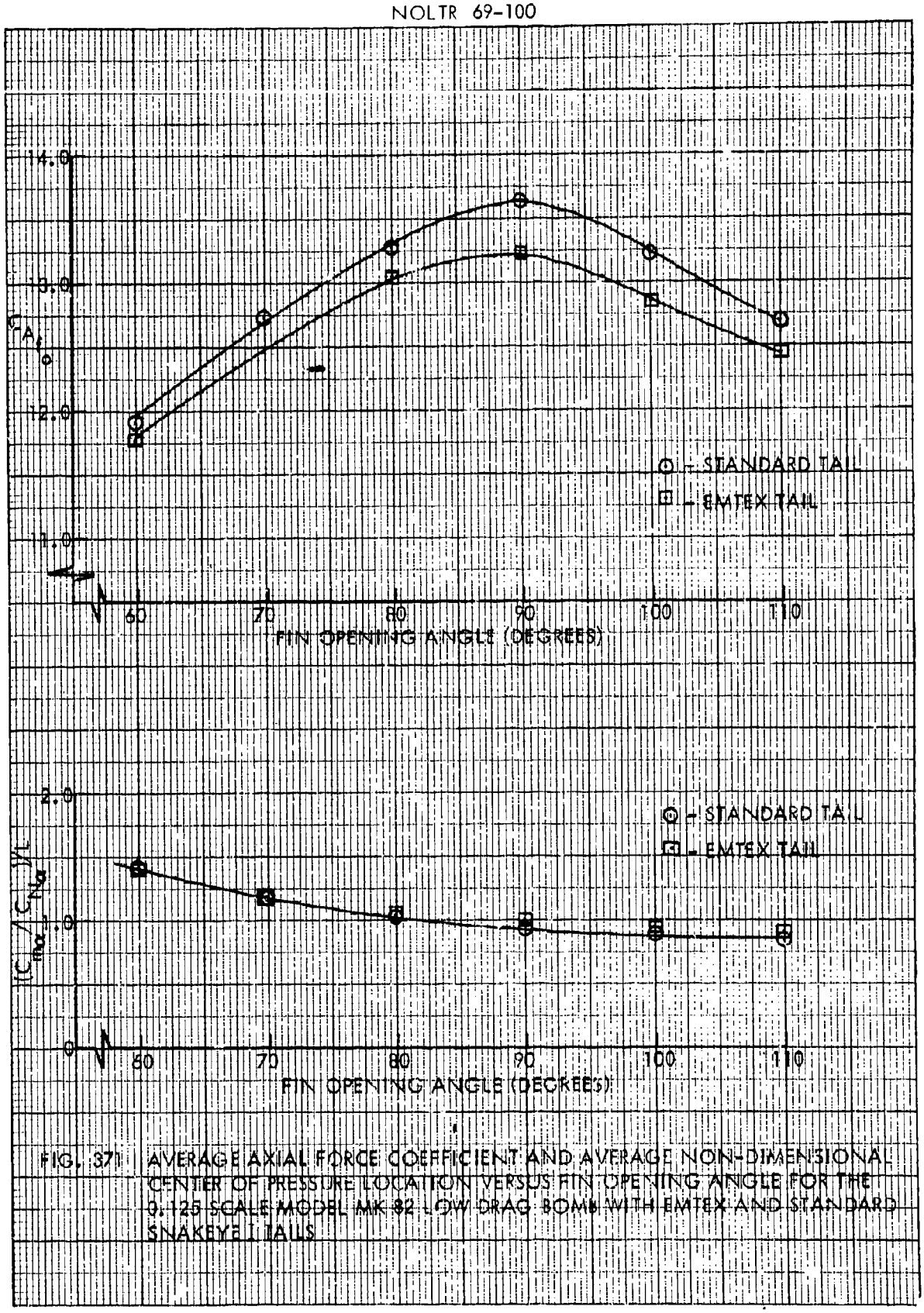


FIG. 371 AVERAGE AXIAL FORCE COEFFICIENT AND AVERAGE NON-DIMENSIONAL CENTER OF PRESSURE LOCATION VERSUS FIN OPENING ANGLE FOR THE 0.125 SCALE MODEL MK 82 LOW DRAG BOMB WITH EMTEX AND STANDARD SNAKEYE I TAILS

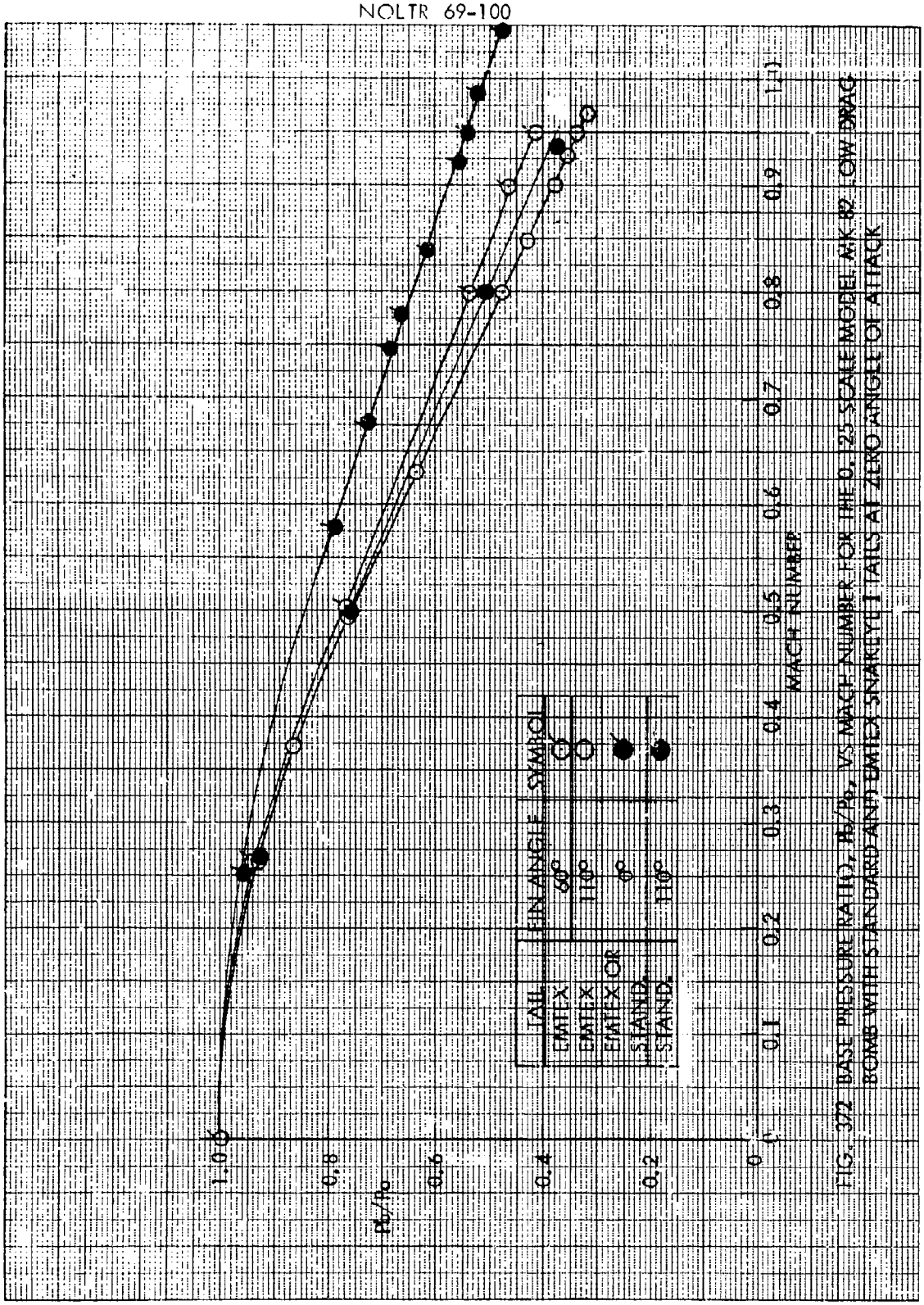


FIG. 372 BASE PRESSURE RATIO, P_b/P_o, VS MACH NUMBER FOR THE 0.25 SCALE MODEL AK-82 LOW DRAG BOMB WITH STANDARD AND EMTEX SNAKEYE TAILS AT ZERO ANGLE OF ATTACK

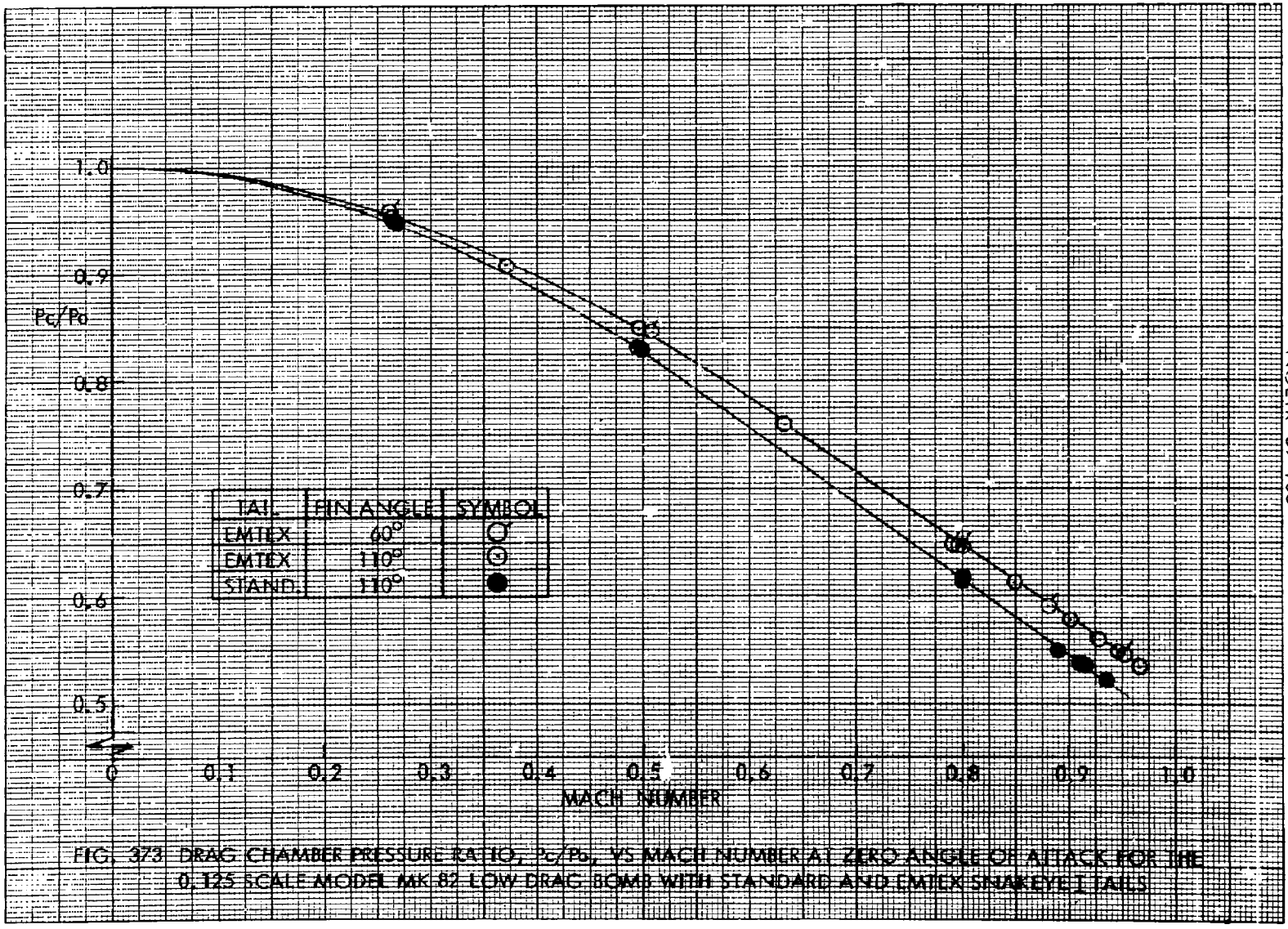


FIG. 373 DRAG CHAMBER PRESSURE RATIO, P_c/P_o, VS MACH NUMBER AT ZERO ANGLE OF ATTACK FOR THE 0.125 SCALE MODEL MK 82 LOW DRAG BOMB WITH STANDARD AND EMTEX SNAKEYE I TAILS

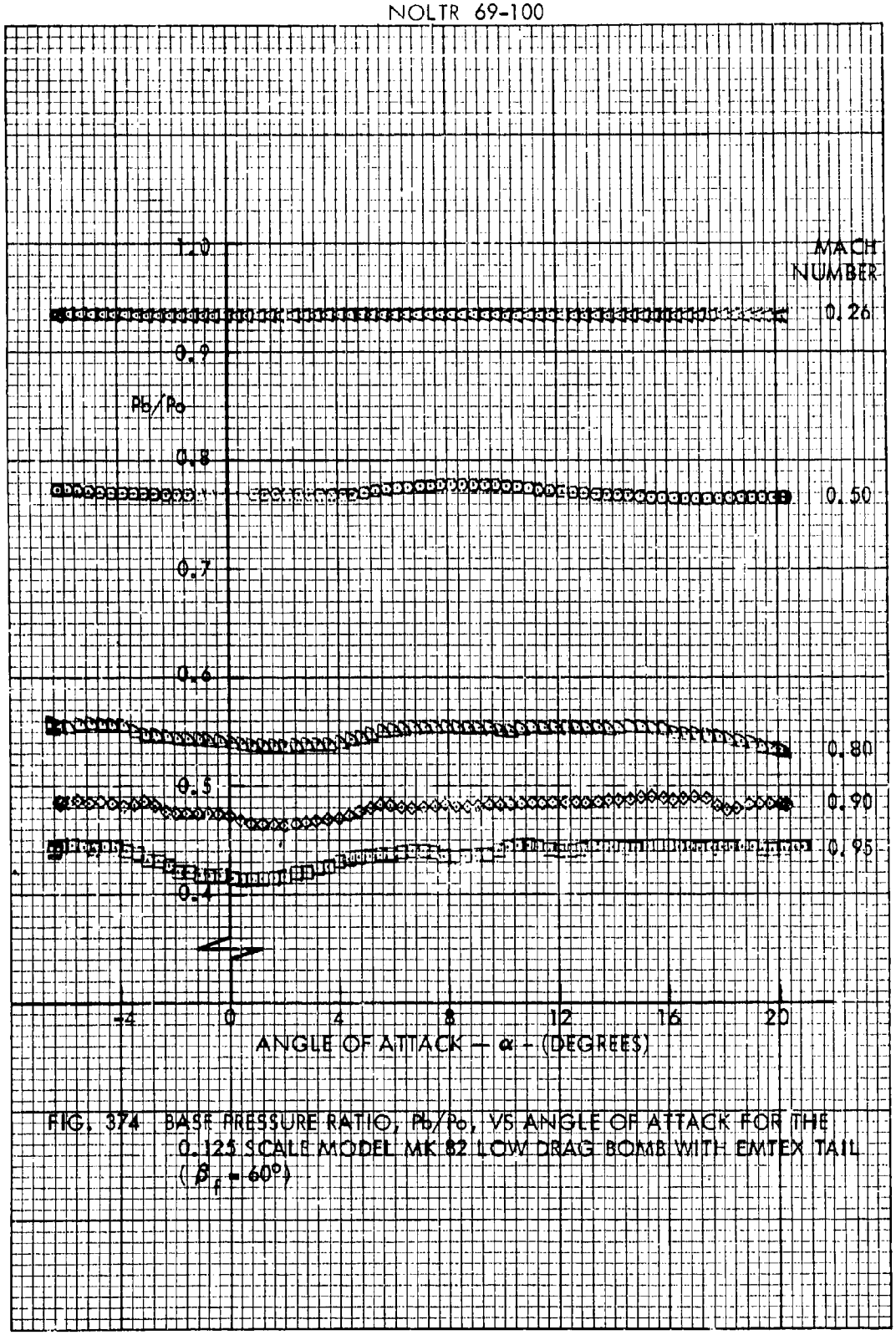


FIG. 374 BASE PRESSURE RATIO, P_b/P_o, VS ANGLE OF ATTACK FOR THE 0.125 SCALE MODEL MK 82 LOW DRAG BOMB WITH EMTEX TAIL ($\beta_f = 60°$)

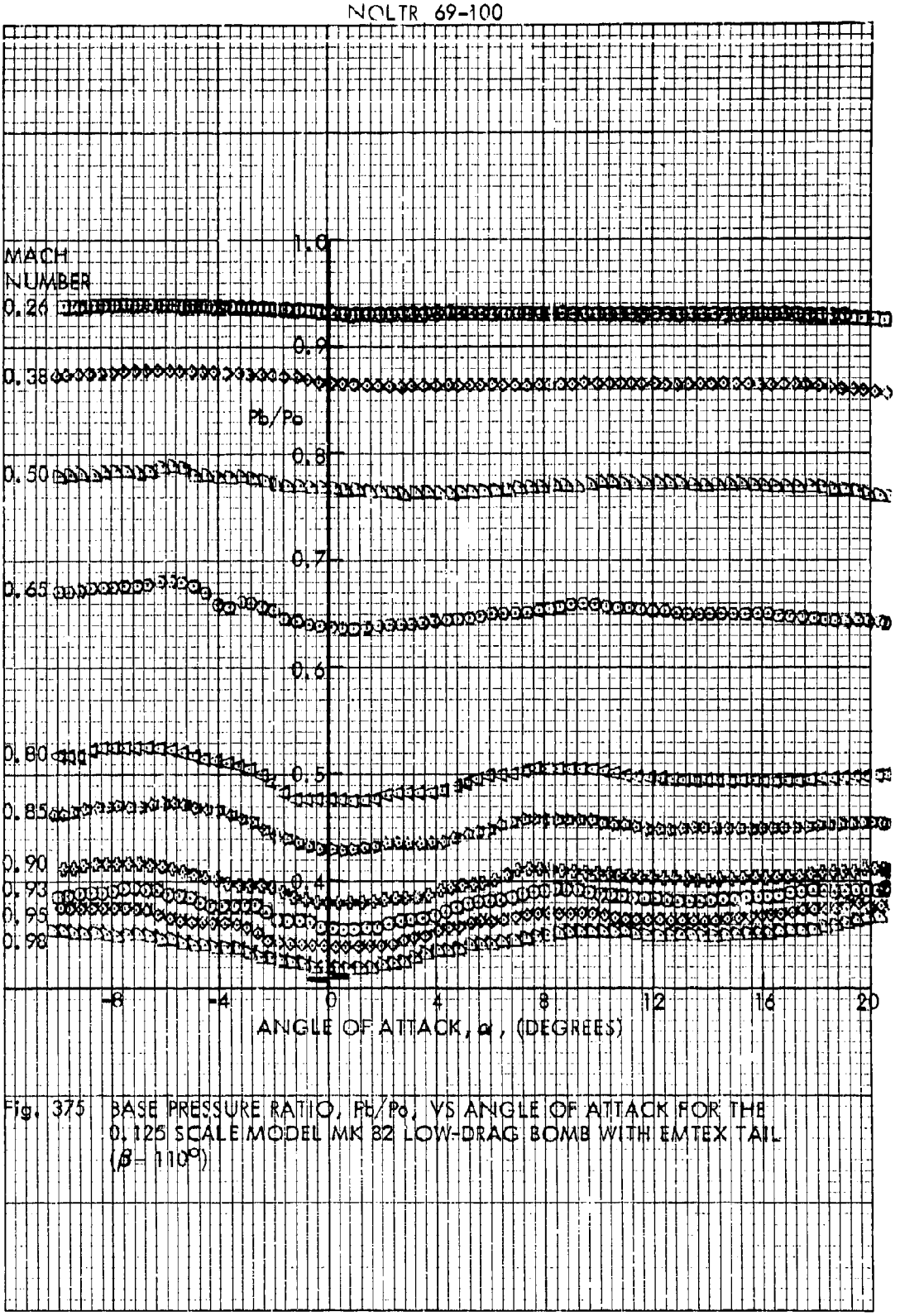


Fig. 375 BASE PRESSURE RATIO, Pb/Po, VS ANGLE OF ATTACK FOR THE 0.125 SCALE MODEL MK 82 LOW-DRAG BOMB WITH EMTEX TAIL ($\beta = 110^{\circ}$)

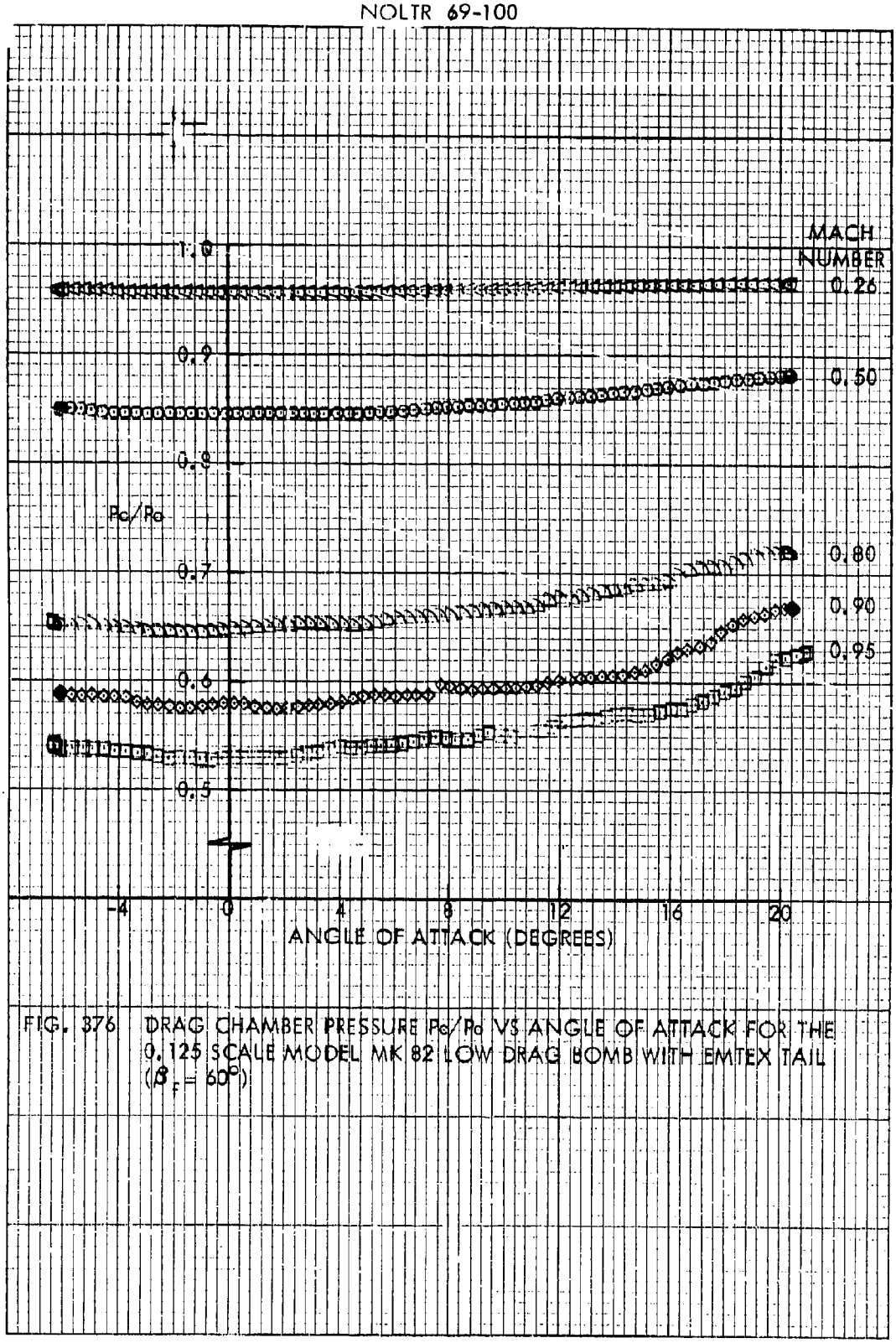


FIG. 376 DRAG CHAMBER PRESSURE P_c/P_o VS ANGLE OF ATTACK FOR THE 0.125 SCALE MODEL MK 82 LOW DRAG BOMB WITH EMTEX TAIL ($\beta_F = 60^\circ$)

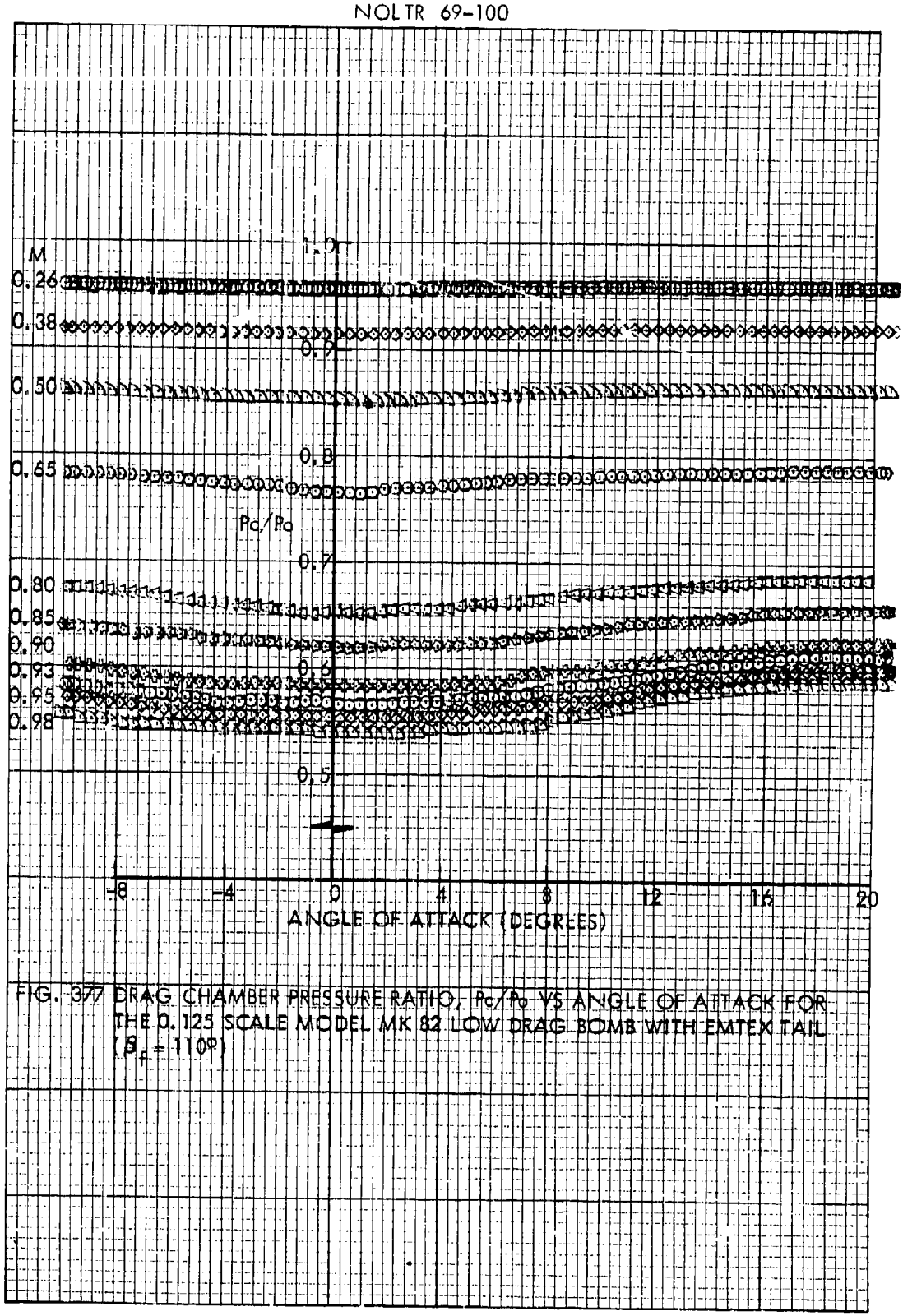


FIG. 377 DRAG CHAMBER PRESSURE RATIO, P_c/P_o VS ANGLE OF ATTACK FOR THE 0.125 SCALE MODEL MK 82 LOW DRAG BOMB WITH EMTEX TAIL ($\beta_f = 110^\circ$)

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U. S. Naval Ordnance Laboratory White Oak, Silver Spring, Maryland	UNCLASSIFIED

Static-Stability Index and Aerodynamic Coefficients for the 0.125-Scale Model Mark 82 Low-Drag Bomb with Standard and Emtex Snakeye I Fins with Six Retardation Angles at Subsonic Speeds

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13. ABSTRACT

The static-stability index, force and moment coefficients are presented as functions of angle of attack for the Mk 82 Low-Drag Bomb with Standard and Emtex Snakeye I Fins. For these tests the fin-opening angles were 60, 70, 80, 90, 100 and 110 degrees; the models' angle of attack ranged from -10 to +20 degrees; the free-stream Mach number was varied from 0.25 to 0.95, and roll angles were at 0, 22.5 and 45 degrees.

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force and moment coefficients						
low-drag bomb						
Standard and Emtex Snakeye I Fins						