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October 1969

EXPERIMENTAL INVESTIGATION OF THE INTERACTION OF A PLANE, OBLIQUE, INCIDENT-REFLECTING SHOCK WAVE WITH A TURBULENT BOUNDARY LAYER ON A COOLED SURFACE

VOLUME 2: BASIC PLOTTED DATA

GENERAL DYNAMICS
Fort Worth Division

Prepared under Contract No. NAS1-6588

for

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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By

Richard F. Kilburg

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Fort Worth Division of General Dynamics
Fort Worth, Texas

for

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FOREWORD

This document is Volume 2 of three volumes reporting an experimental investigation of the two-dimensional interaction of an incident-reflecting shock wave with a turbulent boundary layer on a cooled surface.

The three volumes are:

Volume 1: Test Description and Data Summary (CR-66841-1)

Volume 2: Basic Plotted Data (CR-66841-2)

Volume 3: Tabulated Data (CR-66841-3)

This volume contains the plotted data obtained during conduct of the test program and those nondimensional data that do not logically fit the data summary of Volume 1.

Volume 1 describes the test apparatus and procedures used during testing and data reduction. Nondimensional data descriptive of the flow in the interaction region are presented in summary form.

Volume 3 contains tabulations of all primary data obtained during testing and the nondimensional data subsequently calculated.

EXPERIMENTAL INVESTIGATION OF THE INTERACTION OF A PLANE, OBLIQUE, INCIDENT-REFLECTING SHOCK WAVE WITH A TURBULENT BOUNDARY LAYER ON A COOLED SURFACE

VOLUME 2: BASIC PLOTTED DATA

By Richard F. Kilburg
General Dynamics Fort Worth Division

INTRODUCTION

The plotted data in this volume are supplemental to that presented in Volume I. Boundary layer profiles of total temperature, stagnation pressure, static pressure coefficient, and Mach number are presented, with these variables plotted versus distance normal to the surface. The plate surface static pressure (in coefficient form) and temperature (as a ratio to stream stagnation temperature) are shown with respect to distance from the plate leading edge. The data are in groups for each run ~~and~~ are arranged in increasing run order. An index, listing test conditions, test configuration and run number, is provided in Table 1.

This volume also presents a group of basic and final data which is not presented in Volume 1. These data were not included in the data summary because of some event during each run which caused a test condition or model condition to be different from that specified in the test plan. It is felt, however, that some data from each of these runs might be of use. These are listed as Additional Data in Table 1. The cause for non-inclusion of each run in this group is presented in Table 2.

KEY TO BASIC PLOTTED DATA

CP - plate surface static pressure coefficient

CP-61 - probe static pressure coefficient

PT' - probe total pressure (psi)

PTO - freestream total pressure (psi)

PT'/PTO	- non-dimensional total pressure ratio
TT'	- probe total temperature (^{o}R)
TTO	- freestream total temperature (^{o}R)
TT'/TTO	- non-dimensional total temperature ratio
TW	- plate wall temperature (^{o}R)
TW/TTO	- non-dimensional temperature ratio
Y	- vertical probe height from plate surface (inches)

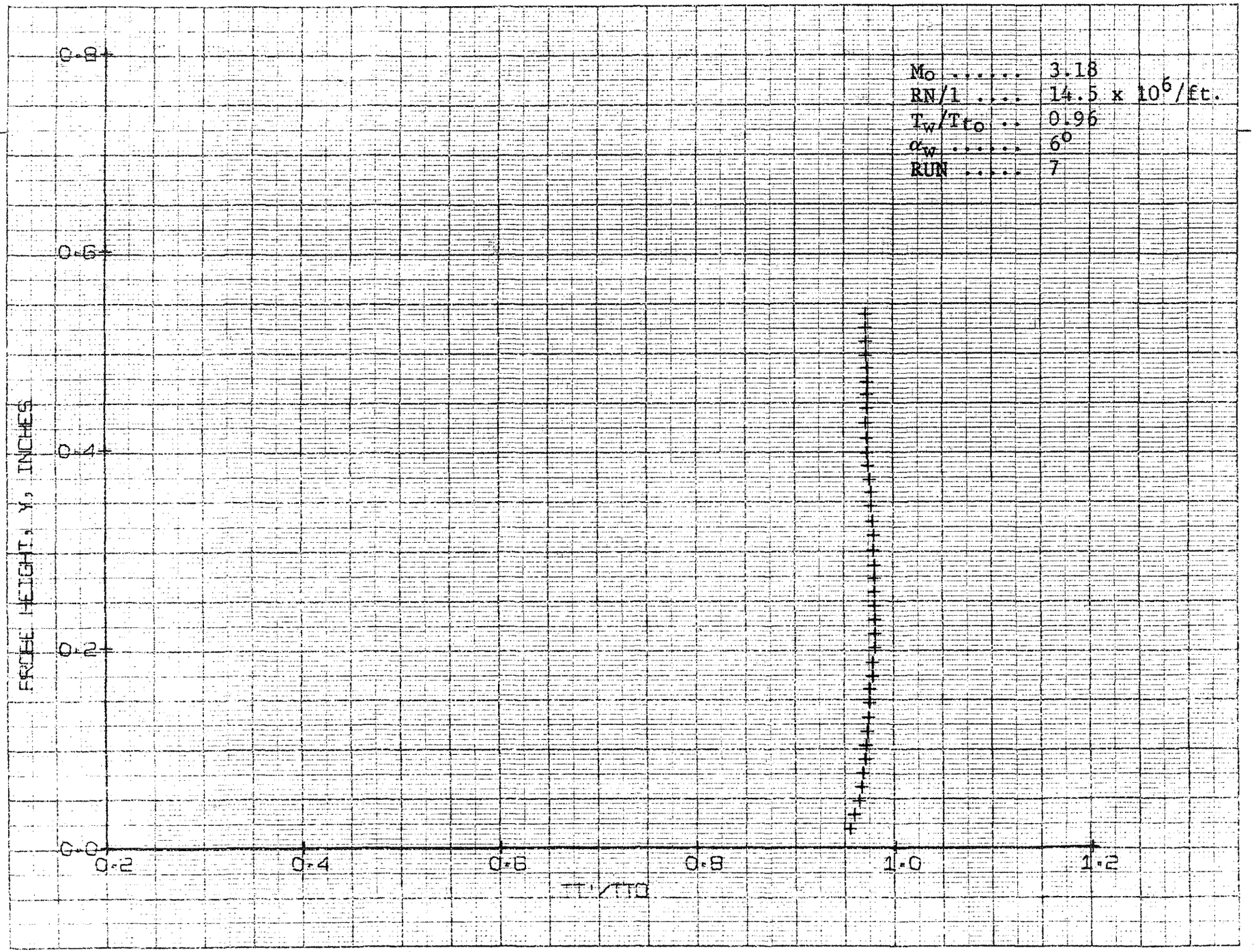
TABLE 1.- INDEX TO PLOTTED DATA

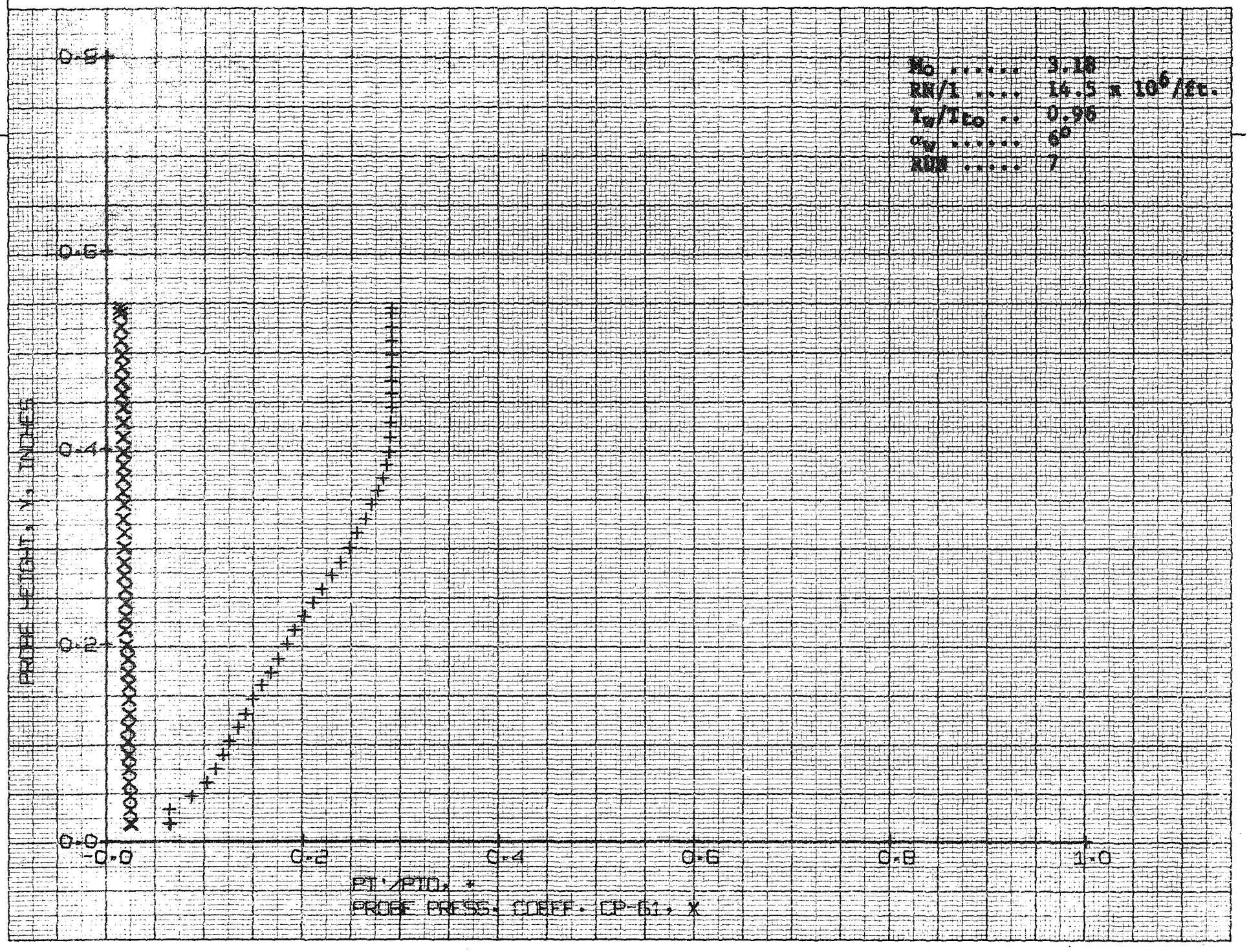
MACH NO. M_o	PLATE TEMP. RATIO T_w/T_{to}	RE/1 x 10^6 (ft.)	WEDGE CONFIG.	SURVEY STATION CODE	SURVEY STATION INCHES	RUN NO.
3.18	0.96	14.5	--	XP(0)	27.00	7
			W_6^5	(1)	31.25	11
			"	(2)	36.00	8
			W_8^6	(1)	31.25	10
			"	(2)	36.00	9
3.18	0.30	14.5	--	XP(0)	27.00	22
			W_6^5	(1)	31.25	29
			"	(2)	36.00	21
			W_8^6	(1)	31.25	28
			"	(2)	36.00	20
3.18	0.31	11.5	--	XP(0)	27.00	23
			W_6^5	(1)	31.25	30
			"	(2)	36.00	14
			W_8^6	(1)	31.25	27
			"	(2)	36.00	19
3.18	0.31	10.3	--	XP(0)	27.00	25
			W_6^5	(1)	31.25	31
			"	(2)	36.00	17
			W_8^6	(1)	31.25	26
			"	(2)	36.00	18
2.01	0.34	12.2	W_6^7	XP(2)	36.00	32
			W_8^8	(2)	36.00	36
2.01	0.32	6.4	W_6^7	XP(2)	36.00	33
			W_8^8	(2)	36.00	34
4.2	0.32	20.2	W_8^3	XP(2)	33.00	43
4.2	0.32	14.5	W_6^2	XP(2)	33.00	46
			W_8^3	(2)	33.00	44
ADDITIONAL DATA*						
3.18	0.60	15.2	W_6^5	XP(2)	36.00	12
3.18	0.30	14.5	W_6^5	XP(2)	36.00	15
4.2	0.31	15.0	W_8^3	XP(2)	33.00	41
4.2	0.31	20.2	W_6^2	XP(2)	33.00	47
4.2	0.31	20.5	W_6^2	XP(2)	33.00	49
4.2	0.31	20.7	W_6^2	XP(1)	31.50	52
4.2	0.31	20.5	W_8^3	XP(1)	31.75	57

*TABLE 2 presents explanations for excluding these data from the main report.

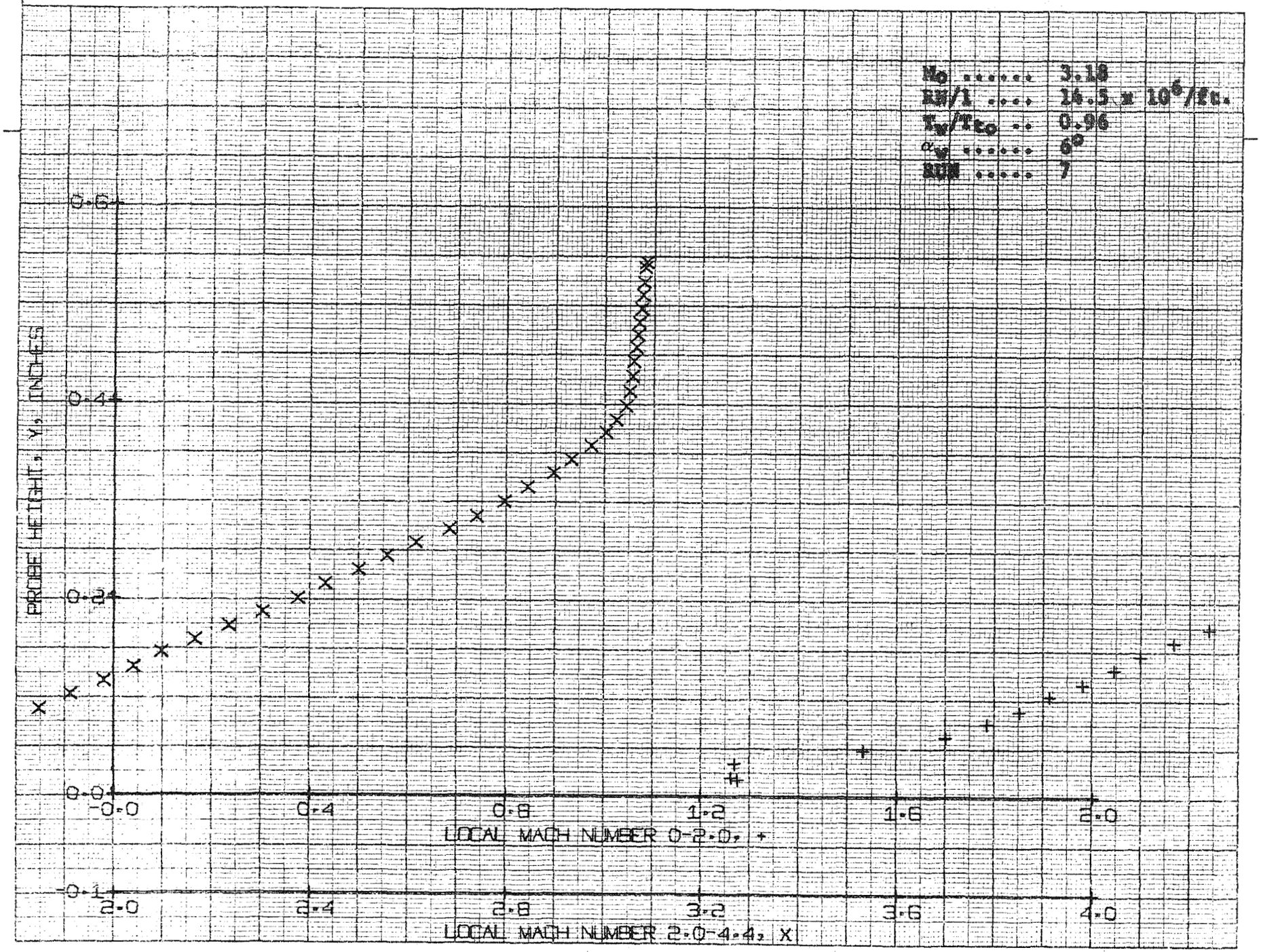
TABLE 2.- EXPLANATION FOR EXCLUSION OF ADDITIONAL DATA

Run No.	Reason for Exclusion
12	Plate temperature too high at beginning of run.
15	Plate temperature high at rear of plate at beginning of run. Some scatter in the data.
41	Incomplete run. Tunnel unstart before run was complete. Comparison with Run 44 for repeatability.
47	Incomplete run. Tunnel unstart before run was complete. M appears too high.
49	M appears too high.
52	C_{p_i}'s are scattered. (Tubes icing up.)
57	C_{p_i}'s are scattered. (Tubes icing up.)


M_o 3.18
RN/1 .... 14.5×10^6/ft.
T_w/T_{t_o} .. 0.96
α_w ..... 6°
RUN 7
0.0
0.2
0.4
0.6
0.8
PROBE HEIGHT, Y, INCHES
0.2
0.4
0.6
0.8
1.0
1.2
T'/TO


M_0 ..... 3.10
RN/L .... 14.5 x 10^6/ft.
T_w/T_{co} .. 0.96
α_w ..... 6^0
KUN 7
PROBE HEIGHT, Y, INCHES
0.0
0.2
0.4
0.6
0.8
-0.0
0.2
0.4
0.6
0.8
1.0
PI'/PTO, +
PROBE PRESS. COEFF. CP-61, X

182-3 007 D 04-28-69 2245 PD01



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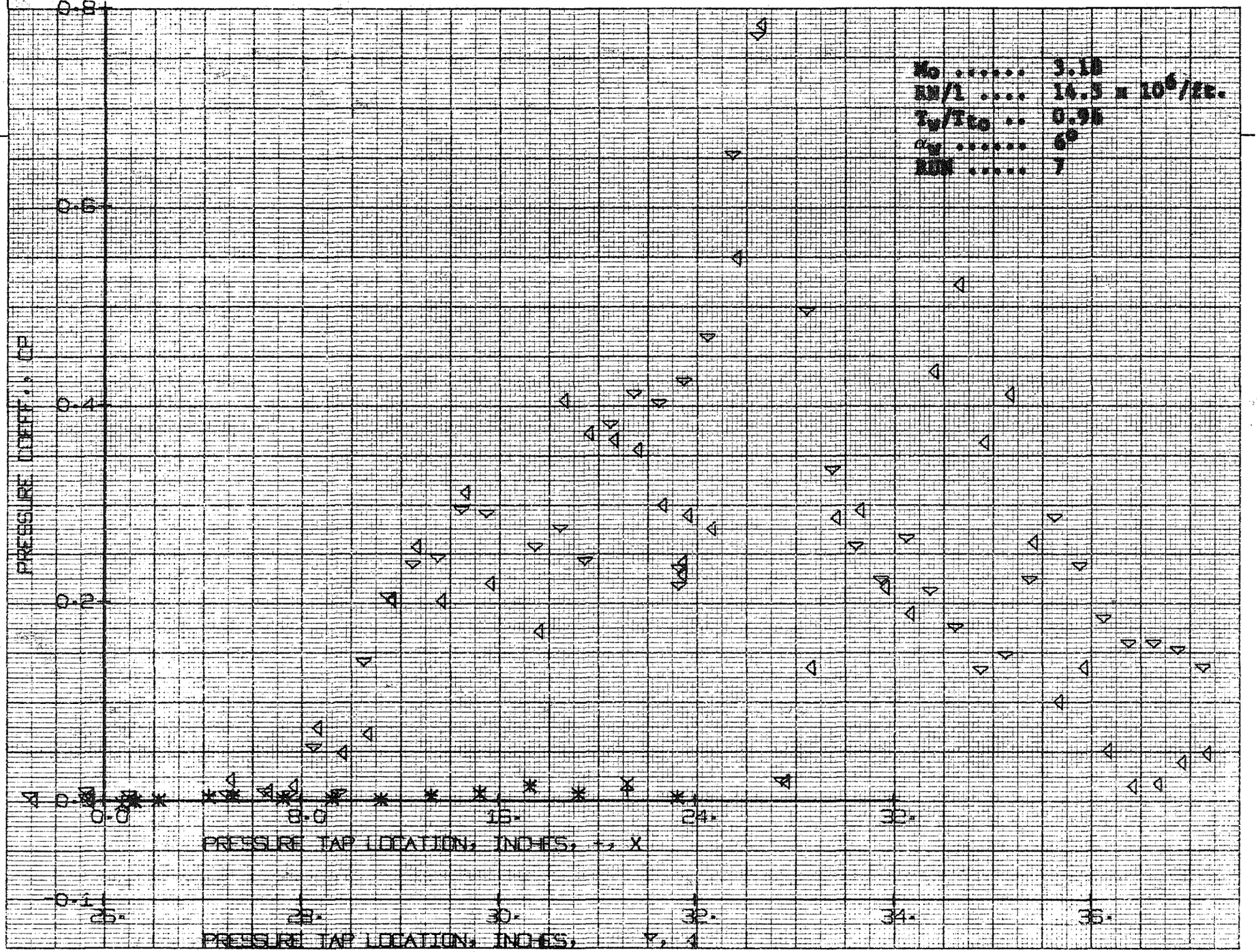

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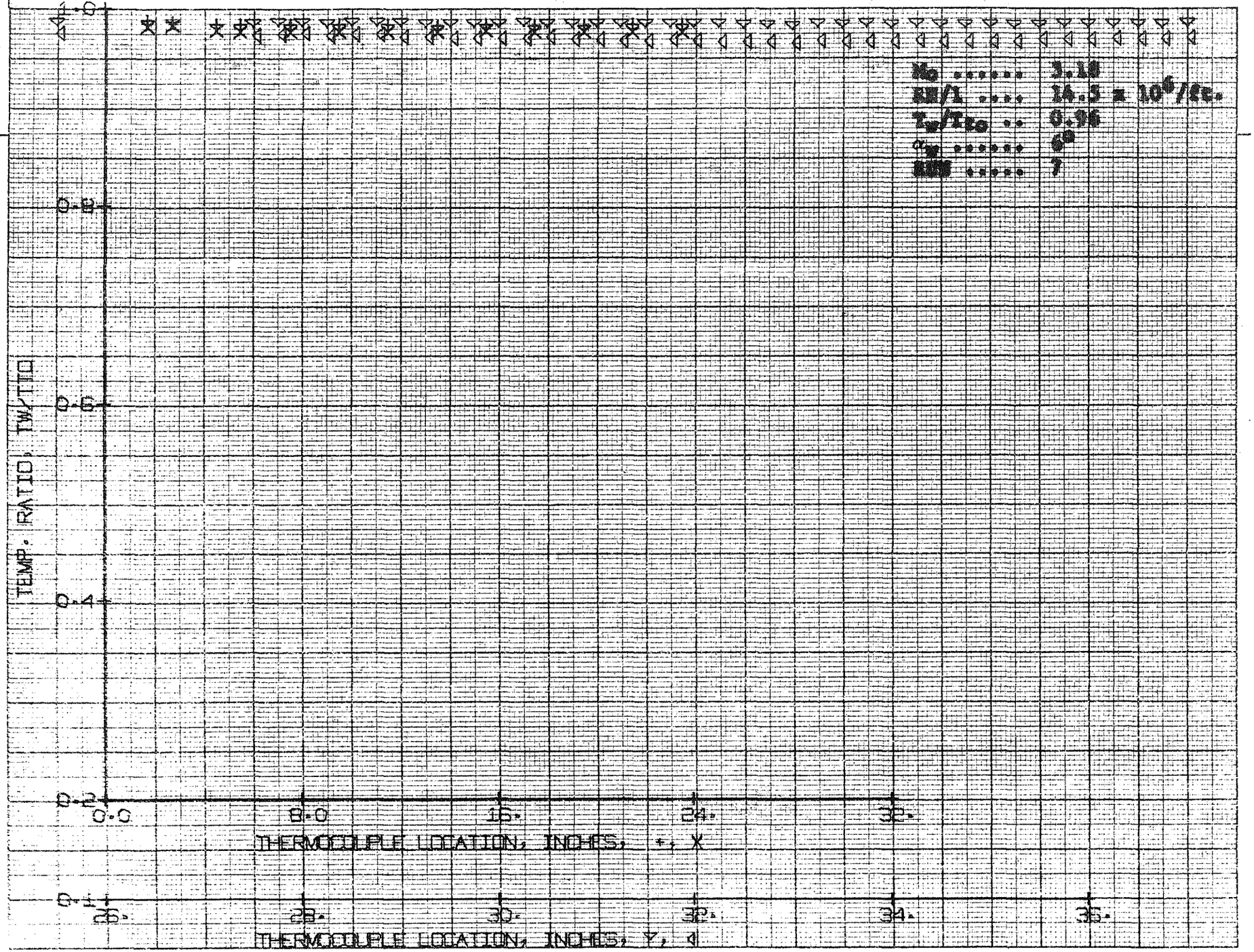

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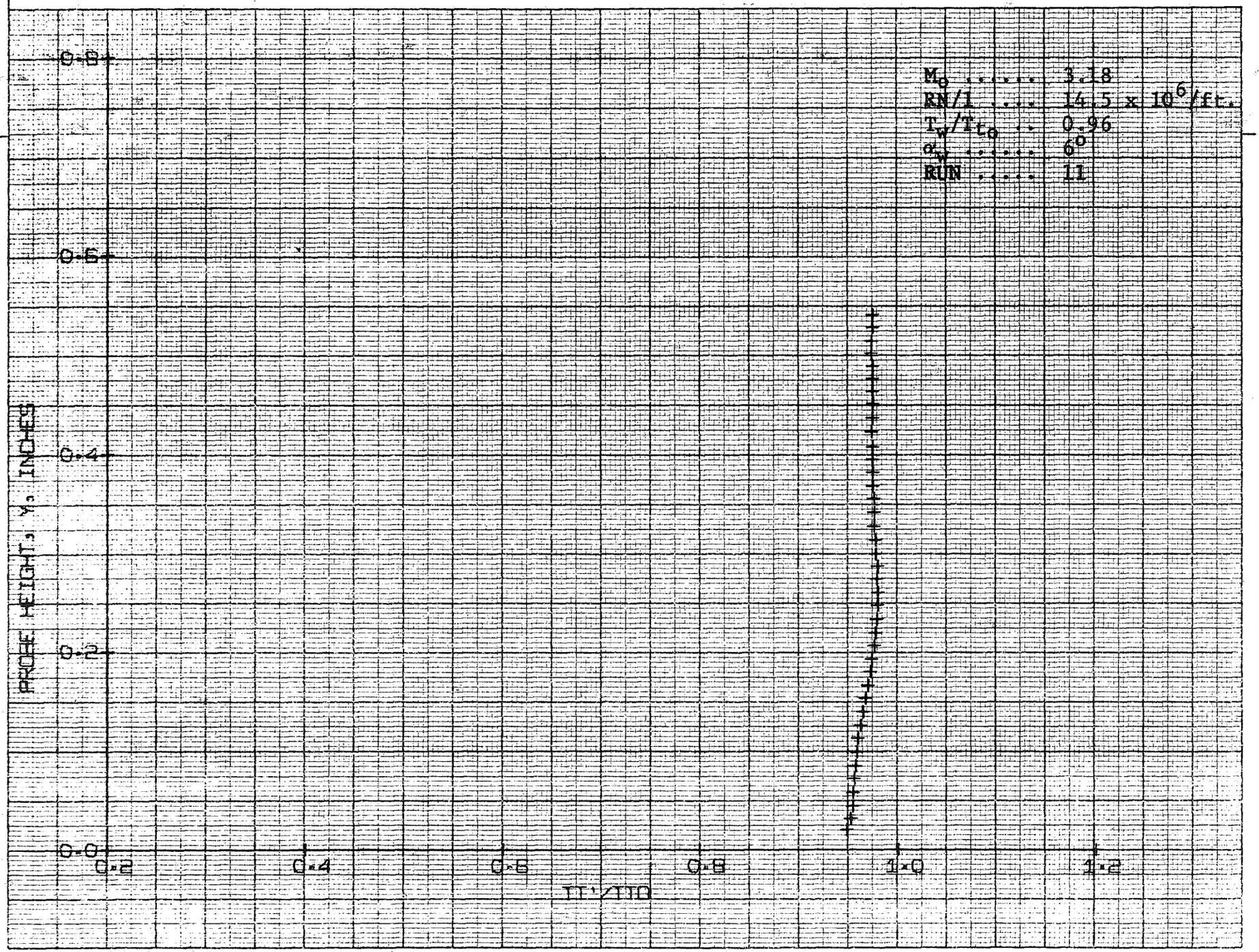

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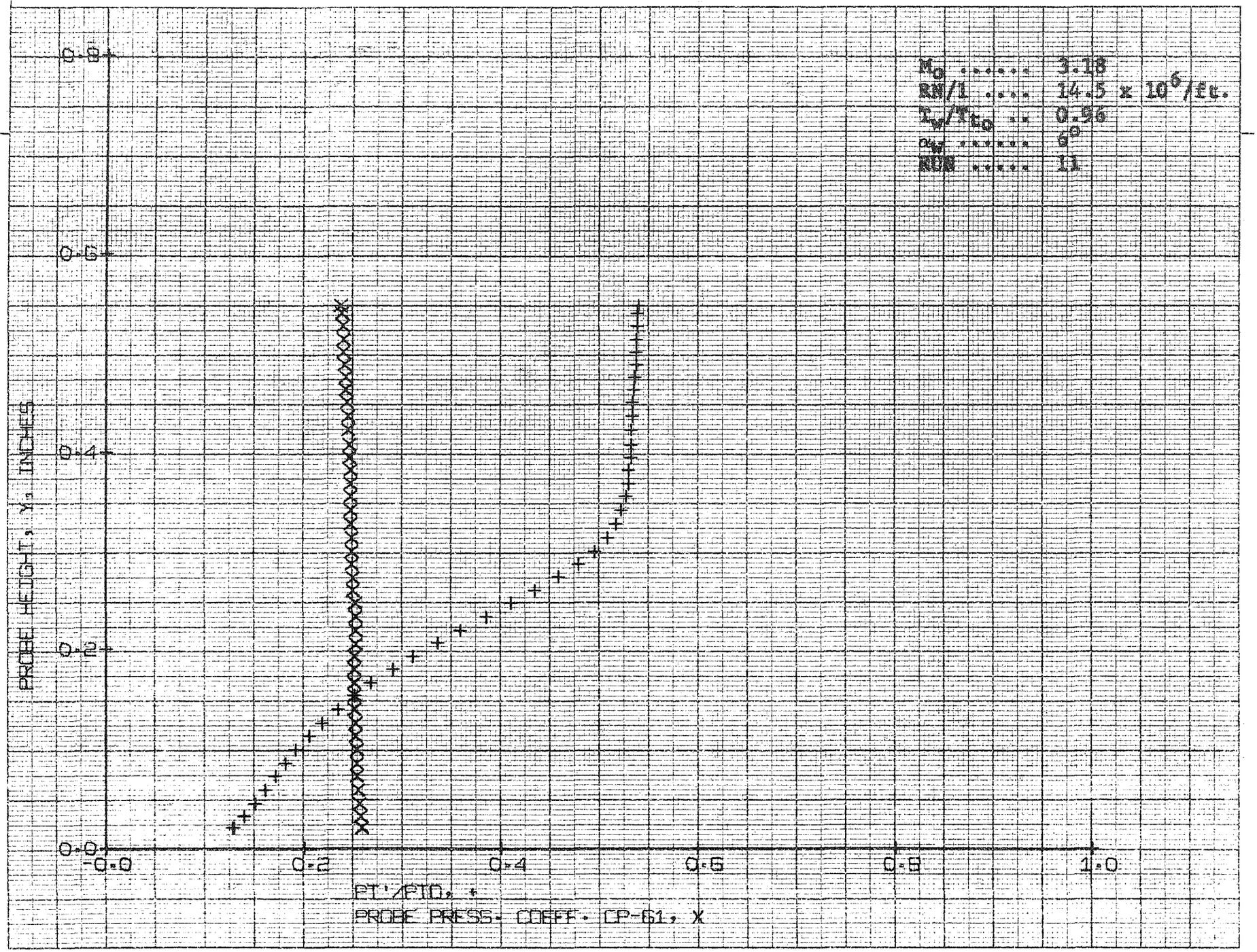

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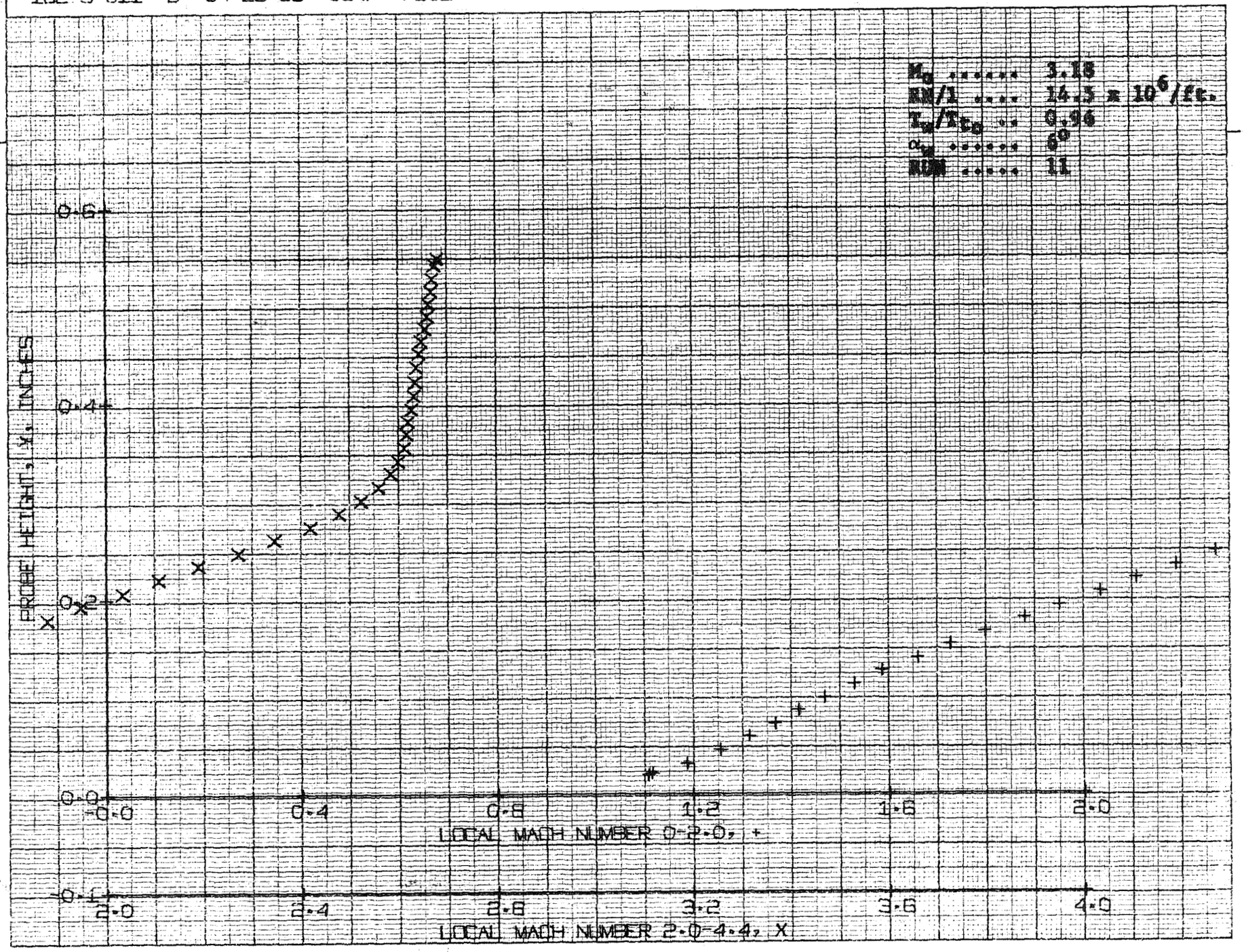
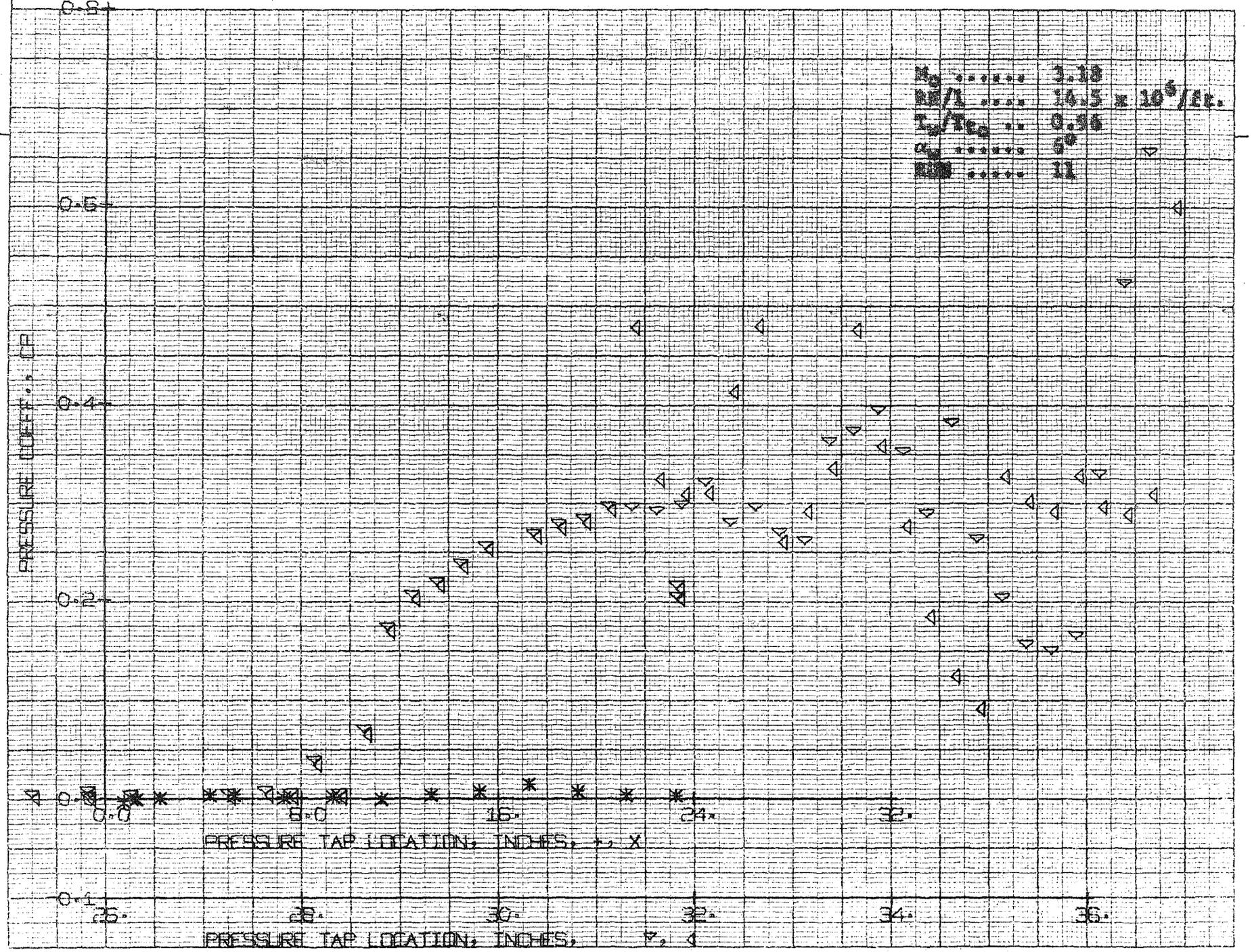
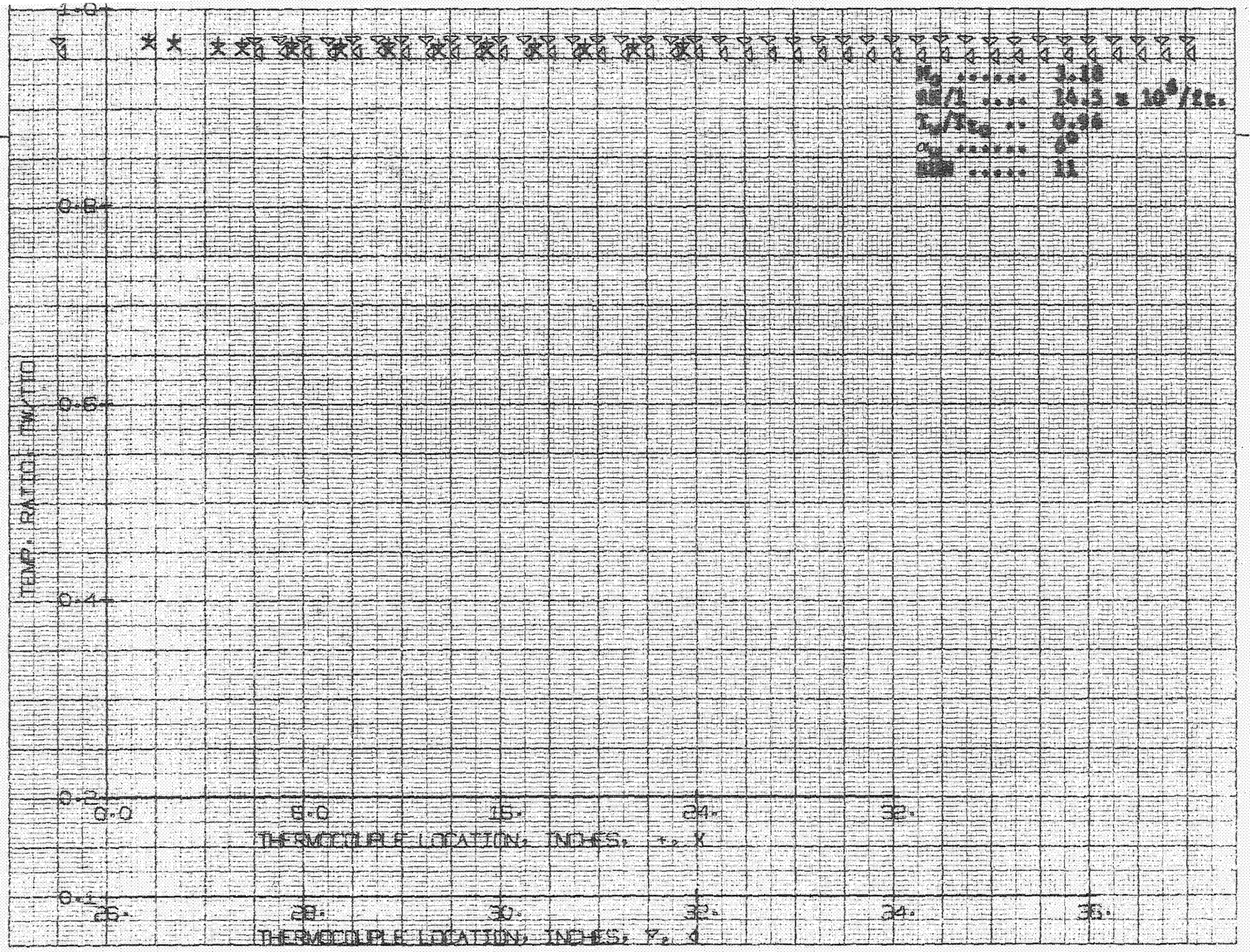
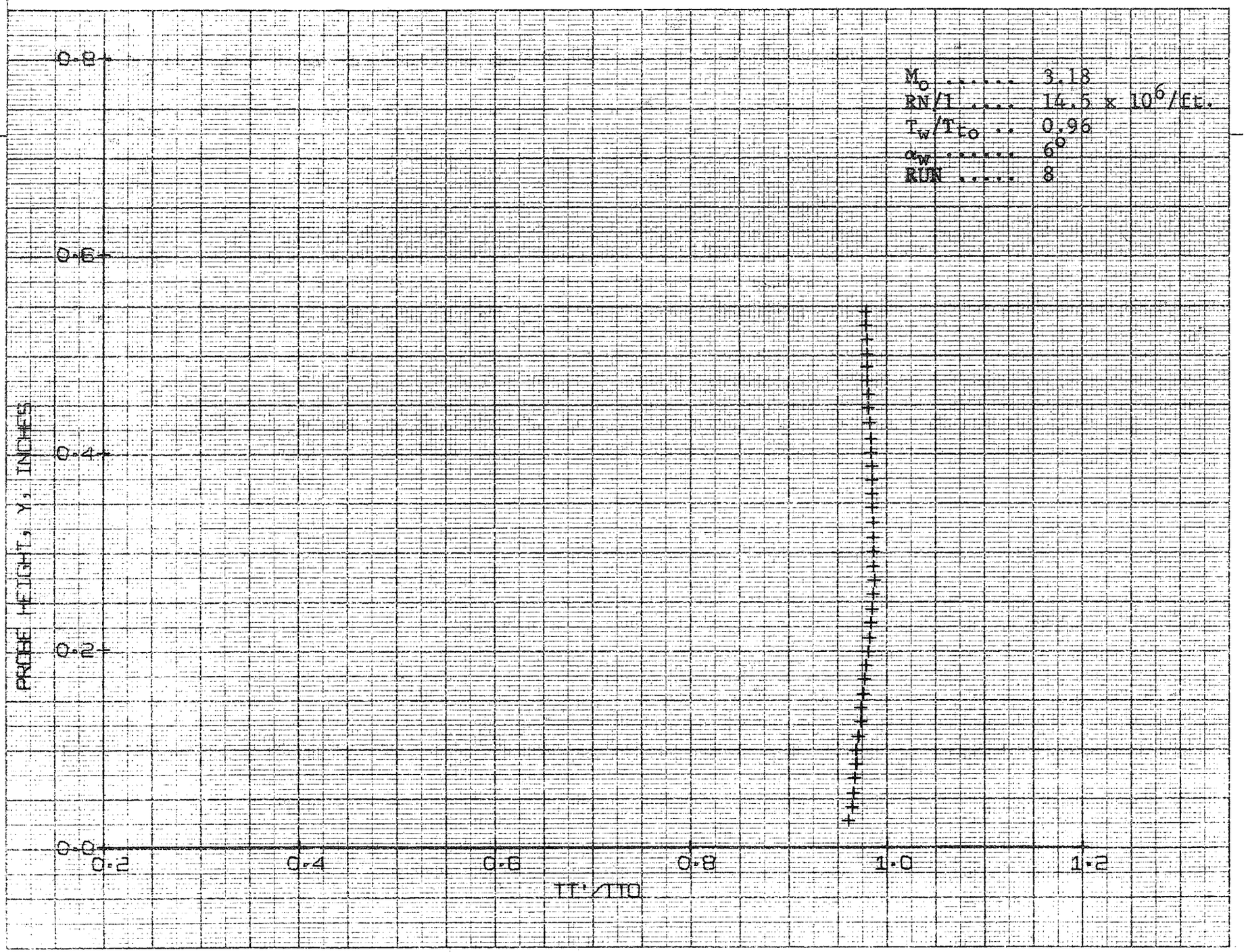


182-3 511 E 04-29-69 0359 PD02

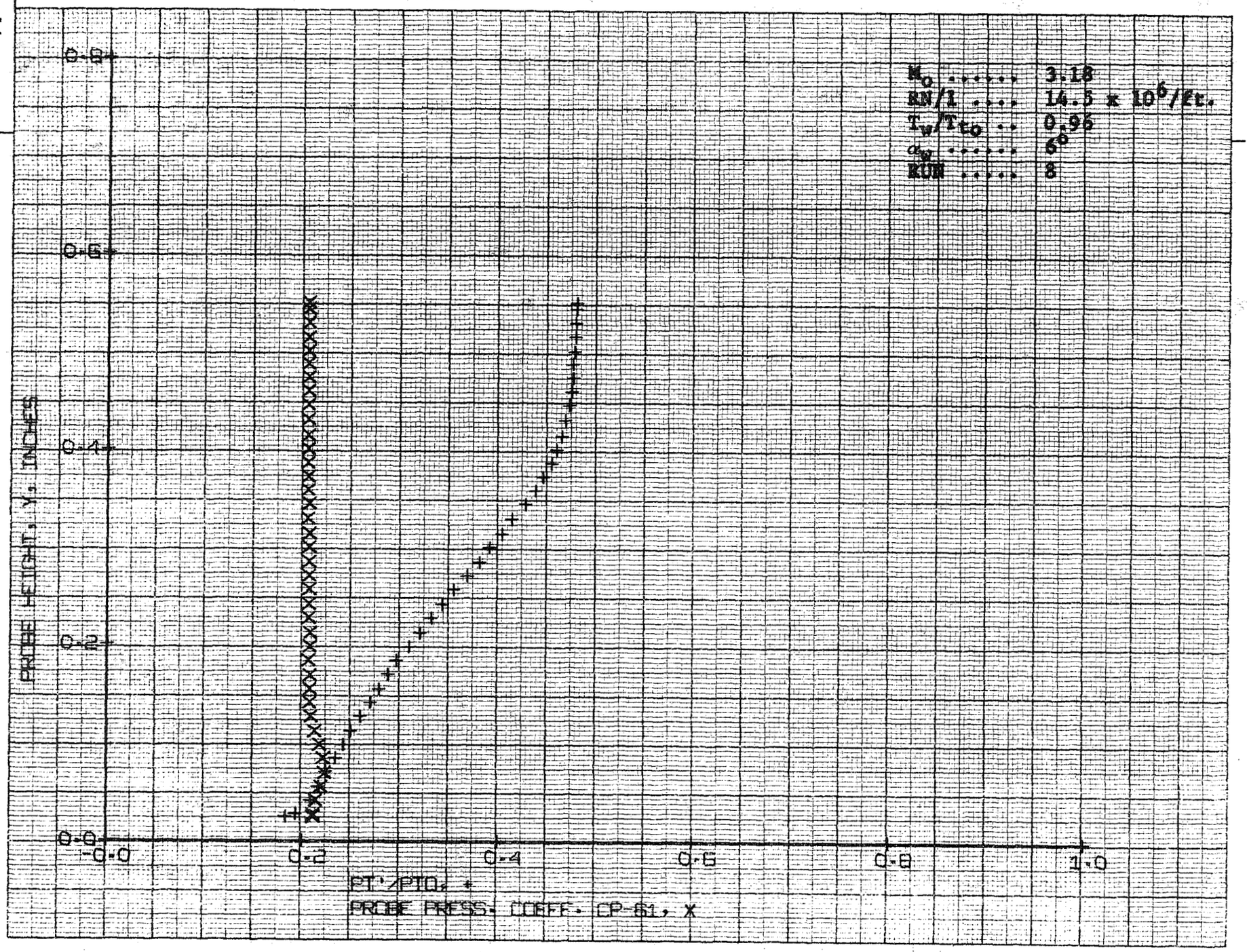



1.0
0.8
0.6
0.4
0.2
0.0
TEMP. RATIO, TW/TTO
8.0
16.
24.
32.
THERMOCOUPLE LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
THERMOCOUPLE LOCATION, INCHES, Y, O

182-3 008 A 04-30-69 0501 PD01



182-3 008 B 04-28-69 2325 PD01



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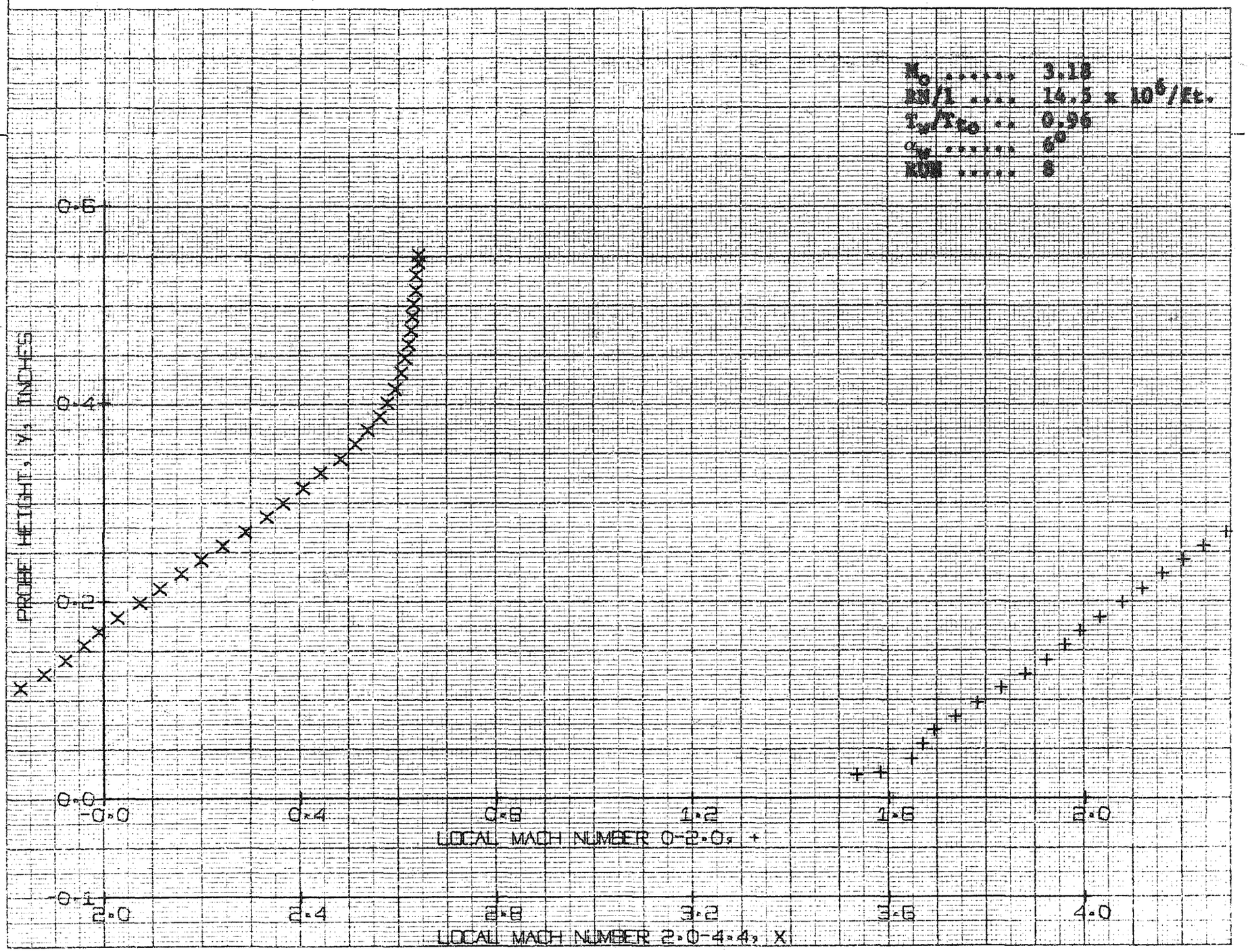
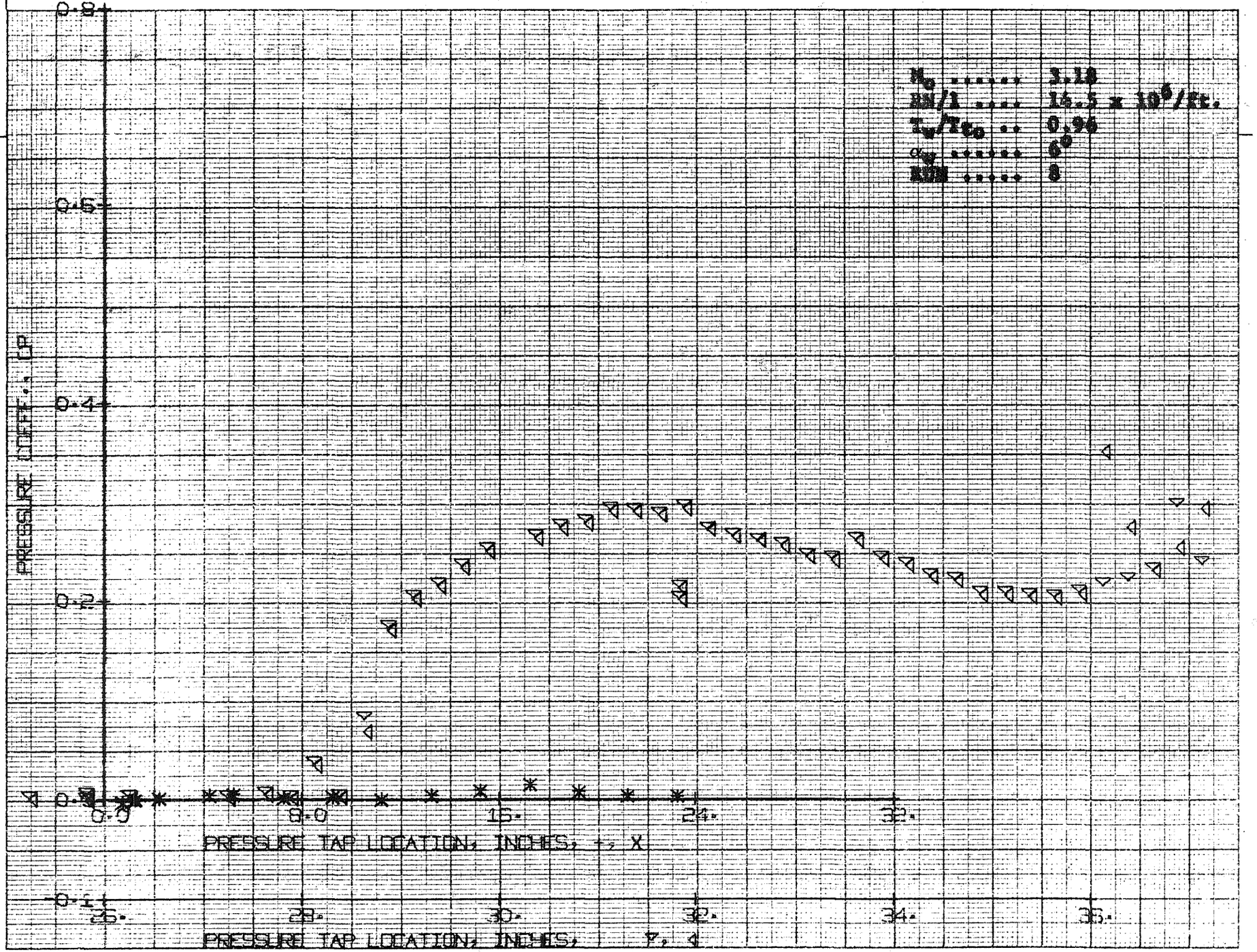
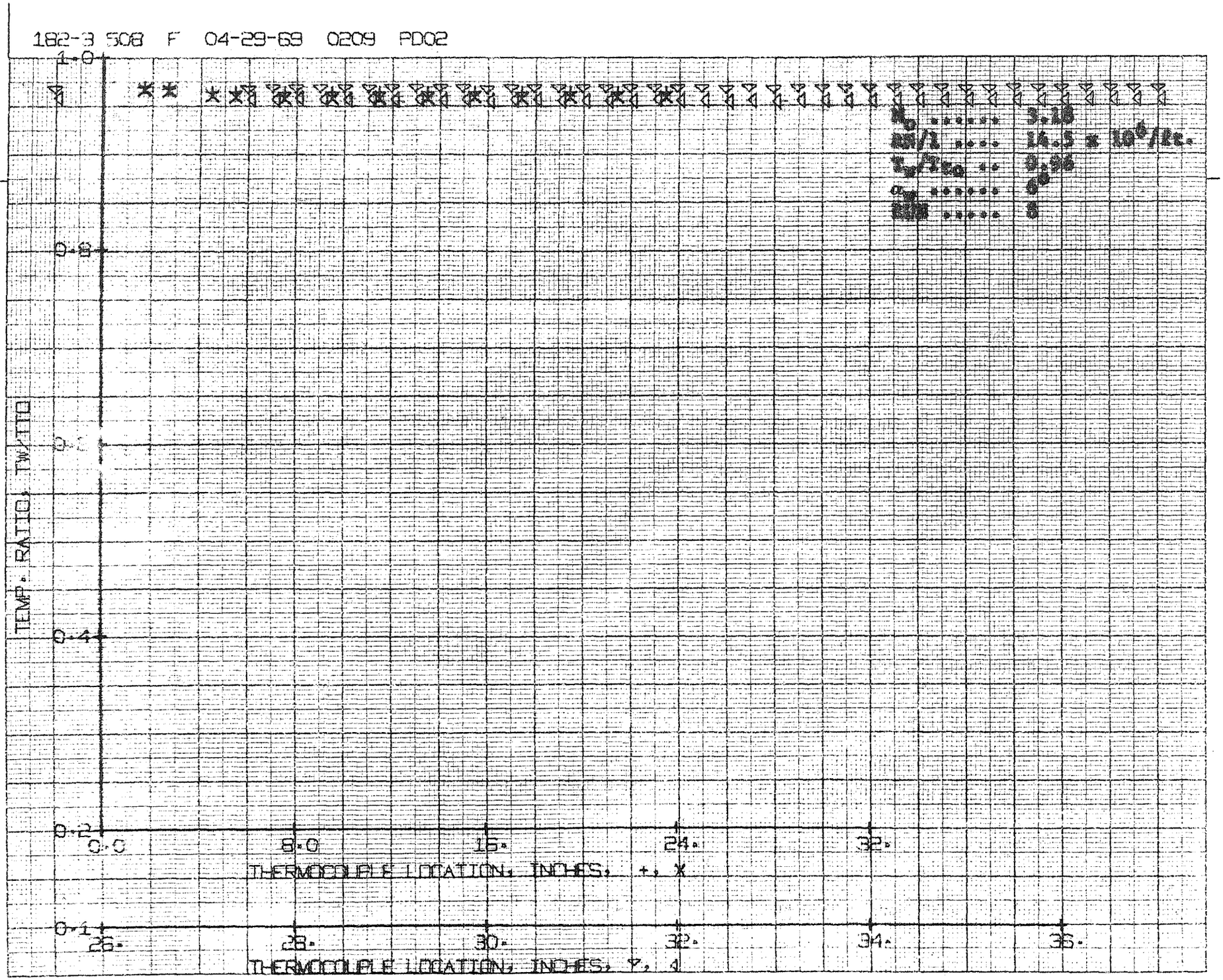
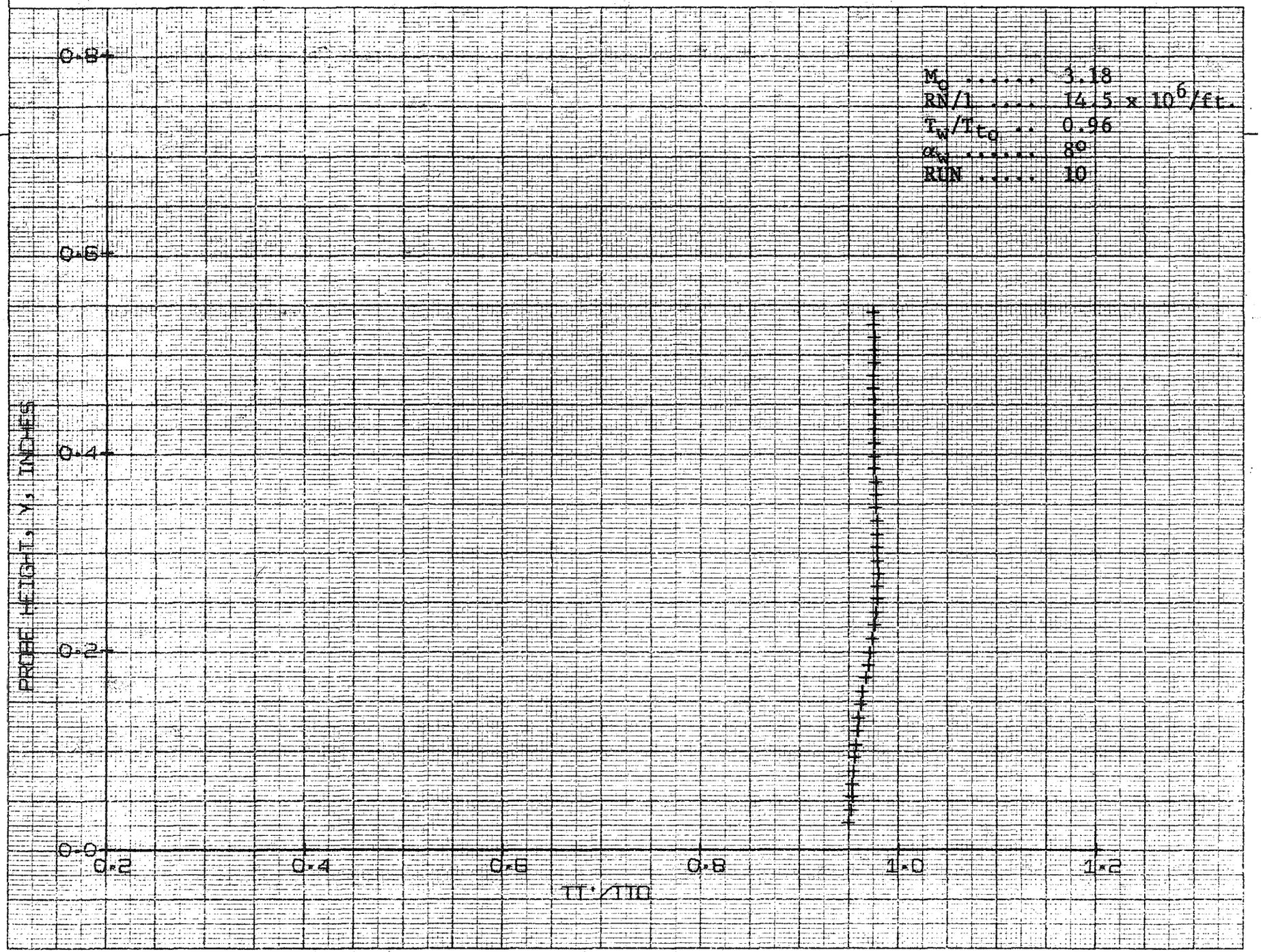


182-3 508 E 04-29-69 0209 PD02

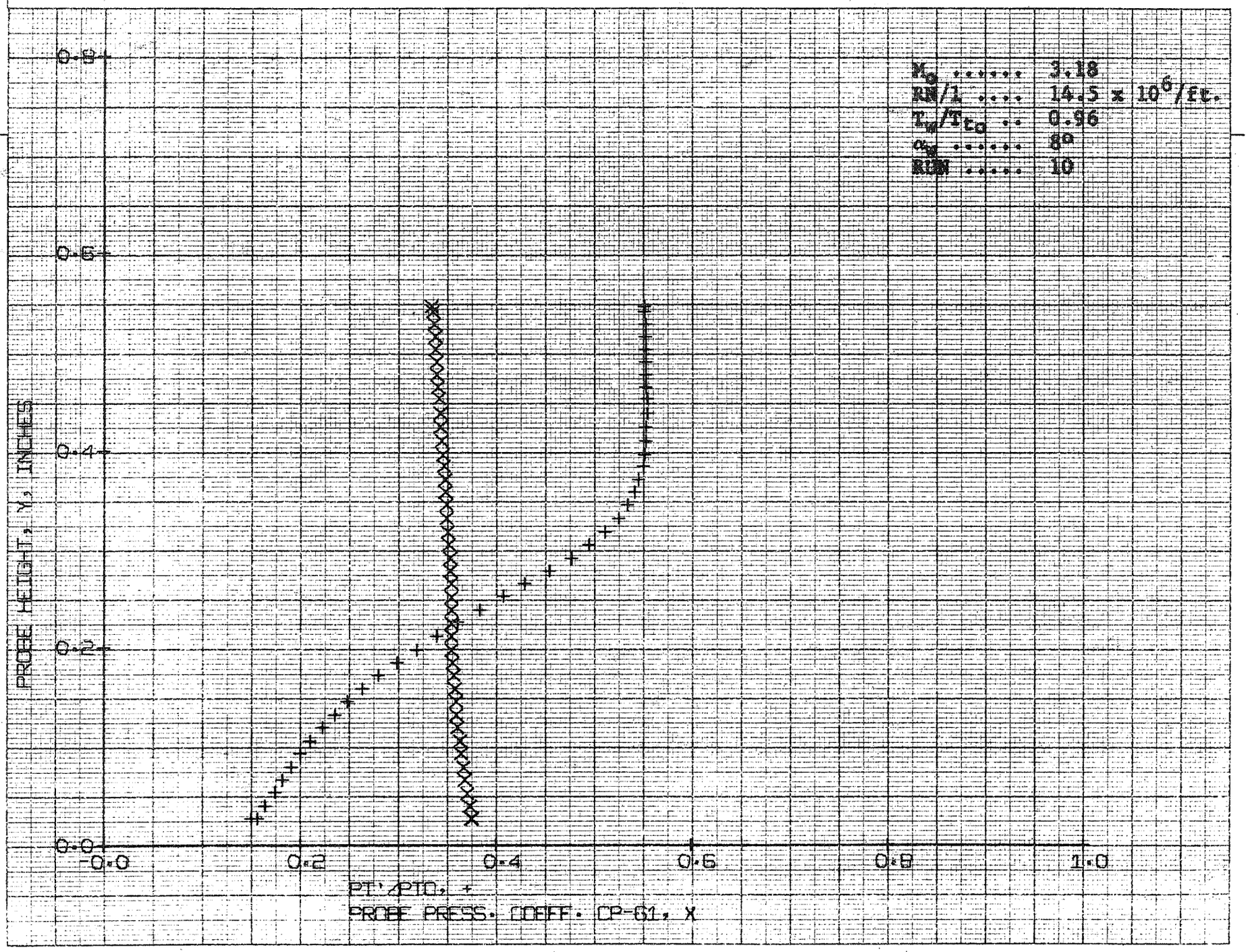



182-3 508 F 04-29-69 0209 PD02
1.0
0.8
0.6
0.4
0.2
0.1
TEMP. RATIO, TW/TTO
0.0
8.0
16.
24.
32.
THERMOCOUPLE LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
THERMOCOUPLE LOCATION, INCHES, Y, 1
R_o 3.18
Ω/L .... 14.5 x 10^6/sec.
$L_w/2r_o$ .. 9.96
α_w ..... 0°
[illegible] 8

182-3 010 A 04-30-69 0515 PD01



182-3 010 B 04-29-69 0245 PD01



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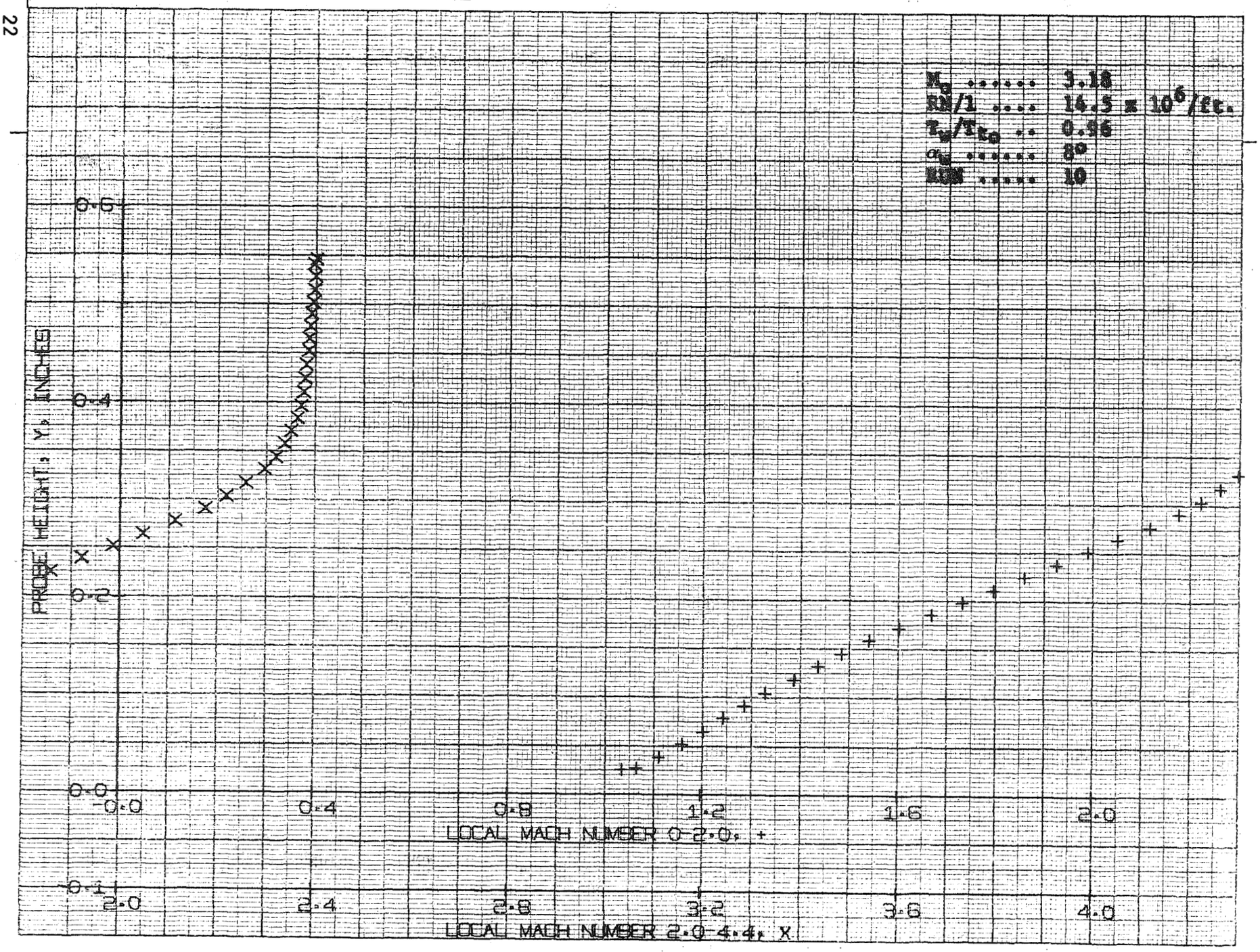
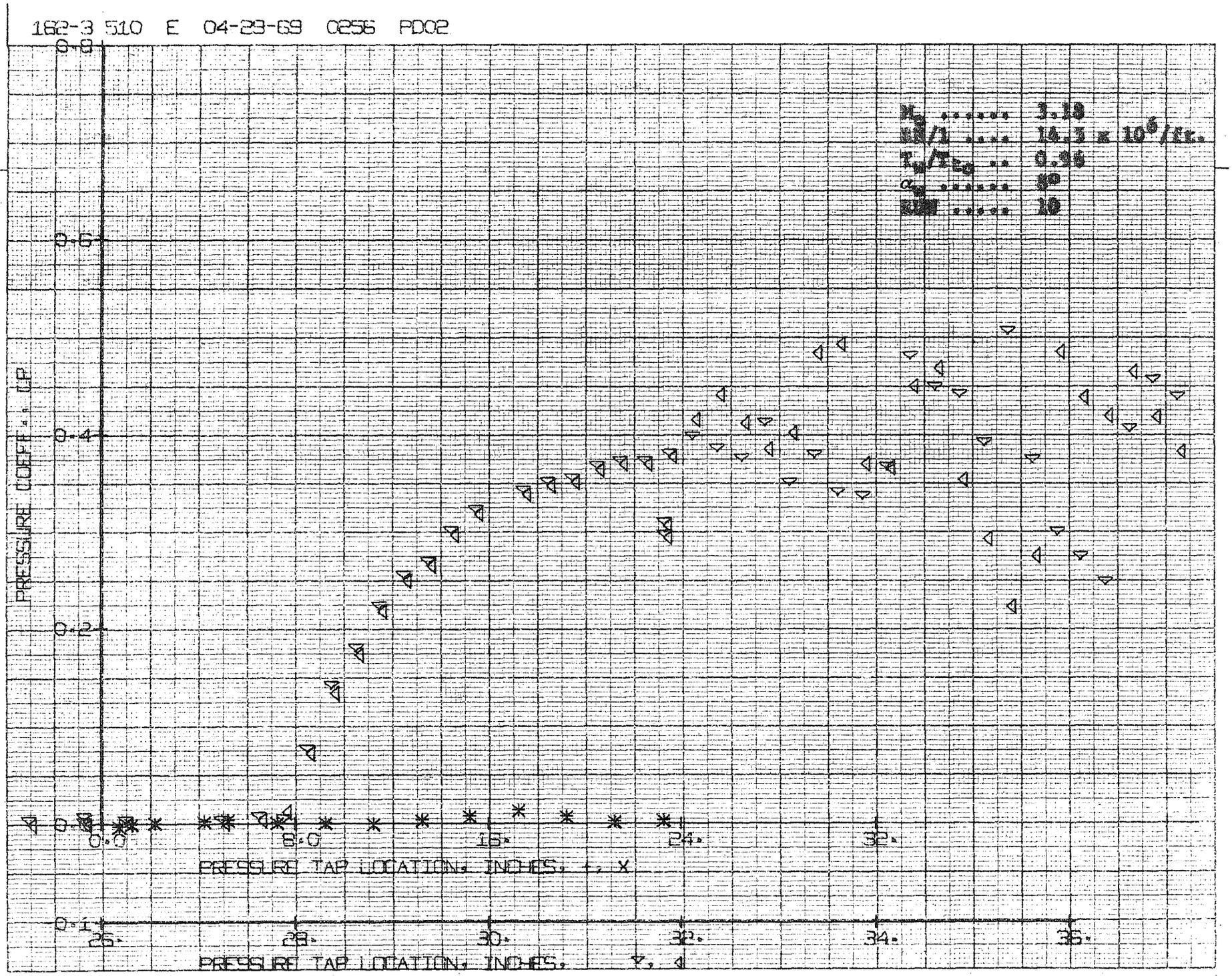
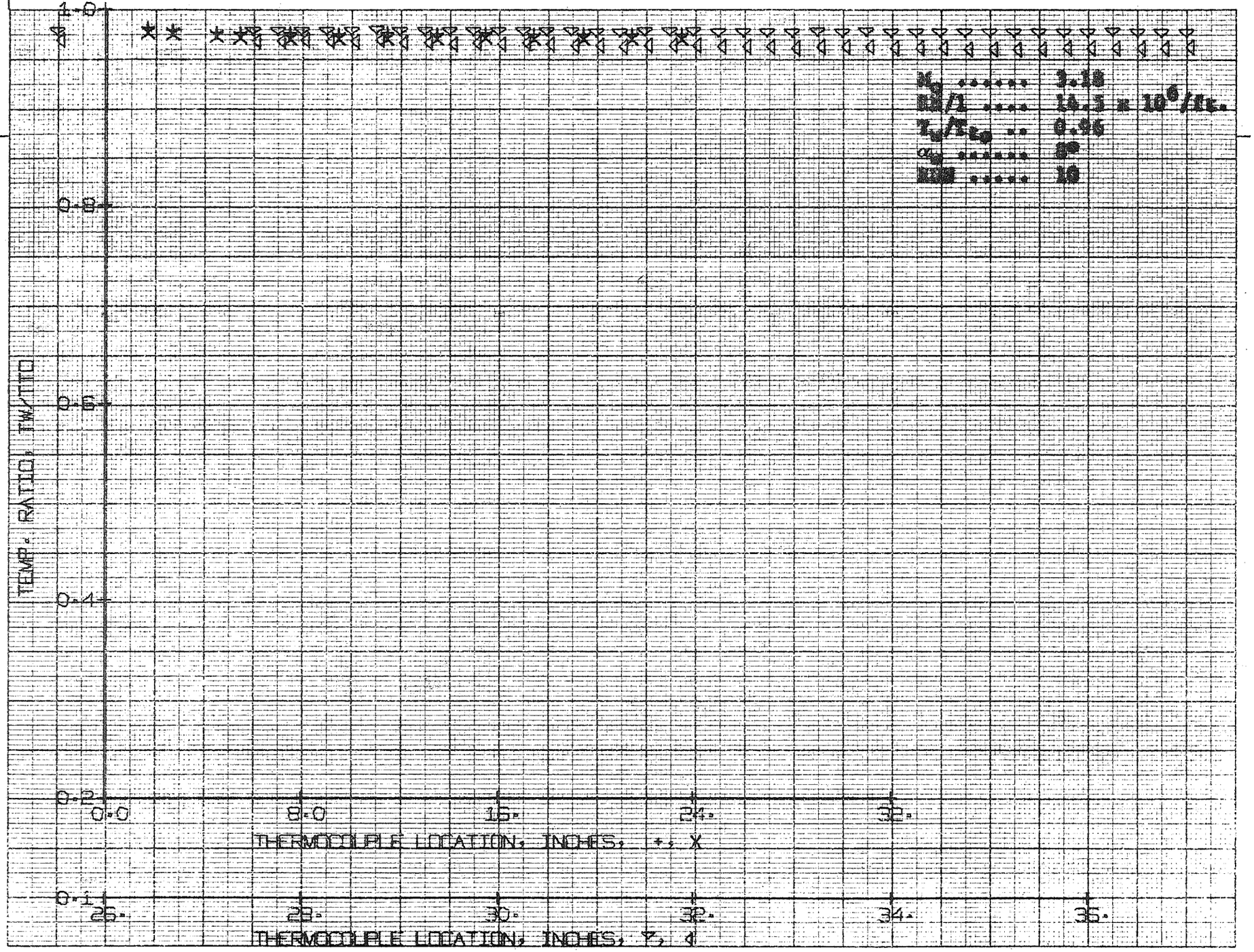



162-3 510 E 04-23-69 0256 PD02
M_∞ 3.10
$\nu\bar{d}/1$ .... 14.5 x 10^6/ft.
T_w/T_{t_∞} .. 0.96
α_∞ ..... 0°
RUN 10
PRESSURE COEFF., CP
0.8
0.6
0.4
0.2
0.0
-0.1
0.0
8.0
16.
24.
32.
PRESSURE TAP LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
PRESSURE TAP LOCATION, INCHES, ▽, △

182-3 510 F 04-29-69 0256 PD02



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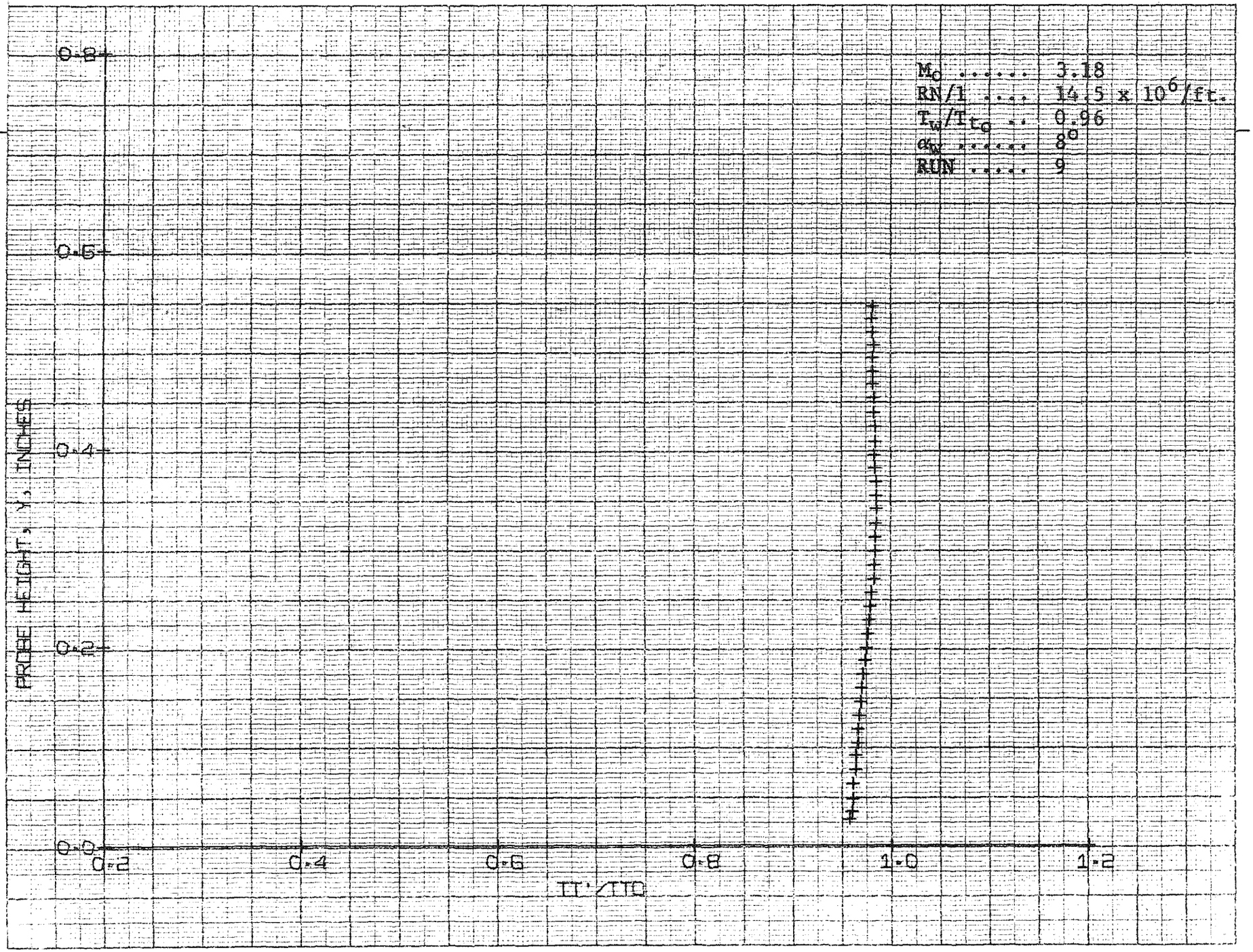

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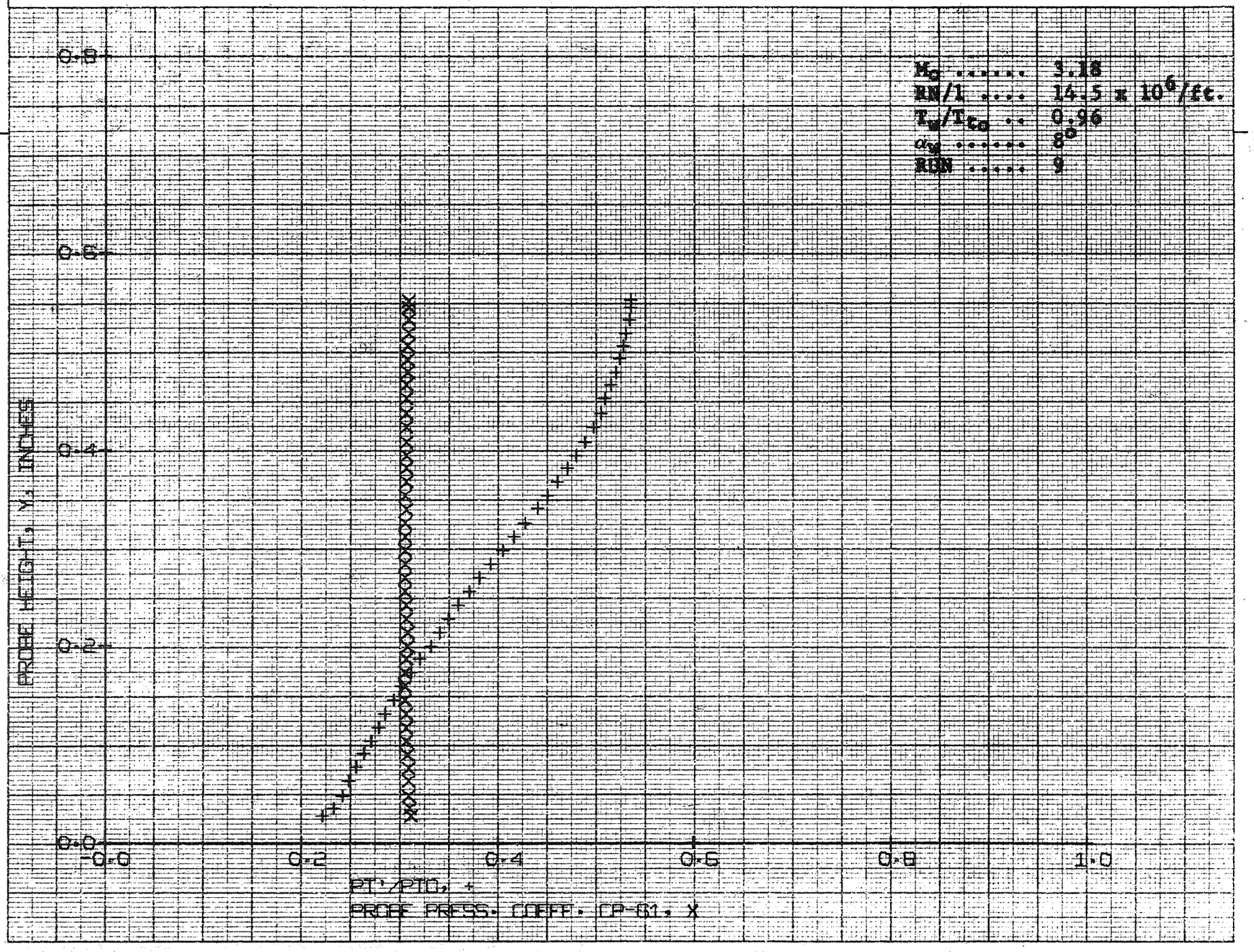

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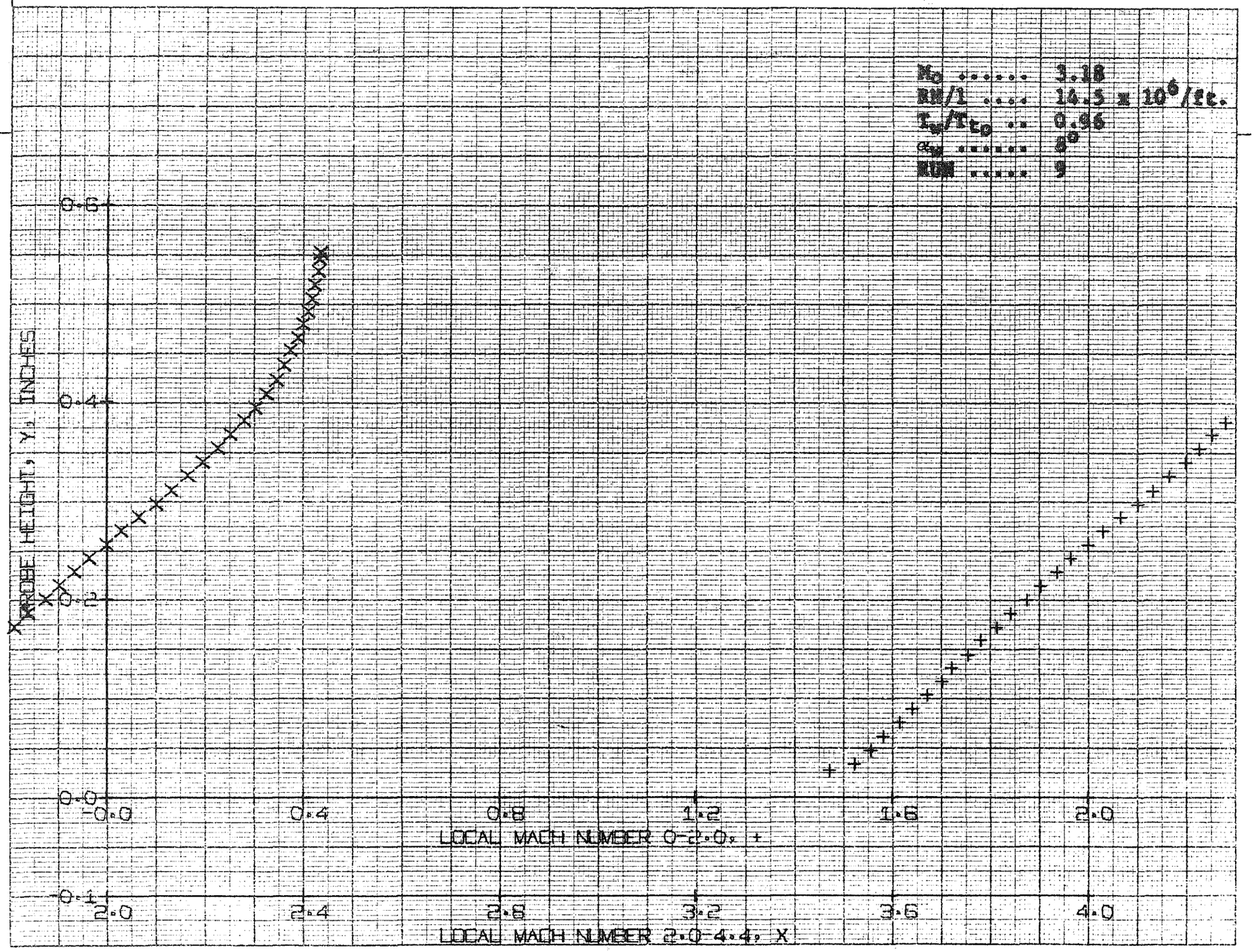

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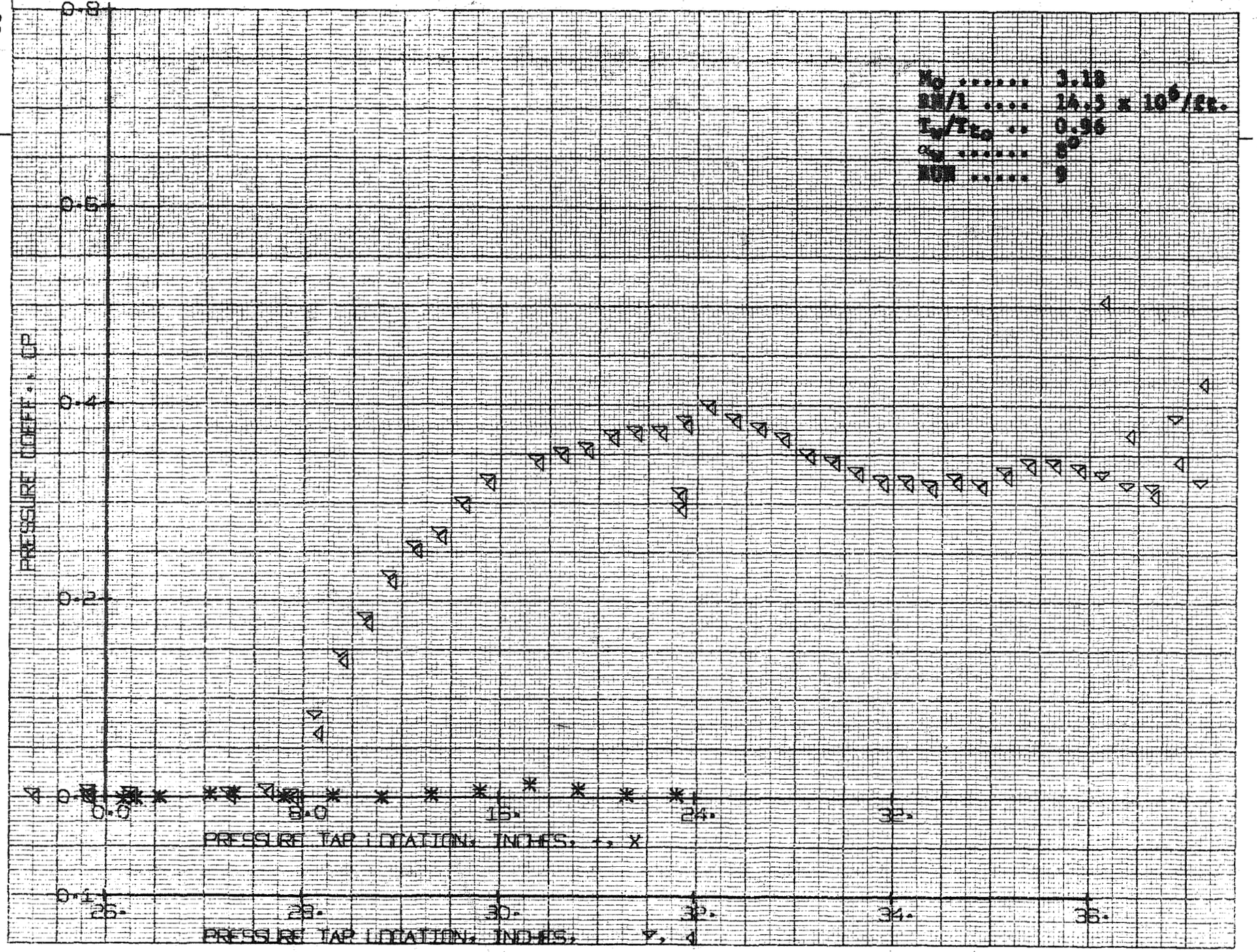

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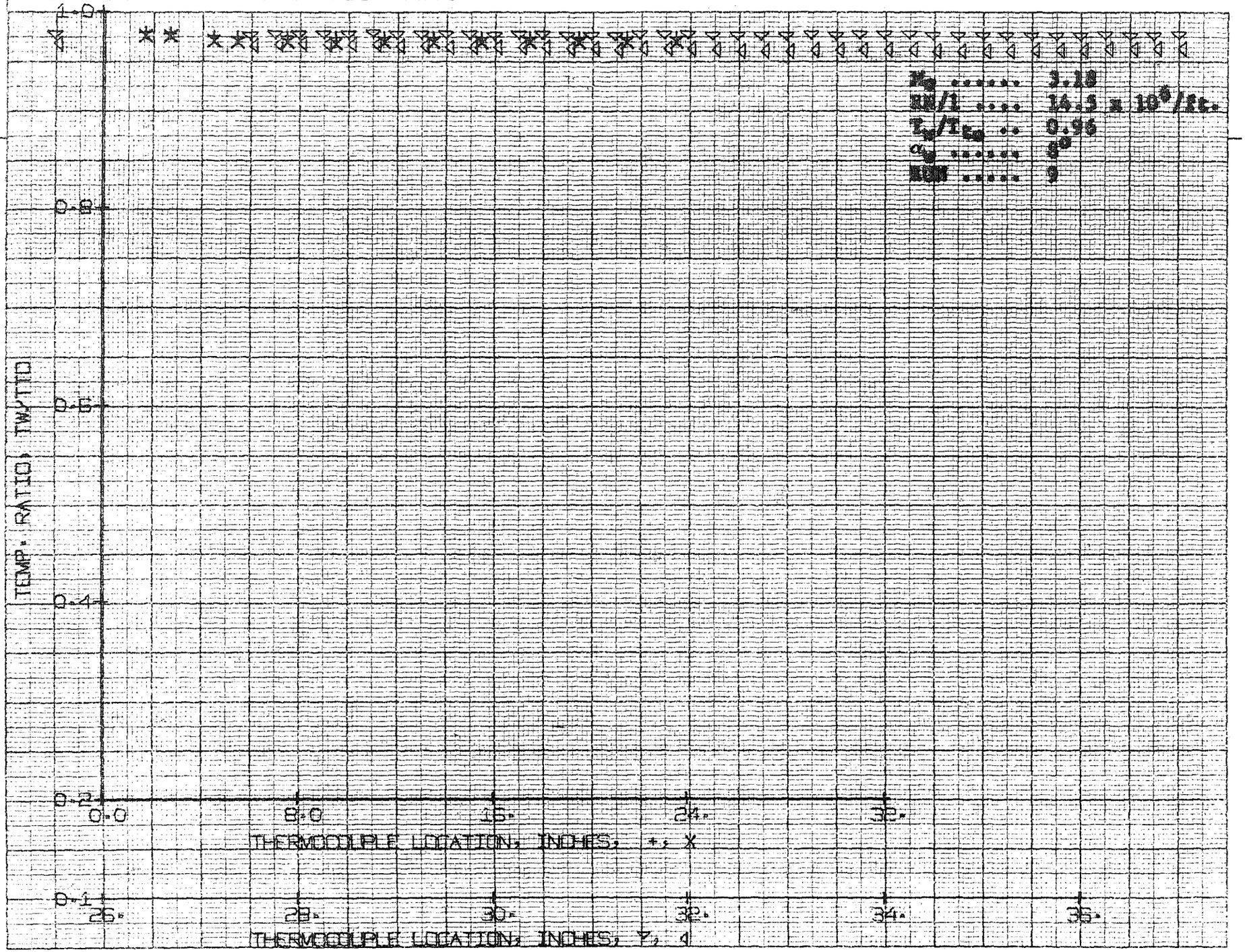

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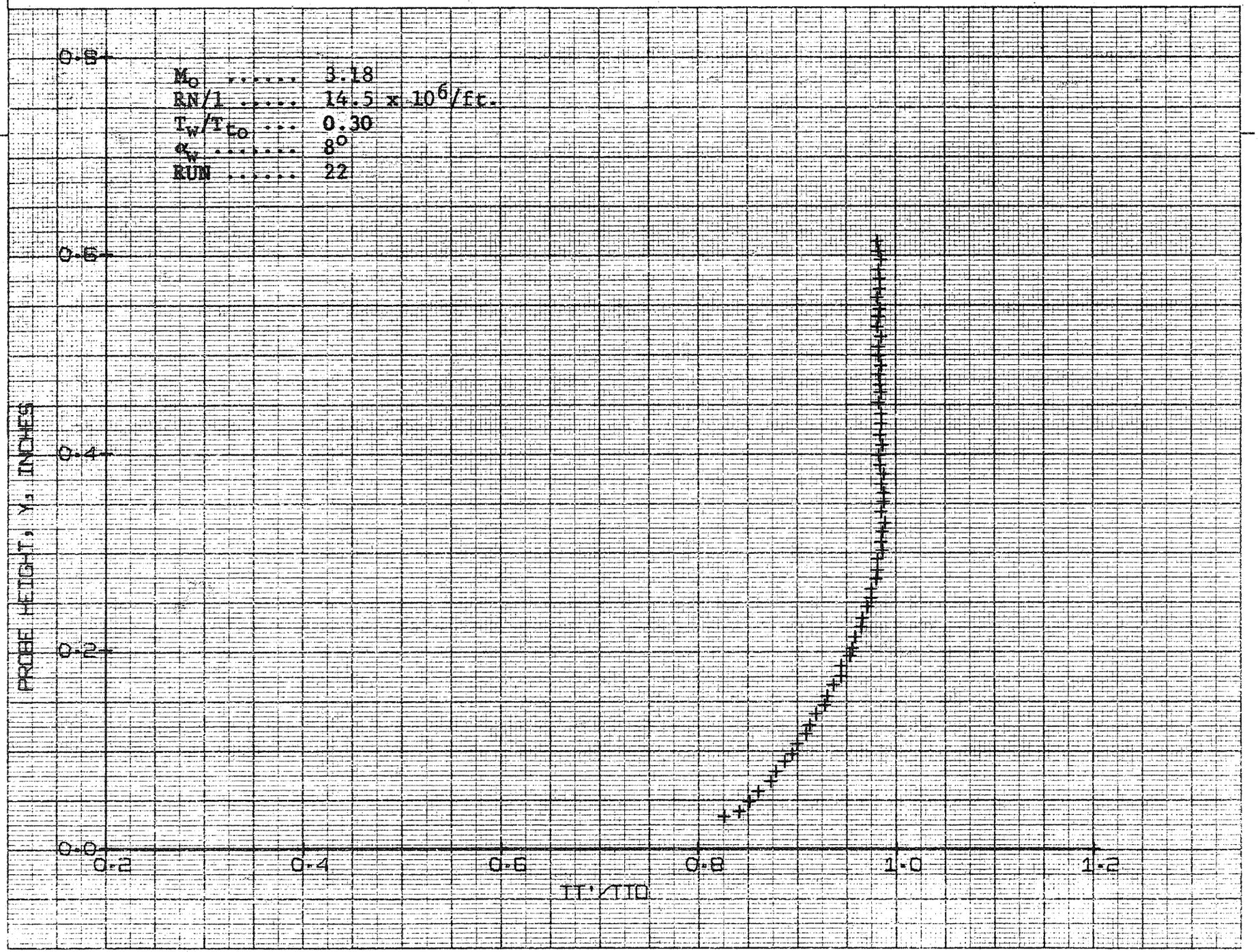

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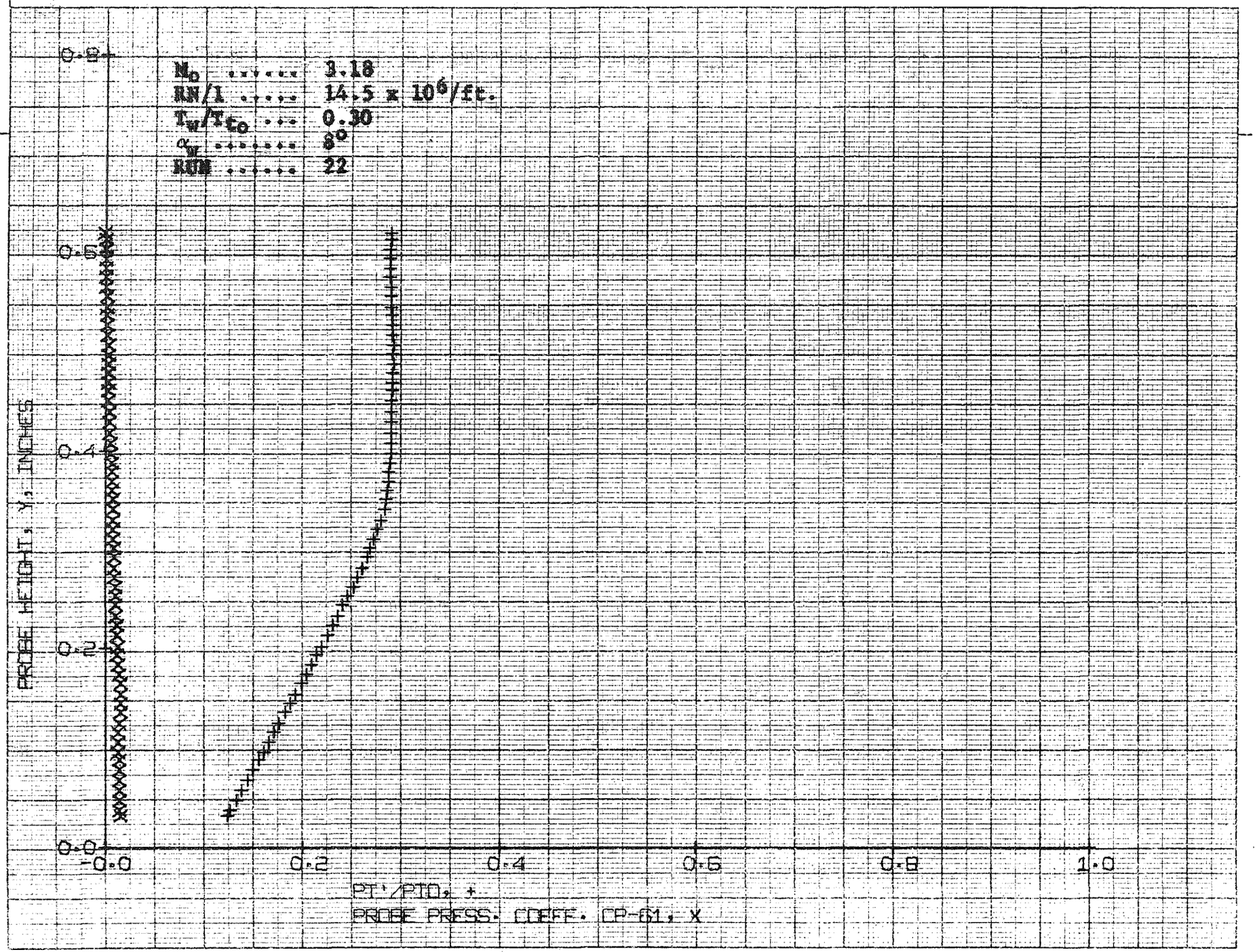

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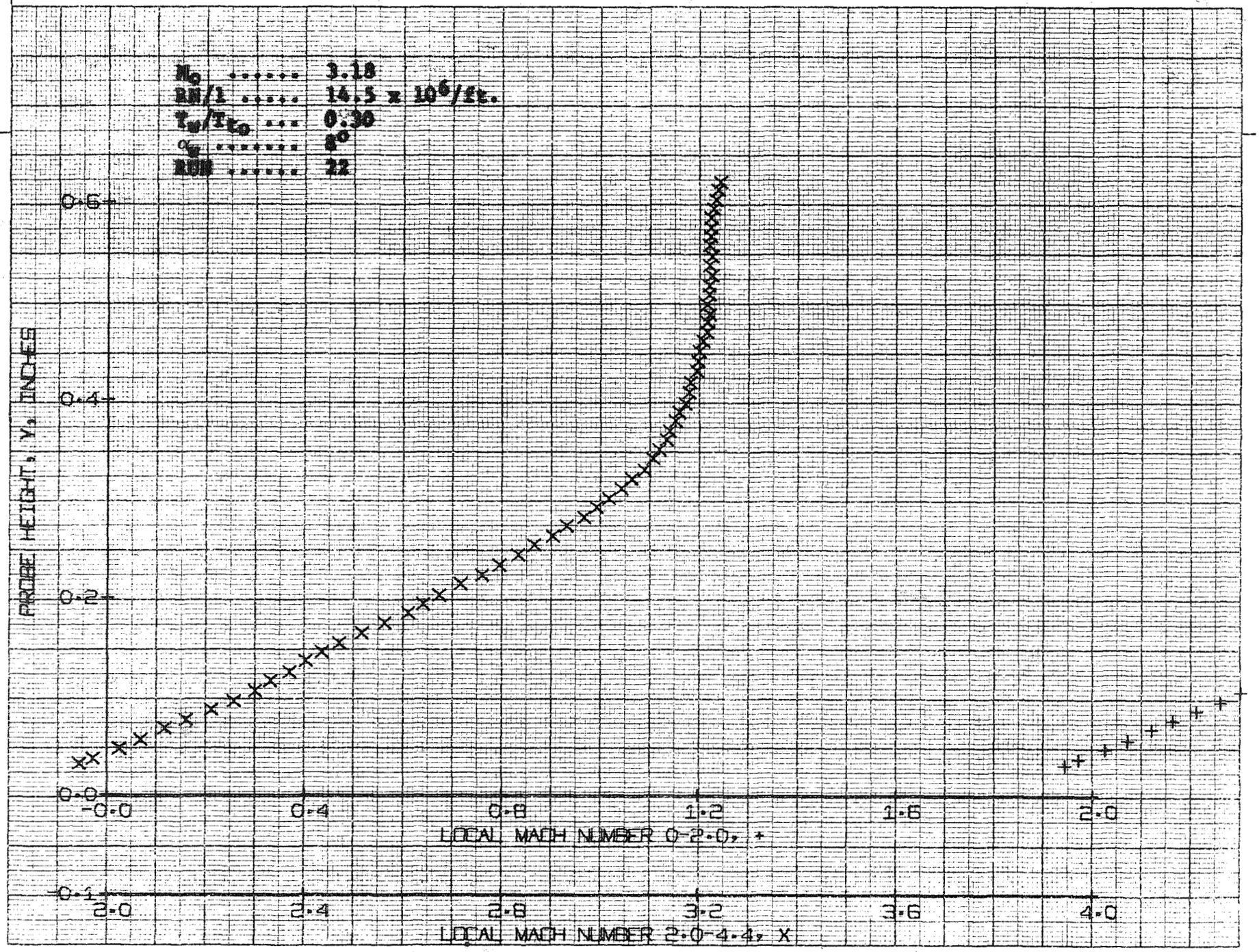
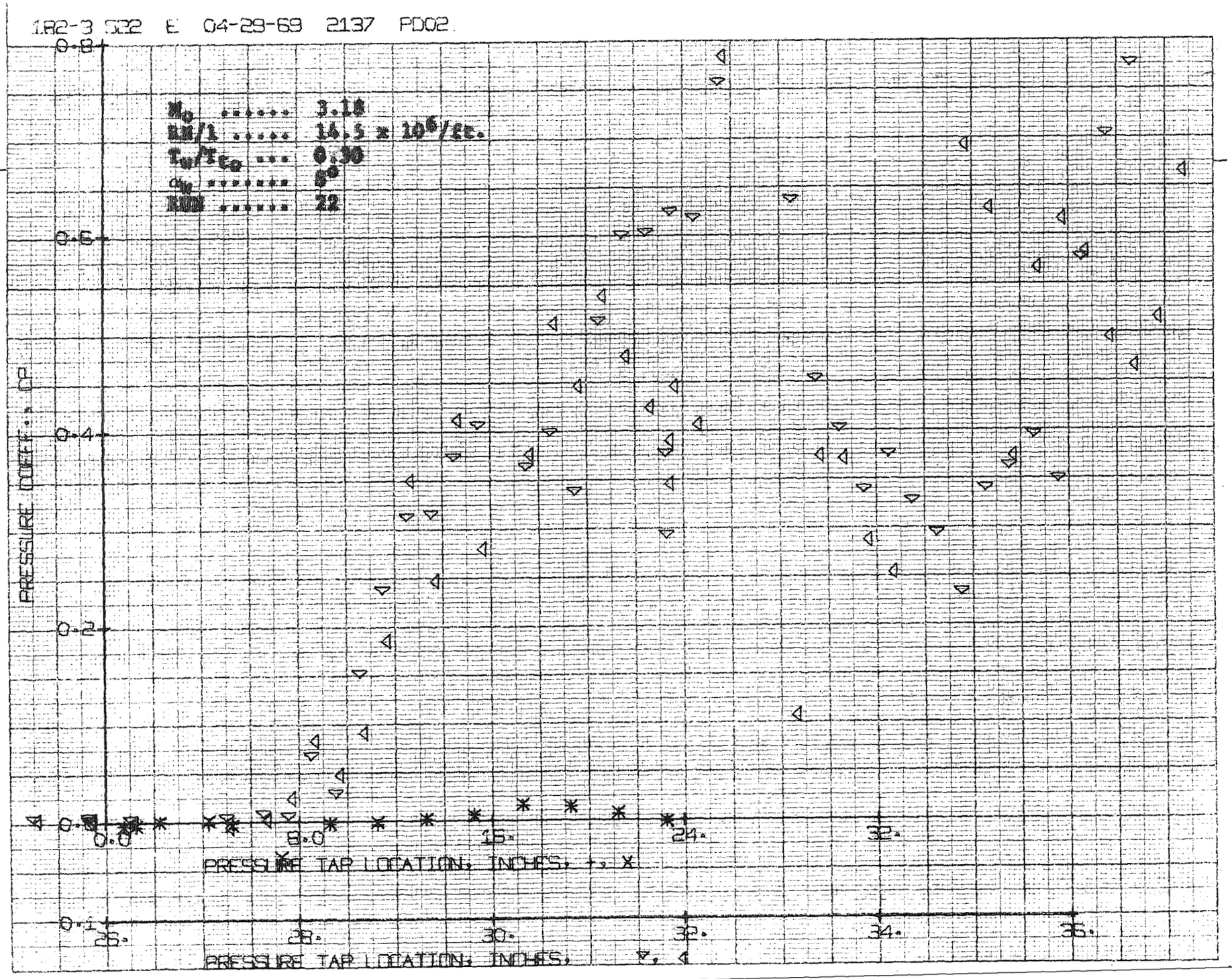
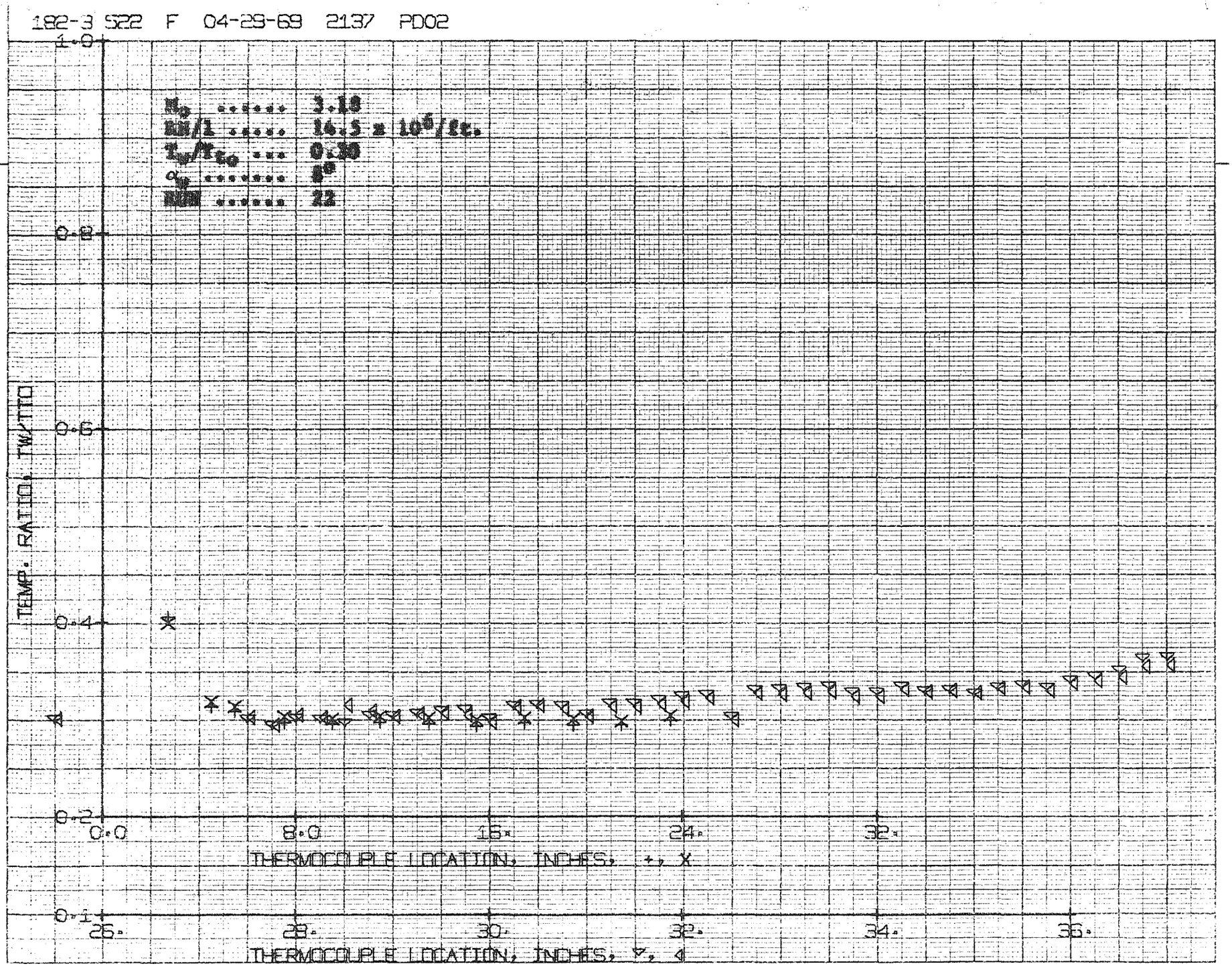
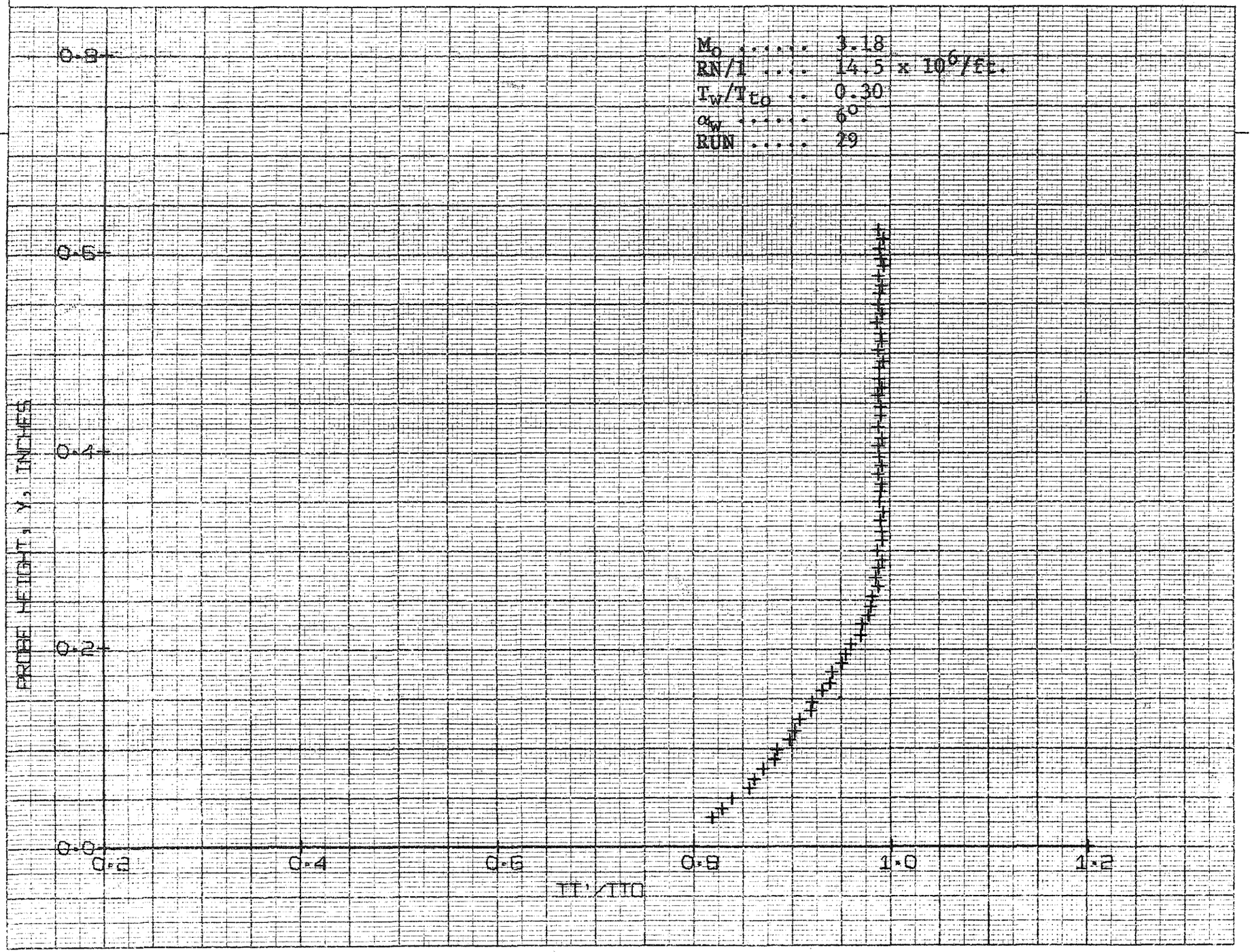



1R2-3 S22 E 04-29-69 2137 PD02
M_0 ..... 3.18
RN/1 ..... 14.5 x 10^6/ft.
T_w/T_{t_0} ... 0.30
α_w ..... 8°
RUN 22
PRESSURE COEFF., CP
0.8
0.6
0.4
0.2
0.0
0.0
8.0
16.
24.
32.
PRESSURE TAP LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
PRESSURE TAP LOCATION, INCHES, Δ, 4


182-3 5522 F 04-29-69 2137 PD02
M_0 ..... 3.18
RN/L ..... 14.5 x 10^6/ft.
T_w/T_{t_0} ... 0.30
α_w ..... 0°
RBN 22
TEMP. RATIO, TW/TTO
1.0
0.8
0.6
0.4
0.2
0.1
0.0
8.0
16.
24.
32.
THERMOCOUPLE LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
THERMOCOUPLE LOCATION, INCHES, ▽, ◁

182-3 029 A 04-30-68 0237 PD01



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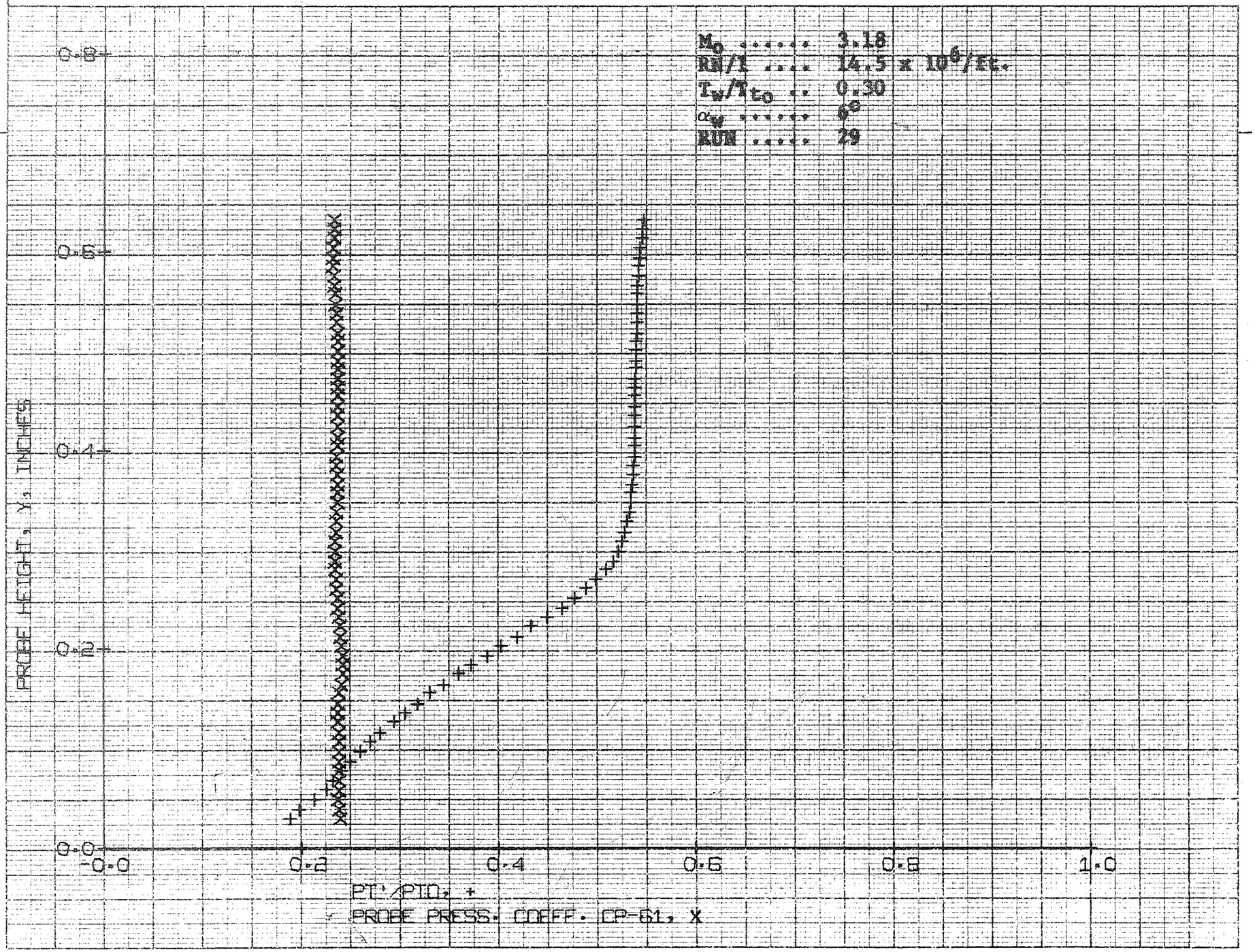

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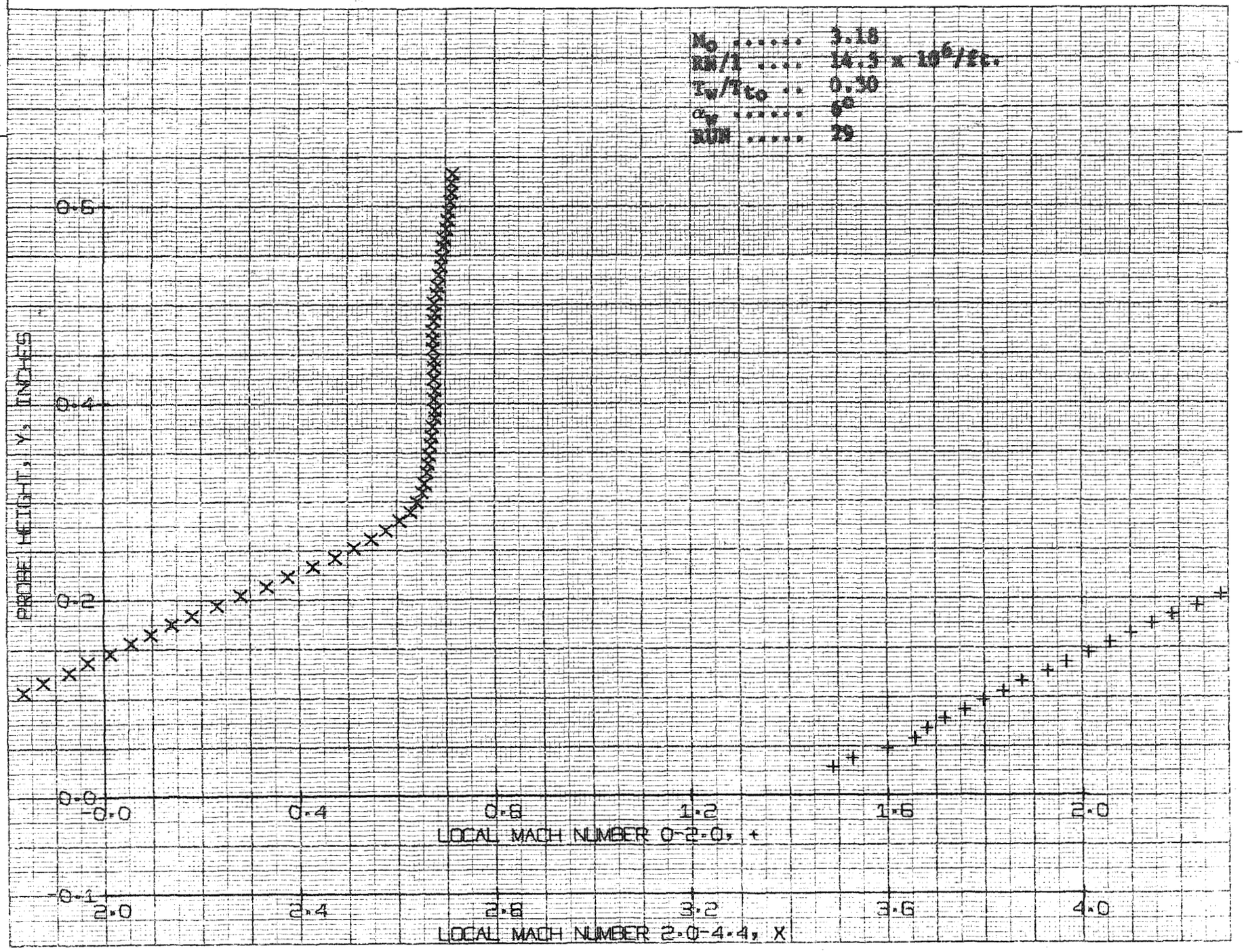
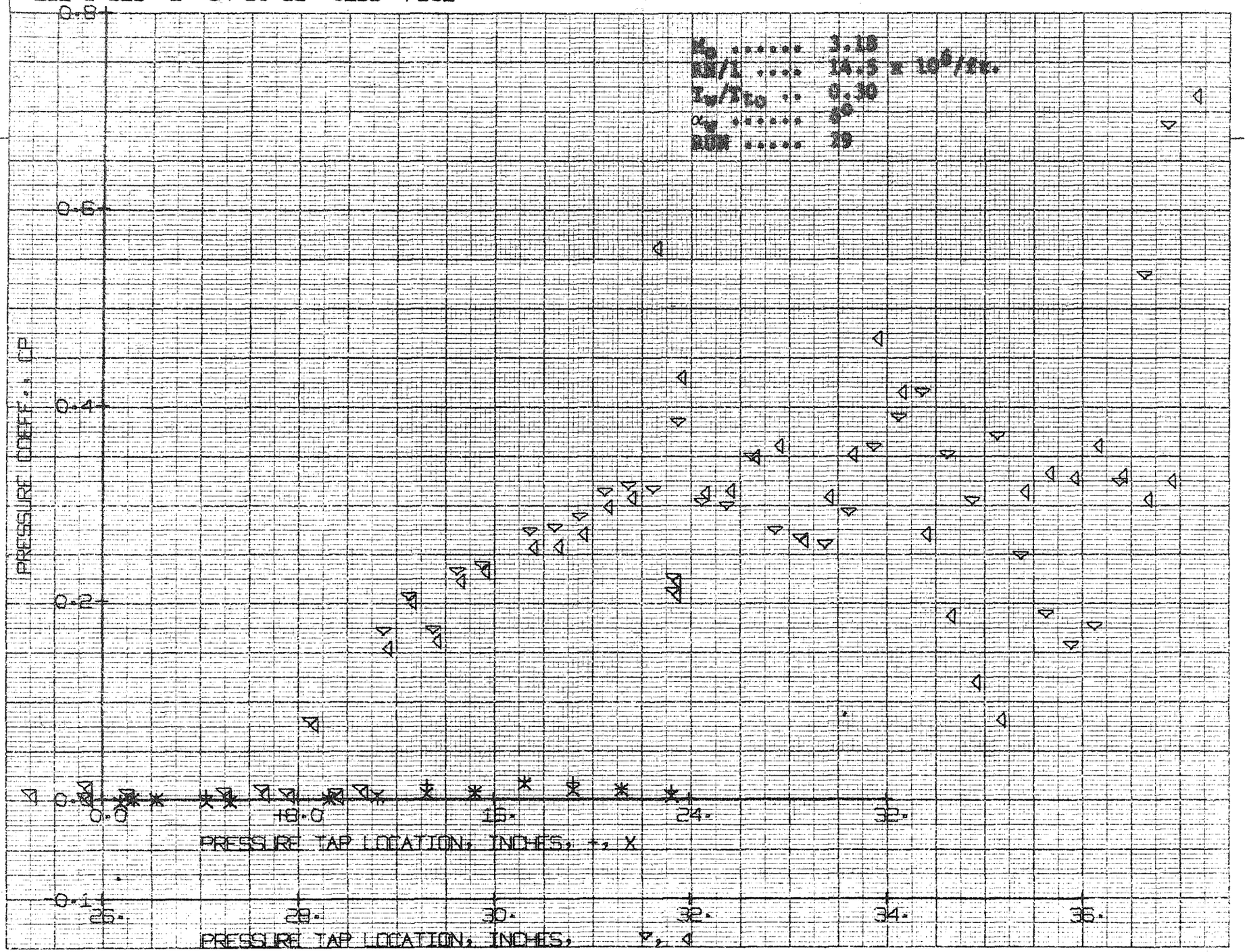
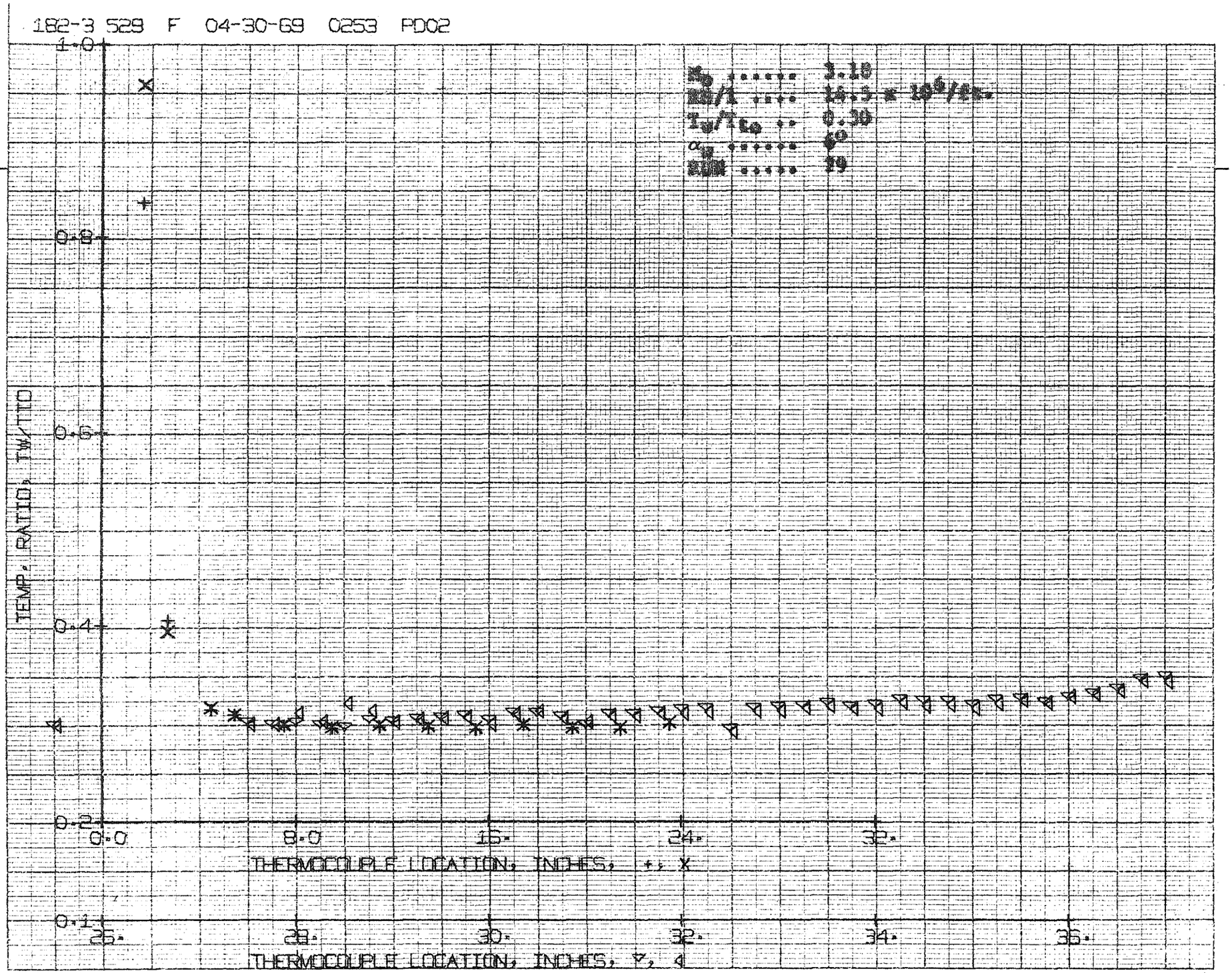
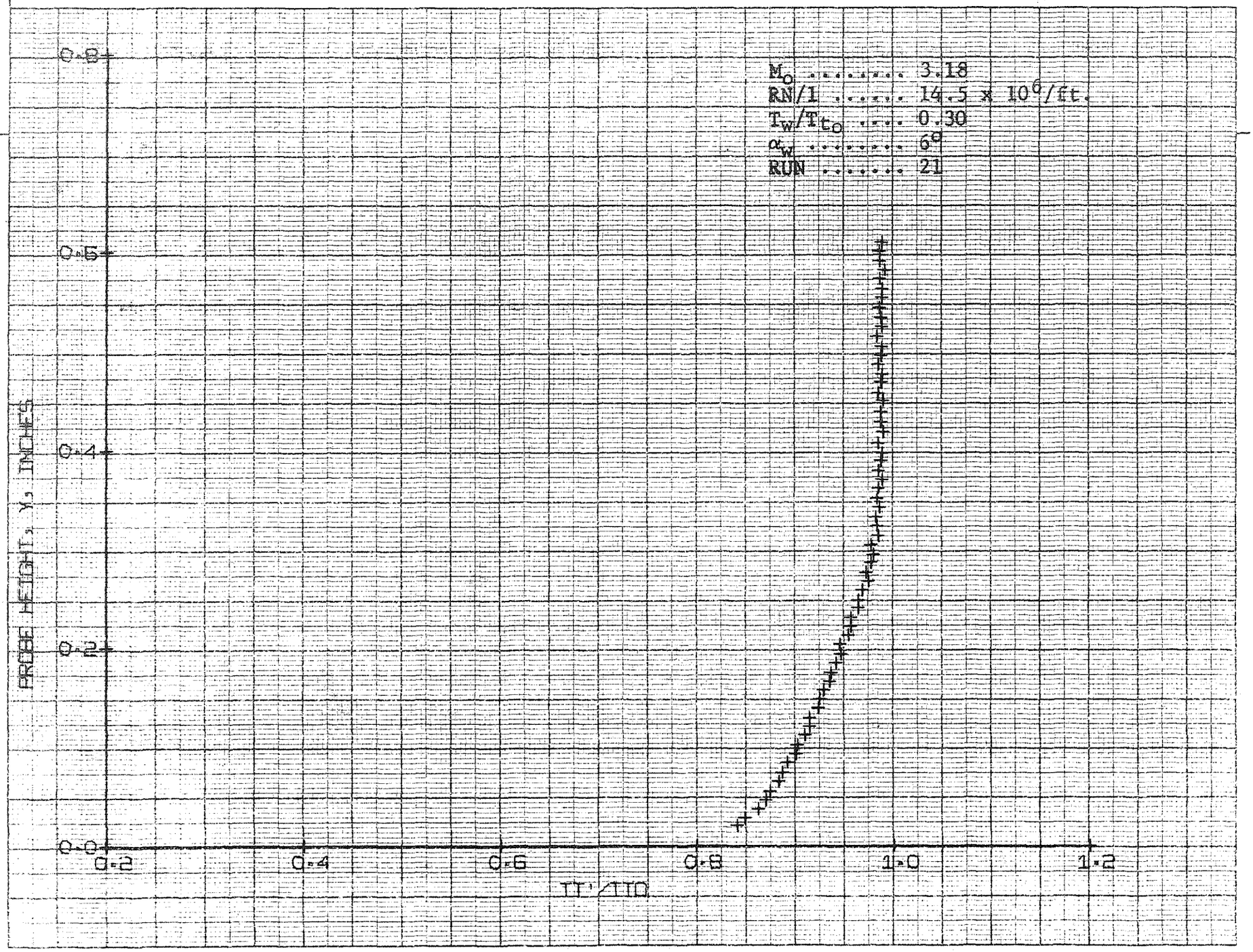


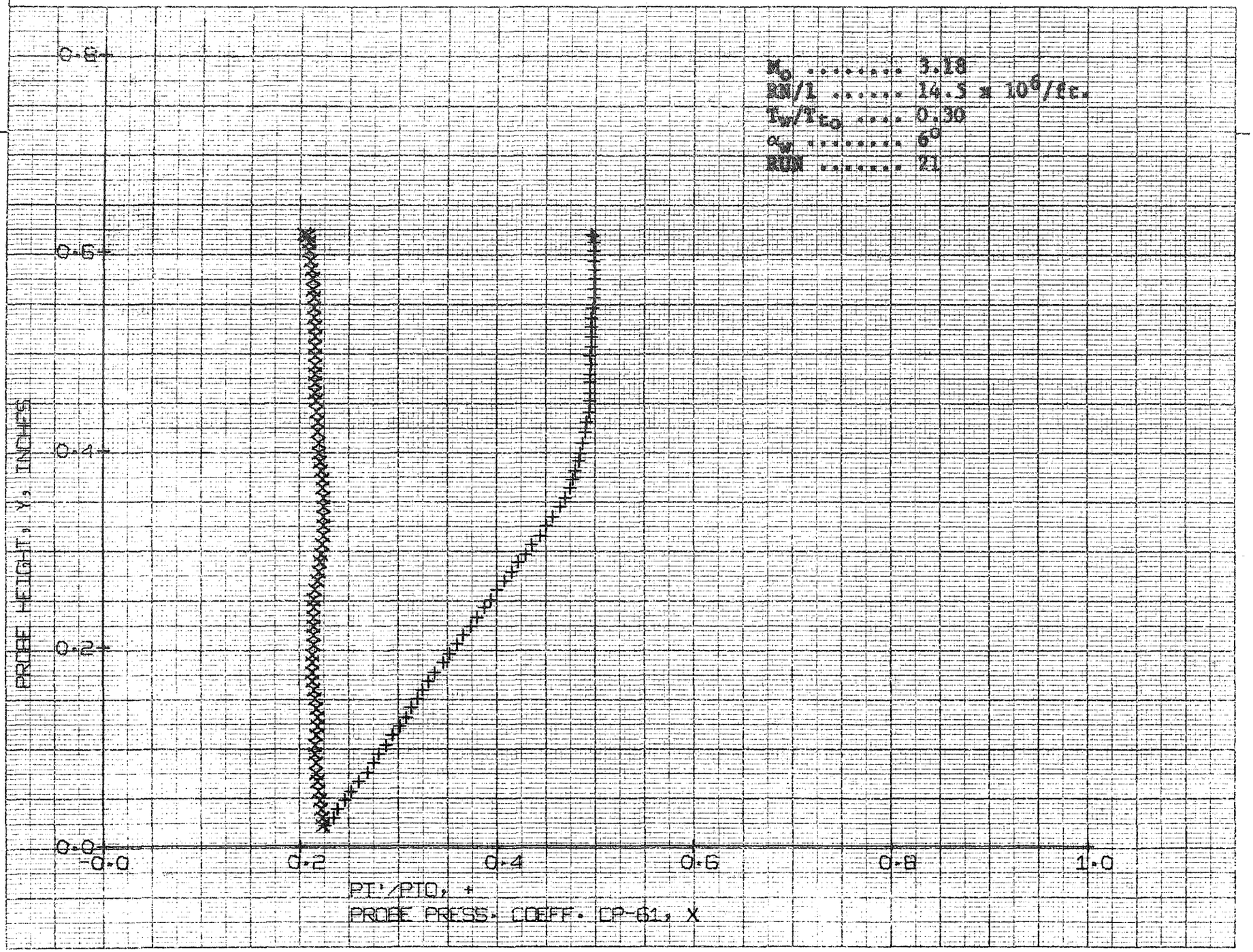

182-3 529 E 04-30-69 0253 PD02
M_o 3.18
RN/L .... 14.5 x 10^6/ft.
T_w/T_{to} .. 0.30
α_w ..... 0°
RUN 39
PRESSURE COEFF., CP
0.8
0.6
0.4
0.2
0.0
-0.1
0.0
18.0
16.
24.
32.
PRESSURE TAP LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
PRESSURE TAP LOCATION, INCHES,


182-3 529 F 04-30-69 0253 PD02
M_2 ..... 3.10
Re/l .... 14.5 x 10^6/ft.
T_w/T_{t0} .. 0.30
α_w ..... 6°
RUN 19
TEMP. RATIO, TW/TTO
1.0
0.8
0.6
0.4
0.2
0.1
0.0
8.0
16.
24.
32.
THERMOCOUPLE LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
THERMOCOUPLE LOCATION, INCHES, ▽, ◁

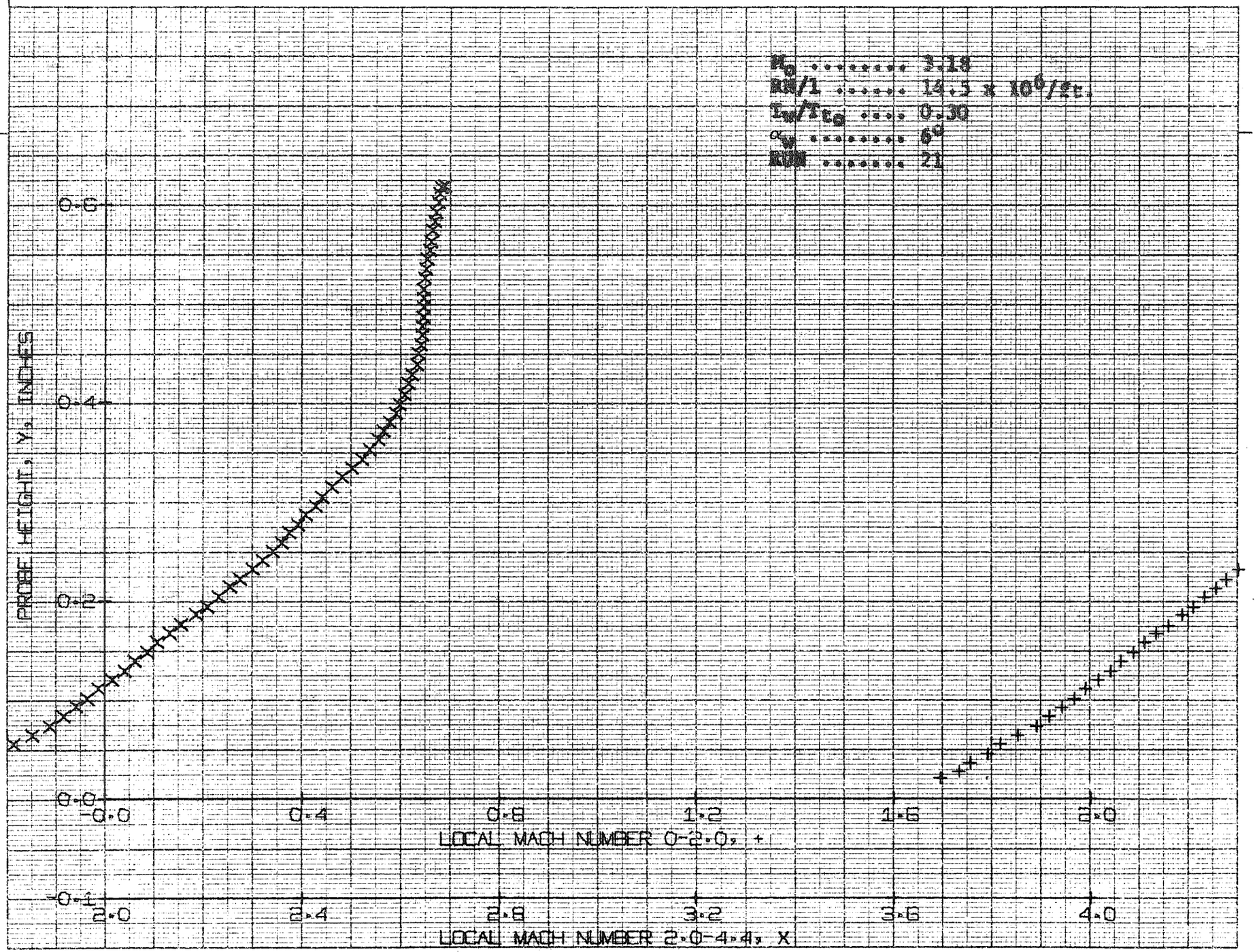
182-3 021 A 04-29-69 2009 PD01



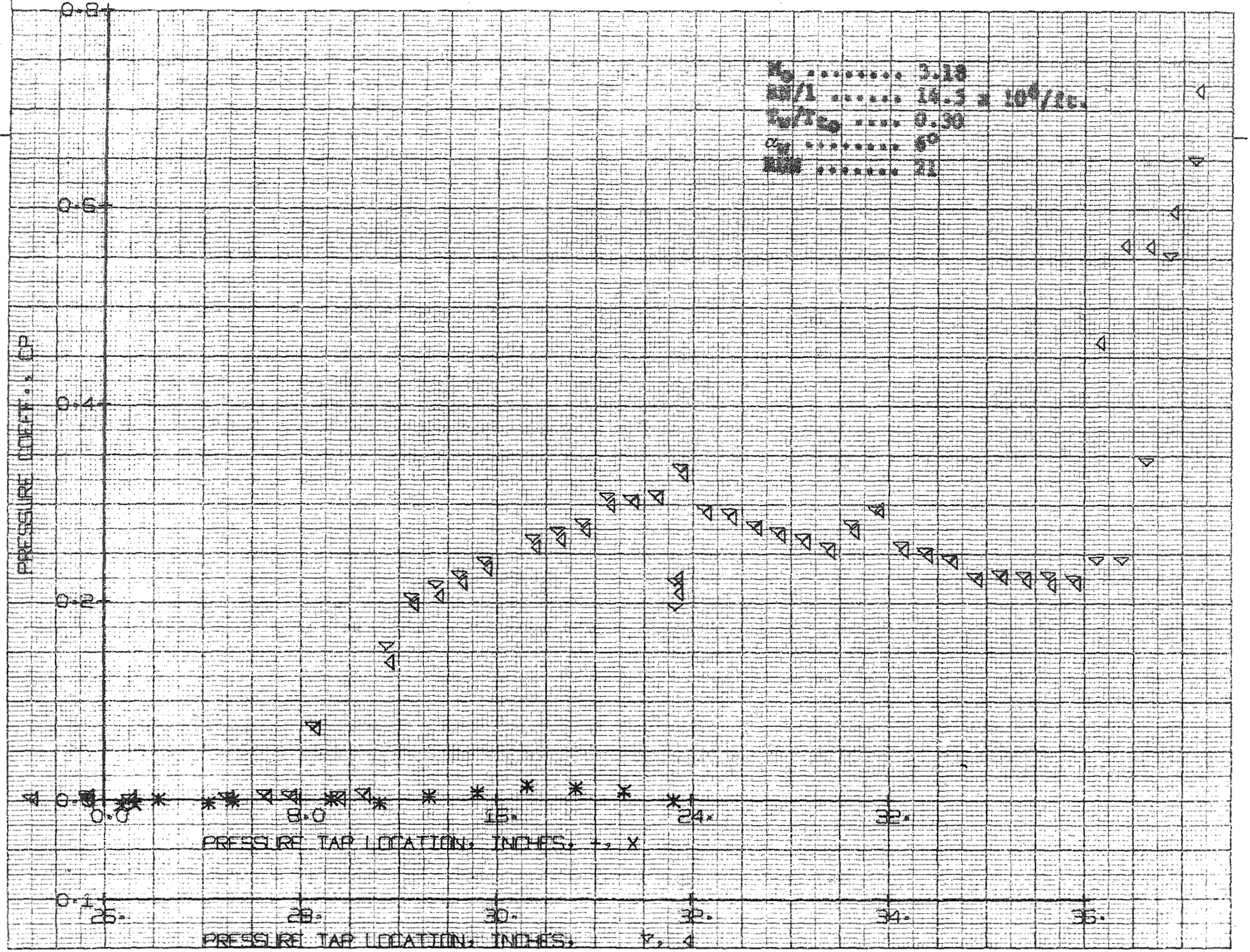
182-3 021 B 04-29-69 2009 PD01



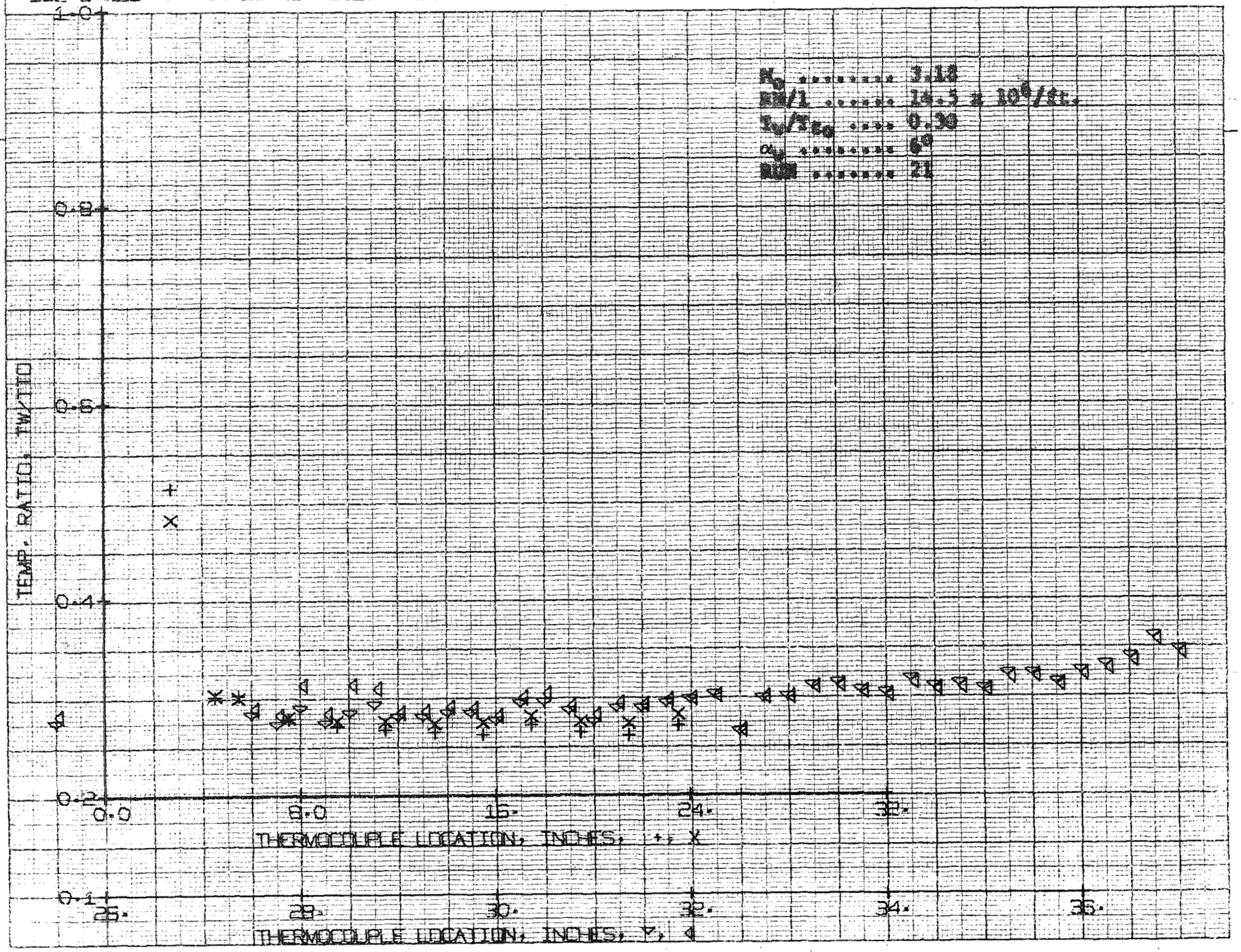
182-3 021 D 04-29-69 2009 PD01



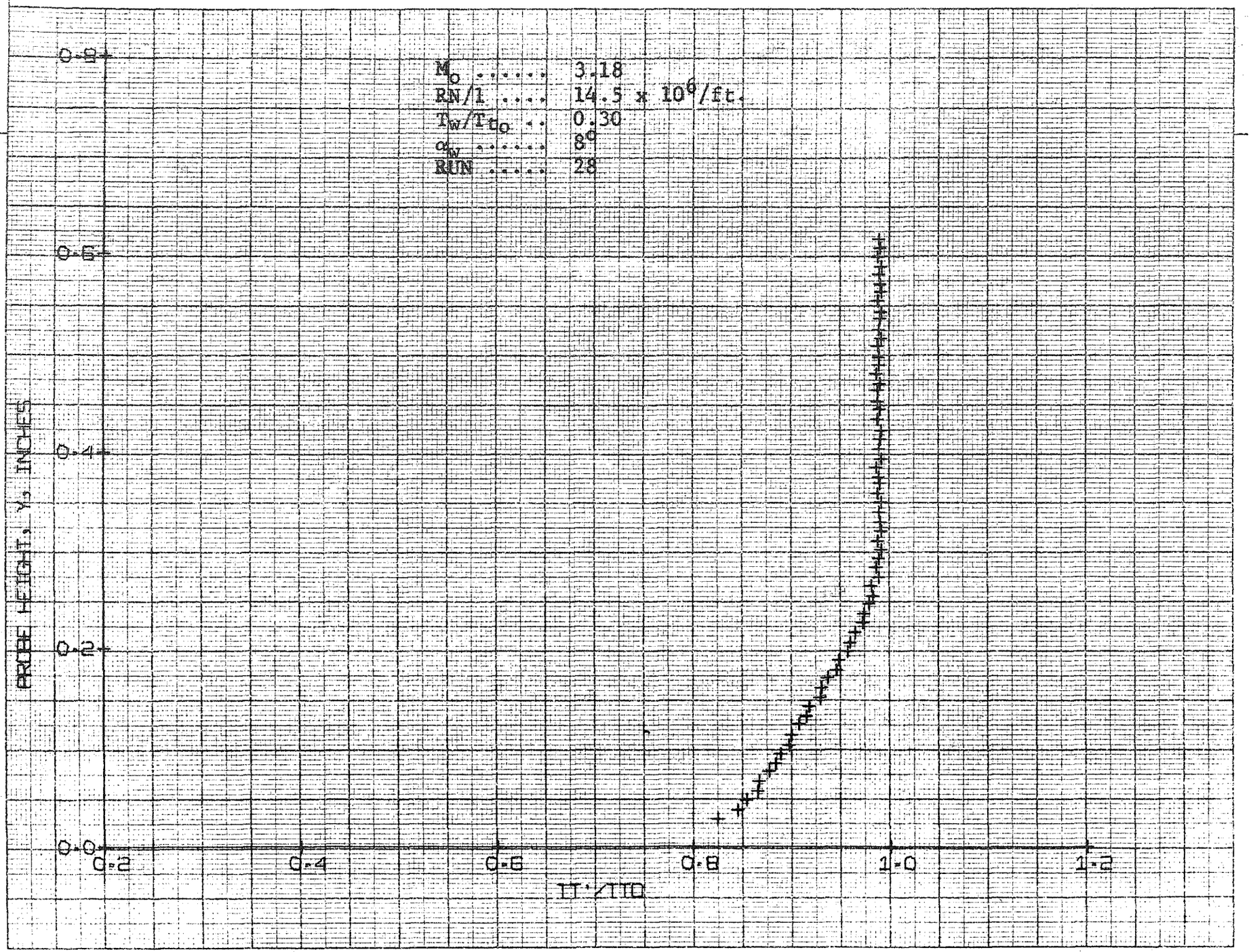
182-3 521 E 04-29-69 2016 PD02



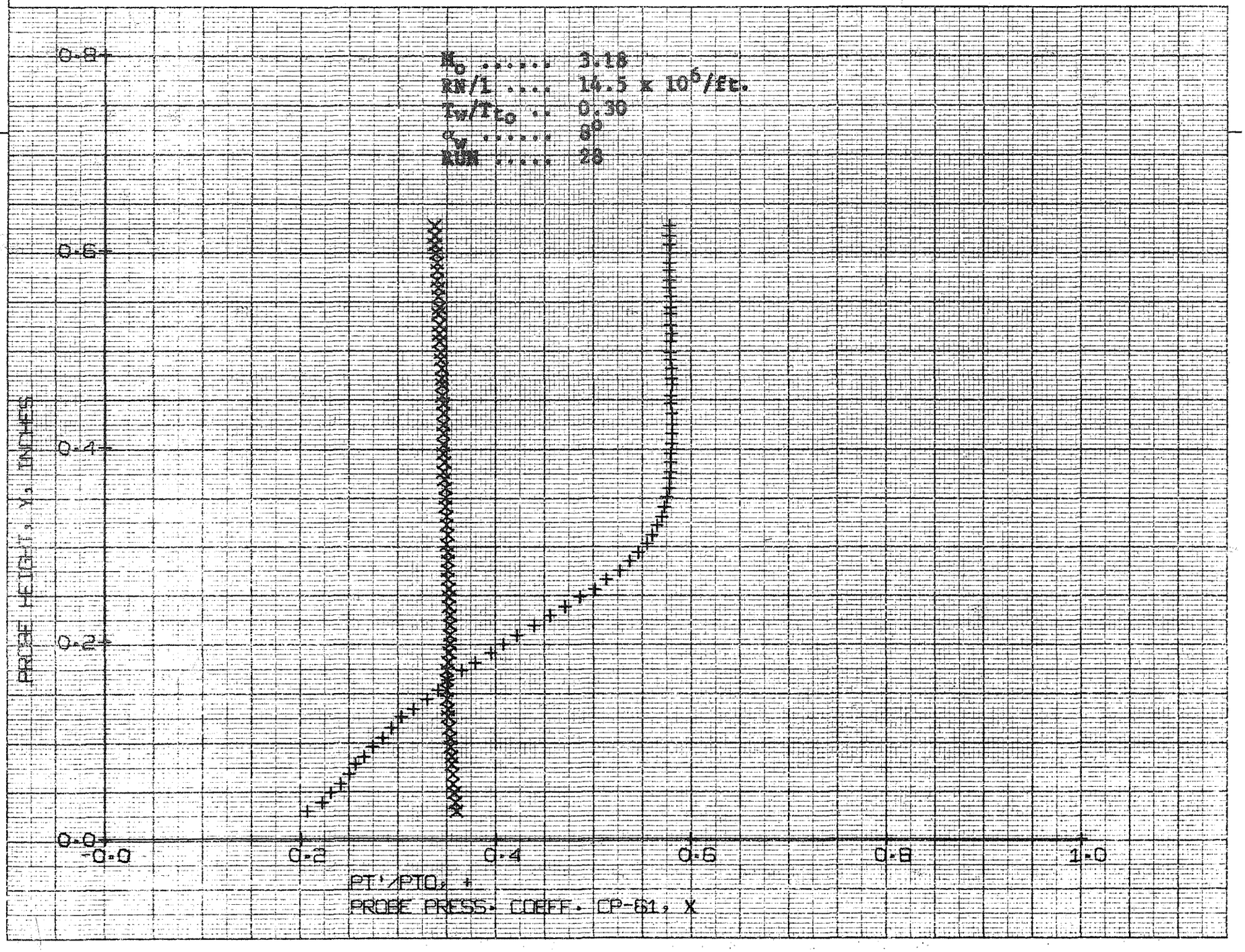
162-3 521 F 04-23-69 2016 PD02



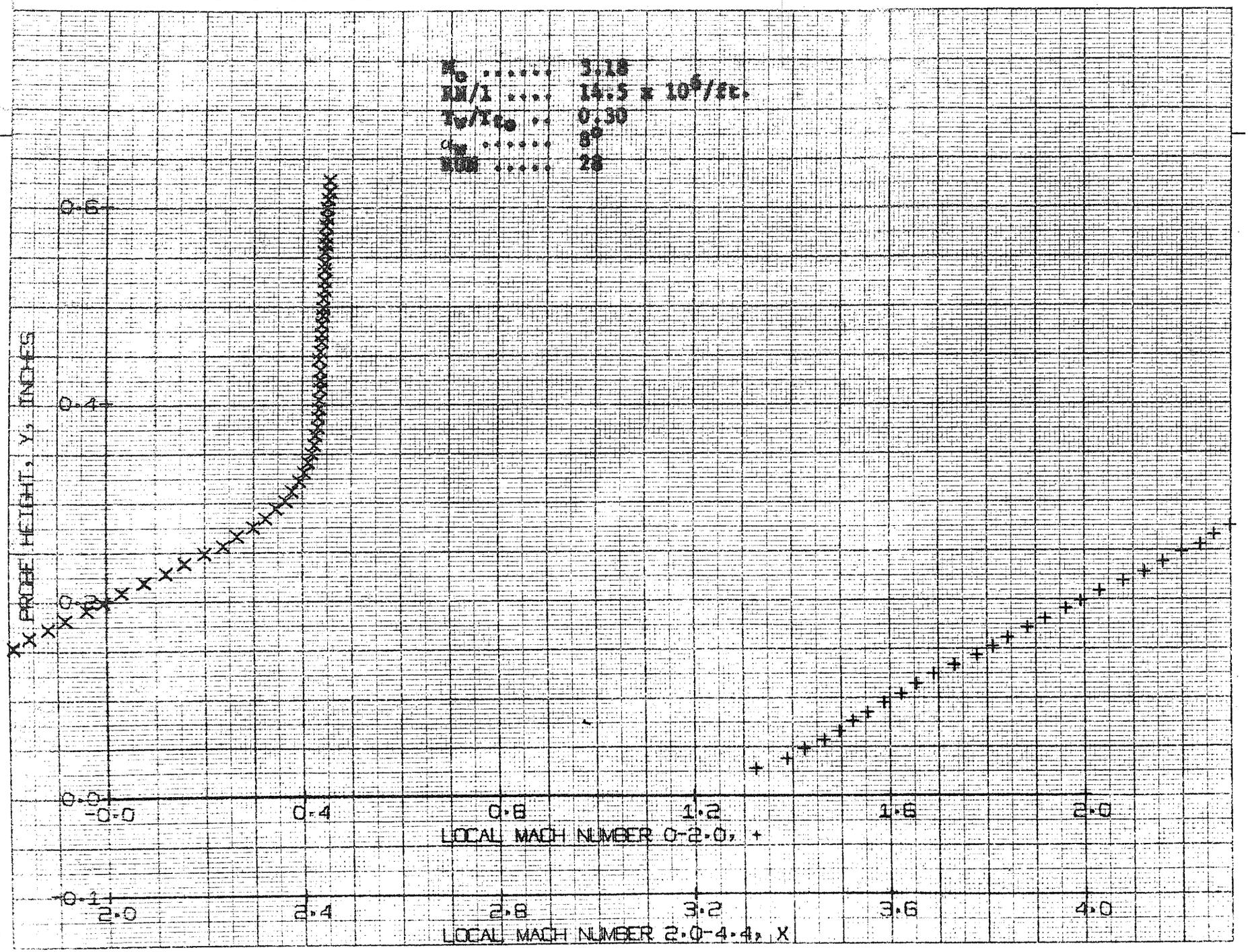
182-3 028 A 04-30-69 0156 PD01



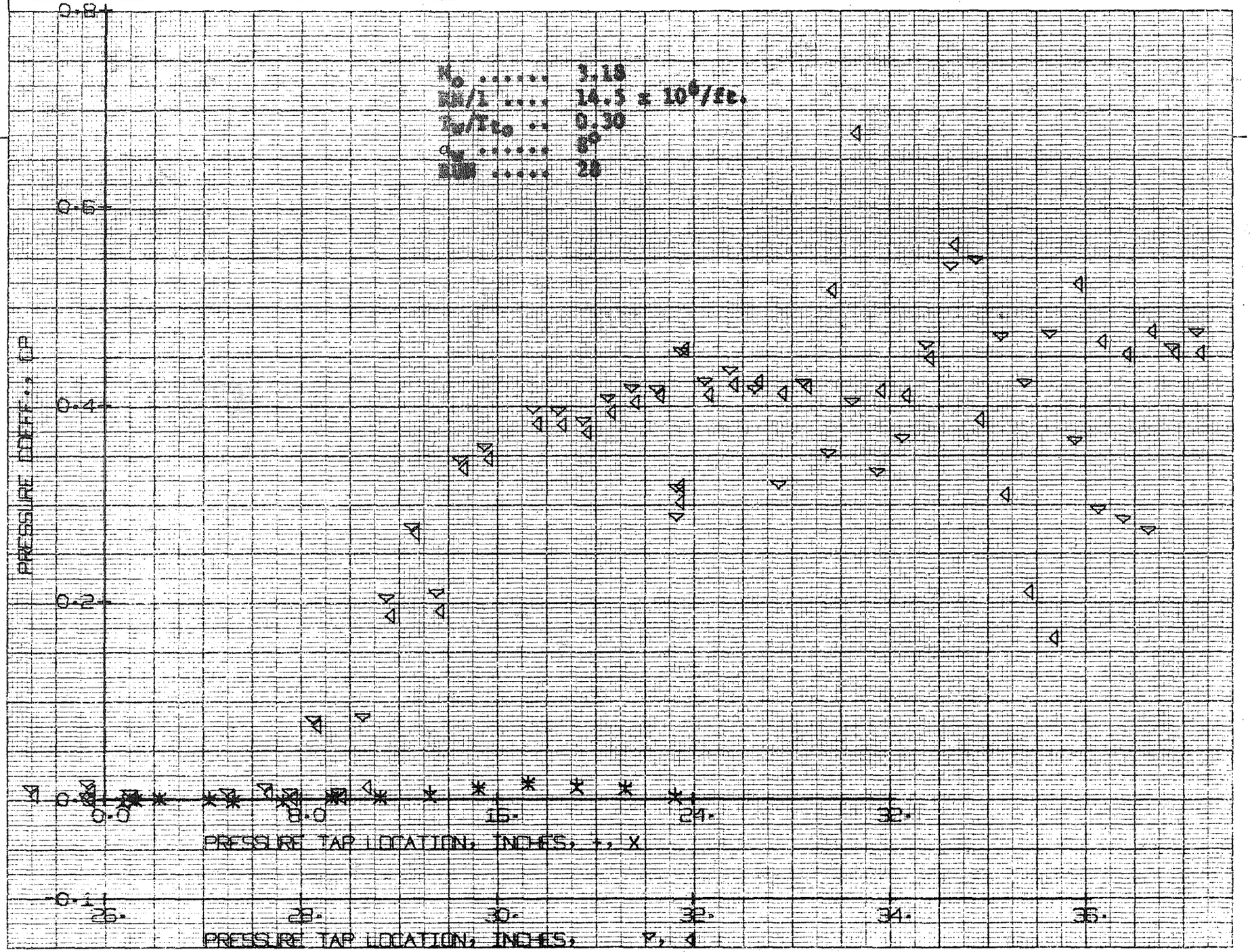
182-3 028 B 04-30-69 0156 PD01



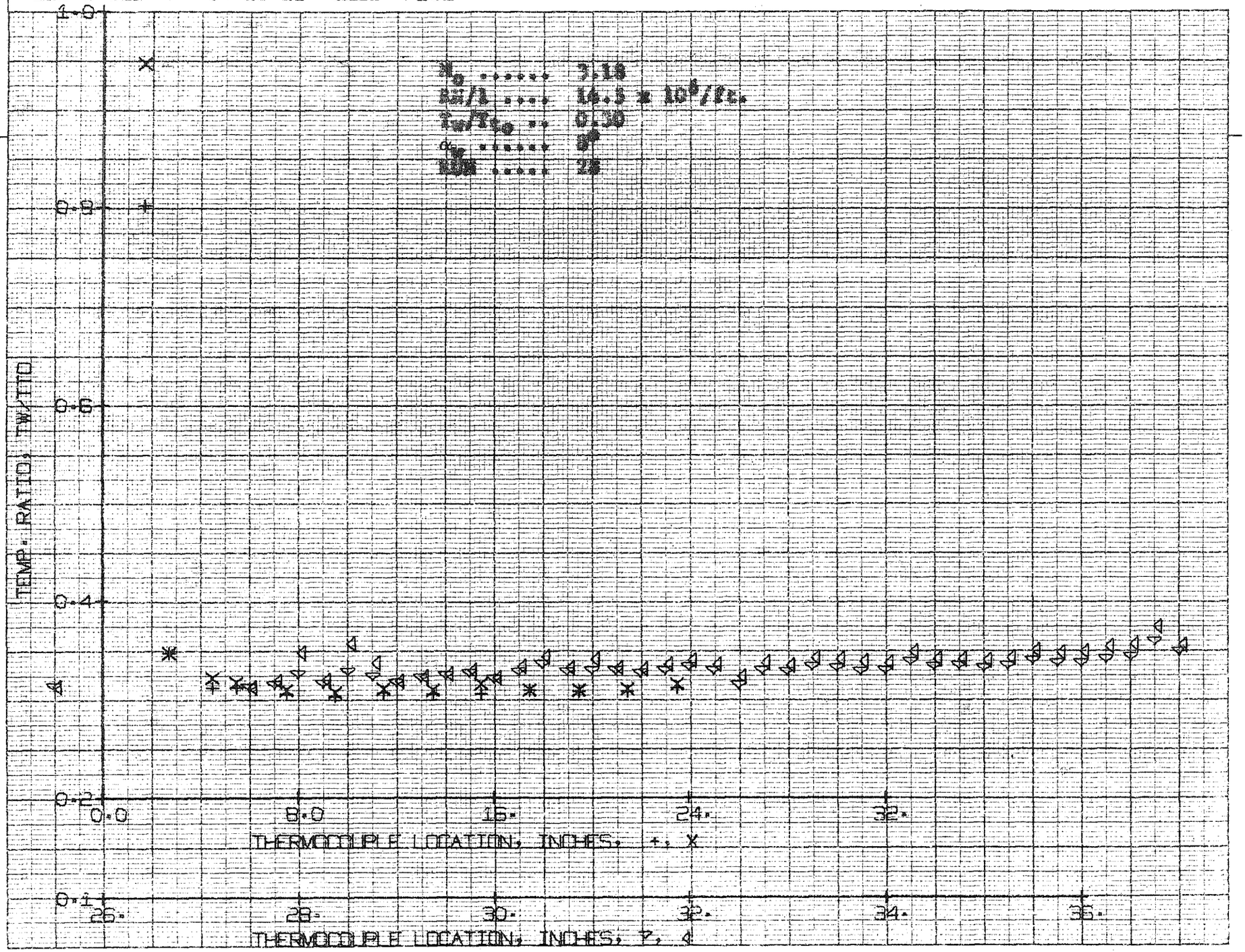
182-3 028 D 04-30-68 0156 PD01

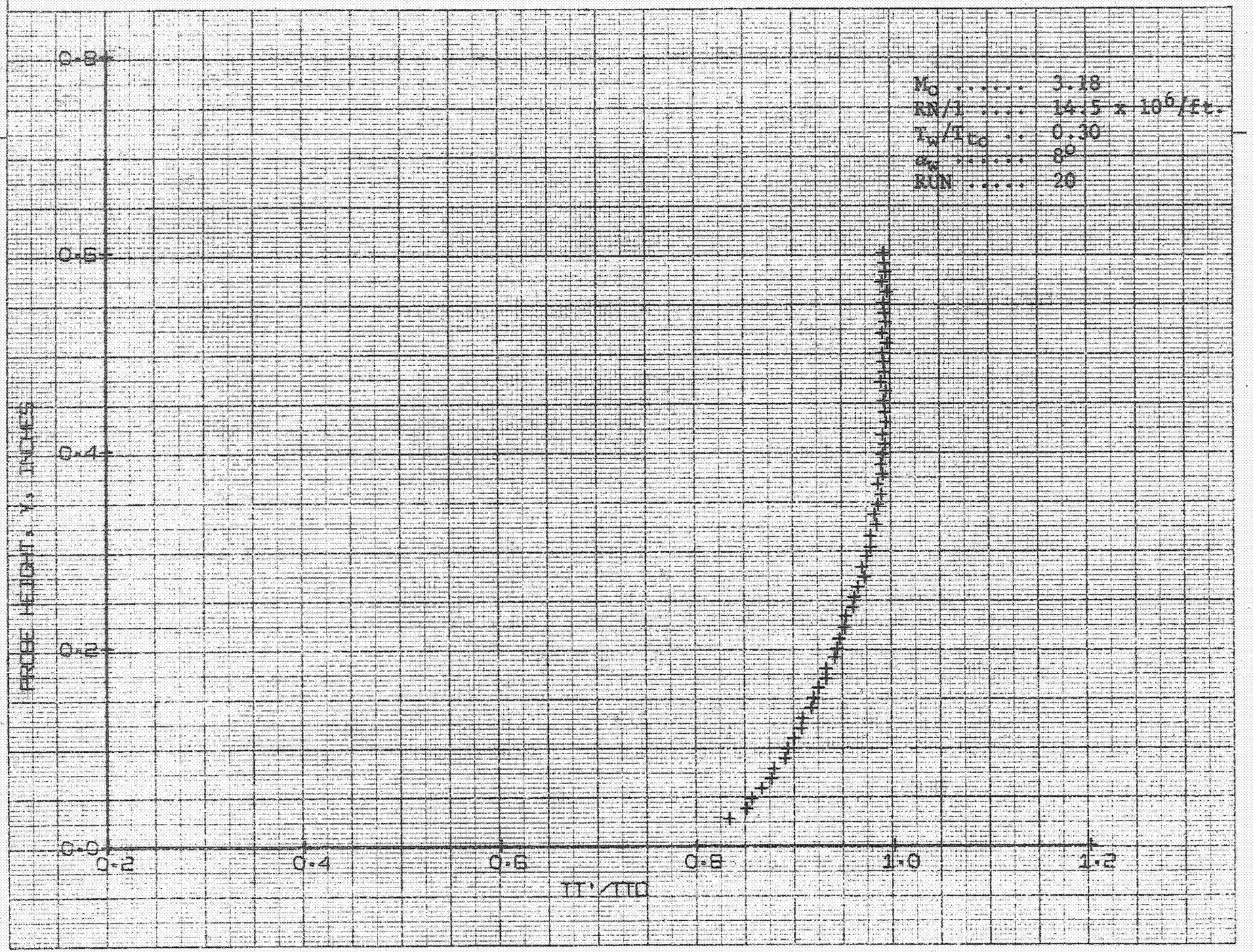


182-3 528 E 04-30-69 0213 PD02

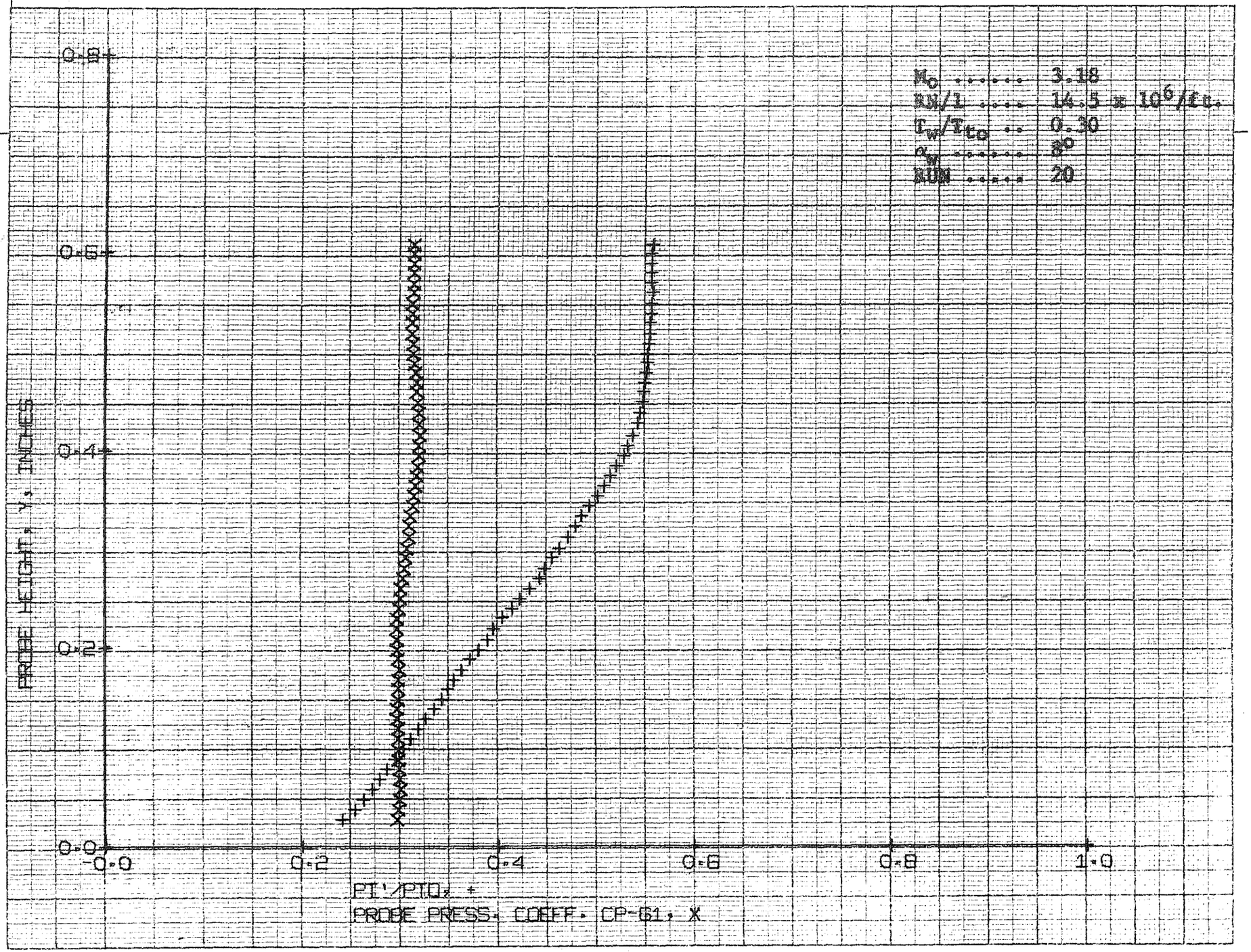


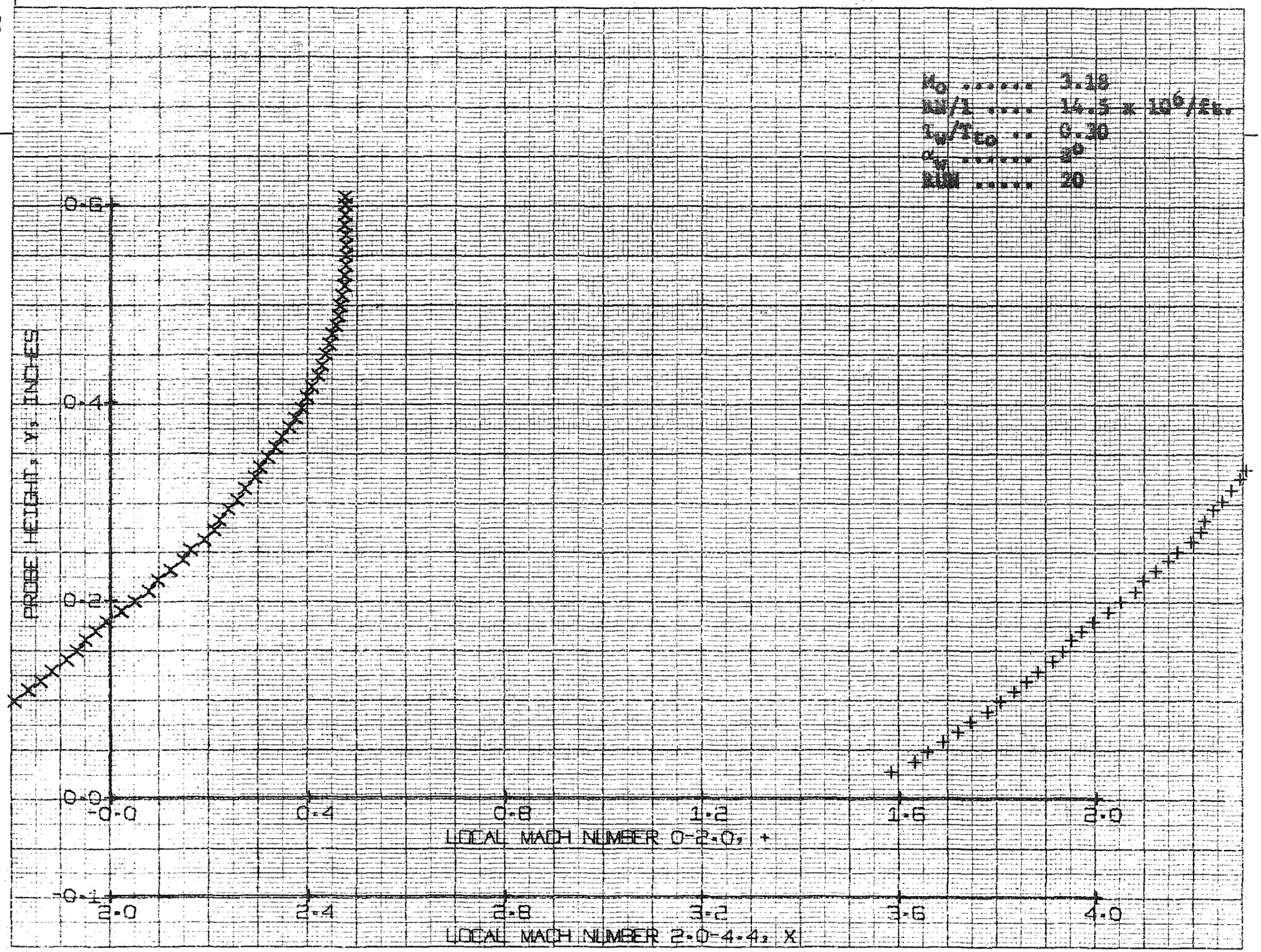
182-3 528 F 04-30-69 0213 PD02

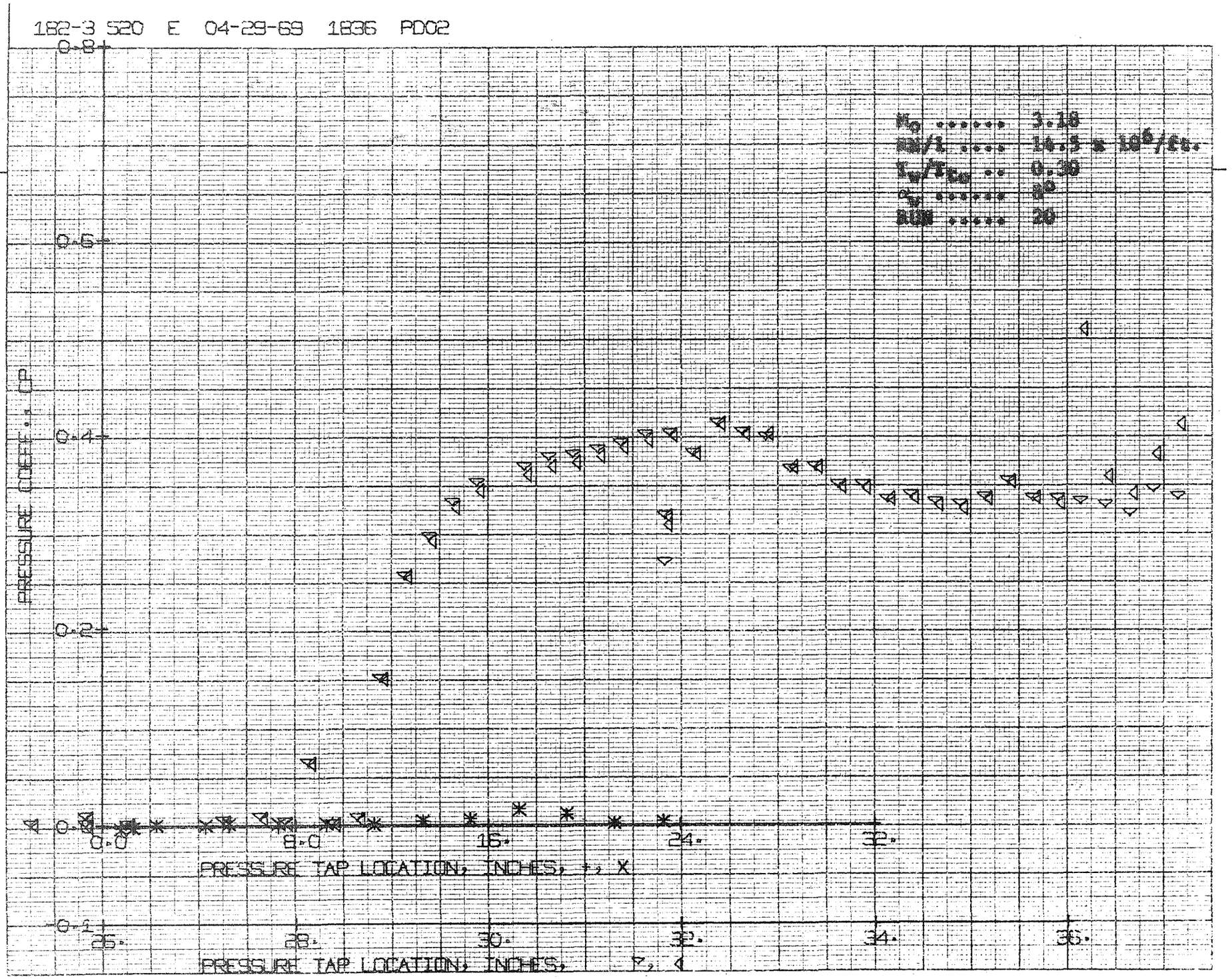



182-3 020 A 04-29-69 1830 PD01
M_o 3.18
RN/1 ..... 14.5 x 10^6/ft.
T_w/T_{co} .. 0.30
α_w ..... 8°
RUN 20
PROBE HEIGHT, Y, INCHES
0.0
0.2
0.4
0.6
0.8
0.2
0.4
0.6
0.8
1.0
1.2
TT'/TTO

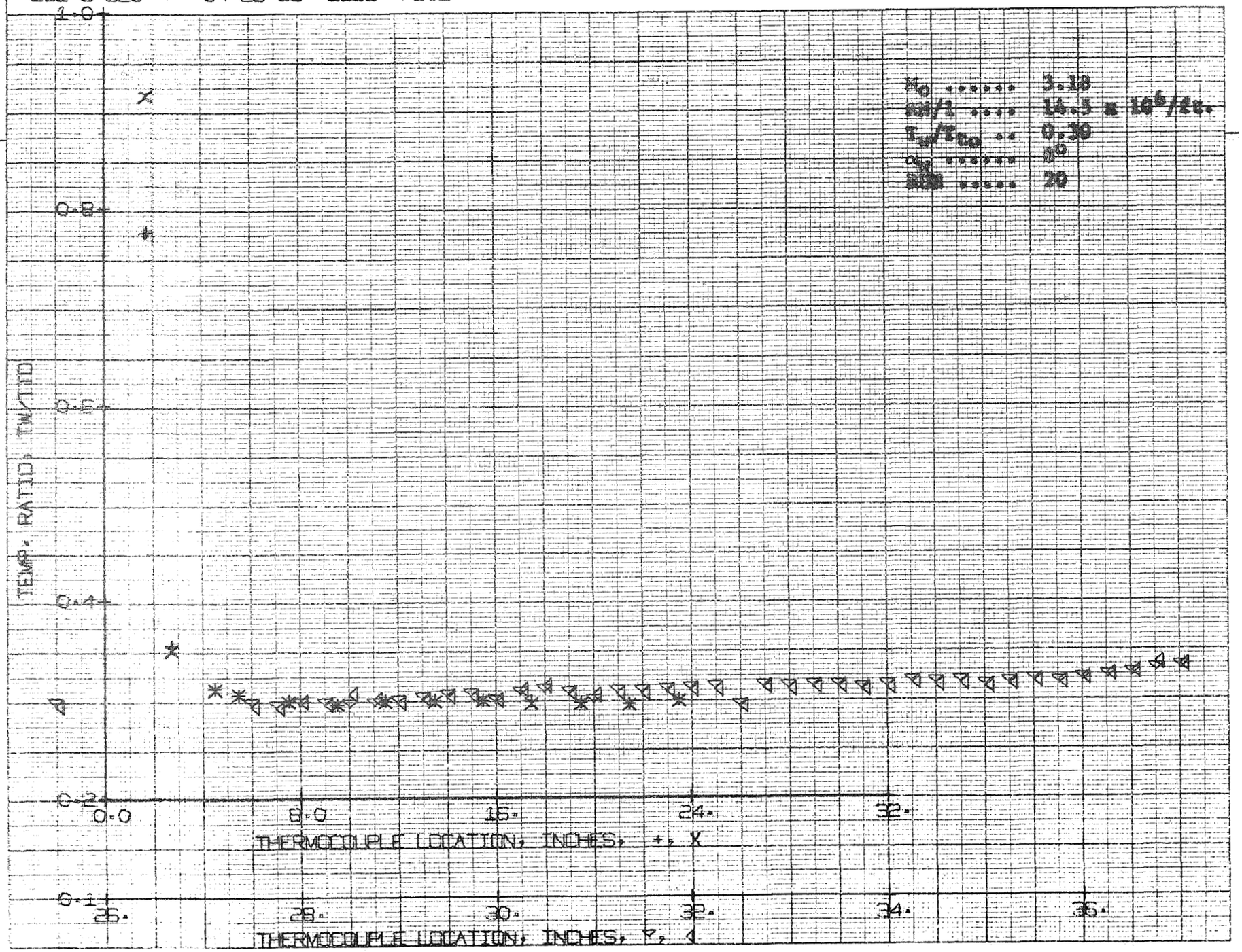
182-3 020 B 04-29-69 1830 PD01



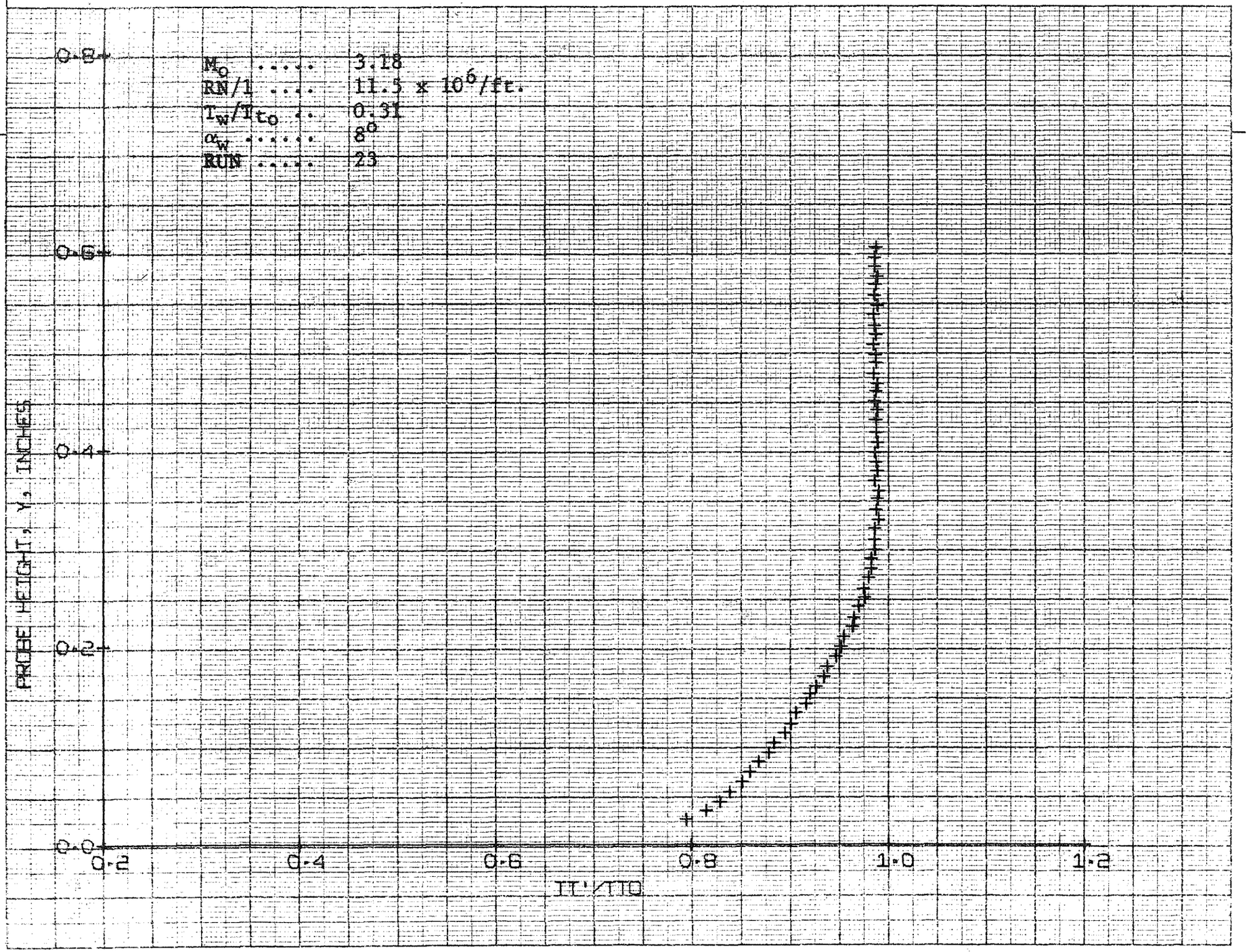

182-3 020 D 04-29-69 1830 PD01
M_0 ..... 3.18
RN/L .... 14.5 x 10^6/ft.
T_w/T_{t0} .. 0.30
α_w ..... 20°
RUN 20
PROBE HEIGHT, Y, INCHES
0.6
0.4
0.2
0.0
-0.0
0.4
0.8
1.2
1.6
2.0
LOCAL MACH NUMBER 0-2.0, +
-0.1
2.0
2.4
2.8
3.2
3.6
4.0
LOCAL MACH NUMBER 2.0-4.4, X


182-3 520 E 04-29-69 1836 PD02
M_0 ..... 3.18
RN/L .... 16.5 x 10^6/ft.
T_w/T_{t0} .. 0.30
α_w ..... 8°
BLN 20
PRESSURE COEFF., CP
0.8
0.6
0.4
0.2
0.0
-0.2
0.0
8.0
16.
24.
32.
PRESSURE TAP LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
PRESSURE TAP LOCATION, INCHES, F, Δ

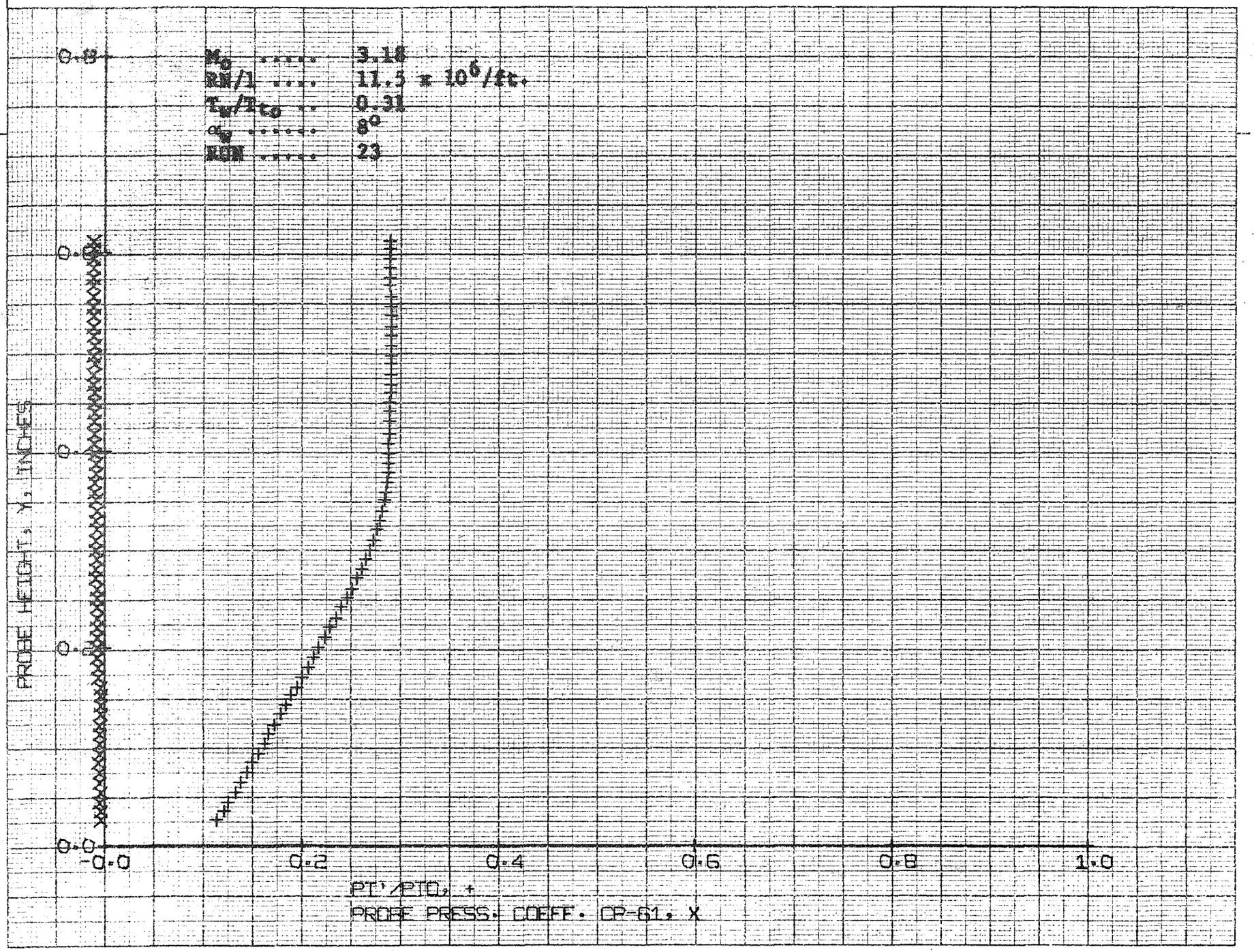
182-3 520 F 04-29-69 1836 PD02

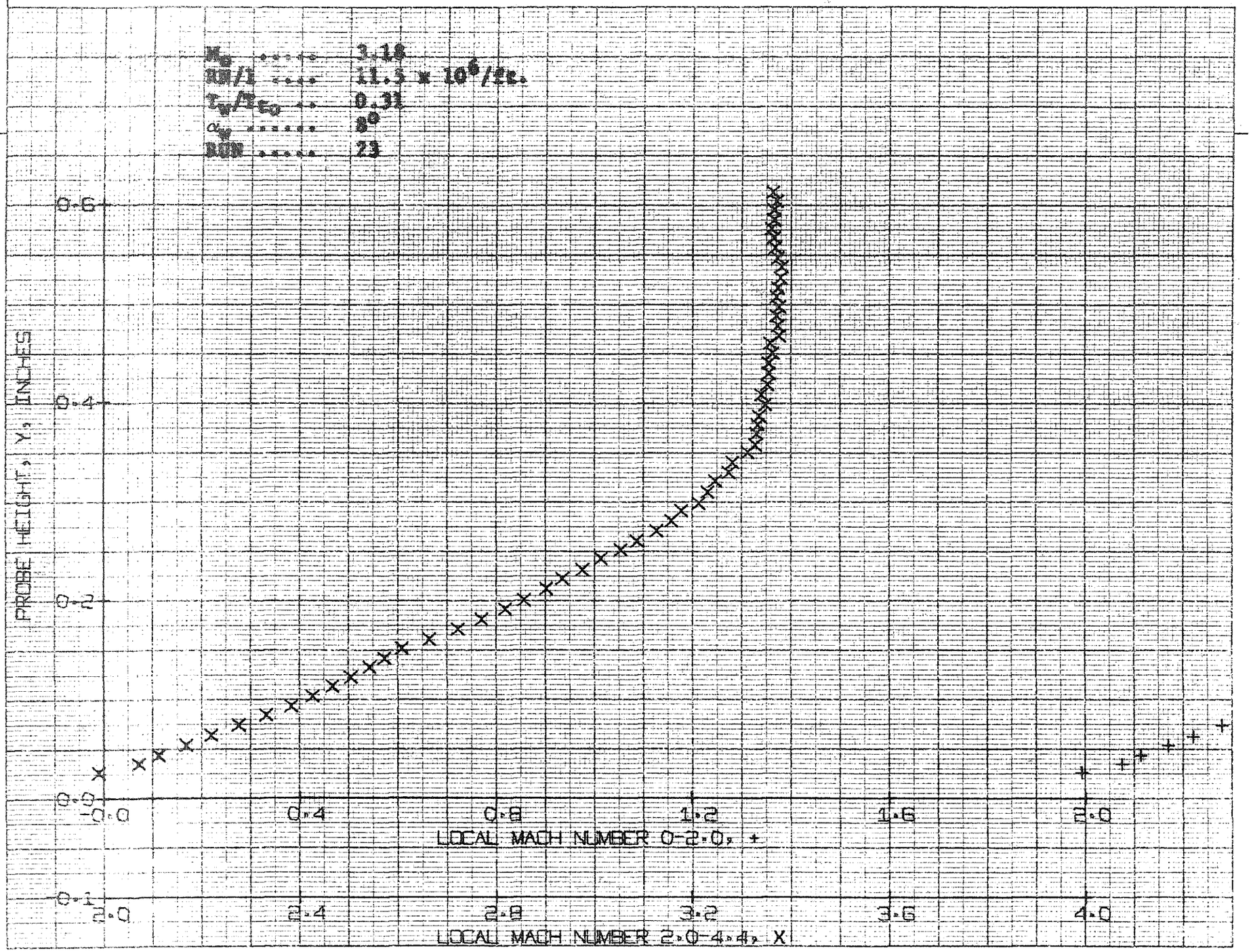


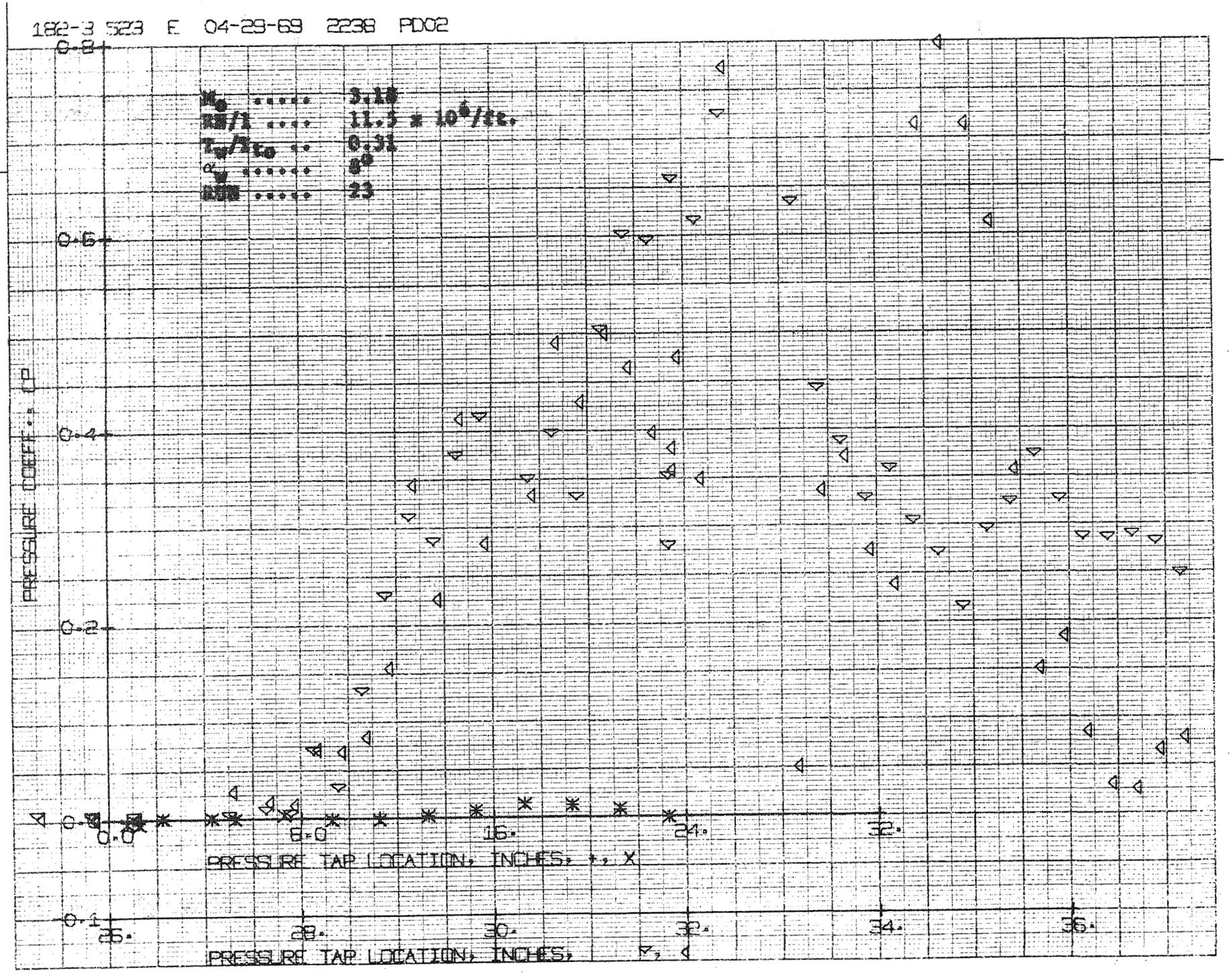
182-3 023 A 04-29-69 2232 P001

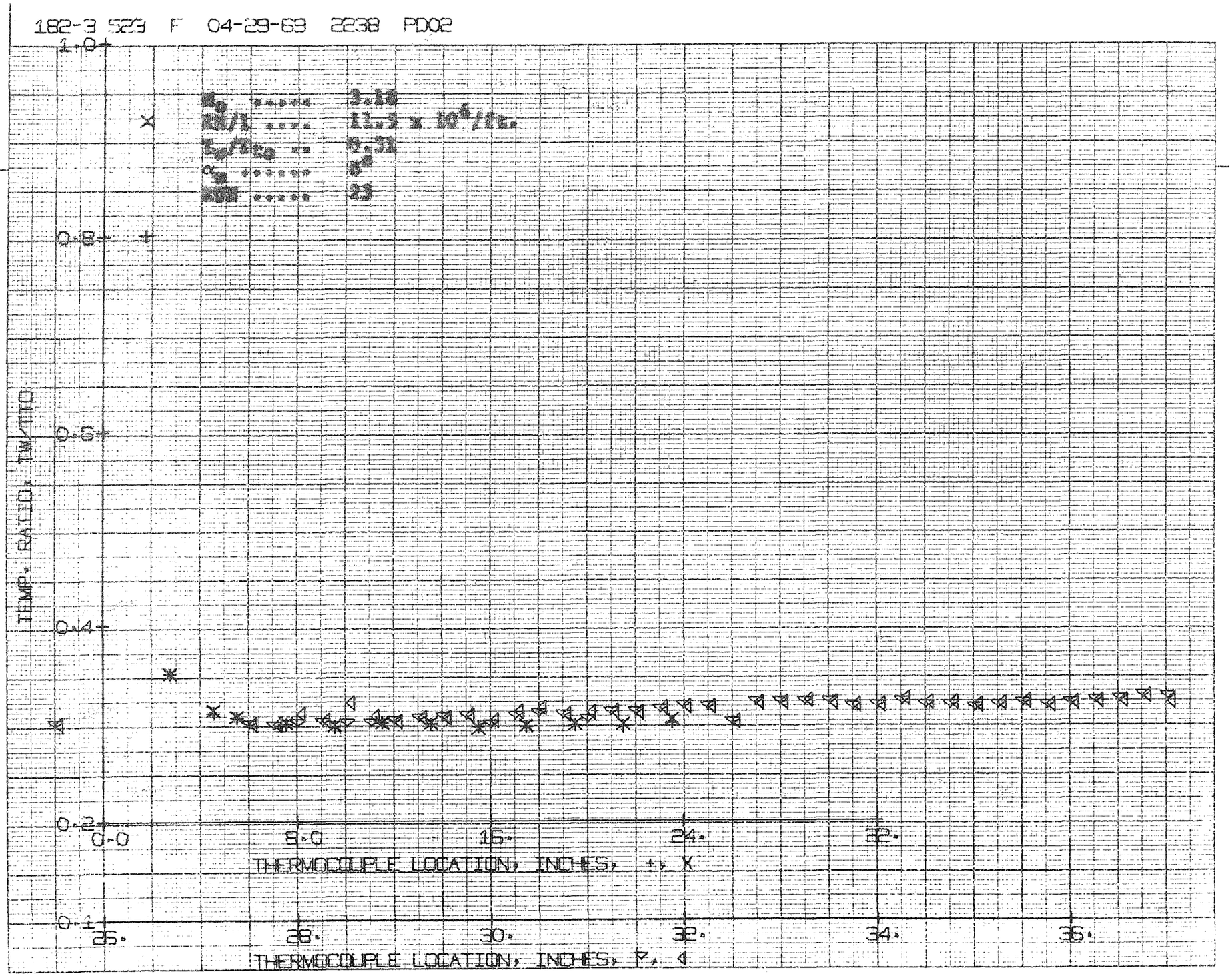


182-3 023 B 04-29-69 2232 PD01

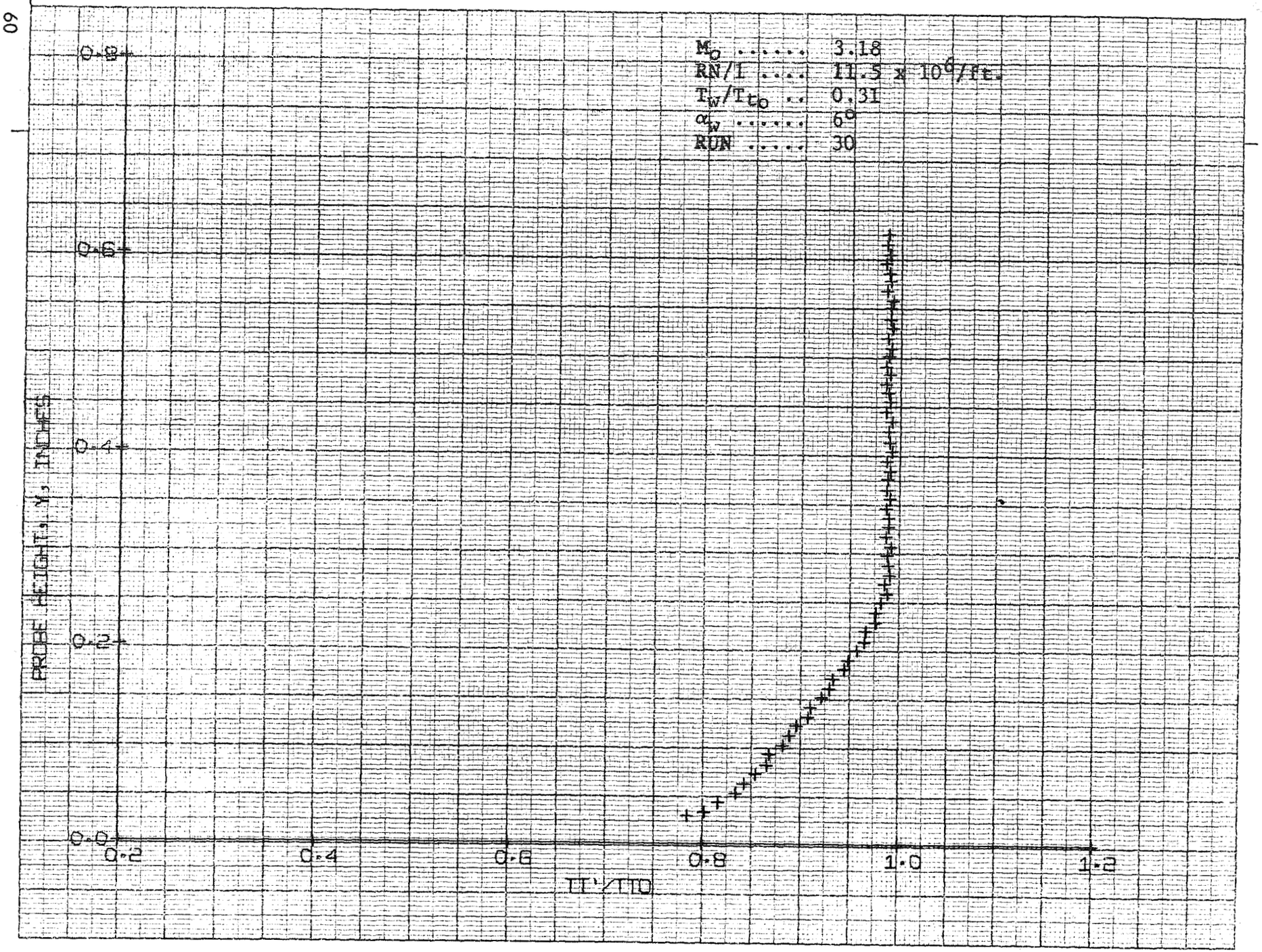


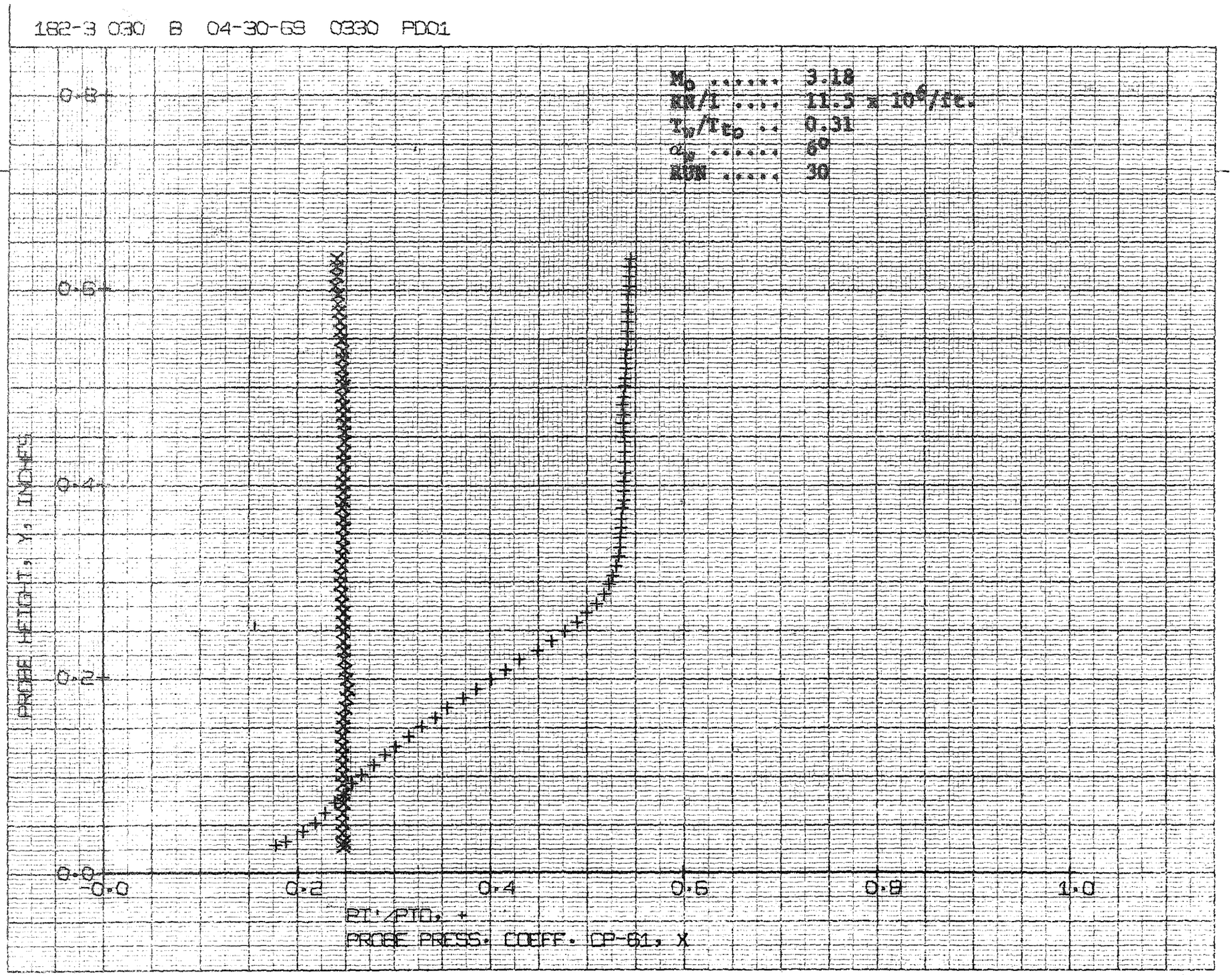

M_o 3.18
RN/i .... 11.5 x 10^6/ft.
T_w/T_{t_o} .. 0.31
α_w ..... 8°
RUN 23
PROBE HEIGHT, Y, INCHES
0.6
0.4
0.2
0.0
-0.0
-0.1
0.4
0.8
1.2
1.6
2.0
LOCAL MACH NUMBER 0-2.0, +
2.0
2.4
2.8
3.2
3.6
4.0
LOCAL MACH NUMBER 2.0-4.4, X


1882-3 5223 E 04-29-69 2238 PD02
M_e 3.18
RN/ft ..... 11.5 x 10^6/ft.
T_w/T_{t0} .. 0.31
α_w ..... 8°
RUN 23
PRESSURE COEFF., CP
0.8
0.6
0.4
0.2
0.0
-0.1
0.0
8.0
16.
24.
32.
PRESSURE TAP LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
PRESSURE TAP LOCATION, INCHES, ▽, △

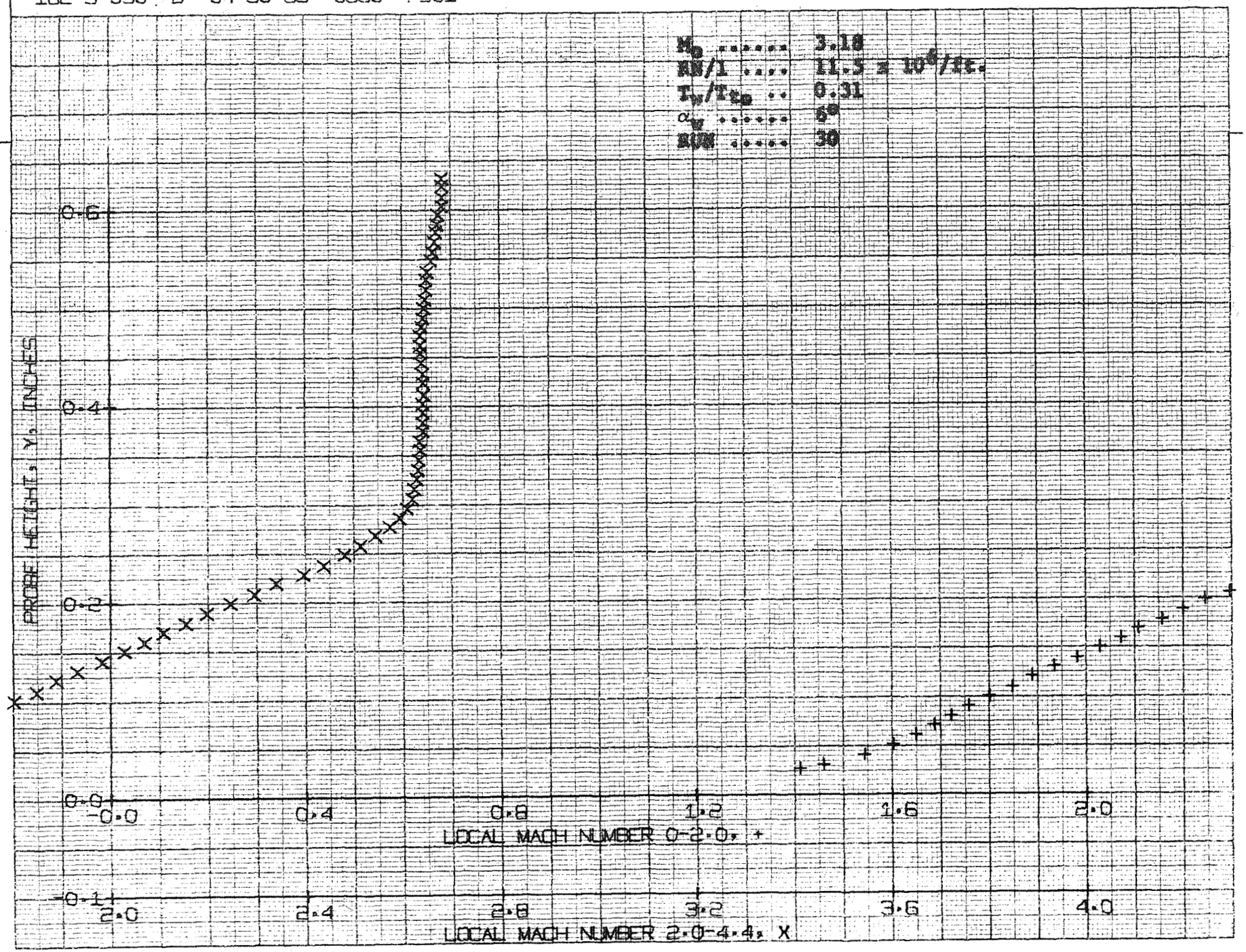

182-3 523 F 04-29-69 2238 PD02
[illegible] 3.18
[illegible]/[illegible] ..... 11.3 x 10^4/ft.
[illegible] .. 9.21
[illegible] ..... [illegible]
[illegible] 23
TEMP. RATIO, TW/TTO
1.0
0.8
0.6
0.4
0.2
0.0
8.0
16.
24.
32.
THERMOCOUPLE LOCATION, INCHES, +, K
0.1
26.
28.
30.
32.
34.
36.
THERMOCOUPLE LOCATION, INCHES, ▽, ◁

182-3 030 A 04-30-69 0330 PD01

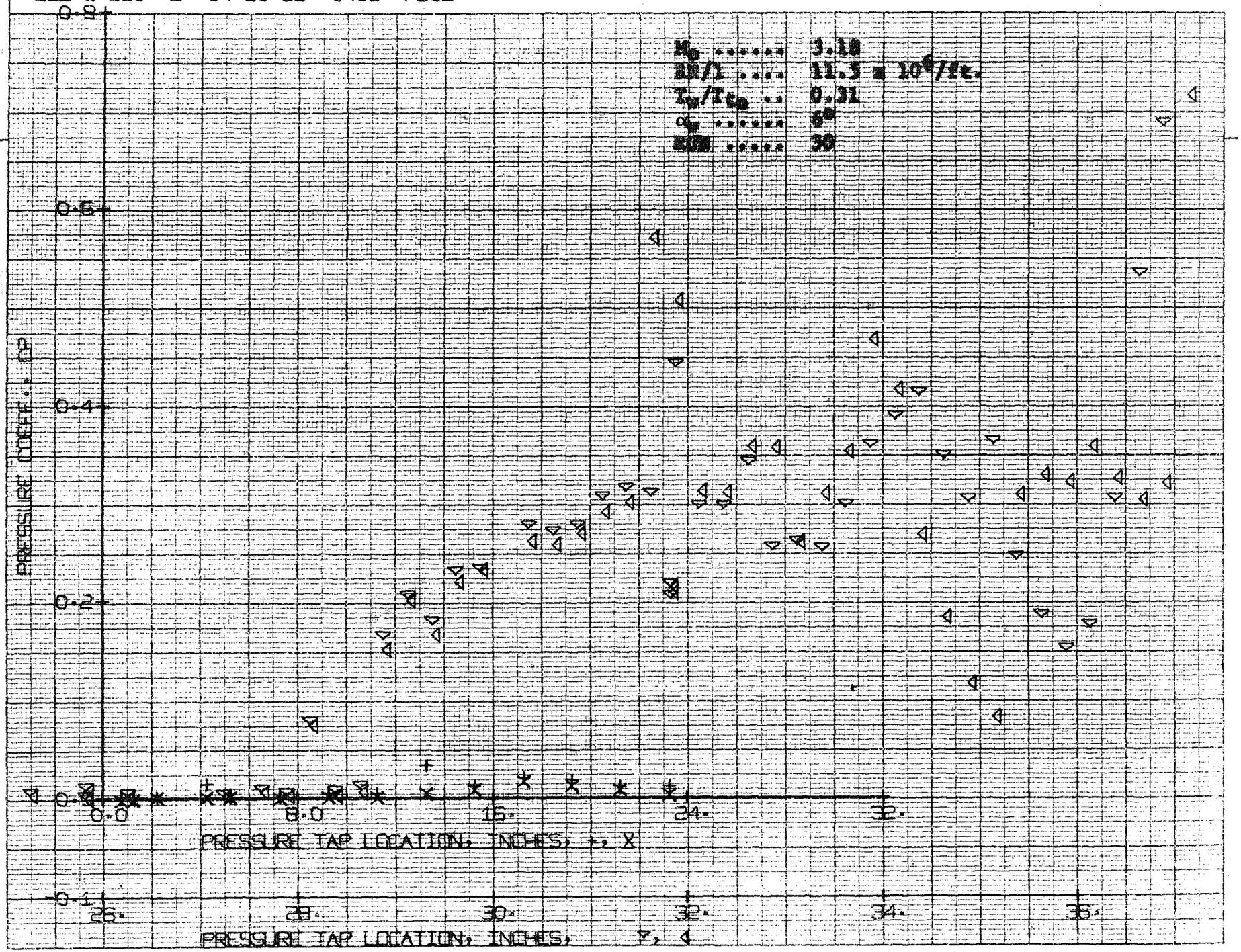



182-3 030 B 04-30-69 0330 PD01
M_D 3.18
KN/I ..... 11.5 x 10^6/ft.
T_w/Tt_D .. 0.31
α_w ..... 6°
RUN 30
PROBE HEIGHT, Y, INCHES
0.0
0.2
0.4
0.6
0.8
-0.0
0.2
0.4
0.6
0.8
1.0
PT'/PTD, +
PROBE PRESS. COEFF. CP-61, X

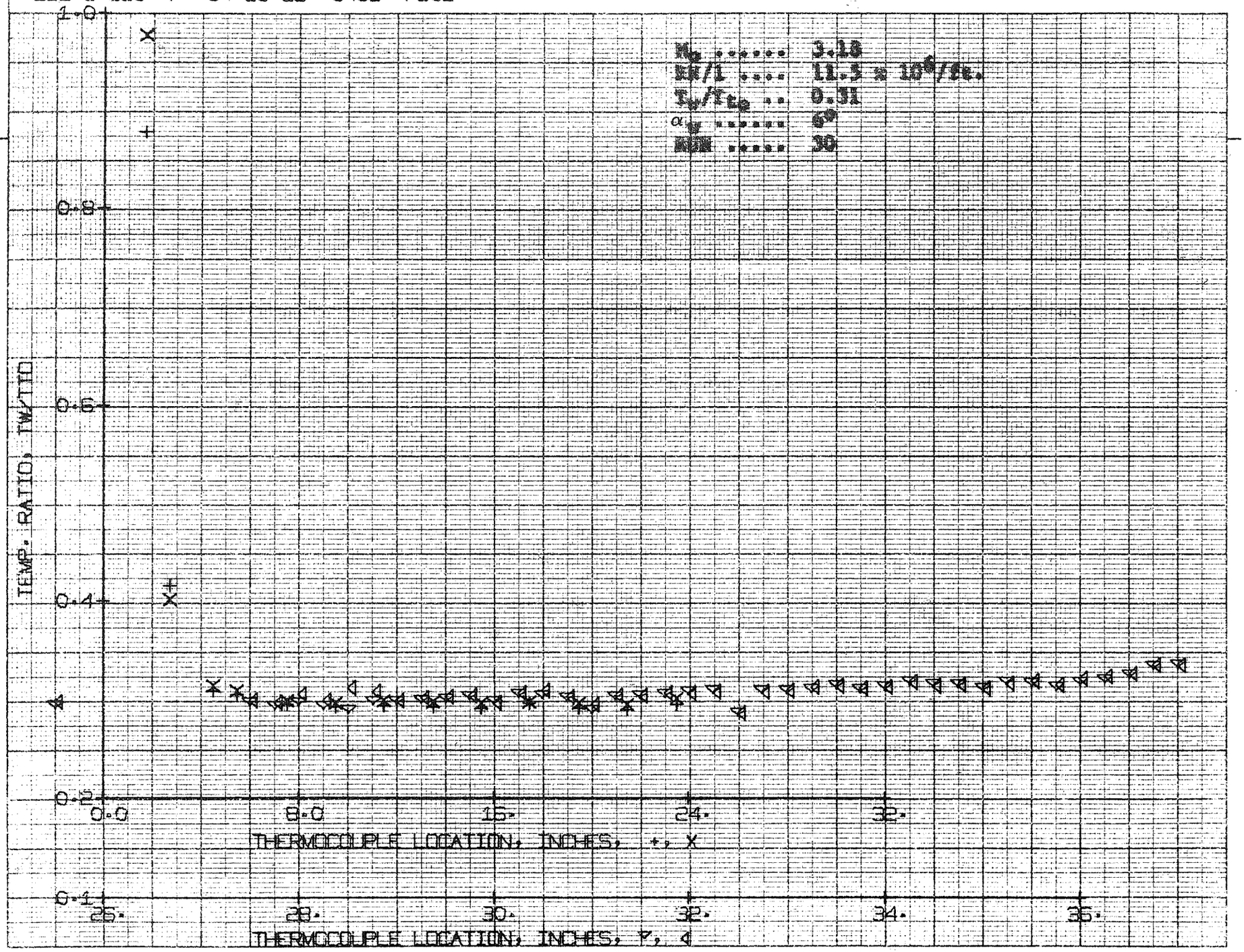
182-3 030 D 04-30-69 0330 PD01



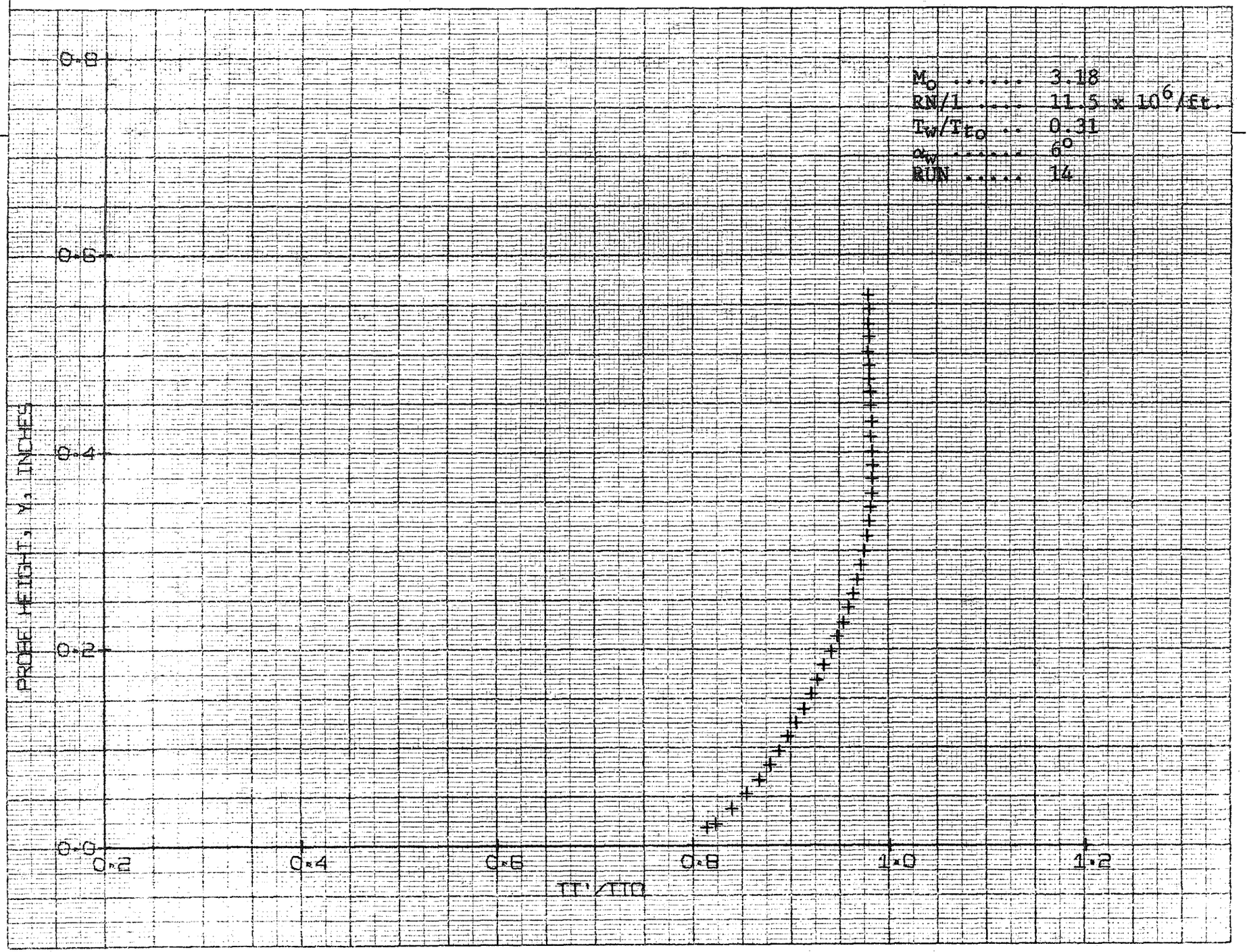
182-3 530 E 04-30-69 0408 PD02



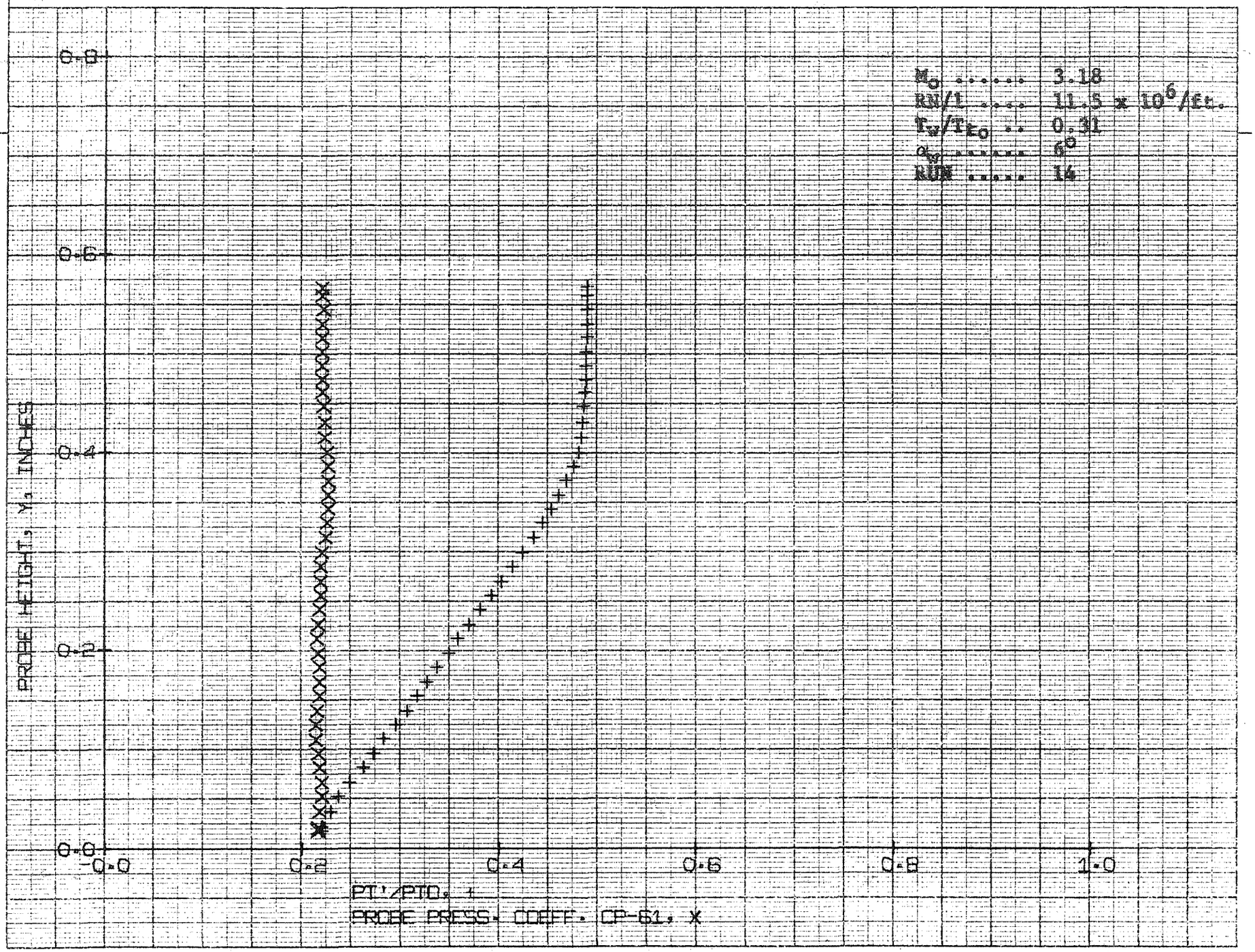
182-3 530 F 04-30-69 0408 PD02



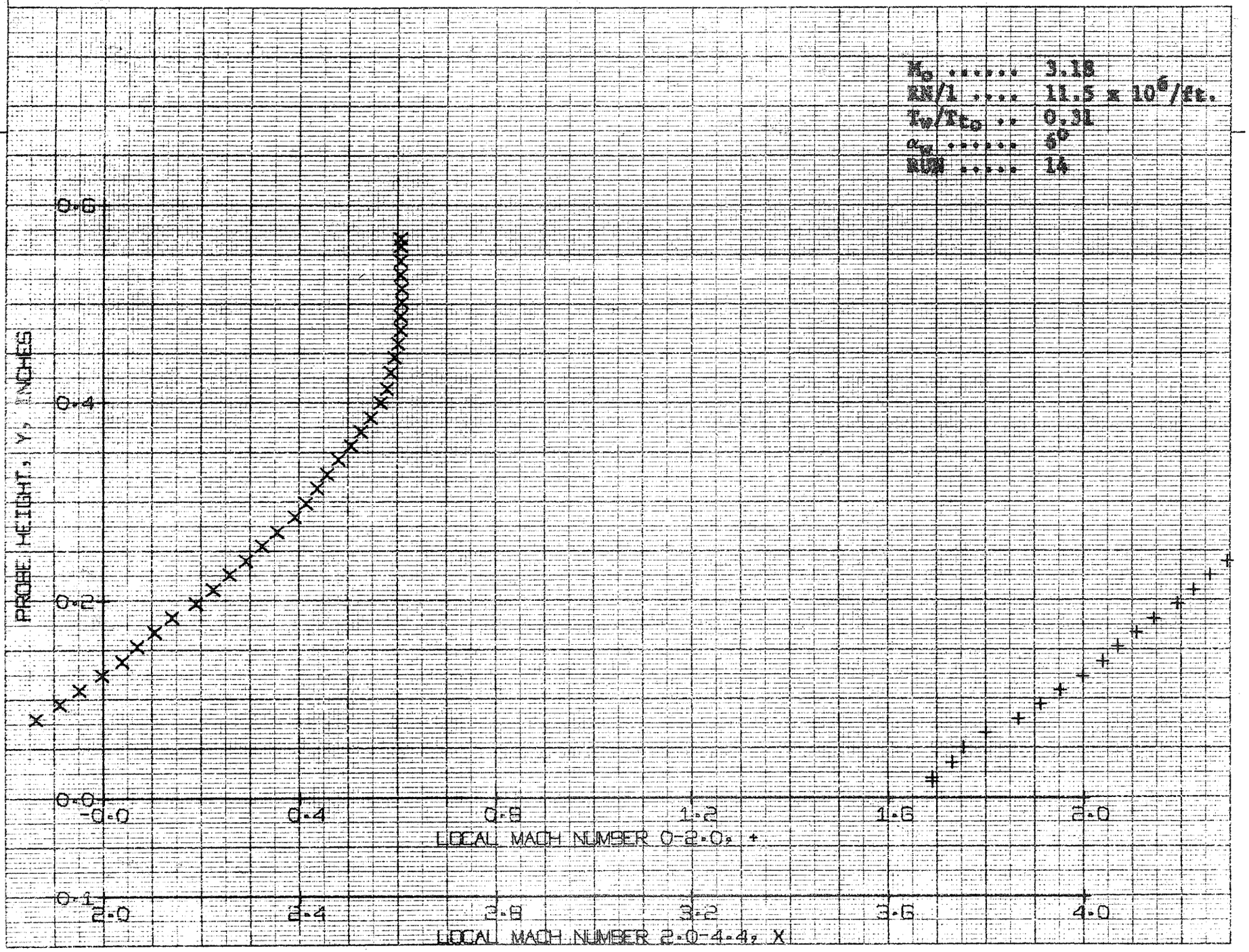
182-3 014 A 04-29-69 1112 PD01



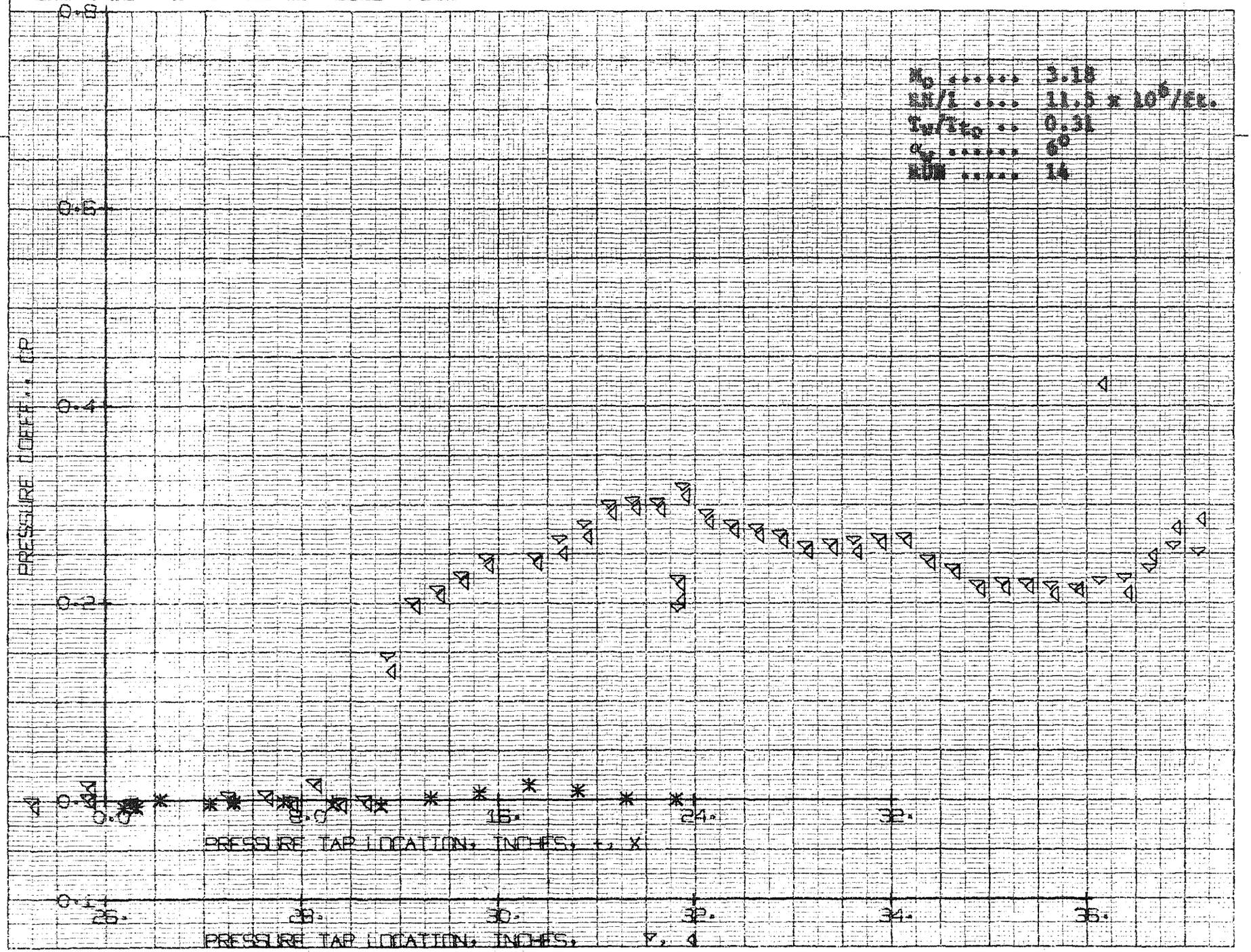
182-3 014 B 04-23-69 1112 PD01

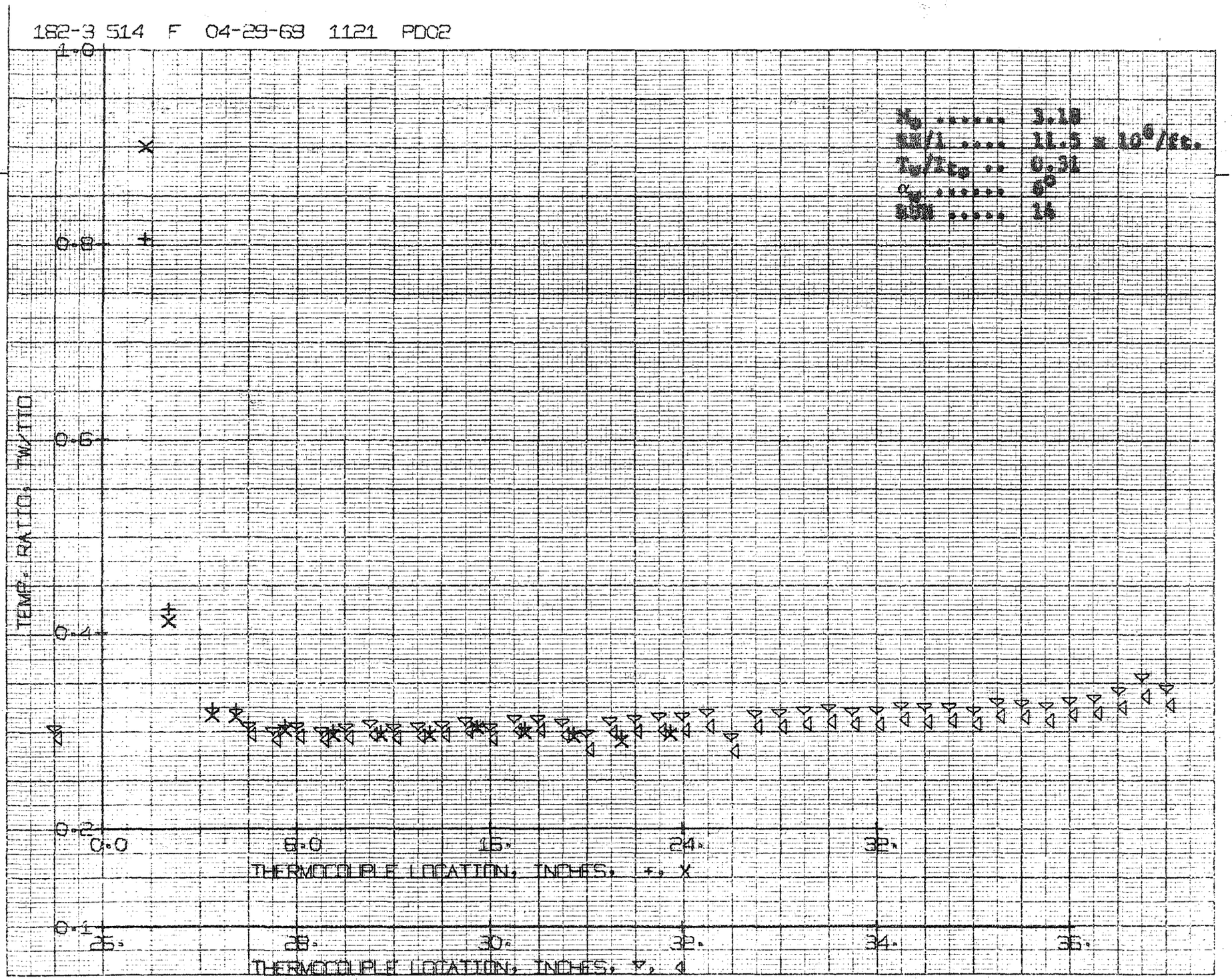


182-3 014 D 04-29-69 1112 PD01

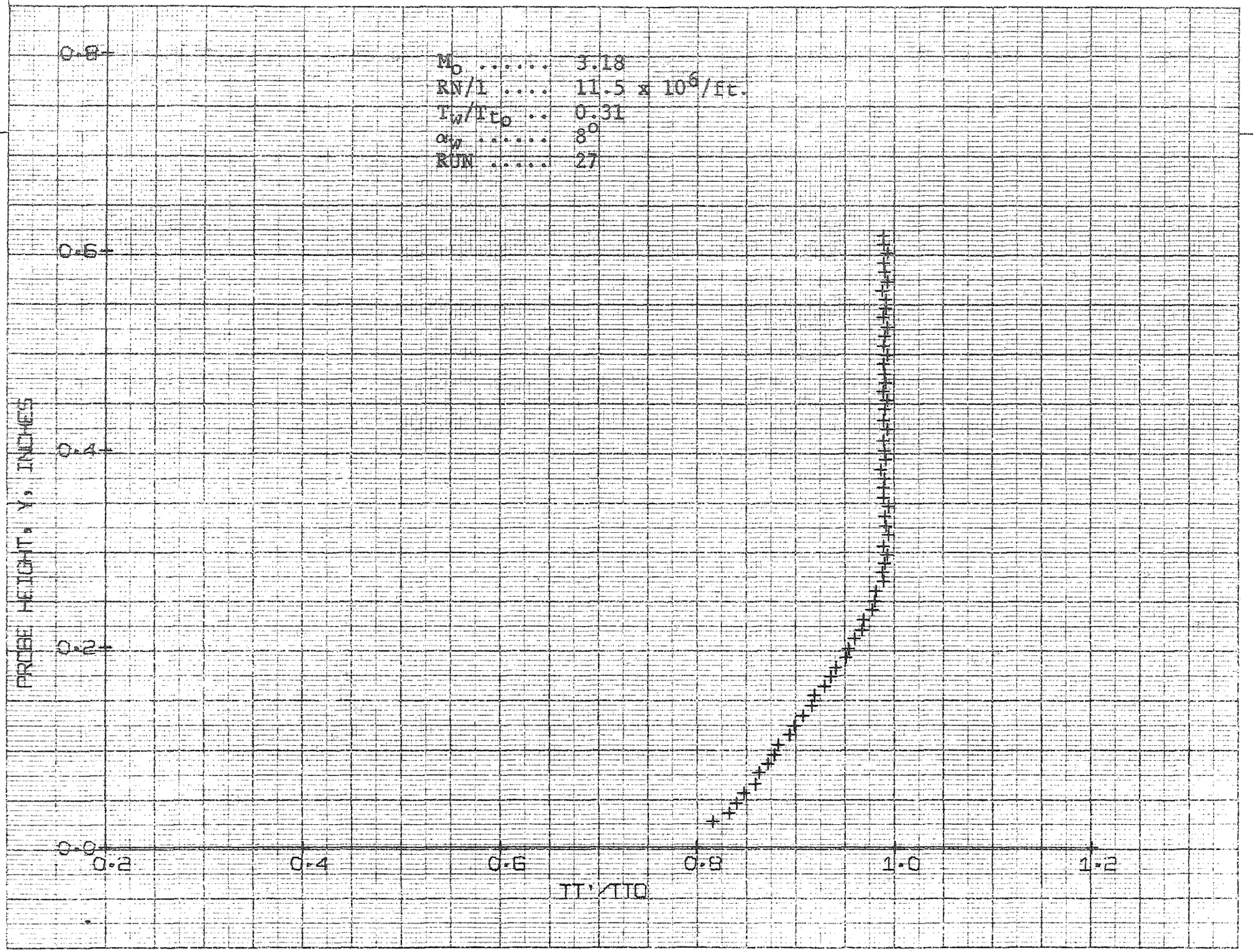


182-3 514 E 04-29-69 1121 PD02

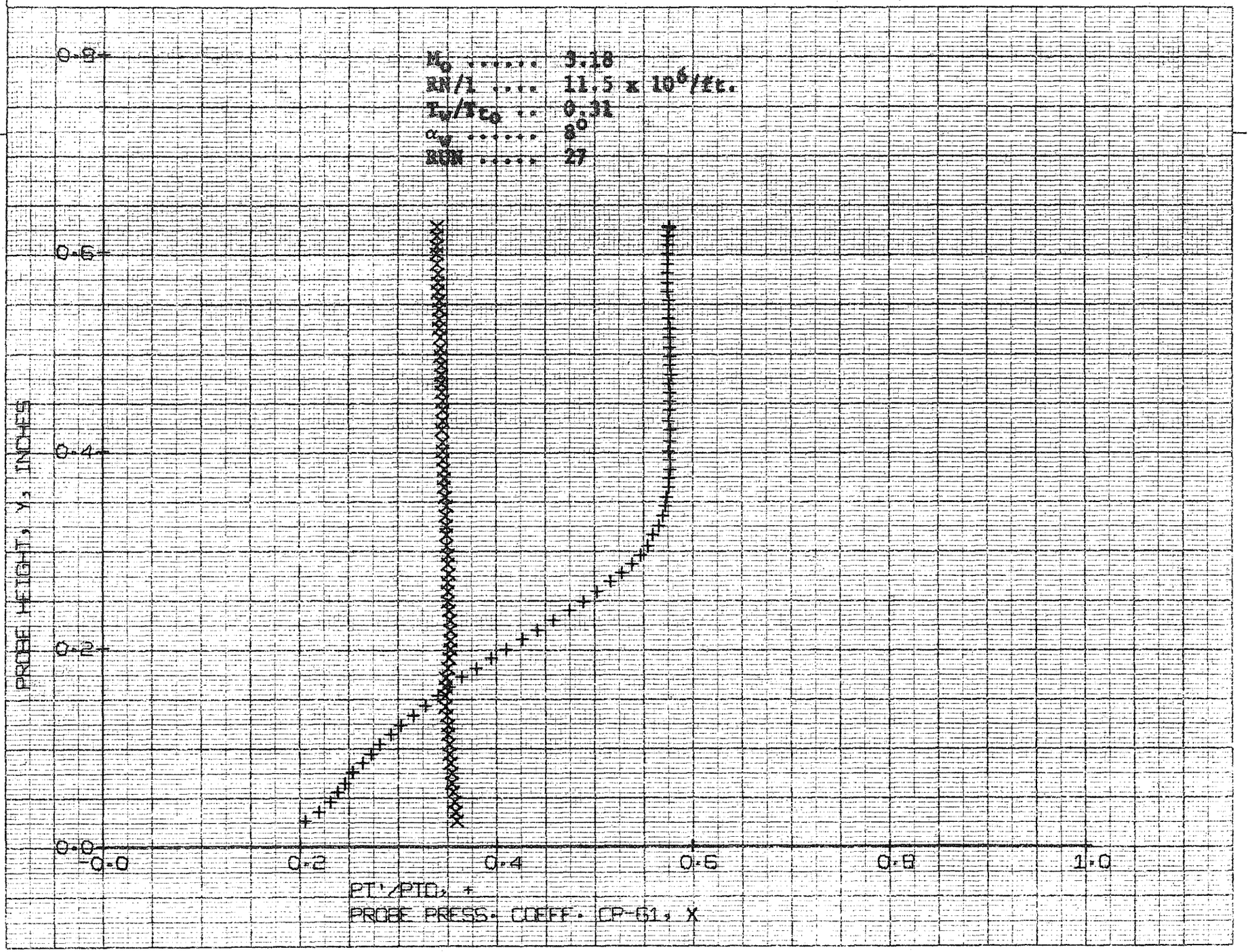



182-3 514 F 04-29-68 1121 PD02
X_0 ..... 3.18
$\dot{m}/A$ .... 11.5 x 10^6/sec.
T_w/T_{t0} .. 0.31
α_w ..... 0°
SUM 14
TEMP. RATIO, TW/TTO
1.0
0.8
0.6
0.4
0.2
0.1
0.0
8.0
16.
24.
32.
THERMOCOUPLE LOCATION, INCHES, +, X
25.
28.
30.
32.
34.
36.
THERMOCOUPLE LOCATION, INCHES, ▽, ◁

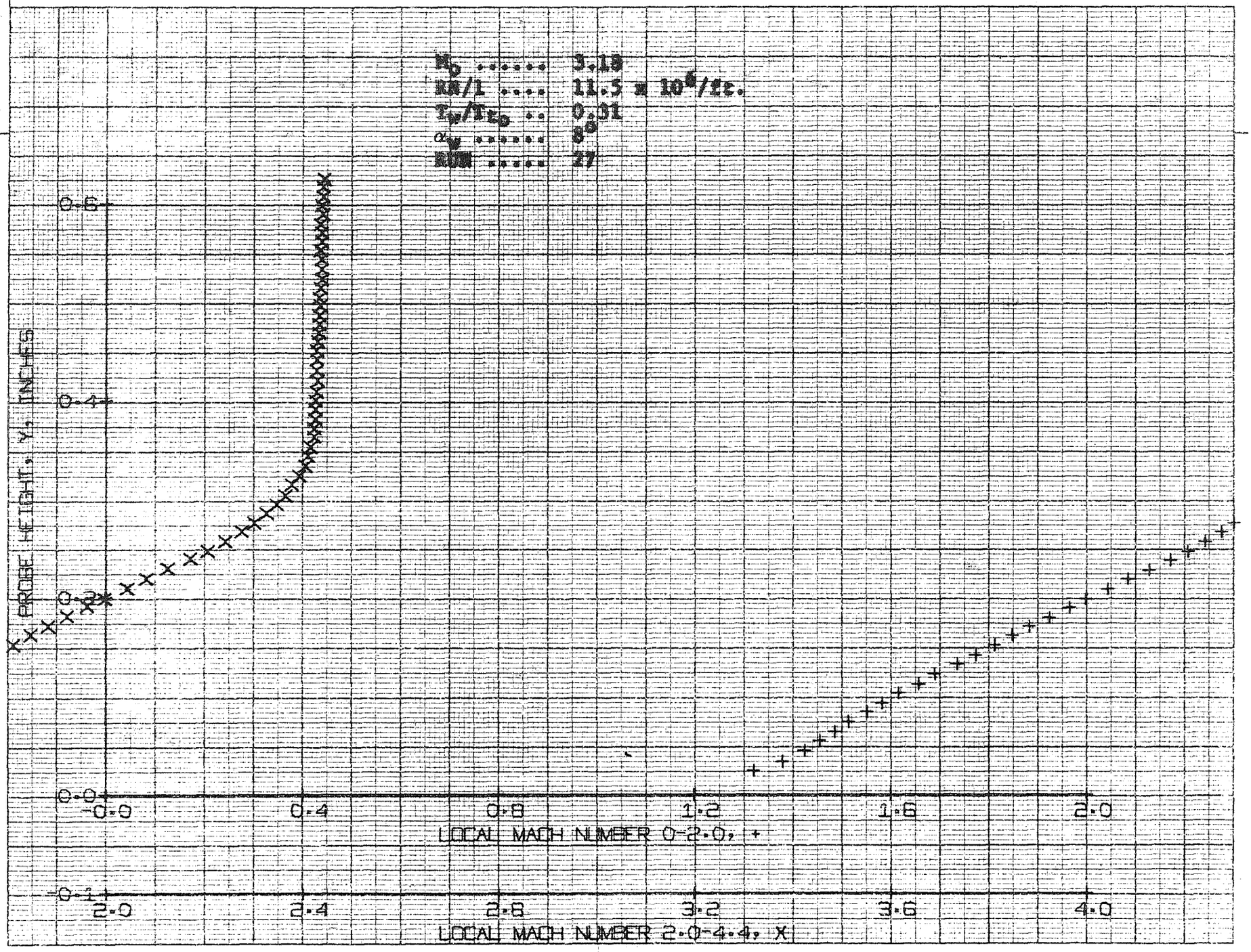
182-3 027 A 04-30-69 0119 PD01

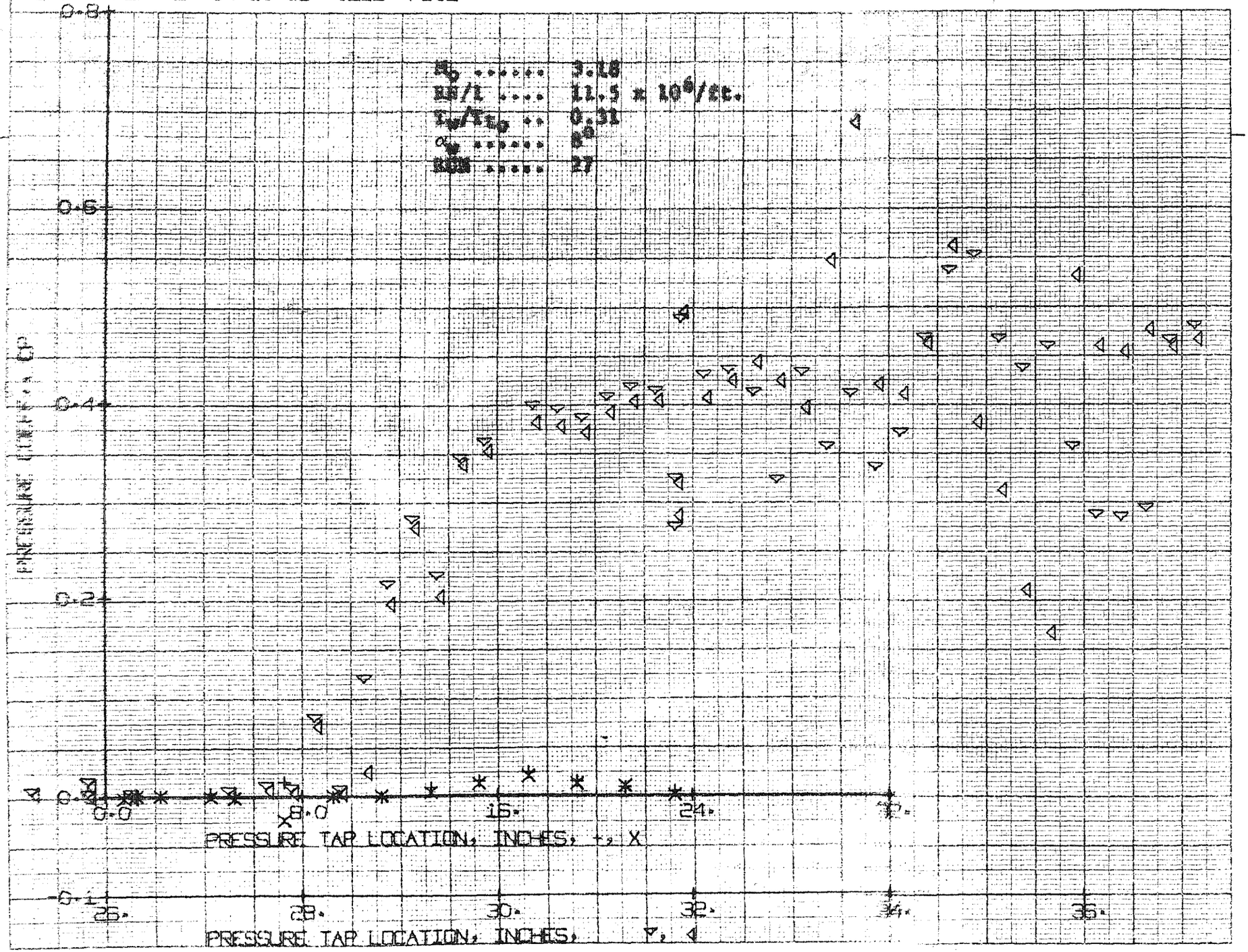


182-3 027 B 04-30-69 0119 PD01

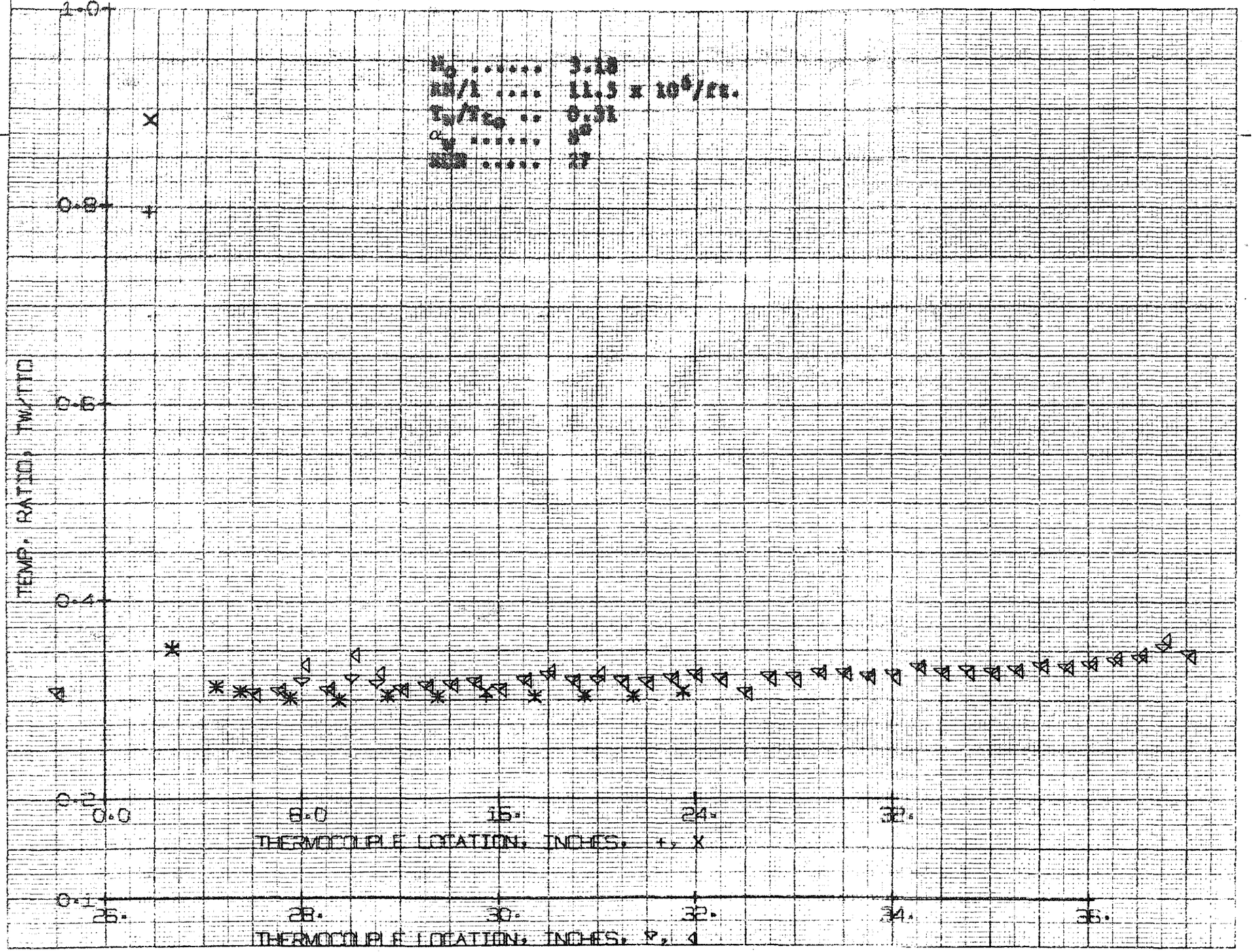


182-3 027 D 04-30-69 0119 PD01

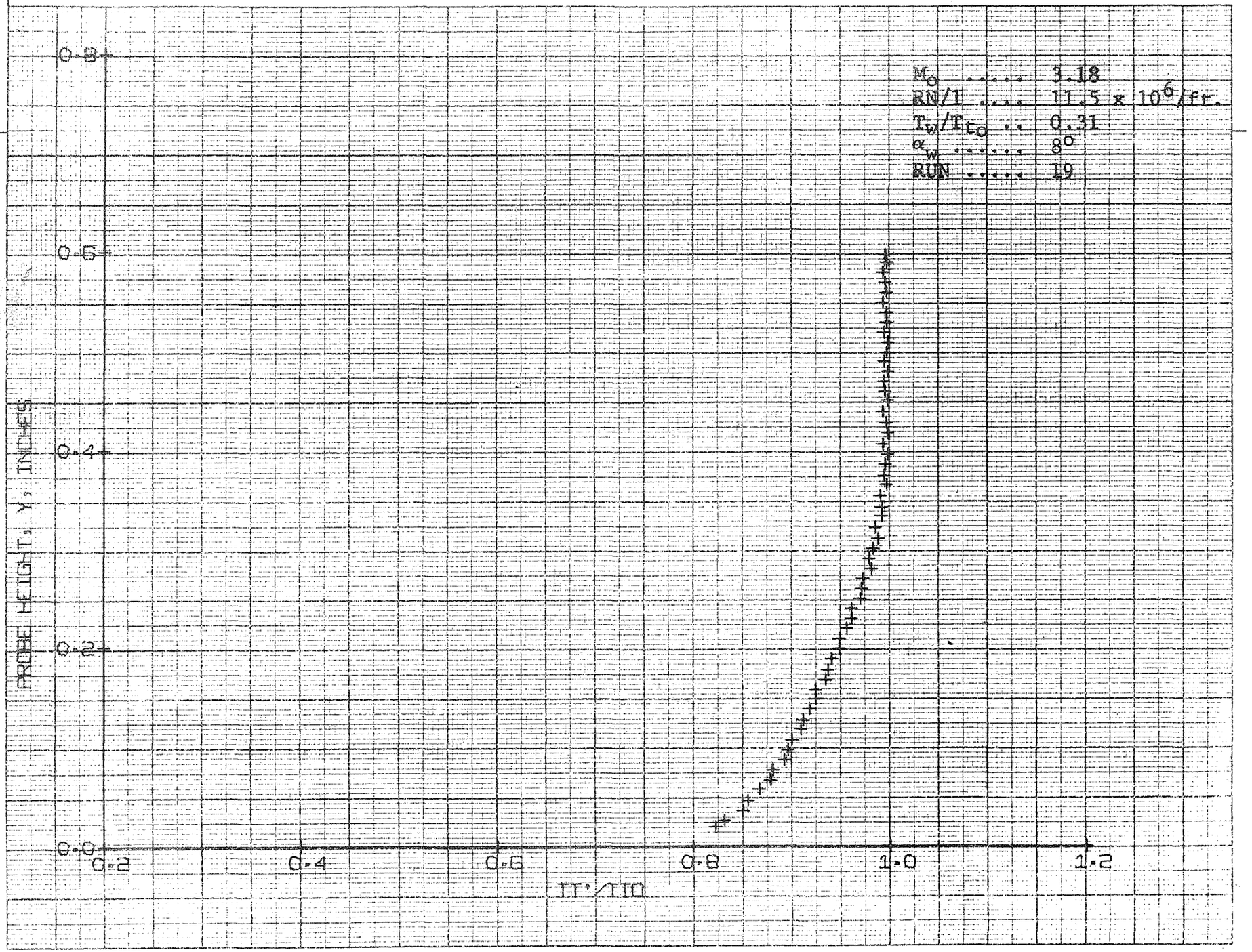



M_0 ..... 3.18
RE/L .... 11.5 x 10^6/ft.
T_w/T_{t_0} .. 0.31
α_w ..... 8^0
RUN 27
PRESSURE COEFFICIENT, CP
0.8
0.6
0.4
0.2
0.0
-0.1
0.0
8.0
16.
24.
32.
40.
26.
28.
30.
32.
34.
36.
PRESSURE TAP LOCATION, INCHES, +, X
PRESSURE TAP LOCATION, INCHES, ▽, △

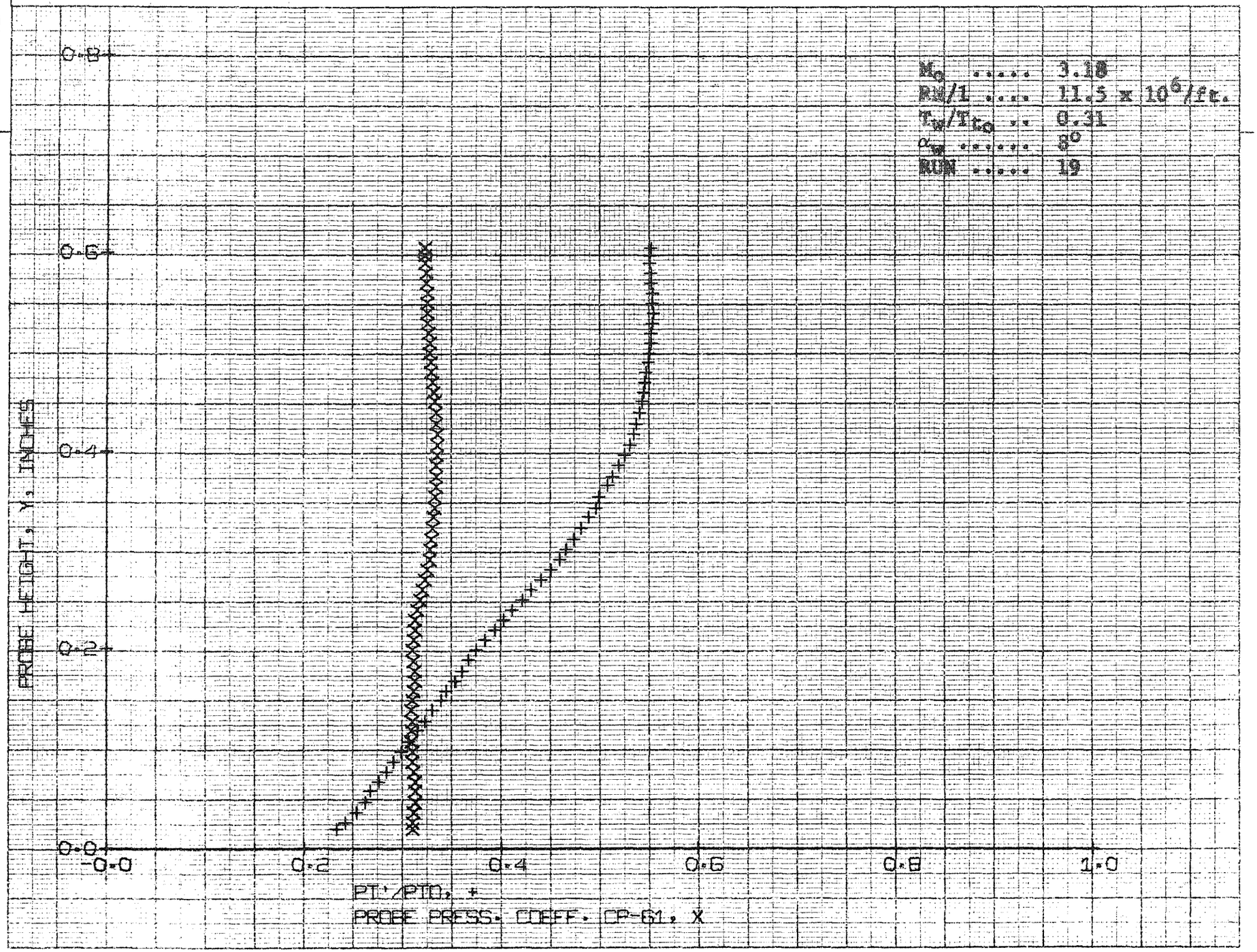
182-3 527 F 04-30-69 0132 PD02



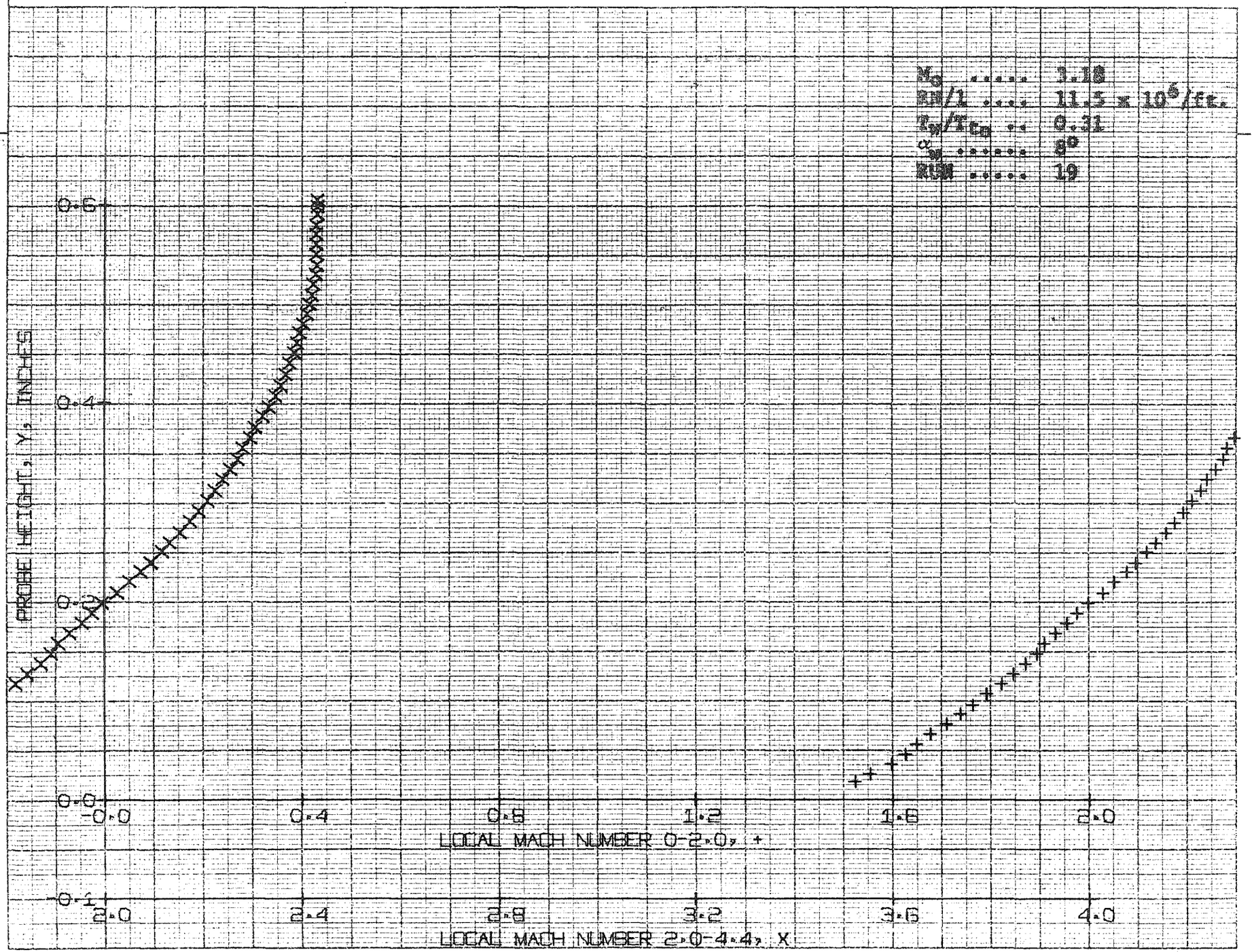
182-3 013 A 04-29-63 1807 PD01



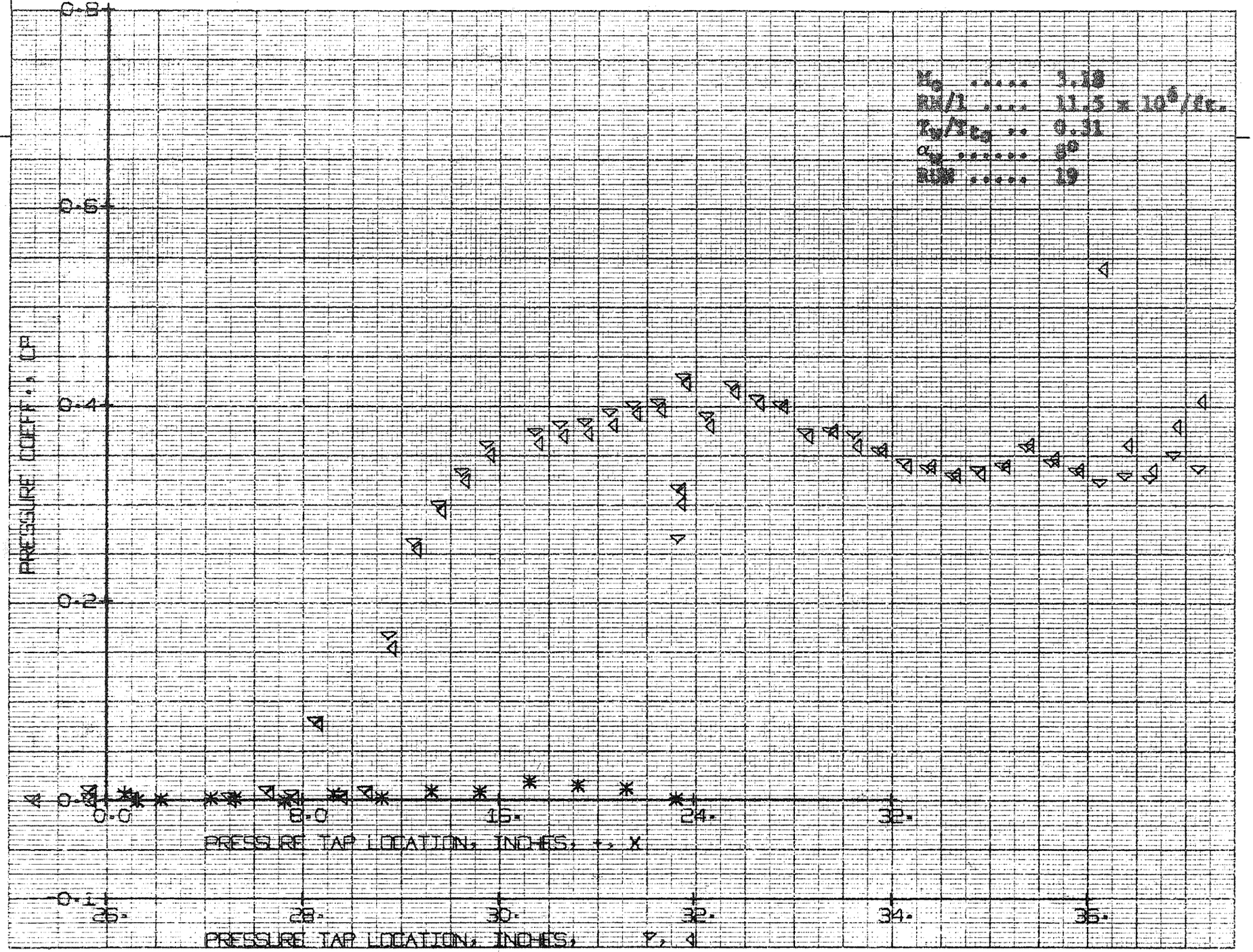
182-3 013 B 04-29-69 1807 P001



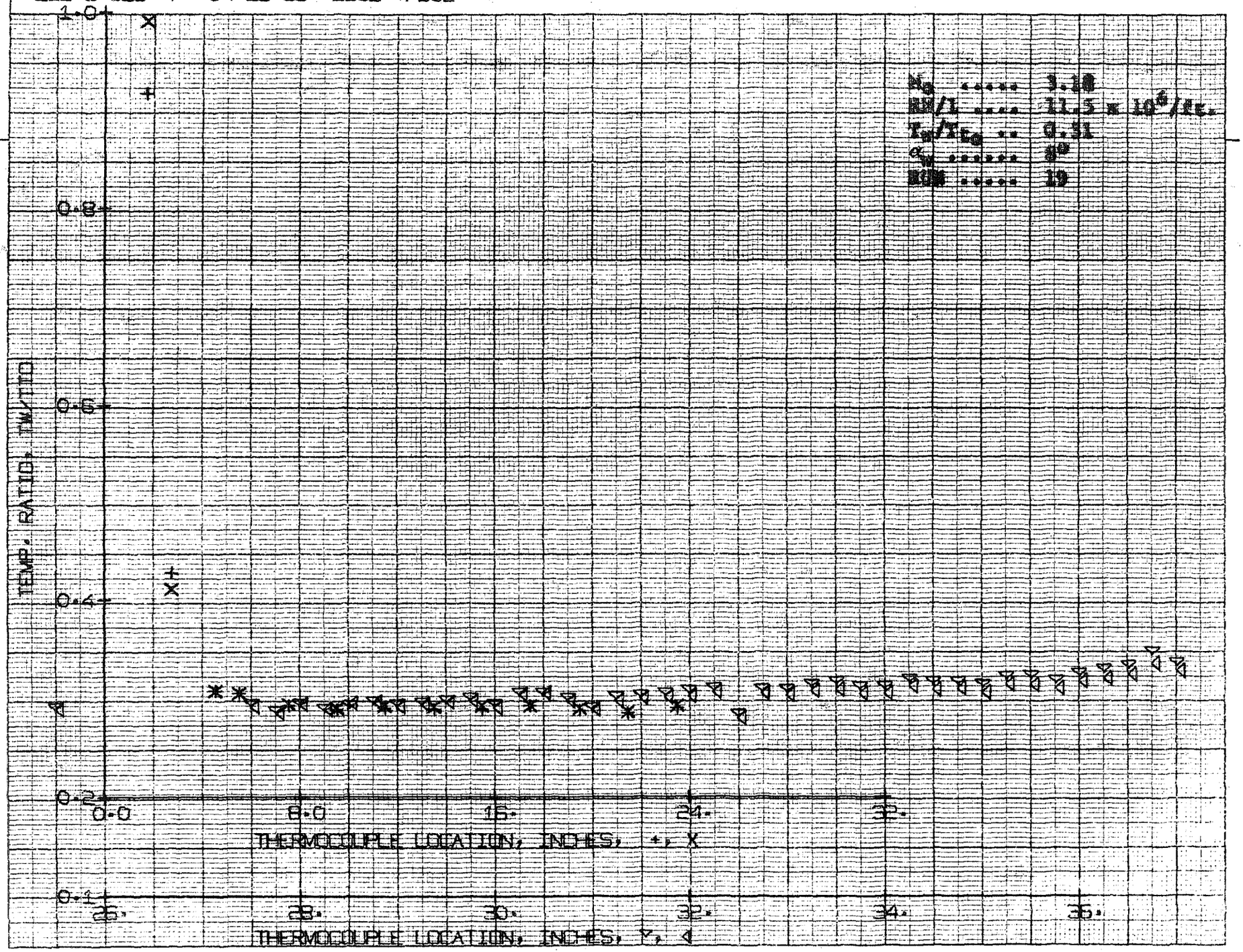
182-3 019 D 04-29-69 1807 PD01



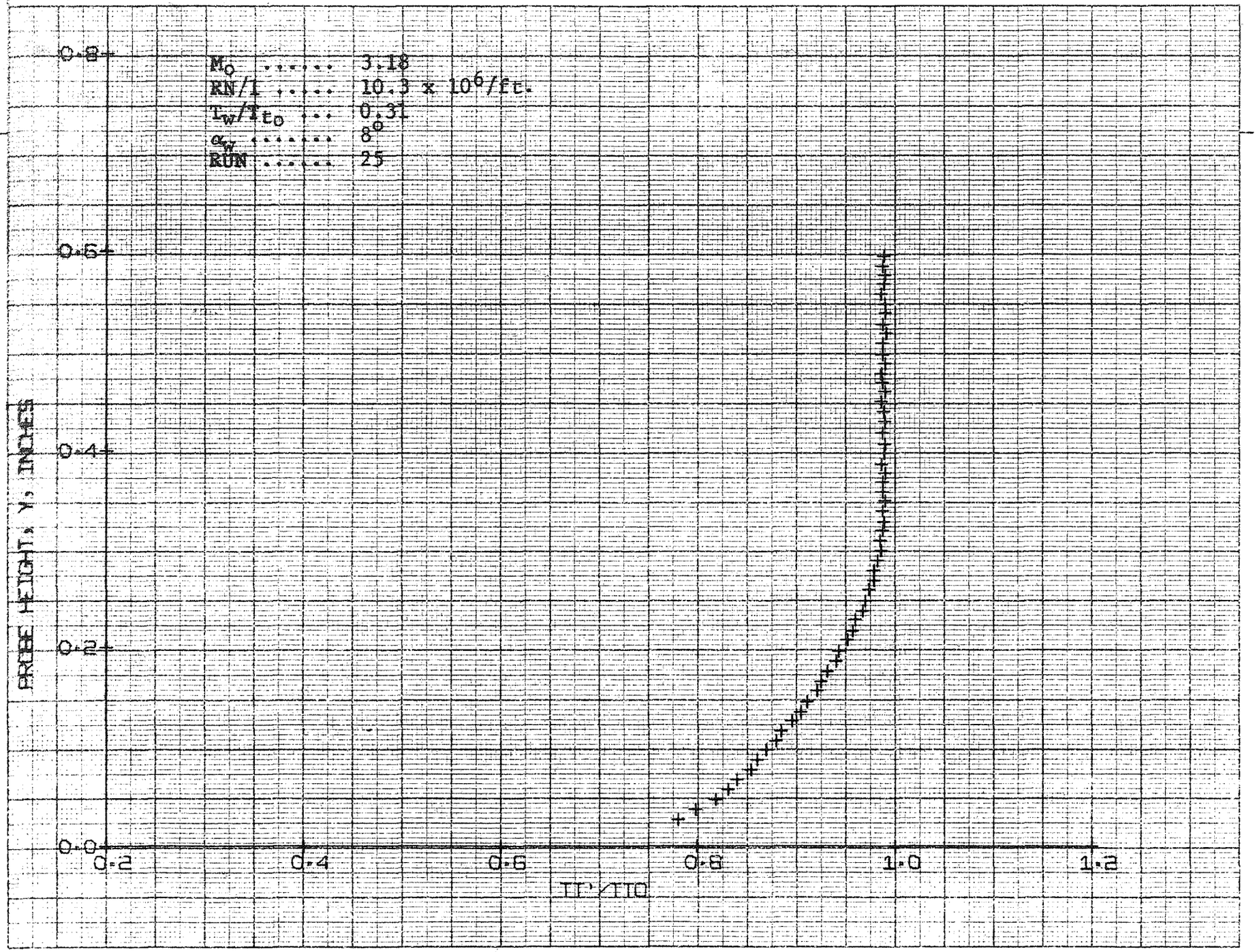
182-3 519 E 04-29-69 1801 PD02



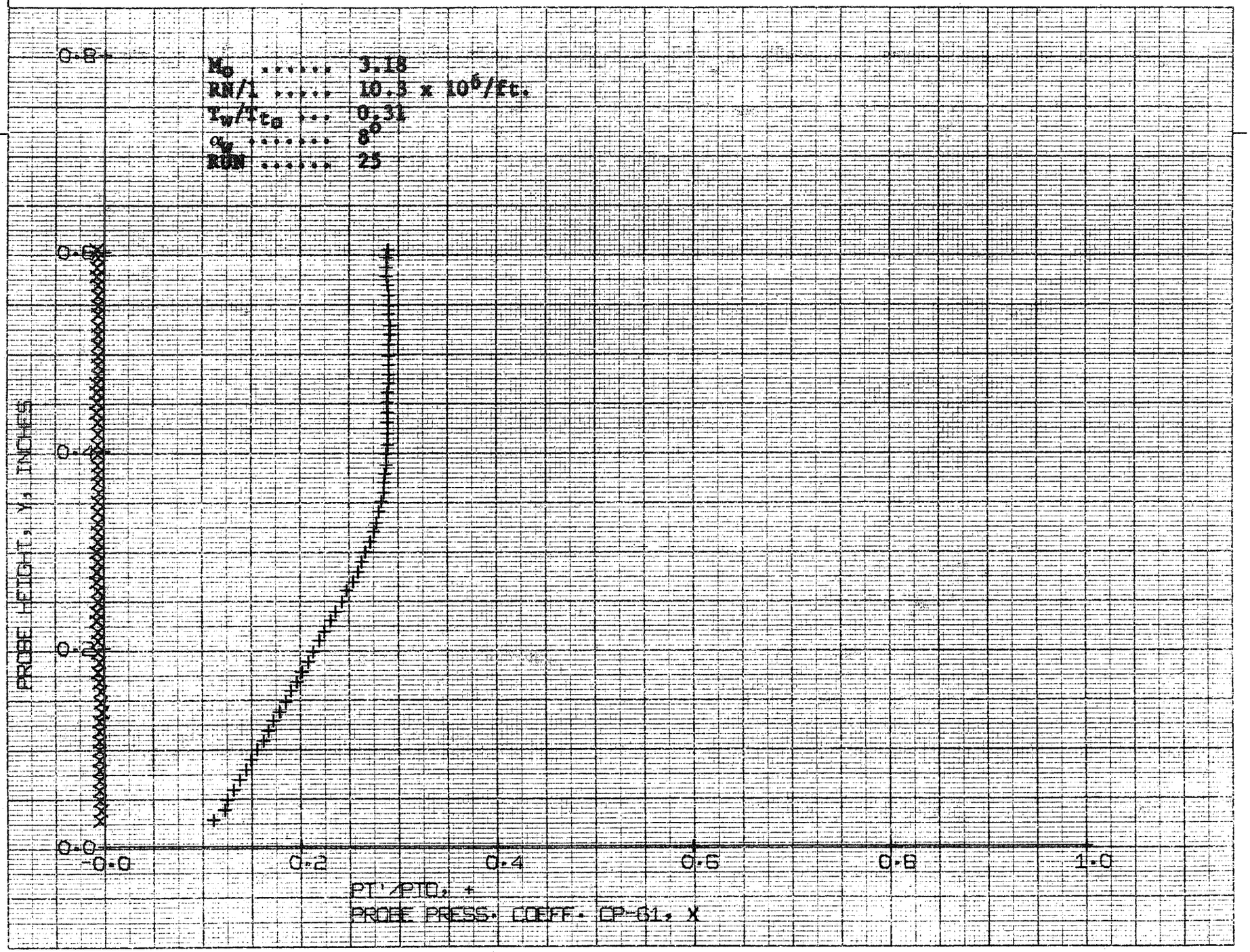
182-3 519 F 04-29-69 1901 PD02



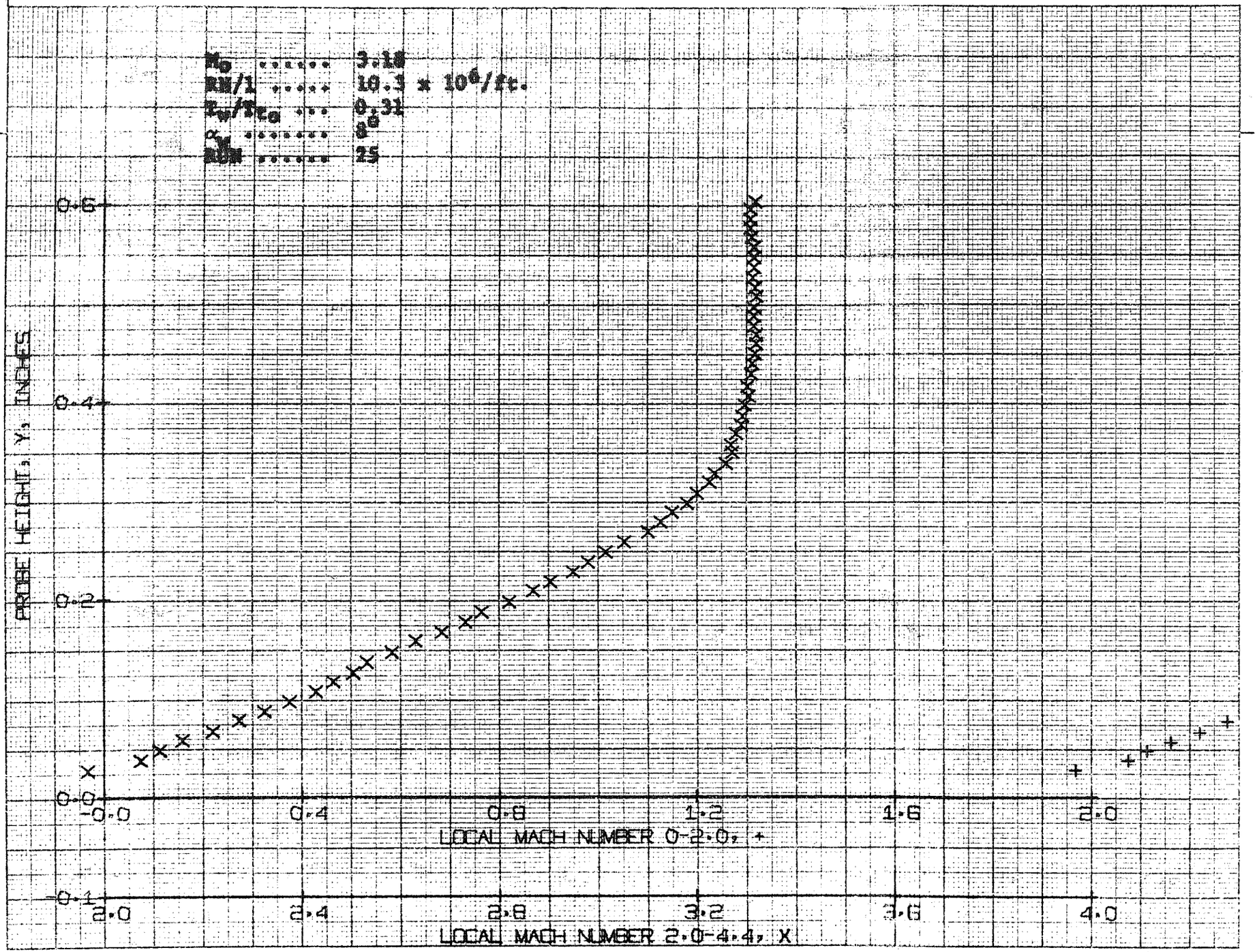
182-3 025 A 04-30-69 0009 PD01

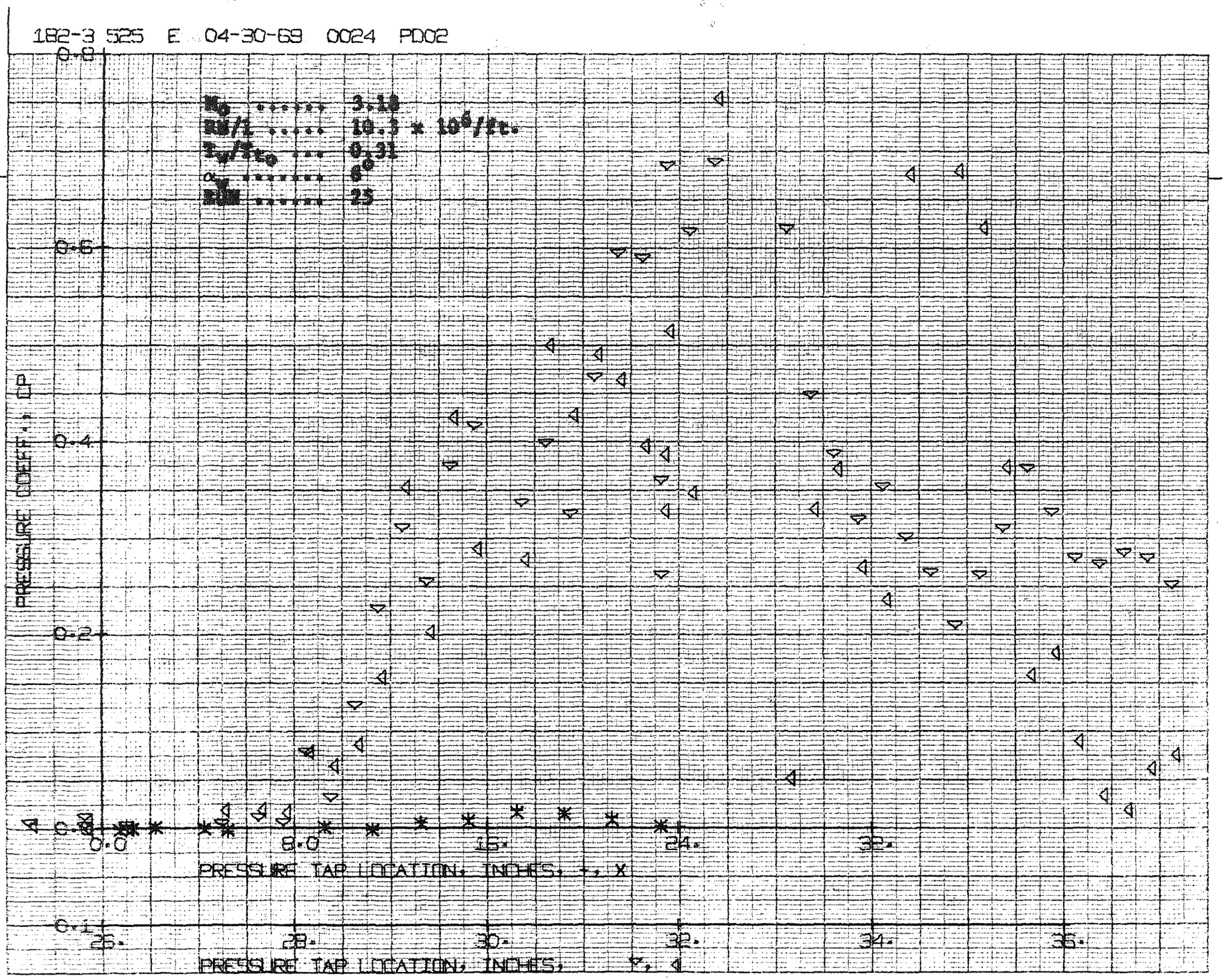


182-3 025 B 04-30-69 0009 PD01

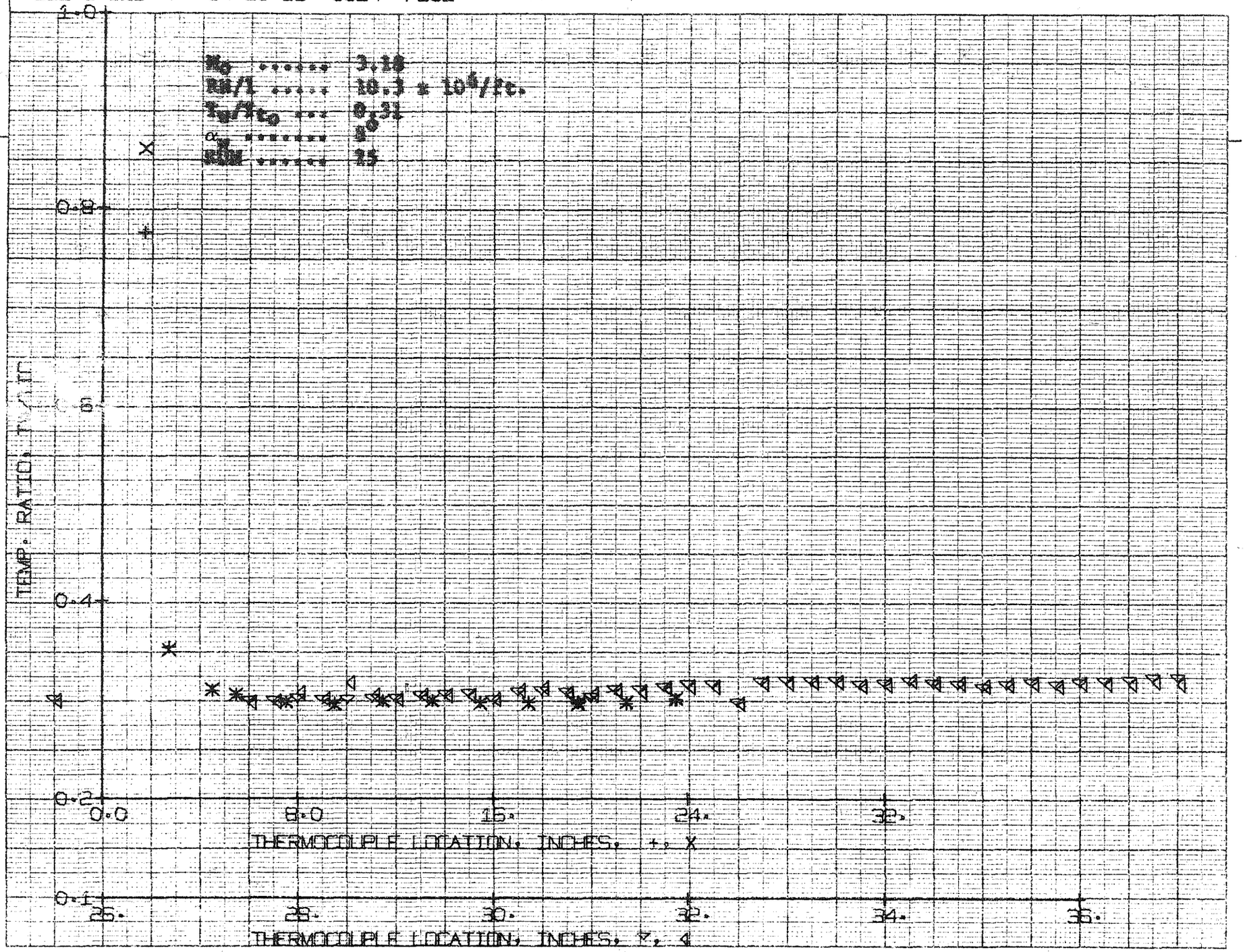


182-3 025 D 04-30-69 0009 PD01

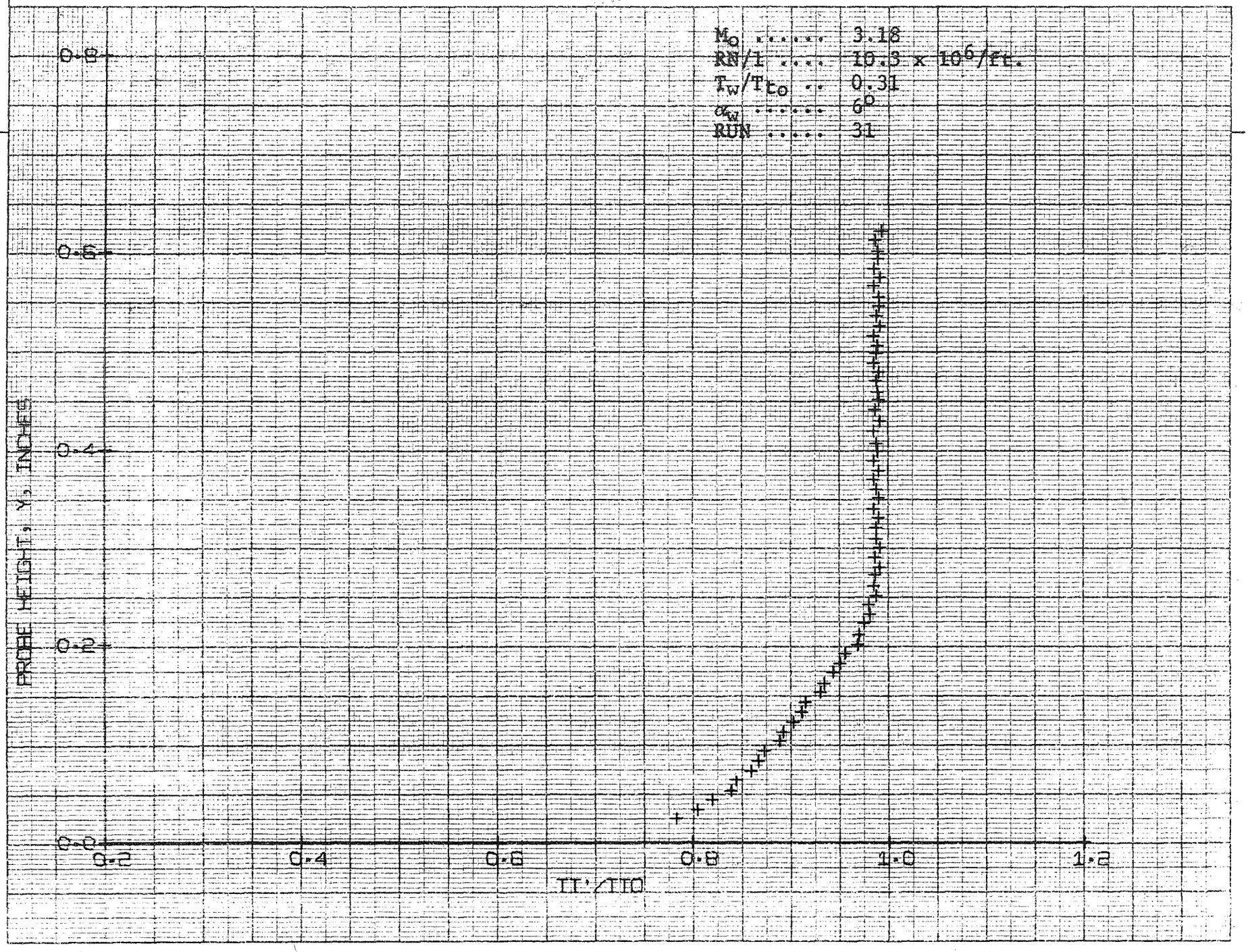



182-3 525 E 04-30-69 0024 PD02
M_0 ..... 3.10
RN/L ..... 10.3 * 10^6/ft.
T_w/T_{t0} ... 0.31
α_w ..... 6°
$\bar{x}/\bar{R}$ 25
PRESSURE COEFF., CP
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
0.0
8.0
16.
24.
32.
PRESSURE TAP LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
PRESSURE TAP LOCATION, INCHES, ▽, △

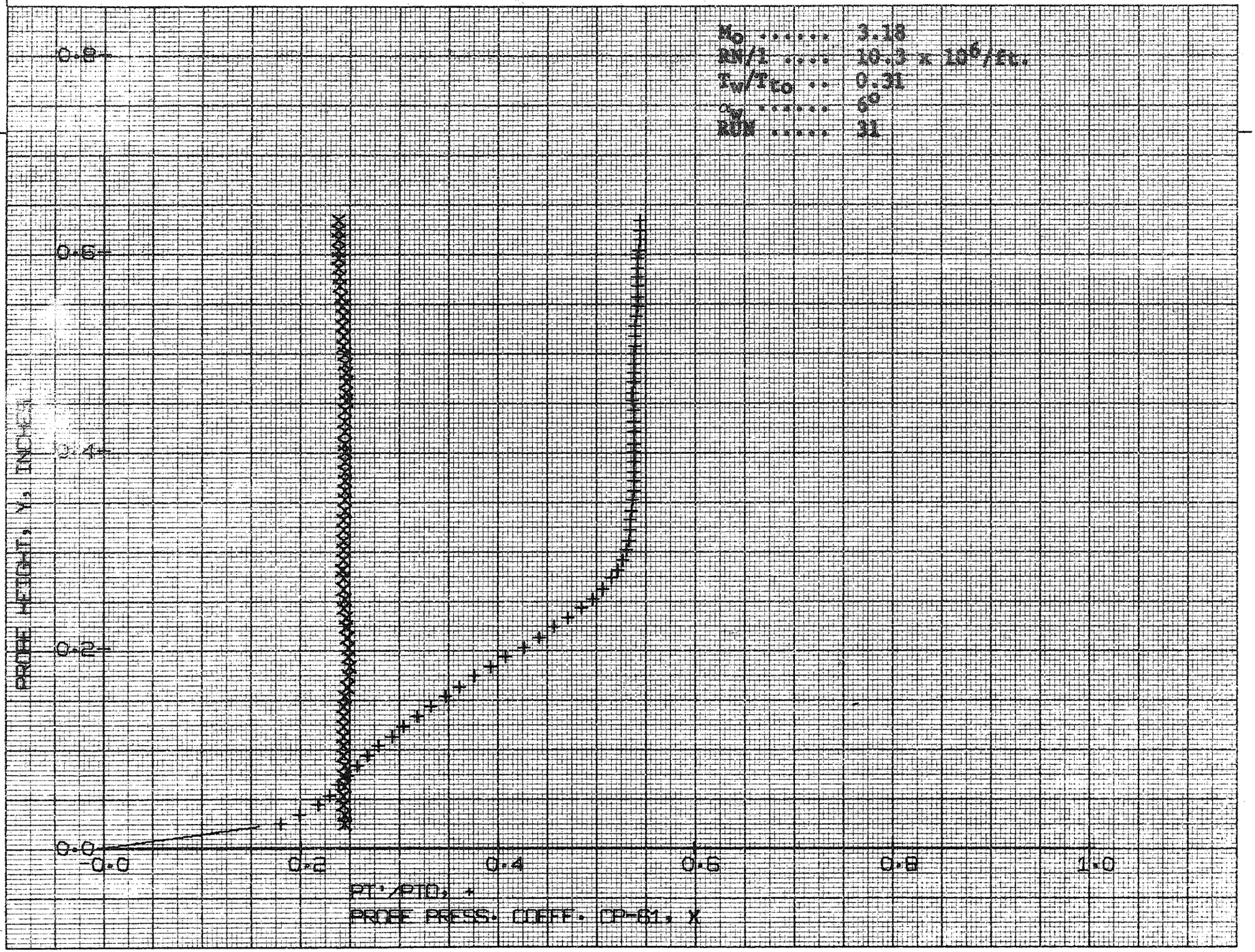
182-3 525 F 04-30-69 0024 PD02



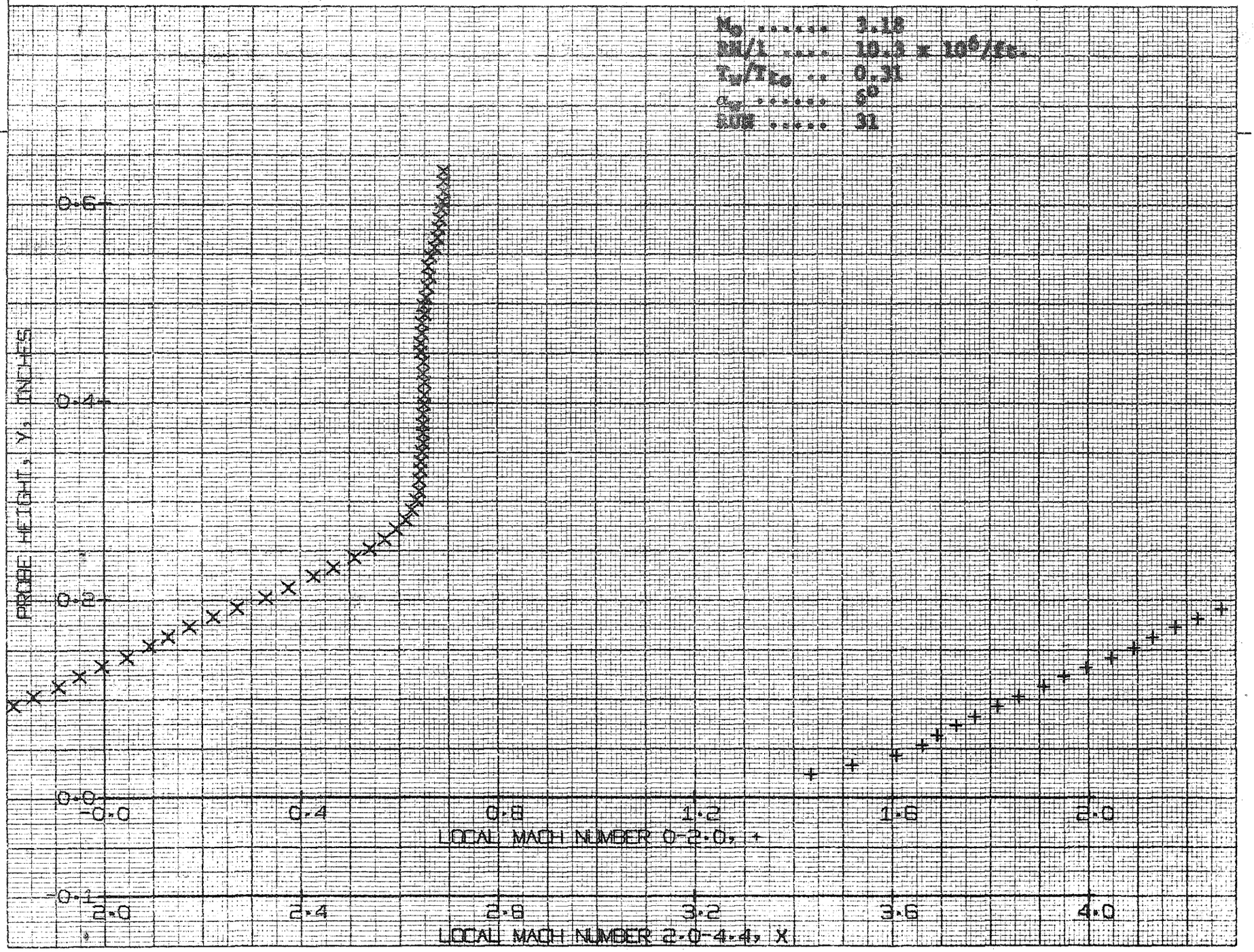
182-3 031 A 04-30-69 0439 PD01



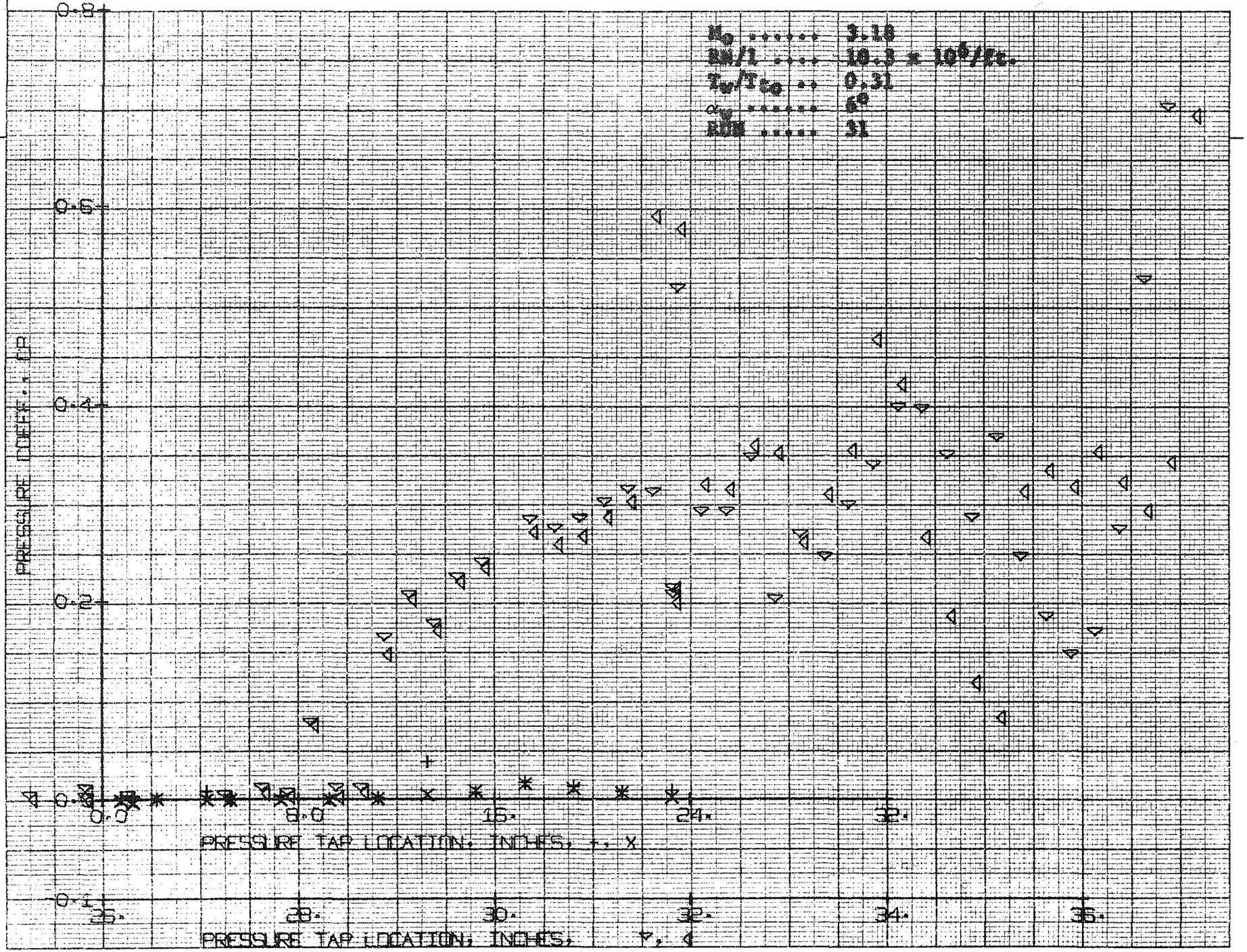
182-3 031 B 04-30-69 0439 PD01



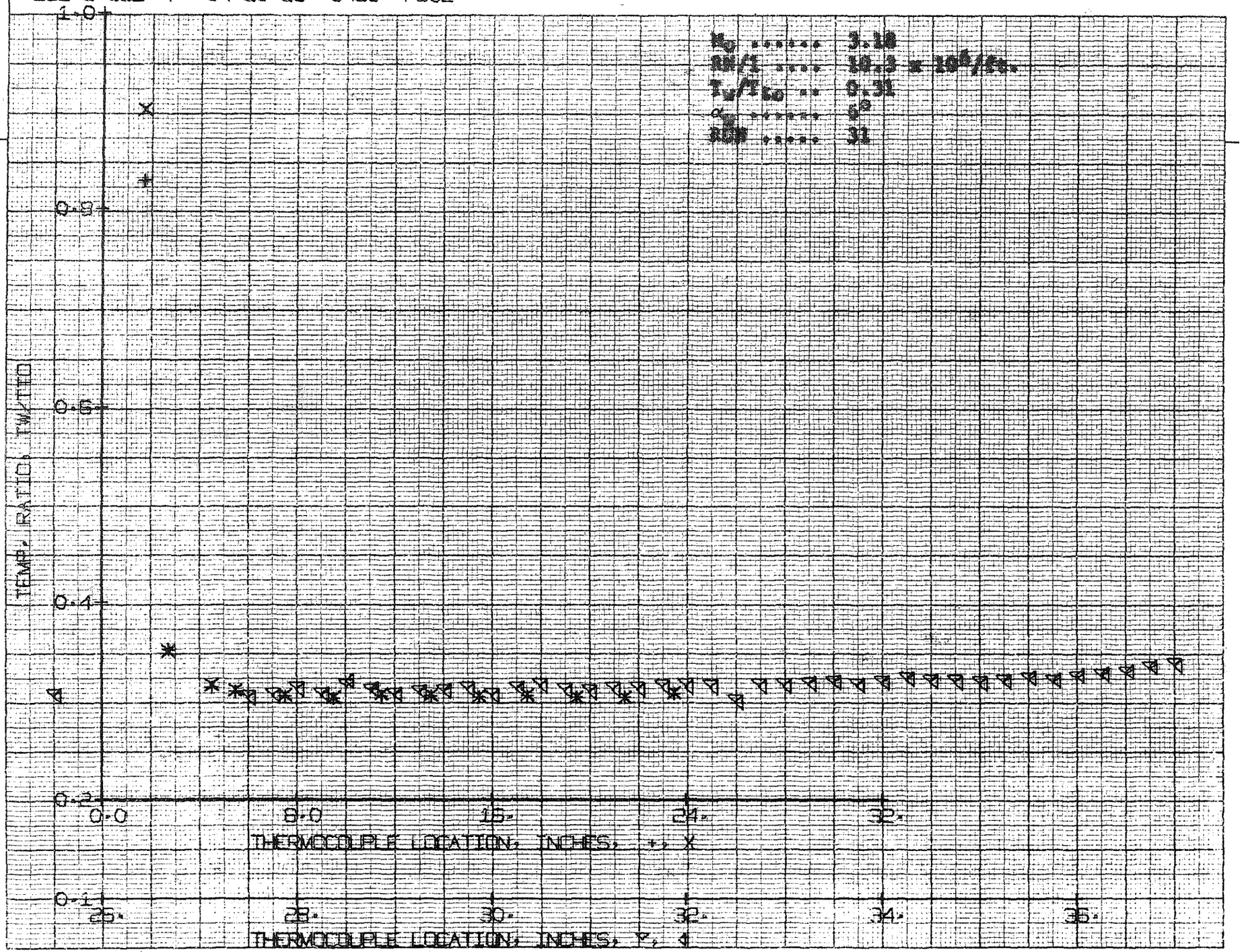
182-3 031 D 04-30-69 0439 PD01

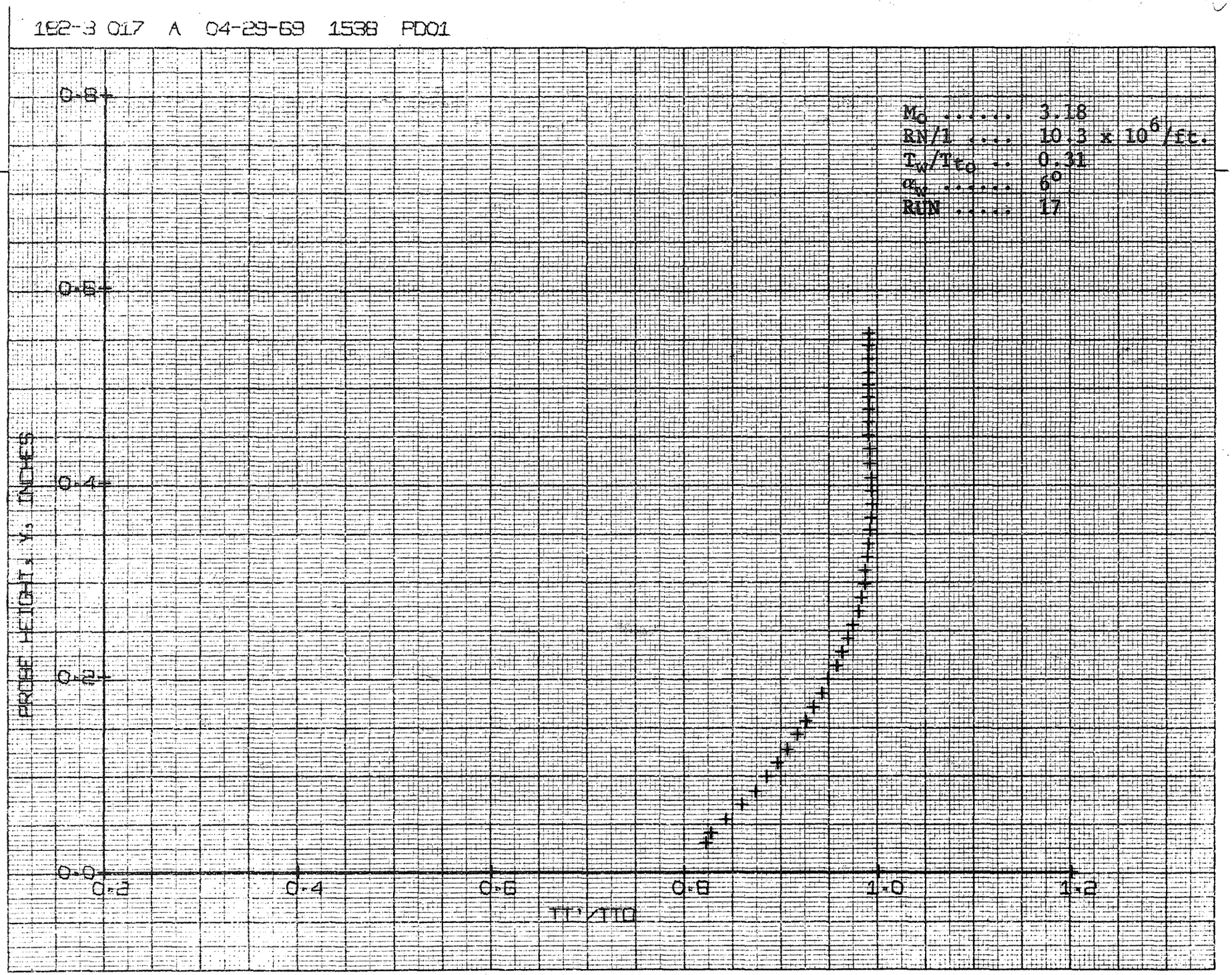


182-3 531 E 04-30-69 0430 PD02

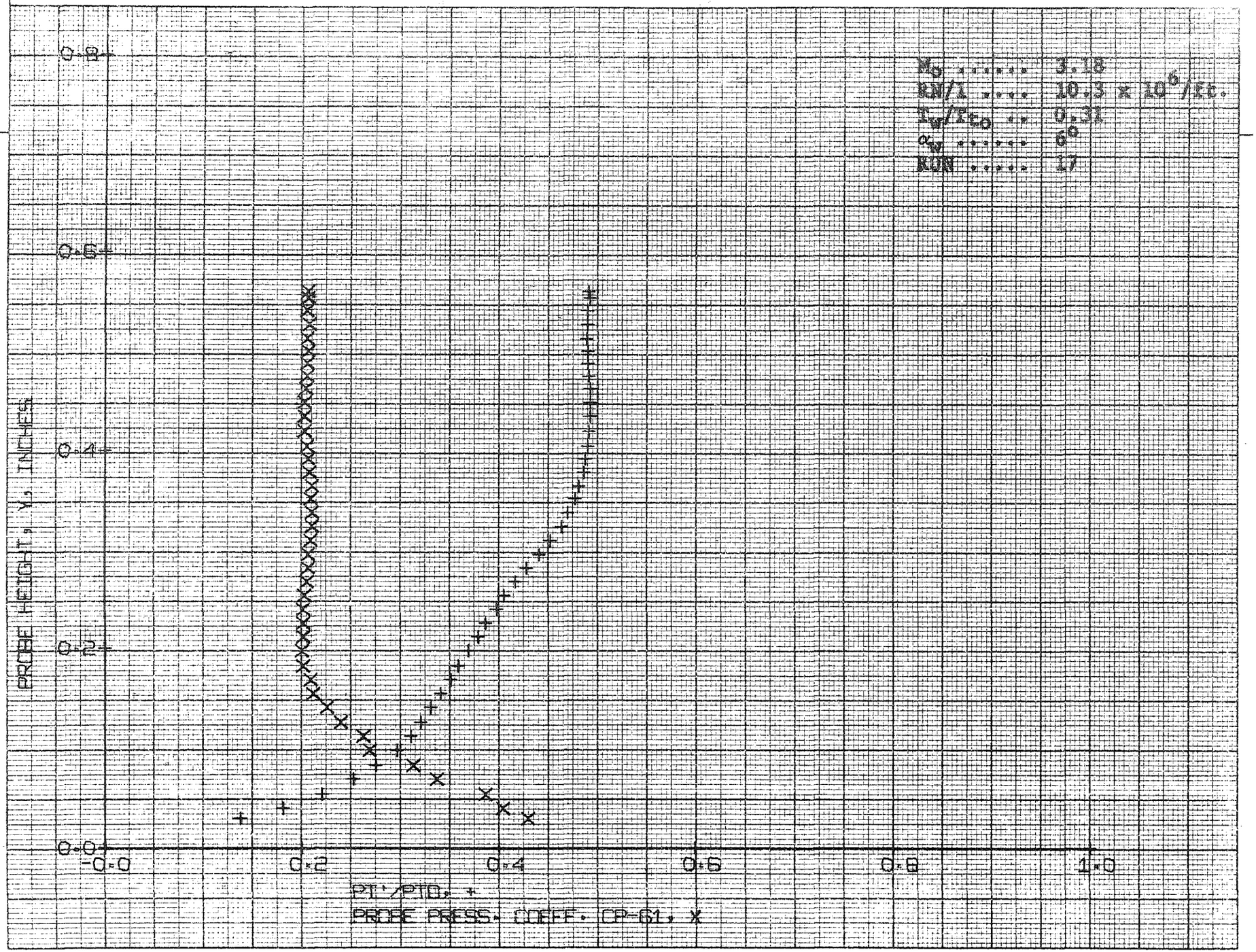


182-3 531 F 04-30-69 0430 PD02

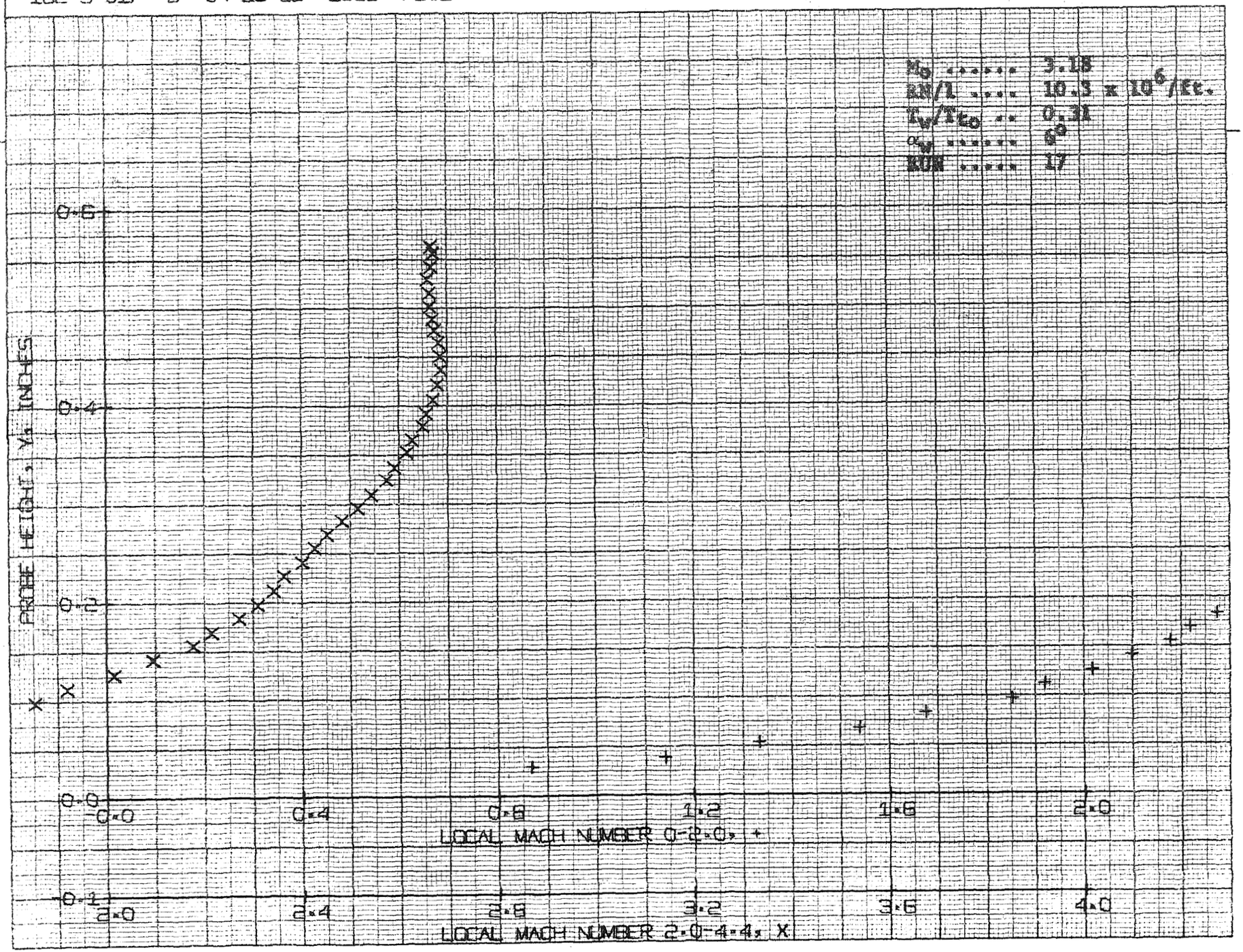



182-3 017 A 04-29-69 1538 PD01
M_c 3.18
RN/1 .... 10.3 x 10^6/ft.
T_w/T_{tc} .. 0.31
α_w ..... 6°
RUN 17
PROBE HEIGHT, Y, INCHES
0.0
0.2
0.4
0.6
0.8
0.2
0.4
0.6
0.8
1.0
1.2
TT'/TTO

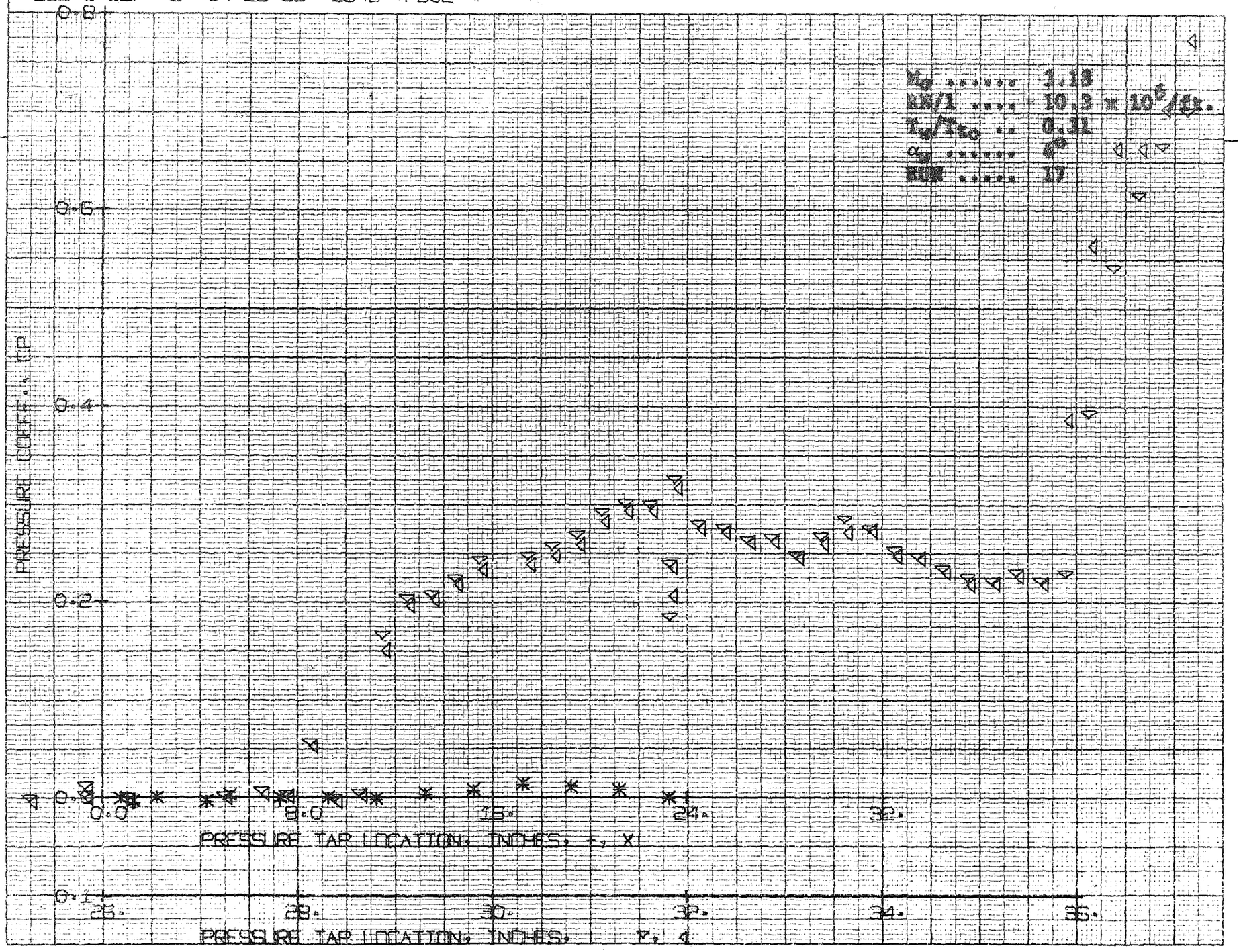
182-3 017 B 04-29-69 1538 PD01



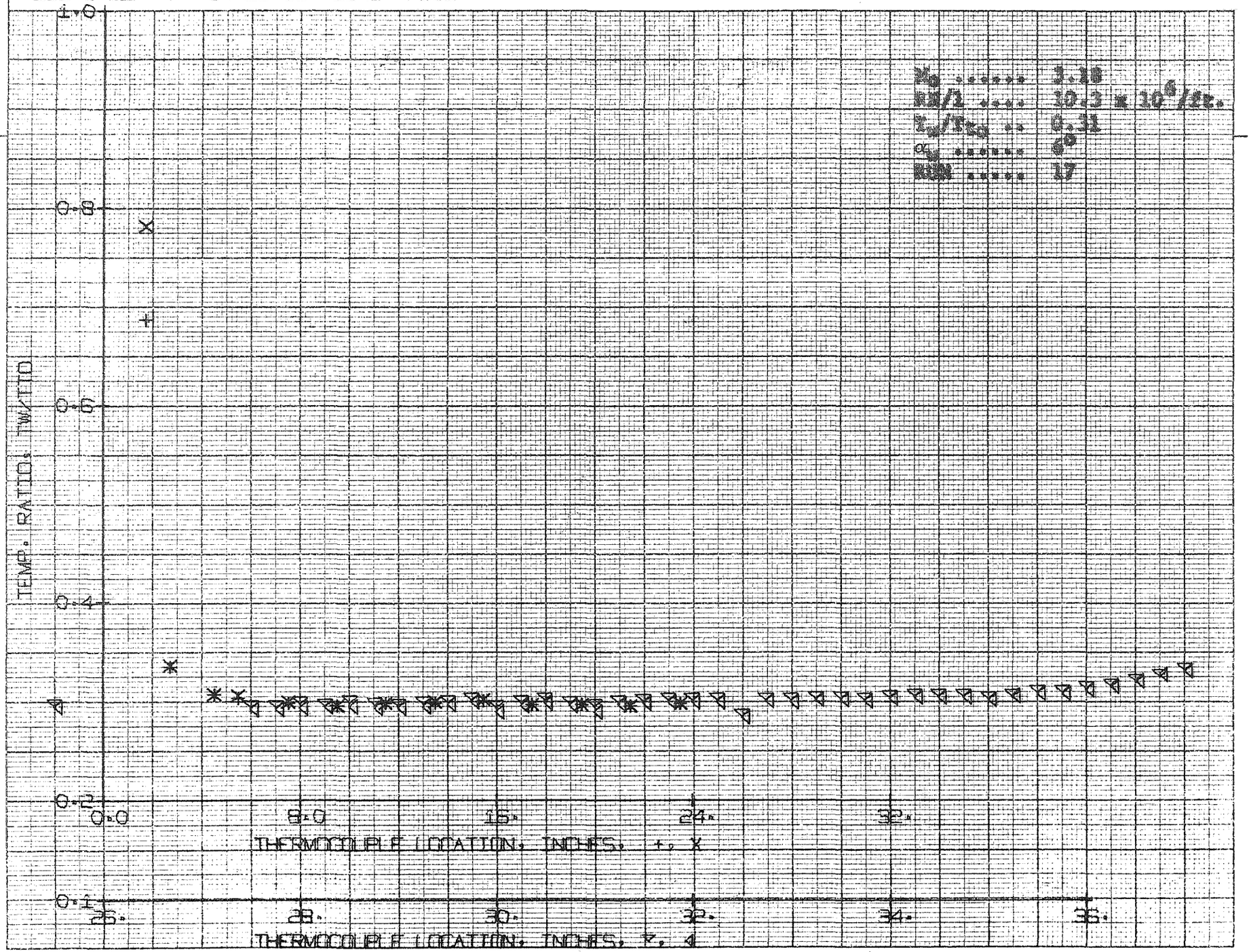
182-3 017 D 04-29-69 1538 PD01



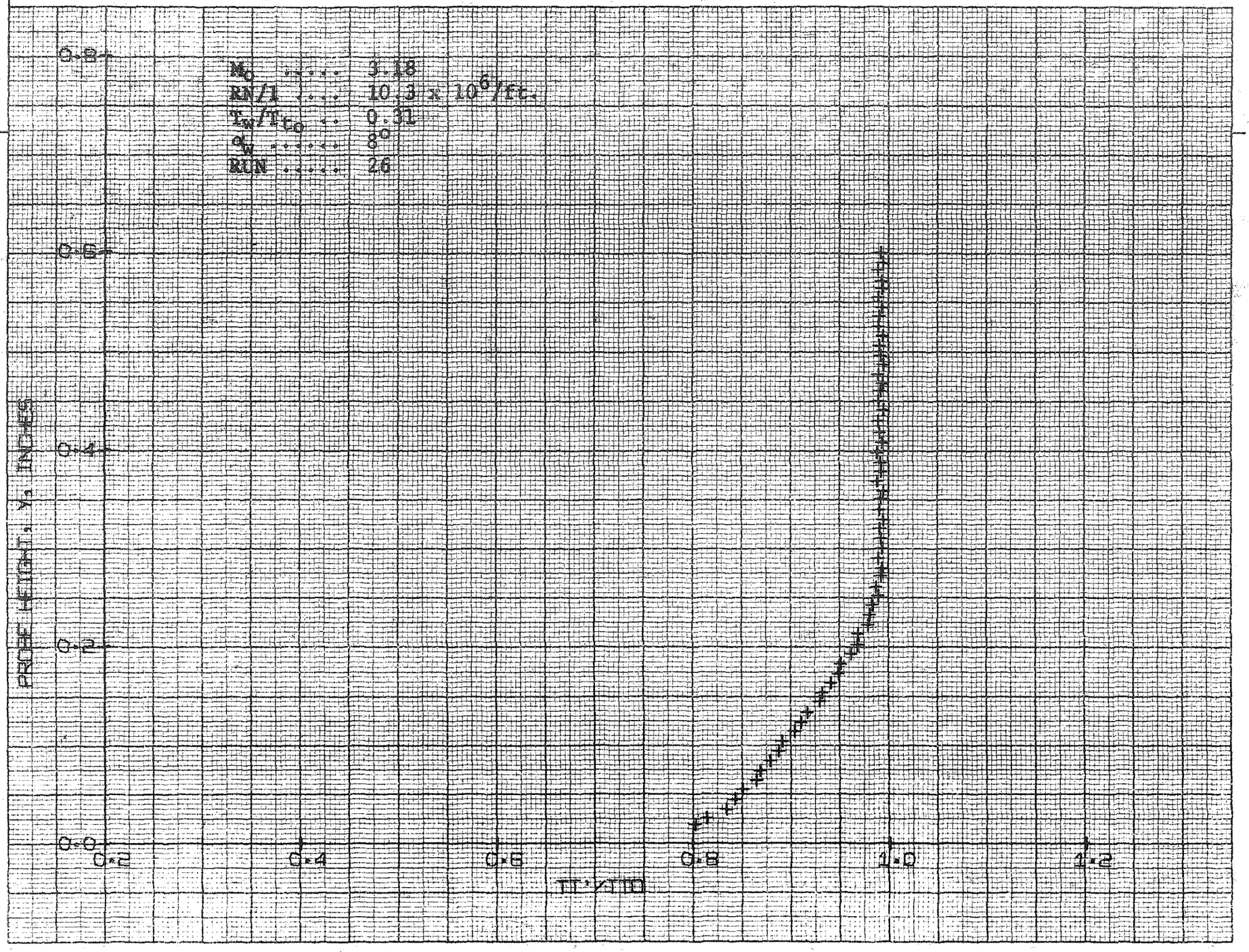
182-3 517 E 04-29-69 1548 PD02



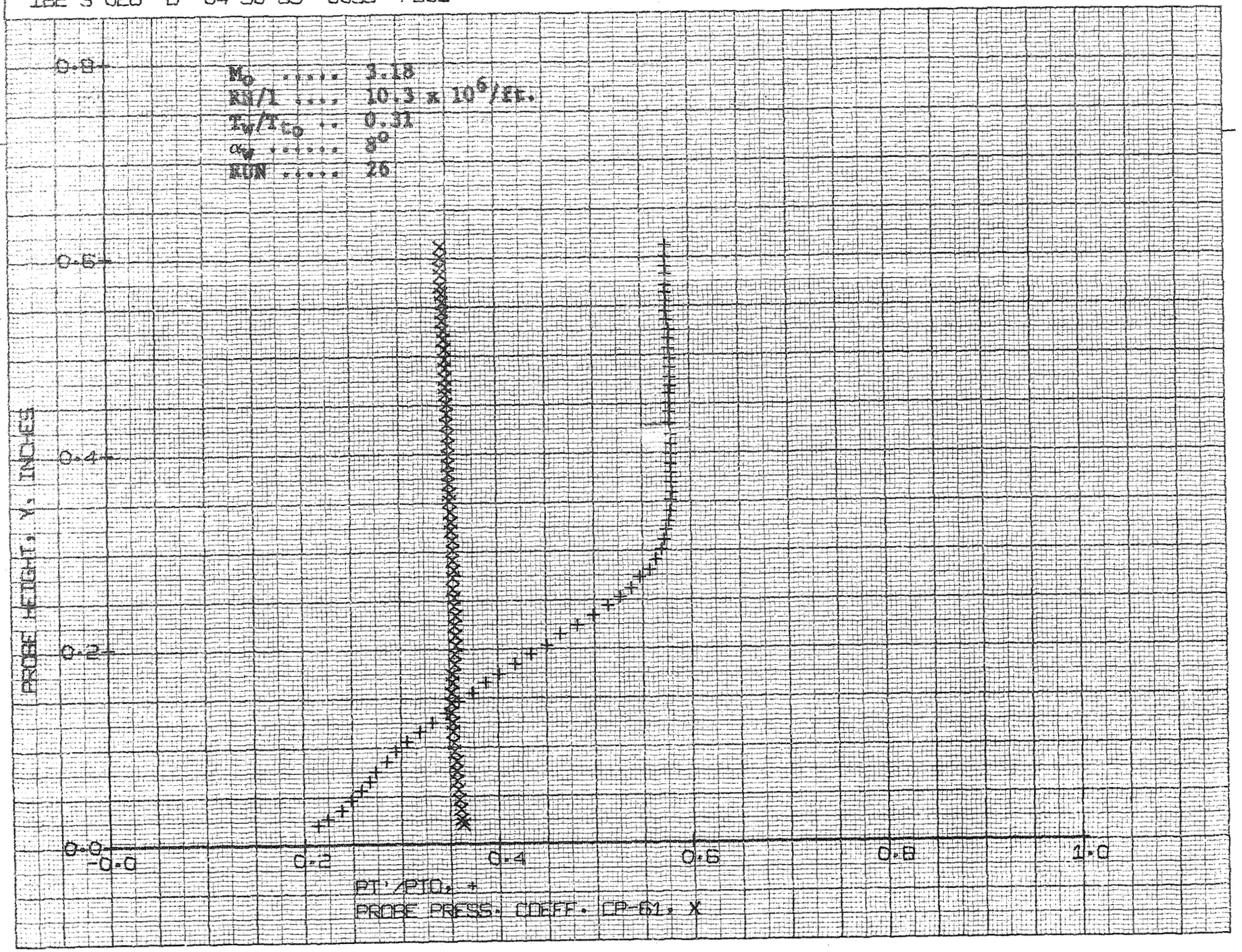
182-3 517 F 04-29-69 1548 PD02

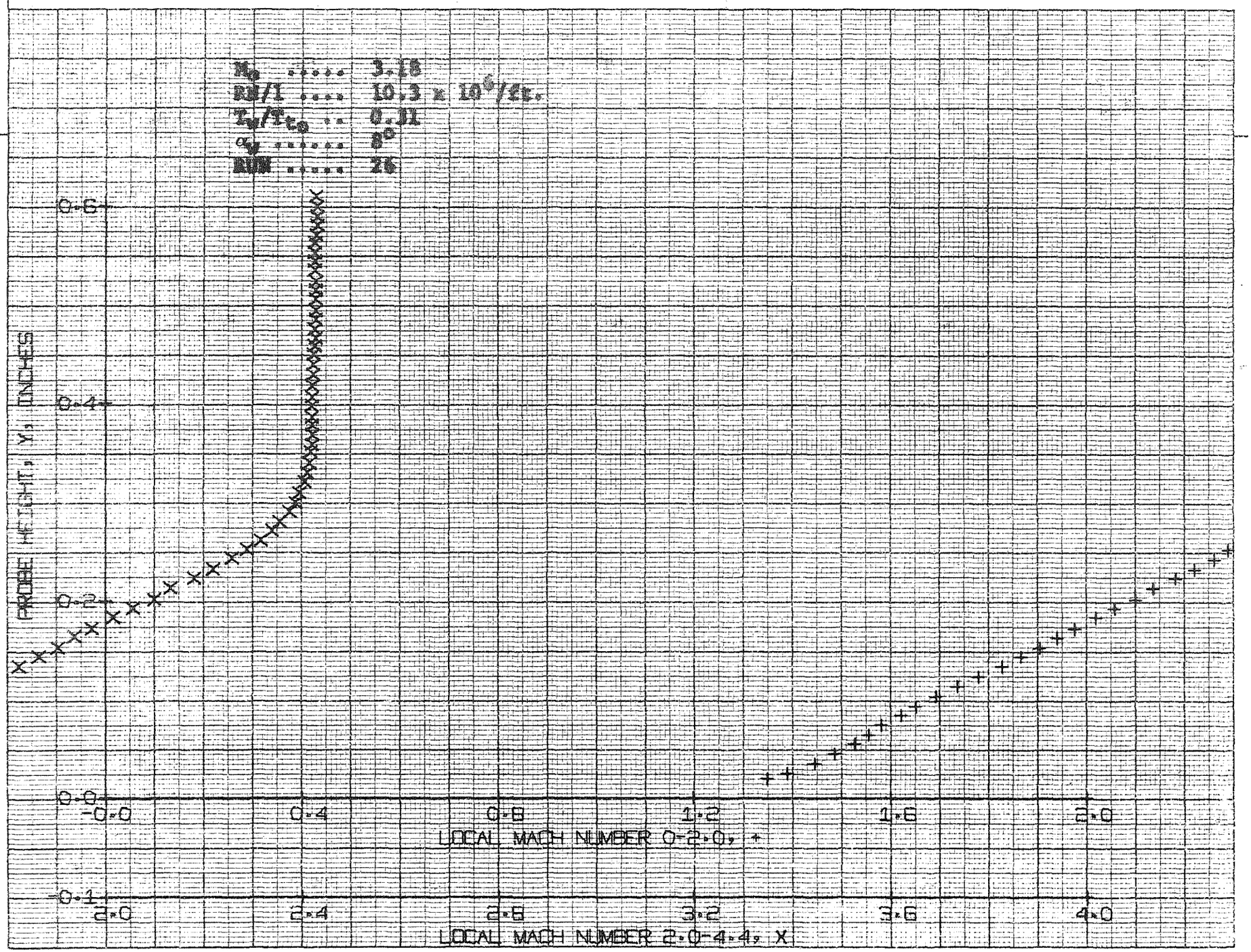


182-3 026 A 04-30-69 0033 PD01

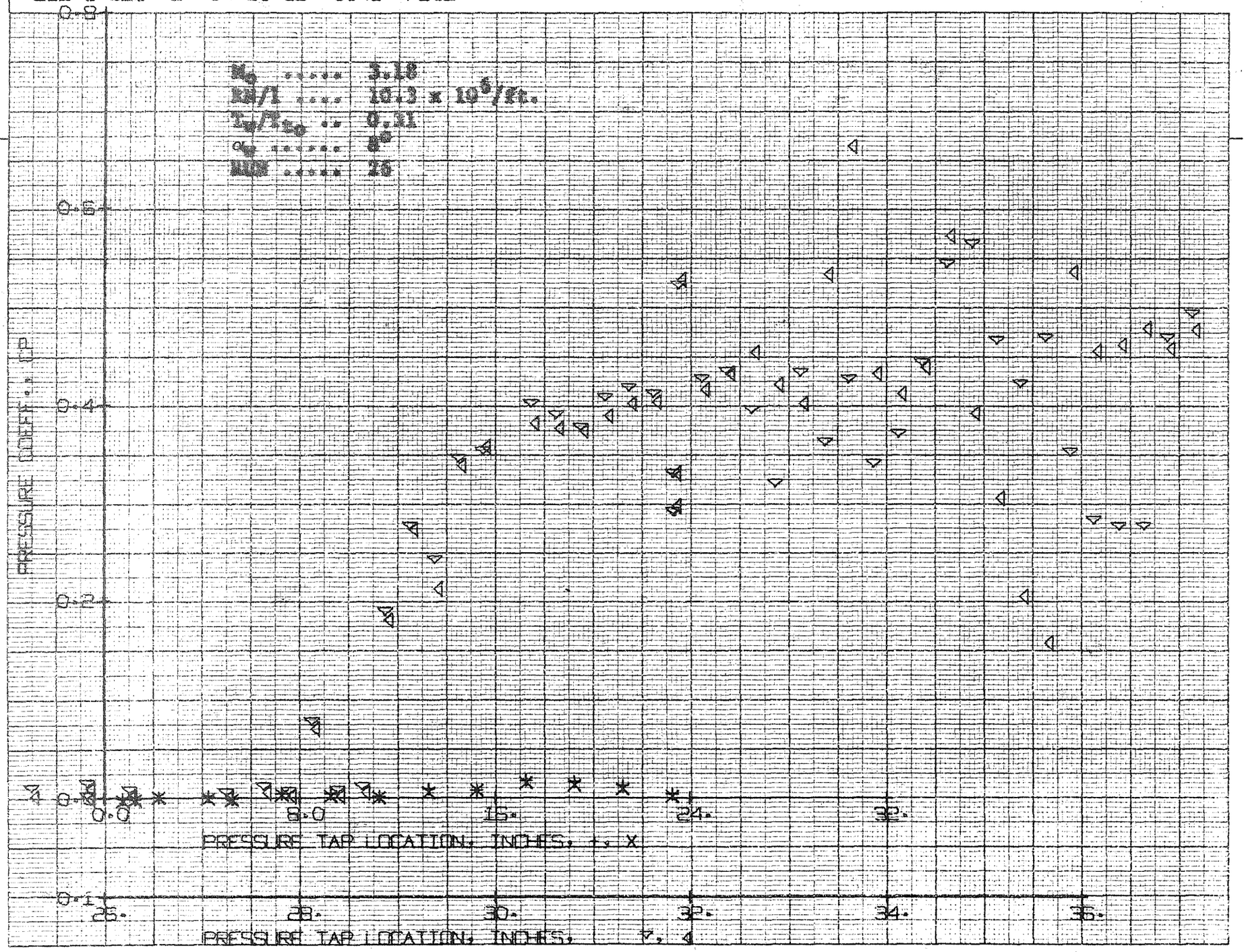


182-3 026 B 04-30-69 0033 PD01

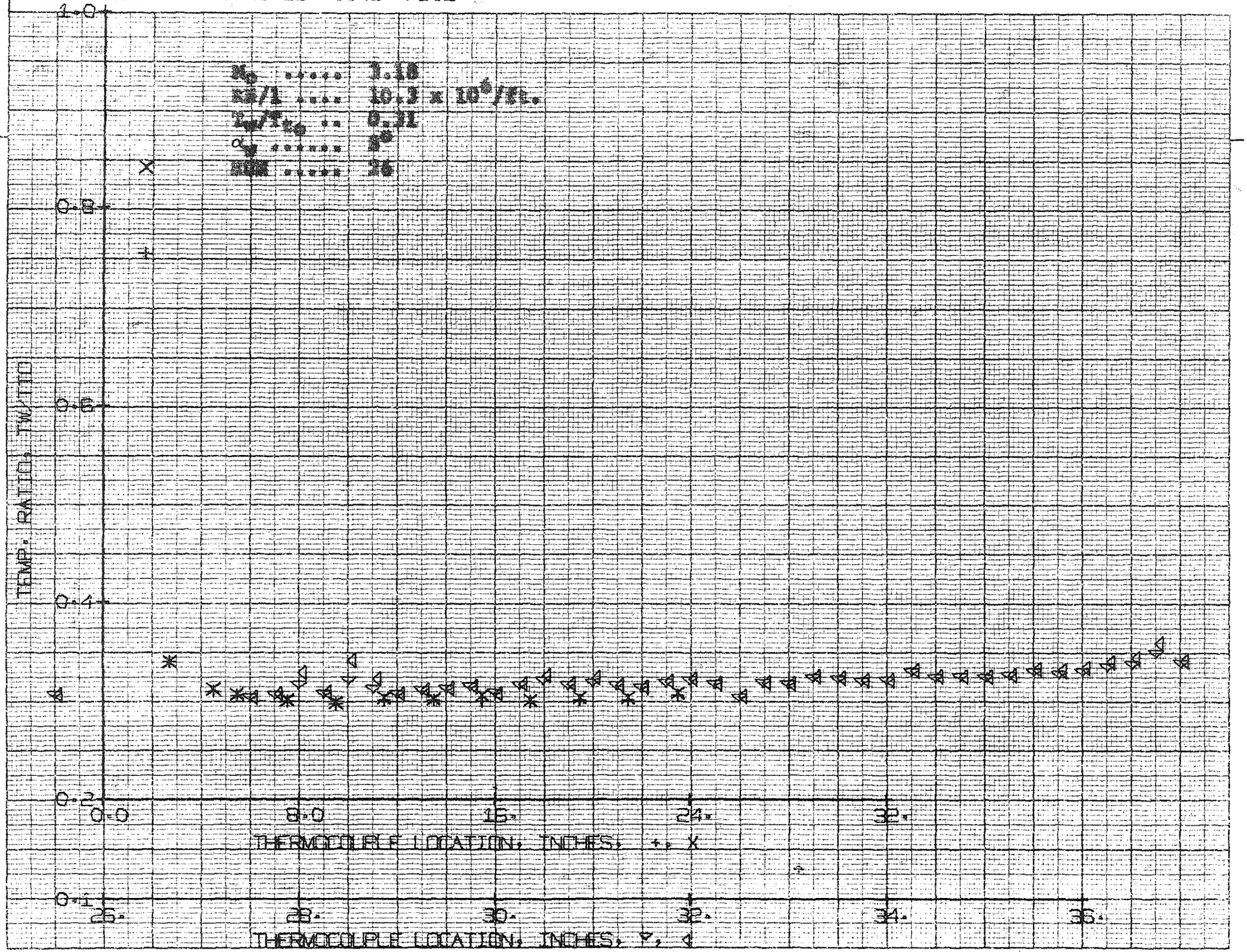



M_0 ..... 3.18
RN/1 .... 10.3×10^6/ft.
T_w/T_{t0} .. 0.31
α_w ..... 0°
RUN 26
PROBE HEIGHT, Y, INCHES
0.6
0.4
0.2
0.0
-0.1
-0.0
0.4
0.8
1.2
1.6
2.0
LOCAL MACH NUMBER 0-2.0, +
2.0
2.4
2.8
3.2
3.6
4.0
LOCAL MACH NUMBER 2.0-4.4, X

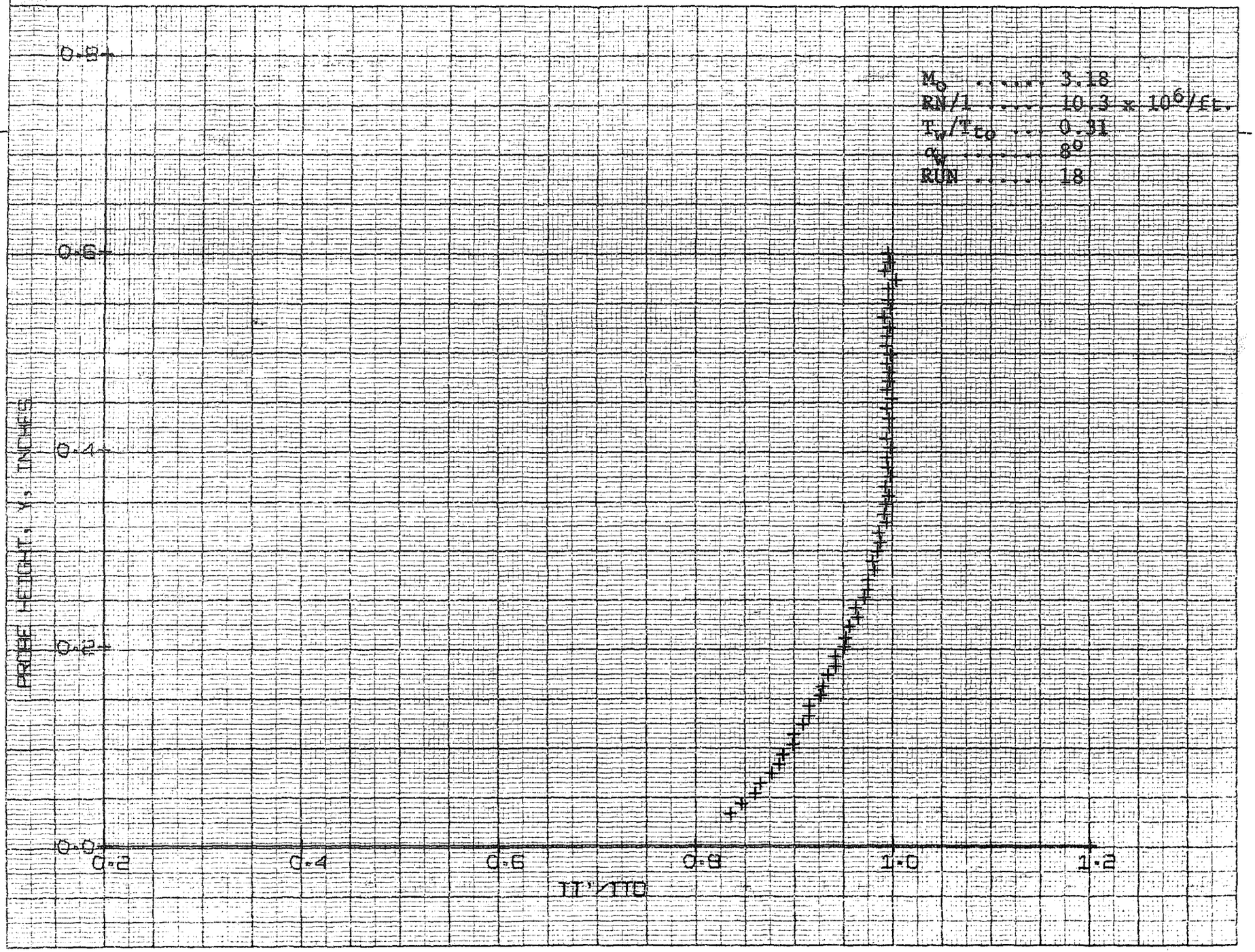
182-3 526 E 04-30-69 0046 PD02



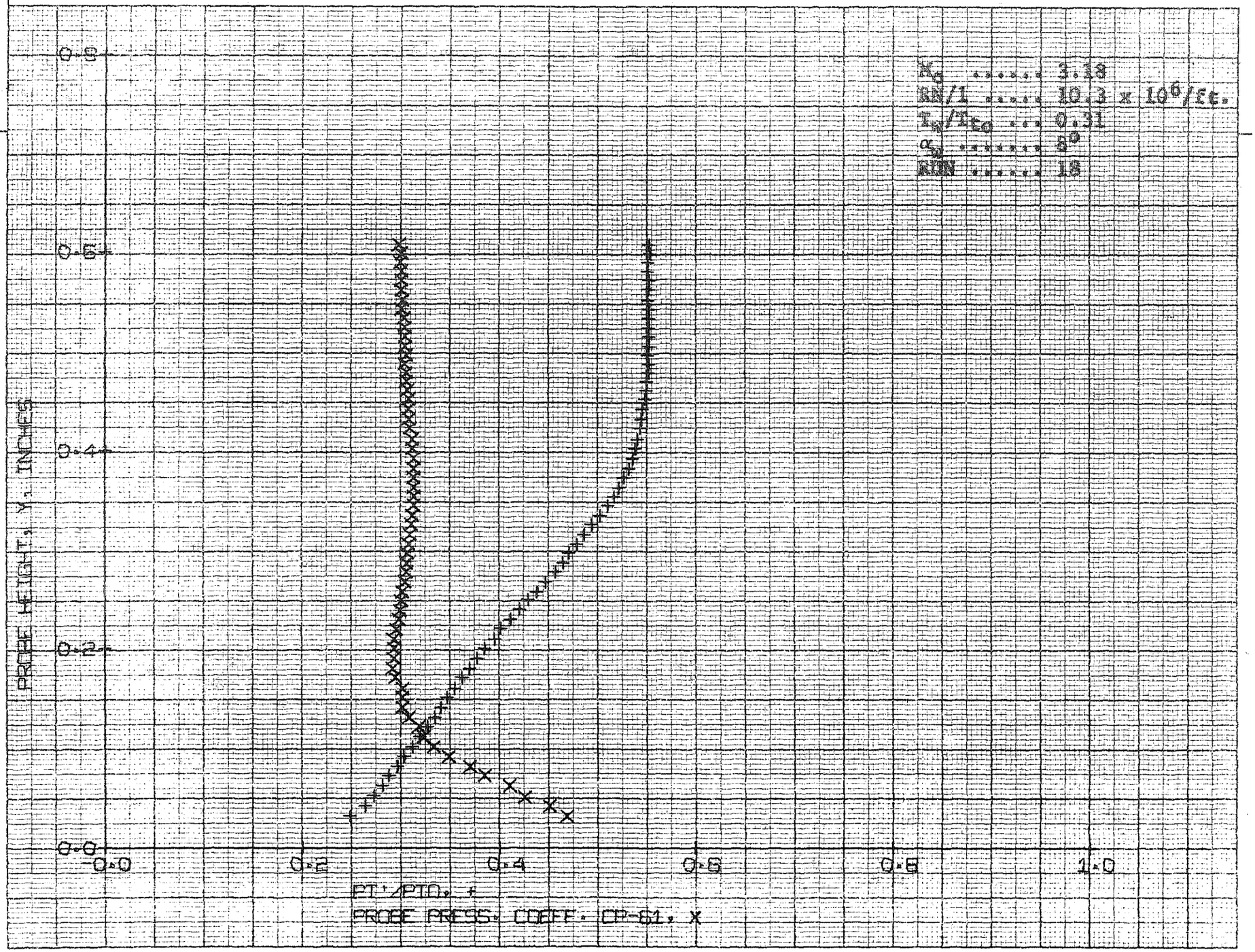
182-3 526 F 04-30-69 0046 PD02



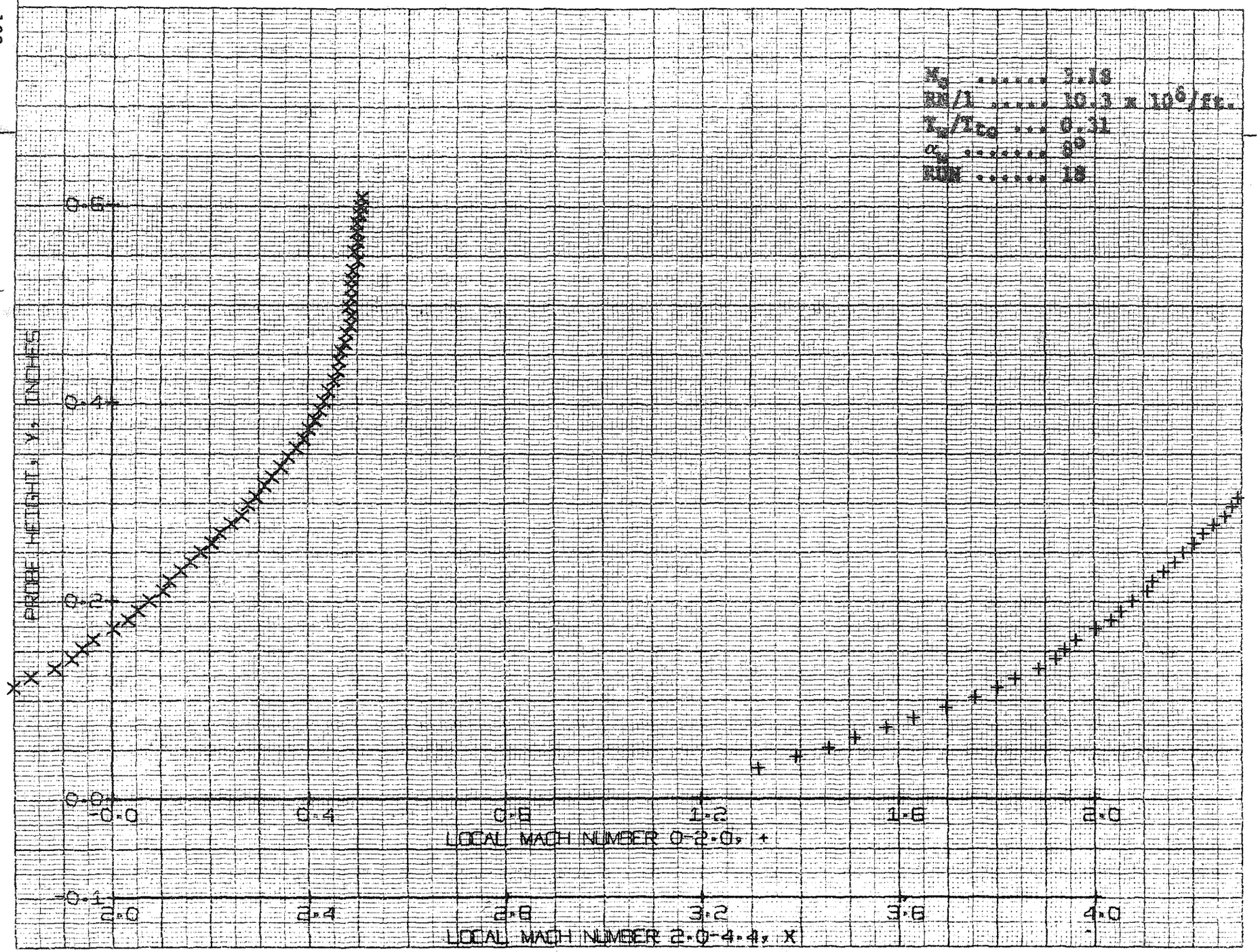
182-3 018 A 04-29-69 1645 PD01

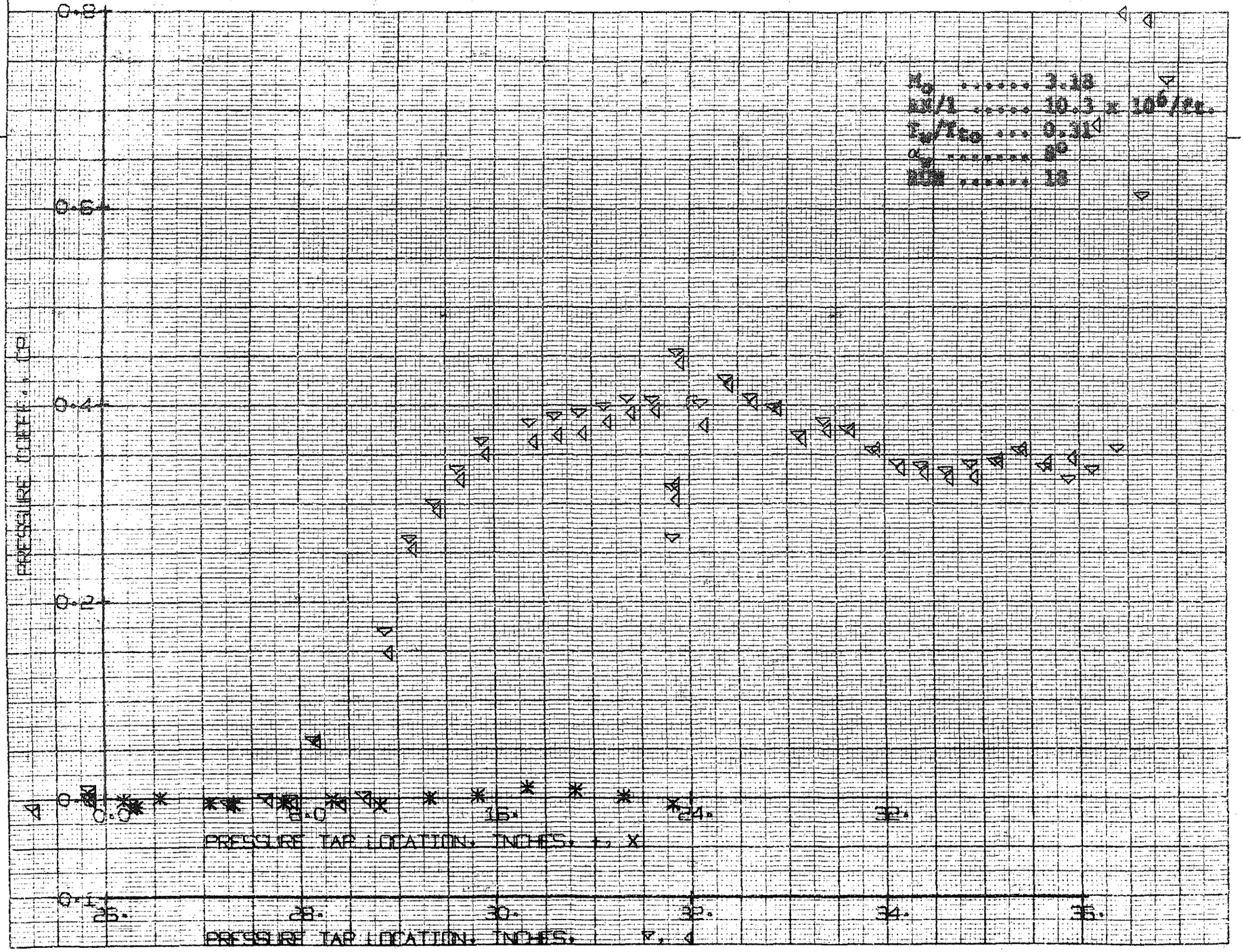


182-3 018 B 04-29-69 1645 PD01

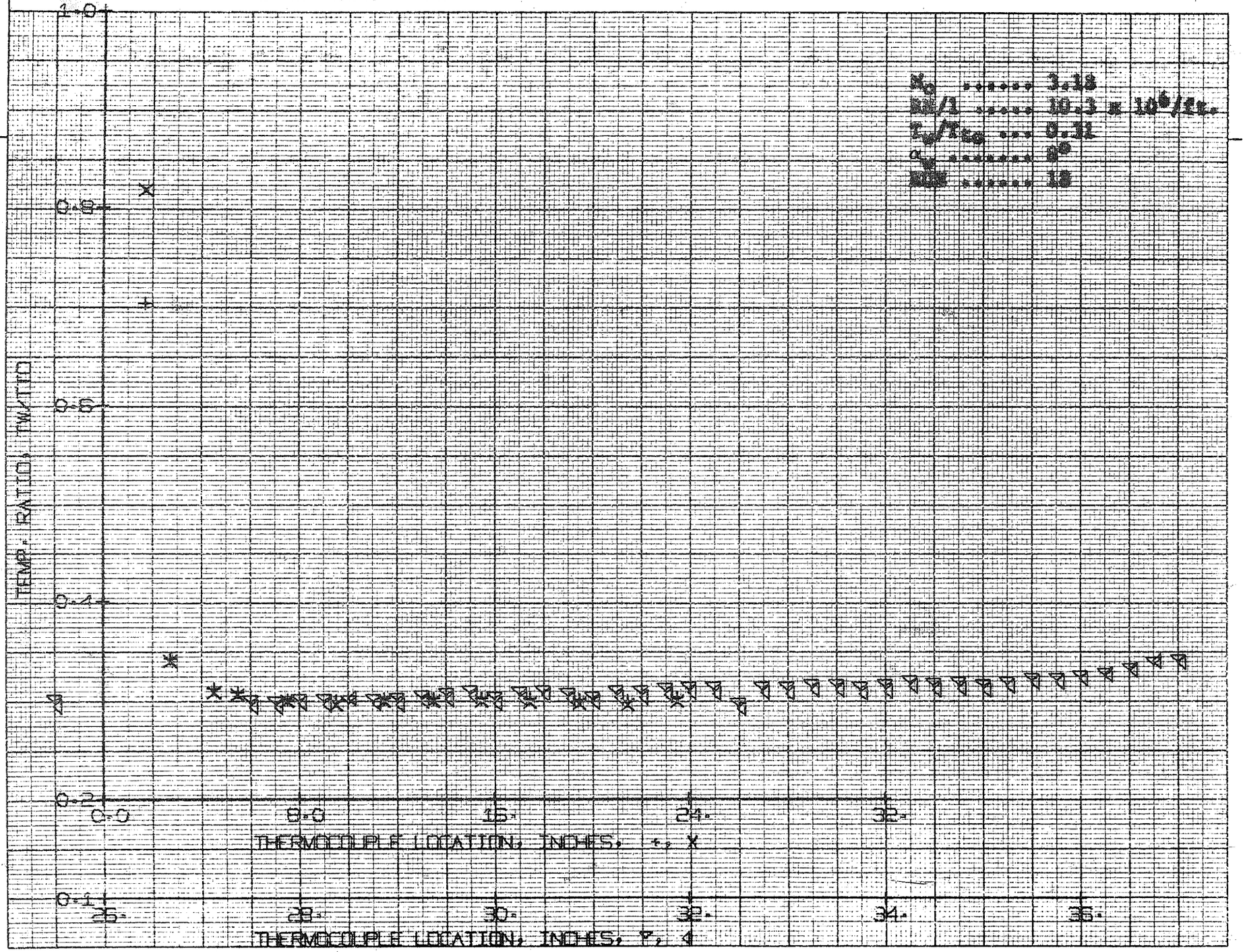


182-3 018 D 04-23-69 1645 PD01

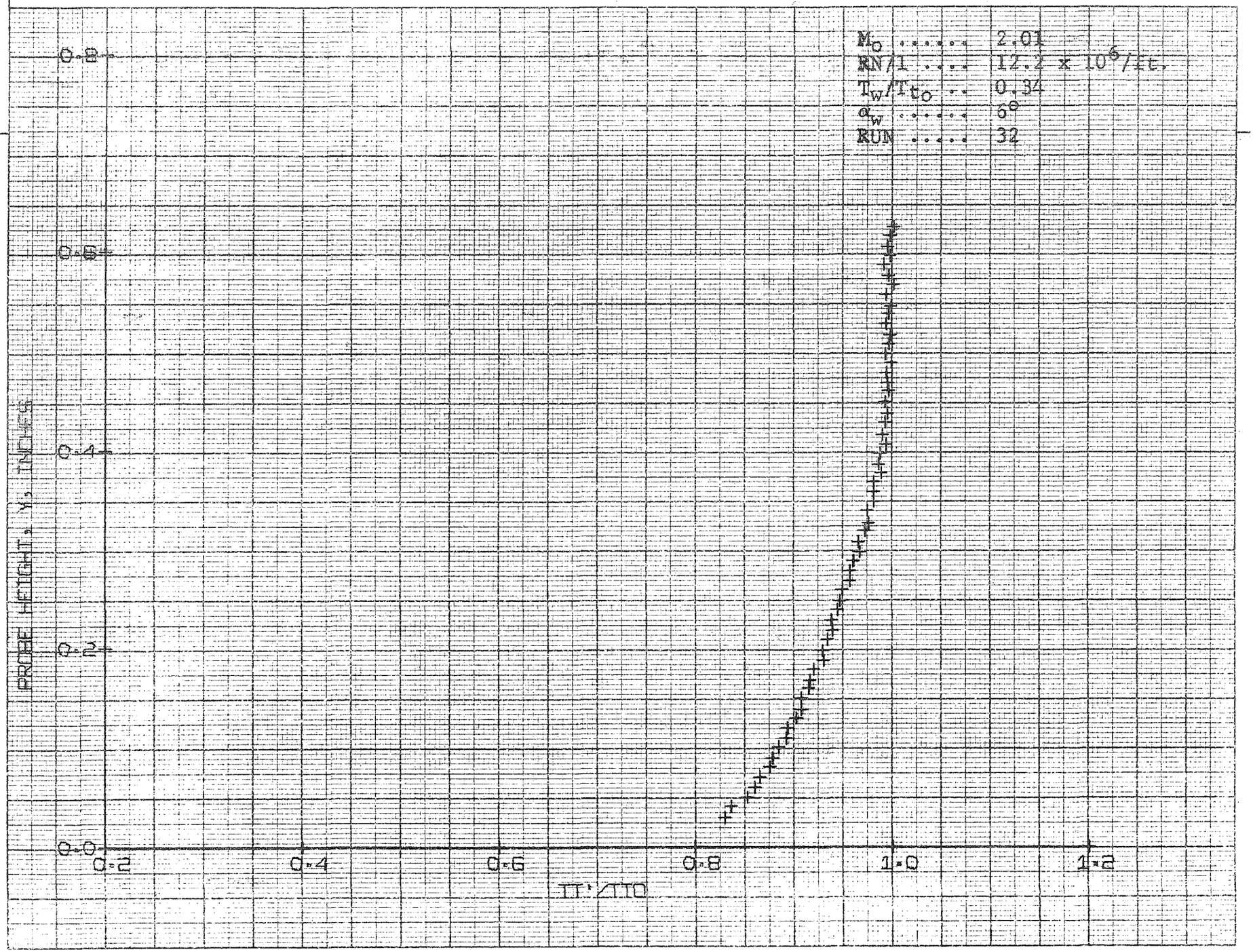



M_0 ..... 3.18
$RE/1$ ..... $10.3 \times 10^6/ft.$
P_w/P_{t0} ... 0.31
α_w ..... 8°
RUN 18
PRESSURE COEFF., CP
0.8
0.6
0.4
0.2
0.0
-0.1
0.0
8.0
16.
24.
32.
PRESSURE TAP LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
PRESSURE TAP LOCATION, INCHES, ▽, △

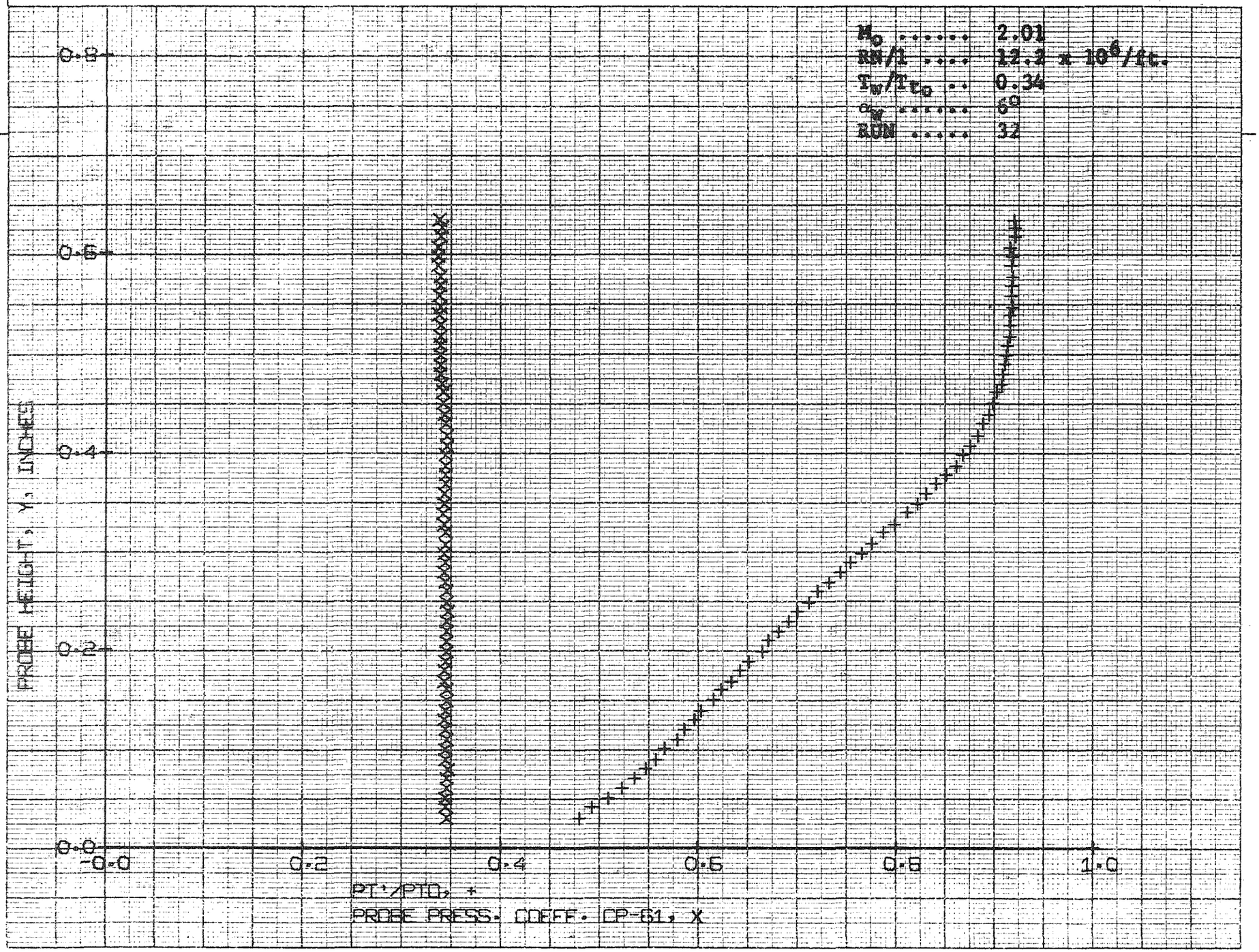
182-3 518 F 04-29-69 1636 PD02



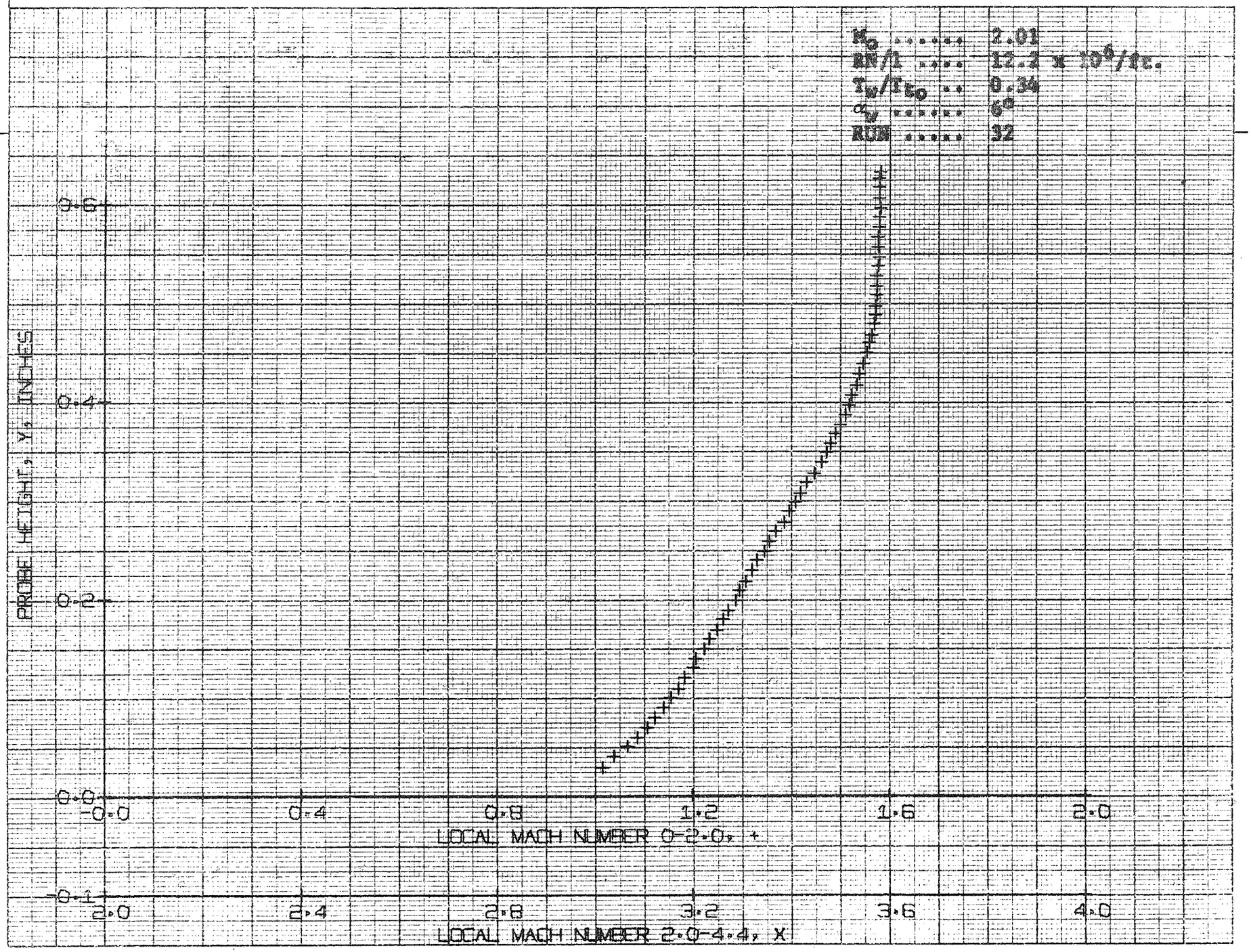
182-3 032 A 04-30-69 0727 PD01



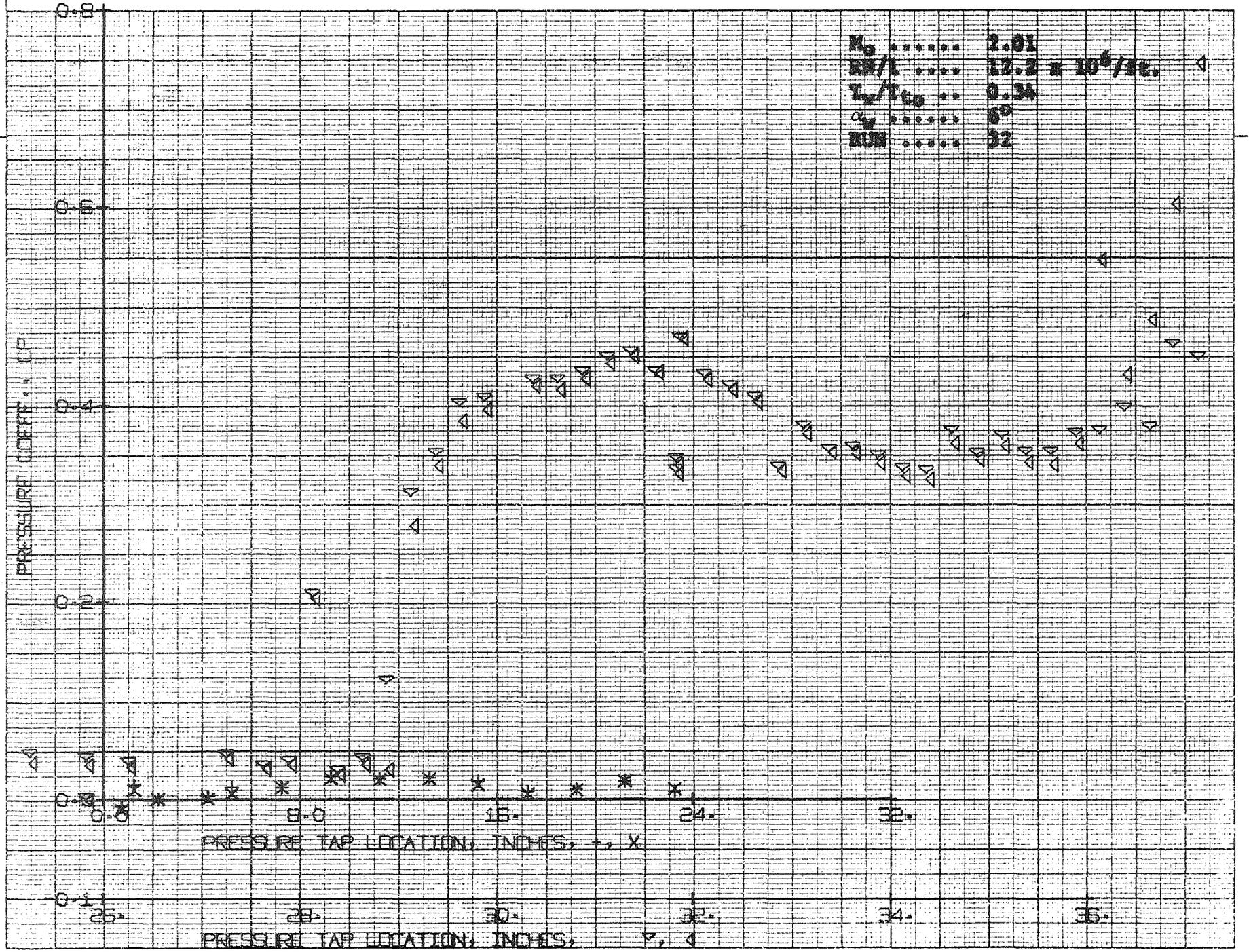
182-3 032 B 04-30-69 0727 PD01

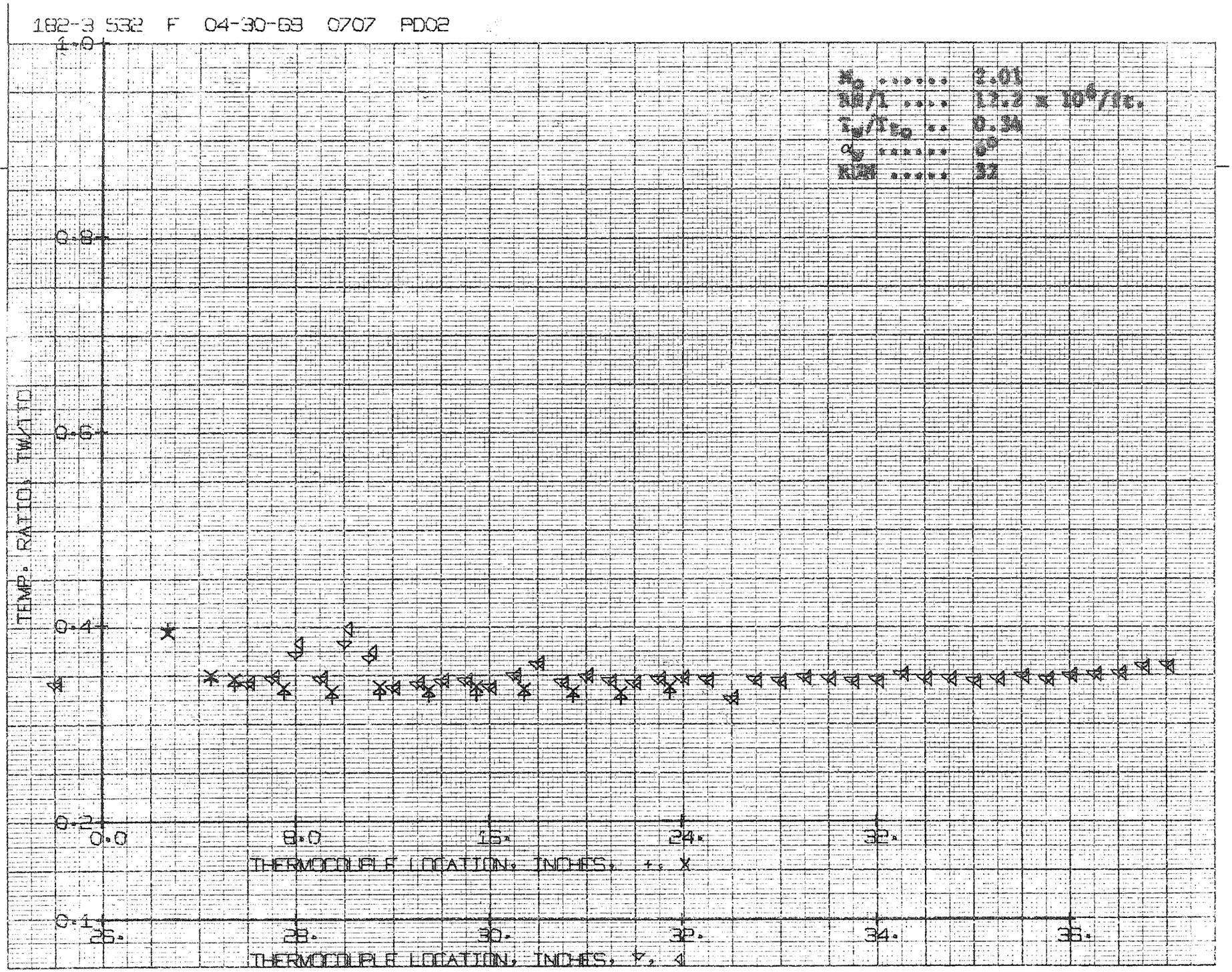


182-3 032 D 04-30-69 0727 PD01

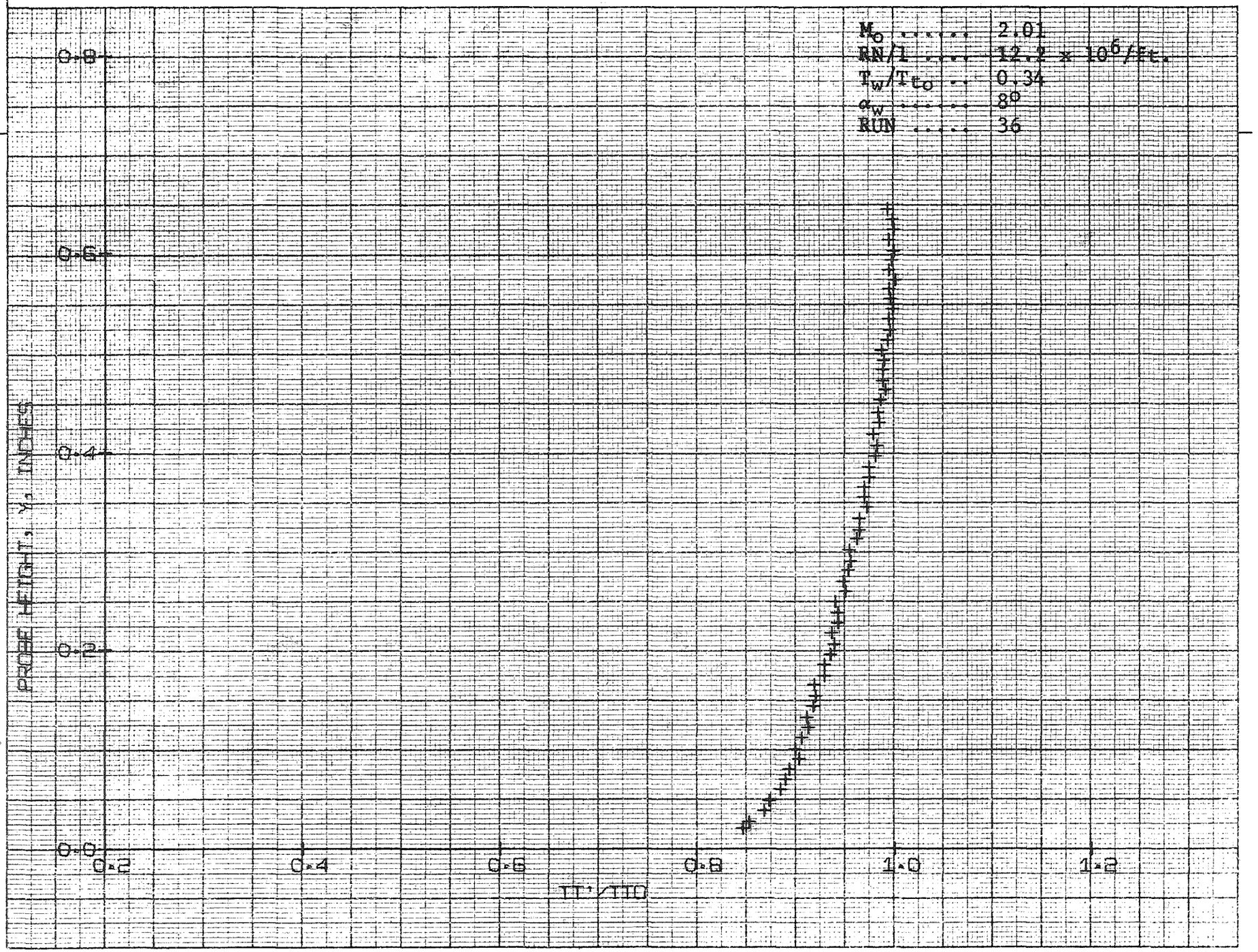


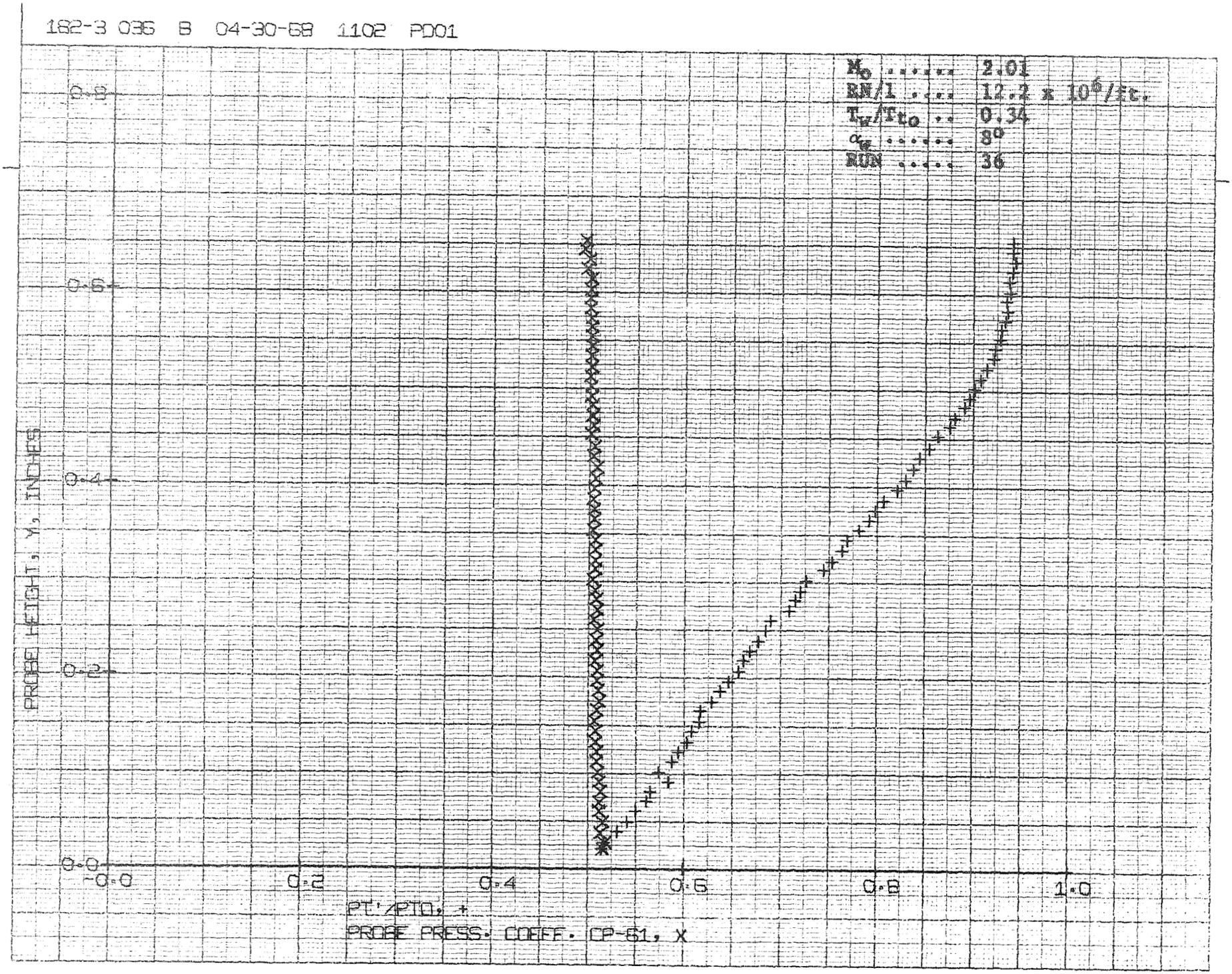
182-3 5332 E 04-30-69 0707 PD02



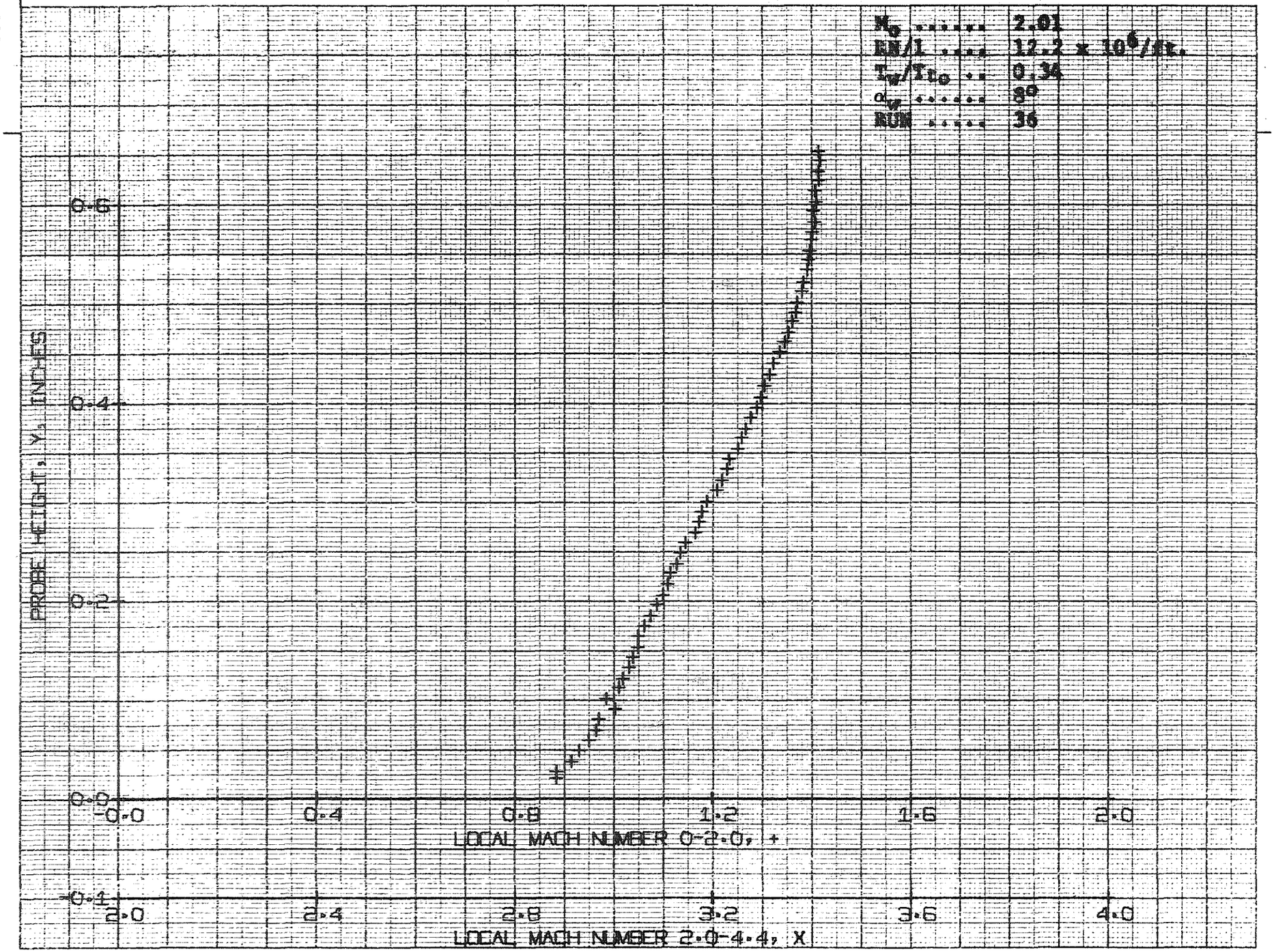

182-3 5332 F 04-30-63 0707 PD02
M_0 ..... 2.01
RN/ft ..... $13.2 \times 10^6/ft.$
T_w/T_{t_0} .. 0.34
α_w ..... 0°
RAM 32
TEMP. RATIO, TW/TTO
1.0
0.8
0.6
0.4
0.2
0.1
0.0
8.0
16.
24.
32.
THERMOCOUPLE LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
THERMOCOUPLE LOCATION, INCHES, ▽, ◁

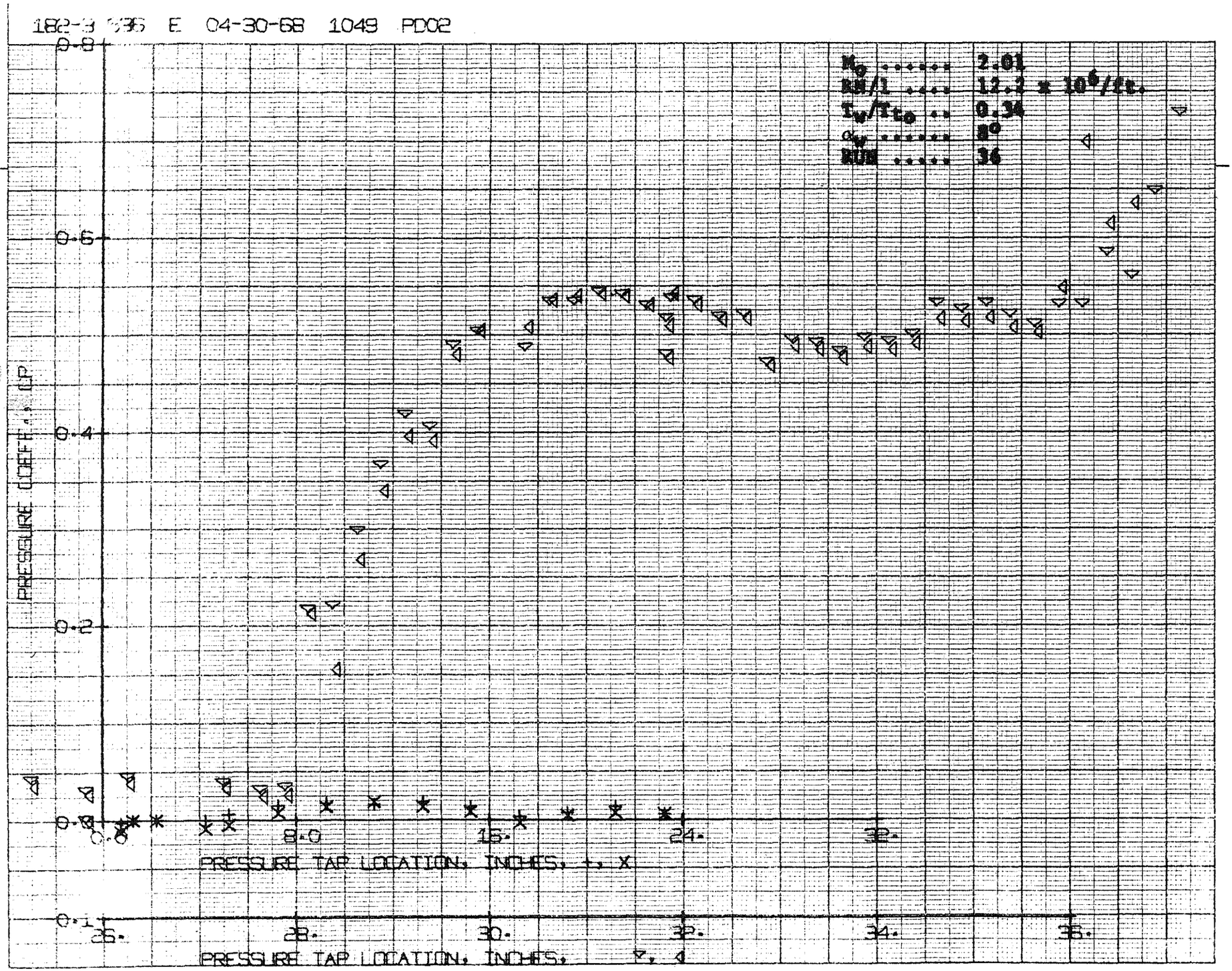
182-3 036 A 04-30-68 1102 PD01

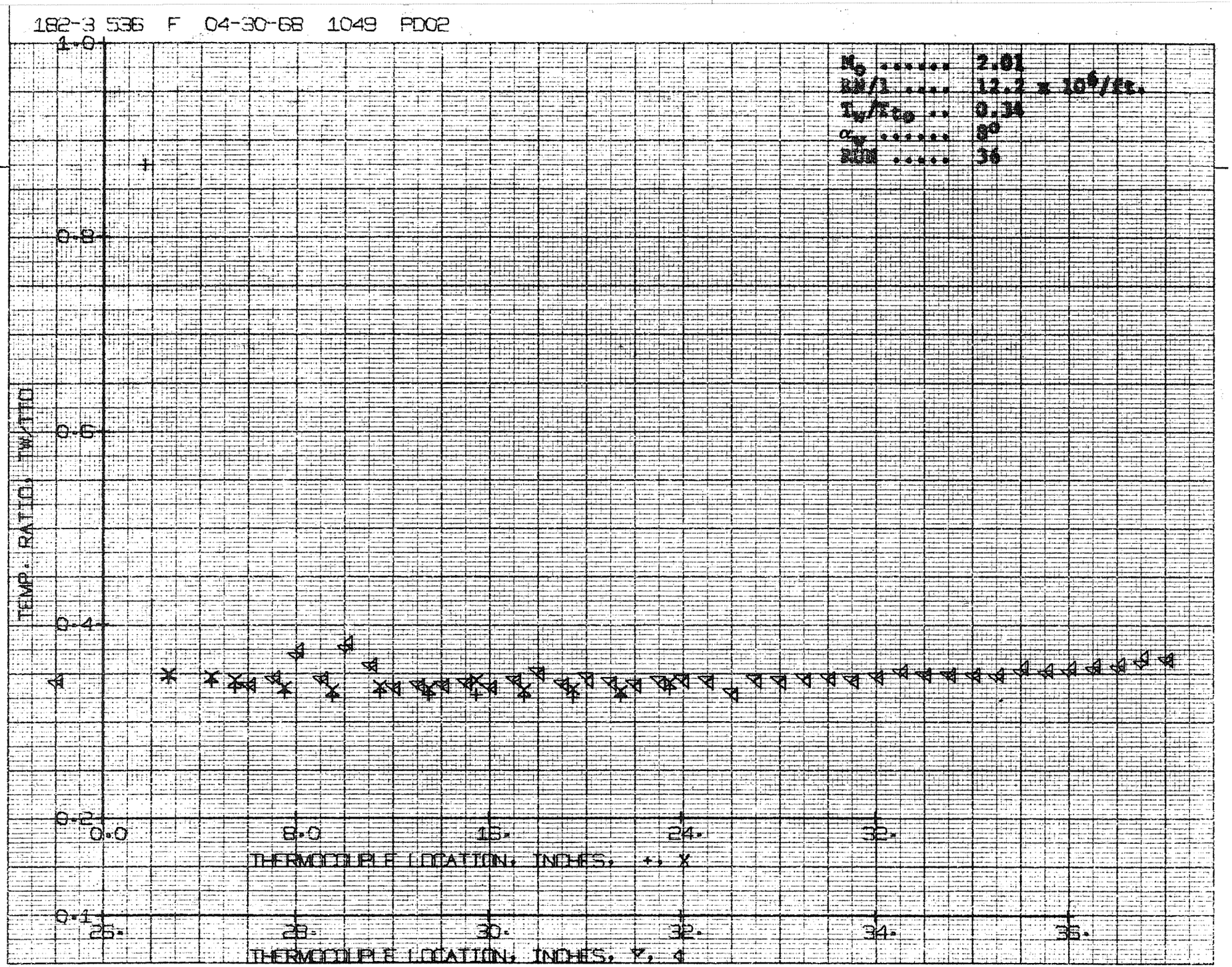


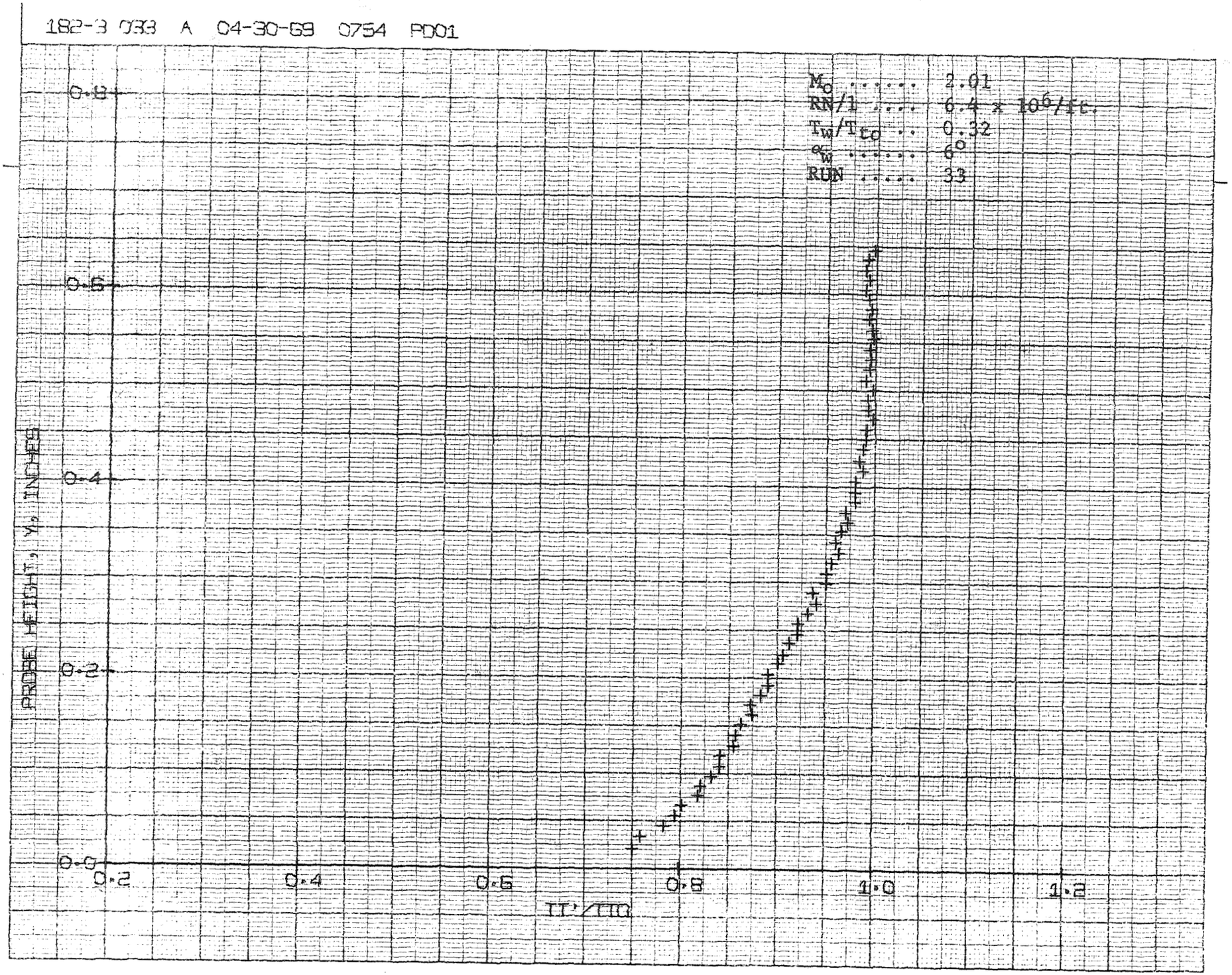

182-3 036 B 04-30-68 1102 PD01
M_o 2.01
RN/1 ..... 12.2 x 10^6/ft.
T_w/T_{t_o} .. 0.34
α_w ..... 8°
RUN 36
PROBE HEIGHT, Y_s, INCHES
0.0
0.2
0.4
0.6
0.8
-0.0
0.2
0.4
0.6
0.8
1.0
P_t'/P_{t_o}, +
PROBE PRESS. COEFF. CP-61, X

182-3 036 D 04-30-68 1102 PD01

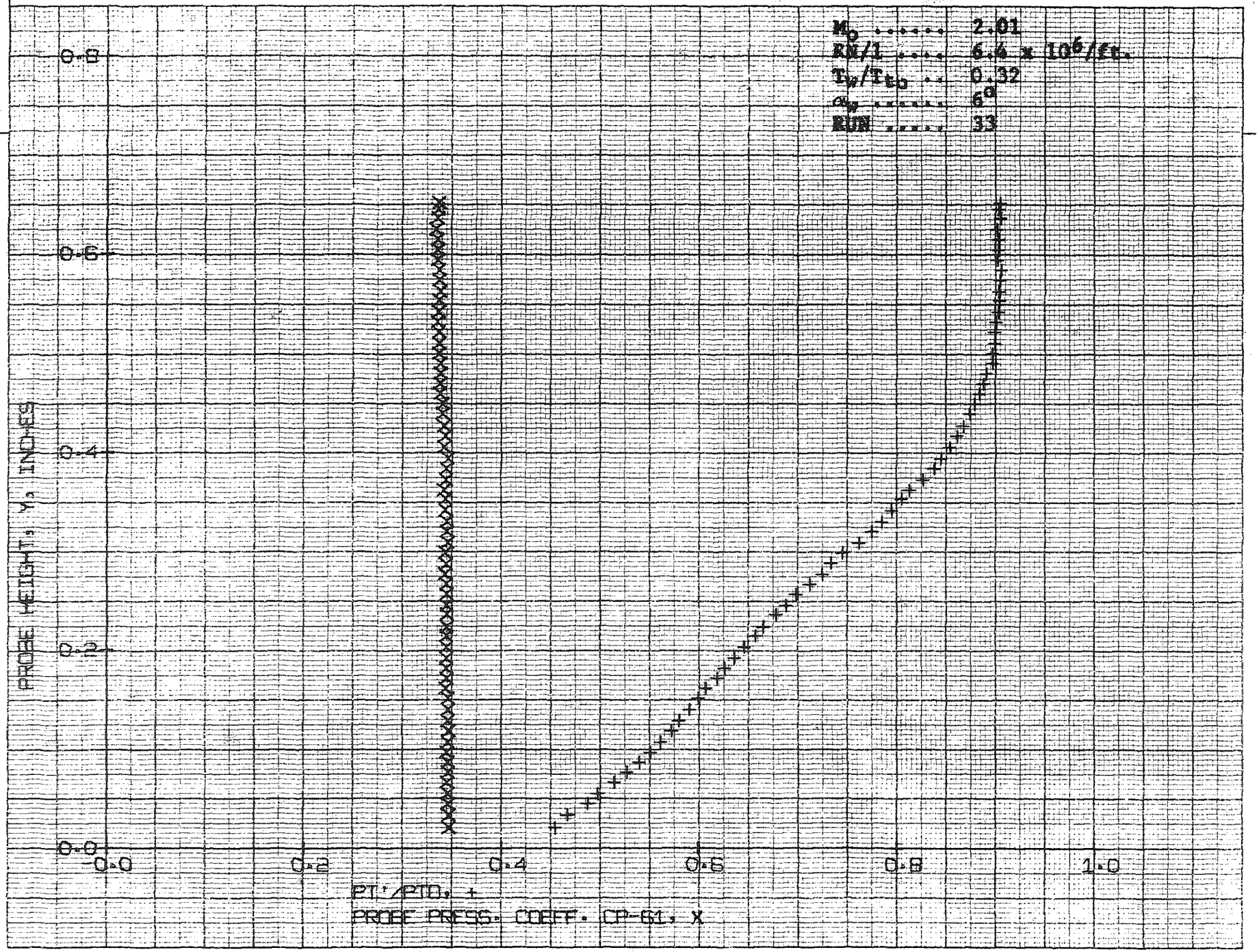



182-3 536 E 04-30-68 1049 PD02
M_o 2.01
RN/L ..... 12.2 x 10^6/ft.
T_w/T_{t_o} .. 0.34
α_w ..... 8°
RUN 36
PRESSURE COEFF., CP
0.8
0.6
0.4
0.2
0.0
-0.2
8.0
16.
24.
32.
PRESSURE TAP LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
PRESSURE TAP LOCATION, INCHES, ▽, △

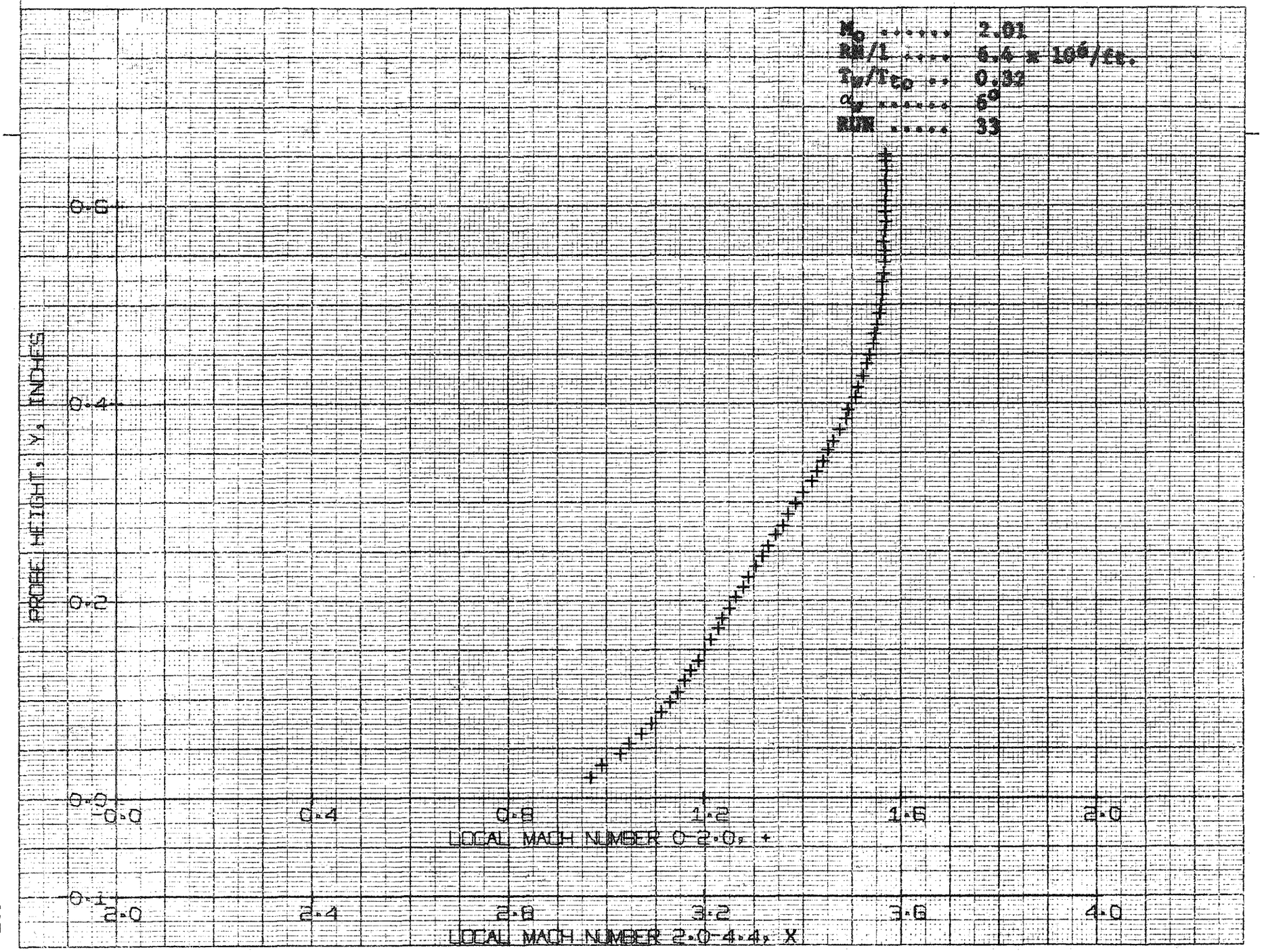

182-3 536 F 04-30-68 1049 PD02
M_∞ 2.01
RN/1 ..... 12.2 x 10^6/ft.
T_w/T_{t_∞} .. 0.34
α_w ..... 8^0
RUN 36
TEMP. RATIO, TW/TTO
1.0
0.8
0.6
0.4
0.2
0.1
0.0
8.0
16.
24.
32.
THERMOCOUPLE LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
THERMOCOUPLE LOCATION, INCHES, Y, 4


182-3 033 A 04-30-69 0754 PD01
M_o 2.01
RN/1 ..... 6.4×10^6/ft.
T_w/T_{to} .. 0.32
α_w ..... 6°
RUN 33
PROBE HEIGHT, Y, INCHES
0.0
0.2
0.4
0.6
0.8
0.2
0.4
0.6
0.8
1.0
1.2
TT'/TT_o

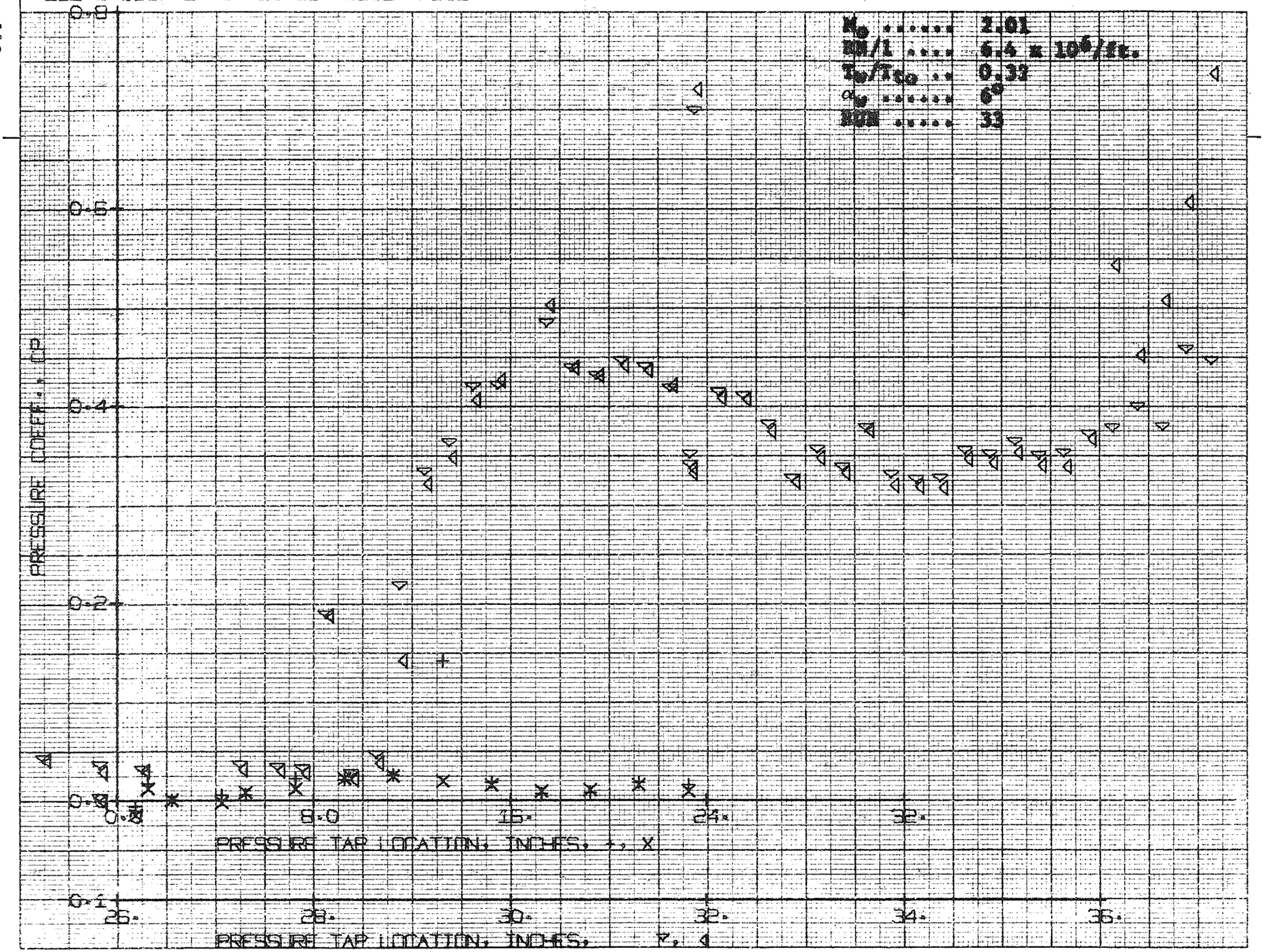
182-3 033 B 04-30-69 0754 PD01



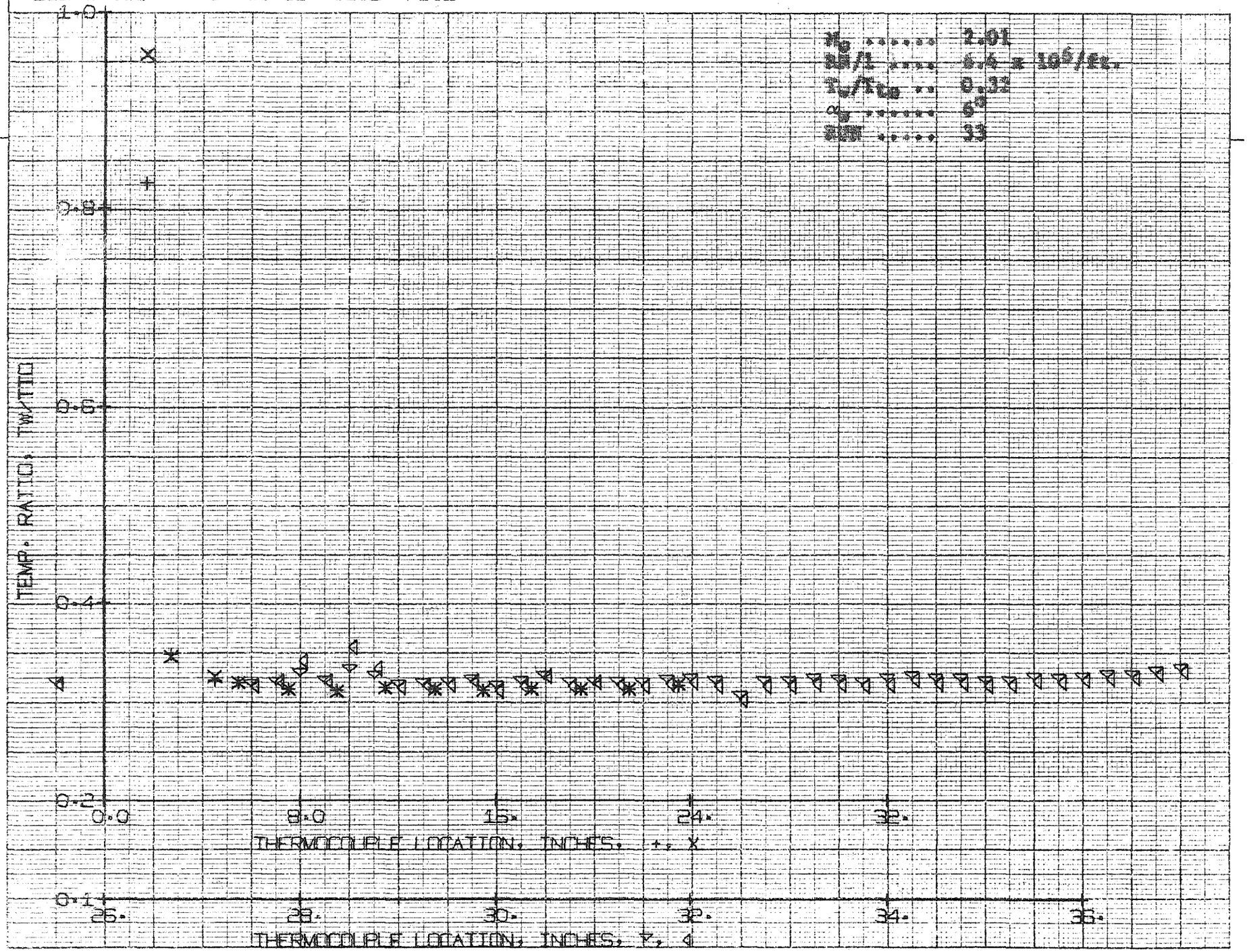
182-3 033 D 04-30-69 0754 PD01



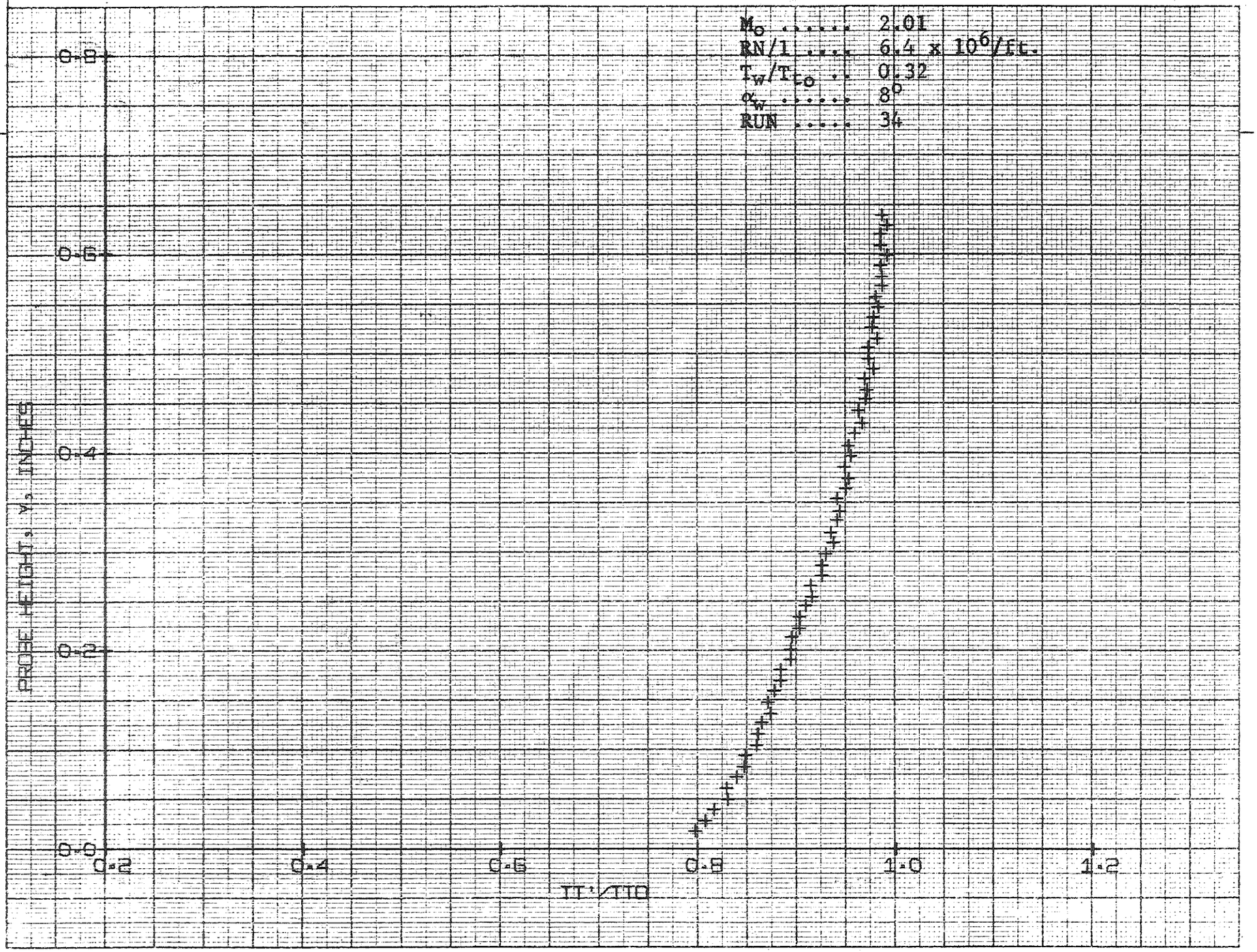
182-3 533 E 04-30-69 0801 PD02



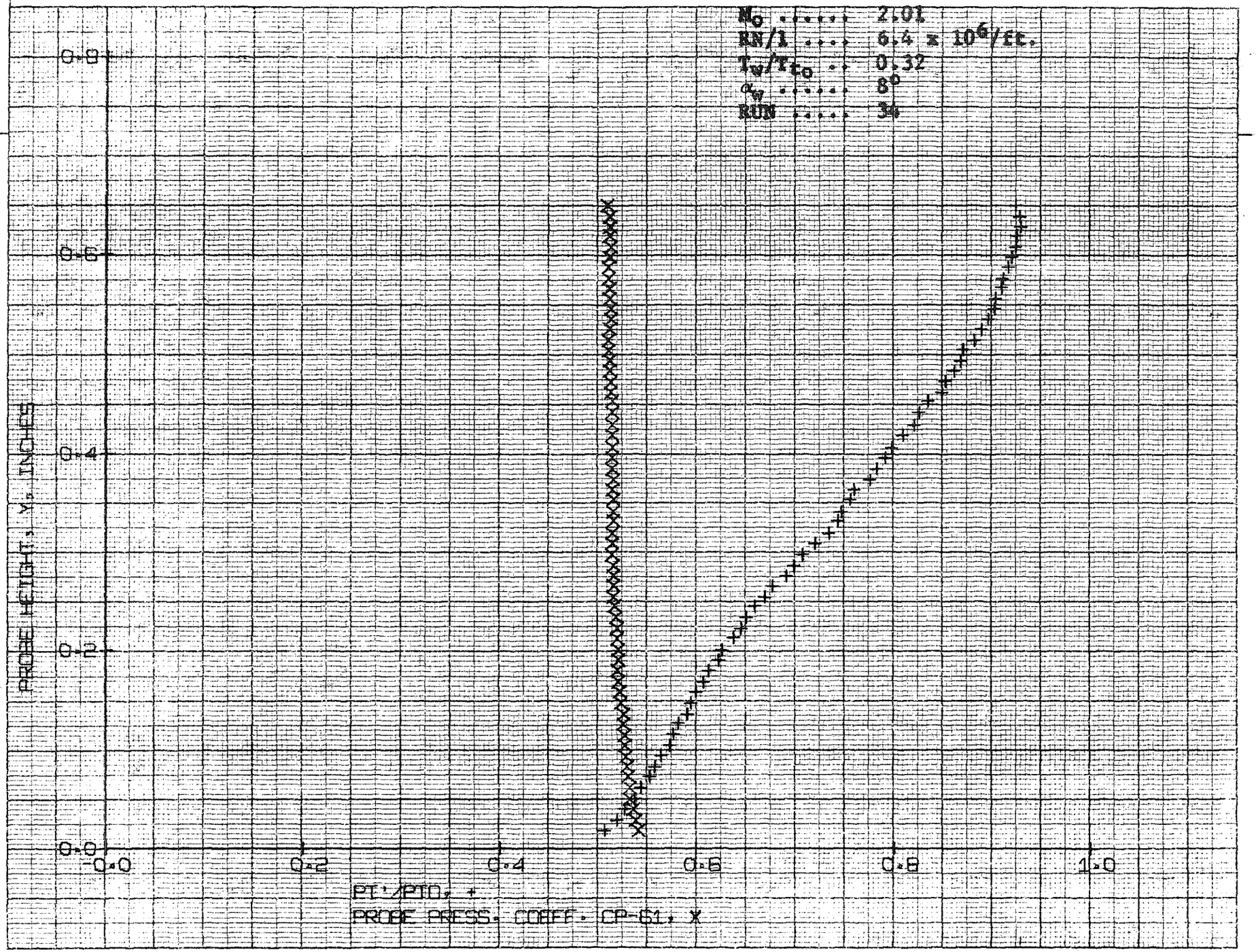
182-3 533 F 04-30-69 0801 PD02



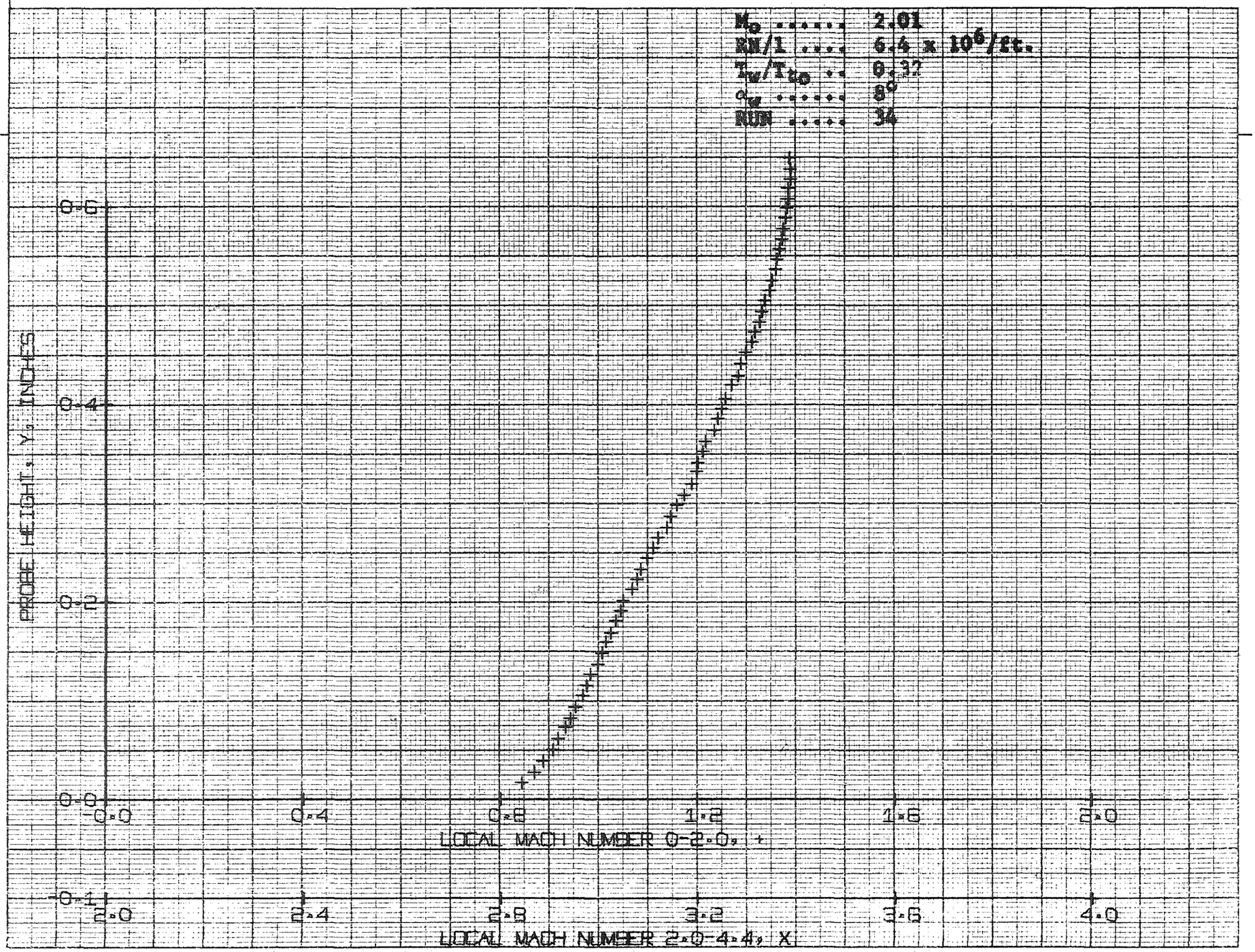
182-3 034 A 04-30-69 0929 PD01

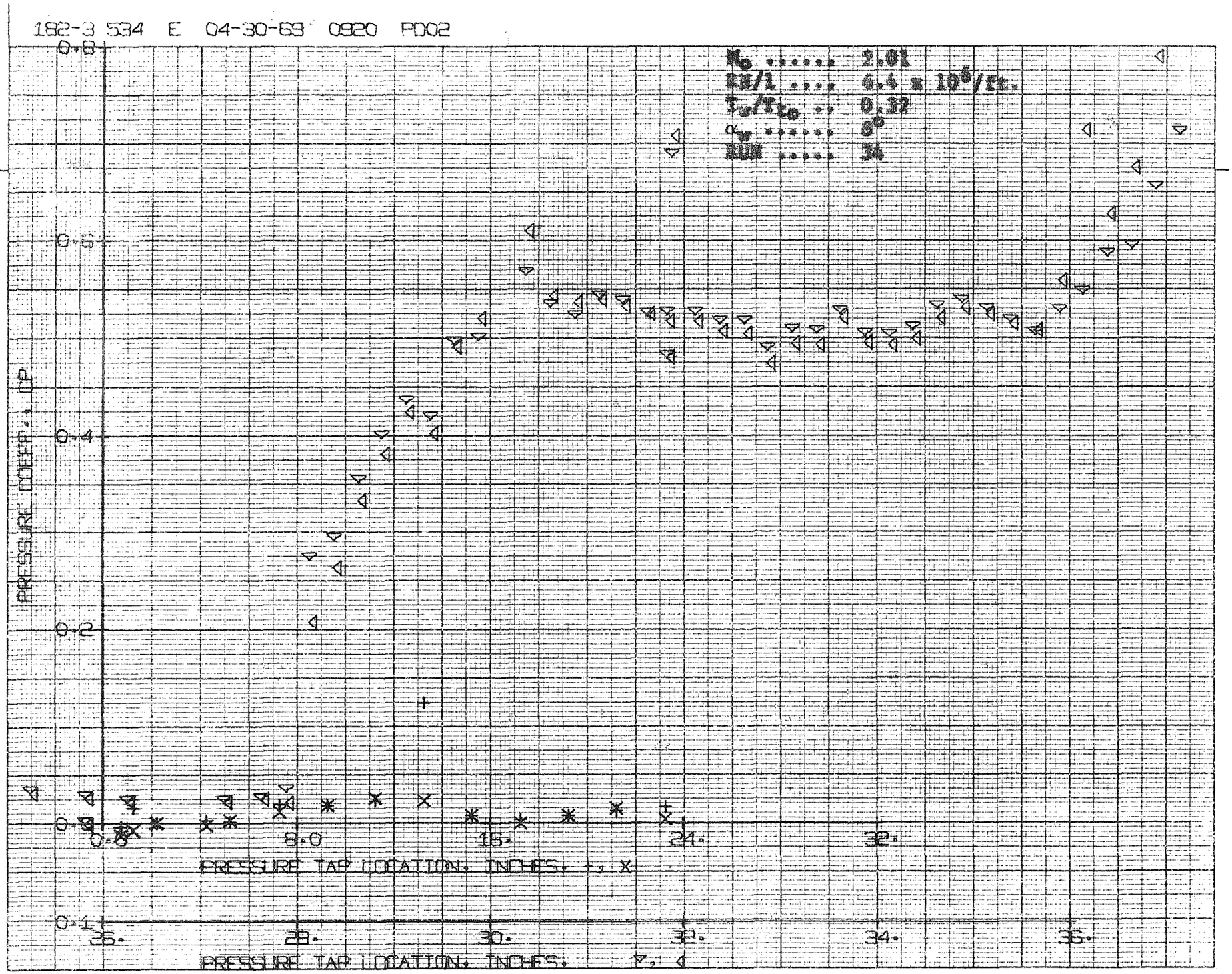


182-3 034 B 04-30-69 0929 PD01

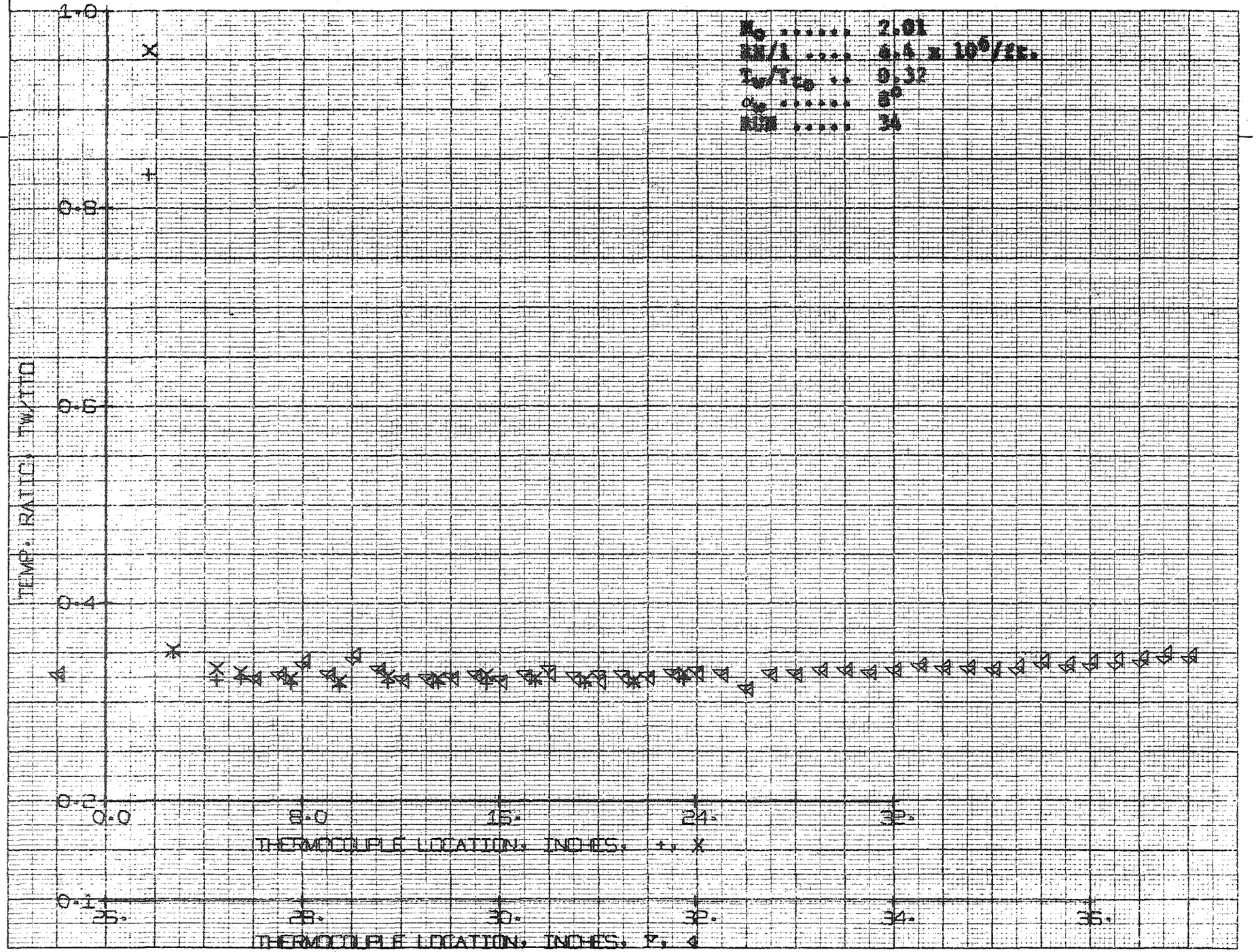


182-3 034 D 04-30-69 0323 PD01

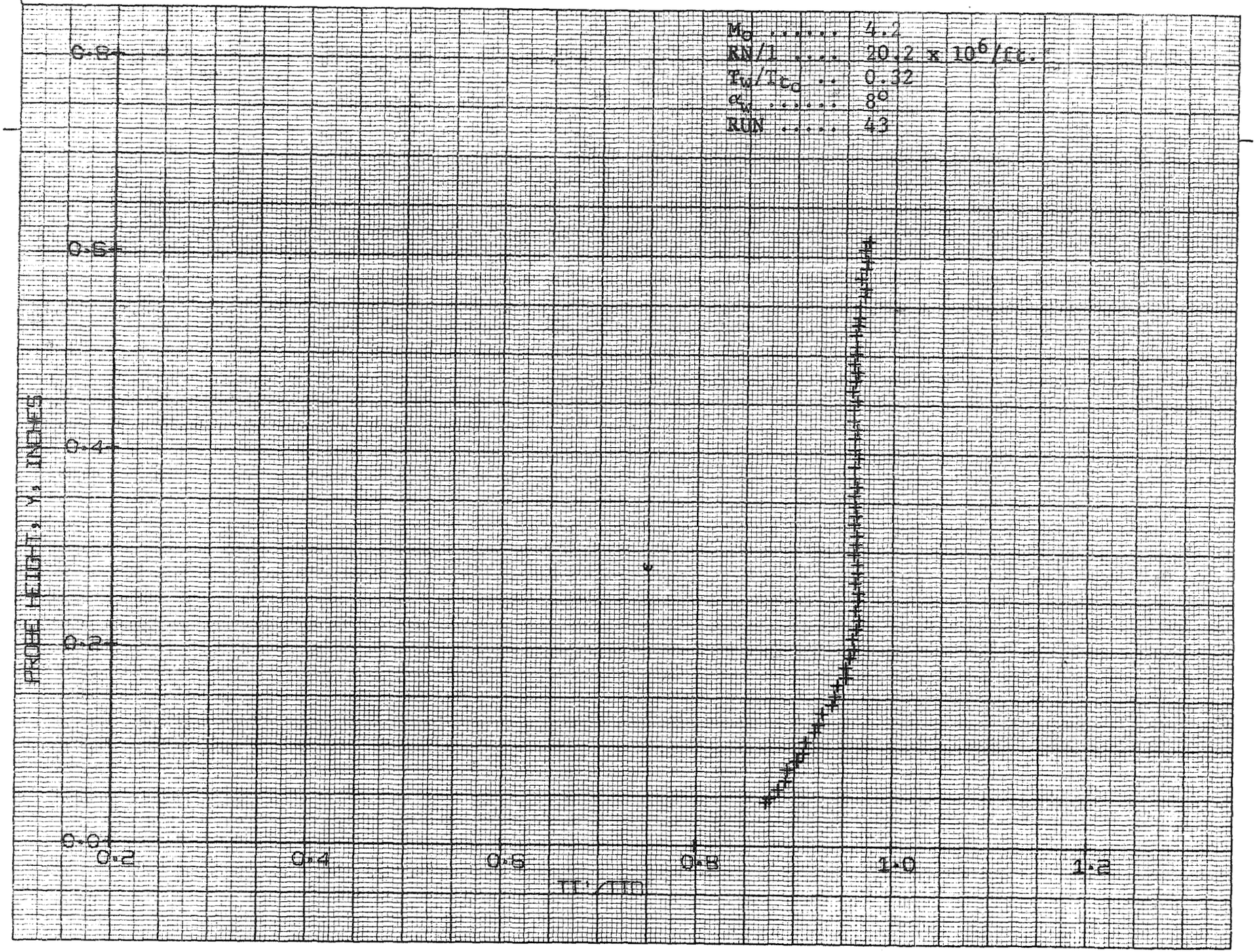



182-3 534 E 04-30-69 0920 PD02
M_o 2.01
RN/l .... 0.4 x 10^6/ft.
T_w/T_{t_o} .. 0.32
α_w ..... 8°
RUN 34
PRESSURE COEFF., CP
0.8
0.6
0.4
0.2
0.0
-0.1
0.0
8.0
16.
24.
32.
PRESSURE TAP LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
PRESSURE TAP LOCATION, INCHES, ▽, △

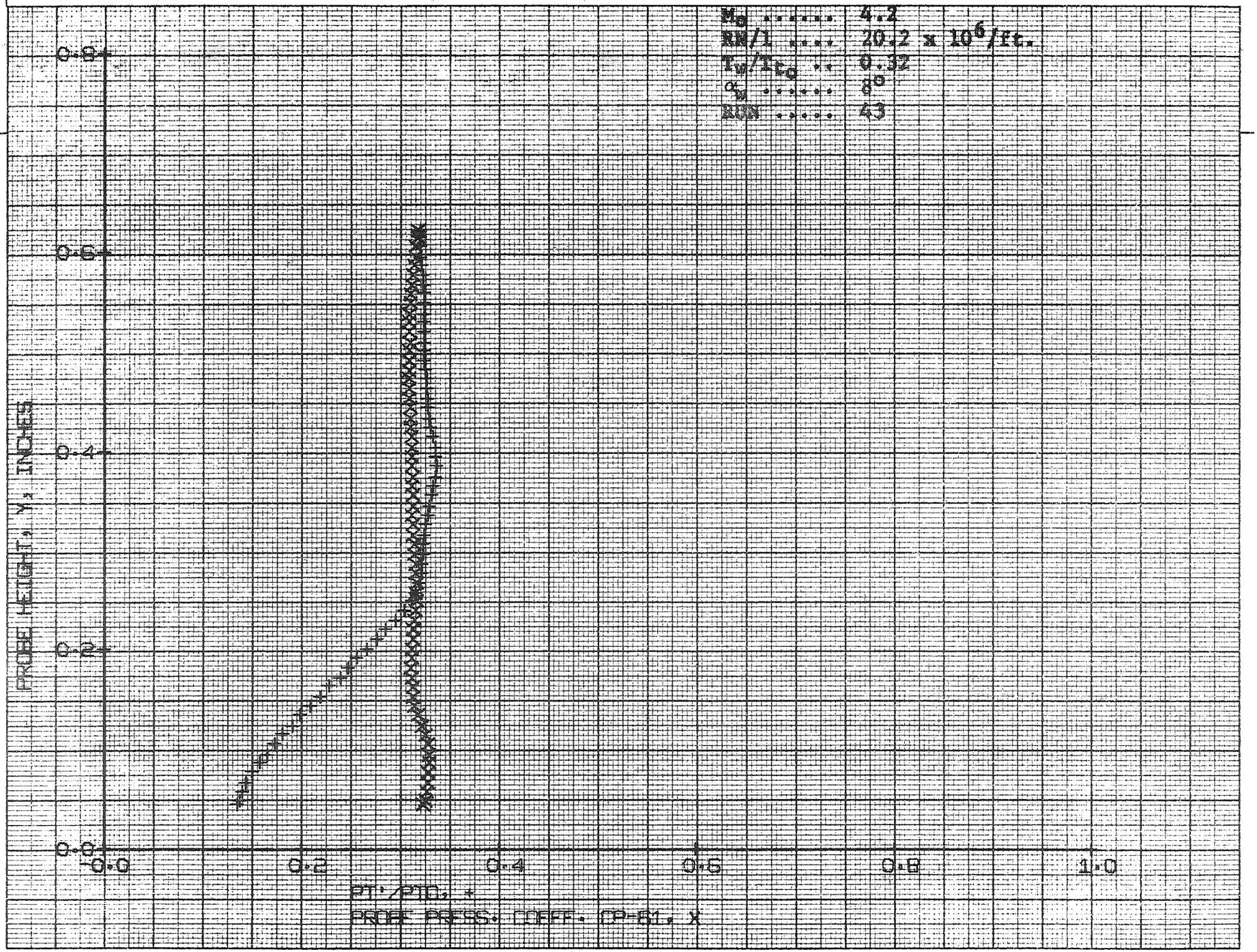
182-3 534 F 04-30-63 0920 PD02



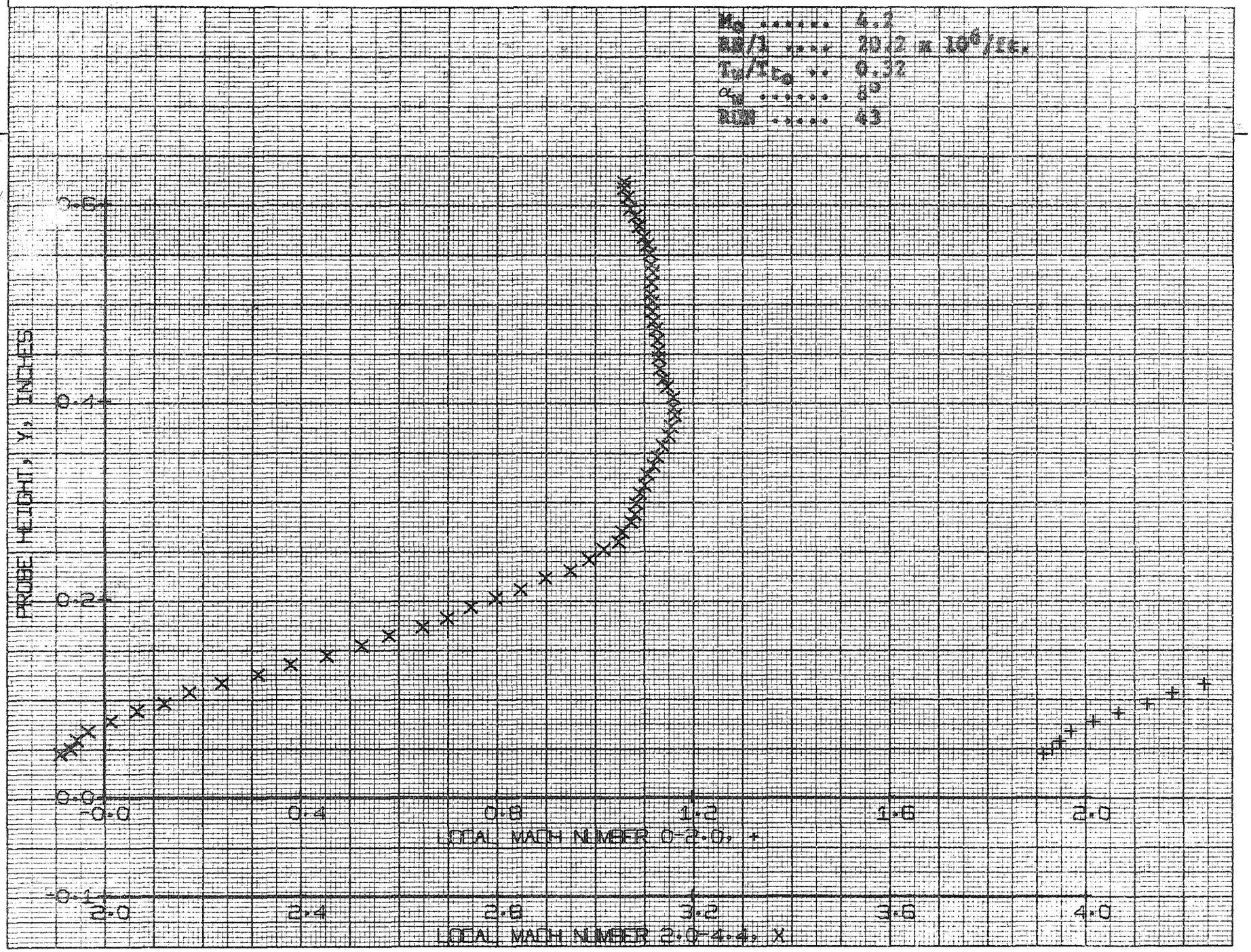
182-3 043 A 05-01-69 0353 PD01

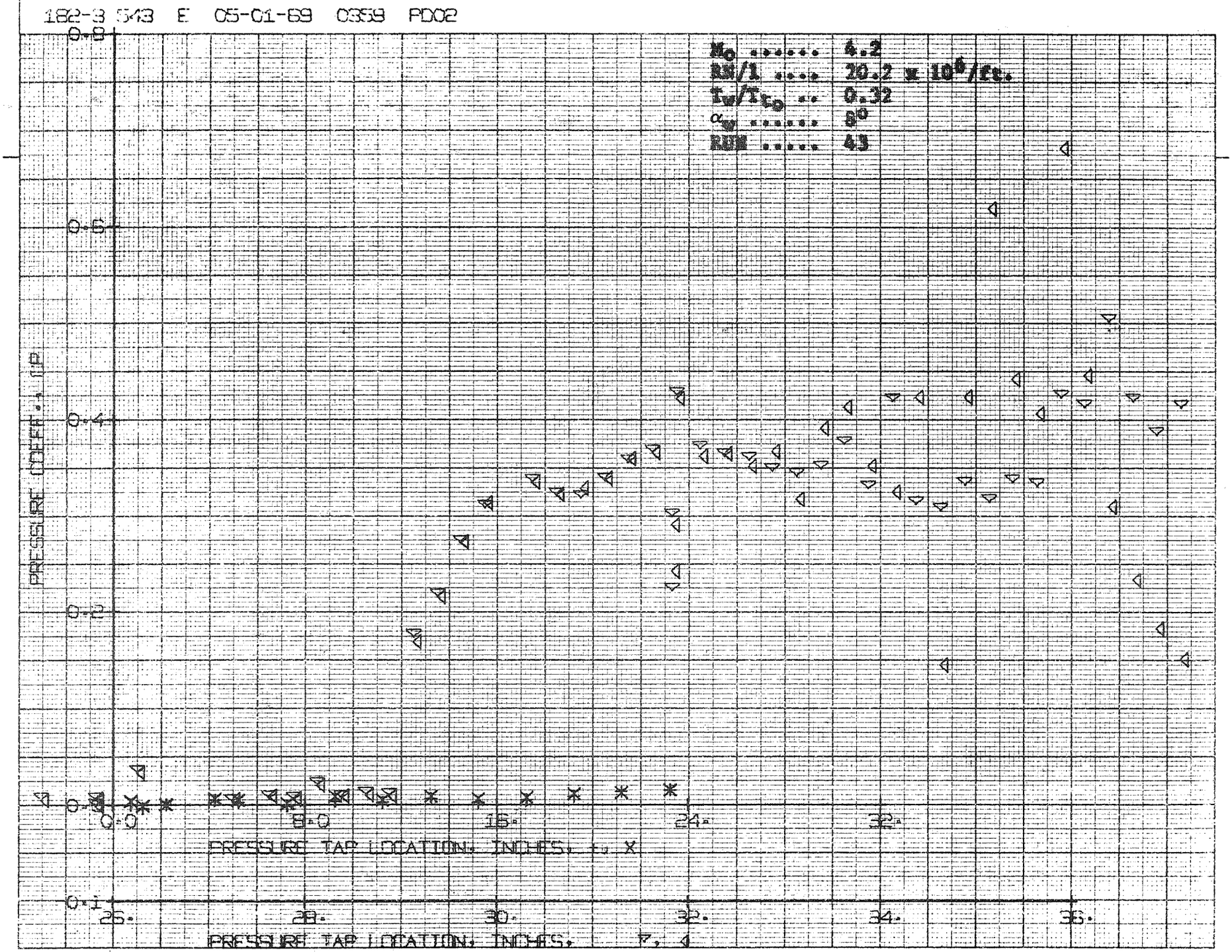


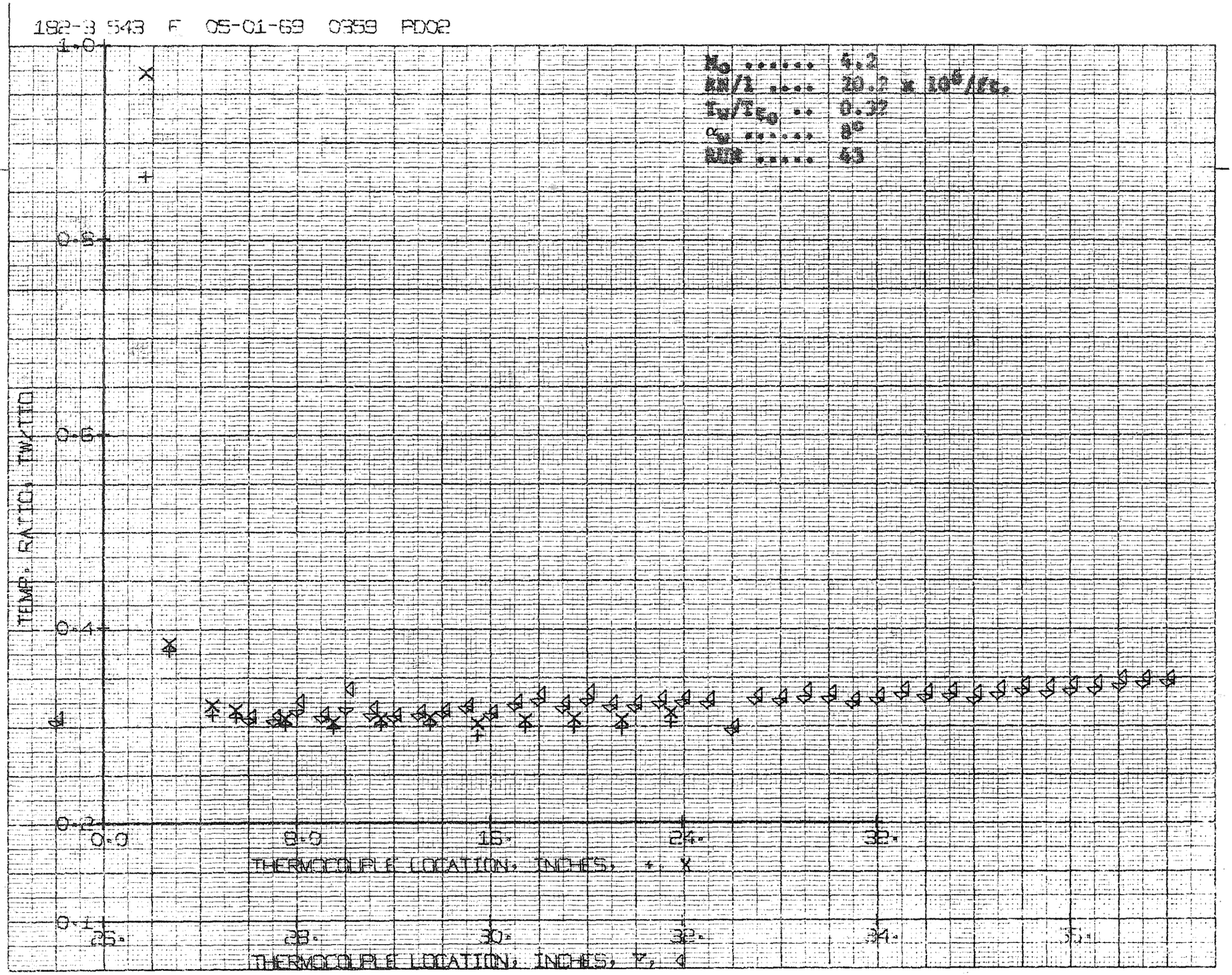
182-3 043 B 05-01-59 0353 PD01



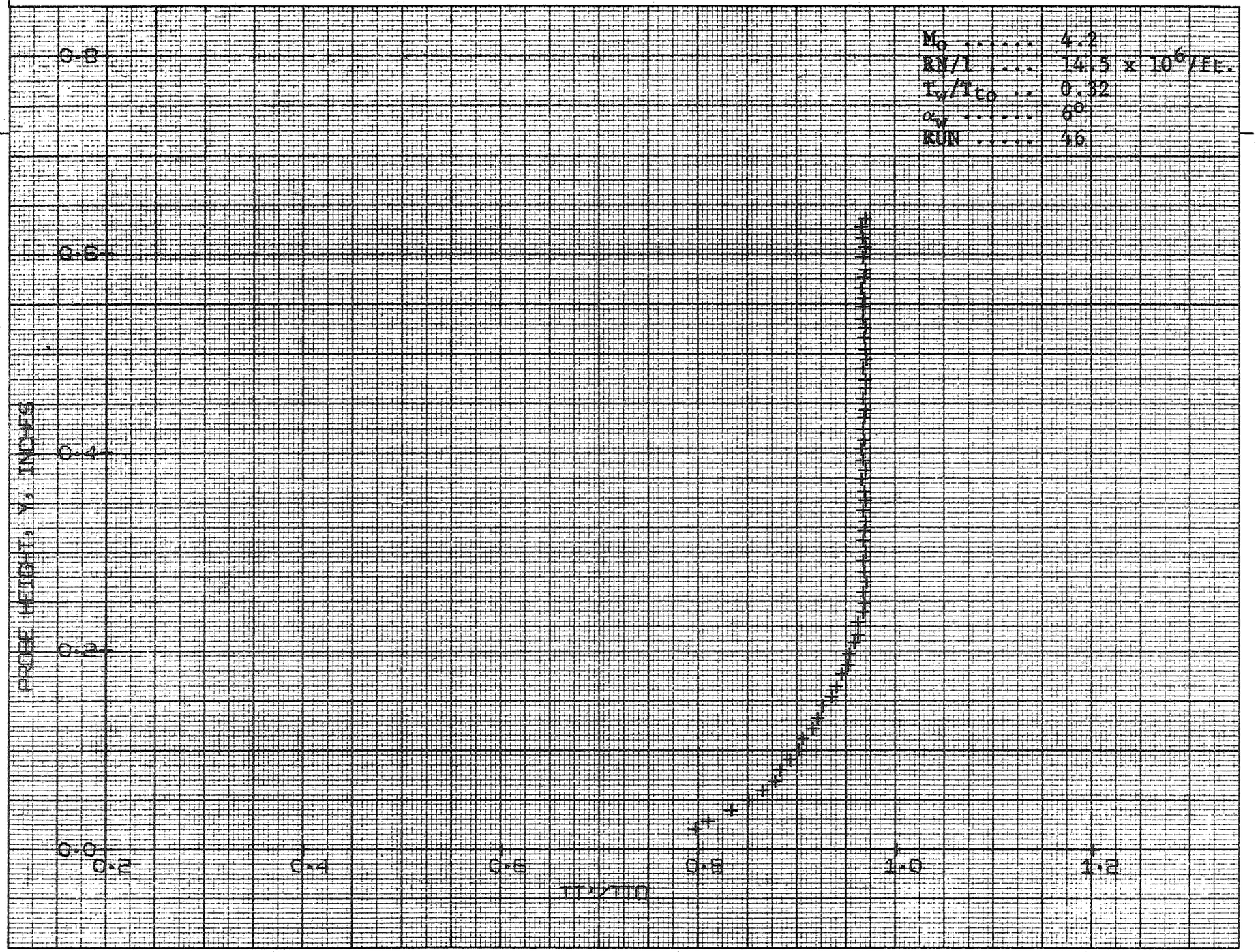
182-3 043 D 05-01-69 0353 PD01



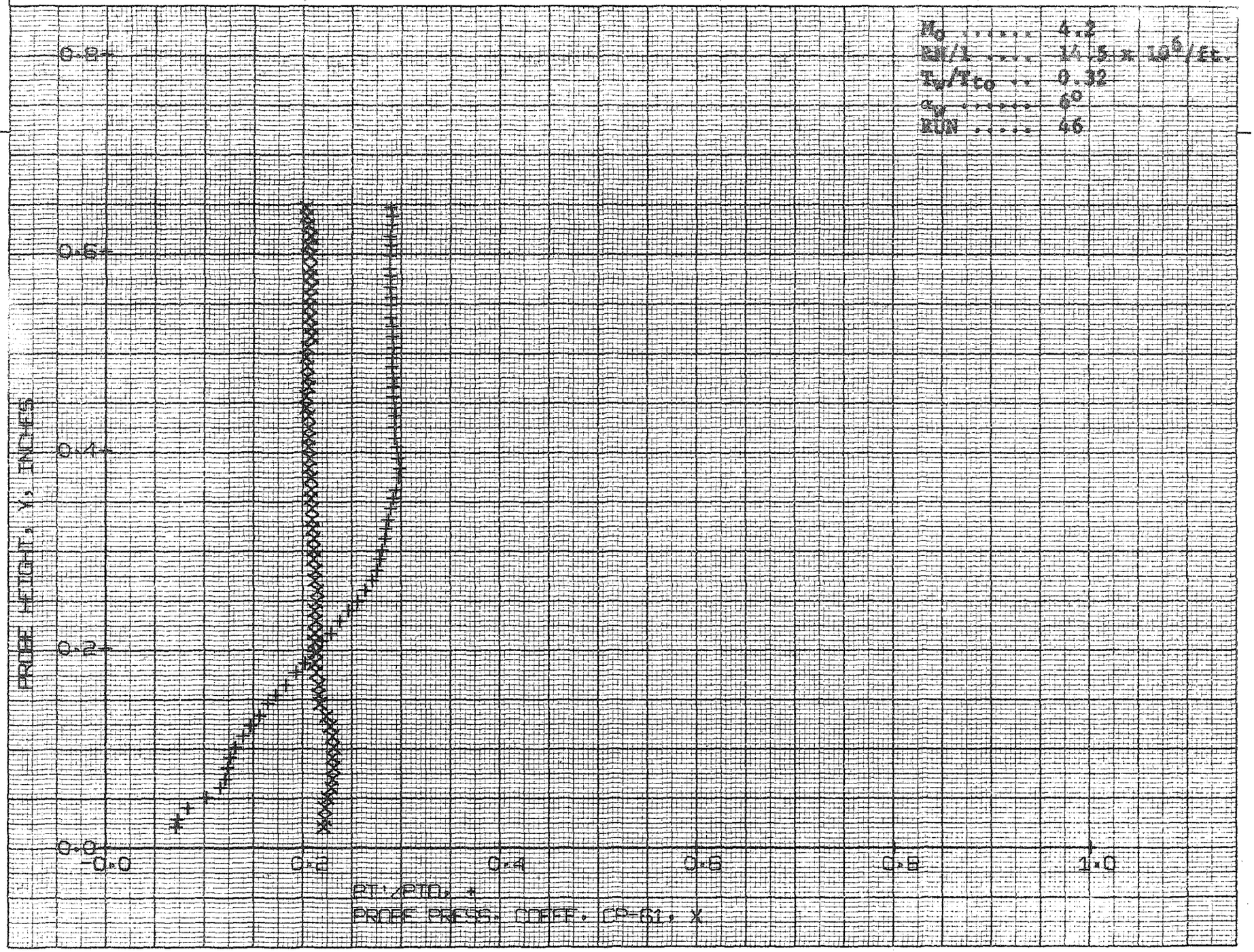

182-3 543 E 05-01-69 0359 PD02
M_0 ..... 4.2
RN/L ..... 20.2 x 10^6/ft.
T_w/T_{t_0} .. 0.32
α_w ..... 8°
RUN 43
PRESSURE COEFF. - CP
0.8
0.6
0.4
0.2
0.0
-0.2
0.0
8.0
16.
24.
32.
PRESSURE TAP LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
PRESSURE TAP LOCATION, INCHES, ▽, △


182-3 543 F 05-01-69 0359 PD02
M_0 ..... 4.2
RN/1 .... 20.2 x 10^6/ft.
T_w/T_{t_0} .. 0.32
α_s ..... 8°
RUN 43
TEMP. RATIO, TW/TTO
1.0
0.8
0.6
0.4
0.2
0.1
0.0
8.0
16.
24.
32.
THERMOCOUPLE LOCATION, INCHES, +, X
25.
28.
30.
32.
34.
36.
THERMOCOUPLE LOCATION, INCHES, ▽, ◁

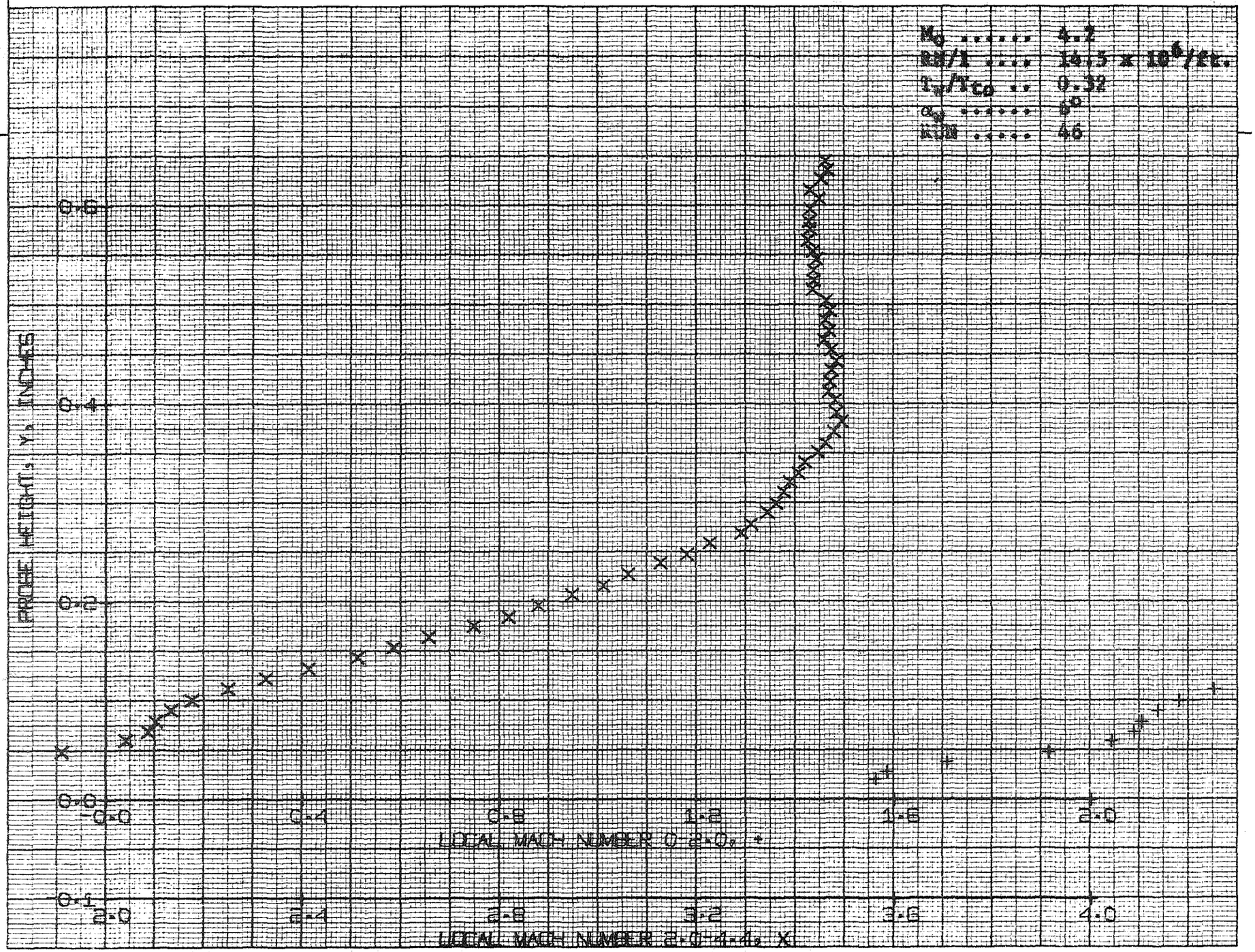
182-3 046 A 05-01-69 0809 PD01



182-3 046 B 05-01-69 0809 PD01

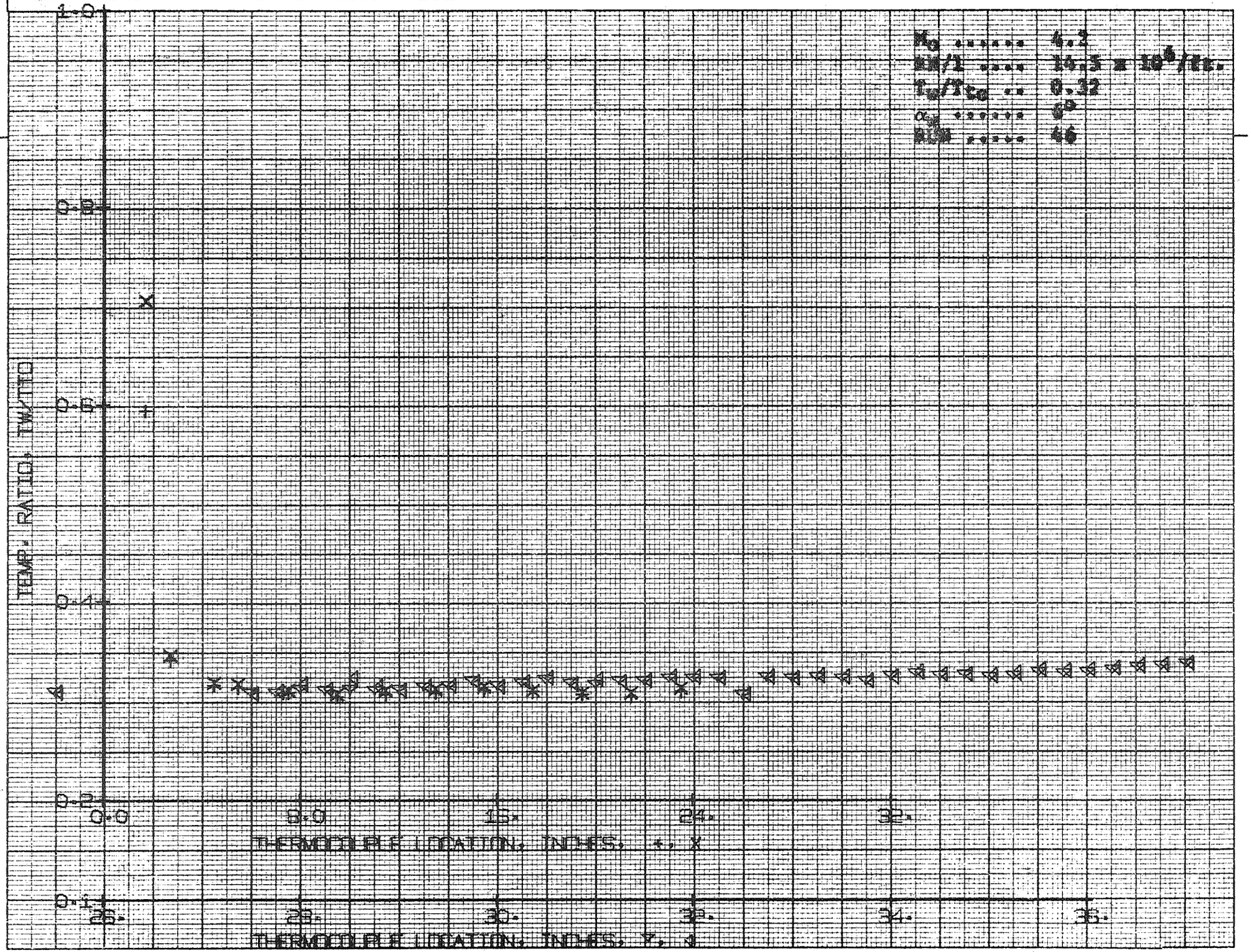


182-3 046 D 05-01-69 0809 PD01

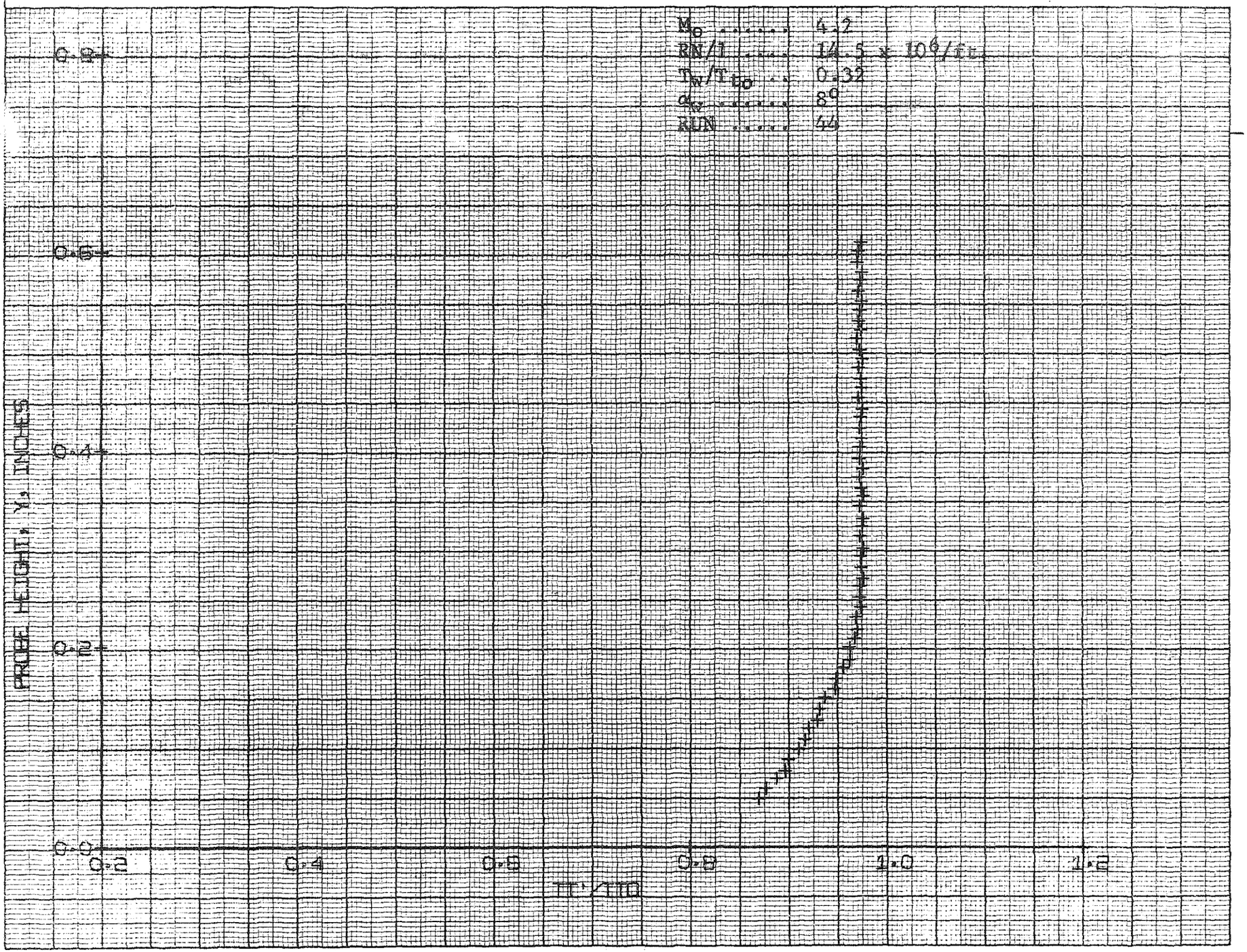


182-3 S46 E 05-01-69 0806 PD02
PRESSURE COEFF., CP
PRESSURE TAP LOCATION, INCHES
0.0
0.5
0.4
0.2
0.0
-0.1
-26.
-22.
-18.
-14.
-10.
-6.
-2.
2.
6.
10.
14.
18.
22.
26.
30.
34.
38.
42.

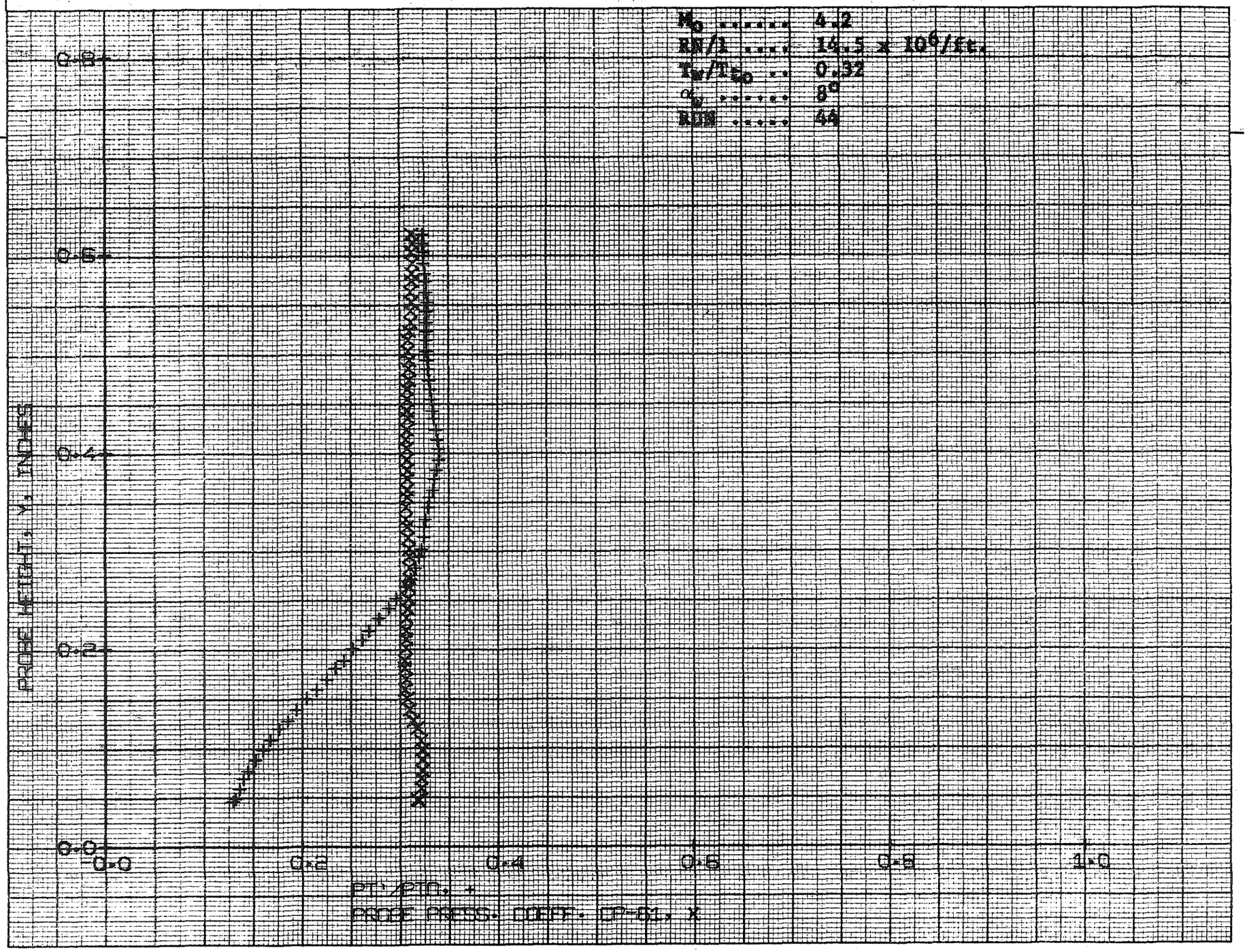
182-3 546 F 05-01-69 0806 PD02



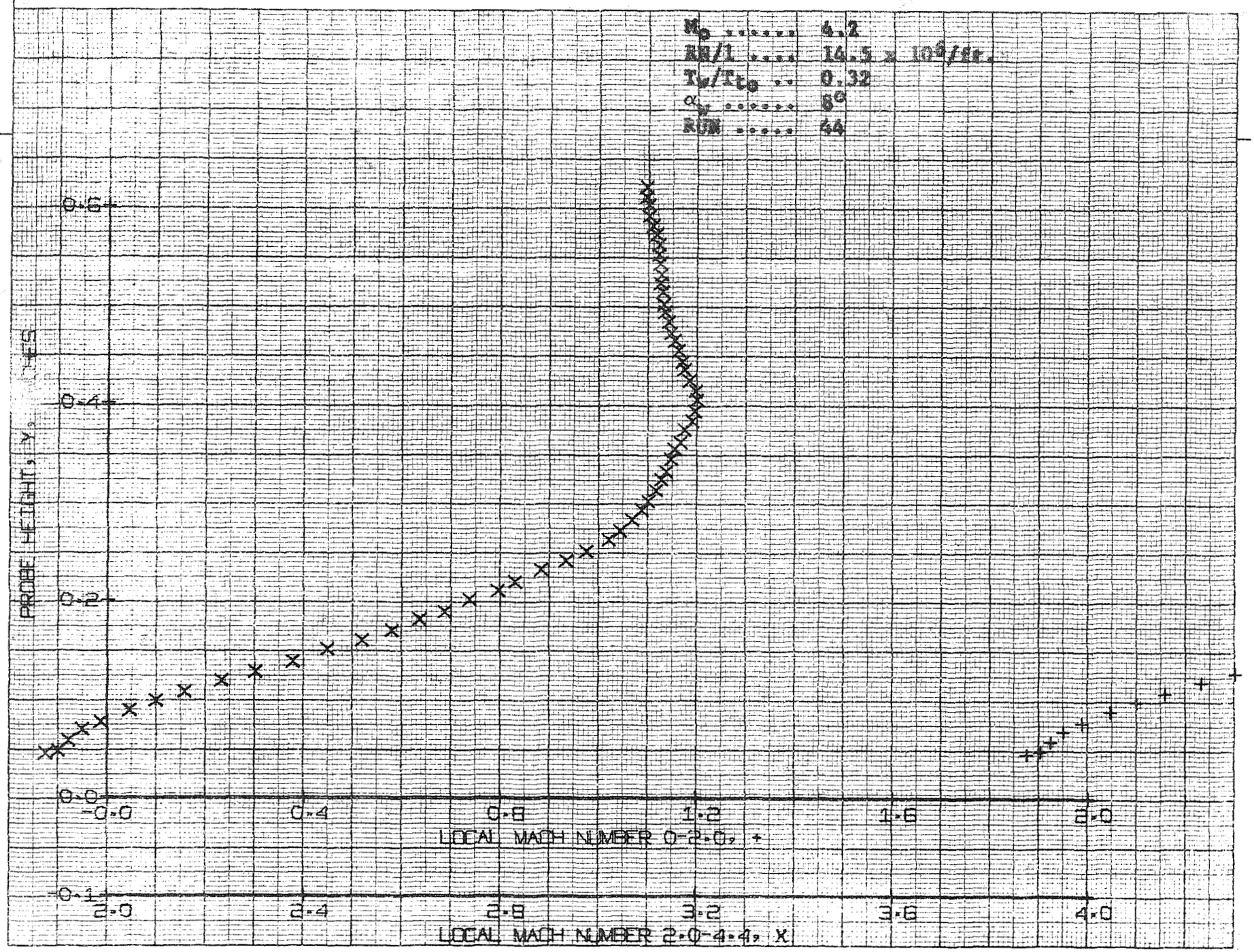
182-3 044 A 05-01-69 0451 P001



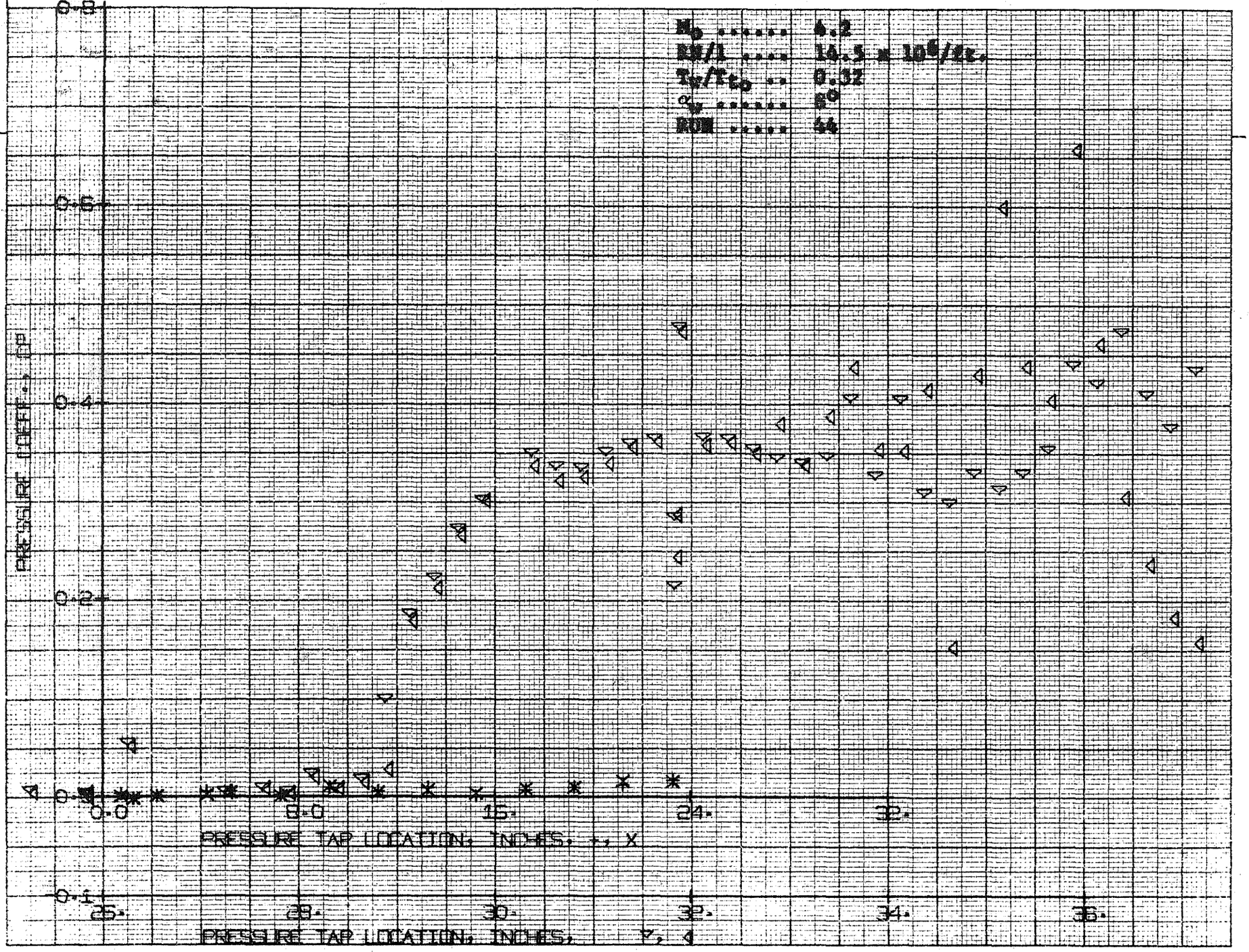
182-3 044 B 05-01-69 0451 PD01

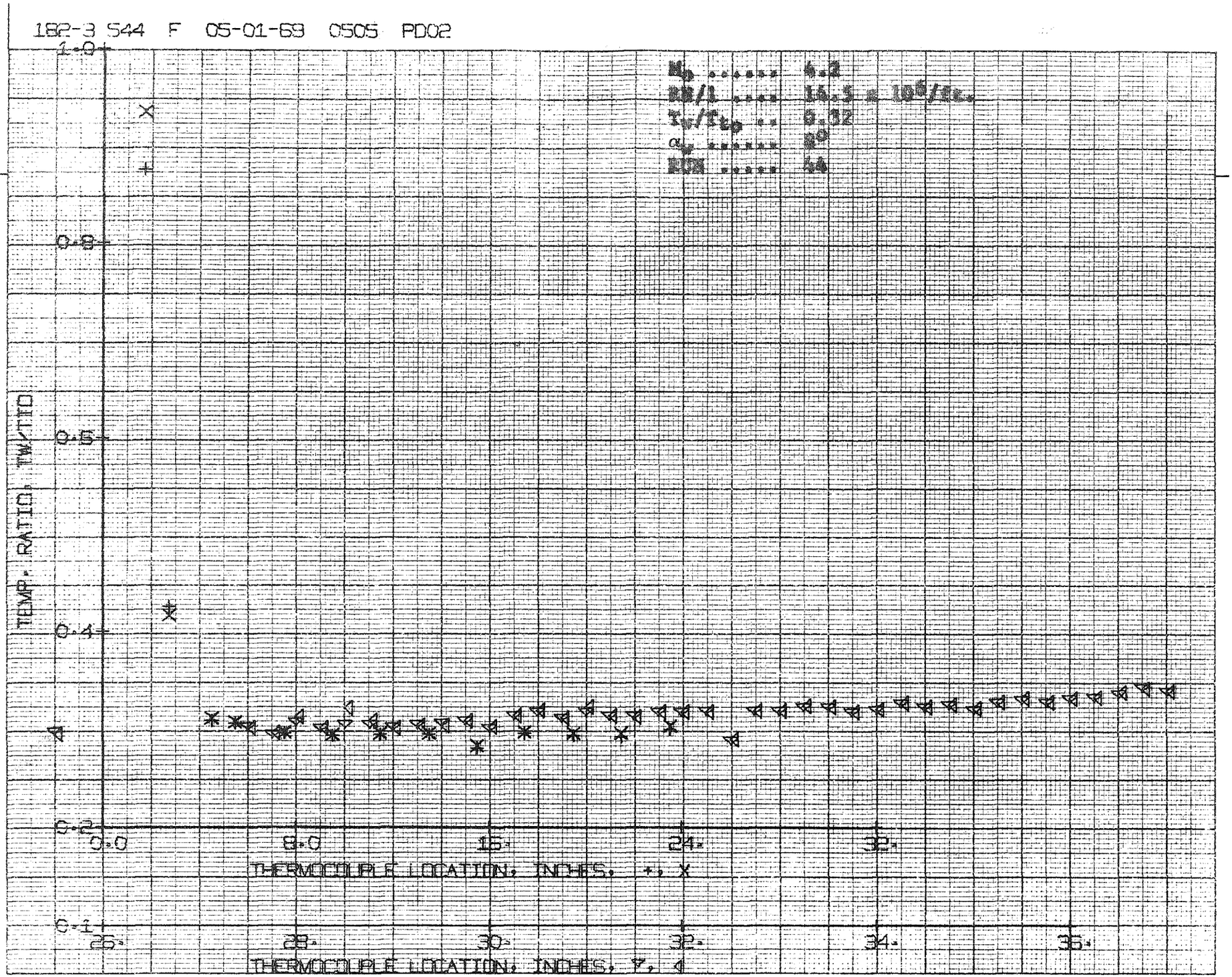


182-3 044 D 05-01-69 0451 PD01

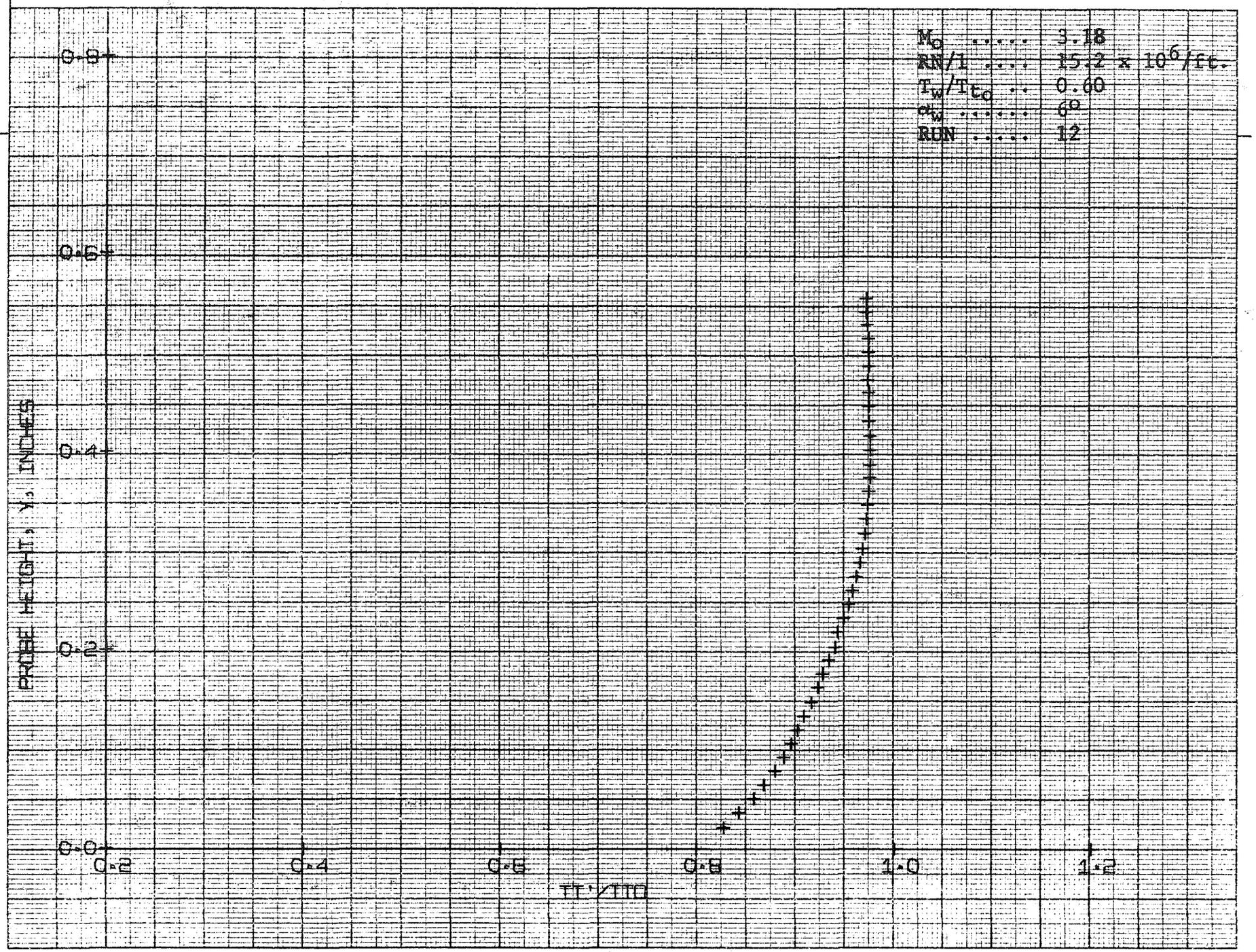


1B2-3 544 E 05-01-69 0505 PD02

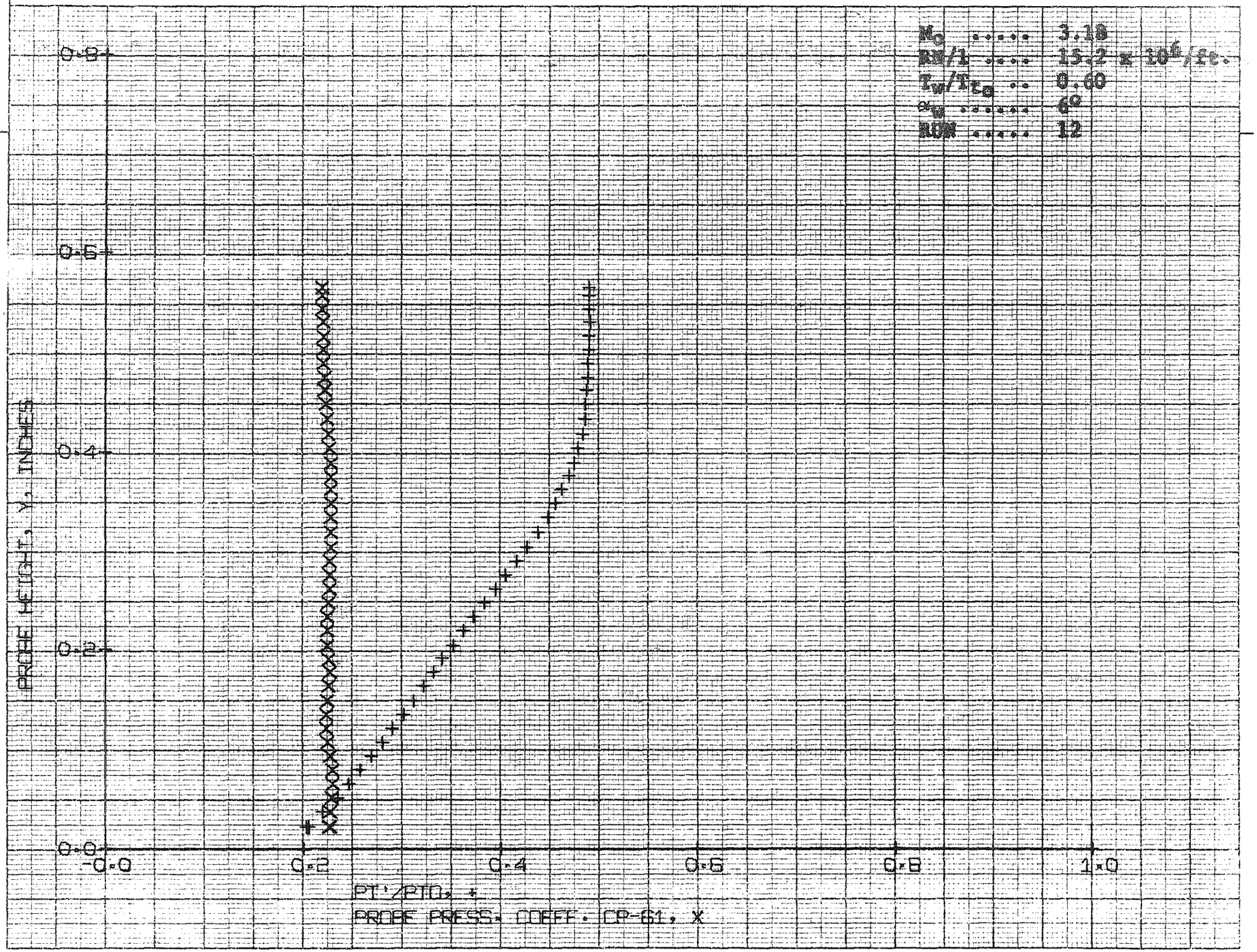



182-3 544 F 05-01-69 0505 PD02
M_b 4.2
RE/L ..... 16.5 x 10^6/ft.
T_w/T_{tp} .. 0.32
α_w ..... 0°
RUN 44
TEMP. RATIO TW/TTO
1.0
0.8
0.6
0.4
0.2
0.1
0.0
8.0
16.
24.
32.
THERMOCOUPLE LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
THERMOCOUPLE LOCATION, INCHES, *, 4

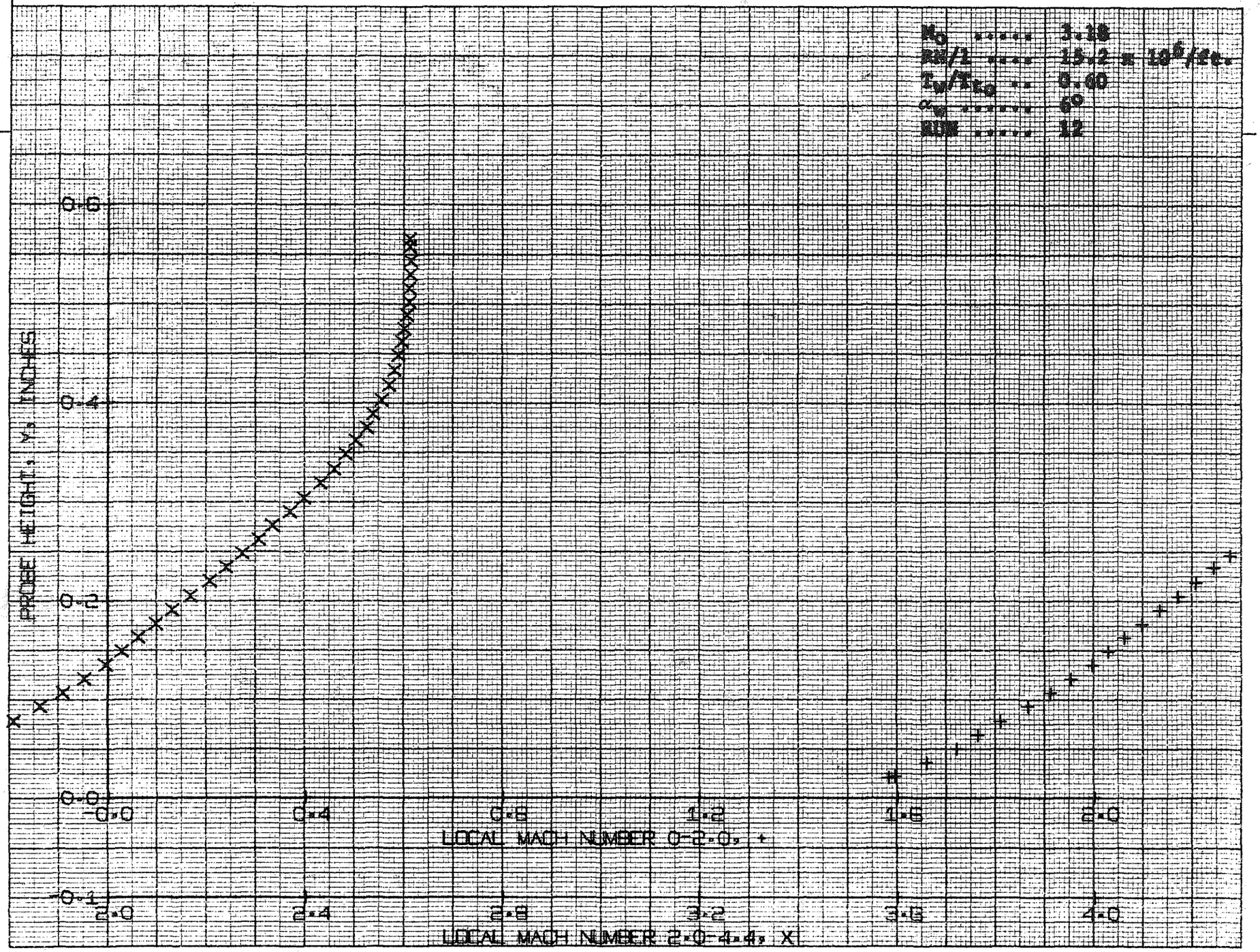
182-3 012 A 04-29-69 0936 PD01



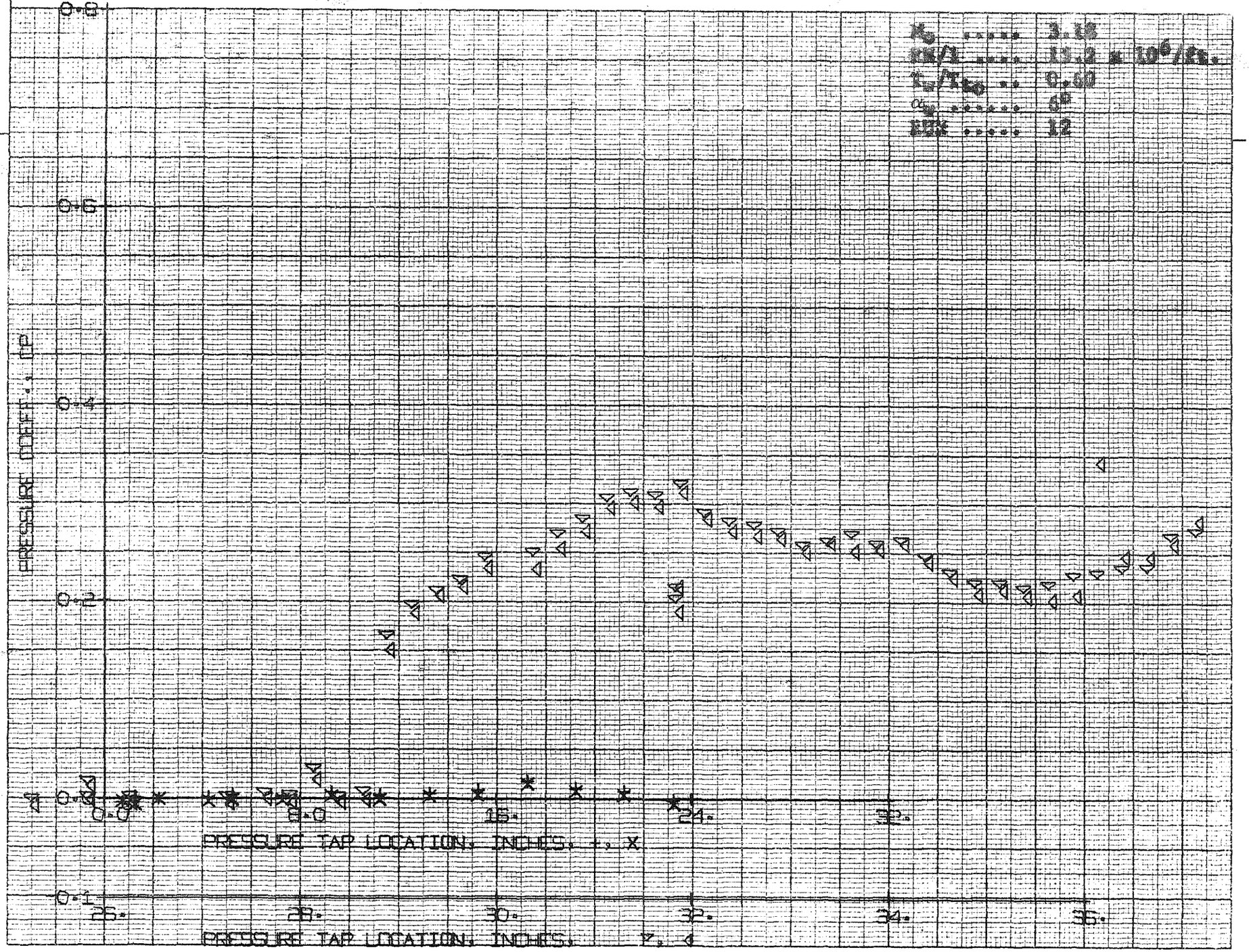
182-3 012 B 04-29-69 0936 PD01

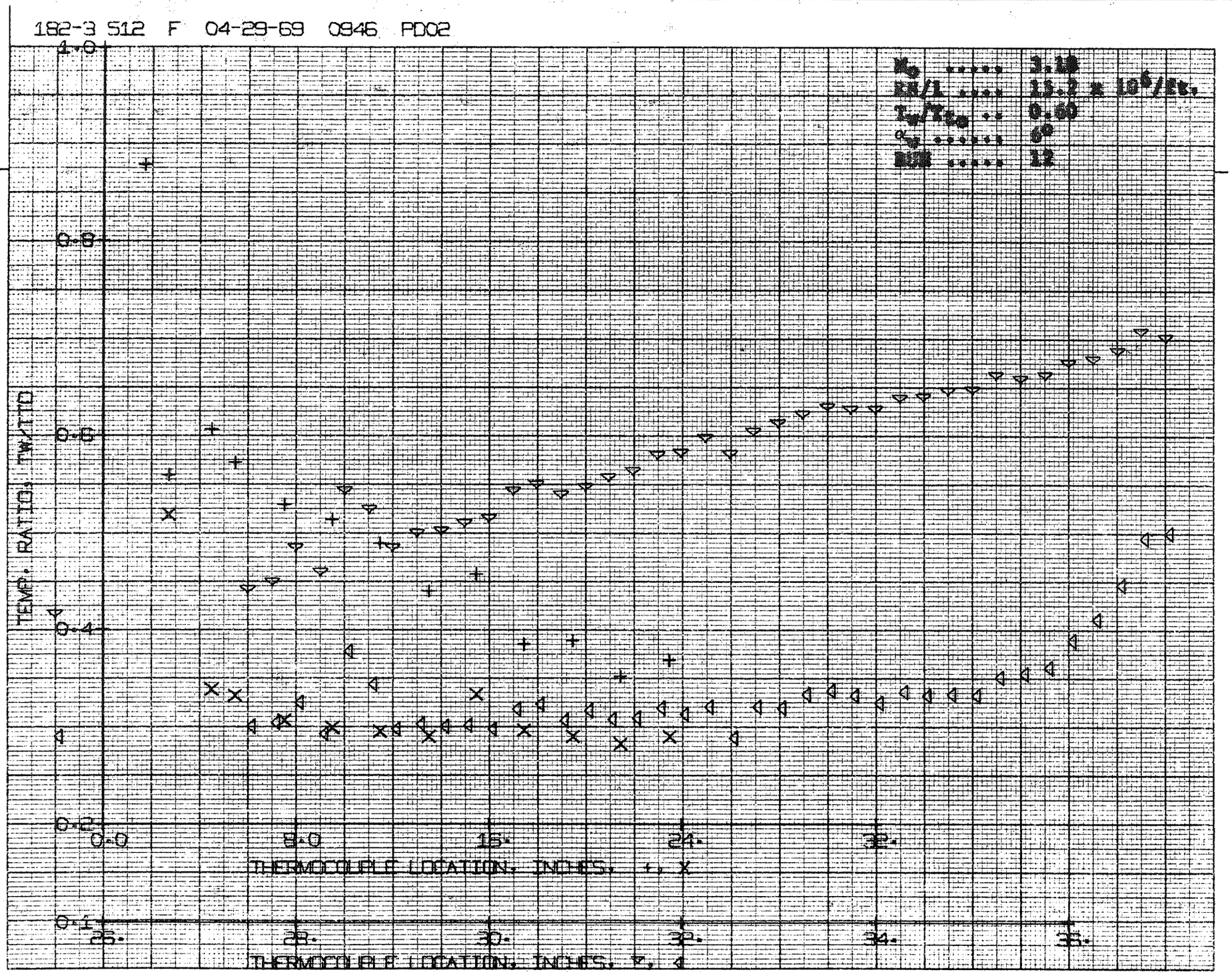


182-3 012 D 04-29-69 0936 PD01

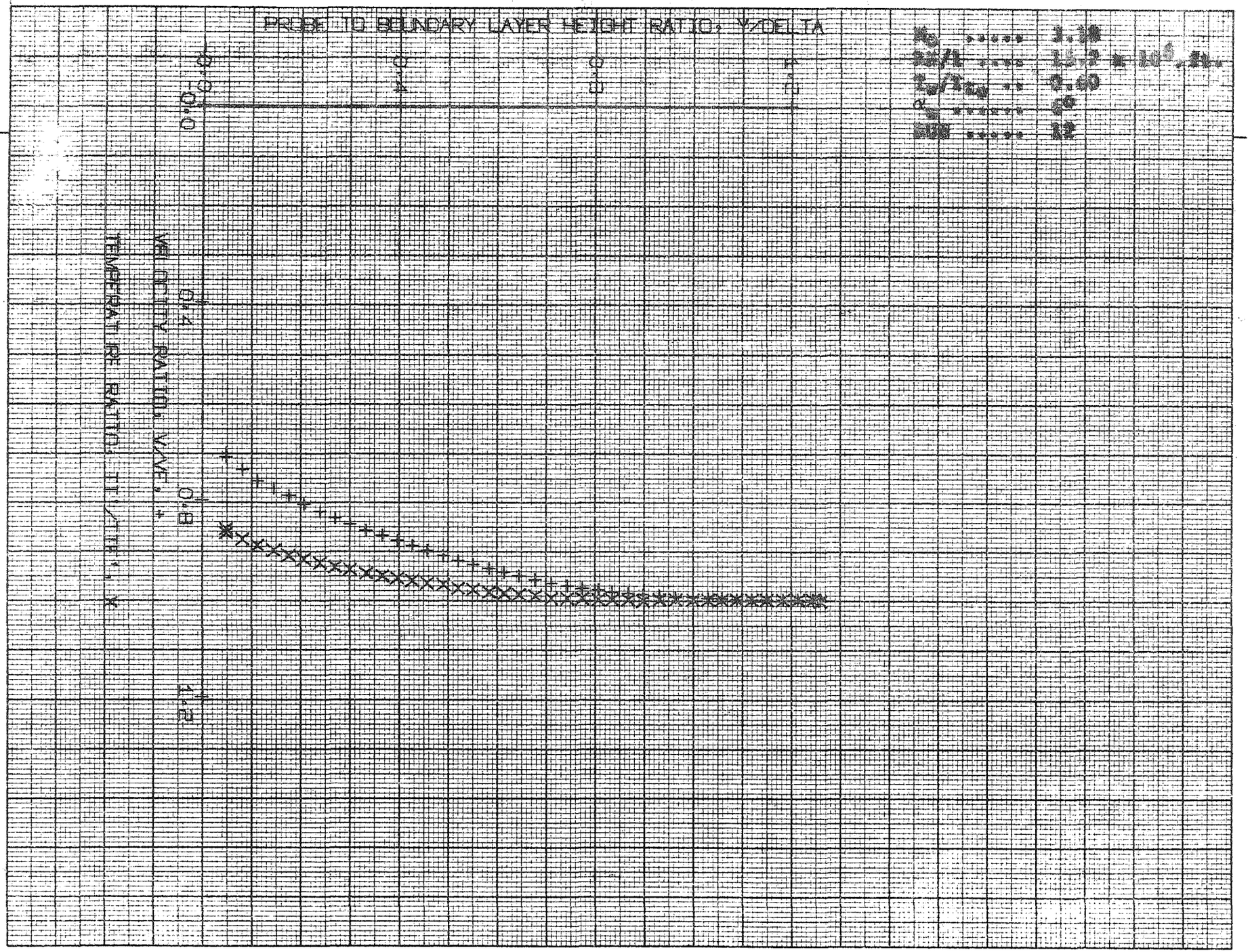


182-3 512 E 04-29-69 0946 PD02

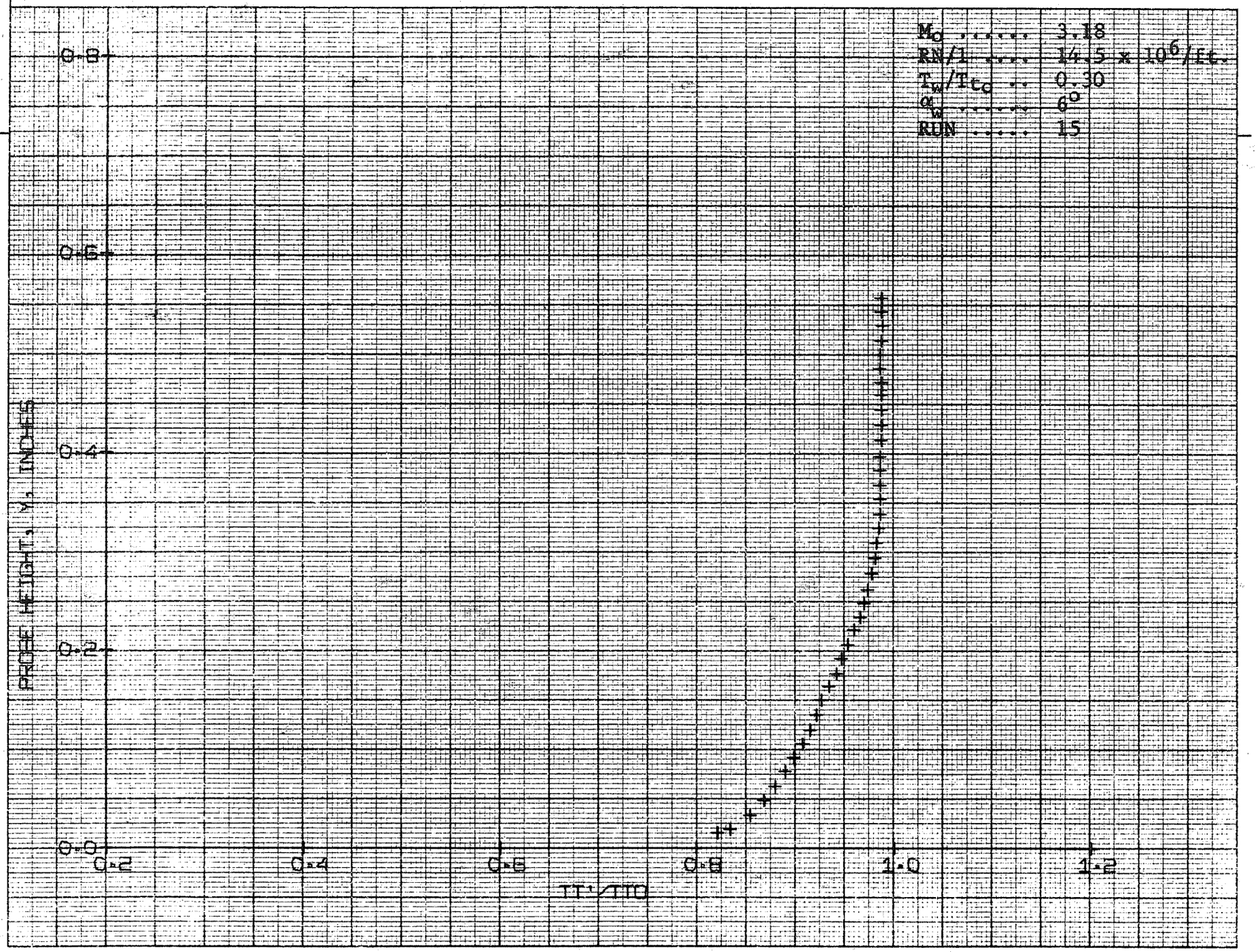



182-3 512 F 04-29-69 0846 PD02
M_0 ..... 3.18
RN/L ..... 13.2 x 10^6/ft.
T_w/T_{t_0} .. 0.60
α_0 ..... 6°
RUN 12
TEMP. RATIO, TW/TTO
1.0
0.8
0.6
0.4
0.2
0.1
0.0
8.0
16.
24.
32.
THERMOCOUPLE LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
THERMOCOUPLE LOCATION, INCHES, ▽, ◁

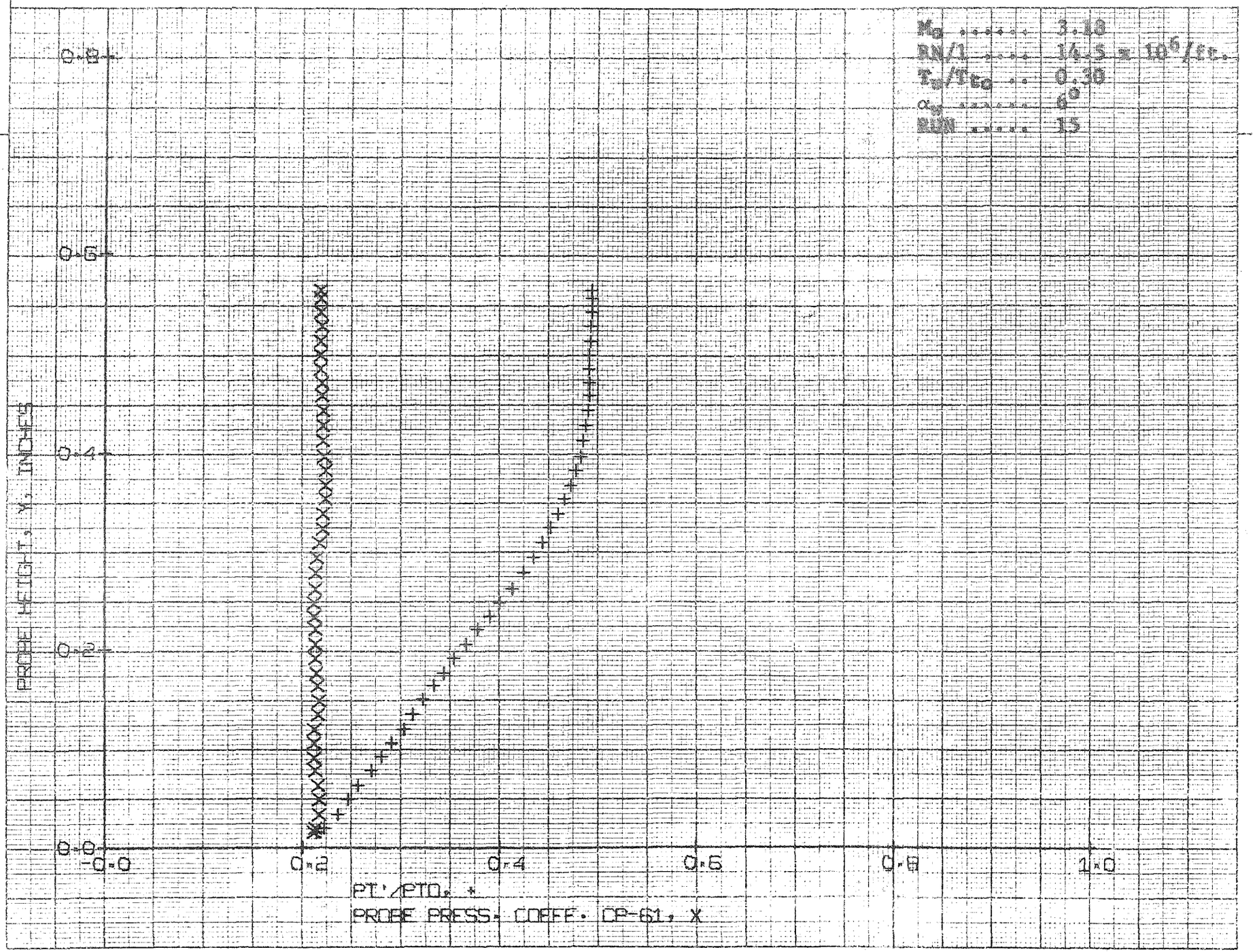
182-3 012 G 06-03-69 1704 PD03



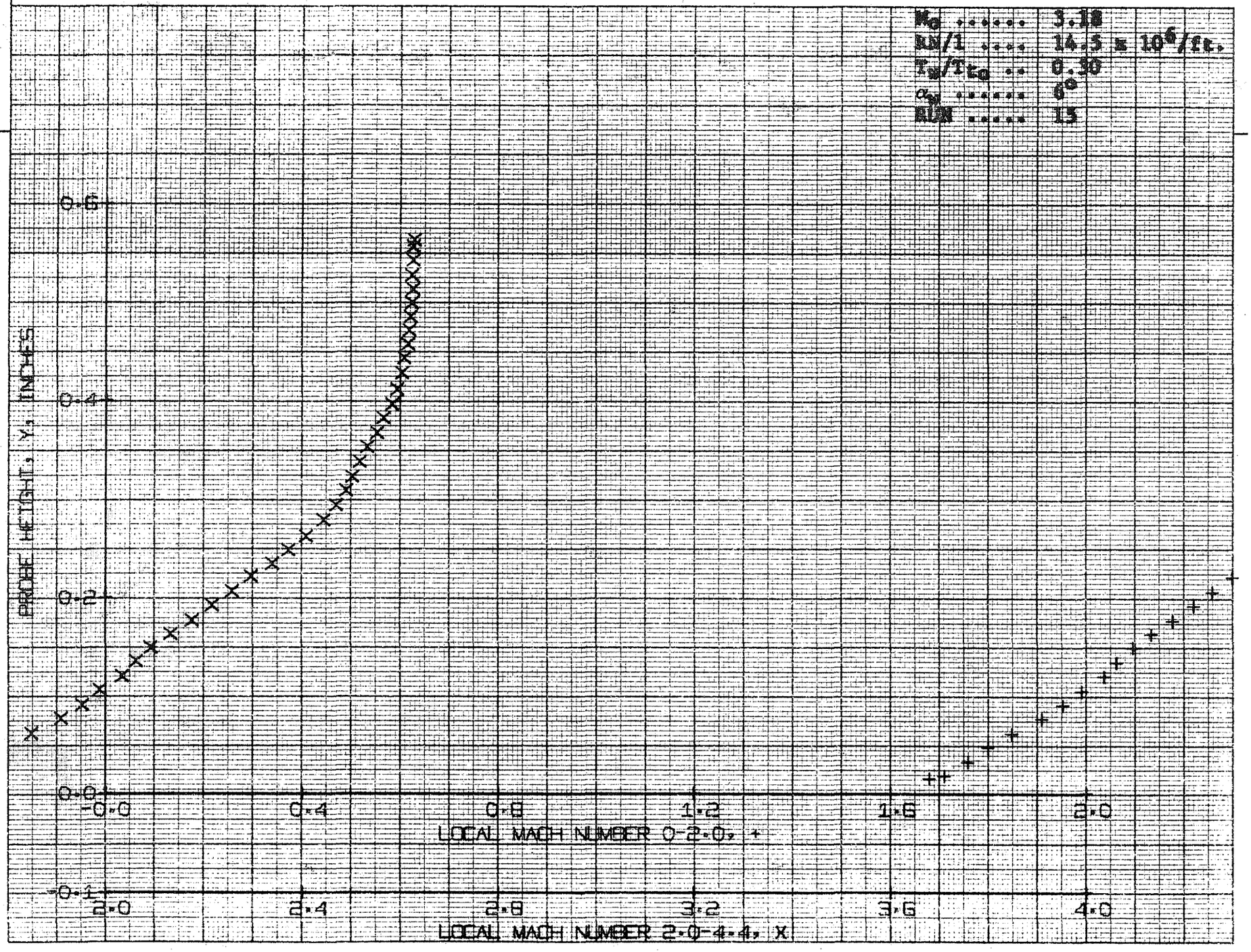
182-3 015 A 04-29-69 1247 PD01

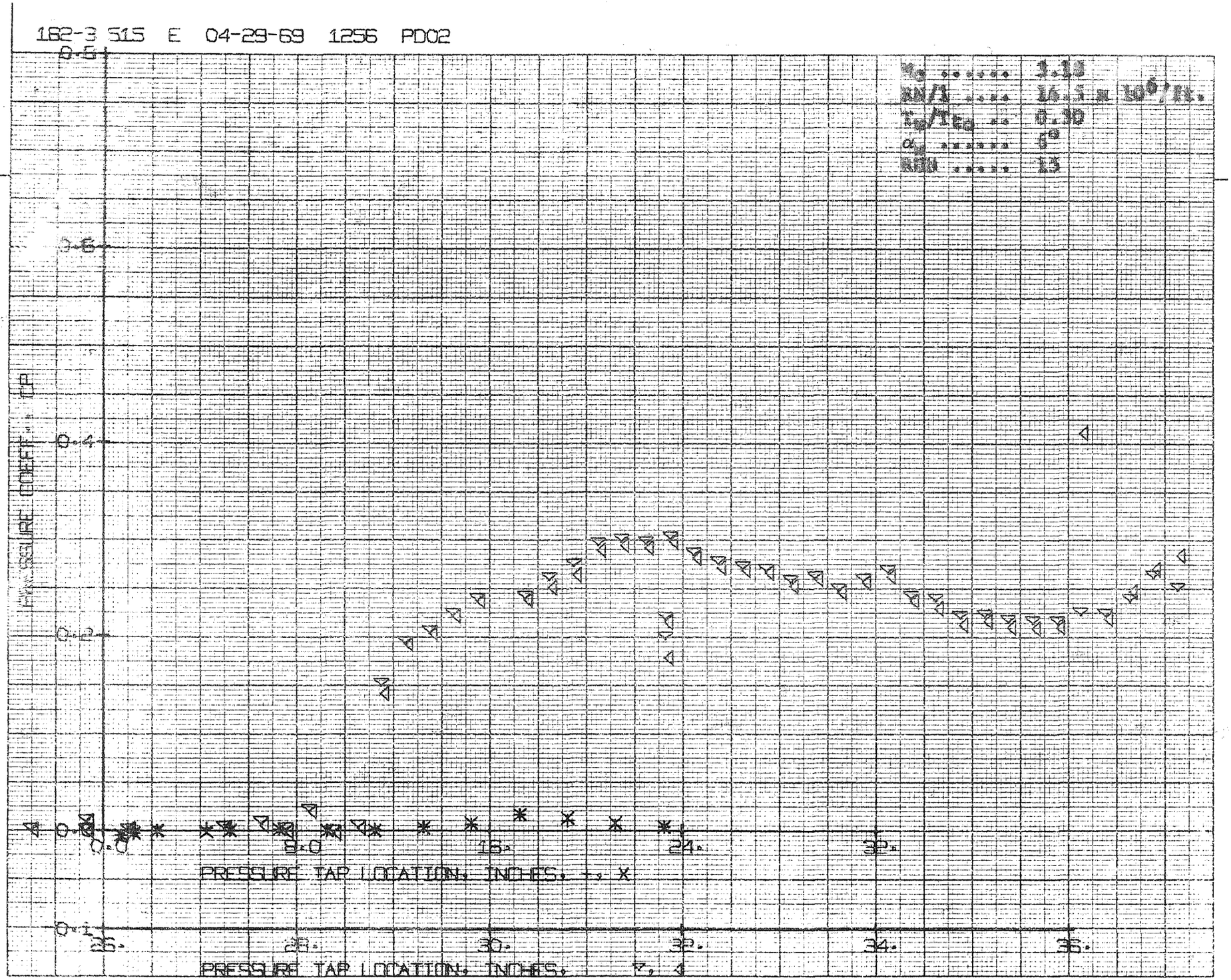


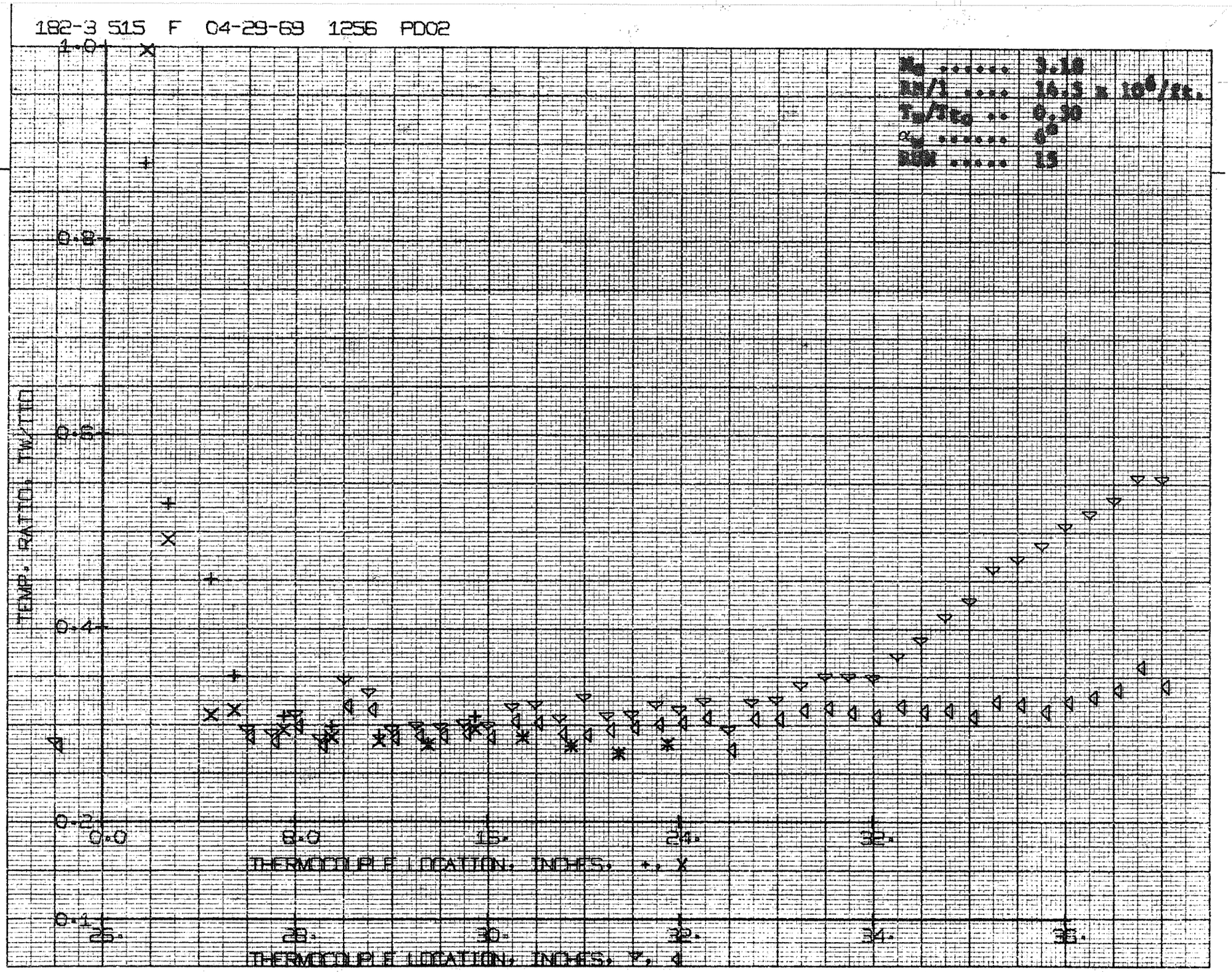
182-3 015 B 04-29-69 1247 PD01



182-3 015 D 04-29-69 1247 PD01

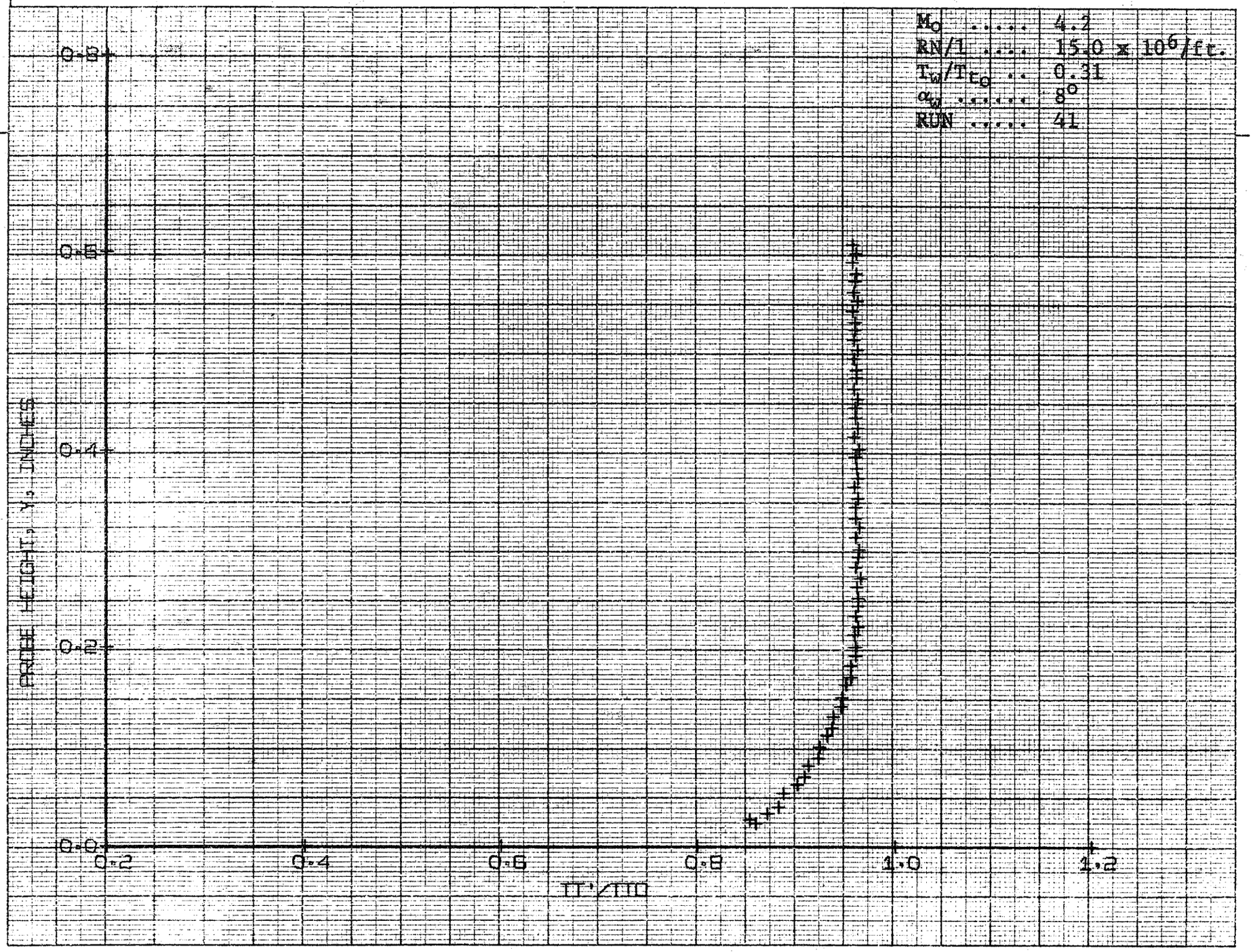


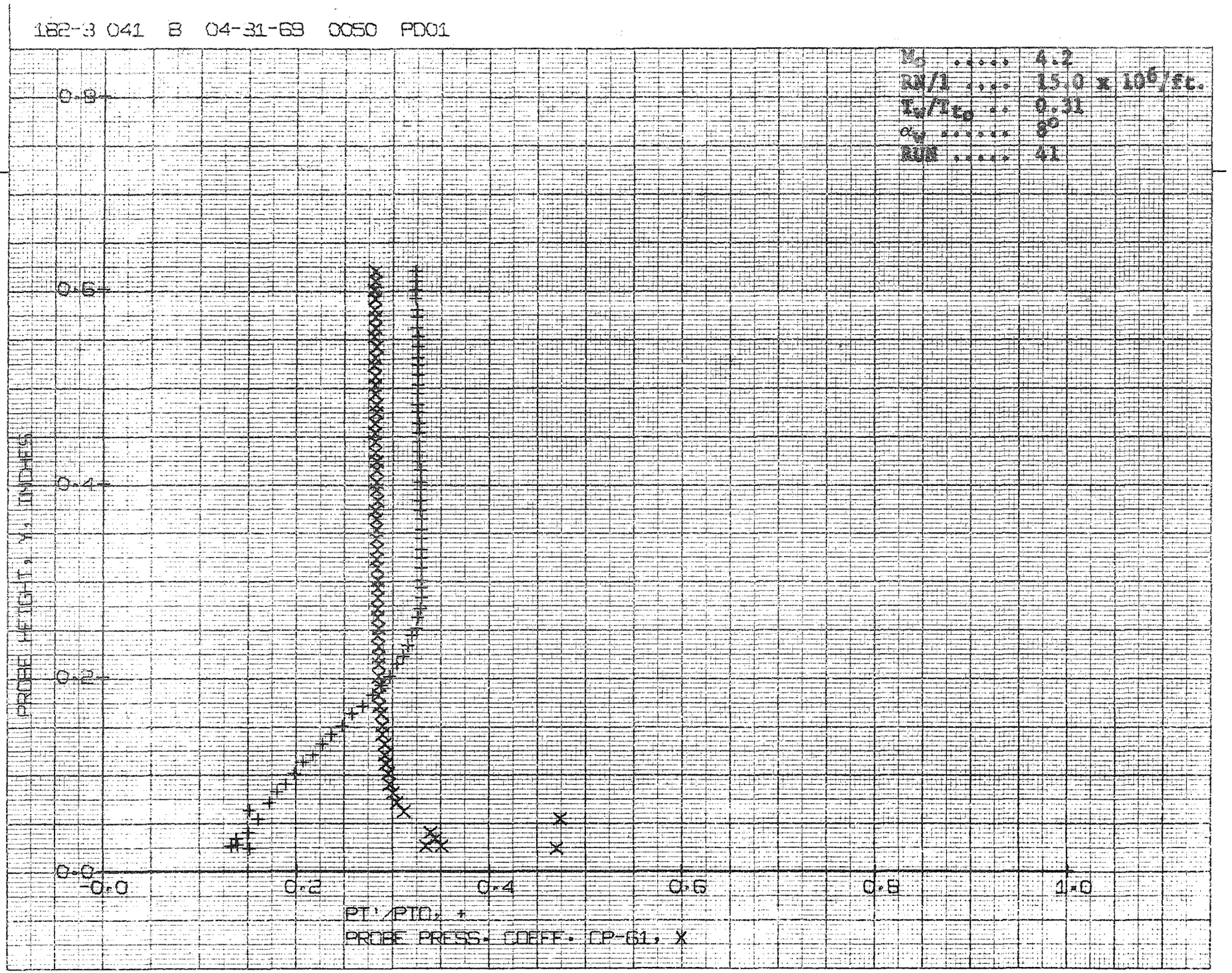

182-3 515 E 04-29-69 1256 PD02
M_s 1.13
RN/L .... 16.1 x 10^6/ft.
T_0/T_{t0} .. 0.30
α_w ..... 0°
NRB 13
PRESSURE COEFF., CP
0.6
0.4
0.2
0.0
-0.1
8.0
16.
24.
32.
PRESSURE TAP LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
PRESSURE TAP LOCATION, INCHES, ▽, △


182-3 515 F 04-29-69 1256 PD02
M_∞ 3.18
RN/ft ..... 16.5 x 10^6/ft.
T_w/T_{t_0} .. 0.30
α_w ..... 6°
RUN 15
TEMP. RATIO, TW/TTO
1.0
0.8
0.6
0.4
0.2
0.1
0.0
8.0
16.
24.
32.
THERMOCOUPLE LOCATION, INCHES, +, X
26.
28.
30.
32.
34.
36.
THERMOCOUPLE LOCATION, INCHES, ▽, △

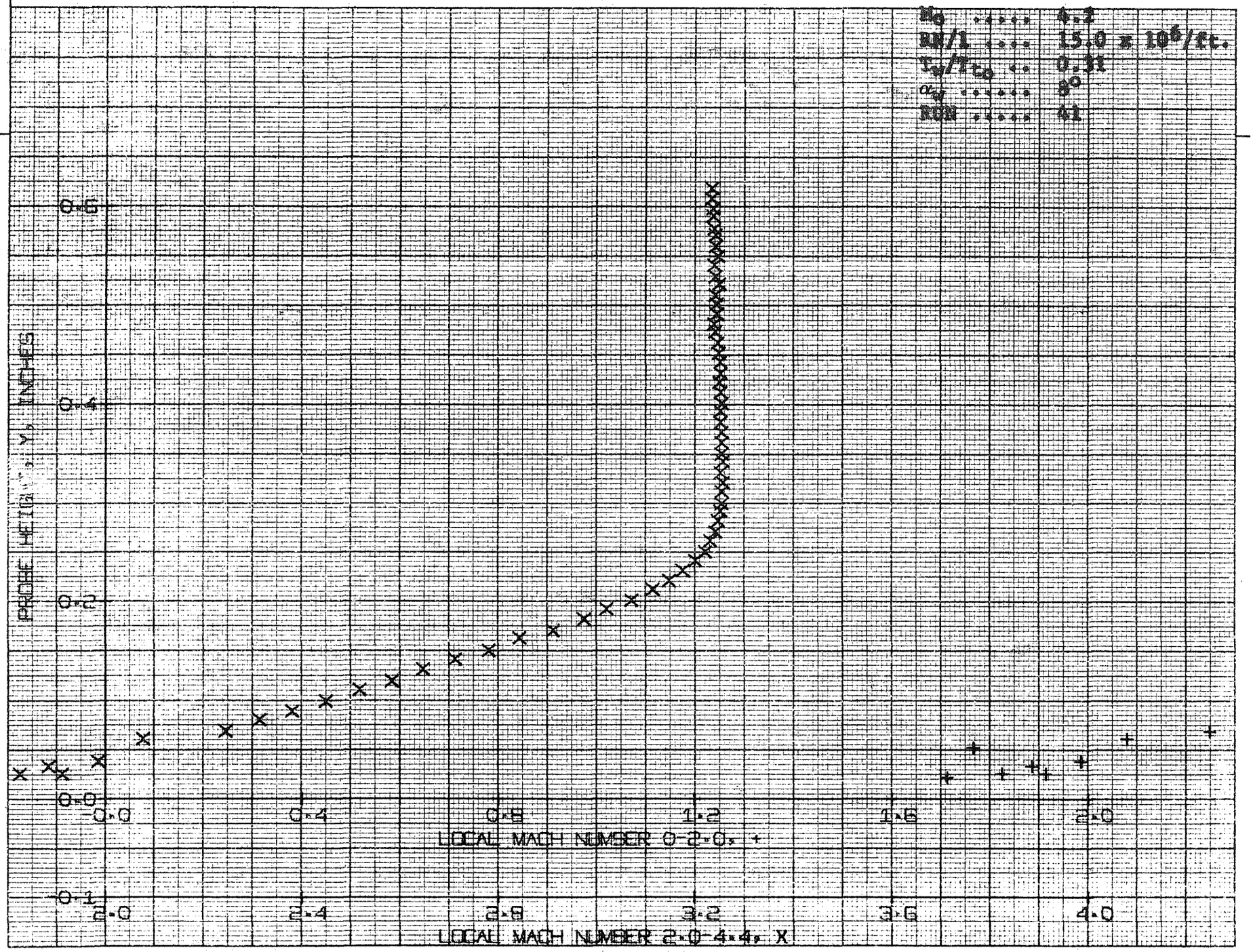
182-3 015 G 06-03-69 1721 PD03
PROBE TO BOUNDARY LAYER HEIGHT RATIO, Y/DELTA
0.0
0.4
0.8
1.2
VELOCITY RATIO, V/VE, +
TEMPERATURE RATIO, TT/TTE, X

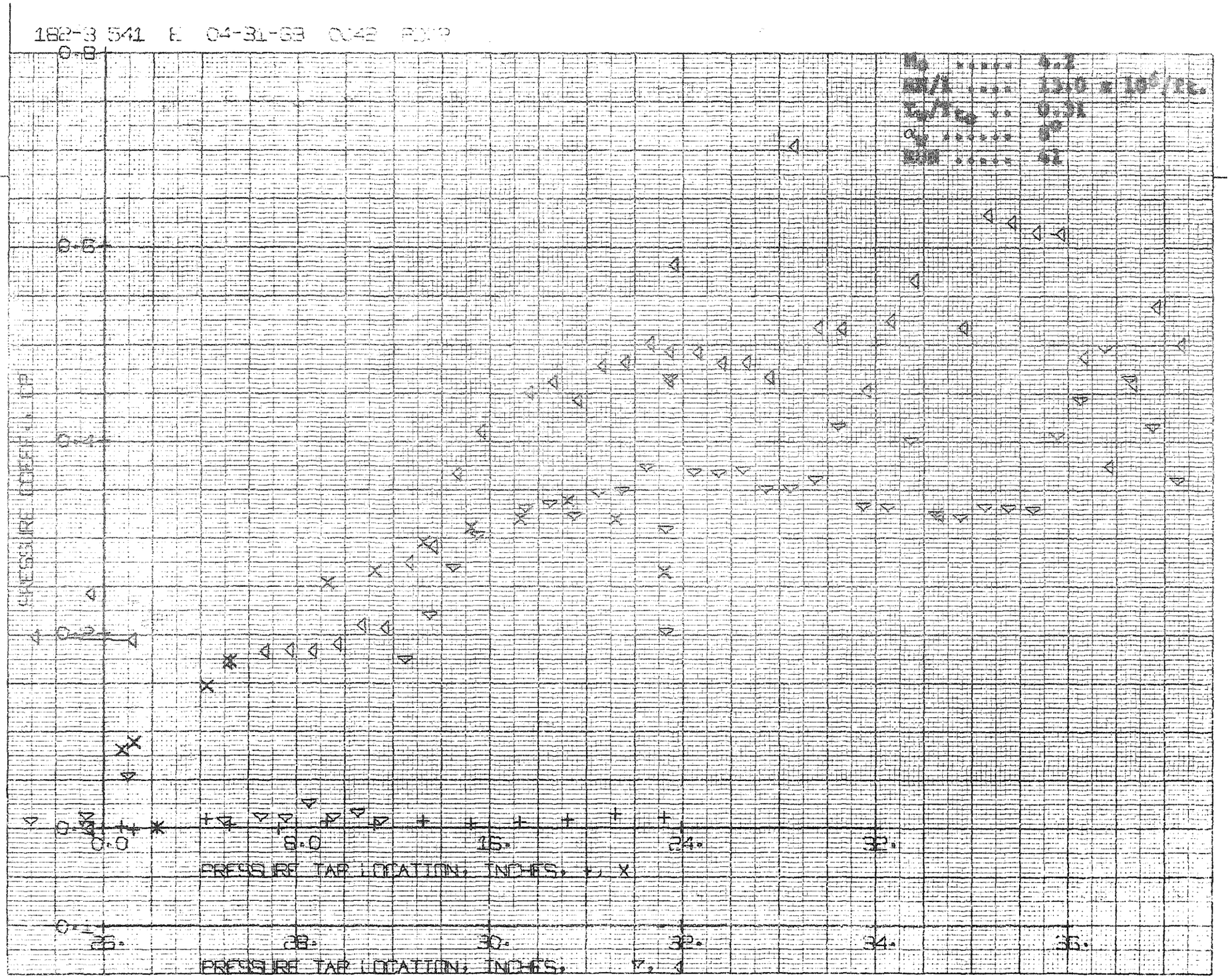
182-3 041 A 04-31-69 0050 PD01



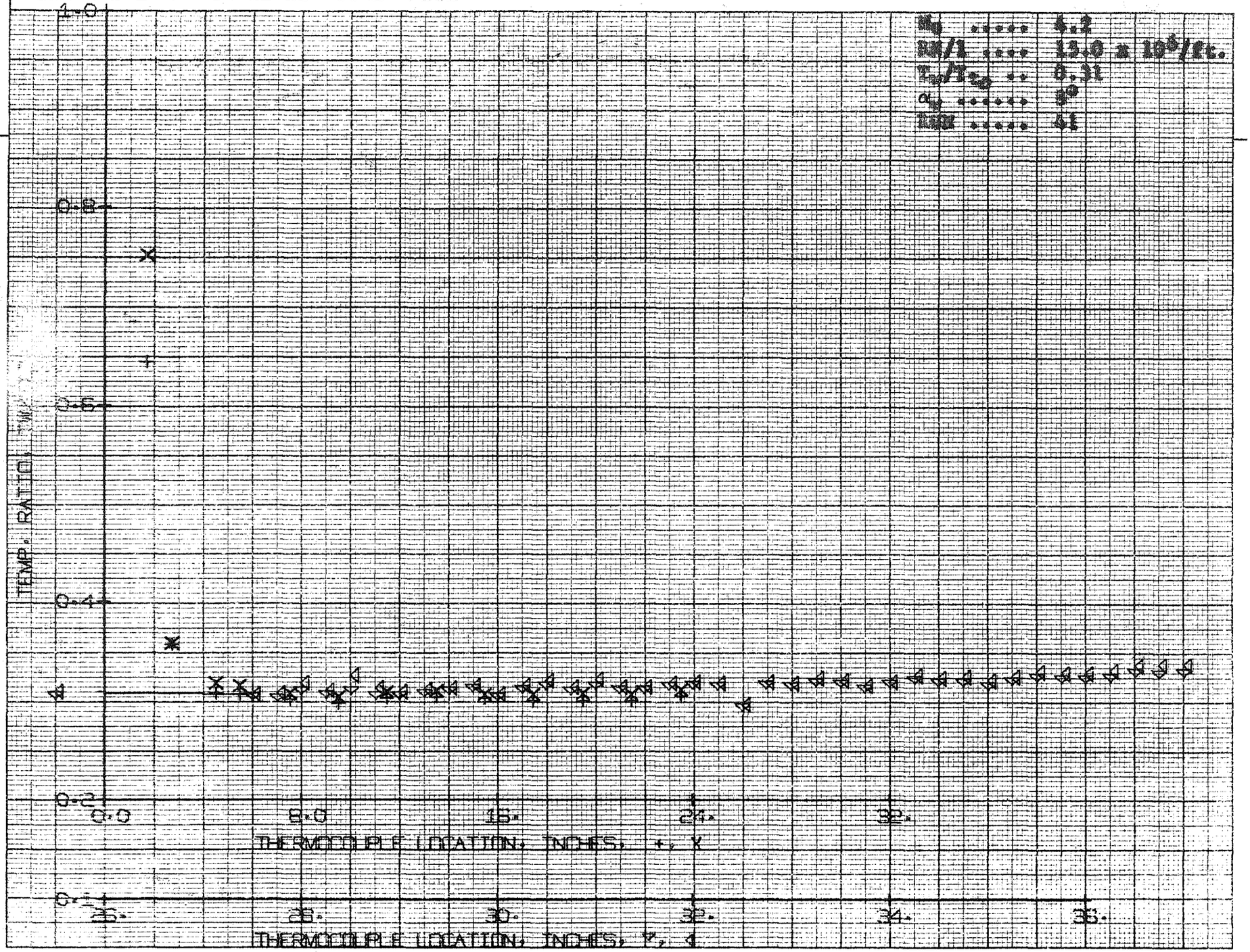

182-3 041 B 04-31-69 0050 PD01
M_∞ 4.2
RN/1 .... 15.0 x 10^6/ft.
T_w/T_{t_0} .. 0.31
α_w ..... 8°
RUN 41
PROBE HEIGHT, Y, INCHES
0.0
0.2
0.4
0.6
0.8
-0.0
0.2
0.4
0.6
0.8
1.0
PT'/PTO, +
PROBE PRESS. COEFF. CP-61, X

182-3 041 D 04-31-69 0050 PD01



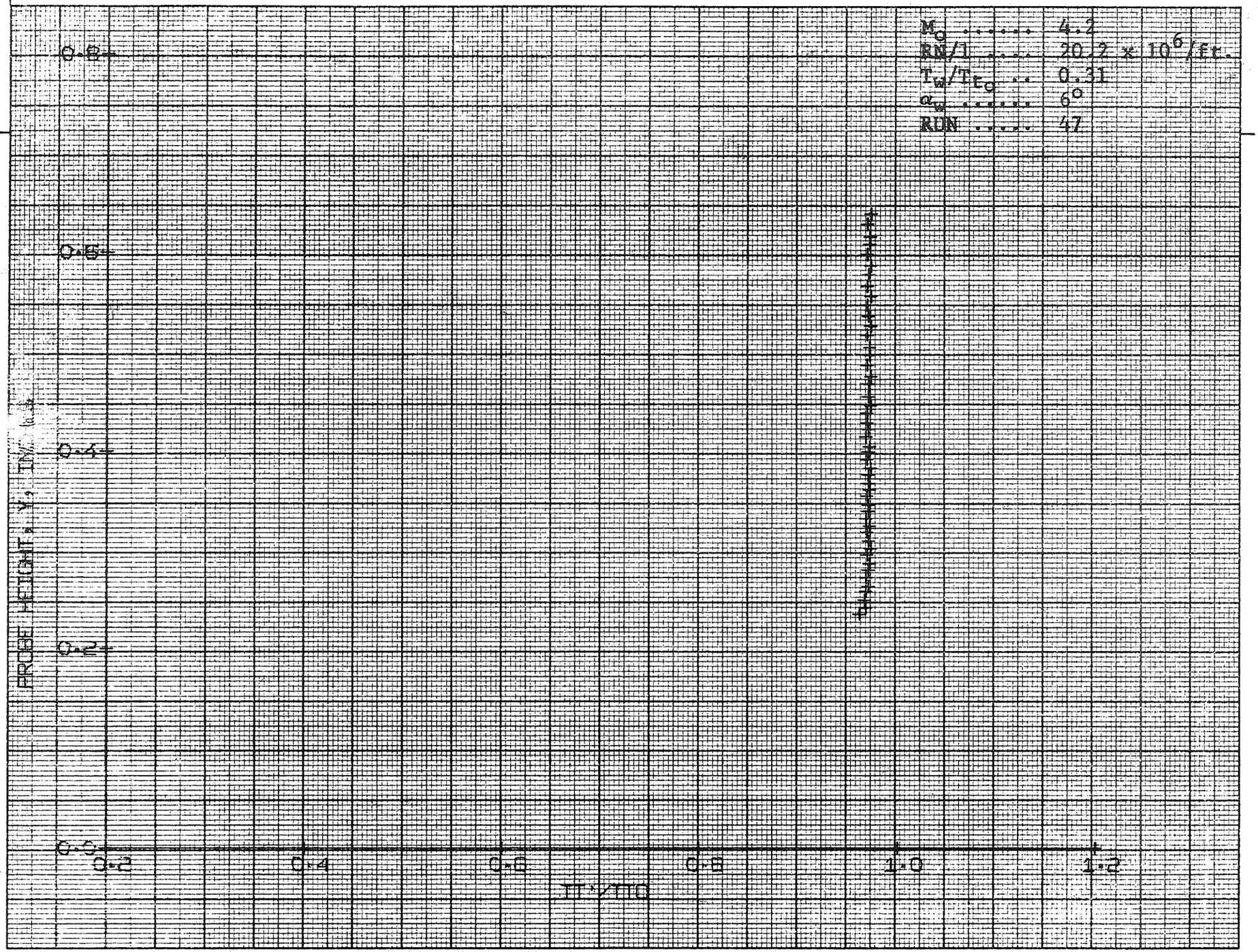

182-3 541 E 04-31-63 0042 FOP
PRESSURE TAP LOCATION, INCHES, +, X
PRESSURE TAP LOCATION, INCHES,
0.0
8.0
16.
24.
32.
20.
28.
30.
32.
34.
36.
0.8
0.6
0.4
0.2
0.0

182-3 541 F 04-31-69 0042 PD02

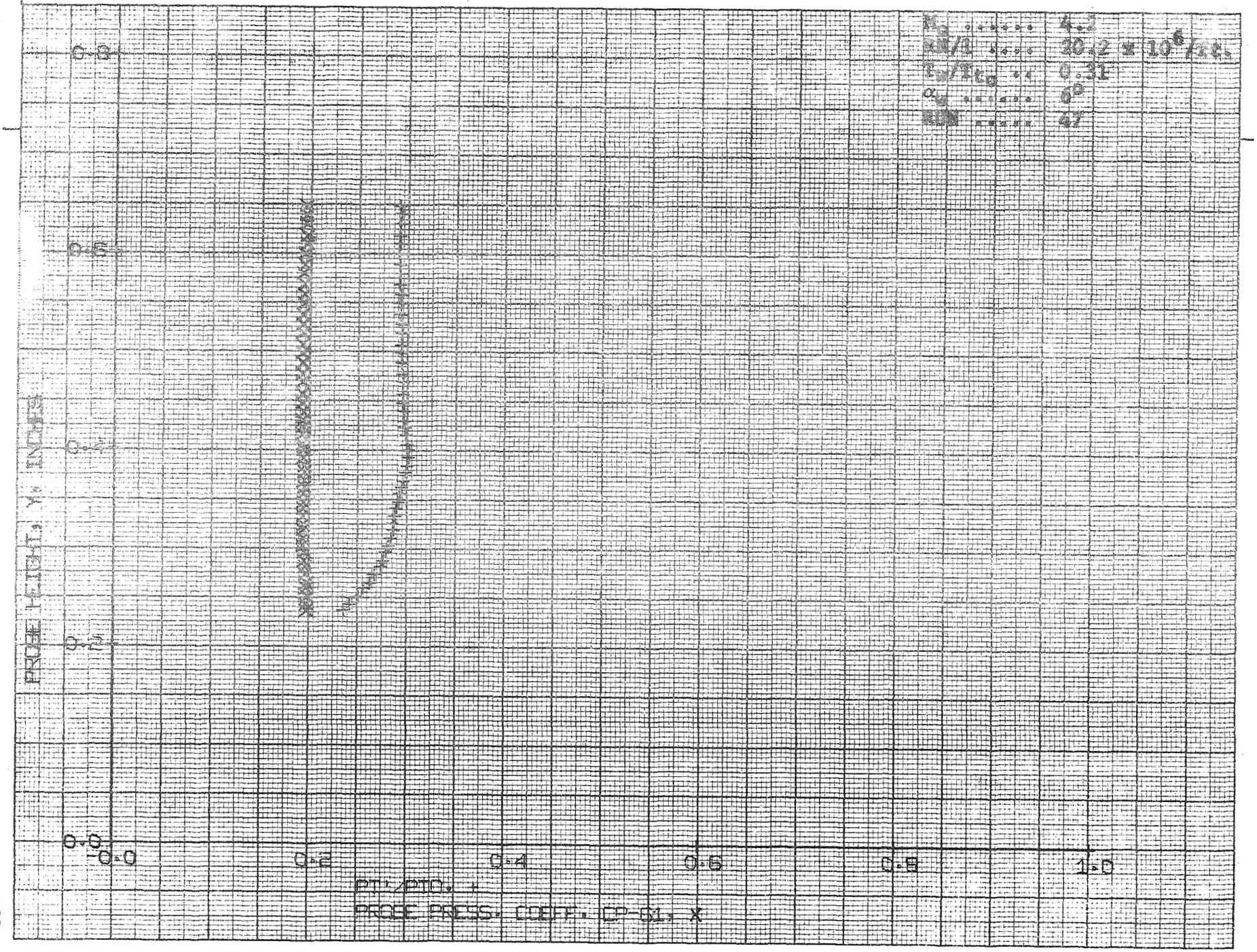


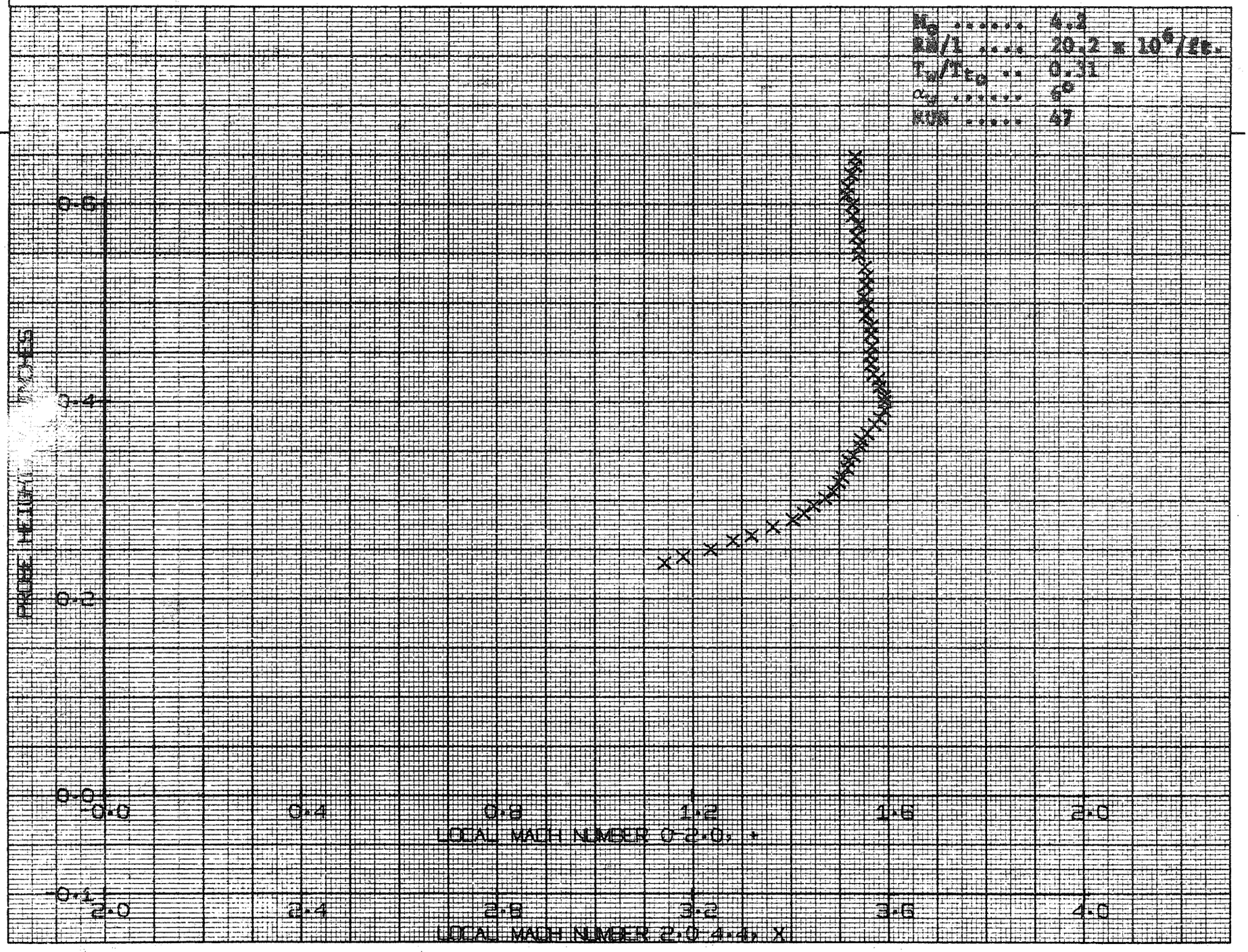
182-3 041 G 06-02-69 1931 PD03
PROF TO BLNDARY LAYER HEIGHT RATIO V/DELTA
0.0
0.4
0.8
1.2
VELOCITY RATIO, V/VE, +
TEMPERATURE RATIO, TT/TTE, X

182-3 047 A 05-01-69 2220 PD01

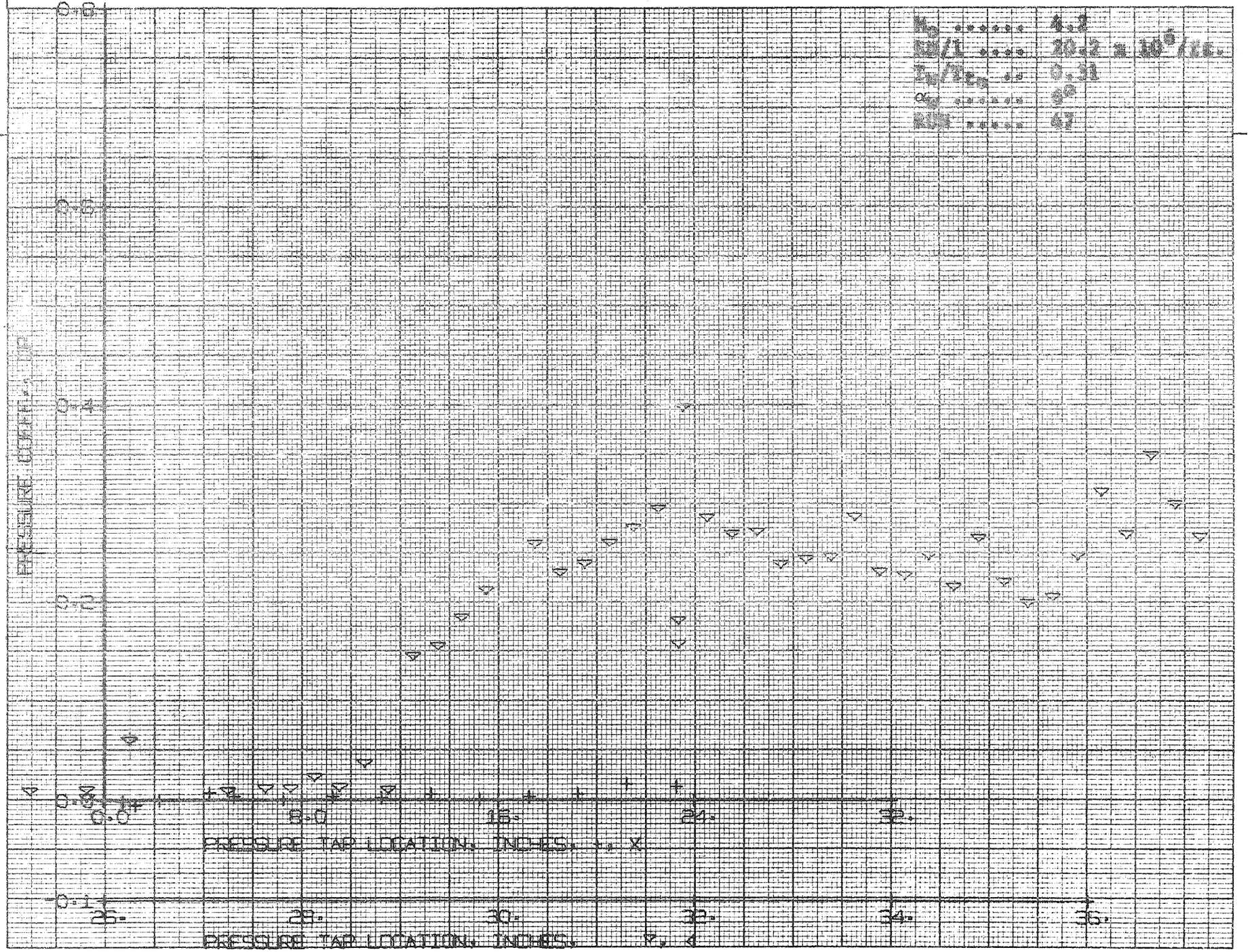


182-3 047 B 05-01-69 0858 PD01

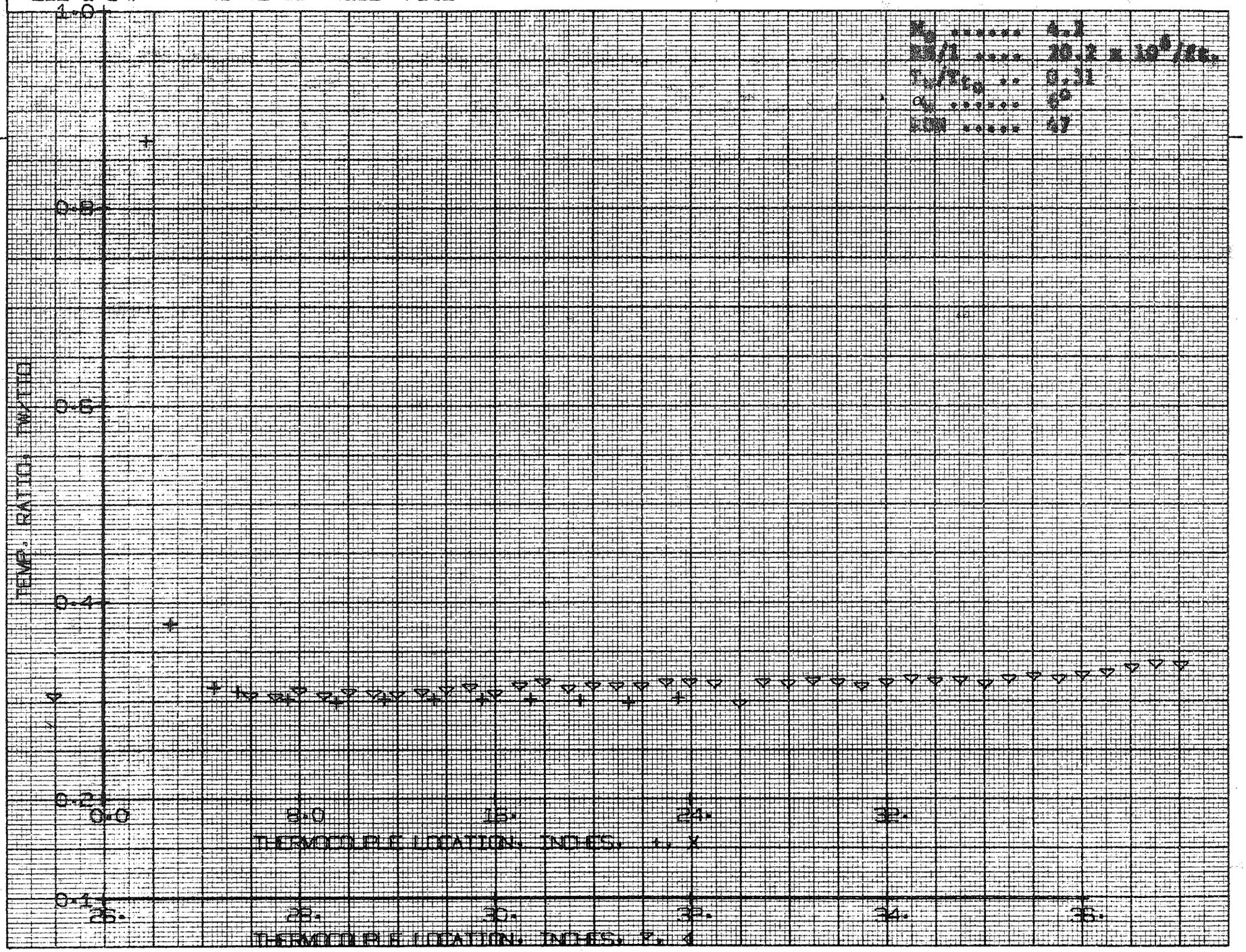



M_∞ 4.3
RN/1 .... 20.2 x 10^6/ft.
T_w/T_{t_0} .. 0.31
α_g ..... 6°
RUN 47
PROBE HEIGHT, INCHES
0.6
0.4
0.2
0.0
-0.1
0.0
0.4
0.8
1.2
1.6
2.0
LOCAL MACH NUMBER 0-2.0, •
2.0
2.4
2.8
3.2
3.6
4.0
LOCAL MACH NUMBER 2.0-4.4, X

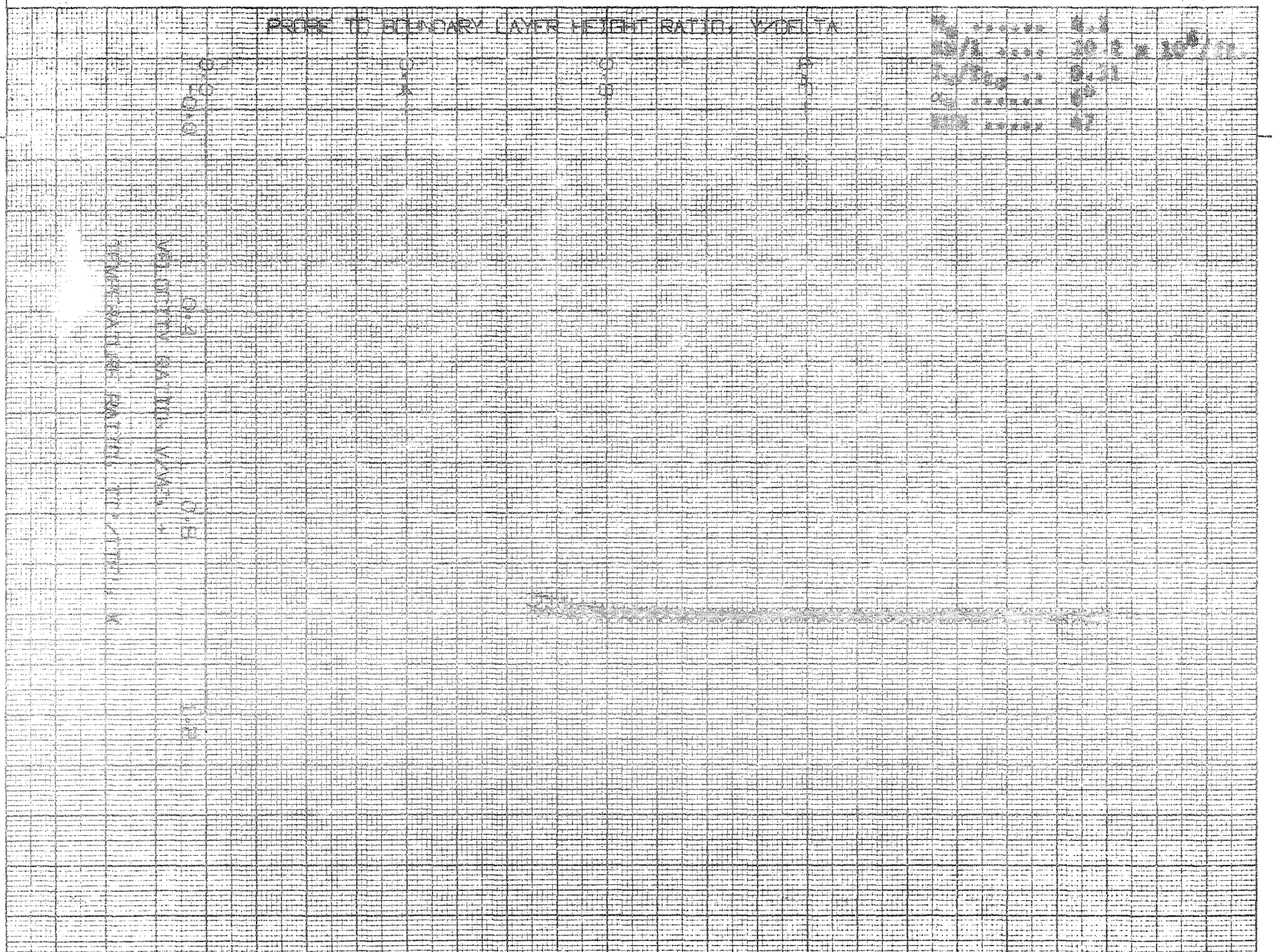
182-3 547 E 05-01-69 0851 PD02



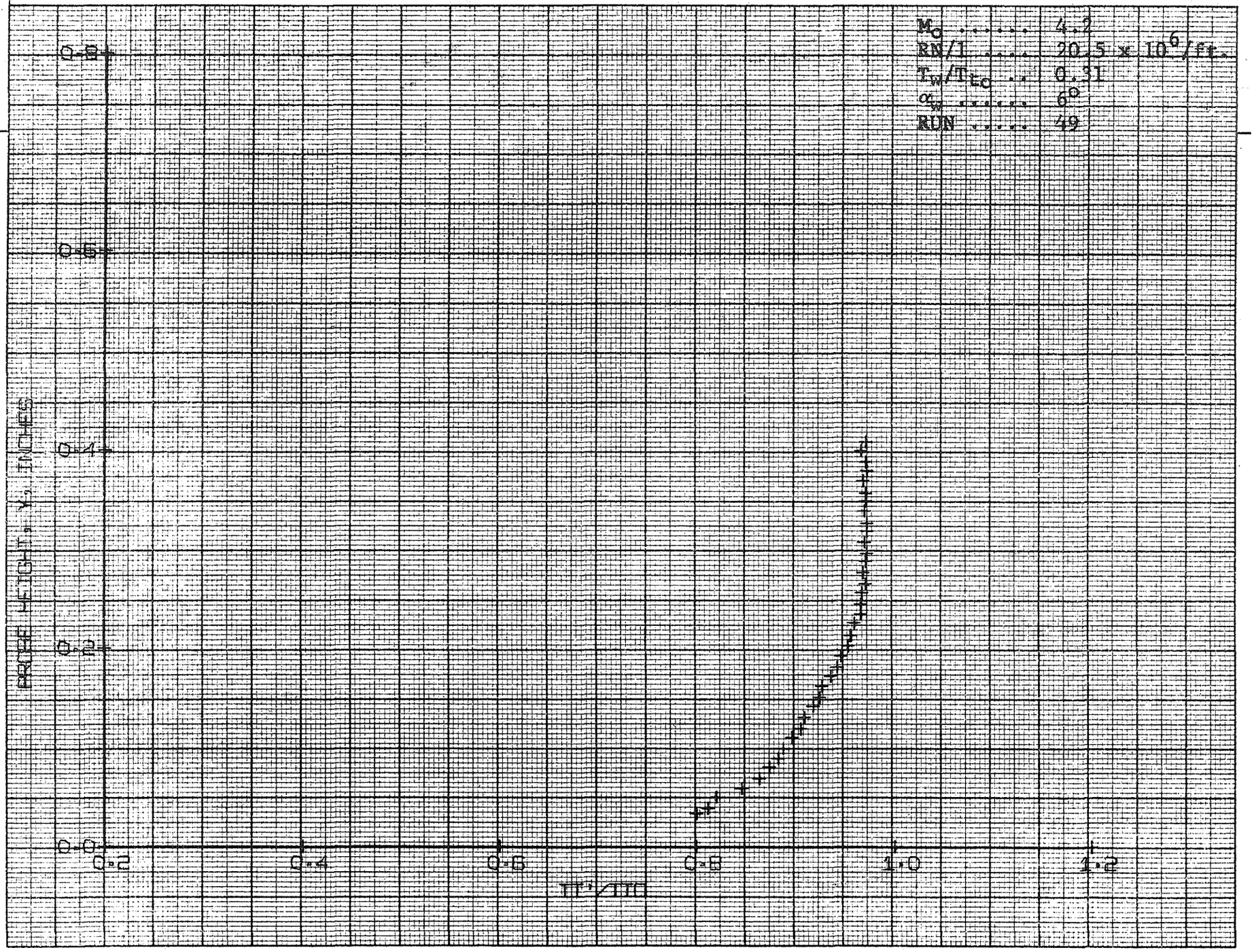
182-3 547 F 05-01-69 0851 PD02



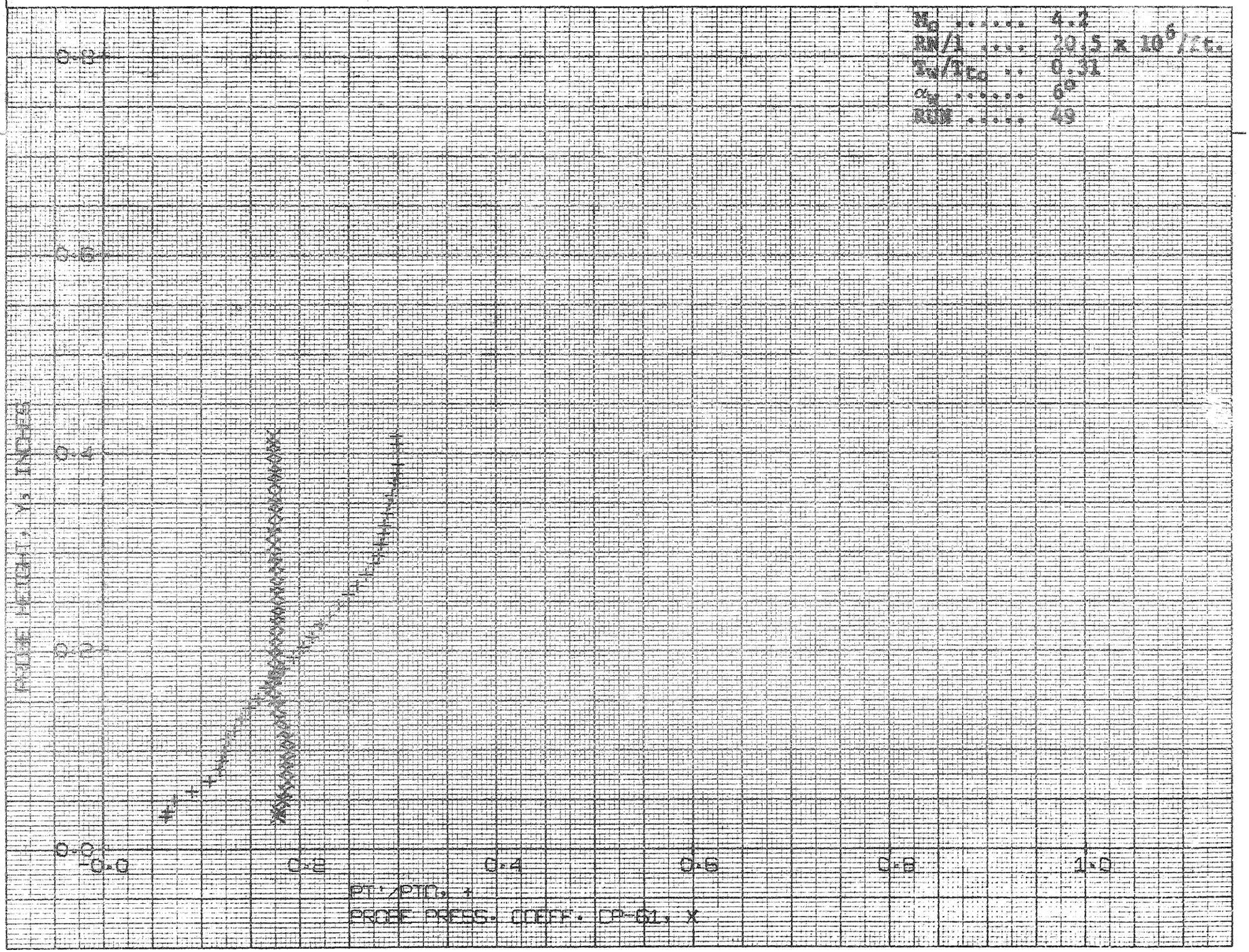
182-3 047 G 06-02-69 2048 P003



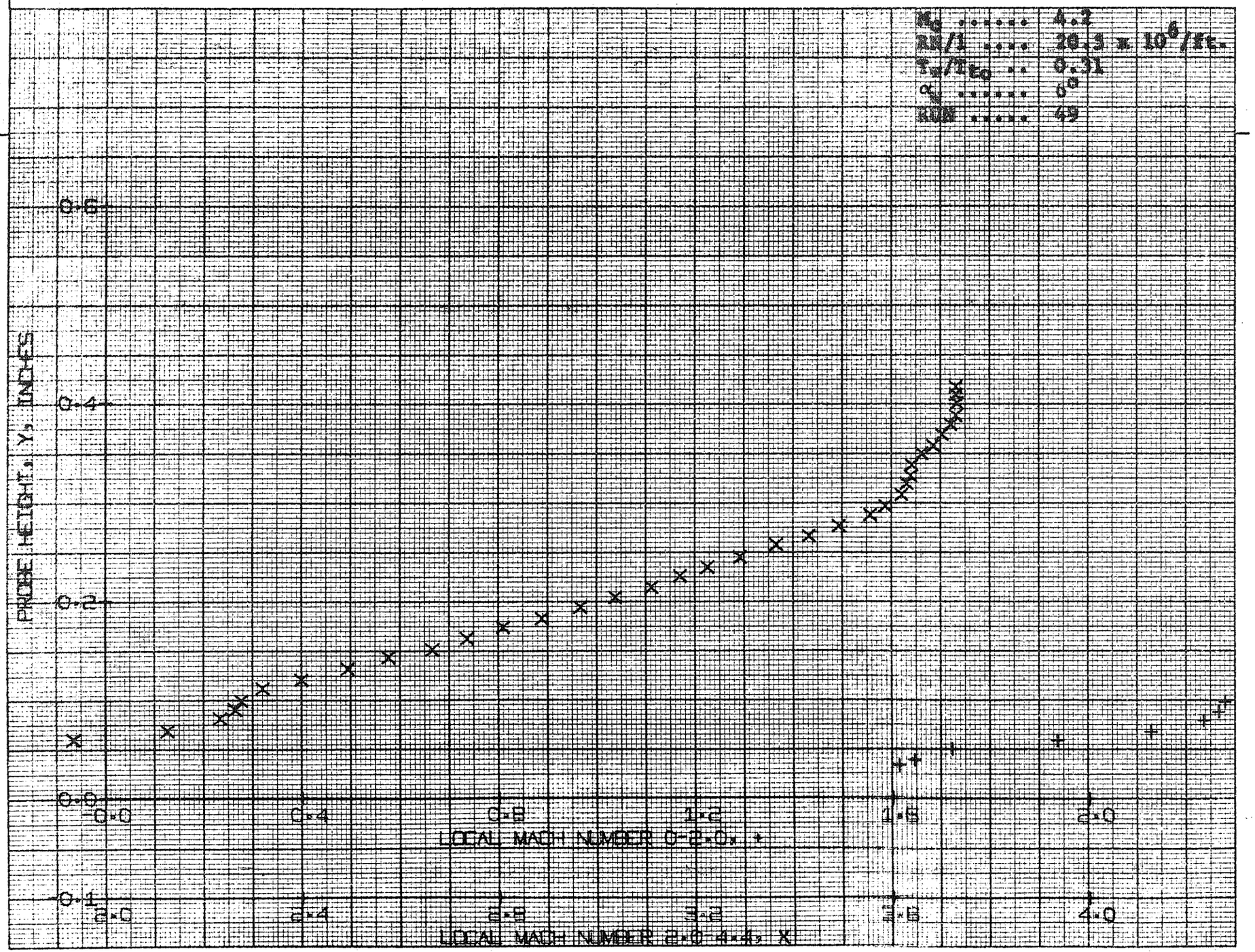
182-3 049 A 05-01-69 2228 PD01



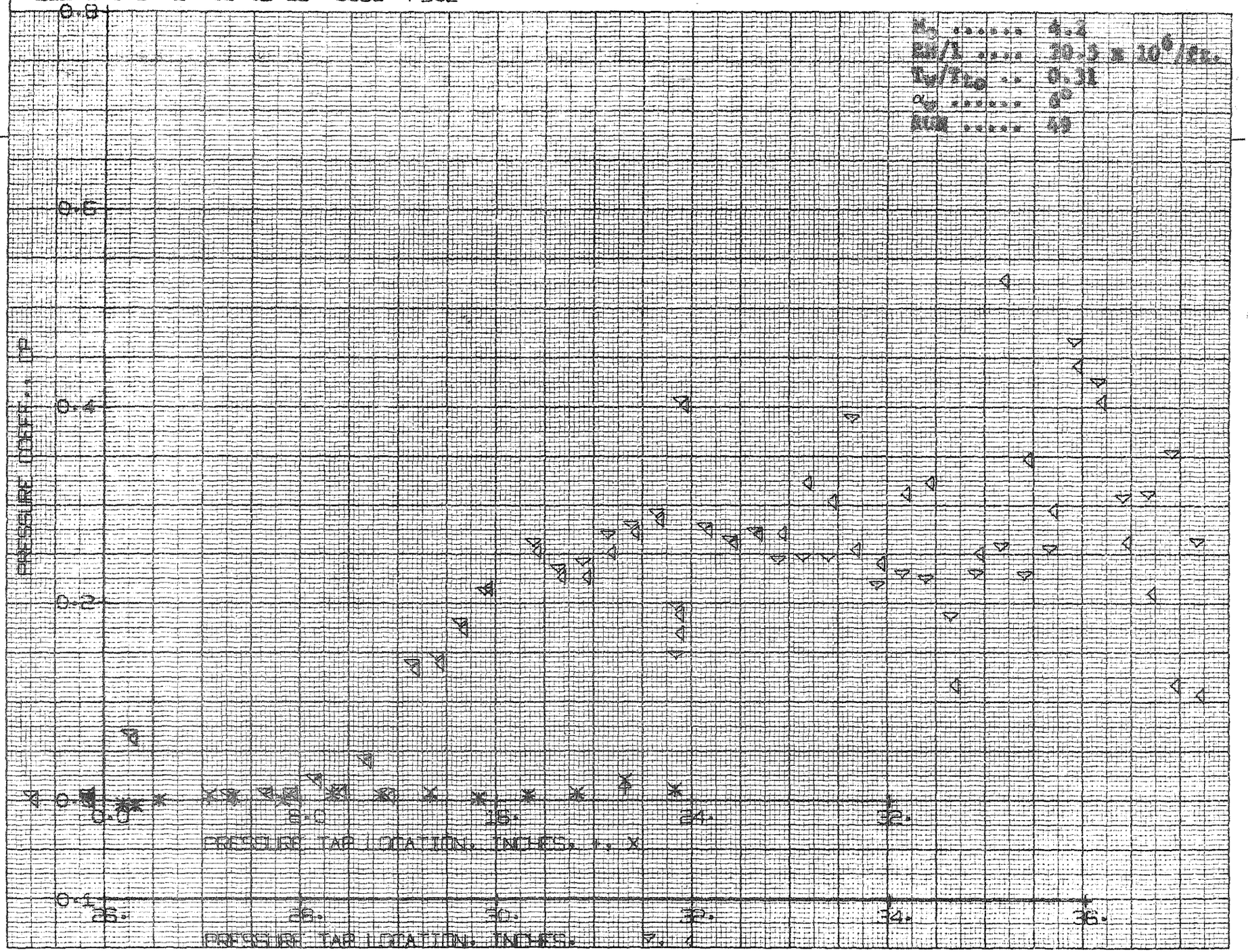
182-3 049 B 05-01-69 0947 PD01



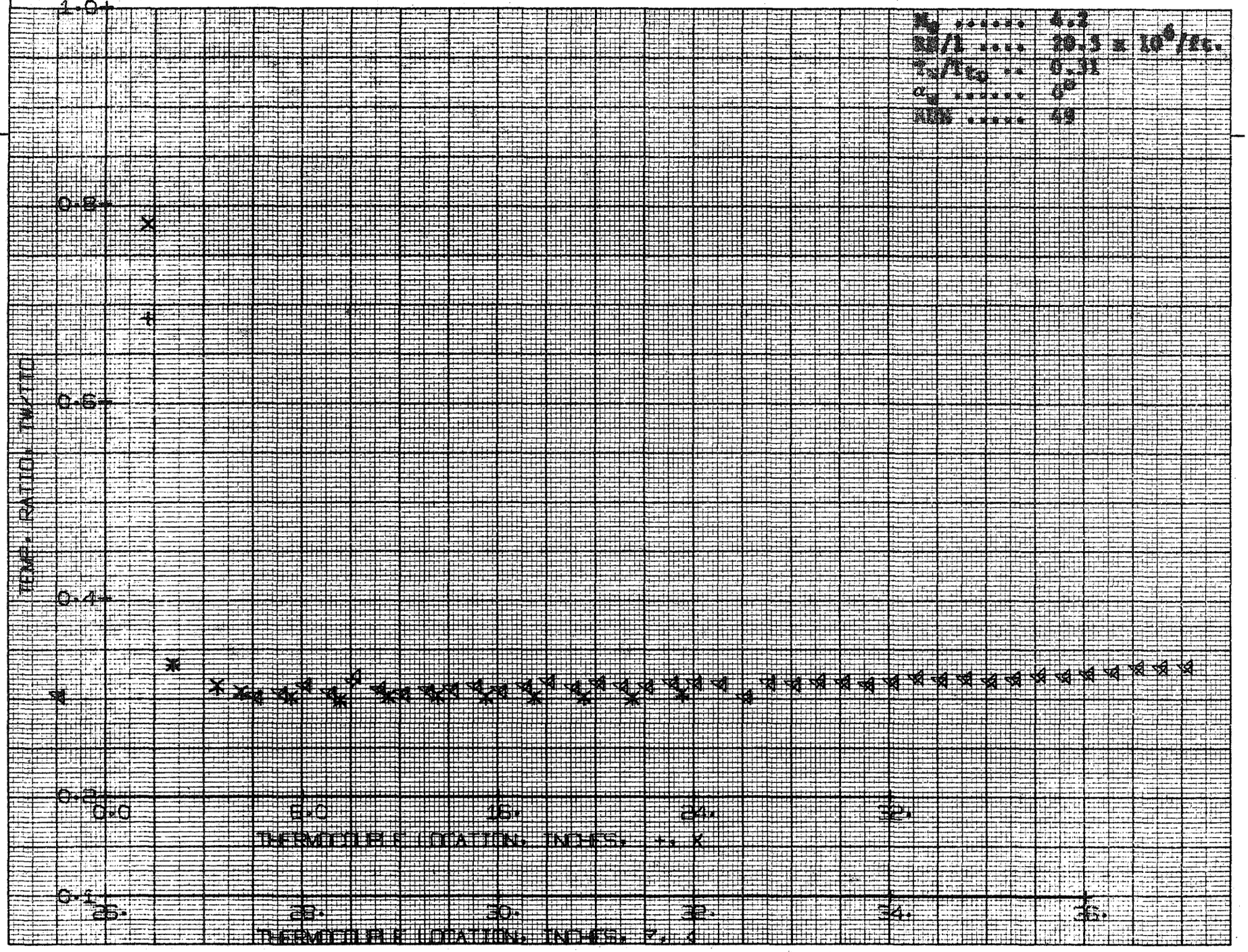
182-3 049 D 05-01-69 0947 PD01



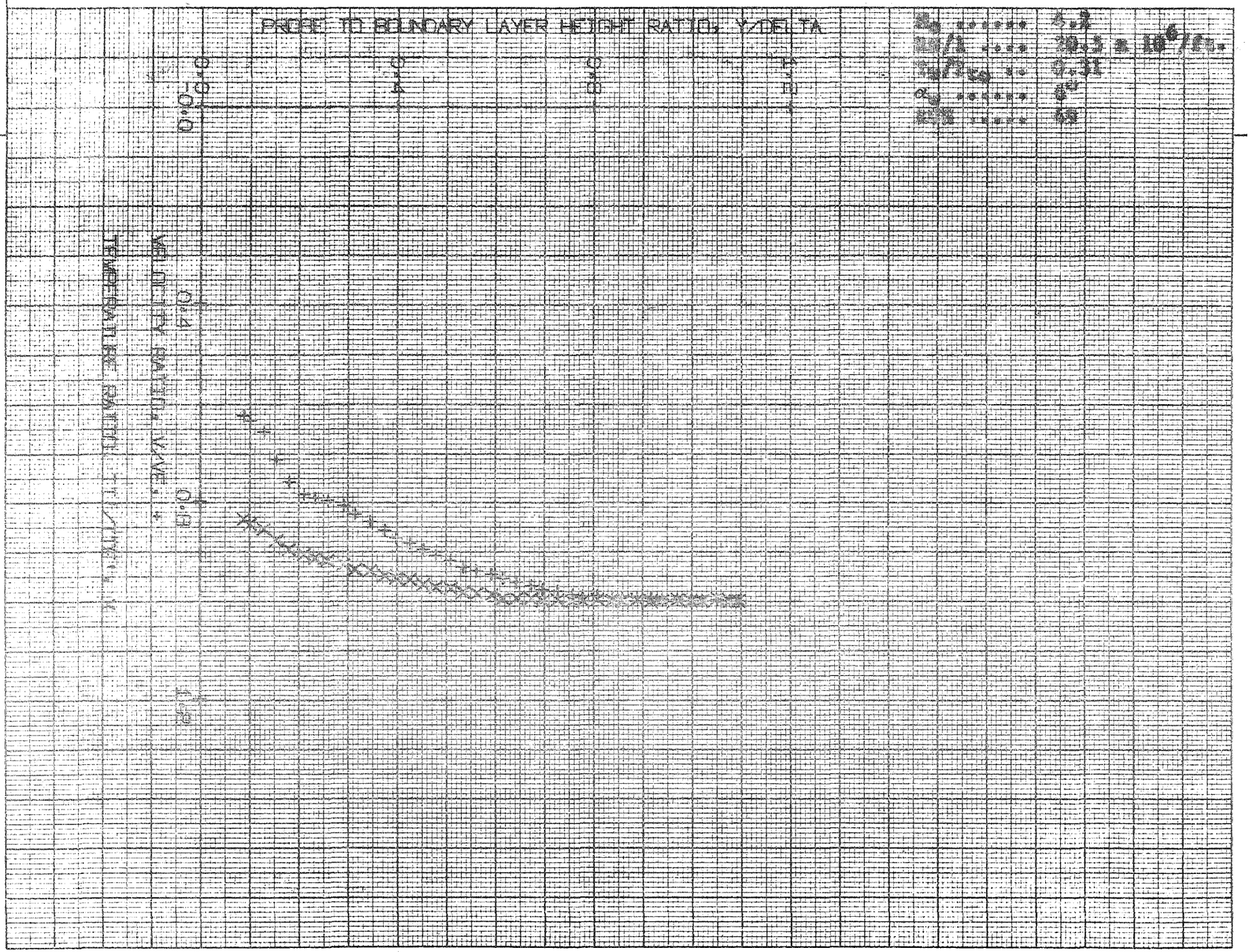
182-3 548 E 05-01-69 0353 PD02



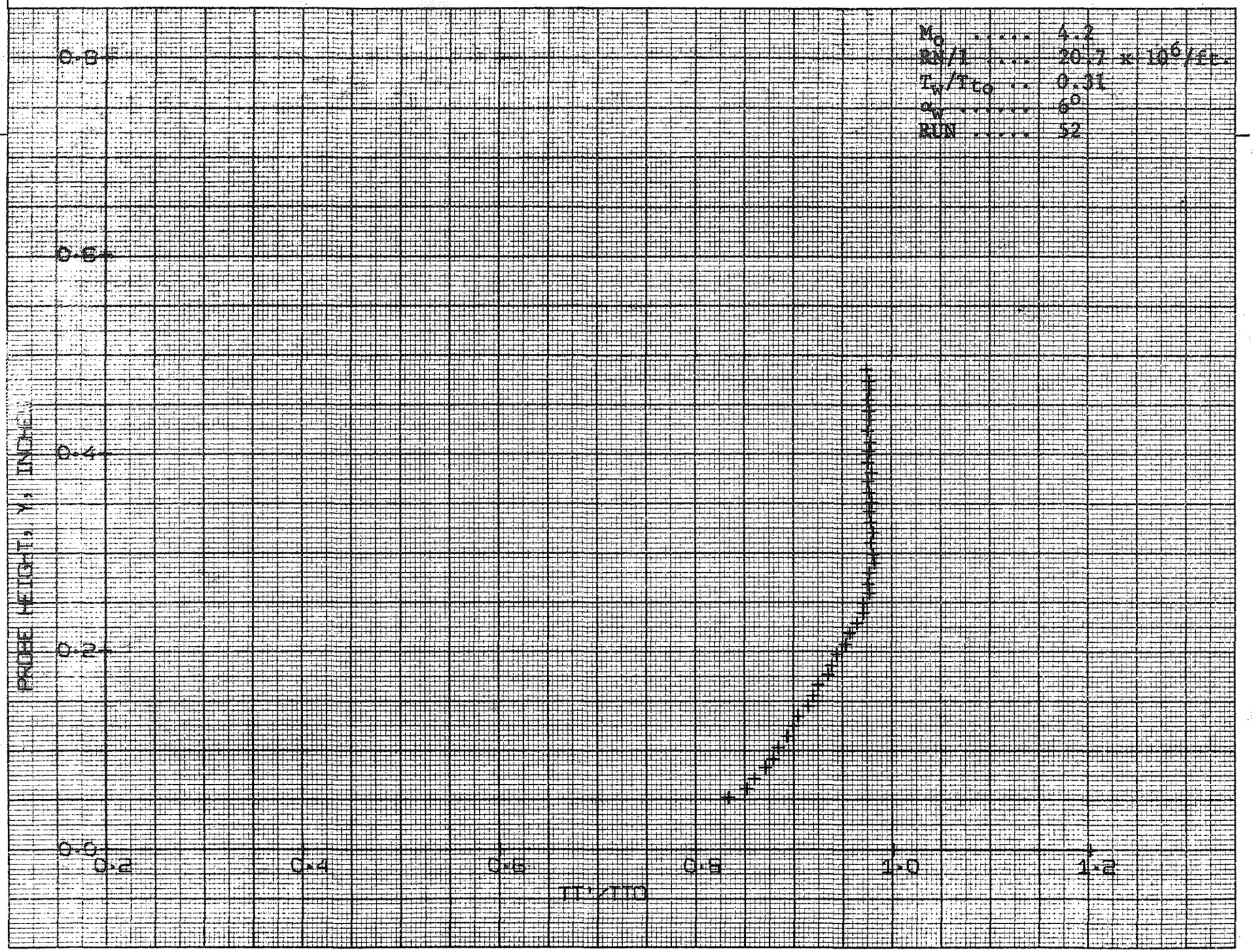
182-3 549 F 05-01-69 0953 P002



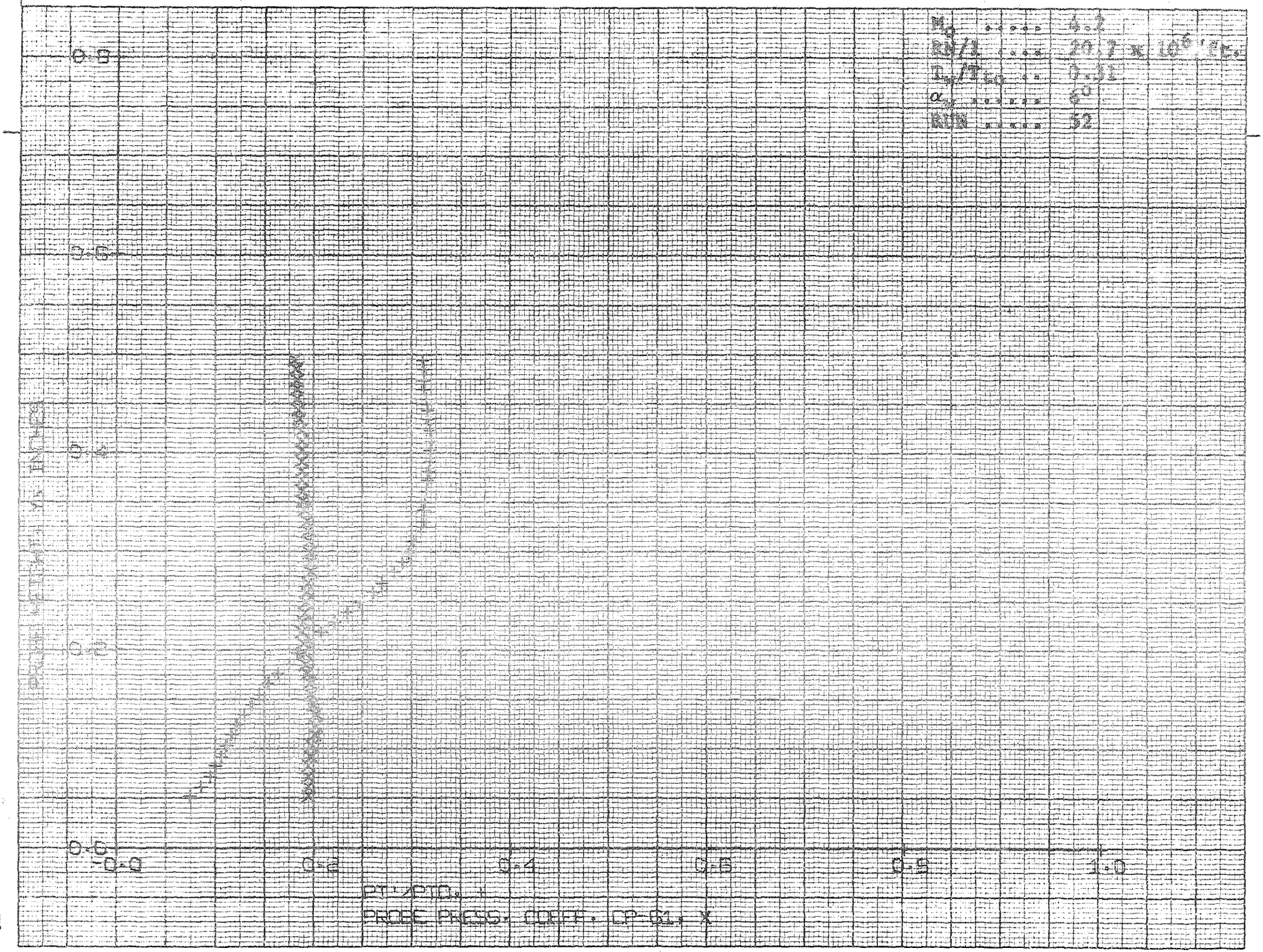
182-3 049 G 06-02-69 2108 P003



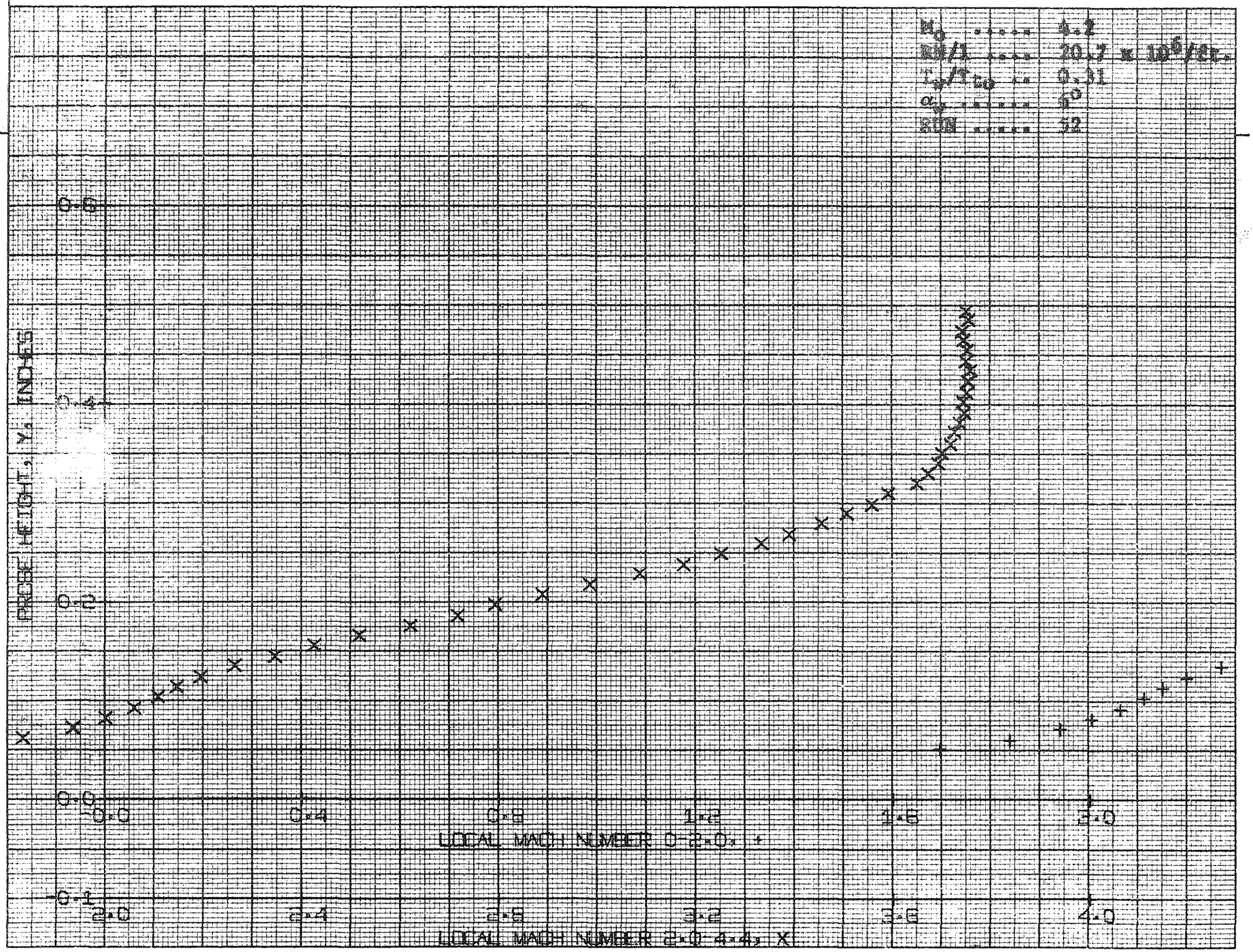
182-3 052 A 05-01-69 1418 PD01



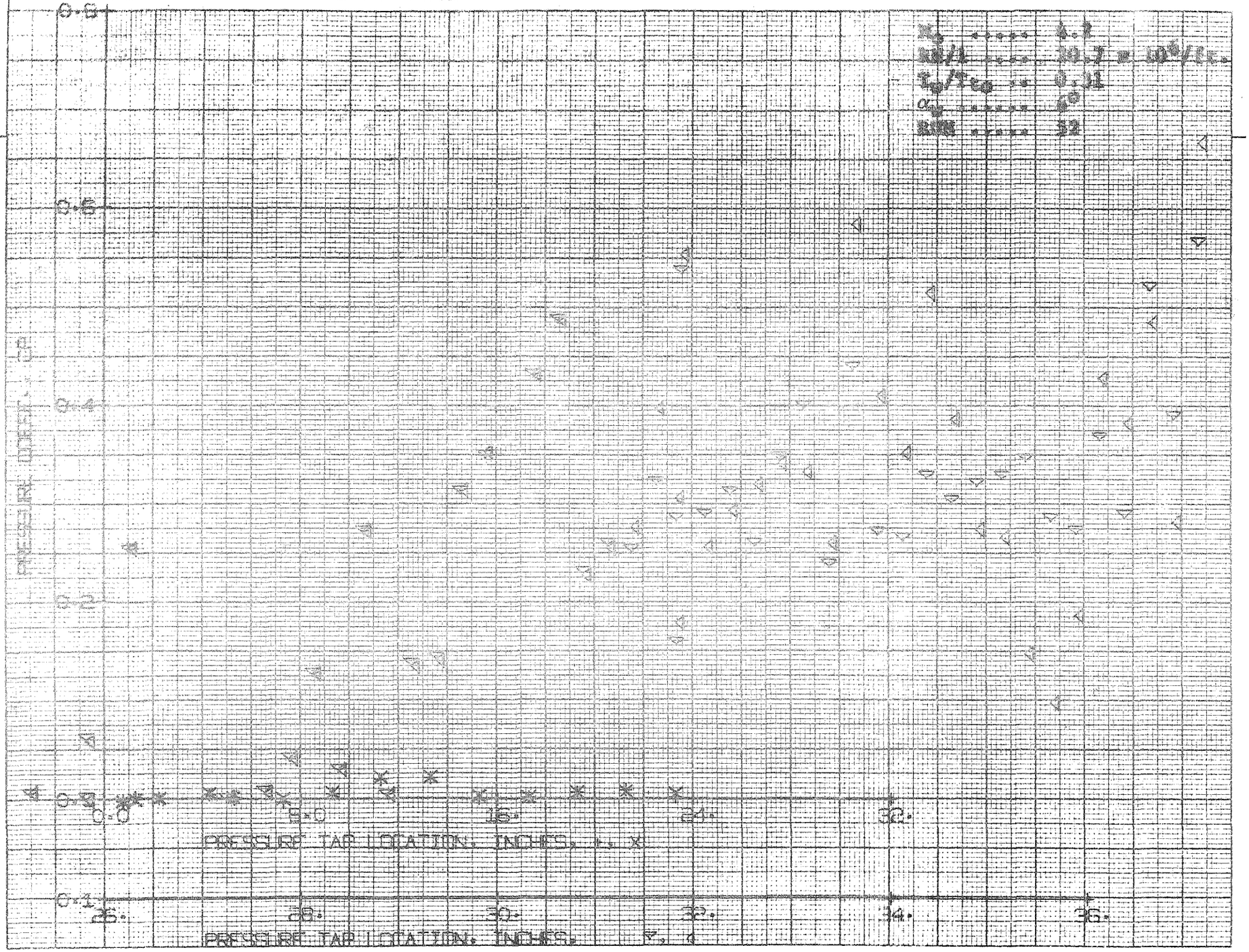
182-3 052 B 05-01-69 1418 PD01



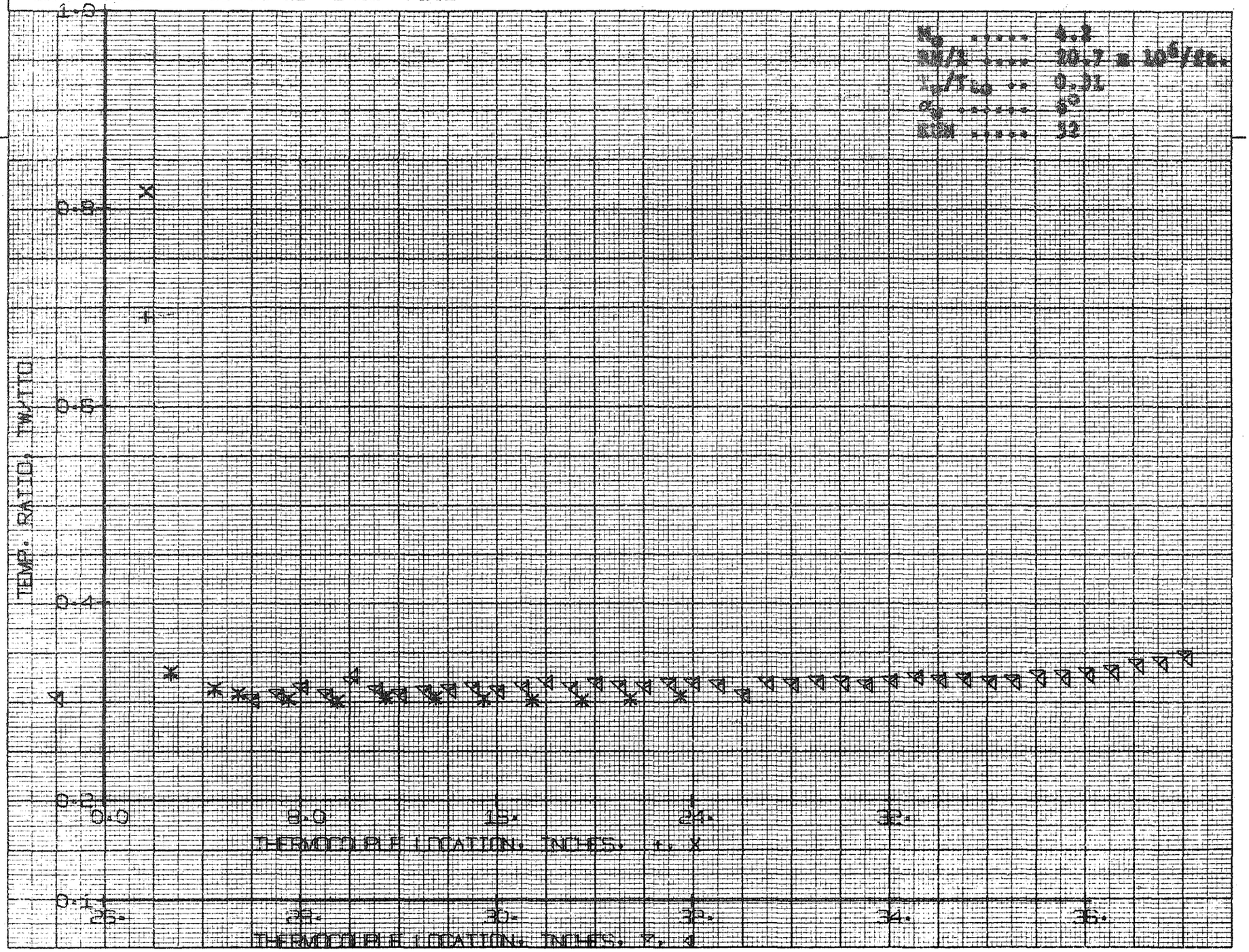
182-3 052 D 05-01-69 1418 PD01



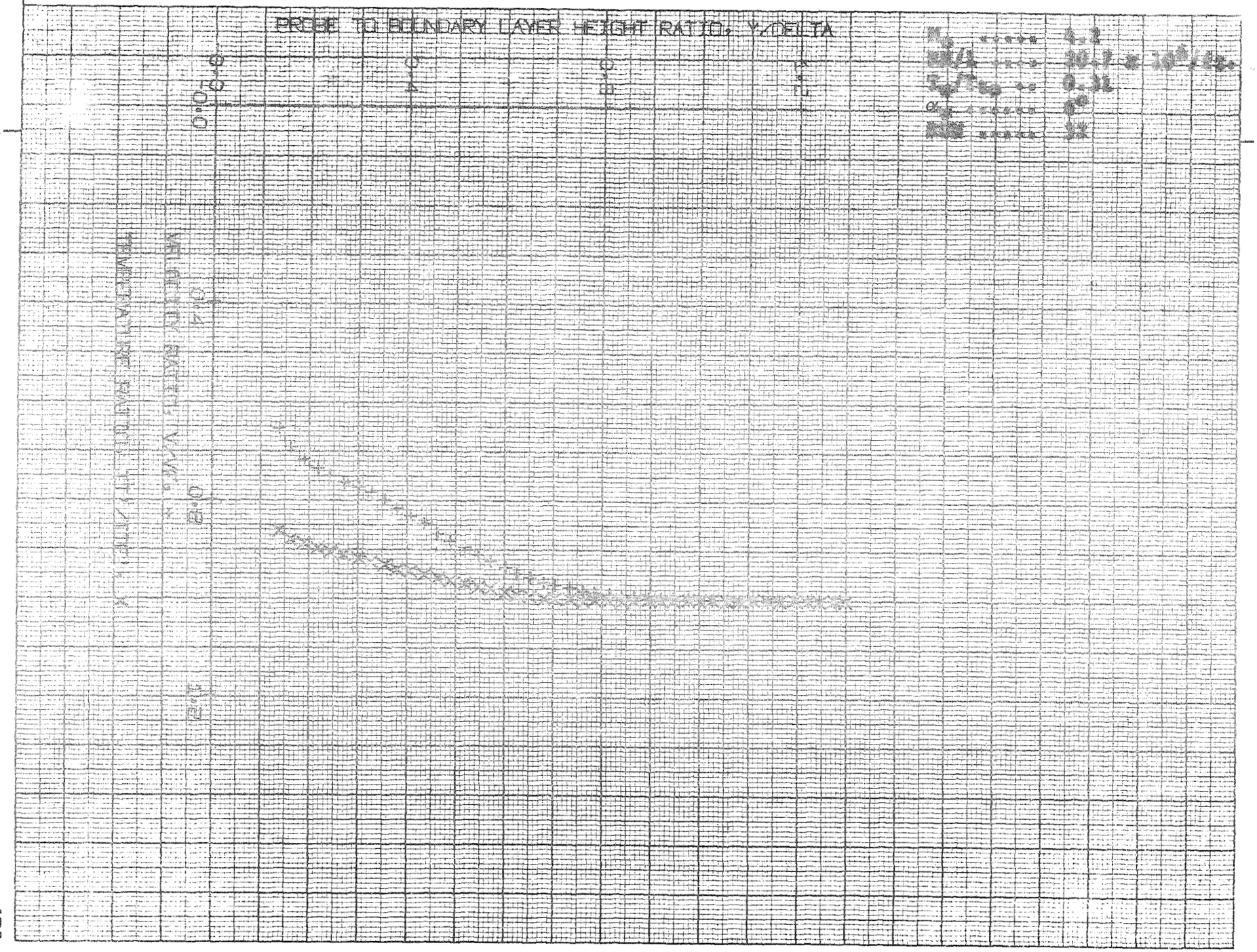
182-3 5552 E 05-01-69 1408 P002



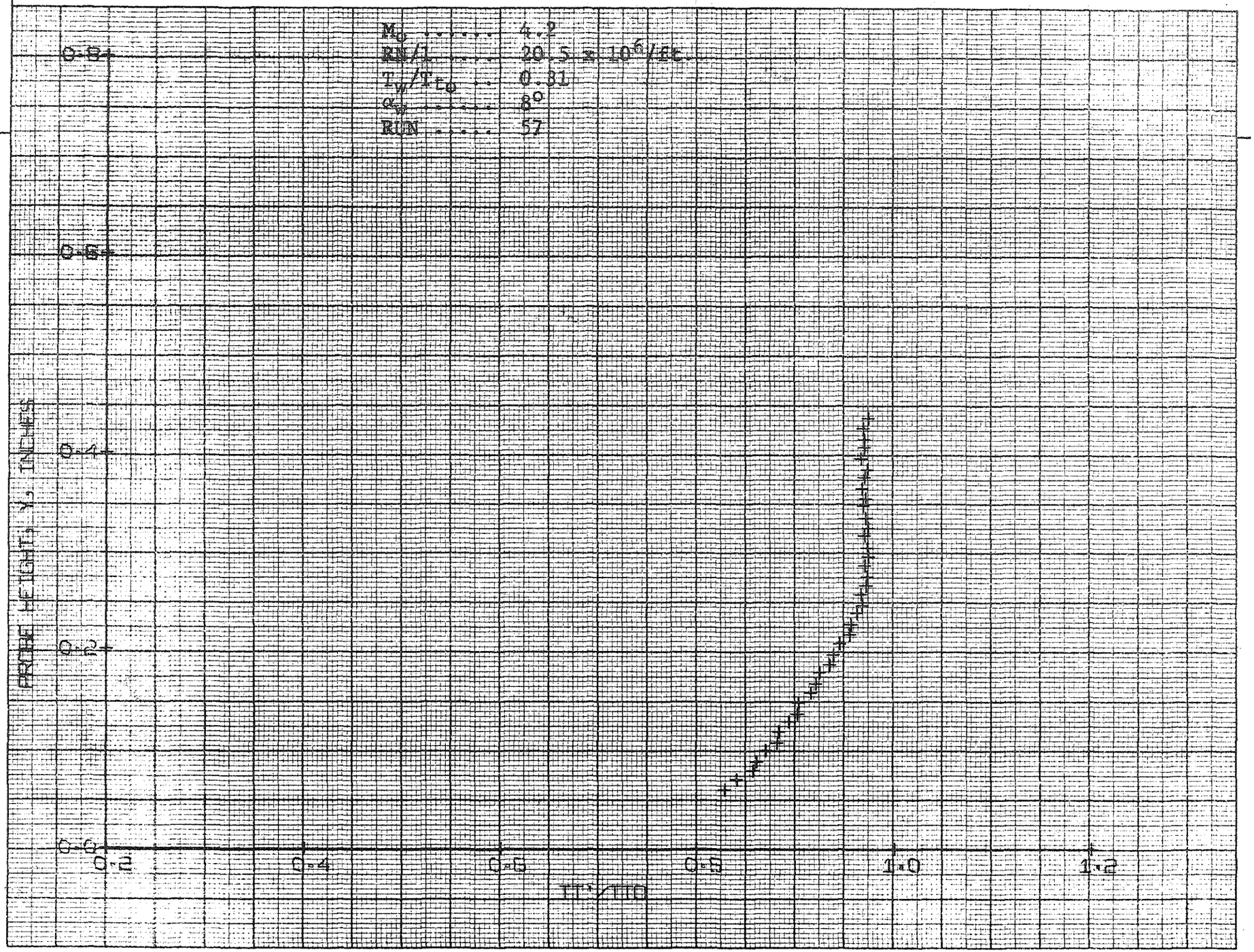
182-3 552 F 05-01-69 1409 PD02

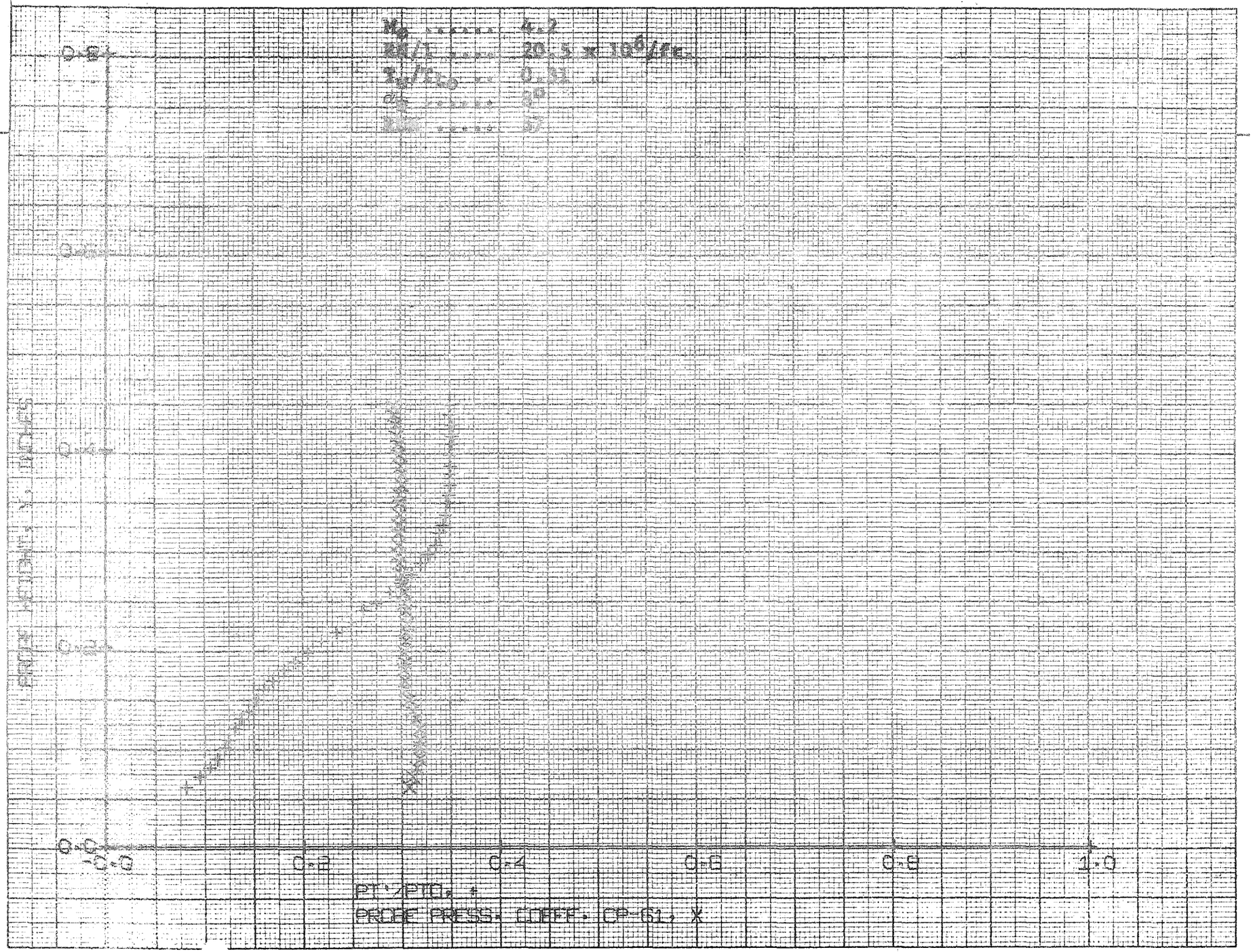


182-3 052 G 06-02-69 2207 PD03

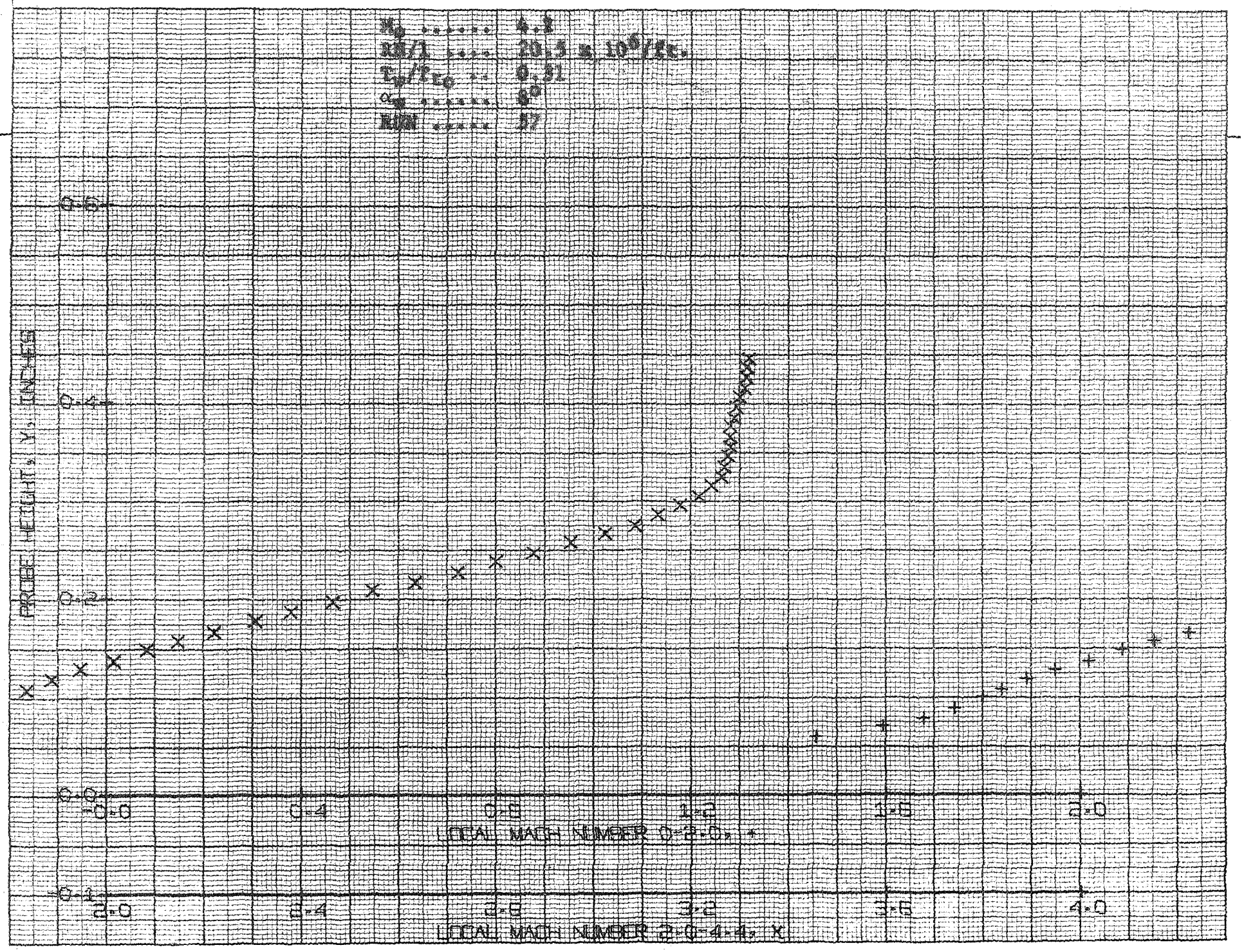


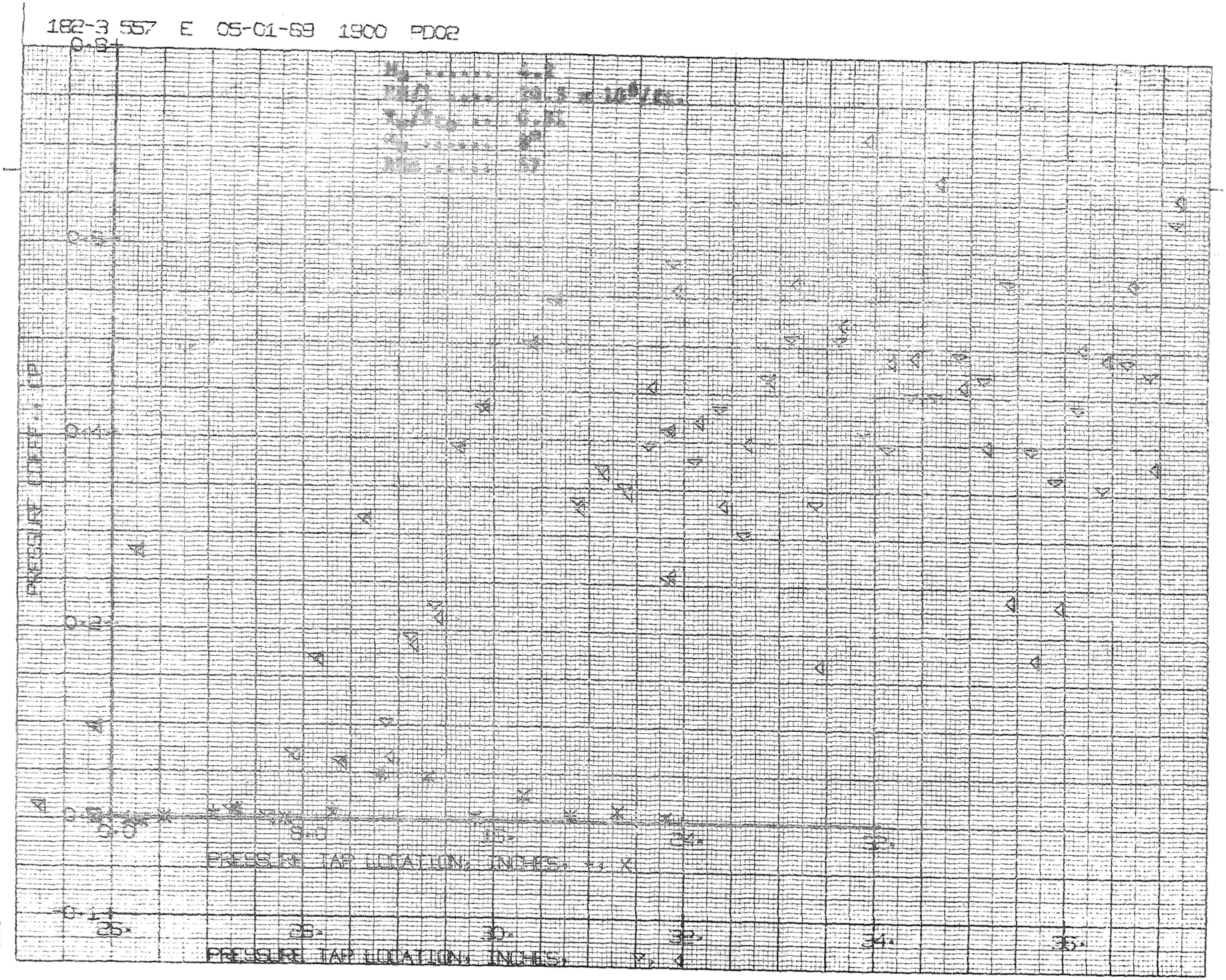
182-3 057 A 05-01-69 1856 PD01



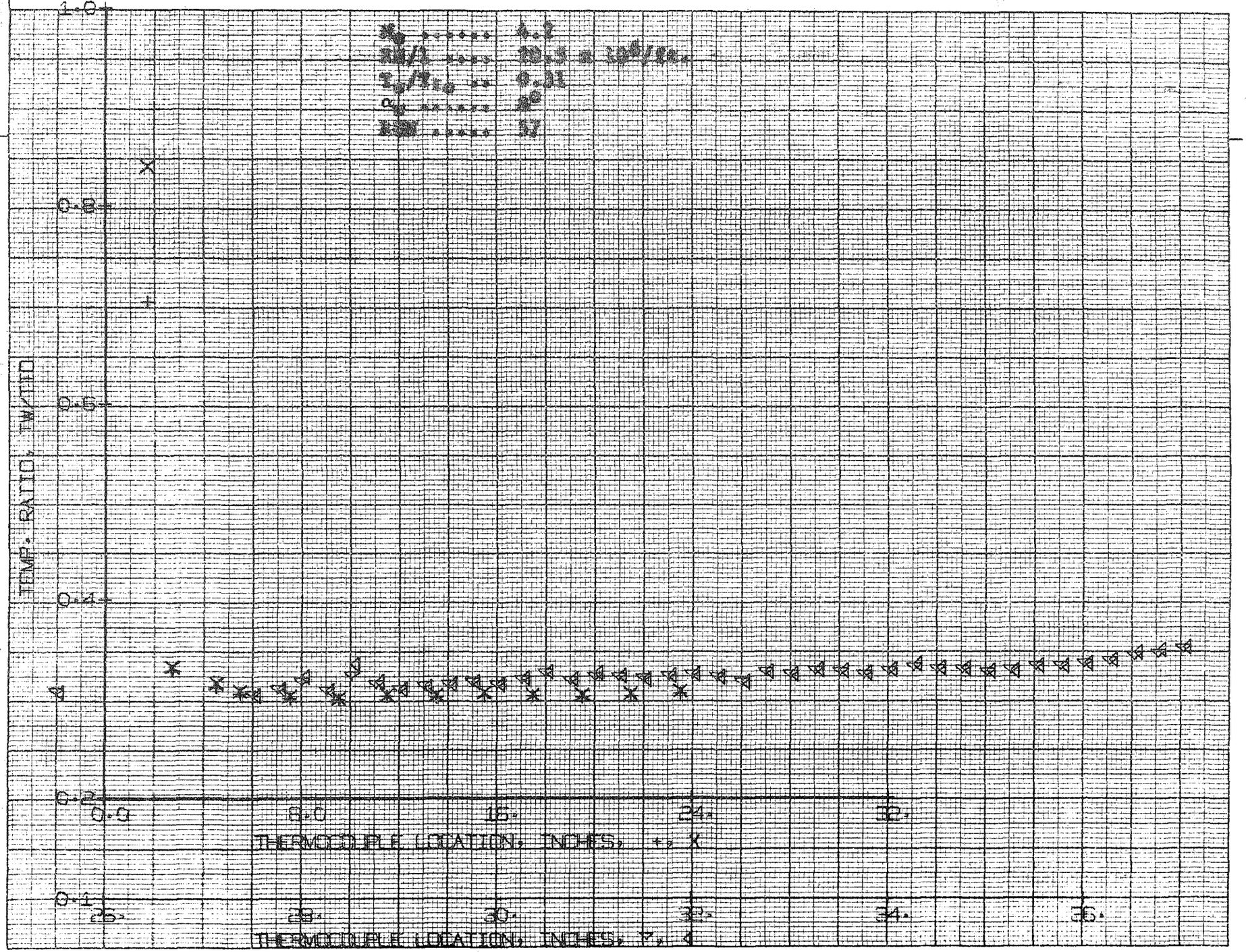
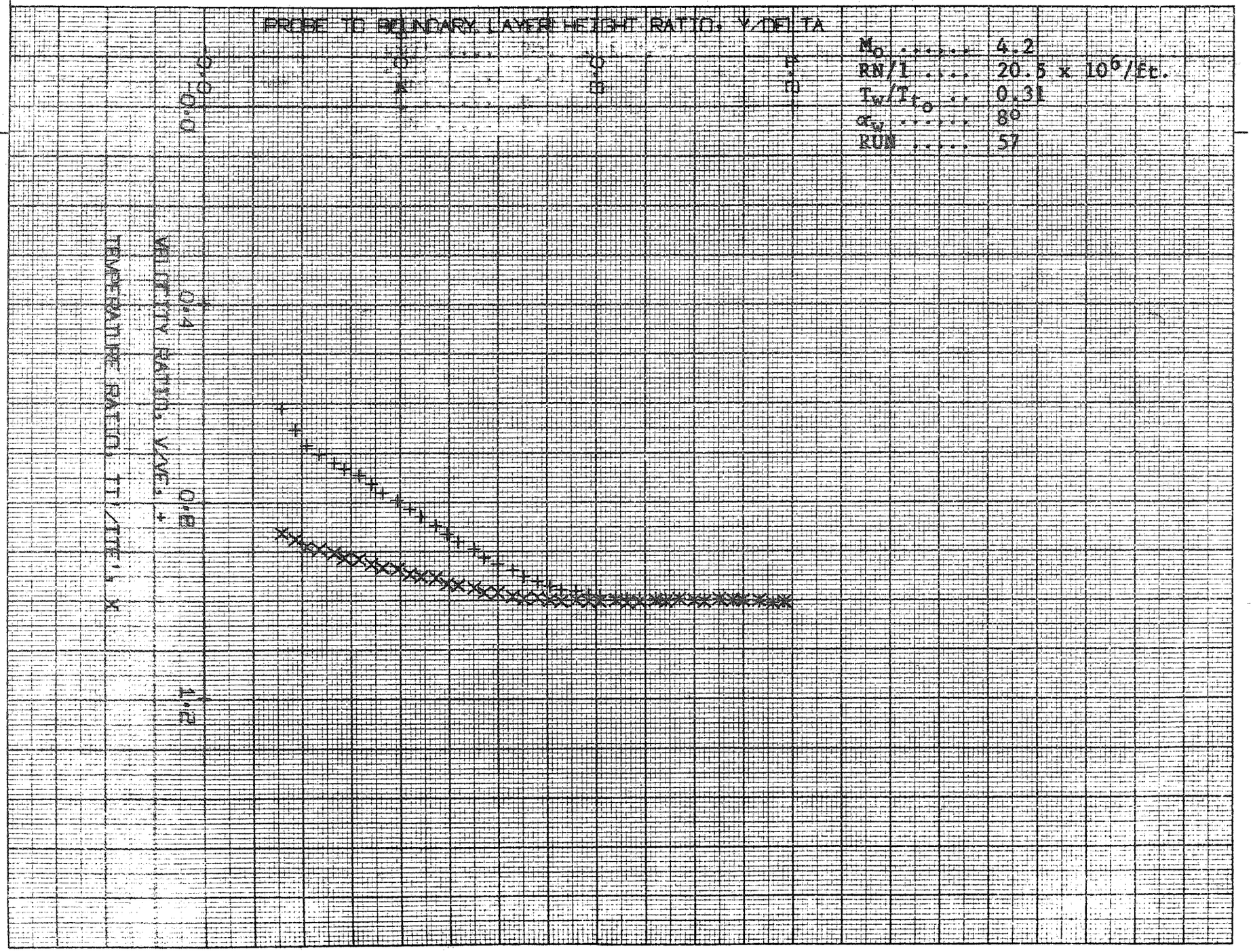

M_0 ..... 4.2
RE/ft ..... $20.5 \times 10^6/ft.$
T_w/T_0 ..... 0.53
δ ..... 0.25 in.
γ 3
0.8
0.6
0.4
0.2
0.0
PROBE HEIGHT Y, INCHES
0.0
0.2
0.4
0.6
0.8
1.0
PT'/PTO, +
PROBE PRESS. COEFF. CP-61, X

182-3 057 D 05-01-69 1656 PD01




182-3 557 E 05-01-69 1900 PD02
PRESSURE (DEF.), PSF
PRESSURE TAP LOCATION, INCHES, X
PRESSURE TAP LOCATION, INCHES,

182-3 557 F 05-01-69 1900 PD02



182-3 C57 G 06-02-69 2241 PD03