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(NASA-CR-117704) APOLLO 0.105 SCALE FS-2 MODEL IN THE NORTH AMERICAN AVIATION TRISONIC WIND TUNNEL TWT 79 /U/ DATA REPORT, 6-13 AUG. 1962 (North American Aviation, Inc.) 196 p

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NAS9-150

17 December 1962

4551

Apollo

[redacted]

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CLASSIFICATION CHANGE

To UNCLASSIFIED

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DATA REPORT FOR APOLLO 0.105-SCALE FS-2 MODEL IN THE NORTH AMERICAN AVIATION TRISONIC WIND TUNNEL TWT 79 (U)

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NORTH AMERICAN AVIATION, INC.
SPACE and INFORMATION SYSTEMS DIVISION

[redacted]

[redacted]

FOREWORD

The FS-2 model tests were conducted under NASA Apollo Contract NAS9-150 from 6 August 1962 to 13 August 1962.

This report was prepared by H. C. Smith of the Wind Tunnel Projects Group, Los Angeles Division.

[redacted]

ABSTRACT

Aerodynamic force tests of the 0.105-scale Apollo FS-2 model were conducted in the North American Aviation Trisonic Wind Tunnel at Mach numbers 0.2, 0.4, 0.7, 0.9, 1.2, and 3.49.

Force coefficients are given for all valid runs. Basic wind tunnel test data only are presented to make the test results available at the earliest possible date. Analysis and summary of results will be reported in a separate document.

[redacted]

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I. INTRODUCTION

Wind tunnel tests of the 0.105-scale Apollo FS-2 force model were conducted in the North American Aviation 7- by 7-foot Trisonic Wind Tunnel to investigate the static stability characteristics of the command module at nominal Mach numbers of 0.4, 0.7, 0.9, 1.2, and 3.5 and to investigate the Reynolds number effect at Mach number 0.2.

The command module was tested at various angle-of-attack ranges between 25 and 177 degrees.

The force tests of the 0.105-scale Apollo model were run to complement data obtained in other wind tunnels on the command module alone; therefore, the results do not include a complete angle-of-attack range from 0 to 180 degrees. Dashed curves connecting the high and low angle-of-attack data were obtained from a correlation of data from other tests. A more complete angle-of-attack range was run at Mach number 0.2 to study the Reynolds number effect on flow attachment and to verify results obtained at an equivalent Mach number during other tests. The abrupt changes in the slopes of the curves, particularly at the low Mach numbers, between 50 and 90 degrees angle of attack is attributed to this flow attachment on the blunt face of the command module.

The use of the word "hysteresis" in the title on some of the data plots is used to indicate the region where the force coefficients at a given angle of attack are dependent on whether the angle was approached from a lower or a higher angle of attack. Sting effects at tunnel sector angles greater than approximately ±10 degrees account for the difference in the data between runs where the angle between the sting and model was changed to give a different angle-of-attack range of the model.

Appendix A of this report contains the tabulated data and Appendix B contains the plotted data.

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II. MODEL DESCRIPTION

The FS-2 is a 0.105-scale model of the Apollo command module. Three basic models, identical except for the angle between the model axis of symmetry and the center line of the balance, were used to cover the required angle-of-attack range. The three models contain a total of 10 balance holes ranging in offset angles from 0 to 180 degrees in 20-degree increments. This arrangement permits testing through an angle-of-attack range from 0 to 180 degrees with a sting angle range as low as ±10 degrees.

The structural integrity of the model is analyzed in SID 62-104[1], and the model design details are presented in Drawings 7121-01077[2] and 7121-01078[3].

INSTRUMENTATION

Six-component force data were measured using the revised 2-3/4 inch Task Mark I-A internal balance. Balance chamber pressure was measured using the pressure orifice existing in the balance.

MODEL NOMENCLATURE

The symbol C_2 is used to designate the command module configuration shown in drawing No. 7121-01077 (-3, -4, -5) and in Figure 1.

FULL-SCALE DIMENSIONS OF THE C_2

Maximum diameter, in.	154.00
Radius of spherical blunt end, in.	184.80
Corner radius, in.	7.70
Nose cone semiangle, deg.	33.00
Nose cone vertex radius, in.	9.15

[1] Structural Analysis of the 0.105-Scale Apollo Wind Tunnel Model. SID 62-104.

[2] Assembly and Details—Command Module FS-2 Apollo Force Model. NAA/S&ID Model Design Drawing No. 7121-01077.

[3] Details—Balance Blocks and Miscellaneous -0.105-Scale FS-2 Apollo. NAA/S&ID Model Design Drawing.

[redacted]

III. TEST PROCEDURE

TEST NOMENCLATURE

Mo	Free-stream Mach number
α	Angle of attack of model axis of symmetry (zero for apex forward), degrees
Ψ	Angle of yaw of model axis of symmetry, degrees
q	Free-stream dynamic pressure, lb/ft^2
A	Model reference area (maximum cross-sectional area), ft^2
D	Model reference diameter (maximum diameter of command module), inches
θ	Offset angle between balance axis and model axis of symmetry, degrees
ϕB	Model roll angle relative to the tunnel center line (ϕB = 0 degrees for these tests), degrees
RN	Reynolds number x 10^{-6} based on reference diameter
Ho	Free-stream total pressure, lb/ft^2
Po	Free-stream static pressure, lb/ft^2
Pb	Balance chamber pressure, lb/ft^2
$\bar{x}$	Distance along model center line from command module cone apex to center of gravity, negative when center of gravity is aft of apex, inches
$\bar{z}$	Perpendicular distance from model center line to center of gravity, positive when center of gravity is below ℄

Stability System of Axes With Origin at Center of Gravity

C_D Drag coefficient, drag/qA

C_L Lift coefficient, lift/qA

C_{mcg} Pitching moment coefficient, pitching moment/qAD

C_Y Side force coefficient, side force/qA

C_n Yawing moment coefficient, yawing moment/qAD

C_ℓ Rolling moment coefficient, rolling moment/qAD

L/D Lift-to-drag ratio, CL/CD

Body System of Axes With Origin at Center of Gravity

C_N Normal force coefficient, normal force/qA

C_A Axial force coefficient, axial force/qA

C_{nB} Yawing moment coefficient, yawing moment/qAD

$C_{\ell B}$ Rolling moment coefficient, rolling moment/qAD

Body System of Axes With Origin at Command Module Projected Cone Apex

C_{mA} Pitching moment coefficient, pitching moment/qAD

Xcp/D Center of pressure location in the normal force direction measured from cone apex, C_{mA}/C_N, negative when aft of apex

MODEL INSTALLATION

The FS-2 model was installed on the 7121-01082 sting and the H-998 fixed sting support on the H-822-3 sector head. The sector was located such that the center of rotation was at tunnel station 3563 when testing supersonically. Upon completion of the supersonic portion of the test, the sector was repositioned for transonic and subsonic testing with the center of rotation at tunnel station 3735 (Figures 2 through 6).

The basic angle range of the sting support system was -15 to +17 degrees for this test.

INSTRUMENTATION

The output of each element of the balance was recorded on the TWT data system. ALWAC program A033 was used to reduce the data from the data master tape on the TWT ALWAC III-E digital computer.

Balance chamber pressure was measured with a Statham differential pressure transducer, type PM ±5-700 (5 psid), referenced to the preselected pressure of the R1 reference system. No corrections based on balance chamber pressure were applied to the data.

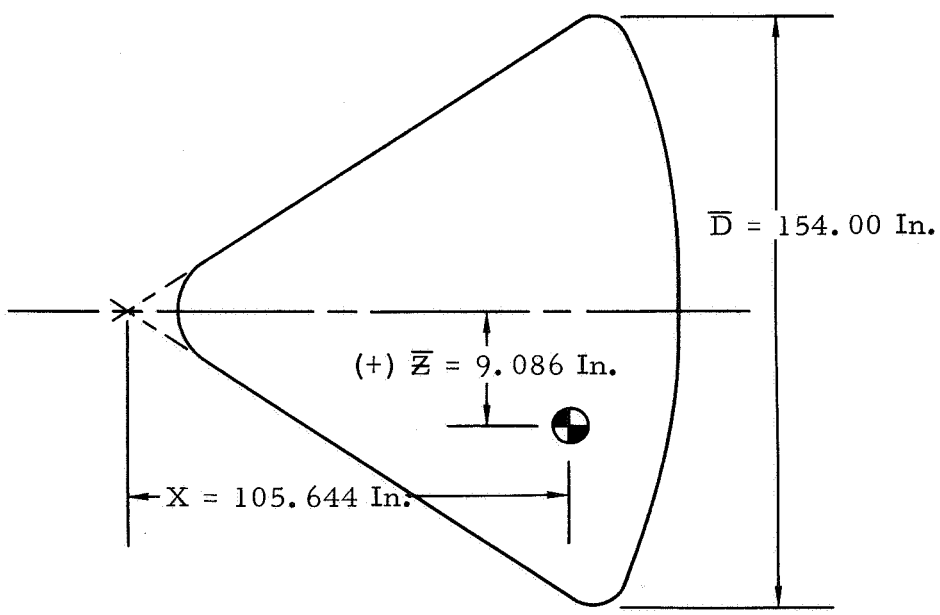
Black and white schlieren photographs were taken during the supersonic portions of this test and are presented in Figures 7 through 10.

DATA REDUCTION

Force and moment coefficients were computed based on the following geometric constants.

$A = 1.4261\ ft^2$ (max. cross-sectional area)
$D = 16.170$ in. (max. diameter)

The reference center-of-gravity location was $\overline{x}/D = -0.686$ and $\overline{z}/D = 0.059$.



ALWAC program A033 was used to reduce the data from the data master tape on the TWT ALWAC III-E digital computer.

All angle-of-attack data were corrected for sting and balance deflections. Although balance chamber pressure was measured, no corrections for base drag were made to the data.

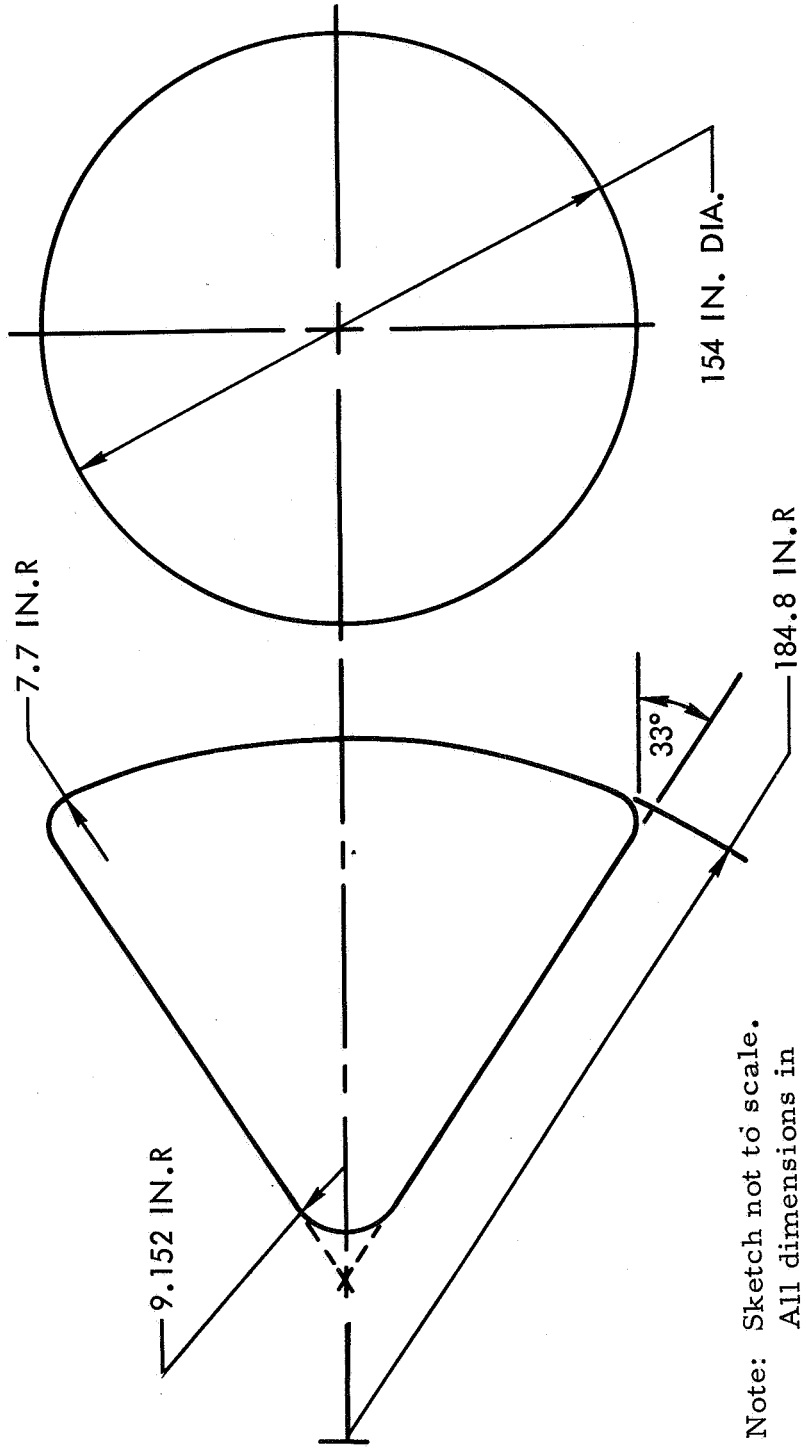
DATA ACCURACY

The balance and recording instrumentation were set to provide maximum possible sensitivity within the capabilities of the amplifying instrumentation and within the limits established by keeping maximum loads less than full scale on the recorders.

At Mach numbers 0.2 and 0.4, the coefficient accuracy suffers because the free-stream dynamic pressure (q_o) is too low relative to the capacity and accuracy of the balance. In addition, the instrumentation for recording tunnel pressures used in computing q_o is not sufficiently accurate or sensitive enough at these low values of q_o. The probable coefficient errors for all test conditions are presented in the following listing.

M_o	$R_N X 10^{-6}$	$\pm\Delta C_N$	$\pm\Delta C_A$	$\pm\Delta C_{M_{cg}}$	$\pm\Delta C_{M_A}$	$\pm\Delta C_L$	$\pm\Delta C_D$
0.2	2.2	0.047	0.039	0.0118	0.025	0.011	0.046
0.2	2.8	0.031	0.033	0.0106	0.023	0.097	0.043
0.2	6.4	0.014	0.016	0.0036	0.010	0.013	0.020
0.4	6.6	0.007	0.008	0.0018	0.005	0.007	0.010
0.7	8.1	0.005	0.004	0.0009	0.004	0.003	0.005
0.9	9.0	0.003	0.003	0.0007	0.002	0.002	0.004
1.2	9.6	0.003	0.002	0.0005	0.002	0.002	0.004
3.493	16.2	0.003	0.003	0.0006	0.002	0.002	0.005

[redacted]



Note: Sketch not to scale.
All dimensions in
inches, full scale.

Figure 1. Command Module C_2

[redacted]

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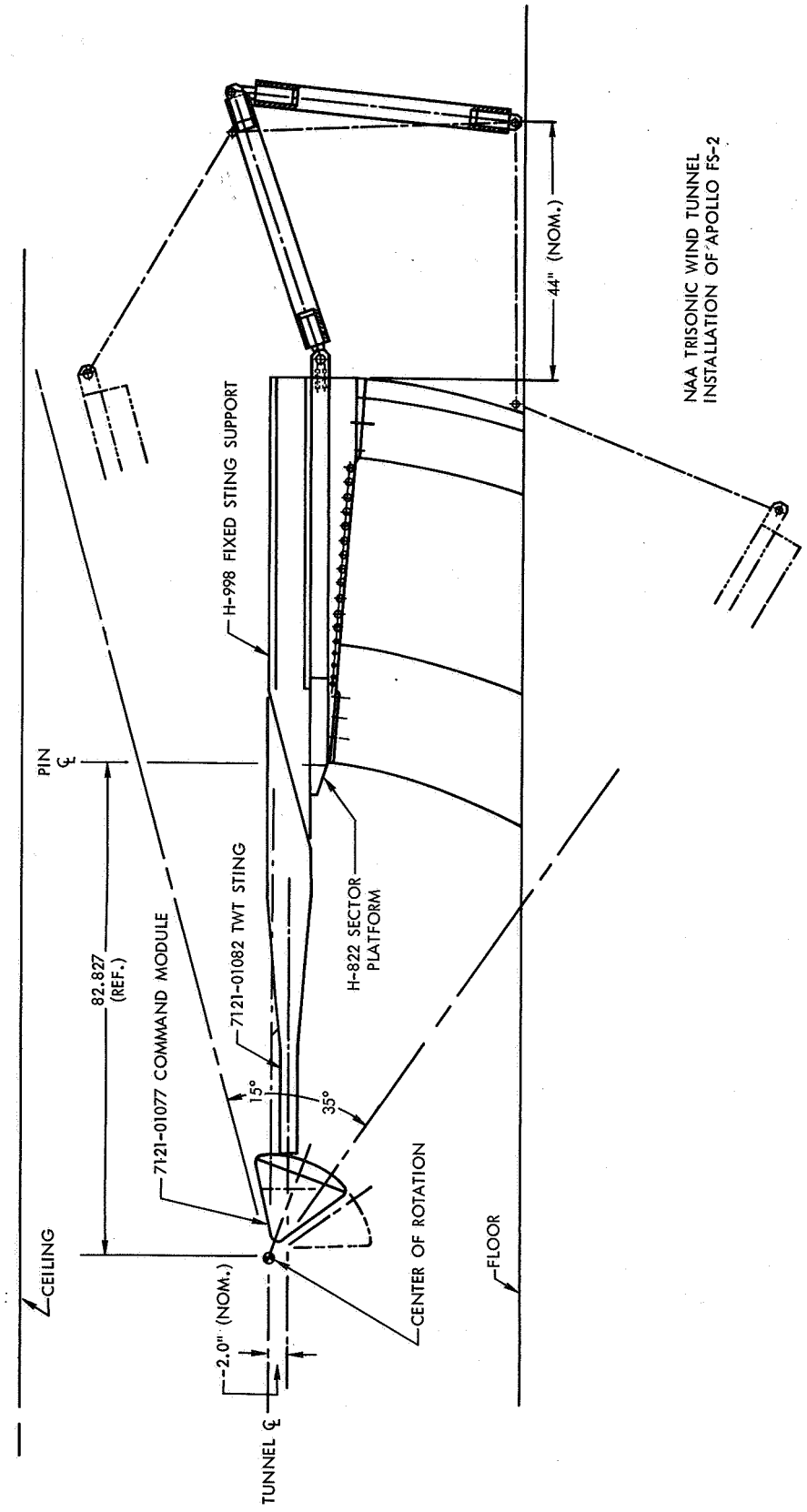

Figure 2. FS-2 Model Installation

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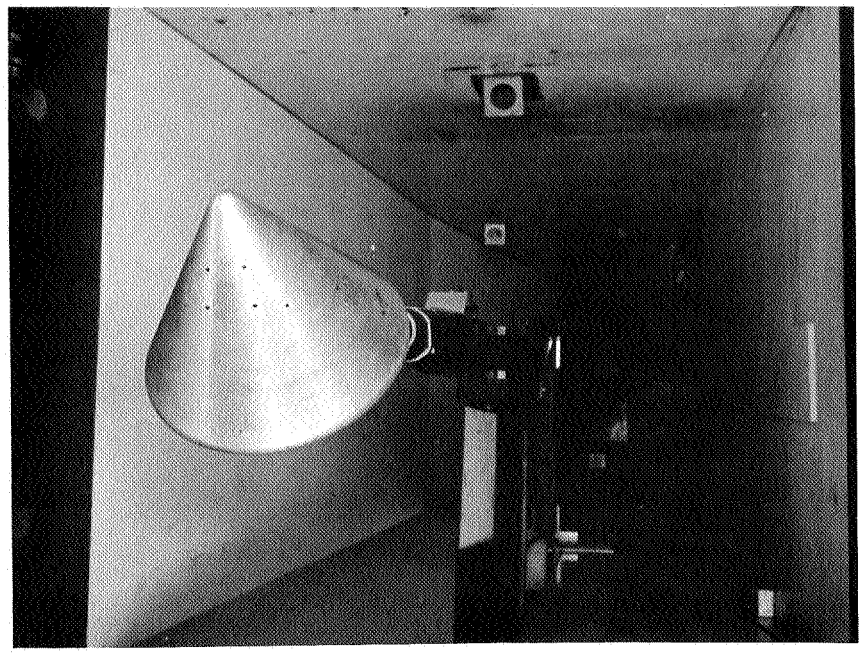

700-98-250

Figure 3. Model Installed at θ = 40 Degrees

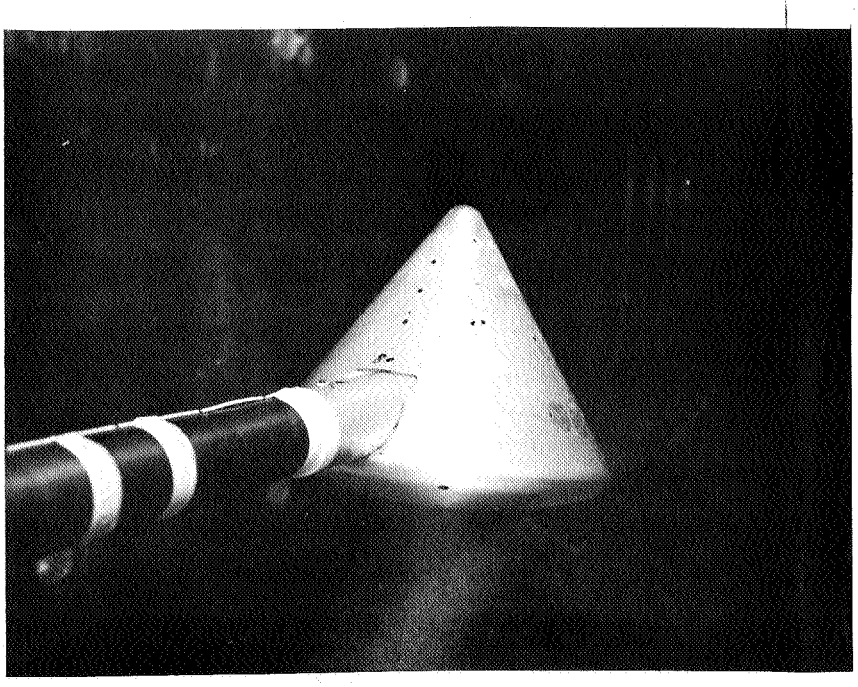

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Figure 4. Model Installed at θ = 80 Degrees

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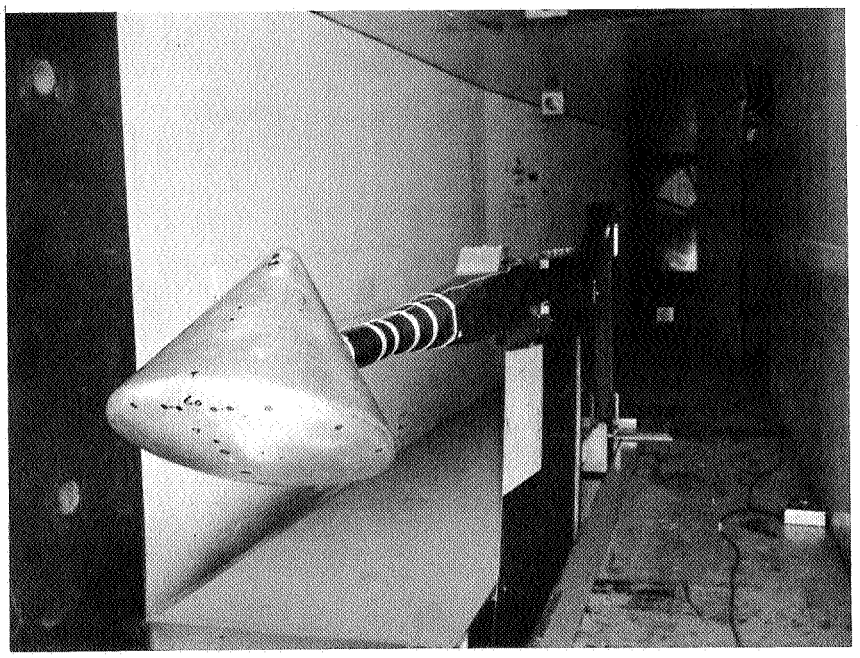

700-98-252

Figure 5. Model Installed at θ = 120 Degrees

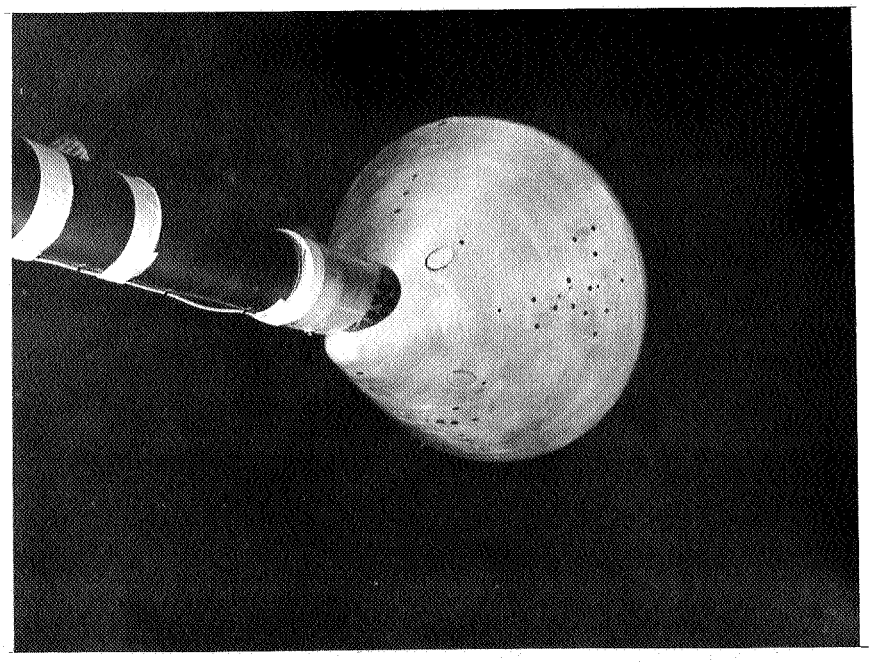

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Figure 6. Model Installed at θ = 160 Degrees

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Figure 7. Typical Schlieren at M = 3.49, α = 65 Degrees

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Figure 8. Typical Schlieren at M = 3.49, α = 76 Degrees

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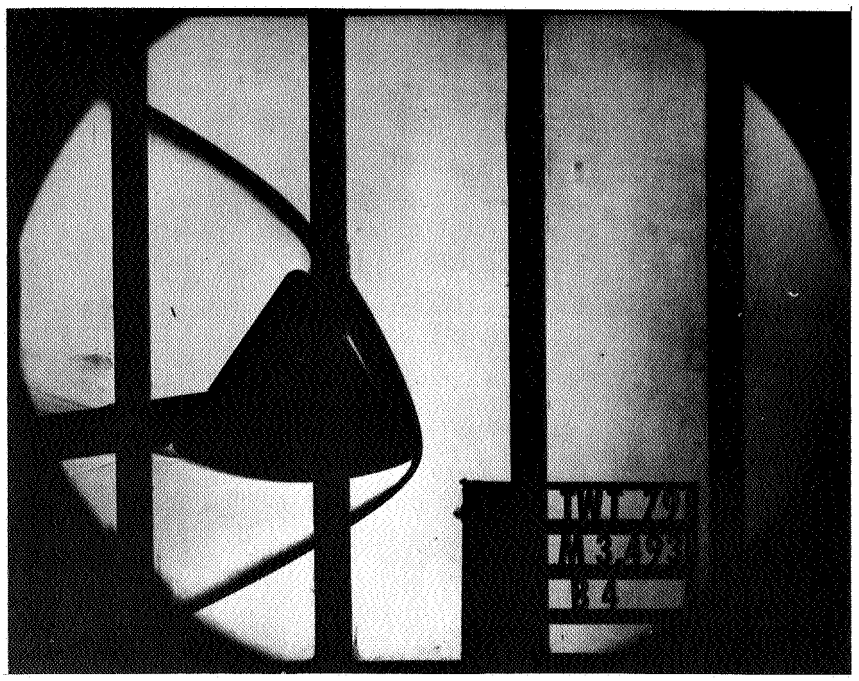
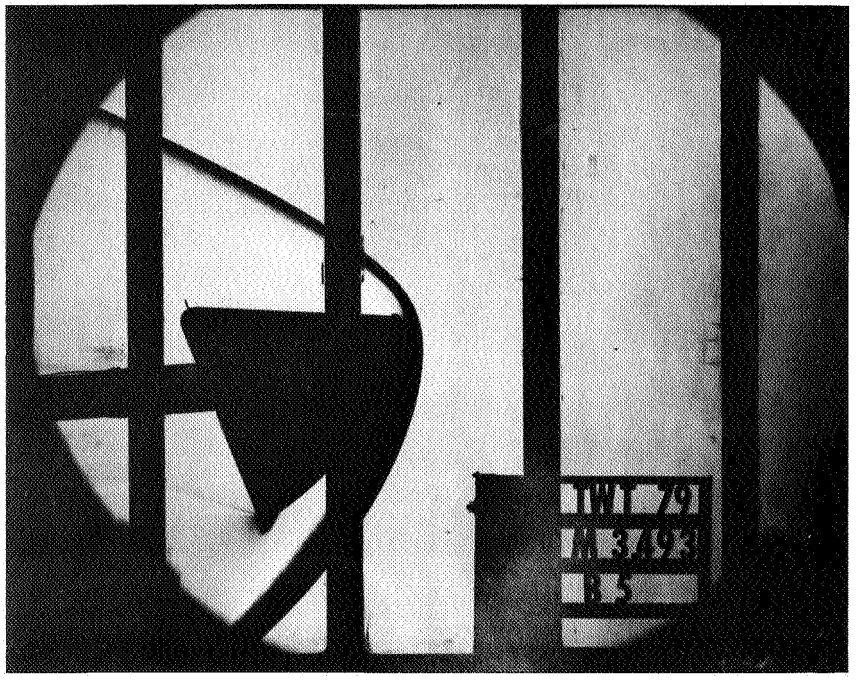


700-98-256

Figure 9. Typical Schlieren at M = 3.49, α = 88 Degrees



700-98-257

Figure 10. Typical Schlieren at M = 3.49, α = 144 Degrees

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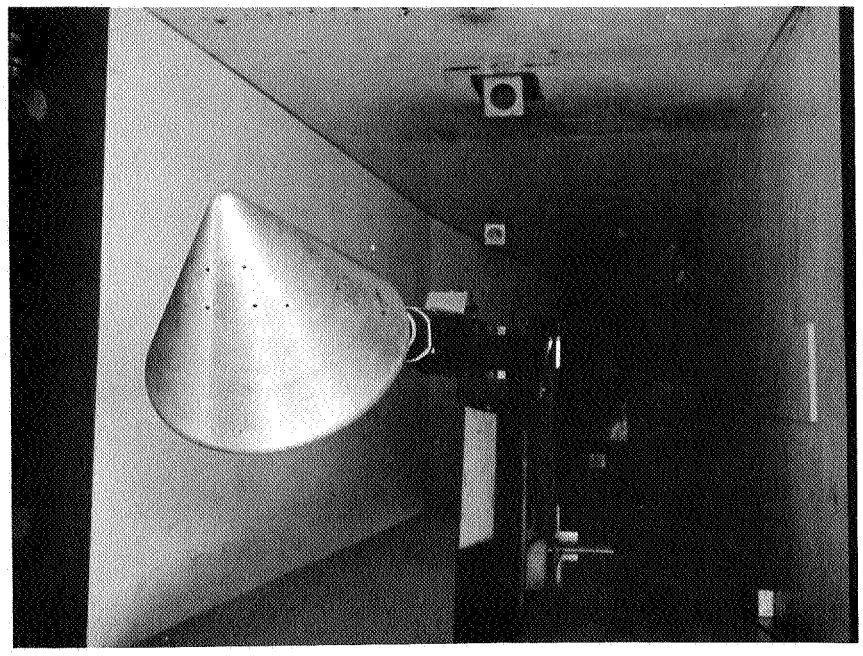

700-98-250

Figure 3. Model Installed at θ = 40 Degrees

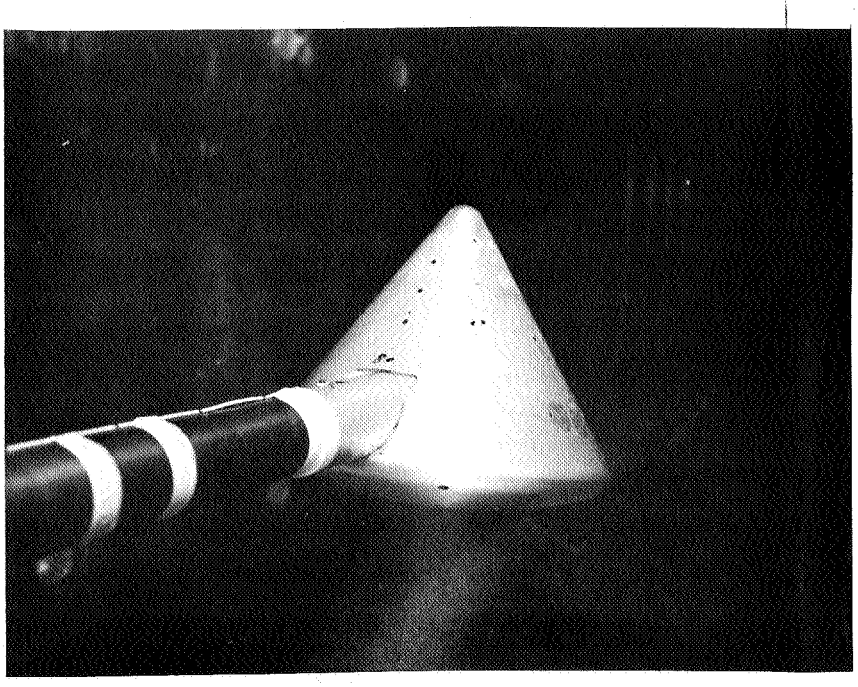

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Figure 4. Model Installed at θ = 80 Degrees

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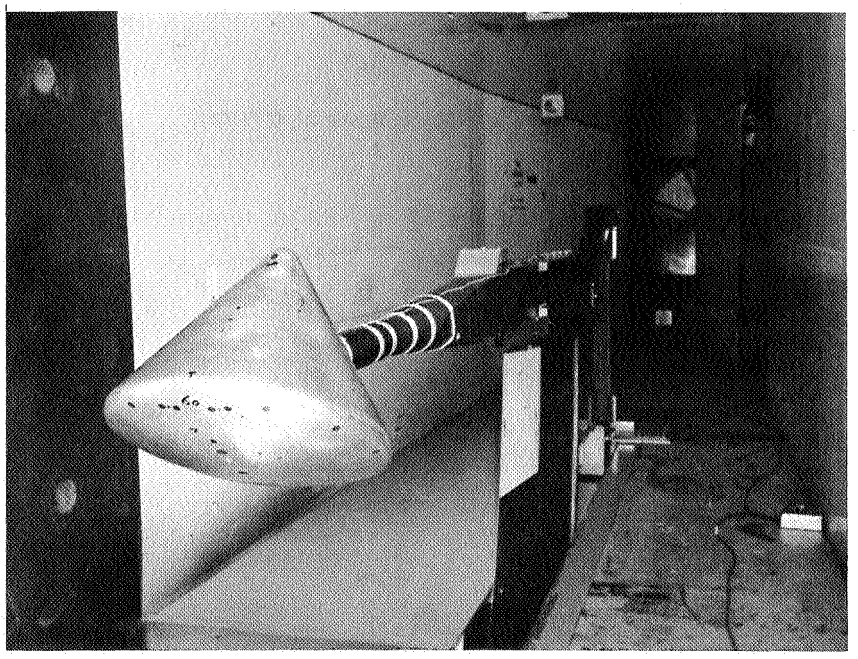

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Figure 5. Model Installed at θ = 120 Degrees

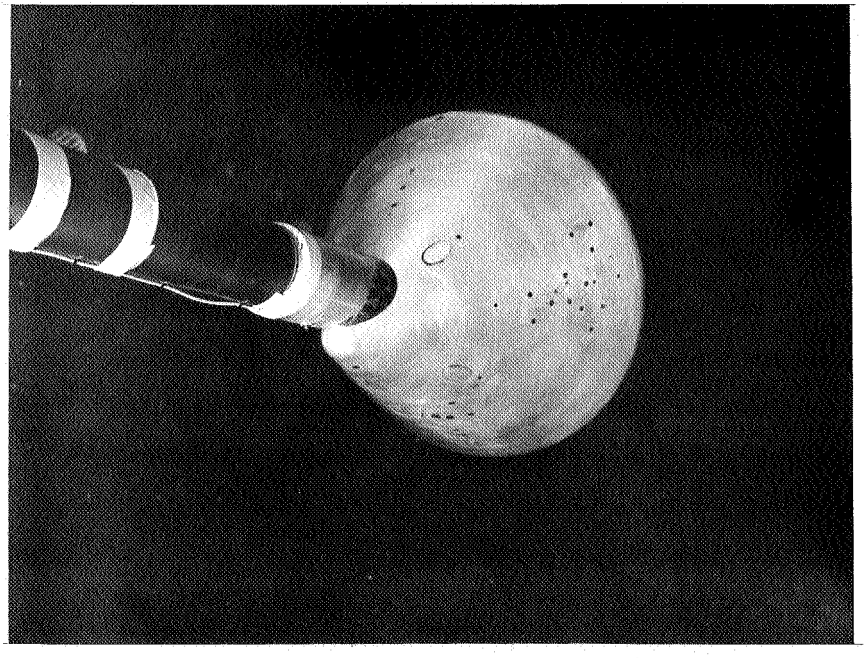

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Figure 6. Model Installed at θ = 160 Degrees

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700-98-254

Figure 7. Typical Schlieren at M = 3.49, α = 65 Degrees

700-98-255

Figure 8. Typical Schlieren at M = 3.49, α = 76 Degrees

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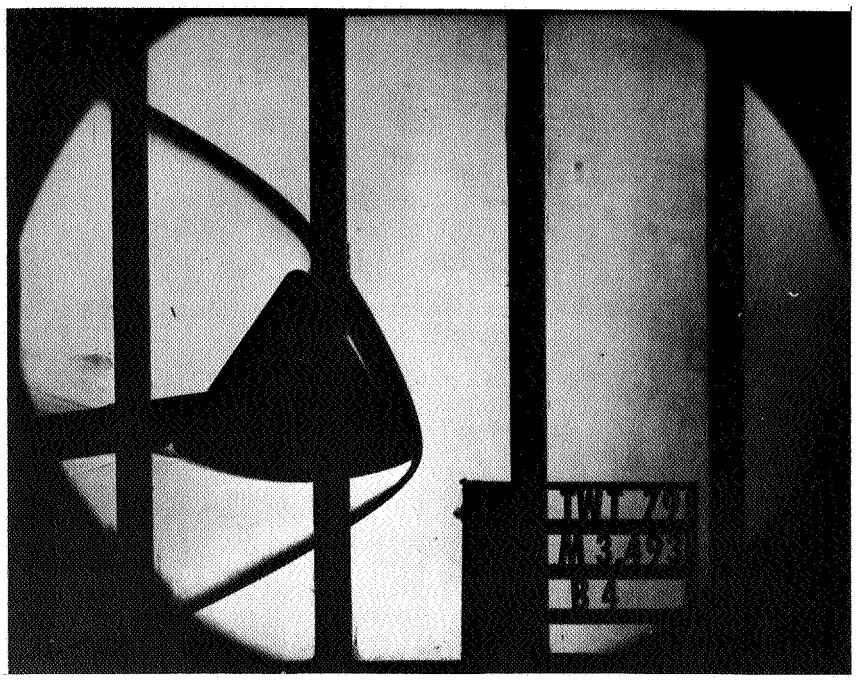
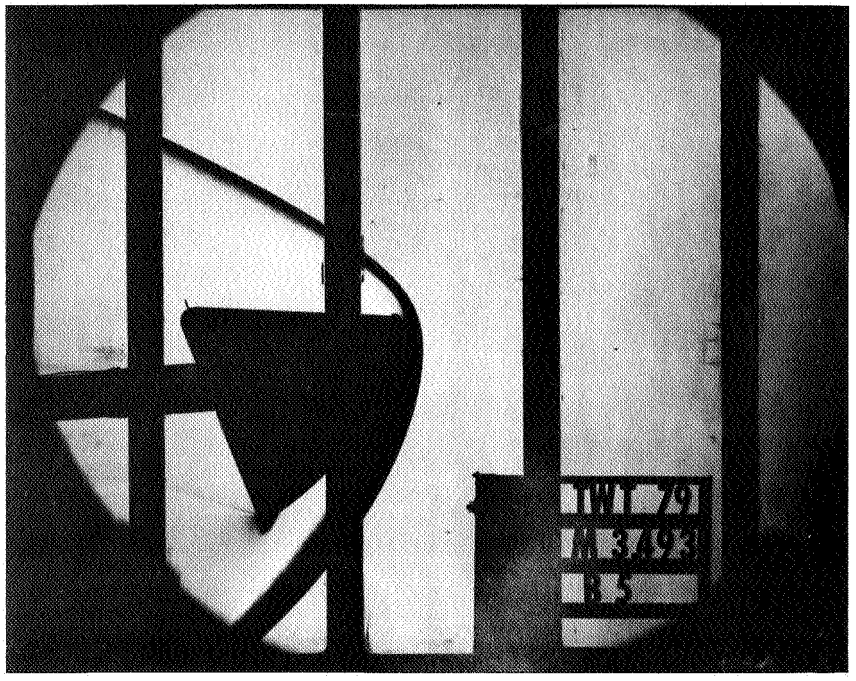


700-98-256

Figure 9. Typical Schlieren at M = 3.49, α = 88 Degrees



700-98-257

Figure 10. Typical Schlieren at M = 3.49, α = 144 Degrees

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[redacted]

APPENDIX A

TABULATED DATA

[redacted]

Run Index

α Range (%)	Mach No.	Run Number							
		0.2			0.4	0.7	0.9	1.2	3.493
	$R_N \times 10^{-6}$	2.2	2.8	6.4	6.6	8.1	9.0	9.6	16.2
25 to 57			31	30	35	24	25	26	
45 to 77		19, 18*	20	14**, 15, 16+	28, 29***	17, 23***	21	22	6, 2*
65 to 97			9	10, 7*, 8*		11	12	13	4, 1*
105 to 137				37				27	
125 to 157			32	34	33				5, 3*
145 to 177				36					

*Blows that are no good, data not presented
**High pitch rate (4.0 deg/sec)
***Angle of attack decreased during blow

[redacted]

[redacted]

DATA FORMAT

The key to reading the tabulated data is as follows:

1. The first two lines at the top of each page contain the following identification.

   TWT 79 = Trisonic Wind Tunnel Test No. 79

   Blow xx = The blow number

   Config. C_2 = Configuration tested

   Theta = Model offset angle

2. First Page - Tunnel conditions

   BN = Block number, identifies block of data computed.

   Alpha = Angle of attack, deg.

   Yaw = Angle of yaw, deg.

   Mach = Test section Mach number

   RN = Reynolds number x 10^{-6} (based on command module diameter, 16.170 inches)

   HO = Test section total pressure, psfa

   PO = Test section static pressure, psfa

   Q = Test section dynamic pressure, psf

   TTO = Test section total temperature, °R

   Dec = Number of decimal places to the left of the last digit.

3. Second Page - Body axis data and balance chamber pressure

BN	= Block number, identifies block of data computed
Alpha	= Angle of attack, deg.
Yaw	= Angle of yaw, deg.
CA	= Axial force coefficient
CN	= Normal force coefficient
CNB	= Yawing moment coefficient about center of gravity, body axis
CLB	= Rolling moment coefficient, body axis
XCPN	= Location of the normal force center of pressure divided by the command module diameter
XCPY	= No data
PBC	= Balance chamber pressure coefficient, $\frac{Pb - Po}{q}$
CMA	= Pitching moment coefficient about the command module apex
Dec	= Number of decimal places to the left of the last digit

4. Third Page - Stability axis data and Lift to Drag ratio

BN	= Block number, identifies block of data computed
Alpha	= Angle of attack, deg.
Yaw	= Angle of yaw, deg.
CD	= Drag coefficient
CL	= Lift coefficient
CMS	= Pitching moment coefficient about the center of gravity, stability axis

[redacted]

CY	= Side force coefficient
CNS	= Yawing moment coefficient about the center of gravity, stability axis
CLS	= Rolling moment coefficient, stability axis
L/D	= Lift to drag ratio
Dec	= Number of decimal places to the left of the last digit

[redacted]

[redacted]

TWT 79 BLOW 4 3RD REDUCTION

CONFIG C2 THETA = 80

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HQ	PO	Q	TTQ
DEC=	2	2	3	2		1	1	1
1302	6483		3493	1584	14347	1900	16226	5486
1379	6634		3493	1618	14275	1890	16145	5394
1394	6827		3493	1624	14267	1889	16135	5379
1411	7050		3493	1628	14244	1886	16110	5365
1428	7269		3493	1635	14252	1887	16119	5353
1445	7490		3493	1642	14254	1887	16120	5339
1462	7710		3493	1643	14237	1885	16102	5332
1479	7933		3493	1646	14219	1883	16081	5322
1496	8153		3493	1647	14187	1879	16045	5312
1512	8374		3493	1651	14184	1878	16041	5303
1529	8593		3493	1651	14155	1874	16009	5297
1545	8800		3493	1649	14113	1869	15961	5290
1561	9003		3493	1643	14037	1859	15876	5285
1577	9210		3493	1640	13982	1851	15813	5278
1593	9415		3493	1635	13912	1842	15735	5271
1612	9646		3493	1630	13847	1834	15660	5264

[redacted]

[redacted]

TWT 79 BLOW 4 3RD REDUCTION

CONFIG C2 THETA = 80

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
1302	6483		5595	6993	8	4	- 7317	380	- 5117
1379	6634		5436	6989	6	2	- 7314	- 140	- 5112
1394	6827		5296	6982	7	6	- 7313	- 193	- 5106
1411	7050		5103	6931	6	5	- 7310	- 221	- 5066
1428	7269		4928	6879	5	6	- 7298	- 256	- 5020
1445	7490		4713	6798	7	5	- 7291	- 295	- 4956
1462	7710		4485	6708	7	4	- 7285	- 329	- 4887
1479	7933		4231	6644	6	10	- 7262	- 333	- 4825
1496	8153		3949	6572	7	7	- 7237	- 360	- 4756
1512	8374		3628	6481	5	9	- 7207	- 390	- 4671
1529	8593		3299	6374	5	10	- 7174	- 428	- 4573
1545	8800		2949	6249	4	13	- 7140	- 445	- 4462
1561	9003		2578	6121	6	12	- 7093	- 461	- 4342
1577	9210		2182	5976	5	13	- 7039	- 474	- 4207
1593	9415		1762	5820	3	11	- 6976	- 495	- 4060
1612	9646		1237	5646	3	17	- 6902	- 507	- 3897

[redacted]

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TWT 79 BLOW 4 3RD REDUCTION

CONFIG C2 THETA = 80

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
1302	6483		8708	- 2089	13	19	-	10	- 2399
1379	6634		8583	- 2174	7	- 24	1	7	- 2533
1394	6827		8447	- 2335	- 1	- 4	- 3	8	- 2765
1411	7050		8236	- 2497	- 8	- 5	- 3	7	- 3031
1428	7269		8033	- 2658	- 7	- 14	- 4	7	- 3309
1445	7490		7791	- 2780	- 12	14	- 3	8	- 3568
1462	7710		7540	- 2874	- 17	12	- 2	8	- 3811
1479	7933		7313	- 2928	- 15	10	- 9	7	- 4004
1496	8153		7082	- 2938	- 12	23	- 6	8	- 4149
1512	8374		6838	- 2899	- 8	21	- 9	6	- 4240
1529	8593		6593	- 2838	- 3	33	- 9	6	- 4305
1545	8800		6348	- 2730	2	24	- 13	5	- 4301
1561	9003		6119	- 2582	12	43	- 12	6	- 4219
1577	9210		5892	- 2399	24	47	- 13	5	- 4071
1593	9415		5677	- 2179	39	45	- 11	3	- 3838
1612	9646		5471	- 1865	52	63	- 17	1	- 3409

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[redacted]

TWT 79 BLOW 5 2ND REDUCTION

CONFIG C2 THETA = 140

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
968	12554		3493	1595	14338	1899	16216	5459
1046	12718		3493	1623	14256	1888	16123	5379
1061	12913		3493	1627	14237	1885	16102	5367
1077	13121		3493	1633	14240	1886	16105	5355
1094	13341		3493	1639	14250	1887	16117	5344
1110	13549		3493	1640	14217	1883	16079	5334
1126	13759		3493	1643	14206	1881	16066	5326
1143	13982		3493	1646	14198	1880	16058	5317
1159	14192		3493	1646	14175	1877	16031	5310
1176	14411		3493	1645	14138	1872	15989	5303
1194	14644		3493	1640	14065	1862	15907	5297
1210	14849		3493	1638	14015	1856	15851	5290
1225	15053		3493	1633	13944	1847	15771	5283
1241	15255		3493	1627	13874	1837	15691	5278
1257	15457		3493	1623	13814	1829	15624	5271
1275	15680		3493	1616	13737	1819	15536	5268

[redacted]

[redacted]

TWT 79 BLOW 5 2ND REDUCTION

CONFIG C2 THETA = 140

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	ΦAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
968	12554		- 6984	2953	12	2	- 4514	113	- 1333
1046	12718		- 7457	2826	10	3	- 4389	- 277	- 1240
1061	12913		- 7949	2699	10	2	- 4179	- 300	- 1128
1077	13121		- 8513	2541	8	1	- 3972	- 364	- 1009
1094	13341		- 9085	2367	6		- 3771	- 394	- 893
1110	13549		- 9612	2241	5	-	- 3540	- 417	- 793
1126	13759		-10136	2101	5	-	- 3336	- 451	- 701
1143	13982		-10664	1965	4		- 3149	- 470	- 619
1159	14192		-11148	1824	3	- 1	- 2944	- 504	- 537
1176	14411		-11645	1699	3	- 1	- 2769	- 527	- 470
1194	14644		-12142	1553	3	- 1	- 2551	- 543	- 396
1210	14849		-12557	1440	2	- 2	- 2412	- 566	- 347
1225	15053		-12974	1323	2	- 2	- 2255	- 573	- 298
1241	15255		-13348	1228	2	- 2	- 2143	- 600	- 263
1257	15457		-13697	1108	1	- 2	- 1980	- 598.	- 219
1275	15680		-14019	993	1	- 2	- 1832	- 610	- 182

[redacted]

[redacted]

TWT 79 BLOW 5 2ND REDUCTION

CONFIG C2 THETA = 140

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
968	12554		6462	3967	282	129	- 8	8	6138
1046	12718		6758	4234	260	135	- 8	6	6265
1061	12913		7110	4463	256	131	- 8	6	6276
1077	13121		7521	4730	233	142	- 6	5	6289
1094	13341		7963	4972	196	152	- 4	4	6244
1110	13549		8426	5139	178	156	- 3	4	6099
1126	13759		8901	5285	143	146	- 4	4	5938
1143	13982		9415	5380	101	150	- 3	3	5714
1159	14192		9901	5439	58	162	- 1	3	5493
1176	14411		10431	5449	9	160	- 1	2	5224
1194	14644		10976	5419	- 47	159	- 2	2	4937
1210	14849		11458	5336	- 100	165	- 1	2	4657
1225	15053		11947	5231	- 156	164	- 1	3	4378
1241	15255		12411	5064	- 208	171	-	3	4081
1257	15457		12845	4880	- 267	171	-	2	3799
1275	15680		13276	4610	- 327	178		2	3472

[redacted]

TWT 79 BLOW 6

CONFIG C2 THETA = 60

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
1162	4502		3493	1576	14265	1889	16133	5485
1229	4660		3493	1605	14249	1887	16115	5416
1246	4883		3493	1608	14232	1885	16096	5406
1262	5095		3493	1613	14234	1885	16098	5394
1278	5305		3493	1617	14227	1884	16091	5384
1292	5496		3493	1619	14203	1881	16063	5373
1309	5715		3493	1624	14208	1881	16069	5365
1325	5915		3493	1626	14199	1880	16059	5358
1341	6123		3493	1624	14152	1874	16006	5351
1358	6347		3493	1625	14132	1871	15983	5344
1374	6557		3493	1620	14053	1861	15893	5336
1389	6754		3493	1617	14004	1854	15838	5331
1406	6973		3493	1612	13934	1845	15758	5324
1421	7181		3493	1606	13866	1836	15682	5319
1437	7388		3493	1602	13794	1827	15601	5310
1456	7616		3493	1593	13705	1815	15500	5307

[redacted]

TWT 79 BLOW 6

CONFIG C2 THETA = 60

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DFC=	2	2	4	4	4	4	4	4	4
1162	4502		6726	6811	- 1	22	- 7130	581	- 4857
1229	4660		6650	6862	2	20	- 7153	168	- 4909
1246	4883		6591	6929	2	19	- 7159	101	- 4961
1262	5095		6502	6967	1	19	- 7170	62	- 4995
1278	5305		6401	7018	2	14	- 7187	18	- 5044
1292	5496		6312	7044	2	13	- 7197	1	- 5069
1309	5715		6162	7068	2	13	- 7217	- 34	- 5101
1325	5915		6043	7087	2	13	- 7226	- 38	- 5121
1341	6123		5917	7091	2	14	- 7240	- 10	- 5134
1358	6347		5763	7079	2	11	- 7250	- 18	- 5132
1374	6557		5625	7090	2	11	- 7254	- 6	- 5143
1389	6754		5473	7065	1	9	- 7250	- 42	- 5122
1406	6973		5275	7021		9	- 7257	- 32	- 5095
1421	7181		5088	7003	2	8	- 7248	- 51	- 5076
1437	7388		4850	6947	1	5	- 7255	- 66	- 5040
1456	7616		4617	6872	2	3	- 7230	- 99	- 4968

[redacted]

TWT 79 BLOW 6

CONFIG C2 THETA = 60

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
1162	4502		9573	57	216	20	- 16	15	59
1229	4660		9554	- 117	194	41	- 13	16	- 123
1246	4883		9554	- 400	185	48	- 13	14	- 419
1262	5095		9507	- 660	171	41	- 14	12	- 694
1278	5305		9456	- 896	152	26	- 10	10	- 948
1292	5496		9391	- 1125	138	26	- 10	9	- 1198
1309	5715		9281	- 1342	114	25	- 10	9	- 1446
1325	5915		9183	- 1554	100	25	- 10	8	- 1693
1341	6123		9064	- 1774	83	39	- 12	9	- 1958
1358	6347		8908	- 1993	67	31	- 9	7	- 2238
1374	6557		8782	- 2189	56	31	- 9	7	- 2493
1389	6754		8620	- 2359	51	30	- 8	5	- 2737
1406	6973		8414	- 2516	36	22	- 9	4	- 2991
1421	7181		8242	- 2647	31	29	- 7	4	- 3212
1437	7388		8020	- 2731	15	14	- 4	2	- 3405
1456	7616		7777	- 2839	21	20	- 3	3	- 3650

[redacted]

TWT 79 BLOW 9 4TH REDUCTION

CONFIG C2 THETA = 80

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
783	6531		206	307	3358	32598	967	5186
875	6705		202	297	3329	32360	921	5201
899	6911		211	308	3316	32150	998	5203
924	7130		207	302	3306	32085	960	5204
948	7328		203	296	3290	31960	926	5206
974	7542		203	297	3314	32198	930	5208
1000	7753		204	300	3323	32279	944	5209
1026	7965		205	298	3294	31988	943	5213
1052	8178		205	298	3306	32110	943	5215
1077	8390		200	292	3316	32247	900	5215
1104	8609		199	290	3309	32190	888	5216
1130	8813		197	286	3302	32146	869	5215
1155	9018		202	294	3307	32150	914	5218
1179	9214		205	299	3318	32223	944	5218
1206	9430		208	301	3299	32013	965	5221
1238	9659		204	296	3297	32021	936	5221

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~~CONFIDENTIAL~~

TWT 79 BLOW 9 4TH REDUCTION

CONFIG C2 THETA = 80

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
783	6531		707	410	11	-29	-31194	-200	-1279
875	6705		461	632	14	16	-22789	1009	-1441
899	6911		282	611	10	-30	-20924	1774	-1279
924	7130		121	743	-2	-34	-18089	1779	-1344
948	7328		-258	850		11	-17257	1922	-1466
974	7542		-467	1069	-1	10	-14711	1722	-1573
1000	7753		-552	1058	-1	10	-14557	-828	-1540
1026	7965		-802	1188	-2	8	-12837	1420	-1525
1052	8178		-965	1102	-3	-56	-13263	970	-1461
1077	8390		-1040	1354	-15	4	-11901	1153	-1612
1104	8609		1875	2198	-6	-34	-10111	-766	-2223
1130	8813		1656	2399	-17	12	-9775	-1539	-2345
1155	9018		1170	2253	-8	-37	-9543	-819	-2150
1179	9214		949	2131	-8	-37	-9559	-2147	-2037
1206	9430		512	2149	3	-37	-9185	-985	-1974
1238	9659		242	2237	21	-26	-8685	-1101	-1943

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TWT 79 BLOW 9 4TH REDUCTION

CONFIG C2 THETA = 80

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
783	6531		668	-471	-956	-87	31	-2	-7052
875	6705		762	-178	-980	28	-10	19	-2331
899	6911		672	-46	-843	-90	31	-2	-678
924	7130		743	123	-827	-94	31	-13	1659
948	7328		739	492	-898	22	-11	3	6653
974	7542		917	721	-866	19	-10	2	7859
1000	7753		914	768	-846	16	-10	1	8406
1026	7965		1024	1003	-757	11	-8	-1	9787
1052	8178		952	1113	-762	11	55	-11	11686
1077	8390		1236	1178	-743	7	-6	-15	9535
1104	8609		2321	-1721	-603	-109	34	-9	-7415
1130	8813		2452	-1577	-601	15	-13	-17	-6431
1155	9018		2249	-1177	-534	-116	37	-7	-5233
1179	9214		2094	-1028	-518	-115	37	-6	-4909
1206	9430		2105	-671	-468	-120	36	6	-3189
1238	9659		2195	-497	-393	236	23	24	-2266

[redacted]

TWT 79 BLOW 10 3RD REDUCTION

CONFIG C2 THETA = 80

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
861	6521		203	659	7521	73090	2099	5290
927	6694		204	657	7433	72214	2099	5283
951	6899		206	662	7422	72065	2138	5281
975	7102		210	678	7431	72056	2232	5278
999	7301		205	662	7432	72170	2129	5276
1025	7519		208	673	7444	72226	2192	5274
1049	7713		206	663	7426	72109	2132	5271
1075	7928		207	668	7418	71992	2163	5269
1100	8141		207	671	7438	72182	2173	5268
1126	8346		205	662	7419	72048	2122	5268
1151	8549		208	669	7413	71935	2173	5268
1175	8743		202	653	7420	72121	2061	5264
1201	8953		201	649	7398	71923	2039	5262
1227	9166		203	656	7402	71915	2085	5262
1254	9382		204	659	7415	72028	2099	5261
1282	9600		205	659	7372	71592	2108	5257

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TWT 79 BLOW 10 3RD REDUCTION

CONFIG C2 THETA = 80

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
861	6521		1992	37	1	24	-	2517	- 994
927	6694		1579	132	- 3	42	-74491	1742	- 983
951	6899		1199	281	- 5	20	-37178	2299	- 1044
975	7102		852	407	- 5	19	-26314	1532	- 1071
999	7301		580	574	- 5	39	-20716	2037	- 1189
1025	7519		267	729	-	37	-16977	1828	- 1238
1049	7713		52	794		30	-16130	1801	- 1281
1075	7928		- 175	945	6	22	-13786	1443	- 1302
1100	8141		- 444	1068	4	1	-12604	1143	- 1346
1126	8346		2357	1961	3	16	- 9918	- 2209	- 1945
1151	8549		2382	2116	7	- 3	- 9601	- 1383	- 2032
1175	8743		2174	2296	- 6	- 21	- 9207	- 1671	- 2114
1201	8953		1873	2330	- 7	- 23	- 8942	- 1916	- 2084
1227	9166		1433	2344	5	- 37	- 8653	- 1307	- 2029
1254	9382		989	2310	- 13	- 27	- 8451	- 1124	- 1952
1282	9600		756	2203	10	- 40	- 8219	- 1402	- 1811

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TWT 79 BLOW 10 3RD REDUCTION

CONFIG C2 THETA = 80

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
861	6521		868	- 1793	- 852	- 21	- 22	11	-20651
927	6694		740	- 1401	- 799	30	- 40	14	-18940
951	6899		692	- 1019	- 781	- 26	- 21	3	-14718
975	7102		662	- 674	- 741	- 27	- 19	1	-10174
999	7301		718	- 387	- 760	22	- 38	7	- 5389
1025	7519		773	- 72	- 722	17	- 36	9	- 925
1049	7713		786	126	- 733	70	- 29	7	1603
1075	7928		896	347	- 664	118	- 21	10	3877
1100	8141		990	598	- 639	62	-	4	6047
1126	8346		2216	- 2119	- 460	21	- 16	5	- 9561
1151	8549		2297	- 2208	- 439	- 33	4	6	- 9612
1175	8743		2391	- 2069	- 410	- 148	20	- 7	- 8651
1201	8953		2345	- 1854	- 374	- 154	23	- 7	- 7903
1227	9166		2302	- 1500	- 335	- 45	37	6	- 6517
1254	9382		2239	- 1141	- 308	- 157	27	- 11	- 5095
1282	9600		2112	- 982	- 254	- 53	39	14	- 4650

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TWT 79 BLOW 11 2ND REDUCTION

CONFIG C2 THETA = 80

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
984	6518		724	845	3318	23408	8585	5309
1062	6675		722	842	3313	23417	8542	5312
1086	6876		725	843	3314	23364	8587	5314
1110	7077		730	850	3323	23307	8701	5312
1134	7278		728	842	3300	23202	8598	5312
1158	7479		720	834	3287	23266	8453	5310
1184	7691		726	842	3301	23234	8583	5310
1208	7889		730	844	3299	23133	8641	5309
1233	8098		731	845	3301	23137	8657	5309
1257	8297		730	845	3300	23157	8628	5305
1283	8510		728	843	3297	23185	8591	5303
1307	8708		725	840	3290	23177	8539	5302
1333	8917		727	844	3301	23230	8583	5300
1359	9129		728	845	3300	23193	8601	5297
1384	9332		723	839	3284	23181	8489	5295
1410	9543		727	842	3284	23104	8543	5290

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TWT 79 BLOW 11 2ND REDUCTION

CONFIG C2 THETA = 80

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
984	6518		3094	4241	179	75	- 8138	- 4212	- 3451
1062	6675		3648	3943	- 123	32	- 8371	- 3891	- 3300
1086	6876		4675	3404	- 90	34	- 8974	- 3431	- 3054
1110	7077		4847	3249	- 27	42	- 9330	- 3375	- 3031
1134	7278		4930	3014	- 14	47	- 9910	- 3201	- 2987
1158	7479		4984	2998	10	48	-10217	- 3379	- 3063
1184	7691		5293	2897	20	23	-10275	- 3290	- 2977
1208	7889		5479	2896	18		-10018	- 3481	- 2901
1233	8098		4966	3052	8	- 2	- 9546	- 3552	- 2914
1257	8297		4536	3152	3	- 1	- 9174	- 3404	- 2892
1283	8510		4204	3346	3	- 7	- 8794	- 3535	- 2942
1307	8708		3936	3484	- 2	1	- 8478	- 3807	- 2954
1333	8917		3626	3604	- 1	- 12	- 8157	- 3904	- 2939
1359	9129		3172	3619	- 2	- 11	- 7898	- 3770	- 2858
1384	9332		2835	3635	- 1	- 3	- 7648	- 3675	- 2781
1410	9543		2388	3611	-	- 7	- 7379	- 3729	- 2665

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TWT 79 BLOW 11 2ND REDUCTION

CONFIG C2 THETA = 80

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
984	6518		5147	- 1027	- 358	1242	7	194	- 1996
1062	6675		5063	- 1796	- 379	392	- 78	- 100	- 3547
1086	6876		4866	- 3125	- 442	489	- 64	- 72	- 6422
1110	7077		4664	- 3506	- 515	690	- 49	- 11	- 7518
1134	7278		4338	- 3817	- 627	686	- 49		- 8798
1158	7479		4200	- 4022	- 711	628	- 43	23	- 9576
1184	7691		4021	- 4499	- 676	312	- 18	25	-11189
1208	7889		3897	- 4818	- 590	- 24	4	18	-12365
1233	8098		3793	- 4427	- 525	- 41	3	7	-11671
1257	8297		3684	- 4116	- 460	- 72	2	3	-11172
1283	8510		3693	- 3903	- 398	- 49	7	2	-10569
1307	8708		3680	- 3754	- 330	- 26	- 1	- 2	-10200
1333	8917		3656	- 3573	- 252	- 97	12	- 1	- 9774
1359	9129		3547	- 3253	- 187	- 74	11	- 2	- 9171
1384	9332		3465	- 3041	- 118	- 53	3	- 1	- 8776
1410	9543		3369	- 2719	- 45	- 44	7		- 8069

[redacted]

TWT 79 BLOW 12 2ND REDUCTION

CONFIG C2 THETA = 80

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
886	6510		892	899	3207	19131	10653	5338
968	6668		898	912	3242	19208	10845	5336
993	6866		901	916	3251	19196	10911	5334
1018	7077		901	913	3239	19119	10876	5332
1044	7293		901	909	3226	19062	10822	5331
1067	7492		900	908	3219	19030	10795	5327
1093	7718		904	909	3217	18940	10831	5324
1119	7931		906	909	3211	18863	10835	5322
1144	8133		906	908	3204	18819	10817	5317
1169	8334		911	913	3215	18782	10909	5317
1195	8547		913	916	3220	18762	10955	5312
1220	8752		917	921	3231	18754	11040	5310
1245	8961		914	918	3220	18758	10962	5307
1271	9173		912	916	3215	18762	10921	5303
1297	9383		911	918	3220	18802	10931	5300
1323	9597		910	917	3214	18802	10893	5297

[redacted]

TWT 79 BLOW 12 2ND REDUCTION

CONFIG C2 THETA = 80

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
886	6510		3212	4976	- 11	7	- 7515	- 4255	- 3739
968	6668		3790	4917	49	7	- 7601	- 4280	- 3737
993	6866		5177	4582	188	21	- 8037	- 4155	- 3683
1018	7077		5192	4481	147	30	- 8144	- 4244	- 3650
1044	7293		5146	4505	- 102	- 25	- 8140	- 4154	- 3667
1067	7492		5050	4435	- 83	- 25	- 8251	- 4259	- 3660
1093	7718		4717	4390	- 26	- 11	- 8227	- 4089	- 3612
1119	7931		4620	4294	- 6	- 4	- 8330	- 4031	- 3576
1144	8133		4653	4289	6	1	- 8392	- 4048	- 3599
1169	8334		5117	4309	5	- 4	- 8252	- 3733	- 3556
1195	8547		4599	4377	6	- 9	- 7925	- 3945	- 3469
1220	8752		4153	4433	5	- 5	- 7715	- 3936	- 3420
1245	8961		3778	4475	7	- 5	- 7509	- 4054	- 3360
1271	9173		3375	4564	5	- 12	- 7295	- 4146	- 3330
1297	9383		2913	4563	6	- 6	- 7115	- 4194	- 3247
1323	9597		2425	4530	6	- 10	- 6955	- 4078	- 3150

[redacted]

TWT 79 BLOW 12 2ND REDUCTION

CONFIG C2 THETA = 80

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
886	6510		5866	- 818	- 134	52	- 11	- 7	- 1395
968	6668		6015	- 1534	- 138	131	13	47	- 2550
993	6866		6152	- 3155	- 232	446	49	183	- 5128
1018	7077		5942	- 3426	- 267	423	20	148	- 5766
1044	7293		5818	- 3597	- 271	- 442	- 6	- 105	- 6182
1067	7492		5596	- 3722	- 317	- 466	3	- 86	- 6651
1093	7718		5328	- 3626	- 320	- 166	5	- 28	- 6805
1119	7931		5076	- 3743	- 357	- 41	2	- 7	- 7374
1144	8133		4941	- 3953	- 380	- 21	-	6	- 8000
1169	8334		4873	- 4583	- 296	- 19	4	5	- 9404
1195	8547		4726	- 4240	- 193	- 4	10	5	- 8970
1220	8752		4609	- 3957	- 132	- 19	5	4	- 8586
1245	8961		4501	- 3747	- 66	8	5	7	- 8325
1271	9173		4460	- 3511	3	- 6	12	6	- 7873
1297	9383		4359	- 3211	57	10	6	6	- 7367
1323	9597		4253	- 2883	102	16	9	7	- 6778

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[redacted]

TWT 79 BLOW 13

CONFIG C2 THETA = 80

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
1008	6492		1190	969	3237	13528	13406	5338
1107	6669		1193	971	3240	13483	13431	5334
1133	6880		1195	971	3241	13455	13444	5332
1159	7090		1195	969	3232	13414	13409	5331
1183	7286		1198	973	3242	13406	13466	5327
1207	7486		1196	970	3230	13381	13408	5326
1232	7689		1197	971	3233	13377	13427	5324
1257	7891		1197	967	3217	13320	13359	5322
1283	8109		1195	966	3215	13337	13340	5322
1308	8313		1202	973	3232	13292	13443	5317
1335	8532		1199	968	3214	13276	13355	5315
1361	8744		1199	967	3208	13243	13330	5310
1386	8941		1199	967	3205	13231	13318	5309
1413	9156		1196	971	3214	13320	13342	5303
1438	9362		1183	967	3202	13503	13226	5303
1465	9573		1169	965	3197	13719	13128	5298

[redacted]

TWT 79 BLOW 13

CONFIG C2 THETA = 80

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
1008	6492		4503	6388	- 2	1	- 7385	- 4056	- 4717
1107	6669		4521	6396	- 3	6	- 7421	- 4110	- 4746
1133	6880		4825	6400	27	8	- 7501	- 4285	- 4800
1159	7090		5044	6469	10	9	- 7555	- 4491	- 4887
1183	7286		5196	6558	9	5	- 7564	- 4701	- 4960
1207	7486		5327	6622	9	3	- 7522	- 4762	- 4981
1232	7689		5367	6661	6	2	- 7448	- 4752	- 4961
1257	7891		5192	6520	5	-	- 7408	- 4621	- 4830
1283	8109		4769	6590	5	1	- 7328	- 4664	- 4829
1308	8313		4190	6502	5	5	- 7247	- 4606	- 4712
1335	8532		3604	6442	7	4	- 7159	- 4494	- 4612
1361	8744		3017	6425	8	7	- 7031	- 4436	- 4518
1386	8941		2523	6427	6	8	- 6924	- 4300	- 4450
1413	9156		2019	6412	8	11	- 6834	- 4283	- 4382
1438	9362		1591	6314	6	9	- 6752	- 4285	- 4263
1465	9573		1162	6182	7	14	- 6676	- 4173	- 4127

TWT 79 BLOW 13

CONFIG C2 THETA = 80

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
1008	6492		7694	- 1370	- 67	- 3	- 2	- 2	- 1781
1107	6669		7663	- 1620	- 89	24	- 7	-	- 2115
1133	6880		7712	- 2184	- 122	56	2	28	- 2832
1159	7090		7764	- 2650	- 149	43	- 5	12	- 3413
1183	7286		7798	- 3033	- 152	10	- 2	10	- 3889
1207	7486		7784	- 3413	- 121	27	-	9	- 4384
1232	7689		7705	- 3716	- 72	- 7	- 1	7	- 4823
1257	7891		7397	- 3841	- 48	-	1	5	- 5192
1283	8109		7249	- 3691	- 24	5	- 1	5	- 5092
1308	8313		6957	- 3382	- 1	52	- 5	6	- 4861
1335	8532		6715	- 3067	23	39	- 4	7	- 4568
1361	8744		6554	- 2726	71	59	- 7	9	- 4160
1386	8941		6453	- 2456	111	64	- 8	6	- 3806
1413	9156		6355	- 2193	139	85	- 12	7	- 3450
1438	9362		6201	- 1987	165	83	- 10	5	- 3204
1465	9573		6035	- 1774	185	98	- 15	5	- 2939

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TWT 79 BLOW 14 3RD REDUCTION

CONFIG C2 THETA = 60

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
1228	5020		203	649	7442	72338	2086	5317
1242	5123		199	635	7414	72138	2001	5317
1256	5348		203	651	7435	72259	2093	5314
1271	5587		201	643	7416	72117	2047	5312
1284	5802		202	644	7417	72116	2055	5312
1298	6051		209	668	7432	72123	2201	5310
1312	6281		201	642	7408	72039	2039	5309
1326	6514		203	650	7427	72182	2086	5307
1340	6743		204	652	7413	72031	2101	5305
1354	6958		203	650	7417	72089	2086	5303
1368	7172		203	648	7414	72072	2070	5303
1382	7387		202	649	7426	72190	2070	5300
1397	7608		205	656	7417	72058	2117	5300
1410	7700		201	645	7410	72056	2047	5298

~~CONFIDENTIAL~~

[redacted]

TWT 79 BLOW 14 3RD REDUCTION

CONFIG C2 THETA = 60

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
1228	5020		3337	1938	182	93	- 8067	- 1515	- 1563
1242	5123		3313	1646	136	131	- 8488	- 1878	- 1397
1256	5348		3087	1423	98	116	- 9238	- 418	- 1314
1271	5587		2858	1313	105	98	- 9894	- 618	- 1299
1284	5802		2888	1092	66	96	-11335	499	- 1238
1298	6051		2593	727	27	88	-14750	1082	- 1072
1312	6281		2164	947	21	43	-13067	882	- 1238
1326	6514		2055	- 204	- 6	7	37231	2670	- 758
1340	6743		1581	69	- 1	8	-34545	2508	- 923
1354	6958		1173	229	- 10	10	-45933	2699	- 1052
1368	7172		753	447	- 1	5	-26249	1585	- 1173
1382	7387		354	648	- 10	7	-20396	2082	- 1322
1397	7608		- 52	882	- 6	7	-16205	2324	- 1430
1410	7700		- 301	977	- 11	28	-15386	2026	- 1504

[redacted]

TWT 79 BLOW 14 3RD REDUCTION

CONFIG C2 THETA = 60

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
1228	5020		3625	- 1323	- 36	1151	45	199	- 3650
1242	5123		3358	- 1552	- 72	1437	- 17	188	- 4621
1256	5348		2980	- 1634	- 156	1324	- 35	148	- 5482
1271	5587		2690	- 1629	- 229	1299	- 22	142	- 6055
1284	5802		2456	- 1871	- 318	1188	- 46	107	- 7621
1298	6051		1909	- 1900	- 420	1010	- 63	66	- 9950
1312	6281		1832	- 1492	- 460	750	- 28	38	- 8145
1326	6514		679	- 1950	- 777	84	- 9	- 2	-28712
1340	6743		670	- 1434	- 783	79	- 8	2	-21395
1354	6958		624	- 1020	- 825	22	- 13	- 6	-16341
1368	7172		661	- 575	- 822	73	- 5		- 8705
1382	7387		721	- 160	- 856	15	- 10	- 8	- 2222
1397	7608		844	262	- 827	10	- 9	- 4	3107
1410	7700		885	513	- 851	64	- 29	- 4	5797

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TWT 79 BLOW 15 2ND REDUCTION

CONFIG C2 THETA = 60

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
1217	4526		204	650	7456	72454	2101	5331
1290	4683		198	634	7441	72420	1993	5324
1319	4892		202	644	7418	72119	2062	5322
1348	5101		201	641	7432	72285	2039	5322
1379	5313		200	637	7402	72005	2016	5317
1409	5516		202	645	7432	72254	2062	5317
1440	5728		202	644	7402	71970	2055	5312
1468	5929		204	653	7422	72116	2109	5310
1498	6134		202	643	7401	71960	2047	5309
1528	6332		201	642	7406	72025	2039	5309
1558	6541		202	643	7386	71811	2047	5302
1588	6740		202	643	7364	71590	2047	5298
1619	6951		202	643	7355	71504	2047	5295
1650	7153		201	637	7325	71229	2016	5295
1681	7362		202	633	7247	70457	2008	5290
1712	7562		198	604	7051	68638	1877	5285

TWT 79 BLOW 15 2ND REDUCTION

CONFIG C2 THETA = 60

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
1217	4526		1598	3875	- 43	20	- 6632	- 3668	- 2570
1290	4683		1633	4031	- 31	29	- 6713	- 3538	- 2706
1319	4892		1347	3794	- 44	49	- 6740	-10011	- 2557
1348	5101		2423	2737	36	58	- 7544	- 2329	- 2064
1379	5313		2967	1485	101	102	- 9311	- 1009	- 1383
1409	5516		2944	1299	61	84	-10218	- 1163	- 1328
1440	5728		2719	1305	80	77	-10671	- 589	- 1393
1468	5929		2535	911	1	84	-13128	1573	- 1196
1498	6134		2563	470	- 46	27	-22374	1267	- 1051
1528	6332		2347	- 399	- 24	- 17	17224	2420	- 688
1558	6541		1813	- 123	- 34		70693	2765	- 873
1588	6740		1413	139	- 1	- 33	-74510	2920	- 1036
1619	6951		1002	399	- 20	- 28	-29791	2415	- 1188
1650	7153		650	650	- 25	- 8	-20872	3036	- 1357
1681	7362		162	698	- 35	- 7	-19835	3248	- 1385
1712	7562		- 297	1058	- 37	- 9	-15440	3042	- 1633

[redacted]

TWT 79 BLOW 15 2ND REDUCTION

CONFIG C2 THETA = 60

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
1217	4526		3877	1593	185	165	- 44	- 17	4109
1290	4683		4057	1567	157	172	- 42	- 3	3863
1319	4892		3745	1477	127	389	- 66	- 1	3945
1348	5101		3652	- 161	- 43	454	- 23	64	- 442
1379	5313		2968	- 1483	- 188	1490	- 21	142	- 4995
1409	5516		2748	- 1674	- 262	1240	- 34	98	- 6090
1440	5728		2567	- 1582	- 336	1356	- 21	109	- 6161
1468	5929		2078	- 1714	- 421	1001	- 72	43	- 8251
1498	6134		1641	- 2024	- 577	649	- 46	- 27	-12329
1528	6332		697	- 2276	- 823	- 20	4	- 29	-32670
1558	6541		642	- 1700	- 851	32	- 14	- 31	-26465
1588	6740		671	- 1251	- 857	141	30	- 14	-18637
1619	6951		724	- 799	- 855	25	19	- 29	-11038
1650	7153		823	- 410	- 873	78	-	- 27	- 4986
1681	7362		716	41	- 896	18	- 4	- 35	578
1712	7562		951	550	- 925	14	-	- 38	5784

[redacted]

TWT 79 BLOW 16 2ND REDUCTION

CONFIG C2 THETA = 60

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
1275	7658		205	650	7433	72208	2124	5350
1305	7490		199	633	7426	72252	2008	5344
1336	7277		209	663	7435	72152	2201	5341
1365	7078		207	657	7430	72137	2163	5341
1395	6876		204	647	7426	72156	2101	5344
1425	6675		201	638	7401	71972	2039	5336
1455	6475		200	637	7427	72247	2024	5334
1485	6279		205	649	7398	71871	2109	5332
1516	6076		204	649	7413	72024	2101	5329
1545	5893		203	644	7406	71995	2070	5327
1576	5689		206	654	7390	71758	2140	5324
1605	5505		202	640	7396	71911	2047	5324
1635	5315		205	648	7367	71565	2101	5317
1665	5128		203	642	7348	71415	2062	5317
1695	4942		202	637	7323	71196	2039	5315
1725	4758		201	630	7268	70675	2001	5310
1754	4577		199	614	7131	69378	1931	5303

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TWT 79 BLOW 16 2ND REDUCTION

CONFIG C2 THETA = 60

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
1275	7658		-103	867	-14	-12	-16289	2391	-1412
1305	7490		234	705	-20	1	-19380	2856	-1367
1336	7277		559	517	-32	3	-22576	2848	-1167
1365	7078		957	368	-10	1	-29883	2637	-1101
1395	6876		1355	83	-33	-16	-14561	3827	-947
1425	6675		1801	-22	-15	-14	-	2371	-879
1455	6475		2204	-279	-15	-13	26315	2547	-734
1485	6279		2480	-463	-14	-57	11884	3185	-550
1516	6076		2987	-679	-28	-17	6162	3179	-418
1545	5893		3391	-735	-24	-14	5009	2989	-368
1576	5689		3665	-1010	-23	-20	1656	3374	-167
1605	5505		3177	1196	86	41	-10140	-414	-1213
1635	5315		3063	1398	111	66	-9177	-893	-1283
1665	5128		3213	1537	127	83	-8605	-1173	-1323
1695	4942		2545	2805	46	-23	-7262	-2969	-2037
1725	4758		1789	3696	-25	-7	-6609	-2667	-2443
1754	4577		1671	3824	-15	-37	-6560	-2428	-2508

TWT 79 BLOW 16 2ND REDUCTION

CONFIG C2 THETA = 60

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
1275	7658		820	301	-823	-97	8	-17	3674
1305	7490		742	-43	-869	16	-6	-19	-574
1336	7277		660	-381	-780	-34	-13	-29	-5775
1365	7078		663	-783	-792	74	-4	-9	-11802
1395	6876		568	-1233	-811	-82	3	-37	-21713
1425	6675		691	-1663	-788	-27	7	-19	-24083
1455	6475		688	-2113	-796	-24	5	-19	-30718
1485	6279		722	-2417	-721	-126	44	-38	-33460
1516	6076		867	-2938	-708	-15	1	-33	-33885
1545	5893		1120	-3284	-673	-14	-1	-28	-29316
1576	5689		1157	-3622	-644	44	4	-30	-31312
1605	5505		2800	-1919	-204	1194	15	94	-6854
1635	5315		2955	-1612	-143	1487	14	128	-5455
1665	5128		3209	-1545	-78	1455	15	151	-4815
1695	4942		3786	-108	39	176	47	20	-286
1725	4758		3935	1172	200	1	-11	-23	2979
1754	4577		3905	1470	215	2	16	-37	3765

[redacted]

TWT 79 BLOW 17 2ND REDUCTION

CONFIG C2 THETA = 60

TUNNEL CONDITIONS

BN DEC=	ALPHA 2	YAW 2	MACH 3	RN 2	HO	PO 1	Q 1	TTO 1
1005	4522		722	799	3133	22144	8080	5298
1096	4697		717	790	3118	22132	7967	5305
1127	4910		733	815	3172	22202	8340	5298
1157	5111		720	797	3135	22189	8058	5302
1186	5310		724	798	3132	22095	8108	5305
1217	5511		731	809	3158	22132	8278	5305
1249	5721		720	796	3131	22173	8042	5302
1280	5916		732	809	3149	22042	8275	5298
1312	6120		727	806	3150	22157	8199	5298
1344	6316		722	796	3124	22075	8057	5302
1376	6514		734	807	3145	21993	8283	5307
1409	6718		725	799	3130	22063	8119	5302
1440	6903		727	803	3139	22075	8176	5302
1472	7111		730	802	3132	21973	8199	5305
1505	7313		728	802	3134	22034	8167	5300
1542	7543		727	800	3130	22014	8149	5302

[redacted]

[redacted]

TWT 79 BLOW 17 2ND REDUCTION

CONFIG C2 THETA = 60

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
1005	4522		1958	4881		8	- 6585	- 3509	- 3214
1096	4697		1855	5107	- 2	2	- 6553	- 3642	- 3347
1127	4910		1532	5164	-	2	- 6504	- 3696	- 3359
1157	5111		1206	5573	9	6	- 6476	- 3879	- 3609
1186	5310		952	5612	8	5	- 6470	- 3866	- 3631
1217	5511		798	5696	- 5	- 7	- 6511	- 3841	- 3709
1249	5721		903	5783	7	2	- 6752	- 3659	- 3904
1280	5916		1352	5248	140	15	- 7035	- 3685	- 3692
1312	6120		1832	5101	163	14	- 7375	- 3879	- 3762
1344	6316		2663	4528	190	33	- 7778	- 3629	- 3522
1376	6514		3348	4051	164	38	- 8186	- 3527	- 3316
1409	6718		4586	3693	143	51	- 8532	- 3850	- 3151
1440	6903		5849	3125	69	25	- 9225	- 4022	- 2883
1472	7111		5939	3049	56	18	- 9615	- 4050	- 2931
1505	7313		6098	2924	34	14	-10268	- 3394	- 3002
1542	7543		5705	2829	9	- 4	-10759	- 3075	- 3044

[redacted]

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TWT 79 BLOW 17 2ND REDUCTION

CONFIG C2 THETA = 60

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
1005	4522		4844	2048	252	91	- 5	5	4228
1096	4697		4999	2129	268	63	- 3	-	4258
1127	4910		4906	2223	276	56	- 2	1	4531
1157	5111		5095	2560	288	110	1	11	5025
1186	5310		5059	2608	278	51		9	5156
1217	5511		5129	2604	248	37	3	- 8	5077
1249	5721		5350	2373	119	84	2	7	4435
1280	5916		5199	1530	- 10	420	59	127	2943
1312	6120		5352	852	- 152	427	66	149	1593
1344	6316		5242	- 332	- 257	596	57	184	- 634
1376	6514		5083	- 1334	- 338	604	34	165	- 2625
1409	6718		5182	- 2795	- 345	970	9	152	- 5392
1440	6903		5011	- 4343	- 393	305	2	74	- 8667
1472	7111		4808	- 4632	- 488	210	1	59	- 9635
1505	7313		4568	- 4987	- 635	134	- 3	37	-10917
1542	7543		4173	- 4809	- 765	- 45	6	8	-11524

[redacted]

~~CONFIDENTIAL~~

TWT 79 BLOW 19 2ND REDUCTION

CONFIG C2 THETA = 60

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
1760	4522		204	224	2595	25215	734	5377
1828	4685		201	221	2595	25235	711	5380
1858	4894		202	222	2589	25174	718	5377
1890	5106		203	223	2586	25130	726	5377
1921	5310		196	213	2562	24949	672	5380
1953	5518		198	216	2581	25126	687	5380
1984	5723		198	216	2581	25126	687	5380
2016	5931		199	217	2578	25086	695	5380
1	6140		196	213	2567	24996	672	5377
32	6348		196	214	2576	25088	672	5377
64	6552		201	220	2589	25181	711	5377
97	6763		204	224	2587	25140	734	5377
130	6967		198	216	2570	25016	687	5377
164	7179		197	215	2569	25013	680	5375
195	7387		198	216	2576	25073	687	5377
228	7591		201	220	2582	25110	711	5373

~~CONFIDENTIAL~~

[redacted]

TWT 79 BLOW 19 2ND REDUCTION

CONFIG C2 THETA = 60

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
1760	4522		946	4520	- 3	3	- 7005	- 3889	- 3166
1828	4685		887	4914	23	- 8	- 6912	- 4515	- 3397
1858	4894		740	4573	8	52	- 7015	- 4709	- 3208
1890	5106		550	4545	21	- 8	- 7064	- 4928	- 3210
1921	5310		635	4658	- 6	3	- 7158	- 3220	- 3334
1953	5518		1861	2358	34	69	- 8991	- 108	- 2120
1984	5723		2059	165	- 5	18	-69581	2411	- 1149
2016	5931		1492	395	- 73	- 14	-32269	1372	- 1273
1	6140		1205	357	37	11	-36025	1600	- 1284
32	6348		826	332	- 20	33	-40106	2447	- 1332
64	6552		494	558	7	20	-26083	1998	- 1456
97	6763		136	653	- 7	11	-23424	886	- 1529
130	6967		- 176	813	- 35	20	-20374	1041	- 1656
164	7179		- 476	1061	- 51	12	-17727	2254	- 1880
195	7387		- 721	1124	19	- 4	-17077	2617	- 1919
228	7591		- 1225	1336	- 9	4	-15245	1448	- 2037

[redacted]

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TWT 79 BLOW 19 2ND REDUCTION

CONFIG C2 THETA = 60

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
1760	4522		3875	2512	- 8	4	- 5	-	6482
1828	4685		4192	2714	29	161	22	11	6475
1858	4894		3934	2445	- 25	317	- 34	40	6215
1890	5106		3881	2428	- 58	156	20	12	6256
1921	5310		4107	2288	- 99	- 1	- 6	- 3	5572
1953	5518		2998	- 182	- 392	1016	- 37	67	- 607
1984	5723		1253	- 1642	- 914	35	- 18	5	-13102
2016	5931		1101	- 1082	- 914	- 627	- 26	- 70	- 9826
1	6140		890	- 887	- 969	193	8	38	- 9970
32	6348		666	- 591	- 1055	- 149	- 39	- 4	- 8873
64	6552		713	- 218	- 1044	17	- 15	14	- 3059
97	6763		656	123	- 1073	16	- 13	- 2	1868
130	6967		701	447	- 1108	- 155	- 31	- 26	6375
164	7179		859	784	- 1180	- 158	- 27	- 45	9131
195	7387		879	1005	- 1190	171	9	17	11429
228	7591		998	1513	- 1192	- 1	- 6	- 7	15160

[redacted]

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TWT 79 BLOW 20

CONFIG C2 THETA = 60

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
964	4527		202	285	3329	32367	927	5380
1054	4701		204	285	3308	32149	935	5385
1084	4907		191	269	3318	32350	827	5387
1114	5110		191	269	3323	32403	827	5387
1144	5313		201	282	3315	32243	911	5387
1175	5517		206	289	3318	32222	958	5387
1206	5724		209	294	3329	32305	989	5387
1238	5932		197	278	3330	32421	881	5387
1269	6139		202	285	3332	32392	927	5387
1331	6548		203	284	3320	32278	927	5387
1363	6756		199	279	3315	32252	896	5387
1394	6953		200	280	3311	32208	904	5387
1430	7181		204	287	3318	32238	942	5387
1462	7386		201	281	3307	32158	911	5387
1493	7587		201	281	3311	32194	911	5391

[redacted]

TWT 79 BLOW 20

CONFIG C2 THETA = 60

BODY AXES DATA AND BALANCE CHAMBER PRESSURE. (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
964	4527		1398	3537	18	- 5	- 6598	- 4100	- 2334
1054	4701		1002	3516	17	- 6	- 6777	- 2325	- 2382
1084	4907		1281	3836	20	- 42	- 6936	- 5438	- 2660
1114	5110		2677	1692	146	23	- 9255	- 1037	- 1566
1144	5313		2654	764	109	78	-14041	- 653	- 1073
1175	5517		2574	534	74	28	-18773	- 647	- 1002
1206	5724		2226	- 238	15	9	30802	2036	- 733
1238	5932		1915	- 236	6	- 32	36692	1422	- 867
1269	6139		1599	- 45	26	- 39	-	897	- 963
1331	6548		824	177	26	- 42	-64000	513	- 1133
1363	6756		525	310	26	- 44	-41301	- 1374	- 1281
1394	6953		199	571	26	- 46	-24918	76	- 1422
1430	7181		8	673	3	- 5	-21807	1183	- 1467
1462	7386		- 315	834	14	- 1	-19322	1923	- 1611
1493	7587		- 683	1009	25	- 49	-17049	2308	- 1719

~~CONFIDENTIAL~~

TWT 79 BLOW 20

CONFIG C2 THETA = 60

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
964	4527		3497	1496	177	126	16	9	4279
1054	4701		3255	1664	90	124	16	9	5111
1084	4907		3737	1545	48	-136	45	-12	4134
1114	5110		2998	-1021	-246	983	74	128	-3404
1144	5313		2203	-1664	-392	1404	3	134	-7554
1175	5517		1908	-1808	-484	1104	19	76	-9475
1206	5724		1004	-2001	-765	148		17	-19922
1238	5932		774	-1767	-917	-95	30	-11	-22844
1269	6139		726	-1425	-899	30	47	4	-19644
1331	6548		503	-676	-963	23	49	6	-13441
1363	6756		487	-367	-1037	21	51	7	-7534
1394	6953		604	13	-1019	17	52	8	214
1430	7181		642	202	-1005	134	5	1	3155
1462	7386		713	534	-1057	134	4	13	7492
1493	7587		811	908	-1067	6	54	12	11196

TWT 79 BLOW 21

CONFIG C2 THETA = 60

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
1002	4529		883	881	3197	19248	10513	5392
1084	4694		893	892	3228	19227	10740	5399
1108	4903		897	896	3241	19219	10833	5404
1134	5113		891	884	3208	19146	10646	5404
1160	5318		893	886	3210	19118	10675	5404
1186	5516		898	890	3219	19077	10764	5404
1212	5713		904	895	3227	18988	10870	5401
1238	5924		905	895	3222	18951	10860	5399
1264	6122		908	897	3225	18903	10911	5399
1290	6312		911	900	3233	18895	10967	5399
1316	6503		903	892	3211	18927	10801	5396
1344	6714		906	893	3213	18882	10840	5396
1371	6917		907	895	3217	18882	10864	5394
1397	7116		904	887	3211	18895	10818	5421
1425	7330		907	896	3215	18870	10859	5387
1452	7534		904	893	3208	18886	10801	5385

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TWT 79 BLOW 21

CONFIG C2 THETA = 60

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
1002	4529		2448	6371	4	- 4	- 6625	- 3693	- 4221
1084	4694		2325	6547	6	- 2	- 6632	- 3825	- 4343
1108	4903		2124	6710	14	- 6	- 6682	- 3924	- 4483
1134	5113		1956	6861	12	- 9	- 6749	- 3983	- 4630
1160	5318		2021	6598	10	- 6	- 6894	- 3998	- 4549
1186	5516		2236	6249	7	- 10	- 7043	- 4023	- 4401
1212	5713		2322	5681	3	- 11	- 7145	- 3741	- 4059
1238	5924		2417	5647	2	- 13	- 7224	- 3616	- 4079
1264	6122		2784	5497	7	- 11	- 7304	- 3729	- 4015
1290	6312		4039	5038	9	- 36	- 7464	- 4201	- 3761
1316	6503		4886	4839	126	20	- 7613	- 4654	- 3684
1344	6714		5165	4675	123	26	- 7849	- 4750	- 3669
1371	6917		5581	4645	215	35	- 8038	- 4805	- 3734
1397	7116		5506	4561	214	34	- 8128	- 4837	- 3707
1425	7330		5194	4545	148	27	- 8129	- 4738	- 3694
1452	7534		4852	4478	60	20	- 8129	- 4507	- 3640

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TWT 79 BLOW 21

CONFIG C2 THETA = 60

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
1002	4529		6250	2743	297	44	6		4389
1084	4694		6371	2771	289	73	5	3	4350
1108	4903		6459	2796	248	50	14	6	4328
1134	5113		6569	2783	195	62	15	4	4236
1160	5318		6493	2336	100	44	11	5	3598
1186	5516		6406	1735	20	37	12	1	2709
1212	5713		6032	1134	- 22	- 2	11	- 4	1879
1238	5924		6089	811	- 60	- 22	12	- 6	1332
1264	6122		6159	207	- 77	- 83	13		336
1290	6312		6320	- 1325	- 64	- 496	36	- 9	- 2096
1316	6503		6449	- 2386	- 74	382	35	123	- 3700
1344	6714		6314	- 2943	- 155	427	24	124	- 4662
1371	6917		6326	- 3564	- 216	587	44	214	- 5634
1397	7116		6095	- 3739	- 251	590	37	213	- 6134
1425	7330		5846	- 3669	- 268	479	16	150	- 6276
1452	7534		5560	- 3561	- 280	300	- 4	63	- 6405

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TWT 79 BLOW 22

CONFIG C2 THETA = 60

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
740	4506		1182	940	3211	13549	13258	5426
833	4678		1189	949	3247	13589	13437	5433
859	4889		1184	940	3217	13536	13292	5433
884	5087		1186	942	3222	13532	13322	5432
910	5292		1191	944	3228	13475	13369	5432
936	5494		1191	941	3215	13419	13319	5432
962	5692		1193	945	3230	13439	13393	5430
990	5904		1192	945	3227	13447	13374	5428
1016	6112		1190	944	3225	13475	13354	5426
1043	6313		1188	943	3219	13480	13320	5426
1071	6524		1188	939	3204	13427	13256	5421
1101	6727		1190	946	3224	13475	13348	5420
1126	6935		1187	942	3210	13459	13279	5418
1151	7135		1183	943	3210	13532	13257	5413
1179	7346		1168	940	3201	13760	13136	5411
1207	7554		1158	940	3198	13927	13070	5404

[redacted]

TWT 79 BLOW 22

CONFIG C2 THETA = 60

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
740	4506		4984	6539	11	10	- 7004	- 3519	- 4580
833	4678		4830	6724	14	4	- 7002	- 3555	- 4709
859	4889		4644	6955	12	2	- 7000	- 3638	- 4869
884	5087		4401	7056	12	2	- 6989	- 3644	- 4931
910	5292		4104	7118	12	- 3	- 7002	- 3541	- 4984
936	5494		3991	7192	8	-	- 7015	- 3452	- 5045
962	5692		4178	7004	14	- 2	- 7077	- 3472	- 4957
990	5904		4477	6841	14	-	- 7181	- 3696	- 4912
1016	6112		4599	6836	14	1	- 7238	- 3949	- 4947
1043	6313		4810	6647	12		- 7309	- 4110	- 4858
1071	6524		5015	6530	15	-	- 7363	- 4288	- 4807
1101	6727		5243	6440	13	-	- 7440	- 4306	- 4792
1126	6935		5552	6476	15	- 6	- 7538	- 4323	- 4882
1151	7135		5676	6498	17	- 3	- 7575	- 4283	- 4922
1179	7346		5614	6457	14	- 1	- 7605	- 3905	- 4911
1207	7554		5381	6295	18	- 4	- 7625	- 3628	- 4800

TWT 79 BLOW 22

CONFIG C2 THETA = 60

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
740	4506		8149	1091	203	108	1	15	1339
833	4678		8208	1085	192	88	6	13	1322
859	4889		8294	1074	180	88	6	10	1294
884	5087		8250	1039	172	86	6	11	1259
910	5292		8153	1017	144	77	9	8	1248
936	5494		8179	865	127	76	5	7	1057
962	5692		8149	323	98	86	9	10	396
990	5904		8169	- 320	48	90	7	12	- 392
1016	6112		8207	- 726	16	91	6	12	- 884
1043	6313		8103	- 1287	- 11	68	6	11	- 1588
1071	6524		8030	- 1819	- 29	87	7	14	- 2265
1101	6727		7966	- 2348	- 62	89	5	12	- 2947
1126	6935		8018	- 2911	- 109	84	11	12	- 3631
1151	7135		7972	- 3300	- 127	76	8	15	- 4139
1179	7346		7789	- 3543	- 147	85	5	14	- 4549
1207	7554		7439	- 3639	- 161	111	8	16	- 4892

[redacted]

TWT 79 BLOW 23

CONFIG C2 THETA = 60

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
1170	7631		741	794	3138	21796	8370	5387
1188	7630		736	802	3188	22238	8438	5399
1206	7631		719	777	3138	22246	8045	5408
1224	7632		721	781	3152	22303	8108	5411
1242	7631		735	794	3170	22133	8378	5414
1260	7506		732	788	3156	22092	8297	5418
1278	7290		721	774	3130	22149	8050	5420
1296	7062		719	777	3144	22271	8068	5420
1314	6832		733	794	3181	22263	8365	5421
1332	6603		730	785	3152	22108	8255	5423
1350	6382		724	776	3133	22108	8102	5423
1368	6162		720	774	3135	22194	8053	5425
1386	5945		726	783	3158	22230	8212	5426
1404	5727		727	785	3159	22214	8230	5425
1422	5507		724	776	3132	22096	8103	5423
1440	5268		721	777	3145	22238	8101	5423
1458	5041		720	777	3147	22291	8078	5421
1476	4815		727	782	3148	22157	8188	5421
1494	4587		721	777	3142	22218	8094	5420
1512	4494		715	774	3133	22283	7976	5406

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TWT 79 BLOW 23

CONFIG C2 THETA = 60

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
1170	7631		5684	3156	16	- 6	-10258	- 4083	- 3238
1188	7630		5606	3010	31		-10513	- 3748	- 3165
1206	7631		5584	2906	14	- 3	-10812	- 3430	- 3142
1224	7632		5708	3022	13	2	-10638	- 3512	- 3214
1242	7631		5453	2902	8	1	-10614	- 3300	- 3080
1260	7506		5549	2819	11	- 19	-10731	- 3073	- 3025
1278	7290		6094	2923	30	- 9	-10475	- 3248	- 3062
1296	7062		5807	3298	67	- 18	- 9553	- 4078	- 3150
1314	6832		5348	3368	122	- 10	- 9063	- 3867	- 3053
1332	6603		4849	3458	148		- 8695	- 3579	- 3007
1350	6382		3561	4105	183	27	- 8152	- 3665	- 3347
1368	6162		2716	4670	198	13	- 7720	- 3764	- 3605
1386	5945		1751	5227	152	12	- 7295	- 3938	- 3813
1404	5727		1120	5608	85	9	- 6889	- 3727	- 3863
1422	5507		948	5654	31	10	- 6648	- 3552	- 3759
1440	5268		1010	5764	17	- 6	- 6502	- 3983	- 3748
1458	5041		1214	5607	8	- 8	- 6518	- 3961	- 3655
1476	4815		1602	5256	-	- 1	- 6560	- 3754	- 3448
1494	4587		1957	5081	- 1	3	- 6608	- 3785	- 3357
1512	4494		2098	5125	- 4	8	- 6632	- 3694	- 3399

[redacted]

TWT 79 BLOW 23

CONFIG C2 THETA = 60

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
1170	7631		4412	- 4776	- 736	- 3	10	14	-10824
1188	7630		4252	- 4734	- 768	160	7	30	-11135
1206	7631		4144	- 4738	- 817	11	6	13	-11432
1224	7632		4285	- 4832	- 803	40	2	13	-11275
1242	7631		4110	- 4612	- 766	25	1	8	-11220
1260	7506		4154	- 4635	- 763	- 253	21	5	-11158
1278	7290		4586	- 4965	- 696	- 206	18	26	-10827
1296	7062		5038	- 4384	- 544	- 202	40	57	- 8702
1314	6832		5106	- 3725	- 425	- 125	54	110	- 7296
1332	6603		5130	- 3026	- 347	75	60	136	- 5898
1350	6382		5255	- 1385	- 318	488	57	177	- 2635
1368	6162		5400	- 170	- 239	323	82	180	- 315
1386	5945		5391	1149	- 122	398	67	137	2132
1404	5727		5323	2090	52	313	38	76	3926
1422	5507		5178	2461	179	164	10	31	4753
1440	5268		5196	2691	268	51	15	10	5178
1458	5041		5095	2638	266	40	11	1	5177
1476	4815		4984	2314	255	30	1	- 1	4642
1494	4587		5009	2133	246	63	- 3	1	4259
1512	4494		5105	2146	243	79	- 9	3	4203

~~CONFIDENTIAL~~

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TWT 79 BLOW 24

CONFIG C2 THETA = 40

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
870	2545		722	804	3169	22402	8170	5317
896	2692		726	811	3179	22382	8263	5309
918	2903		731	814	3172	22238	8316	5302
942	3117		730	815	3181	22304	8331	5305
966	3337		727	800	3130	22009	8152	5303
990	3553		721	793	3120	22067	8037	5309
1014	3768		718	795	3135	22230	8033	5309
1038	3994		725	798	3130	22058	8121	5307
1062	4213		716	789	3118	22157	7951	5309
1086	4426		718	790	3119	22132	7978	5309
1110	4655		715	785	3107	22103	7907	5309
1134	4864		715	793	3135	22292	7985	5307
1158	5078		728	807	3154	22161	8226	5303
1182	5300		719	799	3148	22308	8076	5305
1206	5509		726	800	3132	22062	8132	5300
1231	5679		712	787	3115	22222	7880	5298
1255	5709		721	795	3120	22067	8035	5297
1268	5718		729	805	3138	22030	8198	5295
1249	5708		734	807	3138	21936	8267	5298

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~~CONFIDENTIAL~~

TWT 79 BLOW 24

CONFIG C2 THETA = 40

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
870	2545		4336	3503	2	2	- 6660	- 3314	- 2333
896	2692		4198	3631	-	6	- 6704	- 3482	- 2434
918	2903		3815	3815	8	5	- 6736	- 3383	- 2570
942	3117		3555	4097	5	8	- 6732	- 3617	- 2758
966	3337		3096	4180	10	7	- 6742	- 3277	- 2818
990	3553		2909	4518	10	6	- 6752	- 3562	- 3051
1014	3768		2660	4752	6	6	- 6770	- 3679	- 3217
1038	3994		2268	4799	1	2	- 6759	- 3662	- 3244
1062	4213		2046	5119	- 1	8	- 6751	- 3844	- 3456
1086	4426		1779	5291	3	5	- 6701	- 3979	- 3545
1110	4655		1534	5395	7	3	- 6660	- 3948	- 3593
1134	4864		1346	5753	12	5	- 6599	- 4225	- 3797
1158	5078		995	5786	- 4	11	- 6563	- 4144	- 3797
1182	5300		841	5959	- 13	11	- 6541	- 4090	- 3898
1206	5509		814	5933	- 24	4	- 6589	- 4110	- 3910
1231	5679		941	5984	- 35	2	- 6729	- 4142	- 4026
1255	5709		1025	5844	- 34	12	- 6785	- 4293	- 3965
1268	5718		925	5663	- 22	2	- 6741	- 4066	- 3817
1249	5708		951	5665	- 36	5	- 6746	- 3966	- 3822

~~CONFIDENTIAL~~

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TWT 79 BLOW 24

CONFIG C2 THETA = 40

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
870	2545		5421	1299	328	14	1	3	2397
896	2692		5387	1337	306	27	- 3	5	2481
918	2903		5187	1485	274	53	4	9	2863
942	3117		5162	1666	264	65	1	9	3227
966	3337		4885	1787	234	79	5	11	3659
990	3553		4993	1987	223	78	5	11	3979
1014	3768		5010	2135	202	62	1	9	4261
1038	3994		4820	2224	184	18	- 1	2	4614
1062	4213		4951	2424	179	59	- 6	5	4897
1086	4426		4967	2547	192	42	- 1	5	5129
1110	4655		4972	2597	201	25	3	7	5222
1134	4864		5208	2791	232	65	4	13	5360
1158	5078		5111	2887	233	117	- 11	4	5649
1182	5300		5266	2914	243	90	- 16	- 4	5535
1206	5509		5331	2728	211	6	- 17	- 17	5117
1231	5679		5522	2491	137	54	- 20	- 28	4511
1255	5709		5463	2314	107	125	- 29	- 22	4236
1268	5718		5261	2292	125	94	- 13	- 17	4357
1249	5708		5272	2281	123	66	- 24	- 27	4325

[redacted]

~~CONFIDENTIAL~~

TWT 79 BLOW 25

CONFIG C2 THETA = 40

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
732	2510		879	889	3195	19328	10450	5344
807	2678		881	891	3197	19292	10480	5339
831	2882		886	895	3202	19219	10564	5338
857	3094		890	900	3210	19194	10636	5332
881	3303		894	901	3206	19073	10677	5329
907	3509		900	908	3219	19024	10794	5327
933	3718		907	915	3232	18971	10918	5324
959	3926		907	914	3229	18935	10915	5322
985	4134		904	911	3219	18955	10840	5319
1012	4348		907	915	3226	18923	10905	5315
1038	4549		909	915	3220	18858	10905	5314
1064	4750		905	912	3212	18890	10830	5310
1090	4954		902	905	3193	18841	10729	5309
1118	5168		903	909	3200	18862	10764	5303
1147	5393		903	911	3208	18906	10791	5302
1175	5597		902	912	3208	18931	10774	5297

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TWT 79 BLOW 25

CONFIG C2 THETA = 40

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
732	2510		5455	3630	10	4	- 6787	- 3220	- 2464
807	2678		5183	3858	8	2	- 6830	- 3267	- 2635
831	2882		4885	4155	11	5	- 6855	- 3359	- 2848
857	3094		4469	4480	11	6	- 6877	- 3336	- 3081
881	3303		3986	4701	13	8	- 6876	- 3313	- 3232
907	3509		3690	4943	5	8	- 6884	- 3393	- 3403
933	3718		3288	5203	5	7	- 6828	- 3423	- 3553
959	3926		2885	5493	5	6	- 6761	- 3426	- 3714
985	4134		2811	5926	4	6	- 6739	- 3783	- 3994
1012	4348		2435	6165	2	4	- 6741	- 3680	- 4155
1038	4549		2154	6441	- 7	3	- 6759	- 3744	- 4354
1064	4750		2032	6721	- 5	10	- 6757	- 3807	- 4542
1090	4954		1856	6756	3	7	- 6771	- 3805	- 4574
1118	5168		1854	6666	-	7	- 6847	- 3708	- 4565
1147	5393		2041	6487	4	8	- 6992	- 3718	- 4536
1175	5597		2196	6137	2	8	- 7093	- 3739	- 4353

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~~CONFIDENTIAL~~

TWT 79 BLOW 25

CONFIG C2 THETA = 40

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
732	2510		6480	974	350	35	7	8	1502
807	2678		6366	1110	319	57	6	6	1743
831	2882		6283	1285	292	54	7	9	2046
857	3094		6137	1545	258	73	7	11	2517
881	3303		5904	1769	230	93	7	14	2997
907	3509		5861	1924	208	58	- 1	9	3282
933	3718		5764	2159	213	55	-	9	3746
959	3926		5710	2427	227	73	- 1	8	4251
985	4134		6025	2593	240	71	- 1	7	4303
1012	4348		6008	2798	220	68	- 1	4	4657
1038	4549		6103	2980	195	35	- 7	- 3	4882
1064	4750		6328	3043	192	119	- 11	3	4809
1090	4954		6345	2972	173	108	- 3	7	4684
1118	5168		6379	2680	121	99	- 5	4	4200
1147	5393		6445	2170	38	167	- 4	8	3367
1175	5597		6315	1614	- 10	117	- 5	6	2555

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TWT 79 BLOW 26

CONFIG C2 THETA = 40

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
1000	2478		1186	970	3239	13605	13392	5334
1077	2647		1220	970	3232	12977	13530	5329
1102	2864		1185	964	3212	13508	13275	5326
1127	3072		1183	957	3187	13434	13161	5324
1152	3275		1189	963	3206	13418	13269	5322
1177	3478		1187	956	3182	13345	13163	5322
1203	3687		1192	961	3194	13308	13238	5317
1228	3889		1194	966	3207	13329	13301	5314
1254	4098		1199	968	3213	13276	13350	5312
1280	4306		1201	970	3217	13239	13377	5309
1307	4519		1197	969	3212	13304	13336	5307
1335	4741		1189	962	3185	13329	13185	5303
1363	4957		1189	965	3195	13369	13226	5300
1390	5169		1186	969	3207	13467	13261	5298
1416	5379		1168	966	3193	13723	13108	5293
1443	5580		1155	966	3196	13971	13041	5290

[redacted]

TWT 79 BLOW 26

CONFIG C2 THETA = 40

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
1000	2478		7753	3323	21	1	- 6804	- 2793	- 2261
1077	2647		7401	3541	8	2	- 6840	- 1259	- 2422
1102	2864		7160	3940	15	4	- 6884	- 2816	- 2712
1127	3072		6794	4260	16	4	- 6925	- 2875	- 2950
1152	3275		6456	4589	12	6	- 6953	- 2875	- 3191
1177	3478		6110	4931	13	6	- 6969	- 2903	- 3437
1203	3687		5729	5287	15	5	- 6987	- 2978	- 3694
1228	3889		5500	5659	13	7	- 7004	- 3069	- 3963
1254	4098		5175	5963	13	6	- 7017	- 3095	- 4184
1280	4306		4867	6233	10	3	- 7030	- 3109	- 4382
1307	4519		4782	6536	12	6	- 7034	- 3262	- 4597
1335	4741		4695	6804	14	5	- 7032	- 3486	- 4784
1363	4957		4520	6997	15	4	- 7026	- 3626	- 4916
1390	5169		4452	7114	12	5	- 7030	- 3786	- 5001
1416	5379		4308	7226	5	4	- 7035	- 4001	- 5083
1443	5580		4400	7021	14	3	- 7027	- 3993	- 4933

[redacted]

TWT 79 BLOW 26

CONFIG C2 THETA = 40

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
1000	2478		8432	- 234	477	26	19	9	- 277
1077	2647		8203	- 128	446	34	6	5	- 157
1102	2864		8172	26	415	49	12	11	31
1127	3072		8017	192	375	66	11	12	240
1152	3275		7912	366	340	64	7	12	463
1177	3478		7832	565	309	80	7	12	721
1203	3687		7756	792	274	86	9	13	1021
1228	3889		7834	952	246	93	6	13	1215
1254	4098		7817	1108	214	91	6	13	1418
1280	4306		7812	1231	184	64	5	9	1576
1307	4519		8007	1214	172	80	4	13	1516
1335	4741		8186	1148	163	72	6	13	1402
1363	4957		8257	1097	153	97	7	14	1328
1390	5169		8342	917	145	122	3	12	1099
1416	5379		8376	793	131	79	-	7	947
1443	5580		8280	307	146	116	5	14	371

~~CONFIDENTIAL~~

TWT 79 BLOW 27

CONFIG C2 THETA = 120

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
820	10516		1198	964	3223	13326	13386	5341
889	10702		1204	965	3224	13216	13422	5338
913	10914		1204	968	3232	13248	13455	5338
937	11115		1205	964	3216	13171	13393	5334
962	11324		1207	967	3228	13187	13450	5336
986	11531		1205	966	3222	13208	13415	5332
1011	11739		1201	960	3202	13187	13315	5331
1036	11947		1205	971	3235	13257	13469	5329
1063	12174		1203	969	3224	13244	13416	5324
1089	12388		1197	961	3196	13224	13274	5322
1115	12599		1198	961	3195	13216	13267	5319
1140	12804		1197	964	3202	13257	13295	5317
1167	13023		1195	959	3187	13232	13221	5317
1193	13239		1190	961	3189	13322	13204	5312
1219	13449		1175	963	3196	13606	13157	5310
1246	13661		1157	965	3203	13968	13080	5305

~~CONFIDENTIAL~~

TWT 79 BLOW 27

CONFIG C2 THETA = 120

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
820	10516		- 1316	5740	- 5	- 16	- 6239	- 3668	- 3581
889	10702		- 1797	5594	- 5	- 16	- 6174	- 3659	- 3454
913	10914		- 2437	5489	- 3	- 13	- 6107	- 3762	- 3353
937	11115		- 3035	5364	1	- 10	- 6039	- 3799	- 3239
962	11324		- 3711	5241	5	- 6	- 5970	- 3918	- 3128
986	11531		- 4424	5116	7	2	- 5883	- 4086	- 3009
1011	11739		- 5170	4987	8	1	- 5802	- 4267	- 2894
1036	11947		- 5928	4842	8	3	- 5702	- 4482	- 2761
1063	12174		- 6740	4646	6	4	- 5577	- 4768	- 2591
1089	12388		- 7565	4442	6	3	- 5422	- 5060	- 2409
1115	12599		- 8217	4132	8	4	- 5210	- 5188	- 2152
1140	12804		- 8689	3670	4	5	- 4850	- 5207	- 1780
1167	13023		- 9150	3127	1	4	- 4314	- 4991	- 1349
1193	13239		- 9599	2666	3	6	- 3732	- 4663	- 995
1219	13449		-10011	2253	2	2	- 3062	- 4643	- 690
1246	13661		-10491	1907	- 2	4	- 2328	- 4669	- 444

[redacted]

TWT 79 BLOW 27

CONFIG C2 THETA = 120

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
820	10516		5884	- 231	282		17	- 1	- 393
889	10702		5875	80	280	14	17		137
913	10914		5985	502	272	34	14	2	839
937	11115		6098	896	264	73	9	5	1469
962	11324		6280	1343	250	111	4	7	2138
986	11531		6516	1812	241	106	- 5	5	2781
1011	11739		6807	2296	225	128	- 4	7	3374
1036	11947		7132	2779	213	155	- 7	6	3896
1063	12174		7497	3288	201	150	- 7	3	4385
1089	12388		7905	3805	194	145	- 6	3	4814
1115	12599		8172	4221	199	148	- 8	4	5165
1140	12804		8245	4582	227	143	- 7	1	5558
1167	13023		8297	4965	258	147	- 3	- 2	5984
1193	13239		8440	5292	269	142	- 7	- 2	6270
1219	13449		8623	5562	266	130	- 3	-	6450
1246	13661		8933	5822	246	128	- 1	- 4	6517

[redacted]

TWT 79 BLOW 28

CONFIG C2 THETA = 60

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
963	4536		409	678	4110	36639	4283	5353
1047	4710		399	669	4126	36966	4127	5343
1078	4926		400	670	4120	36897	4138	5339
1108	5136		401	670	4121	36897	4144	5338
1138	5337		388	649	4101	36966	3896	5338
1168	5535		404	670	4083	36485	4174	5332
1199	5738		395	662	4112	36938	4028	5331
1230	5943		395	657	4082	36667	3997	5329
1260	6149		407	678	4094	36517	4240	5324
1289	6340		399	670	4115	36865	4115	5322
1322	6552		396	658	4069	36513	4014	5322
1353	6760		408	684	4114	36679	4282	5317
1385	6962		395	662	4095	36776	4016	5315
1417	7169		393	656	4078	36663	3958	5310
1450	7379		403	674	4094	36602	4162	5309
1482	7591		397	666	4098	36764	4053	5307

[redacted]

TWT 79 BLOW 28

CONFIG C2 THETA = 60

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
963	4536		1578	3797	- 15	9	- 6632	- 3053	- 2518
1047	4710		1641	4071	- 2	15	- 6648	- 3424	- 2706
1078	4926		1318	3998	- 7	16	- 6716	- 3441	- 2685
1108	5136		1375	3765	21	29	- 6824	- 3187	- 2569
1138	5337		2055	3359	153	69	- 7184	- 2652	- 2413
1168	5535		1920	2586	142	84	- 7469	- 1778	- 1931
1199	5738		1982	2327	130	102	- 8187	- 2398	- 1905
1230	5943		1933	1915	93	90	- 9010	- 557	- 1726
1260	6149		1663	1634	61	62	- 9695	- 265	- 1584
1289	6340		1742	1400	27	45	-11455	508	- 1604
1322	6552		1981	199	- 1	9	-52946	3319	- 1054
1353	6760		1483	341	- 1	12	-32717	2540	- 1114
1385	6962		1209	621	1	1	-22131	2585	- 1374
1417	7169		800	810	- 3	1	-18317	2789	- 1483
1450	7379		422	1029	- 1	8	-15125	2439	- 1557
1482	7591		195	1287	- 1	7	-13625	2241	- 1753

[redacted]

TWT 79 BLOW 28

CONFIG C2 THETA = 60

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
963	4536		3811	1545	181	23	-17	-5	4054
1047	4710		4099	1569	185	134	-13	9	3827
1078	4926		3889	1610	137	105	-17	6	4139
1108	5136		3799	1277	96	326	-10	35	3361
1138	5337		3922	355	14	897	35	164	906
1168	5535		3219	-109	-43	1228	11	165	-340
1199	5738		3028	-416	-191	1451	-16	164	-1372
1230	5943		2632	-690	-297	1210	-31	126	-2622
1260	6149		2229	-681	-364	901	-26	83	-3055
1289	6340		2032	-930	-540	741	-29	45	-4579
1322	6552		1002	-1721	-801	86	-9	3	-17168
1353	6760		880	-1242	-793	51	-11	4	-14109
1385	6962		1003	-917	-876	24	-	2	-9146
1417	7169		1020	-505	-880	-8	-2	-3	-4947
1450	7379		1106	-118	-825	43	-8	1	-1067
1482	7591		1296	124	-858	42	-7	1	956

TWT 79 BLOW 29

CONFIG C2 THETA = 60

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
1228	7639		397	661	4117	36932	4072	5358
1255	7629		395	659	4121	37001	4045	5358
1280	7559		395	658	4110	36900	4036	5356
1306	7390		389	649	4106	36993	3918	5355
1332	7211		389	645	4078	36730	3896	5355
1358	7022		407	672	4091	36512	4225	5353
1384	6845		404	668	4089	36536	4180	5353
1410	6667		403	670	4116	36811	4177	5353
1436	6495		392	653	4100	36876	3970	5350
1462	6323		388	647	4102	36981	3892	5350
1488	6155		392	653	4099	36868	3964	5344
1514	5985		391	650	4085	36755	3939	5346
1540	5817		386	642	4075	36759	3843	5344
1566	5648		393	653	4080	36674	3975	5343
1592	5484		395	655	4076	36601	3999	5339
1618	5315		396	657	4079	36617	4014	5338
1644	5151		396	657	4073	36544	4021	5336
1670	4985		399	663	4082	36577	4077	5332
1696	4821		399	664	4087	36621	4082	5331
1722	4650		396	659	4080	36613	4024	5329

[redacted]

TWT 79 BLOW 29

CONFIG C2 THETA = 60

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN .	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
1228	7639		3408	1935	11	9	-11972	- 3331	- 2317
1255	7629		3397	1892	1	11	-12115	- 2935	- 2292
1280	7559		3502	1846	- 3	-	-12320	- 2633	- 2274
1306	7390		3793	1761	1	15	-13025	- 2306	- 2294
1332	7211		3884	1566	2	18	-13734	- 1078	- 2151
1358	7022		3633	1242	- 12	15	-14809	- 850	- 1840
1384	6845		3867	1066	9	10	-16377	- 635	- 1746
1410	6667		2444	339		6	-35814	2118	- 1215
1436	6495		2253	30	6	11	-	2879	- 1027
1462	6323		2745	- 149	- 2	8	62980	2888	- 936
1488	6155		2033	1653	77	58	-10488	- 215	- 1733
1514	5985		1928	1998	101	79	- 9164	- 728	- 1831
1540	5817		2123	2179	101	95	- 8711	- 1433	- 1898
1566	5648		2131	2273	124	88	- 8243	- 1291	- 1874
1592	5484		2034	2785	148	80	- 7414	- 2266	- 2065
1618	5315		1975	3147	134	67	- 7268	- 2653	- 2288
1644	5151		1564	3578	48	20	- 6942	- 2624	- 2484
1670	4985		1530	3763	3	21	- 6798	- 2862	- 2558
1696	4821		1476	3912	10	8	- 6717	- 3161	- 2628
1722	4650		1524	3976	- 4	14	- 6703	- 2912	- 2665

[redacted]

TWT 79 BLOW 29

CONFIG C2 THETA = 60

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
1228	7639		2683	-2856	-787	169	-6	13	-10646
1255	7629		2643	-2851	-793	228	-10	4	-10789
1280	7559		2659	-2932	-800	-26	-1	-3	-11027
1306	7390		2744	-3156	-861	121	-14	5	-11503
1332	7211		2683	-3215	-847	212	-17	7	-11981
1358	7022		2399	-2998	-773	61	-18	-6	-12499
1384	6845		2412	-3205	-786	173	-6	12	-13288
1410	6667		1280	-2110	-838	31	-5	2	-16488
1436	6495		981	-2029	-874	118	-7	10	-20670
1462	6323		1104	-2518	-876	125	-8	2	-22809
1488	6155		2422	-1000	-479	967	-15	95	-4130
1514	5985		2696	-664	-346	1228	-18	127	-2462
1540	5817		2971	-654	-277	1377	-28	136	-2202
1566	5648		3072	-522	-188	1444	-5	152	-1698
1592	5484		3448	-59	-33	1224	20	168	-170
1618	5315		3703	307	-11	932	26	147	829
1644	5151		3774	1003	65	394	14	50	2656
1670	4985		3863	1257	115	221	-15	16	3254
1696	4821		3901	1506	145	220		13	3861
1722	4650		3933	1631	154	138	-13	7	4147

TWT 79 BLOW 30

CONFIG C2 THETA = 40

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
1229	2518		207	642	7302	70865	2131	5372
1308	2694		209	646	7285	70671	2156	5365
1338	2900		197	611	7282	70881	1923	5360
1367	3106		206	636	7246	70340	2097	5358
1397	3307		204	633	7293	70848	2059	5356
1426	3504		206	640	7276	70630	2105	5353
1457	3712		204	630	7261	70541	2046	5350
1487	3911		203	629	7248	70424	2035	5344
1517	4114		202	625	7247	70440	2012	5344
1549	4317		206	636	7224	70130	2087	5343
1579	4521		208	643	7235	70202	2123	5338
1611	4727		201	619	7210	70109	1974	5336
1642	4931		204	630	7217	70105	2040	5332
1674	5135		204	627	7181	69770	2023	5327
1706	5336		201	619	7165	69661	1973	5324
1740	5548		201	615	7119	69211	1957	5322

TWT 79 BLOW 30

CONFIG C2 THETA = 40

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
1229	2518		3920	2790	17	- 58	- 6267	- 4236	- 1749
1308	2694		3635	2842	16	- 4	- 6411	- 3688	- 1822
1338	2900		3926	3397	22	- 34	- 6661	- 4777	- 2262
1367	3106		3310	3149	45	- 15	- 6706	- 3227	- 2112
1397	3307		2795	3439	32	- 15	- 6702	- 4152	- 2305
1426	3504		2711	3493	41	- 20	- 6901	- 4521	- 2410
1457	3712		2418	3708	32	- 9	- 6949	- 4410	- 2577
1487	3911		2227	3720	39	- 19	- 7010	- 3471	- 2608
1517	4114		1824	3804	25	- 18	- 6983	- 4139	- 2656
1549	4317		1522	3702	24	- 11	- 7013	- 3784	- 2596
1579	4521		1475	3691	20	- 21	- 7005	- 3653	- 2585
1611	4727		1150	3935	- 1	2	- 7020	- 3738	- 2762
1642	4931		957	3741	28	- 8	- 6981	- 3945	- 2612
1674	5135		868	3637	36	7	- 7019	- 3613	- 2553
1706	5336		1650	2782	63	48	- 7477	- 1788	- 2080
1740	5548		3250	341	16	86	-25036	- 678	- 853

TWT 79 BLOW 30

CONFIG C2 THETA = 40

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
1229	2518		4735	857	398	-100	40	-45	1810
1308	2694		4528	886	343	109	16	4	1958
1338	2900		5081	1068	301	-55	35	-19	2101
1367	3106		4460	990	245	110	46	10	2220
1397	3307		4218	1357	221	54	35	5	3217
1426	3504		4225	1303	147	108	45	7	3083
1457	3712		4166	1498	111	165	30	12	3594
1487	3911		4075	1482	77	223	42	10	3636
1517	4114		3876	1664	63	167	31	3	4294
1549	4317		3643	1659	35	270	25	9	4553
1579	4521		3658	1554	35	157	29	-1	4248
1611	4727		3671	1825	7	283	-2	1	4972
1642	4931		3461	1714	13	272	25	16	4951
1674	5135		3382	1593	-5	386	17	32	4710
1706	5336		3217	336	-73	927	-1	80	1045
1740	5548		2122	-2484	-427	1546	-62	62	-11706

TWT 79 BLOW 31

CONFIG C2 THETA = 40

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
731	2520		197	266	3137	30541	826	5312
810	2695		207	280	3157	30646	918	5322
840	2904		204	276	3155	30642	894	5324
870	3106		206	278	3146	30537	910	5324
900	3309		196	267	3166	30816	832	5326
930	3504		201	274	3172	30836	875	5327
960	3707		197	267	3166	30816	836	5329
992	3919		195	264	3162	30796	817	5327
1024	4130		200	272	3171	30840	864	5331
1055	4331		206	277	3138	30460	908	5331
1086	4532		203	275	3154	30646	887	5332
1117	4739		204	277	3161	30703	898	5334
1149	4947		190	258	3160	30816	776	5331
1181	5160		207	279	3149	30557	918	5332
1213	5360		208	282	3167	30727	930	5332
1245	5563		190	257	3156	30775	778	5336

[redacted]

TWT 79 BLOW 31

CONFIG C2 THETA = 40

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
731	2520		4942	3133	- 7	4	- 5270	- 5307	- 1651
810	2695		3961	3079	2	27	- 5646	- 3773	- 1738
840	2904		3660	3385	27	- 2	- 5868	- 4181	- 1987
870	3106		3492	3524	26	- 3	- 6090	- 2609	- 2146
900	3309		3375	3768	- 35	15	- 6152	- 5348	- 2318
930	3504		2838	3626	9	19	- 6260	- 5586	- 2270
960	3707		2499	3915	55	- 35	- 6467	- 5515	- 2531
992	3919		2293	4183	19	- 32	- 6630	- 5008	- 2773
1024	4130		1683	4079	34	4	- 6752	- 4429	- 2754
1055	4331		1256	3729	57	- 9	- 6824	- 2549	- 2545
1086	4532		898	3870	25	- 6	- 6843	- 2930	- 2648
1117	4739		607	3892	24	- 7	- 6881	- 4138	- 2678
1149	4947		644	4450	27	- 8	- 6788	- 5125	- 3021
1181	5160		608	3418	22	- 7	- 6807	- 1177	- 2327
1213	5360		2887	- 65	- 10	28	73939	1162	- 477
1245	5563		2953	- 1202	- 24	1	- 100	3297	12

[redacted]

TWT 79 BLOW 31

CONFIG C2 THETA = 40

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
731	2520		5805	730	791	5	- 8		1258
810	2695		4926	950	609	252	- 10	24	1928
840	2904		4843	1183	553	128	25	11	2443
870	3106		4810	1217	479	125	23	11	2529
900	3309		4885	1314	468	- 143	- 37	- 6	2691
930	3504		4405	1339	387	- 9	- 3	21	3040
960	3707		4354	1617	303	- 7	65	5	3715
992	3919		4420	1793	233	- 149	35	- 13	4056
1024	4130		3956	1954	145	120	23	26	4939
1055	4331		3472	1853	89	241	48	32	5336
1086	4532		3383	2082	61	115	22	13	6155
1117	4739		3276	2188	29	112	21	13	6679
1149	4947		3801	2402	72	128	23	15	6320
1181	5160		3056	1647	56	109	19	13	5387
1213	5360		1661	- 2362	- 351	1132	- 29	8	-14221
1245	5563		675	- 3115	- 639	25	- 14	- 19	-46129

[redacted]

TWT 79 BLOW 32 2ND REDUCTION

CONFIG C2 THETA = 140

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
800	12527		210	285	3168	30715	952	5329
894	12705		198	269	3162	30768	844	5331
924	12914		212	286	3150	30525	963	5332
955	13127		213	288	3162	30642	970	5332
985	13329		213	287	3150	30513	971	5334
1017	13545		214	289	3149	30493	981	5332
1047	13744		202	275	3177	30881	884	5332
1079	13957		212	287	3167	30695	968	5332
1109	14156		215	292	3177	30764	995	5332
1140	14368		210	283	3146	30505	945	5332
1170	14572		209	283	3163	30683	938	5332
1200	14770		212	287	3157	30598	965	5332
1231	14981		210	285	3168	30715	952	5332
1262	15182		214	288	3150	30513	978	5332
1295	15397		204	276	3163	30727	891	5331
1329	15607		206	280	3174	30812	916	5331

[redacted]

~~CONFIDENTIAL~~

TWT 79 BLOW 32 2ND REDUCTION

CONFIG C2 THETA = 140

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
800	12527		- 4617	759	148	53	1775	- 3946	135
894	12705		- 5579	570	149	53	7058	- 3857	403
924	12914		- 5227	161	84	32	35226	- 2501	568
955	13127		- 5484	3	75	18	-	- 3121	689
985	13329		- 5672	- 153	65	5	-52074	- 2840	796
1017	13545		- 5969	- 393	42	32	-24752	- 2848	974
1047	13744		- 6992	- 630	29	4	-19472	- 3005	1226
1079	13957		- 6743	- 817	29	27	-15811	- 3427	1292
1109	14156		- 6554	- 1004	21	35	-13525	- 4340	1357
1140	14368		- 6944	- 1211	36	43	-12368	- 4419	1498
1170	14572		- 7281	- 1344	4	34	-11750	- 4666	1579
1200	14770		- 7393	- 1299	18	16	-11474	- 3738	1490
1231	14981		- 8010	- 1569	7	4	-10563	- 5435	1657
1262	15182		- 7671	- 1588	74	16	-10056	- 4510	1597
1295	15397		- 8796	- 1977	22	- 40	- 9660	- 5499	1910
1329	15607		- 8673	- 1987	44	- 17	- 9430	- 4470	1874

~~CONFIDENTIAL~~

[redacted]

TWT 79 3LOW 32 2ND REDUCTION

CONFIG C2 THETA = 140

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
800	12527		3285	3331	383	200	- 128	90	10139
894	12705		3817	4109	465	358	- 132	87	10766
924	12914		3425	3952	370	195	- 77	45	11541
955	13127		3619	4120	368	308	- 63	45	11383
985	13329		3778	4234	356	- 51	- 48	44	11205
1017	13545		3978	4468	352	- 48	- 52	7	11232
1047	13744		4724	5193	381	201	- 25	17	10992
1079	13957		4603	4995	333	537	- 39	- 2	10852
1109	14156		4509	4861	282	522	- 38	- 15	10780
1140	14368		4878	5089	257	426	- 55	- 13	10433
1170	14572		5260	5211	227	184	- 22	- 26	9907
1200	14770		5555	5049	163	174	- 24	- 4	9088
1231	14981		6135	5385	108	- 191	- 8	1	8777
1262	15182		6012	5023	54	- 193	- 73	21	8355
1295	15397		7037	5636	34	- 87	- 2	46	8010
1329	15607		7121	5335	- 2	- 339	- 33	34	7492

[redacted]

TWT 79 BLOW 33

CONFIG C2 THETA = 140

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
703	12546		403	670	4110	36741	4187	5353
772	12708		392	651	4075	36652	3942	5336
798	12914		394	657	4091	36749	3998	5331
823	13116		388	656	4139	37315	3928	5327
850	13321		405	675	4092	36539	4204	5322
877	13534		395	660	4092	36757	4007	5319
905	13751		391	652	4072	36644	3920	5319
931	13946		390	652	4073	36672	3910	5310
958	14155		401	673	4103	36721	4136	5309
986	14365		401	675	4114	36830	4141	5303
1013	14567		389	656	4097	36911	3911	5302
1041	14772		388	660	4132	37242	3926	5300
1068	14976		399	673	4109	36830	4098	5295
1096	15181		388	657	4107	37016	3907	5293
1124	15383		417	695	4079	36183	4412	5290
1151	15587		399	673	4098	36717	4097	5288

[redacted]

TWT 79 BLOW 33

CONFIG C2 THETA = 140

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
703	12546		- 5112	987	- 48	28	979	- 4713	97
772	12708		- 5603	989	- 68	40	1542	- 3996	153
798	12914		- 5840	881	8	30	2860	- 4421	252
823	13116		- 6470	582	16	37	9359	- 5053	544
850	13321		- 6193	318	36	29	20488	- 4306	651
877	13534		- 6700	- 30	51	4	-	- 4312	965
905	13751		- 7078	- 340	36	25	-35284	- 4079	1201
931	13946		- 7453	- 449	38	22	-28867	- 4263	1296
958	14155		- 7264	- 572	17	16	-23291	- 4588	1331
986	14365		- 7761	- 674	27	13	-20940	- 5878	1411
1013	14567		- 8555	- 877	41	16	-18419	- 6147	1616
1041	14772		- 8566	- 1240	4	14	-15012	- 5698	1862
1068	14976		- 8228	- 1368	23	-	-13654	- 5689	1867
1096	15181		- 9145	- 1593	26	23	-12903	- 5835	2056
1124	15383		- 7932	- 1487	45	25	-12247	- 3638	1821
1151	15587		- 8741	- 1646	39	34	-11500	- 5375	1893

[redacted]

TWT 79 BLOW 33

CONFIG C2 THETA = 140

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
703	12546		3769	3591	472	326	5	-56	9527
772	12708		4167	3874	501	638	9	-78	9297
798	12914		4369	3973	512	303	-29	-13	9094
823	13116		4696	4488	562	330	-38	-12	9557
850	13321		4471	4296	504	304	-46	7	9608
877	13534		4744	4730	549	-235	-39	33	9971
905	13751		4989	5032	550	231	-44	6	10086
931	13946		5371	5186	548	-7	-43	8	9654
958	14155		5334	4965	510	132	-23	-2	9308
986	14365		5852	5142	490	-40	-30	5	8788
1013	14567		6570	5549	509	-18	-43	10	8447
1041	14772		6579	5624	505	-16	-11	-10	8547
1068	14976		6419	5325	443	-188	-20	12	8296
1096	15181		7307	5725	423	37	-33	-8	7834
1124	15383		6463	4832	332	84	-51	-3	7477
1151	15587		7305	5076	247	233	-50	-15	6949

[redacted]

TWT 79 BLOW 34 2ND REDUCTION

CONFIG C2 THETA = 140

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
835	12536		200	606	7152	69584	1939	5370
912	12710		208	648	7310	70957	2140	5344
935	12908		199	621	7304	71075	1962	5341
960	13121		212	662	7311	70890	2225	5336
985	13328		200	624	7292	70938	1977	5331
1009	13530		203	637	7303	70978	2055	5326
1035	13746		212	664	7301	70776	2232	5322
1060	13952		206	648	7313	71009	2117	5319
1084	14158		205	641	7268	70606	2078	5314
1110	14373		206	646	7295	70854	2101	5310
1135	14572		204	644	7315	71075	2078	5309
1159	14786		203	637	7270	70657	2039	5303
1185	14999		205	642	7272	70649	2070	5300
1210	15198		198	625	7292	70961	1954	5298
1235	15397		201	631	7251	70509	2001	5297
1261	15607		205	643	7258	70499	2078	5295

[redacted]

~~CONFIDENTIAL~~

TWT 79 BLOW 34 2ND REDUCTION

CONFIG C2 THETA = 140

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
835	12536		- 5080	1202	- 65	28	- 284	- 4934	- 34
912	12710		- 5344	1077	- 41	47	600	- 5341	65
935	12908		- 5836	926	24	35	2645	- 4419	245
960	13121		- 5572	727	10	-	4544	- 5580	330
985	13328		- 6347	405	50	- 41	16486	- 5165	668
1009	13530		- 6551	23	16	2	-	- 4477	914
1035	13746		- 6410	- 164	1	18	-61397	- 3956	1008
1060	13952		- 6775	- 357	23	- 10	-32653	- 4491	1167
1084	14158		- 6946	- 668	9	- 15	-20805	- 5635	1390
1110	14373		- 7364	- 826	- 5	- 9	-18331	- 5172	1514
1135	14572		- 7624	- 1150	2	15	-15200	- 4591	1748
1159	14786		- 7868	- 1199	27	19	-14704	- 6182	1763
1185	14999		- 7711	- 1531	32	46	-12858	- 4984	1968
1210	15198		- 8590	- 1640	10	20	-12472	- 6432	2045
1235	15397		- 8011	- 1896	- 5	25	-11377	- 5722	2157
1261	15607		- 8192	- 1941	39	3	-11060	- 5045	2146

~~CONFIDENTIAL~~

[redacted]

TWT 79 BLOW 34 2ND REDUCTION

CONFIG C2 THETA = 140

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
835	12536		3920	3448	491	210	15	-69	8797
912	12710		4082	3613	488	399	-13	-61	8849
935	12908		4398	3947	537	542	-42	-3	8973
960	13121		4218	3713	500	-147	-6	7	8805
985	13328		4647	4342	572	-702	-4	64	9345
1009	13530		4673	4592	543		-13	10	9828
1035	13746		4612	4455	517	-1	-13	-12	9659
1060	13952		4921	4670	522	-225	-11	22	9490
1084	14158		5027	4840	521	-120	2	18	9628
1110	14373		5448	5023	513	-66	9	4	9220
1135	14572		5652	5244	509	-13	-10	-11	9279
1159	14786		6025	5201	476	40	-33	-2	8633
1185	14999		5911	5183	463	316	-51	-24	8767
1210	15198		6813	5483	413	157	-18	-13	8048
1235	15397		6367	5219	383	212	-7	-24	8197
1261	15607		6700	5097	331	28	-36	13	7607

[redacted]

[redacted]

TWT 79 BLOW 35

CONFIG C2 THETA = 40

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
978	2521		403	672	4079	36461	4154	5309
1055	2691		395	663	4087	36695	4014	5303
1084	2900		399	664	4057	36356	4053	5300
1114	3113		402	676	4101	36679	4157	5298
1145	3331		394	656	4054	36437	3952	5298
1173	3534		400	671	4089	36627	4097	5297
1203	3741		400	672	4089	36615	4105	5295
1232	3941		385	647	4067	36712	3811	5290
1262	4147		387	650	4071	36720	3847	5290
1292	4354		387	653	4089	36877	3863	5288
1322	4558		390	654	4063	36578	3898	5285
1352	4761		401	674	4089	36615	4112	5285
1383	4969		390	654	4060	36562	3886	5281
1413	5174		396	663	4058	36429	3996	5278
1444	5377		399	673	4088	36631	4080	5276
1475	5579		387	651	4058	36590	3840	5273

[redacted]

[redacted]

TWT 79 BLOW 35

CONFIG C2 THETA = 40

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
978	2521		3773	2917	9	5	- 6379	- 3188	- 1861
1055	2691		3682	3358	9	4	- 6472	- 3311	- 2174
1084	2900		3261	3374	10	4	- 6511	- 3261	- 2197
1114	3113		2993	3660	- 3	7	- 6587	- 4110	- 2411
1145	3331		2798	3909	10	3	- 6632	- 3489	- 2593
1173	3534		2815	3929	13	10	- 6681	- 3578	- 2625
1203	3741		2613	3888		10	- 6671	- 3870	- 2594
1232	3941		2237	4292	10	1	- 6655	- 3904	- 2856
1262	4147		1861	4206	7	10	- 6680	- 3703	- 2809
1292	4354		1632	4318	- 7	10	- 6680	- 3789	- 2884
1322	4558		1346	4247	10		- 6678	- 3576	- 2836
1352	4761		1087	4093	2	17	- 6709	- 3941	- 2746
1383	4969		928	4241	- 1	6	- 6702	- 3667	- 2842
1413	5174		892	3900	- 1	10	- 6781	- 3312	- 2644
1444	5377		2115	2670	- 78	- 33	- 7428	- 2807	- 1984
1475	5579		3152	1927	25	13	- 9250	- 1724	- 1782

[redacted]

TWT 79 BLOW 35

CONFIG C2 THETA = 40

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
978	2521		4656	1032	364	55	6	8	2217
1055	2691		4803	1329	349	55	6	8	2766
1084	2900		4488	1370	312	53	7	8	3052
1114	3113		4454	1585	278	-5	-6	4	3559
1145	3331		4486	1730	256	52	7	8	3857
1173	3534		4568	1577	238	106	5	15	3452
1203	3741		4438	1501	229	-8	-6	8	3382
1232	3941		4453	1896	222	50	7	8	4256
1262	4147		4179	1919	187	78	-2	12	4591
1292	4354		4157	2006	176	-44	-12	2	4825
1322	4558		3975	2010	159	45	7	8	5057
1352	4761		3756	1956	128	97	-11	13	5209
1383	4969		3834	2037	124	-16	-5	3	5312
1413	5174		3614	1714	85	44	-8	5	4743
1444	5377		3404	-128	-26	-531	-20	-82	-375
1475	5579		3365	-1524	-274	189	3	28	-4528

TWT 79 BLOW 36

CONFIG C2 THETA = 160

TUNNEL CONDITIONS

BN	ALPHA	YAW	MACH	RN	HO	PO	Q	TTO
DEC=	2	2	3	2		1	1	1
943	14531		204	634	7285	70785	2062	5346
1016	14715		197	613	7273	70815	1916	5336
1040	14921		209	653	7306	70898	2163	5327
1065	15129		205	640	7296	70887	2078	5326
1090	15336		203	630	7252	70493	2024	5324
1116	15550		208	649	7271	70569	2140	5322
1142	15761		209	655	7302	70859	2163	5317
1168	15975		207	647	7270	70582	2117	5314
1194	16190		205	642	7283	70755	2078	5310
1220	16398		208	650	7280	70666	2132	5310
1245	16600		199	625	7269	70718	1970	5309
1272	16815		202	634	7266	70632	2024	5305
1297	17013		204	639	7273	70676	2055	5303
1321	17212		204	640	7255	70486	2062	5298
1347	17419		200	626	7247	70501	1970	5297
1374	17625		205	641	7251	70443	2062	5295

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TWT 79 BLOW 36

CONFIG C2 THETA = 160

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
943	14531		- 7076	- 806	25	4	-18817	- 3055	1516
1016	14715		- 8160	- 933	45	-	-18333	- 3444	1711
1040	14921		- 7659	- 1181	40	7	-14912	- 2747	1760
1065	15129		- 7841	- 1434	30	11	-13403	- 3108	1922
1090	15336		- 8080	- 1596	16	- 2	-12734	- 3888	2032
1116	15550		- 7924	- 1715	18	2	-12011	- 4072	2060
1142	15761		- 8007	- 1837	57	11	-11421	- 3911	2098
1168	15975		- 8164	- 1882	50	- 3	-10955	- 4881	2062
1194	16190		- 8334	- 1919	6	17	-10329	- 4595	1982
1220	16398		- 8360	- 1812	43	22	-10009	- 4686	1813
1245	16600		- 9088	- 1825	31	4	- 9640	- 4976	1759
1272	16815		- 9055	- 1612	102	4	- 9159	- 4729	1476
1297	17013		- 8649	- 1143	46	9	- 9159	- 4872	1047
1321	17212		- 8359	- 1099	55	- 11	- 8949	- 4545	984
1347	17419		- 8673	- 839	47	- 7	- 8816	- 4833	740
1374	17625		- 8380	63	29	3	7198	- 5141	45

~~CONFIDENTIAL~~

[redacted]

TWT 79 BLOW 36

CONFIG C2 THETA = 160

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
943	14531		5360	4690	545	-109	-22	11	8751
1016	14715		6349	5210	589	-303	-37	25	8207
1040	14921		5975	4935	498	-6	-38	14	8258
1065	15129		6188	5025	475	106	-32	5	8120
1090	15336		6506	5049	460	-6	-13	9	7760
1116	15550		6500	4846	415	-62	-18	6	7456
1142	15761		6704	4748	365	95	-57	12	7083
1168	15975		7007	4592	288	-65	-46	20	6553
1194	16190		7326	4412	173	53	-11	-14	6023
1220	16398		7535	4049	77	266	-47	-9	5374
1245	16600		8376	3970	-30	-117	-31	4	4739
1272	16815		8531	3437	-164	111	-100	17	4029
1297	17013		8325	2609	-248	65	-47	-	3134
1321	17212		8129	2235	-264	-272	-53	18	2749
1347	17419		8543	1713	-348	-162	-46	12	2005
1374	17625		8367	485	-406	24	-29	-2	580

[redacted]

TWT 79 BLOW 37

CONFIG C2 THETA = 120

TUNNEL CONDITIONS

BN DEC=	ALPHA 2	YAW 2	MACH 3	RN 2	HO	PO 1	Q 1	TTO 1
943	10524		213	642	7151	69317	2194	5387
1014	10708		211	659	7349	71270	2225	5363
1039	10925		197	610	7273	70809	1923	5360
1063	11119		201	625	7302	71024	2001	5353
1089	11332		196	611	7280	70881	1916	5350
1114	11535		202	629	7285	70827	2024	5344
1137	11727		207	649	7331	71167	2140	5341
1163	11936		210	655	7292	70739	2186	5338
1188	12144		204	637	7289	70827	2062	5332
1214	12353		197	615	7281	70891	1923	5331
1240	12558		204	634	7263	70578	2047	5326
1265	12759		201	629	7296	70960	2001	5324
1290	12962		196	613	7271	70803	1908	5322
1317	13175		203	634	7248	70444	2039	5317
1342	13373		204	643	7307	70993	2078	5314
1368	13574		202	633	7272	70694	2024	5310

[redacted]

TWT 79 BLOW 37

CONFIG C2 THETA = 120

BODY AXES DATA AND BALANCE CHAMBER PRESSURE, (DELTA PBC)/Q

BN	ALPHA	YAW	CA	CN	CNB	CLB	XCPN	PBC	CMA
DEC=	2	2	4	4	4	4	4	4	4
943	10524		322	2052	-14	-9	-5886	-5012	-1208
1014	10708		-29	2015	12	16	-5508	-3494	-1110
1039	10925		-466	2049	-	1	-5052	-1930	-1035
1063	11119		-752	1889	9	6	-4544	-3677	-859
1089	11332		-1190	1821	13	3	-4036	-2559	-735
1114	11535		-1495	1647	4	-4	-3379	-1727	-557
1137	11727		-1934	1348	-2	-12	-2400	-1605	-324
1163	11936		-3449	1224	10	23	-2172	-3322	-266
1188	12144		-4238	1144	-6	-12	-1023	-3948	-117
1214	12353		-4825	1043	39	-41	531	-4361	55
1240	12558		-4902	837	-26	1	1960	-3726	164
1265	12759		-5392	735	11	-13	3911	-4538	287
1290	12962		-5962	461	-2	-30	12410	-4434	572
1317	13175		-5730	101	-28	-	75494	-4395	765
1342	13373		-6078	-124	-36	-7	-75660	-4415	940
1368	13574		-6429	-407	-20	5	-28239	-4303	1149

[redacted]

[redacted]

TWT 79 BLOW 37

CONFIG C2 THETA = 120

STABILITY AXES DATA, DRAG, AND LIFT TO DRAG RATIO

BN	ALPHA	YAW	CD	CL	CMS	CY	CNS	CLS	L/D
DEC=	2	2	4	4	4	4	4	4	4
943	10524		1895	-850	220	-44	12	-11	-4484
1014	10708		1934	-564	272	54	-18	7	-2918
1039	10925		2088	-235	344	-1	-1	-1	-1127
1063	11119		2033	18	394	108	-9	6	88
1089	11332		2143	372	445	107	-8	11	1735
1114	11535		2129	646	486	154	2	6	3035
1137	11727		2084	1101	488	32	12	4	5284
1163	11936		2758	2406	371	127	-25	-2	8725
1188	12144		3186	3019	418	18	13	1	9477
1214	12353		3535	3446	487	-174	12	55	9747
1240	12558		3533	3500	449	517	14	-21	9908
1265	12759		3871	3824	474	118	3	17	9880
1290	12962		4157	4299	536	60	24	17	10342
1317	13175		3891	4208	497	507	19	-21	10815
1342	13373		4111	4478	496	549	30	-21	10892
1368	13574		4320	4779	491	616	11	-18	11061

[redacted]

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APPENDIX B

PLOTTED DATA

~~CONFIDENTIAL~~

DATA INDEX

Command Module Characteristics-Config. C_2
C_D, C_L, $C_{m_{cg}}$, C_A, C_N, C_{m_A}, Xcp/D, L/D vs α

Mach = 3.49 A-1

Mach = 1.20 A-2

Mach = 0.9 A-3

Mach = 0.7 A-4

Mach = 0.4 A-5

Hysteresis Effect due to Pitch Direction
Mach = 0.7 A-6

Mach = 0.4 A-7

Mach = 0.2 A-8

Effect of Reynolds Number
Mach = 0.2 A-9

Effect of Pitch Rate
Mach = 0.2 A-10

DATE: [redacted] MODEL NO. APOLLO FS-2

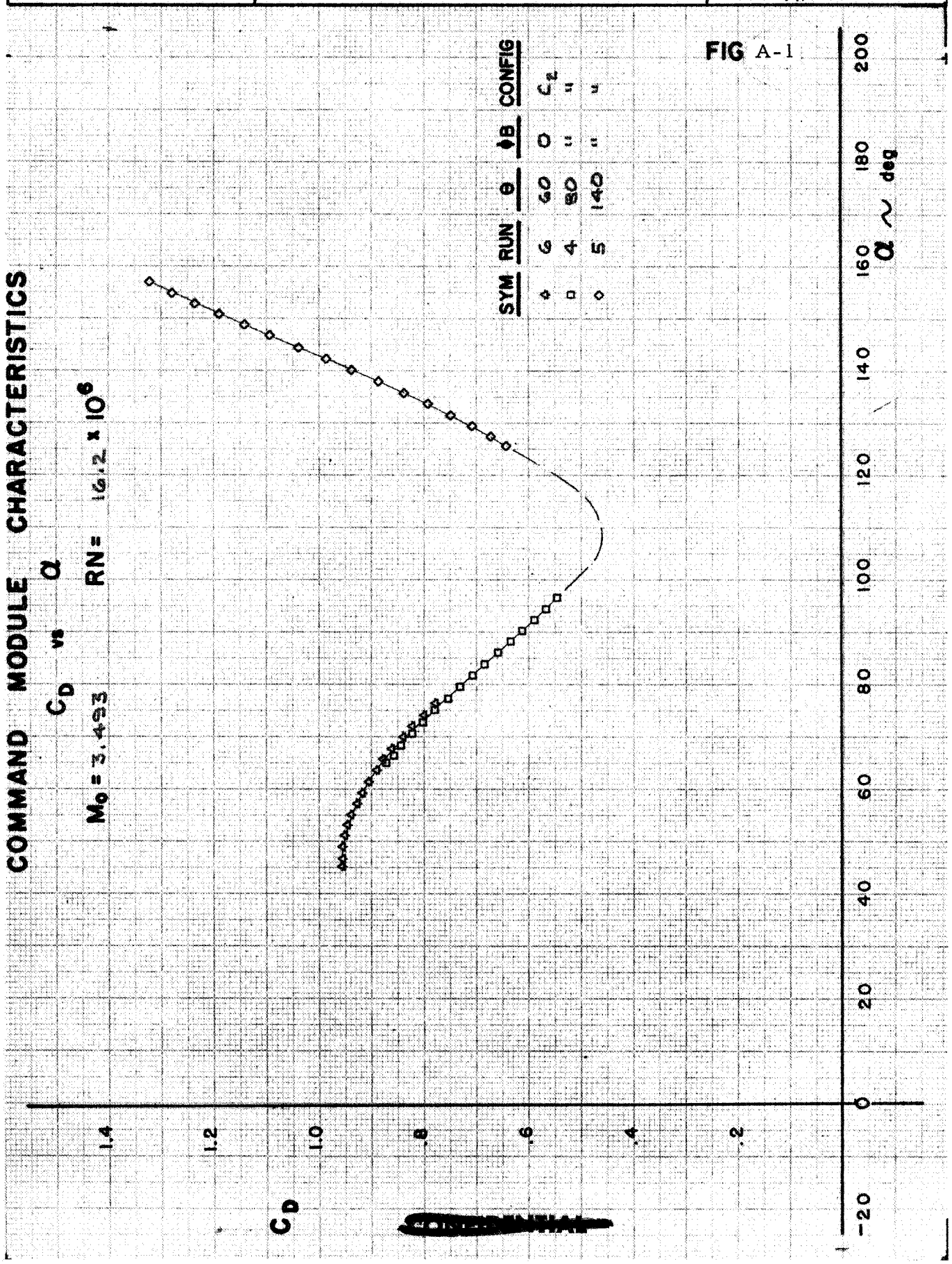
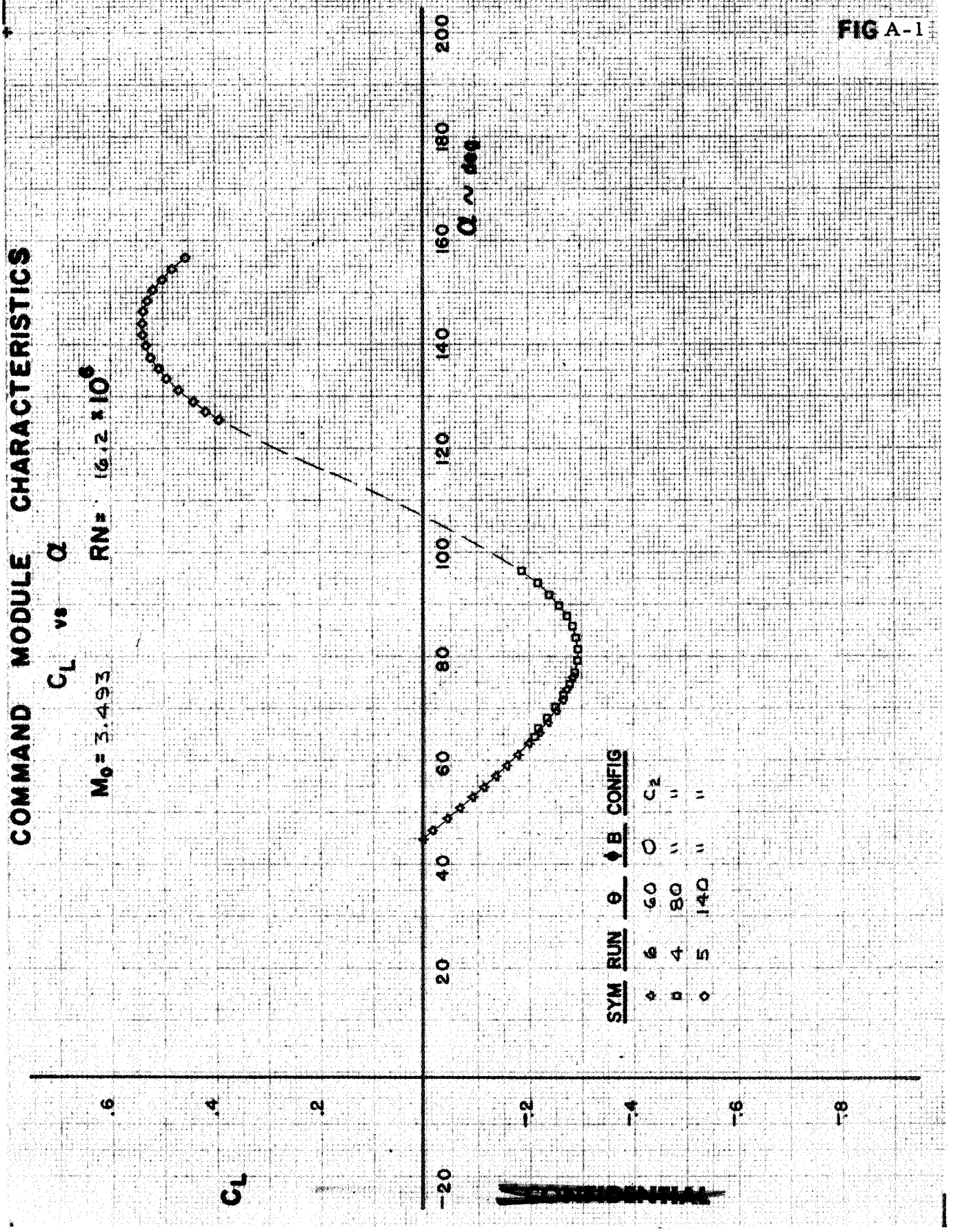


FIG A-1

[redacted]

DATE: [redacted] MODEL NO. APOLLO FS-2

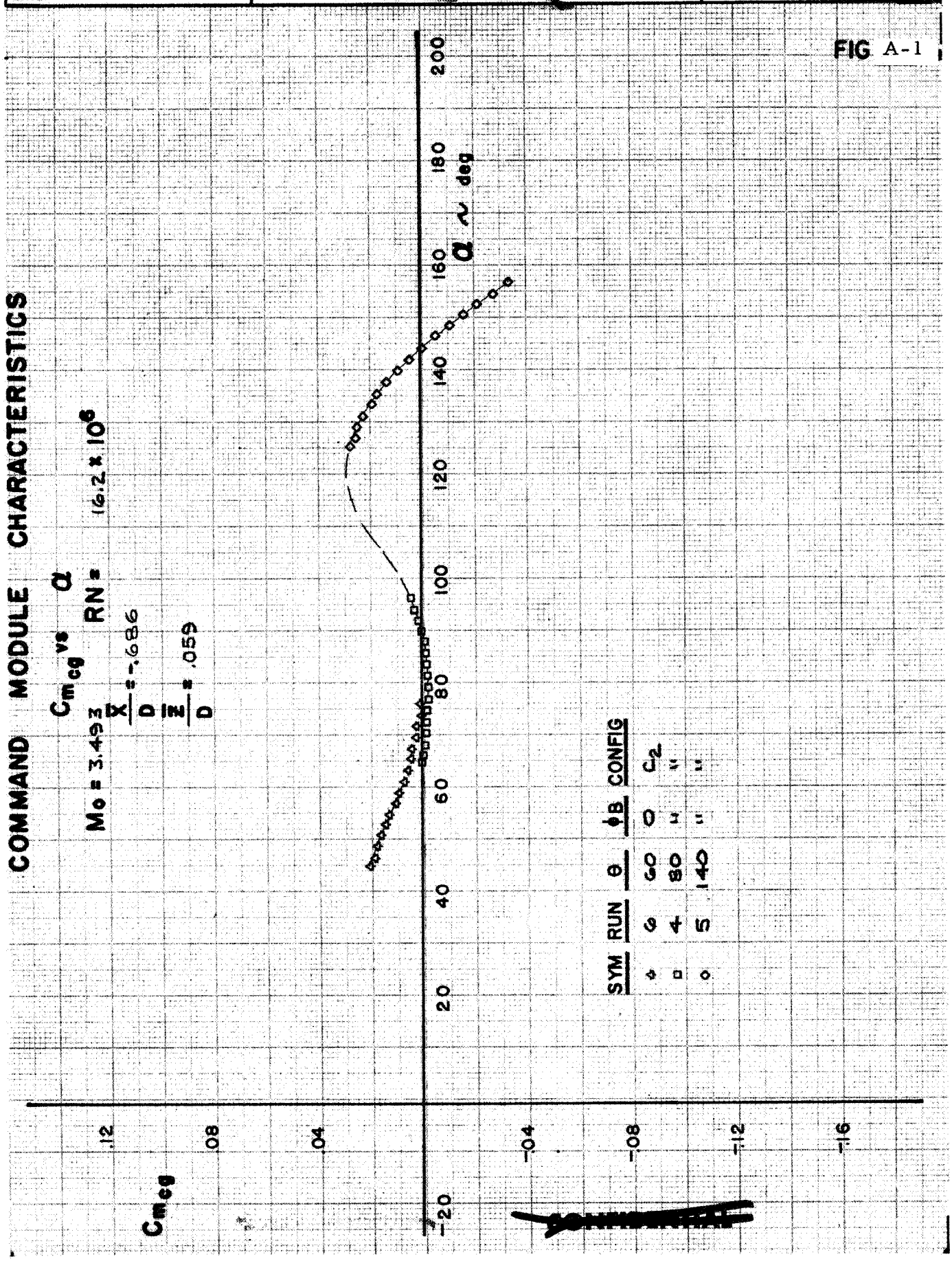
FIG A-1



[redacted]

DATE: [redacted] MODEL NO. APOLLO FS-2

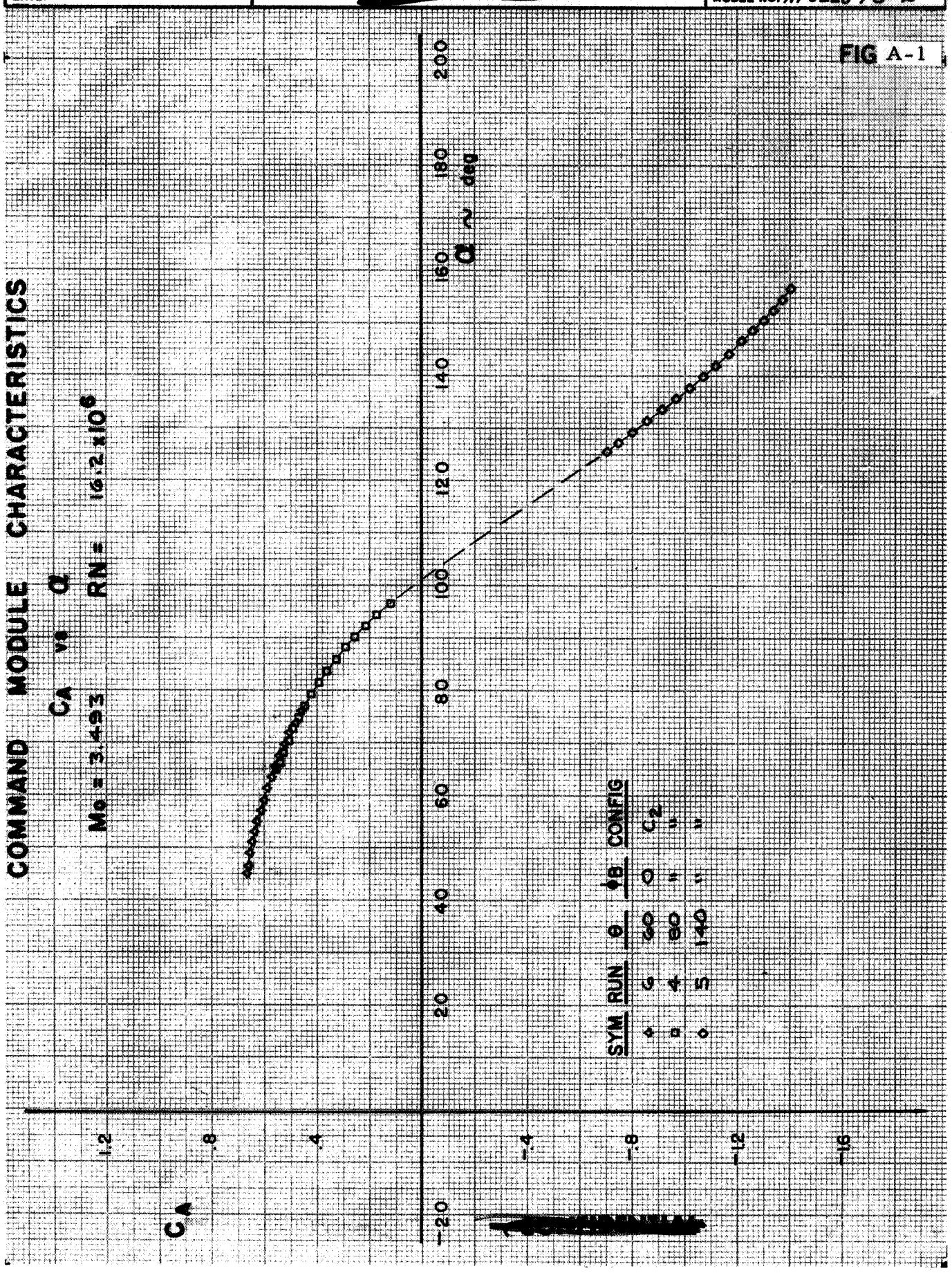
FIG A-1



[redacted]

DATE: [redacted] MODEL NO. APOLLO FS-2

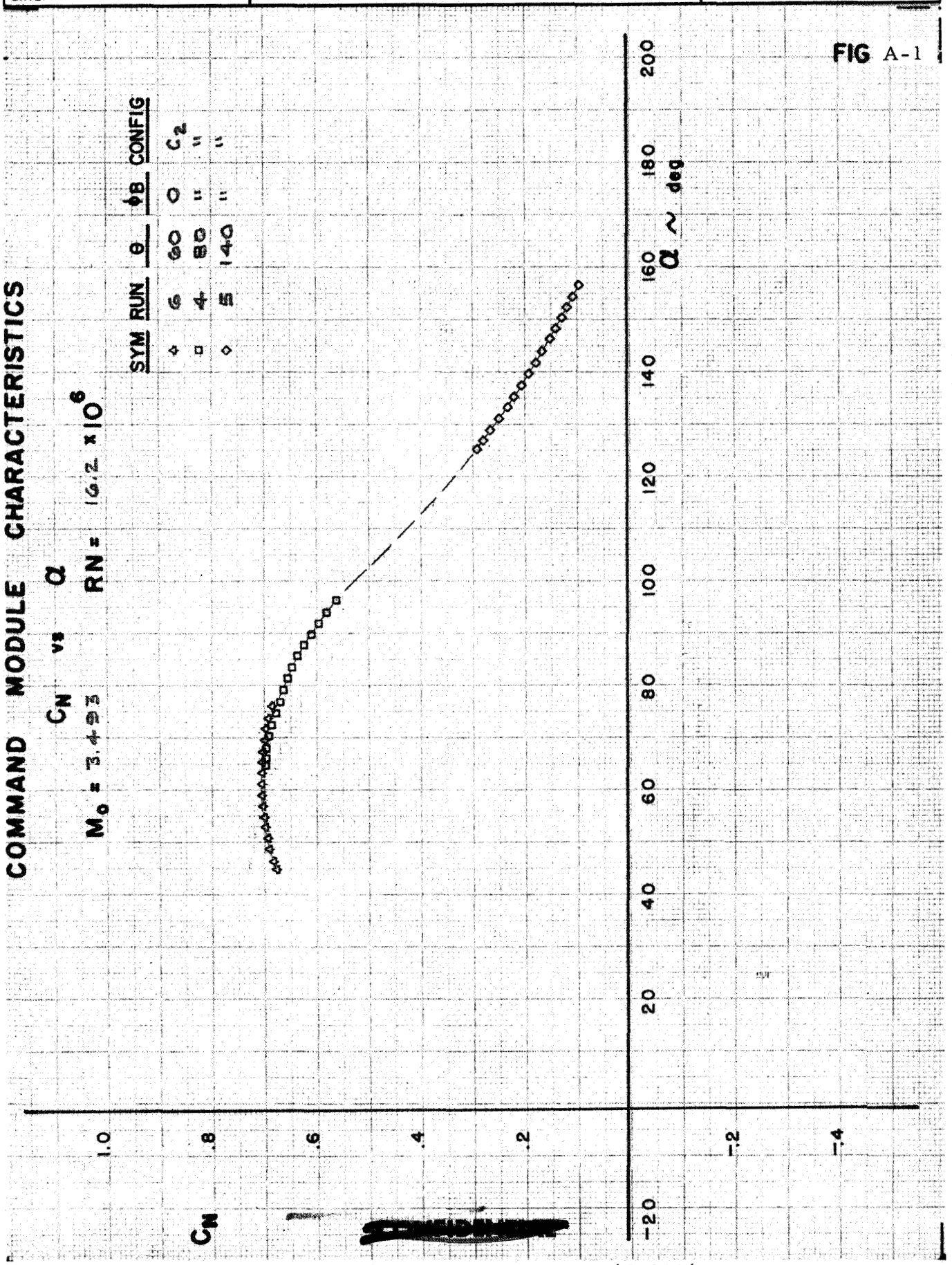
FIG A-1



[redacted]

DATE: [redacted] MODEL NO. APOLLO FS-2

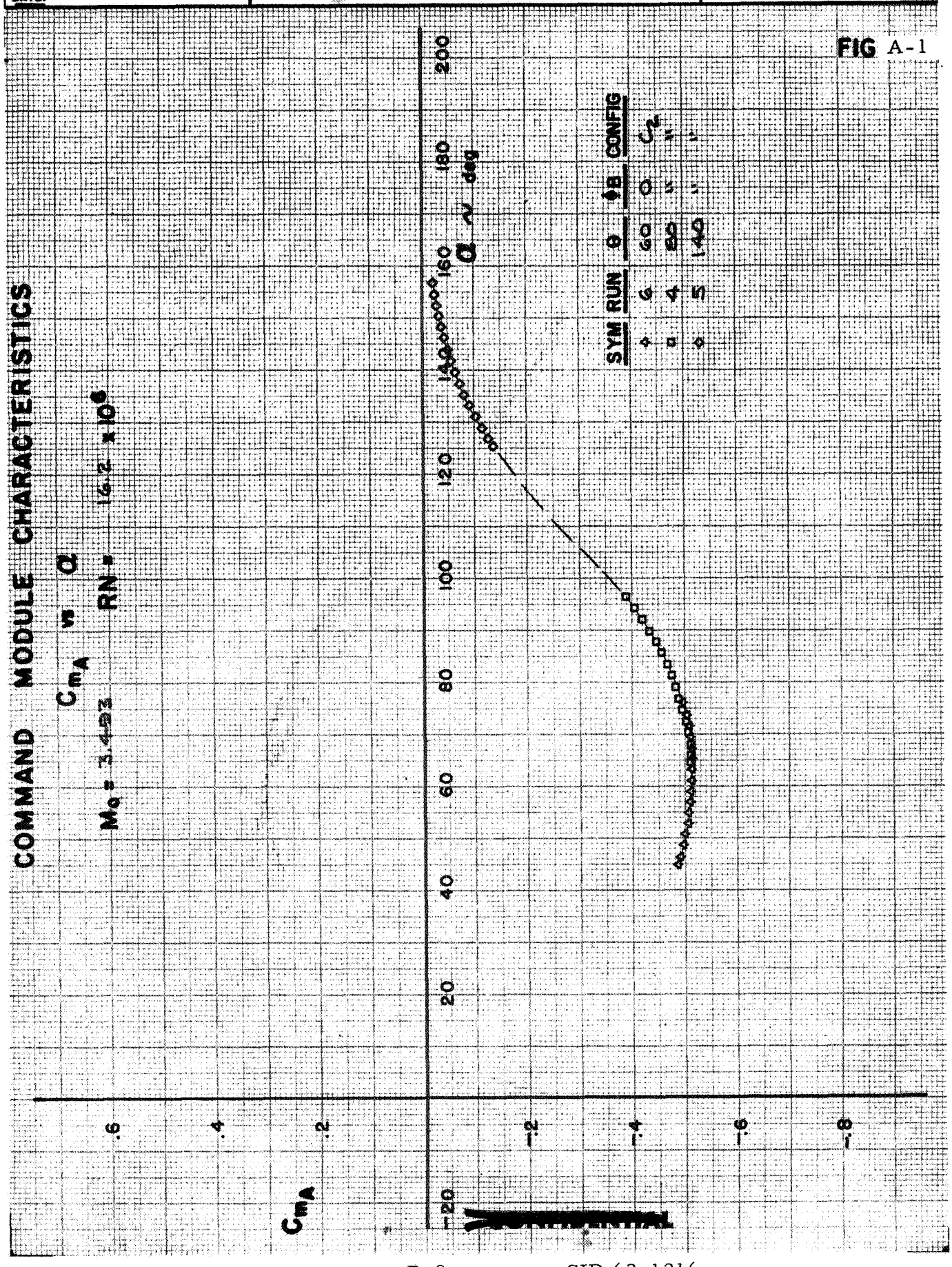
FIG A-1



[redacted]

DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-1



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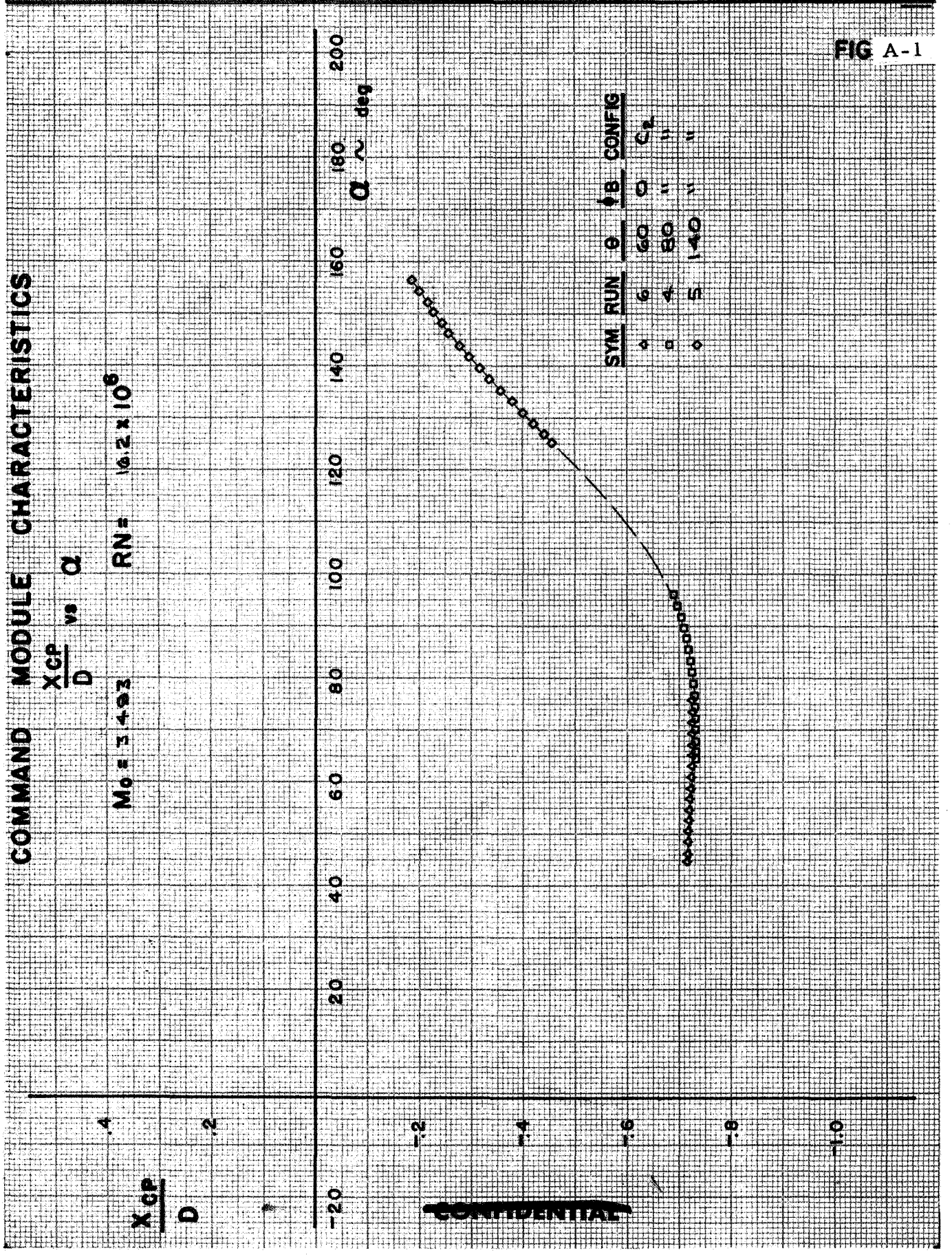
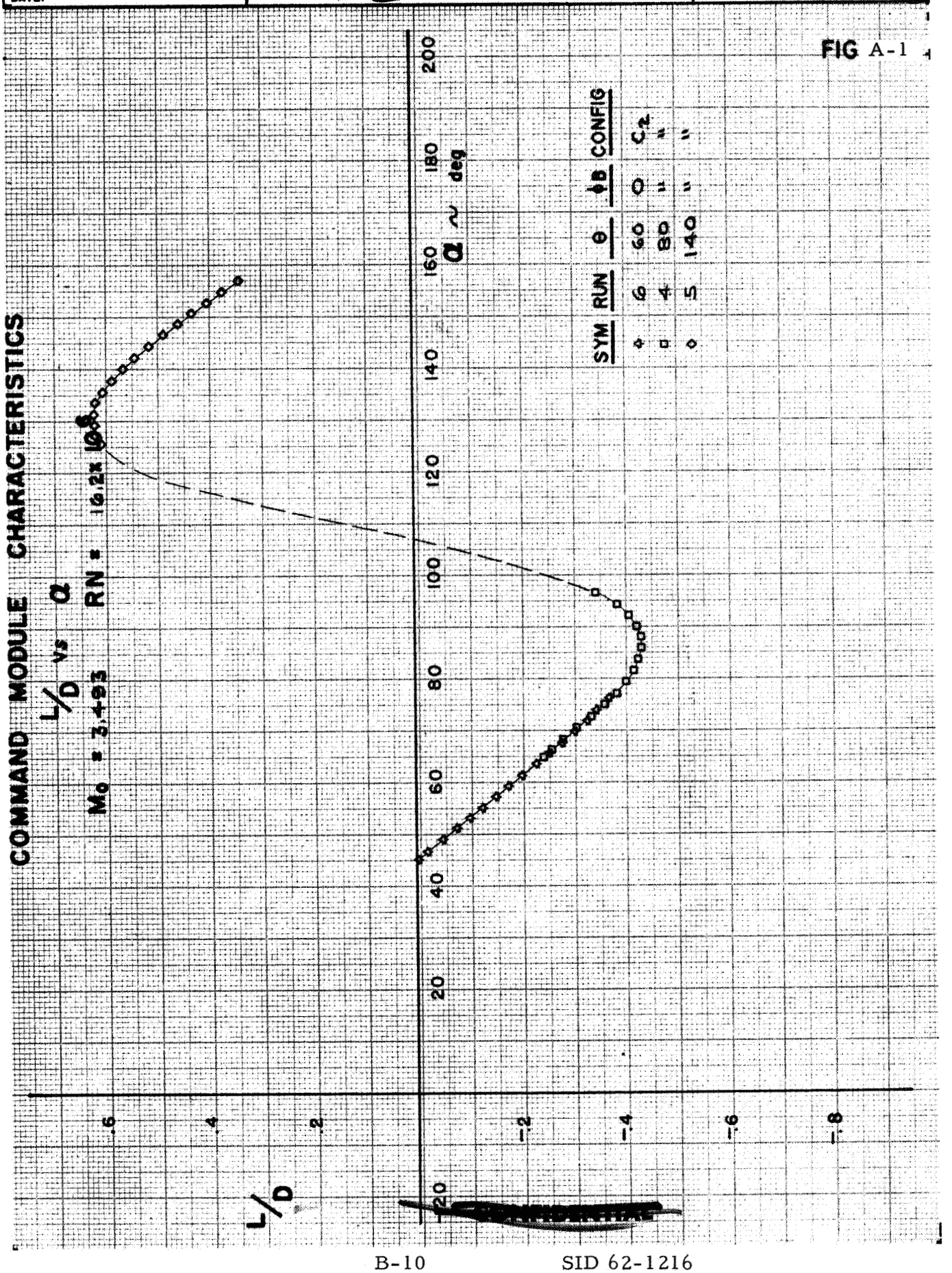
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-1



DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-1



DATE: [redacted] MODEL NO. APOLLO FS-2

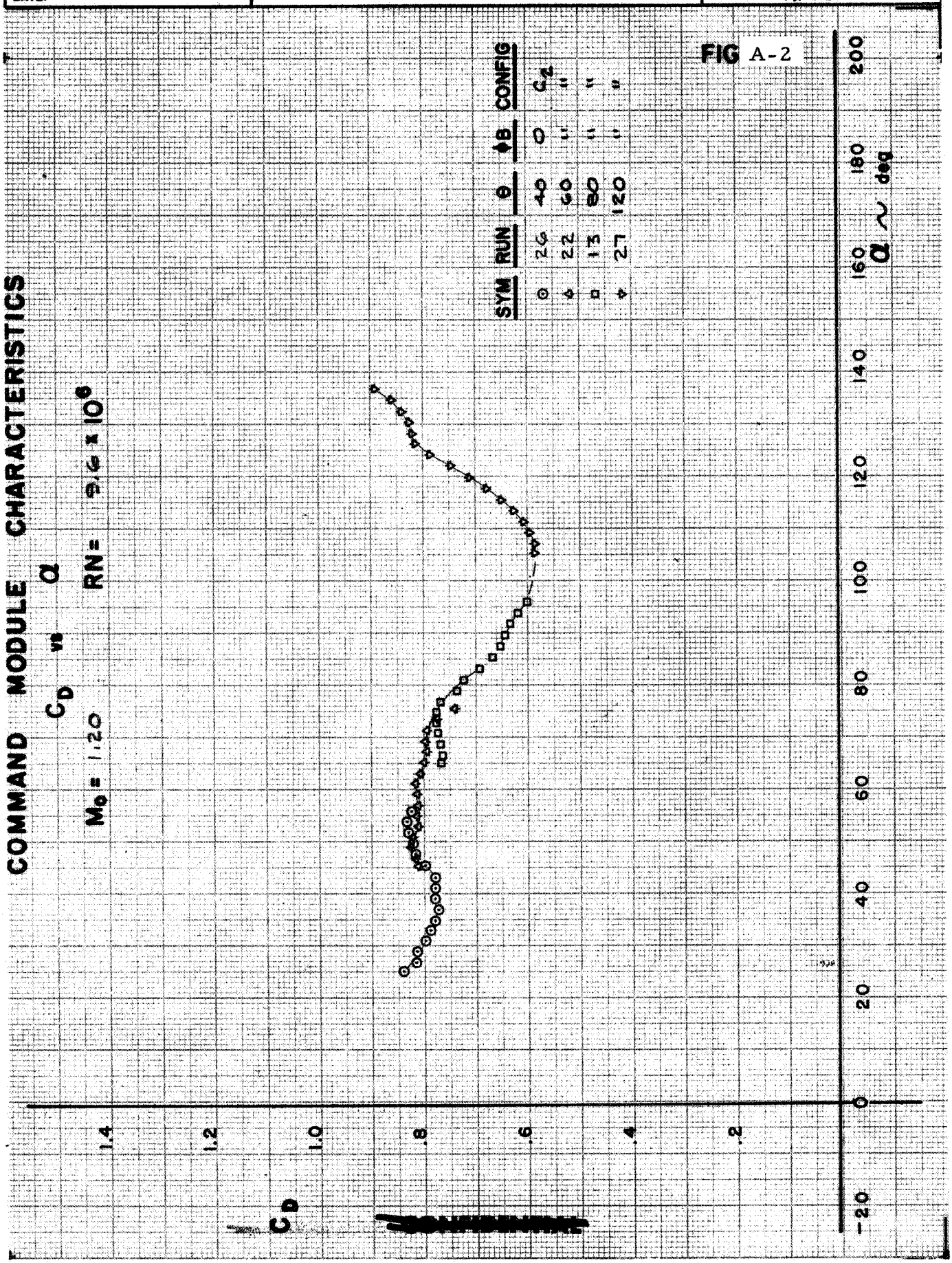
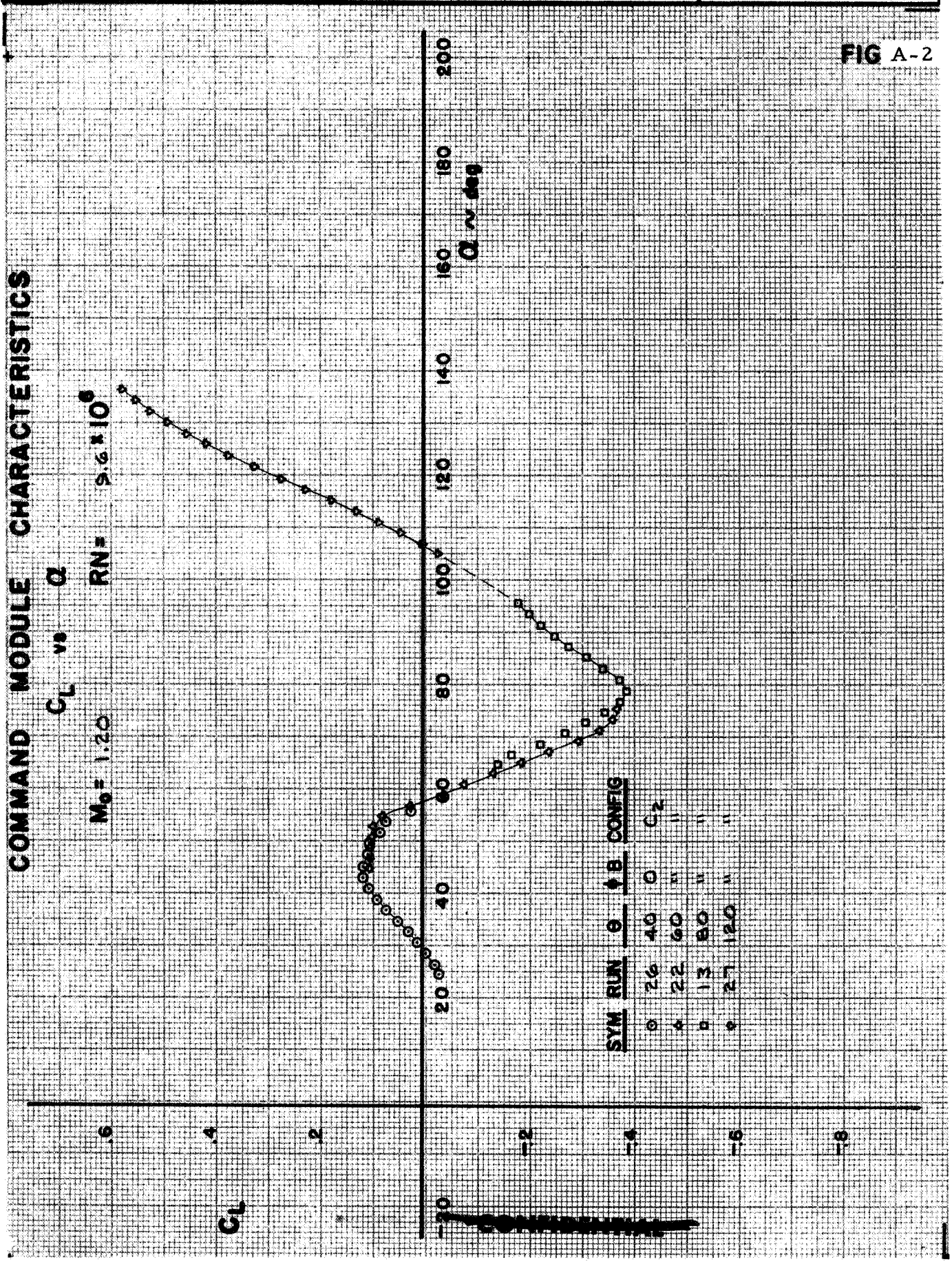


FIG A-2

[redacted]

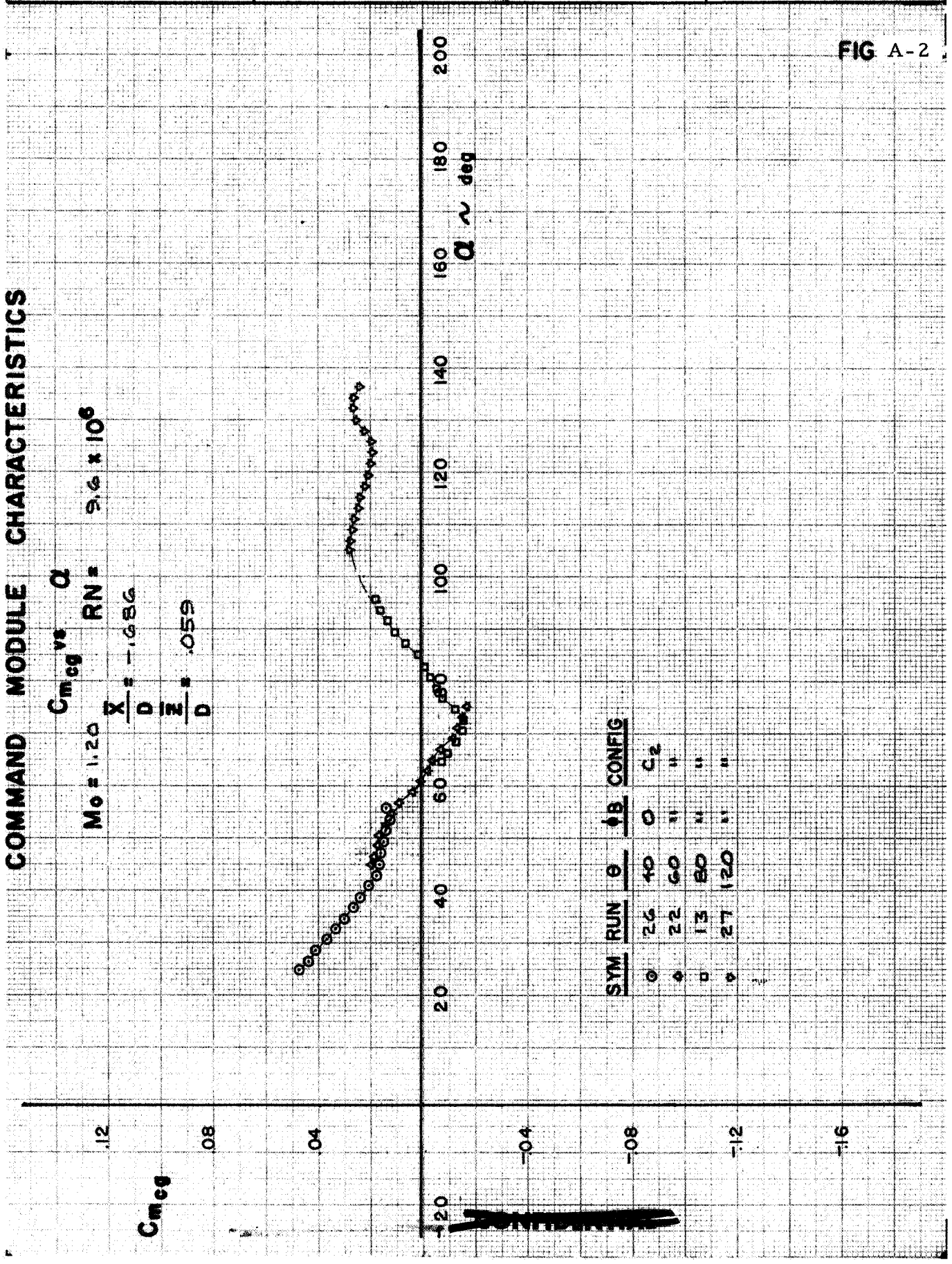
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-2



DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-2



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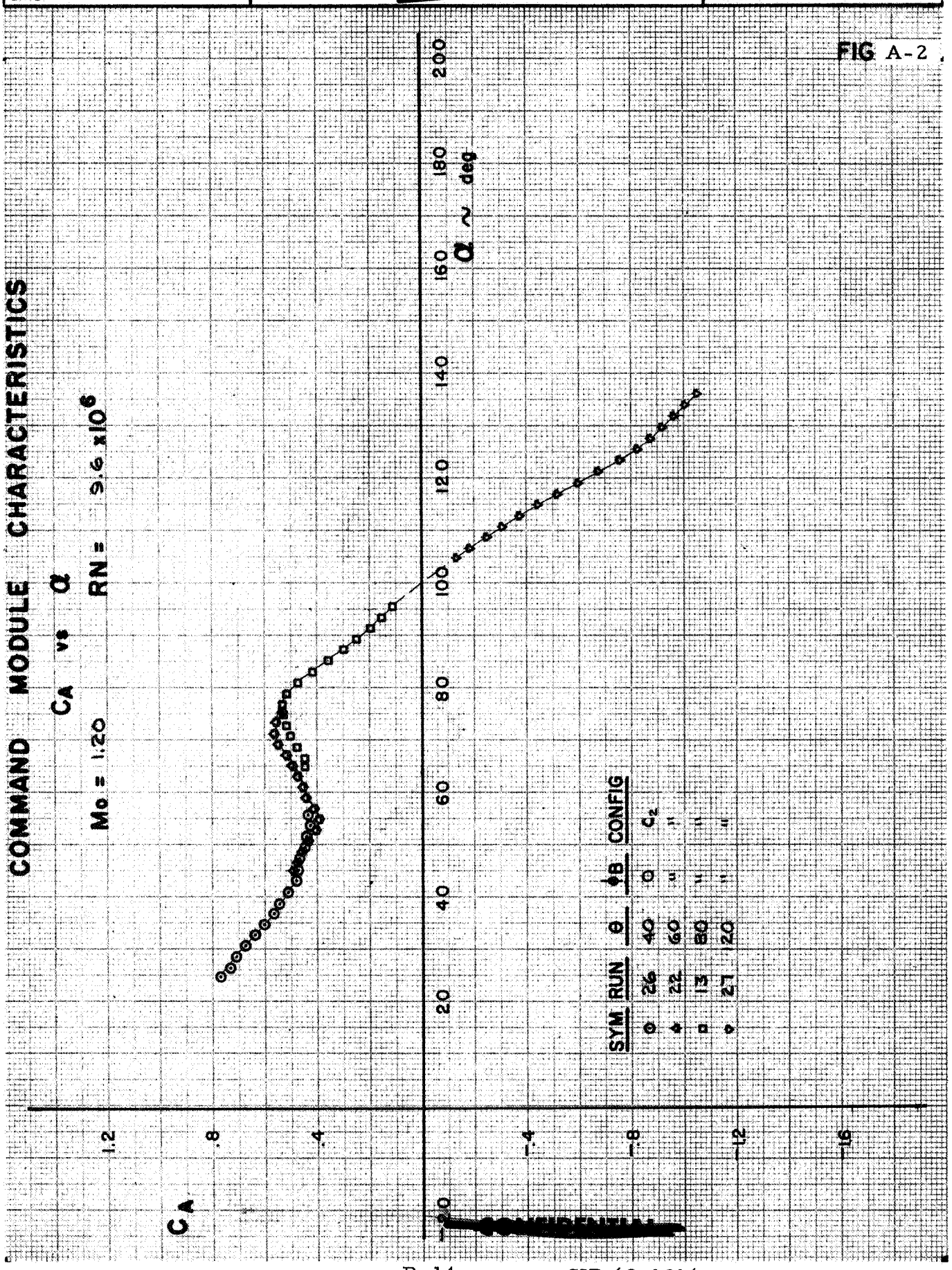
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-2



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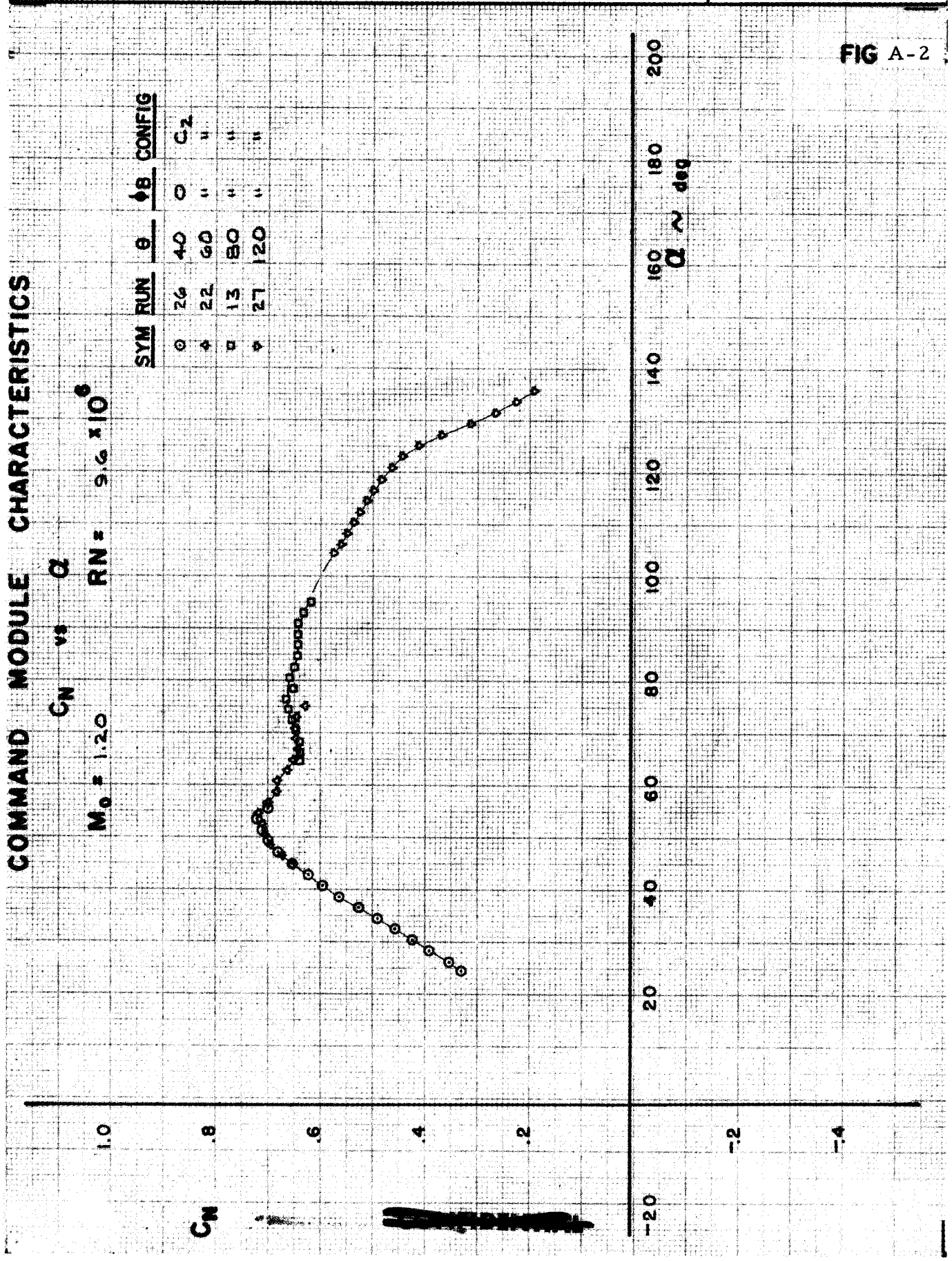
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-2



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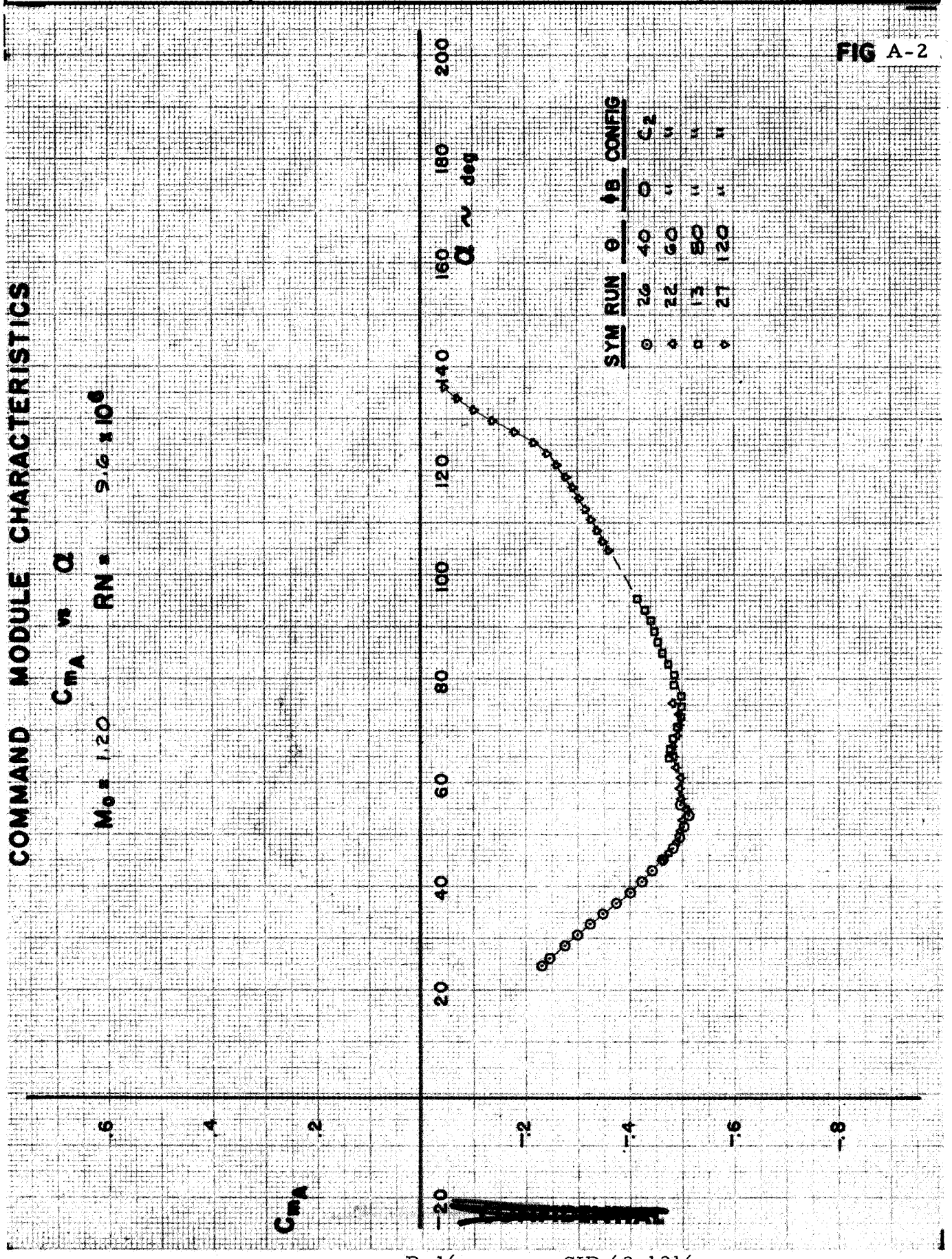
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-2



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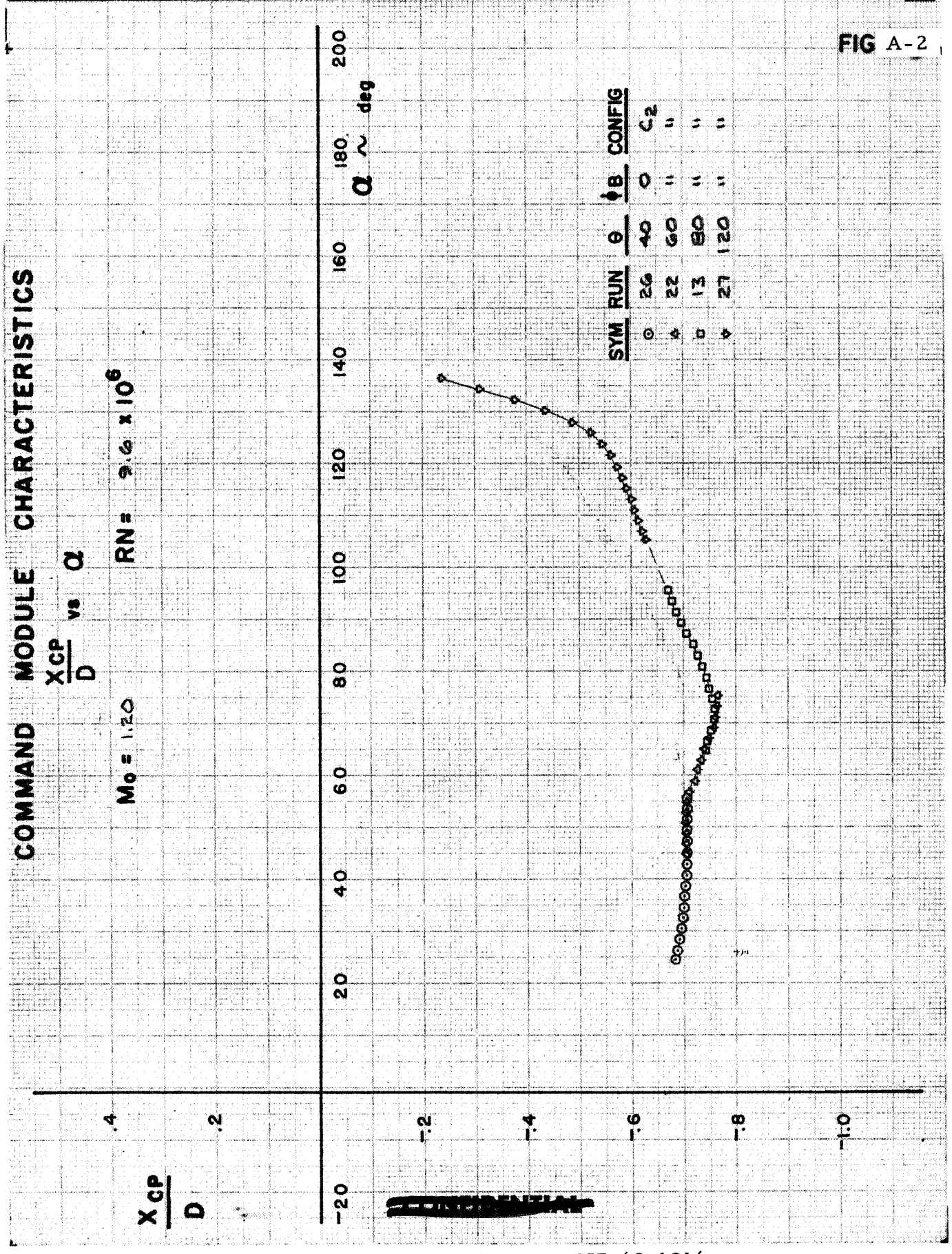
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-2



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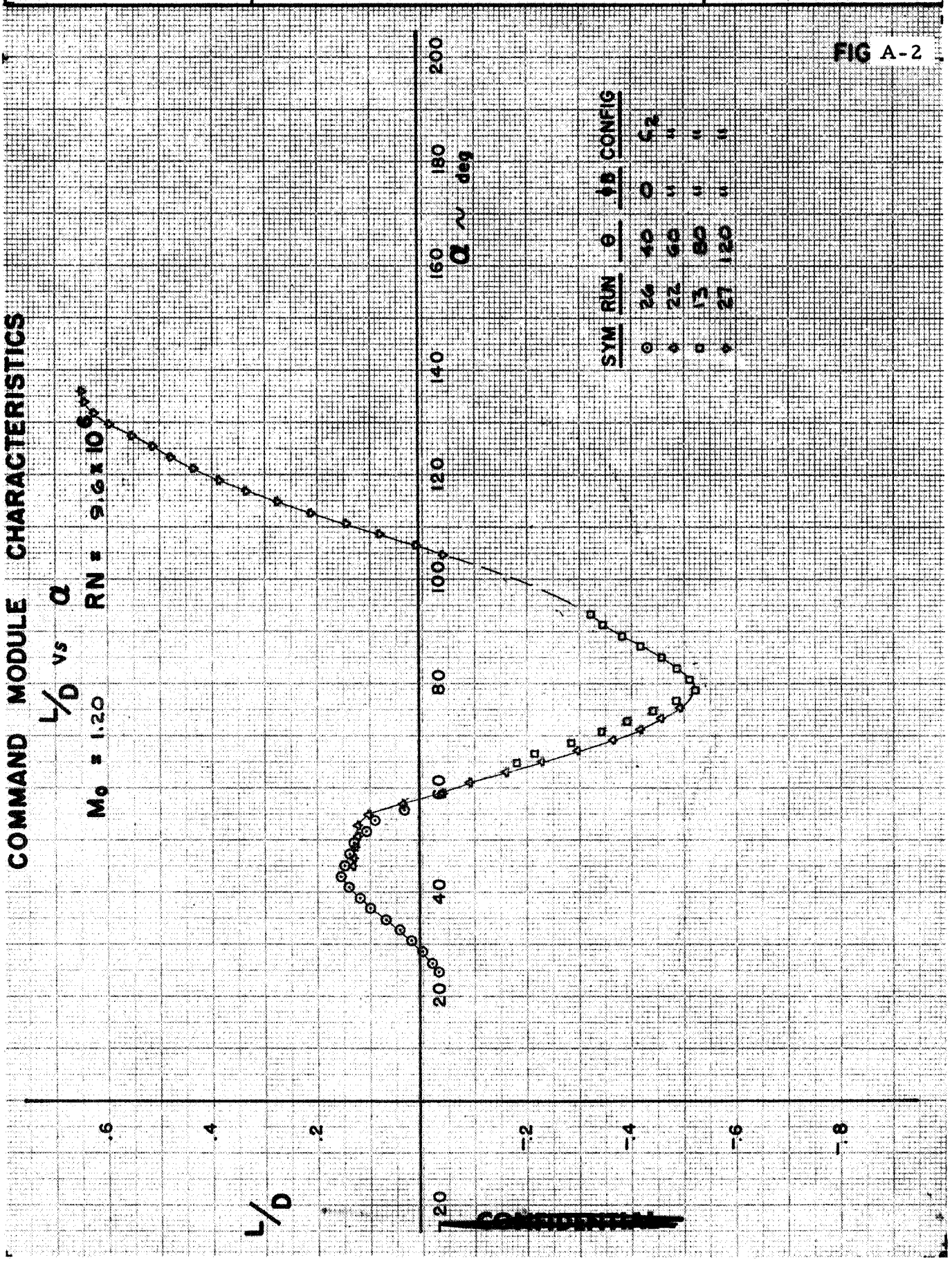
DATE:

CONFIDENTIAL

MODEL NO. APOLLO FS-2

FIG A-2



CONFIDENTIAL

DATE: [redacted] MODEL NO. APOLLO FS-2

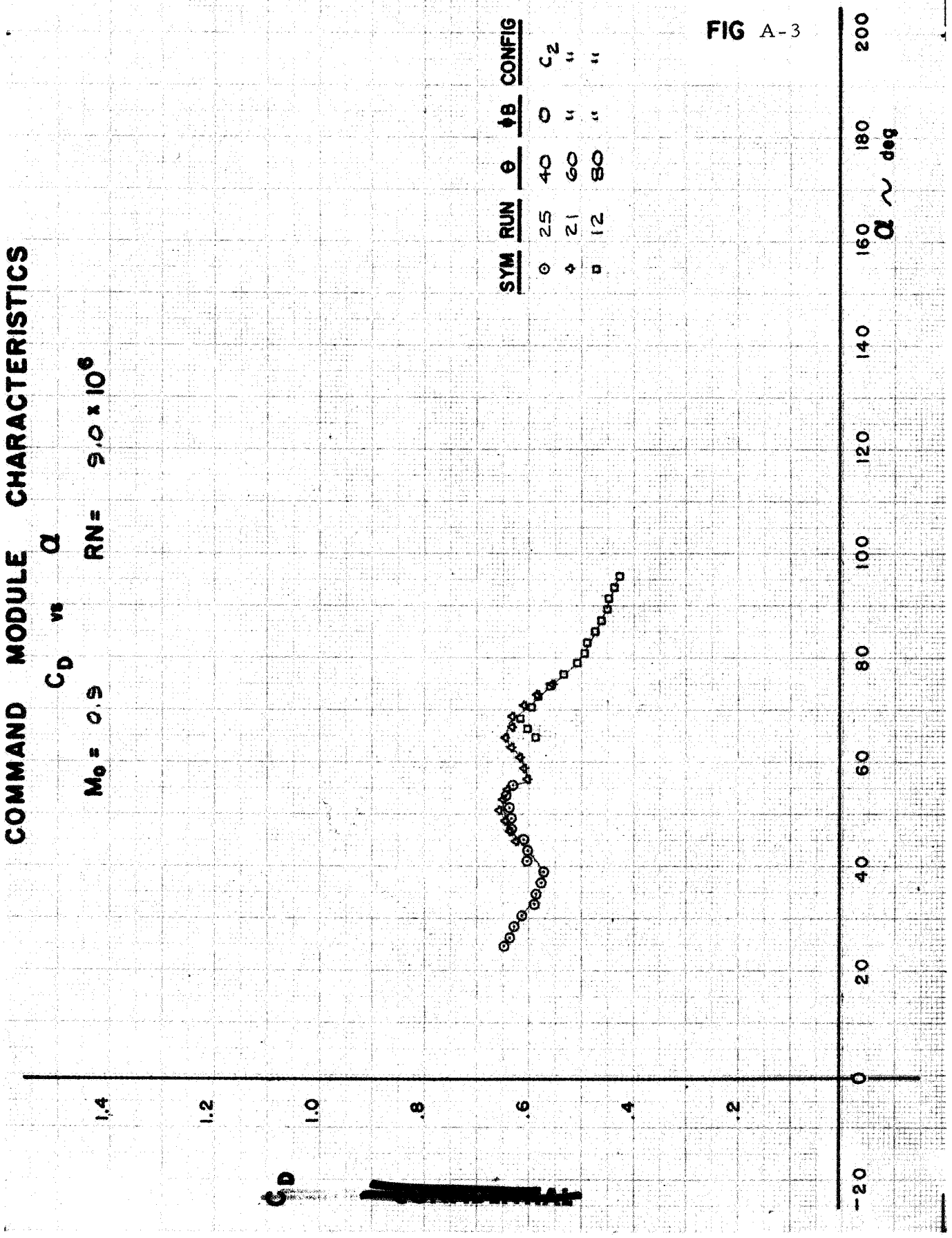
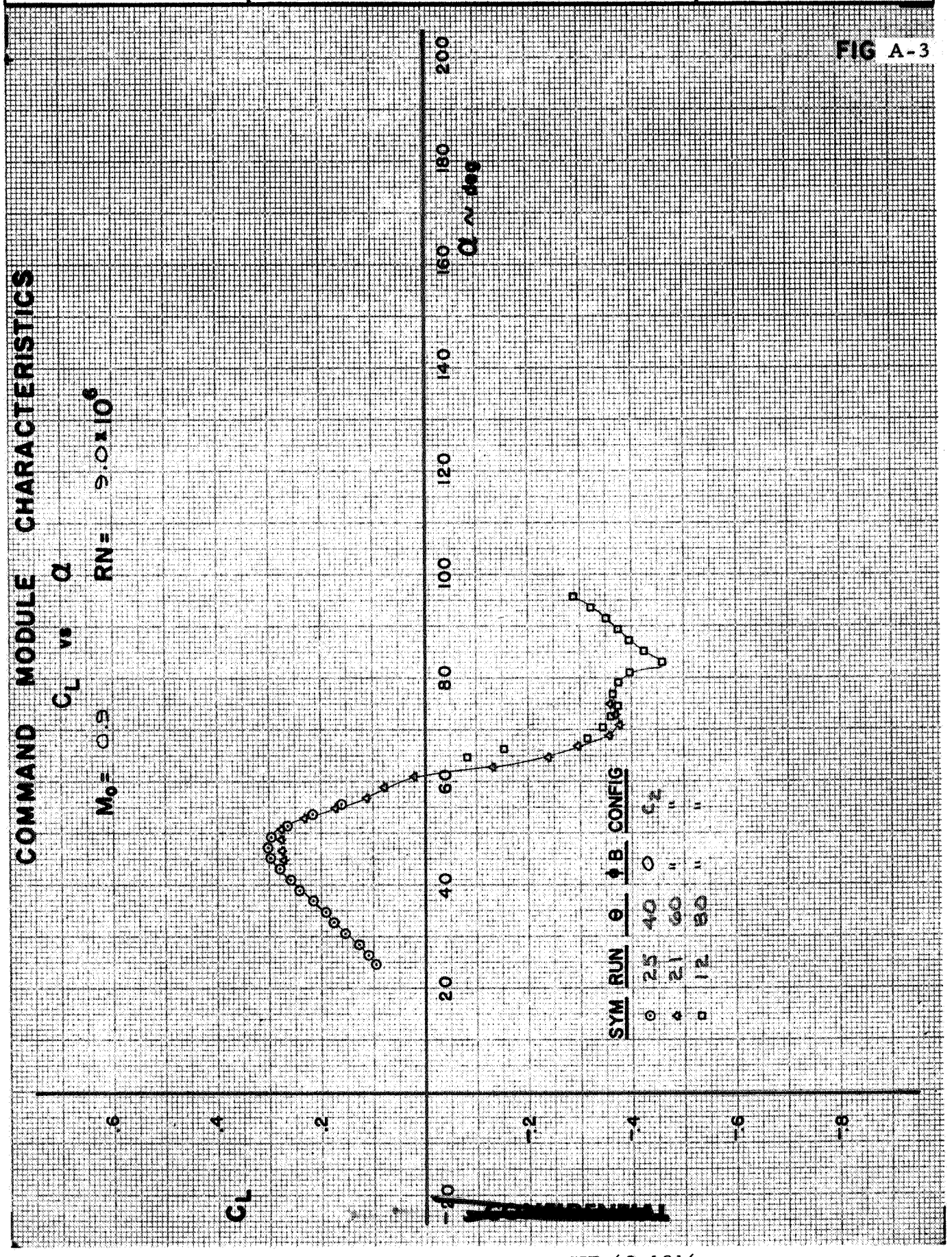


FIG A-3

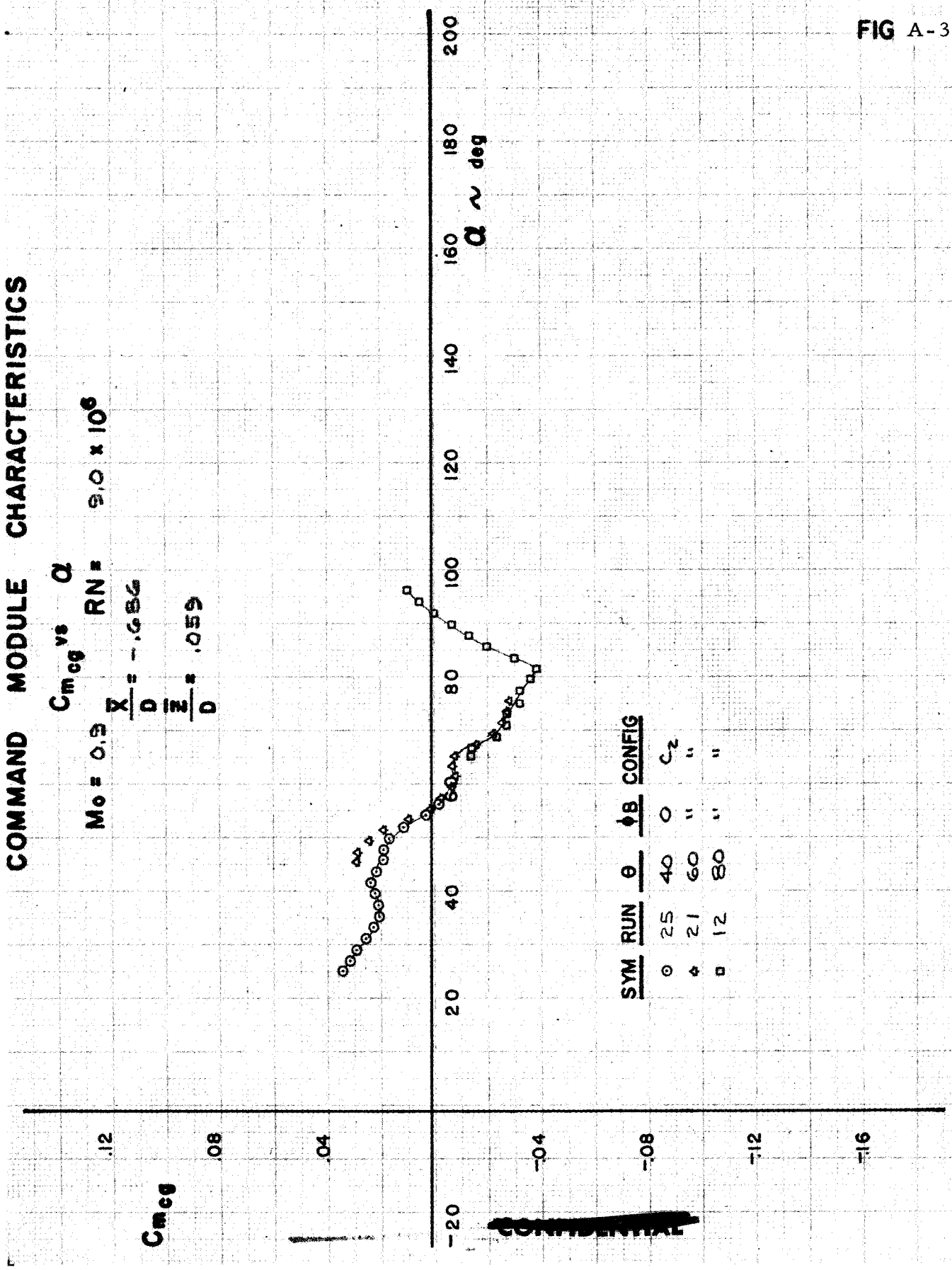
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-3



DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-3



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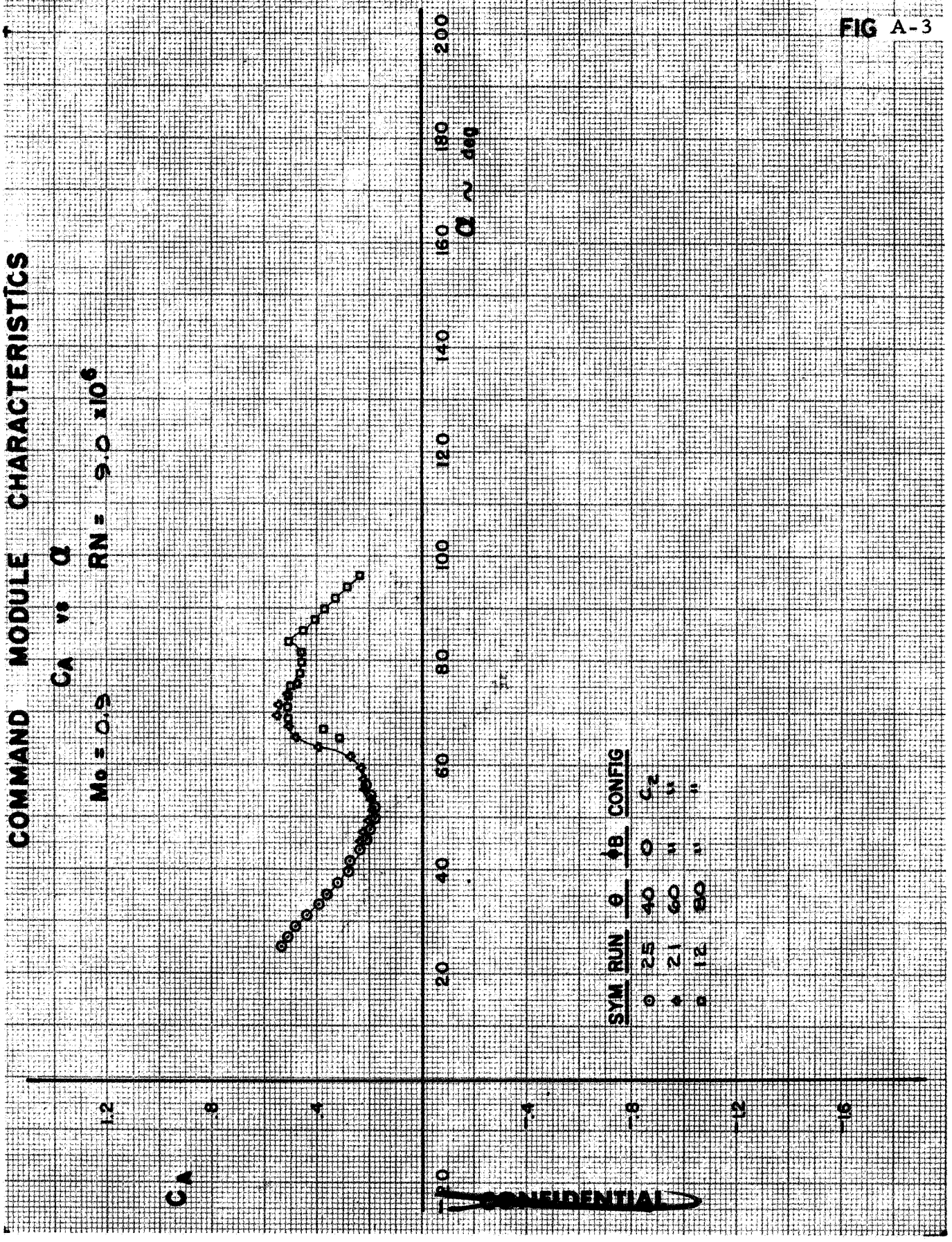
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-3



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DATE: [redacted] MODEL NO. APOLLO FS-2

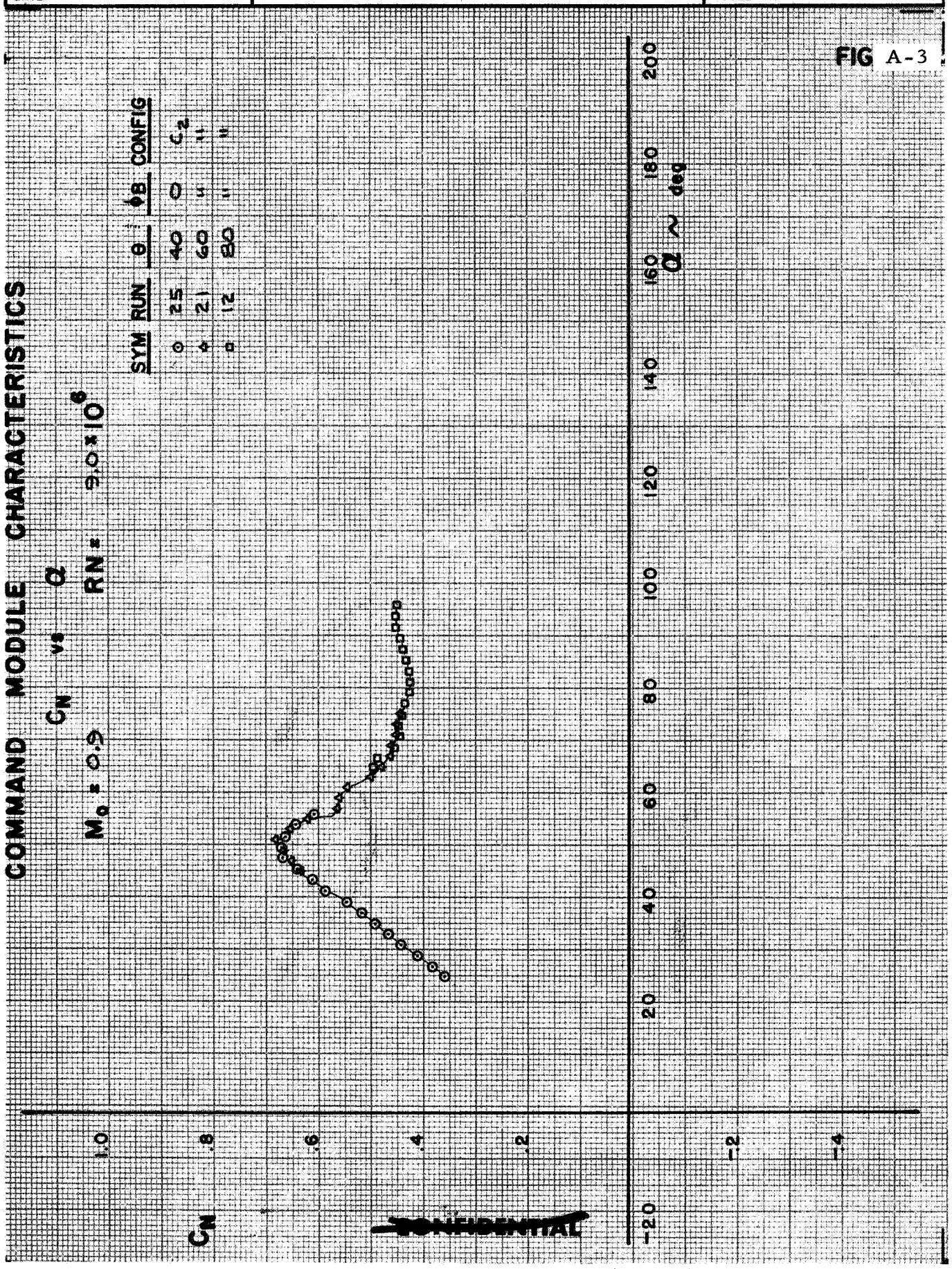

FIG A-3

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DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-3

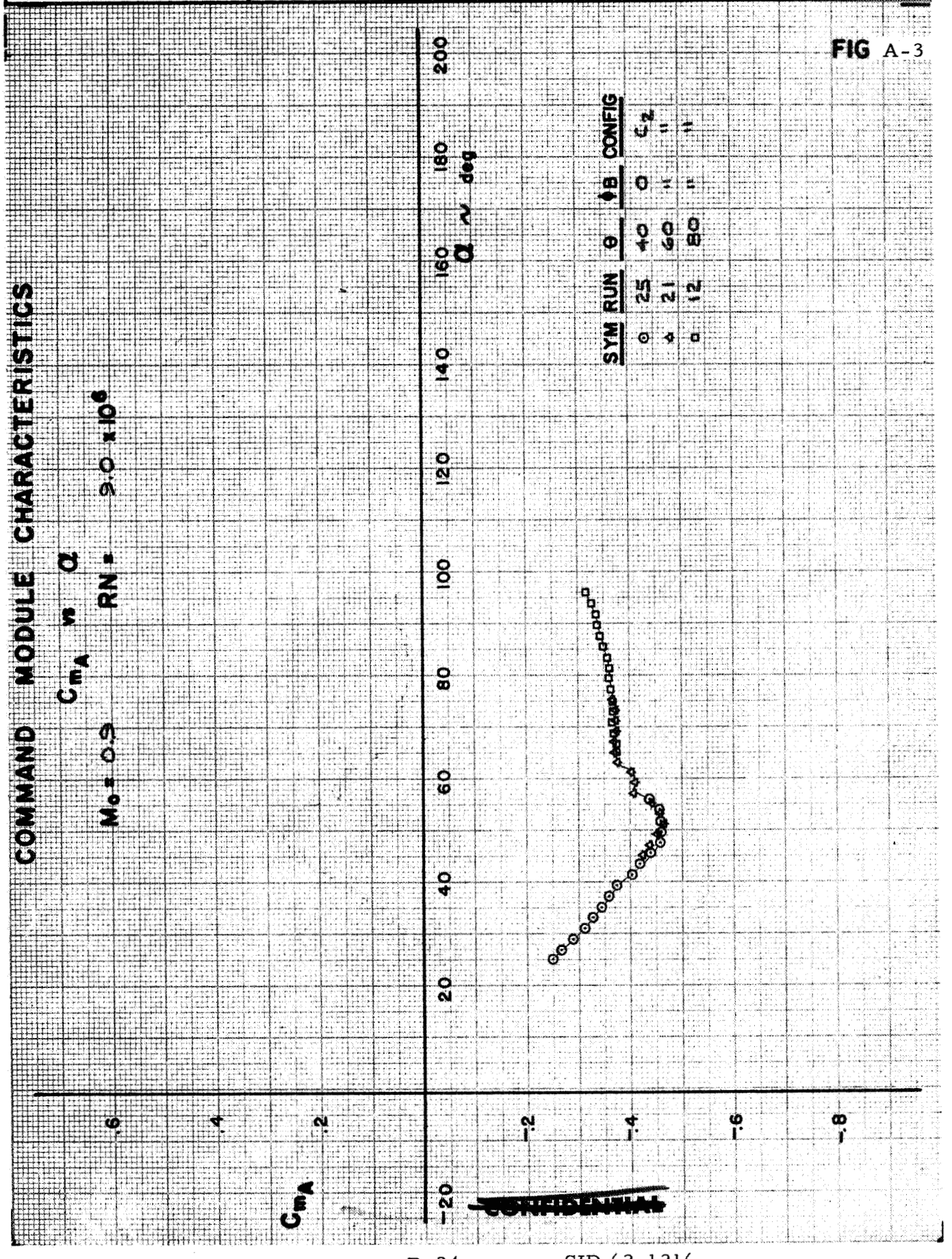

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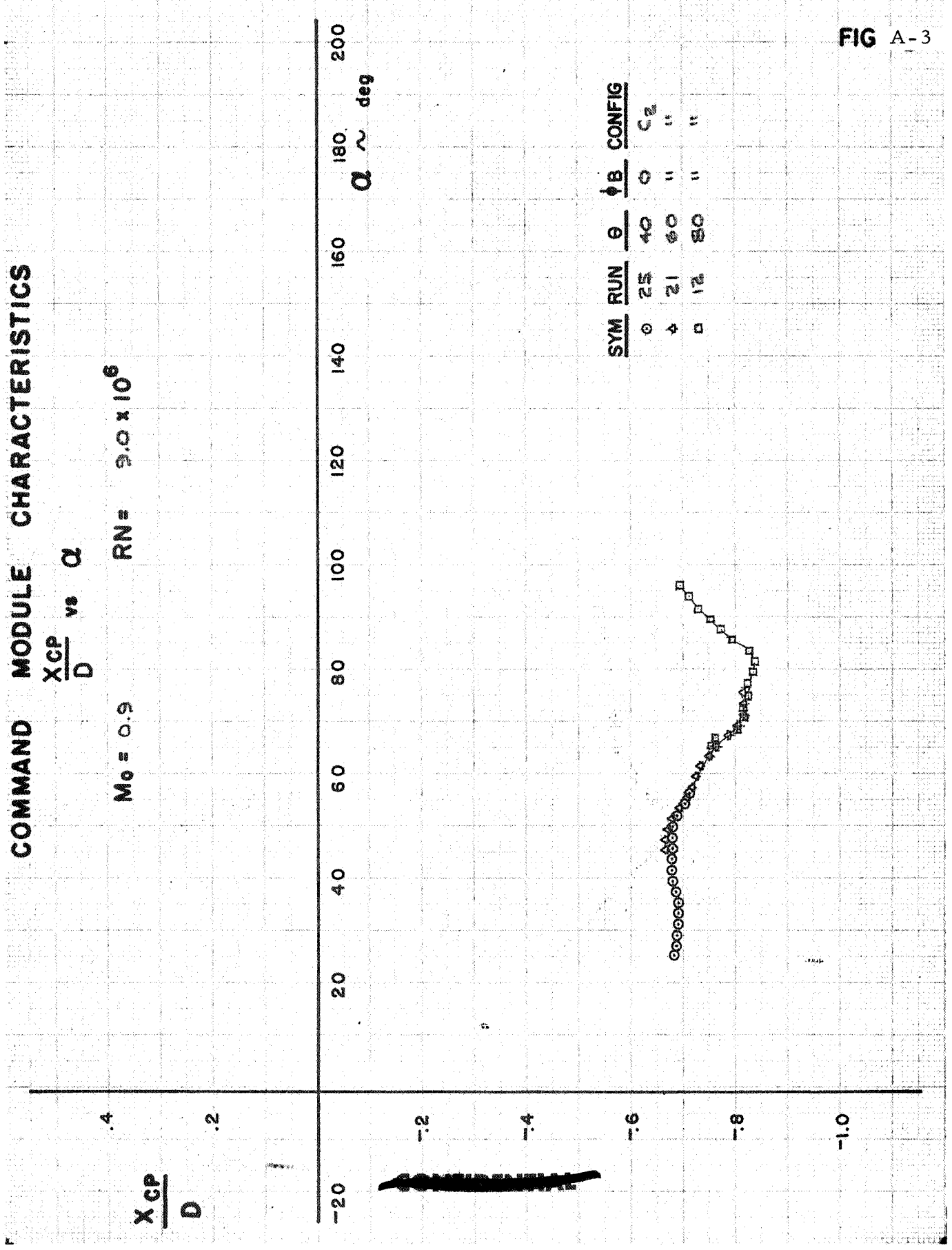
FIG A-3



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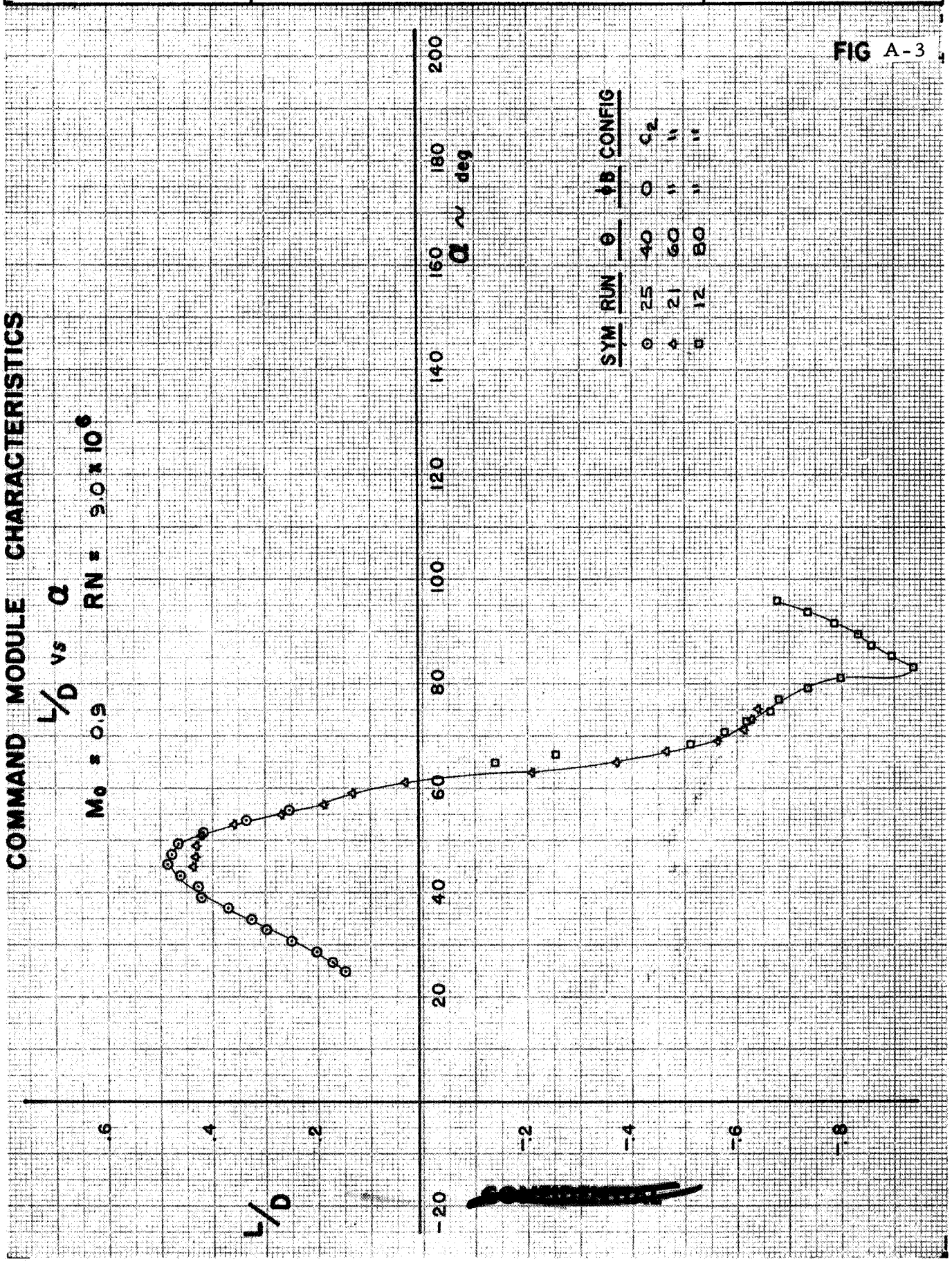
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-3



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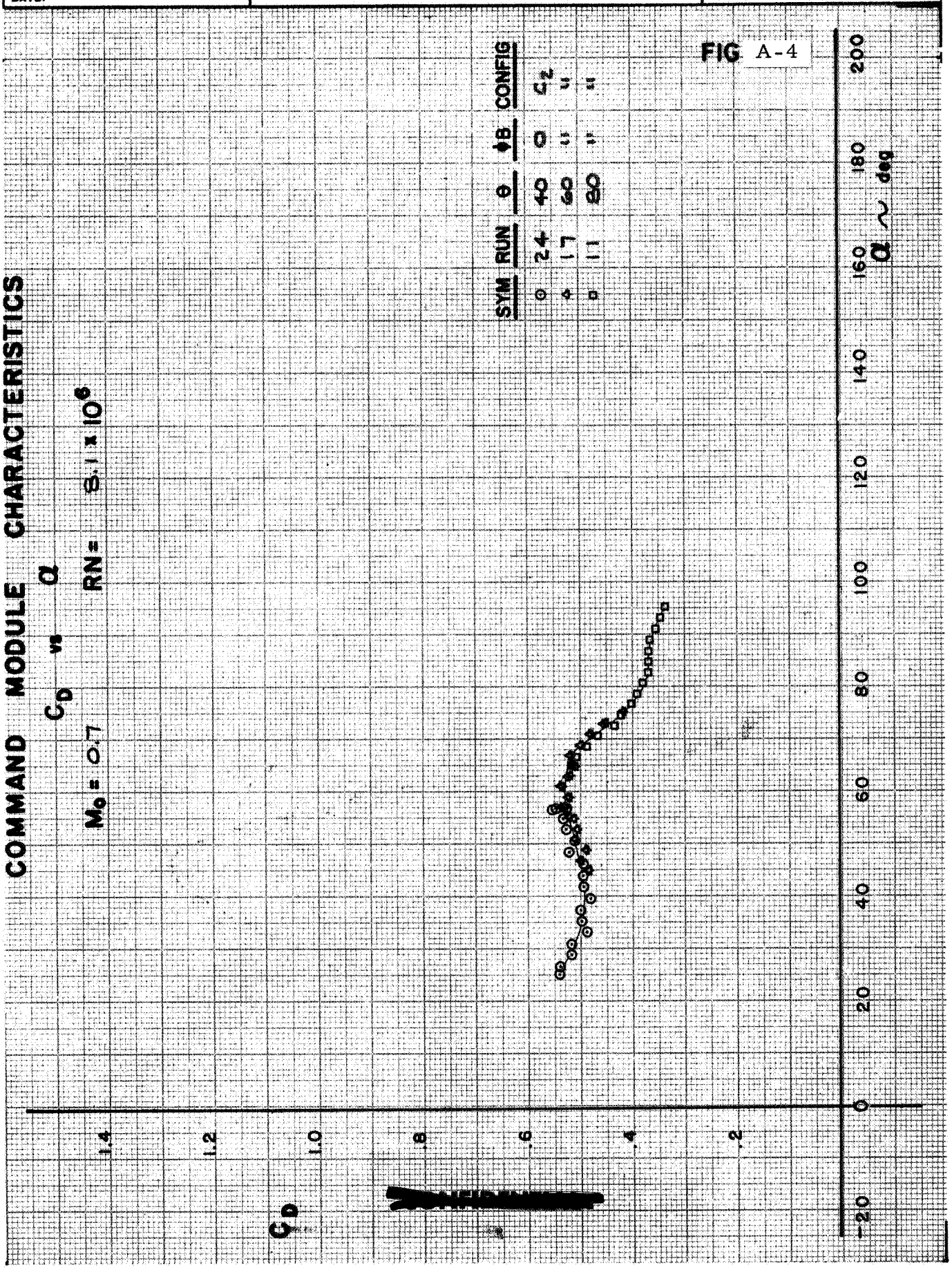
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-4



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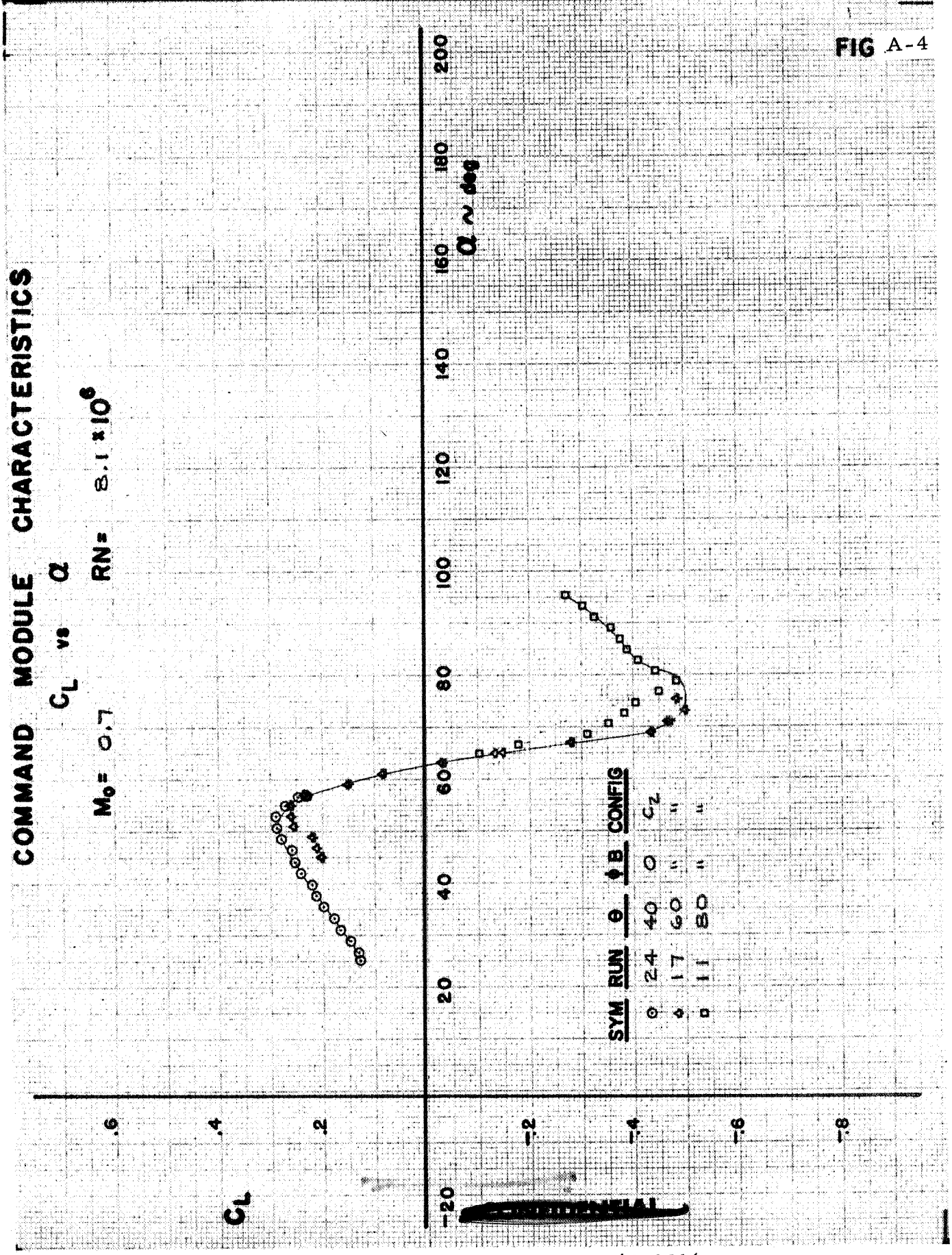
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-4



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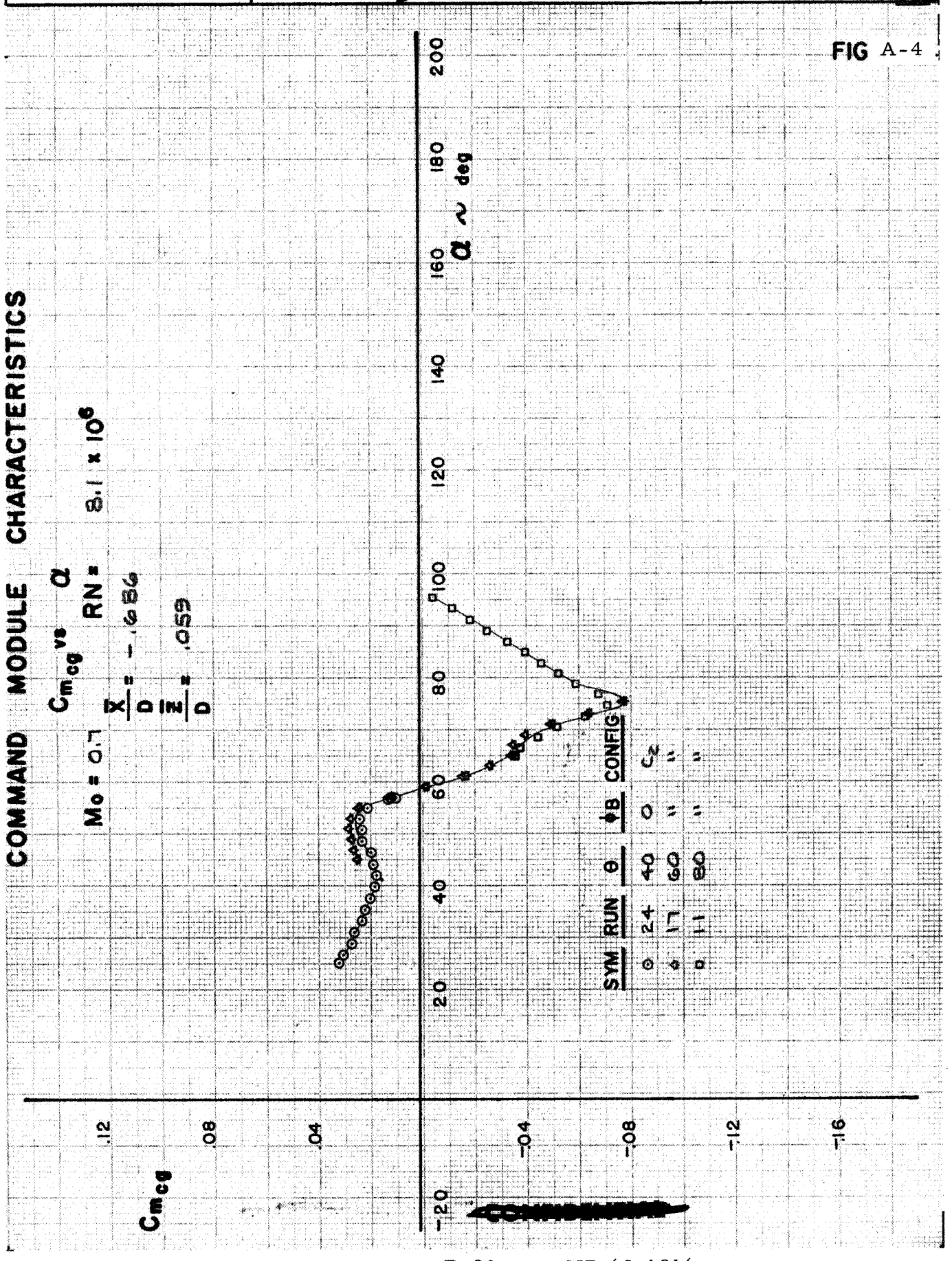
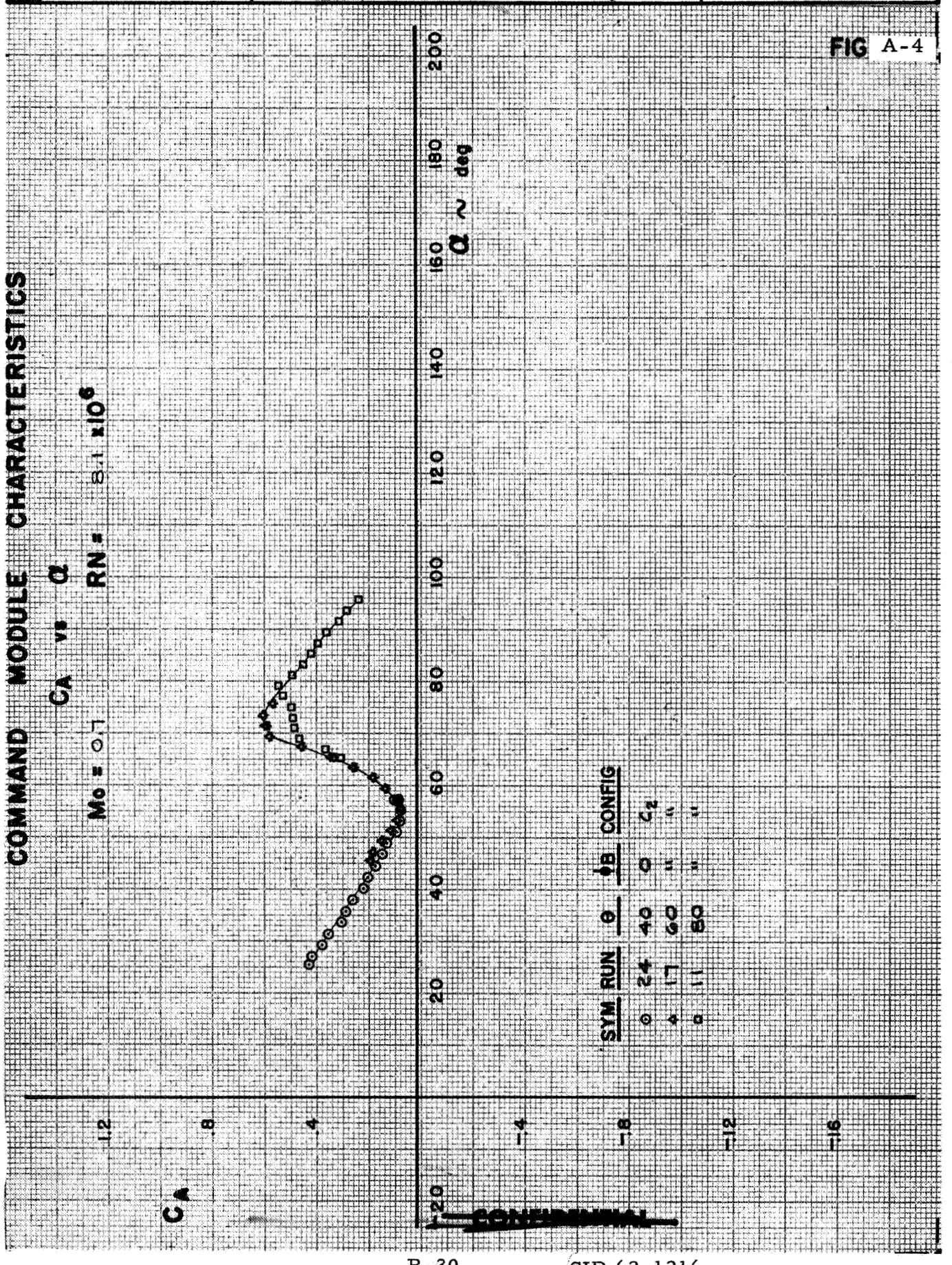
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-4



DATE: CONFIDENTIAL MODEL NO. APOLLO FS-2

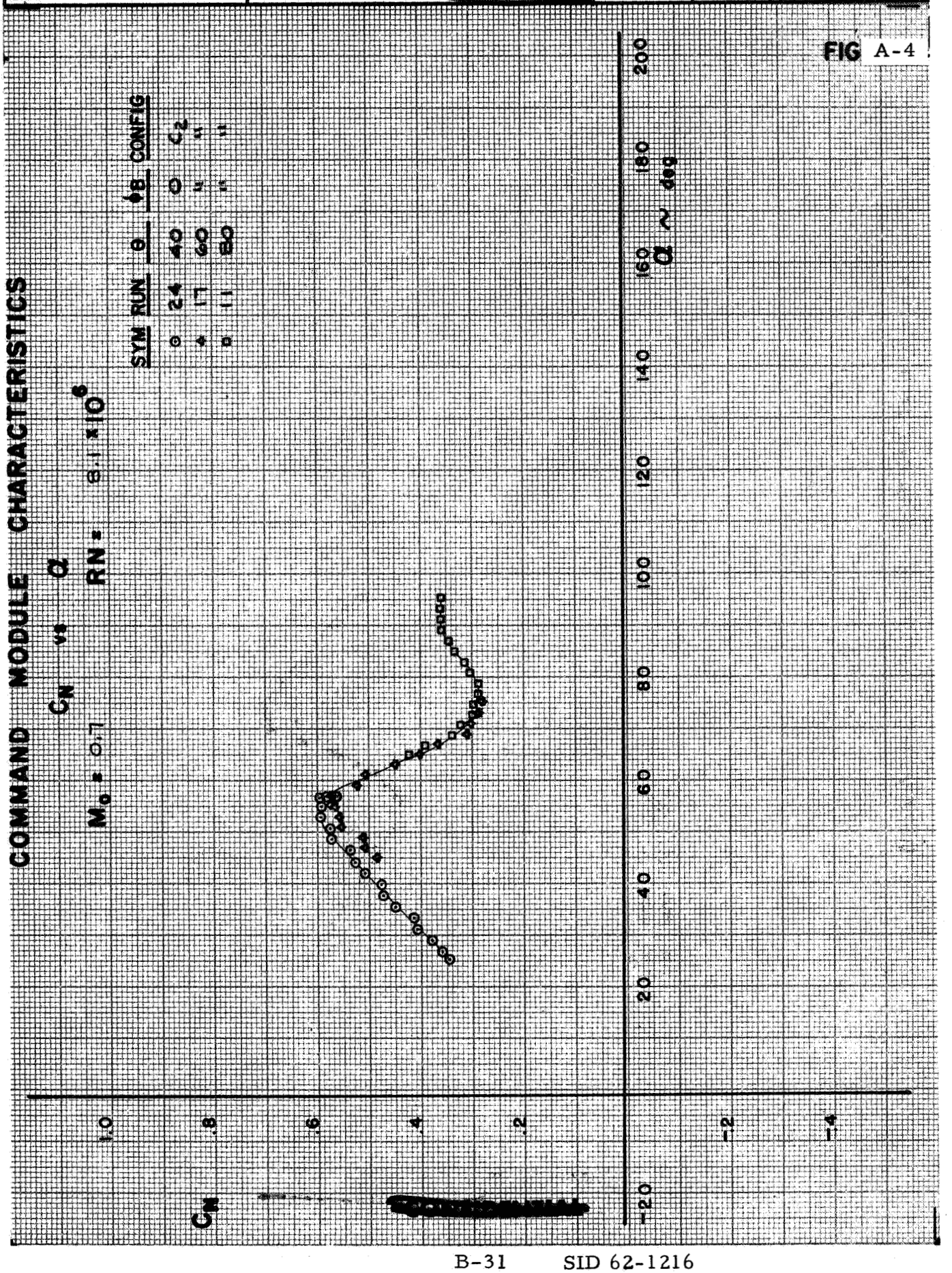
FIG A-4



CONFIDENTIAL

DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-4



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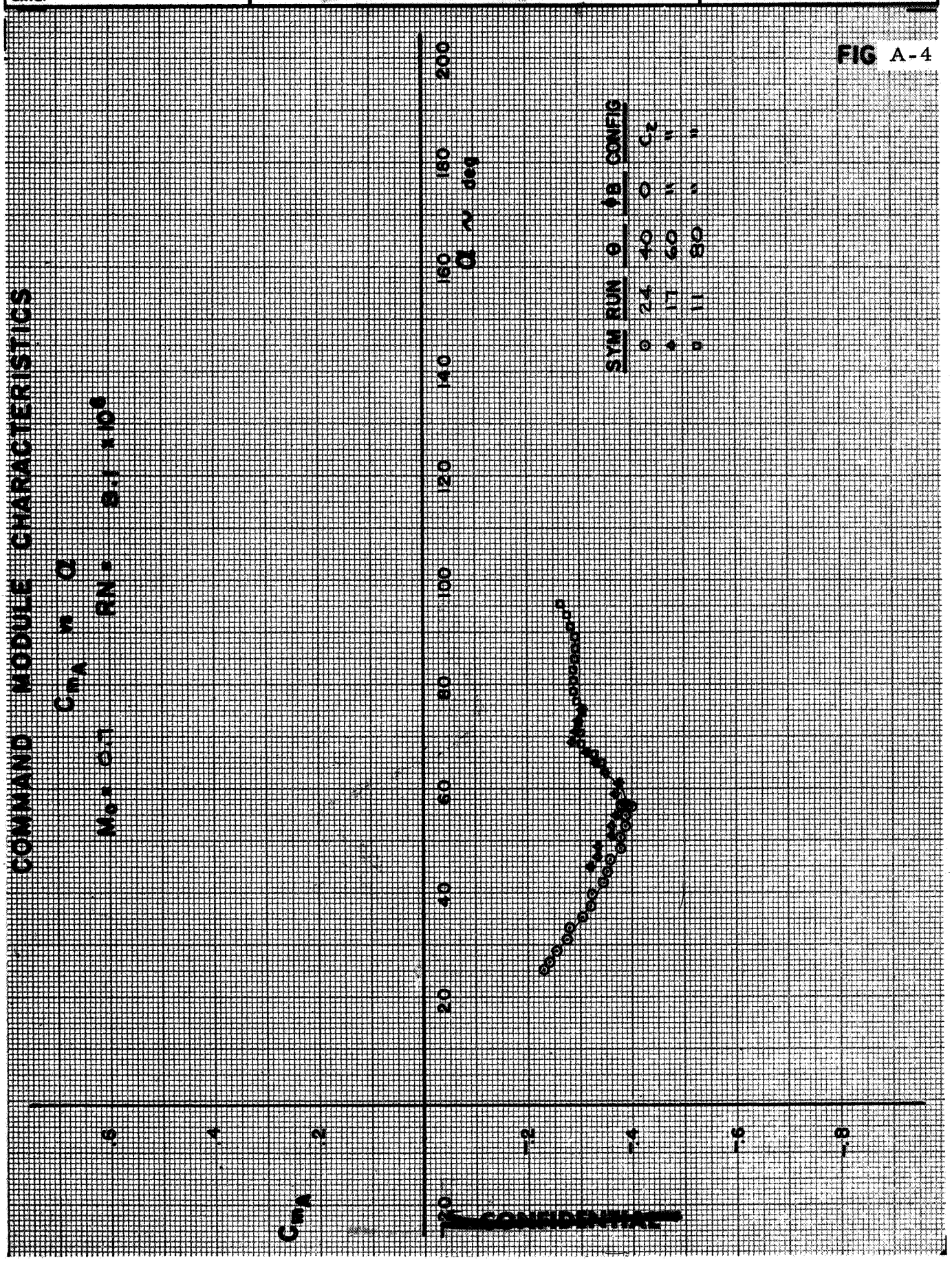
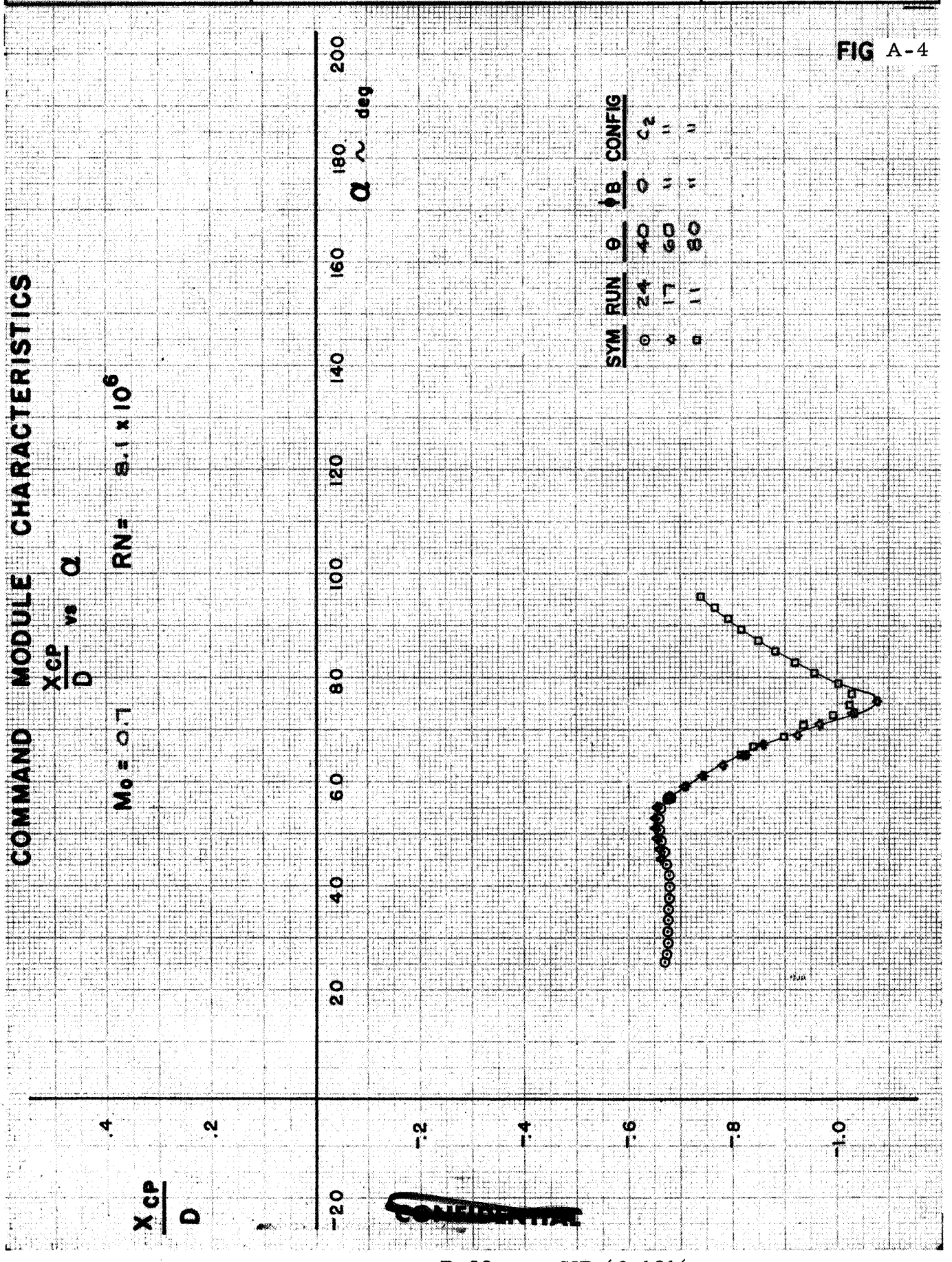
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-4



DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-4



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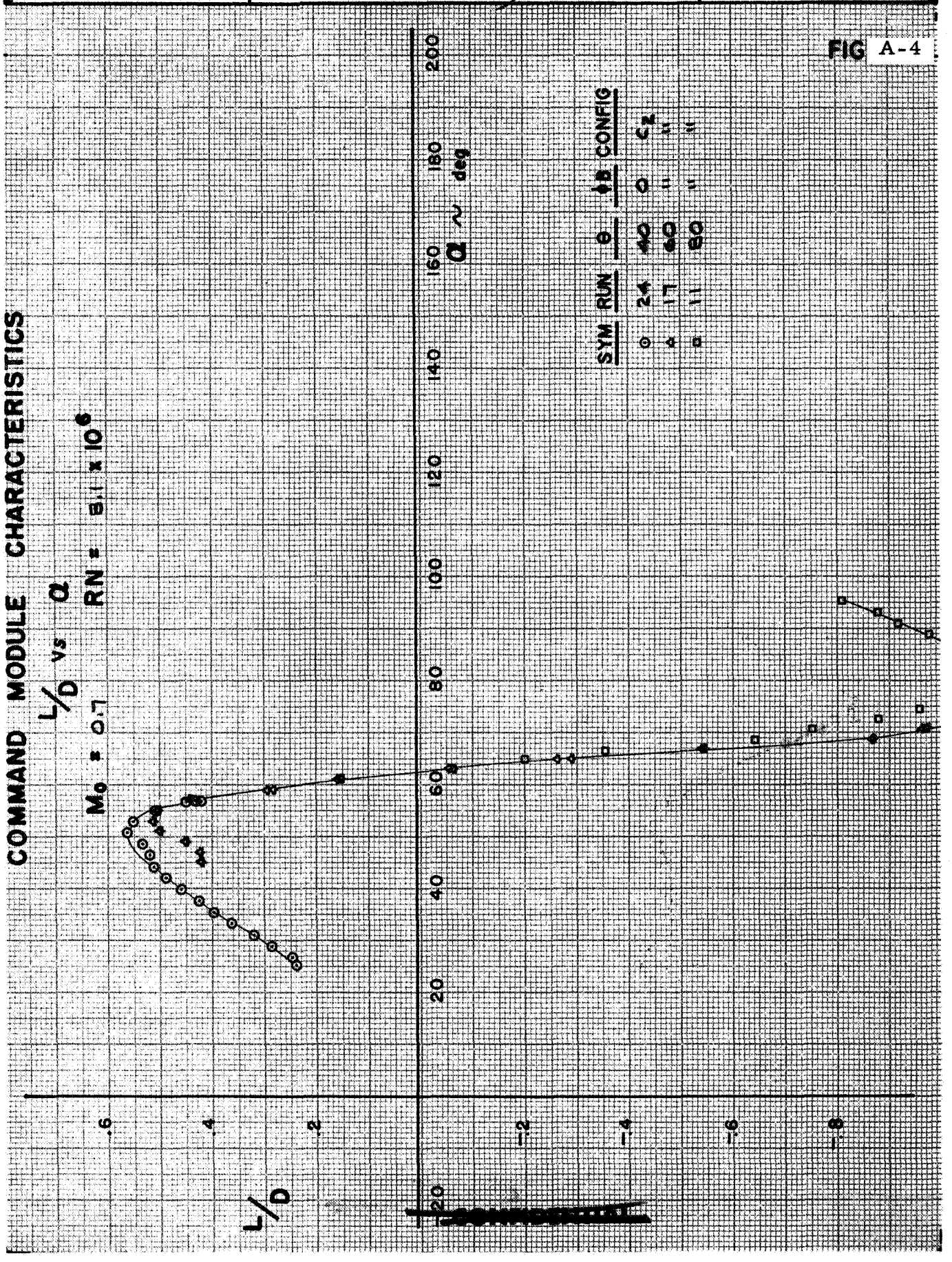
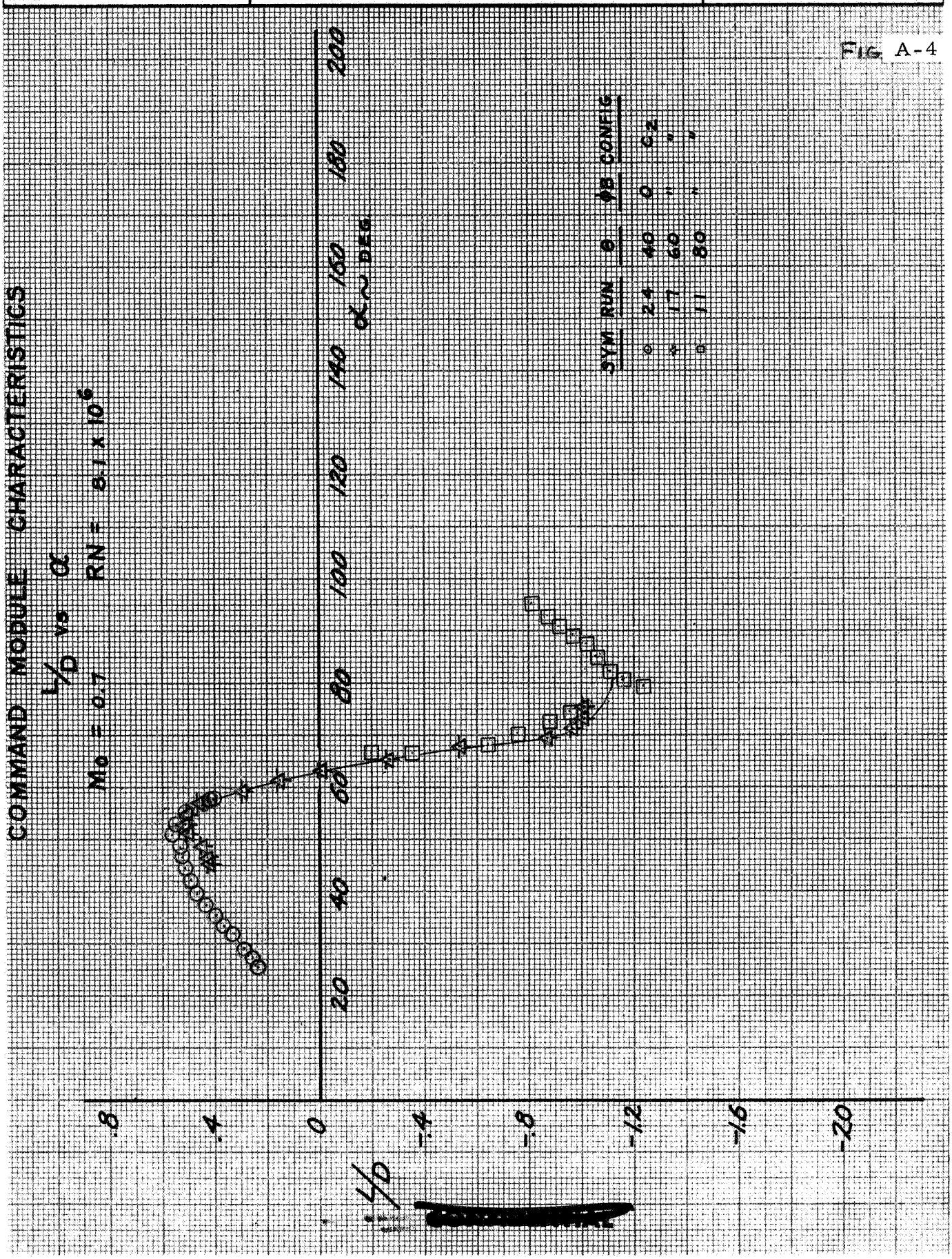
DATE: CONFIDENTIAL MODEL NO. APOLLO FS-2

FIG A-4



DATE: [redacted] MODEL NO. APOLLO FS-2

FIG. A-4



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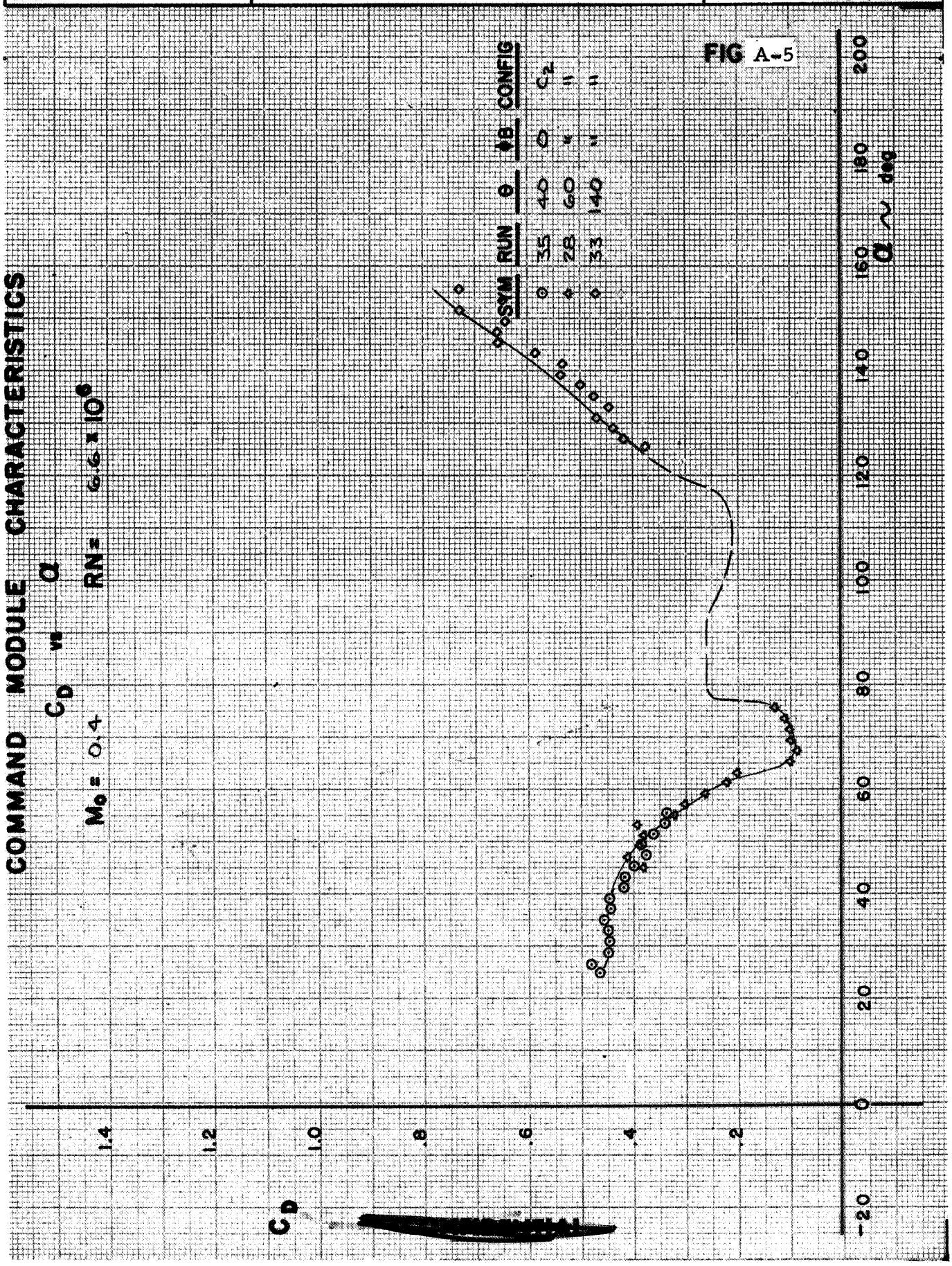

FIG A-5

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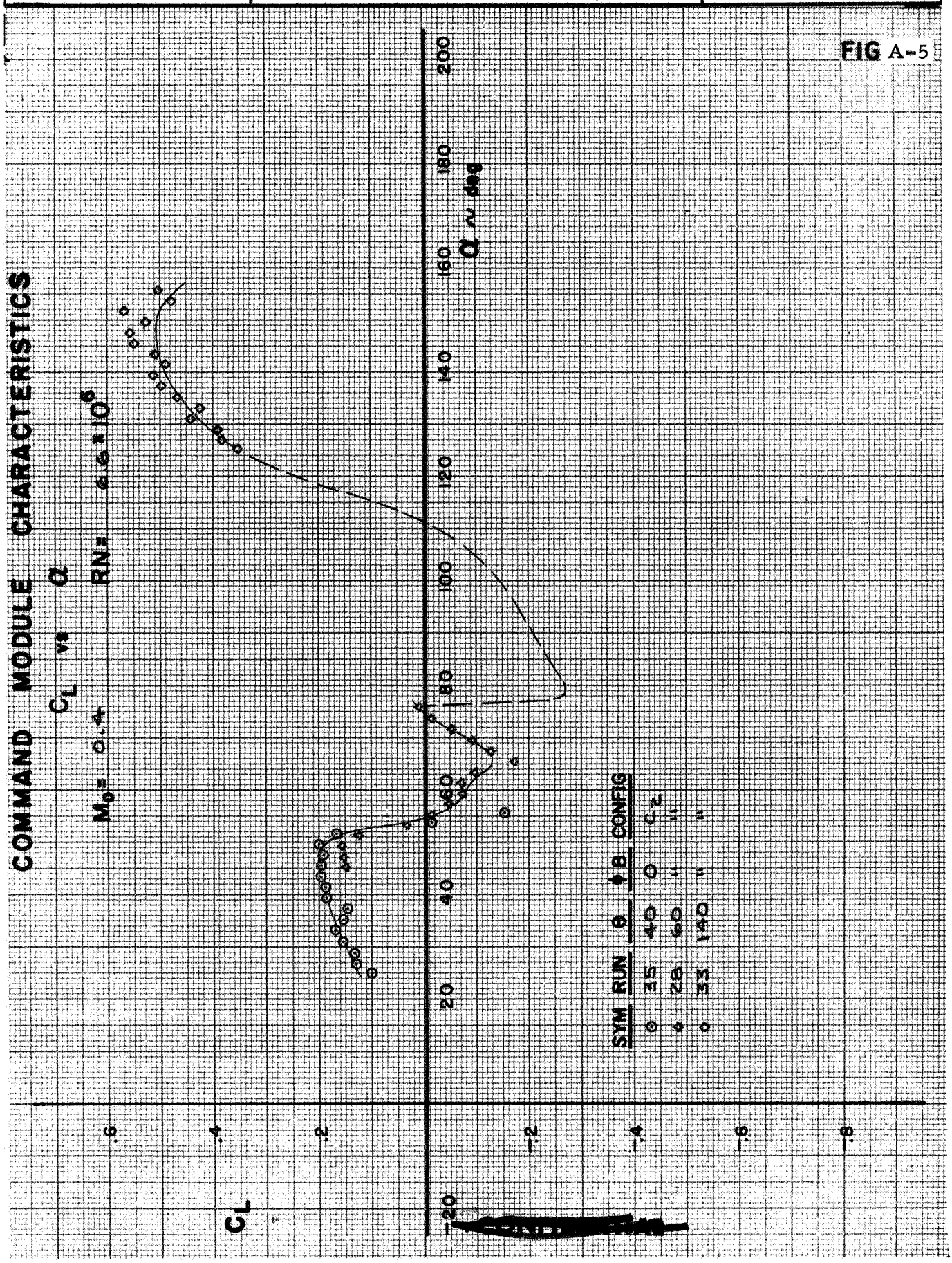
DATE: CONFIDENTIAL MODEL NO. APOLLO FS-2

FIG A-5



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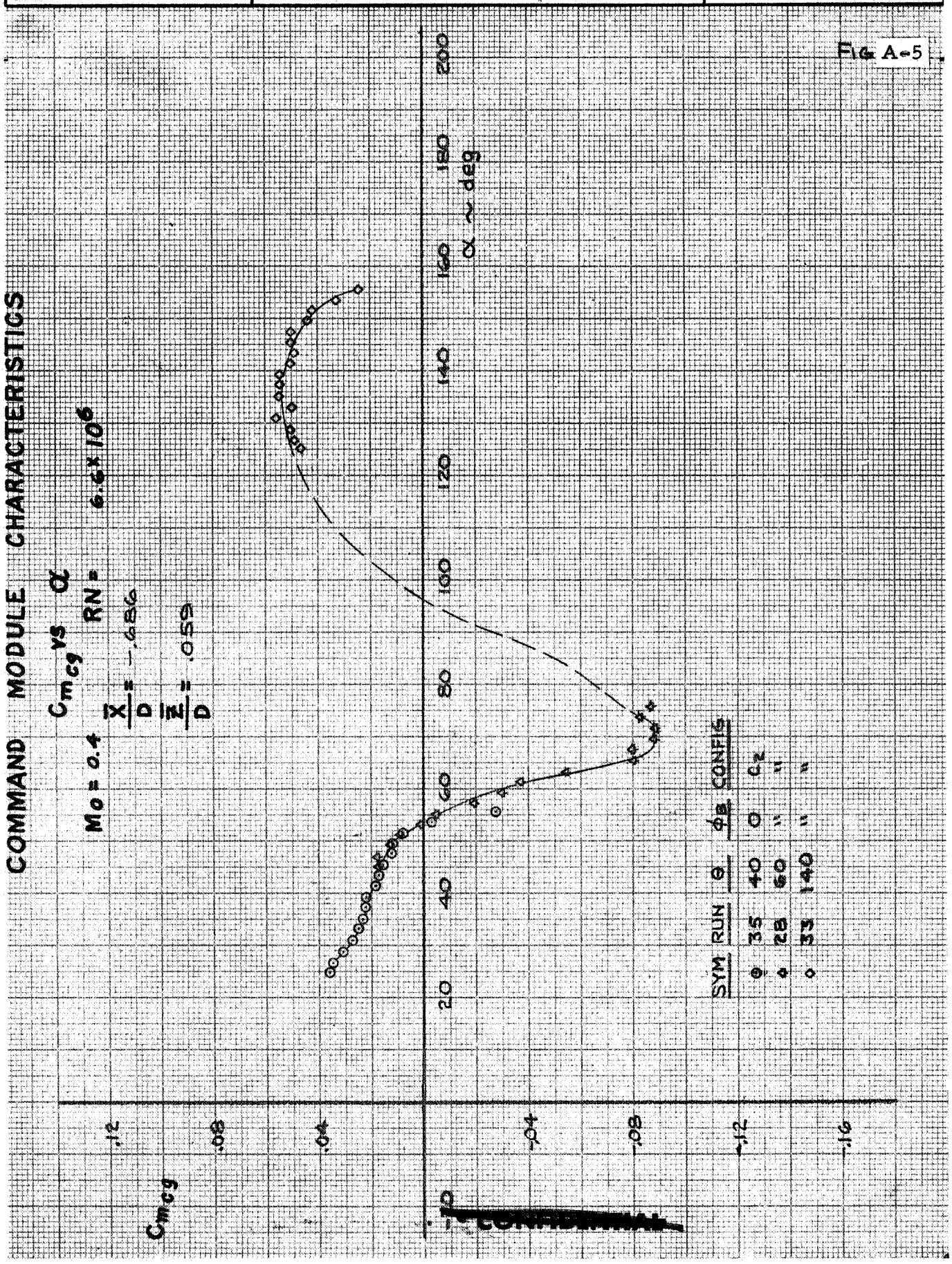

Fig A-5

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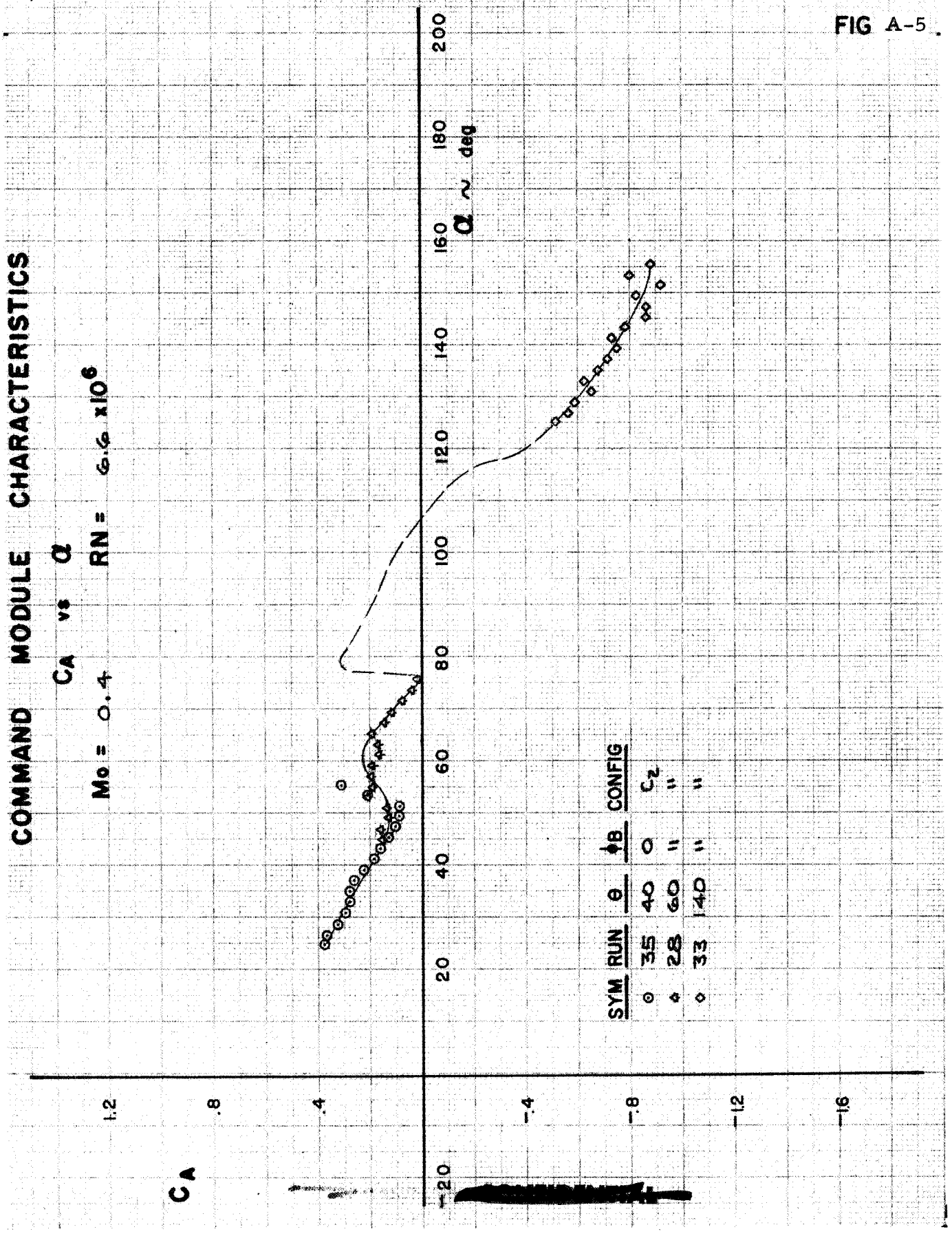
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-5



[redacted]

DATE: [redacted] MODEL NO. APOLLO FS-2

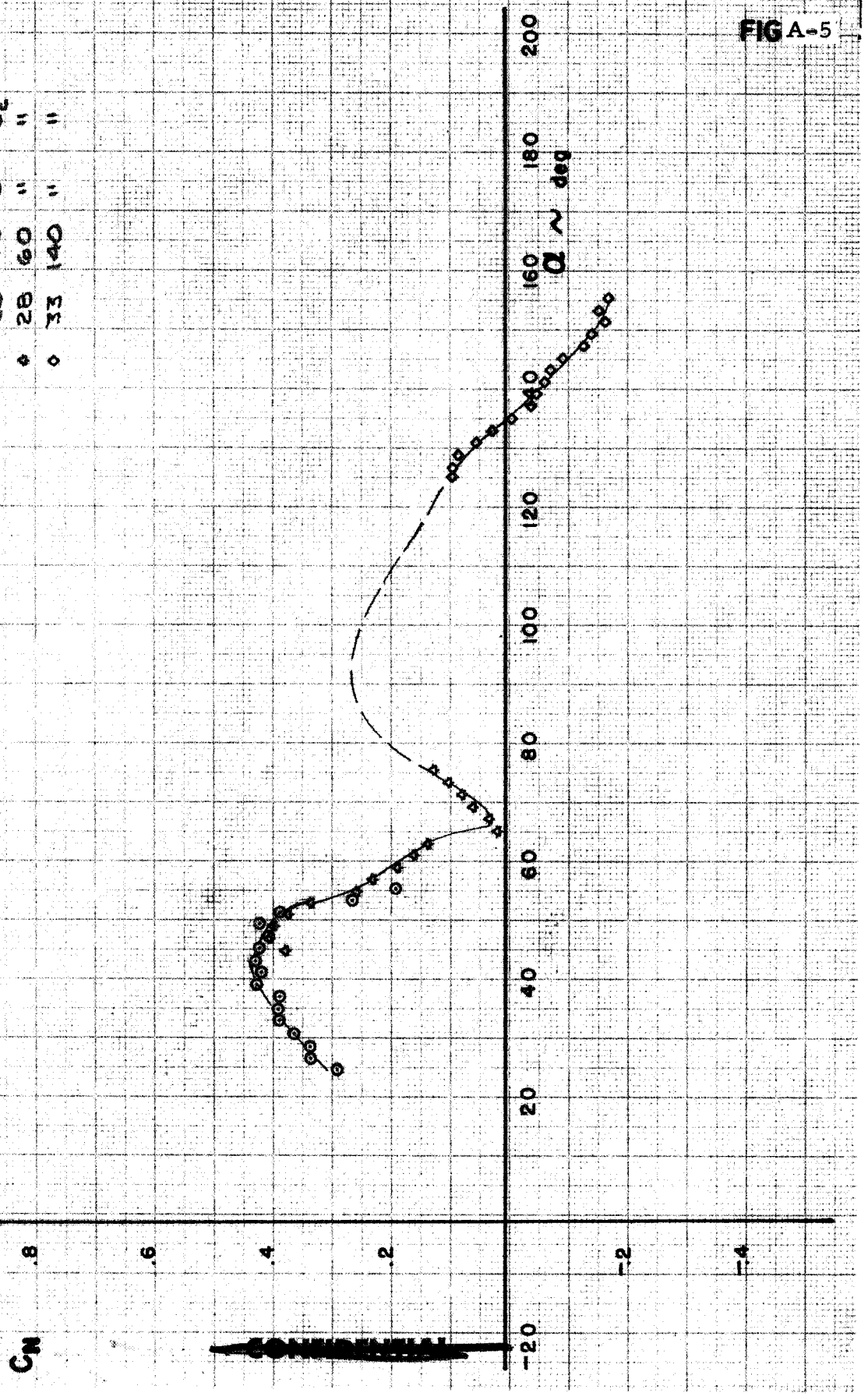
FIG A-5

COMMAND MODULE CHARACTERISTICS

C_N vs α

$M_0 = 0.4$ RN = 6.6×10^6

SYM	RUN	θ	φB	CONFIG
⊙	35	40	0	C_2
◆	28	60	"	"
◇	33	140	"	"



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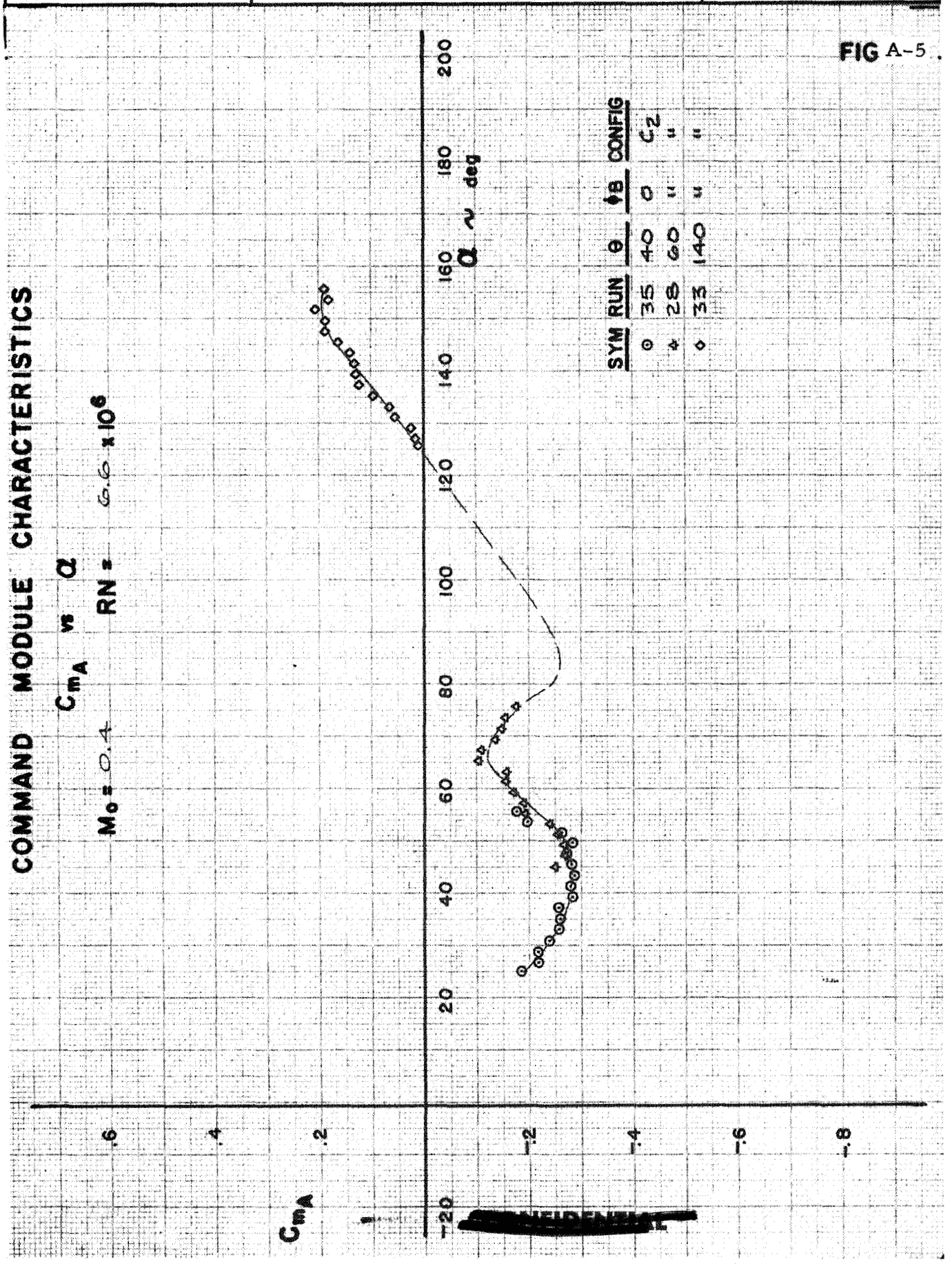
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-5



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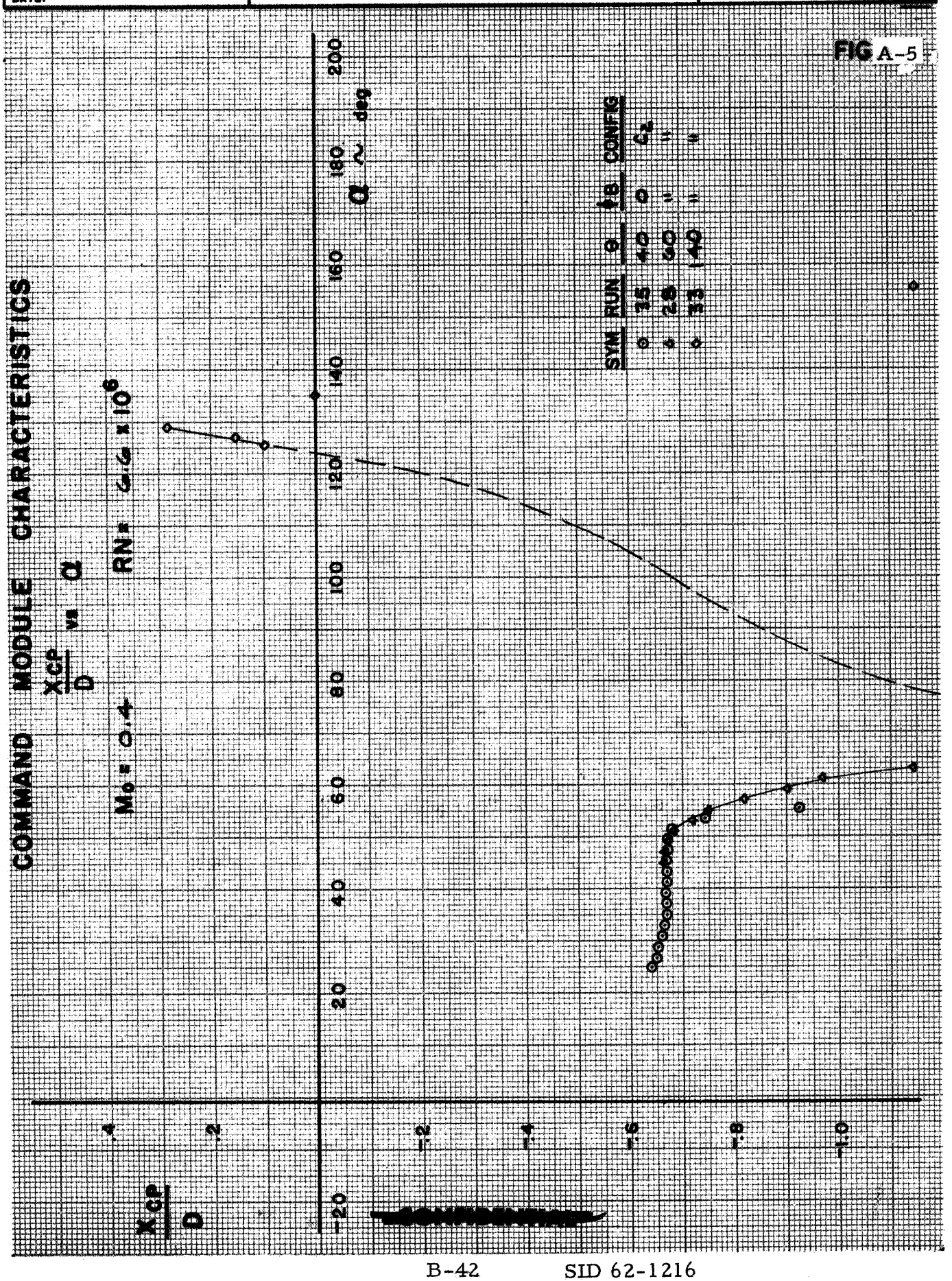
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-5



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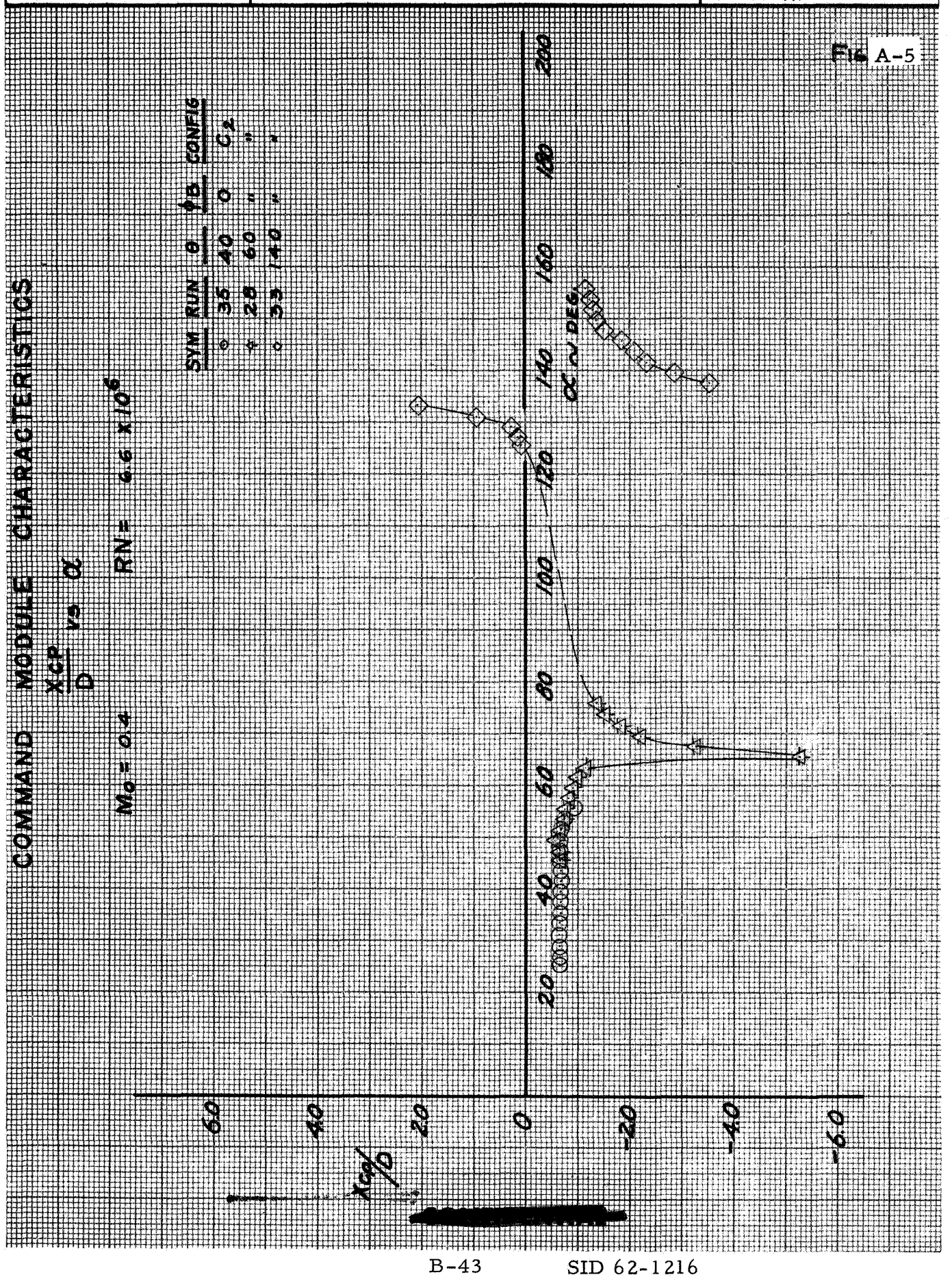
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-5



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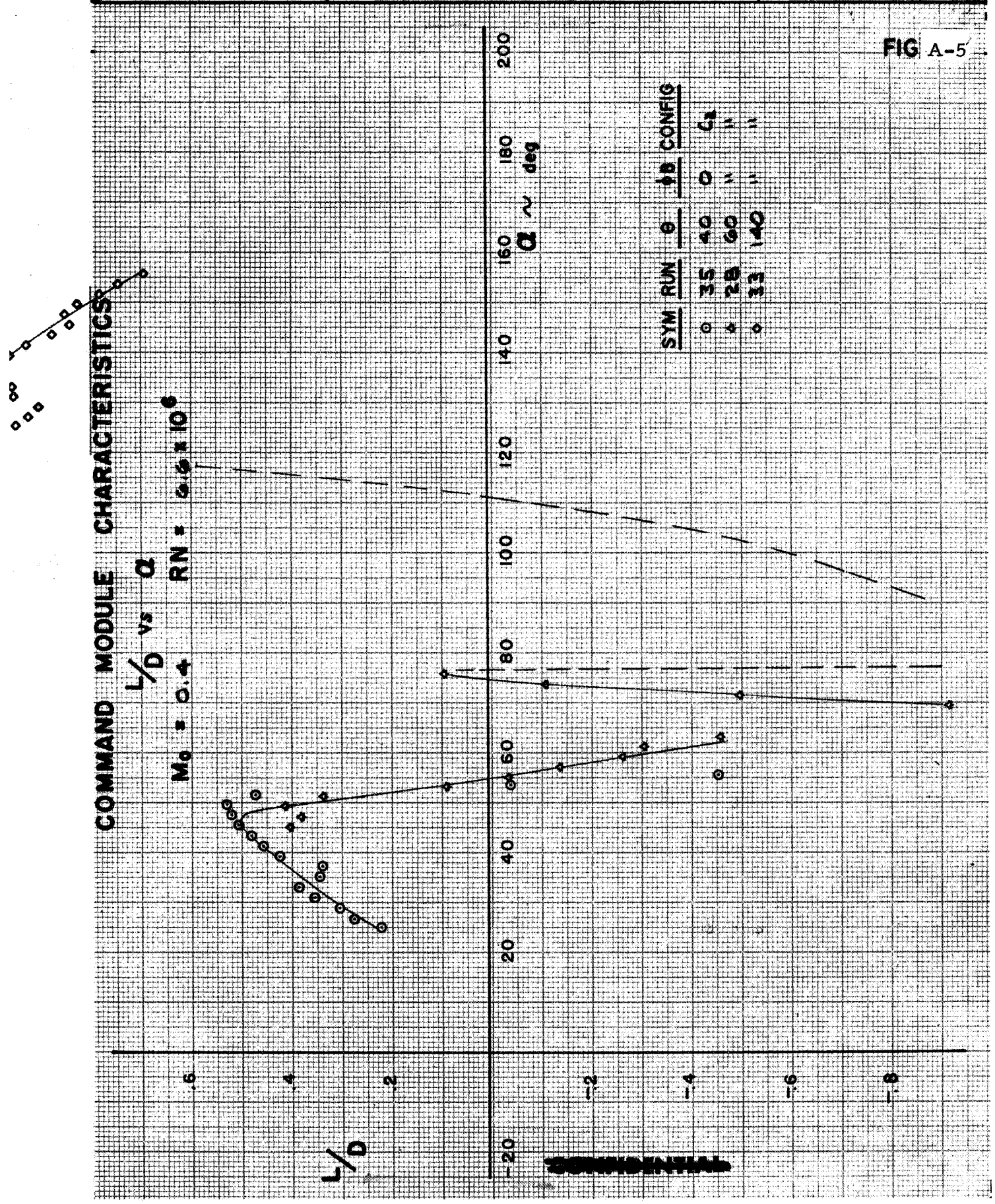
DATE: | [redacted] | MODEL NO. APOLLO FS-2

FIG A-5



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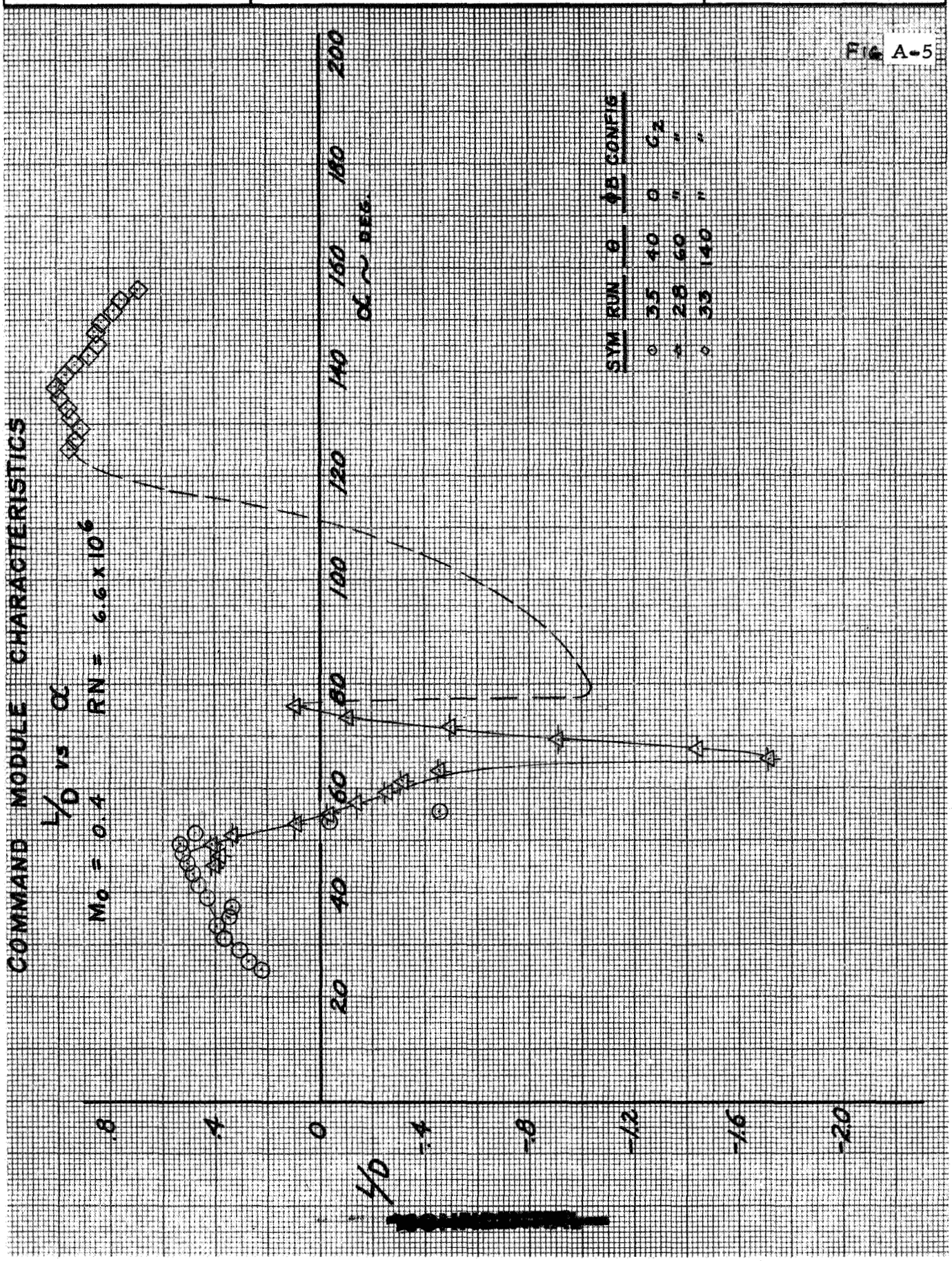
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG. A-5



[redacted]

DATE: ~~CONFIDENTIAL~~ MODEL NO. APOLLO FS-2

FIG A-6

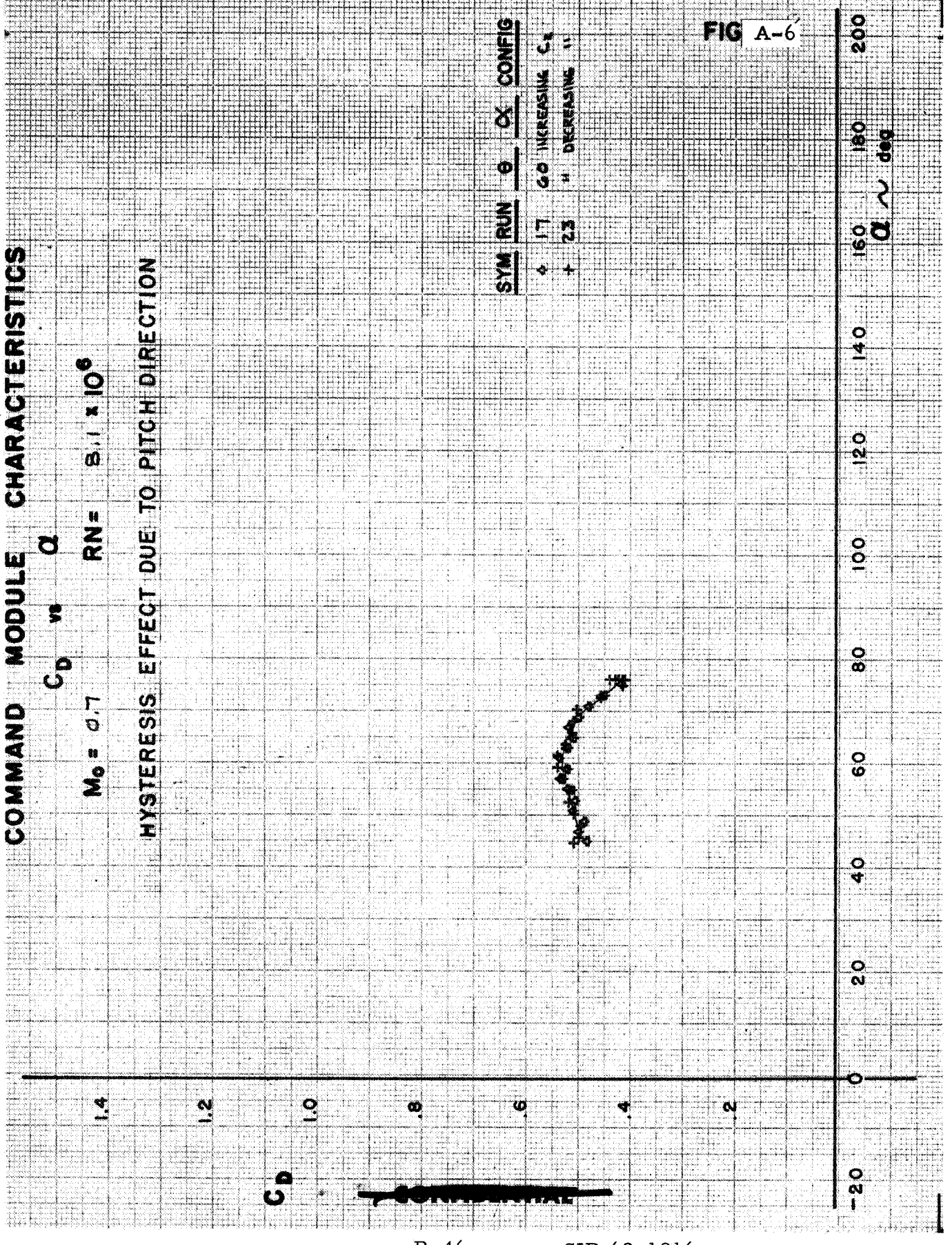
COMMAND MODULE CHARACTERISTICS

C_D vs α

M_∞ = 0.7 RN = 8.1 x 10^6

HYSTERESIS EFFECT DUE TO PITCH DIRECTION

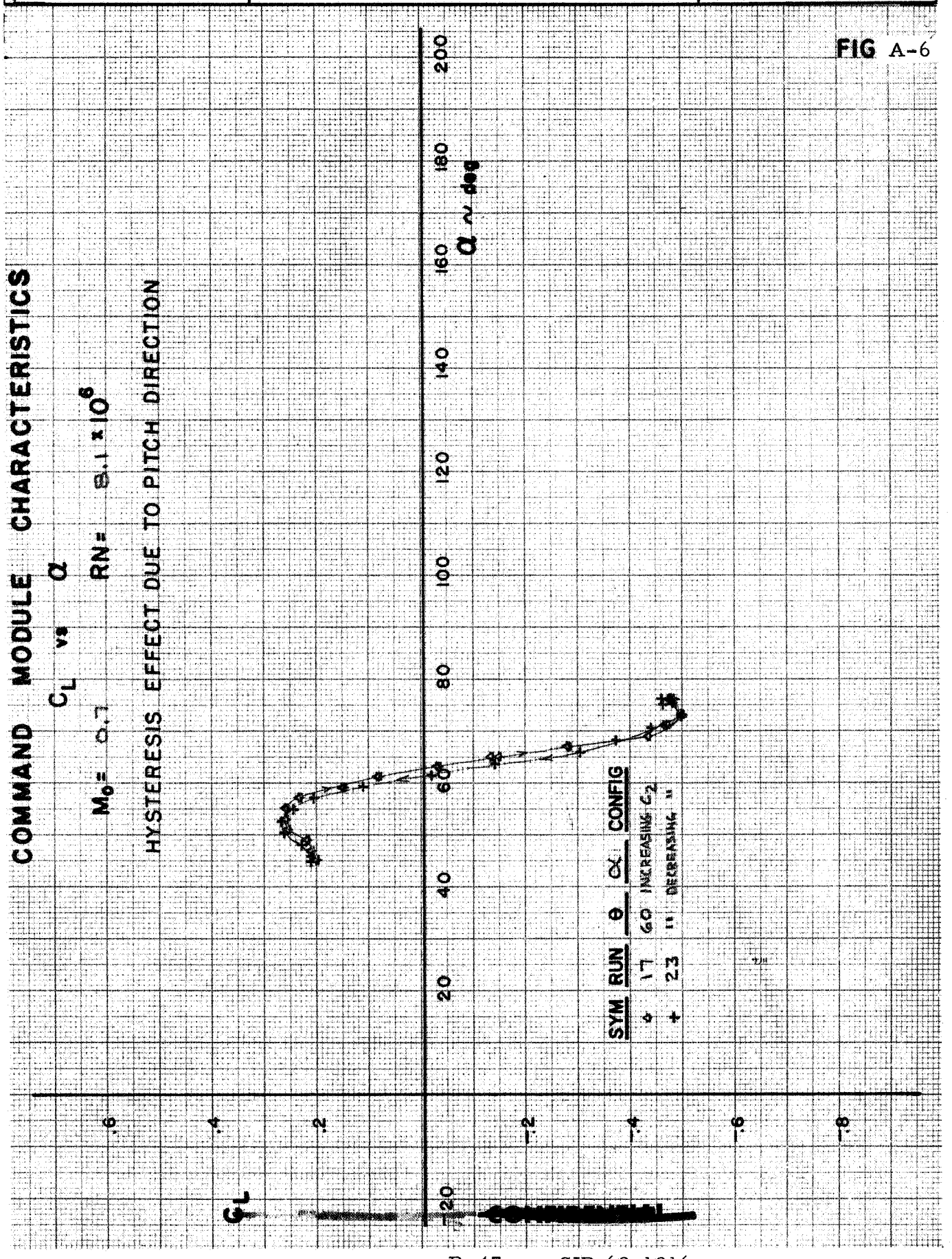
SYM	RUN	θ	α	CONFIG
◇	17	60	INCREASING	C_R
+	23	"	DECREASING	"



~~CONFIDENTIAL~~

DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-6



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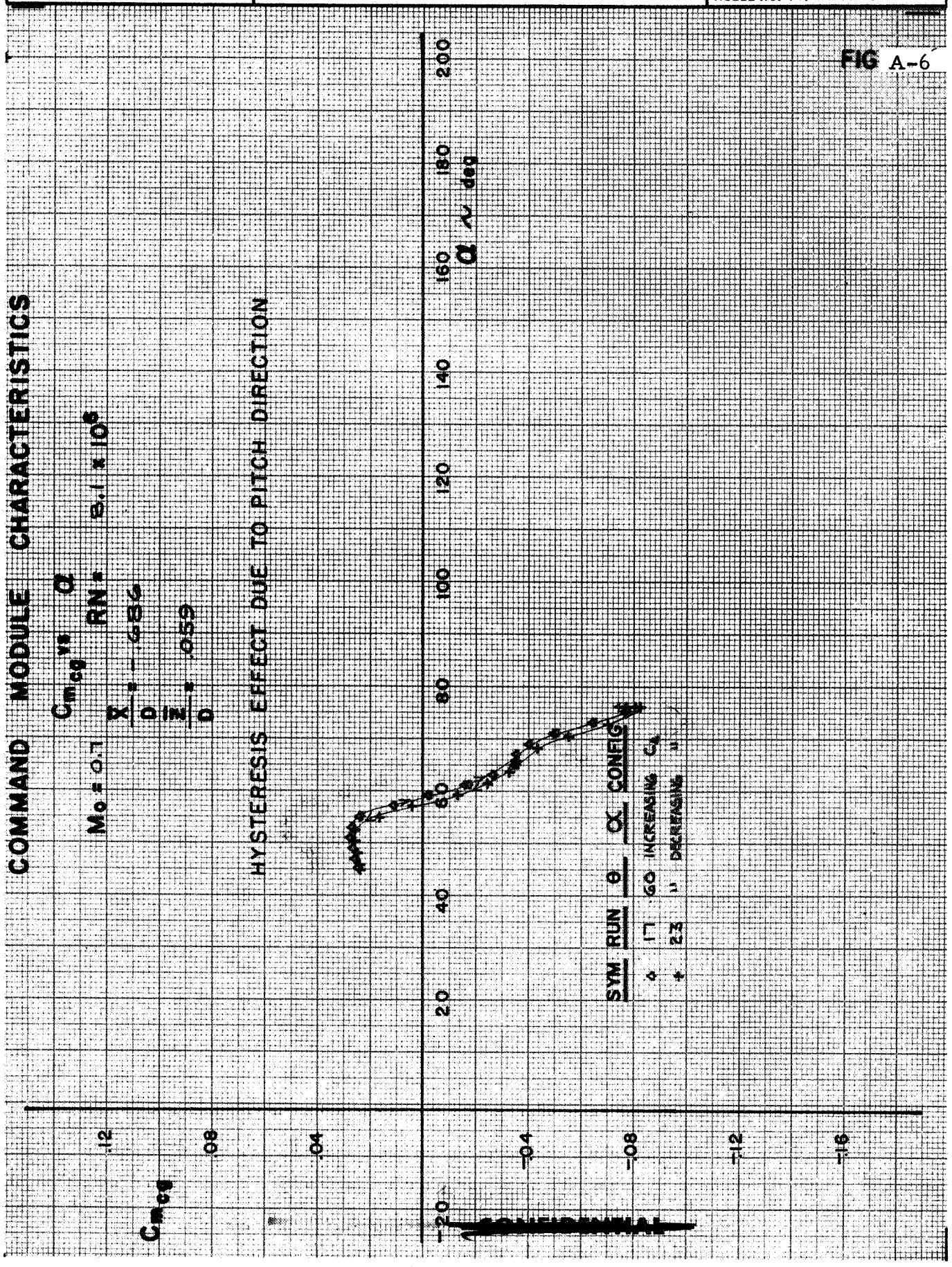
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-6



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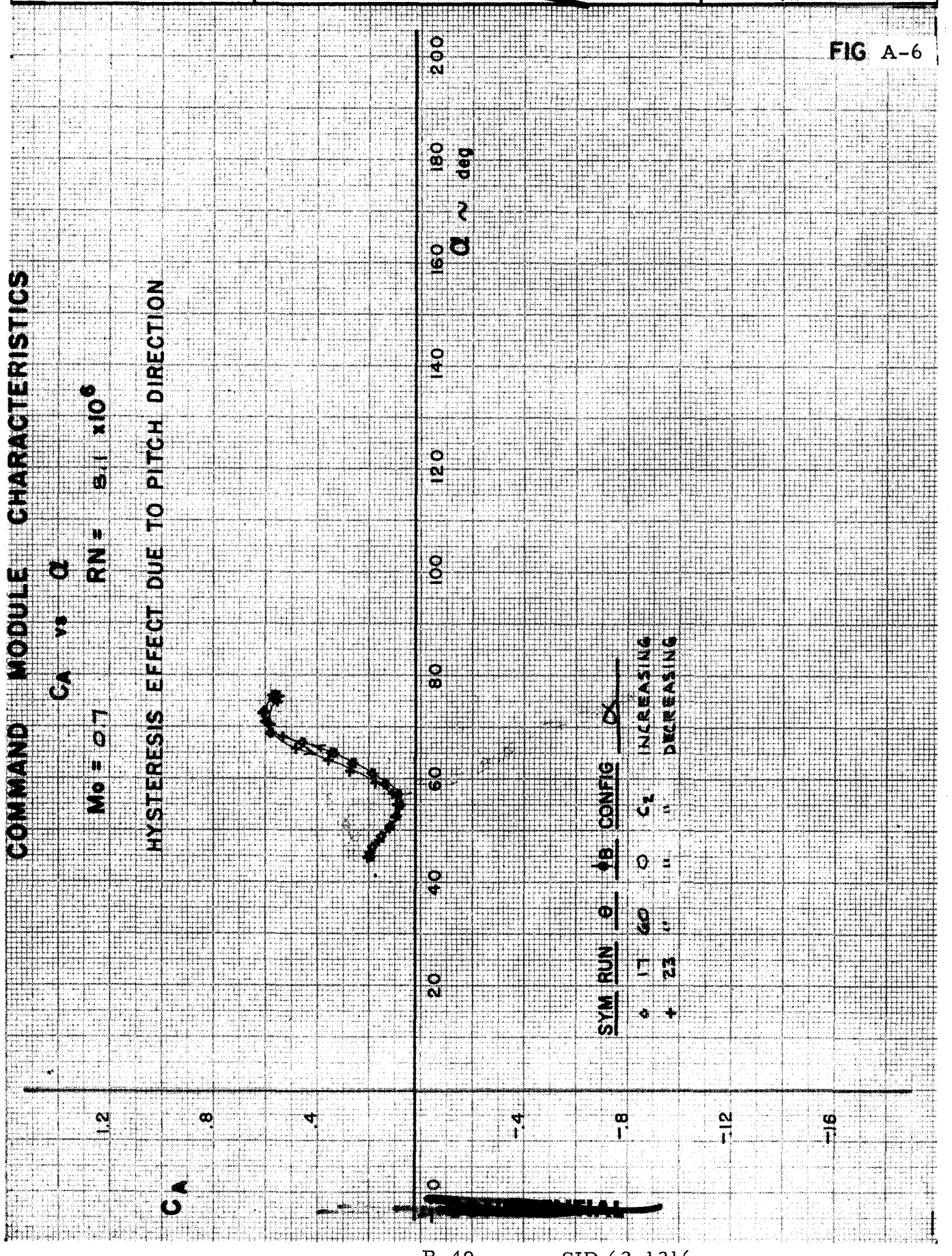
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-6



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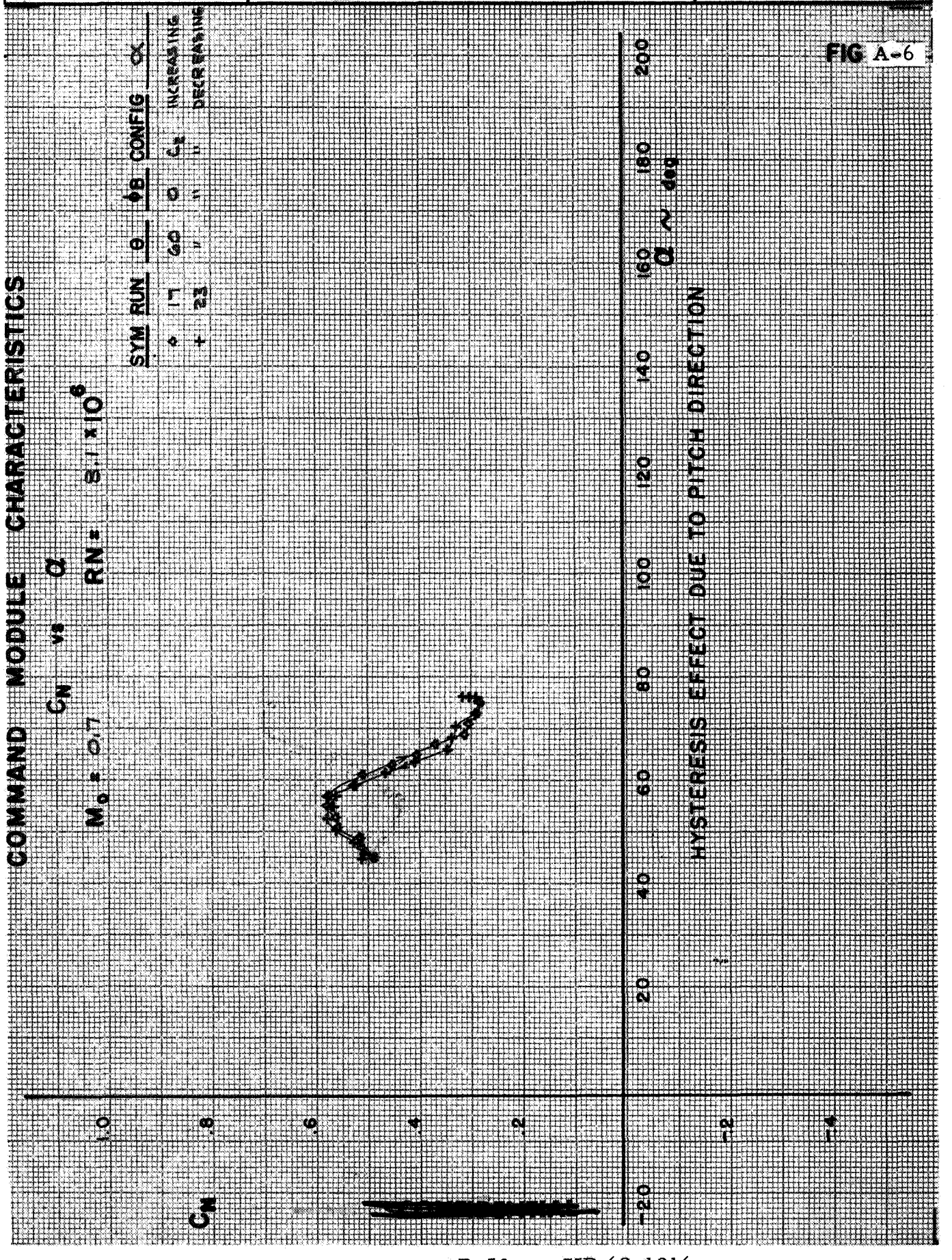
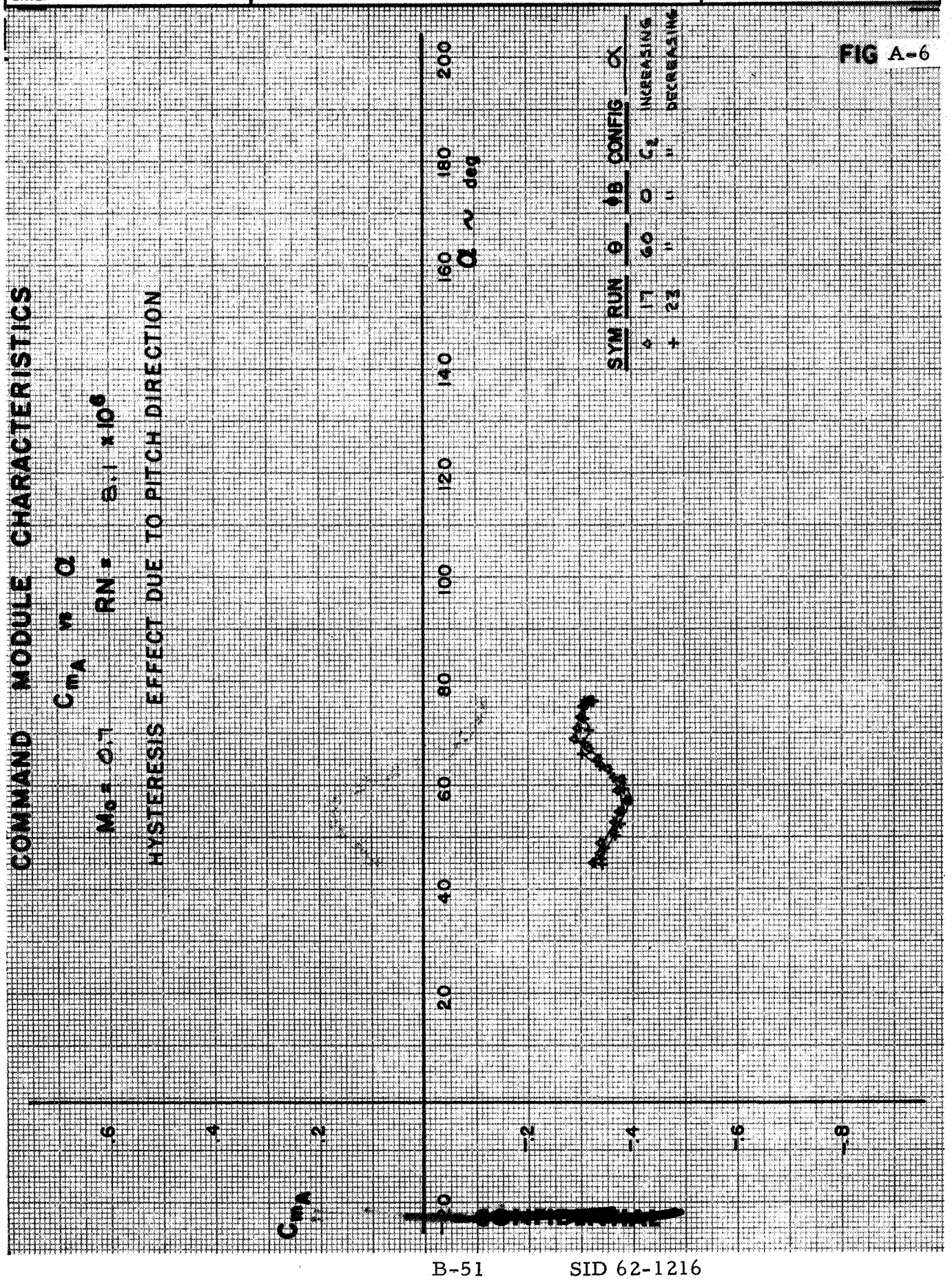
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-6



DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-6



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DATE: [redacted] MODEL NO. APOLLO FS-2

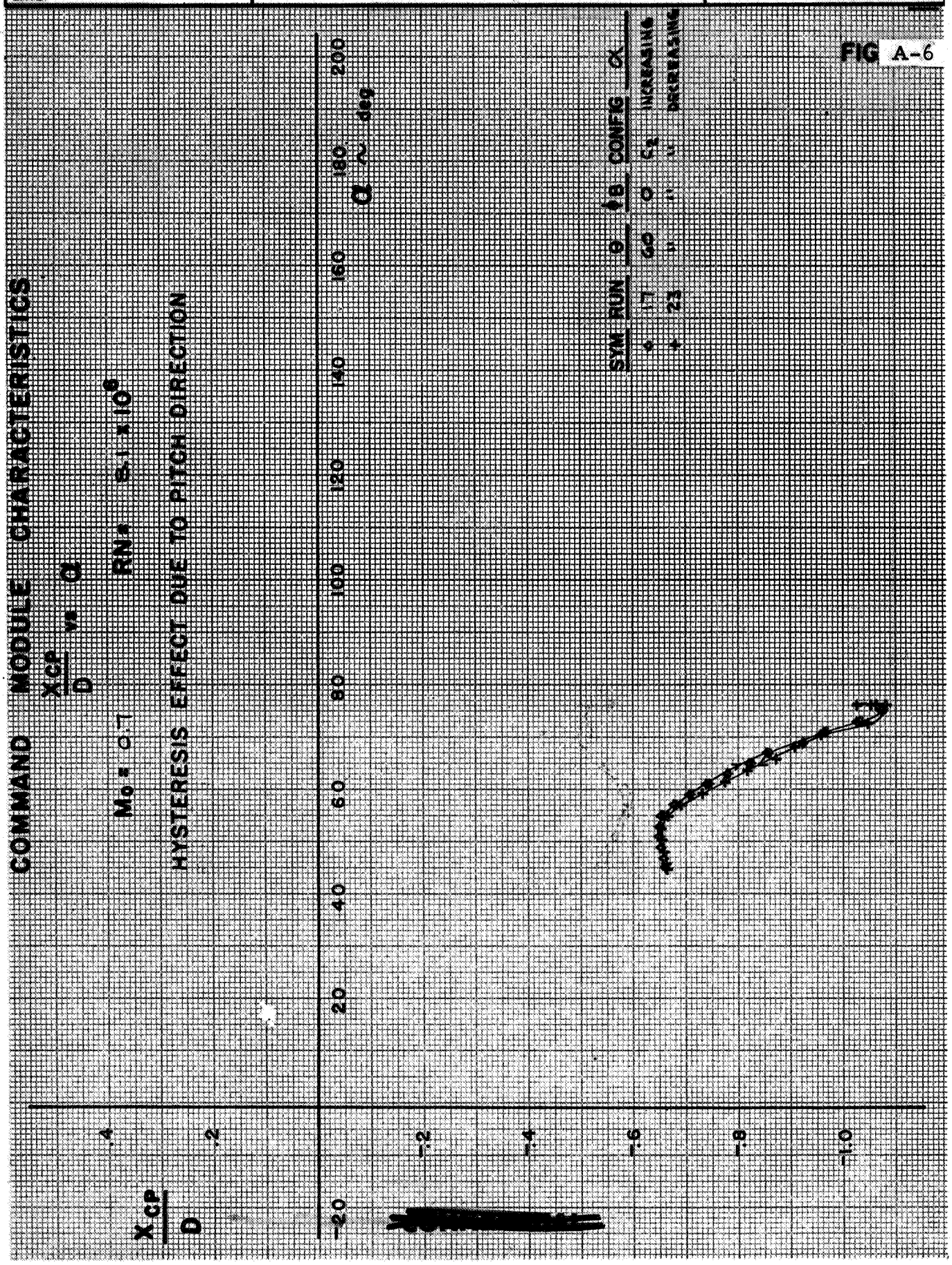

FIG A-6

DATE: [redacted] MODEL NO. APOLLO FS-2

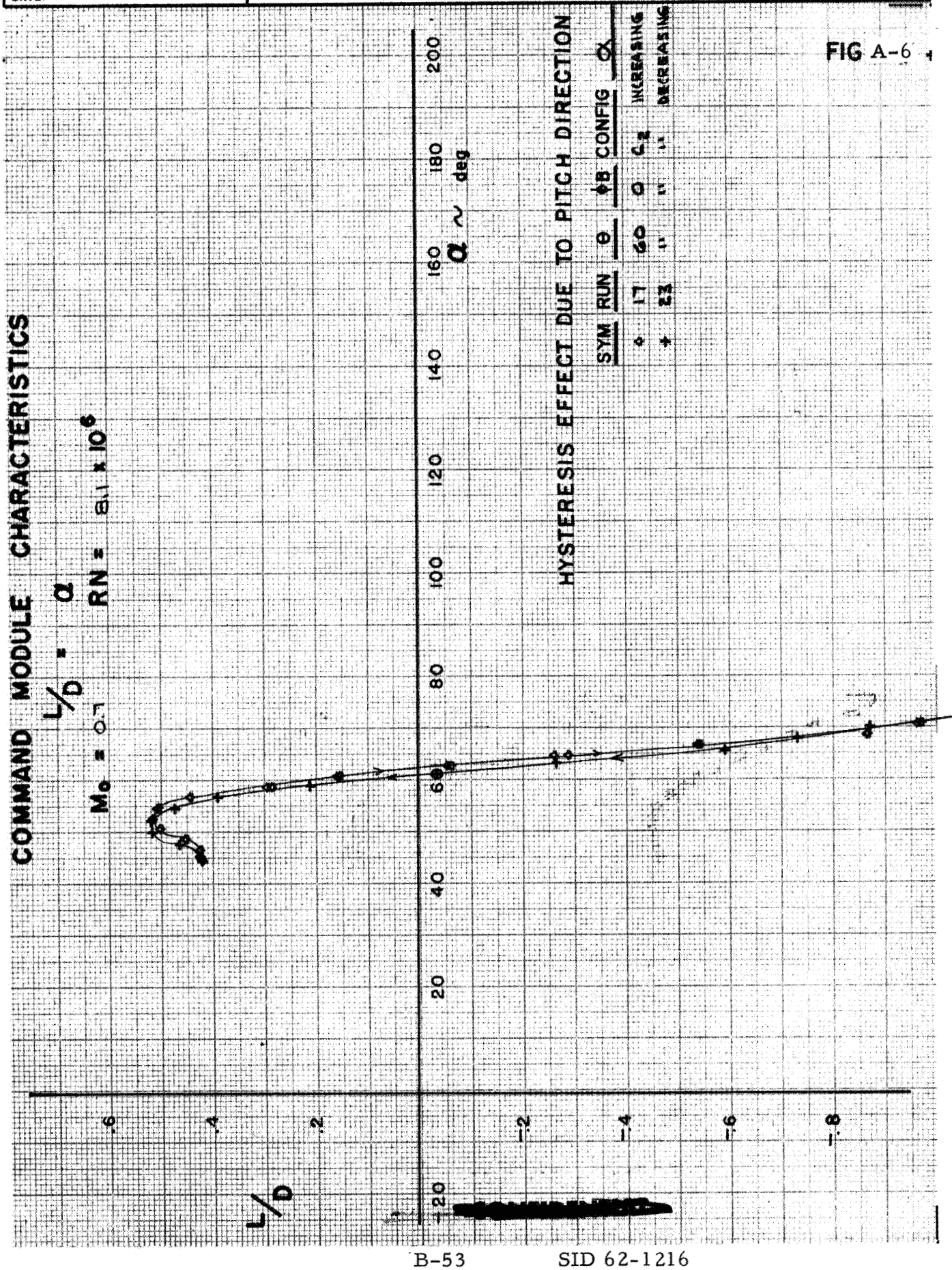

FIG A-6

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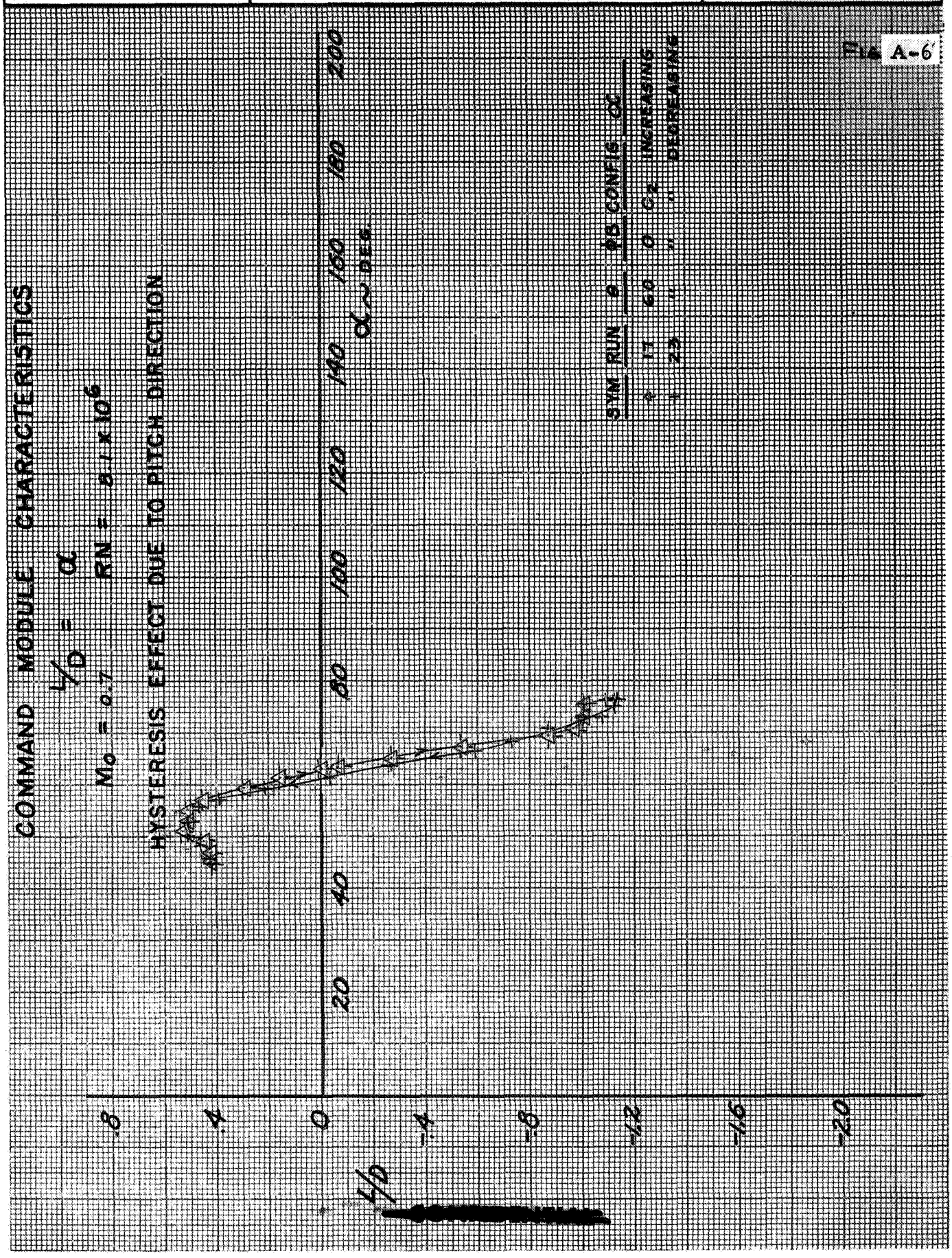

FIG. A-6

DATE: [redacted] MODEL NO. APOLLO FS-2

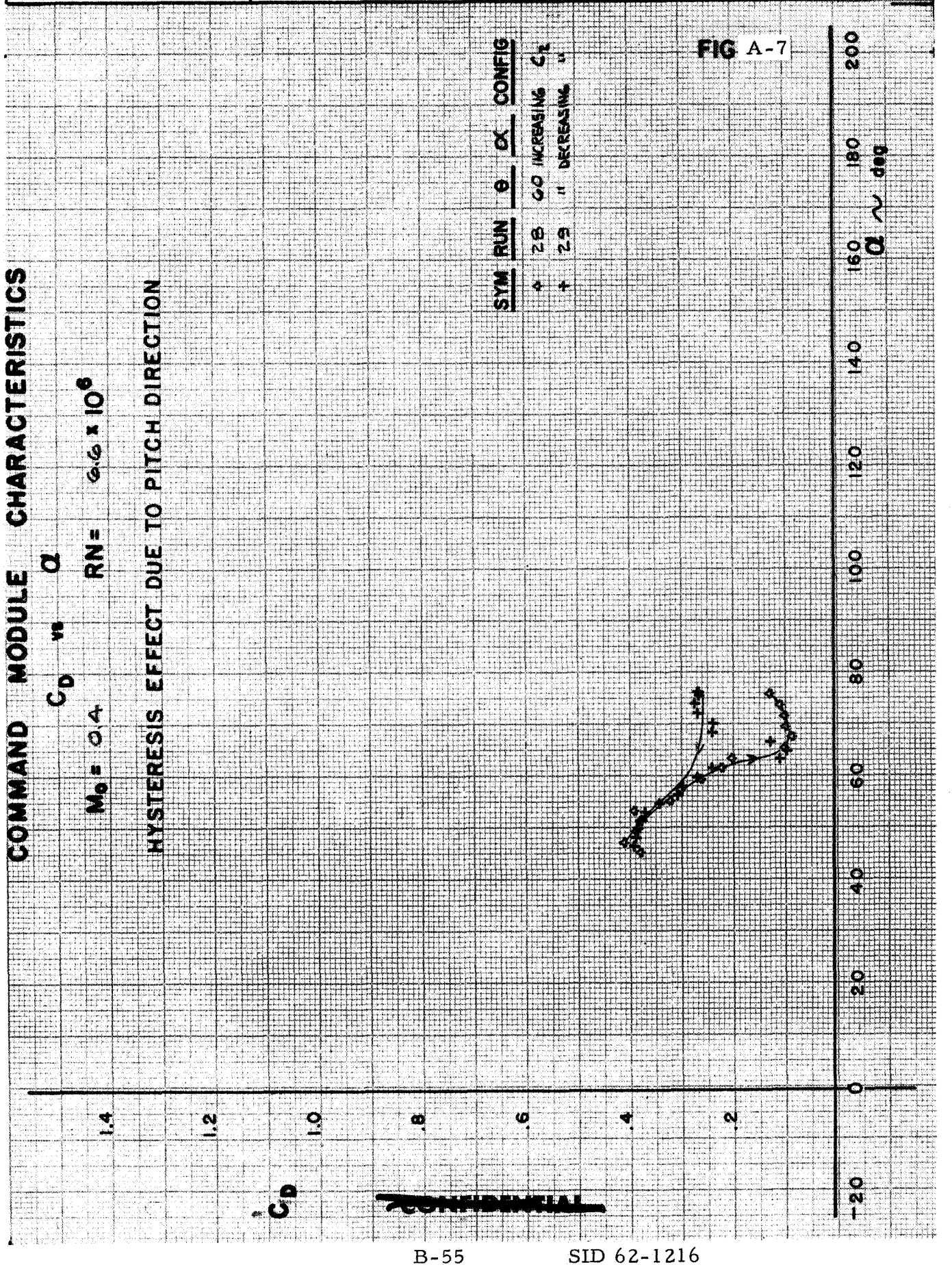

FIG A-7

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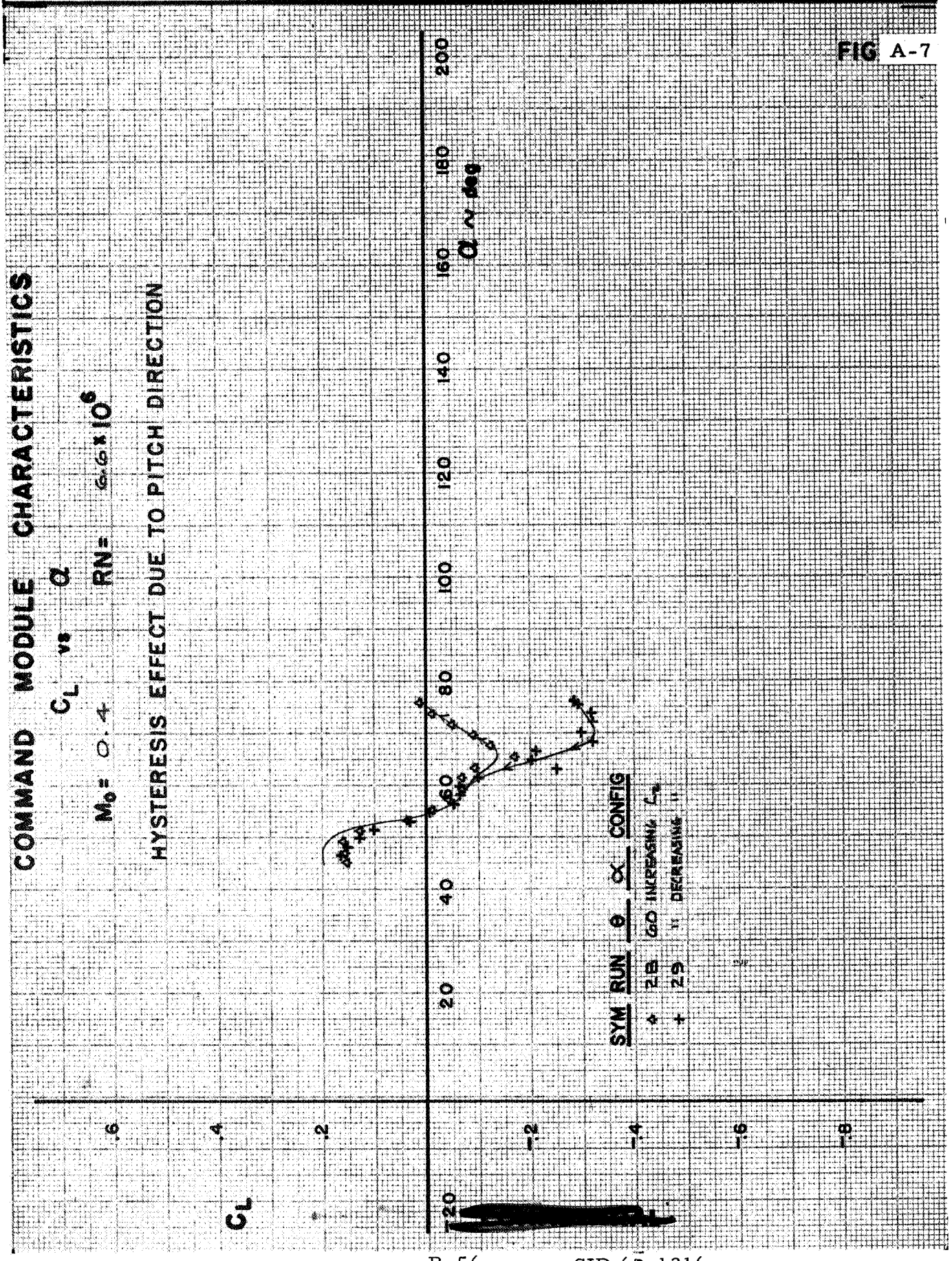
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-7



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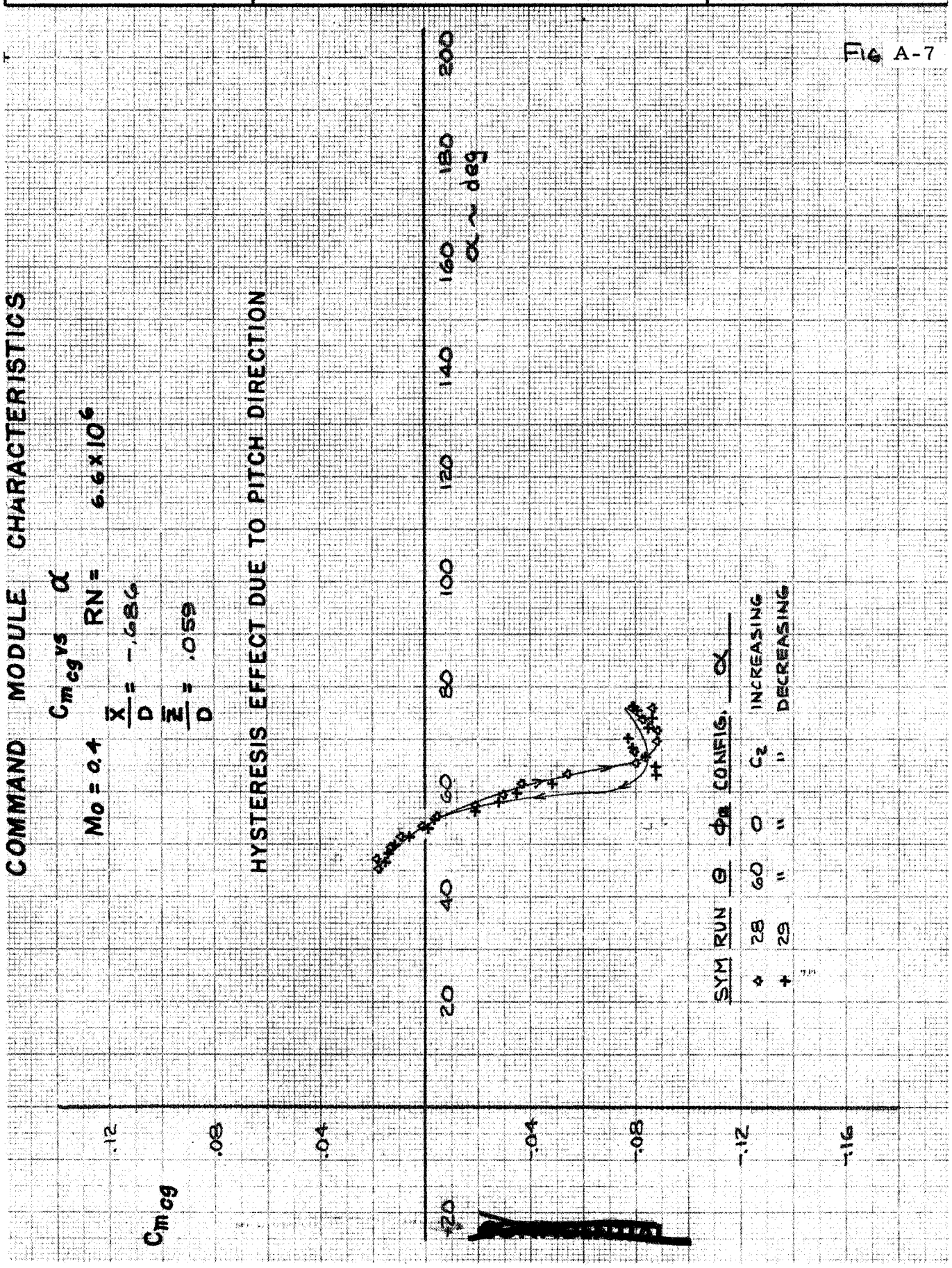
DATE: [redacted] MODEL NO. APOLLO FS-2

Fig A-7



DATE:

[redacted]

MODEL NO. APOLLO FS-2

COMMAND MODULE CHARACTERISTICS

C_A vs α

Mo = 0.4 RN = 6.6 x10^6

HYSTERESIS EFFECT DUE TO PITCH DIRECTION

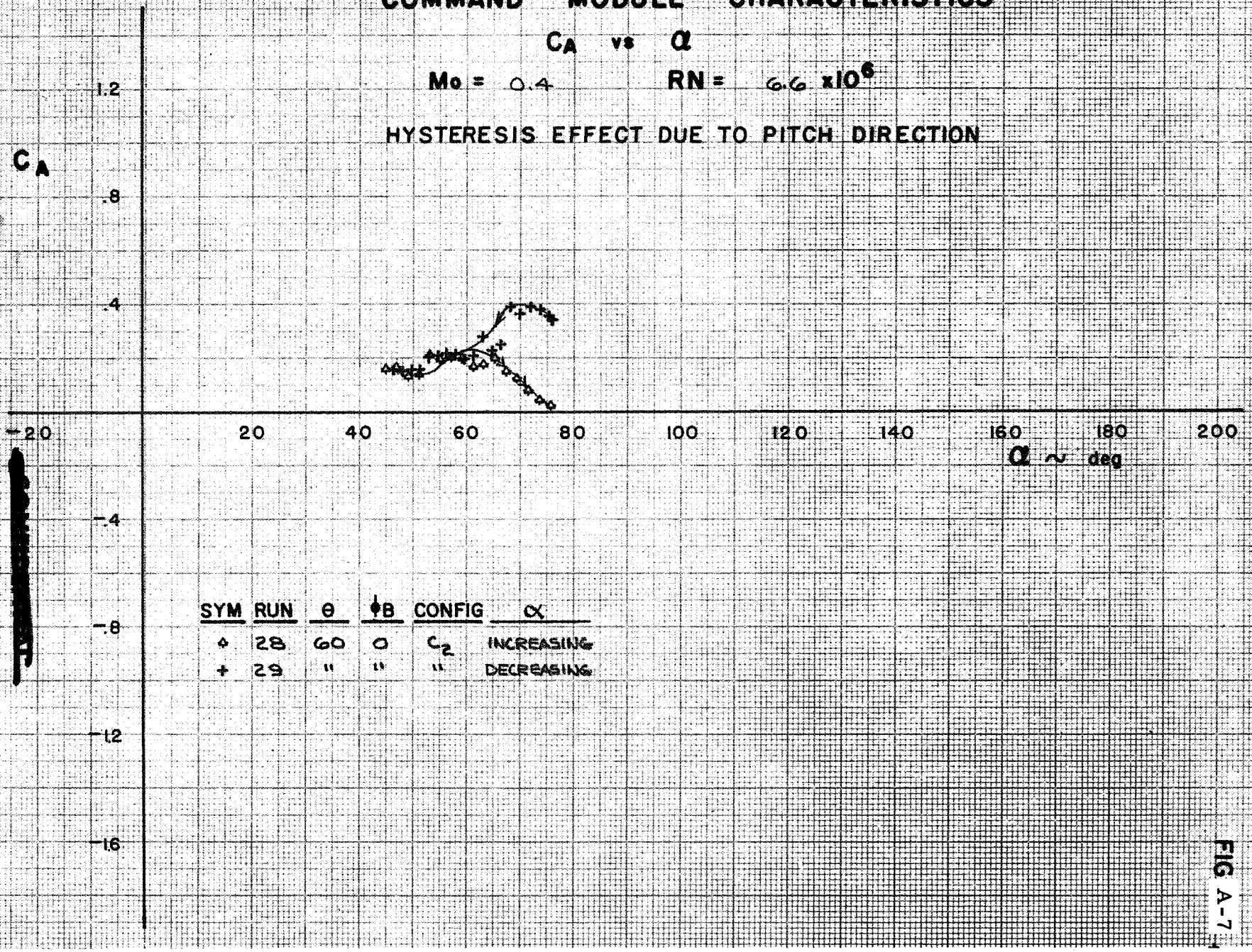


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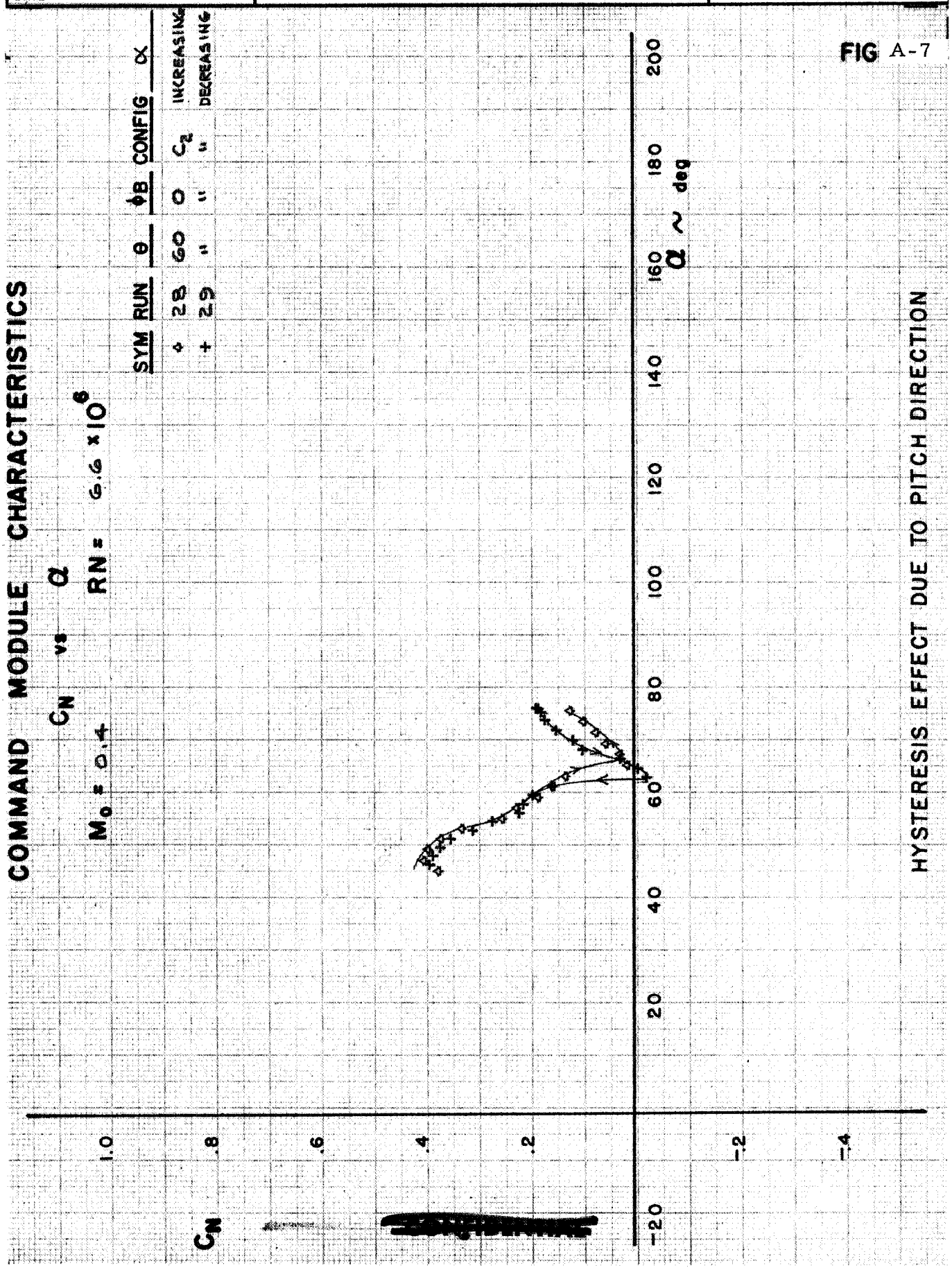
FIG A-7

DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-7



HYSTERESIS EFFECT DUE TO PITCH DIRECTION

DATE: [redacted] MODEL NO. APOLLO FS-2

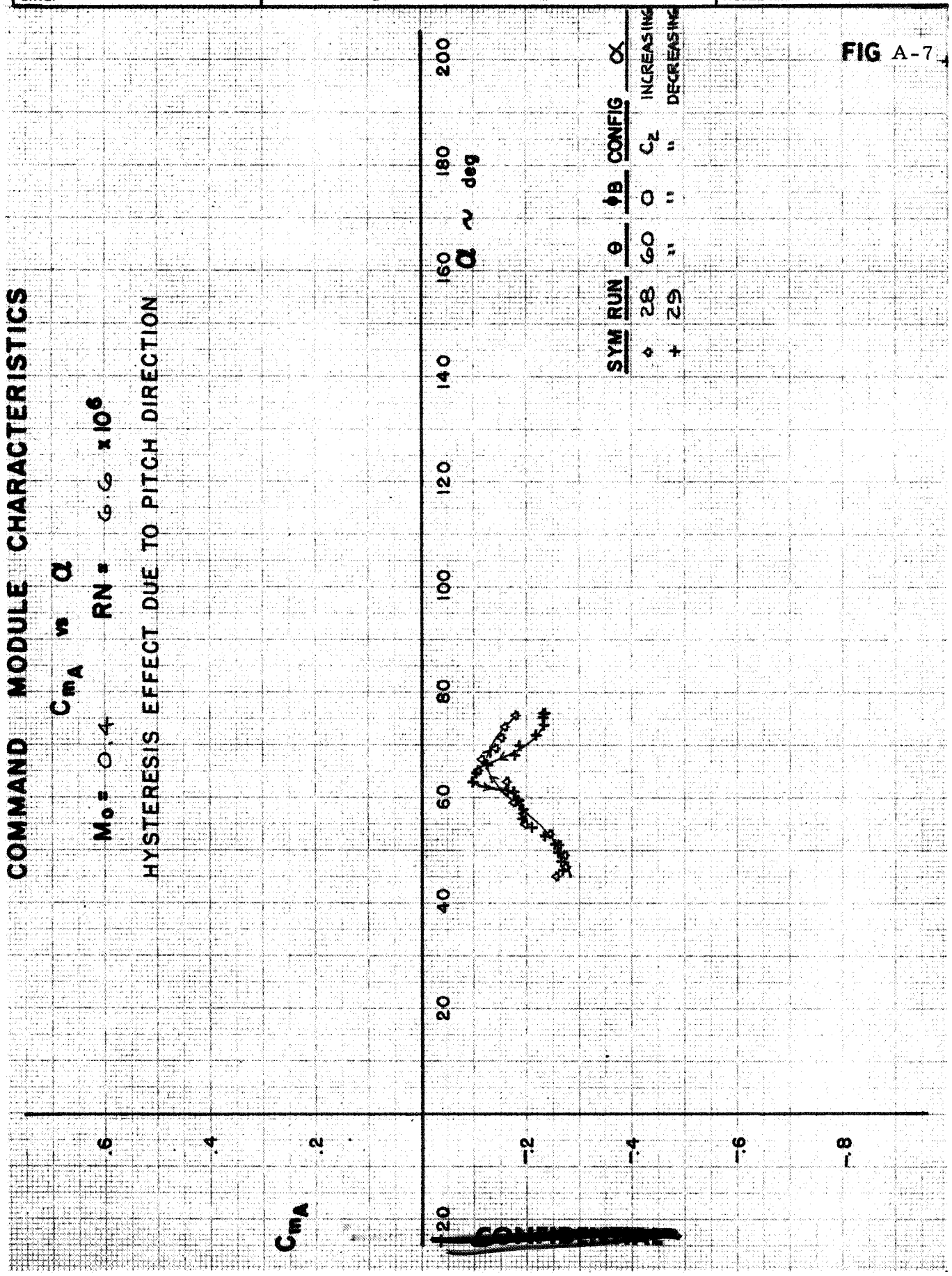


FIG A-7

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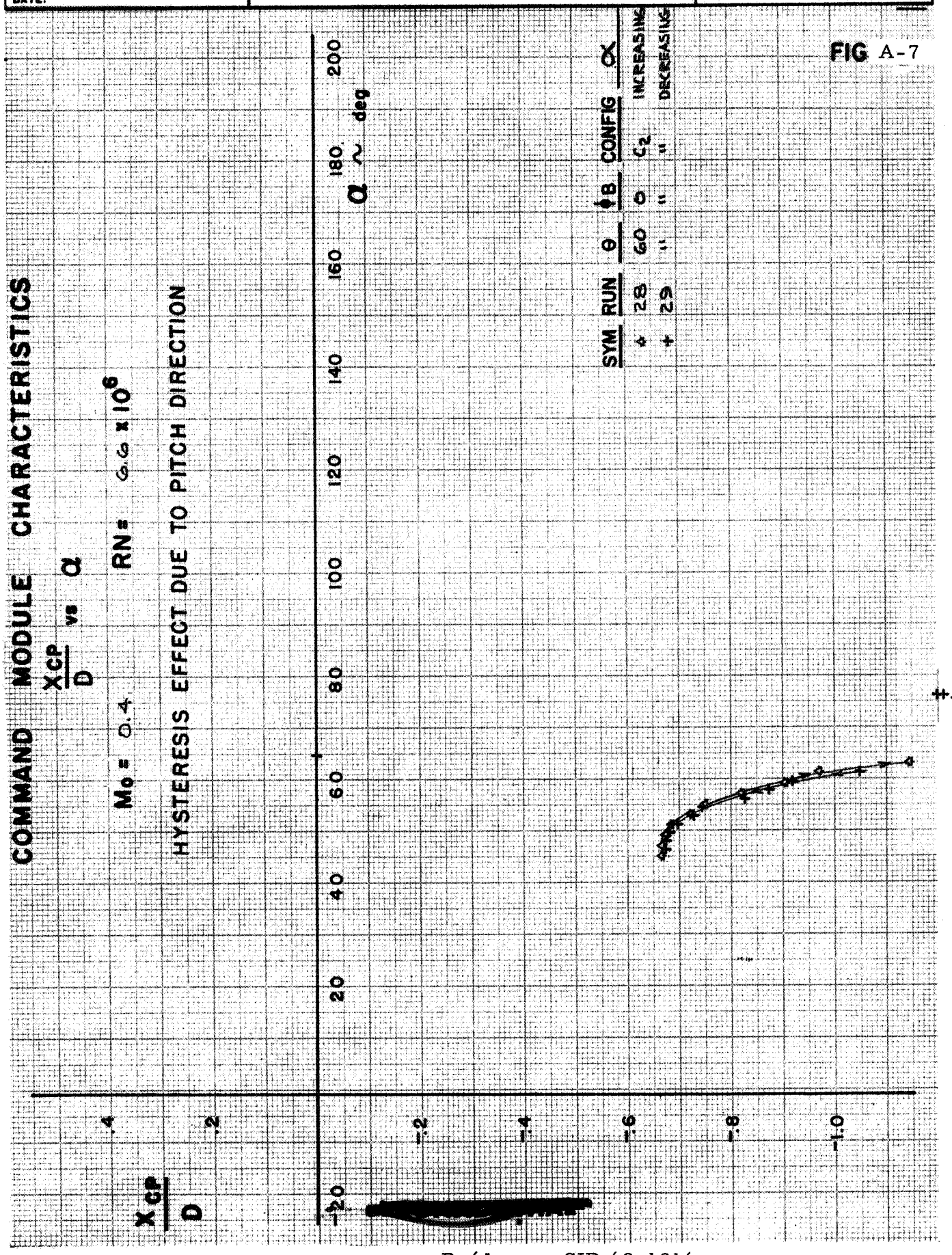
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-7



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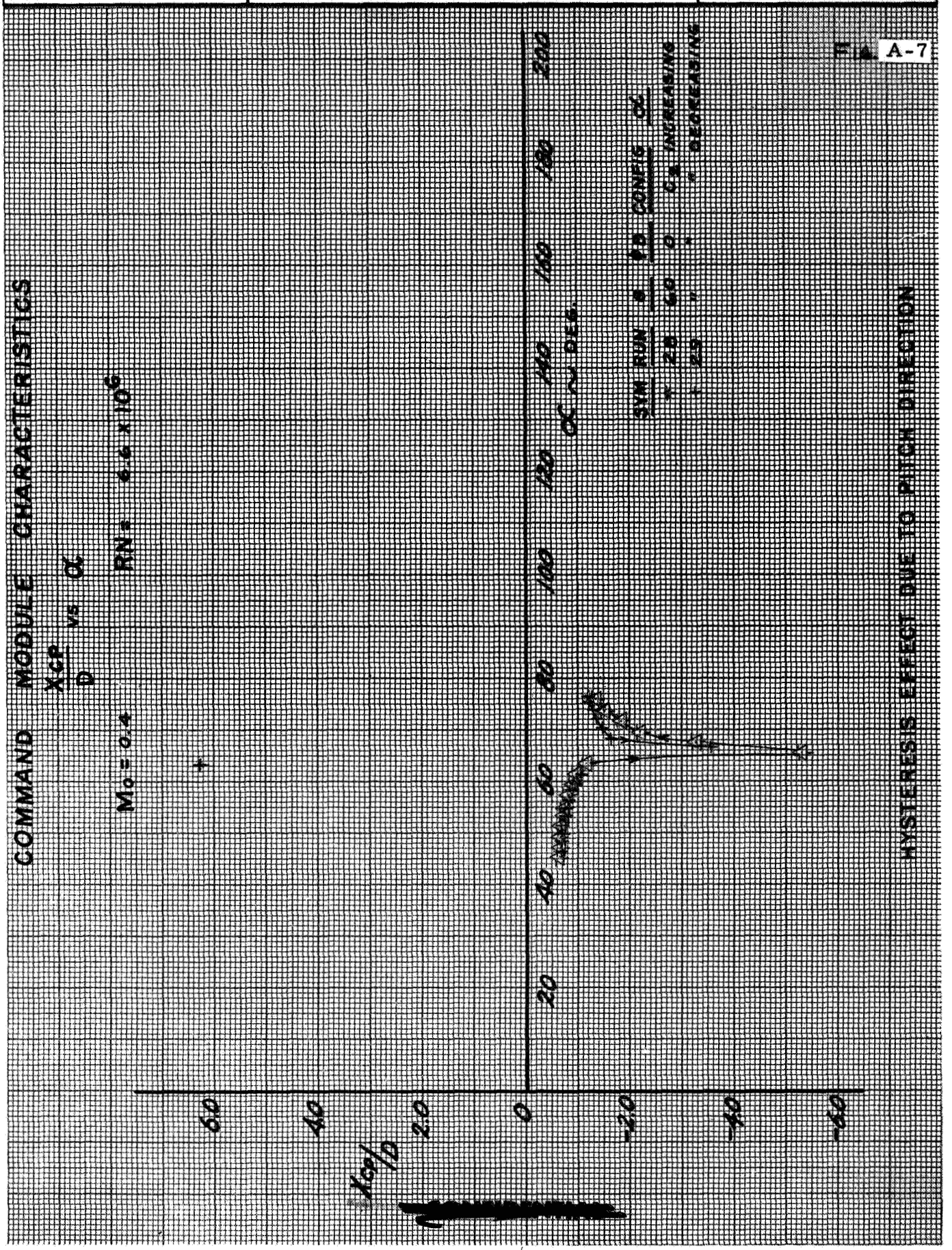
DATE: ~~CONFIDENTIAL~~ MODEL NO. APOLLO FS-2

FIG. A-7



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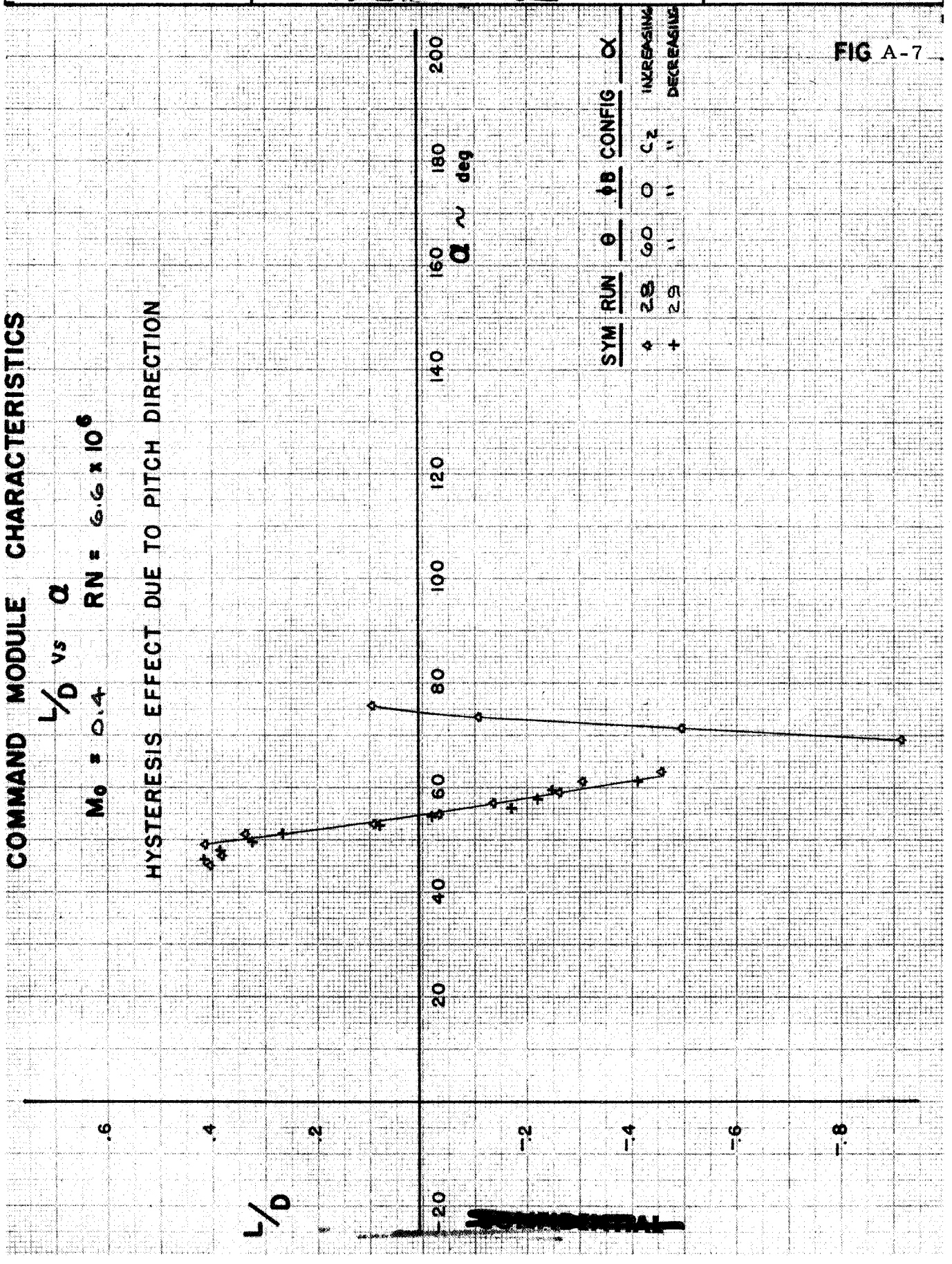
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-7



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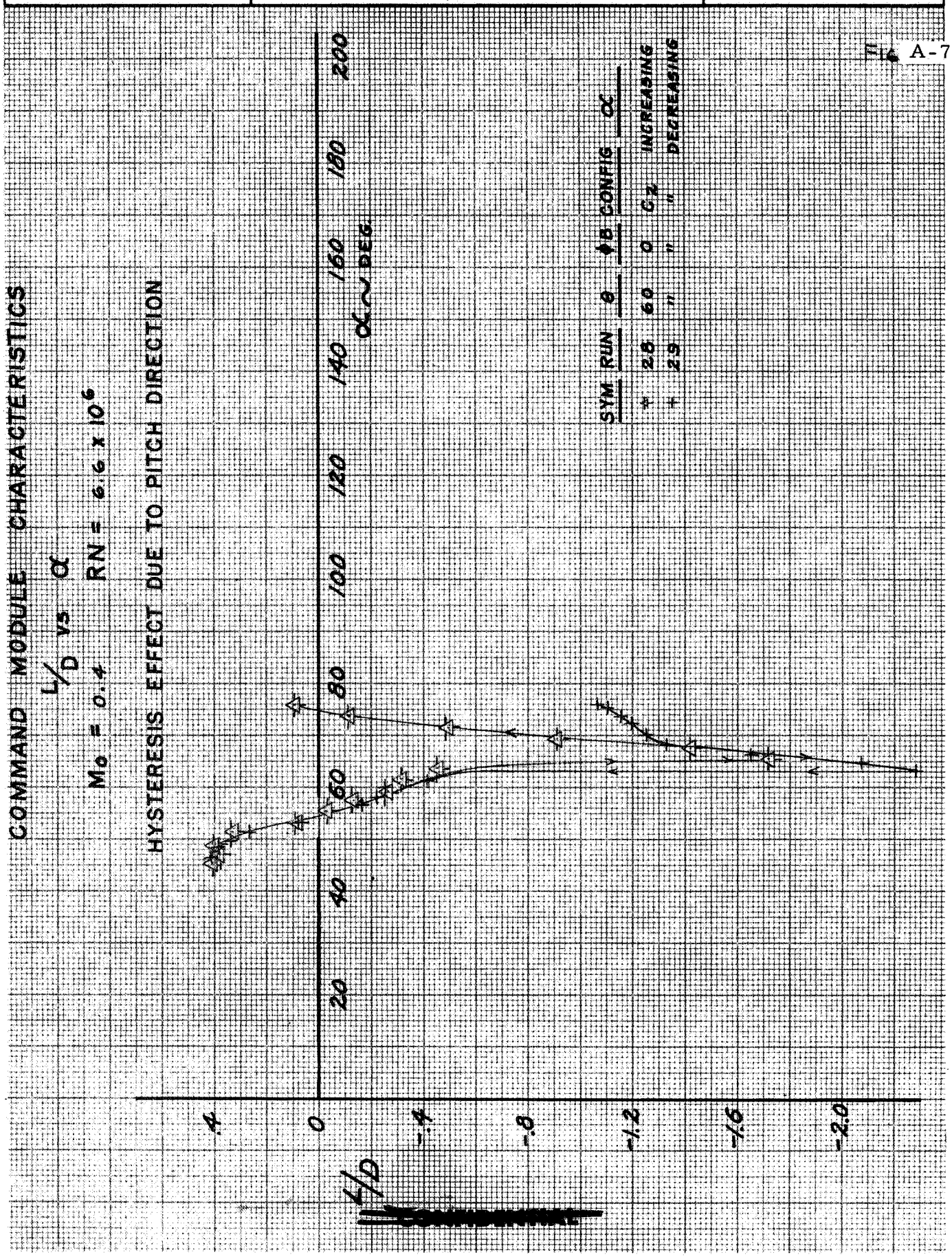
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG. A-7



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DATE: [redacted] MODEL NO. APOLLO FS-2

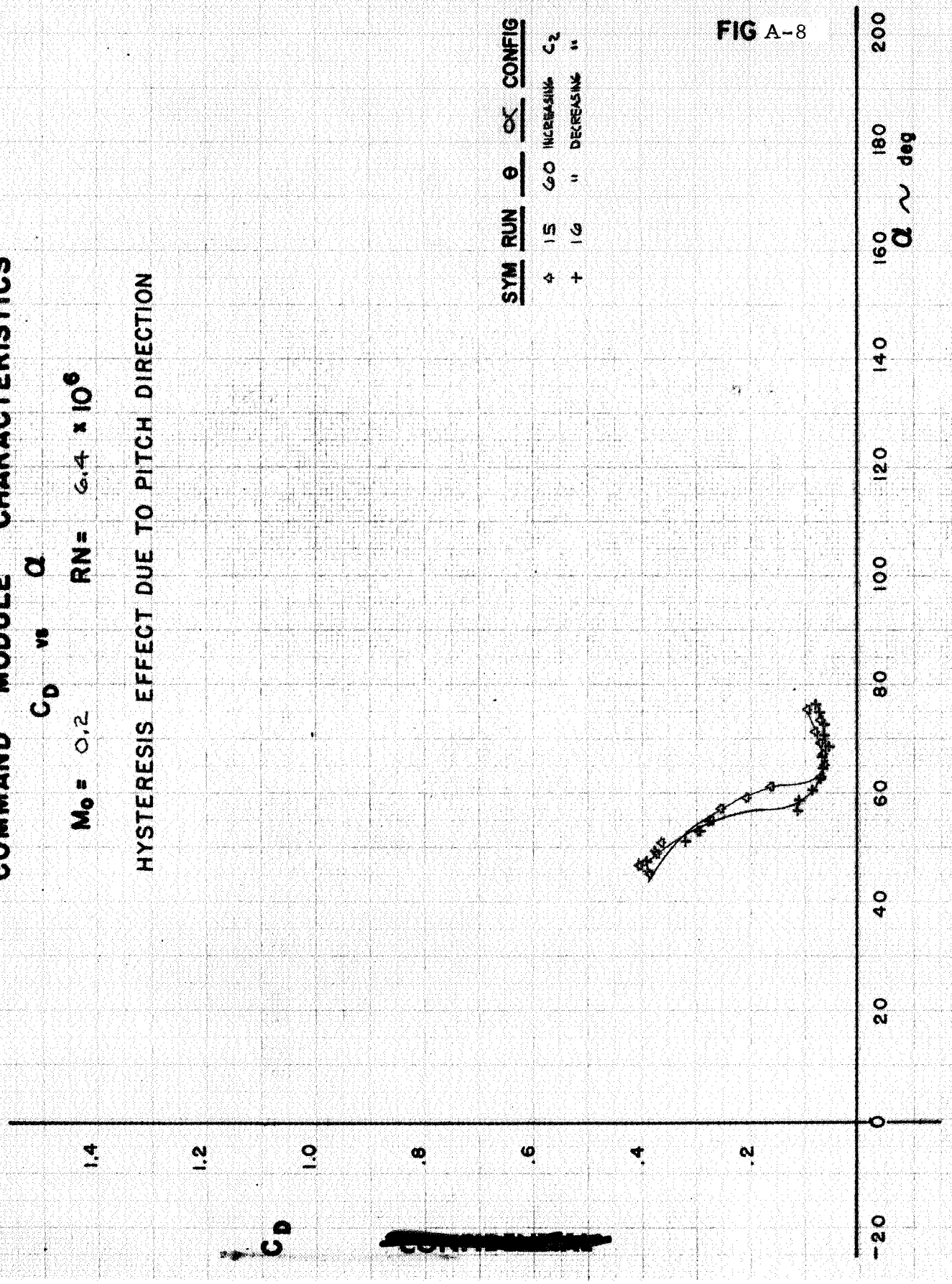
COMMAND MODULE CHARACTERISTICS

C_D vs α

M_0 = 0.2 RN = 6.4 x 10^6

HYSTERESIS EFFECT DUE TO PITCH DIRECTION

FIG A-8



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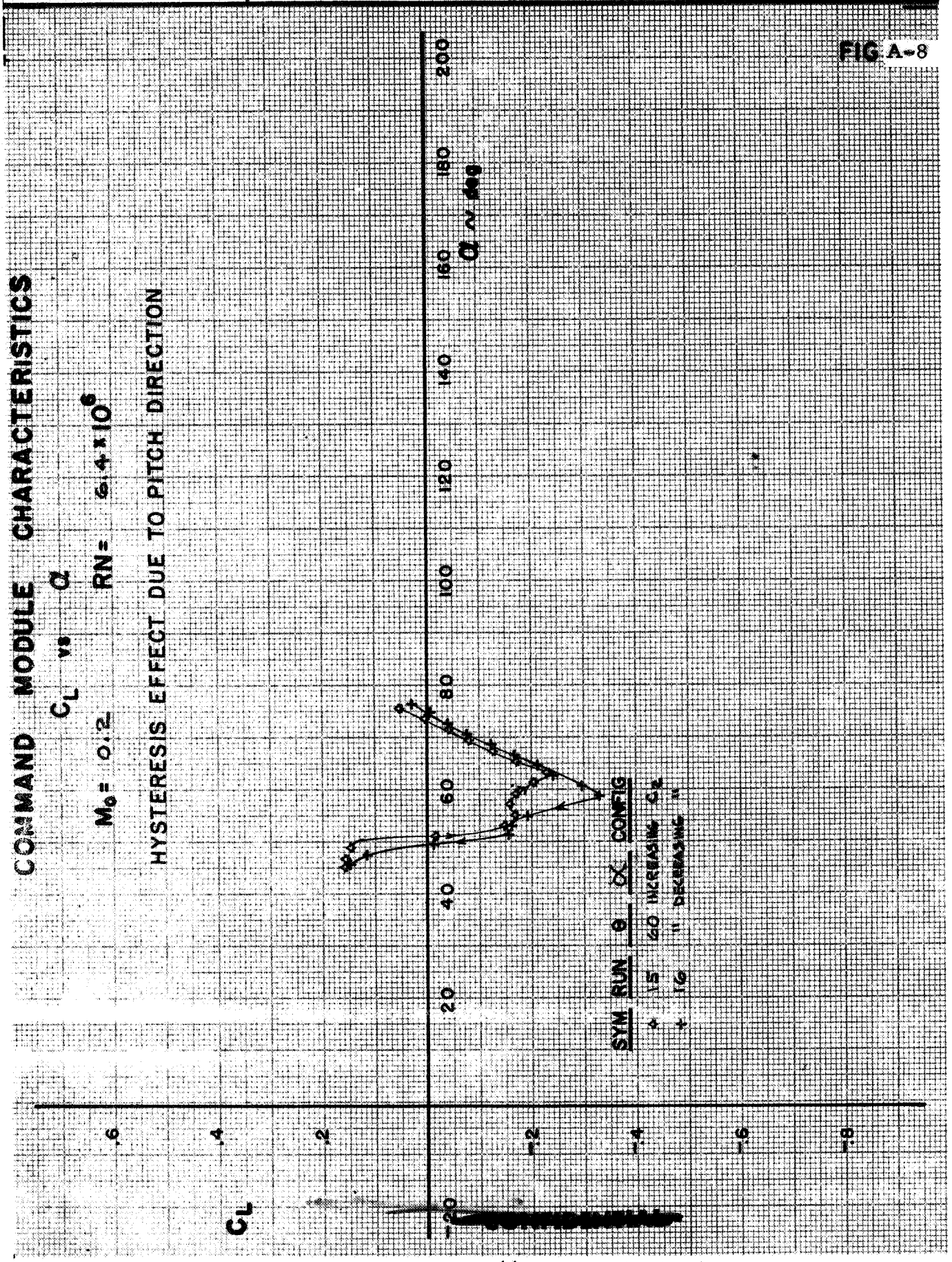
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-8



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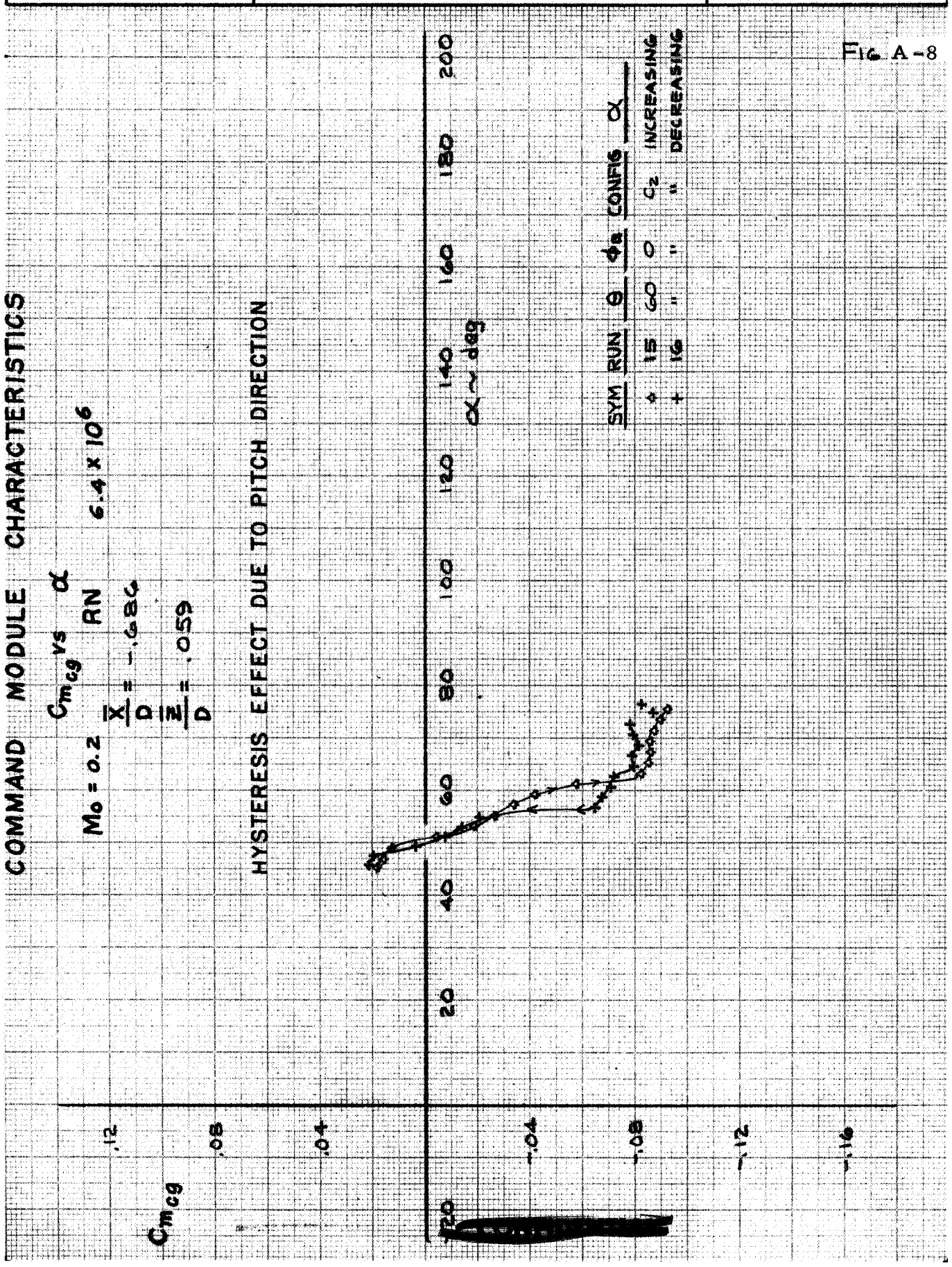
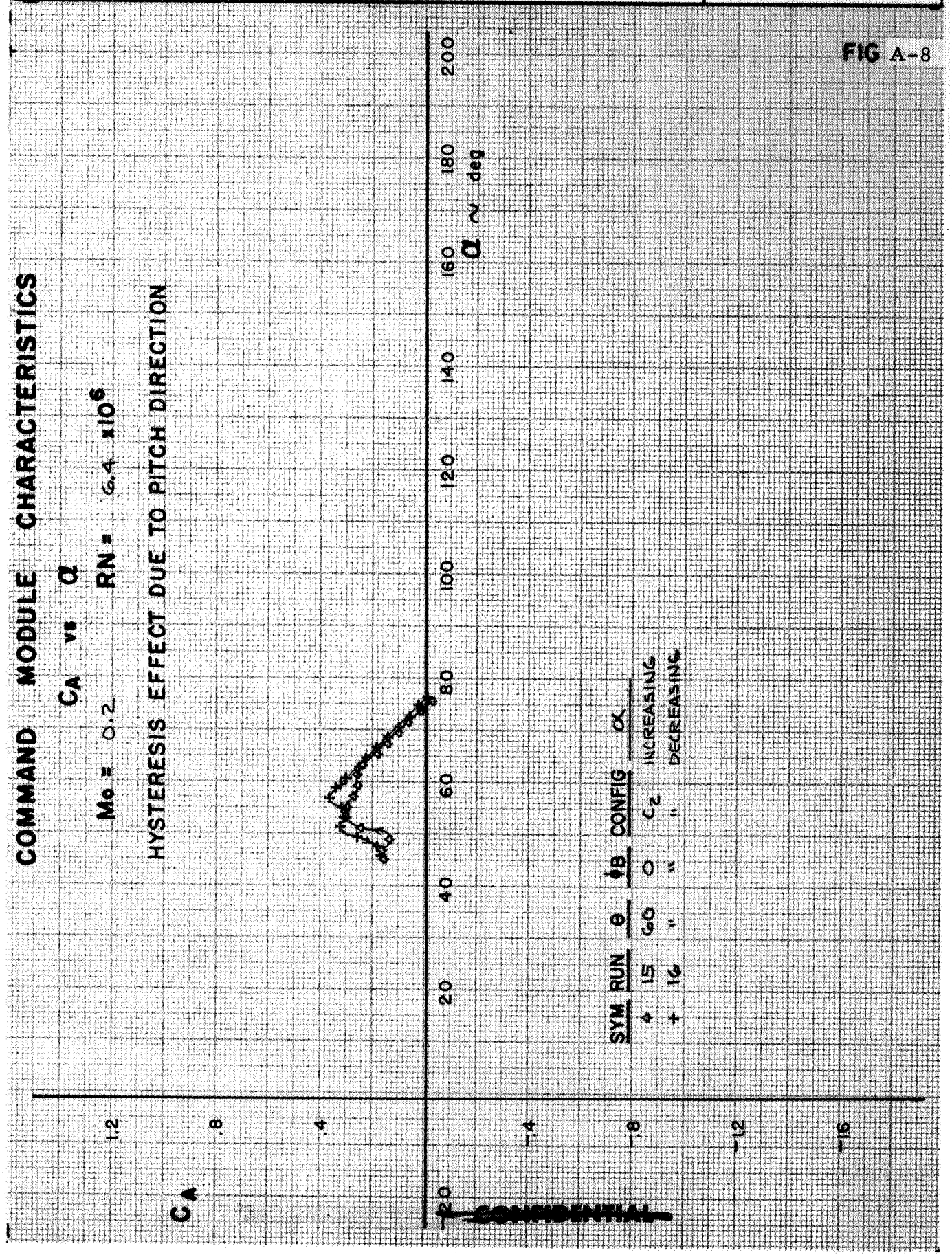
DATE: [redacted] MODEL NO. APOLLO FS-2

Fig A-8



DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-8



[redacted]

DATE: [redacted] MODEL NO. APOLLO FS-2

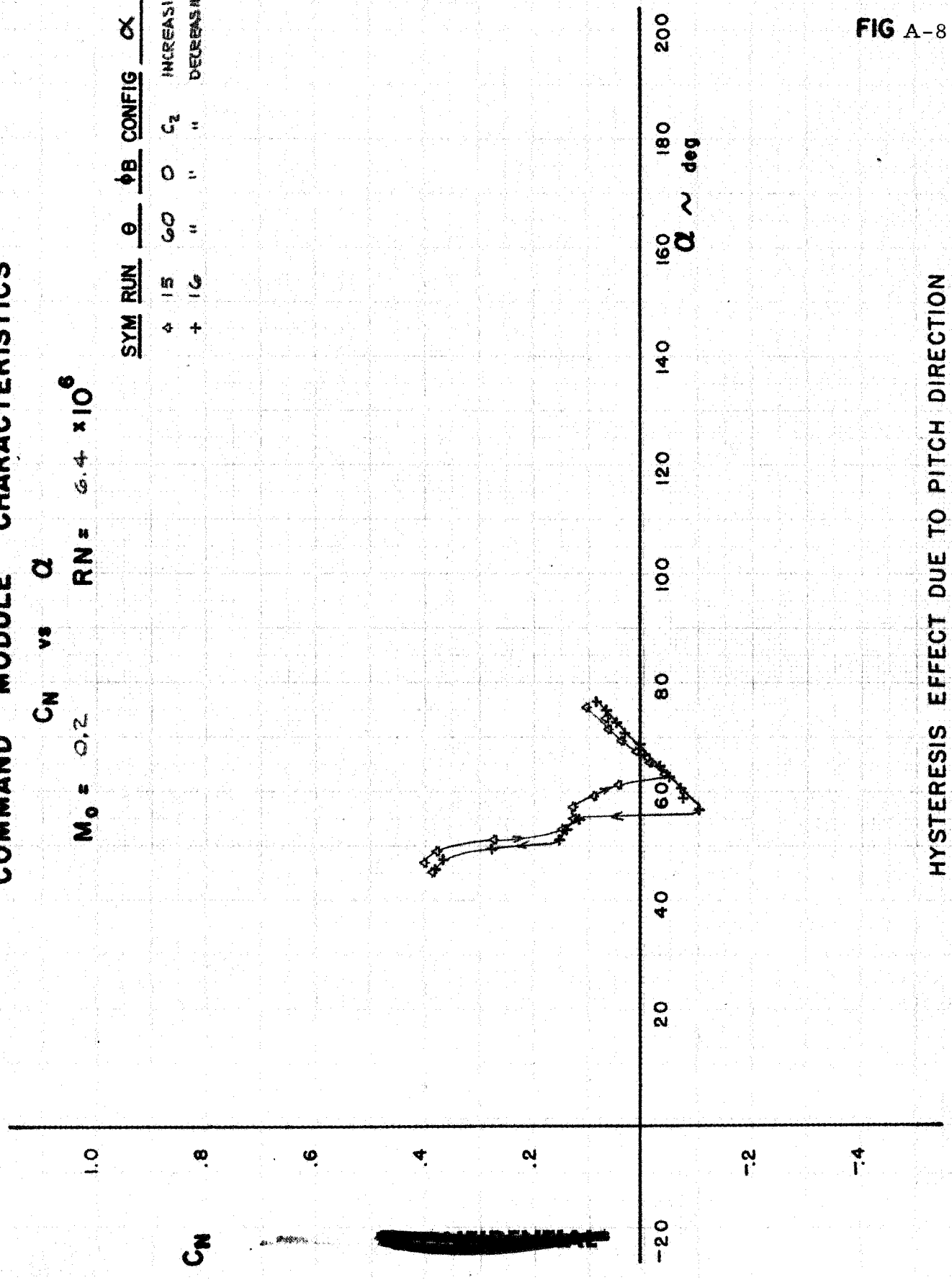
FIG A-8

COMMAND MODULE CHARACTERISTICS

C_N vs α

$M_0 = 0.2$ RN = 6.4×10^6

SYM	RUN	θ	φB	CONFIG	α
◇	15	60	0	C_2	INCREASING
+	16	"	"	"	DECREASING



HYSTERESIS EFFECT DUE TO PITCH DIRECTION

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DATE: [redacted] MODEL NO. APOLLO FS-2

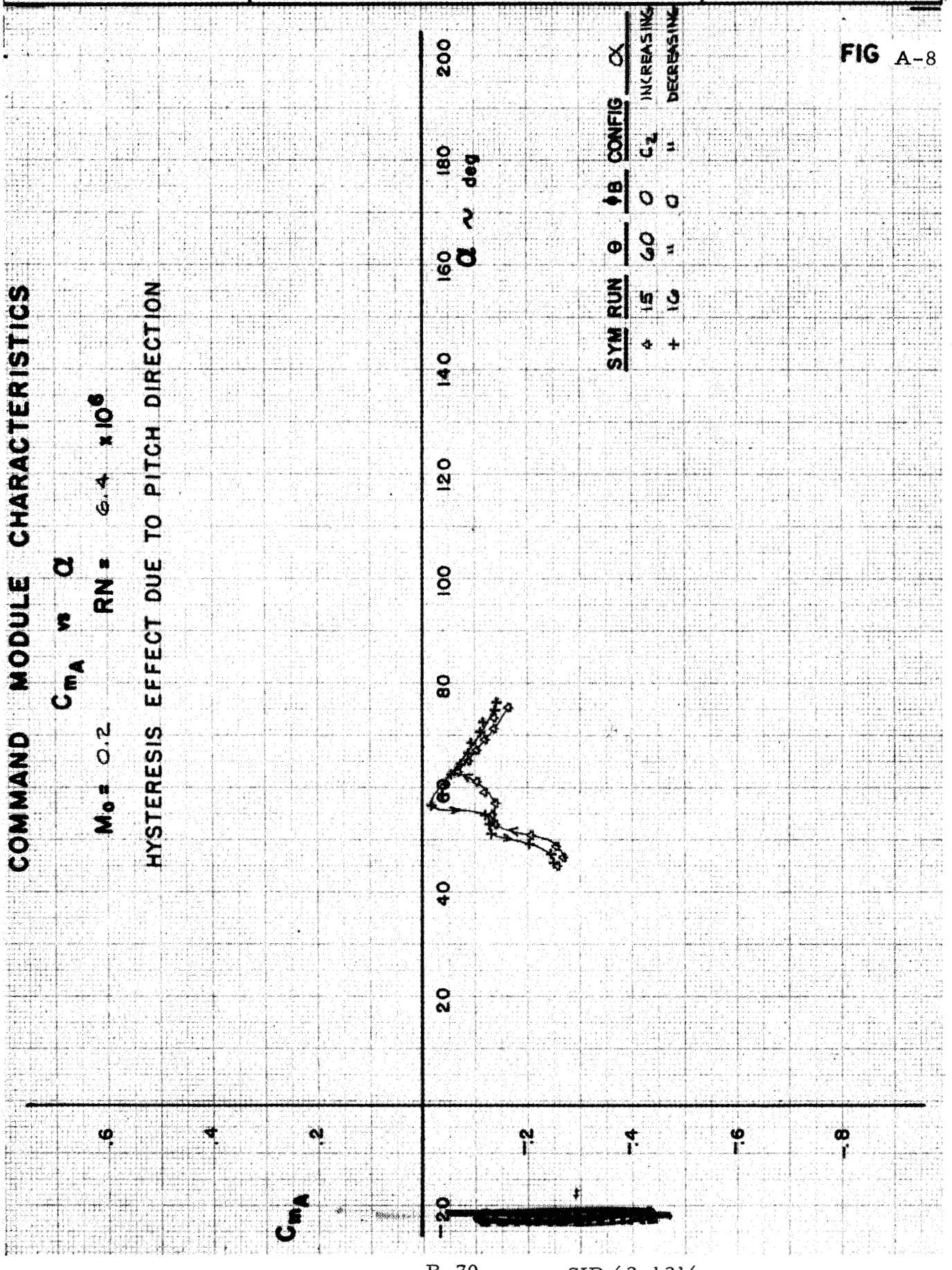
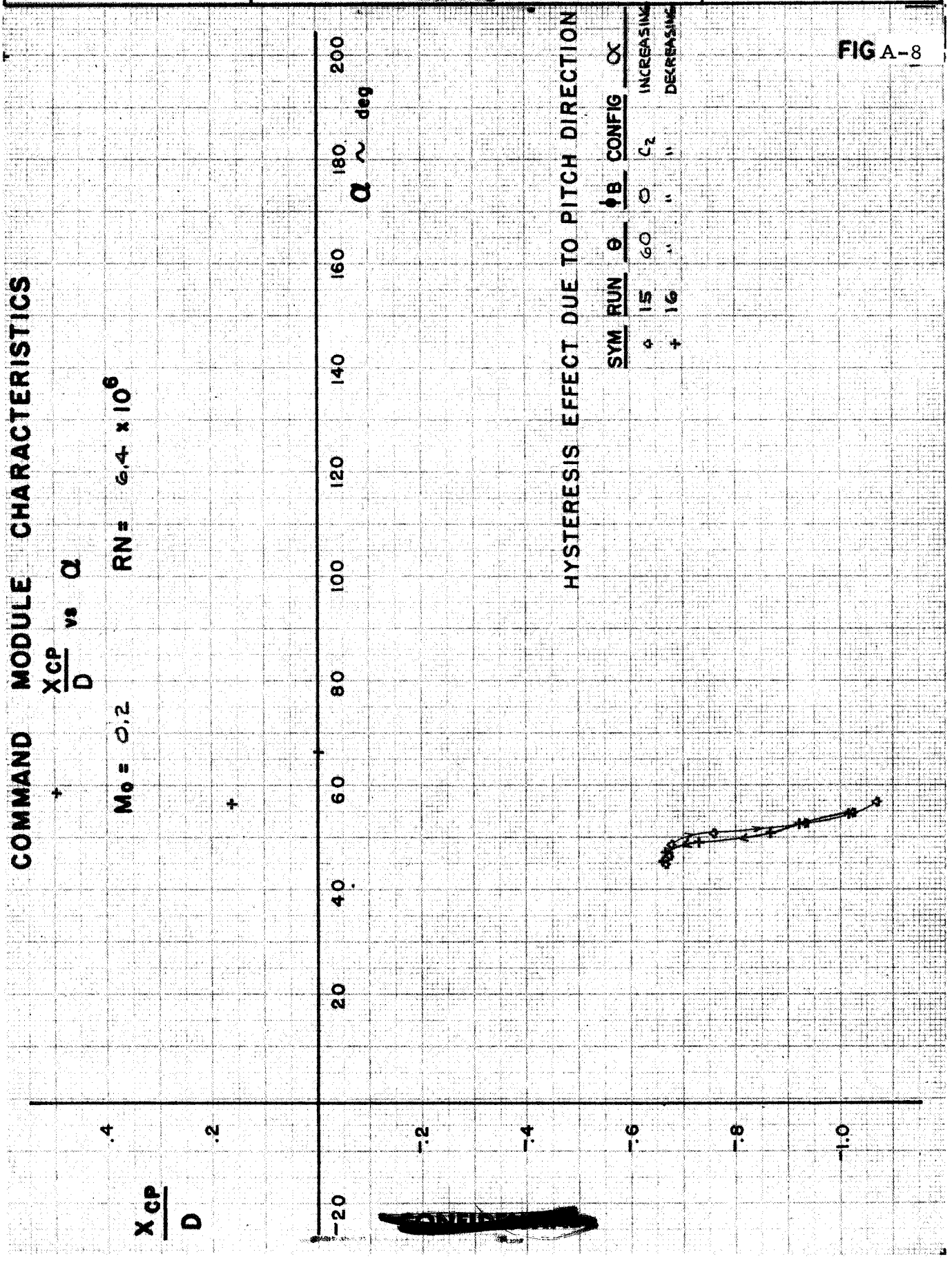


FIG A-8

DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-8



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DATE: [redacted] MODEL NO. APOLLO FS-2

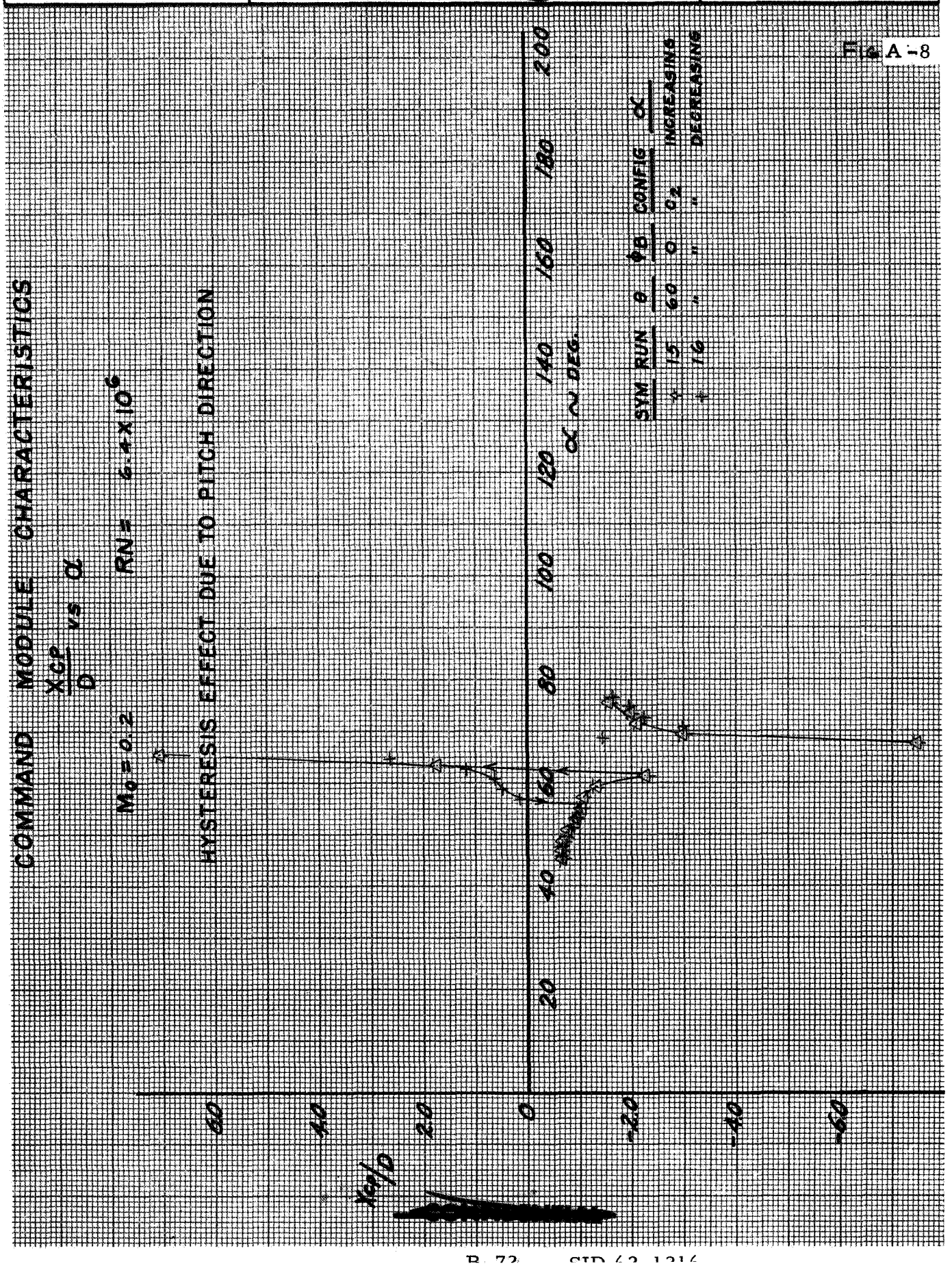

FIG. A-8

DATE: [redacted] MODEL NO. APOLLO FS-2

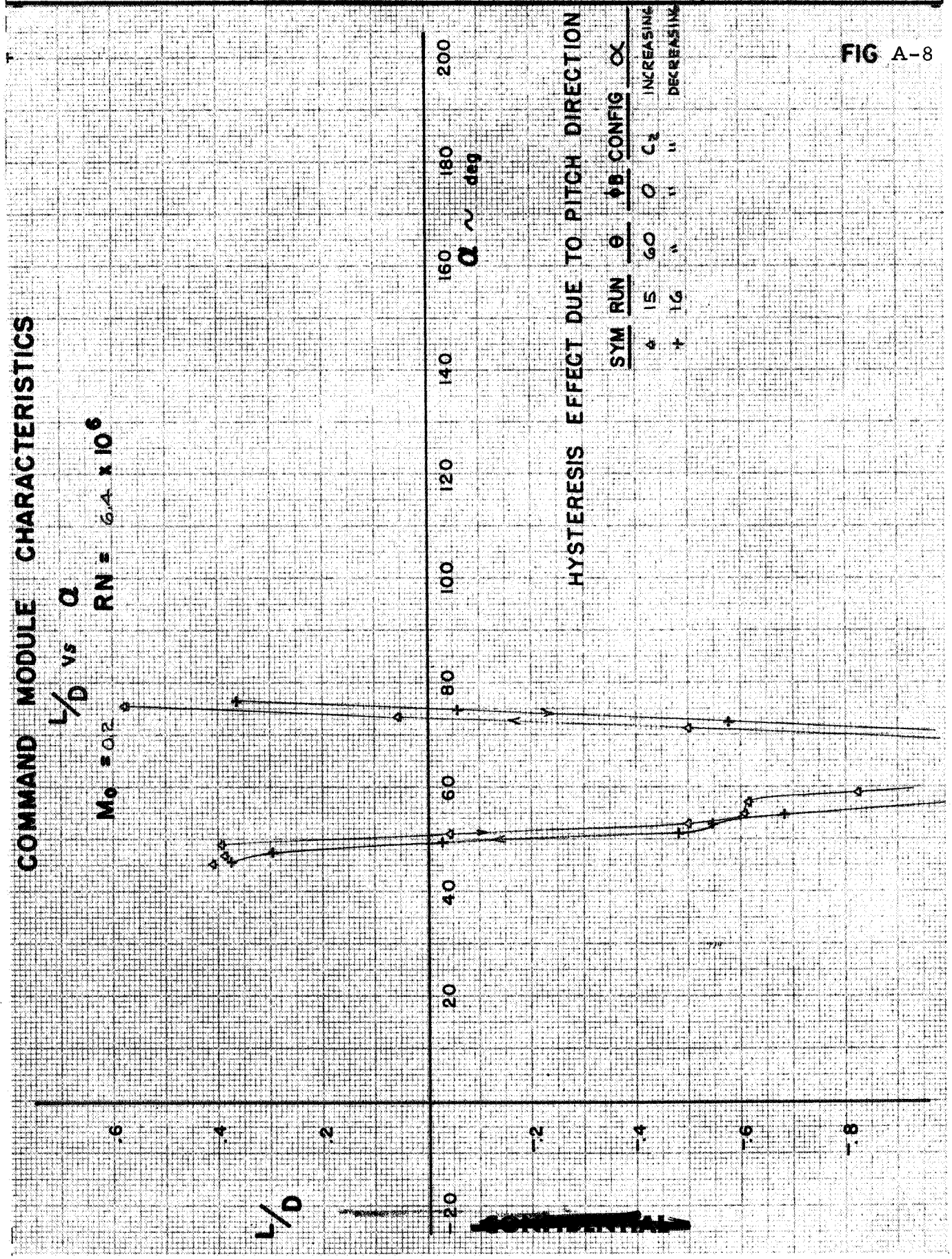

FIG A-8

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DATE: [redacted] MODEL NO. APOLLO FS-2

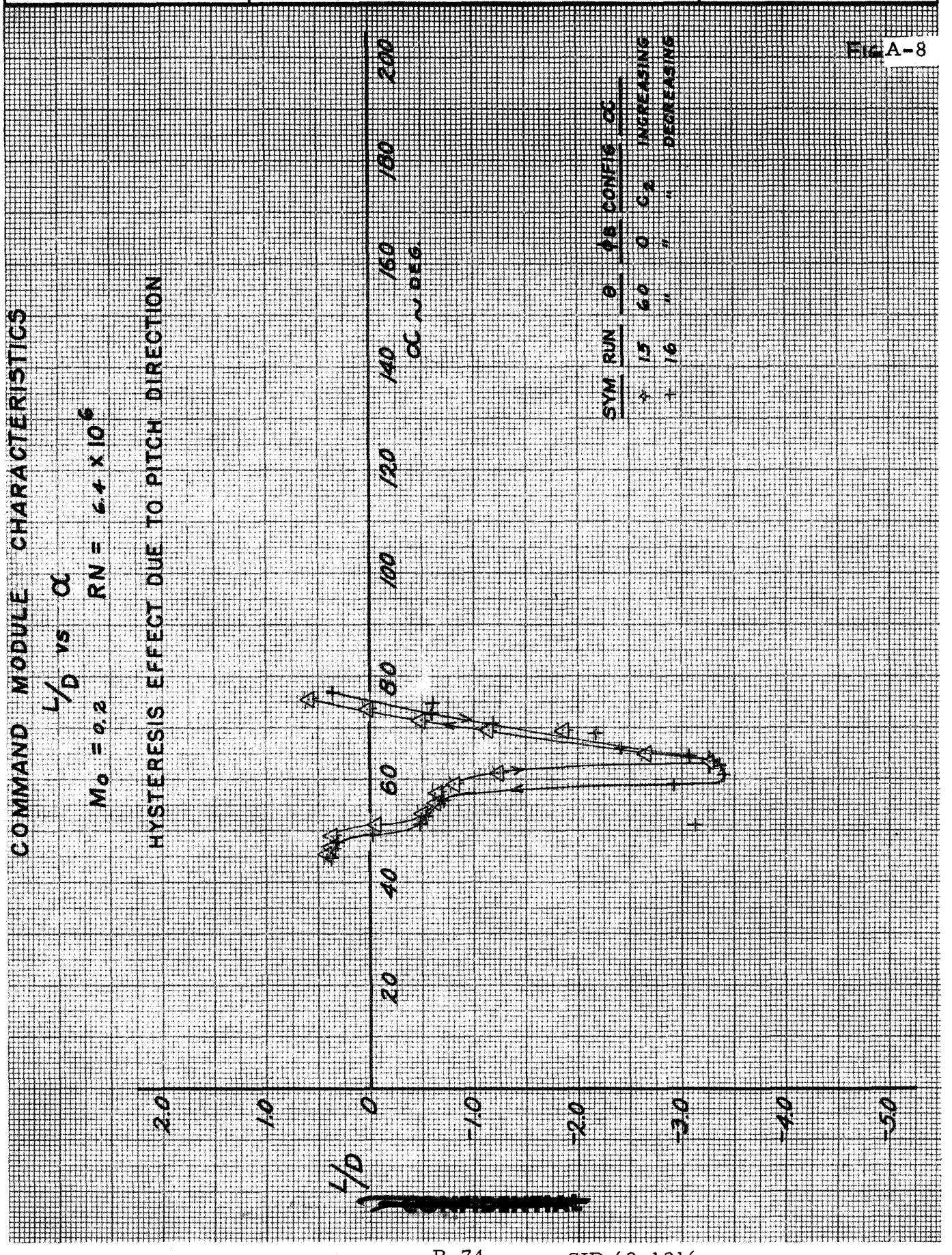

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FIG A-8

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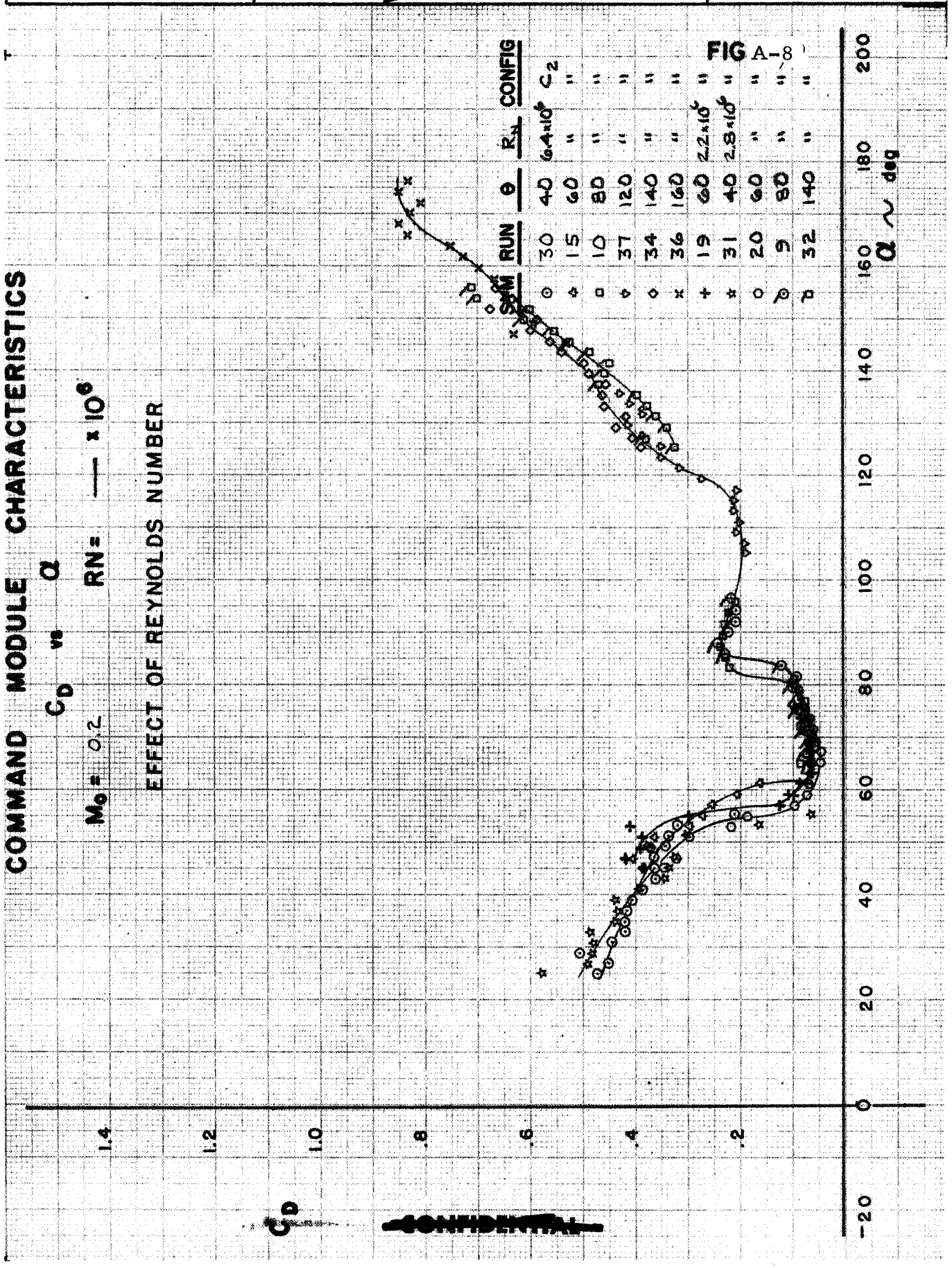

FIG A-8

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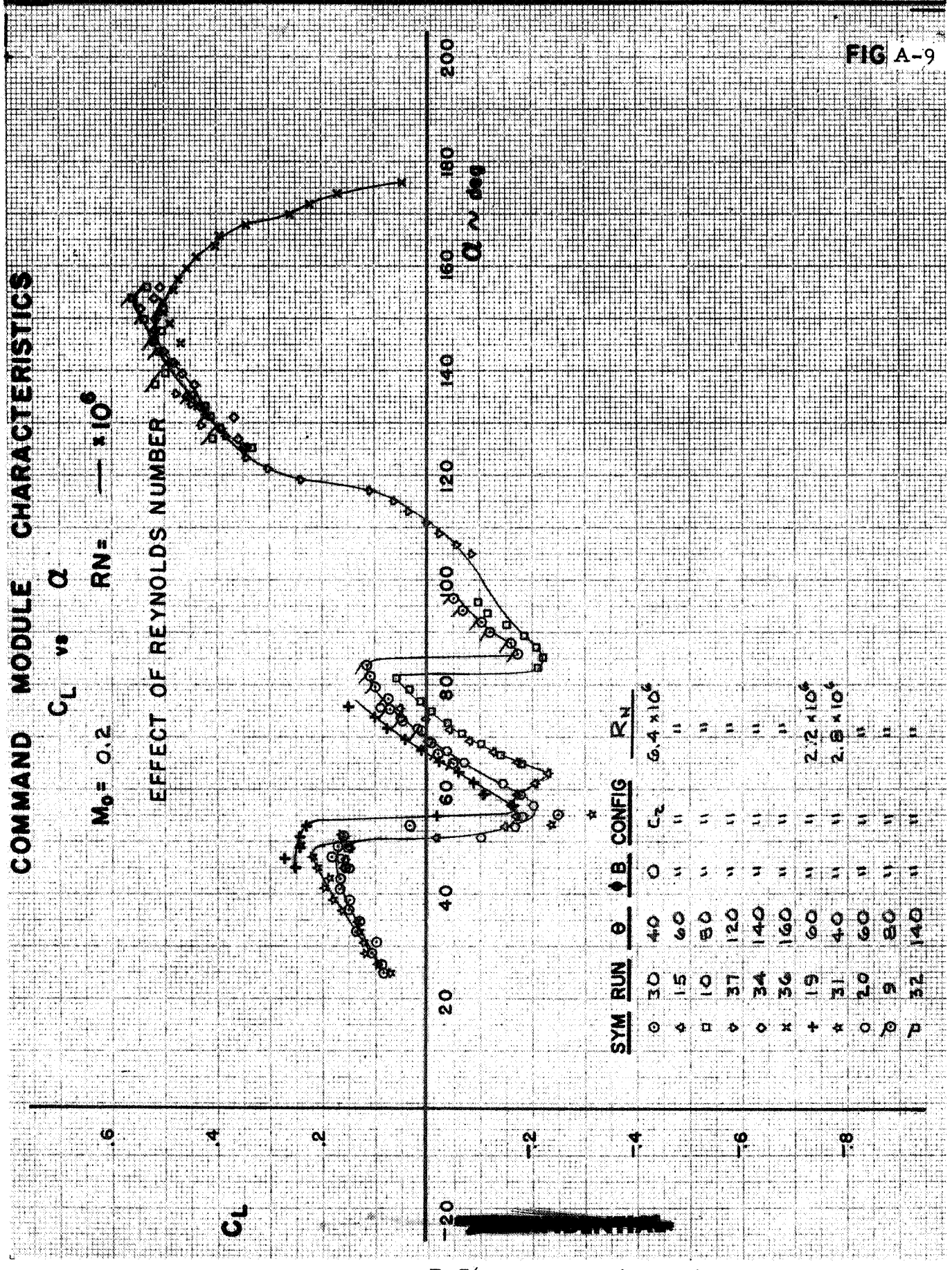
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-9



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DATE: [redacted] MODEL NO. APOLLO FS-2

Fig A-9

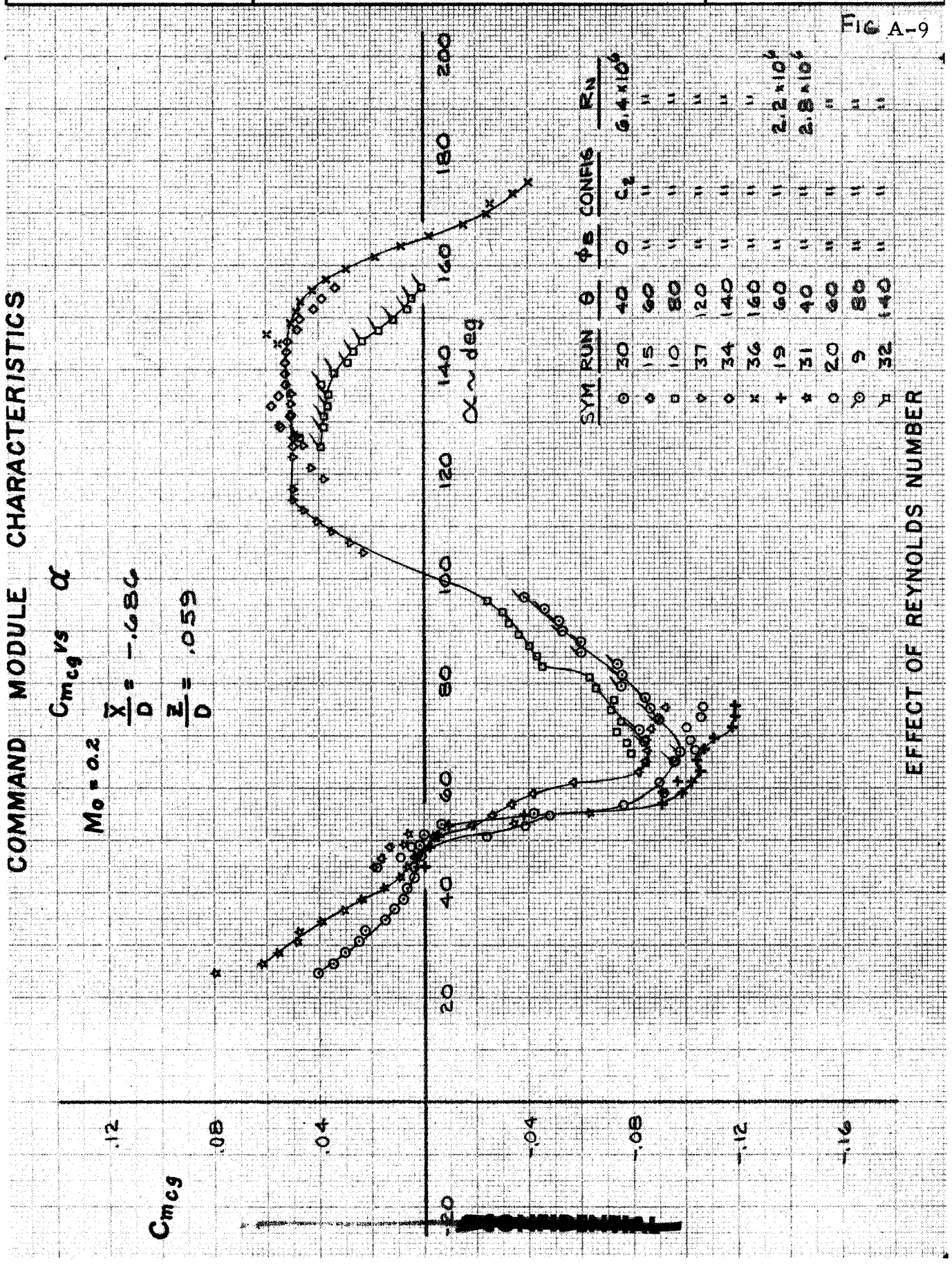

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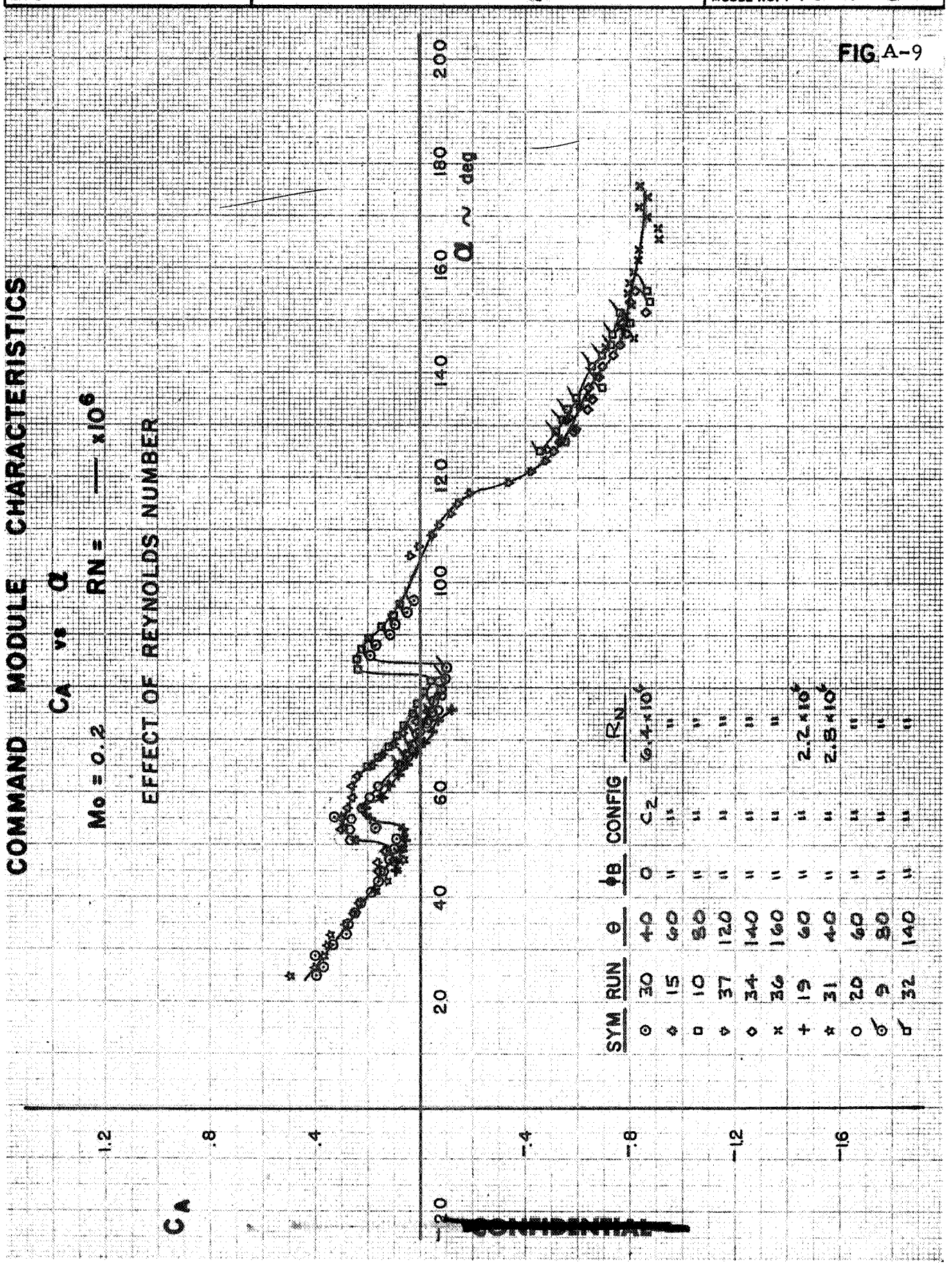
FIG A-9



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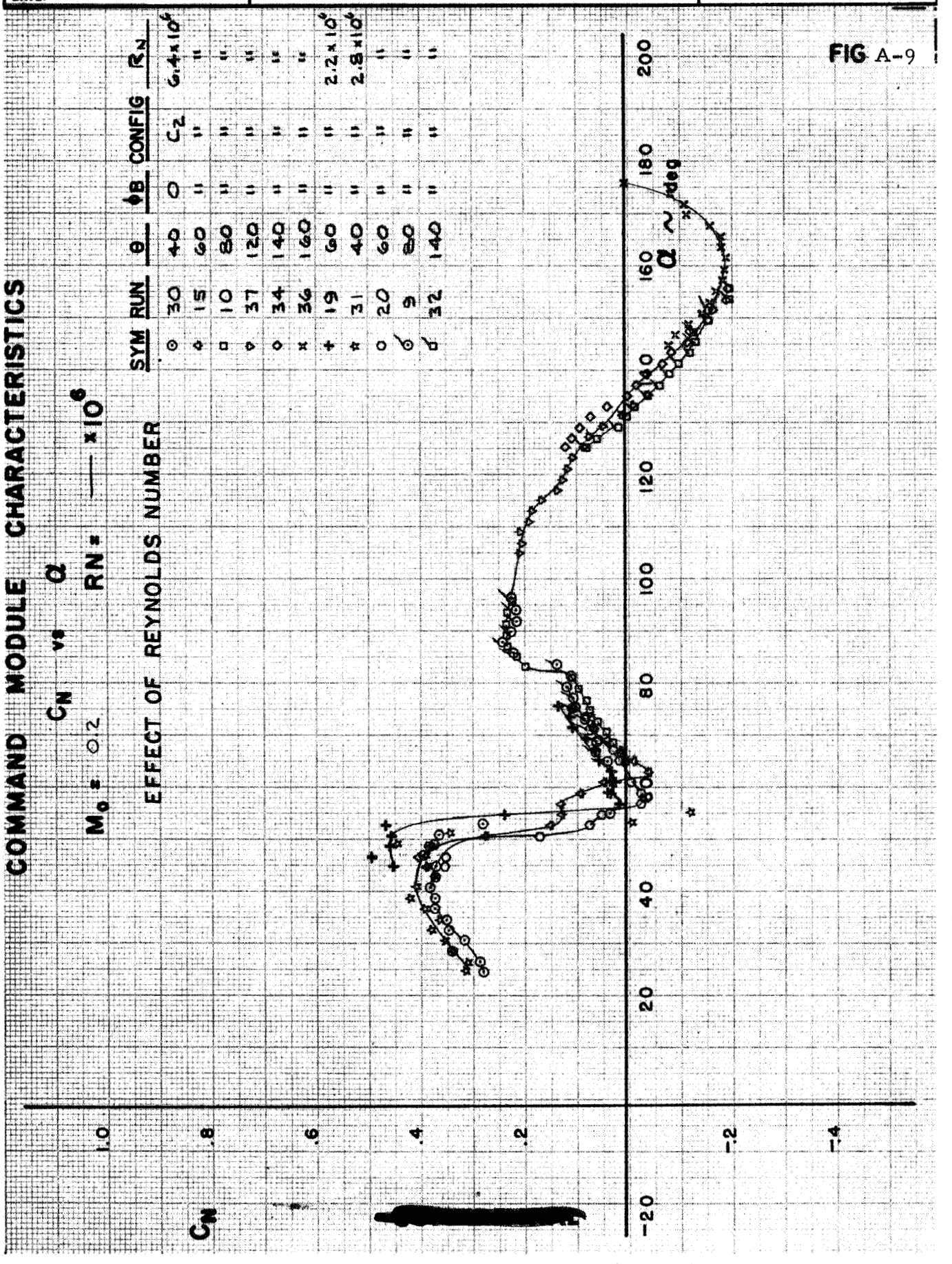

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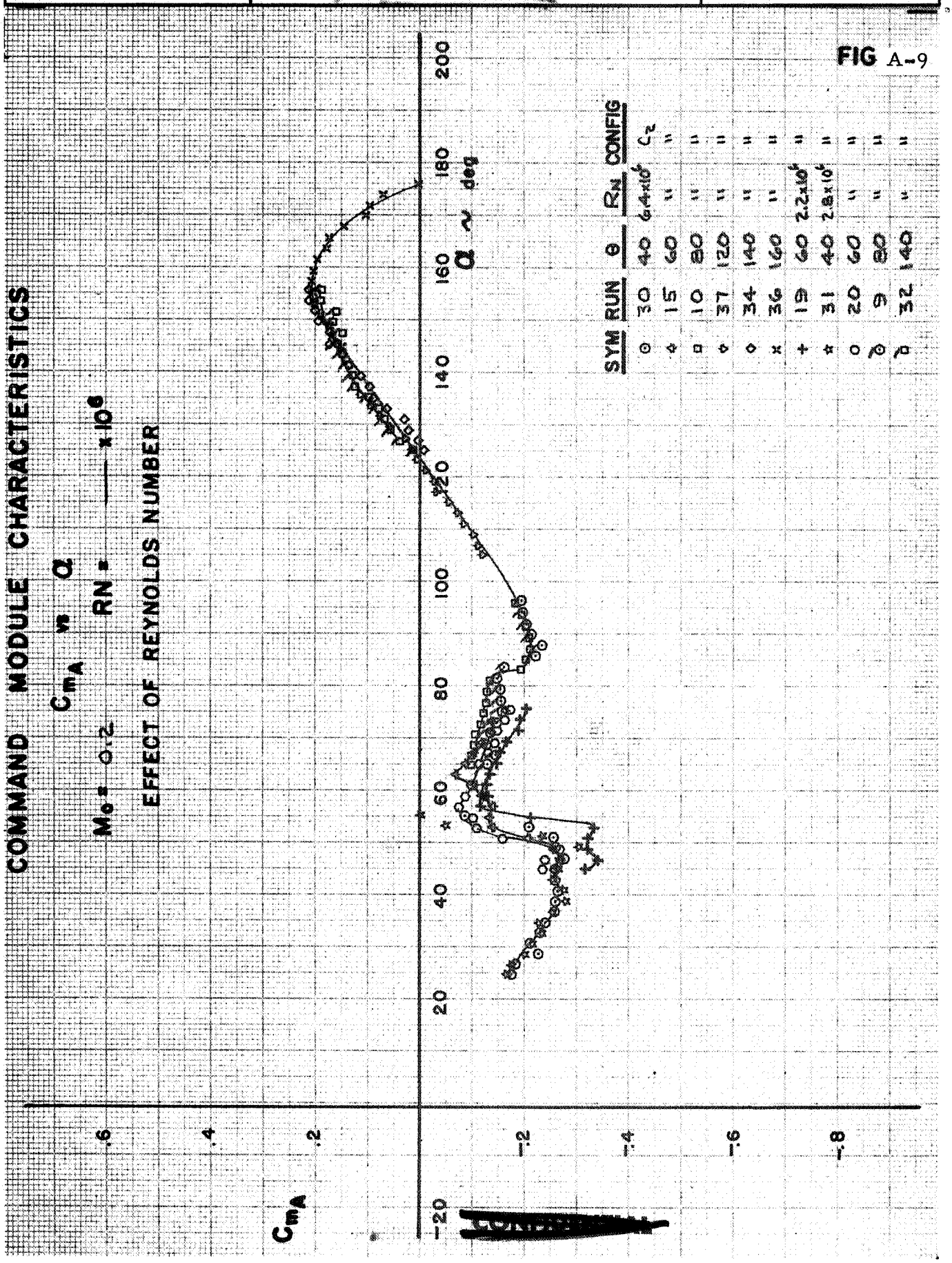
FIG A-9

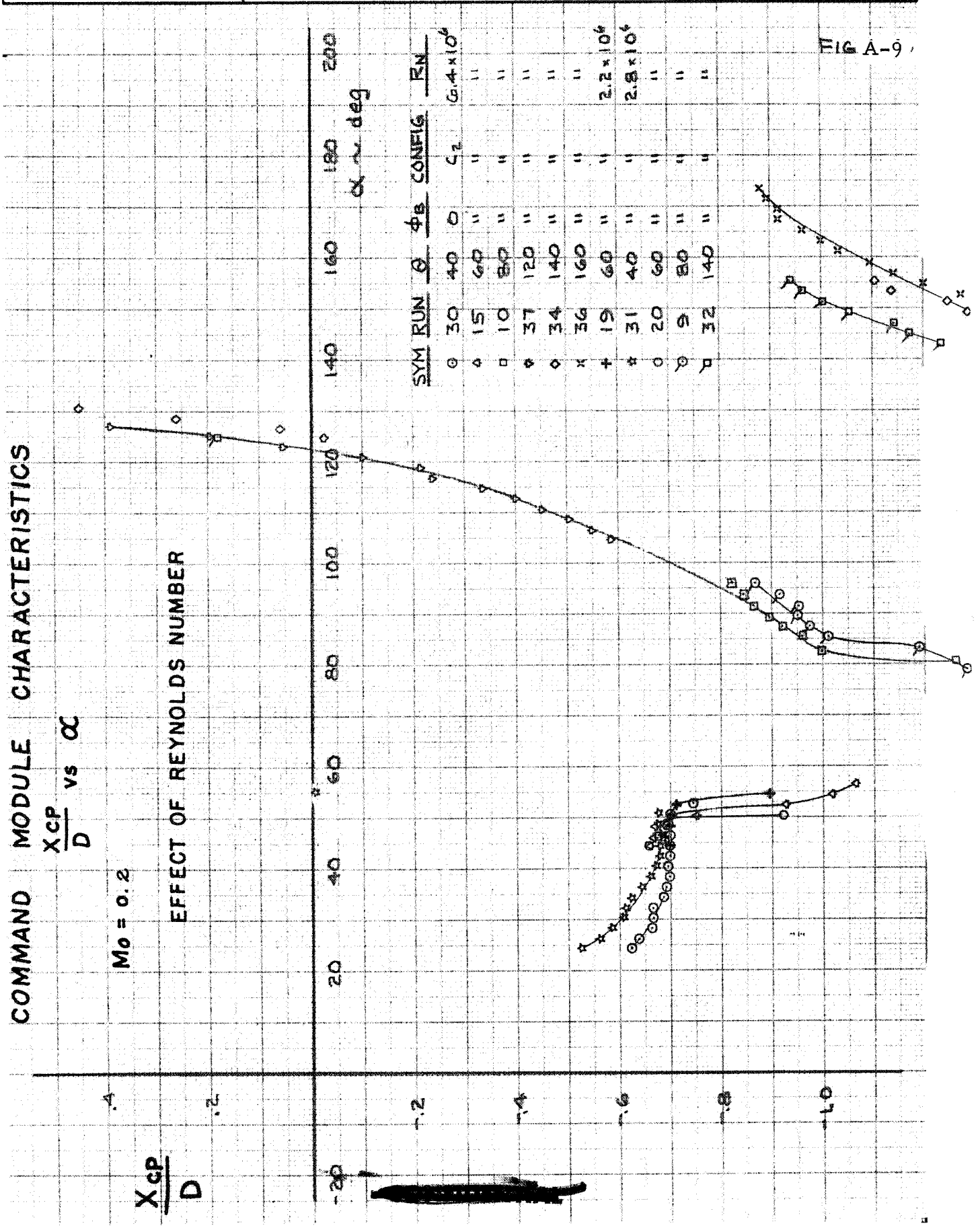
DATE: | CONFIDENTIAL | MODEL NO. APOLLO FS-2

FIG A-9



DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-9



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DATE: [redacted] MODEL NO. APOLLO FS-2

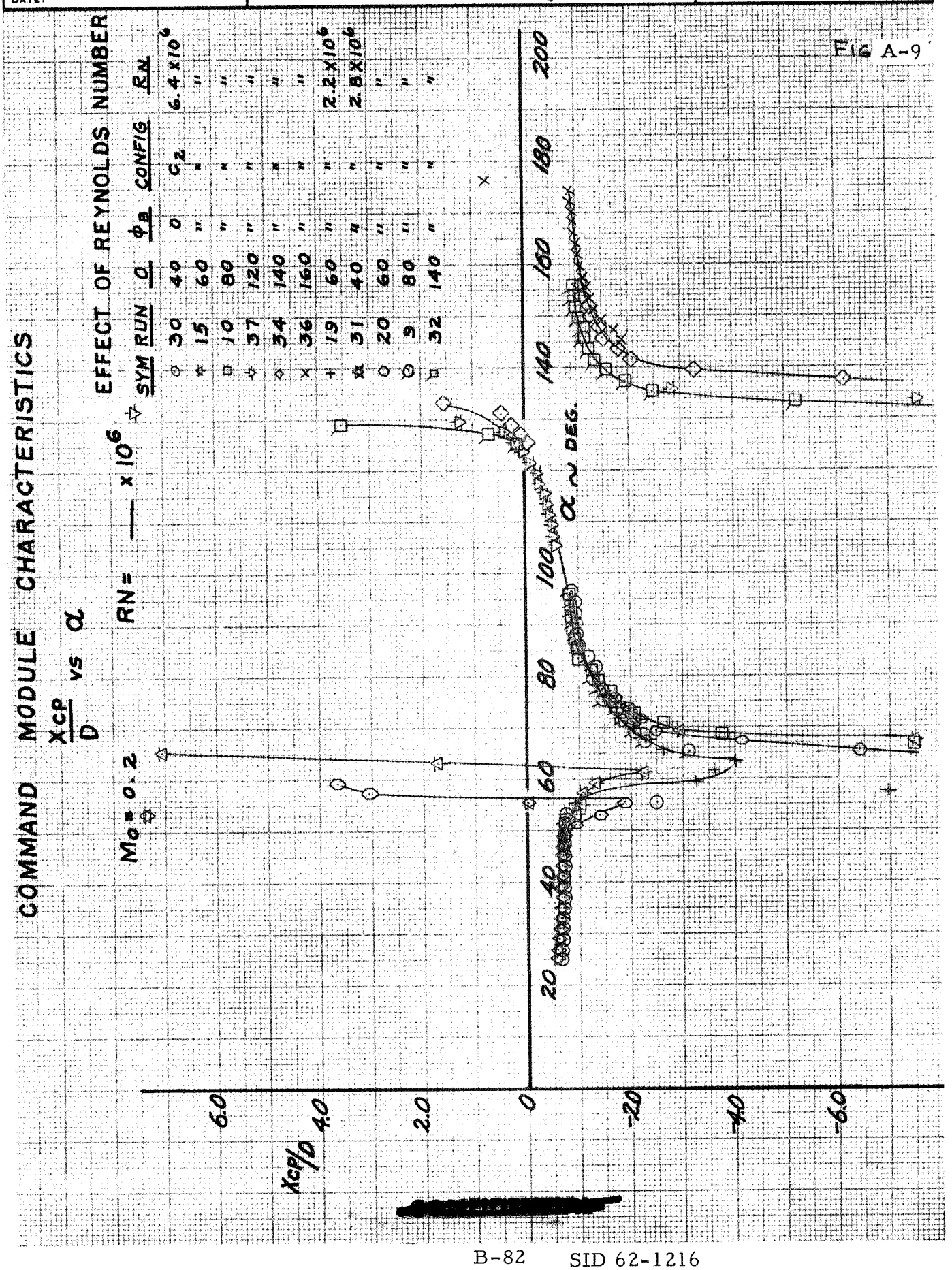

FIG A-9

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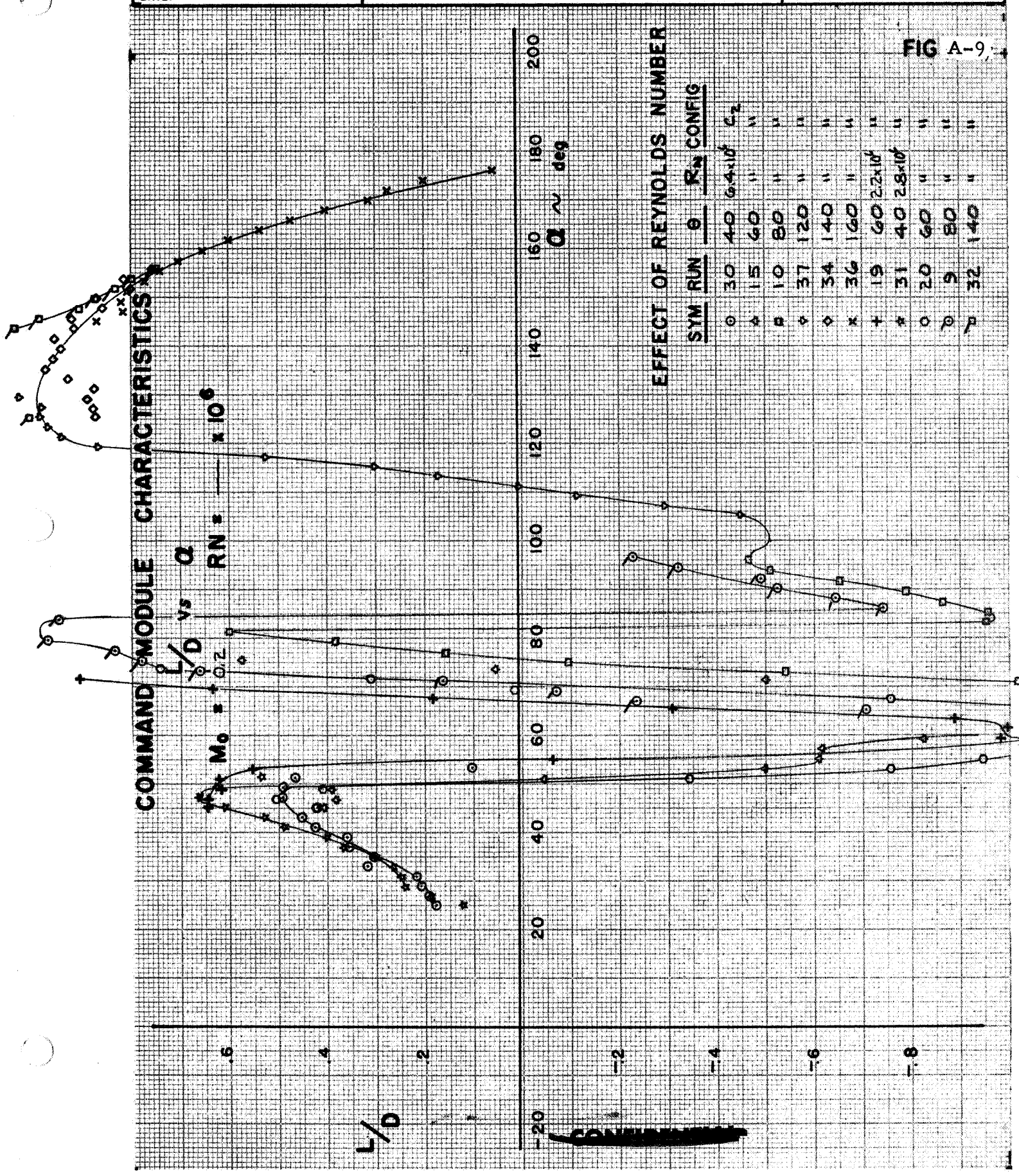

FIG A-9

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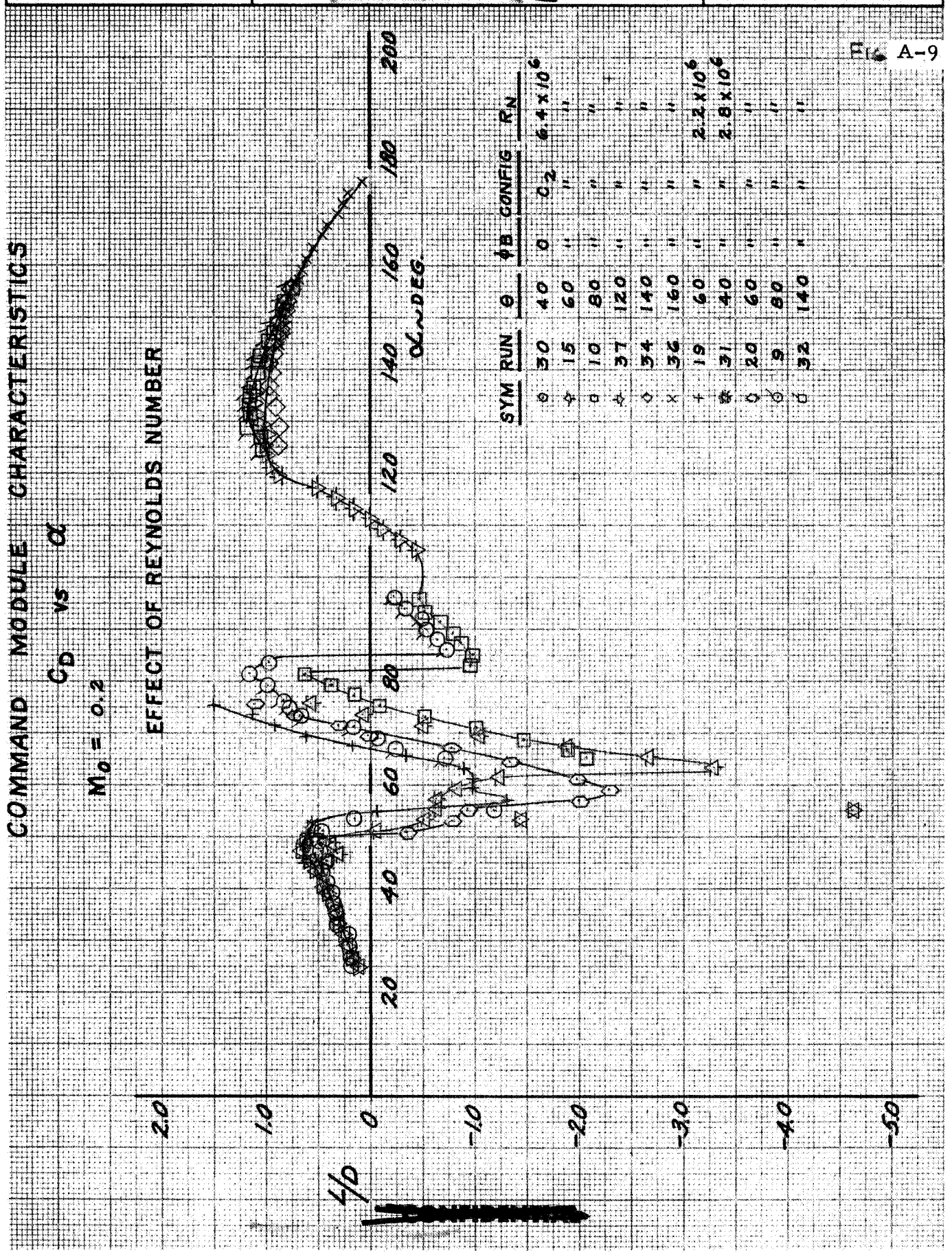

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Fig. A-9

DATE: [redacted] MODEL NO. APOLLO FS-2

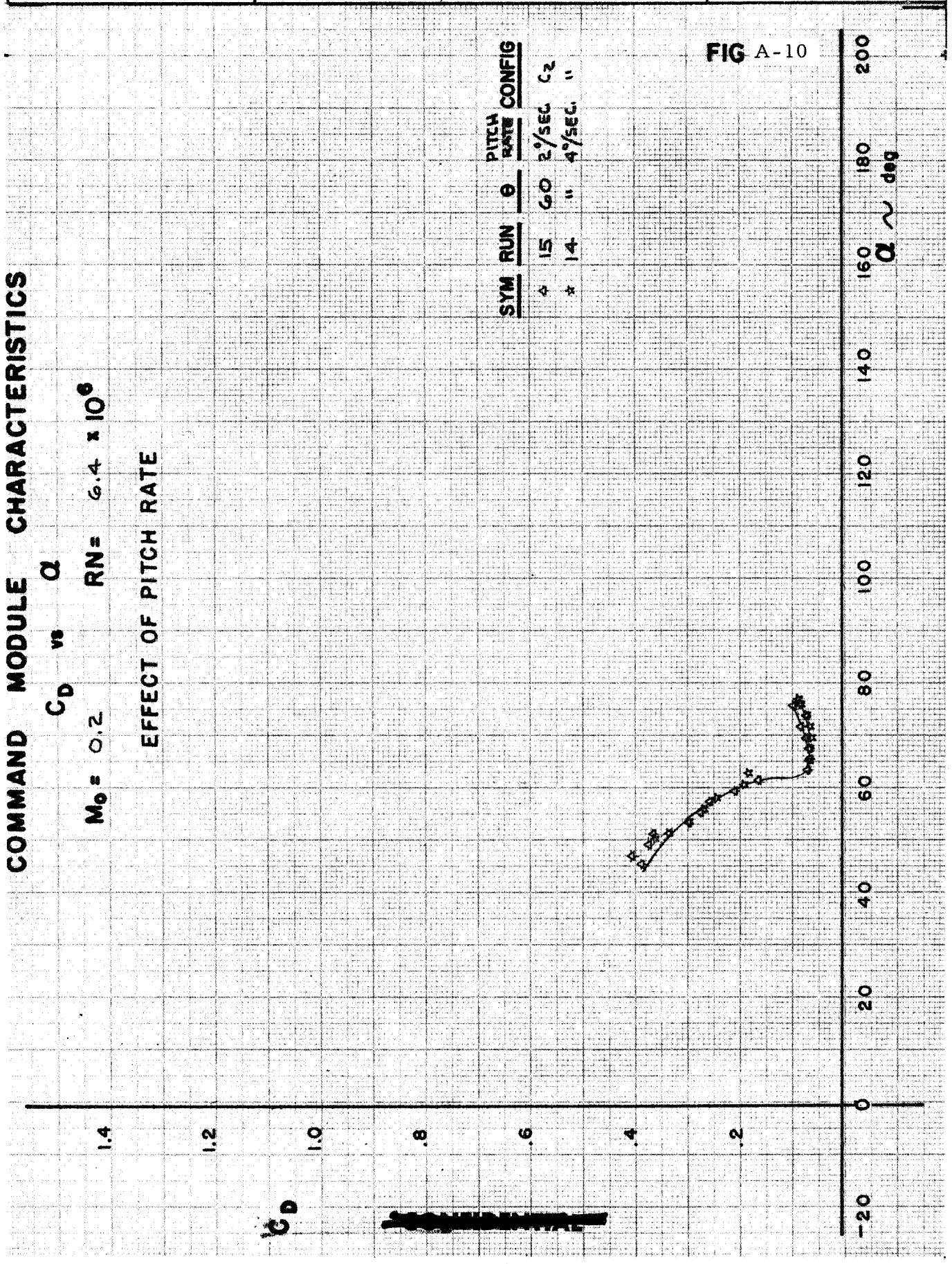

FIG A-10

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DATE: CONFIDENTIAL MODEL NO. APOLLO FS-2

FIG A-10

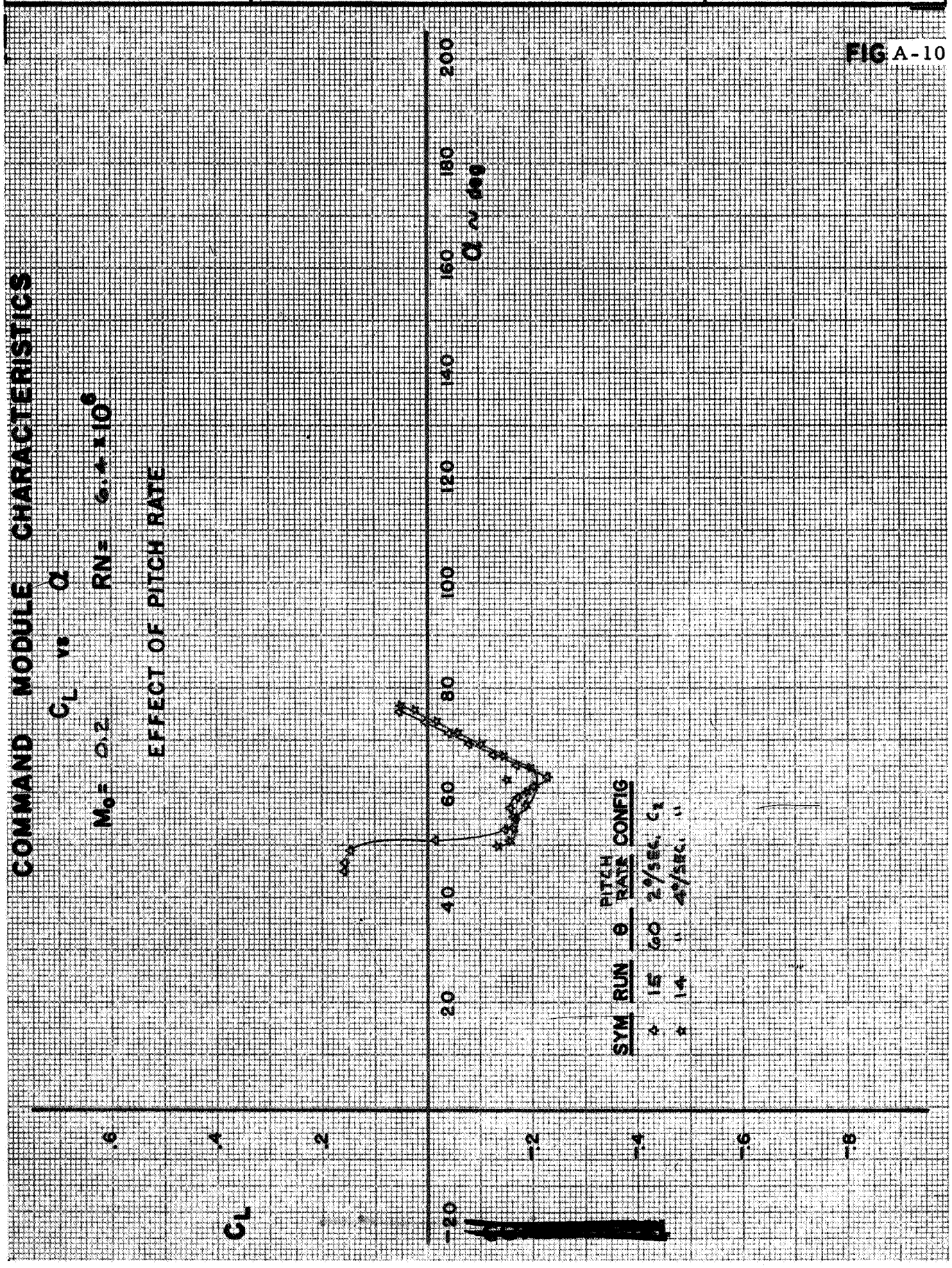
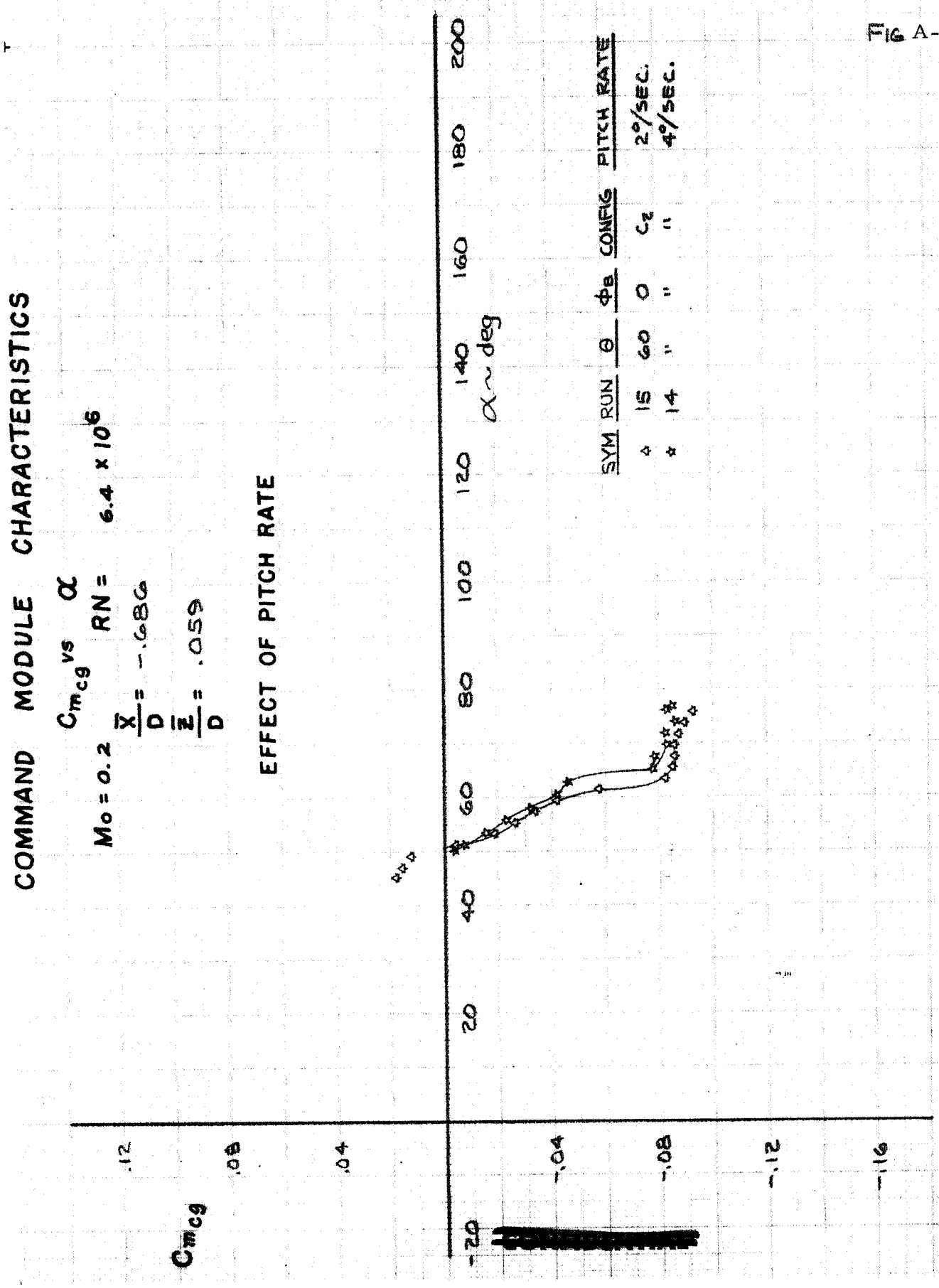
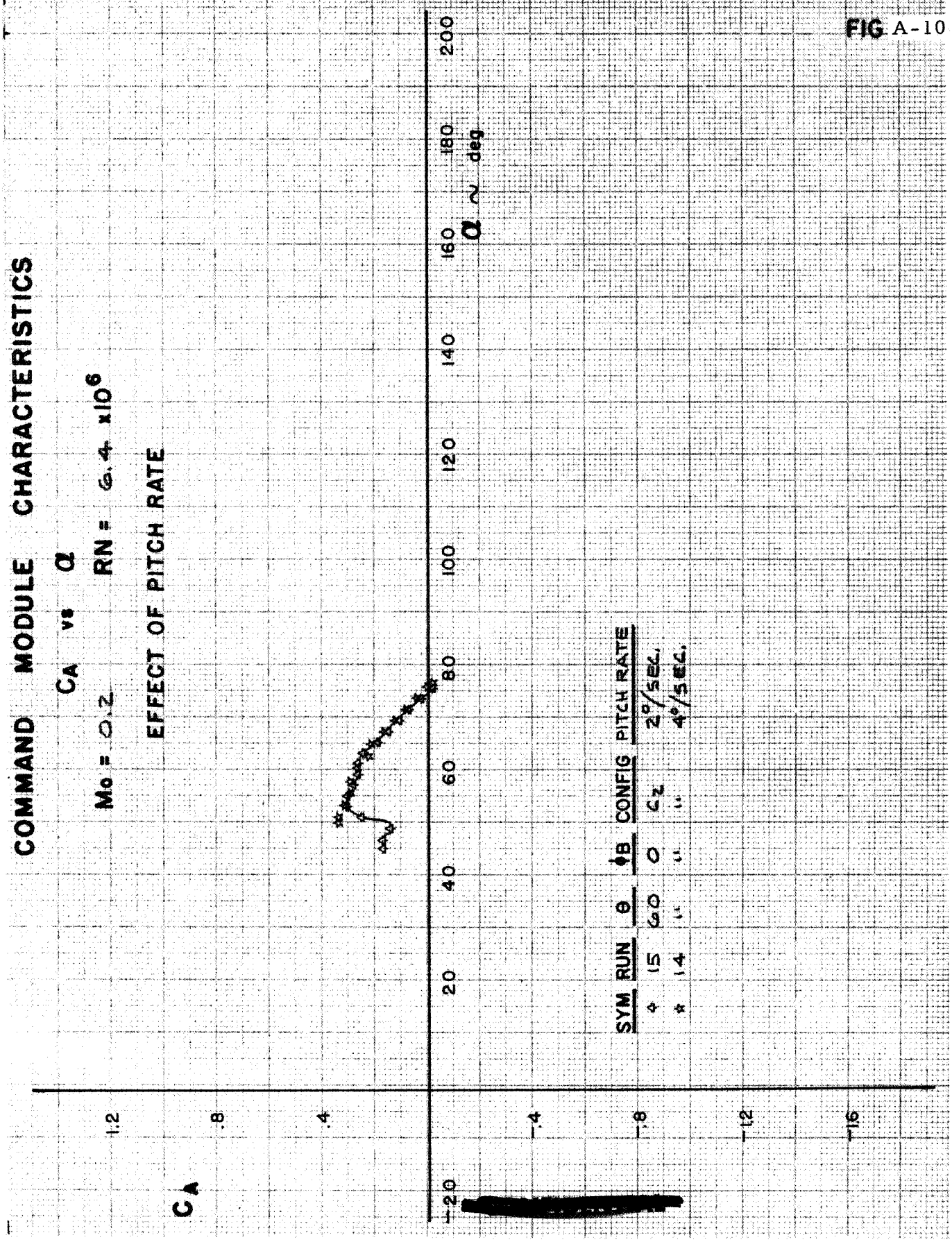


Fig A-10


COMMAND MODULE CHARACTERISTICS
$C_{m_{cg}}$ vs α
$M_o = 0.2$
$\frac{\bar{X}}{D} = -.686$
$\frac{\bar{Z}}{D} = .059$
RN = 6.4×10^6
EFFECT OF PITCH RATE
SYM RUN θ Φ_B CONFIG PITCH RATE
15 60 0 C_2 2°/SEC.
14 " " " 4°/SEC.
$\alpha \sim$ deg
$C_{m_{cg}}$
.12
.08
.04
-.04
-.08
-.12
-.16
-20
20
40
60
80
100
120
140
160
180
200

DATE: | ~~CONFIDENTIAL~~ | MODEL NO. APOLLO FS-2

FIG. A-10



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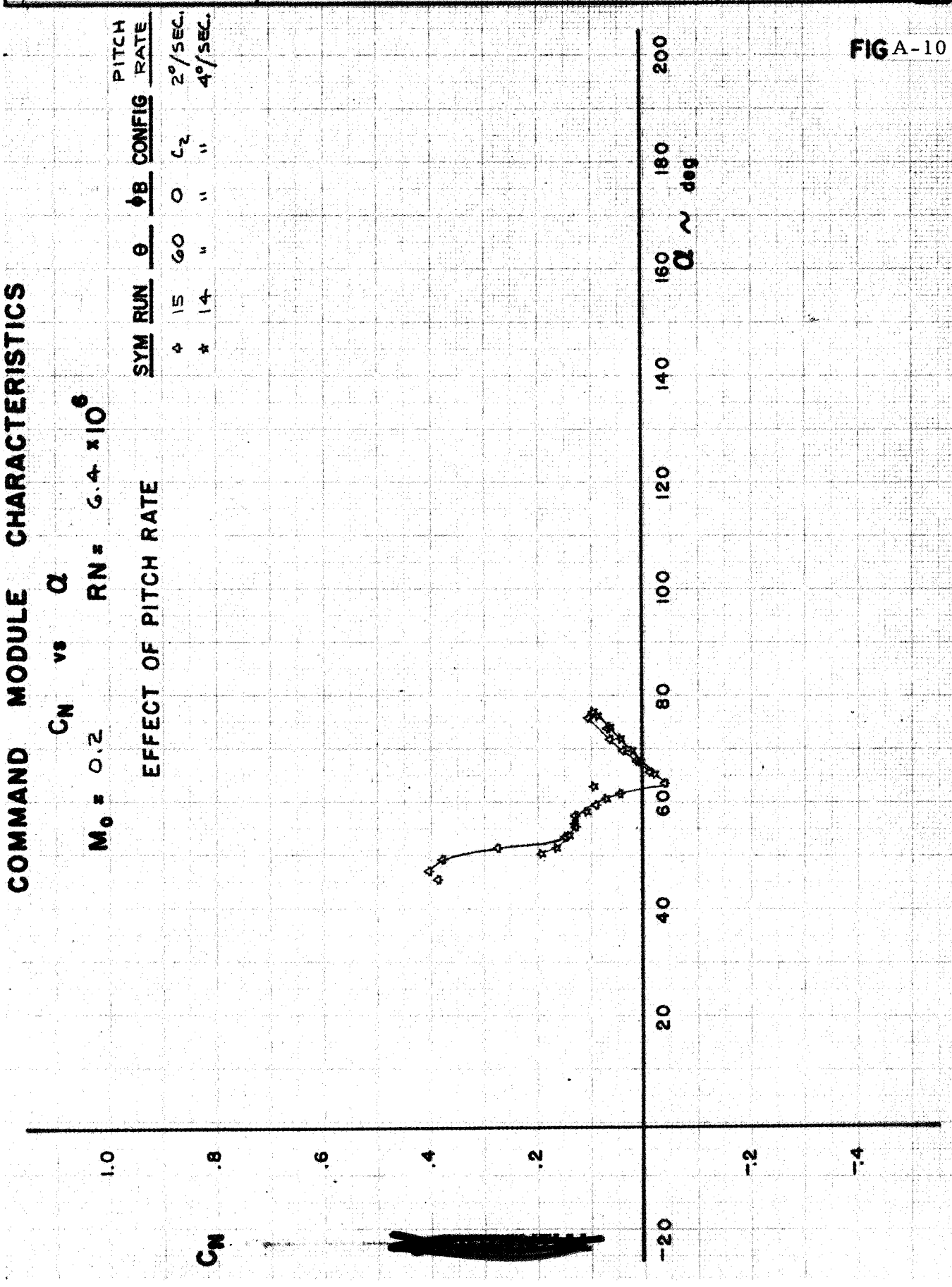
DATE: [redacted] MODEL NO. APOLLO FS-2

FIG A-10



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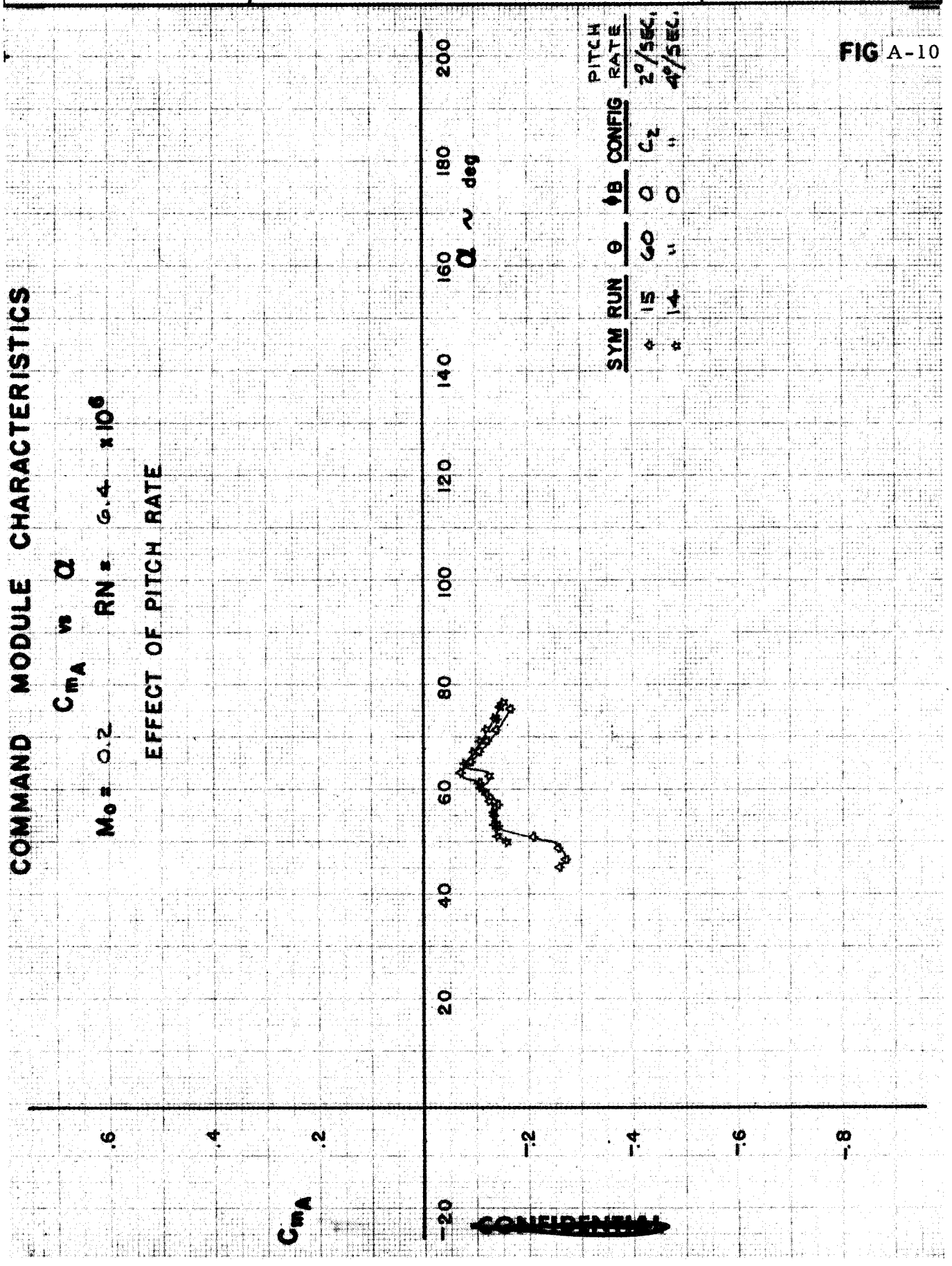

FIG A-10

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DATE: [redacted] MODEL NO. APOLLO FS-2

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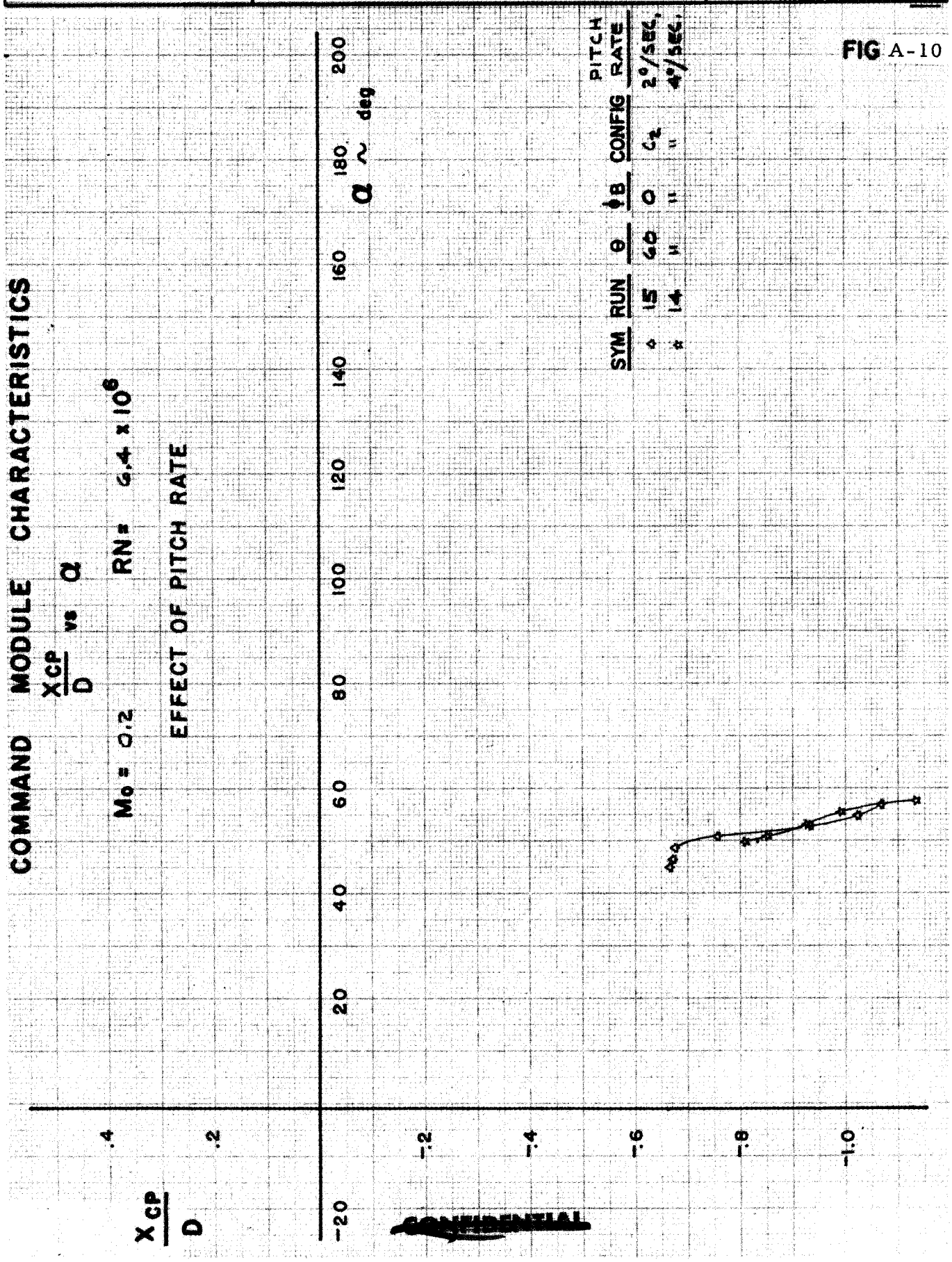

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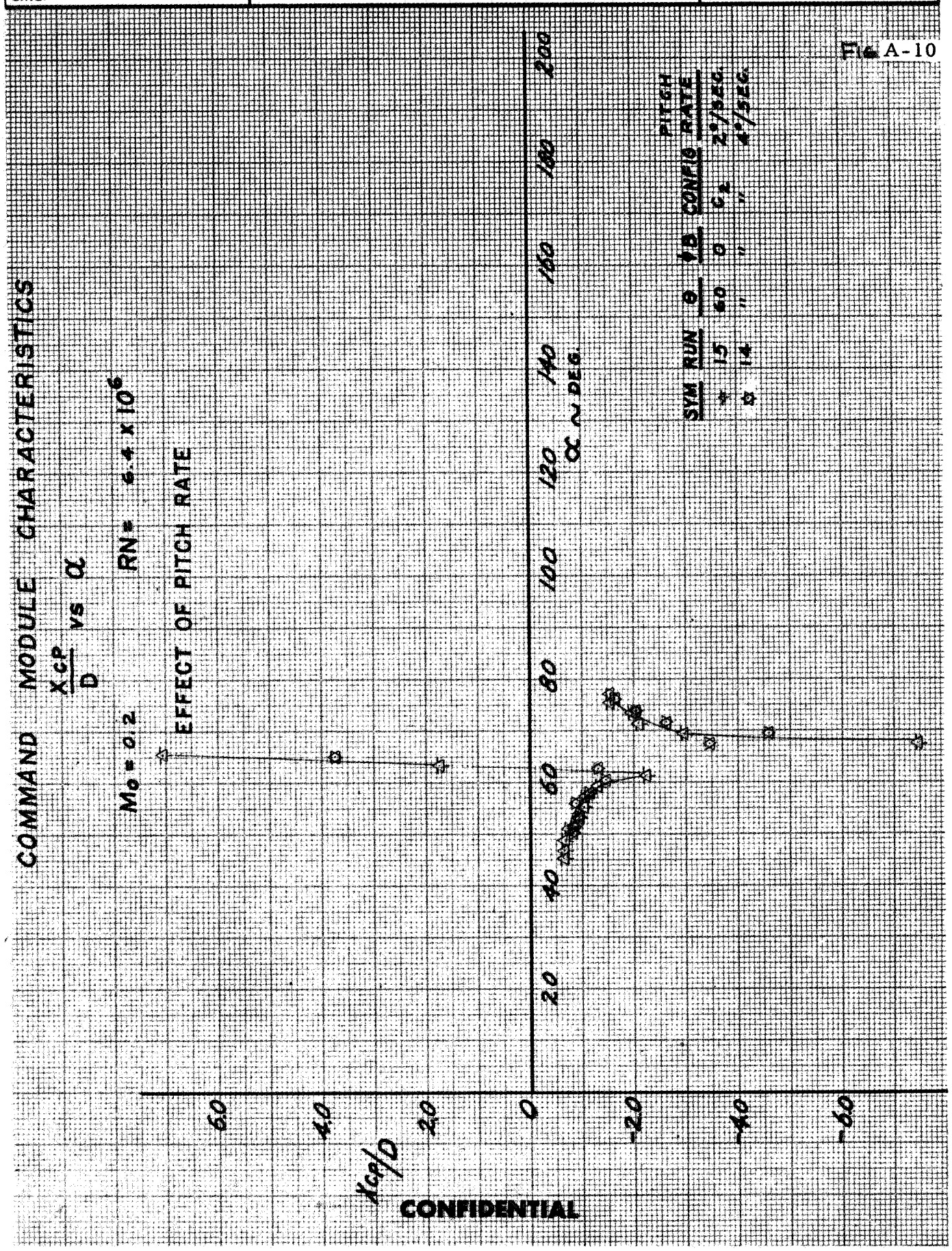
DATE: CONFIDENTIAL MODEL NO. APOLLO FS-2

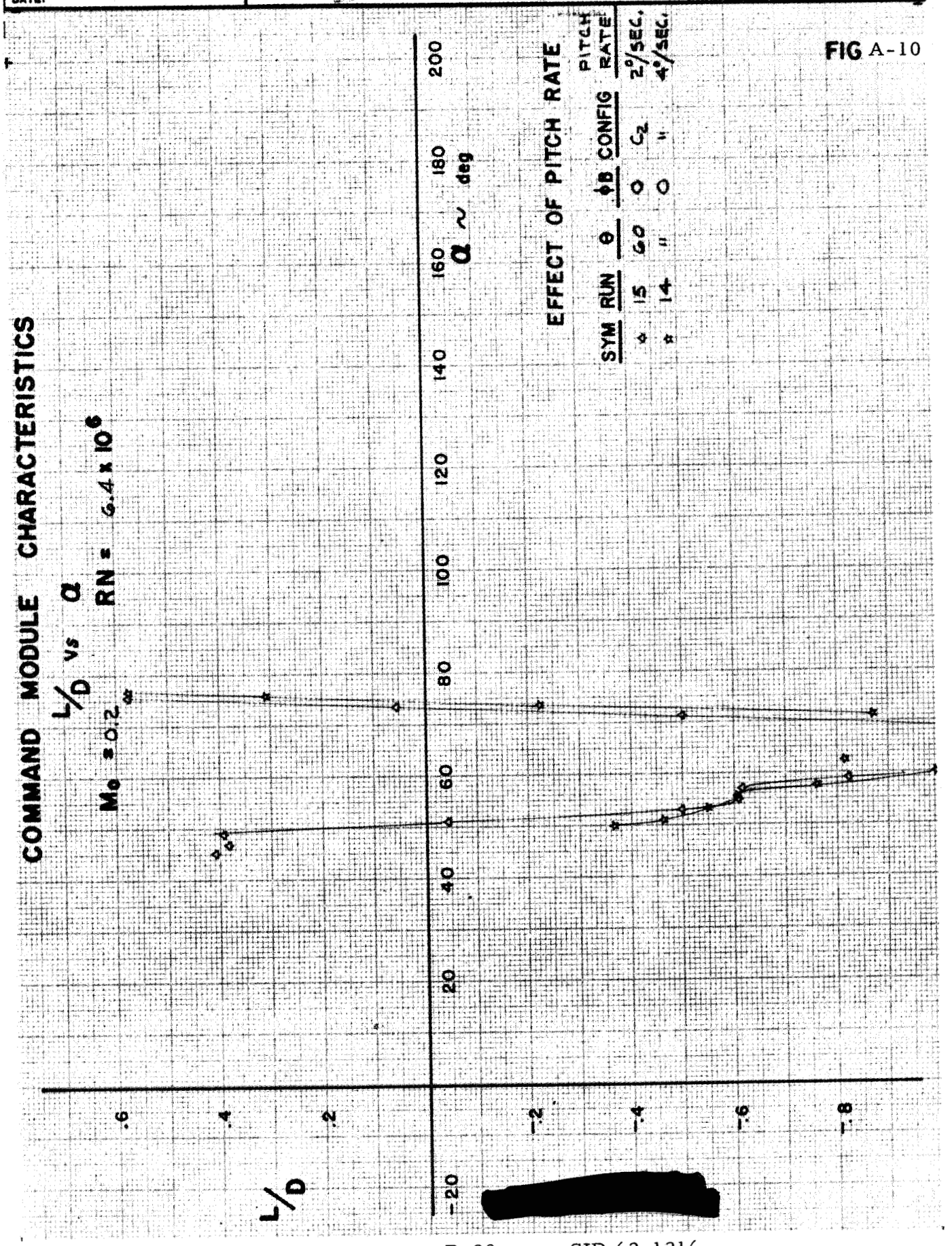
Fig. A-10



CONFIDENTIAL

DATE: ~~CONFIDENTIAL~~ MODEL NO. APOLLO FS-2

FIG A-10



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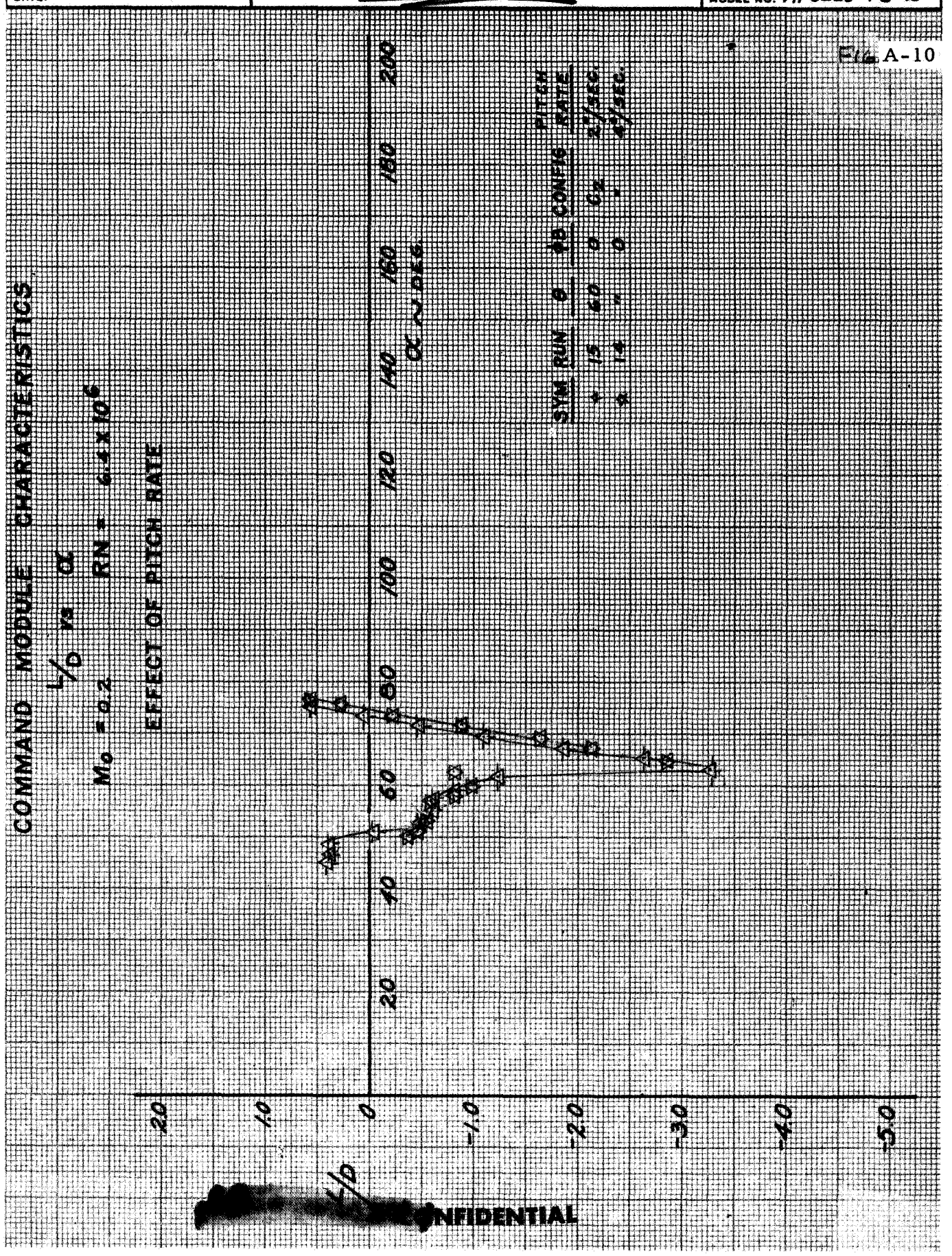
DATE: [redacted] MODEL NO. APOLLO FS-2

Fig. A-10



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