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N68-36324
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N68-36324
NASA CR-97151

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

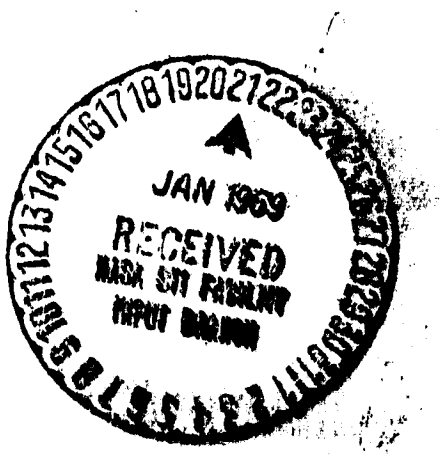
Technical Report 32-1305

Addendum

Mariner IV and V Disturbance Torques and Limit Cycles

Daniel A. Prelewicz

N69-15226
(ACCESSION NUMBER)
320
(PAGES)
CR 88453
(NASA CR OR TMX OR AD NUMBER)
(THRU)
1
(CODE)
31
(CATEGORY)
FACILITY FORM 602



JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA

December 15, 1968

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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TECHNICAL REPORT 32-1305

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Prepared Under Contract No. NAS 7-100
National Aeronautics & Space Administration

Preface

The work described in this report was performed by the Guidance and Control Division of the Jet Propulsion Laboratory.

Foreword

The procedure used to compute the disturbance torques affecting the *Mariner IV* and *Mariner V* spacecraft during selected periods of flight are explained in Jet Propulsion Laboratory TR 32-1305, *Mariner IV and V Disturbance Torques and Limit Cycles*, Oct. 1, 1968. In this Addendum, more extensive examples are given of computer printouts that provide quantitative information on torque limits and limit cycles for the spacecraft. This information is presented in four selected plots, as follows:

Plot I. Reduced position data and torque limits vs time, *Mariner IV*, 33⅓ bits/s, days 361–362, 1964.

Plot II. Reduced position data and torque limits vs time, *Mariner IV*, 33⅓ bits/s, day 366, 1964.

Plot III. Reduced position data and torque limits vs time, *Mariner IV*, 8⅓ bits/s, days 102–105, 1965.

Plot IV. Reduced position data and torque limits vs time, *Mariner V*, 33⅓ bits/s, days 171–173, 1967.

Throughout the plots, time is given in hours, minutes, and seconds (GMT). Symbols are as follows: * = pitch; X = yaw; O = V-axis roll; H = Z-axis or true roll; $ = superimposed data points.

Contents

Plot I. Reduced position data and torque limits vs time, *Mariner IV*, $33\frac{1}{3}$ bits/s, days 361–362, 1964 1

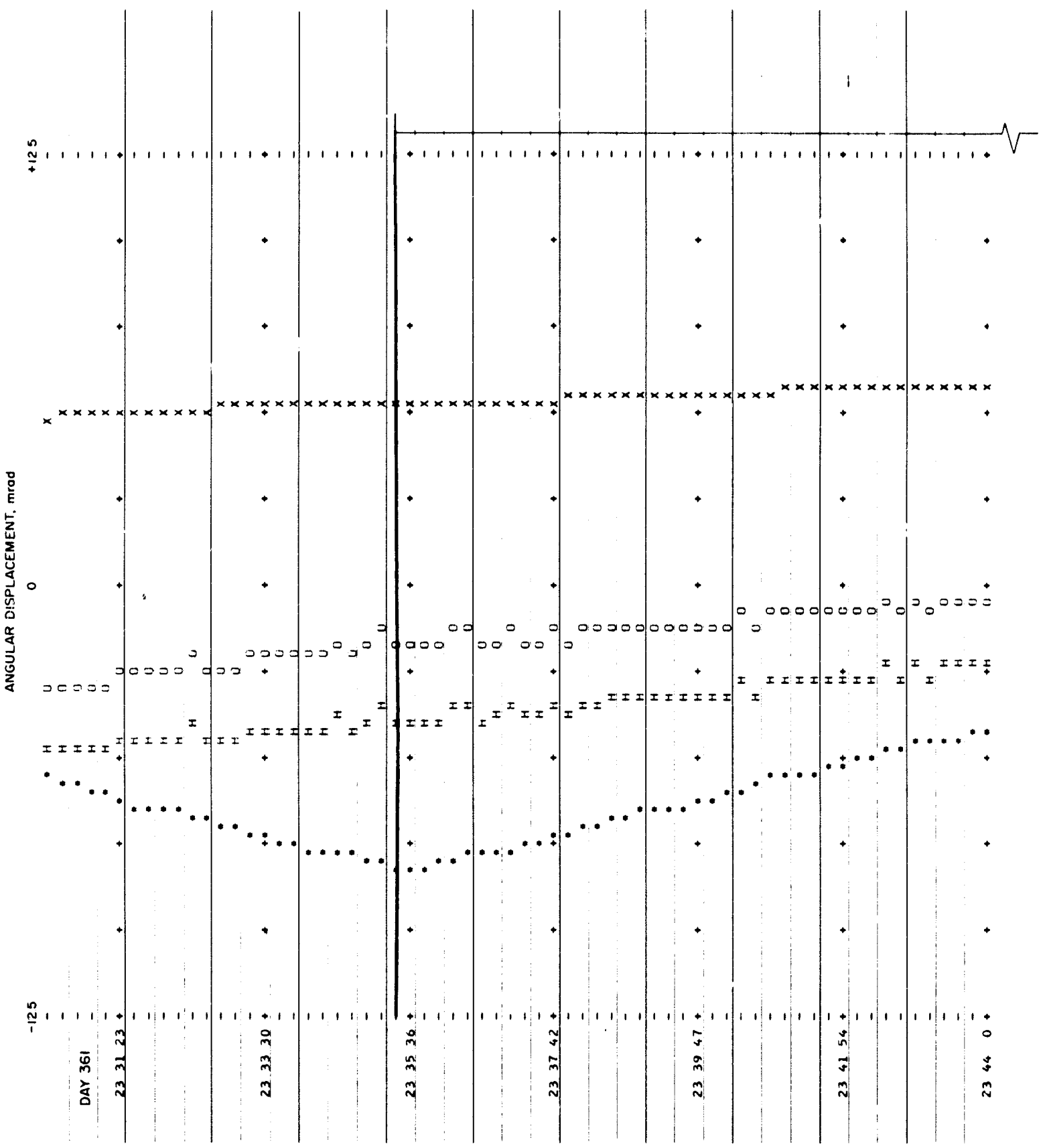
Plot II. Reduced position data and torque limits vs time, *Mariner IV*, $33\frac{1}{3}$ bits/s, day 366, 1964 71

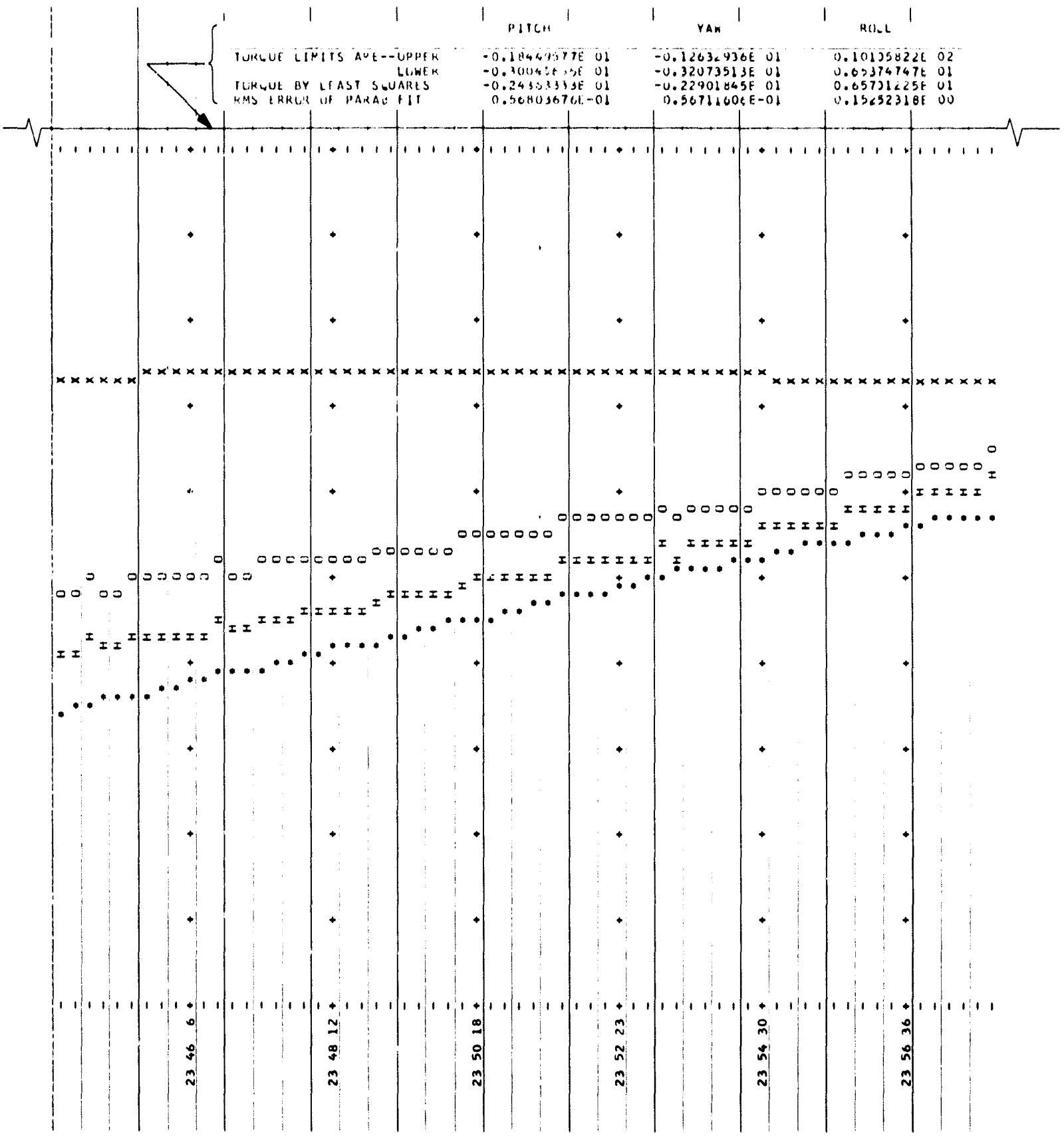
Plot III. Reduced position data and torque limits vs time, *Mariner IV*, $8\frac{1}{3}$ bits/s, days 102–105, 1965 101

Plot IV. Reduced position data and torque limits vs time, *Mariner V*, $33\frac{1}{3}$ bits/s, days 171–173, 1967 197

Plot I

Reduced position data and torque limits vs time, *Mariner IV*, 33⅓ bits/s, days 361–362, 1964


ANGULAR DISPLACEMENT, mrad
+125
0
-125
DAY 361
23 31 23
23 33 30
23 35 36
23 37 42
23 39 47
23 41 54
23 44 0


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.18449577E 01 -0.12632936E 01 0.10135822E 02
LOWER -0.30045[illegible]5E 01 -0.32073513E 01 0.65374747E 01
TORQUE BY LEAST SQUARES -0.24353353E 01 -0.22901845E 01 0.65731225E 01
RMS ERROR OF PARAB FIT 0.56803676E-01 0.56711606E-01 0.15652318E 00
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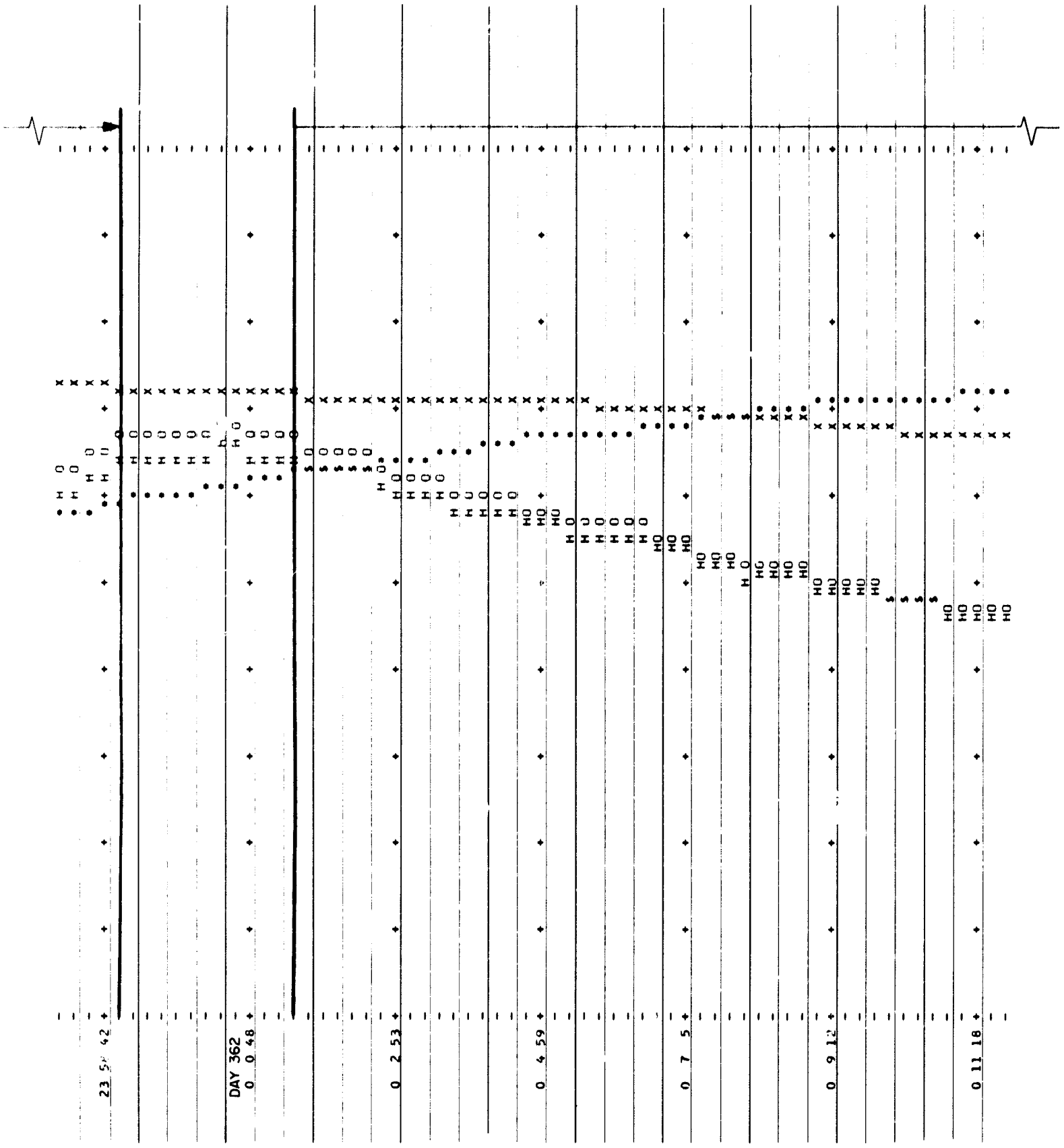
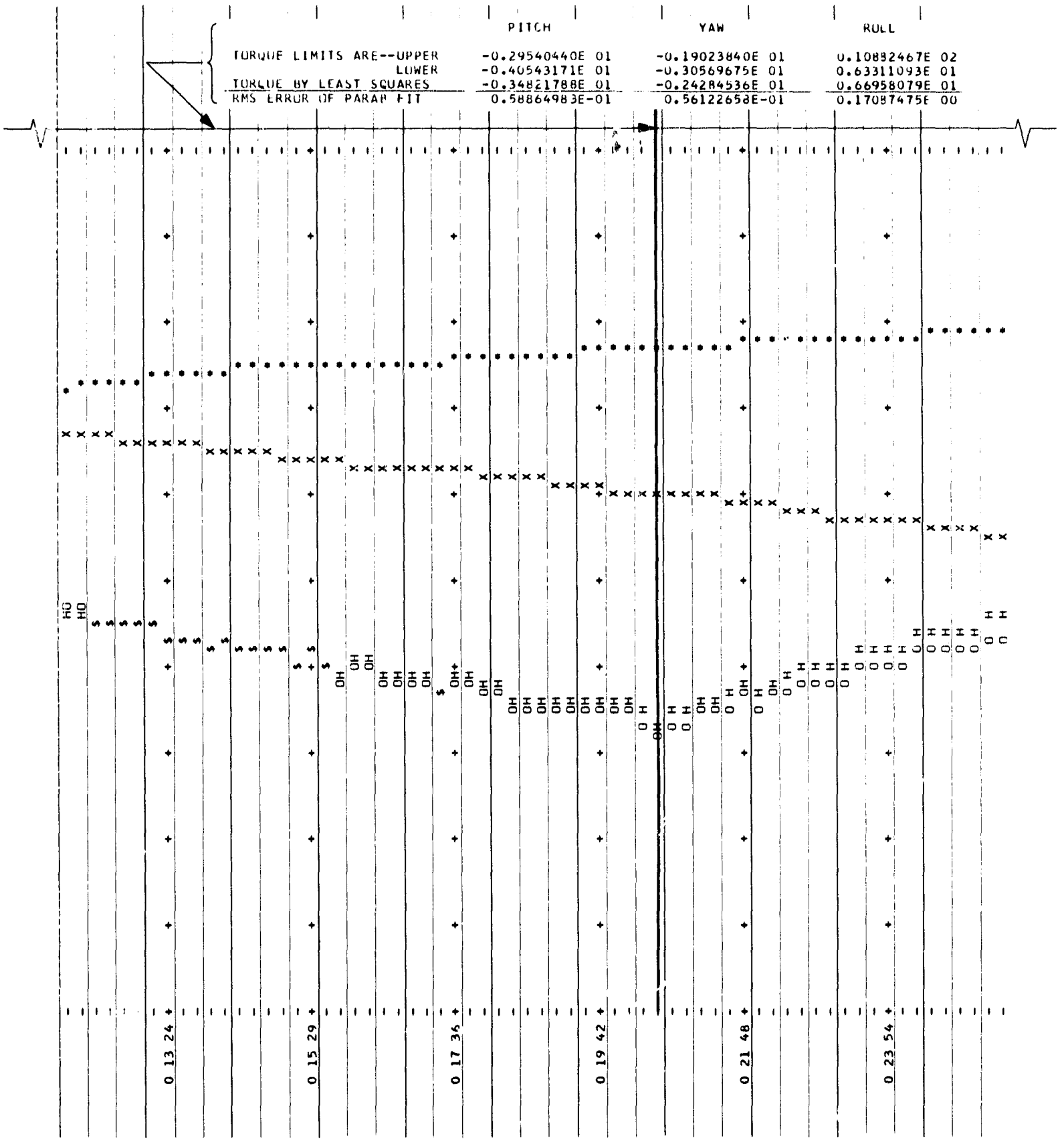
23 48 12
23 50 18
23 52 23
23 54 30
23 56 36


DAY 362
0 0 48
0 2 53
0 4 59
0 7 5
0 9 12
0 11 18


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.29540440E 01 -0.19023840E 01 0.10892467E 02
LOWER -0.40543171E 01 -0.30569675E 01 0.63311093E 01
TORQUE BY LEAST SQUARES -0.34821788E 01 -0.24284536E 01 0.669580 79E 01
RMS ERROR OF PARAB FIT 0.58864983E-01 0.56122658E-01 0.17087475E 00
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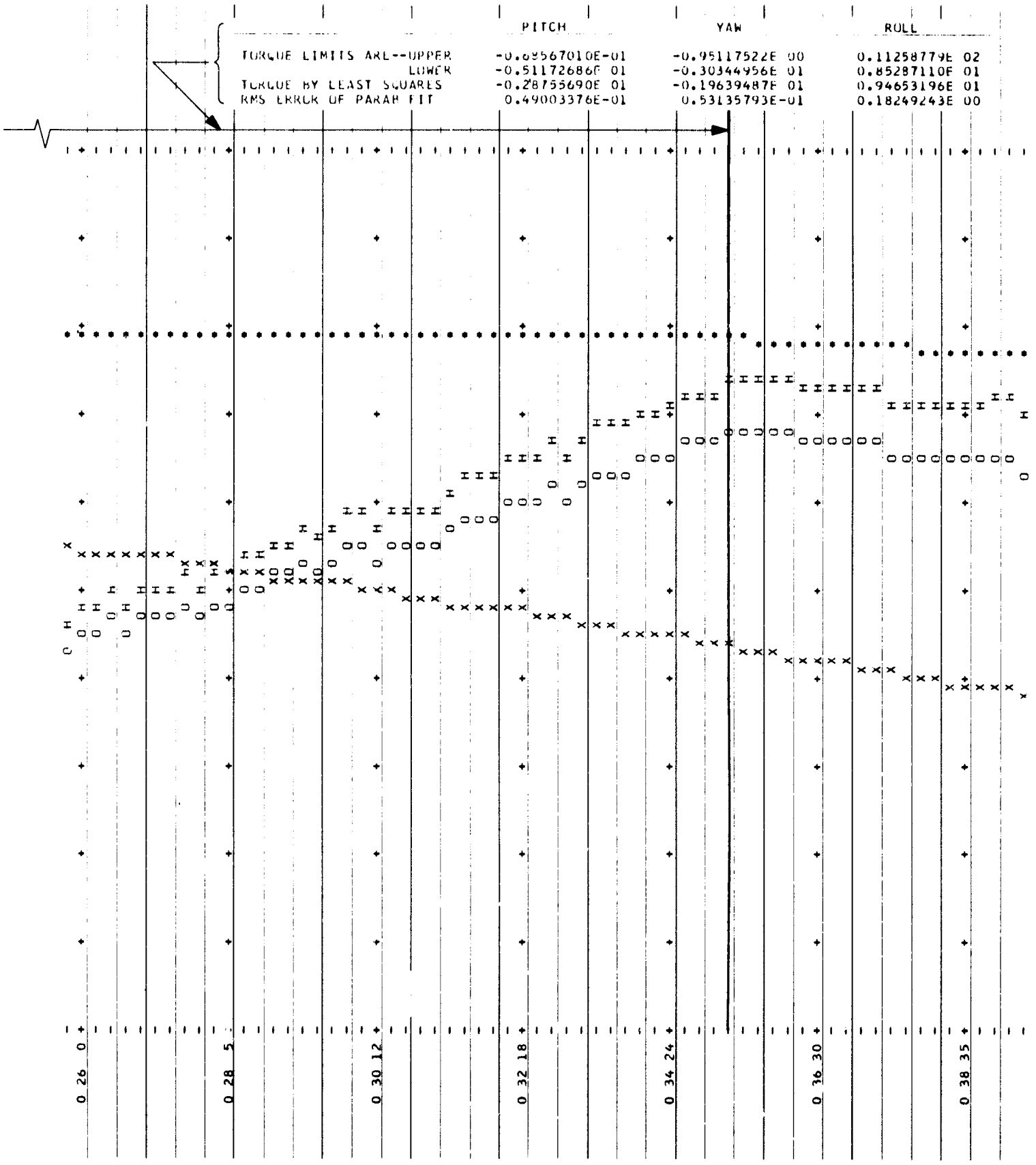
0 17 36
0 19 42
0 21 48
0 23 54


PITCH
YAW
ROLL
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LOWER -0.51172686E 01 -0.30344956E 01 0.85287110E 01
TORQUE BY LEAST SQUARES -0.28755690E 01 -0.19639487E 01 0.94653196E 01
RMS ERROR OF PARAB FIT 0.49003376E-01 0.53135793E-01 0.18249243E 00
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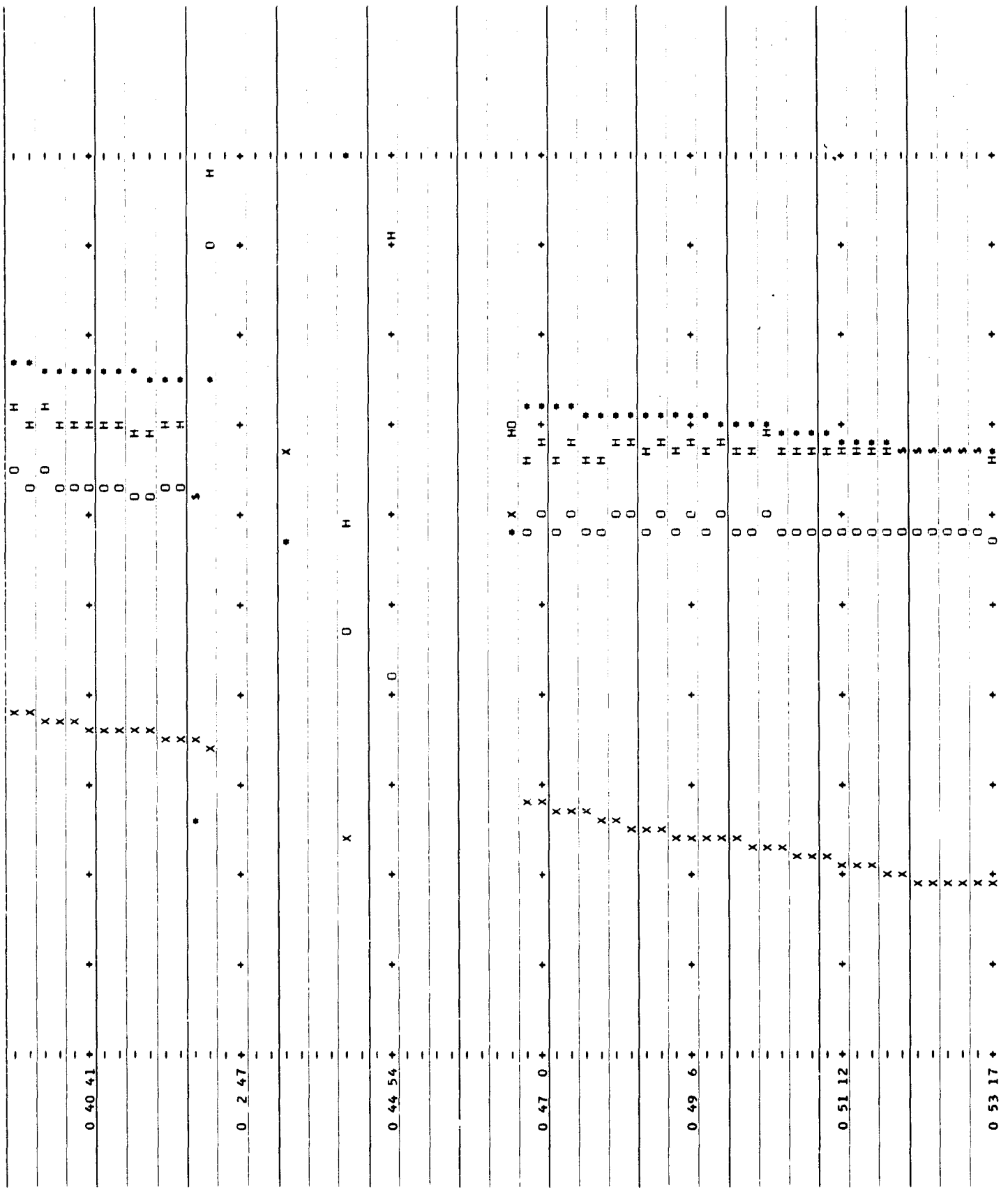
0 30 12
0 32 18
0 34 24
0 36 30
0 38 35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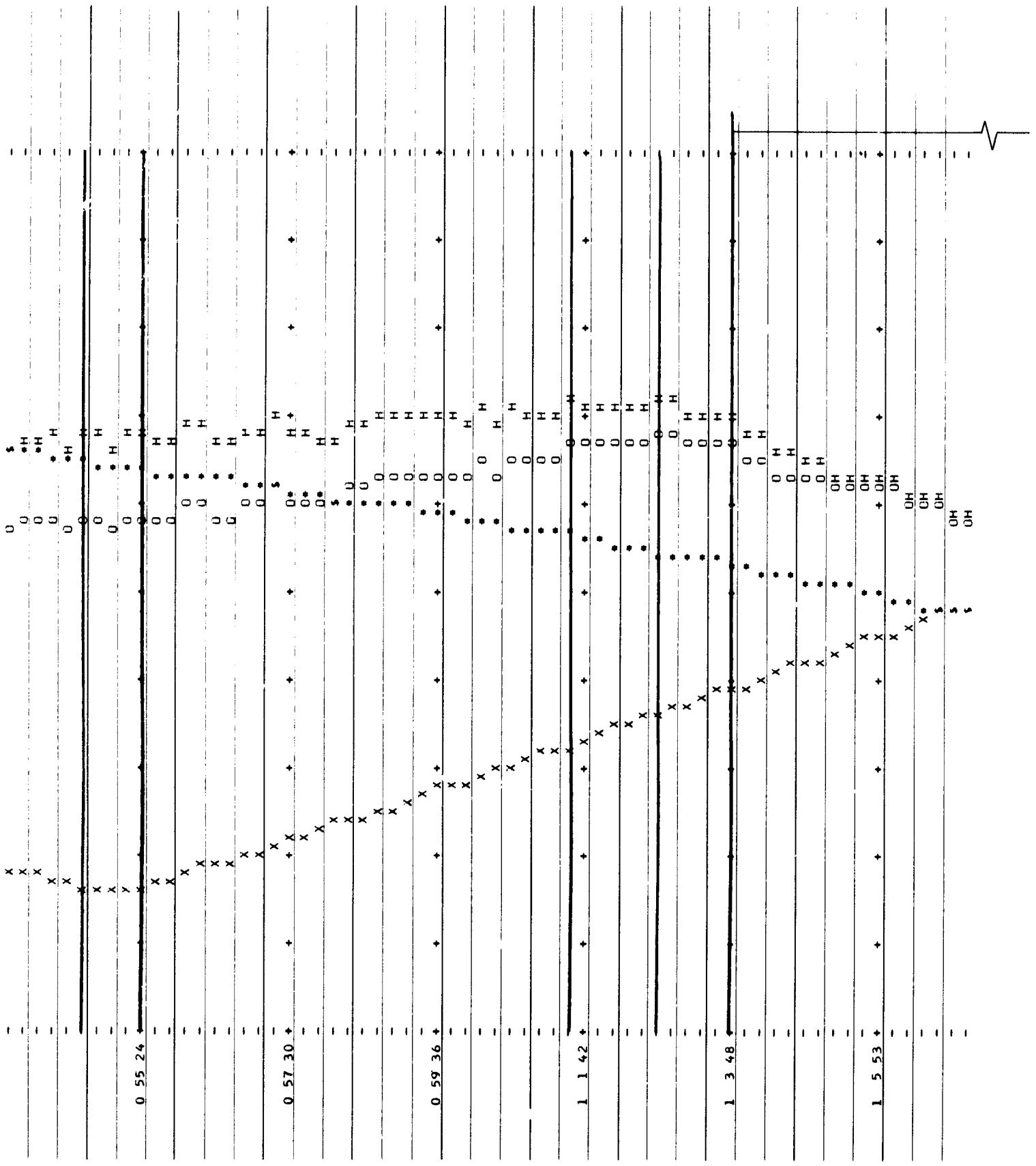
0 2 47
0 44 54
0 47 0
0 49 6
0 51 12
0 53 17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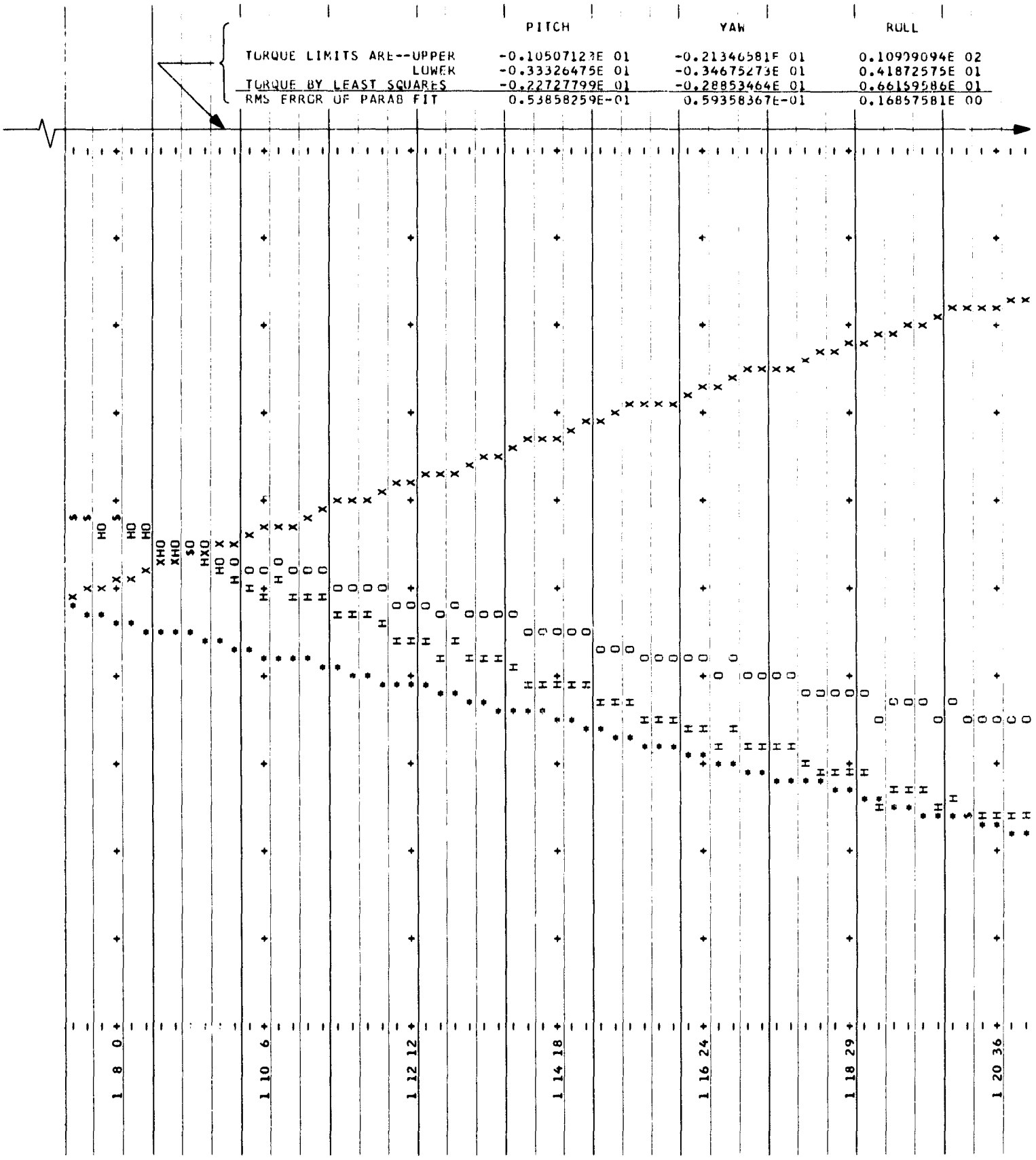
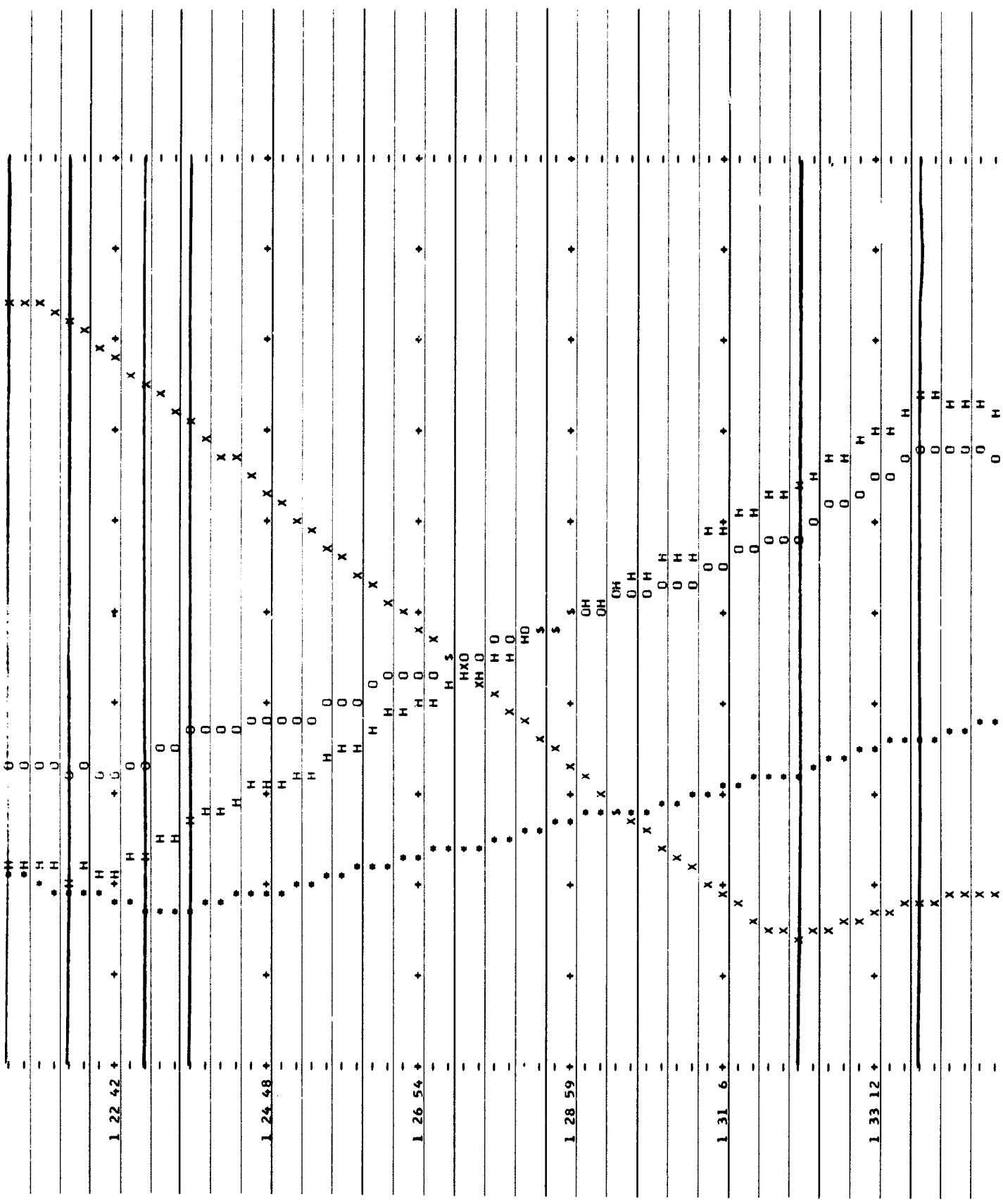
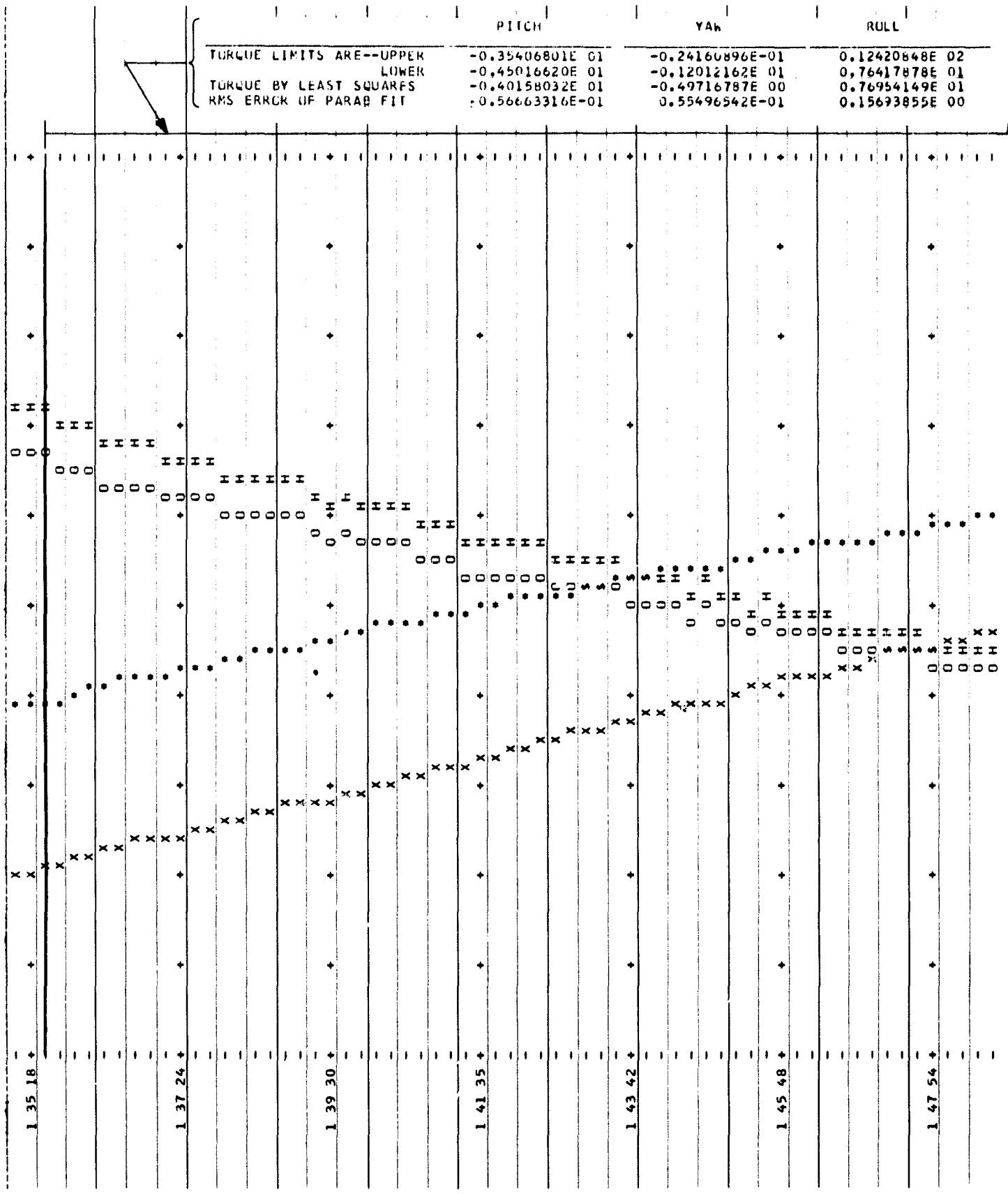
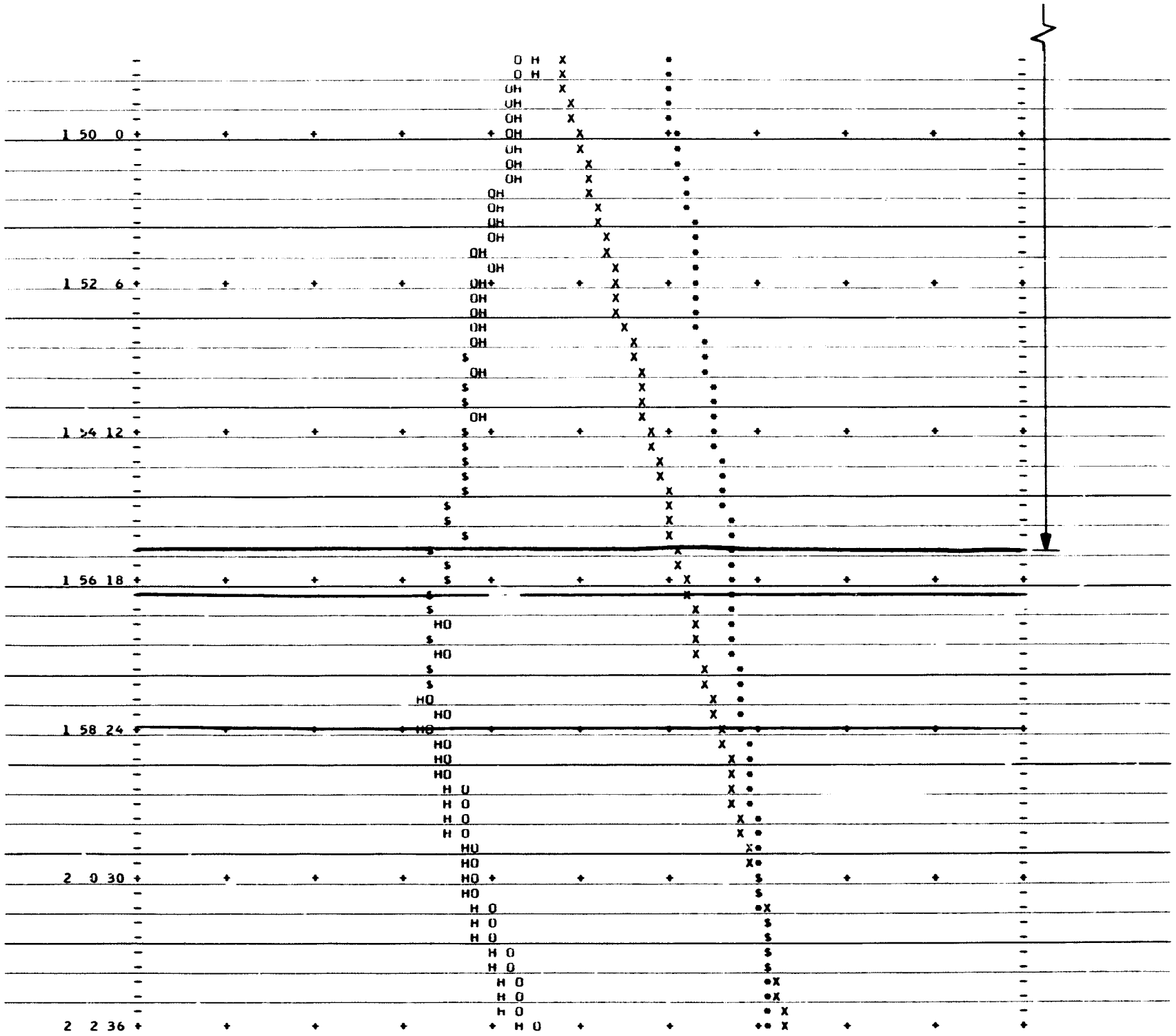
0 57 30
0 59 36
1 1 42
1 3 48
1 5 53


PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.10507123E 01 -0.21346581E 01 0.10999094E 02
LOWER -0.33326475E 01 -0.34675273E 01 0.41872575E 01
TORQUE BY LEAST SQUARES -0.22727799E 01 -0.28853464E 01 0.66159586E 01
RMS ERROR OF PARAB FIT 0.53858259E-01 0.59358367E-01 0.16857581E 00



	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.35406801E 01	-0.24160896E-01	0.12420848E 02
LOWER	-0.45016620E 01	-0.12012162E 01	0.76417878E 01
TORQUE BY LEAST SQUARES	-0.40158032E 01	-0.49716787E 00	0.76954149E 01
RMS ERROR OF PARAB FIT	0.56663316E-01	0.55496542E-01	0.15693855E 00

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1 54 12
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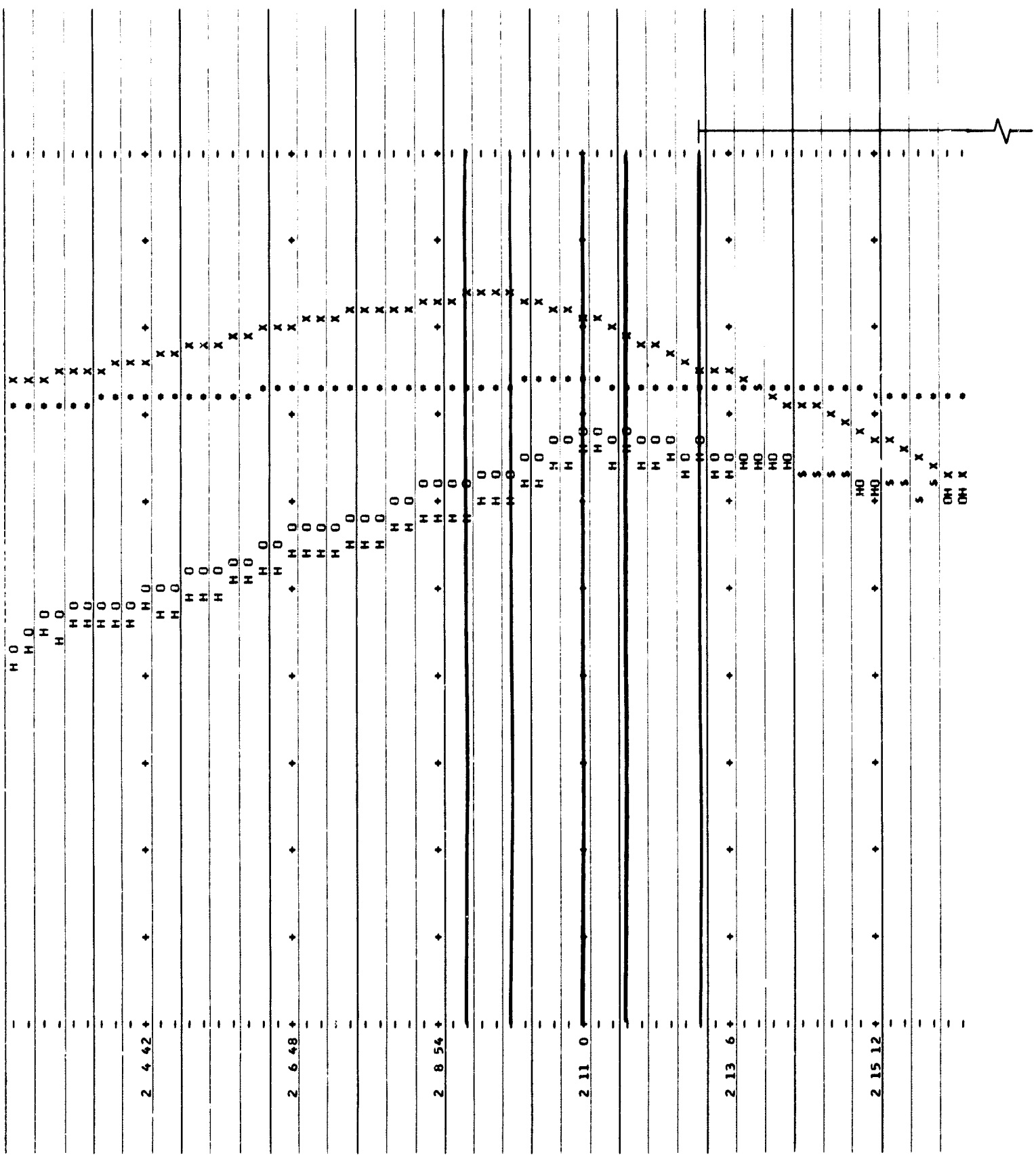
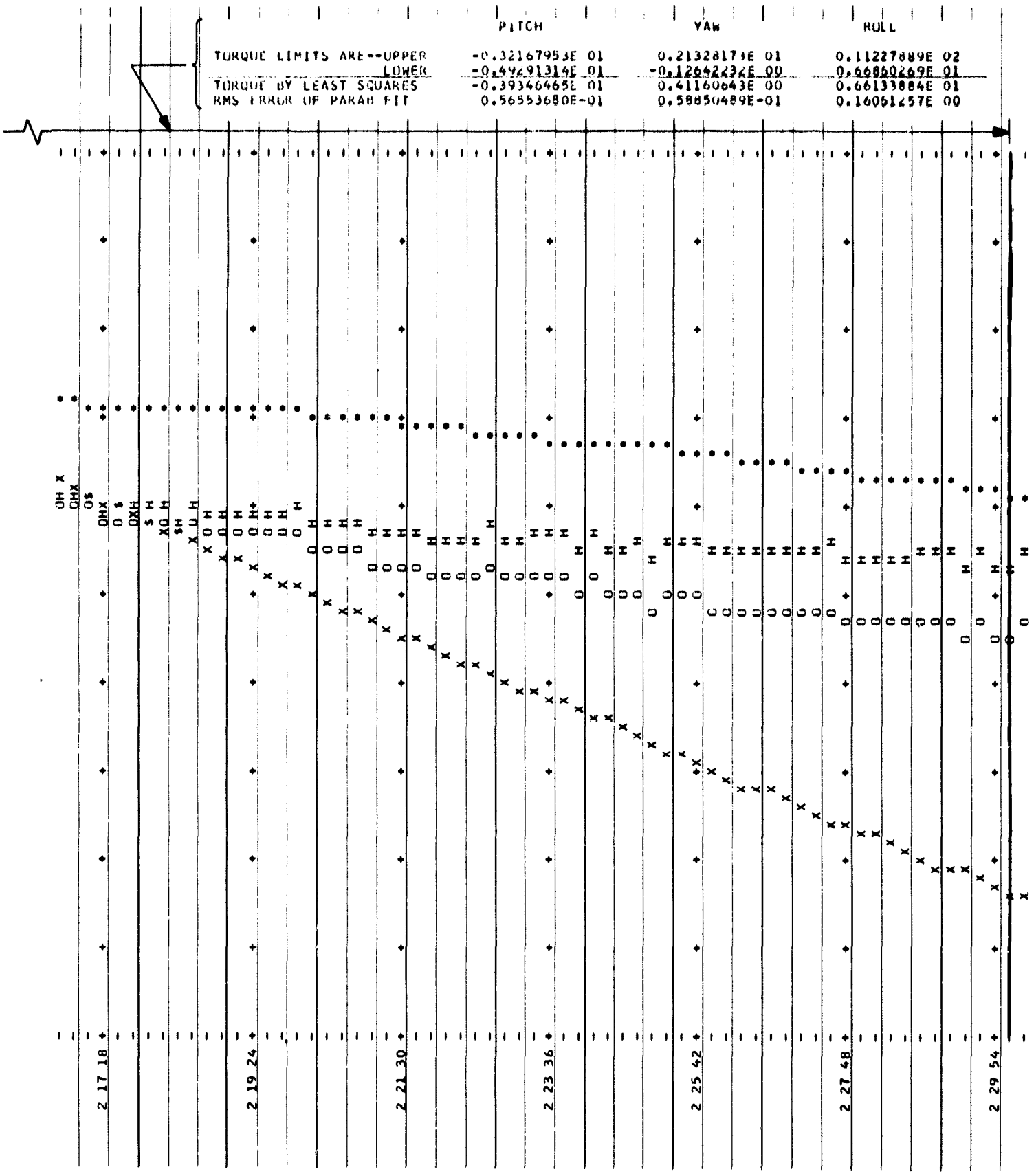
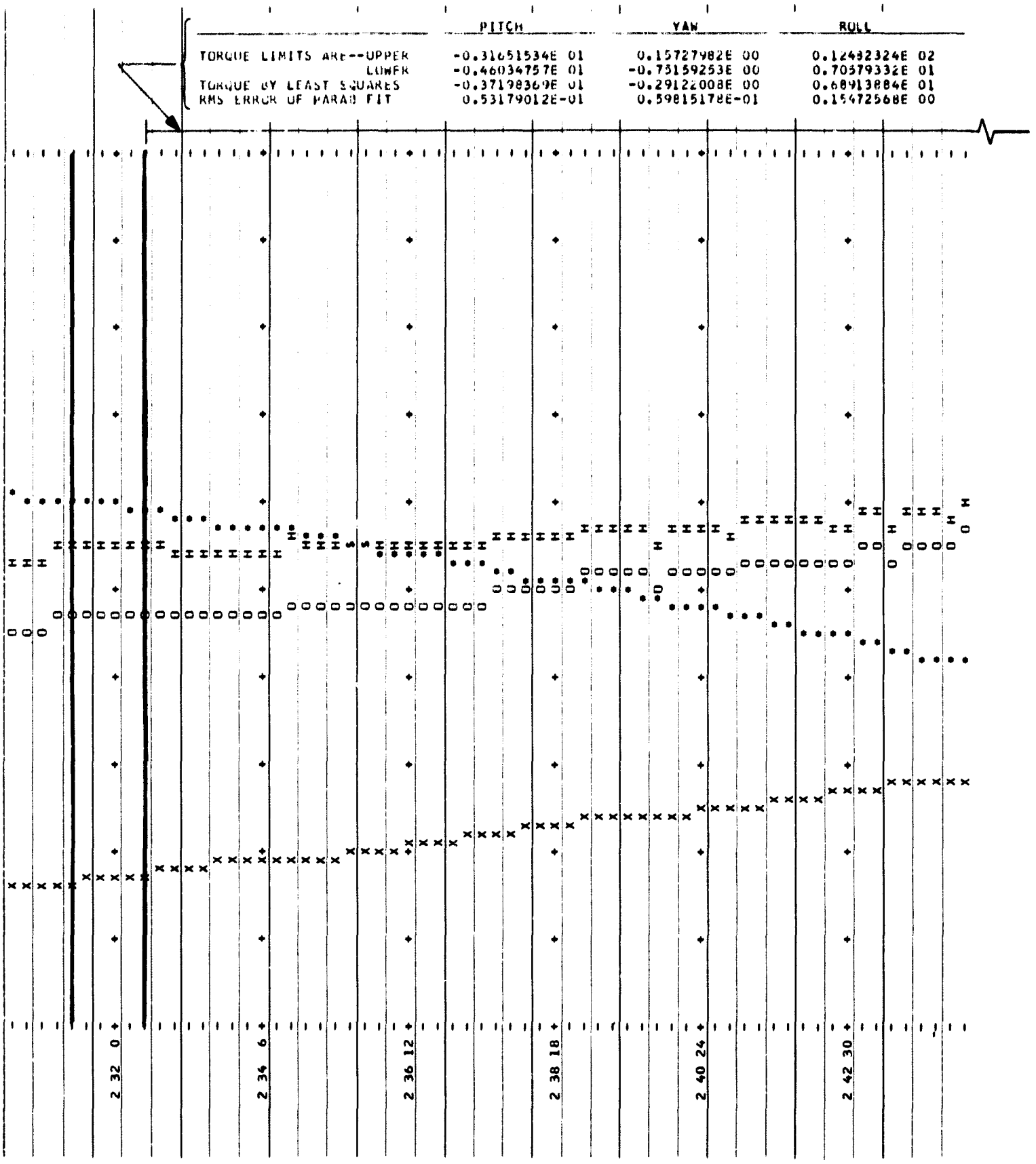
2 2 36




PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.32167953E 01 0.21328173E 01 0.11227889E 02
LOWER -0.49691314E 01 -0.12642234E 00 0.66860269E 01
TORQUE BY LEAST SQUARES -0.39346465E 01 0.41160643E 00 0.66133884E 01
RMS ERROR OF PARAB FIT 0.56553680E-01 0.58850489E-01 0.16051457E 00
2 17 18
2 19 24
2 21 30
2 23 36
2 25 42
2 27 48
2 29 54


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.31651534E 01 0.15727982E 00 0.12482324E 02
LOWER -0.46034757E 01 -0.73159253E 00 0.70579332E 01
TORQUE BY LEAST SQUARES -0.37198369E 01 -0.29122008E 00 0.68913884E 01
RMS ERROR OF PARAB FIT 0.53179012E-01 0.59815178E-01 0.15472568E 00
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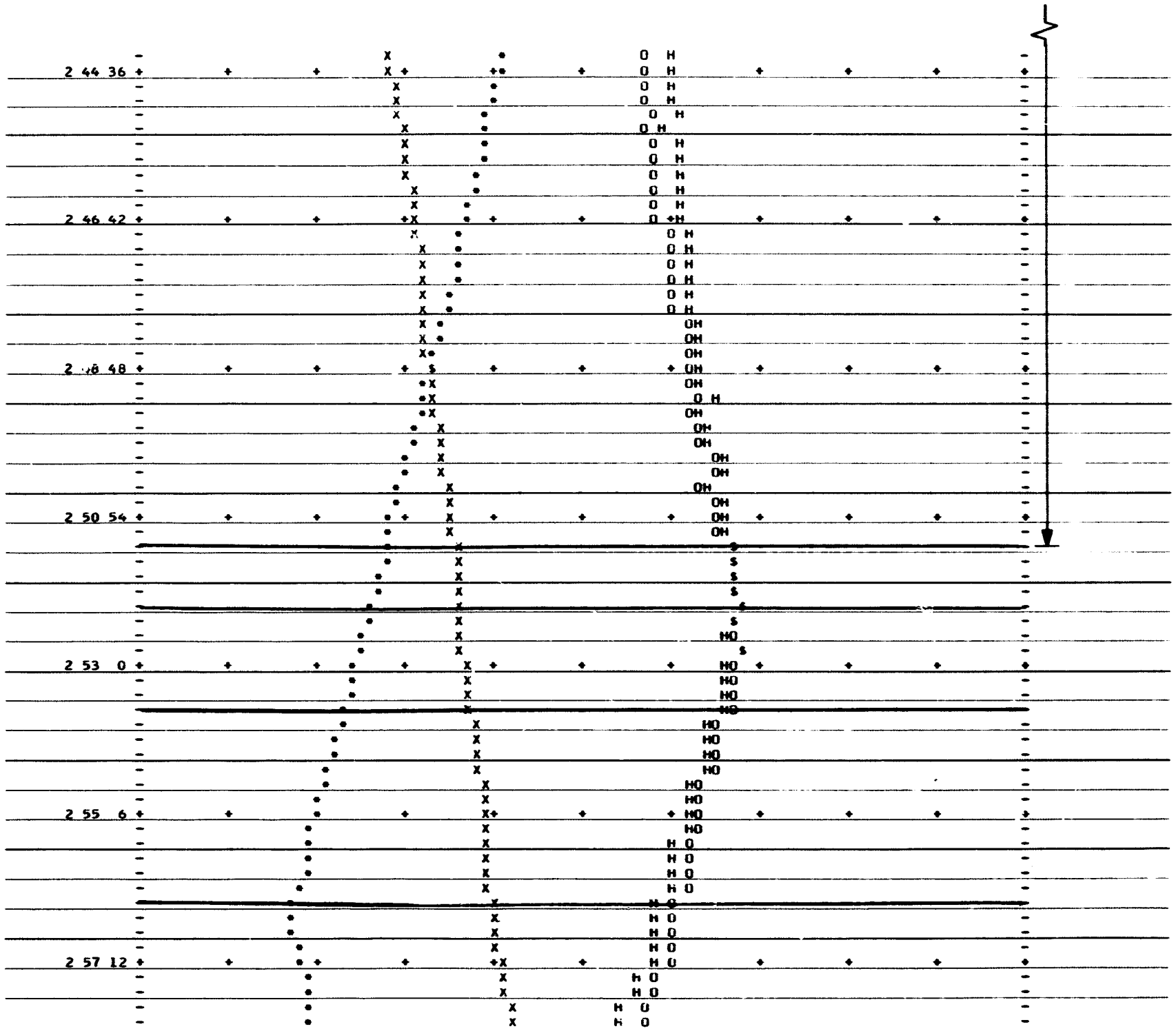
2 34 6
2 36 12
2 38 18
2 40 24
2 42 30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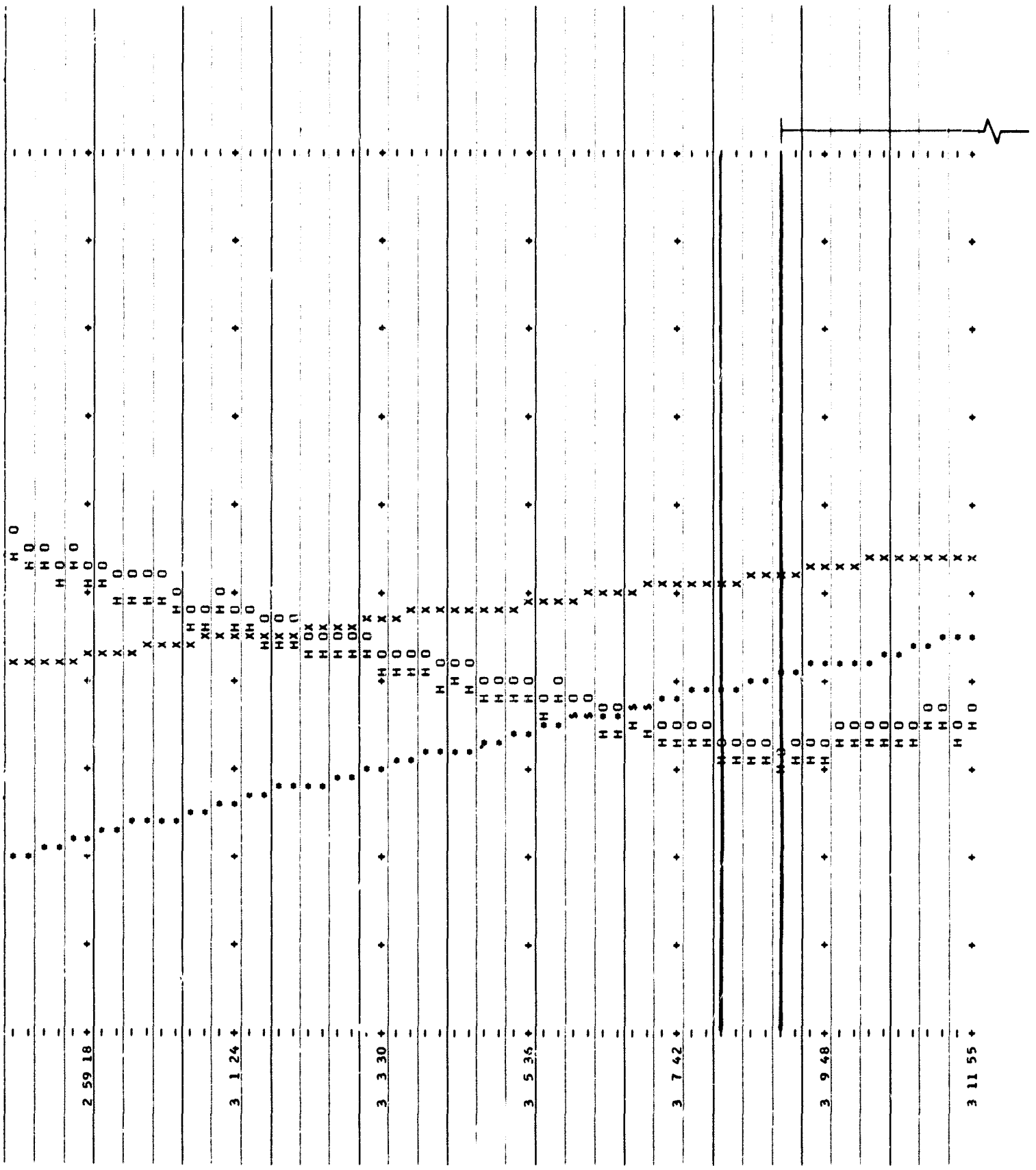
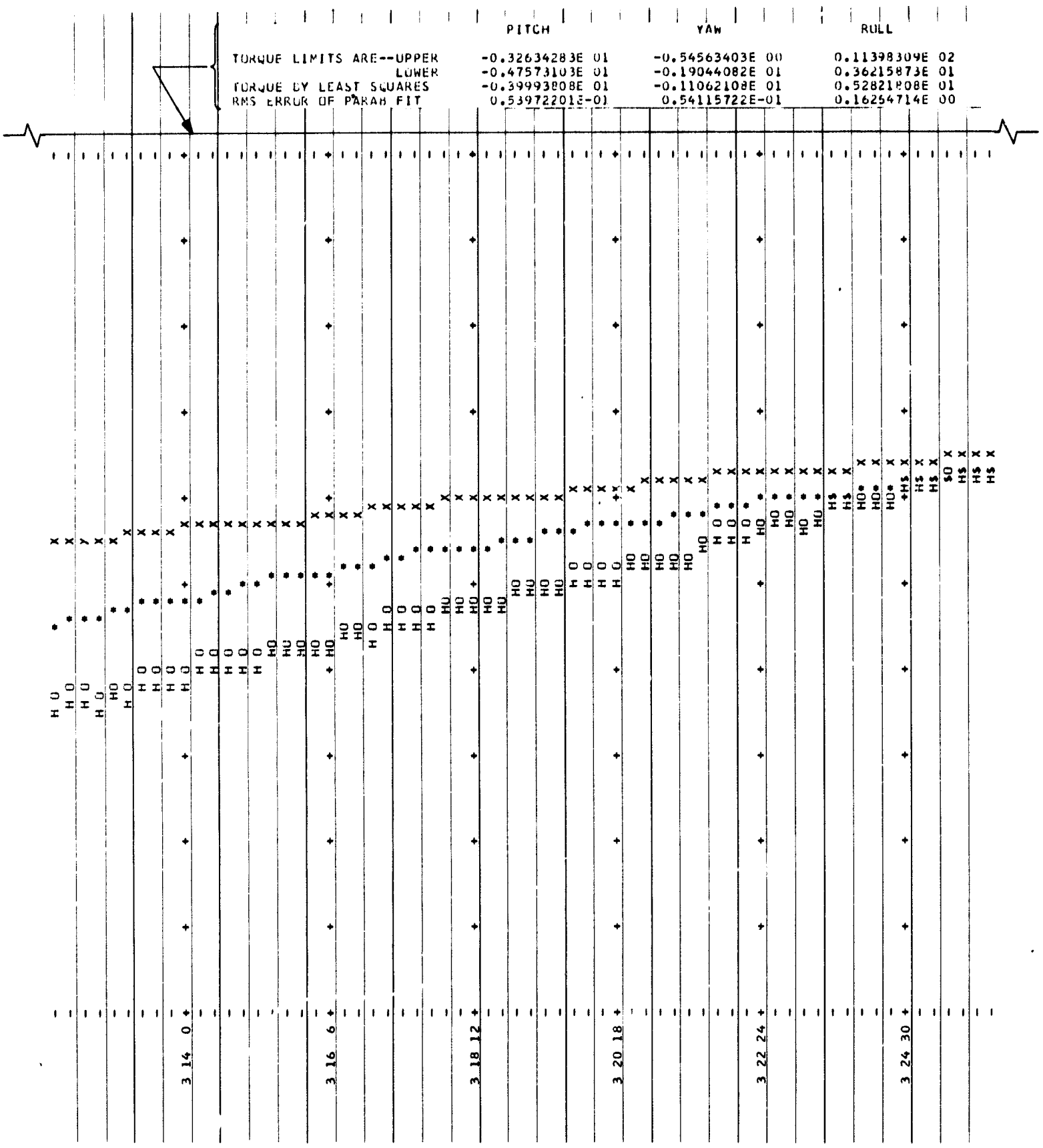
2 48 48
2 50 54
2 53 0
2 55 6
2 57 12




PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.32634283E 01 -0.54563403E 00 0.113983094E 02
LOWER -0.47573103E 01 -0.19044082E 01 0.36215873E 01
TORQUE BY LEAST SQUARES -0.39993808E 01 -0.11062108E 01 0.52821808E 01
RMS ERROR OF PARAB FIT 0.539722013E-01 0.54115722E-01 0.16254714E 00
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3 16 6
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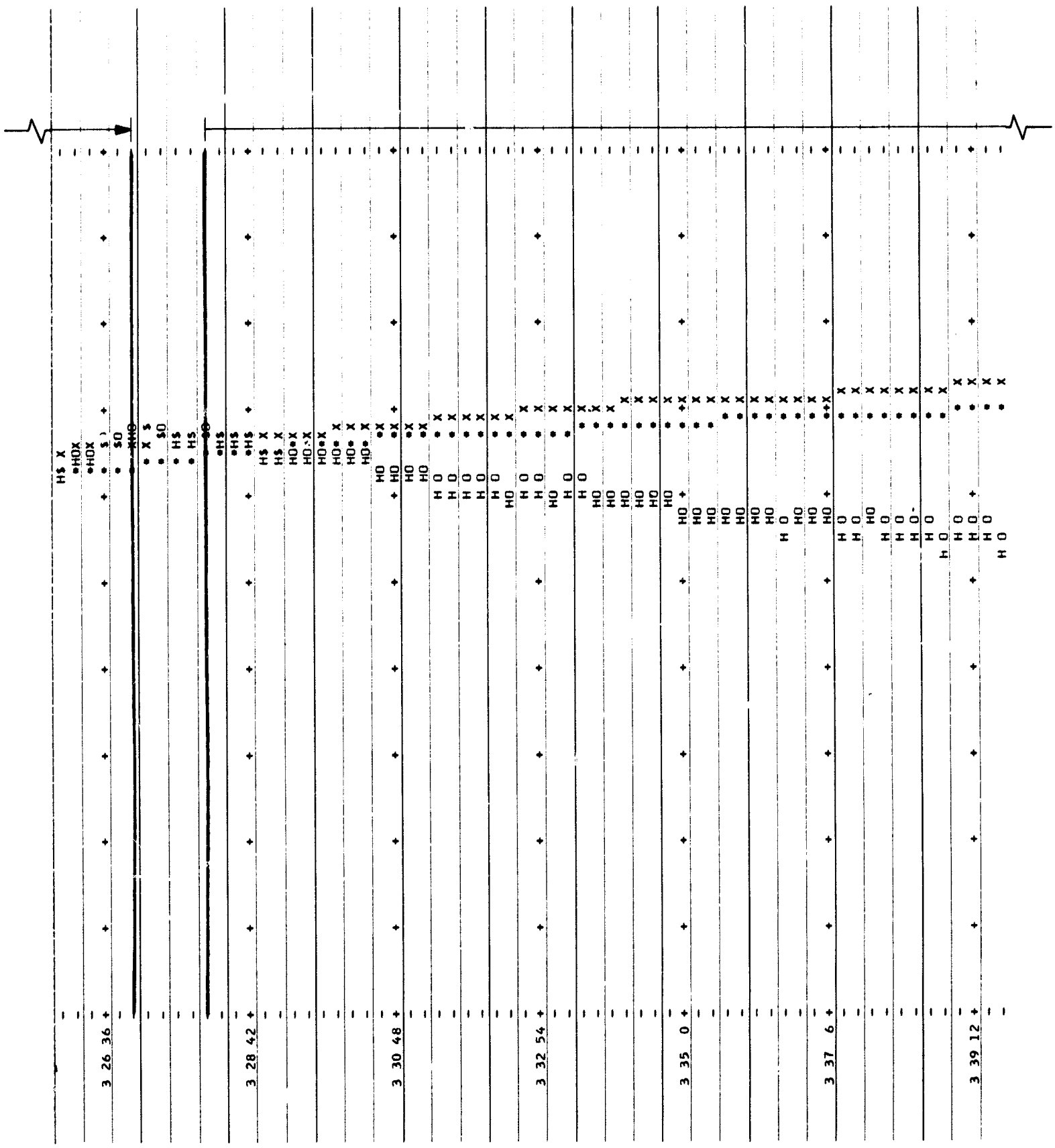
3 22 24
3 24 30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3 35 0
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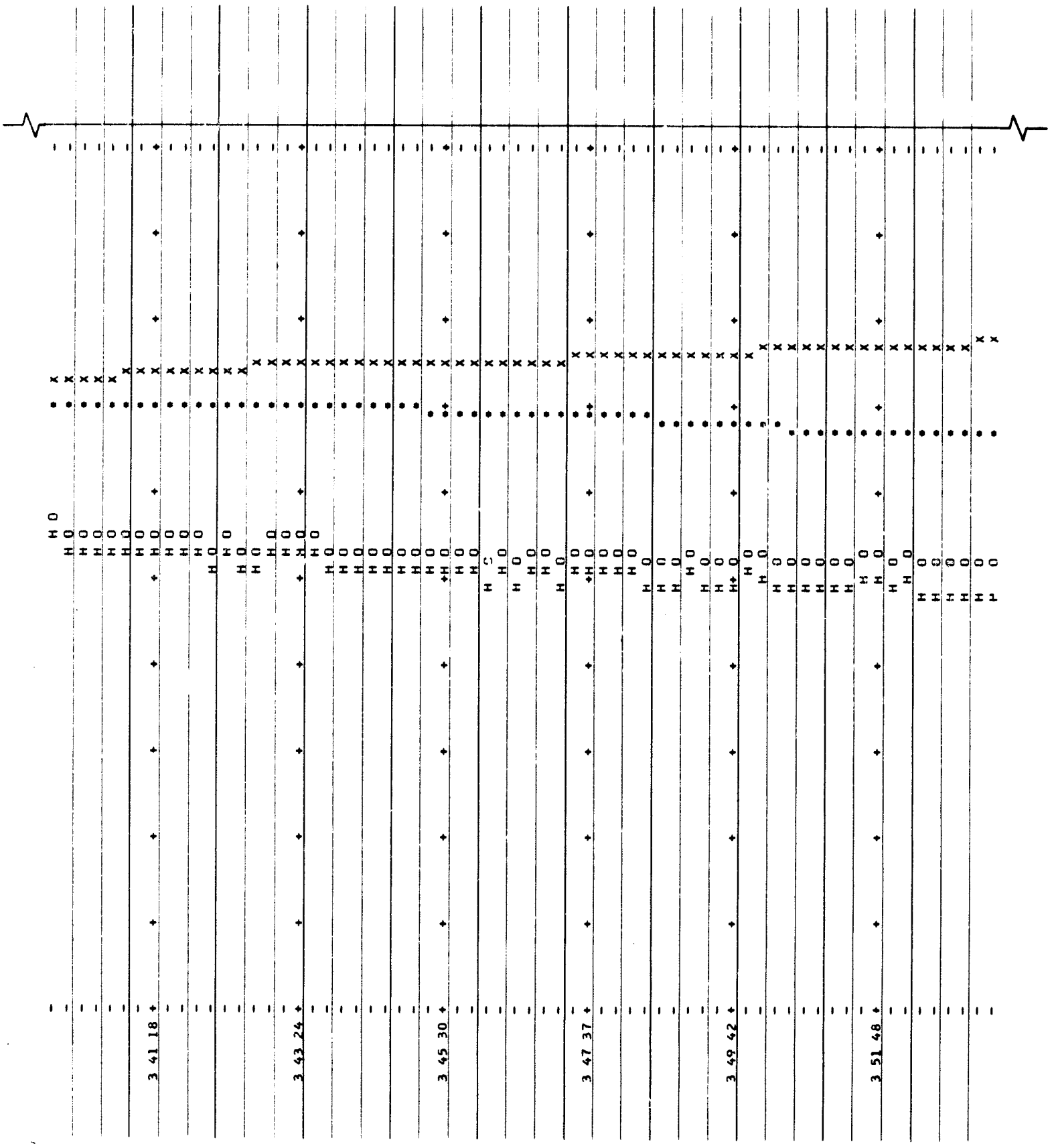
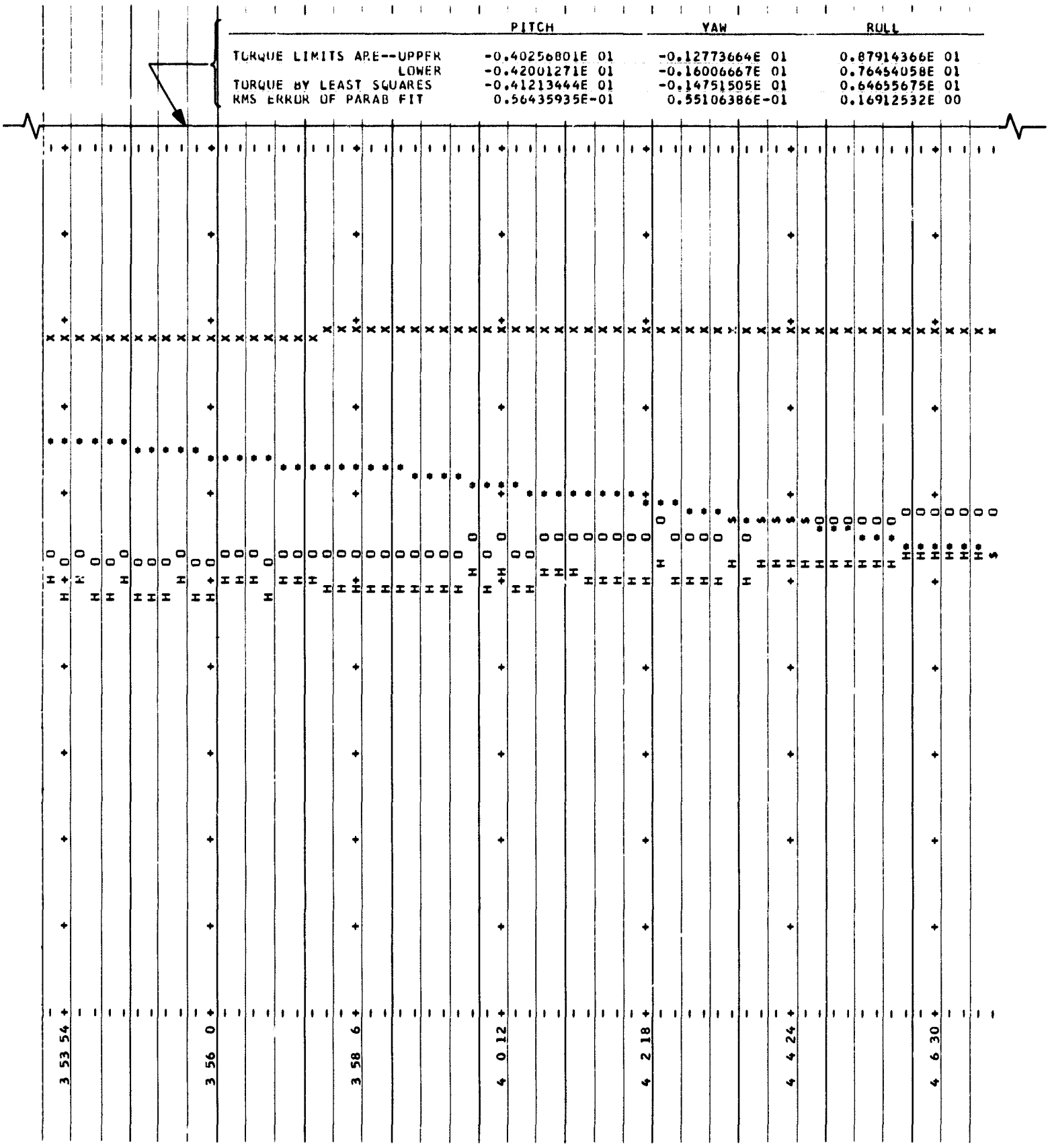
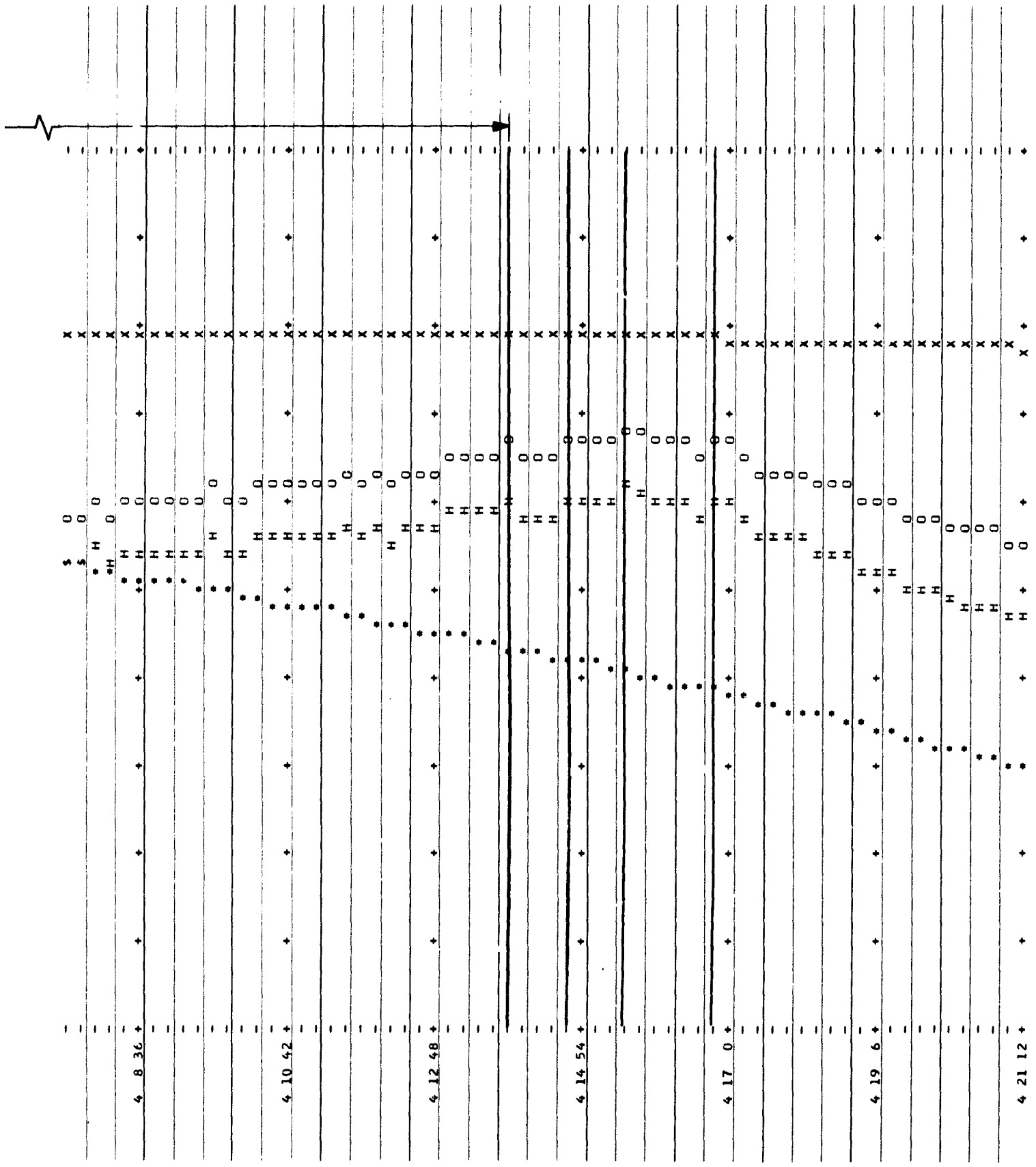
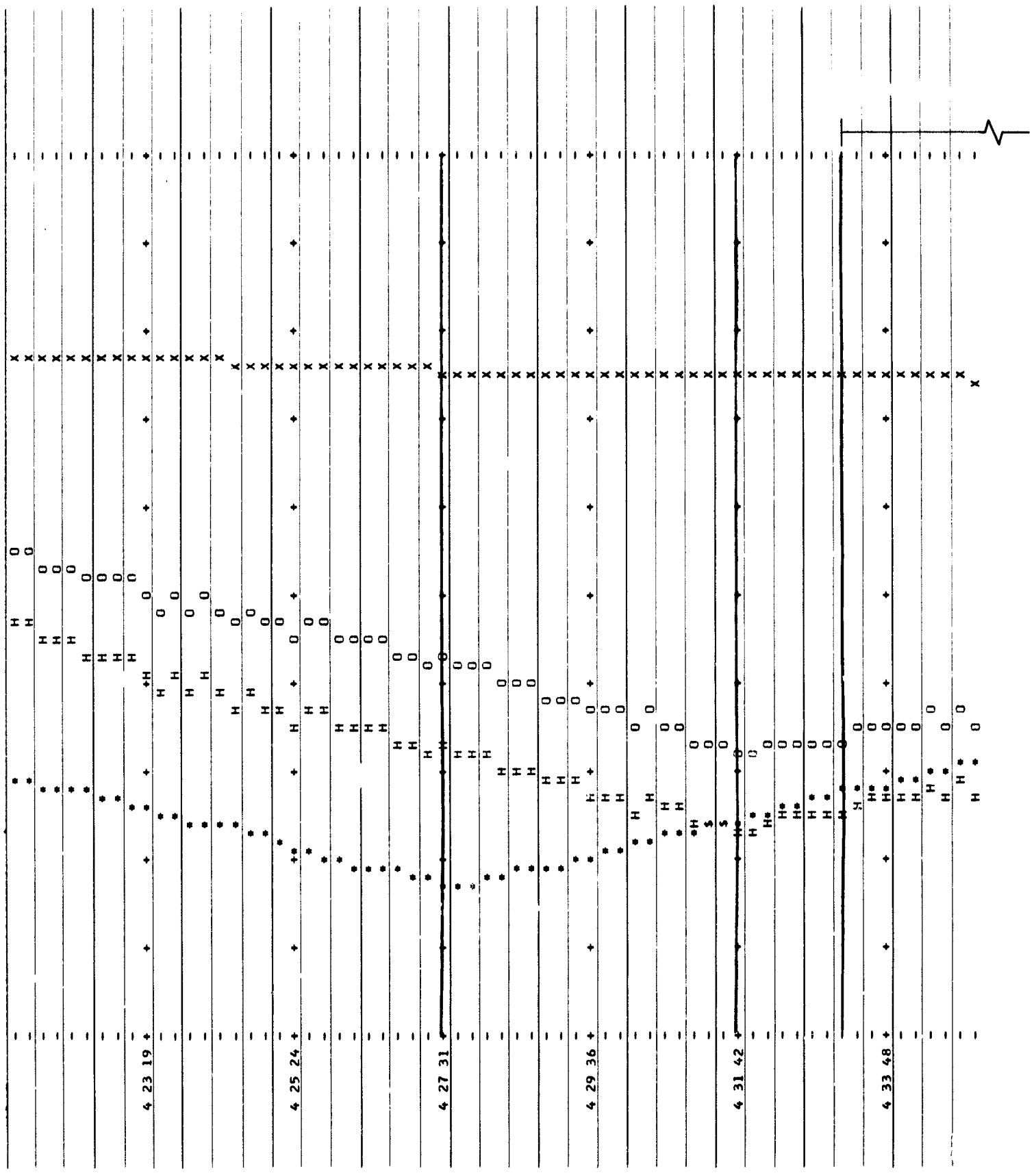

3 41 18
3 43 24
3 45 30
3 47 37
3 49 42
3 51 48

	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.40256801E 01	-0.12773664E 01	0.87914366E 01
LOWER	-0.42001271E 01	-0.16006667E 01	0.76454058E 01
TORQUE BY LEAST SQUARES	-0.41213444E 01	-0.14751505E 01	0.64655675E 01
RMS ERROR OF PARAB FIT	0.56435935E-01	0.55106386E-01	0.16912532E 00



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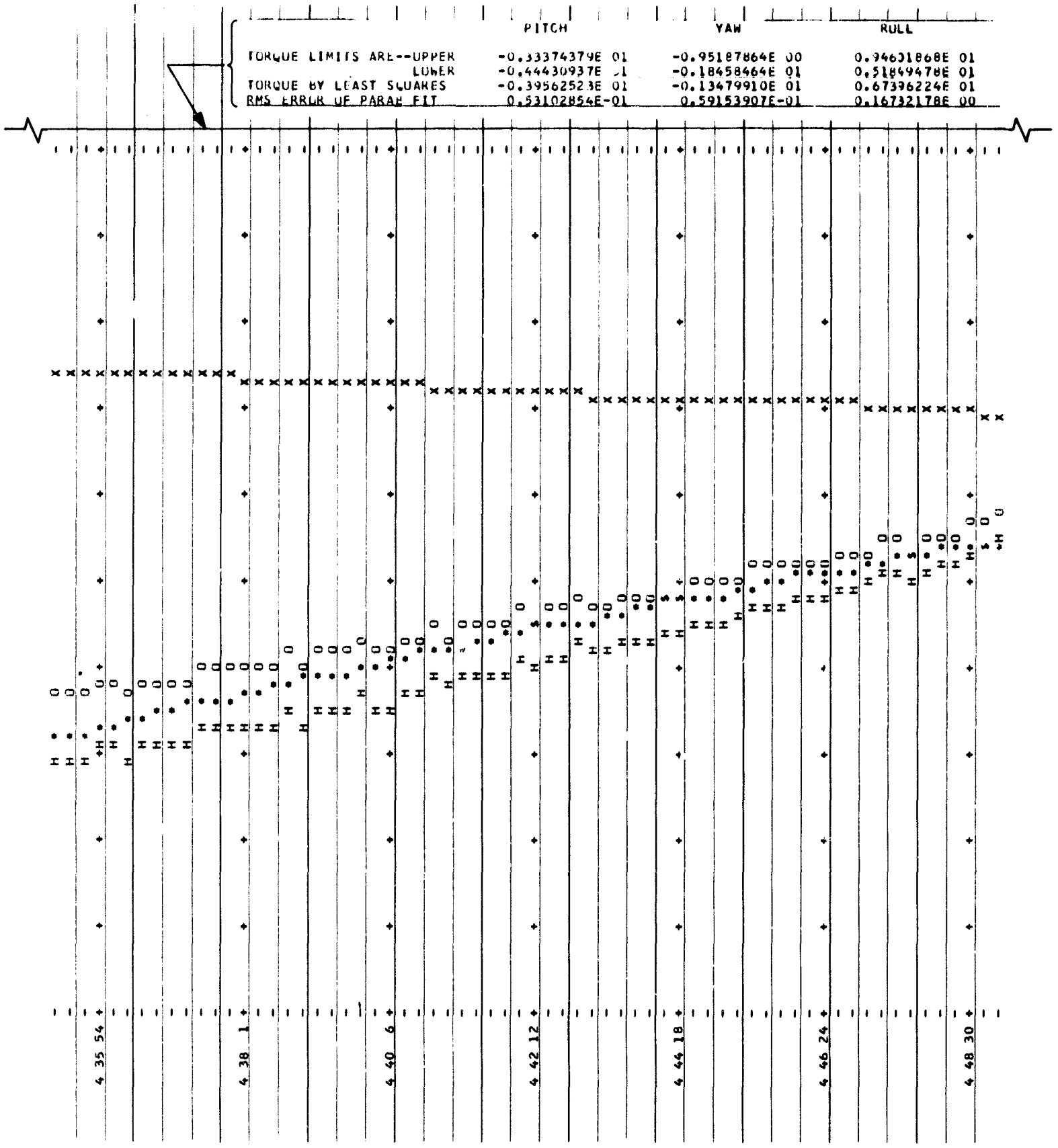
4 33 48


PITCH
YAW
ROLL
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LOWER -0.44430937E 01 -0.18458464E 01 0.51849478E 01
TORQUE BY LEAST SQUARES -0.39562523E 01 -0.13479910E 01 0.67396224E 01
RMS ERROR OF PARAB FIT 0.53102854E-01 0.59153907E-01 0.16732178E 00
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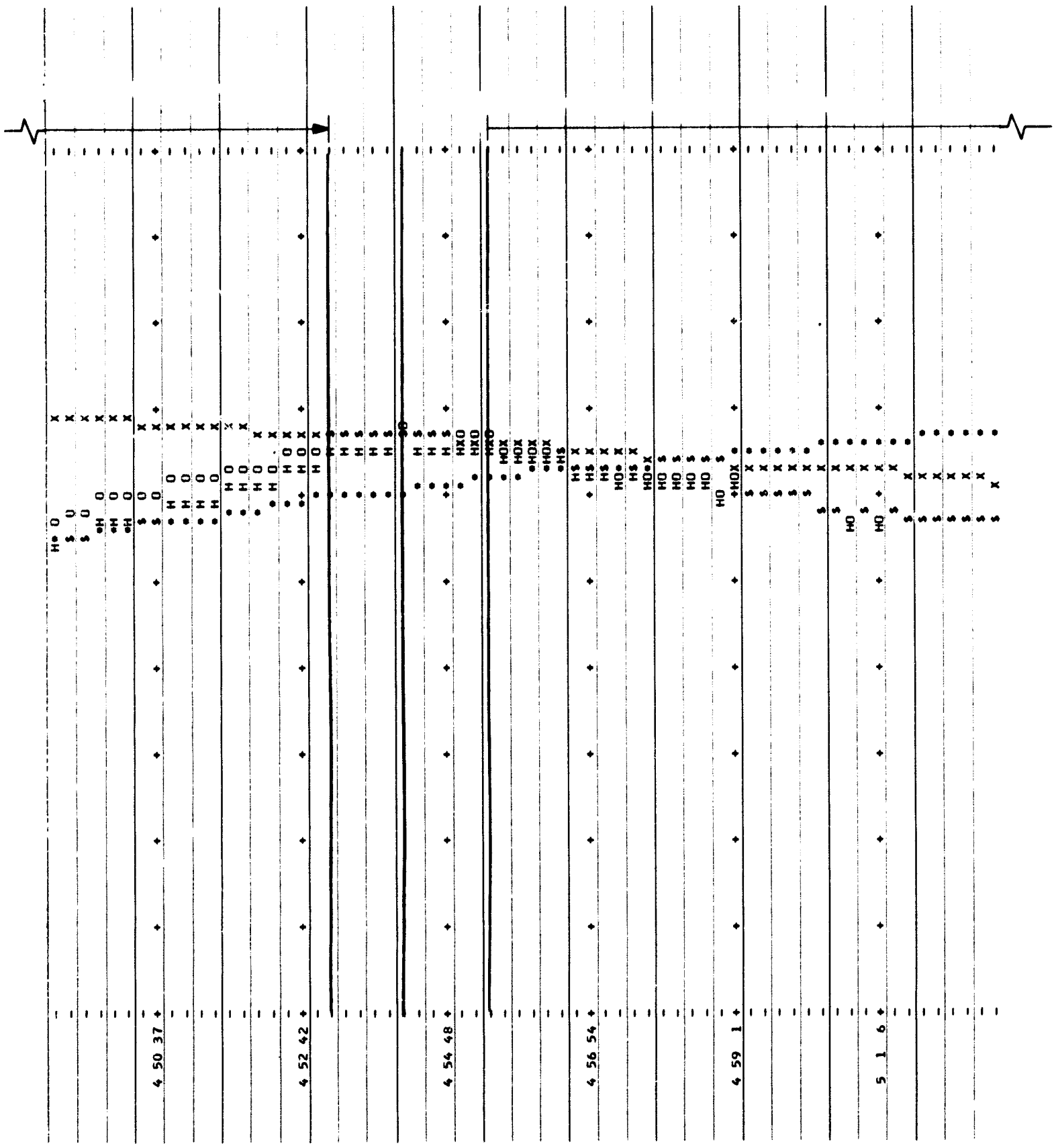
4 40 6
4 42 12
4 44 18
4 46 24
4 48 30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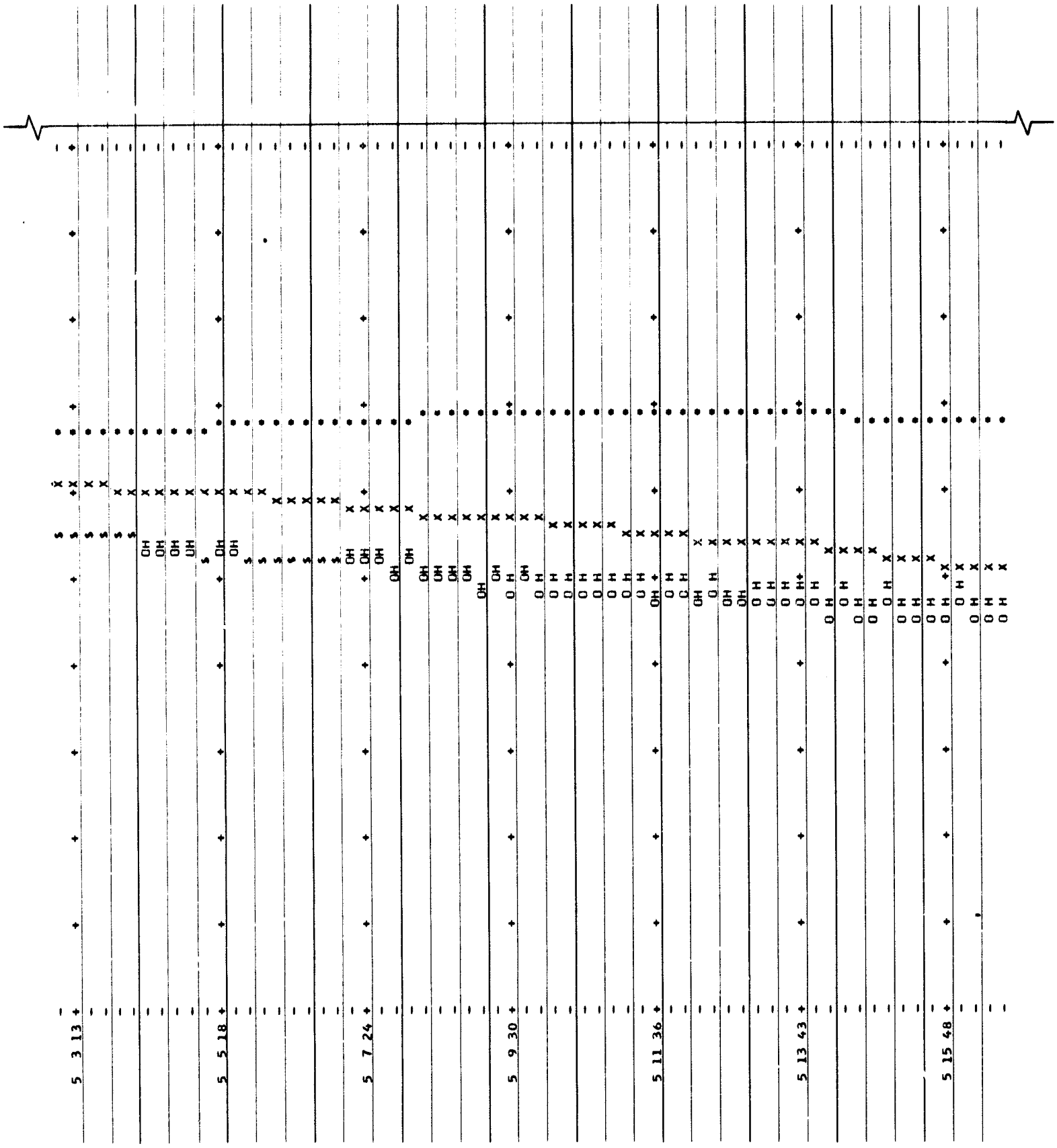
5 1 6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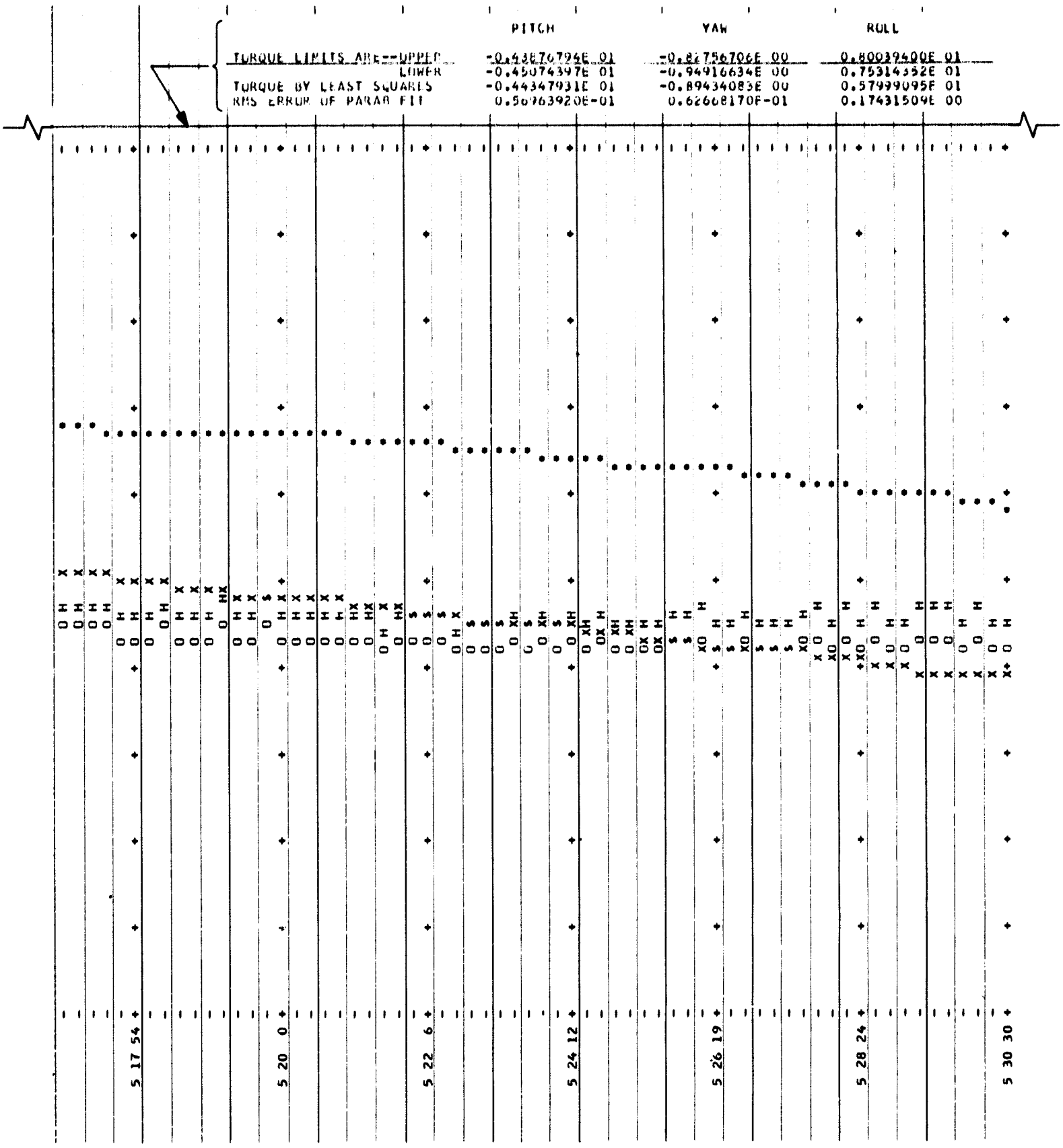
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.43870794E 01 -0.82756706E 00 0.80039400E 01
LOWER -0.45074397E 01 -0.94916634E 00 0.75314352E 01
TORQUE BY LEAST SQUARES -0.44347931E 01 -0.89434083E 00 0.57999095E 01
RMS ERROR OF PARAB FIT 0.5e963920E-01 0.62608170E-01 0.174315094E 00
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5 26 19
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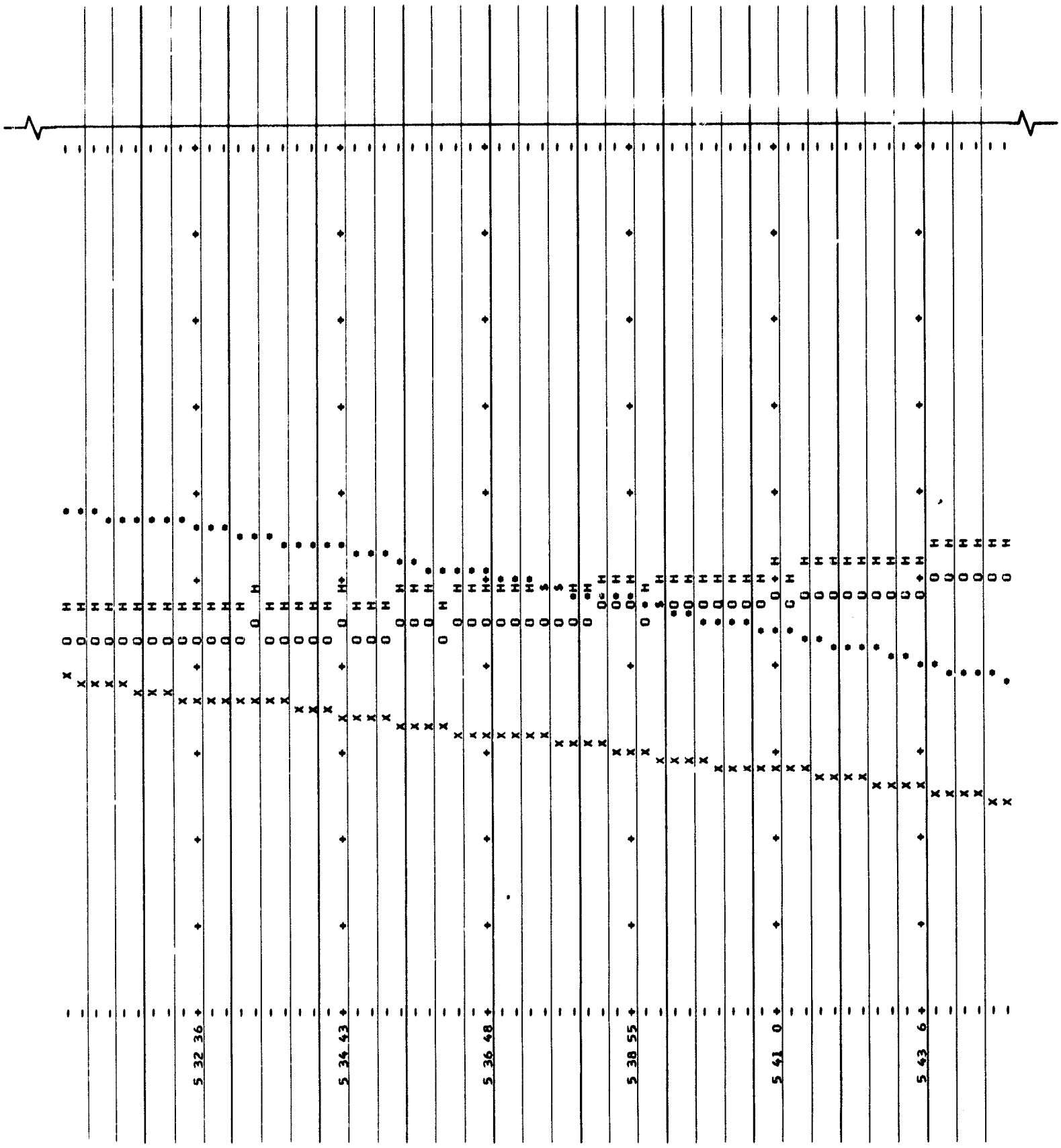

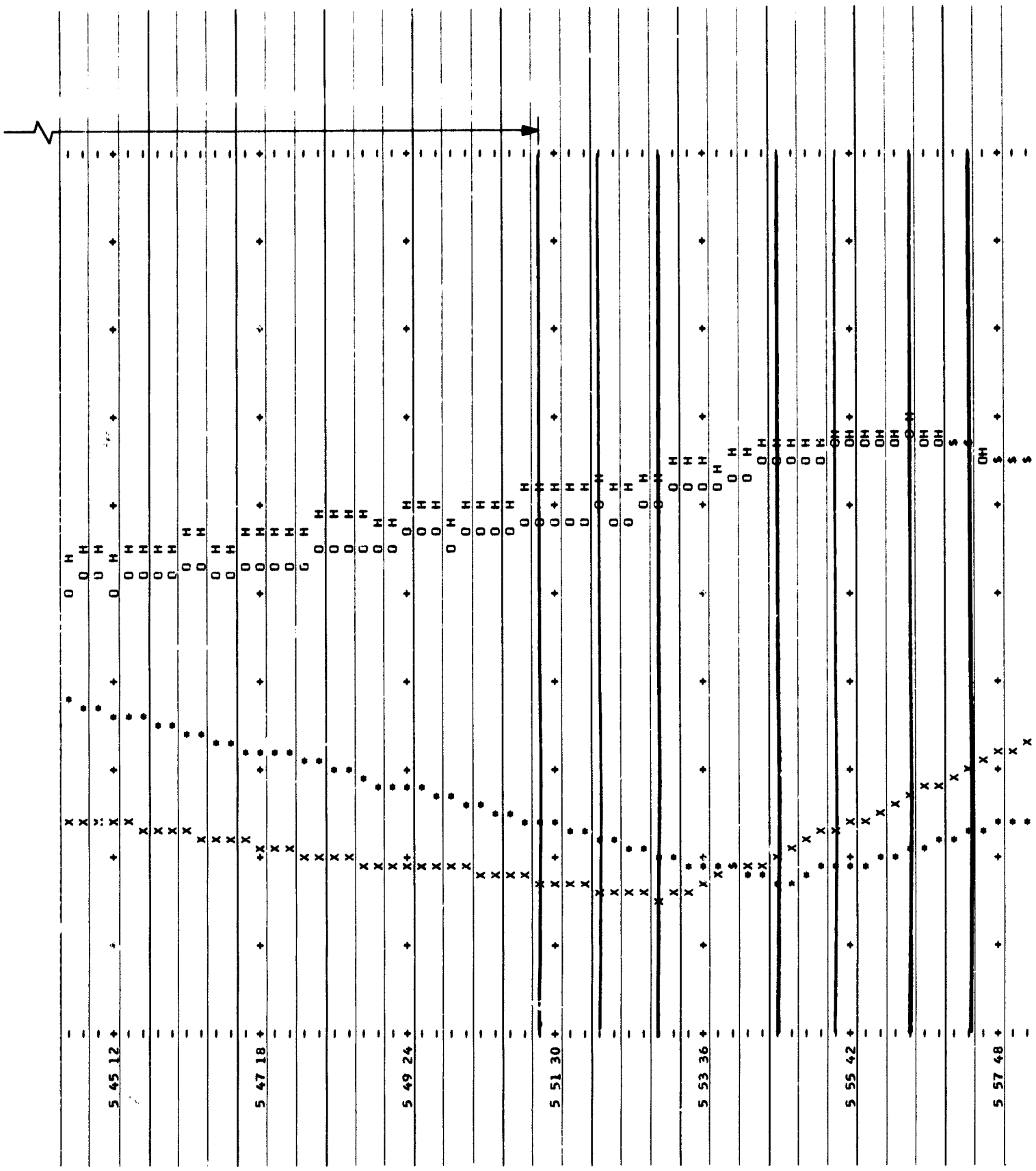
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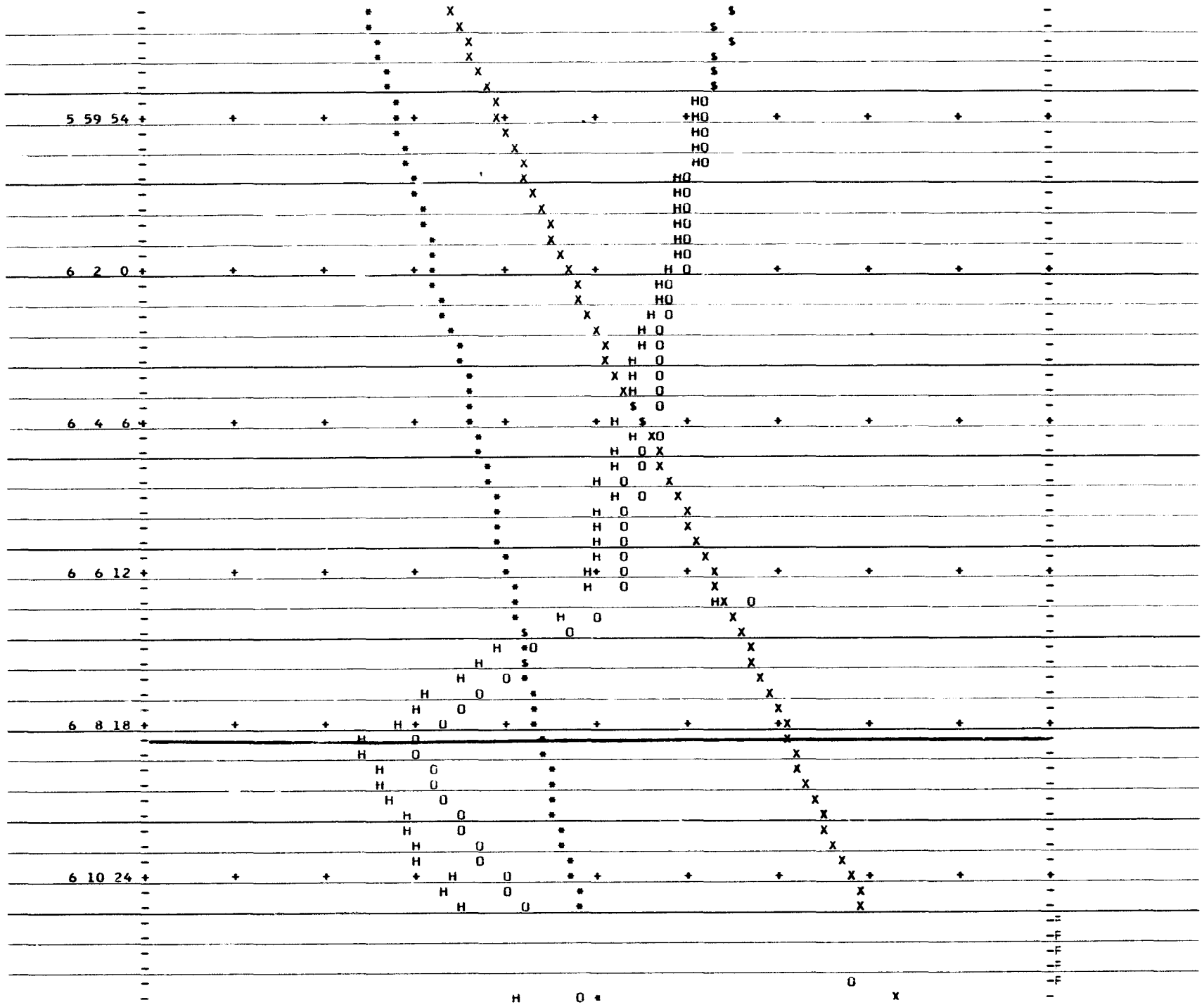
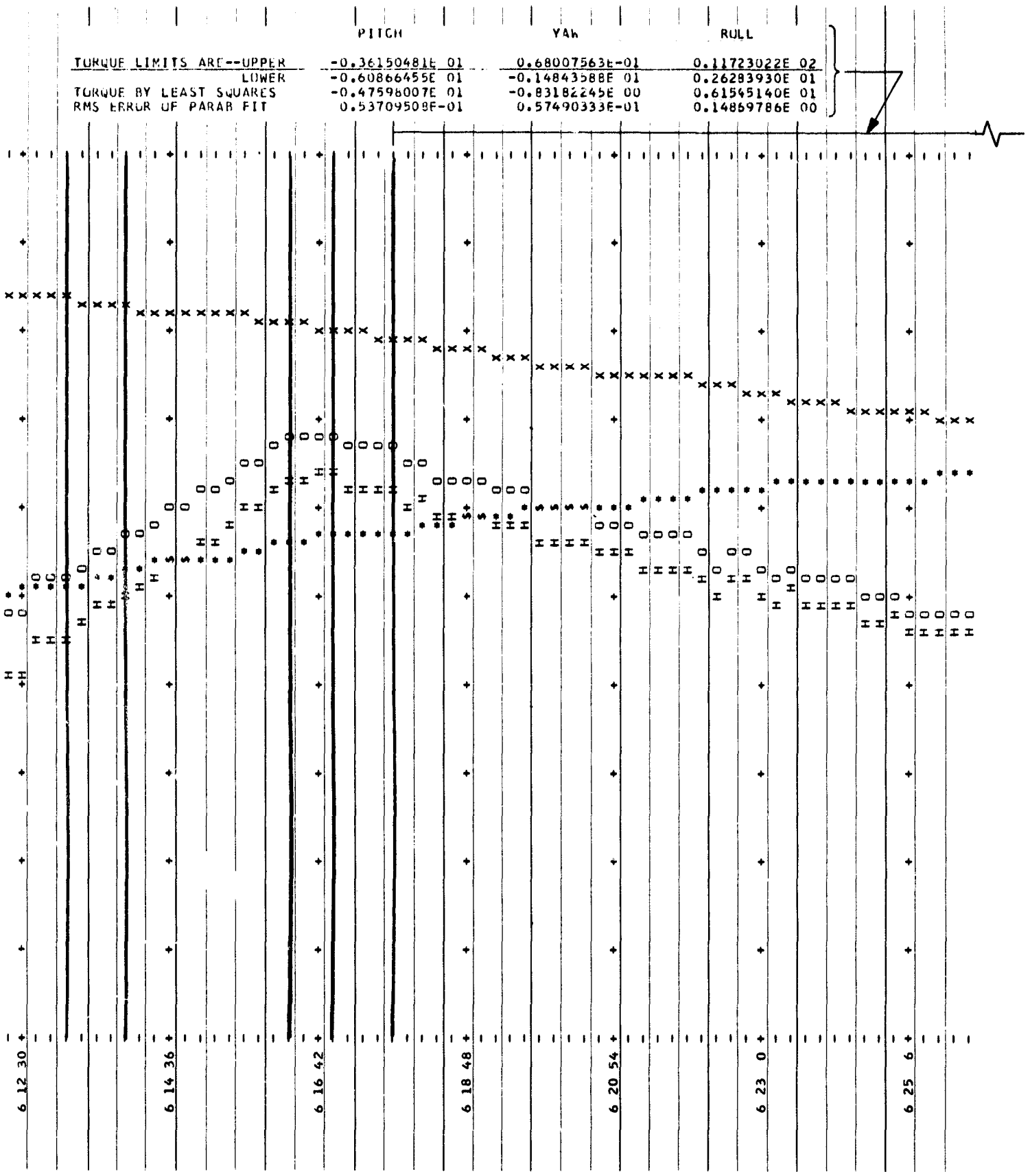
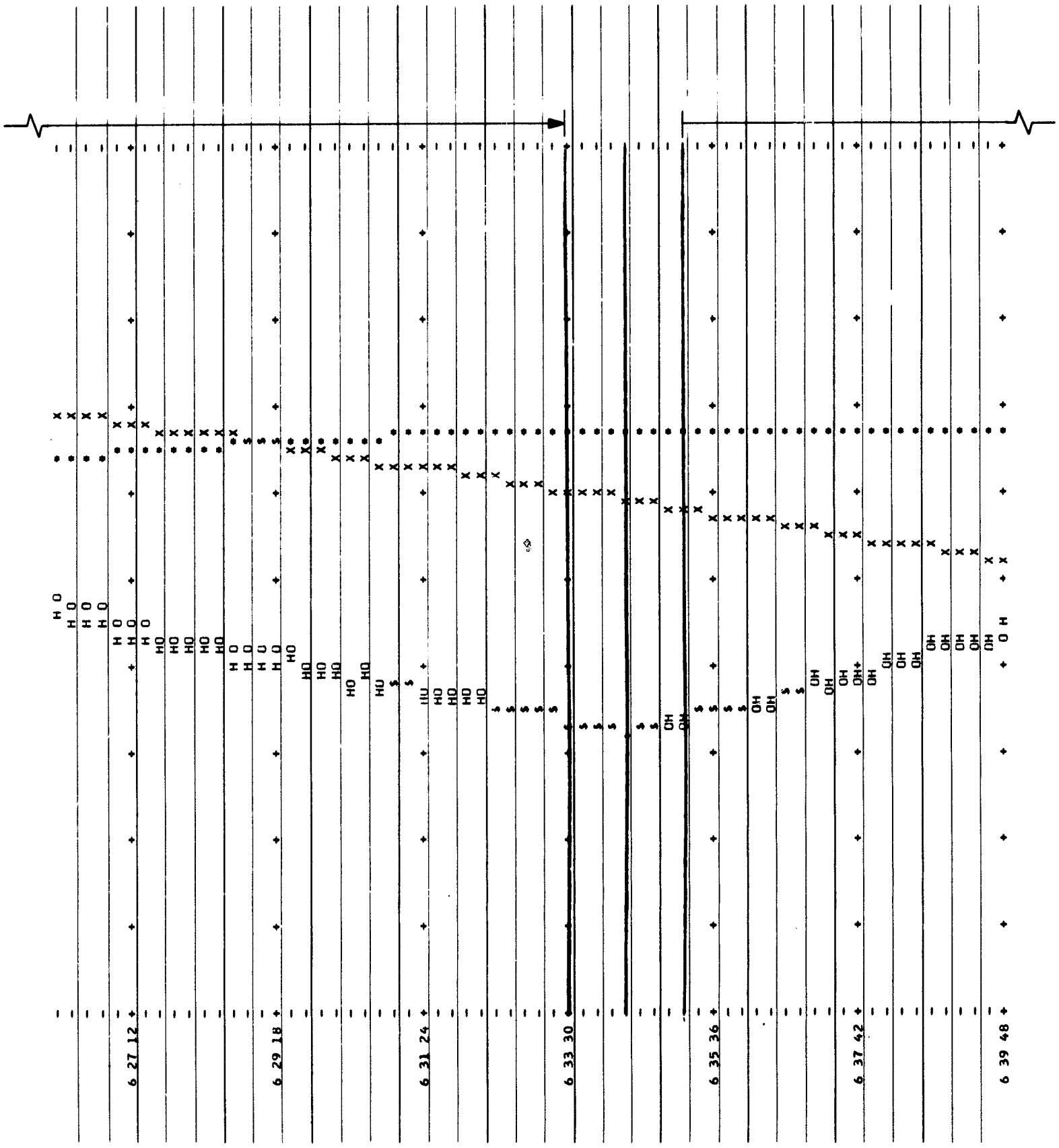
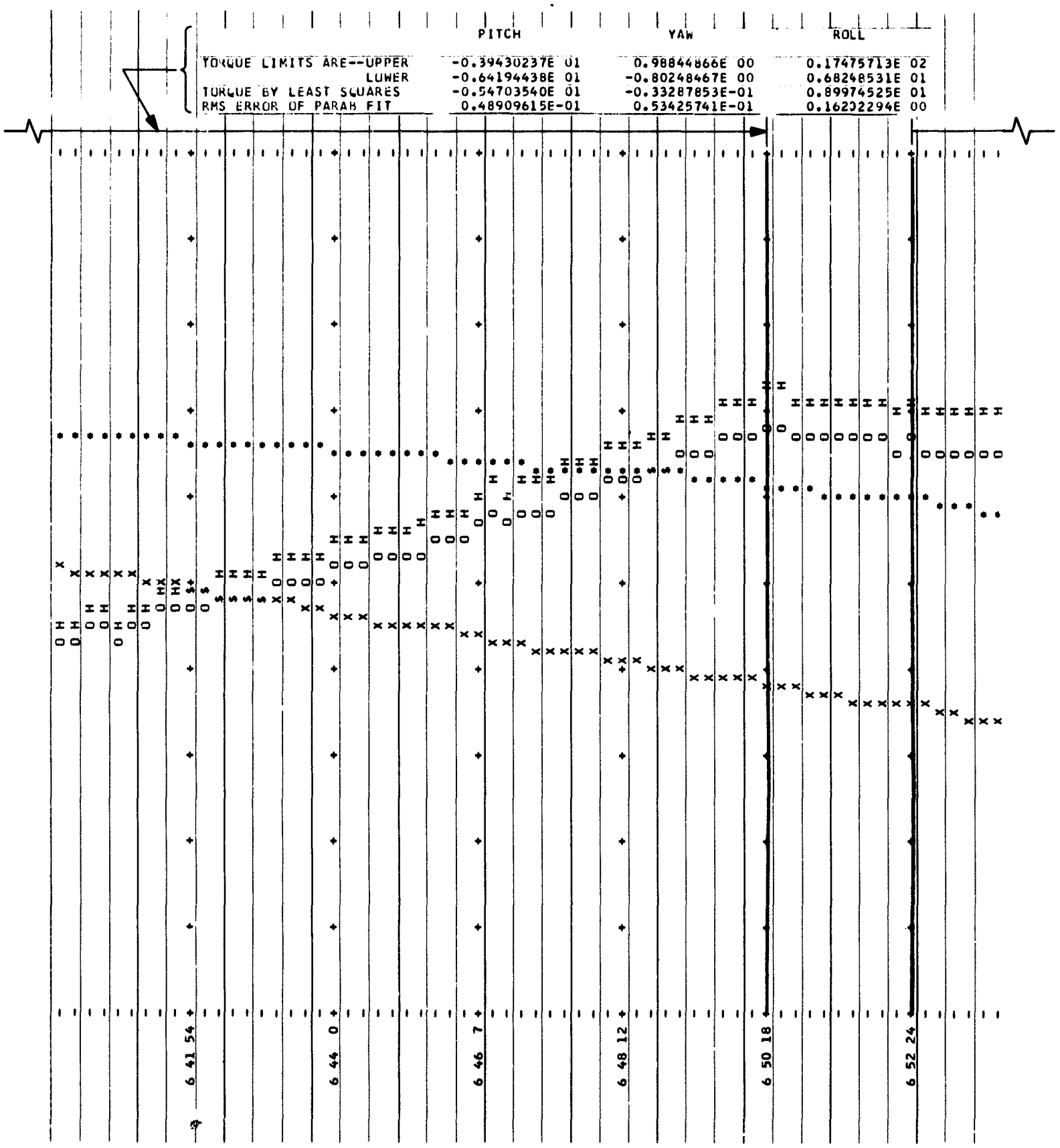

5 59 54
6 2 0
6 4 6
6 6 12
6 8 18
6 10 24

	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.36150481E 01	0.68007563E-01	0.11723022E 02
LOWER	-0.60866455E 01	-0.14843588E 01	0.26283930E 01
TORQUE BY LEAST SQUARES	-0.47596007E 01	-0.83182245E 00	0.61545140E 01
RMS ERROR OF PARAB FIT	0.53709508E-01	0.57490333E-01	0.14859786E 00






PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.39430237E 01 0.98844866E 00 0.17475713E 02
LOWER -0.64194438E 01 -0.80248467E 00 0.68248531E 01
TORQUE BY LEAST SQUARES -0.54703540E 01 -0.33287853E-01 0.89974525E 01
RMS ERROR OF PARAB FIT 0.48909615E-01 0.53425741E-01 0.16202294E 00
6 41 54
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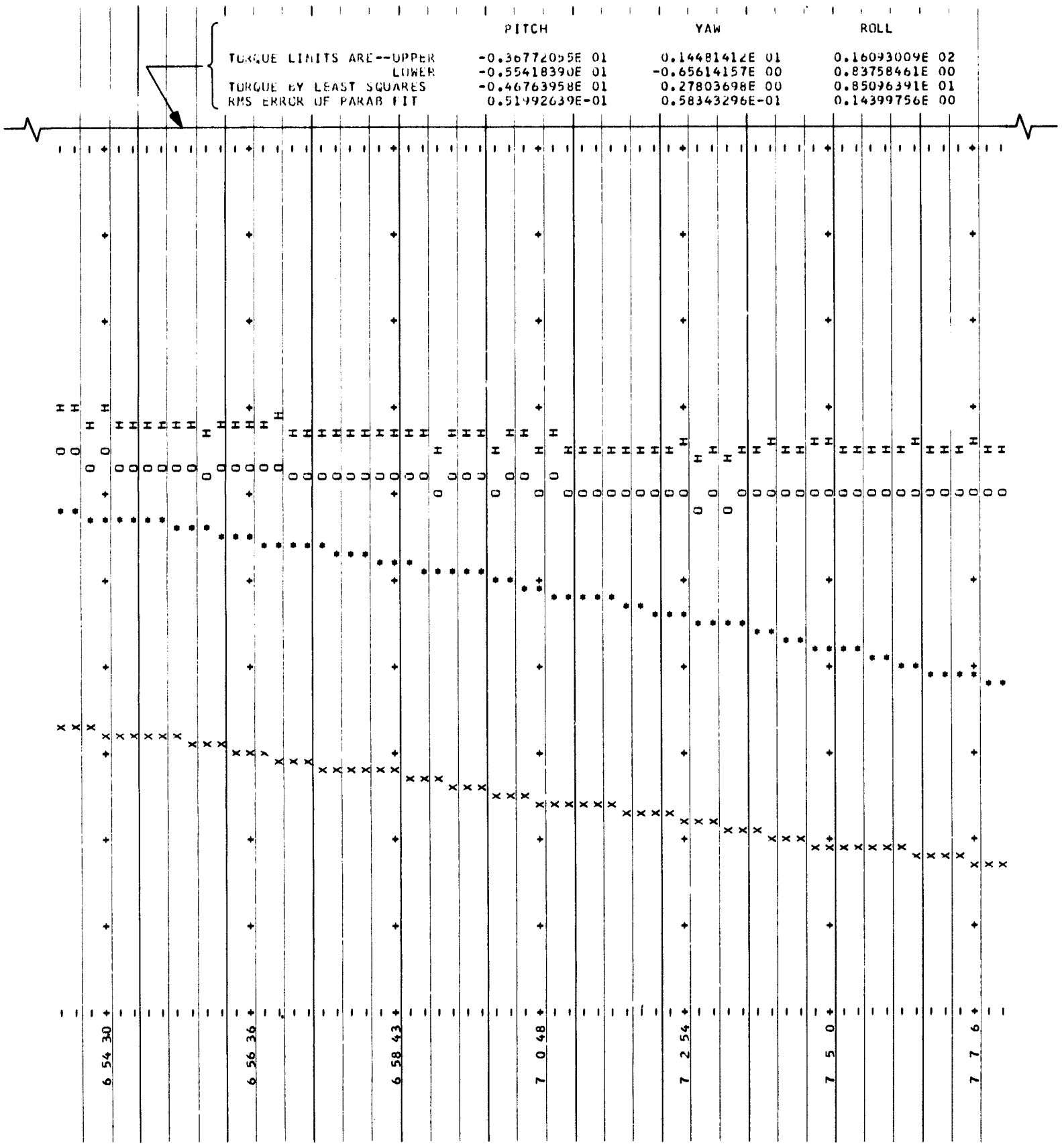
6 46 7
6 48 12
6 50 18
6 52 24


PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.36772055E 01 0.14481412E 01 0.16093009E 02
LOWER -0.55418390E 01 -0.65614157E 00 0.83758461E 00
TORQUE BY LEAST SQUARES -0.46763958E 01 0.27803698E 00 0.85096391E 01
RMS ERROR OF PARAB FIT 0.51992639E-01 0.58343296E-01 0.14399756E 00
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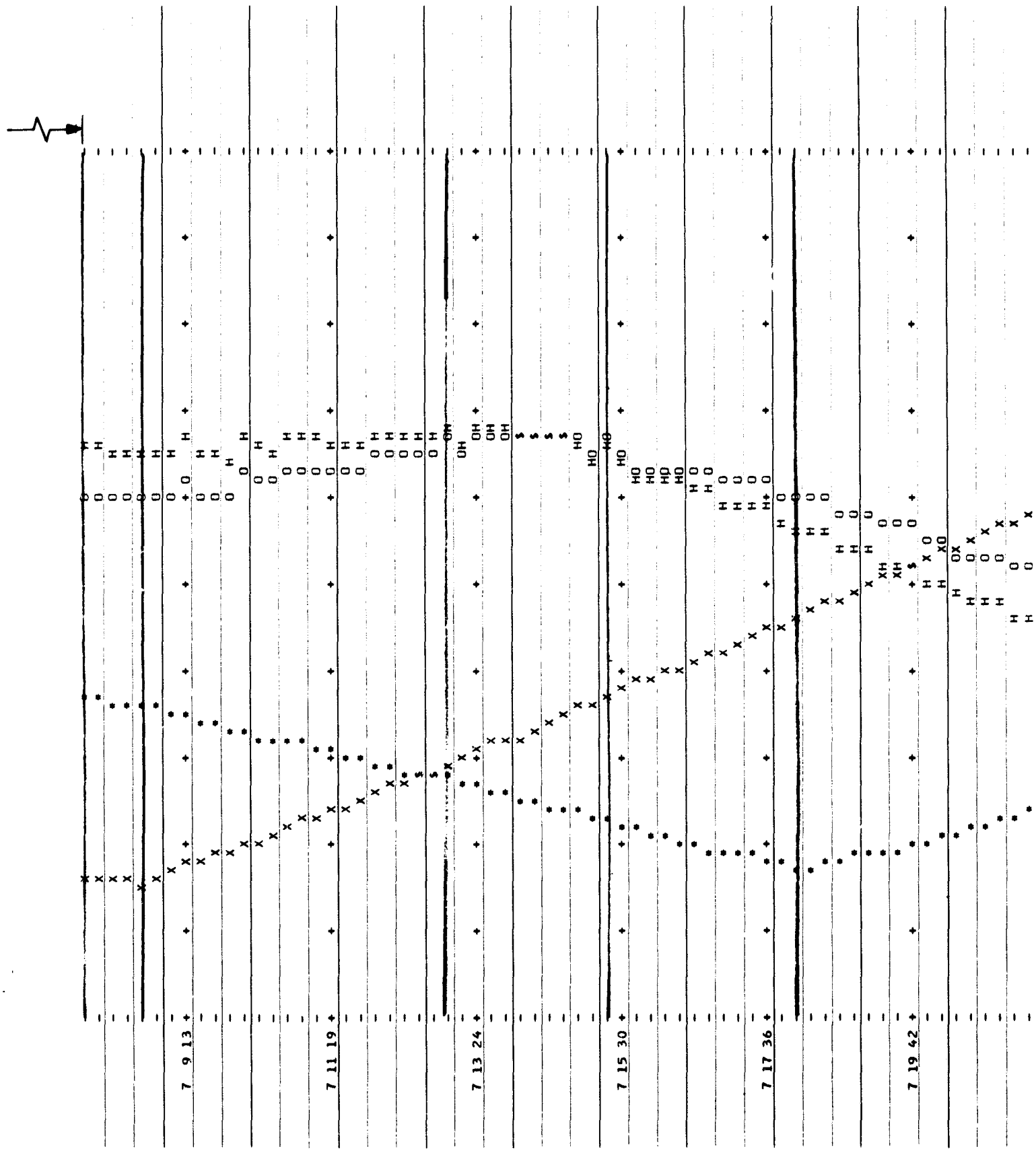
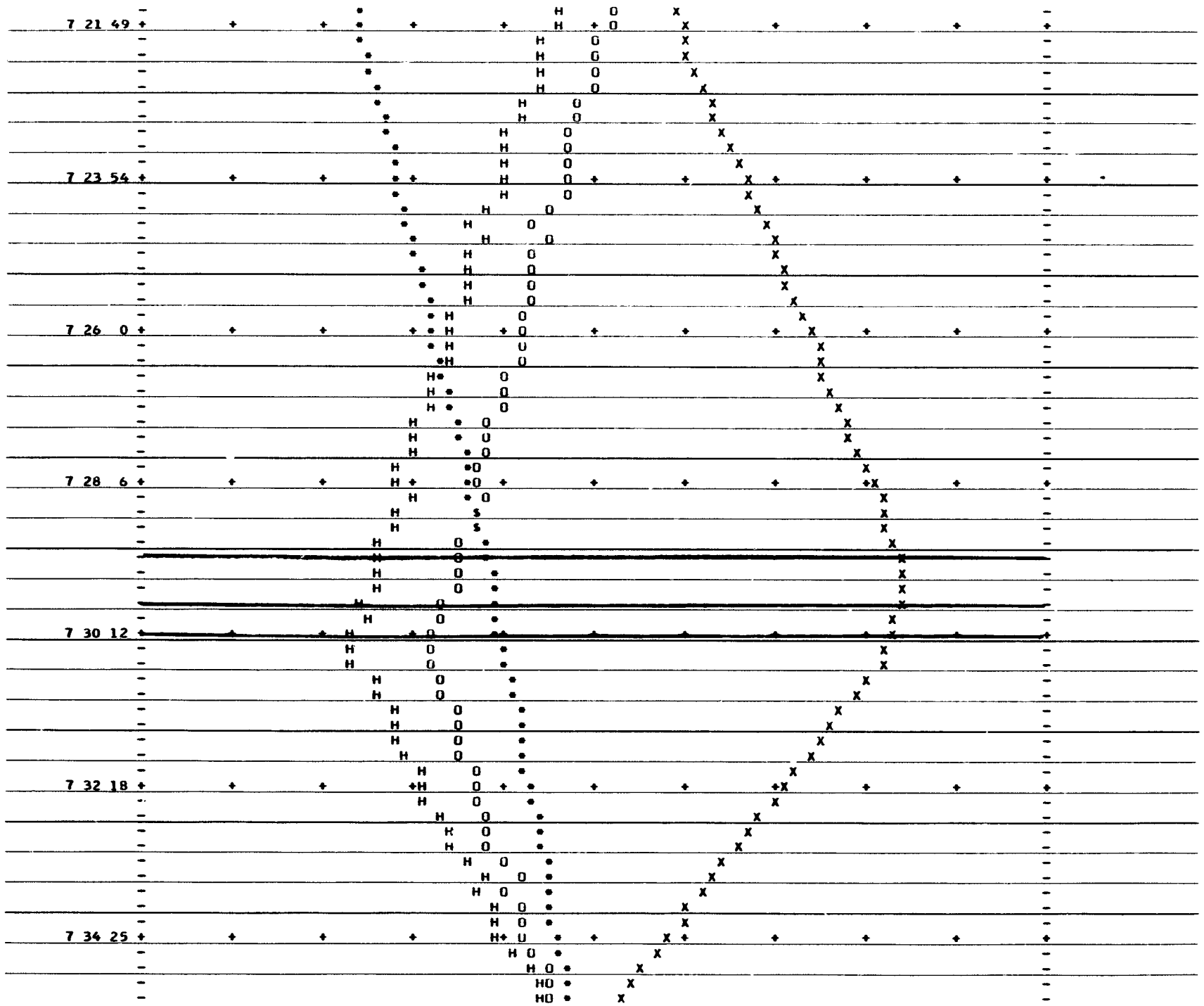
6 58 43
7 0 48
7 2 54
7 5 0
7 7 6

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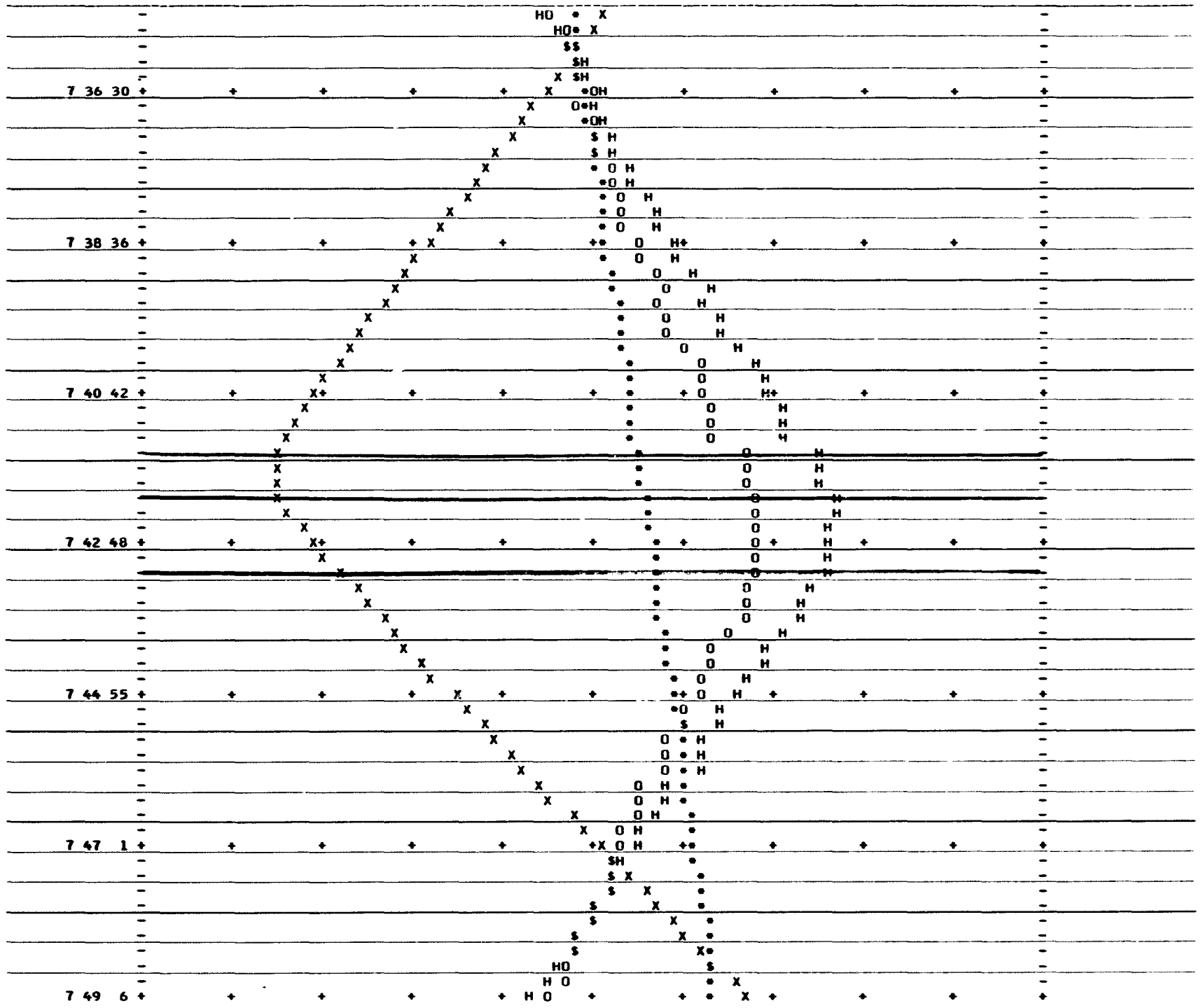
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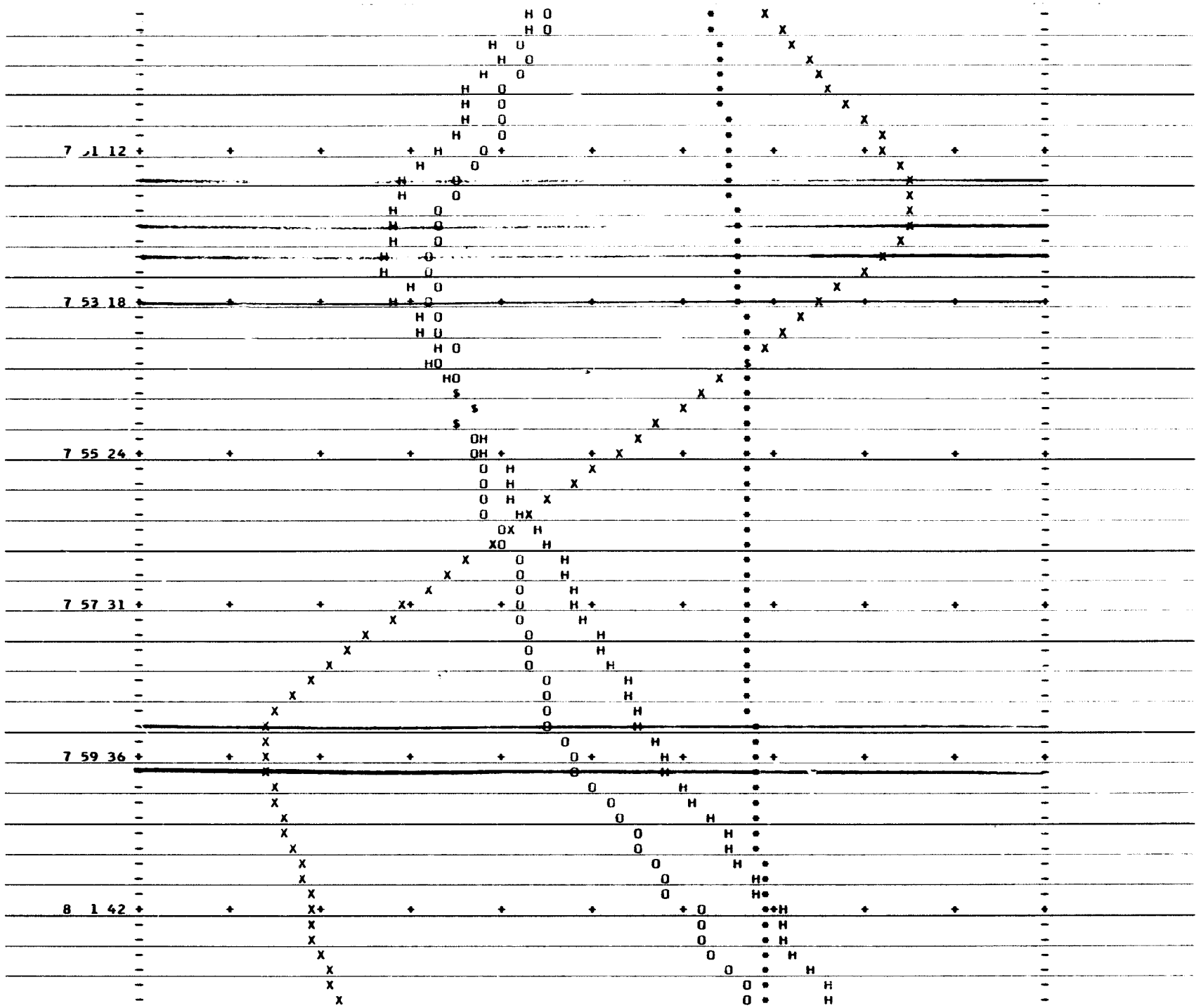
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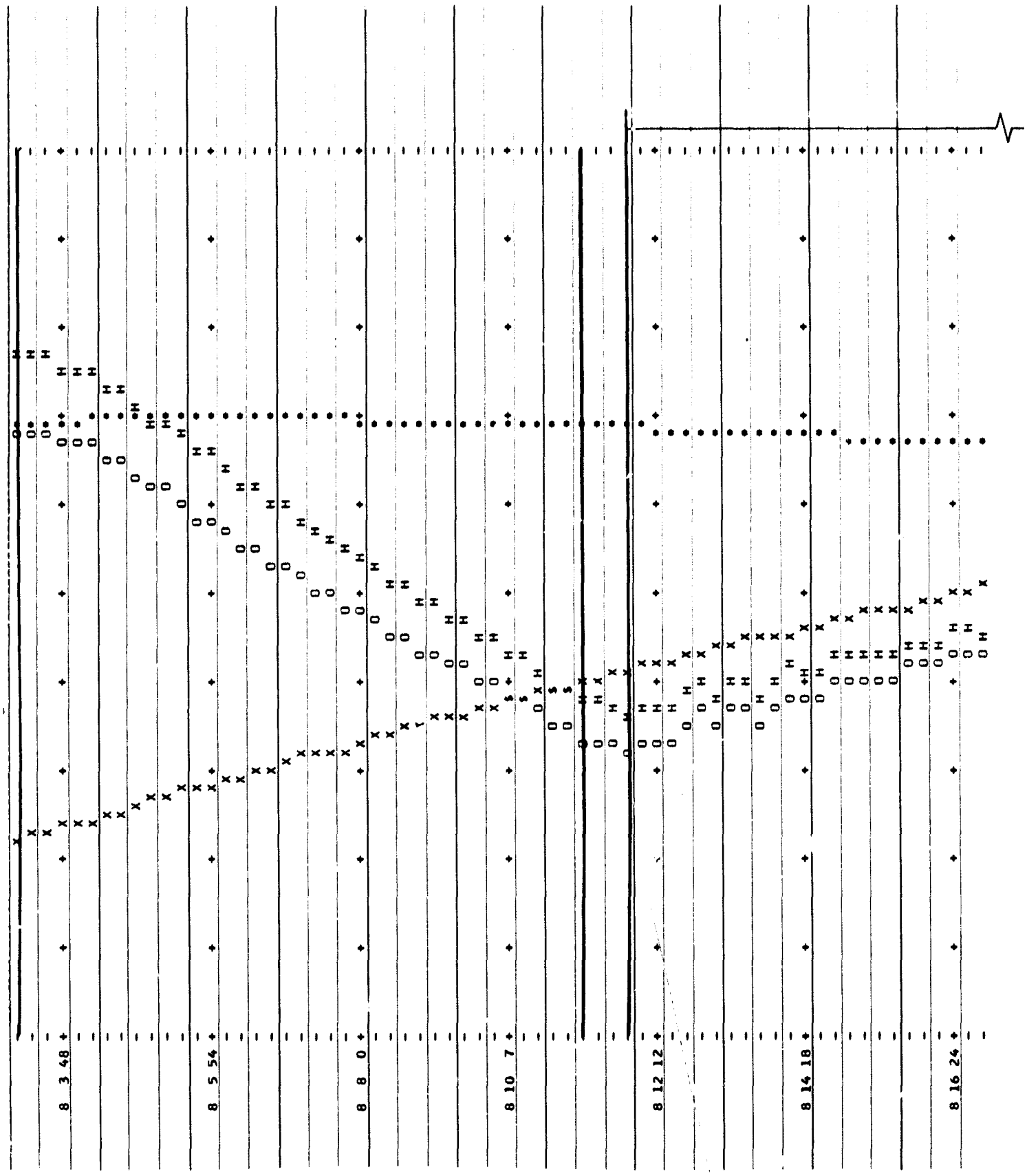

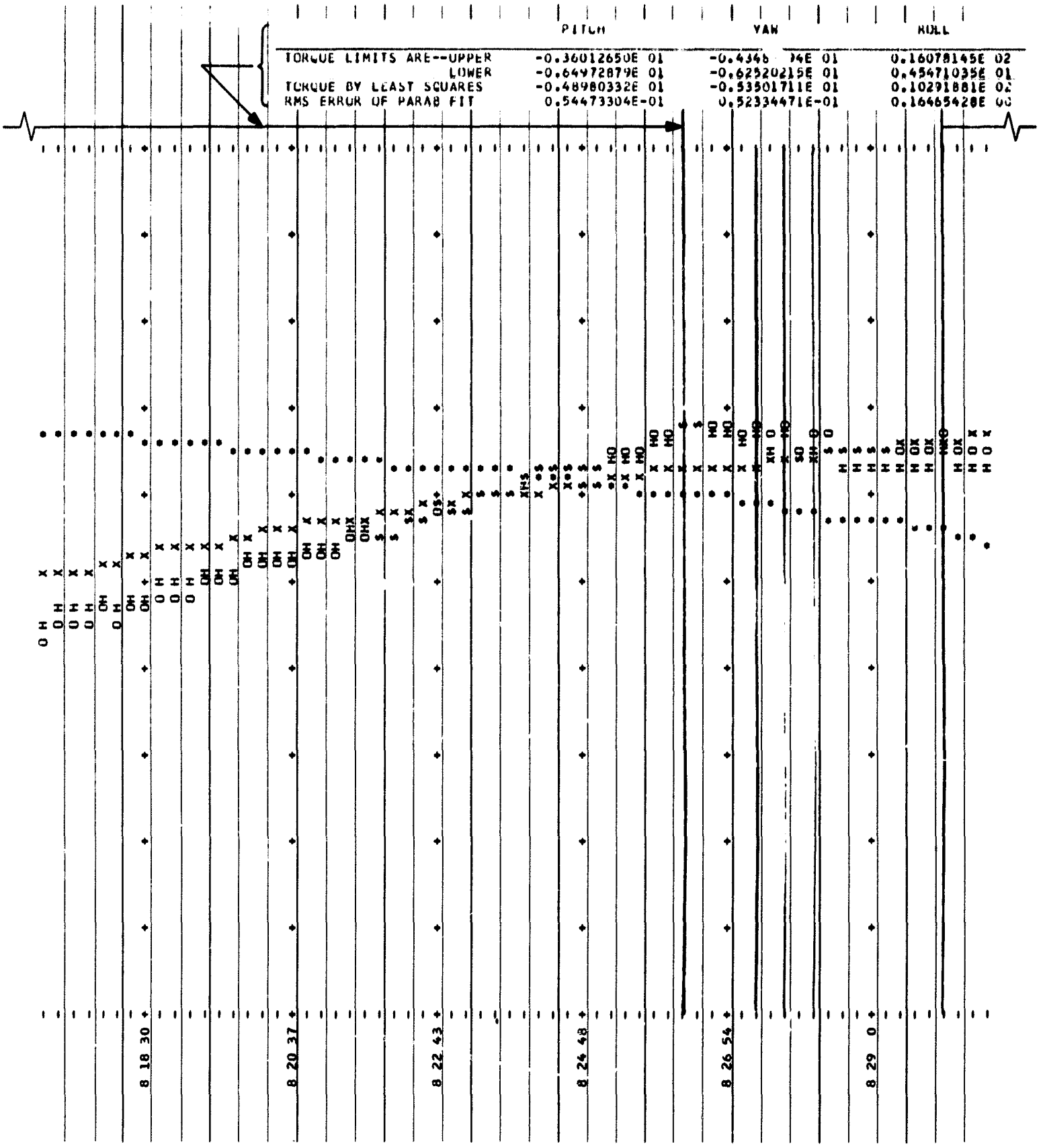
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.36012650E 01 -0.4346 04E 01 0.160781 45E 02
LOWER -0.64972879E 01 -0.62520215E 01 0.45471035E 01
TORQUE BY LEAST SQUARES -0.48980332E 01 -0.53501711E 01 0.10291881E 02
RMS ERROR OF PARAB FIT 0.54473304E-01 0.52334471E-01 0.16465428E 00
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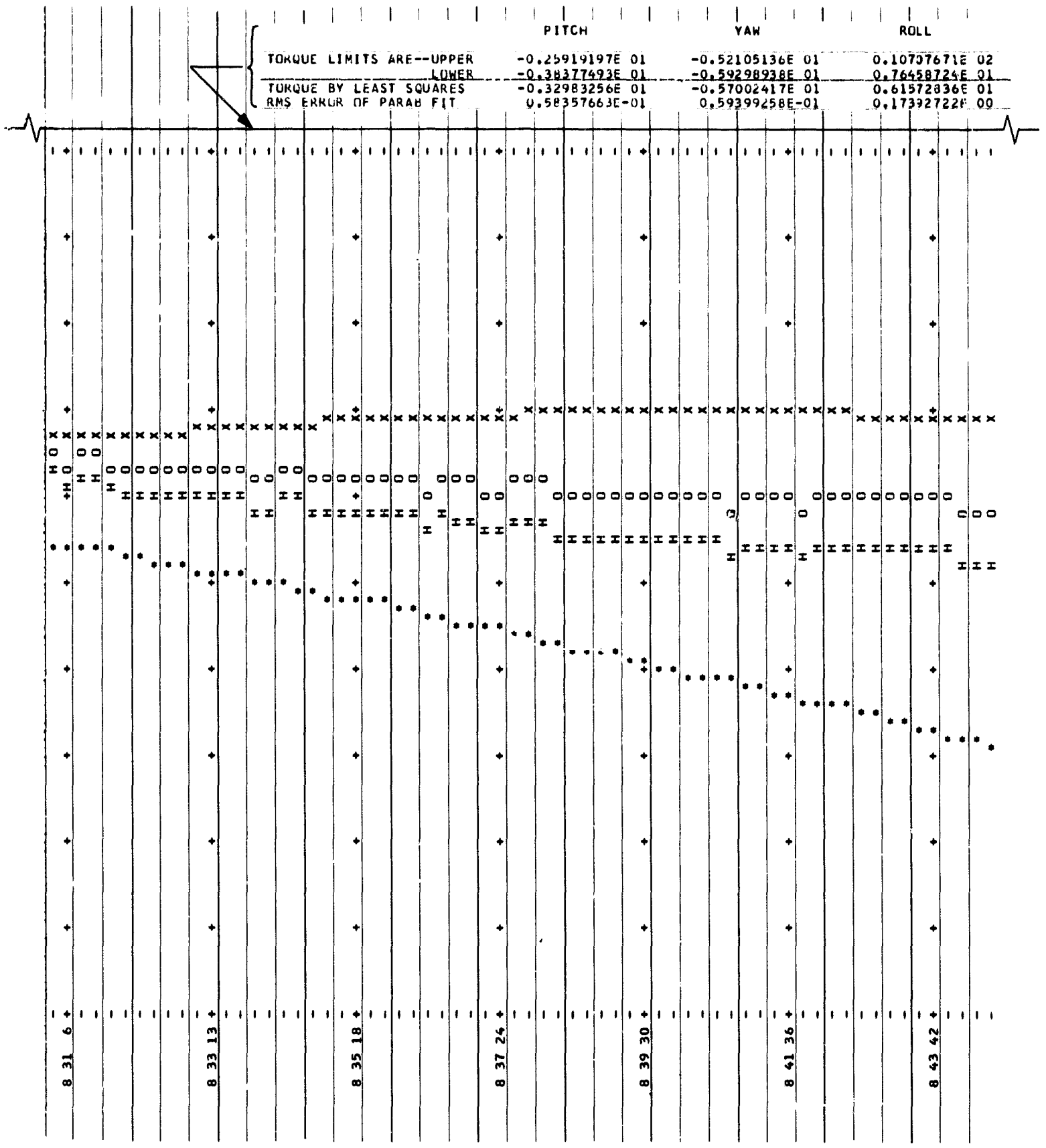
8 20 37
8 22 43
8 24 48
8 26 54
8 29 0


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.25919197E 01 -0.52105136E 01 0.10707671E 02
LOWER -0.38377493E 01 -0.59298938E 01 0.76458724E 01
TORQUE BY LEAST SQUARES -0.32983256E 01 -0.57002417E 01 0.61572836E 01
RMS ERROR OF PARAB FIT 0.58357663E-01 0.59399258E-01 0.17392722E 00
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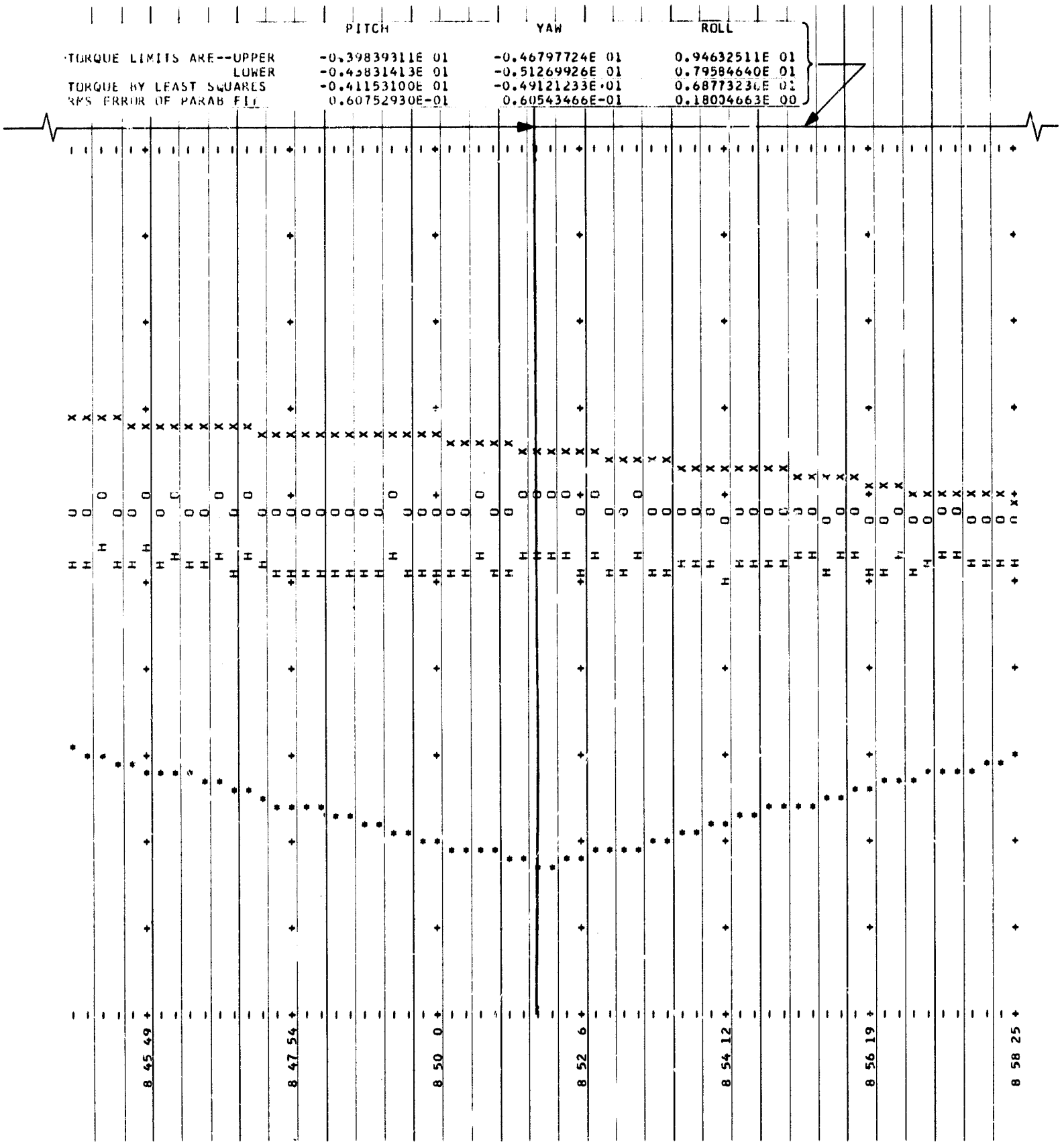
PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.39839311E 01 -0.46797724E 01 0.94632511E 01
LOWER -0.43831413E 01 -0.51269926E 01 0.79584640E 01
TORQUE BY LEAST SQUARES -0.41153100E 01 -0.49121233E 01 0.68773236E 01
RMS ERROR OF PARAB FIT 0.60752930E-01 0.60543466E-01 0.18034663E 00
8 45 49
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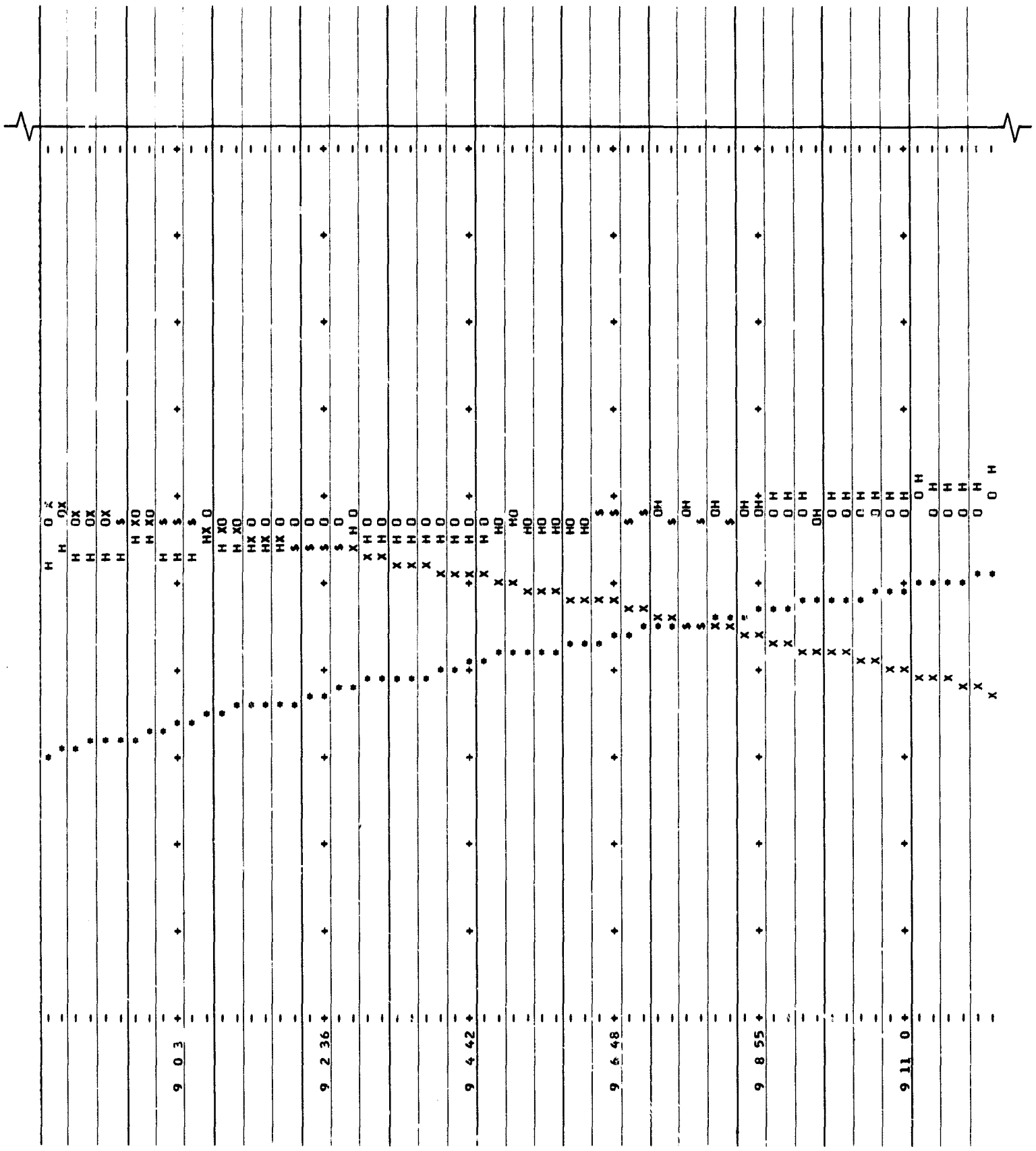
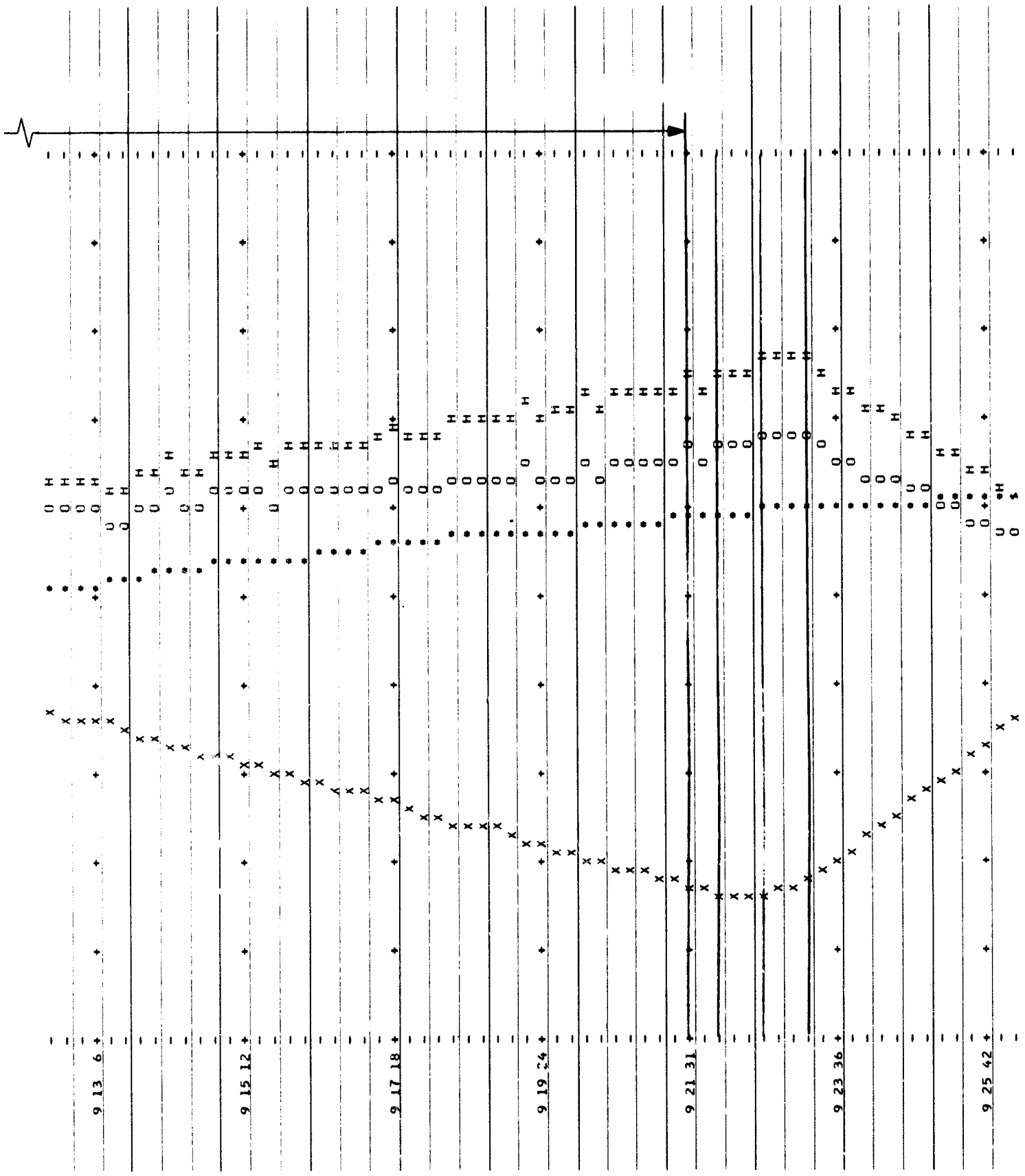
8 50 0
8 52 6
8 54 12
8 56 19
8 58 25

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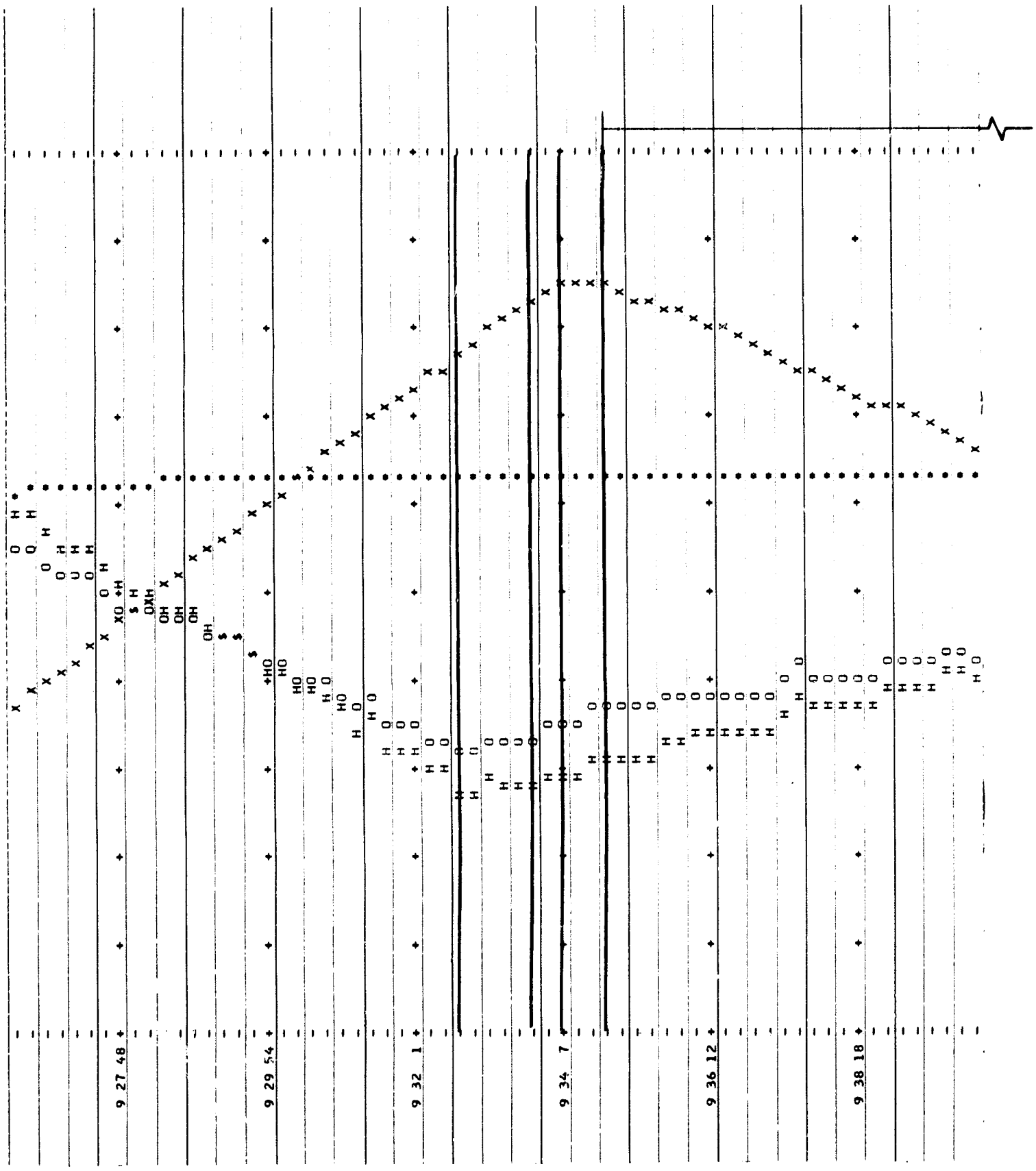
9 15 12
9 17 18
9 19 24
9 21 31
9 23 36
9 25 42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9 32 1
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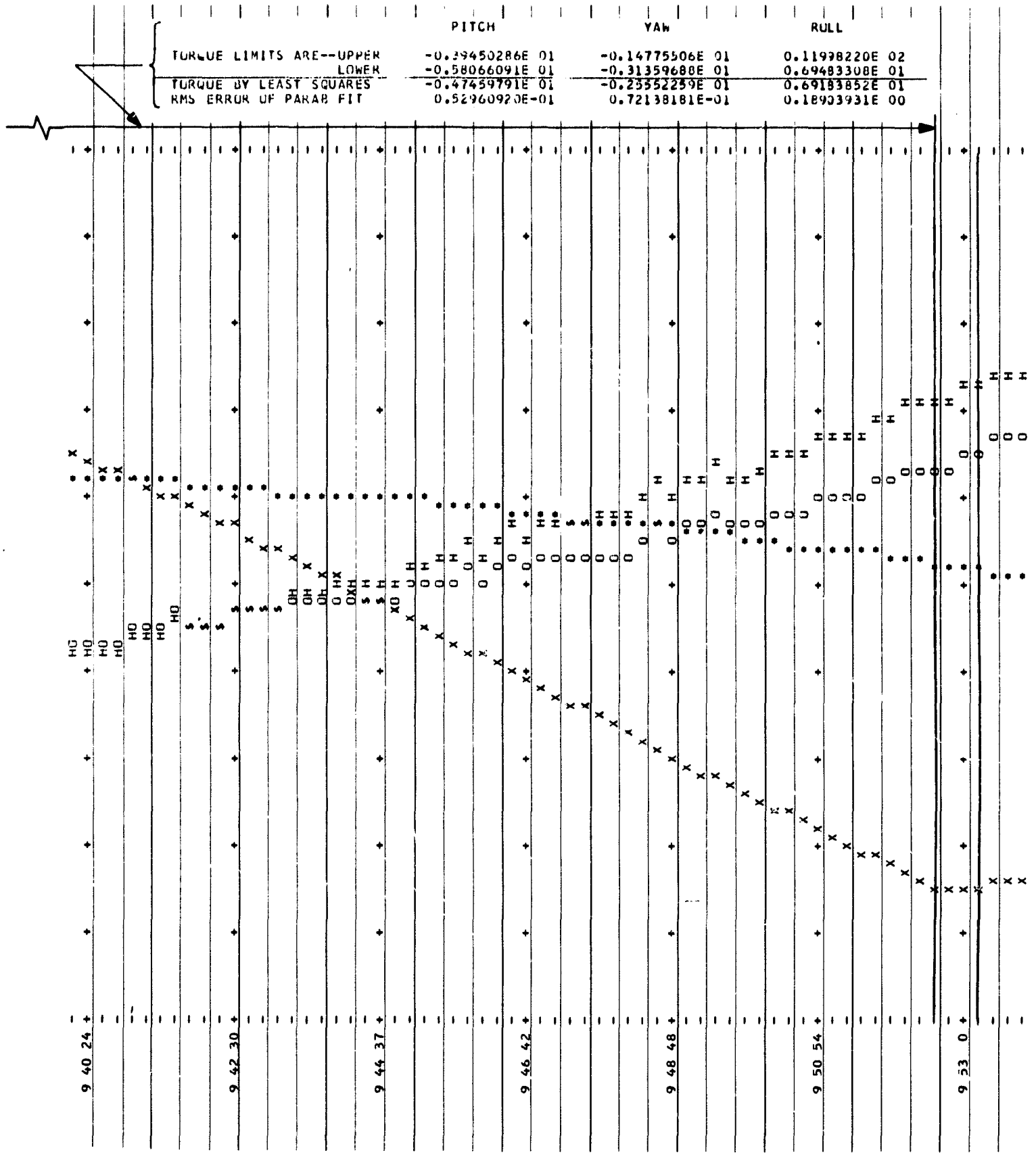
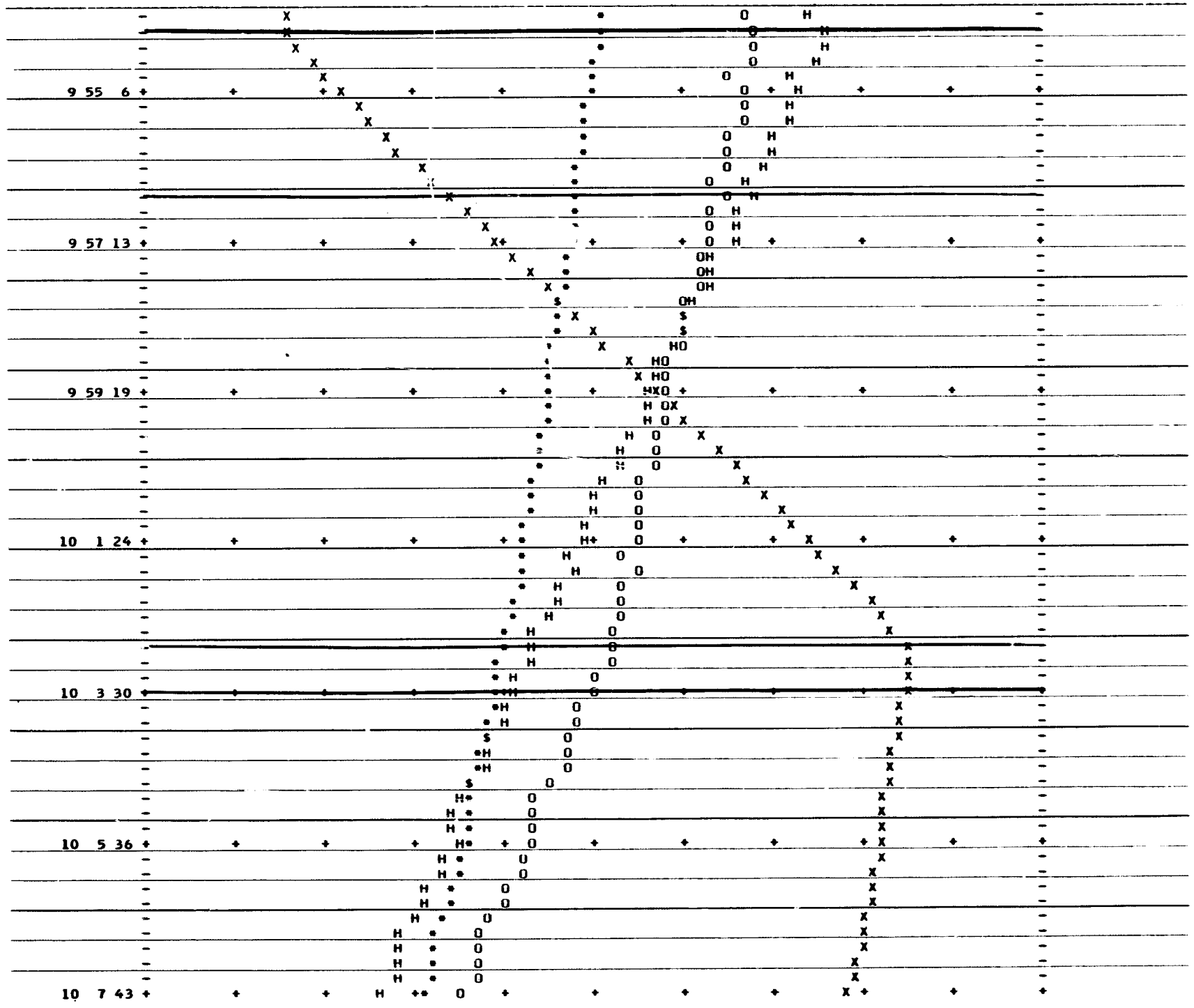
9 36 12
9 38 18


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.39450286E 01 -0.14775506E 01 0.11998220E 02
LOWER -0.58066091E 01 -0.31359688E 01 0.69483308E 01
TORQUE BY LEAST SQUARES -0.47459791E 01 -0.25552259E 01 0.69183852E 01
RMS ERROR OF PARAB FIT 0.52960920E-01 0.72138181E-01 0.18903931E 00
9 40 24
9 42 30
9 44 37
9 46 42
9 48 48
9 50 54
9 53 0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9 59 19
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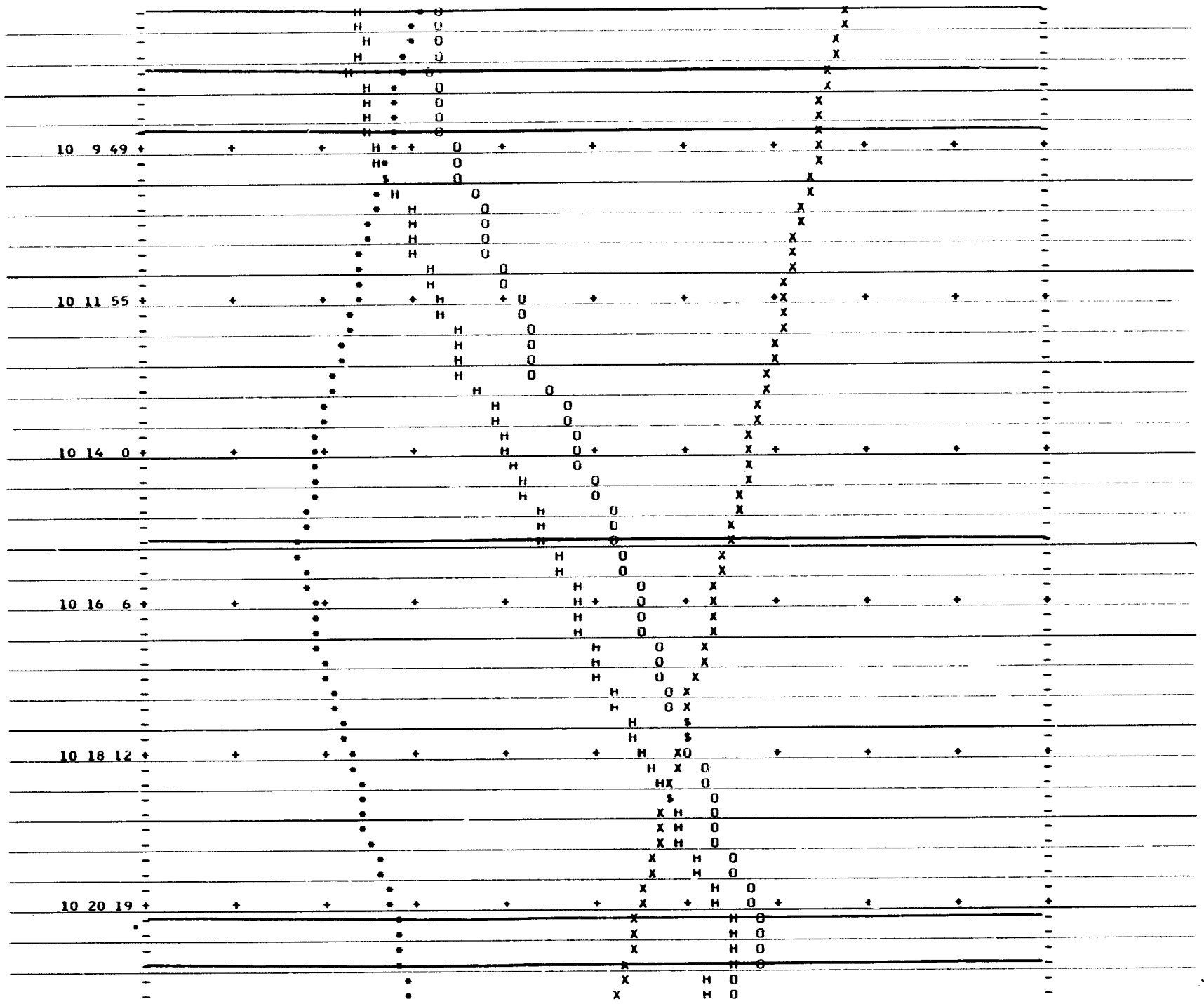
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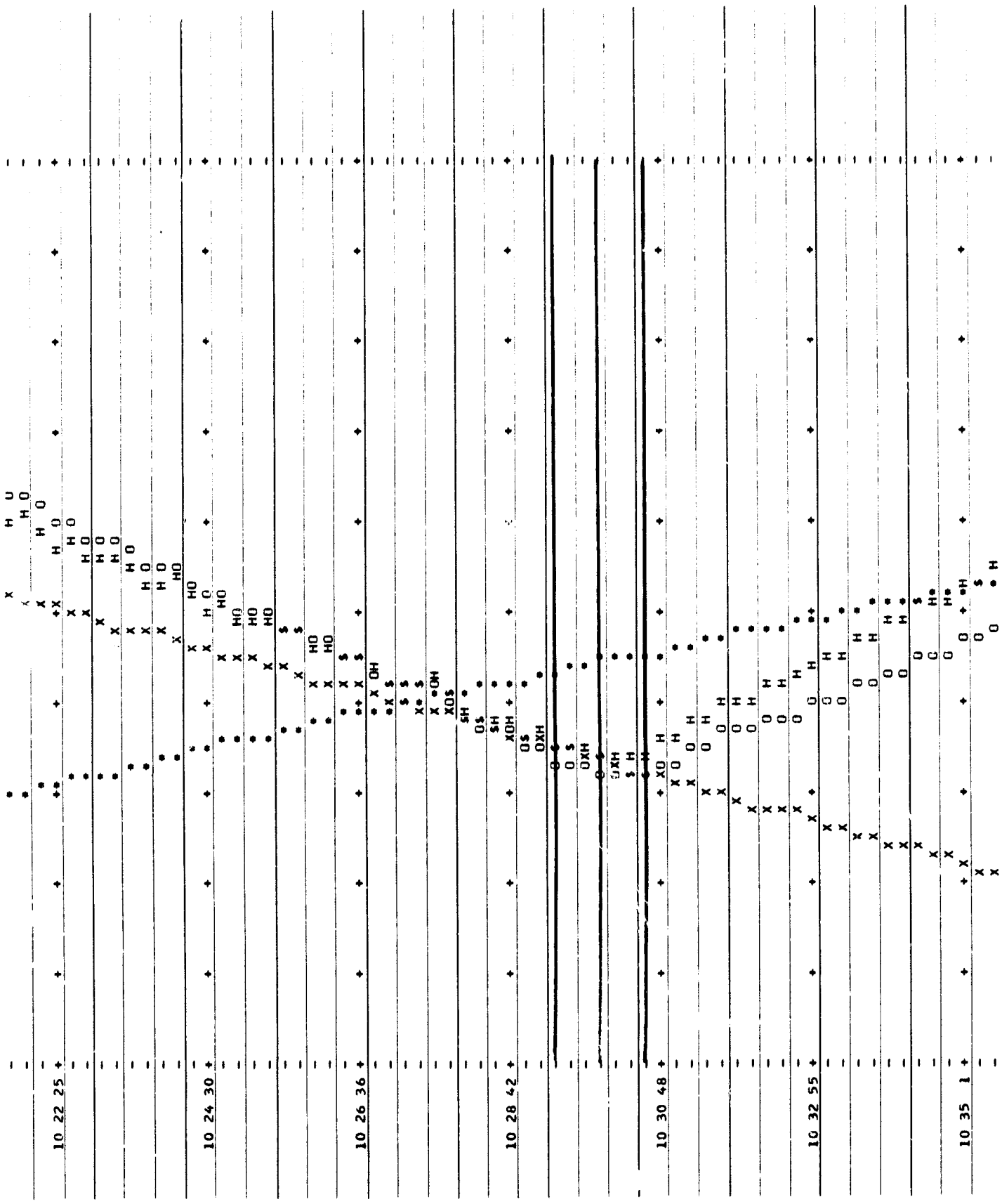
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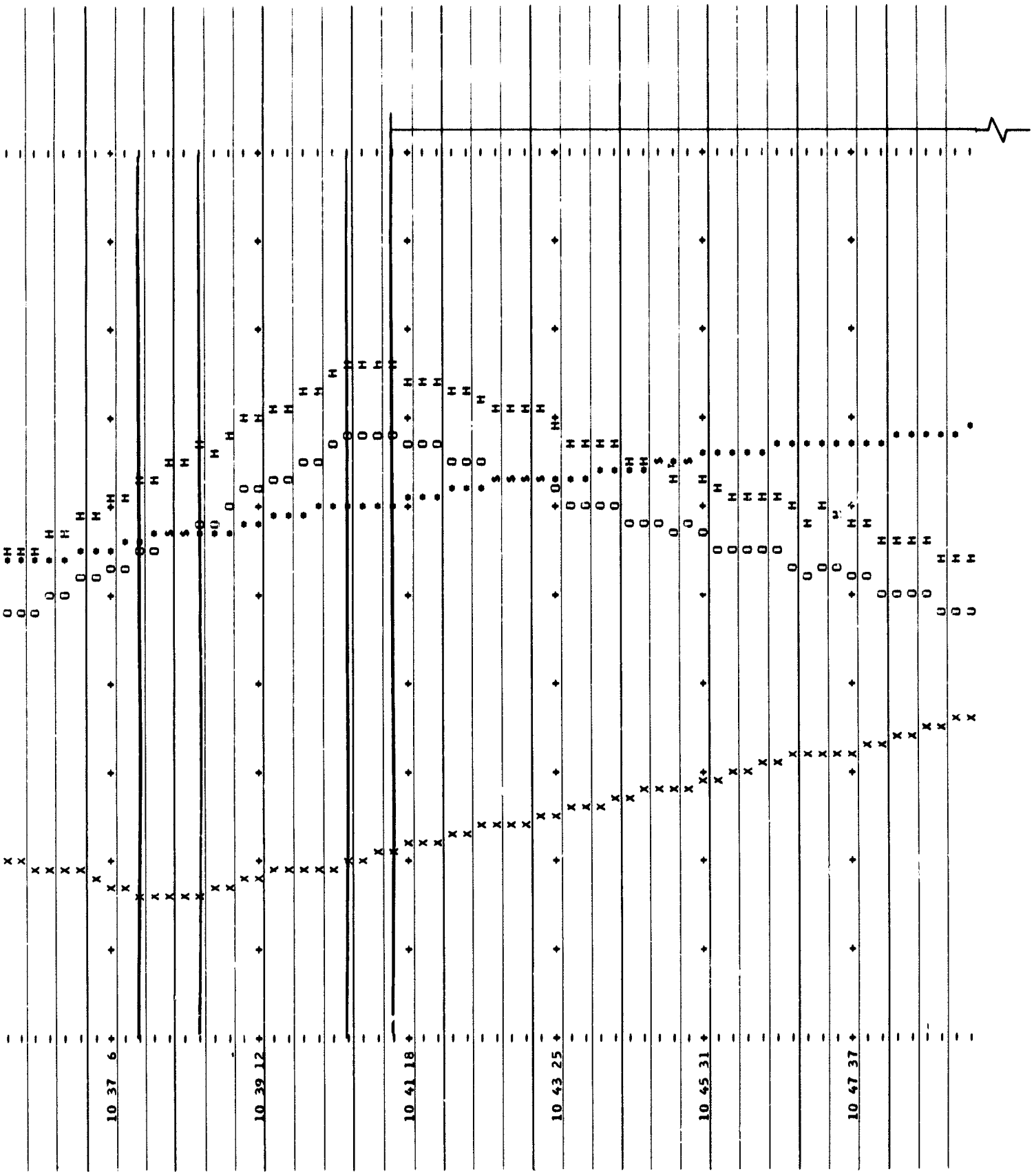
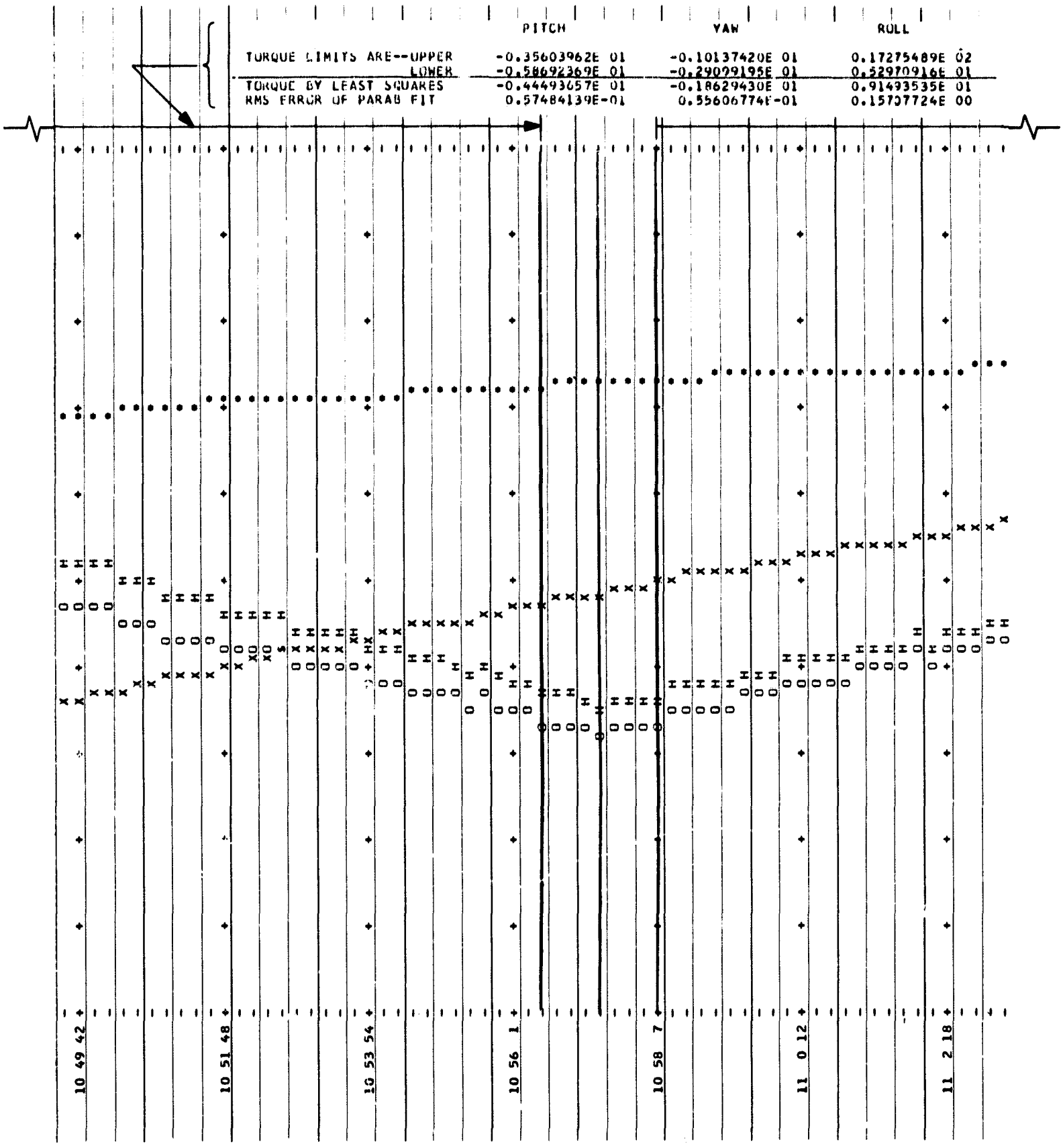
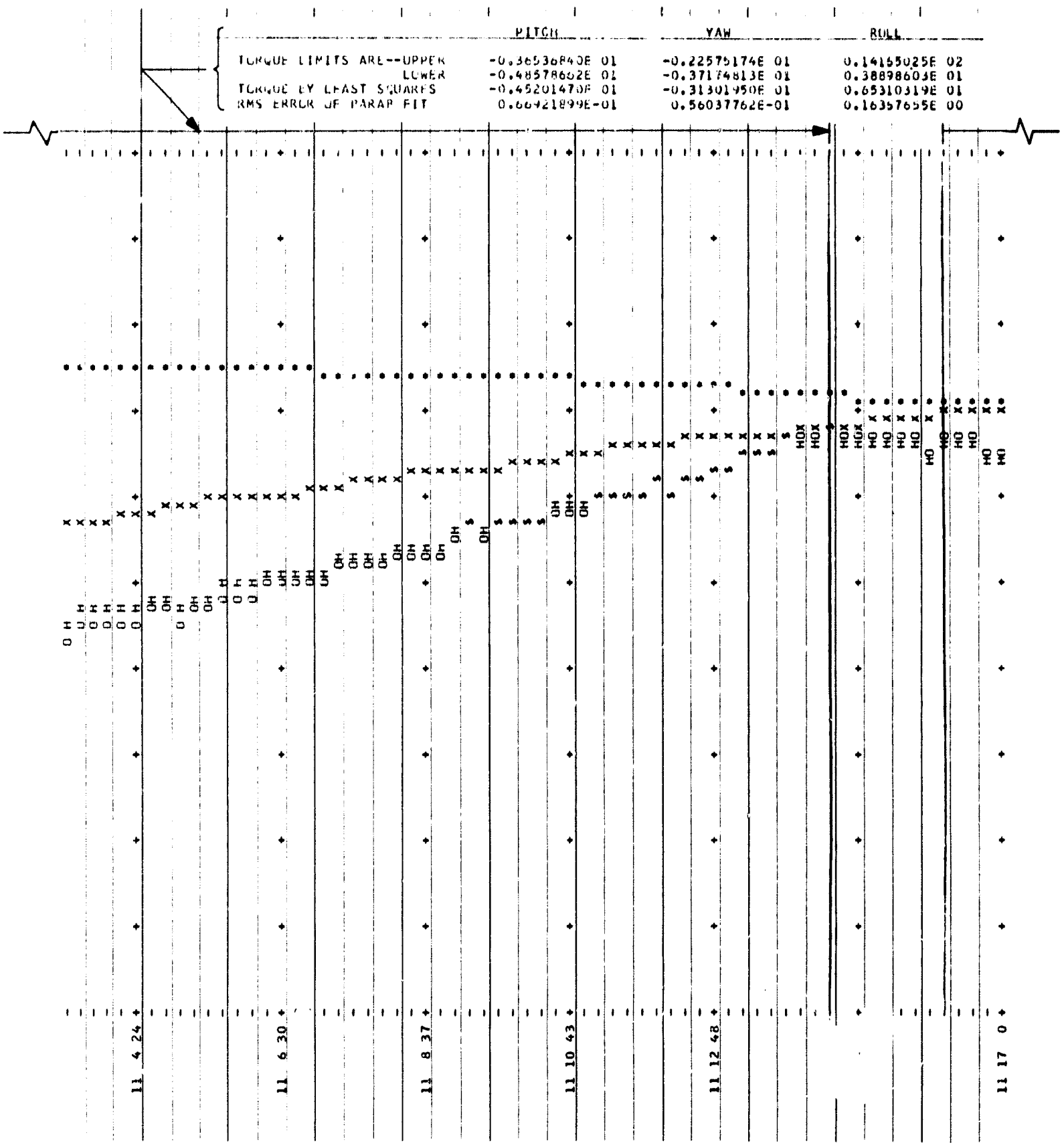
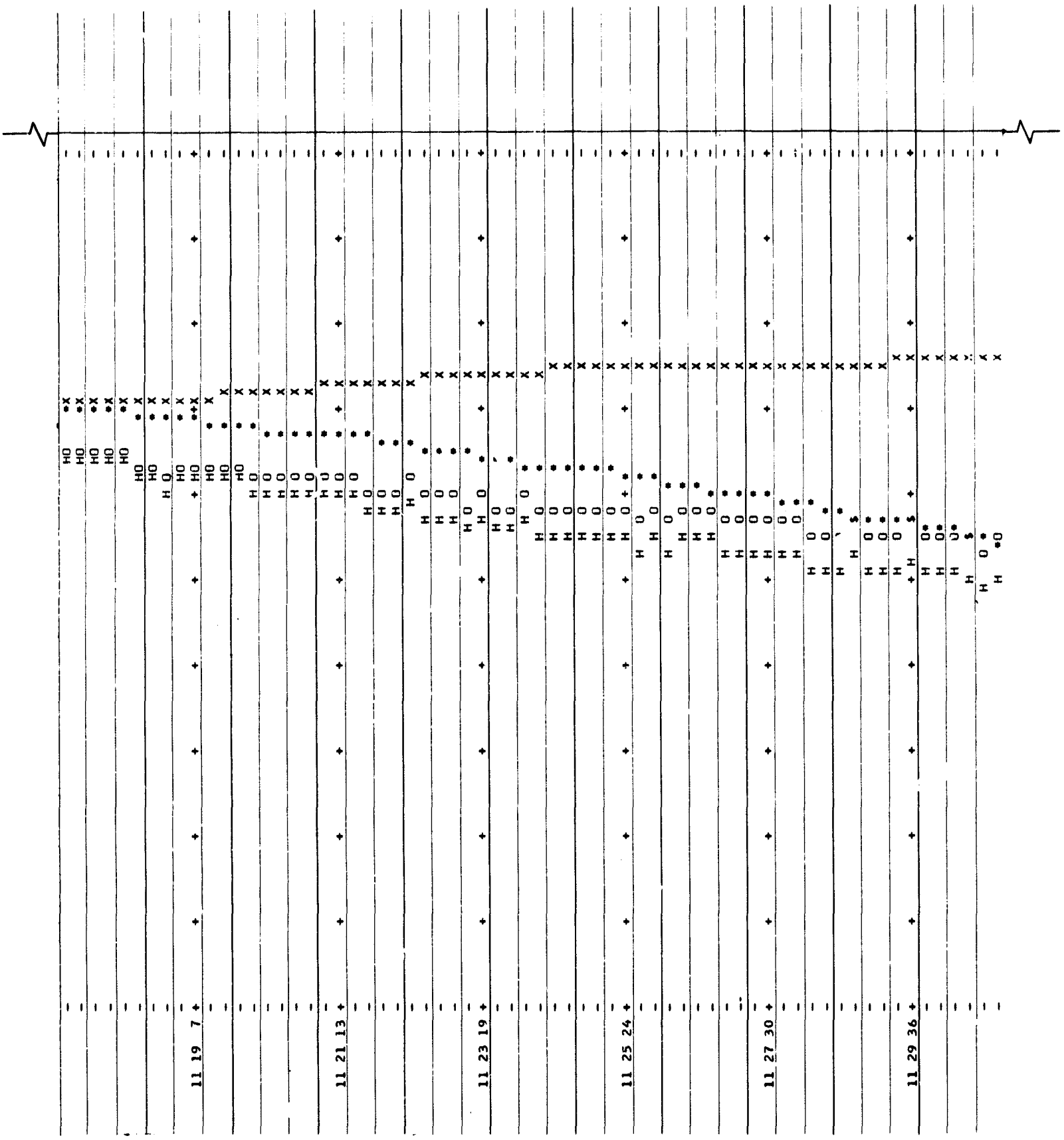
10 35 1


10 37 6
10 39 12
10 41 18
10 43 25
10 45 31
10 47 37

	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.35603962E 01	-0.10137420E 01	0.17275489E 02
LOWER	-0.58692369E 01	-0.29029195E 01	0.52970916E 01
TORQUE BY LEAST SQUARES	-0.44493657E 01	-0.18629430E 01	0.91493535E 01
RMS ERROR OF PARAB FIT	0.57484139E-01	0.55606774E-01	0.15707724E 00




PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.36536840E 01 -0.22575174E 01 0.14165025E 02
LOWER -0.48578602E 01 -0.37174813E 01 0.38898603E 01
TORQUE BY LEAST SQUARES -0.45201470E 01 -0.31301950E 01 0.65310319E 01
RMS ERROR OF PARAB FIT 0.66921899E-01 0.56037762E-01 0.16357655E 00
11 4 24
11 6 30
11 8 37
11 10 43
11 12 48
11 17 0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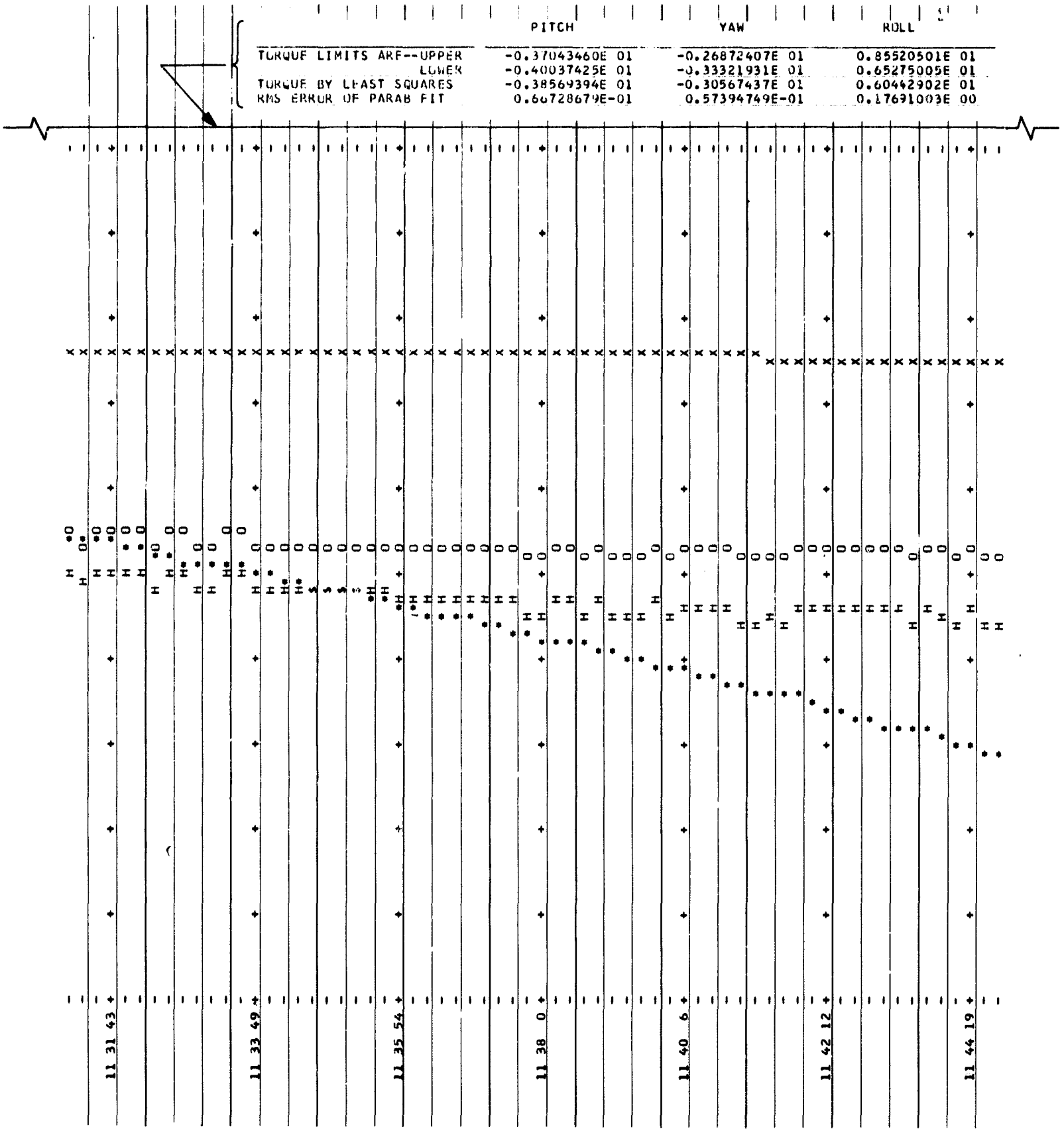
11 21 13
11 23 19
11 25 24
11 27 30
11 29 36


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.37043460E 01 -0.26872407E 01 0.85520501E 01
LOWER -0.40037425E 01 -0.33321931E 01 0.65275005E 01
TORQUE BY LEAST SQUARES -0.38569394E 01 -0.30567437E 01 0.60442902E 01
RMS ERROR OF PARAB FIT 0.66728679E-01 0.57394749E-01 0.17691003E 00
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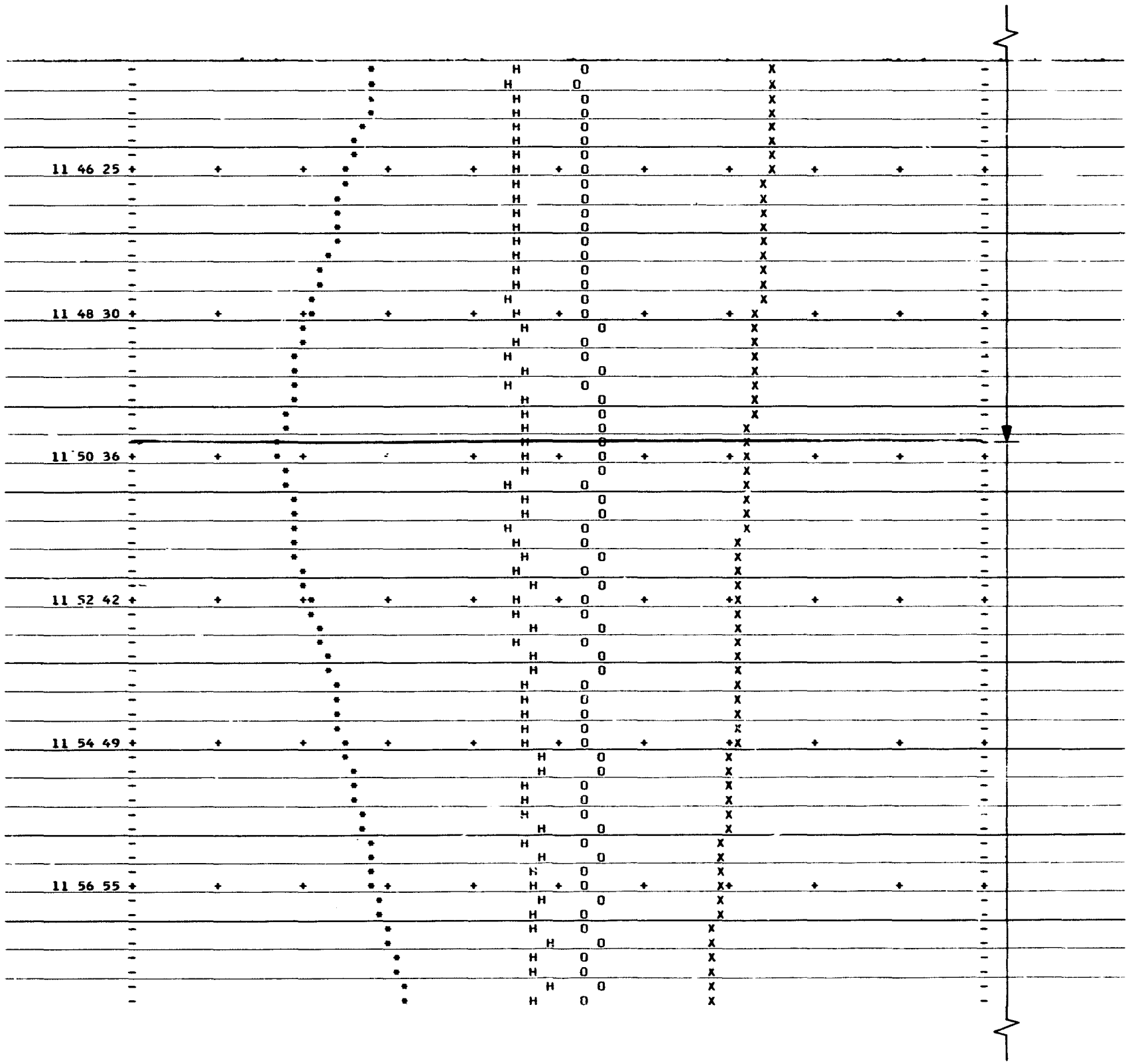
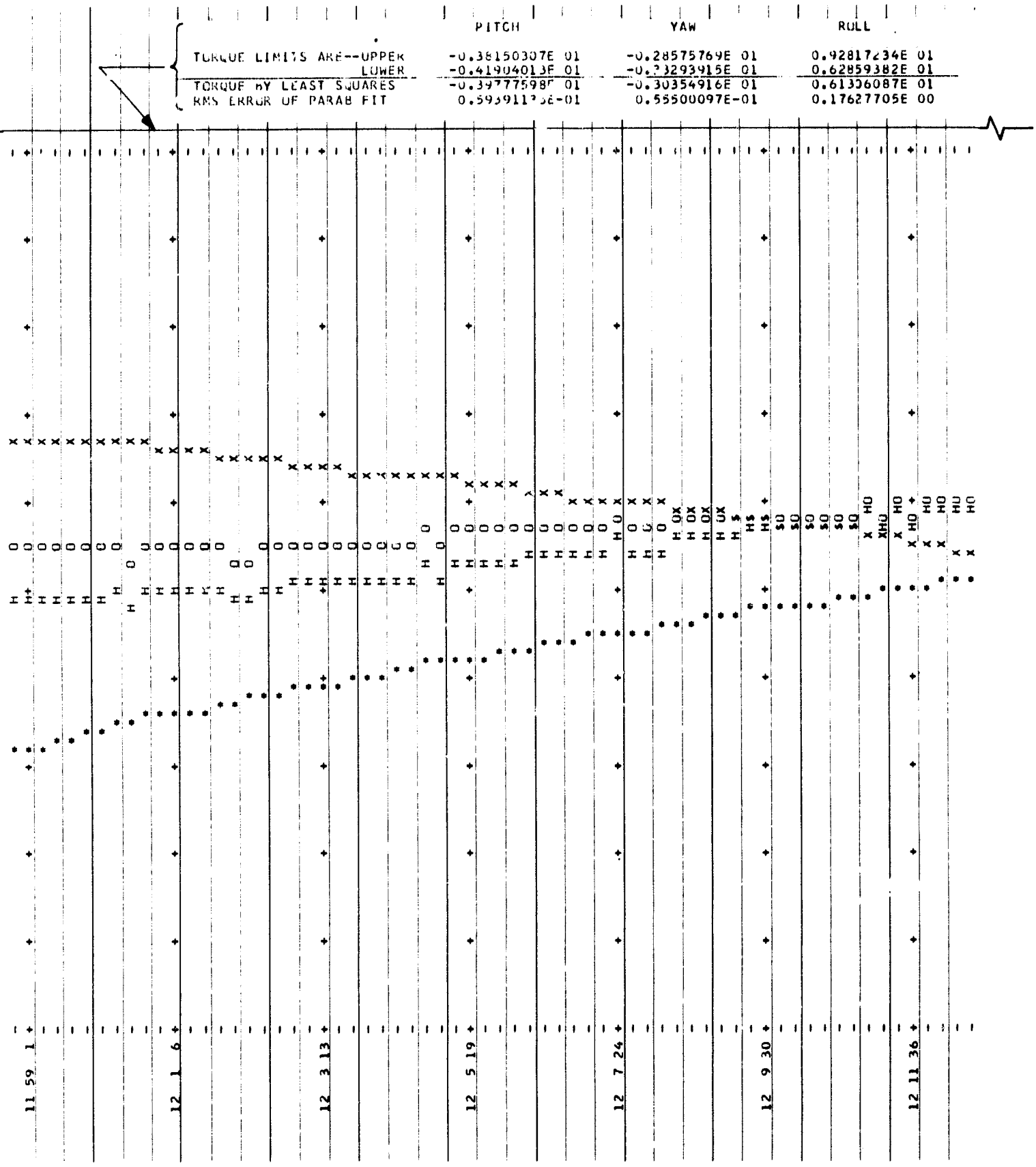
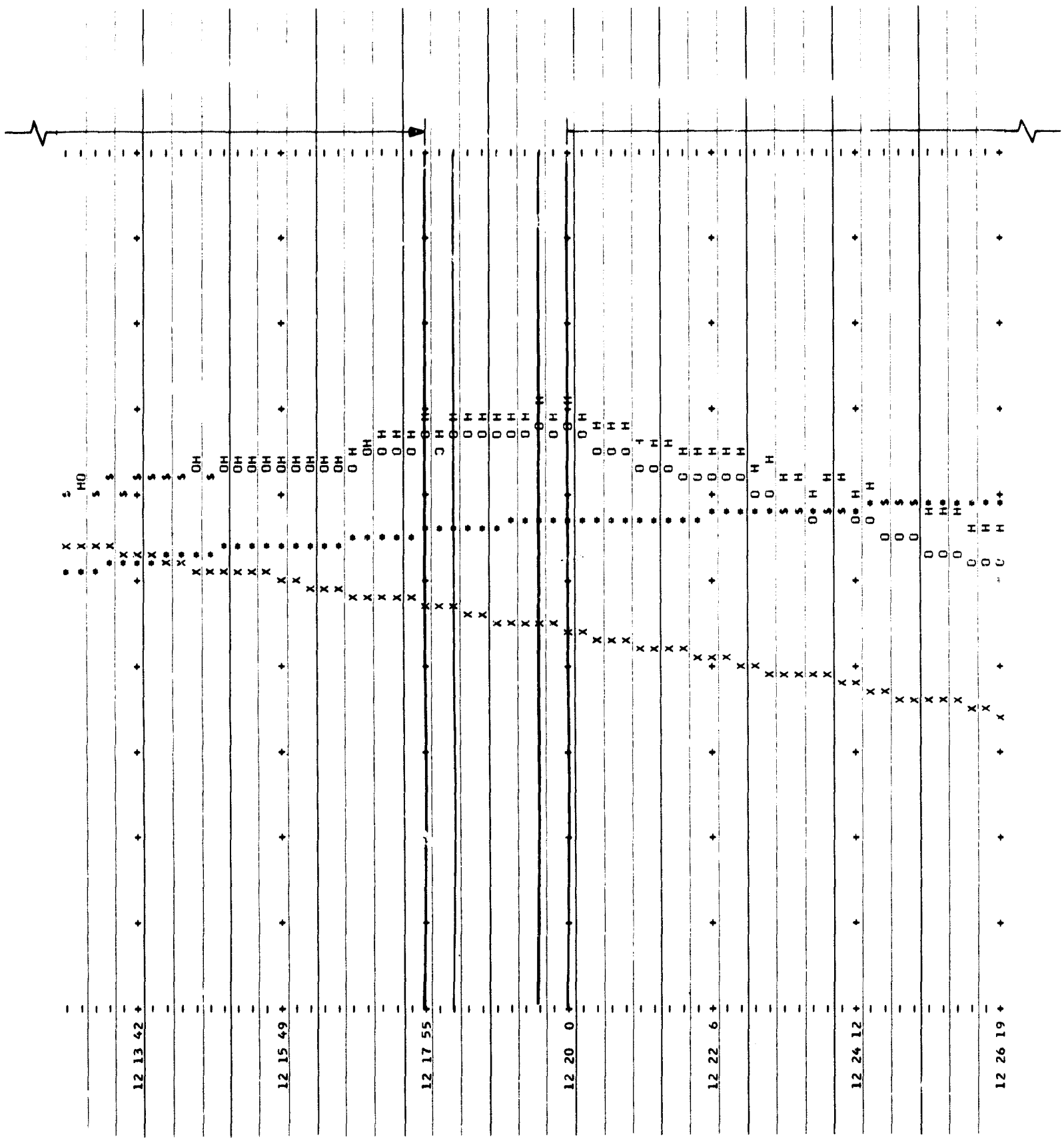
11 35 54
11 38 0
11 40 6
11 42 12
11 44 19


11 46 25
11 48 30
11 50 36
11 52 42
11 54 49
11 56 55

	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.38150307E 01	-0.28575769E 01	0.92817234E 01
LOWER	-0.41904013E 01	-0.32293915E 01	0.62859382E 01
TORQUE BY LEAST SQUARES	-0.39777598E 01	-0.30354916E 01	0.61336087E 01
RMS ERROR OF PARAB FIT	0.5939113E-01	0.55500097E-01	0.17627705E 00

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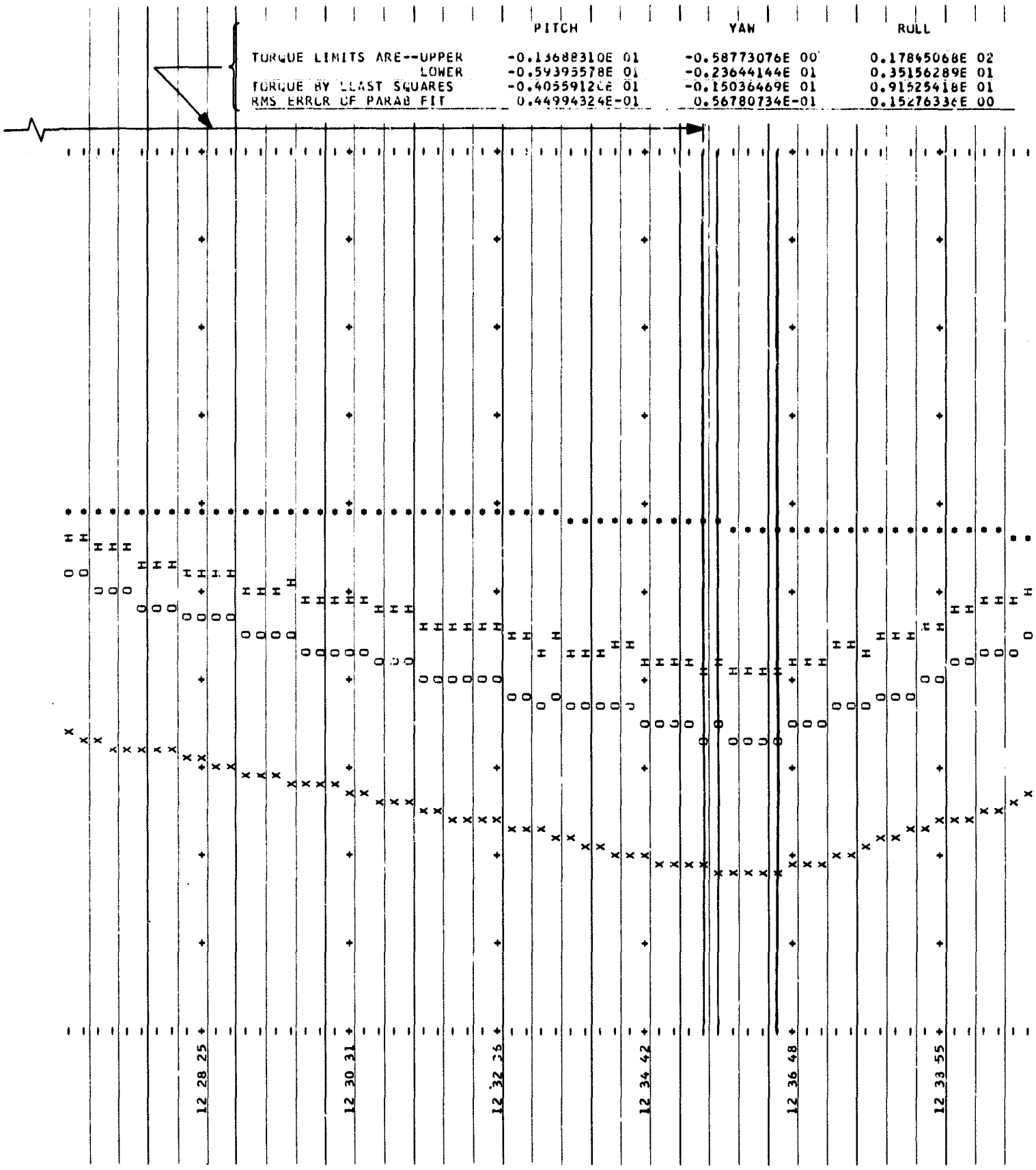
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.13688310E 01 -0.58773076E 00 0.17845068E 02
LOWER -0.59395578E 01 -0.23644144E 01 0.35156289E 01
TORQUE BY LEAST SQUARES -0.4055912CE 01 -0.15036469E 01 0.91525418E 01
RMS ERROR OF PARAB FIT 0.44994324E-01 0.56780734E-01 0.1527633CE 00
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12 32 38
12 34 42
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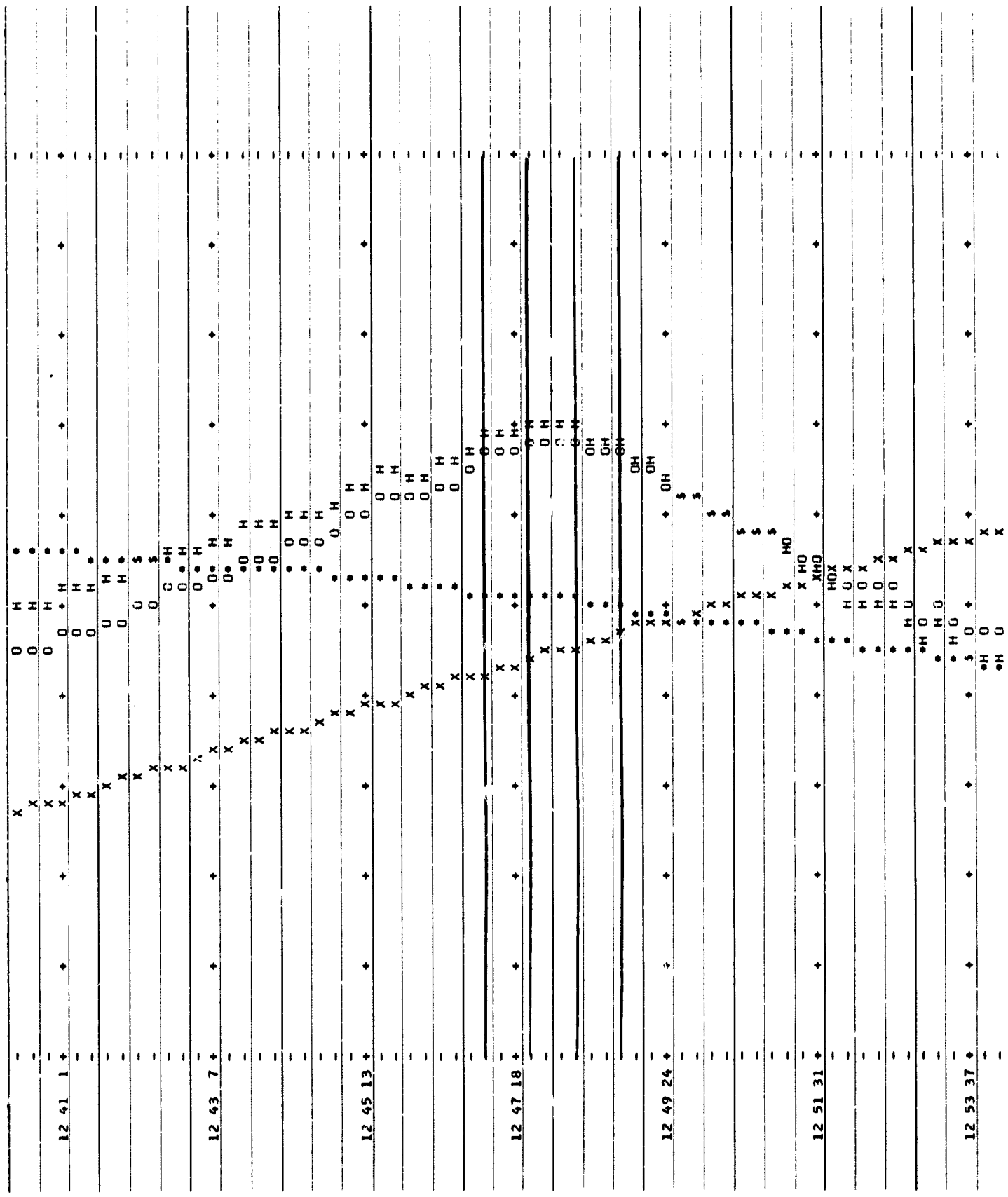
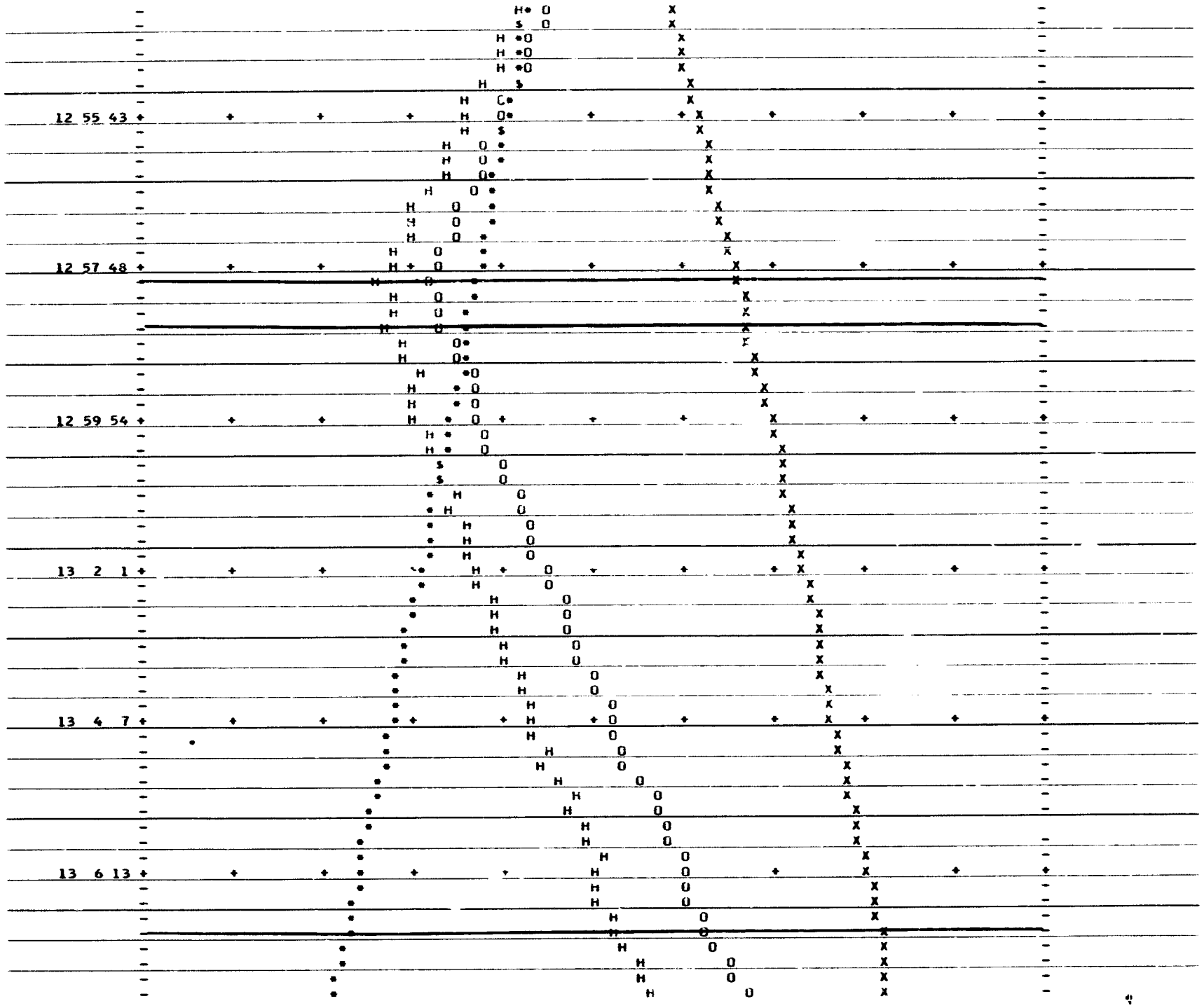
12 33 55




12 55 43
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12 59 54
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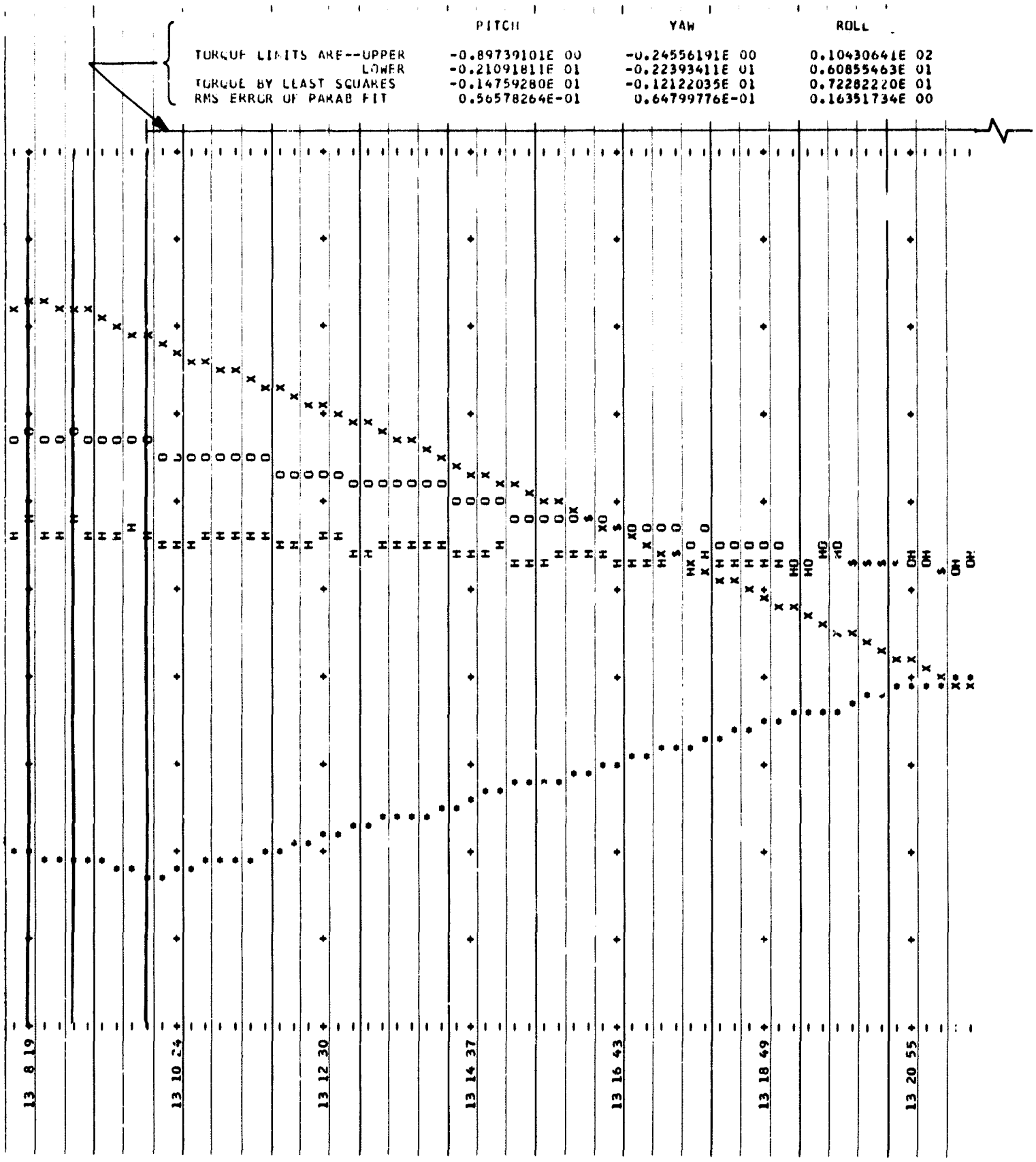
13 4 7
13 6 13


PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.89739101E 00 -0.24556191E 00 0.10430641E 02
LOWER -0.21091811E 01 -0.22393411E 01 0.60855463E 01
TORQUE BY LEAST SQUARES -0.14759280E 01 -0.12122035E 01 0.72282220E 01
RMS ERROR OF PARAB FIT 0.56578264E-01 0.64799776E-01 0.16351734E 00
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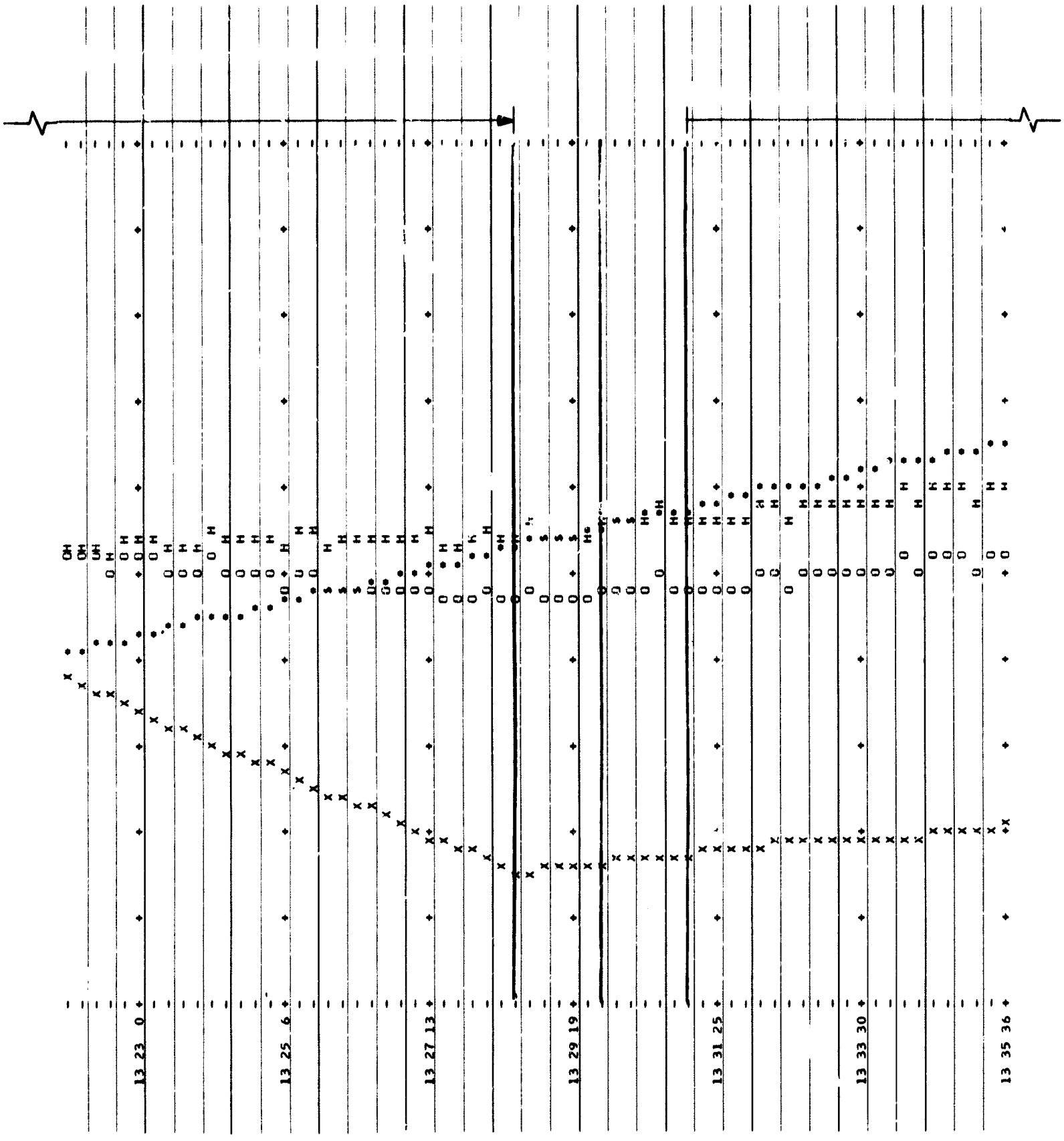
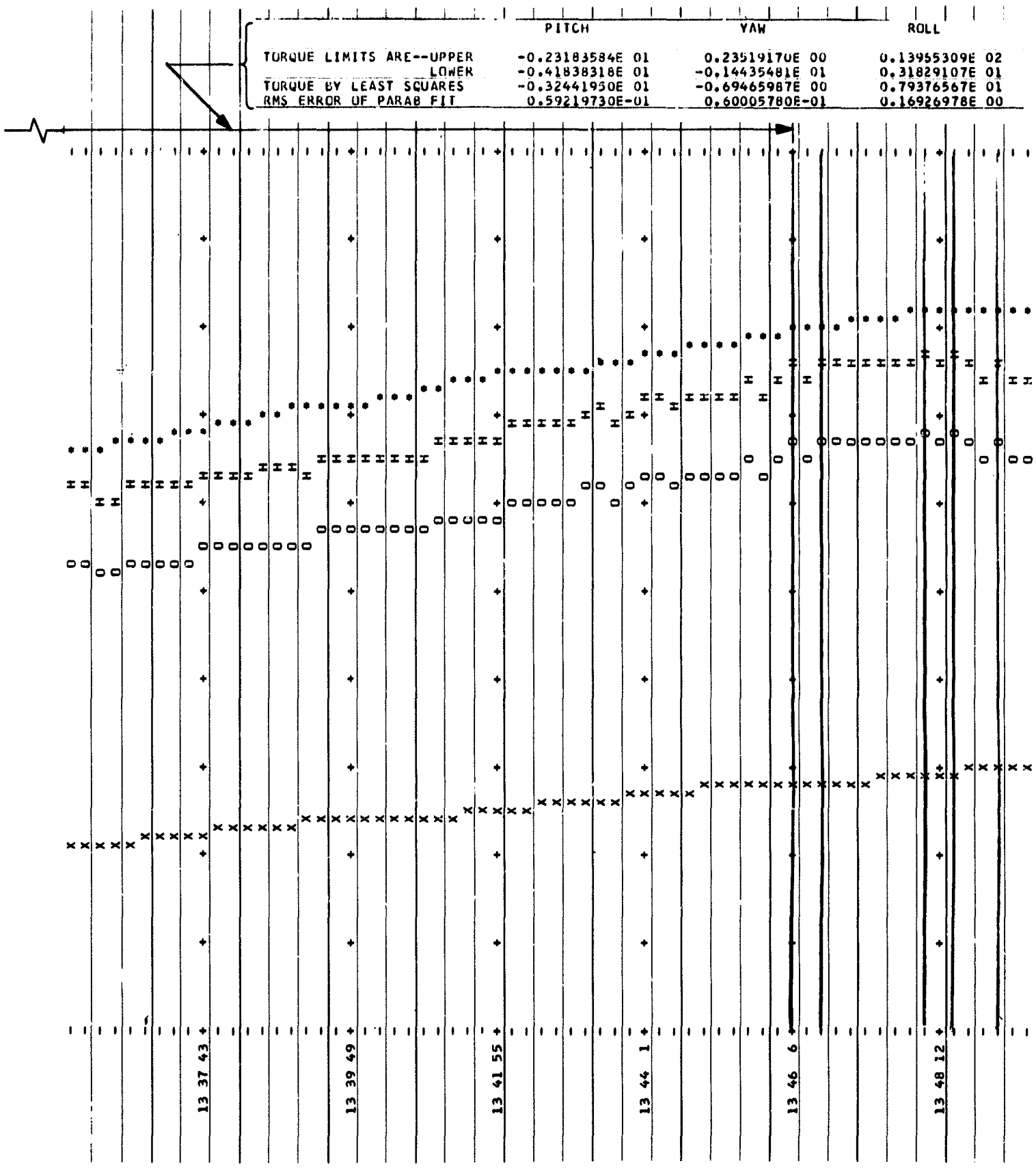
13 20 55




PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.23183584E 01 0.2351917UE 00 0.13955309E 02
LOWER -0.41838318E 01 -0.14435481E 01 0.31829107E 01
TORQUE BY LEAST SQUARES -0.32441950E 01 -0.69465987E 00 0.79376567E 01
RMS ERROR OF PARAB FIT 0.59219730E-01 0.60005780E-01 0.16926978E 00
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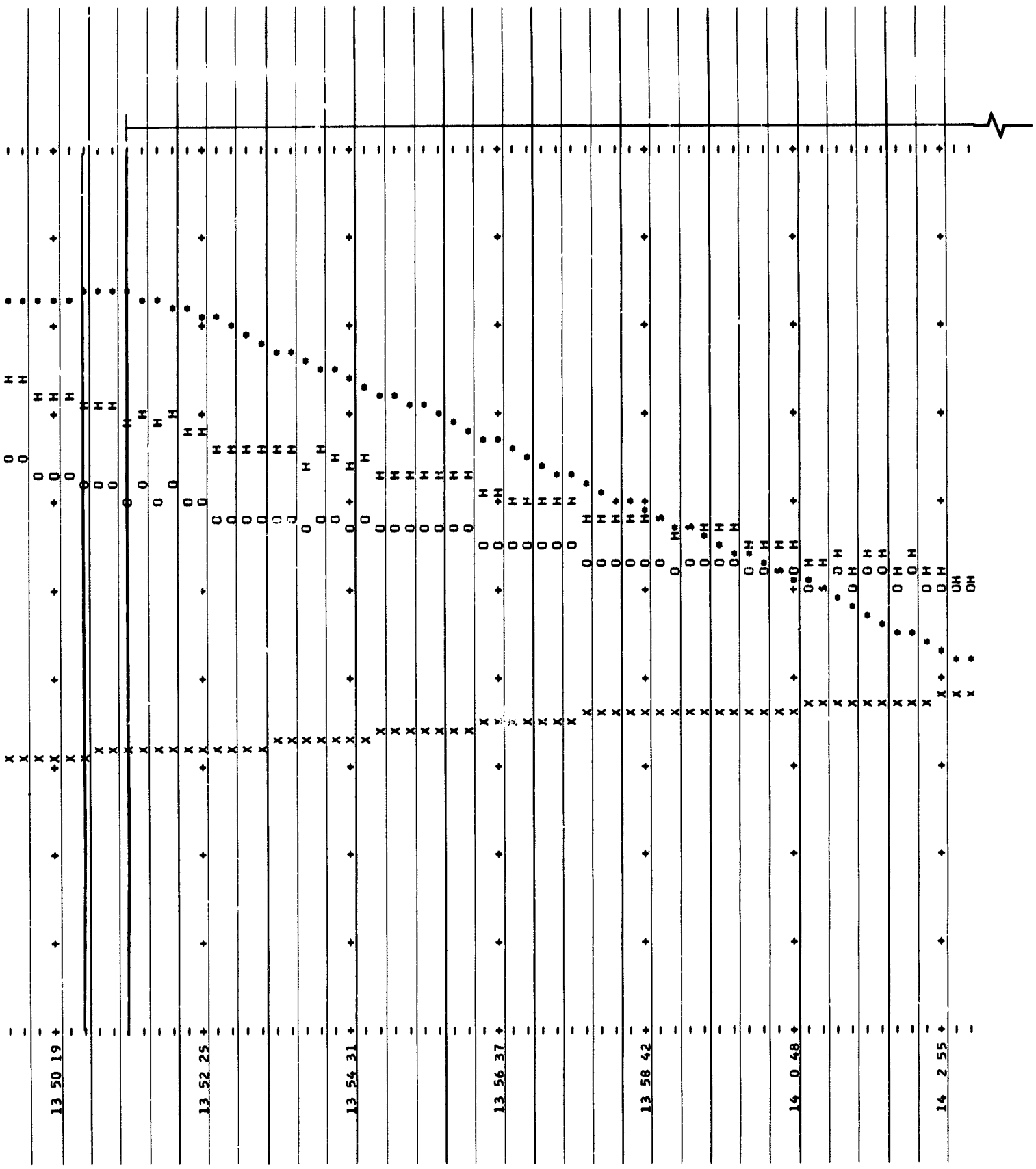
13 39 49
13 41 55
13 44 1
13 46 6
13 48 12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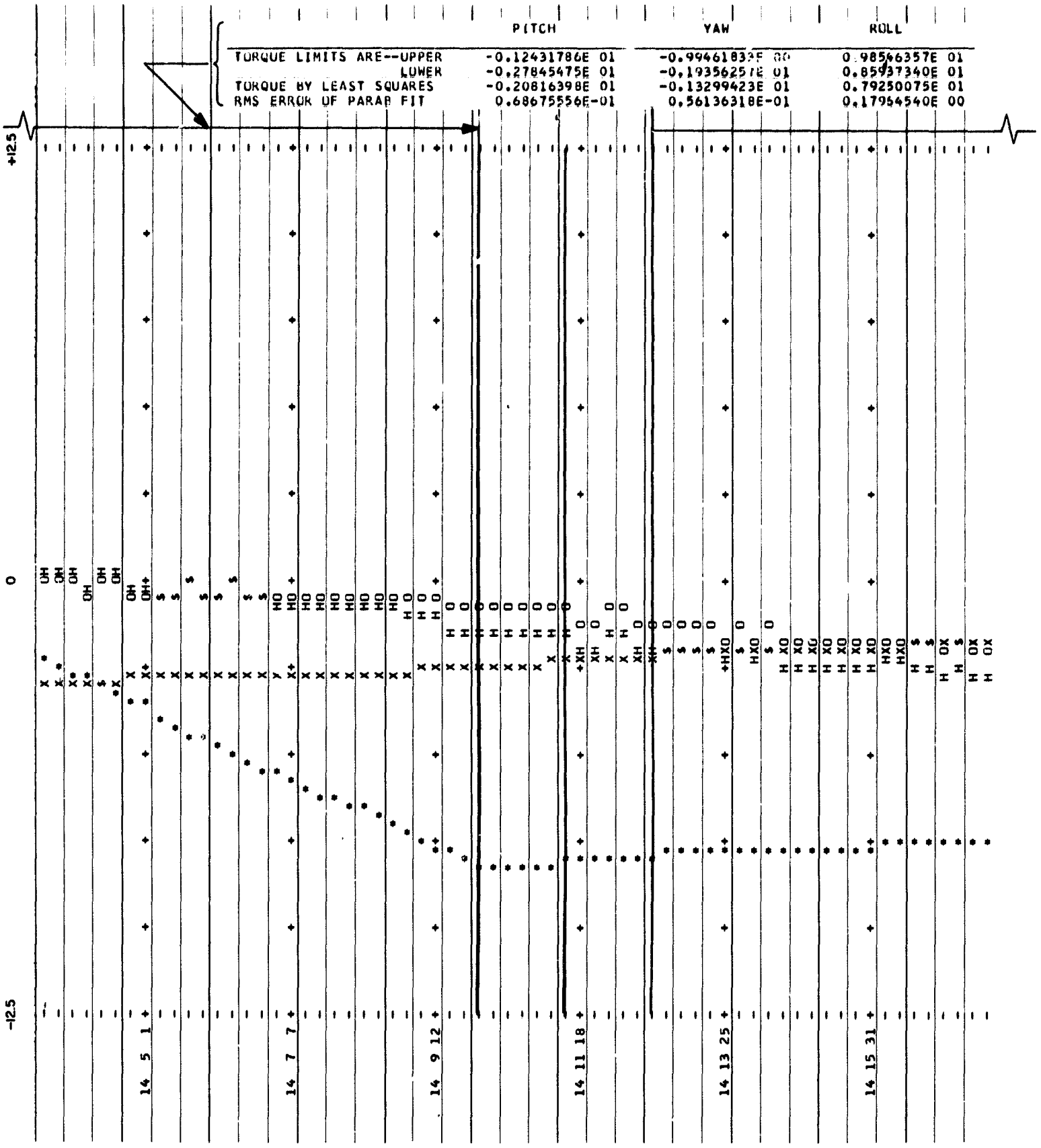
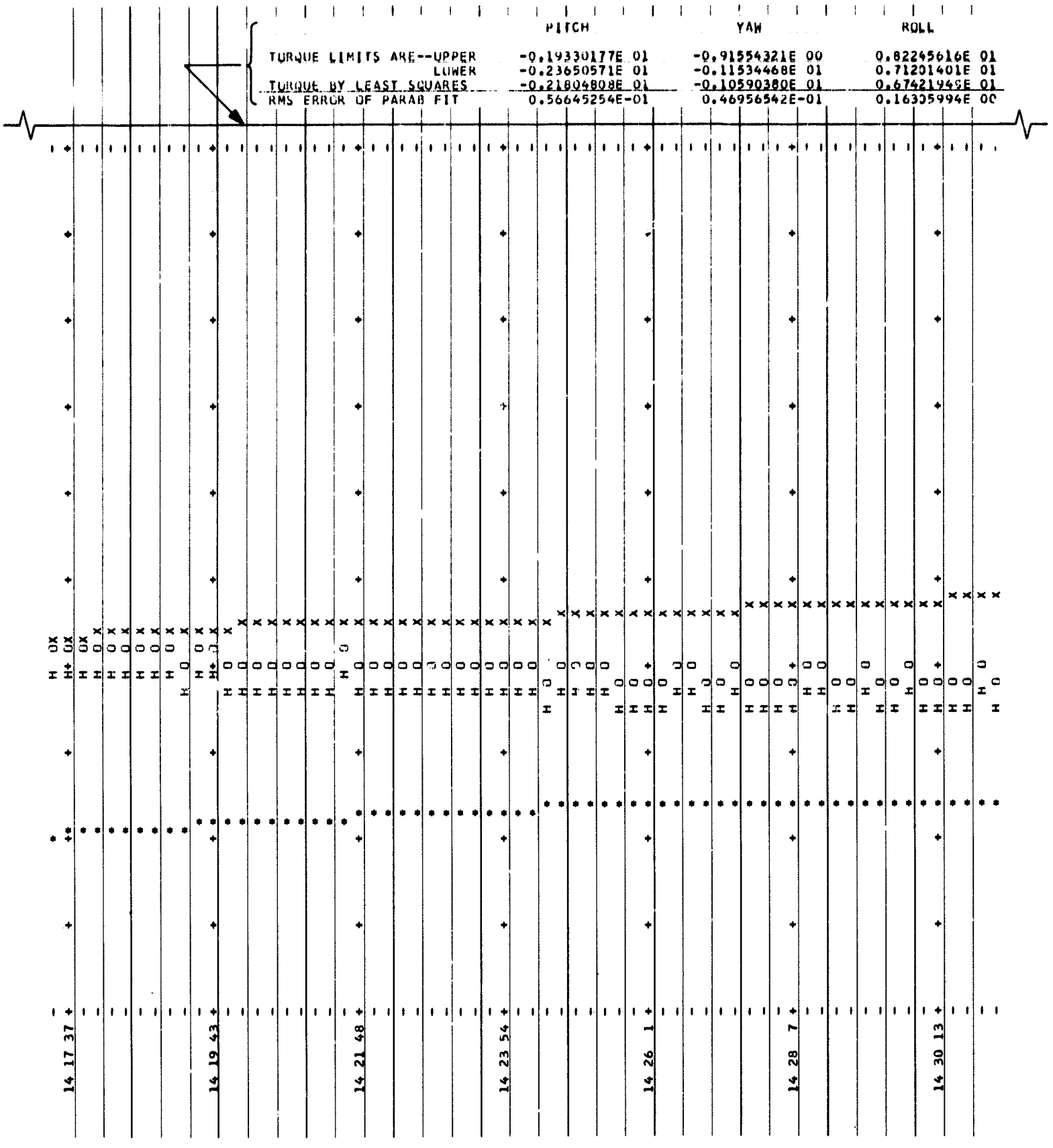
14 2 55


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.12431786E 01 -0.99461833E 00 0.98566357E 01
LOWER -0.27845475E 01 -0.19356257E 01 0.85937340E 01
TORQUE BY LEAST SQUARES -0.20816398E 01 -0.13299423E 01 0.79250075E 01
RMS ERROR OF PARAB FIT 0.68675556E-01 0.56136318E-01 0.17954540E 00
+12.5
-12.5
ANGULAR DISPLACEMENT, mrad
0
14 5 1
14 7 7
14 9 12
14 11 18
14 13 25
14 15 31


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.19330177E 01 -0.91554321E 00 0.82295616E 01
LOWER -0.23650571E 01 -0.11534468E 01 0.71201401E 01
TORQUE BY LEAST SQUARES -0.21804808E 01 -0.10590380E 01 0.67421949E 01
RMS ERROR OF PARAB FIT 0.56645254E-01 0.46956542E-01 0.16305994E 00
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14 23 54
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14 28 7
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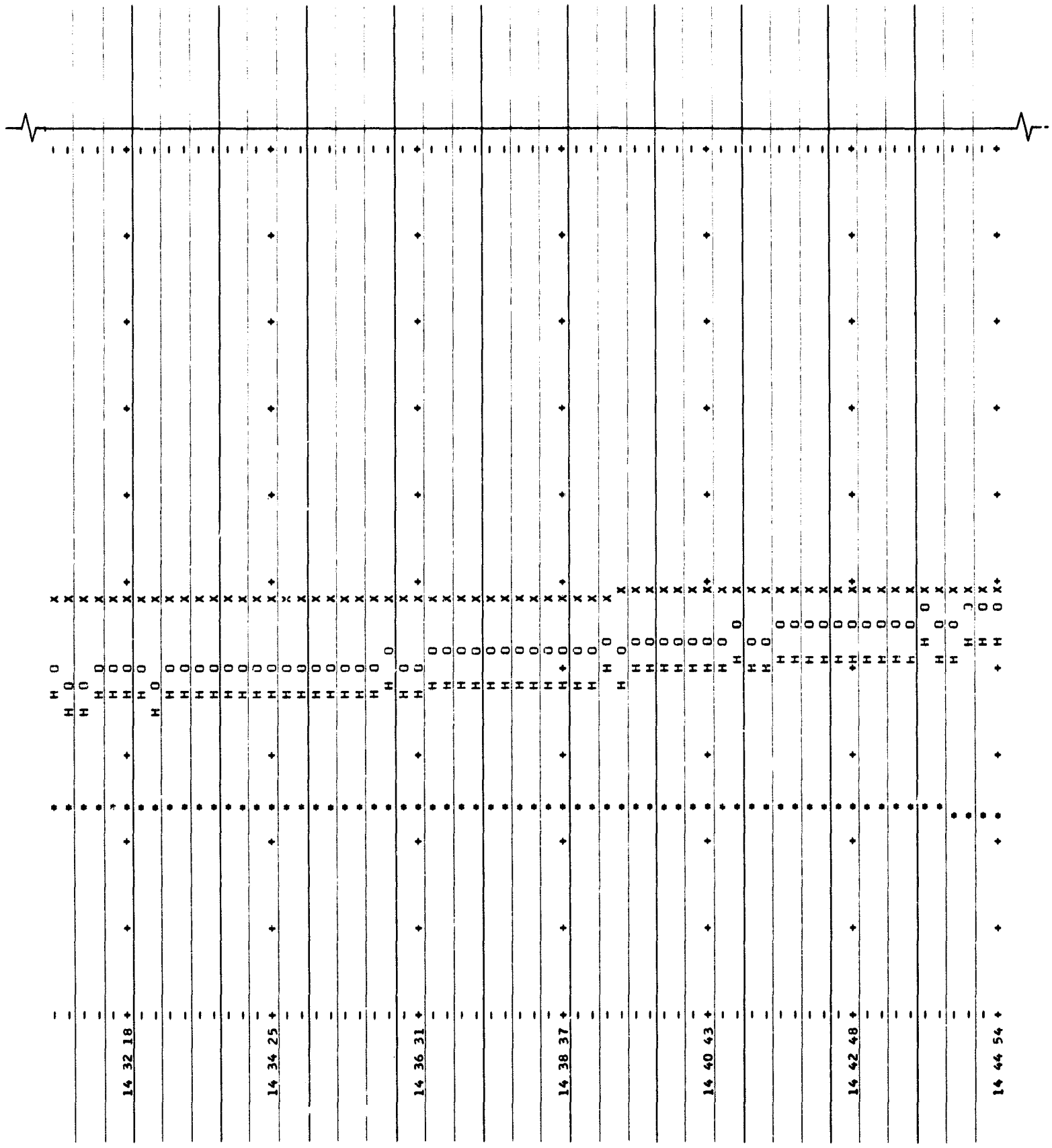

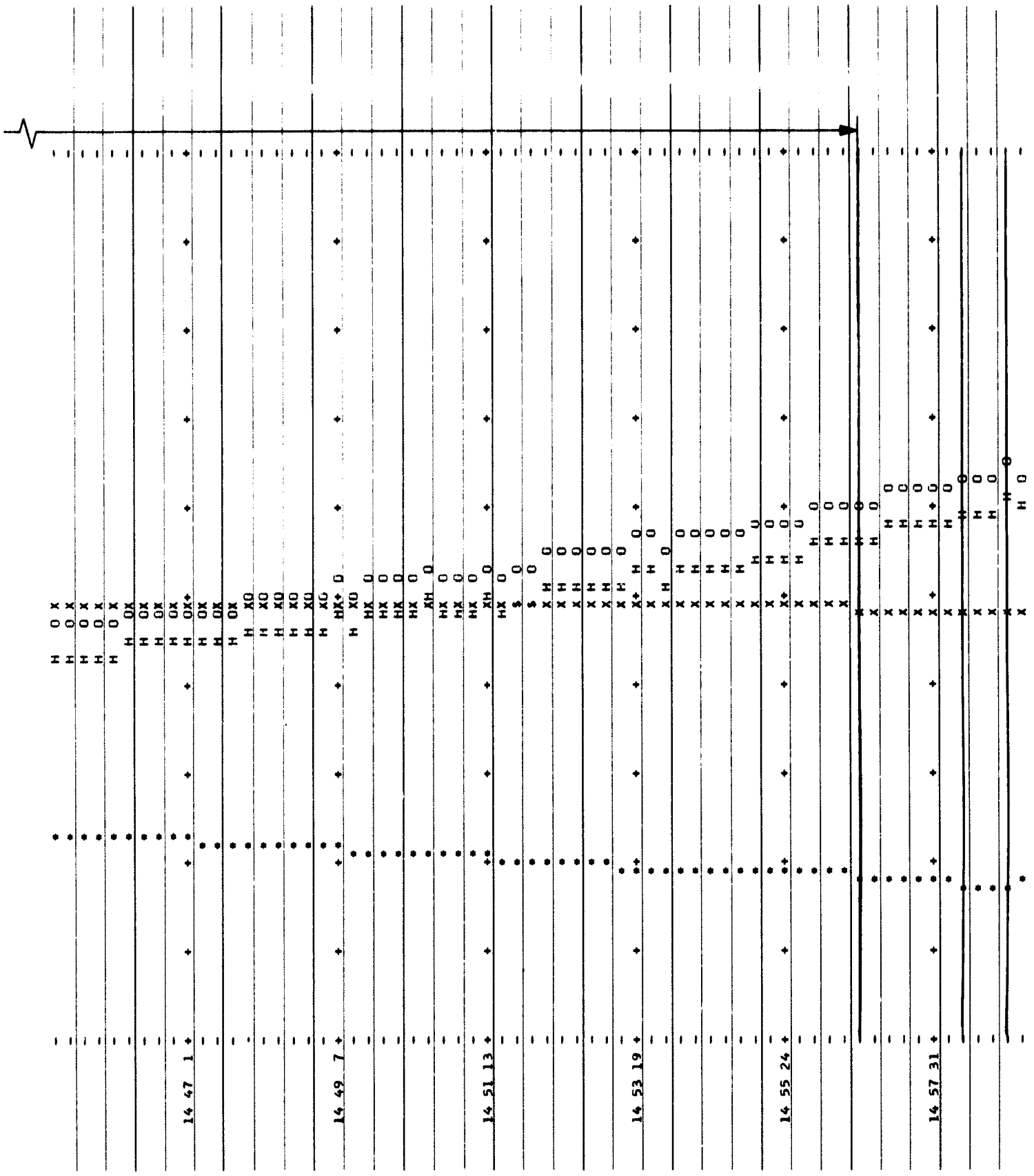
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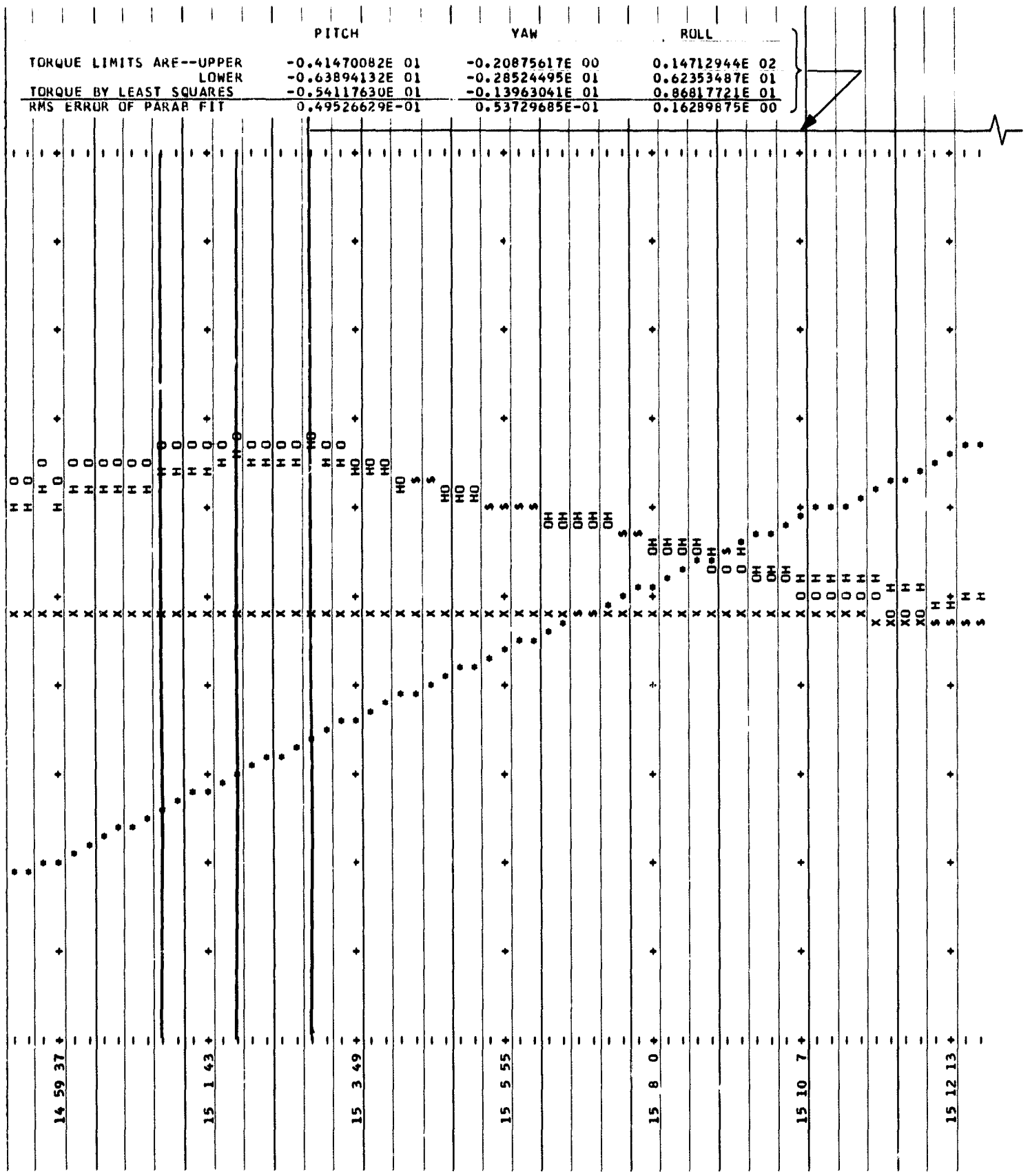
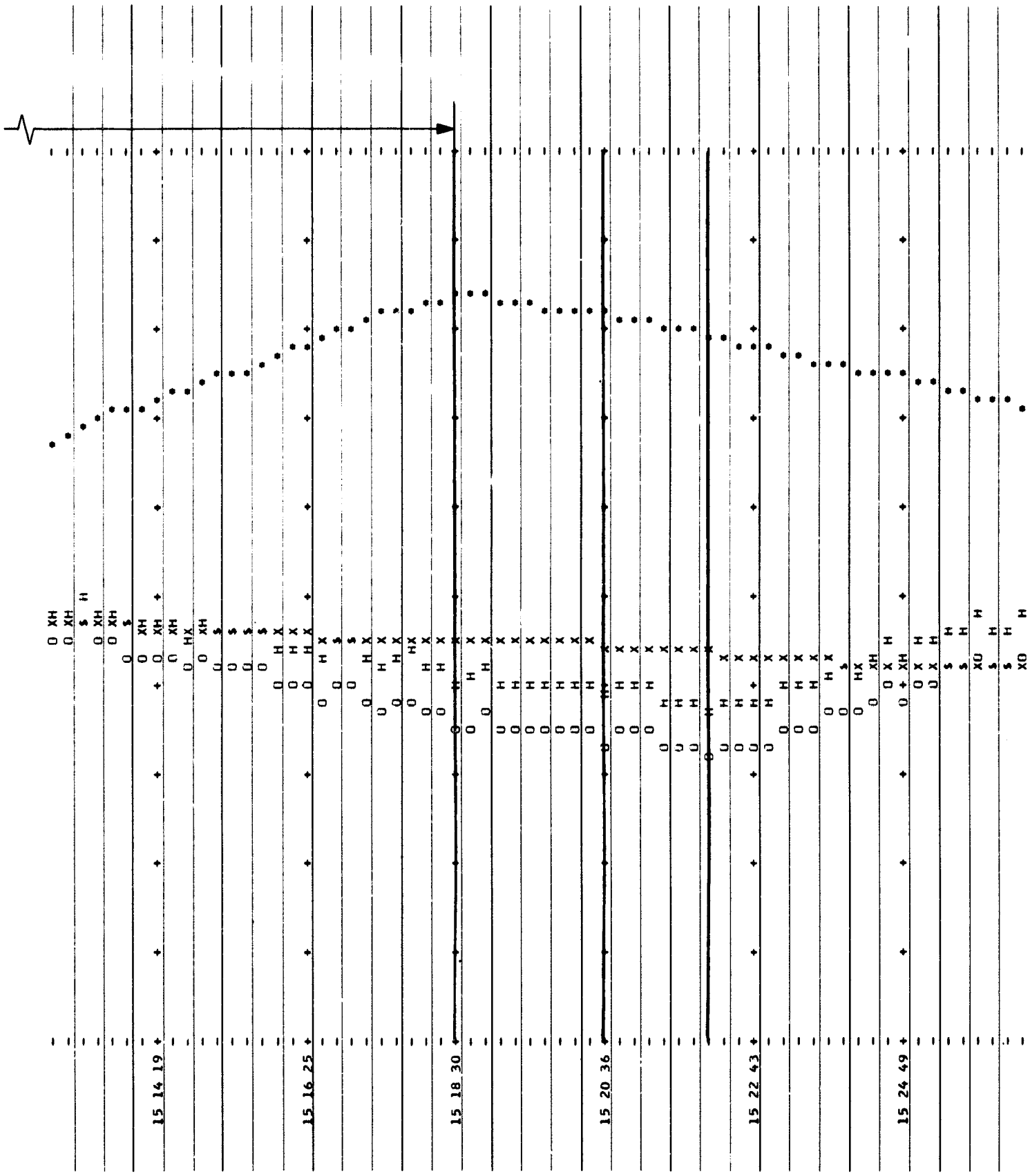
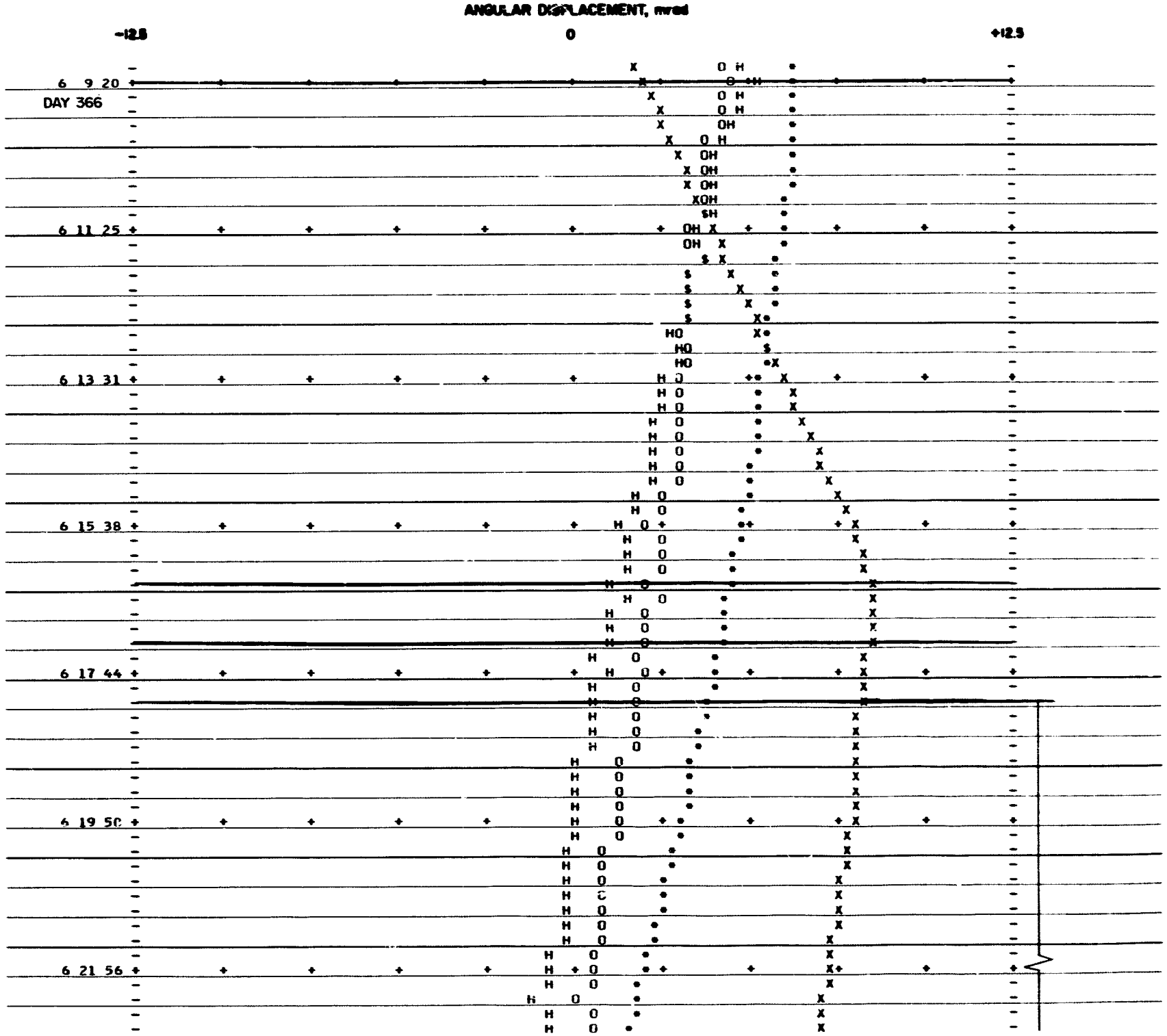
14 49 7
14 51 13
14 53 19
14 55 24
14 57 31

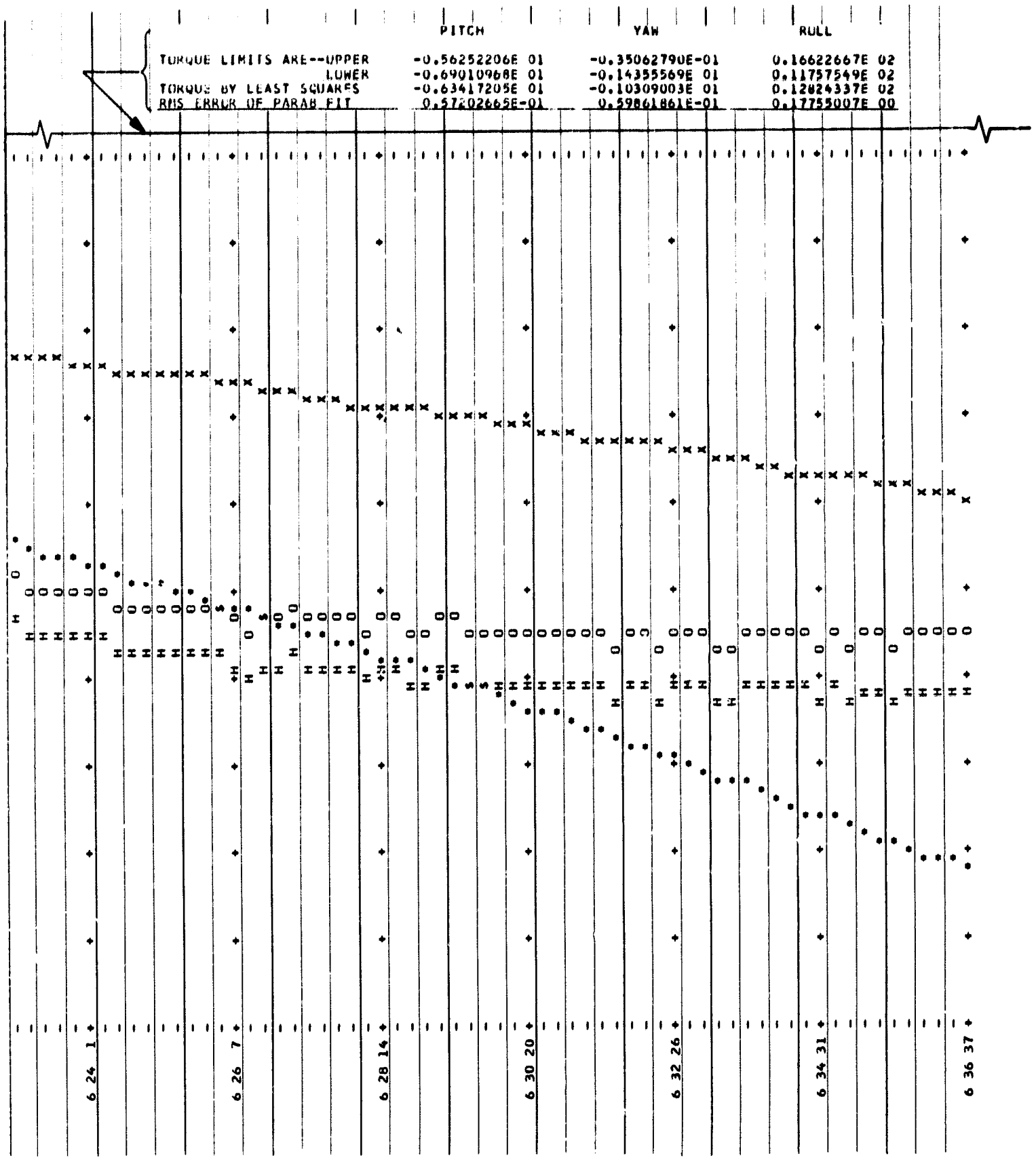

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.41470082E 01 -0.20875617E 00 0.14712944E 02
LOWER -0.63894132E 01 -0.28524495E 01 0.62353487E 01
TORQUE BY LEAST SQUARES -0.54117630E 01 -0.13963041E 01 0.86817721E 01
RMS ERROR OF PARAB FIT 0.49526629E-01 0.53729685E-01 0.16289875E 00
14 59 37
15 1 43
15 3 49
15 5 55
15 8 0
15 10 7
15 12 13

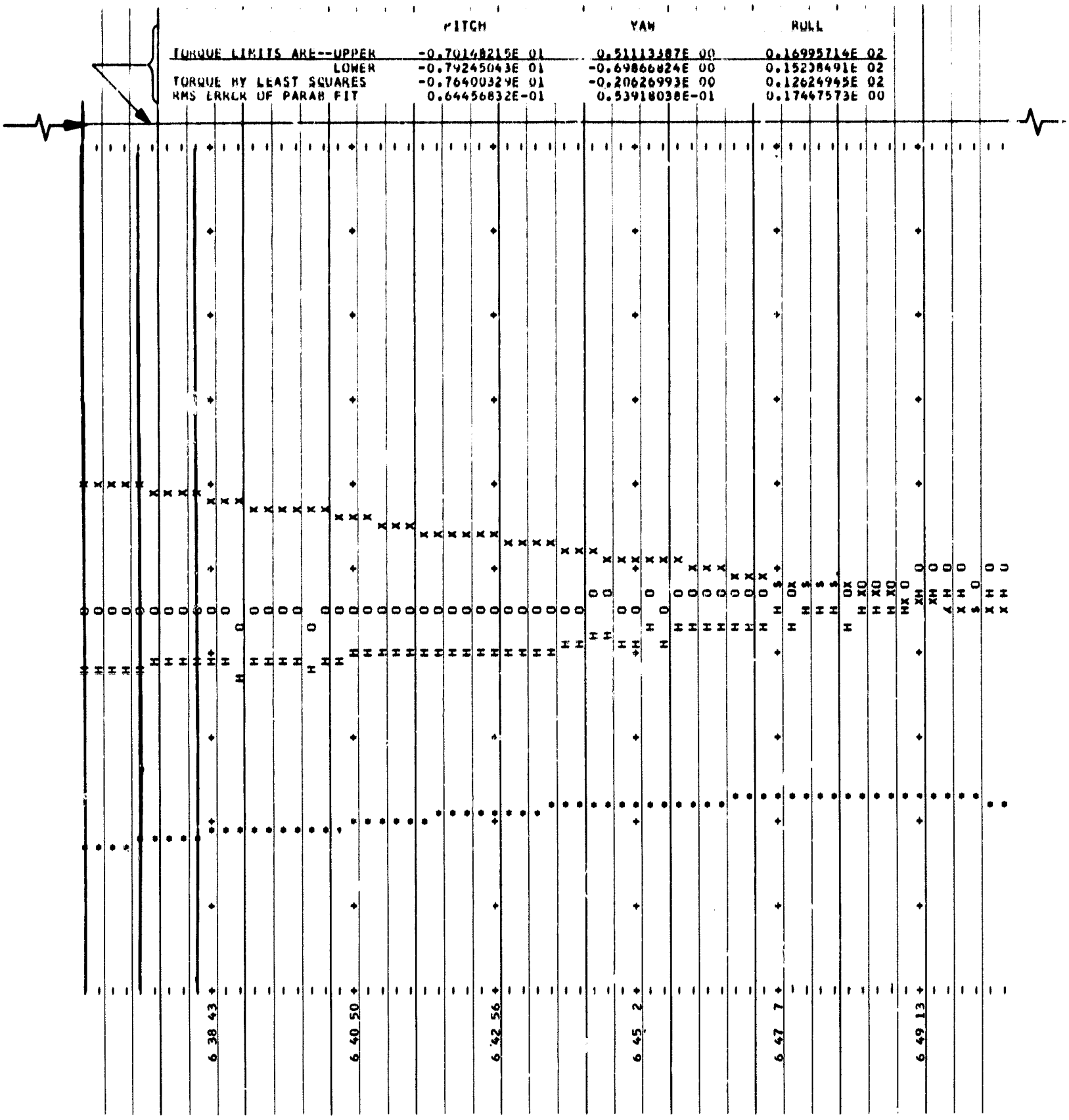


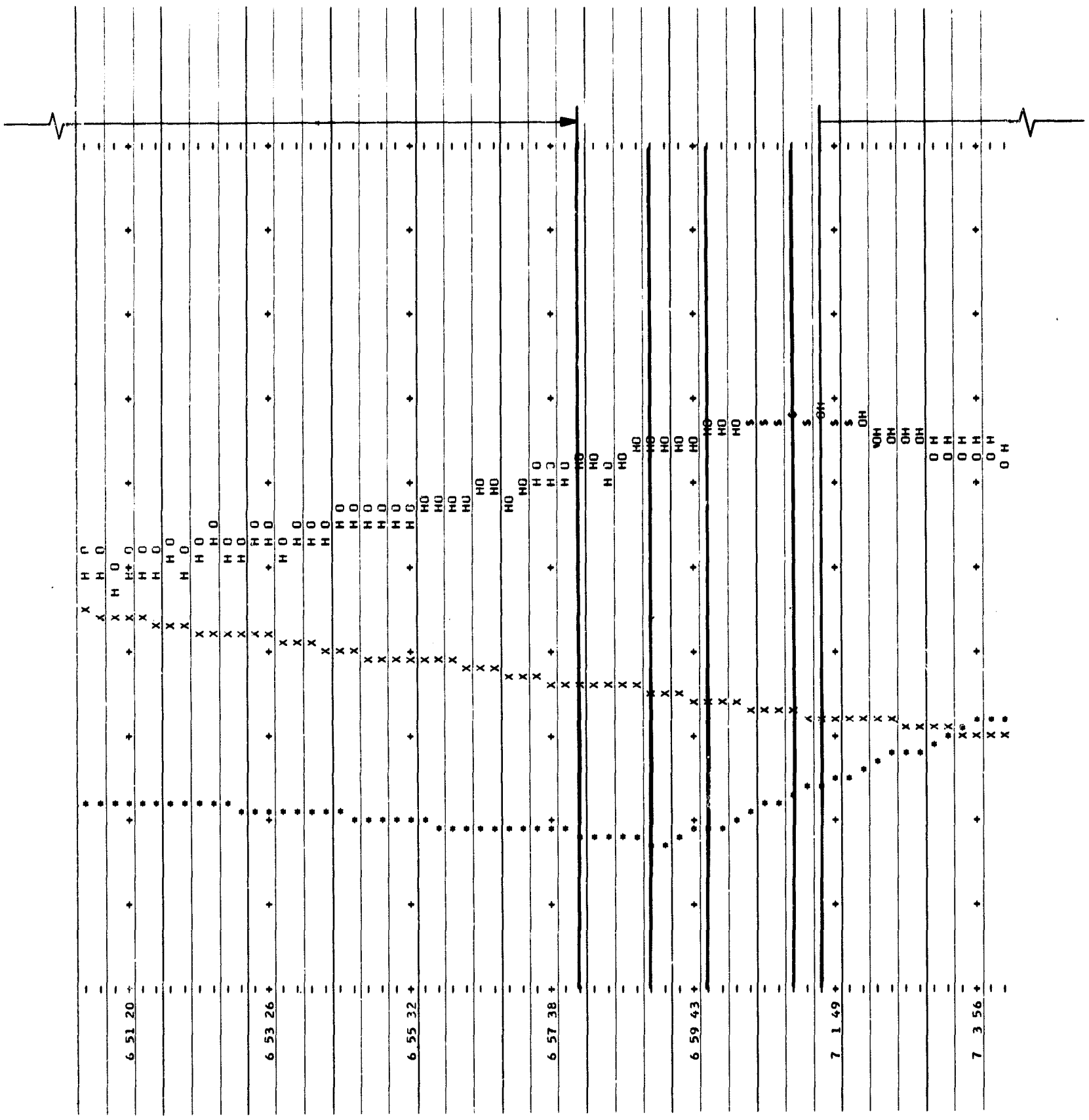
Plot II

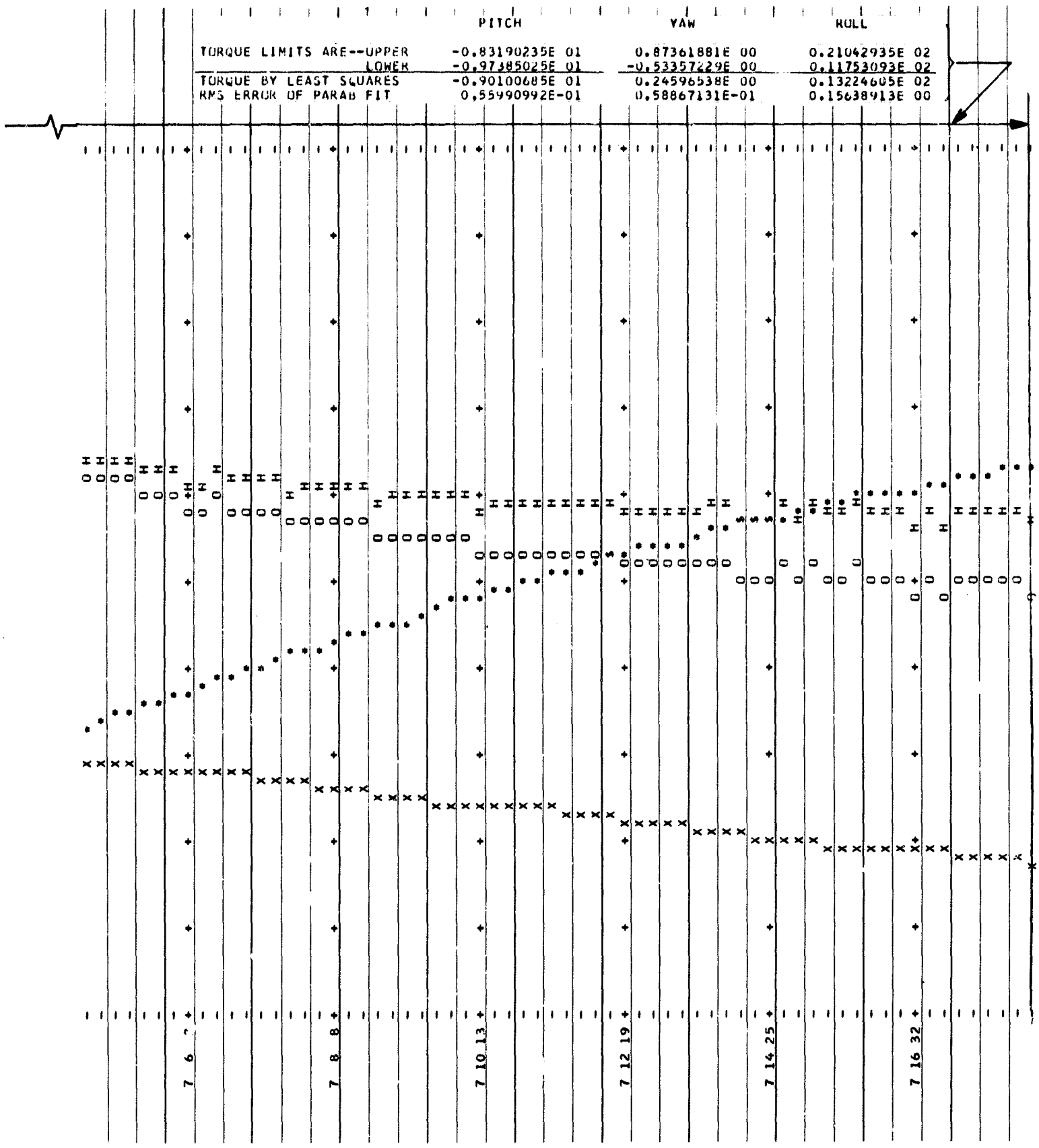
Reduced position data and torque limits vs time,
***Mariner IV*, 33⅓ bits/s, day 366, 1964**

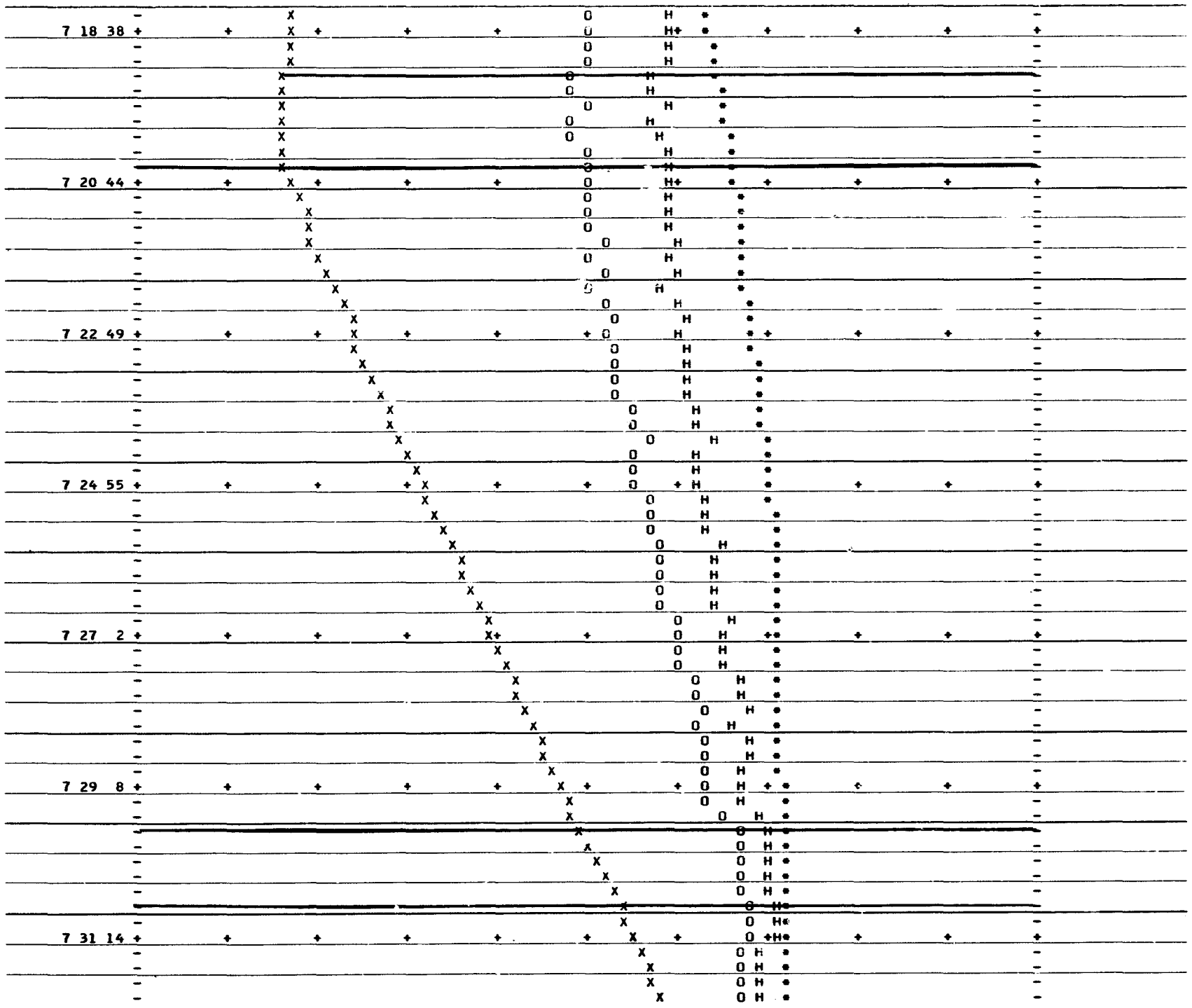

ANGULAR DISPLACEMENT, mrad
-12.5
0
+12.5
DAY 366
6 9 20
6 11 25
6 13 31
6 15 38
6 17 44
6 19 50
6 21 56

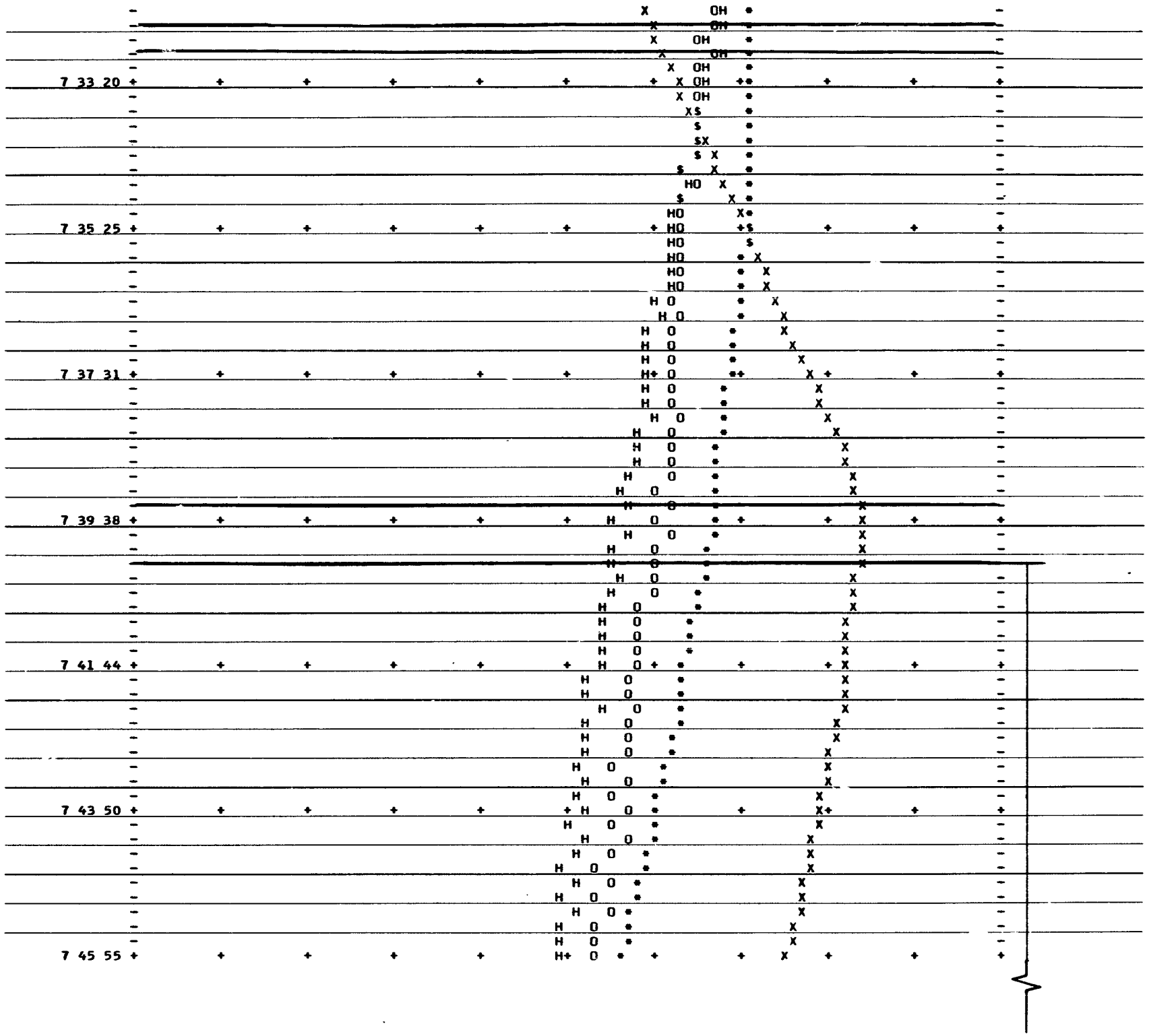

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.56252206E 01 -0.3506279OE-01 0.16622667E 02
LOWER -0.69010968E 01 -0.14355569E 01 0.11757549E 02
TORQUE BY LEAST SQUARES -0.63417205E 01 -0.10309003E 01 0.12824337E 02
RMS ERROR OF PARAB FIT 0.57202665E-01 0.59861861E-01 0.17755007E 00
6 24 1
6 26 7
6 28 14
6 30 20
6 32 26
6 34 31
6 36 37

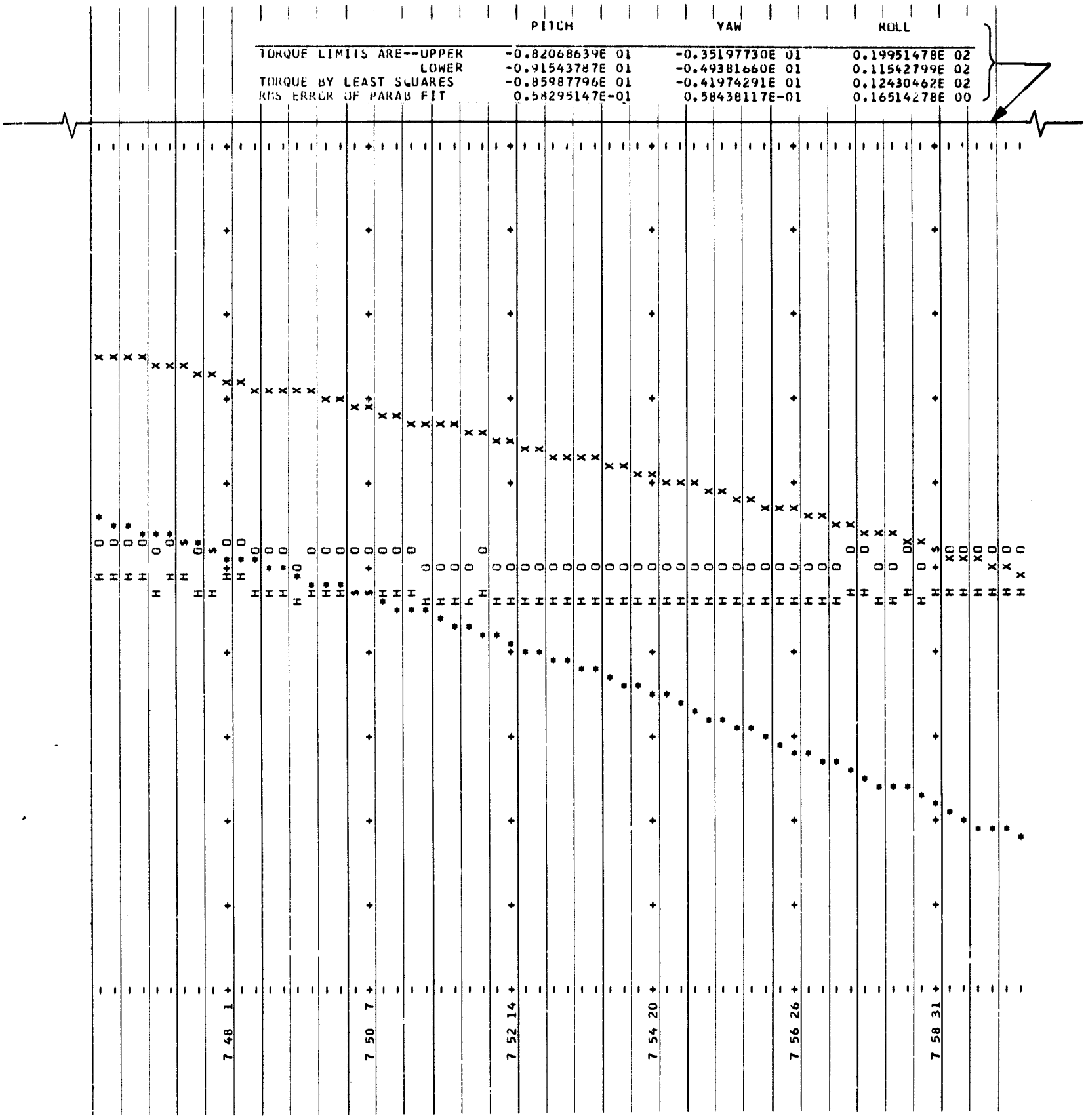

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.70148215E 01 0.51113387E 00 0.16995714E 02
LOWER -0.79245043E 01 -0.69866824E 00 0.15238491E 02
TORQUE BY LEAST SQUARES -0.76400329E 01 -0.20626993E 00 0.12624945E 02
RMS ERROR OF PARAB FIT 0.64456832E-01 0.53918038E-01 0.17467573E 00
6 38 43
6 40 50
6 42 56
6 45 2
6 47 7
6 49 13

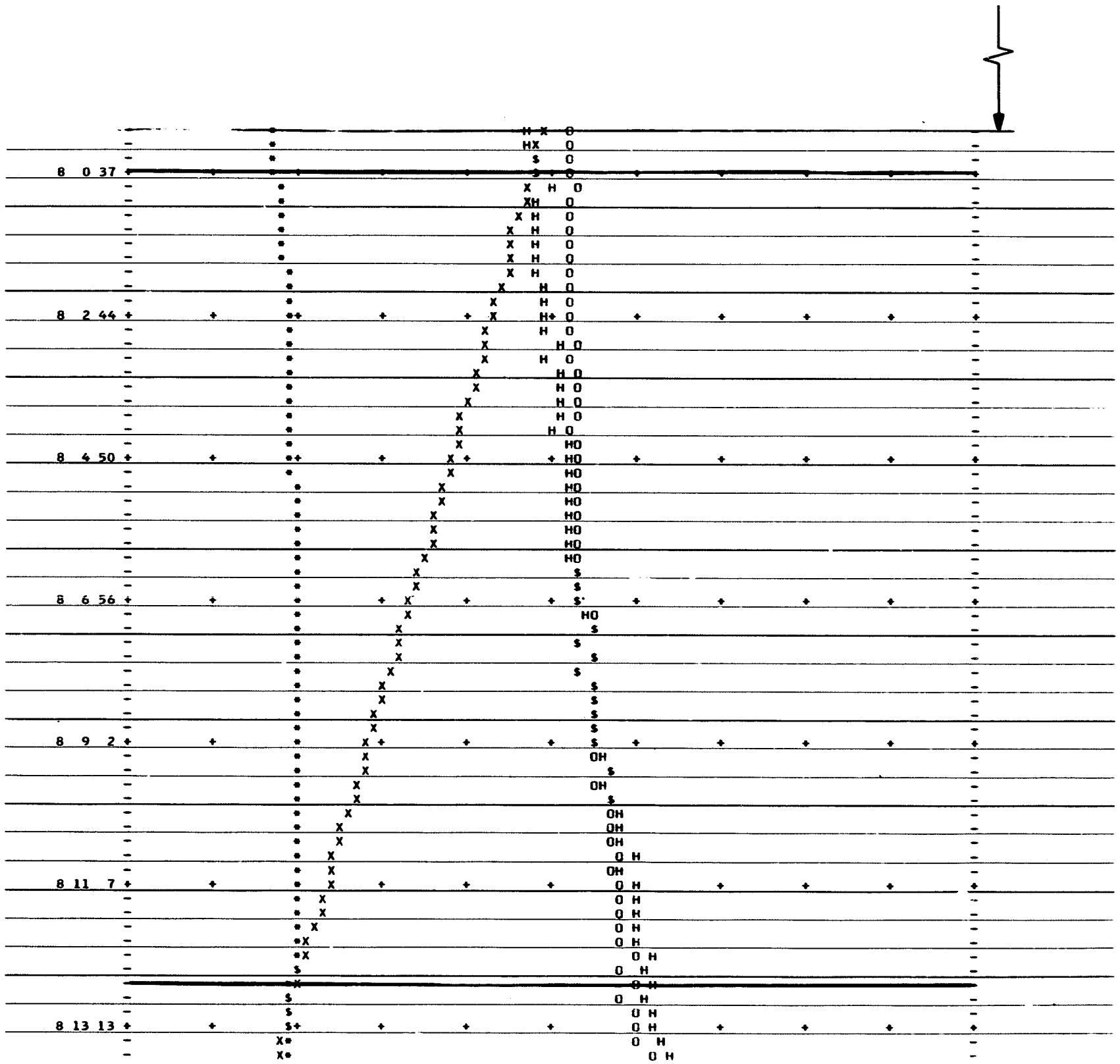

6 51 20
6 53 26
6 55 32
6 57 38
6 59 43
7 1 49
7 3 56


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.83190235E 01 0.87361881E 00 0.21042935E 02
LOWER -0.97385025E 01 -0.53357229E 00 0.11753093E 02
TORQUE BY LEAST SQUARES -0.90100685E 01 0.24596538E 00 0.13224605E 02
RMS ERROR OF PARAB FIT 0.55990992E-01 0.58867131E-01 0.15638913E 00
7 6
7 8 8
7 10 13
7 12 19
7 14 25
7 16 32

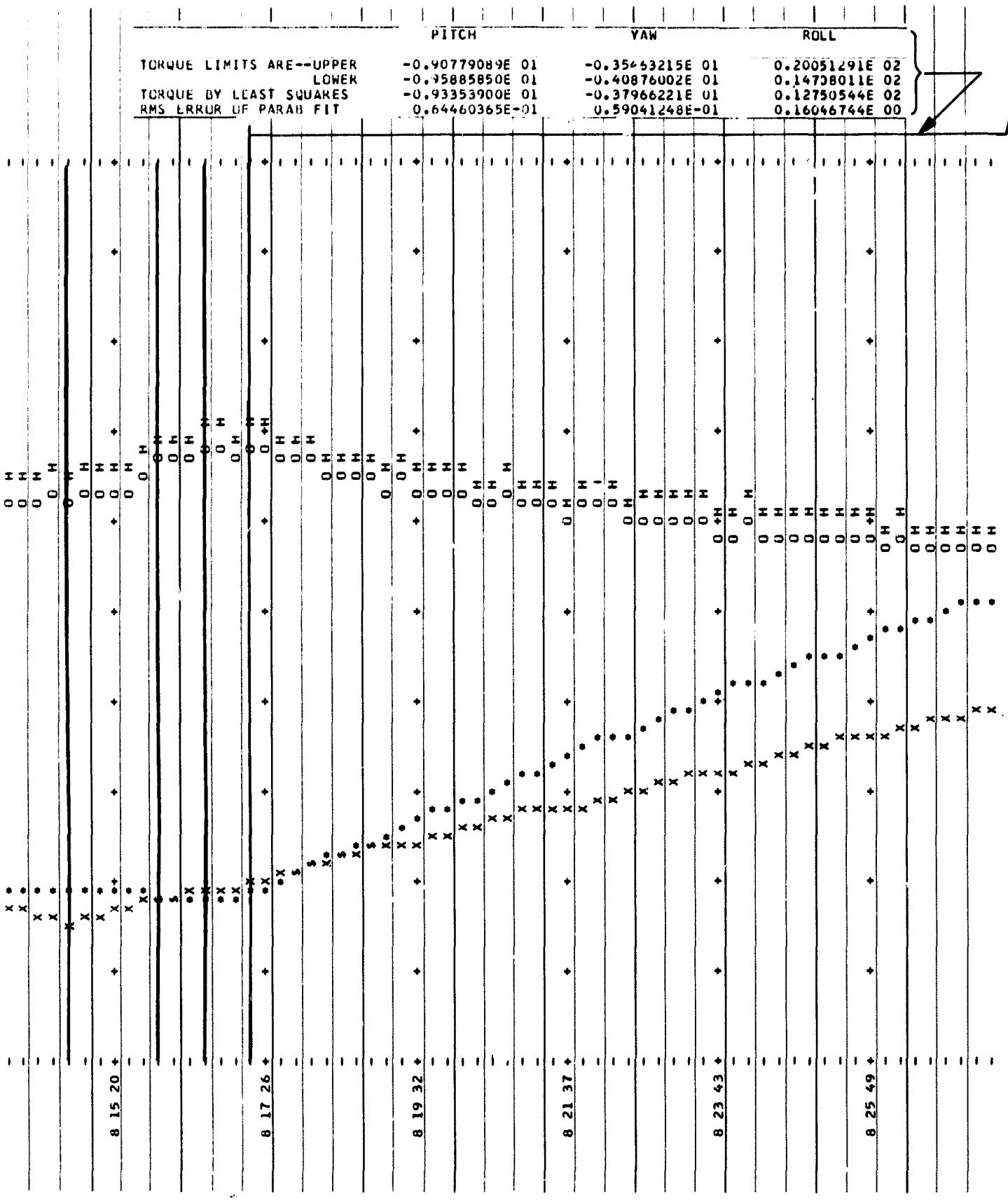

7 18 38
7 20 44
7 22 49
7 24 55
7 27 2
7 29 8
7 31 14

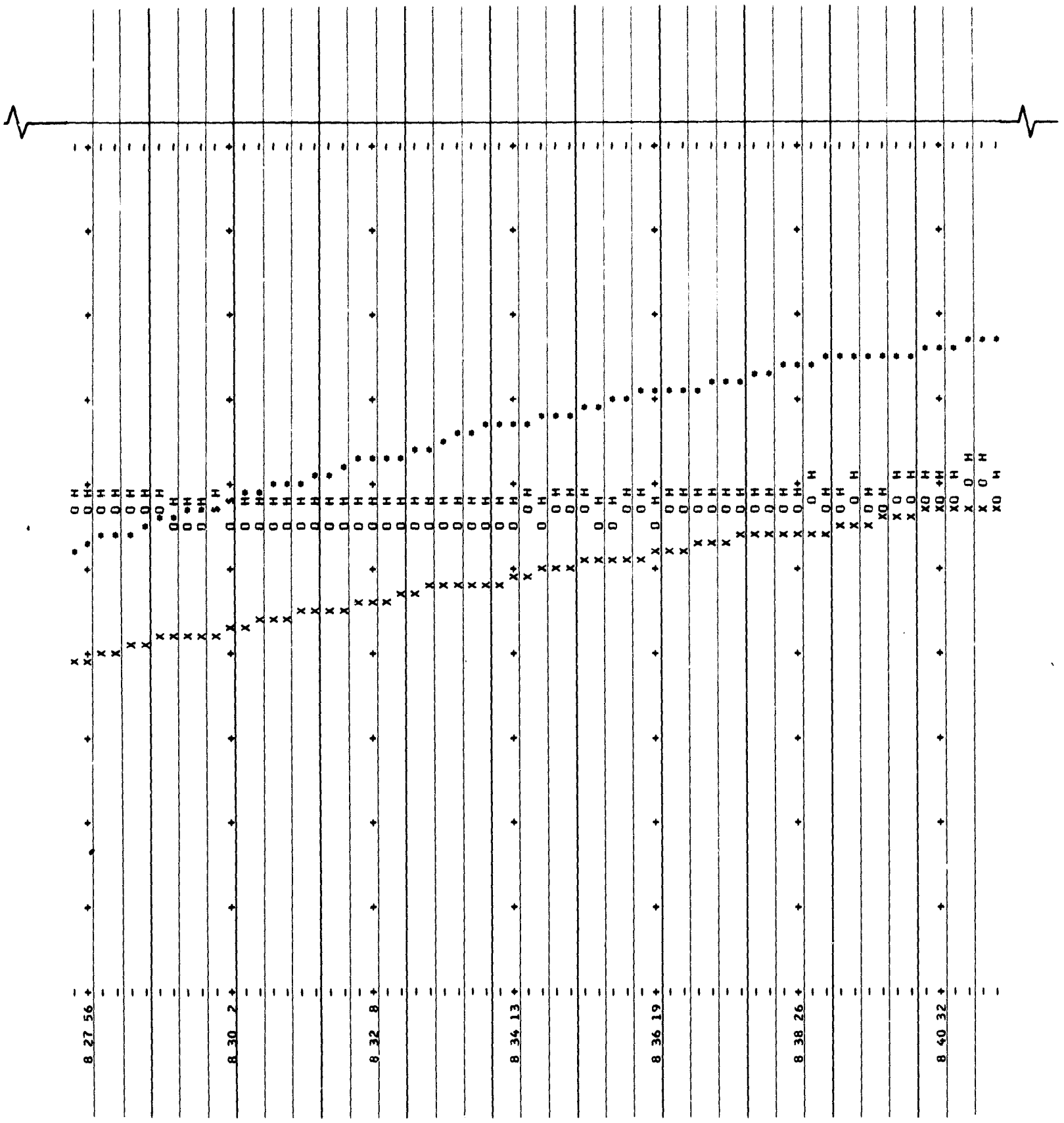

7 33 20
7 35 25
7 37 31
7 39 38
7 41 44
7 43 50
7 45 55

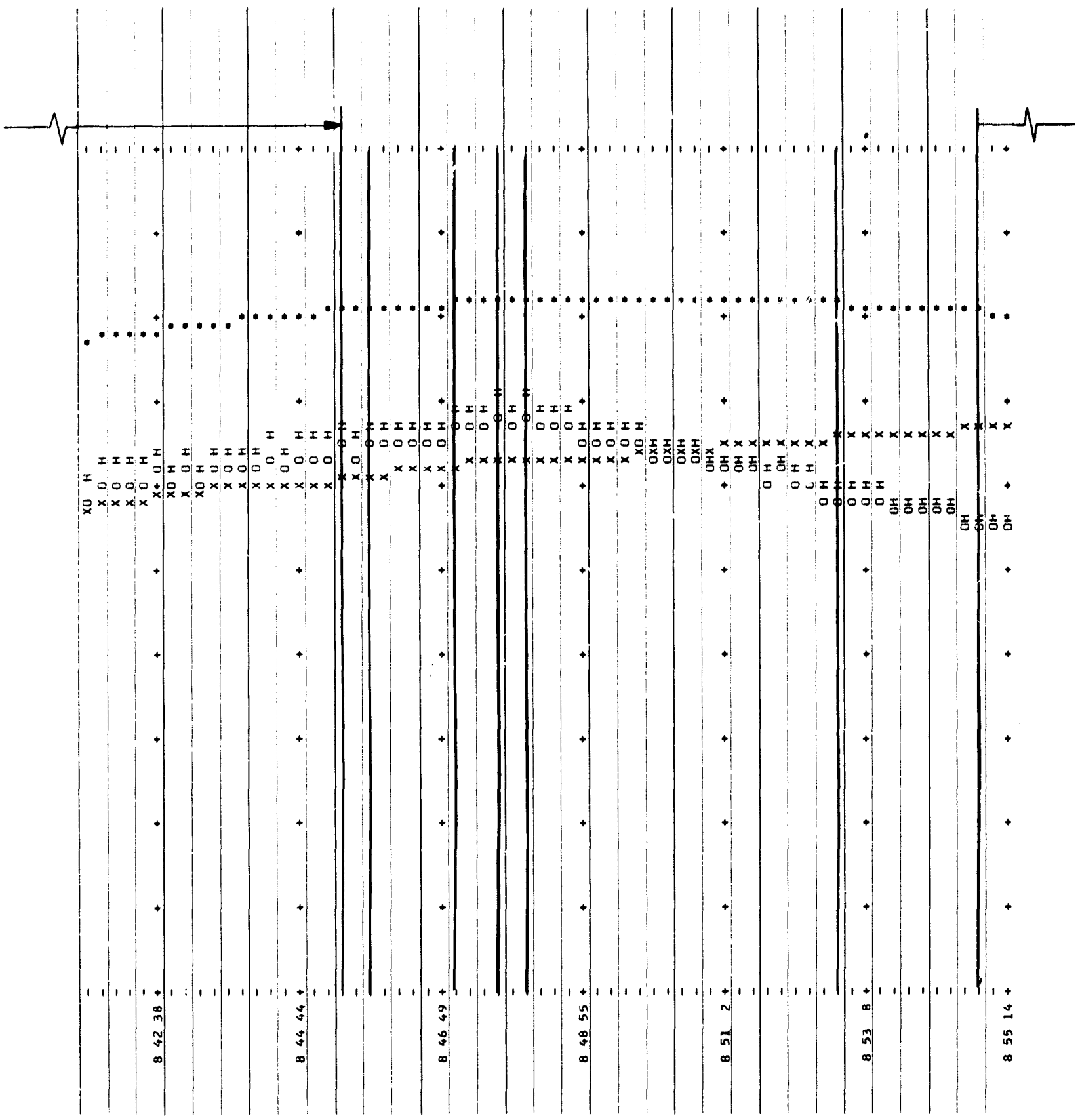

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.82068639E 01 -0.35197730E 01 0.19951478E 02
LOWER -0.91543787E 01 -0.49381660E 01 0.11542799E 02
TORQUE BY LEAST SQUARES -0.85987796E 01 -0.41974291E 01 0.12430462E 02
RMS ERROR OF PARAB FIT 0.58295147E-01 0.58438117E-01 0.16514278E 00
7 48 1
7 50 7
7 52 14
7 54 20
7 56 26
7 58 31

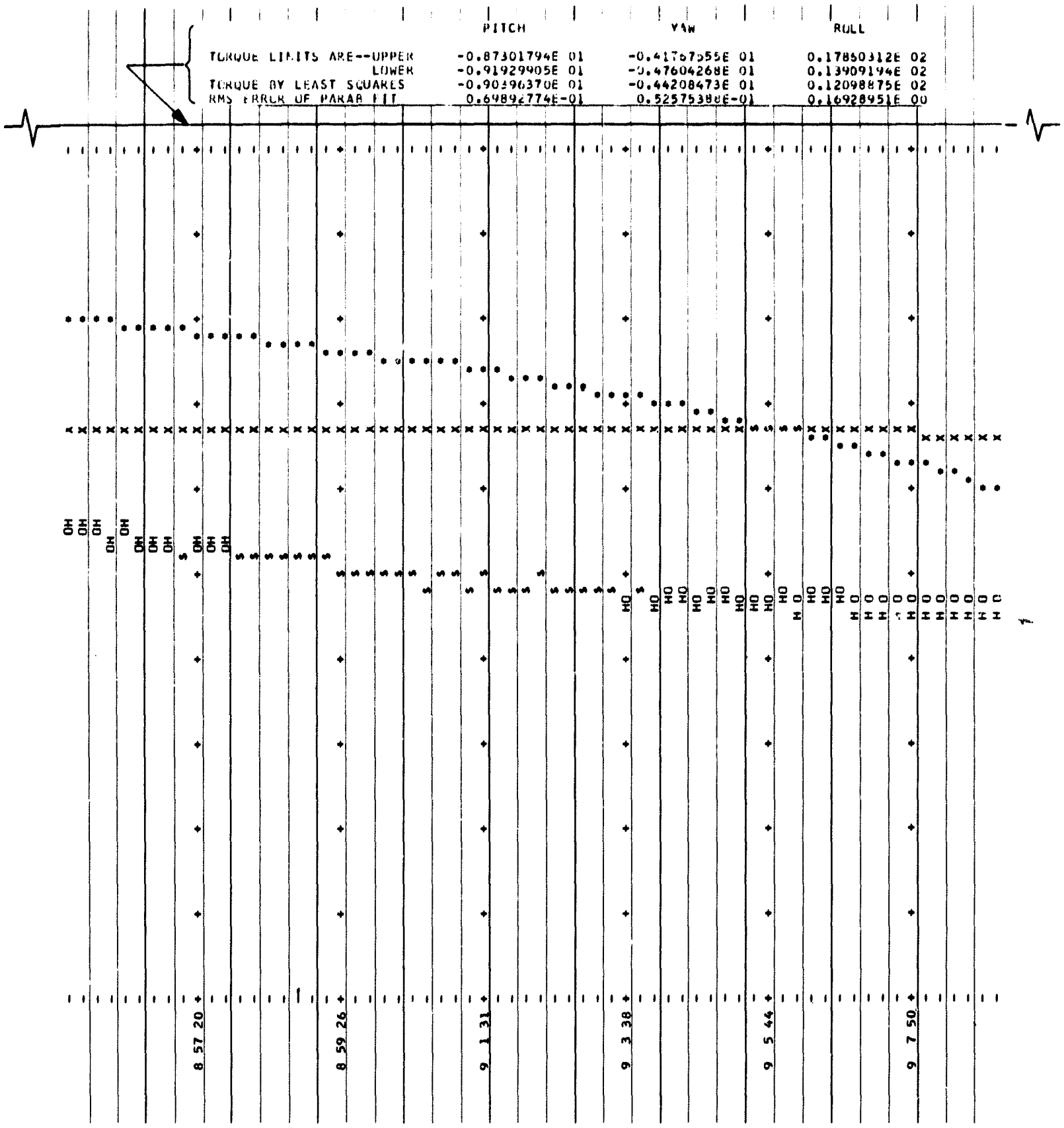

8 0 37
8 2 44
8 4 50
8 6 56
8 9 2
8 11 7
8 13 13

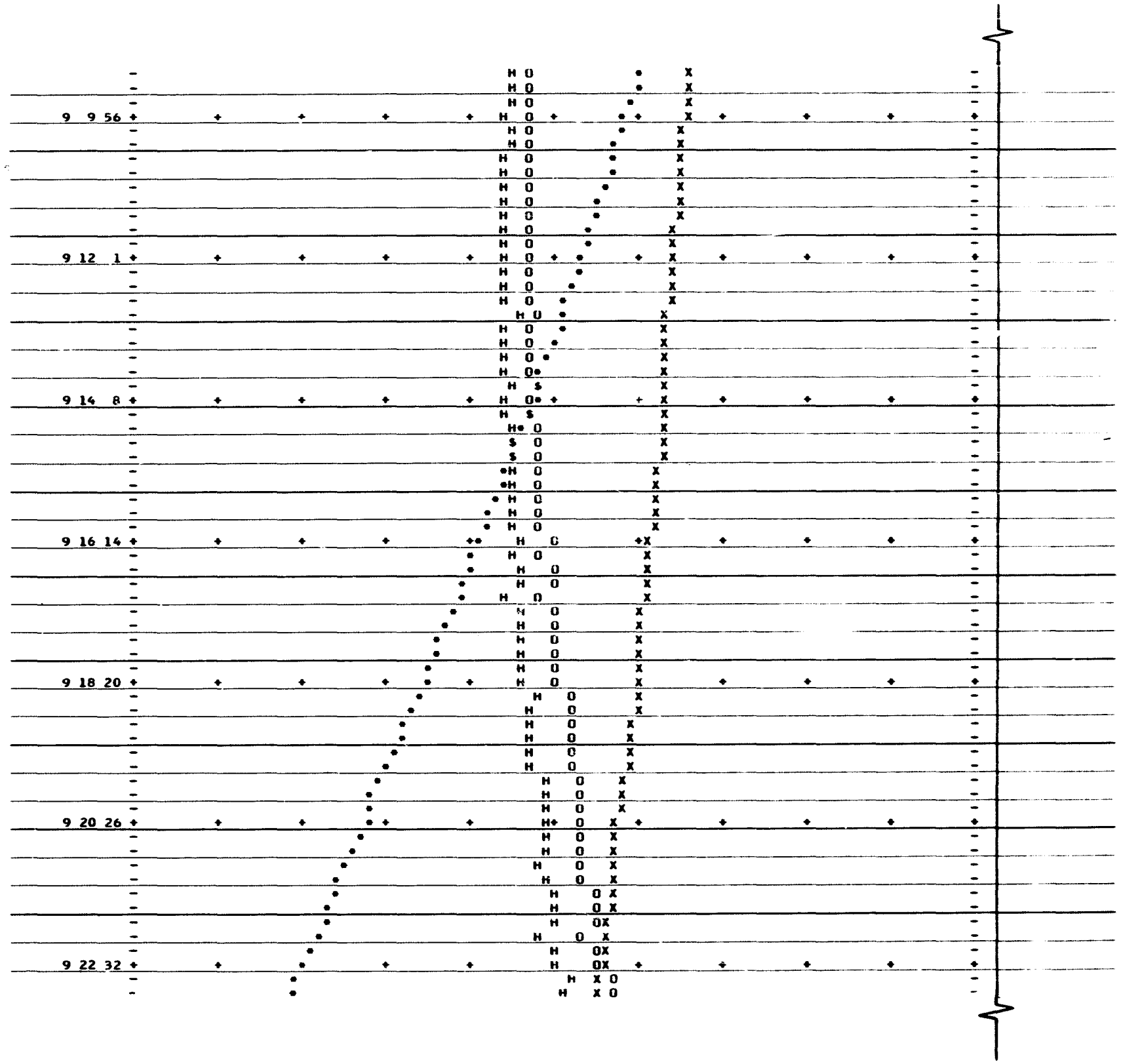
	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.90779089E 01	-0.35463215E 01	0.20051291E 02
LOWER	-0.95885850E 01	-0.40876002E 01	0.14738011E 02
TORQUE BY LEAST SQUARES	-0.93353900E 01	-0.37966221E 01	0.12750544E 02
RMS ERROR OF PARAB FIT	0.64460365E-01	0.59041248E-01	0.16046744E 00

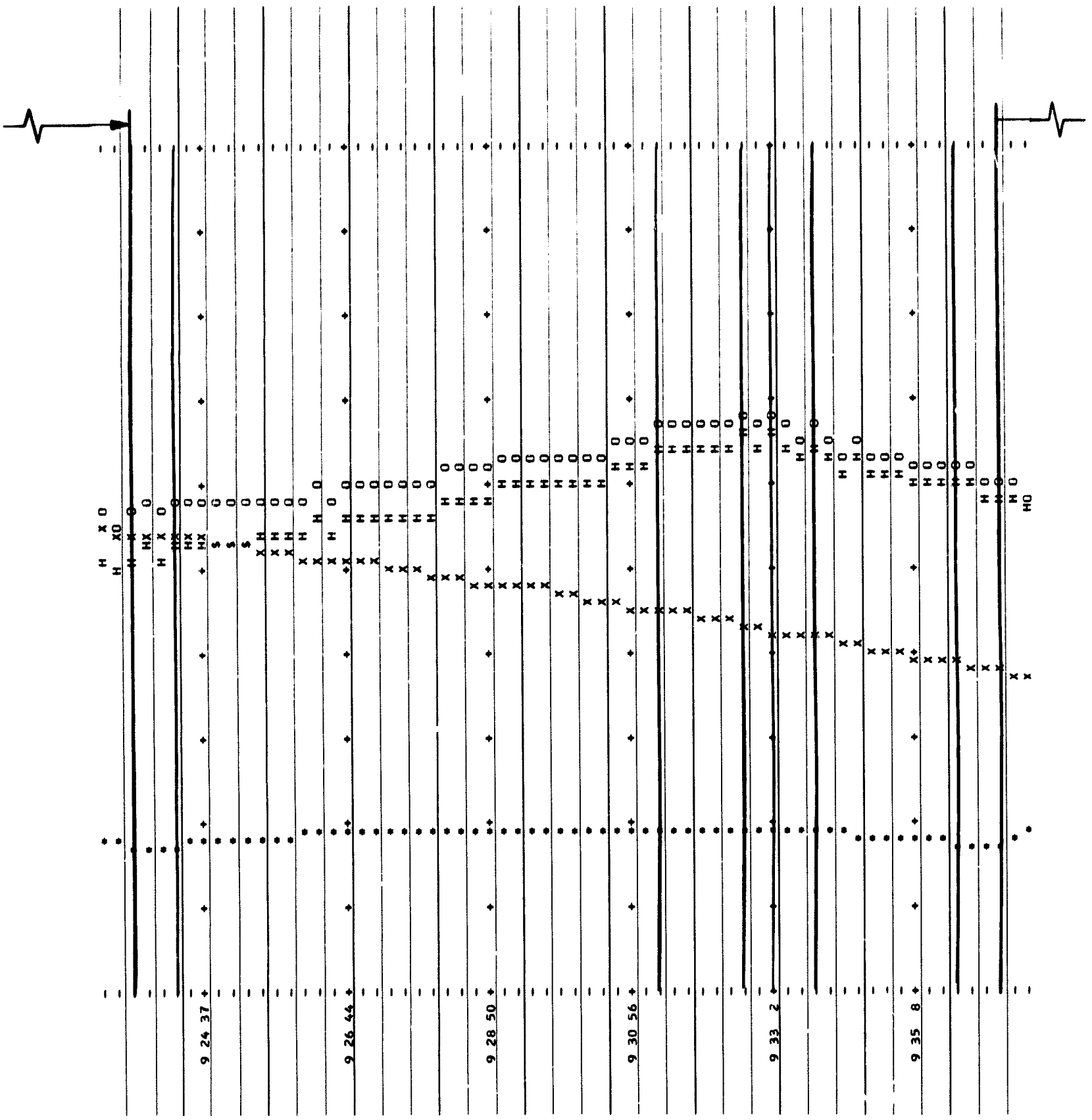



8 27 56
8 30 2
8 32 8
8 34 13
8 36 19
8 38 26
8 40 32

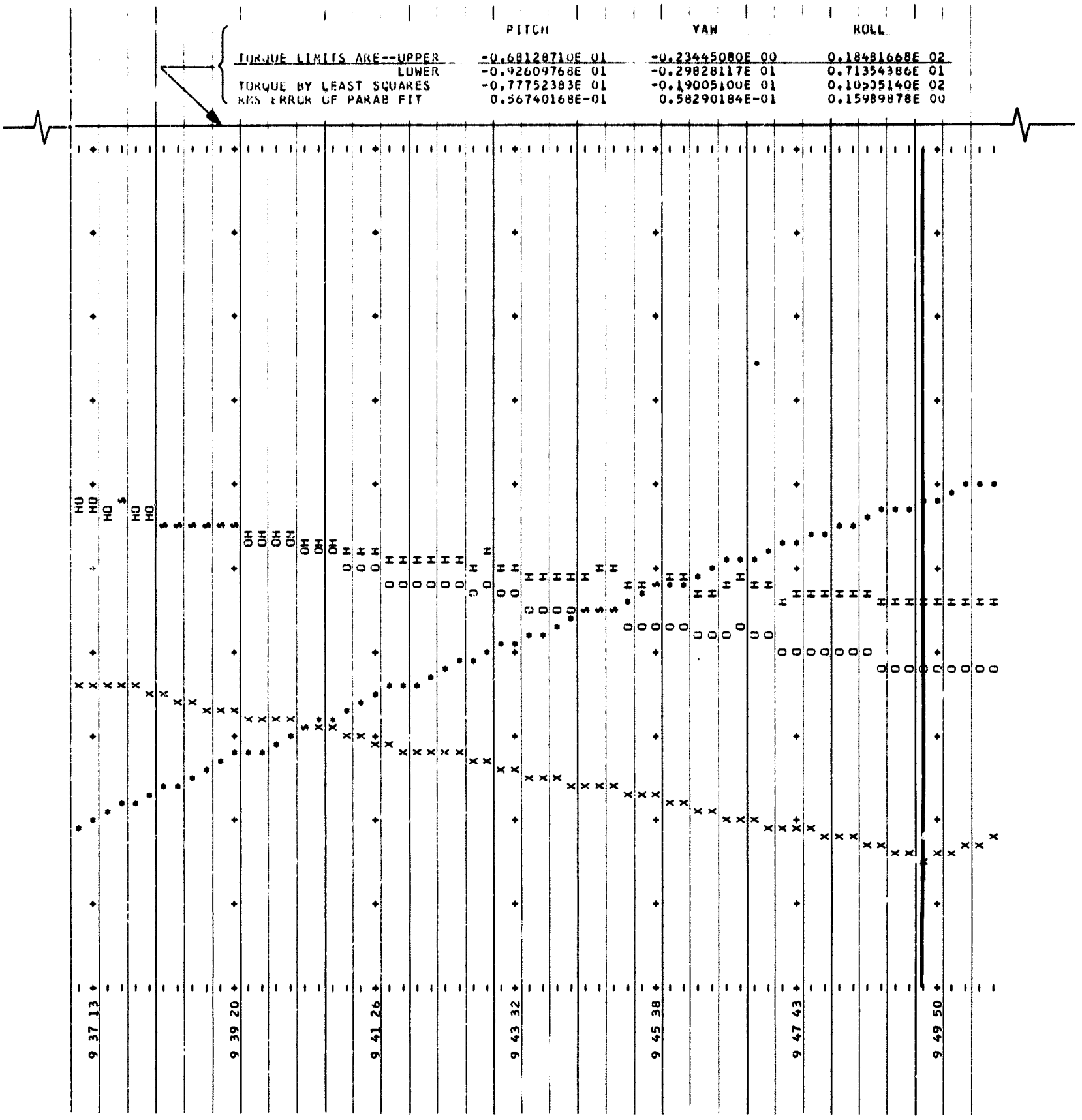

8 42 38
8 44 44
8 46 49
8 48 55
8 51 2
8 53 8
8 55 14

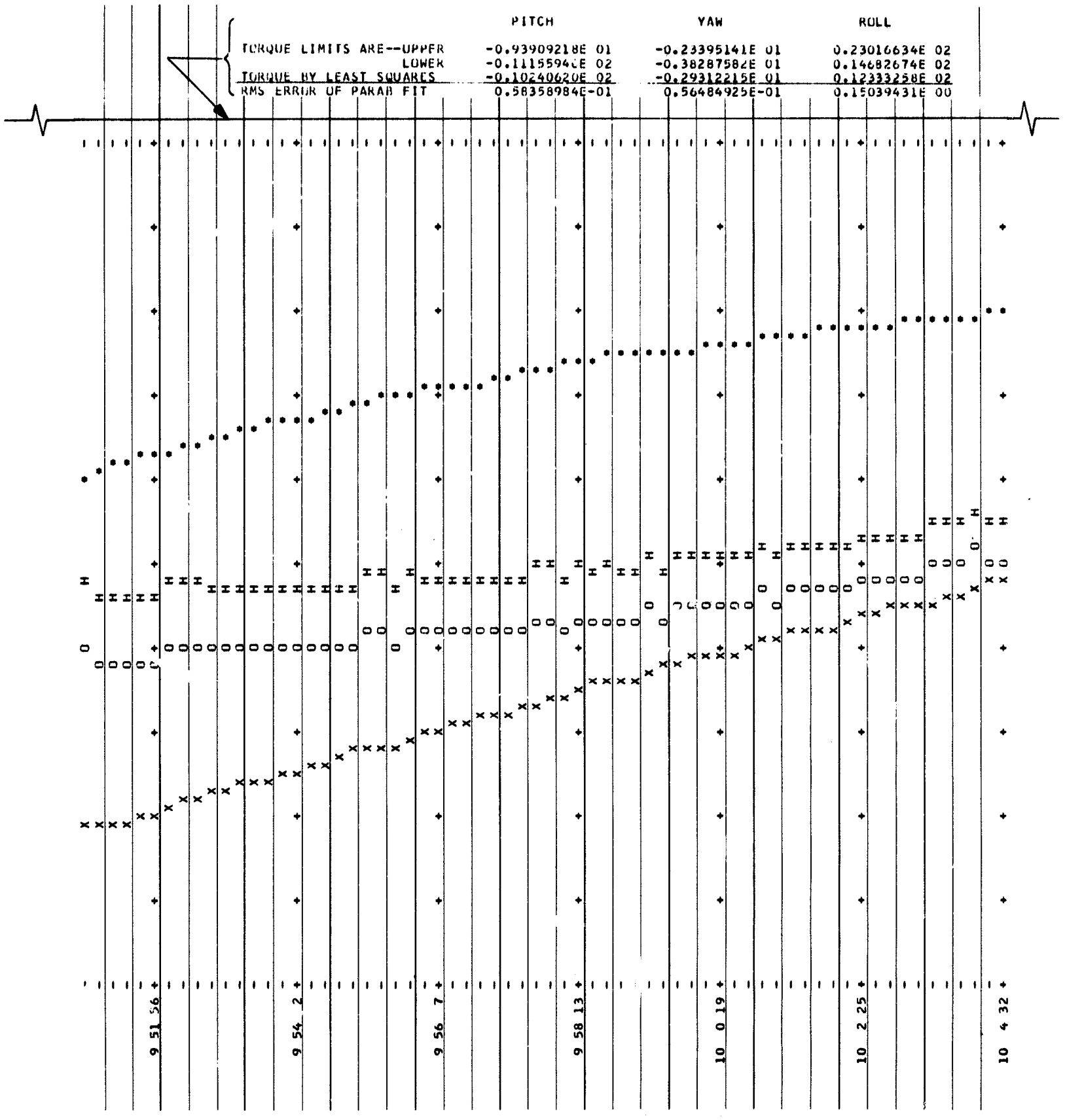

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.87301794E 01 -0.41767955E 01 0.17850312E 02
LOWER -0.91929905E 01 -0.47604268E 01 0.13909194E 02
TORQUE BY LEAST SQUARES -0.90596370E 01 -0.44208473E 01 0.12098875E 02
RMS ERROR OF PARAB FIT 0.64896774E-01 0.52575380E-01 0.16928951E 00
8 57 20
8 59 26
9 1 31
9 3 38
9 5 44
9 7 50

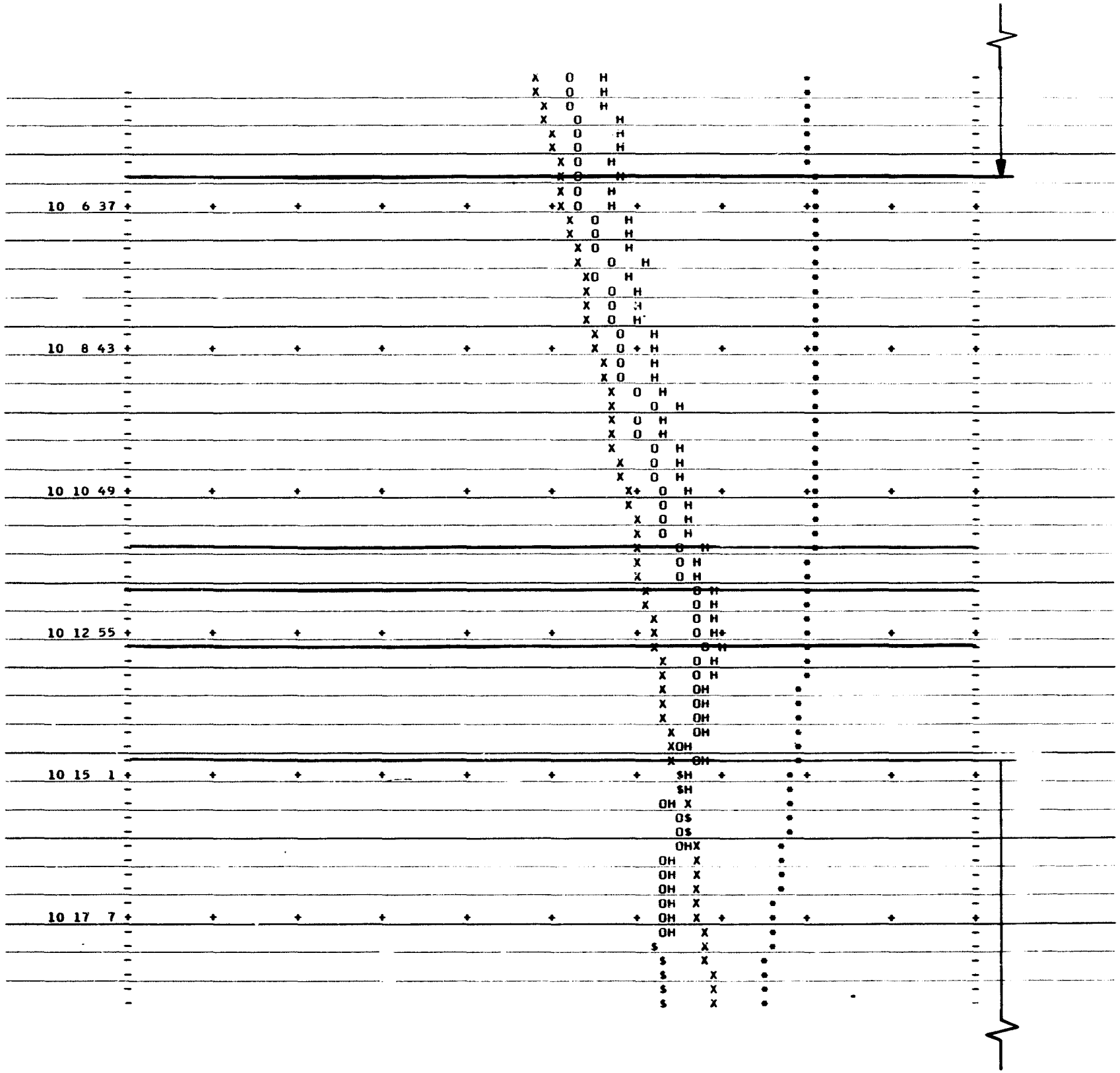

9 9 56
9 12 1
9 14 8
9 16 14
9 18 20
9 20 26
9 22 32


9 24 37
9 26 44
9 28 50
9 30 56
9 33 2
9 35 8

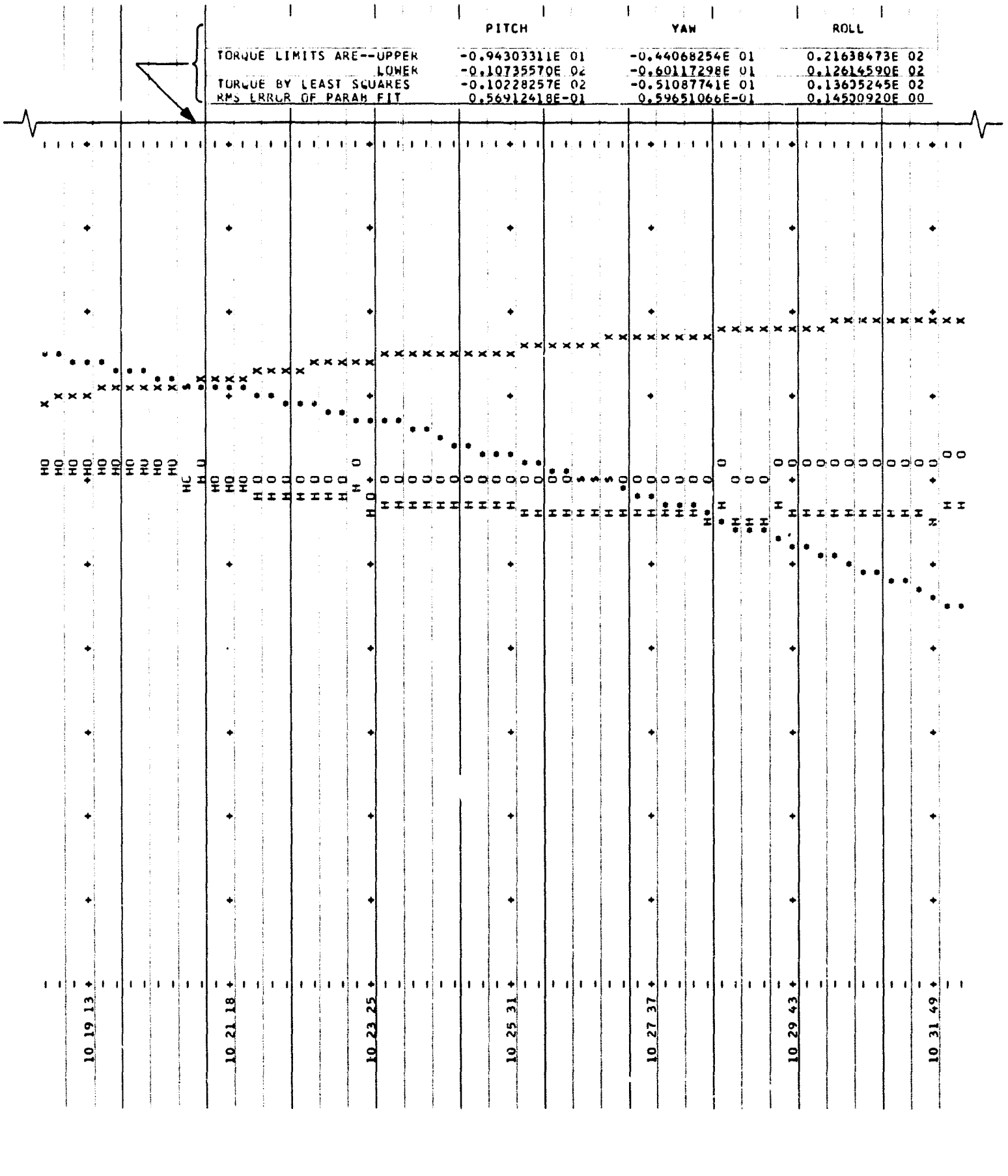
	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.68128710E 01	-0.23445080E 00	0.18481668E 02
LOWER	-0.92609768E 01	-0.29828117E 01	0.71354386E 01
TORQUE BY LEAST SQUARES	-0.77752383E 01	-0.19005100E 01	0.10505140E 02
RMS ERROR OF PARAB FIT	0.56740168E-01	0.58290184E-01	0.15989878E 00

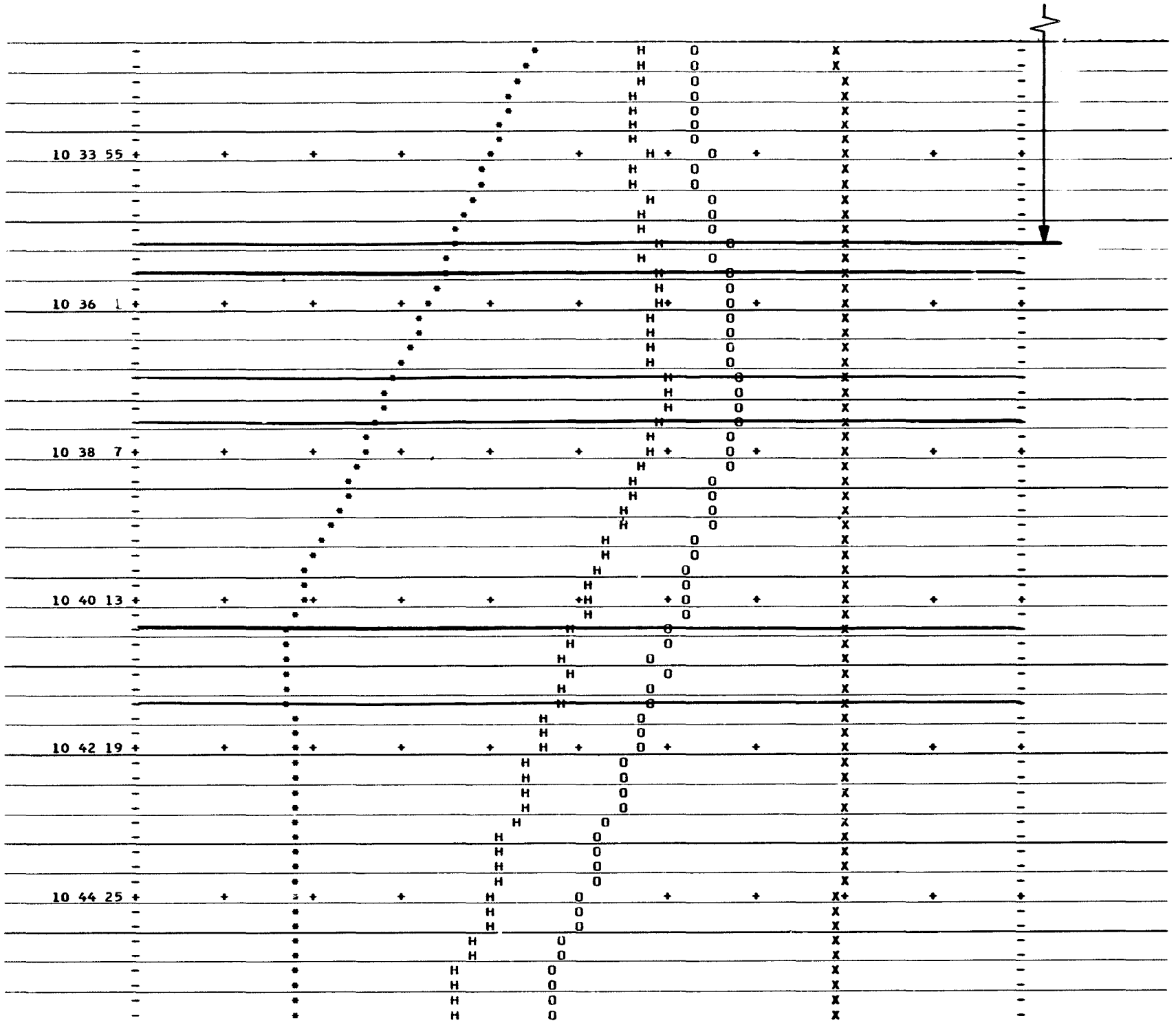


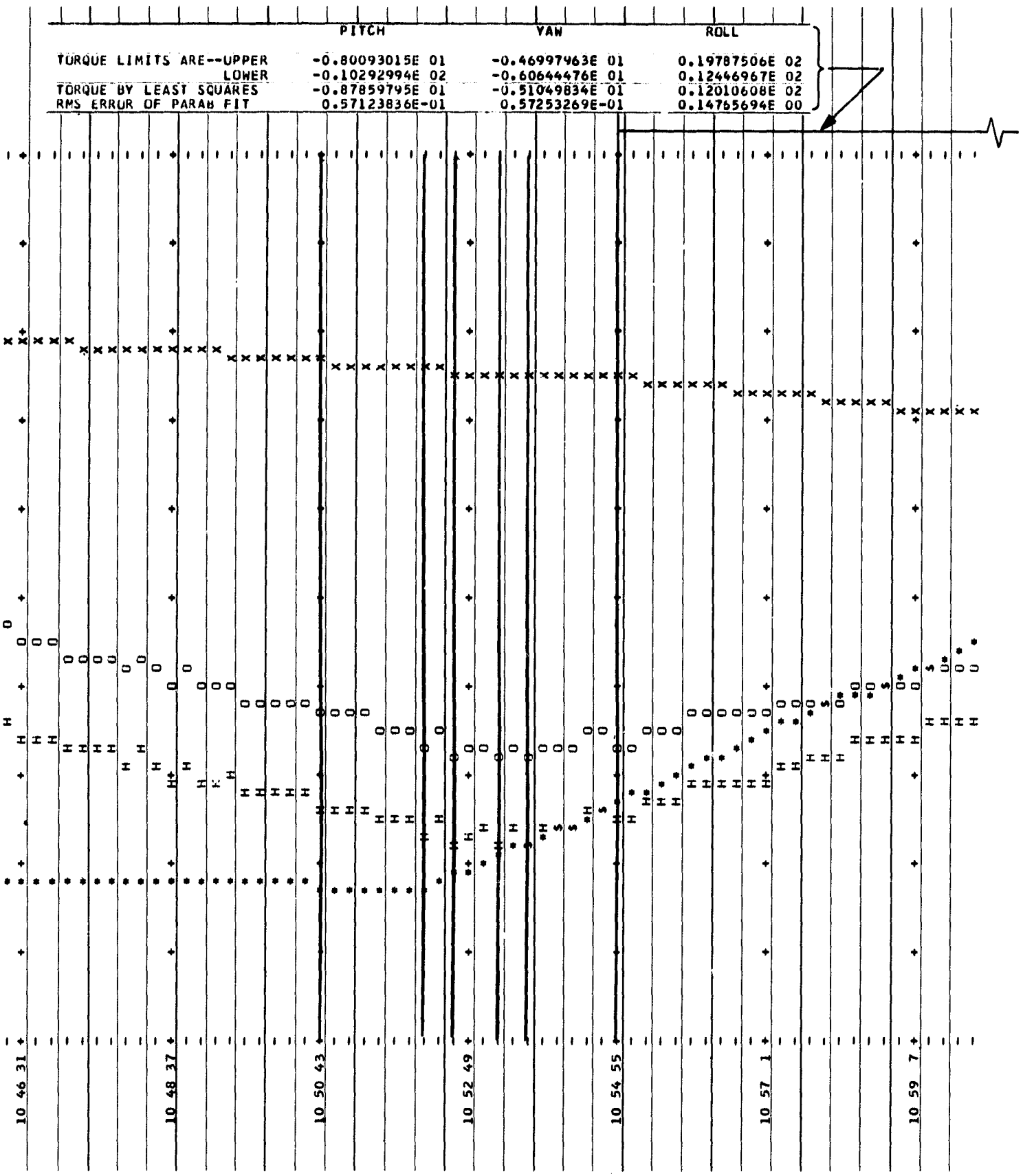

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.93909218E 01 -0.23395141E 01 0.23016634E 02
LOWER -0.11155946E 02 -0.38287582E 01 0.14682674E 02
TORQUE BY LEAST SQUARES -0.10240620E 02 -0.29312215E 01 0.12333258E 02
RMS ERROR OF PARAB FIT 0.58358984E-01 0.56484925E-01 0.15039431E 00
9 51 56
9 54 2
9 56 7
9 58 13
10 0 19
10 2 25
10 4 32

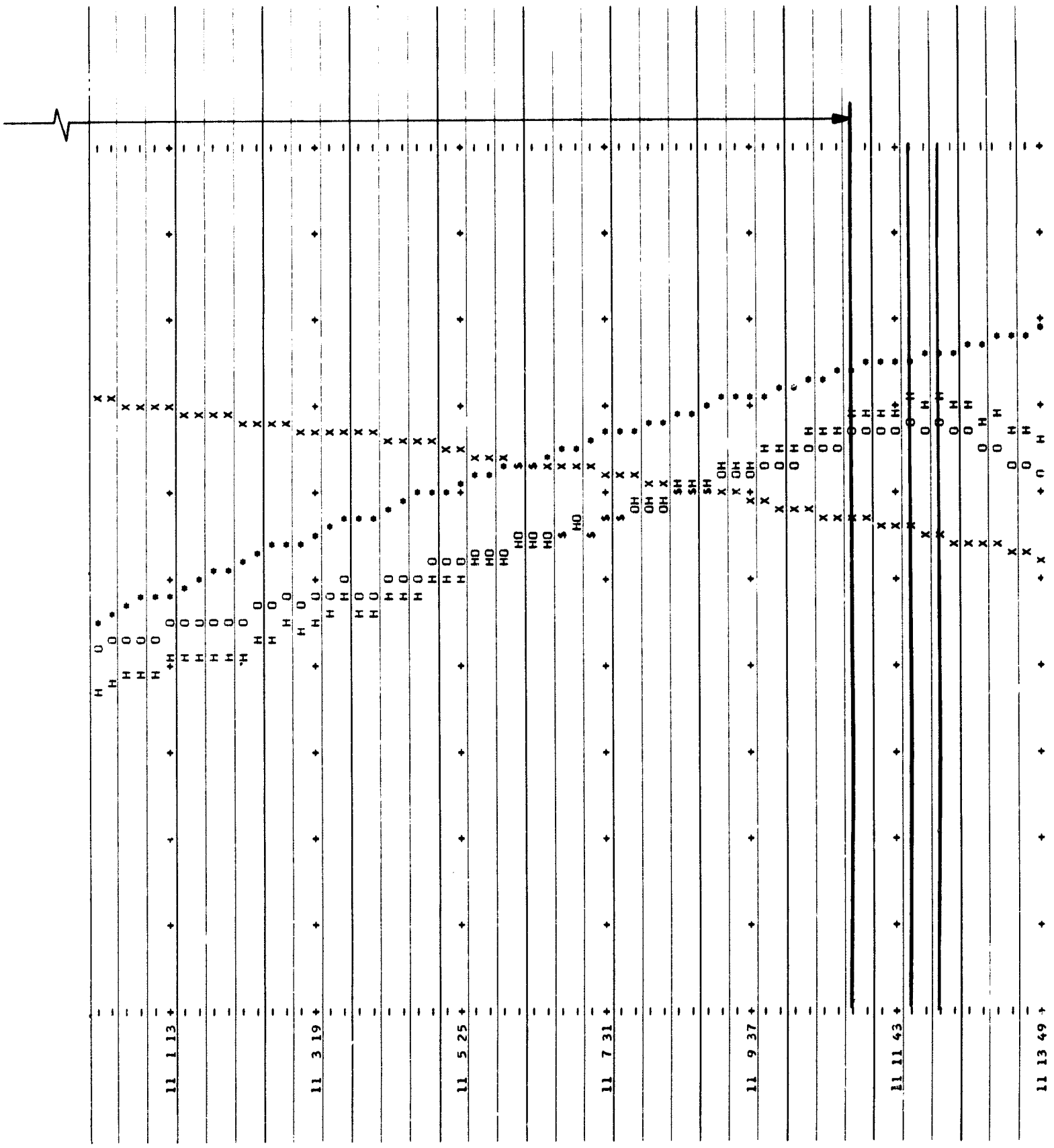

10 6 37
10 8 43
10 10 49
10 12 55
10 15 1
10 17 7

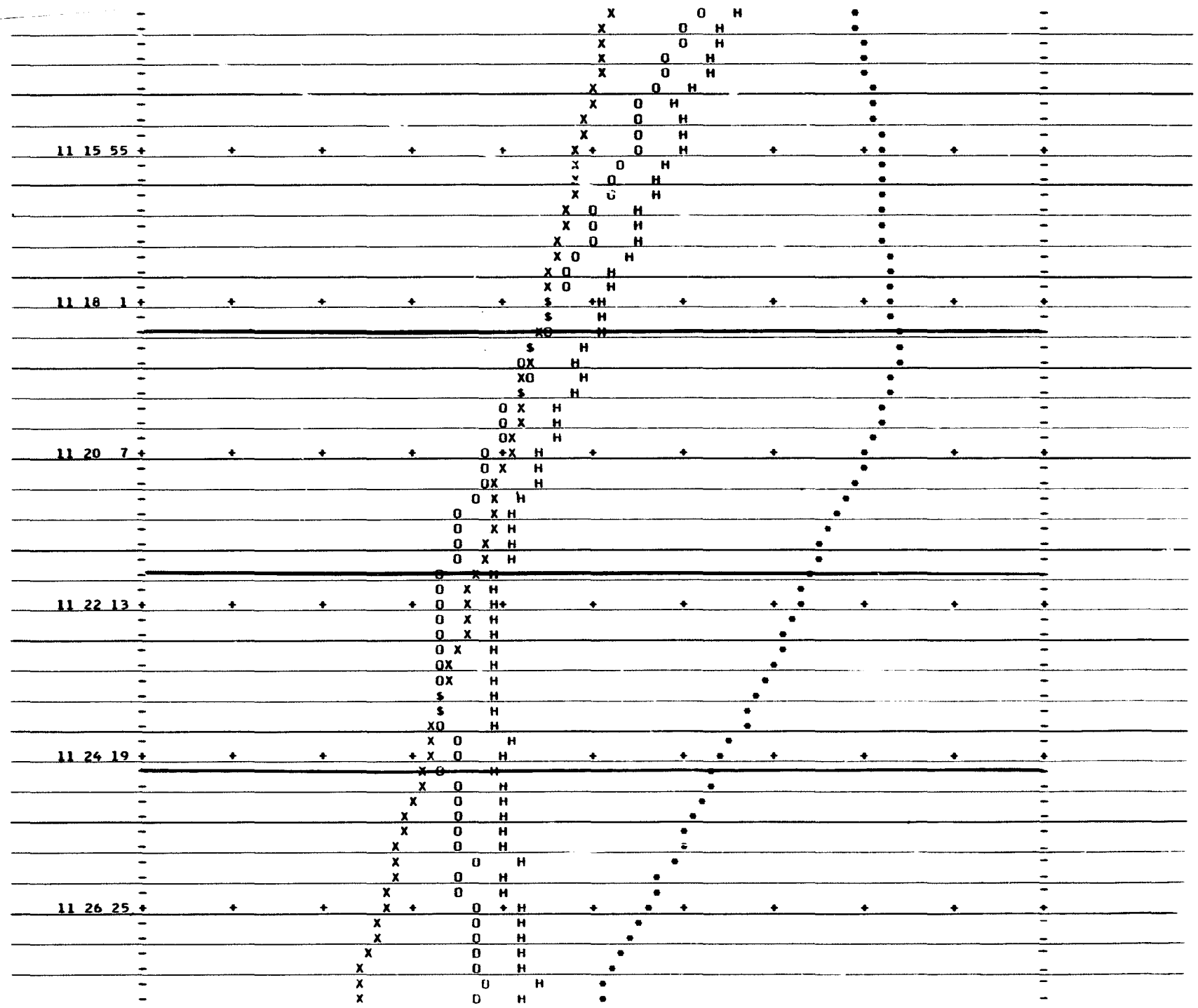
	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.94303311E 01	-0.44068254E 01	0.21638473E 02
LOWER	-0.10735570E 02	-0.60117298E 01	0.12614590E 02
TORQUE BY LEAST SQUARES	-0.10228257E 02	-0.51087741E 01	0.13635245E 02
RMS ERROR OF PARAM FIT	0.56912418E-01	0.59651066E-01	0.14500920E 00

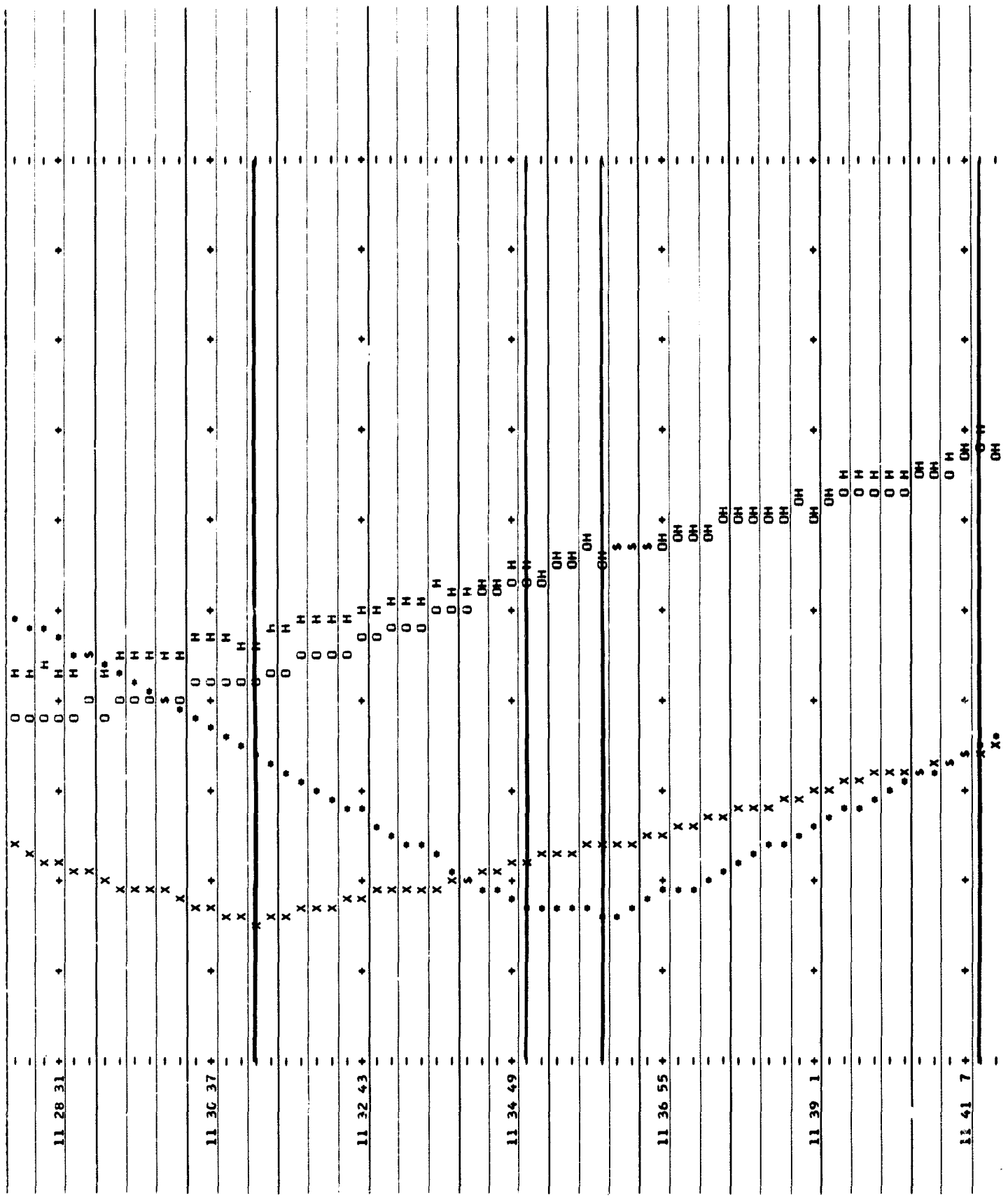


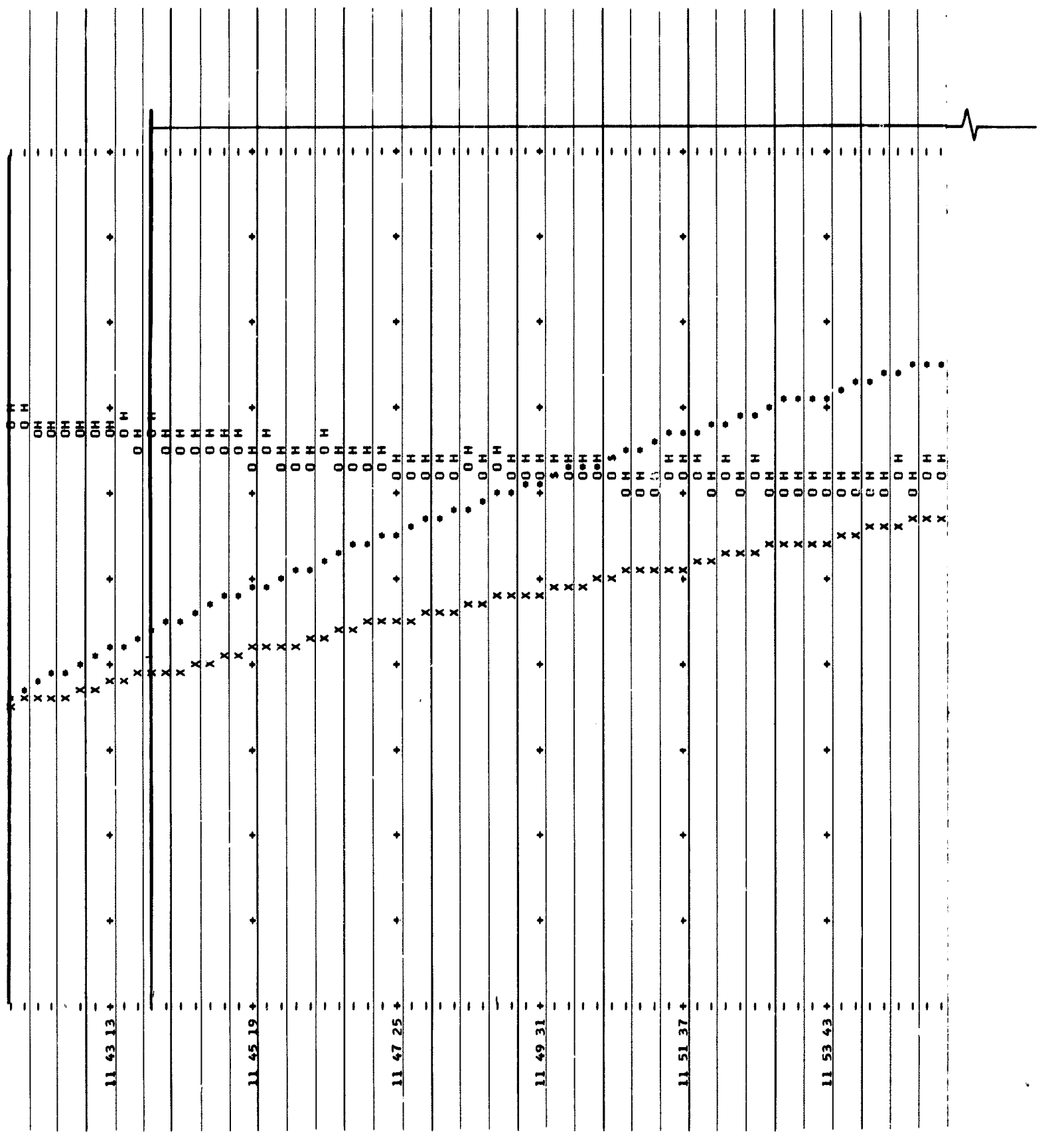

10 33 55
10 36 1
10 38 7
10 40 13
10 42 19
10 44 25

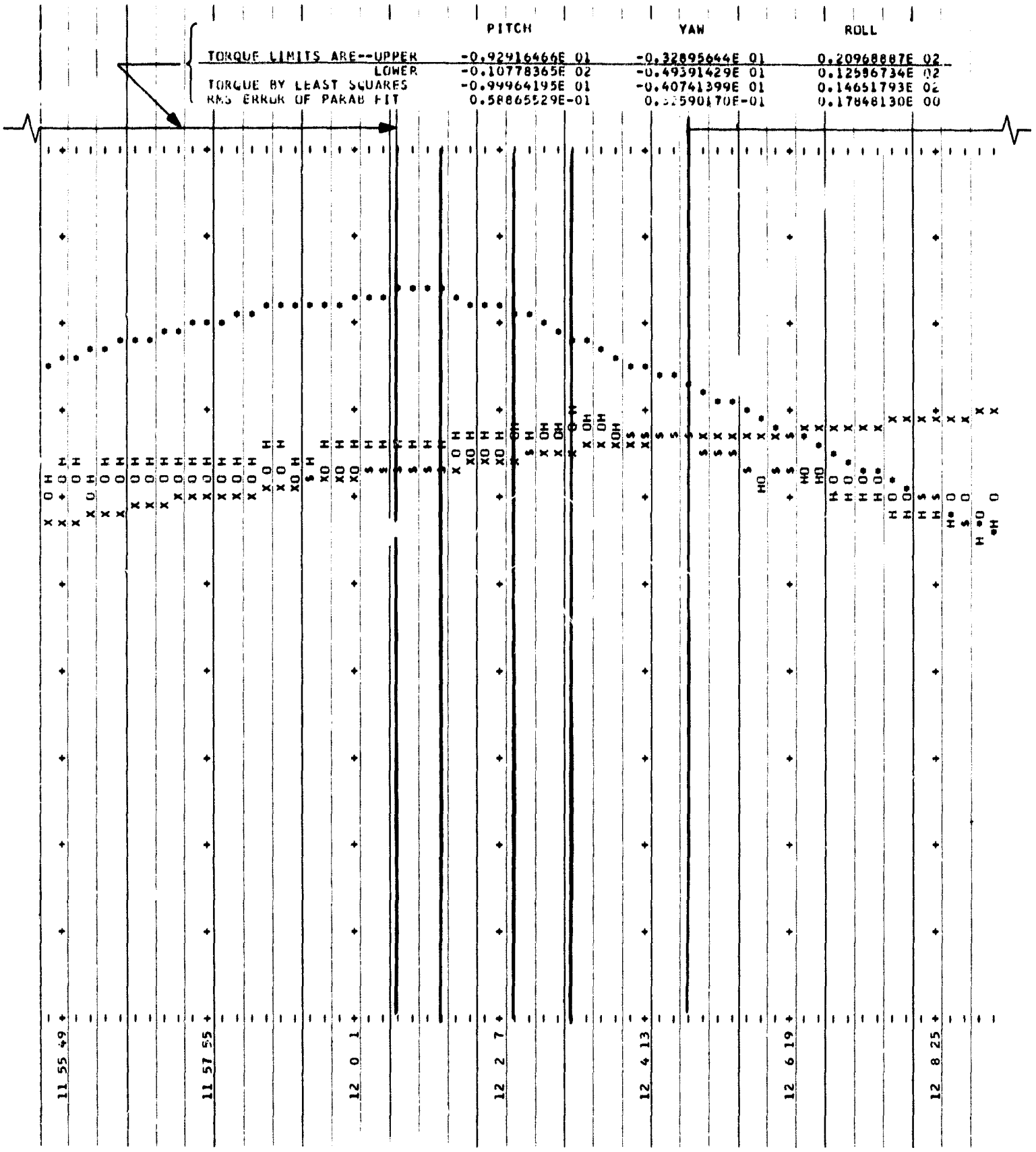

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.80093015E 01 -0.46997463E 01 0.19787506E 02
LOWER -0.10292994E 02 -0.60644476E 01 0.12446967E 02
TORQUE BY LEAST SQUARES -0.87859795E 01 -0.51049834E 01 0.12010608E 02
RMS ERROR OF PARAB FIT 0.57123836E-01 0.57253269E-01 0.14765694E 00
10 46 31
10 48 37
10 50 43
10 52 49
10 54 55
10 57 1
10 59 7

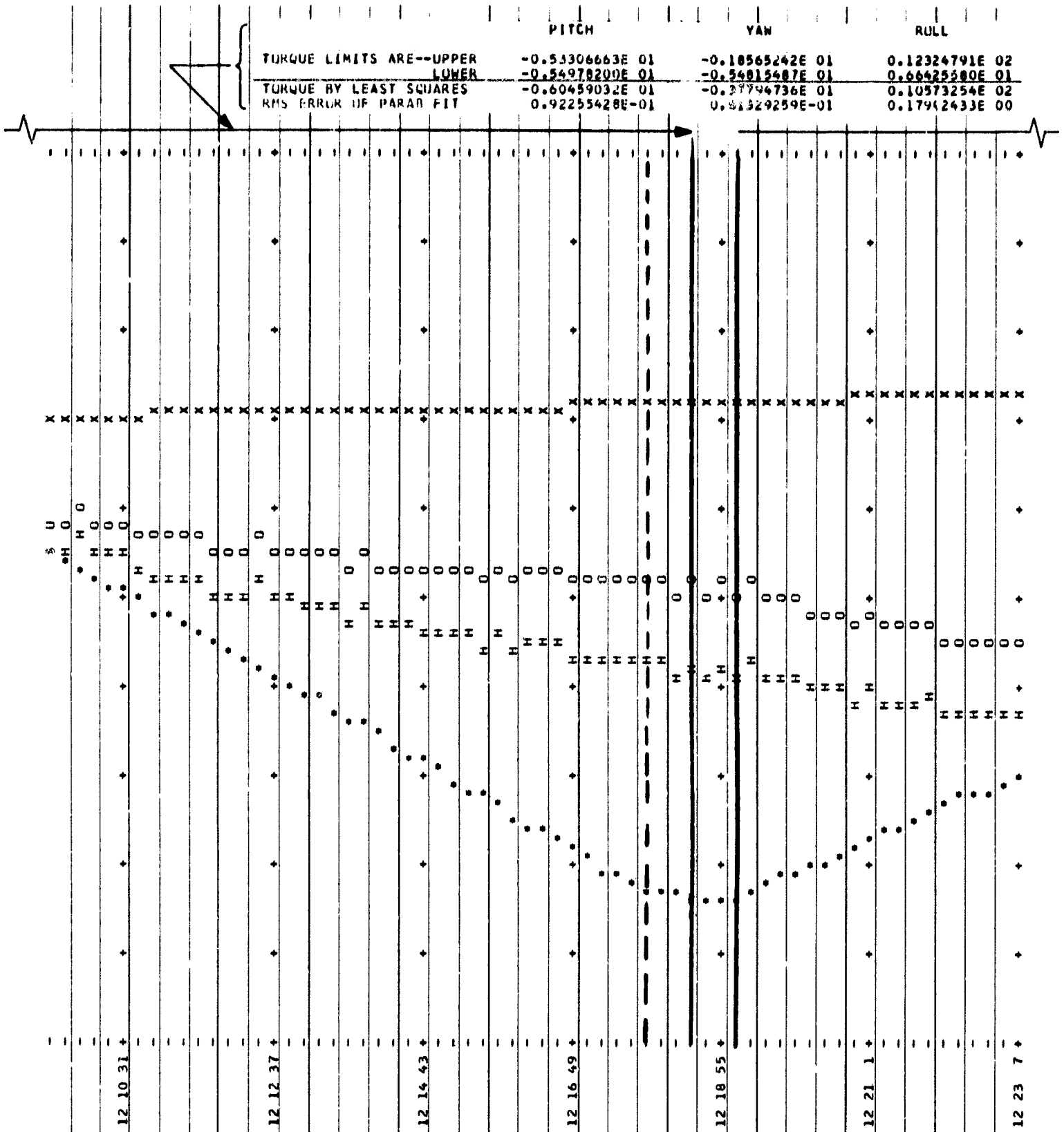


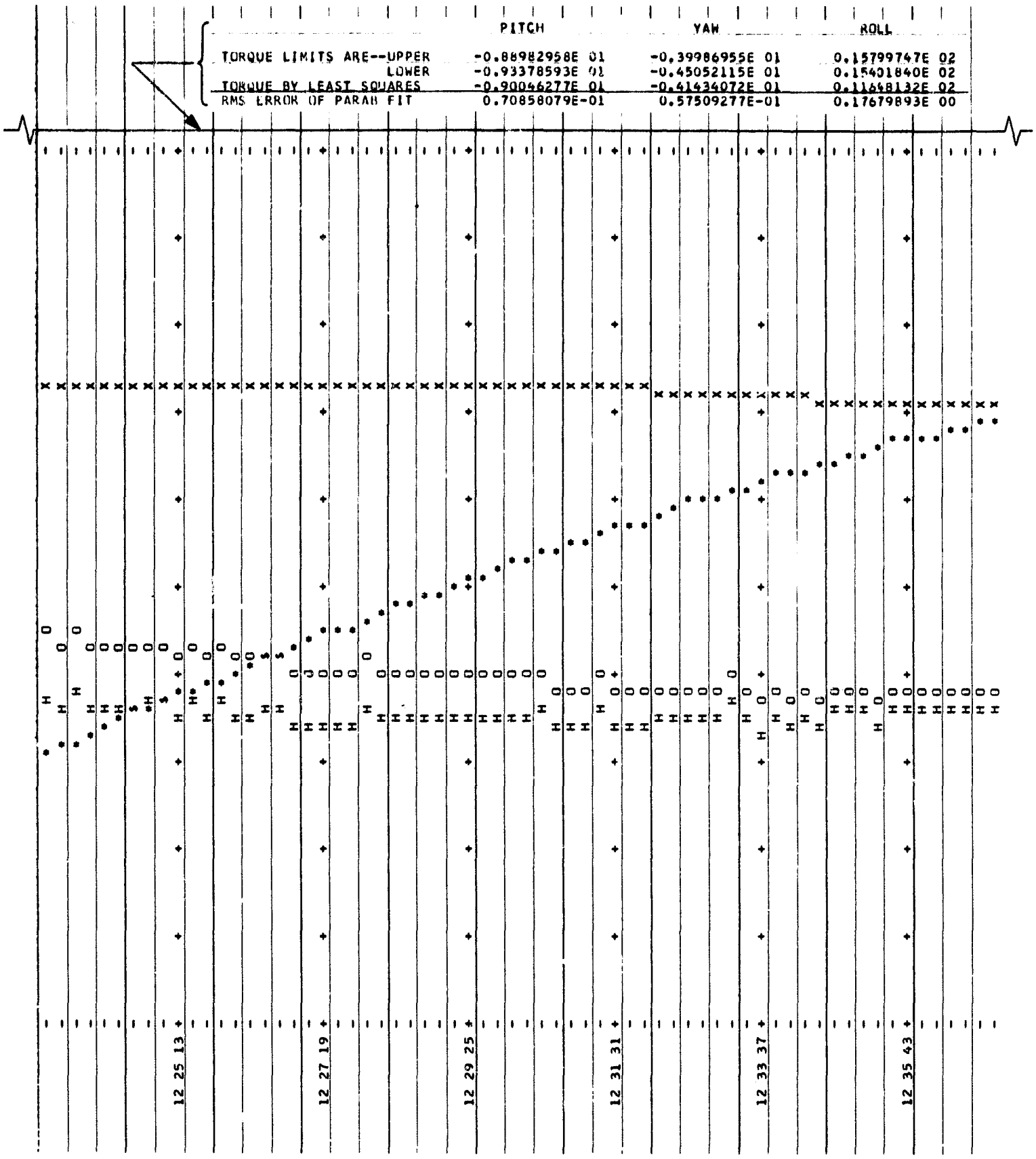

11 15 55
11 18 1
11 20 7
11 22 13
11 24 19
11 26 25

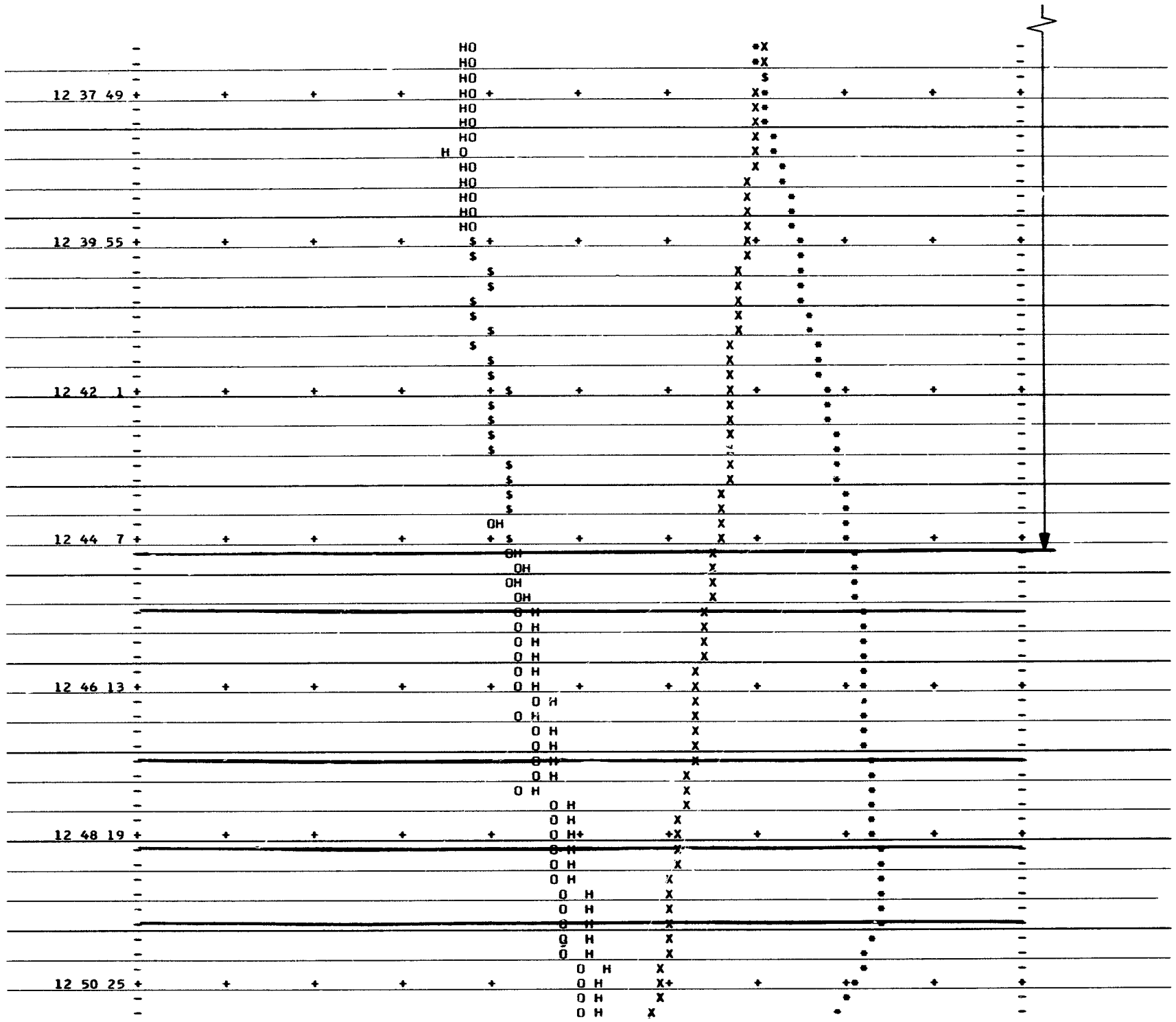



11 43 13
11 45 19
11 47 25
11 49 31
11 51 37
11 53 43


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.92916466E 01 -0.32895644E 01 0.20968887E 02
LOWER -0.10778365E 02 -0.49391429E 01 0.12596734E 02
TORQUE BY LEAST SQUARES -0.99964195E 01 -0.40741399E 01 0.14651793E 02
RMS ERROR OF PARAB FIT 0.58865529E-01 0.35590170E-01 0.17848130E 00
11 55 49
11 57 55
12 0 1
12 2 7
12 4 13
12 6 19
12 8 25

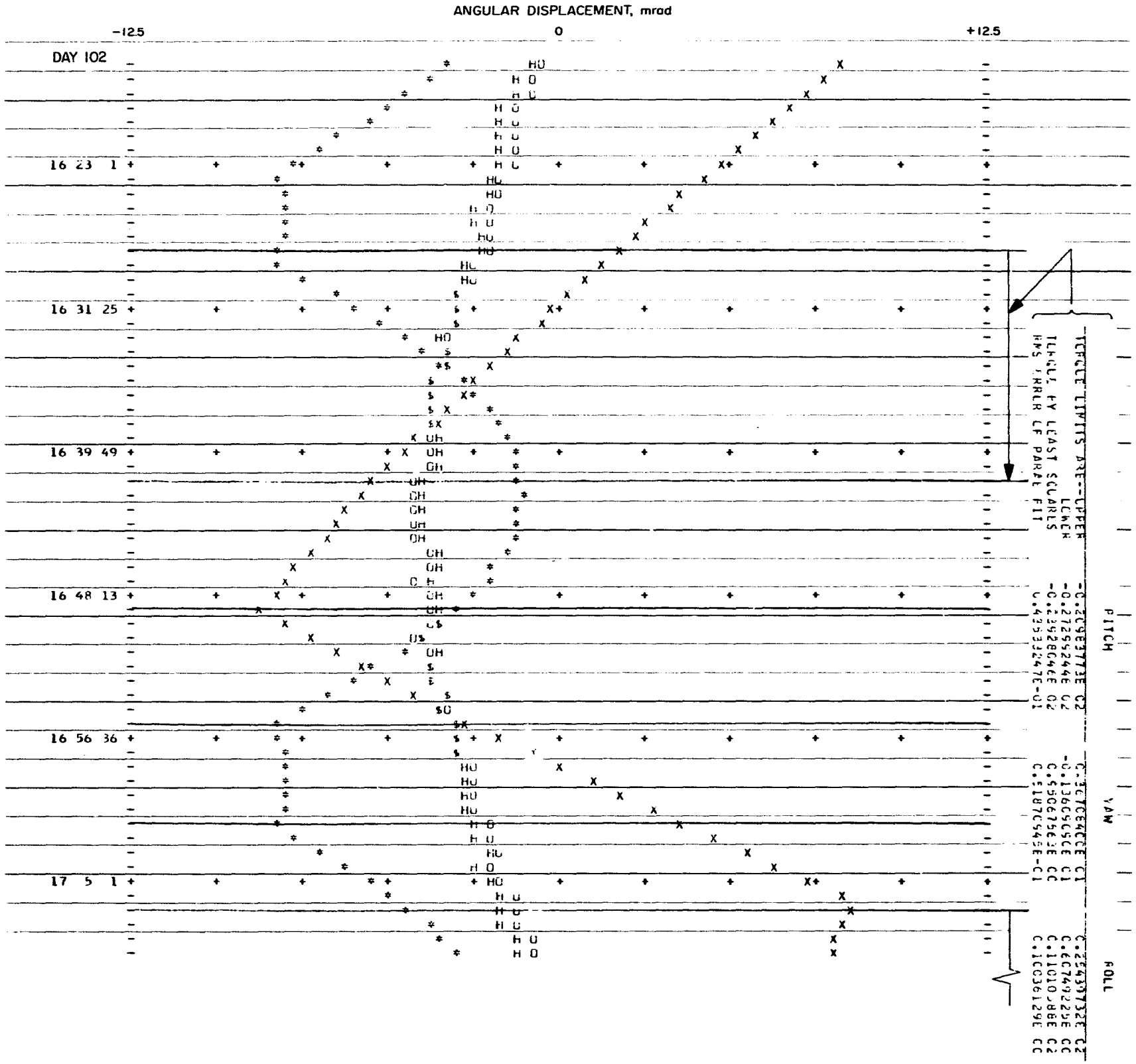

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.53306663E 01 -0.18565242E 01 0.12324791E 02
LOWER -0.54978200E 01 -0.54815487E 01 0.66425580E 01
TORQUE BY LEAST SQUARES -0.60459032E 01 -0.[illegible]7944736E 01 0.10573254E 02
RMS ERROR OF PARAB FIT 0.92255428E-01 0.[illegible]329259E-01 0.179(2433E 00
12 10 31
12 12 37
12 14 43
12 16 49
12 18 55
12 21 1
12 23 7

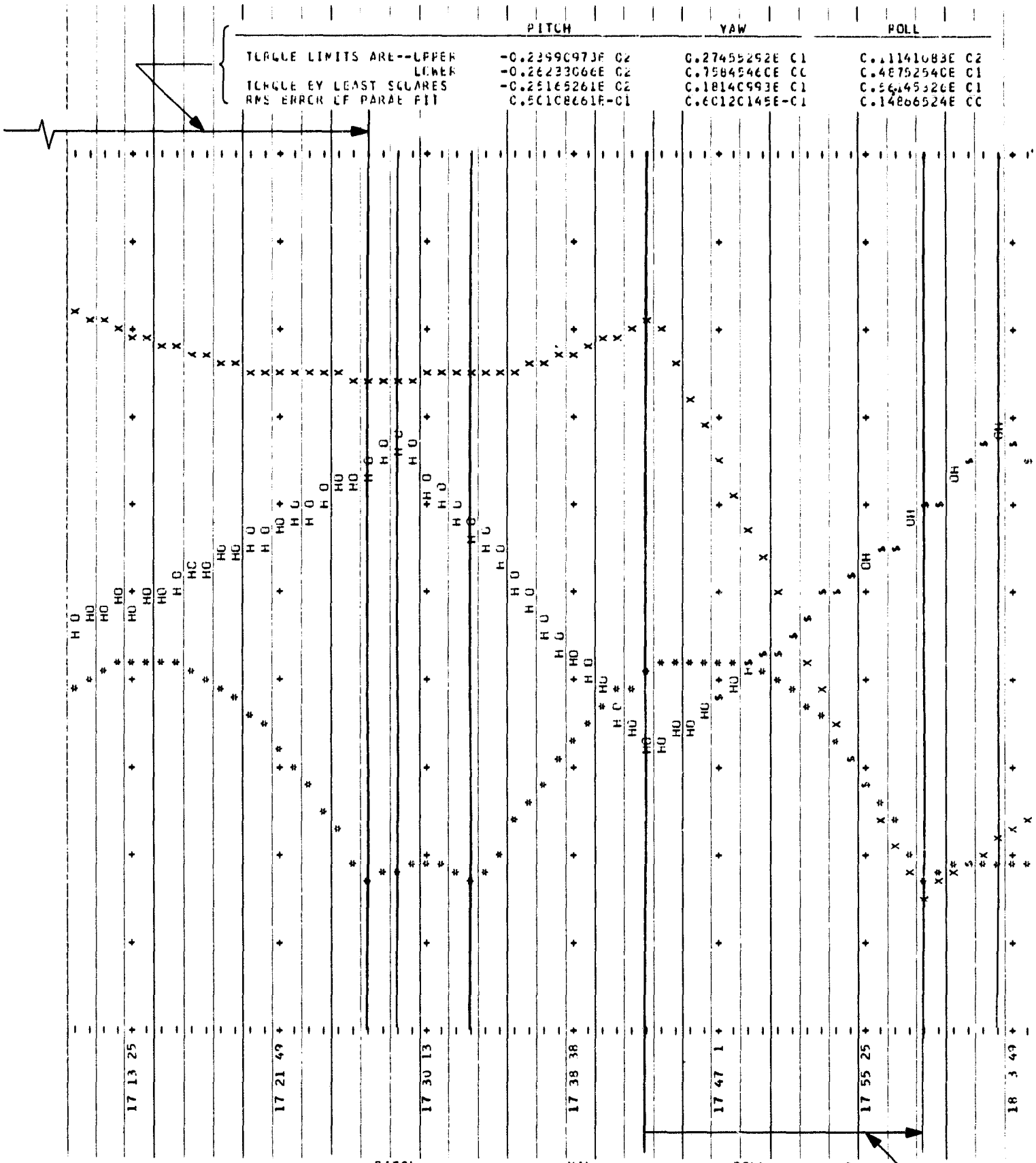

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.88982958E 01 -0.39986955E 01 0.15799747E 02
LOWER -0.93378593E 01 -0.45052115E 01 0.15401840E 02
TORQUE BY LEAST SQUARES -0.90046277E 01 -0.41434072E 01 0.11648132E 02
RMS ERROR OF PARAB FIT 0.70858079E-01 0.57509277E-01 0.17679893E 00
12 25 13
12 27 19
12 29 25
12 31 31
12 33 37
12 35 43

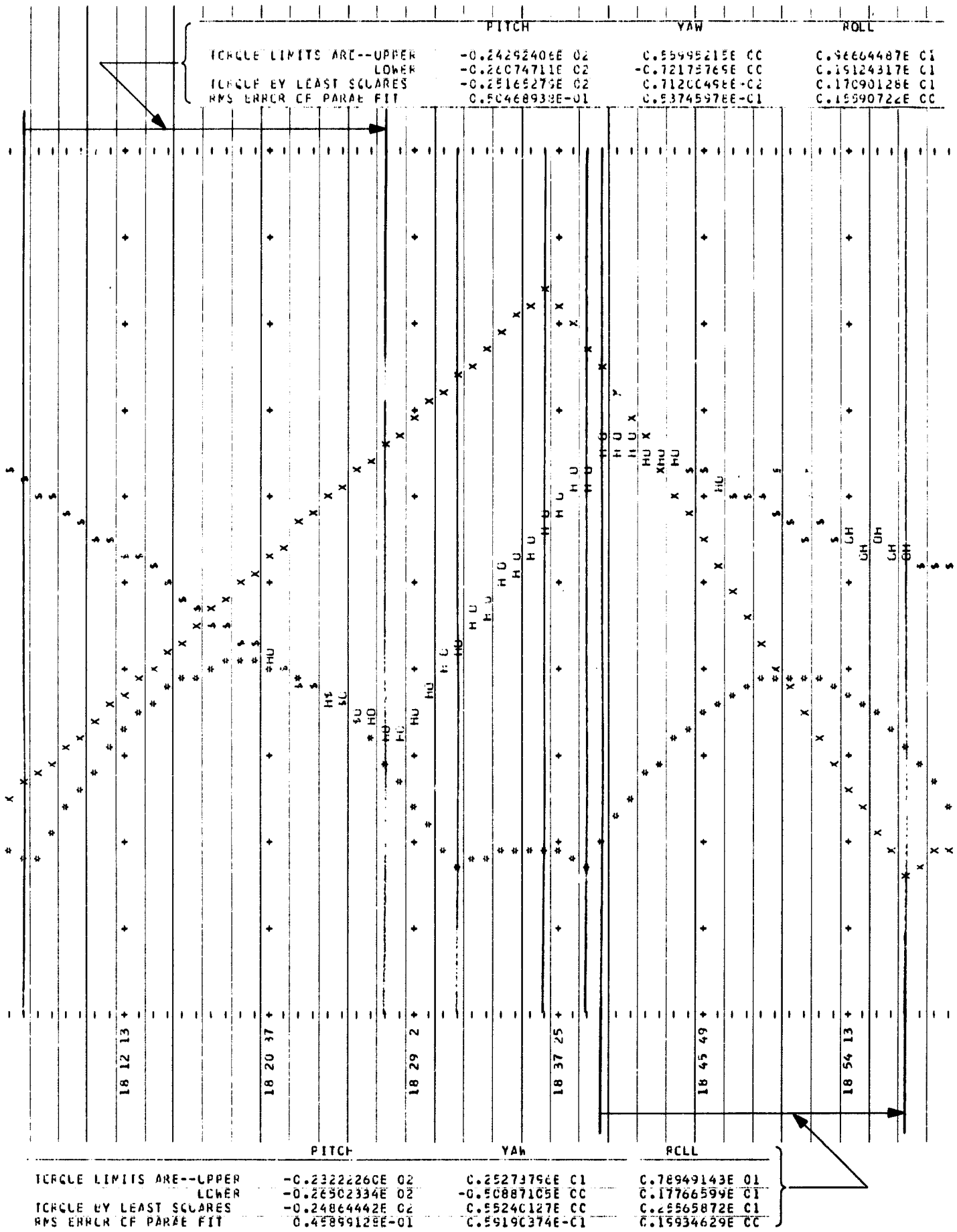

12 37 49
12 39 55
12 42 1
12 44 7
12 46 13
12 48 19
12 50 25

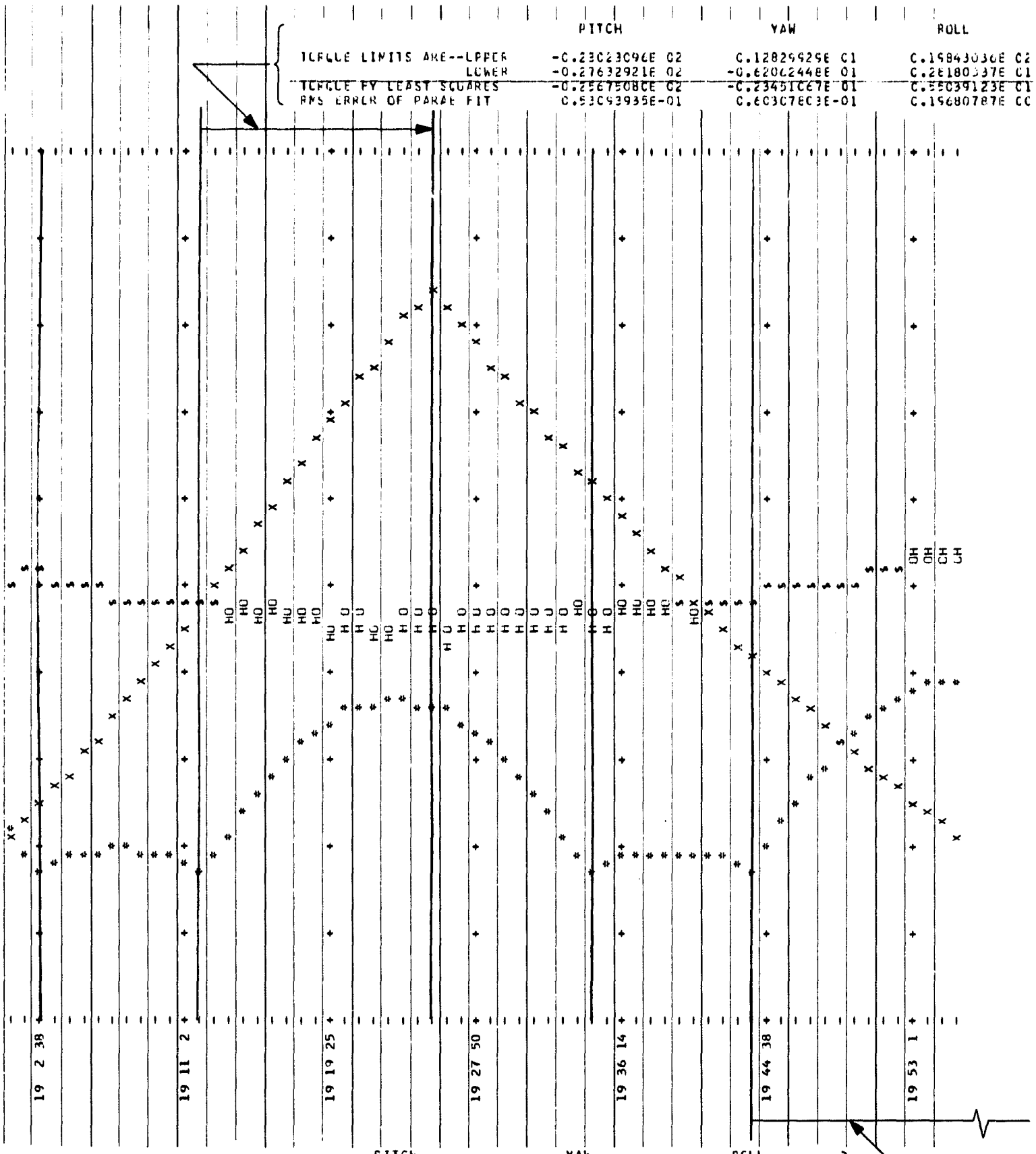
Plot III

Reduced position data and torque limits vs time,
***Mariner IV*, 8⅓ bits/s, days 102–105, 1965**

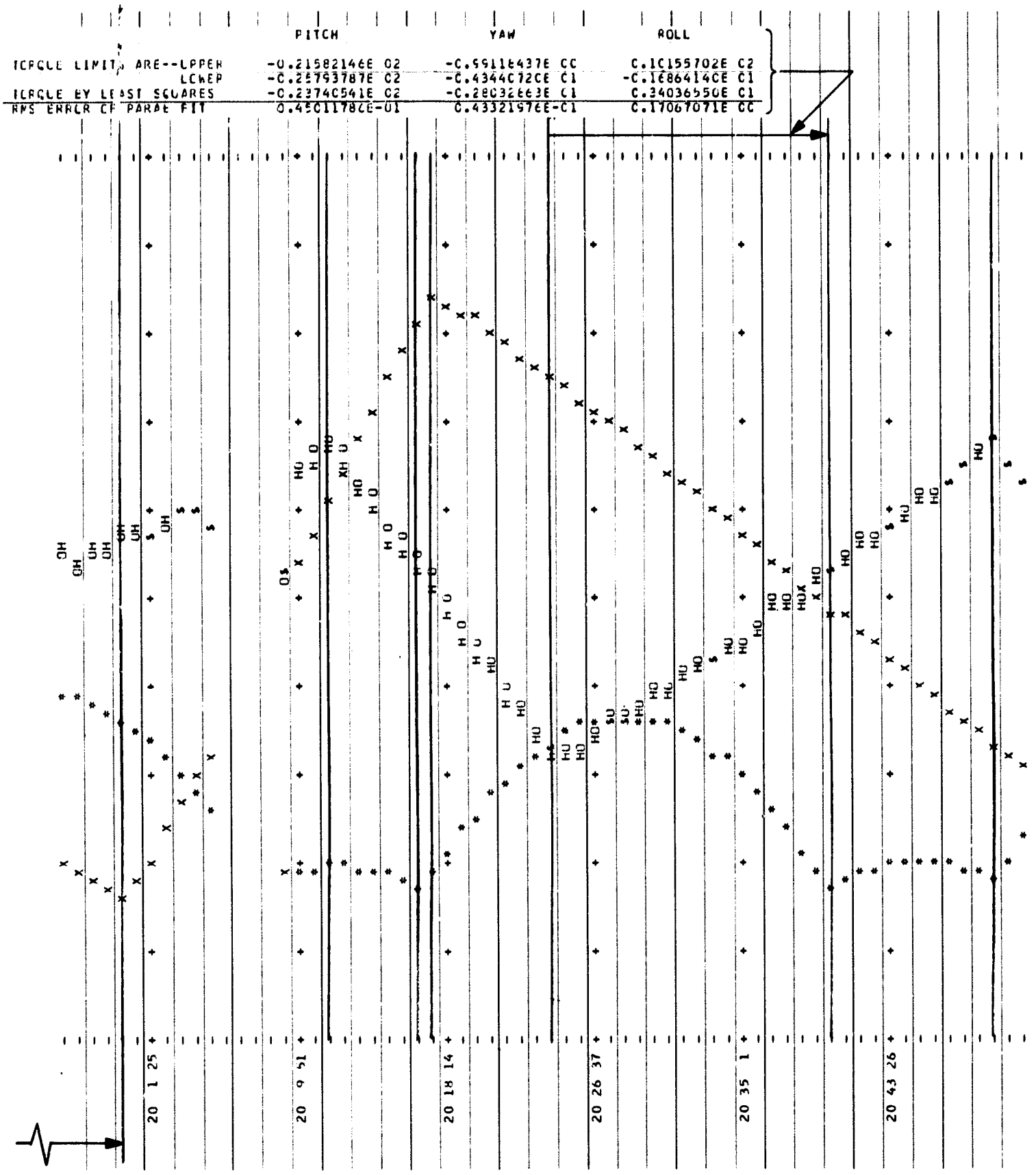

ANGULAR DISPLACEMENT, mrad
-12.5
0
+12.5
DAY 102
16 23 1
16 31 25
16 39 49
16 48 13
16 56 36
17 5 1
TICKLE LIMITS ARE-UPPER
LOWER
TICKLE BY LEAST SQUARES
RMS ERROR OF PARAB FIT
PITCH
YAW
ROLL
-0.2265884E 02
-0.2275645E 02
-0.2259280E 02
0.4263547E-01
-0.1196535E 01
0.5506795E 00
0.5182545E-01
0.2254737E 02
0.2274260E 02
0.2210178E 02
0.1203618E 00

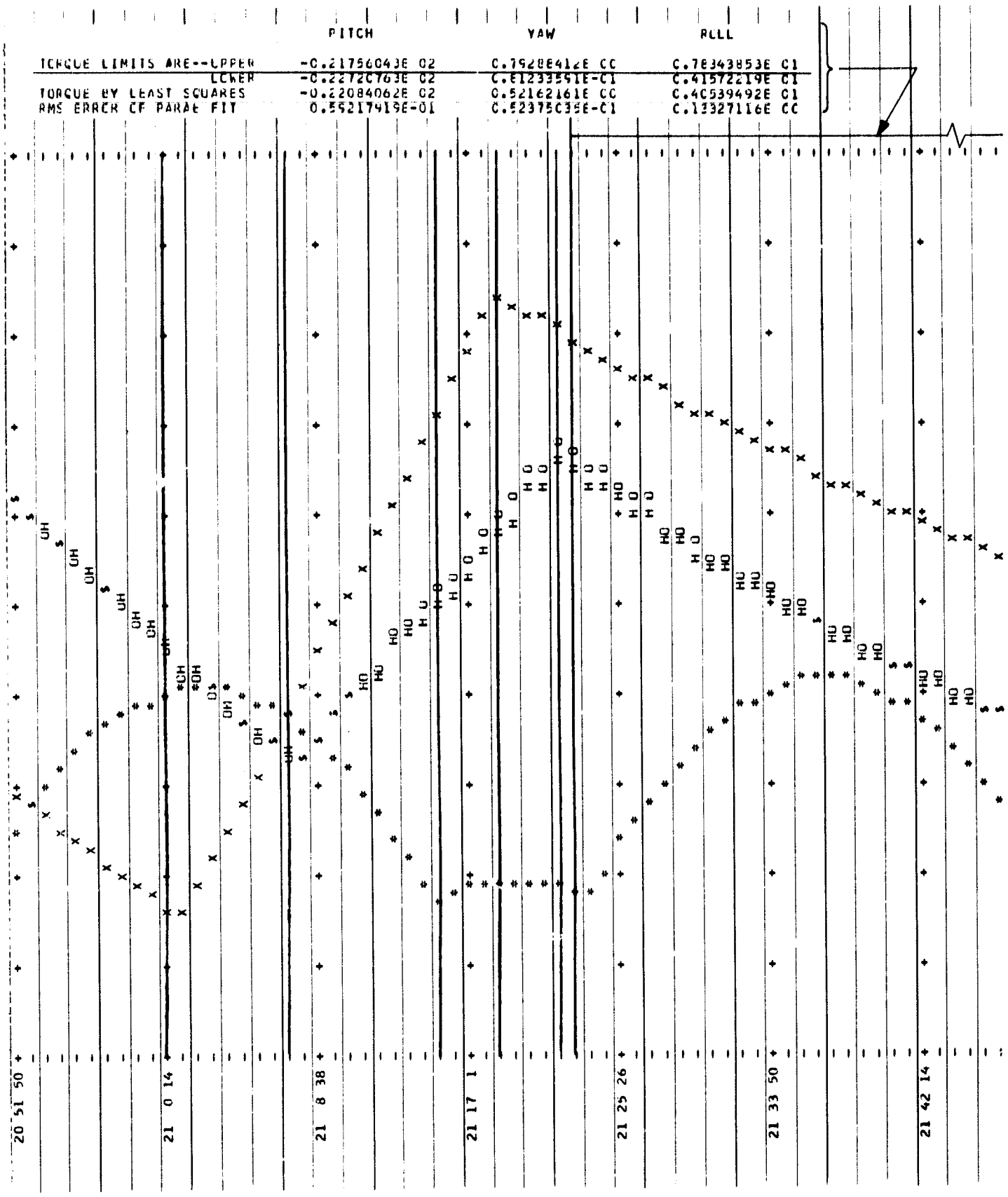

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.23990973E 02 0.27455292E 01 0.11410838E 02
LOWER -0.26233066E 02 0.75845460E 00 0.48752540E 01
TORQUE BY LEAST SQUARES -0.25165261E 02 0.18140993E 01 0.96445326E 01
RMS ERROR OF PARAB FIT 0.5C1C8661E-01 0.6012C145E-01 0.14866524E 00
17 13 25
17 21 49
17 30 13
17 38 38
17 47 1
17 55 25
18 3 49
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.23237058E 02 0.43651755E 01 0.34515358E 01
LOWER -0.27816508E 02 0.19494458E 01 -0.16298233E 01
TORQUE BY LEAST SQUARES -0.25175231E 02 0.28325202E 01 0.20981733E 01
RMS ERROR OF PARAB FIT 0.48345726E-01 0.78441752E-01 0.15447221E 00

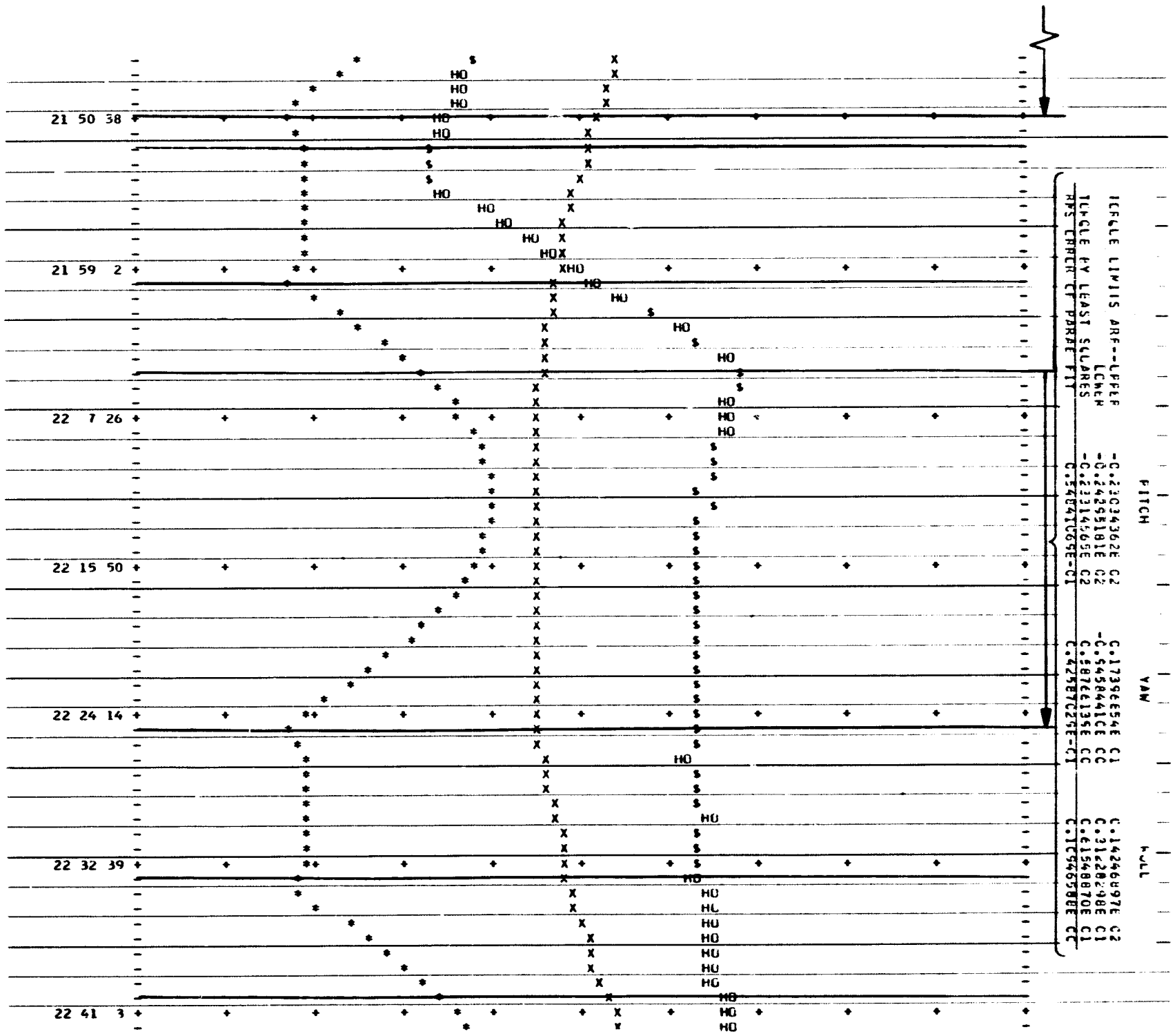

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.2429240EE 02 C.559952 15E CC C.9E6644 87E C1
LOWER -0.2CC74711E C2 -C.7217E769E CC C.151243 17E C1
TORQUE BY LEAST SQUARES -0.25165279E 02 C.7120C49EE-C2 C.17C901 28E C1
RMS ERROR OF PARAB FIT C.5C468938E-01 C.5374597EE-C1 C.15590722E CC
18 12 13
18 20 37
18 29 2
18 37 25
18 45 49
18 54 13
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.2322226CE 02 C.2527379CE C1 C.76949143E 01
LOWER -0.26502334E 02 -0.5C887105E CC C.17766599E C1
TORQUE BY LEAST SQUARES -0.24864442E C2 C.5524C127E CC C.2E565872E C1
RMS ERROR OF PARAB FIT C.45899129E-01 C.5919C374E-C1 C.16934629E CC

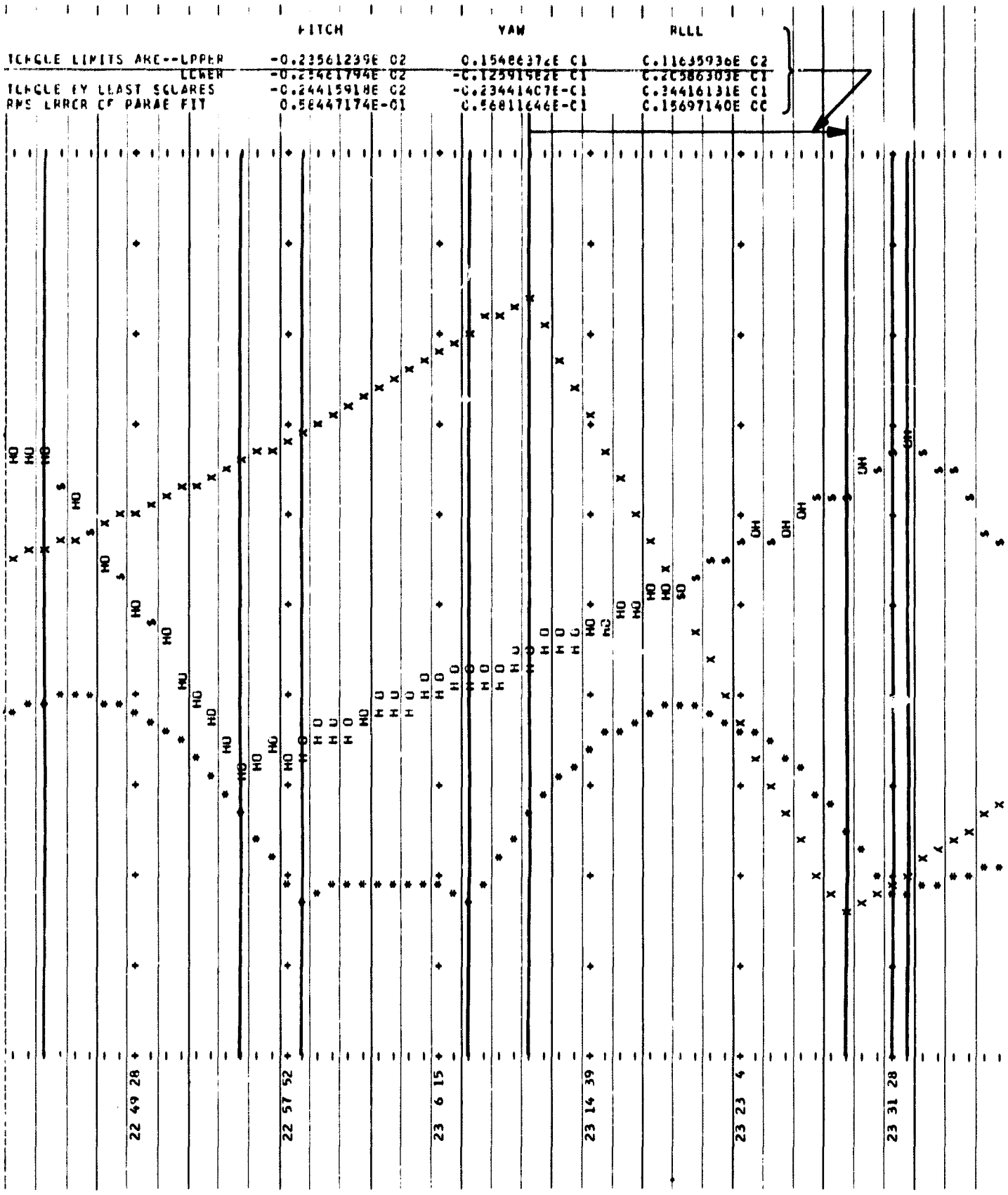

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.23023096E 02 0.12829929E 01 0.19843036E 02
LOWER -0.27632921E 02 -0.62062448E 01 0.28180337E 01
TORQUE BY LEAST SQUARES -0.25675080E 02 -0.23451C67E 01 0.55C391Z3E 01
RMS ERROR OF PARAB FIT 0.83C93935E-01 0.6C3C7EC3E-01 0.19680787E CC
19 2 38
19 11 2
19 19 25
19 27 50
19 36 14
19 44 38
19 53 1
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.22C53348E 02 0.474937S3E C1 0.1C578750E 02
LOWER -0.26773264E 02 0.575492S8E CC -0.58567119E C1
TORQUE BY LEAST SQUARES -0.24240897E 02 0.30698596E C1 0.22217621E 01
RMS ERROR OF PARAB FIT 0.5C972448E-01 0.48327527E-C1 0.14573087E CC

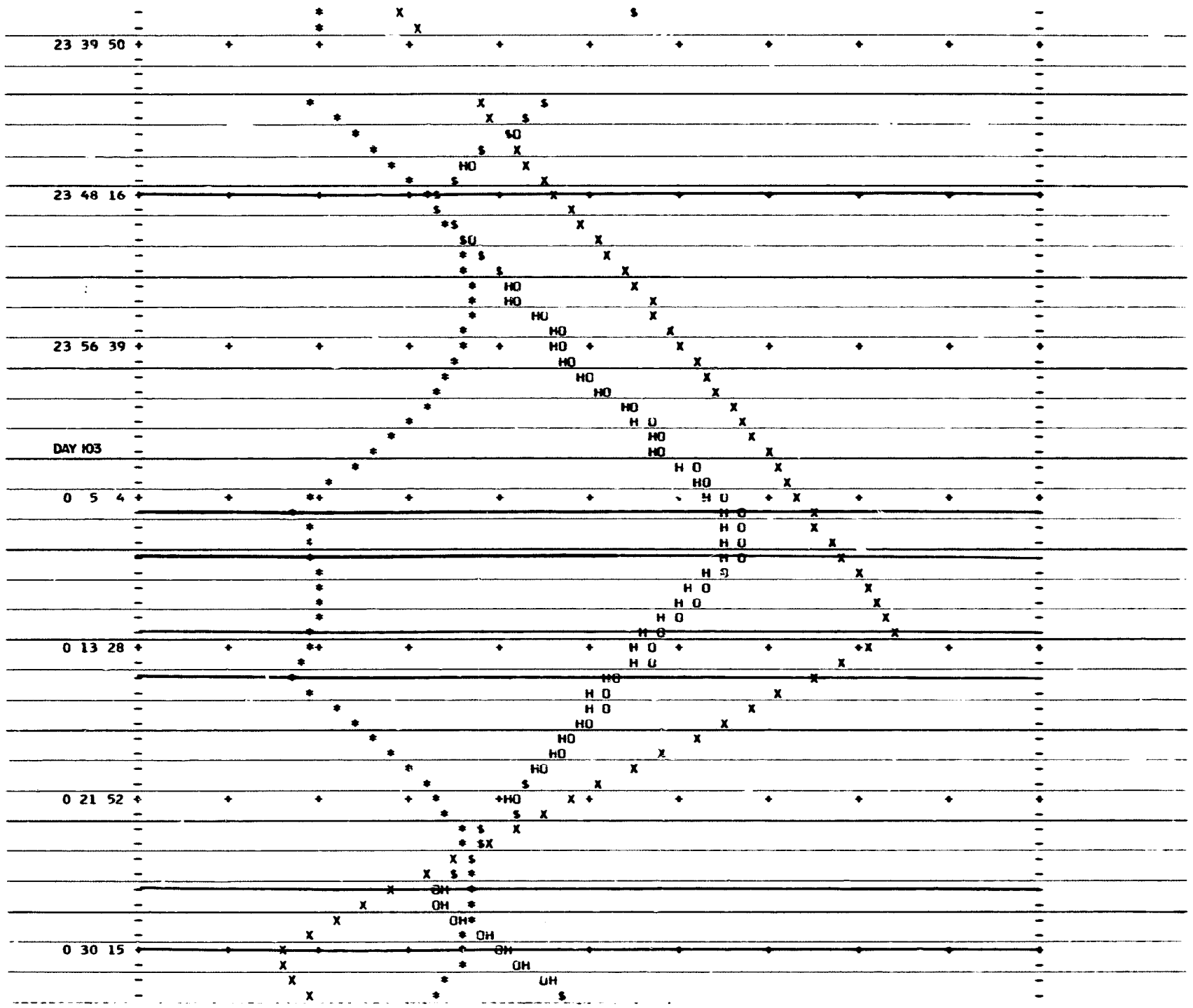
	PITCH	YAW	ROLL
ICRCLE LIMITS ARE--UPPER	-0.21582146E 02	-C.59116437E CC	C.1C155702E C2
LCWER	-C.25793787E C2	-C.4344C72CE C1	-C.1686414CE C1
ICRCLE BY LEAST SQUARES	-0.2374C541E C2	-C.28C32663E C1	C.34036550E C1
RMS ERRCR CF PARAE FIT	0.45C1178CE-01	C.43321976E-C1	C.17067071E CC




PITCH
YAW
RLLL
TORQUE LIMITS ARE--UPPER -0.21756043E 02 C.7928E412E CC C.78343853E C1
LCWER -0.2272C763E 02 C.E12335S1E-C1 C.41572219E C1
TORQUE BY LEAST SQUARES -0.22084062E 02 0.52162161E CC C.4C539492E C1
RMS ERROR OF PARAE FIT 0.552179196-01 C.62375C356-C1 C.13327116E CC
20 51 50
21 0 14
21 8 38
21 17 1
21 25 26
21 33 50
21 42 14


21 50 38
21 59 2
22 7 26
22 15 50
22 24 14
22 32 39
22 41 3
ECCLIE LIMITS ARE--LOWER
-0.2203639E 02
-0.2425818E 02
-0.2214656E 02
-0.2427822E-01
LOWER
ILLICLE BY LEAST SQUARES
-0.2203639E 02
-0.2425818E 02
-0.2214656E 02
-0.2427822E-01
MAS FROM LEAST SQUARE FIT
0.1736565E 01
-0.5458441E 00
0.5875135E 00
0.2427822E-01
PITCH
0.1736565E 01
-0.5458441E 00
0.5875135E 00
0.2427822E-01
MAW
0.1426987E 02
0.1228208E 01
-0.6154887E 01
0.1256598E 02
ROLL


PITCH
YAW
ROLL
TRIGGLE LIMITS ARE--UPPER -0.23561239E 02 0.15486372E C1 C.11635936E C2
LOWER -0.25461794E 02 -C.12591582E C1 C.2C586303E C1
TRIGGLE BY LEAST SQUARES -0.24415918E 02 -C.23441407E-C1 C.24416131E C1
RMS ERROR OF PARAE FIT 0.58447174E-01 C.56811646E-C1 C.15697140E CC
22 49 28
22 57 52
23 6 15
23 14 39
23 23 4
23 31 28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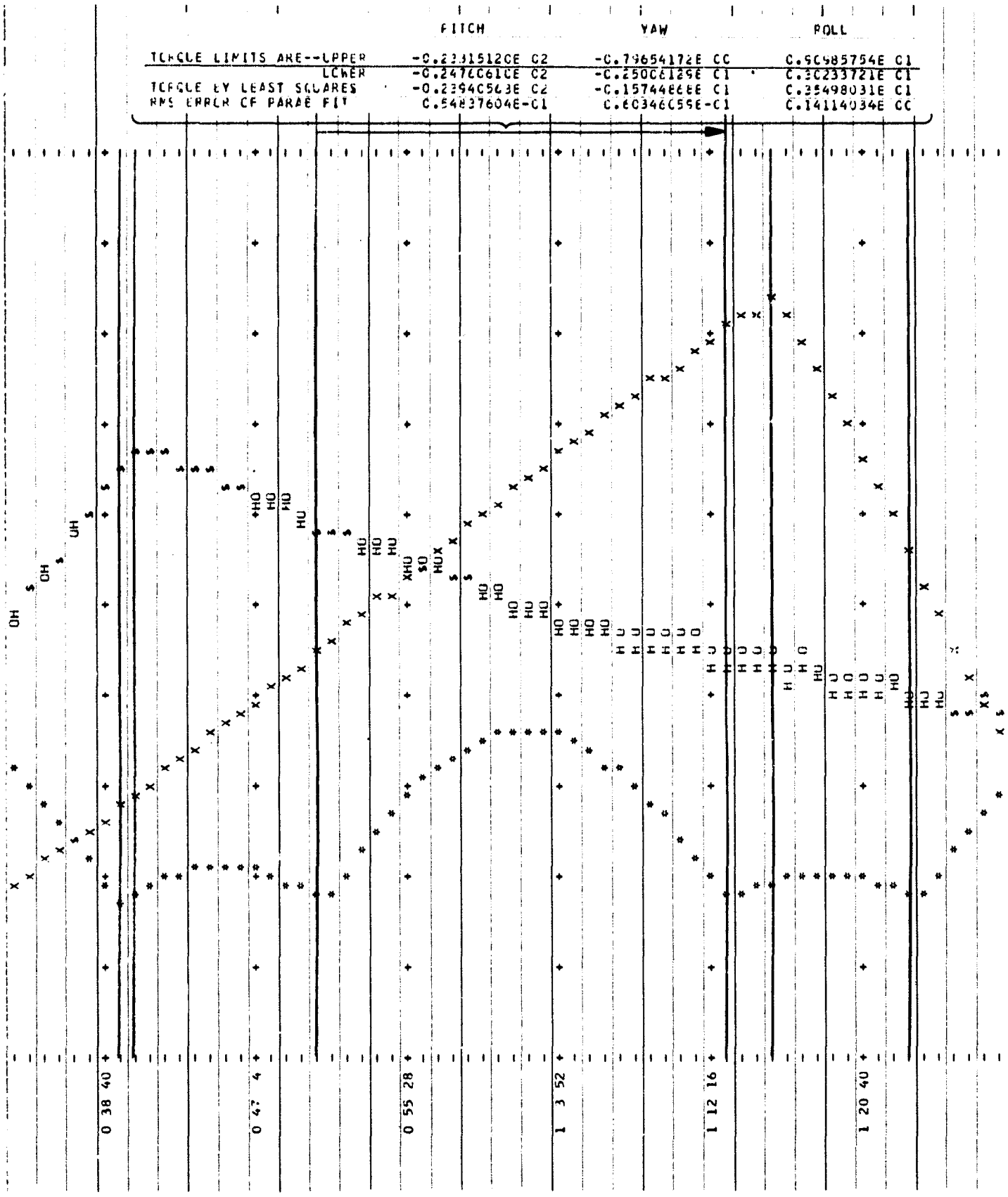
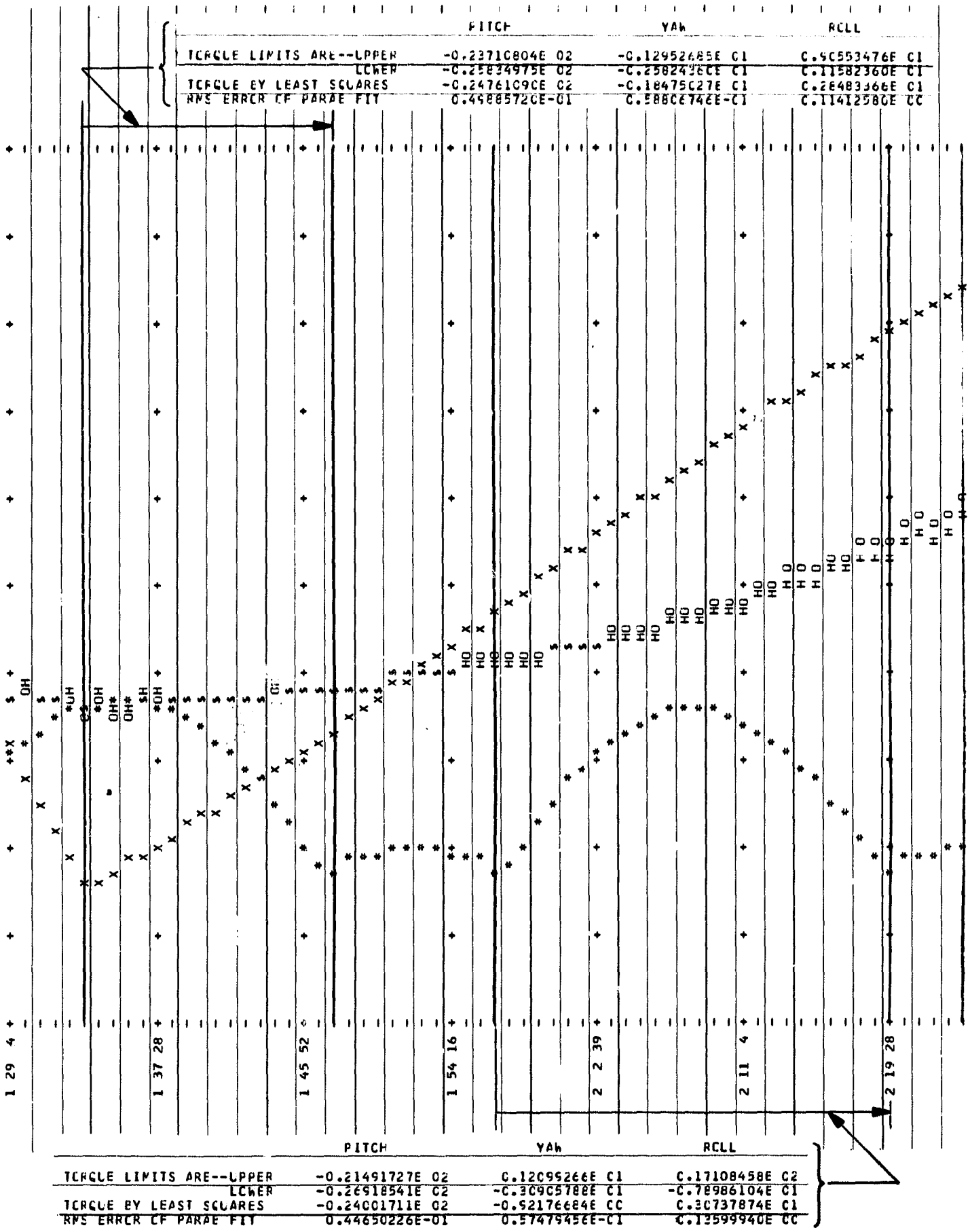
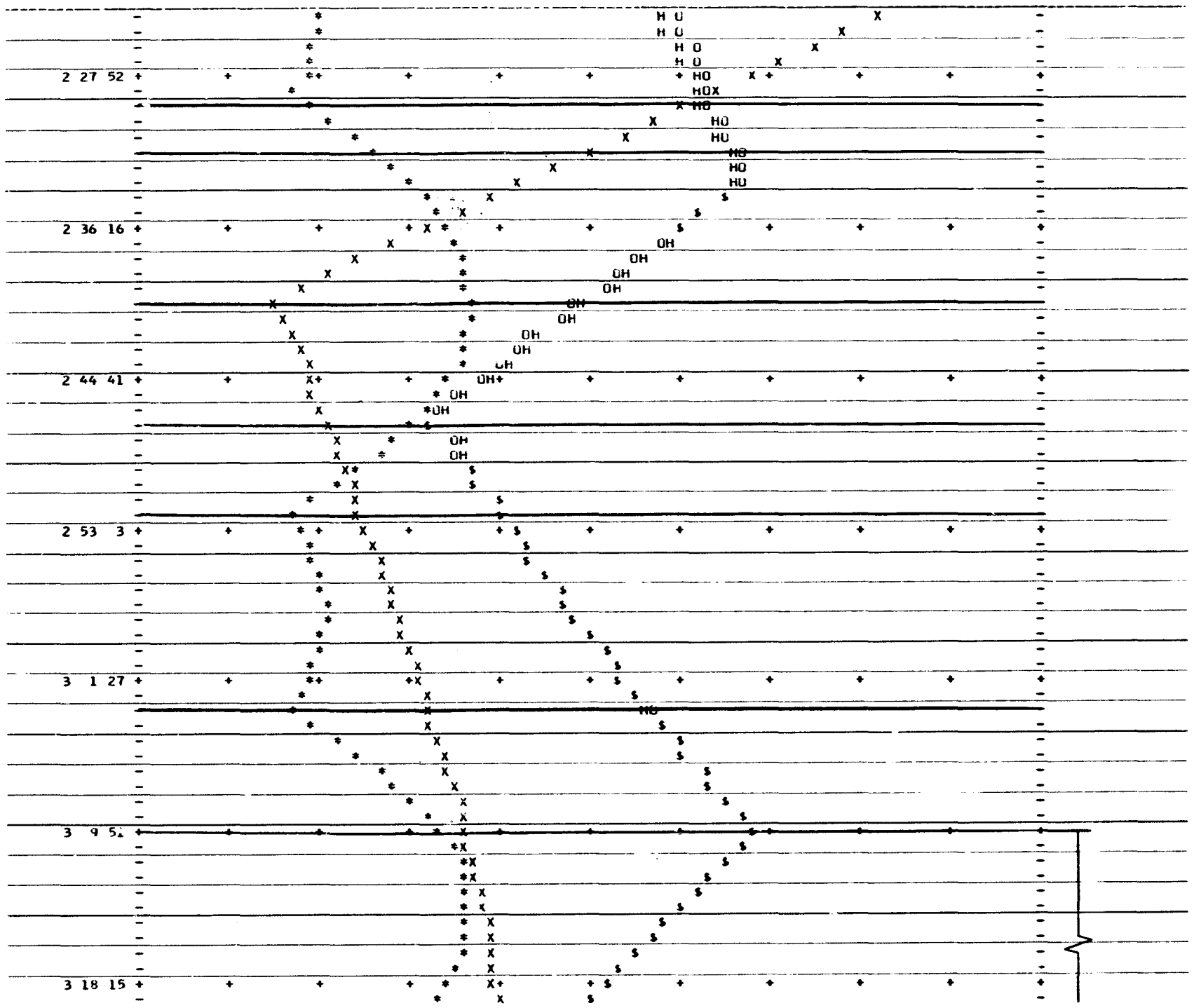
23 48 16
23 56 39
DAY 103
0 5 4
0 13 28
0 21 52
0 30 15

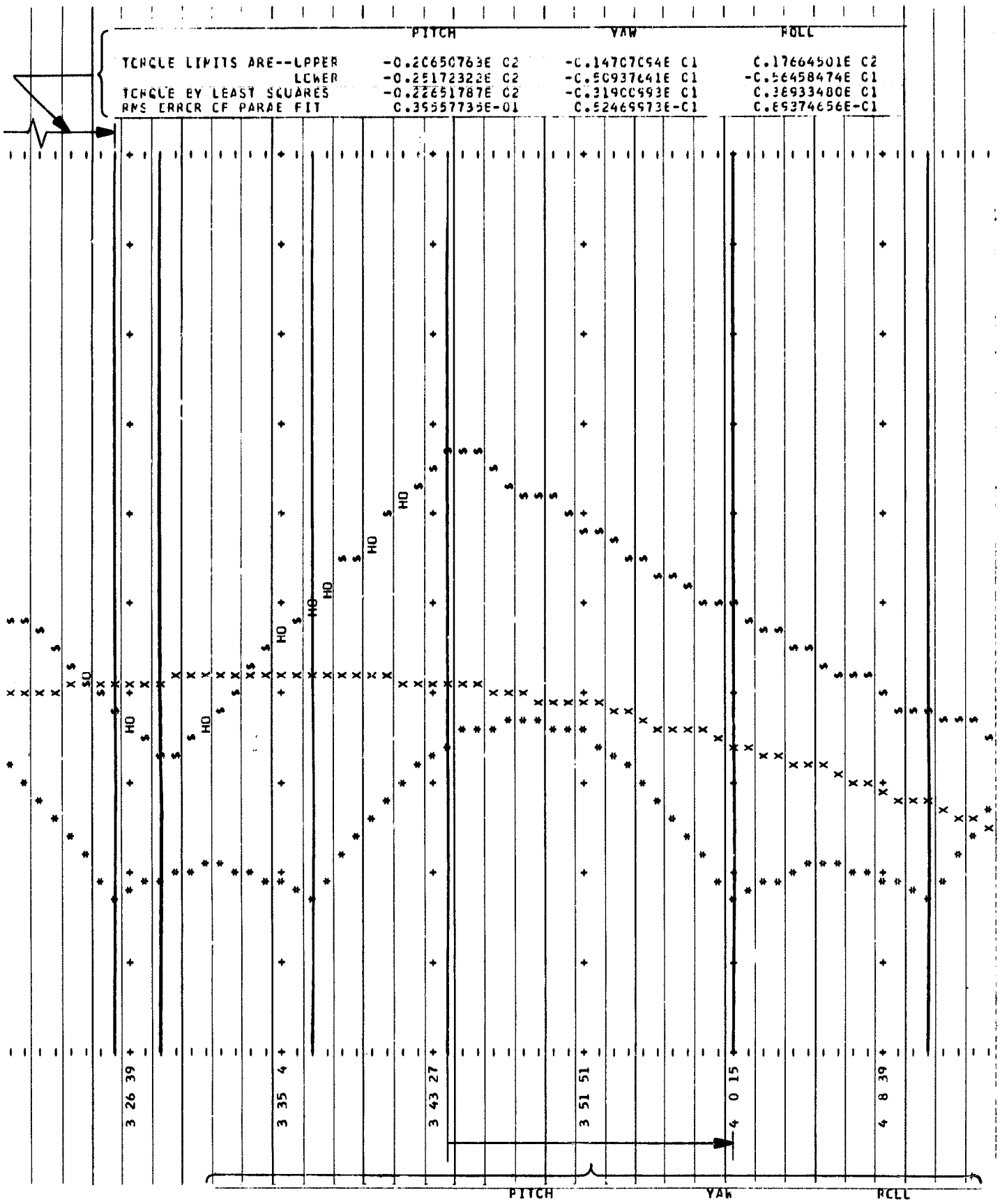

PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.2331512CE C2 -C.79654172E CC C.9C985754E C1
LOWER -0.2476C61CE C2 -C.250C6129E C1 C.3C233721E C1
TOGGLE BY LEAST SQUARES -0.2394C563E C2 -C.15744866E C1 C.354980 31E C1
RMS ERROR OF PARAB FIT C.548376O4E-C1 C.6C346C55E-C1 C.141140 34E CC

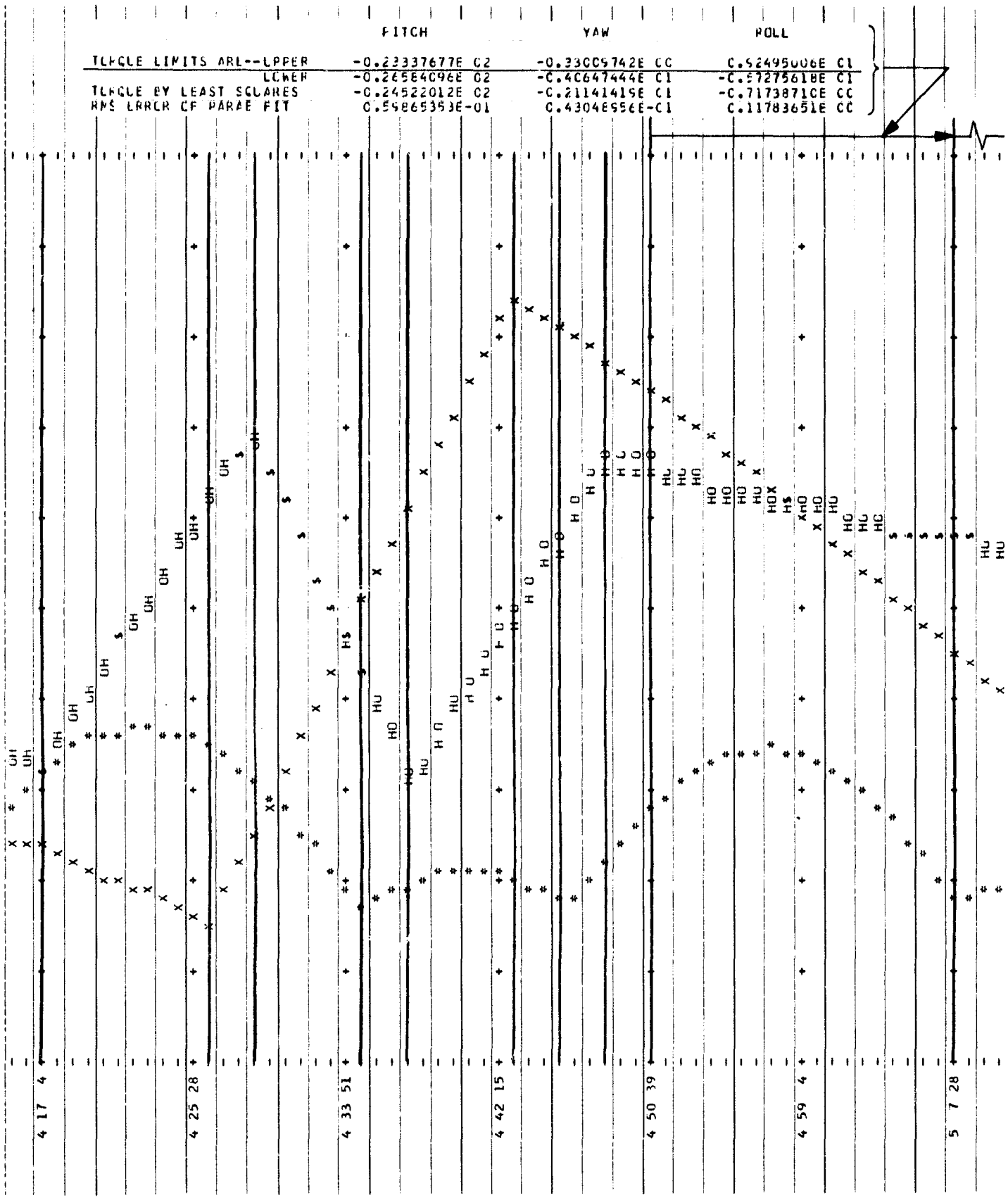


	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.23710804E 02	-0.12952685E 01	0.95553476E 01
LOWER	-0.25834975E 02	-0.25824936E 01	0.11582360E 01
TORQUE BY LEAST SQUARES	-0.24761C9CE 02	-0.18475C27E 01	0.2E483366E 01
RMS ERROR OF PARAE FIT	0.4588572CE-01	0.588CE746E-01	0.11412580E 00

	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.21491727E 02	0.12099266E 01	0.17108458E 02
LOWER	-0.26918541E 02	-0.3090578BE 01	-0.78986104E 01
TORQUE BY LEAST SQUARES	-0.24001711E 02	-0.92176684E 00	0.30737874E 01
RMS ERROR OF PARAE FIT	0.446502266-01	0.574794566-01	0.12599940E 00


2 27 52
2 36 16
2 44 41
2 53 3
3 1 27
3 9 52
3 18 15


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.20650763E 02 -0.14707C94E 01 0.17664501E 02
LOWER -0.25172322E 02 -0.80937641E 01 -0.56458474E 01
TORQUE BY LEAST SQUARES -0.22651787E 02 -0.31900993E 01 0.38933480E 01
RMS ERROR OF PARAB FIT 0.35557735E-01 0.52469973E-01 0.69274656E-01
3 26 39
3 35 4
3 43 27
3 51 51
4 0 15
4 8 39
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.20824876E 02 -0.95570233E 00 0.93497533E 01
LOWER -0.24353404E 02 -0.36821570E 01 -0.53778221E 01
TORQUE BY LEAST SQUARES -0.22496736E 02 -0.24084377E 01 0.13286161E-01
RMS ERROR OF PARAB FIT 0.50803853E-01 0.54538113E-01 0.13536222E 00


PITCH
YAW
ROLL
TURGLE LIMITS ARE--UPPER -0.23337677E 02 -0.33009742E 00 0.52495006E 01
LOWER -0.26584096E 02 -0.40647444E 01 -0.57275618E 01
TURGLE BY LEAST SQUARES -0.24522012E 02 -0.21141419E 01 -0.71738710E 00
RMS ERROR OF PARAB FIT 0.59865353E-01 0.43048556E-01 0.11783651E 00
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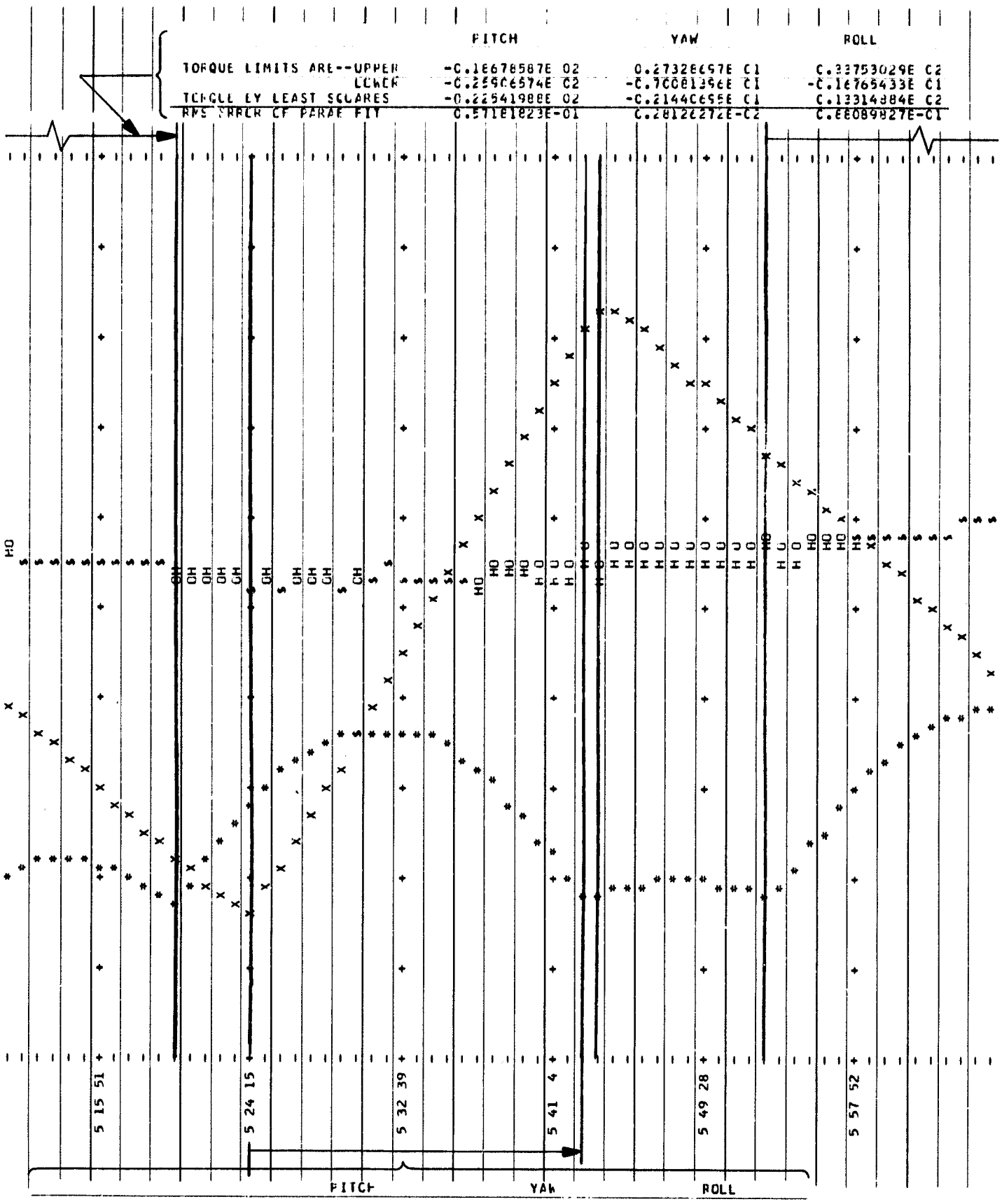
4 25 28
4 33 51
4 42 15
4 50 39
4 59 4
5 7 28


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -C.1E6785E7E 02 0.27328697E C1 C.33753029E C2
LCWER -C.2590657 4E C2 -C.7008139 6E C1 -C.1676543 3E C1
TCRQUE BY LEAST SQUARES -0.2254198 8E 02 -C.2144C695E C1 C.1331488 4E C2
RMS ERRCR CF PARAE FIT C.5718 1823E-01 C.2812 2272E-C2 C.6808 9827E-C1
5 15 51
5 24 15
5 32 39
5 41 4
5 49 28
5 57 52
PITCH
YAW
ROLL
TCRQUE LIMITS ARE--UPPER -0.22973899E 02 C.10103594E CC C.26402308E C1
LCWER -0.24721627E 02 -C.11617225E C1 -C.37802021E C1
TCRQUE BY LEAST SQUARES -0.23558997E 02 -C.21585926E CC C.13086779E C1
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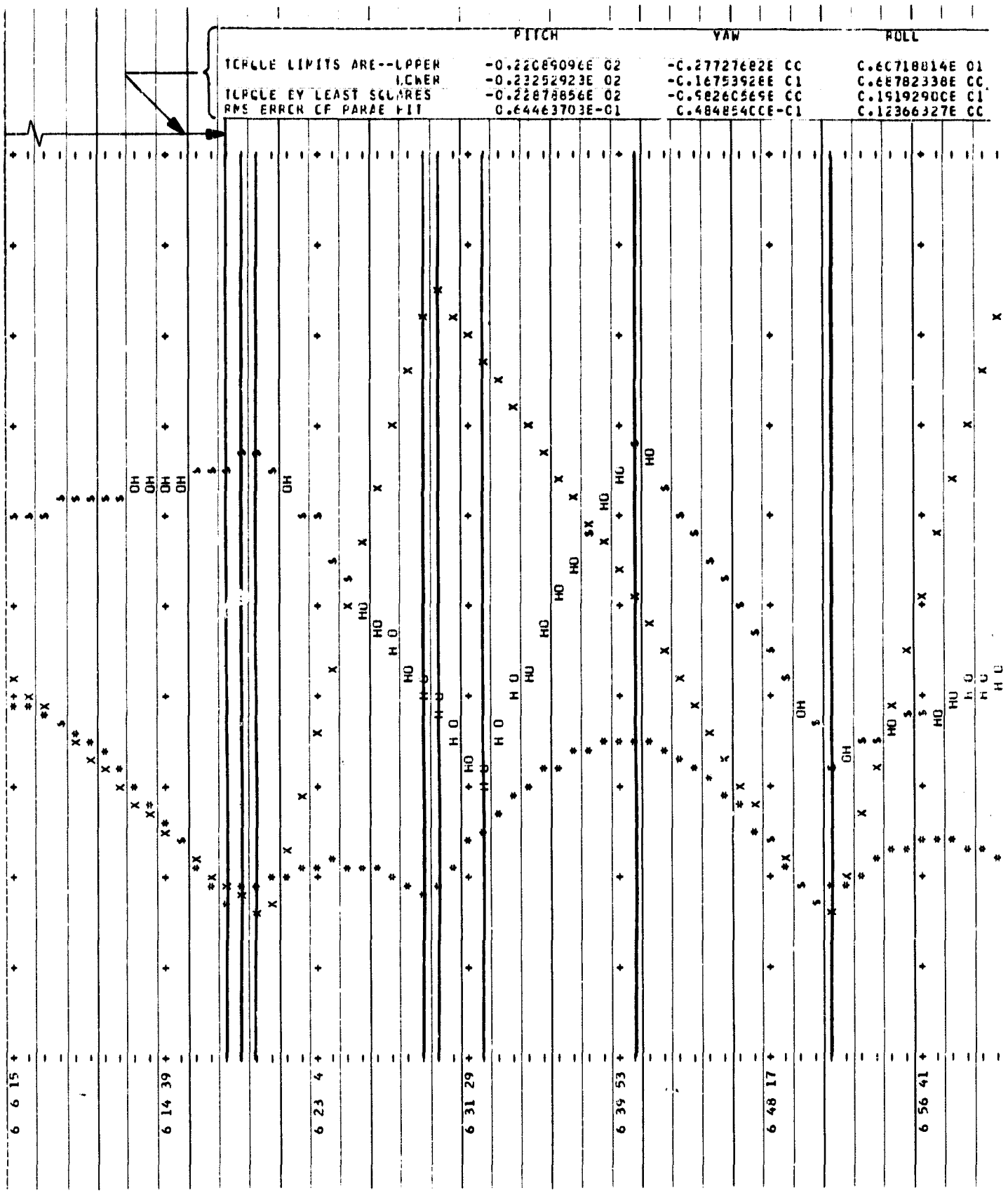
PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.22089096E 02 -C.277276B2E CC C.6C718814E 01
LOWER -0.23252923E 02 -C.16753928E C1 C.6E782338E CC
TOGGLE BY LEAST SQUARES -0.22878856E 02 -C.9826C569E CC C.1919290CE C1
RMS ERROR OF PARAE FIT C.64463703E-01 C.484854CCE-C1 C.12366327E CC
6 6 15
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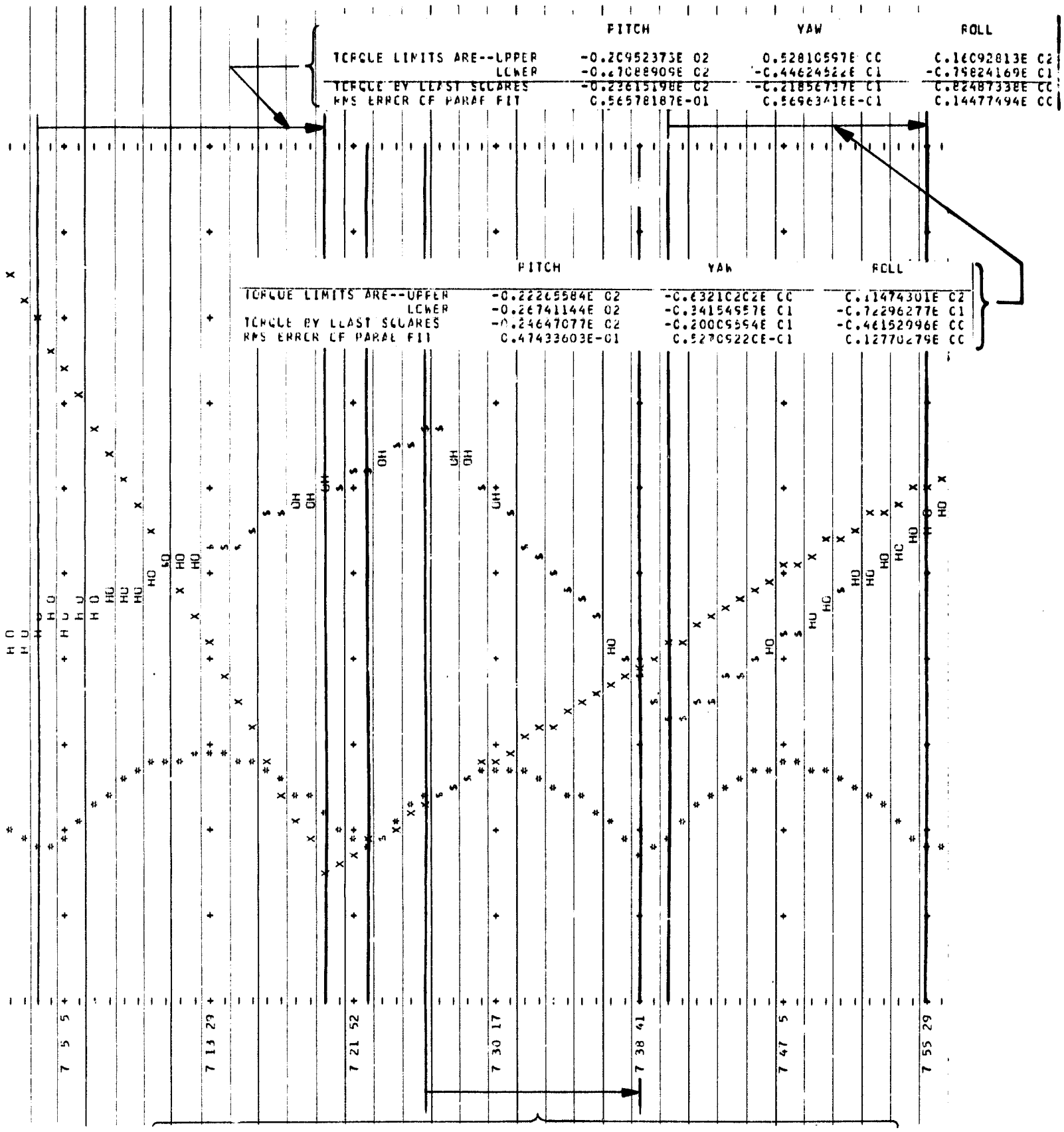
6 48 17
6 56 41


PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.20952373E 02 0.52810597E CC C.16C92813E C2
LOWER -0.17088909E 02 -C.44624522E C1 -C.79824169E C1
TORQUE BY LEAST SQUARES -0.22615198E 02 -C.21856737E C1 C.82487338E CC
RMS ERROR OF PARAB FIT C.56578187E-01 C.56963416E-C1 C.14477494E CC
PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.22265584E 02 -C.6321C2C2E CC C.14743C1E C2
LOWER -0.26741144E 02 -C.34154957E C1 -C.72296277E C1
TORQUE BY LEAST SQUARES -0.24647077E 02 -C.20005594E C1 -C.46152996E CC
RMS ERROR OF PARAB FIT C.47433603E-01 C.5270522CE-C1 C.12770279E CC
7 5 5
7 13 29
7 21 52
7 30 17
7 38 41
7 47 5
7 55 29
PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -C.21572392E 02 -C.23112815E C1 C.78513787E C1
LOWER -C.24063598E 02 -C.37141329E C1 -C.11234702E C1
TORQUE BY LEAST SQUARES -C.2324C121E 02 -C.29418429E C1 C.34807072E C1
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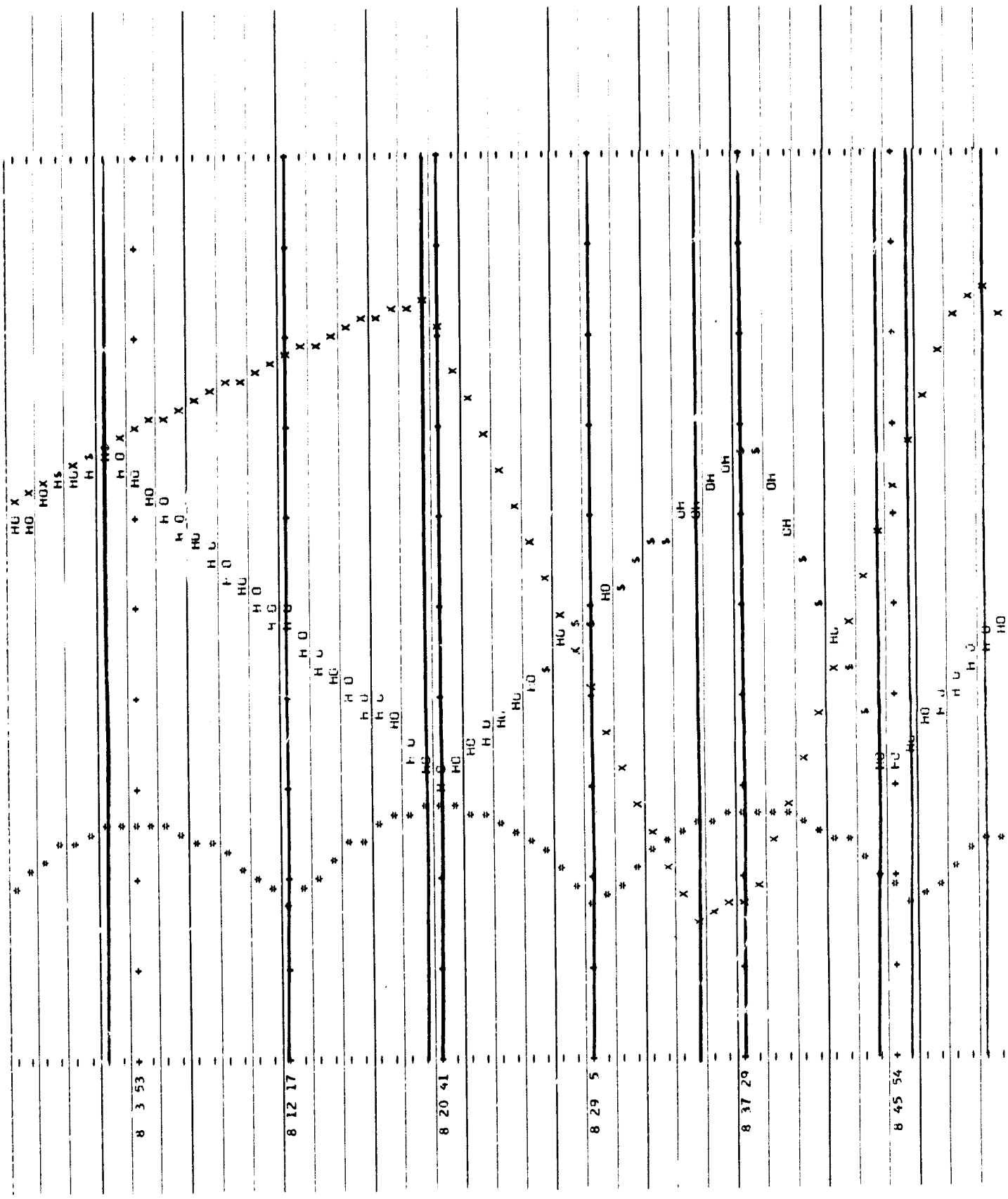
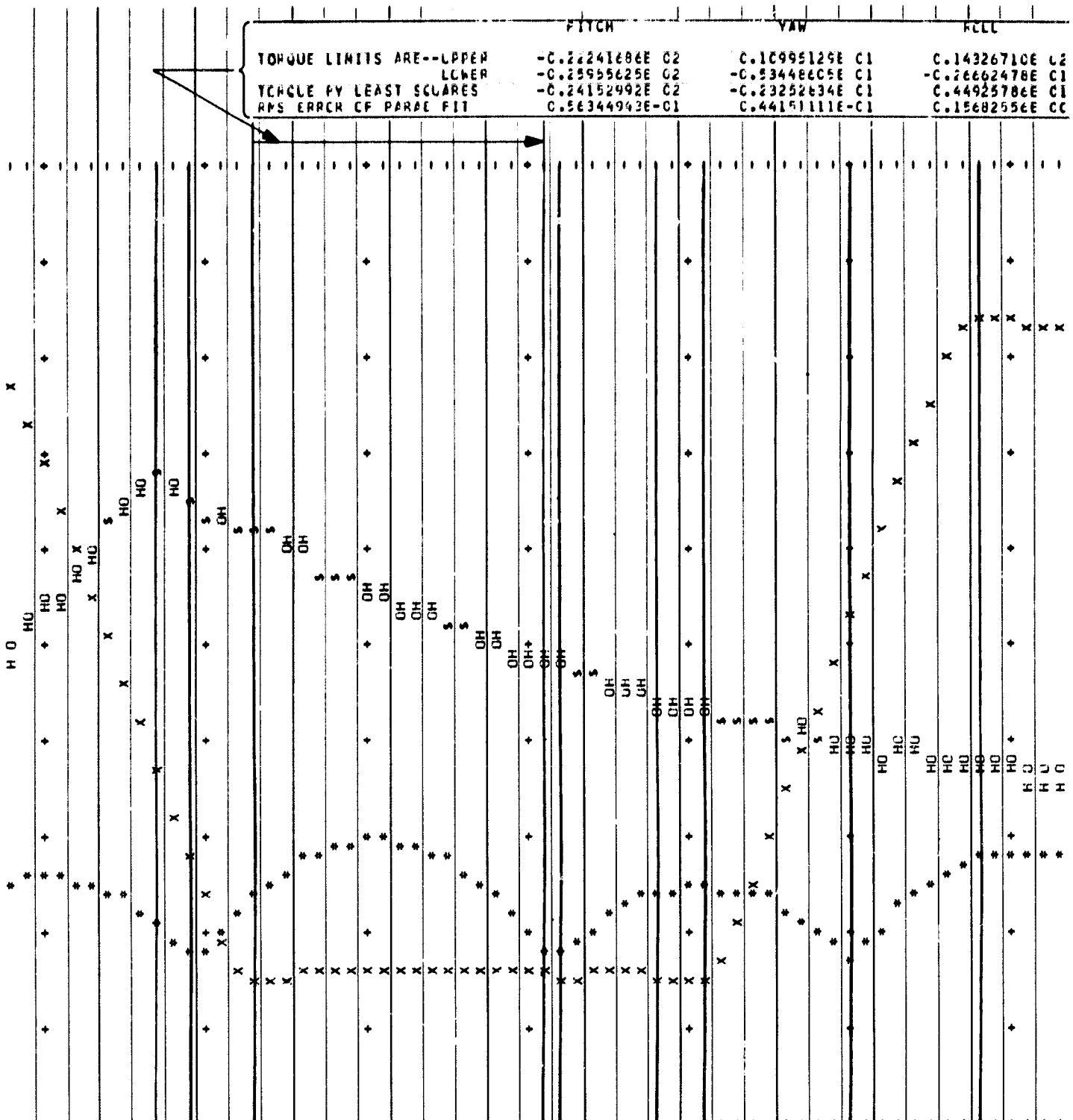

8 3 53
8 12 17
8 20 41
8 29 5
8 37 29
8 45 54


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -C.2224168EE C2 C.1C995125E C1 C.143267106 C2
LOWER -C.25955625E C2 -C.5344ECC5E C1 -C.266624786 C1
TORQUE BY LEAST SQUARES -C.24152492E C2 -C.23252634E C1 C.44925786E C1
RMS ERROR OF PARAB FIT C.563449436-C1 C.4416[1111E-C1 C.1568255EE CC
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9 11 5
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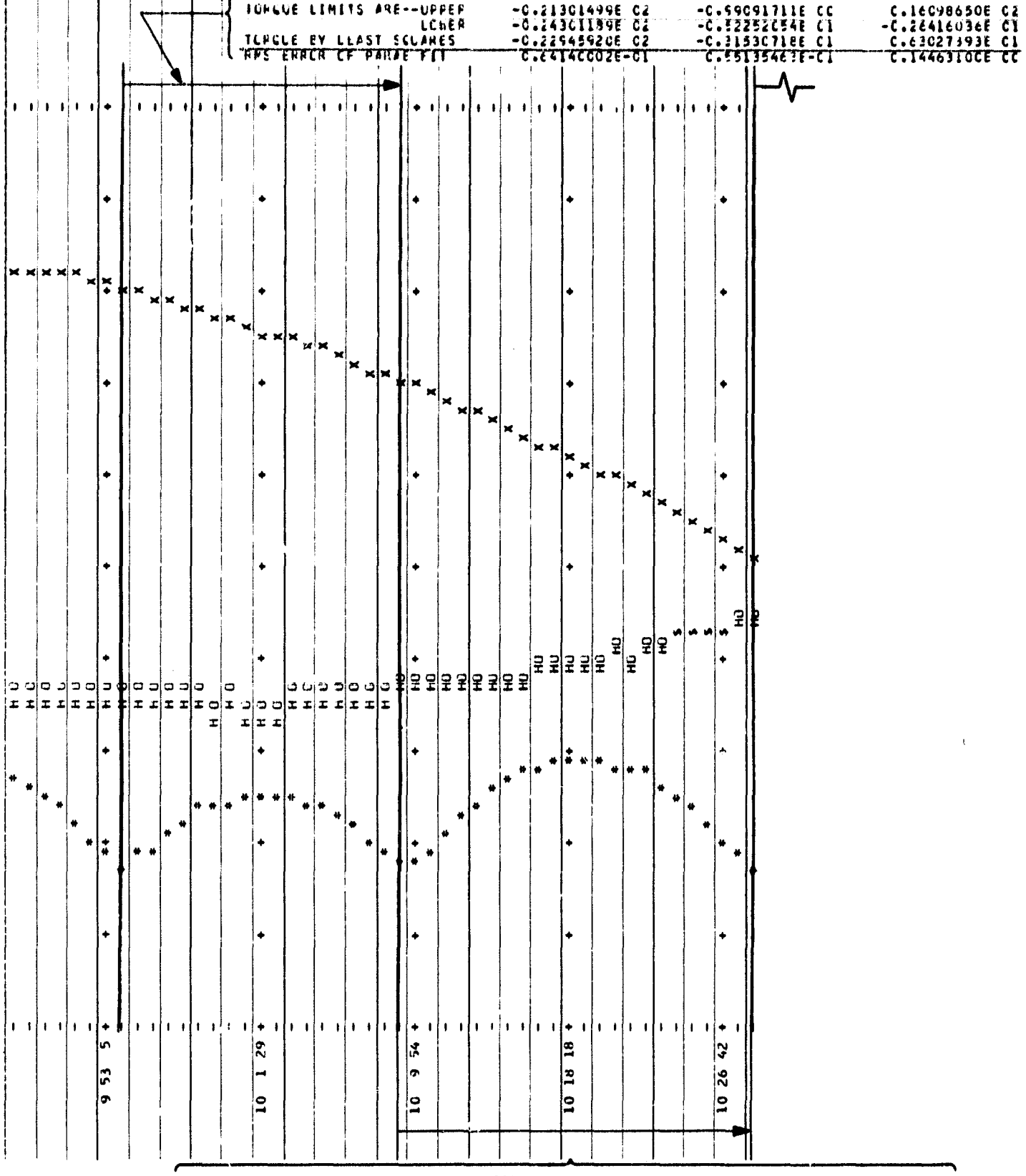
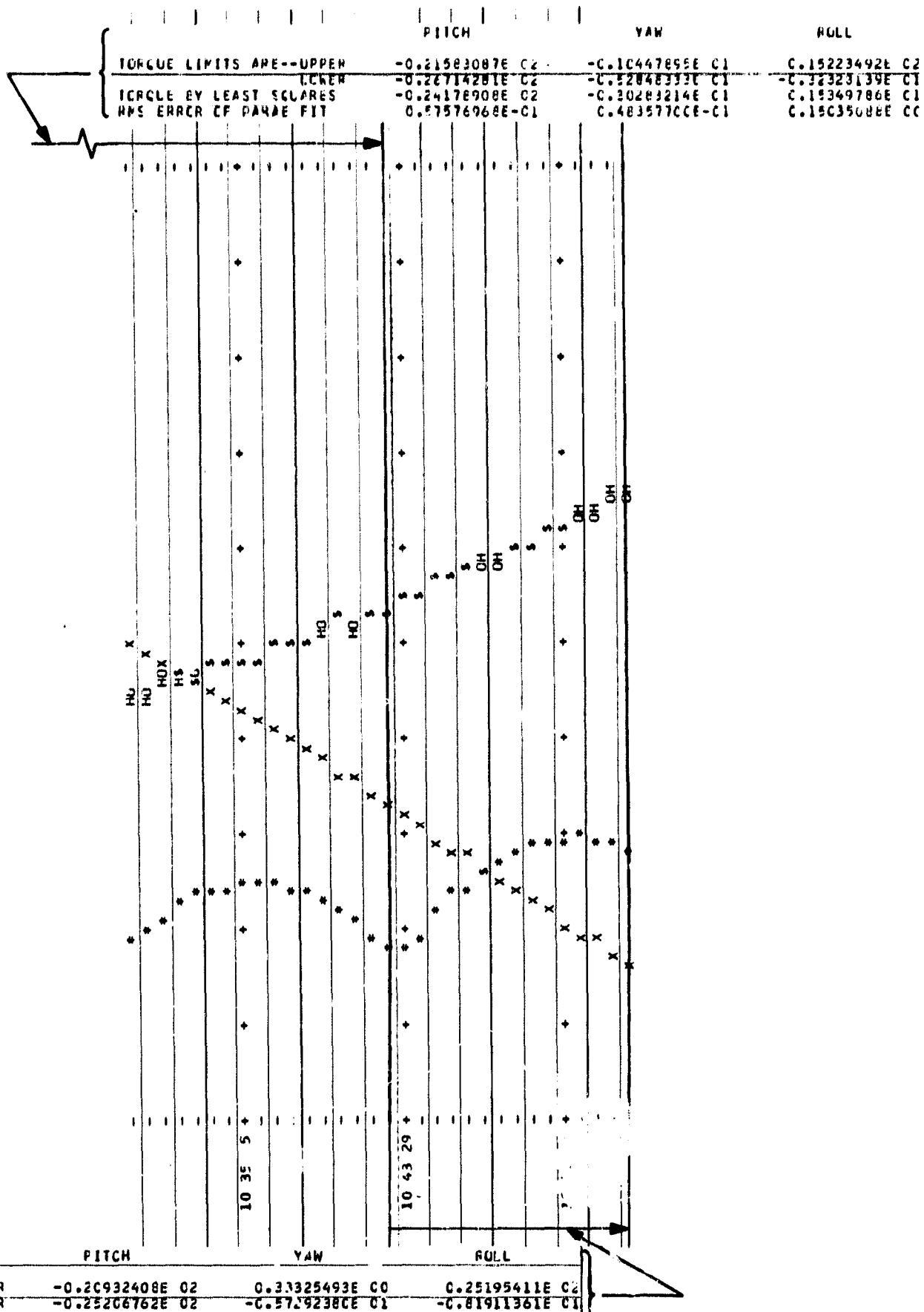
9 36 18
9 44 41



	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.217254056 02	-0.520977866 CC	0.107806136 02
LOWER	-0.239806346 02	-0.341145886 01	0.647472846 CC
TORQUE BY LEAST SQUARES	-0.230561336 02	-0.195749016 01	0.457121496 01
RMS ERROR OF PARAB FIT	0.535758226-01	0.426855116-01	0.126626786 CC


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.21583087E C2 -C.1C447855E C1 C.15223492E C2
LOWER -0.2271428IE C2 -C.52048333E C1 -C.32323139E C1
TORQUE BY LEAST SQUARES -0.24178908E 02 -C.3028J214E C1 C.15349786E C1
RMS ERROR OF PARAB FIT 0.57576968E-C1 C.4835777CE-C1 C.15C350BBE CC
10 35 5
10 43 29
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.2C932408E 02 0.33325493E C0 C.25195411E C2
LOWER -0.25206762E 02 -C.57.9238CE C1 -C.81911361E C1
TORQUE BY LEAST SQUARES -0.227243255 02 -C.248.9987E C1 C.3778698CE C1
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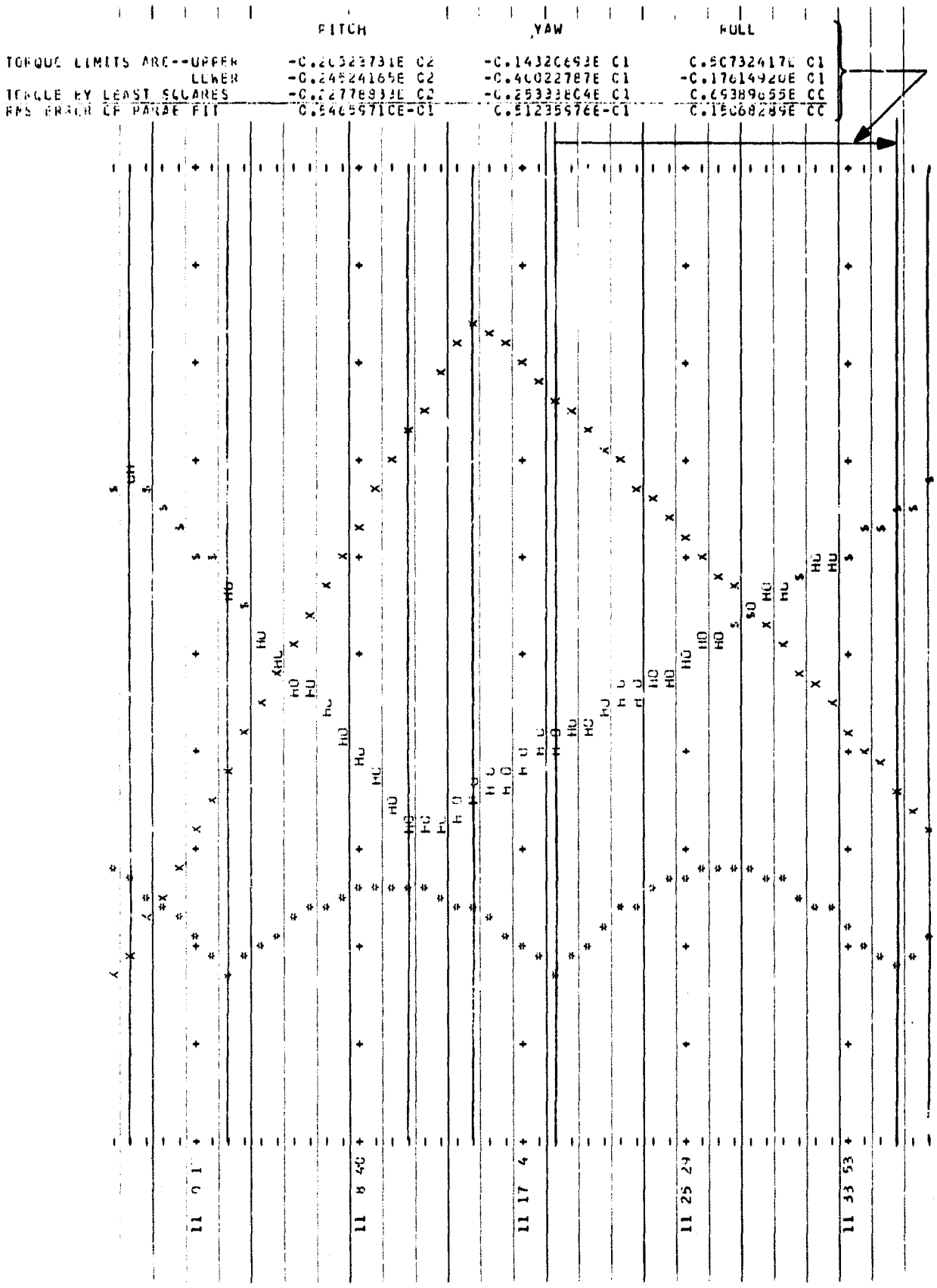
PITCH
YAW
ROLL
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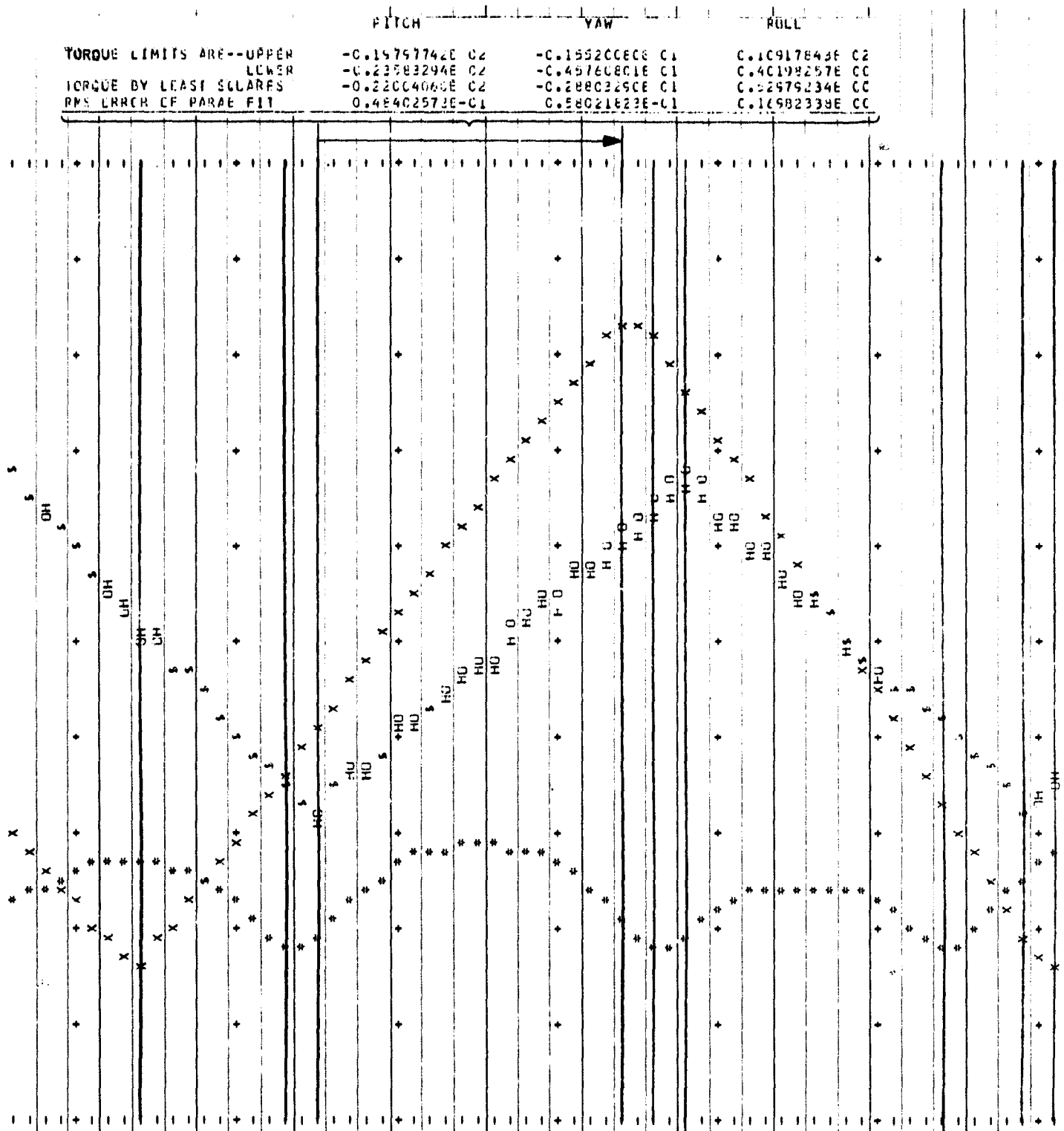
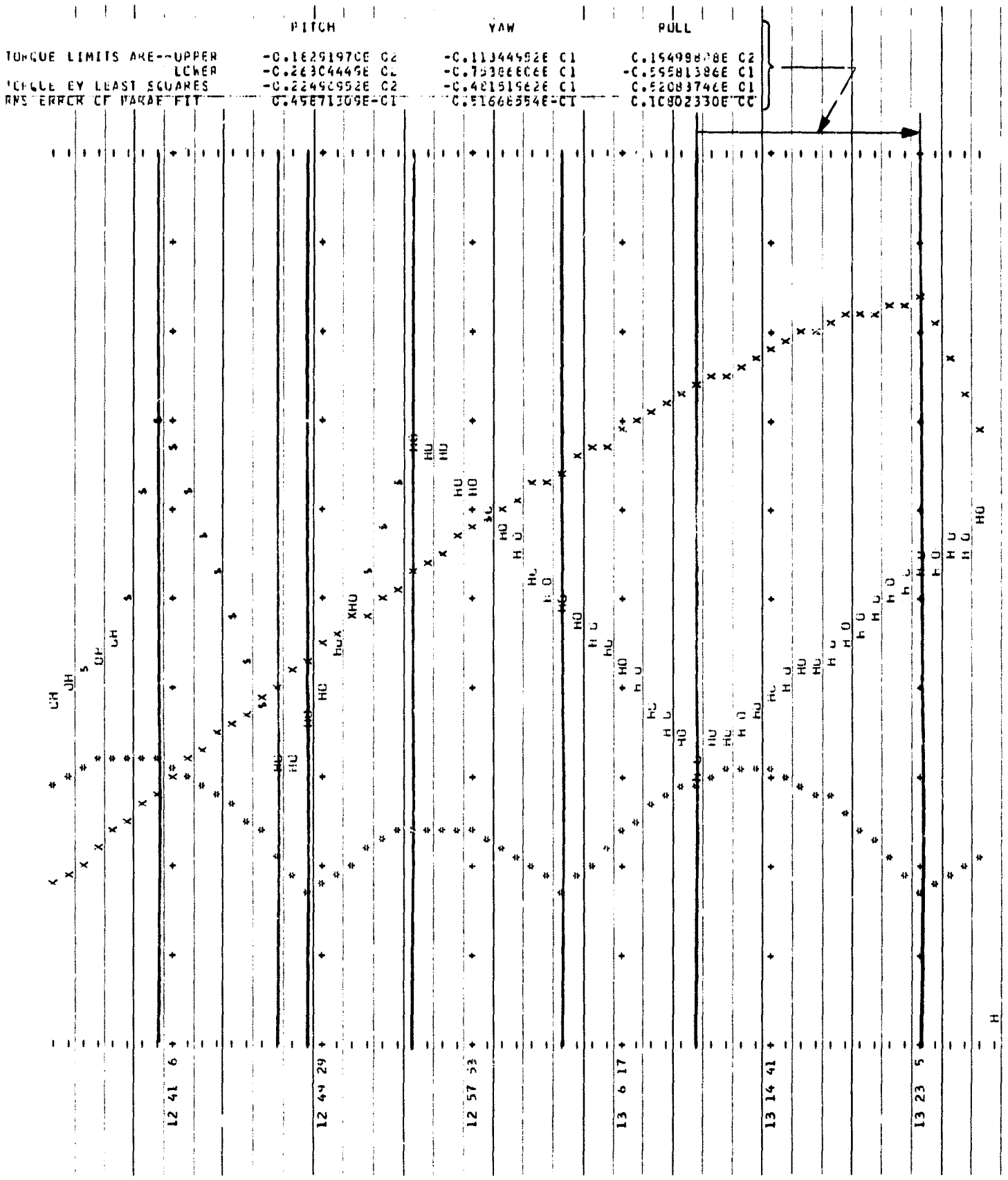
LOWER -C.24524165E C2 -C.4C022787E C1 -C.1761492CE C1
TORQUE BY LEAST SQUARES -C.2277883JE C2 -C.25333EC4E C1 C.693B9655E CC
RMS ERROR OF PARAB FIT C.5465971CE-C1 C.5123597EE-C1 C.15C68289E CC
11 0 1
11 8 4C
11 17 4
11 25 29
11 33 53


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -C.1575774E C2 -C.1552CCECE C1 C.1C917843E C2
LCWER -C.2395B3294E C2 -C.4576C8C1E C1 C.4C1992S7E CC
TORQUE BY LEAST SCLARES -0.22CC4066E C2 -C.2B8C329CE C1 C.2257S234E CC
RMS LRRCR CF PARAE FIT 0.4E4C2572E-C1 C.58C216Z3E-C1 C.1C982338E CC
11 42 17
11 50 41
11 59 5
12 7 29
12 15 53
12 24 17
12 32 41
PITCH
YAW
ROLL
TCRQUE LIMITS ARE--UPPER -0.159587B2E C2 -C.68699C72E CC C.1C036655E C2
LCWER -C.228999108 C2 -C.61927574E C1 -C.4C440462E C1
TCRQUE BY LEAST SQUARES -0.2189C080E C2 -C.3323C785E C1 C.592990?4E C1
RMS ERRCR CF PARAE FIT 0.6C388872E-01 C.520:9245E-C1 C.196B2584E CC


PITCH
YAW
PULL
TORQUE LIMITS ARE--UPPER -0.1629197CE C2 -C.113445S2E C1 C.1549987BE C2
LOWER -0.2630444SE C2 -C.7S30EECEE C1 -C.5S5813S6E C1
TOGGLE BY LEAST SQUARES -0.2249C952E C2 -C.4815196ZE C1 C.52083746E C1
RMS ERROR OF PARAB FIT C.4587130SE-C1 C.S16685S4E-CT C.1C902330E CC
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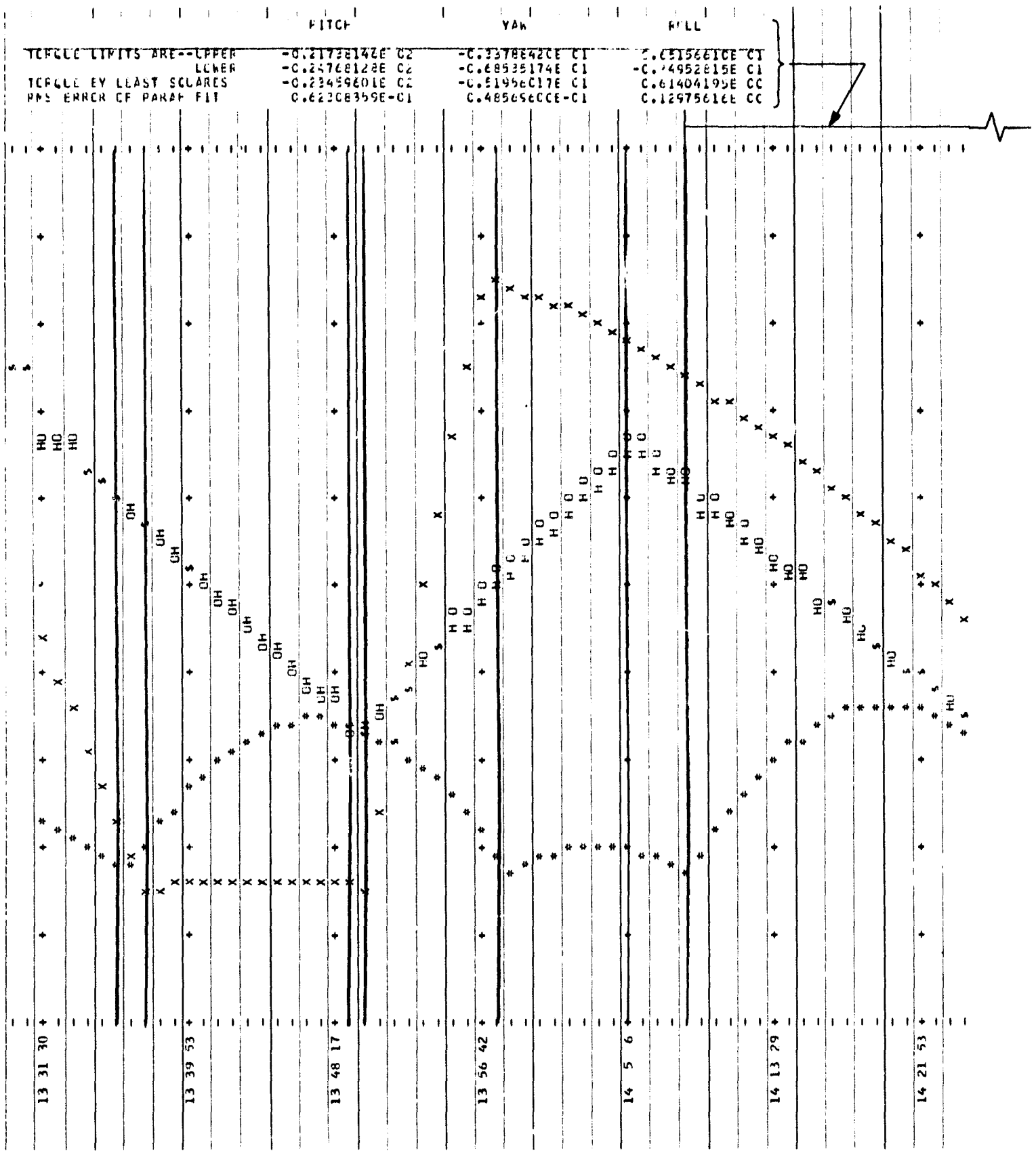
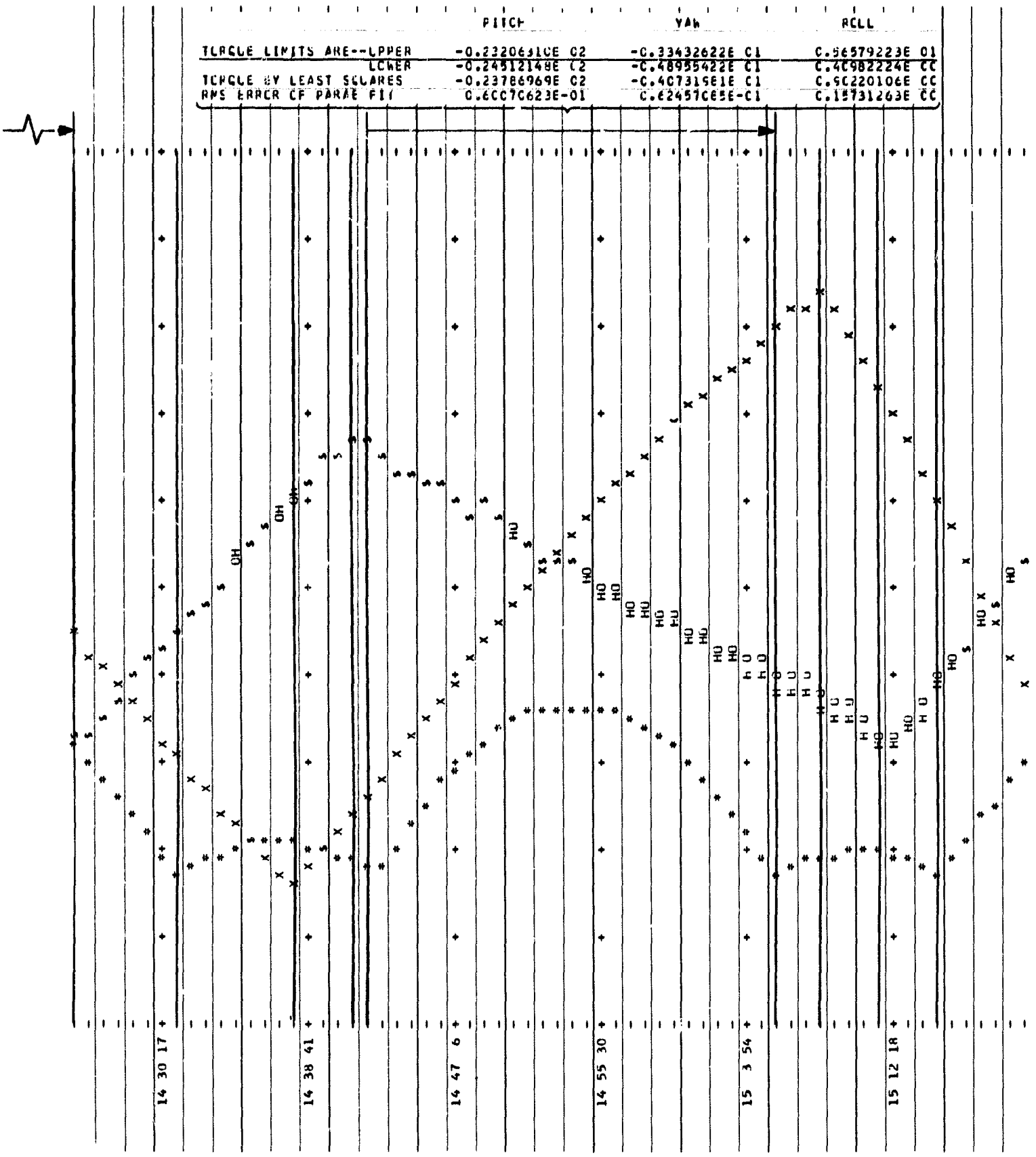
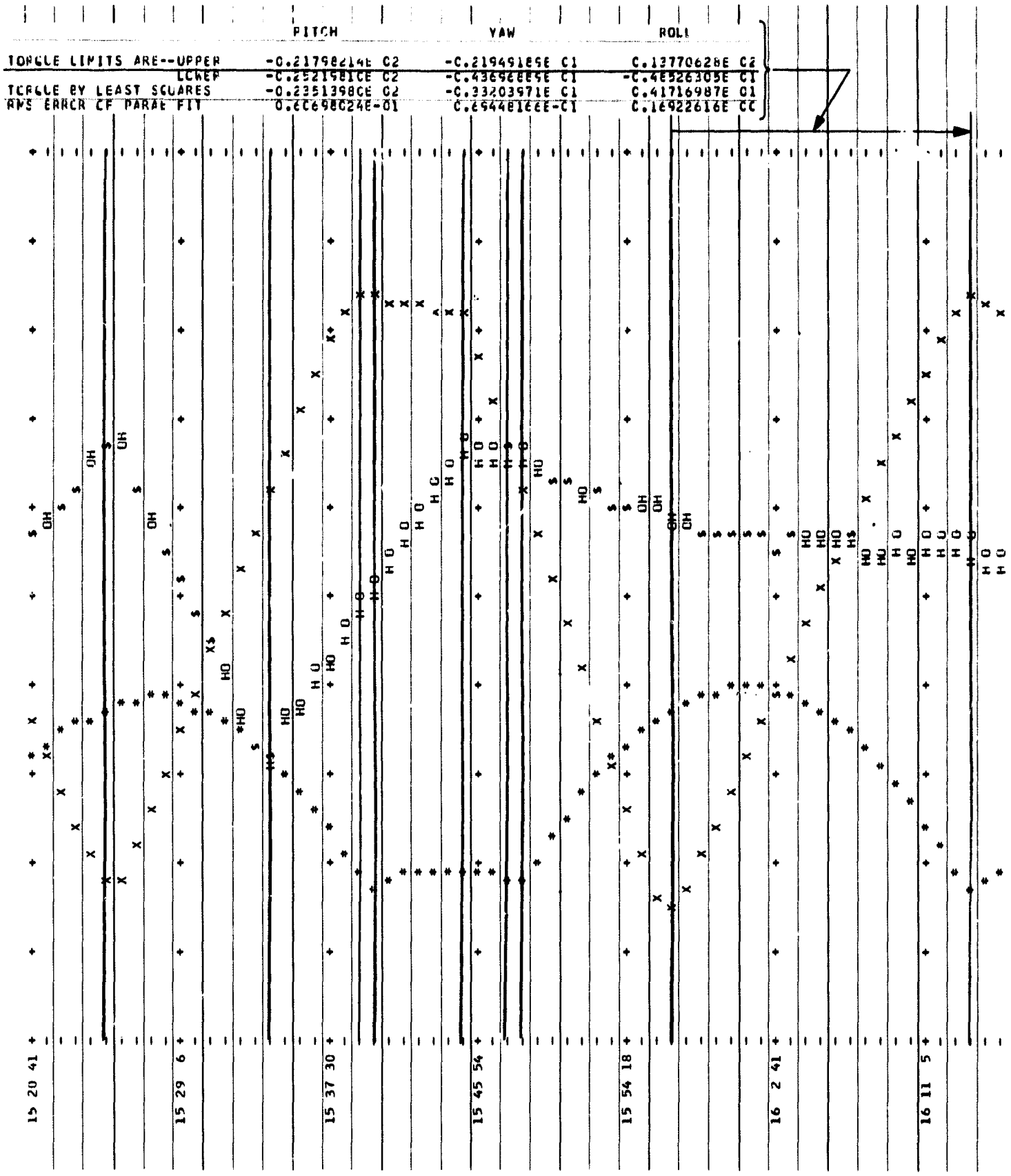
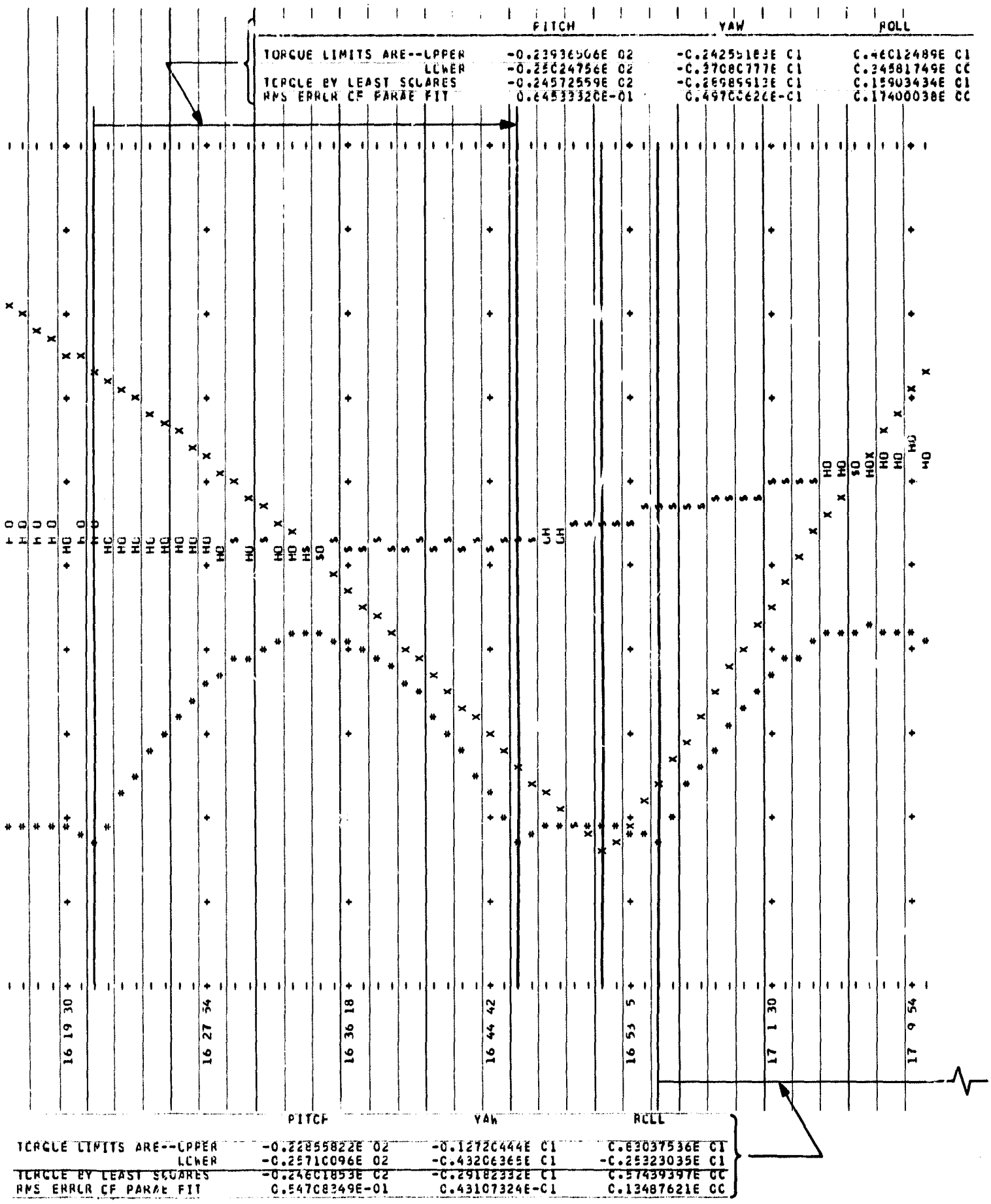
13 14 41
13 23 5

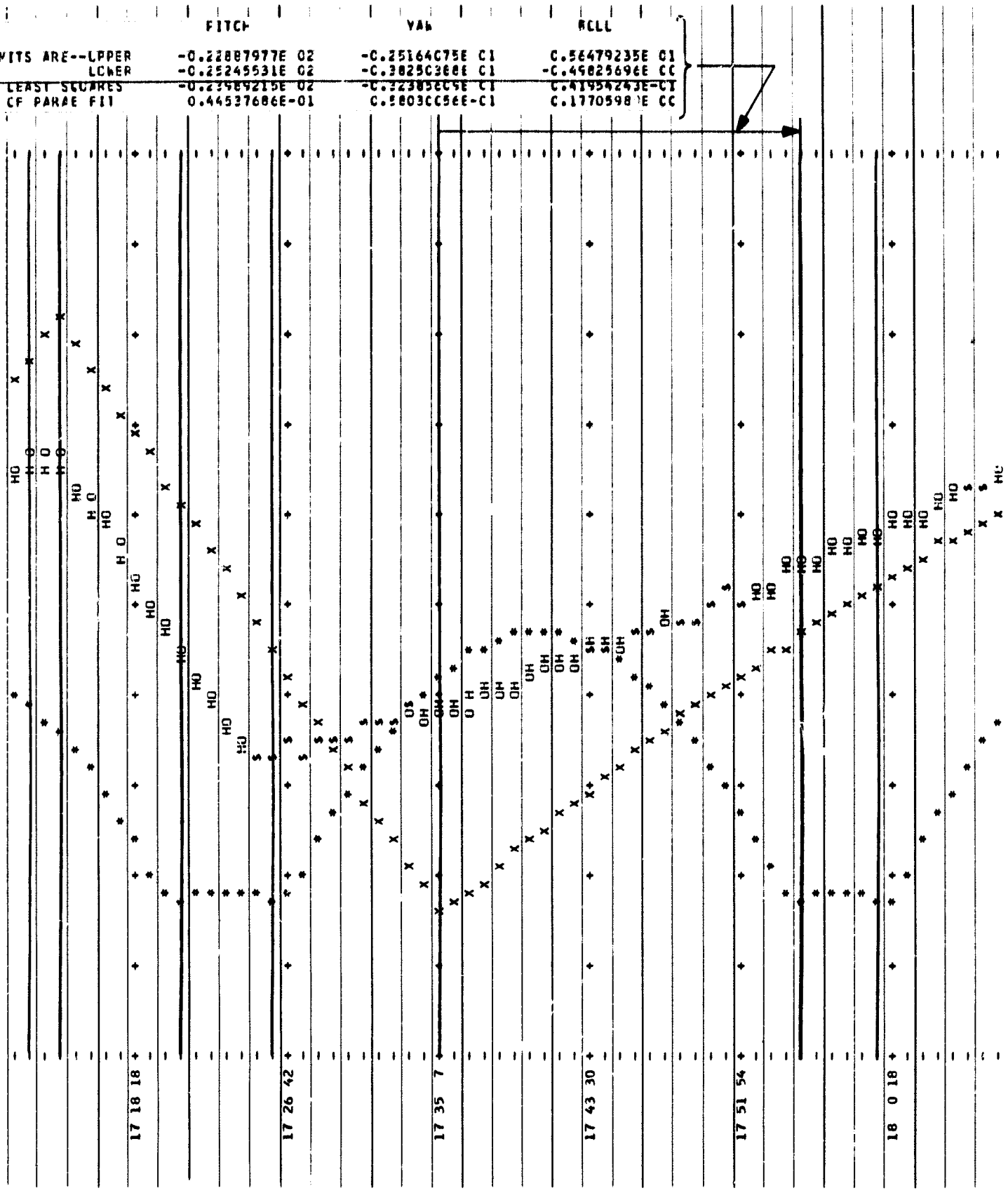

PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.2173E142E 02 -C.3378E42CE C1 C.6515E61CE C1
LOWER -C.2476E128E 02 -C.6853E174E C1 -C.4952E15E C1
TOGGLE BY LEAST SQUARES -0.2345E01E 02 -C.5196E17E C1 C.61404195E CC
RMS ERROR OF PARAB FIT C.6220E359E-01 C.4856E6CCE-C1 C.1297E16E CC
13 31 30
13 39 53
13 48 17
13 56 42
14 5 6
14 13 29
14 21 53


PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.23206310E 02 -0.33432622E 01 0.56579223E 01
LOWER -0.24512148E 02 -0.48955422E 01 0.40982224E 00
TORQUE BY LEAST SQUARES -0.23786969E 02 -0.40731981E 01 0.90220106E 00
RMS ERROR OF PARAB FIT 0.60070623E-01 0.62457085E-01 0.15731263E 00
14 30 17
14 38 41
14 47 6
14 55 30
15 3 54
15 12 18

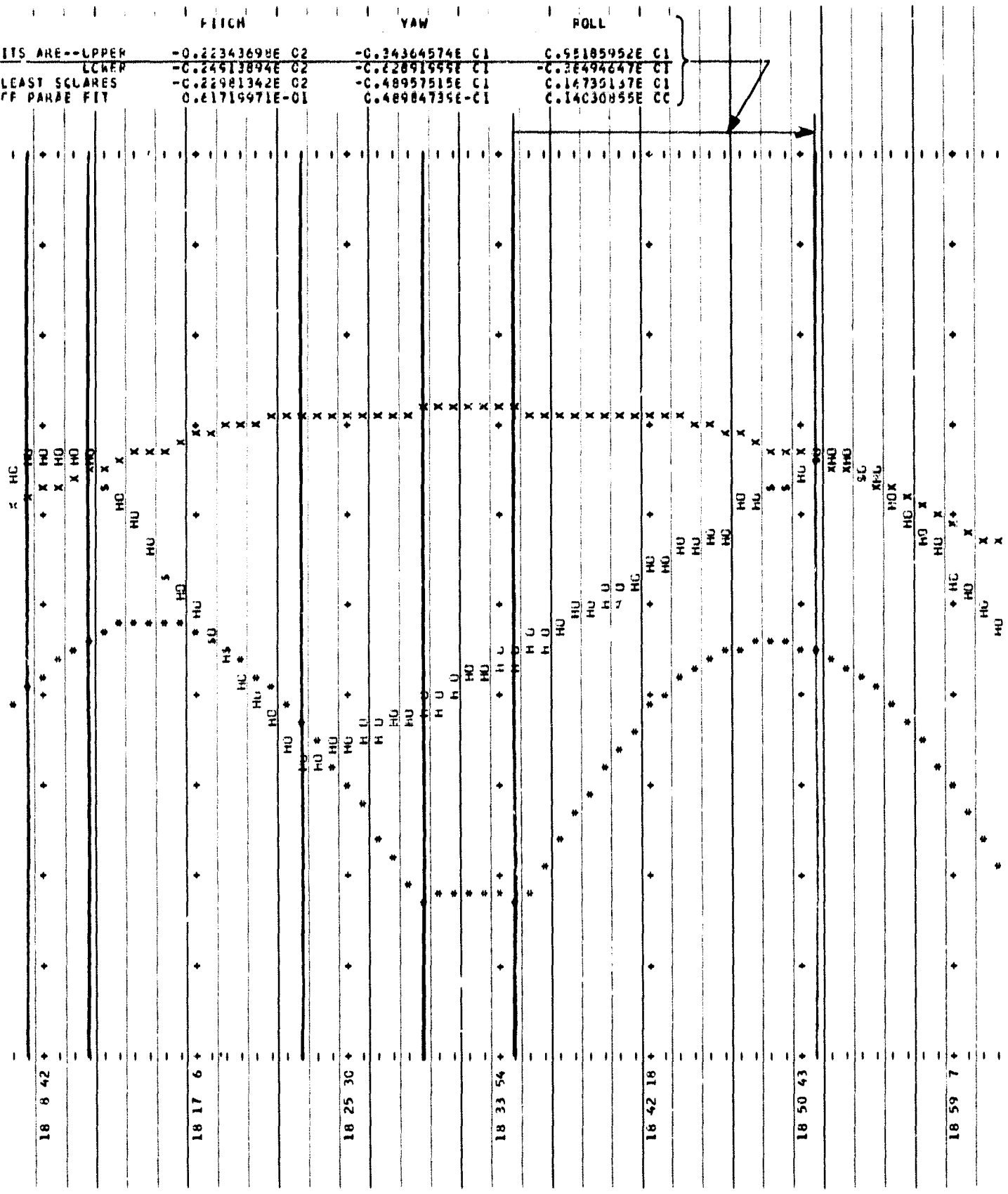

PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.21798214E C2 -C.219491E9E C1 C.13770628E C2
LOWER -C.2521981CE C2 -C.4369EEE5E C1 -C.4E5263C5E C1
TOGGLE BY LEAST SQUARES -0.2351398CE C2 -C.33203971E C1 C.41716987E C1
RMS ERROR OF PARAE FIT 0.6C698C24E-01 C.6944E1EEE-C1 C.169226I6E CC
15 20 41
15 29 6
15 37 30
15 45 54
15 54 18
16 2 41
16 11 5

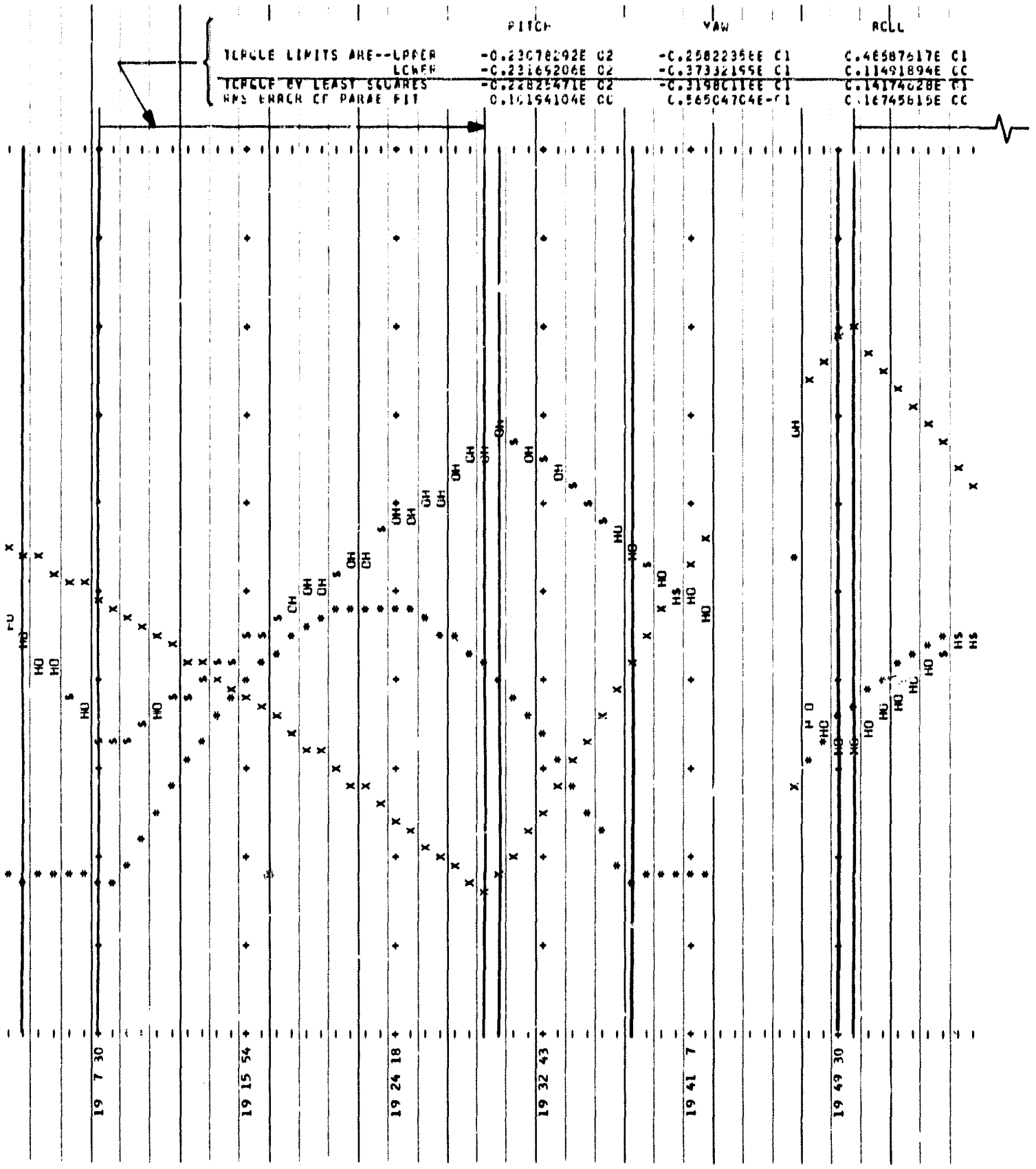

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.23936506E 02 -C.24255183E C1 C.46C12489E C1
LOWER -0.25C24756E 02 -C.3708C777E C1 C.345817496 CC
TORQUE BY LEAST SQUARES -0.24572559E 02 -C.26985513E C1 C.15903434E C1
RMS ERROR OF PARAB FIT 0.64533320E-01 C.49700626E-C1 C.17400038E CC
16 19 30
16 27 54
16 36 18
16 44 42
16 53 5
17 1 30
17 9 54
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.228558226 02 -0.12720444E C1 C.630375366 C1
LOWER -0.25710096E 02 -C.43206365E C1 -C.253230356 C1
TORQUE BY LEAST SQUARES -0.24601853E C2 -C.29182332E C1 C.57439397E CC
RMS ERROR OF PARAB FIT C.5470C8349E-01 C.43107324E-C1 C.13487621E CC

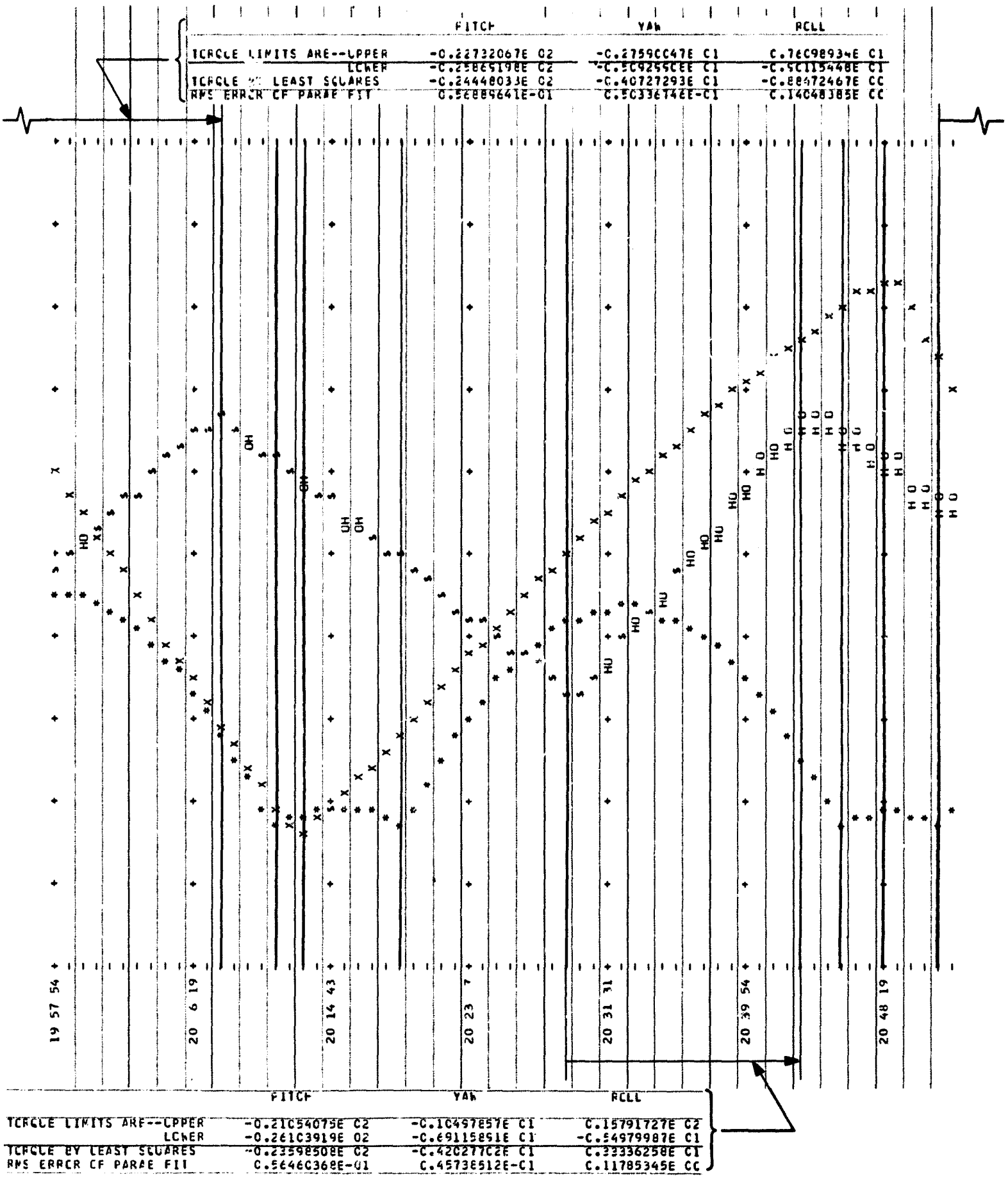
	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.22887977E 02	-0.25164075E 01	0.56479235E 01
LOWER	-0.25245531E 02	-0.38250388E 01	-0.49025696E 00
TORQUE BY LEAST SQUARES	-0.22969215E 02	-0.32385EC5E 01	0.41954243E-01
RMS ERROR OF PARAE FIT	0.44537686E-01	0.9803CC56E-01	0.1770598 E 00

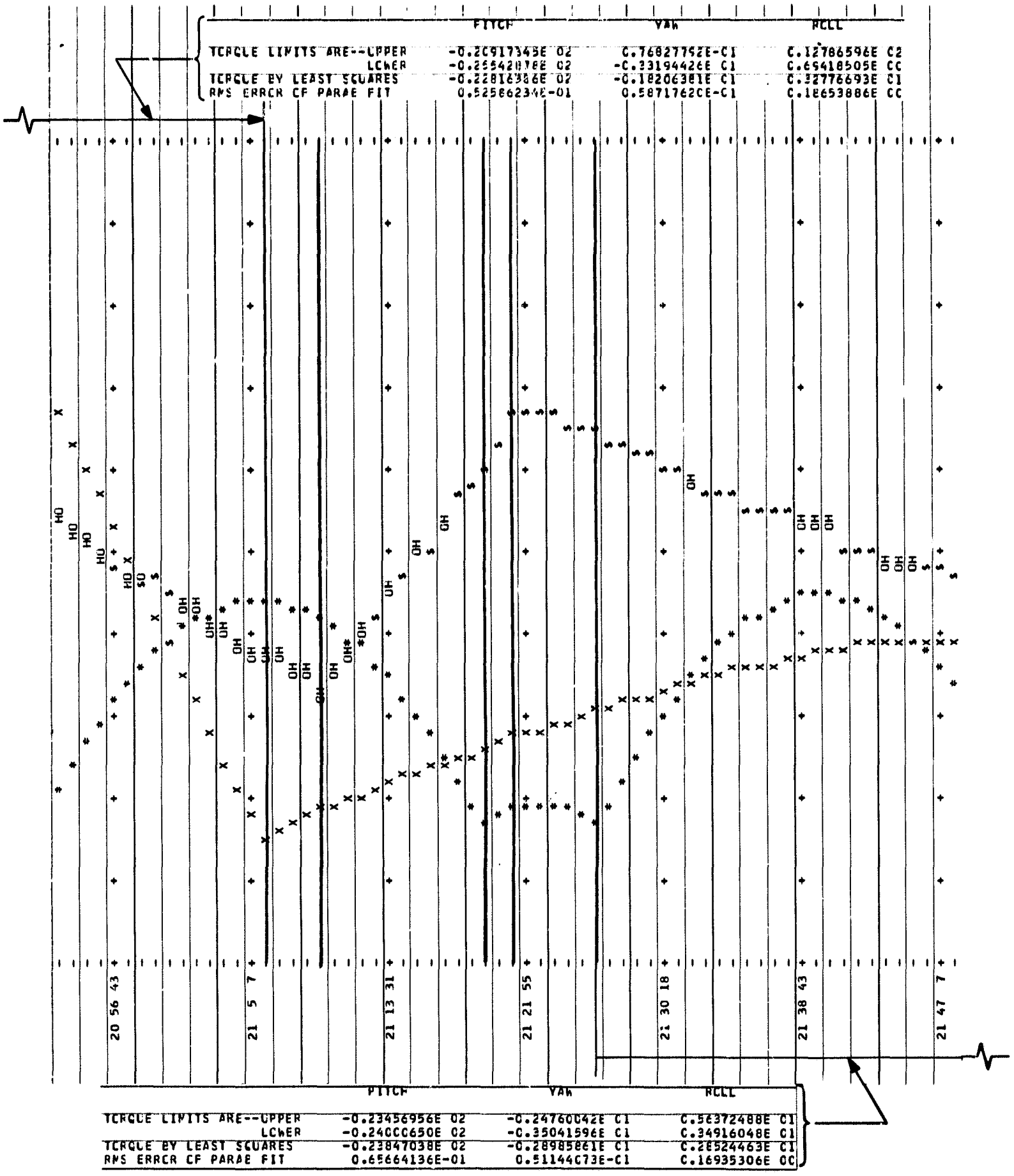


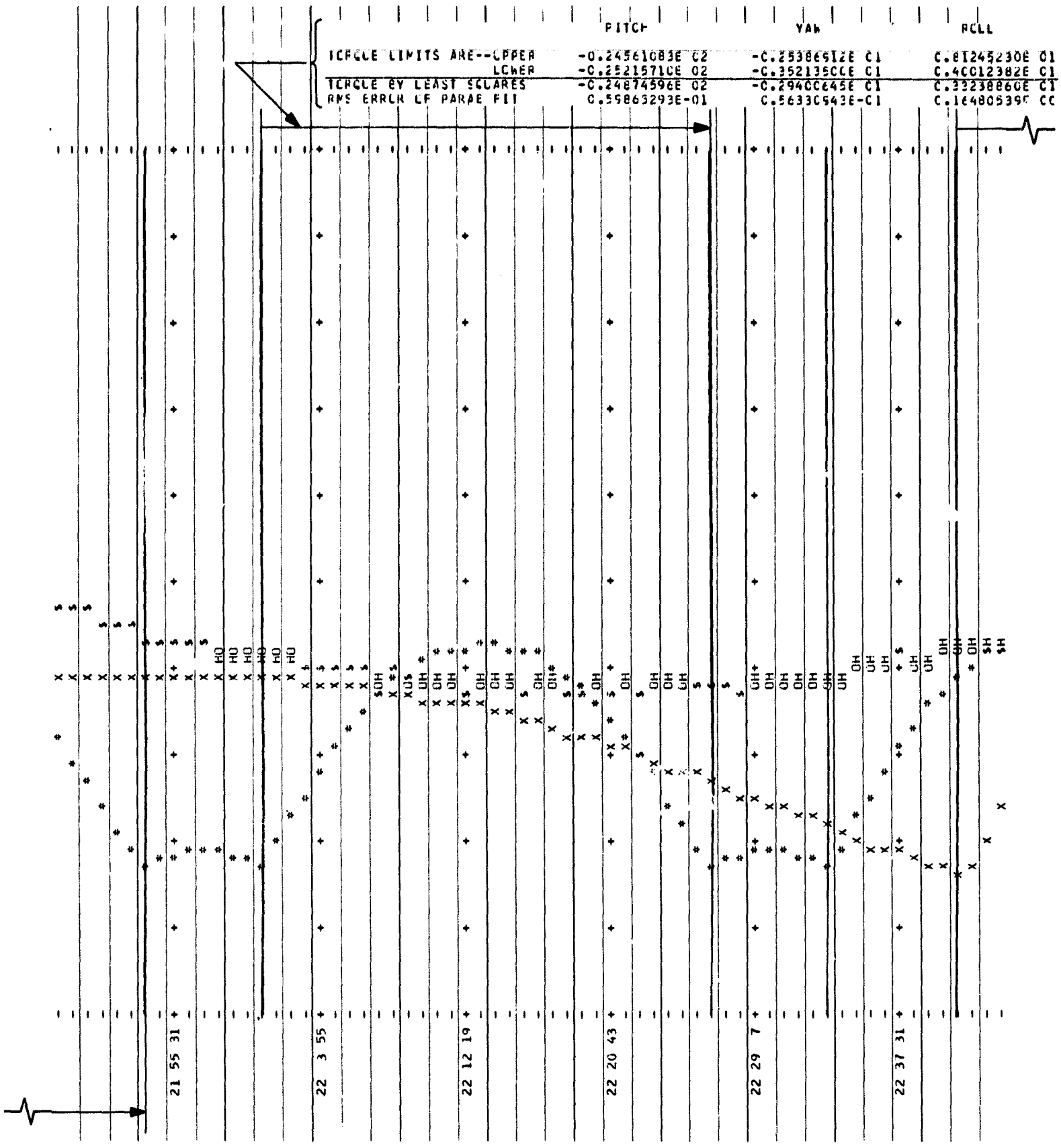
	PITCH	YAW	ROLL
TRIPLE LIMITS ARE--UPPER	-0.22343698E 02	-0.343645746 01	0.951859526 01
LOWER	-0.24913894E 02	-0.228915996 01	-0.3E4946476 01
TRIPLE BY LEAST SQUARES	-0.22981342E 02	-0.489575156 01	0.147351376 01
RMS ERROR OF PARAB FIT	0.61719971E-01	0.489847356-01	0.14C308556 00

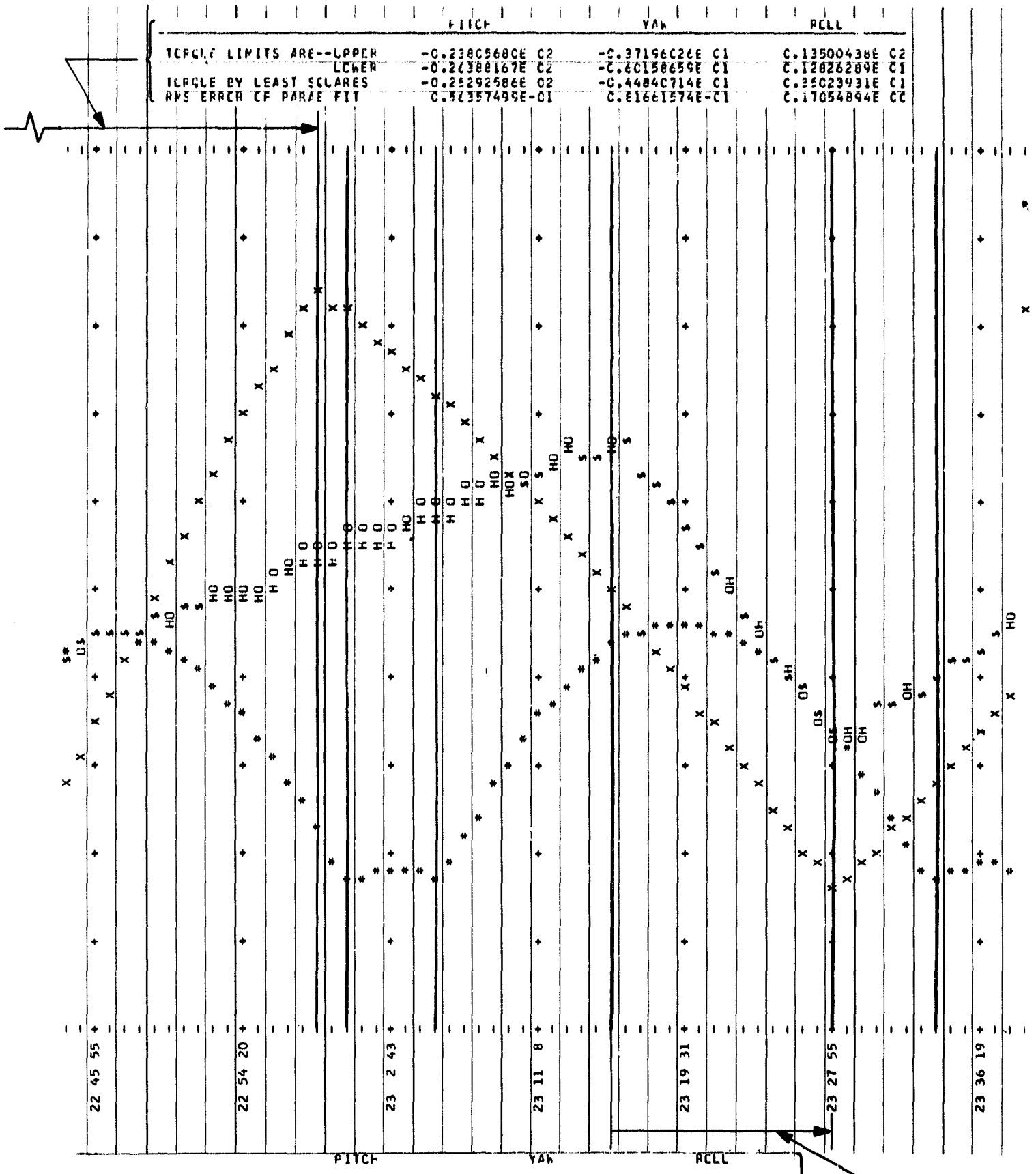


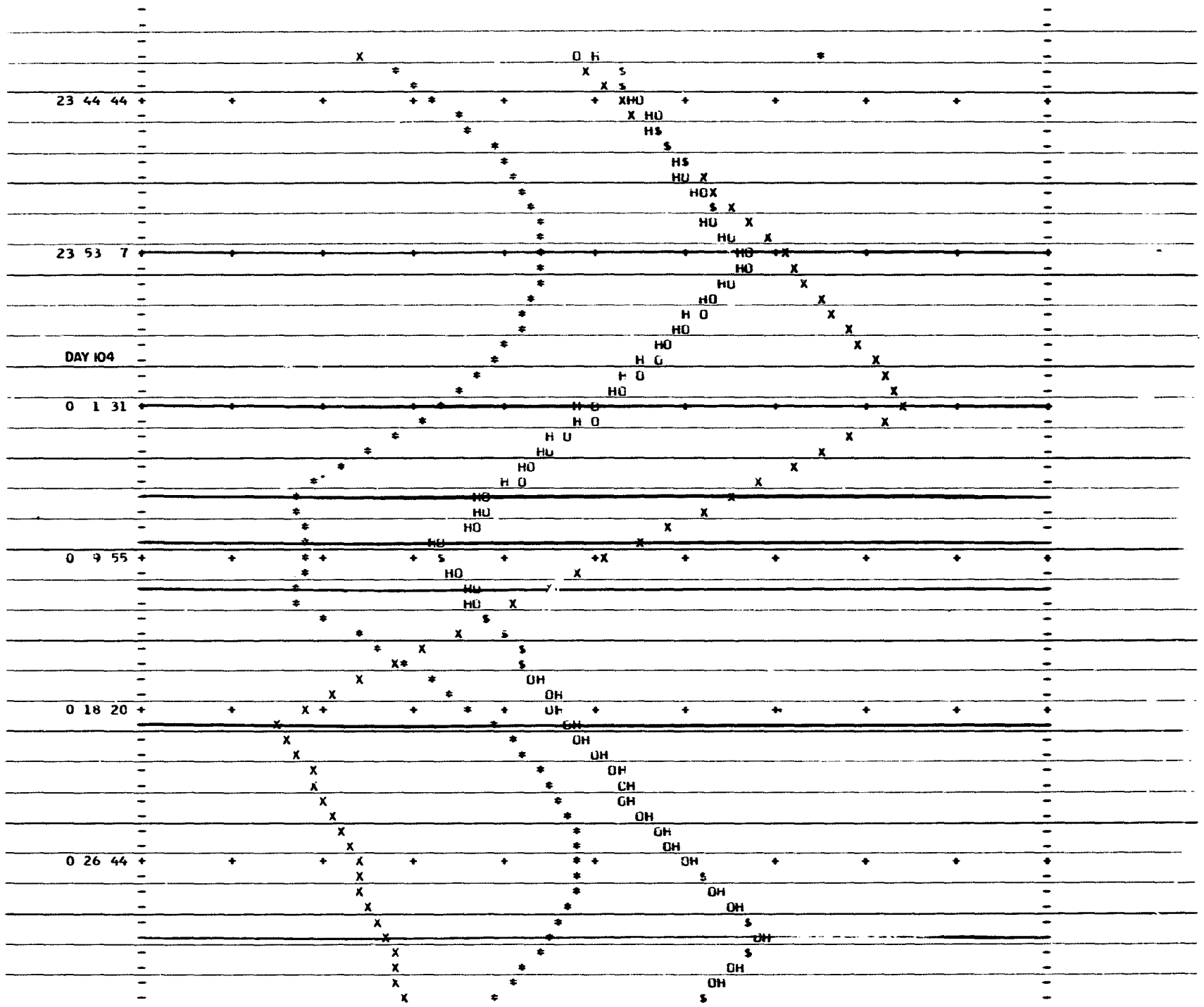

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.23078292E 02 -0.25822356E 01 0.46587617E 01
LOWER -0.23165206E 02 -0.37332155E 01 0.11491894E 00
TORQUE BY LEAST SQUARES -0.22825471E 02 -0.31980116E 01 0.14174028E 01
RMS ERROR OF PARAB FIT 0.10154104E 00 0.56504704E-01 0.16745615E 00
19 7 30
19 15 54
19 24 18
19 32 43
19 41 7
19 49 30

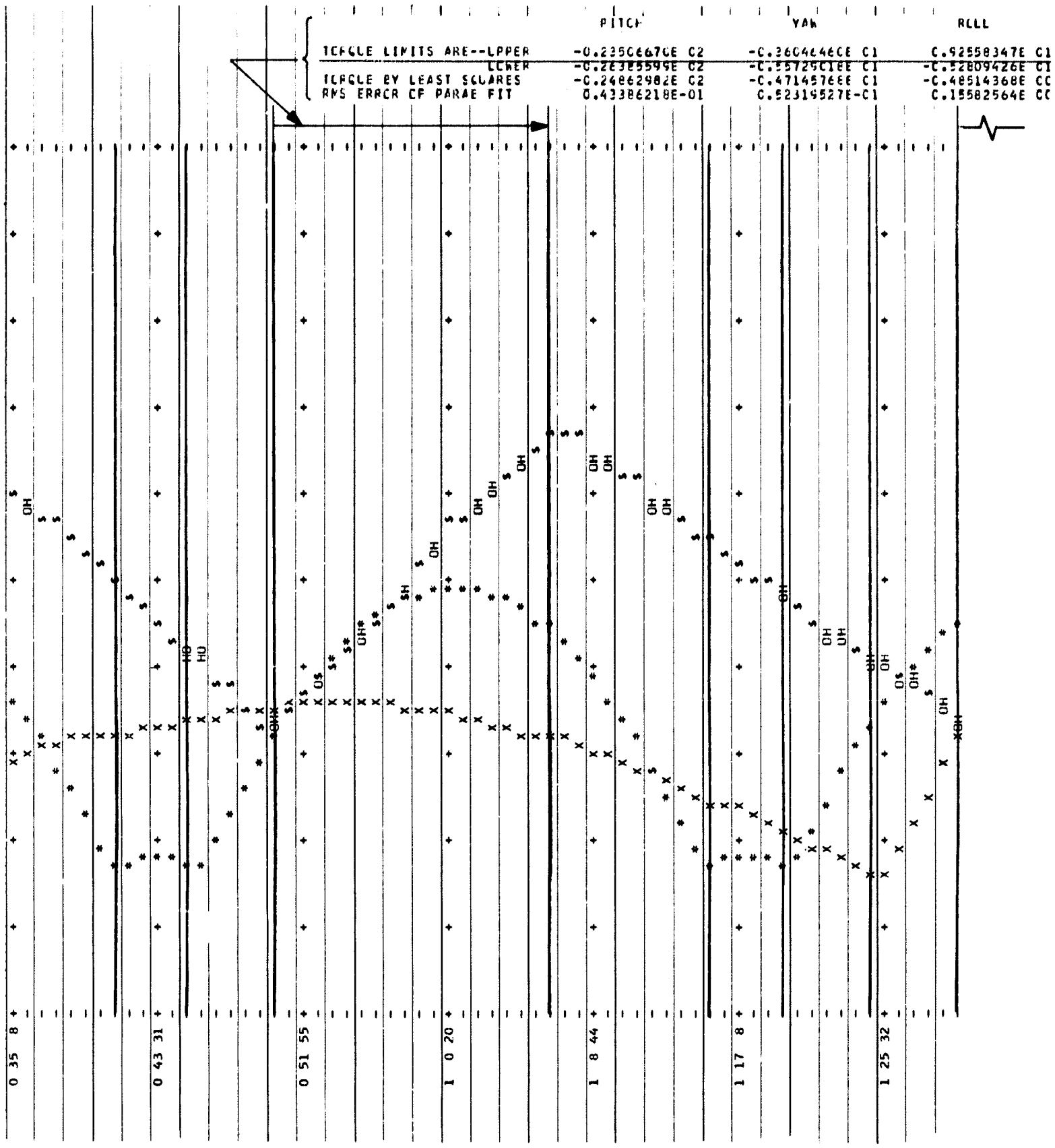

PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.22732067E 02 -0.2759CC47E C1 0.76C9893+E C1
LOWER -0.25865198E 02 -0.5C9259CEE C1 -0.5C115448E C1
TORQUE BY LEAST SQUARES -0.24448033E 02 -0.40727293E C1 -0.88472467E CC
RMS ERROR OF PARAB FIT 0.5E089641E-01 C.5C33E74EE-C1 C.14048385E CC
19 57 54
20 6 19
20 14 43
20 23 7
20 31 31
20 39 54
20 48 19
PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.21C54075E C2 -0.10497857E C1 0.15791727E C2
LOWER -0.26103919E 02 -0.691158S1E C1 -0.54979987E C1
TORQUE BY LEAST SQUARES -0.23598508E C2 -0.42C277C2E C1 0.333362586 C1
RMS ERROR OF PARAB FIT 0.5646C368E-01 C.45736512E-C1 C.11785345E CC

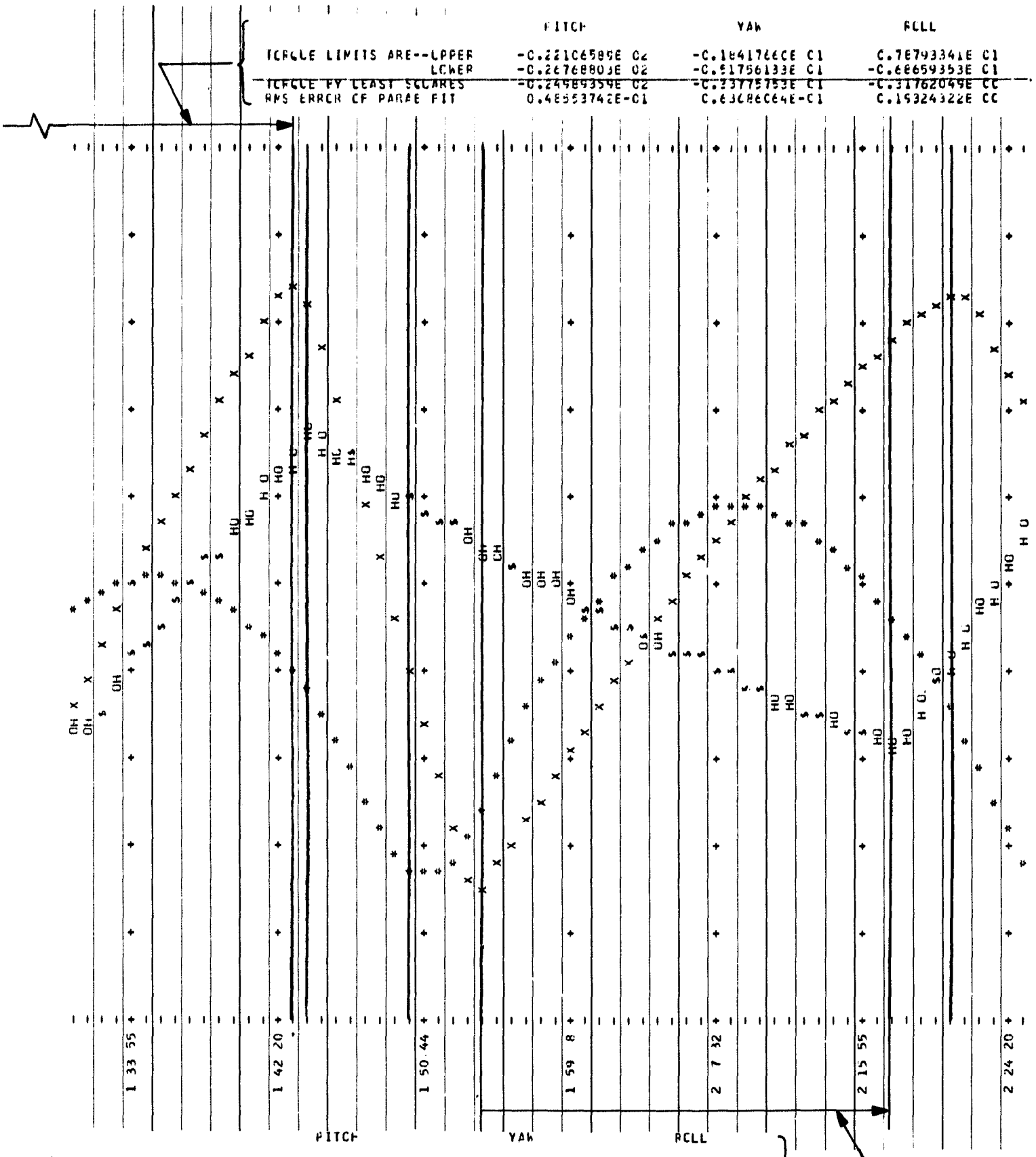

PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.2C9173436 02 C.768277526-C1 C.127865966 C2
LOWER -0.255428786 02 -C.331944266 C1 C.694185056 CC
TORQUE BY LEAST SQUARES -0.228163866 02 -0.182063816 C1 C.327766936 C1
RMS ERROR OF PARAB FIT 0.525862346-01 0.5871762CE-C1 C.186538866 CC
20 56 43
21 5 7
21 13 31
21 21 55
21 30 18
21 38 43
21 47 7
PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.234569566 02 -0.247600426 C1 C.563724886 C1
LOWER -0.240CC6506 02 -C.350415966 C1 C.349160486 C1
TORQUE BY LEAST SQUARES -0.238470386 02 -0.288958616 C1 C.285244636 C1
RMS ERROR OF PARAB FIT 0.656641366-01 0.511440736-C1 C.169353066 CC

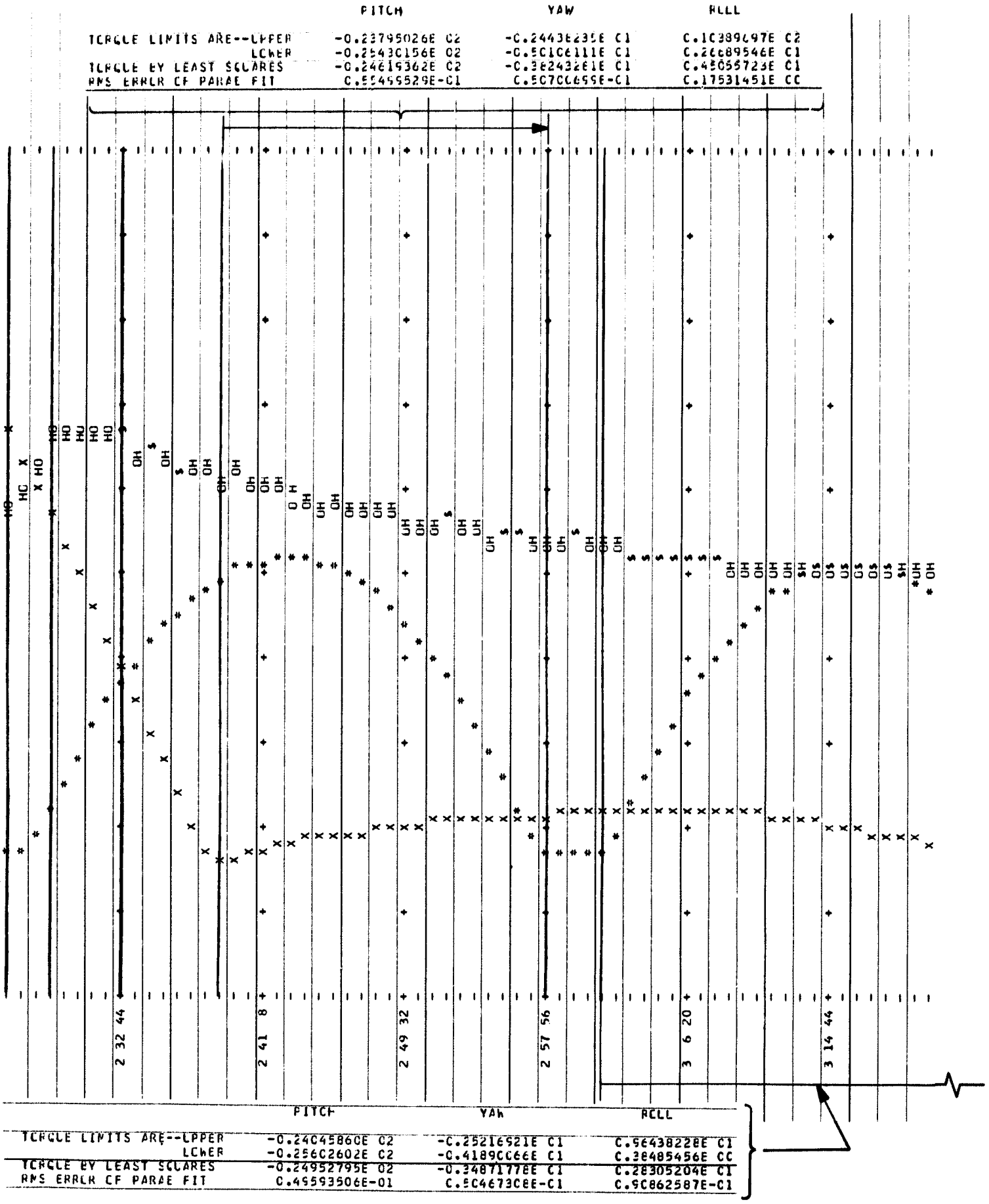

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.24561083E 02 -0.25386512E 01 0.81245230E 01
LOWER -0.25215710E 02 -0.35213500E 01 0.40012382E 01
TORQUE BY LEAST SQUARES -0.24874596E 02 -0.29400645E 01 0.33238860E 01
RMS ERROR OF PARAB FIT 0.59863293E-01 0.56330543E-01 0.16480539E 00
21 55 31
22 3 55
22 12 19
22 20 43
22 29 7
22 37 31

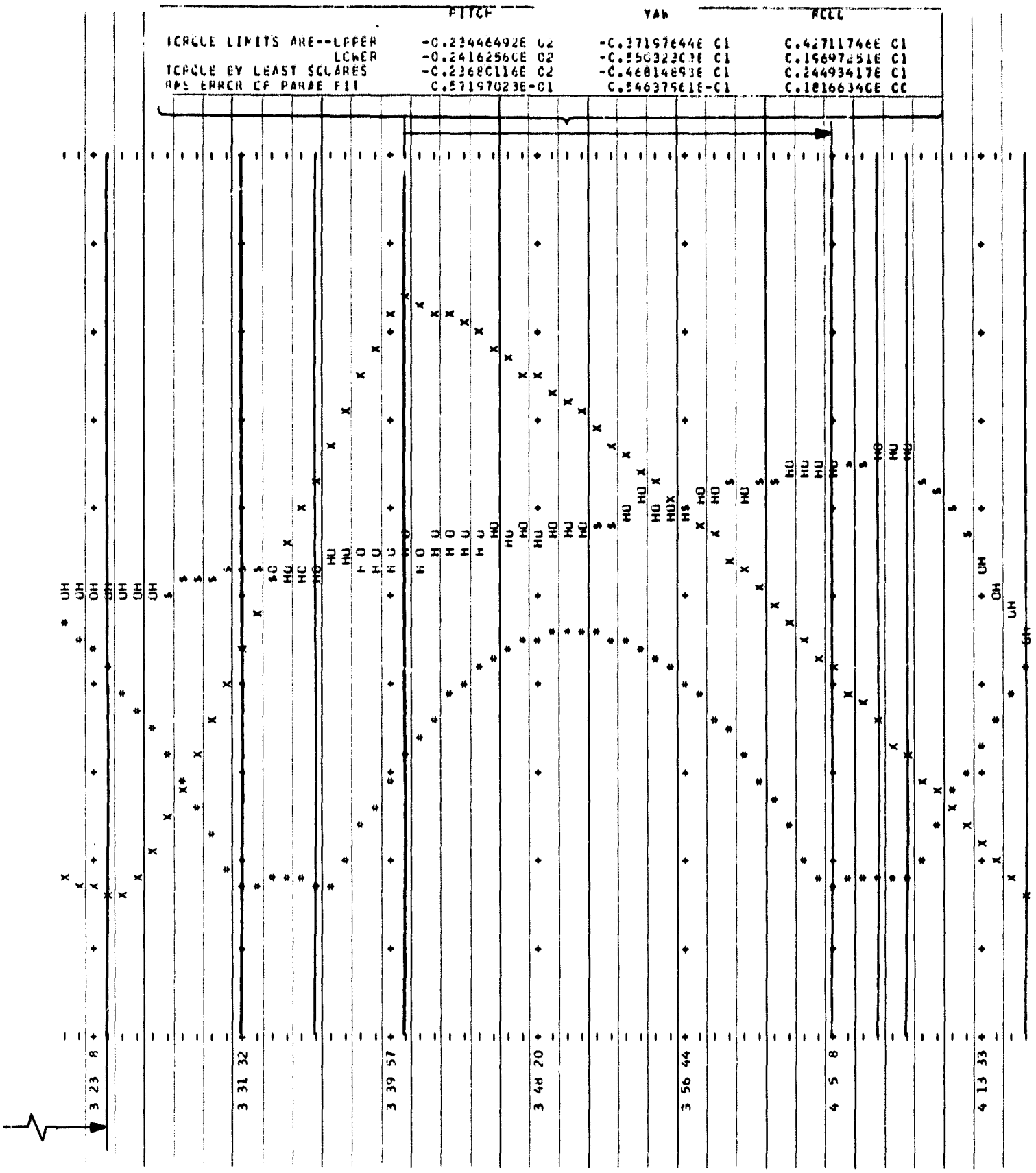

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.23805680E 02 -0.37196C26E C1 C.13500438E C2
LOWER -0.27388167E 02 -0.40158659E C1 C.12826289E C1
TORQUE BY LEAST SQUARES -0.25292586E 02 -0.4484C714E C1 C.13C23931E C1
RMS ERROR OF PARAB FIT C.52357495E-01 C.81661574E-01 C.17054894E CC
22 45 55
22 54 20
23 2 43
23 11 8
23 19 31
23 27 55
23 36 19
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.20819541E 02 -0.34206443E CC C.16153182E C2
LOWER -0.27610604E 02 -0.52849233E C1 -0.12831682E C2
TORQUE BY LEAST SQUARES -0.23980980E 02 -0.31234899E C1 -0.35948657E CC
RMS ERROR OF PARAB FIT 0.36888421E-01 0.57149017E-01 0.12065172E CC


23 44 44
23 53 7
DAY 104
0 1 31
0 9 55
0 18 20
0 26 44


PITCH
YAW
ROLL
TRIGGLE LIMITS ARE--UPPER -0.2350667GE 02 -0.3604646CE 01 0.92558347E 01
LOWER -0.2638355995E 02 -0.35725C18E 01 -0.52809426E 01
TRIGGLE BY LEAST SQUARES -0.24862982E 02 -0.47145766E 01 -0.48514368E 00
RMS ERROR OF PARAE FIT 0.43386218E-01 0.52314527E-01 0.15582564E 00
0 35 8
0 43 31
0 51 55
1 0 20
1 8 44
1 17 8
1 25 32


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.221C6589E 02 -C.1841766CE C1 C.7879334 1E C1
LOWER -0.2676880 3E 02 -C.517561331E C1 -C.68659353E C1
TORQUE BY LEAST SQUARES -0.2458935 4E 02 -C.337757 3E C1 -C.31762049E CC
RMS ERROR OF PARAB FIT 0.4E553742E-01 C.63C86C64E-C1 C.193243 2E CC
1 33 55
1 42 20
1 50 44
1 59 8
2 7 32
2 15 55
2 24 20
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.242561 9E 02 -C.447818 7E C1 C.67807520E C1
LOWER -0.254245 2E 02 -C.657166C1E C1 C.190237 8E C1
TORQUE BY LEAST SQUARES -0.247866 2E C2 -C.555462 3E C1 C.259357 1E C1
RMS ERROR OF PARAB FIT 0.6C191878E-01 C.5177881CE-C1 C.127840 9E C


PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.237950266 02 -0.24436235E 01 0.10389697E 02
LOWER -0.25430156E 02 -0.50106111E 01 0.26689546E 01
TOGGLE BY LEAST SQUARES -0.24619362E 02 -0.38243281E 01 0.48056723E 01
RMS ERROR OF PARAB FIT 0.55495529E-01 0.50700695E-01 0.17531451E 00
2 32 44
2 41 8
2 49 32
2 57 56
3 6 20
3 14 44
PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.24045860E 02 -0.25216921E 01 0.96438228E 01
LOWER -0.25602602E 02 -0.41890066E 01 0.38485456E 00
TOGGLE BY LEAST SQUARES -0.24952795E 02 -0.34871778E 01 0.28305204E 01
RMS ERROR OF PARAB FIT 0.49593506E-01 0.80467308E-01 0.90862587E-01


PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.23446492E 02 -0.37197644E 01 0.42711746E 01
LOWER -0.24162560E 02 -0.55032303E 01 0.15697251E 01
TOGGLE BY LEAST SQUARES -0.23680116E 02 -0.46814893E 01 0.24493417E 01
RMS ERROR OF PARAB FIT 0.57197023E-01 0.54637561E-01 0.18166340E 00
3 23 8
3 31 32
3 39 57
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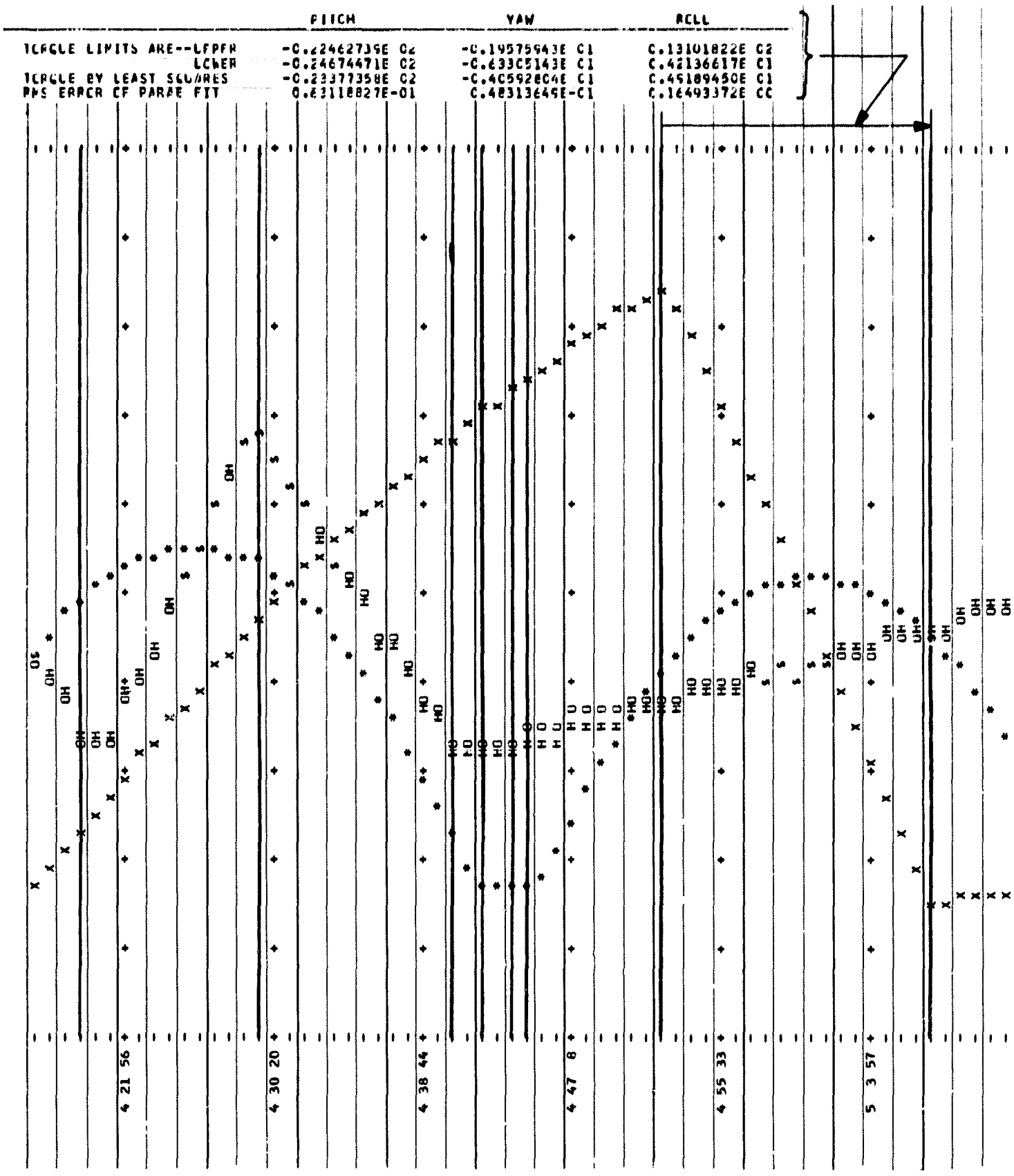
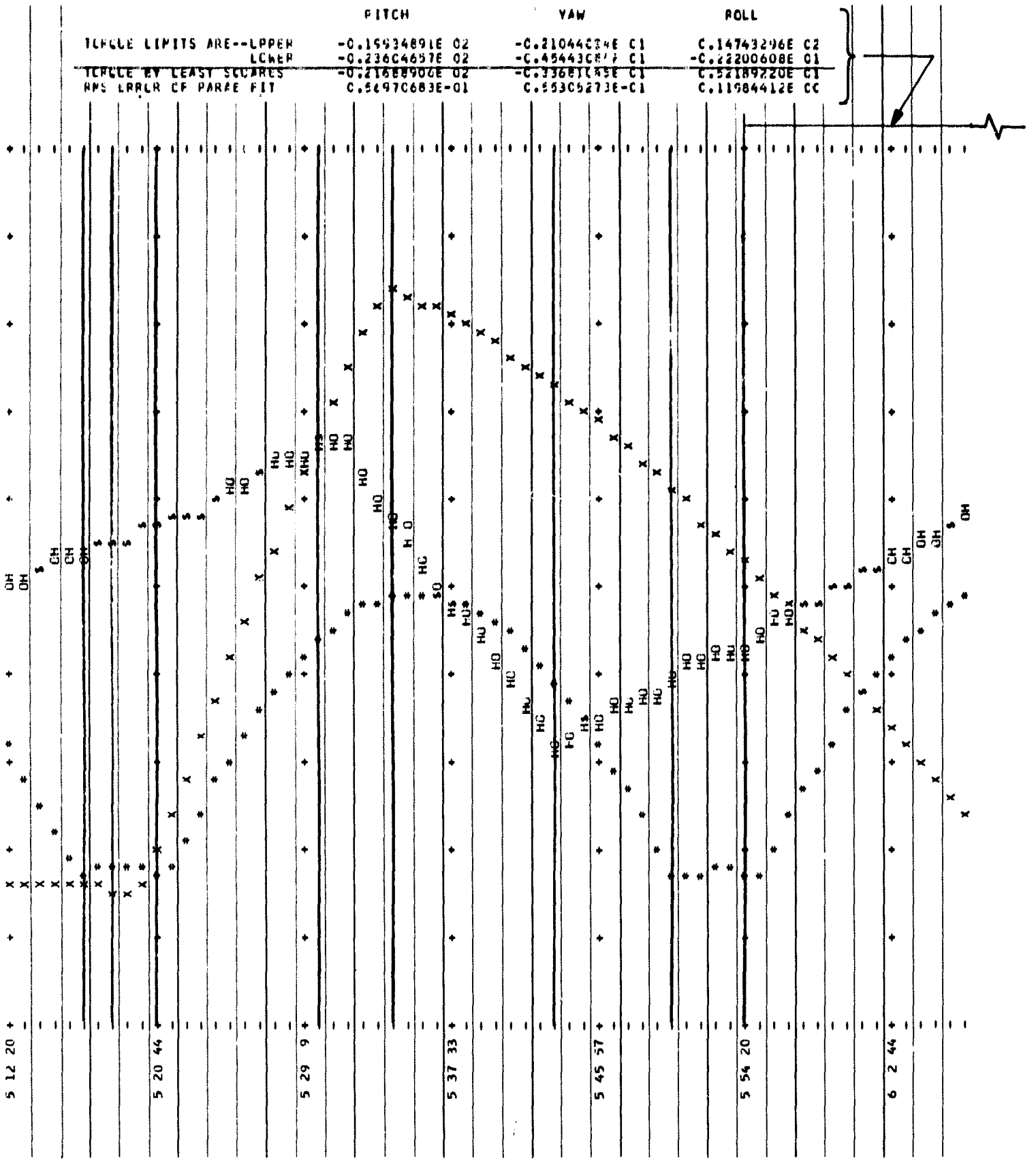
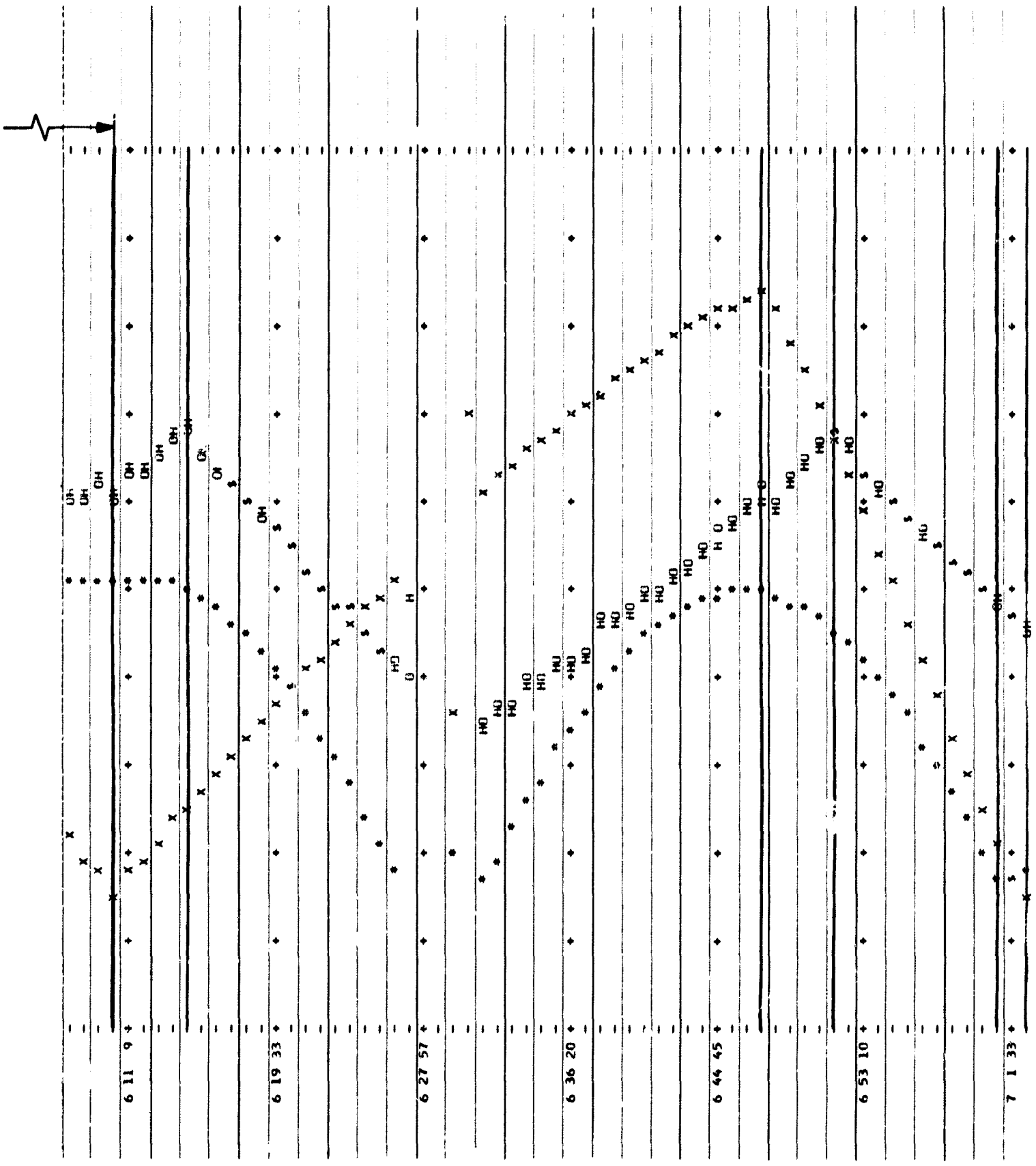
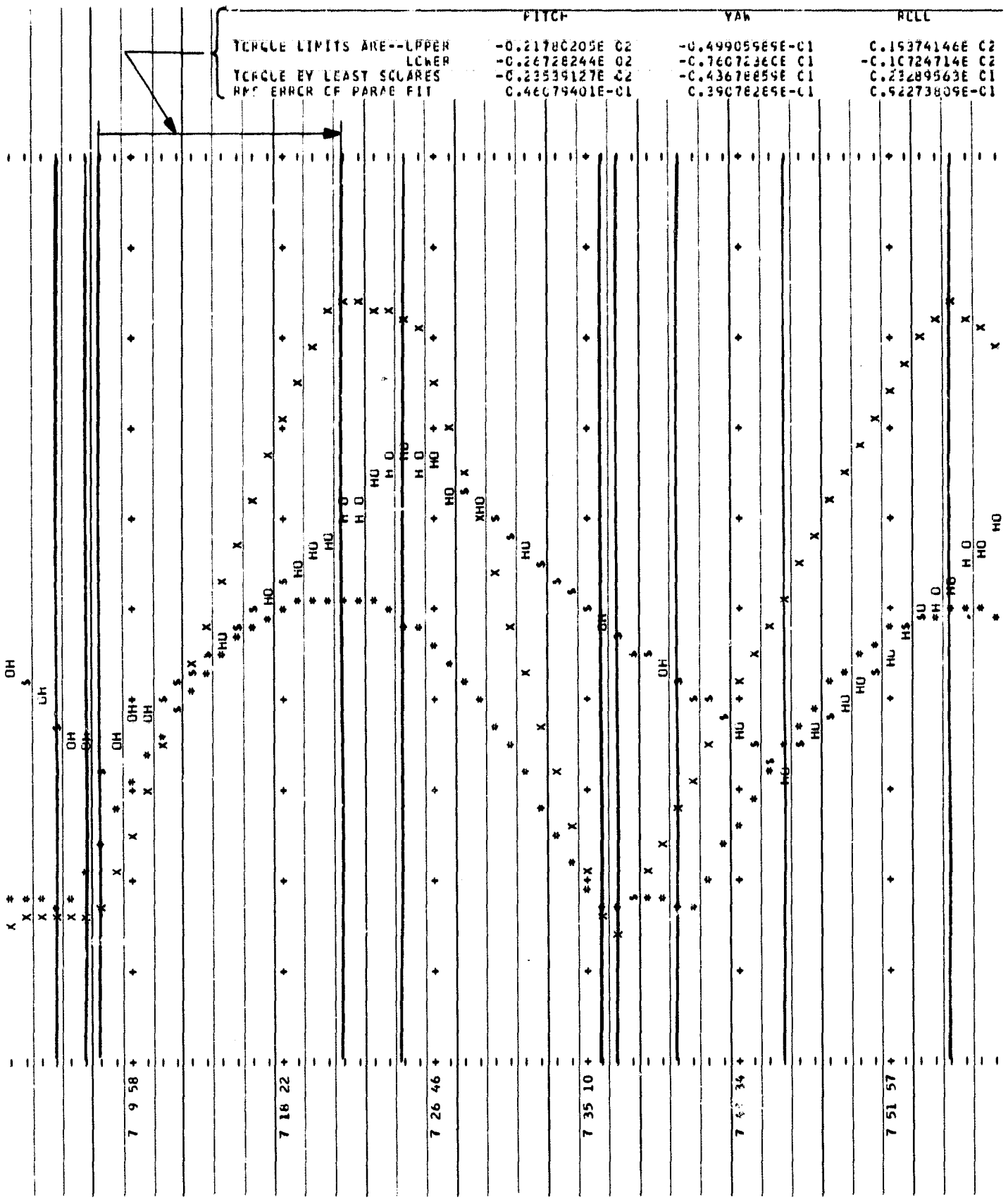
4 5 8
4 13 33

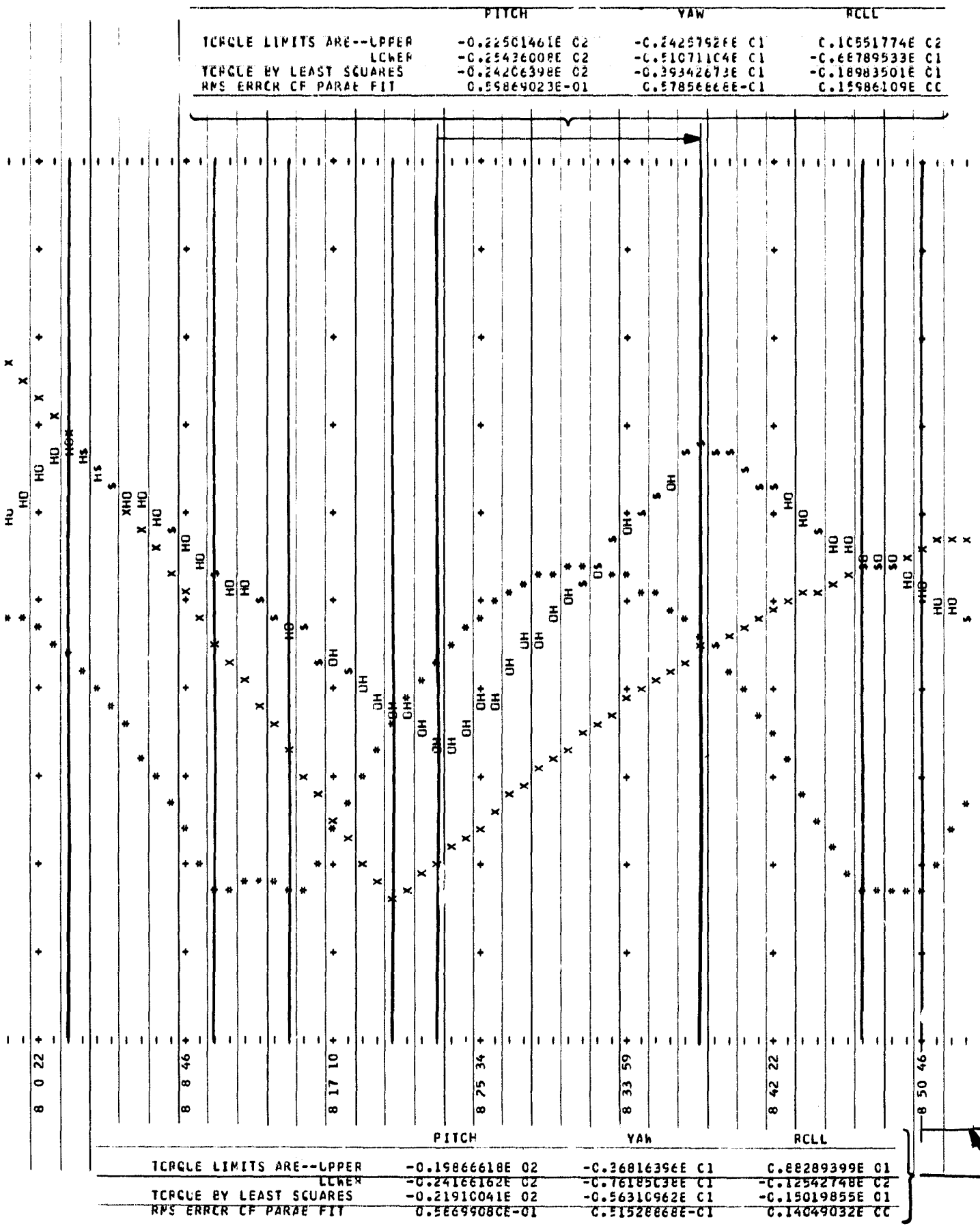

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.22462736E 02 -0.19575943E 01 0.13101822E 02
LOWER -0.24674471E 02 -0.23305143E 01 0.42136617E 01
TORQUE BY LEAST SQUARES -0.23377358E 02 -0.40592804E 01 0.45189450E 01
RMS ERROR OF PARAB FIT 0.83118827E-01 0.48313649E-01 0.16493372E 00
4 21 56
4 30 20
4 38 44
4 47 8
4 55 33
5 3 57

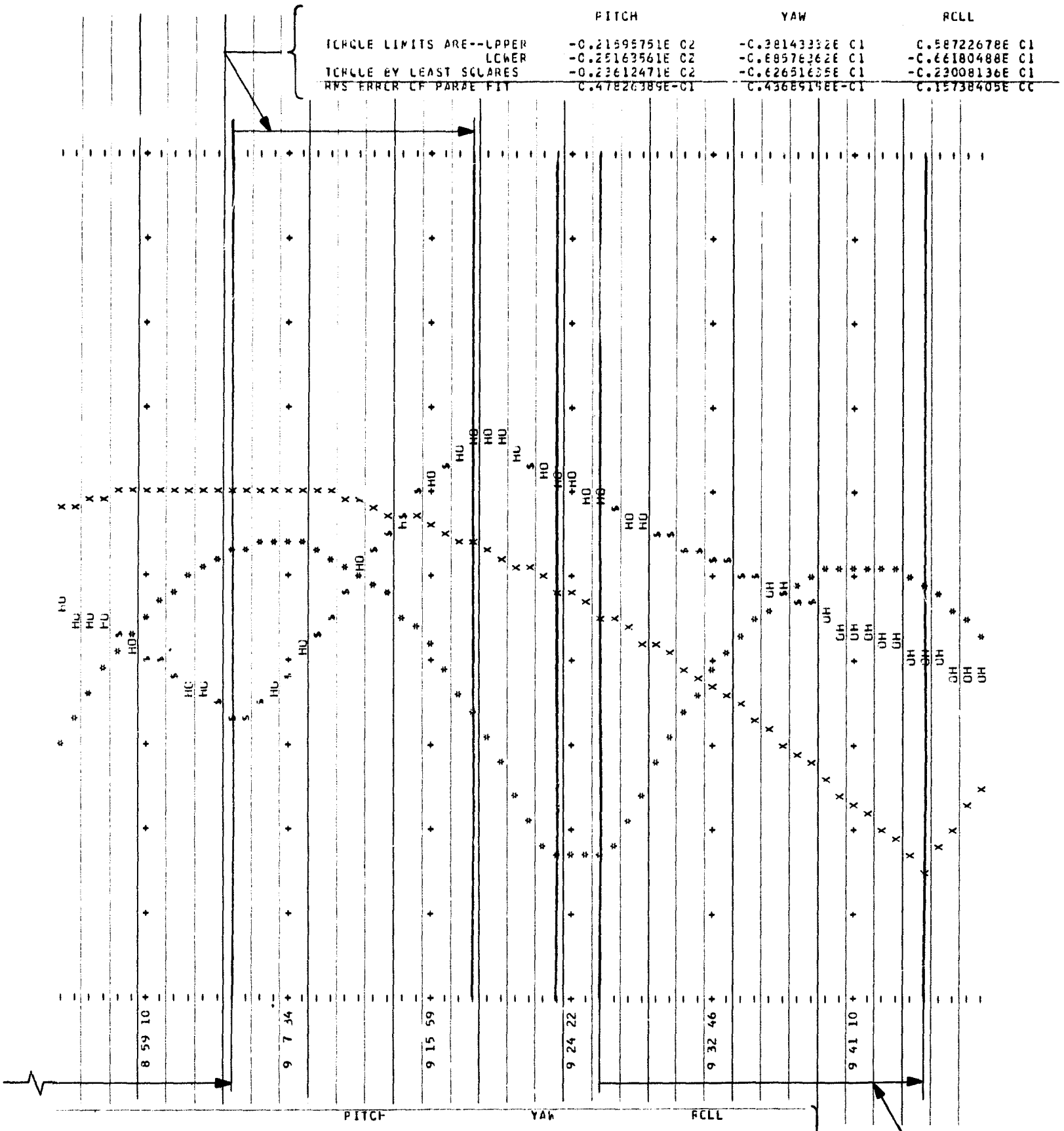
	PITCH	YAW	ROLL
TCRCLE LIMITS ARE--UPPER	-0.1693489[illegible]E 02	-0.21044[illegible]E C1	C.14743296E C2
LCWER	-0.236C4657E 02	-C.45443C[illegible] C1	-C.22200608E 01
TCRCLE BY LEAST SCUARES	-0.216889C4E 02	-C.336[illegible]E C1	C.5218922CE C1
RMS LRRLR CF PARAE FIT	C.5497C683E-01	C.553C5273E-C1	C.119844[illegible]E CC

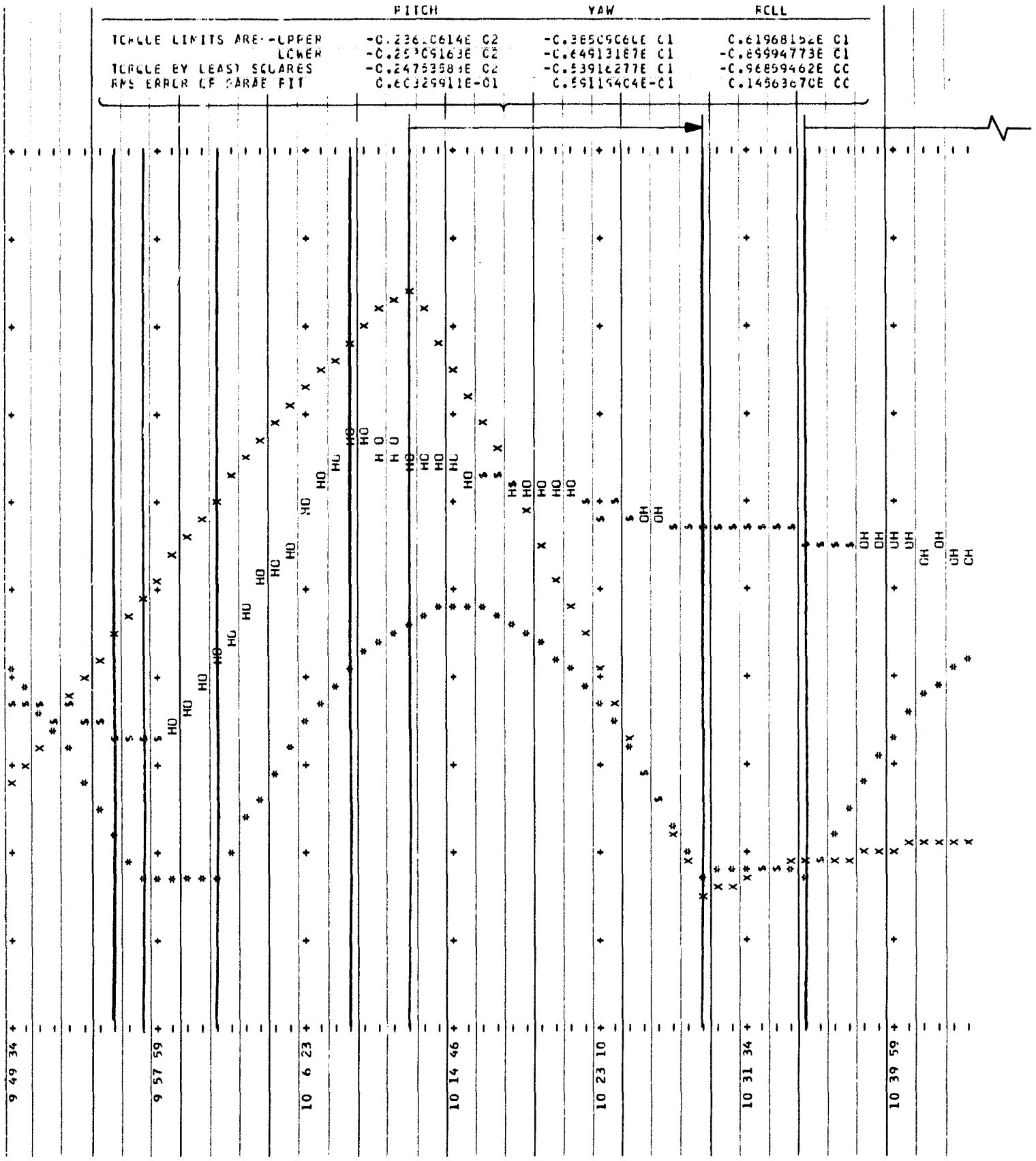


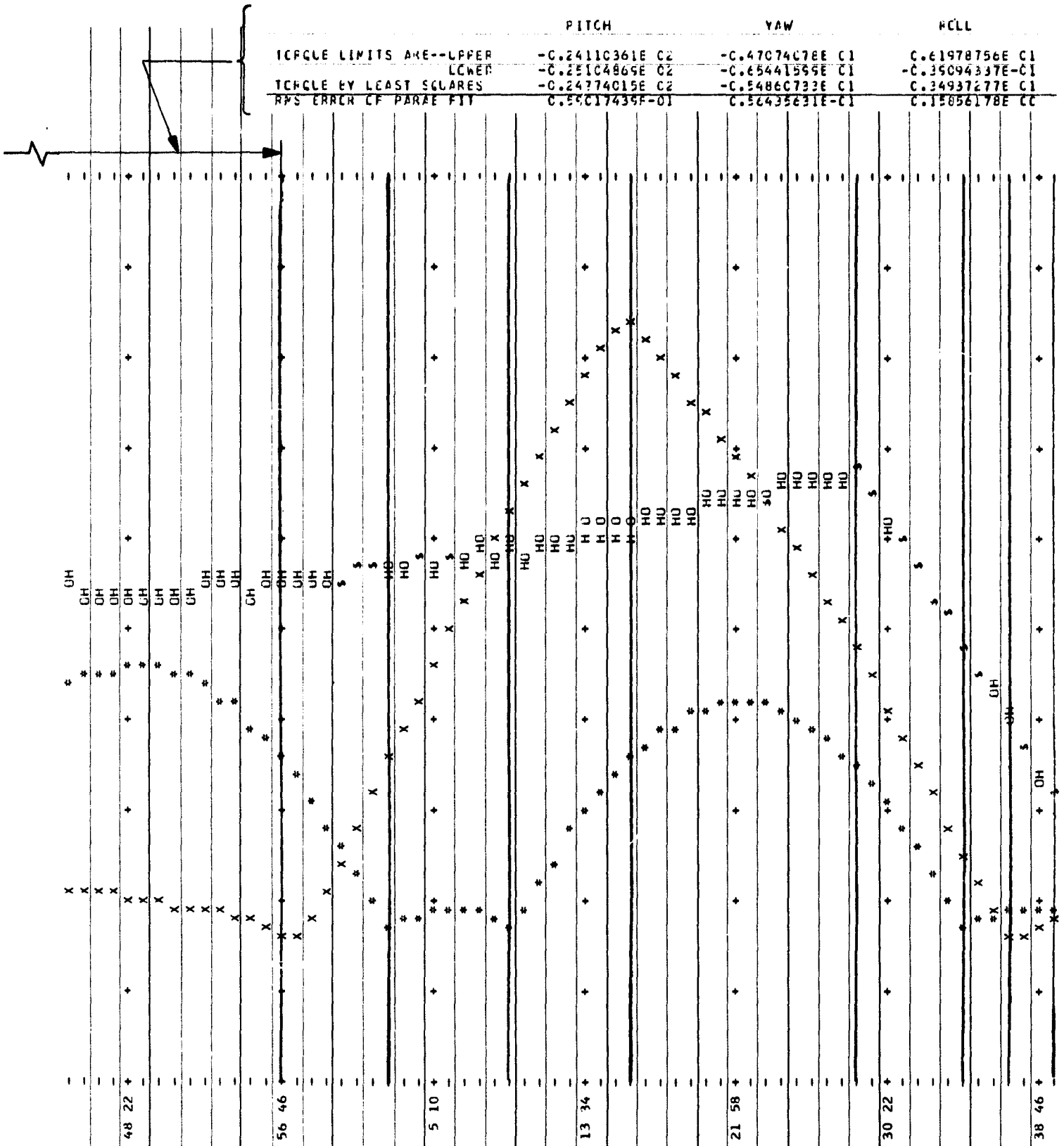


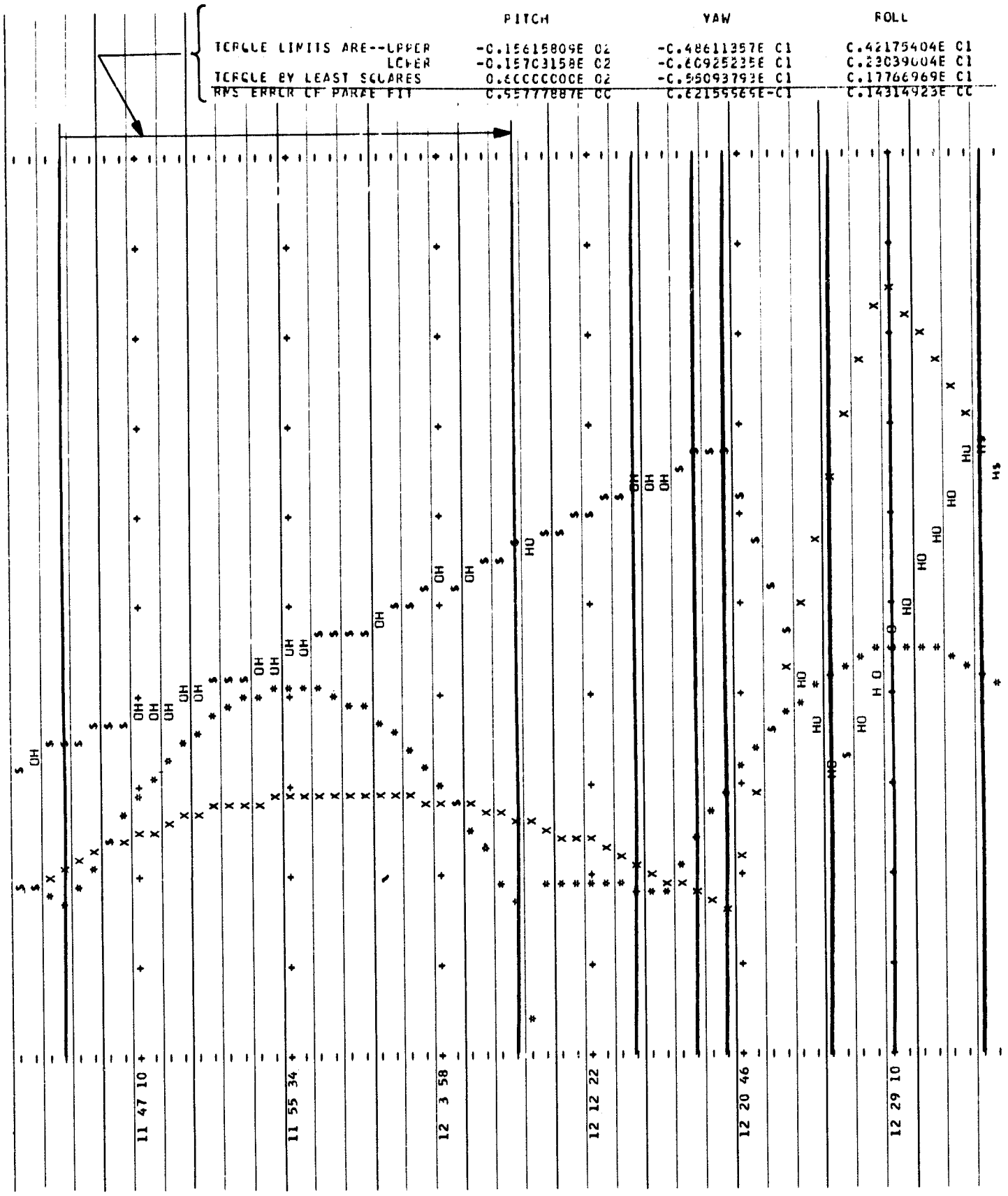

PITCH
YAW
ROLL
TONGUE LIMITS ARE--UPPER -0.21780205E 02 -0.49905965E-01 0.15374146E 02
LOWER -0.26728244E 02 -0.76072366E 01 -0.10724714E 02
TONGUE BY LEAST SQUARES -0.23539127E 02 -0.43678656E 01 0.23289563E 01
RMS ERROR OF PARAB FIT 0.46079401E-01 0.39078265E-01 0.52273809E-01
7 9 58
7 18 22
7 26 46
7 35 10
7 51 57

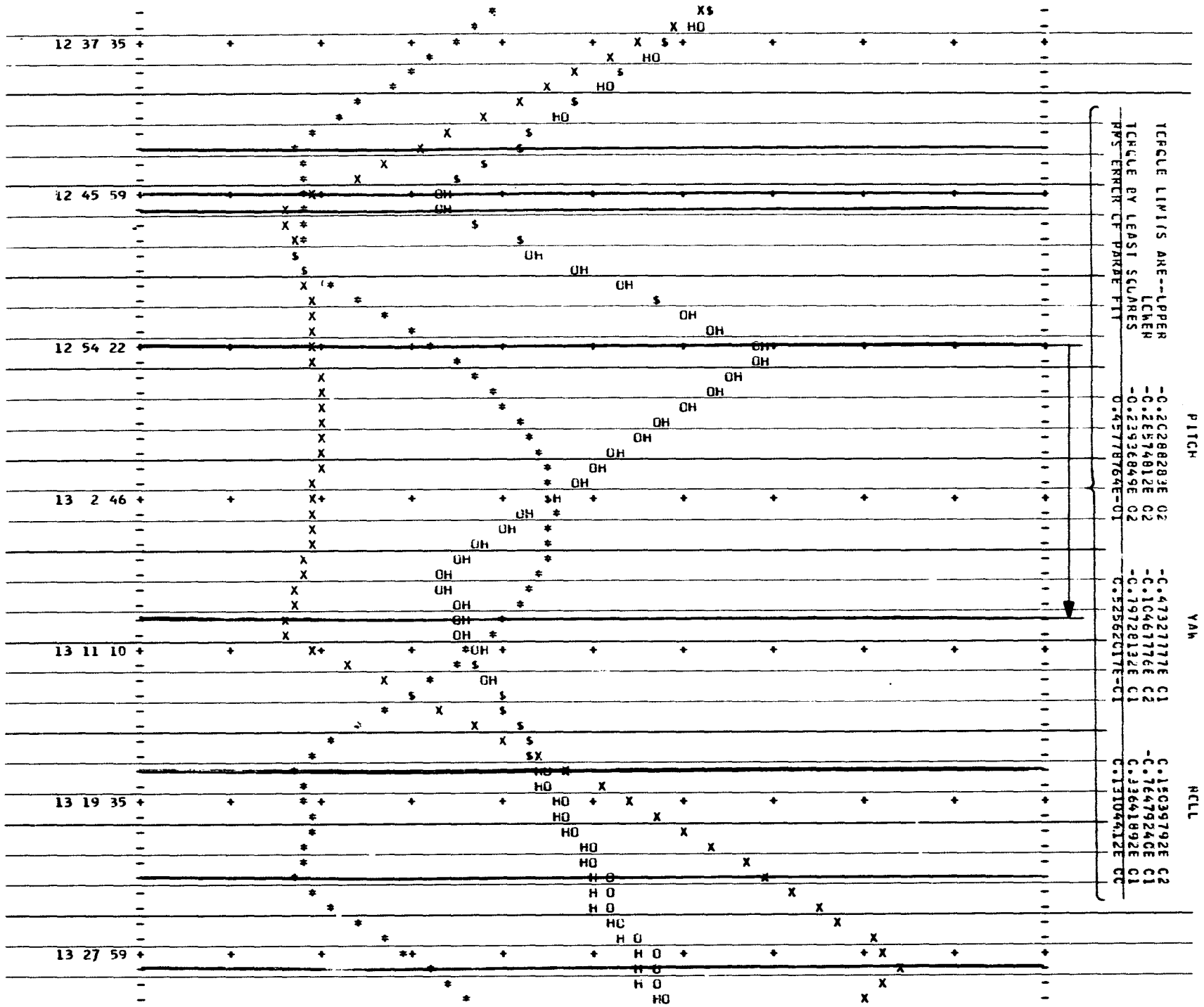

PITCH YAW RCLL
TORQUE LIMITS ARE--UPPER -0.22501461E 02 -0.24257925E 01 0.10551774E 02
LOWER -0.25436008E 02 -0.51071104E 01 -0.68789533E 01
TORQUE BY LEAST SQUARES -0.24206398E 02 -0.39342673E 01 -0.18983501E 01
RMS ERROR OF PARAB FIT 0.59869023E-01 0.57856866E-01 0.15986109E 00
8 0 22
8 8 46
8 17 10
8 25 34
8 33 59
8 42 22
8 50 46
PITCH YAW RCLL
TORQUE LIMITS ARE--UPPER -0.19866618E 02 -0.26816396E 01 0.88289399E 01
LOWER -0.24166162E 02 -0.76185C38E 01 -0.12542748E 02
TORQUE BY LEAST SQUARES -0.21910041E 02 -0.56310962E 01 -0.15019855E 01
RMS ERROR OF PARAB FIT 0.56699086E-01 0.51528868E-01 0.14049032E 00

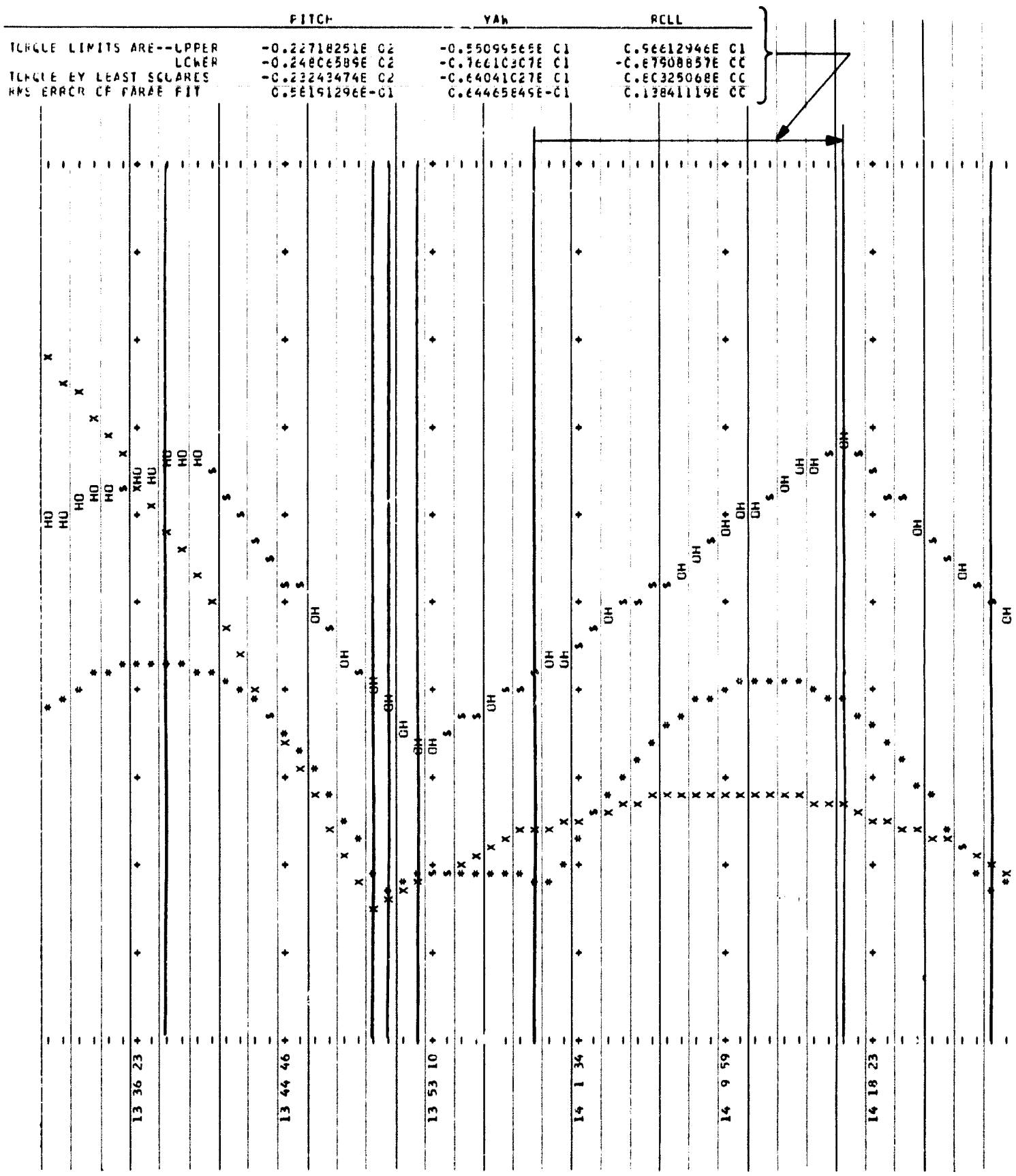

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.21695751E 02 -0.38143332E 01 0.58722678E 01
LOWER -0.25163561E 02 -0.88576362E 01 -0.66180488E 01
TORQUE BY LEAST SQUARES -0.23612471E 02 -0.62651635E 01 -0.23008136E 01
RMS ERROR OF PARAB FIT 0.47826389E-01 0.43689146E-01 0.15738405E 00
8 59 10
9 7 34
9 15 59
9 24 22
9 32 46
9 41 10
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.22859626E 02 -0.30836EC6E 01 0.73546764E 01
LOWER -0.25107867E 02 -0.52609643E 01 -0.40114863E 01
TORQUE BY LEAST SQUARES -0.23783394E 02 -0.4C12E233E 01 -0.30766171E-01
RMS ERROR OF PARAB FIT 0.47773067E-01 0.56681985E-01 0.11703665E 00

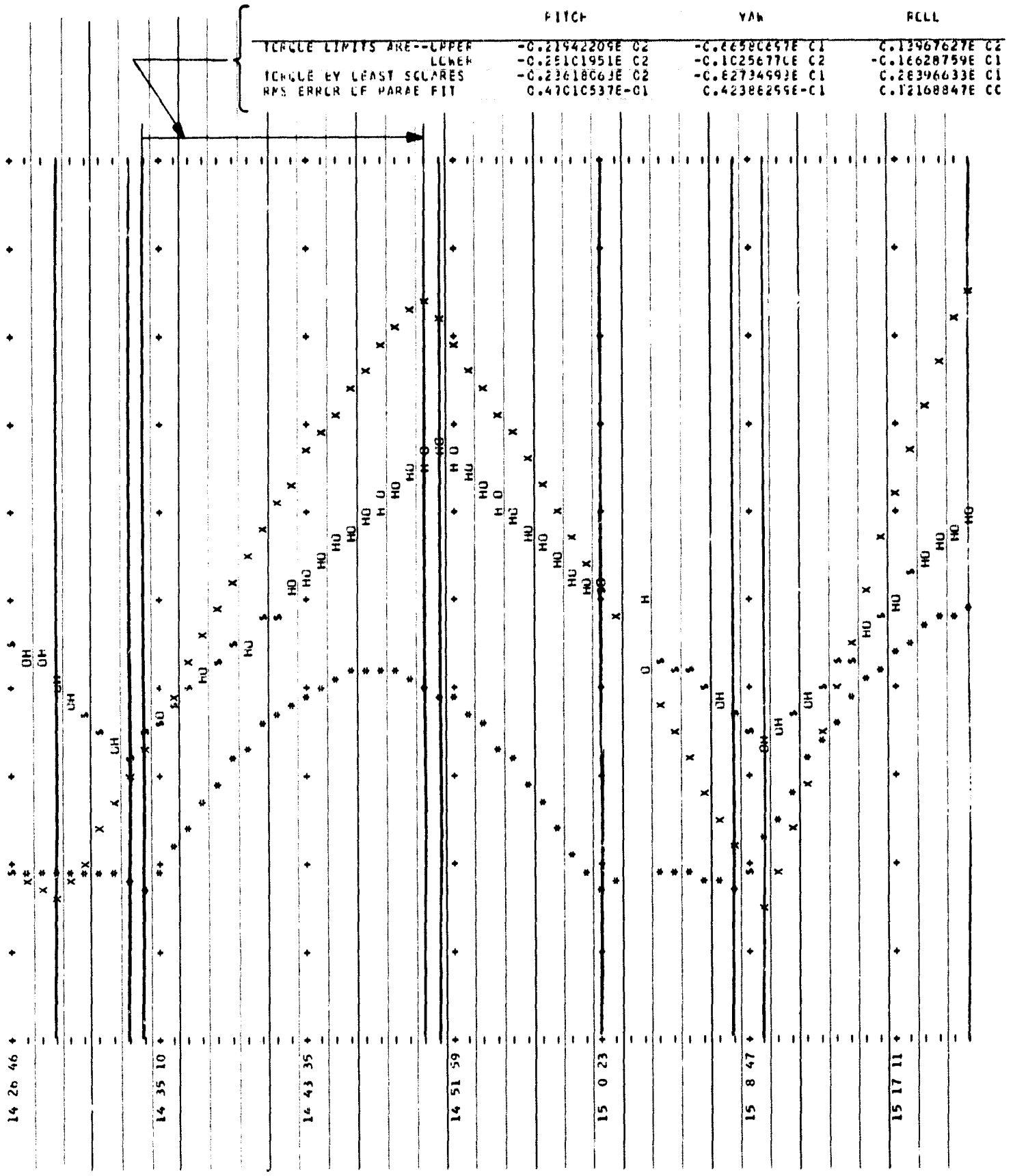

PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.236.0614E 02 -C.385C9C6LE C1 C.619681b2E C1
LOWER -0.25'C9163E 02 -C.649131E7E C1 -C.89994773E C1
TOGGLE BY LEAST SQUARES -0.24753581E 02 -C.5391c277E C1 -C.96859462E CC
RMS ERROR OF PARAB FIT C.6C3299116-01 C.5911994C4E-C1 C.14563c7CE CC
9 49 34
9 57 59
10 6 23
10 14 46
10 23 10
10 31 34
10 39 59

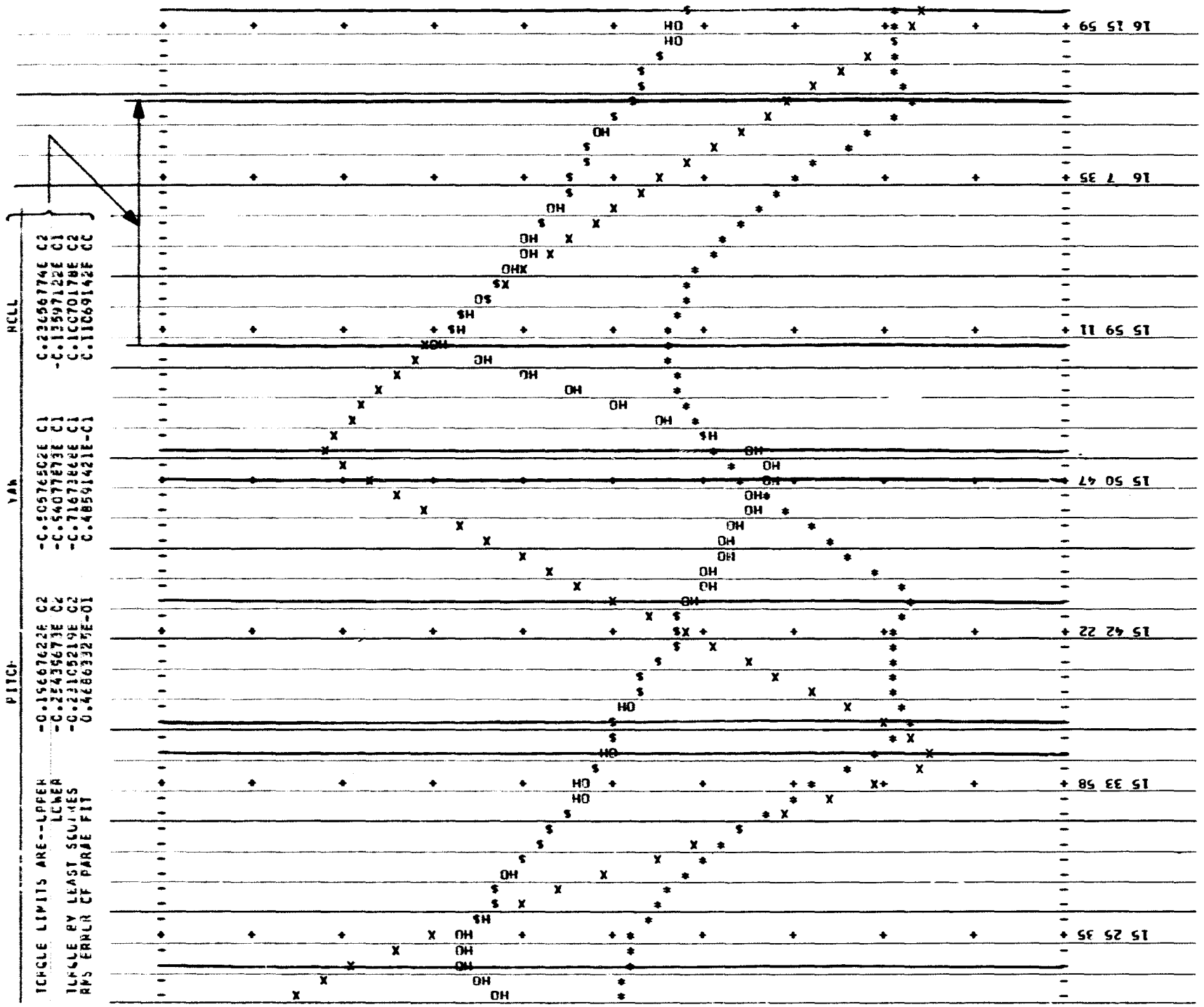

PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.2411C361E C2 -0.47074C78E C1 0.61978756E C1
LOWER -0.2510486GE C2 -0.65441566E C1 -0.35094337E-01
TORQUE BY LEAST SQUARES -0.24774015E C2 -0.5486C733E C1 0.34937277E C1
RMS ERROR OF PARAB FIT 0.55C17439E-01 0.56435631E-01 0.15056178E 00
10 48 22
10 56 46
11 5 10
11 13 34
11 21 58
11 30 22
11 38 46

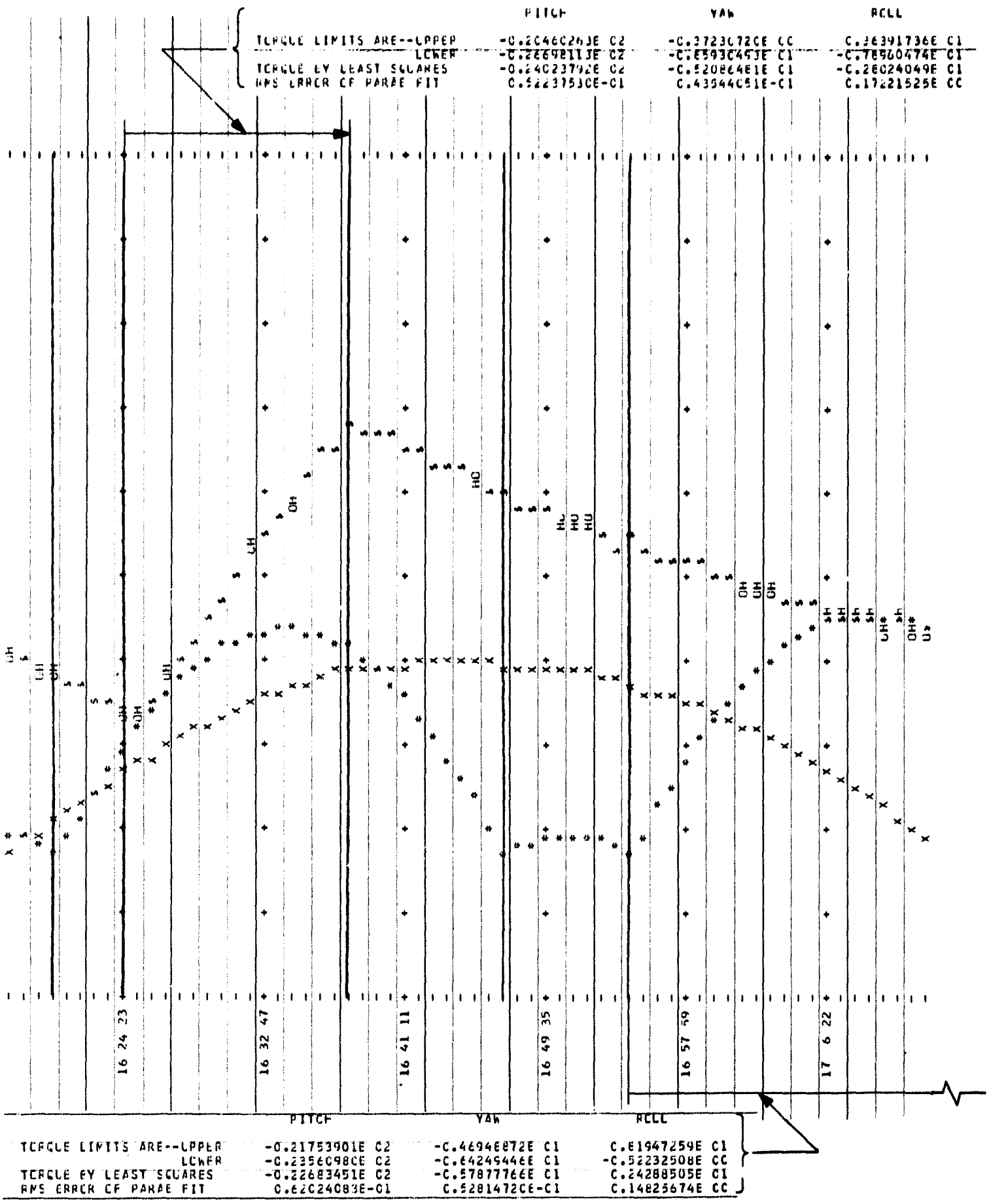

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.15615809E 02 -0.48611357E 01 0.42175404E 01
LOWER -0.15703158E 02 -0.60925235E 01 0.23039004E 01
TORQUE BY LEAST SQUARES 0.00000000E 02 -0.55093793E 01 0.17766969E 01
RMS ERROR OF PARAB FIT 0.55777887E 00 0.62155565E-01 0.14314923E 00
11 47 10
11 55 34
12 3 58
12 12 22
12 20 46
12 29 10


12 37 35
12 45 59
12 54 22
13 2 46
13 11 10
13 19 35
13 27 59
PITCH
YAW
ROLL
TCFCLE LIMITS ARE--UPPER -0.223882835E 02
LOWER -0.225748122E 02
TCHCLE BY LEAST SQUARES -0.225238469E 02
RMS ERROR OF PARAB FIT 0.457787694E-01
C 1 -0.225238469E 02
C 2 -0.176281623E 01
C 3 -0.131044126E 00
C 1 -0.472211713E 01
C 2 -0.104617763E 02
C 3 -0.125628134E-01
C 1 0.150369623E 02
C 2 -0.764726303E 01
C 3 0.269819023E 00

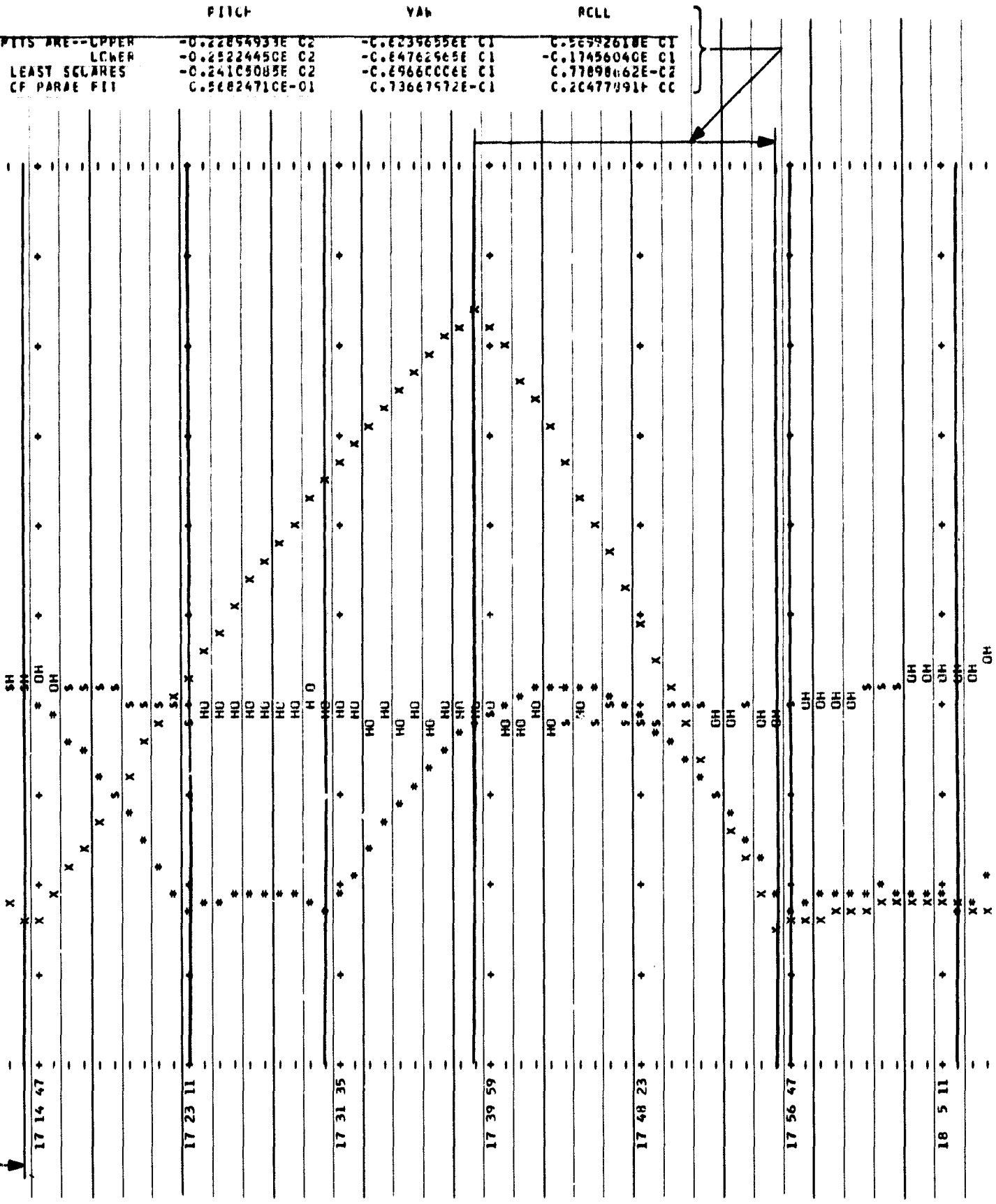

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.22718251E 02 -0.55099565E 01 0.56612946E 01
LOWER -0.24806589E 02 -0.76610C7E 01 -0.67908857E 00
TORQUE BY LEAST SQUARES -0.23243474E 02 -0.64041C27E 01 0.6C325068E 00
RMS ERROR OF PARAB FIT 0.5E191296E-01 0.64465849E-01 0.13841119E 00
13 36 23
13 44 46
13 53 10
14 1 34
14 9 59
14 18 23

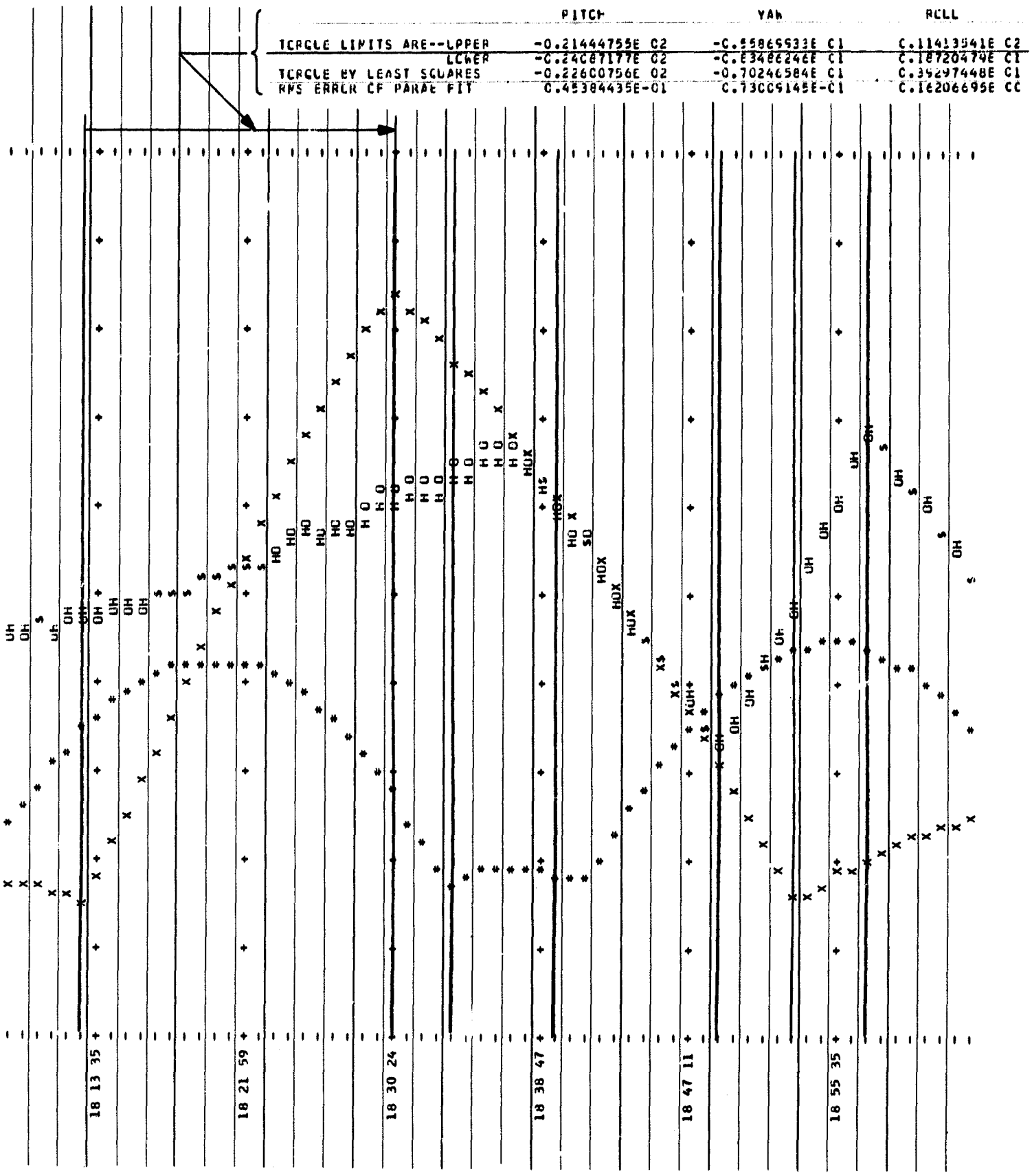

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.21942209E 02 -0.46580697E 01 0.12967627E 02
LOWER -0.25101951E 02 -0.10256771E 02 -0.16628759E 01
TORQUE BY LEAST SQUARES -0.23618069E 02 -0.82734993E 01 0.28396633E 01
RMS ERROR OF PARAB FIT 0.47010537E-01 0.42388259E-01 0.12168847E 00
14 26 46
14 35 10
14 43 35
14 51 59
15 0 23
15 8 47
15 17 11

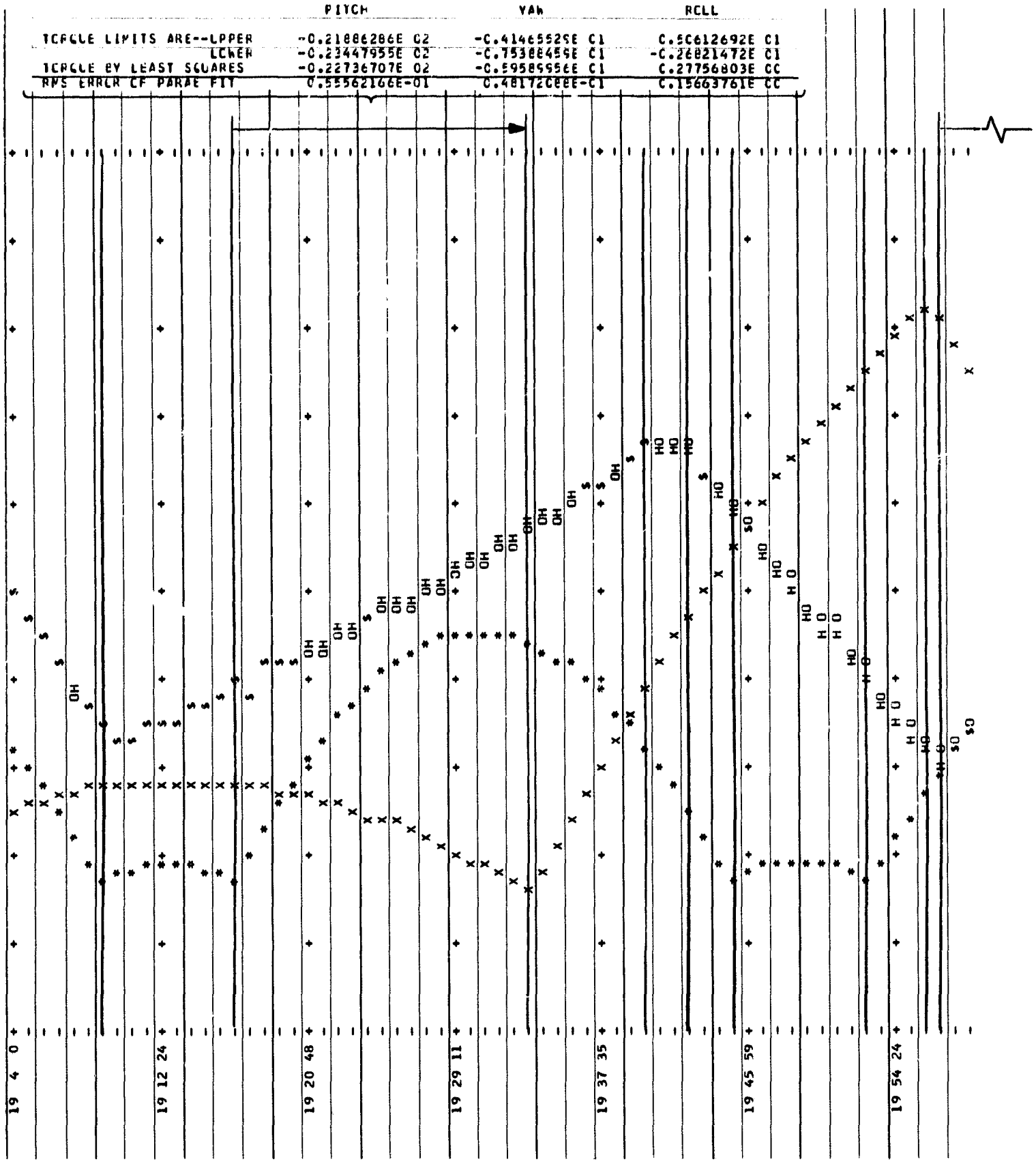

NCLL
C.236567746 C2
-C.135971226 C1
C.1CC701706 C2
C.110691426 CC
YAW
-C.505765026 C1
-C.540778736 C1
-C.716736466 C1
C.485914216-C1
PITCH
-0.156676226 C2
-C.2E4356736 C2
-0.221C52196 C2
0.4E8633266-01
TRIGGLE LIMITS ARE--UPPER
LOWER
TRIGGLE BY LEAST SQUARES
RMS ERROR OF PARAB FIT
16 15 59
16 7 35
15 59 11
15 50 47
15 42 22
15 33 58
15 25 35

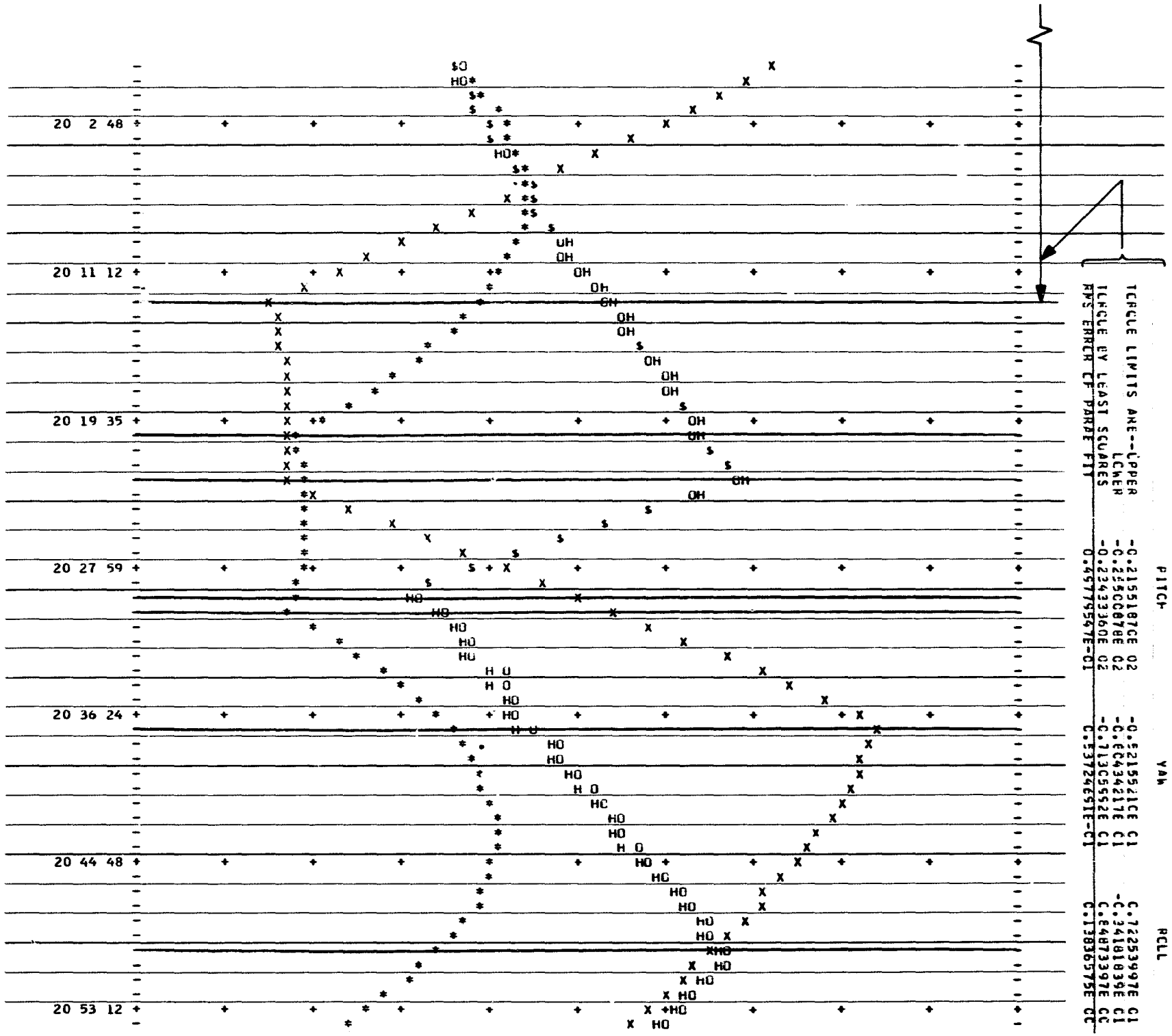

PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.2046026JE 02 -0.3723072CE 00 0.263917366 01
LOWER -0.2669811JE 02 -0.6593C45JE 01 -0.785604746 01
TOGGLE BY LEAST SQUARES -0.2402379ZE 02 -0.5208E4E1E 01 -0.28024049E 01
RMS ERROR OF PARAB FIT 0.5223753CE-01 0.43544C51E-01 0.172215256 00
16 24 23
16 32 47
16 41 11
16 49 35
16 57 59
17 6 22
PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.21753901E 02 -0.4694E872E 01 0.81947259E 01
LOWER -0.2356098CE 02 -0.64249446E 01 -0.52232508E 00
TOGGLE BY LEAST SQUARES -0.22683451E 02 -0.57877766E 01 0.24288505E 01
RMS ERROR OF PARAB FIT 0.62C24083E-01 0.5281472CE-01 0.14825674E 00

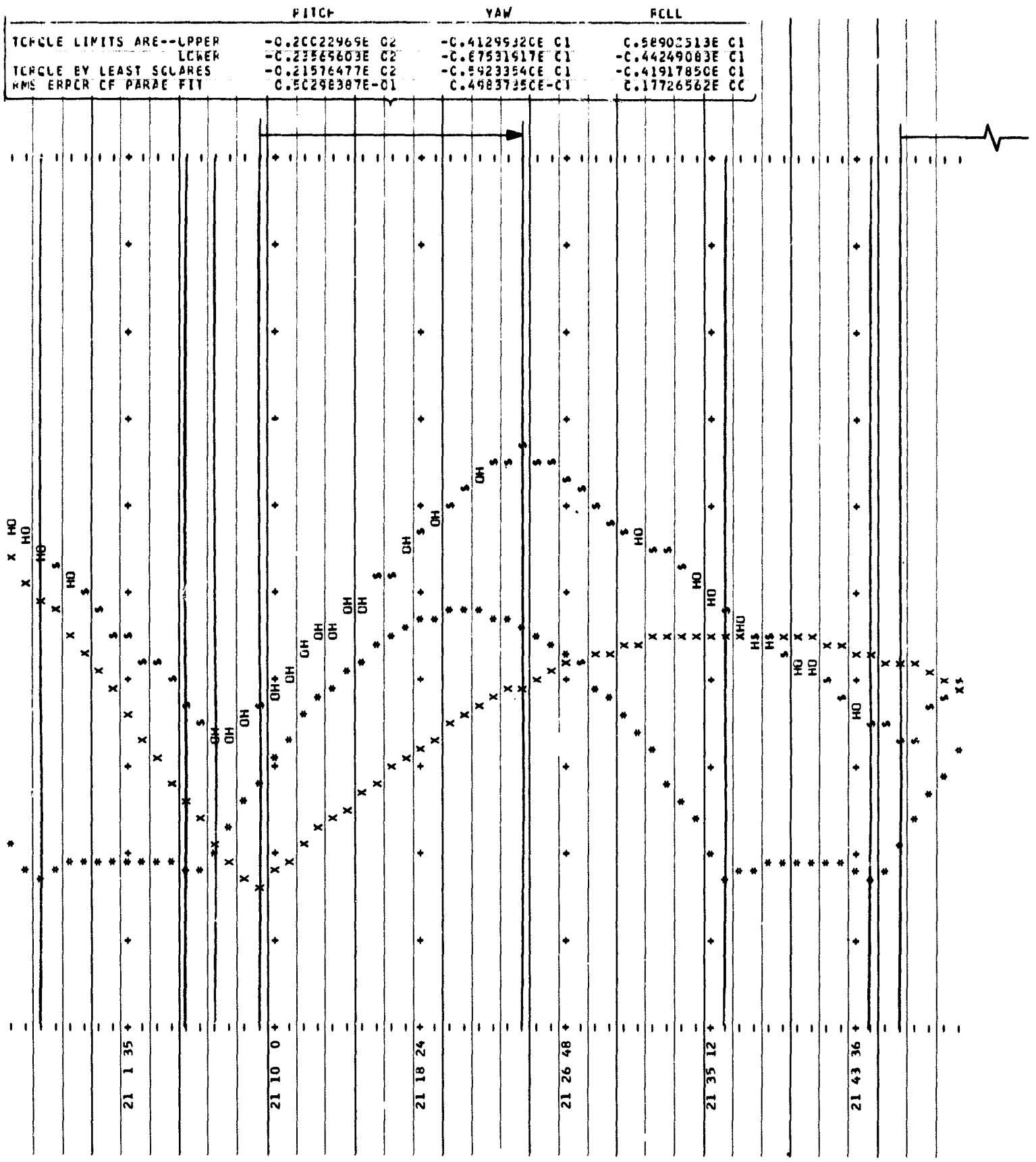
	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.2285493E C2	-C.6239655E C1	C.5699261E C1
LOWER	-0.2522445E C2	-C.6476265E C1	-C.1745604E C1
TORQUE BY LEAST SQUARES	-0.2401585E C2	-C.6966CCCEE C1	C.7789862E-C2
RMS ERROR OF PARAB FIT	C.5682471E-01	C.7366757ZE-C1	C.2C4779[illegible]E CC

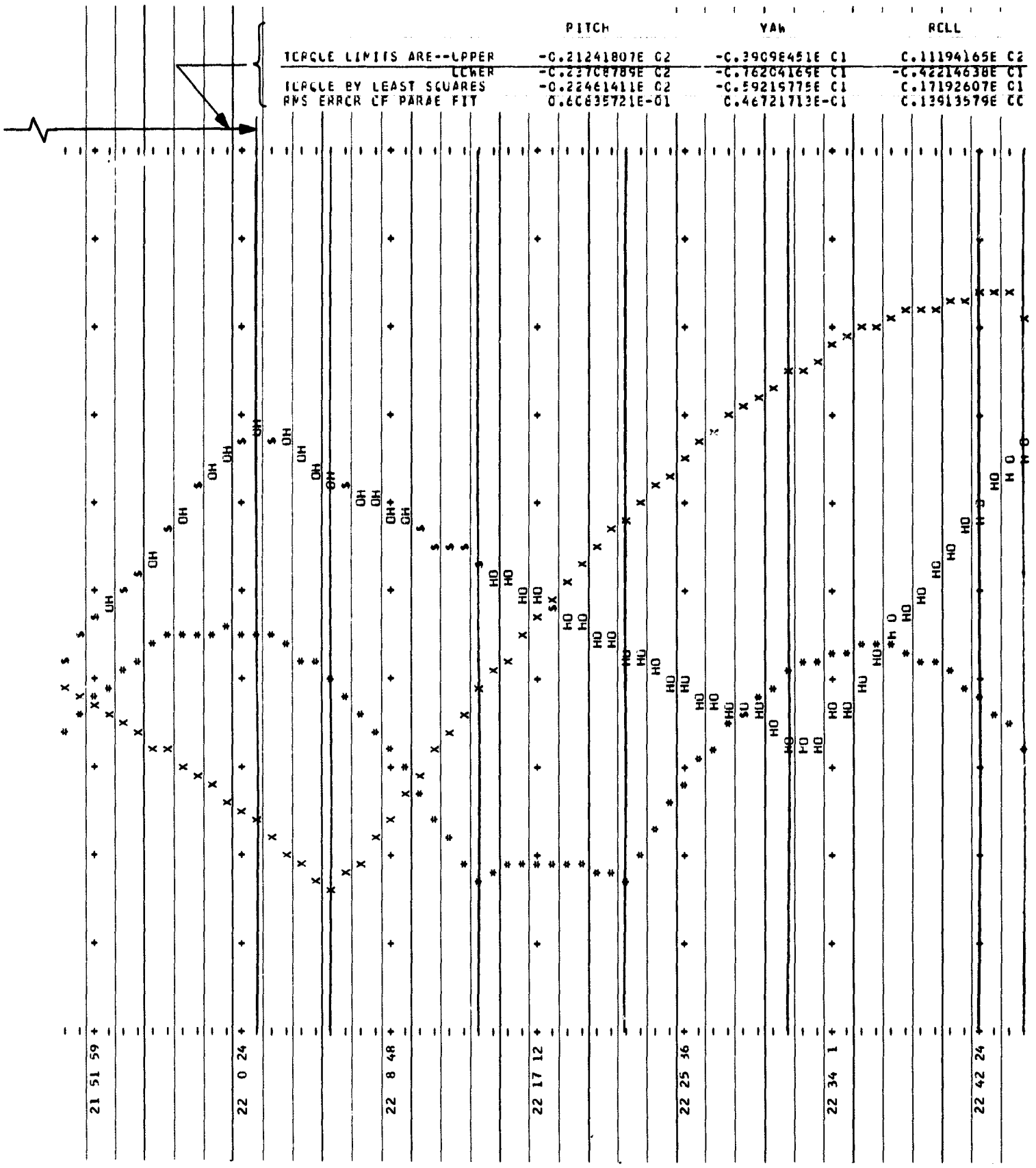


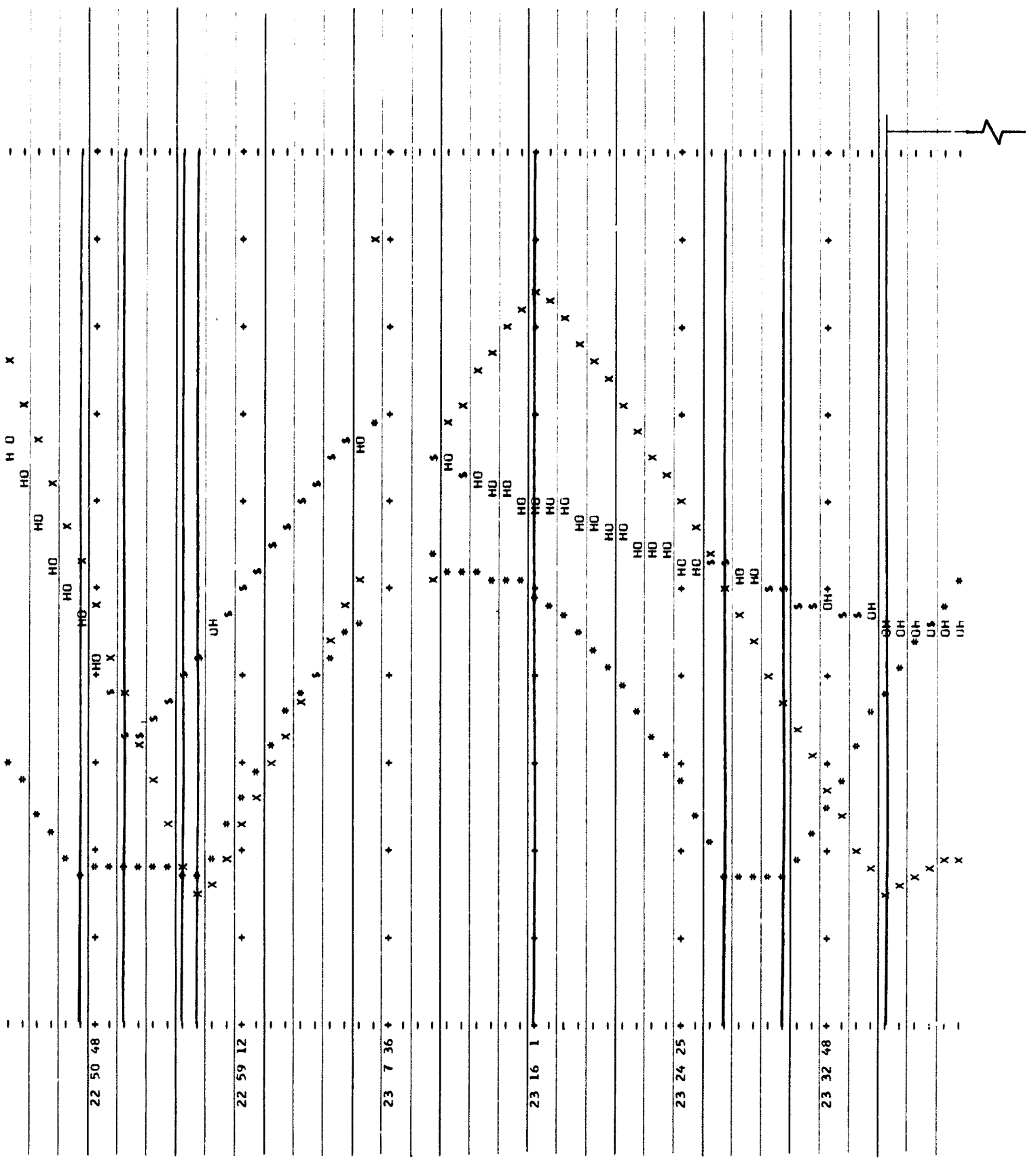

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.21444755E 02 -C.558659338 C1 C.114139541E C2
LOWER -C.24C871778 02 -C.E3486246E C1 C.187204746 C1
TORQUE BY LEAST SQUARES -0.226C0756E 02 -0.702465846 C1 C.342974486 C1
RMS ERROR OF PARAB FIT C.45384435E-01 C.73CC9145E-C1 C.162066956 CC
18 13 35
18 21 59
18 30 24
18 38 47
18 47 11
18 55 35

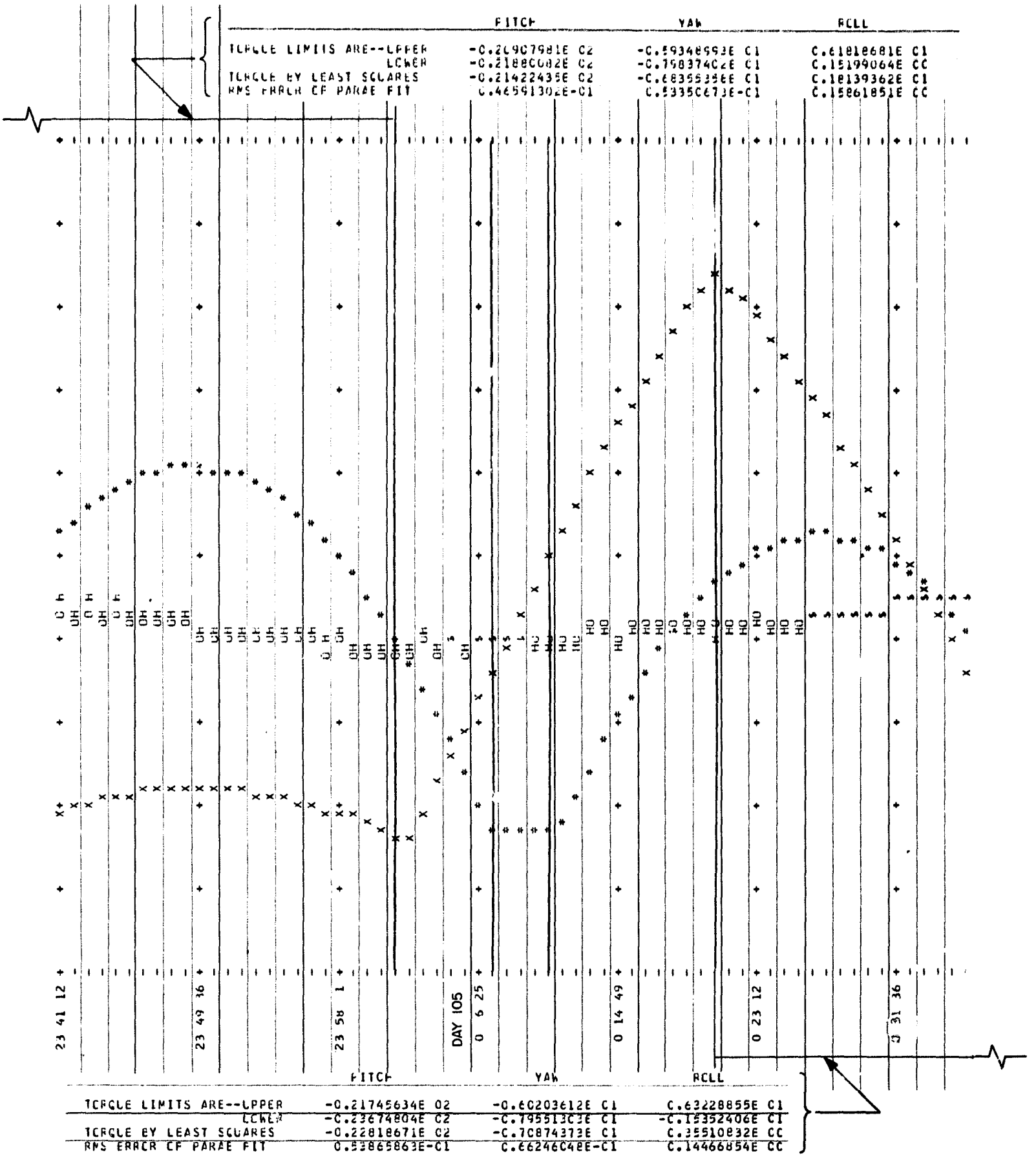

PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.21886286E 02 -0.41465529E 01 0.50612692E 01
LOWER -0.23447955E 02 -0.75388459E 01 -0.26821472E 01
TOGGLE BY LEAST SQUARES -0.22736707E 02 -0.59589956E 01 0.27756803E 00
RMS ERROR OF PARAB FIT 0.55562166E-01 0.48172C66E-01 0.15663761E 00
19 4 0
19 12 24
19 20 48
19 29 11
19 37 35
19 45 59
19 54 24

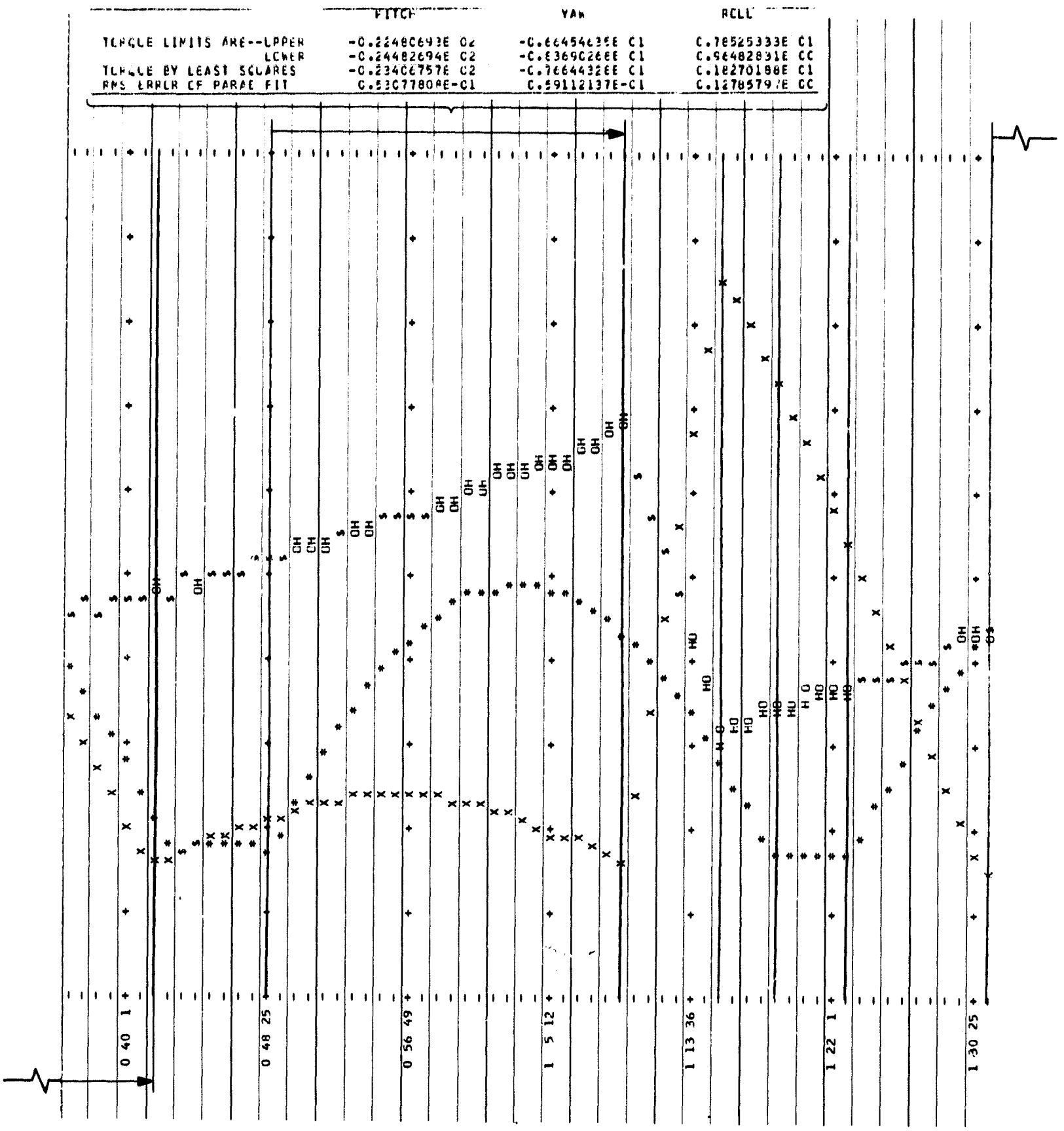

20 2 48
20 11 12
20 19 35
20 27 59
20 36 24
20 44 48
20 53 12
PITCH
YAW
ROLL
TCACLE LIMITS ARE--UPPER
LOWER
TCACLE BY LEAST SQUARES
RMS ERROR OF PARAB FIT
-0.215518826E 02
-0.225500878E 02
-0.224236960E 02
0.257745454E-01
-0.521552160E 01
-0.834342170E 01
-0.113055526E 01
0.857224251E-01
0.722536978E 01
-0.241818693E 01
-0.848736978E 00
0.138369758E 00

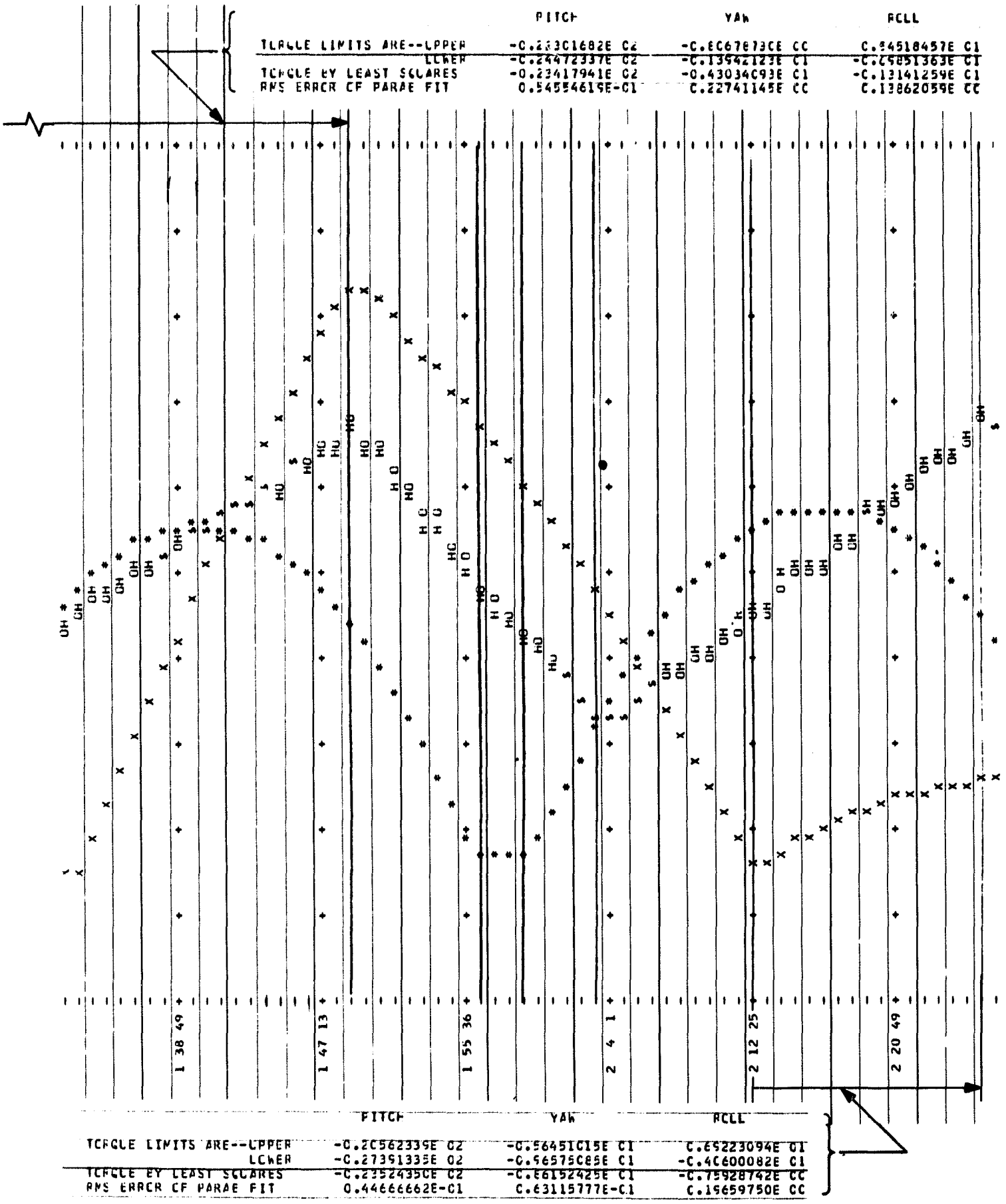

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.2CC22969E C2 -C.41299J2CE C1 C.589C2513E C1
LOWER -C.23565603E C2 -C.67531917E C1 -C.44249083E C1
TORQUE BY LEAST SQUARES -0.21576477E C2 -C.5923354CE C1 -C.4191785CE C1
RMS ERROR OF PARAB FIT C.5C298307E-01 C.4983735CE-C1 C.17726562E CC
21 1 35
21 10 0
21 18 24
21 26 48
21 35 12
21 43 36


PITCH
YAW
ROLL
ICRCLE LIMITS ARE--UPPER -C.21241807E C2 -C.39C9E451E C1 C.11194165E C2
LCWER -C.227C8789E C2 -C.162C4165E C1 -C.42214638E C1
ICRCLE BY LEAST SQUARES -0.2246141 1E C2 -C.592157 75E C1 C.17192607E C1
RMS ERRCR CF PARAE FIT 0.6C635721E-01 C.46721713E-C1 C.139135 79E CC
21 51 59
22 0 24
22 8 48
22 17 12
22 25 16
22 34 1
22 42 24



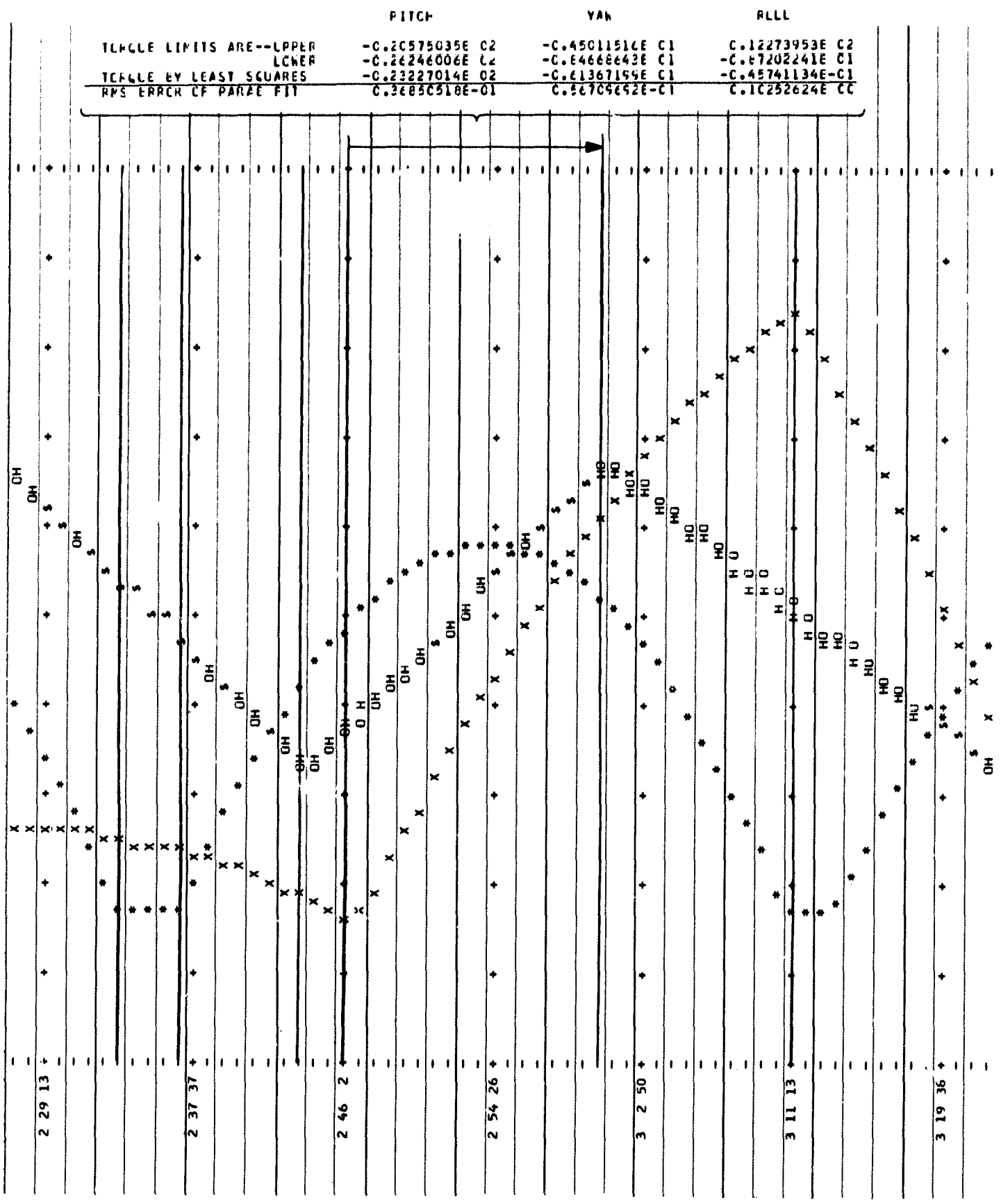

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.2490798IE 02 -0.59348593E 01 0.61818681E 01
LOWER -0.2188C082E 02 -0.198374C2E 01 0.15199064E 00
TORQUE BY LEAST SQUARES -0.21422435E 02 -0.68355356E 01 0.18139362E 01
RMS ERROR OF PARAB FIT 0.46591302E-01 0.5335C673E-01 0.1586185IE 00
DAY 105
23 41 12
23 49 16
23 58 1
0 6 25
0 14 49
0 23 12
0 31 36
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.21745634E 02 -0.60203612E 01 0.63228855E 01
LOWER -0.23674804E 02 -0.7955513C3E 01 -0.15352406E 01
TORQUE BY LEAST SQUARES -0.22818671E 02 -0.7C874373E 01 0.35510832E 00
RMS ERROR OF PARAB FIT 0.53865863E-01 0.66246C48E-01 0.14466854E 00


PITCH
YAW
ROLL
TRIPLE LIMITS ARE--UPPER -0.2248C693E 02 -C.664546 5E C1 C.78525333E C1
LOWER -C.24482694E C2 -C.8369C28EE C1 C.964828 1E CC
TRIPLE BY LEAST SQUARES -0.234C6757E C2 -C.7664432EE C1 C.18270188E C1
RMS ERROR OF PARAB FIT C.53C7780AE-C1 C.59112137E-C1 C.1278579 E CC
0 40 1
0 48 25
0 56 49
1 5 12
1 13 36
1 22 1
1 30 25

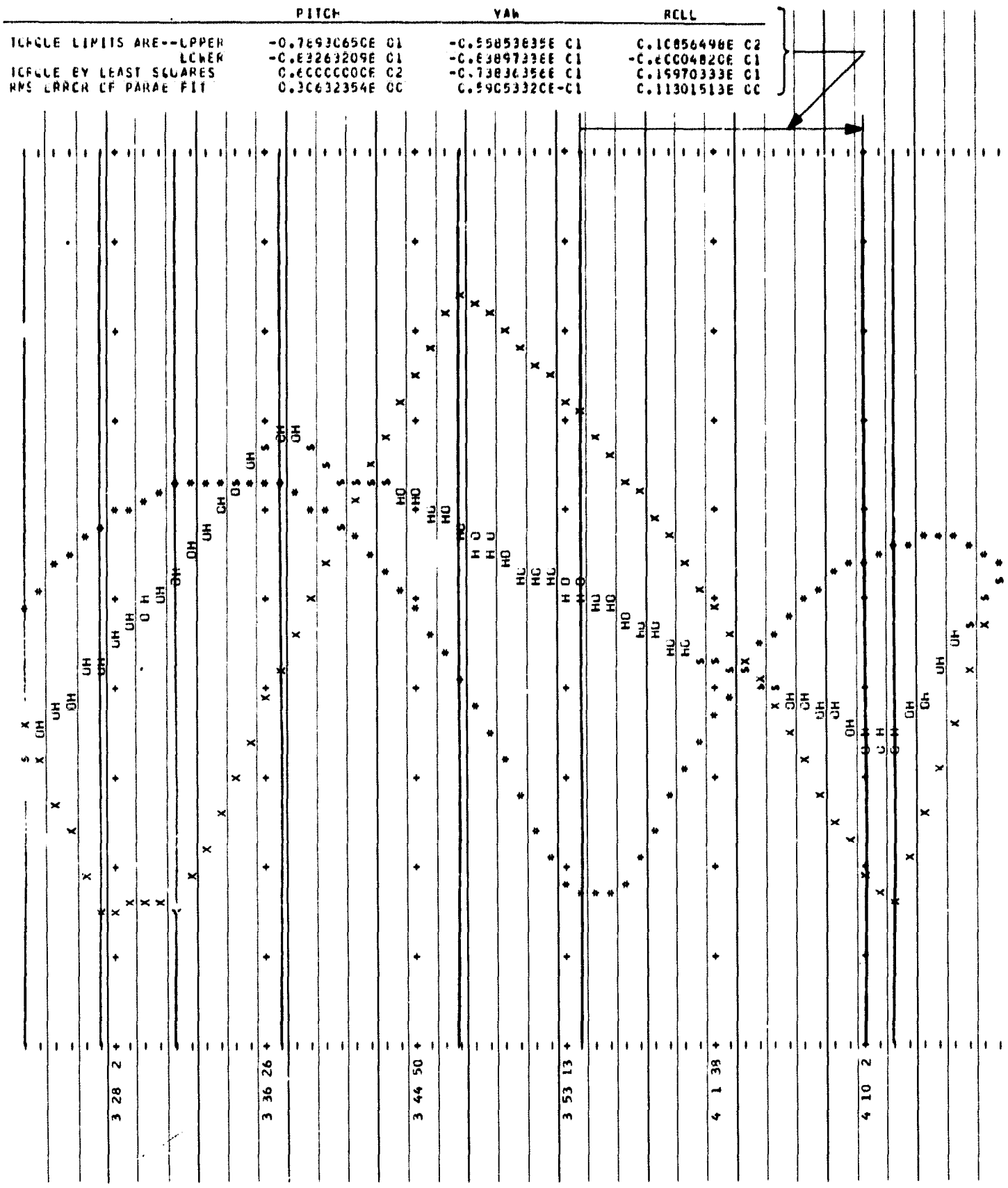


	PITCH	YAW	ROLL
TOGGLE LIMITS ARE--UPPER	-0.23301682E 02	-0.86078736E 00	0.94518457E 01
LOWER	-0.24472337E 02	-0.13542123E 01	-0.65851363E 01
TOGGLE BY LEAST SQUARES	-0.23417941E 02	-0.43034093E 01	-0.13141259E 01
RMS ERROR OF PARAB FIT	0.54554619E-01	0.22741145E 00	0.13862059E 00

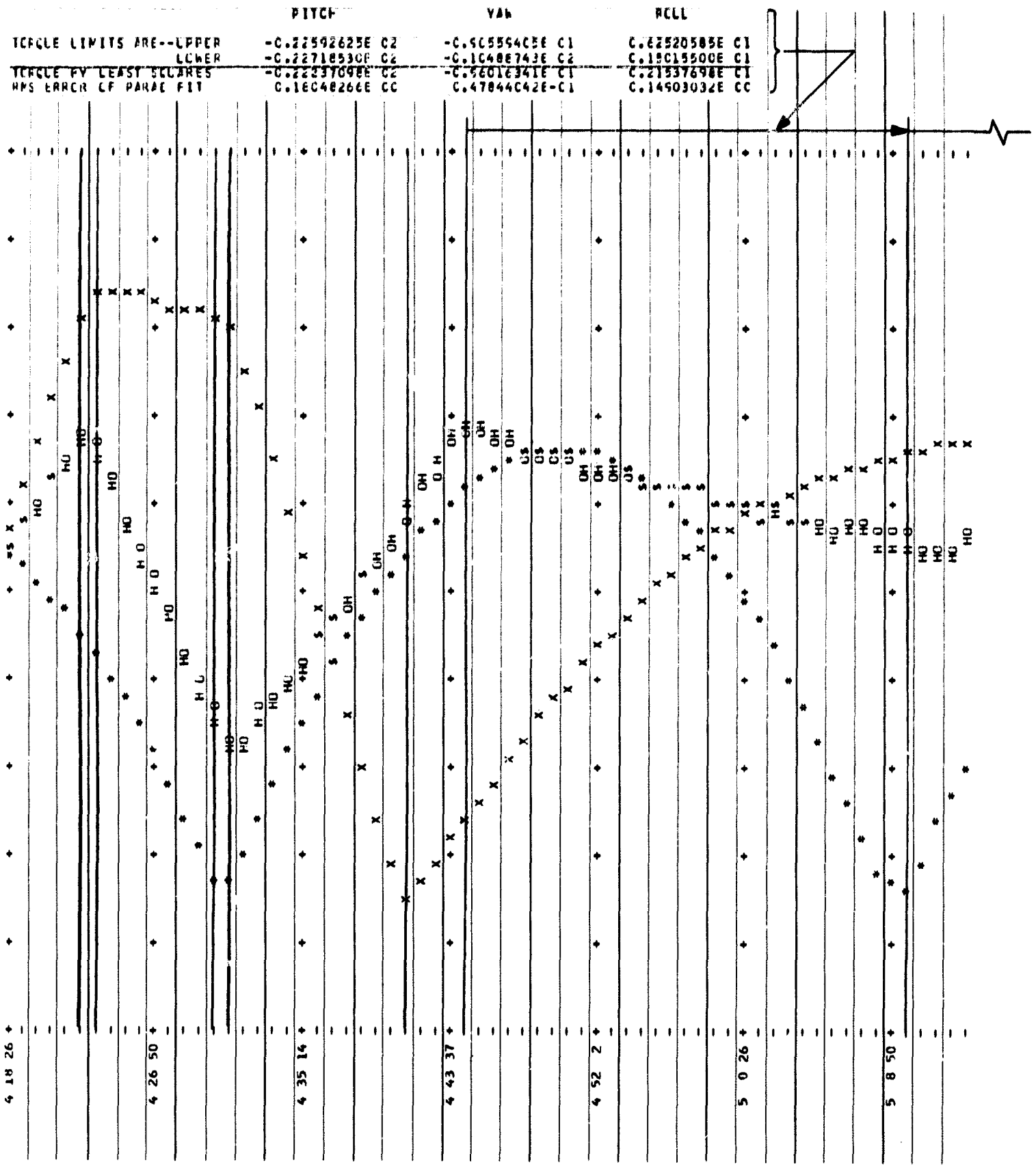
	PITCH	YAW	ROLL
TOGGLE LIMITS ARE--UPPER	-0.20562339E 02	-0.56451015E 01	0.65223094E 01
LOWER	-0.27391335E 02	-0.56575085E 01	-0.40600082E 01
TOGGLE BY LEAST SQUARES	-0.23524350E 02	-0.56152425E 01	-0.75928742E 00
RMS ERROR OF PARAB FIT	0.44666662E-01	0.63115777E-01	0.19659750E 00

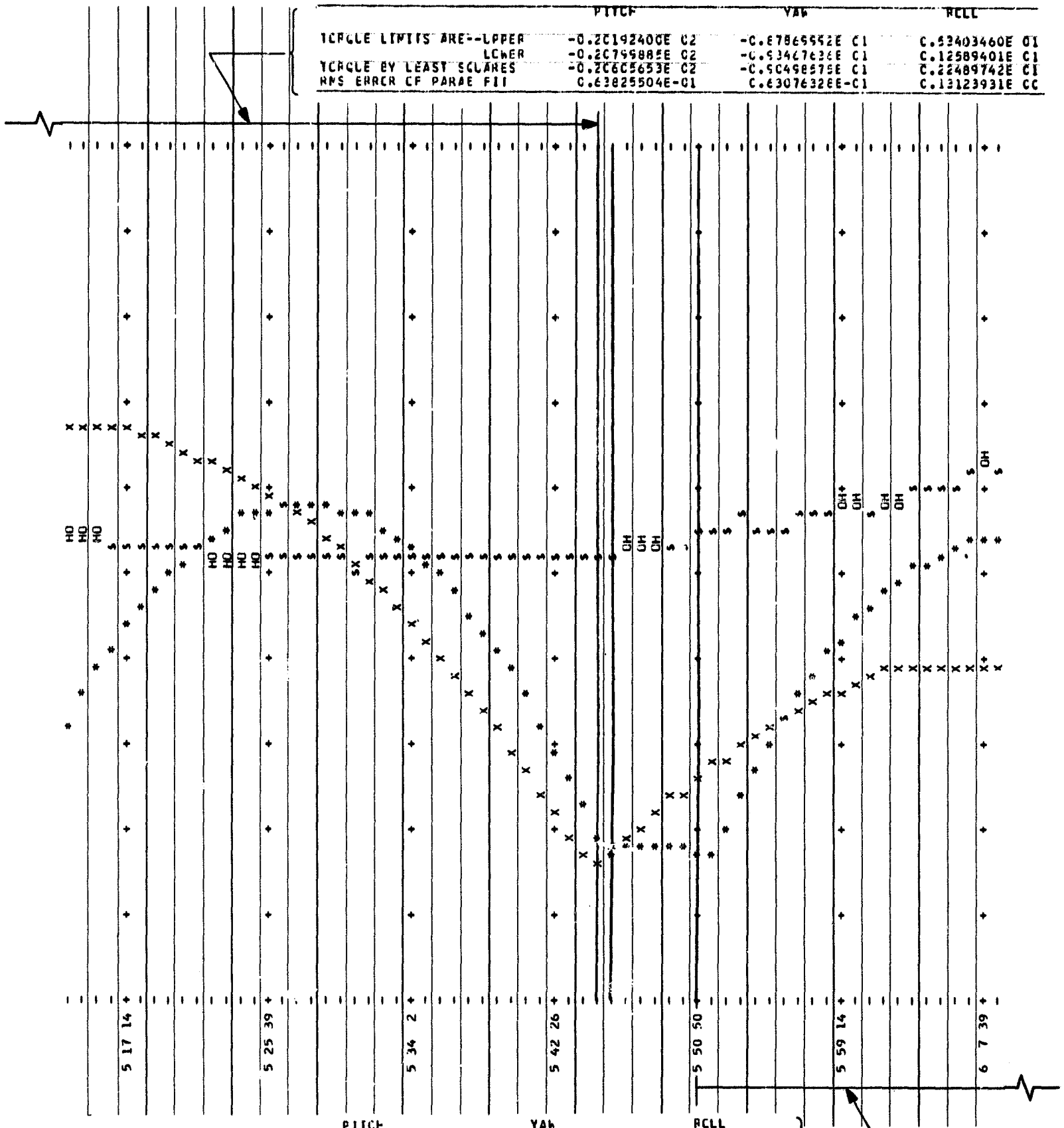

PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.20575035E 02 -0.45011514E 01 0.12273953E 02
LOWER -0.26246006E 02 -0.54666643E 01 -0.87202241E 01
TOGGLE BY LEAST SQUARES -0.23227014E 02 -0.51367159E 01 -0.45741134E-01
RMS ERROR OF PARAB FIT 0.36850518E-01 0.56706452E-01 0.10252624E 00
2 29 13
2 37 37
2 46 2
2 54 26
3 2 50
3 11 13
3 19 36

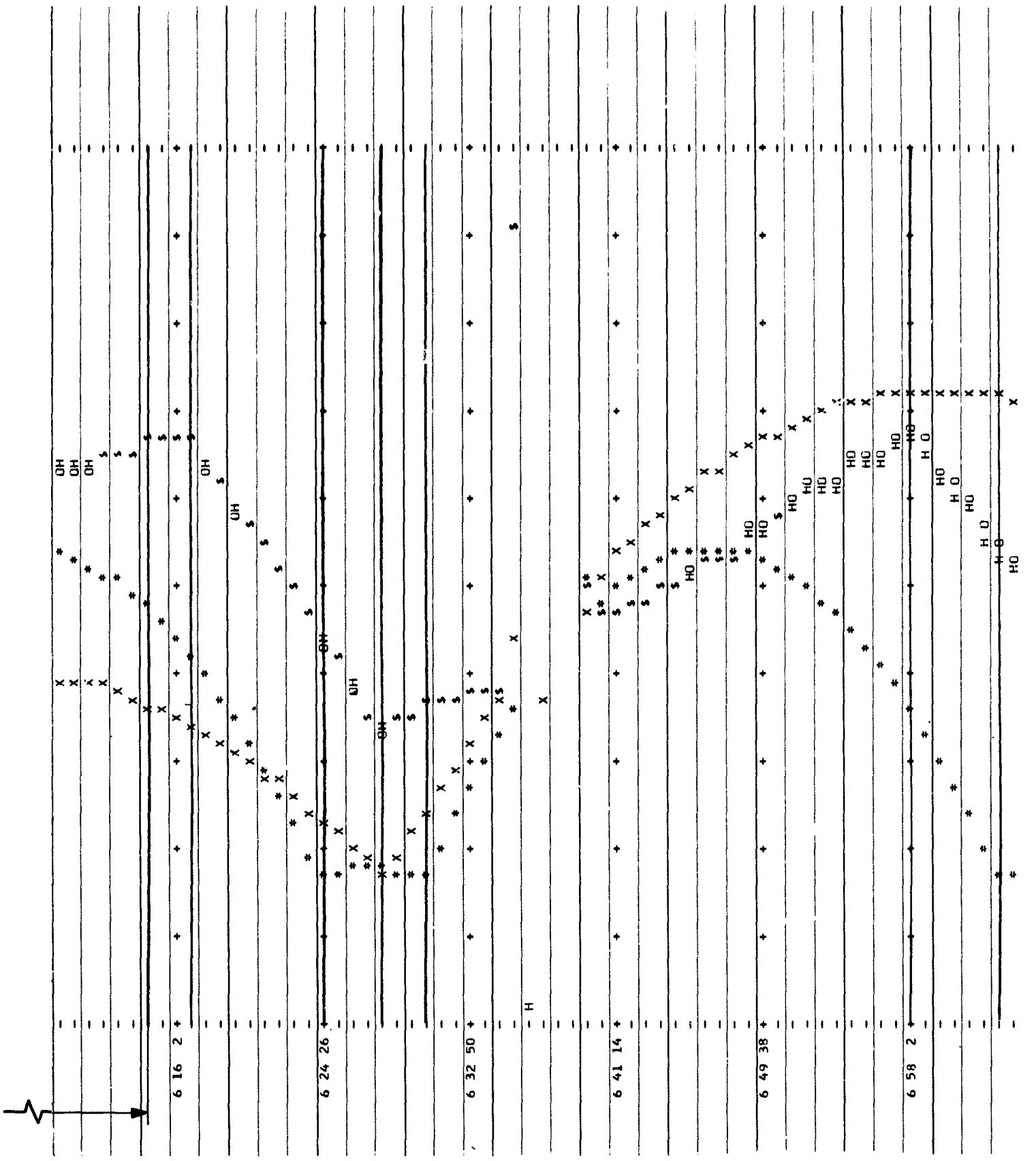
	PITCH	YAW	ROLL
ICRCLE LIMITS ARE--UPPER	-0.7693C65CE C1	-C.558538E35E C1	C.1C856498E C2
LCWER	-C.E3263209E C1	-C.E3897336E C1	-C.ECC0482CE C1
ICRCLE BY LEAST SCUARES	C.ECCCCCCCE C2	-C.738363C6E C1	C.169703333E C1
RMS LRRCR CF PARAE FIT	0.3C6323S4E CC	C.59C5332CE-C1	C.113015136 CC

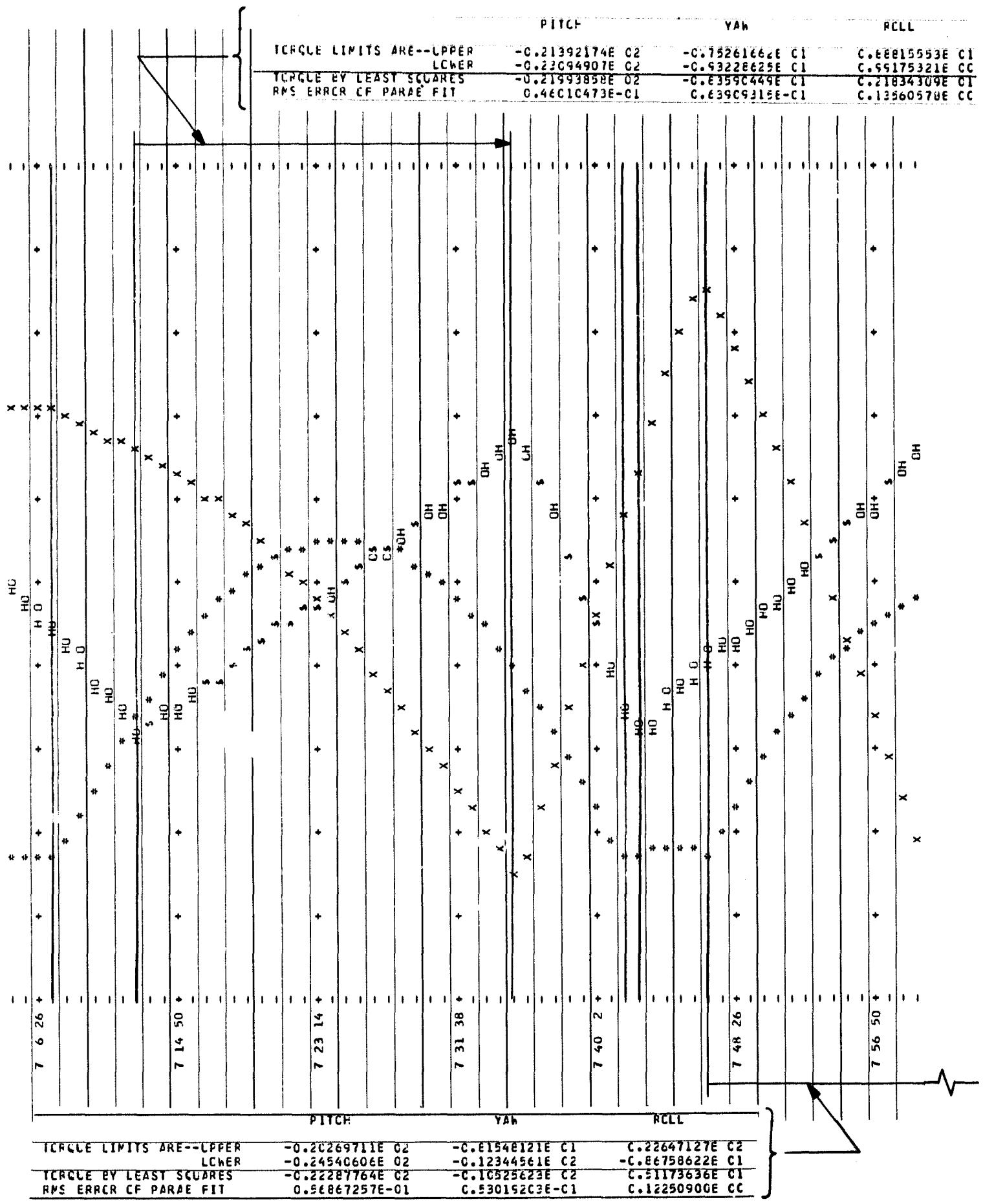


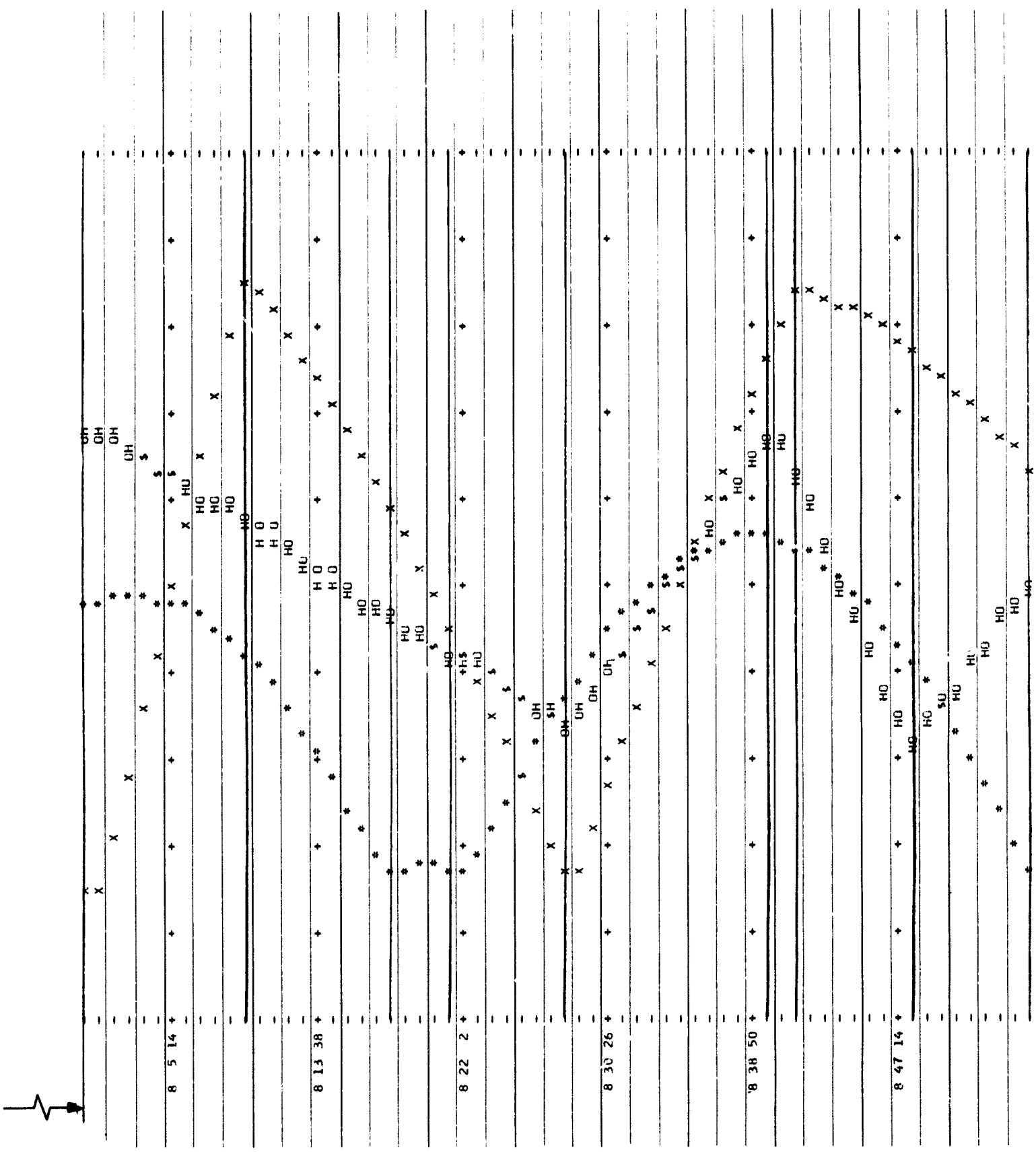
	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.22592625E 02	-0.9C5594C3E C1	0.822520585E C1
LOWER	-0.22718530E 02	-0.1048E743E C2	0.18C155C0E C1
TORQUE BY LEAST SQUARES	-0.22237098E 02	-0.9601E341E C1	0.215376 98E C1
RMS ERROR OF PARAB FIT	0.18048266E CC	0.47844C42E-C1	0.14503032E CC

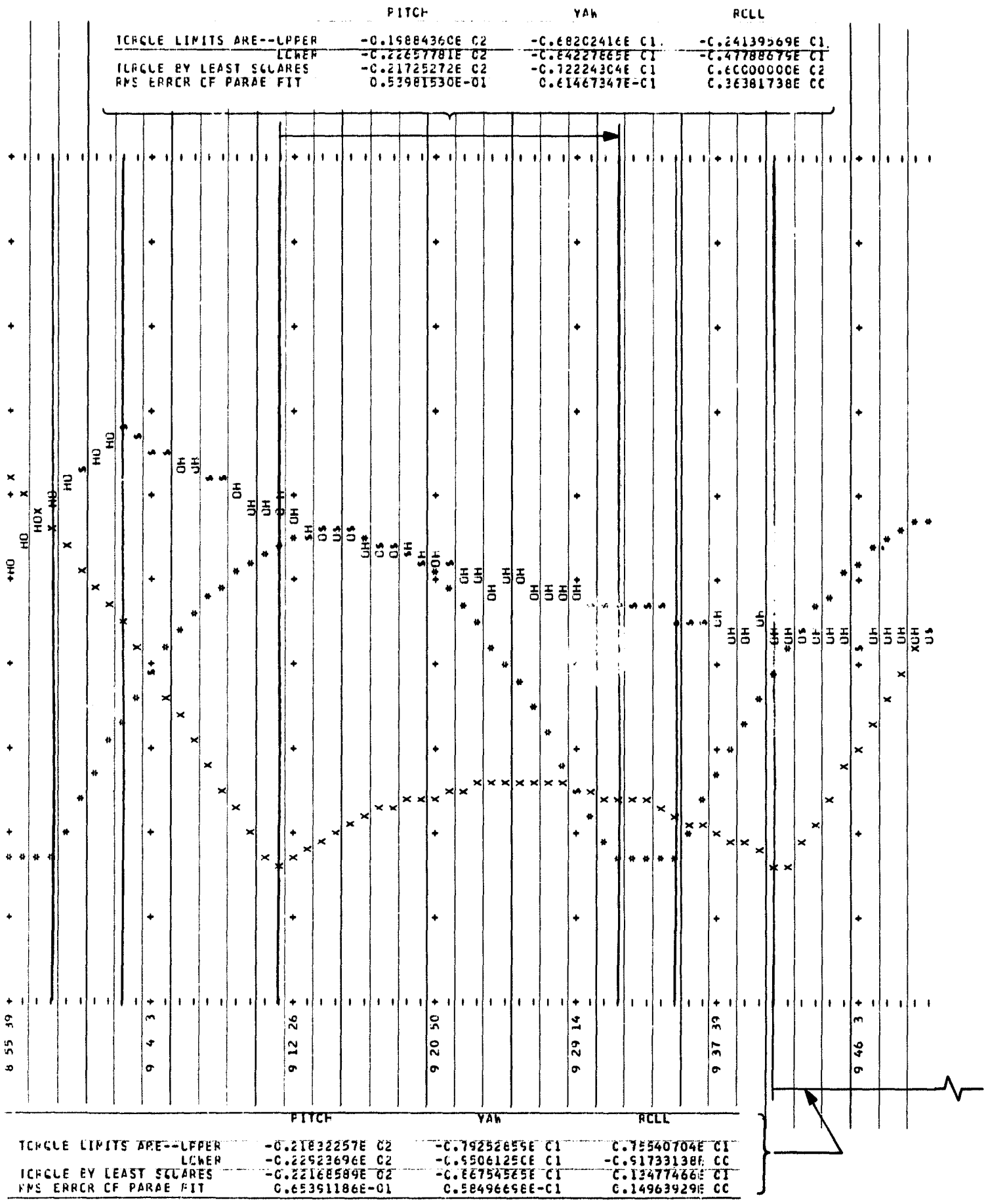



PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.2C192400E C2 -C.678695S2E C1 C.S3403460E C1
LOWER -0.2C799885E C2 -C.S3467636E C1 C.12589401E C1
TORQUE BY LEAST SQUARES -0.2C6C5653E C2 -C.SC498575E C1 C.224897 42E C1
RMS ERROR OF PARAB FIT C.638255O4E-C1 C.63076328E-C1 C.133239 31E CC
5 17 14
5 25 39
5 34 2
5 42 26
5 50 50
5 59 14
6 7 39
PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.21011245E 02 -C.E39C251CE C1 C.78338924E 01
LOWER -0.2221459CE 02 -C.569768 76E C1 C.49418126E C1
TORQUE BY LEAST SQUARES -0.21513088E 02 -C.E7421913E C1 C.3C329481E C1
RMS ERROR OF PARAB FIT C.54233713E-01 C.522535 77E-C1 C.176495 35E CC

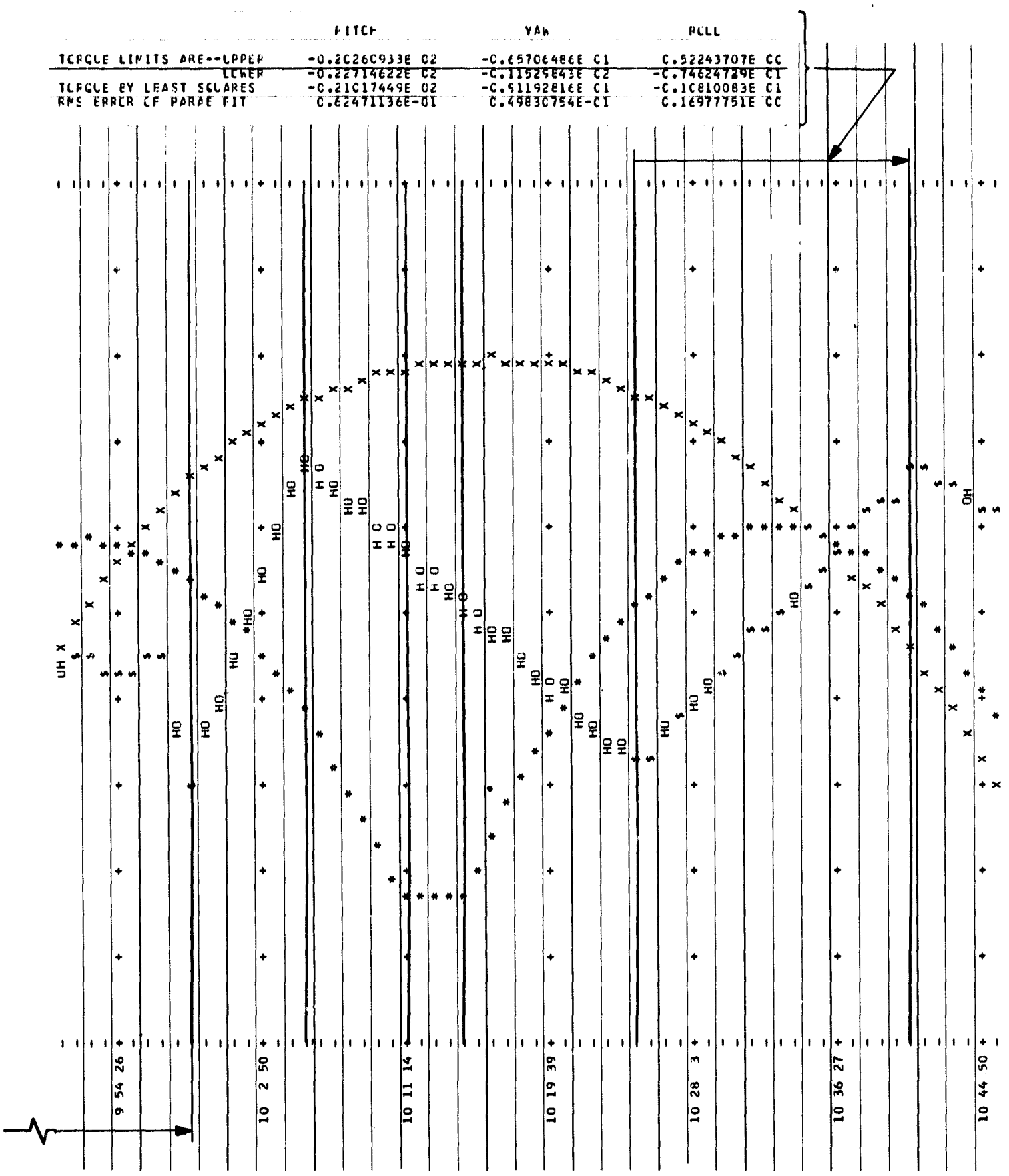

6 16 2
6 24 26
6 32 50
6 41 14
6 49 38
6 58 2

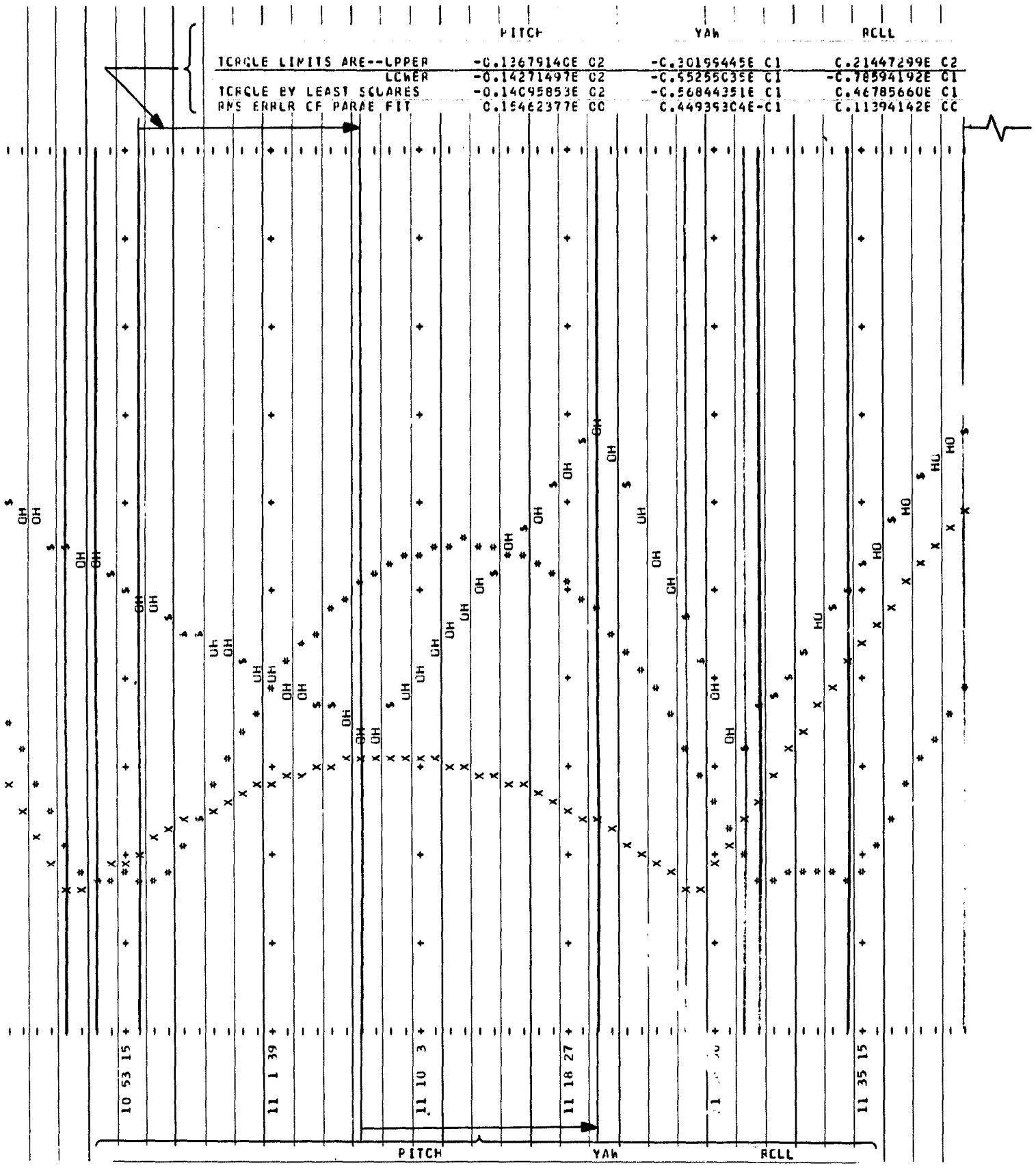

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.21392174E 02 -0.75261662E 01 0.88815553E 01
LOWER -0.23094907E 02 -0.93228625E 01 0.99175321E 00
TORQUE BY LEAST SQUARES -0.21993858E 02 -0.83594449E 01 0.21834309E 01
RMS ERROR OF PARAB FIT 0.46010473E-01 0.63909315E-01 0.13560570E 00
7 6 26
7 14 50
7 23 14
7 31 38
7 40 2
7 48 26
7 56 50
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.20269711E 02 -0.81548121E 01 0.22647127E 02
LOWER -0.24540606E 02 -0.12344561E 02 -0.86758622E 01
TORQUE BY LEAST SQUARES -0.22287764E 02 -0.10525623E 02 0.51173636E 01
RMS ERROR OF PARAB FIT 0.56867257E-01 0.53015203E-01 0.12250900E 00

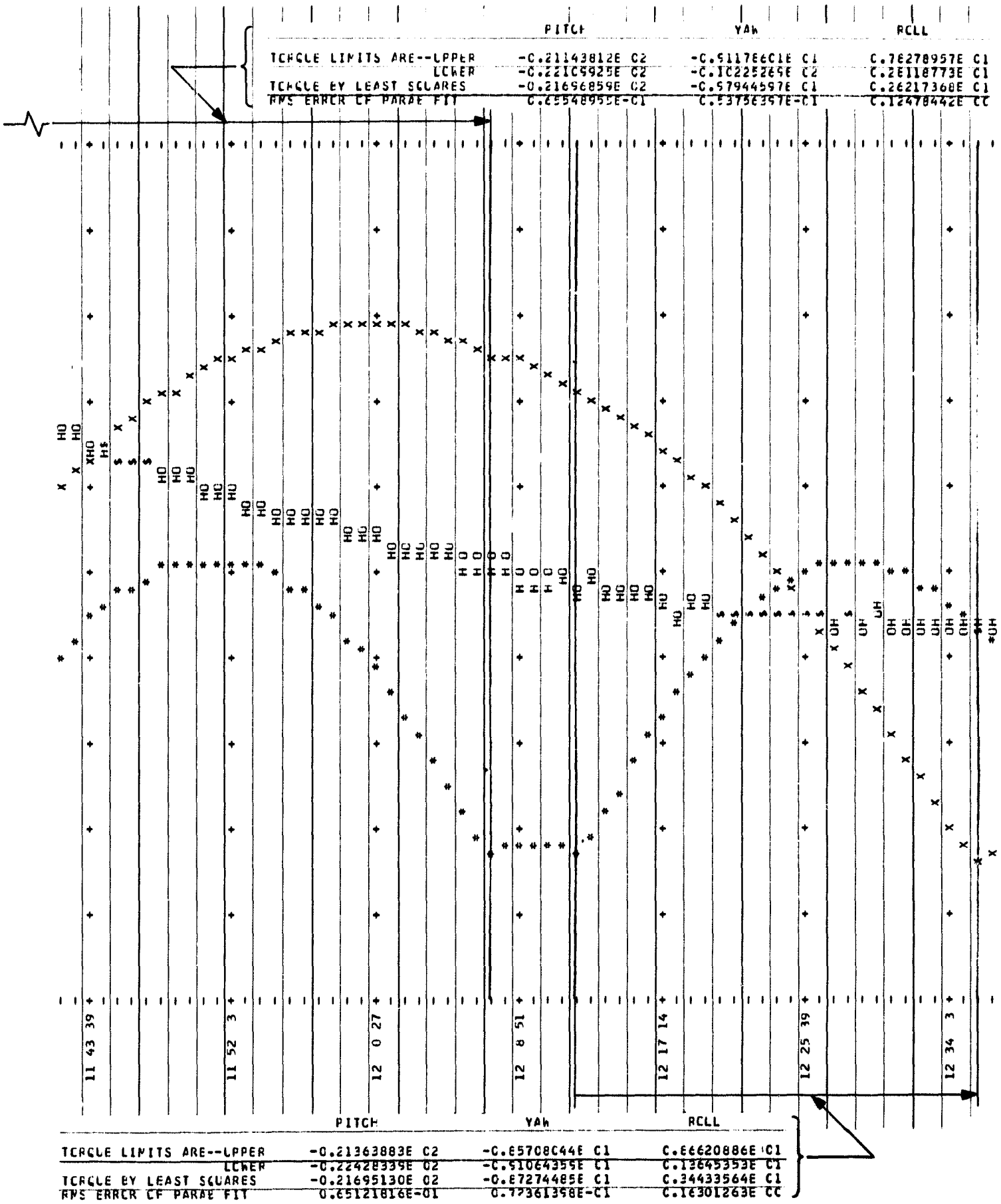


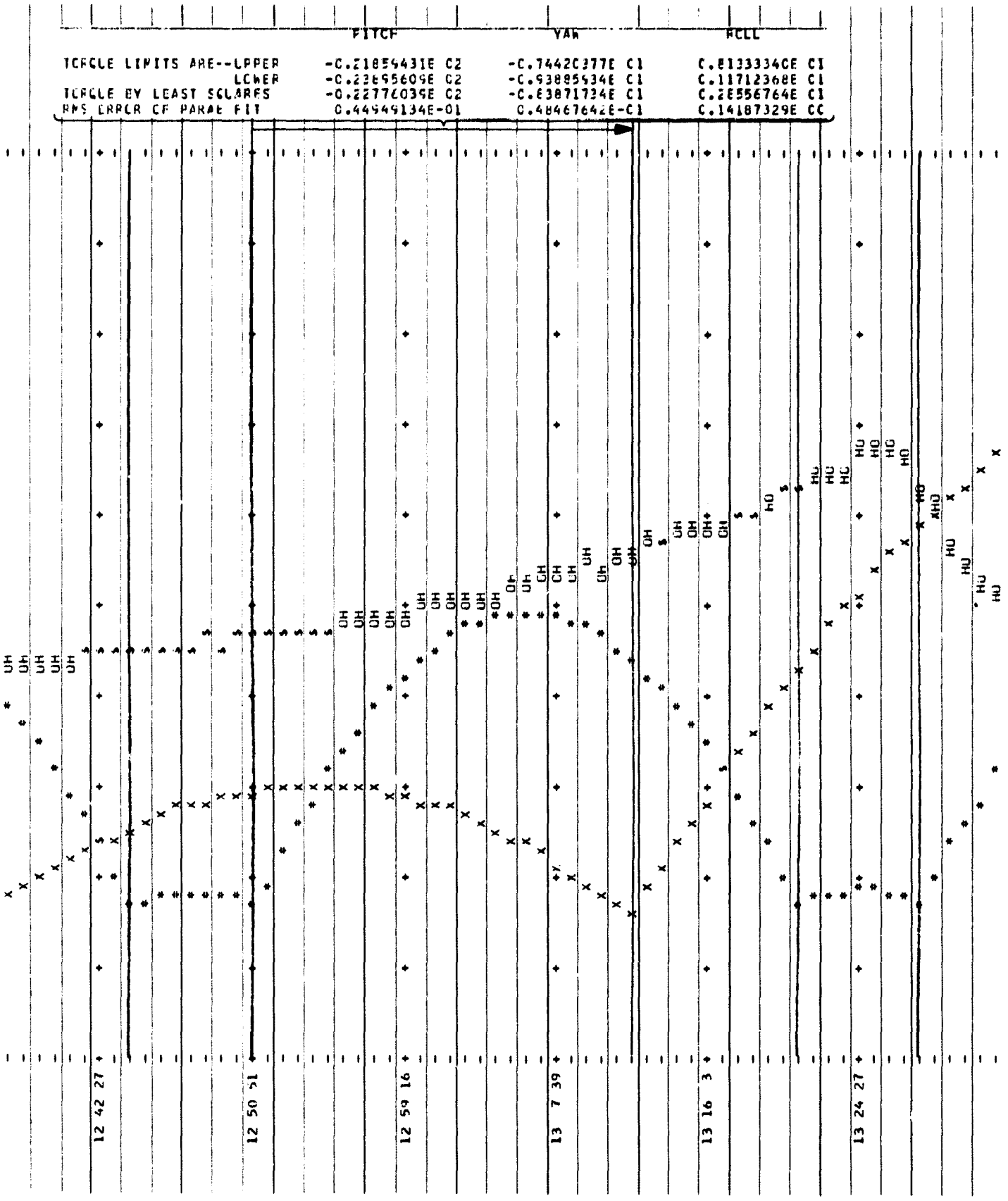

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.19884360E 02 -0.68202416E 01 -0.24139569E 01
LOWER -0.22657781E 02 -0.84227865E 01 -0.47788679E 01
TORQUE BY LEAST SQUARES -0.21725272E 02 -0.72224304E 01 0.60000000E 02
RMS ERROR OF PARAB FIT 0.53981530E-01 0.61467347E-01 0.36381738E 00
8 55 39
9 4 3
9 12 26
9 20 50
9 29 14
9 37 39
9 46 3
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.21832257E 02 -0.79252859E 01 0.75540704E 01
LOWER -0.22923696E 02 -0.85061250E 01 -0.91733138E 00
TORQUE BY LEAST SQUARES -0.22168589E 02 -0.82754565E 01 0.13477466E 01
RMS ERROR OF PARAB FIT 0.65391186E-01 0.58496698E-01 0.14963929E 00

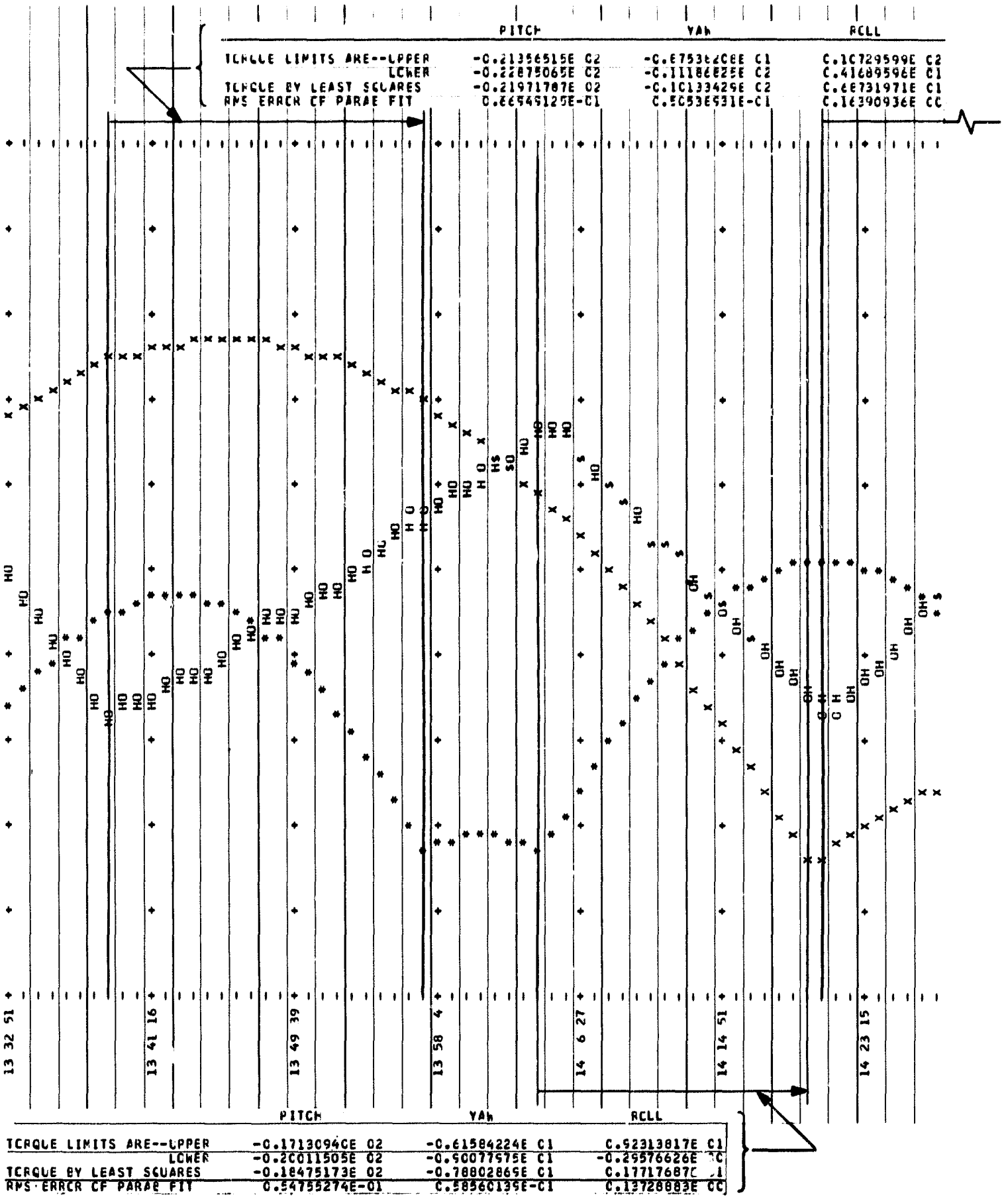
	PITCH	YAW	ROLL
TRIPLE LIMITS ARE--UPPER	-0.2026C933E 02	-C.6570648CE C1	C.52243707E CC
LOWER	-0.22714622E 02	-C.11525E43E C2	-C.746247Z9E C1
TRIPLE BY LEAST SQUARES	-C.21C17449E 02	-C.91192E16E C1	-C.1C810083E C1
RMS ERROR OF PARAB FIT	C.62471136E-01	C.4983C754E-C1	C.16977751E CC

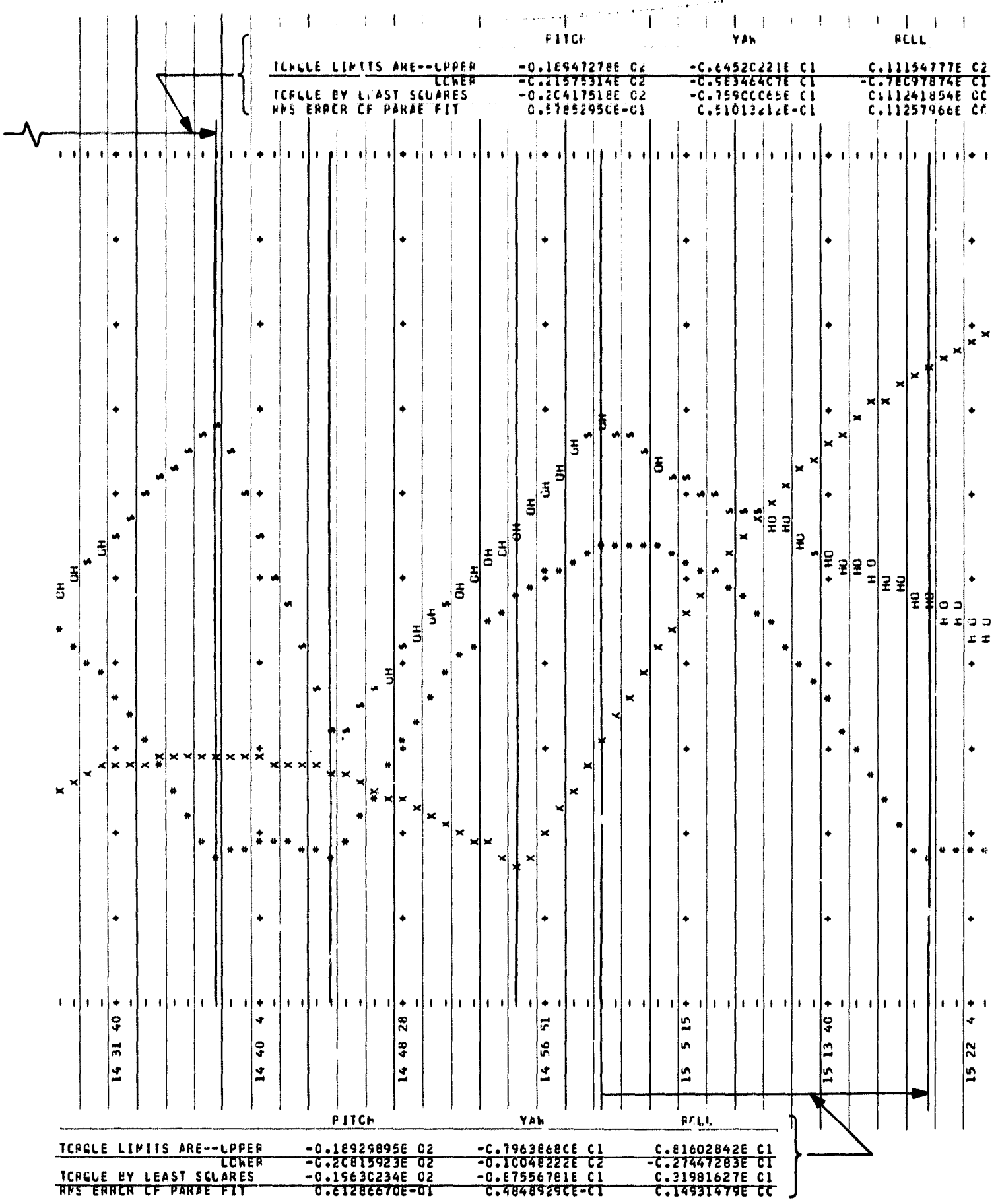



PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.13679140E 02 -0.30199445E 01 0.21447299E 02
LOWER -0.14271497E 02 -0.55255035E 01 -0.78594192E 01
TORQUE BY LEAST SQUARES -0.14095853E 02 -0.56844351E 01 0.46785660E 01
RMS ERROR OF PARAB FIT 0.15462377E 00 0.44935304E-01 0.11394142E 00
10 53 15
11 1 39
11 10 3
11 18 27
11 35 15
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.19826730E 02 -0.59232147E 01 0.16891814E 02
LOWER -0.24343510E 02 -0.12251221E 02 -0.57669174E 01
TORQUE BY LEAST SQUARES -0.21330106E 02 -0.93494146E 01 0.31977187E 01
RMS ERROR OF PARAB FIT 0.48861785E-01 0.38313593E-01 0.11685363E 00


PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.21143812E 02 -0.91176610E 01 0.76278957E 01
LOWER -0.22106925E 02 -0.10225269E 02 0.28118773E 01
TOGGLE BY LEAST SQUARES -0.21696859E 02 -0.97944597E 01 0.26217360E 01
RMS ERROR OF PARAB FIT 0.25548955E-01 0.53756367E-01 0.12478442E 00
11 43 39
11 52 3
12 0 27
12 8 51
12 17 14
12 25 39
12 34 3
PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.21363883E 02 -0.85708644E 01 0.86620886E 01
LOWER -0.22428339E 02 -0.91064355E 01 0.13645353E 01
TOGGLE BY LEAST SQUARES -0.21695130E 02 -0.87274485E 01 0.34433564E 01
RMS ERROR OF PARAB FIT 0.65121816E-01 0.77361358E-01 0.16301263E 00


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.21859431E 02 -0.74420377E 01 0.81333340E 01
LOWER -0.23695609E 02 -0.93885534E 01 0.11712368E 01
TORQUE BY LEAST SQUARES -0.22776039E 02 -0.83871734E 01 0.98556764E 01
RMS ERROR OF PARAB FIT 0.44949134E-01 0.48467642E-01 0.14187329E 00
12 42 27
12 50 51
12 59 16
13 7 39
13 16 3
13 24 27


PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.21356515E 02 -0.67536C6EE C1 C.1C729599E C2
LOWER -0.22875065E 02 -C.1118C82EE C2 C.41689596E C1
TORQUE BY LEAST SQUARES -0.21971787E 02 -C.1C133429E C2 C.6E731971E C1
RMS ERROR OF PARAB FIT C.66549125E-C1 C.5C53E531E-C1 C.16390936E CC
13 32 51
13 41 16
13 49 39
13 58 4
14 6 27
14 14 51
14 23 15
PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.1713094CE 02 -0.615842246 C1 C.923138176 C1
LOWER -0.2C011505E 02 -0.60077575E C1 -0.295766266 CC
TORQUE BY LEAST SQUARES -0.18475173E 02 -0.78802869E C1 C.177176876 C1
RMS ERROR OF PARAB FIT C.547552746-01 C.58560139E-C1 C.13726083E CC


PITCH
YAW
ROLL
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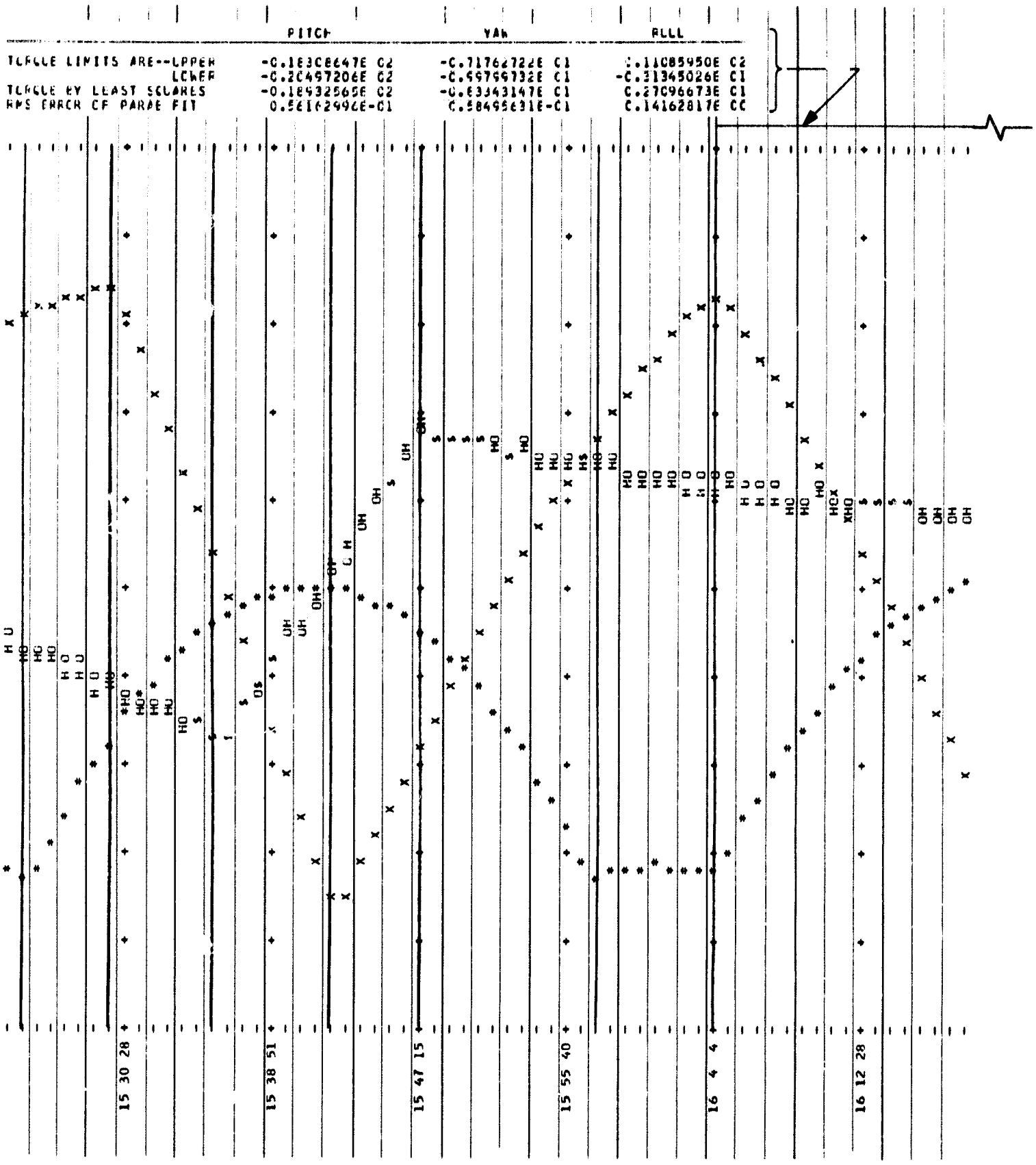
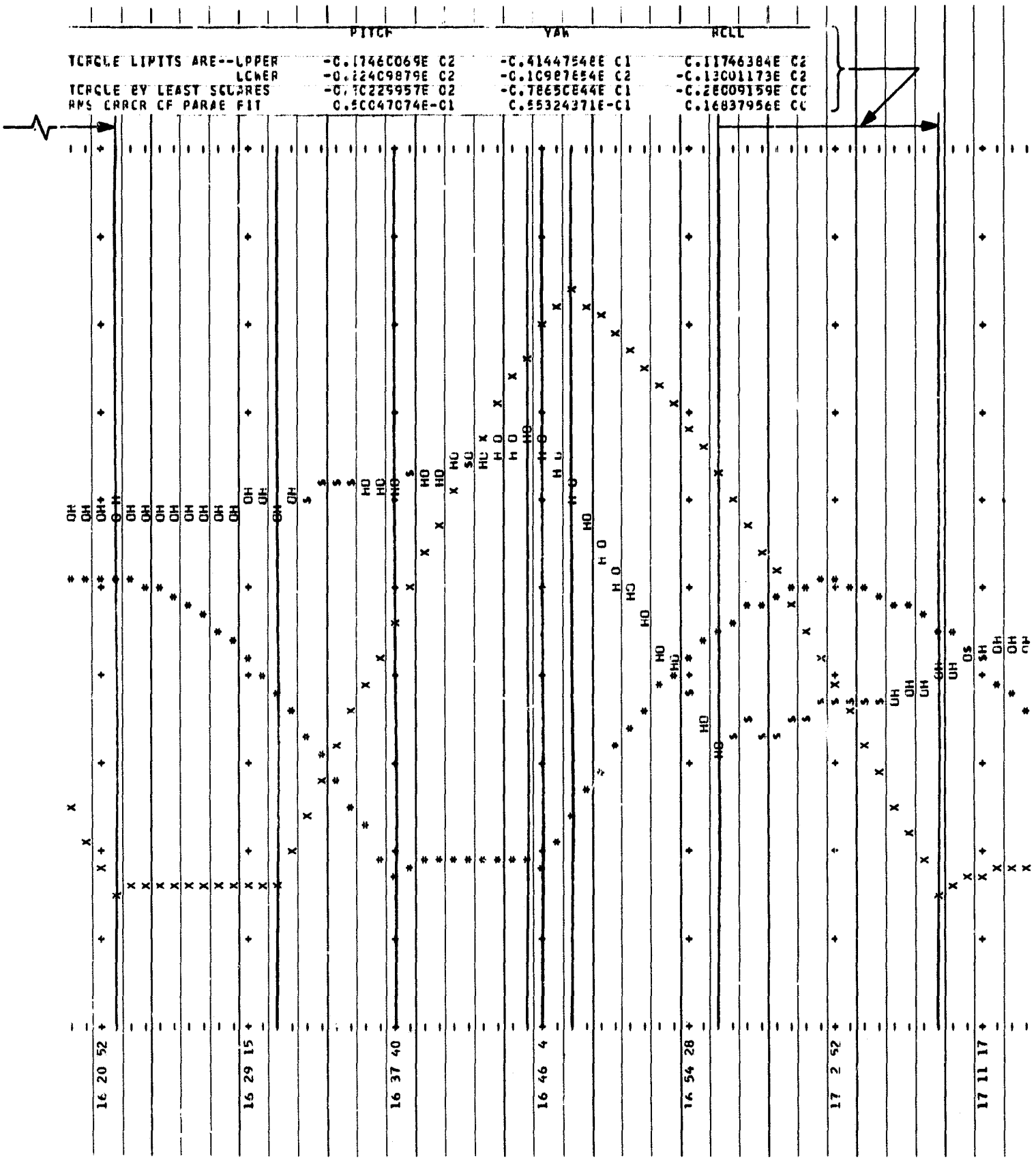
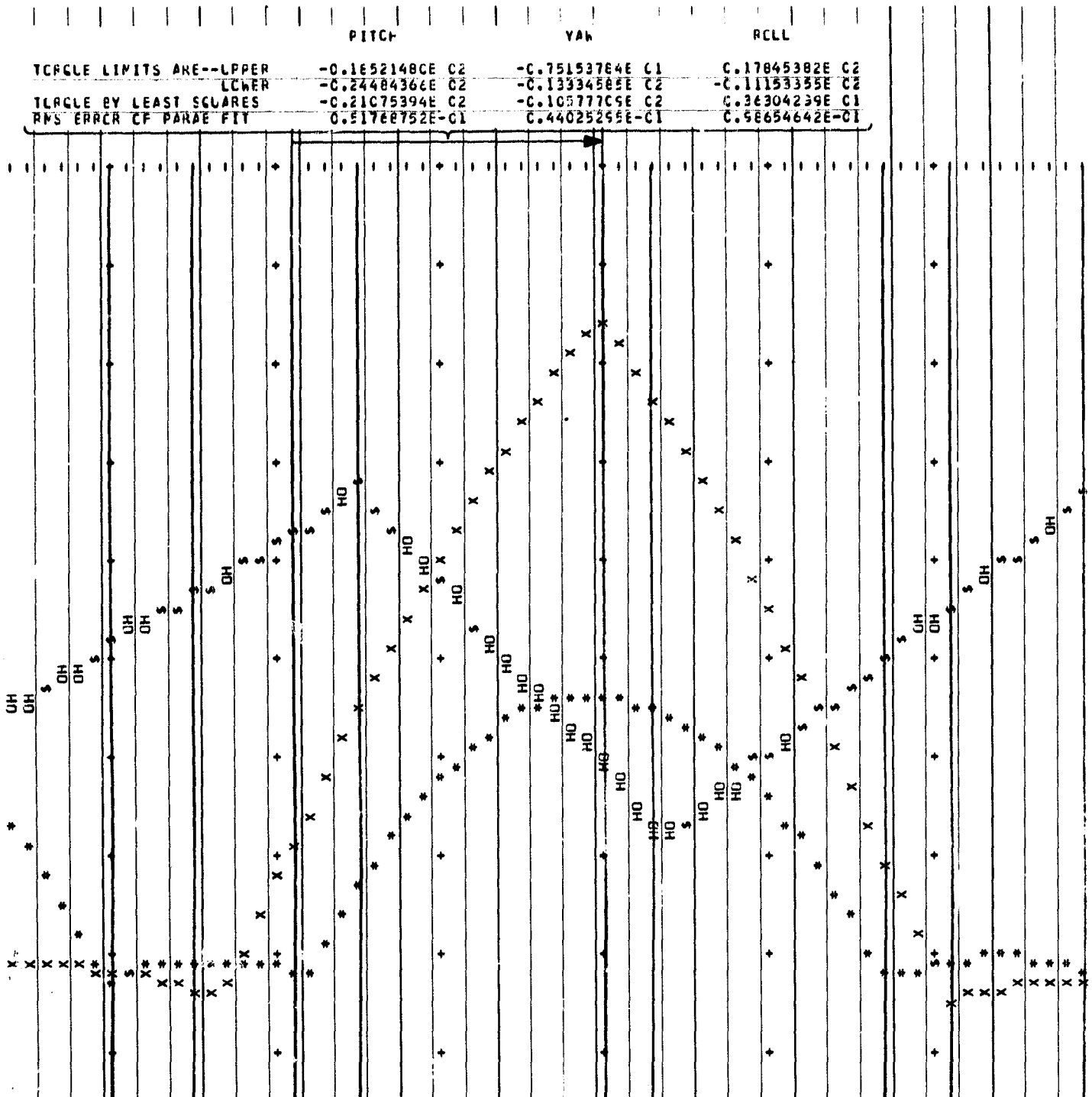
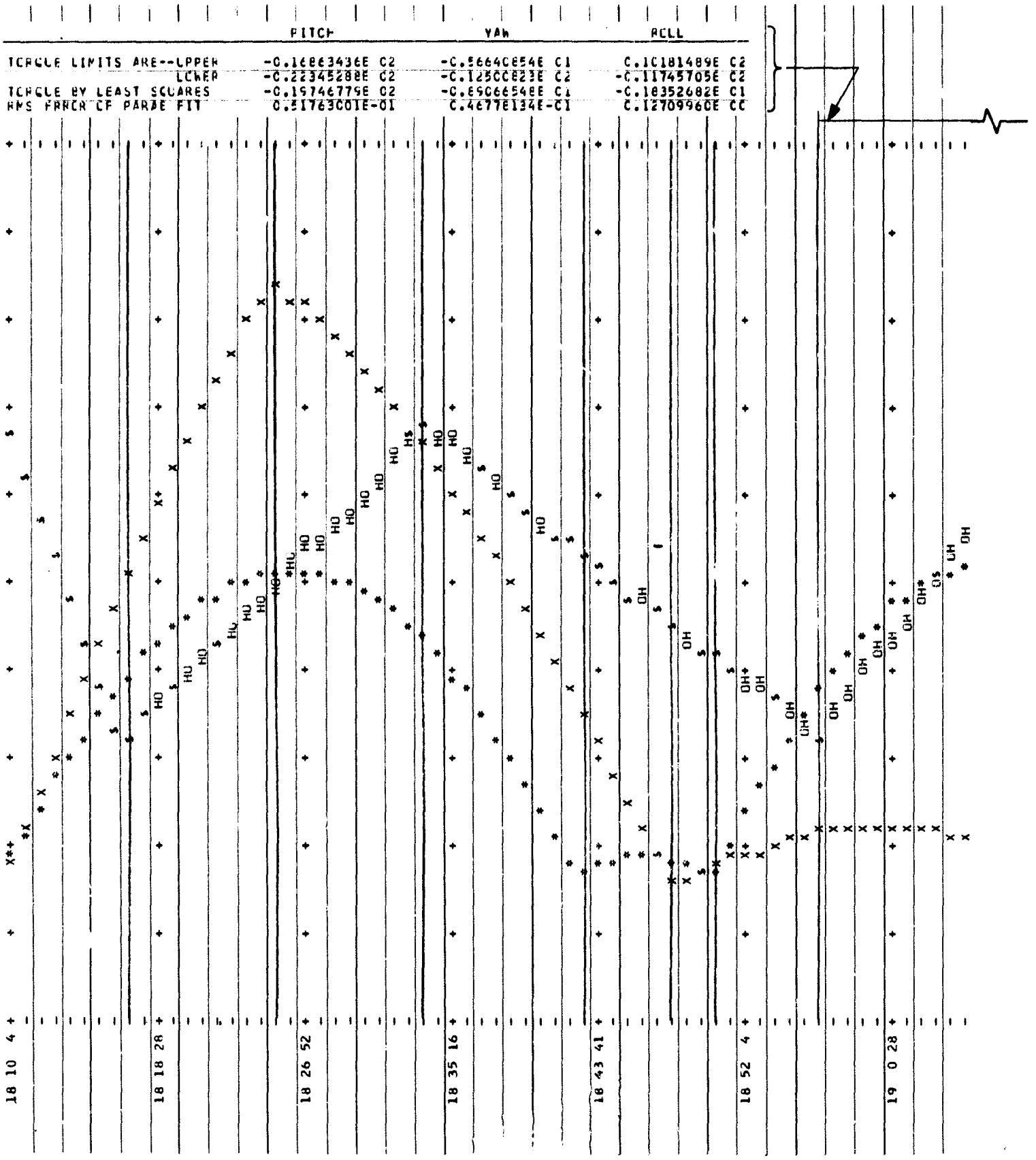
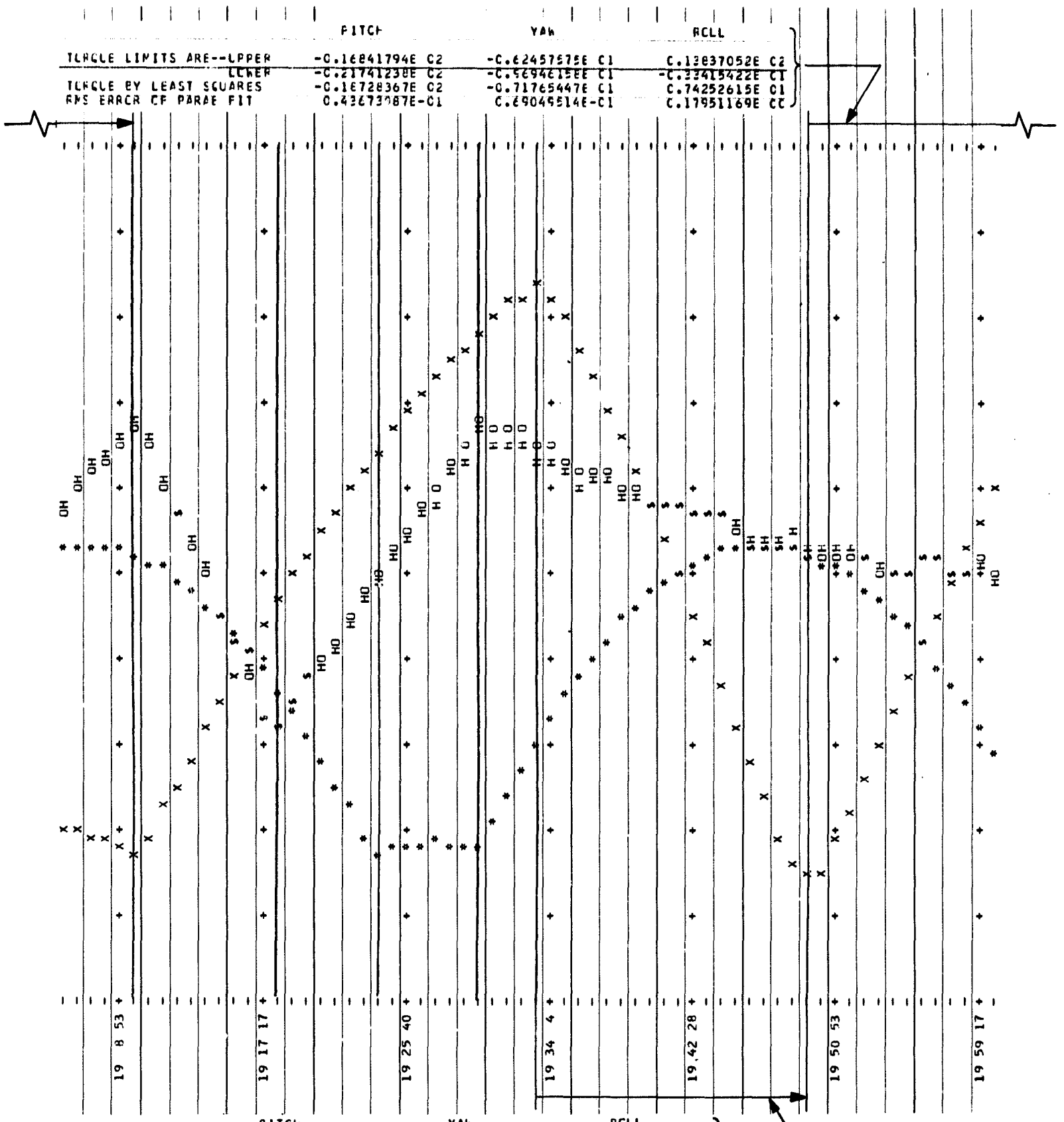
LOWER -C.21575314E 02 -C.5E34E4C7E C1 -C.7EC97874E C1
TOGGLE BY LEAST SQUARES -0.2C417518E 02 -C.759CCC65E C1 C.112418S4E CC
RMS ERROR OF PARAE FIT 0.5785295CE-01 C.51013212E-C1 C.11257966E CC
14 31 40
14 40 4
14 48 28
14 56 51
15 5 15
15 13 40
15 22 4
PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.18929895E 02 -C.7963668CE C1 C.81602842E C1
LOWER -C.2C815923E 02 -0.1C048222E C2 -C.27447283E C1
TOGGLE BY LEAST SQUARES -0.1963C234E 02 -0.E7556781E C1 C.31981627E C1
RMS ERROR OF PARAE FIT 0.61286670E-01 C.4848929CE-C1 C.14931479E CC


PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.1E3CE647E 02 -0.71764722E 01 0.11C85950E 02
LOWER -0.2C497206E 02 -0.69796732E 01 -0.31345026E 01
TOGGLE BY LEAST SQUARES -0.1E9325659E 02 -0.E3E431476 01 0.27C96673E 01
RMS ERROR OF PARAB FIT 0.5E1629466-01 0.58495631E-01 0.14162817E 00
15 30 28
15 38 51
15 47 15
15 55 40
16 4 4
16 12 28


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.1746C069E C2 -C.414475488E C1 C.111746384E C2
LOWER -0.224C9879E C2 -C.1C987654E C2 -C.13C01173E C2
TORQUE BY LEAST SQUARES -0.1C229957E 02 -C.7865CE44E C1 -C.28C09159E CC
RMS ERROR OF PARAB FIT C.5CC47074E-C1 C.553243716-C1 C.168379566 CC
16 20 52
16 29 15
16 37 40
16 46 4
16 54 28
17 2 52
17 11 17

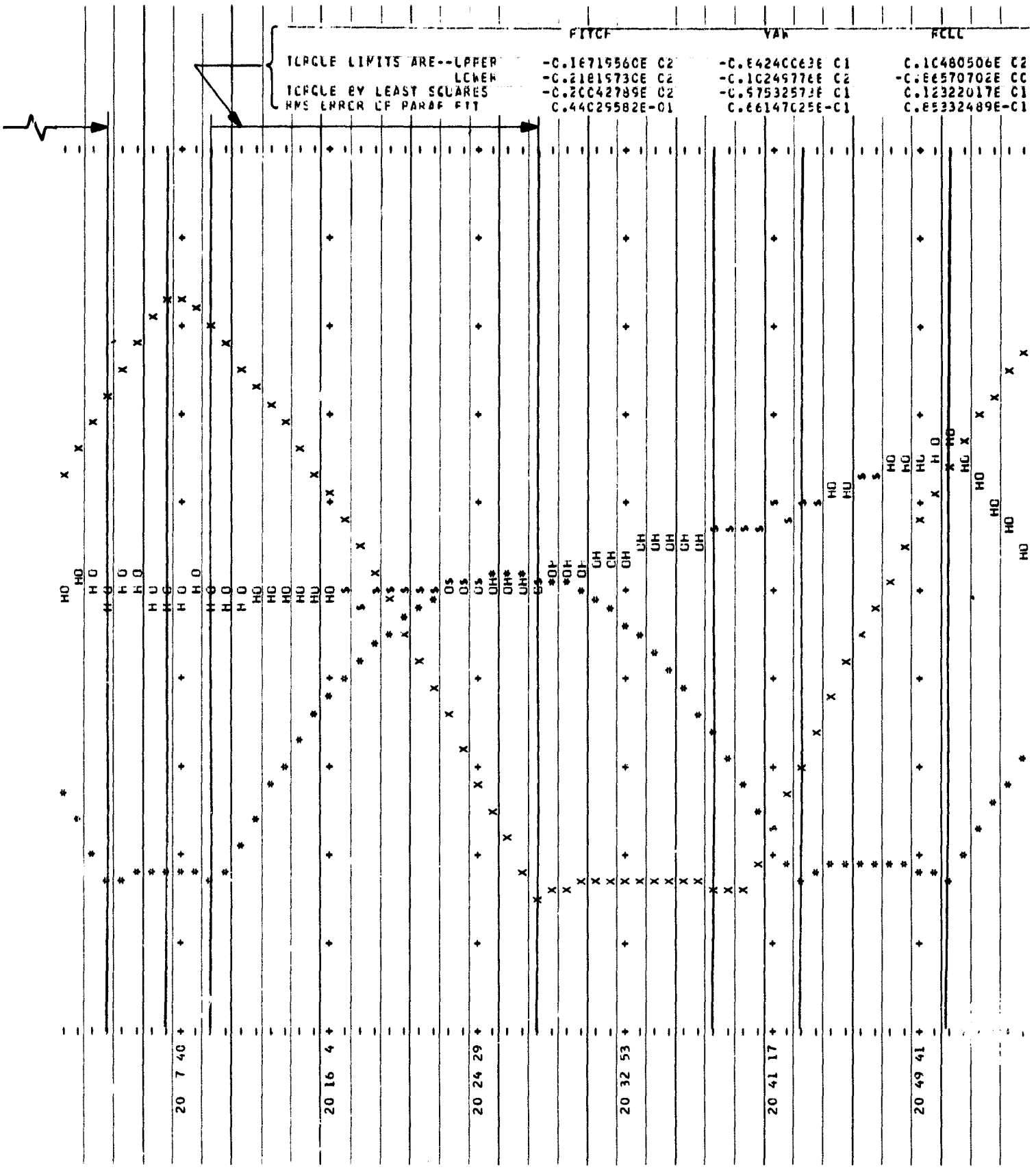

PITCH
YAW
ROLL
TOGGLE LIMITS ARE--UPPER -0.1652148CE C2 -C.751537E4E C1 C.17845382E C2
LOWER -C.24484366E C2 -C.1333450E5E C2 -C.11153355E C2
TOGGLE BY LEAST SQUARES -0.21C75394E C2 -C.105777C9E C2 C.36304239E C1
RMS ERROR OF PARAE FIT 0.51768752E-C1 C.44025265E-C1 C.58654642E-C1
17 19 40
17 28 4
17 36 28
17 44 52
17 53 17
18 1 40

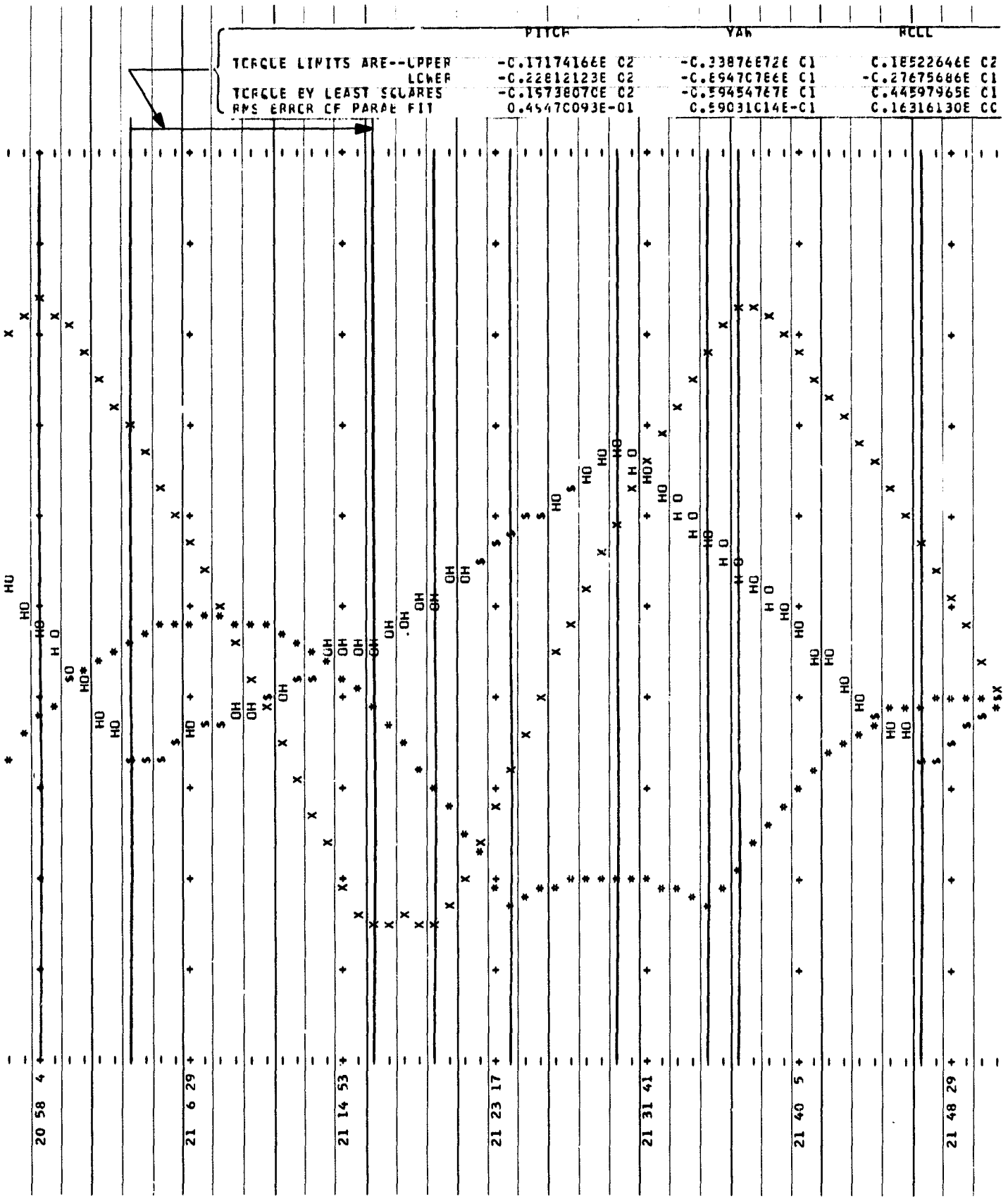

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.16863436E 02 -0.5664CE54E C1 0.1C181489E C2
LOWER -0.22345288E 02 -0.125CCE23E C2 -0.11745705E C2
TORQUE BY LEAST SQUARES -0.19746779E 02 -0.89066548E C1 -0.18352682E C1
RMS ERROR OF PARAB FIT 0.81763C01E-01 0.4677E134E-C1 0.12709960E CC
18 10 4
18 18 28
18 26 52
18 35 16
18 43 41
18 52 4
19 0 28

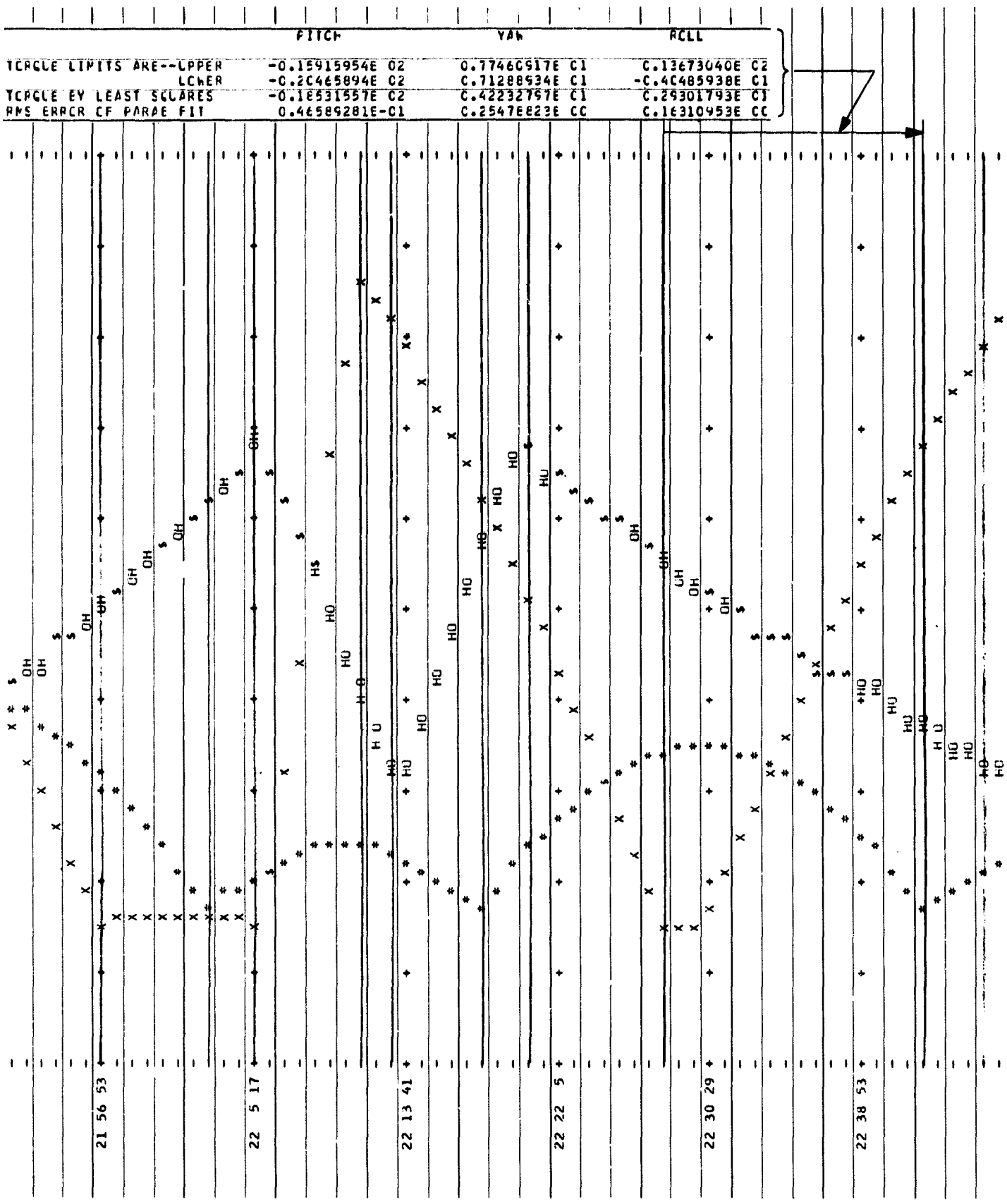


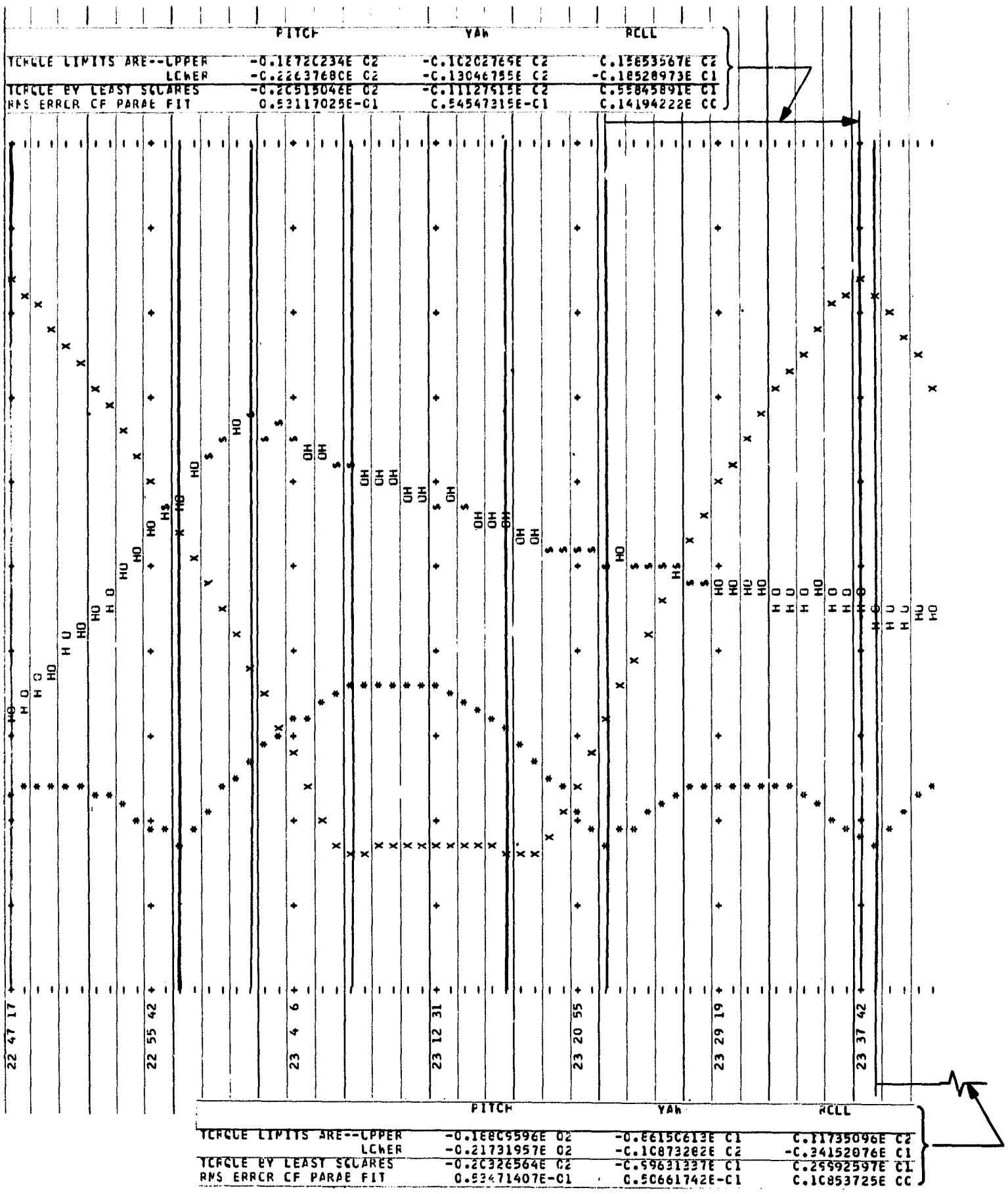
	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.16841794E 02	-0.62457575E 01	0.13837052E 02
LOWER	-0.21741238E 02	-0.56946155E 01	-0.23415422E 01
TORQUE BY LEAST SQUARES	-0.16728367E 02	-0.71765447E 01	0.74252615E 01
RMS ERROR OF PARAE FIT	0.43673087E-01	0.69049514E-01	0.17951169E 00

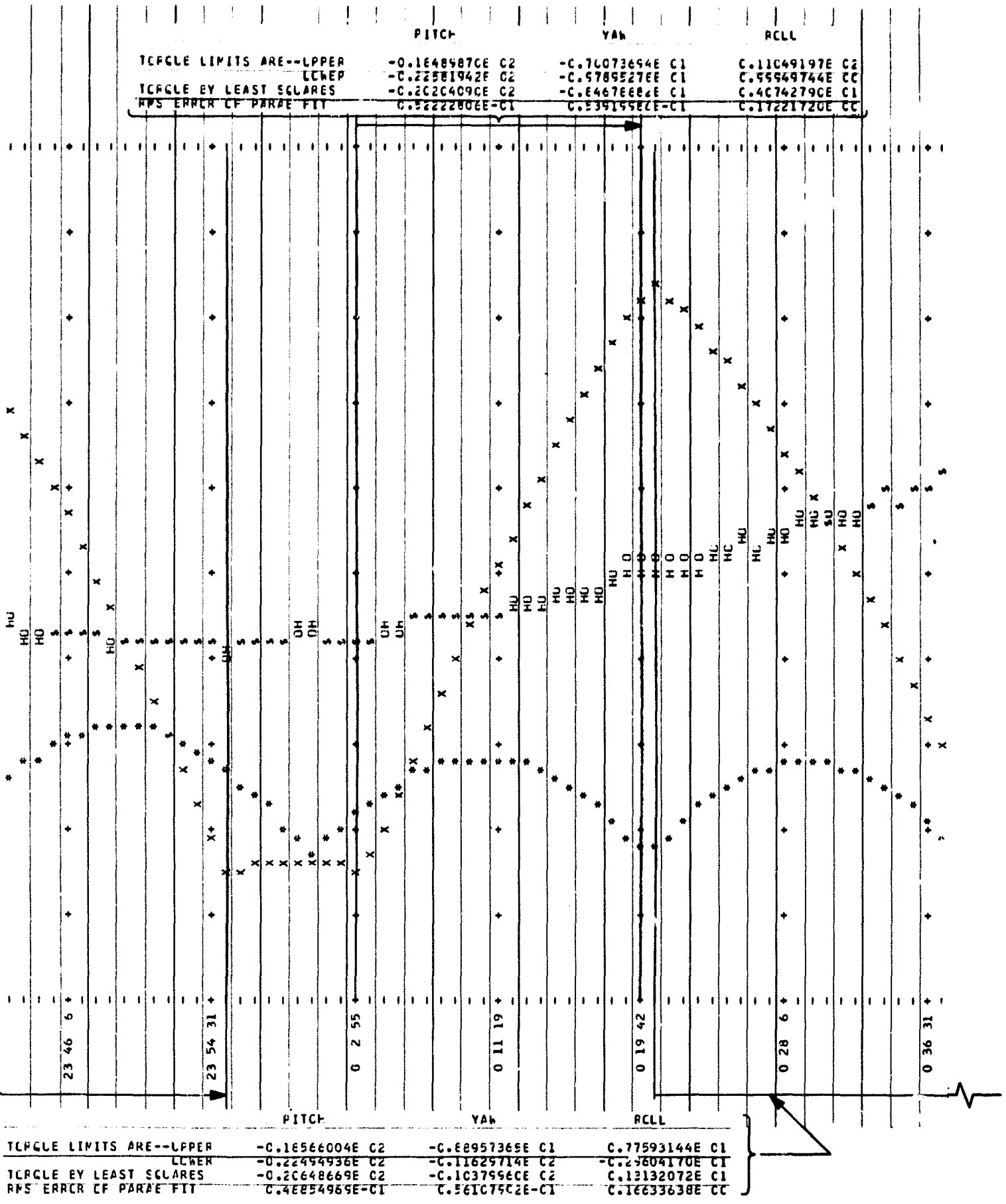
	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.16897014E 02	-0.88837342E 01	0.12501275E 02
LOWER	-0.21961825E 02	-0.52212636E 01	-0.54886289E 00
TORQUE BY LEAST SQUARES	-0.20993693E 02	-0.89377588E 01	0.31986608E 01
RMS ERROR OF PARAE FIT	0.52738680E-01	0.54155933E-01	0.14670877E 00

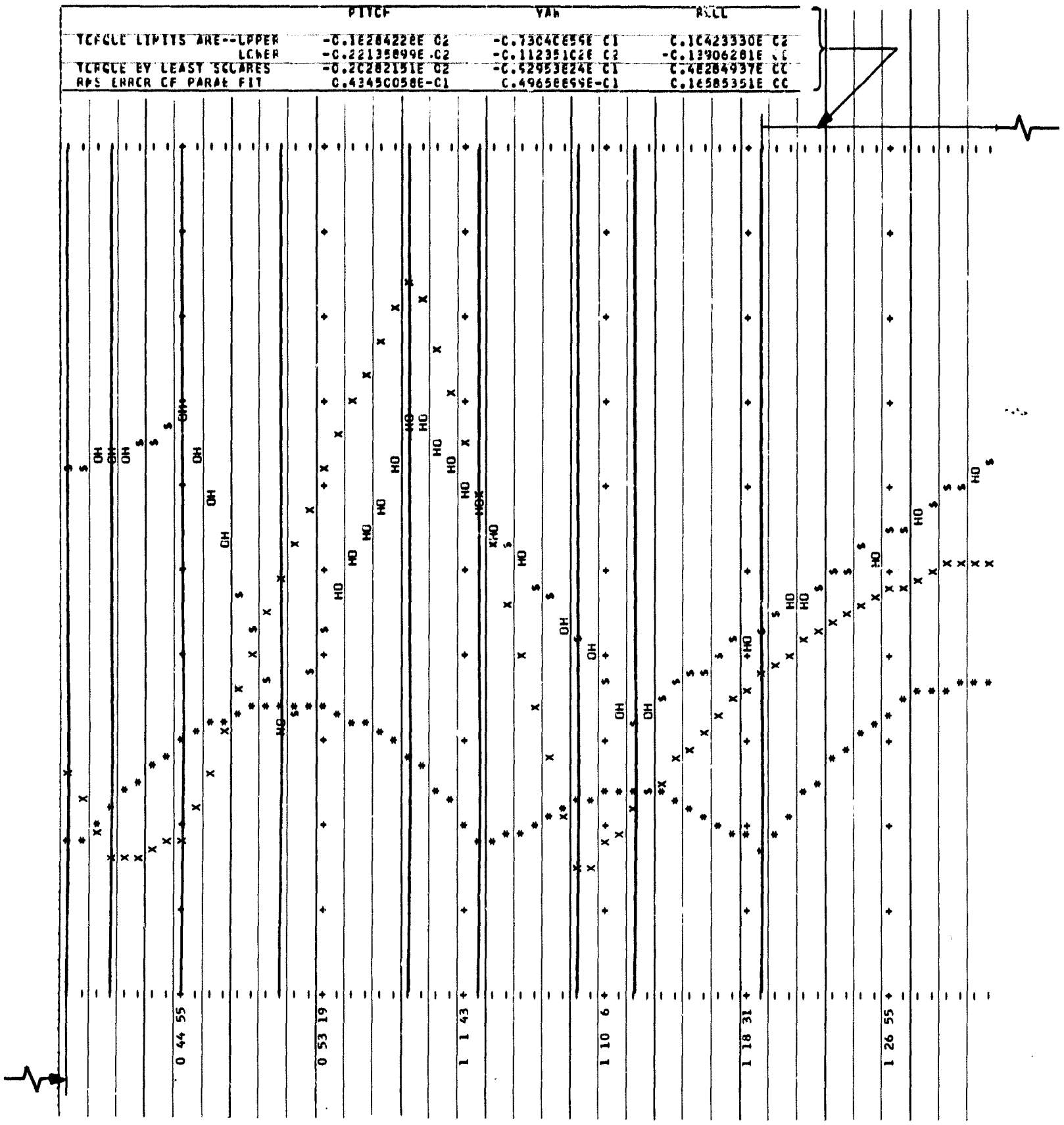

FITCF
VAR
FCLL
TCRCLE LIMITS ARE--UPPER -C.1671956CE C2 -C.E424CC63E C1 C.1C480506E C2
LCWER -C.2101573CE C2 -C.1C249776E C2 -C.6E570702E CC
TCRCLE BY LEAST SCUARES -C.2CC42789E C2 -C.57532573E C1 C.12322017E C1
RMS ERROR OF PARAB FIT C.44C29582E-01 C.66147C25E-C1 C.85332489E-C1


PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -C.17174166E C2 -C.33876E72E C1 C.18522646E C2
LOWER -C.22812123E C2 -C.E947C7E6E C1 -C.27675686E C1
TORQUE BY LEAST SQUARES -C.1573807CE C2 -C.594547E7E C1 C.44597965E C1
RMS ERROR OF PARAB FIT 0.4547C093E-01 C.59031C14E-C1 C.16316130E CC

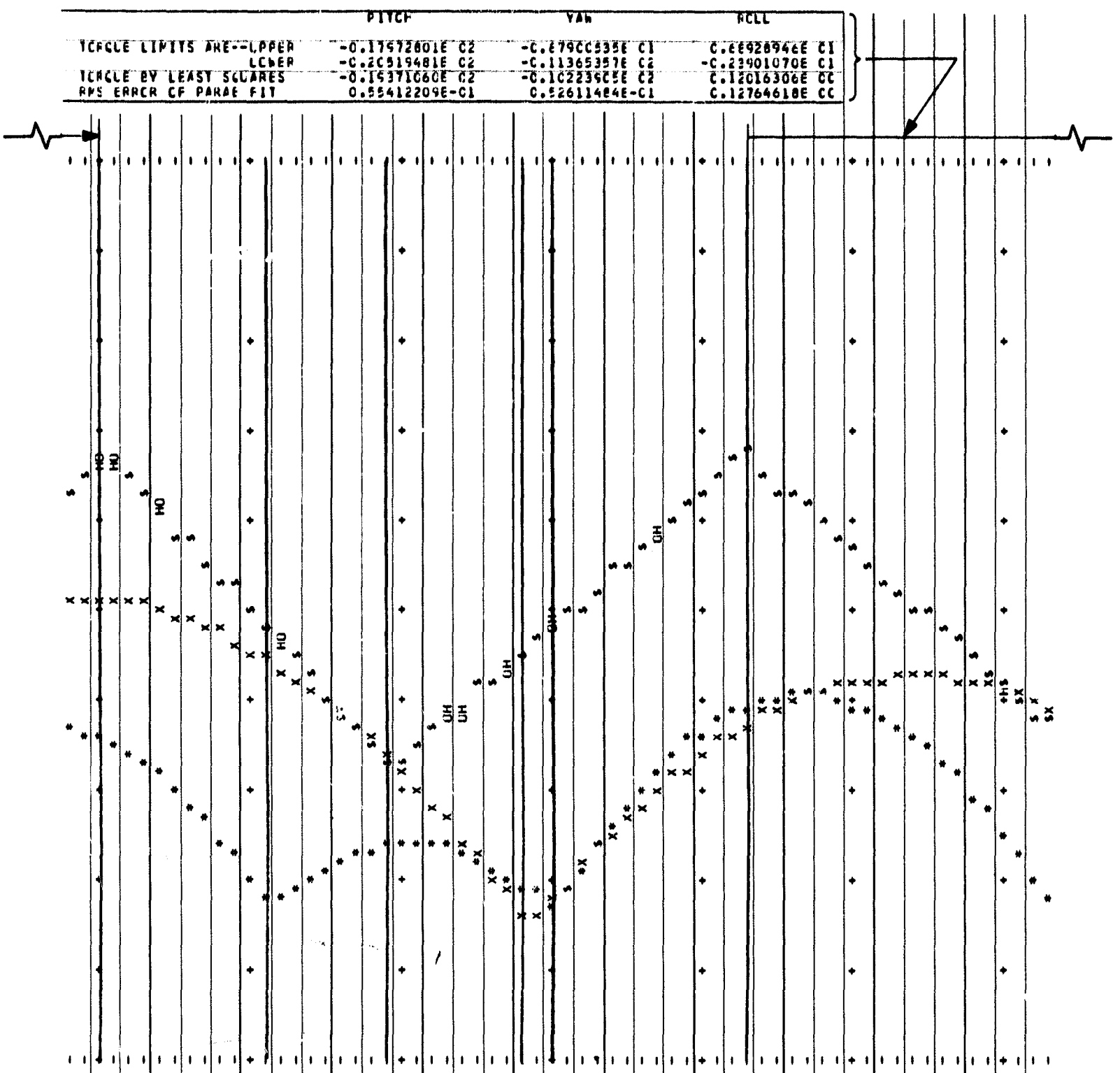

PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.15915954E 02 0.77460917E 01 0.13673040E 02
LOWER -0.20465894E 02 0.71288934E 01 -0.40485938E 01
TORQUE BY LEAST SQUARES -0.18531557E 02 0.42232767E 01 0.29301793E 01
RMS ERROR OF PARAB FIT 0.46589281E-01 0.25478823E 00 0.16310953E 00
21 56 53
22 5 17
22 13 41
22 22 5
22 30 29
22 38 53

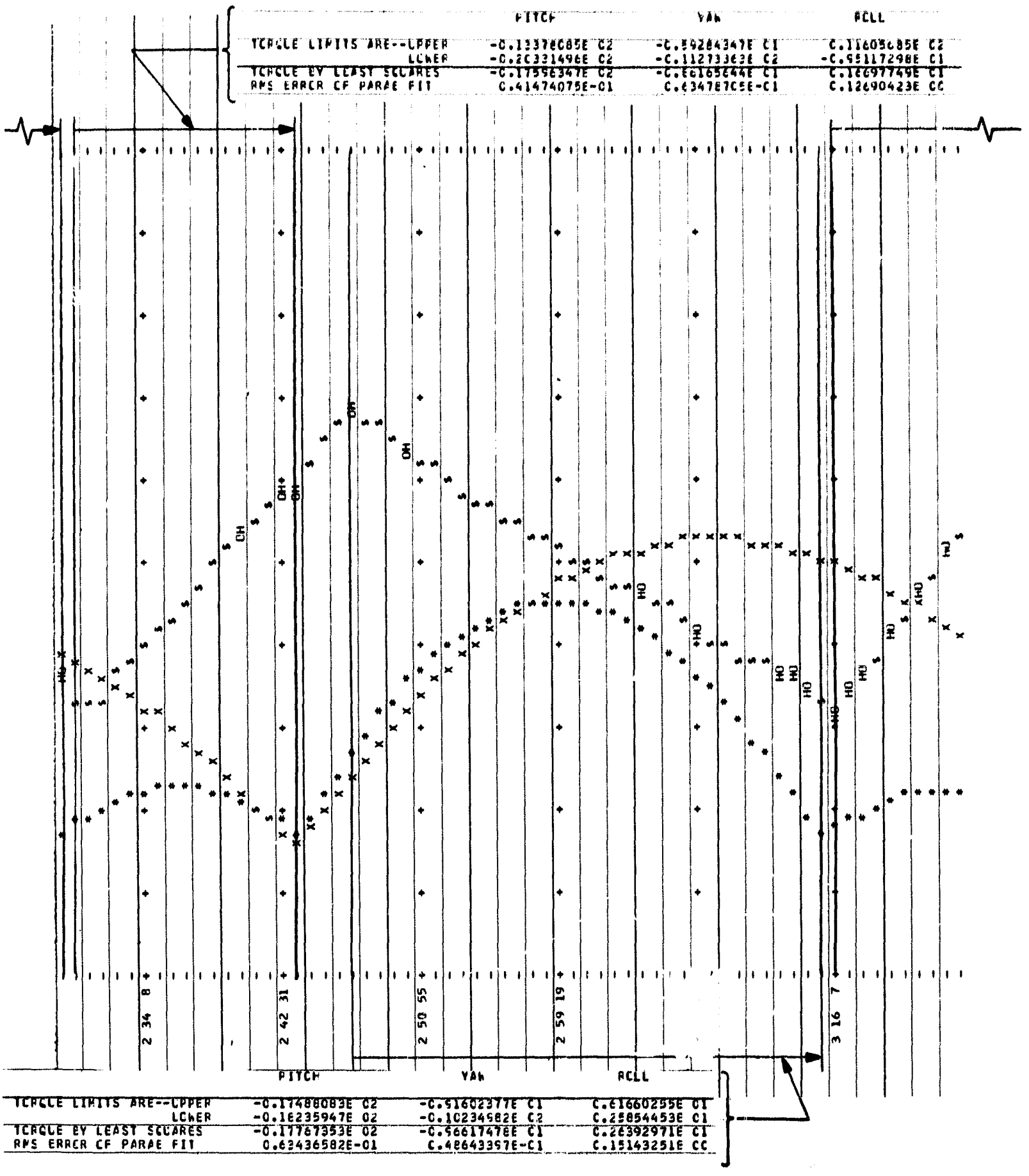

PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.1E72C234E 02 -C.1C2C2769E C2 C.15853567E C2
LOWER -C.2263768CE 02 -C.13046755E C2 -C.18528973E C1
TORQUE BY LEAST SQUARES -0.2C915046E 02 -C.11127515E C2 C.5584589IE C1
RMS ERROR OF PARAB FIT 0.53117025E-01 C.54547315E-01 C.14194222E CC
22 47 17
22 55 42
23 4 6
23 12 31
23 20 55
23 29 19
23 37 42
PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.1E8C9596E 02 -0.8615C613E C1 C.11735096E C2
LOWER -0.21731957E 02 -C.1C873202E C2 -C.34152076E C1
TORQUE BY LEAST SQUARES -0.2C3226564E 02 -C.596313J7E C1 C.255925J7E C1
RMS ERROR OF PARAB FIT 0.53471407E-01 C.506617J2E-C1 C.1C853725E CC

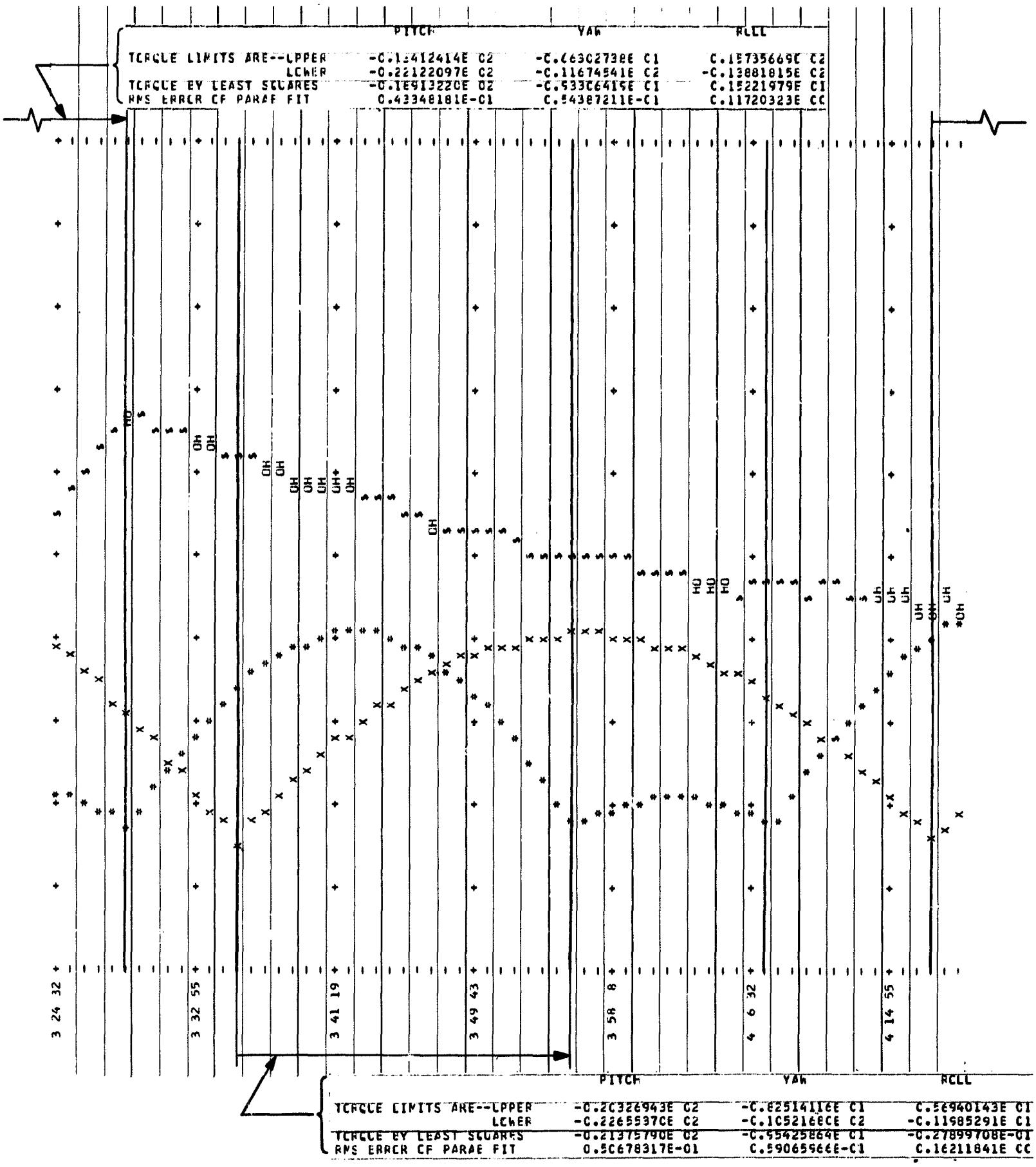

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.1E48987CE C2 -C.7C073694E C1 C.11C49197E C2
LOWER -C.225E1942E C2 -C.57895227EE C1 C.555497 44E CC
TORQUE BY LEAST SQUARES -C.2C2C409CE C2 -C.E467EE82E C1 C.4C74279CE C1
RMS ERROR OF PARAB FIT C.5222280EE-C1 C.E391555E2E-C1 C.17221720E CC
23 46 6
23 54 31
0 2 55
0 11 19
0 19 42
0 28 6
0 36 31
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -C.165660C4E C2 -C.E8957365E C1 C.77593144E C1
LOWER -0.224944936E C2 -C.116297 14E C2 -C.2960417CE C1
TORQUE BY LEAST SQUARES -0.2C648669E C2 -C.1C37596CE C2 C.131320 72E C1
RMS ERROR OF PARAB FIT C.4E854969E-C1 C.561C75C2E-C1 C.166336 38E CC

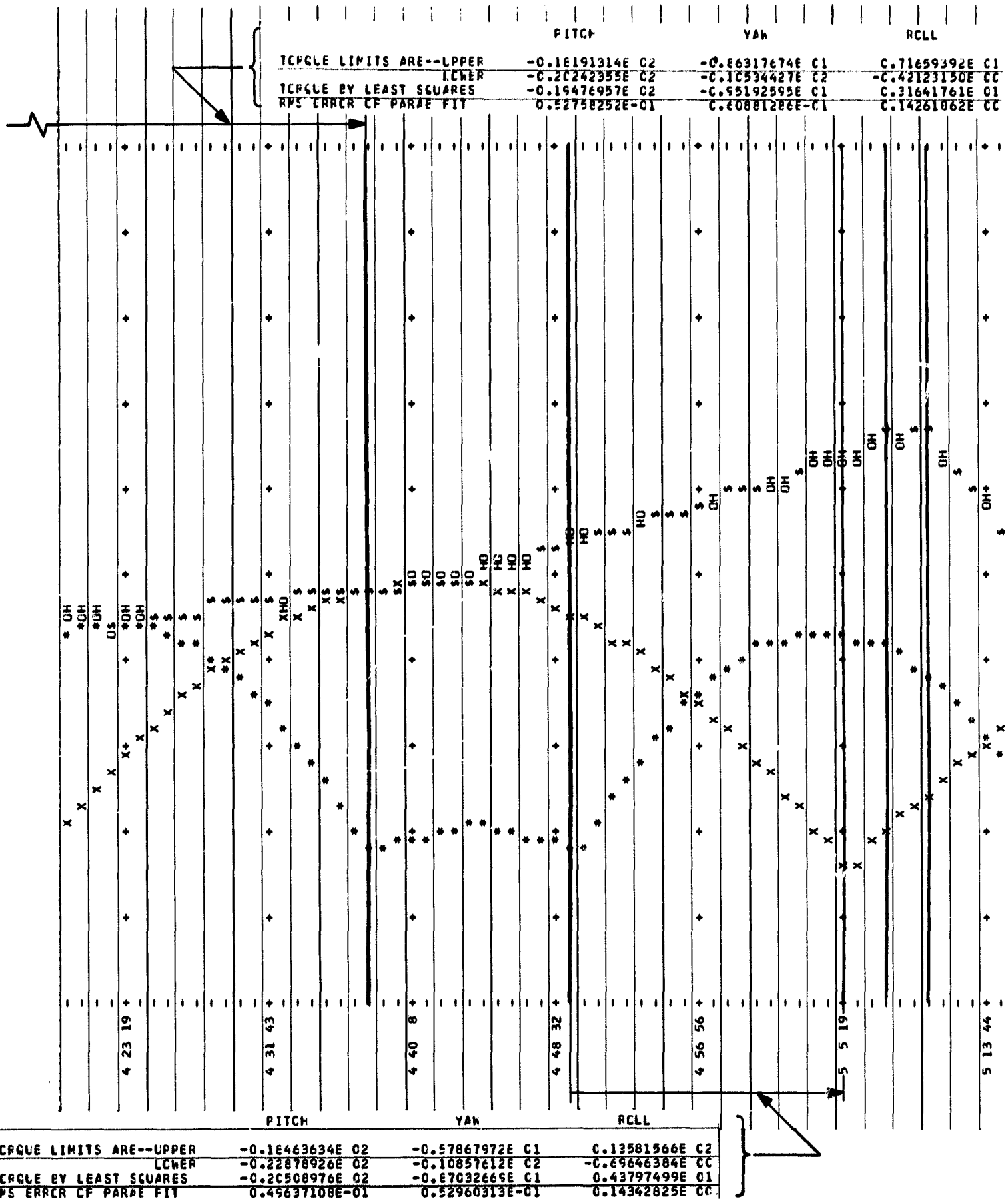

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.1E2842228E 02 -0.73C4C6E5E C1 0.1C4233308 C2
LOWER -0.22135899E 02 -0.112351C2E C2 -0.139062B1E 00
TORQUE BY LEAST SQUARES -0.2C282151E 02 -0.52953E24E C1 0.4E284937E CC
RMS ERROR OF PARAB FIT 0.4345C058E-01 0.4965BE65E-01 0.16585351E CC
0 44 55
0 53 19
1 1 43
1 10 6
1 18 31
1 26 55

	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	-0.17972801E 02	-0.279CC535E 01	0.EE928946E 01
LOWER	-0.2C519481E 02	-0.11365357E 02	-0.23901070E 01
TORQUE BY LEAST SQUARES	-0.19371C60E 02	-0.1C2236C5E 02	0.12016306E 00
RMS ERROR OF PARAB FIT	0.55412209E-01	0.52611404E-01	0.12764618E 00

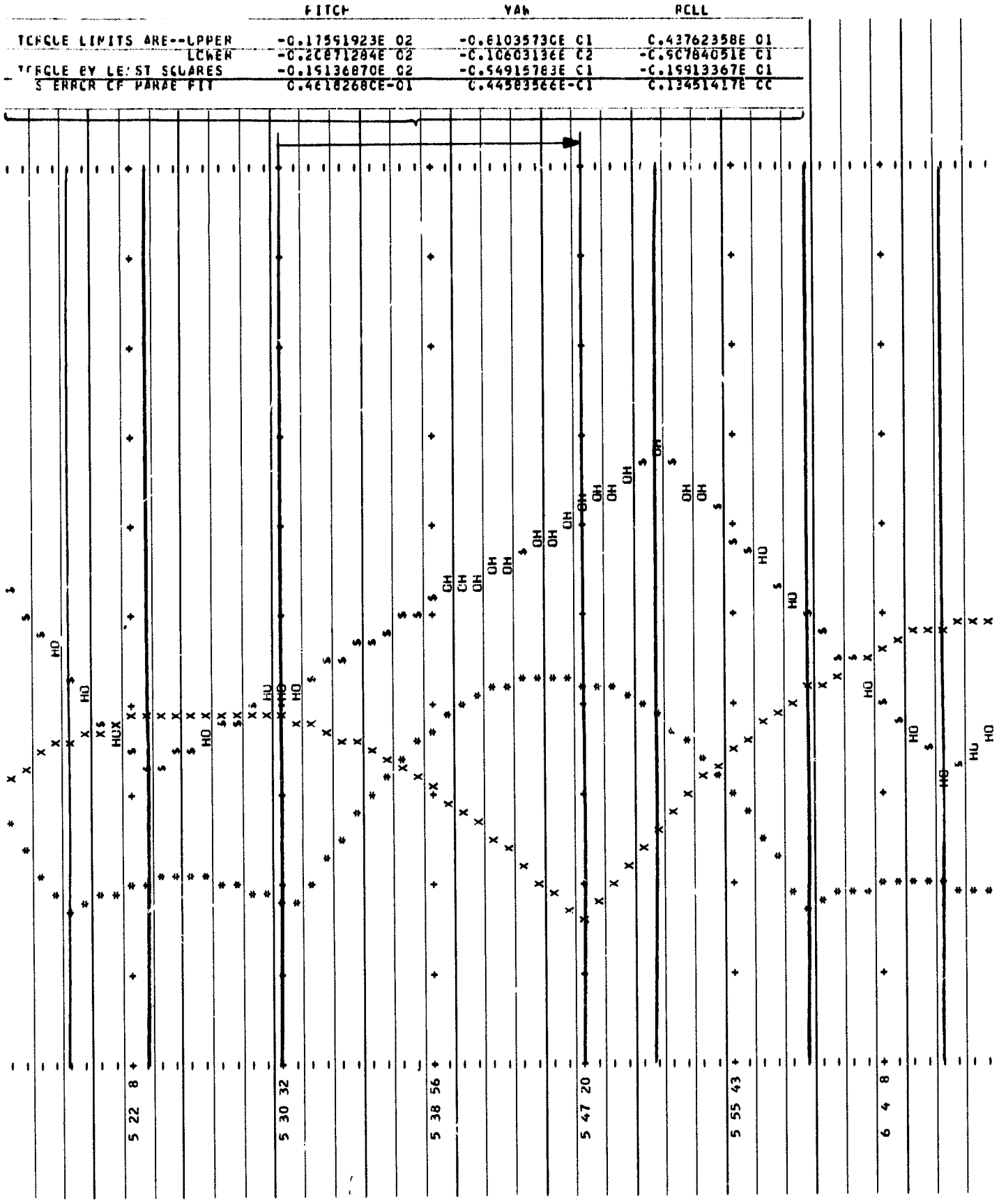


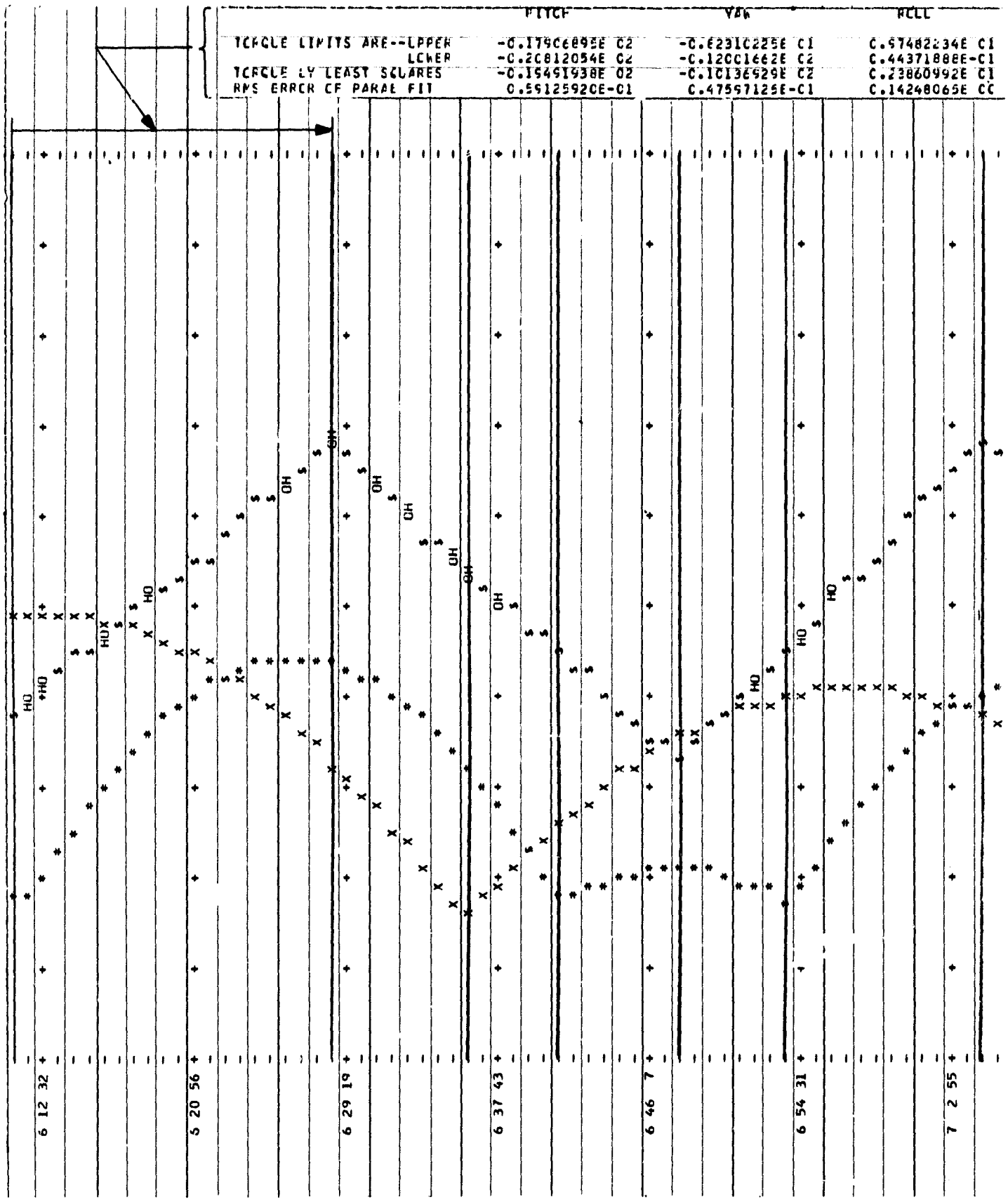

PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.13378085E 02 -0.59284347E 01 0.11603685E 02
LOWER -0.20331496E 02 -0.11273363E 02 -0.99117298E 01
TORQUE BY LEAST SQUARES -0.17595347E 02 -0.86165644E 01 0.10697749E 01
RMS ERROR OF PARAB FIT 0.41474075E-01 0.63478705E-01 0.12690423E 00
2 34 8
2 42 31
2 50 55
2 59 19
3 16 7
PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.17488083E 02 -0.91602377E 01 0.61660255E 01
LOWER -0.18235947E 02 -0.10234582E 02 0.25854453E 01
TORQUE BY LEAST SQUARES -0.17767353E 02 -0.96617478E 01 0.26392971E 01
RMS ERROR OF PARAB FIT 0.62436582E-01 0.48643397E-01 0.15143251E 00


PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -C.13412414E C2 -C.663027388 C1 C.15735669E C2
LOWER -0.22122097E C2 -C.116745418 C2 -C.13881815E C2
TORQUE BY LEAST SQUARES -0.16913220E 02 -C.533C6415E C1 C.15221979E C1
RMS ERROR OF PARAB FIT 0.43348181E-01 C.54387211E-C1 C.11720323E CC
3 24 32
3 32 55
3 41 19
3 49 43
3 58 8
4 6 32
4 14 55
PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.2C326943E C2 -C.825141I6E C1 C.569401436 C1
LOWER -C.2265537CE C2 -C.1C52168CE C2 -C.11985291E C1
TORQUE BY LEAST SQUARES -0.21375790E C2 -C.554258G4E C1 -C.27899708E-01
RMS ERROR OF PARAB FIT 0.5C678317E-01 C.590659G6E-C1 C.16211841E CC


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.18191314E 02 -0.863176746 01 0.71659392E 01
LOWER -0.2C242355E 02 -0.1C534427E 02 -0.42123150E 00
TORQUE BY LEAST SQUARES -0.19476957E 02 -0.951925956 01 0.31641761E 01
RMS ERROR OF PARAB FIT 0.52758252E-01 0.608812866-01 0.14261862E 00
4 23 19
4 31 43
4 40 8
4 48 32
4 56 56
5 5 19
5 13 44
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.1E463634E 02 -0.578679726 01 0.13581566E 02
LOWER -0.22878926E 02 -0.10857612E 02 -0.696466846 00
TORQUE BY LEAST SQUARES -0.2C508976E 02 -0.870326696 01 0.43797499E 01
RMS ERROR OF PARAB FIT 0.49637108E-01 0.529603136-01 0.14342825E 00

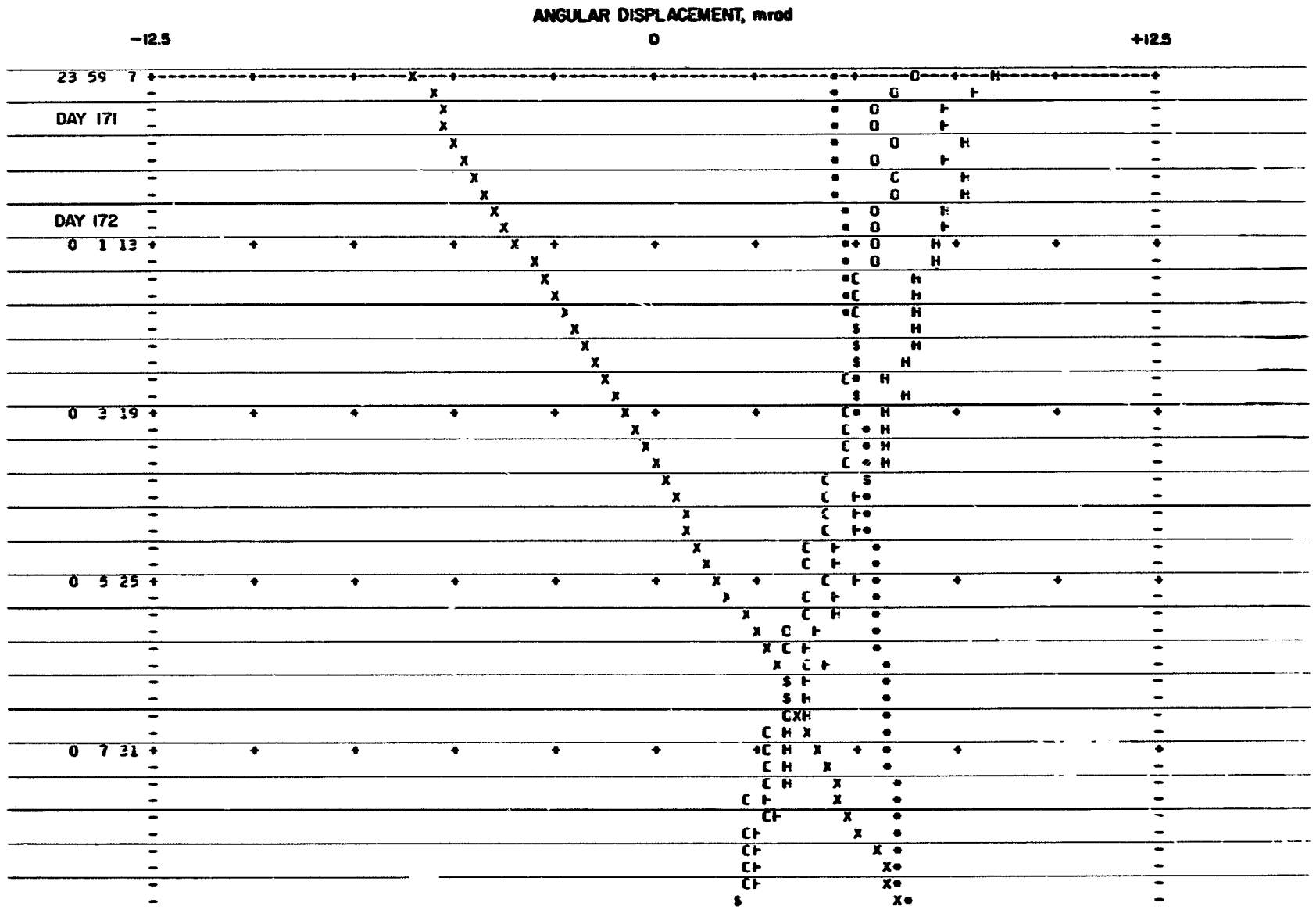
	PITCH	YAW	ROLL
TOGGLE LIMITS ARE--UPPER	-0.17591923E 02	-0.8103573CE C1	C.437623588E 01
LOWER	-0.2C871284E 02	-C.10603136E C2	-C.9C784051E C1
TOGGLE BY LEAST SQUARES	-0.19136870E 02	-C.549157B3E C1	-C.199133678 C1
S ERROR OF PARAB FIT	C.4618268CE-01	C.445835C6E-C1	C.134514178 CC

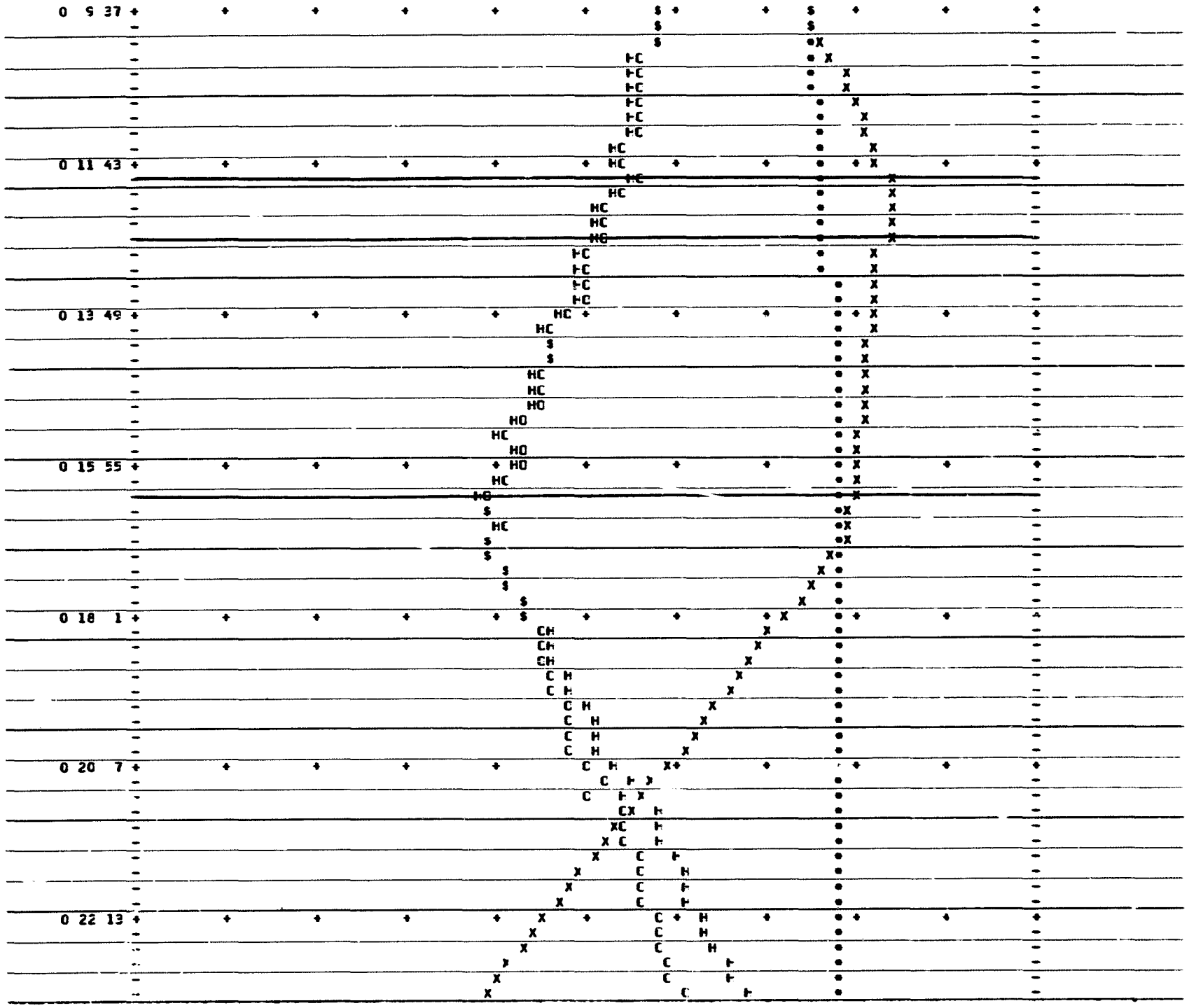


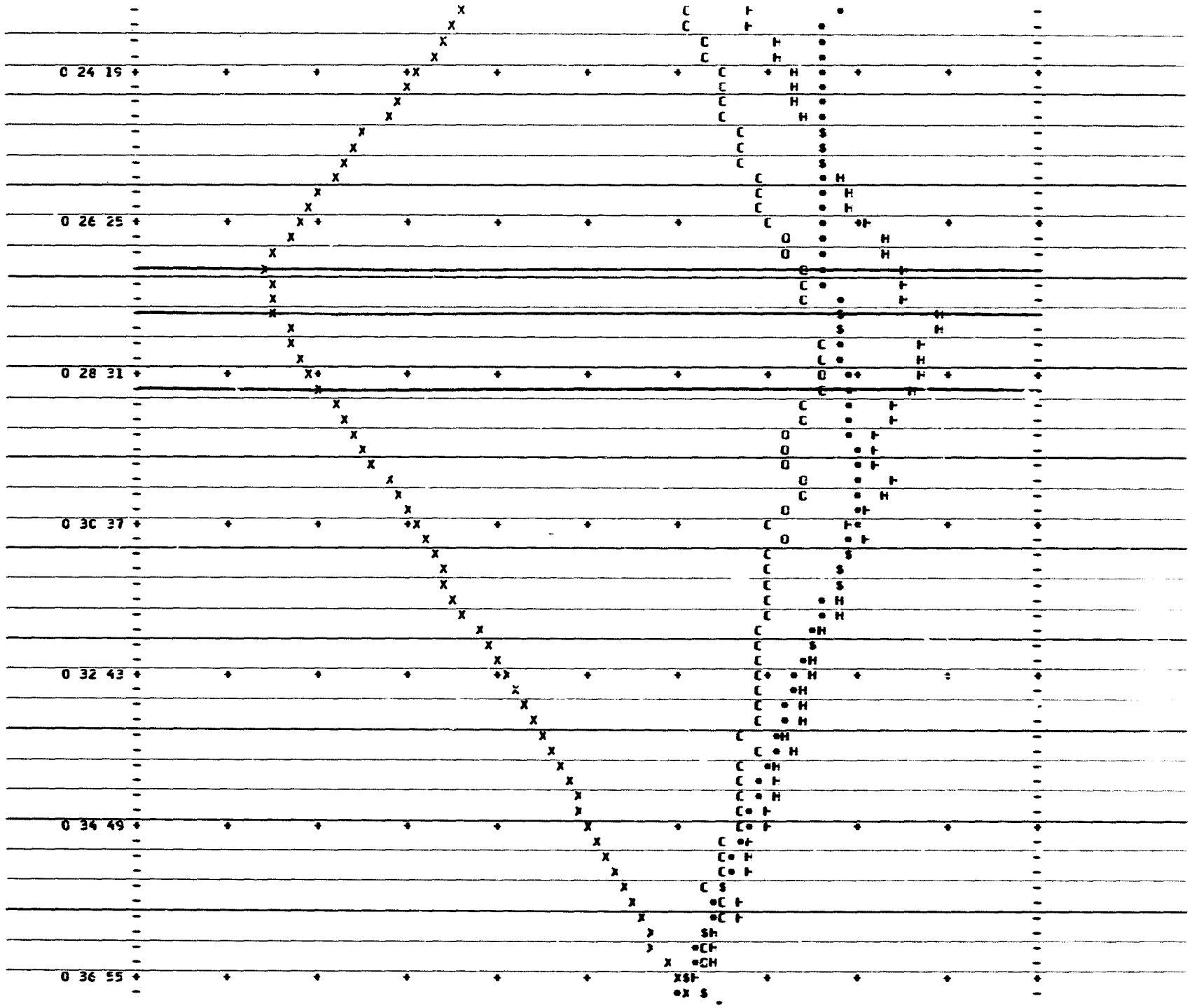

PITCH YAW ROLL
TORQUE LIMITS ARE--UPPER -0.1796E02 -0.6231E01 0.6748E01
LOWER -0.2081E02 -0.1200E02 0.4437E00
TORQUE BY LEAST SQUARES -0.1949E02 -0.1013E02 0.2386E01
RMS ERROR OF PARAB FIT 0.5912E00 0.4755E00 0.1424E00
6 12 32
5 20 56
6 29 19
6 37 43
6 46 7
6 54 31
7 2 55

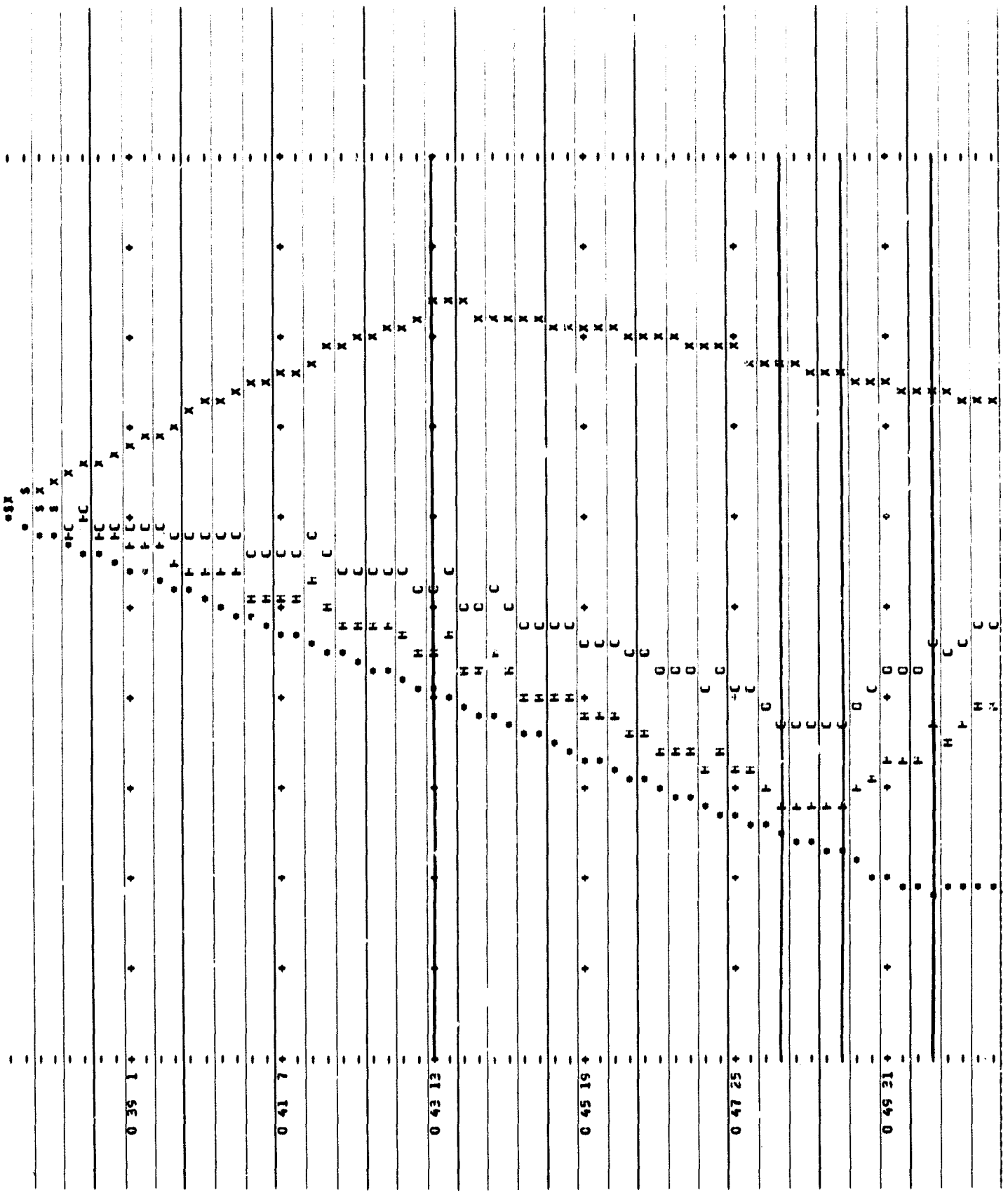
Plot IV

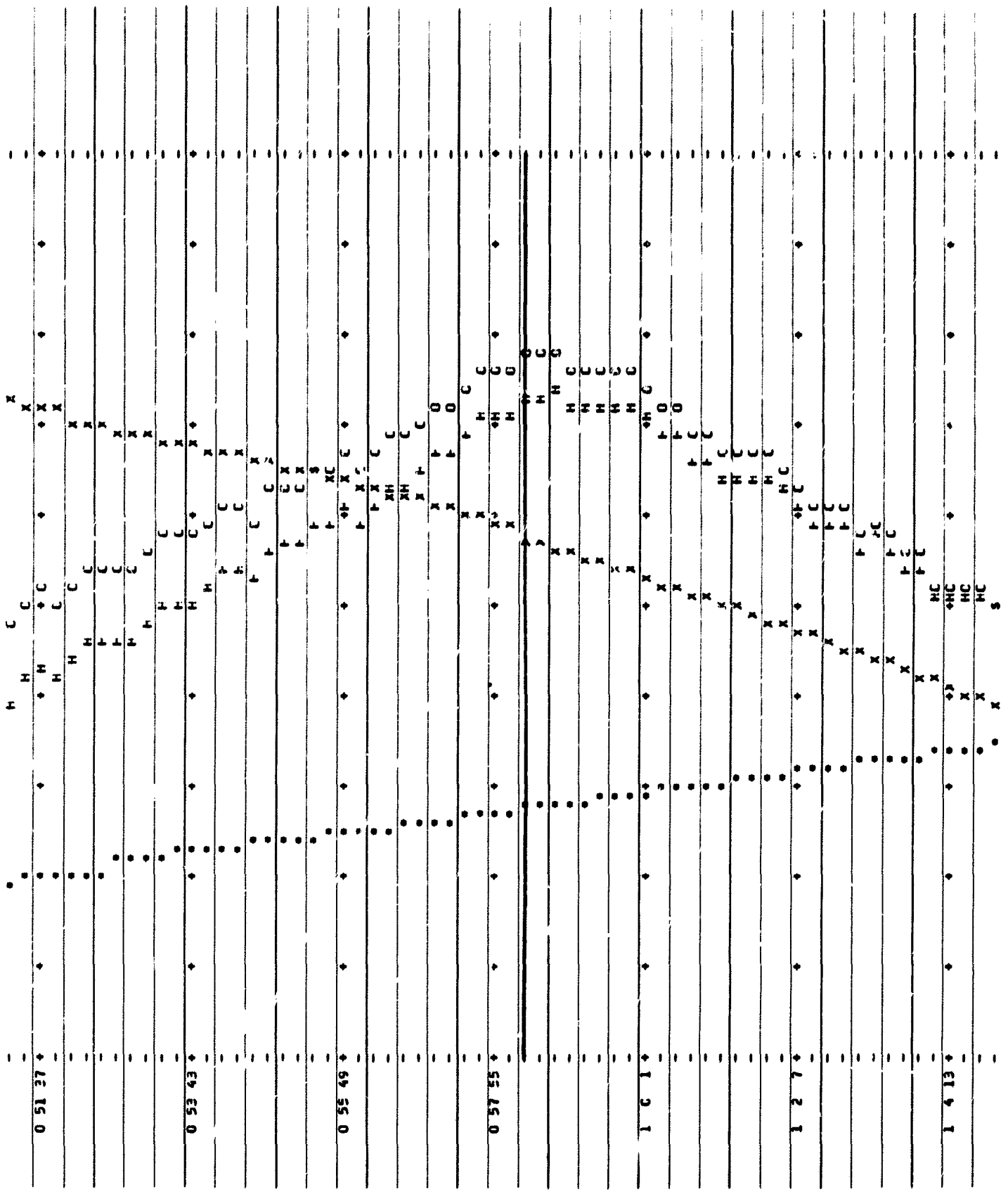
Reduced position data and torque limits vs time, *Mariner V*, 33⅓ bits/s, days 171–173, 1967

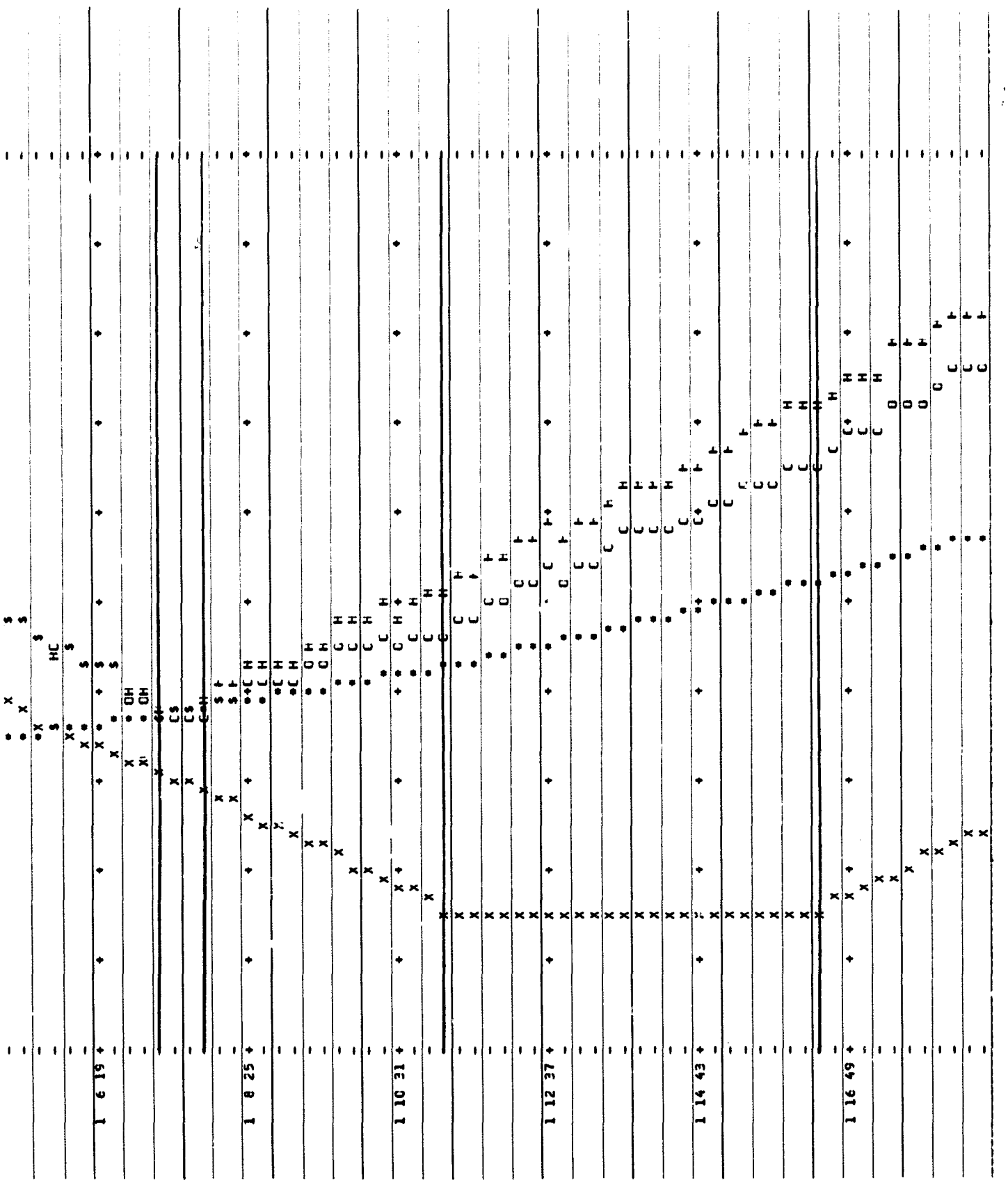

ANGULAR DISPLACEMENT, mrad
−12.5
0
+12.5
23 59 7
DAY 171
DAY 172
0 1 13
0 3 19
0 5 25
0 7 31

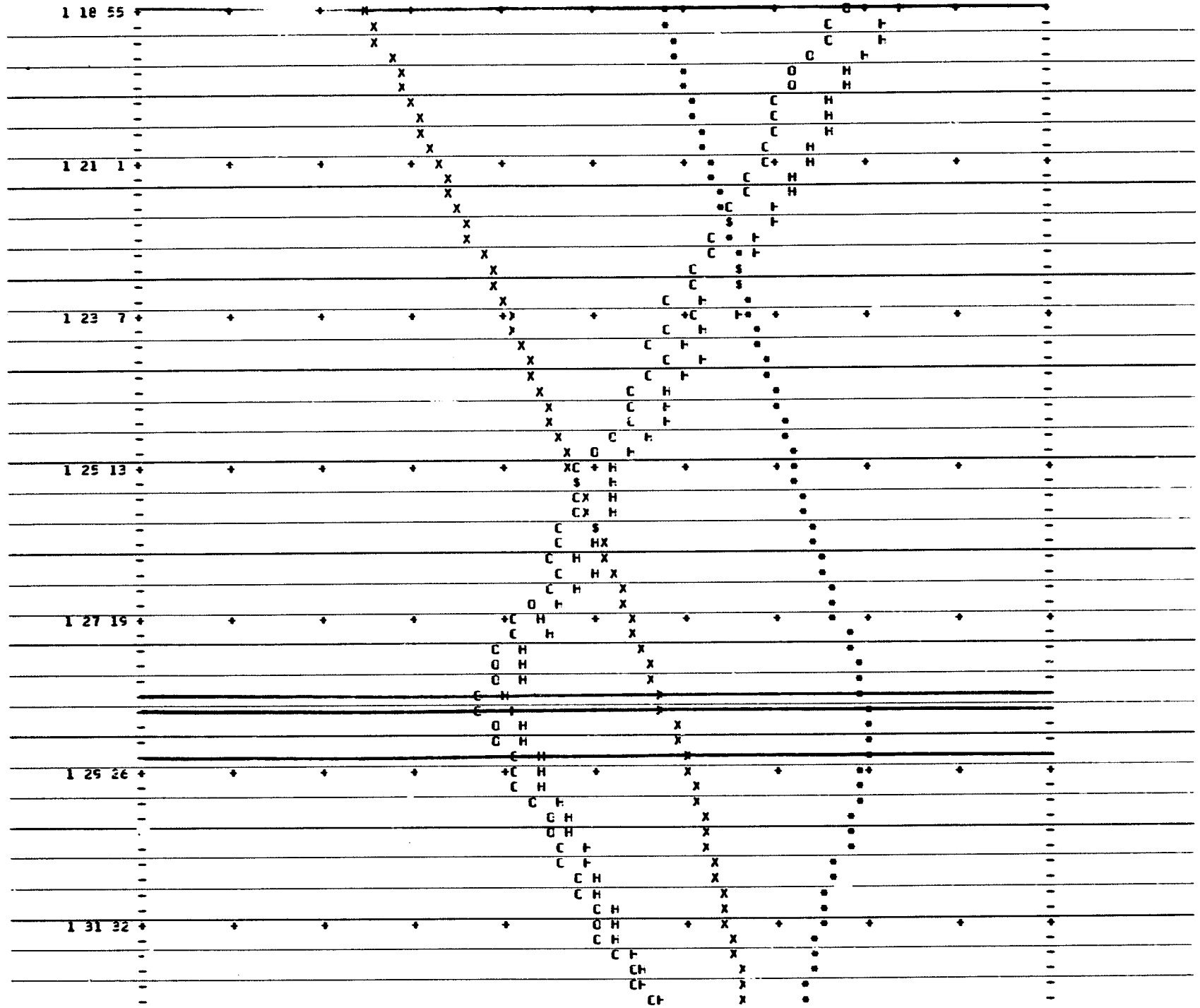

0 5 37
0 11 43
0 13 49
0 15 55
0 18 1
0 20 7
0 22 13

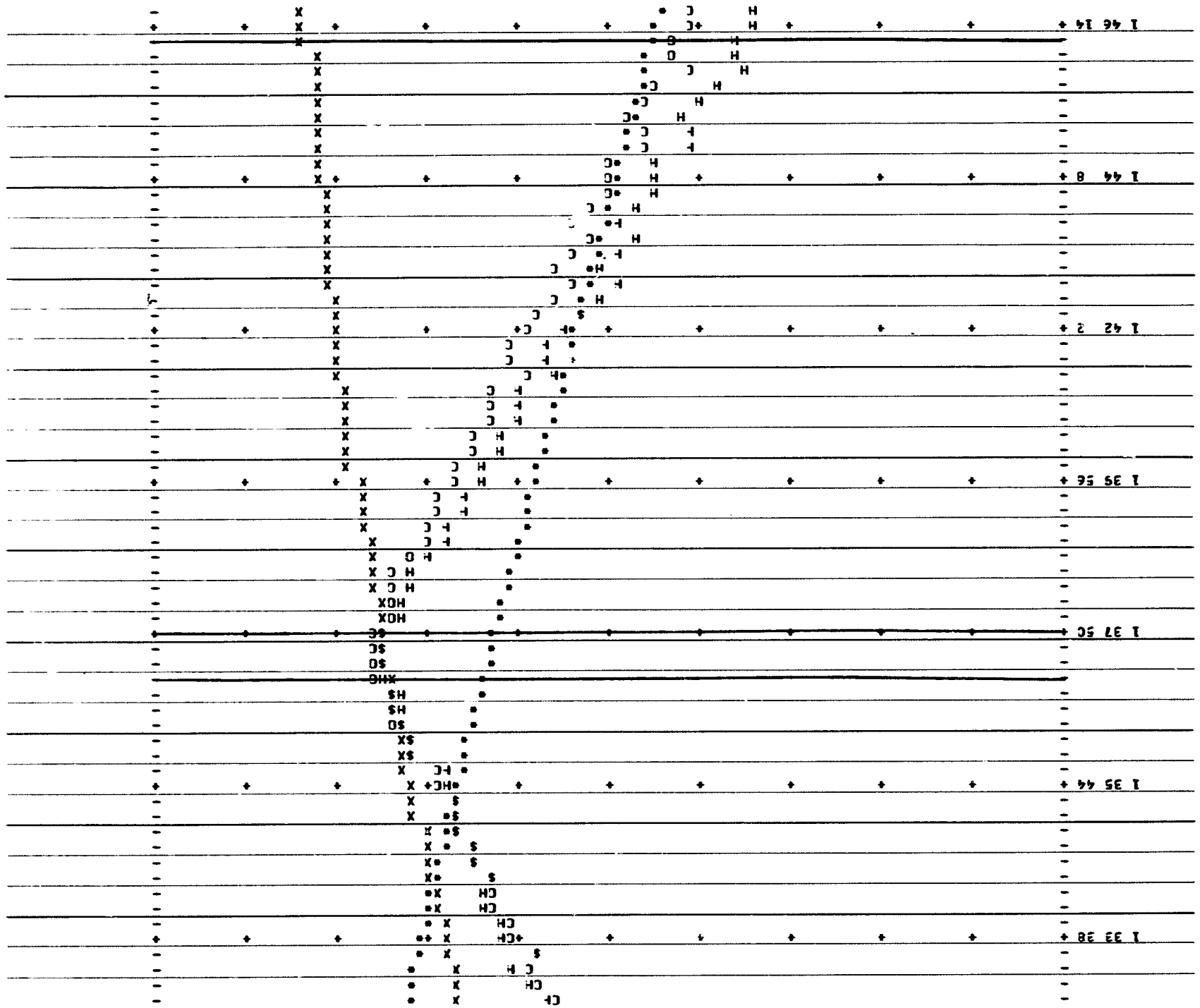

0 24 19
0 26 25
0 28 31
0 30 37
0 32 43
0 34 49
0 36 55

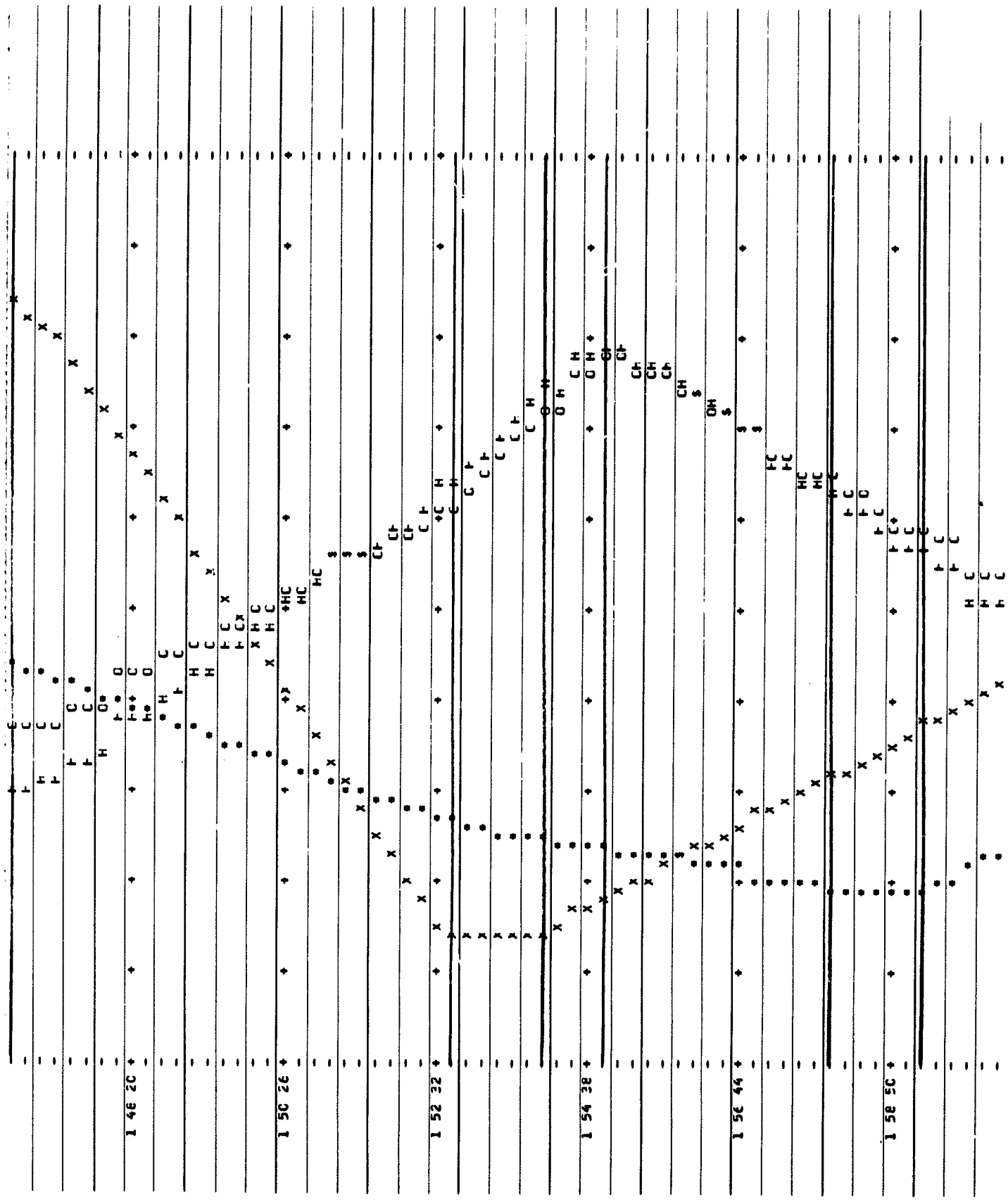

0 35 1
0 41 7
0 43 13
0 45 19
0 47 25
0 49 21

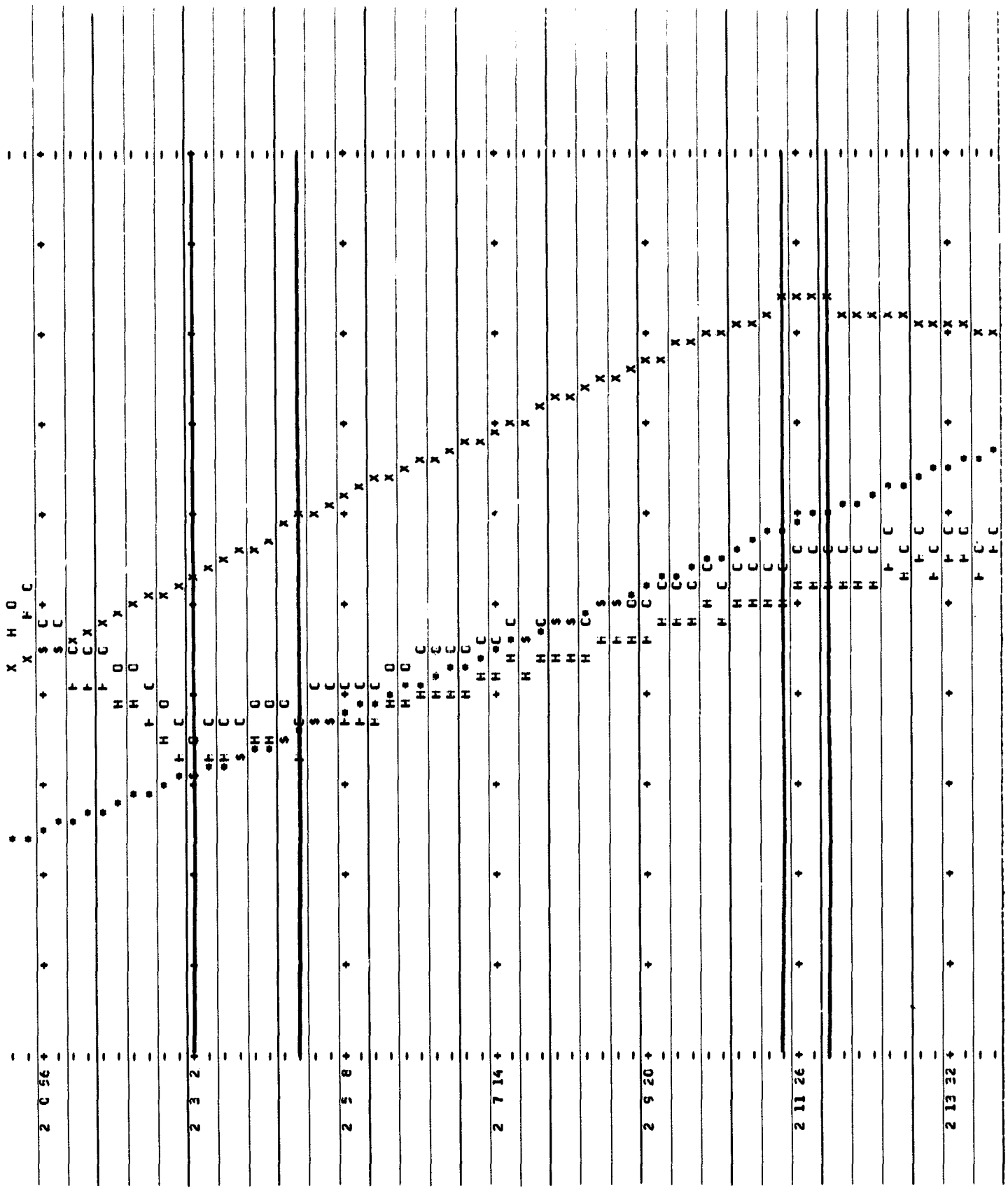

0 51 27
0 53 43
0 55 49
0 57 55
1 0 1
1 2 7
1 4 13

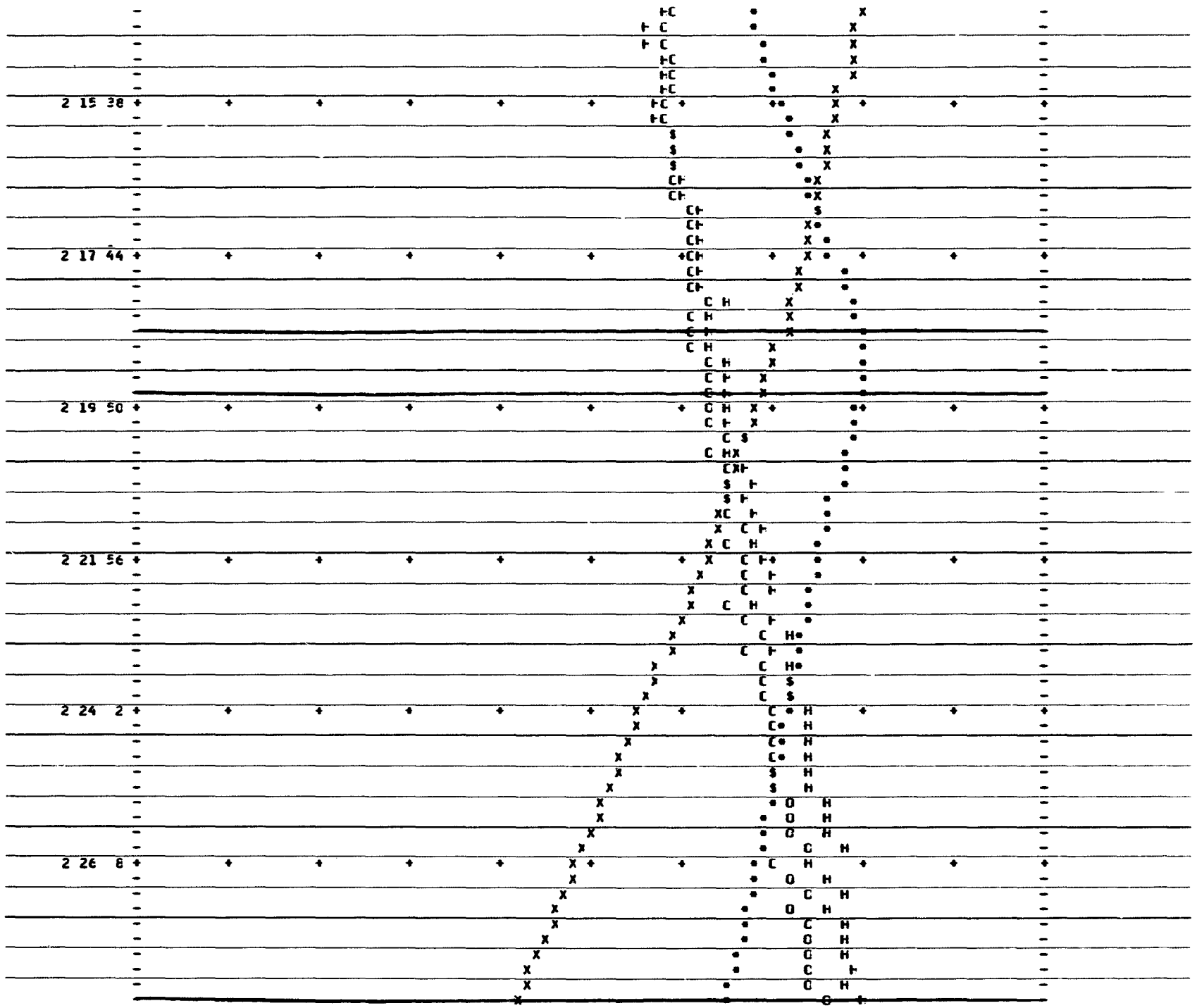


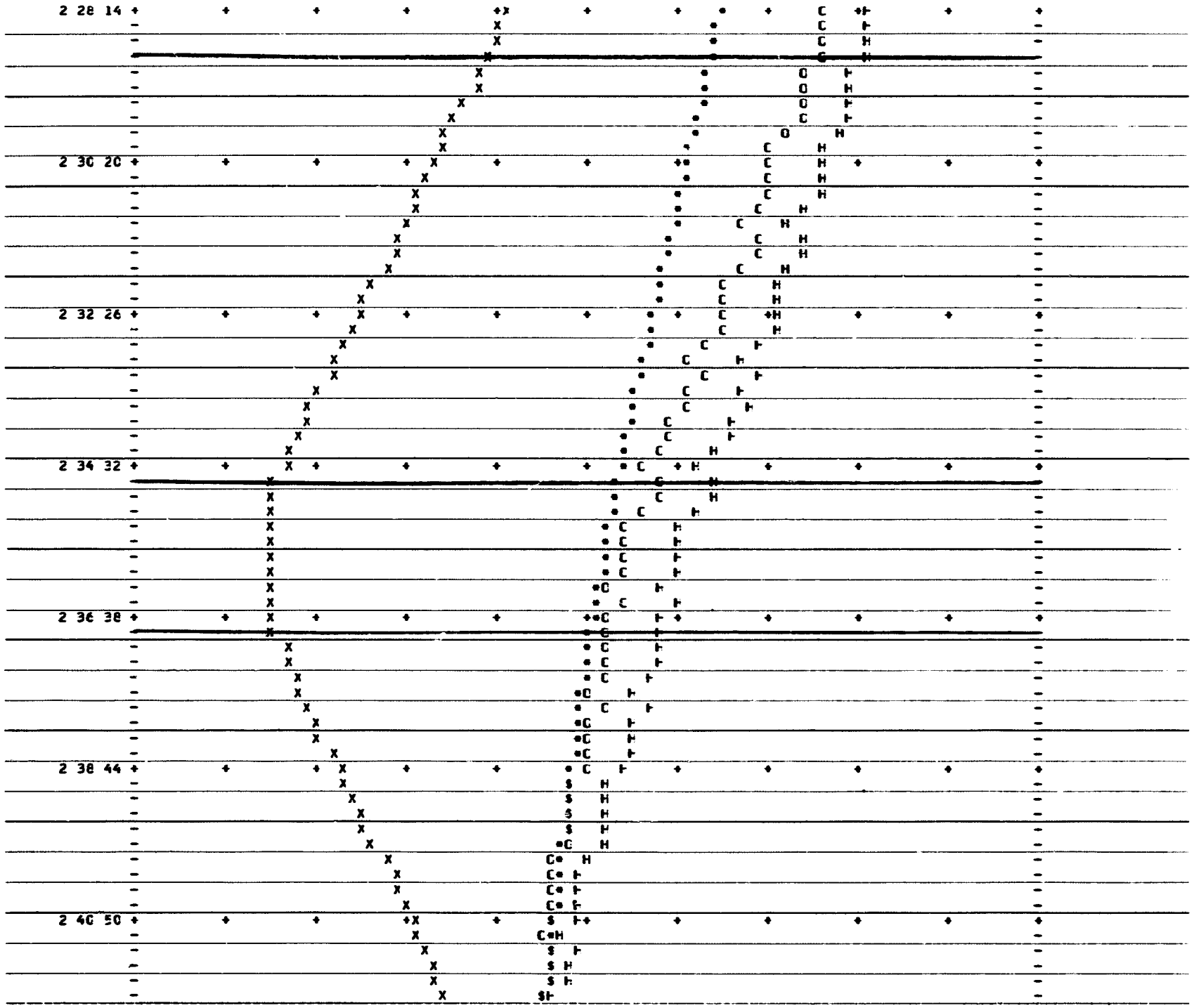

1 18 55
1 21 1
1 23 7
1 25 13
1 27 19
1 29 26
1 31 32

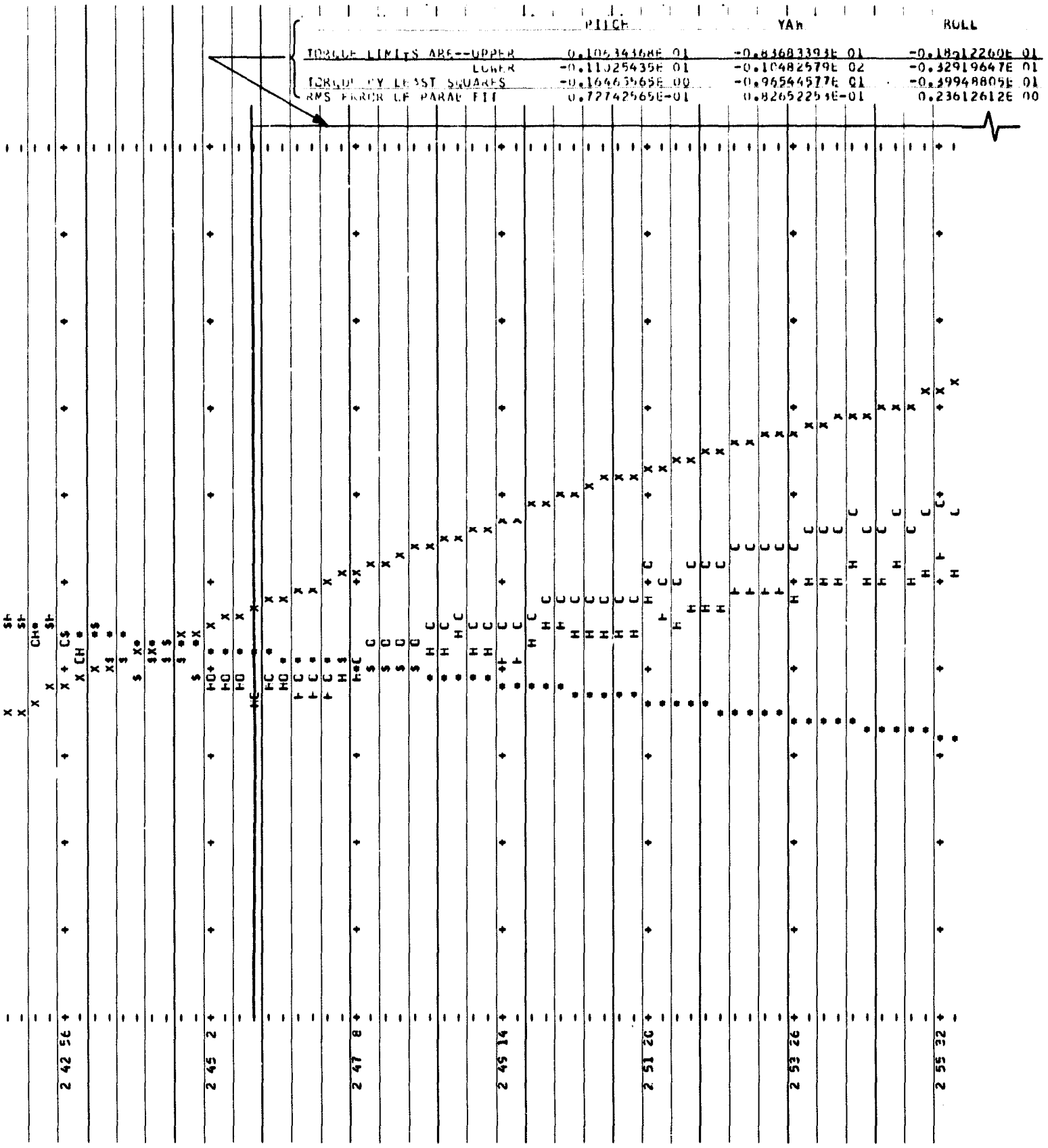

1 46 14
1 44 8
1 42 2
1 39 56
1 37 50
1 35 44
1 33 38

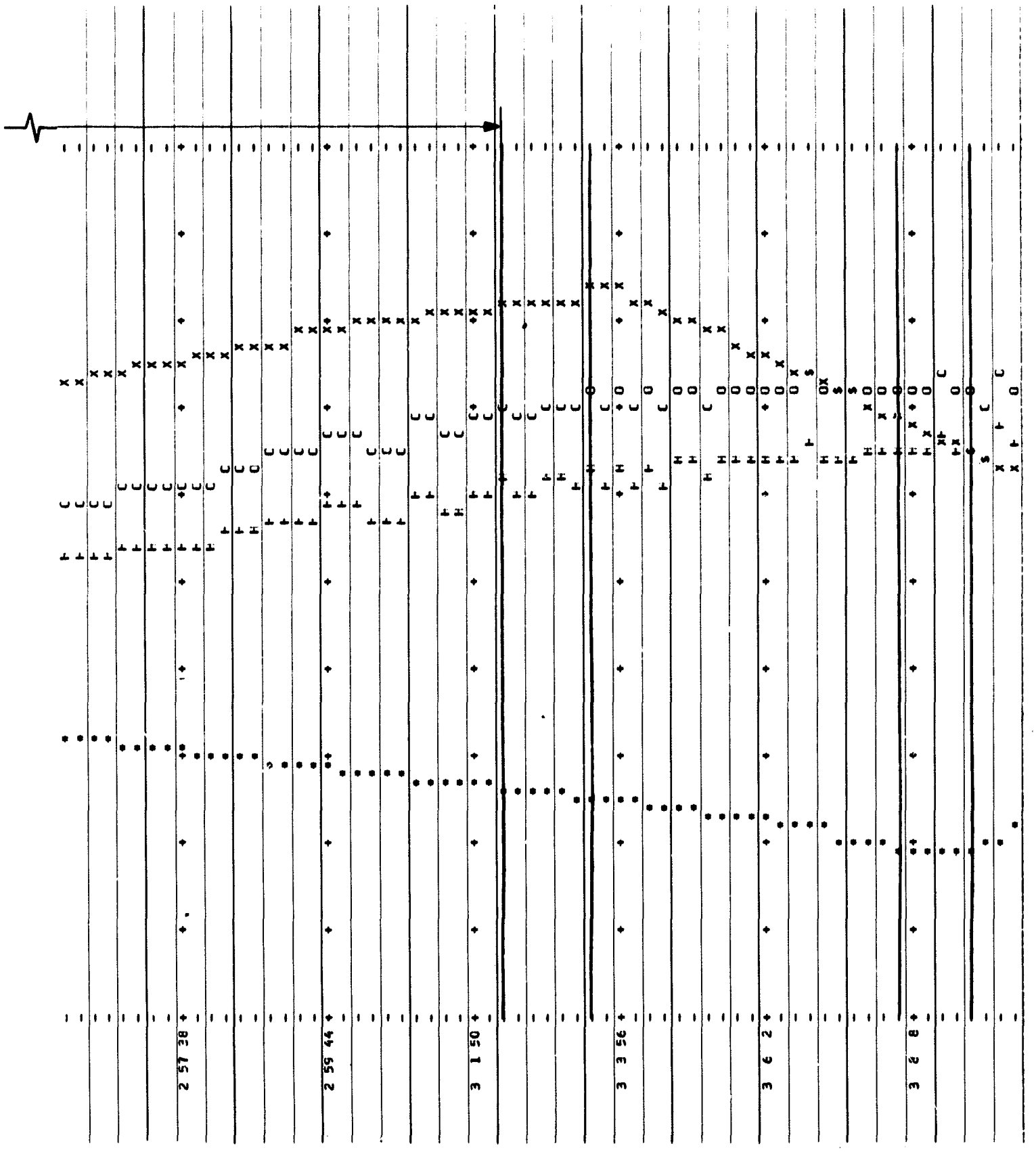


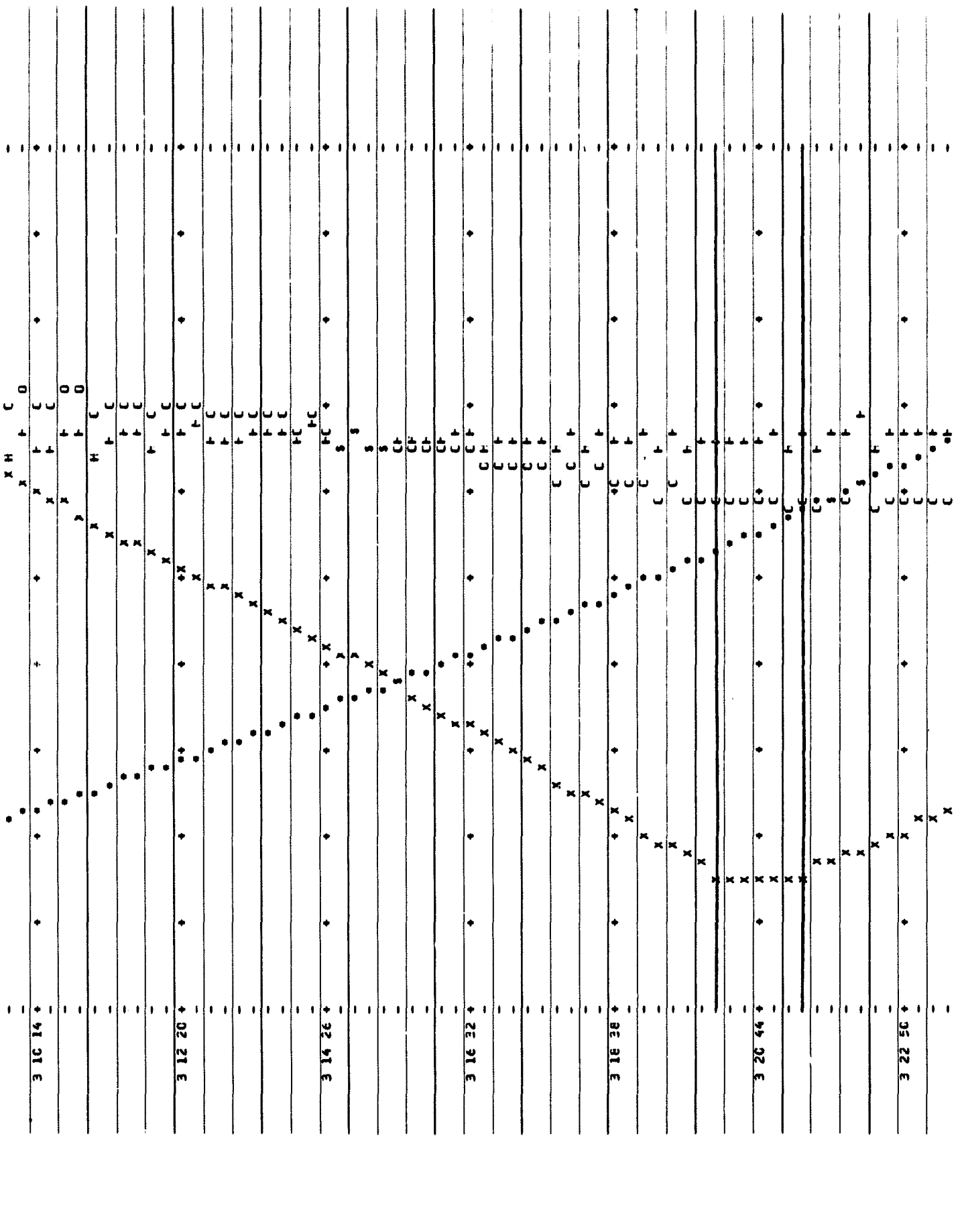


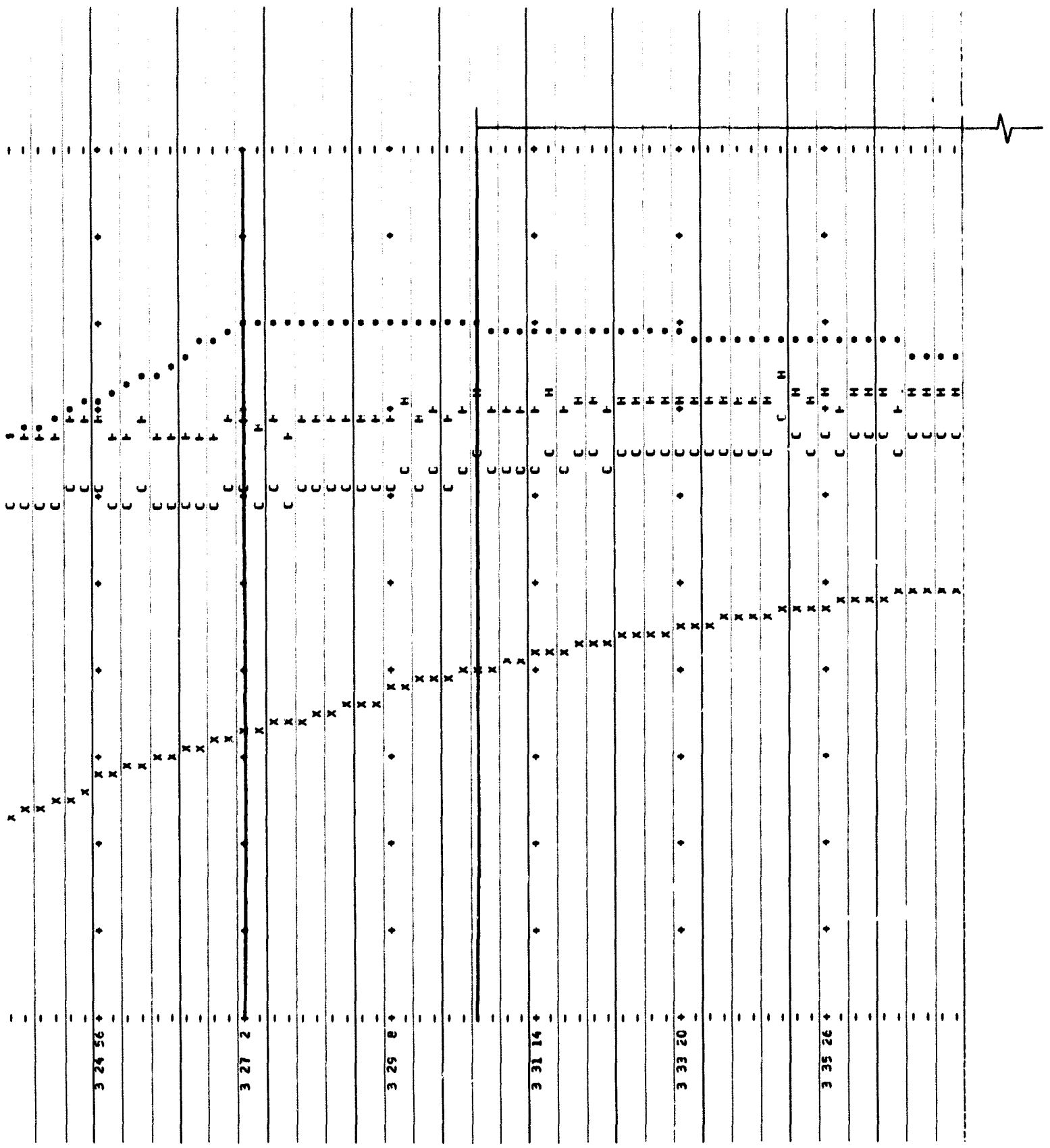

2 15 38
2 17 44
2 19 50
2 21 56
2 24 2
2 26 8

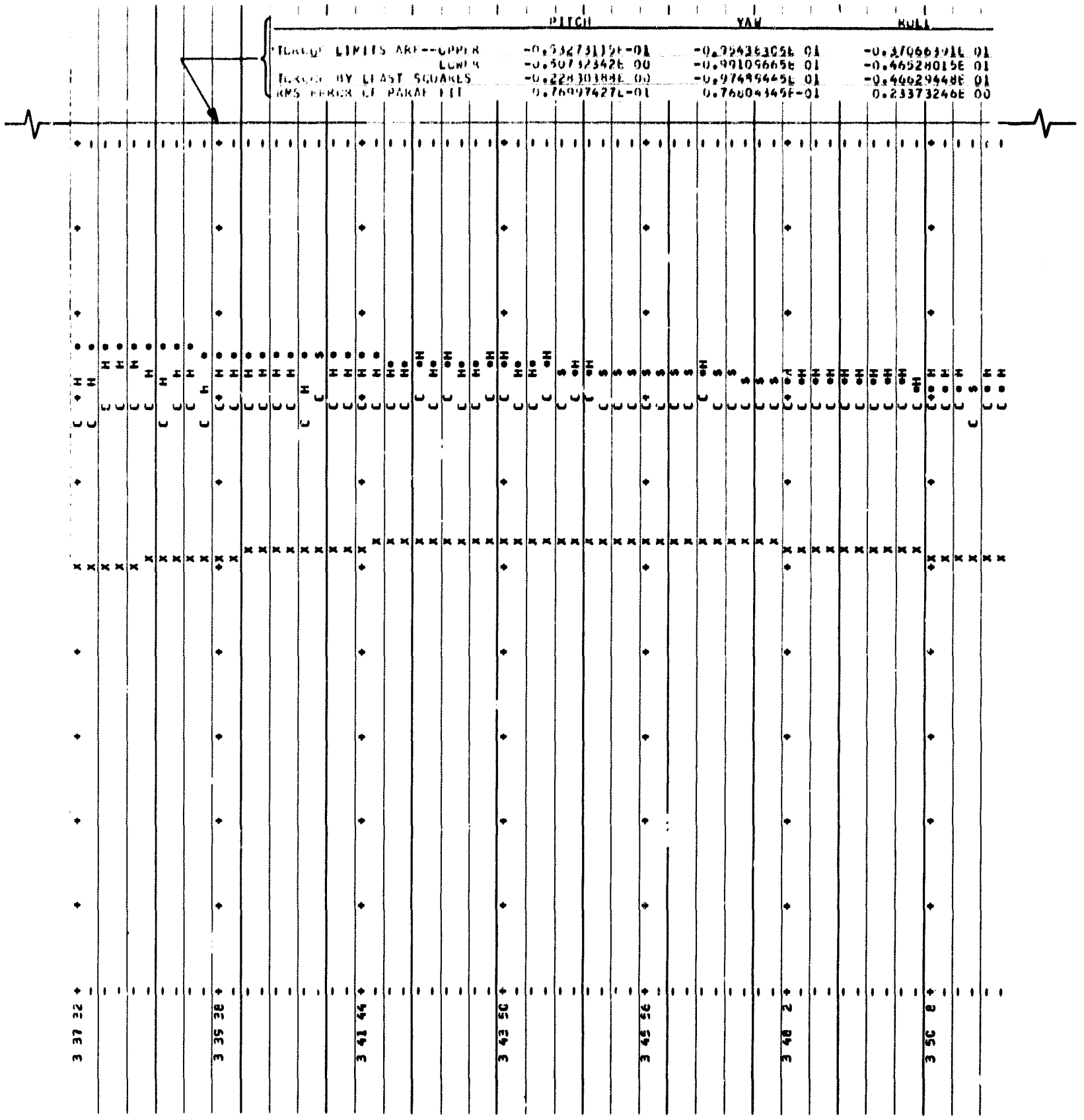

2 28 14
2 30 20
2 32 26
2 34 32
2 36 38
2 38 44
2 40 50

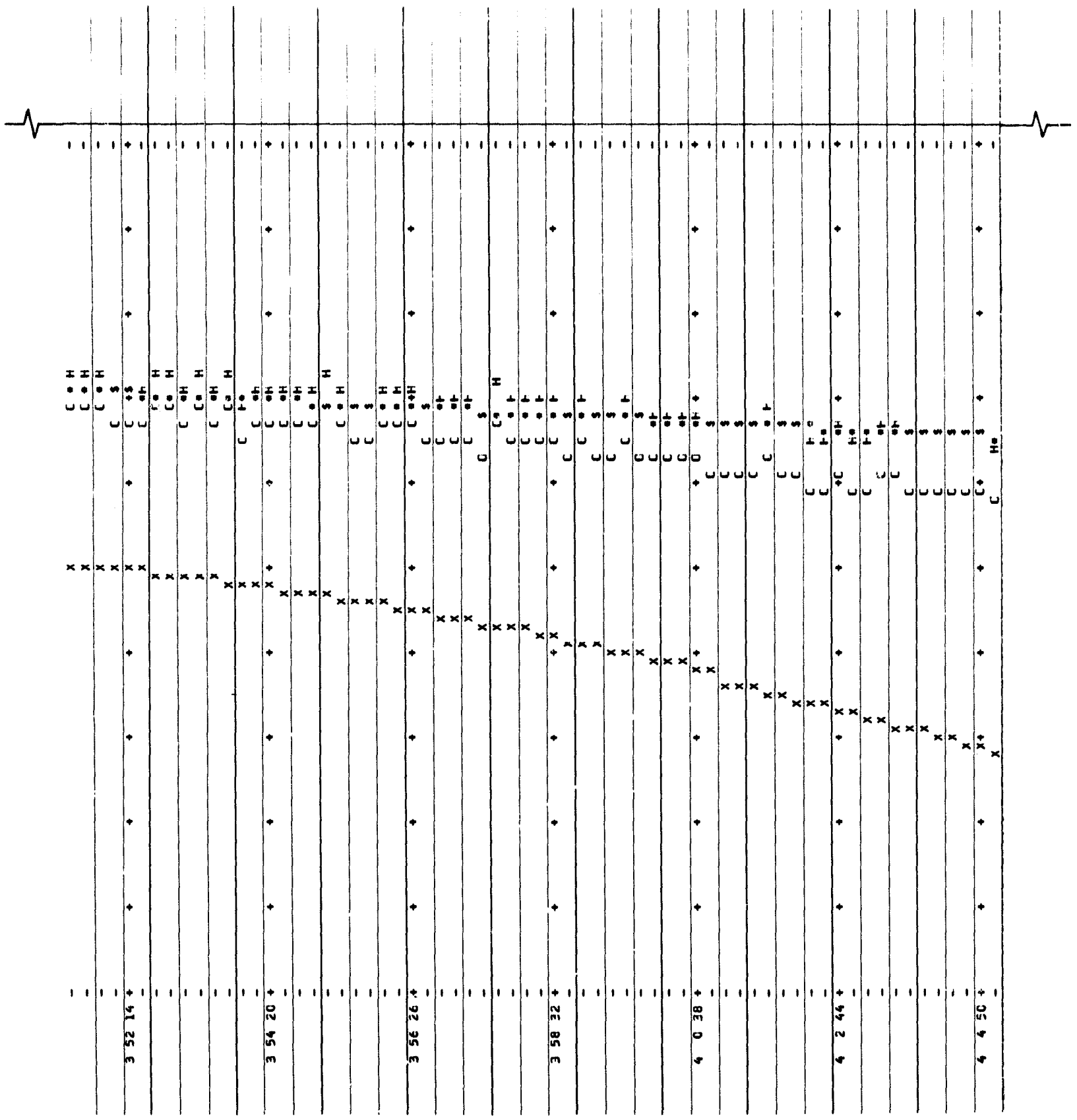

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER 0.10634368E 01 -0.83683393E 01 -0.18912260E 01
LOWER -0.11025435E 01 -0.10482579E 02 -0.32919647E 01
TORQUE BY LEAST SQUARES -0.16465965E 00 -0.96544577E 01 -0.39948805E 01
RMS ERROR OF PARAB FIT 0.72742565E-01 0.82652254E-01 0.23612612E 00
2 42 56
2 45 2
2 47 8
2 45 14
2 51 20
2 53 26
2 55 32


2 57 38
2 59 44
3 1 50
3 3 56
3 6 2
3 8 8

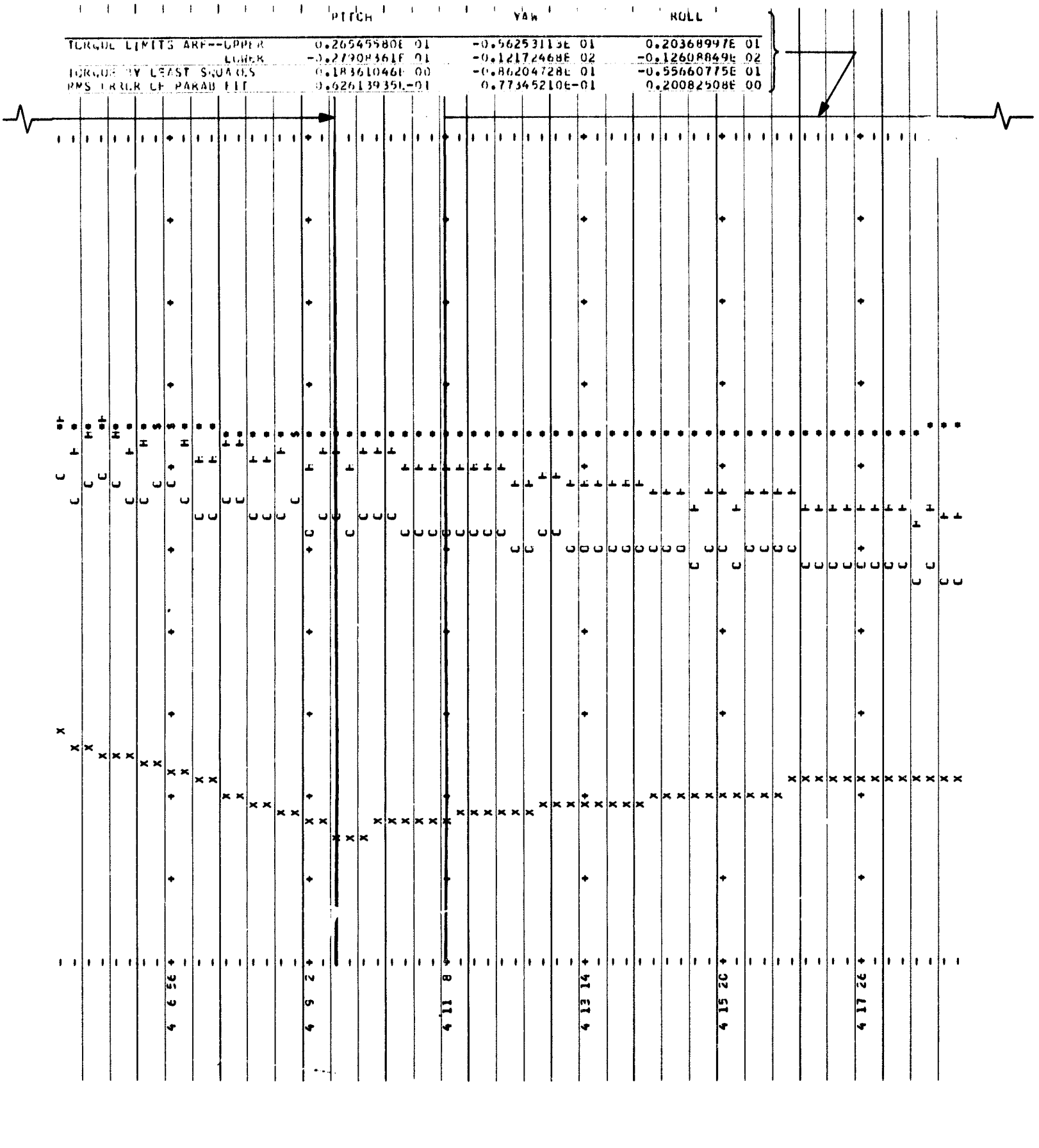

3 10 14
3 12 20
3 14 26
3 16 32
3 18 38
3 20 44
3 22 50

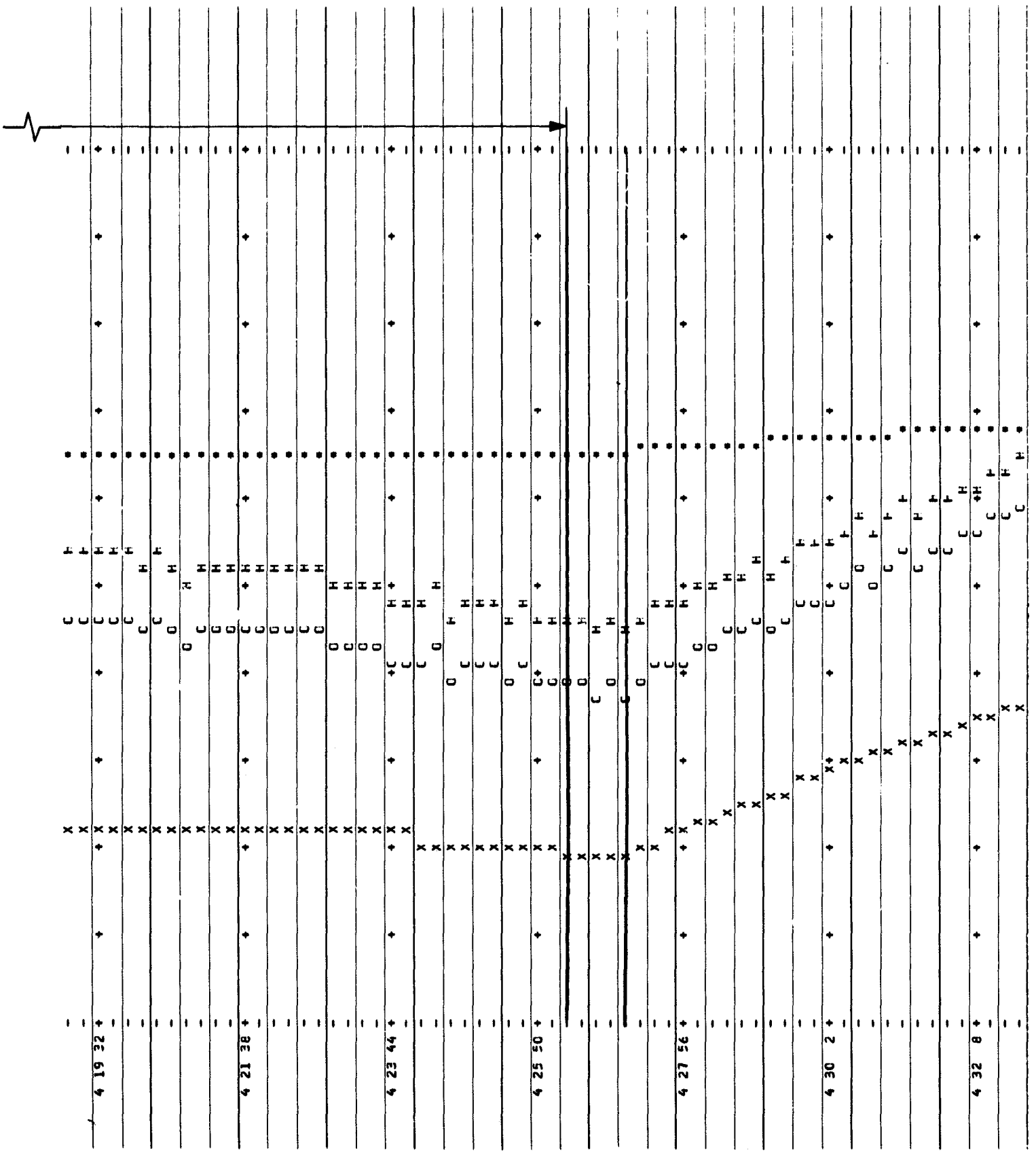

3 24 56
3 27 2
3 29 8
3 31 14
3 33 20
3 35 26

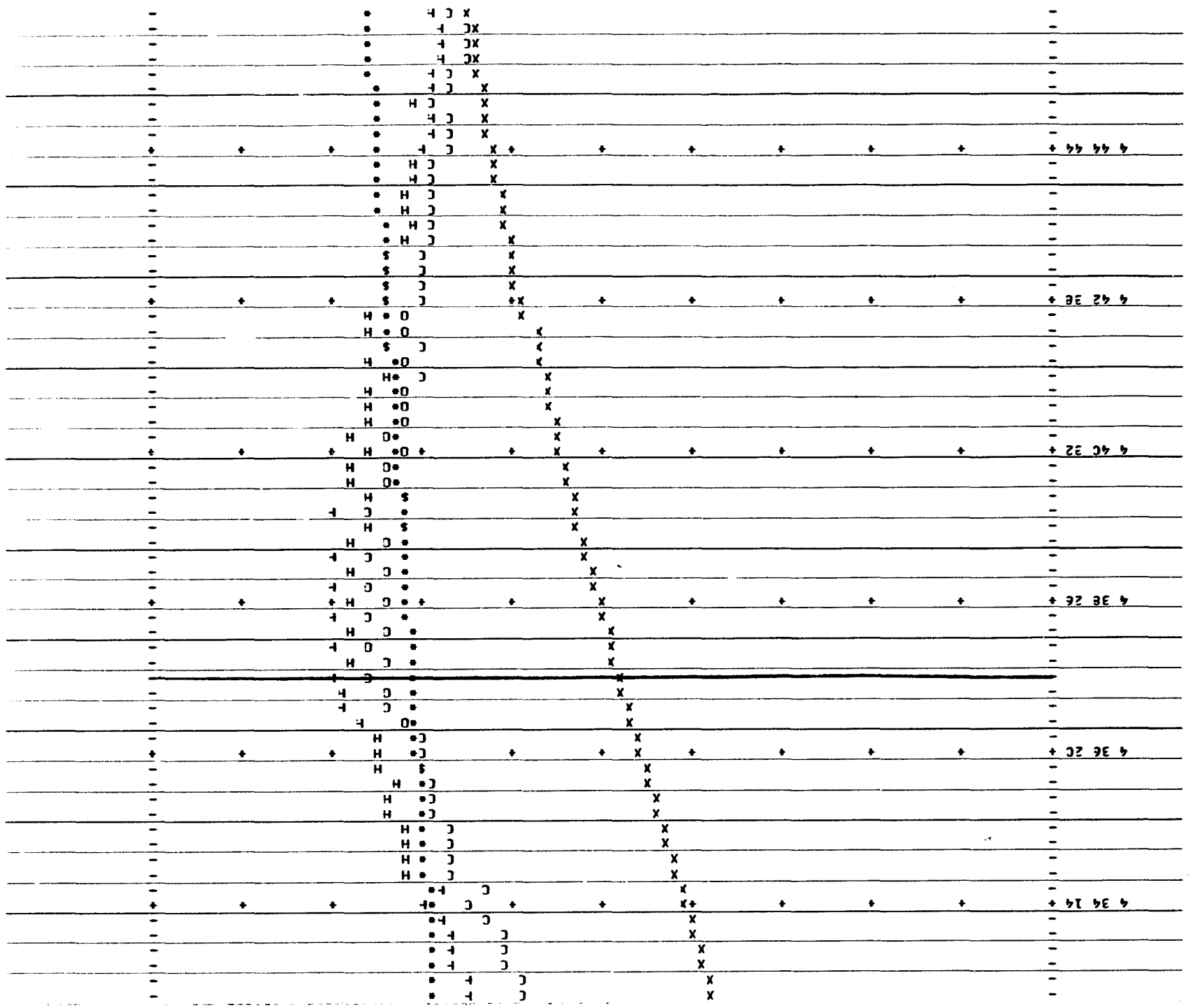

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.53673119E-01 -0.72436305E 01 -0.37066911E 01
LOWER -0.50732342E 00 -0.99109665E 01 -0.46528015E 01
TORQUE BY LEAST SQUARES -0.22830388E 00 -0.97499445E 01 -0.46629448E 01
RMS ERROR OF PARAB FIT 0.76097427E-01 0.76004349E-01 0.23373246E 00
3 37 32
3 39 38
3 41 44
3 43 50
3 45 56
3 48 2
3 50 8

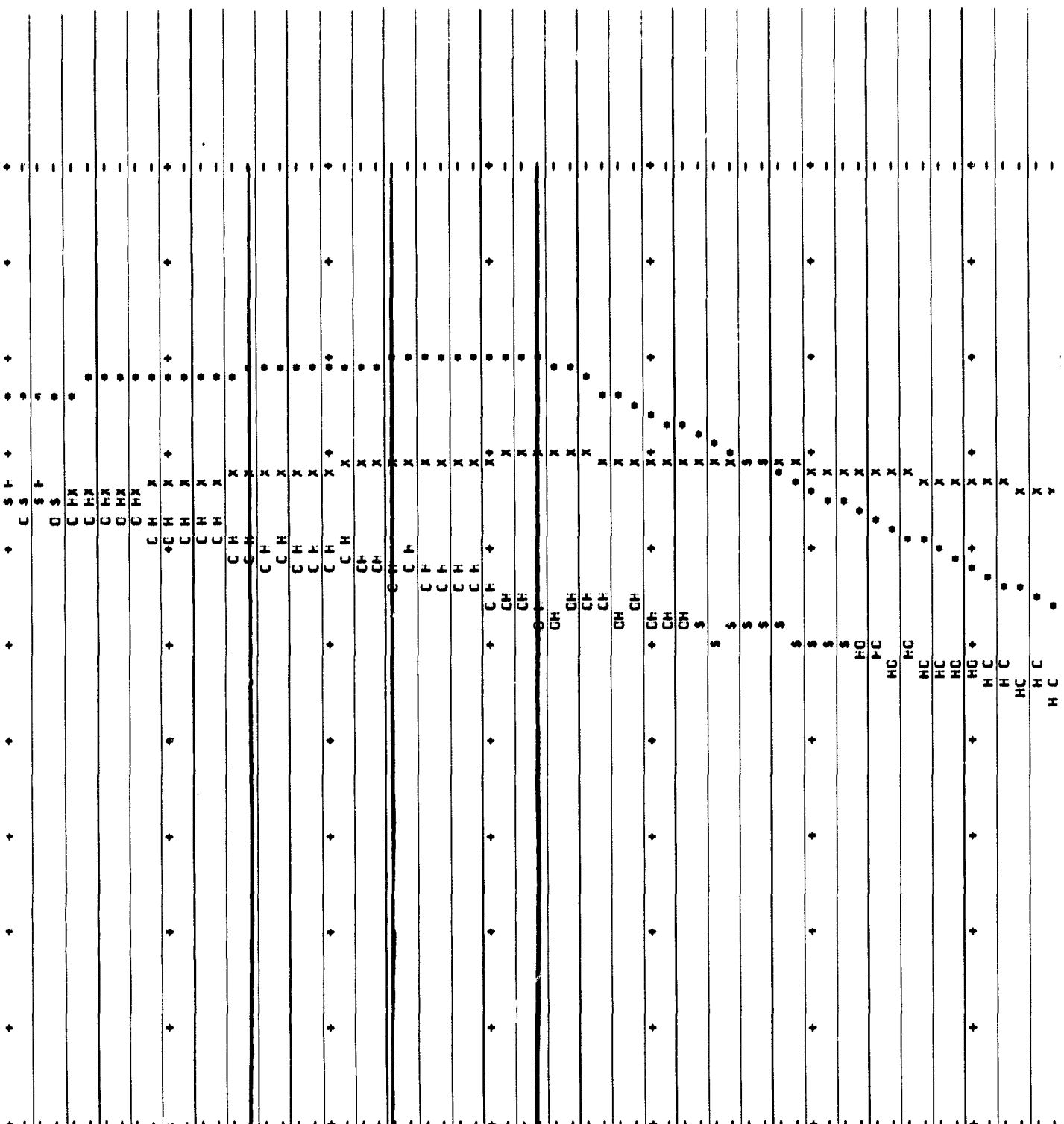

3 52 14
3 54 20
3 56 26
3 58 32
4 0 38
4 2 44
4 4 50

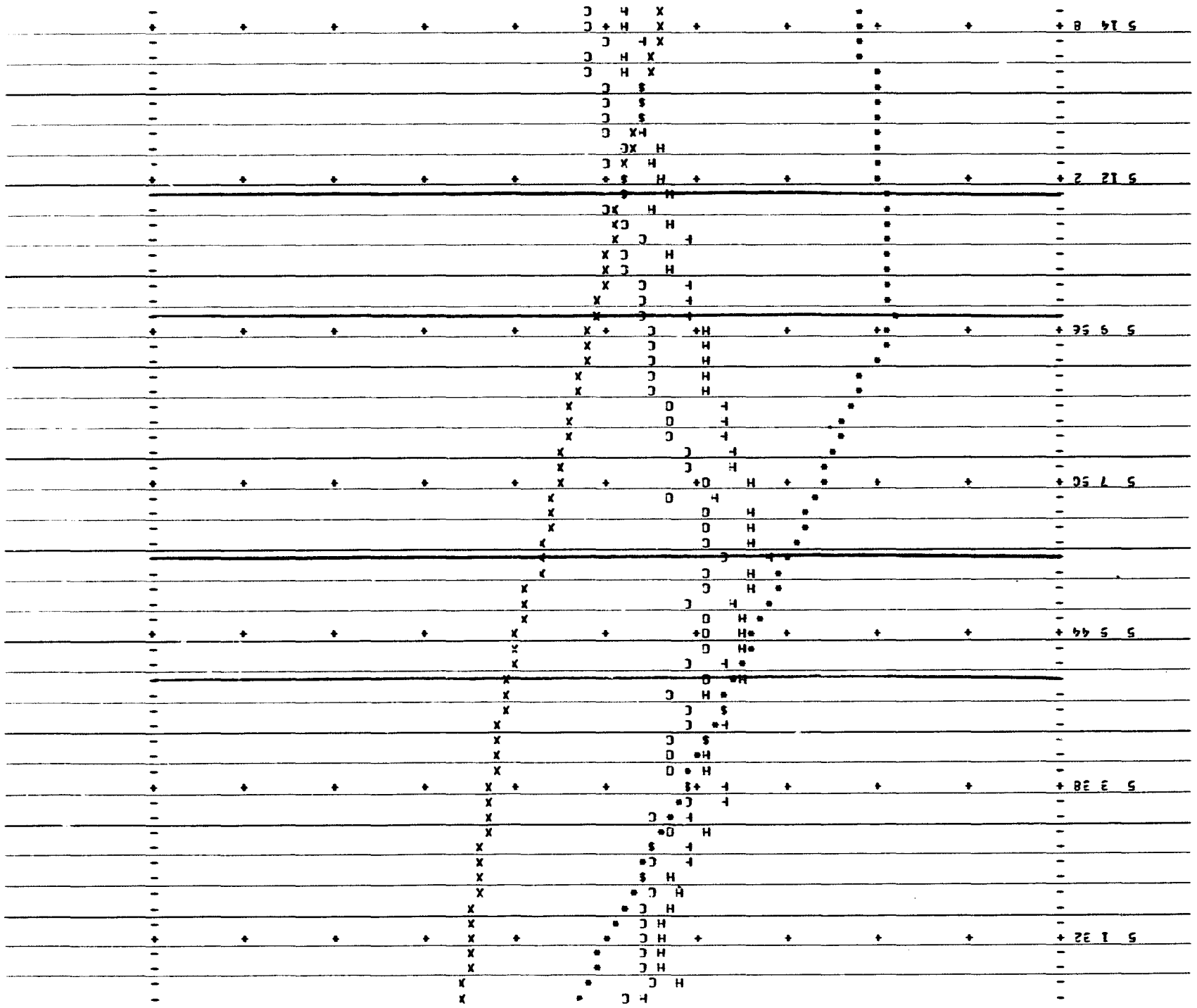
	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	0.26545580E 01	-0.56253113E 01	0.20368997E 01
LOWER	-0.27908361E 01	-0.12172468E 02	-0.12608849E 02
TORQUE BY LEAST SQUARES	0.18361046E 00	-0.86204728E 01	-0.55660775E 01
RMS ERROR OF PARAB FIT	0.62613935E-01	0.77345210E-01	0.20082508E 00

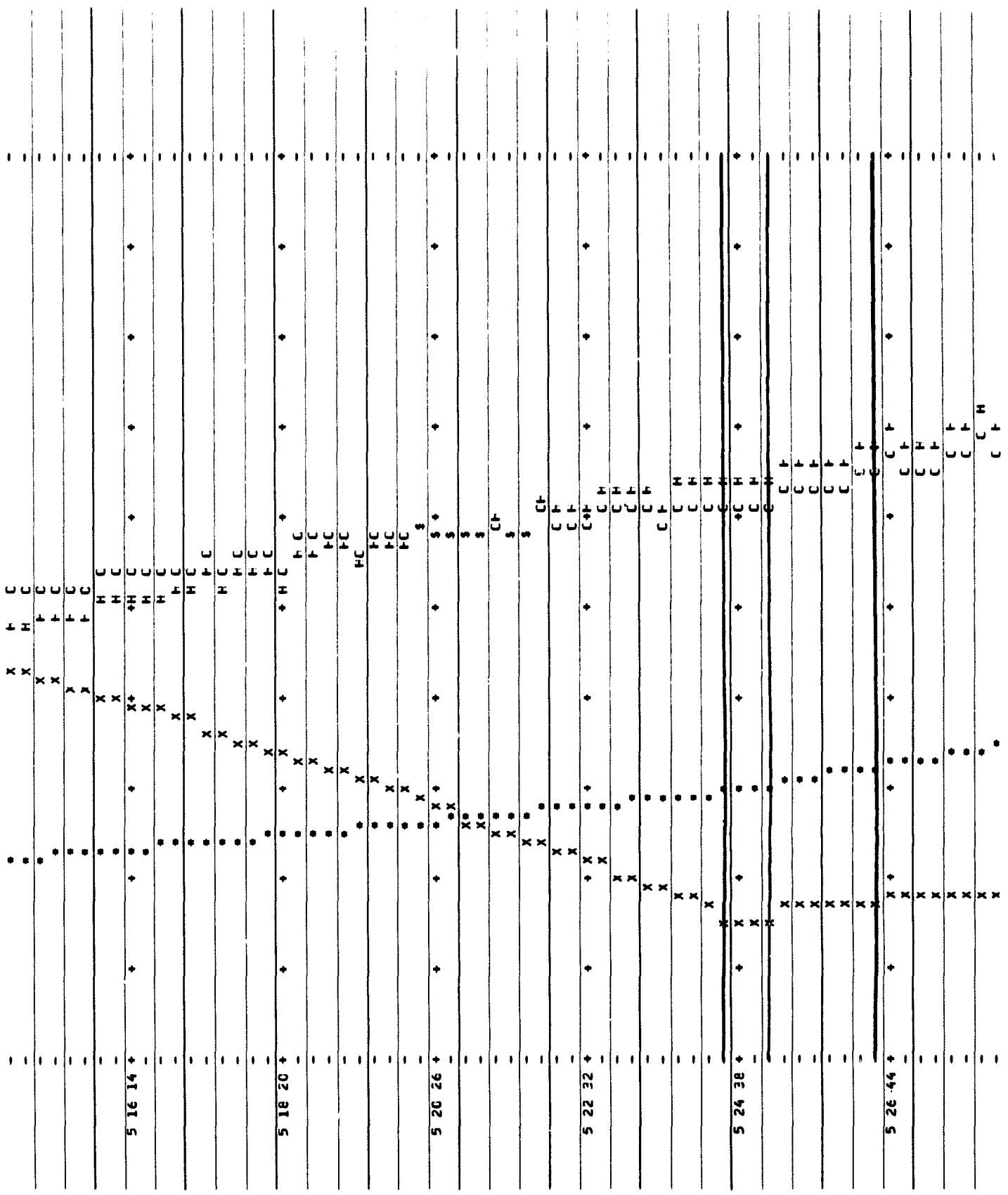


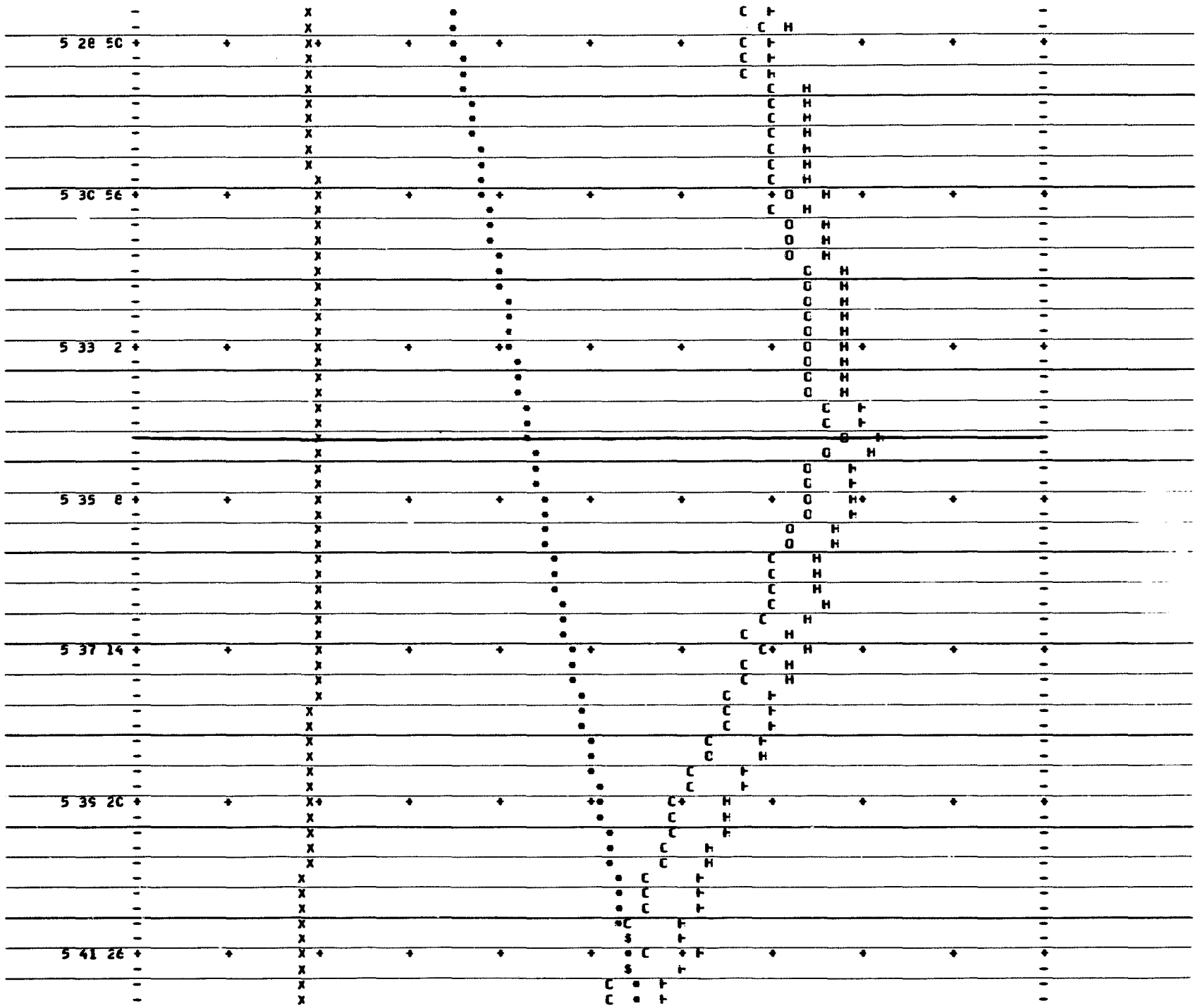



4 44 44
4 42 38
4 40 32
4 38 26
4 36 20
4 34 14


4 46 50
4 48 56
4 51 2
4 53 8
4 55 14
4 57 20
4 59 26


5 14 8
5 12 2
5 9 56
5 7 50
5 5 44
5 3 38
5 1 32


5 16 14
5 18 20
5 20 26
5 22 32
5 24 38
5 26 44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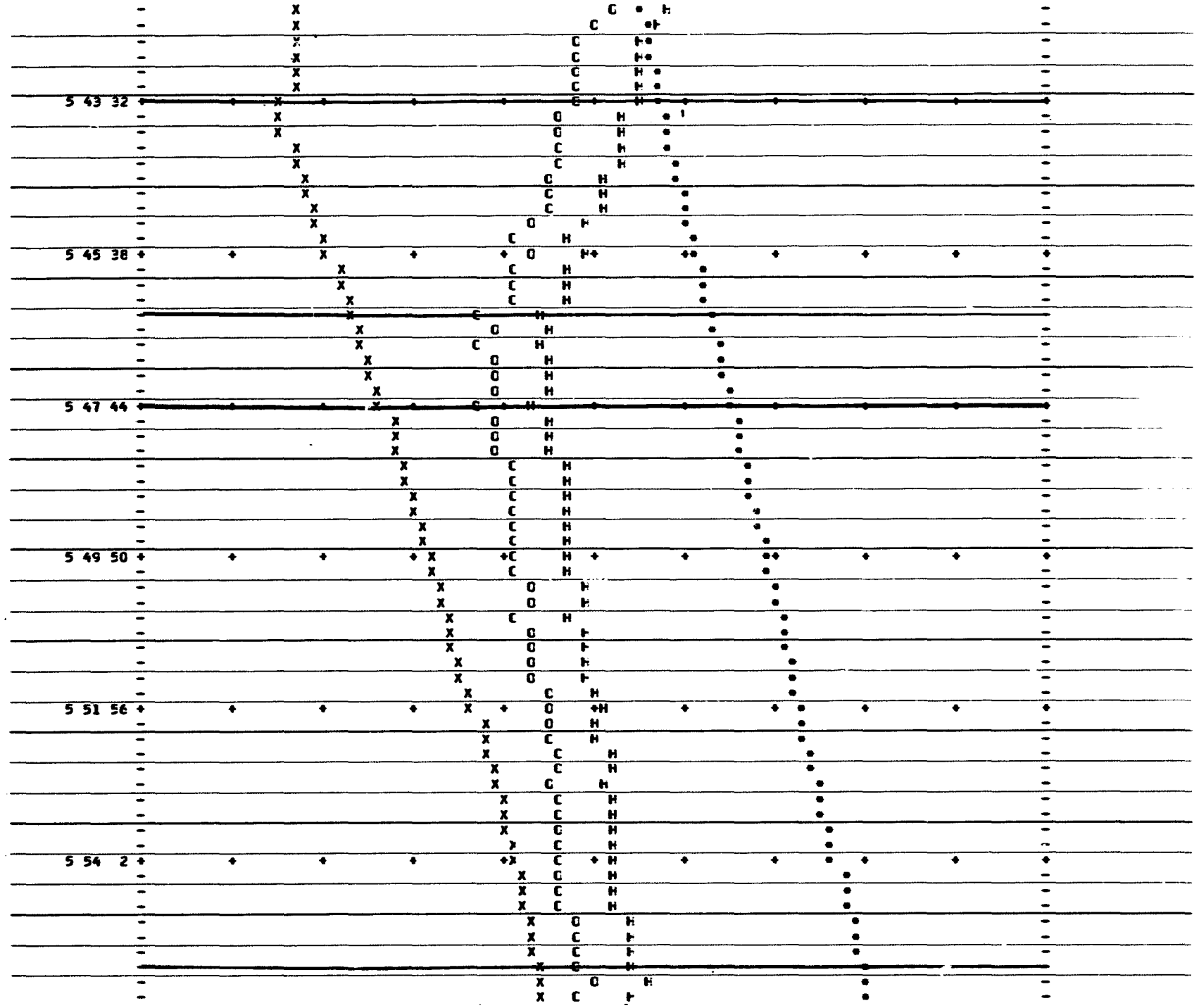
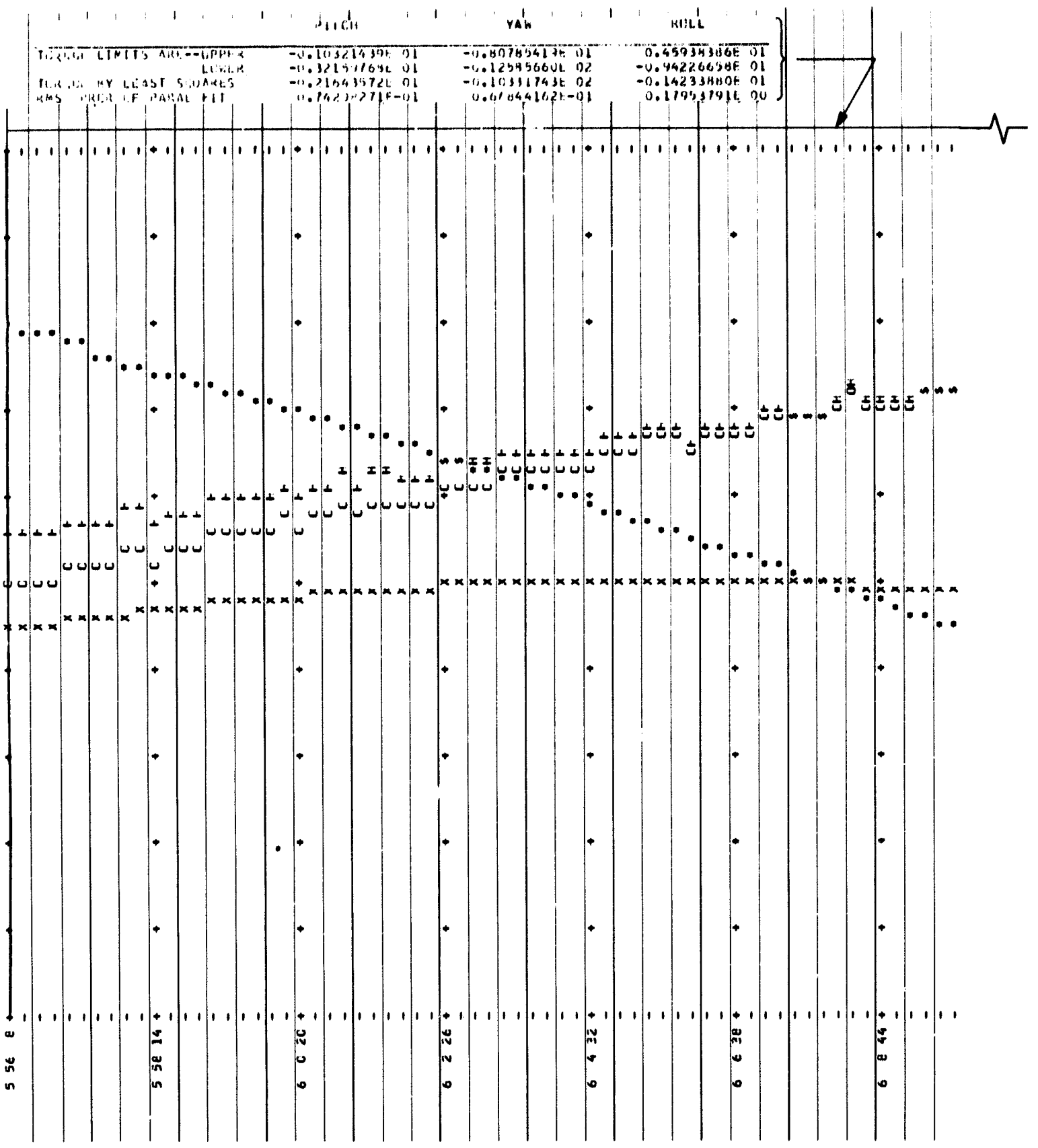
5 30 56
5 33 2
5 35 8
5 37 14
5 35 20
5 41 26


5 43 32
5 45 38
5 47 44
5 49 50
5 51 56
5 54 2


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.10321439E 01 -0.80789413E 01 0.45934306E 01
LOWER -0.32157769E 01 -0.12585660E 02 -0.94226658E 01
TORQUE BY LEAST SQUARES -0.21643572E 01 -0.10311743E 02 -0.14233880E 01
RMS ERROR OF PARAL FIT 0.7423?271E-01 0.6?844162E-01 0.17953791E 00
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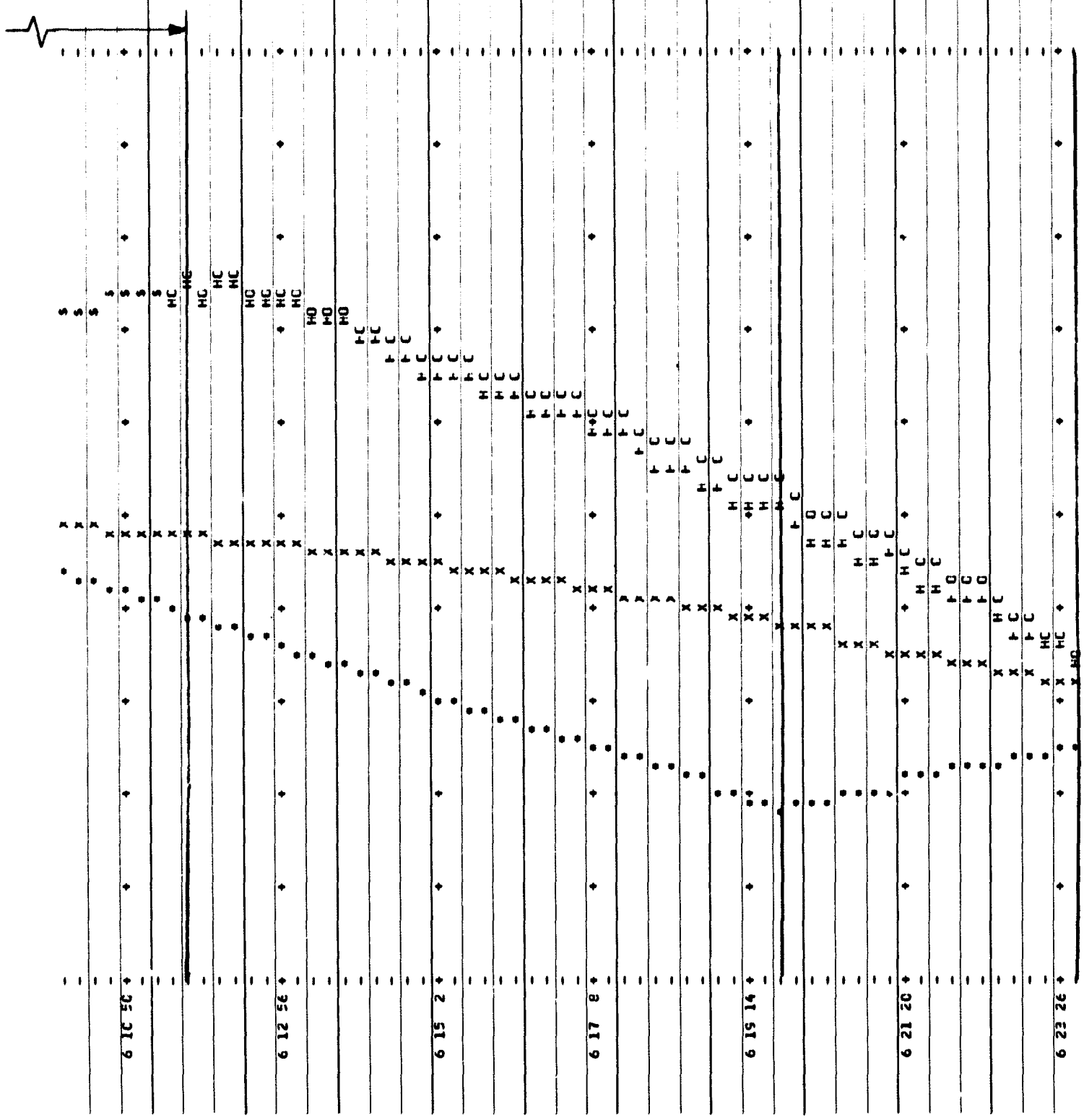
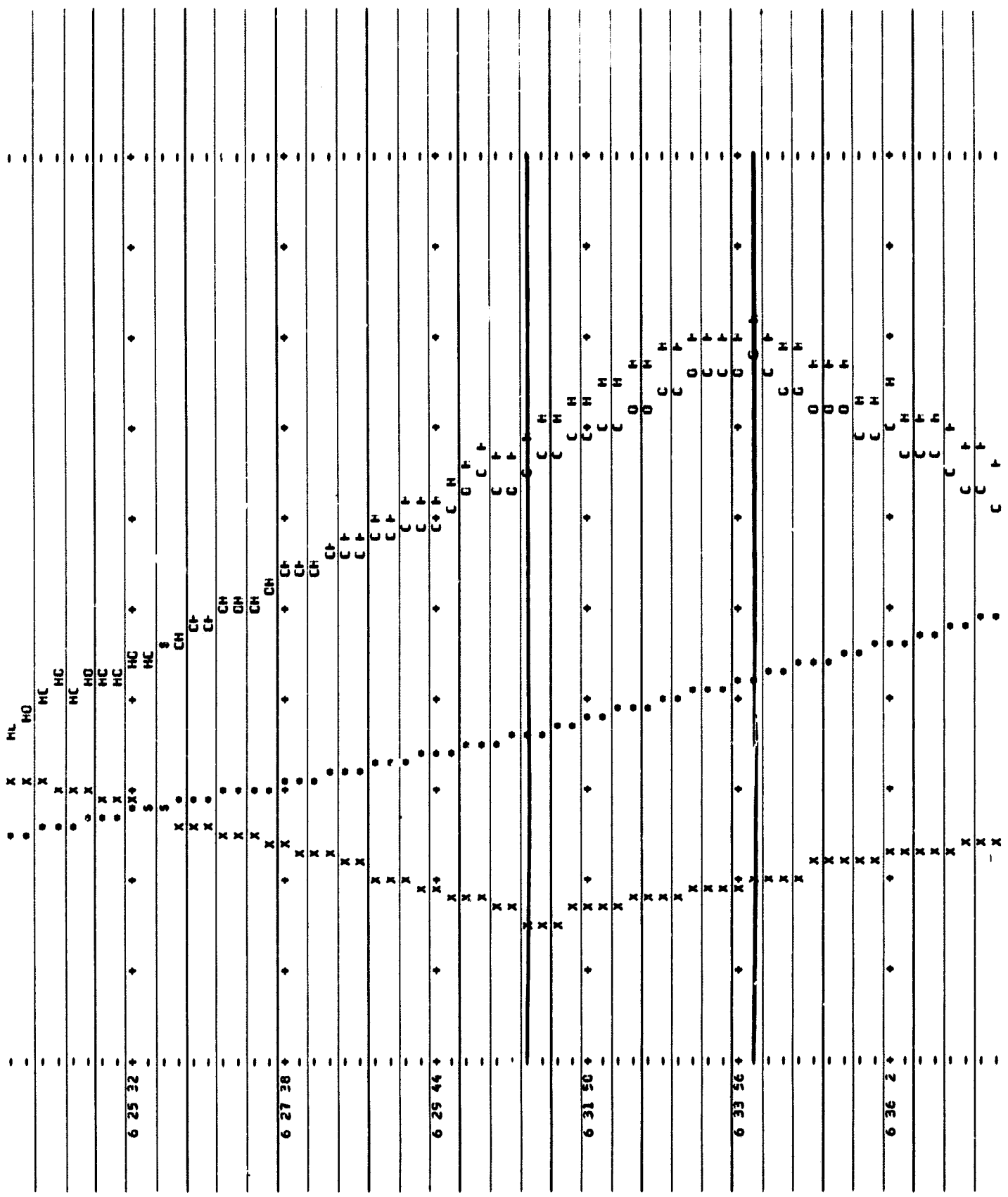
5 58 14
6 0 20
6 2 26
6 4 32
6 6 38
6 8 44

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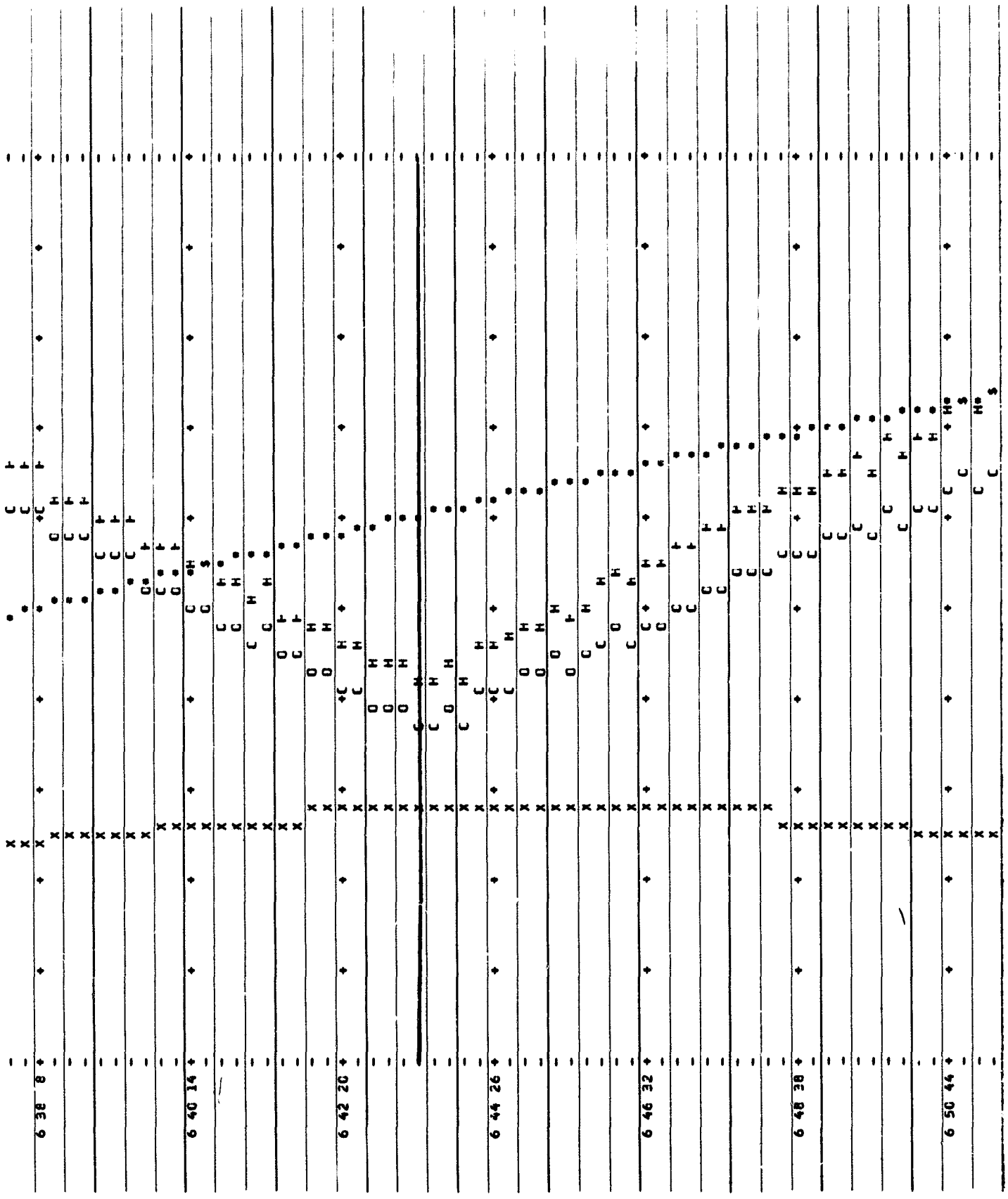
6 27 38
6 25 44
6 31 50
6 33 56
6 36 2


6 38 8
6 40 14
6 42 20
6 44 26
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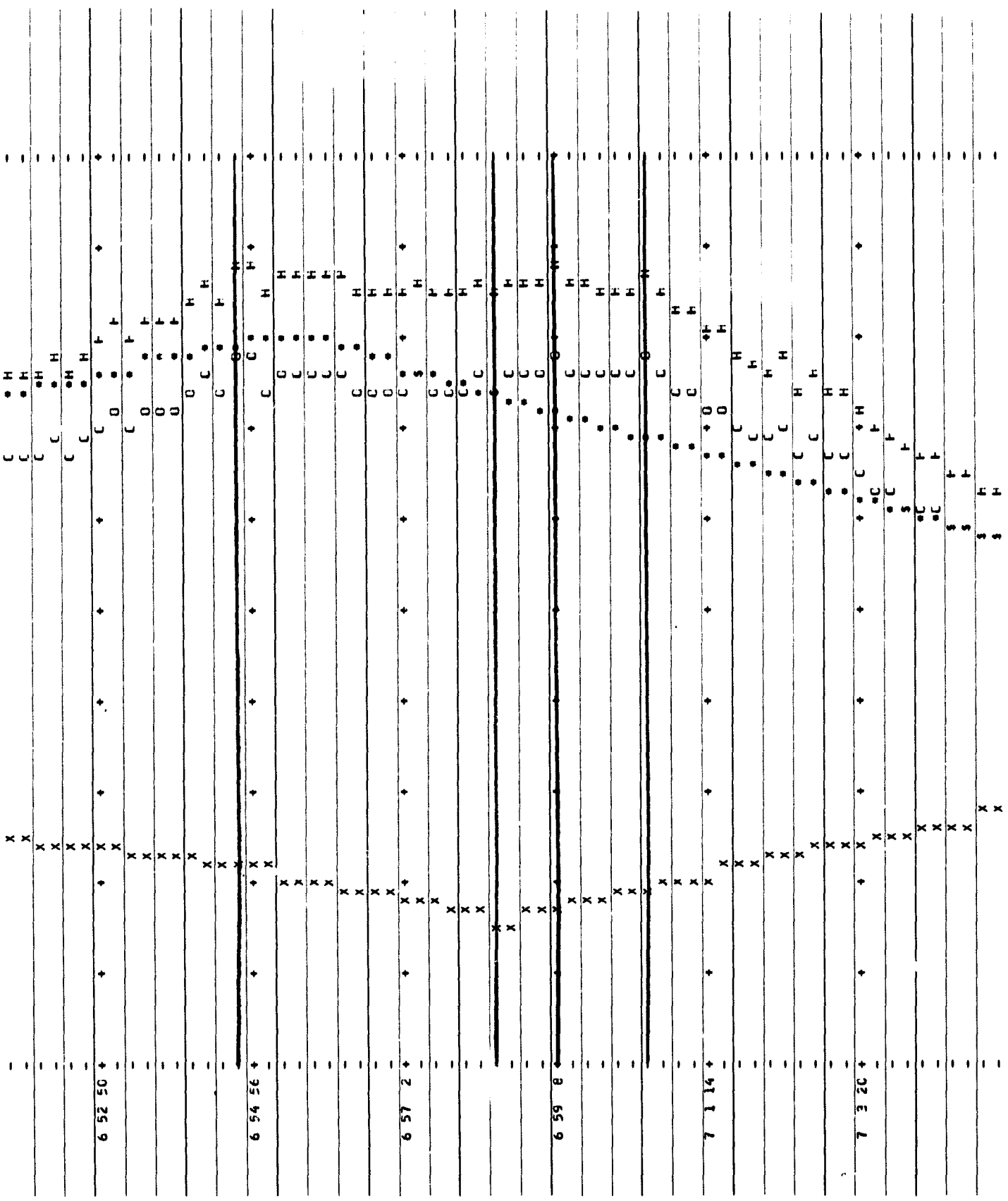
6 50 44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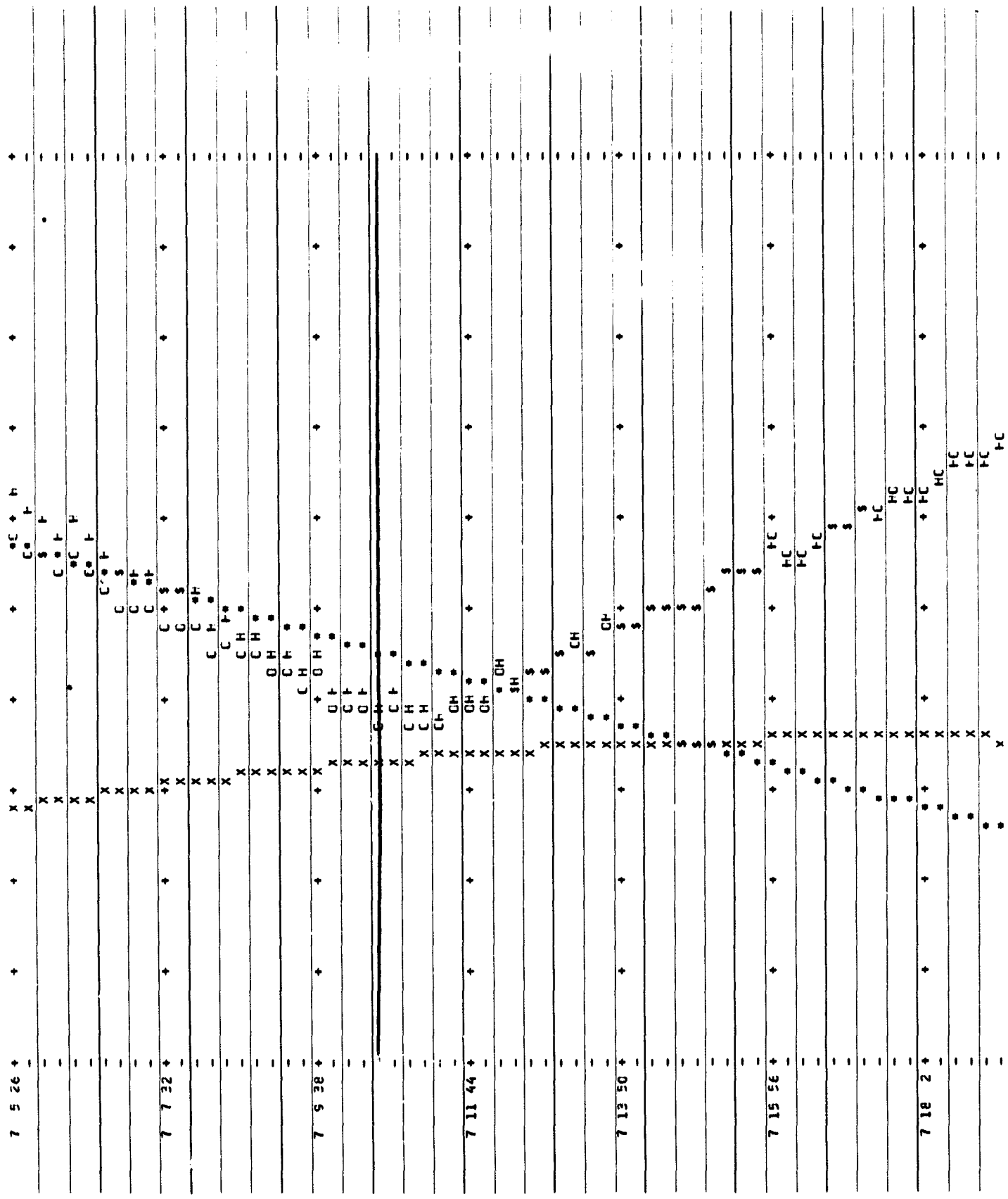
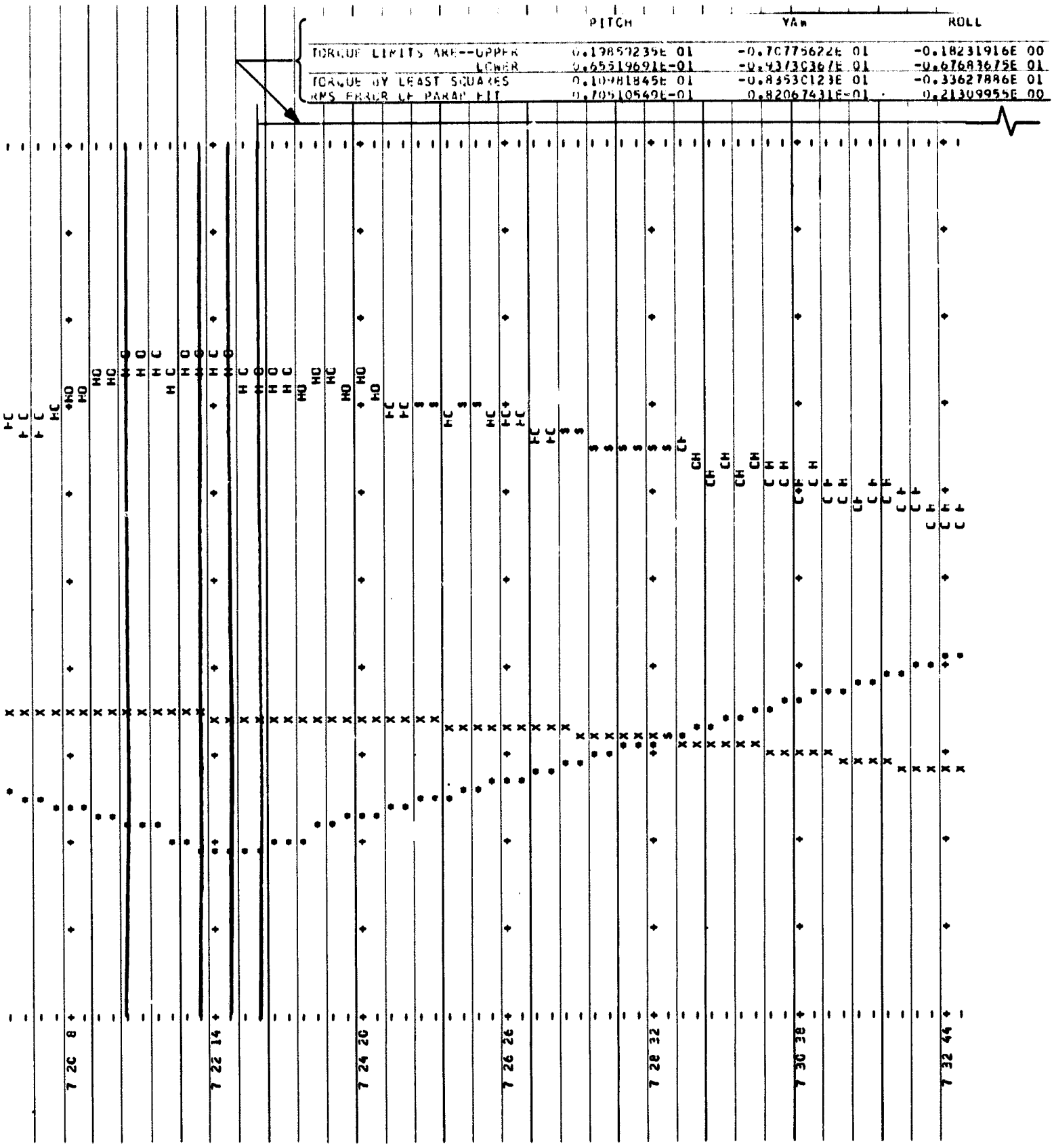
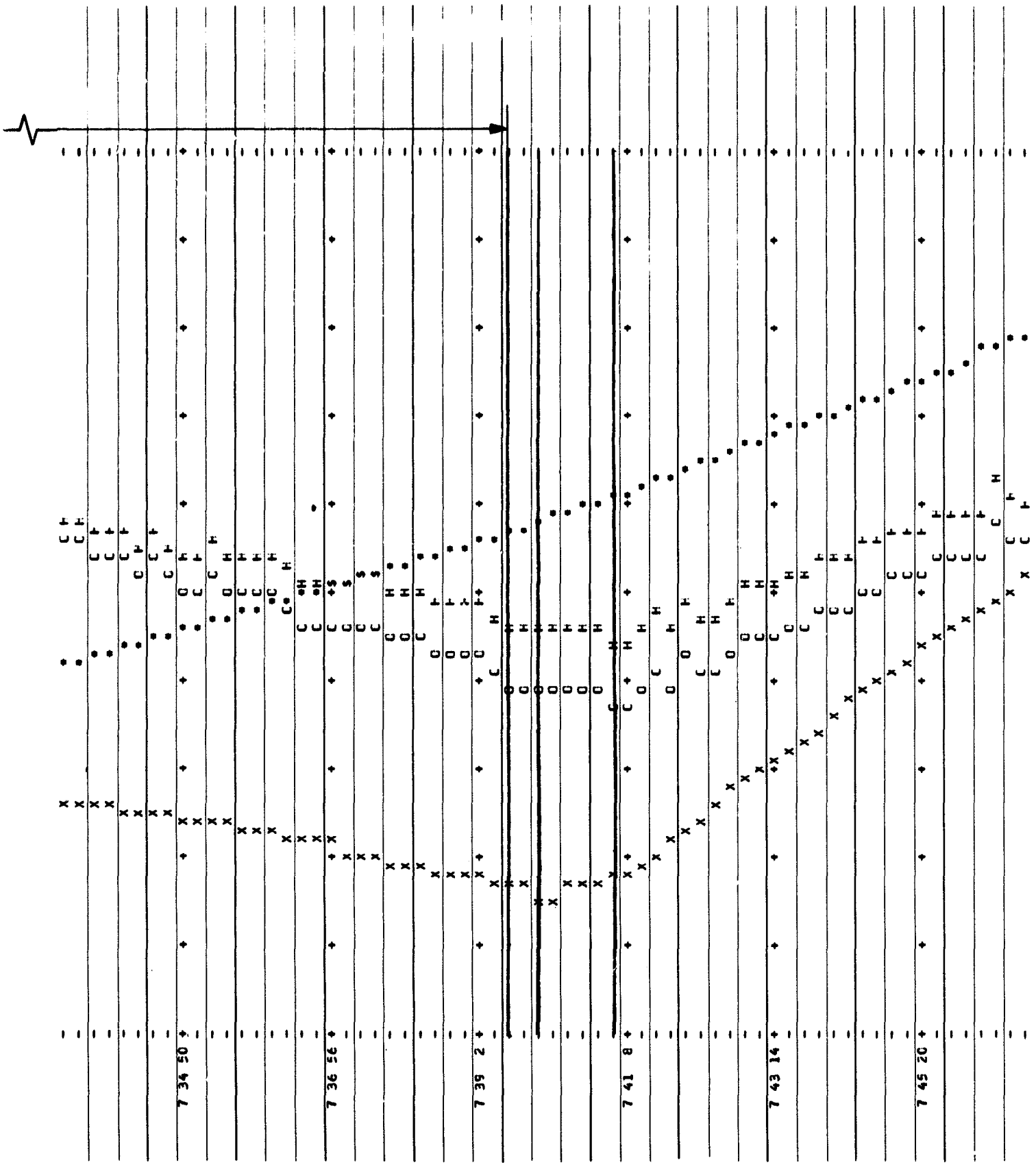
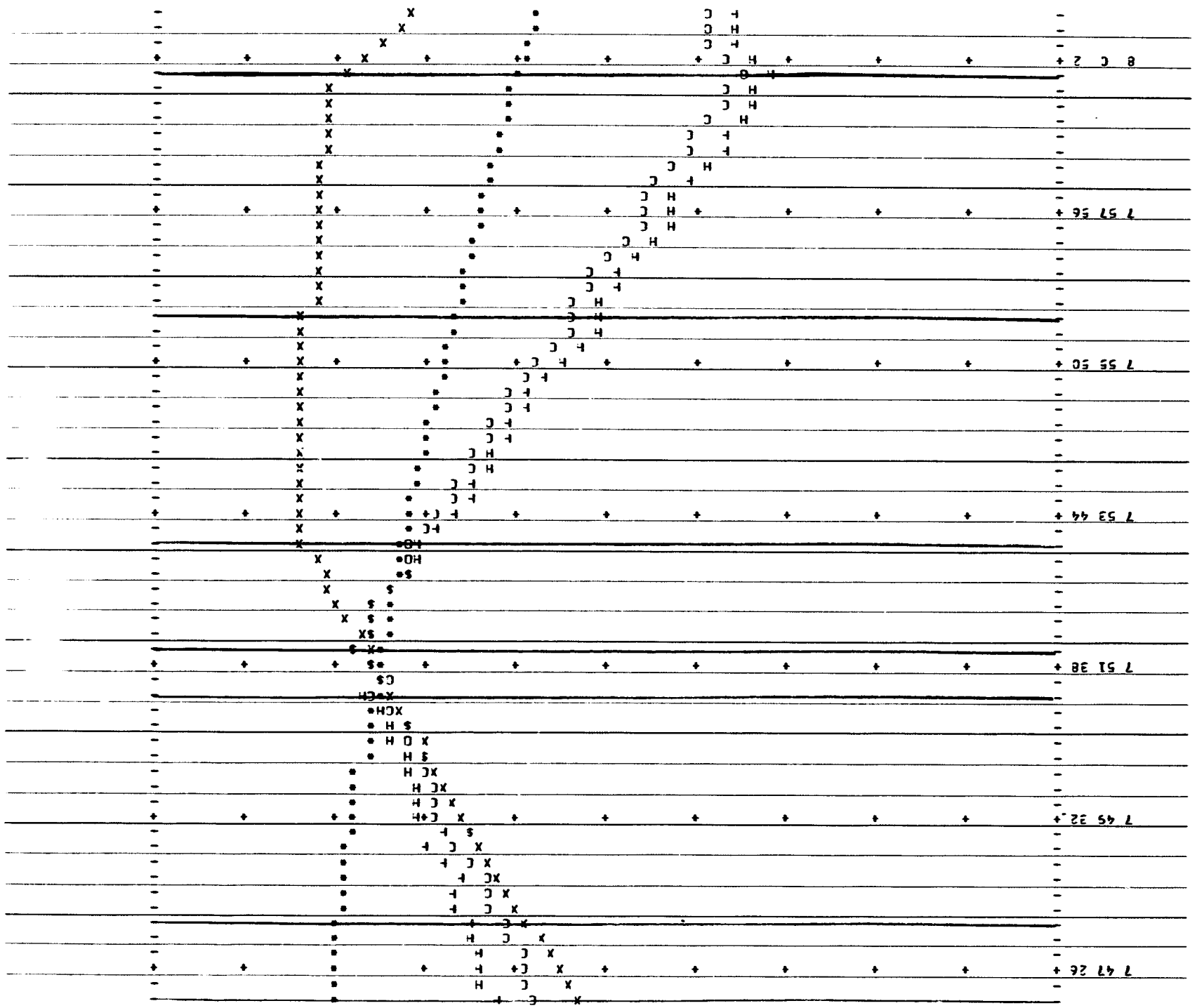
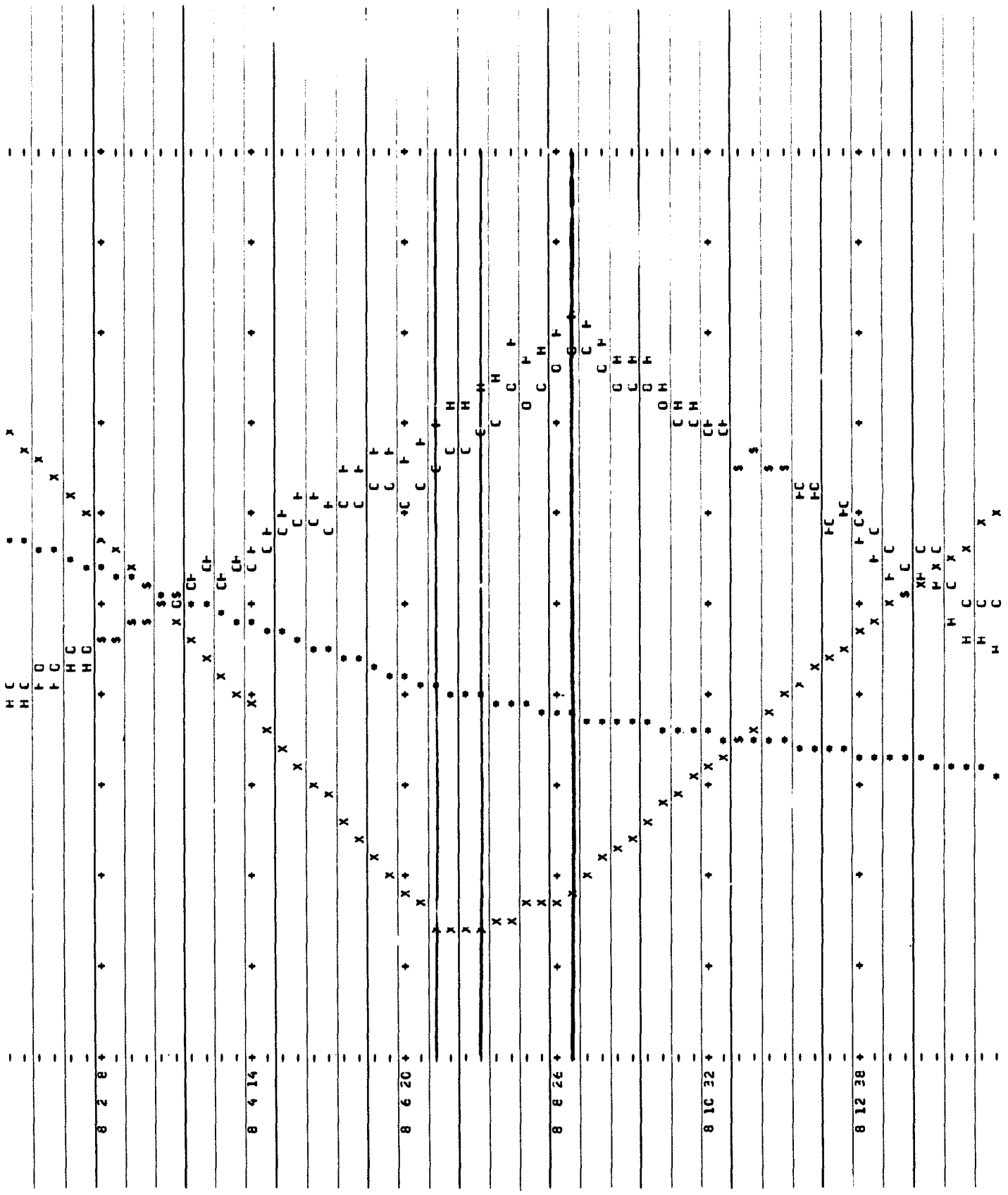
6 54 56
6 57 2
6 59 8
7 1 14
7 3 20

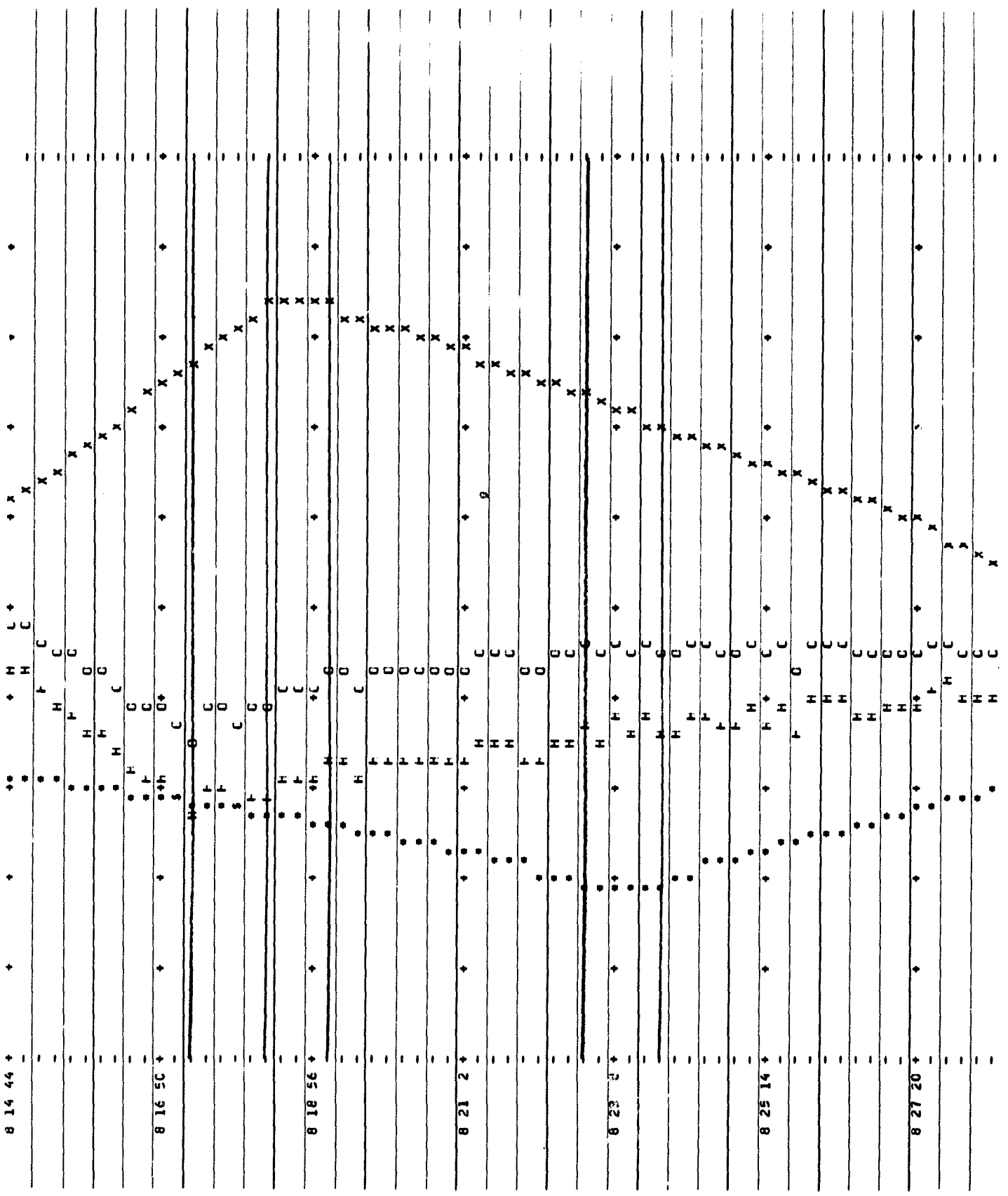


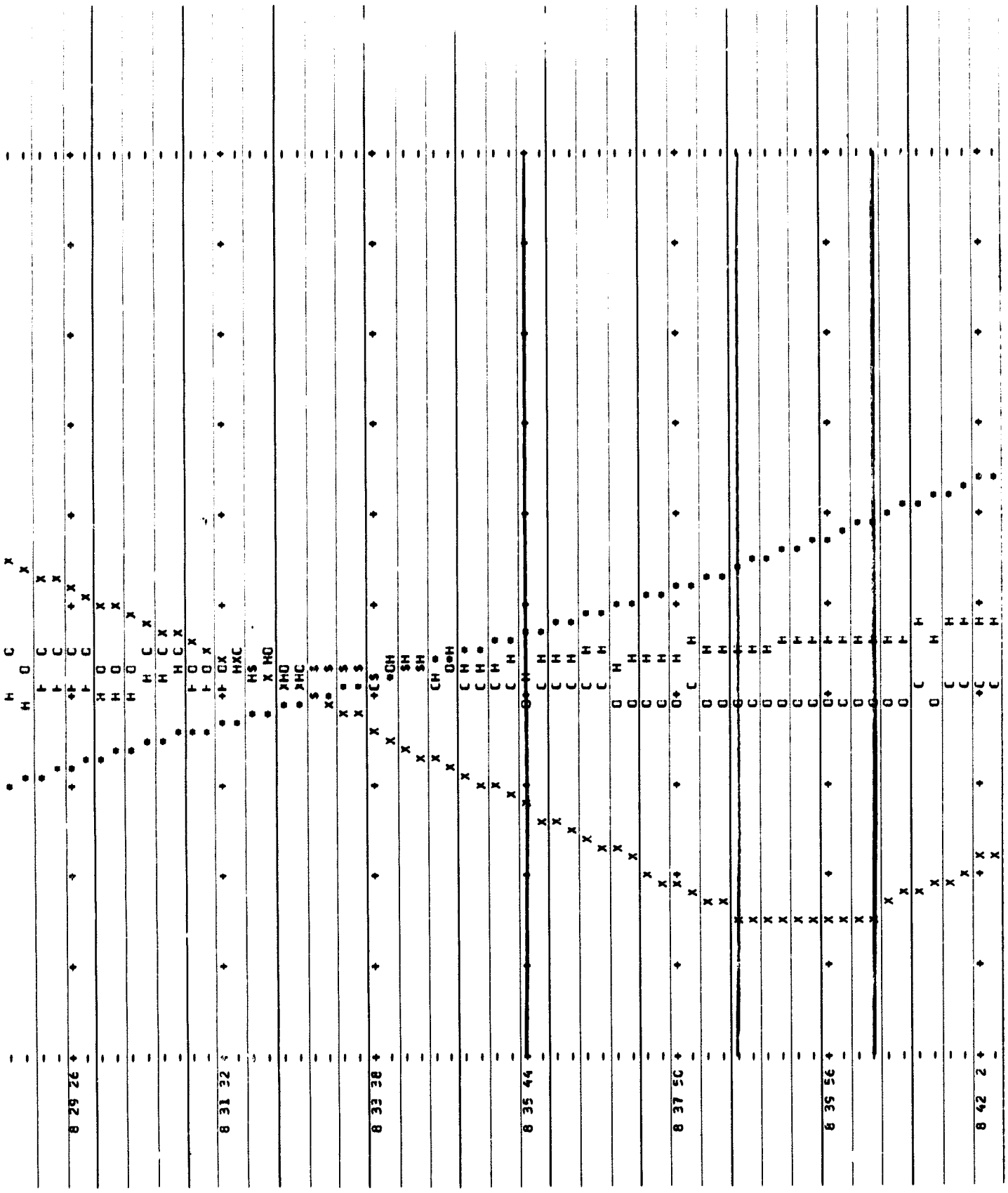

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER 0.19852235E 01 -0.70775622E 01 -0.18231916E 00
LOWER 0.65519691E-01 -0.43730367E 01 -0.67683675E 01
TORQUE BY LEAST SQUARES 0.10481845E 01 -0.8553C123E 01 -0.33627886E 01
RMS ERROR OF PARAB FIT 0.70510549E-01 0.82067431E-01 0.21309955E 00
7 20 8
7 22 14
7 24 20
7 26 26
7 28 32
7 30 38
7 32 44

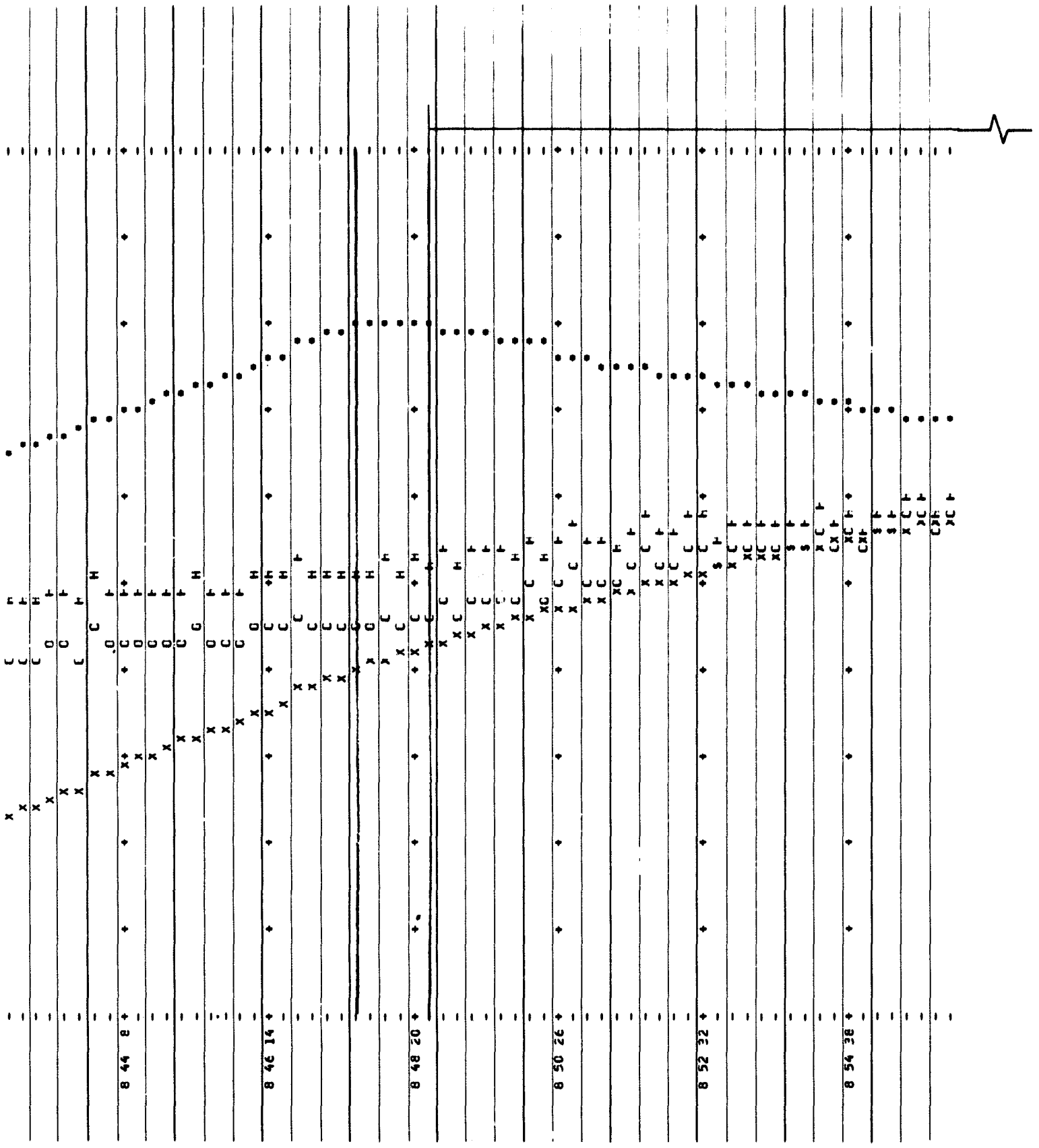

7 34 50
7 36 56
7 39 2
7 41 8
7 43 14
7 45 20


7 53 8
7 57 56
7 55 50
7 53 44
7 51 38
7 49 32
7 47 26




8 14 44
8 16 50
8 18 56
8 21 2
8 23
8 25 14
8 27 20

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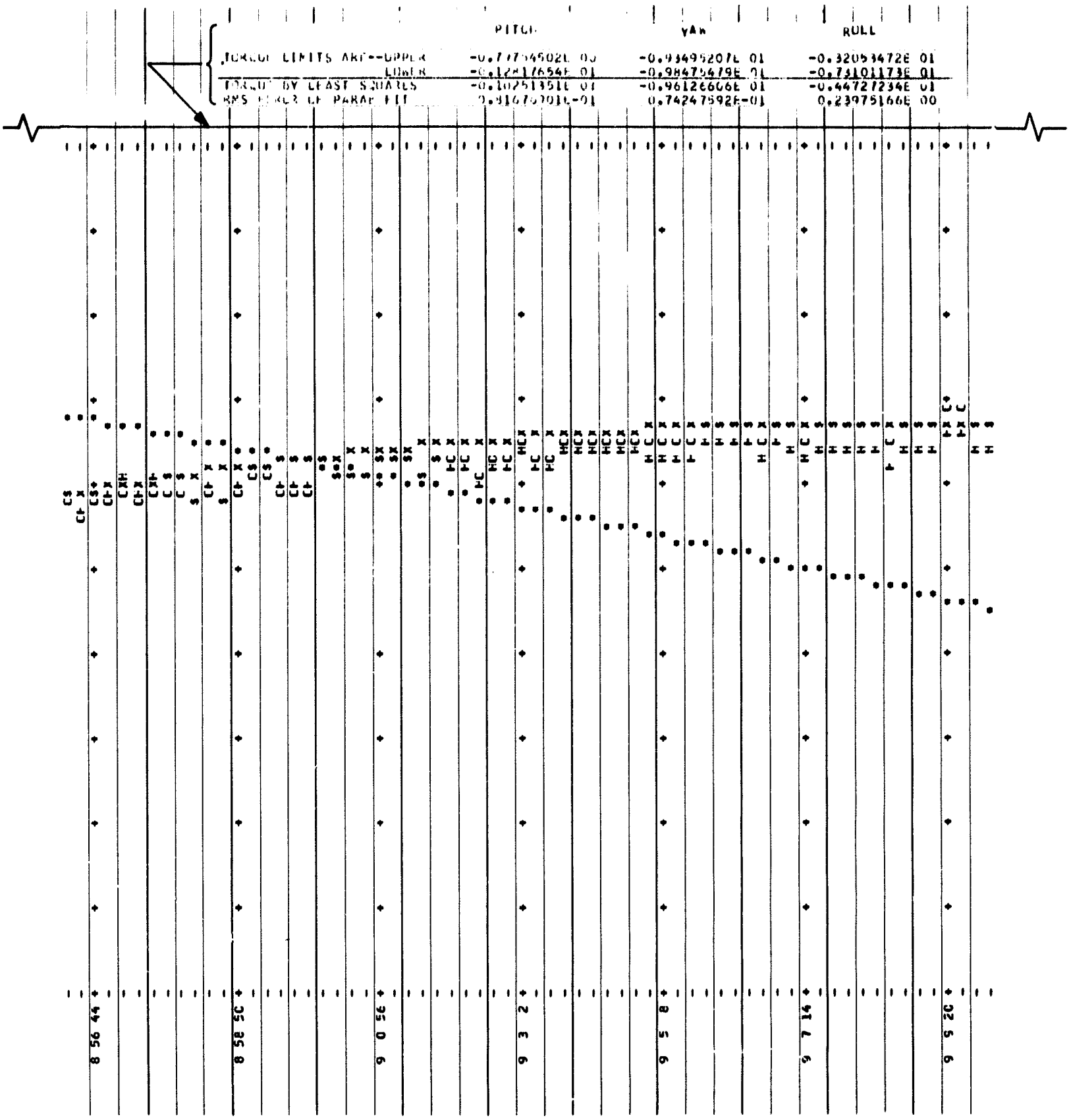
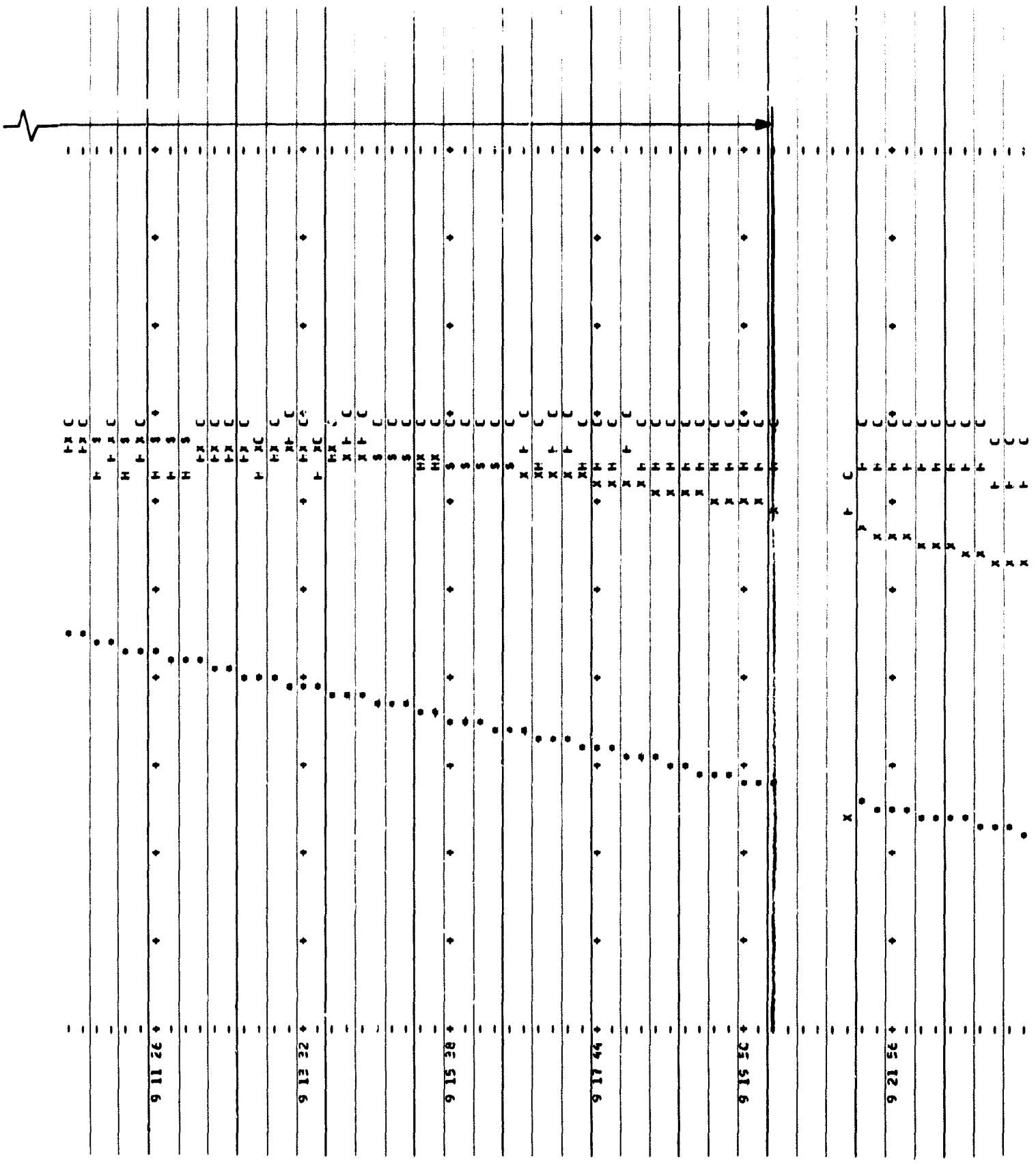
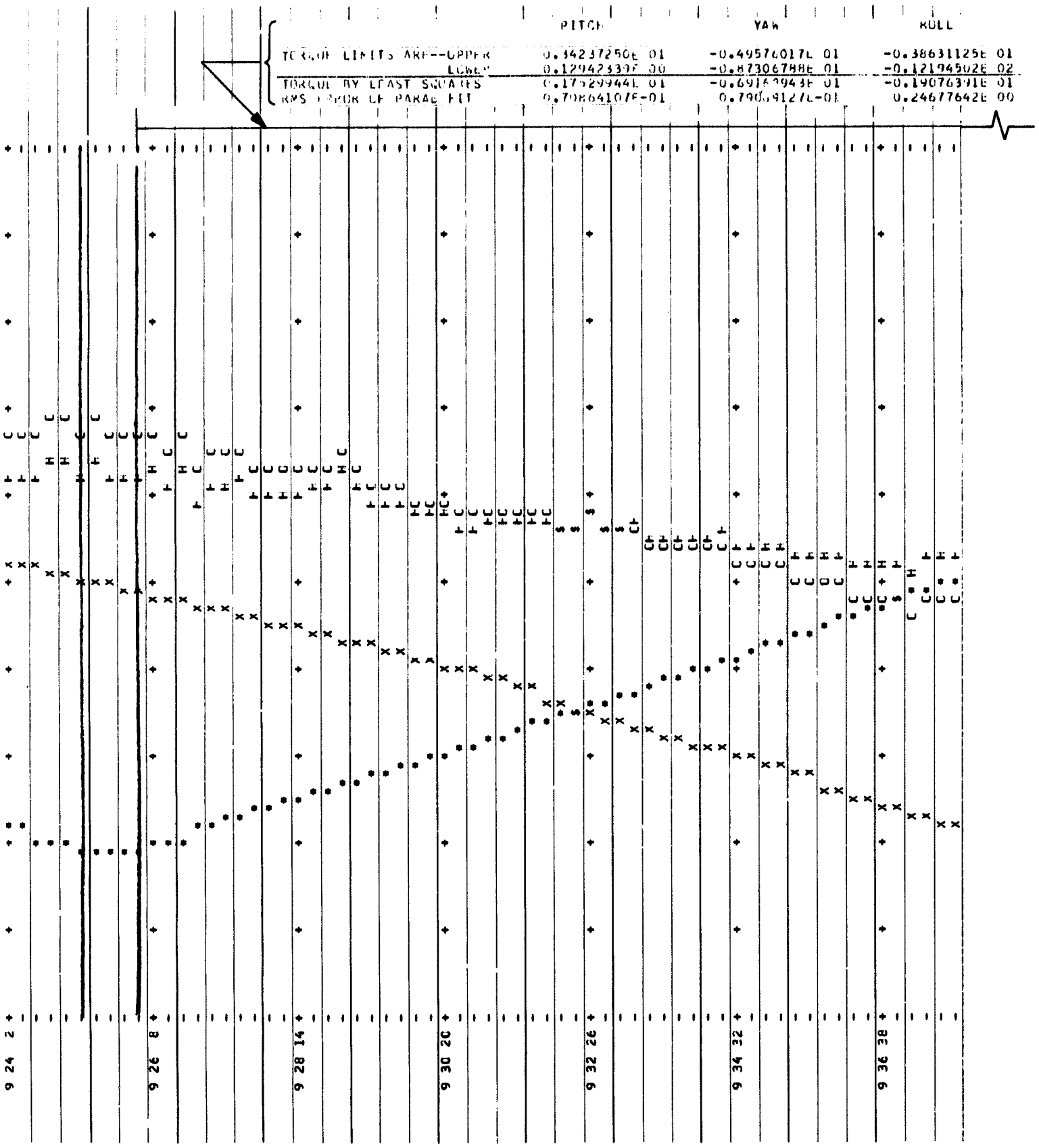

PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER -0.77745402E 00 -0.93495207E 01 -0.32053472E 01
LOWER -0.12417654E 01 -0.98475479E 01 -0.31011173E 01
TORQUE BY LEAST SQUARES -0.10251351E 01 -0.96126606E 01 -0.44727234E 01
RMS ERROR OF PARAB FIT 0.91670701E-01 0.74247592E-01 0.23975166E 00




PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER 0.34237250E 01 -0.49576017E 01 -0.38631125E 01
LOWER 0.12942339E 00 -0.87306788E 01 -0.12194502E 02
TORQUE BY LEAST SQUARES 0.17529944E 01 -0.69163943E 01 -0.19076391E 01
RMS ERROR OF PARAB FIT 0.70864107E-01 0.79069127E-01 0.24677642E 00
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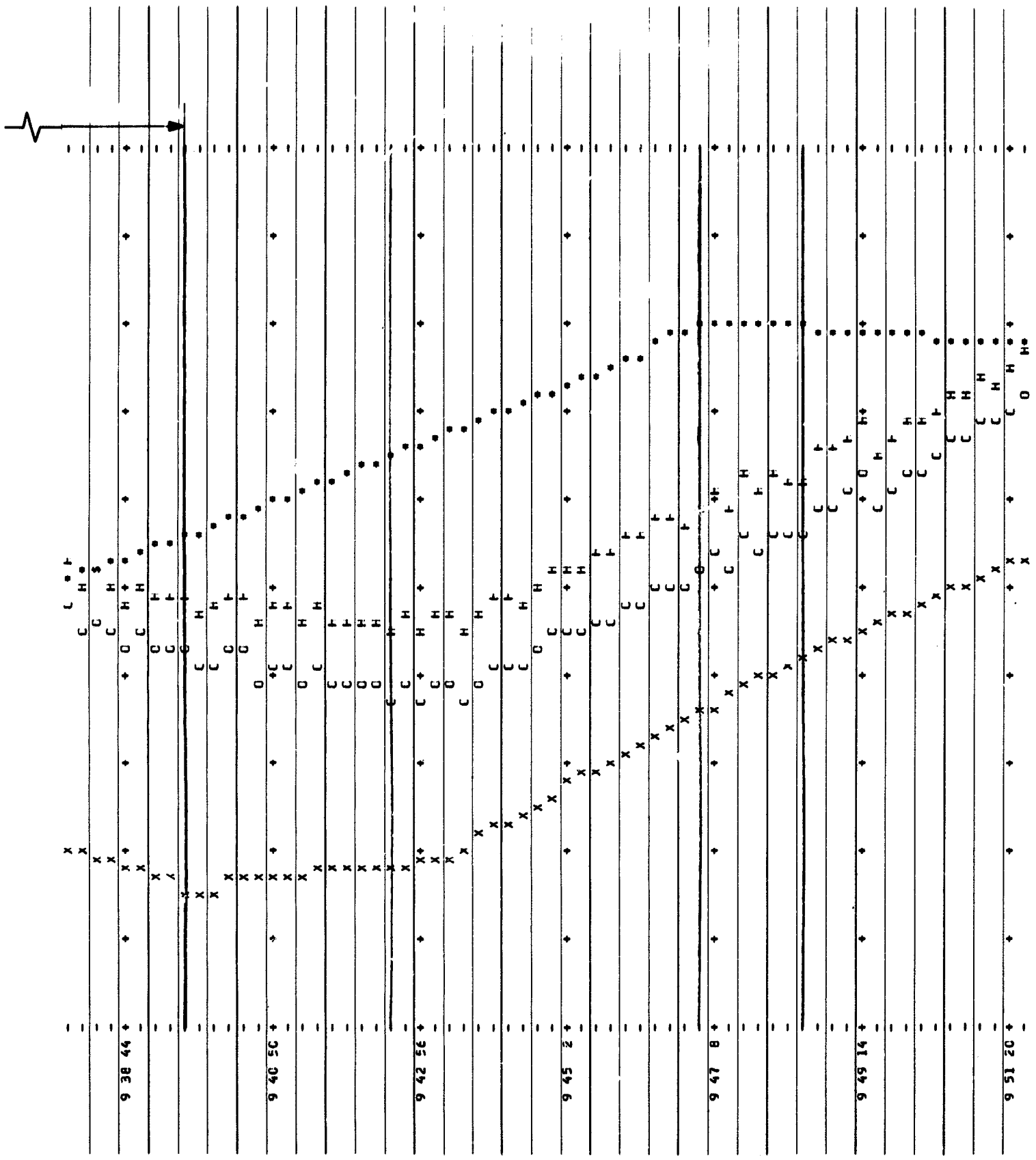
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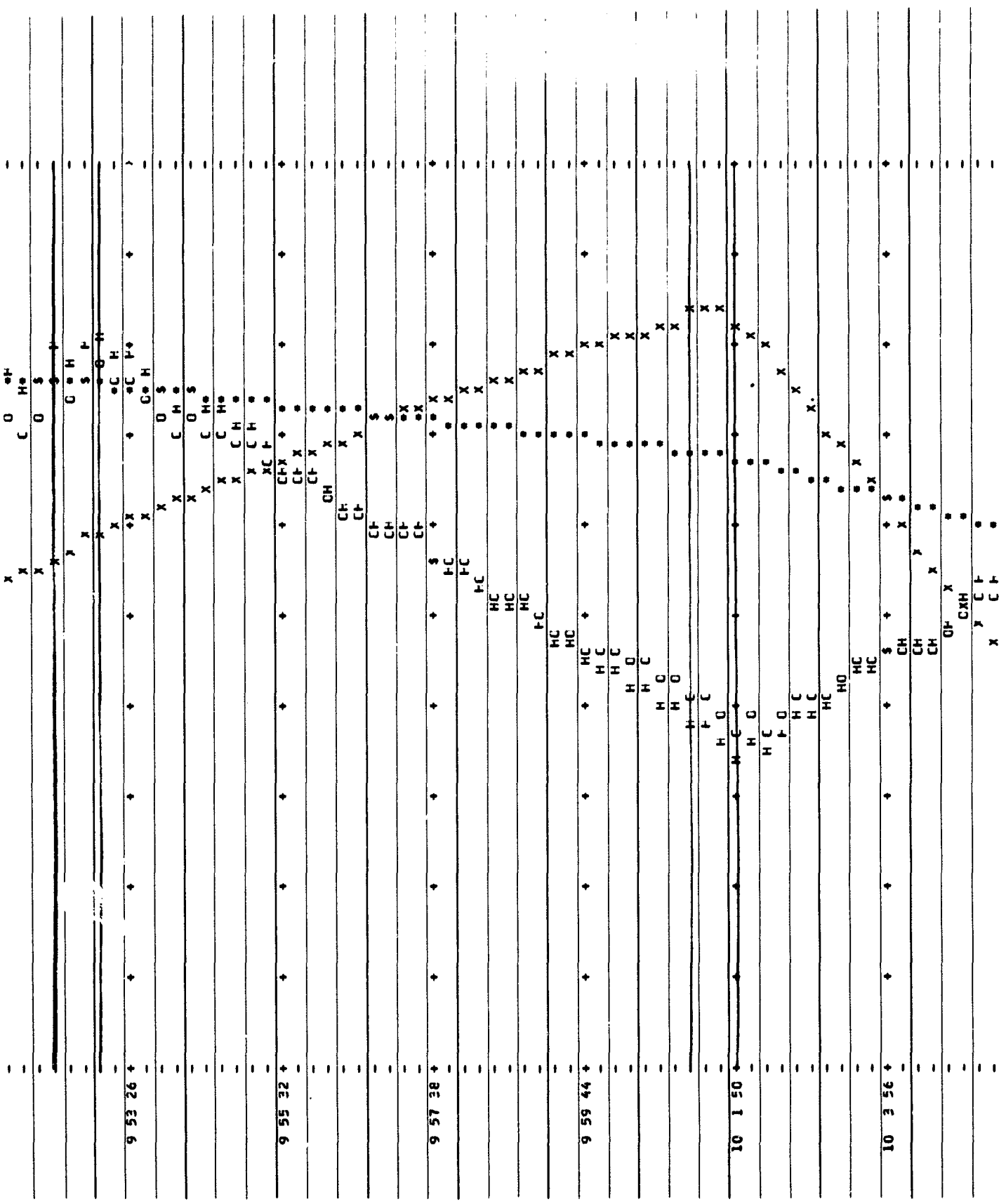
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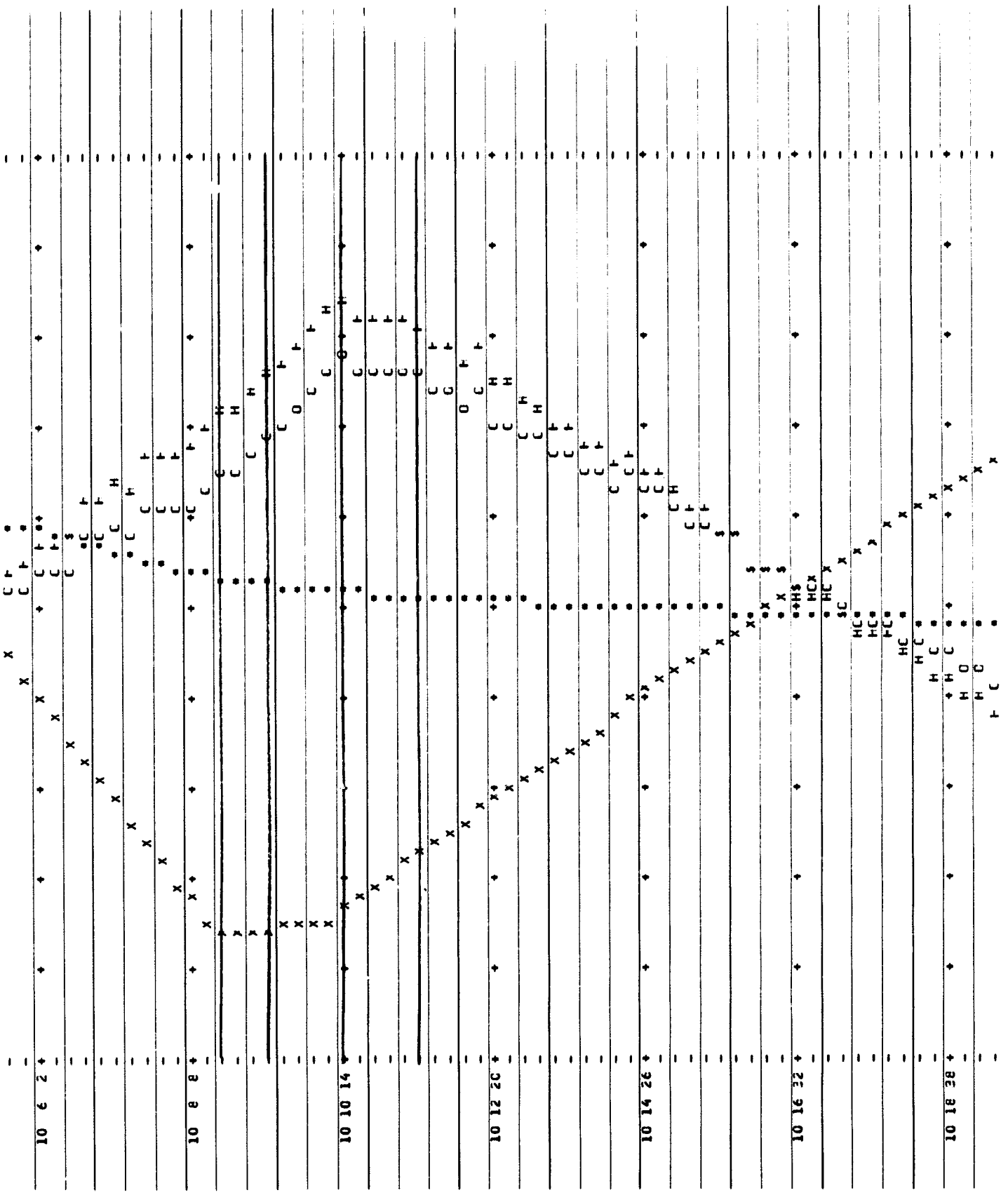

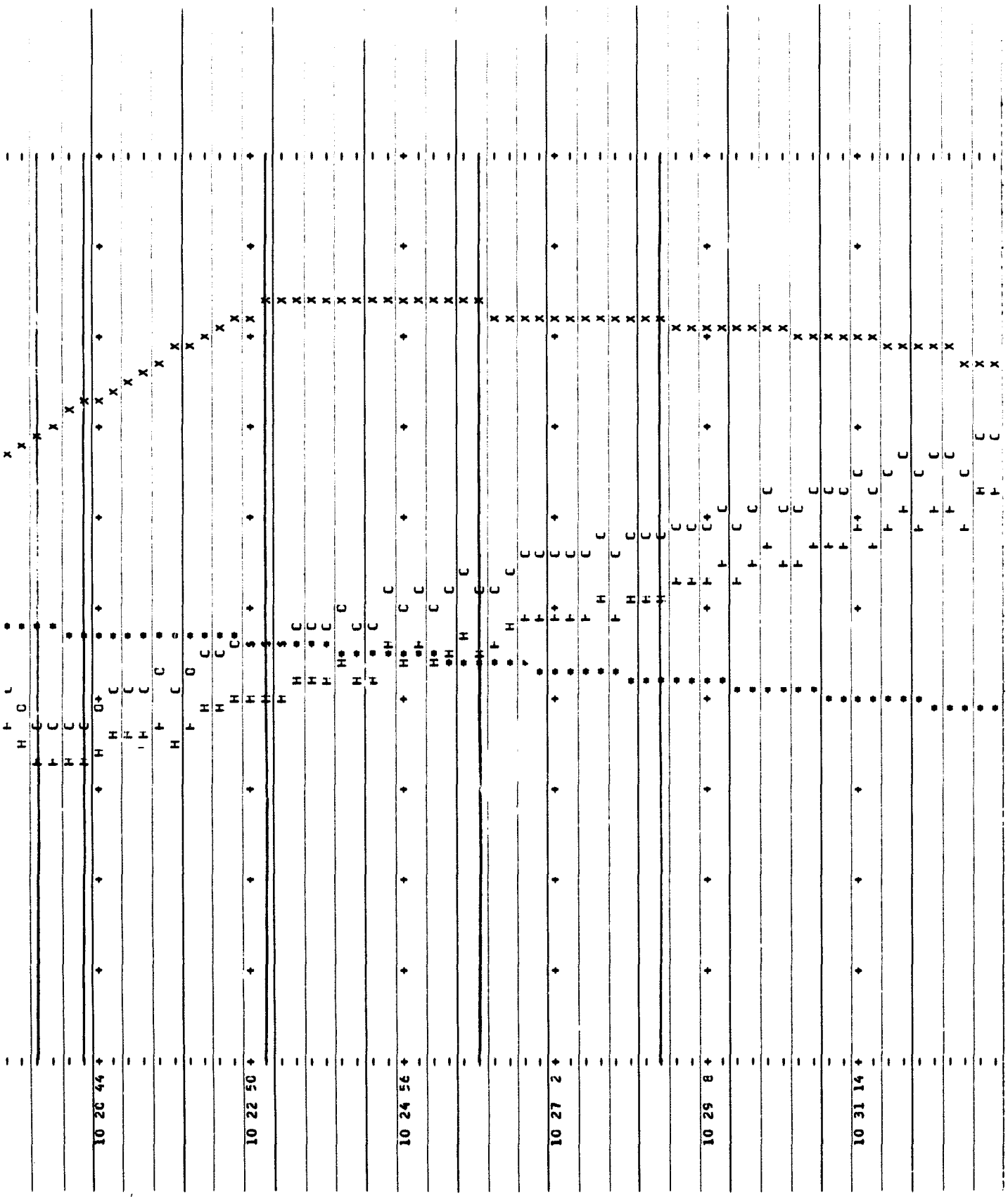
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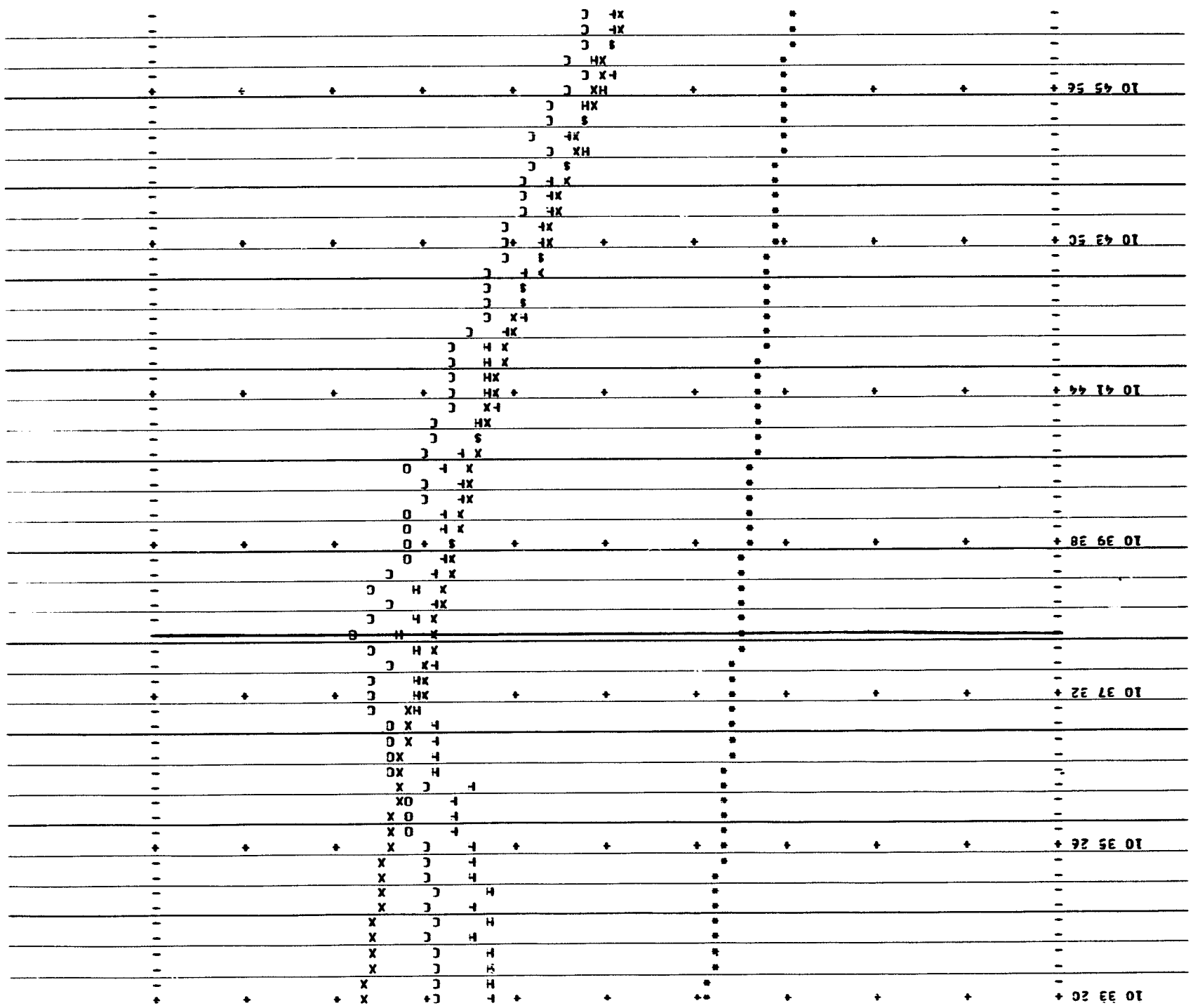
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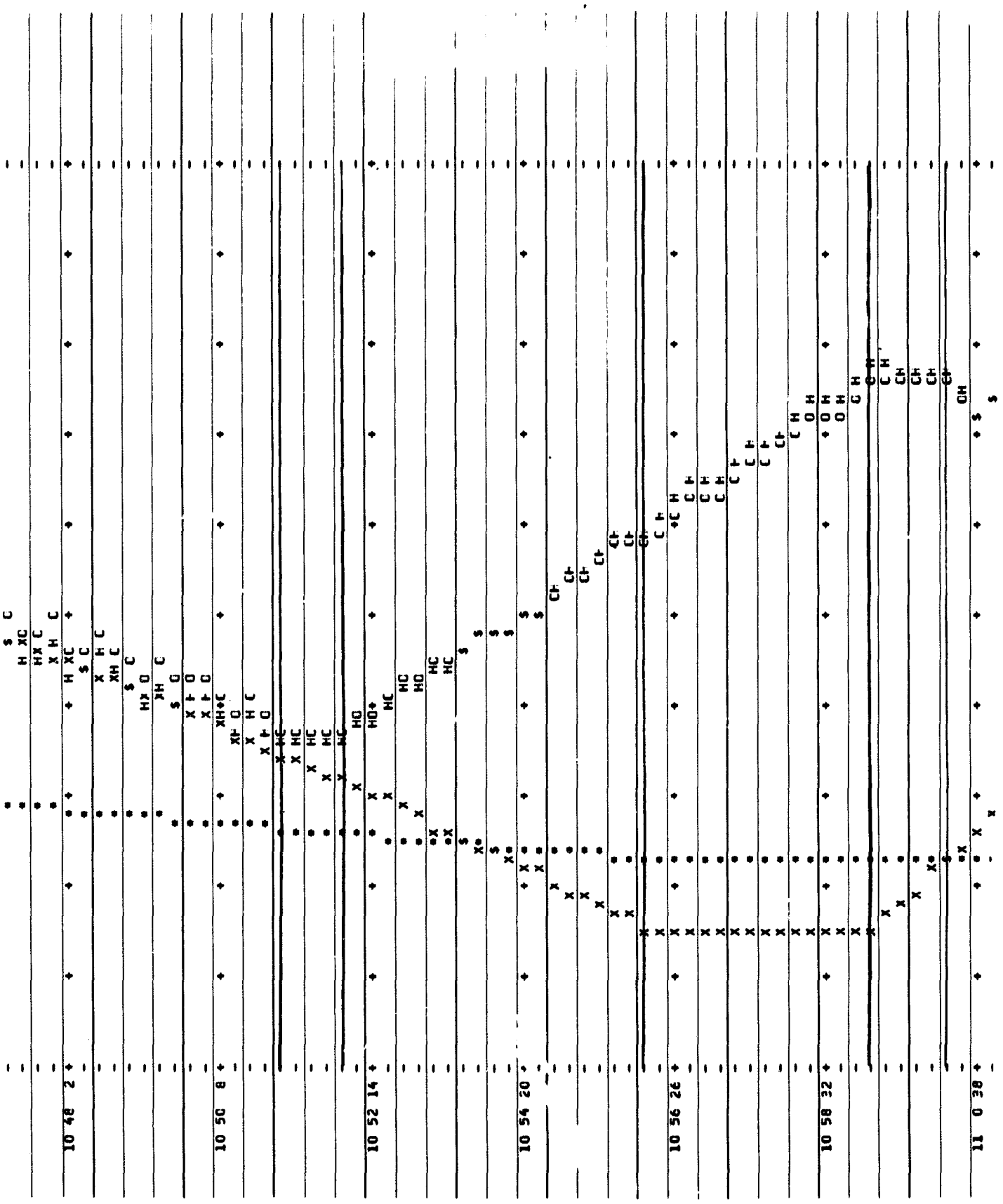

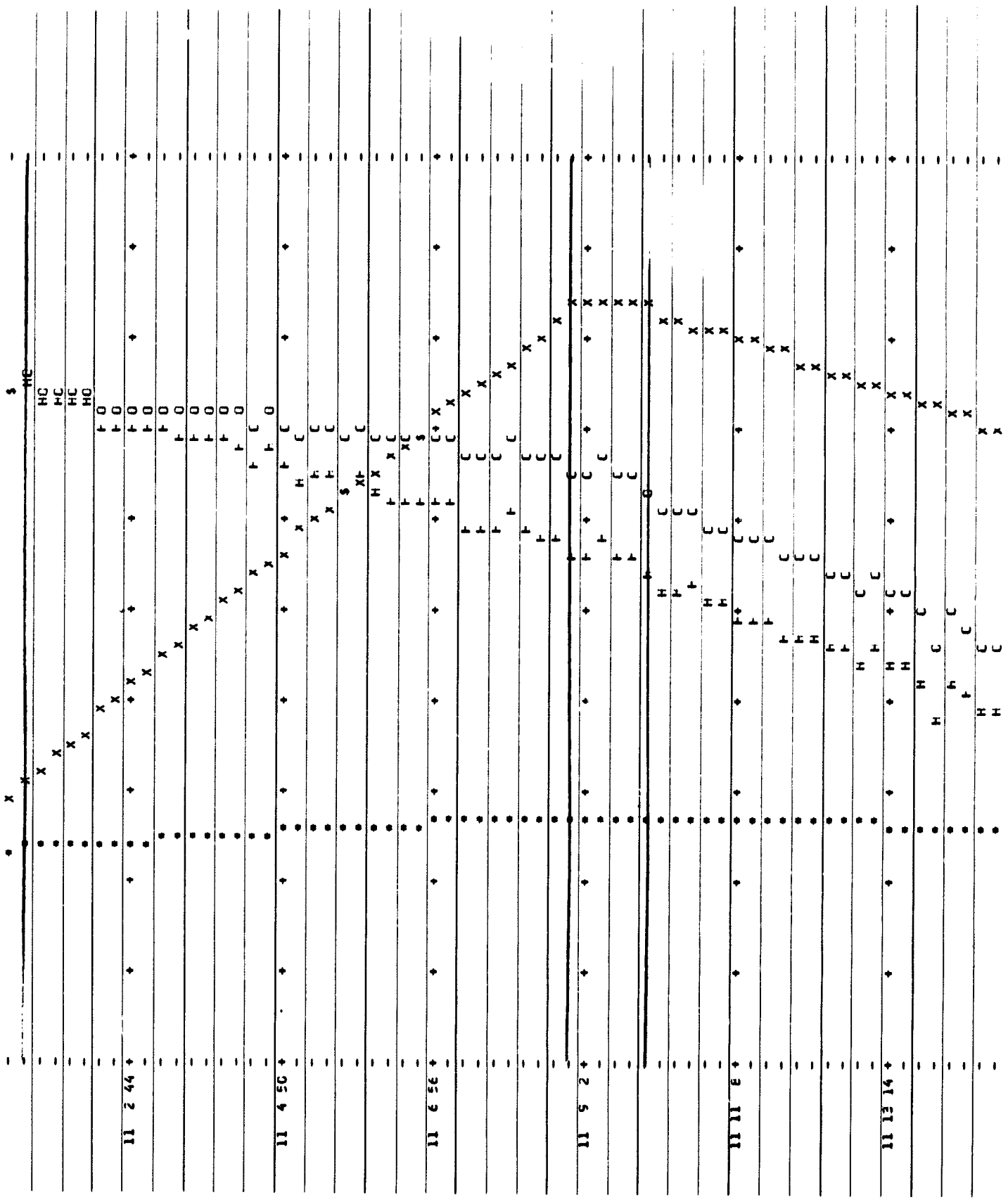

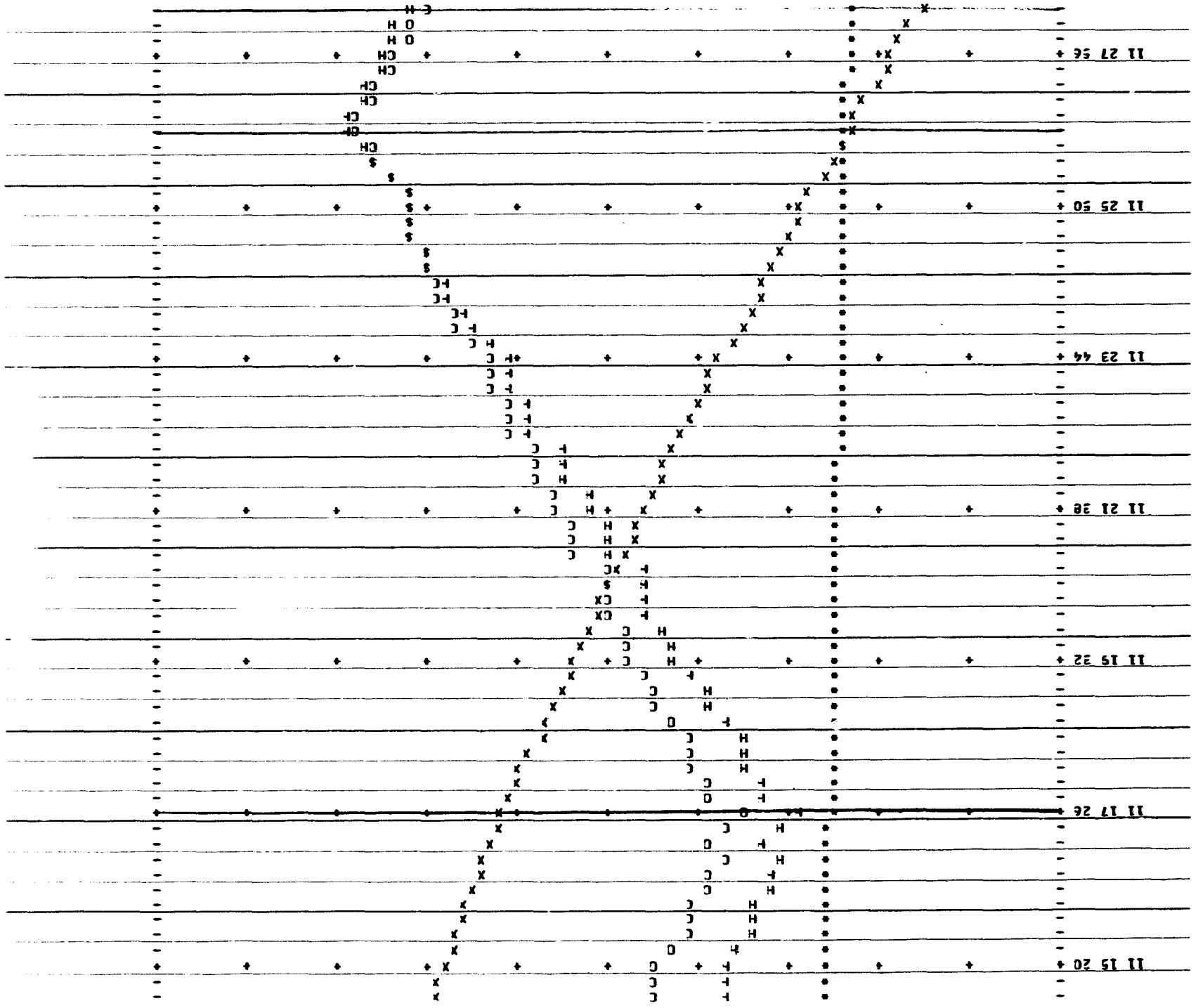
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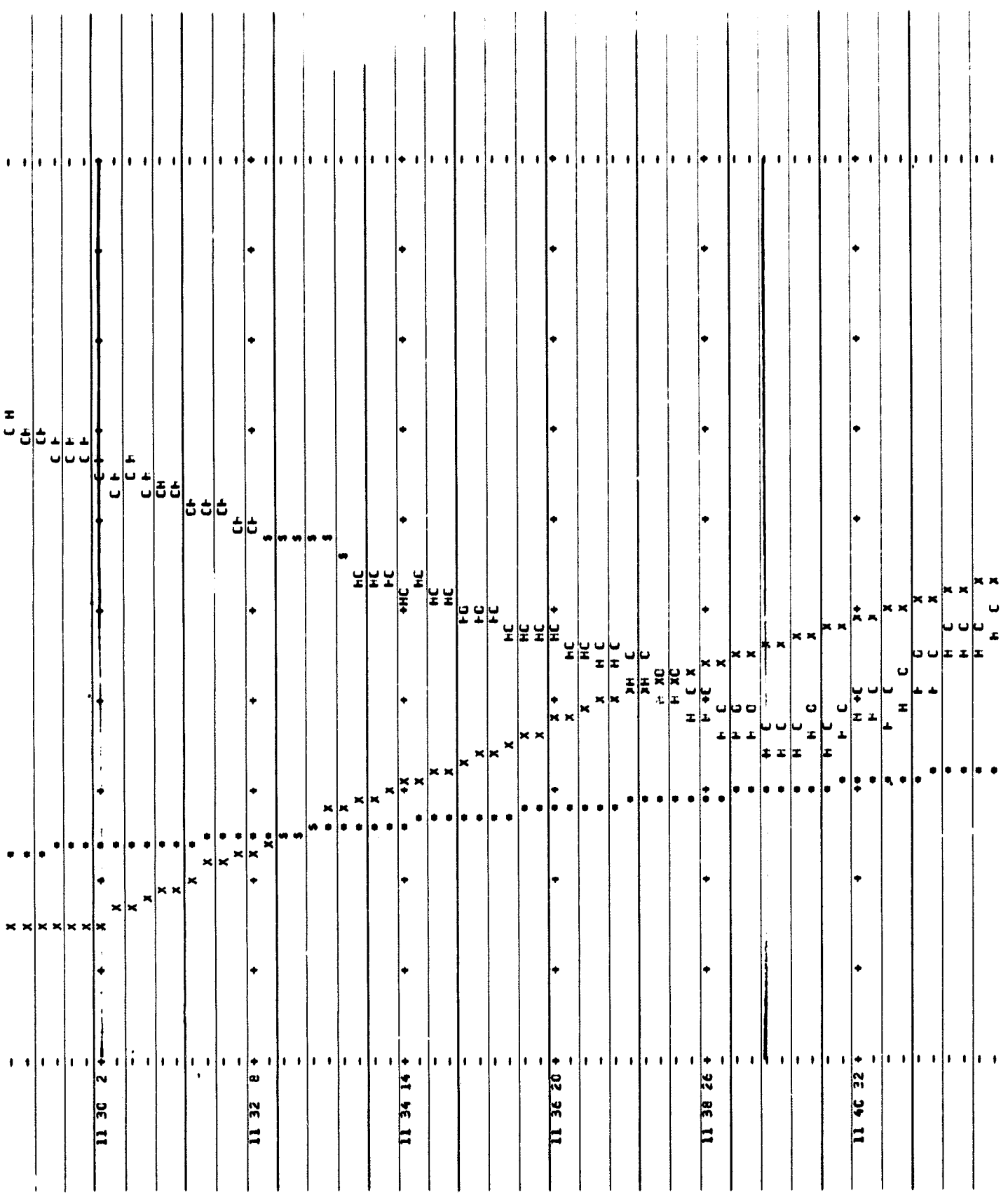
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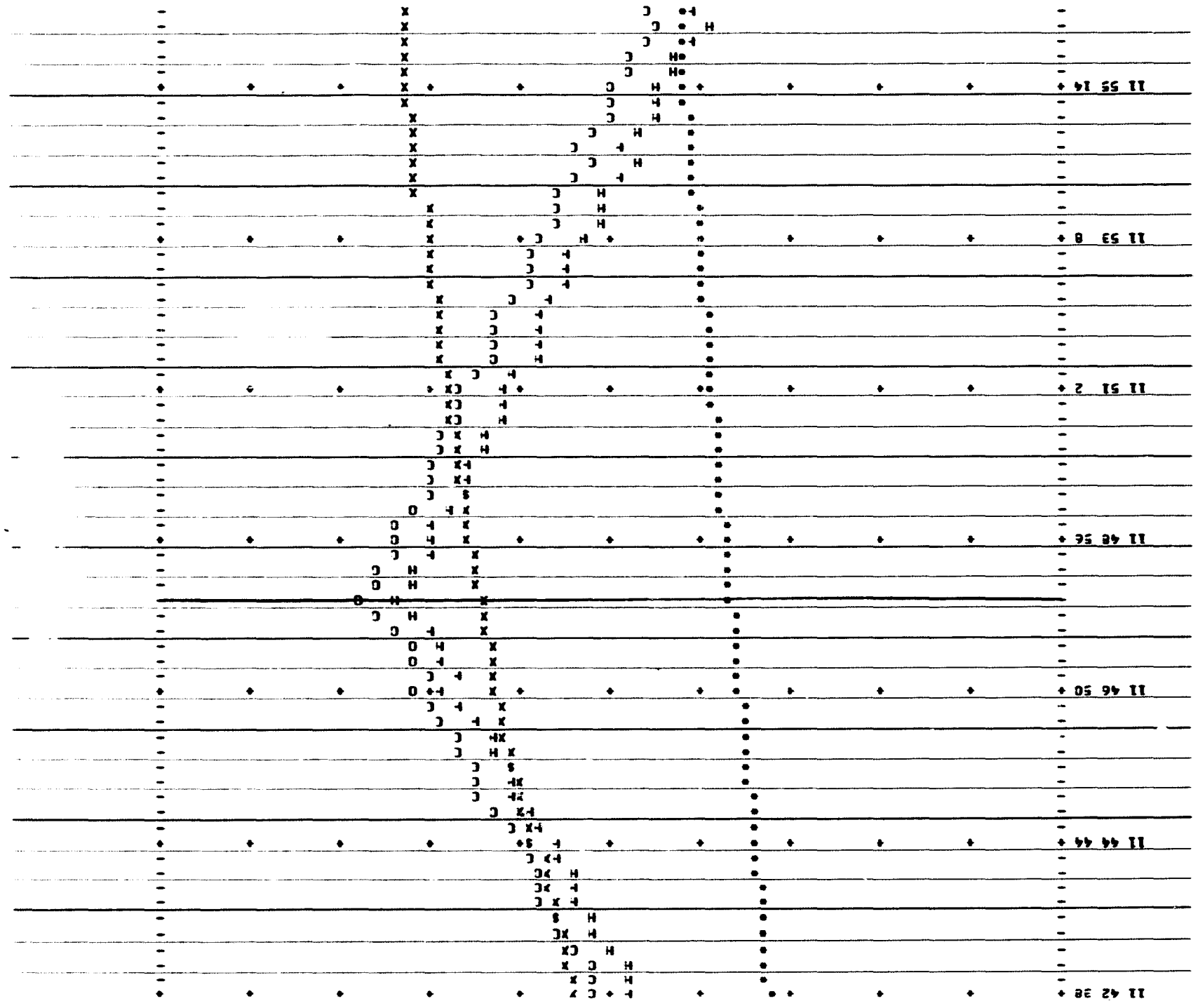
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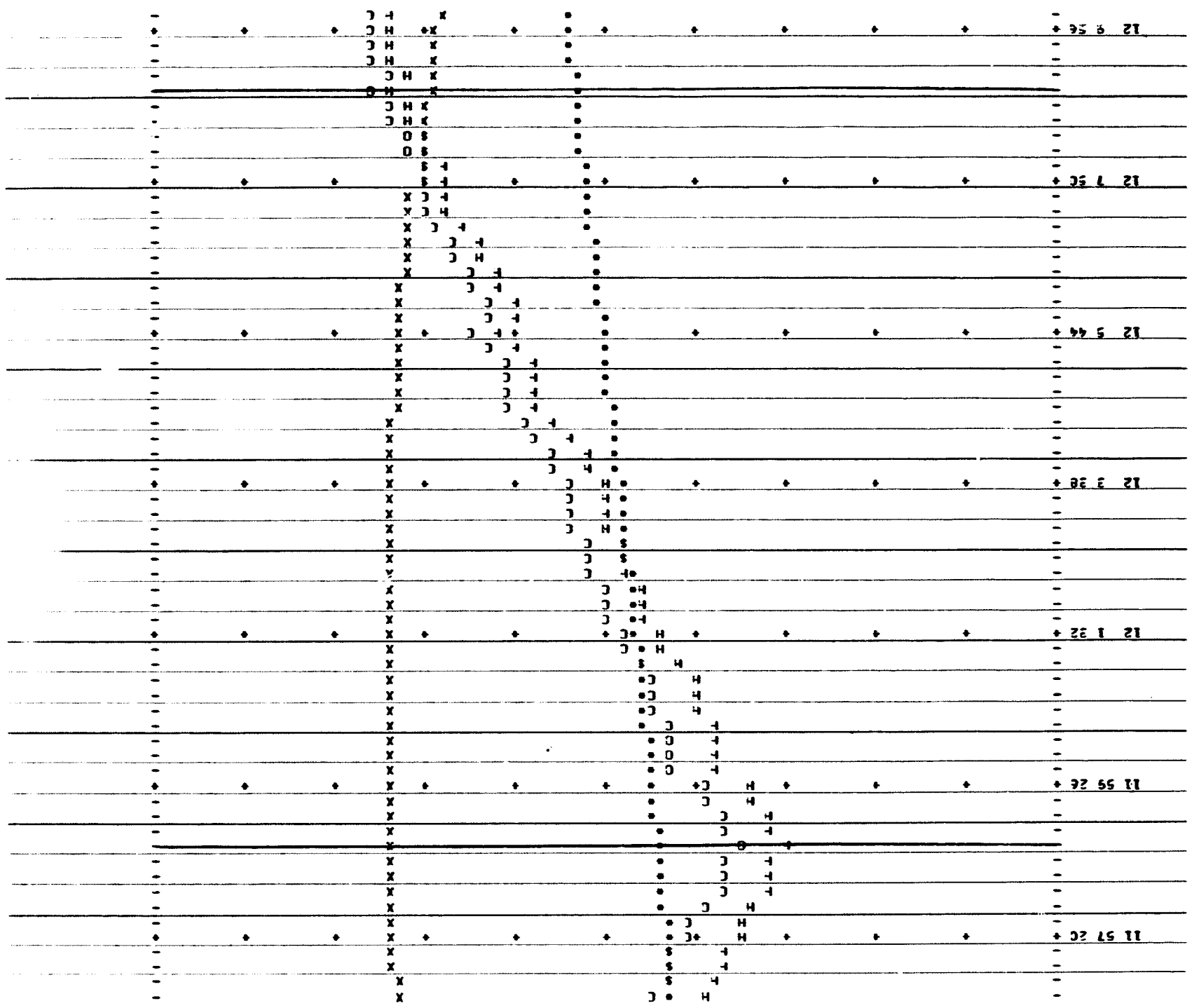
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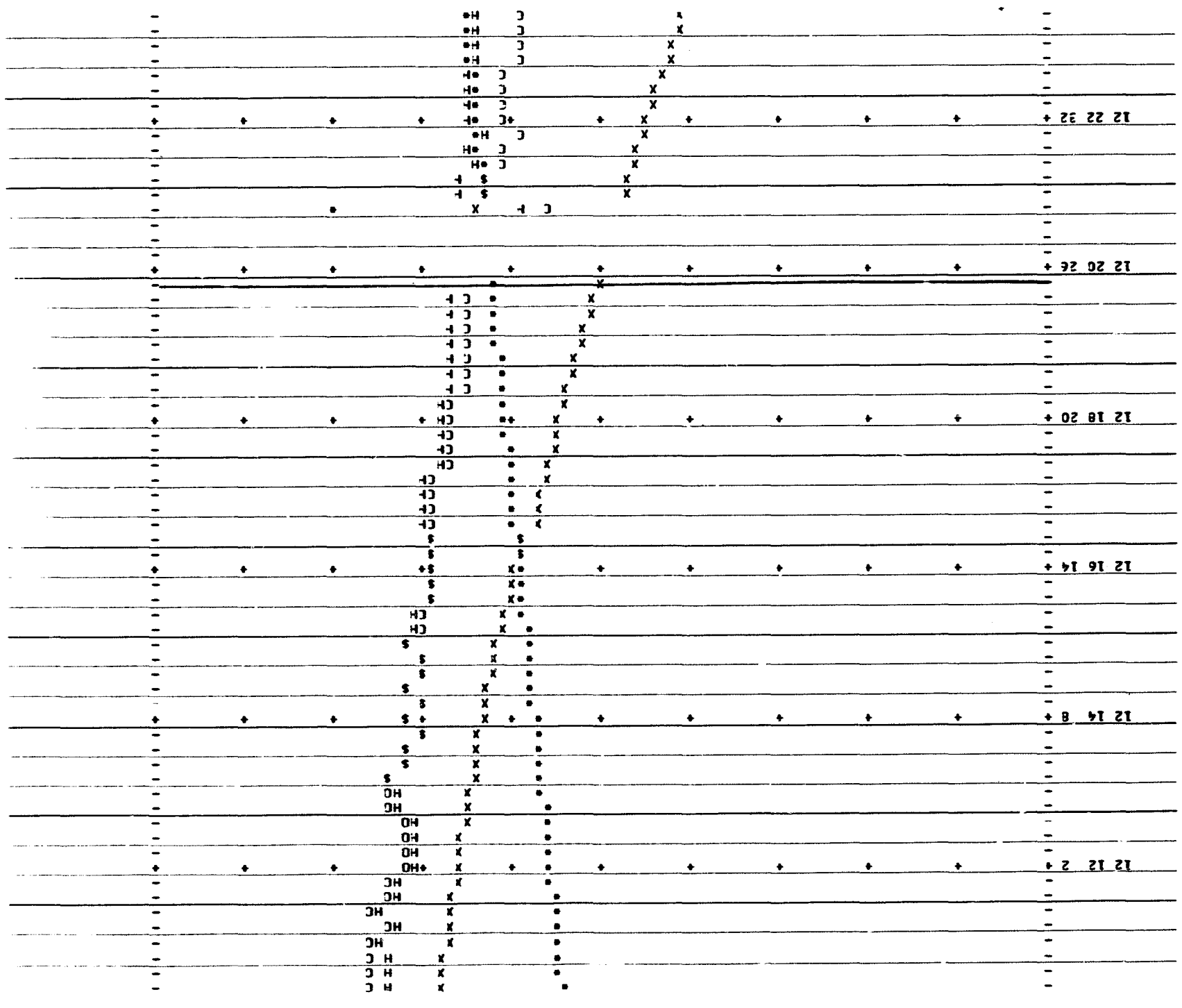
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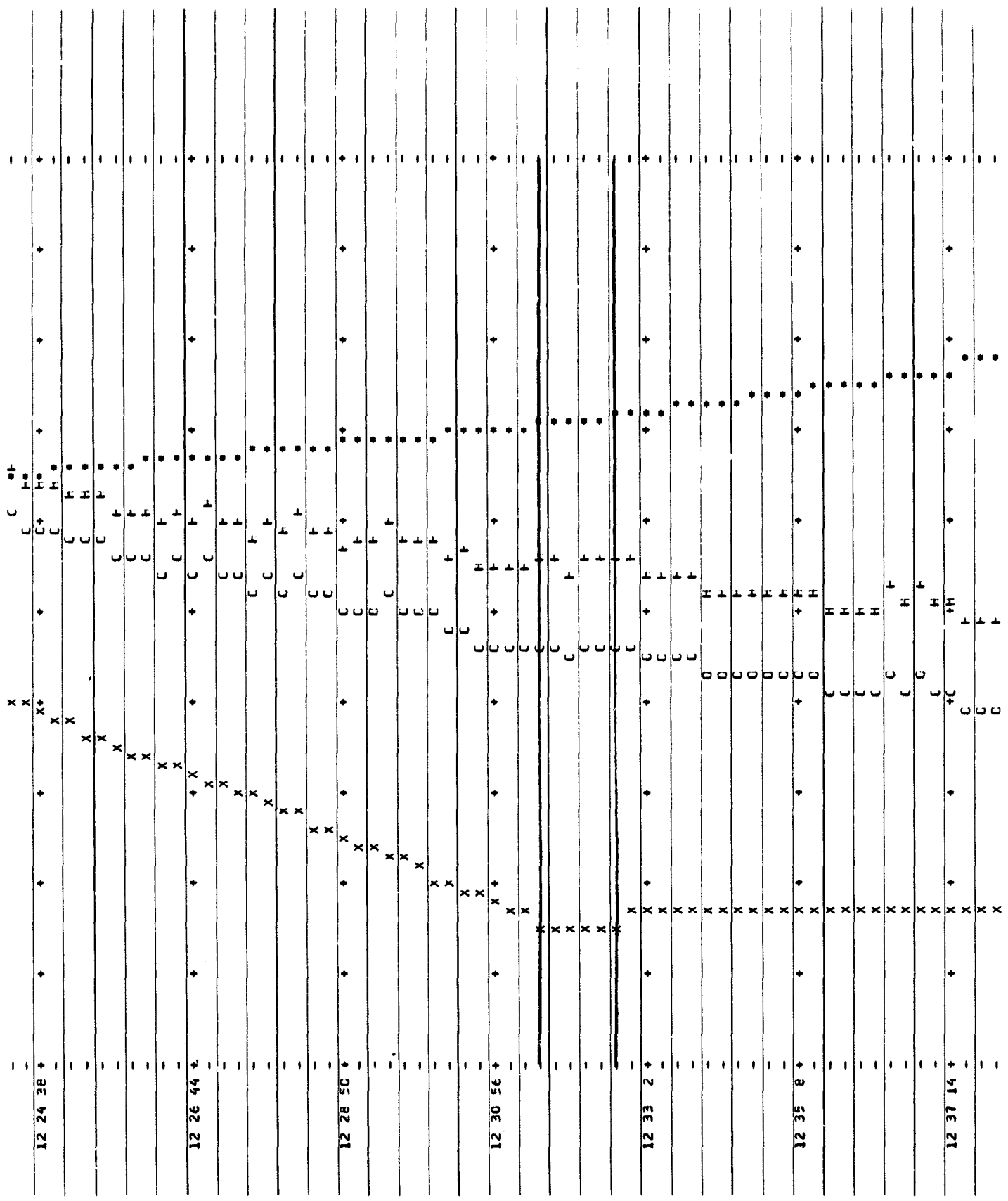
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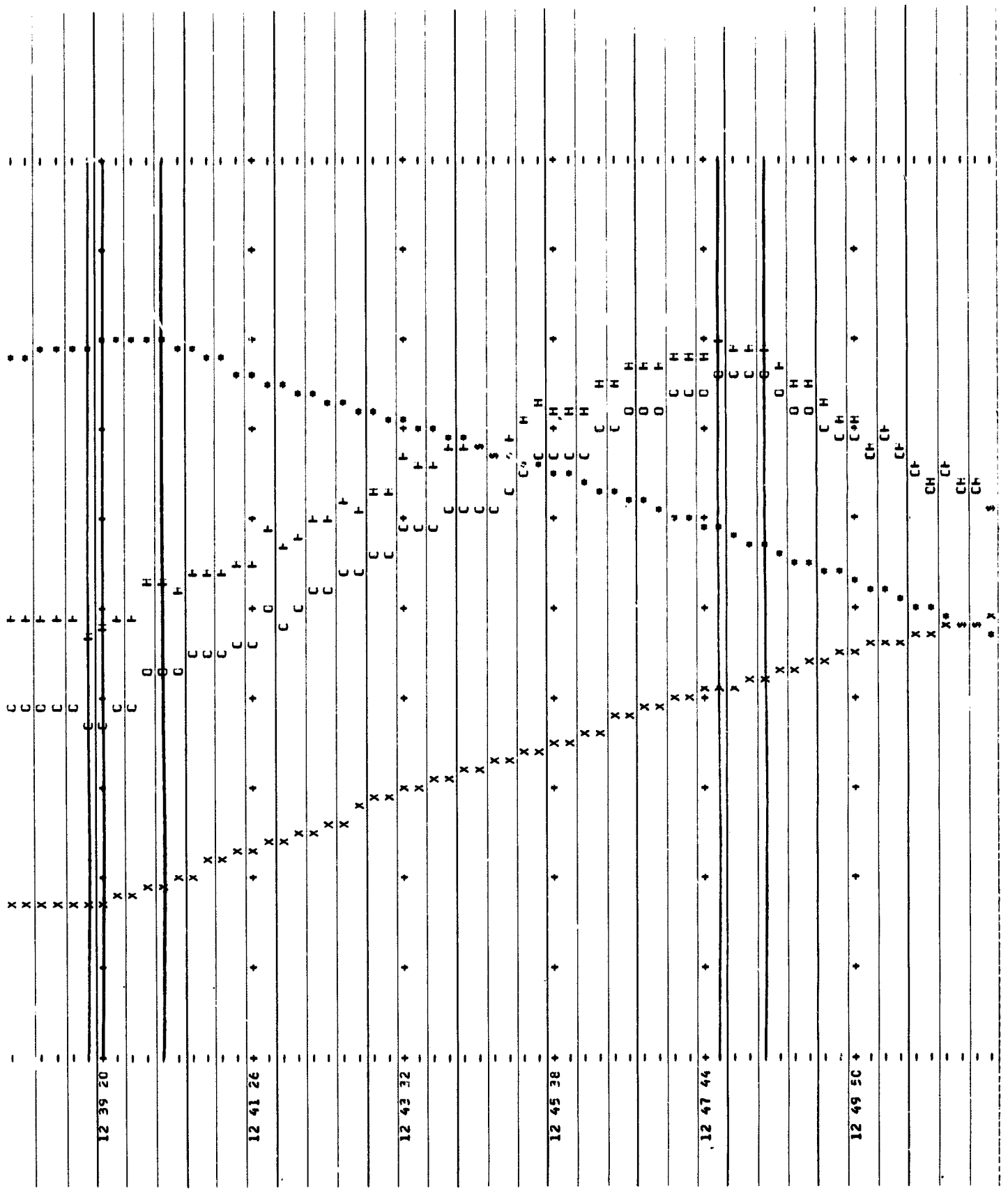
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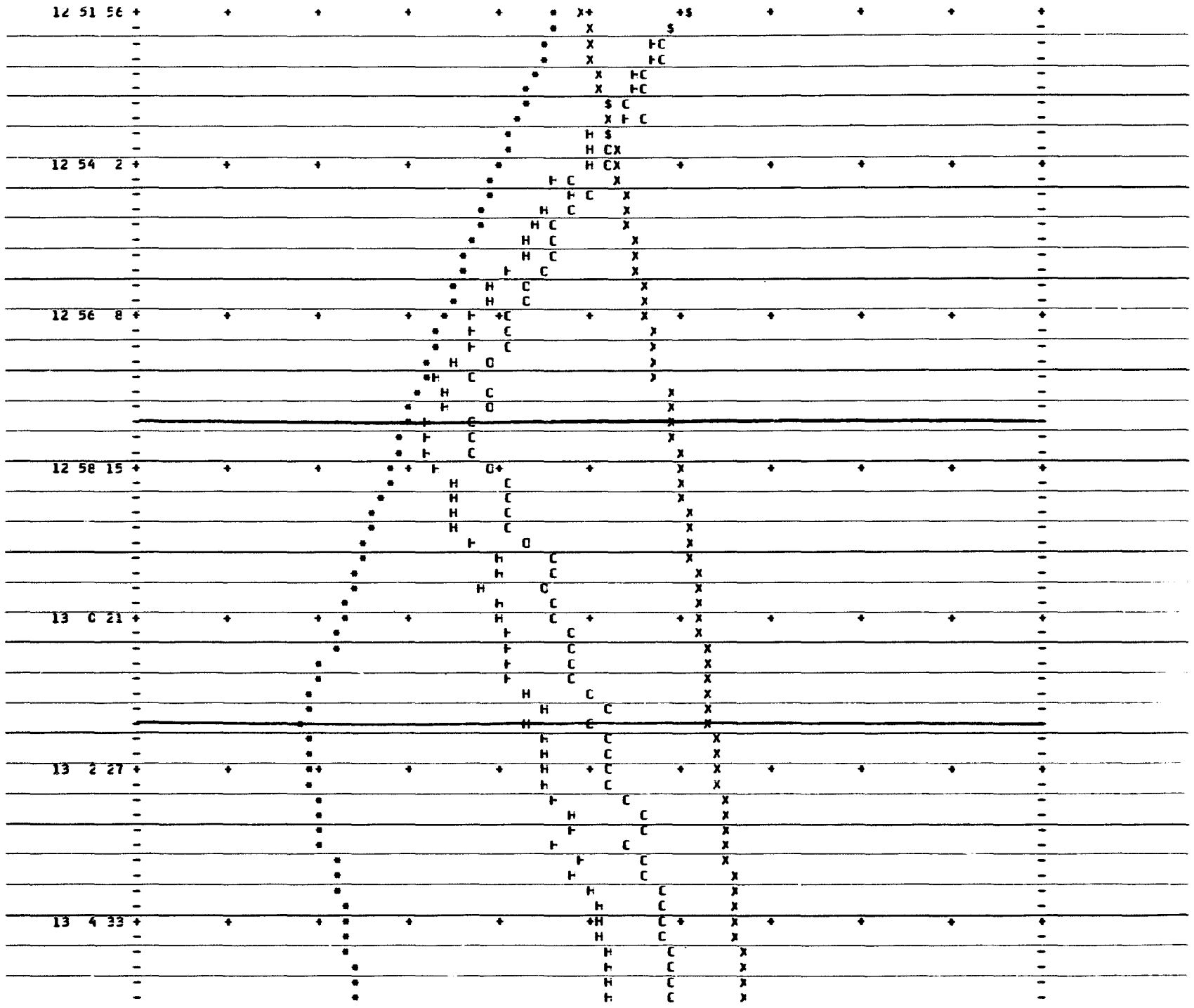
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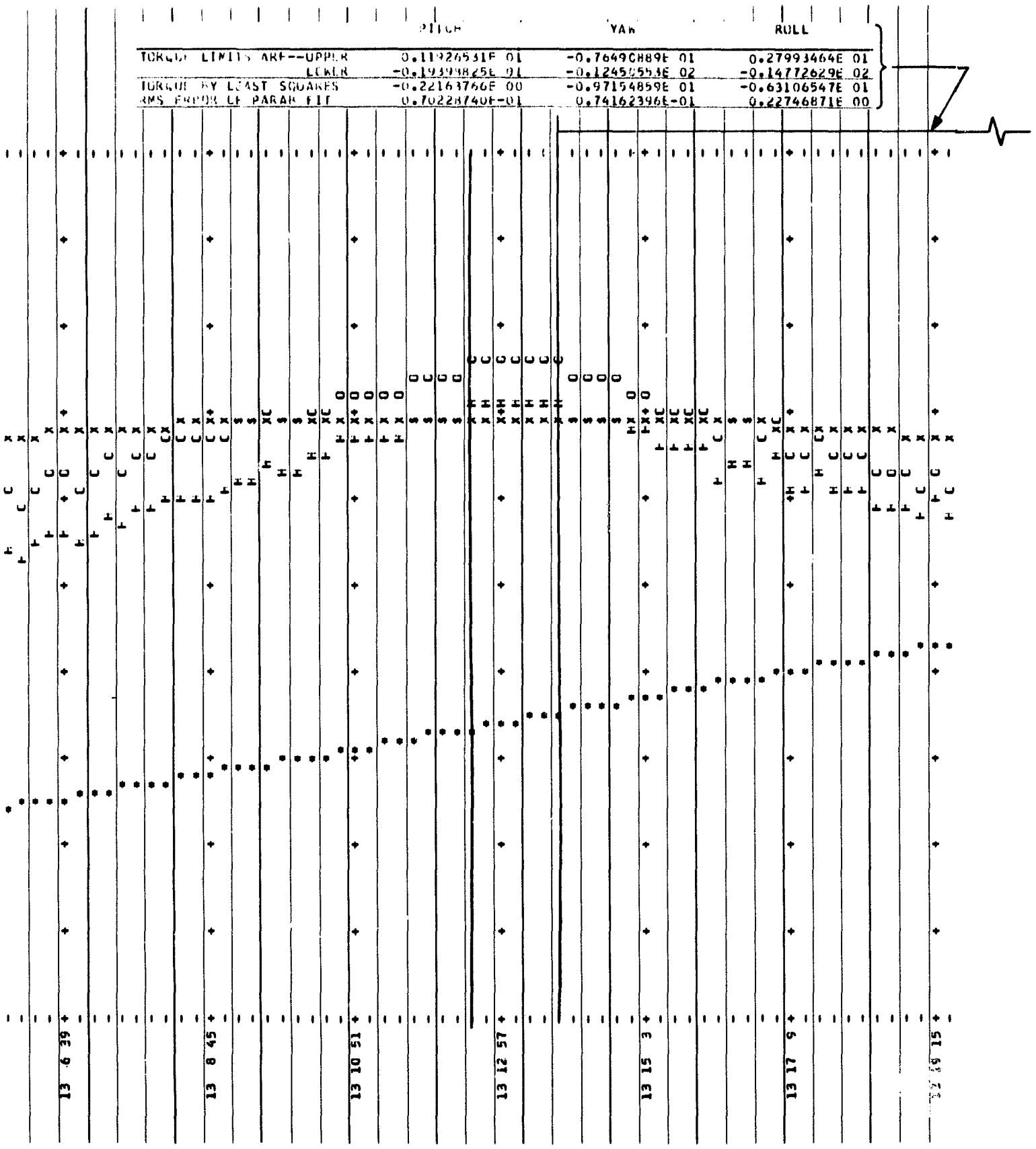
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER 0.11926531E 01 -0.76490889E 01 0.27993464E 01
LOWER -0.19399825E 01 -0.12450554E 02 -0.14772629E 02
TORQUE BY LEAST SQUARES -0.22163766E 00 -0.97154859E 01 -0.63106547E 01
RMS ERROR IF PARAB FIT 0.70228740E-01 0.74162396E-01 0.22746871E 00
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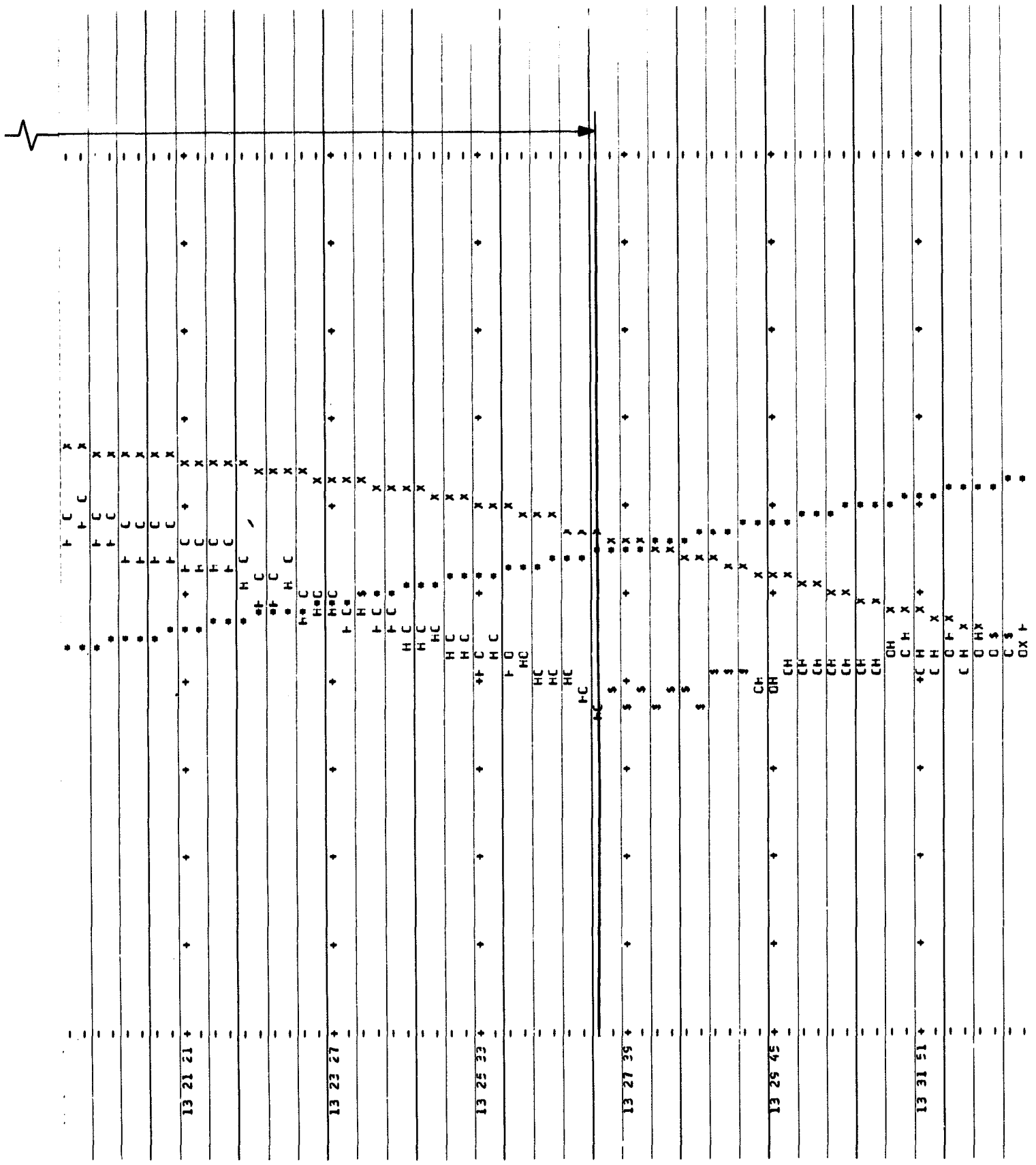
13 8 45
13 10 51
13 12 57
13 15 3
13 17 9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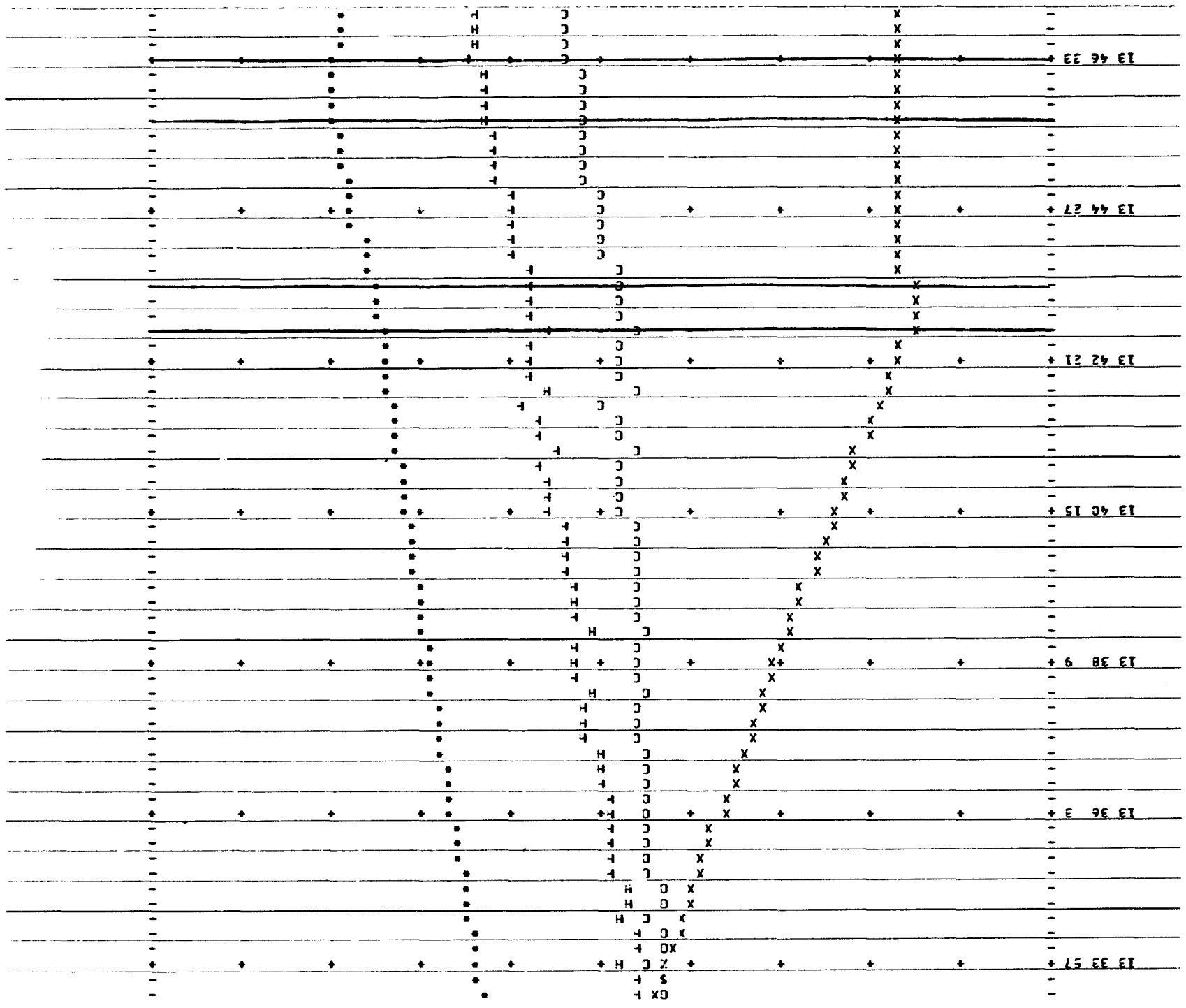
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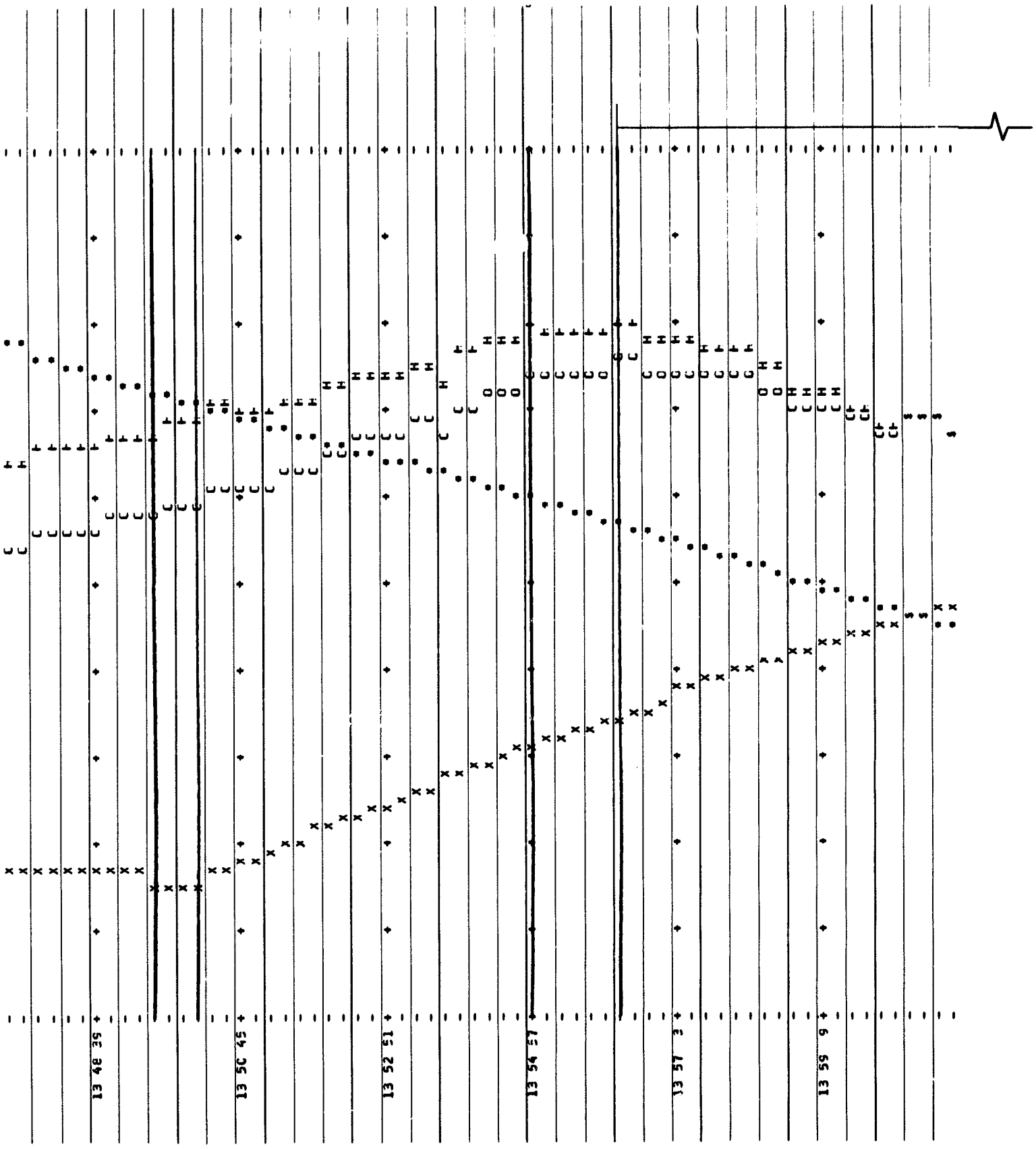
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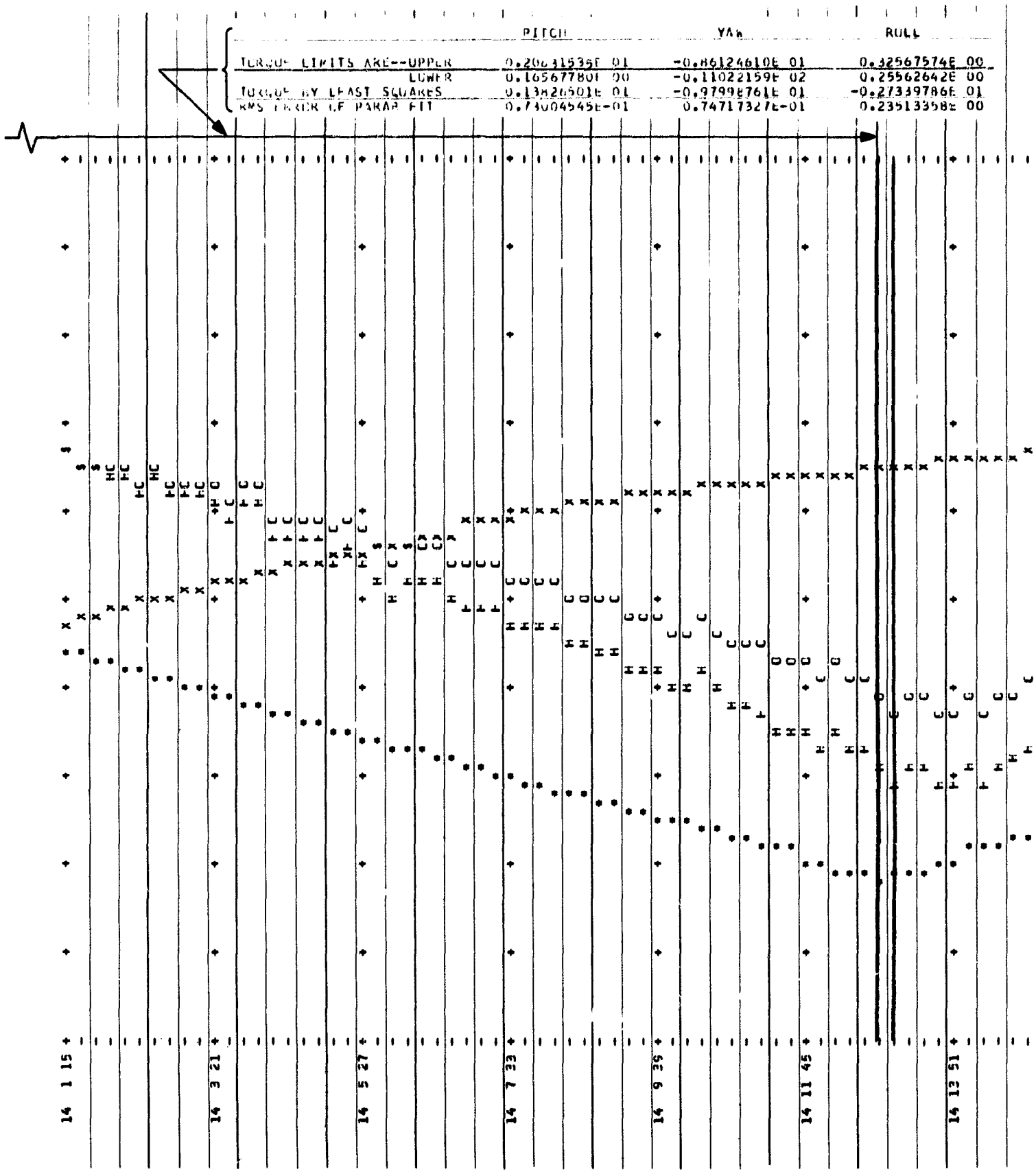
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER 0.20631535E 01 -0.86124610E 01 0.32567574E 00
LOWER 0.16567780E 00 -0.11022159E 02 0.25562642E 00
TORQUE BY LEAST SQUARES 0.13826501E 01 -0.97998761E 01 -0.27339786E 01
RMS ERROR OF PARAB FIT 0.74004545E-01 0.74717327E-01 0.23513358E 00
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14 5 27
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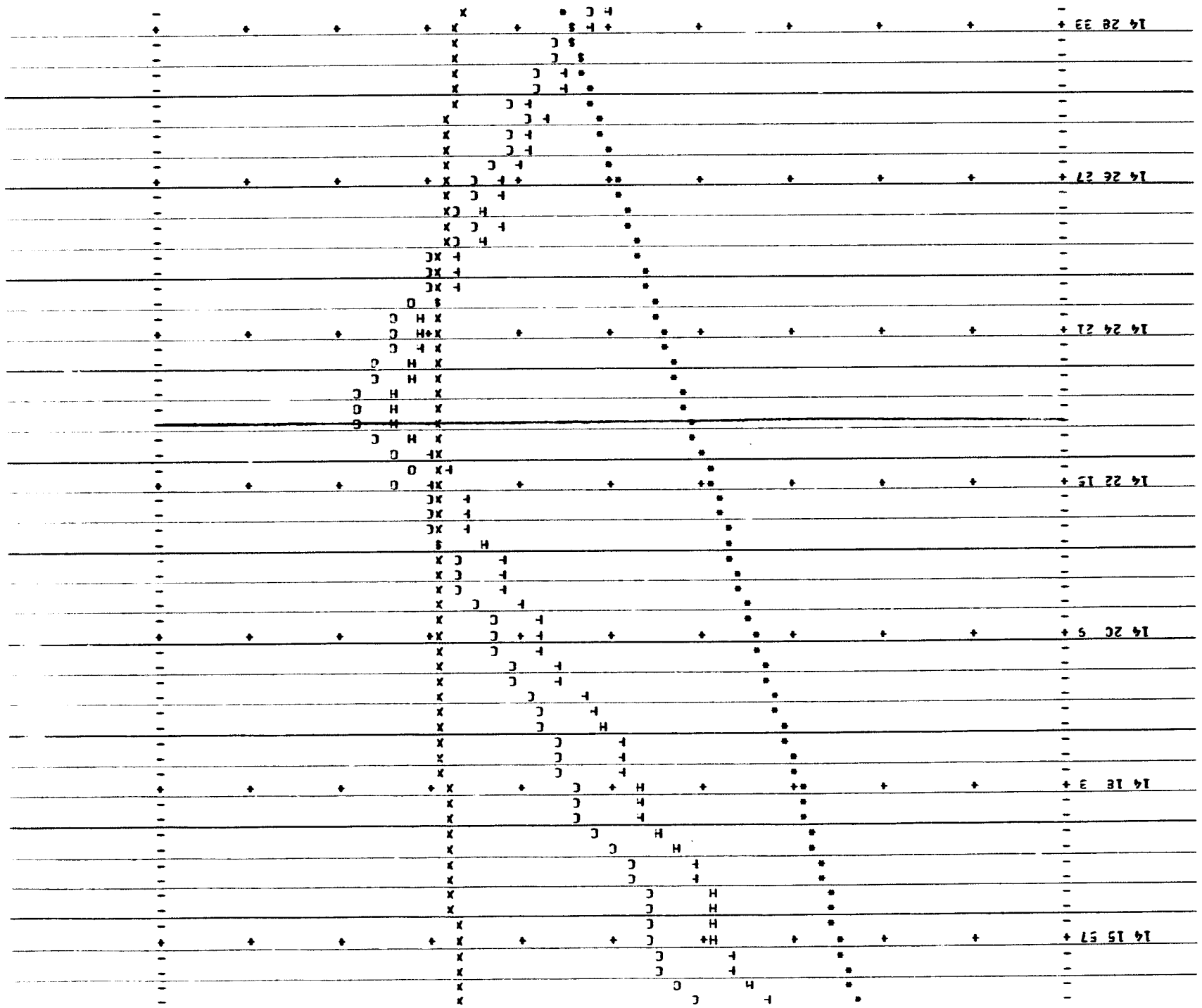
14 11 45
14 13 51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14 22 15
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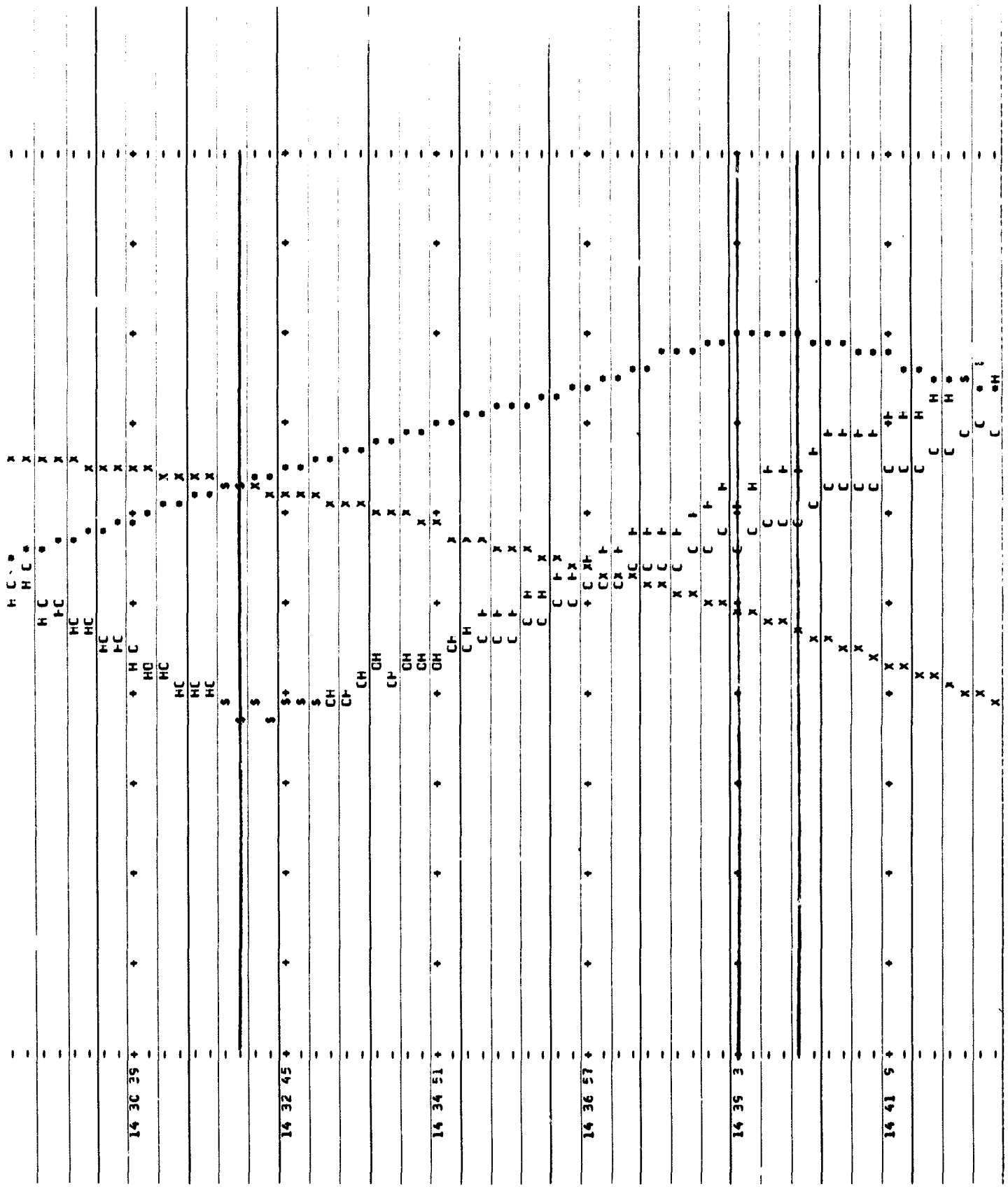

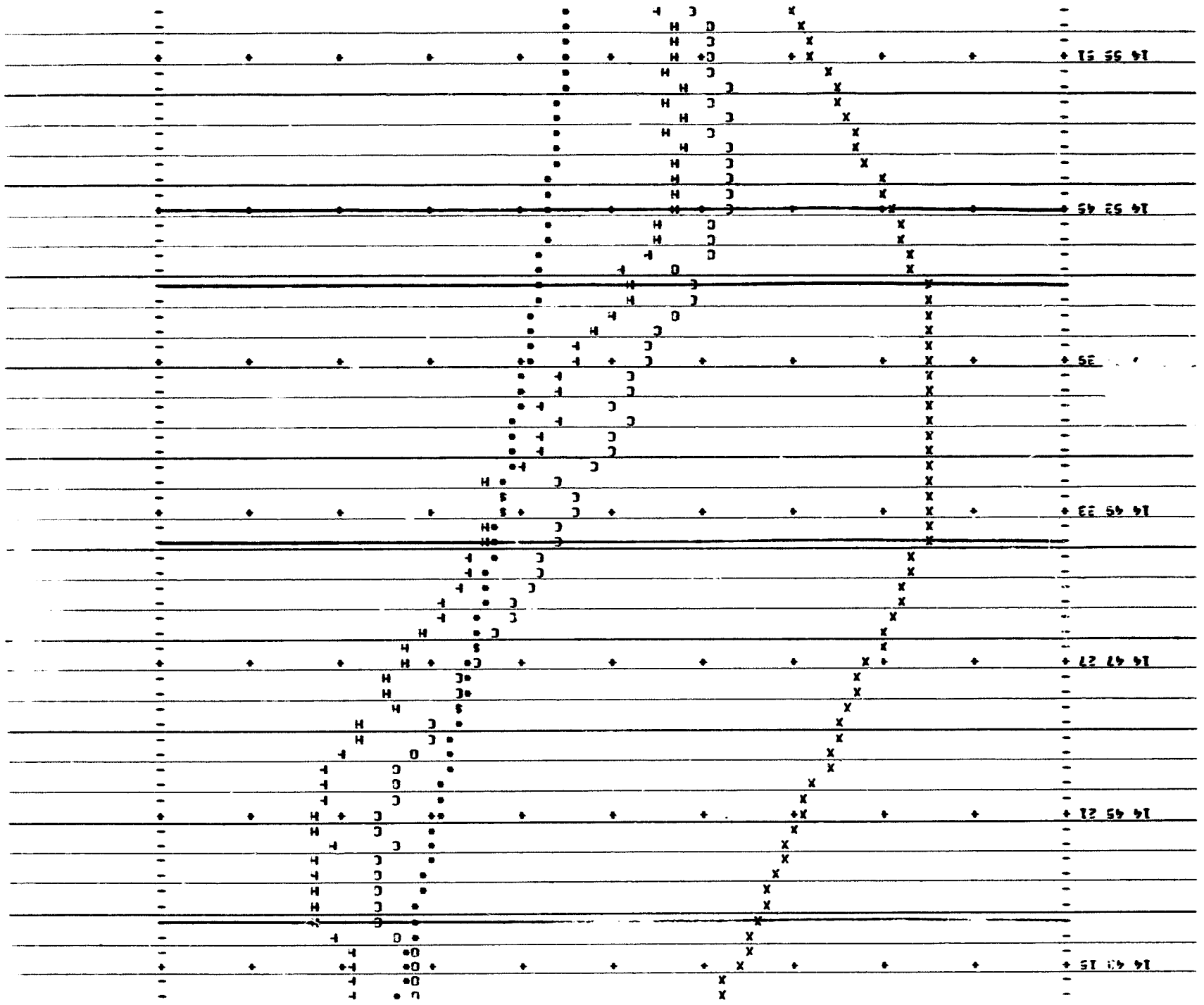
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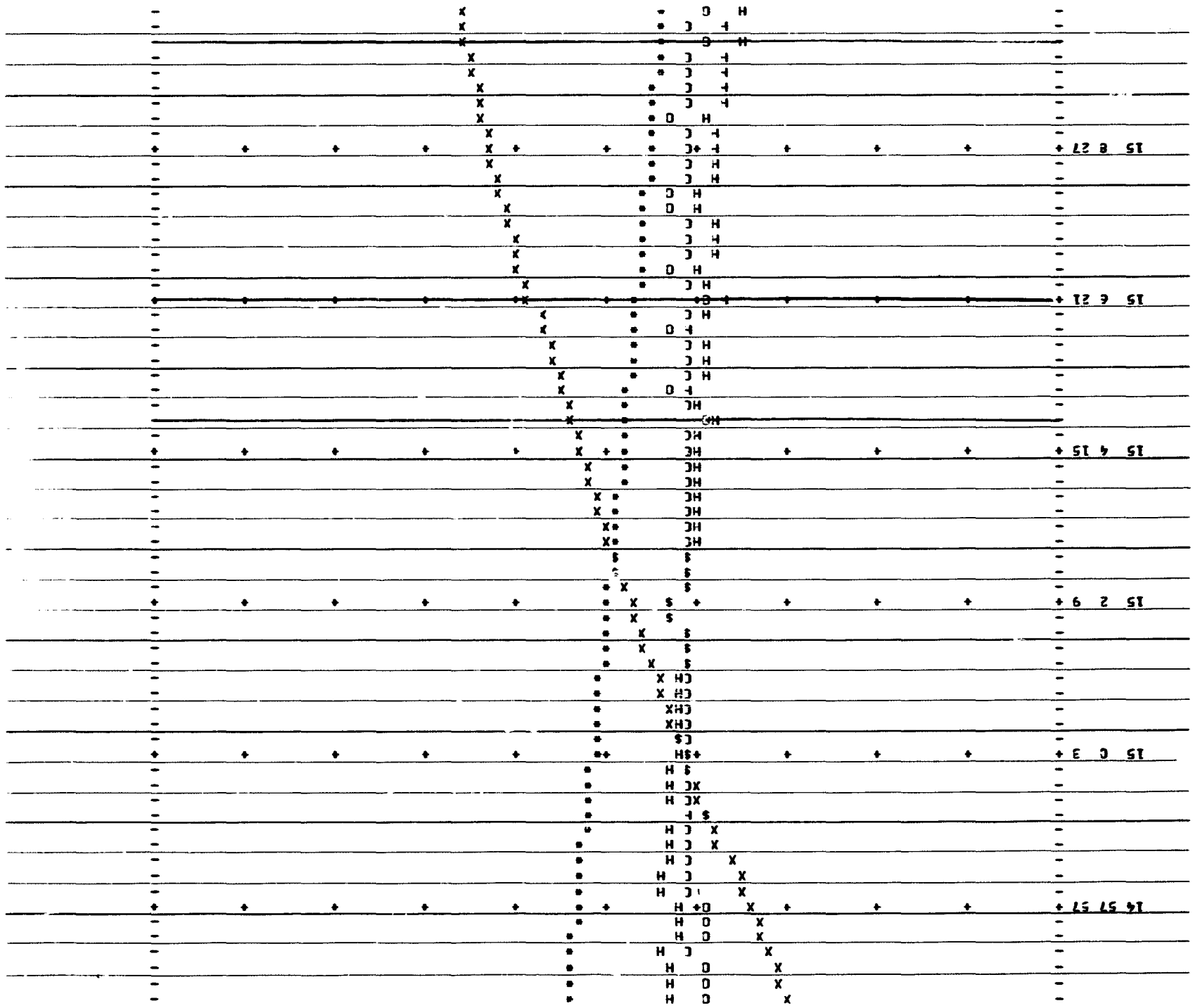
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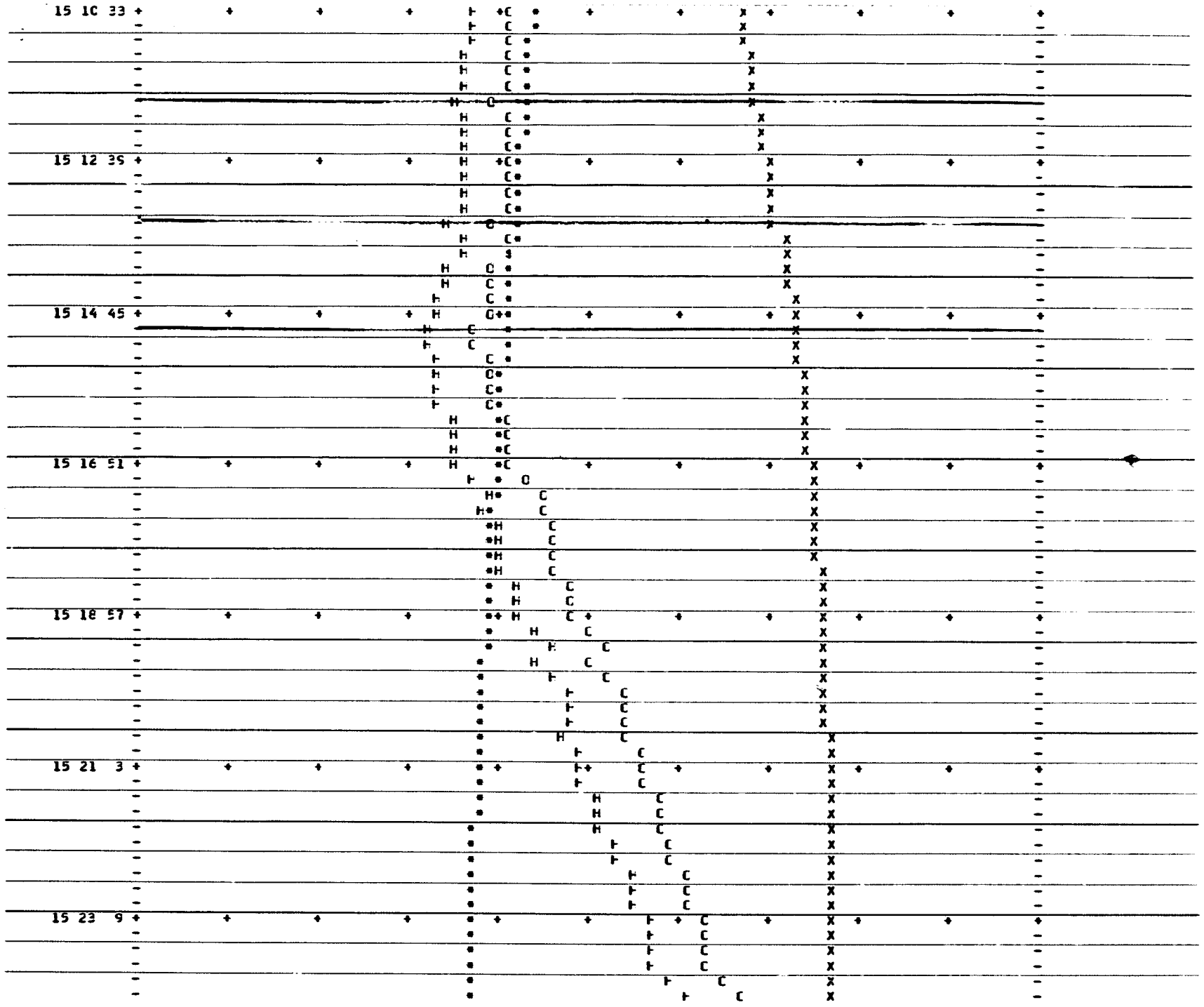
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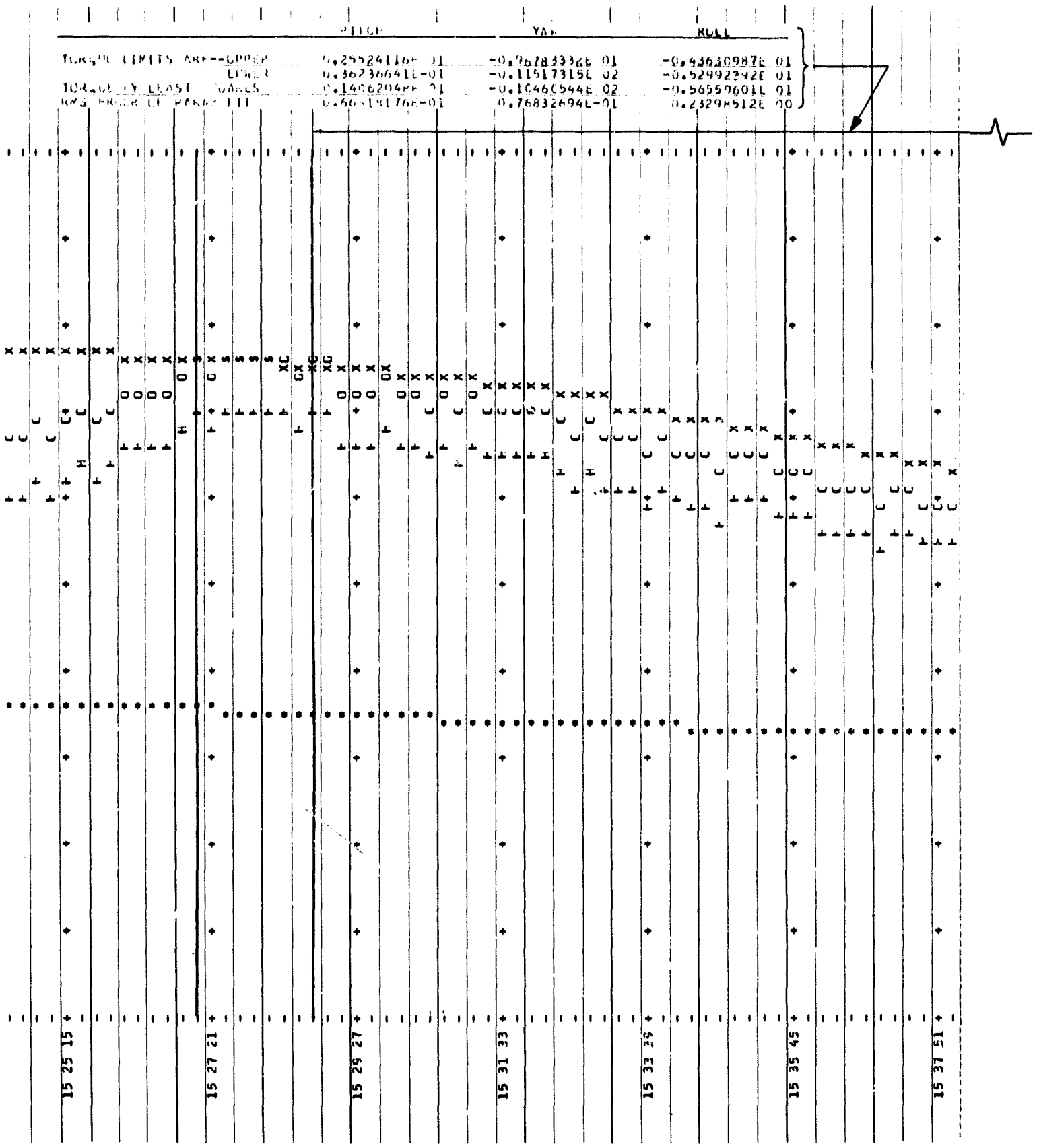
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER 0.25524116E 01 -0.96783336E 01 -0.43630987E 01
LOWER 0.36236641E-01 -0.11517315E 02 -0.52992342E 01
TORQUE BY LEAST SQUARES 0.14062044E 01 -0.10460544E 02 -0.56559601E 01
RMS ERROR OF PARAMETER FIT 0.66-1917GE-01 0.76832694E-01 0.23298512E 00
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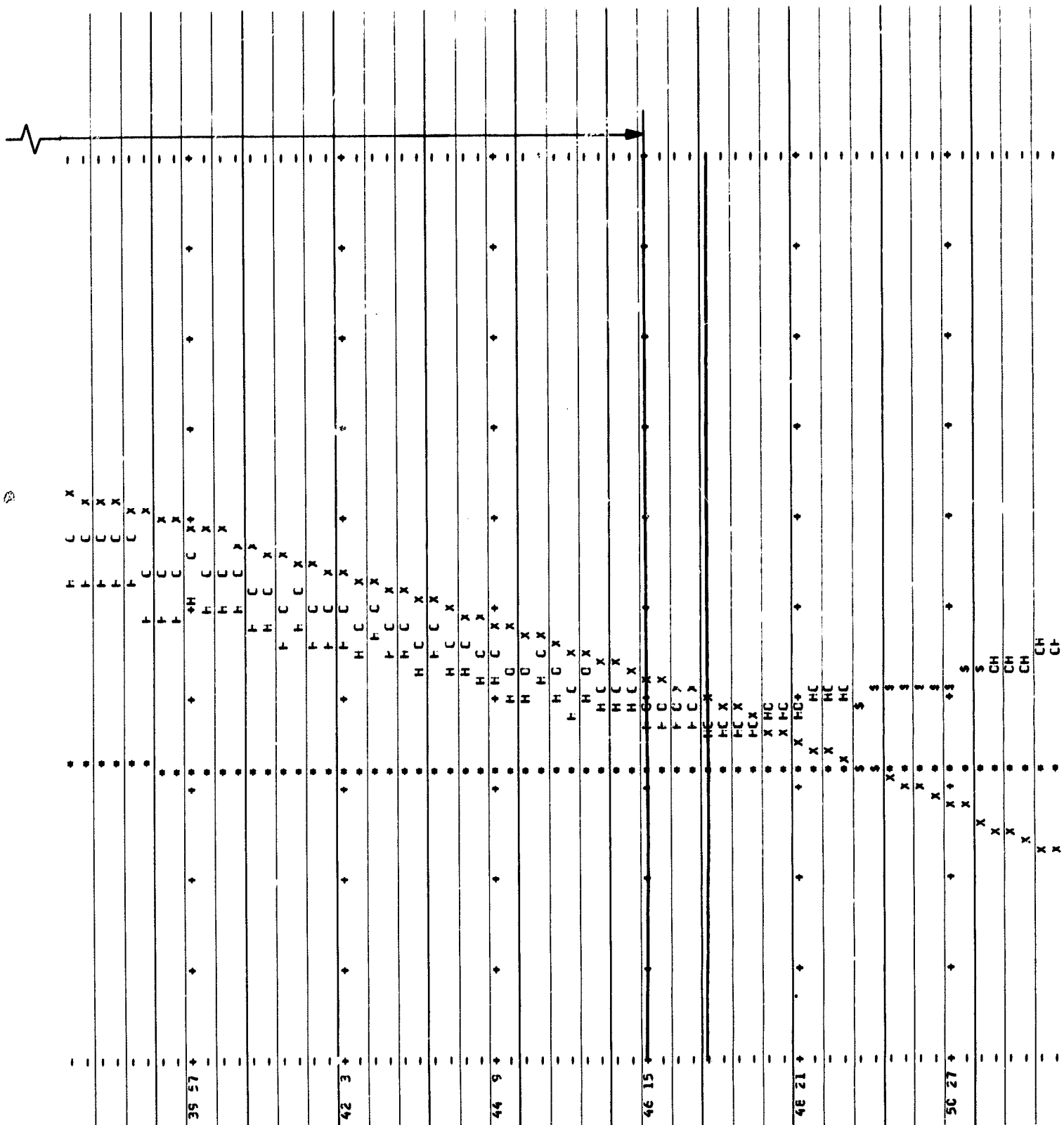
15 35 45
15 37 51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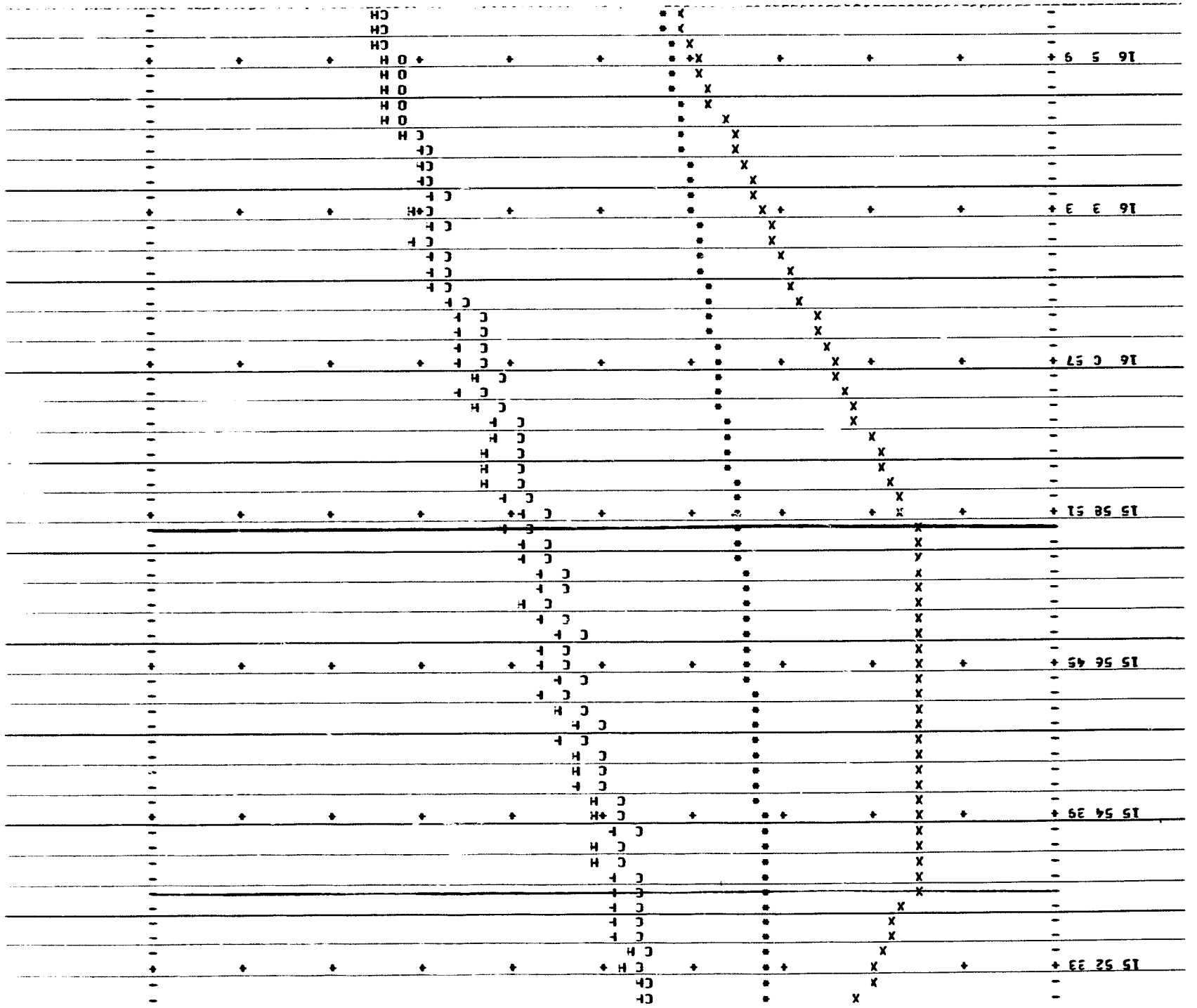
15 44 9
15 46 15
15 48 21
15 50 27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16 3 3
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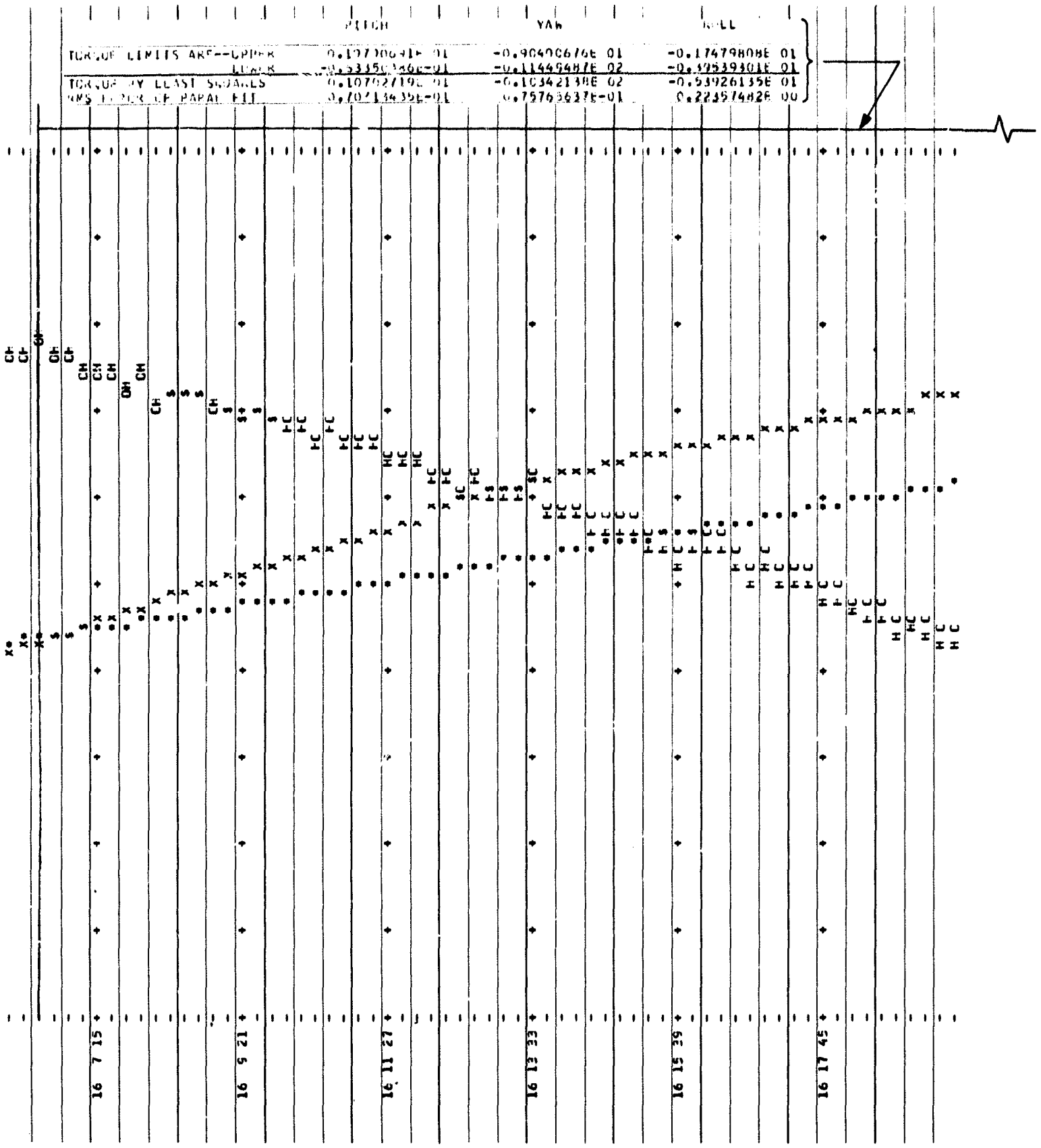
PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER 0.19700691E 01 -0.90400676E 01 -0.17479808E 01
LOWER -0.53350346E-01 -0.11449648E 02 -0.49539301E 01
TORQUE BY LEAST SQUARES 0.10702719E 01 -0.10342138E 02 -0.59926135E 01
RMS ERROR OF PARAB FIT 0.70713439E-01 0.75763637E-01 0.22357482E 00
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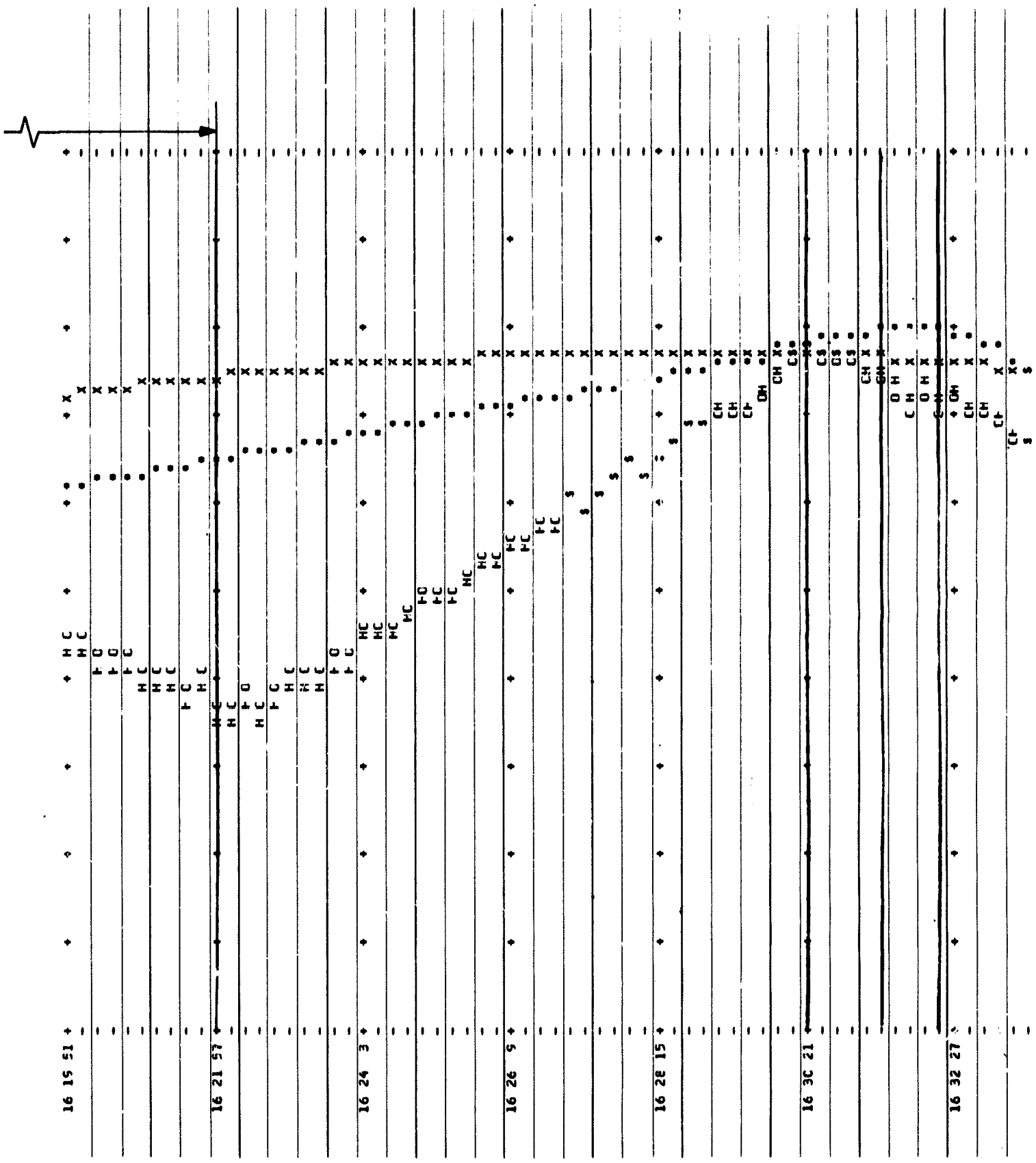
16 11 27
16 13 33
16 15 39
16 17 45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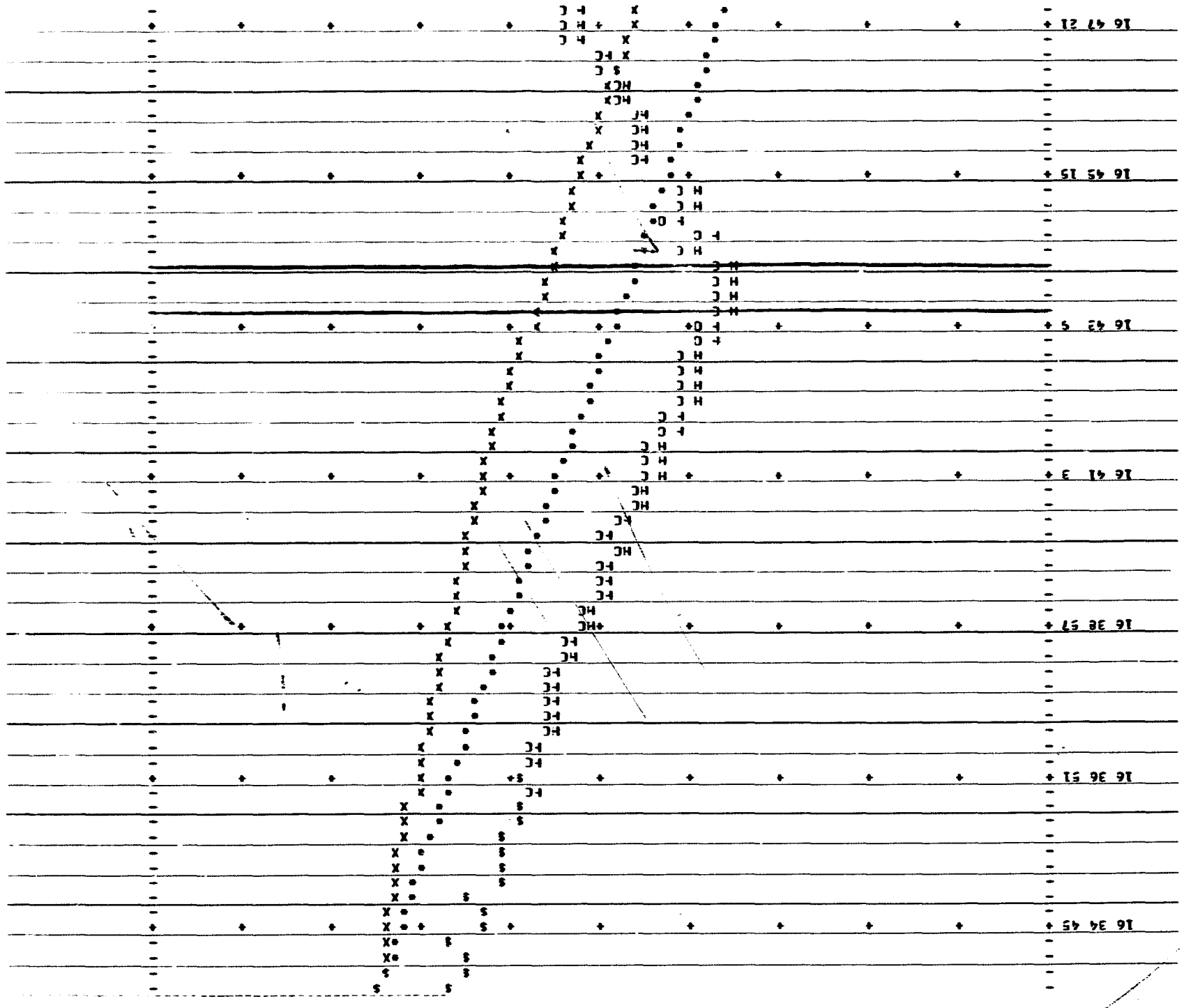
16 32 27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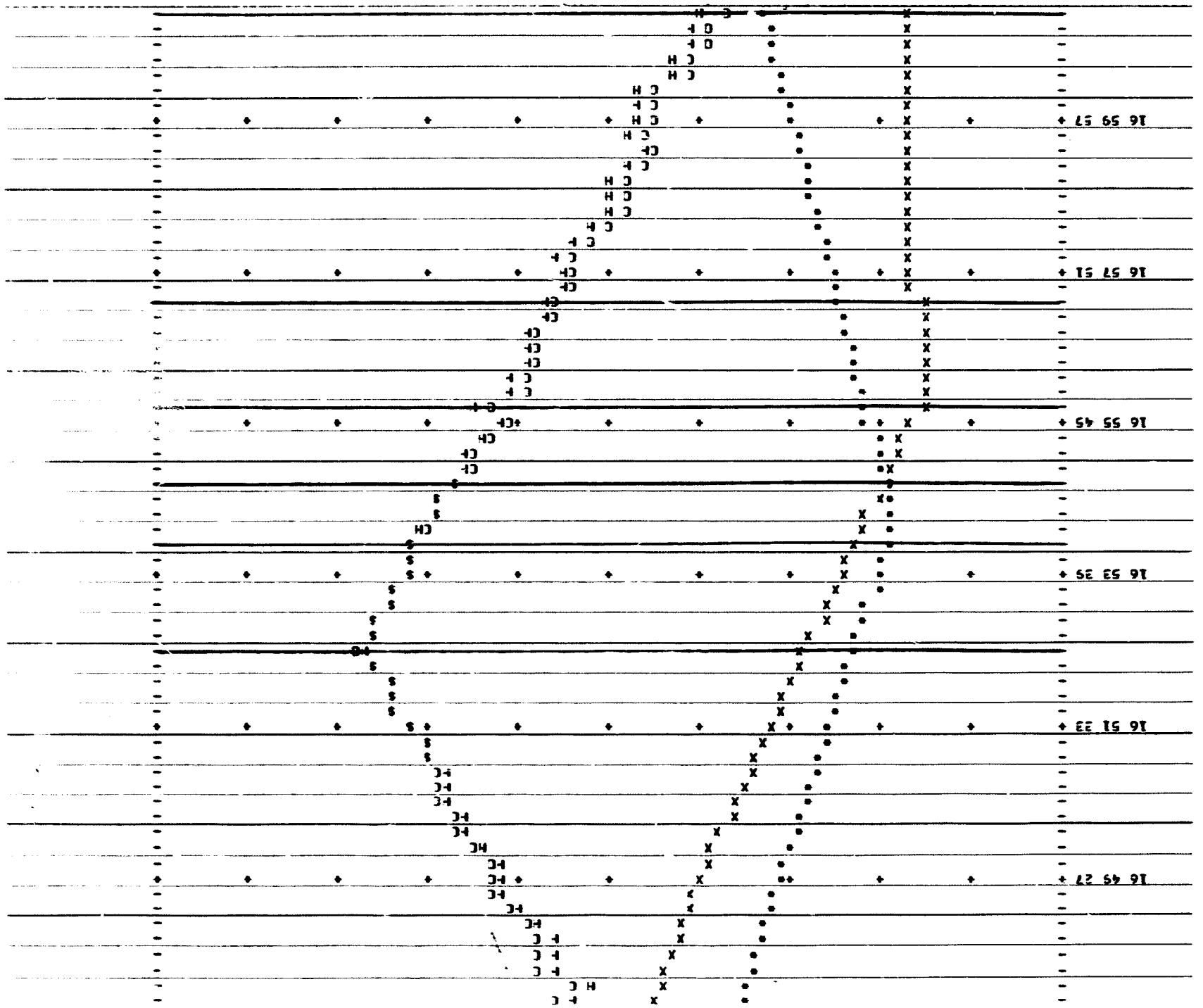
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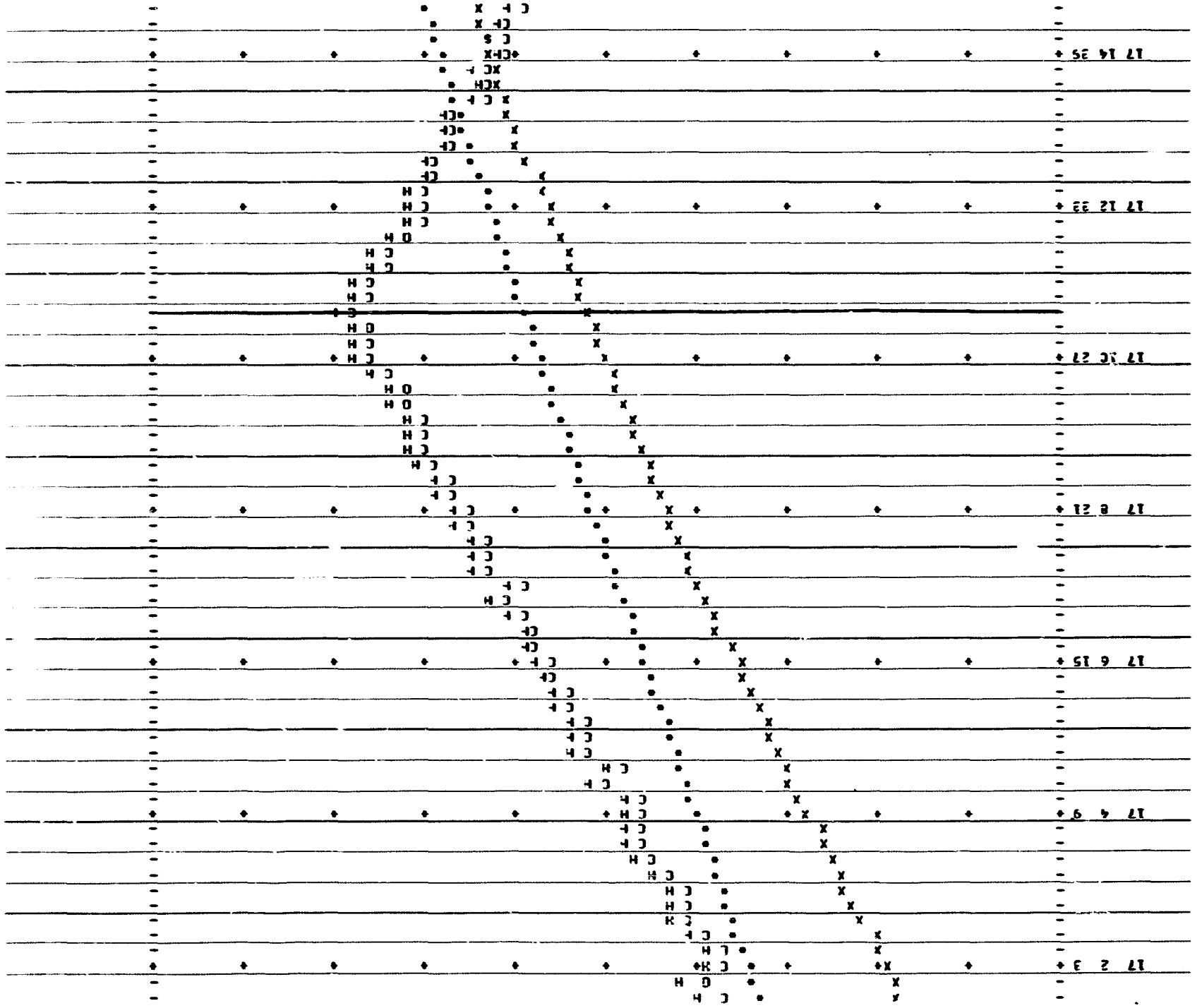
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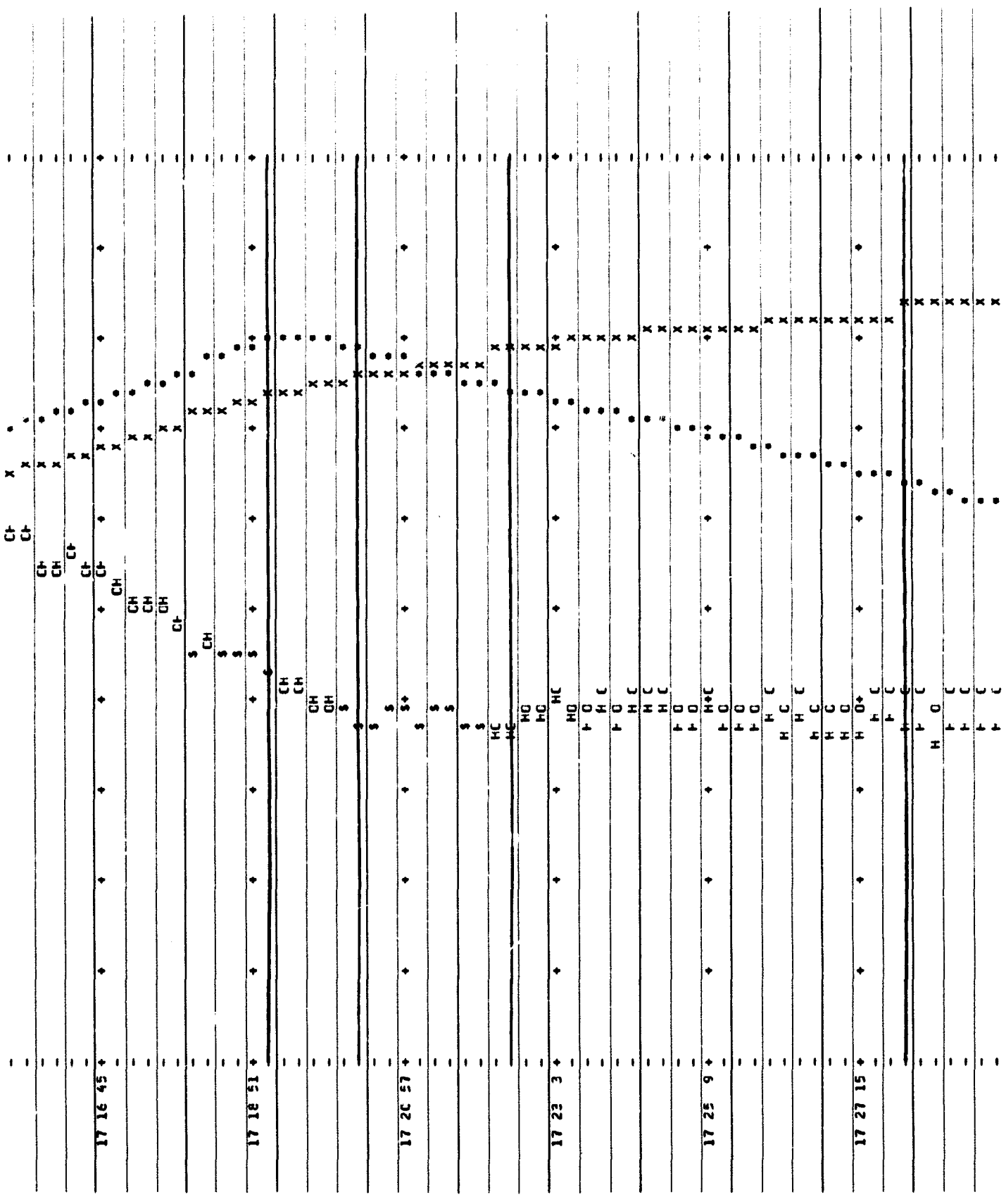

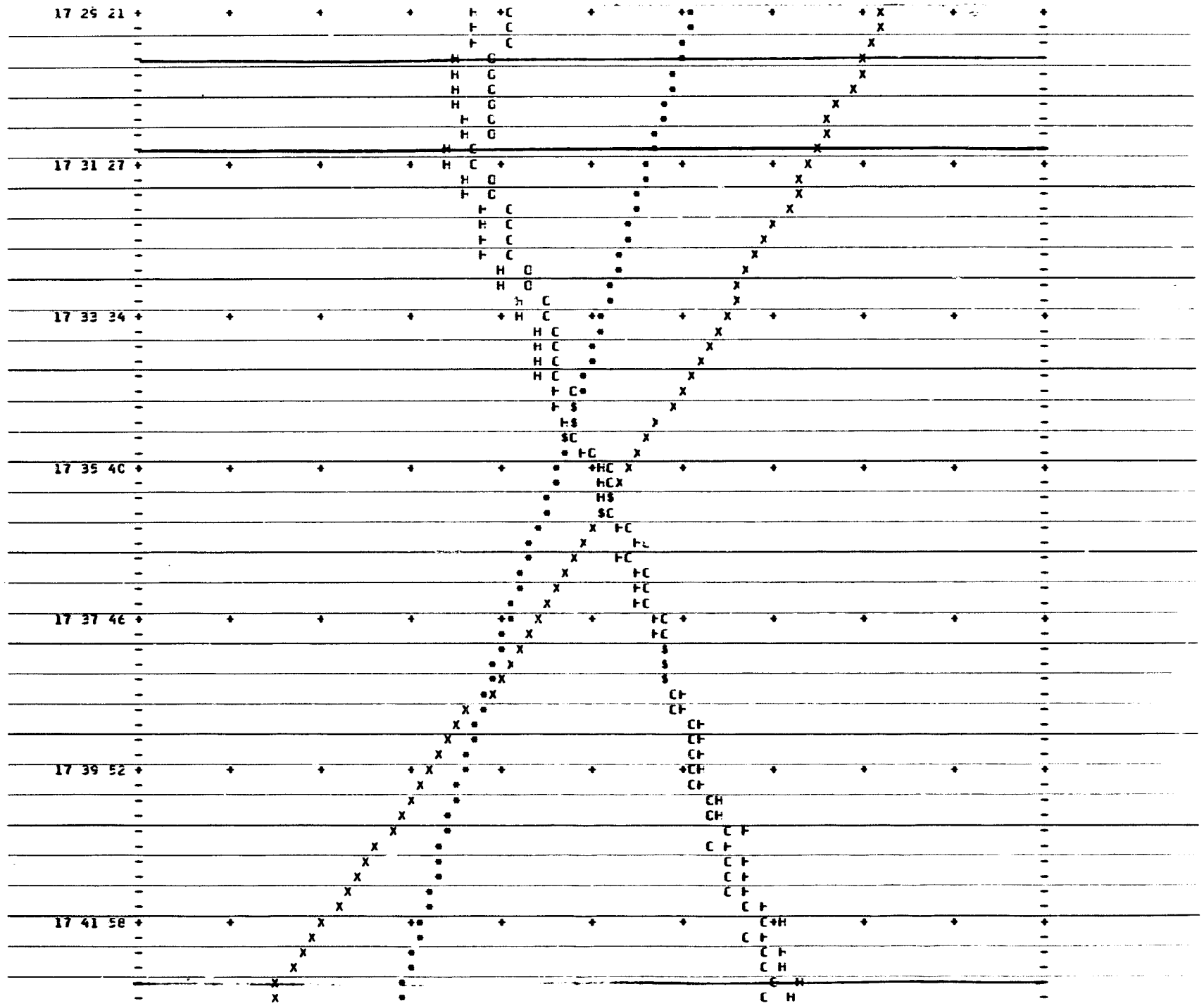
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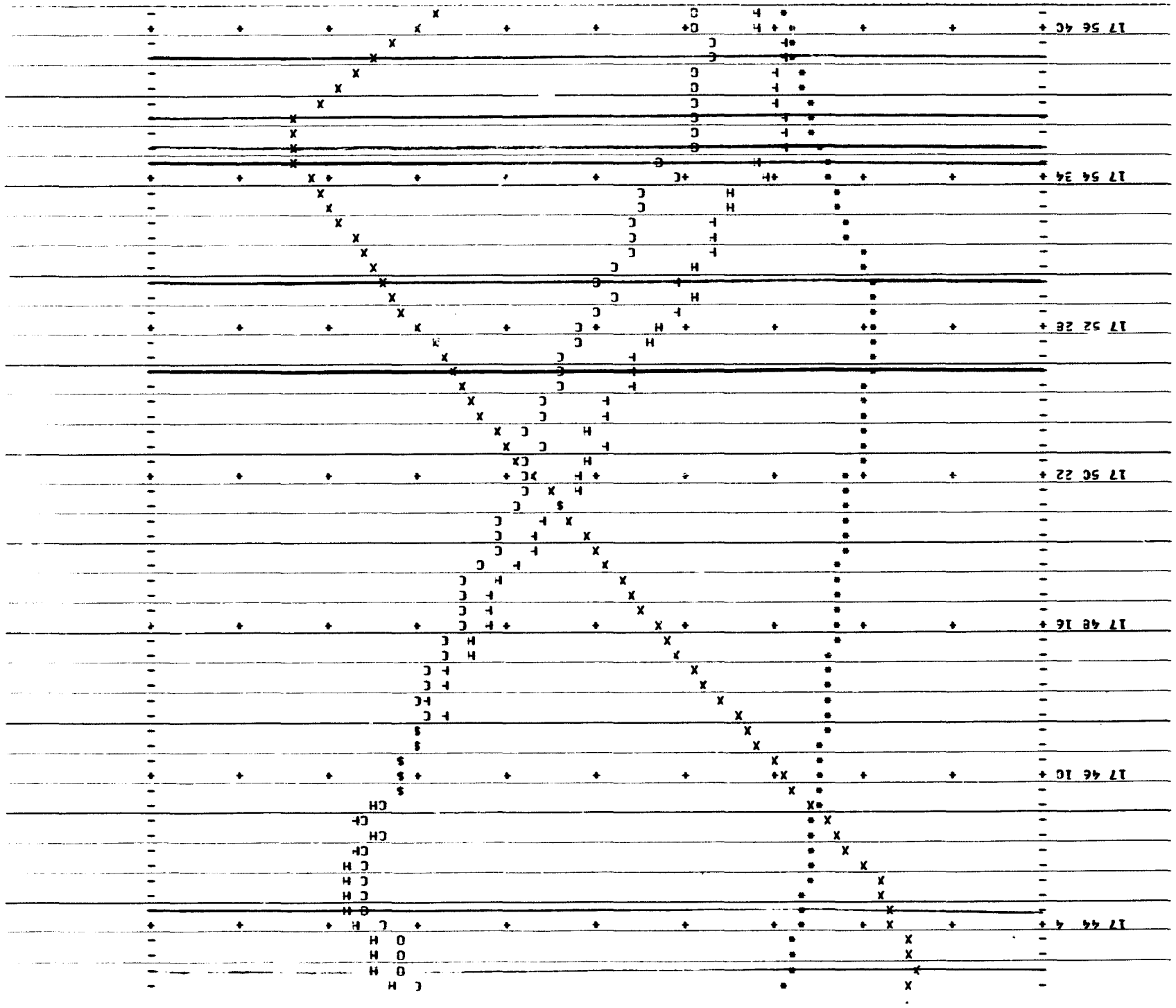
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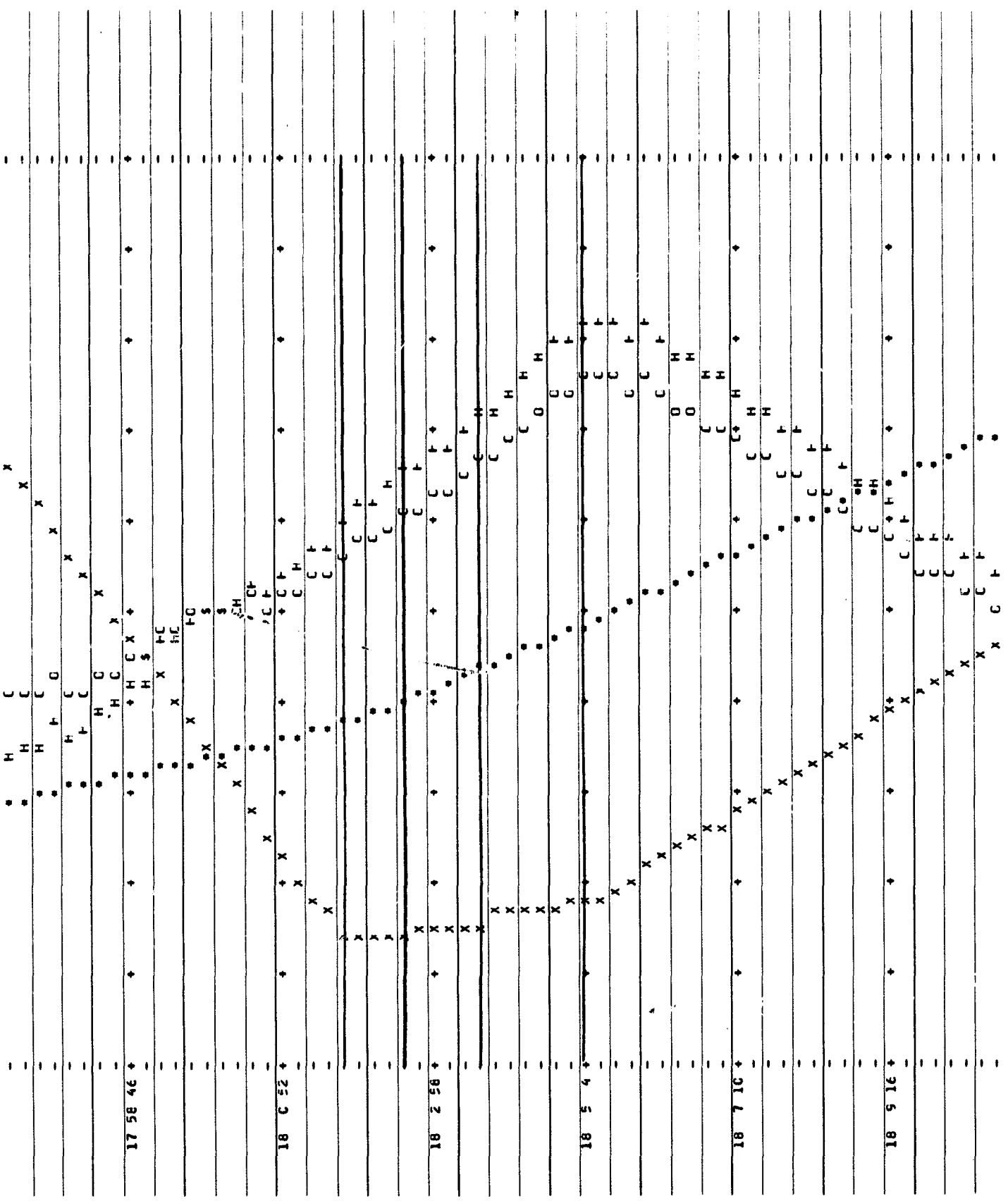

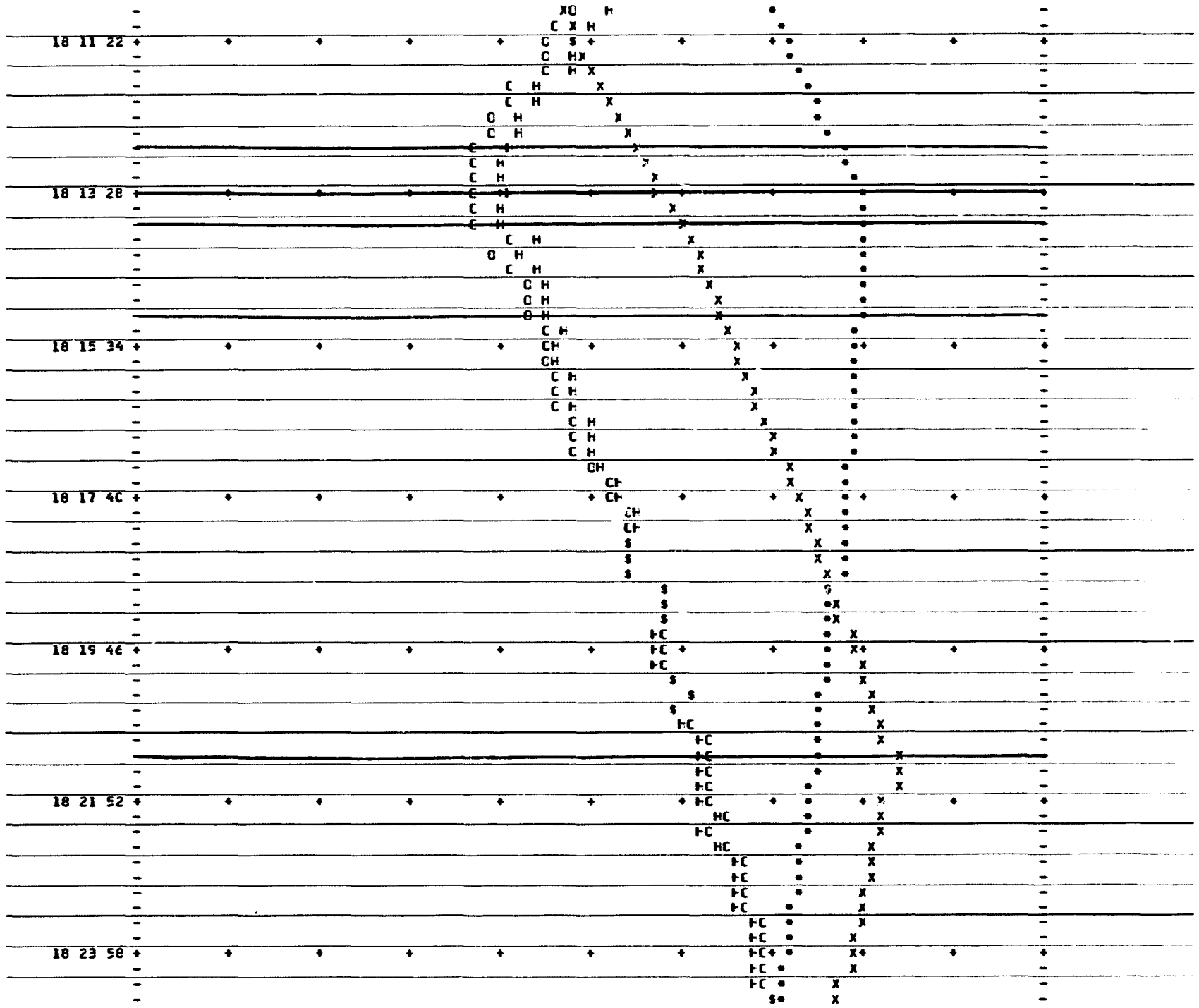
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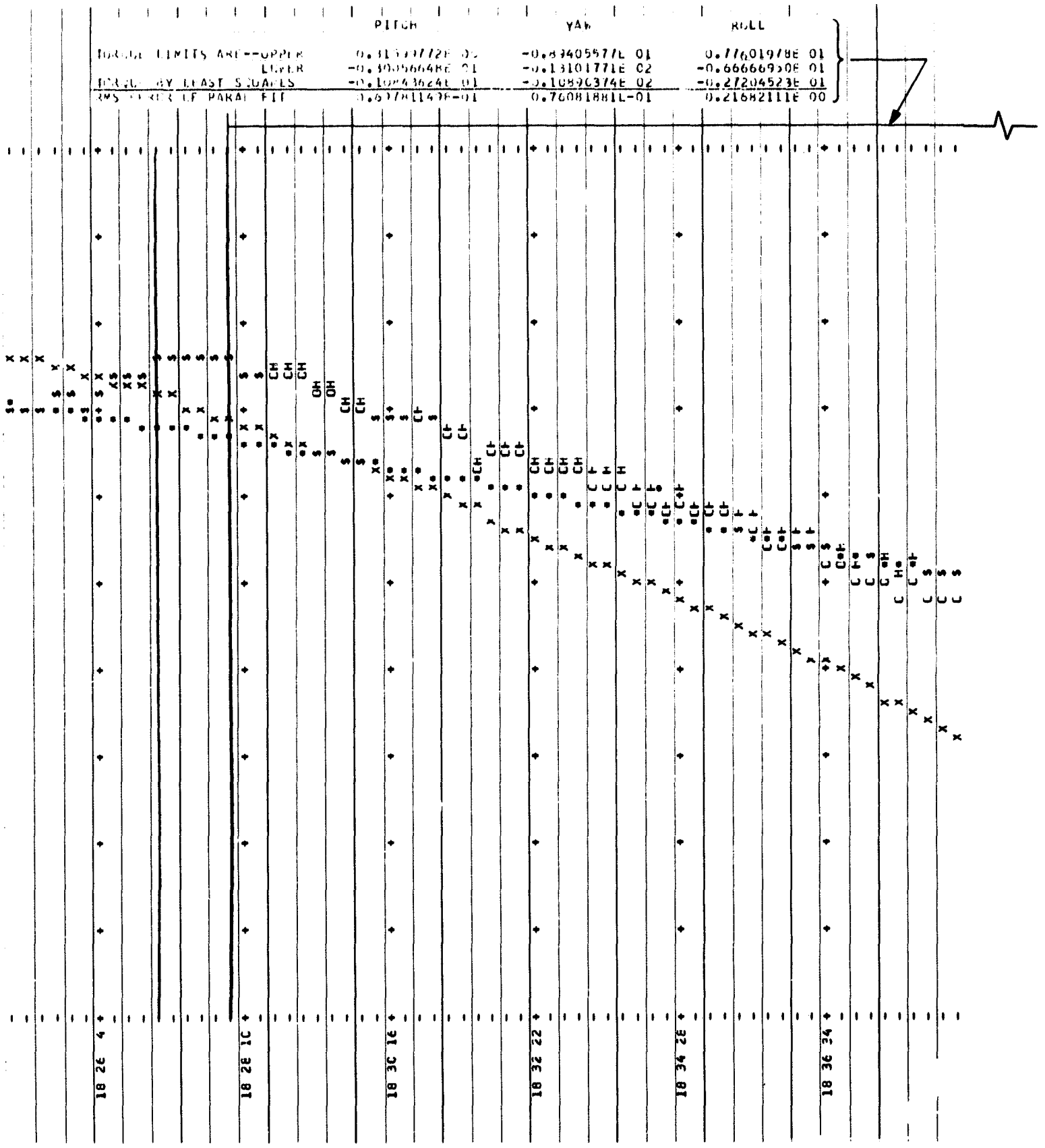
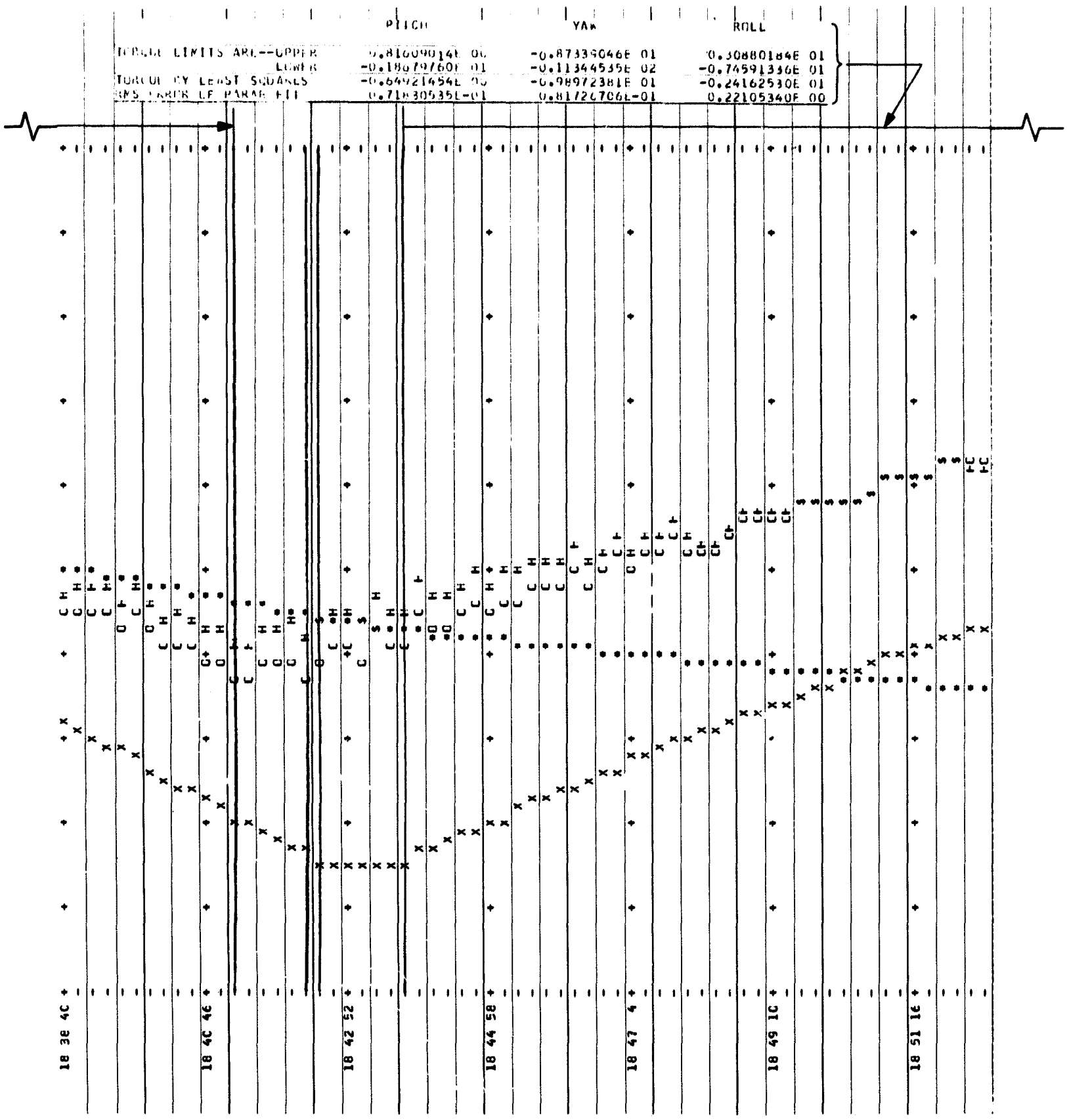
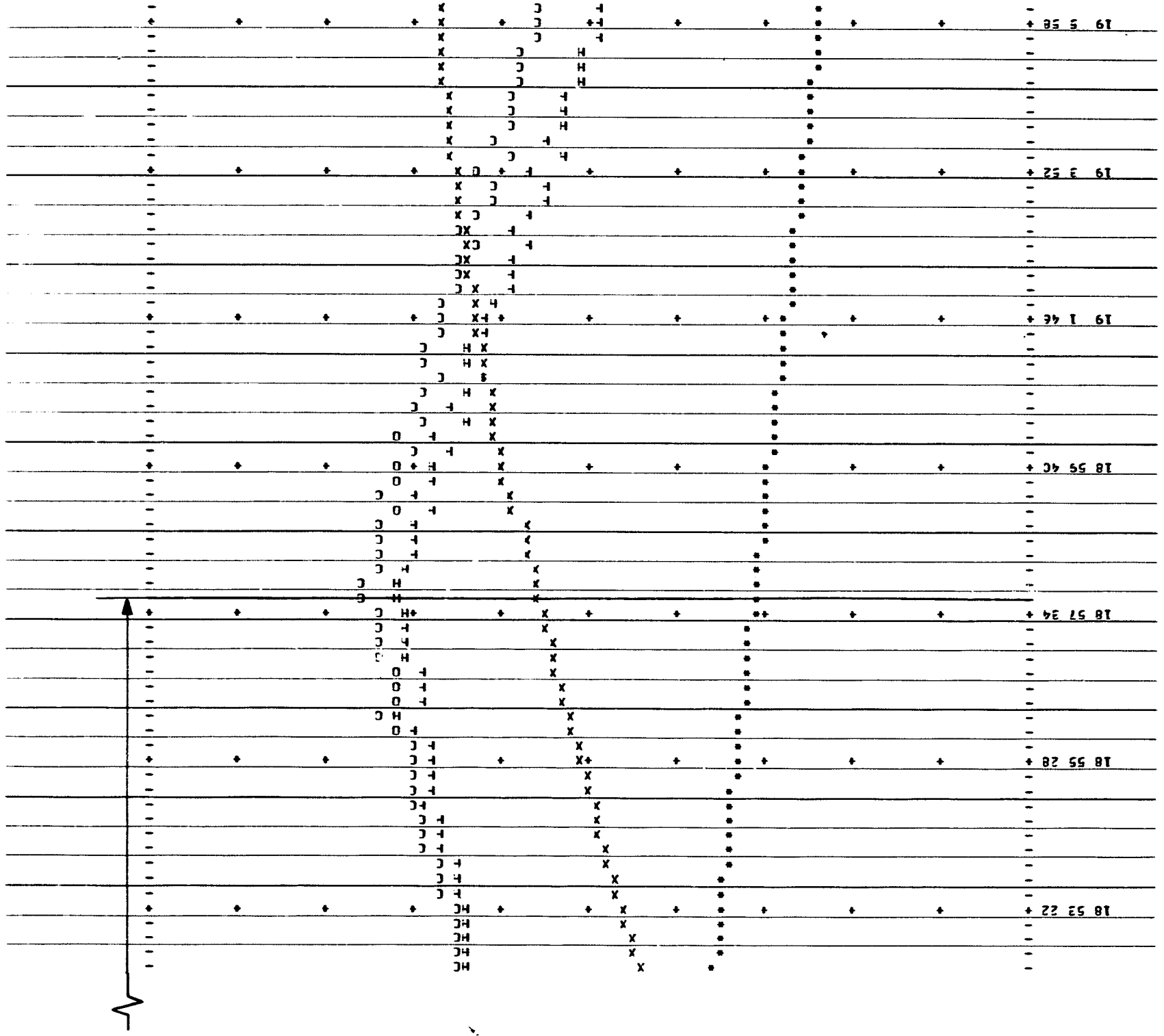

PITCH
YAW
ROLL
LIMITS ARE--UPPER
LOWER
BY LEAST SQUARES
RMS ERROR OF PARAB FIT
18 2E 4
18 2E 1C
18 3C 16
18 32 22
18 34 2E
18 36 34


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER 0.81600914E 00 -0.87336046E 01 0.30880184E 01
LOWER -0.18079760E 01 -0.11344535E 02 -0.74591336E 01
TORQUE BY LEAST SQUARES -0.64921454E 00 -0.98972381E 01 -0.24162530E 01
RMS ERROR OF PARAB FIT 0.71830535E-01 0.81726706E-01 0.22105340E 00
18 38 40
18 42 52
18 44 58
18 47 4
18 49 10
18 51 16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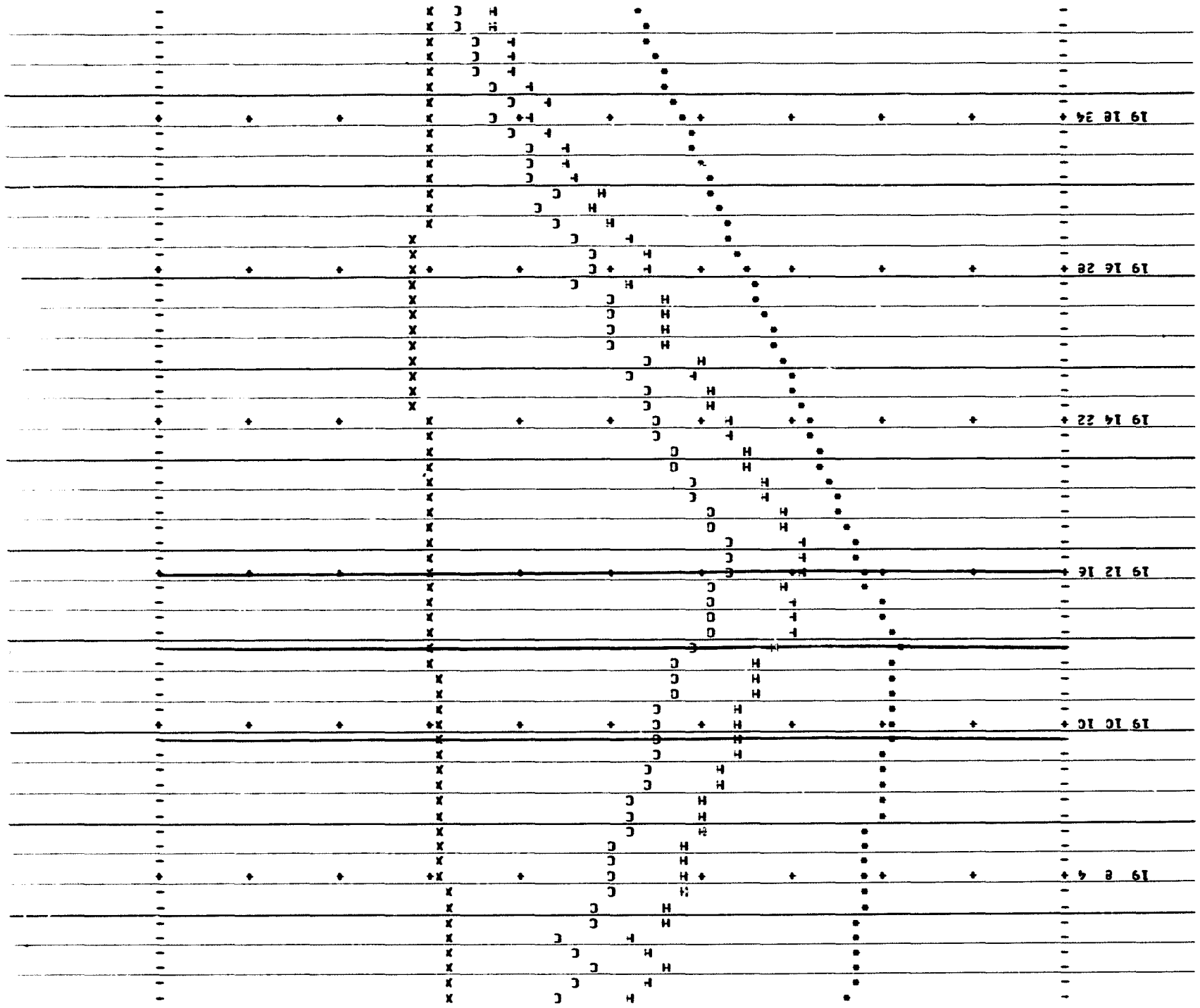
19 1 46
18 59 40
18 57 34
18 55 28
18 53 22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19 14 22
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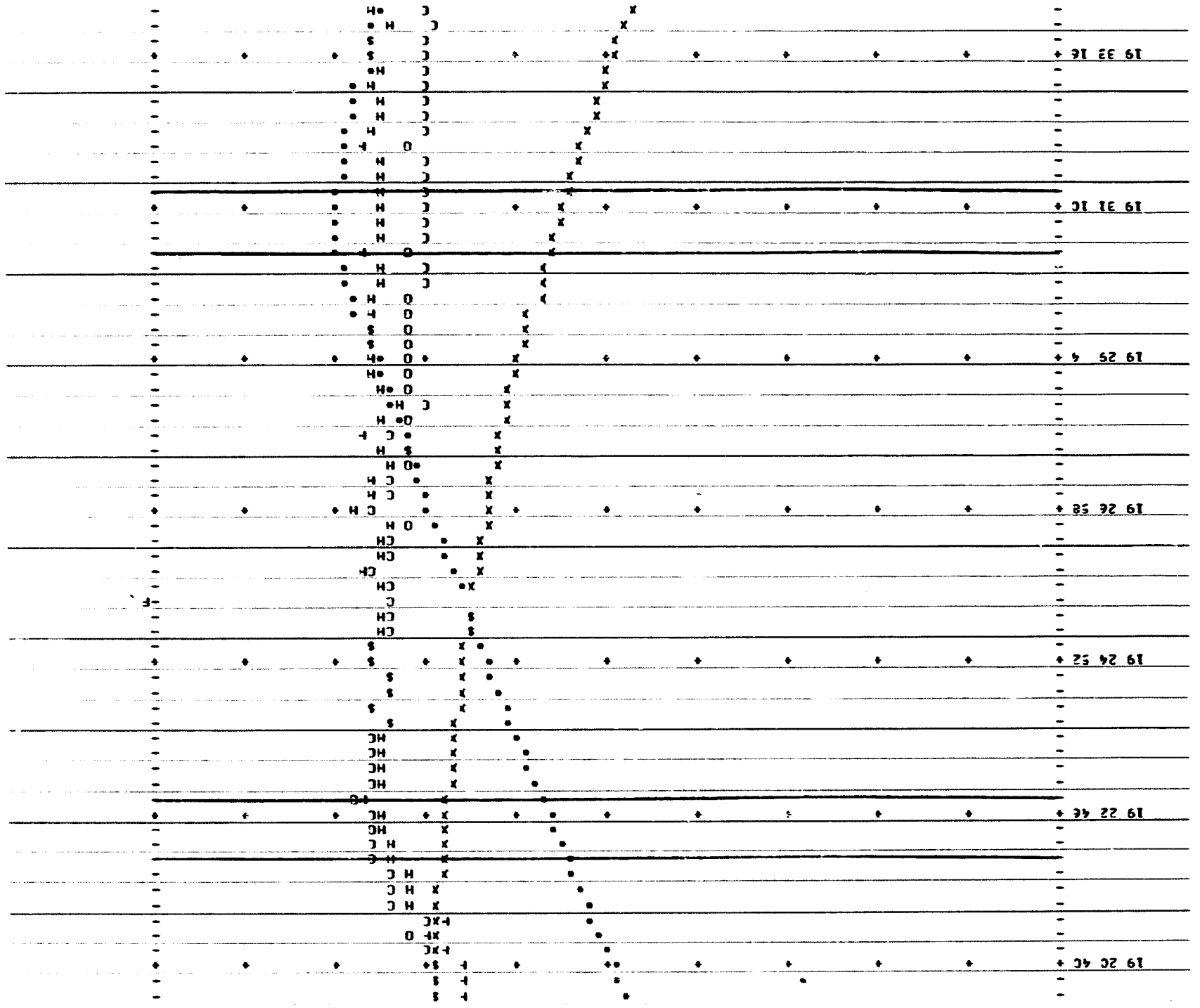
19 10 10
19 8 4


19 33 16
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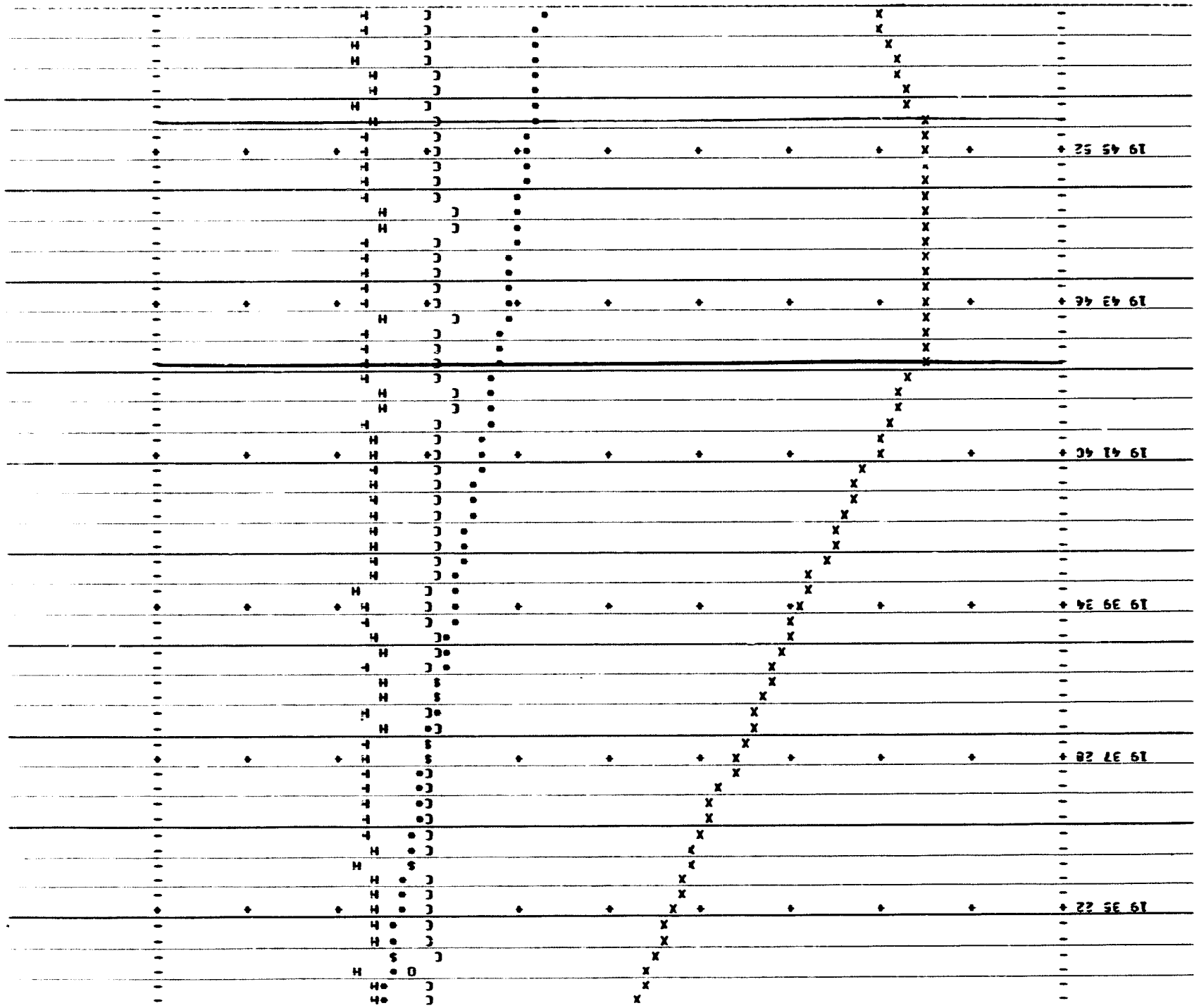
19 20 40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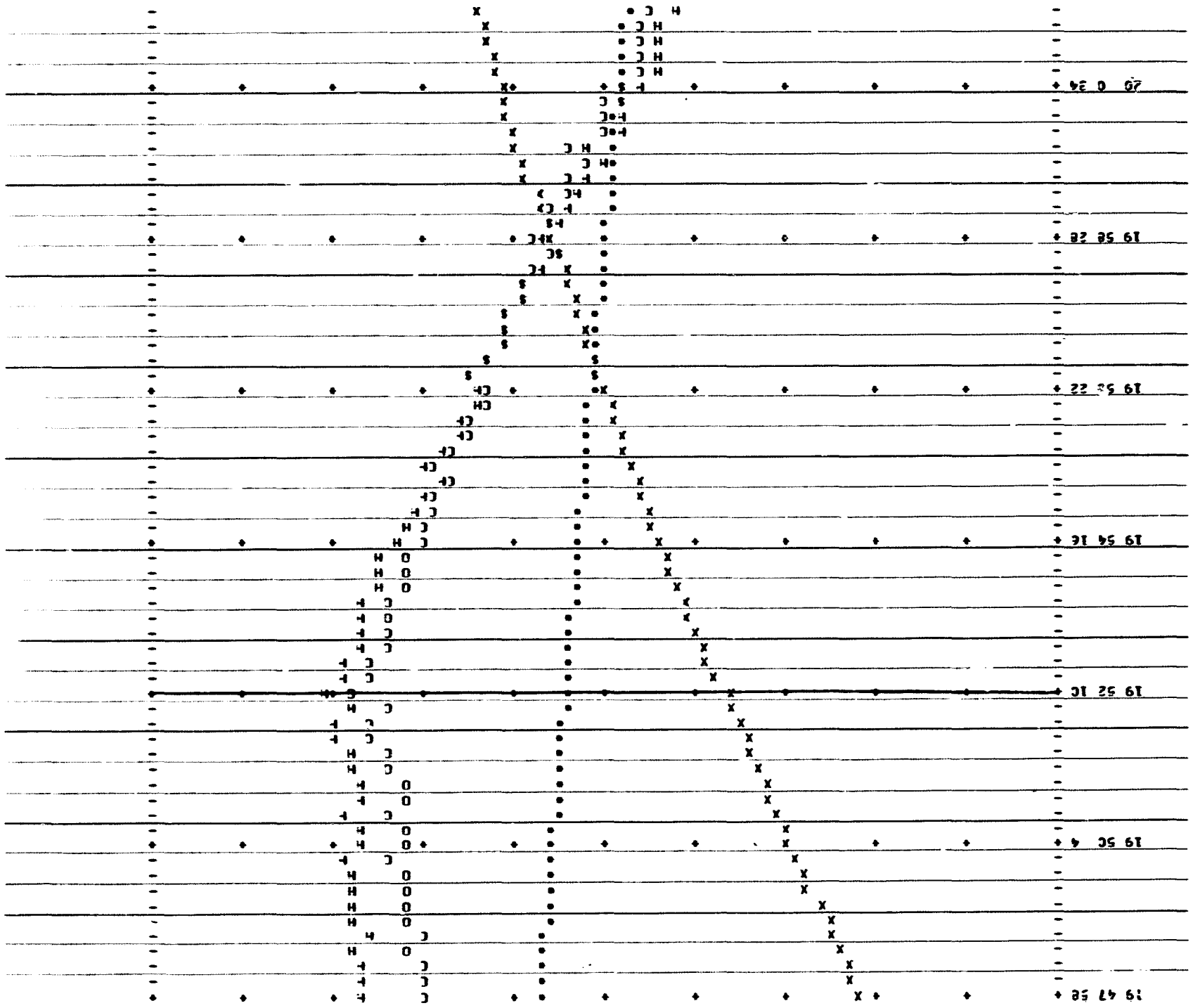
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19 56 22
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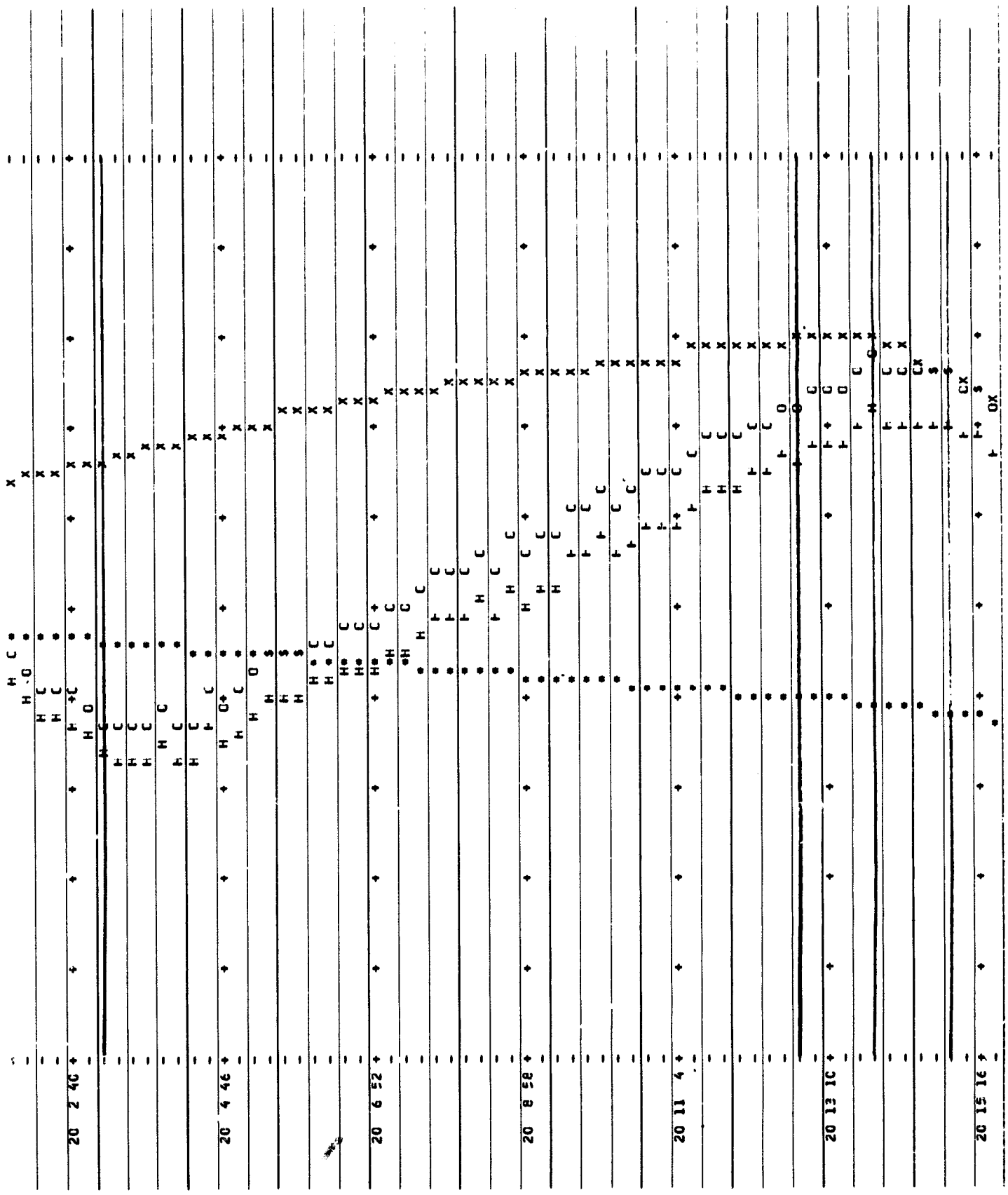
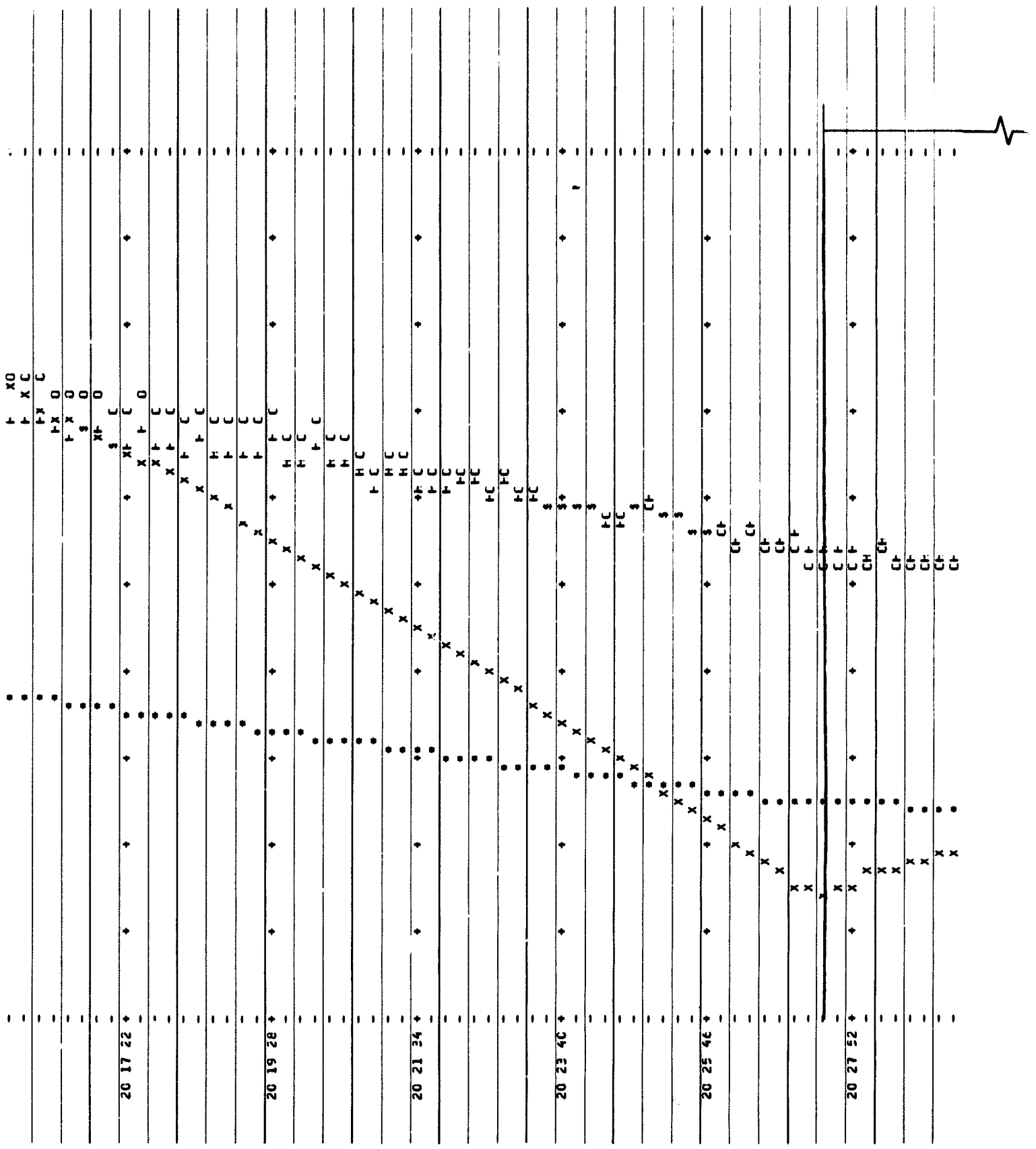
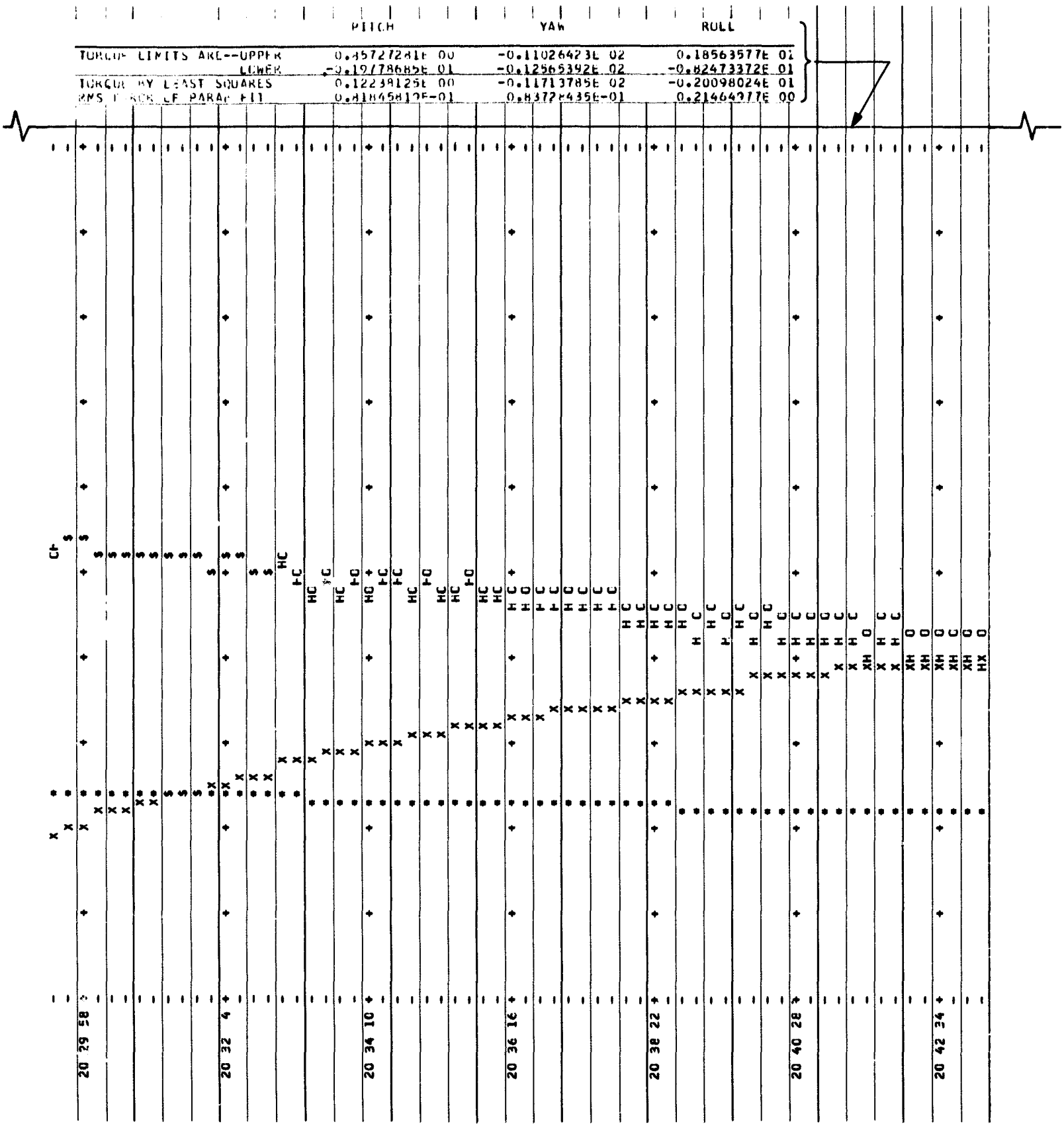
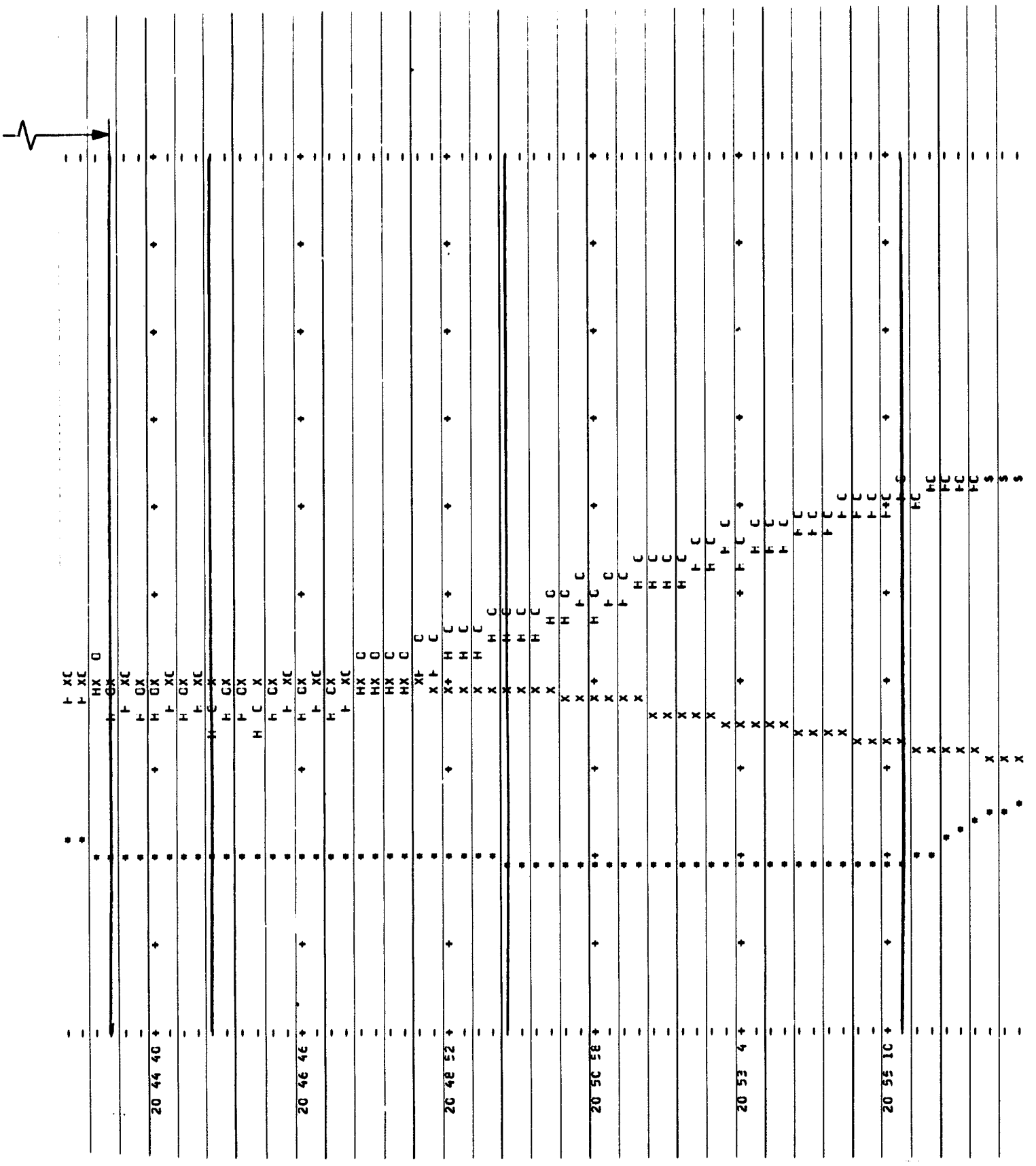
20 0 34

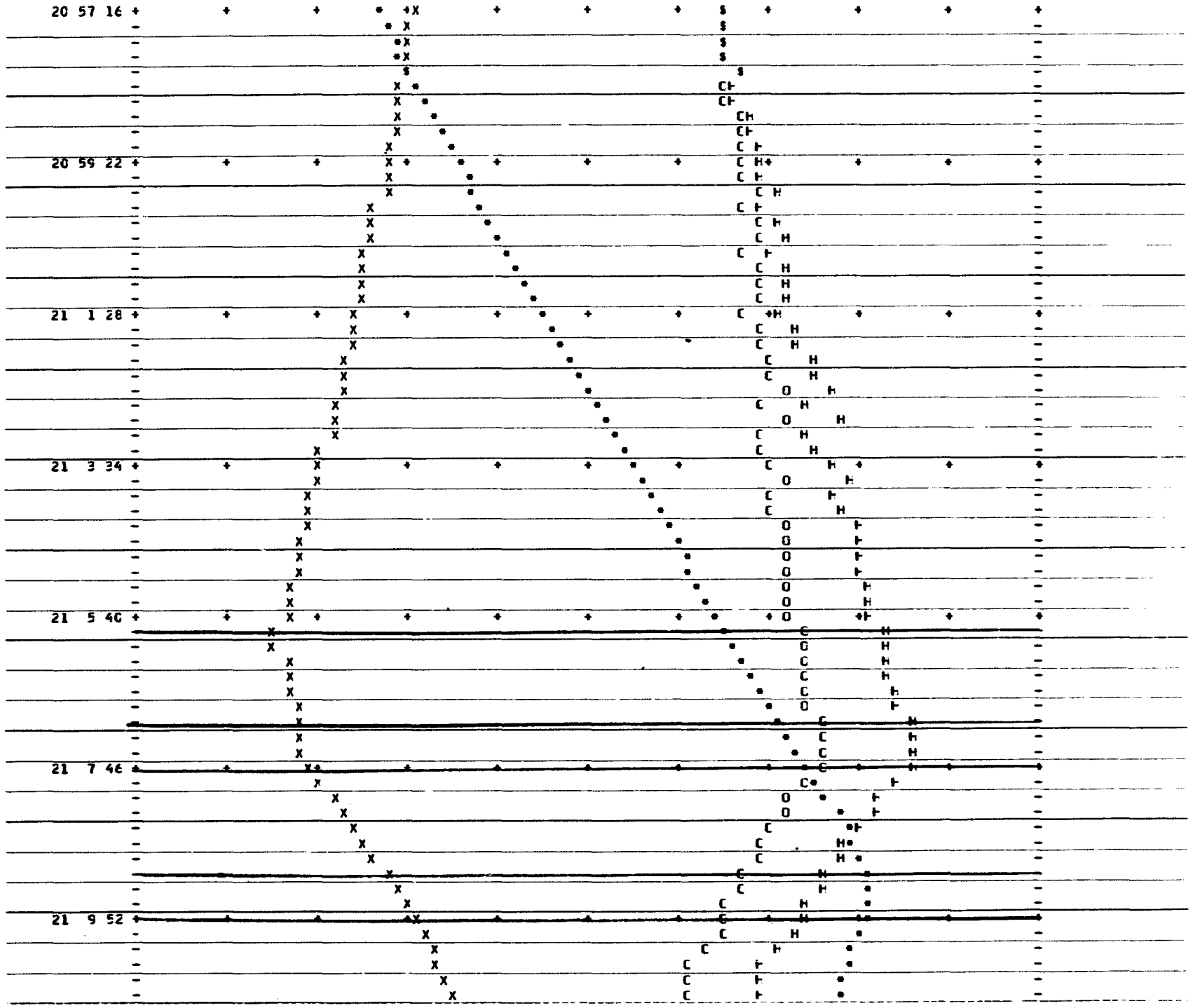




	PITCH	YAW	ROLL
TORQUE LIMITS ARE--UPPER	0.45727241E 00	-0.11026423E 02	0.18563577E 01
LOWER	-0.19778685E 01	-0.12565392E 02	-0.82473372E 01
TORQUE BY LEAST SQUARES	0.12239125E 00	-0.11713785E 02	-0.20098024E 01
RMS [illegible] OF PARAB FIT	0.81845812E-01	0.83728435E-01	0.21464977E 00



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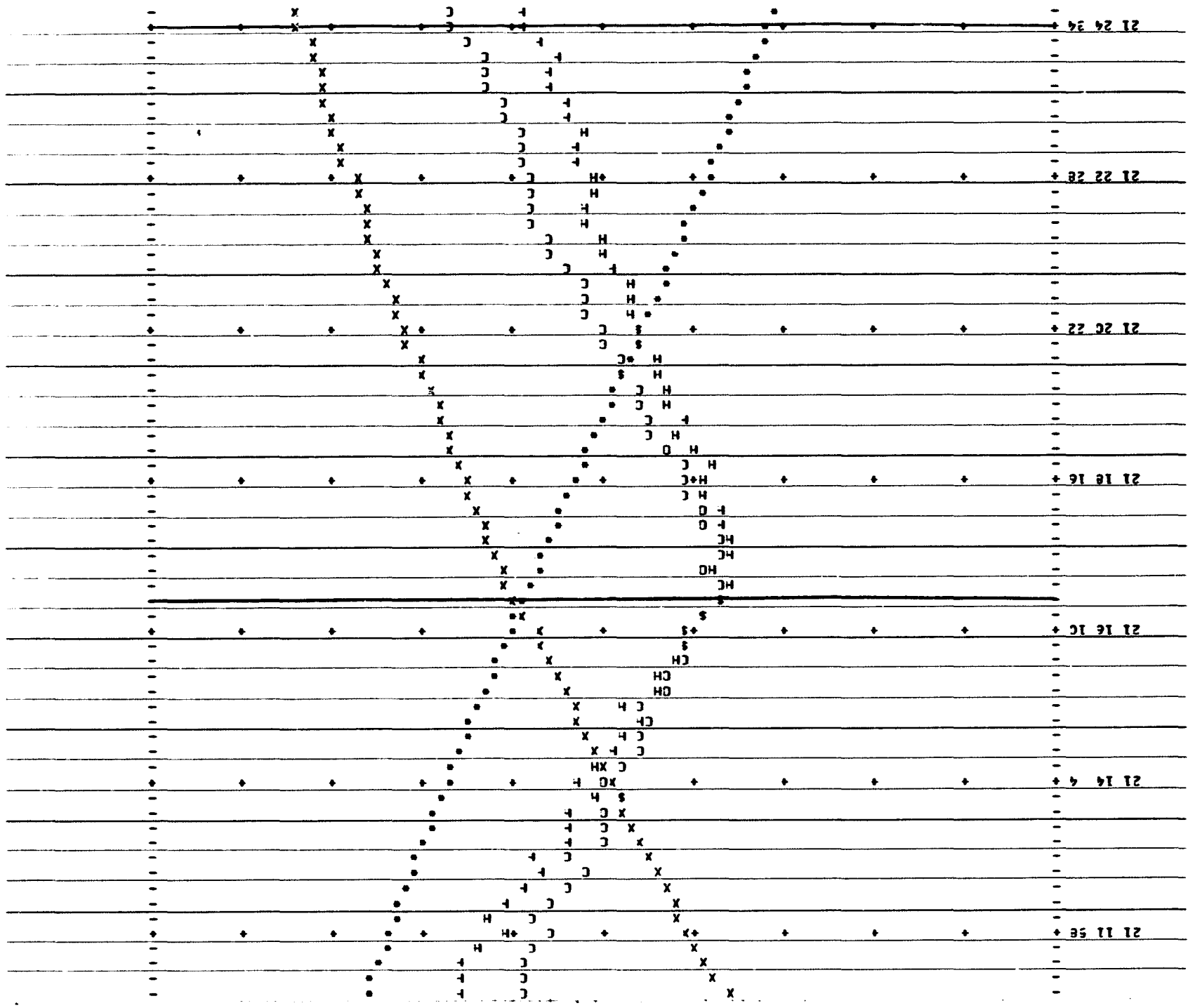
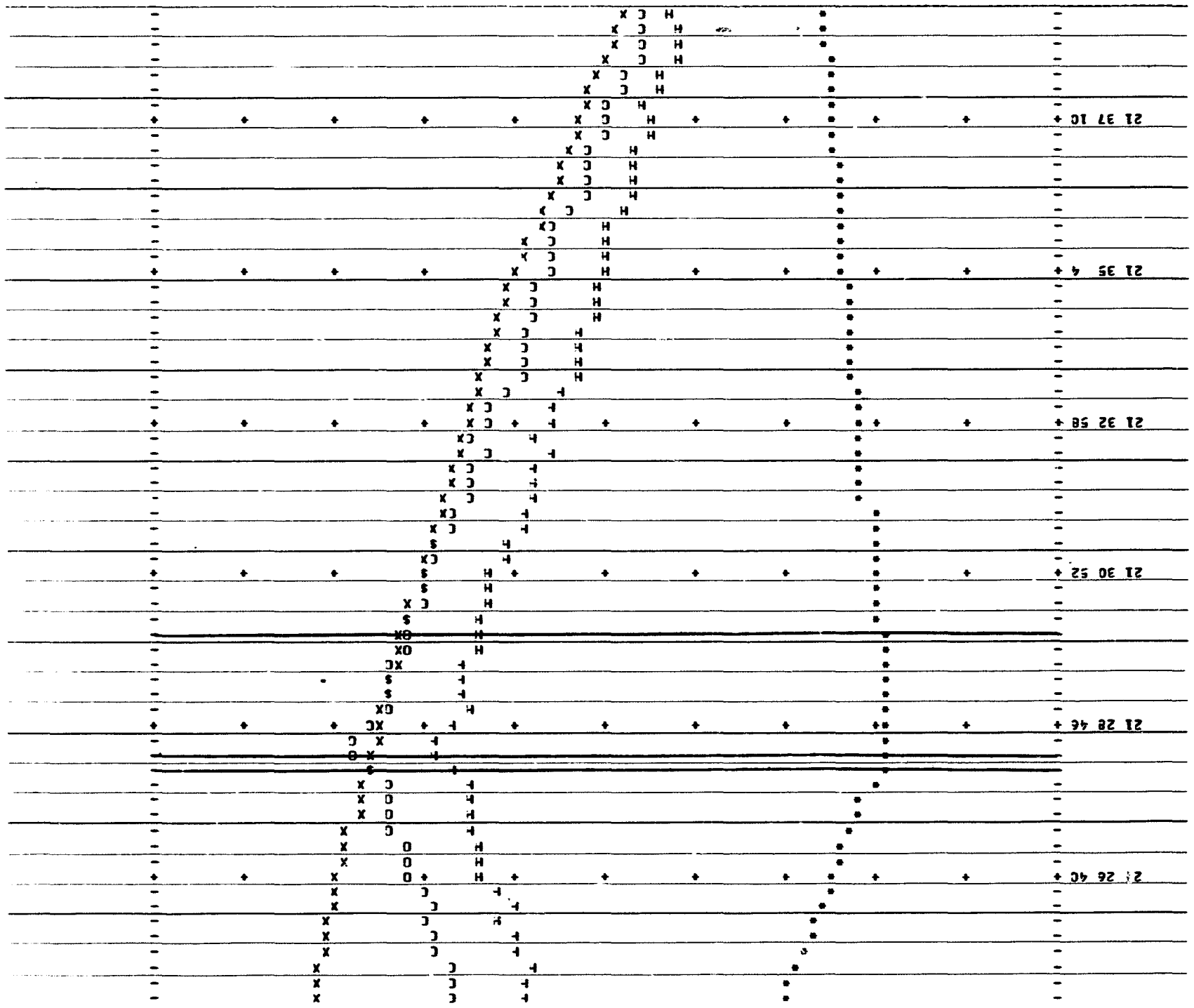
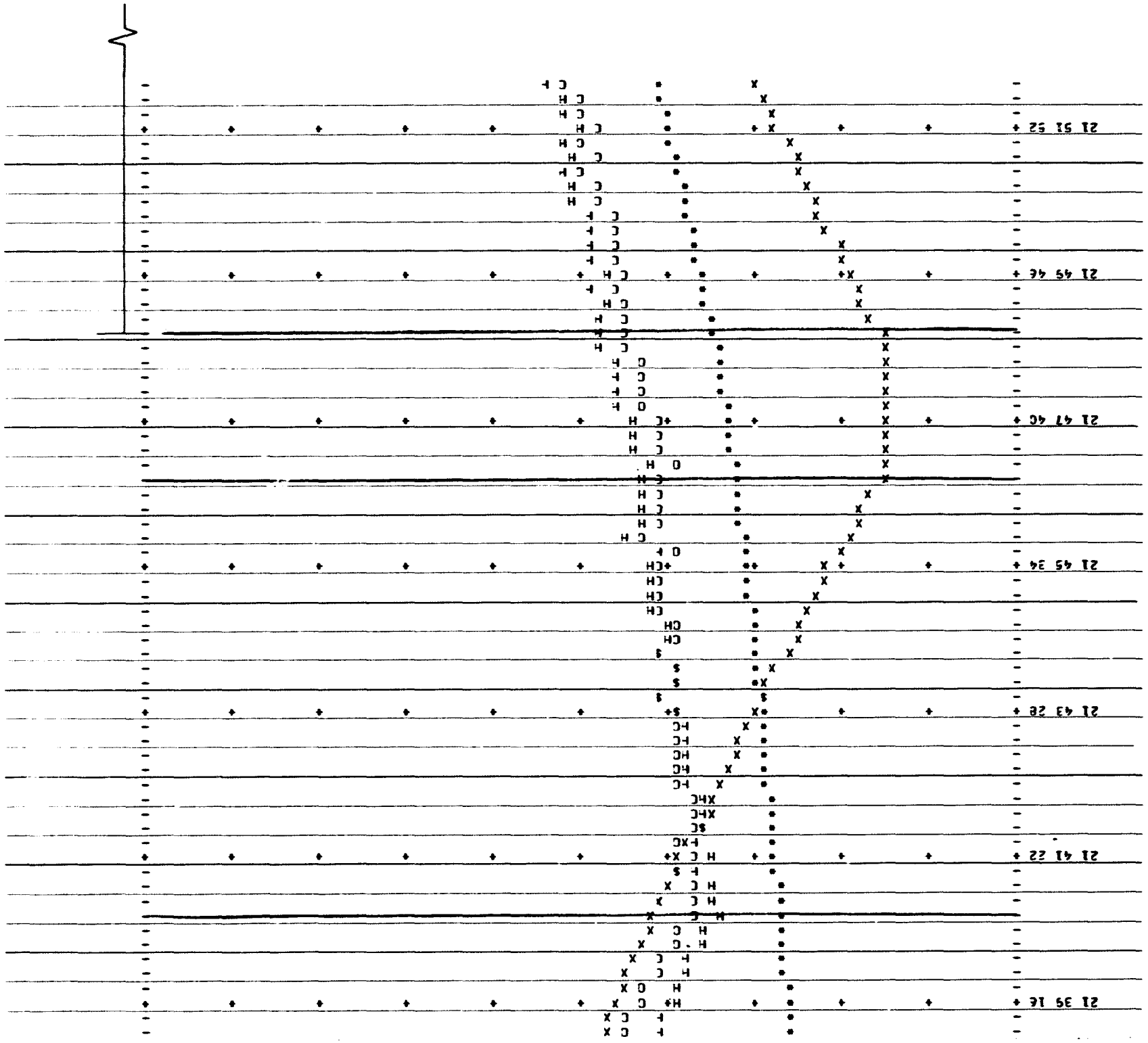
20 59 22
21 1 28
21 3 34
21 5 40
21 7 46
21 9 52


21 24 24
21 22 28
21 20 22
21 18 16
21 16 1C
21 14 4
21 11 5E


21 37 10
21 35 4
21 32 58
21 30 52
21 28 46
21 26 40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21 49 46
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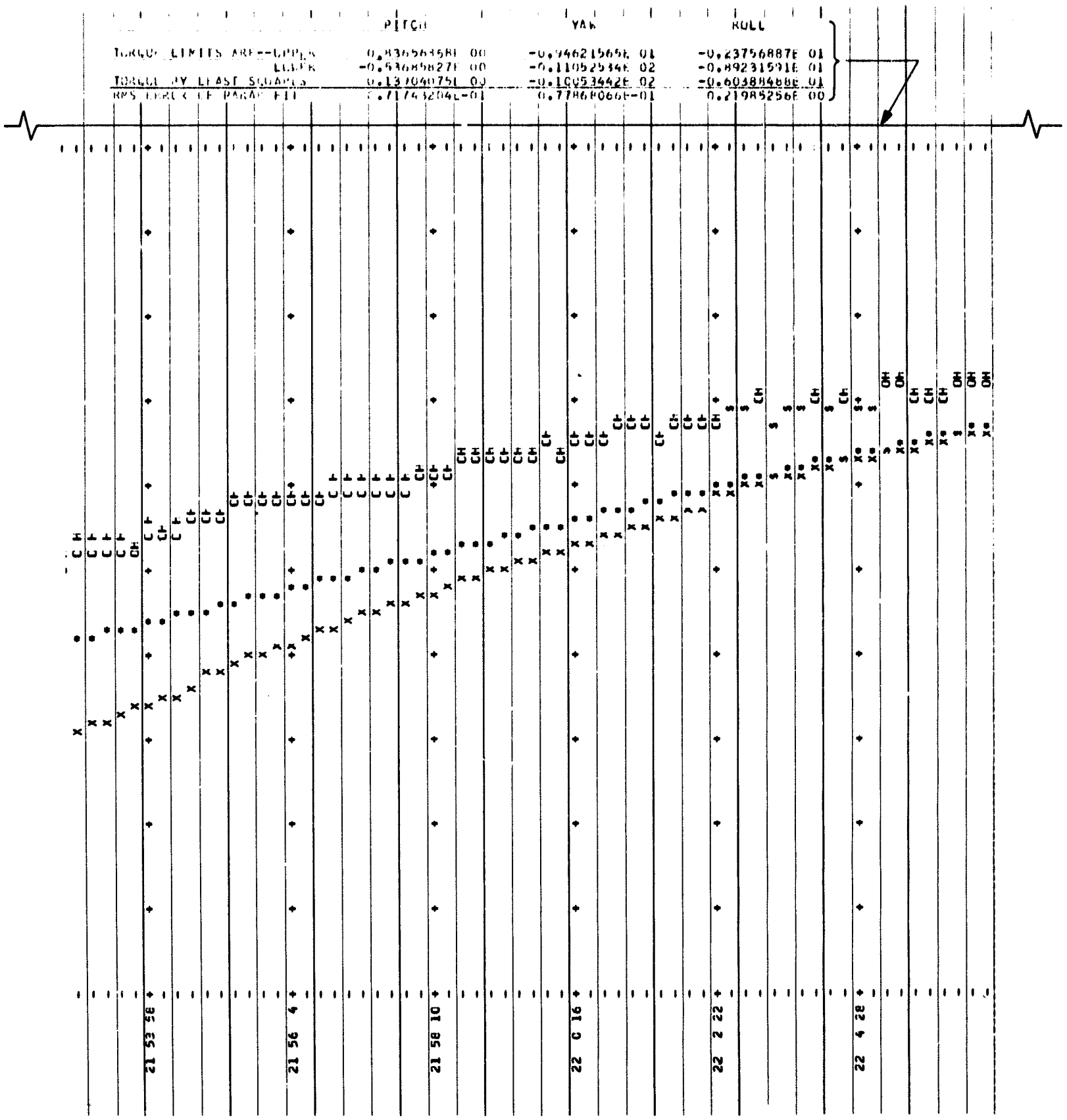
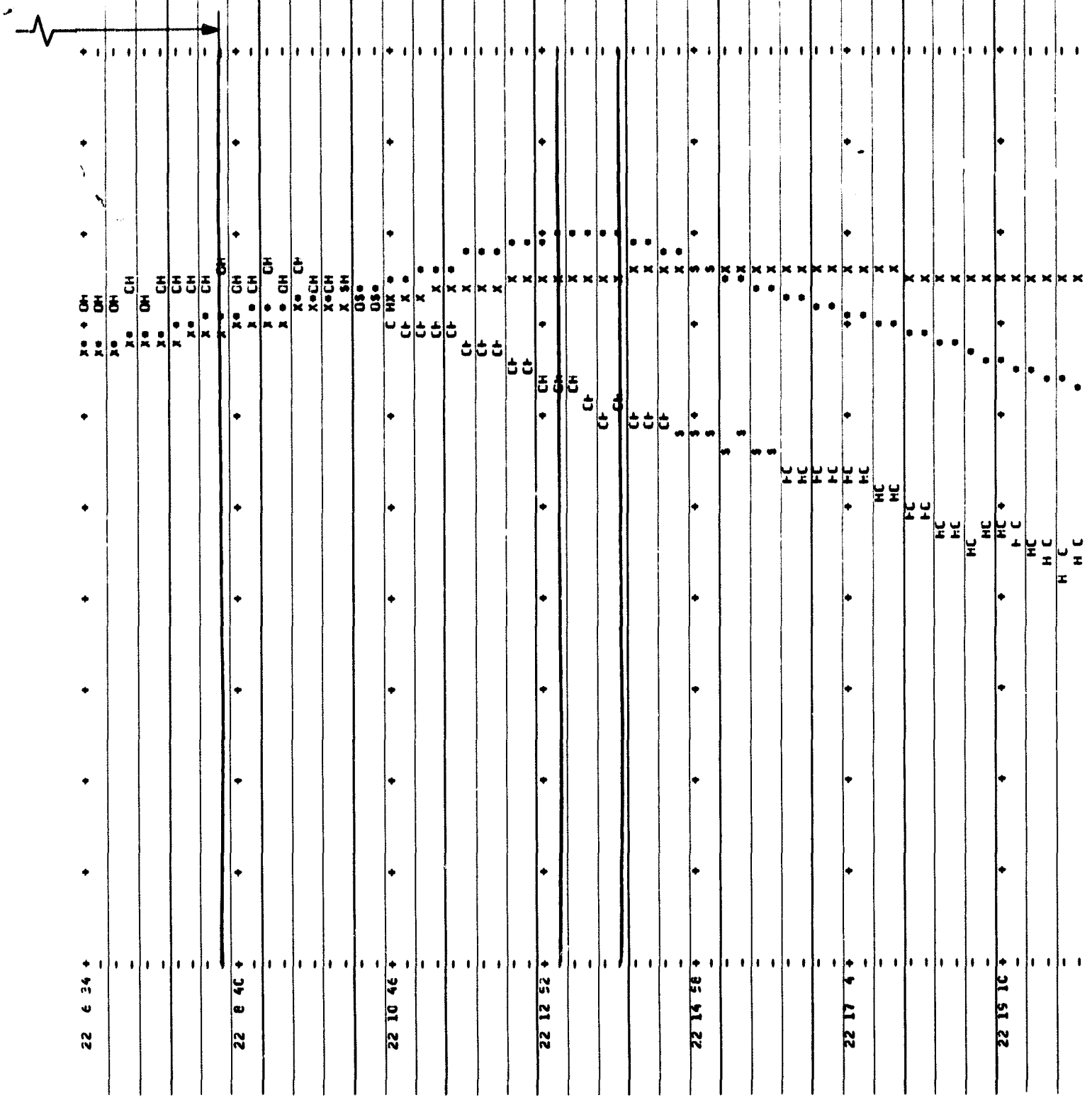
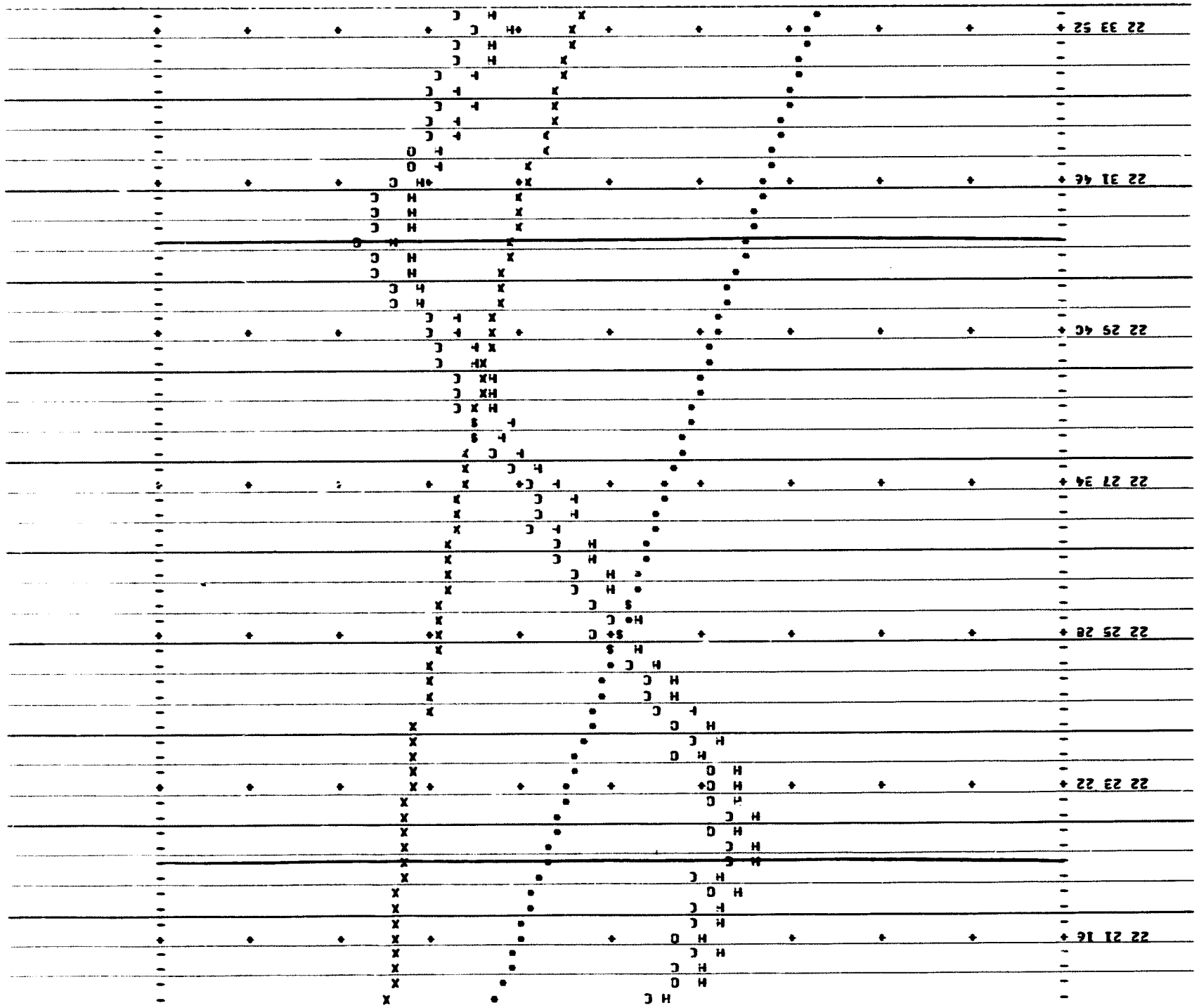
21 45 34
21 43 28
21 41 22
21 39 16


PITCH
YAW
ROLL
TORQUE LIMITS ARE--UPPER 0.8365616E 00 -0.9462156E 01 -0.2375688E 01
LOWER -0.6368582E 00 -0.1105253E 02 -0.8923159E 01
TORQUE BY LEAST SQUARES 0.1370401E 00 -0.1005344E 02 -0.6038468E 01
RMS ERROR OF PARAB FIT 0.7174204E-01 0.7786066E-01 0.2198525E 00
21 53 56
21 56 4
21 58 10
22 0 16
22 2 22
22 4 28




22 33 52
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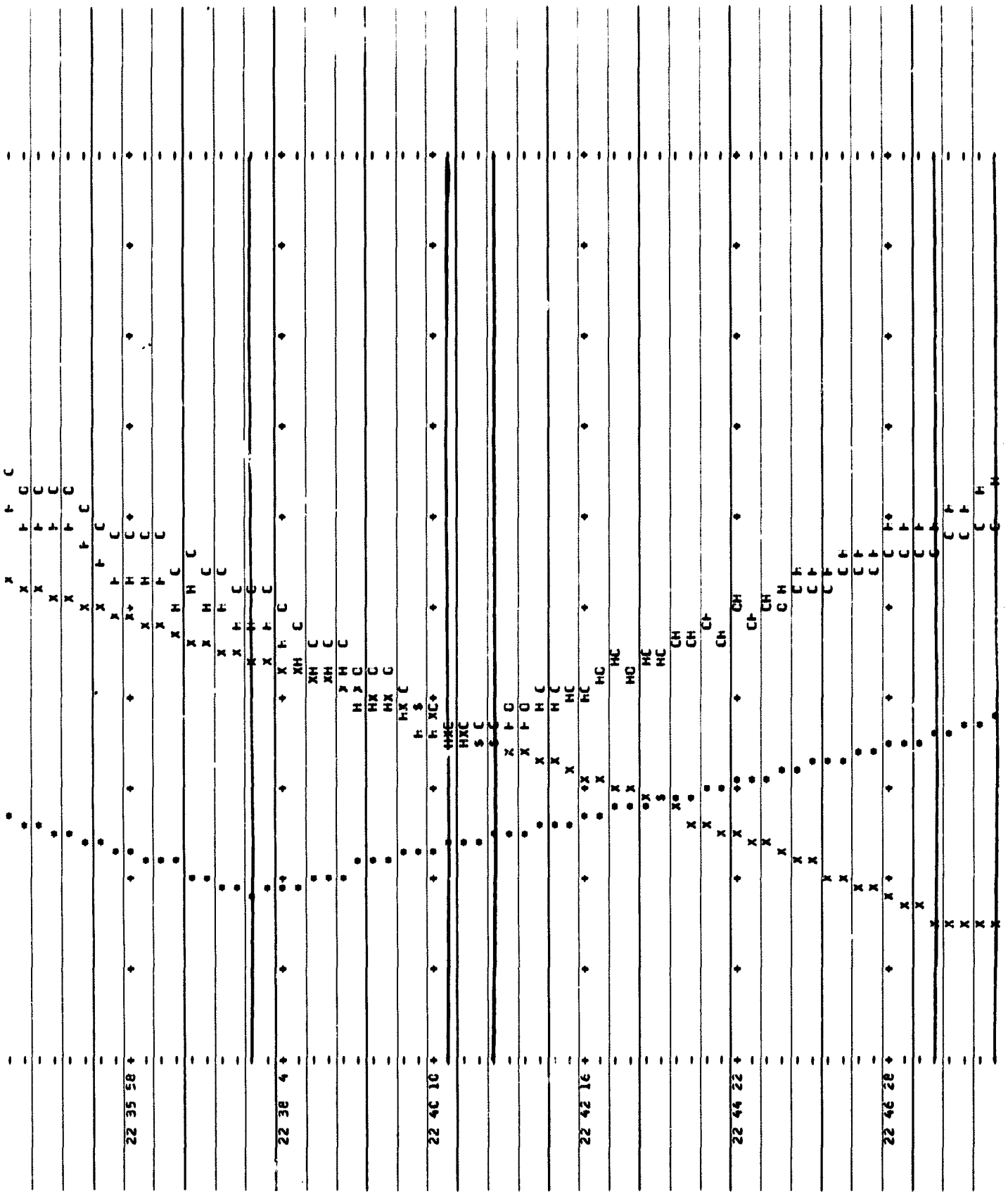
22 25 28
22 23 22
22 21 16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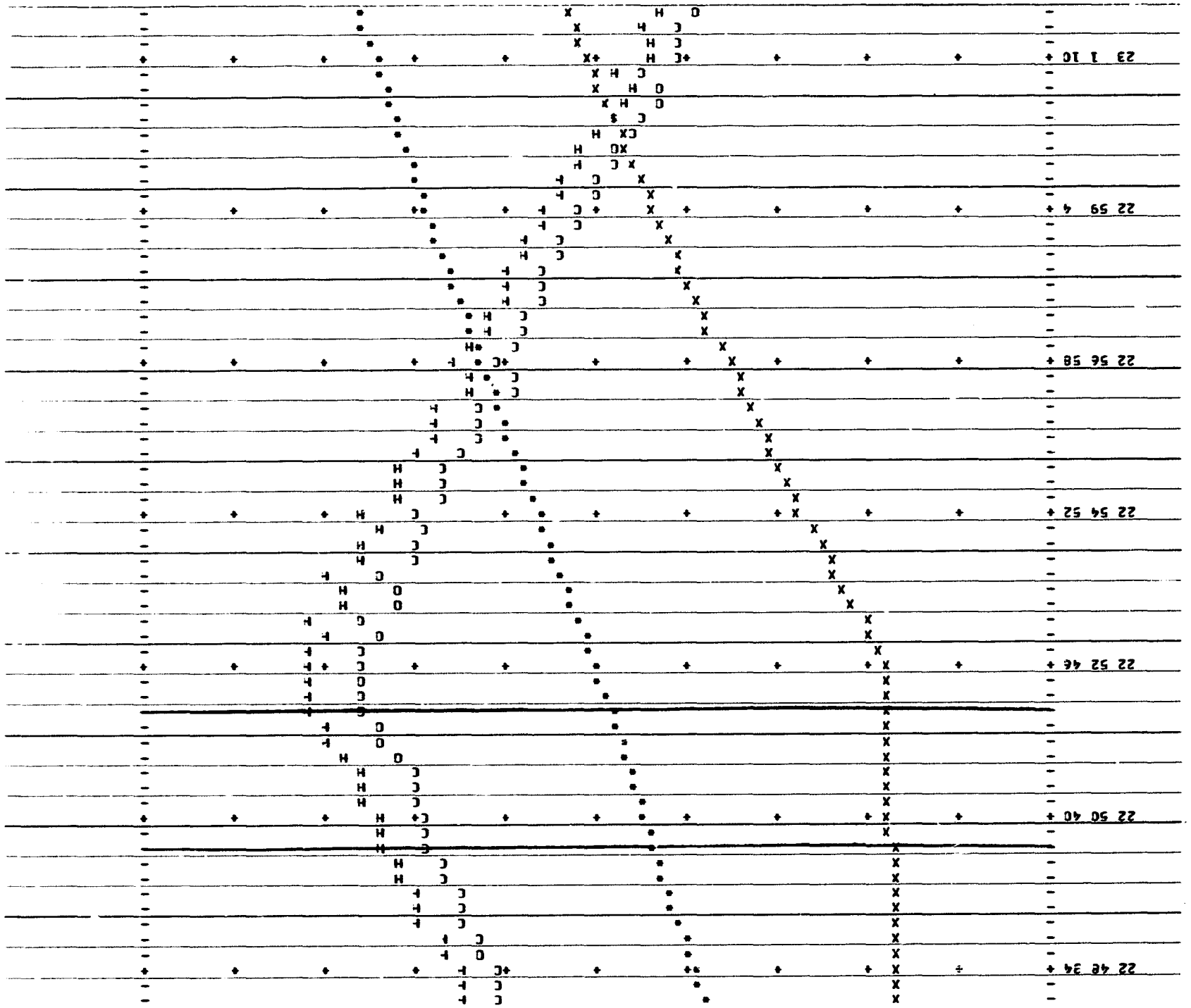
22 42 16
22 44 22
22 46 28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22 59 4
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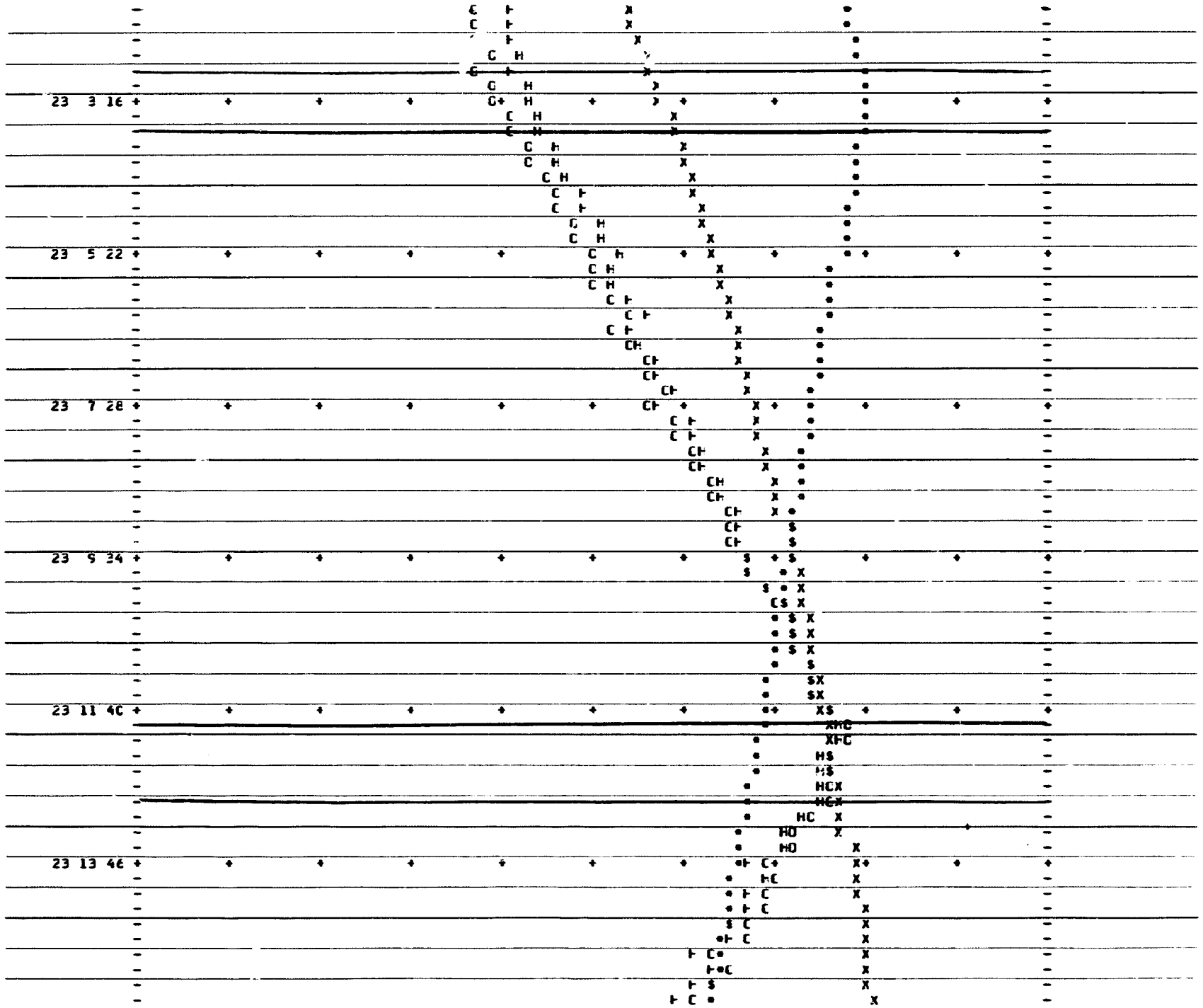
22 48 34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23 5 22
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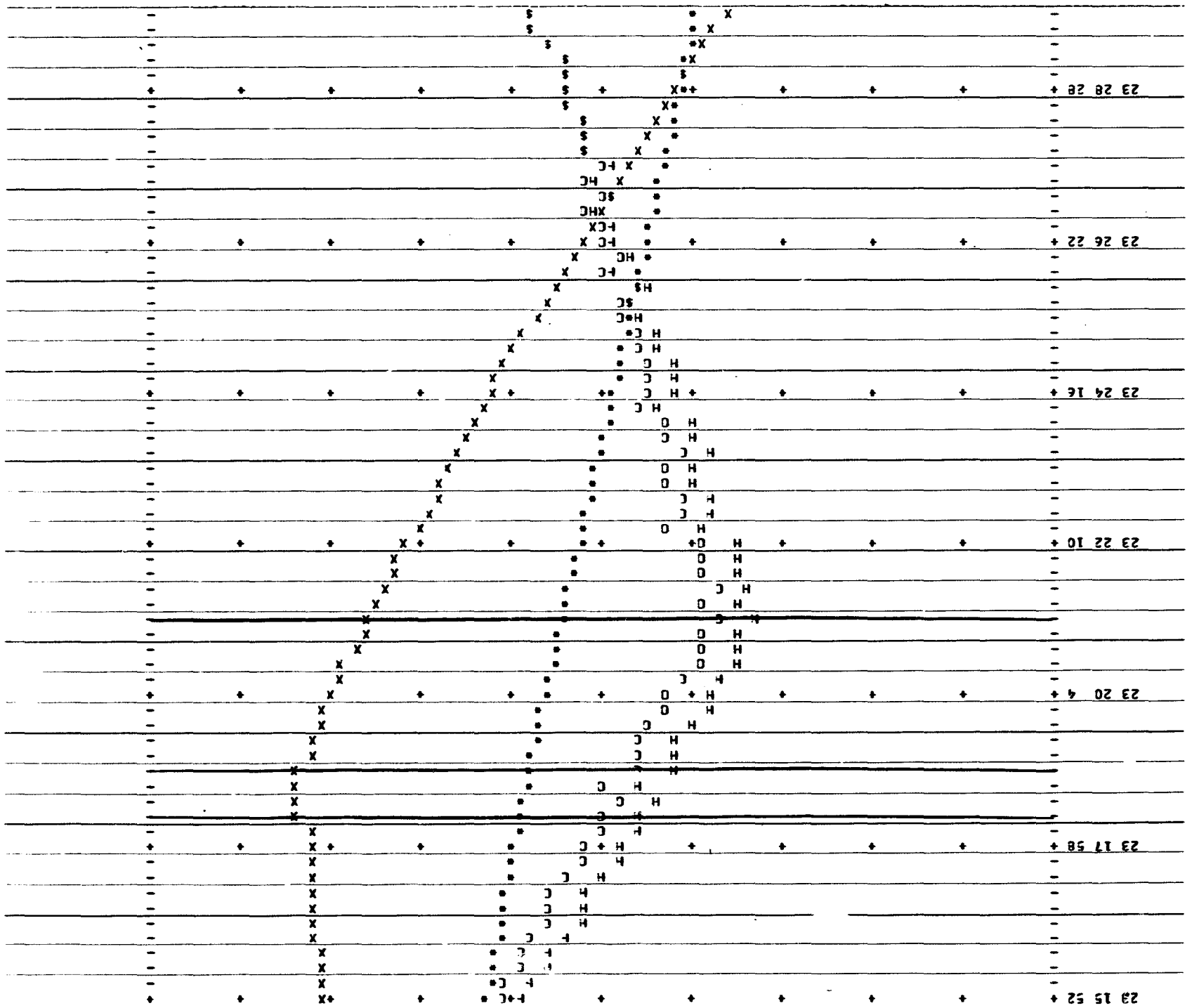
23 13 46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23 26 22
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23 22 10
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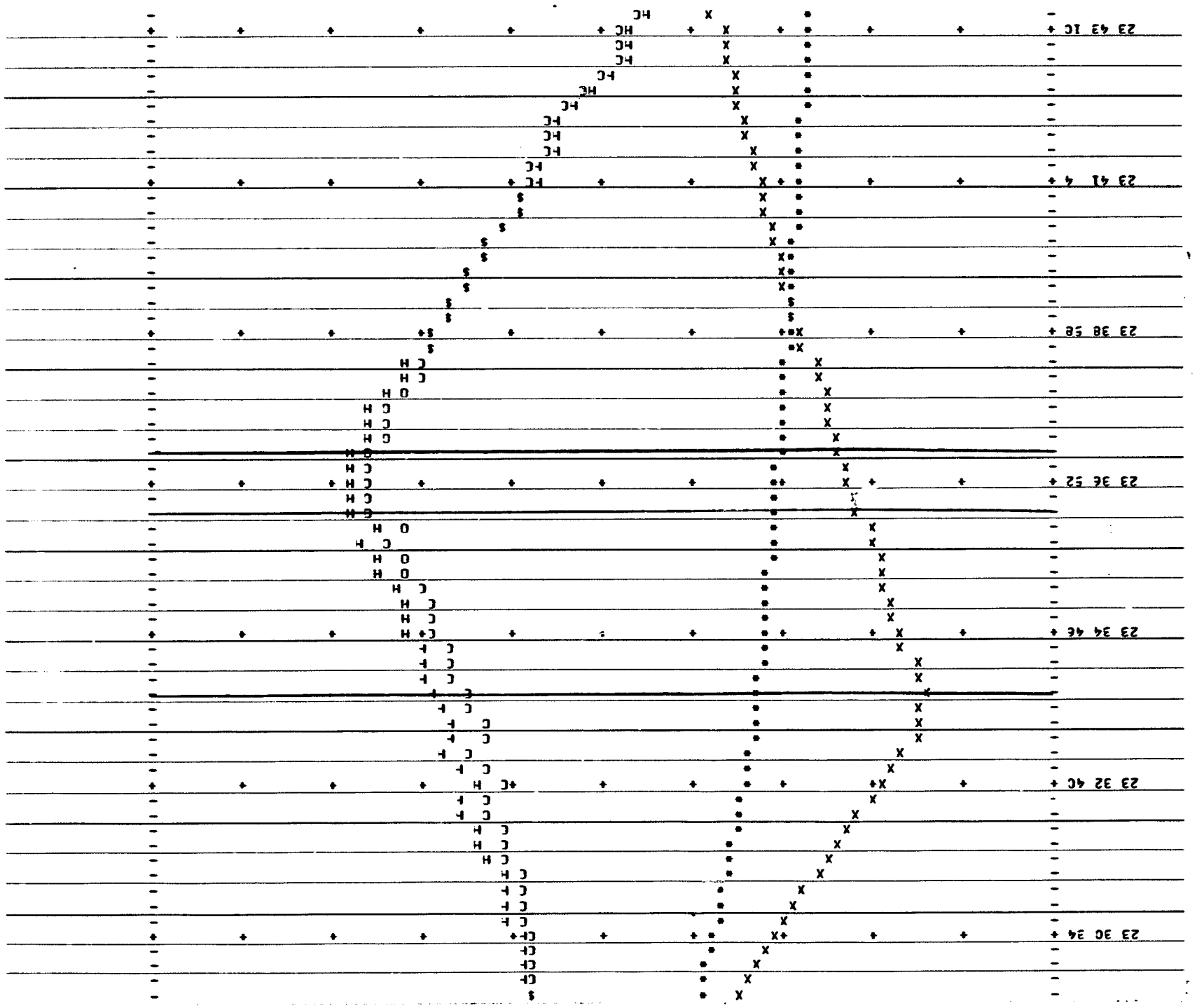
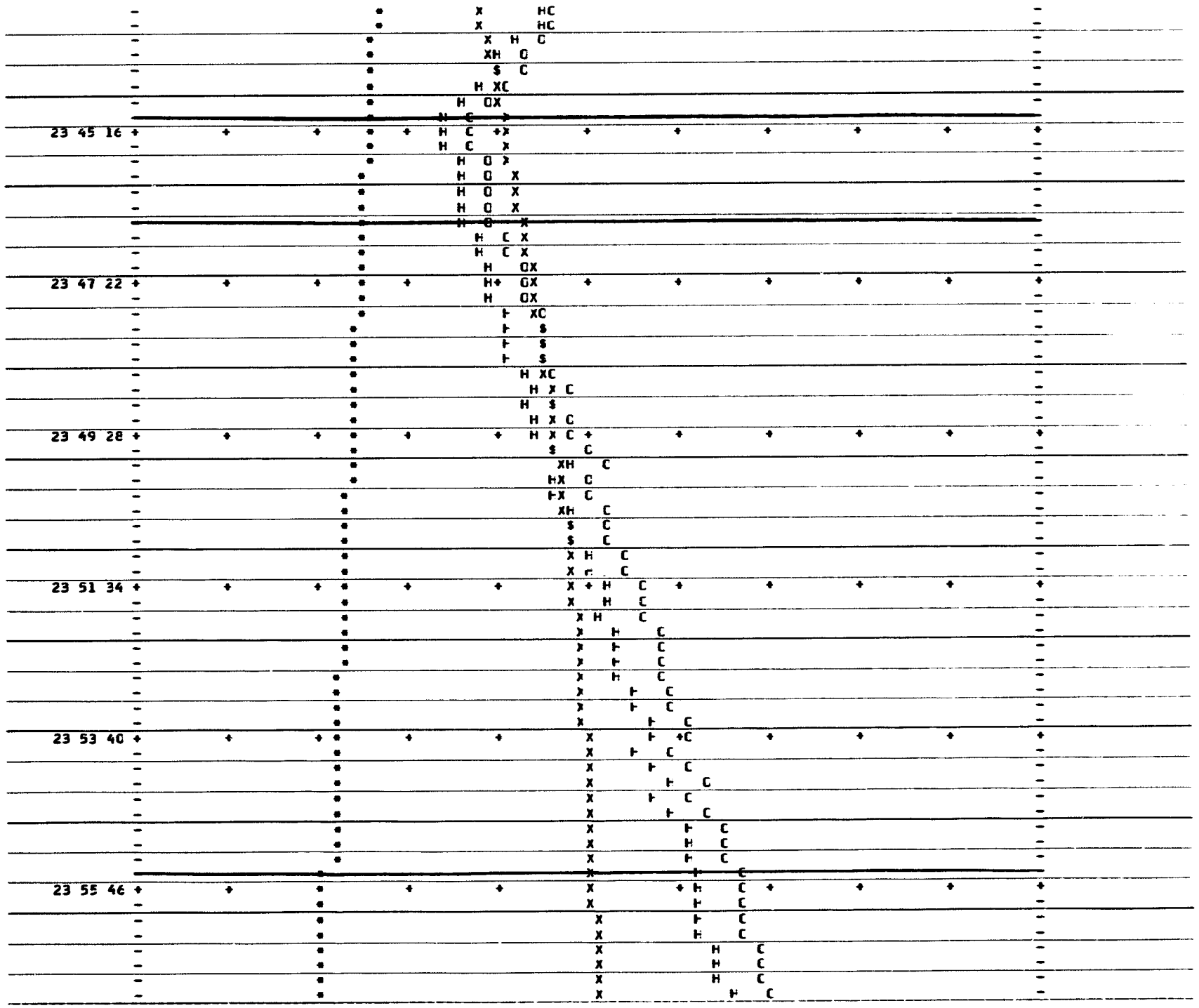
23 17 58
23 15 52


23 43 1C
23 41 4
23 38 5E
23 36 52
23 34 4E
23 32 4C
23 30 34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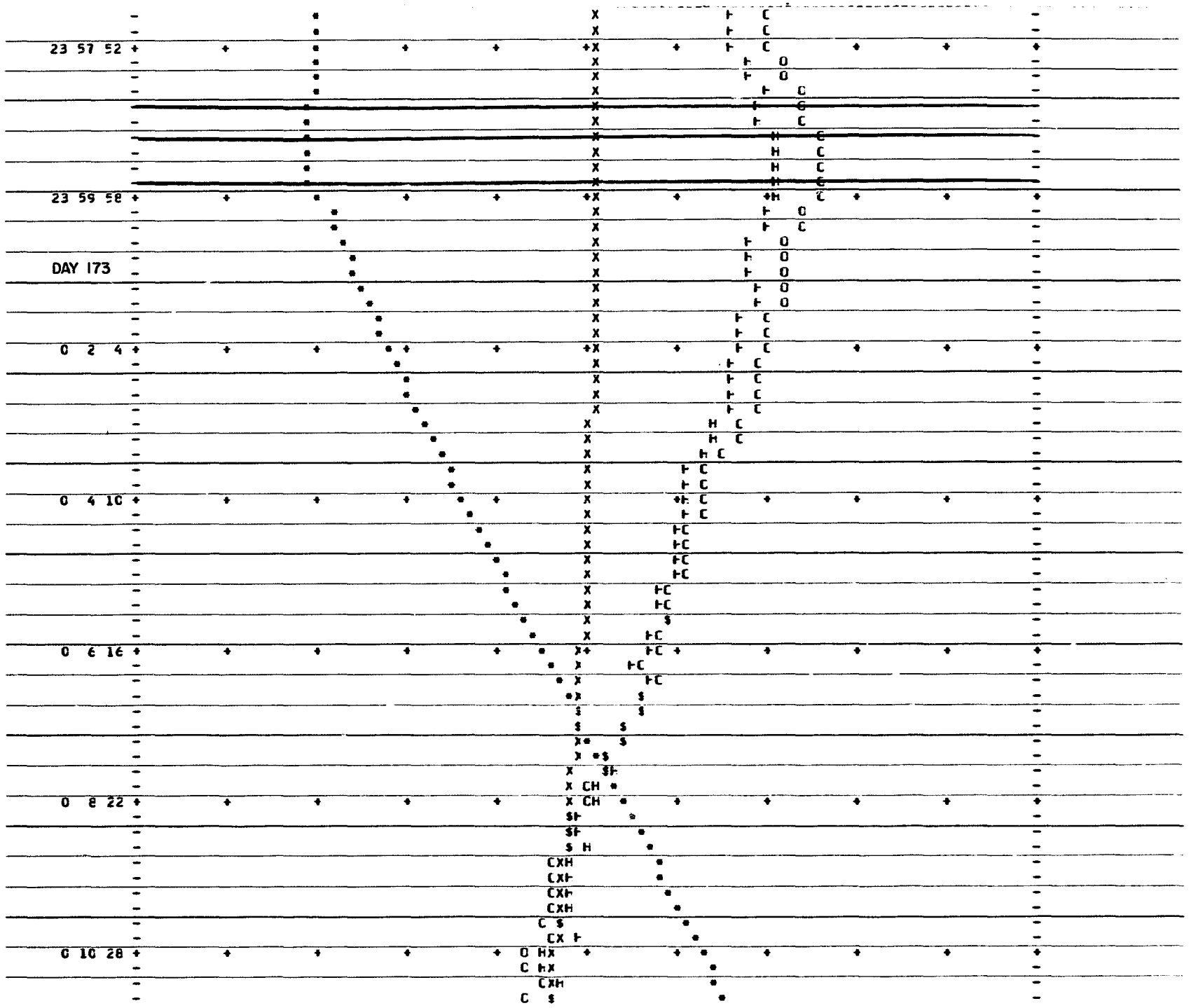
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23 59 58
DAY 173
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0 4 10
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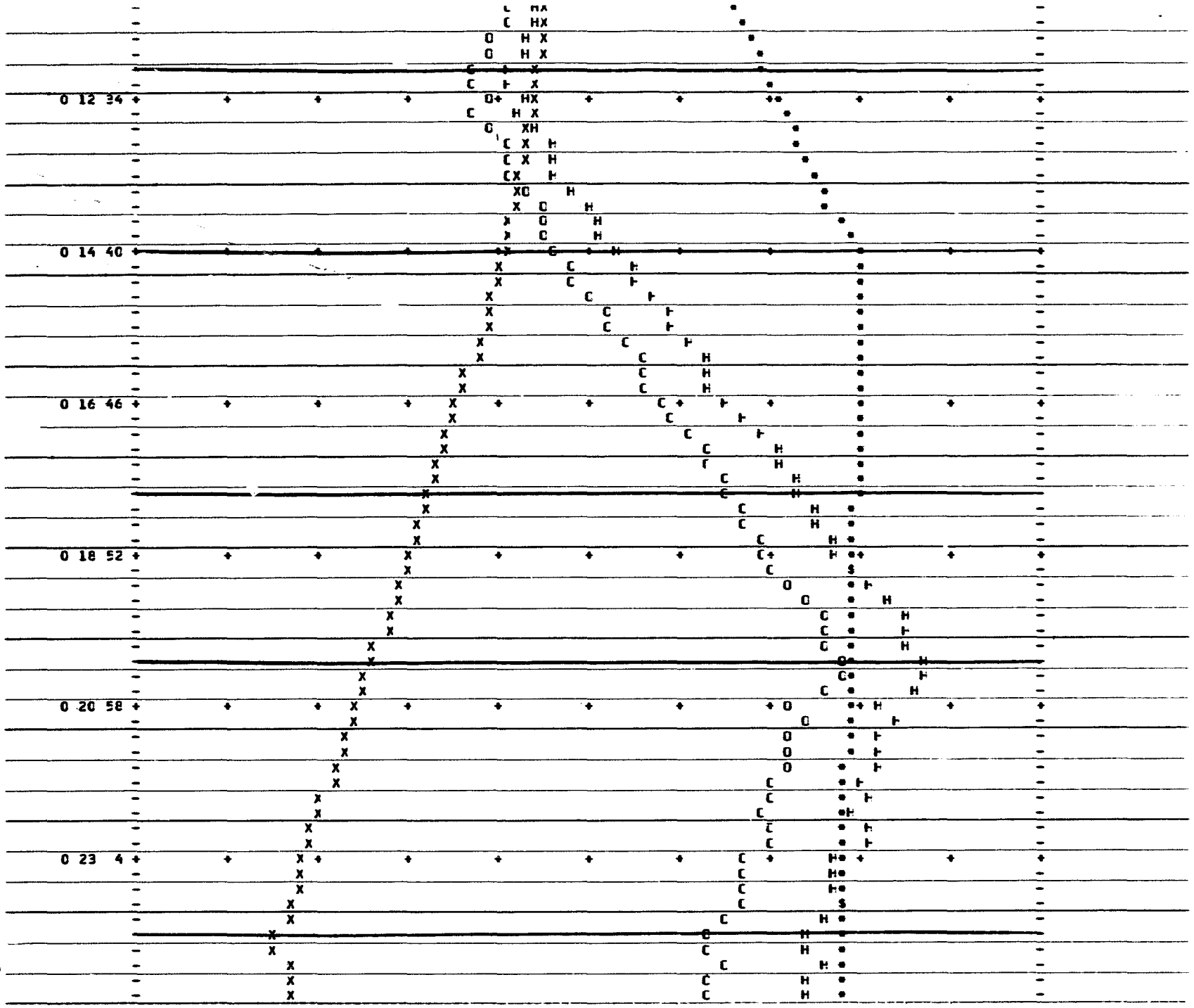
0 8 22
0 10 28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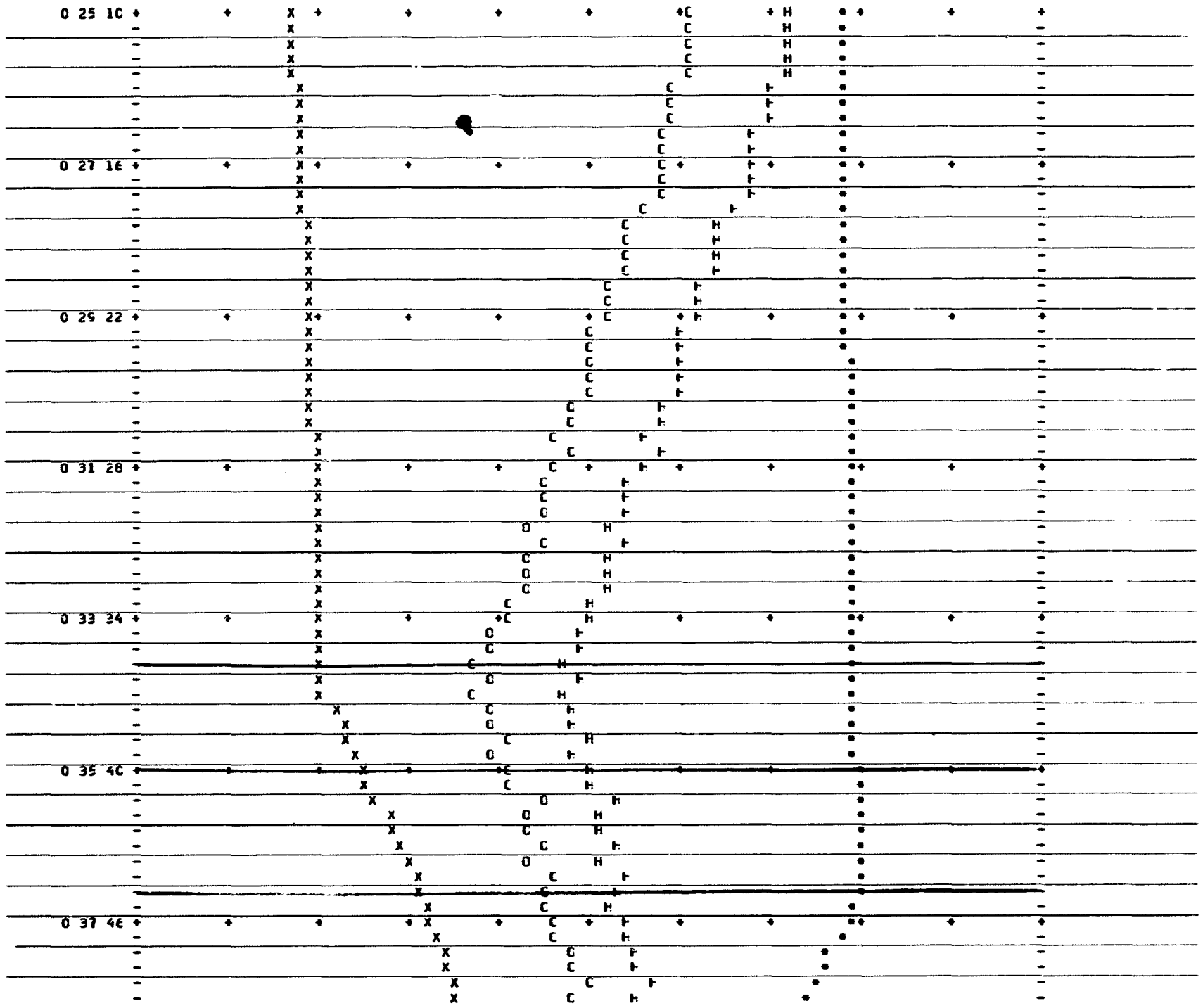
0 23 4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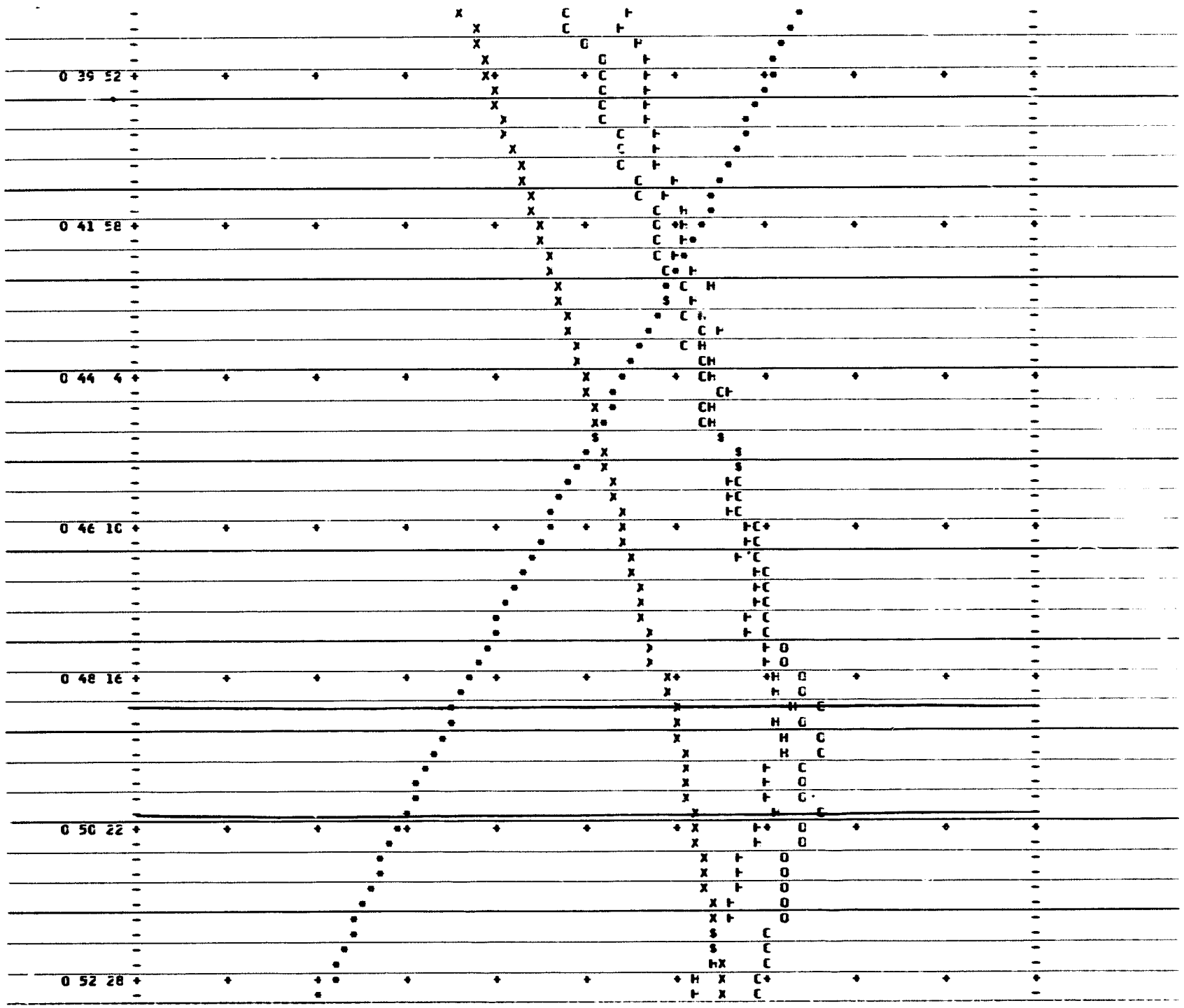
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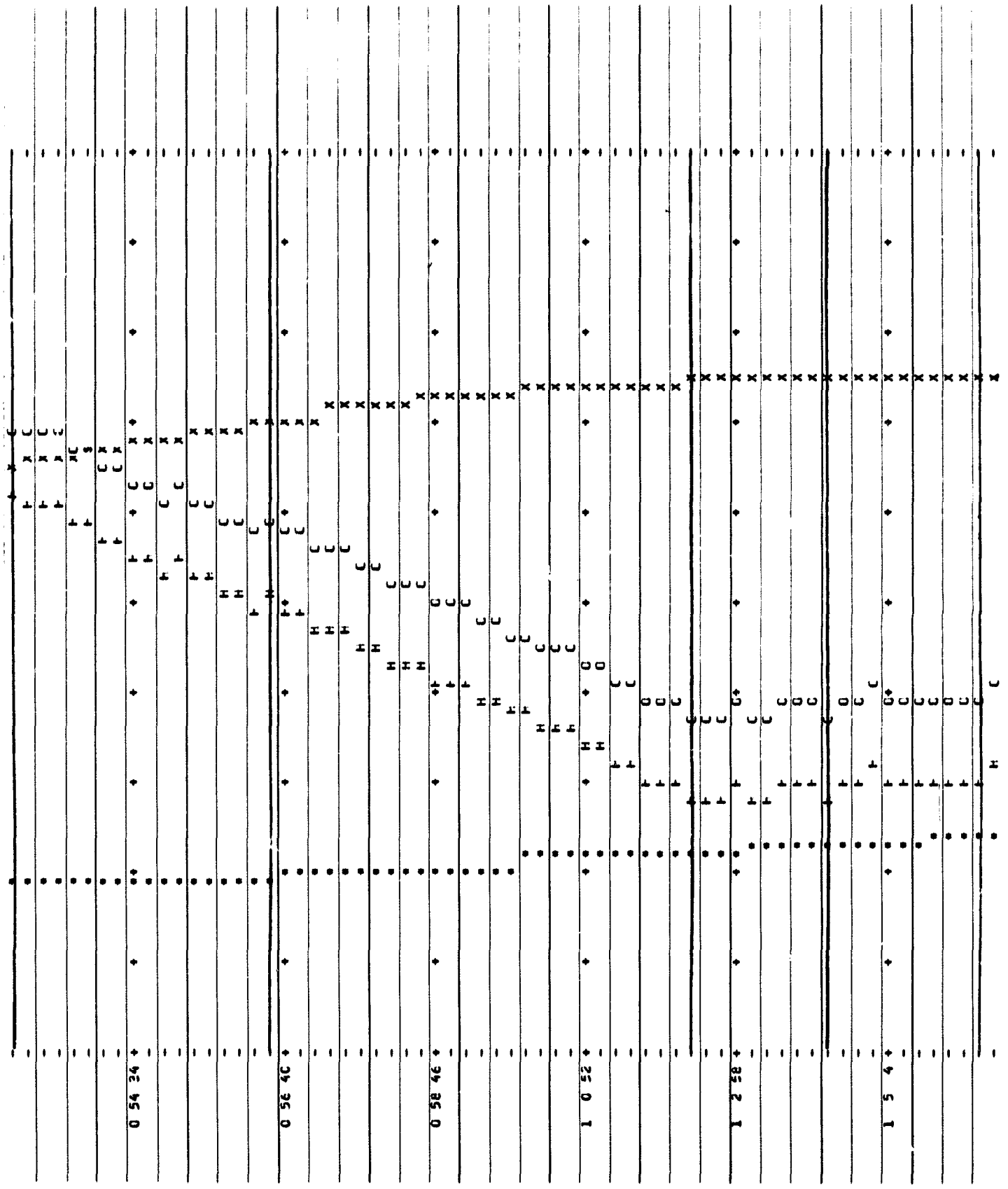
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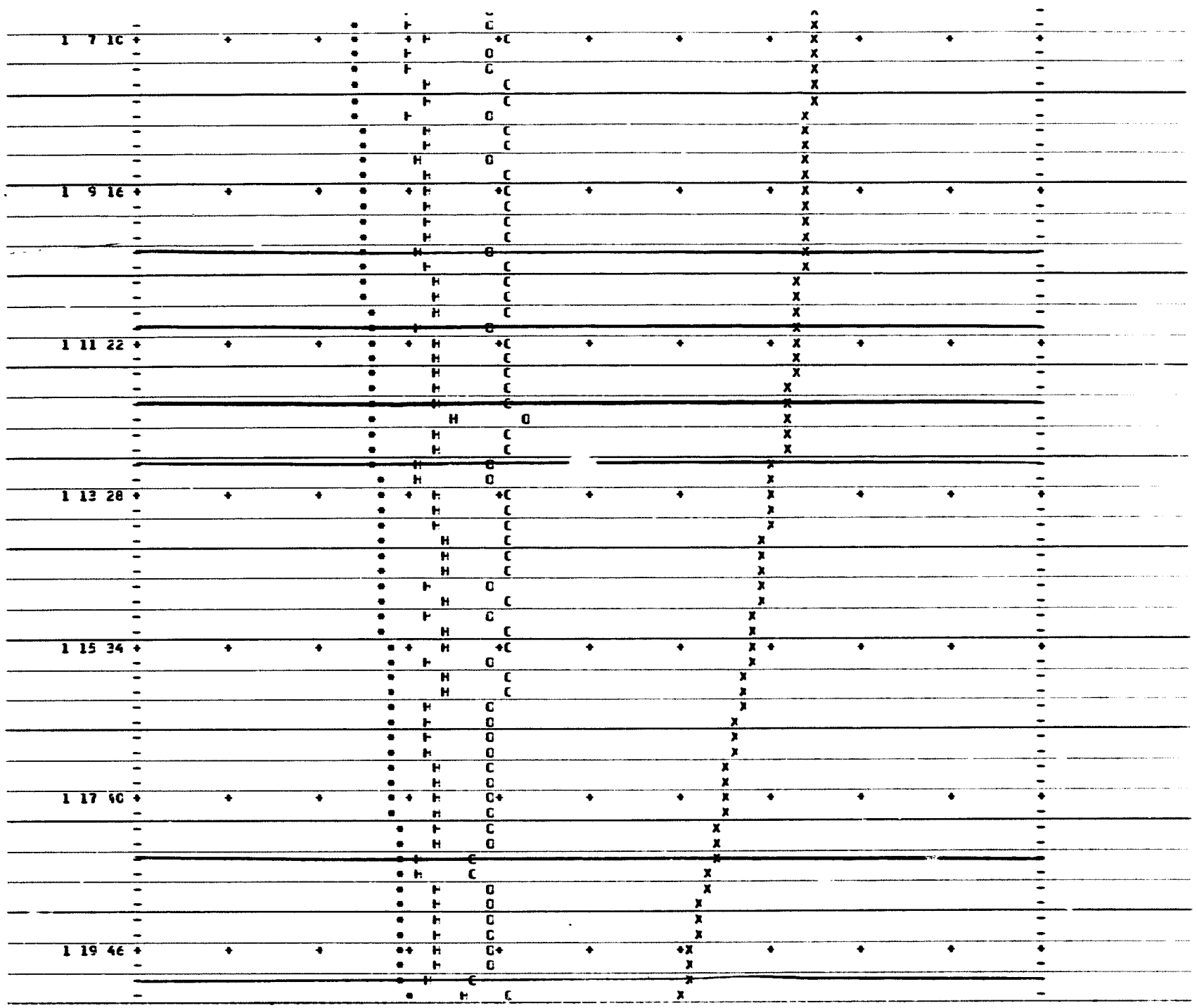
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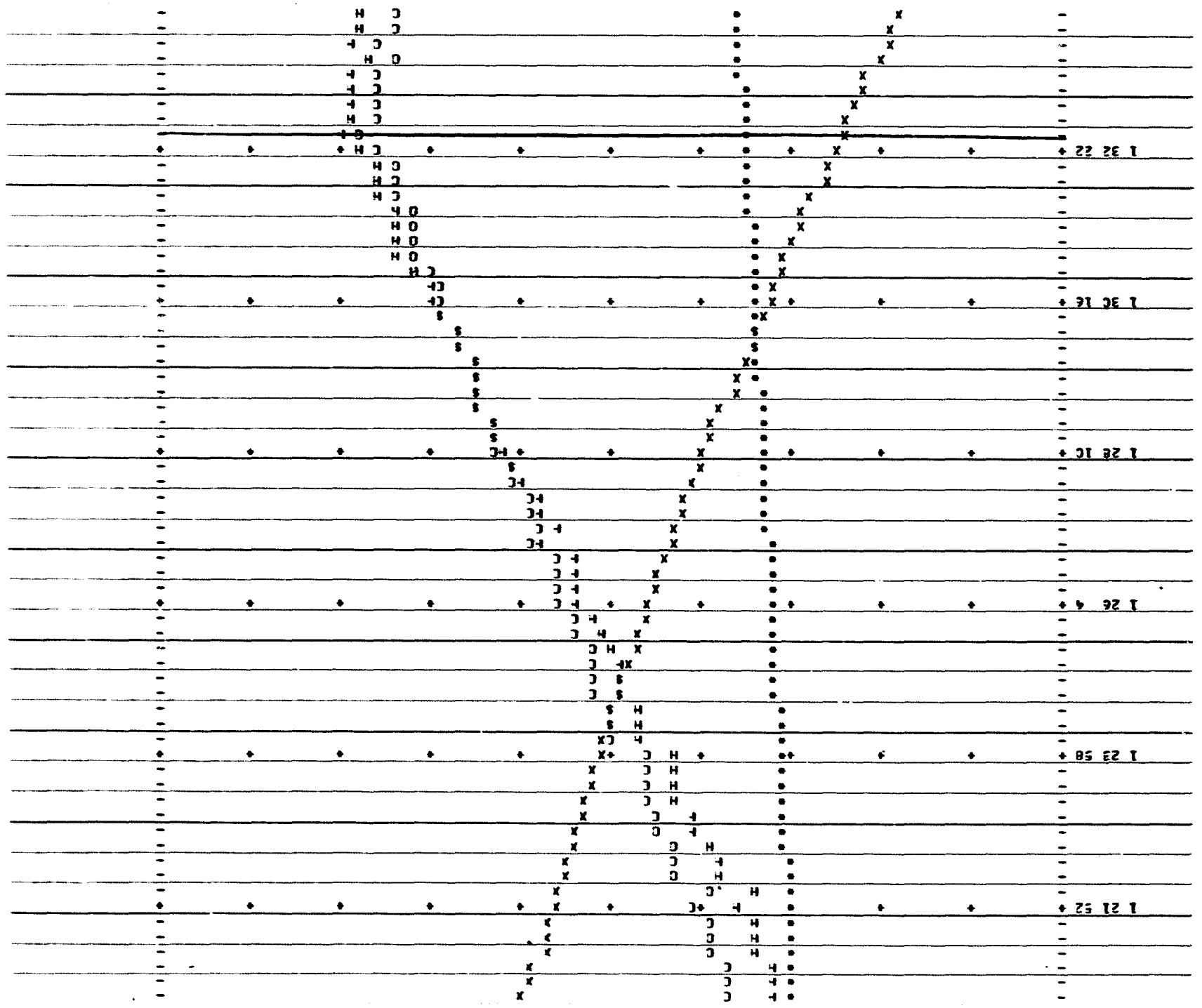
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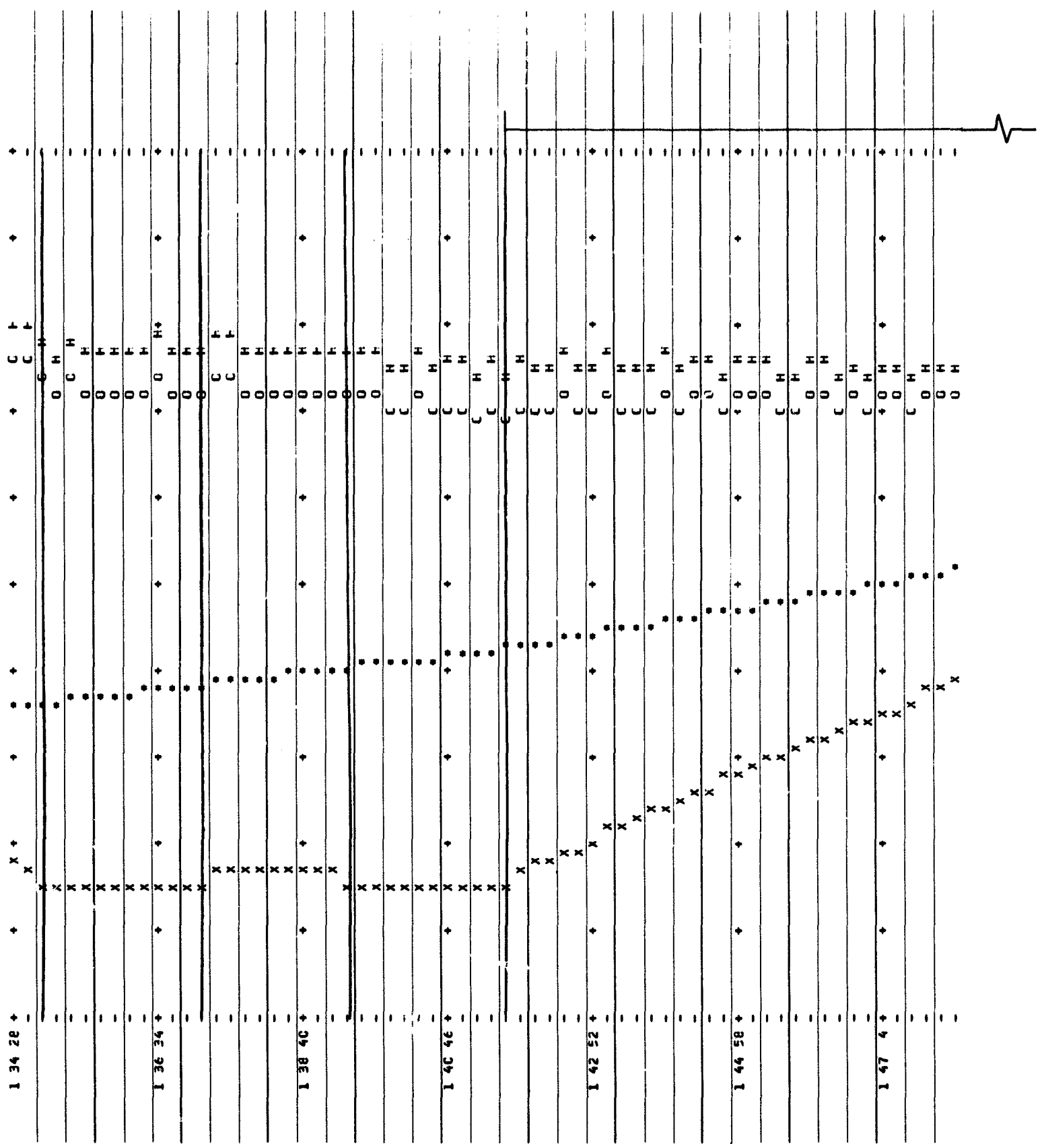
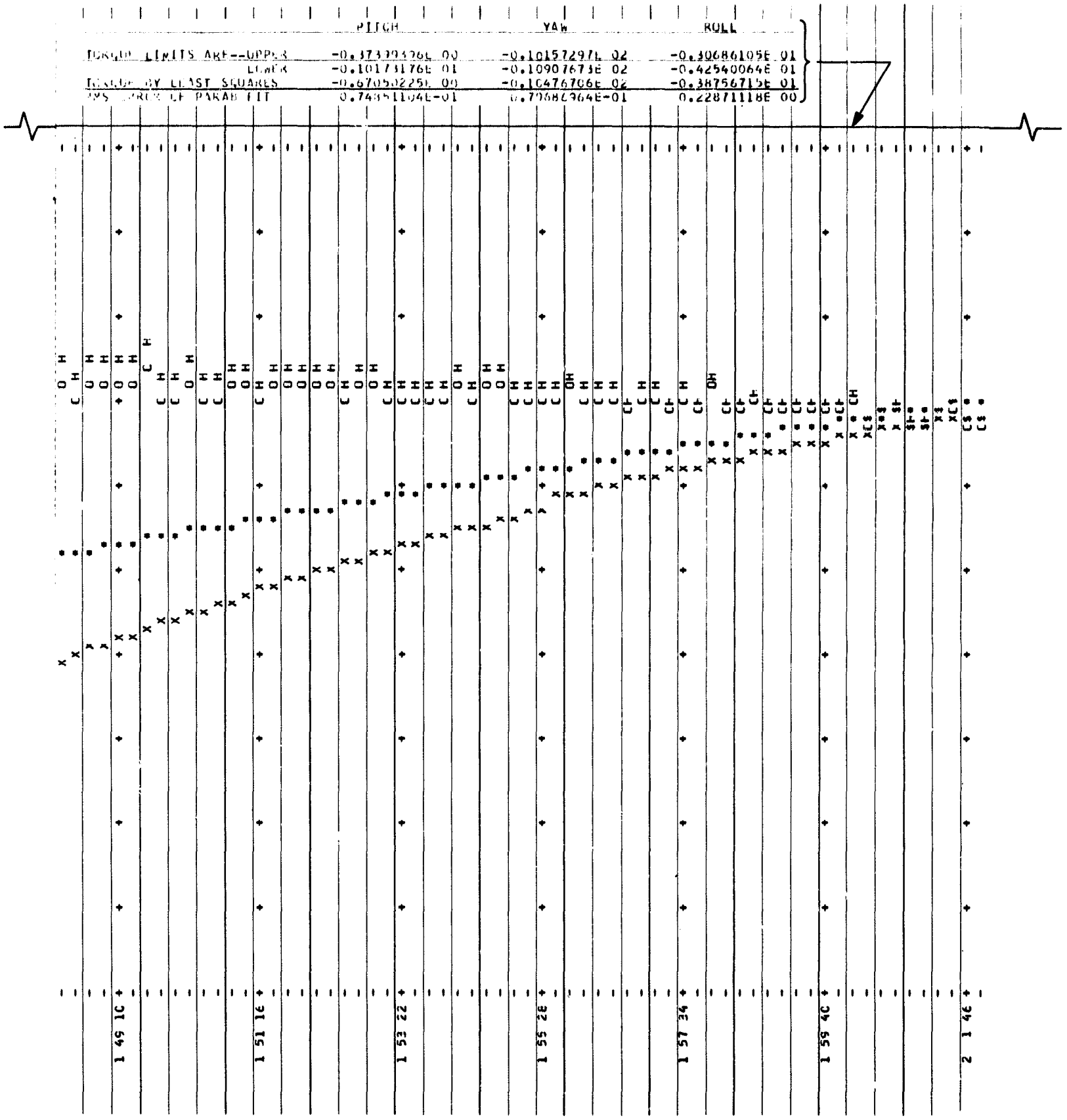
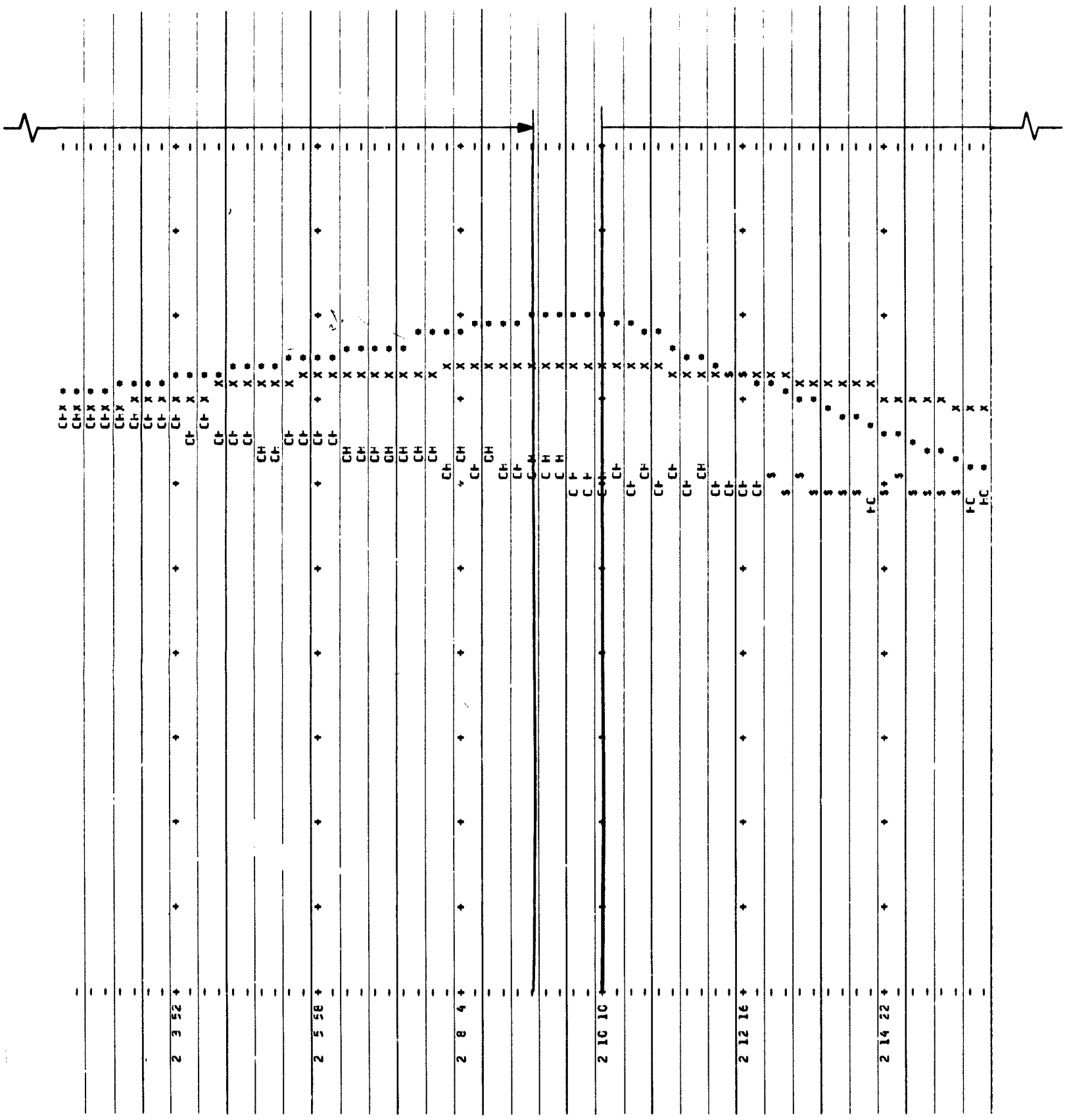
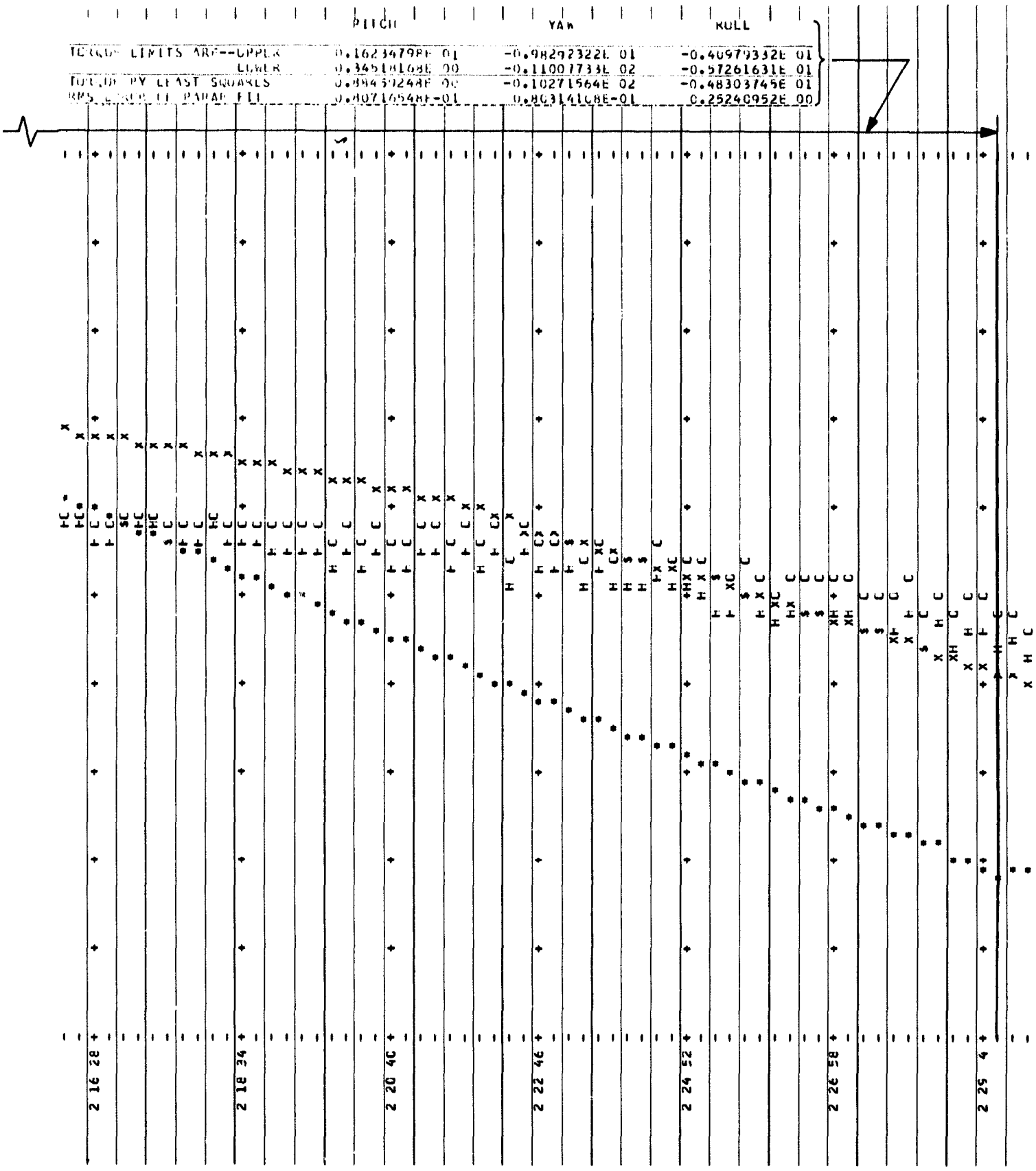
1 26 4
1 23 58
1 21 52

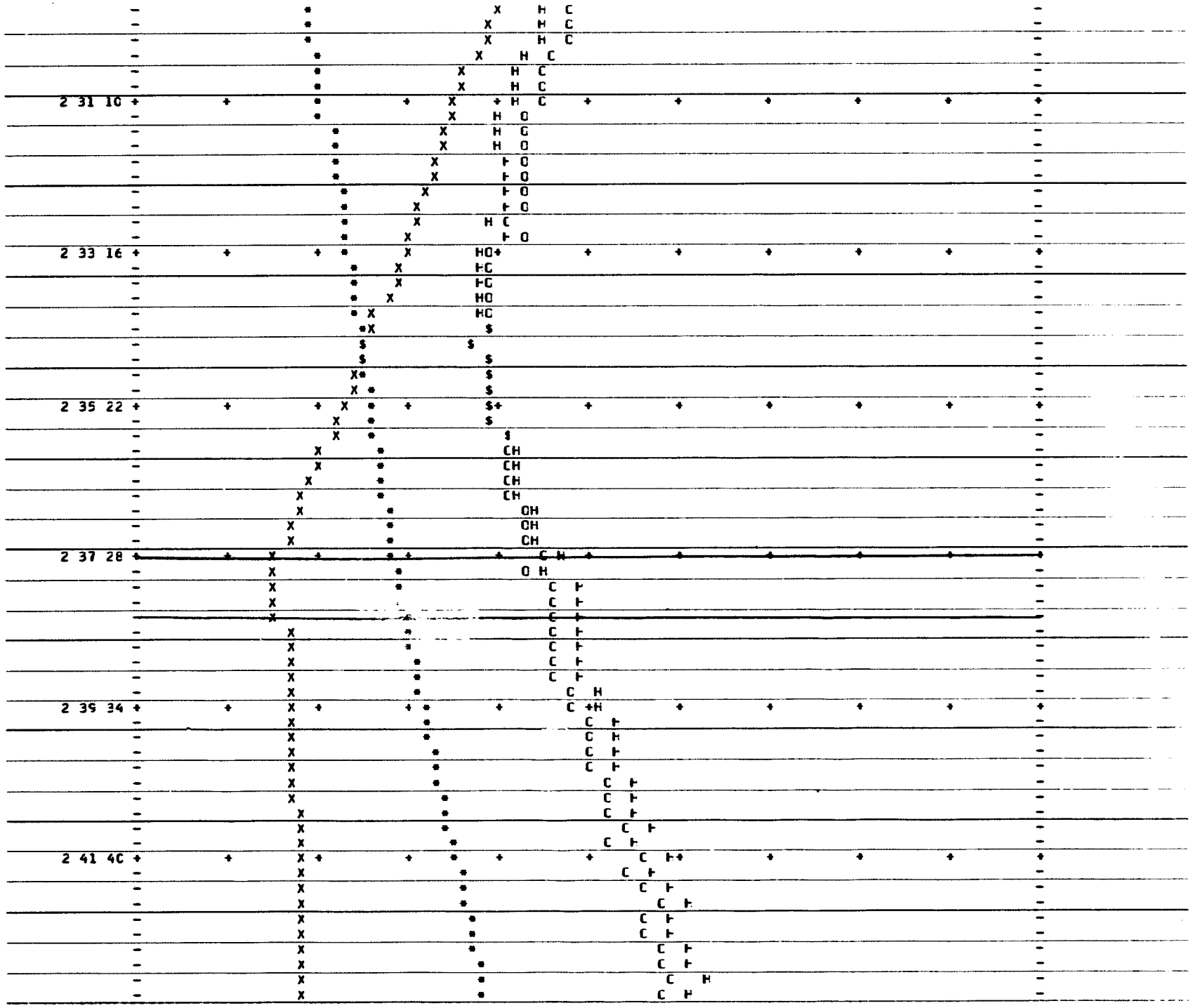

1 34 28
1 36 34
1 38 40
1 40 46
1 42 52
1 44 58
1 47 4

	PITCH	YAW	ROLL
FORCED LIMITS ARE--UPPER	-0.37339426E 00	-0.10157297E 02	-0.30686105E 01
LOWER	-0.10173176E 01	-0.10907673E 02	-0.42540064E 01
RESULT BY LEAST SQUARES	-0.67053225E 00	-0.10476706E 02	-0.38756715E 01
RMS ERROR OF PARAB FIT	0.74351104E-01	0.70682964E-01	0.22871118E 00




2 3 52
2 5 58
2 8 4
2 10 10
2 12 16
2 14 22


PITCH
YAW
ROLL
LIMITS ARE--UPPER 0.16234798E 01 -0.98292322E 01 -0.40979332E 01
LOWER 0.36518168E 00 -0.11007733E 02 -0.57261631E 01
BY LEAST SQUARES 0.89459248E 00 -0.10271564E 02 -0.48303745E 01
0.80716548E-01 0.86314168E-01 0.25240952E 00
2 16 28
2 18 34
2 20 46
2 22 46
2 24 52
2 26 58
2 25 4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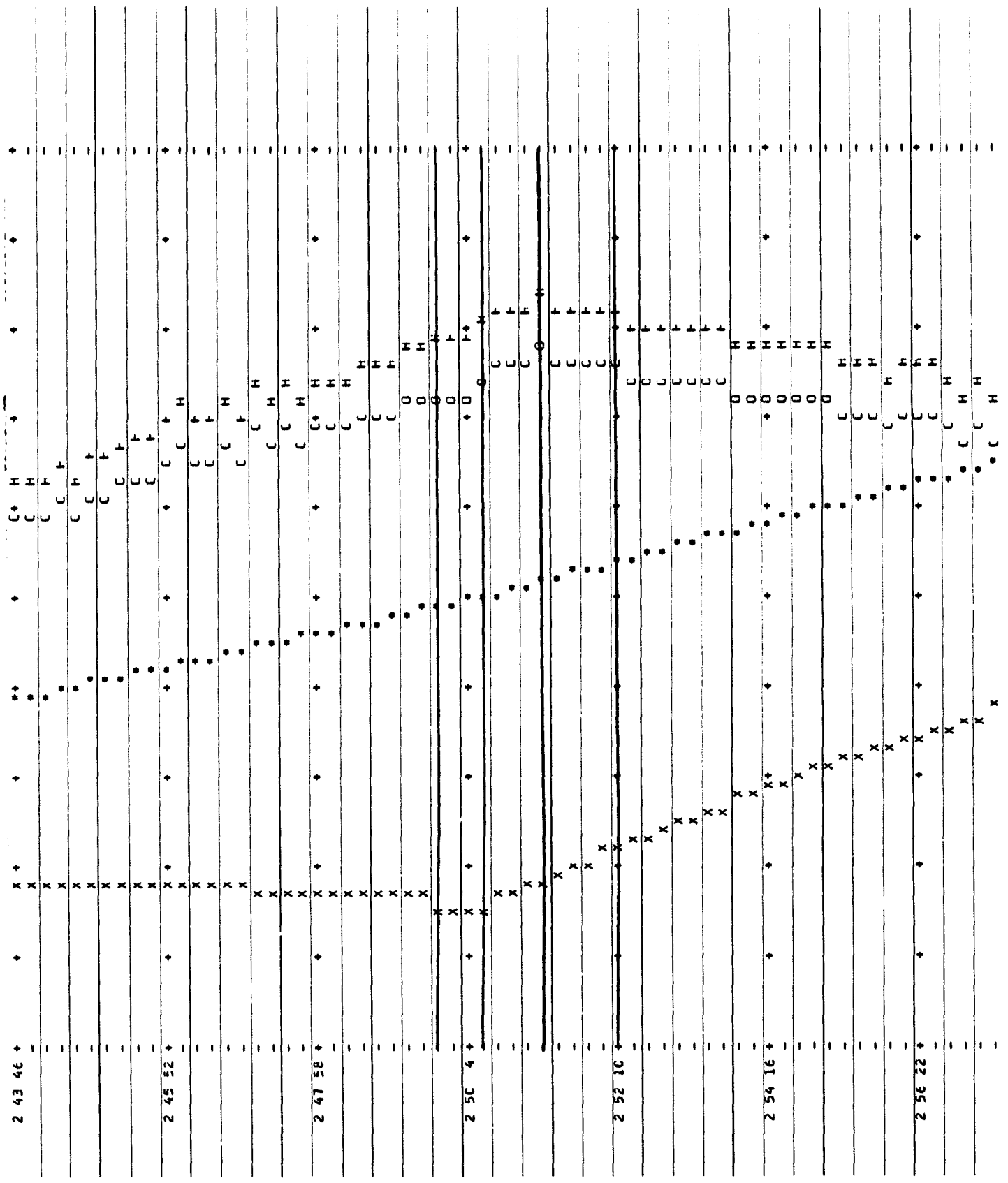
2 43 46
2 45 52
2 47 58
2 5C 4
2 52 1C
2 54 1E
2 56 22