

FILE

TEST AND MEASUREMENT LAB TEST RESULTS

REQUESTER: F.E. MARTIN TESTER: J. SELAN - A. Cooper DATE: 10/21/88
REPORT NO.: 882432 WORK ORDER NO.: 48153
WRITTEN BY: J. SELAN
TEST TYPE: DEVELOPMENTAL

FIREARM STAT'S : MODEL: 700-CLASSIC CAL or GAUGE: 300 WEATHERBY
BARREL TYPE: MAG. SPORT PROOFED: YES ☒ NO ☐ MAG.

REASON FOR TEST :

TO DETERMINE ACCURACY OF AMMO SUPPLIED BY LONGKE IN 300
WEATHERBY MAG.

EQUIPMENT REQUIRED :

4-M-700's CLASSICS - #6202843 - #8686103 - #8686067 - #6209215 - #6209210 - #86894118
1 MARK-V - WEATHERBY - #23792
AMMO: JCO WEATHERBY MAG - 190 GR. PSP.
JOX LYMAN ALL AMERICAN SCOPE - 1300E BASE (LEUPOLD-LARRY) - 1 SET LEUPOLD I.I.N. (MED) RINGS.
100 YD. RANGE.
CLEANING RODS - NIPPE'S #9 SOLVENT - BUSHNELL - BORE SIGHTER - ASSORTED PATCHES.
DIGITIZING BOARD - CALCOMP #900 AND - HP #900

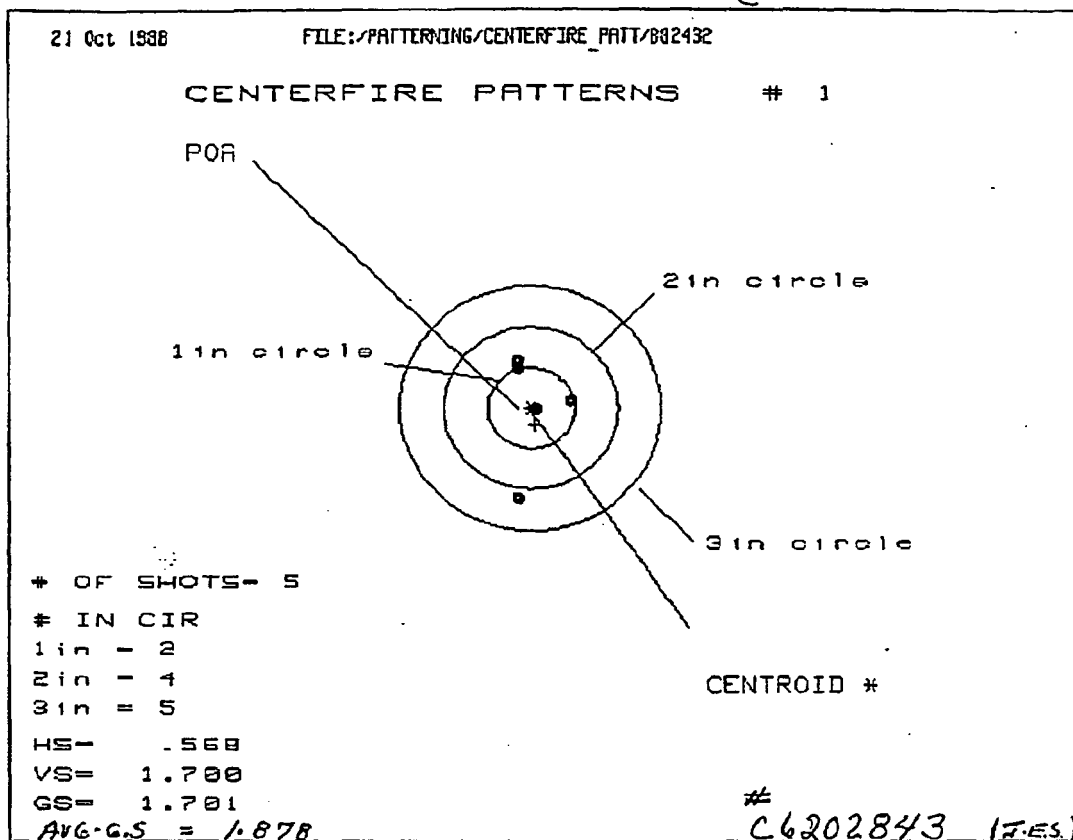
TEST PROCEDURE : 3X5 SHOT GROUPS PER RIFLE.

IN STILL SCOPE. BORE SIGHT:
WIRE BRUSH WITH NOSES & SOLVENT. PATCH DRY.
ZERO FOR P.O.I. - RECLEAN
FIRE ONE FOULING SHOT.
SHOOT 5 SHOT GROUP UNTIL 3 GROUPS COMPLETED.
COOL BETWEEN EACH GROUP.
REPEAT - CLEANING, AND FIRING PROCEDURE.

TEST RESULTS :

GROUPS.	1	2	3	AVG.	MEAN RADIUS.	1	2	3	AVG.
C 6202843 (J.S.)	1.701	2.356	1.577	1.878		.537	.922	.412	.490
B 6896103 (J.S.)	2.71	2.232	2.136	2.36		.830	.741	.749	.773
B 6896067 (J.S.)	2.077	2.38	1.889	2.115		.831	1.050	.754	.875
C 6209215 (J.S.)	.664	1.172	1.633	1.156		.301	.467	.526	.431
C 6209210 (J.S.)	1.158	1.584	1.621	1.454		.374	.608	.540	.51
B 6896118 (J.S.)	1.302	1.956	1.732	1.663		.484	.759	.529	.571
23792 (J.S.)	3.807	2.653	1.856	2.772		1.137	1.032	.716	.962
WHOP - MAG - CONTROL									
AGGRIGATE OF 700				CLASSES - 2.125					
						AGGRIGATE	OF	700	
						CLASSES -	.779		

C-



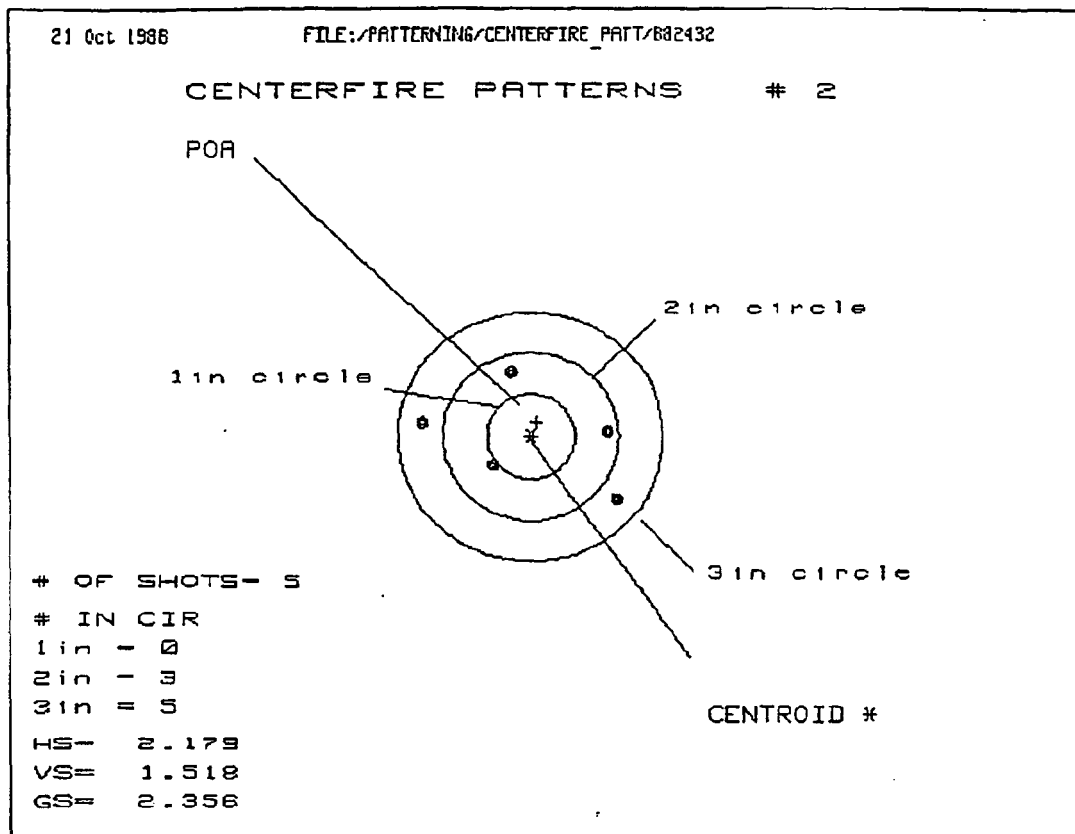
A.M.R. = .690

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.401	.373	.314
MINIMUM X	:	-.167	-.194	-.254
MAXIMUM Y	:	.550	.263	.292
MINIMUM Y	:	-1.150	-.284	-.197
CENTROID X	:	-.048	-.021	.039
CENTROID Y	:	.208	.495	.408
POR TO CENTROID in.	:	.213	.496	.410
MIN RADIUS	:	.027	.282	.206
MEAN RADIUS	:	.537	.325	.307
MAX RADIUS	:	1.155	.416	.387
HORIZONTAL SPREAD	:	.568	.568	.568
VERTICAL SPREAD	:	1.700	.547	.489
EXTREME SPREAD	:	1.701	.710	.688
NUMBER IN ONE INCH CIRCLE	=		2	
NUMBER IN TWO INCH CIRCLE	=		4	
NUMBER IN THREE INCH CIRCLE	=		5	

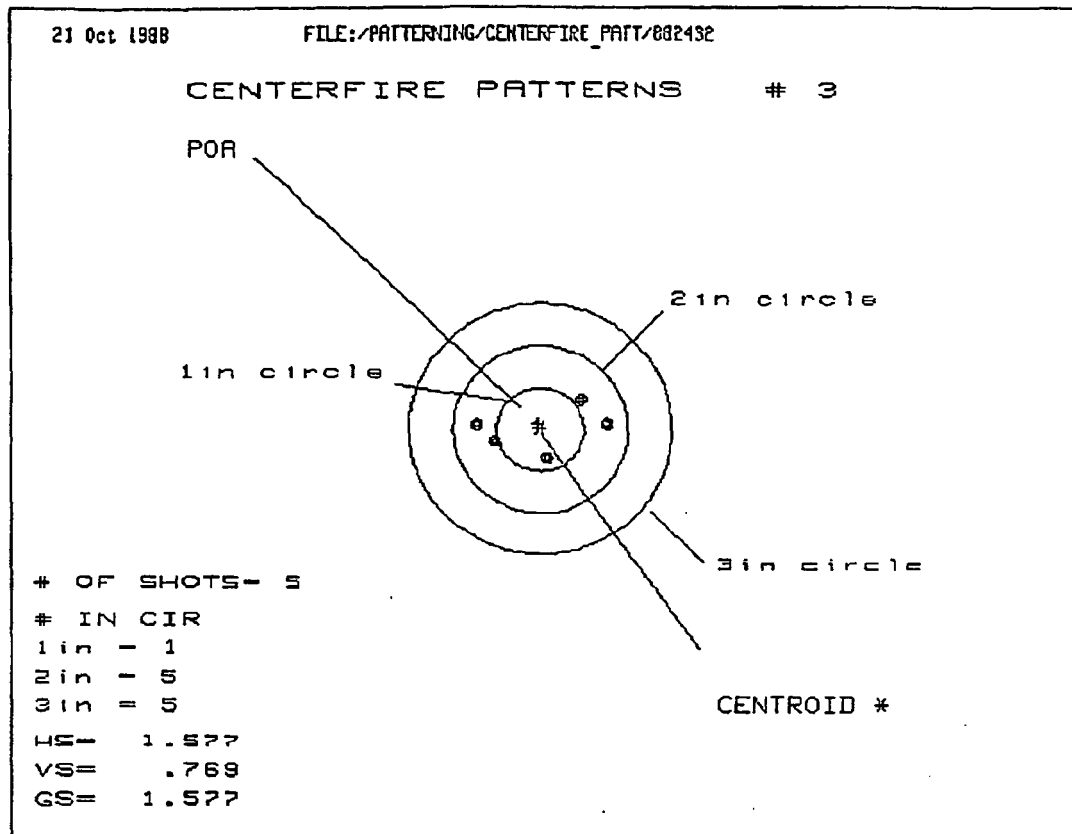
M/700 "CLASSIC."
 .300 W&W. MAG.
 REM. 190 GR. RSP.

LYMAN 20X SCOPE -
 ALL-AMERICAN

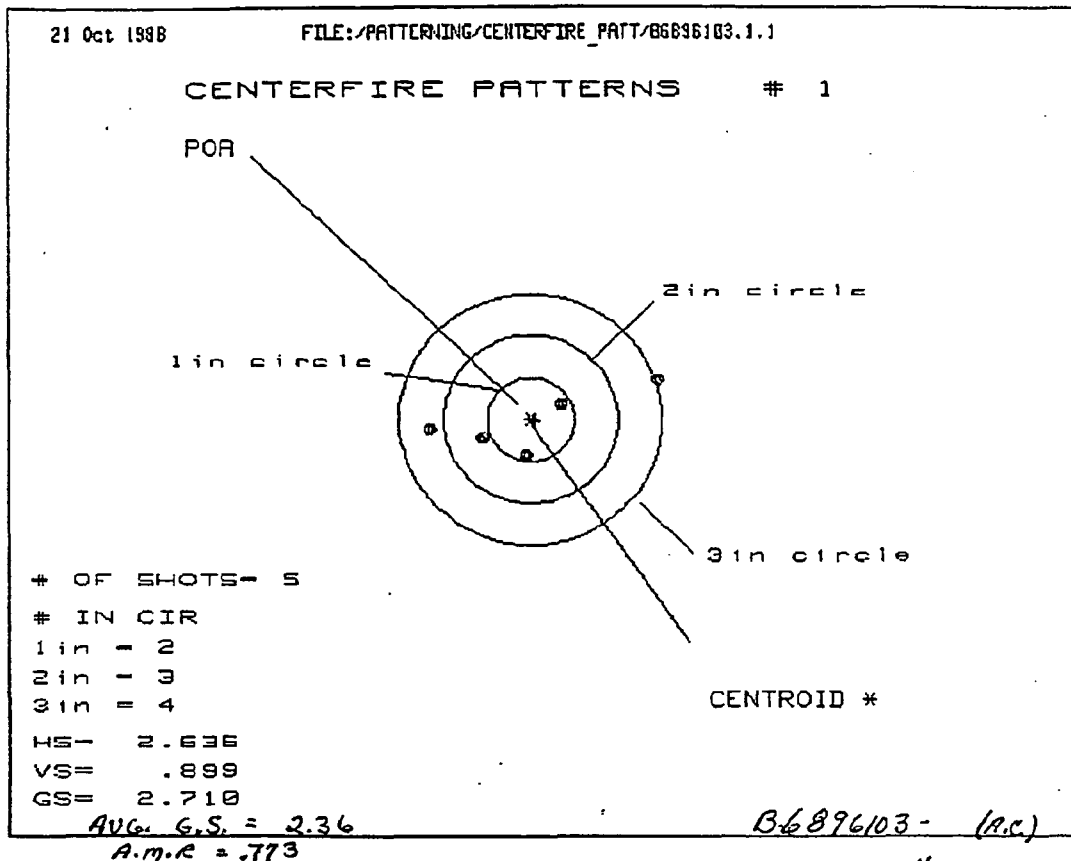
100 YDS. SAND BAG REST.



PATTERN #	2	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.990	1.088	.774
MINIMUM X	-1.189	-.941	-.476
MAXIMUM Y	.794	.613	.609
MINIMUM Y	-.724	-.489	-.493
CENTROID X	-.069	-.317	-.003
CENTROID Y	-.161	.021	.024
POA TO CENTROID in.	.175	.318	.024
MIN RADIUS	.513	.516	.678
MEAN RADIUS	.922	.791	.715
MAX RADIUS	1.227	1.094	.783
HORIZONTAL SPREAD	2.179	2.029	1.250
VERTICAL SPREAD	1.518	1.102	1.102
EXTREME SPREAD	2.356	2.032	1.306
NUMBER IN ONE INCH CIRCLE =	0		
NUMBER IN TWO INCH CIRCLE =	3		
NUMBER IN THREE INCH CIRCLE =	5		



PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.804	.621	.430
MINIMUM X	-.773	-.572	-.493
MAXIMUM Y	.395	.412	.435
MINIMUM Y	-.374	-.357	-.334
CENTROID X	.033	-.168	.022
CENTROID Y	-.061	-.078	-.101
POA TO CENTROID in.	.078	.186	.103
MIN RADIUS	.377	.327	.340
MEAN RADIUS	.612	.521	.485
MAX RADIUS	.807	.745	.612
HORIZONTAL SPREAD	1.577	1.192	.923
VERTICAL SPREAD	.769	.769	.769
EXTREME SPREAD	1.577	1.240	1.067
NUMBER IN ONE INCH CIRCLE	= 1		
NUMBER IN TWO INCH CIRCLE	= 5		
NUMBER IN THREE INCH CIRCLE	= 5		

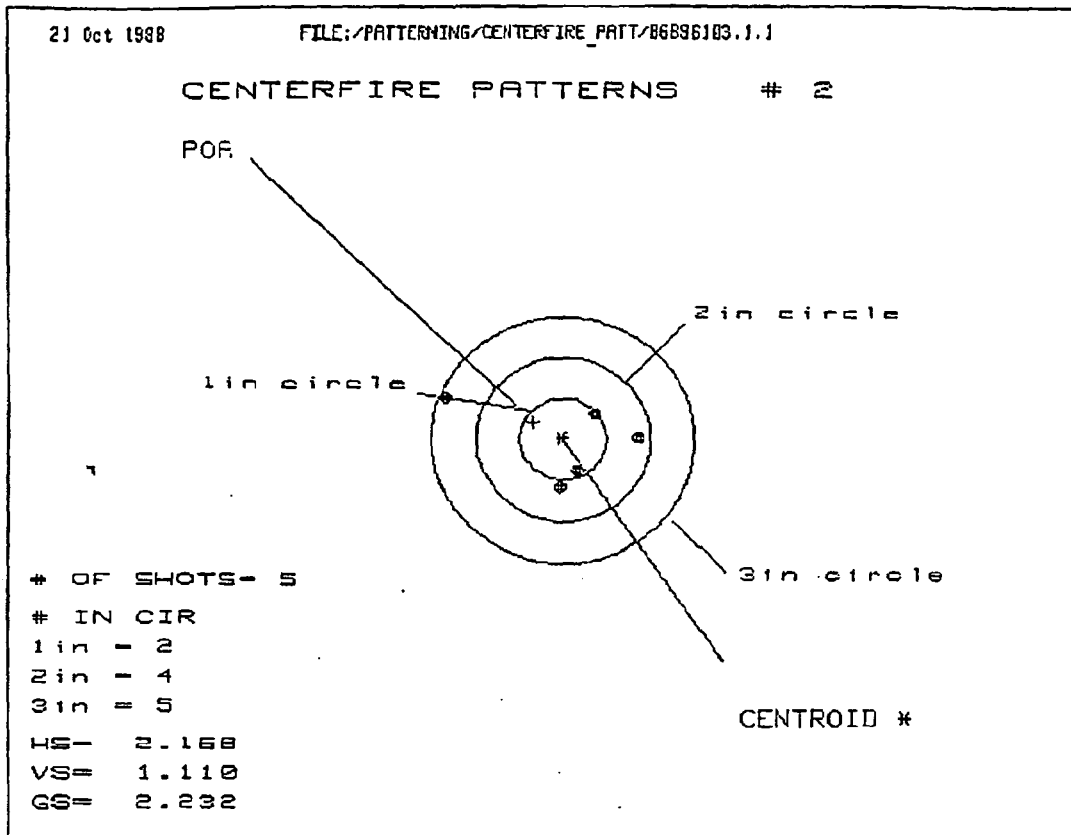


PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.466	.713	.445
MINIMUM X	:	-1.170	-.804	-.475
MAXIMUM Y	:	.507	.347	.349
MINIMUM Y	:	-.392	-.266	-.264
CENTROID X	:	-.046	-.412	-.144
CENTROID Y	:	.015	-.111	-.113
POA TO CENTROID in.	:	.048	.427	.183
MIN RADIUS	:	.398	.224	.266
MEAN RADIUS	:	.830	.555	.438
MAX RADIUS	:	1.551	.804	.566
HORIZONTAL SPREAD	:	2.636	1.517	.920
VERTICAL SPREAD	:	.899	.613	.613
EXTREME SPREAD	:	2.710	1.555	1.017
NUMBER IN ONE INCH CIRCLE =		2		
NUMBER IN TWO INCH CIRCLE =		3		
NUMBER IN THREE INCH CIRCLE =		4		

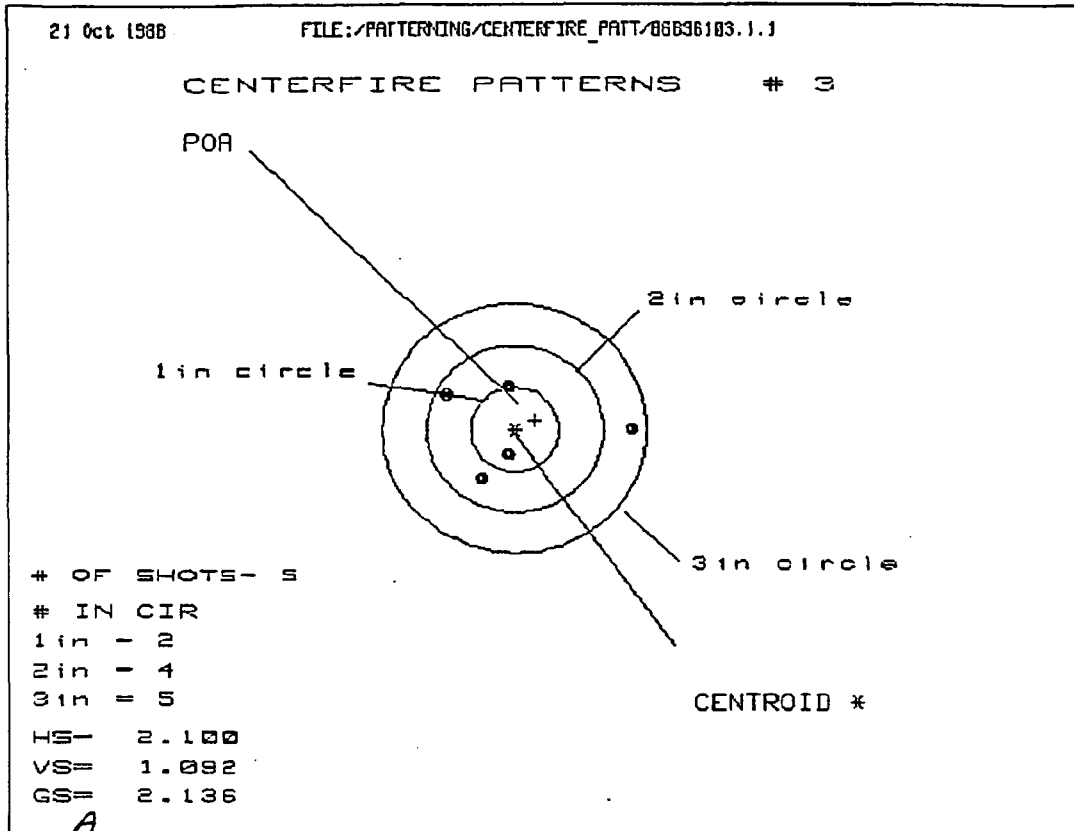
m-700 "CLASSIC"
300 WBY. MAG,
REM-190 GR. P.S.P.

LYMAN ALL-AMERICAN
20X SCOPE.

100 YDS. SAND BAG REST.



PATTERN #	1	2	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.827	.492	.189
MINIMUM X	-1.341	-.351	-.187
MAXIMUM Y	.555	.463	.517
MINIMUM Y	-.555	-.416	-.362
CENTROID X	.342	.677	.513
CENTROID Y	-.214	-.353	-.407
POA TO CENTROID in.	.403	.764	.655
MIN RADIUS	.386	.266	.154
MEAN RADIUS	.741	.448	.371
MAX RADIUS	1.451	.545	.550
HORIZONTAL SPREAD	2.168	.843	.376
VERTICAL SPREAD	1.110	.879	.879
EXTREME SPREAD	2.232	1.022	.956
NUMBER IN ONE INCH CIRCLE	2	4	5
NUMBER IN TWO INCH CIRCLE	4	5	
NUMBER IN THREE INCH CIRCLE	5		



PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	1.322	.271	.122
MINIMUM X	-.778	-.448	-.197
MAXIMUM Y	.479	.487	.630
MINIMUM Y	-.613	-.605	-.462
CENTROID X	-.221	-.551	-.402
CENTROID Y	-.118	-.126	-.269
POA TO CENTROID in.	.251	.566	.484
MIN RADIUS	.336	.382	.183
MEAN RADIUS	.749	.542	.442
MAX RADIUS	1.322	.620	.641
HORIZONTAL SPREAD	2.100	.719	.319
VERTICAL SPREAD	1.092	1.092	1.092
EXTREME SPREAD	2.136	1.138	1.138
NUMBER IN ONE INCH CIRCLE	=	2	
NUMBER IN TWO INCH CIRCLE	=	4	
NUMBER IN THREE INCH CIRCLE	=	5	

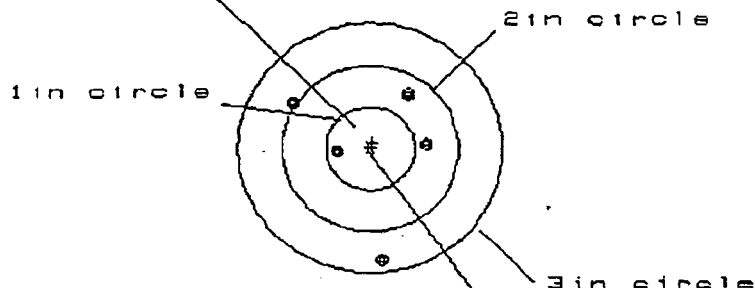
21 Oct 1988

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CENTERFIRE PATTERNS

1

POA



OF SHOTS- 5

IN CIR

1 in = 1

2 in = 4

3 in = 5

HS- 1.487

VS= 2.000

GS= 2.077

CENTROID *

AVG G.S. = 2.115

A.V.M.P. = .875

B6896067 (FES)

PATTERN #

1

SHOTS (BEST OF)

5

4

3

MAXIMUM X

.644

.681

.412

MINIMUM X

-.843

-.806

-.614

MAXIMUM Y

.710

.388

.459

MINIMUM Y

-1.290

-.320

-.249

CENTROID X

-.022

-.059

.210

CENTROID Y

-.064

.258

.187

POA TO CENTROID in.

.060

.265

.281

MIN RADIUS

.382

.471

.462

MEAN RADIUS

.831

.663

.542

MAX RADIUS

1.298

.834

.663

HORIZONTAL SPREAD

1.487

1.487

1.026

VERTICAL SPREAD

2.000

.708

.708

EXTREME SPREAD

2.077

1.567

1.080

NUMBER IN ONE INCH CIRCLE =

1

NUMBER IN TWO INCH CIRCLE =

4

NUMBER IN THREE INCH CIRCLE =

5

M-700- CLASSIC.

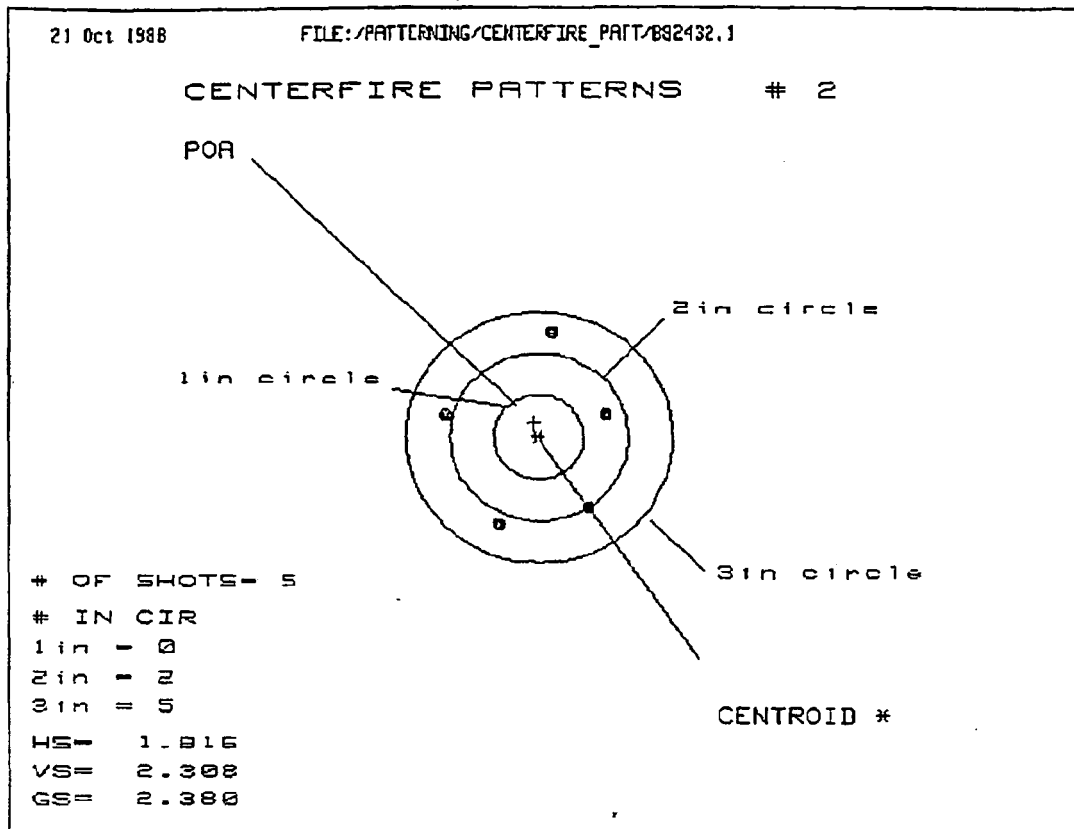
.300 W&B MAG.

REM- 190 GR. RSP.

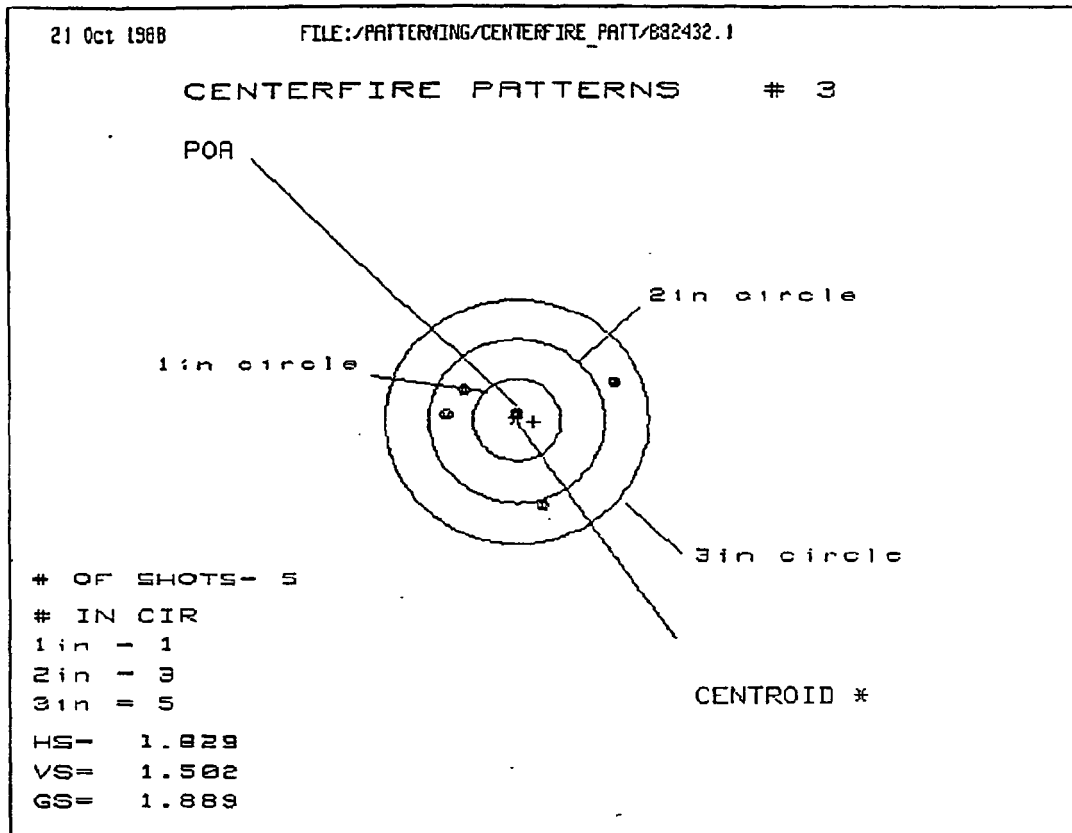
LYMAN- ALL AMERICAN

JOY SCOPE

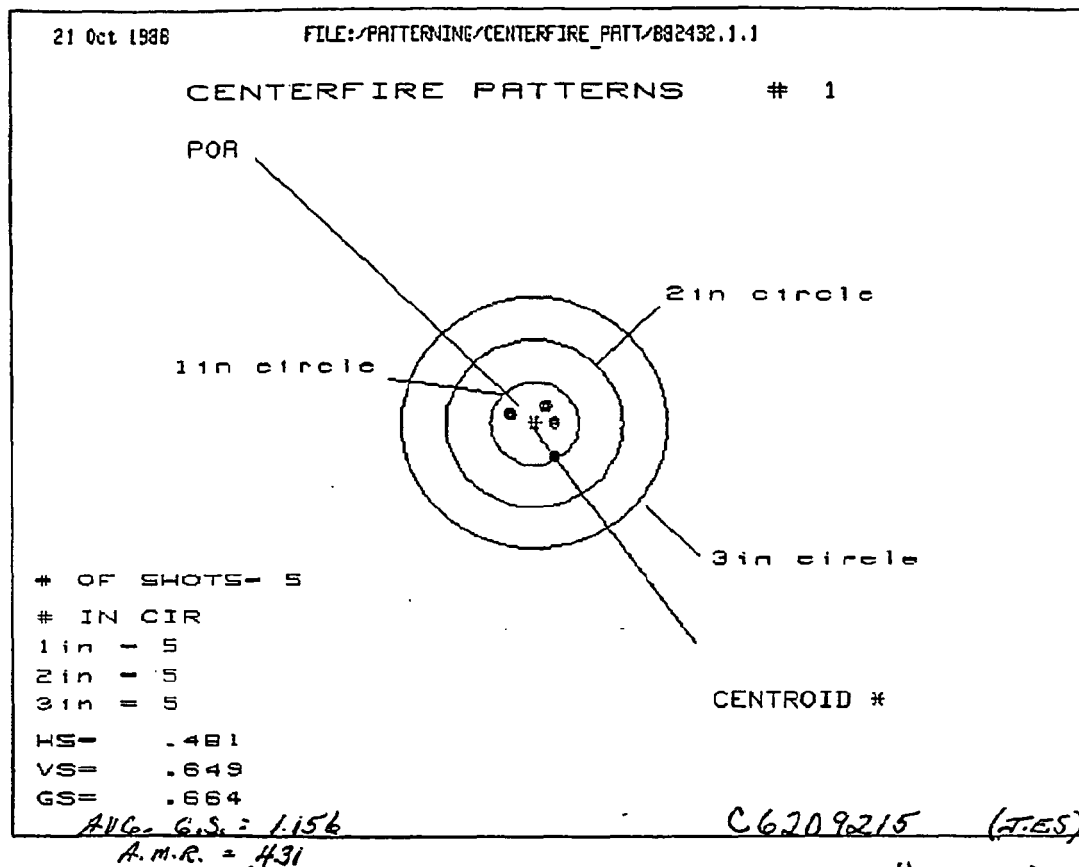
100 YDS. SAND BAG REST.



PATTERN #	2	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.770	.813	.691
MINIMUM X	-1.046	-1.003	-1.125
MAXIMUM Y	1.269	.613	.372
MINIMUM Y	-1.039	-.722	-.723
CENTROID X	.052	.009	.131
CENTROID Y	-.167	-.484	-.244
POA TO CENTROID in.	.175	.485	.277
MIN RADIUS	.817	.736	.775
MEAN RADIUS	1.050	.931	.934
MAX RADIUS	1.281	1.175	1.185
HORIZONTAL SPREAD	1.816	1.816	1.816
VERTICAL SPREAD	2.308	1.334	1.095
EXTREME SPREAD	2.380	1.905	1.905
NUMBER IN ONE INCH CIRCLE =	0	0	0
NUMBER IN TWO INCH CIRCLE =	2	2	2
NUMBER IN THREE INCH CIRCLE =	5	5	5



PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	1.064	.604	.417
MINIMUM X	-.765	-.499	-.298
MAXIMUM Y	.512	.511	.223
MINIMUM Y	-.990	-.862	-.121
CENTROID X	-.193	-.459	-.660
CENTROID Y	.026	-.102	.186
POA TO CENTROID in.	.195	.470	.686
MIN RADIUS	.076	.284	.253
MEAN RADIUS	.754	.616	.335
MAX RADIUS	1.181	1.053	.429
HORIZONTAL SPREAD	1.829	1.103	.715
VERTICAL SPREAD	1.502	1.373	.344
EXTREME SPREAD	1.889	1.655	.715
NUMBER IN ONE INCH CIRCLE	= 1		
NUMBER IN TWO INCH CIRCLE	= 3		
NUMBER IN THREE INCH CIRCLE	= 5		



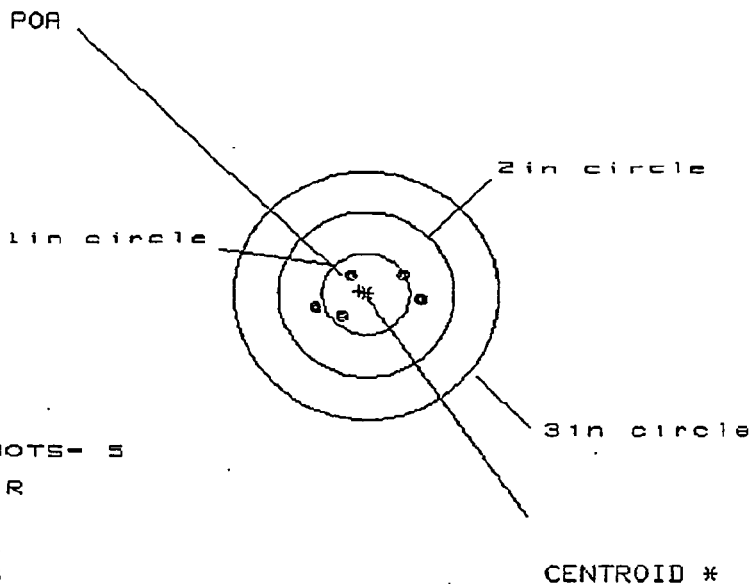
PATTERN #	1		
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.208	.255	.318
MINIMUM X	-.273	-.226	-.163
MAXIMUM Y	.259	.161	.045
MINIMUM Y	-.390	-.130	-.076
CENTROID X	-.027	-.074	-.137
CENTROID Y	-.012	.086	.032
POA TO CENTROID in.	.029	.113	.141
MIN RADIUS	.210	.220	.159
MEAN RADIUS	.301	.246	.210
MAX RADIUS	.433	.286	.327
HORIZONTAL SPREAD	.481	.481	.481
VERTICAL SPREAD	.649	.291	.121
EXTREME SPREAD	.664	.496	.496
NUMBER IN ONE INCH CIRCLE	= 5		
NUMBER IN TWO INCH CIRCLE	= 5		
NUMBER IN THREE INCH CIRCLE	= 5		

M-700 - "CLASSIC"
300. WBY. MAG.
REM- 190 GR PSP.
LYMAN- ALL AMERICAN
30X SCOPE.
100 YDS. SAND BAG REST.

21 Oct 1998

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CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1 in = 3

2 in = 5

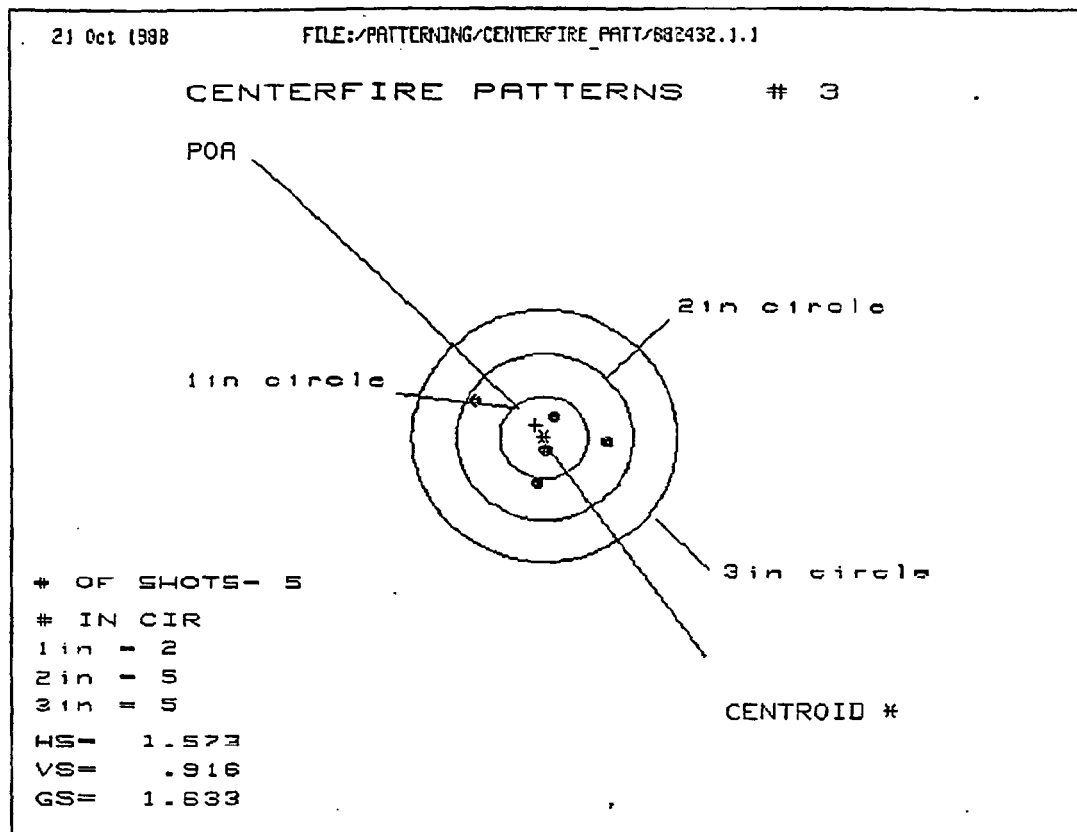
3 in = 5

HS= 1.169

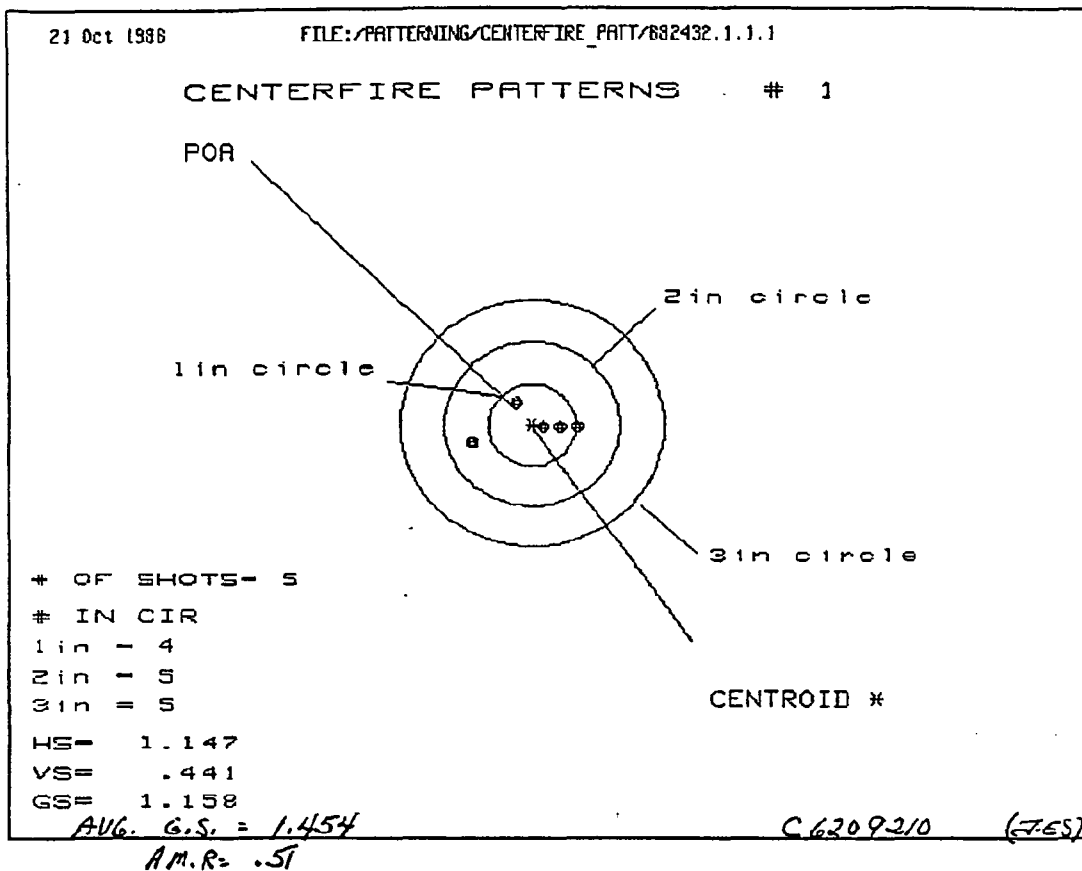
VS= .489

GS= 1.172

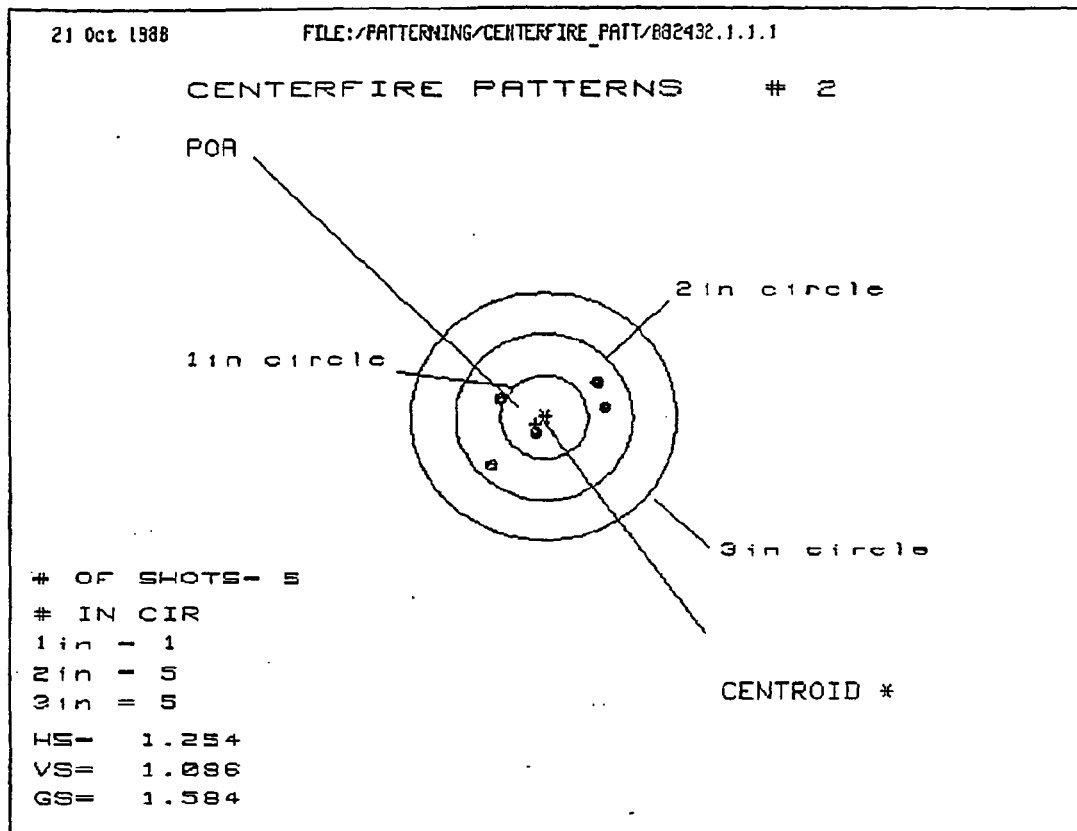
PATTERN #	2	3	4	5
SHOTS (BEST OF)	5	4	3	
MAXIMUM X	.591	.588	.444	
MINIMUM X	-.578	-.438	-.284	
MAXIMUM Y	.228	.219	.175	
MINIMUM Y	-.261	-.270	-.314	
CENTROID X	.088	-.068	.076	
CENTROID Y	-.030	-.021	.023	
POA TO CENTROID (in.)	.086	.071	.079	
MIN RADIUS	.282	.219	.238	
MEAN RADIUS	.467	.397	.375	
MAX RADIUS	.592	.615	.465	
HORIZONTAL SPREAD	1.169	1.018	.728	
VERTICAL SPREAD	.489	.489	.489	
EXTREME SPREAD	1.172	1.065	.857	
NUMBER IN ONE INCH CIRCLE	=	3		
NUMBER IN TWO INCH CIRCLE	=	5		
NUMBER IN THREE INCH CIRCLE	=	5		



PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.750	.544	.112
MINIMUM X	-.823	-.294	-.112
MAXIMUM Y	.404	.378	.400
MINIMUM Y	-.512	-.411	-.389
CENTROID X	.088	.294	.112
CENTROID Y	-.150	-.251	-.273
POA TO CENTROID in.	.174	.386	.295
MIN RADIUS	.135	.184	.010
MEAN RADIUS	.526	.406	.277
MAX RADIUS	.917	.548	.415
HORIZONTAL SPREAD	1.573	.838	.224
VERTICAL SPREAD	.916	.789	.789
EXTREME SPREAD	1.633	.964	.820
NUMBER IN ONE INCH CIRCLE =	2		
NUMBER IN TWO INCH CIRCLE =	5		
NUMBER IN THREE INCH CIRCLE =	5		



PATTERN #	:	1			M-700 - CLASSIC
SHOTS (BEST OF)	:	5	4	3	.300 W&B MAG.
MAXIMUM X	:	.493	.329	.222	
MINIMUM X	:	-.654	-.358	-.248	REM. 190 GR. P.S.P.
MAXIMUM Y	:	.257	.211	.187	
MINIMUM Y	:	-.184	-.185	-.129	
CENTROID X	:	-.016	.148	.038	LYMAN - ALL AMERICAN
CENTROID Y	:	.013	.059	.083	80x SCOPE.
POA TO CENTROID in.	:	.020	.159	.091	
MIN RADIUS	:	.098	.117	.132	
MEAN RADIUS	:	.374	.251	.224	
MAX RADIUS	:	.679	.415	.310	
HORIZONTAL SPREAD	:	1.147	.687	.478	100 YDS SAND BAG REST.
VERTICAL SPREAD	:	.441	.316	.316	
EXTREME SPREAD	:	1.158	.744	.538	
NUMBER IN ONE INCH CIRCLE	=		4		
NUMBER IN TWO INCH CIRCLE	=		5		
NUMBER IN THREE INCH CIRCLE	=		5		

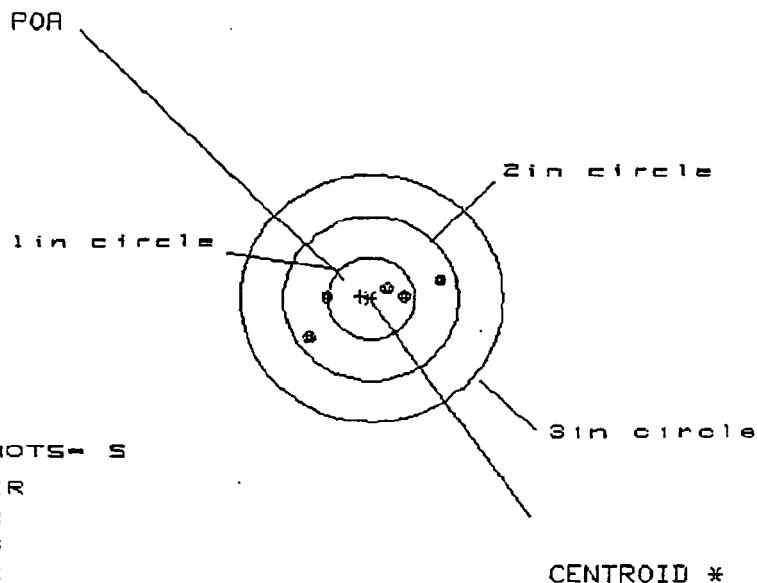


PATTERN #	2	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.664	.517	.655
MINIMUM X	-.590	-.673	-.535
MAXIMUM Y	.464	.309	.160
MINIMUM Y	-.622	-.336	-.233
CENTROID X	.104	.251	.113
CENTROID Y	.079	.234	.132
POA TO CENTROID in.	.130	.344	.173
MIN RADIUS	.212	.424	.262
MEAN RADIUS	.608	.534	.493
MAX RADIUS	.857	.676	.659
HORIZONTAL SPREAD	1.254	1.190	1.190
VERTICAL SPREAD	1.086	.644	.393
EXTREME SPREAD	1.584	1.193	1.193
NUMBER IN ONE INCH CIRCLE =	1		
NUMBER IN TWO INCH CIRCLE =	5		
NUMBER IN THREE INCH CIRCLE =	5		

21 Oct 1988

FILE:/PATTERNING/CENTERFIRE_PATT/882432.1.1.1

CENTERFIRE PATTERNS # 3



OF SHOTS= 5

IN CIR

1 in = 2

2 in = 5

3 in = 5

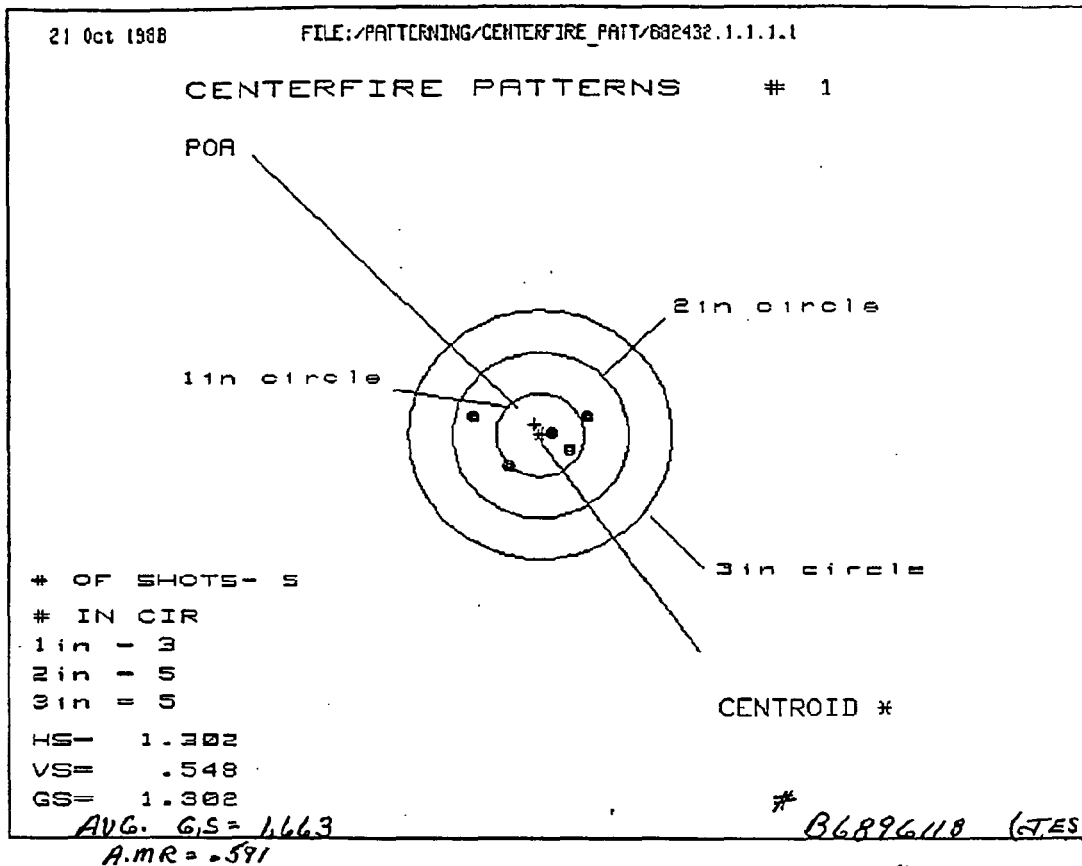
HS= 1.466

VS= .691

GS= 1.621

CENTROID *

PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.758	.591	.357
MINIMUM X	-.708	-.716	-.522
MAXIMUM Y	.239	.127	.096
MINIMUM Y	-.452	-.114	-.072
CENTROID X	.116	.293	.099
CENTROID Y	-.029	.083	.041
POA TO CENTROID in.	.119	.304	.107
MIN RADIUS	.223	.061	.191
MEAN RADIUS	.548	.389	.358
MAX RADIUS	.840	.725	.527
HORIZONTAL SPREAD	1.466	1.297	.879
VERTICAL SPREAD	.691	.241	.168
EXTREME SPREAD	1.621	1.319	.880
NUMBER IN ONE INCH CIRCLE	=	2	
NUMBER IN TWO INCH CIRCLE	=	5	
NUMBER IN THREE INCH CIRCLE	=	5	



PATTERN #	1		
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.562	.377	.311
MINIMUM X	-.740	-.546	-.421
MAXIMUM Y	.221	.256	.174
MINIMUM Y	-.327	-.272	-.186
CENTROID X	.065	.251	.125
CENTROID Y	-.131	-.186	-.272
POA TO CENTROID in.	.146	.312	.299
MIN RADIUS	.173	.090	.206
MEAN RADIUS	.484	.339	.326
MAX RADIUS	.773	.610	.460
HORIZONTAL SPREAD	1.302	.923	.732
VERTICAL SPREAD	.548	.528	.360
EXTREME SPREAD	1.302	1.063	.759
NUMBER IN ONE INCH CIRCLE	=	3	
NUMBER IN TWO INCH CIRCLE	=	5	
NUMBER IN THREE INCH CIRCLE	=	5	

M-700 - "CLASSIC"

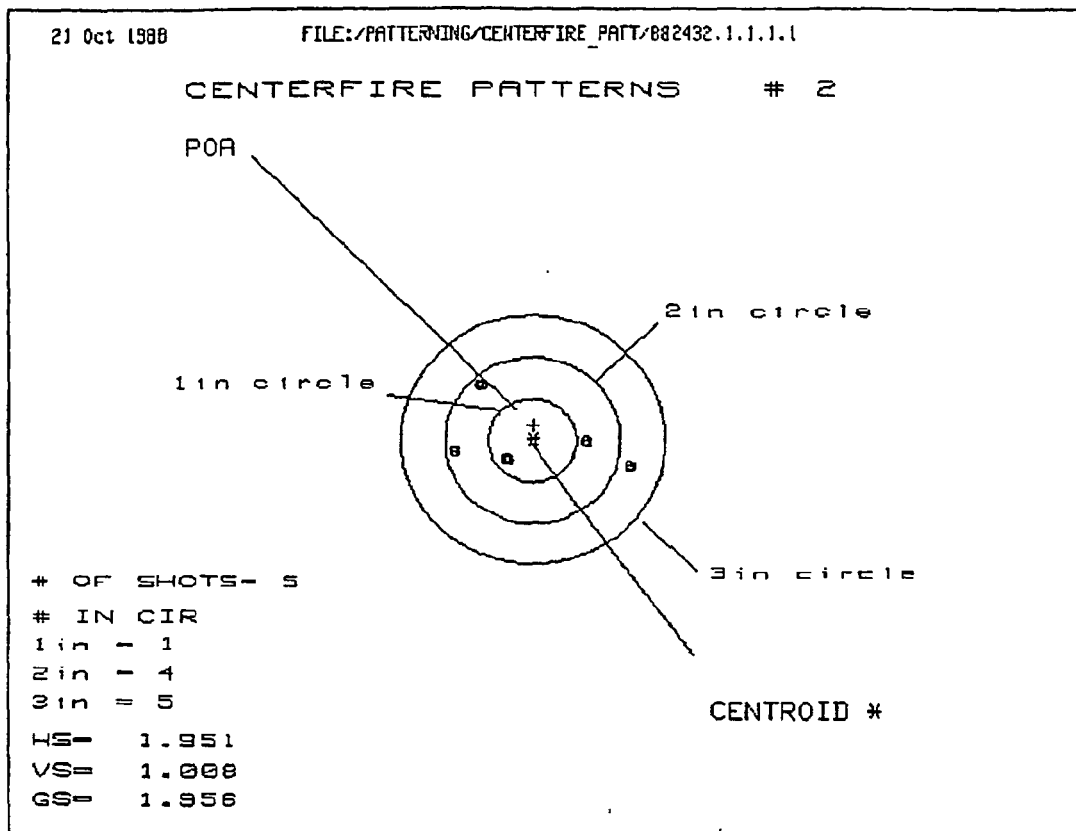
.300 WBY. MAG.

REM. 190 GR. P.S.P.

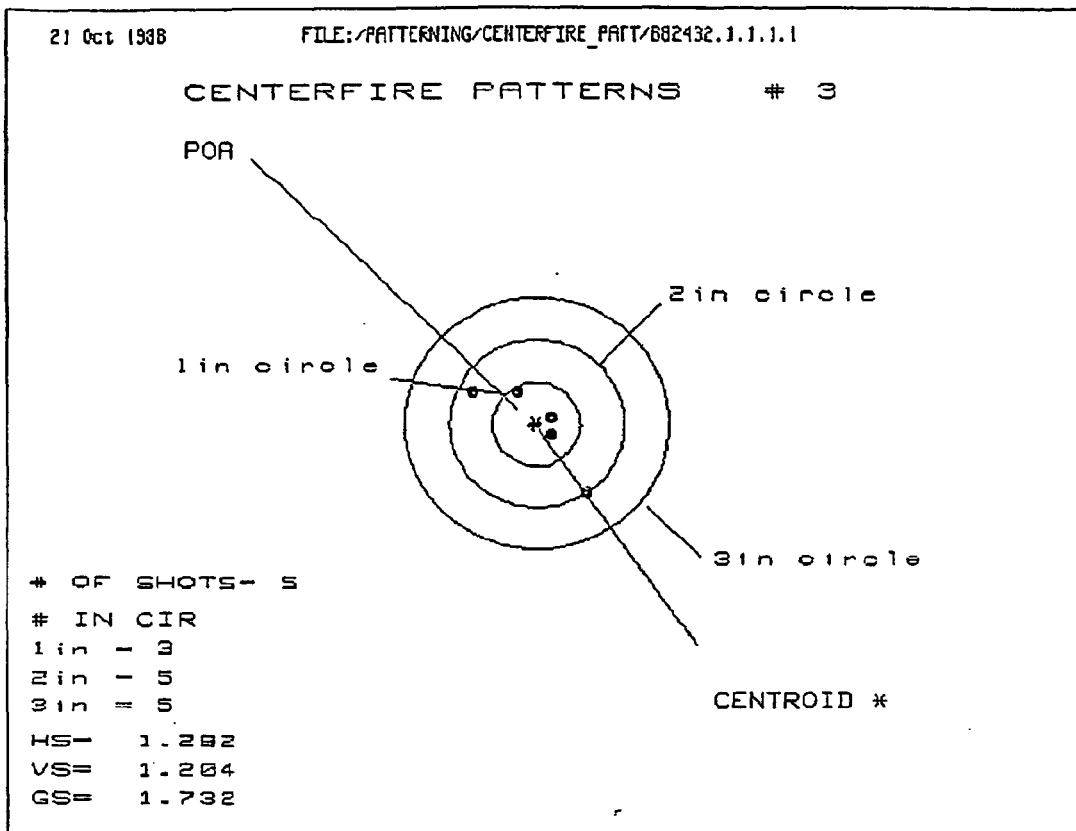
LYMAN - ALL AMERICAN

20X SCOPE.

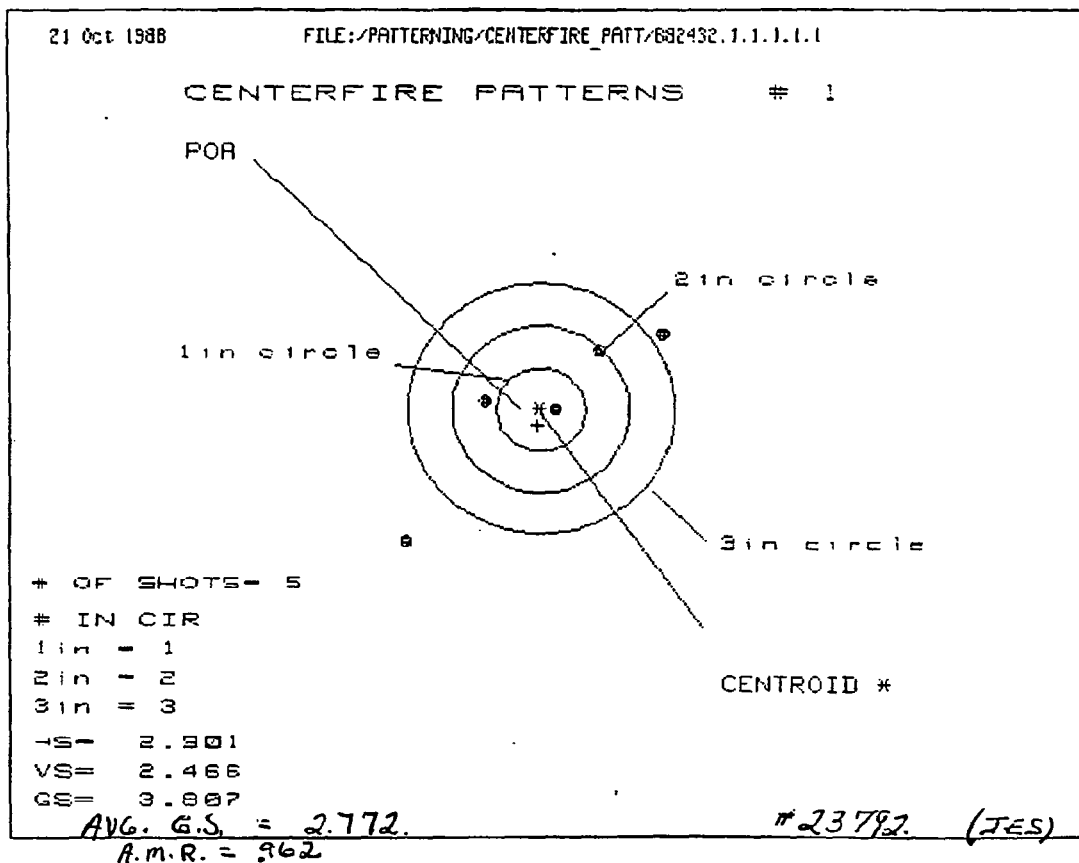
100 YDS. SAND BAG REST



PATTERN #	2	3	4
SHOTS (BEST OF)	5	4	3
MAXIMUM X	1.095	.841	.750
MINIMUM X	-.856	-.583	-.673
MAXIMUM Y	.702	.625	.105
MINIMUM Y	-.306	-.283	-.074
CENTROID X	-.008	-.281	-.191
CENTROID Y	-.176	-.099	-.308
POA TO CENTROID in.	.176	.298	.362
MIN RADIUS	.332	.283	.107
MEAN RADIUS	.759	.610	.513
MAX RADIUS	1.137	.847	.757
HORIZONTAL SPREAD	1.951	1.423	1.423
VERTICAL SPREAD	1.008	.908	.179
EXTREME SPREAD	1.956	1.429	1.429
NUMBER IN ONE INCH CIRCLE	= 1		
NUMBER IN TWO INCH CIRCLE	= 4		
NUMBER IN THREE INCH CIRCLE	= 5		

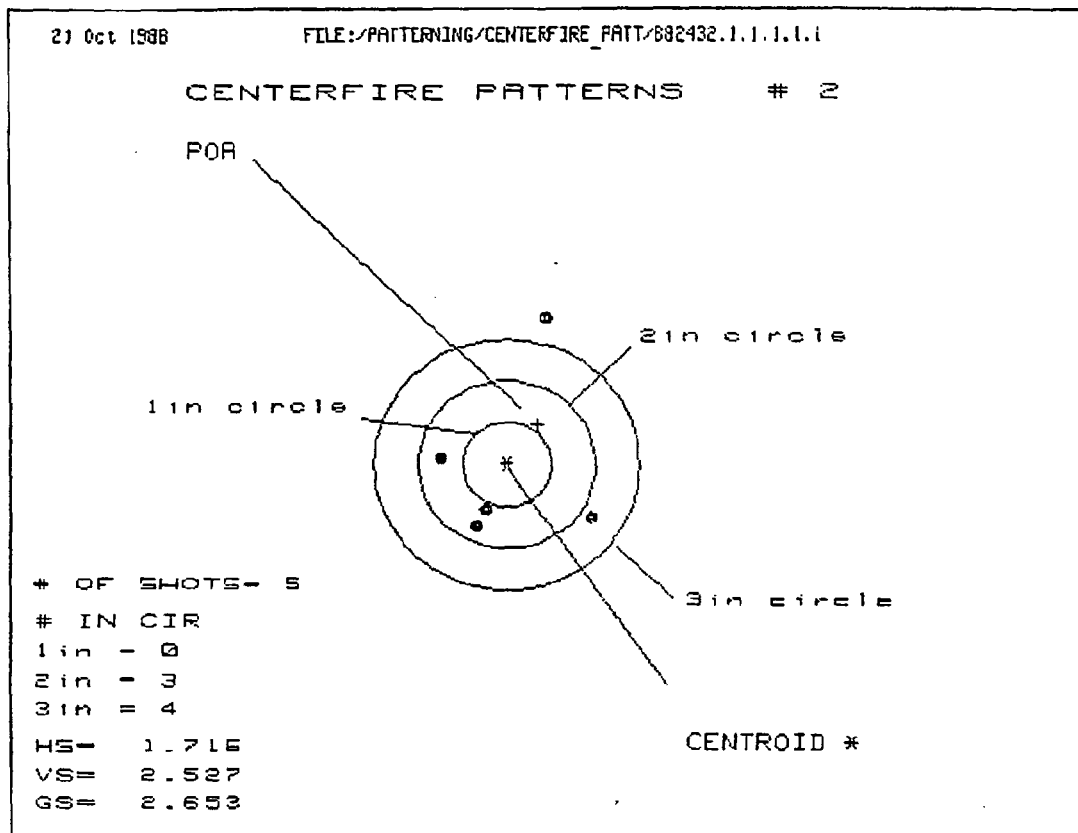


PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.556	.349	.154
MINIMUM X	-.726	-.587	-.253
MAXIMUM Y	.430	.236	.302
MINIMUM Y	-.774	-.283	-.217
CENTROID X	.032	-.107	.088
CENTROID Y	.013	.207	.141
POR TO CENTROID in.	.034	.233	.166
MIN RADIUS	.180	.243	.176
MEAN RADIUS	.529	.413	.270
MAX RADIUS	.953	.619	.394
HORIZONTAL SPREAD	1.282	.936	.407
VERTICAL SPREAD	1.204	.519	.519
EXTREME SPREAD	1.732	1.004	.628
NUMBER IN ONE INCH CIRCLE	= 3		
NUMBER IN TWO INCH CIRCLE	= 5		
NUMBER IN THREE INCH CIRCLE	= 5		

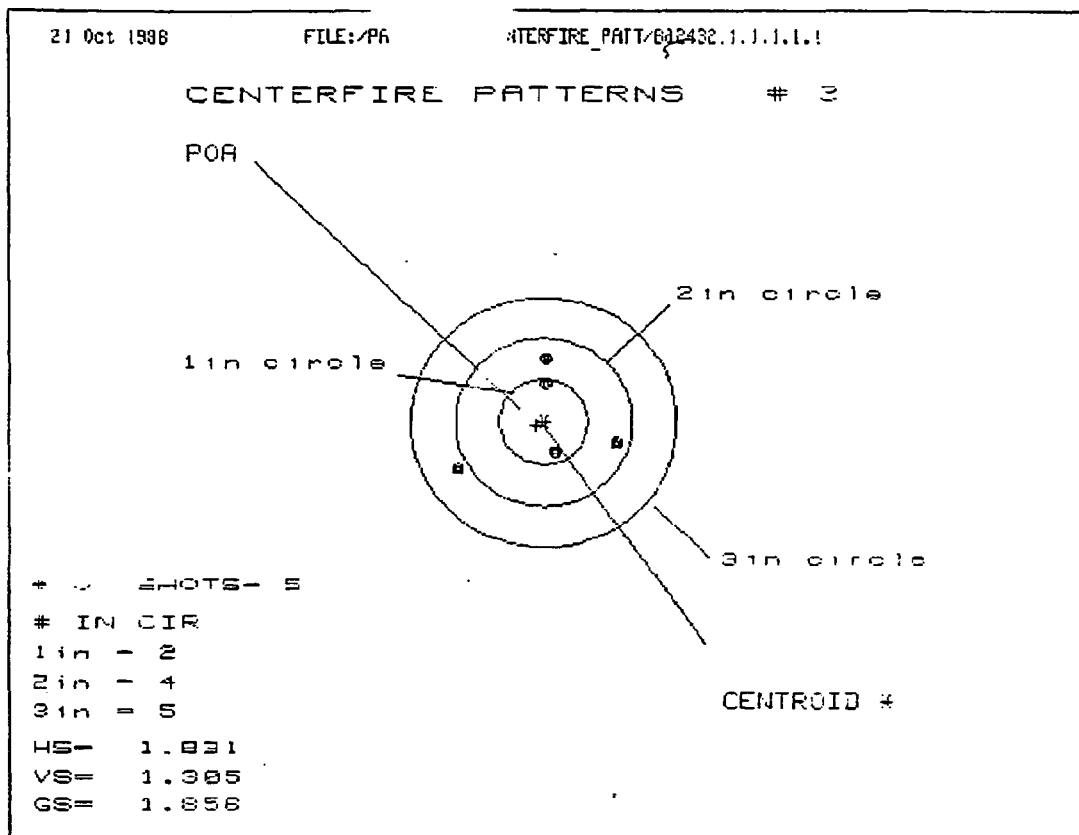


PATTERN #	:	1			
SHOTS (BEST OF)	:	5	4	3	
MAXIMUM X	:	1.320	.925	.621	
MINIMUM X	:	-1.581	-1.039	-.731	
MAXIMUM Y	:	.059	.457	.468	LYMAN 20x SCOPE
MINIMUM Y	:	-1.607	-.436	-.284	ALL-AMERICAN
CENTROID X	:	.034	.429	.121	
CENTROID Y	:	.192	.594	.442	
POA TO CENTROID in.	:	.195	.733	.458	
MIN RADIUS	:	.200	.445	.304	100 YDS. SAND BAG REST.
MEAN RADIUS	:	1.137	.762	.612	
MAX RADIUS	:	2.254	1.093	.778	
HORIZONTAL SPREAD	:	2.901	1.964	1.352	
VERTICAL SPREAD	:	2.466	.893	.752	
EXTREME SPREAD	:	3.807	2.118	1.501	
NUMBER IN ONE INCH CIRCLE =			1		
NUMBER IN TWO INCH CIRCLE =			2		
NUMBER IN THREE INCH CIRCLE =			3		

WEATHERBY - MARK V
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REM. 190 GR. PSP.



PATTERN #	2	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.961	1.067	.220
MINIMUM X	-.755	-.650	-.294
MAXIMUM Y	1.015	.492	.449
MINIMUM Y	-.712	-.258	-.301
CENTROID X	-.349	-.435	-.810
CENTROID Y	-.473	-.927	-.884
POA TO CENTROID in.	.588	1.032	1.199
MIN RADIUS	.608	.171	.265
MEAN RADIUS	1.032	.610	.370
MAX RADIUS	1.863	1.074	.536
HORIZONTAL SPREAD	1.716	1.716	.514
VERTICAL SPREAD	2.527	.750	.750
EXTREME SPREAD	2.653	1.825	.835
NUMBER IN ONE INCH CIRCLE	=	0	
NUMBER IN TWO INCH CIRCLE	=	3	
NUMBER IN THREE INCH CIRCLE	=	4	



PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.825	.574	.109
MINIMUM X	-1.006	-.258	-.067
MAXIMUM Y	.746	.606	.473
MINIMUM Y	-.559	-.494	-.627
CENTROID X	.080	.331	.140
CENTROID Y	.047	.187	.320
POA TO CENTROID in.	.093	.380	.349
MIN RADIUS	.393	.385	.167
MEAN RADIUS	.716	.559	.426
MAX RADIUS	1.151	.698	.636
HORIZONTAL SPREAD	1.931	.832	.176
VERTICAL SPREAD	1.305	1.100	1.100
EXTREME SPREAD	1.856	1.289	1.110
NUMBER IN ONE INCH CIRCLE	2		
NUMBER IN TWO INCH CIRCLE	4		
NUMBER IN THREE INCH CIRCLE	5		